TIBCO Jaspersoft® for AWS User Guide

Software Release 7.5

TIBCO®

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CHAPTER 1 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 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.

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 in 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.

- Our Online Learning Portal lets you learn at your own pace, and covers topics for developers, system administrators, business users, and data integration users. The Portal is available online from the Professional Services section of our website.
- 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.

CHAPTER 2 INSTALLATION AND CONFIGURATION

This document covers Jaspersoft for AWS Hourly and Annual Offerings as well as Jaspersoft for AWS BYOL (Bring Your Own License) and Jaspersoft for AWS with Multi-Tenancy. You can purchase the hourly and annual products directly on the AWS Marketplace. To purchase annual subscription licenses for BYOL contact TIBCO Jaspersoft Sales.

TIBCO Jaspersoft also offers a Quick Start for deploying JasperReports Server on AWS. Quick Starts are automated reference deployments that use AWS CloudFormation templates to deploy key technologies on AWS, following AWS best practices. See the deployment guide for TIBCO JasperReports Server on the AWS Cloud for more information.

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 AWS Marketplace**
- **Launching Instances**

2.1 Prerequisites

You'll need a few things before you can install and run Jaspersoft Business Intelligence on Amazon Web Services:

- An Amazon Web Services (AWS) account.
  If you already have an account, log into AWS.
  To create an AWS account, go to the Amazon Web Services sign up page, click the Sign Up button, and follow the instructions.

If you have a personal Amazon.com account stored in your browser, AWS uses that account by default. You need to sign out of Amazon or, preferably, use a different browser to set up an AWS account separate from your personal account.

- A valid Amazon key pair in your account. If you don't have a valid key pair, follow the instructions on the AWS documentation site: https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-key-pairs.html
- The Required Permissions for using our CloudFormation templates and connecting to a data source.

- If you plan to use Jaspersoft for AWS BYOL, you'll need an annual subscription license. To purchase licenses for BYOL contact TIBCO Jaspersoft Sales

The procedures in this section work for both TIBCO Jaspersoft Reporting and Analytics for AWS (Hourly and BYOL) for AWS and TIBCO Jaspersoft for AWS with MultiTenancy.

2.1.1 Required Permissions

Depending on how you use Jaspersoft for AWS, you'll need various permission sets.

Using our CloudFormation (CF) templates:

Using our CF templates typically requires some admin permissions. AWS permissions required to launch a new JasperReports Server instance include:

- CloudFormation create stack and events
- Create and run EC2 instances
- Create EC2 security groups
- Create IAM resources
- Grant access to RDS, Redshift, and EC2

AWS permissions required to launch the template to create a new JasperReports Server role or user include:

- Create IAM resources
- Grant access to RDS, Redshift, and EC2

Connecting to the data source:

Permissions required to connect to the data source include:

- Access to RDS and/or Redshift
- Permissions to create and modify the database security groups in each
- Permissions to create and modify EC2 security groups

Please note that this document does not address connectivity to Amazon Elastic MapReduce (EMR). For more information on how to connect Jaspersoft for AWS to EMR, please see: http://community.jaspersoft.com/jaspersoft-aws/connect-emr.

2.2 Subscribing From AWS Marketplace

The Jaspersoft listing on the AWS Marketplace offers multiple Jaspersoft Reporting and Analytics products as subscriptions:

- TIBCO Jaspersoft Reporting and Analytics for AWS (Hourly)
- TIBCO Jaspersoft for AWS with Multi-Tenancy (Hourly)
- TIBCO Jaspersoft Reporting and Analytics for AWS (BYOL)

Subscribing to a Jaspersoft product is a single process with multiple steps, which includes accepting the terms of use for both the AWS Marketplace and Jaspersoft.

The product page shows the pricing information (hourly and annual for non-BYOL), available instance types, and support information for the Jaspersoft product.

The product page shows the total projected charges hourly or annually plus EC2 infrastructure charges but you won't be charged until you subscribe. Simply visiting a page does not place your order.

Click **Continue to Subscribe** to start the AWS Marketplace subscription process. Log into your AWS account if you are not already logged in.

When prompted, read and accept the terms of use.

When prompted to configure the software, select how the product will be deployed (**Fulfillment Option**), the version of the software, your region, the type of JasperReports Server instance, and the number of licenses.

You'll receive an email confirmation once your order is processed.

2.3 Launching Instances

This section describes the processes for creating a JasperReports Server instance or cluster inside a Virtual Private Cloud (VPC).

Your Jaspersoft software is charged separately from the AWS EC2 instance charges. Please make sure you follow these instructions to turn off your EC2 instance server running Jaspersoft after use. If not, you will continue to be charged by the hour for EC2 use. Note that when you stop your EC2 instance server no one will have access to the reports or dashboards you've created until you restart the EC2 instance server. When you stop an EC2 instance server, you will still be charged the small EBS charge. If you don't want to be charged for EBS, make sure you terminate your EC2 instance server. Note that in this case none of your work will be retrievable, unless you're using an auto-scaling cluster.

2.3.1 Creating a JasperReports Server Instance Inside a VPC

The JasperReports Server instance will be hosted in your Virtual Private Cloud (VPC).

To create a new JasperReports Server instance in a VPC:

1. Select the Jaspersoft product you want in the AWS Marketplace and follow the subscription process to get to the **Configure the Software** page.
2. Under **Fulfillment Option**, select CloudFormation Template from the first drop-down list and Jaspersoft Stack Instance Inside a VPC from the second list.
3. Select the software version and region, then click **Continue to Launch**.
4. Under **Choose Action**, select **Launch CloudFormation** and then click **Launch**. The **Create Stack** page in the AWS console opens. Under Specify template, the Amazon S3 URL option is already selected and a URL for the template file is filled in. Do not change these options.
5. Click **Next**. The **Specify stack details** page appears.
6. In the **Stack name** field, give your CloudFormation stack a unique name.
7. Choose an **InstanceType**.
8. Choose the **KeyName** of your EC2 KeyPair.
9. Choose the **VpcId** from your account.
10. Choose the **SubnetId** from the VPC.
11. Choose whether to create a publicly accessible IP address for the instance using **EnablePublicIp**. Default is True. Select False to refuse.

12. In the **SecuredIp** field, enter the IP address and mask for SSH access.
13. Click **Next**. The **Configure stack options** page appears.
14. Add any tags you want use to simplify administration of your infrastructure.

    A tag consists of a key/value pair and will flow to resources inside your stack. You can add up to 10 unique keys to each instance, along with an optional value for each key.
15. Select an IAM role for managing the stack's resources.
16. Expand the **Advanced** section and set your notification, rollback, and other options.
17. Click **Next**. The **Review** page appears.
18. Double check your template, parameter, and option information.
19. Click the acknowledgment check box, then click **Create Stack**. You'll see a message telling you your stack has been created. The Services web page, shows your stack's initial status as `CREATE_IN_PROGRESS`. It generally takes two to four minutes for the status to change to `CREATE_COMPLETE`.
20. Select your complete instance and click the **Outputs** tab. Here you'll find information you'll need when you're ready to log into JasperReports Server:
    - The URL for Getting Started with JasperReports Server .
    - The name of your instance.
    - The login name and password.
    - The name of your S3LicenseBucket.

2.3.2 Creating a JasperReports Server Cluster Inside a VPC

Jaspersoft provides an auto-scaling cluster using Amazon Relational Database Service (RDS) that ensures that there are enough EC2 instances to handle the workload for your JasperReports Server application. With the cluster, instances are created and removed depending on CPU usage. It also provides a failover mechanism by storing your repository in an external database, so if something happens to an instance it will be replaced and connected to your existing repository. The cluster uses the Amazon Elastic Load Balancer (ELB) to route traffic and only supports PostgreSQL databases. You'll need to create and initialize your PostgreSQL database and make sure that it's in the same cloud as the VPC.

The CloudFormation template for the cluster creates the following AWS resources:

- An Auto Scaling group that contains the EC2 instances for your JasperReports Server cluster. When creating the stack, you'll define the maximum number of instances in your cluster. The Auto Scaling group defines the thresholds for increasing and decreasing the instances in your cluster. For more information about auto scaling groups, see the AWS documentation:
  https://docs.aws.amazon.com/autoscaling/latest/userguide/AutoScalingGroup.html
- An Amazon ELB that works as a static endpoint (DNS Name - URL) and monitors the clustered JasperReports Server instances. If something happens to one of your instances—the instance fails or JasperReports Server stops responding—it will be replaced with a new one. For more information on ELB, see the AWS documentation:
  https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-internet-facing-load-balancers.html

If you are using a BYOL license, make sure to delete any existing instances after applying your license. Deleting an instance before applying your license may result in the automatic creation of a new instance using an older license. See **Applying a Jaspersoft License for AWS BYOL** for more information.

To create a new JasperReports Server cluster in a VPC:

1. Select the Jaspersoft product you want in the AWS Marketplace and follow the subscription process to get to the **Configure the Software** page.
2. Under **Fulfillment Option**, select CloudFormation Template from the first drop-down list and Jaspersoft Cluster using RDS for metadata from the second list.
3. Select the software version and region, then click **Continue to Launch**.
4. Under **Choose Action**, select **Launch CloudFormation** and then click **Launch**. The **Create Stack** page in the AWS console opens. Under Specify template, the Amazon S3 URL option is already selected and a URL for the template file is filled in. Do not change these options.
5. Click **Next**. The **Specify stack details** page appears.
6. In the **Stack name** field, give your CloudFormation stack a unique name.
7. Enter the host name of your database connection in **DBHost**, the database port number in **DBPort**, and the database name in **DBName** .
8. Enter the database user name in the **DBUser** field and the database password in **DBPassword**.
9. Choose an **InstanceType**.
10. Choose the **KeyName** of your EC2 KeyPair.
11. Choose your **VpcId** and **SubnetId** from the drop downs.
12. **EnablePublicIp** defaults to true. Unless you change this setting, your initialization instance will be assigned a public IP address and ELB (if enabled) will be configured as "internet-facing". See Amazon's documentation about internet-facing load balancers here:

    http://docs.aws.amazon.com/ElasticLoadBalancing/latest/DeveloperGuide/elb-internet-facing-load-balancers.html
13. In the **SecuredIp** field, enter the IP address and mask for SSH access.
14. Enter the maximum number of instances to create for your cluster in the **MaxInstancesCount** field. You can have a maximum of 10 instances in your cluster.
15. Chose your **AvailabilityZones** from the drop down.
16. To enable notifications about your instance state, enter a valid email address in the **OperatorEMail** field. Leave this field blank to disable notification.
17. Click **Next**. The **Configure stack options** page appears.
18. Add any tags you want to simplify administration of your infrastructure.

    A tag consists of a key/value pair and will flow to resources inside your stack. You can add up to 10 unique tags for each instance.
19. Expand the **Advanced** section of the **Configure stack options** page and set your notification, rollback, and other options.
20. Click **Next**. The **Review** page appears.

    Double-check your template, parameter, and option information.
21. Click the acknowledgment check box, then click **Create**.

    You'll see your Stack Name listed in a table. While it's being created the Status column will display `CREATE_IN_PROGRESS`. After a few minutes the status should change to `CREATE_COMPLETE`.

    If the status changes to `ROLLBACK` instead of `CREATE_COMPLETE`, you may need to accept the Terms of Use. Check the **Events** tab for more information.
22. Select your complete instance and click the **Outputs** tab. Here you'll find information you'll need when you're ready to log into JasperReports Server:
    - The URL for Getting Started with JasperReports Server.

- The login name and password.
- The name of your ProvisionInstance.
- The name of your Auto Scaling group.
- The name of your S3LicenseBucket.

2.3.2.1 Manually Deploy Your Cluster in VPC

Manually create a new Repository database in an external PostgreSQL database and initialize it.

If a database connection issue occurs, make sure that the instance's public and private IP addresses are accessible to RDS.

To deploy your cluster manually:

1. Log into your instance by ssh using the `ssh -i EC2_KeyPair ec2-user@instance_name` command.
   You can find the instance name on the **Outputs** tab. See Amazon's documentation for more information on connecting to the instance:
   http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/AccessingInstances.html
2. Change the directory to:
   `/usr/share/jrs_dist/jasperreports-server-bin`
3. Run the initialization script:
   `sudo -E ./deploy-database-to-external-repo.sh normal` if you want to create the sugarcrm and foodmart sample databases or `sudo -E ./deploy-database-to-external-repo.sh minimal` if you don't want those databases.

You may want to skip the initialization script If your external database already contains a valid JasperReports Server repository that you want of use. The script will create (or recreate) a JasperReports Server repository database (for example from a previous dump or RDS snapshot) with a minimal set of resources or with samples.

4. If initialization is successful, halt the instance: `sudo halt -p`
   If initialization is unsuccessful, troubleshoot the database, then run the initialization script (step 3).
5. Go to the EC2 Console and increase the instance count from 0 to 1 in the Auto Scaling group (name is provided on the Outputs tab of the CloudFormation template).
6. Use the Getting Started URL from the Outputs tab to access your JasperReports Server appliance.

2.3.3 Creating a JasperReports Server Instance from the EC2 Console

If you have a complex network topology or special volume requirements, you might need to create your instance from the EC2 Console.

