pentaho

Version 5.4

Install BA Server with Your Own BA Repository

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Introduction

This section explains how to install Business Analytics (BA) Server and configure it to use the BA Repository database of your choice. The BA Repository contains solution content, scheduling, and audit tables needed for the BA Server to operate. You can house the BA Repository on PostgreSQL, MySQL, MS SQL Server, or Oracle. With this installation option, you must supply, install, and configure your chosen database yourself.

Prerequisites

Read Select BA Installation Option to make sure that this is the best installation option for you. Then, check the Supported Technologies tables to make sure that your server computer, BA Repository database, and web browser meet Pentaho's requirements for this version of the software.

Expertise

The topics in this section are written for IT administrators, evaluators, and analysts who have who have access to the server on which the BA Server will be installed. You should know where data is stored, how to connect to it, details about the computing environment, and how to use the command line to issue commands for Microsoft Windows or Linux. You should also know how to install a database.

Tools

You will need a text editor and a zip tool to complete some of the steps in this installation process.

Login Credentials

All of the tasks in this section require that you have the appropriate permissions and accesses required to install software on servers and workstations.

Overview of the Installation Process

The installation process consists of the following steps.

- Prepare Environment: Explains how to prepare your computer for software installation.
- Prepare Repository: Provides information about how to run DDL scripts that create tables for the BA Repository. Also provides information about how to configure the BA Repositories on your selected database.
- Start BA Server: Explains how to modify startup files and start the BA server.
- Next Steps: Indicates what to do after the BA Server has been installed.

Prepare Environment

This section explains how to prepare your environment for the installation process. Select your operating system to begin.

- Windows
- Linux and Mac

Prepare Your Windows Environment for Installation

Install the BA Repository Host Database

The BA Repository houses data needed for Pentaho tools to provide scheduling and security functions. It also stores metadata and models for reports that you create. You can host the BA Repository on these databases.

- PostgreSQL
- MySQL
- Oracle
- MS SQL Server

To install the BA Repository's host database, do these things.

1. Check the Supported Technologies section to determine which versions of databases Pentaho supports.
2. Download and install the database of your choice.
3. Verify that the database is installed correctly.

Install Java

Install a supported version of Java.

1. Check the Supported Technologies list to see which version of Java Pentaho supports.
2. Download the supported version of the JRE or JDK from the Oracle site and install it.

Download and Unpack Installation Files

The Pentaho BA Server software, data files, and examples are stored in pre-packaged .zip files. You will need to manually copy these files to correct directories.

Download Files

Download the following installation and plug-in files from the Pentaho Customer Support Portal in the archive build folder.

Component	Zip File
BA Server Installation File	`biserver-ee-5.0.0-dist.zip`
Dashboard Designer Plugin	`pdd-plugin-ee-5.0.0-dist.zip`

Component	Zip File
Interactive Reporting Plugin	`pir-plugin-ee-5.0.0-dist.zip`
Mobile Plugin	`pentaho-mobile-plugin-5.0.0-dist.zip`
Pentaho Analyzer Plugin	`paz-plugin-ee-5.0.0-dist.zip`
BA Operations Mart Files	`pentaho-operations-mart-5.0.0-dist.zip`

Unpack BA Server Installation File

1. Unzip the BA Server Installation file.
2. To unpack the file, run `installer.bat`. The **IZPak** window appears.
3. Read the license agreement, select **I accept the terms of this license agreement**, and click **Next**.
4. In the **Select the installation path** text box, enter the place where you want to create the pentaho directory, then click **Next**.
5. A message indicating that a target directory will be created appears. Click **Yes**.
6. When the installation progress is complete, click **Quit**.
7. Navigate to the pentaho directory and create a server subdirectory.
8. Move the biserver-ee directory into the server directory. When you are finished, the directory structure should look like this:
   - pentaho/jdbc-distribution
   - pentaho/license-installer
   - pentaho/server/biserver-ee

Unpack Plugin Files

1. Unzip the file.
2. Unpack the file by running `install.bat`.
3. In the **IZPack** window read the license agreement, select **I accept the terms of this license agreement**, then click **Next**.
4. In the **Select the installation path** text box, save the file in the `pentaho/server/biserver-ee/pentaho-solutions/system` directory, then click **Next**.
5. A warning message appears. Click **Yes**.
6. When the installation finishes, click **Quit**.

