Endeca® Latitude

Latitude Studio Power User's Guide

Version 2.1.0 • June 2011

Contents

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Preface

Endeca® Latitude applications guide people to better decisions by combining the ease of search with the analytic power of business intelligence. Users get self-service access to the data they need without needing to specify in advance the queries or views they need. At the same time, the user experience is data driven, continuously revealing the salient relationships in the underlying data for them to explore.

The heart of Endeca's technology is the MDEX Engine.™ The MDEX Engine is a hybrid between an analytical database and a search engine that makes possible a new kind of Agile BI. It provides guided exploration, search, and analysis on any kind of information: structured or unstructured, inside the firm or from external sources.

Endeca Latitude includes data integration and content enrichment tools to load both structured and unstructured data. It also includes Latitude Studio, a set of tools to configure user experience features including search, analytics, and visualizations. This enables IT to partner with the business to gather requirements and rapidly iterate a solution.

About this guide

This guide contains information for power users tasked with using Endeca Latitude Studio to build end-user applications.

Latitude Studio enables rapid configuration of search applications—often in just minutes. These applications offer the highly interactive Guided Navigation® user experience across a full range of structured and unstructured enterprise data.

Latitude Studio includes a Component SDK, which is a packaged development environment for portlets, themes, layout templates, and other portal elements. Endeca has modified Liferay's version of its Plugins SDK to include Endeca enhancements.

Who should use this guide

This guide is intended for power users of Endeca Latitude Studio on Windows or Linux.

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 Endeca Customer Support

The Endeca Support Center provides registered users with important information regarding Endeca software, implementation questions, product and solution help, training and professional services consultation as well as overall news and updates from Endeca.

You can contact Endeca Standard Customer Support through the Support section of the Endeca Developer Network (EDeN) at *http://eden.endeca.com*.

Chapter 1

Introduction to Latitude Studio

This section provides an overview for getting started building applications with Latitude Studio.

About Latitude Studio

Endeca Latitude Studio is a portal application, built on the Liferay Portal, that you populate with portlet components.

Latitude Studio enables rapid configuration of search applications that offer the highly interactive Guided Navigation® user experience across a full range of structured and unstructured enterprise data.

Lightweight and easy to deploy, Latitude Studio is ideal for the development of enterprise-quality search applications.

Latitude Studio's component-based nature makes the applications built with it simple to control, adapt, and extend. Granular layout and configuration control allow users to manage and personalize their own experiences.

About Latitude Studio power users

This guide is intended for Latitude Studio power users.

Power users configure Latitude Studio content for *end users*, who consume the Latitude Studio content.

Several job roles might fit into the power user category. For example, a business analyst might configure Latitude Studio and determine the components and data that end users have access to.

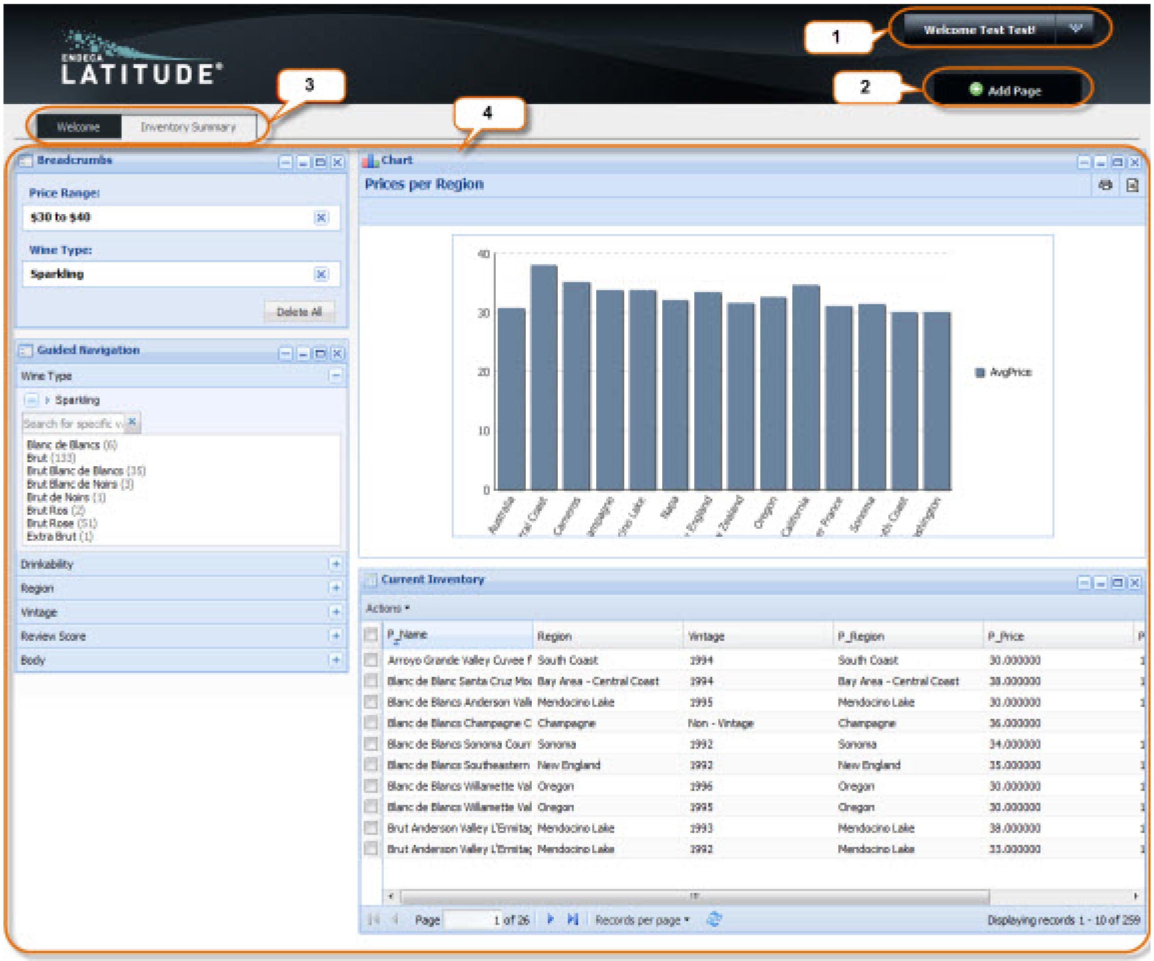
End users might include executives seeking a dashboard view, as well as other users who need to drill through interactive visualizations and reports.

Typically, Latitude Studio is configured so that end users cannot access the edit view of a component.

About the Latitude Studio user interface

The look-and-feel of a Latitude 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.

When you first access a Latitude Studio application, you see an interface similar to this one:



Price Range:
$30 to $40

Wine Type:
Sparkling

Blanc de Blancs (6)
Brut (133)
Brut Blanc de Blancs (35)
Brut Blanc de Noirs (3)
Brut de Noirs (1)
Brut Ros (2)
Brut Rose (51)
Extra Brut (1)

P_Name	Region	Vintage	P_Region	P_Price
Arroyo Grande Valley Cuvee f	South Coast	1994	South Coast	30.000000
Blanc de Blanc Santa Cruz Mo	Bay Area - Central Coast	1994	Bay Area - Central Coast	38.000000
Blanc de Blancs Anderson Vall	Mendocino Lake	1995	Mendocino Lake	30.000000
Blanc de Blancs Champagne C	Champagne	Non - Vintage	Champagne	36.000000
Blanc de Blancs Sonoma Coun	Sonoma	1992	Sonoma	34.000000
Blanc de Blancs Southeastern	New England	1992	New England	35.000000
Blanc de Blancs Willamette Val	Oregon	1996	Oregon	30.000000
Blanc de Blancs Willamette Val	Oregon	1995	Oregon	30.000000
Brut Anderson Valley L'Ermitag	Mendocino Lake	1993	Mendocino Lake	38.000000
Brut Anderson Valley L'Ermitag	Mendocino Lake	1992	Mendocino Lake	33.000000

Displaying records 1 - 10 of 259

In the above diagram, the numbers mark the following main controls and work areas:

Number	Item	Description
1	Dock	The Dock gives you access to function areas such as: • **Control Panel**, for administrative functions • **Add Component**, for adding Latitude and Liferay components to the page • **Layout Template**, for selecting the page layout • **Manage Pages**, for administering the pages
2	Add Page	**Add Page** allows you to add pages to the application's interface.
3	Tabbed pages	Tabbed pages are added by the power user or application developer, and can be considered home pages for the various application components. Placing the components on several pages instead of on a single page provides a more useful navigation experience for the end user.

Number	Item	Description
4	Portal workspace	The portal workspace is where users access the components. In the example, the **Guided Navigation** component provides end users with contextual navigation across the application's data set. The **Results Table** component shows the records returned by the end user's navigation. This portal workspace example also shows a chart created using the application's **Chart** component.

More information on these features is provided later in this guide.

Prerequisites to Latitude Studio application development

Before you begin developing your application in Latitude Studio, make sure the following items are in place.

The items are associated with different roles, including the power user, system administrator, developer, or designer:

Role	Responsibilities
Power user	• Understanding your use cases and business case, so you can assemble Latitude Studio components to match these cases. • Building application pages. • Creating charts. • Configuring controls for the various components.
System administrator	• Deploying and maintaining the server that will host the Latitude Studio application. • Connecting Latitude Studio to enterprise systems. • Setting up Latitude Studio logging. • Establishing and maintaining the Latitude Studio connection to its underlying database. • Managing ongoing clustering and load balancing. • Deploying extension points provided by the developer.
Developer	• Modifying existing components, or creating new ones, to better meet your organization's unique business requirements. • Developing Latitude Studio extension points for things like security.
Designer	• Creating new themes

Obtaining more information about the Endeca MDEX Engine

This guide assumes that you already have experience working with the Endeca MDEX Engine.

This includes having a solid understanding of Endeca Analytics and other forms of data manipulation.

For more information about the MDEX Engine, consult the documentation for the version you are using. The documentation is available in the Knowledge Base of the Endeca Developer's Network (EDeN).

Chapter 2

Summary of Latitude Studio Components

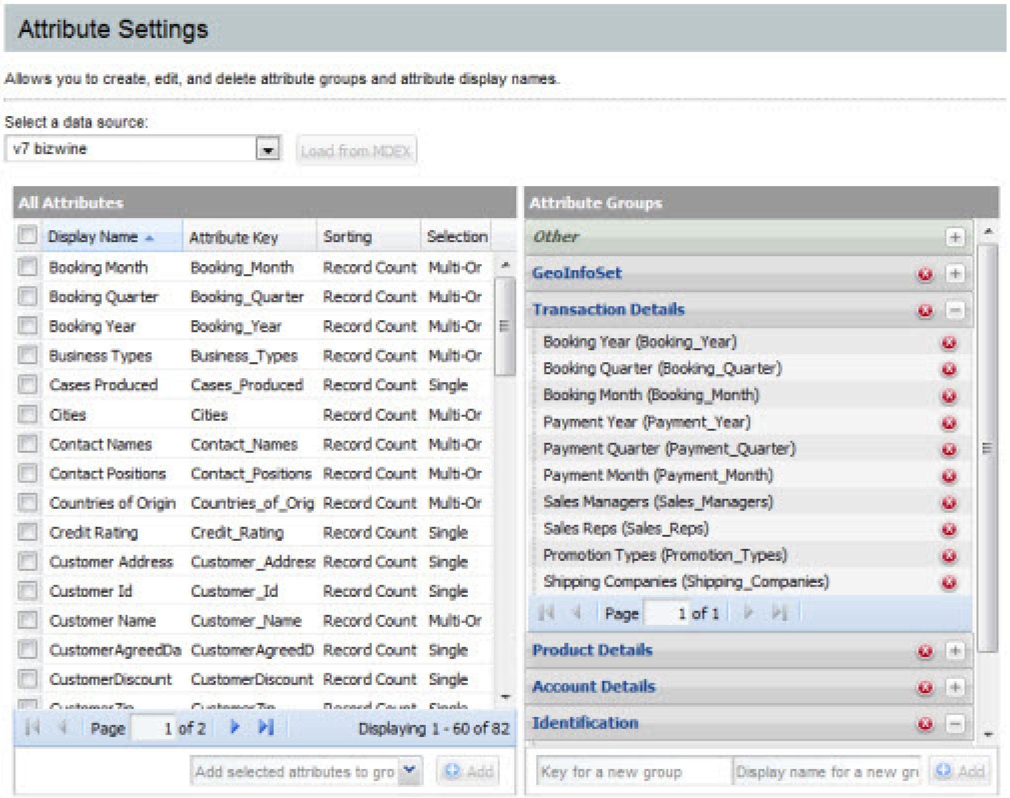
Here is a quick overview of the Latitude Studio components and how they can be used and configured.

Administrative components

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

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.

Select a data source: v7 bizwine

All Attributes

□ Display Name ▲	Attribute Key	Sorting	Selection
□ Booking Month	Booking_Month	Record Count	Multi-Or
□ Booking Quarter	Booking_Quarter	Record Count	Multi-Or
□ Booking Year	Booking_Year	Record Count	Multi-Or
□ Business Types	Business_Types	Record Count	Multi-Or
□ Cases Produced	Cases_Produced	Record Count	Single
□ Cities	Cities	Record Count	Multi-Or
□ Contact Names	Contact_Names	Record Count	Multi-Or
□ Contact Positions	Contact_Positions	Record Count	Multi-Or
□ Countries of Origin	Countries_of_Orig	Record Count	Multi-Or
□ Credit Rating	Credit_Rating	Record Count	Single
□ Customer Address	Customer_Addres:	Record Count	Single
□ Customer Id	Customer_Id	Record Count	Single
□ Customer Name	Customer_Name	Record Count	Multi-Or
□ CustomerAgreedDa	CustomerAgreedD	Record Count	Single
□ CustomerDiscount	CustomerDiscount	Record Count	Single
□ CustomerZip	CustomerZip	Record Count	Single

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Attribute Groups

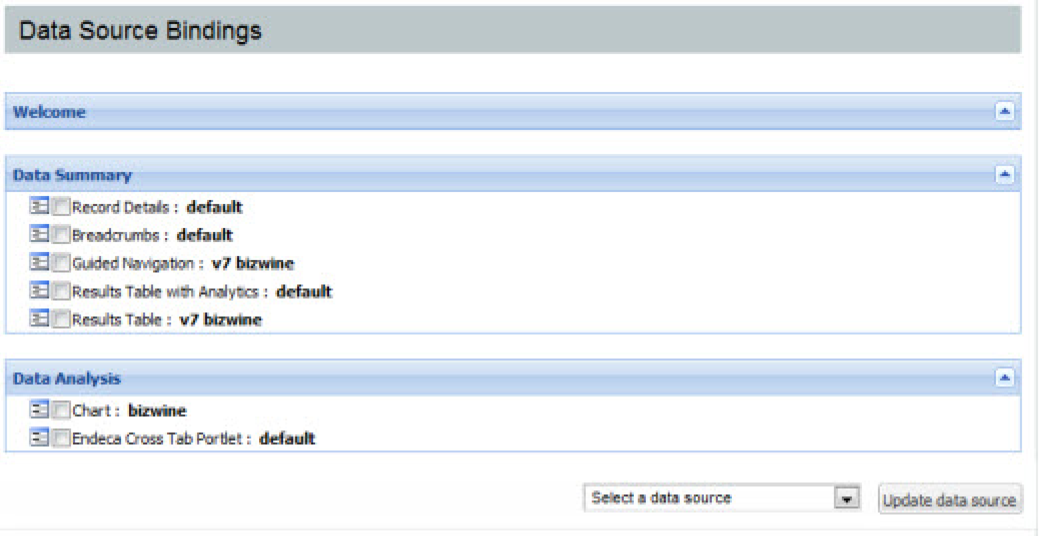
- Other
- GeoInfoSet
- Transaction Details
  - Booking Year (Booking_Year)
  - Booking Quarter (Booking_Quarter)
  - Booking Month (Booking_Month)
  - Payment Year (Payment_Year)
  - Payment Quarter (Payment_Quarter)
  - Payment Month (Payment_Month)
  - Sales Managers (Sales_Managers)
  - Sales Reps (Sales_Reps)
  - Promotion Types (Promotion_Types)
  - Shipping Companies (Shipping_Companies)
  - Page 1 of 1
- Product Details
- Account Details
- Identification

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

Data Source Bindings

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



Data Source Bindings

Welcome

Data Summary

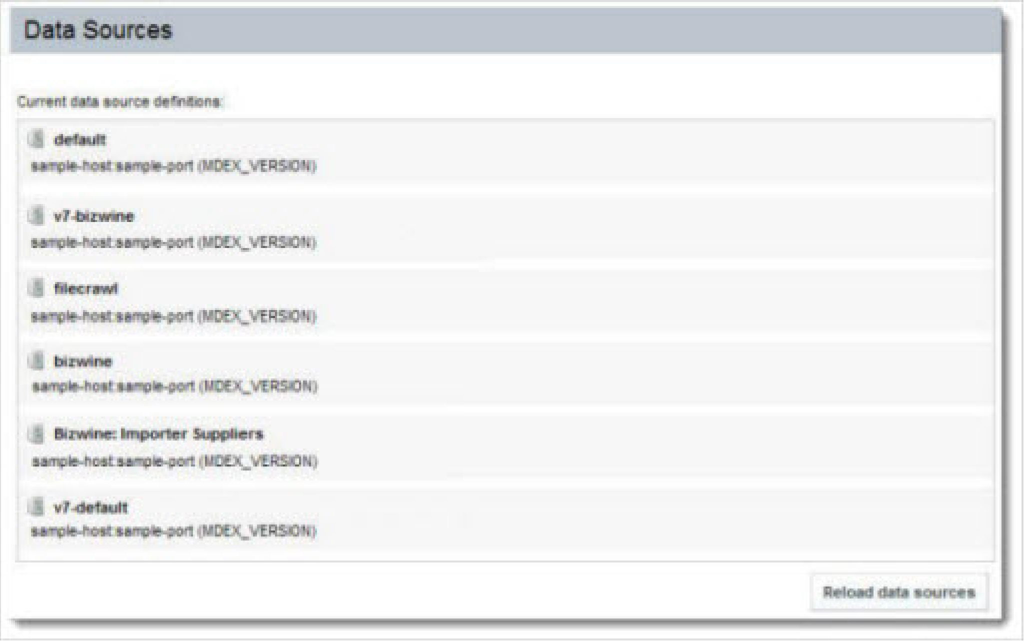
□ Record Details : **default**
□ Breadcrumbs : **default**
□ Guided Navigation : **v7 bizwine**
□ Results Table with Analytics : **default**
□ Results Table : **v7 bizwine**

Data Analysis

□ Chart : **bizwine**
□ Endeca Cross Tab Portlet : **default**

Data Sources

Used to test and reload the configured data sources for the Latitude Studio.



Data Sources

Current data source definitions:

default
sample-host:sample-port (MDEX_VERSION)

v7-bizwine
sample-host:sample-port (MDEX_VERSION)

filecrawl
sample-host:sample-port (MDEX_VERSION)

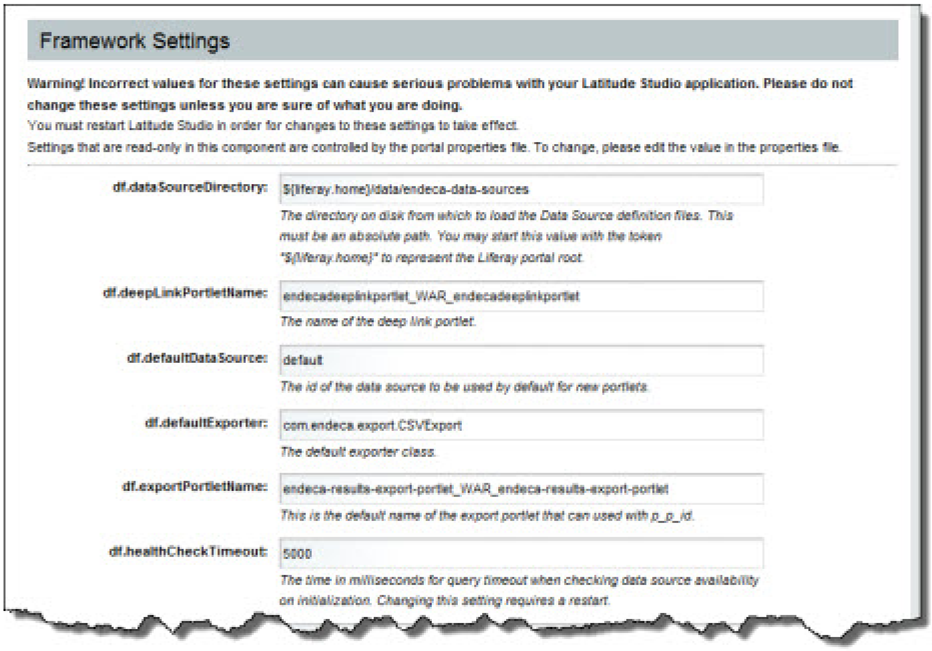
bizwine
sample-host:sample-port (MDEX_VERSION)

Bizwine: Importer Suppliers
sample-host:sample-port (MDEX_VERSION)

v7-default
sample-host:sample-port (MDEX_VERSION)

Framework Settings

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



Framework Settings

Warning! Incorrect values for these settings can cause serious problems with your Latitude Studio application. Please do not change these settings unless you are sure of what you are doing.

You must restart Latitude Studio in order for changes to these settings to take effect.

Settings that are read-only in this component are controlled by the portal properties file. To change, please edit the value in the properties file.

df.dataSourceDirectory: ${liferay.home}/data/endeca-data-sources

The directory on disk from which to load the Data Source definition files. This must be an absolute path. You may start this value with the token "${liferay.home}" to represent the Liferay portal root.

df.deepLinkPortletName: endecadeeplinkportlet_WAR_endecadeeplinkportlet

The name of the deep link portlet.

df.defaultDataSource: default

The id of the data source to be used by default for new portlets.

df.defaultExporter: com.endeca.export.CSVExport

The default exporter class.

df.exportPortletName: endeca-results-export-portlet_WAR_endeca-results-export-portlet

This is the default name of the export portlet that can used with p_p_id.

df.healthCheckTimeout: 5000

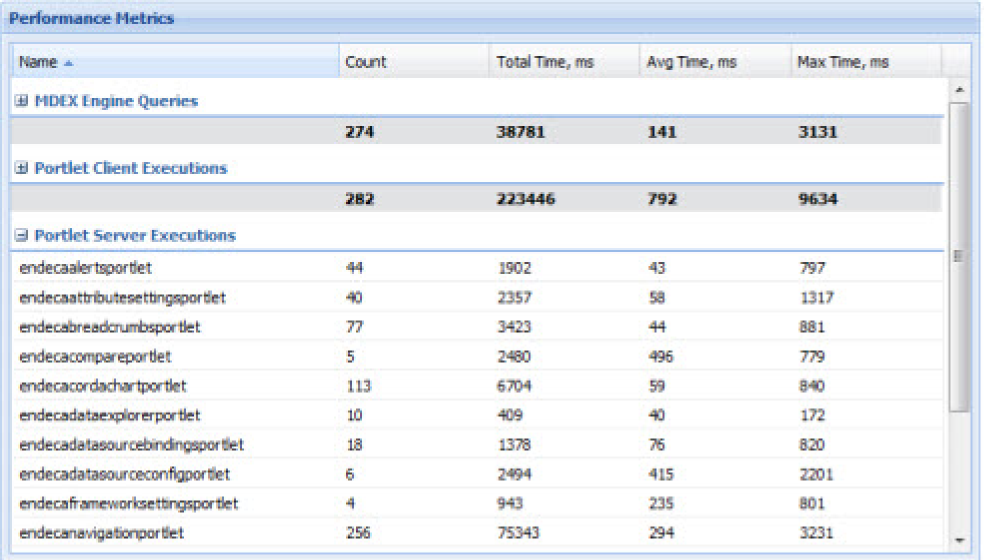
The time in milliseconds for query timeout when checking data source availability on initialization. Changing this setting requires a restart.

Performance Metrics

Provides insight into the number of queries performed by Latitude Studio, and the time taken to complete those queries. The component can be configured to include information for:

- MDEX Engine queries
- Portlet server executions
- Portlet client executions

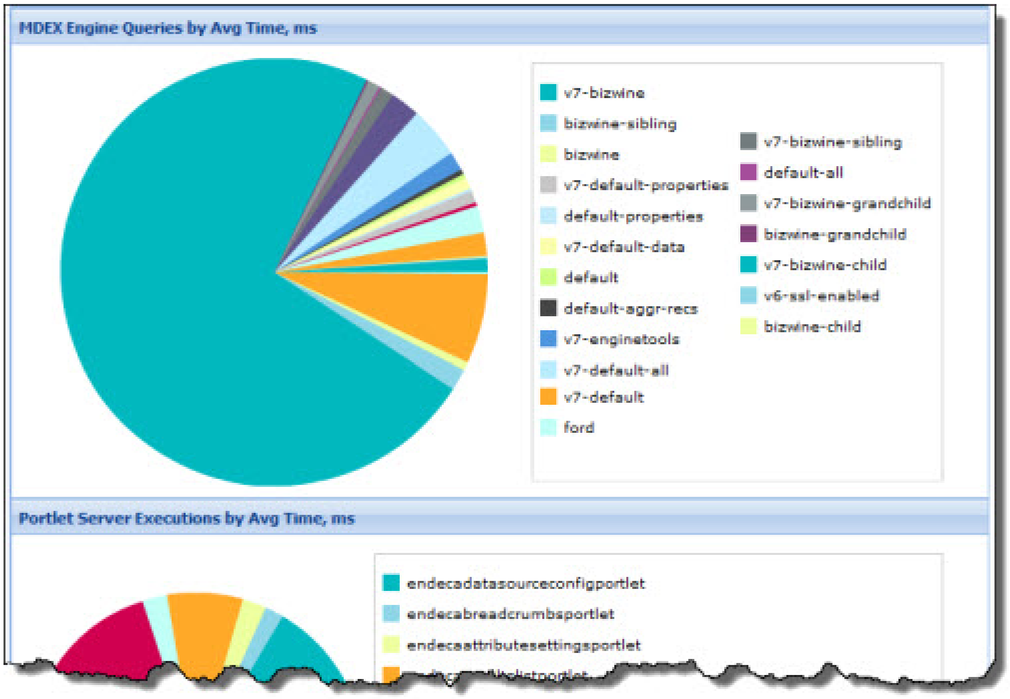
At the top of the component is a table summarizing the query information.



Performance Metrics

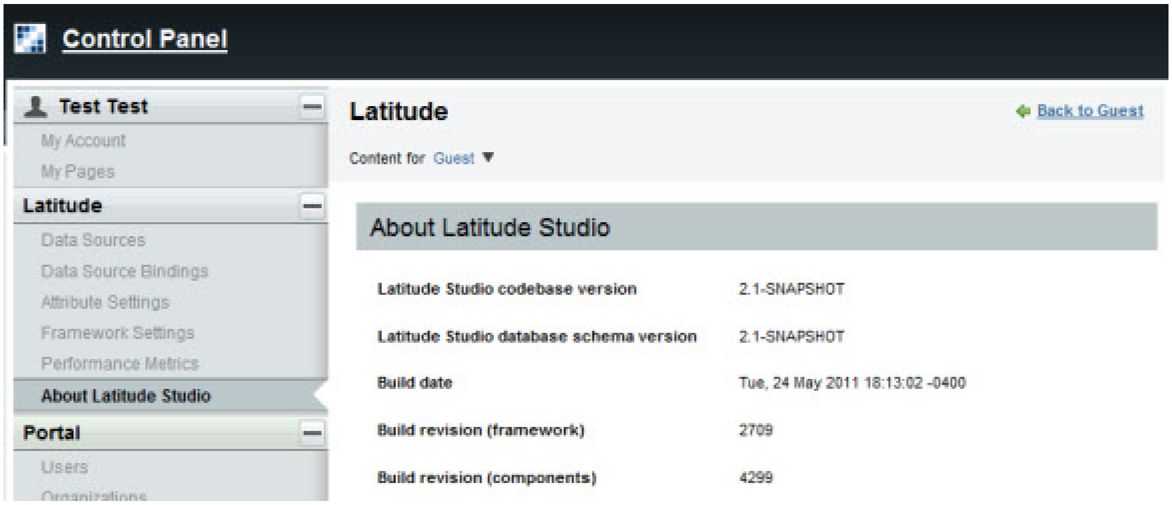
Name ▲	Count	Total Time, ms	Avg Time, ms	Max Time, ms
⊞ MDEX Engine Queries				
	274	**38781**	**141**	**3131**
⊞ Portlet Client Executions				
	282	**223446**	**792**	**9634**
⊟ Portlet Server Executions				
endecaalertsportlet	44	1902	43	797
endecaattributesettingsportlet	40	2357	58	1317
endecabreadcrumbsportlet	77	3423	44	881
endecacompareportlet	5	2480	496	779
endecacordachartportlet	113	6704	59	840
endecadataexplorerportlet	10	409	40	172
endecadatasourcebindingsportlet	18	1378	76	820
endecadatasourceconfigportlet	6	2494	415	2201
endecaframeworksettingsportlet	4	943	235	801
endecanavigationportlet	256	75343	294	3231

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



About Latitude Studio

Provides version and build information for the Latitude Studio application.



About Latitude Studio

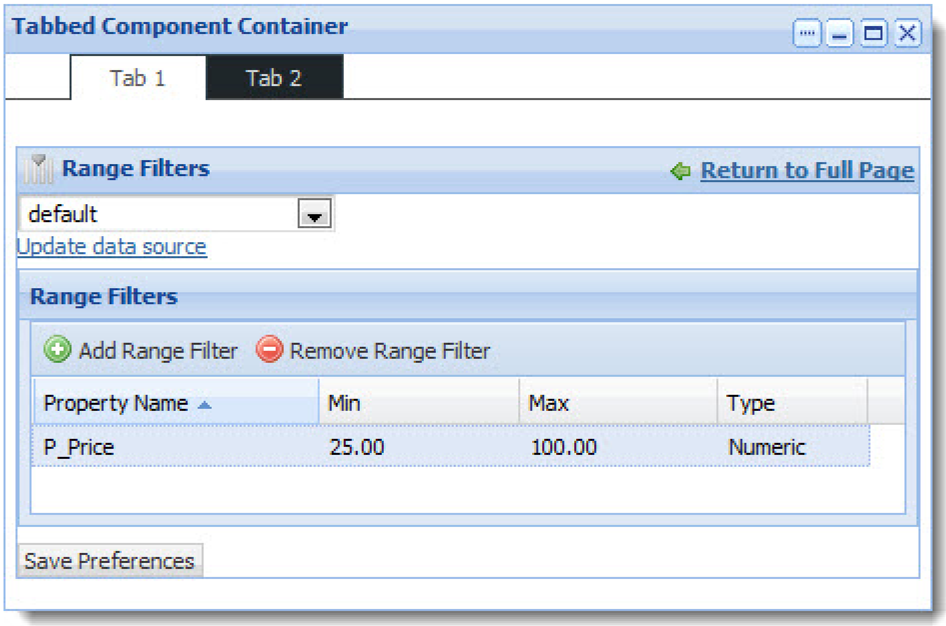
Latitude Studio codebase version	2.1-SNAPSHOT
Latitude Studio database schema version	2.1-SNAPSHOT
Build date	Tue, 24 May 2011 18:13:02 -0400
Build revision (framework)	2709
Build revision (components)	4299

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.



default

Property Name ▲	Min	Max	Type
P_Price	25.00	100.00	Numeric

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

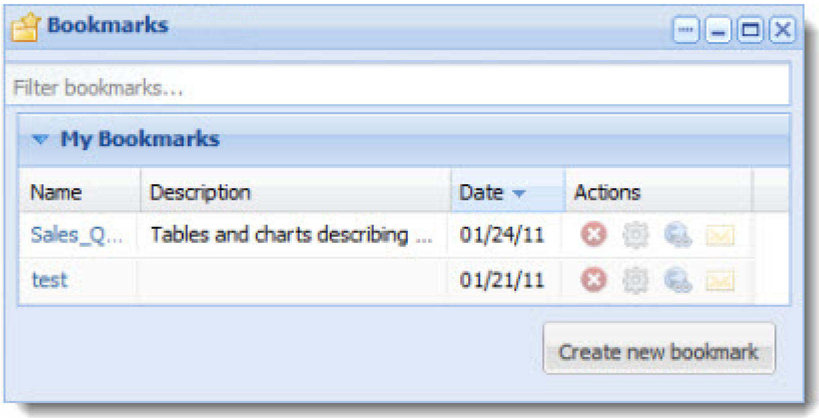
Personalization components

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

Bookmarks

Allows end users to save the current state of the Latitude 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.



Name	Description	Date	Actions
Sales_Q...	Tables and charts describing ...	01/24/11	
test		01/21/11	

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

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

Results components

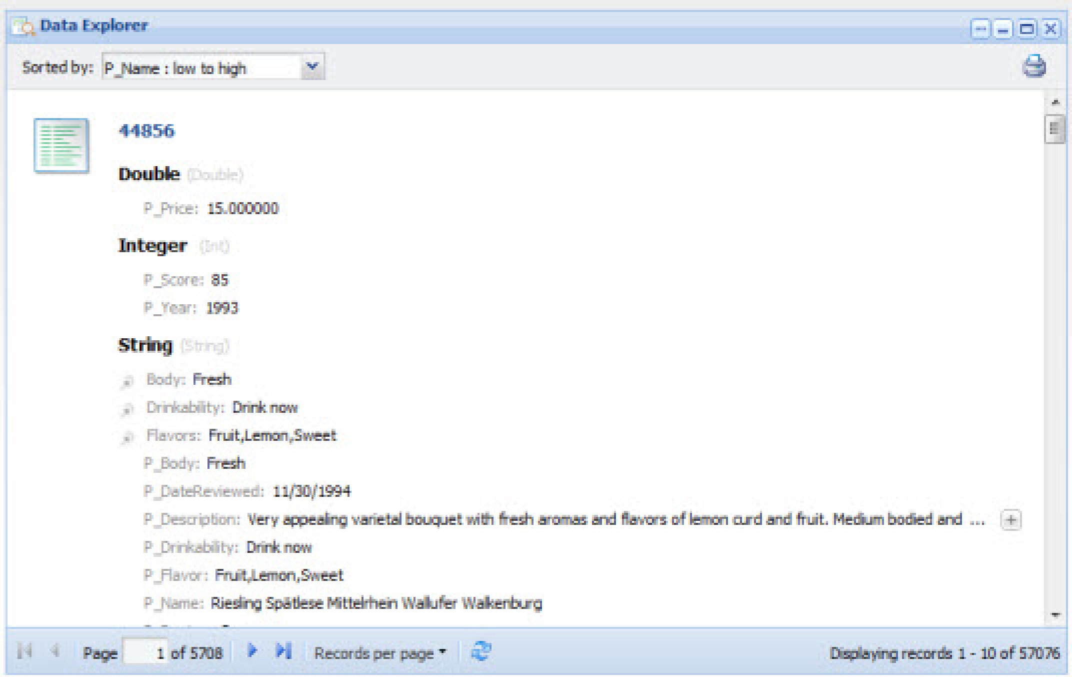
Results components, available from the **Latitude** section of the **Add Component** dialog, allow end users to view lists of records from a data source.

Data Explorer

Displays each record in the current refinement as a complete set of attribute-value pairs. The attributes are grouped by data type.

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

Users can print and export the list.



Data Explorer

Sorted by: P_Name : low to high

44856

Double (Double)

P_Price: 15.000000

Integer (Int)

P_Score: 85

P_Year: 1993

String (String)

Body: Fresh

Drinkability: Drink now

Flavors: Fruit,Lemon,Sweet

P_Body: Fresh

P_DateReviewed: 11/30/1994

P_Description: Very appealing varietal bouquet with fresh aromas and flavors of lemon curd and fruit. Medium bodied and ...

P_Drinkability: Drink now

P_Flavor: Fruit,Lemon,Sweet

P_Name: Riesling Spätlese Mittelrhein Wallufer Walkenburg

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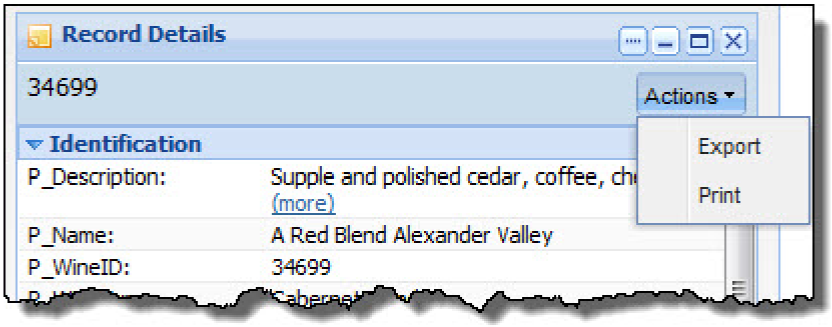
For the **Data Explorer** component, power users can configure:

- The data source
- 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.

End users can export and print the list. They also may be able to use the **Find Similar** component to find other records with one or more of the same attribute values.



Record Details

34699

Actions

Export

Print

Identification

P_Description: Supple and polished cedar, coffee, ch (more)

P_Name: A Red Blend Alexander Valley

P_WineID: 34699

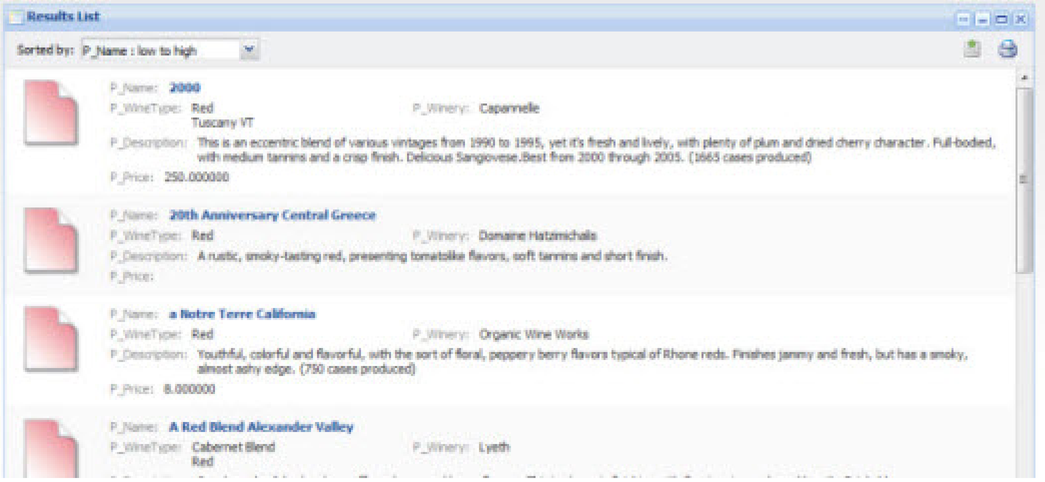
For the **Record Details** component, power users can configure:

- 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.



Sorted by: P_Name : low to high

P_Name: 2000
P_WineType: Red
Tuscany VT
P_Winery: Capannelle
P_Description: This is an eccentric blend of various vintages from 1990 to 1995, yet it's fresh and lively, with plenty of plum and dried cherry character. Full-bodied, with medium tannins and a crisp finish. Delicious Sangiovese.Best from 2000 through 2005. (1665 cases produced)
P_Price: 250.000000

P_Name: 20th Anniversary Central Greece
P_WineType: Red
P_Winery: Domaine Hatzimichalis
P_Description: A rustic, smoky-tasting red, presenting tomatolike flavors, soft tannins and short finish.
P_Price:

P_Name: a Notre Terre California
P_WineType: Red
P_Winery: Organic Wine Works
P_Description: Youthful, colorful and flavorful, with the sort of floral, peppery berry flavors typical of Rhone reds. Finishes jammy and fresh, but has a smoky, almost ashy edge. (750 cases produced)
P_Price: 8.000000

P_Name: A Red Blend Alexander Valley
P_WineType: Cabernet Blend
Red
P_Winery: Lyeth

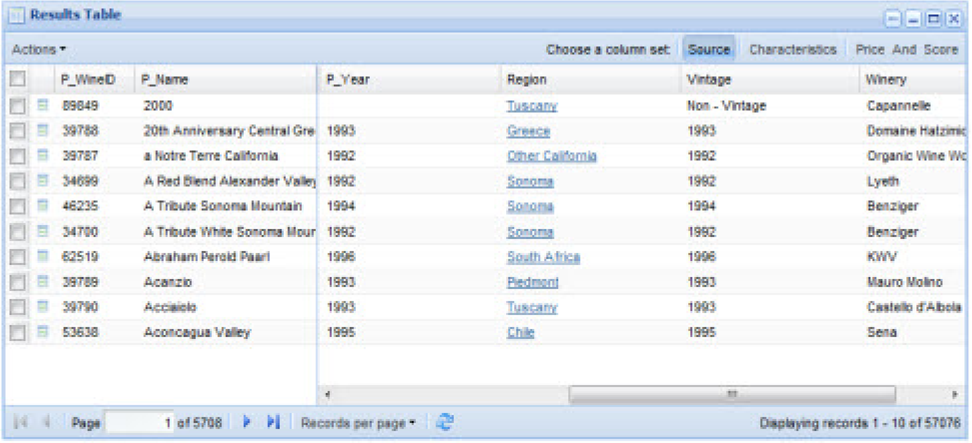
For the **Results List** component, power users can configure:

- 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:

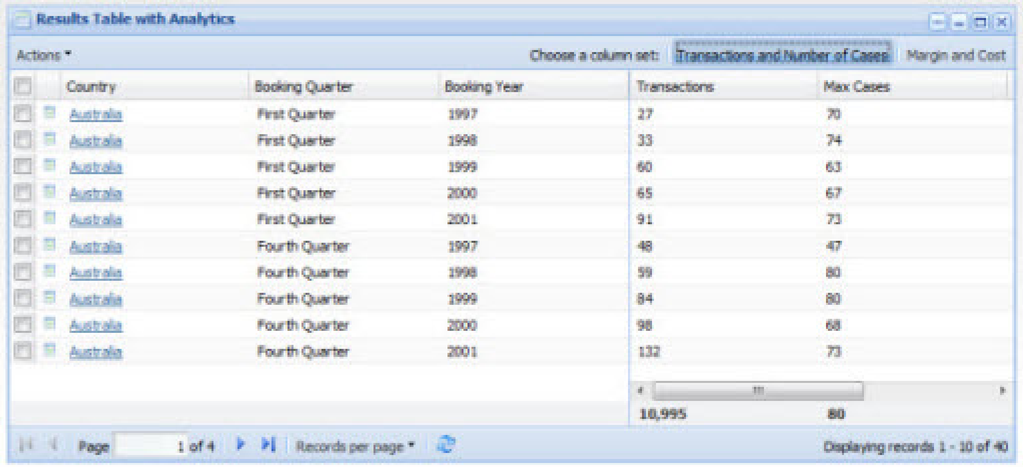
- A list of records for the current refinement



□		P_WineID	P_Name	P_Year	Region	Vintage	Winery
□		89849	2000		Tuscany	Non - Vintage	Capannelle
□		39788	20th Anniversary Central Gre	1993	Greece	1993	Domaine Hatzimic
□		39787	a Notre Terre California	1992	Other California	1992	Organic Wine Wc
□		34699	A Red Blend Alexander Valley	1992	Sonoma	1992	Lyeth
□		46235	A Tribute Sonoma Mountain	1994	Sonoma	1994	Benziger
□		34700	A Tribute White Sonoma Mour	1992	Sonoma	1992	Benziger
□		62519	Abraham Perold Paarl	1996	South Africa	1996	KWV
□		39789	Acanzio	1993	Piedmont	1993	Mauro Molino
□		39790	Acciaiolo	1993	Tuscany	1993	Castello d'Albola
□		53638	Aconcagua Valley	1995	Chile	1995	Sena

Page 1 of 5708 Records per page Displaying records 1 - 10 of 57076

- A set of metrics generated from an Analytics statement



Results Table with Analytics
Actions ▾
Choose a column set:
Transactions and Number of Cases
Margin and Cost

□	Country	Booking Quarter	Booking Year	Transactions	Max Cases
□	Australia	First Quarter	1997	27	70
□	Australia	First Quarter	1998	33	74
□	Australia	First Quarter	1999	60	63
□	Australia	First Quarter	2000	65	67
□	Australia	First Quarter	2001	91	73
□	Australia	Fourth Quarter	1997	48	47
□	Australia	Fourth Quarter	1998	59	80
□	Australia	Fourth Quarter	1999	84	80
□	Australia	Fourth Quarter	2000	98	68
□	Australia	Fourth Quarter	2001	132	73
				10,995	80

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:

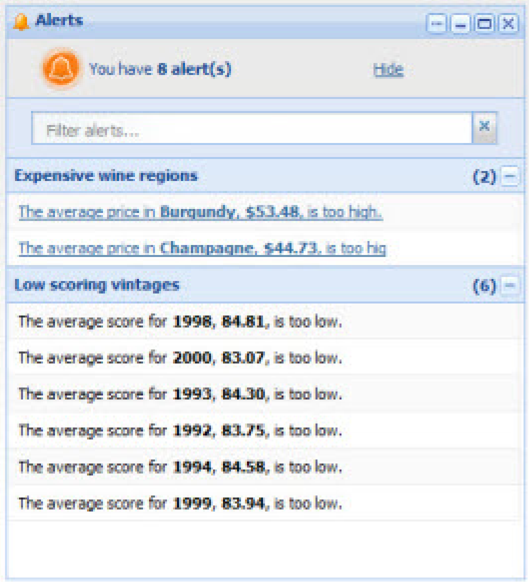
- The data source
- An Analytics statement to return a set of metrics
- The groups of columns to display in the table
- The pagination and sorting options for the table
- The available actions for the table

Data Visualization components

Data Visualization components, available from the **Latitude** 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.



Alerts

You have **8 alert(s)** Hide

Filter alerts...

Expensive wine regions (2)

The average price in **Burgundy, $53.48**, is too high.

The average price in **Champagne, $44.73**, is too hig

Low scoring vintages (6)

The average score for **1998**, **84.81**, is too low.

The average score for **2000**, **83.07**, is too low.

The average score for **1993**, **84.30**, is too low.

The average score for **1992**, **83.75**, is too low.

The average score for **1994**, **84.58**, is too low.

The average score for **1999**, **83.94**, is too low.

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

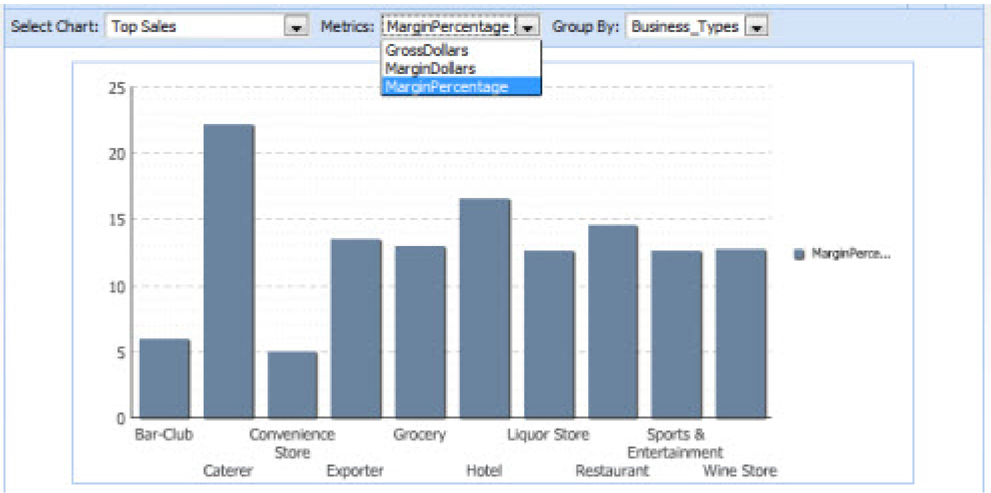
- Whether end users can use an alert to refine the data
- The data source for each alert
- The Analytics query for each alert
- The text of the alert messages

Chart

Displays data using standard Corda-based chart formats, including:

- Bar charts
- Line charts
- Pie charts

A single **Chart** component can contain multiple charts. End users also may be able to select different metrics values or grouping attributes in order to change the chart display.



Select Chart: Top Sales Metrics: MarginPercentage Group By: Business_Types

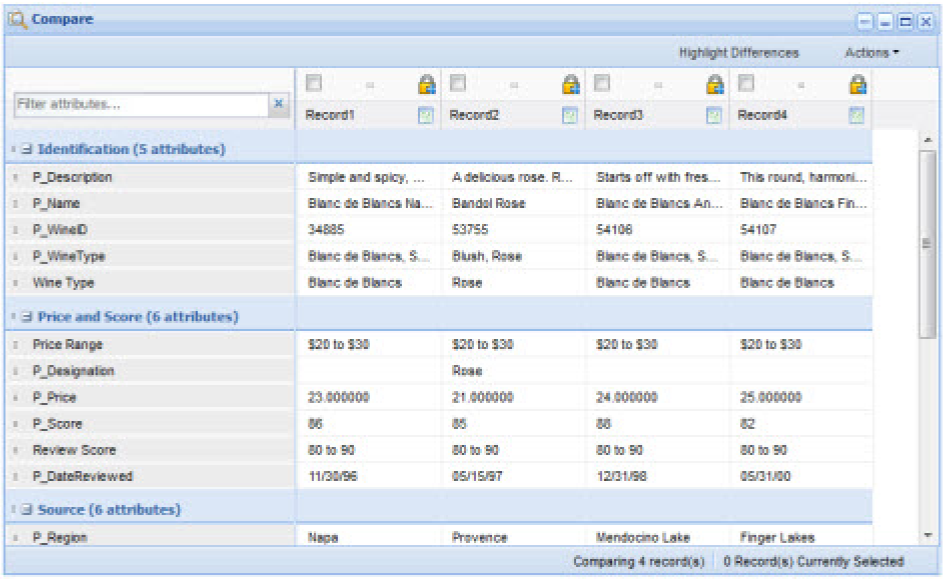
For the **Chart** component, power users can configure:

- The data source

- The chart style and labels
- The Analytics query for the chart data
- Whether end users can change the chart metrics and grouping

Compare

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



	Record1	Record2	Record3	Record4
Identification (5 attributes)				
P_Description	Simple and spicy, ...	A delicious rose. R...	Starts off with fres...	This round, harmoni...
P_Name	Blanc de Blancs Na...	Bandol Rose	Blanc de Blancs An...	Blanc de Blancs Fin...
P_WineID	34885	53755	54106	54107
P_WineType	Blanc de Blancs, S...	Blush, Rose	Blanc de Blancs, S...	Blanc de Blancs, S...
Wine Type	Blanc de Blancs	Rose	Blanc de Blancs	Blanc de Blancs
Price and Score (6 attributes)				
Price Range	$20 to $30	$20 to $30	$20 to $30	$20 to $30
P_Designation		Rose		
P_Price	23.000000	21.000000	24.000000	25.000000
P_Score	86	85	88	82
Review Score	80 to 90	80 to 90	80 to 90	80 to 90
P_DateReviewed	11/30/96	05/15/97	12/31/98	05/31/00
Source (6 attributes)				
P_Region	Napa	Provence	Mendocino Lake	Finger Lakes

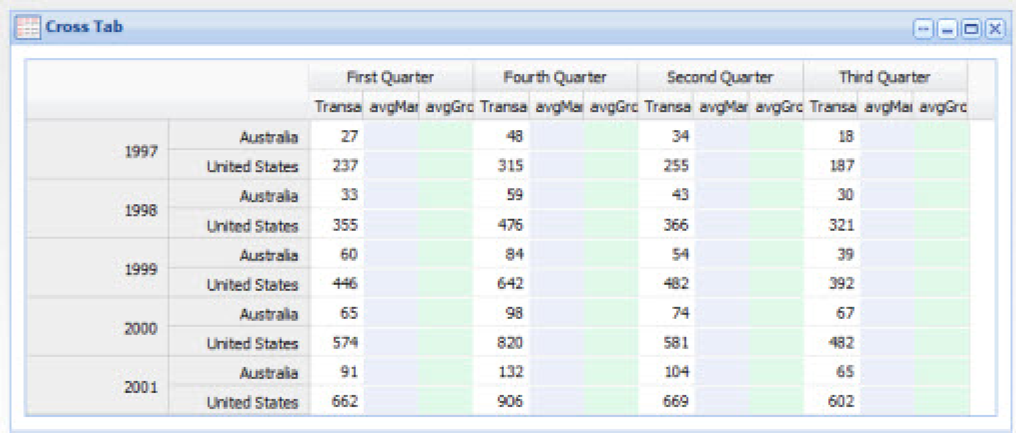
Comparing 4 record(s) | 0 Record(s) Currently Selected

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.



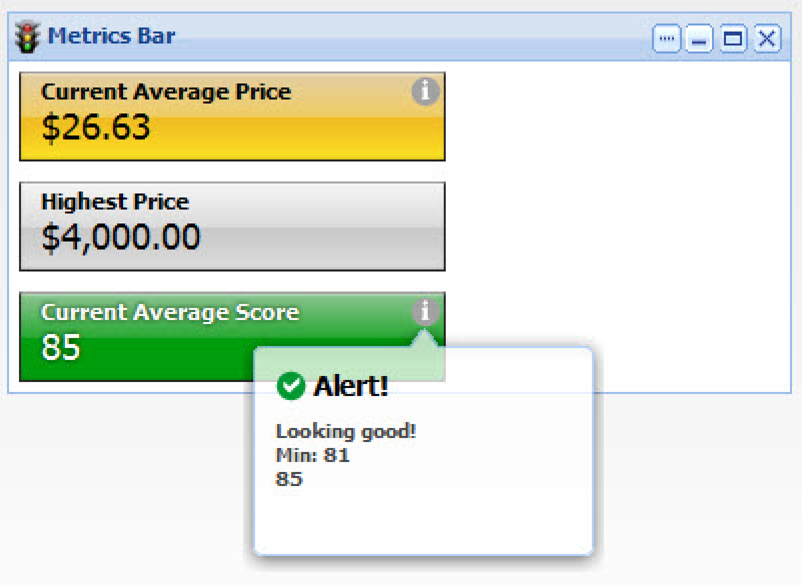
		First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
		Transa	avgMar	avgGrc	Transa	avgMar	avgGrc	Transa	avgMar	avgGrc	Transa	avgMar	avgGrc
1997	Australia	27			48			34			18		
	United States	237			315			255			187		
1998	Australia	33			59			43			30		
	United States	355			476			366			321		
1999	Australia	60			84			54			39		
	United States	446			642			482			392		
2000	Australia	65			98			74			67		
	United States	574			820			581			482		
2001	Australia	91			132			104			65		
	United States	662			906			669			602		

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

- The data source
- The Analytics query to generate the metrics and groupings
- The display of the metrics and groupings
- The dimensions of the table and window

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.



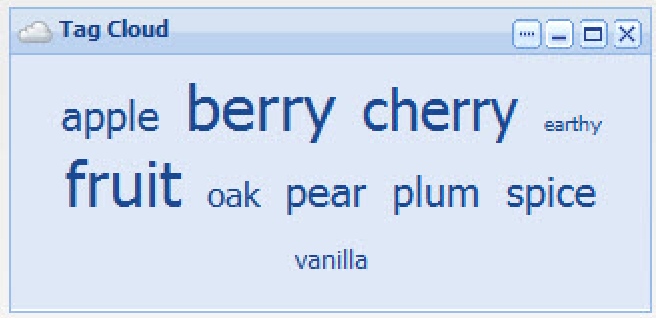
For the **Metrics Bar** component, power users can configure:

- The data source
- The Analytics 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 the values can be used for refinement

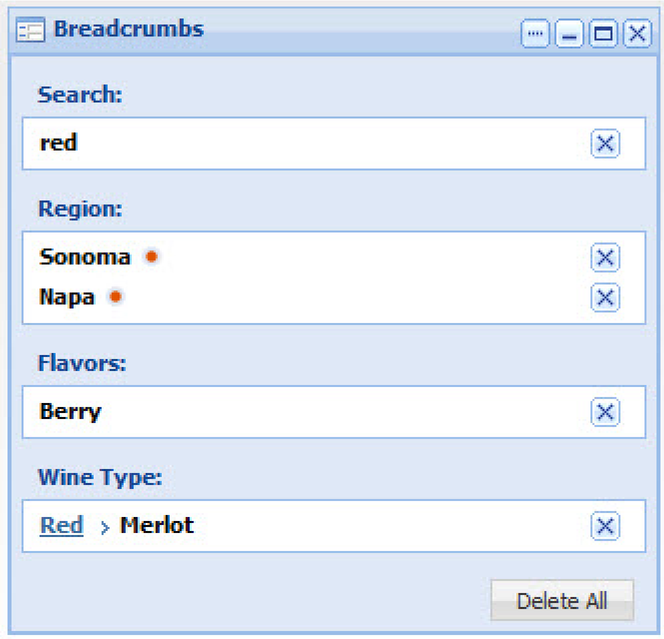
Filtering components

Filtering components, available from the **Latitude** 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.

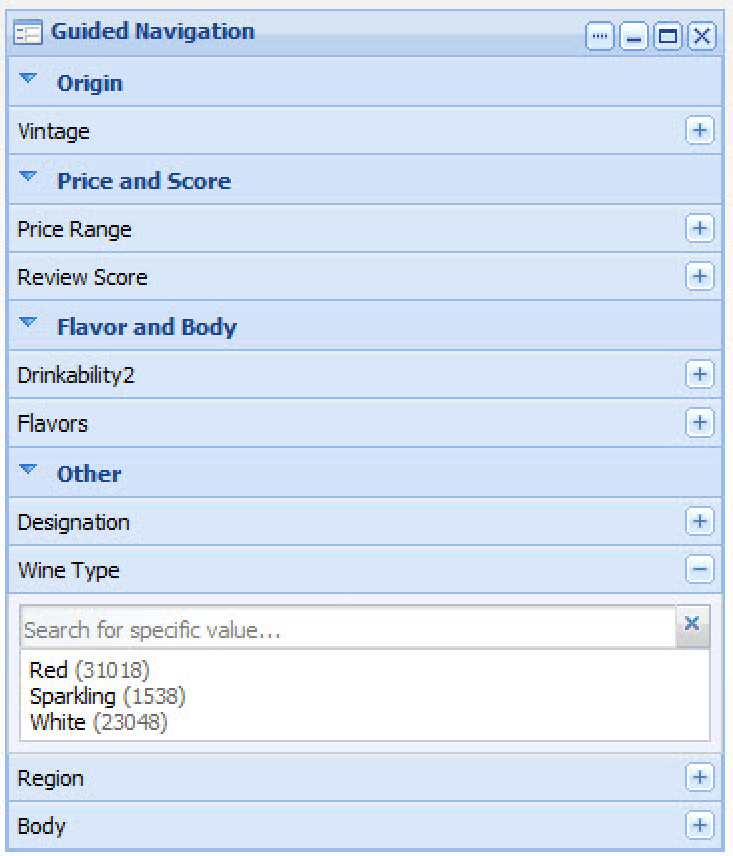


For the **Breadcrumbs** component, power users can configure:

- The data source to use
- Whether to allow end users to collapse lists of multiple value 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.

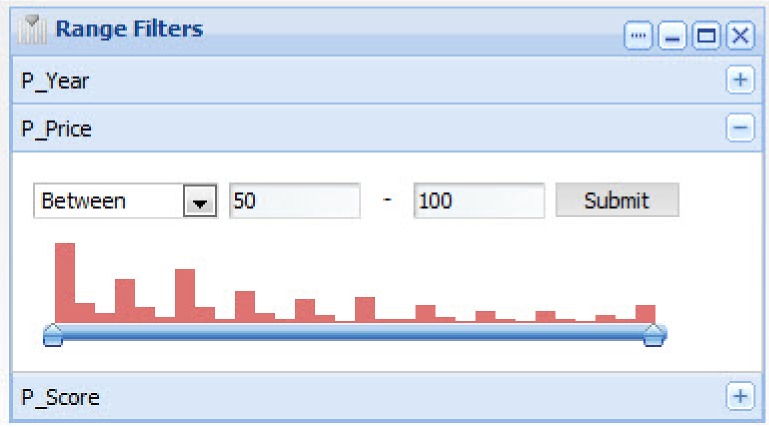


For the **Guided Navigation** component, power users can configure:

- 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.



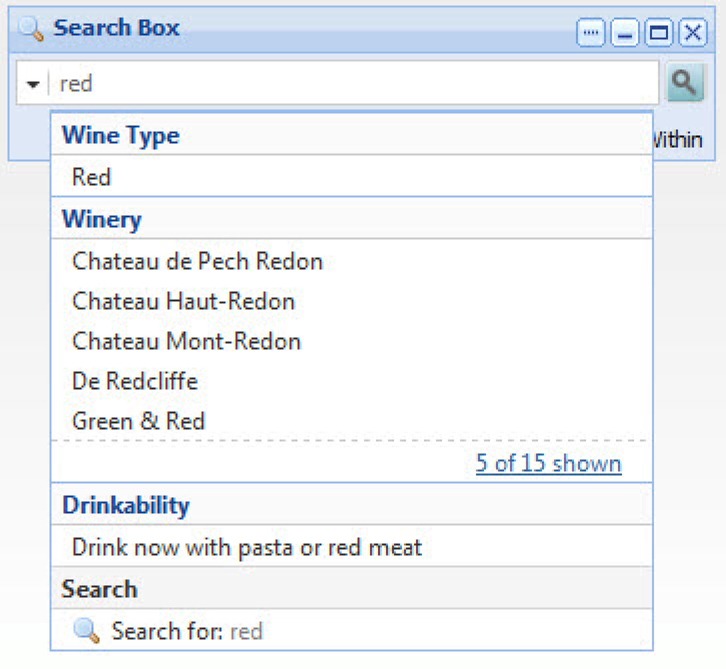
For the **Range Filters** component, power users can configure:

- 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

Chapter 3

Liferay Portal Basics

Because Latitude Studio is built upon the Liferay Portal, you need to know Liferay basics before you begin developing your Latitude Studio application.

About the Liferay Portal

Latitude Studio is build upon the Liferay Portal Enterprise Edition.

Liferay Portal is an open-source JSR-286 portal technology. Latitude Studio extends basic Liferay functionality to provide enhanced user management, security, and cross-component interaction, as well as performance-optimized communication with the Endeca MDEX Engine.

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

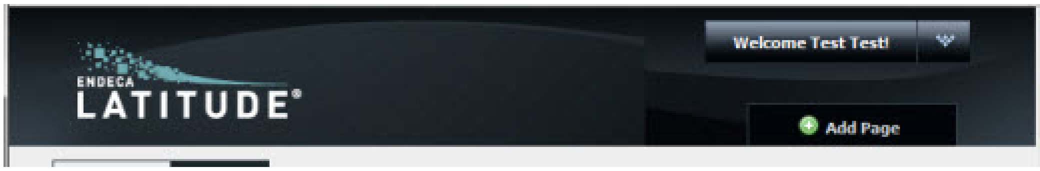
Liferay Portal features used in Latitude Studio

This section describes Liferay Portal features that have been incorporated into Latitude Studio.

Dock menu functions

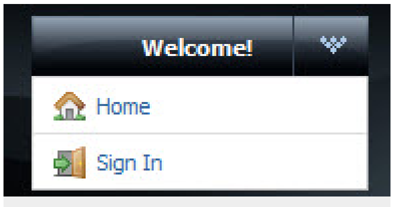
The Liferay Portal Dock houses the main menu for the portal application.

The Dock is located in the upper right corner of the application window. It provides navigation links to various functions. The Dock is typically labeled "Welcome, <*user name*>!"

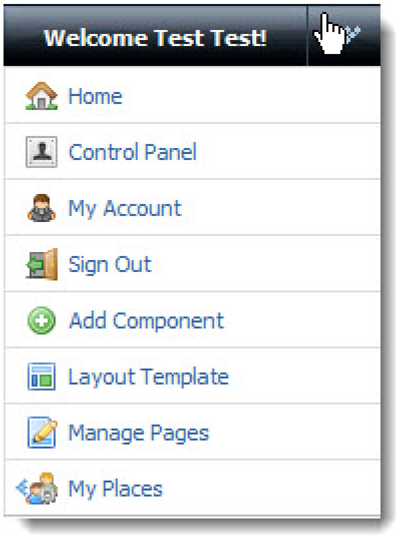


To display the application menu, hover the mouse over the Dock.

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.



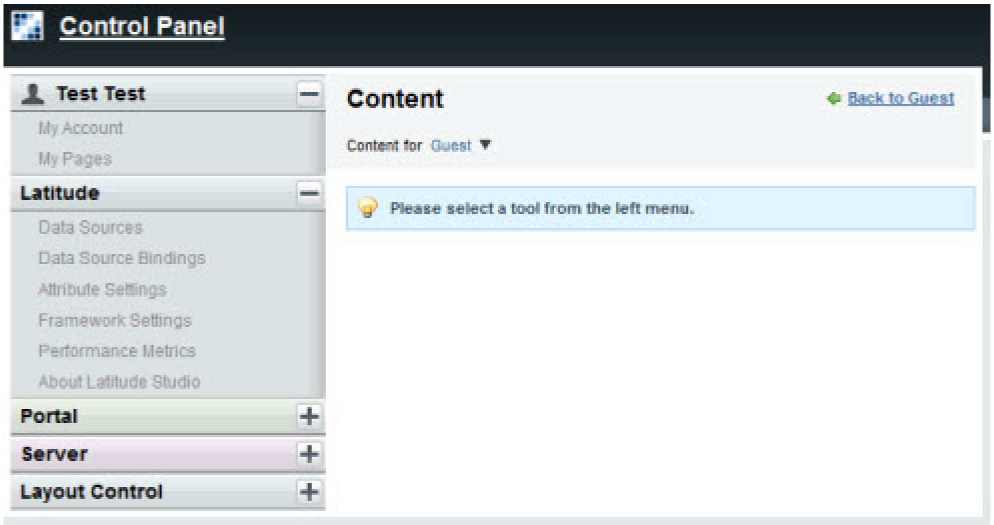
The Dock menu can include the following options:

Dock Link	Purpose
Home	Takes you to the home page.
Control Panel	Provides access to the Liferay and Endeca administrative functions.
My Account	Lets you edit your user information, including changing your login password.
Sign Out	Logs you out.
Add Component	Lets you add Endeca and Liferay components to the application.
Layout Template	Displays the **Layout Template** window, which lets you apply a different layout to a page.
Manage Pages	Displays the **Manage Pages** menu, where you can: • Add and delete pages • Change the page order • perform other page administration functions
My Places	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.



Please select a tool from the left menu.

Power users generally use the **Control Panel** to access Latitude Studio administrative components, such as the **Data Sources** and **Framework Settings** components.

User Name section

The user name section at the top of the **Control Panel** is the logged-in user's personal space. It contains the following functions:

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

Latitude section

Power users generally use the **Control Panel** to access the administrative components in the **Latitude** section:

Data Sources	Used to view and reload data sources.
Data Source Bindings	Used to associate data sources with components.
Attribute Settings	Used to create and modify attribute groups, and configure attributes.
Framework Settings	Provides access to state, security, and other settings.
Performance Metrics	Displays information about component and MDEX Engine query performance.

For details, see the chapter on administrative components.

Portal section

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

Users	Used to add and modify user accounts.

Organizations	Used to create and edit Organizations, which are hierarchical collections of users.
Communities	Used to create and edit Communities, which are collections of users who have a common interest.
User Groups	Used to create and edit User Groups, which are simple, arbitrary collections of users.
Roles	Used to manage user roles, which are used to define permissions across their scope. The types of roles are: • Portal role - grants access across the portal. • Community role - grants access only within a single Community. • Organization role - grants access only within a single Organization. The portal administrator can use these roles to control permissions in the application, such as who is able to see specific pages.
Password Policies	Sets the password rules, such as the password strength and the password expiration.
Settings	Contains most of the global portal settings, including authentication, e-mail configuration, and the default landing page.
Monitoring	If monitoring is enabled, monitors all the live sessions in the portal.
Plugins Configuration	Used to configure which portal roles have access to the plugins.

Server section

The **Server** section provides the following administration functions:

Server Administration	Allows you to perform administrative tasks for the overall portal server, including: • Resource management • Setting log levels • Migrating data between databases • Configuring the e-mail server • Shutting down the Liferay Portal server
Portal Instances	Allows you to add and configure multiple portal instances on a single server.
Plugins Installation	Allows you to view the installed plugins and add new ones.

Layout Control section

The **Layout Control** section provides the following administration functions:

Web Content	Allows you to add Web content, structures, templates, and RSS feeds.
Links	Allows you to add folder links.

About plugins

Plugins are `.war` files that allow you to add functionality to Latitude Studio. In the Liferay Portal, portlets, 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.

Creating plugins with the Component SDK

Latitude Studio provides component developers with a Component SDK that they can use to modify or create portlet components. These tasks are not usually done by power users. For more information about the Component SDK, see the chapter *"Installing and Using the Component SDK"* in the *Latitude Developer's Guide*.

About Liferay components

In addition to Latitude standard components, Latitude Studio includes some Liferay components by default.

Among these components are the **Tabbed Component Container** and the **Content Management** components.

Accessing Liferay Portal documentation

Latitude Studio is built upon the Liferay Portal. For more information about how to perform various tasks, you can see Liferay's documentation.

Specifically, the *Liferay Portal Administrator's Guide* provides extensive information about installing, configuring, and maintaining a portal. To access a free PDF download of the guide:

1. Go to `http://www.liferay.com`.
2. Click the **Documentation** link.
3. Select the version.
4. Click the **Administration** link.

Liferay also offers developer assistance in the form of blogs, wikis, and forums. To access these resources, go to `http://www.liferay.com`, then navigate to the **Community** section.

Chapter 4

Working with Data Sources

Data sources and query states represent connections between Latitude Studio and the MDEX Engines, and between queries and the MDEX Engines. This section discusses how to create, configure, and select data sources.

About data sources

Every instance of a component that needs to query the MDEX Engine is backed by a selected data source. A data source represents a pointer to a specific MDEX Engine or load balancer, and is used to maintain the application state for each user's session.

Each data source is a .json file that contains:

- Connection information for the MDEX Engine or load balancer
- Optional filters to restrict the returned data

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

Changing a Latitude component's data source

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

For a Latitude component that can be bound to a data source, to change the data source:

1. In the header of the component, click the **...** button, and then select **Preferences**.

   The edit view for the component is displayed.

2. From the data source drop-down list, select the new data source, then 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. Click **Return to Full Page**.

Note: This procedure only changes the data source for that single instance of the component.

Specifying a default data source

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

When you initially start Latitude Studio, the `id` of the default data source is set to **default**. If you do not change this setting, you must include a data source that has an `id` of **default**.

Upon installation, the `endeca-portal\data\endeca-data-sources` directory includes a `default.json` data source file, which has an implicit `id` of **default**. This file only includes host and port information.

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.

   Make sure that there is an existing data source with that `id` value.
3. Restart **Latitude Studio**.

Configuring data sources

Latitude Studio includes sample data sources you can use as a basis for creating your own data sources. Each data source contains at minimum the connection information for the MDEX Engine.

Sample MDEX Engine data sources

Latitude Studio ships with sample data sources. You can use these samples as models for your own data sources.

The sample data sources are located in the `endeca-portal\data\endeca-data-sources` directory:

- `base-filters-data-source.json.sample` - Provides an example of a data source with filters to restrict the returned data.
- `child-data-source.json.sample` - Provides an example of a child data source.
- `secured-data-source.json.sample` - Provides an example of a data source with security filters.
- `simple-data-source.json.sample` - Provides an example of a basic data source.

This directory also contains a `default.json` file, which contains host and port information only.

Adding data sources to Latitude Studio

You can add new data sources to Latitude Studio. Your Latitude components can then access those data sources.

To add a data source to Latitude Studio:

1. Create a new JSON file in `endeca-portal\data\endeca-data-sources`.

   For examples, see the sample data sources located in the same directory.

2. After creating the new file, either:
   - Restart Latitude Studio.
   - In the **Control Panel**, select **Data Sources**. On the **Data Sources** component, click **Update data sources**.

Note: If your data source does not appear, it probably means that your data source definition file contains invalid JSON syntax. To confirm this, look for a message about invalid syntax in the Latitude Studio log `df.log`. Check the log, edit your syntax, and then try the steps above again.

Basic data source syntax

Data source files are written as a JSON string. Each data source must contain the MDEX Engine connection settings, and can optionally contain identification and description information.

Connection settings (required)

Every data source must at a minimum contain the following MDEX Engine connection settings:

`server`	The name of the server on which the MDEX Engine is running.
`port`	The port on which the MDEX Engine is listening.
`apiVersion`	The version of the MDEX Engine. Must be set to`DISCOVERY_SERVICE`.

Here is an example of the most basic data source configuration, with just the connection information.

```
{
 "server":"server01.lab.acme.com",
 "port":"15000",
 "apiVersion" : "DISCOVERY_SERVICE"
}
```

Identification and description settings

The data source can optionally contain the following identification and description settings:

`id`	The identifier of the data source. Used internally. The `id` value cannot contain spaces. If you do not provide a value for `id`, then it is set to the name of the data source file. For example, if the data source file is `parts.json`, and you do not provide a value for `id`, then `id` is set to `parts`. If you do not provide a value for `id`, make sure that the data source file name does not contain any spaces.
`name`	The name of the data source. This is the value displayed on the Latitude Studio UI, including on the **Data Sources** component and in data source drop-down lists.

	If you do not provide a value for `name`, then it is set to the name of the data source file.
`description`	A longer description of the data source. Used for logging and debugging.

For example:

```
{
 "server":"server01.lab.acme.com",
 "port":"15000",
 "apiVersion" : "DISCOVERY_SERVICE",
 "id":"wine1",
 "name":"Wine Transactions",
 "description":"Transaction data for the Midwest Region"
}
```

Adding filters to a data source

The `baseFunctions` setting in the data source file allows you to include filters in order to restrict the returned data.

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.

Latitude Studio comes with the following filters:

Class Name and Description	**Configuration Properties**
`NegativeRefinementFilter` Used to filter data to exclude records that have the provided attribute value.	`attributeValue`: String `attributeKey`: String `ancestors`: String[]
`RangeFilter` Used to filter data to include records with attribute values within the specified range.	`attributeKey`: String `rangeOperator`: `(LT | LTEQ |GT |GTEQ| BTWN |GCLT |GCGT | GCBTWN)` `value1`: numeric `value2`: numeric (optional) `value3`: numeric (optional)
`RecordFilter`	`recordFilter`: String

Class Name and Description	Configuration Properties
This is the most commonly used type of filter. Can be configured to include multiple filters with Boolean logic.	
`RefinementFilter` Used to filter data to include records with the specified attribute values.	`attributeValue`: long `attributeKey`: long `multiSelect`: `(AND |OR | NONE)` (optional) `navigable`: `(true|false)` (optional)
`SearchFilter` Used to filter the data to include records that have the provided search terms.	`searchInterface`: String (Either a search interface or an attribute enabled for text search) `terms`: String `matchMode`: `(ALL | PARTIAL | ANY | ALLANY | ALLPARTIAL | PARTIALMAX | BOOLEAN)` `enableSnippeting`: boolean (optional; default is `false`) `snippetLength`: int (required if `enableSnippeting` is `true`) To enable snippeting, set `enableSnippeting` to `true`, and provide a value for `snippetLength`.

Example data source with filters

The following example data source file is based on wine merchant data. The data is filtered to only include records from the Midwest Region, that have the value 1999 for the Year attribute.

```
{
 "server":"server01.lab.acme.com",
 "port":"15000",
 "apiVersion" : "DISCOVERY_SERVICE",
 "id":"wine1",
 "name":"Wine Transactions",
 "description":"Transaction data for the Midwest Region",
 "baseFunctions": [
  {
   "class":"com.endeca.portal.data.functions.RecordFilter",
   "recordFilter":"Regions:Midwest"
  },
  {
   "class":"com.endeca.portal.data.functions.RefinementFilter",
   "attributeValue":"1999",
   "attributeKey":"Year"
  }
        ]
}
```

Configuring parent and child data sources

Latitude Studio data sources can have parents and children. A child data source is essentially a subset of the parent data source. The `baseFunctions` setting in a child data source file should contain some set of filters.

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 the released version of Latitude Studio.

For a child data source, the data source file includes the following setting:

`parentDataSource:parent-ds-id`	The id of the parent data source.

When a component connected to a child data source requests the current query state, the query state is the query state of the data source's parent, plus the filters from the child.

When the query state is changed for a child data source (for example, by setting a refinement from Guided Navigation), the change also happens on the parent data source. The operation is applied to each data source's parent until it finds a data source without a parent.

When the query state is changed for a parent data source, the query states for all of its children also are changed, and any components connected to the child data sources are refreshed.

Example of a child data source

In the following example, the parent data source is `base-filters-data-source`. The child data source only includes data for the Importer supplier type.

```
{
   "server":"server01.lab.acme.com",
   "port":"5555",
   "apiVersion":"DISCOVERY_SERVICE",
   "parentDataSource":"base-filters-data-source",
   "baseFunctions": [
        {"class":"com.endeca.portal.data.functions.RecordFilter",
         "recordFilter":"Supplier_Types:Importer"
        }
   ]
}
```

The sample data source `child-data-source.json.sample` provides a template for defining a child data source.

Configuring role-based security for data sources

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

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

securityEnabled	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 `securityFilters`.

securityFilters	Defines all of the security filters to be used by the data source. **Note:** Record filters are the only supported type of `securityFilter`.
rolePermissions	Maps the user roles to the security filters. For each mapping, the format is: `"<role name>" : "<filterName>"` where: • *<role name>* is the name of the user role . • *<filterName>* is the name of the security filter.
inheritSecurity	For a child data source, whether the data source should inherit the security filters configured in its ancestor data sources. If set to `"true"`, then the list of security filters to apply includes both: • All of the security filters for every ancestor data source • All of the security filters defined in the child data source

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.

```
{
 "server":"server01.lab.acme.com",
 "port":"15000",
 "apiVersion" : "DISCOVERY_SERVICE",
 "id":"ds-id",
 "name":"Descriptive DataSource name",
 "description":"Detailed information about this DataSource",
"securityEnabled": "true",
"inheritSecurity": "true",
"securityFilters": {
     "frenchFilter": {
           "class":"com.endeca.portal.data.functions.RecordFilter",
           "recordFilter":"OR(Region:Bordeaux,Region:Burgundy)"
     }
},
"rolePermissions": {
     "French Wine": ["frenchFilter"]
}
}
```

The sample data source `secured-data-source.json.sample` provides a template for configuring a secured data source.