Before you can create a JasperReports Server instance from the EC2 console, you need to create a CloudFormation role. If you skip this step, when you get to the Welcome screen, you'll see the following error message:

We don't recommend this method, because it doesn't provide the auto-connect feature for Amazon RDS and Redshift included with the CloudFormation templates. If you choose this method, be sure to define that option during the setup process.

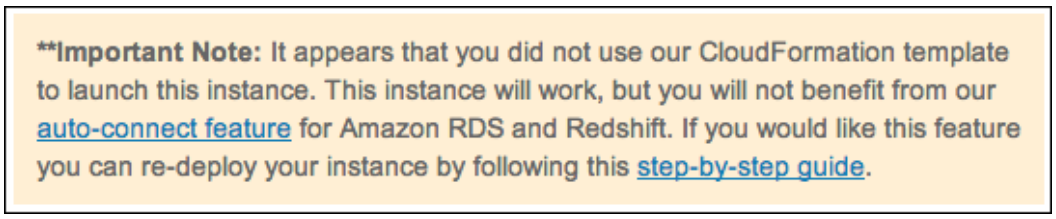

Figure 2-1 Missing Role Error Message

If you launch your instance with a role, JasperReports Server will use that Role to generate temporary AWS security tokens for automatic discovery and management of security between your JasperReports Server instance and RDS\Redshift instances.

If no role is defined in your JasperReports Server Instance, you have 2 options:

- Provide Access and Secret keys in AWS Datasource for Discovery and Automatic Security management.
- Manage security manually. (In this case remember to disable Automatic security management in JasperReports Server Server Settings.)

To create a JasperReports Server instance from the EC2 console:

1. Open the AWS Management Console.
2. Go to **Compute > EC2**. The EC2 Dashboard page opens.
3. On the left, select **Image > AMIs**.
4. Enter Jaspersoft in the **Search** text field and press Enter.
5. Select the AMI you want, and click the **Launch** button at the top of the page. The **Choose an Instance Type** page opens.

Make sure you select the correct AMI for you license type (hourly, annual, or BYOL).

6. Choose an **Instance Type** from the list.

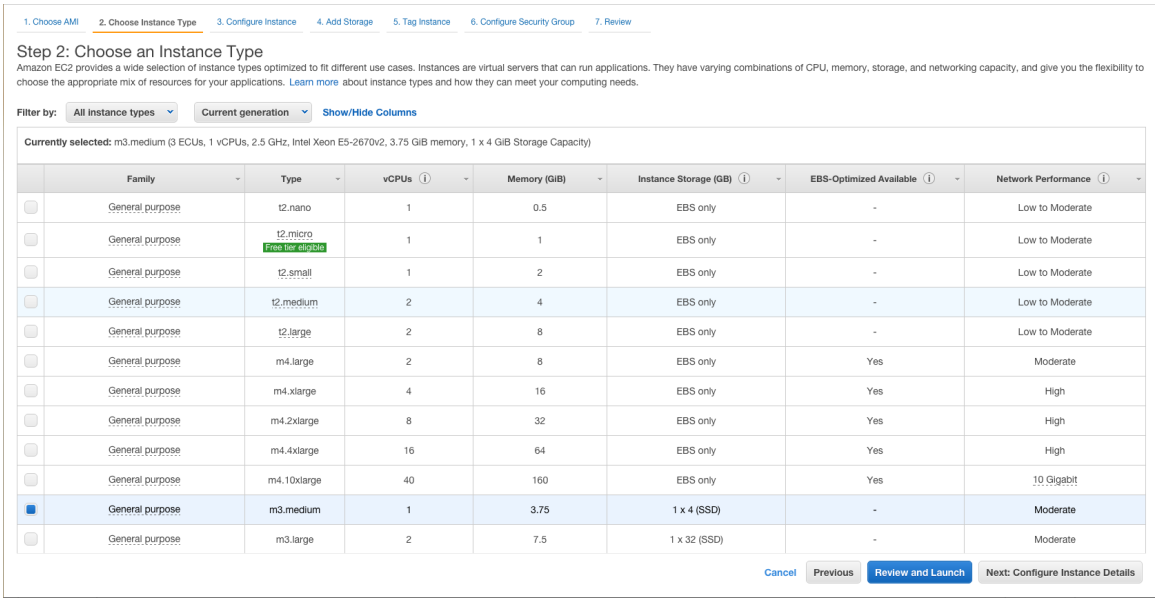

Figure 2-2 Instance Type list

7. Click **Next: Configure Instance Details** at the bottom of the page, and configure the following details.

   Hover over the information icon for descriptions of each item.

   - Number of instances
   - Purchasing option
   - Network
   - Availability Zone (if using EC2) or Subnet (if using VPC)
   - Auto-assign Public IP
   - IAM role
   - Shutdown behavior
   - Enable termination protection
   - Monitoring
   - Tenancy

8. Expand the **Advanced Details** section and configure the following details:
   - Kernel ID
   - RAM disk ID
   - User data
9. Click **Next: Add Storage** and review the details. Click items you want to edit. You can add EBS and instance store volumes by clicking the **Add New Volume** button.
10. Click **Next: Tag Instance** and add optional tags. To add more tags click the **Create Tag** button.

    A tag is a key/value pair that will flow to resources inside your stack. You can add up to 10 unique tags to each instance.

11. Click **Next: Configure Security Group** and configure your firewall rules. Choose an existing security group or create a new security group.

We set up one AWS DB Security Group (using IP address) per JasperReports Server instance in each RDS region. The security group allows connections from the JasperReports Server instance to the specified AWS database instance.

12. Click **Review and Launch**. Review your information and edit if necessary.
13. Click **Launch**.
14. When prompted, select an existing key pair, or create a new key pair, and click **Launch Instances**.

    You'll see a message telling you that your instance is now launching. Your instances may take a few minutes to launch, depending on the software you are running.

Hours of use on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

15. Click **Close**.

2.3.4 Logging in to JasperReports Server

Log into JasperReports Server using the Getting Started URL generated when you created your JasperReports Server instance. You'll find this URL in the Cloud Formation **Outputs** tab.

The initial user is `superuser` and password is your AWS instance ID, located below the Getting Started URL in the **Outputs** tab or in the EC2 console. You can change the password after your initial login.

To log into JasperReports Server the first time:

1. Click the **GettingStartedURL** link in your **Outputs** tab. The **Welcome to Jaspersoft BI** page appears.

Figure 2-3 Welcome to Jaspersoft BI page

2. Choose what you want from the following:
   - Upload your license to the server
   - Explore resources
   - Watch an introductory video
   - Log in

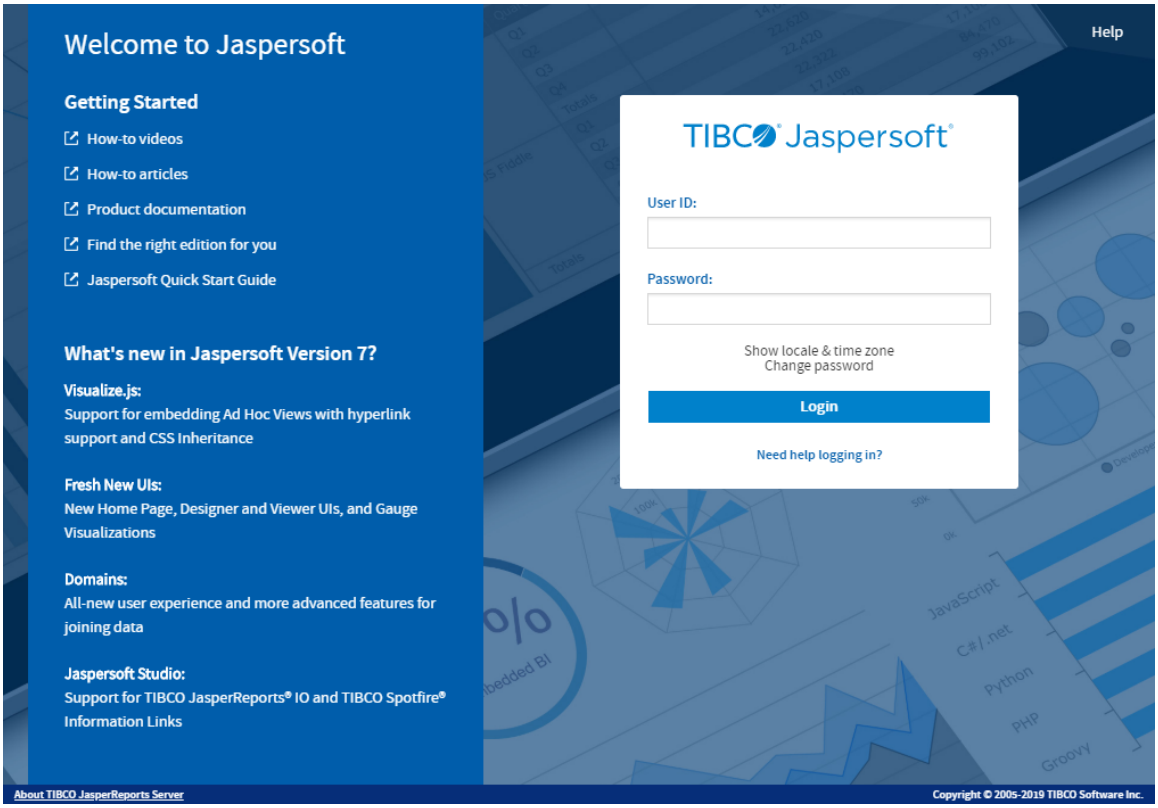

Figure 2-4 Login Screen

If you're using BYOL, you'll start with a 72-hour license. This page will display a reminder when your license is set to expire.

Before you click the Login button on this page:

1. Enter `superuser` as your User ID.
2. Your AWS EC2 instance ID is your initial password.

   You'll find your AWS instance ID on the CloudFormation **Outputs** tab of your instance or in the EC2 console.

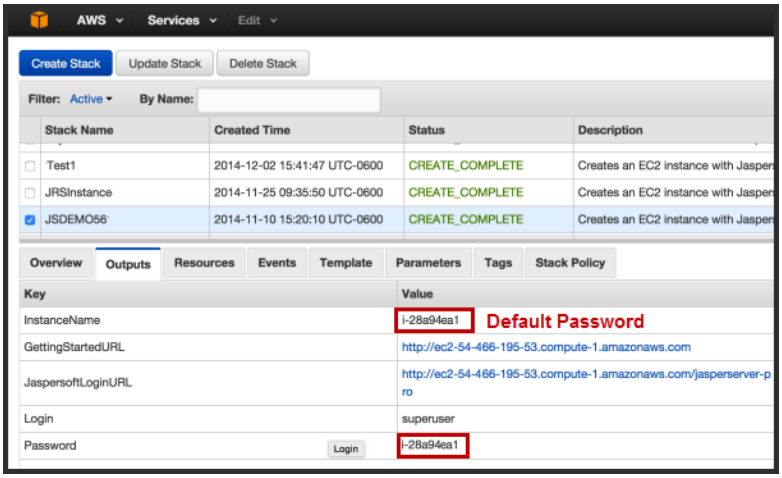

Figure 2-5 Finding the default password in the CloudFormation stack

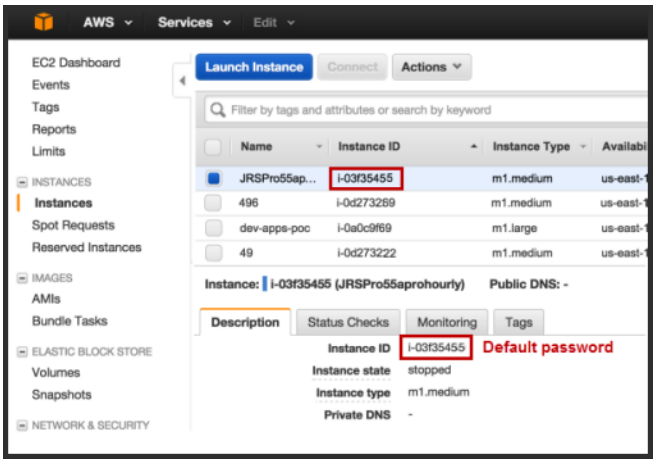

Figure 2-6 Finding the default password in the EC2 console.

