



JASPERSOFT OLAP USER GUIDE

RELEASE 4.7

<http://www.jaspersoft.com>

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This is version 0812-JSP47-15 of the *Jaspersoft OLAP User Guide*.

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CHAPTER 1 INTRODUCTION TO JASPERSOFT OLAP

JasperReports Server builds on JasperReports as a comprehensive family of Business Intelligence (BI) products, providing robust static and interactive reporting, report server, and data analysis capabilities. These capabilities are available as either stand-alone products, or as part of an integrated end-to-end BI suite utilizing common metadata and provide shared services, such as security, a repository, and scheduling. The server exposes comprehensive public interfaces enabling seamless integration with other applications and the capability to easily add custom functionality.

The heart of the Jaspersoft BI Suite is the server, which provides the ability to:

- Easily create new reports based on views designed in an intuitive, web-based, drag and drop Ad Hoc Editor.
- Efficiently and securely manage many reports.
- Interact with reports, including sorting, changing formatting, entering parameters, and drilling on data.
- Schedule reports for distribution through email and storage in the repository.
- Arrange reports and web content to create appealing, data-rich Jaspersoft Dashboards that quickly convey business trends.

For business intelligence users, Jaspersoft offers Jaspersoft OLAP, which runs on the server. This optional component is described in this user guide.

This chapter includes:

- [Overview of Jaspersoft's OLAP Tools](#)
- [Jaspersoft's Information Resources](#)
- [External Information Resources](#)

1.1 Overview of Jaspersoft's OLAP Tools

Jaspersoft offers a number of tools to help you define multidimensional cubes and explore their data. For end-users, the following tools provide access to OLAP data:

- **Ad Hoc views.** Created with the Ad Hoc Editor, these views can be based on OLAP client connections. An Ad Hoc view can be a table, chart, or crosstab and is the entry point to analysis operations such as slice and dice, drill down, and drill-through. You can save an Ad Hoc view as a report in order to edit it in the interactive report viewer, schedule it, or add it to a dashboard.
- **OLAP-based reports.** Reports created in the Ad Hoc Editor, iReport, and Jaspersoft Studio can read data from OLAP data sources. These reports tend to be more static than views based on the same data sources, but are excellent when t data exploration, such as slice or drill-through, yields results you need to distribute widely.
- **Jaspersoft OLAP views.** A view of multidimensional data that is based on an OLAP client connection and an MDX query. Unlike Ad Hoc views, you can directly edit an OLAP view's MDX query to change the data and the way they are displayed. An OLAP view is the entry point for advanced analysis users who want to write their own queries.

- Jaspersoft ODBO Connect. This separate client user interface enables Microsoft Excel Pivot Tables to access Jaspersoft OLAP and other OLAP servers that support the XML for Analysis (XML/A) Simple Object Access Protocol (SOAP) protocol. It lets users familiar with Excel leverage those skills to explore their OLAP cubes and create pivot tables based on them. Jaspersoft ODBO Connect is described in its own user guide, which is installed with the product.

In addition to these end-user tools, the Jaspersoft OLAP workbench helps data analysts define the measures and dimensions of a cube based on the data in their transactional database. The workbench is described in its own user guide, which is installed with the product.

1.2 Jaspersoft's Information Resources

In addition to this guide and the others installed with JasperReports Server, Jaspersoft provides several sources of information to help extend your knowledge:

- Our Ultimate Guides document advanced features and configuration. They also include best practice recommendations and numerous examples. The guides are available as downloadable PDFs. Community project users can purchase individual guides or bundled documentation packs from the Jaspersoft [online store](#). Commercial customers can download them freely from the [support portal](#).
- Our free [Business Intelligence Tutorials](#) let you learn at your own pace, and cover topics for developers, system administrators, business users, and data integration users. The tutorials are available online from Professional Services section of our [website](#).
- Our free samples, which are installed with JasperReports, iReport, and JasperReports Server, are documented online:
 - [JasperReports Samples Overview](#)
 - [JasperReports Samples Reference](#)

Click the Docs link on our [community website](#) to find more documentation about iReport and JasperReports Server.

- JasperForge, our [community website](#), hosts open source projects, associated source code, tools for bug tracking, version control, and forums for community discussion. You'll find development and implementation advice, a secure development environment for community-driven projects, and community feedback.



The OLAP connections you define in Jaspersoft OLAP can be used to explore data in Ad Hoc views, which retain the dimension and measure metadata defined for your cubes. For more information, refer to the *JasperReports Server User Guide*.

1.3 External Information Resources

As analytic practices permeate the business sector, reference books about OLAP and MDX proliferate. While many focus on Microsoft SQL Server, the language concepts and syntax apply more broadly. The following resources can help you understand analysis:

- *Mondrian Technical Guide*: <http://www.jasperforge.org>
- Jaspersoft OLAP Workbench: <http://jasperforge.org/plugins/mwiki/index.php/Jasperserver/JasperAnalysis>
- Historical overview of analysis: <http://en.wikipedia.org/wiki/analysis>
- JPivot SourceForge project: <http://jpivot.sourceforge.net/>
- William Pearson. *MDX at First Glance: Introduction to SQL Server MDX Essentials*. <http://www.databasejournal.com/features/mssql/article.php/1495511>
- Microsoft MDX reference: <http://msdn2.microsoft.com/en-us/library/ms145506.aspx>
- Wikipedia MDX overview and links: http://.wikipedia.org/wiki/Multidimensional_Expressions
- A collection of other MDX article links: <http://sqlblog.com/blogs/mosha/archive/2005/10/11/mdx-functions-in-analysis-services-2005.aspx>
- Official XML/A home: <http://www.xmla.org/>

In addition to these resources, Jaspersoft encourages you to review the *Jaspersoft OLAP User Guide*.

CHAPTER 2 ANALYZING DATA IN AN OLAP VIEW

Jaspersoft OLAP is an On Line Analytical Processing (OLAP) application. OLAP applications help users analyze and understand complex data. Jaspersoft OLAP Community Project uses JPivot for analytical processing with an improved user interface.



The procedures in this document assume that you installed JasperReports Server with its sample data. The schemas and views it describes are available only if the samples are installed.

2.1 Opening an OLAP View

An OLAP view consists of a client connection and an MDX query. A client connection is either a Mondrian connection or an XML/A connection; it provides the data that appears in the view. Jaspersoft OLAP contains a number of sample OLAP views. For simplicity, this guide assumes you installed the sample data and are logged in as a user with an administrator role (that is, that you have access to the view and its data).

To open an OLAP view:

1. Click **View > Repository**.
The repository appears.
2. Scroll through the repository to select an OLAP view or, type the name (or partial name) of the view you want to see in the search field at the top of the page.
For example, enter `Foodmart`.
The repository reappears, displaying the objects that match your text.

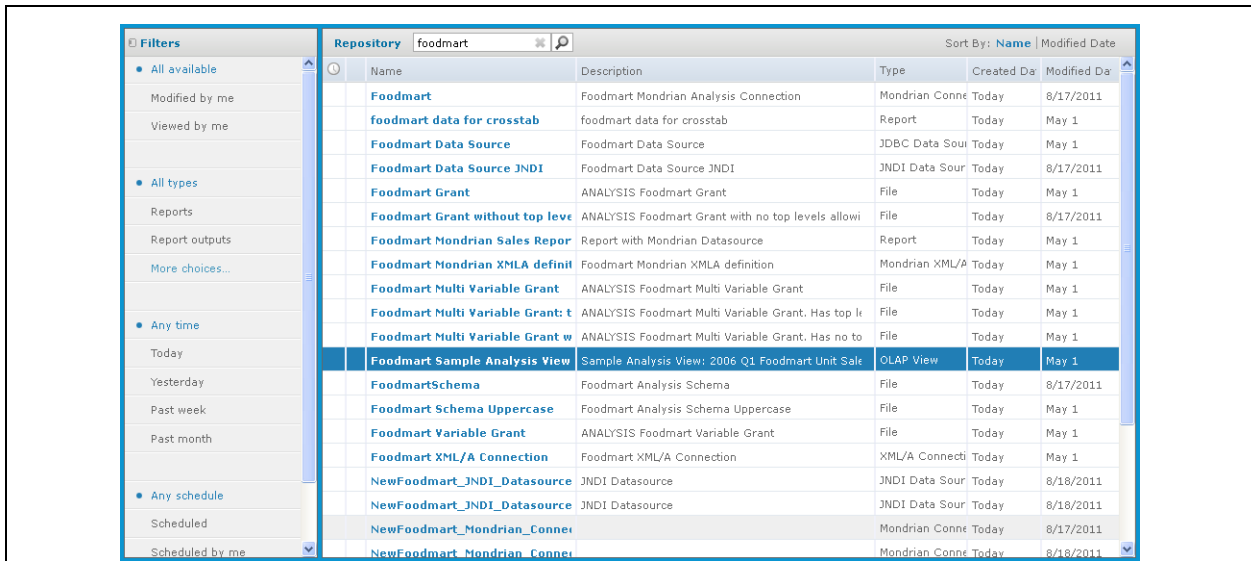


Figure 2-1 Search Results in the Repository

- To display an OLAP view, right-click it and select **Run**. For example, right-click the **Foodmart Sample Analysis View** and click **Run**.

JasperReports Server displays the view.

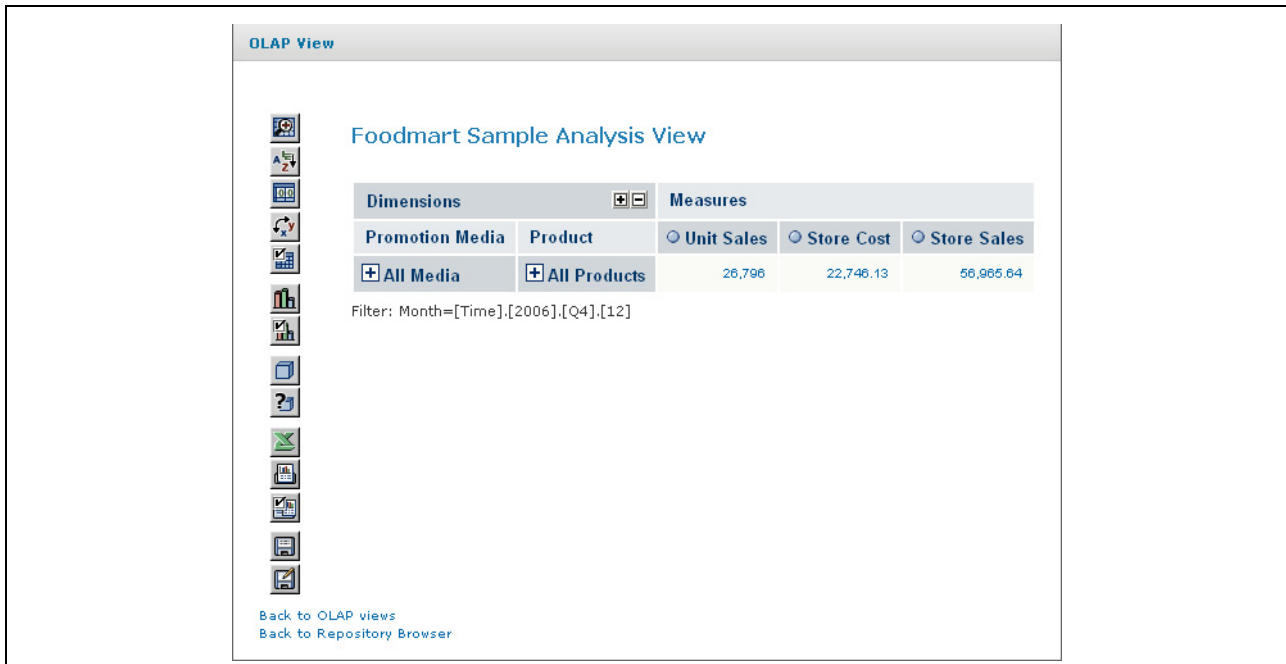



Figure 2-2 Foodmart Sample Analysis View

- Click the tool bar buttons and values in the navigation table to explore the data.


2.2 OLAP Tool Bar

The tool bar on left side of the view (**Figure 2-2 on page 8**) provides access to many OLAP operations and features described in the following sections.


2.2.1 Drill into a Dimension Member

	Zoom on Drill	Toggles (that is, turns on or off) the zoom in/out hyperlinks for hierarchy members. In the following navigation table, Zoom on Drill is selected; All Media and All Products are hyperlinks; click them to view the members of their hierarchies.															
<table border="1"> <thead> <tr> <th colspan="2">Dimensions</th> <th colspan="3">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Product</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td>+ All Media</td> <td>+ All Products</td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> </tbody> </table> <p>Filter: Month=[Time].[2006].[Q4].[12]</p>			Dimensions		Measures			Promotion Media	Product	Unit Sales	Store Cost	Store Sales	+ All Media	+ All Products	26,796	22,746.13	56,965.64
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

2.2.2 Sort Across Hierarchy

	Sort Across Hierarchy	Toggles between sort across and sort within hierarchy. In the following example, Sort Across Hierarchy is selected, and the Unit Sales measure is sorted in descending order across the Product hierarchy.																																				
<table border="1"> <thead> <tr> <th colspan="3">Dimensions</th> <th colspan="3">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Product</th> <th>Product Family</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td>+ All Media</td> <td>+ All Products</td> <td></td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> <tr> <td></td> <td></td> <td>+ Food</td> <td>19,356</td> <td>16,562.05</td> <td>41,484.40</td> </tr> <tr> <td></td> <td></td> <td>+ Non-Consumable</td> <td>5,021</td> <td>4,258.77</td> <td>10,679.21</td> </tr> <tr> <td></td> <td></td> <td>+ Drink</td> <td>2,419</td> <td>1,925.31</td> <td>4,802.03</td> </tr> </tbody> </table> <p>Filter: Month=[Time].[2006].[Q4].[12]</p>			Dimensions			Measures			Promotion Media	Product	Product Family	Unit Sales	Store Cost	Store Sales	+ All Media	+ All Products		26,796	22,746.13	56,965.64			+ Food	19,356	16,562.05	41,484.40			+ Non-Consumable	5,021	4,258.77	10,679.21			+ Drink	2,419	1,925.31	4,802.03
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2.2.3 Natural Order

	Natural Order	Natural Order means numbers in measures columns are ordered according to the order of hierarchy members.
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2.2.4 Hierarchical Ascending and Descending

	Ascending	The Hierarchy Ascending and Hierarchy Descending order operations arrange the rows according to their numeric value. Hierarchy Ascending sorts from smallest to largest, while Hierarchy Descending sorts from largest to smallest.
	Descending	


2.2.5 Show Empty Rows & Columns

	Hide Empty Rows/Columns	Hides or reveals rows or columns that do not have relevant fact data. The following example includes empty rows for Promotion Media (Street Handout; Sunday Paper; and Sunday Paper, Radio, TV).																																																																																																
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2.2.6 Swap Axes

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2.2.7 Edit Display Option

	Edit Display Options	Allows users to configure the cube options, drill-through options, and sort options, as described in the following sections.																																				
<div style="display: flex; align-items: center;"> <table border="1" style="margin-right: 20px;"> <thead> <tr> <th colspan="3">Dimensions</th> <th colspan="3">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Product</th> <th>Product Family</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td>+ All Media</td> <td>- All Products</td> <td></td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> <tr> <td></td> <td>All Products</td> <td></td> <td></td> <td>1,925.31</td> <td>4,802.03</td> </tr> <tr> <td></td> <td></td> <td></td> <td>16,562.05</td> <td></td> <td>41,484.40</td> </tr> <tr> <td></td> <td></td> <td></td> <td>4,258.77</td> <td></td> <td>10,679.21</td> </tr> </tbody> </table> <div style="border: 1px solid gray; padding: 5px; width: 300px;"> <p>Display Options</p> <p>Cube Options:</p> <p><input checked="" type="checkbox"/> Show all parent columns</p> <p><input type="checkbox"/> Show individual parent cells</p> <p><input type="checkbox"/> Include member attributes</p> <p>Drill-through Options:</p> <p><input type="checkbox"/> Show table below cube (on same page)</p> <p><input type="checkbox"/> Hide drill-through links</p> <p><input checked="" type="checkbox"/> Include only selected measure</p> <p>Sort Options:</p> <p><input type="checkbox"/> Sort across cube hierarchy</p> <p><input type="checkbox"/> Start sorting in descending order</p> <p><input type="checkbox"/> Display only the first N rows</p> <p>Number of rows: <input type="text" value="10"/></p> <p style="text-align: right;">OK Cancel</p> </div> </div> <p style="font-size: small; margin-top: 10px;">Filter: Month=[Time].[2006].[Q4].[12]</p> <p style="font-size: x-small; margin-top: 10px;">views sitony Browser</p>			Dimensions			Measures			Promotion Media	Product	Product Family	Unit Sales	Store Cost	Store Sales	+ All Media	- All Products		26,796	22,746.13	56,965.64		All Products			1,925.31	4,802.03				16,562.05		41,484.40				4,258.77		10,679.21
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2.2.7.1 Cube Options

Show all parent columns	Displays the column headings of a given hierarchy. The following navigation table shows Product and Product Family as parent column headings.																																																																																																						
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Include member attributes	Displays the member properties of the displayed hierarchy members.																																																																																																						


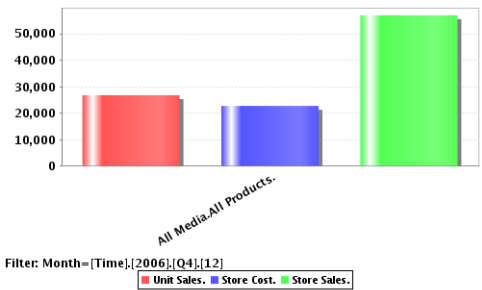
2.2.7.2 Drill-through Operations

Show table below cube (on same page)	Displays the drill-through table below the navigation table. By default, the drill-through table appears in a separate browser window.
Hide drill-through links	Removes the hyperlinks from the fact data in measures.
Include only selected measure	Limits the display to only the selected measure in the drill-through table.


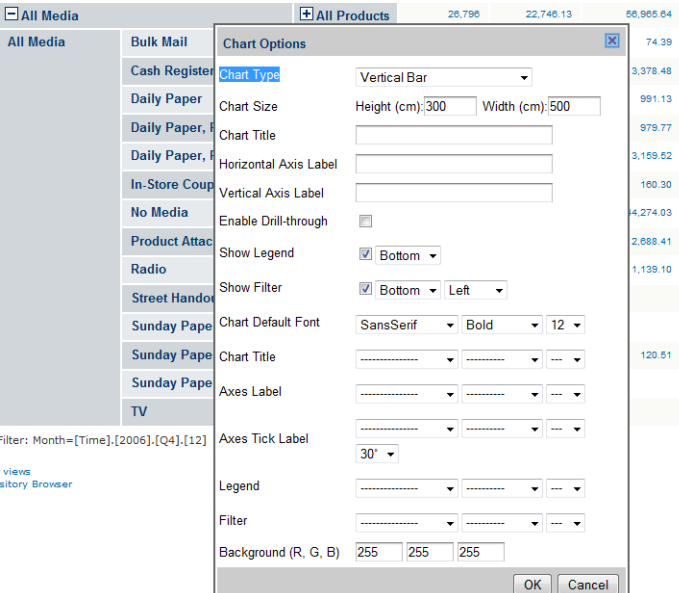
2.2.7.3 Sort Option

Sort across cube hierarchy	Changes the behavior of sorting across or within dimension hierarchies. See 2.2.2, “Sort Across Hierarchy,” on page 9 .
Start sorting in descending order	Toggles the sort behavior between ascending and descending.
Display only the first N rows	Limits the number of rows displayed after sorting.


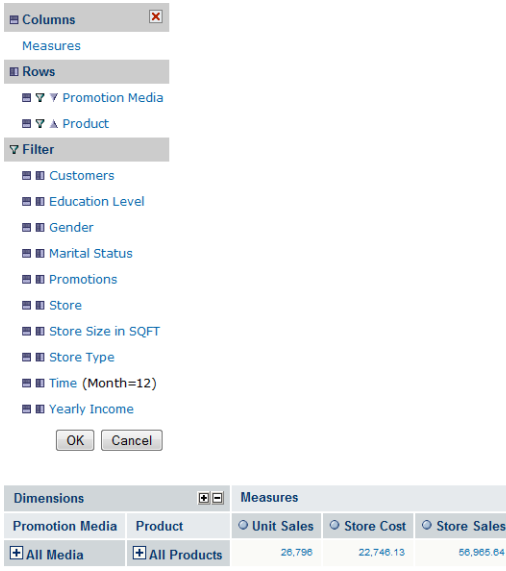
2.2.8 Show Chart

	Show Chart	Displays a chart of the navigation table data. The following example shows a bar chart that represents the columns in these measures: Unit Sales, Store Cost, and Store Sales.															
 <p>Filter: Month=[Time].[2006].[Q4].[12]</p> <p>■ Unit Sales. ■ Store Cost. ■ Store Sales.</p> <table border="1" data-bbox="568 1228 1079 1312"> <thead> <tr> <th colspan="2">Dimensions</th> <th colspan="3">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Product</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td>All Media</td> <td>All Products</td> <td>28,796</td> <td>22,748.13</td> <td>56,905.64</td> </tr> </tbody> </table> <p>Filter: Month=[Time].[2006].[Q4].[12]</p>			Dimensions		Measures			Promotion Media	Product	Unit Sales	Store Cost	Store Sales	All Media	All Products	28,796	22,748.13	56,905.64
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2.2.9 Edit Chart Options

	Edit Chart Operations	Defines various charting options.
		


2.2.10 Change Data Cube

	Change Data Cube	Changes an OLAP view and defines dimension filters. Click Change Data Cube to display the options in the following figure.
		
	Columns	Selects specific measures to display.
	Rows	Selects specific dimension members to display.
	Filter	Selects specific dimension members that don't appear in the navigation table. This selection determines the data displayed in the navigation table.


2.2.11 Show MDX Query

	Show MDX Query	Changes the navigation table by editing the MDX query that generates the view. This feature is intended for advanced users familiar with MDX and the data structures underlying the view.
<div style="border: 1px solid gray; padding: 10px;"> <p style="text-align: right; margin: 0;">MDX Query Editor ✖</p> <pre style="font-family: monospace; font-size: 0.9em;">select {[Measures].[Unit Sales], [Measures].[Store Cost], [Measures].[Store Sales]} ON COLUMNS, {([Promotion Media].[All Media], [Product].[All Products])} ON ROWS from [Sales] where [Time].[2006].[Q4].[12]</pre> </div>		

2.2.12 Export to Excel

	Export to Excel	Prompts you to view or save the current navigation table in Microsoft Excel format.																																				
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 20%;">A</th> <th style="width: 20%;">B</th> <th style="width: 15%;">C</th> <th style="width: 15%;">D</th> <th style="width: 15%;">E</th> </tr> </thead> <tbody> <tr> <td>1</td> <td colspan="2">Dimensions</td> <td colspan="3">Measures</td> </tr> <tr> <td>2</td> <td>Promotion Media</td> <td>Product</td> <td>Unit Sales</td> <td>Store Cost</td> <td>Store Sales</td> </tr> <tr> <td>3</td> <td>All Media</td> <td>All Products</td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> <tr> <td>4</td> <td colspan="5">Filter: Month=[Time].[2006].[Q4].[12]</td> </tr> <tr> <td>5</td> <td colspan="5"></td> </tr> </tbody> </table>				A	B	C	D	E	1	Dimensions		Measures			2	Promotion Media	Product	Unit Sales	Store Cost	Store Sales	3	All Media	All Products	26,796	22,746.13	56,965.64	4	Filter: Month=[Time].[2006].[Q4].[12]					5					
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5																																						

2.2.13 Export to PDF

	Export to PDF	Prompts you to view or save the current navigation table in Adobe Acrobat PDF format.															
<div style="border: 1px solid gray; padding: 10px;"> <p style="font-size: 0.8em; margin: 0;">xls_export.pdf - Adobe Reader File Edit View Document Tools Window Help</p> <p style="font-size: 0.8em; margin: 0;">1 (1 of 1) 117% Find</p> <p style="text-align: right; font-size: 0.8em; margin: 0;">Page 1 of 1</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center; margin: 10px 0;"> <thead> <tr> <th colspan="2">Dimensions</th> <th colspan="3">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Product</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td>All Media</td> <td>All Products</td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> </tbody> </table> <p style="font-size: 0.8em; margin: 0;">Filter: Month=[Time].[2006].[Q4].[12]</p> </div>			Dimensions		Measures			Promotion Media	Product	Unit Sales	Store Cost	Store Sales	All Media	All Products	26,796	22,746.13	56,965.64
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2.2.14 Edit Output Operations

	Edit Output Options	Defines various output options.

2.2.15 Save Buttons

	Save View	Saves this OLAP view. Changes you've made since you opened the view are saved to the repository. If you don't have permission to save the view in its current location, the Save View As dialog prompts you to select a new location.
	Save View As	Saves this OLAP view under a new name and location. Changes you've made since opening the view are saved to the repository in the location you select. Note that you cannot use the Save View As button to overwrite an existing view (even if you have sufficient permissions).

For more information, refer to [2.5, "Saving an OLAP View,"](#) on page 18.

2.3 Navigation Table

The navigation table appears at the top of the OLAP view ([Figure 2-2 on page 8](#)). It shows the data that is retrieved by the current MDX query, which appears in both the main view and in drill-through tables.