Connecting to a secured MDEX Engine

You can set up Latitude Studio to connect to a secured (HTTPS) MDEX Engine.

Several of the steps below refer to the chapter *"Using Endeca SSL Certificate Utilities"* in the *Latitude Administrator's Guide*. Before attempting these steps, make sure you have a copy of that guide at hand.

Note: The steps below assume you are using the Latitude Studio Tomcat bundle.

1. Stop Latitude Studio.
2. Generate the SSL certificate files for the Dgraph using the `enecerts` utility.

   For instructions, refer to the section "Generating SSL certificates" in the *Latitude Administrator's Guide*.

3. Generate the Java KeyStore (JKS) files.

   For instructions, see the *Latitude Administrator's Guide*.

4. Place the JKS keys into the directory containing the JSON data source files.

   This is typically, but not always, the `endeca-portal\data\endeca-data-sources` directory.

5. In the appropriate JSON data source file, add the `sslConfig` setting, which contains the following settings:

`caFile`	The name of the truststore file.
`caPassword`	The password for the truststore file.
`certFile`	The name of the keystore file.
`certPassword`	The password for the keystore file.

   For example:

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

   Note: SSL configuration file paths are relative to the directory containing the JSON data source files. This is typically, but not always, the `endeca-portal\data\endeca-data-sources` directory.

6. Restart Latitude Studio.

Example of a data source connected to secured MDEX Engine

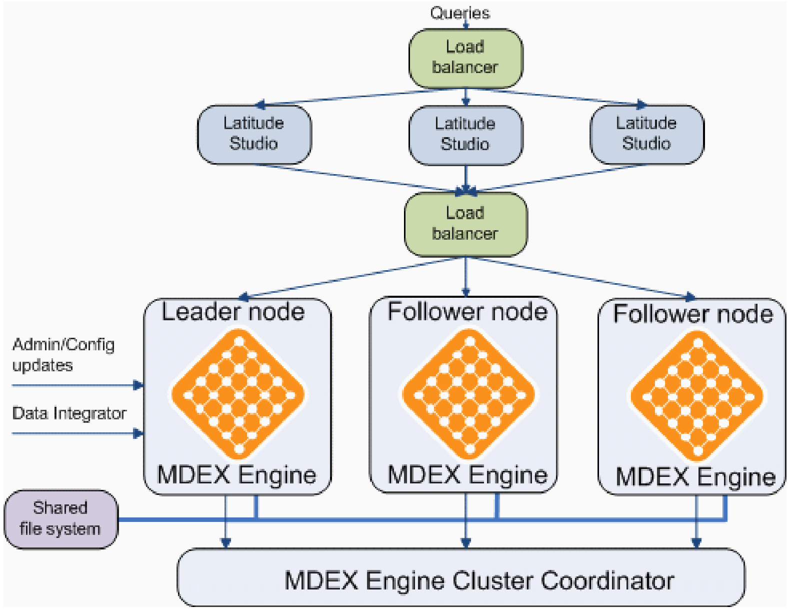
The following data source connects to a secured MDEX Engine.

```
{
 "server":"server01.lab.acme.com",
 "port":"15000",
 "apiVersion" : "DISCOVERY_SERVICE",
 "sslConfig": {
  "caFile":"truststore.ks",
  "caPassword":"pwd1",
  "certFile":"keystore.ks",
  "certPassword":"pwd2"
 }
```

```
 "id":"ds-id",
 "name":"Descriptive DataSource name",
 "description":"Detailed information about this DataSource",
 "baseFunctions": [
  {
   "class":"com.endeca.portal.data.functions.RecordFilter",
   "recordFilter":"Regions:Midwest"
  },
  {
   "class":"com.endeca.portal.data.functions.RangeFilter",
   "property":"P_Price",
   "rangeOperator":"GTEQ",
   "value1": "25"
  },
  {
   "class":"com.endeca.portal.data.functions.RefinementFilter",
   "attributeValue":"123",
   "attributeKey":"121"
  }
        ]
}
```

Configuring a data source for a clustered environment

The MDEX Engine can use a clustered configuration with multiple nodes, where one node is the leader node, and the other nodes are follower nodes.



Latitude Studio communicates with the MDEX Engine cluster through a load balancer. The data source is configured to connect to the load balancer.

You also configure the data source to identify the leader node to apply any updates to. If you do not provide the update settings, then you cannot use the **Attribute Settings** component to manage the data source's attribute and group settings.

When you edit the data source's attribute and group settings from the **Attribute Settings** component:

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.

When configuring the data source for an MDEX Engine cluster, the main settings are:

`server`	The server for the load balancer.
`port`	The port number for the load balancer.
`updateServer`	The server for the leader node.
`updatePort`	The port number for the leader node.
`updateSslConfig`	Optional. If applicable, the SSL settings for connecting to the leader node. Includes the following settings: • `caFile` - The truststore file. • `caPassword` - The truststore password. • `certFile` - The name of the keystore file. • `certPassword` - The keystore password.

For example:

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

Chapter 5

Building Latitude Studio Applications

As a Latitude Studio power user, you build Web-based applications for end users who share specific job roles. This section provides a high-level overview of that process.

Applying a theme to a page

Themes control the look and feel of your Latitude Studio application.

Themes are hot deployable plugins that you can use to customize the appearance of your application. By using your own theme, your Latitude Studio application can adhere to the look-and-feel standards used across all of your company's Web sites and Web application.

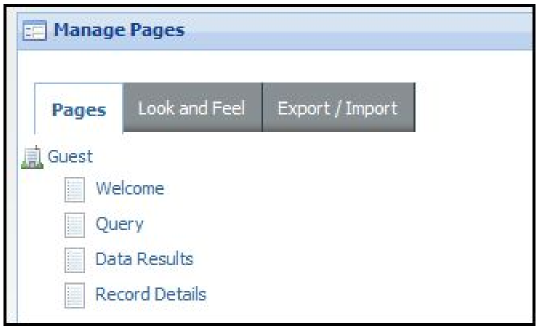
By default, Latitude Studio ships with the Endeca theme and the Liferay Classic theme. From the Liferay Web site, you can download themes from the Liferay Community Plugin Library. These themes are contributed by the Liferay community of users:

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

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

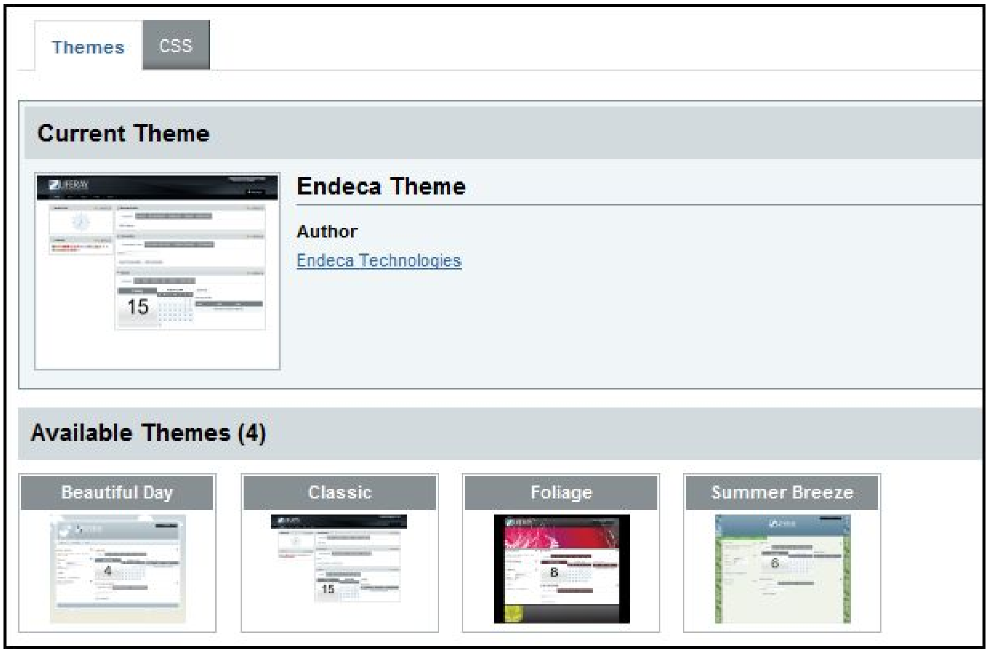
To apply an existing theme to a page:

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

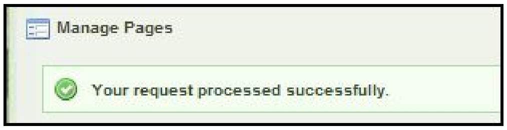


3. Click the **Look and Feel** tab.

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 on that theme.



If the new theme was successfully applied, you will see this message:



Your request processed successfully.

Note that each page can have a different theme.

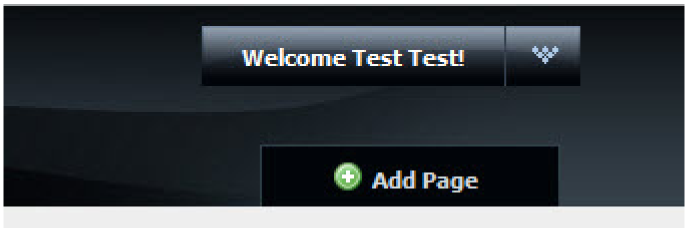
Adding a page

When you first launch Latitude Studio, the interface consists of a single page. However, you can 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.

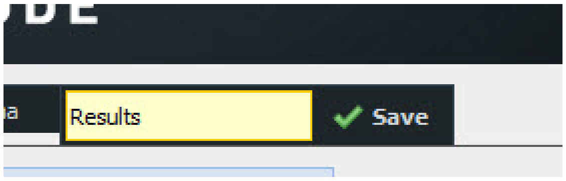
To add a page to your Latitude Studio application:

1. Click **Add Page**.



An empty page label is created.

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



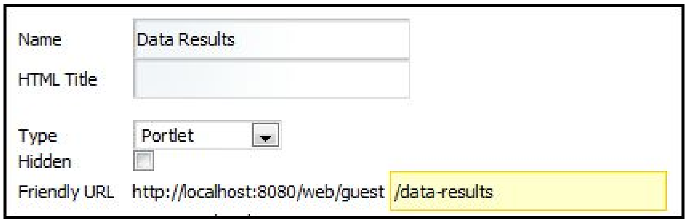
Results

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: Data Results
HTML Title:
Type: Portlet
Hidden: □
Friendly URL: http://localhost:8080/web/guest /data-results

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.

Deleting a page

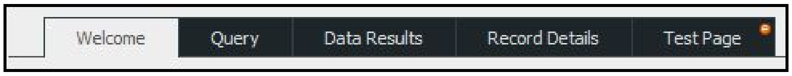
You can delete pages from the application. When you a delete a page, any components on the page also are deleted.

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:

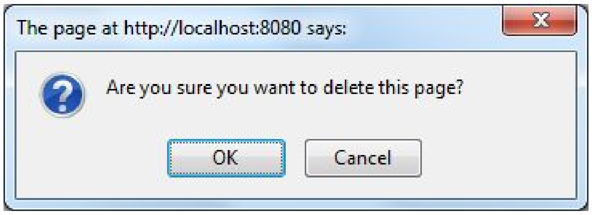
1. Navigate to a different page from the one you want to delete.
2. Place the cursor on the page tab of the page to be deleted.

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



3. Click the delete icon.

   A delete confirm prompt is displayed:



The page at http://localhost:8080 says:

Are you sure you want to delete this page?

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.

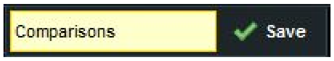
Renaming a page

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.



Comparisons

4. Click **Save**.

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

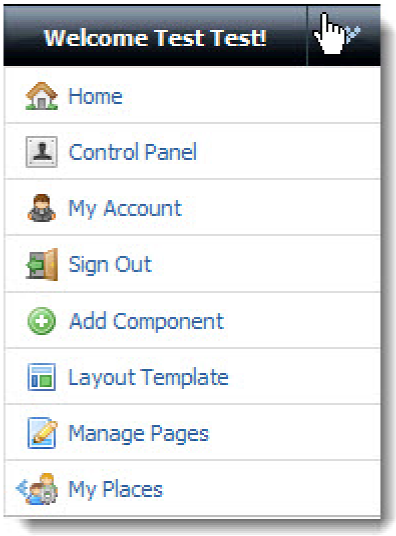
Applying a layout template to the page

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

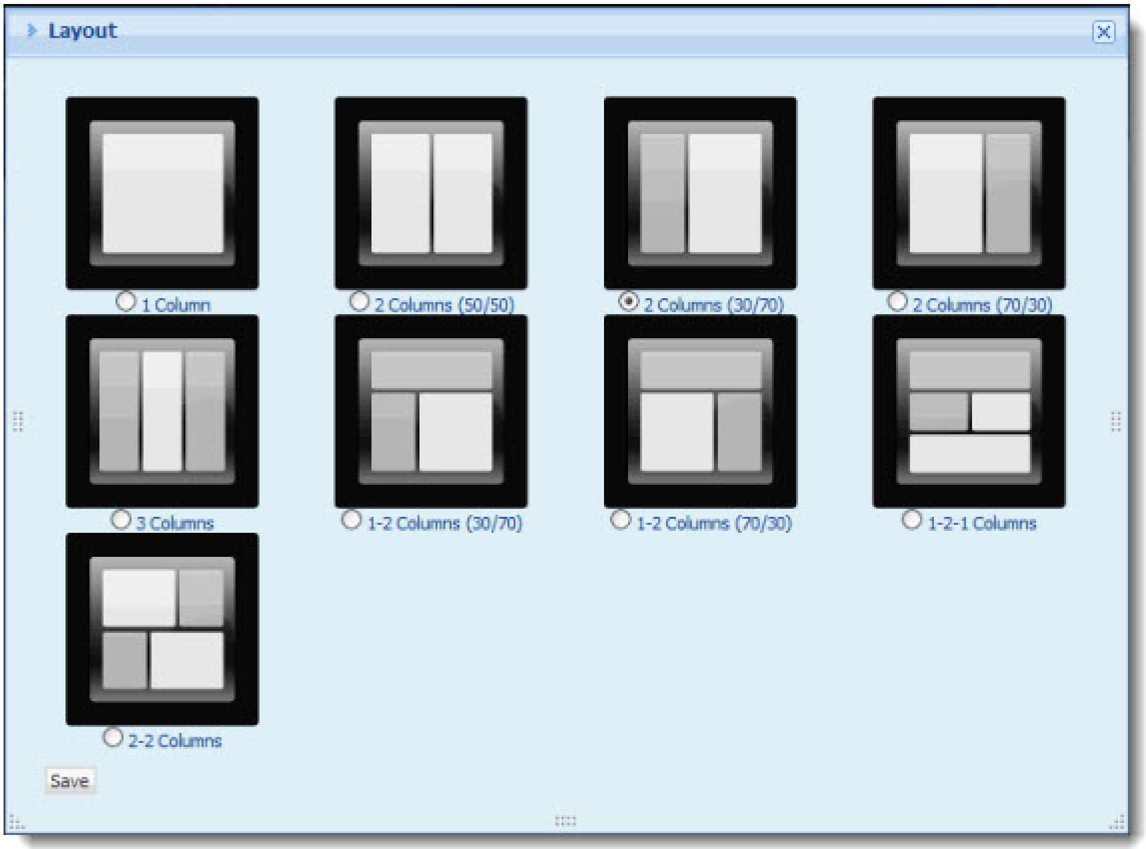
Layout templates determine how components are organized on each page. For example, a page may contain two horizontal columns of different widths, or a banner over two equally-wide columns.

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, select a layout option.



4. Click **Save**

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

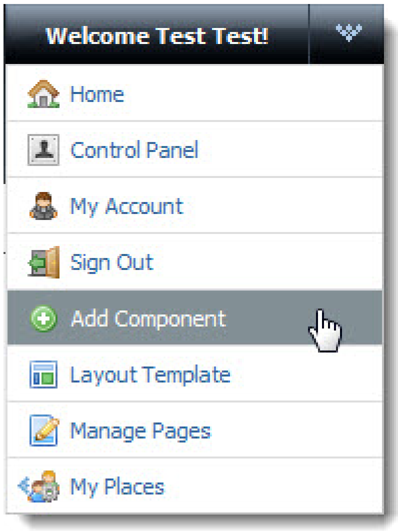
Note: If the default layout templates supplied by Liferay do not meet your needs, your developer can create custom layout template plugins for you, and your system administrator can make them available to your application.

Adding Latitude components

Latitude Studio contains several standard Latitude components. These components allow you to add Latitude functionality to your application.

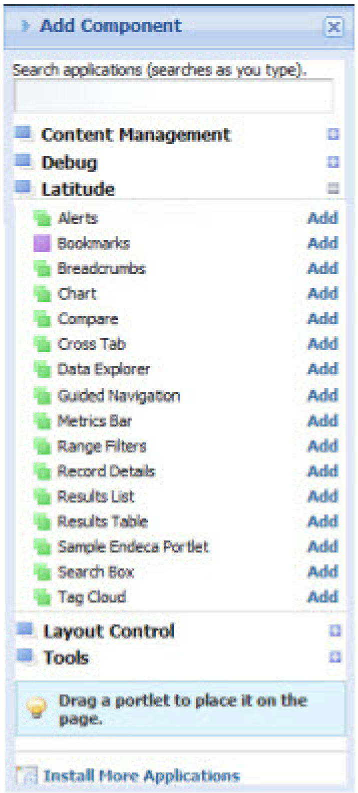
To add a Latitude component to your Latitude Studio application:

1. Point the cursor at the Dock.
2. In the Dock menu, select **Add Component**.



   The **Add Component** dialog is displayed.

3. In the **Add Component** dialog, expand the **Latitude** category.



A list of the available Latitude components appears.

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.

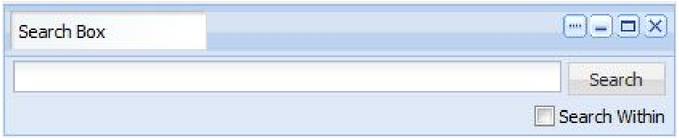
Renaming components

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 new title is applied to the component.

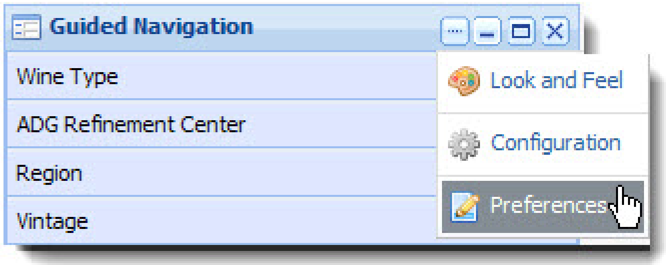
Editing components

You edit Latitude 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.

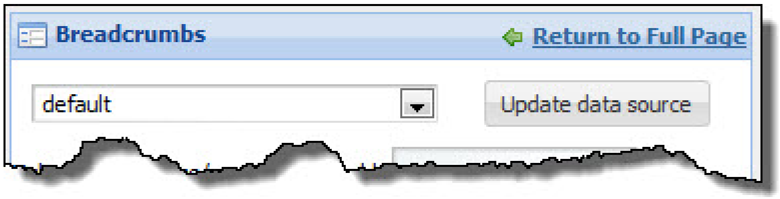
To edit a Latitude component:

1. In the component's title bar, click **....**. In the drop-down menu, click **Preferences**.



   The edit view for the component is displayed.

2. Edit the settings for the component.
3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

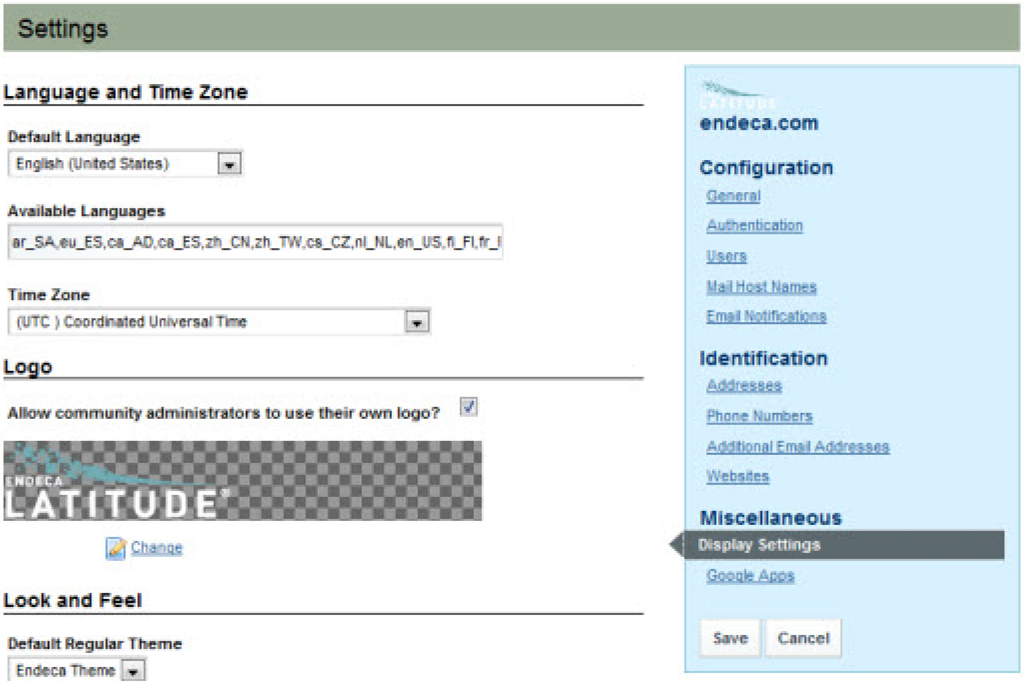


Changing the company logo

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

To change the company 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**.



Settings

Language and Time Zone

Default Language: English (United States)

Available Languages: ar_SA,eu_ES,ca_AD,ca_ES,zh_CN,zh_TW,cs_CZ,nl_NL,en_US,fi_FI,fr_I

Time Zone: (UTC) Coordinated Universal Time

Logo

Allow community administrators to use their own logo? ☑

Look and Feel

Default Regular Theme: Endeca Theme

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.

Chapter 6

Latitude Studio Logging

Your Latitude Studio application can use Apache `log4j` logging utility.

Options for modifying logging in your Latitude Studio components

To modify logging for your Latitude Studio components, you can use the **Control Panel** or modify `portal-log4j-ext.xml`.

For developers, you will most frequently need to adjust a logging verbosity level for a given class or class hierarchy. The easiest way to do this is through the Liferay **Control Panel**.

To modify logging in a more complex manner, or to change default settings, you can modify the `portal-log4j-ext.xml`.

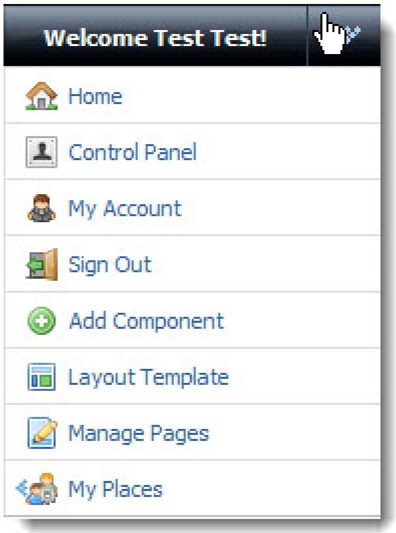
Note: Using either of these methods causes Liferay to adjust the log verbosity for both `log4j` and the Java Utility Logging Implementation (JULI). Code using either of these loggers should respect this configuration.

Adjusting the logging verbosity level in the Control Panel

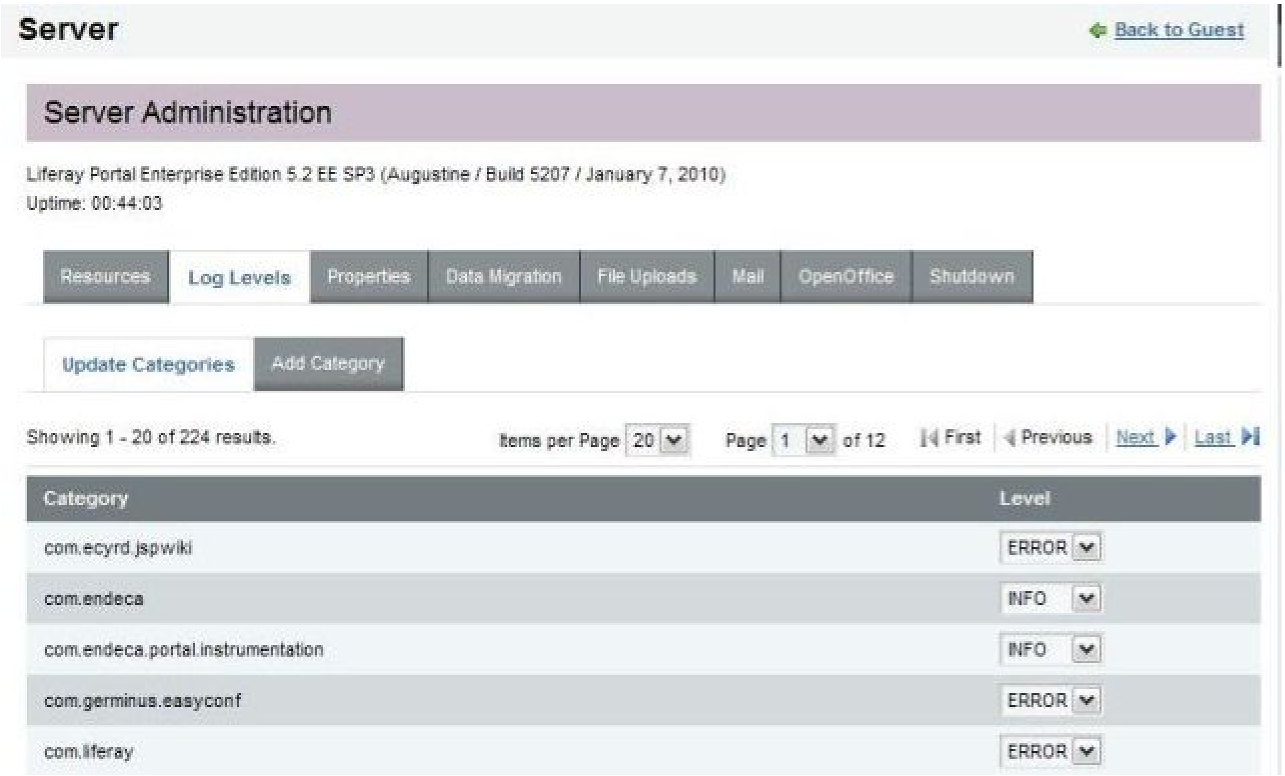
The easiest way to dynamically adjust logging verbosity levels for any class hierarchy is from the Liferay **Control Panel**.

To adjust logging verbosity in the Liferay Control Panel:

1. In Latitude Studio, point the cursor at the Dock.



2. From the drop-down menu, choose **Control Panel**.
3. From the **Control Panel** tool menu, choose **Server Administration**.
4. In the **Server Administration** pane, choose the **Log Levels** tab.



Liferay Portal Enterprise Edition 5.2 EE SP3 (Augustine / Build 5207 / January 7, 2010)
Uptime: 00:44:03

Showing 1 - 20 of 224 results. Items per Page 20 Page 1 of 12

Category	Level
com.ecyrd.jspwiki	ERROR
com.endeca	INFO
com.endeca.portal.instrumentation	INFO
com.germinus.easyconf	ERROR
com.liferay	ERROR

5. Scroll to find the class hierarchy you want to modify, and then adjust the logging level in the drop-down list. The available options are:

   - OFF
   - FATAL
   - ERROR

- WARN
- INFO
- DEBUG
- ALL

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

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

Note: By default, Endeca sets log levels for `com.endeca` and `com.endeca.portal.instrumentation`. You can adjust these levels. In addition, you can use the **Add Category** tab to set the verbosity for a specific class or package.

Modifying portal-log4j-ext.xml to override default logging settings

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

Liferay also provides a second configuration file, `portal-log4j-ext.xml` (located in the portal application's `/WEB-INF/classes/META-INF/` directory). This file can be used to override settings in the main `portal-log4j.xml` file.

Both of these files are in standard `log4j` XML configuration format. Both files allow creating and modifying appenders, binding appenders to loggers, and adjusting the default log verbosity of different classes and packages.

By default, the Latitude override file `portal-log4j-ext.xml` specifies a log verbosity of INFO for the `com.endeca` and `com.endeca.portal.instrumentation` packages. The file does not override any of the default log verbosity settings specified for non-Latitude components packaged in `portal-log4j.xml`.

Setting up logging

Latitude Studio uses the Apache `log4j` logging utility.

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

Liferay also provides a second configuration file, `portal-log4j-ext.xml`, which can be used to override settings in the main `portal-log4j.xml` file.

Both of these files are in standard log4j XML configuration format. Both files allow creating and modifying appenders, binding appenders to loggers, and adjusting the default log verbosity of different classes/packages.

By default, the Latitude override file specifics a log verbosity of INFO for the `com.endeca` and `com.endeca.portal.instrumentation` packages. The file does not override any of the default log verbosity settings specified for non-Endeca components packaged in `portal-log4j.xml`.

The Latitude log configuration specifies three appenders. The main root logger prints all messages to:

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

The file `df.log` is specified relative to the working directory. If not adjusted, the `df.log` file can typically be found in one of the following locations:

1. If Tomcat was started by running the `startup.bat` or `startup.sh` script, the log is found wherever the script was run. For example, if you navigate to `tomcat-<version>/bin` and execute the startup script, your logs appear in `tomcat-<version>/bin/df.log`.
2. If Tomcat was registered and started as a Windows service, the log files may be located in `C:\Windows\System32\df.log` or `C:\Windows\SysWOW64\df.log`.
3. If Tomcat is a server inside of Eclipse, the log files may be located in the root of the Eclipse directory (such as `C:\eclipse\df.log`).
4. If running WAS 6.1 or 7, the log files may be located relative to the profile's working directory (such as `/localdisk/WAS/AppServer/profiles/AppSrv01/df.log`).

In addition to the console and `df.log` appenders, Endeca also provides a second file appender for capturing metrics logging. This appender creates a file called `df-metrics.log`, which is generated in the same location as `df.log`.

All log entries produced by classes in `com.endeca.portal.instrumentation` are routed to `df-metrics.log`—they are not printed to the console or to `df.log`.

By keeping performance information separate, administrators can easily distinguish server logs from performance logs, and can easily run analysis scripts on the performance logs.

Note: For further details on `log4j` logging in Liferay, see the *Liferay Portal Administrator's Guide*.

About log4j.properties

This topic describes the different versions of the `log4j.properties` file.

The version of the `log4j.properties` file that is located in `common/endorsed/log4j.properties.jar` is used to configure logging for the Tomcat bundle. The file ensures that there is some preliminary `log4j` configuration, because in the Tomcat bundle, `log4j` is initialized before Latitude Studio.

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

Once Latitude Studio starts and loads its XML configuration file, it overrides the settings in the `log4j.properties` file. Therefore, it should not be necessary for administrators to modify this properties file.

In addition, all deployed portlets, as well as the Latitude Studio application itself, have their own `log4j.properties` files, located in `WEB-INF/classes`. Because Latitude Studio uses XML configuration files, these properties 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 7

Administrative Components

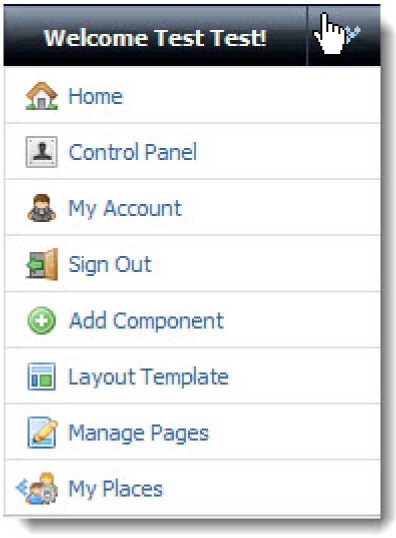
Latitude Studio contains a number of administrative components. Many administrative components are chiefly used by system administrators, but some can be modified by power users.

Accessing the administrative components

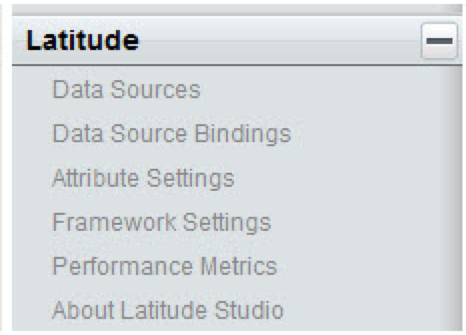
The Latitude Studio administrative components are available from the Liferay **Control Panel**.

To navigate to the Latitude Studio administrative components:

1. In Latitude Studio, click the Dock.



2. From the drop-down menu, select **Control Panel**.
3. In the **Latitude** section of the **Control Panel**, click the component you want to edit.



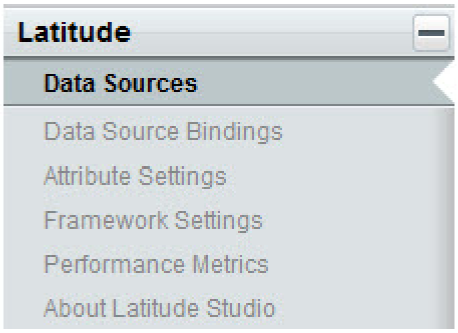
4. After you finish editing the component, click **Return to <*user name*>**.

Data Sources

The **Data Sources** component is used to test and reload the configured data sources.

About the Data Sources component

The **Data Sources** component on the **Control Panel** allows you to view configured data sources and test the connection to them. You also can reload updated configuration based on edits you have made on disk.



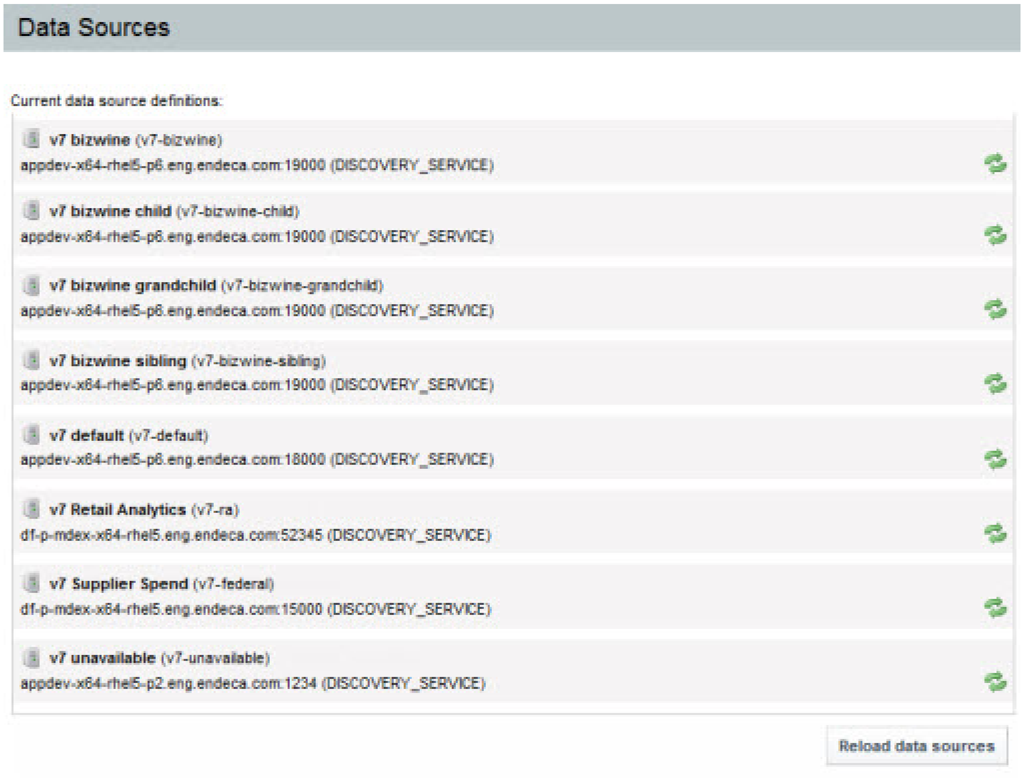
Each Latitude Studio component that needs to query the MDEX Engine is tied to a data source. From a component's edit view, you can select a different data source for that component.

Note: For general information about Latitude Studio data sources, see the chapter on configuring data sources.

Using the Data Sources component

The **Data Sources** component lists all of the data sources configured for your application.

For example:



Data Sources

Current data source definitions:

v7 bizwine (v7-bizwine)
appdev-x64-rhel5-p6.eng.endeca.com:19000 (DISCOVERY_SERVICE)

v7 bizwine child (v7-bizwine-child)
appdev-x64-rhel5-p6.eng.endeca.com:19000 (DISCOVERY_SERVICE)

v7 bizwine grandchild (v7-bizwine-grandchild)
appdev-x64-rhel5-p6.eng.endeca.com:19000 (DISCOVERY_SERVICE)

v7 bizwine sibling (v7-bizwine-sibling)
appdev-x64-rhel5-p6.eng.endeca.com:19000 (DISCOVERY_SERVICE)

v7 default (v7-default)
appdev-x64-rhel5-p6.eng.endeca.com:18000 (DISCOVERY_SERVICE)

v7 Retail Analytics (v7-ra)
df-p-mdex-x64-rhel5.eng.endeca.com:52345 (DISCOVERY_SERVICE)

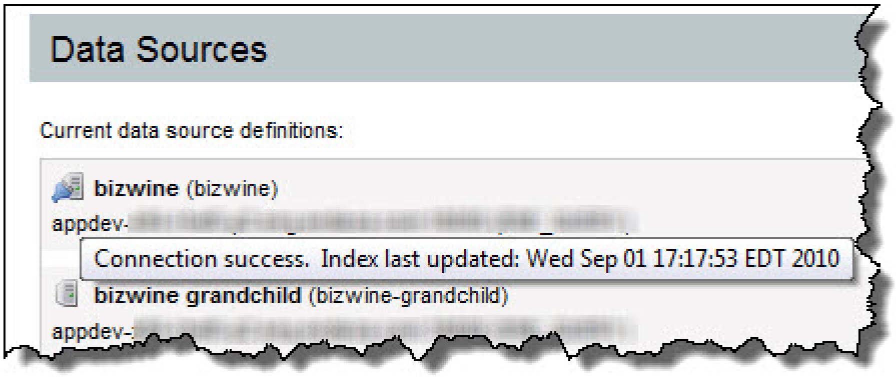
v7 Supplier Spend (v7-federal)
df-p-mdex-x64-rhel5.eng.endeca.com:15000 (DISCOVERY_SERVICE)

v7 unavailable (v7-unavailable)
appdev-x64-rhel5-p2.eng.endeca.com:1234 (DISCOVERY_SERVICE)

Each data source definition consists of:

- The name of the data source.
- The version of the MDEX Engine they are using (`DISCOVERY_SERVICE` for MDEX Engine 7).

To test the data source's connection, click the icon next to the data source. The icon changes, and mousing over it provides a confirmation message.



Data Sources

Current data source definitions:

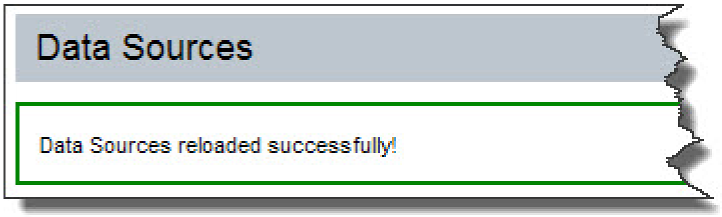
bizwine (bizwine)
appdev-[redacted]

Connection success. Index last updated: Wed Sep 01 17:17:53 EDT 2010

bizwine grandchild (bizwine-grandchild)
appdev-[redacted]

To clear the Latitude Studio's session cache of attributes and attribute groups, click 🔄.

To reload the updated configuration based on edits made on disk, click the **Reload data sources** button.



Data Sources

Data Sources reloaded successfully!

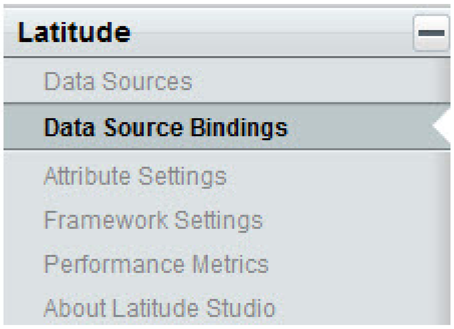
Note: Configuration of data sources themselves takes place offline.

Data Source Bindings

The **Data Source Bindings** component allows power users to set the data source used by multiple components.

About the Data Source Bindings component

The **Data Source Bindings** component on the **Control Panel** allows the power user to associate different configured data sources with selected components in a single operation, rather than on a per-component basis.

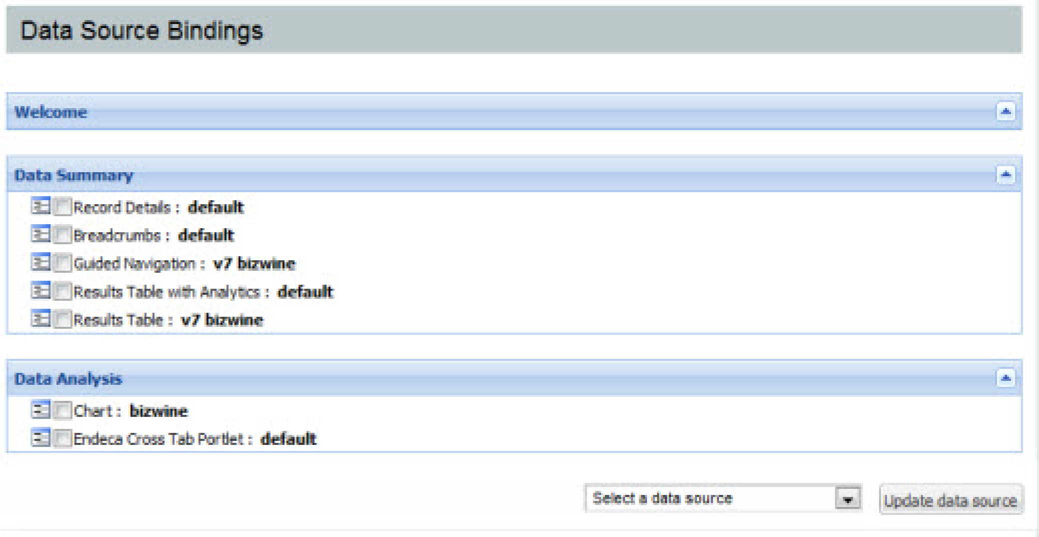


Configuring Data Source Bindings

The **Data Source Bindings** component lists the data-source-backed components for each page. You can then bind the same data source to one or more of the components.

To associate components with a particular data source:

1. Check the check box 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**.



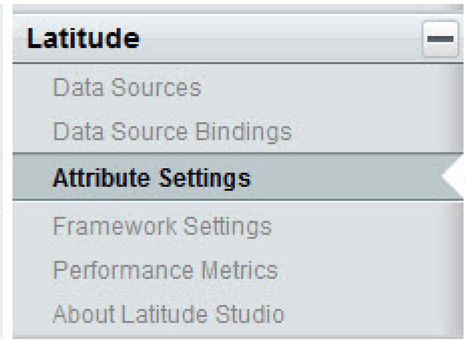
Record Details : **default**
Breadcrumbs : **default**
Guided Navigation : **v7 bizwine**
Results Table with Analytics : **default**
Results Table : **v7 bizwine**

Chart : **bizwine**
Endeca Cross Tab Portlet : **default**

Attribute Settings

The **Attribute Settings** component allows power users to define their attribute groups.

An attribute group is a collection of attributes.



For details on using the **Attribute Settings** component, see the chapter "Managing Attributes and Attribute Groups" in this guide.

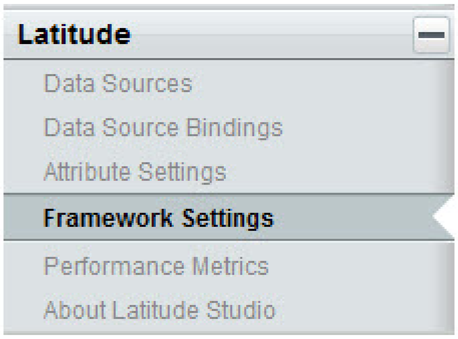
Framework Settings

The **Framework Settings** component provides access to many configuration options for your Latitude Studio application.

About the Framework Settings component

The **Framework Settings** component on the **Control Panel** provides access to state, security, and other 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.



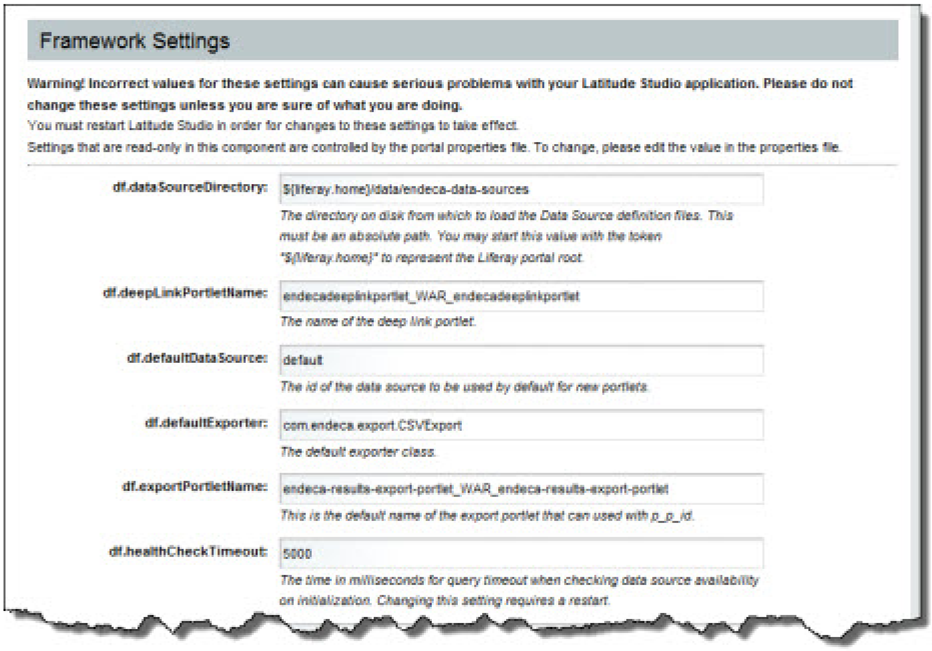
The default values of these settings are created automatically upon first use. You can only edit the settings. You cannot add or delete settings.

Settings only appear after the feature(s) that use them have been executed at least once. For example, if you have never used the **Chart** component, the **Corda Server URL** settings will not appear.

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.



Framework Settings

Warning! Incorrect values for these settings can cause serious problems with your Latitude Studio application. Please do not change these settings unless you are sure of what you are doing.

You must restart Latitude Studio in order for changes to these settings to take effect.

Settings that are read-only in this component are controlled by the portal properties file. To change, please edit the value in the properties file.

df.dataSourceDirectory: ${liferay.home}/data/endeca-data-sources

The directory on disk from which to load the Data Source definition files. This must be an absolute path. You may start this value with the token "${liferay.home}" to represent the Liferay portal root.

df.deepLinkPortletName: endecadeeplinkportlet_WAR_endecadeeplinkportlet

The name of the deep link portlet.

df.defaultDataSource: default

The id of the data source to be used by default for new portlets.

df.defaultExporter: com.endeca.export.CSVExport

The default exporter class.

df.exportPortletName: endeca-results-export-portlet_WAR_endeca-results-export-portlet

This is the default name of the export portlet that can used with p_p_id.

df.healthCheckTimeout: 5000

The time in milliseconds for query timeout when checking data source availability on initialization. Changing this setting requires a restart.

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

Framework Setting	Meaning
df.cordaImageAuthEnabled	Controls whether Corda chart image URLs are secured.
df.cordaServerExternalUrl	The externally accessible URLs of the Corda Server, which is used by the **Chart** component.
df.cordaServerInternalUrl	The internally accessible URLs of the Corda Server, which is used by the **Chart** component.
df.cordaServerRedirectorUrl	The URL of the Corda Redirector, which can be used by the **Chart** component.
df.dataSourceDirectory	The directory on disk from which to load data source definition files.
df.deepLinkPortletName	The name of the deep link component.
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.
df.maxExportAnalyticsRecords	The maximum allowable number of Analytics records that can be exported.
df.maxExportBaseErrors	The maximum allowable number of non-Analytics records that can be exported.
df.mdexCacheManager	The fully-qualified class name to use for the MDEX Cache Manager. Changing this setting is currently experimental and unsupported, and should be used only for research purposes. This interface will change in upcoming releases.
df.mdexSecurityManager	The fully-qualified class name to use for the MDEX Security Manager.
df.mdexStateManager	The fully-qualified class name to use for the MDEX State Manager.
df.metadataCacheEnabled	If set to `false`, retrieves this metadata directly from the data source whenever required (this will be slow). This setting will take effect for new sessions. Note that the use of this setting in a production environment is not supported.
df.viewTransitionDefaultContext	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. The default value is `/web/guest/`, which is the default guest area of Latitude Studio.

Framework Setting	Meaning
	If you create your application within a Liferay Portal community, then you would specify the relative path to that community. For example, if you created your application within a community called My Community, you would set this setting to `/web/my-community/`. By setting the path here, you do not have to include it in the target field in the individual component settings.
df.wsConnectionTimeout	The time in milliseconds before the connection to the MDEX Engine web services times out. The default value is 300000. If you experience frequent timeouts, then you may need to adjust this setting, or check your hardware configuration.

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 Latitude 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 Latitude 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 Latitude Studio has been started:

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

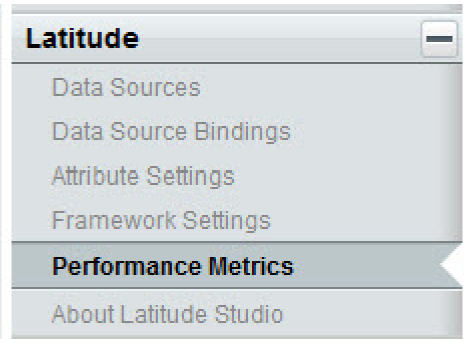
   On the **Framework Settings** page of the **Control Panel**, the setting is now read only. You can no longer edit the value from the **Control Panel**.

Performance Metrics

The **Performance Metrics** component provides insight into the number of queries performed and the time needed for those queries.

About the Performance Metrics component

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



The **Performance Metrics** component does not require a backing data source.

You use a setting in `portal-ext.properties` to configure the types of performance metrics to include on the component.

Using Performance Metrics

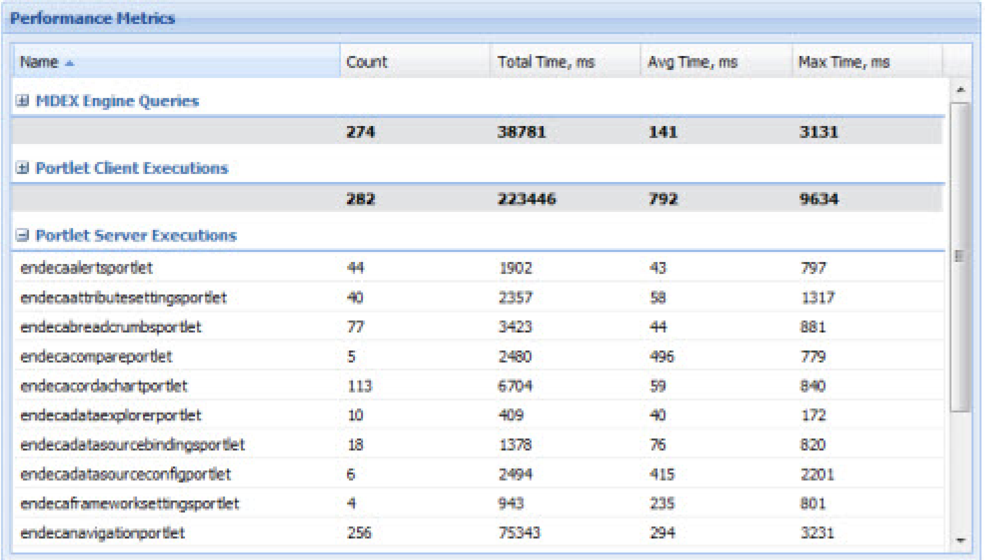
The **Performance Metrics** component provides performance information for queries and executions.

Depending on how the component is configured, the component can contain information on:

- MDEX Engine queries by data source
- Portlet client executions by component
- Portlet server executions by component

By default, only the MDEX Engine queries and portlet server executions are included.

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



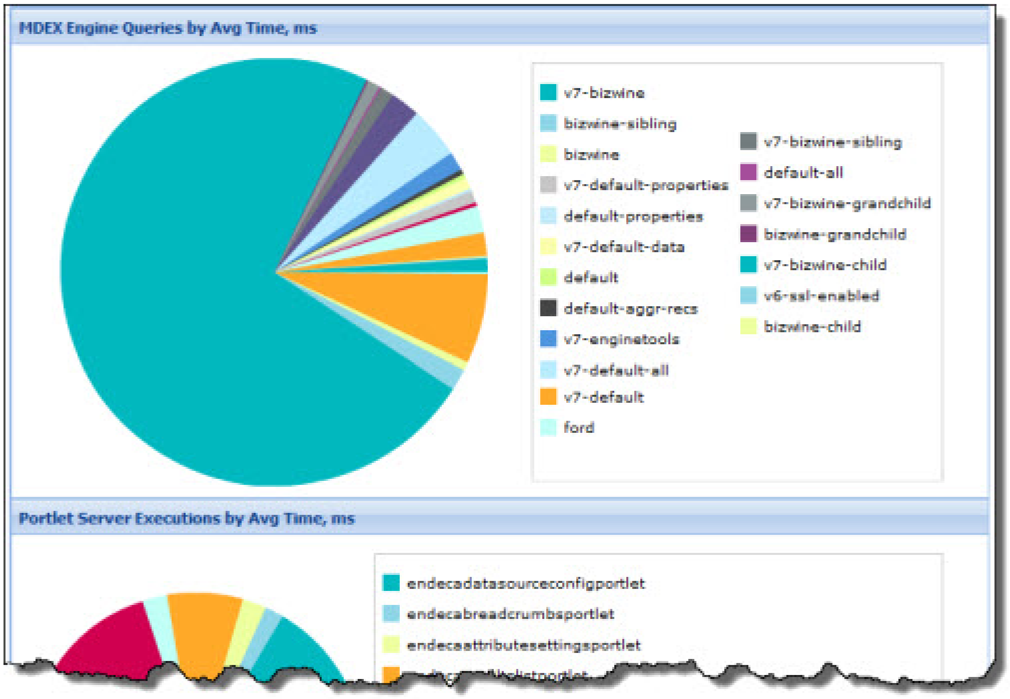
Performance Metrics

Name ▲	Count	Total Time, ms	Avg Time, ms	Max Time, ms
⊞ MDEX Engine Queries				
	274	**38781**	**141**	**3131**
⊞ Portlet Client Executions				
	282	**223446**	**792**	**9634**
⊟ Portlet Server Executions				
endecaalertsportlet	44	1902	43	797
endecaattributesettingsportlet	40	2357	58	1317
endecabreadcrumbsportlet	77	3423	44	881
endecacompareportlet	5	2480	496	779
endecacordachartportlet	113	6704	59	840
endecadataexplorerportlet	10	409	40	172
endecadatasourcebindingsportlet	18	1378	76	820
endecadatasourceconfigportlet	6	2494	415	2201
endecaframeworksettingsportlet	4	943	235	801
endecanavigationportlet	256	75343	294	3231

For each data source or portlet, 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: The **Performance Metrics** component provides a view into MDEX Engine query performance, which does not correlate directly to a page view, as there are often multiple MDEX Engine queries powering a single page.

Configuring the Performance Metrics component

By default, the **Performance Metrics** component displays information for MDEX Engine queries and portlet server executions. You can use a setting in `portal-ext.properties` to configure the metrics you want to display.

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 MDEX queries.
`PORTLET`	If this value is included, then the component includes information on portal server executions, which include: • Portlet render requests • Portlet resource requests • Portlet action requests
`CLIENT`	If this value is included, then the component includes information on portal client executions.

For example, in the default configuration, where only the MDEX queries and portlet server executions are displayed, the value is:

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

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

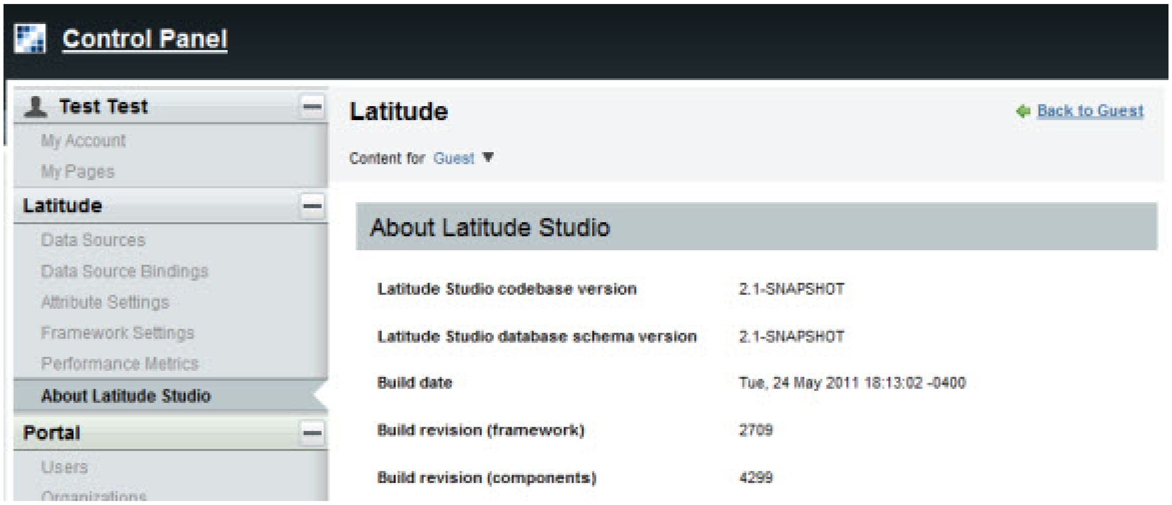
```
df.performanceLogging=QUERY,PORTLET,CLIENT
```

If you make the value empty, then the **Performance Metrics** component also will be empty.

```
df.performanceLogging=
```

About Latitude Studio

The **About Latitude Studio** component provides build and version information for the application.



Latitude

Content for Guest ▼

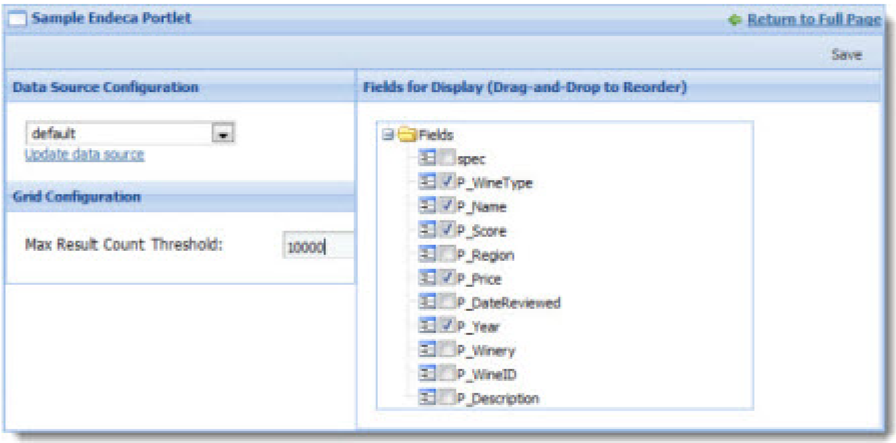
About Latitude Studio

Latitude Studio codebase version	2.1-SNAPSHOT
Latitude Studio database schema version	2.1-SNAPSHOT
Build date	Tue, 24 May 2011 18:13:02 -0400
Build revision (framework)	2709
Build revision (components)	4299

Sample Endeca Portlet

The **Sample Endeca Portlet** component provides developers with a template from which they can build their own custom components.

This component is provided as a starting point for developers who want to create their own components.



Data Source Configuration

default

Update data source

Grid Configuration

Max Result Count Threshold: 10000

Fields for Display (Drag-and-Drop to Reorder)

Fields
- □ spec
- ☑ P_WineType
- ☑ P_Name
- ☑ P_Score
- □ P_Region
- ☑ P_Price
- □ P_DateReviewed
- ☑ P_Year
- □ P_Winery
- □ P_WineID
- □ P_Description

Chapter 8

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

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

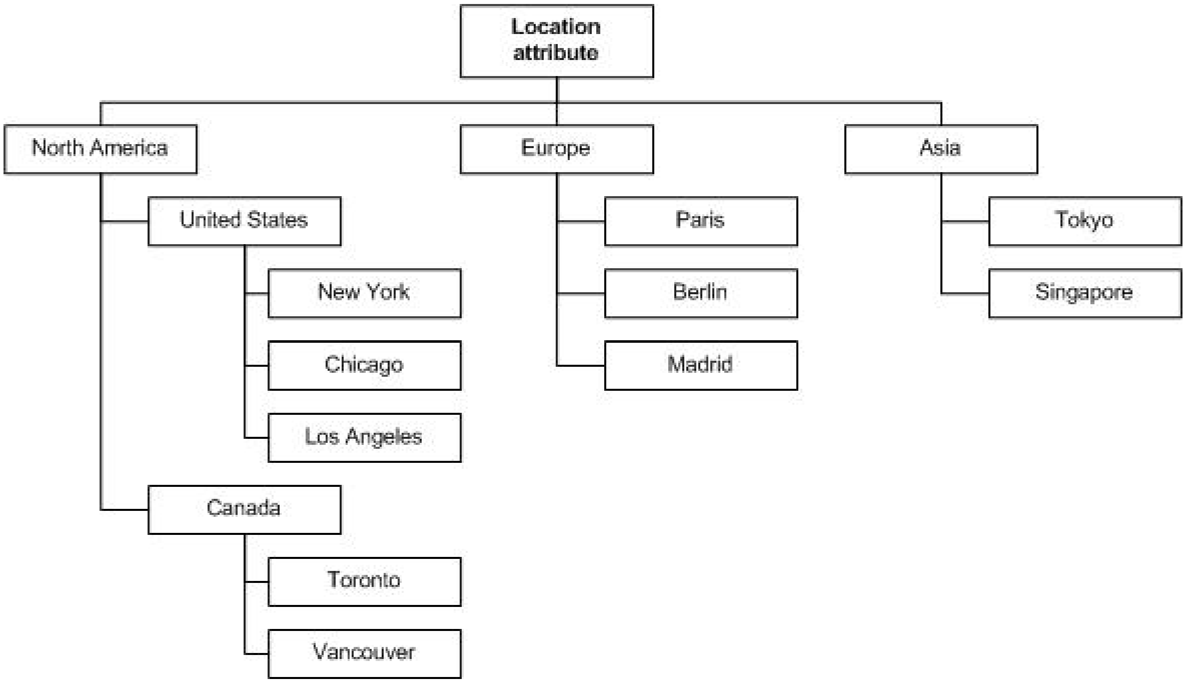
About attributes

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

In a Latitude 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 MDEX Engine is created. From the **Attribute Settings** component in Latitude 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 Latitude 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 named `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.

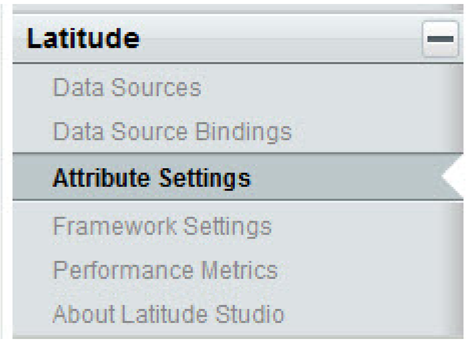
When you add attributes to your own attribute groups, they are removed from the `Other` group. However, you can add the same attribute to more than one of your own groups.

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.

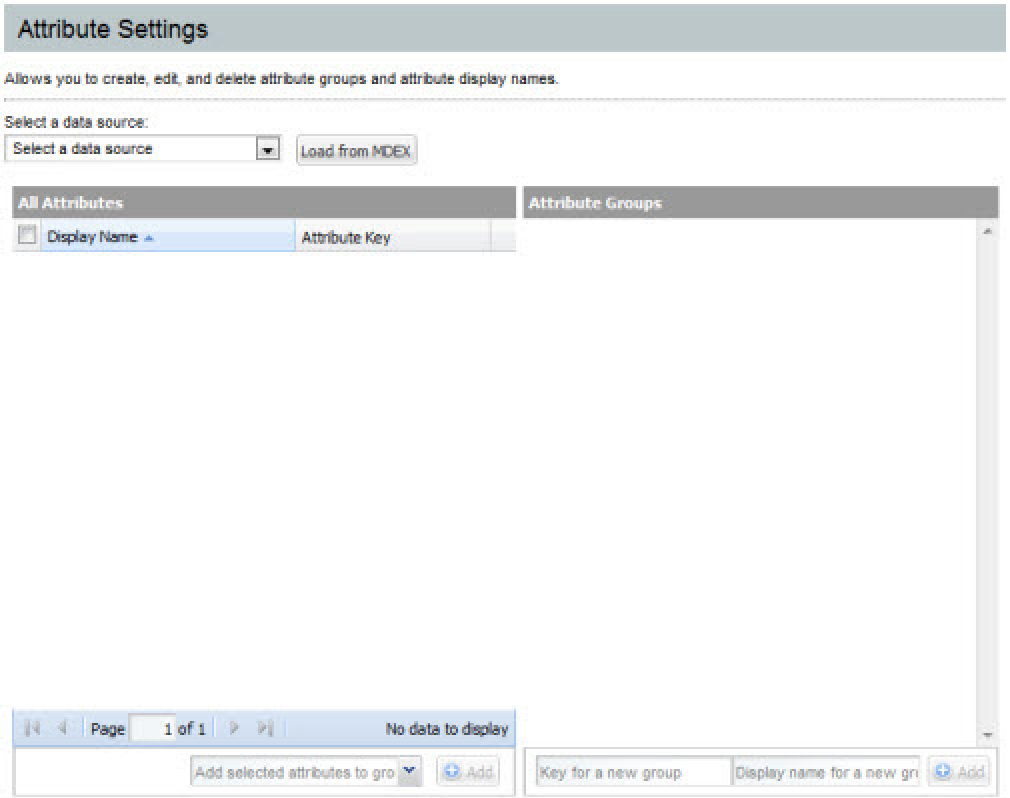
To display the attributes and groups for a data source:

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



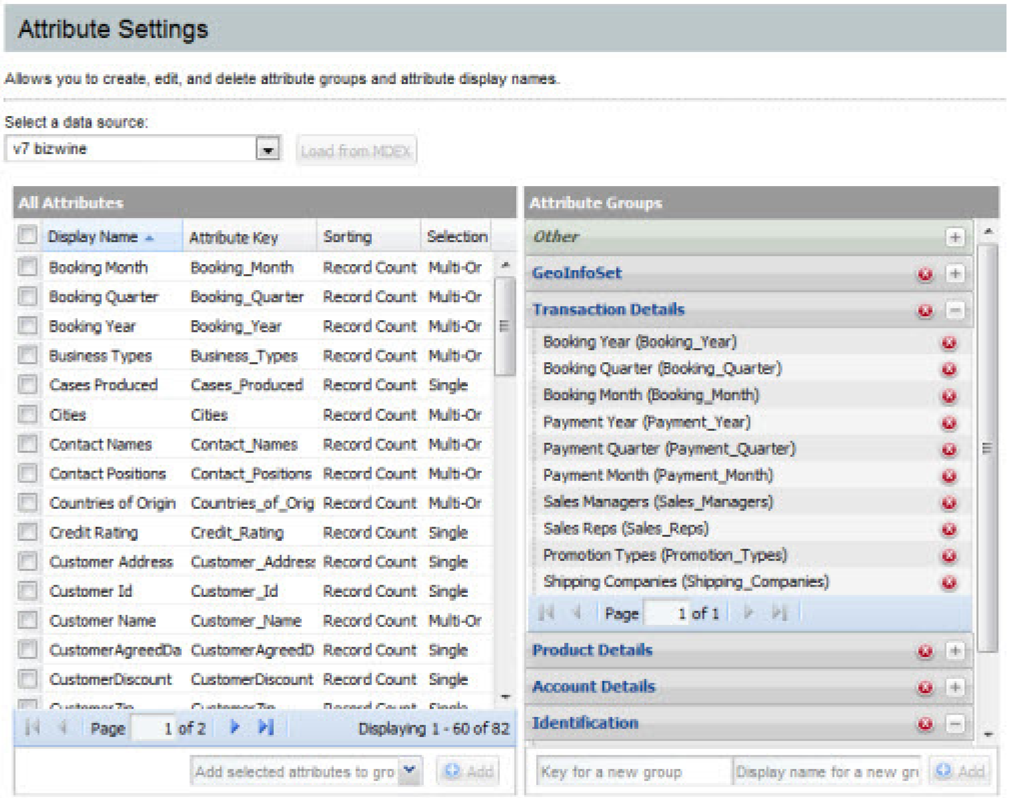
Attribute Settings

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

Select a data source:

4. 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.

Select a data source: v7 bizwine

All Attributes

☐	Display Name ▲	Attribute Key	Sorting	Selection
☐	Booking Month	Booking_Month	Record Count	Multi-Or
☐	Booking Quarter	Booking_Quarter	Record Count	Multi-Or
☐	Booking Year	Booking_Year	Record Count	Multi-Or
☐	Business Types	Business_Types	Record Count	Multi-Or
☐	Cases Produced	Cases_Produced	Record Count	Single
☐	Cities	Cities	Record Count	Multi-Or
☐	Contact Names	Contact_Names	Record Count	Multi-Or
☐	Contact Positions	Contact_Positions	Record Count	Multi-Or
☐	Countries of Origin	Countries_of_Orig	Record Count	Multi-Or
☐	Credit Rating	Credit_Rating	Record Count	Single
☐	Customer Address	Customer_Addres	Record Count	Single
☐	Customer Id	Customer_Id	Record Count	Single
☐	Customer Name	Customer_Name	Record Count	Multi-Or
☐	CustomerAgreedDa	CustomerAgreedD	Record Count	Single
☐	CustomerDiscount	CustomerDiscount	Record Count	Single
☐	CustomerZip	CustomerZip	Record Count	Single

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Attribute Groups

- *Other*
- GeoInfoSet
- Transaction Details
  - Booking Year (Booking_Year)
  - Booking Quarter (Booking_Quarter)
  - Booking Month (Booking_Month)
  - Payment Year (Payment_Year)
  - Payment Quarter (Payment_Quarter)
  - Payment Month (Payment_Month)
  - Sales Managers (Sales_Managers)
  - Sales Reps (Sales_Reps)
  - Promotion Types (Promotion_Types)
  - Shipping Companies (Shipping_Companies)
  - Page 1 of 1
- Product Details
- Account Details
- Identification

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 Latitude Studio application. From the **Attribute Settings** component, power users can edit the attribute display names.

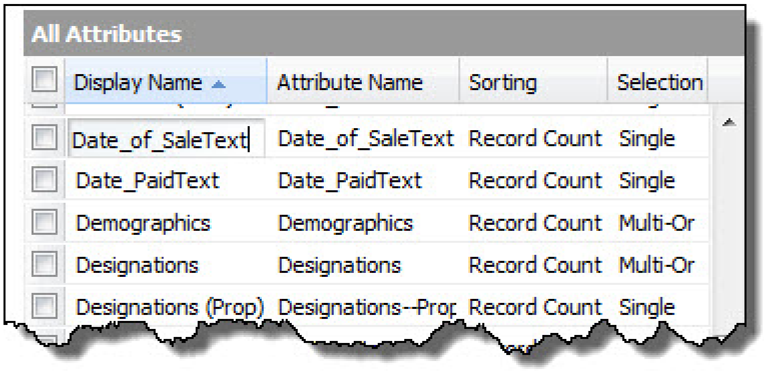
Changing an attribute's display name does not change the attribute's name as tagged on the data record.

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.



All Attributes

□	Display Name ▲	Attribute Name	Sorting	Selection
□	Date_of_SaleText	Date_of_SaleText	Record Count	Single
□	Date_PaidText	Date_PaidText	Record Count	Single
□	Demographics	Demographics	Record Count	Multi-Or
□	Designations	Designations	Record Count	Multi-Or
□	Designations (Prop)	Designations--Prop	Record Count	Single

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

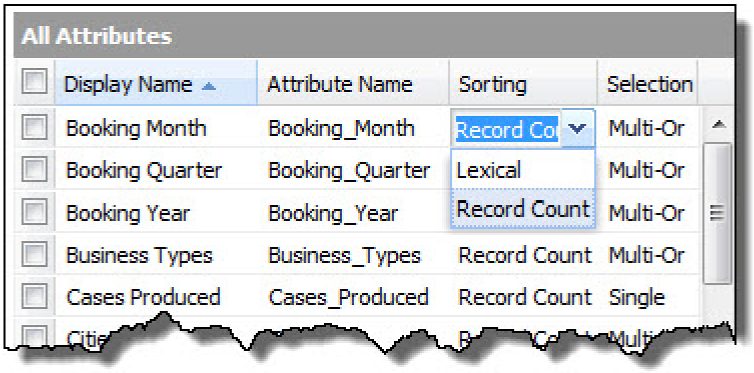
For each attribute, the **Attribute Settings** component includes configuration options related to the selection and sorting of attribute values on the **Guided Navigation** component.

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.



All Attributes

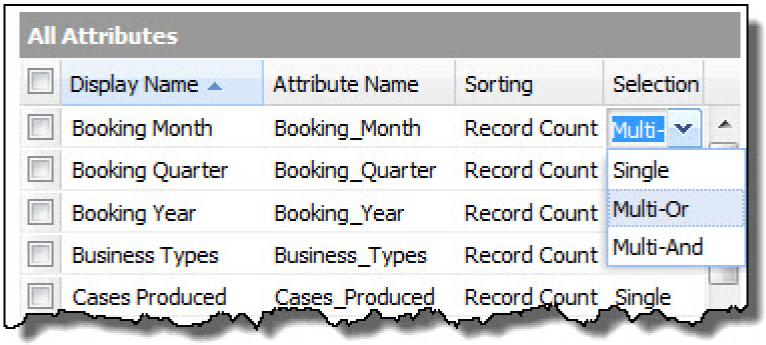
□	Display Name ▲	Attribute Name	Sorting	Selection
□	Booking Month	Booking_Month	Record Co	Multi-Or
□	Booking Quarter	Booking_Quarter	Lexical	Multi-Or
□	Booking Year	Booking_Year	Record Count	Multi-Or
□	Business Types	Business_Types	Record Count	Multi-Or
□	Cases Produced	Cases_Produced	Record Count	Single

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

Lexical	Indicates to display the selected values in alphabetical or numeric order. 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: • Blue (5 records) • Green (25 records) • Red (15 records)
Record Count	Indicates to display the selected values in descending order by the number of matching records. 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: • Green (25 records) • Red (15 records) • Blue (5 records)

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.



All Attributes

□	Display Name ▲	Attribute Name	Sorting	Selection
□	Booking Month	Booking_Month	Record Count	Multi-
□	Booking Quarter	Booking_Quarter	Record Count	
□	Booking Year	Booking_Year	Record Count	
□	Business Types	Business_Types	Record Count	
□	Cases Produced	Cases_Produced	Record Count	Single

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

Single	Indicates that end users can only select one value for the attribute.
Multi-Or	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).
Multi-And	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.

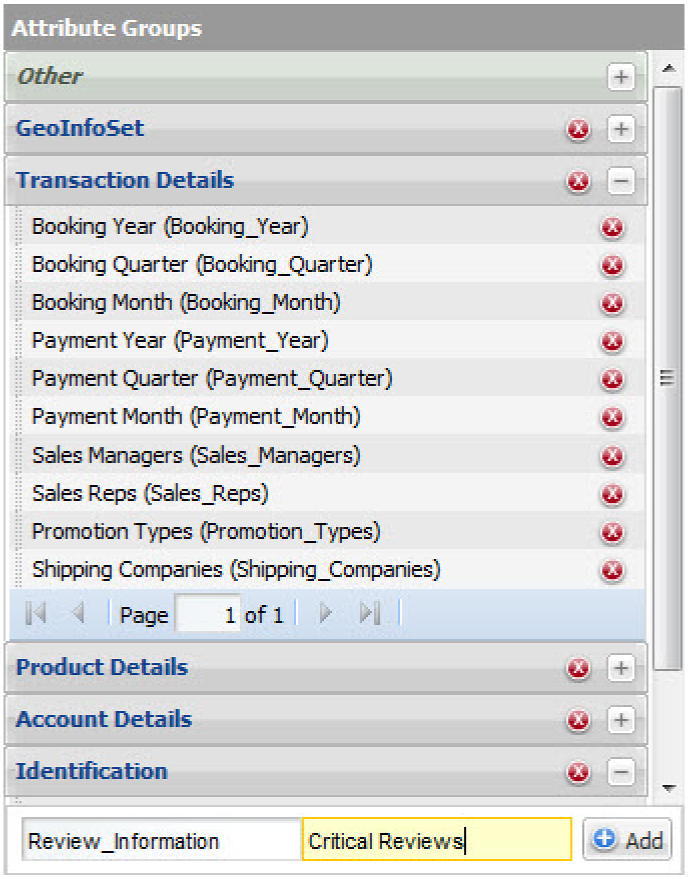
Creating a new attribute group

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.