3. Click **Change password** and enter a new password.

4. Log in again. The **Home** screen appears.

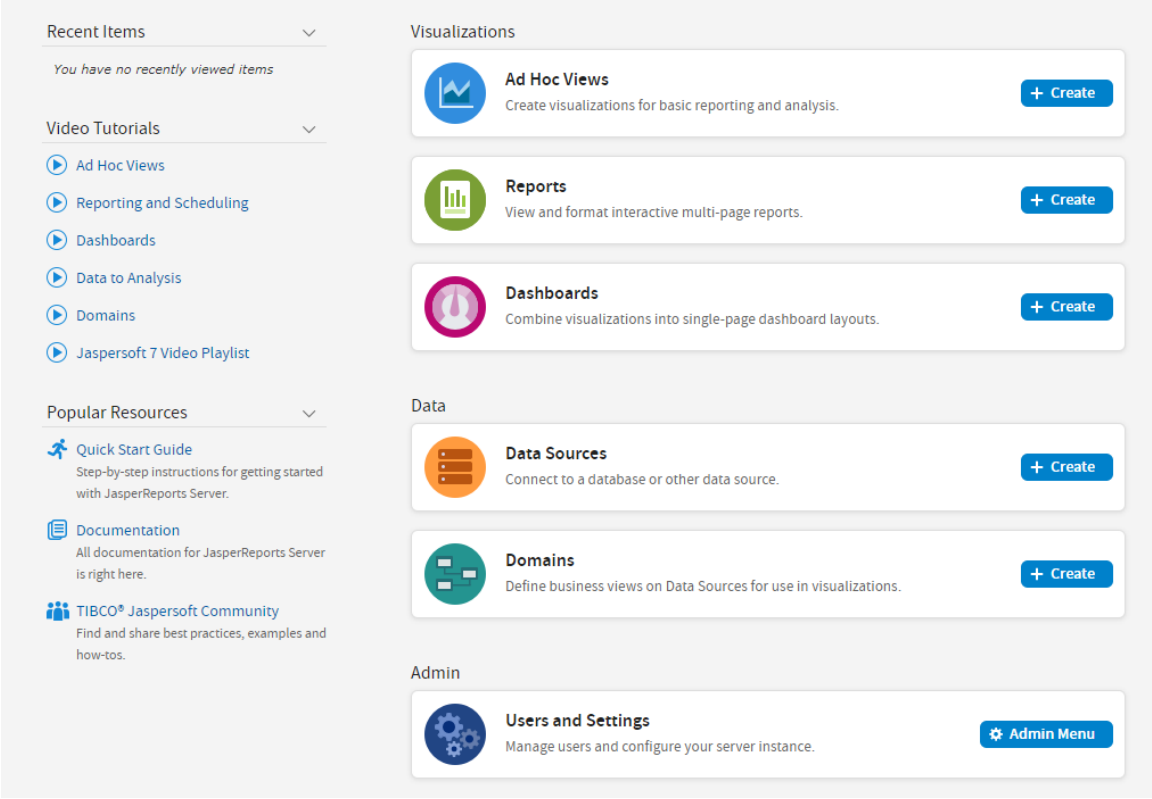

Figure 2-7 Home Screen

If you use PostgreSQL as your database, not all PostgreSQL-supported functions will work with Redshift. See the Redshift documentation for details about supported functions.

2.4 Using Customized Configuration Files for Server Instances

JasperReports Server allows you to use the S3 bucket for your CloudFormation stack to store customized configuration files for creating your EC2 instances. Uploading the configuration files to the S3 bucket will apply the customizations to every instance created from the stack, including instances created as part of a cluster. In the S3 bucket, you must recreate the JasperReports Server structure for the configuration files, starting with the `conf` and `webapp` folders at the Tomcat root level.

If you want to remove the customized file from an EC2 instance, you will need to copy the original configuration file to the S3 bucket and reboot the instance. This will replace the file on the instance and remove the customizations from JasperReports Server. Deleting the customized file from the S3 bucket without adding a replacement will not remove the customizations when the instance is rebooted.

To upload your customization:

1. On the AWS Management Console homepage, click **CloudFormation**.

2. Click on the name of the CloudFormation stack for your cluster.
3. Find the name of the stack's S3 bucket on the **Outputs** tab.
4. Return to the AWS Management Console homepage and click **S3**.
5. Find the bucket for your cluster and click on the name.
6. Click **Create Folder**. Recreate the paths to your configuration files starting with the `conf` and `webapp` folders.
7. After creating the folder paths, browse to the folder for your configuration file.
8. Click **Upload**.
9. Click Add files and find the configuration file on your local machine.
10. Click **Upload** to upload the configuration file.
    AWS uploads the file and stores it in the S3 bucket.
11. With the configuration file in place, reboot or terminate the cluster from the **EC2** > **Instances** > **Instances** page.
    When the cluster is rebooted or recreated, the changes based on the configuration file will be in place.

2.5 Configuring HTTPS Access for AWS ELB and JasperReports Server

Follow these instructions if you want to use Elastic Load Balancer (ELB) as an HTTPS termination point with JasperReports Server behind it.

1. Create your ELB in AWS with a JasperReports Server instance behind it.
2. Configure your load balancer using the instructions found here:
   http://docs.aws.amazon.com/ElasticLoadBalancing/latest/DeveloperGuide/enable-proxy-protocol.html
3. Edit the following file in your JasperReports Server instance:
   `/usr/share/tomcat7/conf/server.xml`
   a. Locate the connector tag: `<connector port="80"...`
   b. In the connector tag, add the following parameters:
      `scheme="https" proxyPort="443" proxyName="Elastic load balancer public DNS name"`
4. Save the file and restart tomcat. See **Stopping and Restarting Tomcat**.

2.6 PhantomJS for AWS

JasperReports Server instances are installed with PhantomJS pre-installed. PhantomJS is a headless WebKit with JavaScript API that we recommend for the engine to execute JavaScript when generating graphical reports that are run in the background or scheduled, as well as exporting dashboards to a PNG, PDF, ODT, or DOCX file. For more information on PhantomJS, including configuration settings, see *JasperReports Server Administrator Guide*.

CHAPTER 3 MANAGING YOUR INSTALLATION

For information about the AWS data source, see the *JasperReports Server Administrator Guide*.

This chapter contains the following sections:

3.1 Applying a Jaspersoft License for AWS BYOL

When creating your JasperReports Server instance or cluster for BYOL, AWS creates a S3 bucket for you to upload your JasperReports Server license. You'll need to upload your license after the trial license expires.

More information on applying a license is available on the Jaspersoft Community Site, at http://community.jaspersoft.com/wiki/applying-your-jaspersoft-product-licenses.

Make sure you have all the prerequisites for applying your license:

- A valid license file.
- Access to the AWS Management Console.
- A BYOL instance or cluster already running in AWS.
- A S3 bucket. You can find the name of the bucket on the Outputs tab of your CloudFormation stack.

These instructions are only for BYOL licenses. You cannot upload other JasperReports Server licenses to your S3 bucket.

If you are using a BYOL license for a cluster, deleting an instance before applying your license may result in the automatic creation of a new instance using an older license.

To apply your license file:

1. Login to the AWS console. The address is generally something like `https://<yourAWSAccountID>.signin.aws.amazon.com/console`.
   If you would like more information on logging into the AWS console see: https://docs.aws.amazon.com/IAM/latest/UserGuide/console.html
2. On the AWS Management Console home page, click **S3**.

3. Click the name of the bucket for your instance or cluster.
4. Click **Upload**.
5. Click **Add Files** to find the license file on your local machine.
6. Click **Start Upload**.
   AWS uploads the file and stores it in the S3 bucket.
7. With the license in place, reboot your instance from the **EC2 > Instances > Instances** page.

To verify that your license is uploaded, open JasperReports Server in a web browser and click **About JasperReports Server** in the lower left corner.

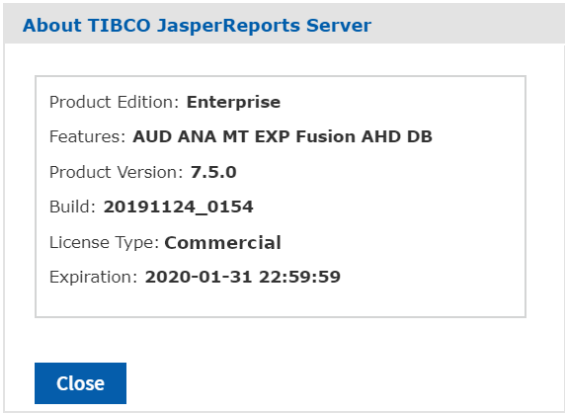

Figure 3-1 Valid License Information

3.2 Using the Cloud Settings Page

The cloud settings page enables you to change Security Group settings without restarting the server. This page is accessible only if you're logged in as `superuser`.

To reach the AWS Settings page:

1. Click **Manage > Server Settings**. The **Log Settings** page appears.
2. Click **Cloud Settings** in the left menu. The **Cloud Settings** page appears.

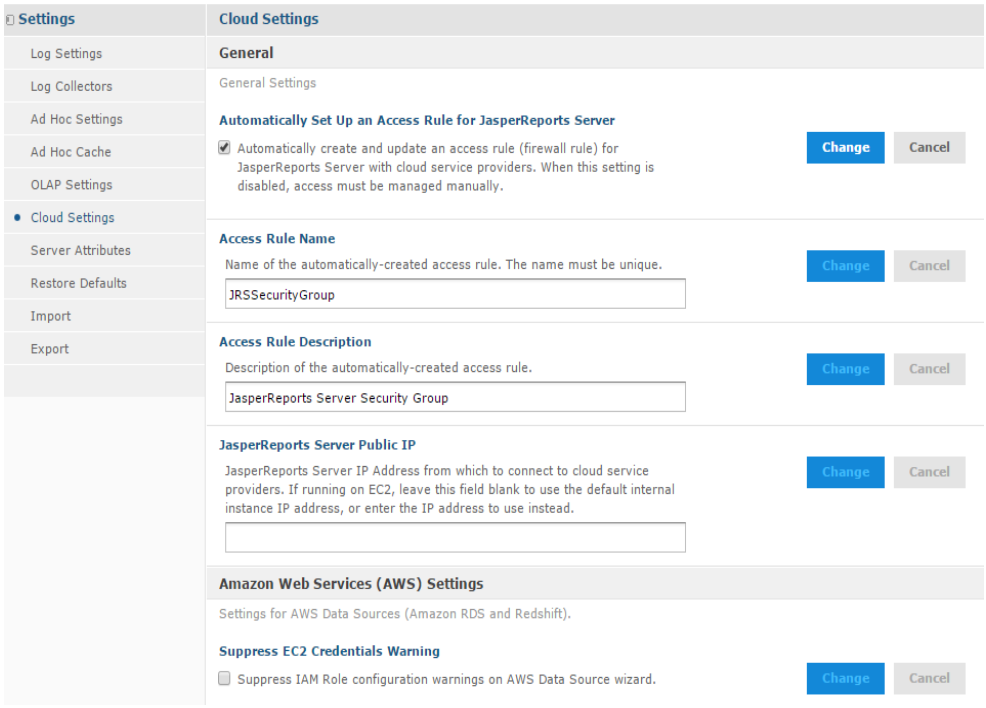

Figure 3-2 Cloud Settings Page

On this page you can enable AWS Security Group changes for the following settings:

- Access Rule Name
- Access Rule Description
- JasperReports Server Public IP
- Suppress EC2 Credentials Warning

There is one AWS DB Security Group (using IP address) in each RDS region, per JasperReports Server instance. The security group allows connections from the JasperReports Server instance to the specified AWS database instance.

Automatically Set Up an Access Rule for JasperReports Server: This check box is generally left checked to allow JasperReports Server to use the instance credentials it assumes from the IAM role or the Access\Secret keys provided in AWS Datasource to grant itself access to RDS and Redshift data services. For example, let's say you stop your EC2 instance with JasperReports Server on Friday. When you restart it on Monday, the instance gets a new IP address. JasperReports Server then re-grants itself access to RDS. If you want to manage the security groups manually, clear this box.

Access Rule Name: JasperReports Server uses this security group name when creating security groups to support AWS data sources. The EC2 instance ID is appended to this name when your JasperReports Server instance is running on EC2. When running outside of EC2, make sure the security group name is unique for each instance of JasperReports Server to ensure that IP addresses are properly granted access to the appropriate database instances.

Access Rule Description: This text is the description of the security group or groups in the AWS console.

JasperReports Server Public IP: Most users on EC2 should leave the this field empty. On EC2, JasperReports Server determines the IP address automatically. If you're running JasperReports Server outside of EC2, determine your IP address and enter it in this field. It is also possible with complex EC2 topology involving Virtual Private Clouds (VPCs) that you'll need to provide your IP address manually.

Suppress EC2 Credentials Warning: If your JasperReports Server instance was created with no IAM role, when you go to the data source wizard to add a data source with EC2 credentials you'll be warned that no proper role is set. Checking this box suppresses the warning and disables the option.

3.3 Upgrading Your Instance or Jaspersoft Version

Updating your 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.

You must be logged in as `superuser` to upgrade.

