



Jaspersoft for Azure User Guide

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Introduction

TIBCO JasperReports® Server builds on TIBCO JasperReports® Library 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 providing 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.

Note: *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 TIBCO Jaspersoft.*

The heart of the TIBCO 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 users interested in multi-dimensional modeling, we offer Jaspersoft® OLAP, which runs as part of the server. While the Ad Hoc Editor lets users create simple reports, more complex reports can be created outside of the server. You can either use Jaspersoft® Studio or manually write JRXML code to create a report that can be run on the server. We recommend that you use Jaspersoft Studio unless you have a thorough understanding of the JasperReports file structure.

You can use the following sources of information to learn about JasperReports Server:

- Our core documentation describes how to install, administer, and use JasperReports Server and Jaspersoft Studio. Core documentation is available as PDFs in the doc subdirectory of your JasperReports Server installation. You can also access PDF and HTML versions of these guides online from the [Documentation section](#) of the Jaspersoft Community website.
- Our Ultimate Guides document advanced features and configuration. They also include best practice recommendations and numerous examples. You can access PDF and HTML versions of these guides online from the [Documentation section](#) of the Jaspersoft Community website.
- The [Jaspersoft Community site](#) covers topics for developers, system administrators, business users, and data integration users.

- Our free samples, which are installed with JasperReports Library, Jaspersoft Studio, and JasperReports Server, are available and documented online. Please visit our [GitHub repository](#).
- If you have a subscription to our professional support offerings, please contact our Technical Support team when you have questions or run into difficulties. They're available on the web at and through email at <http://support.tibco.com> and js-support@tibco.com.

JasperReports Server is a component of both a community project and commercial offerings. Each integrates the standard features such as security, scheduling, a web services interface, and much more for running and sharing reports. Commercial editions provide additional features, including Ad Hoc views and reports, advanced charts, dashboards, Domains, auditing, and a multi-organization architecture for hosting large BI deployments.

Installation and Configuration

This document covers JasperSoft for Azure. To purchase annual subscription licenses, contact TIBCO JasperSoft Sales.

This chapter assumes you have basic knowledge of JasperReports Server. You can find JasperSoft's documentation on the JasperSoft Community Site: <http://community.jaspersoft.com/documentation>.

This chapter contains the following sections:

- [Prerequisites](#)
- [Subscribing from Azure Marketplace](#)

Prerequisites

You'll need a few things before you can install and run JasperSoft Business Intelligence on Azure:

- An Azure account. If you already have an account, [log into Azure](#). To create an Azure account, go to the [Azure portal](#), click the **Create Account** link, and follow the instructions.

Subscribing from Azure Marketplace

The JasperSoft listing on the Azure Marketplace offers JasperSoft Reporting and Analytics products as a subscription:

- TIBCO JasperSoft Reporting and Analytics for Azure (BYOL)

Subscribing to a JasperSoft project is a single process with multiple steps, which includes accepting the terms of use for both the Azure Marketplace and JasperSoft.

The Azure Marketplace product page shows the pricing information (BYOL), available instance types, and support information for the JasperSoft product.

Note: *Azure Instances are charged per hour or annually. In order to incur less costs for Azure machines, users often turn off the server when it's not in use. Also, note that when you stop your VM instance server, no one will have access to any reports or dashboards you have created until you restart the VM server.*

For more information, see [Launching JasperReports Server from Azure Marketplace](#).

Launching JasperReports Server from Azure Marketplace

This section describes requirements and steps for launching a Jaspersoft VM on the Azure Marketplace.

Jaspersoft offers BYOL (Bring Your Own License) VM on Azure. Instructions in this section ensure that the right VM size is selected for your Jaspersoft deployment.

Requirements for Single Instance BYOL VM

The following JasperReports Server features should be turned ON.

- **Chromium** - export for dashboards and reports
- **Diagnostic** - Diagnostic report should be present and enabled
- Password change enabled and force the user to change the password on login page
 - [Configuring-user-password-options](#)
 - .../WEB-INF/jasperserver-servlet.xml
 - property allowUserPasswordChange=true
 - passwordExpirationInDays=365

The following Multi Tenant configurations are recommended:

- Only root organization is present
- Superuser - activated and password auto generated at VM creation time
- All other users disabled in JasperReports Server
- Encryption - default settings

The following Sample Data is available:

- Foodmart and SugarCRM database populated on VM
- All standard sample repository resources deployed

IMPORTANT! On the **Azure Welcome Page** (BYOL only available), users should update their passwords on the *first* login:

- username: `superuser`
- password: `<generated>`

Other VM Requirements

For additional credentials required for logging into JRS, refer to the following location:

/home/jasperserver/bitnami_credentials

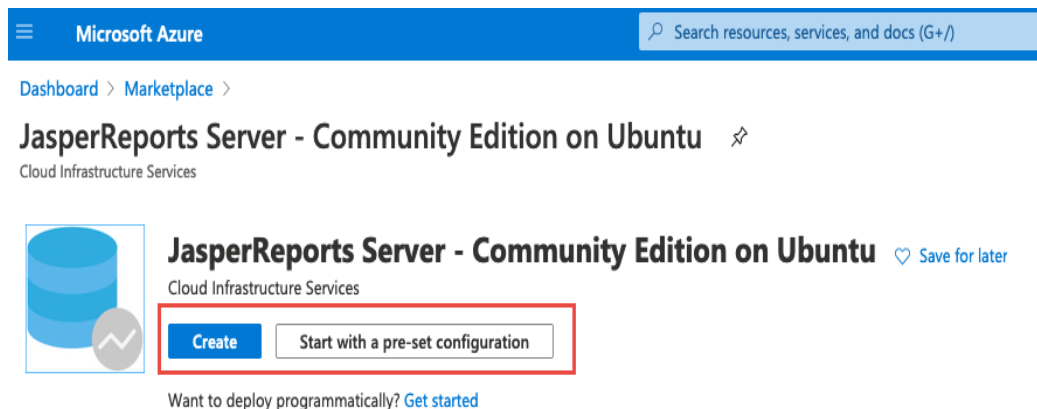
Launching Jaspersoft VM on Azure

Prerequisites

- Microsoft Azure Account. Don't have an Azure account? [Sign up here](#)
- [Certificate](#) will be required to connect to Azure SQL Databases for security. Don't have a Key Pair created? [Generate one](#)
- Existing Jaspersoft annual subscription (needed for BYOL)
- Recommended starting VM Size is 4VCPUs.

To launch the Jaspersoft VM from Azure Marketplace:

1. Start from Azure Marketplace.
First find Jaspersoft on the Azure Marketplace. Go directly to the Jaspersoft listings. Continue to the launch pages. Accept Terms.
 - a. Select **TIBCO Reporting and Analytics** for Azure.
 - b. On the TIBCO Reporting and Analytics screen, select **GET IT NOW** and click **Continue**.
 - c. Select one of these options to launch the VM.
 - Create
 - Start with a pre-set configuration



Selecting the **Create** initiates the **Create a Virtual Machine** wizard and **Start with a pre-set configuration** provides you to customize your VM.