2.3.1 Expand/Collapse Position

	Expand Position	Expands or collapses rows at a specific hierarchy member. In the following navigation table, the All Media member is collapsed: it can be expanded; the All Products member is expanded and can be collapsed.
	Collapse Position	


2.3.2 Expand/Collapse Member

Expand/Collapse Member	Synchronizes the expansion or contraction of rows across all hierarchy members when they are clicked. The following navigation table shows the Product member expanded for the Promotion Media hierarchy member.																																																																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: left;">Dimensions</th> <th colspan="3" style="text-align: left;">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Media Type</th> <th>Product</th> <th>Product Family</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td rowspan="4">All Media</td> <td rowspan="4"></td> <td>All Products</td> <td></td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> <tr> <td>All Products</td> <td>Drink</td> <td>2,419</td> <td>1,925.31</td> <td>4,802.03</td> </tr> <tr> <td>All Products</td> <td>Food</td> <td>19,356</td> <td>16,562.05</td> <td>41,484.40</td> </tr> <tr> <td>All Products</td> <td>Non-Consumable</td> <td>5,021</td> <td>4,258.77</td> <td>10,679.21</td> </tr> <tr> <td rowspan="8">All Media</td> <td rowspan="4">Bulk Mail</td> <td>All Products</td> <td></td> <td>30</td> <td>28.60</td> <td>74.39</td> </tr> <tr> <td>All Products</td> <td>Drink</td> <td>6</td> <td>4.87</td> <td>13.57</td> </tr> <tr> <td>All Products</td> <td>Food</td> <td>22</td> <td>22.34</td> <td>57.50</td> </tr> <tr> <td>All Products</td> <td>Non-Consumable</td> <td>2</td> <td>1.39</td> <td>3.32</td> </tr> <tr> <td rowspan="4">Cash Register Handout</td> <td>All Products</td> <td></td> <td>1,600</td> <td>1,353.09</td> <td>3,378.48</td> </tr> <tr> <td>All Products</td> <td>Drink</td> <td>162</td> <td>144.85</td> <td>361.74</td> </tr> <tr> <td>All Products</td> <td>Food</td> <td>1,154</td> <td>972.60</td> <td>2,430.11</td> </tr> <tr> <td>All Products</td> <td>Non-Consumable</td> <td>284</td> <td>235.64</td> <td>586.63</td> </tr> </tbody> </table>		Dimensions				Measures			Promotion Media	Media Type	Product	Product Family	Unit Sales	Store Cost	Store Sales	All Media		All Products		26,796	22,746.13	56,965.64	All Products	Drink	2,419	1,925.31	4,802.03	All Products	Food	19,356	16,562.05	41,484.40	All Products	Non-Consumable	5,021	4,258.77	10,679.21	All Media	Bulk Mail	All Products		30	28.60	74.39	All Products	Drink	6	4.87	13.57	All Products	Food	22	22.34	57.50	All Products	Non-Consumable	2	1.39	3.32	Cash Register Handout	All Products		1,600	1,353.09	3,378.48	All Products	Drink	162	144.85	361.74	All Products	Food	1,154	972.60	2,430.11	All Products	Non-Consumable	284	235.64	586.63
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2.3.3 Zoom In/Out

Zoom In/Out	Click hyperlinked hierarchy members to replace the current table with a sub-table that depicts the selected member. The following navigation table shows the table displayed when you zoom in on the Drink product of All Products.																																													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: left;">Dimensions</th> <th colspan="3" style="text-align: left;">Measures</th> </tr> <tr> <th>Promotion Media</th> <th>Product</th> <th>Product Family</th> <th>Product Department</th> <th>Unit Sales</th> <th>Store Cost</th> <th>Store Sales</th> </tr> </thead> <tbody> <tr> <td rowspan="4">All Media</td> <td>All Products</td> <td></td> <td></td> <td>26,796</td> <td>22,746.13</td> <td>56,965.64</td> </tr> <tr> <td>All Products</td> <td>Drink</td> <td></td> <td>2,419</td> <td>1,925.31</td> <td>4,802.03</td> </tr> <tr> <td>Drink</td> <td></td> <td>Alcoholic Beverages</td> <td>681</td> <td>579.52</td> <td>1,441.48</td> </tr> <tr> <td>Drink</td> <td></td> <td>Beverages</td> <td>1,289</td> <td>1,054.70</td> <td>2,855.45</td> </tr> <tr> <td>Drink</td> <td></td> <td>Dairy</td> <td>439</td> <td>291.09</td> <td>705.10</td> </tr> </tbody> </table>		Dimensions				Measures			Promotion Media	Product	Product Family	Product Department	Unit Sales	Store Cost	Store Sales	All Media	All Products			26,796	22,746.13	56,965.64	All Products	Drink		2,419	1,925.31	4,802.03	Drink		Alcoholic Beverages	681	579.52	1,441.48	Drink		Beverages	1,289	1,054.70	2,855.45	Drink		Dairy	439	291.09	705.10
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2.3.4 Show Source Data (Drill-through)

Show Source Data	Click hyperlinked fact data to display additional columns from that specific fact data. The following drill-through table shows the drill-through of Total Unit Sale for Alcoholic Beverages. For more information about the drill-through table's options, refer to 2.4, "Drill-through Table," on page 18.																																																																																																																																																										
<div data-bbox="282 321 1386 348" style="background-color: #e0e0e0; padding: 2px;">  Drill Through Table for [Unit_Sales = 681] </div> <table border="1" data-bbox="282 352 1386 819"> <thead> <tr> <th>Store_Country</th> <th>Store_State</th> <th>Store_City</th> <th>Store_Name</th> <th>Store_Sqft</th> <th>Store_Type</th> <th>Year</th> <th>Quarter</th> <th>Month</th> <th>Week</th> <th>Day</th> <th>Product_Family</th> <th>Product_Department</th> <th>Product_Category</th> </tr> </thead> <tbody> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>16</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>16</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>16</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>16</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>16</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>20</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>1</td><td>20</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>3</td><td>29</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>3</td><td>29</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> <tr><td>USA</td><td>CA</td><td>Beverly Hills</td><td>Store 6</td><td>23688</td><td>Gourmet Supermarket</td><td>2006</td><td>Q4</td><td>12</td><td>3</td><td>29</td><td>Drink</td><td>Alcoholic Beverages</td><td>Beer and Wine</td></tr> </tbody> </table> <div data-bbox="282 825 669 846" style="margin-top: 5px;"> Page 1/23 ▶▶ Goto Page <input type="text" value="1"/> Rows/page <input type="text" value="10"/> </div>		Store_Country	Store_State	Store_City	Store_Name	Store_Sqft	Store_Type	Year	Quarter	Month	Week	Day	Product_Family	Product_Department	Product_Category	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	16	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	16	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	16	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	16	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	16	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	20	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	1	20	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	3	29	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	3	29	Drink	Alcoholic Beverages	Beer and Wine	USA	CA	Beverly Hills	Store 6	23688	Gourmet Supermarket	2006	Q4	12	3	29	Drink	Alcoholic Beverages	Beer and Wine
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2.3.5 Expand All/Collapse All

	Expand All	Expands all of the currently displayed members (all those that display the plus sign (+)) to the next level of detail in the hierarchies. This can be selected repeatedly to expand all levels of detail. This option is only available when Zoom on Drill is not active. This operation is limited by the memory available to the application server that hosts JasperReports Server. It stops expanding members when this limit is reached.
	Collapse All	Collapses the navigation table to its initial view.


2.3.6 Zoom Out All

	Zoom Out All	Restores the navigation table to its initial view after having zoomed. This option is only available when you're in Zoom on Drill mode.
---	--------------	---


2.4 Drill-through Table

The drill-through table displays supporting details for the selected roll-up value in the navigation table (described in [2.3, “Navigation Table,” on page 15](#)). The following sections describe the available functionality.




2.4.1 Edit Properties


	Edit Properties	Displays at the top-left corner of the drill-through table. Selects the columns to display or hide in the drill-through table. The up and down arrows move the columns and specify the number of rows to display per page.
---	-----------------	--

2.4.2 Output as CSV

	Output as CSV	Displayed at the top-left corner of the drill-through table. Prompts you to view or save the current drill-through table in comma-separated values format.
---	---------------	--

2.4.3 Page Controls

Page 1/14 	First, Previous, Next, Last	Click the arrows to navigate the pages of data.
Goto Page <input type="text" value="1"/> 	Goto Page	Enter the number of the page you want to view and press return to display the page.
Rows/page <input type="text" value="10"/> 	Rows/page	Set the number of rows to display.

By default, the drill-through table opens in its own window. Edit the display options (by clicking ) to display the drill-through table on the same page as the navigation table. When the drill-through table is on the same page as the navigation table, click the small red X in the drill-through table’s upper-right corner to close it.

2.5 Saving an OLAP View

After making changes to the navigation table, save the OLAP view as described in [2.2.15, “Save Buttons,” on page 15](#). With sufficient permissions, you can either overwrite the existing view or save the view with a new name. When you save, you are prompted for a name, location, and an optional description. If a view with the same name exists in this location, you are prompted to overwrite the existing file. When you save a view with a new name, JasperReports Server displays the new view, rather than the view you initially edited.



Jaspersoft OLAP only saves the drill-through table if it is displayed on the same page as the navigation table. For more information, refer to [2.2.7.2, “Drill-through Operations,” on page 12](#).

CHAPTER 3 JASPERSOFT OLAP ADMINISTRATION

Jaspersoft OLAP administration involves repository management and performance tuning. For information about more general administrative tasks, such as access control, see the *JasperReports Server Administrator Guide*.



The **Manage** menu, discussed in some of the following sections, only appears if you have an administrative role, such as `ROLE_ADMINISTRATOR` or `ROLE_SUPERUSER`.

This chapter includes:

- ♦ **Overview for OLAP Administrators**
- ♦ **Administering OLAP Views**
- ♦ **Working with OLAP Settings and the Cache**
- ♦ **Working with OLAP Objects in the Repository**
- ♦ **Performance Tuning**
- ♦ **Troubleshooting Jaspersoft OLAP**



JasperReports Server's themes can control the look and feel of your OLAP views and interface, such as changing the colors and borders used in the navigation table. For more information, refer to the *JasperReports Server Administrator Guide*.

3.1 Overview for OLAP Administrators

Jaspersoft OLAP lets you analyze data organized into a hierarchical dimensional model, which has cubes and dimensions as its primary entities. In a relational database implementation of online analytical processing (OLAP), the entities reside in relational tables. This is sometimes referred to as Relational OLAP (ROLAP).

Jaspersoft OLAP is based on an open source ROLAP server called Mondrian. JPivot, an open source web-based OLAP user interface, enables users to display and navigate Mondrian's results. Jaspersoft OLAP includes an improved JPivot user interface (as compared to JPivot).

The de facto standard for OLAP query languages is MDX; many analysis applications use it. In a distributed computing environment, XML for Analysis (XML/A) is the standard for accessing OLAP data sources remotely. XML/A uses a web services architecture and transmits MDX queries using the SOAP protocol.

To implement and maintain Jaspersoft OLAP:

1. Store cube data in a relational database and use an OLAP schema file to define the cubes. Note that using existing transactional databases may be inefficient with large amounts of data. To improve performance, use an extract, transform,

and load (ETL) process: extract information from one or more data sources, integrate and transform the data, and load the result into the separate cube database.

2. Identify facts or measures (the values to summarize) and dimensions (divisions of the measures – for example, dividing time into weeks, months, and years) in the cube database.
3. Define an OLAP schema, mapping logical facts and dimensions onto the physical database. The Jaspersoft OLAP engine uses the schema to interpret the database and perform OLAP queries. The Jaspersoft OLAP Schema Workbench enables you to develop, validate, and test schemas against the database. The *Mondrian Technical Guide* gives details of schemas and their options.
4. Create an OLAP client connection that includes your schema and a database connection. Optionally, define data level security for the cube with access grants that limit users to only the data they are allowed to see, based on their roles and user profile information. The repository stores the information you provide to define an OLAP client connection.
5. Define entry points for analysis of the cube data, known as OLAP views. OLAP views enable end users to interact with cubes without having to know query languages, database connections, and other technical details. An OLAP view is an MDX query that is run against the cube as a starting point for interactive analysis. OLAP views appear as objects that users can select through the web interface. You can use the Jaspersoft OLAP Schema Workbench to develop and test MDX queries.
6. If you have defined access grants, test them by using the **Log in As** function to impersonate users with different roles.
7. Plan for updates to data in the cube, usually on a regular basis (for example, nightly or weekly). After an update, flush (empty) the Jaspersoft OLAP data cache so that subsequent queries get the results of new data. For more information, see [3.3.2, “Flushing the OLAP Cache,” on page 39](#).
8. Tune for performance. As a database administrator, analyze the SQL queries that Jaspersoft OLAP issues against the cube database. Jaspersoft OLAP has built-in tools that enable you to track queries (for information, refer to [3.5, “Performance Tuning,” on page 63](#)). Tune the cube database accordingly with tools specific to the database type (for example, indexes and data striping). With large data volumes, you can create pre-calculated tables during the data load (ETL) process to aggregate measure values. Jaspersoft OLAP can use the aggregate tables to replace calculations and thus improve query performance.
9. Design your environment for scalability and availability. Jaspersoft OLAP can run on a single machine. However, for large numbers of users, large data volumes, and high availability, you can use a multi-host environment with load balancers and some machines dedicated to either OLAP user interface or OLAP server duties. You can use XML/A to distribute processing. For more information, refer to [3.4.4, “Working with XML/A Connections,” on page 54](#) and [3.4.5, “Working with XML/A Sources,” on page 56](#).

The detailed procedures, beginning in section [3.2.2, “Creating an OLAP View with a Mondrian Connection,” on page 21](#), step you through the process of setting up all components of an OLAP view.

3.2 Administering OLAP Views

This section describes basic administration of OLAP views, including:

- ♦ [Overview of an OLAP View](#)
- ♦ [Creating an OLAP View with a Mondrian Connection](#)
- ♦ [Creating an OLAP View with an XML/A Connection](#)
- ♦ [Editing an OLAP View](#)

3.2.1 Overview of an OLAP View

An OLAP view is a collection of multidimensional data that is based on an OLAP client connection and an MDX query. It is the entry point to analysis operations, such as slice and dice, navigate, and drill-through. End users open these views from the repository once administrators create them. Creating a view entails identifying the elements that allow Jaspersoft OLAP to retrieve and secure the data.

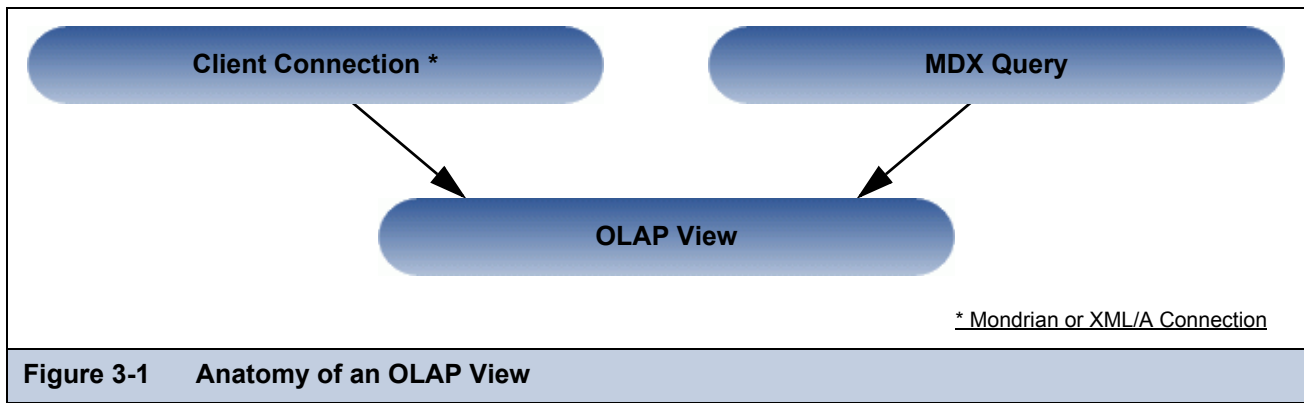


Figure 3-1 Anatomy of an OLAP View

For more information about client connections, refer to 3.4.3.2, “Editing a Mondrian Connection,” on page 49 and 3.4.4.2, “Editing an XML/A Connection,” on page 55.

3.2.2 Creating an OLAP View with a Mondrian Connection

An OLAP view can retrieve data from a Mondrian connection. For more information on Mondrian connections, refer to 3.4.3.2, “Editing a Mondrian Connection,” on page 49.

To create an OLAP view with a local Mondrian connection:

1. Click **View > Repository**.
The repository page appears.
2. In the **Folders** panel, navigate to **Organization > Organization > Analysis Components > Analysis Views**.
3. Right-click the folder and select **Add Resource > OLAP View**.

The Name the View page appears and prompts you to provide a name for the new view.

The screenshot shows a dialog box titled 'Add OLAP View'. The main heading is 'Name the View'. Below this, it says 'Provide a name for the OLAP View.' There are three input fields: 'Name (required):', 'Resource ID (required):', and 'Description:'. At the bottom of the dialog, there are three buttons: 'Previous', 'Next', and 'Cancel'.

Figure 3-2 Name the View Page

4. Enter a name and description for the new view. The **Resource ID** field is auto-generated when you type in the **Name** field. After it is saved, it can't be changed.
5. Click **Next**.

The Locate Mondrian Client Connection Source page appears and prompts you to select or create a local Mondrian connection.

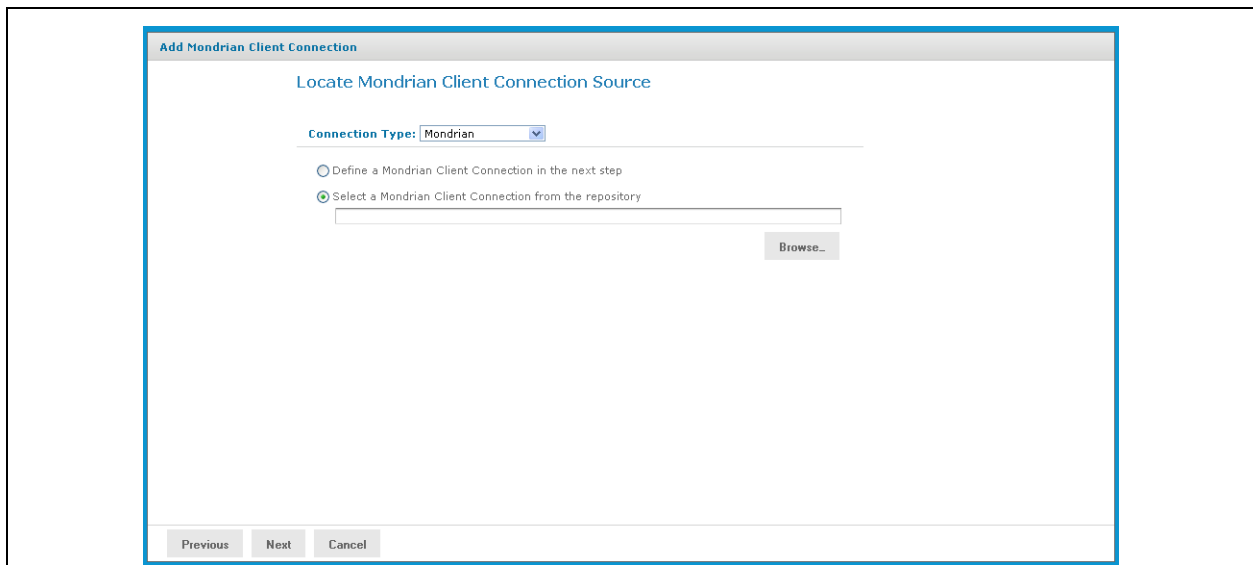


Figure 3-3 Locate Mondrian Client Connection Source Page

6. Click either:
 - ♦ **Define a Mondrian Client Connection in the next step.**
 - ♦ **Select a Mondrian Client Connection from the repository.**
 Then click **Browse**, navigate to the connection you want, and click **Select**.
7. Click **Next**.

If you chose to define a new Mondrian connection, the Set Connection Type and Properties page appears and prompts you to define a connection.

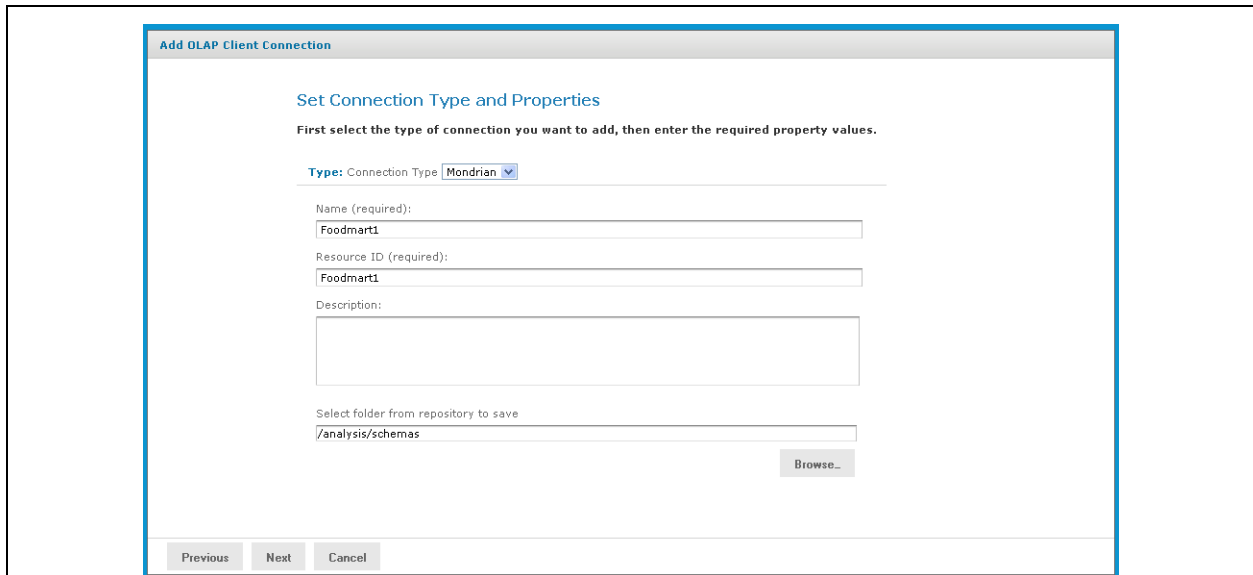


Figure 3-4 Set Connection Type and Properties Page

8. To change the type of the connection, select a connection type from the **Type** drop-down and complete the fields. Otherwise, enter the requested information. For details see [3.4.3.1, “Creating a Mondrian Connection,” on page 45](#).
9. To chose a location for the connection, click **Browse**, navigate to a folder, and click **Select**.
10. Click **Next**.
The Locate OLAP Schema page appears and prompts you to upload an OLAP schema or select one from the repository.

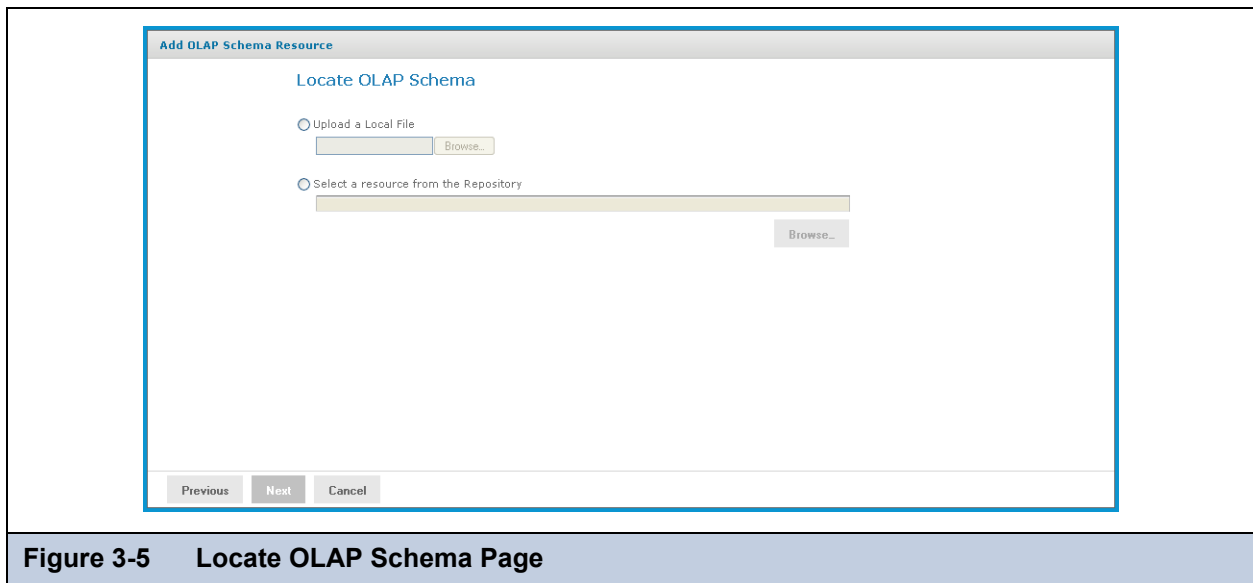


Figure 3-5 Locate OLAP Schema Page

11. Click either:
 - ♦ **Upload a Local File** to select a file from your local computer. Then click **Browse**, navigate to select the file you want, and click **Select**.
 - ♦ **Select a resource from the Repository** to select an existing schema. Then click **Browse**, navigate to select the schema, and click **Select**.
12. Click **Next**.
The OLAP Schema Resource page appears.