To upgrade your instance:

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

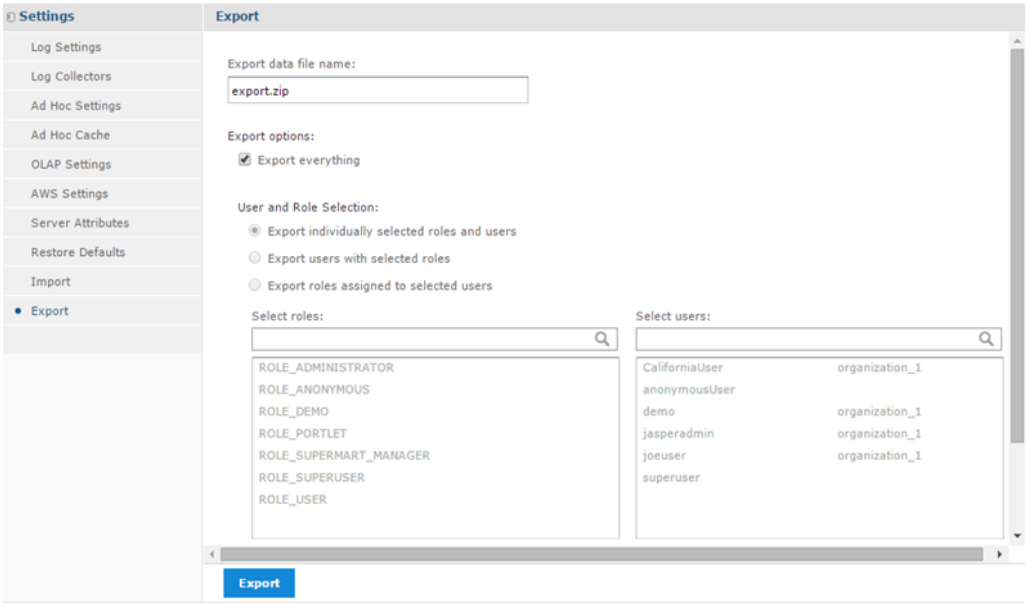

Figure 3-3 Export Window

3. Name your export data file and select the items to export. Choose **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. You will need to stop the current instance before creating the new one. In AWS, go to **EC2 Dashboard > Instances > Instances** to stop the instance.

5. Create a new instance that uses the latest version of the Jaspersoft for AWS AMI.
   For instructions on creating an instance, see **Launching Instances**.
6. Log into your new instance as superuser.
7. Navigate to **Manage > Server Settings**.
8. Click **Import** in the left column. The **Import** window appears.

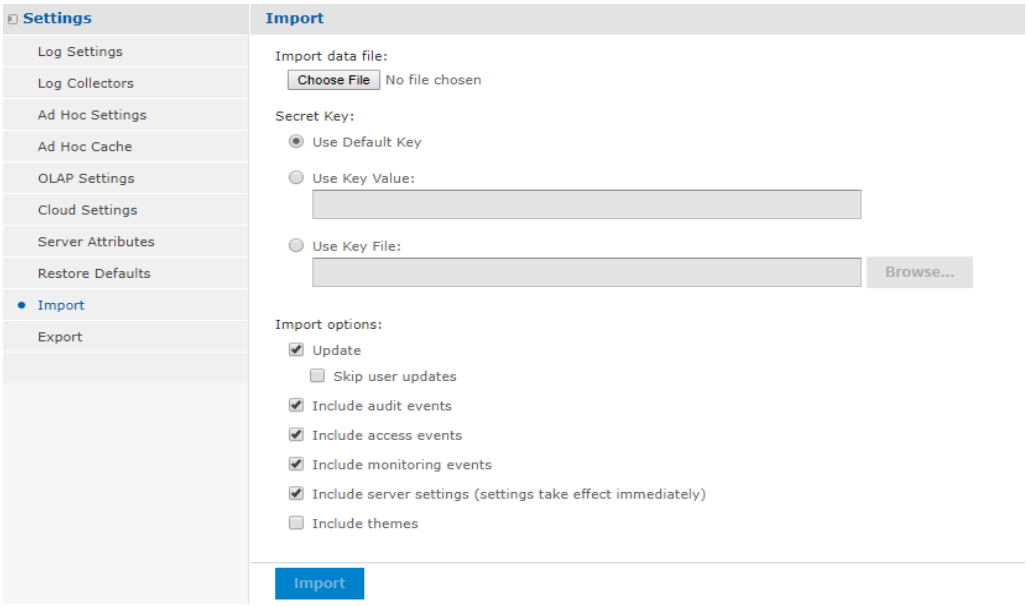

Figure 3-4 Import Window

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

3.4 Retrieving Logs

To retrieve logs:

1. SSH into your instance using your AWS private key and the user name `ec2-user`.
   a. To follow logs, execute this command:

```
tail -f /var/log/jasperserver/jasperserver.log
```

b. To dump log content, execute this command:

```
cat /var/log/jasperserver/jasperserver.log
```

3.5 Stopping and Restarting Tomcat

To stop and restart Tomcat:

1. SSH into your instance using your AWS private key and the user name `ec2-user`.
2. Stop the Tomcat service using the following command:

```
sudo service tomcat8 stop
```

3. Restart the Tomcat service:

```
sudo service tomcat8 start
```

CHAPTER 4 CONNECTING TO YOUR DATA WITH JASPERREPORTS SERVER

Follow the instructions in the chapter to connect JasperReports Server to Amazon RDS or Redshift. For Amazon Elastic MapReduce (EMR) see **Connect to Amazon EMR**. For connecting JasperReports Server to non-Amazon data sources, see **Additional Connection Types**.

4.1 Launching JasperReports Server on AWS Marketplace

Upon purchasing JasperReports Server on AWS Marketplace or obtaining your BYOL ("Bring Your Own License") license key from Jaspersoft, make sure you follow the instructions in **Applying a Jaspersoft License for AWS BYOL** to launch the product.

- If you purchase JasperReports Server directly on AWS Marketplace, the license key is included.
- If you're using the Jaspersoft BYOL license key option, you can download the BYOL license key from http://support.tibco.com.

4.2 Connect to Amazon RDS or Redshift

JasperReports Server can automatically discover and connect to Amazon Relational Database Server (RDS) and Amazon Redshift using the auto-connect feature.

To connect to Amazon RDS or Redshift:

1. Log into JasperReports Server as an administrator.
2. Go to **Create** > **Data Source**.

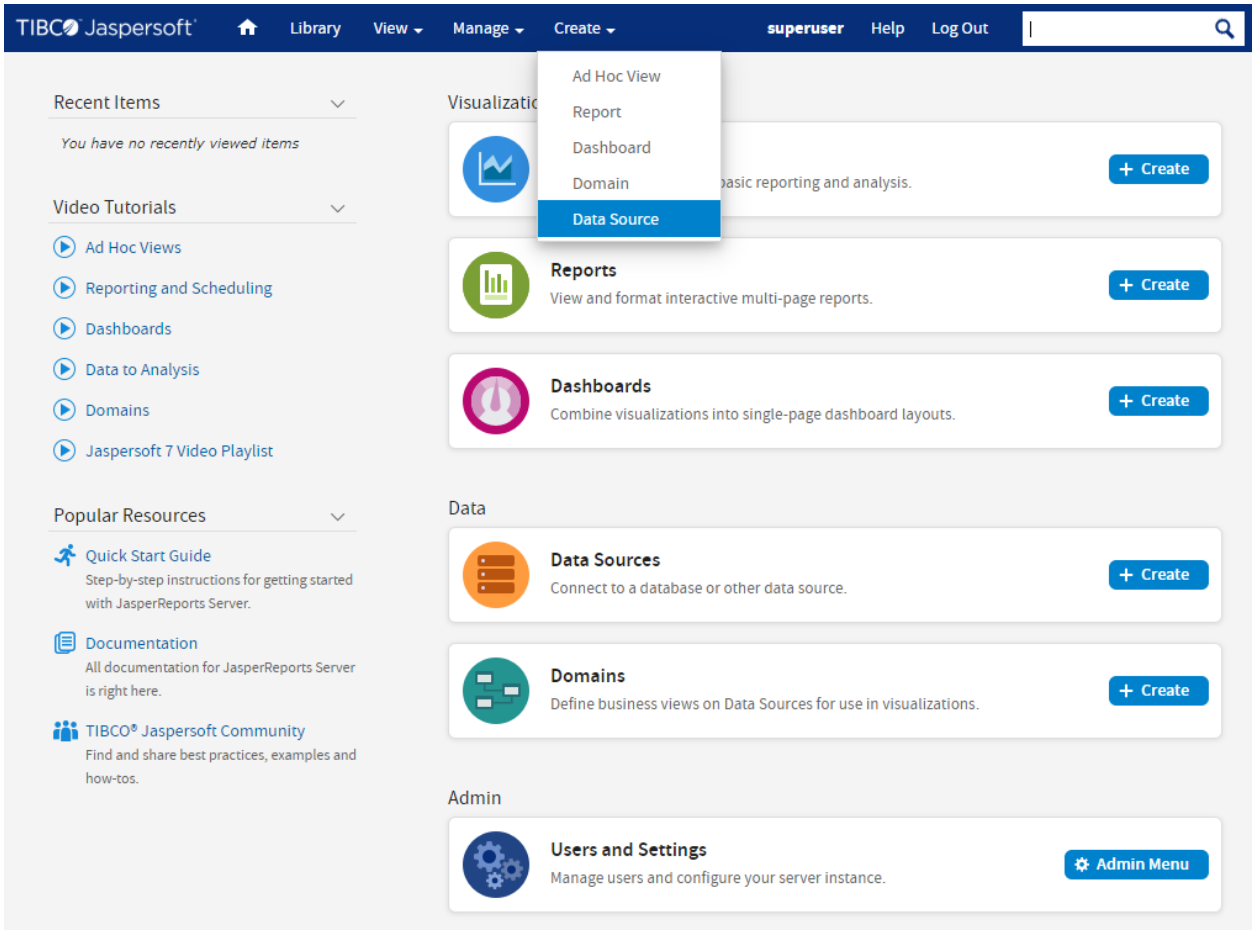

Figure 4-1 Create > Data Source menu

3. Select **AWS Data Source** from the **Type** dropdown menu.
4. Enter your EC2 instance credentials. If EC2 instance credentials are not available, then see the Additional Connection Possibilities section below.
5. Under **AWS Settings**, select **EC2 instance credentials**.

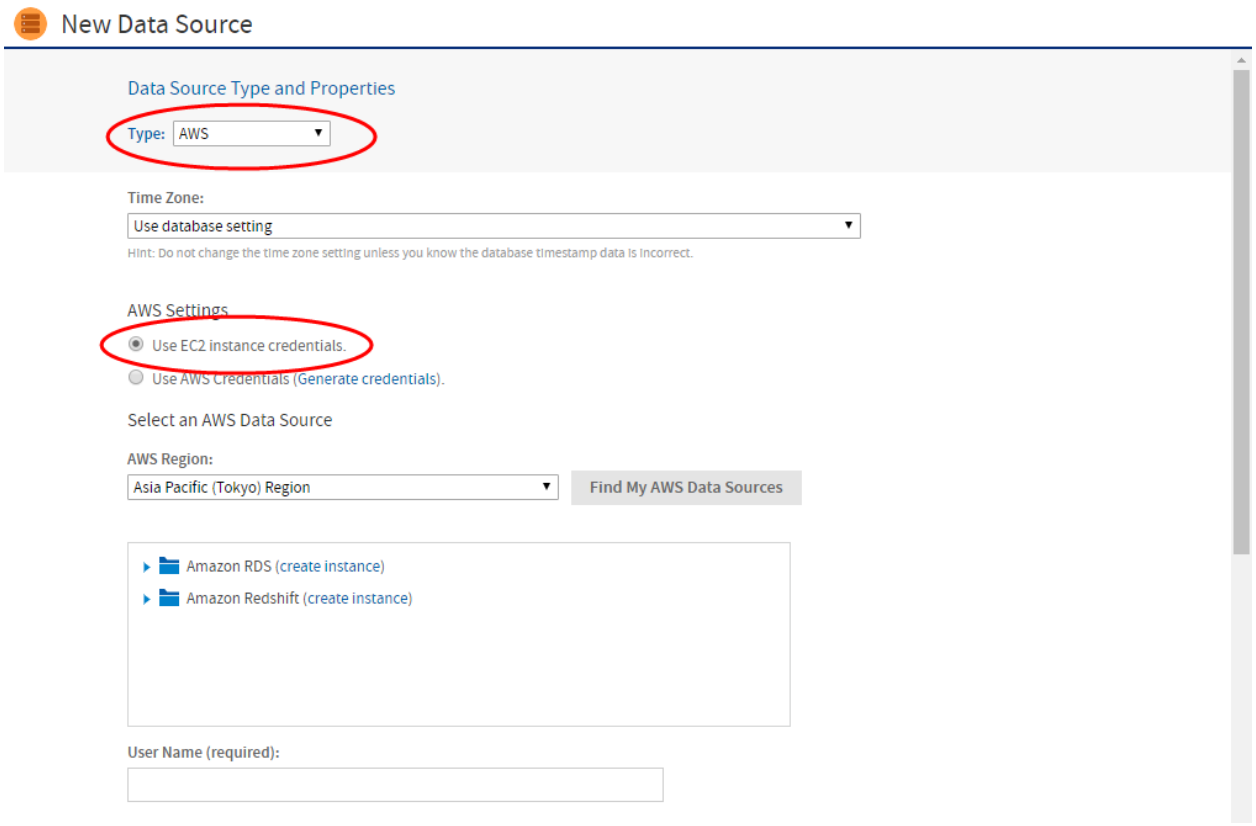

Figure 4-2 Add Data Source dialog

6. Enter your database connection info:

   JasperReports Server is able to detect your RDS and Redshift data sources. This is possible because the IAM Role associated with the EC2 instance is allowed to execute the actions "rds:Describe*" and "redshift:Describe*". It pre-populates the Database Name, Driver, and URL.

   On the New Data Source page, You must enter the database username and password. For security reasons, Amazon does not store these credentials, and Jaspersoft cannot retrieve them.