   Attribute Groups

   - *Other*
   - GeoInfoSet
   - Transaction Details
     - Booking Year (Booking_Year)
     - Booking Quarter (Booking_Quarter)
     - Booking Month (Booking_Month)
     - Payment Year (Payment_Year)
     - Payment Quarter (Payment_Quarter)
     - Payment Month (Payment_Month)
     - Sales Managers (Sales_Managers)
     - Sales Reps (Sales_Reps)
     - Promotion Types (Promotion_Types)
     - Shipping Companies (Shipping_Companies)
   - Product Details
   - Account Details
   - Identification

   Review_Information | Critical Reviews

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

3. Click **Add**.

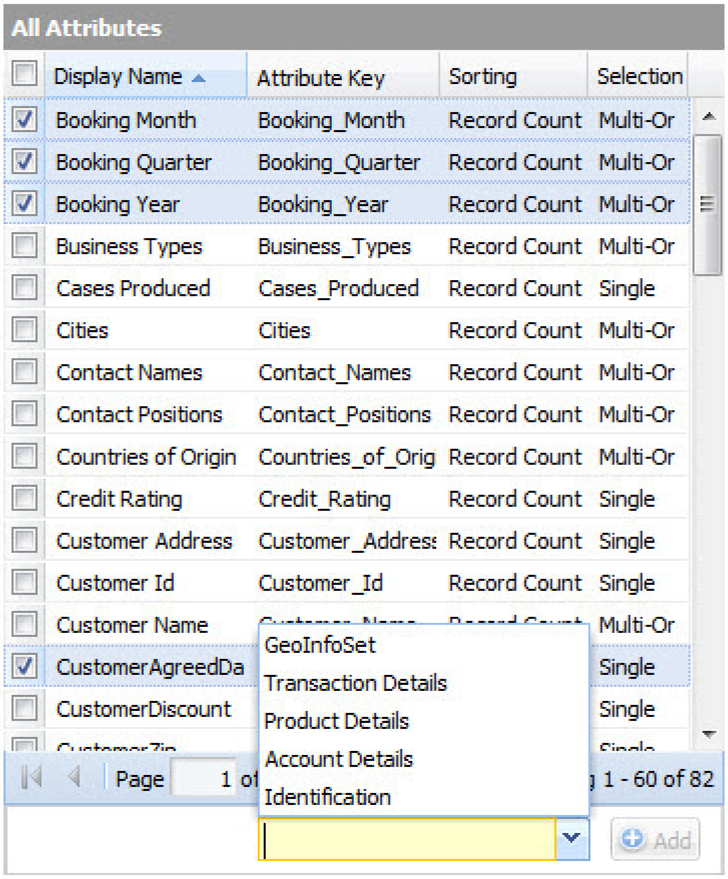
   Note that the **Add** button is not enabled until you have provided valid values for both the group key and the display name.

   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.



All Attributes

□	Display Name ▲	Attribute Key	Sorting	Selection
☑	Booking Month	Booking_Month	Record Count	Multi-Or
☑	Booking Quarter	Booking_Quarter	Record Count	Multi-Or
☑	Booking Year	Booking_Year	Record Count	Multi-Or
□	Business Types	Business_Types	Record Count	Multi-Or
□	Cases Produced	Cases_Produced	Record Count	Single
□	Cities	Cities	Record Count	Multi-Or
□	Contact Names	Contact_Names	Record Count	Multi-Or
□	Contact Positions	Contact_Positions	Record Count	Multi-Or
□	Countries of Origin	Countries_of_Orig	Record Count	Multi-Or
□	Credit Rating	Credit_Rating	Record Count	Single
□	Customer Address	Customer_Address	Record Count	Single
□	Customer Id	Customer_Id	Record Count	Single
□	Customer Name	Customer_Name	Record Count	Multi-Or
☑	CustomerAgreedDa			Single
□	CustomerDiscount			Single
□	CustomerZip			Single

   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.

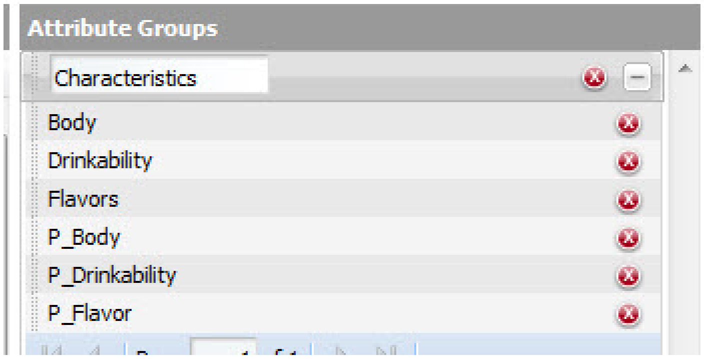
Changing the display name of an attribute group

From the **Attribute Settings** component, you can change the display name of any of your own groups. You cannot change the attribute group key, and you cannot change the name or content of the `Other` group.

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.



Attribute Groups

Characteristics

Body

Drinkability

Flavors

P_Body

P_Drinkability

P_Flavor

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

The new display name is updated automatically on the Latitude Studio components.

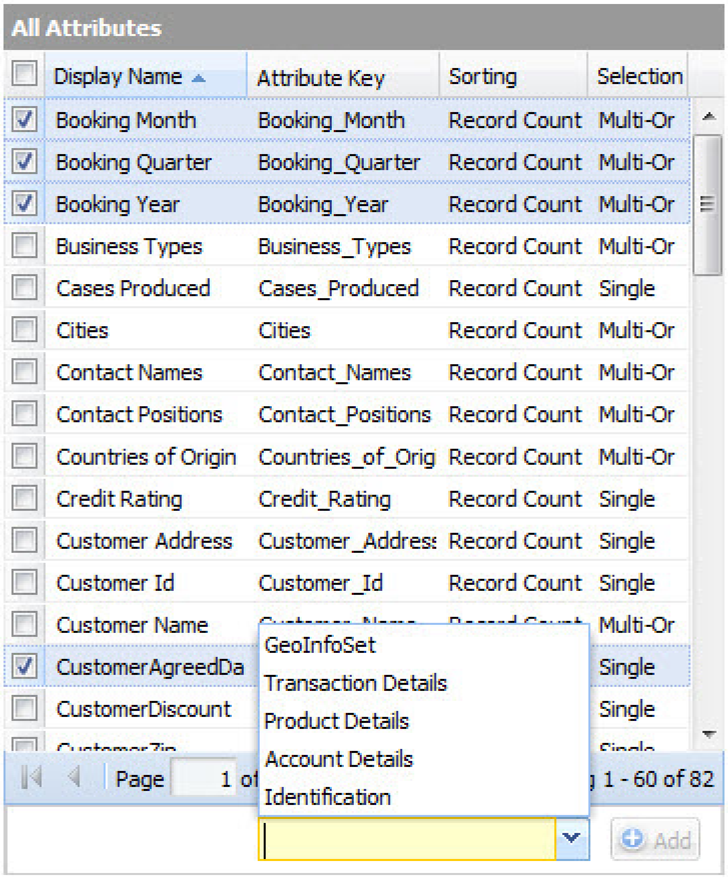
Adding attributes to an attribute group

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.



All Attributes

□	Display Name ▲	Attribute Key	Sorting	Selection
☑	Booking Month	Booking_Month	Record Count	Multi-Or
☑	Booking Quarter	Booking_Quarter	Record Count	Multi-Or
☑	Booking Year	Booking_Year	Record Count	Multi-Or
□	Business Types	Business_Types	Record Count	Multi-Or
□	Cases Produced	Cases_Produced	Record Count	Single
□	Cities	Cities	Record Count	Multi-Or
□	Contact Names	Contact_Names	Record Count	Multi-Or
□	Contact Positions	Contact_Positions	Record Count	Multi-Or
□	Countries of Origin	Countries_of_Orig	Record Count	Multi-Or
□	Credit Rating	Credit_Rating	Record Count	Single
□	Customer Address	Customer_Addres:	Record Count	Single
□	Customer Id	Customer_Id	Record Count	Single
□	Customer Name			Multi-Or
☑	CustomerAgreedDa			Single
□	CustomerDiscount			Single
□	CustomerZip			Single

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.

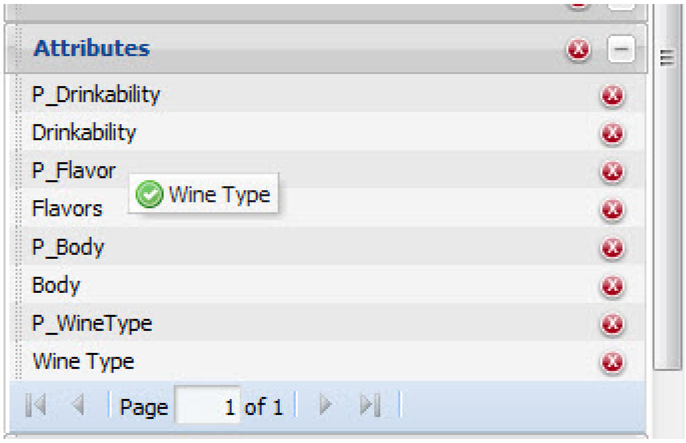
   If an attribute was already added to one of your groups, it is not removed from that group.

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.



Attributes

P_Drinkability

Drinkability

P_Flavor

Flavors

Wine Type

P_Body

Body

P_WineType

Wine Type

Page 1 of 1

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

3. Release the mouse.

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

Removing attributes from an attribute group

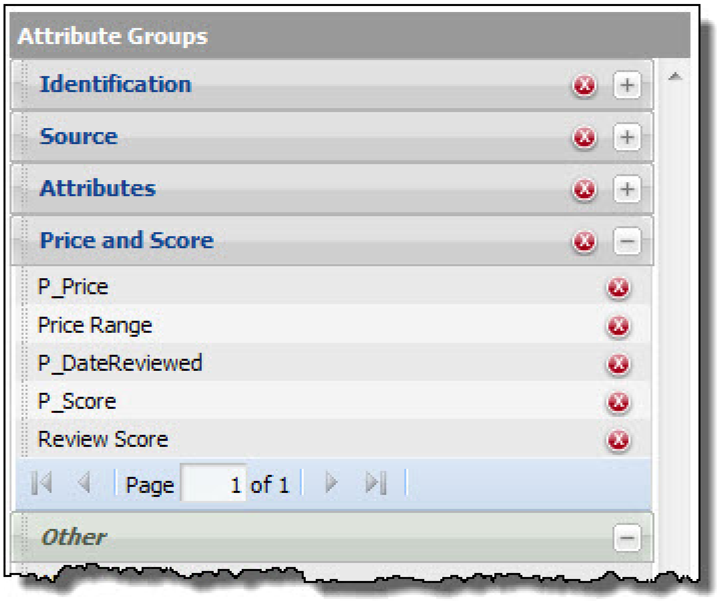
From the **Attribute Settings** component, you can remove attributes from your attribute groups.

Removing an attribute from an attribute group does not remove it from other attribute groups or from the MDEX Engine.

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.



Attribute Groups

Identification

Source

Attributes

Price and Score

P_Price

Price Range

P_DateReviewed

P_Score

Review Score

Page 1 of 1

Other

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

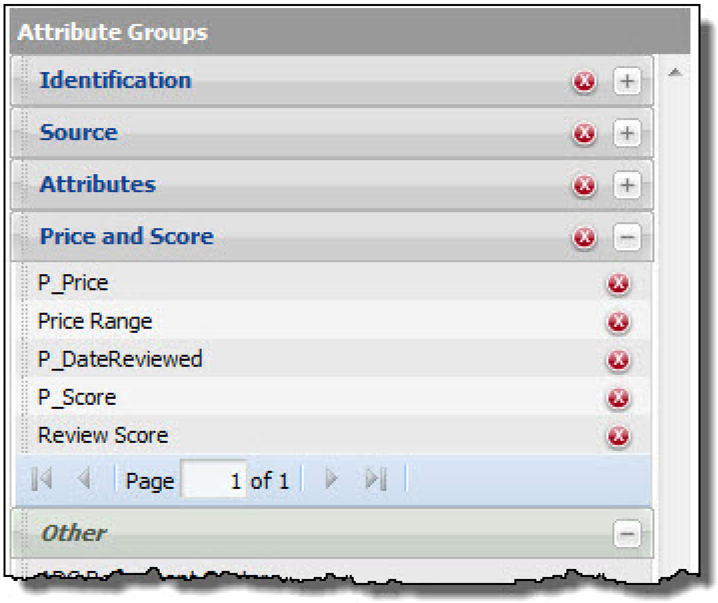
From the **Attribute Settings** component, you can delete your own attribute groups.

You cannot delete the default `Other` attribute group.

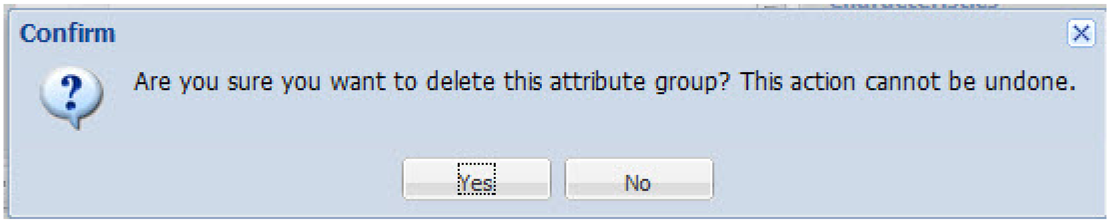
Deleting an attribute group does not delete its attributes from the MDEX Engine or from your other attribute groups.

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.


Confirm

Are you sure you want to delete this attribute group? This action cannot be undone.

2. On the confirmation message, to delete the attribute group, click **Yes**.

The attribute group is removed from the MDEX Engine and from the **Attribute Groups** panel. It no longer displays on the Latitude Studio components.

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

Chapter 9

Layout Components

Layout components provide additional control over Latitude Studio application design and display.

Tabbed Component Container

The **Tabbed Component Container** groups a page into 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. It is the only Endeca-developed layout control.

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.

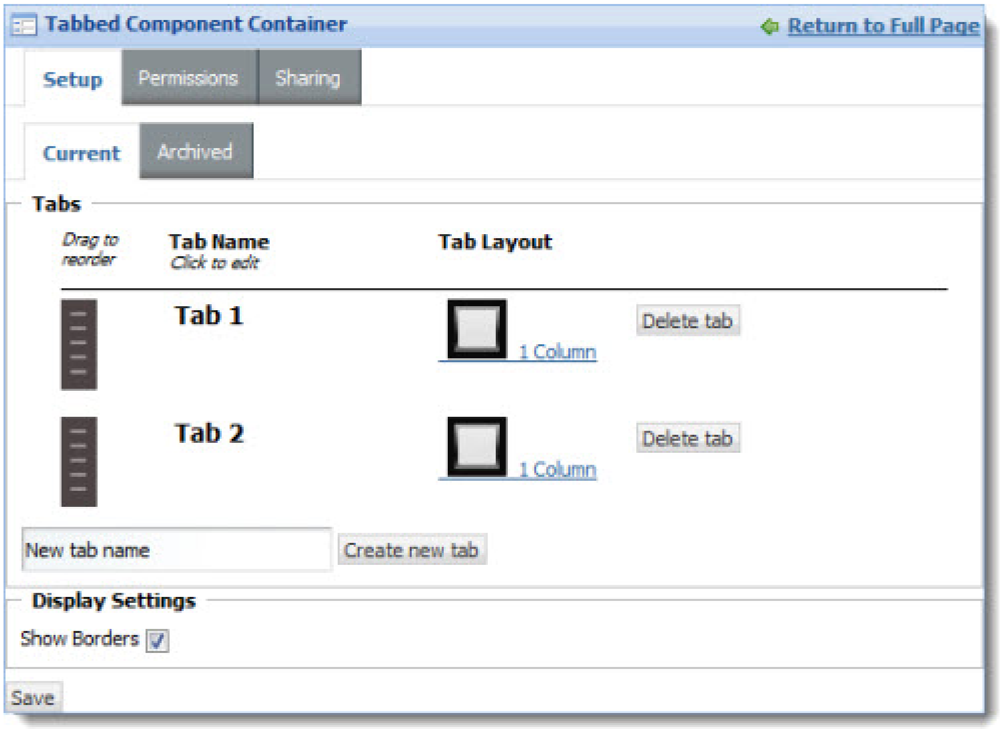
The following notes apply to the **Tabbed Component Container**:

- You cannot 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 attempting to 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.**

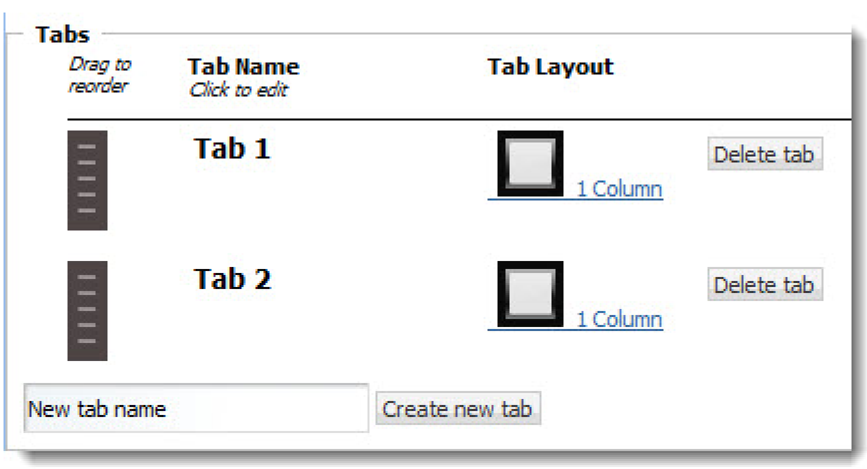


Note: Only the configuration tasks on the **Setup** tab are relevant to our purposes. You may disregard the other tabs.

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:

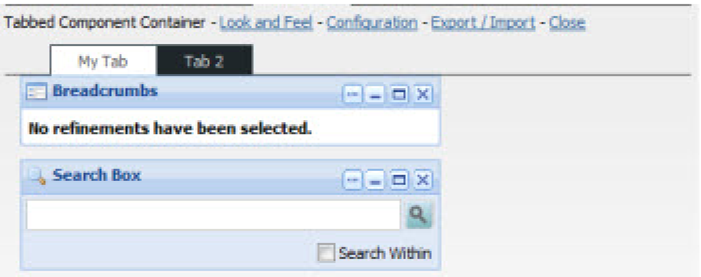
Tabs:	From this section, you can: • Add or delete tabs • Select the layout for each tab • Change the display name for each tab • Set the display order of the tabs



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.

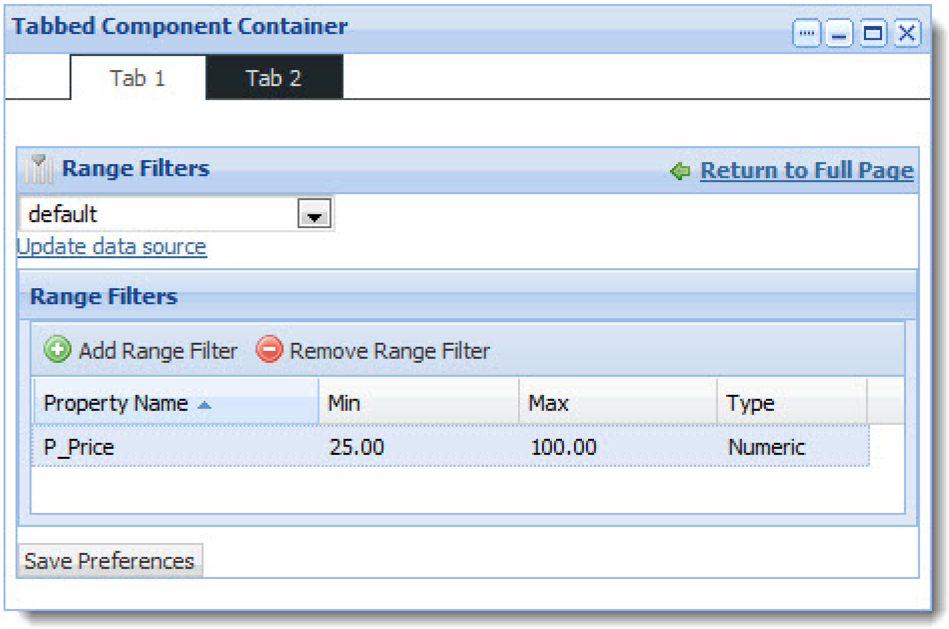

Tabbed Component Container - Look and Feel - Configuration - Export / Import - Close
My Tab
Tab 2
Breadcrumbs
Search Box
□ Search Within

No refinements have been selected.

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.

In the example below, a **Range Filters** component has been dragged onto Tab 1.



Property Name ▲	Min	Max	Type
P_Price	25.00	100.00	Numeric

Chapter 10

Using Endeca Analytics

This section introduces Endeca Analytics and describes its interaction with Latitude Studio.

Introduction to Endeca Analytics

Endeca Analytics builds on the core capabilities of the Endeca MDEX Engine to enable applications that examine aggregate information such as trends, statistics, analytical visualizations, and comparisons.

Key extensions to the Endeca MDEX Engine associated with Analytics include the following:

- An Analytics language, which allows users to explore aggregate and statistical views of large databases using a Guided Navigation interface.
- Support for date and time data types, which allows applications to work with temporal data, performing time-based sorting, filtering, and analysis.

The following components support Analytics statements:

- **Alerts**
- **Chart**
- **Cross Tab**
- **Metrics Bar**
- **Results Table**

Before using Analytics, Latitude Studio power users need to be able to write Endeca Analytics statements. These statements are used to create Latitude Studio charts and other visualizations.

Important features of Endeca Analytics

Endeca Analytics adds a powerful integrated Analytics language, which can be used to construct interactive analytics applications.

Some of the important features of the Endeca Analytics language are:

Tight integration with search and navigation

The Endeca Analytics language allows analytical visualizations that update dynamically as the end user refines the current search and navigation query, allowing Endeca Analytics to be controlled using the Endeca Guided Navigation interface.

Further, analytics results support click-through to underlying record details. End users can refine their navigation state directly from a view of their analytics sub-query results, using the Guided Navigation interface to explore the details behind any statistic.

Rich analytical functionality

The Endeca Analytics language supports the computation of a rich set of analytics on records in an Endeca MDEX Engine, and in particular on the results of navigation, search, and other analytics operations.

The language includes support for the following:

- Aggregation functions.
- Numeric functions.
- Composite expressions to construct complex derived functions.
- Grouped aggregations such as cross-tabulated totals over one or more managed attributes.
- Top-k according to an arbitrary function.
- Cross-grouping comparisons such as time period comparisons.
- Intra-aggregate comparisons such as computation of the percentage contribution of one region of the data to a broader subtotal.
- Rich compositions of these features.

Efficiency

Although the Endeca Analytics language allows the expression of a rich set of analytics, its functionality is constrained to allow efficient internal implementation, avoiding multiple table scans, complex joins, and so on. Good performance for analytics operations is essential for enabling the interactive response time associated with the Guided Navigation interface.

Familiarity

The Endeca Analytics language uses concepts, structure, and terminology that are familiar to developers with a knowledge of SQL.

The Analytics language

This section describes the important features of the Analytics language, and provides sample analytics queries and a detailed syntax reference.

Query input and embedding

The Endeca Analytics language provides the ability to request an arbitrary number of analytics operations based on the results of a single Endeca Navigation query.

This means that when you are working in Latitude Studio, you can embed queries as sub-queries within a containing navigation query.

This embedding approach supports the tight integration of Endeca search, navigation, and analytics.

Each analytics sub-query operates on the result records produced by the containing navigation query. This allows the analytics sub-queries to update dynamically as the user refines the current search and navigation state.

The Analytics language syntax

The majority of the Analytics language syntax is based on a subset of the SQL Language, providing familiarity for developers used to working with relational database systems.

Statements

An Analytics query can consist of any number of statements, each of which might compute related or independent analytics results. Each Analytics statement in a query must be given a unique name, as these names are later used to retrieve Analytics results.

The following notes apply to statements:

- Analytics statements do not support operations against geocode attributes. If necessary, you can work around this limitation by representing a geocode attribute as a string, or by splitting a geocode attribute into latitude and longitude values and representing each value as an integer.
- All attribute names must be NCName-compliant. They cannot contain spaces or special characters.

Examples

The following example creates two Analytics statements:

```
RETURN "Statement One" AS ...
RETURN "Statement Two" AS ...
```

By default, the result of each statement in an Analytics query is returned to the calling application. But in some cases, an Analytics statement is only intended as input for other Analytics statements in the same query, not for presentation to the end user.

In such cases, it is valuable to inform the system that the statement results are not needed, but are only defined as an intermediate step. This is accomplished using the DEFINE keyword in place of the RETURN keyword, for example:

```
DEFINE "Statement One" AS ...
```

The concept of query layering and inter-query references is described in later sections of this guide. So far, we have discussed statements in the abstract as parts of queries that compute analytics results, but have not described their capabilities or contents.

Aggregation/GROUP BY

The most basic type of statement provided by the Endeca Analytics language is the aggregation operation with GROUP BY, which buckets a set of Endeca records into a resulting set of aggregated Endeca records.

In most Analytics applications, all Analytics statements are aggregation operations.

To define the set of resulting buckets for an aggregation operation, the operation must specify a set of GROUP BY attributes. The cross product of all values in these grouping attributes defines the set of candidate buckets.

After associating input records with buckets, the results are automatically pruned to include only non-empty buckets. Aggregation operations correspond closely to the SQL GROUP BY concept, and the Analytics syntax re-uses SQL keywords.

Examples of basic usage of GROUP BY

For example, suppose we have sales transaction data with records consisting of the following fields (attributes):

```
{ TransId, ProductType, Amount, Year, Quarter, Region,
  SalesRep, Customer }
```

such as:

```
{ TransId = 1, ProductType = "Widget", Amount = 100.00,
  Year = 2009, Quarter = "09Q1", Region  = "East",
  SalesRep = "J. Smith", Customer = "Customer1" }
```

If an Analytics statement uses “Region” and “Year” as GROUP BY attributes, the statement results contain an aggregated Endeca record for each valid, non-empty “Region” and “Year” combination. In the Analytics language syntax, this example is expressed as:

```
DEFINE RegionsByYear AS
GROUP BY Region, Year
```

resulting in the aggregates of the form { Region, Year }, for example:

```
{ "East", "2008" }
{ "West", "2009" }
{ "East", "2009" }
```

The above example performs simple leaf-level group-by operations. It is also possible to group by a specified depth of each managed attribute.

For example, if the “Region” attribute in the above example contained hierarchy such as Country, State, City, and the grouping was desired at the State level (one level below the root of the managed attribute hierarchy), the following syntax would be used:

```
GROUP BY "Region":1
```

GROUP BY as a result of a computation

A GROUP BY key can be the result of a computation (the output of a SELECT expression), as long as that expression itself does not contain an aggregation function.

For example, the following syntax represents a correct usage of GROUP BY:

```
SELECT COALESCE(Person, 'Unknown Person')
as Person2, ... GROUP BY Person2
```

The following syntax is incorrect and results in an error (because Sales2 contains an aggregation function):

```
SELECT SUM(Sales) as Sales2, ... GROUP
BY Sales2
```

Specifying only Group

You can also use a GROUP statement to aggregate results into a single bucket.

For example, if you would like to use the SUM statement to return a single sum across a set of records, write the following query:

```
RETURN "ReviewCount" AS SELECT
SUM(number_of_reviews) AS "NumReviews"
GROUP
```

This query returns one record for `"NumReviews"` where the value is the sum over the attribute `"number_of_reviews"`.

Expressions/SELECT AS

This topic describes SELECT AS operations, contains lists of Analytics functions (aggregation, numeric and time/date), and describes the COALESCE expression.

Having created a set of aggregates using a GROUP BY operation, it is typical for Analytics queries to compute one or more derived analytics in each resulting bucket. This is accomplished using SELECT AS operations and Analytics expressions.

Each aggregation operation can declare an arbitrary set of named expressions, sometimes referred to as derived attributes, using SELECT AS syntax. These expressions represent aggregate analytic functions that are computed for each aggregated Endeca record in the statement result.

Important: Derived attribute names must be NCName-compliant. They cannot contain spaces or special characters. For example, the following statement would not be valid:

```
RETURN foo AS SELECT AVG(Price) AS "Average Price"
```

The space would have to be removed:

```
RETURN foo AS SELECT AVG(Price) AS "AveragePrice"
```

Expressions can make use of a broad array of operators, which are described in the following section.

List of aggregation functions

Analytics supports the following aggregation functions:

Function	Description
AVG	Computes the arithmetic mean value for a field.
COUNT	Counts the number of records with valid non-null values in a field for each GROUP BY result.
COUNTDISTINCT	Counts the number of unique, valid non-null values in a field for each GROUP BY result.
MAX	Finds the maximum value for a field.
MIN	Finds the minimum value for a field.
MEDIAN	Finds the median value for a field.
STDDEV	Computes the standard deviation for a field.
ARB	Selects an arbitrary but consistent value from the set of values in a field.
SUM	Computes the sum of field values.
VARIANCE	Computes the variance (that is, the square of the standard deviation) for a field.

List of numeric functions

Analytics supports the following numeric functions:

Function	Description
addition	The addition operator (`+`).
subtraction	The subtraction operator (`-`).
multiplication	The multiplication operator (`*`).

Function	Description
division	The division operator `(/)`.
ABS	Returns the absolute value of n. If n is `0` or a positive integer, returns n; otherwise, n is multiplied by `-1`.
CEIL	Returns the smallest integer value not less than n.
EXP	Exponentiation, where the base is e. Returns the value of e (the base of natural logarithms) raised to the power of n.
FLOOR	Returns the largest integer value not greater than n.
LN	Natural logarithm. Computes the logarithm of its single argument, the base of which is e.
LOG	Logarithm. `log(n, m)` takes two arguments, where n is the base, and m is the value you are taking the logarithm of.
MOD	Modulo. Returns the remainder of n divided by `m`. Analytics uses the `fmod` floating point remainder, as defined in the C/POSIX standard.
ROUND	Returns a number rounded to the specified decimal place. The unary version drops the decimal (non-integral) portion of the input. The binary version allows you to set the number of spaces at which the number is rounded: • Positive second arguments specified to this function correspond to the number of places that must be returned after the decimal point. For example, `ROUND(123.4567, 3) = 123.457` • Negative second arguments correspond to the number of places that must be returned before the decimal point. For example, `ROUND(123.4567, -3) = 100.0`
SIGN	Returns the sign of the argument as `-1`, `0`, or `1`, depending on whether n is negative, zero, or positive.
SQRT	Returns the nonnegative square root of n.
TRUNC	Returns the number n, truncated to `m` decimals. If `m` is `0`, the result has no decimal point or fractional part. The unary version drops the decimal (non-integral) portion of the input, while the binary version allows you to set the number of spaces at which the number is truncated.
SIN	The sine of n, where the angle of n is in radians.
COS	The cosine of n, where the angle of n is in radians.
TAN	The tangent of n, where the angle of n is in radians.
POWER	Returns the value of n raised to the power of `m`.

Function	Description
TO_DURATION	Casts an integer into a number of milliseconds so that it can be used as a duration. When TO_DURATION is given a value of type double, it removes the decimal portion and converts the integer portion to a duration.

COALESCE expression

The COALESCE expression allows for user-specified null-handling. For more information on null handling, see the section *"Handling of null results"* in this guide.

You can use COALESCE to evaluate records for multiple values and return the first non-null value encountered, in the order specified. The following requirements apply:

- You can specify two or more arguments to COALESCE
- Arguments that you specify to COALESCE should all be of the same type
- You cannot specify managed attributes as arguments to COALESCE. However, if you have a managed attribute mapped to a standard attribute, you can then specify this standard attribute to COALESCE and this will result in a valid query.
- The COALESCE expression can only be used in a SELECT clause, and not in other clauses (such as WHERE)

In the following example, all records without a specified price are treated as zero in the computation:

```
AVG(COALESCE(price, 0))
```

COALESCE can also be used without aggregation, for example:

```
SELECT COALESCE(price, 0) AS price_or_zero WHERE
```

Using the COUNT and COUNTDISTINCT functions

Review these examples before implementing the COUNT and COUNTDISTINCT functions.

The COUNT function counts the number of records with valid non-null values in a field for each GROUP BY result. For example, suppose there are four records with the value "small" in the Size field, and some of them have values in the Color field:

```
Record 1: Size=small, Color=red, Color=white
Record 2: Size=small, Color=blue, Color=green
Record 3: Size=small, Color=black
Record 4: Size=small
```

The query "RETURN result AS SELECT COUNT(Color) as Total GROUP BY Size" will return the result:

```
Record 1: Size=small, Total=3
```

The query returns "3", because in the "small" result group, three records had valid Color assignments.

Note: The COUNT function is counting records with valid assignments (three in this example), not the number of different values that appear in the field (five in this example: red, white, blue, green and black).

For single-assigned attributes, the COUNTDISTINCT function returns the number of unique, valid non-null values in a field for each GROUP BY result. For example, suppose there are four records with the value "small" in the Size field and different single values in the Color field:

```
Record 1: Size=small, Color=red
Record 2: Size=small, Color=blue
Record 3: Size=small, Color=red
Record 4: Size=small
```

The query "RETURN result AS SELECT COUNTDISTINCT (Color) as Total GROUP BY Size" would return:

```
Record 1: Size=small, Total=2
```

The total is "2" because across all of the records in this group, there are two unique, valid, non-null values in the Color field: "red" and "blue."

Note: The COUNTDISTINCT function should never be used with multi-assigned attributes. The results of the query may be misleading if records can have multiple values for one attribute. For example: `Record 1: Size=small, Color=red, Color=white, Color=blue`.

Nested queries/FROM

By using FROM syntax, an aggregation operation can specify that its input be obtained from the output of any previously declared statement.

The results of an Analytics statement consist of a set of aggregated records that can be used like any other Endeca records. Because of this, aggregation operations can be layered upon one another.

By default, the source of records for an Analytics statement is the result of the containing search and navigation query. But using FROM syntax, an aggregation operation can specify that its input be obtained from the output of any previously declared statement.

Example of using FROM syntax

For example, one aggregation query might compute the total number of transactions grouped by “Quarter” and “Sales Rep.” Then, a subsequent aggregation can group these results by “Quarter,” computing the average number of transactions per “Sales Rep.”

This example can be expressed as:

```
DEFINE RepQuarters AS
SELECT COUNT(TransId) AS NumTrans
GROUP BY SalesRep, Quarter ;

RETURN Quarters AS
SELECT AVG(NumTrans) AS AvgTransPerRep
FROM RepQuarters
GROUP BY Quarter
```

RepQuarters produces aggregates of the form { SalesRep, Quarter, NumTrans }, such as:

```
{ J. Smith, 09Q1, 10 }
{ J. Smith, 09Q2, 3 }
{ F. Jackson, 08Q4, 10 }
...
```

and Quarters returns aggregates of the form { Quarter, AvgTransPerRep }, such as:

```
{ 083Q4, 10 }
{ 09Q1, 4.5 }
{ 09Q2, 6 }
...
```

Inter-statement references

Multiple analytics sub-queries can be specified within the context of a single Endeca navigation query, each corresponding to a different analytical view, or to a sub-total at a different granularity level.

Statements can be nested within one another to compute layered Analytics.

Additionally, using a special cross-table referencing facility provided by the SELECT expression syntax, expressions can make use of values from other computed statements. This is often useful when coarser subtotals are required for computing analytics within a finer-grained bucket.

For example, if computing the percent contribution for each sales representative last year, the overall year total is needed to compute the value for each individual representative. Queries such as this can be composed using inter-statement references.

Examples of inter-statement references

As an example, suppose we want to compute the percentage of sales per “ProductType” per “Region.” One aggregation computes totals grouped by “Region,” and a subsequent aggregation computes totals grouped by “Region” and “ProductType.”

This second aggregation would use expressions that referred to the results from the “Region” aggregation. That is, it would allow each “Region” and “ProductType” pair to compute the percentage of the full “Region” subtotal represented by the “ProductType” in this “Region.”

The first statement computes the total product sales for each region:

```
DEFINE RegionTotals AS
SELECT SUM(Amount) AS Total
GROUP BY Region
```

Then, a statement uses the “RegionTotals” results defined above to determine the percentage for each region, making use of the inter-statement reference syntax (square brackets for addressing and dot operator for field selection).

```
RETURN ProductPcts AS
SELECT
  100 * SUM(Amount) / RegionTotals[Region].Total AS PctTotal
GROUP BY Region, ProductType
```

The bracket operator specifies that we are referencing the result of RegionTotals statement whose group-by value is equal to the local ProductPcts bucket's value for the Region attribute. The dot operator indicates that we are referencing the Total field in the specified RegionTotals bucket.

The above example makes use of referencing values in a separate statement, but the reference operator can also be used to reference values within the current statement. This is useful for computing trends that change over time, such as year-on-year sales change, which could be expressed as:

```
RETURN YearOnYearChange AS
SELECT SUM(Amount) AS TotalSales,
  SUM(Amount) - YearOnYearChange[Year-1].TotalSales AS Change
GROUP BY Year
```

Result ordering/ORDER BY

ORDER BY operators control the order of result records returned by an aggregation operation.

Records can be ordered by any of their attribute or derived values, ascending or descending, in any combination.

Examples with ORDER BY operators

For example, to order “SaleRep” aggregates by their total “Amount” values, the following would be used:

```
DEFINE Reps AS
SELECT SUM(Amount) AS Total
GROUP BY SalesRep
ORDER BY Total DESC
```

Paging and rank filtering/PAGE

By default, any statement that returns results to the application returns all results. In some cases, it is useful to request results in smaller increments for presentation to the user (such as presenting the sales reps ten at a time, with links to page forward and backward).

For example, the following query groups the records by SalesRep, returning the 11th through 20th resulting buckets (order in this case is arbitrary but consistent between queries):

```
DEFINE Reps AS
GROUP BY SalesRep
PAGE(10,10)
```

Paging can also be used in combination with ORDER BY to achieve “top-k” type queries. For example, the following query returns the top 10 sales reps by total sales:

```
DEFINE Reps AS
SELECT SUM(Amount) AS Total
GROUP BY SalesRep
ORDER BY Total DESC
PAGE(0,10)
```

for Latitude Studio components that provide their own paging capabilities, you should not use the Analytics language paging statement. Use caution with PAGE statements within Latitude Studio components, and always test to see if there is an incompatibility.

Filters/WHERE, HAVING

The Analytics language supports a general set of filtering operations. As in SQL, these can be used to filter the input records considered by a given statement (WHERE) and the output records returned by that statement (HAVING).

You can also filter input records for each expression to compute analytic expressions for a subset of the result buckets.

A variety of filter operations are supported, such as numeric and string value comparison functions (such as equality, inequality, greater than, less than, between, and so on), and Boolean operators (AND, OR, or NOT) for creating complex filter constraints.

For example, you could limit the sales reps to those who generated at least $10,000:

```
RETURN Reps AS
SELECT SUM(Amount) AS SalesTotal
GROUP BY SalesRep
HAVING SalesTotal > 10000
```

You could further restrict this analytics sub-query to only the sales in the Western region:

```
RETURN Reps AS
SELECT SUM(Amount) AS SalesTotal
WHERE Region = 'West'
GROUP BY SalesRep
HAVING SalesTotal > 10000
```

Ensure that you specify a valid attribute to the WHERE filter (or to any other filter clause). Otherwise, the Dgraph issues an error indicating that the specified attribute does not exist.

As mentioned above, filters can be specified for each expression. For example, a single query can include two expressions, where one expression computes the total for the entire aggregate, while another expression computes the total for a particular sales representative:

```
RETURN QuarterTotals AS SELECT
  SUM(Amount) AS SalesTotal,
  SUM(Amount) WHERE SalesRep = 'John Smith' AS JohnTotal
GROUP BY Quarter
```

This would give us both the total overall sales and the total sales for John Smith in each quarter.

Temporal Analytics

You can use time, dateTime and duration attribute types for special Analytics operations: `TRUNC` and `EXTRACT`.

- `TRUNC` rounds a dateTime down to a coarser granularity bucket.
- `EXTRACT` extracts a portion of a dateTime, such as the day of the week.

In addition to these special-purpose functions, time and date values support normal arithmetic operations. For example:

- A duration may be added to a time or a dateTime to obtain a new time or dateTime.
- Two times or two dateTimes may be subtracted to obtain a duration.
- Two durations may be added or subtracted to obtain a new duration.

TRUNC

The TRUNC function can be used to round a dateTime value down to a coarser granularity.

For example, this is useful when performing a GROUP BY on dateTime data based on coarser time ranges (such as GROUP BY “Quarter” given dateTime values).

The syntax of the TRUNC function is:

```
<TruncExpr>     ::=  TRUNC(<expr>,<DateTimeUnit>)
<dateTimeUnit>  ::=  SECOND | MINUTE | HOUR |
                     DATE | WEEK | MONTH | QUARTER | YEAR
```

For example, given a dateTime attribute “TimeStamp” with a value representing 10/13/2009 11:35:12.000, the TRUNC operator could be used to compute the following results (represented in pretty-printed form for clarity; actual results would use standard Endeca dateTime format):

```
TRUNC("TimeStamp", SECOND)  = 10/13/2009 11:35:12.000
TRUNC("TimeStamp", MINUTE)  = 10/13/2009 11:35:00.000
TRUNC("TimeStamp", HOUR)    = 10/13/2009 11:00:00.000
TRUNC("TimeStamp", DATE)    = 10/13/2009 00:00:00.000
TRUNC("TimeStamp", WEEK)    = 10/08/2009 00:00:00.000
TRUNC("TimeStamp", MONTH)   = 10/01/2009 00:00:00.000
TRUNC("TimeStamp", QUARTER) = 10/01/2009 00:00:00.000
TRUNC("TimeStamp", YEAR)    = 01/01/2009 00:00:00.000
```

As a simple example of using this functionality, the following query groups transaction records containing TimeStamp and Amount attributes by quarter:

```
RETURN Quarters AS
SELECT SUM(Amount) AS Total,
       TRUNC(TimeStamp, QUARTER) AS Qtr
GROUP BY Qtr
```

EXTRACT

The EXTRACT function extracts a portion of a dateTime, such as the day of the week or month of the year.

This is useful in situations where the data must be filtered or grouped by a slice of its timestamps, for example computing the total sales that occurred on any Monday.

```
<ExtractExpr>   ::=  EXTRACT(<expr>,<DateTimeUnit>)
<DateTimeUnit>  ::=  SECOND | MINUTE | HOUR | DAY_OF_WEEK |
                     DAY_OF_MONTH | DAY_OF_YEAR | DATE | WEEK |
                     MONTH | QUARTER | YEAR
```

For example, given a dateTime attribute “TimeStamp” with a value representing 10/13/2009 11:35:12.000, the EXTRACT operator could be used to compute the following results:

```
EXTRACT("TimeStamp", SECOND)       = 12
EXTRACT("TimeStamp", MINUTE)       = 35
EXTRACT("TimeStamp", HOUR)         = 11
EXTRACT("TimeStamp", DATE)         = 13
EXTRACT("TimeStamp", WEEK)         = 40   /* Zero-indexed */
EXTRACT("TimeStamp", MONTH)        = 10
EXTRACT("TimeStamp", QUARTER)      = 3    /* Zero-indexed */
EXTRACT("TimeStamp", YEAR)         = 2009
EXTRACT("TimeStamp", DAY_OF_WEEK)  = 4    /* Zero-indexed */
EXTRACT("TimeStamp", DAY_OF_MONTH) = 13
EXTRACT("TimeStamp", DAY_OF_YEAR)  = 286  /* Zero-indexed */
```

As a simple example of using this functionality, the following query groups transaction records containing TimeStamp and Amount attributes by quarter, and for each quarter computes the total sales that occurred on a Monday (DAY_OF_WEEK=1):

```
RETURN Quarters AS
SELECT SUM(Amount) AS Total
       TRUNC(TimeStamp, QUARTER) AS Qtr
WHERE EXTRACT(TimeStamp,DAY_OF_WEEK) = 1
GROUP BY Qtr
```

Sample queries

This section presents sample queries for a number of representative use cases.

For the purposes of these examples, we assume that we have sales transaction data with records consisting of the following fields (attributes):

```
{ TransId, ProductType, Amount, Year, Quarter, Region,
  SalesRep, Customer }
```

such as:

```
{ TransId = 1, ProductType = "Widget", Amount = 100.00,
  Year = 2009, Quarter = "09Q1", Region  = "East",
  SalesRep = "J. Smith", Customer = "Customer1" }
```

Top-k

Compute the best 10 SalesReps based on total sales from the first quarter of this year:

```
RETURN BestReps AS
SELECT SUM(Amount) AS Total
WHERE Quarter = '09Q1'
GROUP BY SalesRep
ORDER BY Total DESC
PAGE(0,10)
```

Subset comparison

Compute the percent of sales where ProductType="Widgets", grouped by Quarter and Region. This query combines totals on all elements of a grouping (total sales) with totals on a filtered set of elements (sales for "Widgets" only).

```
RETURN Results AS
SELECT
  (SUM(Amount) WHERE ProductType='Widgets') /
   SUM(Amount) AS PctWidgets
GROUP BY Quarter, Region
```

Nested aggregation

Compute the average number of transactions per sales representative grouped by Quarter and Region.

This query represents a multi-level aggregation. First, transactions must be grouped into sales reps to get per-rep transaction counts. Then these rep counts must be aggregated into averages by quarter and region.

```
DEFINE DealCount AS
SELECT COUNT(TransId) AS NumDeals
GROUP BY SalesRep, Quarter, Region ;

RETURN AvgDeals AS
SELECT AVG(NumDeals) AS AvgDealsPerRep
FROM DealCount
GROUP BY Quarter, Region
```

IN filter used for segmentation (pie chart)

This query shows how the IN filter can be used to populate a pie chart showing sales divided into six segments: one segment for each of the five largest customers, and one segment showing the aggregate sales for all other customers.

The first statement gathers the sales for the top five customers, and the second statement aggregates the sales for all customers not in the top five.

```
RETURN Top5 AS SELECT
SUM(Sale) AS Sales
GROUP BY Customer
ORDER BY Sales DESC
PAGE(0,5);
```

```
RETURN Others AS SELECT
SUM(Sale) AS Sales
WHERE NOT [Customer] IN Top5
GROUP
```

Inter-statement references example

For each quarter, compute the percentage of sales due to each product type.

This query requires inter-statement use of information. To compute the sales of a given product as a percentage of total sales for a given quarter, the quarterly totals must be computed and stored so that calculations for quarter/product pairs can retrieve the corresponding quarterly total.

```
DEFINE QuarterTotals AS
SELECT SUM(Amount) AS Total
GROUP BY Quarter ;

RETURN ProductPcts AS
SELECT
  100 * SUM(Amount) / QuarterTotals[Quarter].Total AS PctTotal
GROUP BY Quarter, ProductType
```

Syntax reference

The examples and discussion of the query syntax provided in previous sections give an overview of the language and its intended use. This section is a full reference for the query syntax.

Syntax (BNF)

The basic structure of a query is an ordered list of statements. The result of a query is a set of named record sets (one per statement).

```
<Query>        ::=  <Statements>
<Statements>   ::=  <Statement> [; <Statements>]
```

A statement defines a record set by specifying:

1. A name for the resulting record set.
2. What attributes (or derived attributes) its records should contain (SELECTs).
3. The input record set (FROM).
4. A filter to apply to that input (WHERE).
5. A way to group input records (a mapping from input records to output records, GROUP BY).
6. A filter to apply to output records (HAVING).
7. A way to order the output records (ORDER BY).
8. A way to page through the output records (return only a subset of the output, PAGE).

```
<Statement>    ::=  (DEFINE | RETURN) <Key> AS <Select>
                       [<From>]
                       [<Where>]
                       [<GroupBy>]
                       [<Having>]
                       [<OrderBy>]
                       [<Page>]
```

A statement includes a list of assignments that compute the derived attributes populated into the resulting records:

```
<Select>       ::=  SELECT <Assigns>
<Assigns>      ::=  <Assign> [, <Assigns>]
<Assign>       ::=  <Expr> AS <Key>
```

A statement's input record set is either:

- The result of a previous statement
- The navigation state's records (NavStateRecords)
- The Dgraph's base records (AllBaseRecords)

The omission of the FROM clause implies FROM NavStateRecords.

```
<From>         ::=  FROM <Key>
               ::=  FROM NavStateRecords
               ::=  FROM AllBaseRecords
```

As in SQL, an optional WHERE clause represents a pre-filter on inbound records, and an optional HAVING clause represents a post-filter on the output records:

```
<Where>        ::=  WHERE <Filter>
<Having>       ::=  HAVING <Filter>
```

Input records need to be mapped to output records for the purposes of populating derived values in the output records. The input records provide the values used in expressions and Where filters.

Ways of mapping inputs to outputs

There are three ways to group (or aggregate) input records together.

- If a GROUP BY list of attributes is given, then all records containing identical values for those attributes are grouped (or bucketed) together.
- If only GROUP is specified, all input records are grouped into a single output record.
- If no GROUP or GROUP BY is specified, then no grouping occurs. The number of output records is the same as the number of input records.

```

<GroupBy>      ::=  GROUP
               ::=  GROUP BY <Groupings>
<Groupings>    ::=  <Grouping> [, <Groupings>]
<Grouping>     ::=  <Key>
               ::=  <Key>:<int>
```

Note: Colon operator requests grouping by attribute values at a specified depth.

If an input record contains multiple values corresponding to the same grouping key, the default behavior is that the record maps to all possible output records.

An optional ORDER BY clause can be used to order the records in the resulting record set. An element in the ORDER BY clause specifies an attribute to sort (or break ties) by and in what direction: (growing values = ASCending; shrinking values = DESCending). The default order is ascending.

```
<OrderBy>      ::=  ORDER BY <OrderList>
<OrderList>    ::=  <Order> [, <OrderList>]
<Order>        ::=  <Key> [ASC | DESC]
```

The PAGE(i,n) operator allows the returned record set to be limited to n records starting with the record at index i. The 'Page' clause can be used with or without a preceding ORDER BY clause. If the ORDER BY clause is omitted, records are returned in arbitrary but consistent order.

```
<Page>         ::=  PAGE(<int>,<int>)
```

Expressions define the derived values that can be computed for result records:

```
<Expr>         ::=  <AggrExpr>
               ::=  <Expr>[+|-|*|/]<Expr>
               ::=  UnaryFunc(<Expr>)
               ::=  BinaryFunc(<Expr>, <Expr>)
               ::=  COALESCE(<Expr>, <Expr>,...)
<AggrExpr>     ::=  <SimpleExpr>
               ::=  <AggrFunc>(<SimpleExpr>) [<Where>]
<SimpleExpr>   ::=  <Key>
               ::=  <Literal>
               ::=  <SimpleExpr> [+|-|*|/] <SimpleExpr>
               ::=  <UnaryFunc>(<SimpleExpr>)
               ::=  <BinaryFunc>(<SimpleExpr>, <SimpleExpr>)
               ::=  <TimeDateFunc>(<SimpleExpr>,<DateTimeUnit>)
               ::=  <LookupExpr>
<AggrFunc>     ::=  ARB | AVG | COUNT | COUNTDISTINCT | MAX |
                    MEDIAN | MIN | STDDEV | SUM | VARIANCE
<UnaryFunc>    ::=  ABS | CEIL | COS | EXP | FLOOR | LN |
                    ROUND | SIGN | SIN | SQRT |
                    TAN | TO_DURATION | TRUNC
<BinaryFunc>   ::=  DIVIDE | LOG | MINUS | MOD | MULTIPLY |
                    PLUS | POWER | ROUND | TRUNC
<TimeDateFunc> ::=  EXTRACT | TRUNC
<DateTimeUnit> ::=  SECOND | MINUTE | HOUR | DAY_OF_MONTH |
                    DAY_OF_WEEK | DAY_OF_YEAR | DATE | WEEK |
                    MONTH | QUARTER | YEAR
```

Optionally, a WHERE clause may be specified after an aggregation function. As in SQL, the Analytics language WHERE clause expresses record filtering. But in addition to per-statement WHERE clauses, the Analytics language allows WHERE clauses to be specified at the expression level, allowing filtering of aggregate members for the computation of derived values on member subsets. SQL requires join operations to achieve a similar effect, with additional generality, but at the cost of efficiency and overall query execution complexity.

Lookup expressions provide the ability to refer to values in record sets that have been previously computed (possibly different from the current and FROM record set). Lookups can only refer to record sets that were grouped (non-empty GROUP BY clause) and the LookupList must match the GROUP BY fields of the lookup record set.

```

<LookupExpr>   ::=  <Key>[<LookupList>].<Key>
<LookupList>   ::=  <empty>
               ::=  <SimpleExpr> [,<LookupList>]
```

Note: For a specific example of a lookup expression in action, see the topic "Inter-statement references".

Filters provide basic comparison, range, membership and Boolean filtering capabilities, for use in WHERE and HAVING clauses.

```
<Filter>
               ::=  <Key> <Compare> <Literal>
               ::=  <Key> IS [NOT] NULL
               ::=  <Filter> AND <Filter>
               ::=  <Filter> OR <Filter> | NOT <Filter>
               ::=  [<KeyList>] IN <Key>
<Compare>      ::=  = | <> | < | > | <= | >=
<KeyList>      ::=  <Key> [, <KeyList>]
```

The IN filter can be used to filter data based on membership in another statement. It can only refer to previously computed record sets based on a non-empty GROUP BY. The number and type of keys in the KeyList must match the number and type of keys used in the statement referenced by the IN clause.

Characters

All Unicode characters are accepted.

```
<Literal>      ::=  <StringLiteral> |




  <NumericLiteral>
```

String literals must be surrounded by single-quotes. Embedded single-quotes and backslashes must be escaped by backslashes.

Numeric literals can be integers or floating point numbers. However, they do not support exponential notation, and they cannot have trailing f|F|d|D to indicate float or double.

Some examples of literals:

```
34   .34   'jim'   'àlêx\'s house'
```

Identifiers can either be quoted (using double-quote characters) or unquoted.

```
<Key>          ::=  <Identifier>
```

Unquoted identifiers can contain only letters, digits, and underscores, and cannot start with a digit.

Quoted identifiers can contain any character, but double-quotes and backslashes must be escaped using a backslash.

To make some text be interpreted as an identifier instead of as a keyword, simply place it within quotation marks. For example if you have an attribute named WHERE or GROUP, you can reference it as “WHERE” or “GROUP.” Omitting the quotation marks would lead to a syntax error.

Some example identifiers:

```
àlêx4
"4th street"
"some ,*#\" funny \\;% characters"
```

Handling of special data values

This section discusses how the Analytics language defines special data values, such as null and NaN (Not a Number), and describes how Analytics statements perform matches on records with hierarchical attributes, or records that have multiple values from an attribute assigned to them.

Handling of null results

This topic discusses how Analytics handles null results.

If an attribute value is missing for a record, this guide refers to the attribute as being null. For example, if a record does not contain an assignment for a Price attribute, Analytics defines its Price value as null.

The following statements describe the Analytics behavior:

Type of operation	How Analytics handles null values
Arithmetic operations and non-aggregating functions	The value of any operation on a null value is also defined as null. For example, if a record has a value of 4 for Quantity and a null value for Price, then the value of `Quantity + Price` is considered to be null.
Aggregating functions	Analytics ignores records with null values. For example, if there are 10 records, and 2 of them have a null value for a Price attribute, all aggregating operations ignore the 2 records, and instead compute their value using only the other 8 records. If all 10 records have a null Price, then most aggregations such as `SUM(Price)` also result in null values. The exceptions are `COUNT` and `COUNTDISTINCT`, which return zero if all the records have a null value. (That is, the output of `COUNT` or `COUNTDISTINCT` is never null.)
Grouping expressions	Analytics ignores any record that has a null value in any of the group keys, and does not consider the record to be present in any group.
Filters	Any comparison involving null values is false, that is it does not match the record with the null value. For example, if record A has price 5, and record B has no price value, then: • `WHERE price = 5` matches A • `WHERE NOT(price = 5)` matches B • `WHERE price <> 5` matches neither A nor B • `WHERE NOT(price <> 5)` matches both A and B • `WHERE price = 99` matches neither A nor B • `WHERE NOT(price = 99)` matches both A and B • `WHERE price <> 99` matches A • `WHERE NOT(price <> 99)` matches B
Sorting	For any sort order specified, Analytics returns normal results first, followed by records with a NaN value, followed by records with a null value.

Handling of NaN, inf and -inf results

This topic discusses how Analytics handles results with these values.

Operations in the Analytics language adhere to the conventions for NaN, `inf` and `-inf` defined by the IEEE 7540 2008 standard for handling floating point numbers.

In cases when it has to perform operations involving floating point numbers, or operations involving division by zero or null values, Analytics expressions can return NaN, `inf`, and `-inf` results.

For example, NaN, `inf` and `-inf` values could arise in your Analytics calculations in the following instances:

- A zero divided by zero results in NaN
- A positive number divided by zero results in `inf`
- A negative number divided by zero results in `-inf`

For most operations, Analytics treats NaN, `inf` or `-inf` values as any other value; this topic does not mention those cases. For some operations, however, you may find it useful to know how Analytics defines these special values.

These special cases include:

Type of operation	How Analytics handles `NaN`, `inf` and `-inf`
Arithmetic operations	Arithmetic operations with `NaN` values result in `NaN` values.
Filters	`NaN` values do not pass filters. Any comparison involving a `NaN` value is false.
Sorting	`NaN` is treated as "less than" `-inf` (`NaN < -inf`). For any sort order specified, Analytics first returns normal records, followed by records with a `NaN` value, followed by records with a `null` value.

Handling of records with multiple values

This topic describes how Analytics expressions handle cases where multiple values are assigned to a record.

Typically, any record can have zero, one or more values from a particular attribute assigned to it.

For example, for a record tagged with both `Blue` and `Green`, these Analytics expressions behave as follows:

- `WHERE Color = Blue` matches the record
- `WHERE Color <> Blue` matches the record
- `WHERE NOT(Color = Blue)` does not match the record
- `WHERE NOT(Color <> Blue)` does not match the record

Chapter 11

Personalization Components

Personalization components allow end users to customize their Latitude Studio application.

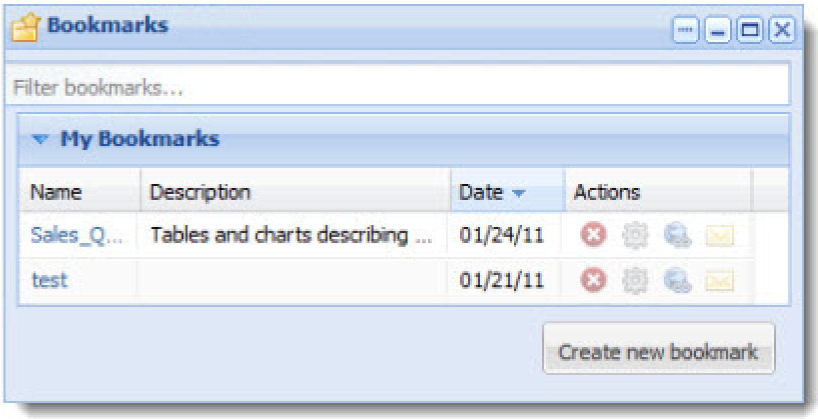
Bookmarks

The **Bookmarks** component allows end users to save the current page configuration.

About the Bookmarks component

Bookmarks is a personalization component that allows end users to save a given navigation and component state in order to be able to share it or return to it at a later time.

Once a bookmark has been created, end users can click it to return to that state. Bookmarks are listed in the order they were created, along with an accompanying description and date.



Name	Description	Date	Actions
Sales_Q...	Tables and charts describing ...	01/24/11	
test		01/21/11	

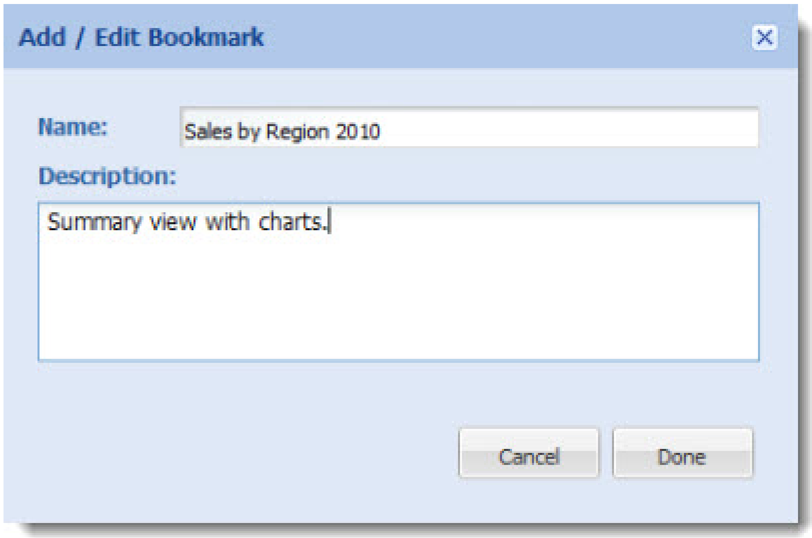
Note: The **Bookmarks** component does not require a backing data source. It stores and retrieves data from the underlying Liferay database.

Using Bookmarks

The **Bookmarks** component allows the end user to create, edit, delete, and share 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**.

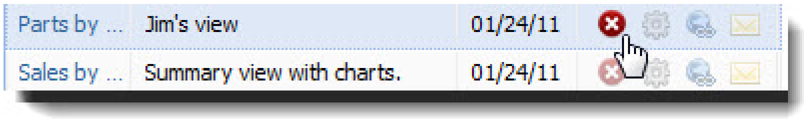


Name: Sales by Region 2010

Description: Summary view with charts.

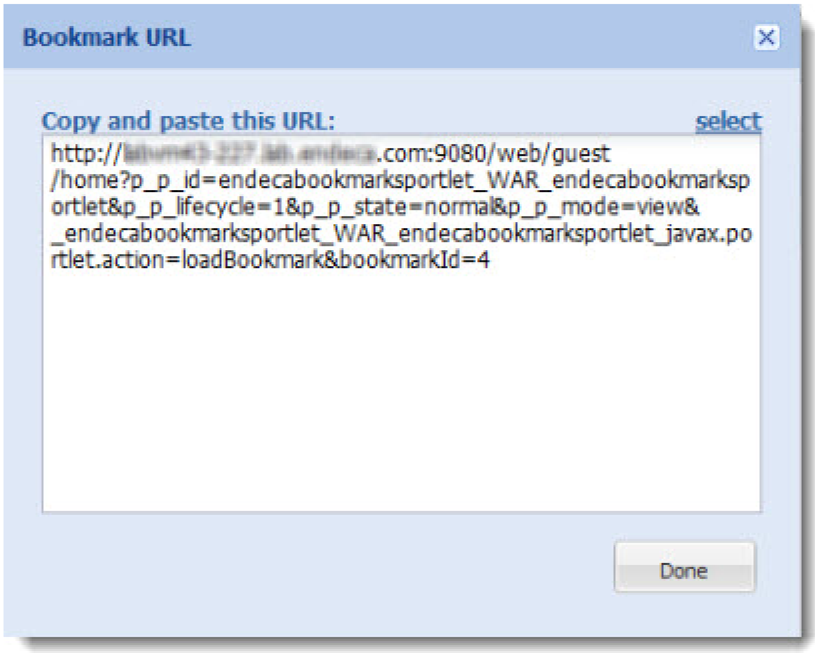
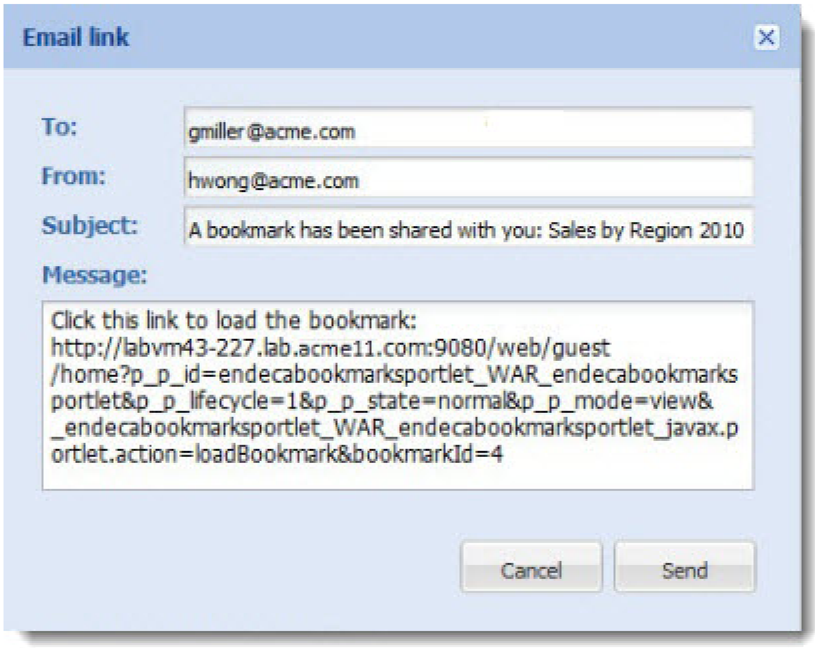
3. Click **Done**.

When a bookmark is created, the following icons appear next to it:



Parts by ...	Jim's view	01/24/11	✖ ⚙ 🔗 ✉
Sales by ...	Summary view with charts.	01/24/11	✖ ⚙ 🔗 ✉

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:

	 http://[redacted].com:9080/web/guest/home?p_p_id=endecabookmarksportlet_WAR_endecabookmarksportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&_endecabookmarksportlet_WAR_endecabookmarksportlet_javax.portlet.action=loadBookmark&bookmarkId=4
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:  To: gmiller@acme.com From: hwong@acme.com Subject: A bookmark has been shared with you: Sales by Region 2010 Message: Click this link to load the bookmark: http://labvm43-227.lab.acme11.com:9080/web/guest/home?p_p_id=endecabookmarksportlet_WAR_endecabookmarksportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&_endecabookmarksportlet_WAR_endecabookmarksportlet_javax.portlet.action=loadBookmark&bookmarkId=4 After filling in the recipient information, to send the URL, click **Send**. **Note:** In order to use the email feature, the Latitude Studio administrator must set up the email server, as described in the *Latitude Administrator's Guide*.

Bookmark data saved for each component

For each component, the **Bookmarks** component saves the following parts of the component state.

Administrative components are not are not included here. There is no bookmark data for administrative components.

Component	Persisted States	Comments
Alerts	Expanded/collapsed view of alert groups	For the **Alerts** component, the bookmark saves whether the list of alert groups is expanded. If the alert groups are displayed, then for each alert group, the bookmark also saves whether the list of alerts is expanded.
Bookmark	None	Nothing about the **Bookmarks** component itself is stateful.
Breadcrumbs	Expanded multi-select managed attributes	When multi-select managed attribute values are present in the **Breadcrumbs** component, they may be grouped into a collapse/expand control (depending on the number of values and the threshold set in the component's preferences). The state of each multi-select attribute's collapse/expand control is stateful and will be stored in a bookmark. For example, if you select Flavors of "Apple", "Berry" and "Cherry" in the sample wine data set, the collapse/expand control appears and is collapsed by default. If you expand it and then create a bookmark, the control will be expanded when that bookmark is loaded.
Chart	Metric, x-axis, and cross tab drop-down lists	When configuring a chart, the power user can define multiple metrics, x-axis, and cross tab groupings. When the chart is configured in this way, drop-down lists are provided for each. The user's selection for the **Metric**, **Group By (X-Axis)**, and **Cross Tab** drop-down lists are persisted with a bookmark.
Compare	**Attributes:** persists the order of attributes and the expand and collapse state of attribute groups. **Records:** persists the order of records and their highlighted state	
Cross Tab	None	
Data Explorer	None	

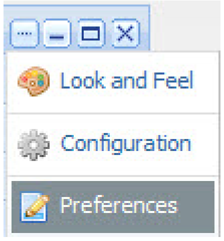
Component	Persisted States	Comments
Guided Navigation	Expanded attributes and collapsed attribute groups	Any managed attribute that is expanded so that its refinements are exposed is persisted in a bookmark, so that it will still be expanded when the bookmark is loaded. Attribute groups are, by default, expanded. If you collapse an attribute group, this is persisted in a bookmark, so that it will be collapsed when the bookmark is loaded.
Metrics Bar	None	
Range Filters	None	
Record Details	None	
Results List	None	
Results Table	Sort state and number of records per page	If you have sorted on a column and then create a bookmark, the sort will be applied when the bookmark is loaded. If you have selected a certain number of records per page and then create a bookmark, the results table will display that number of records per page when you load the bookmark.
Search Box	None	
Tabbed Component Container	The tab in focus	If you create a bookmark when on a tab other than the first one, that tab will be reloaded properly when the bookmark is loaded.
Tag Cloud	None	

Configuring a Bookmarks component

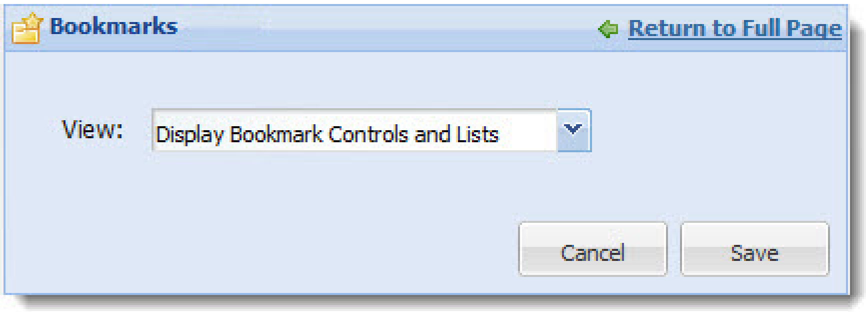
For a **Bookmarks** component, power users select the display view, which controls whether end users can create bookmarks and view the list of bookmarks.

To configure a **Bookmarks** component:

1. To display the edit view for the component, click its **....** button. In the drop-down menu, click **Preferences**.



2. From the **View** drop-down list, select the display mode.



View: Display Bookmark Controls and Lists

The options are:

Display Bookmark Controls only	End users can create new bookmarks, but cannot see the list of saved bookmarks.
Display Bookmark Lists only	End users can display the list of existing bookmarks, but cannot create a new bookmark.
Display Bookmark Controls and Lists	End users can both create new bookmarks and display the list of existing bookmarks. This is the default.

3. To save your changes, click **Save**.
4. To exit the edit view, click **Return to Full Page**.

Chapter 12

Results Components

These components provide a detailed view of records for the current refinement.

Data Explorer

The **Data Explorer** component displays a list of records.

About the Data Explorer component

The **Data Explorer** component displays the list of records for the current refinement. Each record contains a complete set of attribute-value pairs, grouped by data type.

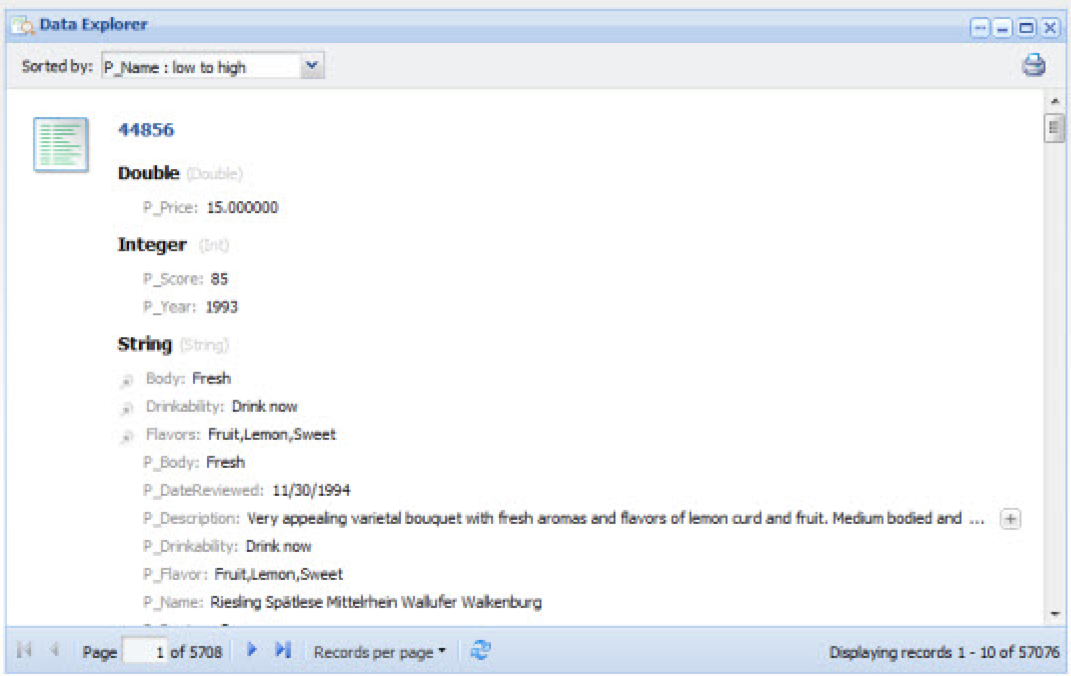
The **Data Explorer** component is designed to be a useful tool for power users. For example, they may use the component to verify newly loaded data.

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 are grouped by data type.



Data Explorer

Sorted by: P_Name : low to high

44856

Double (Double)

P_Price: 15.000000

Integer (Int)

P_Score: 85

P_Year: 1993

String (String)

Body: Fresh

Drinkability: Drink now

Flavors: Fruit,Lemon,Sweet

P_Body: Fresh

P_DateReviewed: 11/30/1994

P_Description: Very appealing varietal bouquet with fresh aromas and flavors of lemon curd and fruit. Medium bodied and ...

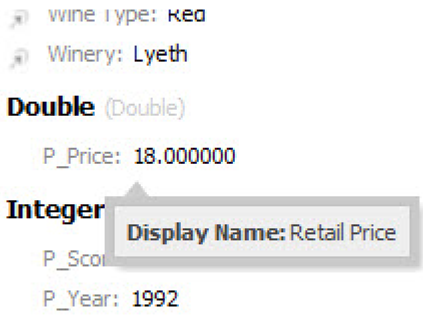
P_Drinkability: Drink now

P_Flavor: Fruit,Lemon,Sweet

P_Name: Riesling Spätlese Mittelrhein Wallufer Walkenburg

In the list, the managed attributes are indicated with an icon in front of the attribute name.

The **Data Explorer** component shows the actual attribute name. To see the display name for an attribute, hover the mouse over the attribute name.



Wine Type: Red

Winery: Lyeth

Double (Double)

P_Price: 18.000000

Integer

Display Name: Retail Price

P_Scor

P_Year: 1992

Records included in the Data Explorer component

The **Data Explorer** component reflects the current refinement state of the data.

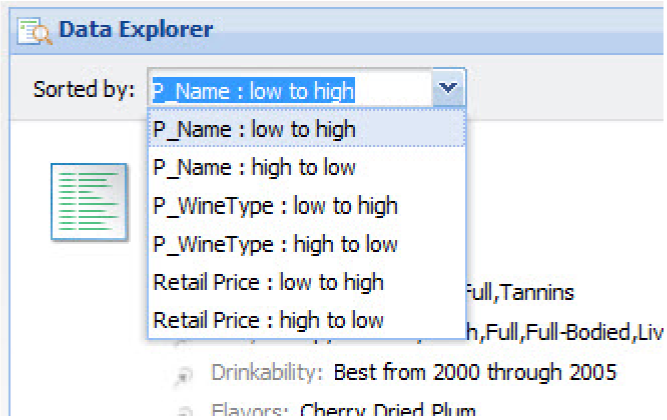
So for example, if you have used a **Guided Navigation** component or a search to refine the data, the **Data Explorer** component only displays the matching records.

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.



Sorted by: P_Name : low to high

To sort the list, select a sort option.

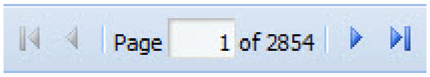
When users use a search to refine the data, the list automatically is sorted by Search Relevance. Users can then select a different sort option from the drop-down list.

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.



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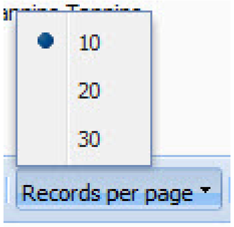
Users can use these tools to:

- 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, end users 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.

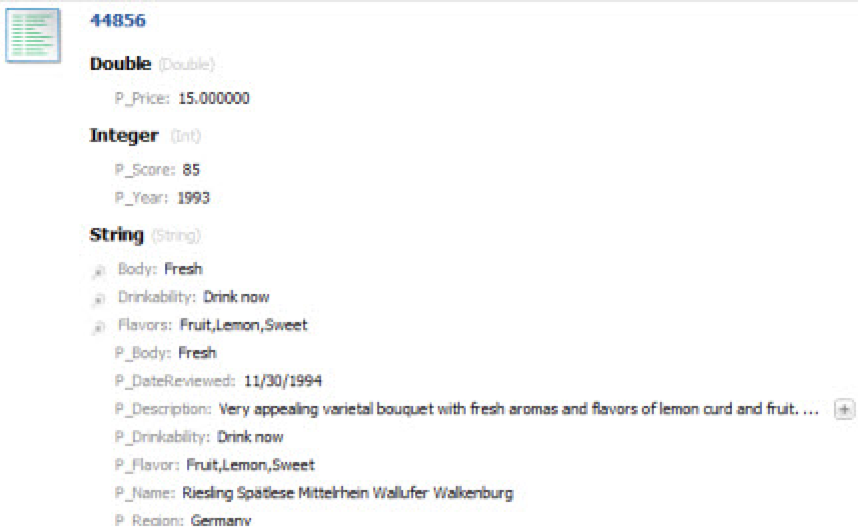


To change the number of records per page, select the number.

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 list item.