Unpack Operations Mart DDL Files

1. Unzip the file.
2. Unpack the file by running `install.bat`.
3. In the **IZPack** window read the license agreement, select **I accept the terms of this license agreement**, then click **Next**.
4. In the **Select the installation path** text box, save the file in the `pentaho/server/biserver-ee/data` directory, then click **Next**.

5. A warning message appears. Click **Yes**.
6. When the installation finishes, click **Quit**.
7. Remove all of the files except the `pentaho-operations-mart-ddl-5.0.0.zip` file.
8. Unzip the `pentaho-operations-mart-ddl-5.0.0.zip` file. Move the directory for your database into `pentaho/server/biserver-ee/data/<database name>`. Delete the others.

If your BA Repository is On:	Copy this directory into `pentaho/server/biserver-ee/data/`
PostgreSQL	postgresql
MySQL	mysql5
Oracle	oracle10g
MS SQL Server	sqlserver

Verify Directory Structure

After you have finished unpacking all of the plugin and pentaho operations mart files, the pentaho directory structure should contain these subdirectories.

- pentaho/server/biserver-ee/pentaho-solutions/system/analyzer
- pentaho/server/biserver-ee/pentaho-solutions/system/dashboards
- pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-interactive-reporting
- pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-mobile-plugin
- pentaho/server/biserver-ee/
- pentaho/server/biserver-ee/data/<database name>

Install the Analysis Enterprise Edition Plugin

Follow the instructions below to install the Pentaho Analysis Enterprise Edition package, which contains Analysis engine enhancements for large ROLAP deployments. This procedure does not cover Pentaho Analyzer installation, which is covered in this section .

1. If you have not already done so, retrieve the `pentaho-analysis-ee-5.0.0.zip` file from the Pentaho website.
2. Unpack the file to a temporary location.
3. Stop the BA Server if it is running.
4. Copy the following JARs from the `/pentaho-analysis-ee/lib` to `/tomcat/webapps/pentaho/WEB-INF/lib`.
    - pentaho-analysis-ee-5.0.0.jar
    - infinispan-core-5.3.0.Final.jar
    - jboss-logging-3.1.1.GA.jar
    - jboss-marshalling-1.3.15.GA.jar

- jboss-marshalling-river-1.3.15.GA.jar
- jboss-transaction-api_1.1_spec-1.0.0.Final.jar
- jgroups-3.3.1.Final.jar
- staxmapper-1.1.0.Final.jar

13. Copy all of the configuration files from `/pentaho-analysis-ee/config` to `/tomcat/webapps/pentaho/WEB-INF/classes`.
14. Depending on the installation type; there would not be a **pentaho.war** (in archive based installations and executable based installations the **pentaho.war** is already deployed and the application will show as: `/tomcat/webapps/pentaho/`.
15. Remove the temporary **pentaho-analysis-ee** directory.
16. To enable the segment cache plugin, you first follow the installation steps above. Once this is done, open the file `WEB-INF/classes/pentaho-analysis-config.xml` and set the following property. See http://wiki.pentaho.com/display/analysis/Pentaho+Analysis+EE for more details.

```
<entry key="USE_SEGMENT_CACHE">true</entry>
```

Pentaho Analysis Enterprise Edition is now installed with the default Infinispan configuration.

Set Environment Variables

Set the `PENTAHO_JAVA_HOME` and `PENTAHO_INSTALLED_LICENSE_PATH` environment variables. If you do not set these variables, Pentaho will not start correctly.

NOTE:

If you are using a JRE, set the `JRE_HOME` home environment variable as well.

1. Set the path of the `PENTAHO_JAVA_HOME` variable to the path of your Java installation, like this.

```
SET PENTAHO_JAVA_HOME=C:\Program Files\Java\jdk7
```

2. Set the path of the `PENTAHO_INSTALLED_LICENSE_PATH` variable to the path of your installed licenses, like this.

```
SET PENTAHO_INSTALLED_LICENSE_PATH=C:\Users\pentaho\.pentaho\.
installedLicenses.xml
```

3. Log out and in again, then verify the variables have been properly set.

Next Step

You've finished preparing your environment. Go to Configure Your Repository Database to continue.