   The default database is automatically populated, but you may manually enter another if your RDS or Redshift instance has multiple databases.

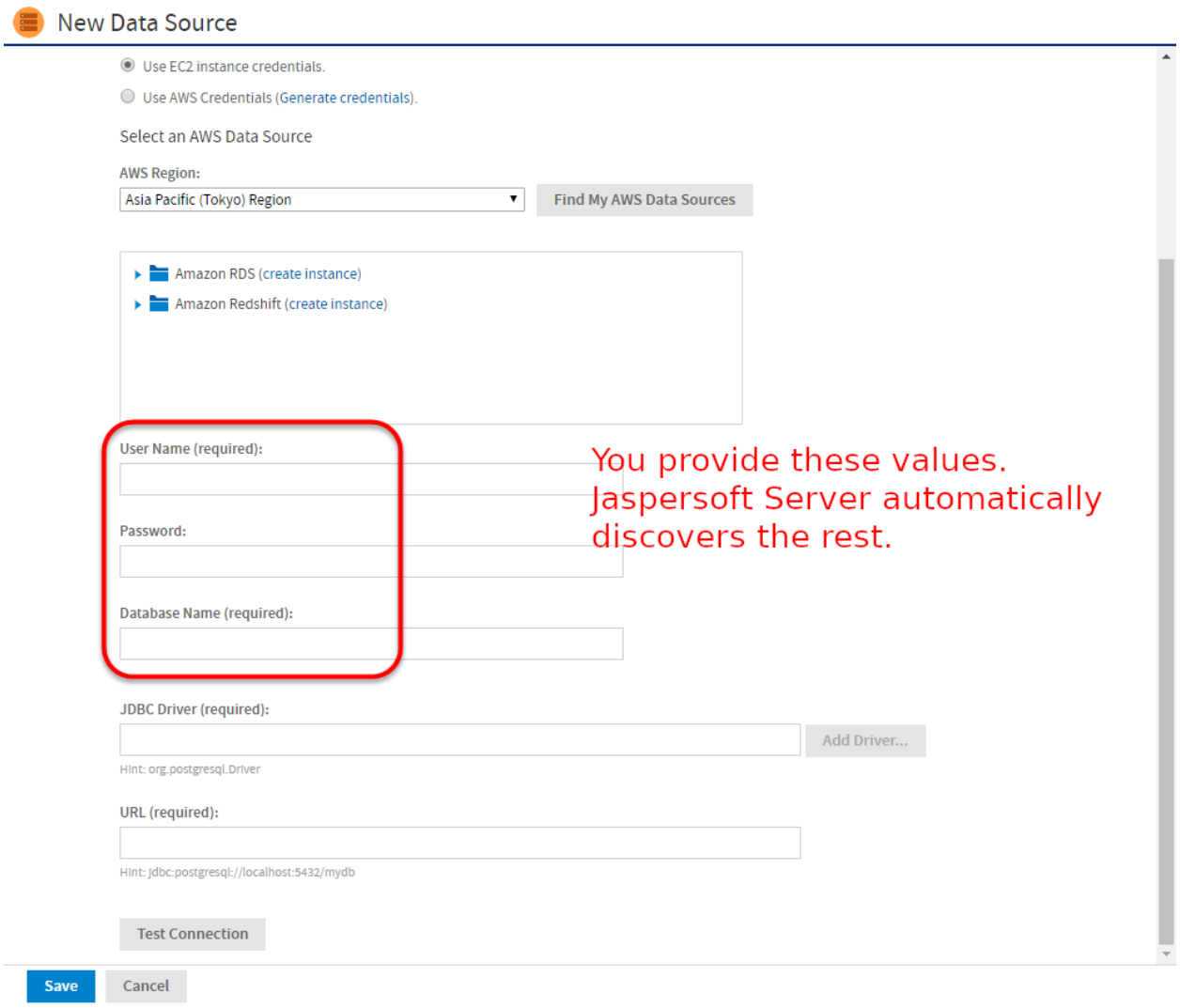

Figure 4-3 New Data Source dialog

7. Test your connection:

   You should always test your connection. This button does much more than just testing:

   - It creates a DB Security Group.
   - It adds the internal IP of the EC2 instance to the security group to authorize ingress to RDS. This is possible because the IAM Role provides the instance with credentials like "rds:CreateDBSecurityGroup" and "redshift:AuthorizeClusterSecurityGroupIngress".
   - If you want to control details of the security group name or specify the IP address manually because you have a complex VPC Topology, then navigate to the menu **Manage > Server Settings > AWS Settings**.

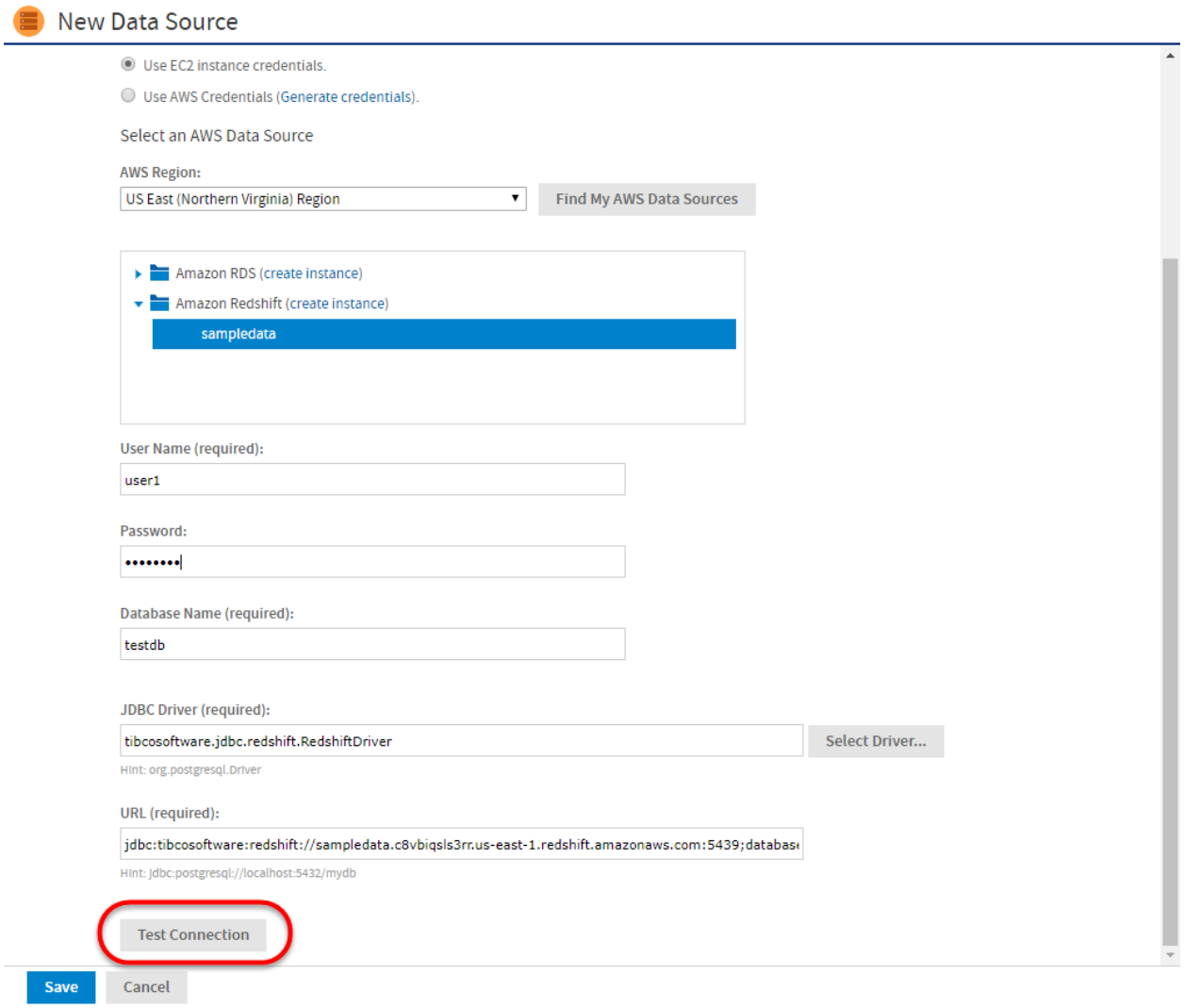

Figure 4-4 Test Connection dialog

8. Create a Domain:

   Jaspersoft's metadata layer is called "Data Domains". Choose **Create > Domain** from the main menu and follow the wizard to build a domain.

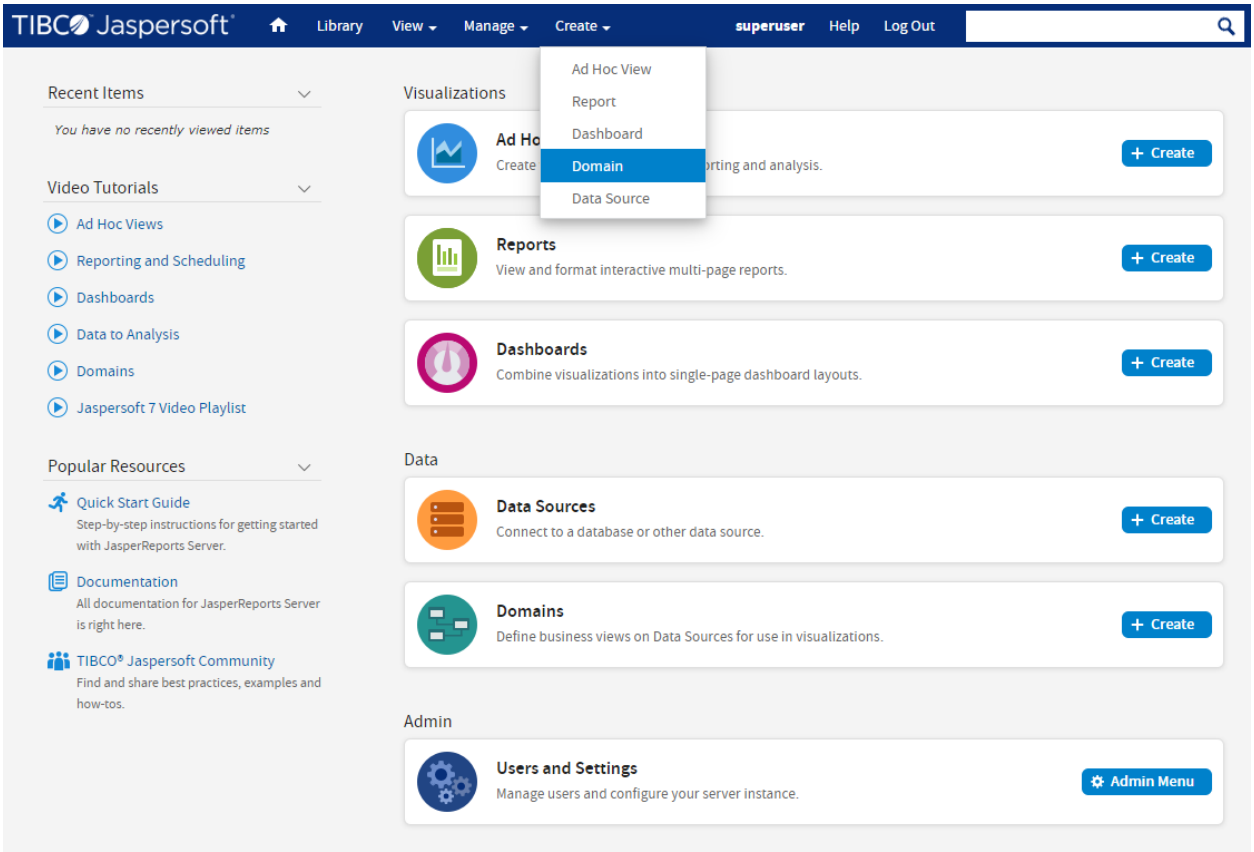

Figure 4-5 Create > Domain menu

9. Analyze your data:

   Choose **Create > Ad Hoc View**. Find your newly created domain and use the ad hoc environment to begin analyzing your data.