44856

Double (Double)

P_Price: 15.000000

Integer (Int)

P_Score: 85

P_Year: 1993

String (String)

Body: Fresh

Drinkability: Drink now

Flavors: Fruit,Lemon,Sweet

P_Body: Fresh

P_DateReviewed: 11/30/1994

P_Description: Very appealing varietal bouquet with fresh aromas and flavors of lemon curd and fruit. ...

P_Drinkability: Drink now

P_Flavor: Fruit,Lemon,Sweet

P_Name: Riesling Spätlese Mittelrhein Wallufer Walkenburg

P_Region: Germany

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.

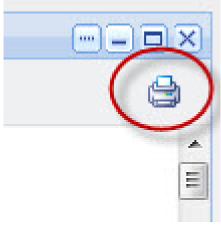
Printing the Data Explorer list

Users can print the current content of a **Data Explorer** component.

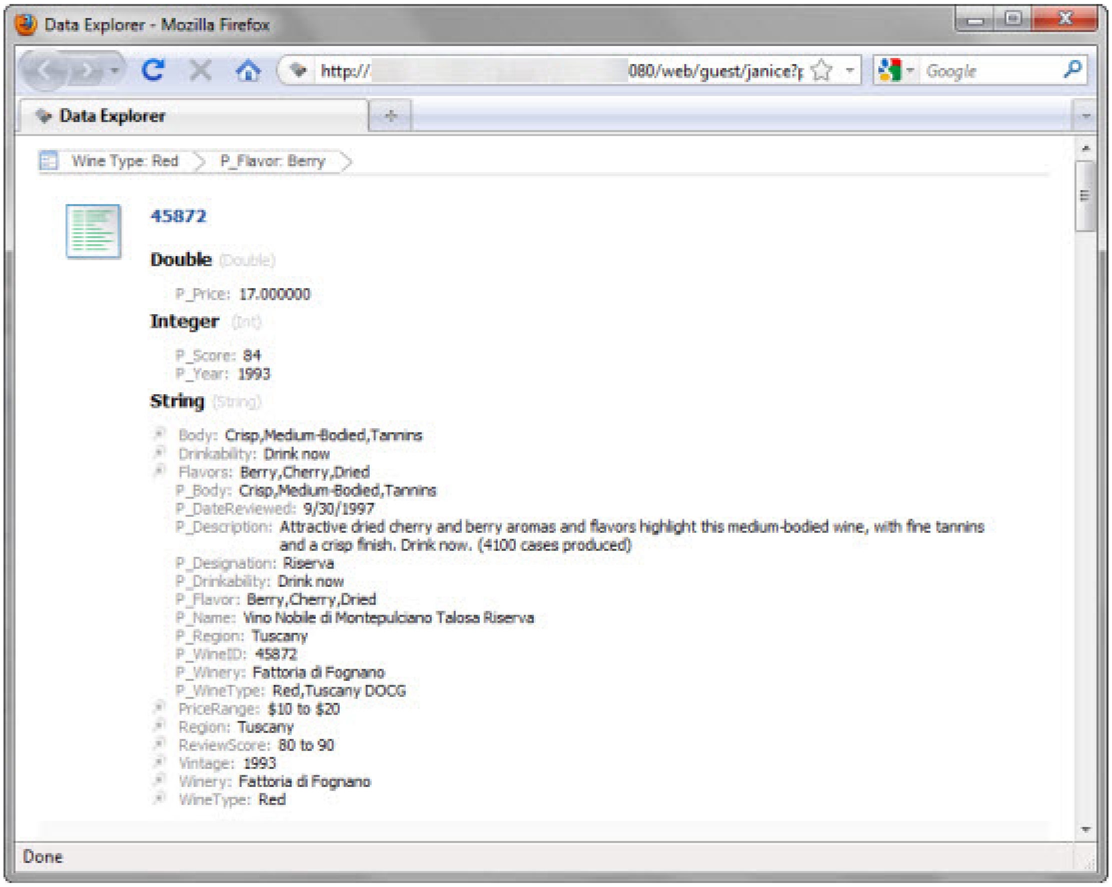
The print option only prints the records for the current refinement.

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.


Data Explorer - Mozilla Firefox
http:// 080/web/guest/janice?
Google
Data Explorer
Wine Type: Red
P_Flavor: Berry
Done

45872

Double (Double)

P_Price: 17.000000

Integer (Int)

P_Score: 84
P_Year: 1993

String (String)

Body: Crisp,Medium-Bodied,Tannins
Drinkability: Drink now
Flavors: Berry,Cherry,Dried
P_Body: Crisp,Medium-Bodied,Tannins
P_DateReviewed: 9/30/1997
P_Description: Attractive dried cherry and berry aromas and flavors highlight this medium-bodied wine, with fine tannins and a crisp finish. Drink now. (4100 cases produced)
P_Designation: Riserva
P_Drinkability: Drink now
P_Flavor: Berry,Cherry,Dried
P_Name: Vino Nobile di Montepulciano Talosa Riserva
P_Region: Tuscany
P_WineID: 45872
P_Winery: Fattoria di Fognano
P_WineType: Red,Tuscany DOCG
PriceRange: $10 to $20
Region: Tuscany
ReviewScore: 80 to 90
Vintage: 1993
Winery: Fattoria di Fognano
WineType: Red

The print dialog box also is displayed.

2. Select the printing options, and then complete the printing process.

Adding a Data Explorer component to a page

On the **Add Component** list, the **Data Explorer** component is listed under the **Latitude** heading.

When the component is first added, it displays the records for the default data source.

Configuring a Data Explorer component

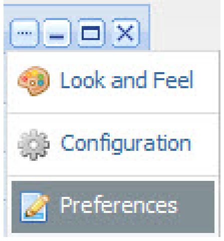
For a **Data Explorer**component, power users determine whether users can navigate through and change the sort order of the records in the list.

Displaying the edit view for the Data Explorer component

Power users use the edit view to configure the **Data Explorer** component.

To display the edit view for a **Data Explorer** component:

1. Click the **...** icon for the component.
2. From the context menu, select **Preferences**.

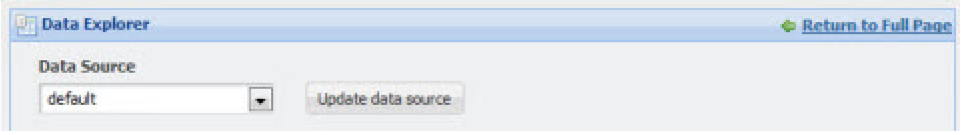


Selecting the data source for the Data Explorer component

The **Data Explorer** component requires a data source.

To select the data source:

1. From the **Data Source** drop-down list, select the data source to use.



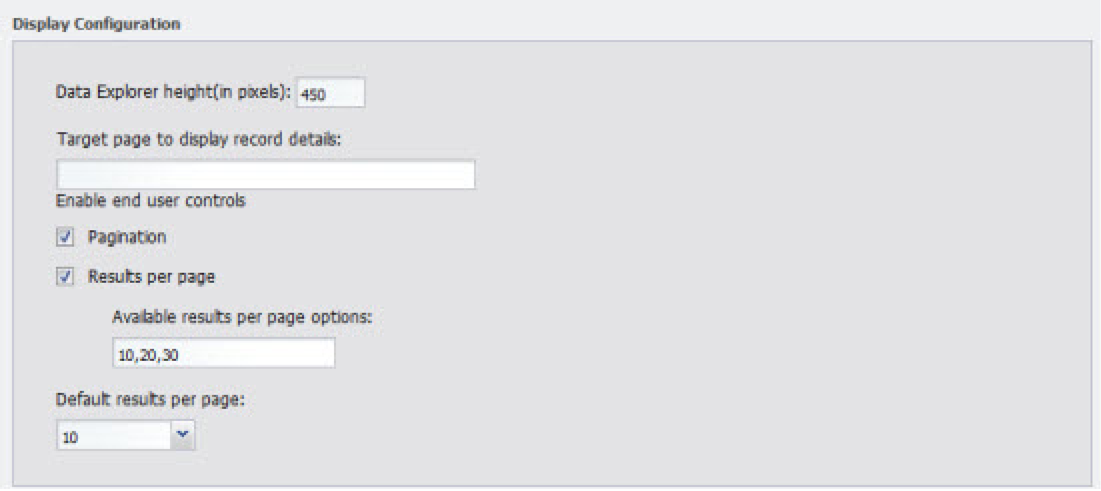
Data Source: default

2. Click the **Update data source** button.

   The **Available Attributes** list is updated to reflect the selected data source.

Configuring the Data Explorer pagination options

From the edit view of a **Data Explorer** component, power users can configure whether to enable pagination, and if pagination is enabled, whether to allow users to select the number of results per page.



Display Configuration

Data Explorer height(in pixels): 450

Target page to display record details:

Enable end user controls

☑ Pagination

☑ Results per page

Available results per page options: 10,20,30

Default results per page: 10

Under **Display Configuration**, to configure the pagination and navigation options for a **Data Explorer** component:

1. To specify a height for the component, in the **Data Explorer height (in pixels)** field, type the height value in pixels.

2. 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.

3. 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.

4. 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.

5. 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.

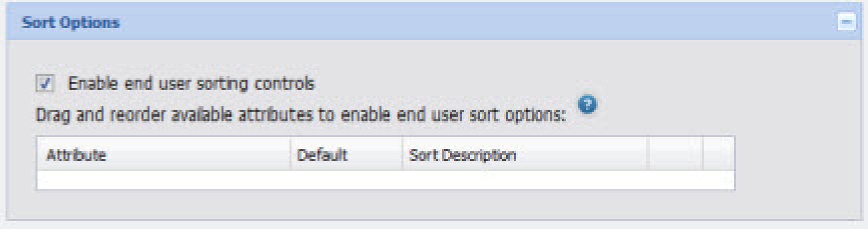
6. If the **Results per page** checkbox is not checked, then in the **Default results per page** field, type the number of records to display per page.

Configuring the sorting options for a 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**:



Sort Options

☑ Enable end user sorting controls

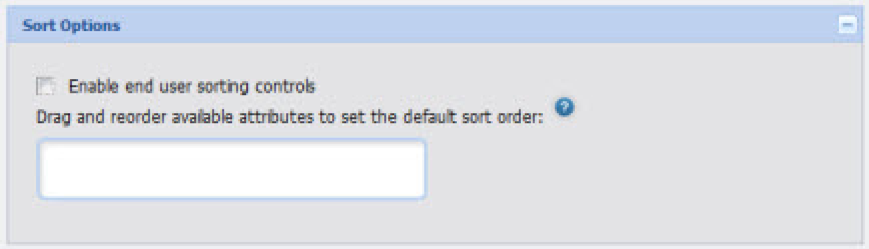
Drag and reorder available attributes to enable end user sort options:

Attribute	Default	Sort Description

- 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.



Sort Options

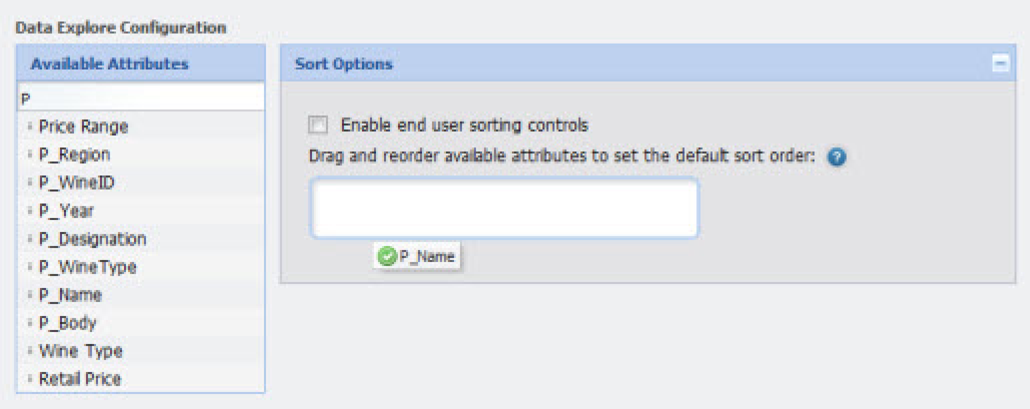
□ Enable end user sorting controls

Drag and reorder available attributes to set the default sort order:

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.

When the green check mark is displayed, you can release the mouse to drop the attribute.



Data Explore Configuration

Available Attributes

P

- Price Range
- P_Region
- P_WineID
- P_Year
- P_Designation
- P_WineType
- P_Name
- P_Body
- Wine Type
- Retail Price

Sort Options

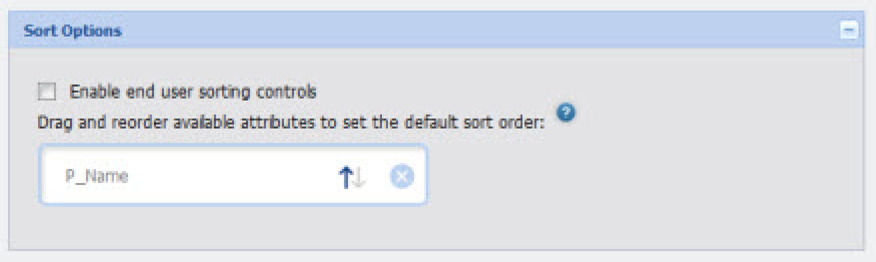
□ Enable end user sorting controls

Drag and reorder available attributes to set the default sort order:

✓ P_Name

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.



Sort Options

□ Enable end user sorting controls

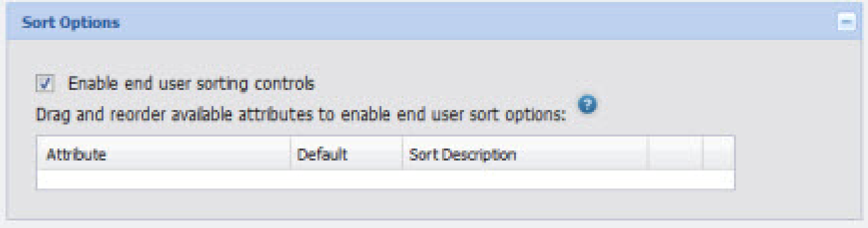
Drag and reorder available attributes to set the default sort order:

P_Name ↑↓ ⊗

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.

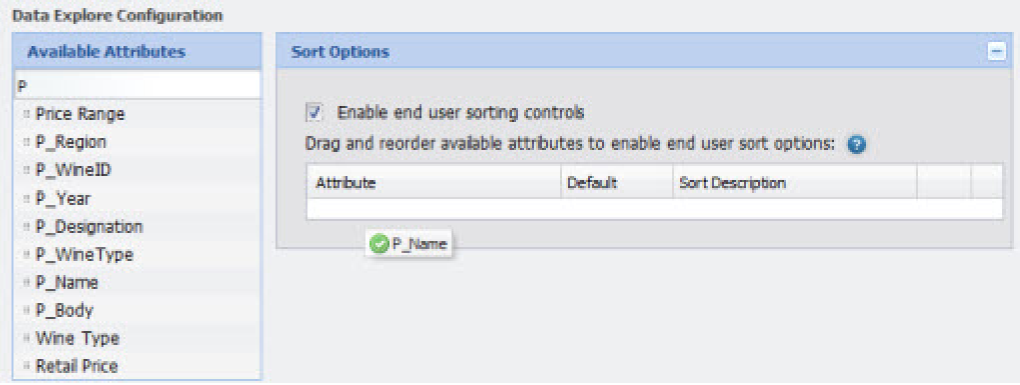
3. If the **Sorting** checkbox is checked, then the **Sort Options** section is updated to allow you to provide a list of attributes that users can use to sort the list.


Sort Options
☑ Enable end user sorting controls
Drag and reorder available attributes to enable end user sort options:
Attribute
Default
Sort Description

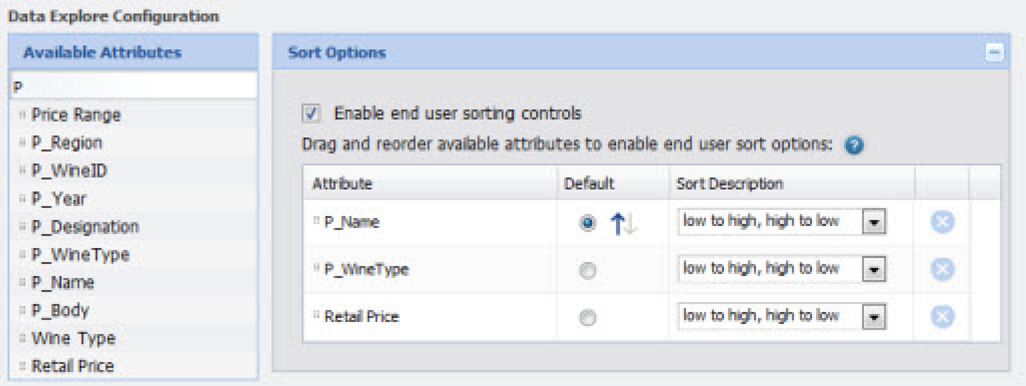
To add an attribute, drag the attribute from the **Available Attributes** to the **Sort Options** table.

In the **Available Attributes** list, you can use the filter field to find the attribute you want to use.

When the green check mark icon is displayed, you can release the mouse to drop the attribute.



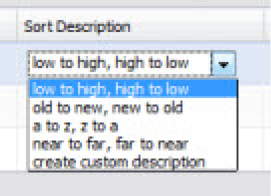
4. To determine the order of the attributes in the **Sorted by** drop-down list, drag each row up or down in the list.


Data Explore Configuration
Available Attributes
P
Price Range
P_Region
P_WineID
P_Year
P_Designation
P_WineType
P_Name
P_Body
Wine Type
Retail Price
Sort Options
☑ Enable end user sorting controls
Drag and reorder available attributes to enable end user sort options:

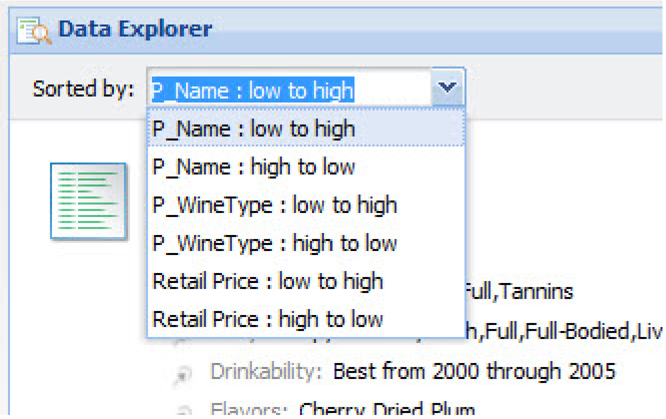
Attribute	Default	Sort Description
P_Name	● ↑↓	low to high, high to low
P_WineType	○	low to high, high to low
Retail Price	○	low to high, high to low

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.

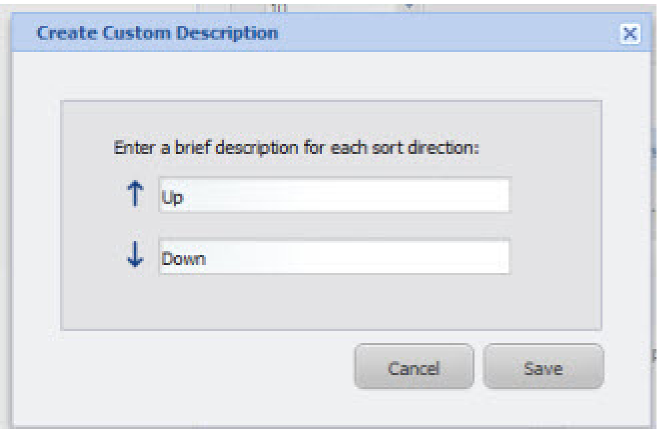
6. From the **Sort Description** drop-down list, select the text that displays next to the attribute in the **Sorted by** drop-down list.



The **Sorted by** list includes one entry for sorting in ascending order, and one for sorting in descending order.


Data Explorer
Sorted by: P_Name : low to high
P_Name : low to high
P_Name : high to low
P_WineType : low to high
P_WineType : high to low
Retail Price : low to high
Retail Price : high to low
Full,Tannins
h,Full,Full-Bodied,Liv
Drinkability: Best from 2000 through 2005
Flavors: Cherry Dried Plum

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:


Create Custom Description
Enter a brief description for each sort direction:
↑ Up
↓ Down
Cancel
Save

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**.

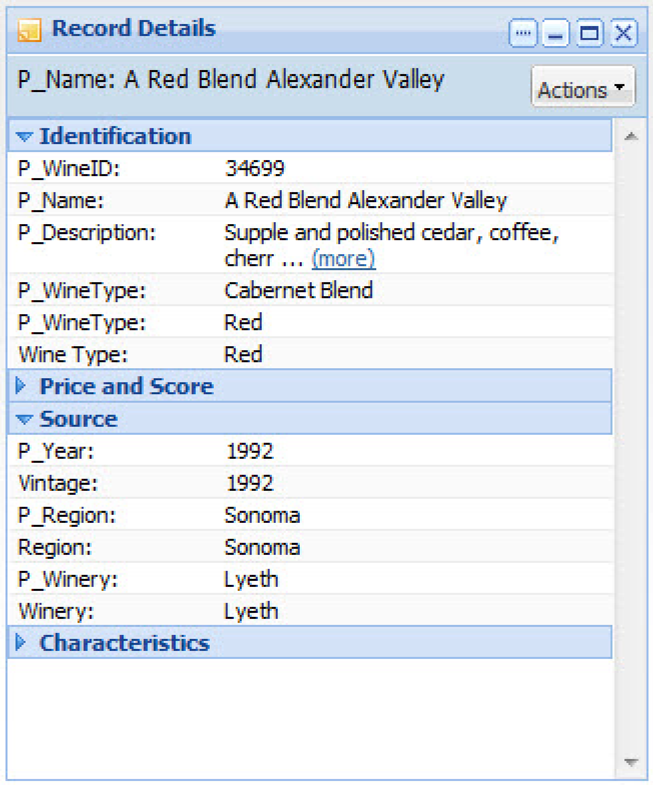
Record Details

The **Record Details** component contains the attribute values for a selected record.

About the Record Details component

The **Record Details** component displays a list of attribute values for a record selected from the **Results Table**, **Compare**, **Results List**, or **Data Explorer** component.

The power user determines the attribute groups to include, and the order in which to display the groups and the attributes within each group.



P_Name: A Red Blend Alexander Valley

Identification

P_WineID:	34699
P_Name:	A Red Blend Alexander Valley
P_Description:	Supple and polished cedar, coffee, cherr ... (more)
P_WineType:	Cabernet Blend
P_WineType:	Red
Wine Type:	Red

Price and Score

Source

P_Year:	1992
Vintage:	1992
P_Region:	Sonoma
Region:	Sonoma
P_Winery:	Lyeth
Winery:	Lyeth

Characteristics

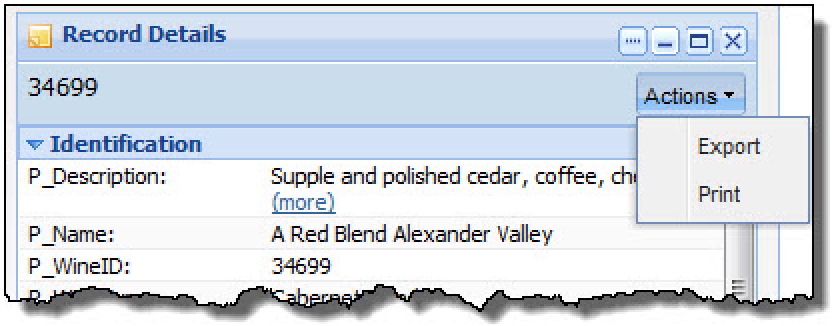
The **Record Details** component can only be used with a **Results Table**, **Compare**, **Results List**, or **Data Explorer** component. The components must have the same data source.

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.
- Print the record details



Configuring a Record Details component

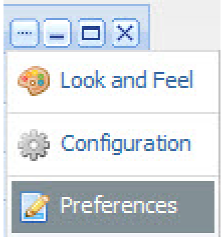
For a **Record Details** component, power users can configure the data source, the available actions, and the list of attribute groups.

Displaying the edit view for the Record Details component

You configure the **Record Details** component from its edit view.

To display the edit view:

1. On the **Record Details** component, click the **....** button.
2. In the drop-down menu, click **Preferences**.



Selecting the data source for the Record Details component

The **Record Details** component requires a backing 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**.

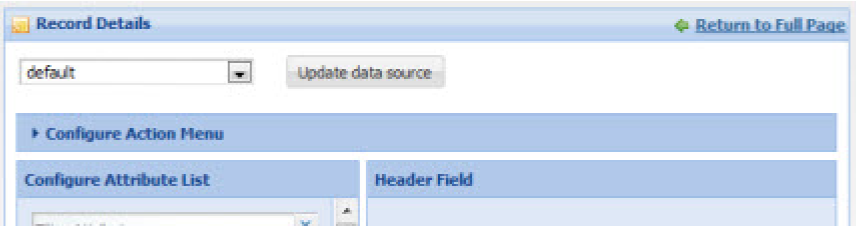
Configuring the available actions for a Record Details component

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:

Export	Allows end users to export the record details to a spreadsheet.
Print	Allows end users to print the record details.

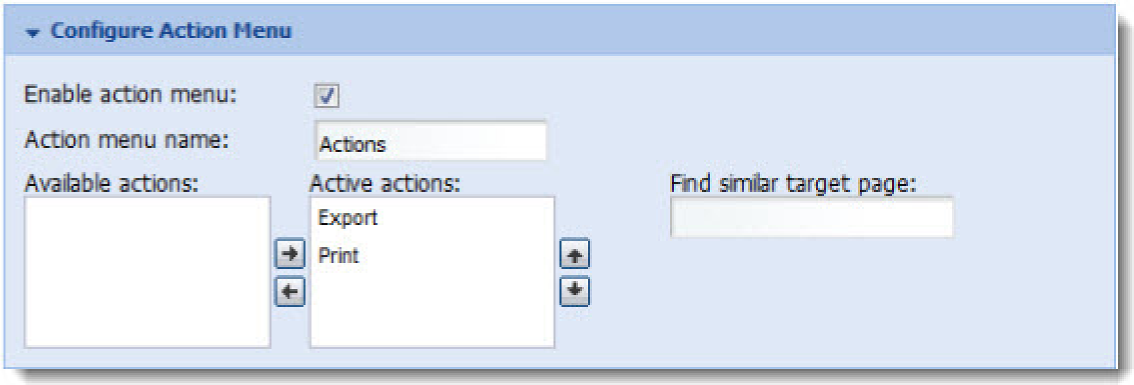
On the edit view of the **Record Details** component, you use the **Configure Action Menu** section to configure the **Actions** menu. By default, the section is collapsed, with only the heading displayed.



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.



Enable action menu: ☑

Action menu name: Actions

Available actions:

Active actions:
Export
Print

Find similar target page:

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. If you enabled the **Find Similar** option, then in the **Find Similar** target page field, type the name of the page where the **Find Similar** component is located.

   If you do not provide a page name, then the component is assumed to be on the current page.

   If the **Find Similar** component is not on the specified page, then the **Find Similar** option will not work.

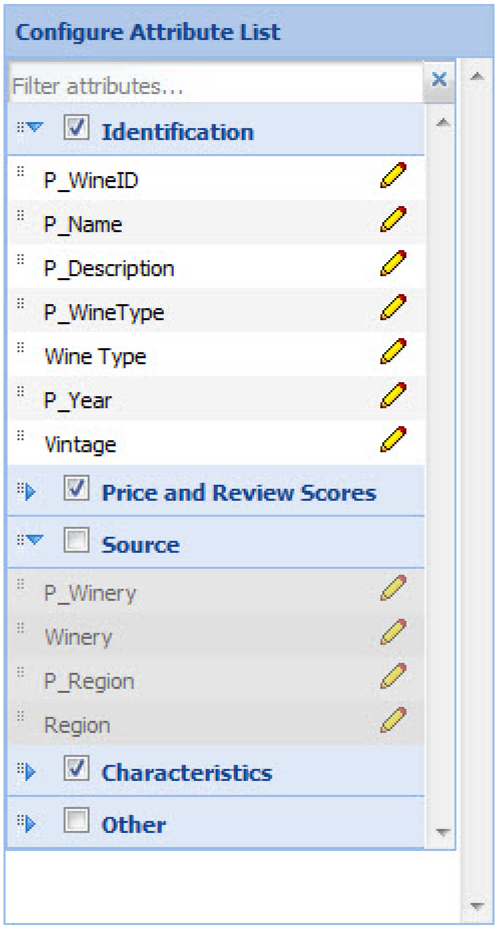
8. To save your changes, click **Save Preferences**.
9. To exit the edit view, click **Return to Full Page**.

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.



Configure Attribute List

Filter attributes...

☑ Identification
- P_WineID
- P_Name
- P_Description
- P_WineType
- Wine Type
- P_Year
- Vintage

☑ Price and Review Scores

☐ Source
- P_Winery
- Winery
- P_Region
- Region

☑ Characteristics

☐ Other

   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:

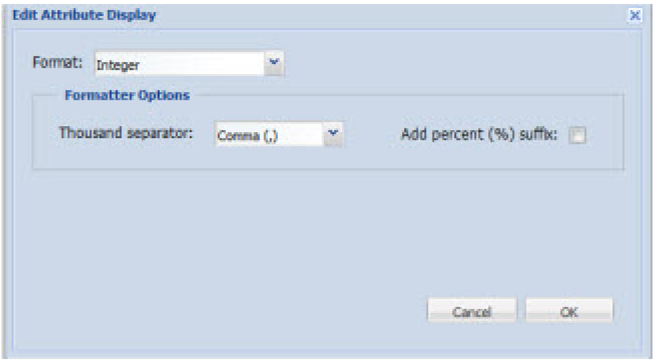
1. Under **Configure Attribute List**, click the edit icon for the attribute.

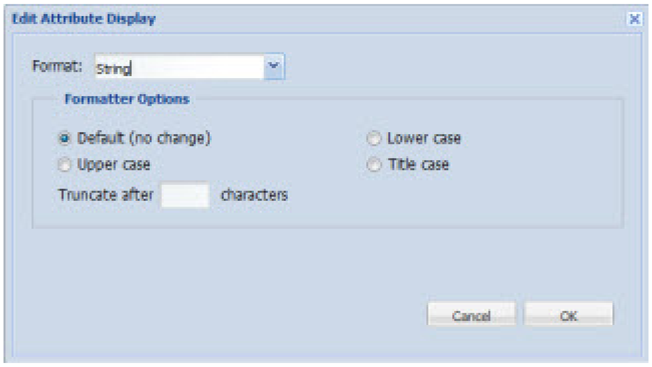
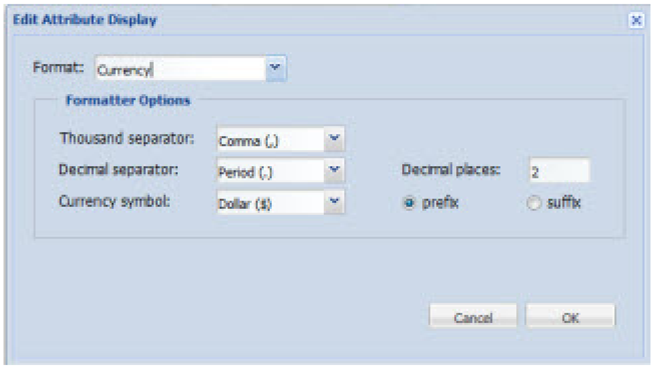
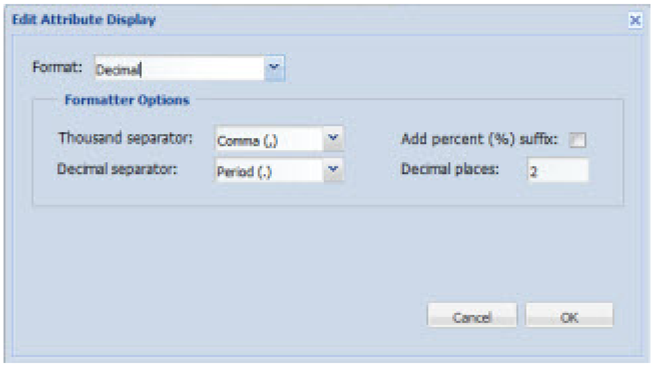
   The **Edit Attribute Display** dialog is displayed. The default format for the attribute is based on the attribute's data type.

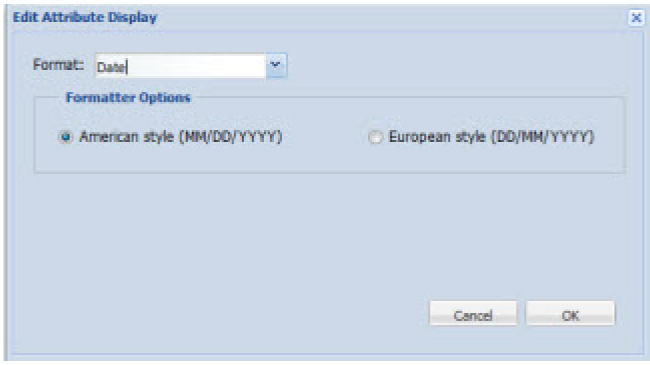
2. From the **Format** drop-down list, select the format to use for the attribute value, and then configure the options for the selected type.

   If you select a different format, make sure that it is an appropriate format for the value being displayed.

   The options are:

Integer	Indicates that the value is an integer. For integer values, you can configure:  Format: Integer Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ • The character to use to separate the thousands • Whether to display the percent symbol after the value
String	Indicates that the value is a text string. For string values, you can configure:

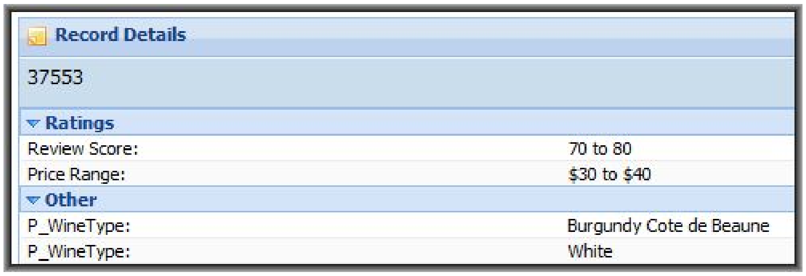
	 Edit Attribute Display Format: String Formatter Options ● Default (no change) ○ Lower case ○ Upper case ○ Title case Truncate after characters Cancel OK • Whether to change the capitalization of the text string • The number of characters after which to truncate the value
Currency	Indicates that the value is a currency value. For currency values, you can configure:  Edit Attribute Display Format: Currency Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Decimal places: 2 Currency symbol: Dollar ($) ● prefix ○ suffix Cancel OK • 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:  Edit Attribute Display Format: Decimal Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ Decimal separator: Period (.) Decimal places: 2 Cancel OK

	• 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
Date	Indicates that the value is a date. For a date value, you can configure the format to use. The options are:  Format: Date ● American style (MM/DD/YYYY) ○ European style (DD/MM/YYYY) • **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.

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.



Record Details

37553

Ratings

Review Score:	70 to 80
Price Range:	$30 to $40

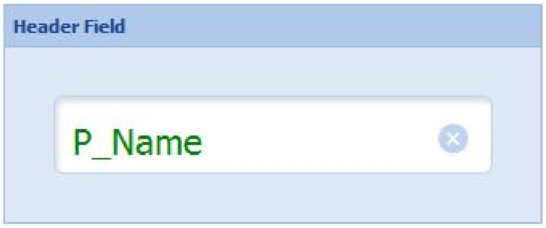
Other

P_WineType:	Burgundy Cote de Beaune
P_WineType:	White

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.

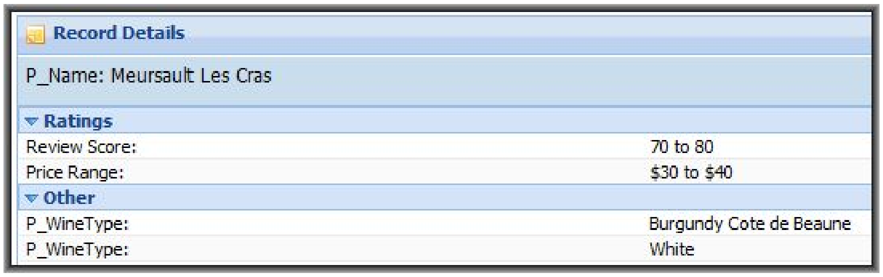


Header Field

P_Name

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.



Record Details

P_Name: Meursault Les Cras

Ratings	
Review Score:	70 to 80
Price Range:	$30 to $40
Other	
P_WineType:	Burgundy Cote de Beaune
P_WineType:	White

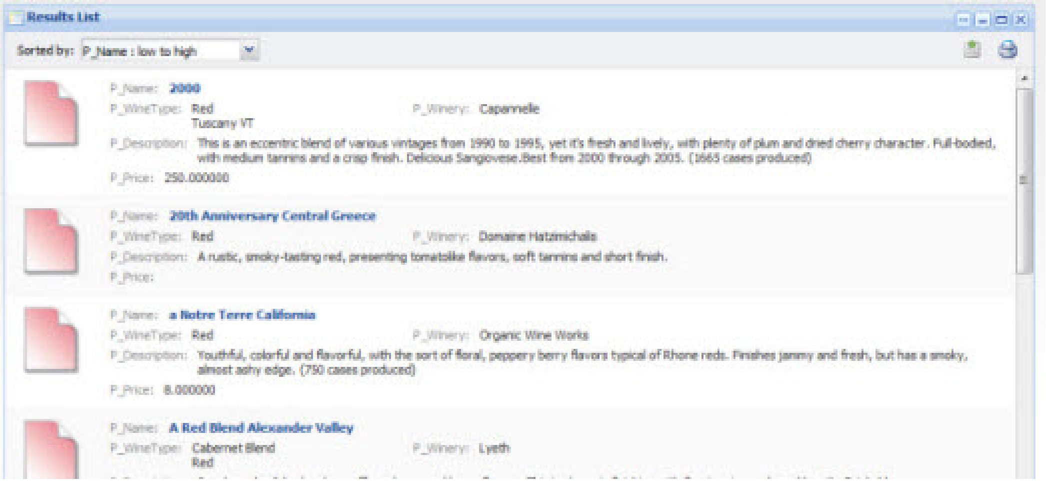
Results List

The **Results List** component displays a list of records.

About the Results List component

The **Results List** component displays a list of records in a list format similar to regular web search results.

In the list, each record includes a selected set of attributes.



Results List

Sorted by: P_Name : low to high

P_Name: 2000
P_WineType: Red
Tuscany VT
P_Winery: Capannelle
P_Description: This is an eccentric blend of various vintages from 1990 to 1995, yet it's fresh and lively, with plenty of plum and dried cherry character. Full-bodied, with medium tannins and a crisp finish. Delicious Sangiovese.Best from 2000 through 2005. (1665 cases produced)
P_Price: 250.000000

P_Name: 20th Anniversary Central Greece
P_WineType: Red
P_Winery: Domaine Hatzimichalis
P_Description: A rustic, smoky-tasting red, presenting tomatolike flavors, soft tannins and short finish.
P_Price:

P_Name: a Notre Terre California
P_WineType: Red
P_Winery: Organic Wine Works
P_Description: Youthful, colorful and flavorful, with the sort of floral, peppery berry flavors typical of Rhone reds. Finishes jammy and fresh, but has a smoky, almost ashy edge. (750 cases produced)
P_Price: 8.000000

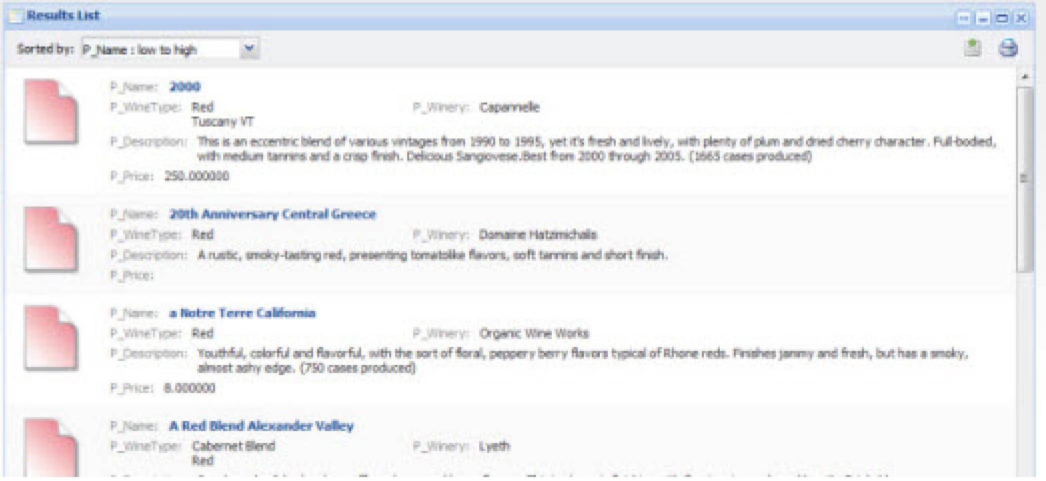
P_Name: A Red Blend Alexander Valley
P_WineType: Cabernet Blend
Red
P_Winery: Lyeth

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.



Sorted by: P_Name : low to high

P_Name: 2000
P_WineType: Red
Tuscany VT
P_Winery: Caparnelle
P_Description: This is an eccentric blend of various vintages from 1990 to 1995, yet it's fresh and lively, with plenty of plum and dried cherry character. Full-bodied, with medium tannins and a crisp finish. Delicious Sangiovese.Best from 2000 through 2005. (1665 cases produced)
P_Price: 250.000000

P_Name: 20th Anniversary Central Greece
P_WineType: Red
P_Winery: Domaine Hatzimichalis
P_Description: A rustic, smoky-tasting red, presenting tomatolike flavors, soft tannins and short finish.
P_Price:

P_Name: a Notre Terre California
P_WineType: Red
P_Winery: Organic Wine Works
P_Description: Youthful, colorful and flavorful, with the sort of floral, peppery berry flavors typical of Rhone reds. Finishes jammy and fresh, but has a smoky, almost ashy edge. (750 cases produced)
P_Price: 8.000000

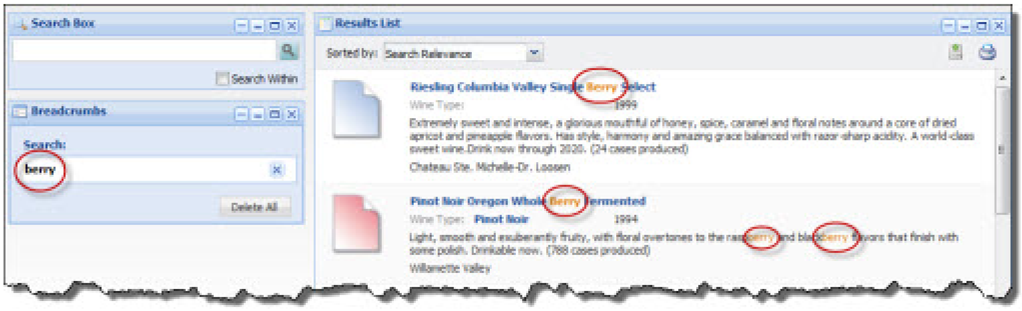
P_Name: A Red Blend Alexander Valley
P_WineType: Cabernet Blend
Red
P_Winery: Lyeth

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.



Search:
berry

Sorted by: Search Relevance

Riesling Columbia Valley Single Berry Select
Wine Type: 1999
Extremely sweet and intense, a glorious mouthful of honey, spice, caramel and floral notes around a core of dried apricot and pineapple flavors. Has style, harmony and amazing grace balanced with razor-sharp acidity. A world-class sweet wine.Drink now through 2020. (24 cases produced)
Chateau Ste. Michelle-Dr. Loosen

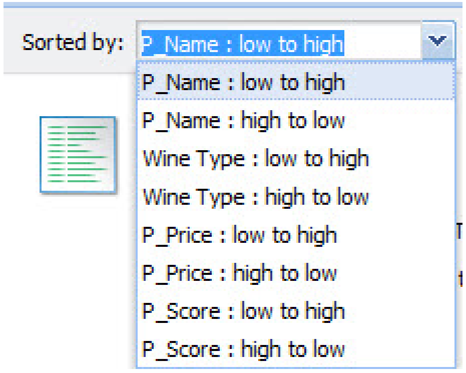
Pinot Noir Oregon Whole Berry Fermented
Wine Type: Pinot Noir 1994
Light, smooth and exuberantly fruity, with floral overtones to the raspberry and blackberry flavors that finish with some polish. Drinkable now. (788 cases produced)
Willamette Valley

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.

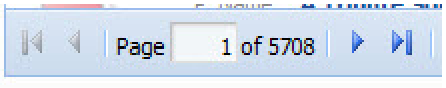
When end users use a search to refine the data, the list automatically is sorted by Search Relevance. End users can then select a different sort option from the drop-down list.

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.



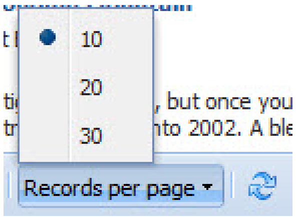
End users can use these tools to:

- 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.

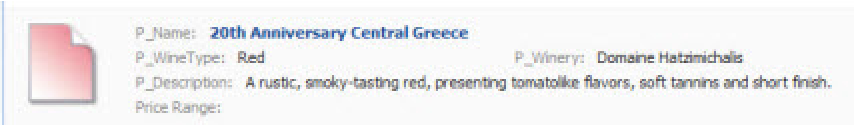


To change the number of records per page, select the number.

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.



P_Name: 20th Anniversary Central Greece
P_WineType: Red P_Winery: Domaine Hatzimichalis
P_Description: A rustic, smoky-tasting red, presenting tomatolike flavors, soft tannins and short finish.
Price Range:

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

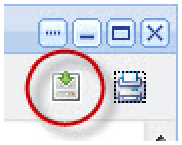
End users can export the current content of a **Results List** component to a spreadsheet file.

The export 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.

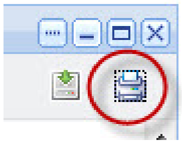
Printing the results list

End users can print the current content of a **Results List** component.

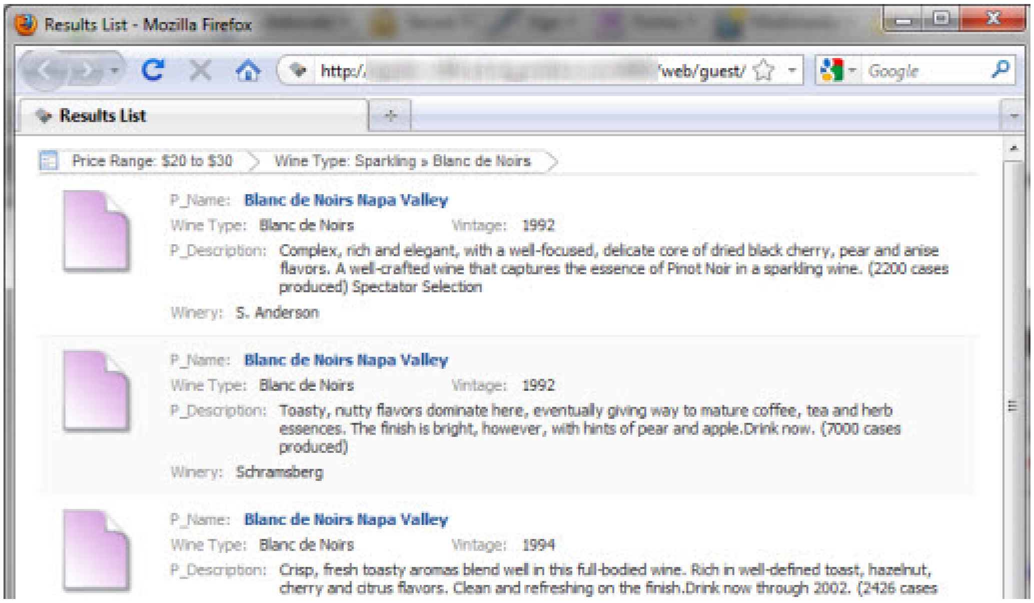
The print option only prints the records for the current refinement.

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.

   Results List - Mozilla Firefox

   http:/[redacted]'web/guest/

   Results List

   Price Range: $20 to $30 > Wine Type: Sparkling » Blanc de Noirs

   P_Name: Blanc de Noirs Napa Valley
   Wine Type: Blanc de Noirs Vintage: 1992
   P_Description: Complex, rich and elegant, with a well-focused, delicate core of dried black cherry, pear and anise flavors. A well-crafted wine that captures the essence of Pinot Noir in a sparkling wine. (2200 cases produced) Spectator Selection
   Winery: S. Anderson

   P_Name: Blanc de Noirs Napa Valley
   Wine Type: Blanc de Noirs Vintage: 1992
   P_Description: Toasty, nutty flavors dominate here, eventually giving way to mature coffee, tea and herb essences. The finish is bright, however, with hints of pear and apple.Drink now. (7000 cases produced)
   Winery: Schramsberg

   P_Name: Blanc de Noirs Napa Valley
   Wine Type: Blanc de Noirs Vintage: 1994
   P_Description: Crisp, fresh toasty aromas blend well in this full-bodied wine. Rich in well-defined toast, hazelnut, cherry and citrus flavors. Clean and refreshing on the finish.Drink now through 2002. (2426 cases

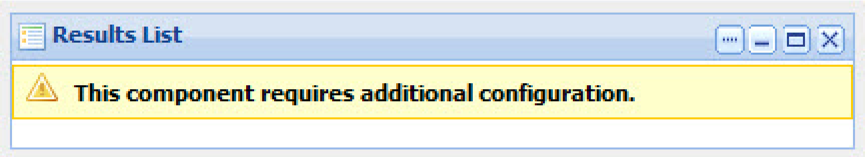
   The print dialog box also is displayed.

2. Select the printing options, and then complete the printing process.

Adding a Results List component to a page

On the **Add Component** list, the **Results List** component is in the **Latitude** section.

When the component is first added, it does not display any records. Instead, a message displays indicating that the component needs to be configured.



Results List

This component requires additional configuration.

Configuring a Results List component

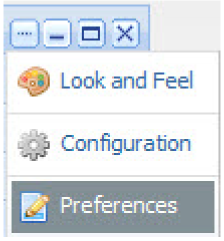
For a **Results List** component, power users determine how the component is displayed and how end users can interact with each displayed attribute.

Displaying the edit view for a Results List component

Power users use the edit view to configure a **Results List** component.

To display the edit view for a **Results List** component:

1. Click the **…** button for the component.
2. In the drop-down menu, select **Preferences**.

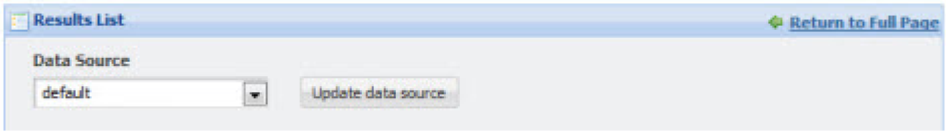


Selecting the data source for a Results List component

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.



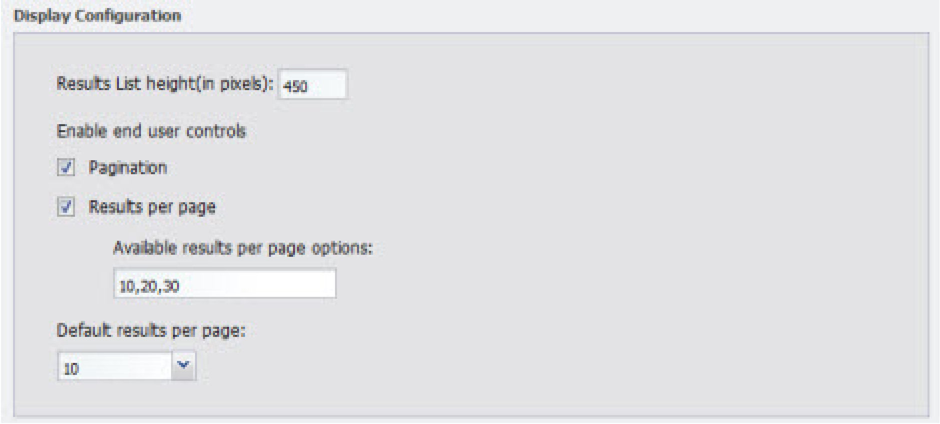
Data Source: default

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.



Display Configuration

Results List height(in pixels): 450

Enable end user controls

☑ Pagination

☑ Results per page

Available results per page options:

10,20,30

Default results per page:

10

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.

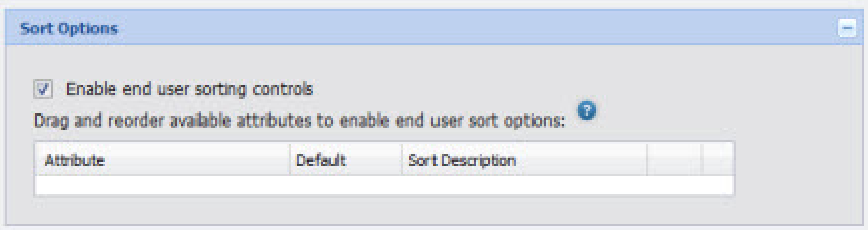
6. If the **Results per page** checkbox is not checked, then in the **Default results per page** field, type the number of records to display per page.

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**:



Sort Options

☑ Enable end user sorting controls

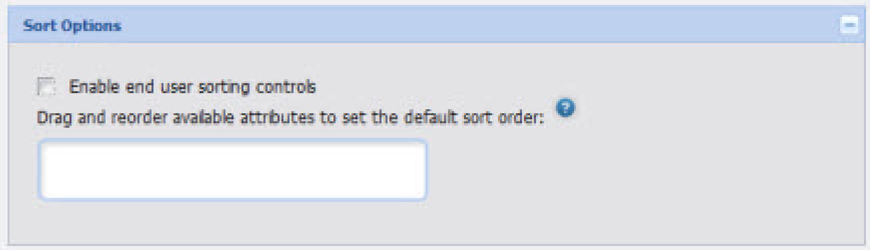
Drag and reorder available attributes to enable end user sort options:

Attribute	Default	Sort Description

- 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.



Sort Options

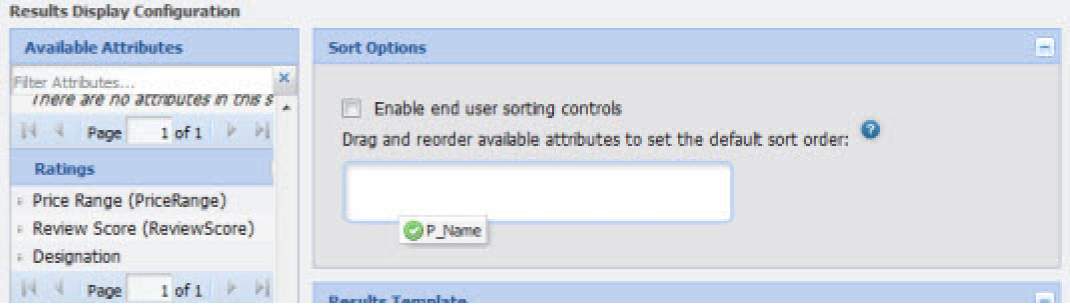
☐ Enable end user sorting controls

Drag and reorder available attributes to set the default sort order:

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.

When the green check mark is displayed, you can release the mouse to drop the attribute.



Results Display Configuration

Available Attributes

Filter Attributes...

There are no attributes in this s

Page 1 of 1

Ratings

- Price Range (PriceRange)
- Review Score (ReviewScore)
- Designation

Page 1 of 1

Sort Options

☐ Enable end user sorting controls

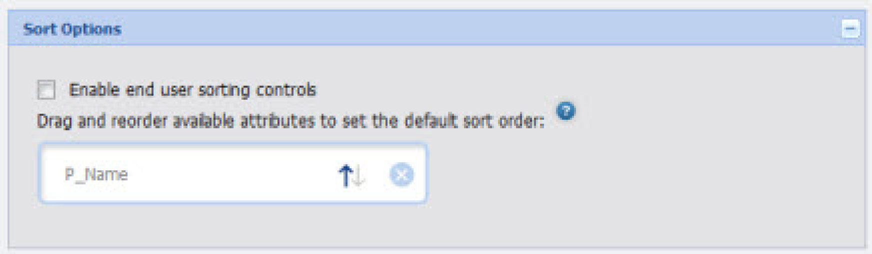
Drag and reorder available attributes to set the default sort order:

✓ P_Name

Results Template

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.



Sort Options

☐ Enable end user sorting controls

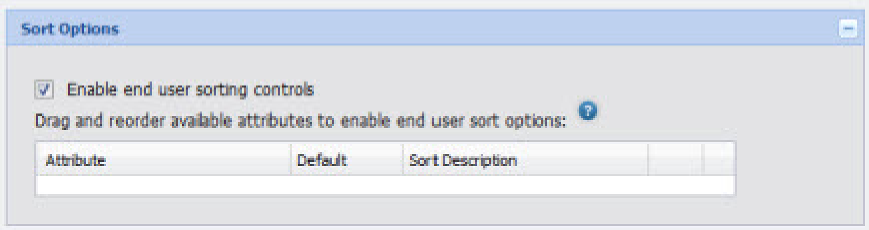
Drag and reorder available attributes to set the default sort order:

P_Name ↑↓

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.



Sort Options

☑ Enable end user sorting controls

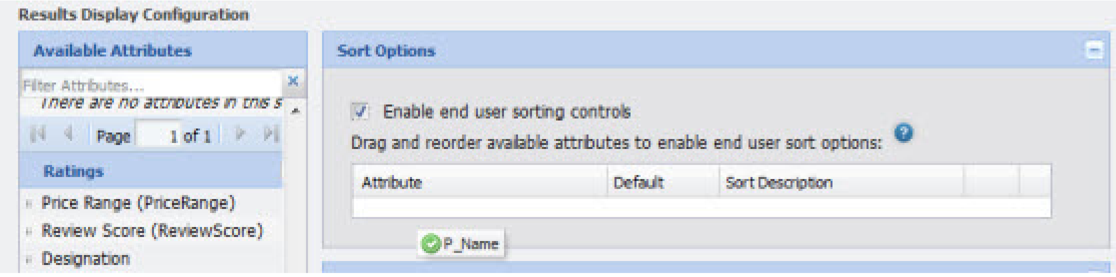
Drag and reorder available attributes to enable end user sort options:

Attribute	Default	Sort Description		

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.

When the green check mark icon is displayed, you can release the mouse to drop the attribute.



Results Display Configuration

Available Attributes

Filter Attributes...

There are no attributes in this s

Page 1 of 1

Ratings

Price Range (PriceRange)

Review Score (ReviewScore)

Designation

Sort Options

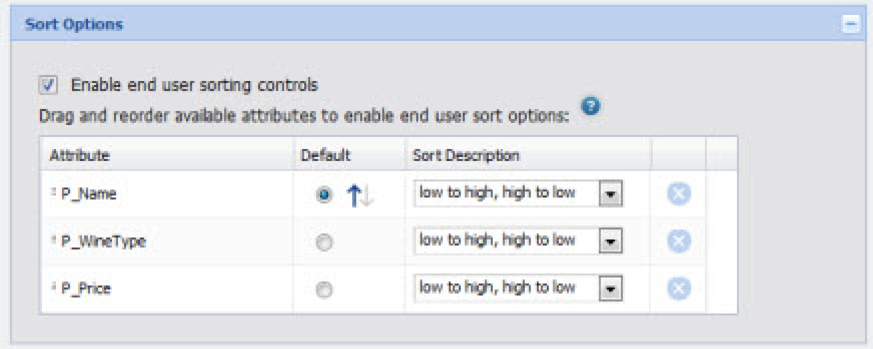
☑ Enable end user sorting controls

Drag and reorder available attributes to enable end user sort options:

Attribute	Default	Sort Description		

✓ P_Name

4. To determine the order of the attributes in the **Sorted by** drop-down list, drag each row up and down in the list.



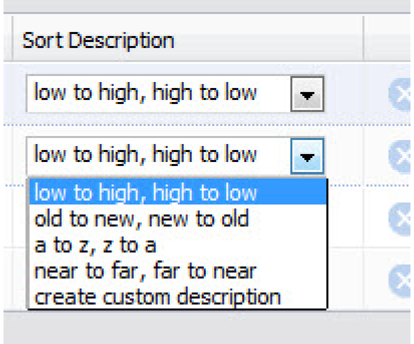
Sort Options

☑ Enable end user sorting controls

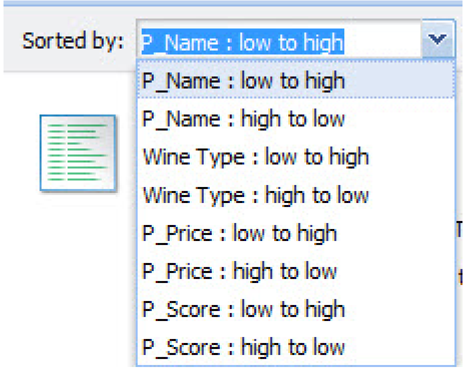
Drag and reorder available attributes to enable end user sort options:

Attribute	Default	Sort Description		
P_Name	● ↑↓	low to high, high to low	⊗	
P_WineType	○	low to high, high to low	⊗	
P_Price	○	low to high, high to low	⊗	

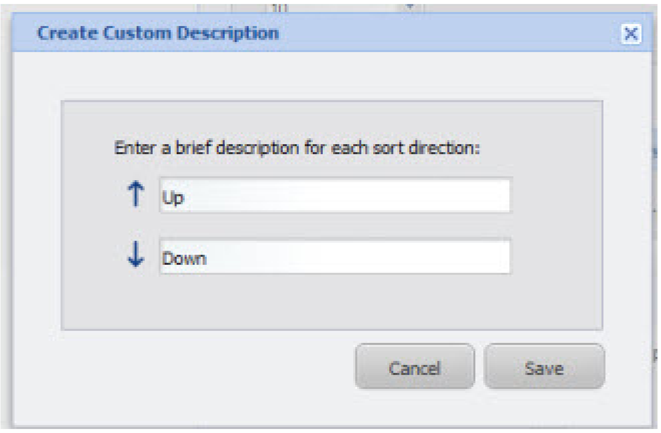
5. For the attribute you want to use for the default sort order:
   a) Click the **Default** radio button next to the attribute.
   b) To sort by that attribute in ascending order, click the up arrow.
   c) To sort by that attribute in descending order, click the down arrow.
6. From the **Sort Description** 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:

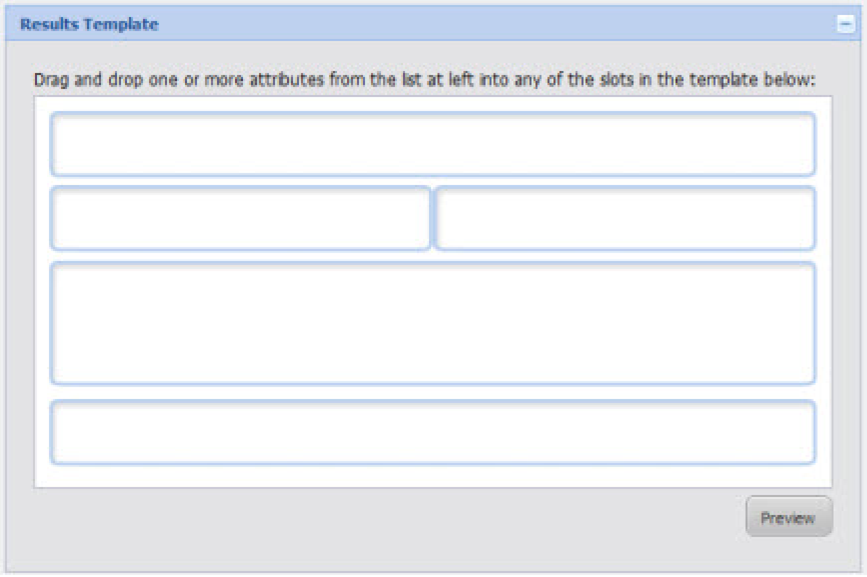

Create Custom Description
Enter a brief description for each sort direction:
↑ Up
↓ Down
Cancel
Save

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.



Results Template
Drag and drop one or more attributes from the list at left into any of the slots in the template below:
Preview

Each block on the template represents a single attribute. Each block can have an associated action, either to

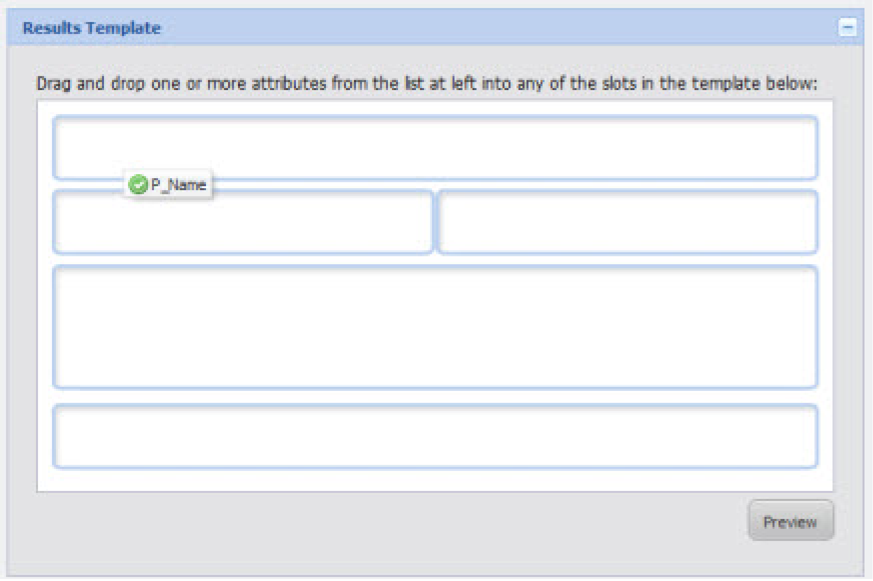
- Link to the record detail
- Refine the data set
- Link to a resource such as a Web page or file. These resources may be specific to the value of a selected attribute.

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:

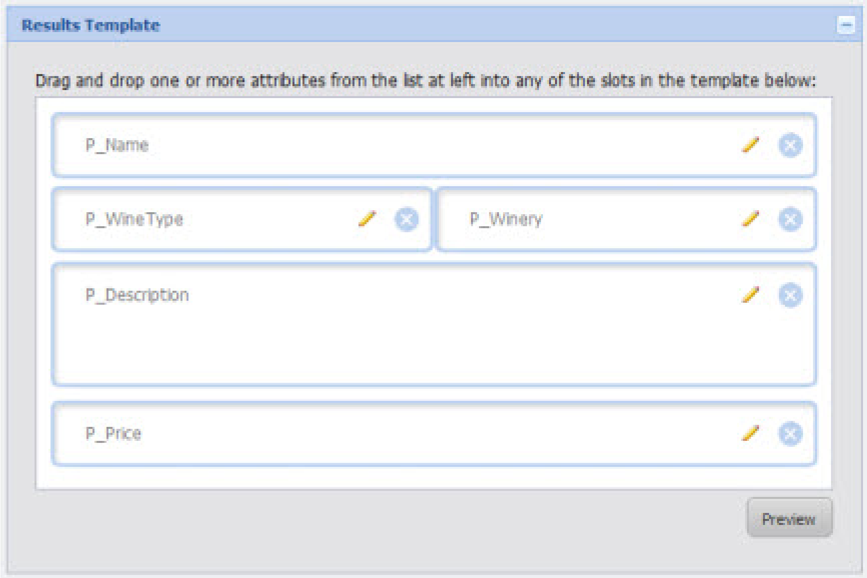
1. To add an attribute to the template:
   a) Drag the attribute from the **Available Attributes**.
   b) When the green check mark icon is displayed, you can release the mouse and drop the attribute into the box.



Results Template

Drag and drop one or more attributes from the list at left into any of the slots in the template below:

When all of the slots are filled, the template will look like:

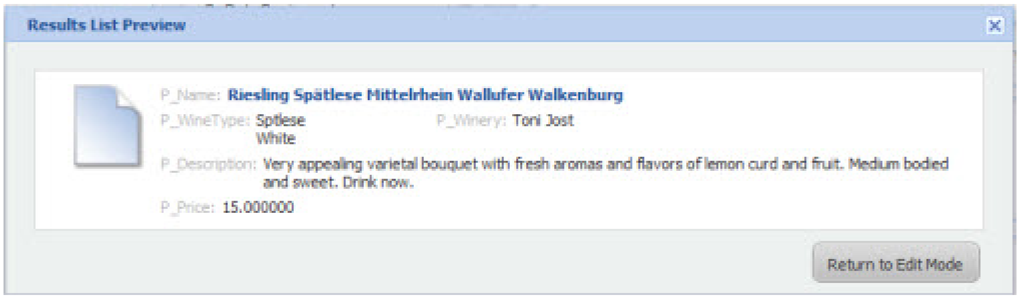


Results Template

Drag and drop one or more attributes from the list at left into any of the slots in the template below:

2. To replace an attribute with a different attribute, drop the new attribute into the block.
3. To clear a block entirely, 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.



Results List Preview

P_Name: Riesling Spätlese Mittelrhein Wallufer Walkenburg

P_WineType: Sptlese White

P_Winery: Toni Jost

P_Description: Very appealing varietal bouquet with fresh aromas and flavors of lemon curd and fruit. Medium bodied and sweet. Drink now.

P_Price: 15.000000

To close the preview, click **Return to Edit Mode**.

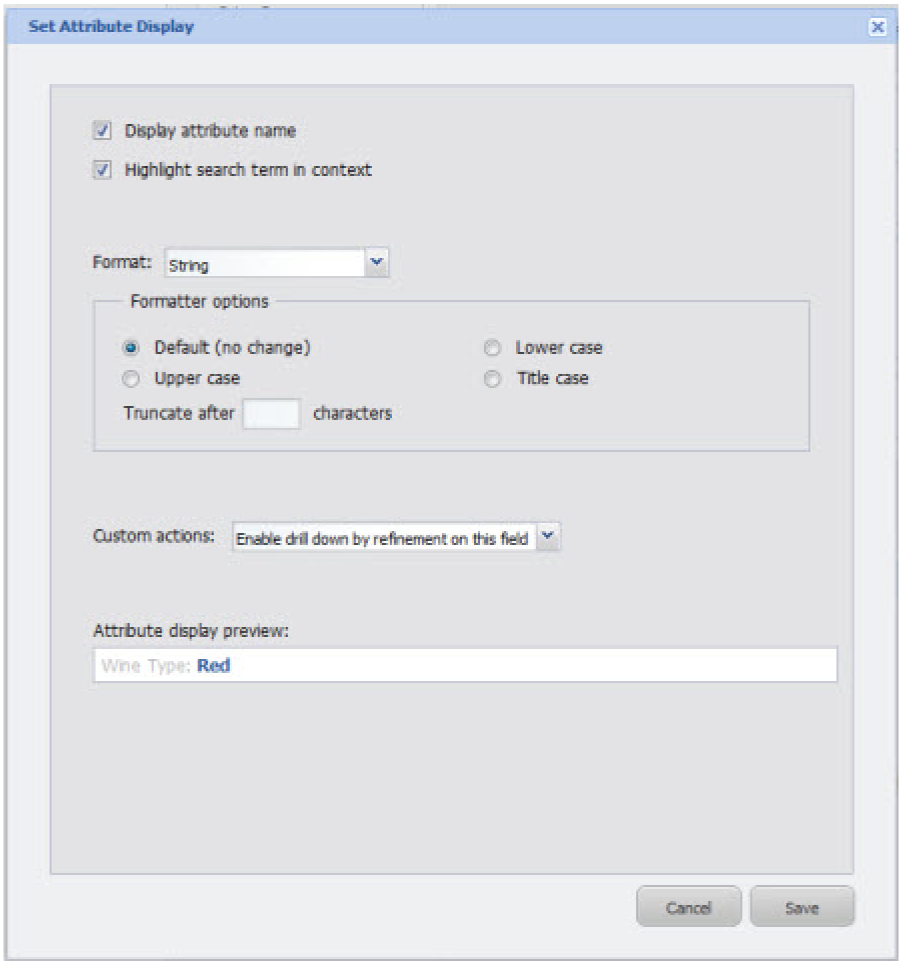
Configuring the attributes in a Results List record

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.



Set Attribute Display

☑ Display attribute name

☑ Highlight search term in context

Format: String

Formatter options

● Default (no change) ○ Lower case

○ Upper case ○ Title case

Truncate after ☐ characters

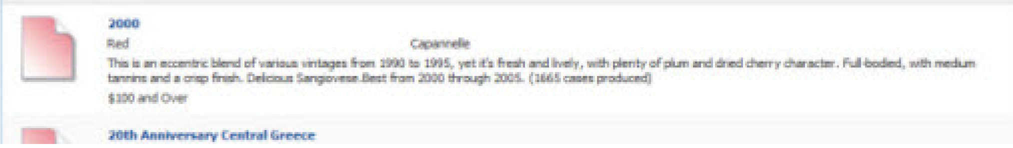
Custom actions: Enable drill down by refinement on this field

Attribute display preview:

Wine Type: Red

2. 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.

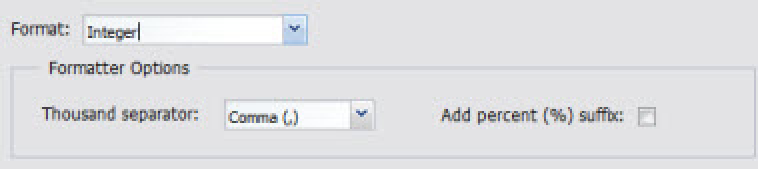
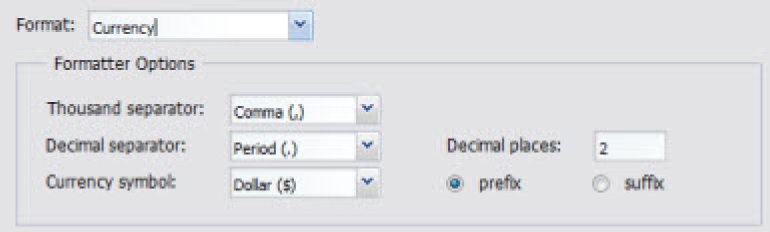
   2000
   Red Capannelle
   This is an eccentric blend of various vintages from 1990 to 1995, yet it's fresh and lively, with plenty of plum and dried cherry character. Full-bodied, with medium tannins and a crisp finish. Delicious Sangiovese.Best from 2000 through 2005. (1665 cases produced)
   $100 and Over
   20th Anniversary Central Greece

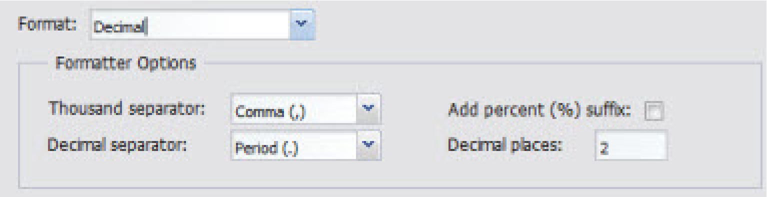
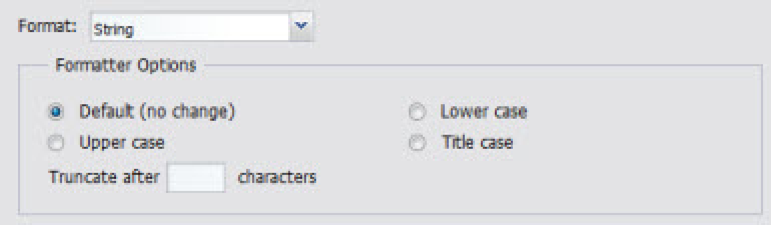
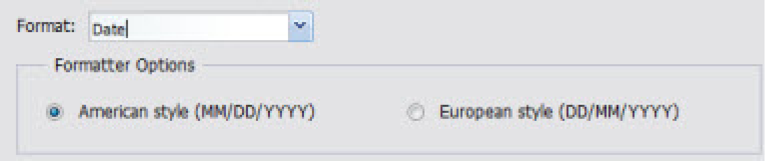
3. When end users type search text into a **Search Box**, to highlight the search text in the attribute value, check the **Highlight search term in context** checkbox.

   The box is checked by default.

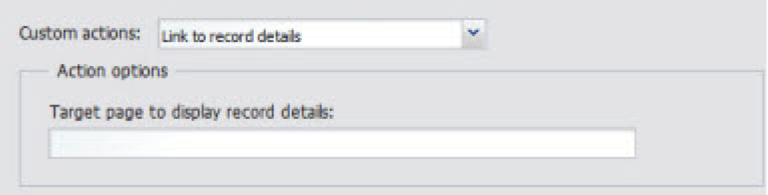
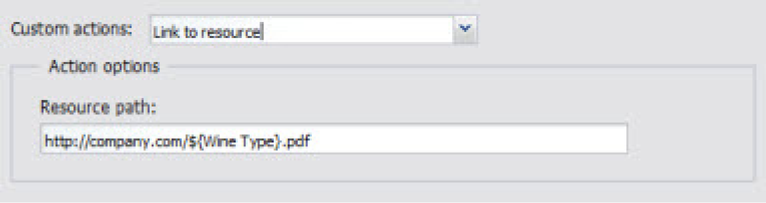
4. From the **Format** drop-down list, select the format to use to display the attribute value. The default format is based on the attribute's data type.