- d. To start the pre-set configuration, click **Start with a pre-set configuration** button.
- e. On the **Choose recommended defaults that match your workload** page, select a workload environment.
 - Dev/Test
 - Production

- f. Select one of these workload types.
 - General Purpose(D-series)
 - Memory optimized(E-series)
 - Compute optimized(F-series)
 - g. After you select the workload environment and workload type, click **Continue to create a VM**.
2. Run the Installation process.
- a. On the **Create a Virtual Machine** wizard page, select a resources group (or click **Create new link** to create a resource group for your deployment - this will gather all the resources together in one folder).
 - b. Set a Virtual Machine name and pick a region to launch an instance of Jaspersoft for Azure.
 - c. Select VM Size - **4V CPUs with 16 GB RAM**.
 - d. Select either **SSH public key** or **Password** for authentication type. You can download the SSH public key at the end of the creation process, and for Password, enter username and password.
 - e. Enable HTTP and HTTPS ports. By default port 22 is selected, in addition, you need to select port 80 (http) and 443 (https) from the drop-down list in the Select inbound ports.
 - f. Click the **Disk** tab to set the OS disk type and select **Premium SSD**.
 - g. Click **Next: Review + create** button to go to Review + create tab. The Review + create page displays the summary of configuration you have made.
 - h. Click **Create** to generate the VM. It takes about 15 minutes for the instance to complete the build process, even though the Azure displays the instance has been generated.
 - i. When the installation is completed, go to your **Resources Group** and select the VM that was created. On the **VM Page**, find **Public IP address**, this is the Endpoint that you can log in to your new JasperReports Server installation.
Note: If Public IP address is being used and the Jaspersoft Welcome page does not appear, then the VM is still in process.
 - j. On the **Jaspersoft Welcome Screen**, register for Jaspersoft Studio license and support. Change your first time credentials on the **Login Page**.
3. Upload Your License (for BYOL).
- Upon obtaining a license from Jaspersoft, please reference [this article](#) to learn how to upload your Jaspersoft license.

Managing Your Installation

Installation directory:

```
/opt/jaspersoft/jasperreports-pro
```

License directory:

```
/opt/jaspersoft/tomcat/webapps/jasperserver-pro
```

Applying a License for Jaspersoft for Azure

Bringing your own SQL Server license through License Mobility, also referred to as BYOL, means using an existing SQL Server Volume License with Software Assurance in an Azure VM. A SQL Server VM using BYOL only charges for the cost of running the VM, not for SQL Server licensing, given that you have already acquired licenses and Software Assurance through a Volume Licensing program.

To use BYOL with a SQL Server VM, you must have a license for SQL Server Standard or Enterprise and Software Assurance, which is a required option through some volume licensing programs and an optional purchase with others.

To create an Azure VM running SQL Server 2017 with one of these bring-your-own-license images, see the VMs prefixed with "{BYOL}":

- [SQL Server 2017 Enterprise Azure VM](#)
- [SQL Server 2017 Standard Azure VM](#)

For more information on Azure licenses, contact [Azure support](#).

Upgrading Your Azure Instance or Jaspersoft Version

Updating your Azure instance or Jaspersoft version requires three main tasks:

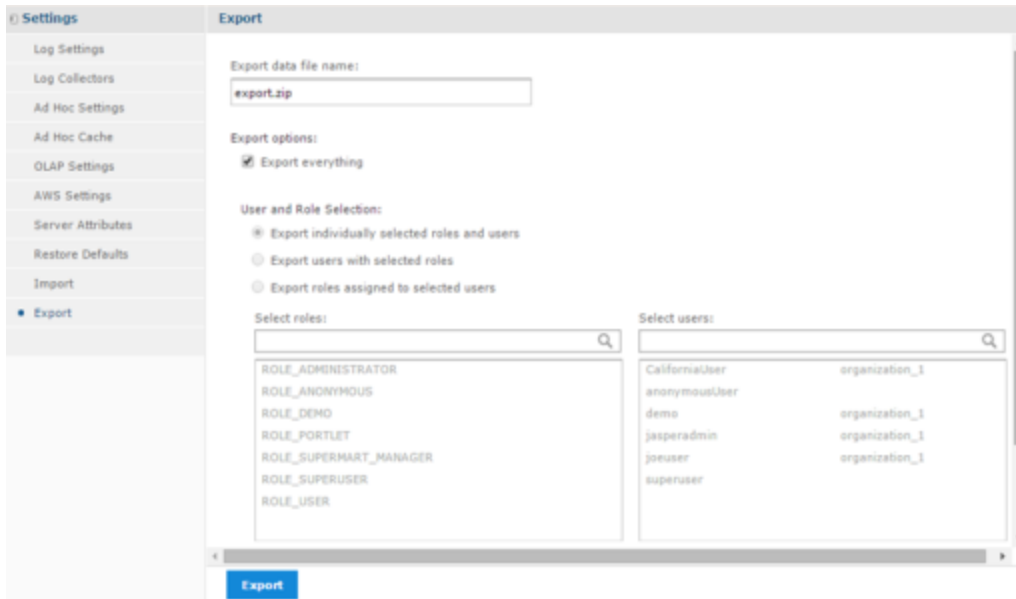
1. Export your repository.
2. Update the instance, to accommodate a different instance size and/or to move to a different version of JasperReports Server.
3. Import your repository into your new instance.

After the upgrade, you'll have to re-apply any customizations you made to the instance outside of the user interface.

Note: You must be logged in as *superuser* to upgrade.

To upgrade your Azure instance:

1. Navigate to **Manage > Server Settings**.
2. Click **Export** in the left column. The **Export** window appears.



3. Name your export data file and select the items to export. Select **Export everything** or select specific items.
4. Click the **Export** button. You'll see a message that your export succeeded, and your file will be saved to your default download location. If you are using a yearly subscription, you cannot run two instances on the same subscription.

Note: You will need to stop the current instance before creating the new one. From the **Azure portal**, select **Virtual machines** to see the status of all of your instances. Select the instance you want to shut down. Select **Stop** to shut down the **instance**.

Note: Using the command line `js-export` gives more options, such as generation of keys and passwords that can be used for importing back into JRS.

5. Back up your server's keystore by copying the `.jrsk` & `.jrsksp` files in the user's home directory.
Note: The properties of these files need to be the same, if needed.
6. Create a new instance that uses the latest version of Jaspersoft for Azure. For instructions on creating an instance, see [Creating a VM from .vhd file](#). You can also find more information on keystore files in the *Jaspersoft Security Guide*.
7. When a new VM is generated, it will create new keystore files. If you need to use the existing keystore files, make sure your original keys are available in the new server's keystore. You can either create the VM with a copy of the keystore, so that it uses the same keys as the original server, or you can create the VM with new keys and then add the original import-export key.
8. Log into your new instance as superuser.
9. Navigate to **Manage > Server Settings**.

10. Click **Import** in the left column. The **Import** window appears.

The screenshot shows the 'Import' window in JasperReports Server. On the left, a sidebar lists various settings categories, with 'Import' selected. The main content area is titled 'Import' and contains the following sections:

- Import data file:** A text input field containing 'export.zip' and a 'Browse...' button.
- Import-Export Key:** A group of radio buttons with the following options:
 - Server Key**: For your JasperReports Server only.
 - Legacy Key**: For all JasperReports Servers.
 - Key Value:** A text input field.
 - Stored Key:** A text input field with a 'Browse...' button.
- Import options:** A group of checkboxes:
 - Update**
 - Skip user updates**
 - Include audit events**
 - Include access events**
 - Include monitoring events**
 - Include server settings (settings take effect immediately)**
 - Include themes**

A blue **Import** button is located at the bottom of the main content area.

11. Click the **Choose File** button, and select the file you exported in Step 4.
12. Select your import options.
13. Click the **Import** button. You'll see a message telling you your import succeeded.
14. If you've customized your instance outside of the user interface, re-apply your changes now.