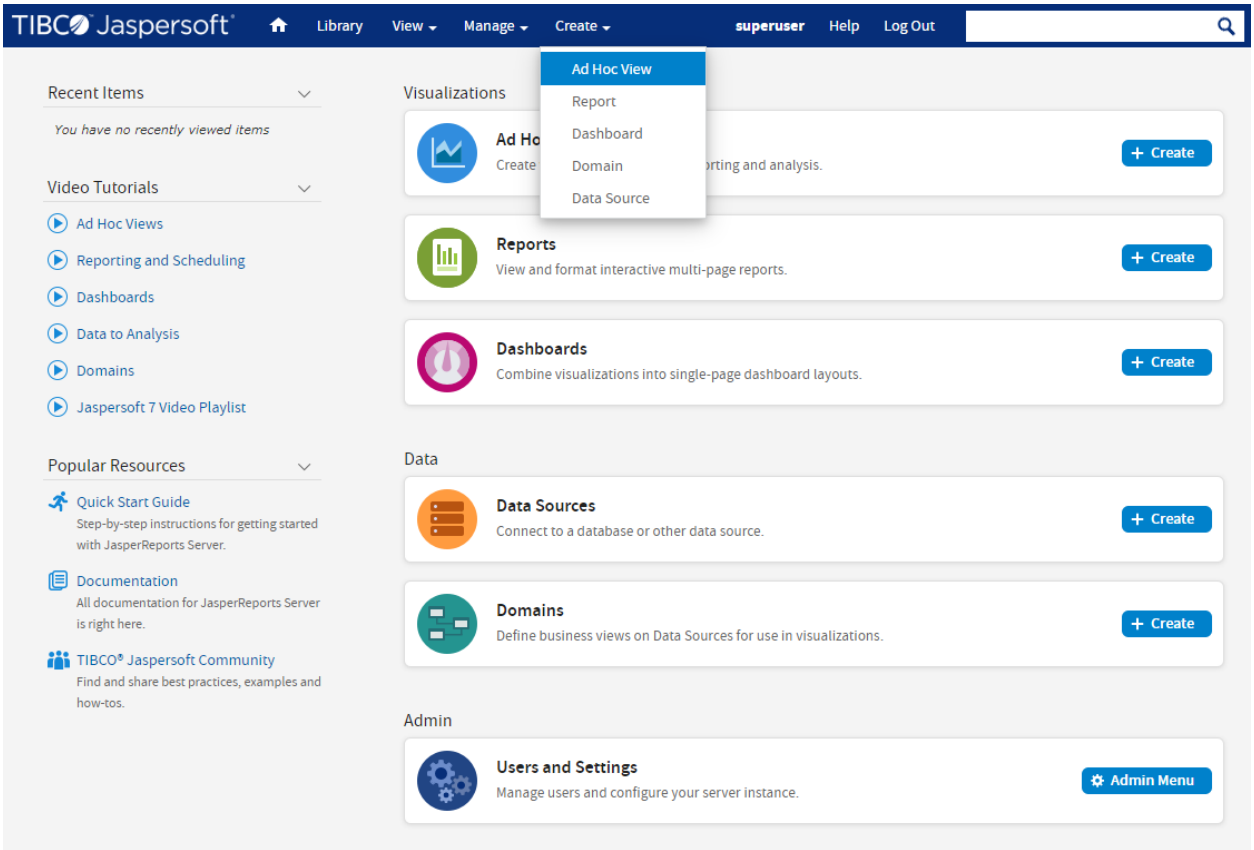

Figure 4-6 Create > Ad Hoc View menu

10. Next steps:

    Refer to the Online Learning Portal for details on creating domains, performing ad hoc analysis, and creating reports.

4.3 Additional Connection Types

- **AWS Credentials**

  We recommend launching Jaspersoft BI on an EC2 instance with an associated IAM Role. This role provides EC2 credentials for your JasperReports Server instance.

  If this option is not available, you can use AWS credentials instead. If you already have AWS Credentials, you can enter the Access Key and Secret Key.

  If you don't have AWS Credentials, you can run the CloudFormation Template "jrs-create-user" to generate credentials.

  http://www.jaspersoft.com/jrs-create-user?region=us-east-1

  http://www.jaspersoft.com/jrs-create-user?region=us-west-2

  http://www.jaspersoft.com/jrs-create-user?region=us-west-1

  http://www.jaspersoft.com/jrs-create-user?region=eu-west-1

  http://www.jaspersoft.com/jrs-create-user?region=ap-northeast-1

http://www.jaspersoft.com/jrs-create-user?region=sa-east-1

Running the CloudFormation Template "jrs-create-user" requires using the older AWS CloudFormation console. If you are using the newer, redesigned CloudFormation console, you need to switch back to the previous version to run this template.

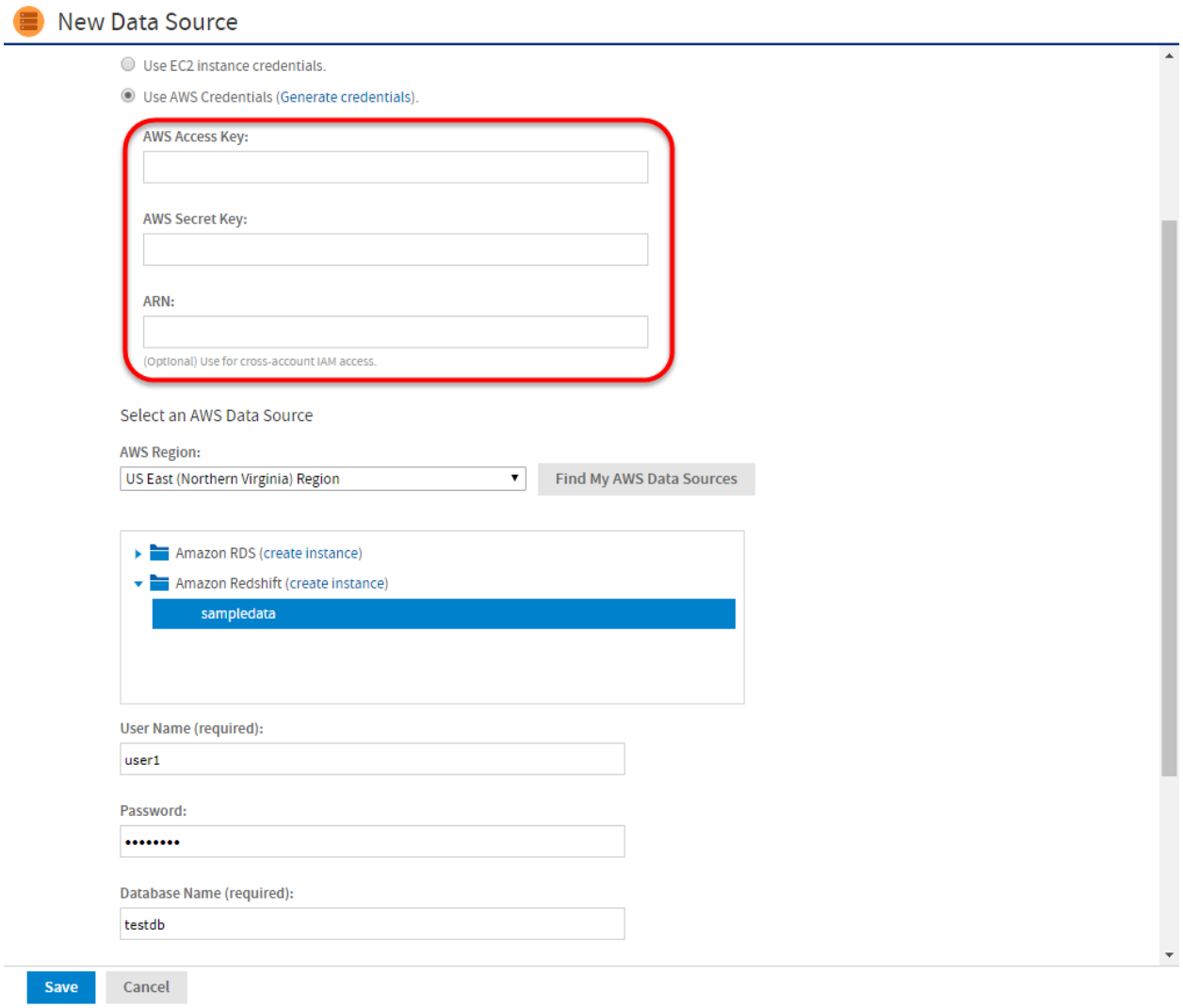

Figure 4-7 Entering AWS credentials

- **JDBC / JNDI Connections**

NOTE: When using JDBC for data source connections, you're responsible for managing the security groups to allow access from the Jaspersoft server to the data source.

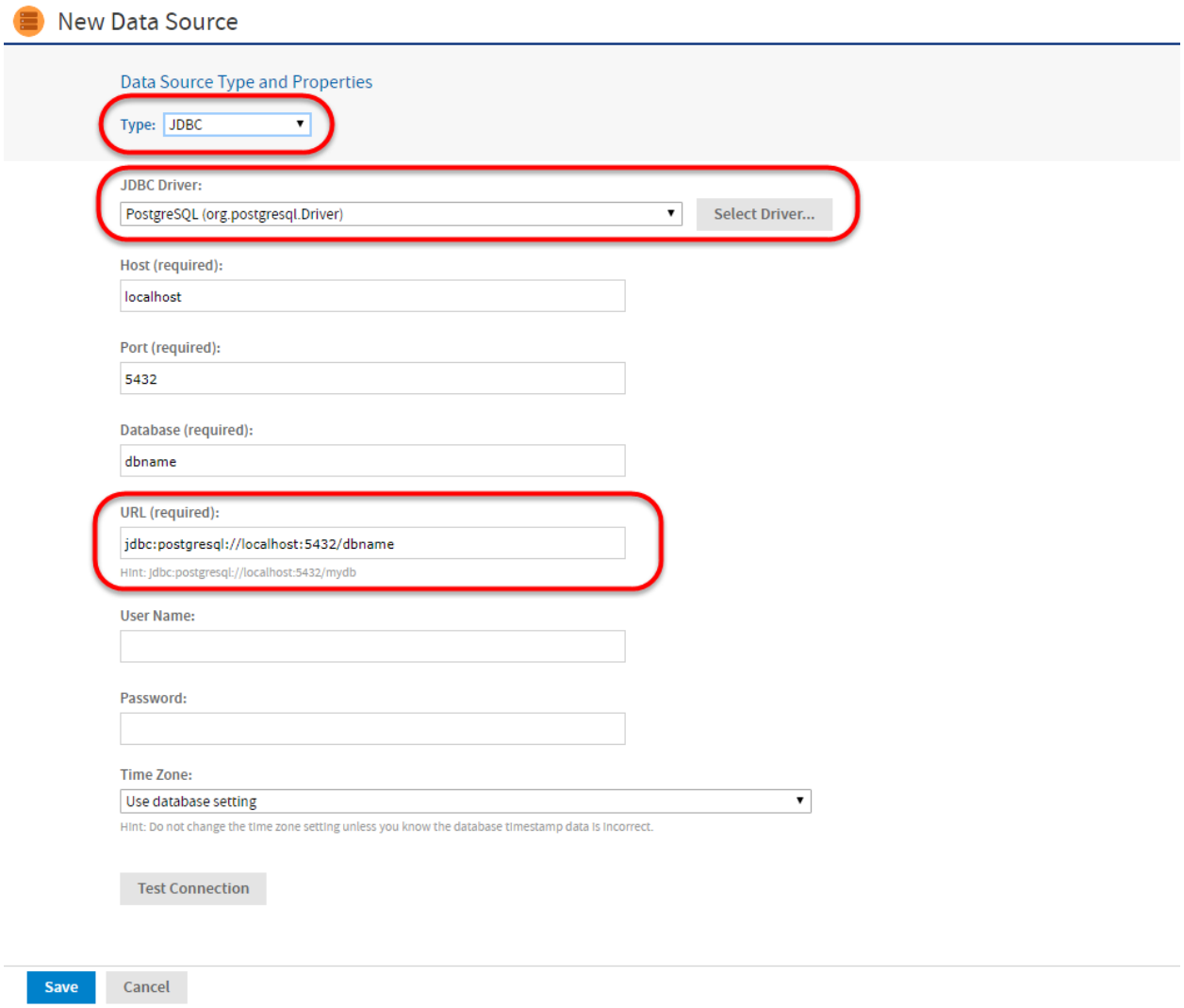

Figure 4-8 Using JDBC / JNDI connections

- **Amazon RDS or Redshift**
  When connecting to Amazon RDS or Redshift, it is best to use the AWS Data Source type to make configuration easier. If you prefer, you can use JDBC to connect to Amazon RDS or Redshift. To connect using JDBC, choose the JDBC Data Source type. Enter all connection information and test. Alternatively, you can choose JNDI Data Source and refer to a data source defined in Apache Tomcat.

Benefits of defining your own JDBC connections:

- You have complete control

Benefits of using AWS Data Sources:

- Jaspersoft provides the driver and URL
- Data source automatically recovers if the IP address changes
- Data source automatically recovers if DB Security Groups are modified

4.4 Connect to Amazon EMR

The JasperReports Server auto-connect feature is not supported for Amazon EMR. Connections to EMR need to be configured manually. Please see the Amazon EMR connection page for details:
http://community.jaspersoft.com/jaspersoft-aws/connect-emr

CHAPTER 5 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 AWS. Jaspersoft Studio allows you to create sophisticated layouts containing charts, images, subreports, crosstabs, and more.

5.1 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.