   The options are:

Integer	Indicates that the value is an integer.  Format: Integer Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ For an integer value, you can configure: • The character to use to separate the thousands • Whether to display a % sign after the value
Currency	Indicates that the value is a currency value.  Format: Currency Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Currency symbol: Dollar ($) Decimal places: 2 ● prefix ○ suffix For a currency value, you can configure: • The character to use to separate the thousands • The character to use for the decimal • The number of decimal places to include • The currency symbol to use • Whether to display the currency symbol in front of the value (**prefix**) or after the value (**suffix**)

Decimal	Indicates that the value is a decimal number.  Format: Decimal Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ Decimal separator: Period (.) Decimal places: 2 For a decimal value, you can configure: • The character to use to separate the thousands • Whether to display a % sign after the value • The character to use for the decimal • The number of decimal places to display
String	Indicates that the value is a text string.  Format: String Formatter Options ● Default (no change) ○ Lower case ○ Upper case ○ Title case Truncate after ______ characters 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.  Format: Date Formatter Options ● American style (MM/DD/YYYY) ○ European style (DD/MM/YYYY) 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 **Custom 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:

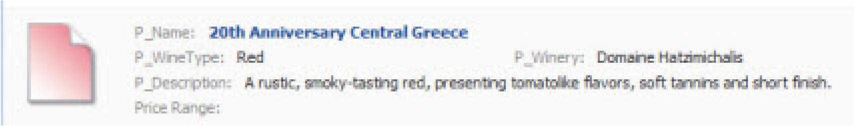
No Action	If you select this option, then the attribute value is not a hyperlink.
Link to record details	This option is only available for the top block of the template. If you select this option, then when end users click the attribute value, the **Record Details** component is populated with the details for that record. When you select the option, the **Target page to display record details** field is displayed. Custom actions: Link to record details Action options 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.
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.
Link to resource	If you select this option, then when end users click the attribute value: • A link to another web page. • A link to a file such as a document or spreadsheet. You can create different resources 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. Custom actions: Link to resource Action options Resource path: http://company.com/${Wine Type}.pdf In the field, type the path to the page or file. If you have created different resources for different values of an attribute, then in the URL, use `${<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`.

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.



P_Name: 20th Anniversary Central Greece

P_WineType: Red   P_Winery: Domaine Hatzimichalis

P_Description: A rustic, smoky-tasting red, presenting tomatolike flavors, soft tannins and short finish.

Price Range:

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.

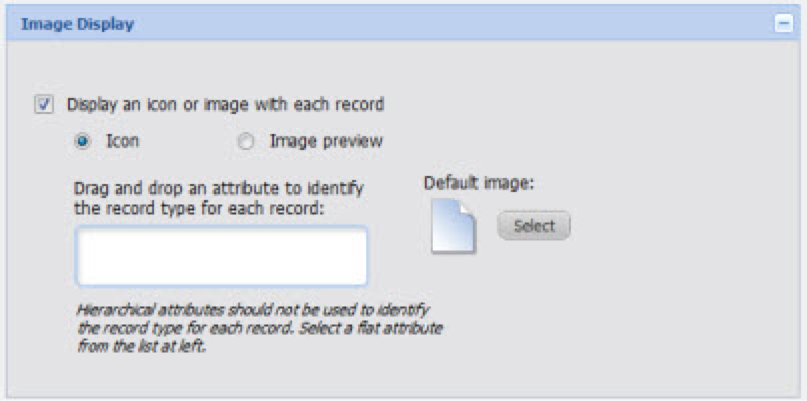
   

   Image Display

   ☑ Display an icon or image with each record

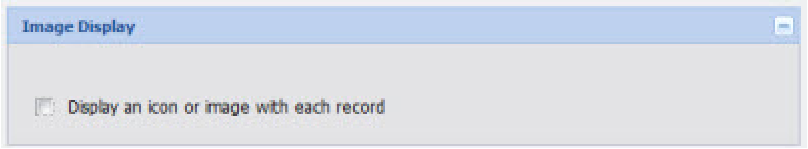
   ● Icon   ○ Image preview

   Drag and drop an attribute to identify the record type for each record:

   Default image:

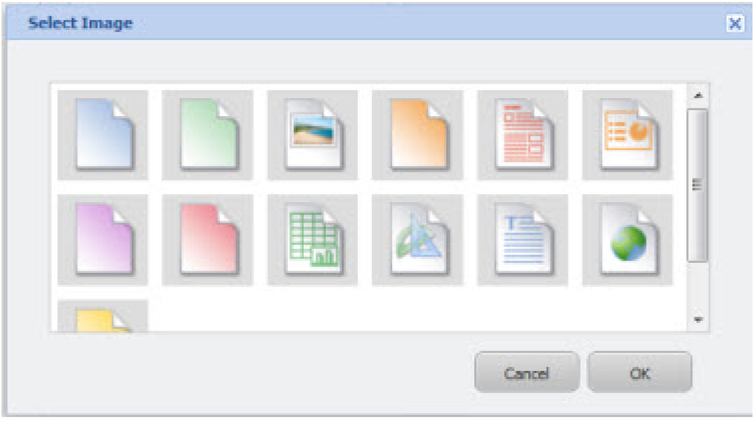
   Hierarchical attributes should not be used to identify the record type for each record. Select a flat attribute from the list at left.

   To not display an image, uncheck the box. If you uncheck the box, the rest of the image settings are hidden.



□ Display an icon or image with each record

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**.

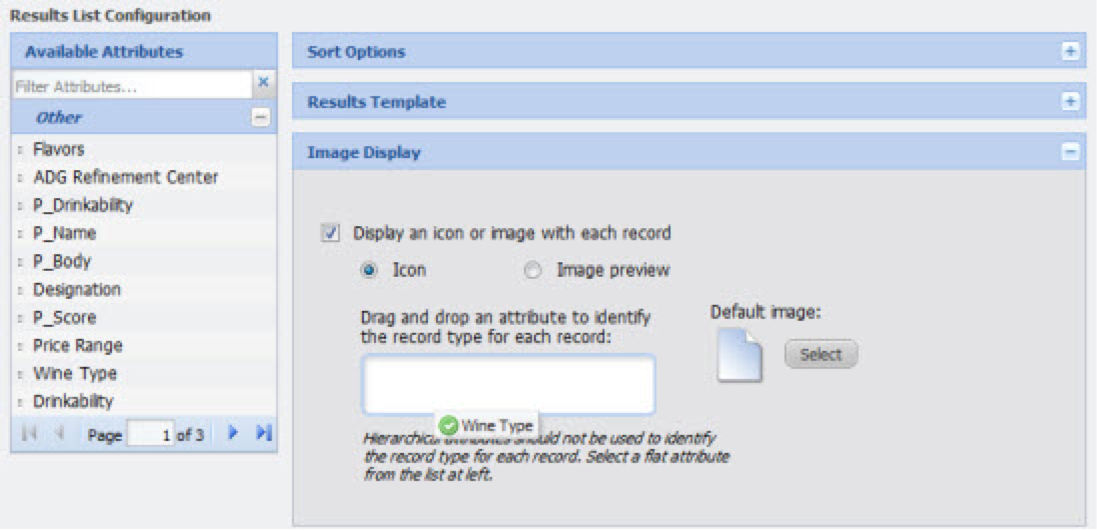
   For images other than the default image, you can either display:

   - 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 the green check mark icon displays, you can release the mouse to drop the attribute.



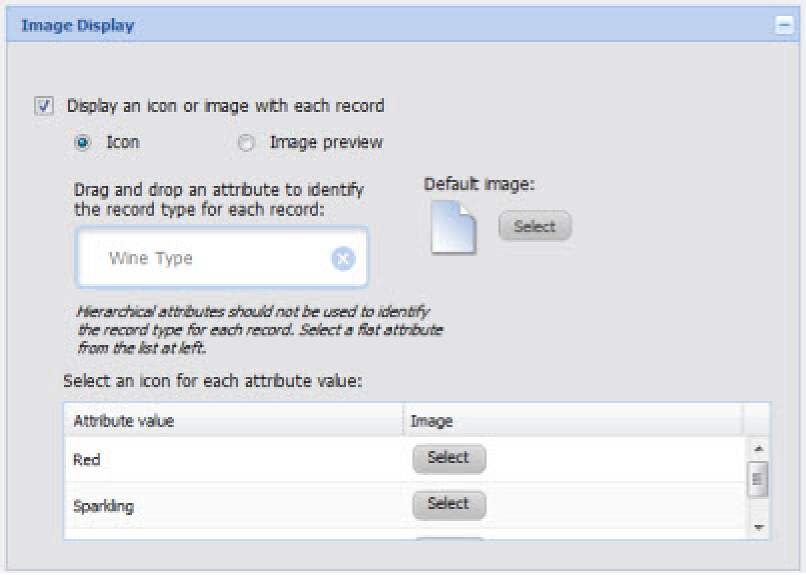
☑ Display an icon or image with each record

● Icon ○ Image preview

Drag and drop an attribute to identify the record type for each record:

Hierarchical attributes should not be used to identify the record type for each record. Select a flat attribute from the list at left.

When you drop the attribute, the list of available attribute values is displayed.



☑ Display an icon or image with each record

● Icon ○ Image preview

Drag and drop an attribute to identify the record type for each record:

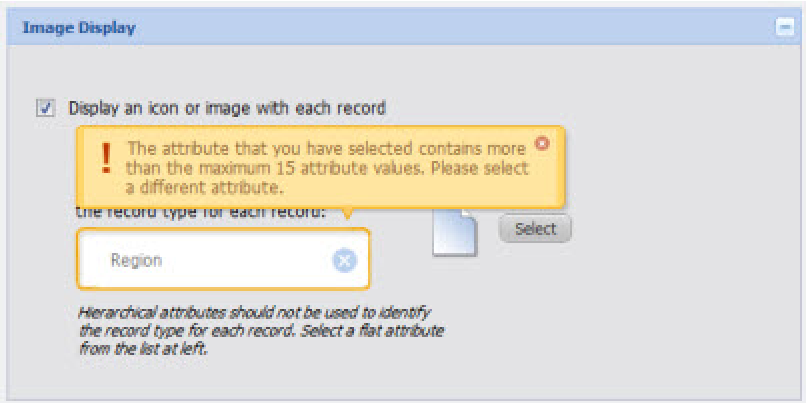
Wine Type

Hierarchical attributes should not be used to identify the record type for each record. Select a flat attribute from the list at left.

Select an icon for each attribute value:

Attribute value	Image
Red	Select
Sparkling	Select

If the attribute is not a managed attribute, or has more than 15 values, an error message is displayed.



☑ Display an icon or image with each record

! The attribute that you have selected contains more than the maximum 15 attribute values. Please select a different attribute.

the record type for each record:

Region

Hierarchical attributes should not be used to identify the record type for each record. Select a flat attribute from the list at left.

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.

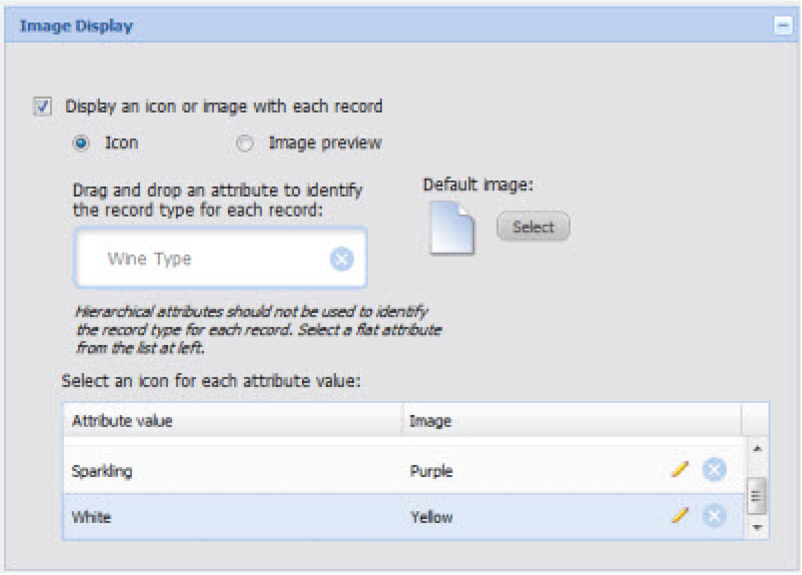


Image Display

☑ Display an icon or image with each record

● Icon ○ Image preview

Drag and drop an attribute to identify the record type for each record:

Wine Type

Default image: Select

Hierarchical attributes should not be used to identify the record type for each record. Select a flat attribute from the list at left.

Select an icon for each attribute value:

Attribute value	Image
Sparkling	Purple
White	Yellow

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.

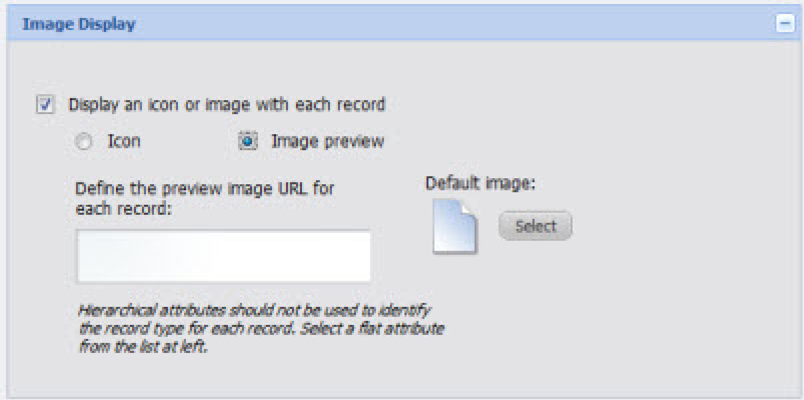


Image Display

☑ Display an icon or image with each record

○ Icon ● Image preview

Define the preview image URL for each record:

Default image: Select

Hierarchical attributes should not be used to identify the record type for each record. Select a flat attribute from the list at left.

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.

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

Results Table

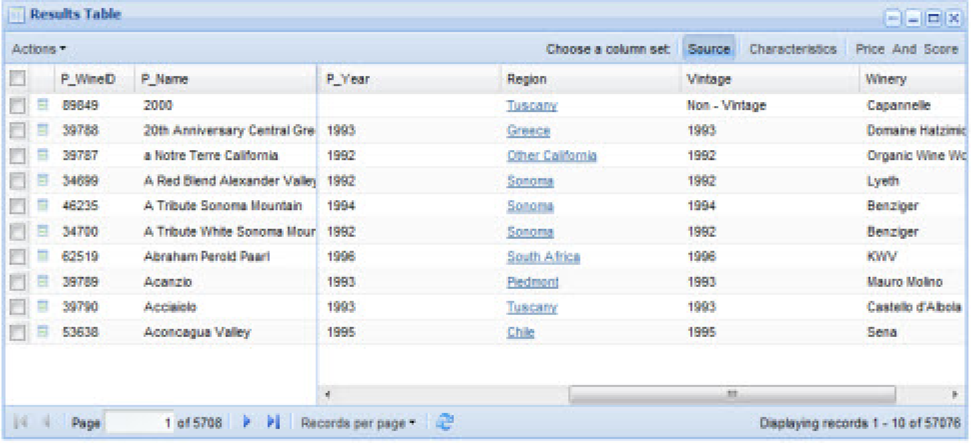
The **Results Table** component displays a list of records or metrics in a tabular format.

About the Results Table component

The **Results Table** component displays a set of data in a table format.

The data displayed in the **Results Table** component is either:

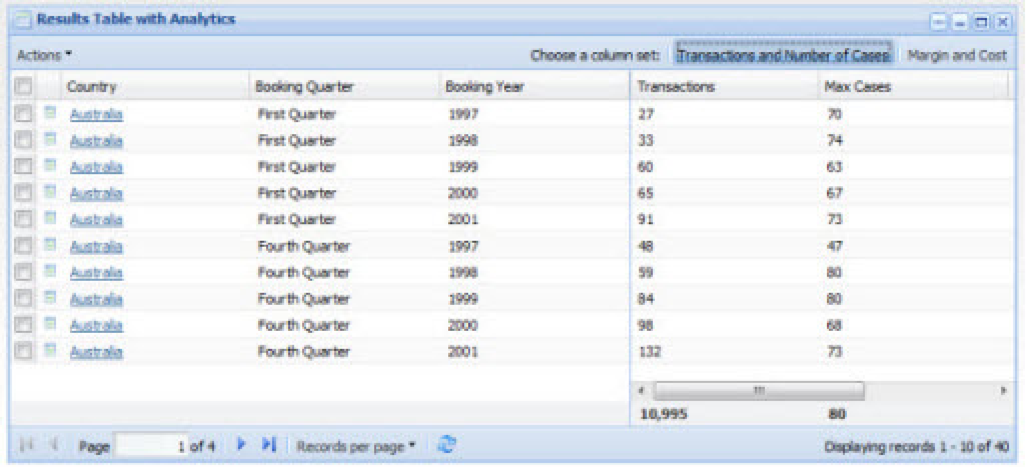
- A list of records from the data set. Each row represents a single record. The columns contain the attribute values for the record.



□		P_WineID	P_Name	P_Year	Region	Vintage	Winery
□		89849	2000		Tuscany	Non - Vintage	Capannelle
□		39788	20th Anniversary Central Gre	1993	Greece	1993	Domaine Hatzimic
□		39787	a Notre Terre California	1992	Other California	1992	Organic Wine Wc
□		34699	A Red Blend Alexander Valley	1992	Sonoma	1992	Lyeth
□		46235	A Tribute Sonoma Mountain	1994	Sonoma	1994	Benziger
□		34700	A Tribute White Sonoma Mour	1992	Sonoma	1992	Benziger
□		62519	Abraham Perold Paarl	1996	South Africa	1996	KWV
□		39789	Acanzio	1993	Piedmont	1993	Mauro Molino
□		39790	Acciaiolo	1993	Tuscany	1993	Castello d'Albola
□		53638	Aconcagua Valley	1995	Chile	1995	Sena

- A set of generated metrics calculated from an Analytics statement. 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.



Results Table with Analytics

Actions ▾ Choose a column set: Transactions and Number of Cases Margin and Cost

□	Country	Booking Quarter	Booking Year	Transactions	Max Cases
□	Australia	First Quarter	1997	27	70
□	Australia	First Quarter	1998	33	74
□	Australia	First Quarter	1999	60	63
□	Australia	First Quarter	2000	65	67
□	Australia	First Quarter	2001	91	73
□	Australia	Fourth Quarter	1997	48	47
□	Australia	Fourth Quarter	1998	59	80
□	Australia	Fourth Quarter	1999	84	80
□	Australia	Fourth Quarter	2000	98	68
□	Australia	Fourth Quarter	2001	132	73
				10,995	80

Page 1 of 4 Records per page ▾ Displaying records 1 - 10 of 40

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.

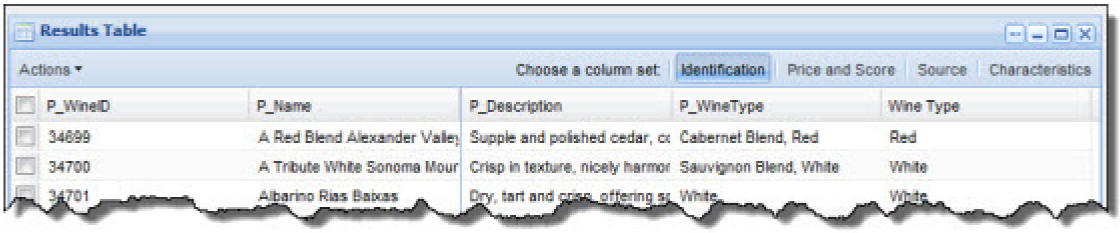
Selecting the set of columns to display

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, the power user defines the column sets.

The **Results Table** also may be configured with locked columns that are always displayed on the left of the table.

If the **Results Table** contains multiple column sets, then the column set names are displayed at the top of the table. The currently selected set is highlighted.



Results Table

Actions ▾ Choose a column set: Identification Price and Score Source Characteristics

□	P_WineID	P_Name	P_Description	P_WineType	Wine Type
□	34699	A Red Blend Alexander Valley	Supple and polished cedar, cc	Cabernet Blend, Red	Red
□	34700	A Tribute White Sonoma Mour	Crisp in texture, nicely harmor	Sauvignon Blend, White	White
□	34701	Albarino Rias Baixas	Dry, tart and crisp, offering sı	White	White

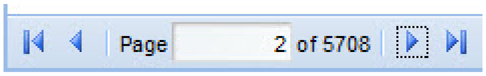
To display the columns in a column set, click the column set name.

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 column set name is not displayed, and the columns are always displayed.

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.



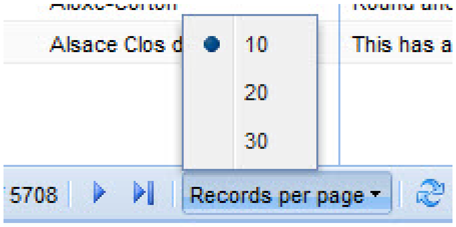
End users can use these tools to:

- 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.

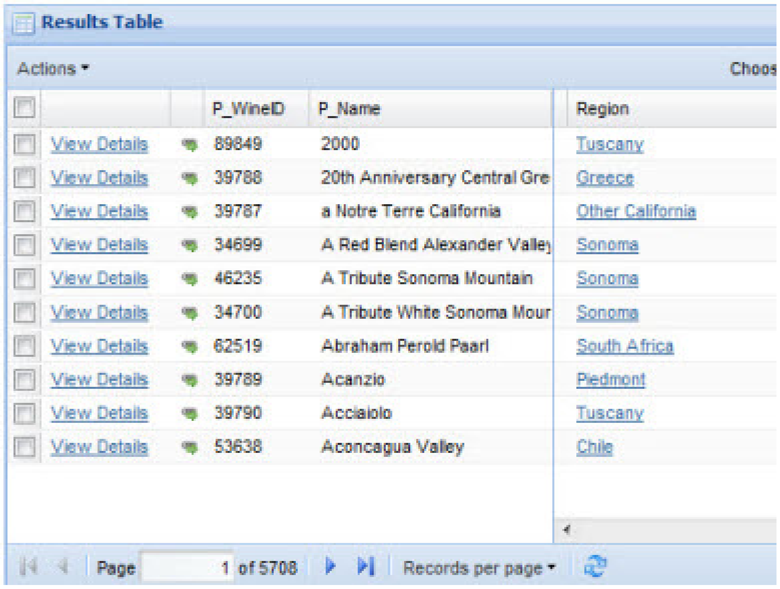
Types of links available from a Results Table component

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.



☐		P_WineID	P_Name	Region
☐	View Details	89849	2000	Tuscany
☐	View Details	39788	20th Anniversary Central Gre	Greece
☐	View Details	39787	a Notre Terre California	Other California
☐	View Details	34699	A Red Blend Alexander Valley	Sonoma
☐	View Details	46235	A Tribute Sonoma Mountain	Sonoma
☐	View Details	34700	A Tribute White Sonoma Mour	Sonoma
☐	View Details	62519	Abraham Perold Paarl	South Africa
☐	View Details	39789	Acanzio	Piedmont
☐	View Details	39790	Acciaiolo	Tuscany
☐	View Details	53638	Aconcagua Valley	Chile

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.

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.

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

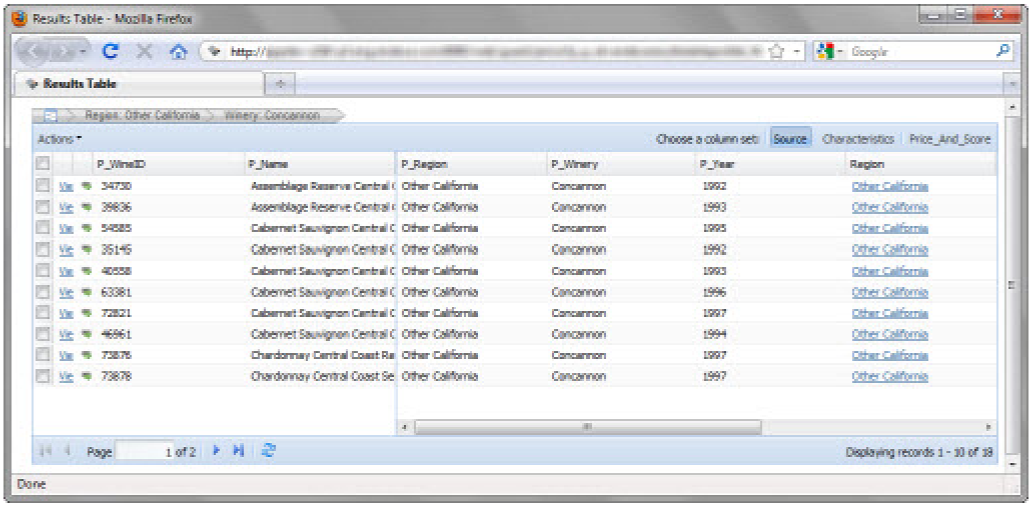
The **Results Table** component includes an option to print the current page of the results. If other actions are available, then the **Print** option is in the **Actions** menu. If no other actions are available, then a **Print** button is displayed in place of the **Actions** menu.

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.



□		P_WineID	P_Name	P_Region	P_Winery	P_Year	Region
□	Vie	34730	Assemblage Reserve Central (	Other California	Concannon	1992	Other California
□	Vie	39836	Assemblage Reserve Central (	Other California	Concannon	1993	Other California
□	Vie	54585	Cabernet Sauvignon Central C	Other California	Concannon	1995	Other California
□	Vie	35145	Cabernet Sauvignon Central C	Other California	Concannon	1992	Other California
□	Vie	40558	Cabernet Sauvignon Central C	Other California	Concannon	1993	Other California
□	Vie	63381	Cabernet Sauvignon Central C	Other California	Concannon	1996	Other California
□	Vie	72821	Cabernet Sauvignon Central C	Other California	Concannon	1997	Other California
□	Vie	46961	Cabernet Sauvignon Central C	Other California	Concannon	1994	Other California
□	Vie	73876	Chardonnay Central Coast Re	Other California	Concannon	1997	Other California
□	Vie	73878	Chardonnay Central Coast Se	Other California	Concannon	1997	Other California

The print dialog box also is displayed.

3. Select the printing options, and then complete the printing process.

Configuring a Results Table component

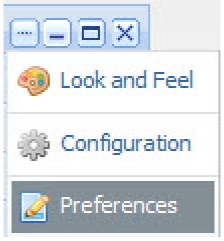
For a **Results Table** component, power users configure the data to include and the available options for working with the results.

Displaying the Results Table edit view

Power users use the edit view to configure a **Results Table** component.

To display the edit view:

1. On the component, click the **...** button.
2. From the drop-down menu, select **Preferences**.

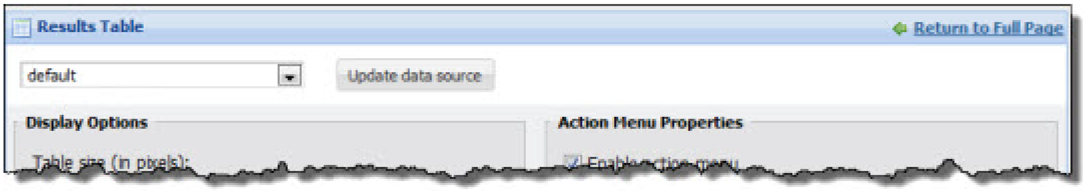


Selecting the data source to use for a Results Table

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.



default

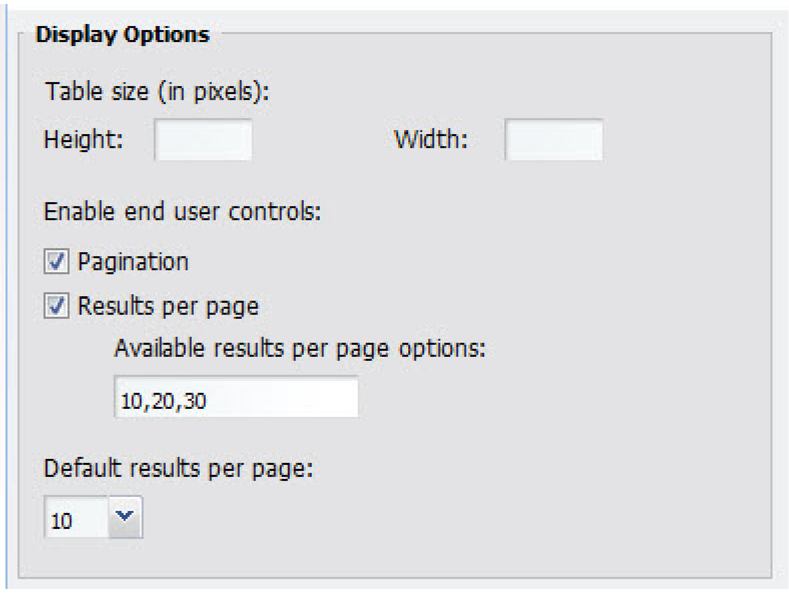
2. Click **Update data source**.

   A message displays indicating that the component now uses the new data source.

Configuring Results Table size and pagination options

For a **Results Table** component, power users can set the size of the component, and whether to allow end users to page through the results and set the number of results per page.

In the **Display Options** section of the edit view, to configure the component size and pagination options:



☑ Pagination

☑ Results per page

Available results per page options: 10,20,30

Default results per page: 10

1. Under **Table Size**:
   a) In the **Height** field, type the height in pixels of the component.
   b) In the **Width** field, type the width in pixels of the component.
2. 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.
3. To allow end users to set the number of results per page, check the **Results per Page** check box.
4. 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.

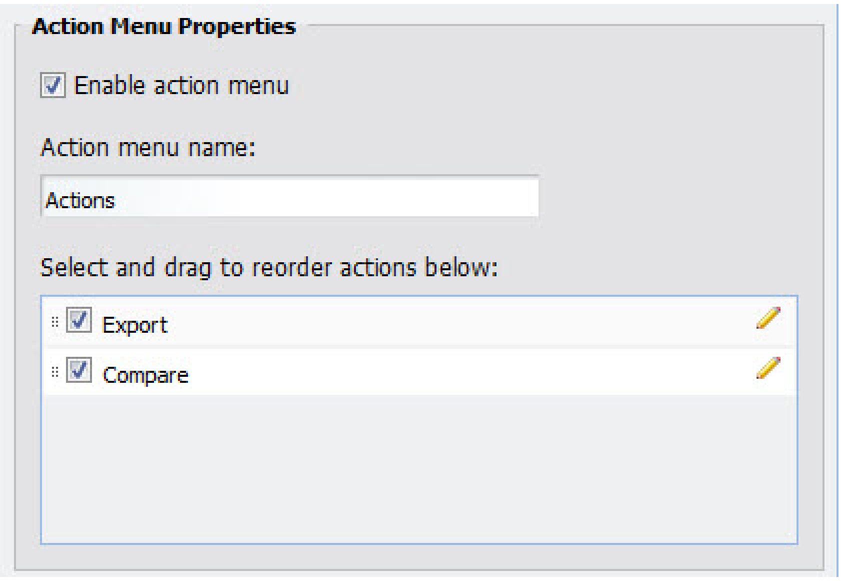
b) From the **Default results per page** drop-down list, select the number of results to display per page by default.

5. 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.
6. To save the configuration changes, click **Save Preferences**.
7. 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 **Results Table** edit view, in the **Action Menu Properties** section, to configure the **Actions** menu:



Action Menu Properties

☑ Enable action menu

Action menu name:

Actions

Select and drag to reorder actions below:

☑ Export

☑ Compare

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 Properties** 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**.

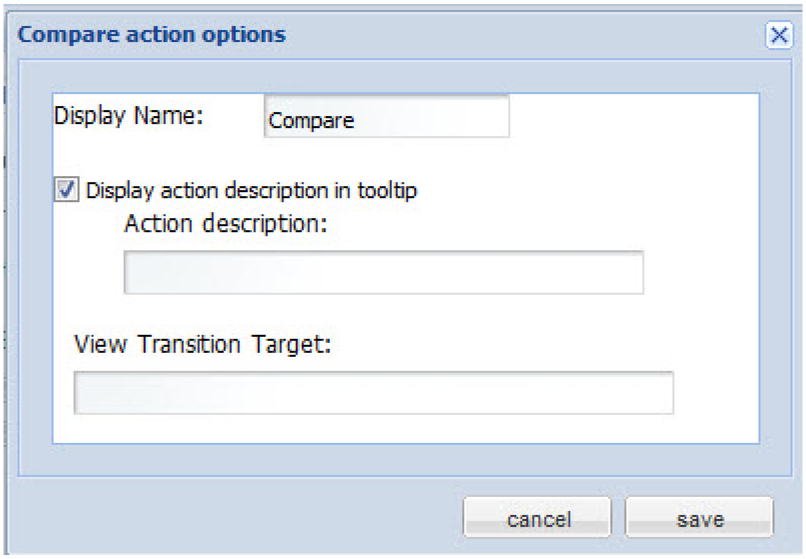
3. In the list of available actions, check the checkbox next to each action to include in the menu.

   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.



Compare action options

Display Name: Compare

☑ Display action description in tooltip

Action description:

View Transition Target:

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.

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**.

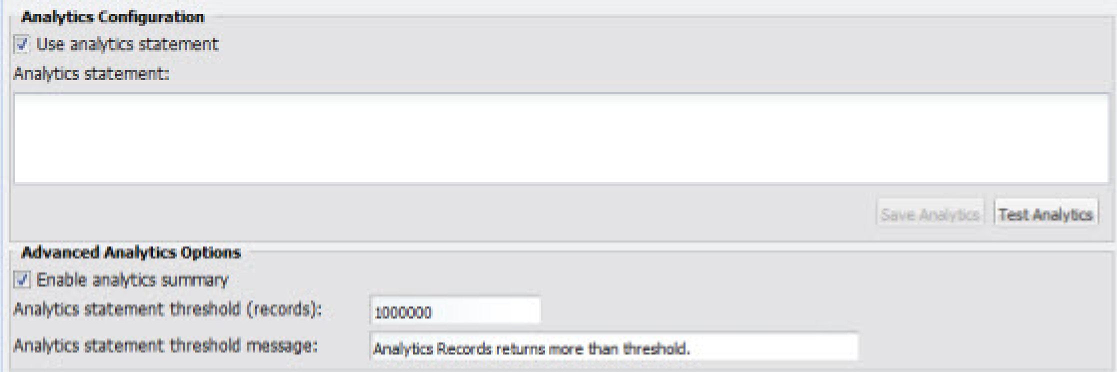
Using Analytics to generate the Results Table results

By default, the **Results Table** component displays a list of records. You can also configure a **Results Table** component to display a set of metrics generated from an Analytics statement.

On the edit view of a **Results Table** component, to use an Analytics statement to generate the **Results Table** results:

1. Under **Analytics Configuration**, check the **Use analytics statement** checkbox.

   The **Analytics statement** text area and **Advanced Analytics Options** section are displayed.



☑ Use analytics statement

Analytics statement:

☑ Enable analytics summary

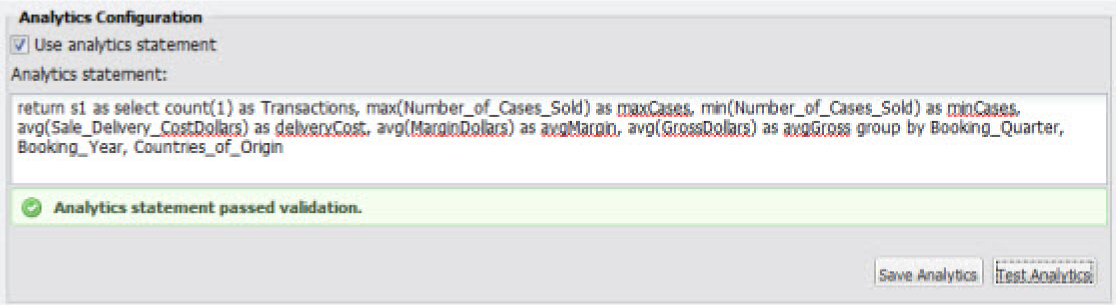
Analytics statement threshold (records): 1000000

Analytics statement threshold message: Analytics Records returns more than threshold.

2. In the **Analytics statement** field, type the Analytics statement.
3. After entering the statement, to validate it, click **Test Analytics**.

   If there are no errors, then:

   - The **Save Analytics** button is enabled.



☑ Use analytics statement

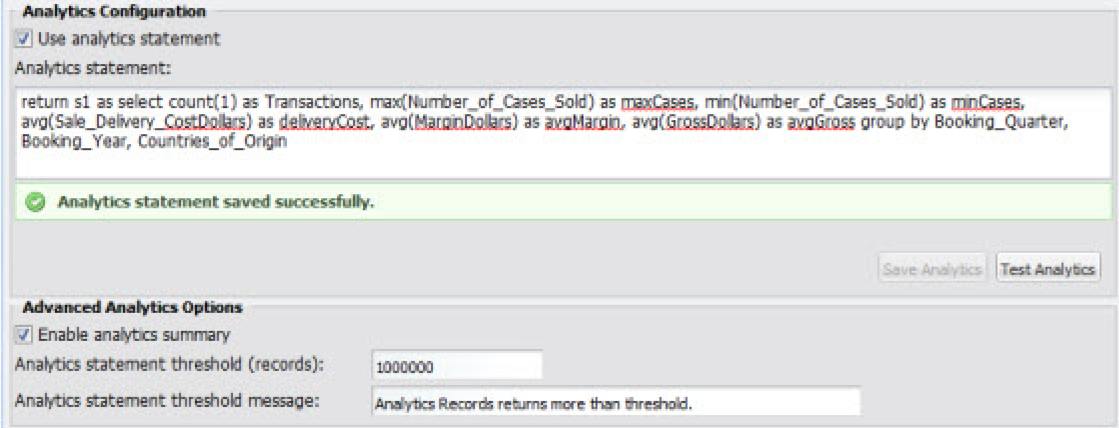
Analytics statement:

```
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
```

Analytics statement passed validation.

   - In the **Column Group 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.

4. To save the Analytics statement, click **Save Analytics**.
5. Under **Advanced Analytics Options**:



☑ Use analytics statement

Analytics statement:

```
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
```

Analytics statement saved successfully.

☑ Enable analytics summary

Analytics statement threshold (records): 1000000

Analytics statement threshold message: Analytics Records returns more than threshold.

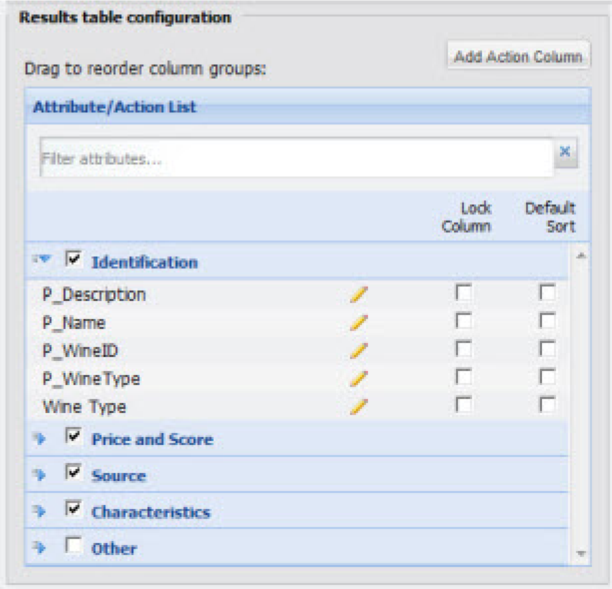
Enable analytics summary	To display a summary row at the bottom of the table, check the checkbox. For each column, you then configure whether to display a summary value in the row.

Analytics statement threshold (records)	In the field, type the maximum number of base records to be processed by the Analytics statement. If the number of records processed is greater than this number, then the end user is prompted to refine the data.
Analytics statement threshold message	In the field, type the message to display to end users when the number of records processed is greater than the maximum.

6. To save the configuration changes, click **Save Preferences**.
7. To exit the edit view, click **Return to Full Page**.

Configuring the column sets to display for record-based results

If you are not using Analytics to populate the table, then you use the **Attribute/Action List** to select the attribute groups to include on the component. Each displayed attribute group becomes a column set.



Results table configuration

Drag to reorder column groups:

Add Action Column

Attribute/Action List

Filter attributes... ×

	Lock Column	Default Sort
☑ **Identification**		
P_Description	□	□
P_Name	□	□
P_WineID	□	□
P_WineType	□	□
Wine Type	□	□
☑ **Price and Score**		
☑ **Source**		
☑ **Characteristics**		
□ **Other**		

To configure the attribute groups to display:

1. To include an attribute group, check the checkbox for the group.
2. For the displayed attribute groups, for each attribute:
   - To display the attribute value as a locked column, check the **Lock Column** checkbox.

     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 the attribute value in the default sort order, check the **Default sort** checkbox.

     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.

3. To set the display order of the attribute groups, drag the group to the correct location in the list.

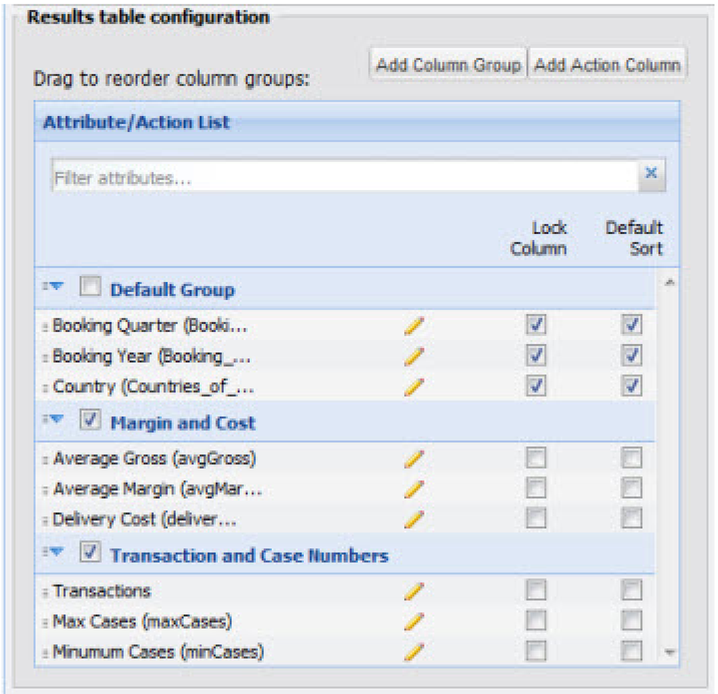
   You can expand and collapse the groups to make them easier to work with. To expand or collapse a group, click the group name.

4. To save the changes, click **Save Preferences**.
5. To exit the edit view, click **Return to Full Page**.

Configuring the column sets to display for Analytics-based results

If you are using Analytics to populate the table, then when you first load the Analytics statement, the **Attribute/Action List** is populated by a single column set called **Default Group**. In the **Default Group** are the metrics and grouping attributes from the Analytics statement.

For results generated from an Analytics statement, you can create and rename column sets. You can then move the metrics into your column sets.

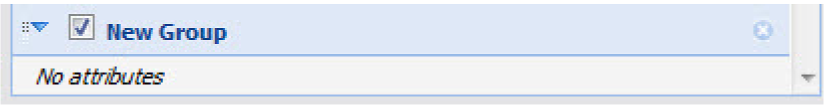


	Lock Column	Default Sort
□ Default Group		
Booking Quarter (Booki...	☑	☑
Booking Year (Booking_...	☑	☑
Country (Countries_of_...	☑	☑
☑ Margin and Cost		
Average Gross (avgGross)	□	□
Average Margin (avgMar...	□	□
Delivery Cost (deliver...	□	□
☑ Transaction and Case Numbers		
Transactions	□	□
Max Cases (maxCases)	□	□
Minumum Cases (minCases)	□	□

To configure the column sets:

1. To add a new column set, click **Add Column Group**.
   An empty column set is added to the list.
2. 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.**
3. To include a column set in the display, check its check box. To remove a column set, uncheck the checkbox.
4. To change the display order of a column set, drag the set to the new location in the list.

5. To remove an empty column set, click its delete icon.



You cannot remove a column set that contains columns.

6. To move a metric into a different column set, drag it into the column set.
7. To change the display order of the columns within a column set, drag each column to the new location in the list.
8. To display the metric value as a locked column, check its **Lock Column** checkbox.

   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.

9. To use the metric in the default sort order for the results, check the **Default sort** checkbox.

   The column is copied to the **Sorting Controls** list.

10. To save the changes, click **Save Preferences**.
11. To exit the edit view, click **Return to Full Page**.

Formatting and selecting actions for Results Table column values

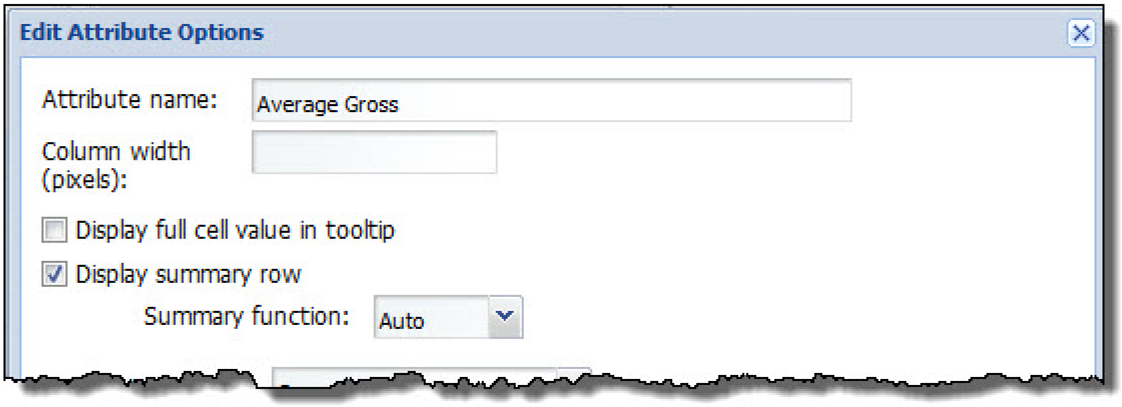
For each column in a **Results Table**, power users can configure the format used to display the value, and whether to allow users to click the value in order to refine data or display related information. For an Analytics-based table, power users also configure the column heading and summary options.

From the edit view of a **Results Table** component, to configure a column:

1. Click the edit icon for the column.

   The **Edit Attribute Options** dialog is displayed.

2. For columns in an Analytics statement, in the **Attribute name** field, type the label to use for the **Results Table** column.



Edit Attribute Options

Attribute name: Average Gross

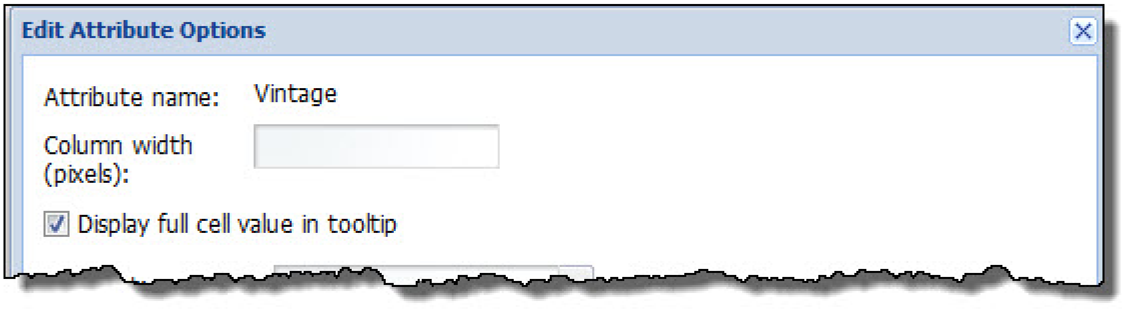
Column width (pixels):

□ Display full cell value in tooltip

☑ Display summary row

Summary function: Auto

For attribute values in a records-based table, the display name is used, and you cannot change the column heading.



Edit Attribute Options

Attribute name: Vintage

Column width (pixels):

☑ Display full cell value in tooltip

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 Analytics-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.

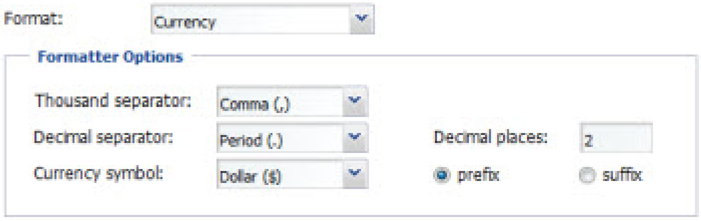
   b) From the **Summary function** drop-down list, select the function used to generate the value in the summary row.

   Note that you cannot display a summary value for a group-by attribute.

6. From the **Format** drop-down list, select the format to use to display the column value.

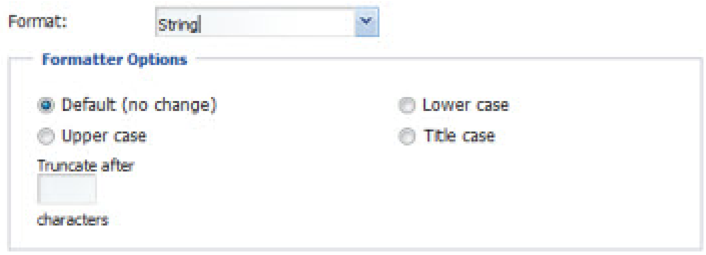
   For attributes, the default value is based on the attribute data type. Make sure to select a format that makes sense for the data being displayed.

   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:

Currency	Indicates that the value is a currency value.  Format: Currency Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Decimal places: 2 Currency symbol: Dollar ($) ● prefix ○ suffix For a currency value, you can configure: • The character to use to separate the thousands • The character to use for the decimal point • The number of decimal places to include • The currency symbol to use • Whether to display the currency symbol in front of the value (**prefix**) or after the value (**suffix**)

String

Indicates that the value is a text string.



Format: String

Formatter Options

● Default (no change) ○ Lower case

○ Upper case ○ Title case

Truncate after

characters

For a string value, you can configure the capitalization.

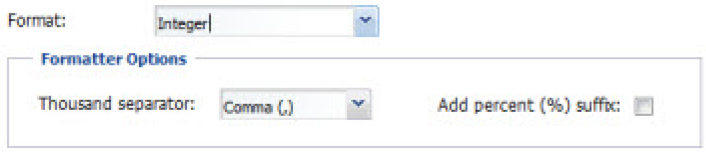
You can either:

- 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.

Integer

Indicates that the value is an integer.



Format: Integer

Formatter Options

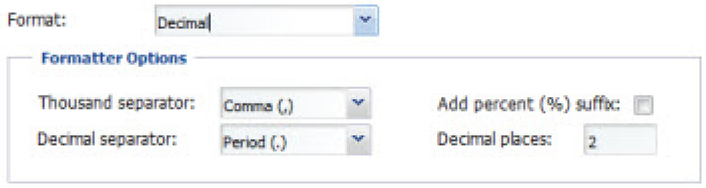
Thousand separator: Comma (,) Add percent (%) suffix: □

For an integer value, you can configure:

- The character to use to separate the thousands
- Whether to display a % sign after the value

Decimal

Indicates that the value is a decimal value.



Format: Decimal

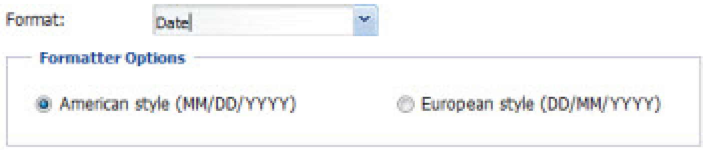
Formatter Options

Thousand separator: Comma (,) Add percent (%) suffix: □

Decimal separator: Period (.) Decimal places: 2

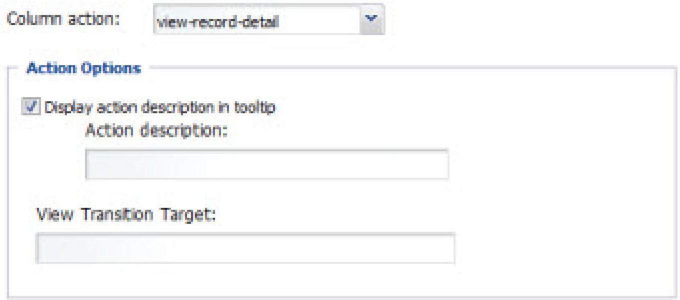
For a decimal value, you can configure:

- The character to use to separate the thousands
- Whether to display a % sign after the value
- The character to use for the decimal
- The number of decimal places to display

Date	Indicates that the value is a date.  Format: Date Formatter Options ● American style (MM/DD/YYYY) ○ European style (DD/MM/YYYY) 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.

7. From the **Column action** drop-down list, select the action to perform when users click the column value.

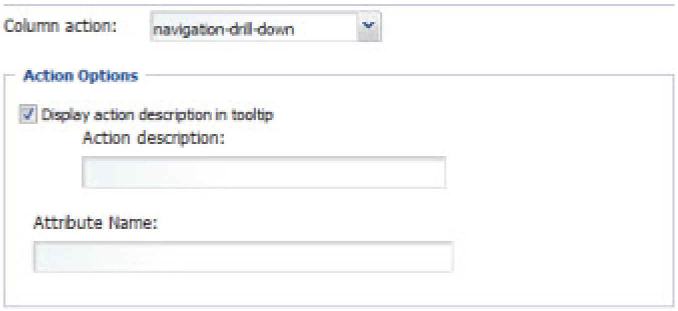
   When you select an option, the **Action options** section is updated to display the fields to use to configure that action type. The available actions are:

none	Indicates that the value is not a hyperlink. This is the default value.
view-record-detail	Indicates that when end users click the icon or link, a **Record Details** component is populated with the values for that row. For records-based tables, the attributes are displayed in their attribute groups. For Analytics-based tables: • The group by attributes are displayed in their attribute groups. • The generated metrics are displayed in the **Other** group.  Column action: view-record-detail Action Options ☑ Display action description in tooltip Action description: View Transition Target: For the **view-record-detail** action, you can configure: • Whether to display a tooltip when the end user hovers over the value • The text to display in the tooltip • The page on which the **Record Details** component is located. If you do not specify a page, the end user stays on the current page.

navigation-drill-down

Indicates that when end users click the value, the value is used to refine the data.

For an Analytics-based table, this option can only be used for the grouping attributes. It cannot be used for the generated metrics.



Column action: navigation-drill-down

Action Options

☑ Display action description in tooltip

Action description:

Attribute Name:

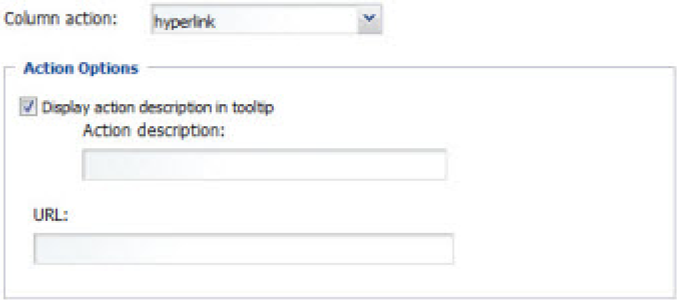
For the **navigation-drill-down** action, you can configure:

- Whether to display a tooltip when the end user hovers 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.

hyperlink

Indicates that the value is a hyperlink to another page or file.



Column action: hyperlink

Action Options

☑ Display action description in tooltip

Action description:

URL:

For the **hyperlink** action, you can configure:

- Whether to display a tooltip when the end user hovers over the value
- The text to display in the tooltip
- The 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`.

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.

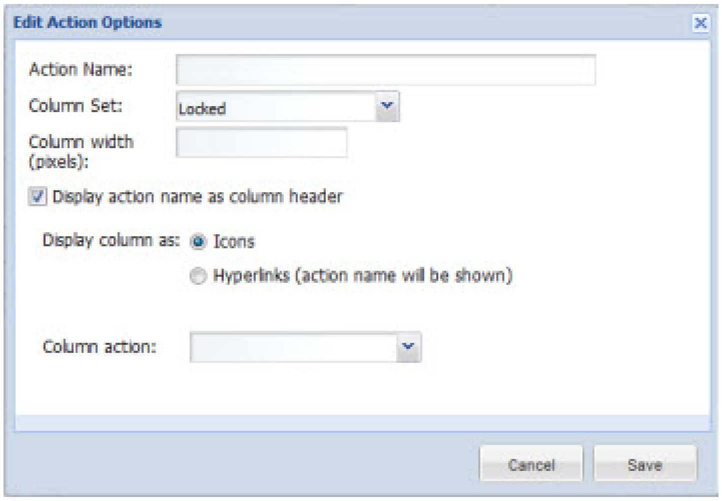
8. To save the column configuration, click **Save**.

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 edit view of a **Results Table** component, to add an action column:

1. Click the **Add Action Column** button.
   The **New action column** dialog is displayed.



Edit Action Options

Action Name:

Column Set: Locked

Column width (pixels):

☑ Display action name as column header

Display column as: ● Icons ○ Hyperlinks (action name will be shown)

Column action:

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.

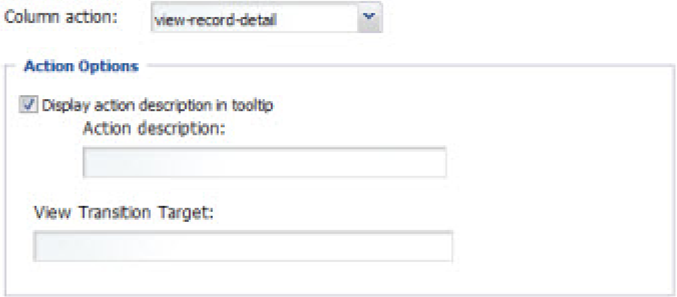
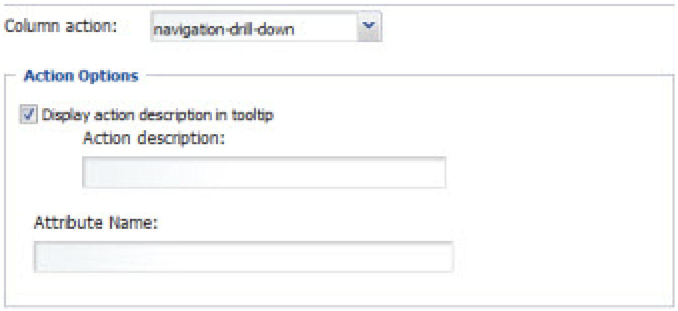
   By default, the box is not checked.

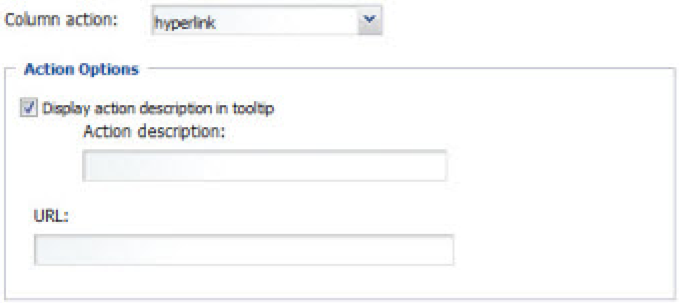
6. Under **Display column as**, click the radio button to indicate how to display the action.

   - 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.

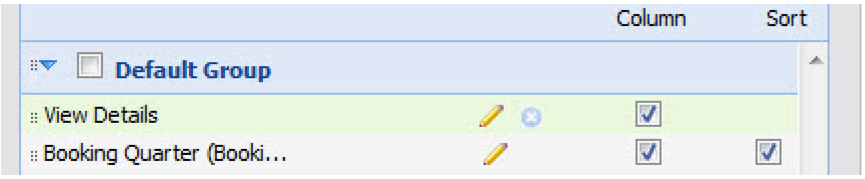
7. Under **Column actions**, from the **Action** drop-down list, select the action.

   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:

view-record-detail	Indicates that when end users click the icon or link, a **Record Details** component is populated with the values for that row. For records-based tables, the **Record Details** component contains the standard list of attribute groups. For Analytics-based tables, the **Record Details** component contains all of the column sets from the table.  Column action: view-record-detail Action Options ☑ Display action description in tooltip Action description: View Transition Target: For the **view-record-detail** action, you can configure: • Whether to display a tooltip when the end user hovers over the column • The text to display in the tooltip • The page on which the **Record Details** component is located. If you do not specify a page, the end user stays on the current page.
navigation-drill-down	Indicates that when end users click the icon or link, the value for the selected attribute is used to refine the data.  Column action: navigation-drill-down Action Options ☑ Display action description in tooltip Action description: Attribute Name: For the **navigation-drill-down** action, you can configure: • Whether to display a tooltip when the end user hovers over the value • The text to display in the tooltip You also must provide the name of the attribute.

hyperlink	Indicates that the action is a hyperlink to another page or file.  Column action: hyperlink Action Options ☑ Display action description in tooltip Action description: URL: For the **hyperlink** action, you can configure: • Whether to display a tooltip when the end user hovers 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 Analytics-based table, the column is added to the **Default Group**.



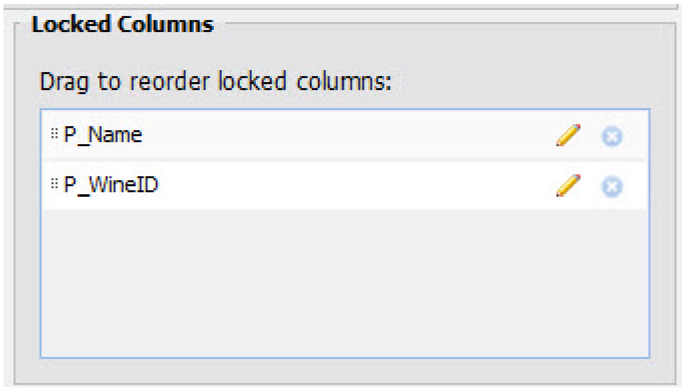
	Column	Sort
□ Default Group		
View Details	☑	
Booking Quarter (Booki...	☑	☑

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.



Locked Columns

Drag to reorder locked columns:

- P_Name
- P_WineID

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** check box.
   - In the **Locked Column Settings** list, click the delete icon for the column.

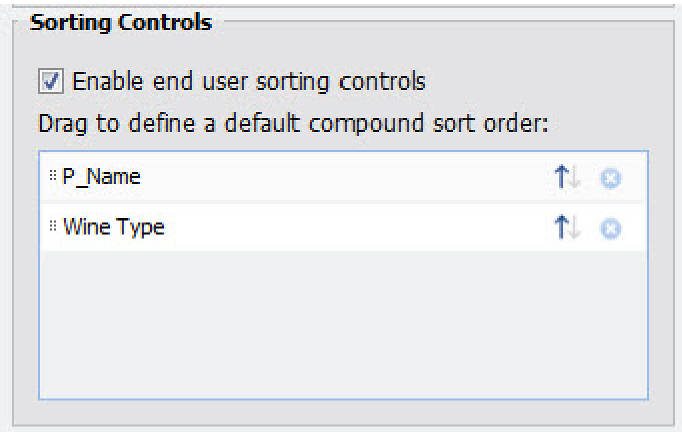
   When you remove a column from the locked columns, it is then displayed in its original column set.
3. To save the changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

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** check box. 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.



Sorting Controls

☑ Enable end user sorting controls

Drag to define a default compound sort order:

- P_Name
- Wine Type

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** check box.
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**.

Chapter 13

Data Visualization Components

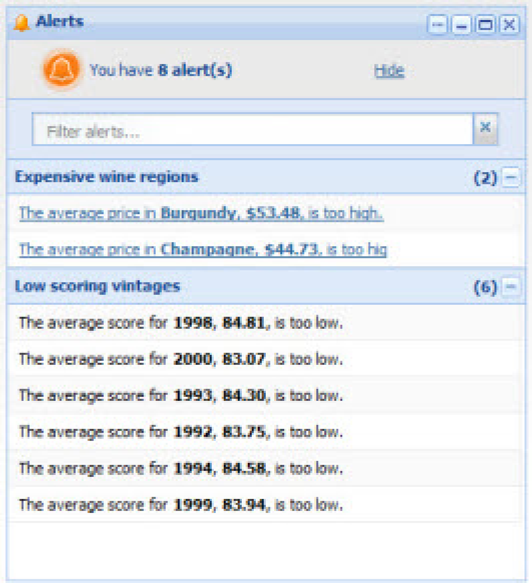
These components provide a more detailed view of your data.

Alerts

The **Alerts** component displays alert messages to end users.

About the Alerts component

The **Alerts** component displays alert messages to the end user. The alert messages are displayed based on values returned by Analytics queries.



You have 8 alert(s)

Expensive wine regions (2)

The average price in **Burgundy, $53.48,** is too high.

The average price in **Champagne, $44.73,** is too hig

Low scoring vintages (6)

The average score for **1998, 84.81,** is too low.

The average score for **2000, 83.07,** is too low.

The average score for **1993, 84.30,** is too low.

The average score for **1992, 83.75,** is too low.

The average score for **1994, 84.58,** is too low.

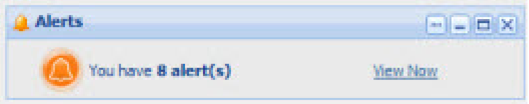
The average score for **1999, 83.94,** is too low.

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.

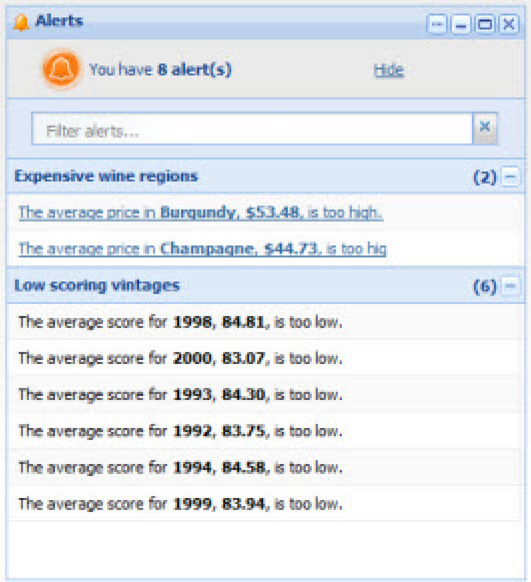
When end users first log in, if there are alerts available, the **Alerts** component displays with a message indicating the number of alerts.



You have **8 alert(s)**

To display the list of the alerts, click **View Now**.

The alerts are divided into groups.



You have **8 alert(s)**

Expensive wine regions (2)

The average price in **Burgundy, $53.48**, is too high.

The average price in **Champagne, $44.73**, is too hig

Low scoring vintages (6)

The average score for **1998**, **84.81**, is too low.

The average score for **2000**, **83.07**, is too low.

The average score for **1993**, **84.30**, is too low.

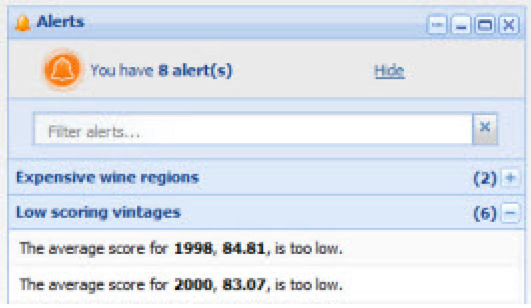
The average score for **1992**, **83.75**, is too low.

The average score for **1994**, **84.58**, is too low.

The average score for **1999**, **83.94**, is too low.

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.



You have **8 alert(s)**

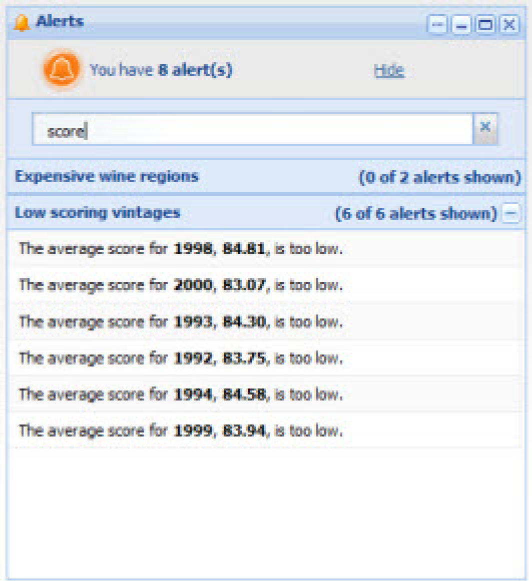
Expensive wine regions (2)

Low scoring vintages (6)

The average score for **1998**, **84.81**, is too low.

The average score for **2000**, **83.07**, is too low.

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.



You have **8 alert(s)**

Expensive wine regions (0 of 2 alerts shown)

Low scoring vintages (6 of 6 alerts shown)

The average score for **1998**, **84.81**, is too low.

The average score for **2000**, **83.07**, is too low.

The average score for **1993**, **84.30**, is too low.

The average score for **1992**, **83.75**, is too low.

The average score for **1994**, **84.58**, is too low.

The average score for **1999**, **83.94**, is too low.

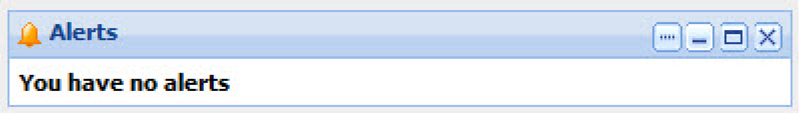
If the alert is hyperlinked, then when you click the alert, the data is refined using the attribute values associated with the message. You can be redirected to a different page to view the refined data, or the refinement can be done on the current page. The attribute value is added to the **Breadcrumbs** 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.

Adding an Alerts component to a page

On the **Add Component** window, the **Alerts** component is listed in the **Latitude** category.

When you first add the component, it simply indicates that there are no alerts:



You have no alerts

Configuring an Alerts component

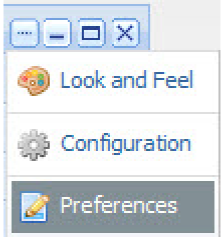
The configuration for the **Alerts** component includes both general component options and the alert groups.

Displaying the edit view for an Alerts component

To configure an **Alerts** component, you must display the edit view for the component.

To display the edit view for an **Alerts** component:

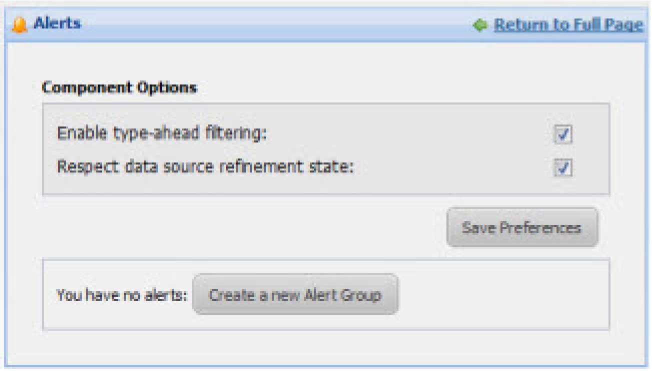
1. Click the **...** button for the component.
2. From the drop-down menu, select **Preferences**.



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:


Alerts

Return to Full Page

Component Options

Enable type-ahead filtering: ☑

Respect data source refinement state: ☑

Save Preferences

You have no alerts: Create a new Alert Group

To configure the component options:

1. Configure the checkboxes as follows:

Enable type-ahead filtering	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. If the box is not checked, then the search box is not displayed. This box is checked by default.
Respect data source refinement state	If this checkbox is checked, then the Analytics query for the alert is only performed on the data for the current refinement. If the box is not checked, then the Analytics query is performed on the entire data set. This box is checked by default.

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 Analytics 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

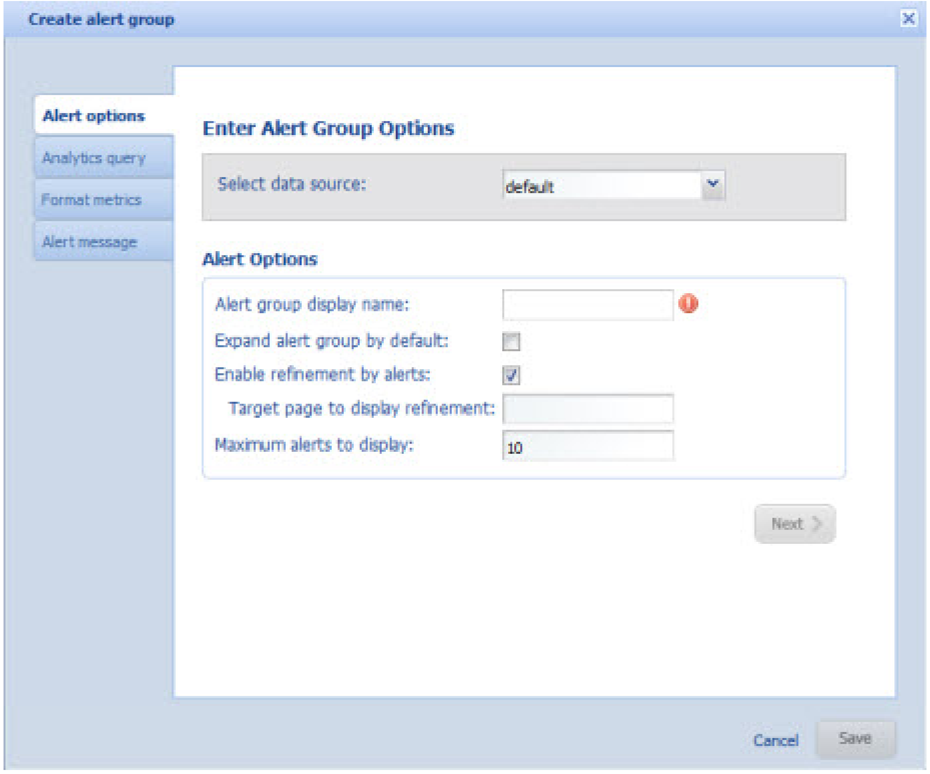
When you first add an **Alerts** component, it has no alert groups.

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.



Enter Alert Group Options

Select data source: default

Alert Options

Alert group display name:

Expand alert group by default: ☐

Enable refinement by alerts: ☑

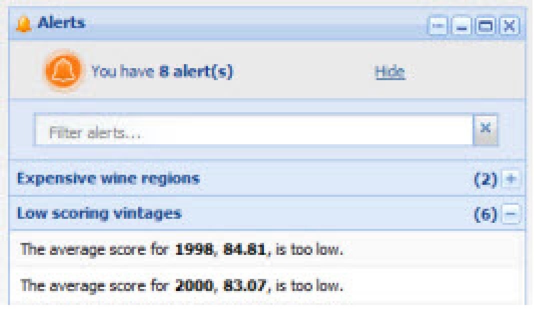
Target page to display refinement:

Maximum alerts to display: 10

To configure the alert options:

1. From the **Select data source** drop-down list, select the data source to use for the alert Analytics query.
2. In the **Alert Options** section:

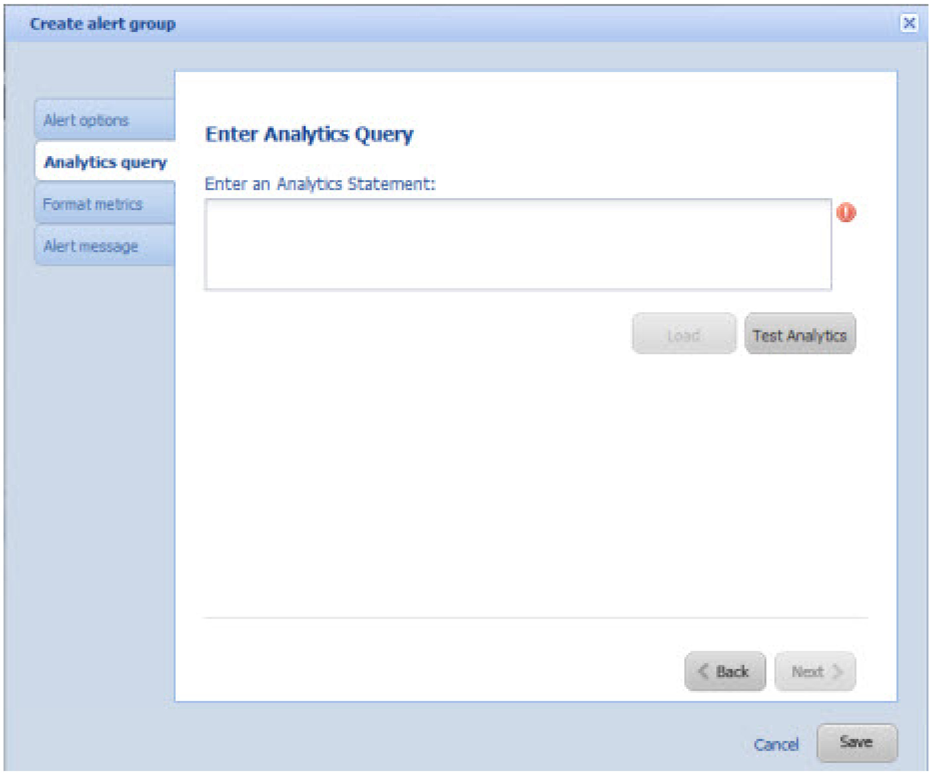
Alert group display name	Required. In the field, type the name of the alert group. This is the name that displays to the end user.

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.  Alerts You have **8 alert(s)** Hide Filter alerts... **Expensive wine regions** (2) **Low scoring vintages** (6) The average score for **1998**, **84.81**, is too low. The average score for **2000**, **83.07**, is too low. 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. 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.
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 **Analytics query** tab, click **Next**.

Configuring the Analytics query for an alert group

On the **Analytics query** tab, you configure the Analytics query for the alert group. If any records match the query, then alerts are displayed.



To configure the Analytics query:

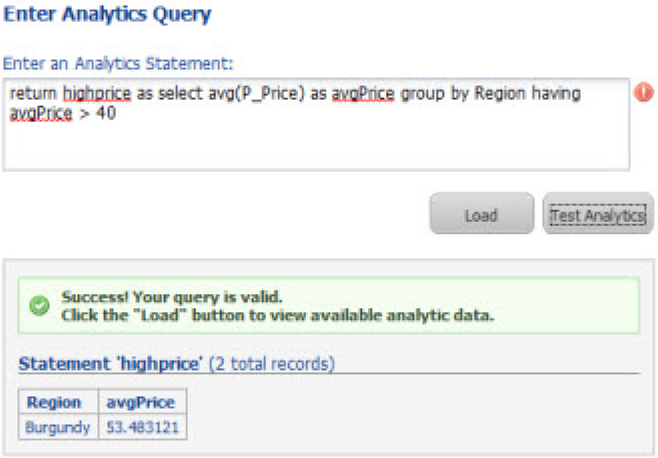
1. In the text area, enter the Analytics query.

   Note: When entering the query, remember that all attribute names, including names of derived attributes, must be NCName-compliant. They cannot contain spaces or special characters.

2. After you enter the query, to validate the query, click **Test Analytics**.

   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.



```
return highprice as select avg(P_Price) as avgPrice group by Region having
avgPrice > 40
```

Success! Your query is valid.
Click the "Load" button to view available analytic data.