Note: Installing JasperReports Server automatically generates encryption keys that reside on the file system. These keys are stored in a dedicated TIBCO Jaspersoft keystore. Make sure this keystore is properly secured and backed up. For more information, refer to the *JasperReports Server Security Guide*.

Retrieving Logs

For Log Collection, run the following command:

```
/opt/jaspersoft/tomcat/logs/
```

Stopping and Restarting Tomcat

To stop Tomcat, run the following command:

```
sudo service tomcat stop/start
```

To restart Tomcat, run the following command:

```
sudo service tomcat start
```

Connecting to your Data with JasperReports Server using Azure Datasource

This section explains how to connect to your Azure data using Jaspersoft for Azure.

Follow the steps listed below to connect to Azure SQL Database.

For non-Azure data sources, see the JDBC/JNDI connections section below.

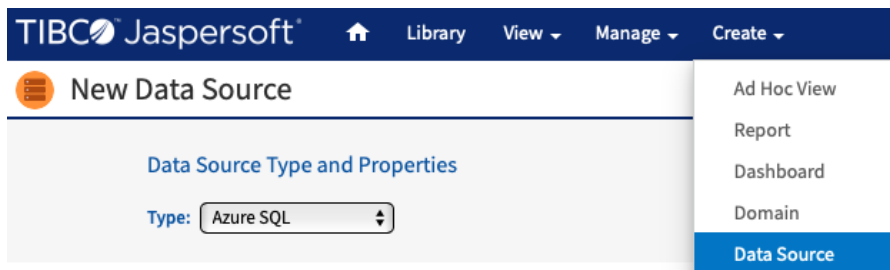
Prerequisites

- JasperReports Server is running
- You can login as superuser

Connect to Azure SQL Database

JasperReports Server can discover and connect to Azure SQL DataSource using the **Find My Azure Databases** feature.

1. From the JasperReports Server main menu, go to **Create > Data Source > Azure SQL** Data Source.



2. Use Azure Subscription and Certificate credentials.

The data source type should be set to **Azure SQL**. Enter your information in the **Azure Subscription Id**, **Certificate** and **Certificate Password** fields, then click the **Find My Azure Databases** button. If Azure subscription and certificate credentials are not available, see the [Additional Connection Possibilities](#) section.

Azure Settings

Azure Subscription Id (required):

Azure User Certificate (required):

Azure User Certificate Password (required):

Select an Azure Database

- ▼ jaspersample
 - master
 - sugarcrm

3. Enter Database connection information.

JasperReports Server is able to detect your Azure SQL Database data sources when you enter the Subscription credentials. It pre-populates the Server Name, Database Name to form the URL.

You will need to enter the database username and password. For security reasons, Azure does not store these credentials, so Jaspersoft cannot retrieve them.

Find My Azure Databases

▼ jaspersample

- master
- sugarcrm**

Select your database

Server Name (required):
jaspersample

Database Name (required):
sugarcrm

User Name (required):
jasperqa@jaspersample
username@servername

Password:
.....

Use Microsoft driver (NOT INSTALLED)

URL (required):
jdbc:tibcosoftware:sqlserver://jaspersample.database.windows.net:1433;databaseName=sugarcrm;Enc

Hint: jdbc:sqlserver://serverName.database.windows.net:1433;databaseName=mydb

Values you provide, Jaspersoft discovers the rest

4. Test the connection.

It is recommended to always test your connection before saving the Datasource.

Server Name (required):

Database Name (required):

User Name (required):

username@servername

Password:

Use Microsoft driver (NOT INSTALLED)

URL (required):

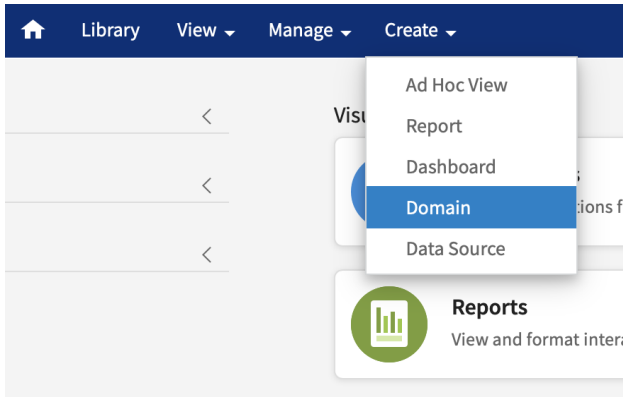
Hint: jdbc:sqlserver://servername.database.windows.net:1433;databaseName=mydb

✔ Connection passed

5. Create a Domain.

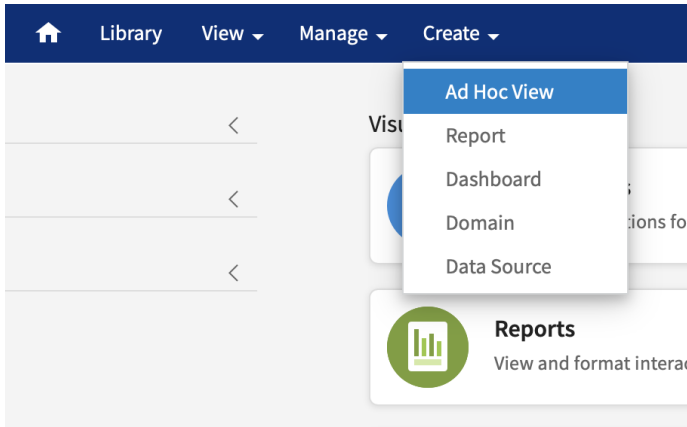
Jaspersoft's metadata layer is called "**Data Domains**". From the main menu, go to **Create > Domain**.

Follow the domain creation wizard to build a domain.



6. Analyze your data.

From the main menu, go to **Create > Ad Hoc View**. Find your newly created domain and use the ad hoc environment to begin analyzing your data.



7. Next steps.

Refer to the [Jaspersoft Online Documentation](#) for more details on creating domains, performing ad hoc analysis, and creating reports.

JDBC/JNDI Connections

Note: When using JDBC for data source connections, the user will be responsible for managing the Azure security groups and inbound/outbound rules to allow access from the Jaspersoft server to the data source.

When connecting to Azure, it is best to use the data source type "**Azure SQL**" to make configuration easier. If you prefer, JDBC connections may be used to connect to Azure SQL. To connect using JDBC, choose the data source type "**JDBC**". Enter all connection information and test. Alternatively, you can choose "**JNDI**" and refer to a data source defined in Apache Tomcat.

New Data Source

Data Source Type and Properties

Type:

JDBC Driver:

Host (required):

Port (required):

Database (required):

URL (required):

Hint: jdbc:postgresql://localhost:5432/mydb

Working with Jaspersoft Studio Professional

Jaspersoft Studio enables you to create sophisticated, pixel-perfect reports on the desktop and upload those reports to JasperReports Server on Azure. Jaspersoft Studio allows you to create sophisticated layouts containing charts, images, subreports, crosstabs, and more.