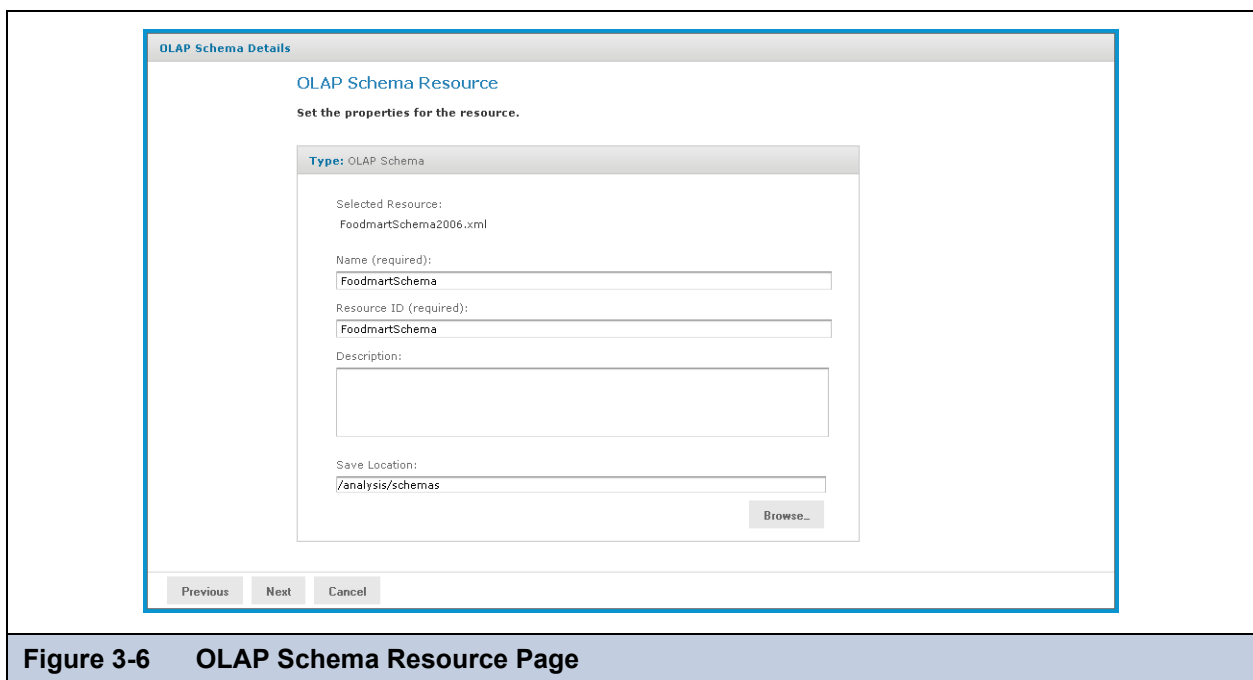


Figure 3-6 OLAP Schema Resource Page

If you chose to upload a new file, the fields are editable. Enter the requested information. For details, refer to [3.4.2, “Working with OLAP Schemas,” on page 42](#).

13. Click **Next**.
The Locate Data Source page appears and prompts you to create or select a data source.

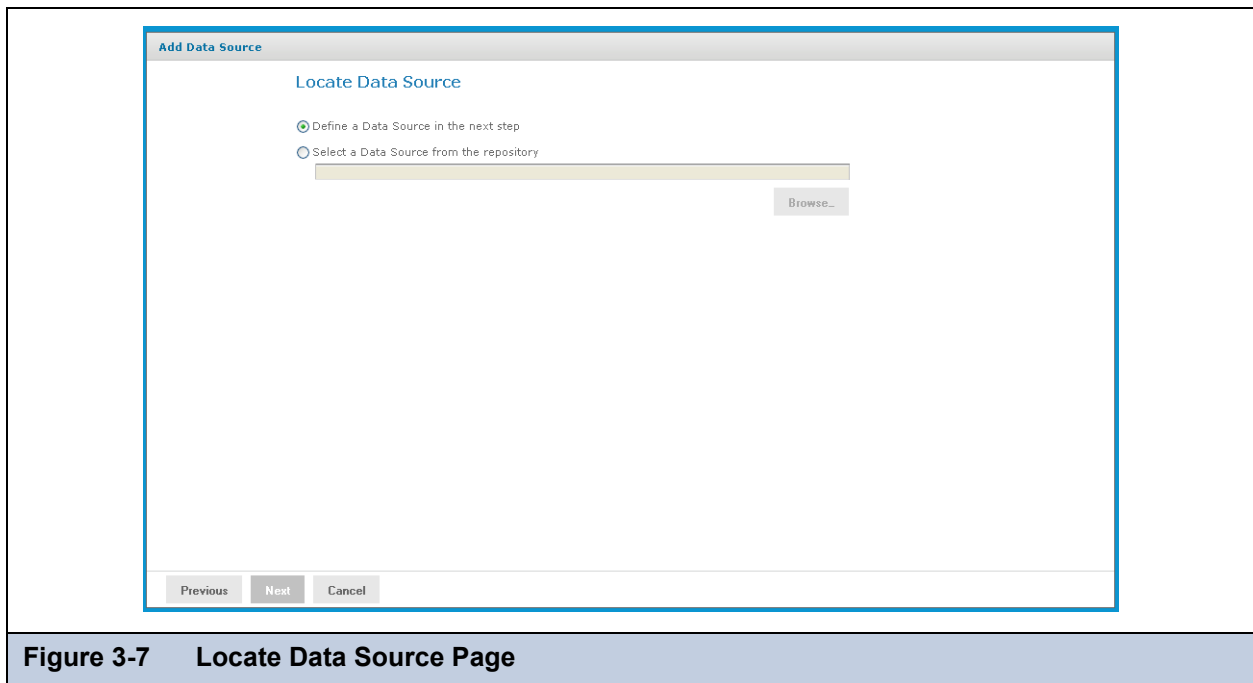


Figure 3-7 Locate Data Source Page

14. Click either:

- ♦ **Define a Data Source in the next step** to add a data source.
- ♦ **Select a Data Source from the repository** to select a data source from the repository.

Then click **Browse**, navigate to the data source you want to use, and click **Select**. Click **Next** and skip to **step 18**.

15. Click **Next**.

If you chose to create a new data source, the Set Data Source Type and Properties page appears.

Add Data Source

Set Data Source Type and Properties

First, select the type of data source you wish to add, then enter the required property values.

Type: JDBC Data Source

Name (required):
Foodmart Data Source

Resource ID (required):
Foodmart_Data_Source

Description:
JDBC data source pointing to Foodmart sample data in Postgres.

Driver (required):
org.postgresql.Driver
Hint: org.postgresql.Driver

URL (required):
jdbc:postgresql://localhost:5432/foodmart
Hint: jdbc:postgresql://localhost:5432/mydb

User Name (required):
postgres

Password:
••••••••

Time Zone:
Use database setting.
Hint: Do not change the time zone setting unless you know the database timestamp data is incorrect.

Save Location:
/analysis/views
Browse_

Test Connection

Previous Next Cancel

Figure 3-8 Set Data Source Type and Properties Page

16. Enter the requested information and test the connection. For details, refer to 3.4.1, “Working with Data Sources,” on page 41 and to the *JasperReports Server Administrator Guide*.
17. When the test succeeds, click **Next**.

If you use a commercial edition of the server, the Locate Access Grant Definition page appears, prompting you to set the properties for the resource.

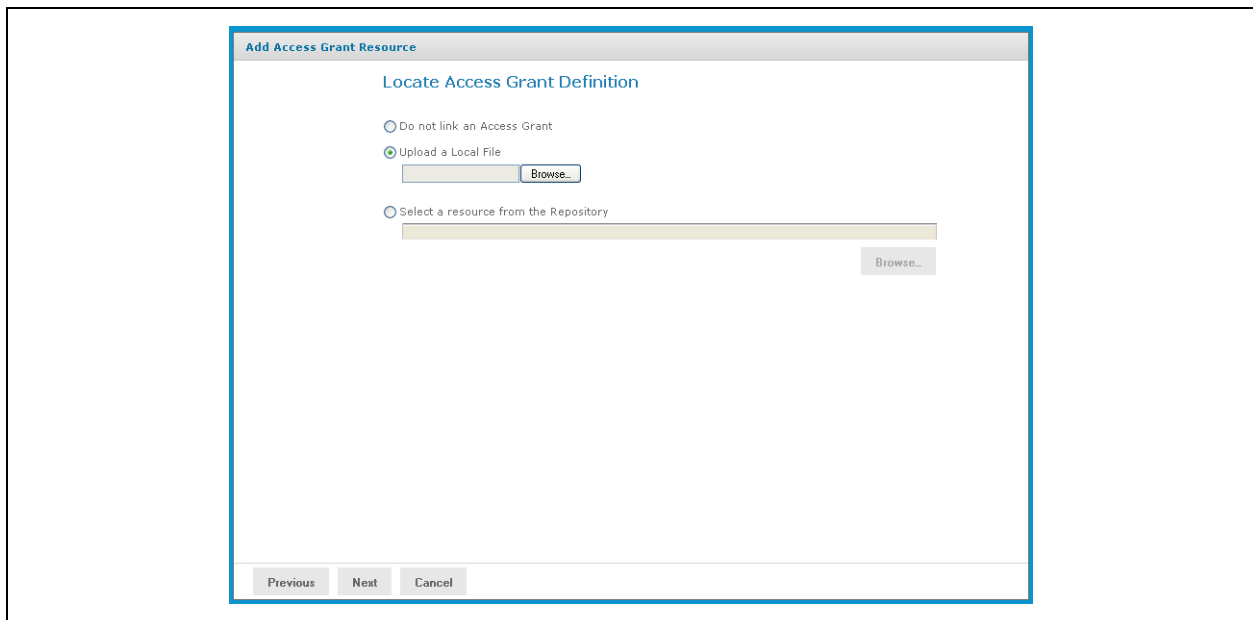


Figure 3-9 Locate Access Grant Definition Page

18. Click one of the following:

- **Do not link an Access Grant** if you don't need to apply data security. Then click **Next** and skip to step **step 22**.
- **Upload a Local File** to select a file from your local computer. Then click **Browse**, navigate to select the file you want, and click **Select**.
- **Select a resource from the Repository** to select an existing schema. Then click **Browse**, navigate to select the schema, and click **Select**.

In our case, we don't need to secure the data in the view, so won't specify an access grant schema. The next steps show you how to add a file if it's needed.

19. Click **Next**.

The Access Grant Resource page appears.

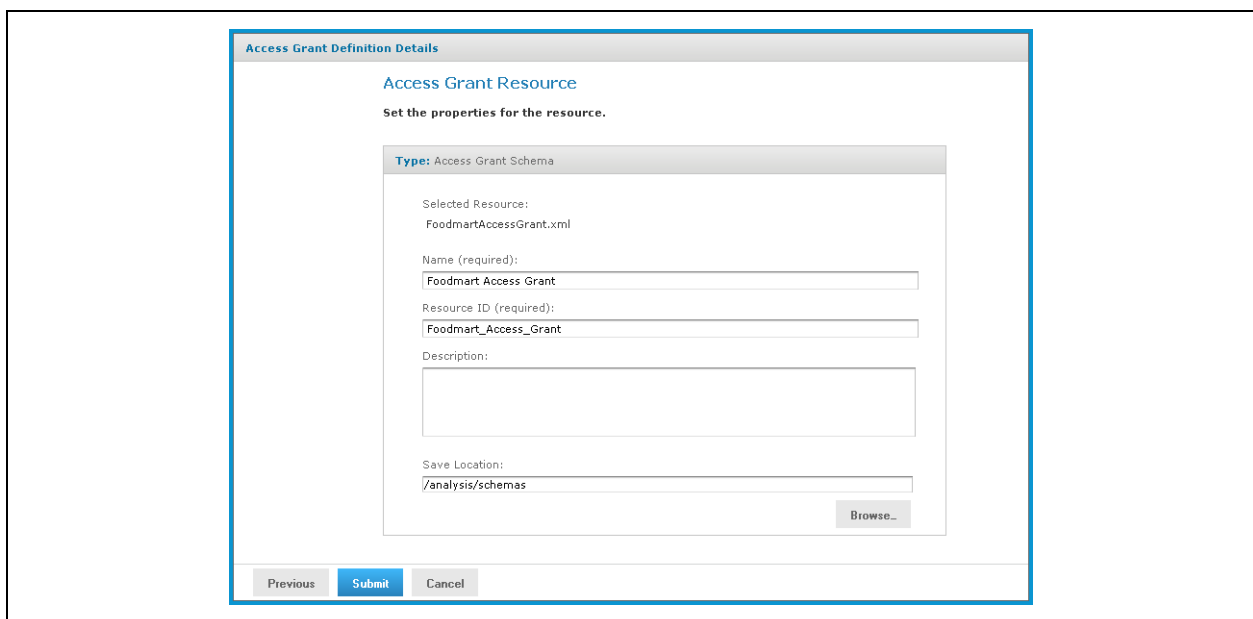


Figure 3-10 Access Grant Resource Page

20. If you chose to upload a new file from your computer, the fields are editable. Enter the requested information. For details, refer to [3.4.6.3, “Uploading an Access Grant Schema,”](#) on page 62. If you chose a file from the repository, the fields aren’t editable.
21. Click **Next**.
The Define the Query page appears and prompts you for an MDX query string.

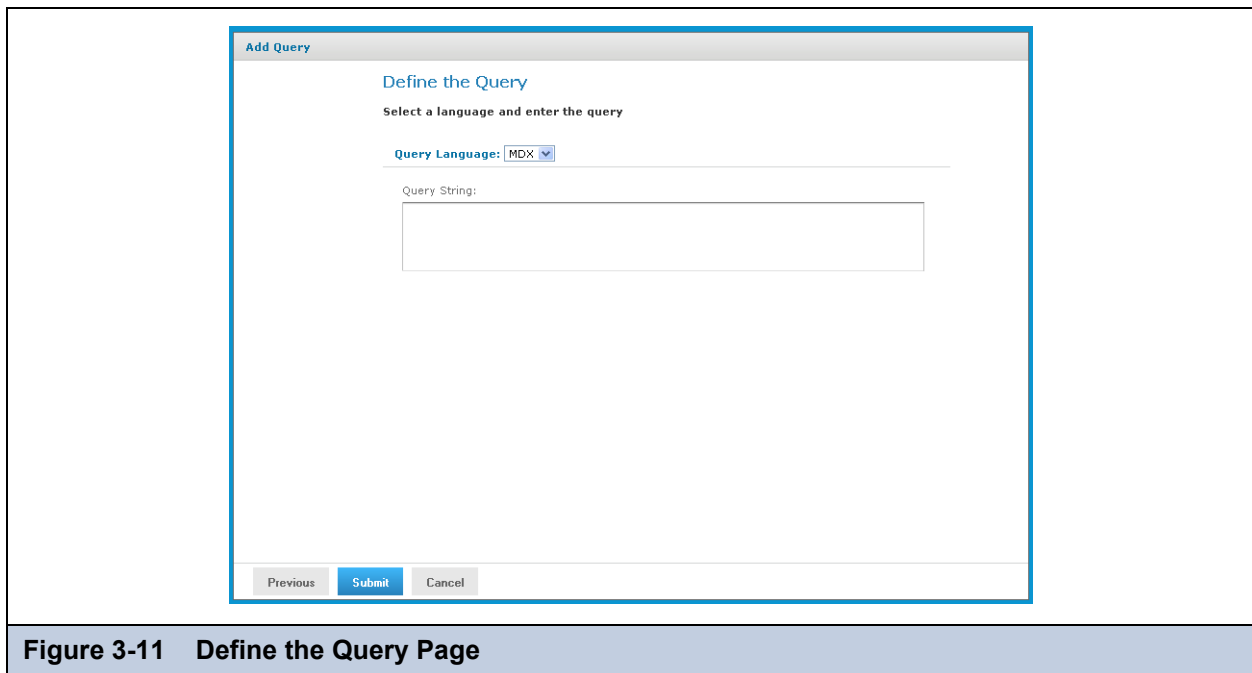


Figure 3-11 Define the Query Page

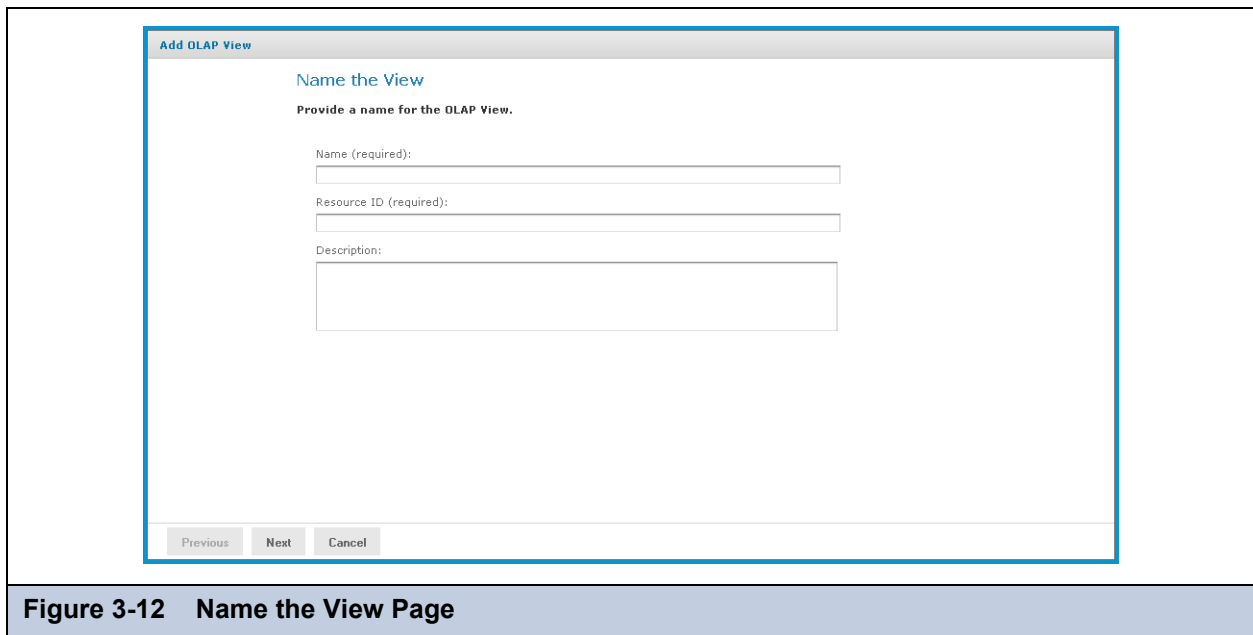
22. Enter an MDX query. For example, type:
- ```
select {[Measures].[Unit Sales], [Measures].[Store Cost], [Measures].[Store Sales]} on
columns, {[Promotion Media].[All Media], [Product].[All Products]} ON rows from Sales
where ([Time].[2006].[Q4].[12])
```
- To learn more about writing MDX queries, refer to the reference material listed in [1.3, “External Information Resources,”](#) on page 6.
23. Click **Submit**.  
If the view passes validation, it is added to the repository. If you receive an error, it is likely that the problem is a typo in your query. Carefully review the query to ensure that it is valid.
24. When you have a valid OLAP view, clicking **Submit** adds it to the repository.  
If the view passes validation, it is added to the repository.

### 3.2.3 Creating an OLAP View with an XML/A Connection

An OLAP view can retrieve data from an XML/A connection. An XML/A connection is a connection to a remote Mondrian client connection. For more information on XML/A connections, refer to [3.4.4, “Working with XML/A Connections,”](#) on page 54 and [3.4.5, “Working with XML/A Sources,”](#) on page 56.

**To create an OLAP view with an XML/A connection:**

1. Click **View > Repository**.  
The repository appears.
2. In the Folder panel, navigate to **Organization > Organization > Analysis Components > Analysis Views**.
3. Right-click the **Analysis Views** folder and select **Add Resource > OLAP View** from the context menu.  
The Name the View page appears and prompts you to enter the basic details about the new view.



**Figure 3-12 Name the View Page**

4. Enter a name and a description of the view and click **Next**.  
The Locate Mondrian Connection page appears.
5. In the **Connection Type** drop-down, select XML/A Connection.
6. Click either:
  - ♦ **Define a XML/A Client Connection in the next step** to add a new connection.
  - ♦ **Select a XML/A Client Connection from the Repository** to select a data source from the repository.  
Click **Browse**, navigate to the location where you want to add the file, and click **Select**. Click **Next** and skip to [step 9](#).
7. If you chose to create a new client connection, the Set Connection Type and Properties page appears and prompts you to define the connection, Enter the requested information. For details, refer to [3.4.4, “Working with XML/A Connections,”](#) on [page 54](#).

**Figure 3-13 Set Connection Type and Properties - XML/A Page**



Your XML/A provider may be another JasperReports Server instance hosting Mondrian connections. For more information, refer to sections 3.4.4, “Working with XML/A Connections,” on page 54 and 3.4.5, “Working with XML/A Sources,” on page 56.

8. Click **Next**.

The Define the Query page appears and prompts you for a query string.

**Figure 3-14 Define the Query Page**

- In the **Query String** field, enter the MDX query. For example, type:

```
select {[Measures].[Unit Sales], [Measures].[Store Cost], [Measures].[Store Sales]} on
columns, {[Promotion Media].[All Media], [Product].[All Products]} ON rows from Sales
where ([Time].[2006].[Q4].[12])
```

To learn more about writing MDX queries, refer to the reference material listed in 1.3, “External Information Resources,” on page 6.

- Click **Submit**.

If the view passes validation, it is added to the repository. If you receive an error, it is likely that the problem is a typo in your query. Carefully review the query to ensure that it is valid.

- When you have a valid OLAP view, clicking **Submit** adds it to the repository.

If the view passes validation, it is added to the repository.

### 3.2.4 Editing an OLAP View

To change the naming, connection, or MDX query in an OLAP view:

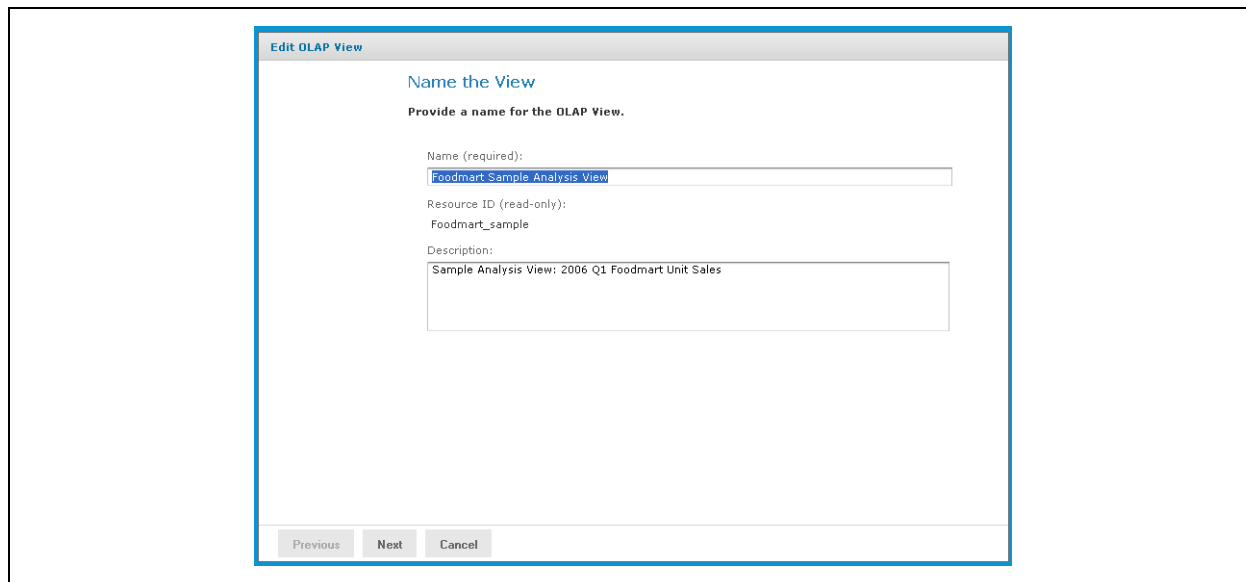
- In the **Search** field in the repository, enter the name (or partial name) of the OLAP view you want to edit, and click the **Search** icon.

For example, enter `food`.

The repository displays the objects that match the text you enter.

- Right-click a view and click **Edit**. In this example, we’re editing the Foodmart Sample Analysis View.

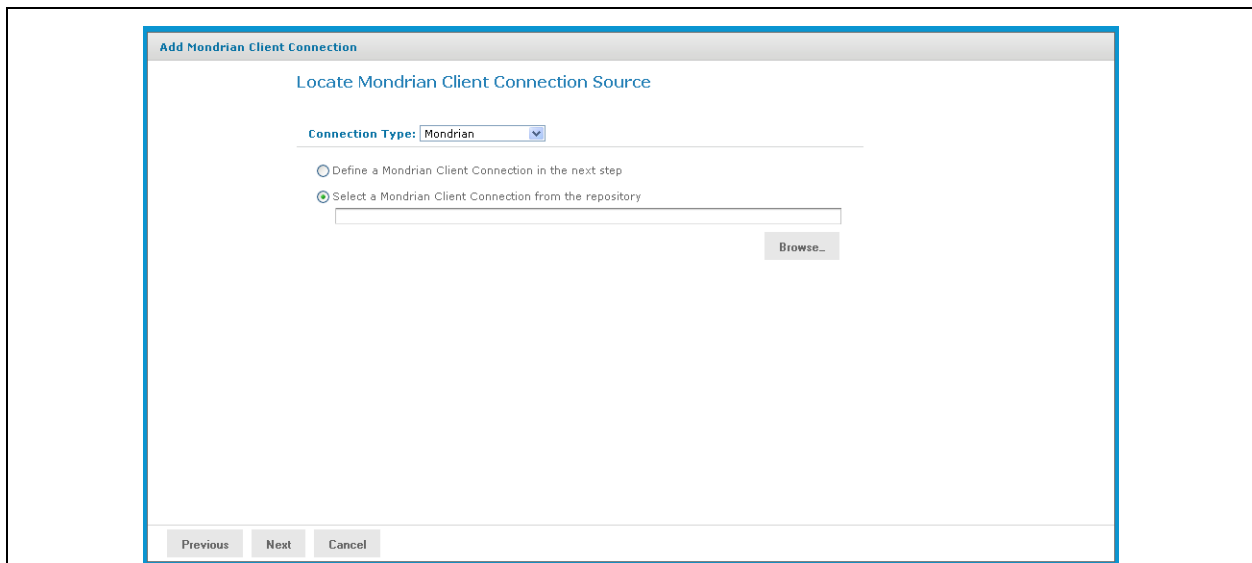
The Name the View page appears with the fields populated.