5.2 Connecting Jaspersoft Studio to Your Data

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

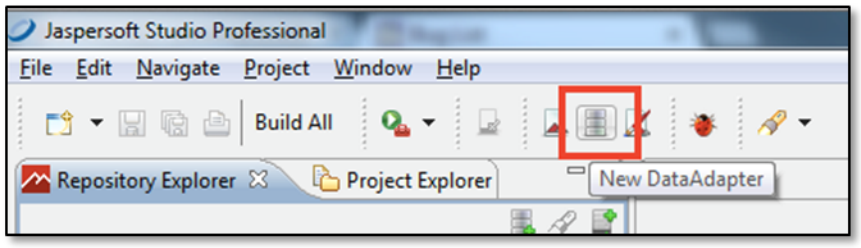

Figure 5-1 New DataAdapter button

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

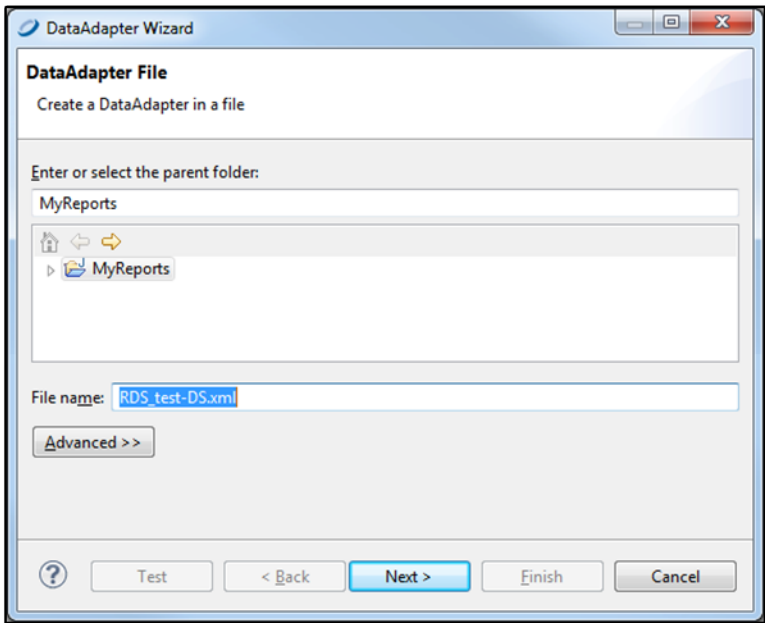

Figure 5-2 DataAdapter wizard

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

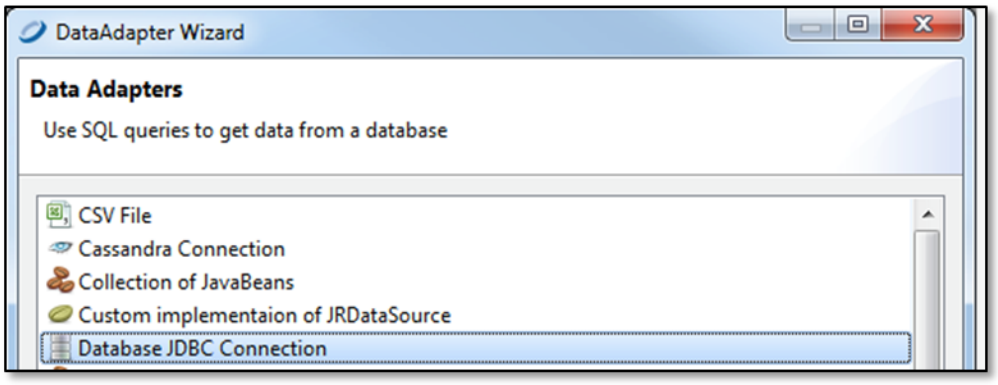

Figure 5-3 Selecting a data source type

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

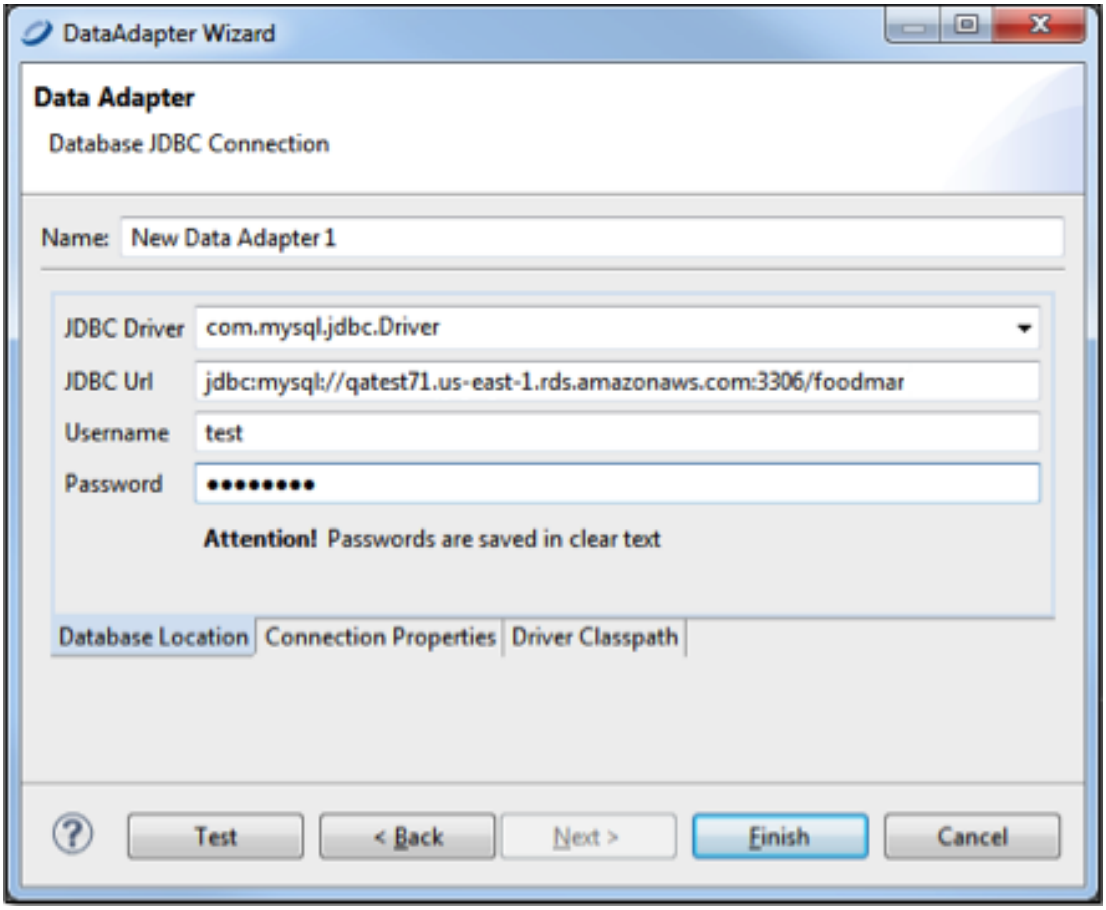

Figure 5-4 Entering your database location

4. Add the **JDBC Driver**. You may need to search the web for one that corresponds to your RDBMS or other technology on your EC2 instance.
5. Enter the **JDBC Url**. This is the Endpoint URL from your Amazon EC2 dashboard (including the port) and database type.