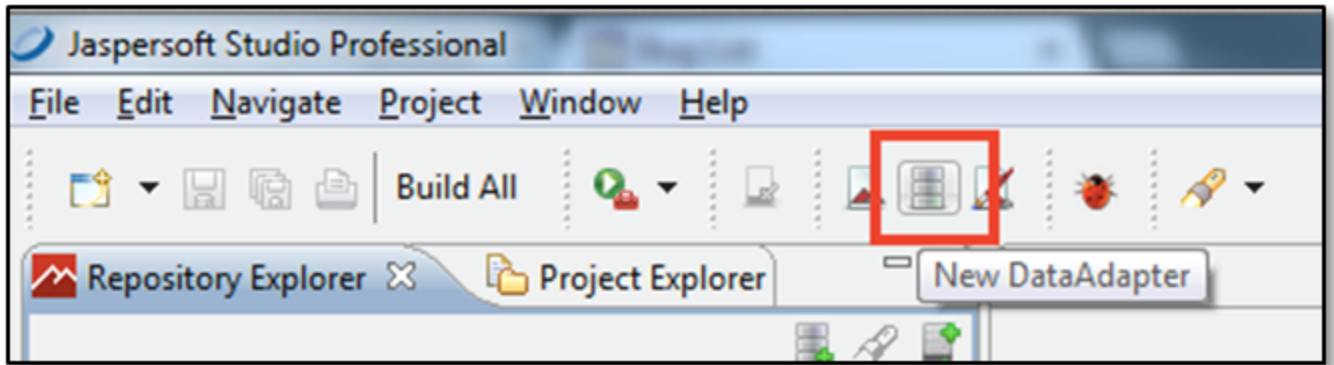
Downloading Jaspersoft Studio

Jaspersoft Studio is available as an Eclipse Rich Client Package (RCP), downloadable from the following location: <http://community.jaspersoft.com/project/jaspersoft-studio/releases>.

See the *Jaspersoft Studio User Guide* for instructions on how to install Jaspersoft Studio on your local machine and installing your license.

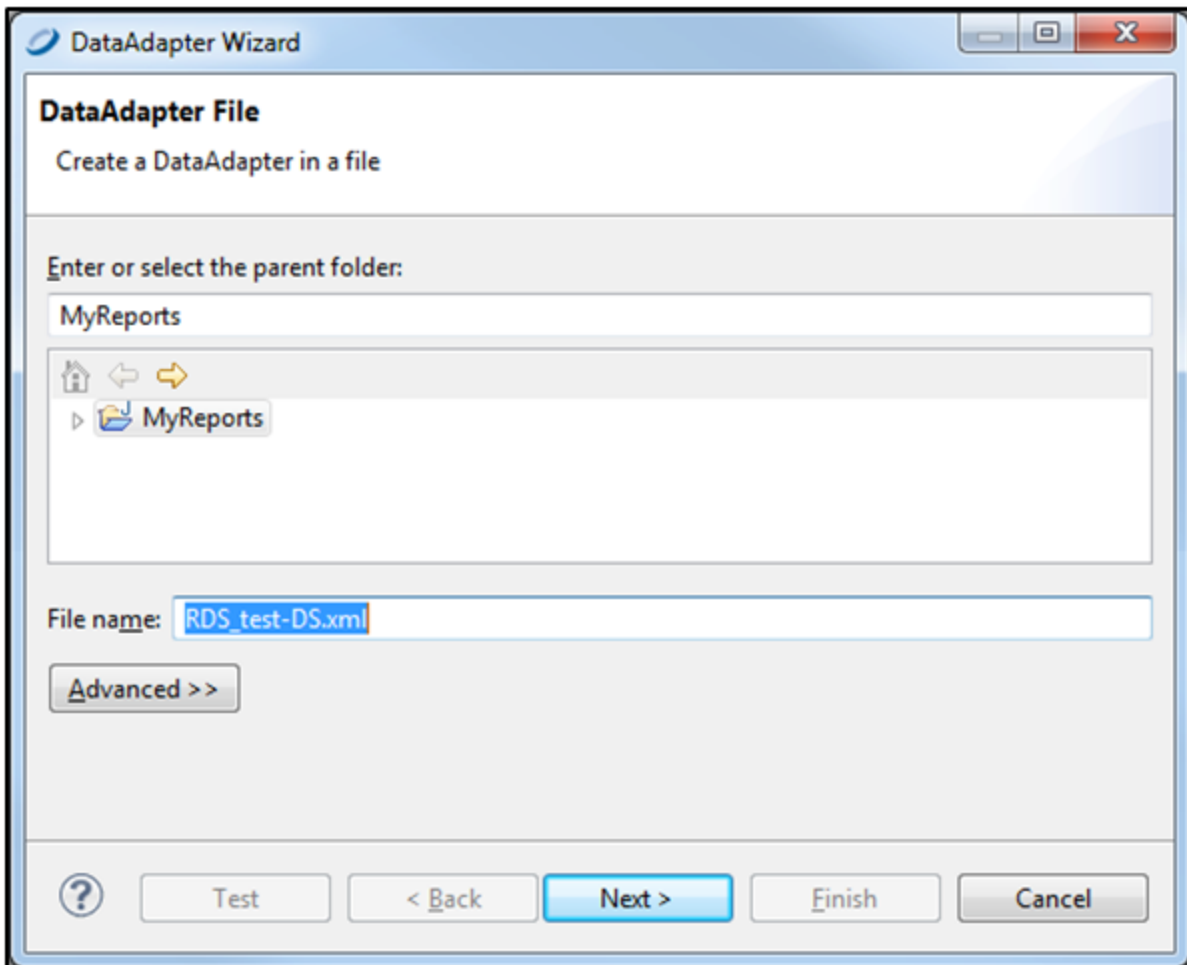
Connecting Jaspersoft Studio to Your Data

1. Create a new Data Adapter (called Data Source in Jaspersoft Studio).



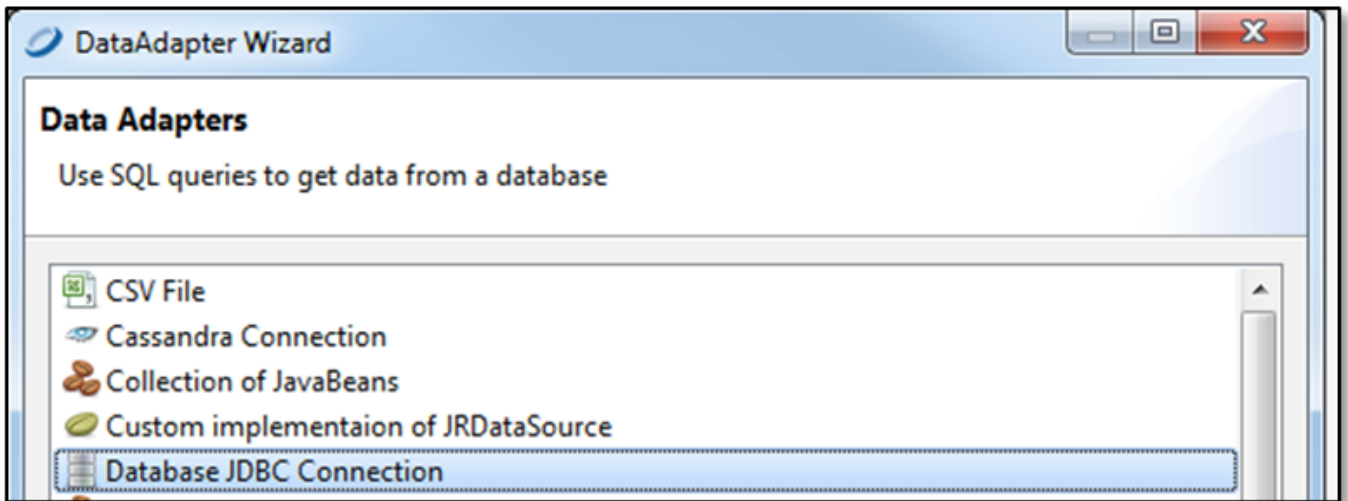
New DataAdapter button

In Jaspersoft Studio, click the **New Data Adapter** icon to display the DataAdapter wizard.