**Figure 3-15 Name the View Page**

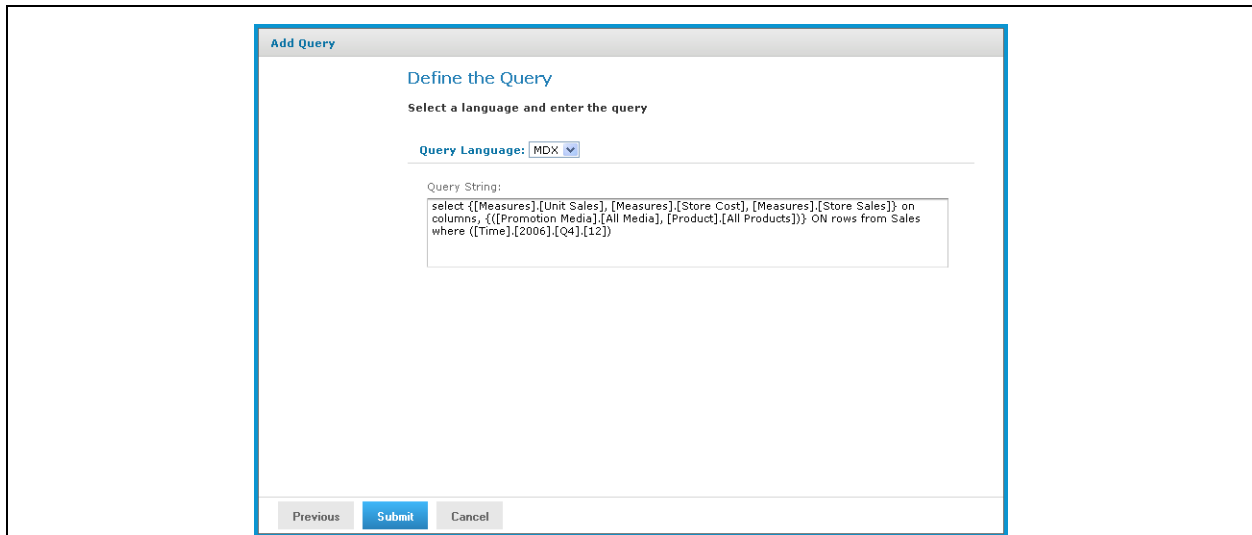
- Make your changes to the fields as necessary and click **Next**.

The page that appears depends on the type of client connection defined in the view. For example, if the view specifies a Mondrian connection, the Locate a Mondrian Connection Source page appears.



**Figure 3-16 Locate Mondrian Client Connection Source Page**

4. Depending on the type of connection specified, enter values as necessary. Click each field you want to change and enter new values. For details, refer to 3.2.2, “Creating an OLAP View with a Mondrian Connection,” on page 21 and 3.2.3, “Creating an OLAP View with an XML/A Connection,” on page 27.
5. Click **Next**.  
The Define a Query page appears with the query language set to MDX.



**Figure 3-17 Define the Query Page**

6. Change the query or enter a new one, if necessary.



You can also edit a view’s MDX query by modifying the navigation table and saving the view. To learn more about writing MDX queries, refer to the reference material listed in 1.3, “External Information Resources,” on page 6.

7. Click **Submit**.  
If the view passes validation, it is added to the repository. If you receive an error, it is likely that the problem is a typo in your query. Carefully review the query to ensure that it is valid.
8. When you have a valid OLAP view, clicking **Submit** adds it to the repository.

## 3.3 Working with OLAP Settings and the Cache



This section describes functionality that can be restricted by the software license for JasperReports Server. If you don't see some of the options described in this section, your license may prohibit you from using them. To find out what you're licensed to use, or to upgrade your license, contact Jaspersoft.

Various configurable properties control the OLAP engine behavior. In most cases, you can use the default values for these properties. However, if you want to adjust the performance, you may need to change them.



Jaspersoft recommends that you carefully review the effects of the changes you make to the performance tuning variables, and to test such changes before using them in a production environment.

The OLAP settings page requires you to have administrative permissions:

- ♦ In JasperReports Server commercial editions, you must be logged in as a user with the `ROLE_SUPERUSER` role.
- ♦ In JasperReports Server Community Project, you must be logged in as a user with the `ROLE_ADMINISTRATOR` role. Also not that, in this edition, the options are not editable. you must make your changes in a configuration file on the server's host, instead.

This section includes:

- ♦ [Changing OLAP Settings](#)
- ♦ [Flushing the OLAP Cache](#)
- ♦ [Configuring OLAP Cache Reuse](#)

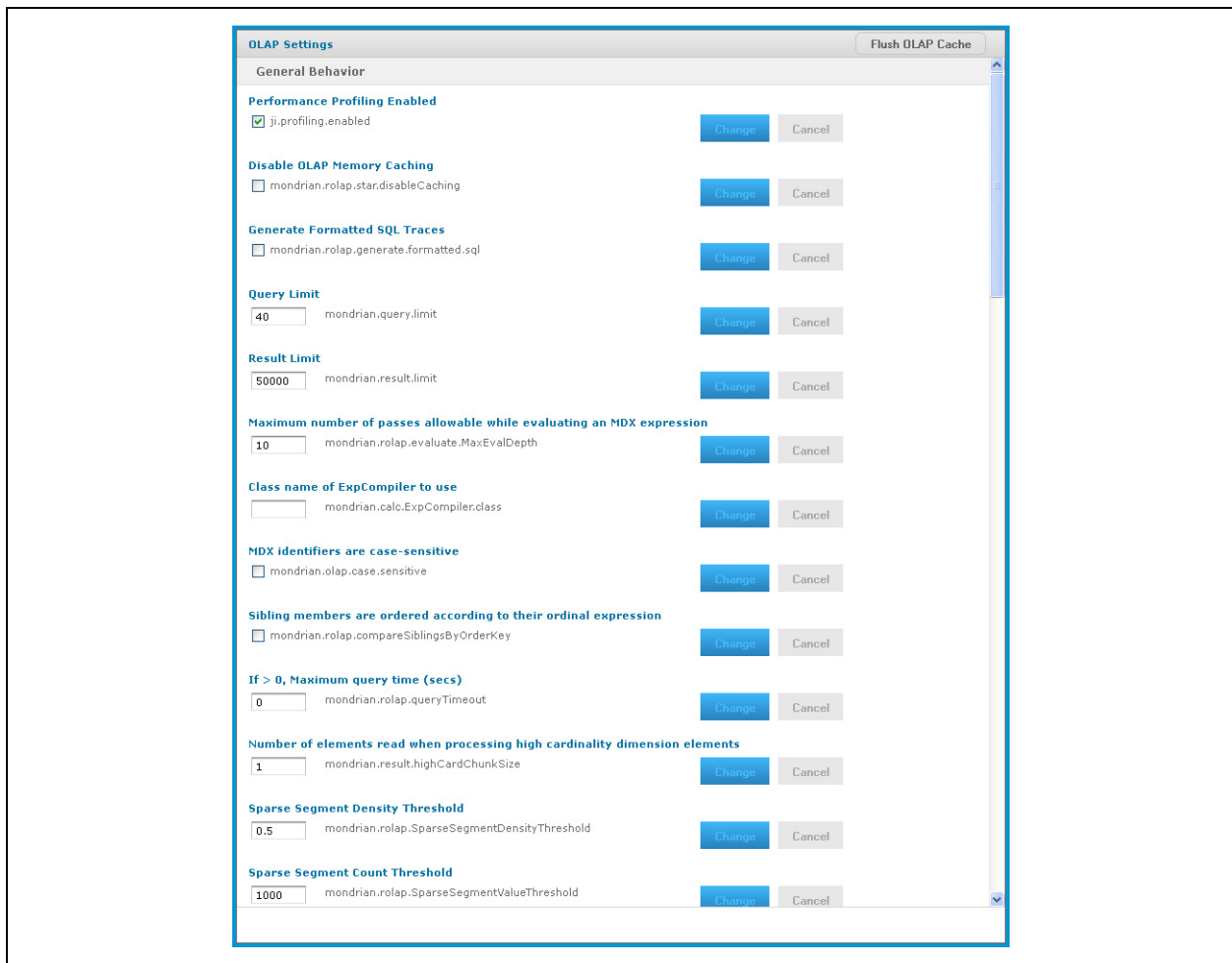
### 3.3.1 Changing OLAP Settings

To change the OLAP settings in commercial editions of the server:

1. Click **Manage > Server Settings**.
2. Click **OLAP Settings**.

The OLAP Settings page appears.





**Figure 3-18 OLAP Settings Page**

Note that the name of each property (as it appears in the underlying OLAP engine) appears below its name is shown. The properties are described in the table below.

3. If your edition of the server includes it, click the **Performance Profiling Enabled** check box to generate performance reports and views, and click **Change**.

The page displays a message indicating that the setting was updated.

4. Locate and analyze the performance reports and views. The reports are found in the repository at `/performance/reports`. The views are found at `/performance/views`.
5. Review the available properties described below to determine if they can be changed to improve performance.
6. Adjust any options as needed, click **Change**, and run the performance views and reports to understand the impact your changes made.
7. Adjust the settings as necessary.

Test your views and adjust properties as your findings dictate.



To log the SQL queries Jaspersoft OLAP sends to the database, set the **Generate Formatted SQL Traces** option. This ensures that Jaspersoft OLAP writes the SQL queries it executes to the log file you specify.

Table 3-1 on page 34 lists the properties' meanings.

**Table 3-1 OLAP Settings**

| Property                                                                           | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Behavior</b>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Performance Profiling Enabled</b>                                               | When enabled, performance profiling data is generated and recorded. The availability of this setting is controlled by your license.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Disable OLAP Memory Caching</b>                                                 | Turns off caching completely. Disabling caching can have a very noticeable negative performance impact.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Generate Formatted SQL Traces</b>                                               | When tracing is enabled, Jaspersoft OLAP formats SQL queries in the trace output with line breaks, which makes them easier to read.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Query Limit</b>                                                                 | The maximum number of concurrent queries allowed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Result Limit</b>                                                                | When set to a number greater than 0, result sets are limited to the specified number of rows.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Maximum number of passes allowable while evaluating a MDX expression</b>        | When evaluating an MDX query, the maximum number of passes allowed. Jaspersoft OLAP returns an error when this threshold is exceeded; for example, the error may occur during complex calculations.                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Class name of ExpCompiler to use</b>                                            | If entered, this must be a Java class name that is an implementation of the <code>mondrian.calc.ExpCompiler</code> interface. Refer to the Mondrian Javadoc for more information.                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MDX identifiers are case-sensitive</b>                                          | Specifies whether the MDX parser considers the case of identifiers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Sibling members are ordered according to their ordinal expression</b>           | Specifies whether siblings at the same level of a dimension are compared according to the order key value retrieved from their ordinal expression. By default, ordinal expressions are only used for ORDER BY, and Jaspersoft OLAP ignores the actual values. When this property is enabled, Jaspersoft OLAP can correctly order members when native filtering is used. Note that this setting requires that the RDBMS provides non-null instances of <code>java.lang.Comparable</code> that yield the correct ordering when calling their <code>Comparable.compareTo</code> method. |
| <b>If &gt; 0, Maximum query time (secs)</b>                                        | When set to a value greater than zero, Jaspersoft OLAP times out if the query takes longer than the specified number of seconds. If a query exceeds the limit, Jaspersoft OLAP returns an error.<br><br>For more information, refer to the Query Limit and Result Limit entries in this table.                                                                                                                                                                                                                                                                                       |
| <b>Number of elements read when processing high cardinality dimension elements</b> | This property determines how many members Mondrian reads in one block from the database. Setting large values for this property increases performance but can overload memory. Values should be prime with <code>mondrian.result.limit</code> .<br><br>For more information, refer to the <i>Mondrian Technical Guide</i> .                                                                                                                                                                                                                                                          |
| <b>Sparse Segment Density Threshold</b>                                            | Performance tuning variable. This property only applies when <code>SparseSegmentCountThreshold</code> is enabled. It determines whether to use a sparse or a dense representation when collections of cell values are stored in memory.                                                                                                                                                                                                                                                                                                                                              |

**Table 3-1 OLAP Settings, continued**

| Property, continued                                                                                                                          | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Sparse Segment Count Threshold</b></p>                                                                                                 | <p>Performance tuning variable. this property only applies when SparseSegmentDensityThreshold is set. It determines whether a sparse or a dense representation is used when collections of cell values are stored in memory.</p> <p>When storing collections of cell values, Jaspersoft OLAP can use either a sparse or a dense representation. This is determined by the possible and actual number of values: density is calculated as actual / possible.</p> <p>Whenever possible, Jaspersoft OLAP uses a sparse representation - countThreshold * actual &gt; densityThreshold.</p> <p>For example, for the default values (countThreshold = 1000, SparseSegmentDensityThreshold = 0.5), Jaspersoft OLAP uses a dense representation for:</p> <ul style="list-style-type: none"> <li>◆1000 possible, 0 actual, or</li> <li>◆2000 possible, 500 actual, or</li> <li>◆3000 possible, 1000 actual)</li> </ul> <p>If there are fewer actual values or more possible values, Jaspersoft OLAP uses a sparse representation.</p> |
| <p><b>During schema load, invalid members are ignored and will be treated as a null</b></p>                                                  | <p>When enabled, Jaspersoft OLAP ignores invalid members during schema load; they are treated as null members if they are referenced in a later query.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><b>During query validation, invalid members are ignored and will be treated as a null</b></p>                                             | <p>When enabled, Jaspersoft OLAP ignores invalid members during query validation; invalid members are ignored and are treated as null members.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>Defines how a null Member is represented in the result output</b></p>                                                                  | <p>Specifies how Jaspersoft OLAP should represent a null member in the result output.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>If &gt; 0, the maximum number of iterations allowed when evaluating an aggregate</b></p>                                               | <p>When set to a number greater than 0, the maximum number of iterations allowed when evaluating an aggregate. When set to 0, iterations are unlimited.</p> <p>If a query exceeds the limit, Jaspersoft OLAP returns an error that specifies this property's value. For more information, refer to the Query Limit and Result Limit entries in this table.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>If &gt; 0, crossjoin result limit beyond which the optimizer will be applied</b></p>                                                   | <p>When set to a number greater than 0, a threshold for a crossjoin input list's size; if it exceeds this value, and the axis has the NON EMPTY qualifier, Jaspersoft OLAP uses the non-empty optimizer.</p> <p>When this property is set to 0, Jaspersoft OLAP applies the non-empty optimizer to all crossjoin input lists. To ensure that the optimizer is never applied to crossjoin input lists, set this value to the Integer.MAX_VALUE.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>If there are unrelated dimensions to a measure in context during aggregation, the measure is ignored in the evaluation context</b></p> | <p>When dimensions unrelated to a measure are detected during aggregation, the measure is ignored in the evaluation context. Note that this property can only affects measures whose CubeUsage's IgnoreUnrelatedDimensions is false.</p> <p>For more information, refer to the <i>Mondrian Technical Guide</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Table 3-1 OLAP Settings, continued**

| Property, continued                                                                                                              | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Do elements of a dimension (levels, hierarchies, members) need to be prefixed with dimension name in the MDX query</b></p> | <p>Determines if elements of dimension (levels, hierarchies, and members) must be prefixed with the dimension name in MDX queries.</p> <p>This property determines whether certain queries succeed or fail based on the way the dimension elements are defined in the MDX query. When this property is enabled, this query fails:</p> <pre>select {[Omaha]} on columns from cust</pre> <p>When this property is disabled, that same query succeeds.</p> <p>With the property enabled, the correct query is:</p> <pre>select {[Nebraska].[Omaha]} on columns from cust</pre> <p>If your schema is very large or complex, Jaspersoft recommends enabling this setting, as processing such schemas can be very resource-intensive.</p> <p>For more information, refer to the <i>Mondrian Technical Guide</i>.</p> |
| <p><b>Division by null or zero produces NULL</b></p>                                                                             | <p>By default, when Jaspersoft OLAP attempts to divide by zero or null, it evaluates to Infinity, which is correct for some analysis providers. When this property is enabled, Jaspersoft OLAP instead evaluates such calculations to null, which can be helpful in certain circumstances.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Solve Order evaluation behavior</b></p>                                                                                    | <p>Specifies how to evaluate the <code>SOLVE_ORDER</code>:</p> <ul style="list-style-type: none"> <li>• Absolute. Any specified scope is ignored and the <code>SOLVE_ORDER</code> value is absolute. For example, Jaspersoft OLAP gives precedence to a query-defined calculated member with a <code>SOLVE_ORDER</code> of 1 over a cube defined value of 2.</li> <li>• Scoped. Jaspersoft OLAP first resolves cube-calculated members, then resolves session-scoped members, and finally resolves query-defined calculations. Jaspersoft OLAP only applies the <code>SOLVE_ORDER</code> value within the scope in which it was defined.</li> </ul>                                                                                                                                                            |
| <p><b>Aggregate Settings</b></p>                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>Enable Aggregate Tables</b></p>                                                                                            | <p>When enabled, Jaspersoft OLAP identifies tables in the database that are aggregates, and uses those aggregate values.</p> <p>For more information, refer to the <i>Mondrian Technical Guide</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Choose Aggregate Table By Volume</b></p>                                                                                   | <p>Performance tuning variable for aggregates. This property only applies when aggregate tables are used. Consider using this property when optimizing for tables with many large columns. This property determines whether aggregate tables are ordered by volume or row count.</p> <p>When this property is enabled, Jaspersoft OLAP uses the aggregate table with the smallest volume (number of rows multiplied by number of columns); when it is disabled, Jaspersoft OLAP uses the aggregate table with the fewest rows.</p>                                                                                                                                                                                                                                                                             |
| <p><b>Optimize predicates</b></p>                                                                                                | <p>Determines whether Jaspersoft OLAP optimizes predicates. When this property is enabled, Jaspersoft OLAP optimizes certain predicates.</p> <p>When it is disabled, predicates are only optimized when all of a dimension's members are included. In this case, Jaspersoft OLAP only retrieves the data specified in the query.</p> <p>For more information, refer to the <i>Mondrian Technical Guide</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>Rule file for aggregate table identification</b></p>                                                                       | <p>Specifies a file that defines aggregate table recognition rules. This file can either reside in the application server or the file system. Typically, you can accept the default.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>AggRule element's tag value</b></p>                                                                                        | <p>The AggRule element's tag value. Typically, you can accept the default.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Table 3-1 OLAP Settings, continued

| Property, continued                                                                                               | Notes                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SQL to log for aggregate table creation to support MDX with aggregates</b>                                     | Determines whether Jaspersoft OLAP prints the SQL code generated for aggregate tables.<br>When this property is enabled, Jaspersoft OLAP processes each aggregate request and prints both the lost and collapsed dimension <code>create</code> and <code>insert</code> SQL statements. When used in conjunction with the <code>CmdRunner</code> , it lets you automatically create aggregate table generation SQL. |
| <b>Factory class for determining the tables and columns of a data source</b>                                      | If entered, this must be a Java class name that is an implementation of the <code>mondrian.rolap.aggmatcher.JdbcSchema.Factory</code> interface. The default implementation is <code>mondrian.rolap.aggmatcher.JdbcSchema.StdFactory</code> . Refer to the Mondrian Javadoc for more information.                                                                                                                  |
| <b>Cache and SQL Generation Settings</b>                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Use a cache for the results of frequently evaluated expressions</b>                                            | Determines whether Jaspersoft OLAP caches the results of frequently-evaluated expressions. Enabling this property can reduce the number of unnecessary computations when processing a large amount of data.                                                                                                                                                                                                        |
| <b>Cache RolapCubeMember objects</b>                                                                              | Determines whether Jaspersoft OLAP caches RolapCubeMember objects, which each associate a member of a shared hierarchy with a cube that uses it.<br>Disable this property if you plan to use the member cache control.                                                                                                                                                                                             |
| <b>Maximum number of constraints in a single 'IN' SQL clause</b>                                                  | The maximum number of constraints in a single SQL IN clause. This value varies with your RDBMS type and configuration. Jaspersoft recommends these values:<br><ul style="list-style-type: none"> <li>• DB2: 2,500</li> <li>• MySQL: 10,000</li> <li>• Oracle: 1,000</li> <li>• Postgres: 10,000</li> <li>• Other: 10,000</li> </ul>                                                                                |
| <b>Some NON EMPTY CrossJoin MDX statements will be computed in the database</b>                                   | When enabled, Jaspersoft OLAP pushes down to the database processing related to some NON EMPTY <code>CrossJoin</code> MDX statements.                                                                                                                                                                                                                                                                              |
| <b>Some TopCount MDX statements will be computed in the database</b>                                              | When enabled, Jaspersoft OLAP pushes down to the database processing related to some <code>TopCount</code> MDX statements.                                                                                                                                                                                                                                                                                         |
| <b>Some Filter() MDX statements will be computed in the database</b>                                              | When enabled, Jaspersoft OLAP pushes down to the database processing related to some <code>Filter()</code> MDX statements.                                                                                                                                                                                                                                                                                         |
| <b>Some NON EMPTY MDX statements will be computed in the database</b>                                             | When enabled, Jaspersoft OLAP pushes down to the database processing related to some NON EMPTY MDX set operations (Such as <code>member.children</code> , <code>level.members</code> and <code>member.descendants</code> ).                                                                                                                                                                                        |
| <b>Expand non native sub-expressions of a native expression into MemberLists</b>                                  | When enabled, Jaspersoft OLAP expands non-native sub-expressions of a native expression into <code>MemberLists</code> .                                                                                                                                                                                                                                                                                            |
| <b>Alerting action in case native evaluation of a function is enabled but not supported in a particular query</b> | Specifies the error level (OFF, WARN, or ERROR) to use when a function's native evaluation is enabled but isn't supported in the context of a particular query's usage. Errors are only returned in the case of a <code>NonEmptyCrossJoin</code> . Alerts are only raised when there is a possibility that native evaluation would improve matters.                                                                |
| <b>Some rollup queries will be combined using group by grouping sets if the SQL dialect allows it</b>             | When enabled, Jaspersoft OLAP combines some rollup queries using <code>group by grouping sets</code> . Note that this property only applies to data stored in Oracle, DB2, or Teradata.                                                                                                                                                                                                                            |

**Table 3-1 OLAP Settings, continued**

| Property, continued                                                                                          | Notes                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>XML/A Settings</b>                                                                                        |                                                                                                                                                                                                                                                            |
| <b>XML/A Maximum Drill Through Rows</b>                                                                      | Limits the number of rows returned from an XML/A drill-through operation.                                                                                                                                                                                  |
| <b>First row in the result of an XML/A drill-through request will be filled with the total count of rows</b> | If this property is enabled, the first row returned for an XML/A drill-through request shows the total count of rows in the underlying database.                                                                                                           |
| <b>Memory Monitoring Settings</b>                                                                            |                                                                                                                                                                                                                                                            |
| <b>Use Java Memory monitoring to avoid out of memory</b>                                                     | When enabled, Jaspersoft OLAP uses the Java's memory monitoring capability. In this case, when memory is exhausted, Jaspersoft OLAP returns a <code>MemoryLimitExceededException</code> exception rather than an out of memory error.                      |
| <b>Threshold to limit memory used</b>                                                                        | Specifies the percent of memory usage that should trigger a notification to Jaspersoft OLAP that memory is low.                                                                                                                                            |
| <b>Class name of factory to manage memory</b>                                                                | If entered, this must be a Java class name that is an implementation of the <code>mondrian.util.MemoryMonitor</code> interface. Such a class ( <code>mondrian.util.NotificationMemoryMonitor</code> ). Refer to the Mondrian Javadoc for more information. |

These properties are stored in the repository (at /properties) as a list of values called `GlobalPropertiesList`. This list is populated the first time you alter one of the properties. Jaspersoft recommends that you allow JasperReports Server to manage this list of values for you automatically; therefore, only change the values using the **Manage > Server Settings** menu option.

For more information about these properties, refer to the *Mondrian Technical Guide*. Use the name of each property (shown below each property name) when searching this reference.

Many other properties can be set by editing configuration files, but some of them do not affect Jaspersoft OLAP because they are controlled in the repository user interface. For example, you do not have to provide a `connectString` property, or to specify the `jdbcDrivers` for Mondrian, because Jaspersoft OLAP automatically generates these properties when the `DataSource` for an `AnalysisClientConnection` is selected.

**To change the OLAP settings in the Community Project edition of the server:**

1. Click **Manage > OLAP Settings**.

The OLAP Settings page appears.

Note that the name of each property (as it appears in the underlying OLAP engine) is shown. The properties are described in [Table 3-1 on page 34](#).

| OLAP Settings                                |                                                                                                                                   | Flush OLAP Cache |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------|
| mondrian.query.limit                         | 40                                                                                                                                |                  |
| mondrian.jdbcDrivers                         | sun.jdbc.odbc.JdbcOdbcDriver,org.hsqldb.jdbcDriver,oracle.jdbc.OracleDriver,com.mysql.jdbc.Driver                                 |                  |
| mondrian.result.limit                        | 50000                                                                                                                             |                  |
| mondrian.result.highCardChunkSize            | 1                                                                                                                                 |                  |
| mondrian.test.connectString                  | Provider=mondrian;Jdbc=jdbc:odbc:MondrianFoodMart;JdbcDrivers=sun.jdbc.odbc.JdbcOdbcDriver;Catalog=/WEB-INF/queries/FoodMart.xml; |                  |
| mondrian.foodmart.jdbcURL                    | jdbc:odbc:MondrianFoodMart                                                                                                        |                  |
| mondrian.rolap.SparseSegmentValueThreshold   | 1000                                                                                                                              |                  |
| mondrian.rolap.SparseSegmentDensityThreshold | 0.5                                                                                                                               |                  |
| mondrian.test.iterations                     | 1                                                                                                                                 |                  |
| mondrian.test.VUsers                         | 1                                                                                                                                 |                  |
| mondrian.test.TimeLimit                      | 0                                                                                                                                 |                  |
| mondrian.test.Warmup                         | false                                                                                                                             |                  |
| mondrian.rolap.agg.enableCacheHitCounters    | false                                                                                                                             |                  |
| mondrian.test.WarnIfNoPatternForDialect      | NONE                                                                                                                              |                  |
| mondrian.rolap.aggregates.Use                | true                                                                                                                              |                  |
| mondrian.rolap.aggregates.Read               | true                                                                                                                              |                  |
| mondrian.rolap.aggregates.ChooseByVolume     | false                                                                                                                             |                  |
| mondrian.rolap.aggregates.rules              | /DefaultRules.xml                                                                                                                 |                  |
| mondrian.rolap.aggregates.rule.tag           | default                                                                                                                           |                  |

**Figure 3-19 OLAP Settings Page**

- Review the available properties to determine if changing them can improve performance.
- On the JasperReports Server host, locate the `mondrian.properties` file. It resides in the `WEB-INF` directory in your JasperReports Server installation.
- Open the `mondrian.properties` file and locate the property you want to change.
- Adjust the value to the right of the equals sign to change the property, save the file, and restart JasperServer. Test your views and adjust properties as your findings dictate.