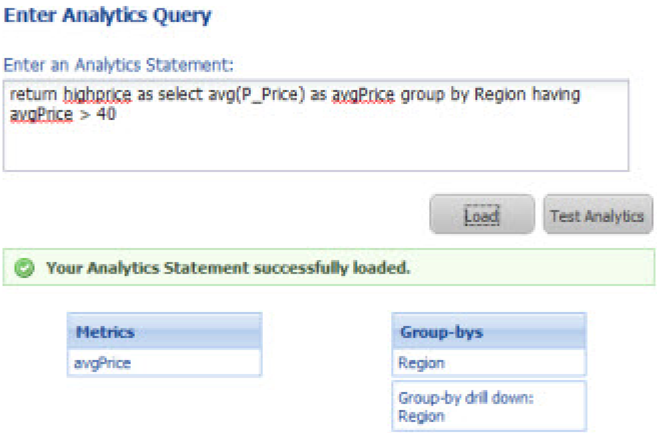
Statement 'highprice' (2 total records)

Region	avgPrice
Burgundy	53.483121

3. 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 Analytics Query

Enter an Analytics Statement:

```
return highprice as select avg(P_Price) as avgPrice group by Region having
avgPrice > 40
```

Your Analytics Statement successfully loaded.

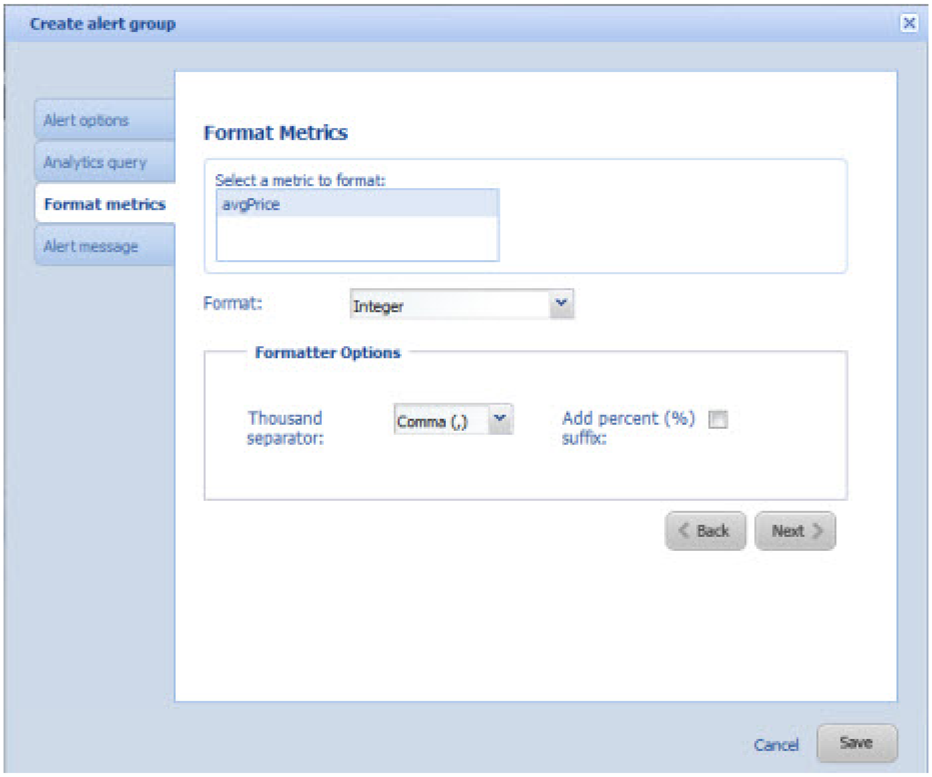
Metrics
avgPrice

Group-bys
Region
Group-by drill down: Region

4. 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.



Create alert group

Format Metrics

Select a metric to format:
avgPrice

Format: Integer

Formatter Options

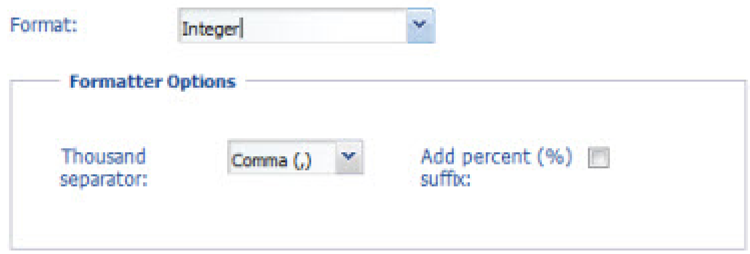
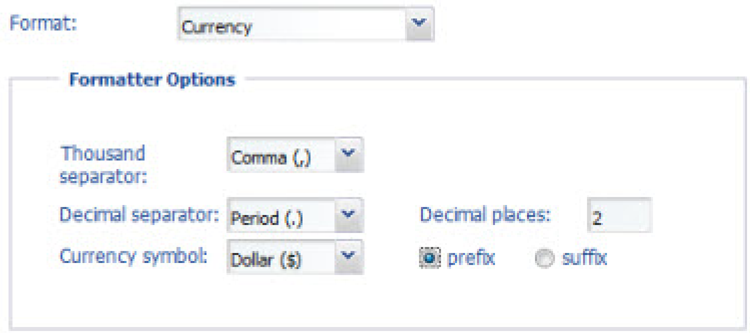
Thousand separator: Comma (,)

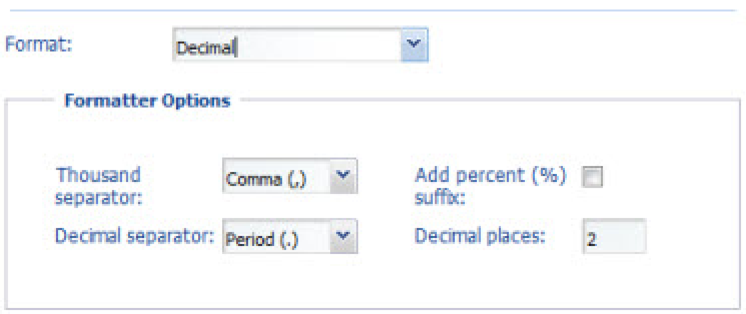
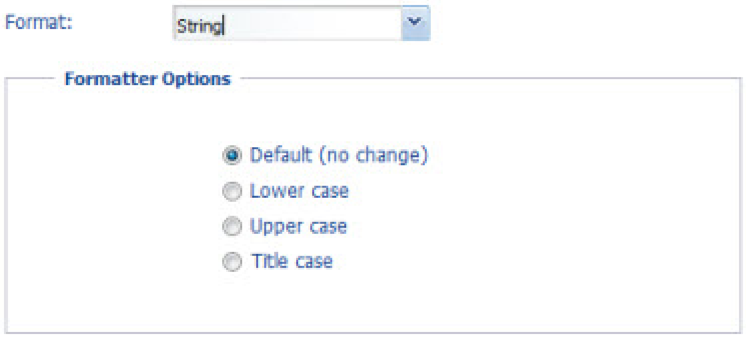
Add percent (%) suffix: □

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:

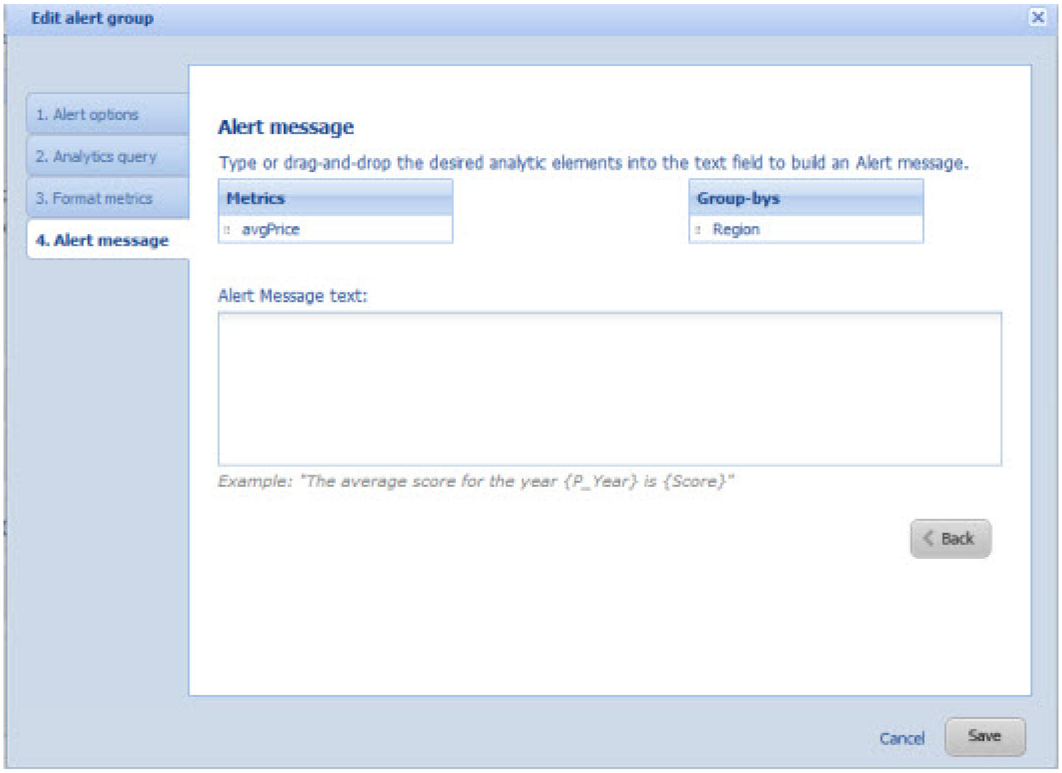
Integer	Indicates that the value is an integer. For integer values, you can configure:  Format: Integer Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ • The character to use to separate the thousands • Whether to display the percent symbol after the value
Currency	Indicates that the value is a currency value. For currency values, you can configure:  Format: Currency Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Decimal places: 2 Currency symbol: Dollar ($) ● prefix ○ suffix • 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:

	 Format: Decimal Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ Decimal separator: Period (.) Decimal places: 2 • 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:  Format: String Formatter Options ● Default (no change) ○ Lower case ○ Upper case ○ Title case • 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.



Type or drag-and-drop the desired analytic elements into the text field to build an Alert message.

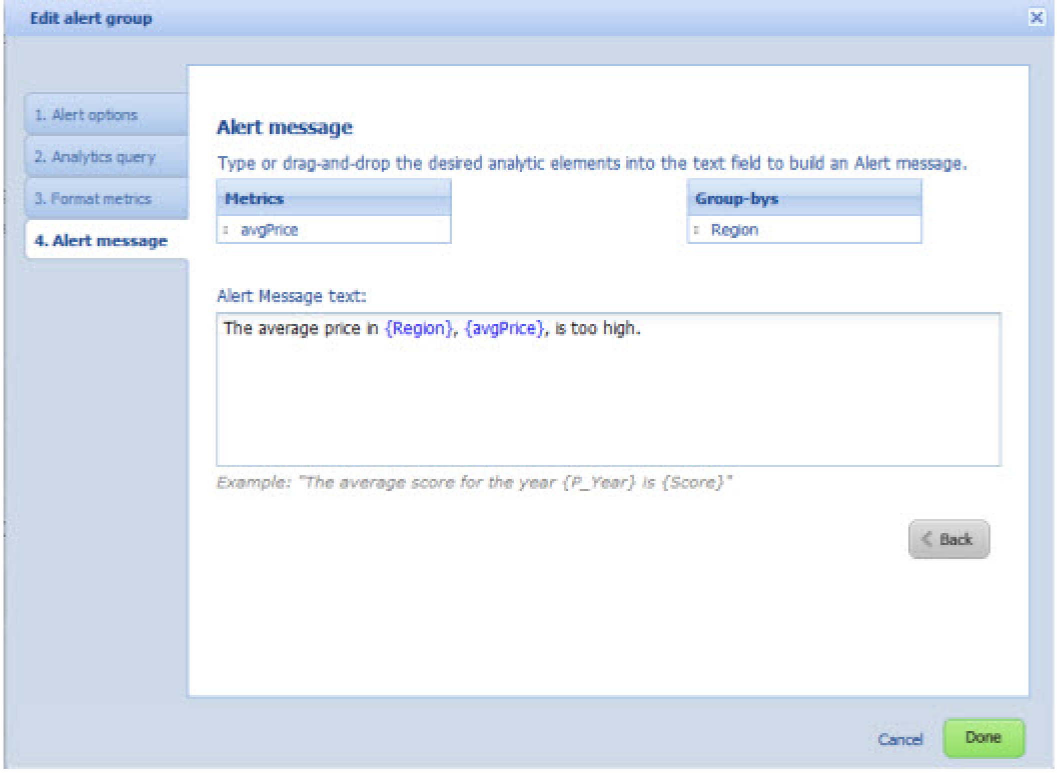
Alert Message text:

Example: "The average score for the year {P_Year} is {Score}"

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.



Edit alert group

Alert message

Type or drag-and-drop the desired analytic elements into the text field to build an Alert message.

Metrics	Group-bys
avgPrice	Region

Alert Message text:

The average price in {Region}, {avgPrice}, is too high.

Example: "The average score for the year {P_Year} is {Score}"

Saving changes to an alert group

The alert group configuration is saved from the alert group dialog.

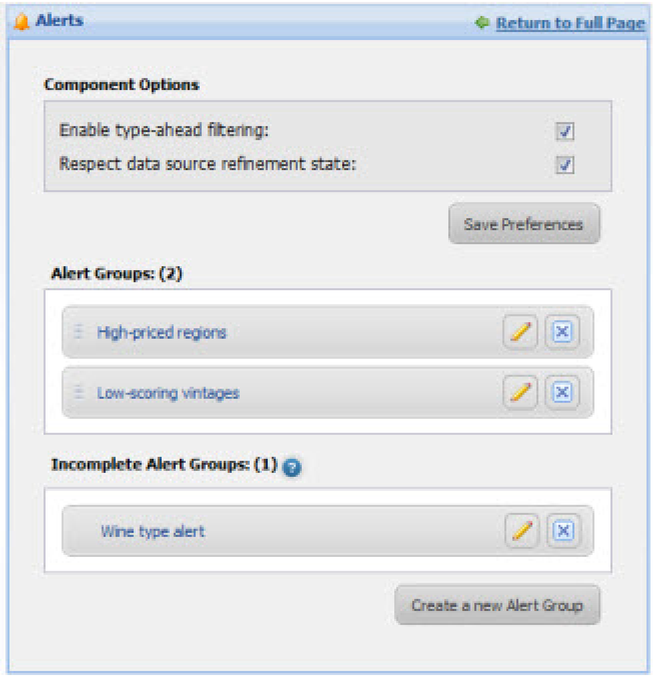
To save an alert group:

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 analytics query or an alert message), it is displayed under the **Incomplete Alert Groups** heading, and is not displayed to end users.



Component Options

Enable type-ahead filtering: ☑

Respect data source refinement state: ☑

Alert Groups: (2)

- High-priced regions
- Low-scoring vintages

Incomplete Alert Groups: (1)

- Wine type alert

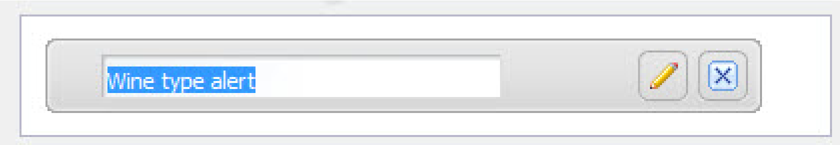
Editing an alert group

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.



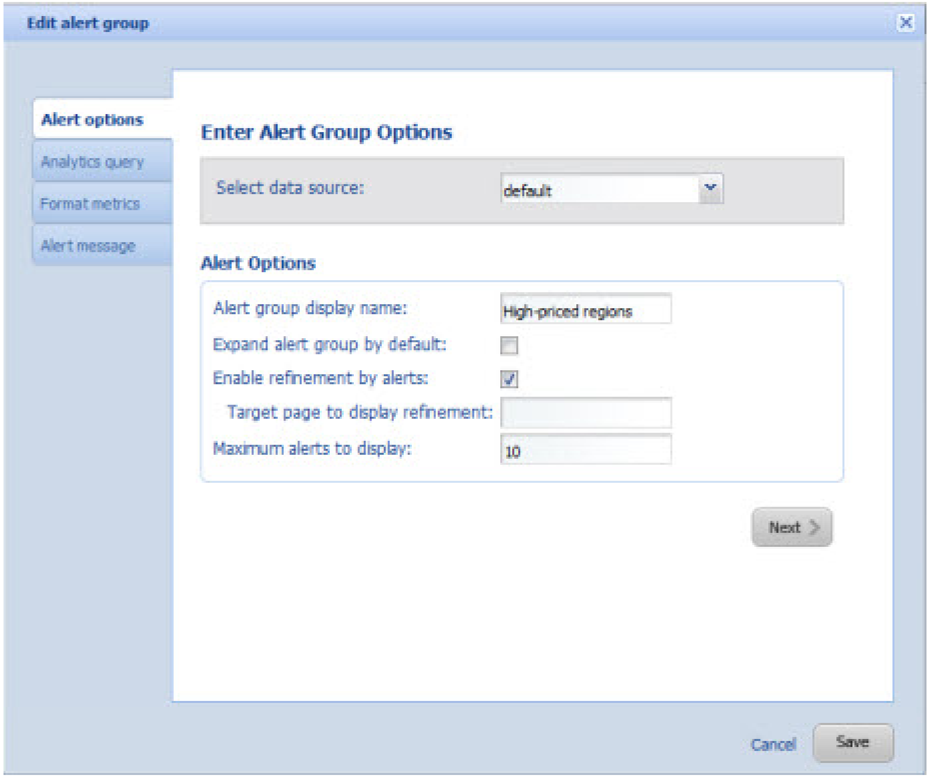
2. Type the new name, then press **Enter.**

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.



Select data source: default

Alert group display name: High-priced regions

Expand alert group by default: □

Enable refinement by alerts: ☑

Target page to display refinement:

Maximum alerts to display: 10

2. Make the required changes.

   If you change the selected data source, then you must retest and reload the Analytics query.

   Latitude 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**.

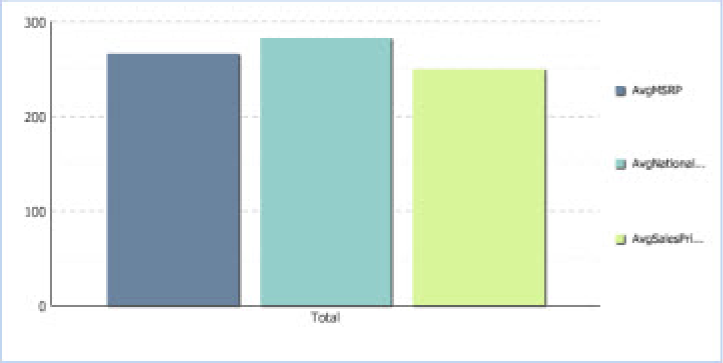
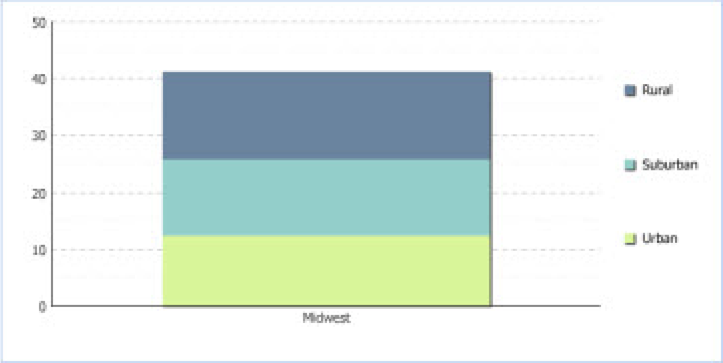
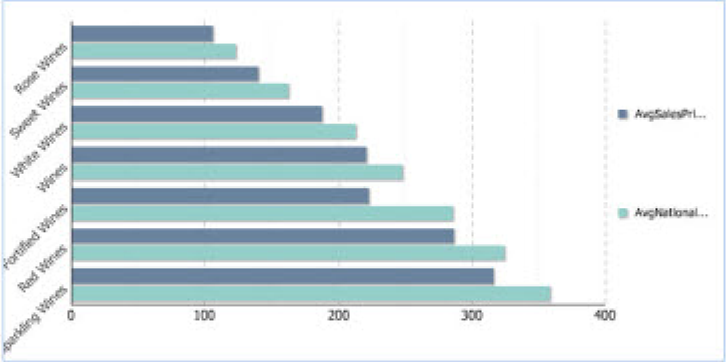
Chart

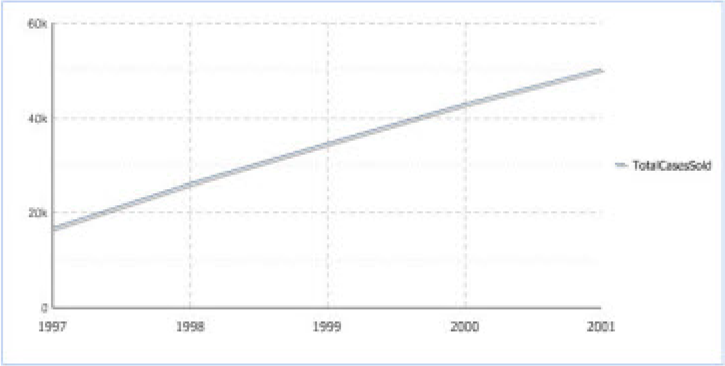
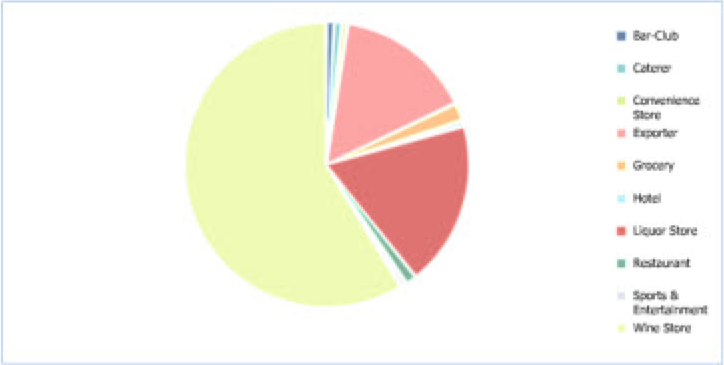
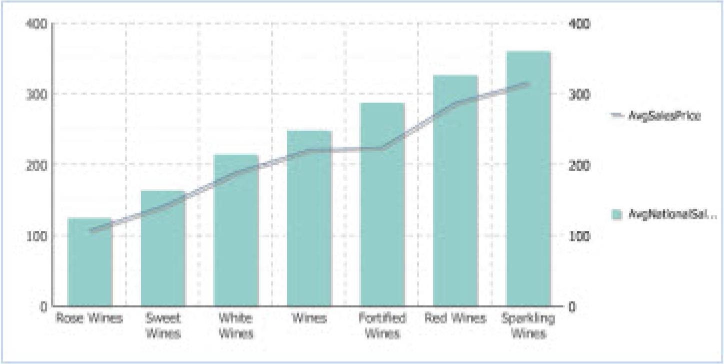
The **Chart** component displays data using standard chart formats.

About the Chart component

The **Chart** component allows end users to view Corda-based Analytics charting of the current data.

It supports the following chart styles:

Vertical Bar	
Stacked Vertical Bar	
Horizontal Bar	

Line	
Pie	
Line Bar Combo	

The **Chart** component can contain multiple individual charts. End users then select which chart they want to view.

End users can mouse over a chart to reveal numeric data, and click a chart element to filter results by the attribute values displayed in the chart.

End users also may be able to select a different metric or grouping option to display on the chart.

Dependencies

To use the **Chart** component, you must install Corda. For details, see the *Latitude Installation Guide*.

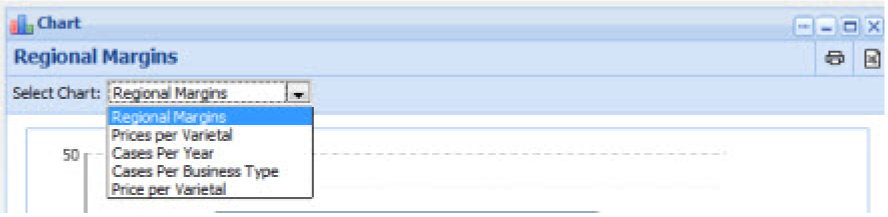
The **Chart** component also requires the use of Endeca Analytics.

Using Chart

End users can modify the display of the **Chart** component, and use the chart elements to refine the data.

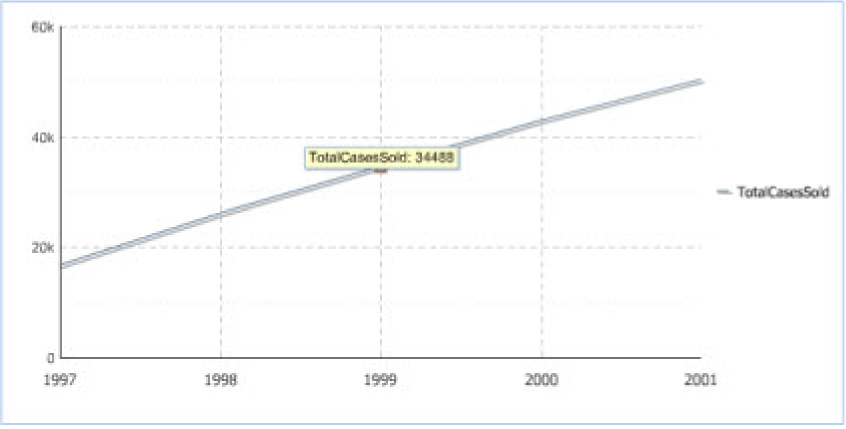
Selecting the chart to display

If the **Chart** component contains more than one chart, then at the top of the component is a drop-down list of the charts. To display a chart, end users select it from the list.



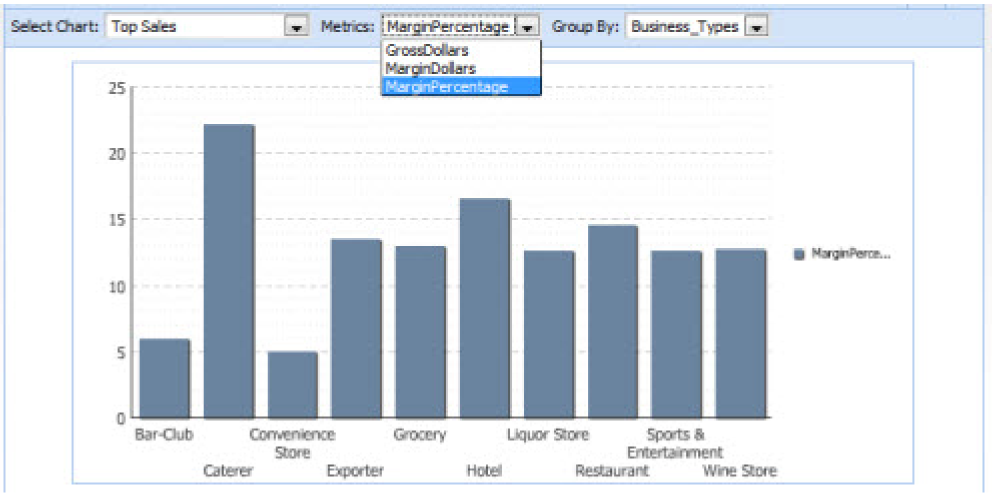
Displaying related data for a chart element

For each chart, end users can mouse over chart elements to see the related data.



Changing the display of a parametric chart

Power users also can create parametric charts, which allow end users to modify the chart display by selecting values from the drop-down lists at the top of the chart.



Select Chart: Top Sales

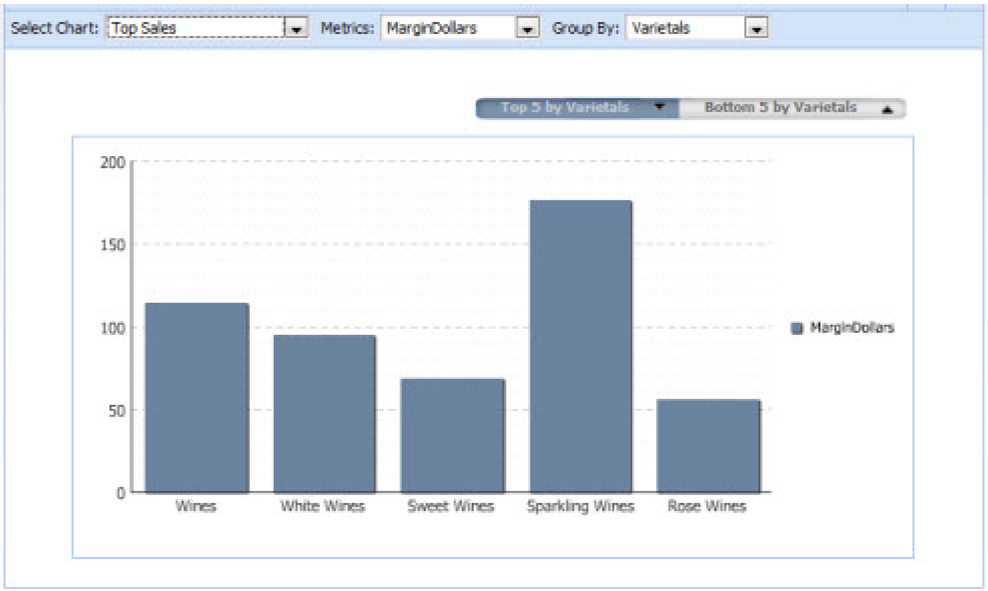
Metrics: MarginPercentage

Group By: Business_Types

Using the "top n" function to change the display

If there are a large number of values, the chart may only display the top or bottom "n" number of values. For example, the chart may only show the top 10 sales figures or the 5 lowest performing regions.

In that case, the chart may include a toggle to switch between showing the top and bottom set of values.



Select Chart: Top Sales

Metrics: MarginDollars

Group By: Varietals

Using the chart to refine data

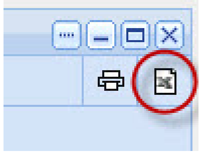
When end users click a chart element, the data is refined by the group by attribute value for the selected chart element. Note that this function only works for managed attributes.

The attribute value is added to any **Breadcrumbs** component that uses the same data source.

Exporting a chart to a spreadsheet

End users can export the chart data to a spreadsheet.

To export the chart, end users click the export icon at the top right of the component.



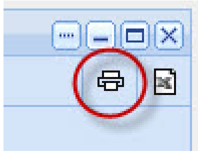
They are then prompted to save or open the spreadsheet file.

Note that if the **Chart** component contains multiple charts, only the currently displayed chart is exported.

Printing a chart

End users also can print a chart.

To print a chart, end users click the print icon at the top right of the component.



A printable version of the component is displayed in a separate browser window, along with the print dialog.

End users select the print options, then print the chart.

Note that if the **Chart** component contains multiple charts, only the currently displayed chart is printed.

Configuring the Chart component

For the **Chart** component, power users can configure the data source, component dimensions, and the chart or charts to display.

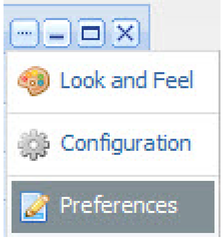
Note: Unlike most components, the **Chart** component includes online help. This help, which mostly provides tips on working with Analytics statements, can be accessed from the same drop-down menu that contains the **Preferences** option. For more information on working with Analytics statements, see the "Using Analytics" chapter.

Configuring the data source and chart options

The top sections of the edit view allow power users to configure the data source and general display options for the **Chart** component as a whole.

To configure the data source and display options:

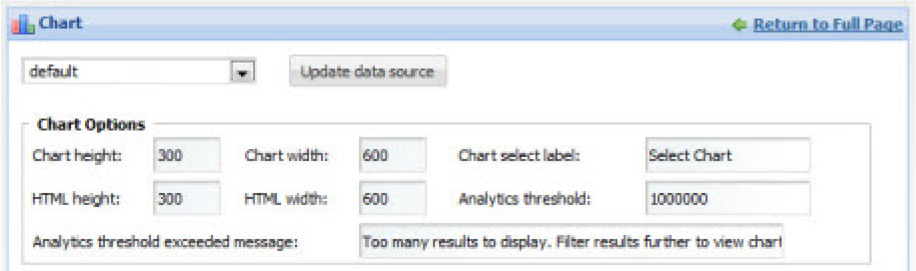
1. To display the edit view for a **Chart** component, click its **....** button, then click **Preferences**.



2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.

   Note that the same data source is used for all of the charts created for the **Chart** component.

3. Under **Chart Options**, set the display options for the chart:



default

Chart Options

Chart height: 300 Chart width: 600 Chart select label: Select Chart

HTML height: 300 HTML width: 600 Analytics threshold: 1000000

Analytics threshold exceeded message: Too many results to display. Filter results further to view chart

Chart Height	In the field, enter the display height in pixels of the chart.
Chart Width	In the field, enter the display width in pixels of the chart.
HTML Height	In the field, enter the height in pixels of the HTML page in which to display the chart. This is typically the same as the chart height, but should not be smaller.
HTML Width	In the field, enter the width in pixels of the HTML page in which the chart will be displayed. This is typically the same as the chart width, but should not be smaller.
Chart Select Label	In the field, enter the label to use for the drop-down list from which end users select the chart to display. This is only used if the component contains more than one chart.
Analytics Threshold	In the field, type the maximum number of Analytics results the query can return. If the number of results is larger than this number, then the message in the **Analytics Threshold Exceeded Message** field is displayed.
Analytics Threshold Exceeded Message	In the field, type the message to display if the number of query results exceed the value specified in the **Analytics Threshold** field.

Configuring charts for a Chart component

From the edit view of the **Chart** component, power users can create one or more charts to include on the component. For each chart, the power user selects the chart style, and provides an Analytics statement to generate the chart data.

On the edit view, each tab represents a chart.

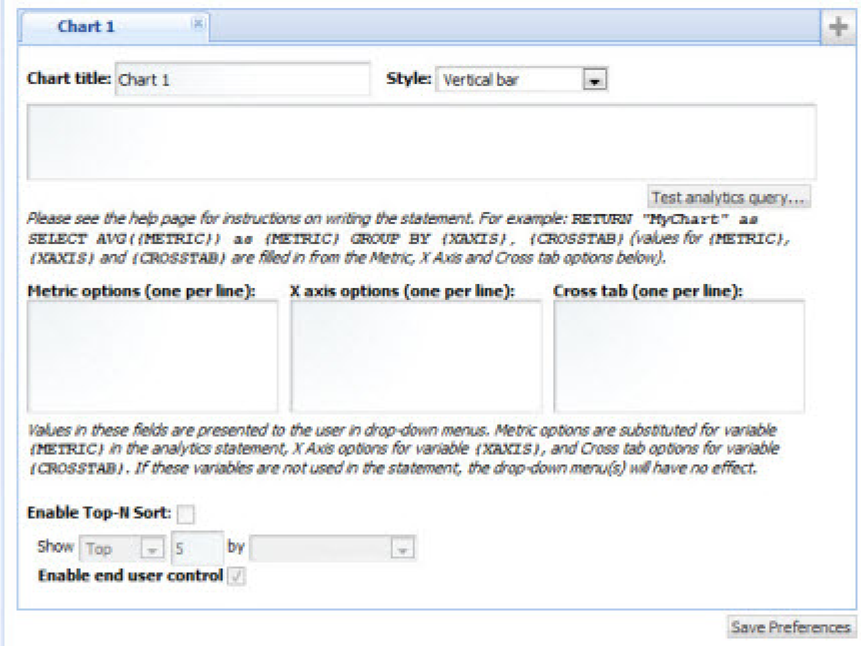


Chart title: Chart 1 Style: Vertical bar

Please see the help page for instructions on writing the statement. For example: `RETURN "MyChart" as SELECT AVG({METRIC}) as {METRIC} GROUP BY {XAXIS}, {CROSSTAB}` *(values for* `{METRIC}`*,* `{XAXIS}` *and* `{CROSSTAB}` *are filled in from the Metric, X Axis and Cross tab options below).*

Metric options (one per line): X axis options (one per line): Cross tab (one per line):

Values in these fields are presented to the user in drop-down menus. Metric options are substituted for variable `{METRIC}` *in the analytics statement, X Axis options for variable* `{XAXIS}`*, and Cross tab options for variable* `{CROSSTAB}`*. If these variables are not used in the statement, the drop-down menu(s) will have no effect.*

Enable Top-N Sort: □

Show Top 5 by

Enable end user control ☑

To add a chart to the **Chart** component, click the **+** button.

To remove a chart from the component, click the delete button at the top right corner of the chart tab.

On the chart tab, to configure a chart:

1. In the **Chart title** field, enter the title for the chart.

   For end users, the title is displayed at the top of the chart. If the component contains multiple charts, it is displayed in the chart drop-down list.

   In the edit view, the title also is used as the chart tab label.

2. From the **Style** drop-down list, select the type of chart.
3. In the text area, enter the Analytics statement on which the chart will be based. For example:

   ```
   RETURN YearlyAverages AS SELECT
       AVG(Product_MSRPDollars) AS AvgMSRP,
      AVG(Product_Avg_National_Sales_PriceDollars) AS AvgNationalSalesPrice,

       AVG(Unit_Sale_PriceDollars) AS AvgSalesPrice
   GROUP
   ```

   Note that you can only configure labels for metrics, using the AS functionality in the Analytics statement. The labels must be NCName-compliant (no spaces or special characters).

   To create a parametric chart, where end users can use drop-down lists to change the chart display, you replace the actual attributes with the following placeholder values:

   - `{METRIC}` is replaced at runtime by a user-specified value from the **Metrics Options** list. If you use the `{METRIC}` token, you must use it for both the field to be returned and the "AS" alias for that field.
   - `{XAXIS}` is replaced at runtime by a user-specified value from the **X Axis Options** list.
   - `{CROSSTAB}` is replaced at runtime by a user-specified value from the **Cross tab** list

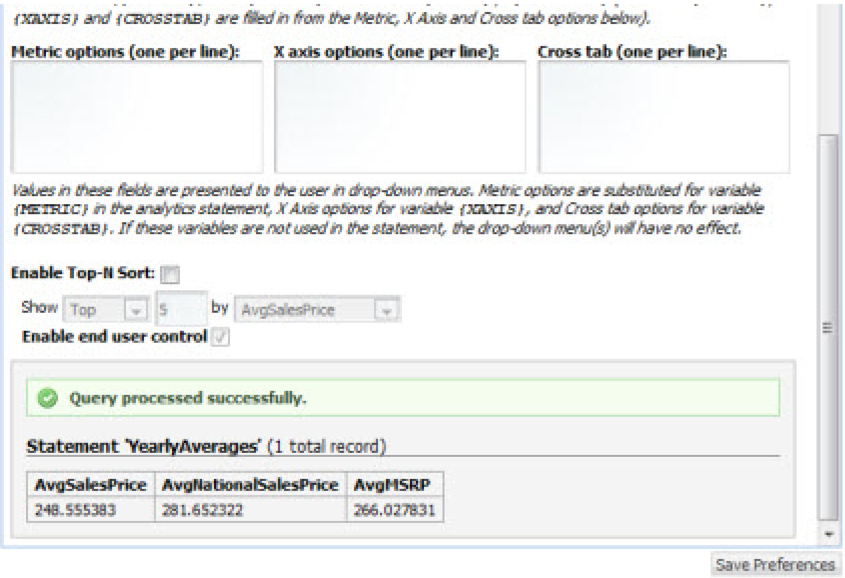
   For example:

   ```
   RETURN MyChart AS SELECT AVG({METRIC}) GROUP BY {XAXIS}
   ```

4. To test the validity of the statement, click the **Test analytics query** button.

   If the statement is not valid, then an error message is displayed.

   If the statement is valid, then a "success" message is displayed, as well as the metric values from the statement.



{XAXIS} and {CROSSTAB} are filled in from the Metric, X Axis and Cross tab options below).

Metric options (one per line): **X axis options (one per line):** **Cross tab (one per line):**

Values in these fields are presented to the user in drop-down menus. Metric options are substituted for variable {METRIC} in the analytics statement, X Axis options for variable {XAXIS}, and Cross tab options for variable {CROSSTAB}. If these variables are not used in the statement, the drop-down menu(s) will have no effect.

Enable Top-N Sort: □

Show Top 5 by AvgSalesPrice

Enable end user control ☑

Query processed successfully.

Statement 'YearlyAverages' (1 total record)

AvgSalesPrice	AvgNationalSalesPrice	AvgMSRP
248.555383	281.652322	266.027831

5. For a parametric chart, in the **Metric Options**, **X Axis Options**, and **Cross tab** fields, enter the lists of values.

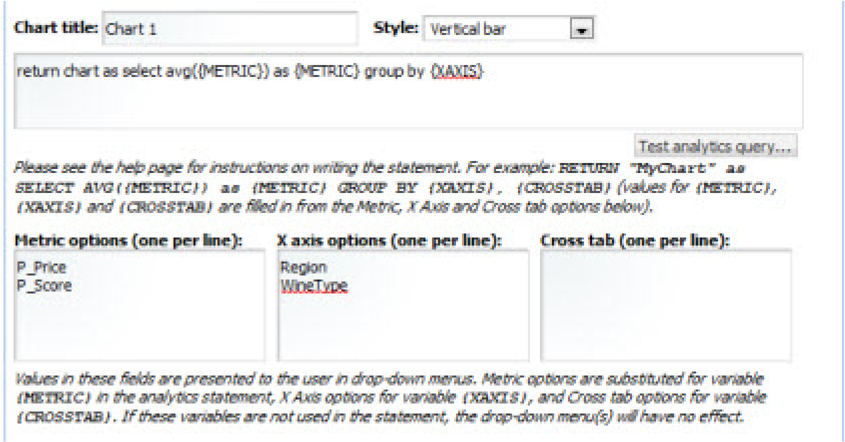


Chart title: Chart 1 **Style:** Vertical bar

```
return chart as select avg({METRIC}) as {METRIC} group by {XAXIS}
```

Please see the help page for instructions on writing the statement. For example: RETURN "MyChart" as SELECT AVG({METRIC}) as {METRIC} GROUP BY {XAXIS}, {CROSSTAB} *(values for {METRIC}, {XAXIS} and {CROSSTAB} are filled in from the Metric, X Axis and Cross tab options below).*

Metric options (one per line):
P_Price
P_Score

X axis options (one per line):
Region
WineType

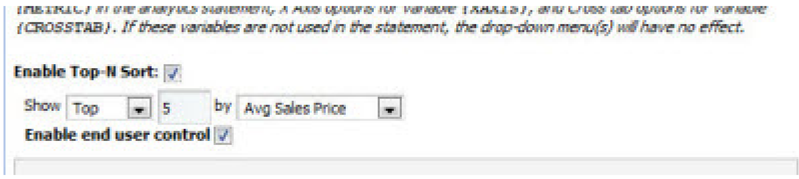
Cross tab (one per line):

Values in these fields are presented to the user in drop-down menus. Metric options are substituted for variable {METRIC} in the analytics statement, X Axis options for variable {XAXIS}, and Cross tab options for variable {CROSSTAB}. If these variables are not used in the statement, the drop-down menu(s) will have no effect.

   These values are used to as the available options in the drop-down lists used by end users to control the chart display. Cross tabs are grouped aggregations such as cross-tabulated totals over one or more attributes.

6. To only display the top or bottom "n" values on the chart:

   a) Check the **Enable Top-N Sort** checkbox.



{METRIC} in the analytics statement, X Axis options for variable {XAXIS}, and Cross tab options for variable {CROSSTAB}. If these variables are not used in the statement, the drop-down menu(s) will have no effect.

Enable Top-N Sort: ☑

Show Top 5 by Avg Sales Price

Enable end user control ☑

b) From the **Show** drop-down list, to only display the top values, select **Top**. To only display the bottom values, select **Bottom.**

c) In the field, enter the number of values to display.

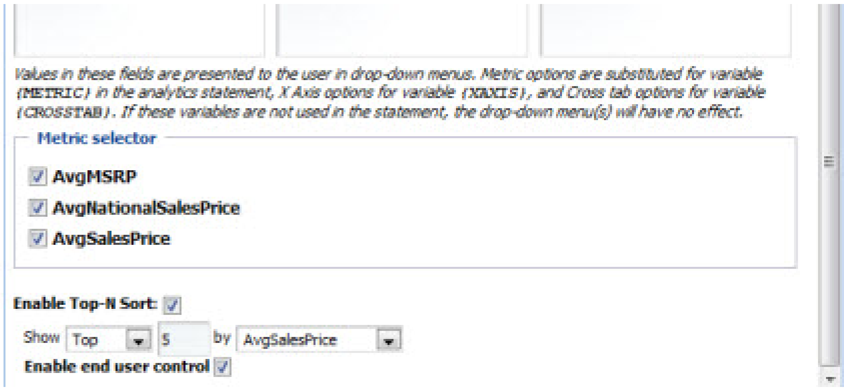
   The default is 10.

d) From the **by** drop-down list, select the metric to use to sort the displayed values.

e) To allow end users to toggle between the top and bottom values, check the **Enable end user control** check box.

7. To save the new or updated Analytics statement, click **Save Preferences**.

   The **Metric selector** section is displayed, listing all of the metrics from the current Analytics statement.



Values in these fields are presented to the user in drop-down menus. Metric options are substituted for variable {METRIC} in the analytics statement, X Axis options for variable {XAXIS}, and Cross tab options for variable {CROSSTAB}. If these variables are not used in the statement, the drop-down menu(s) will have no effect.

Metric selector

☑ AvgMSRP

☑ AvgNationalSalesPrice

☑ AvgSalesPrice

Enable Top-N Sort: ☑

Show Top ▾ 5 by AvgSalesPrice ▾

Enable end user control ☑

8. By default, the chart displays all of the metrics. From the **Metric selector** section, to remove a metric from the display, uncheck its checkbox.

   For example, your Analytics statement may include a metric to control the display order of the chart elements. However, you may not want the chart to display this value.

9. If you have made any other changes, then to save those changes, click **Save Preferences**.

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

Chart component examples

Here are examples of each chart style. Each example includes both the Analytics statement and the resulting chart display.

Vertical bar chart

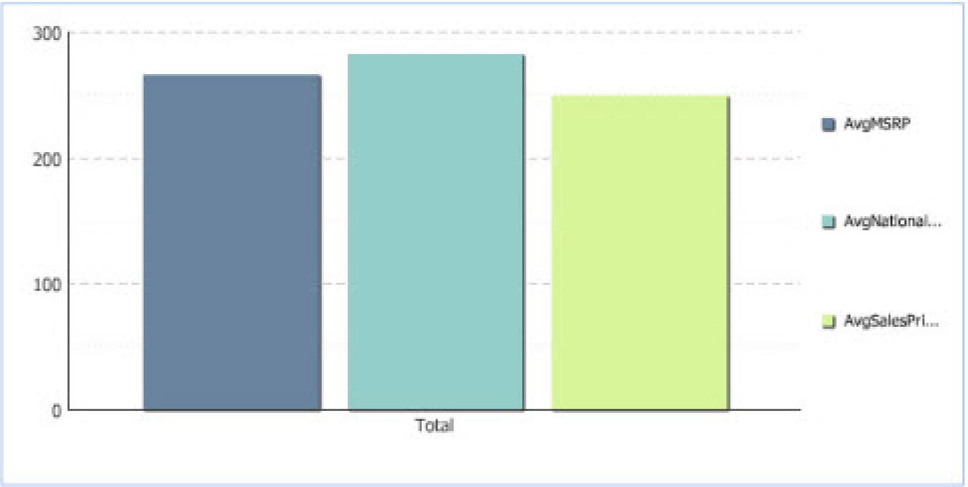
Here is an example of a vertical bar chart.

The Analytics statement for this example uses a zero GROUP BY statement with three metrics:

```
RETURN YearlyAverages AS SELECT
    AVG(Product_MSRPDollars) AS AvgMSRP,
    AVG(Product_Avg_National_Sales_PriceDollars) AS AvgNationalSalesPrice,

    AVG(Unit_Sale_PriceDollars) AS AvgSalesPrice
GROUP
```

The chart displays “AvgMSRP”, “AvgNationalSalesPrice”, and “AvgSalesPrice” metrics:



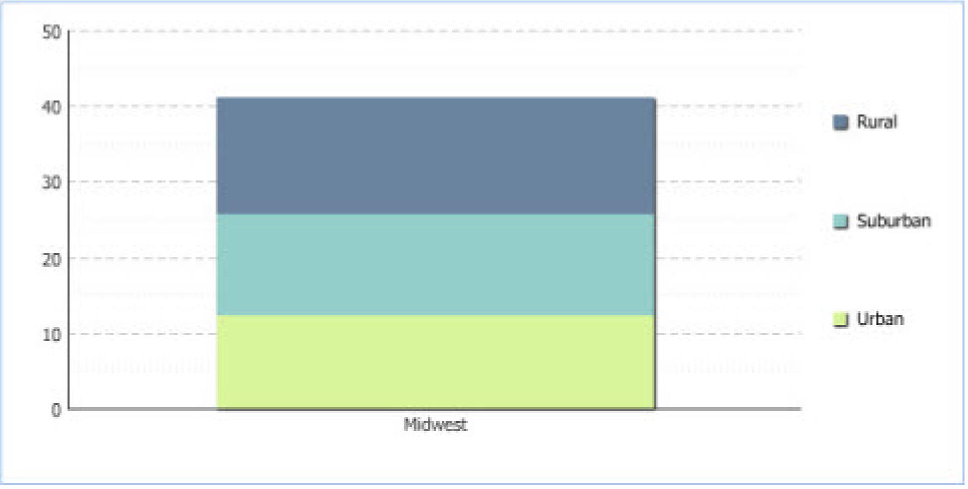
Stacked vertical bar chart

Here is an example of a stacked vertical bar chart.

The Analytics statement for this example has two GROUP BY statements. One metric is summarized by a specified categorization, and the second GROUP BY is specified as the cross tab.

```
RETURN RegionalMargin AS SELECT
   SUM(GrossDollars * MarginPercentage) / SUM(GrossDollars) AS DollarWeighte¬
dAvgMargin
GROUP BY Regions, Demographics
```

The chart summarizes the “DollarWeightedAvgMargin” metric for each Region (which is the first GROUP BY and therefore the primary category) and presents a cross-tabulation with each Demographic (which is the second GROUP BY and therefore the cross tab):



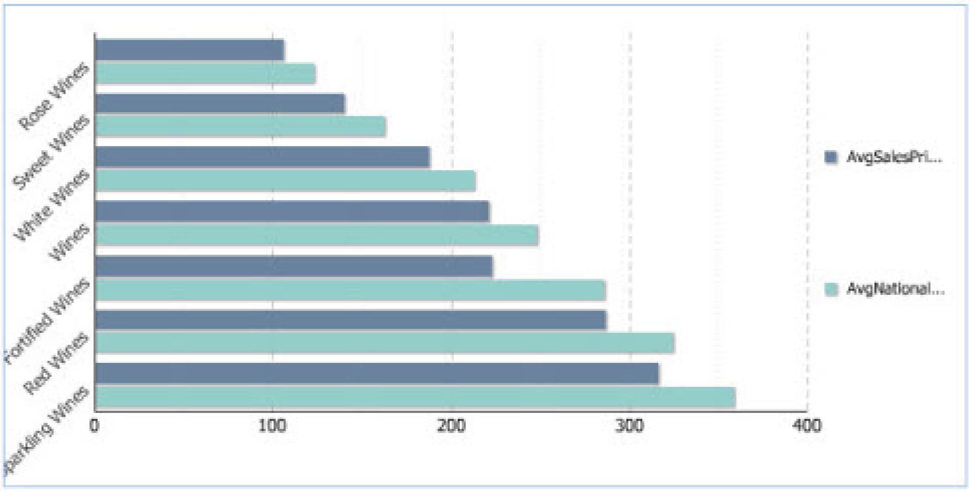
Horizontal bar chart

Here is an example of a horizontal bar chart.

The Analytics statement for this example uses a single GROUP BY statement with two metrics:

```
RETURN NumCases AS SELECT
    AVG(Unit_Sale_PriceDollars) AS AvgSalesPrice,
    AVG(Product_Avg_National_Sales_PriceDollars) AS AvgNationalSalesPrice
GROUP BY Varietals ORDER BY AvgNationalSalesPrice
```

The chart compares the "AvgSalesPrice" metric to the "AvgNationalSalesPrice" for each varietal:



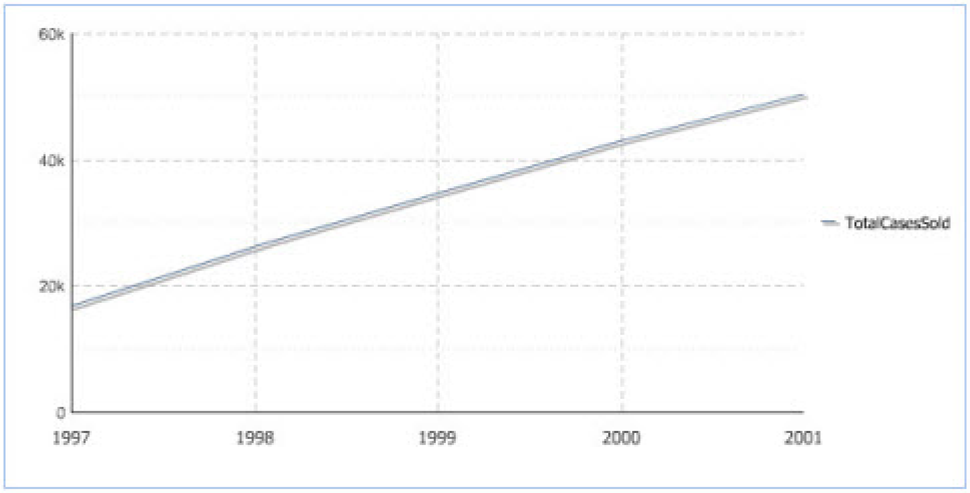
Line chart

Here is an example of a line chart.

The Analytics statement for this example has one GROUP BY and a single metric:

```
RETURN NumCases AS SELECT
    SUM(Number_of_Cases_Sold) AS TotalCasesSold
GROUP BY Booking_Year
```

The chart summarizes the “TotalCasesSold” metric for each Booking_Year:



Pie chart

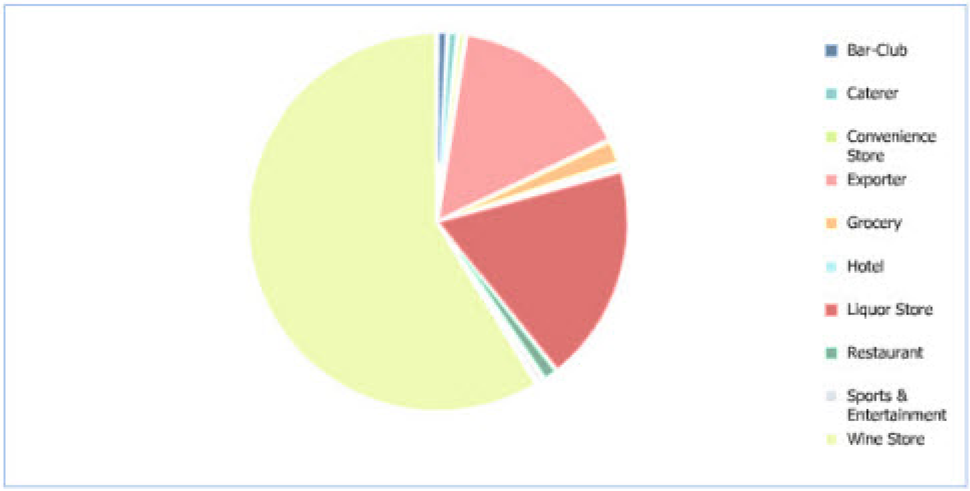
Here is an example of a pie chart.

The Analytics statement for this example contains one GROUP BY and a single metric:

```
RETURN NumCases AS SELECT
    SUM(Number_of_Cases_Sold) AS TotalCasesSold
GROUP BY Business_Types
```

Important: The pie chart type only supports a single GROUP BY statement. If you have multiple GROUP BYs in your statements, the chart will not display or execute drill-down as expected.

The chart summarizes the "TotalCasesSold" metric for each value of Business_Type:



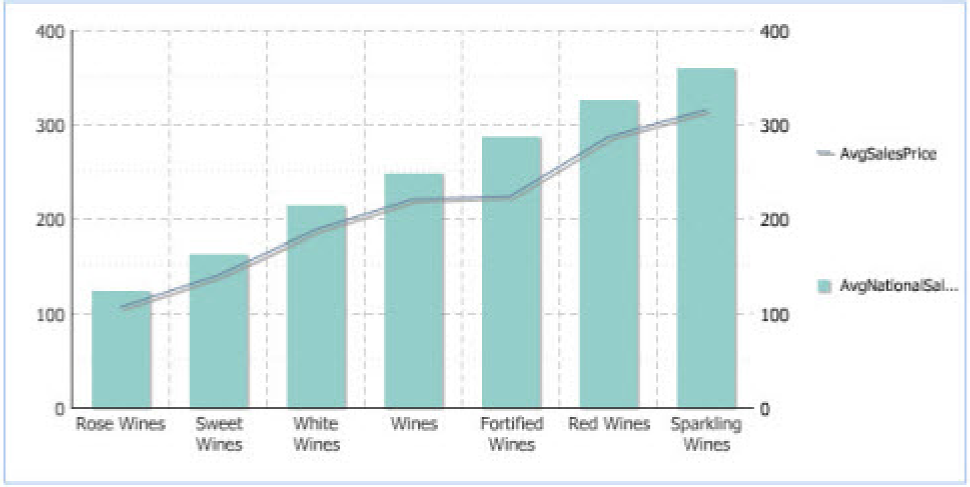
Line bar combo chart

Here is an example of a line bar combo chart.

The Analytics statement for this example contains one GROUP BY statement and two metrics:

```
RETURN NumCases AS SELECT
    AVG(Unit_Sale_PriceDollars) AS AvgSalesPrice,
    AVG(Product_Avg_National_Sales_PriceDollars) AS AvgNationalSalesPrice
GROUP BY Varietals ORDER BY AvgNationalSalesPrice
```

The chart compares the "AvgSalesPrice" metric to the "AvgNationalSalesPrice" for each varietal:

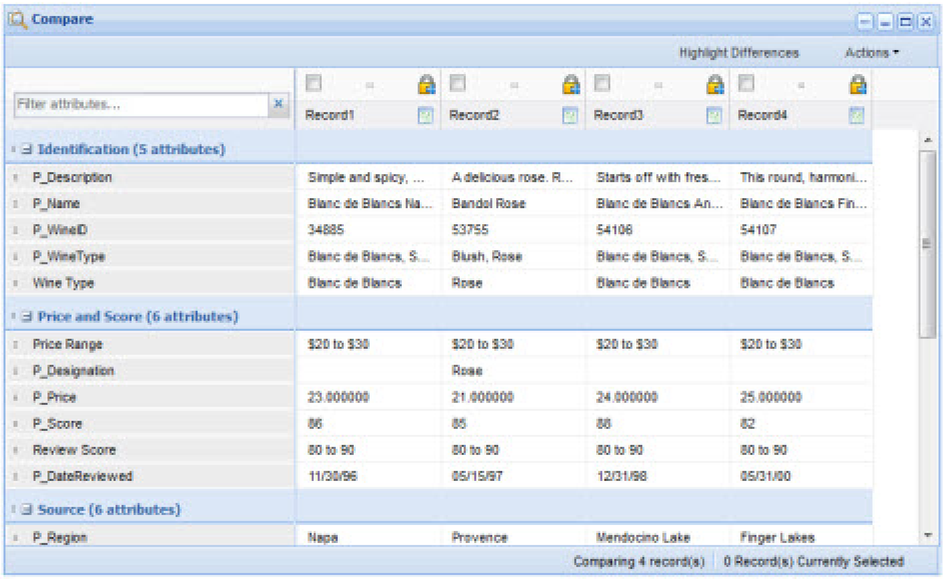


Compare

The **Compare** component allows for direct comparisons of selected **Results Table** records.

About the Compare component

The **Compare** component allows end users to view two or more records from a **Results Table** component side-by-side in order to analyze their differences and similarities.



	Record1	Record2	Record3	Record4
⊟ Identification (5 attributes)				
P_Description	Simple and spicy, ...	A delicious rose. R...	Starts off with fres...	This round, harmoni...
P_Name	Blanc de Blancs Na...	Bandol Rose	Blanc de Blancs An...	Blanc de Blancs Fin...
P_WineID	34885	53755	54106	54107
P_WineType	Blanc de Blancs, S...	Blush, Rose	Blanc de Blancs, S...	Blanc de Blancs, S...
Wine Type	Blanc de Blancs	Rose	Blanc de Blancs	Blanc de Blancs
⊟ Price and Score (6 attributes)				
Price Range	$20 to $30	$20 to $30	$20 to $30	$20 to $30
P_Designation		Rose		
P_Price	23.000000	21.000000	24.000000	25.000000
P_Score	86	85	88	82
Review Score	80 to 90	80 to 90	80 to 90	80 to 90
P_DateReviewed	11/30/96	05/15/97	12/31/98	05/31/00
⊟ Source (6 attributes)				
P_Region	Napa	Provence	Mendocino Lake	Finger Lakes

Comparing 4 record(s) | 0 Record(s) Currently Selected

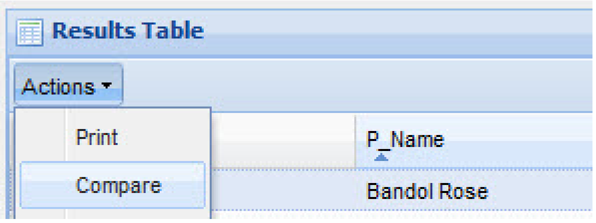
Using Compare

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.

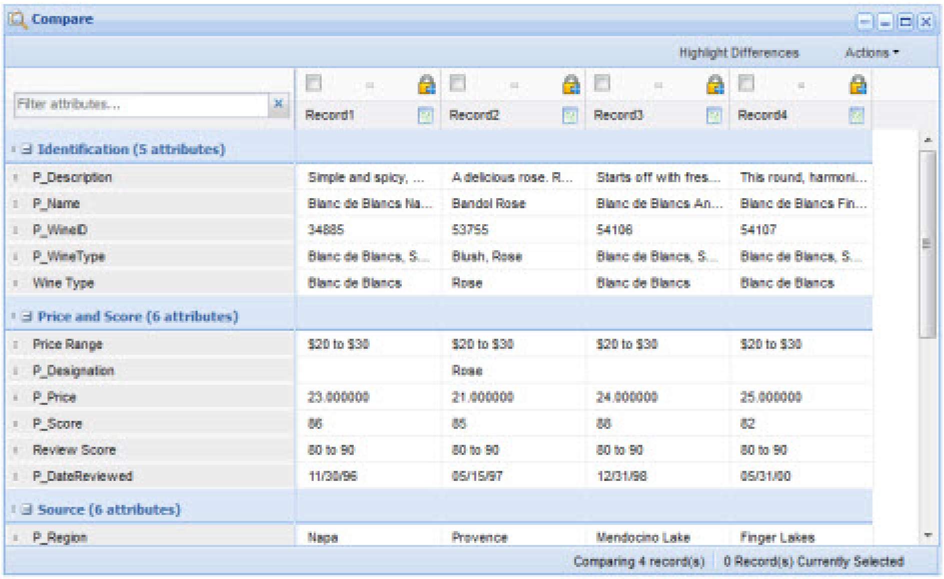
Selecting the records to compare

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.

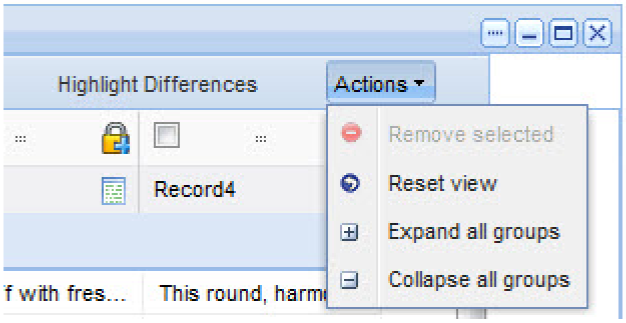


	Record1	Record2	Record3	Record4
Identification (5 attributes)				
P_Description	Simple and spicy, ...	A delicious rose. R...	Starts off with fres...	This round, harmoni...
P_Name	Blanc de Blancs Na...	Bandol Rose	Blanc de Blancs An...	Blanc de Blancs Fin...
P_WineID	34885	53755	54106	54107
P_WineType	Blanc de Blancs, S...	Blush, Rose	Blanc de Blancs, S...	Blanc de Blancs, S...
Wine Type	Blanc de Blancs	Rose	Blanc de Blancs	Blanc de Blancs
Price and Score (6 attributes)				
Price Range	$20 to $30	$20 to $30	$20 to $30	$20 to $30
P_Designation		Rose		
P_Price	23.000000	21.000000	24.000000	25.000000
P_Score	86	85	88	82
Review Score	80 to 90	80 to 90	80 to 90	80 to 90
P_DateReviewed	11/30/96	05/15/97	12/31/98	05/31/00
Source (6 attributes)				
P_Region	Napa	Provence	Mendocino Lake	Finger Lakes

Comparing 4 record(s) | 0 Record(s) Currently Selected

Depending on how the component was configured, the differences among the records may be highlighted.

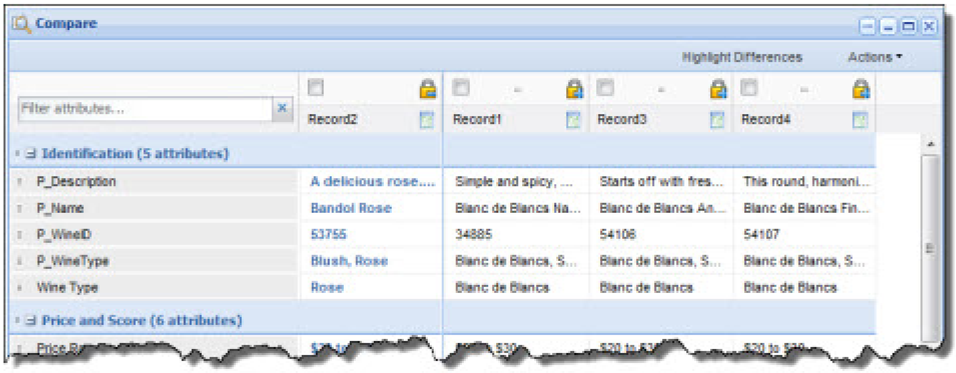
To restore the default display for the component, from the **Actions** menu, select **Reset view**.



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
Identification (5 attributes)				
P_Description	A delicious rose....	Simple and spicy, ...	Starts off with fres...	This round, harmoni...
P_Name	Bandol Rose	Blanc de Blancs Na...	Blanc de Blancs An...	Blanc de Blancs Fin...
P_WineID	53755	34885	54106	54107
P_WineType	Blush, Rose	Blanc de Blancs, S...	Blanc de Blancs, S...	Blanc de Blancs, S...
Wine Type	Rose	Blanc de Blancs	Blanc de Blancs	Blanc de Blancs
Price and Score (6 attributes)				

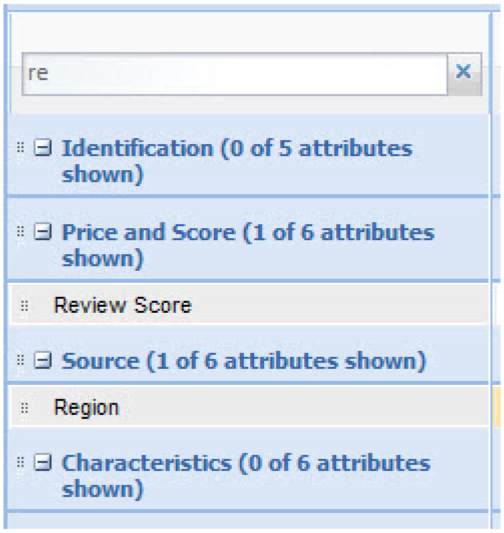
To remove the designation as a baseline record, click the lock icon again. The record column remains at the left of the table, but can now be moved.

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.



re ✕

⊟ Identification (0 of 5 attributes shown)

⊟ Price and Score (1 of 6 attributes shown)

Review Score

⊟ Source (1 of 6 attributes shown)

Region

⊟ Characteristics (0 of 6 attributes shown)

To expand or collapse an attribute group, click the group name.

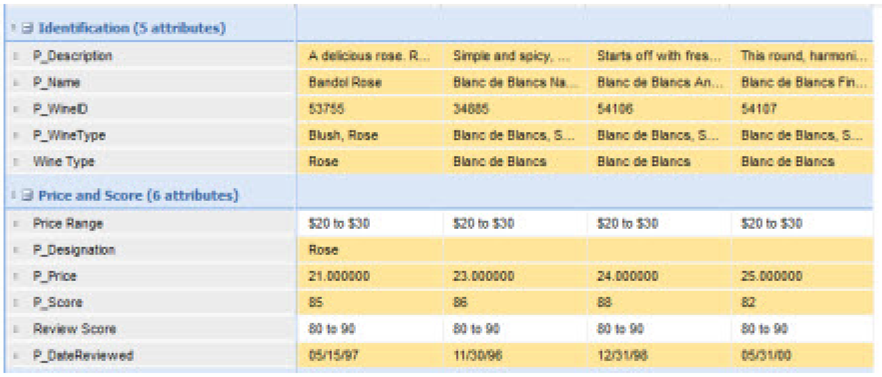
To expand all of the attribute groups, from the **Actions** menu, select **Expand all groups**.

To collapse all of the attribute groups, from the **Actions** menu, select **Collapse all groups**.

Highlighting differences between the records

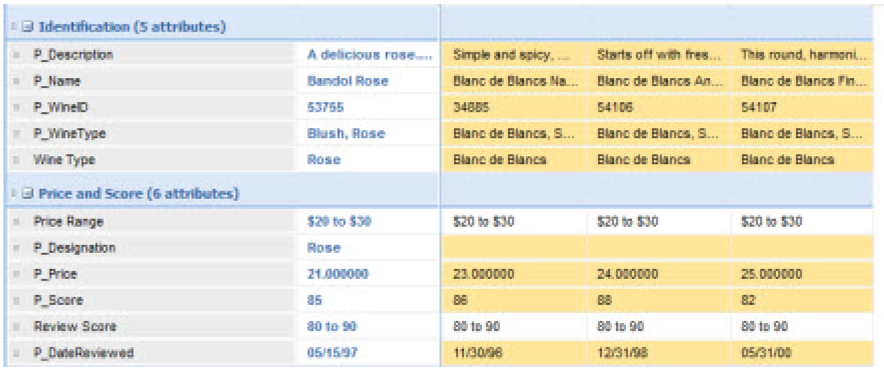
To highlight the differences in attribute values, click **Highlight Differences**.

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 (5 attributes)				
P_Description	A delicious rose. R...	Simple and spicy, ...	Starts off with fres...	This round, harmoni...
P_Name	Bandol Rose	Blanc de Blancs Na...	Blanc de Blancs An...	Blanc de Blancs Fin...
P_WineID	53755	34885	54106	54107
P_WineType	Blush, Rose	Blanc de Blancs, S...	Blanc de Blancs, S...	Blanc de Blancs, S...
Wine Type	Rose	Blanc de Blancs	Blanc de Blancs	Blanc de Blancs
⊟ Price and Score (6 attributes)				
Price Range	$20 to $30	$20 to $30	$20 to $30	$20 to $30
P_Designation	Rose			
P_Price	21.000000	23.000000	24.000000	25.000000
P_Score	85	86	88	82
Review Score	80 to 90	80 to 90	80 to 90	80 to 90
P_DateReviewed	05/15/97	11/30/96	12/31/98	05/31/00

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 (5 attributes)				
P_Description	A delicious rose....	Simple and spicy, ...	Starts off with fres...	This round, harmoni...
P_Name	Bandol Rose	Blanc de Blancs Na...	Blanc de Blancs An...	Blanc de Blancs Fin...
P_WineID	53755	34885	54106	54107
P_WineType	Blush, Rose	Blanc de Blancs, S...	Blanc de Blancs, S...	Blanc de Blancs, S...
Wine Type	Rose	Blanc de Blancs	Blanc de Blancs	Blanc de Blancs
Price and Score (6 attributes)				
Price Range	$20 to $30	$20 to $30	$20 to $30	$20 to $30
P_Designation	Rose			
P_Price	21.000000	23.000000	24.000000	25.000000
P_Score	85	86	88	82
Review Score	80 to 90	80 to 90	80 to 90	80 to 90
P_DateReviewed	05/15/97	11/30/98	12/31/98	05/31/00

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 icon in the column heading for that record.

The **Record Details** component for that record is displayed.

Configuring a Compare component

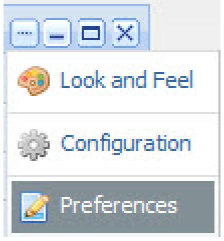
For a **Compare** component, power users select the data source and the attribute values to display. They also set the display options for the table.

Displaying the edit view for a Compare component

Power users use the edit view to configure the **Compare** component settings.

To display the edit view for a **Compare** component:

1. On the **Compare** component, click the **....** button.
2. From the drop-down menu, select **Preferences**.



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.

To bind the component to a different data source:

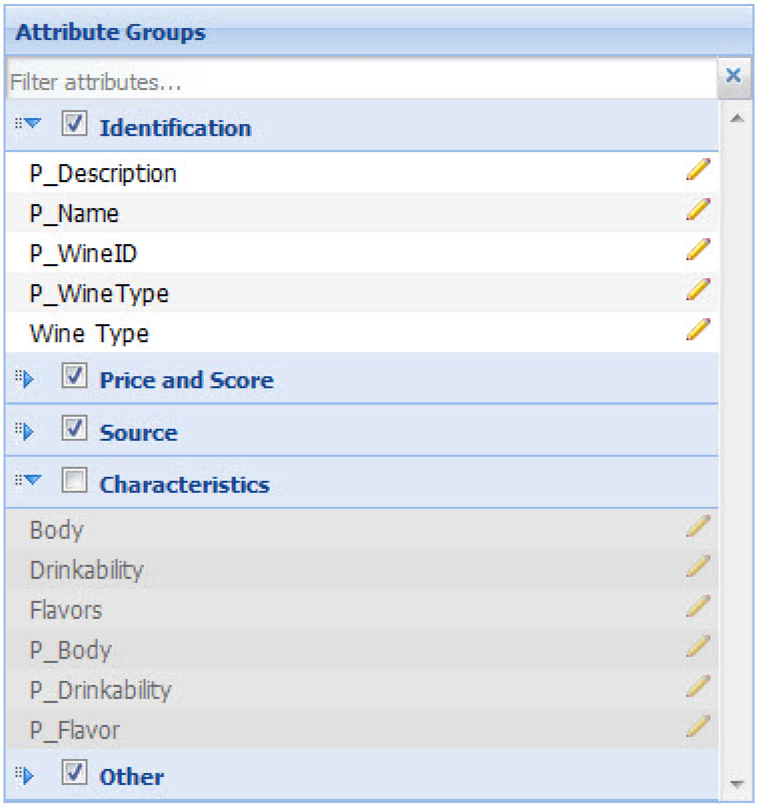
1. From the drop-down list, select the data source.
2. Click **Update data source**.

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.



Attribute Groups

Filter attributes...

☑ Identification
- P_Description
- P_Name
- P_WineID
- P_WineType
- Wine Type

☑ Price and Score

☑ Source

□ Characteristics
- Body
- Drinkability
- Flavors
- P_Body
- P_Drinkability
- P_Flavor

☑ Other

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:

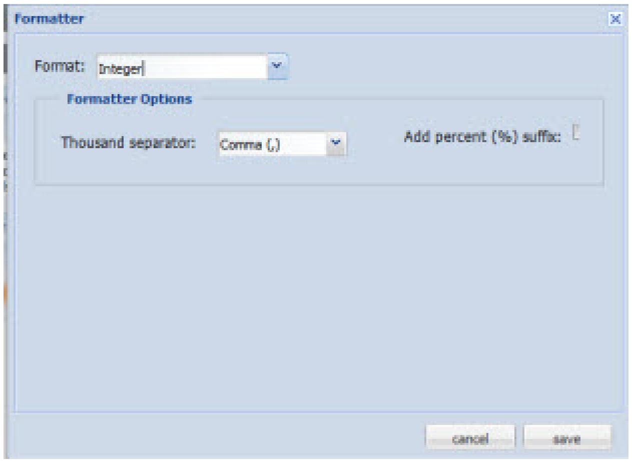
1. Under **Configure Attribute List**, click the edit icon for the attribute.

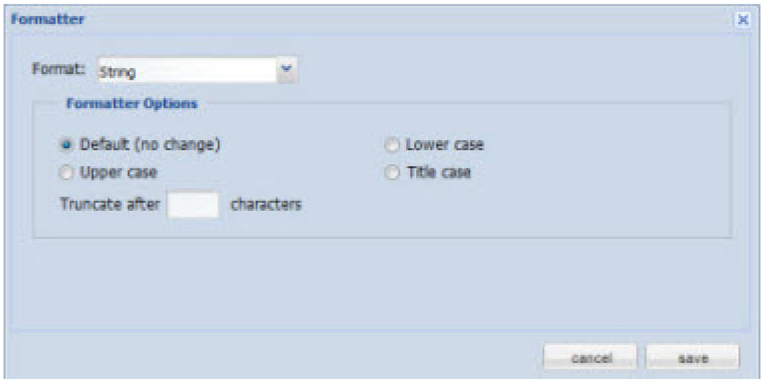
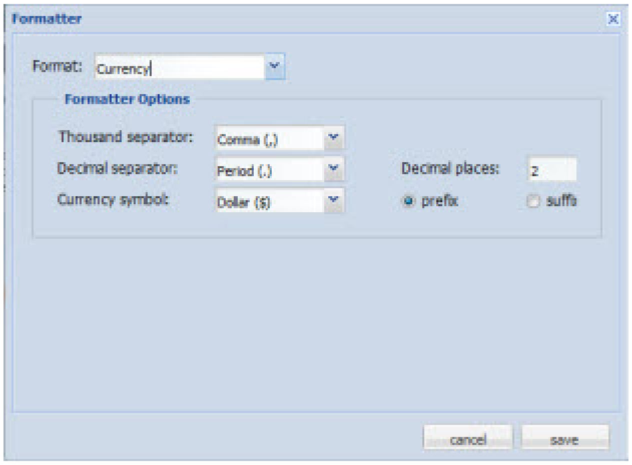
   The **Formatter** dialog is displayed. The default format for the attribute is based on the attribute's data type.