Prepare Your Linux and Mac Environment for Installation

Create the Pentaho User

Create a pentaho user account that has administrative privileges. You will use this account to complete the rest of the installation instructions.

1. Create an administrative user on computer that will host the BA Server and name it **pentaho**.
2. Verify that you have the appropriate permissions to read, write, and execute commands in the pentaho user's home directory.

Install the BA Repository Host Database

The BA Repository houses data needed for Pentaho tools to provide scheduling and security functions. The repository also stores metadata and models for reports that you create. You can choose to host the BA Repository on these databases.

- PostgreSQL
- MySQL
- Oracle
- MS SQL Server

To install the BA Repository's host database, do these things.

1. Check the Supported Technologies section to determine which versions of the databases Pentaho supports.
2. Download and install the database of your choice.
3. Verify that the BA Repository database is installed correctly.

Install Java

Install a supported version of Java.

1. Check the Supported Technologies list to see which version of Java Pentaho supports.
2. Download the supported version of the JRE or JDK from the Oracle site and install it.

Download and Unpack Installation Files

The Pentaho BA Server software, data files, and examples are stored in pre-packaged .zip files. You will need to manually copy these files to correct directories.

Download Files

Download the following installation and plug-in files from the Pentaho Customer Support Portal in the archive build folder.

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Dashboard Designer Plugin	`pdd-plugin-ee-5.0.0-dist.zip`
Interactive Reporting Plugin	`pir-plugin-ee-5.0.0-dist.zip`
Mobile Plugin	`pentaho-mobile-plugin-5.0.0-dist.zip`
Pentaho Analyzer Plugin	`paz-plugin-ee-5.0.0-dist.zip`

Unpack BA Server Installation File

1. Unzip the BA Server Installation file.
2. To unpack the file, run `installer.bat`. The **IZPak** window appears.
3. Read the license agreement, select **I accept the terms of this license agreement**, and click **Next**.
4. In the **Select the installation path** text box, enter the place where you want to create the pentaho directory, then click **Next**.
5. A message indicating that a target directory will be created appears. Click **Yes**.
6. When the installation progress is complete, click **Quit**.
7. Navigate to the pentaho directory and create a server subdirectory.
8. Move the biserver-ee directory into the server directory. When you are finished, the directory structure should look like this:
   - pentaho/jdbc-distribution
   - pentaho/license-installer
   - pentaho/server/biserver-ee

Unpack Plugin Files

1. Unzip the file.
2. Unpack the file by running `install.sh`.
3. In the **IZPack** window read the license agreement, select **I accept the terms of this license agreement**, then click **Next**.
4. In the **Select the installation path** text box, save the file in the `pentaho/server/biserver-ee/pentaho-solutions/system` directory, then click **Next**.
5. A warning message appears. Click **Yes**.
6. When the installation finishes, click **Quit**.

Verify Directory Structure

After you have finished unpacking all of the plugin files, the pentaho directory structure should contain these subdirectories.

- pentaho/server/biserver-ee/pentaho-solutions/system/analyzer
- pentaho/server/biserver-ee/pentaho-solutions/system/dashboards
- pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-interactive-reporting
- pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-mobile-plugin

Download and Unpack Installation Files

The Pentaho BA Server software, data files, and examples are stored in pre-packaged .zip files. You will need to manually copy these files to correct directories.

Download Files

Download the following installation and plug-in files from the Pentaho Customer Support Portal in the archive build folder.

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Interactive Reporting Plugin	`pir-plugin-ee-5.0.0-dist.zip`
Mobile Plugin	`pentaho-mobile-plugin-5.0.0-dist.zip`
Pentaho Analyzer Plugin	`paz-plugin-ee-5.0.0-dist.zip`
BA Operations Mart Files	`pentaho-operations-mart-5.0.0-dist.zip`

Unpack BA Server Installation File

1. Unzip the BA Server Installation file.
2. To unpack the file, run `installer.sh`. The **IZPak** window appears.
3. Read the license agreement, select **I accept the terms of this license agreement**, and click **Next**.
4. In the **Select the installation path** text box, enter the place where you want to create the pentaho directory, then click **Next**.
5. A message indicating that a target directory will be created appears. Click **Yes**.
6. When the installation progress is complete, click **Quit**.
7. Navigate to the pentaho directory and create a server subdirectory.
8. Move the biserver-ee directory into the server directory. When you are finished, the directory structure should look like this:

- pentaho/jdbc-distribution
- pentaho/license-installer
- pentaho/server/biserver-ee

Unpack Plugin Files

1. Unzip the file.
2. Unpack the file by running `install.sh`.
3. In the **IZPack** window read the license agreement, select **I accept the terms of this license agreement**, then click **Next**.
4. In the **Select the installation path** text box, save the file in the `pentaho/server/biserver-ee/pentaho-solutions/system` directory, then click **Next**.
5. A warning message appears. Click **Yes**.
6. When the installation finishes, click **Quit**.

Unpack Operations Mart DDL Files

1. Unzip the file.
2. Unpack the file by running `install.sh`.
3. In the **IZPack** window read the license agreement, select **I accept the terms of this license agreement**, then click **Next**.
4. In the **Select the installation path** text box, save the file in the `pentaho/server/biserver-ee/data` directory, then click **Next**.
5. A warning message appears. Click **Yes**.
6. When the installation finishes, click **Quit**.
7. Remove all of the files except the pentaho-operations-mart-ddl-`5.0.0`.zip file.
8. Unzip the pentaho-operations-mart-ddl-`5.0.0`.zip file. Move the directory for your database into `pentaho/server/biserver-ee/data/<database name>`. Delete the others.

If your BA Repository is On:	Copy this directory into `pentaho/server/biserver-ee/data/`
PostgreSQL	postgresql
MySQL	mysql5
Oracle	oracle10g
MS SQL Server	sqlserver

Verify Directory Structure

After you have finished unpacking all of the plugin and pentaho operations mart files, the pentaho directory structure should contain these subdirectories.

- pentaho/server/biserver-ee/pentaho-solutions/system/analyzer

- pentaho/server/biserver-ee/pentaho-solutions/system/dashboards
- pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-interactive-reporting
- pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-mobile-plugin
- pentaho/server/biserver-ee/
- pentaho/server/biserver-ee/data/<database name>

Install the Analysis Enterprise Edition Plugin

Follow the instructions below to install the Pentaho Analysis Enterprise Edition package, which contains Analysis engine enhancements for large ROLAP deployments. This procedure does not cover Pentaho Analyzer installation, which is covered in this section .

1. If you have not already done so, retrieve the `pentaho-analysis-ee-5.0.0.zip` file from the Pentaho website.
2. Unpack the file to a temporary location.
3. Stop the BA Server if it is running.
4. Copy the following JARs from the `/pentaho-analysis-ee/lib` to `/tomcat/webapps/pentaho/WEB-INF/lib`.
    - pentaho-analysis-ee-5.0.0.jar
    - infinispan-core-5.3.0.Final.jar
    - jboss-logging-3.1.1.GA.jar
    - jboss-marshalling-1.3.15.GA.jar
    - jboss-marshalling-river-1.3.15.GA.jar
    - jboss-transaction-api_1.1_spec-1.0.0.Final.jar
    - jgroups-3.3.1.Final.jar
    - staxmapper-1.1.0.Final.jar
13. Copy all of the configuration files from `/pentaho-analysis-ee/config` to `/tomcat/webapps/pentaho/WEB-INF/classes`.
14. Depending on the installation type; there would not be a **pentaho.war** (in archive based installations and executable based installations the **pentaho.war** is already deployed and the application will show as: `/tomcat/webapps/pentaho/`.
15. Remove the temporary **pentaho-analysis-ee** directory.
16. To enable the segment cache plugin, you first follow the installation steps above. Once this is done, open the file `WEB-INF/classes/pentaho-analysis-config.xml` and set the following property. See http://wiki.pentaho.com/display/analysis/Pentaho+Analysis+EE for more details.

```
<entry key="USE_SEGMENT_CACHE">true</entry>
```

Pentaho Analysis Enterprise Edition is now installed with the default Infinispan configuration.

Set Environment Variables

Set the `PENTAHO_JAVA_HOME` and `PENTAHO_INSTALLED_LICENSE_PATH` environment variables. If you do not set these variables, Pentaho will not start correctly.

NOTE:

If you are using a JRE, set the `JRE_HOME` home environment variable as well.