To log the SQL queries Jaspersoft OLAP sends to the database, set the **Generate Formatted SQL Traces** option. This ensures that Jaspersoft OLAP writes the SQL queries it executes to the log file you specify.

### 3.3.2 Flushing the OLAP Cache

This option clears the in-memory cache that Mondrian builds; caching is used to improve query performance. Flushing the cache is not usually necessary except when underlying data in the database changes. For example, after running an ETL process, the cache is out of date; it may not match the data in the database.

Such data changes are not reflected in OLAP views until the application server is restarted or until the cache is flushed.

To flush the cache, click **Manage > Server Settings**, click **OLAP Settings**, and click **Flush OLAP Cache** near the top of the page.

The OLAP cache is also automatically flushed when an existing Mondrian connection or one of its components (such as the schema or data source) is changed in the repository.

For more information on caching, see the *Jaspersoft OLAP Ultimate Guide* and the *JasperReports Server Administrator Guide*.



### 3.3.3 Configuring OLAP Cache Reuse

JasperReports Server caches your data when a user opens an OLAP view, Ad Hoc view, or OLAP-based report. These data are reused if they are subsequently requested before the cache is flushed. To determine whether a new request can be fulfilled with cached data, the server creates an identifier (by combining several connection attributes of the OLAP schema (such as `catalogUrl`, `connectionKey`, `jdbcUser`, `dataSourceStr` (or `catalogUrl`), and `dataSource`)). The server then compares the identifier to those of datasets in the cache. If it matches one, the data is reused; otherwise, the server assumes that this is a unique request and loads new data into the cache.

Alternatively, you can configure the server to compare schemas' checksums. In this cases, the server calculates the checksum of the schema being loaded and compares it to the checksums of schemas with datasets in the cache. If it matches one, the data are reused; otherwise, the server assumes that this is a unique request and loads new data into the cache.

If you want the server to identify datasets in the OLAP cache using a checksum, you can edit a configuration file:

| OLAP Schema Checksum Comparison for Caching               |                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Configuration File                                        |                                                                                                                                                                                                                                                                                                                                 |
| ...\\WEB-INF\\classes\\mondrian.connect.string.properties |                                                                                                                                                                                                                                                                                                                                 |
| Property                                                  | Description                                                                                                                                                                                                                                                                                                                     |
| UseContentChecksum                                        | When this property is set to <code>true</code> , JasperReports Server calculates an OLAP schema's checksum and compares that to checksums of schemas with datasets already in the cache. If it matches one, the data are reused; otherwise, the server assumes that this is a unique request and loads new data into the cache. |



Jaspersoft recommends caution if you configure the server to identify datasets by the checksum of the associated OLAP schema. Under very specific circumstances, setting this property to `true` can cause unexpected behavior in which cached data are reused incorrectly. Users might see data associated with a different schema whose data is already in the cache simply because the checksums match. The following scenario presents one such case, though others are certainly possible.

Consider this server configuration:

- The JasperReports Server instance hosts two organizations: Client1 and Client2.
- Each organization has a user responsible for data analysis:
  - Client1's data analyst is Amber.
  - Client2's data analyst is Huan.
- Each organization includes an OLAP-based report that uses identical OLAP schemas:
  - Client1
    - Report: Sales Leads OLAP Report (C1)
    - OLAP Schema: SalesLeadsSchemaC1
  - Client2
    - Report: Sales Leads OLAP Report (C2)
    - OLAP Schema: SalesLeadsSchemaC2
- Each OLAP schema relies on a different database with the same data structures, so that the users in each organization see their own data.

Now consider this use case:

1. Amber (in the Client organization) opens the Sales Leads OLAP Report (C1).  
Amber sees sales leads generated by Client1. In the cache, this data is identified by the checksum of the SalesLeadsSchemaC1 schema.
2. Before the cache is flushed, Huan (in the Client2 organization) opens the Sales Leads OLAP Report (C2).  
By default, Huan sees sales leads generated by Client2 (which is the expected result). However, when the `UseContentChecksum` property is set to `true`, the server compares the checksum of the of the SalesLeadsSchema2 with



those in the cache. Because this checksum matches the checksum of SalesLeadsSchema1 (the schema loaded by Amber), the server returns the cached data instead of loading data from Client2's data source.



In this scenario, Huan sees another client's sales data.

If your JasperReports Server instance hosts multiple organizations, Jaspersoft recommends that you use the default setting and allow the server to identify OLAP datasets using their connection URL details.

Note that other scenarios can cause similar unexpected behavior when the `UseContentChecksum` property is set to `true`; two checksums could conceivably match for any number of unpredictable reasons.

## 3.4 Working with OLAP Objects in the Repository

OLAP views rely on several other types of object in the repository. This section describes their creation and maintenance, including:

- [Working with Data Sources](#)
- [Working with OLAP Schemas](#)
- [Working with Mondrian Connections](#)
- [Working with XML/A Connections](#)
- [Working with XML/A Sources](#)
- [Working with Access Grant Definitions](#)



An OLAP view references most of these objects indirectly. For example, an OLAP schema is a part of a Mondrian connection; the OLAP view refers to the Mondrian connection which in turn refers to the schema. The following figures can help you understand how the objects relate:

- [Figure 3-1, “Anatomy of an OLAP View,” on page 21](#)
- [Figure 3-23, “Anatomy of a Mondrian Connection,” on page 44](#)
- [Figure 3-38, “Anatomy of an XML/A Connection,” on page 54](#)
- [Figure 3-41, “Anatomy of an XML/A Source,” on page 57](#)

The repository objects described in this section are also used by Ad Hoc views that return OLAP data. Such views are created against OLAP client connections (Mondrian or XML/A) using the Ad Hoc Editor. For more information on Ad Hoc views, refer to the *JasperReports Server User Guide*.

### 3.4.1 Working with Data Sources

A data source is a resource in the repository that defines how and where to obtain the data displayed by reports or views. Typically, it includes the location of the data and the details you need to access it, such as a user name and password. In the case of Jaspersoft OLAP, data sources are exposed through Mondrian connections.

For detailed information about data sources, refer to the *JasperReports Server Administrator Guide*.

#### To edit a data source:

1. In the **Search** field, enter the name (or partial name) of the object you want to edit, and click the Search icon. For example, enter `food`.  
The search results display objects that match the text you entered.
2. Right-click the data source and click **Edit** from the context-menu.  
The Set Data Source Type and Properties page appears.

**Figure 3-20 Set Data Source Type and Properties**



The options vary depending on the type of data source.

3. Change the values as necessary and click **Test Connection** to ensure the connection is valid. A banner at the top of the page displays a message: **Connection successful** or **Connection failed**.
4. If the connection test fails, check the values you entered, or check that the data is available from the service you specify, and test the connection again.
5. When the test succeeds, click **Submit**.

The data source is saved to the repository.

### 3.4.2 Working with OLAP Schemas

An OLAP schema is a metadata definition of a multidimensional database. Use the Jaspersoft OLAP workbench to create them. For more information, refer to **1.1, “Overview of Jaspersoft’s OLAP Tools,” on page 5**. OLAP schemas are stored in the repository as XML file resources.

#### 3.4.2.1 Uploading an OLAP Schema

You can upload an OLAP schema to the repository so that it can be accessed by more than one Mondrian connection. Doing this before creating a view simplifies the procedure for defining Mondrian connections and OLAP views.

**To upload a schema:**

1. Click **View > Repository**.  
The repository appears.
2. In the Folder panel, navigate to **Analysis Components > Analysis Schemas**.

- Right-click the folder and navigate to **Add Resource > File > OLAP Schema**.

The Upload a File From Your Local Computer page appears and prompts you to select a file and set its properties.

**Figure 3-21 Upload a File From Your Local Computer - OLAP Schema**

- Under **Path to File**, click **Choose File** and locate the OLAP schema you want to add.
- Enter a name and description for the schema.  
The **Resource ID** is auto-generated as you type in the **Name** field. You can change the ID if necessary.
- Next to the **Save Location** field, click **Browse** and navigate to the location in the repository where you want the file to reside.
- Click **Submit**.  
The new file appears in the repository.

#### 3.4.2.2 Editing an OLAP Schema

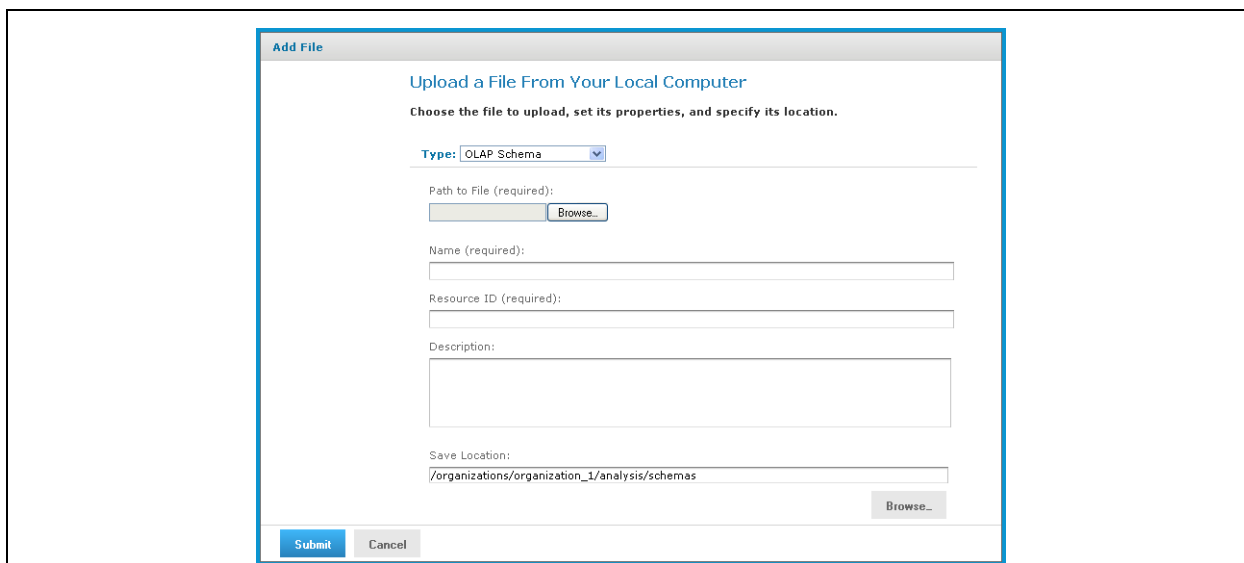
You can change the schema name, the schema file, and location of an OLAP schema.

##### To change an OLAP schema's naming and file source:

- In the **Search** field, enter the name (or partial name) of the schema you want to edit, and click the Search icon. For example, enter `sugar`.  
The search results appear, displaying objects that match the text you entered.
- Select the schema, right-click, and click **Edit**.  
The Upload a File From Your Local Computer page appears and prompts you to the values.



You cannot change the **Type** or **Resource ID** fields.



**Figure 3-22 Upload a File From Your Local Computer - OLAP Schema**

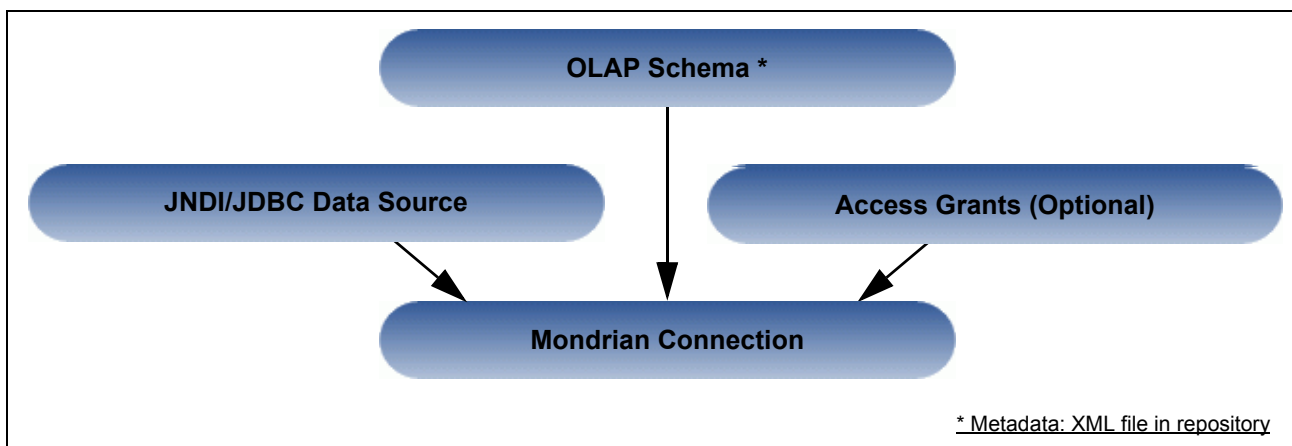
3. To upload a new file, next to the **Path to File** field, click **Browse** and navigate to and select the file you want to upload.
4. Enter changes to the **Name** and **Description** fields as necessary.
5. Under the **Save Location** field, click **Browse** and navigate to the location where you want to store the file, and click **Select**.
6. Click **Submit**.  
The edited schema appears in the repository.

### 3.4.3 Working with Mondrian Connections



This section describes functionality that can be restricted by the software license for JasperReports Server. If you don't see some of the options described in this section, your license may prohibit you from using them. To find out what you're licensed to use, or to upgrade your license, contact Jaspersoft.

A Mondrian connection describes how to present your transactional data as a multidimensional cube for analysis.



\* Metadata: XML file in repository

**Figure 3-23 Anatomy of a Mondrian Connection**

If you use JasperReports Server Community Project, you cannot include access grants in your Mondrian connection. Data-level security is only supported in commercial editions of the server.

### 3.4.3.1 Creating a Mondrian Connection

To create a Mondrian connection:

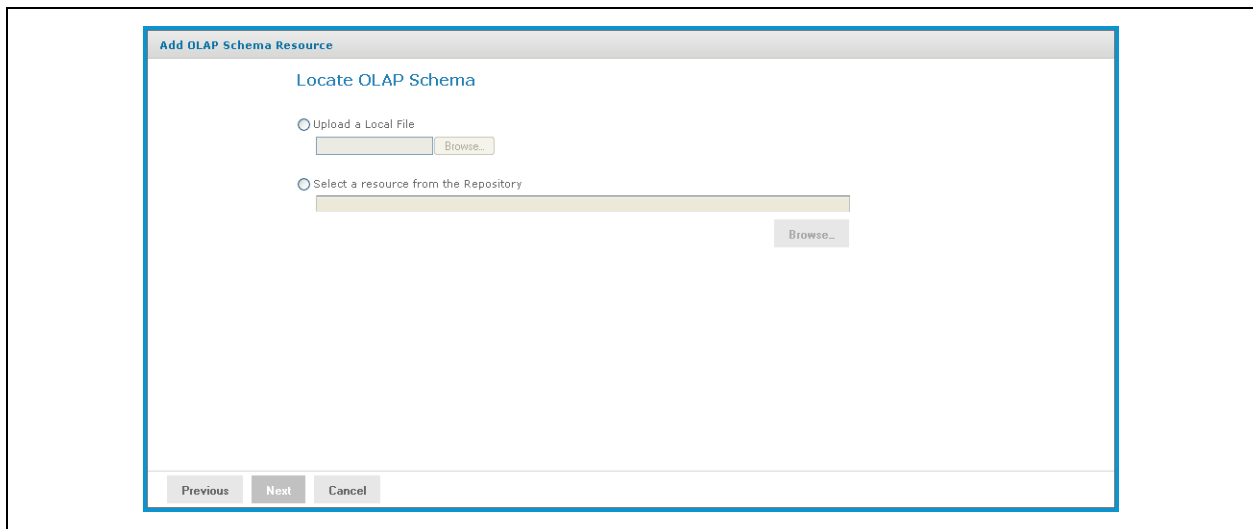
1. Click **View > Repository**.  
The repository page appears.
2. In the **Folders** panel, navigate to **Organization > Organization > Analysis Components > Analysis Connections**.
3. Right-click the folder and select **Add Resource > OLAP Client Connection**.  
The Set Connection Type and Properties page appears and prompts you to define a connection.

**Figure 3-24 Set Connection Type and Properties Page**

By default, the server prompts you to create a Mondrian connection. If you want to create an XML/A connection, refer to [3.4.4.1, “Creating an XML/A Connection,” on page 54](#).

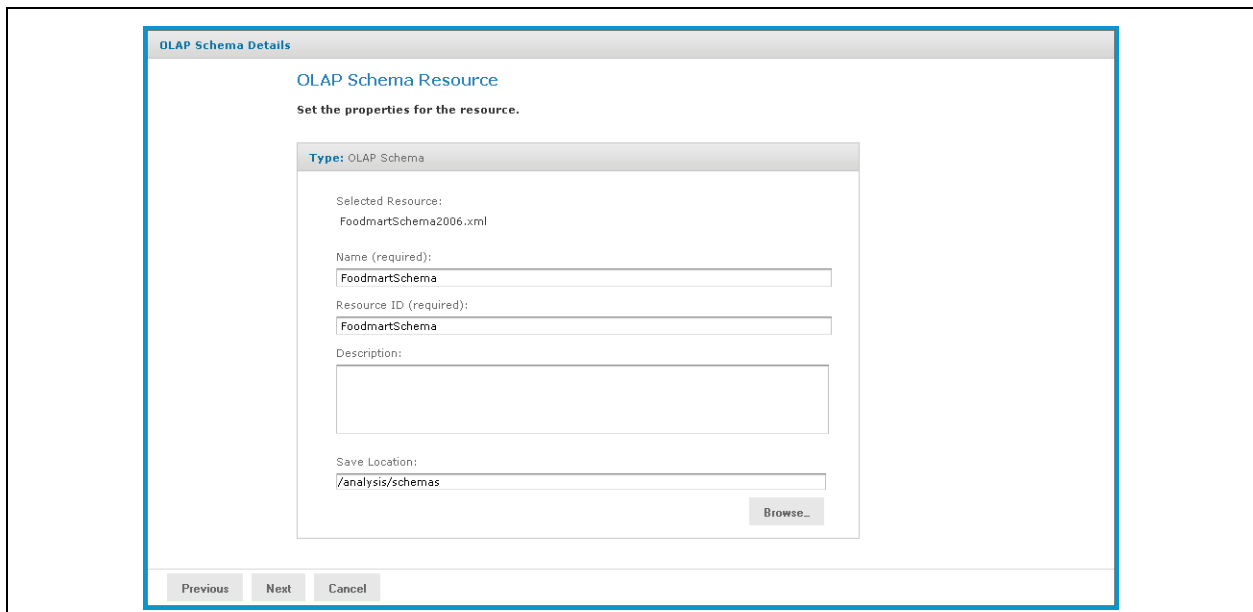
4. Enter a name and description for the new connection. The **Resource ID** field is auto-generated when you type in the **Name** field. After it is saved, it can't be changed.
5. To change the location of the connection, click **Browse**, navigate to a folder, and click **Select**.
6. Click **Next**.

The Locate OLAP Schema page appears and prompts you to upload an OLAP schema or select one from the repository.



**Figure 3-25 Locate OLAP Schema Page**

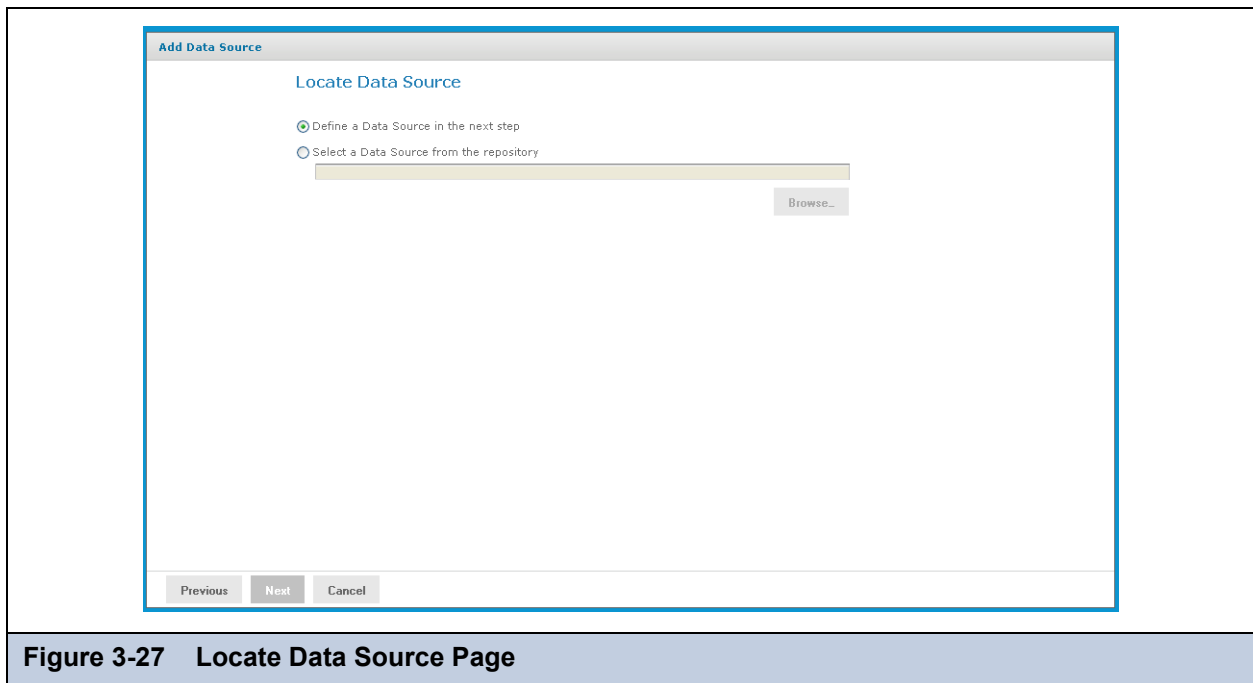
7. Click either:
  - ♦ **Upload a Local File** to select a file from your local computer. Then click **Choose File**, navigate to select the file, and click **Select**.
  - ♦ **Select a resource from the Repository** to select an existing schema. Then click **Browse**, navigate to select the file, and click **Select**.
8. Click **Next**.  
The OLAP Schema Resource page appears.



**Figure 3-26 OLAP Schema Resource Page**

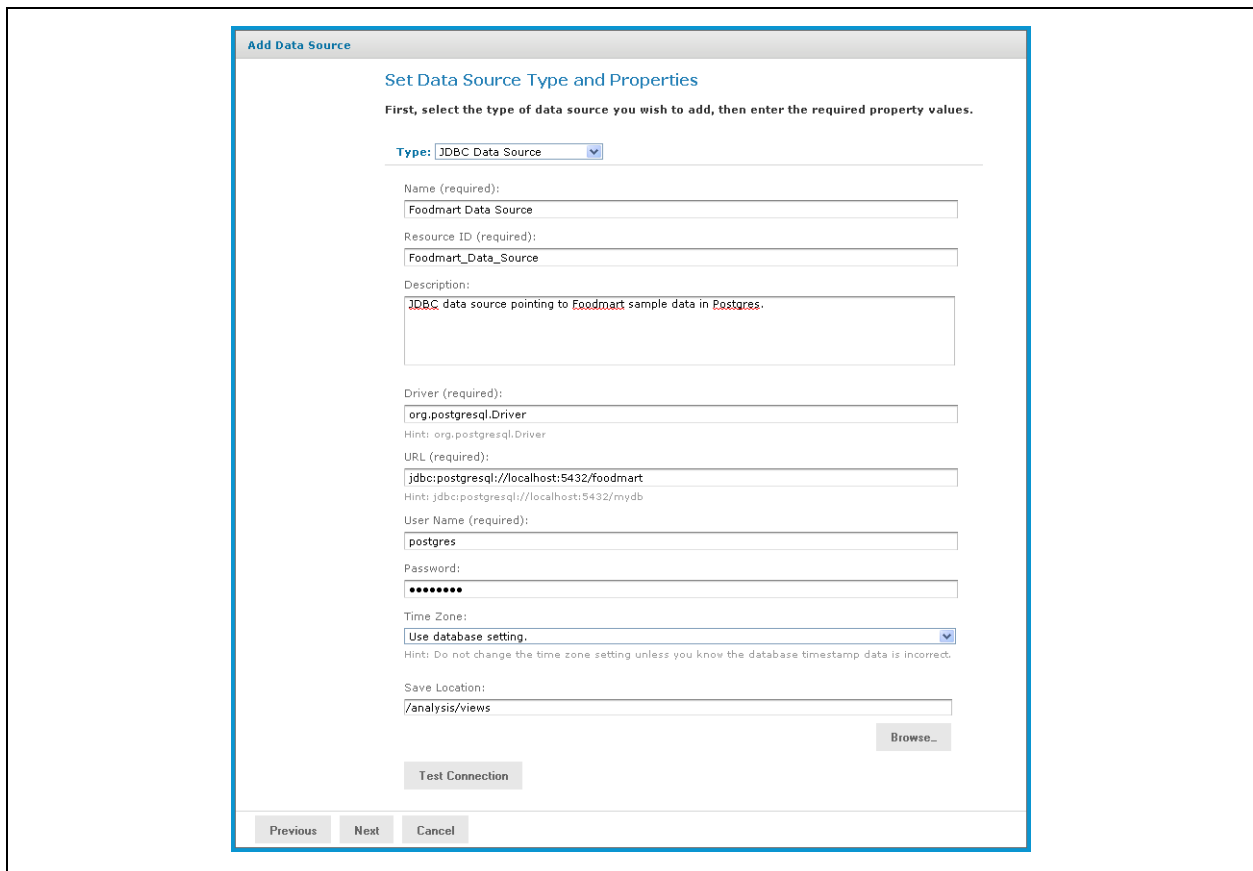
If you chose to upload a new file from your computer, the fields are editable. Enter the requested information. For details, refer to [3.4.2.1, “Uploading an OLAP Schema,” on page 42](#). If you chose a file from the repository, the fields aren’t editable.