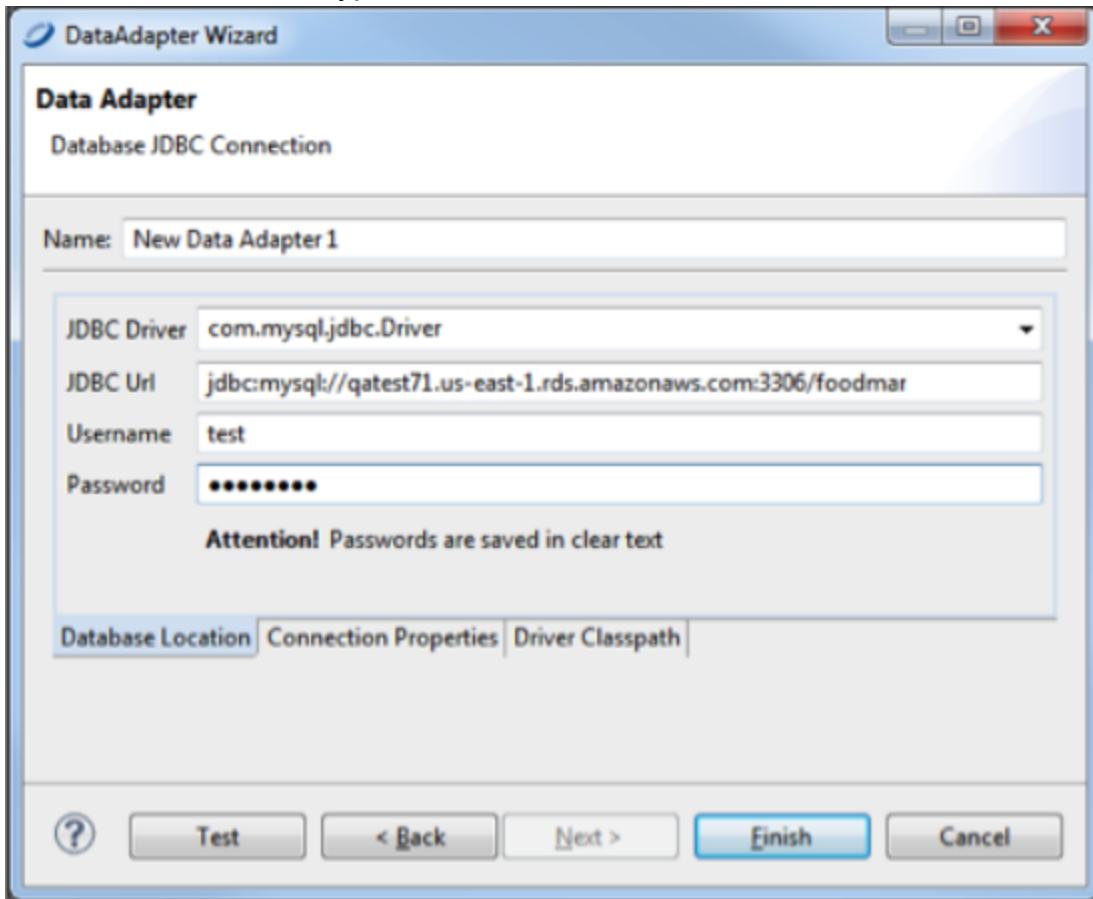
DataAdapter wizard

2. Name your DataAdapter and click **Next**.



Selecting a data source type

3. Select the data source type. For Amazon RDS and Redshift, use **JDBC**. Then click **Next**.

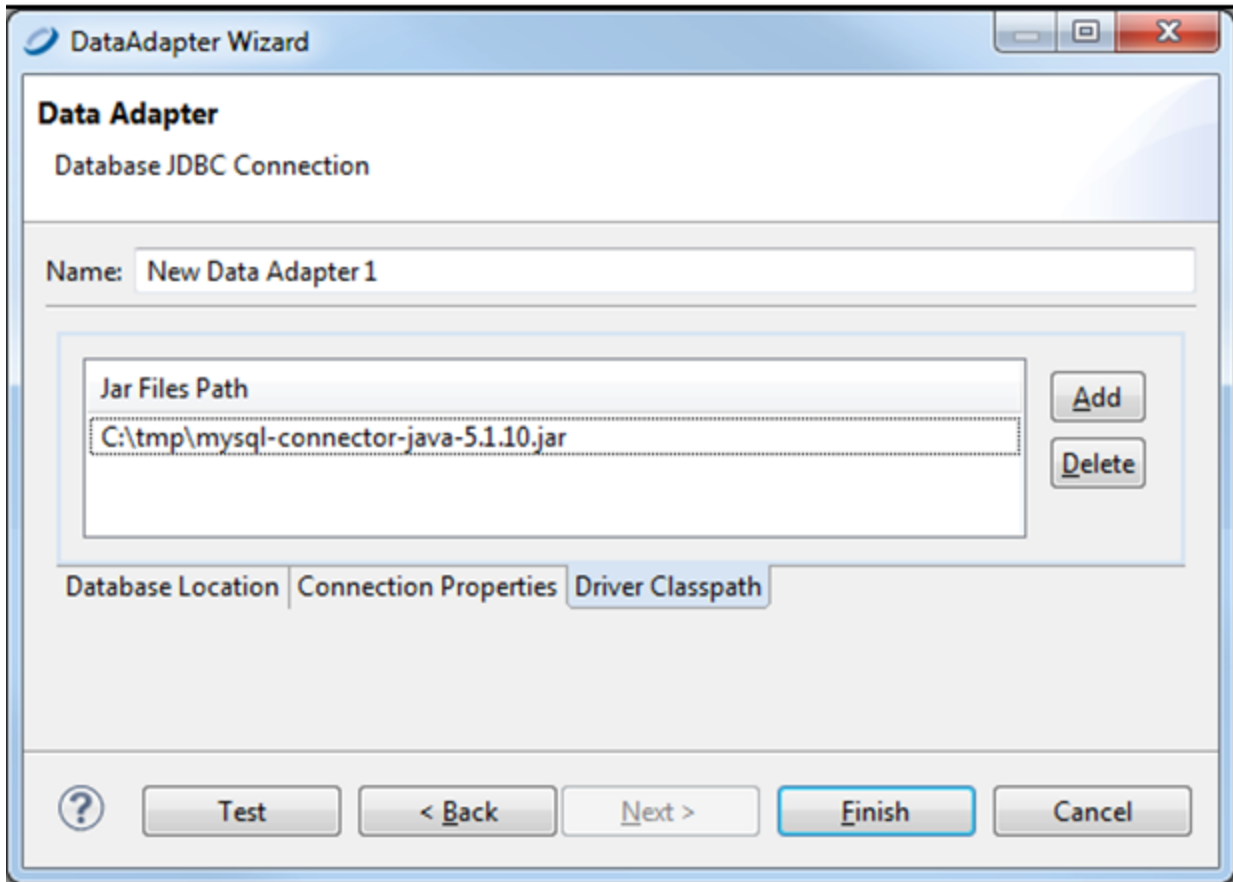


Entering your database location

4. Add the **JDBC Driver**. You may need to search the web for one that corresponds to your RDBMS or other technology on your Azure instance.