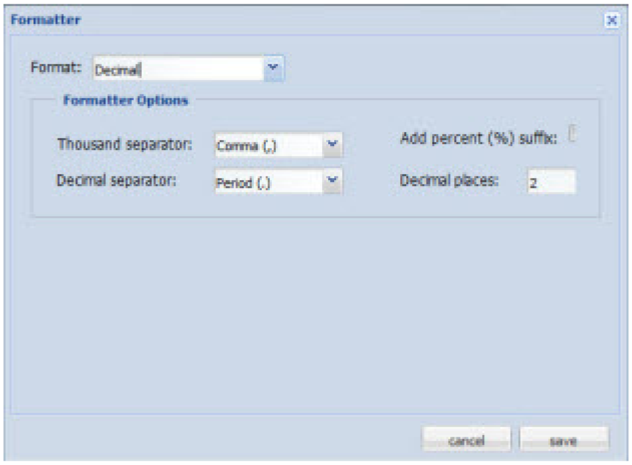
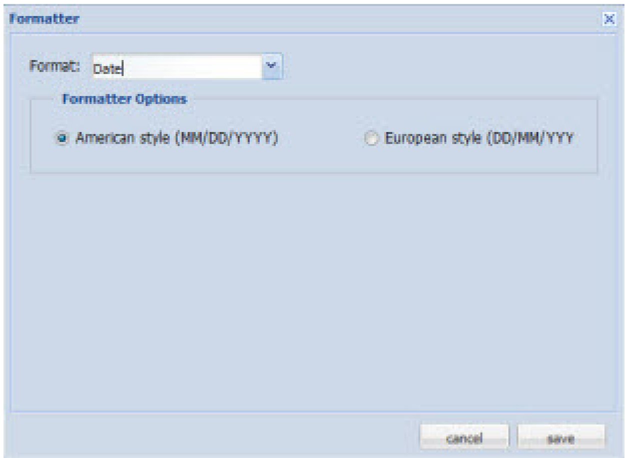
2. From the **Format** drop-down list, select the format to use for the attribute value, and then configure the options for the selected type.

   If you select a different format, make sure that it is an appropriate format for the value being displayed.

   The options are:

Integer	Indicates that the value is an integer. For integer values, you can configure:  Format: Integer Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ • The character to use to separate the thousands • Whether to display the percent symbol after the value
String	Indicates that the value is a text string. For string values, you can configure:

	 Formatter Format: String Formatter Options ● Default (no change) ○ Lower case ○ Upper case ○ Title case Truncate after ____ characters • Whether to change the capitalization of the text string • The number of characters after which to truncate the value
Currency	Indicates that the value is a currency value. For currency values, you can configure:  Formatter Format: Currency Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Decimal places: 2 Currency symbol: Dollar ($) ● prefix ○ suffi • 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:

	 Formatter Format: Decimal Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Add percent (%) suffix: □ Decimal places: 2 - 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
Date	Indicates that the value is a date. For a date value, you can configure the format to use. The options are:  Formatter Format: Date Formatter Options ● American style (MM/DD/YYYY) ○ European style (DD/MM/YYY - **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.

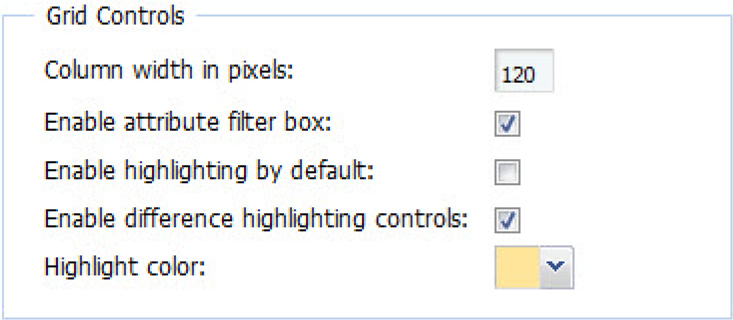
3. To save the changes, click **Save**.

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:

1. Under **Grid Controls**:



Grid Controls

Column width in pixels: 120

Enable attribute filter box: ☑

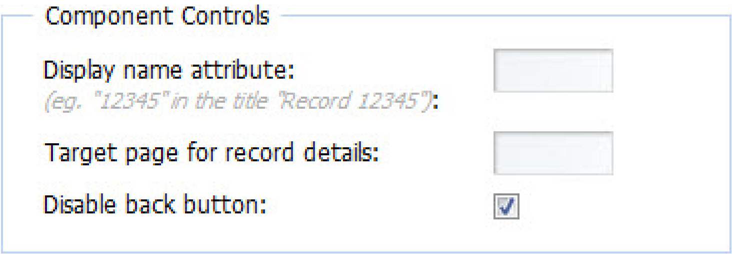
Enable highlighting by default: □

Enable difference highlighting controls: ☑

Highlight color: 🟨

Column width in pixels	In the field, type the width in pixels of the record columns. Each column uses the same width.
Enable attribute filter box	If this checkbox is checked, then on the **Compare** component, the attribute search filter is displayed, to allow end users to search for specific attribute values. If the box is not checked, then the attribute search filter is not displayed, and end users cannot search for attribute values. By default, the box is checked.
Enable highlighting by default	If this checkbox is checked, then when the **Compare** component is first populated, it automatically highlights the differences among all of the selected records. If the box is not checked, then the differences are not highlighted automatically. By default, the box is not checked.
Enable difference highlighting controls	If this checkbox is checked, then on the **Compare** component, the **Highlight Differences**/**Hide Highlights** button is displayed, to allow end users to show or hide the highlighting. If this box is not checked, then the button is not displayed, and end users cannot show or hide the highlighting. By default, the box is checked.
Highlight color	From the drop-down list, select the color to use for the highlighting.

2. In the **Component Controls** panel:

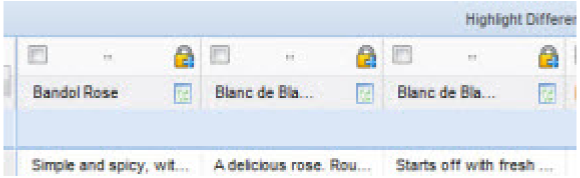


Component Controls

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.  Highlight Differer Bandol Rose Blanc de Bla... Blanc de Bla... Simple and spicy, wit... A delicious rose. Rou... Starts off with fresh ... 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.

3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

Cross Tab

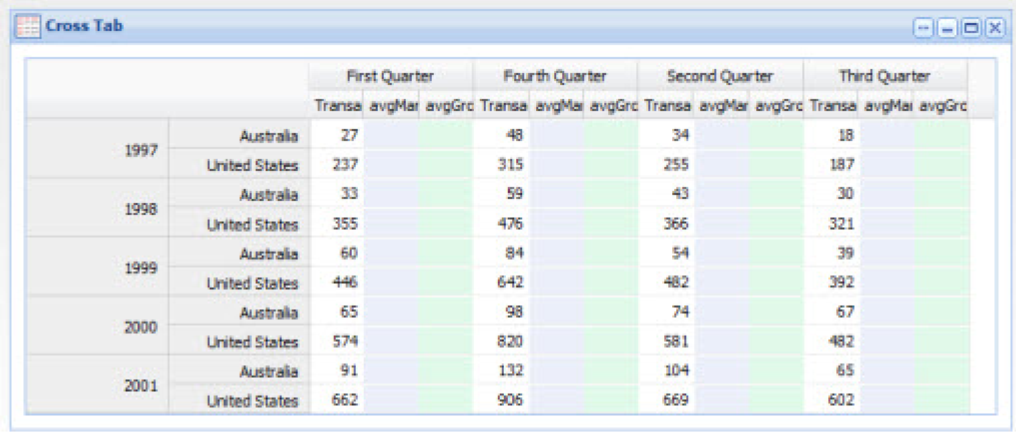
The **Cross Tab** component provides a complex comparison view of data.

About the Cross Tab component

The **Cross Tab** component generates a table that allows end users to perform comparisons and identify trends across several cross sections of data.

The values in the header rows and columns represent every possible grouping value of the specified data fields.

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 for the first quarter of 1997 that were shipped by J. & B. Freight.



		First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
		Transa	avgMar	avgGrc	Transa	avgMa	avgGrc	Transa	avgMar	avgGrc	Transa	avgMa	avgGrc
1997	Australia	27			48			34			18		
	United States	237			315			255			187		
1998	Australia	33			59			43			30		
	United States	355			476			366			321		
1999	Australia	60			84			54			39		
	United States	446			642			482			392		
2000	Australia	65			98			74			67		
	United States	574			820			581			482		
2001	Australia	91			132			104			65		
	United States	662			906			669			602		

Note: This component requires the use of Endeca Analytics.

Using Cross Tab

End users can view the cross tab result table, but cannot edit or modify it.

The component can be configured to be updated automatically when end users refine the data.

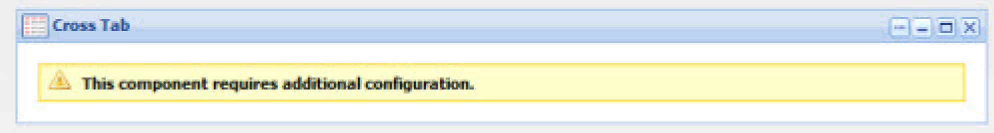
Configuring a Cross Tab component

For a **Cross Tab** component, power users provide the Analytics statement and configure how the table is displayed.

Configuring the data source and Analytics statement for a Cross Tab component

For a **Cross Tab** component, power users can select a different data source, and must provide an Analytics statement.

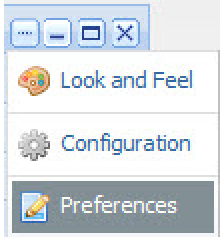
When you first add a **Cross Tab** component, it displays a message indicating that additional configuration is required.



This component requires additional configuration.

To configure the data source and Analytics query for the component:

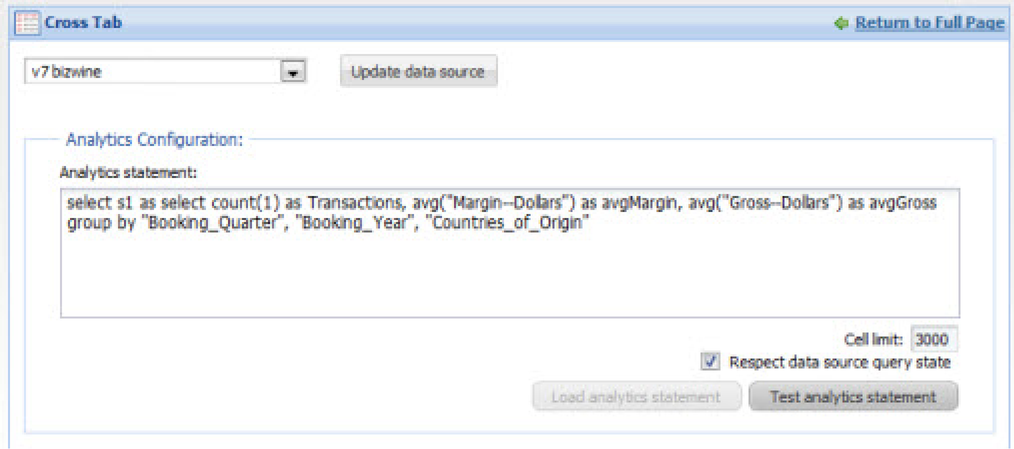
1. To display the edit view for the component, click its **....** button. In the drop-down menu, click **Preferences**.



2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.

   Note that if you change the data source for an existing component, the rest of the component configuration, including the Analytics statement, is cleared.

3. In the **Analytics Statement** field, enter an Analytics statement to return the cross-tab values.



```
select s1 as select count(1) as Transactions, avg("Margin--Dollars") as avgMargin, avg("Gross--Dollars") as avgGross
group by "Booking_Quarter", "Booking_Year", "Countries_of_Origin"
```

Cell limit: 3000

☑ Respect data source query state

Note: When entering your analytics statement, remember that all attribute names, including the names of derived attributes, must be NCName-compliant. They cannot contain spaces or special characters.

When selecting the attributes to group by, make sure to select attributes that have a limited number of values. If you group by an attribute that has too many values, your **Cross Tab** table may become too large to be useful.

4. In the **Cell Limit** field, set the maximum number of cells to include in the **Cross Tab** results table.

   The default value is 3000.

   In general, you should not make this value much larger than the default. A table with many thousands of cells is time-consuming to render and difficult for end users to read.

5. To update the table automatically when end users refine the data, check the **Respect data source query state** box.

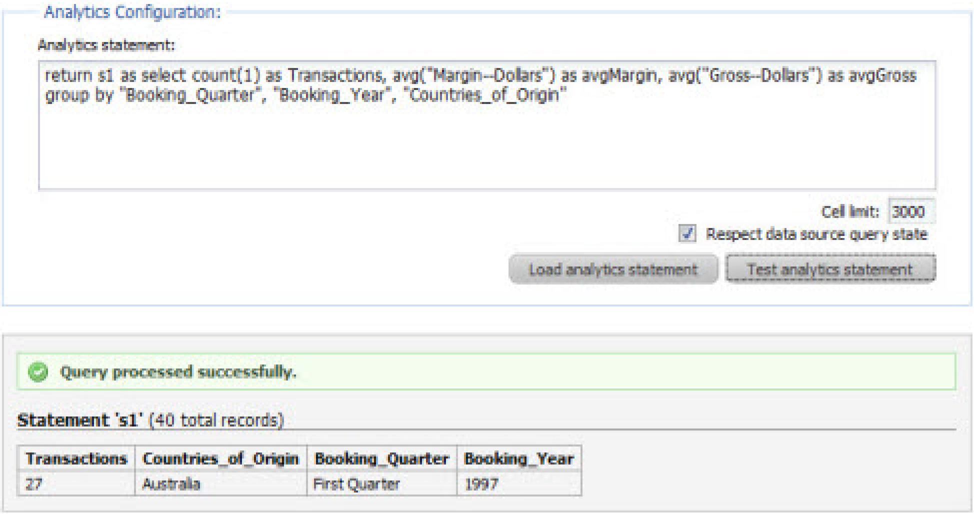
   The box is checked by default.

   When the box is unchecked, the component is independent of the data source query state, and the metric values remain constant.

6. To validate the Analytics statement, click the **Test analytics statement** button.

   If the Analytics statement is valid, then:

- The **Load analytics statement** button is enabled.
- A sample result is displayed.



Analytics Configuration:

Analytics statement:

```
return s1 as select count(1) as Transactions, avg("Margin--Dollars") as avgMargin, avg("Gross--Dollars") as avgGross
group by "Booking_Quarter", "Booking_Year", "Countries_of_Origin"
```

Cell limit: 3000

☑ Respect data source query state

Load analytics statement | Test analytics statement

Query processed successfully.

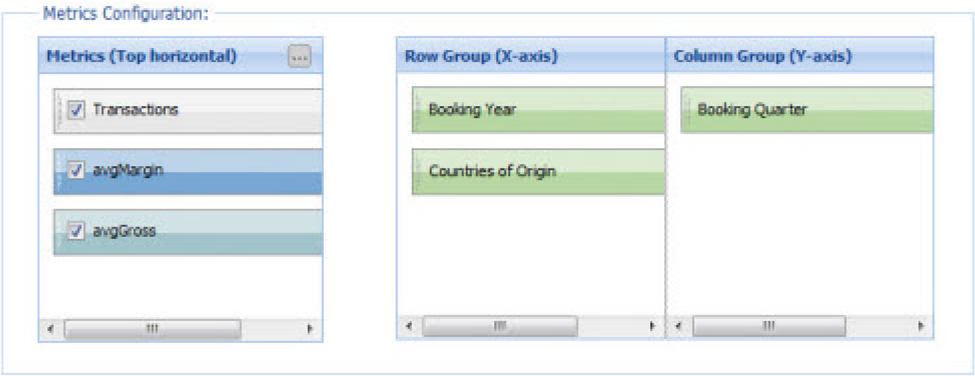
Statement 's1' (40 total records)

Transactions	Countries_of_Origin	Booking_Quarter	Booking_Year
27	Australia	First Quarter	1997

7. To load the Analytics statement, click the **Load analytics statement** button.

When you load the statement:

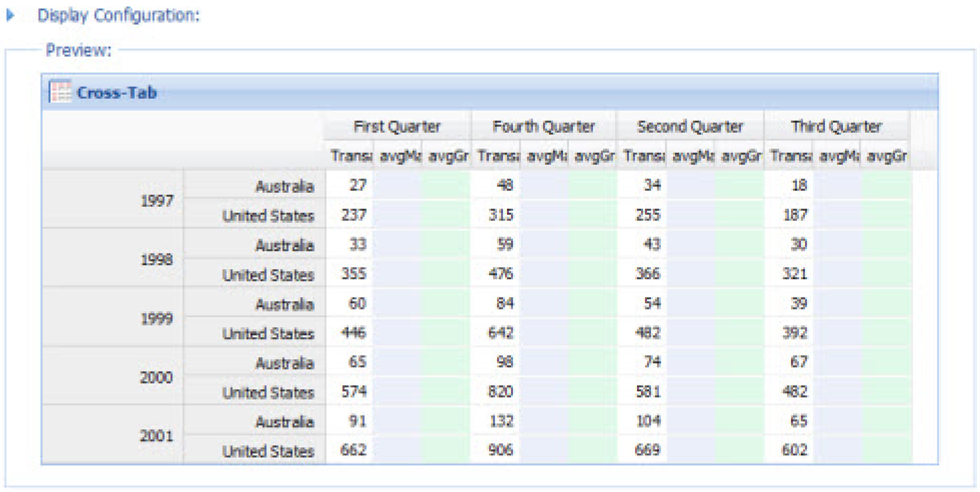
- The **Metrics Configuration** section is populated with the metrics and grouping fields from the statement. The section provides options to configure the display of the metrics and groupings.



Metrics Configuration:

Metrics (Top horizontal)	Row Group (X-axis)	Column Group (Y-axis)
☑ Transactions	Booking Year	Booking Quarter
☑ avgMargin	Countries of Origin	
☑ avgGross		

- The preview table at the bottom of the edit view shows how the component will display to end users.



Display Configuration:

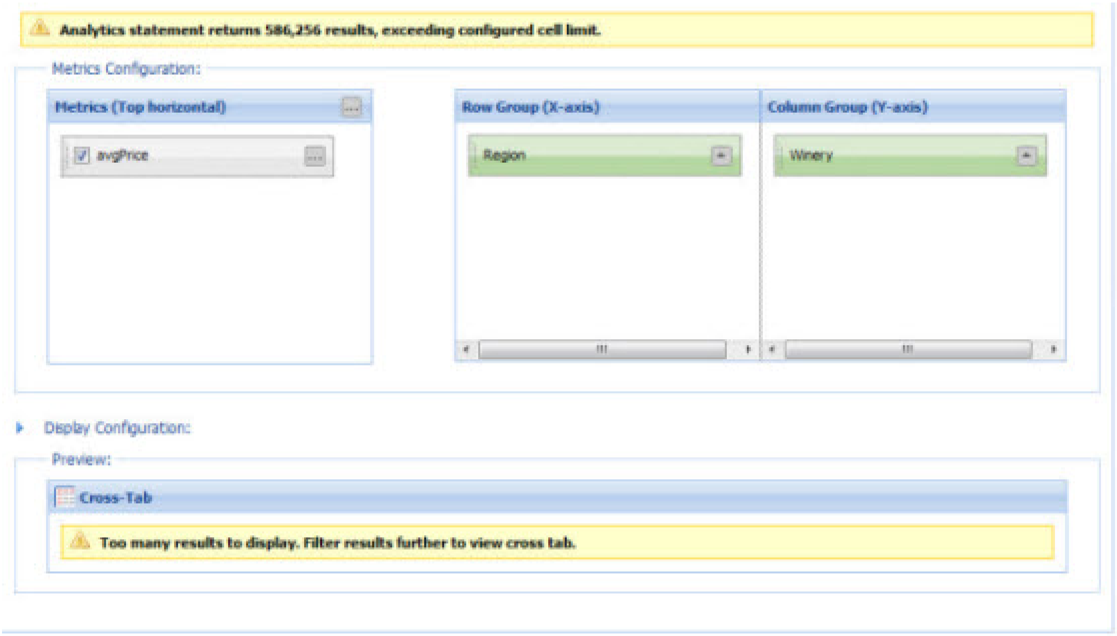
Preview:

Cross-Tab

		First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
		Transa	avgMa	avgGr	Transa	avgMa	avgGr	Transa	avgMa	avgGr	Transa	avgMa	avgGr
1997	Australia	27			48			34			18		
	United States	237			315			255			187		
1998	Australia	33			59			43			30		
	United States	355			476			366			321		
1999	Australia	60			84			54			39		
	United States	446			642			482			392		
2000	Australia	65			98			74			67		
	United States	574			820			581			482		
2001	Australia	91			132			104			65		
	United States	662			906			669			602		

If you do not need to configure the table layout or dimensions, then to exit the edit view, click **Return to Full Page**.

If the number of results is larger than the value of **Cell limit**, then when you load the Analytics statement, the preview is not displayed. Error messages indicate that the results need to be filtered.



Analytics statement returns 586,256 results, exceeding configured cell limit.

Metrics Configuration:

Metrics (Top horizontal)

☑ avgPrice

Row Group (X-axis)

Region

Column Group (Y-axis)

Winery

Display Configuration:

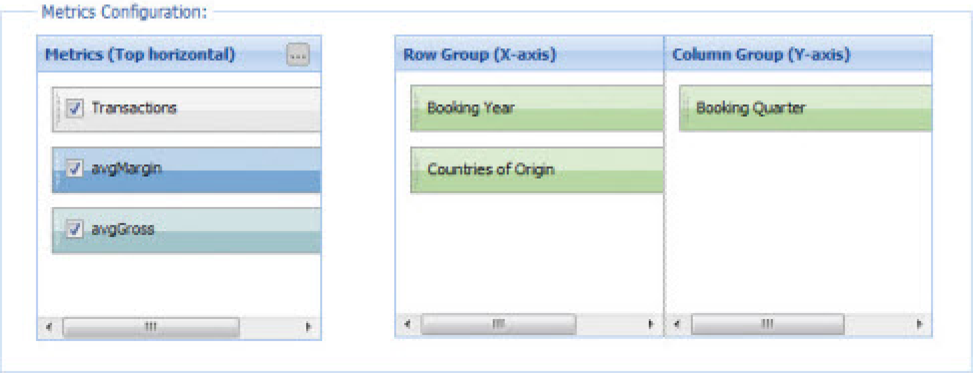
Preview:

Cross-Tab

Too many results to display. Filter results further to view cross tab.

Configuring the Cross Tab table layout

The **Metrics Configuration** section of the **Cross Tab** component edit view allows power users to control the layout of the table and the format of the metrics values.



Metrics Configuration:

Metrics (Top horizontal) ...	Row Group (X-axis)	Column Group (Y-axis)
☑ Transactions	Booking Year	Booking Quarter
☑ avgMargin	Countries of Origin	
☑ avgGross		

In the **Metrics Configuration** section:

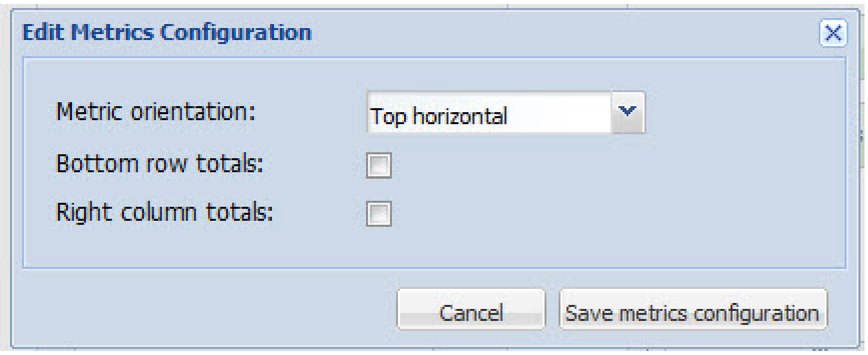
- The **Metrics** list contains the metrics from the Analytics statement. By default, the metrics labels are displayed in the bottom header row on the table.
- The **Row Group** list contains the group by fields that are displayed as the header columns to the left of the table.
- The **Column Group** list contains the group by fields that are displayed as the header rows above the metrics labels.

As you make changes to the configuration, to see their effects on the table, check the preview table at the bottom of the edit view.

To configure the layout of the **Cross Tab** table:

1. In the **Metrics** list, to configure the general display rules for the metrics:
   a) Click the **...** button in the top right corner.

      The **Edit Metrics Configuration** dialog is displayed.

      Edit Metrics Configuration

      Metric orientation: Top horizontal

      Bottom row totals: □

      Right column totals: □

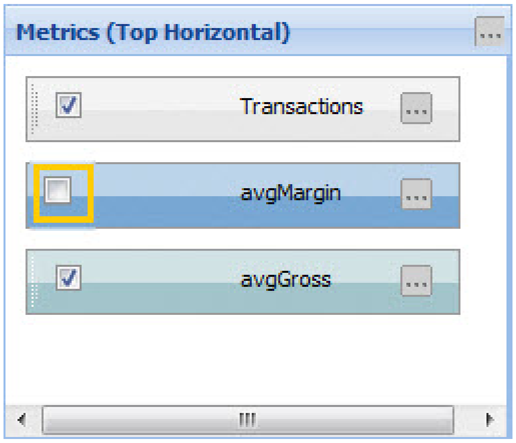
   b) From the **Metric orientation** drop-down list, select where to display the metrics labels:
      - To display the metrics labels across the top of the table, select **Top horizontal**. This is the default value.
      - To display the metrics labels to the left of the table, select **Left vertical**.
   c) To add a row to the bottom of the table containing the totals for each column, check the **Bottom row totals** checkbox.

      This box is unchecked by default.
   d) To add a column to the right of the table containing the totals for each row, check the **Right column totals** check box.

This box is unchecked by default.

Note: Totals are computed using the same aggregating function as the original metric. For example, metrics computed using the average function (AVG) display an overall average for the total. Because totals may be confusing in cases where the ARB function is used, you may not want to display totals in those cases.

2. In the **Metrics** list, to determine the order in which to display the metrics, drag and drop the metrics within the list.
3. In the **Metrics** list, to remove a metric from the table, uncheck its checkbox.



Metrics (Top Horizontal)

☑ Transactions

□ avgMargin

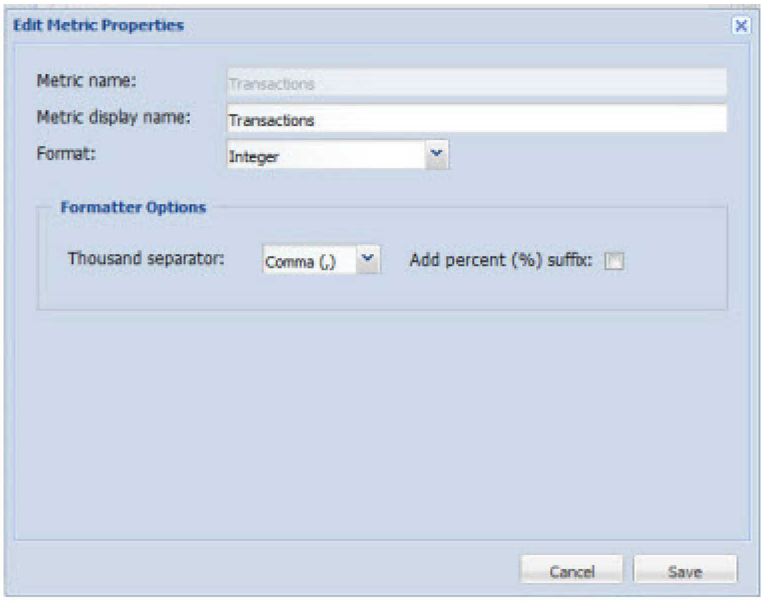
☑ avgGross

You would most likely use this option to hide a metric that you used to generate the metric you wanted to display. Otherwise, if you do not want to display a metric, you should remove it from the Analytics statement instead of unchecking the checkbox.

4. In the **Metrics** list, to configure the display of an individual metric:

a) Click the `...` button on the metric label.

The **Edit Metric Properties** dialog is displayed.



Edit Metric Properties

Metric name: Transactions

Metric display name: Transactions

Format: Integer

Formatter Options

Thousand separator: Comma (,)

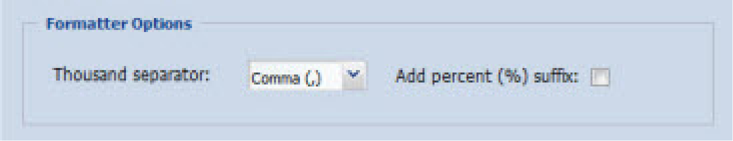
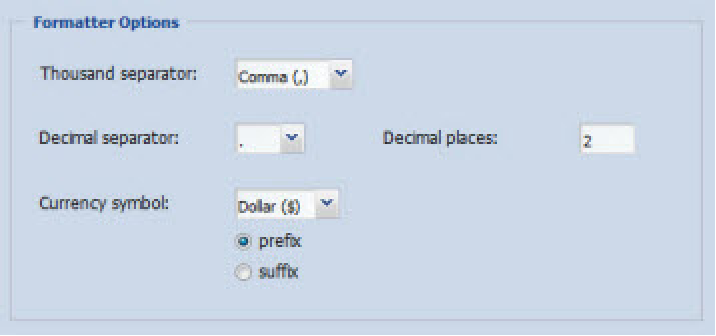
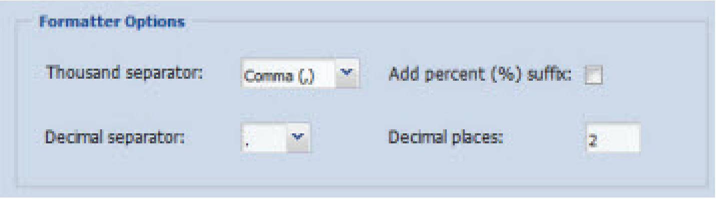
Add percent (%) suffix: □

b) In the **Metric display name** field, type the label to display for the metric row or column heading.

c) From the **Format** drop-down list, select the format to use to display the metric.

When you select the format, the **Formatter Options** section is updated to display the available fields for that format.

The format options are:

Integer	Displays the metrics value as an integer. This is the default value. For an integer value, you can configure:  Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ • The character to use for the thousands separator • Whether to display a percent sign after the value
Currency	Displays the metrics value as a currency value. For a currency value, you can configure:  Formatter Options Thousand separator: Comma (,) Decimal separator: . Decimal places: 2 Currency symbol: Dollar ($) ● prefix ○ suffix • The character to use for the thousands separator • The character to use for the decimal point • The number of decimal places to display • The currency symbol to display • Whether to display the currency symbol before the value (**prefix**) or after the value (**suffix**)
Decimal	Displays the metrics value as a decimal value. For a decimal value, you can configure:  Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ Decimal separator: . Decimal places: 2 • The character to use for the thousands separator

	• Whether to display a percent sign after the value • The character to use for the decimal point • The number of decimal places to display

d) To save the changes, click **Save.**

5. In the **Row Group** and **Column Group** sections, to configure the group by values:

a) To control where the group by value displays, drag it to the appropriate list:

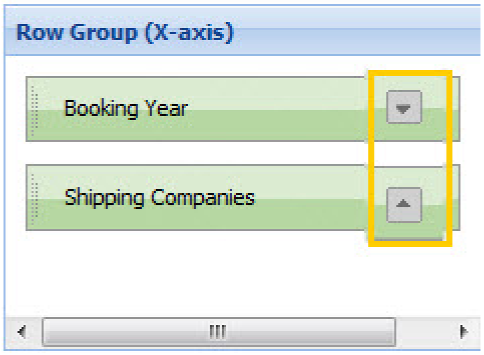
- To display it as a row heading, drag it to the **Row Group** list.
- To display it as a column heading, drag it to the **Column Group** list.

b) To determine the order in which the group by values display, drag the values within the list.

In the **Row Group** list, the top value is in the leftmost heading column.

In the **Column Group** list, the top value is in the top heading row.

c) To control the order in which the values display, use the toggle next to the value name.

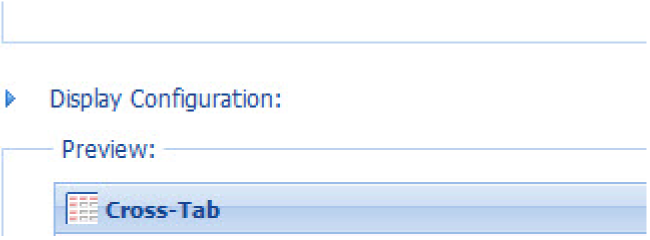


By default, the values display in ascending order. To display the values in descending order, click the icon.

Configuring the table dimensions for a Cross Tab component

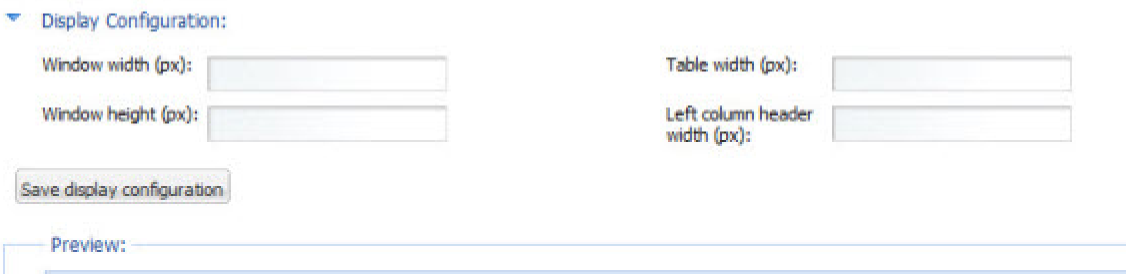
The **Display Configuration** section of the **Cross Tab** component edit view allows you to more precisely control the dimensions (in pixels) of the table and its window.

When you first display the edit view, the fields are hidden. By default, the fields are empty, and the table is displayed based on the width of the layout column.



To configure specific window and table dimensions:

1. To display the fields, click the arrow icon to the left of the heading.
2. In the **Display Configuration** fields:



Window width (px)	In the field, type the width in pixels of the **Cross Tab** window. If there is no value in the field, then the table is adjusted for the best display for the width of the layout column. If you do provide a value, the metrics column widths are adjusted to fit within the specified width.
Window height (px)	In the field, type the height in pixels of the **Cross Tab** window. If there is no value in the field, then the table is as high as needed to display all of the rows. Note that if the height you specify is less than the height needed to display all of the rows, the table is truncated.
Table width (px)	In the field, type the width in pixels of the metrics area of the table. If there is no value in the field, then the table is adjusted for the best display based on the width of the window.
Left column header width (px)	In the field, type the width in pixels of the left column header area of the table. If there is no value in the field, then the table is adjusted for the best display based on the width of the window and table.

3. After configuring the dimensions, to save the changes, click **Save display configuration**.

Metrics Bar

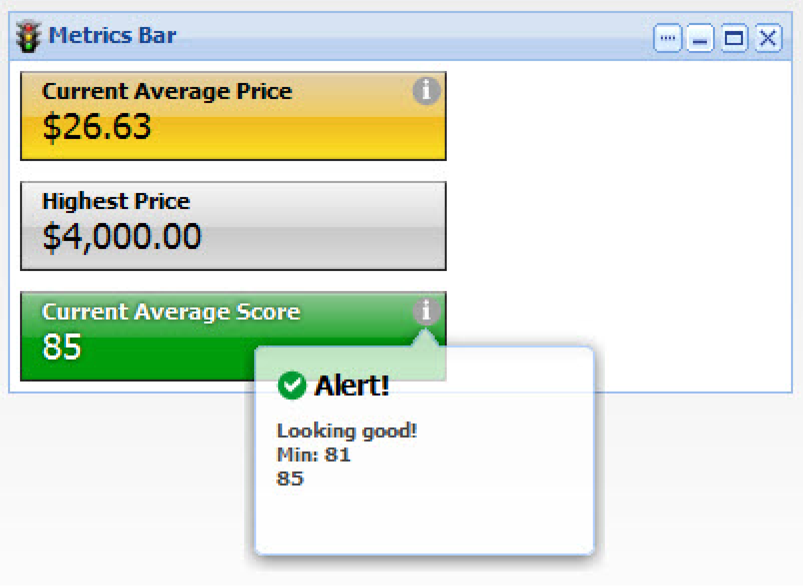
The **Metrics Bar** component provides a quick view of summarized aspects of the data.

About the Metrics Bar component

The **Metrics Bar** component allows users to quickly view metrics that summarize various aspects of the underlying data.

The **Metrics Bar** component displays metric values that are based on Analytics statements written by the power user.

The power user 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:



Current Average Price
$26.63

Highest Price
$4,000.00

Current Average Score
85

Alert!

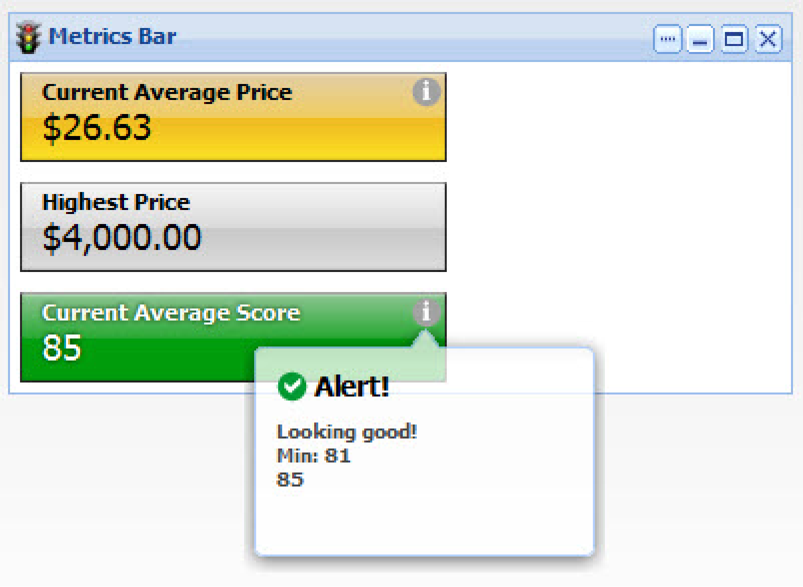
Looking good!
Min: 81
85

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.



Current Average Price
$26.63

Highest Price
$4,000.00

Current Average Score
85

Alert!

Looking good!
Min: 81
85

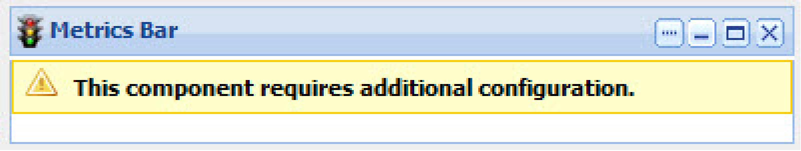
Configuring a Metrics Bar component

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 Analytics statements for the Metrics Bar

For each metric to display, power users must provide an Analytics statement.

When you first add the **Metrics Bar** component, it displays a message indicating that additional information is required.

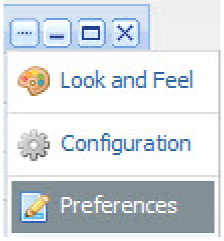


This component requires additional configuration.

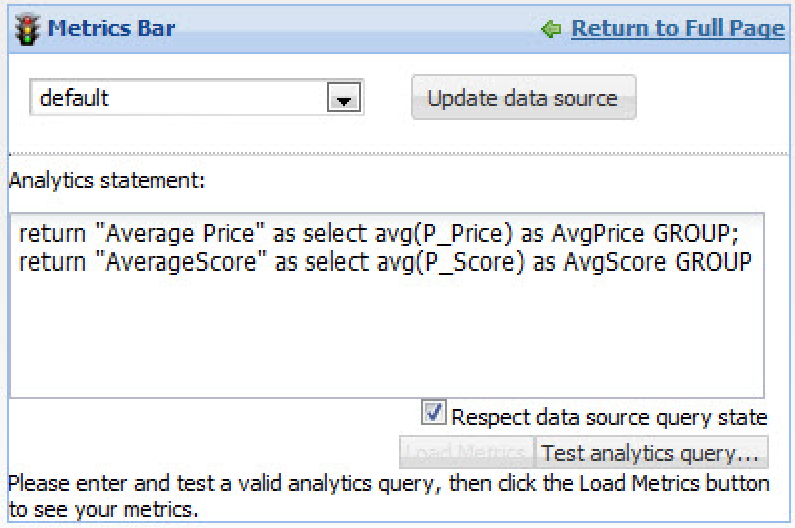
For the **Metrics Bar** component, you provide Analytics statements to generate the metrics that are used by the component.

To provide the Analytics statements for the **Metrics Bar** component:

1. To display the edit view for the component, click its **....** button, then in the drop-down menu, click **Preferences**.



2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.
3. In the **Analytics Statement** field, enter your Analytics statements.



default

Analytics statement:

```
return "Average Price" as select avg(P_Price) as AvgPrice GROUP;
return "AverageScore" as select avg(P_Score) as AvgScore GROUP
```

☑ Respect data source query state

Please enter and test a valid analytics query, then click the Load Metrics button to see your metrics.

Note: When entering your analytics statements, remember that all attribute names, including names of derived attributes, must be NCName-compliant. They cannot contain spaces or special characters.

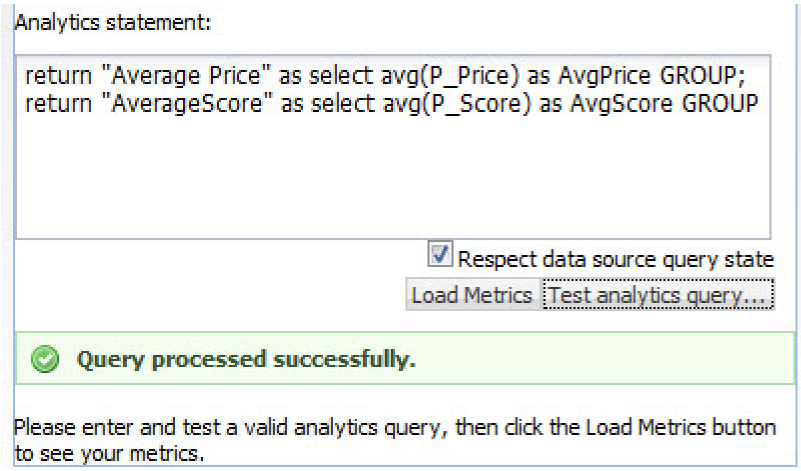
4. The **Respect data source query state** box determines whether the **Metrics Bar** values are for the currently displayed data only.

   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.

5. To validate the Analytics statement, click the **Test analytics query** button.

   If the Analytics statement is valid, the **Load Metrics** button is enabled.



Analytics statement:

```
return "Average Price" as select avg(P_Price) as AvgPrice GROUP;
return "AverageScore" as select avg(P_Score) as AvgScore GROUP
```

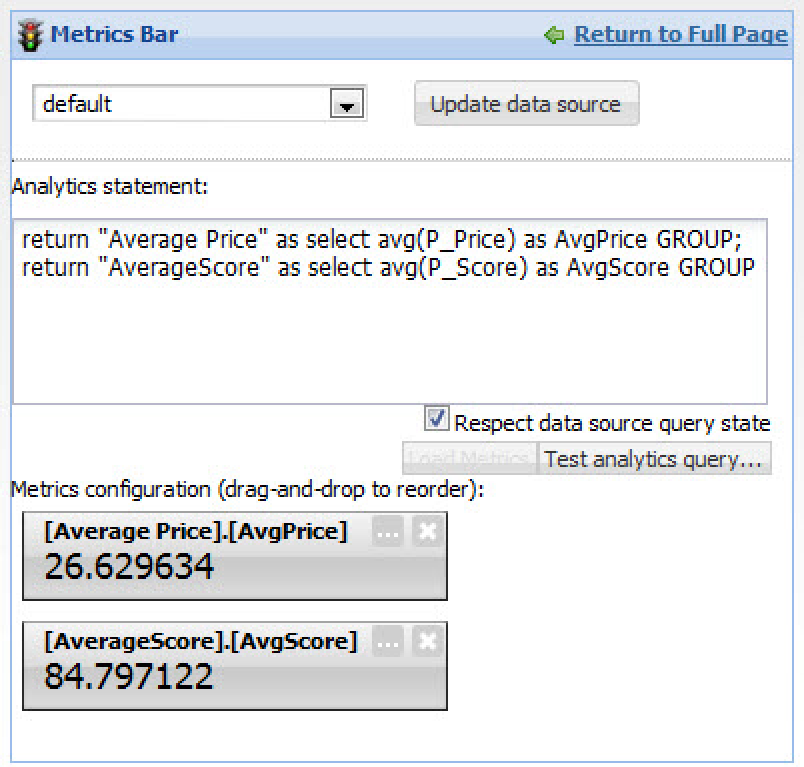
☑ Respect data source query state

✓ Query processed successfully.

Please enter and test a valid analytics query, then click the Load Metrics button to see your metrics.

6. Click **Load Metrics**.

   For each metric in the Analytics statements, a metric box is added to the edit view.



Analytics statement:

```
return "Average Price" 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):

[Average Price].[AvgPrice]
26.629634

[AverageScore].[AvgScore]
84.797122

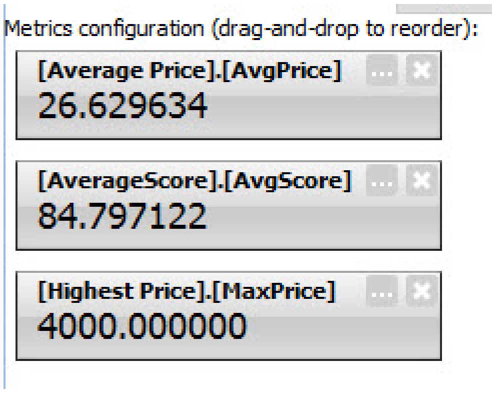
After you select your metrics, you can:

- 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 Analytics statements for the Metrics Bar component, a metric box is created for each metric from the statements.



Metrics configuration (drag-and-drop to reorder):

[Average Price].[AvgPrice]
26.629634

[AverageScore].[AvgScore]
84.797122

[Highest Price].[MaxPrice]
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.

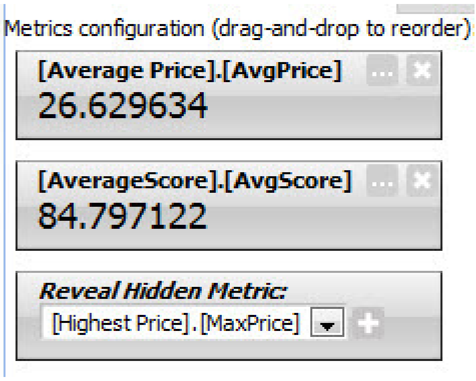
To hide and restore metrics on the **Metrics Bar**:

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)

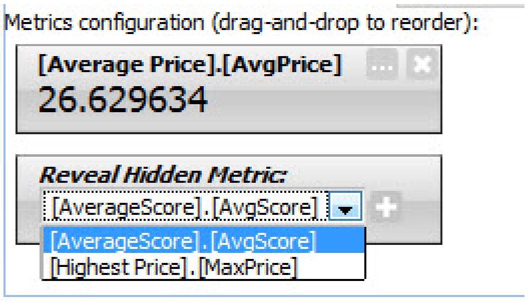
   [Average Price].[AvgPrice]
   26.629634

   [AverageScore].[AvgScore]
   84.797122

   Reveal Hidden Metric:
   [Highest Price].[MaxPrice]

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):

   [Average Price].[AvgPrice]
   26.629634

   Reveal Hidden Metric:
   [AverageScore].[AvgScore]
   [AverageScore].[AvgScore]
   [Highest Price].[MaxPrice]

   b) Click the **+** icon.

   The metric is removed from the **Reveal Hidden Metric** drop-down list.

   The metric box is added for that metric.

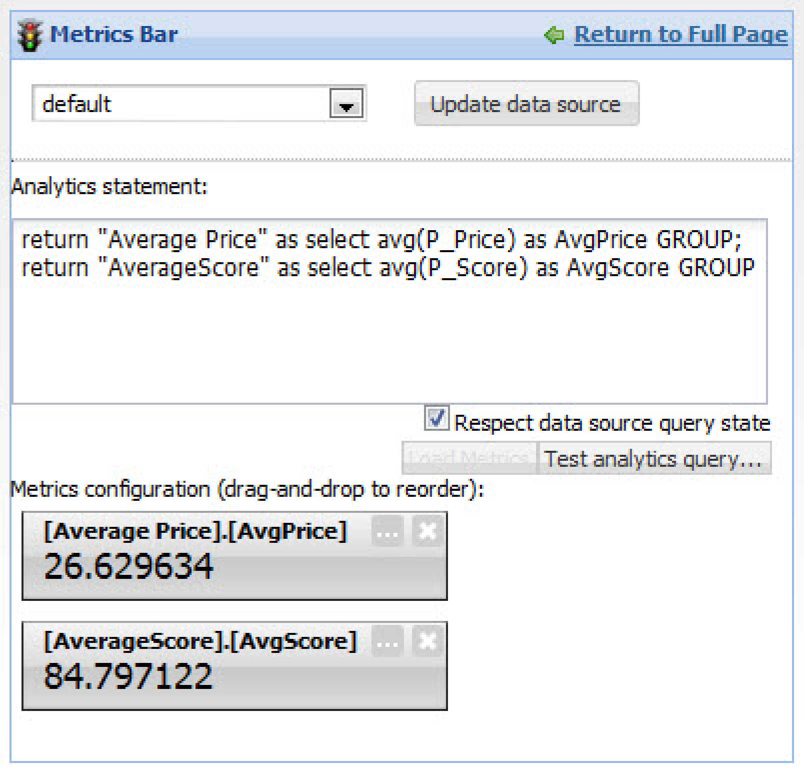
   If there are no other hidden metrics, then the hidden metric values box is removed.

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 Analytics statement.
- There are no alerts associated with the metrics



default

Analytics statement:

```
return "Average Price" 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):

[Average Price].[AvgPrice]
26.629634

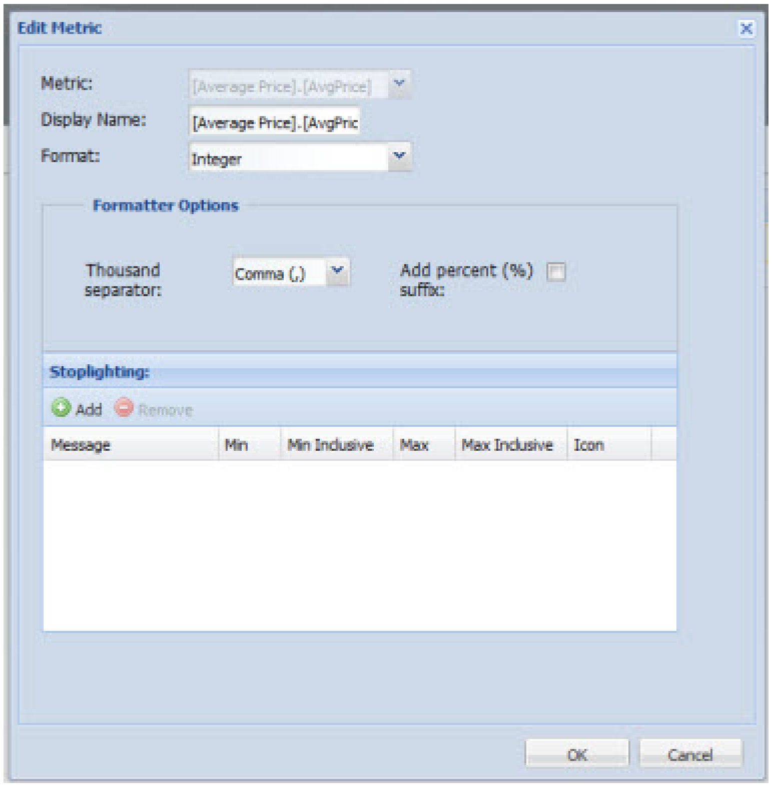
[AverageScore].[AvgScore]
84.797122

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.



Metric: [Average Price].[AvgPrice]

Display Name: [Average Price].[AvgPric

Format: Integer

Thousand separator: Comma (,)

Add percent (%) suffix: □

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.

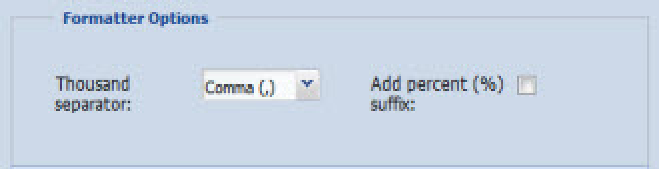
   By default, the display name is based on the Analytics statement.

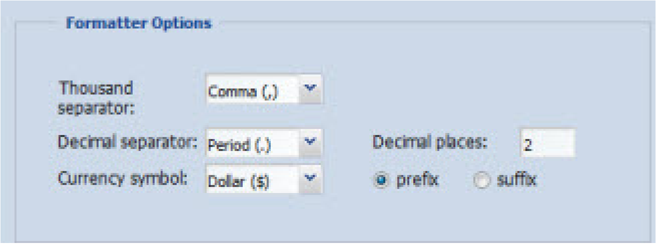
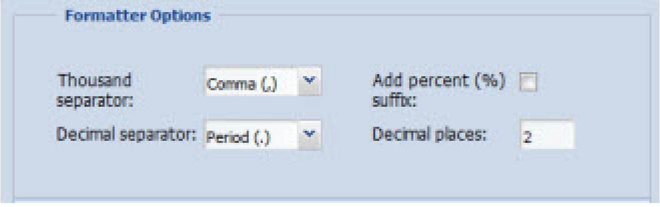
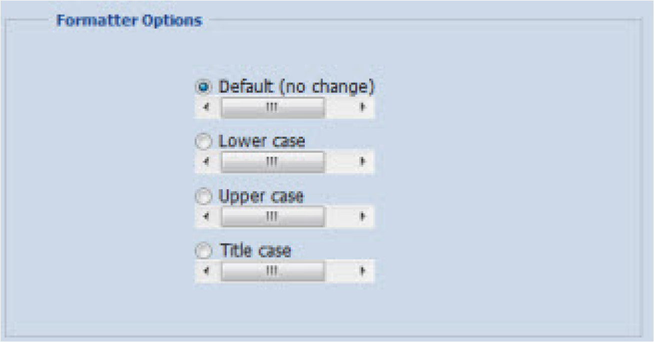
3. From the **Format** drop-down list, select the format to use to display the metric value. The options are:

   - **Integer**
   - **Currency**
   - **Decimal**
   - **String**

   When you select a format, the **Formatting Options** section is updated to contain the fields for configuring the selected format.

4. In the **Formatting Options** section, use the fields to configure how the metrics value will display. The fields for each format are:

Integer	For the **Integer** format, you can configure:  Thousand separator: Comma (,) Add percent (%) suffix: □ • The character to use to separate the thousands • Whether to display a percent sign (%) after the value.

Currency	For the **Currency** format, you can configure:  Formatter Options Thousand separator: Comma (,) Decimal separator: Period (.) Decimal places: 2 Currency symbol: Dollar ($) ● prefix ○ suffix • The character to use to separate the thousands • The character to use for the decimal • The number of decimal places to display • The currency symbol to display • Whether to display the currency symbol before the value (**prefix**) or after the value (**suffix**)
Decimal	For the **Decimal** format, you can configure:  Formatter Options Thousand separator: Comma (,) Add percent (%) suffix: □ Decimal separator: Period (.) Decimal places: 2 • The character to use to separate the thousands • Whether to display a percent sign (%) after the value. • The character to use for the decimal • The number of decimal places to display
String	For the **String** format, you can configure whether to change the capitalization of the text. The options are to:  Formatter Options ● Default (no change) ○ Lower case ○ Upper case ○ Title case • Keep the string as it is retrieved from the database • Convert the entire string to lower case • Convert the entire string to upper case • Convert the string to title case (first word of each letter is capitalized)

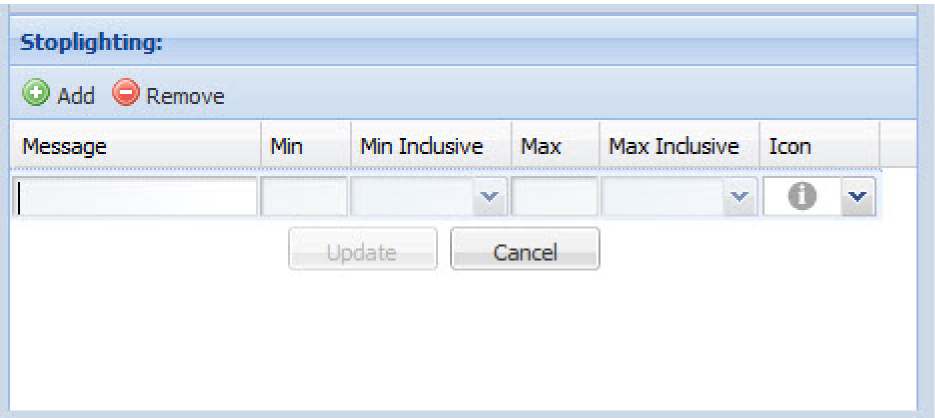
5. For the **Integer**, **Currency**, and **Decimal** formats, you can configure alert messages to display based on the current value of the metric. **String** values cannot have alert messages.

   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, and the icon to display next to the alert.

   In the **Stoplighting** section, to configure the alert messages:

   a) To add an alert message, click **Add**.
   The next row of fields is enabled.



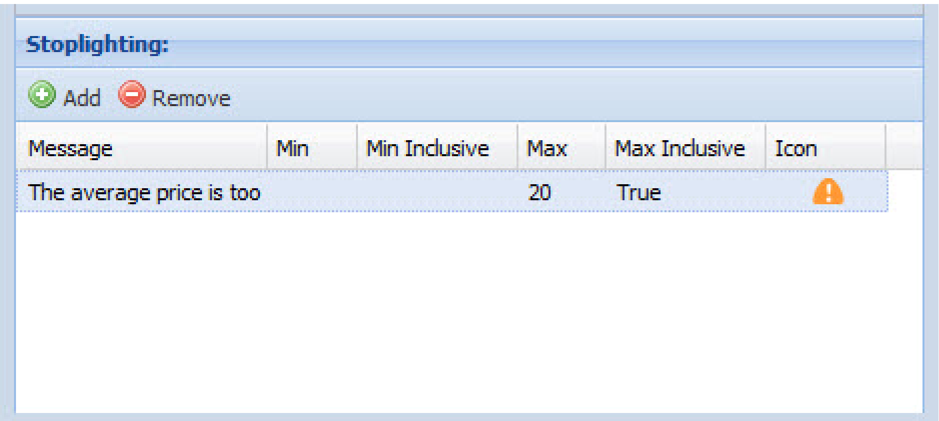
   b) To configure the message:

Message	In the **Message** field, type the text of the message to display.
Min	In the **Min** 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.
Min Inclusive	If you have provided a minimum value, then from the **Min Inclusive** drop-down list, select whether the provided value is inclusive. If you select **True**, then the alert message displays if the value is greater than or equal to the provided value. If you select **False**, then the alert message displays only if the value is greater than the provided value.
Max	In the **Max** 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.

Max Inclusive	If you have provided a maximum value, then from the **Max Inclusive** drop-down list, select whether the provided value is inclusive. If you select **True**, then the alert message displays if the value is less than or equal to the provided value. If you select **False**, then the alert message displays only if the value is less than the provided value.
Icon	From the **Icon** drop-down list, select the icon to display next to the alert message. The color of the selected icon also determines the color of the metric box when the metric value meets the minimum/maximum value criteria.

c) After filling out the fields, to save the alert message, click **Update**.

The alert message is added to the list.



Message	Min	Min Inclusive	Max	Max Inclusive	Icon
The average price is too			20	True	⚠

d) To edit an existing alert message, double-click the message row. The fields are enabled to allow you to edit the message.

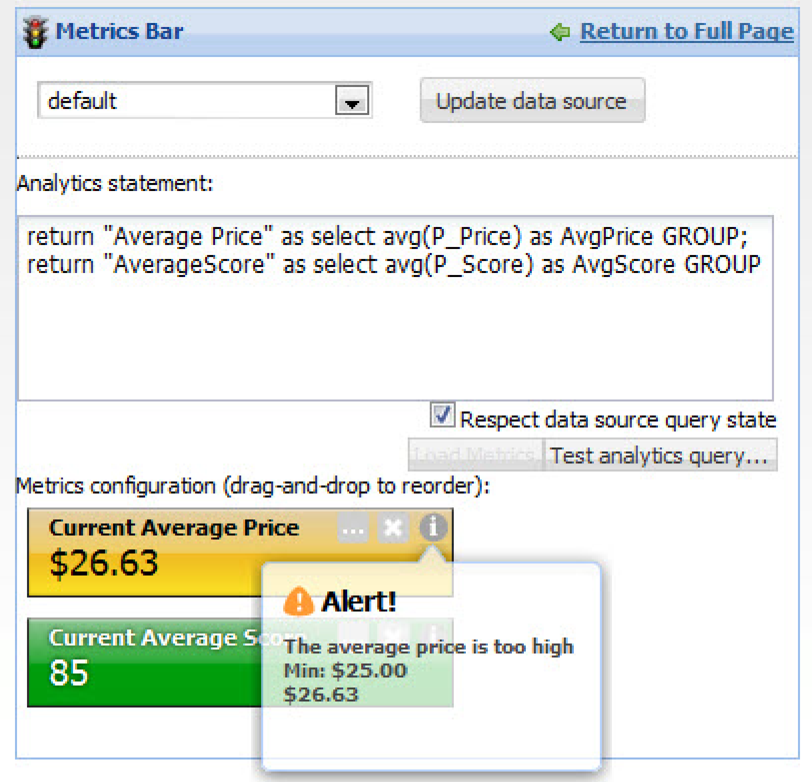
After making the edits, to save the changes, click **Update**.

e) To remove an alert message, click the message, then click **Remove**.

6. 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.