9. Click **Next**.  
The Locate Data Source page appears and prompts you to create or select a data source.



**Figure 3-27 Locate Data Source Page**

10. Click either:
  - ♦ **Define a Data Source in the next step** to add a data source.
  - ♦ **Select a Data Source from the repository** to select a data source from the repository.  
Then click **Browse**, navigate to select the file, and click **Select**.
11. Click **Next**.  
The Set Data Source Type and Properties page appears.

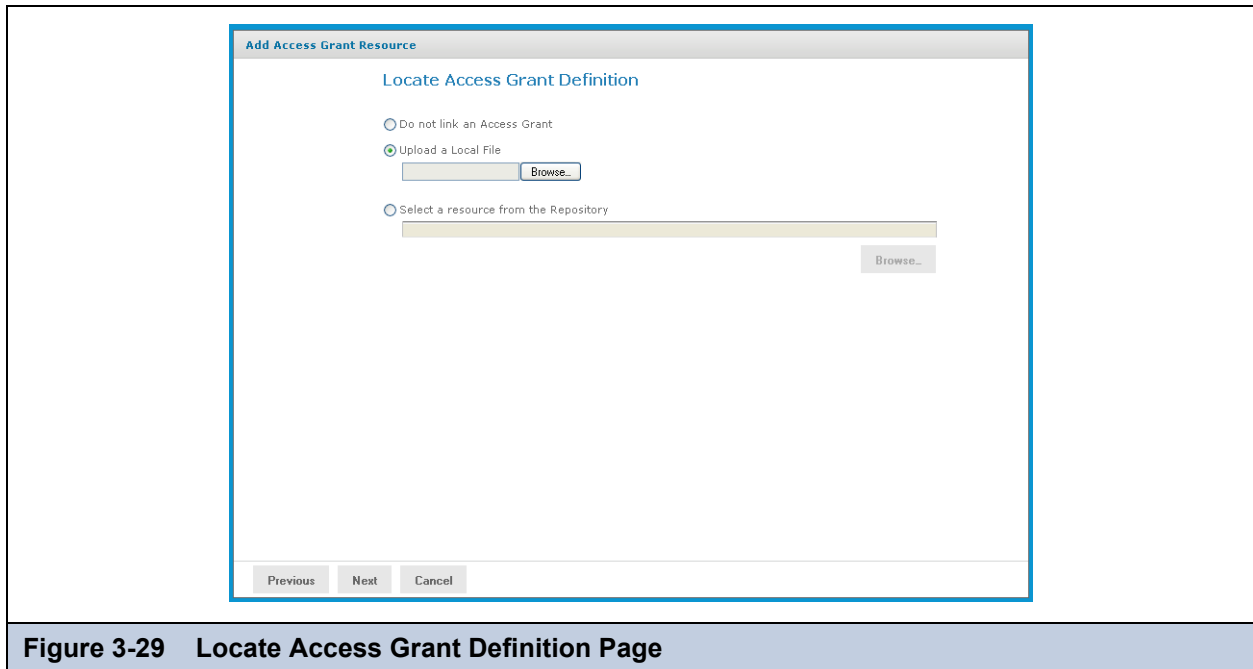


**Figure 3-28 Set Data Source Type and Properties Page**

If you chose to define a new data source, the fields are editable. Enter the requested information. For details, refer to [3.4.1, “Working with Data Sources,” on page 41](#). If you chose a data source from the repository, the fields aren’t editable.

12. Click **Next**.

The Locate Access Grant Definition page appears and prompts you to set the properties for the resource.



**Figure 3-29 Locate Access Grant Definition Page**



13. Click one of the following:
- **Do not link an Access Grant** if you don't need to apply data security. Then skip to step [step 16](#).
  - **Upload a Local File** to select a file from your local computer. Then click **Browse**, navigate to select the file you want, and click **Select**.
  - **Select a resource from the Repository** to select an existing schema. Then click **Browse**, navigate to select the schema, and click **Select**.
14. Click **Next**.  
If you chose to secure the view, the Access Grant Resource page appears.

**Figure 3-30 Access Grant Resource Page**

15. If you chose to upload a new AGXML file, the fields are editable. Enter the requested information. For details, refer to [3.4.6.3, “Uploading an Access Grant Schema,” on page 62](#). If you chose a access grant file from the repository, the fields aren't editable.
16. Click **Next**.

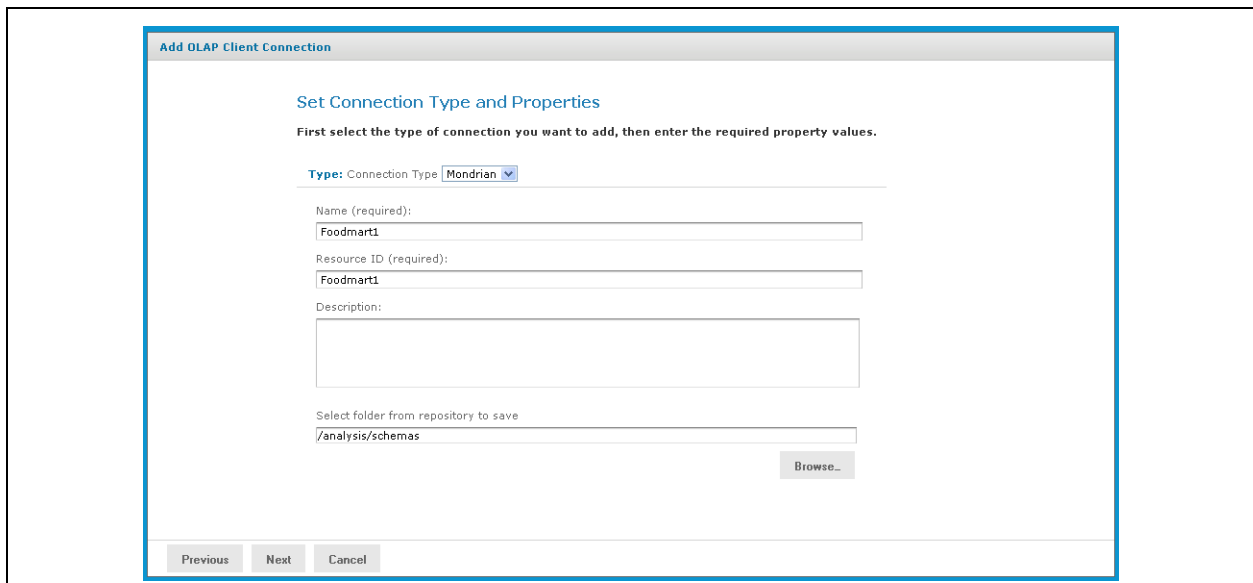
The Mondrian connection is added to the repository. Views can now reference this connection to expose data to your users. For information on creating OLAP views, refer to [3.2, “Administering OLAP Views,” on page 20](#). For information of creating Ad Hoc views, refer to *JasperReports Server User Guide*.

### 3.4.3.2 Editing a Mondrian Connection

You can change the connection name, schema, data source, and access grant definition in a Mondrian connection.

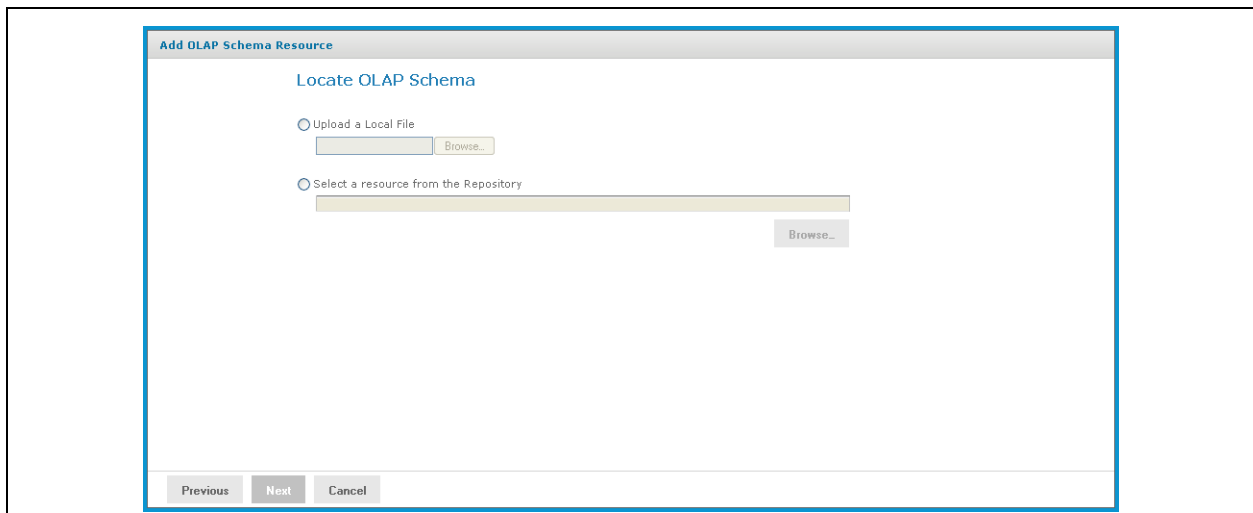
#### To edit a Mondrian connection:

1. In the **Search** field, enter the name (or partial name) of the Mondrian connection you want to edit, and click the Search icon. For example, enter `foodmart`.  
The repository appears and displays objects that match the text you entered.
2. Right-click the Mondrian connection you want to edit and click **Edit**.  
The Set Connection Type and Properties page appears with the fields populated.



**Figure 3-31 Set Connection Type and Properties Page**

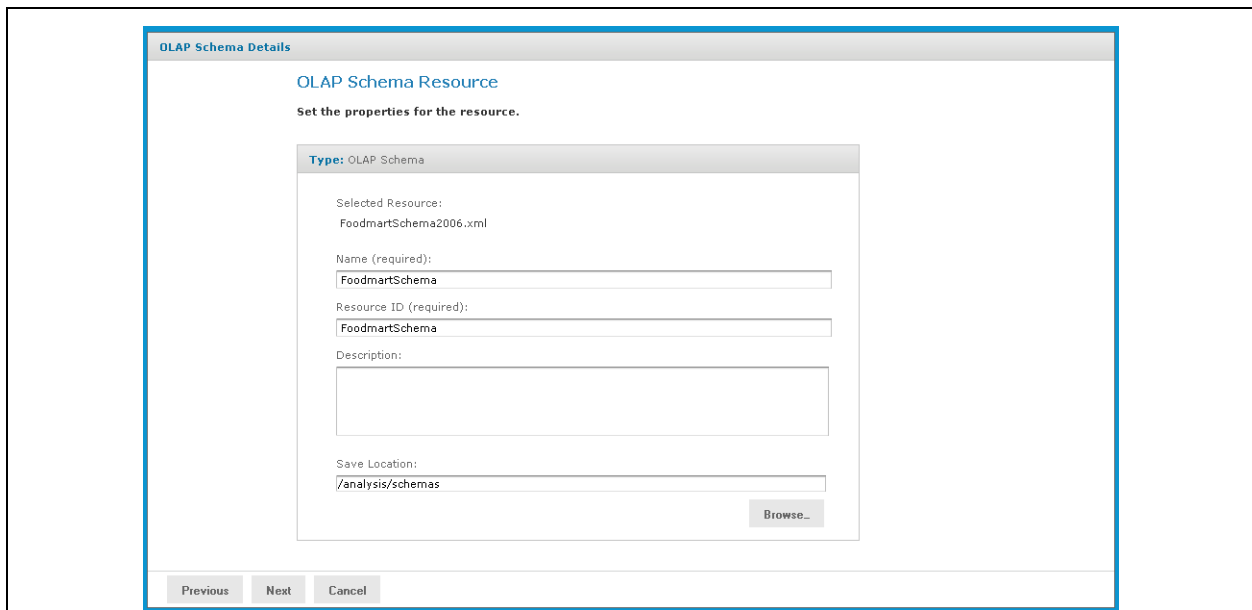
3. Change values as necessary and click **Next**.  
The Locate OLAP Schema page appears.



**Figure 3-32 Locate OLAP Schema Page**

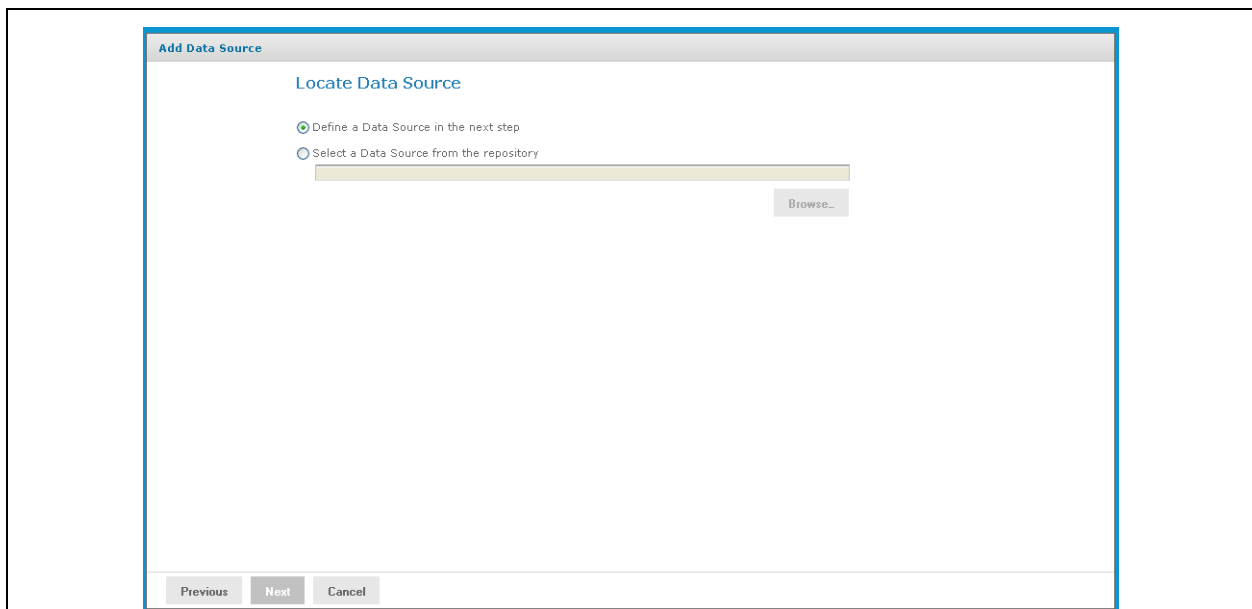
You can either accept the existing file or replace it. If you replace the file, you can either upload a new file or select one from the repository.

4. To accept the existing file, click **Next**.
5. To replace the file, either:
  - ♦ Click **Upload a Local File** and click **Browse** to upload a new schema from your local computer.
  - ♦ Click **Select a resource from the Repository**, click **Browse**, and navigate the repository to the schema you want to use. Then click **Select**.
6. Click **Next**.  
The OLAP Schema Resource page appears.



**Figure 3-33 OLAP Schema Resource**

7. If you chose to upload a new file, enter a name and description for it.  
If you accepted the existing file or selected one from the repository, the fields aren't editable.
8. Click **Next**.  
The Locate Data Source page appears.



**Figure 3-34 Locate the Data Source**

You can either accept the existing data source or replace it. If you replace it, you can either define a new data source or select one from the repository.

9. To accept the existing data source, click **Next**.
10. To replace the data source, either:
  - ♦ Click **Define a Data Source in the next step**.

- Click **Select a Data Source from the Repository**, click **Browse**, and navigate the repository to locate the data source you want to use. Then click **Select**.

11. Click **Next**.

If you accepted the existing data source, or if you selected a data source from the repository, that connection is used. Clicking **Next** displays the Locate Access Grant page.

If you chose to define a new data source, the Set Data Source Type and Properties page appears.

**Figure 3-35 Set Data Source Type and Properties Page**

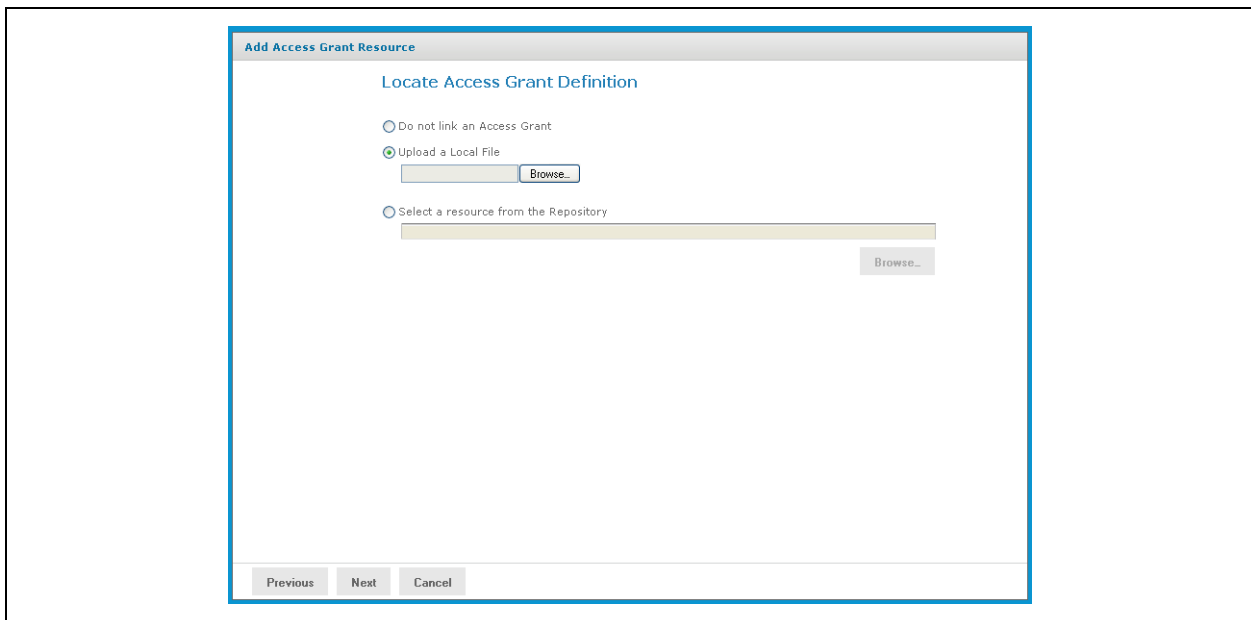
12. Enter the requested information, For details on defining data sources, refer to [3.4.1, “Working with Data Sources,” on page 41](#) and to the *JasperReports Server Administrator Guide*.



Test the new data source to ensure it works properly.

13. Click **Submit**.

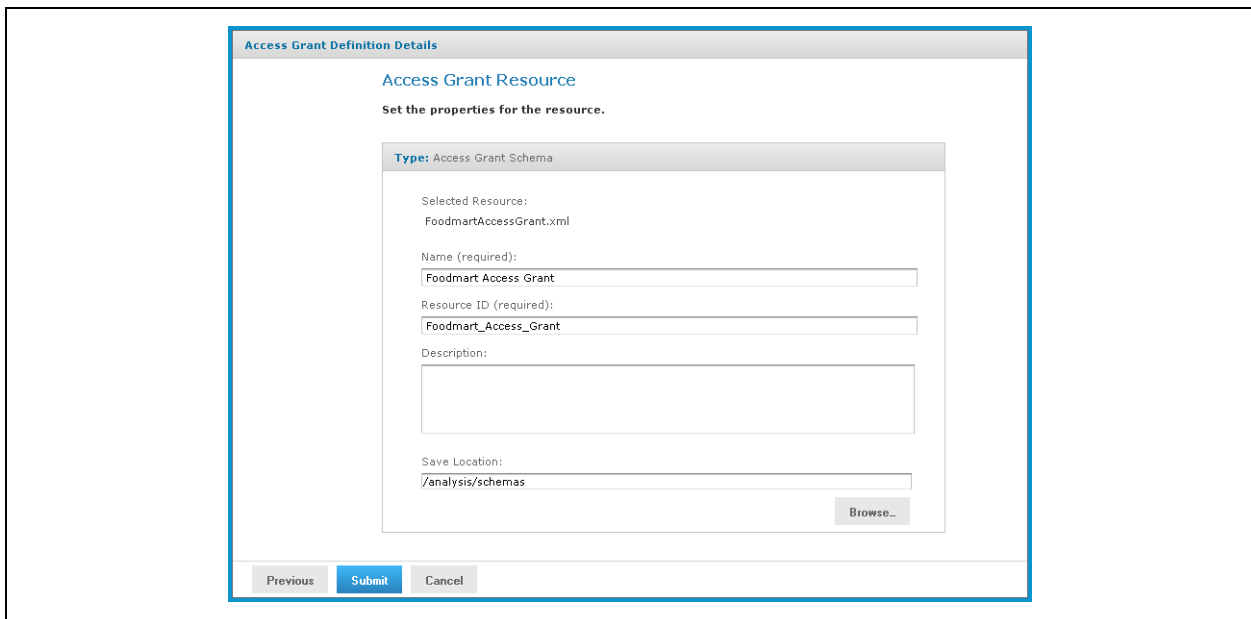
The Locate Access Grant Definition page appears.



**Figure 3-36 Locate Access Grant Definition Page**

14. Click one of the following options:
  - ♦ **Do not link an Access Grant.** Click **Next** and skip to [step 17](#).
  - ♦ **Upload a Local File.** Click **Browse** to select a different local file.
  - ♦ **Select a resource from the Repository.** Click **Browse** to select a different file in the repository.
15. Click **Next**.

If you chose to secure the data, the Access Grant Resource page appears.



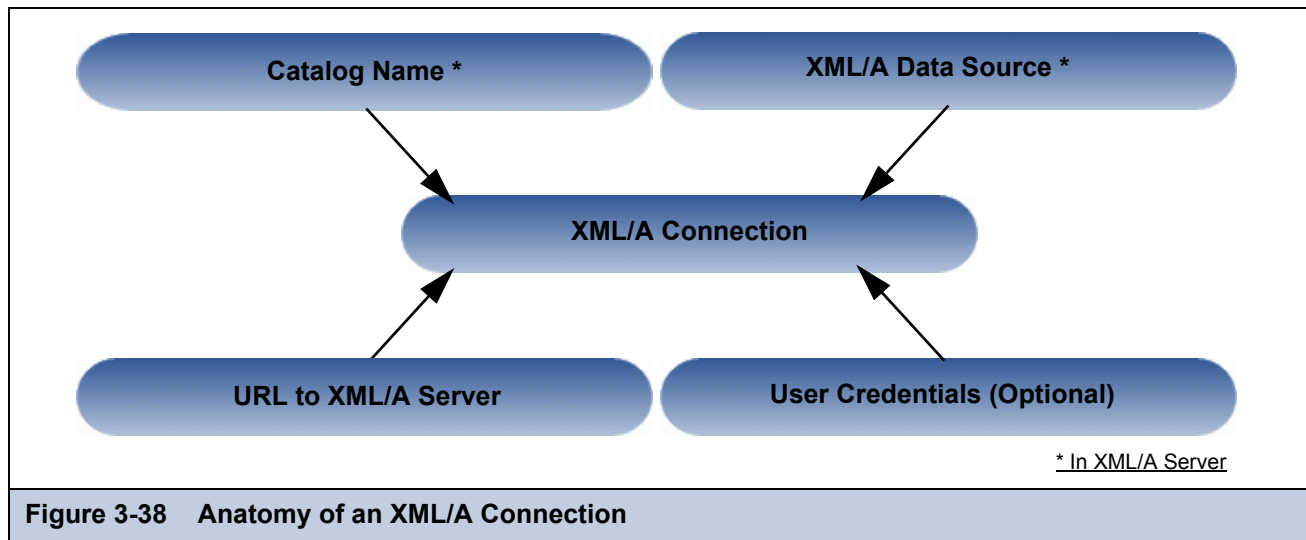
**Figure 3-37 Access Grant Resource Page**

16. If you upload a new AGXML file, enter the requested information. For details, refer to [3.4.6.3, “Uploading an Access Grant Schema,” on page 62](#). If you selected a resource from the repository, the fields aren’t editable.
17. Click **Submit**.

The updated connection appears in the repository.

### 3.4.4 Working with XML/A Connections

An XML/A connection describes how to connect to a remote XML/A provider, such as an XML/A source in another instance of JasperReports Server. In this case, the XML/A source points to a Mondrian connection in the remote server.



#### 3.4.4.1 Creating an XML/A Connection

To create an XML/A connection:

1. Click **View > Repository**.  
The repository page appears.
2. In the **Folders** panel, navigate to **Organization > Organization > Analysis Components > Analysis Connections**.
3. Right-click the folder and select **Add Resource > OLAP Client Connection**.  
The Set Connection Type and Properties page appears and prompts you to define a connection.
4. In the **Connection Type** drop-down, select XML/A Connection.  
The page refreshes and prompts you to define the XML/A connection.
5. Complete the fields:
  - General details include the name, label, and description of the connection.
  - Data options include the catalog, data source, and URI of the data that this connection should return. These details describe a data store in your remote XML/A provider.
  - Credentials are the name and password JasperSoft OLAP can pass to the remote XML/A provider to log in. If this user's password changes, the connection will fail. You can leave the **User Name** and **Password** fields blank, so the logged in user's credentials are passed to the remote server when the connection is accessed.