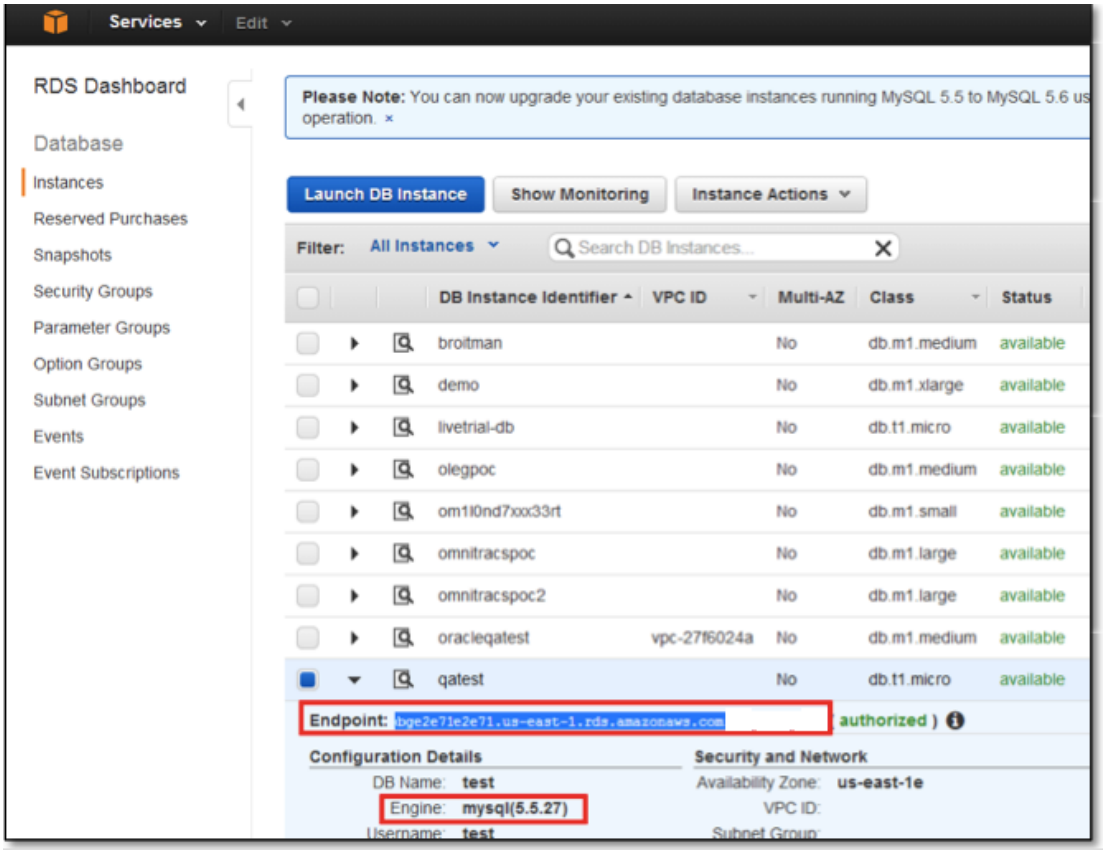

Figure 5-5 Locating the Endpoint

6. Click the **Driver Classpath** tab and select the local path of the driver.

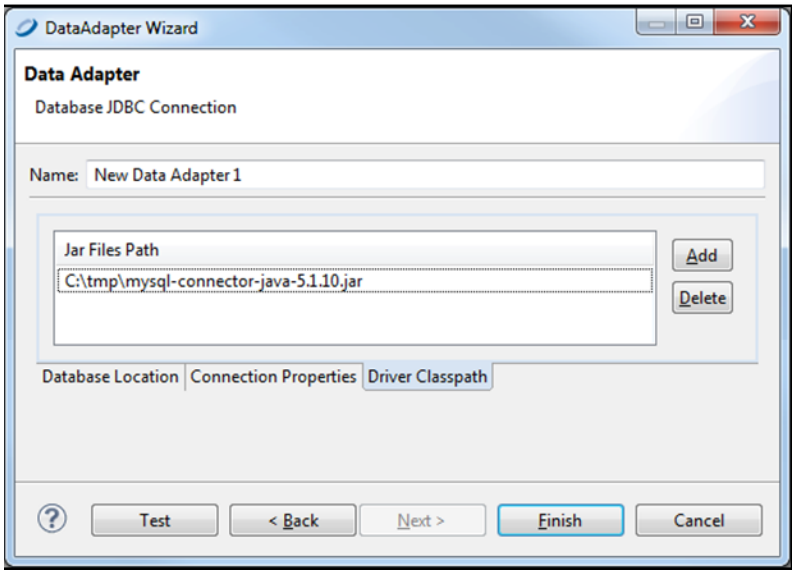

Figure 5-6 Selecting the driver classpath

7. Test the connection.

5.3 Connecting Jaspersoft Studio Pro to the JasperReports Server Repository

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….**

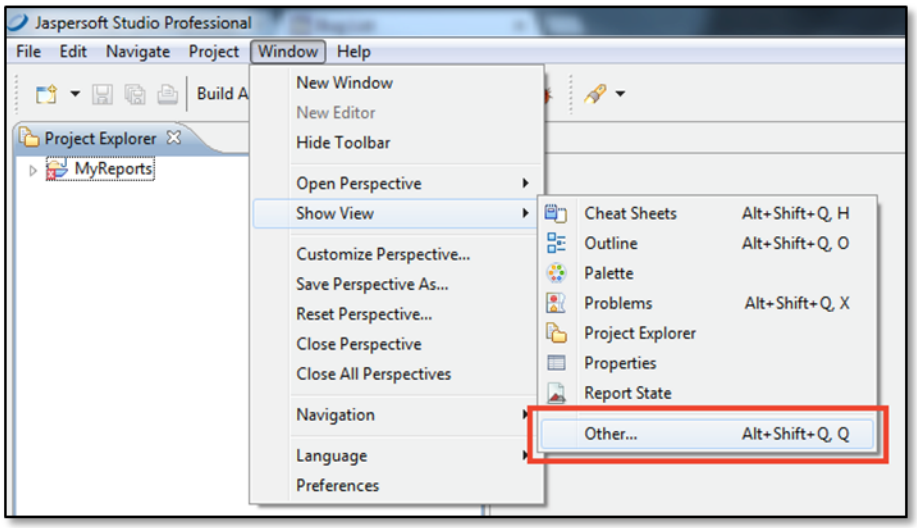

Figure 5-7 Window > Show Views > Other…. menu

2. Select **Repository Explorer**.

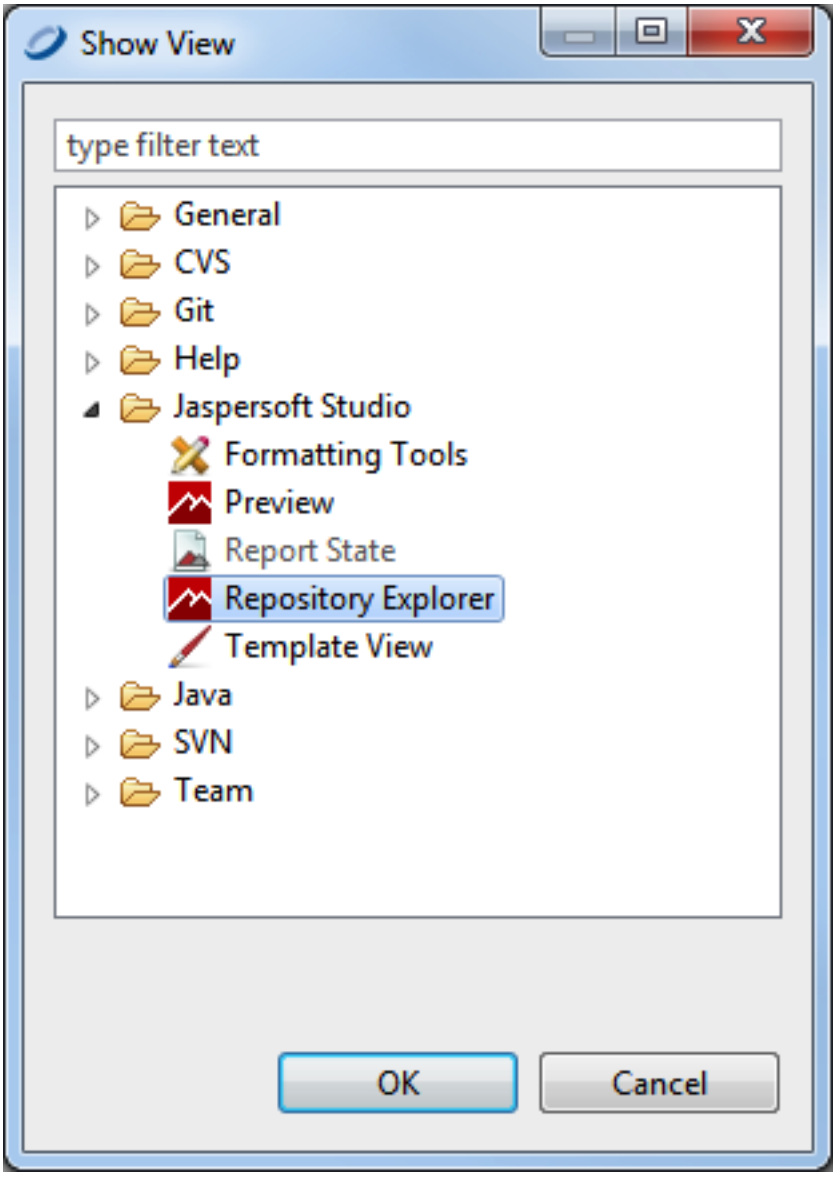

Figure 5-8 Selecting the Repository Explorer

3. Select the instance's URL. It should start with `ec2`.

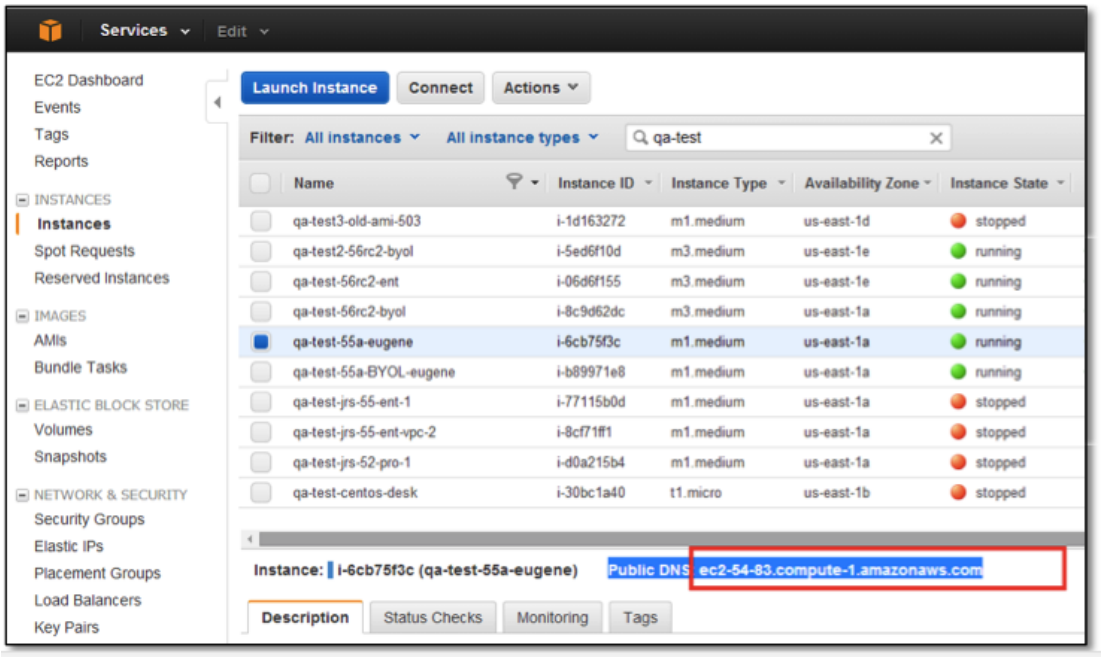

Figure 5-9 Selecting the instance URL

4. Right-click the name of your instance to create a JasperReports Server repository connection.

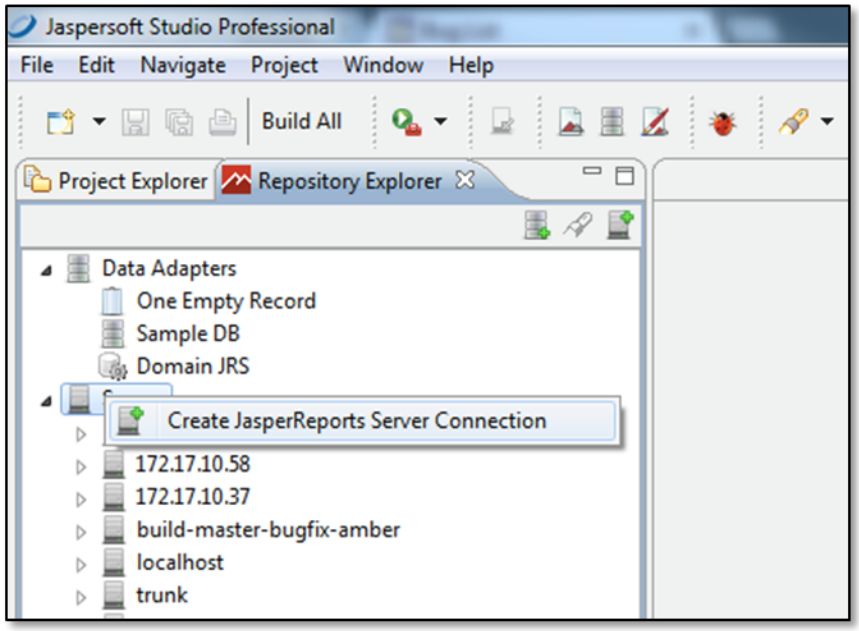

Figure 5-10 Creating the JasperReports Server repository connection

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.

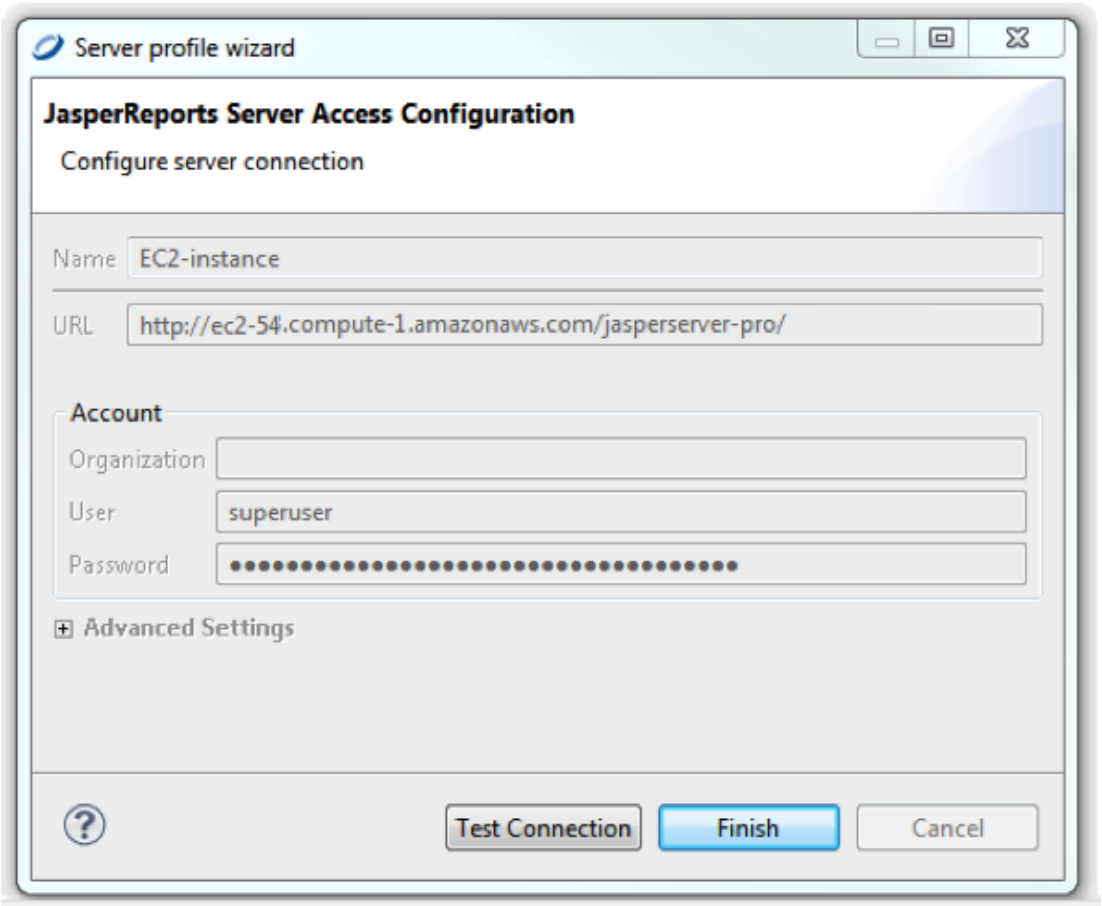

Figure 5-11 Filling in the instance URL

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

AMAZON TERMINOLOGY

Amazon Machine Image (AMI)

A supported and maintained Linux provided by Amazon Web Services for use on Amazon Elastic Compute Cloud (Amazon EC2). It is designed to provide a stable, secure, and high performance execution environment for applications running on Amazon EC2. It also includes several packages that enable easy integration with AWS, including launch configuration tools and many popular AWS libraries and tools. Amazon Web Services also provides ongoing security and maintenance updates to all instances running the Amazon AMI.

Amazon Web Services (AWS)

Cloud platform, used to provide and host a family of services, such as RDS, S3, EC2, DynamoDB.

AWS Console

The user interface Amazon has built around the available services offered. Within the AWS Console, there are sub-consoles for individual services (EC2, S3, RDS, CloudFront, DynamoDB, etc.)

AWS Marketplace

Storefront for commercial AMIs provided and managed by Amazon, which bills customer for usage and keeps a percentage of sales proceeds.

AWS Identity and Access Management (IAM)

AWS Identity and Access Management (IAM) enables you to create multiple users and manage the permissions for each of these users within your AWS Account. A user is an identity within your AWS account with unique security credentials that can be used to access AWS Services. IAM eliminates the need to share passwords or access keys, and makes it easy to enable or disable a user's access as appropriate.

CloudFormation (CF)

AWS CloudFormation gives developers and systems administrators an easy way to create and manage a collection of related AWS resources, provisioning and updating them in an orderly and predictable fashion.

Marketplace AMI

An AMI that is distributed through the AWS Marketplace.

Public AMI

AMI configured as public by any Amazon user, and listed in everyone's AWS EC2 console AMI area.

RDS

Amazon's Relational Database Service, which makes it easy to run MySQL, Oracle, or SQL Server database servers in the cloud. The servers are managed, upgraded, and backed up by Amazon.

Stack

A collection of AWS resources you create and delete as a single unit

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.

Amazon Web Services (AWS)

Cloud platform, used to provide and host a family of services, such as RDS, S3, and EC2.

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.

CloudFormation (CF)

Amazon Web Services CloudFormation gives developers and systems administrators an easy way to create and manage a collection of related AWS resources, provisioning, and updating them in an orderly and predictable fashion.

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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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 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 suborganizations and mange 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 S3 bucket hosted by Amazon Web Services. Users access the repository through a file browser on the host machine or through the AWS console.

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.

S3 Bucket

Cloud storage system for Amazon Web Services. JasperReports IO can use an S3 bucket to store files for its repository.

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.

Stack

A collection of Amazon Web Services resources you create and delete as a single unit.

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.

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