Analytics statement:

```
return "Average Price" 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):

Current Average Price
$26.63

Current Average Score
85

Alert!
The average price is too high
Min: $25.00
$26.63

7. To exit the edit view, and return to the end user view, click **Return to Full Page**.

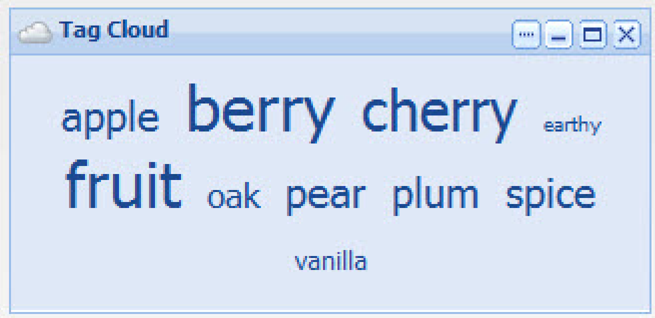
Tag Cloud

The **Tag Cloud** component analyzes the occurrence of text values within the value of an attribute.

About the Tag Cloud component

The **Tag Cloud** component provides a visual representation of the frequency or relevance of text values for a selected attribute within the current data set.

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.

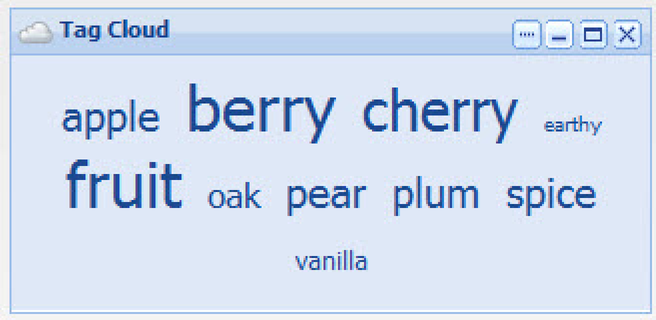


To provide a meaningful summary, the **Tag Cloud** component must be associated with an attribute that consists of numerous textual attribute values.

Note: The **Tag Cloud** component supports base records. It does not support Analytics records.

Using Tag Cloud

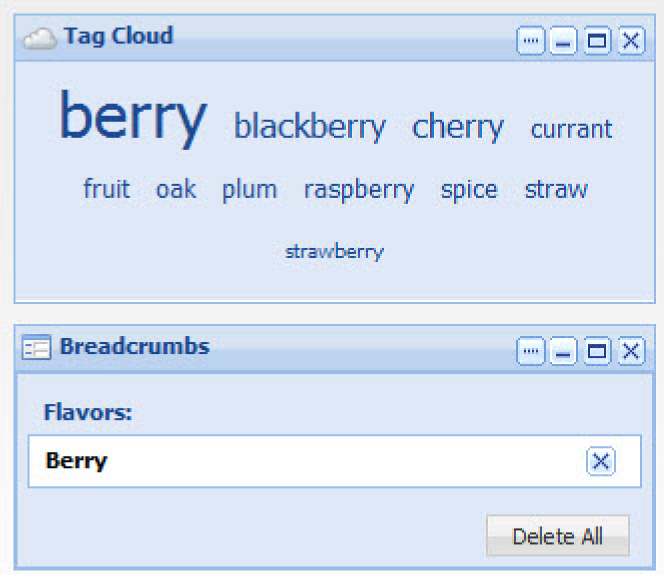
On the **Tag Cloud** component, end users can see the distribution of values for a selected attribute within the current data set. Terms in a larger font occur more frequently or are more relevant.



Note: For hierarchical attributes, the tag cloud only shows the frequency of the actual displayed value, not of any child values in the hierarchy. So 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.

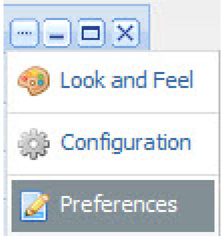


Configuring a Tag Cloud component

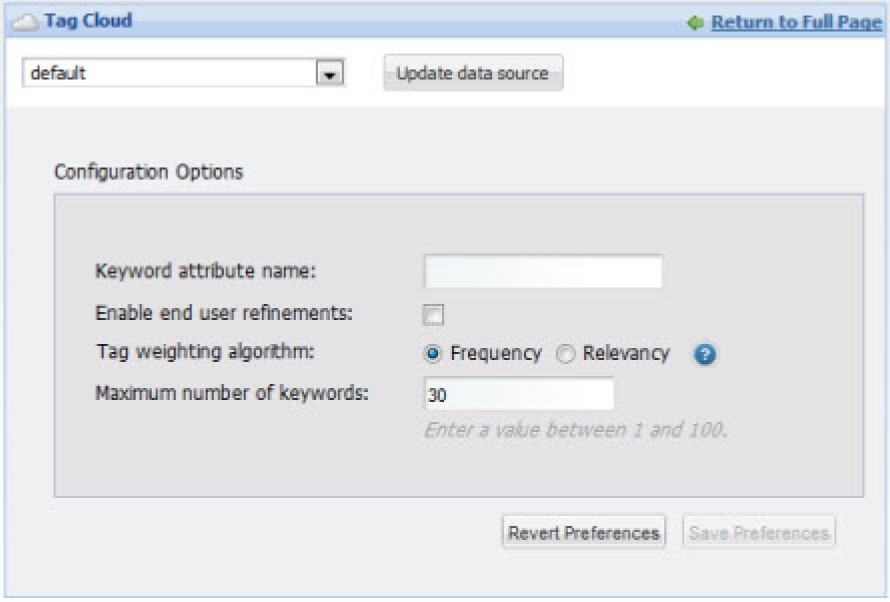
For a **Tag Cloud** component, power users select the data source and attribute to use. For multi-select attributes, they can also enable the refinement option.

To configure a **Tag Cloud** component:

1. To display the edit view for the component, click its **....** button. From the drop-down menu, select **Preferences**.



2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.



Tag Cloud

Return to Full Page

default ▾ | Update data source

Configuration Options

Keyword attribute name:

Enable end user refinements: □

Tag weighting algorithm: ● Frequency ○ Relevancy ?

Maximum number of keywords: 30

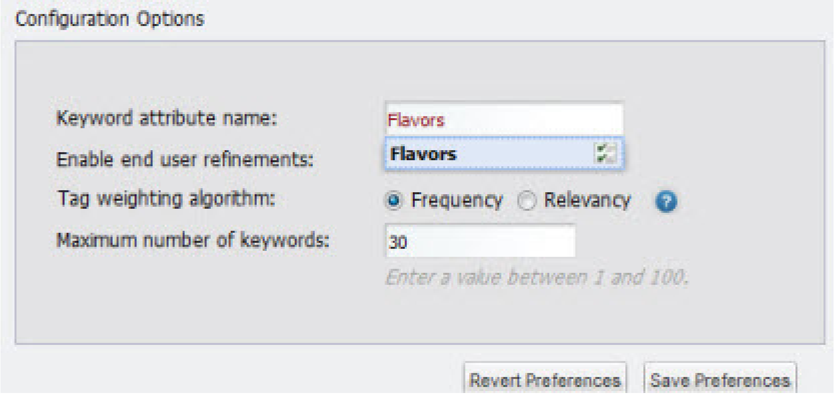
Enter a value between 1 and 100.

Revert Preferences | Save Preferences

3. 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, Latitude Studio shows a double-check mark icon next to the attribute name.



Configuration Options

Keyword attribute name: Flavors

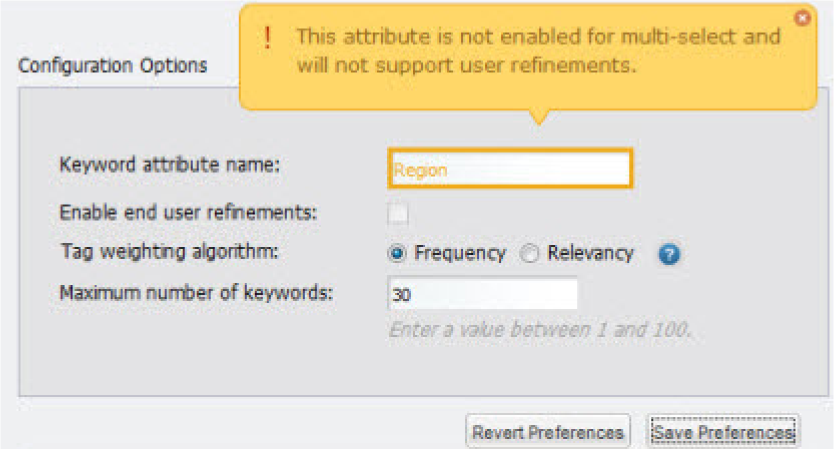
Enable end user refinements: Flavors

Tag weighting algorithm: ● Frequency ○ Relevancy

Maximum number of keywords: 30

Enter a value between 1 and 100.

If you enter an attribute that is not enabled for multi-select, then a warning message is displayed.



! This attribute is not enabled for multi-select and will not support user refinements.

Configuration Options

Keyword attribute name: Region

Enable end user refinements: □

Tag weighting algorithm: ● Frequency ○ Relevancy

Maximum number of keywords: 30

Enter a value between 1 and 100.

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.

4. 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.

5. Under **Tag weighting algorithm**, click the radio button next to the option to use to determine the significance of a tag.

   The options are:

Frequency	If you select this option is selected, then the tags are sized to represent the number of records associated with the related attribute value. The terms associated with the largest number of records are displayed in the largest font size.
Relevancy	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. Terms that appear throughout the index are less relevant, and appear smaller, than those that appear only in the matching records.

	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.

6. In the **Maximum number of keywords** field, specify the maximum number of attribute values to display.

   The default is 30.

7. To save your changes, click **Save Preferences**.
8. To exit the edit view, click **Return to Full Page**.

Chapter 14

Filtering Components

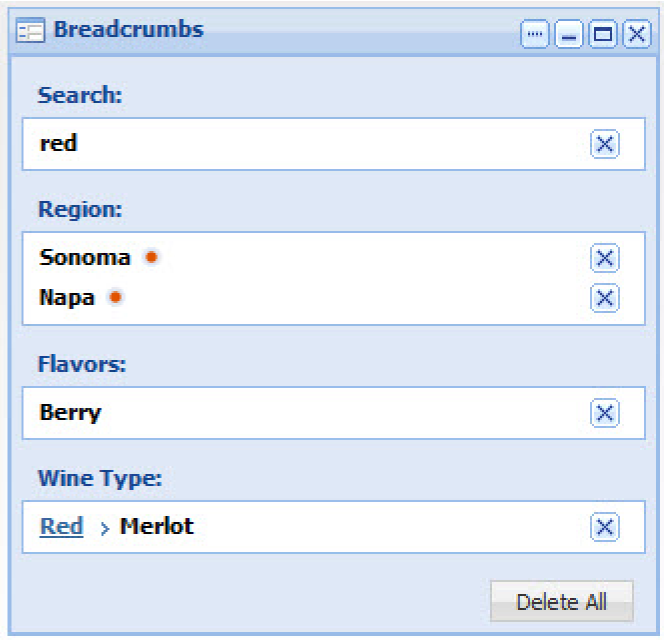
Filtering components allow you to search, navigate, and filter your data.

Breadcrumbs

The **Breadcrumbs** component tracks the attribute values and search terms that are currently being used to filter the data.

About the Breadcrumbs component

The **Breadcrumbs** component summarizes in a vertical stack the values the end user has selected to filter the data.



Search:
red

Region:
Sonoma
Napa

Flavors:
Berry

Wine Type:
Red > Merlot

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** 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.

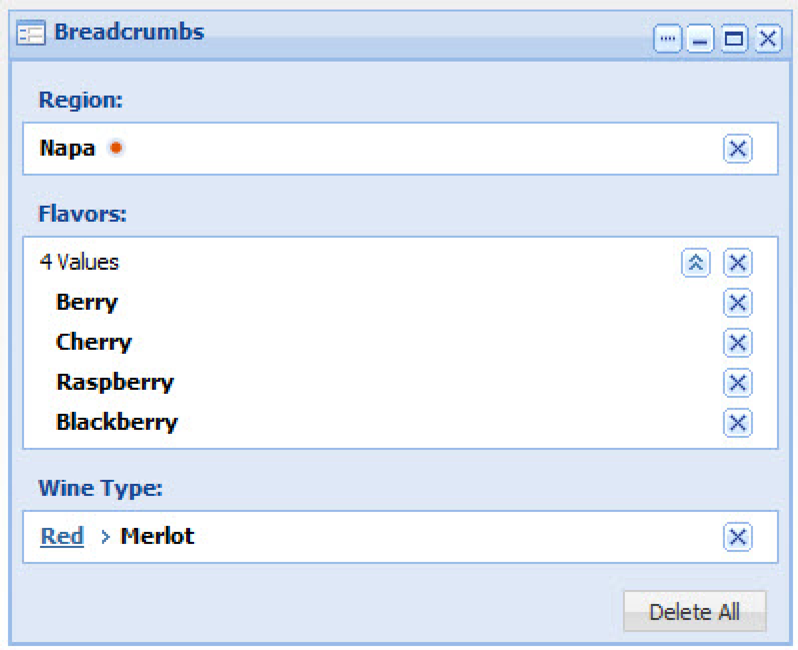
The **Breadcrumbs** component requires a backing data source. In order for the component to be useful, there also must be at least one component that is bound to the same data source and that allows end users to select refinements.

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.

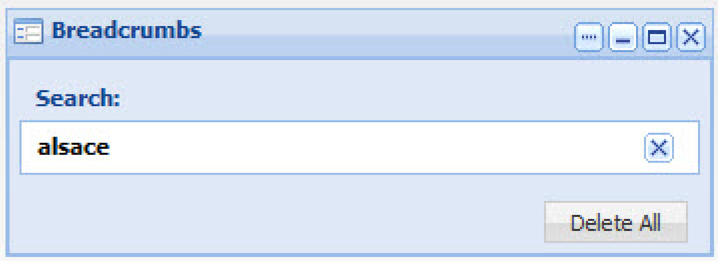


For negative refinements (refining data to show records that do NOT have the selected value), there is a red dot next to the attribute value.

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.

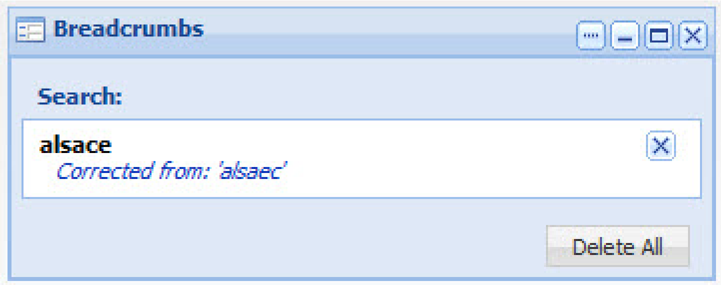
For search term values, the heading indicates that the value is a search term.


Breadcrumbs

Search:

alsace

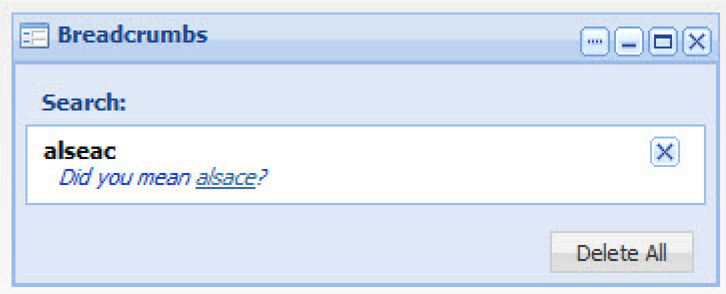
If the search function made an automatic spelling correction, it is included in the breadcrumb:


Breadcrumbs

Search:

alsace
Corrected from: 'alsaec'

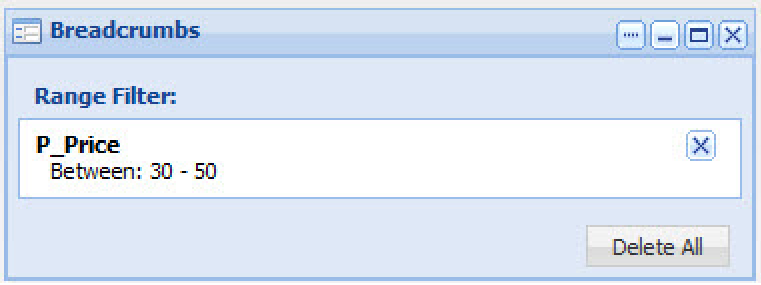
The breadcrumb may also include a "did you mean" option to suggest a search term that closely matches the specified term:


Breadcrumbs

Search:

alseac
Did you mean alsace?

For range filters, the breadcrumb contains the attribute name and the selected range of values. The heading indicates that it is a range filter.


Breadcrumbs

Range Filter:

P_Price
Between: 30 - 50

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.

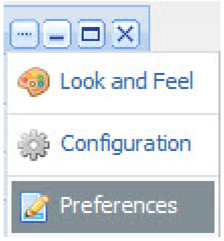
To remove all of the refinements, click the **Delete All** button.

Configuring a Breadcrumbs component

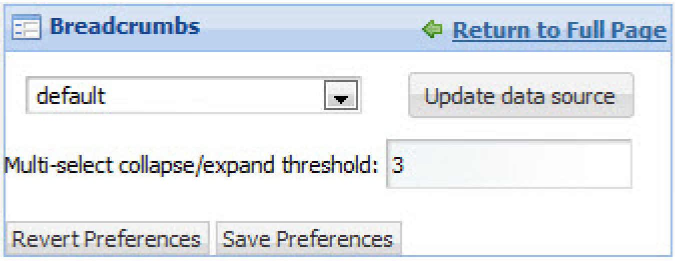
For a **Breadcrumbs** component, power users can configure the data source and whether to expand a list of multi-select attribute values.

To configure a **Breadcrumbs** component:

1. To display the edit view for the component, click the **....** button. In the drop-down menu, click **Preferences**.



The **Breadcrumbs** edit view is displayed.

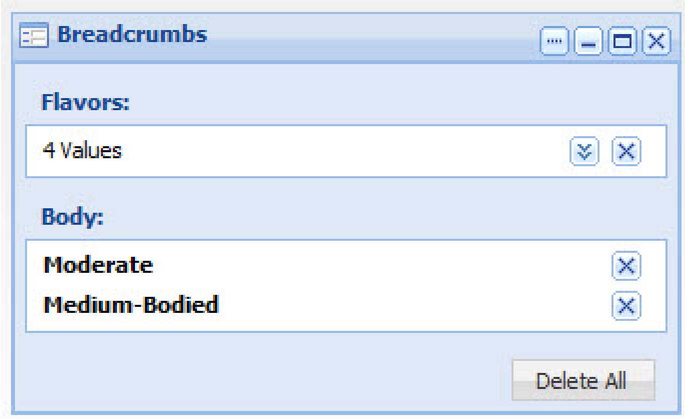


default

Multi-select collapse/expand threshold: 3

2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.
3. 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.



Flavors:

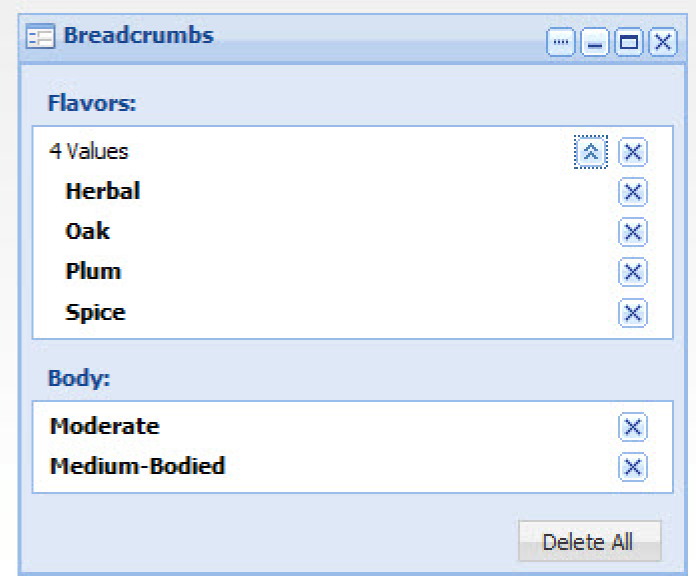
4 Values

Body:

Moderate

Medium-Bodied

End users can then use the expand/collapse button to display or hide the full list.



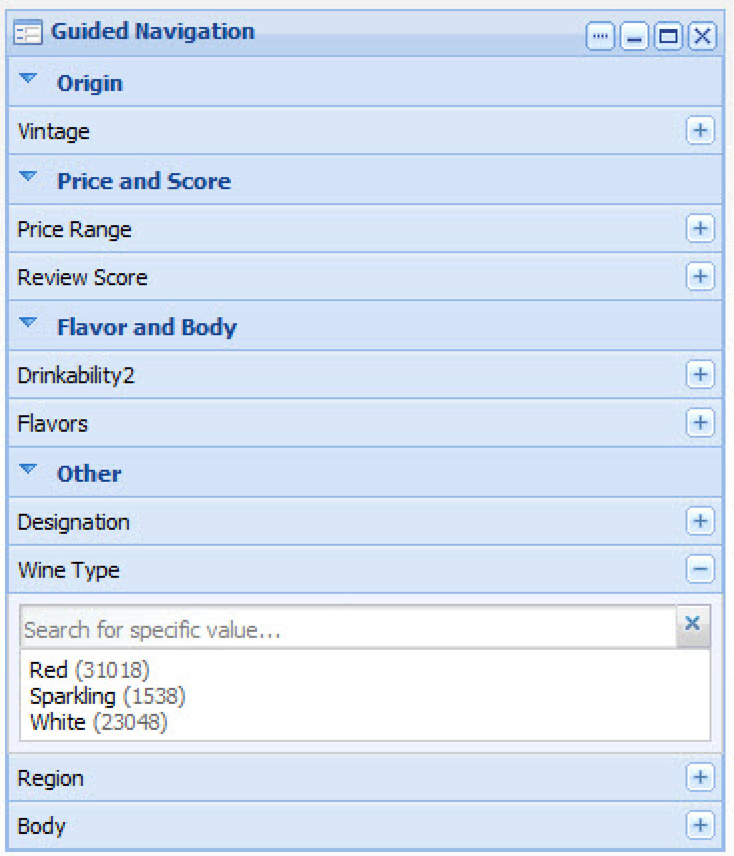
4. To save your changes, click **Save Preferences**.
5. To exit the edit view, click **Return to Full Page**.

Guided Navigation

The **Guided Navigation** component allows end users to filter the current data using selected attribute values.

About the Guided Navigation component

The **Guided Navigation** component provides Endeca Guided Navigation® functionality - contextual navigation across large volumes of structured MDEX Engine-specific data.



The component displays the values for selected attributes. If base refinement statistics are enabled in the MDEX Engine, then the component also displays the number of matching records for a selected 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.

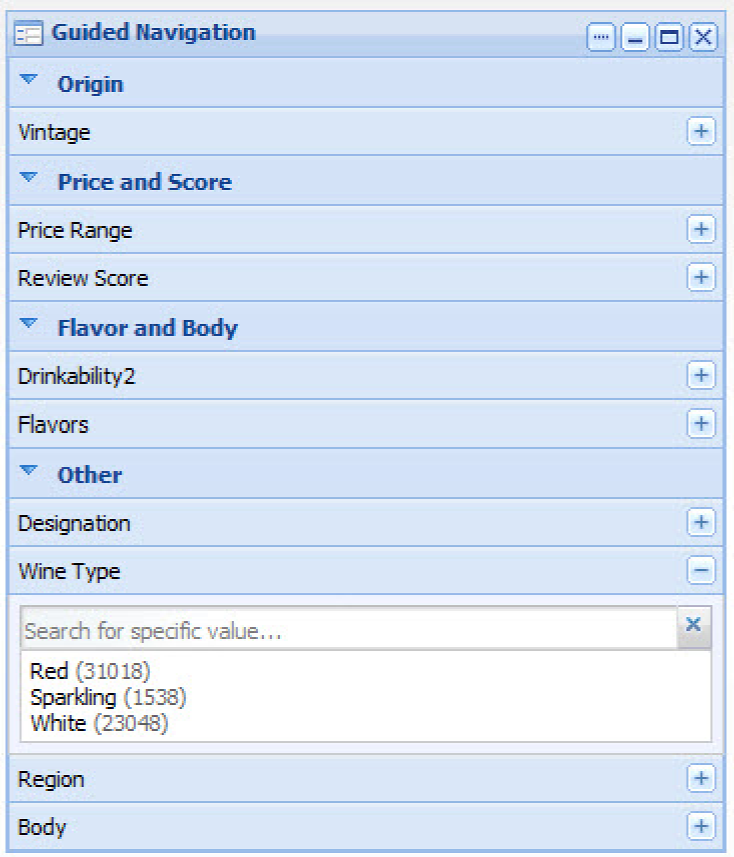
Using Guided Navigation

End users use the **Guided Navigation** component to refine the displayed data.

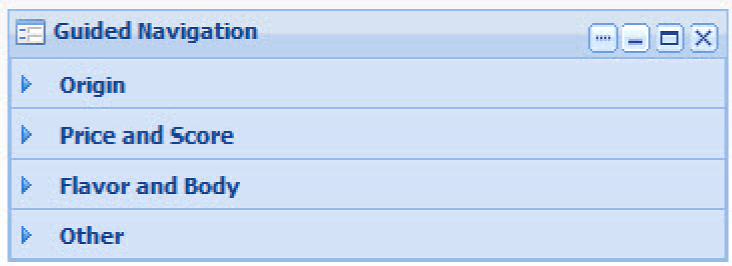
Displaying the available attribute values

The **Guided Navigation** component displays the attribute groups that end users can use to filter the data.

The values for each attribute may be displayed or hidden by default.

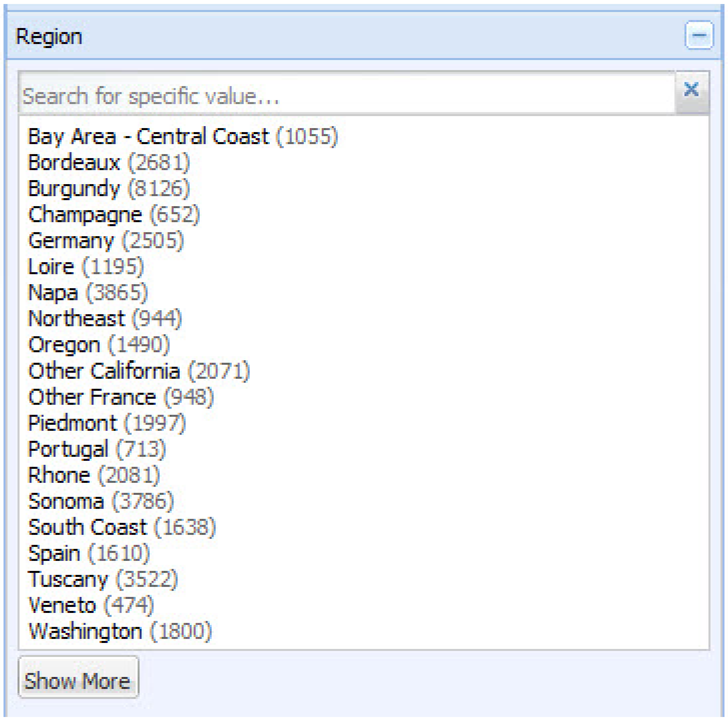


To show or hide the list of attributes for a group, click the group name.



To display or hide the available values for an attribute, click the attribute name, or use the **+** and **-** buttons for the attribute.

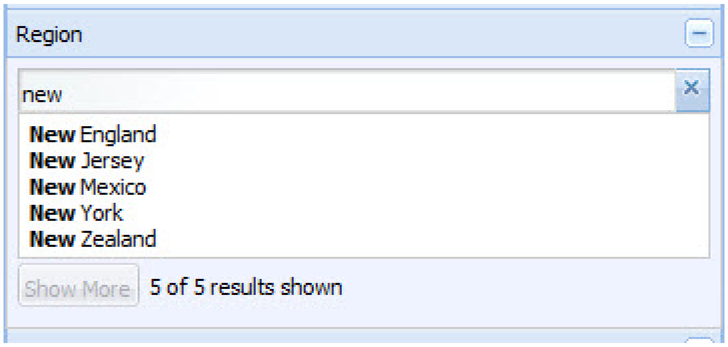
If the number of values is too large, then a **Show More** button is displayed:



Bay Area - Central Coast (1055)
Bordeaux (2681)
Burgundy (8126)
Champagne (652)
Germany (2505)
Loire (1195)
Napa (3865)
Northeast (944)
Oregon (1490)
Other California (2071)
Other France (948)
Piedmont (1997)
Portugal (713)
Rhone (2081)
Sonoma (3786)
South Coast (1638)
Spain (1610)
Tuscany (3522)
Veneto (474)
Washington (1800)

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.



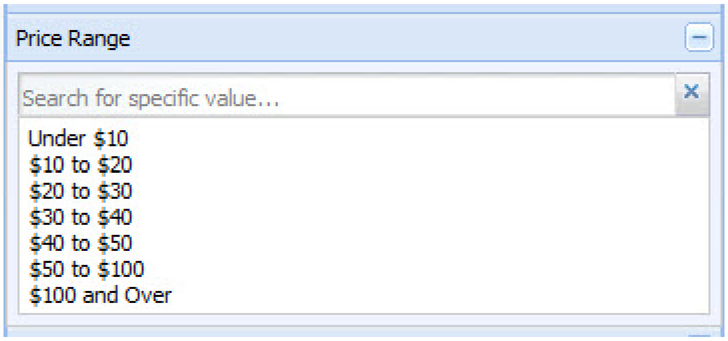
new

New England
New Jersey
New Mexico
New York
New Zealand

5 of 5 results shown

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.



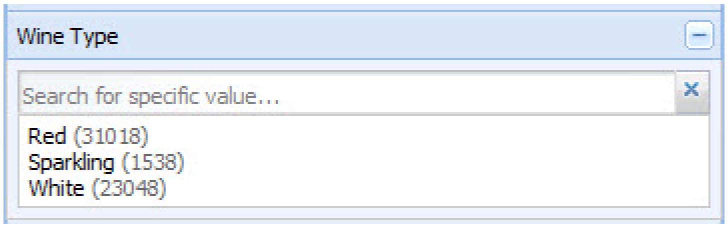
Under $10
$10 to $20
$20 to $30
$30 to $40
$40 to $50
$50 to $100
$100 and Over

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

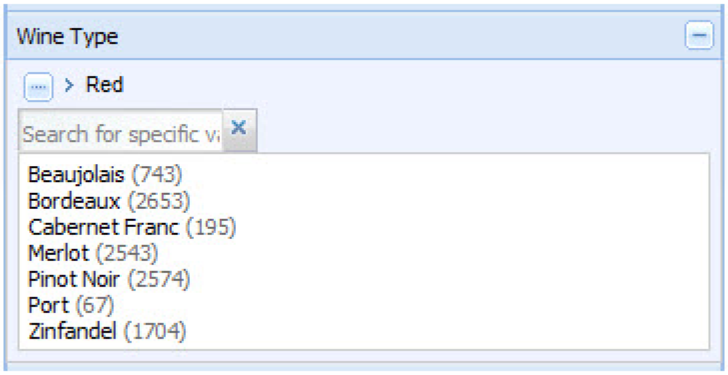
For a hierarchical attribute, only **Guided Navigation** component initially displays the top level of the hierarchy.



Red (31018)
Sparkling (1538)
White (23048)

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.



Beaujolais (743)
Bordeaux (2653)
Cabernet Franc (195)
Merlot (2543)
Pinot Noir (2574)
Port (67)
Zinfandel (1704)

To return to the top level of the hierarchy, click the **...** button.

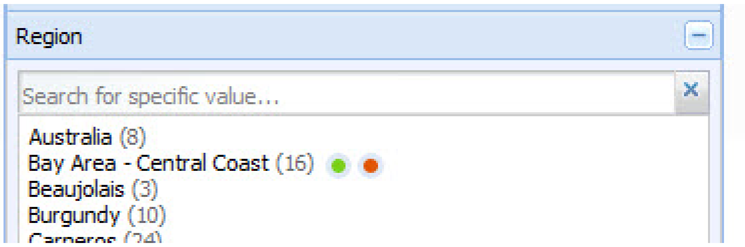
When you click a child attribute value, the selected value is added to the existing breadcrumb for that attribute. If there is another level of child values, those values are displayed on the **Guided Navigation** component.

When you click a value that does not have any children, then 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, a green dot (on the left) and red dot (on the right) are displayed next to the value.



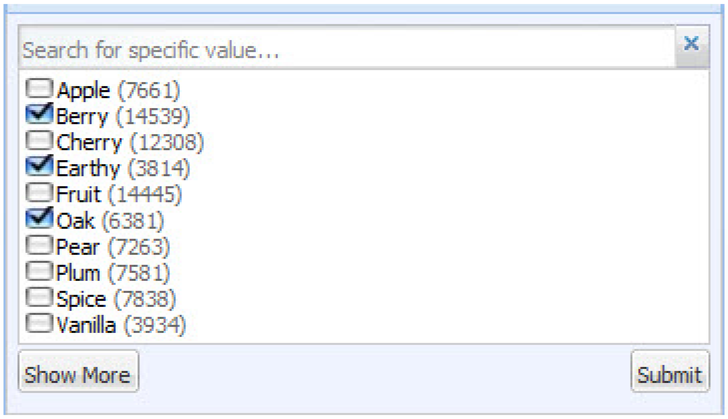
Australia (8)
Bay Area - Central Coast (16) ● ●
Beaujolais (3)
Burgundy (10)
Carneros (24)

To refine the data to only include records that have that value, click the green dot.

To refine the data to only include records that do NOT have that value, click the red dot. When you do a negative refinement, then a red dot also is displayed next to the breadcrumb.

Selecting multiple values for an attribute

If users can select multiple value for an attribute, then a check box displays next to each available value.



☐ Apple (7661)
☑ Berry (14539)
☐ Cherry (12308)
☑ Earthy (3814)
☐ Fruit (14445)
☑ Oak (6381)
☐ Pear (7263)
☐ Plum (7581)
☐ Spice (7838)
☐ Vanilla (3934)

To select values for filtering, check the check box next to each value, then click the **Submit** button. 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 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.

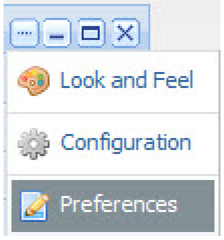
Setting the Guided Navigation data source and configuration options

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.

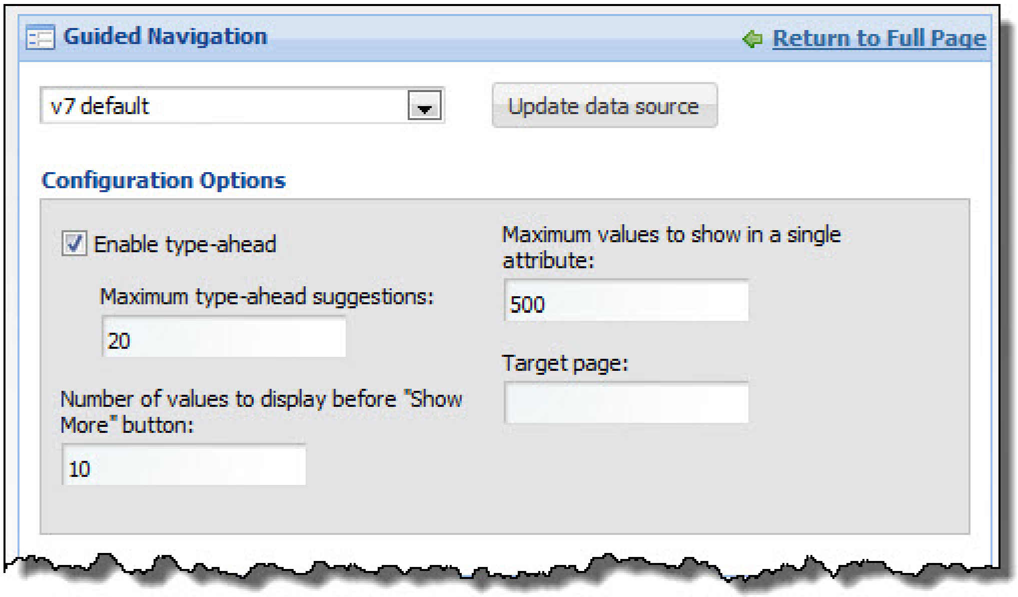
Before configuring type-ahead suggestions, attribute search wildcarding must be enabled in the MDEX Engine.

To set the **Guided Navigation** data source and the configuration options:

1. To display the edit view for the **Guided Navigation** component, click its **....** button. In the drop-down menu, click **Preferences**.



2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.
3. Under **Configuration Options**:



v7 default

☑ 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:

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.

Maximum type-ahead suggestions	In the field, type the maximum total number of type-ahead suggestions the MDEX Engine 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.
Maximum values to show in a single attribute	In the field, type the maximum number of values per attribute to be displayed. The default value is 500. If the number of values is greater than this number, then end users can use the type-ahead search to find a specific value. Limiting the number of values to display can help prevent end users from being overwhelmed by an excessive number of results. **Note:** 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 **Guided Navigation** interface, to allow users to get access to specific values by filtering for them.
Target page	In the field, type the name of the page to display when end users select a value. The selected value is passed to the components on that page. If you do not specify a target page, then the end user stays on the current page.
Number of values to display before "Show More" button	In the field, type the number of attribute values to display before displaying the **Show More** button. For example, if this value is set to 20, then when end users first select an attribute, only 20 values are displayed. If there are more than 20 values, then the **Show More** button is displayed. When end users click **Show More**, the remaining values are displayed, up to the maximum values setting.

4. To save your changes, click **Save Preferences**.
5. To exit the edit view, click **Return to Full Page**.

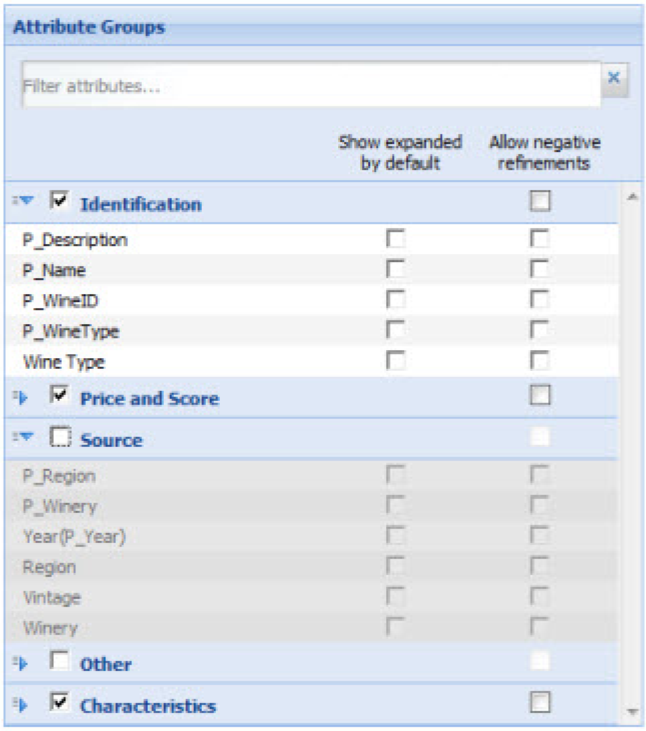
Configuring the attribute list for Guided Navigation

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.



Attribute Groups

Filter attributes...

	Show expanded by default	Allow negative refinements
☑ Identification		☐
P_Description	☐	☐
P_Name	☐	☐
P_WineID	☐	☐
P_WineType	☐	☐
Wine Type	☐	☐
☑ Price and Score		☐
☐ Source		
P_Region	☐	☐
P_Winery	☐	☐
Year(P_Year)	☐	☐
Region	☐	☐
Vintage	☐	☐
Winery	☐	☐
☐ Other		
☑ Characteristics		☐

2. 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.

3. In the displayed groups, for each attribute, you can configure:

Show expanded by default	To automatically expand the list of values for the attribute, check the checkbox. By default, the box is not checked. End users can always collapse or expand the list as needed.
Allow negative refinements	To allow negative refinements for the attribute, check the checkbox for that attribute. By default, the box is not checked. To enable or disable negative refinements for all of the attributes in a group, check or uncheck the group-level checkbox. If negative refinements are allowed, then end users can use the **Guided Navigation** component to exclude records that have a particular value.

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.

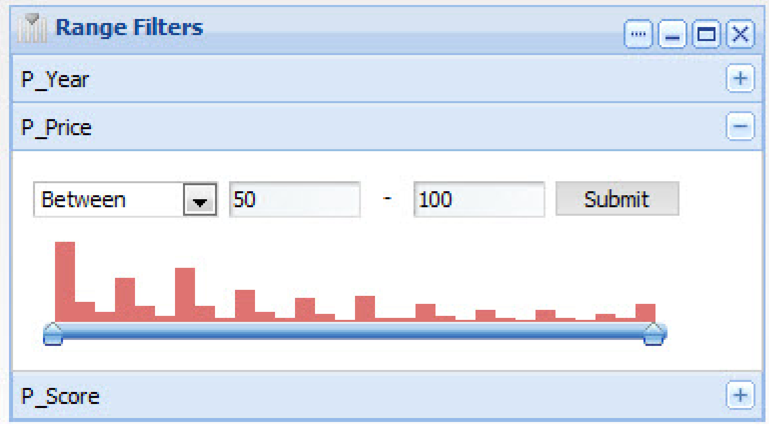
4. To save your changes, click **Save Preferences**.
5. To exit the edit view, click **Return to Full Page**.

Range Filters

The **Range Filters** component allows end users to refine data based on a range of attribute values.

About the Range Filters component

The **Range Filters** component allows power users to create a set of filters. Each filter is for a specific attribute. End users can then use these filters to refine the displayed data to only include records that have attribute values within a specified range.



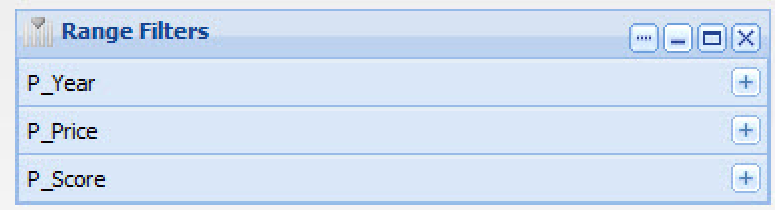
The **Range Filters** component can only be used for numeric and date attributes.

It 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:

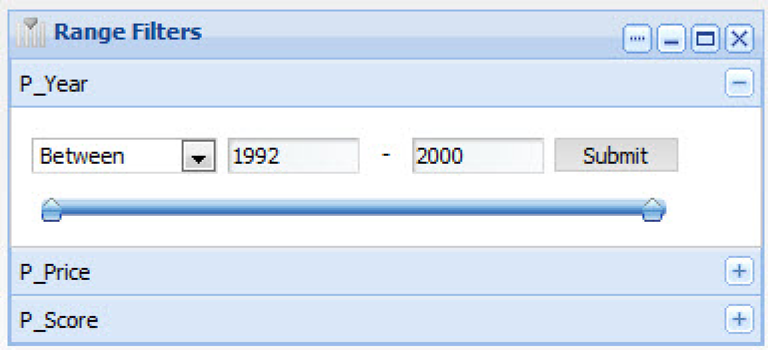
- Click the **+** button for that range filter
- Click the attribute name

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:

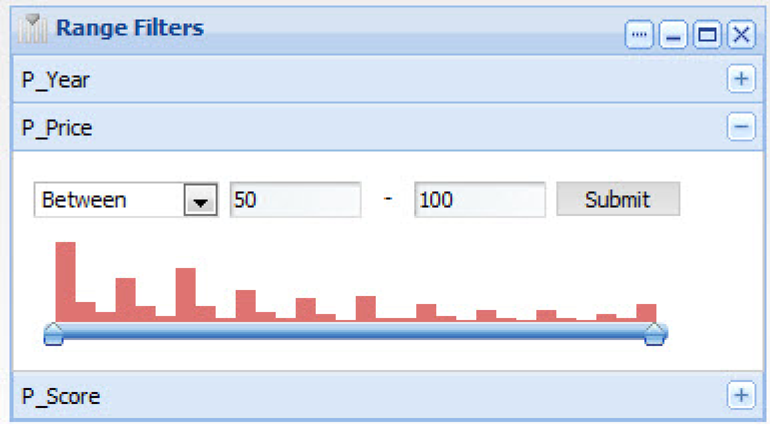
- A specific value configured by the power user
- The actual minimum/maximum value for the current refinement

For numeric values, below the values is a slider bar:



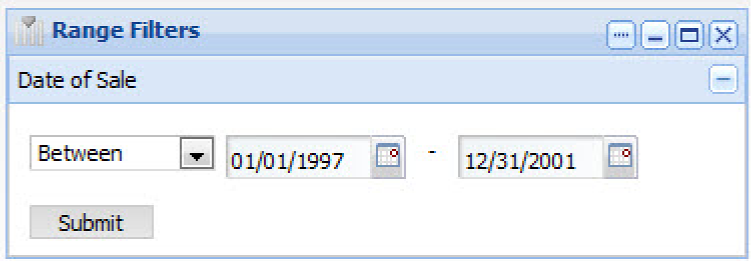
Between 1992 - 2000

A numeric filter also may be configured to include a histogram, which shows how the attribute values are distributed within the range:



Between 50 - 100

For date filters, there is no slider or histogram:

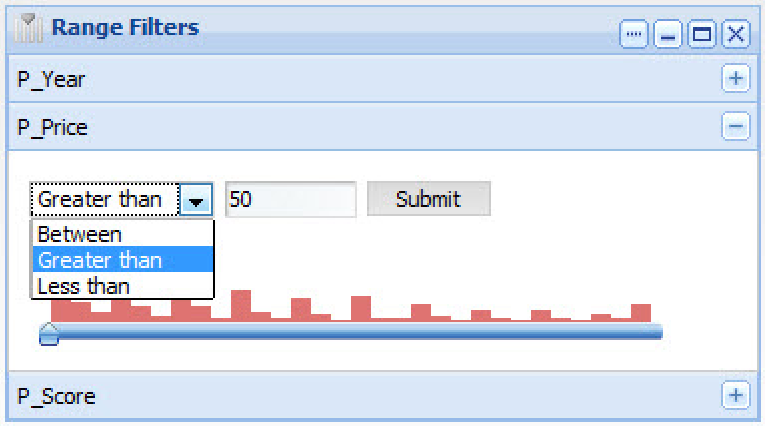


Between 01/01/1997 - 12/31/2001

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

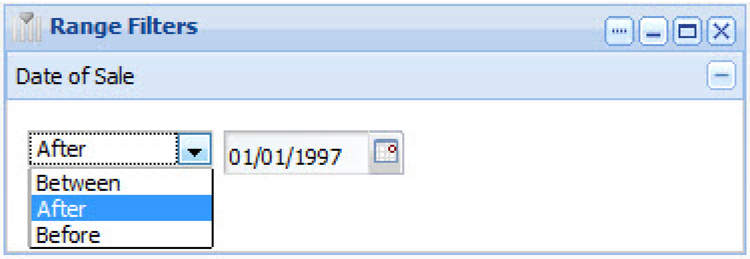
- **Less than** a selected value



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:

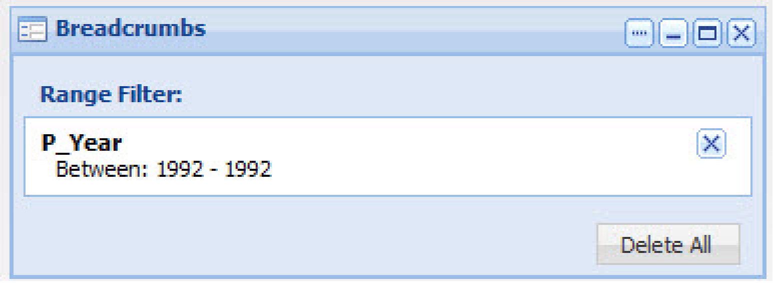
1. From the drop-down list, select whether to specify a range:
   - **Between** two dates
   - **After** a selected date
   - **Before** a selected date



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.



Range Filter:

P_Year
Between: 1992 - 1992

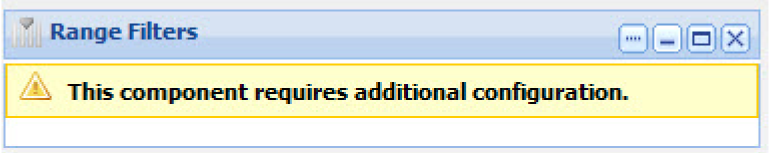
When you remove the filter from the **Breadcrumbs** component, it is added back to the **Range Filters** component.

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 MDEX Engine.

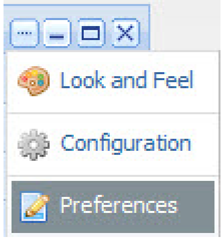
When you first add a **Range Filters** component, it displays a message indicating that additional configuration is needed.



This component requires additional configuration.

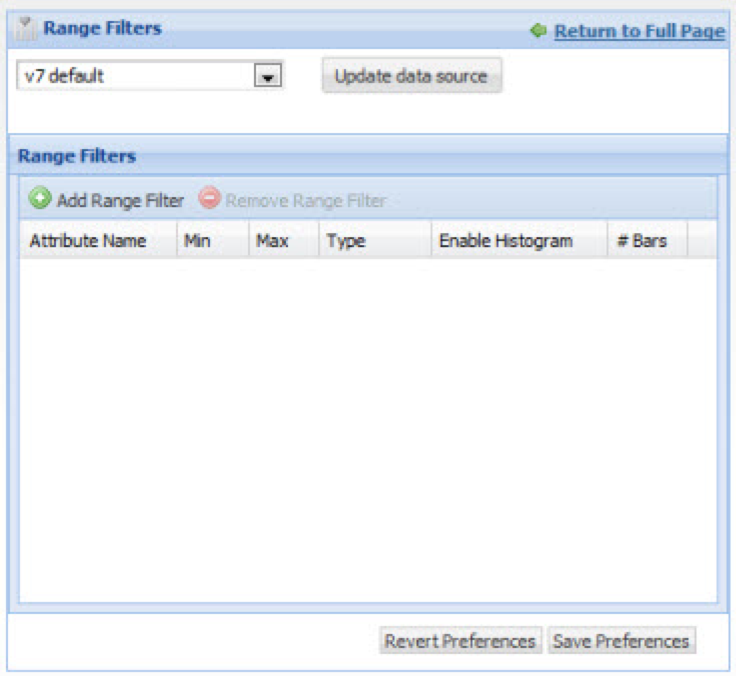
To configure the **Range Filters** component:

1. To display the component edit view, click the **....** button. In the drop-down menu, click **Preferences**.

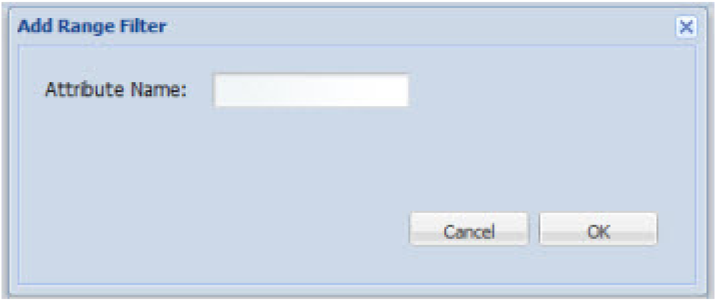


2. To bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.

   The list of filters is cleared.



3. 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.

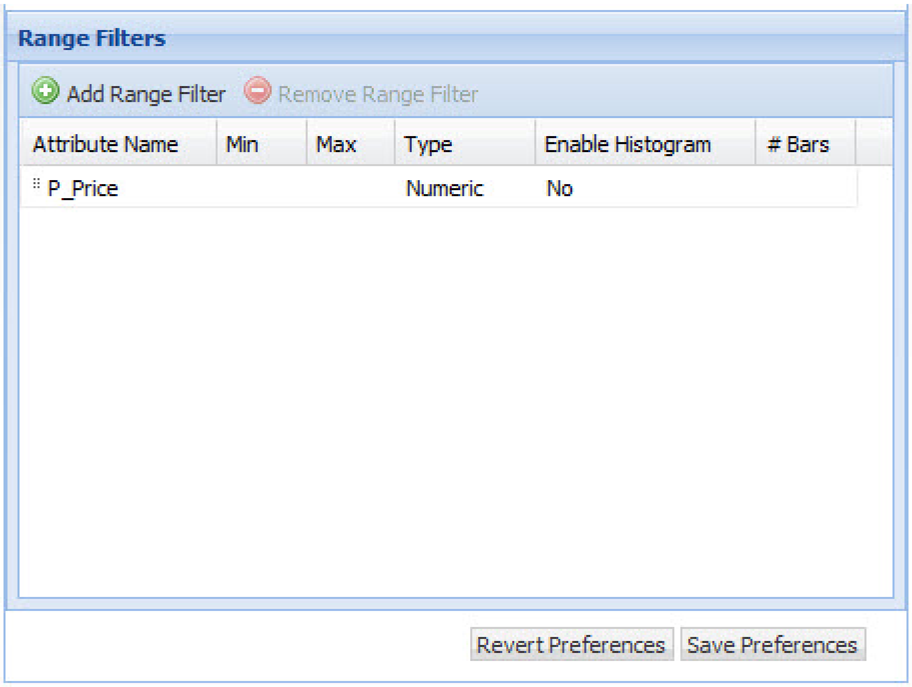
   The attribute must be either a date or a numeric attribute, and cannot be a managed attribute.

   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.



Attribute Name	Min	Max	Type	Enable Histogram	# Bars
P_Price			Numeric	No	

Note that the new filter is not actually saved until you save the component.

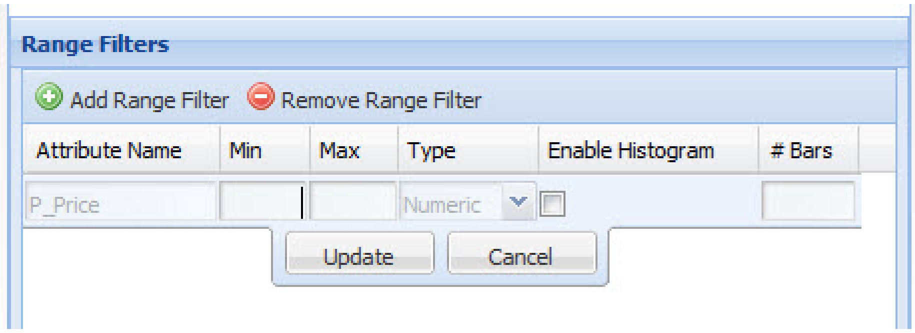
When the new filter is added:

- There are no minimum and maximum values specified.
- The type is based on the attribute type.
- The filter does not include a histogram.

4. 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.



Attribute Name	Min	Max	Type	Enable Histogram	# Bars
P_Price			Numeric	□	

   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.

Max	In the field, enter the maximum value to show for the range filter. If you do not provide a maximum value, then the filter displays the maximum value for the current refinement. For date filters, the **Max** value must be given in milliseconds-since-epoch format.
Enable Histogram	For a numeric filter, to display a histogram for the filter, check the checkbox. If the box is not checked, then the slider bar displays without the histogram. For date filters, this checkbox cannot be checked.
#Bars	For numeric filters, if the **Enable Histogram** checkbox is checked, then in the **#Bars** field, type the number of bars to display in the histogram. The default is 30. The more bars that are displayed, the more precise the histogram.

c) To confirm the changes, click **Update.**

Note that any changes to a filter are not actually saved until you save the component.

5. 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.

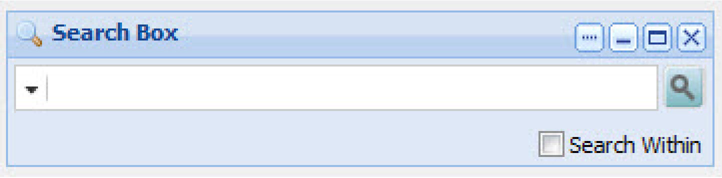
6. To change the order in which a filter is displayed, drag and drop the row to the new location in the list.
7. To save the changes to the component, click **Save Preferences**.
8. To exit the edit view, click **Return to Full Page**.

Search Box

The **Search Box** component allows end users to search for records.

About the Search Box component

The **Search Box** component provides a search function for a Latitude Studio application.



It allows end users to submit keyword searches. The **Search Box** component also can be configured to provide type-ahead suggestions listing attribute values that match the typed text.

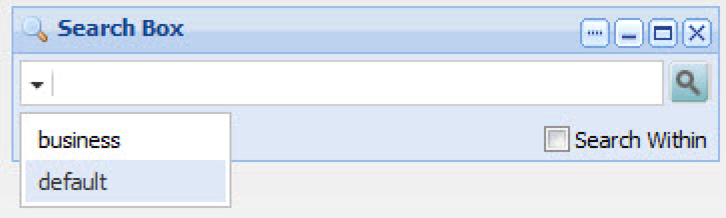
The **Search Box** component works in conjunction with:

- **Breadcrumbs**
- **Guided Navigation**
- **Data Explorer**
- **Results List**
- **Results Table**

Using Search Box

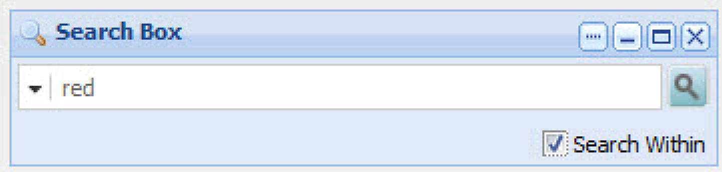
End users use the **Search Box** component to find records that contain a specified search term.

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.



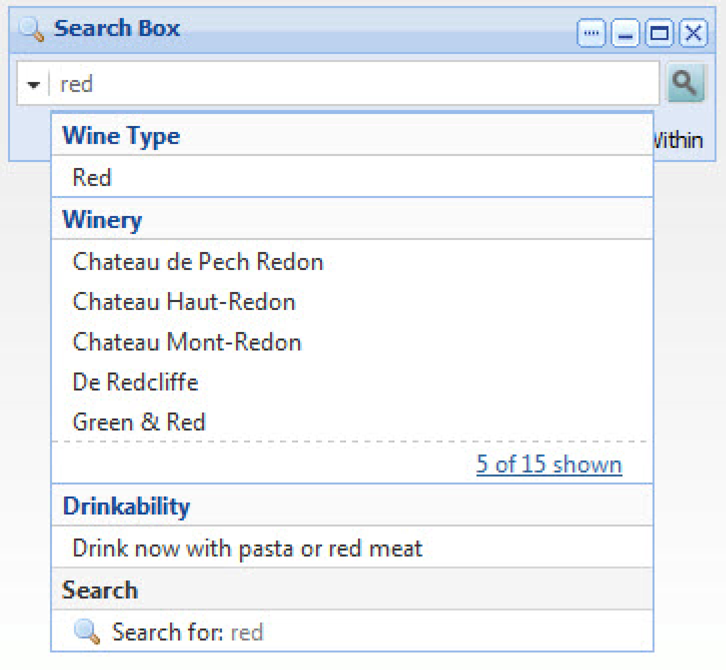
After selecting the search configuration, to do a basic search, end users:

1. In the field, type the search term.
2. To only search within the currently displayed data, check the **Search Within** checkbox.



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 can 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.



Search Box

red

Wine Type

Red

Winery

Chateau de Pech Redon

Chateau Haut-Redon

Chateau Mont-Redon

De Redcliffe

Green & Red

5 of 15 shown

Drinkability

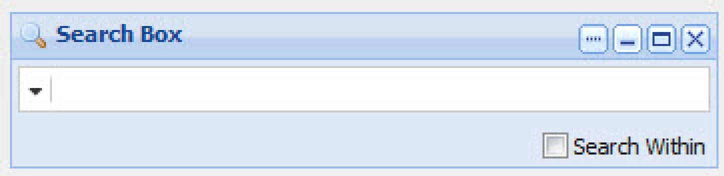
Drink now with pasta or red meat

Search

Search for: red

Vithin

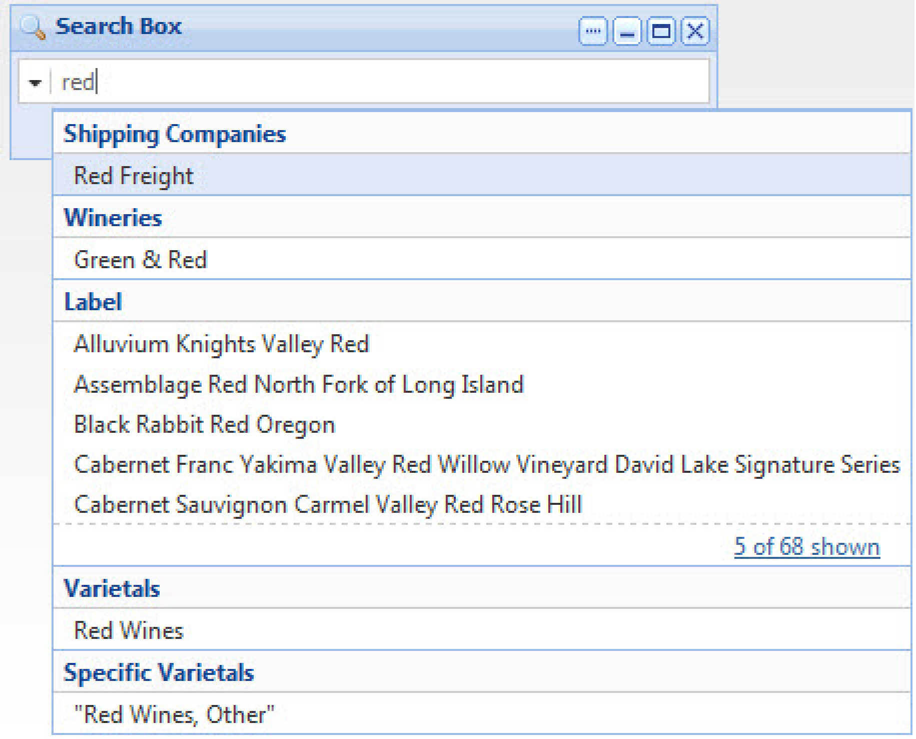
If the data source for the selected search configuration does not have a search interface, then only type-ahead is supported. The search icon does not display.



Search Box

□ Search Within

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.



Search Box

red

Shipping Companies

Red Freight

Wineries

Green & Red

Label

Alluvium Knights Valley Red

Assemblage Red North Fork of Long Island

Black Rabbit Red Oregon

Cabernet Franc Yakima Valley Red Willow Vineyard David Lake Signature Series

Cabernet Sauvignon Carmel Valley Red Rose Hill

5 of 68 shown

Varietals

Red Wines

Specific Varietals

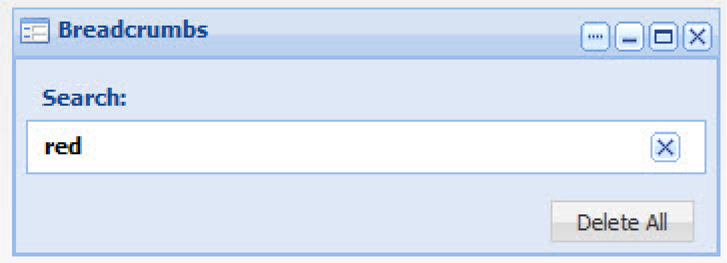
"Red Wines, Other"

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.

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.



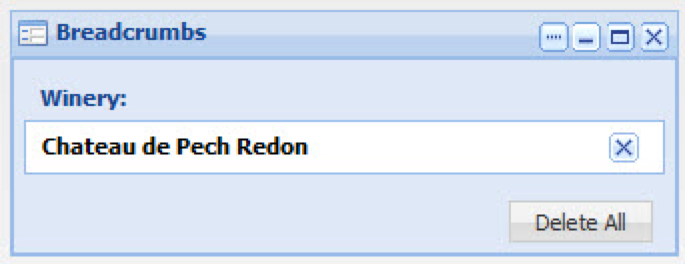
Breadcrumbs

Search:

red

Delete All

- If the end user selected an attribute value, then the breadcrumb is an attribute value breadcrumb.



Breadcrumbs

Winery:

Chateau de Pech Redon

Delete All

The selected value also is removed from the available values on the **Guided Navigation** component.

Configuring the Search Box component

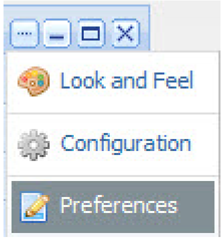
For the **Search Box** component, power users create a list of available search configurations.

Displaying the edit view for the Search Box component

Power users use the **Search Box** component edit view to configure the **Search Box**.

To display the edit view:

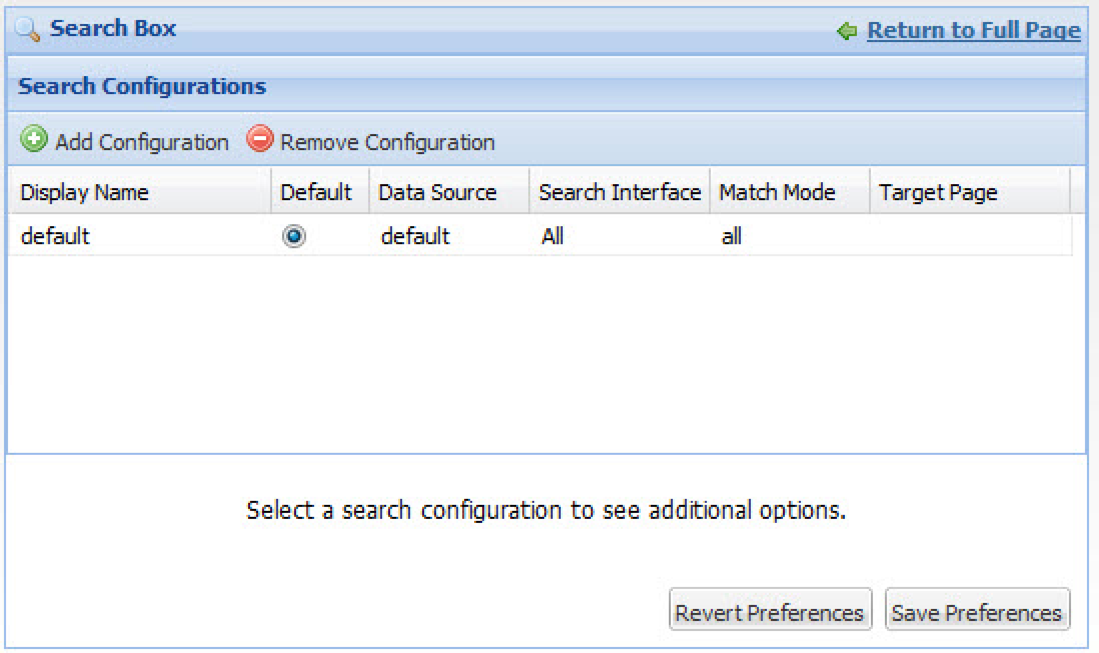
1. On the **Search Box** component, click the **...** button.
2. In the drop-down menu, click **Preferences**.



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:



Display Name	Default	Data Source	Search Interface	Match Mode	Target Page
default	●	default	All	all	

Select a search configuration to see additional options.

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:

all	For this mode, a record only is returned if it contains all of the search terms. For example, if the user types `California red`, then only records containing both "California" and "red" are included. This is the default mode.
any	For this mode, a record is returned if it contains any of the search terms. For example, if the user types `California red`, then records that contain either "California" or "red" are included. The records do not have to include both terms.
partial	For this mode, a record is returned based on the partial search rules for the selected search interface. Each search interface can be configured with either: • A "Match at Least" rule, indicating the minimum number of matching terms • An "Omit at Most" rule, indicating the maximum number of terms that be not found in the record 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 `California red berry sweet`, and

	the search interface "Match at Least" rule is 2, then only records with at least two of those terms are included. 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 `California red berry sweet`, and the search interface "Omit at most" rule is 1, then only records with at least three of those terms are included.
partialmax	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. So it first looks for records that match all of the search terms. If it finds any, it stops looking, and returns those records. 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. 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.
allany	For this mode, the search first looks for records that have all of the terms. If it finds any, it stops looking and returns those records. If none of the records have all of the search terms, then the search looks for records that have any of the search terms.
allpartial	For this mode, the search first looks for records that have all of the terms. If it finds any, it stops looking and returns those records. If none of the records have all of the search terms, then the search changes to partial mode.
boolean	This mode allows end users to do a Boolean search. The Boolean search supports the following operators: • AND • OR • NOT • NEAR • ONEAR

e) 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.

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

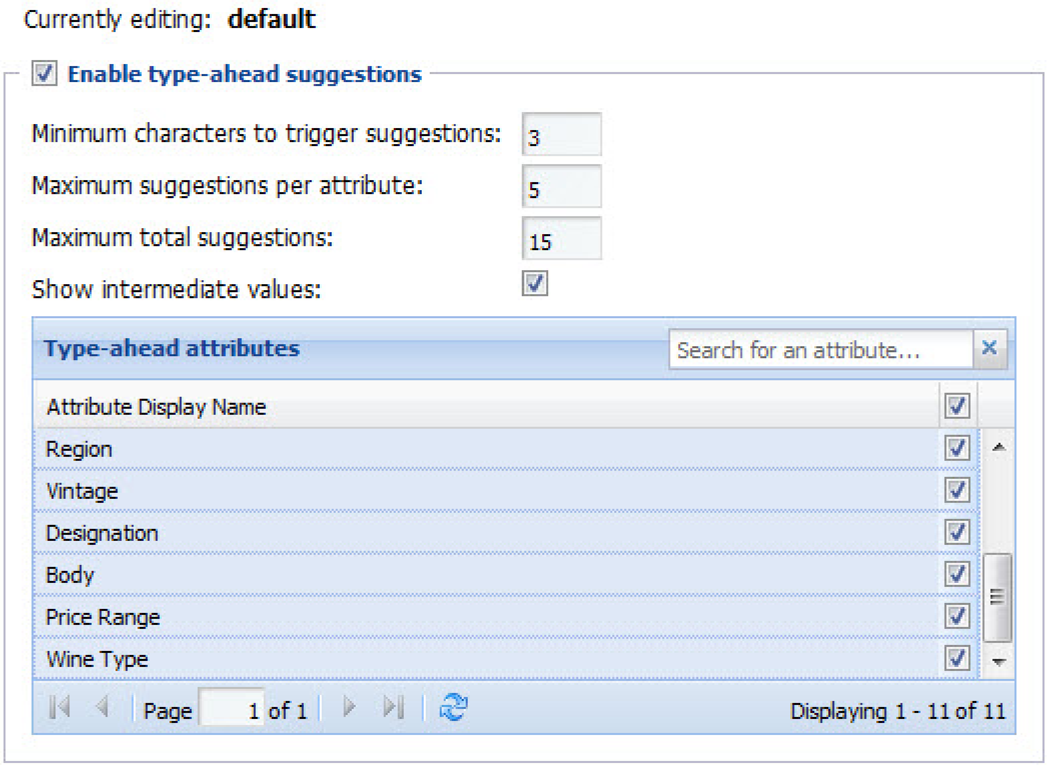
Each search configuration for a **Search Box** component can be configured to allow type-ahead suggestions. When type-ahead is enabled, the component displays attribute values that match the entered text while the end user types.

In order to use type-ahead suggestions, attribute search wildcarding must be enabled in the MDEX Engine.

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.



Currently editing: **default**

☑ Enable type-ahead suggestions

Minimum characters to trigger suggestions: 3

Maximum suggestions per attribute: 5

Maximum total suggestions: 15

Show intermediate values: ☑

Type-ahead attributes

Attribute Display Name	☑
Region	☑
Vintage	☑
Designation	☑
Body	☑
Price Range	☑
Wine Type	☑

Page 1 of 1

Displaying 1 - 11 of 11

2. 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.

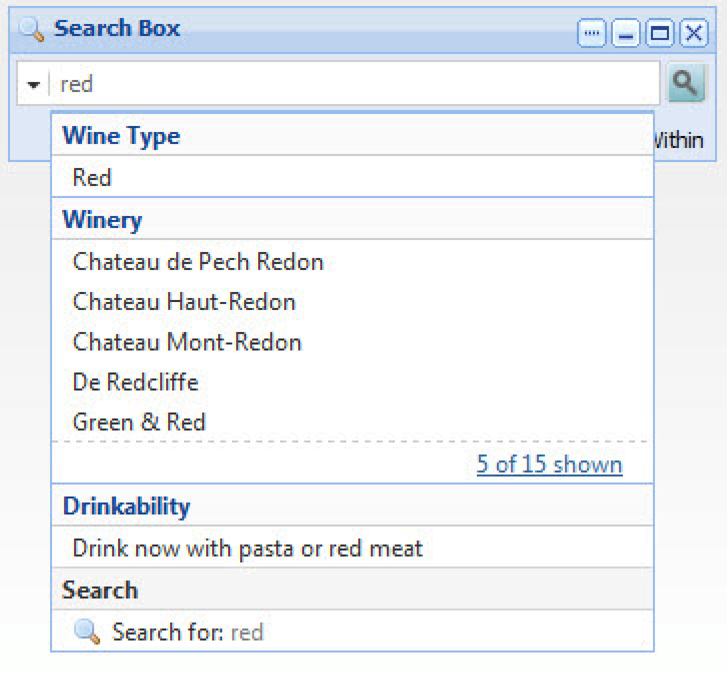
If the data source for the configuration does not have any search interfaces defined, then the checkbox is checked and locked.

3. In the **Minimum characters to trigger suggestions** field, set the minimum number of characters the user must type before type-ahead suggestions are offered.
4. In the **Maximum suggestions per attribute** field, set the maximum number of type-ahead suggestions the MDEX Engine 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.

5. In the **Maximum total suggestions** field, set the maximum total number of type-ahead suggestions the MDEX Engine 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 15

Incorporating Liferay Components

Latitude Studio includes a number of Liferay components in its installation by default. These components can be integrated with Latitude components to allow you to build richer applications.

Liferay component support

The level of documentation and support Endeca provides for the Liferay components included in Latitude Studio differs from that provided for our own standard components.

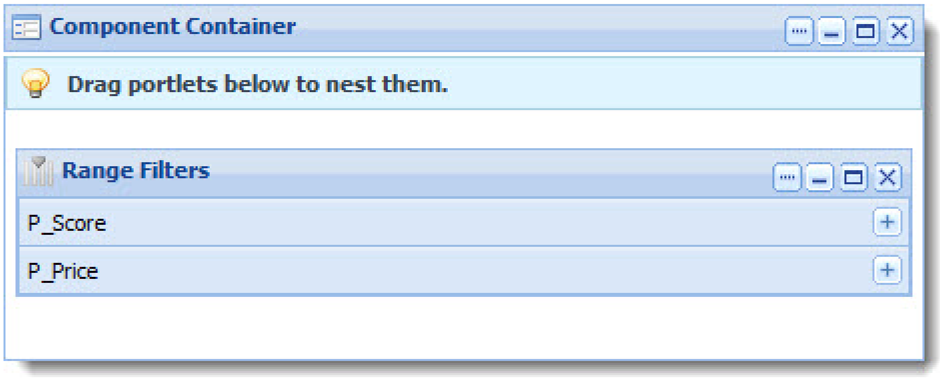
Because these components were not developed by Endeca, Endeca cannot control their interface or guarantee that they will be available in subsequent versions. Endeca provides only high-level documentation for Liferay components.

For more detailed information, consult the Liferay documentation and forums, available at *http://www.liferay.com.*

Component Container

The **Component Container** allows power users to organize components by grouping them together in a single container.

The power user can choose from several layout templates in order to customize the display to meet the needs of the application.

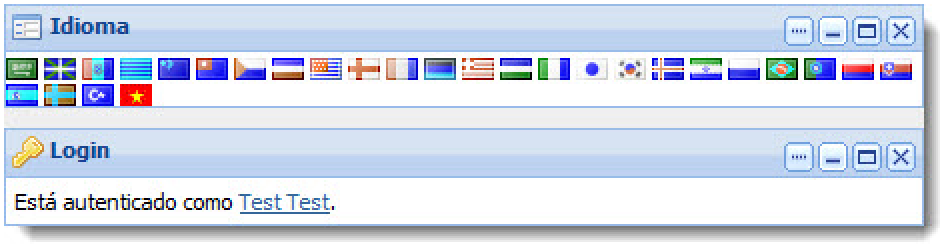


Note: Do not add a **Component Container** component to a **Tabbed Container** component.

Languages component

The **Languages** component can be used to change the locale of the server.

To select an alternate language in the **Language** component, click the flag icon associated with your target language.



Está autenticado como Test Test.

Latitude Studio displays the component messages from your resource bundle in your target language. In addition, because the portal itself is also localized, menus and other portal controls also display in your target language.

Liferay Web Content Management components

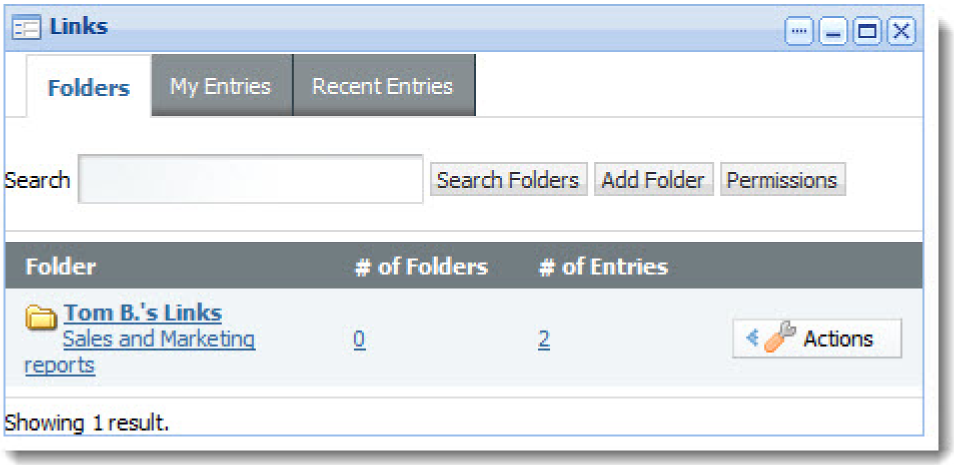
Liferay Web Content Management (WCM) components can be integrated into your application to provide document management and publishing capabilities.

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.



Folder	# of Folders	# of Entries
Tom B.'s Links Sales and Marketing reports	0	2

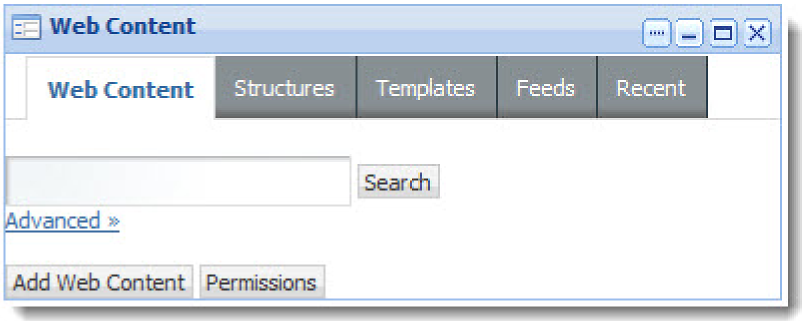
Showing 1 result.

Web Content component

The **Web Content** component allows the power user to configure and manage the administrative aspects of Liferay Web Content Management.

This includes the following:

- Enabling users to write and publish articles to the site.
- Creating article templates.
- Controlling article-creation workflow and versioning.
- Managing article search and metadata.

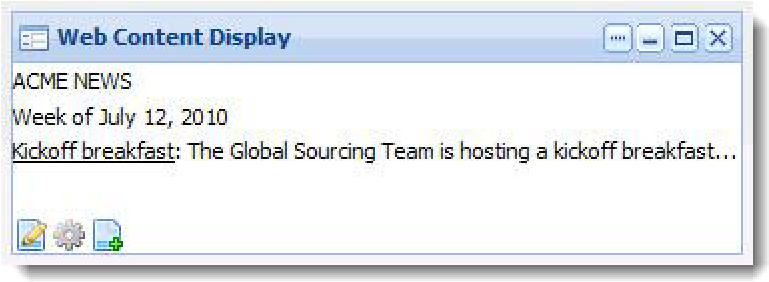


The content is displayed in the **Web Content Display** component.

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.



ACME NEWS

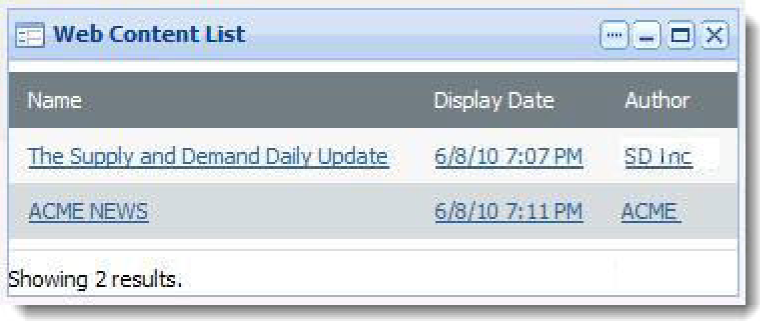
Week of July 12, 2010

Kickoff breakfast: The Global Sourcing Team is hosting a kickoff breakfast...

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.



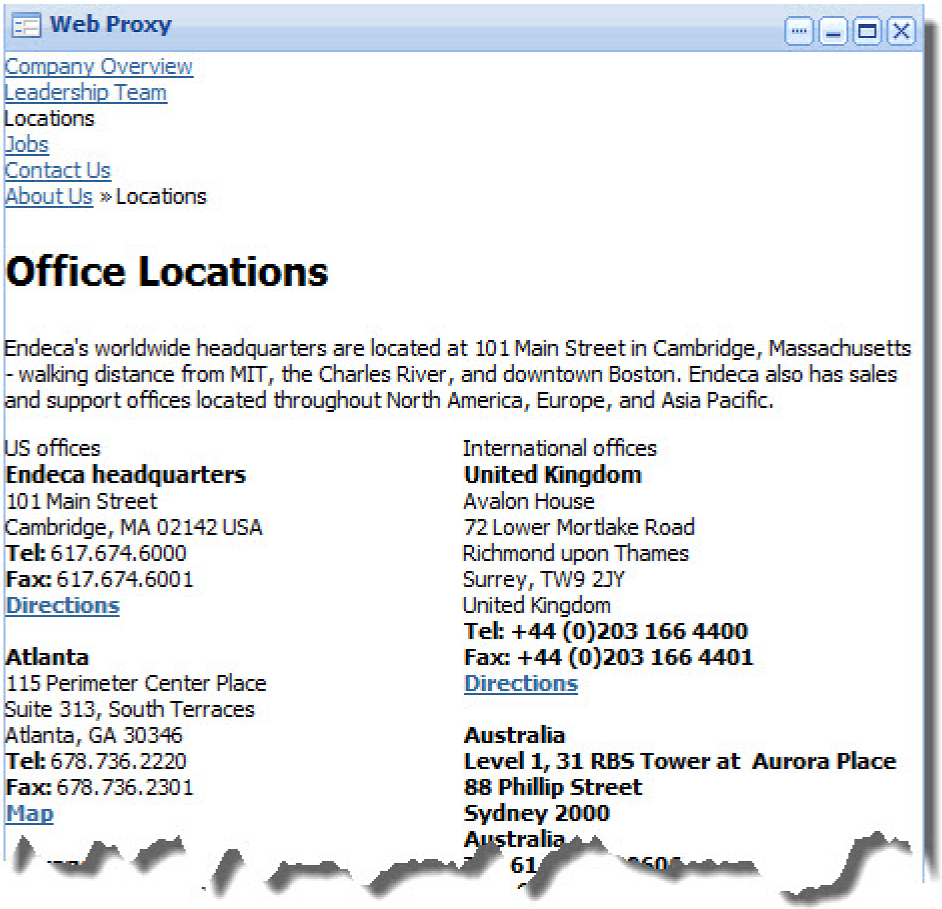
Name	Display Date	Author
The Supply and Demand Daily Update	6/8/10 7:07 PM	SD Inc
ACME NEWS	6/8/10 7:11 PM	ACME

Showing 2 results.

Web Proxy component

The **Web Proxy** component makes it possible to show any Web site as if it were a component.

The power user can configure the appearance and authentication of the content.



Company Overview
Leadership Team
Locations
Jobs
Contact Us
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Office Locations

Endeca's worldwide headquarters are located at 101 Main Street in Cambridge, Massachusetts - walking distance from MIT, the Charles River, and downtown Boston. Endeca also has sales and support offices located throughout North America, Europe, and Asia Pacific.

US offices
Endeca headquarters
101 Main Street
Cambridge, MA 02142 USA
Tel: 617.674.6000
Fax: 617.674.6001
Directions

Atlanta
115 Perimeter Center Place
Suite 313, South Terraces
Atlanta, GA 30346
Tel: 678.736.2220
Fax: 678.736.2301
Map

International offices
United Kingdom
Avalon House
72 Lower Mortlake Road
Richmond upon Thames
Surrey, TW9 2JY
United Kingdom
Tel: +44 (0)203 166 4400
Fax: +44 (0)203 166 4401
Directions

Australia
Level 1, 31 RBS Tower at Aurora Place
88 Phillip Street
Sydney 2000
Australia

Chapter 16

Creating Links Between Pages in Latitude Studio

For components that allow refinement or linking, power users can configure the links to target a different page of the Latitude Studio application.

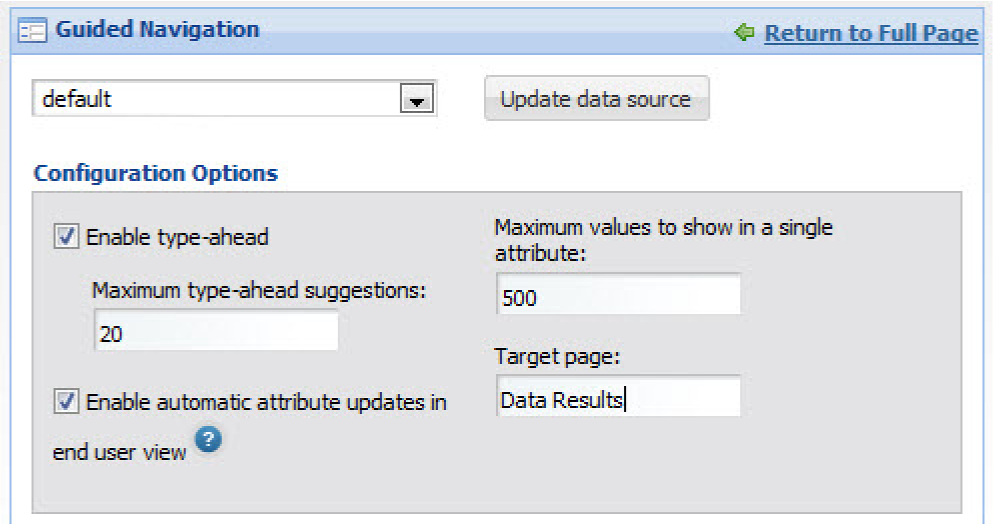
About page transitions

Page transitions allow a component on one page in your Latitude Studio application to pass data to a component on another page.

For example, you might have a **Results Table** component on one page and a **Record Details** component on another page. The **Results Table** component could be configured to target the **Record Details** component through a page transition.

The page transitions feature is implemented by component developers, but power users can specify the target for a page transition.

For the following example configuration, when users select an attribute on the **Guided Navigation** component, the refinement is applied to the **Data Results** page.



☑ Enable type-ahead

Maximum type-ahead suggestions: 20

☑ Enable automatic attribute updates in end user view

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.

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

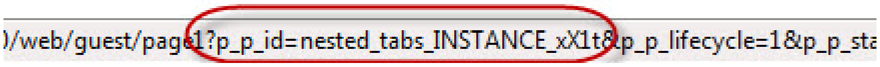
In order to implement certain kinds of page transitions, you need to use component IDs, rather than names.

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 you must use a component's ID rather than its name when defining a page transition target.

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/page1?p_p_id=nested_tabs_INSTANCE_xX1t&p_p_lifecycle=1&p_p_sta
```

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 17

Using Deep Linking to Create Links from External Sites

Power users can create URLs to allow transitions from an external site to a Latitude Studio page.

About deep linking

Deep linking allows users to construct URLs that take them from an external site to a target page in Latitude Studio. In effect, these URLs act as external bookmarks to Latitude Studio.

Pages targeted by deep linking inbound portal URLs must already exist within Latitude Studio, and contain zero or more Latitude components bound to one or more data sources.

The URLs encode the data source filter state for any or all of the data sources defined in the application.

Any query filter supported by the data source JSON files is supported in the URL. Navigation by attribute values is also supported.

Users construct these URLs based on a query URL template, which define filters for a number of data sources for that user request.

When implementing deep linking, keep the following restrictions in mind:

- Only attribute keys (not display names) will work in deep links. Any deep link created using display names will fail.
- If non-supported filters are specified, the filters are ignored, but no error message is issued. The non-supported filters are `EQLFilter` and `RecordAggregator`.

Deep linking URL format

Deep linking uses the `deeplink` URL query parameter to create external bookmarks to the Latitude Studio.

The general form of the URL is:

```
http://portalhost:port/path/to/page?deeplink=JSON-ARRAY-OF-DATASOURCE-STATES
```

The following is a record filter example:

```
http://localhost:8080/web/guest?deeplink=[{"default":
{"queryFunctions":[{"class":"RecordFilter","recordFilter":
"Designation:BestBuy"}]}}]
```

If the page you are navigating to includes a **Tabbed Component Container**, then you can use the `pageTransitionTabState` parameter to direct the user to a specific tab. To do this:

```
http://portalhost:port/path/to/page?com.endeca.discovery.
pageTransitionTabState=tabcomponentname[tabnumber]&deeplink=JSON-ARRAY-OF-
DATASOURCE-STATES
```

Where:

- *tabcomponentname* is the name of the component.
- *tabnumber* is the number of the tab.

In this example, in addition to providing a record filter, the link directs the user to the second tab of the Stores tabbed component:

```
http://localhost:8080/web/guest??com.endeca.discovery.
pageTransitionTabState=Stores[2]&deeplink=[{"default":
{"queryFunctions":[{"class":"RecordFilter","recordFilter":
"Designation:BestBuy"}]}}]
```

Deep linking syntax

The `deeplink` parameter value is a JSON array of data source states keyed by data source ID.

Data source state consists of query functions and `NavByValue` JSON objects. The syntax is as follows:

```
deepLink=[
  { "dataSourceId":
    {
      "queryFunctions": [data source json as defined elsewhere],
      "navByValue": {
        "attribute1":"attributevalue1",
        "attribute2":"attributevalue2",
        "attribute3":["attributevalue","attributevalue","attributevalue"]
      }
    }
  },
  { "dataSourceId2": ...},
  { "dataSourceId3": ...}
]
```

Below is an example of the JSON array:

```
http://localhost:8080/web/guest?deeplink=[
{
 "default": {
  "queryFunctions":[
  {
   "class":"RecordFilter",
   "recordFilter":"Designation:Best Buy"
  },
  {
   "class":"RangeFilter",
   "property":"P_Price","rangeOperator":"BTWN","value1":"50","value2":"100"
  }
  ],
  "navByValue":{
   "Wine Type":"Red",
   "Region":"Other France",
   "Body":["Fresh","Full","Rich","Ripe"]
  }
 }
},
{ "v7-wine":{
  "queryFunctions":[
  {
   "class":"RecordFilter",
   "recordFilter":"Designation:Best Buy"
  }
  ],
     "navByValue":{
   "Wine Type":"Red",
   "Region":"Other France",
   "Body":["Fresh","Full","Rich","Ripe"]
  }
}
]
```

For more information about data source syntax in general, see the chapter "Configuring Data Sources" in this guide.

Note: Microsoft Internet Explorer has a URL character limit of 2083 characters. Be aware of this limit when creating a deep linking URL with a large number of filters.

Using NavByValue filters

A `NavByValue` filter is a convenient way to refine a query using attribute values.

To do the same refinement with a `RefinementFilter`, you would need to look up the attribute value ID for each attribute value in the refinement and then pass the IDs into the `RefinementFilter`. Further, there are different ways to look up attribute value IDs depending on the version of the MDEX Engine being queried.

The `NavByValue` filter handles these steps for you.

A `NavByValue` filter allows the deep link to both:

- Refine the query using attribute values instead of attribute value IDs.
- Reflect query refinements in other components on the page. This is similar to making refinements through the **Guided Navigation** component.

Deep linking examples

Here are two examples of deep linking URLs.

Record filter: The following URL applies a record filter for wines from the 2000 vintage:

```
http://localhost:8080/web/guest/my-page?deeplink=[{"default":
{queryFunctions:[{"class":"RecordFilter","recordFilter":"Vintage:2000"}]}}]
```

Page and tab transition with a record filter: This URL combines a tab transition that points to a specific nested tab on the target page with a record filter:

```
http://localhost:8080/web/guest/my-page?com.endeca.discovery.
pageTransitionTabState=Charts[2]&deeplink=[{"default":{"queryFunctions":
[{"class":"RecordFilter","recordFilter":"Vintage:1999"}]}}]
```

Resetting data source query state

To reset a data source's query state back to its base state, you pass it an empty filter.

The following URL is an example of a `deeplink` parameter passing an empty array.

```
http://localhost:8080/web/guest/my-page?deeplink=[{"default":{}}]
```

How security is handled with deep linking

Authentication and page authorization for the deep linking feature are handled by the Liferay Portal.

- Authentication, if required, is handled before deep link processing.
- Page authorization is handled after deep link processing. Deep link processing is performed before redirecting to a URL-specified page or tab.

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