Your XML/A provider may be another JasperReports Server instance hosting Mondrian connections. For more information, refer to section [3.4.5, "Working with XML/A Sources,"](#) on page 56.

**Add OLAP Client Connection**

**Set Connection Type and Properties**

First select the type of connection you want to add, then enter the required property values.

Type: Connection Type **XML/A**

Name (required):

Resource ID (required):

Description:

Catalog (required):

Hint: Foodmart

Data Source (required):

Hint: Provider=Mondrian;DataSource=Foodmart;

URI (required):

Hint: http://localhost:8080/jasperserver-pro/xmla

User Name:

Password:

Select folder from repository to save  
/analysis/views

**Figure 3-39 Set Connection Type and Properties - XML/A Page**

6. Click **Submit**.

The new XML/A Connection appears in the repository.



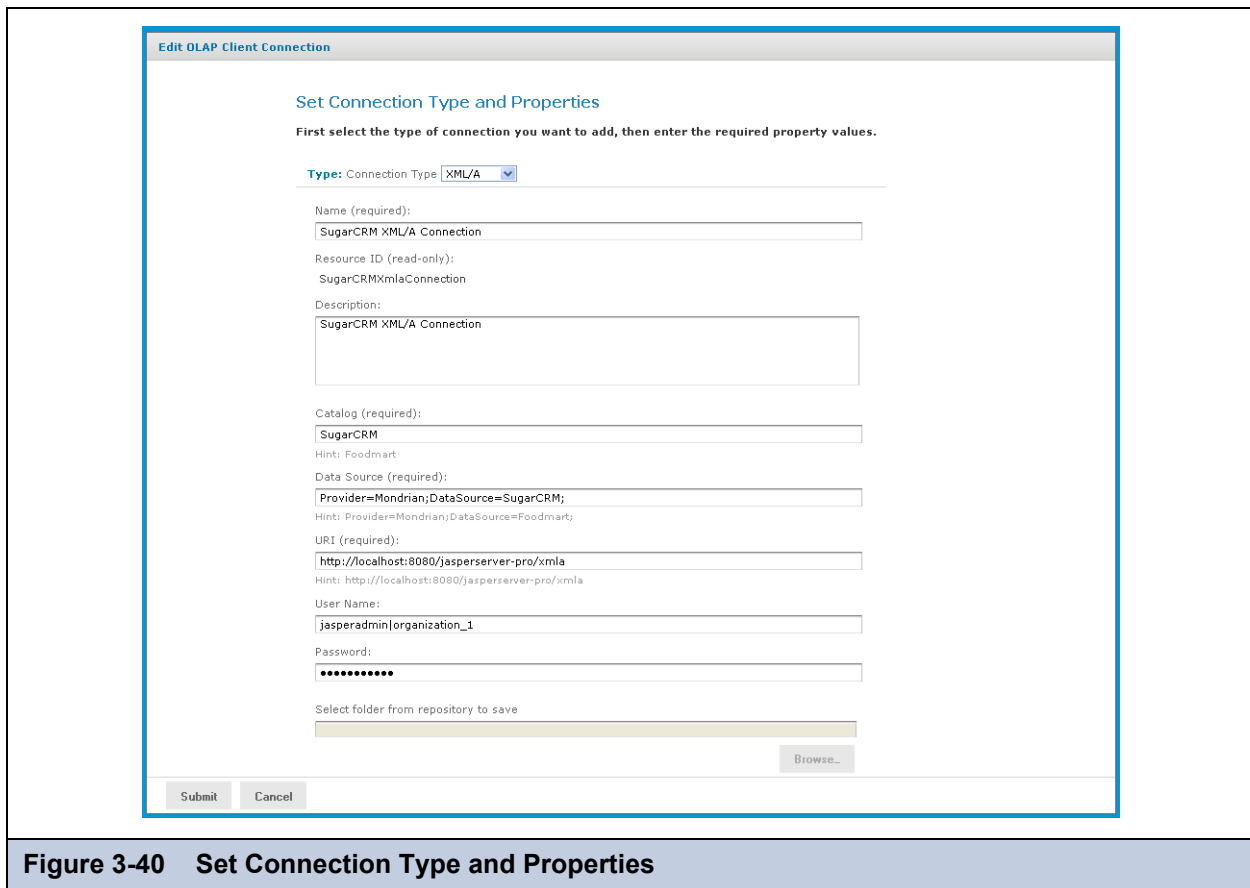
If you specify an instance of JasperReports Server as your XML/A provider (in the **URI** field), and it hosts more than one organization, specify the organization name in the **User Name** field, separated from the account name with the pipe character (|). For example, to connect as a user named `joeuser` in an organization named `organization_1`, specify `joeuser|organization_1` in the **User Name** field.

If you are logged in as superuser, you cannot use the Ad Hoc Editor to access data exposed through an XML/A connection. Instead, Jaspersoft recommends that you login as `jasperadmin` or a non-administrative user when creating Ad Hoc views from XML/A connections.

#### 3.4.4.2 Editing an XML/A Connection

**To edit an XML/A connection's naming and connection properties:**

1. In the **Search** field, enter the name (or partial name) of the connection you want to edit, and click the Search icon. For example, enter `sugar`.  
The search results appear, displaying objects that match the text you entered.
2. Right-click the XML/A connection you want to change and click **Edit**.  
The Set Connection Type and Properties page appears.



**Figure 3-40 Set Connection Type and Properties**

3. Make changes as necessary.
4. Click **Submit**.  
The edited XML/A Connection appears in the repository.

### 3.4.5 Working with XML/A Sources

This section describes the XML/A sources that XML/A connection access to retrieve data,, and includes:

- [Overview of XML/A Sources](#)
- [XML/A Security](#)
- [Creating an XML/A Source](#)
- [Editing an XML/A Source](#)

#### 3.4.5.1 Overview of XML/A Sources

XML/A connections point to Mondrian connections (by way of XML/A sources) in remote XML/A providers, allowing you to separate your front end processing from your back end processing when analyzing data in OLAP views.

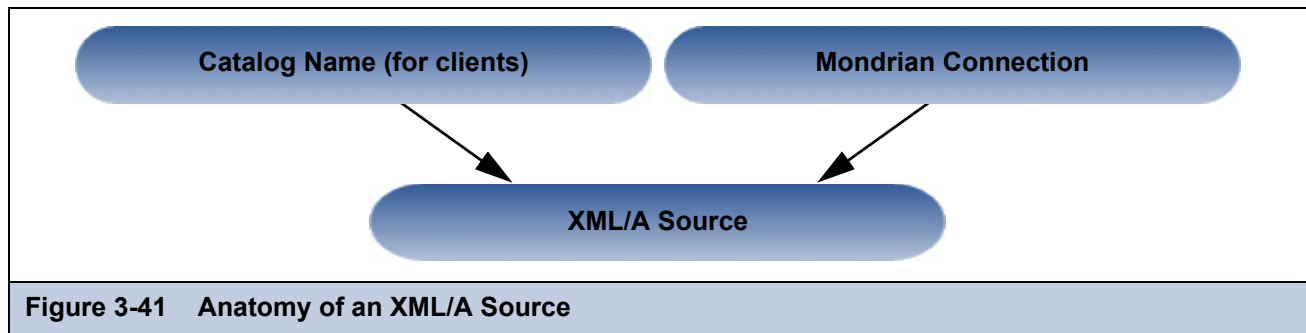
Jaspersoft OLAP can run as a XML/A server, allowing OLAP queries to be run from remote clients and query results returned to those clients over the XML/A web services protocol. The OLAP data for XML/A comes from Mondrian connections referenced by XML/A sources.

Jaspersoft OLAP XML/A connections provide a client view to XML/A servers, including Jaspersoft OLAP. You may want to run separate Jaspersoft OLAP servers, splitting the Jaspersoft OLAP XML/A clients from the XML/A servers. This client/server configuration allows load balancing, around-the-clock availability, and fail over in Jaspersoft OLAP environments. Other clients that can connect to Jaspersoft OLAP when it is run as a XML/A server include Excel Pivot Tables with the Jaspersoft ODBO Driver.

In order to allow Jaspersoft OLAP to run as a XML/A server, XML/A sources need to be defined in the repository. The list of XML/A sources a given client can connect to can be controlled by repository permissions, as XML/A clients must authenticate



via user name and password, and their access to the repository can be limited by permissions. In commercial editions of Jaspersoft OLAP, OLAP data level security can be used to filter OLAP query results based on the logged in user making the XML/A requests. [3.4.6.3, “Uploading an Access Grant Schema,” on page 62.](#)



### 3.4.5.2 XML/A Security

The default configuration uses HTTP Basic authentication to challenge requests for the /xmla path. If the client doesn't have a valid JasperReports Server user name and password in its XML/A connection source, the connection will fail, unless the user name and password are left blank; in this case, the credentials of the logged in user are passed by the client application to the remote server.



With HTTP Basic authentication, clear-text passwords are transmitted in the header of an HTTP request unless you have enabled JasperReports Server to use encrypted passwords. For more information, refer to the *JasperReports Server Administrator Guide*.

When creating an XML/A connection, you can either specify a user name and password for all users to share, or you can leave user name and password blank, so that the connection passes the current user's name and password to the server.

### 3.4.5.3 Creating an XML/A Source

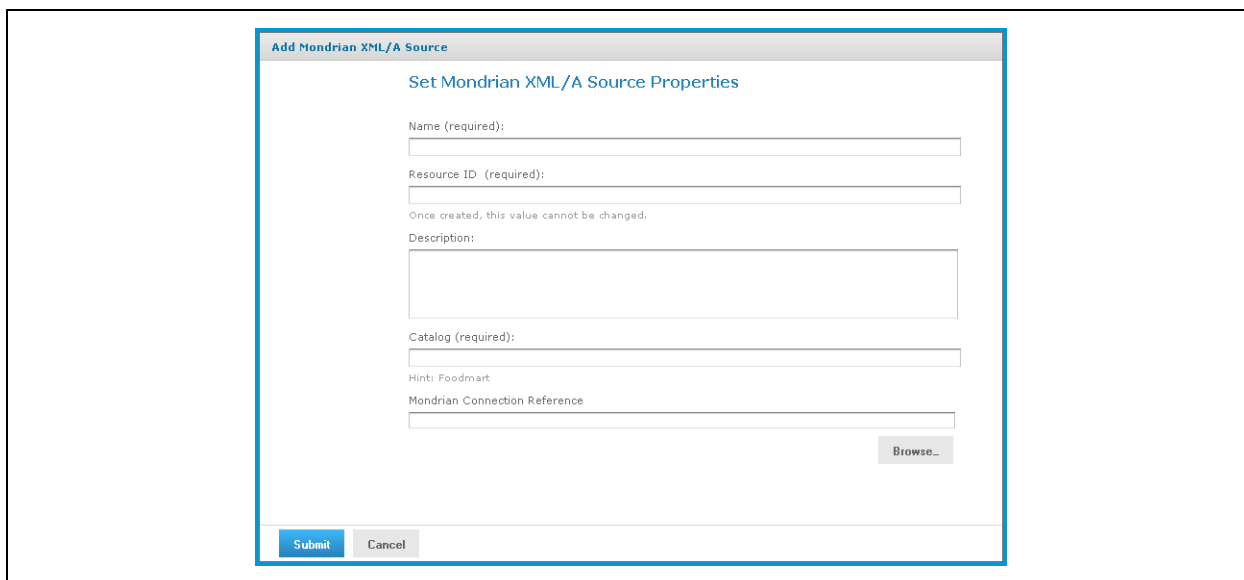
An XML/A source provides access to a single catalog (database schema) referenced by a Mondrian connection in a local instance of JasperReports Server. It defines a particular Mondrian connection in the repository that answers OLAP requests. The XML/A source is referenced by remote clients (such as an XML/A connection in a remote instance of JasperReports Server). The catalog name you specify uniquely defines the data that an XML/A client can retrieve from the source.

An XML/A source is also sometimes called an XML/A definition.

#### To add an XML/A source:

1. Click **View > Repository**.
2. In the Folder panel, navigate to **Organization > Analysis Components > xml/a**.
3. Right-click the folder and select **Add Resource > Mondrian XML/A Source** from the context-menu.

The Set Mondrian XML/A Source Properties page appears and prompts you to enter basic information.



**Figure 3-42 Set Mondrian XML/A Source Properties Page**

- Enter XML/A source information. For example:

|                                      |                                                                                                                                                     |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>                          | SugarCrmMondrianXmlaSource                                                                                                                          |
| <b>Resource ID</b>                   | Sugar CRM Mondrian XML/A Source                                                                                                                     |
| <b>Description</b>                   | Sugar CRM Mondrian XML/A Source                                                                                                                     |
| <b>Catalog</b>                       | The name of the database that contains the data to analyze.                                                                                         |
| <b>Mondrian Connection Reference</b> | The path and name of the connection this XML/A source references. If the XML/A provider is JasperReports Server, its value is the connection's URI. |

- Click **Submit** to save the XML/A source.

Once you create an XML/A source in and XML/A provider such as Jaspersoft OLAP, you must create an XML/A connection in your client application that points to it. For more information, see [3.5, “Performance Tuning,” on page 63](#).

#### 3.4.5.4 Editing an XML/A Source

You can change an XML/A source name, connection properties, and location in the repository.

##### To edit an XML/A source:

- In the **Search** field, enter the name (or partial name) of the schema you want to edit, and click the Search icon.  
For example, enter `food`.  
The search results appear, displaying objects that match the text you entered.
- Right-click an XML/A source, and click **Edit** on the context-menu.  
The Set Mondrian XML/A Source Properties page appears.

**Set Mondrian XML/A Source Properties**

Name (required):  
Foodmart Mondrian XMLA definition

Resource ID (read-only):  
FoodmartXmlaDefinition  
Once created, this value cannot be changed.

Description:  
Foodmart Mondrian XMLA definition

Catalog (required):  
Foodmart

Hint: Foodmart

Mondrian Connection Reference  
/organizations/organization\_1/analysis/connections/Foodmart

Required Catalog

Browse...

Submit Cancel

**Figure 3-43 Set Mondrian XML/A Source Properties Page**

3. Click each active field you want to change and enter the new data.
4. Click **Submit**.

The updated source appears in the repository.

### 3.4.6 Working with Access Grant Definitions



This section describes functionality that can be restricted by the software license for JasperReports Server. If you don't see some of the options described in this section, your license may prohibit you from using them. To find out what you're licensed to use, or to upgrade your license, contact Jaspersoft.

An access grant definition is an XML structure that specifies a user's access rights to different parts of the data defined by an OLAP schema. The access grant definition specifies access rights based on roles. Users with a given role have the access rights granted to that role. An access grant definition can also refer to a profile attribute table that control access through properties defined for specific users. This allows you to use variable substitution to create simple, flexible access grants.

This section includes:

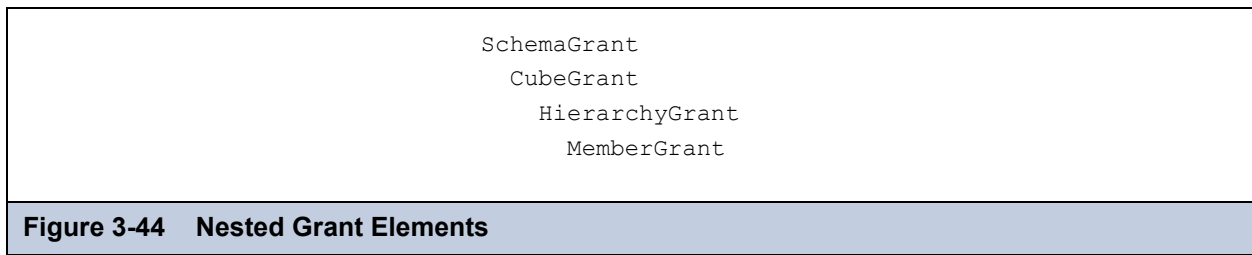
- [Overview of Data-level Access Using AGXML Schemas](#)
- [Sample Access Grant Definition](#)
- [Uploading an Access Grant Schema](#)
- [Working with the Profile Attribute Table](#)
- [Best Practices for Designing Access Control](#)

#### 3.4.6.1 Overview of Data-level Access Using AGXML Schemas

An access grant definition depends on elements of the OLAP schema associated with a connection. That OLAP schema must contain cubes with the same name and structure as appear in the access grant definition's CubeGrant elements. If you specify access grants down to the member level, the references to member values in the access grant definition must be in the database defined by the connection.

You create an access grant definition as an XML file with an AGXML file extension. To use it, import it into the repository, or upload it while creating an OLAP client connection, just as you can upload an OLAP schema.

The elements are arranged hierarchically, as shown in [Figure 3-44 on page 60](#). The grant definitions for a role lie within the following nested grant elements: SchemaGrant, CubeGrant, HierarchyGrant, and MemberGrant. SchemaGrant is the outermost element, and MemberGrant is innermost. In general, grants within an element override grants in containing elements.



The following table describes the attributes of the grant elements and lists possible attribute values:

| Grant Element  | Attribute   | Attribute Description                                                                                                                                                                                                                                                                                                                                                           | Values                                                                                    |
|----------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| SchemaGrant    | access      | Defines the default access for any object in the schema.                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>♦ all</li> <li>♦ none</li> </ul>                   |
| CubeGrant      | access      | Defines the default access to hierarchies within the cube specified by its cube attribute.<br><br>If the schema contains cubes for which no CubeGrant element appears, then the default access defined at the SchemaGrant level applies to those cubes.                                                                                                                         | <ul style="list-style-type: none"> <li>♦ all</li> <li>♦ none</li> </ul>                   |
| HierarchyGrant | access      | Defines the role's access to the hierarchy specified by the <code>hierarchy</code> attribute. If <code>access = custom</code> , MemberGrant sub-elements define the role's access within the hierarchy.<br><br>If a cube contains hierarchies for which no HierarchyGrant element appears, then the default access defined at the CubeGrant level applies to those hierarchies. | <ul style="list-style-type: none"> <li>♦ all</li> <li>♦ none</li> <li>♦ custom</li> </ul> |
|                | topLevel    | Defines the segment of the hierarchy that users with the given role can see. They can see everything between and including the endpoints. Nothing in an enclosed MemberGrant element can override the <code>topLevel</code> and <code>bottomLevel</code> attributes.                                                                                                            | (varies)                                                                                  |
|                | bottomLevel |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                           |
| MemberGrant    | member      | Specifies the top level of the hierarchy defined by the enclosing HierarchyGrant element to which the MemberGrant's <code>access</code> attribute applies. For example, if the member value is <code>[Store].[USA].[CA]</code> , the top level to which the <code>access</code> attribute applies is California in the Store hierarchy.                                         | (varies)                                                                                  |
|                | access      | Defines everything including or below the level specified by the member attribute, except that it cannot grant access to anything outside the segment defined by the HierarchyGrant attributes <code>topLevel</code> and <code>bottomLevel</code> .                                                                                                                             | <ul style="list-style-type: none"> <li>♦ all</li> <li>♦ none</li> </ul>                   |

The `topLevel` and `bottomLevel` attributes use a dot notation to specify a level in the hierarchy. In the example in [3.4.6.2, "Sample Access Grant Definition," on page 61](#), the `topLevel` attribute for the Store hierarchy has the value `[Store].[Store.Country]`. The `[Store]` designates the Store hierarchy. The `[Store.Country]` designates the Country level of the Store hierarchy.

You can use substitution variables in the grant expressions that specify the values of the `topLevel`, `bottomLevel`, and `member` attributes. The example in [3.4.6.2, "Sample Access Grant Definition," on page 61](#) includes variable substitution.

Jaspersoft OLAP applies grants in the order that you define them. For example, if you grant access to USA and then deny access to Oregon, an affected user cannot see Oregon or any of its children (for example, Portland). But if you deny access to Oregon and then grant access to USA, the user can see Oregon and all of its children.

Granting access to a member also grants access to the levels above it, except that the grant cannot override the HierarchyGrant's `topLevel` attribute. For example, if you deny access to USA and then grant access to California, an affected user can see California and USA, but no other states. If the data includes USA totals, they will be based on data from all states.

You can test access grant definitions by creating users with various roles and logging in as them. For more information on roles, users, and the **Log in As** feature, refer to the *JasperReports Server Administrator Guide*. The *Jaspersoft OLAP Ultimate Guide* also includes a detailed implementation example.



Names of roles, users, hierarchical levels, and profile attributes are all case-sensitive in access grant definitions.

### 3.4.6.2 Sample Access Grant Definition

The following sample access grant definition (called Foodmart Grant and found in the repository at /analysis/schemas) is used with the Foodmart Mondrian connection, (found in the repository at /analysis/connections):

```
<Roles>
 <Role name="StateManager">
 <SchemaGrant access="none">
 <CubeGrant cube="Sales" access="all">
 <HierarchyGrant hierarchy="[Store]"
 access="custom"
 topLevel="[Store].[Store Country]"
 >
 <MemberGrant member="[Store].[USA].[%{State}]"
 access="all"/>
 </HierarchyGrant>
 <HierarchyGrant hierarchy="[Customers]"
 access="custom"
 topLevel="[Customers].[State Province]"
 bottomLevel="[Customers].[City]"
 >
 <MemberGrant member="[Customers].[USA].[%{State}]"
 access="all"/>
 </HierarchyGrant>
 <HierarchyGrant hierarchy="[Gender]"
 access="none"/>
 </CubeGrant>
 </SchemaGrant>
 </Role>
</Roles>
```

This schema defines access permissions for a role called StateManager. In this example, the SchemaGrant element defines none as the default access for all objects in the schema. Users with the StateManager role cannot access anything, unless a lower level grant overrides the default.

The cube attribute has the value Sales, so the definition is for the Sales cube. The access attribute has the value all. This gives users with this role access to the entire Sales cube. Again, lower level grants can override this one.

HierarchyGrant elements define access to the Store, Customers, and Gender hierarchies. Users with this role cannot see any of the gender hierarchy. The other two HierarchyGrant elements define custom access to the Store and Customers hierarchies.

The member grants in this example use substitution variables like %{State} to represent substitutions from the profile attribute table. These particularize the grant to the specific user associated with the StateManager role. For example, suppose user John has StateManager as one of his roles. Also suppose that the profile attribute table has a row in which the values of the columns attribute and values are State, and CA,OR,WA. If you create a view for John, the line:

```
<MemberGrant member="[Customers].[USA].[%{State}]"
 access="all"/>
```

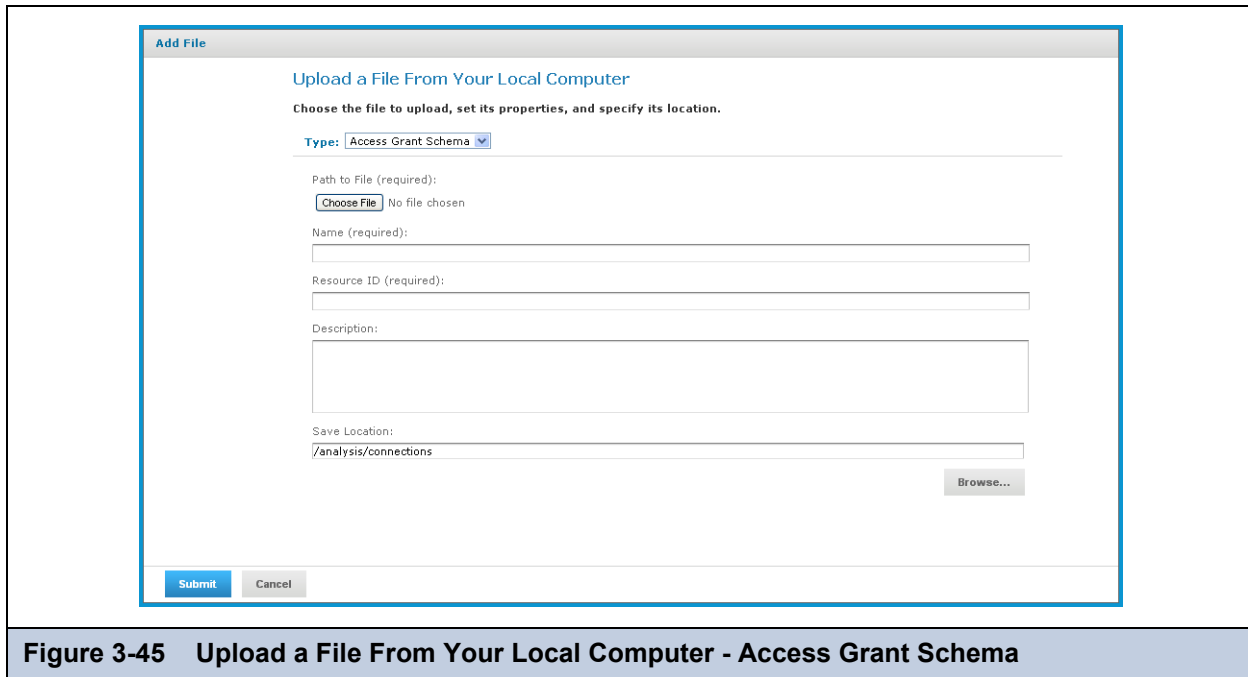
in the above example is interpreted to mean:

```
<MemberGrant member="[Customers].[USA].[CA,OR,WA]"
 access="all"/>
```

### 3.4.6.3 Uploading an Access Grant Schema

To upload an access grant schema (AGXML):

1. Click **View > Repository**.  
The repository page appears.
2. In the **Folders** panel, navigate to **Organization > Organization > Analysis Components > Analysis Schemas**.
3. Right-click the folder and select **Add Resource > File > Access Grant Schema**.  
The Upload a File From Your Local Computer page appears and prompts you to select a file and set its properties.