5. Enter the **JDBC Url**. This is the Endpoint URL from your Azure dashboard (including the port) and database type.
6. Click the Driver Classpath tab and select the local path of the driver.

Connecting Jaspersoft Studio Pro to the JasperReports Server Repository



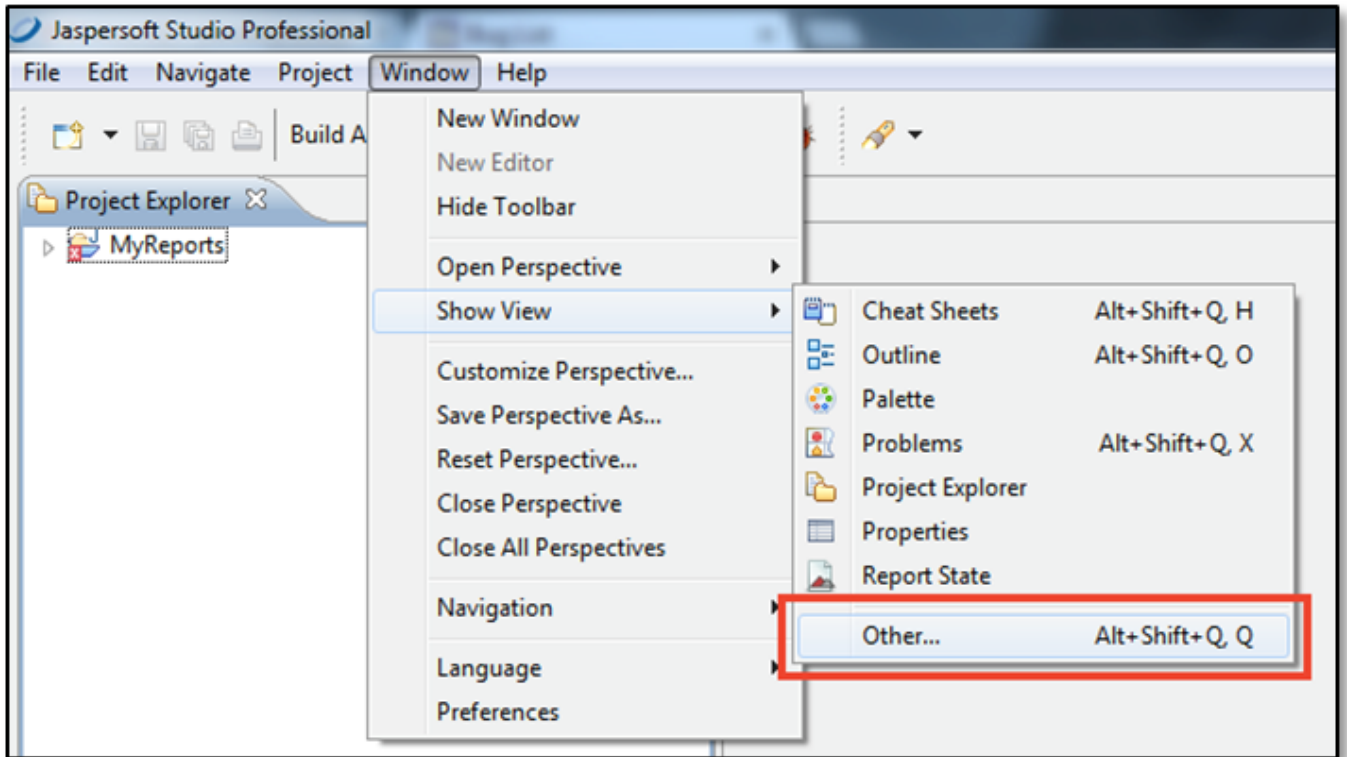
Selecting the driver classpath

7. Test the connection.

You'll need to connect to the Jaspersoft Studio repository to manage and schedule reports

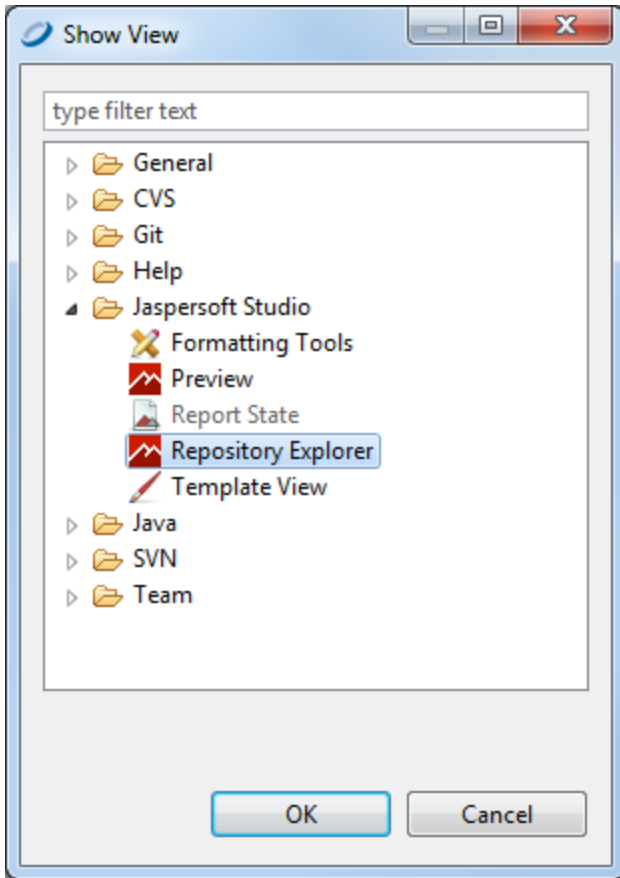
To define the Repository Explorer's connection:

1. In Jaspersoft Studio, select **Window > Show Views > Other....**



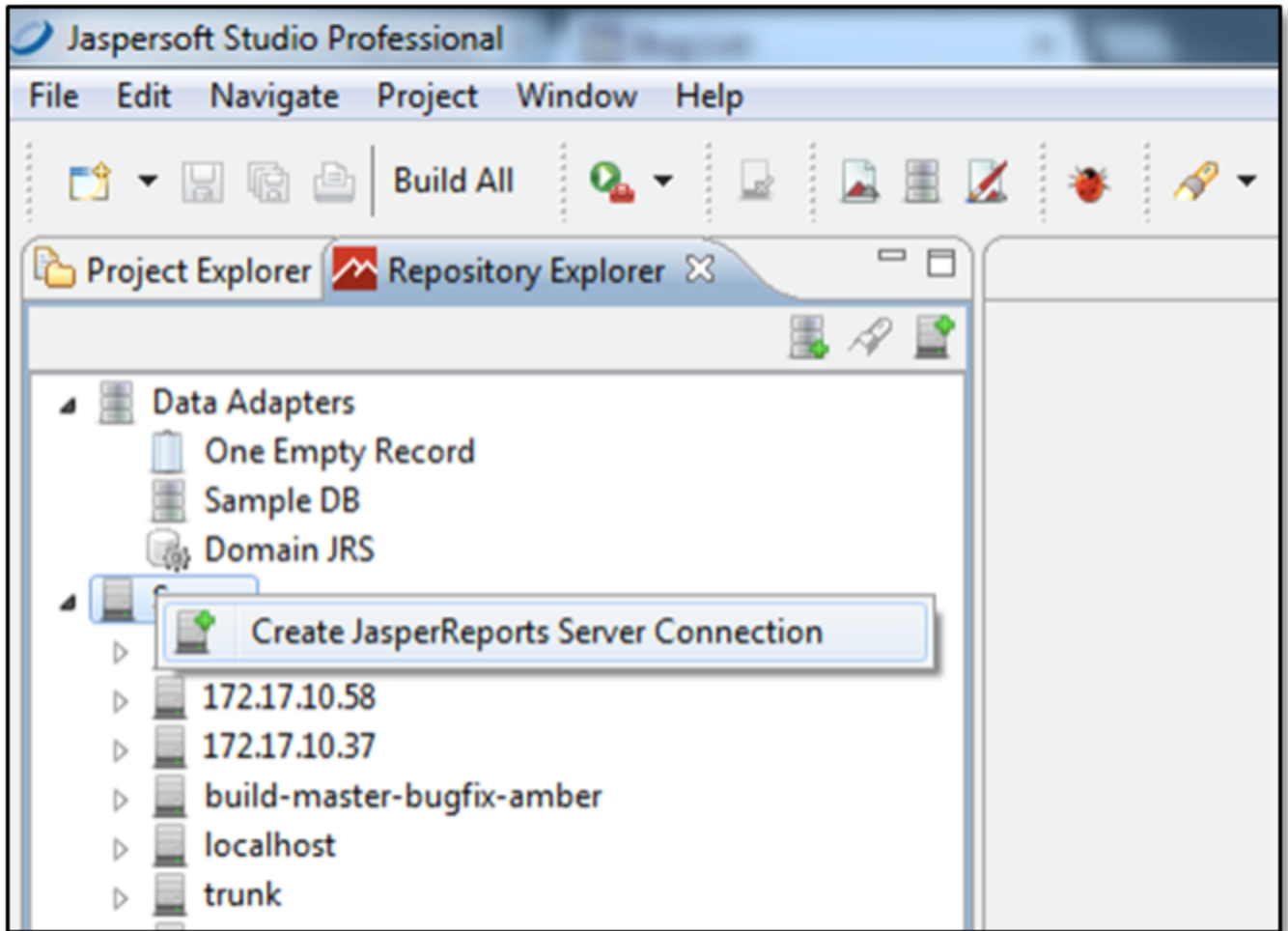
Window > Show Views > Other.... menu

2. Select **Repository Explorer**.



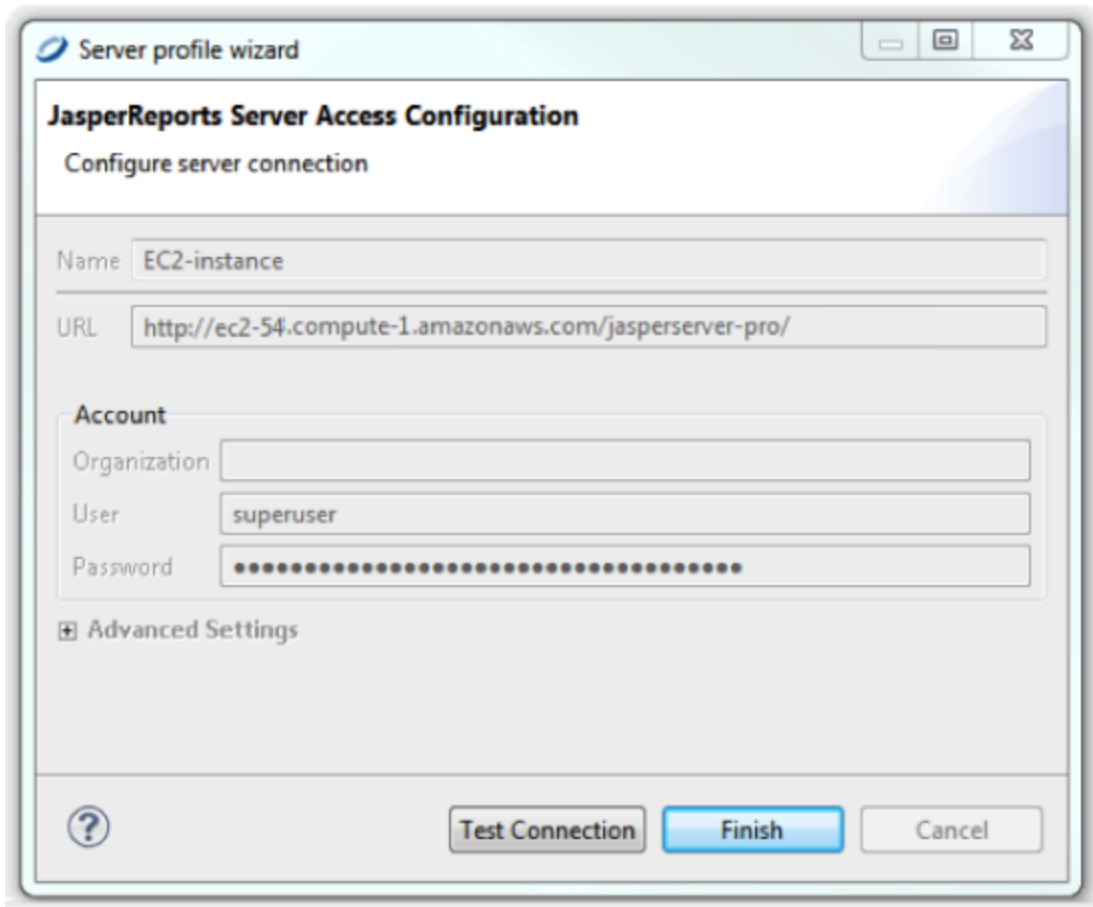
Selecting the Repository Explorer

3. Select the instance's URL.
4. Right-click the name of your instance to create a JasperReports Server repository connection.



Creating the JasperReports Server repository connection

5. Fill in the instance's url, but don't add the port ID number. Make sure to include /jasperserver-pro/ at the end of the path.



Filling in the instance URL

From here, you should follow the Jaspersoft Studio documentation on how to create reports.

There is also online training and tutorials available here:

<http://community.jaspersoft.com/wiki/jaspersoft-studio-tutorials-archive>

Microsoft Azure Terminology

account

An account that's used to access and manage an Azure subscription. It's often referred to as an Azure account although an account can be any of these: an existing work, school, or personal Microsoft account, or an Office 365 user name and password.

API app

Another name for App Service app.

App Service app

The compute resources that Azure App Service provides for hosting a website or web application, web API, or mobile app backend. App Service apps are also referred to as *App Services*, *web apps*, *API apps*, and *mobile apps*.

availability set

A collection of virtual machines that are managed together to provide application redundancy and reliability. The use of an availability set ensures that during either a planned or unplanned maintenance event at least one virtual machine is available.

Azure classic deployment model

One of two deployment models used to deploy resources in Azure (the new model is Azure Resource Manager). Some Azure services support only the Resource Manager deployment model, some support only the classic deployment model, and some support both. The documentation for each Azure service specifies which model(s) they support.

Azure command-line interface (CLI)

A command-line interface that can be used to manage Azure services from Windows, macOS, and Linux. Some services or service features can be managed only via PowerShell or the CLI.

Azure PowerShell

A command-line interface to manage Azure services via a command line from Windows PCs. Some services or service features can be managed only via PowerShell or the CLI.