**Figure 3-45 Upload a File From Your Local Computer - Access Grant Schema**

4. Under **Path to File**, click **Choose File** and locate the access grant schema you want to add.
5. Enter a name and description for the schema.  
The **Resource ID** is auto-generated as you type in the **Name** field. You can change the ID if necessary.
6. To select a different folder to hold the schema, click **Browse** next to the **Save Location** field and navigate to the location in the repository where you want the file to reside.
7. Click **Submit**.

The new file appears in the repository.

### 3.4.6.4 Working with the Profile Attribute Table

Profile attributes are defined in a table in the repository database. The Jaspersoft OLAP user interface does not provide access to the profile attribute table. To query or update this table, you must run SQL statements against your JasperReports Server repository database. For more information on working with profile attributes, refer to the *JasperReports Server Ultimate Guide*. For a detailed example of data-level security, including a complete example of cube security based on profile attributes and roles, refer to the *Jaspersoft OLAP Ultimate Guide*.

### 3.4.6.5 Best Practices for Designing Access Control

Best practices for designing access control will emerge as you gain experience with this feature. Here are some suggestions to get you started:

- Review the detailed implementation example found in the *Jaspersoft OLAP Ultimate Guide* to understand the entire implementation process.
- Start with a clear description of the requirements before writing XML.
- Determine the different roles played by users of your application, and assign specific roles to each user.

- Create a hierarchy in each cube that corresponds in a one-to-one way with the different levels of access. That is, make a hierarchical level that corresponds to a user role. Defining the access control requirements before building the schema is much easier than adding access control after designing the schema.
- Build your access control definition iteratively. Start with the smallest definition that you can test. When it works properly, add and test additional increments until you have a complete definition.
- Use an XML editor to help you format access grants properly.

## 3.5 Performance Tuning

For a simple application with a relatively small dataset for which performance is not critical, (for example, a small intranet application or developer environment), the simplest server configuration is to run a single application server that connects to a local database, which contains both the data being analyzed (that is, the operational data store) and the JasperReports Server repository database. However, this configuration doesn't perform under a large load. This section describes steps you can take to improve performance for larger implementations and data sets.

For larger analysis applications, the ROLAP database is often a performance bottleneck. In this case, dedicate a computer to host the ROLAP database, and configure JasperReports Server to access it. The database and its host should be optimized for disk read and write. This separation of the application from the data is sufficient for many implementations.

To improve performance further, separate the Jaspersoft OLAP user interface from other elements. Inside Jaspersoft OLAP, the application that visualizes your results and provides navigation (JPivot) competes for resources with the analysis engine (Mondrian). To separate these processing resources, run two different instances of Jaspersoft OLAP: one that handles JPivot's tasks, and another that handles Mondrian's. The former instance is called the XML/A client; the latter is called the XML/A provider (or XML/A server). In the XML/A provider, define Mondrian connections that point to your operational data store. Then define XML/A connections in the XML/A client that point to Mondrian connections in the XML/A provider.

In this configuration, your users connect to the XML/A client, which sends XML/A requests to the XML/A provider, which in turn connects to the database (using a Mondrian connection) to retrieve the results; it returns the results to the XML/A client. The XML/A client then provides visualization and navigation for your end users.

In this configuration, Mondrian and JPivot don't compete for resources, and performance in large implementations is improved. For more information, see [3.4.4, “Working with XML/A Connections,” on page 54](#) and [3.4.5, “Working with XML/A Sources,” on page 56](#).

## 3.6 Troubleshooting Jaspersoft OLAP

This section describes some issues you may encounter once Jaspersoft OLAP is installed. For troubleshooting instructions regarding installation, refer to the *JasperReports Server Installation Guide*. For troubleshooting instructions regarding JasperReports Server, refer to the *JasperReports Server Administrator Guide*.

This section describes:

- [Logging](#)
- [Drill-through Behavior for Dimensions with Parent-child Hierarchies](#)
- [XML/A-based Sample Views and Reports Fail](#)
- [404 Error When WebLogic Hosts Jaspersoft OLAP](#)

### 3.6.1 Logging

Jaspersoft OLAP logging is controlled through log4j settings. log4j's statement logging occurs in the `mondrian.mdx` and `mondrian.sql` log4j categories. These categories log the statements and how long they ran. The SQL log also records the number of results returned in the result set.

To log your MDX and SQL queries, edit the `/WEB-INF/log4j.properties` file and uncomment these lines:

```
#log4j.logger.mondrian.mdx=debug, jasperanalysis
#log4j.logger.mondrian.sql=debug, jasperanalysis
```

To log all possible Mondrian debugging information, add this line to the `log4j.properties` file:

```
log4j.logger.mondrian=debug
```

Adding this property also ensures that Jaspersoft OLAP logs all SQL and MDX queries.

To log the SQL generated when users drill-through to the underlying transactional data, add this line to the `log4j.properties` file:

```
log4j.logger.jasperanalysis.drillthroughSQL=DEBUG, jasperanalysis
```



You can also use JasperReports Server's audit Domains and reports to log user activity. For more information, refer to the *JasperReports Server Administrator Guide*.

### 3.6.2 Drill-through Behavior for Dimensions with Parent-child Hierarchies

When a user drills through an aggregated value in their OLAP data, JasperReports Server returns measure information for that member and for all of the members below it, with the notable exception of dimensions with parent-child hierarchies. Because of a defect in the underlying OLAP engine, drill-through for dimensions with parent-child hierarchies behaves unexpectedly. The behavior varies, depending on whether you access the data through Ad Hoc views or Jaspersoft OLAP views:

- In the Ad Hoc Editor, drill-through is prevented. When a crosstab includes a dimension with parent-child hierarchy, and a user clicks the drill-through link, the server returns a message indicating that drill-through is disabled.
- In Jaspersoft OLAP, drill-through returns measures for the current member, but not for members below it in the parent-child hierarchy. Since the data that is returned is partial, it isn't reliable.

Because of this issue, Jaspersoft recommends that you avoid using parent-child hierarchies in your dimensions. If you must use parent-child hierarchies, Jaspersoft recommends that you access such dimensions only through Ad Hoc views.

For more information about Ad Hoc views, refer to the *JasperReports Server User Guide*. For more information about the underlying issue, see Mondrian's issue tracker (<http://jira.pentaho.com/browse/MONDRIAN-388>).

### 3.6.3 XML/A-based Sample Views and Reports Fail

Some of JasperReports Server's sample views and reports demonstrate the ability to retrieve data using the XML/A protocol by loading data from the sample Foodmart and Sugar XML/A connections. Because XML/A client connections have to specify a port number in their URI value, the port numbers are hard-coded to the default for Apache Tomcat (8080). If your application server uses a different port number, these reports and views fail. For example, if WebSphere hosts your (commercial edition) server, and it uses its default port number (9080), the sample views and reports based on XML/A connections fail. Another example where this failure occurs is if you used a non-default port number for Apache Tomcat.

To use these samples, you must edit the XML/A connections and enter the correct port number. For instructions, refer to the *JasperReports Server Installation Guide*.

Note that the XML/A connection samples are contrived, in that they retrieve data from the local server, when XML/A is meant to retrieve data from remote OLAP sources.



### 3.6.4 404 Error When WebLogic Hosts Jaspersoft OLAP



This section describes functionality that can be restricted by the software license for JasperReports Server. If you don't see some of the options described in this section, your license may prohibit you from using them. To find out what you're licensed to use, or to upgrade your license, contact Jaspersoft.

If Jaspersoft OLAP is hosted by WebLogic, you may encounter 404 errors when changing the data cube in your OLAP views. To fix the issue, you must update your WebLogic configuration and delete files from your file system. For more information, refer to the *JasperReports Server Installation Guide*.



## GLOSSARY

---

### **Ad Hoc Editor**

The interactive data explorer in JasperReports Server Professional and Enterprise editions. Starting from a predefined collection of fields, the Ad Hoc Editor lets you drag and drop fields, dimensions, and measures to explore data and create tables, charts, and crosstabs. These Ad Hoc views can be saved as reports.

### **Ad Hoc Report**

In previous versions of JasperReports Server, a report created through the Ad Hoc Editor. Such reports could be added to dashboards and be scheduled, but when edited in iReport, lost their grouping and sorting. In the current version, the Ad Hoc Editor is used to explore views which in turn can be saved as reports. Such reports can be edited in iReport and Jaspersoft Studio without loss, and can be scheduled and added to dashboards.

### **Ad Hoc View**

A view of data that is based on a Domain, Topic, or OLAP client connection. An Ad Hoc view can be a table, chart, or crosstab and is the entry point to analysis operations such as slice and dice, drill down, and drill through. Compare [OLAP View](#). You can save an Ad Hoc view as a report in order to edit it in the interactive viewer, schedule it, or add it to a dashboard.

### **Analysis View**

See [OLAP View](#).

### **Audit Archiving**

To prevent audit logs from growing too large to be easily accessed, the installer configures JasperReports Server to move current audit logs to an archive after a certain number of days, and to delete logs in the archive after a certain age. The archive is another table in the JasperReports Server's repository database.

### **Audit Domains**

A Domain that accesses audit data in the repository and lets administrators create Ad Hoc reports of server activity. There is one Domain for current audit logs and one for archived logs.

### **Audit Logging**

When auditing is enabled, audit logging is the active recording of who used JasperReports Server to do what when. The system installer can configure what activities to log, the amount of detail gathered, and when to archive the data. Audit logs are stored in the same private database that JasperReports Server uses to store the repository, but the data is only accessible through the audit Domains.

### **Auditing**

A feature of JasperReports Server Enterprise edition that records all server activity and allows administrators to view the data.

## Calculated Field

In a Domain, a field whose value is calculated from a user-written formula that may include any number of fields, operators, and constants. A calculated field is defined in the Domain Designer, and it becomes one of the items to which the Domain's security file and locale bundles can apply.

## CRM

Customer Relationship Management. The practice of managing every facet of a company's interactions with its clientele. CRM applications help businesses track and support their customers.

## CrossJoin

An MDX function that combines two or more dimensions into a single axis (column or row).

## Cube

The basis of most OLAP applications, a cube is a data structure that contains three or more dimensions that categorize the cube's quantitative data. When you navigate the data displayed in an OLAP view, you are exploring a cube.

## Custom Field

In the Ad Hoc Editor, a field that is created through menu items as a simple function of one or two available fields, including other custom fields. When a custom field becomes too complex or needs to be used in many reports, it is best to define it as a calculated field in a Domain.

## Dashboard

A collection of reports, input controls, graphics, labels, and web content displayed in a single, integrated view. Dashboards often present a high level view of your data, but input controls can parameterize the data to display. For example, you can narrow down the data to a specific date range. Embedded web content, such as other web-based applications or maps, make dashboards more interactive and functional.

## Derived Table

In a Domain, a derived table is defined by an additional query whose result becomes another set of items available in the Domain. For example, with a JDBC data source, you can write an SQL query that includes complex functions for selecting data. You can use the items in a derived table for other operations on the Domain, such as joining tables, defining a calculated field, or filtering. The items in a derived table can also be referenced in the Domain's security file and locale bundles.

## Data Policy

In JasperReports Server, a setting that determines how the server processes and caches data used by Ad Hoc reports. Select your data policies by clicking **Manage > Ad Hoc Settings**.

## Data Source

Defines the connection properties that JasperReports Server needs to access data. The server transmits queries to data sources and obtains datasets in return for use in filling reports and previewing Ad Hoc reports. JasperReports Server supports JDBC, JNDI, and Bean data sources; custom data sources can be defined as well.

## Dataset

A collection of data arranged in columns and rows. Datasets are equivalent to relational results sets and the `JRDataSource` type in the JasperReports Library.

## Datatype

In JasperReports Server, a datatype is used to characterize a value entered through an input control. A datatype must be of type text, number, date, or date-time. It can include constraints on the value of the input, for example maximum and minimum values. As such, a datatype in JasperReports Server is more structured than a datatype in most programming languages.

## Denormalize

A process for creating table joins that speeds up data retrieval at the cost of having duplicate row values between some columns.

**Dice**

An OLAP operation to select columns.

**Dimension**

A categorization of the data in a cube. For example, a cube that stores data about sales figures might include dimensions such as time, product, region, and customer's industry.

**Domain**

A virtual view of a data source that presents the data in business terms, allows for localization, and provides data-level security. A Domain is not a view of the database in relational terms, but it implements the same functionality within JasperReports Server. The design of a Domain specifies tables in the database, join clauses, calculated fields, display names, and default properties, all of which define items and sets of items for creating Ad Hoc reports.

**Domain Topic**

A Topic that is created from a Domain by the Data Chooser. A Domain Topic is based on the data source and items in a Domain, but it allows further filtering, user input, and selection of items. Unlike a JRXML-based Topic, a Domain Topic can be edited in JasperReports Server by users with the appropriate permissions.

**Drill**

To click on an element of an OLAP view to change the data that is displayed:

- Drill down. An OLAP operation that exposes more detailed information down the hierarchy levels by delving deeper into the hierarchy and updating the contents of the navigation table.
- Drill through. An OLAP operation that displays detailed transactional data for a given aggregate measure. Click a fact to open a new table beneath the main navigation table; the new table displays the low-level data that constitutes the data that was clicked.
- Drill up. An OLAP operation for returning the parent hierarchy level to view to summary information.

**Eclipse**

An open source Integrated Development Environment (IDE) for Java and other programming languages, such as C/C++.

**ETL**

Extract, Transform, Load. A process that retrieves data from transactional systems, and filters and aggregates the data to create a multidimensional database. Generally, ETL prepares the database that your reports will access. The JasperSoft ETL product lets you define and schedule ETL processes.

**Fact**

The specific value or aggregate value of a measure for a particular member of a dimension. Facts are typically numeric.

**Field**

A field is equivalent to a column in the relational database model. Fields originate in the structure of the data source, but you may define calculated fields in a Domain or custom fields in the Ad Hoc Editor. Any type of field, along with its display name and default formatting properties, is called an item and may be used in the Ad Hoc Editor.

**Frame**

A dashboard element that displays reports or custom URLs. Frames can be mapped to input controls if their content can accept parameters.

**Group**

In a report, a group is a set of data rows that have an identical value in a designated field.

- In a table, the value appears in a header and footer around the rows of the group, while the other fields appear as columns.
- In a chart, the field chosen to define the group becomes the independent variable on the X axis, while the other fields of each group are used to compute the dependent value on the Y axis.

**Hierarchy Level**

In an OLAP cube, a member of a dimension containing a group of members.

## Input Control

A button, check box, drop-down list, text field, or calendar icon that allows users to enter a value when running a report or viewing a dashboard that accepts input parameters. For JRXML reports, input controls and their associated datatypes must be defined as repository objects and explicitly associated with the report. For Domain-based reports that prompt for filter values, the input controls are defined internally. When either type of report is used in a dashboard, its input controls are available to be added as special content.

## iReport Designer

An open source tool for graphically designing reports that leverage all features of the JasperReports Library. The Jaspersoft iReport Designer lets you drag and drop fields, charts, and sub-reports onto a canvas, and also define parameters or expressions for each object to create pixel-perfect reports. You can generate the JRXML of the report directly in iReport, or upload it to JasperReports Server. iReport is implemented in NetBeans.

## Item

When designing a Domain or creating a Topic based on a Domain, an item is the representation of a database field or a calculated field along with its display name and formatting properties defined in the Domain. Items can be grouped in sets and are available for use in the creation of Ad Hoc reports.

## JasperReport

A combination of a report template and data that produces a complex document for viewing, printing, or archiving information. In the server, a JasperReport references other resources in the repository:

- The report template (in the form of a JRXML file)
- Information about the data source that supplies data for the report
- Any additional resources, such as images, fonts, and resource bundles referenced by the report template.

The collection of all the resources that are referenced in a JasperReport is sometimes called a report unit. End users usually see and interact with a JasperReport as a single resource in the repository, but report creators must define all of the components in the report unit.

## JasperReports Library

An embeddable, open source, Java API for generating a report, filling it with current data, drawing charts and tables, and exporting to any standard format (HTML, PDF, Excel, CSV, and others). JasperReports processes reports defined in JRXML, an open XML format that allows the report to contain expressions and logic to control report output based on run-time data.

## JasperReports Server

A commercial open source, server-based application that calls the JasperReports library to generate and share reports securely. JasperReports Server authenticates users and lets them upload, run, view, schedule, and send reports from a web browser. Commercial versions provide metadata layers, interactive report and dashboard creation, and enterprise features such as organizations and auditing.

## Jaspersoft ETL

A graphical tool for designing and implementing your data extraction, transforming, and loading (ETL) tasks. It provides hundreds of data source connectors to extract data from many relational and non-relational systems. Then, it schedules and performs data aggregation and integration into data marts or data warehouses that you use for reporting.

## Jaspersoft OLAP

A relational OLAP server integrated into JasperReports Server that performs data analysis with MDX queries. The product includes query builders and visualization clients that help users explore and make sense of multidimensional data. Jaspersoft OLAP also supports XML/A connections to remote servers.

## Jaspersoft Studio

An open source tool for graphically designing reports that leverage all features of the JasperReports Library. Jaspersoft Studio lets you drag and drop fields, charts, and sub-reports onto a canvas, and also define parameters or expressions for each object to create pixel-perfect reports. You can generate the JRXML of the report directly in JasperSoft Studio, or upload it to JasperReports Server. Jaspersoft Studio is implemented in Eclipse.

**JavaBean**

A reusable Java component that can be dropped into an application container to provide standard functionality.

**JDBC**

Java Database Connectivity. A standard interface that Java applications use to access databases.

**JNDI**

Java Naming and Directory Interface. A standard interface that Java applications use to access naming and directory services.

**Join Tree**

In Domains, a collection of joined tables from the actual data source. A join is the relational operation that associates the rows of one table with the rows of another table based on a common value in given field of each table. Only the fields in a same join tree or calculated from the fields in a same join tree may appear together in a report.

**JPivot**

An open source graphical user interface for OLAP operations. For more information, visit <http://jpivot.sourceforge.net/>.

**JRXML**

An XML file format for saving and sharing reports created for the JasperReports Library and the applications that use it, such as iReport Designer and JasperReports Server. JRXML is an open format that uses the XML standard to define precisely all the structure and configuration of a report.

**MDX**

Multidimensional Expression Language. A language for querying multidimensional objects, such as OLAP (On Line Analytical Processing) cubes, and returning cube data for analytical processing. An MDX query is the query that determines the data displayed in an OLAP view.

**Measure**

Depending on the context:

- In a report, a formula that calculates the values displayed in a table's columns, a crosstab's data values, or a chart's dependent variable (such as the slices in a pie).
- In an OLAP view, a formula that calculates the facts that constitute the quantitative data in a cube.

**Mondrian**

A Java-based, open source multidimensional database application.

**Mondrian Connection**

An OLAP client connection that consists of an OLAP schema and a data source. OLAP client connections populate OLAP views.

**Mondrian Schema Editor**

An open source Eclipse plug-in for creating Mondrian OLAP schemas.

**Mondrian XML/A Source**

A server-side XML/A source definition of a remote client-side XML/A connection used to populate an OLAP view using the XML/A standard.

**MySQL**

An open source relational database management system. For information, visit <http://www.mysql.com/>.

**Navigation Table**

The main table in an OLAP view that displays measures and dimensions as columns and rows.

## ODBO Connect

Jaspersoft ODBO Connect enables Microsoft Excel 2003 and 2007 Pivot Tables to work with Jaspersoft OLAP and other OLAP servers that support the XML/A protocol. After setting up the Jaspersoft ODBO data source, business analysts can use Excel Pivot Tables as a front-end for OLAP analysis.

## OLAP

On Line Analytical Processing. Provides multidimensional views of data that help users analyze current and past performance and model future scenarios.

## OLAP Client Connection

A definition for retrieving data to populate an OLAP view. An OLAP client connection is either a direct Java connection (Mondrian connection) or an XML-based API connection (XML/A connection).

## OLAP Schema

A metadata definition of a multidimensional database. In Jaspersoft OLAP, schemas are stored in the repository as XML file resources.

## OLAP View

Also called an analysis view. A view of multidimensional data that is based on an OLAP client connection and an MDX query. Unlike Ad Hoc views, you can directly edit an OLAP view's MDX query to change the data and the way they are displayed. An OLAP view is the entry point for advanced analysis users who want to write their own queries. Compare [Ad Hoc View](#).

## Organization

A set of users that share folders and resources in the repository. An organization has its own user accounts, roles, and root folder in the repository to securely isolate it from other organizations that may be hosted on the same instance of JasperReports Server.

## Organization Admin

Also called the organization administrator. A user in an organization with the privileges to manage the organization's user accounts and roles, repository permissions, and repository content. An organization admin can also create suborganizations and manage all of their accounts, roles, and repository objects. The default organization admin in each organization is the `jasperadmin` account.


## Outlier

A fact that seems incongruous when compared to other member's facts. For example, a very low sales figure or a very high number of helpdesk tickets. Such outliers may indicate a problem (or an important achievement) in your business. The analysis features of Jaspersoft OLAP excel at revealing outliers.

## Parameter

Named values that are passed to the engine at report-filling time to control the data returned or the appearance and formatting of the report. A report parameter is defined by its name and type. In JasperReports Server, parameters can be mapped to input controls that users can interact with.

## Pivot

To rotate a crosstab such that its row groups become column groups and its column groups become rows. In the Ad Hoc Editor, pivot a crosstab by clicking .

## Pivot Table

A table with two physical dimensions (for example, X and Y axis) for organizing information containing more than two logical dimensions (for example, PRODUCT, CUSTOMER, TIME, and LOCATION), such that each physical dimension is capable of representing one or more logical dimensions, where the values described by the dimensions are aggregated using a function such as SUM. Pivot tables are used in Jaspersoft OLAP.



## Properties

Settings associated with an object. The settings determine certain features of the object, such as its color and label. Properties are normally editable. In Java, properties can be set in files listing objects and their settings.

## Report

In casual usage, *report* may refer to:

- A JasperReport. See [JasperReport](#).
- The main JRXML in a JasperReport.
- The file generated when a JasperReport is scheduled. Such files are also called content resources or output files.
- The file generated when a JasperReport is run and then exported.
- In previous JasperReports Server versions, a report created in the Ad Hoc Editor. See [Ad Hoc Report](#).

## Repository

The tree structure of folders that contain all saved reports, dashboards, OLAP views, and resources. Users access the repository through the JasperReports Server web interface or through iReport. Applications can access the repository through the web service API. Administrators use the import and export utilities to back up the repository contents.

## Resource

In JasperReports Server, anything residing in the repository, such as an image, file, font, data source, Topic, Domain, report element, saved report, report output, dashboard, or OLAP view. Resources also include the folders in the repository. Administrators set user and role-based access permissions on repository resources to establish a security policy.

## Role

A security feature of JasperReports Server. Administrators create named roles, assign them to user accounts, and then set access permissions to repository objects based on those roles. Certain roles also determine what functionality and menu options are displayed to users in the JasperReports Server interface.

## Schema

A logical model that determines how data is stored. For example, the schema in a relational database is a description of the relationships between tables, views, and indexes. In Jaspersoft OLAP, an OLAP schema is the logical model of the data that appears in an OLAP view; they are uploaded to the repository as resources. For Domains, schemas are represented in XML design files.

## Schema Workbench

A graphical tool for easily designing OLAP schemas, data security schemas, and MDX queries. The resulting cube and query definitions can then be used in Jaspersoft OLAP to perform simple but powerful analysis of large quantities of multi-dimensional data stored in standard RDBMS systems.

## Set

In Domains and Domain Topics, a named collection of items grouped together for ease of use in the Ad Hoc Editor. A set can be based on the fields in a table or entirely defined by the Domain creator, but all items in a set must originate in the same join tree. The order of items in a set is preserved.

## Slice

An OLAP operation for filtering data rows.

## SQL

Structured Query Language. A standard language used to access and manipulate data and schemas in a relational database.

## System Admin

Also called the system administrator. A user who has unlimited access to manage all organizations, users, roles, repository permissions, and repository objects across the entire JasperReports Server instance. The system admin can create root-level organizations and manage all server settings. The default system admin is the `superuser` account.

## Topic

A JRXML file created externally and uploaded to JasperReports Server as a basis for Ad Hoc reports. Topics are created by business analysts to specify a data source and a list of fields with which business users can create reports in the Ad Hoc Editor. Topics are stored in the Ad Hoc Components folder of the repository and displayed when a user launches the Ad Hoc Editor.

## Transactional Data

Data that describe measurable aspects of an event, such as a retail transaction, relevant to your business. Transactional data are often stored in relational databases, with one row for each event and a table column or field for each measure.

## User

Depending on the context:

- A person who interacts with JasperReports Server through the web interface. There are generally three categories of users: administrators who install and configure JasperReports Server, database experts or business analysts who create data sources and Domains, and business users who create and view reports and dashboards.
- A user account that has an ID and password to enforce authentication. Both people and API calls accessing the server must provide the ID and password of a valid user account. Roles are assigned to user accounts to determine access to objects in the repository.

## View

Several meanings pertain to JasperReports Server:

- An Ad Hoc view. See [Ad Hoc View](#).
- An OLAP view. See [OLAP View](#).
- A database view. See [http://en.wikipedia.org/wiki/View\\_%28database%29](http://en.wikipedia.org/wiki/View_%28database%29).

## WCF

Web Component Framework. A low-level GUI component of JPivot. For more information, see <http://jpivot.sourceforge.net/wcf/index.html>.

## Web Services

A SOAP (Simple Object Access Protocol) API that enables applications to access certain features of JasperReports Server. The features include repository, scheduling and user administration tasks.

## XML

eXtensible Markup language. A standard for defining, transferring, and interpreting data for use across any number of XML-enabled applications.

## XML/A

XML for Analysis. An XML standard that uses Simple Object Access protocol (SOAP) to access remote data sources. For more information, see <http://www.xmla.org/>

## XML/A Connection

A type of OLAP client connection that consists of Simple Object Access Protocol (SOAP) definitions used to access data on a remote server. OLAP client connections populate OLAP views.

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