Azure Resource Manager deployment model

One of two deployment models used to deploy resources in Microsoft Azure (the other is the classic deployment model). Some Azure services support only the Resource Manager deployment model, some support only the classic deployment model, and some support both. The documentation for each Azure service specifies which model(s) they support.

fault domain

The collection of virtual machines in an availability set that can possibly fail at the same time. An example is a group of machines in a rack that share a common power source and network switch. In Azure, the virtual machines in an availability set are automatically separated across multiple fault domains.

geo

A defined boundary for data residency that typically contains two or more regions. The boundaries may be within or beyond national borders and are influenced by tax regulation. Every geo has at least one region. Examples of geos are Asia Pacific and Japan. Also called *geography*.

geo-replication

The process of automatically replicating content such as blobs, tables, and queues within a regional pair.

image

A file that contains the operating system and application configuration that can be used to create any number of virtual machines. In Azure there are two types of images: VM image and OS image. A VM image includes an operating system and all disks attached to a virtual machine when the image is created. An OS image contains only a generalized operating system with no data disk configurations.

limits

The number of resources that can be created or the performance benchmark that can be achieved. Limits are typically associated with subscriptions, services, and offerings.

load balancer

A resource that distributes incoming traffic among computers in a network. In Azure, a load balancer distributes traffic to virtual machines defined in a load-balancer set. A load balancer can be internet-facing, or it can be internal.

mobile app

Another name for App Service App.

offer

The pricing, credits, and related terms applicable to an Azure subscription.

portal

The secure web portal used to deploy and manage Azure services.

region

An area within a geo that does not cross national borders and contains one or more datacenters. Pricing, regional services, and offer types are exposed at the region level. A region is typically paired with another region, which can be up to several hundred miles away. Regional pairs can be used as a mechanism for disaster recovery and high availability scenarios. Also referred to as *location*.

resource

An item that is part of your Azure solution. Each Azure service enables you to deploy different types of resources, such as databases or virtual machines.

resource group

A container in Resource Manager that holds related resources for an application. The resource group can include all of the resources for an application, or only those resources that are logically grouped together. You can decide how you want to allocate resources to resource groups based on what makes the most sense for your organization.

Resource Manager template

A JSON file that declaratively defines one or more Azure resources and that defines dependencies between the deployed resources. The template can be used to deploy the resources consistently and repeatedly.

resource provider

A service that supplies the resources you can deploy and manage through Resource Manager. Each resource provider offers operations for working with the resources that are deployed. Resource providers can be accessed through the Azure portal, Azure PowerShell, and several programming SDKs.

role

A means for controlling access that can be assigned to users, groups, and services. Roles are able to perform actions such as create, manage, and read on Azure resources.

service level agreement (SLA)

The agreement that describes Microsoft's commitments for uptime and connectivity. Each Azure service has a specific SLA.

shared access signature (SAS)

A signature that enables you to grant limited access to a resource, without exposing your account key.

storage account

An account that gives you access to the Azure Blob, Queue, Table, and File services in Azure Storage. The storage account name defines the unique namespace for Azure Storage data objects.

subscription

A customer's agreement with Microsoft that enables them to obtain Azure services. The subscription pricing and related terms are governed by the offer chosen for the subscription.

tag

An indexing term that enables you to categorize resources according to your requirements for managing or billing. When you have a complex collection of resources, you can use tags to

visualize those assets in the way that makes the most sense. For example, you could tag resources that serve a similar role in your organization or belong to the same department.

update domain

The collection of virtual machines in an availability set that are updated at the same time. Virtual machines in the same update domain are restarted together during planned maintenance. Azure never restarts more than one update domain at a time. Also referred to as an upgrade domain.

virtual machine

The software implementation of a physical computer that runs an operating system. Multiple virtual machines can run simultaneously on the same hardware. In Azure, virtual machines are available in a variety of sizes.

virtual machine extension

A resource that implements behaviors or features that either help other programs work or provide the ability for you to interact with a running computer. For example, you could use the VM Access extension to reset or modify remote access values on an Azure virtual machine.

virtual network

A network that provides connectivity between your Azure resources that is isolated from all other Azure tenants. An Azure VPN Gateway lets you establish connections between virtual networks and between a virtual network and an on-premises network. You can fully control the IP address blocks, DNS settings, security policies, and route tables within a virtual network.

Web app

Another name for App Service App.

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 Jaspersoft Studio, 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 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.

Aggregate Function

An aggregate function is one that is computed using a group of values; for example, Sum or Average. Aggregate functions can be used to create calculated fields in Ad Hoc views. Calculated fields containing aggregate functions cannot be used as fields or added to groups in an Ad Hoc view and should not be used as filters. Aggregate functions allow you to set a level, which specifies the scope of the calculation; level values include Current (not available for PercentOf), ColumnGroup, ColumnTotal, RowGroup, RowTotal, Total.

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 an Ad Hoc view or a Domain, a field whose value is calculated from a user-defined formula that may include any number of fields, operators, and constants. For Domains, a calculated field becomes one of the items to which the Domain's security file and locale bundles can apply. There are more functions available for Ad Hoc view calculations than for Domains.

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 parametrize 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.

Dashlet

An element in a dashboard. Dashlets are defined by editable properties that vary depending on the dashlet type. Types of dashlet include reports, text elements, filters, and external web content.

Data Island

A single join tree or a table without joins in a Domain. A Domain may contain several data islands, but when creating an Ad Hoc view from a Domain, you can only select one of them to be available in the view.

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 > Server > Settings Ad Hoc Settings**. By default, this setting is only available to the `superuser` account.

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.

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.

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

In Jaspersoft Studio, a frame is a rectangular element that can contain other elements and optionally draw a border around them. Elements inside a frame are positioned relative to the frame, not to the band, and when you move a frame, all the elements contained in the frame move together. A frame automatically stretches to fit its contents.

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.

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 IO

An HTTP-based reporting service for JasperReports Library that provides a REST API for running, exporting, and interacting with reports and a JavaScript API for embedding reports and their input controls into your web pages and web applications.

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 Studio

A commercial 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.

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.

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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 Jaspersoft Studio and JasperReports Server. JRXML is an open format that uses the XML standard to define precisely all the structure and configuration of a report.

Level

Specifies the scope of an aggregate function in an Ad Hoc view. Level values include Current (not available for PercentOf), ColumnGroup, ColumnTotal, RowGroup, RowTotal, Total.

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 sub-organizations 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 help desk 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**.

Report Run

An execution of a report, Ad Hoc view, or dashboard, or a view or dashboard designer session, it measures and limits usage of Freemium instances of JasperReports Server. The executions apply to resources no matter how they are run (either in the web interface or through the various APIs, such as REST web services). Users of our Community Project and our full-use commercial licenses are not affected by the limit. For more information, please contact sales@jaspersoft.com.

Repository

Depending on the context:

- In JasperReports Server, the repository is 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 Jaspersoft Studio. Applications can access the repository through the web service API. Administrators use the import and export utilities to back up the repository contents.
- In JasperReports IO, the repository is where all the resources needed to create and run reports are stored. The repository can be stored in a directory on the host computer or in an Azure Git repository. Users access the

repository through a file browser on the host machine or through Azure DevOps.

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.

Virtual Data Source

A virtual data source allows you to combine data residing in multiple JDBC and/or JNDI data sources into a single data source that can query the combined data. Once you have created a virtual data source, you create Domains that join tables across the data sources to define the relationships between the data sources.

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.