1. Set the path of the `PENTAHO_JAVA_HOME` variable to the path of your Java installation, like this.

```
export PENTAHO_JAVA_HOME=/usr/lib/jvm/java-7-sun
```

2. Set the path of the `PENTAHO_INSTALLED_LICENSE_PATH` variable to the path of your installed licenses, like this.

```
export PENTAHO_INSTALLED_LICENSE_PATH=/home/pentaho/.pentaho/.
installedLicenses.xml
```

3. Log out and in again, then verify the variables have been properly set.

Advanced Linux and Mac Topics

Complete the instructions in this section only if you have a headless node or if you plan to install on a Mac OS.

Prepare a Headless Linux or Solaris Server

There are two headless server scenarios that require special procedures on Linux and Solaris systems. One is for a system that has no video card; the other is for a system that has a video card, but does not have an X server installed. In some situations -- particularly if your server doesn't have a video card -- you will have to perform both procedures to properly generate reports with the BA Server.

Systems without video cards

The **java.awt.headless** option enables systems without video output and/or human input hardware to execute operations that require them. To set this application server option when the BA Server starts, you will need to modify the startup scripts for either the BA Server, or your Java application server. You do not need to do this now, but you will near the end of these instruction when you perform the Start BA Server step. For now, add the following item to the list of CATALINA_OPTS parameters: **-Djava.awt.headless=true**.

The entire line should look something like this:

```
export CATALINA_OPTS="-Djava.awt.headless=true -Xms4096m -Xmx6144m -
XX:MaxPermSize=256m -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.
gcInterval=3600000"
```

If you intend to create a BA Server service control script, you must add this parameter to that script's CATALINA_OPTS line.

NOTE:

If you do not have an X server installed, you must also follow the below instructions.

Systems without X11

To generate charts, the Pentaho Reporting engine requires functionality found in X11. If you are unwilling or unable to install an X server, you can install the **xvfb** package instead. xvfb provides X11 framebuffer emulation, which performs all graphical operations in memory instead of sending them to the screen.

Use your operating system's package manager to properly install xvfb.

Adjust Amount of Memory Mac OS Allocates for PostgreSQL

If you plan to install the software on a Mac OS, and you choose to use PostgreSQL, you need to increase the amount of memory that the Mac OS allocates for PostgreSQL. You can skip these instructions if you plan to install the software on Windows or Linux.

PostgreSQL is the name of the default database that contains audit, schedule and other data that you create. PostgreSQL starts successfully only if your computer has allocated enough memory. Go to http://www.postgresql.org/docs/devel/static/kernel-resources.html and follow the instructions there on how to adjust the memory settings on your computer.

Next Step

You've finished preparing your environment. Go to Configure Your Repository Database to continue.

Configure Your Repository Database

Select the database that you are using as the solution repository.

- PostgreSQL
- MySQL
- Oracle
- MS SQL Server

Use PostgreSQL as Your Repository Database

Before you prepare your Business Analytics (BA) Repository, complete the tasks in Prepare Environment.

The BA Repository resides on the database that you installed during the Prepare Environment step, and consists of four repositories: *Jackrabbit*, *Quartz*, *Hibernate,* and *Pentaho Operations Mart*.

- *Jackrabbit* contains the solution repository, examples, security data, and content data from reports that you use Pentaho software to create.
- *Quartz* holds data that is related to scheduling reports and jobs.
- *Hibernate* holds data that is related to audit logging.
- *Pentaho Operations Mart* reports on system usage and performance.

Initialize PostgreSQL BA Repository Database

To initialize PostgreSQL so that it serves as the BA Repository, you will need to run a few SQL scripts to create the Hibernate, Quartz, Jackrabbit (JCR), and Pentaho Operations Mart databases.

NOTE:

Use the ASCII character set when you run these scripts. Do not use UTF-8 because there are text string length limitations that might cause the scripts to fail.

These sections take you through the steps to initialize the PostgreSQL BA repository database.

Change Default Passwords

We recommend that you change the default passwords in the SQL script files. If you are evaluating Pentaho, you might want to skip this step.

If you do decide to make the databases more secure, use any text editor to change the passwords in these files:

- `pentaho/server/biserver-ee/data/postgresql/create_jcr_postgresql.sql`
- `pentaho/server/biserver-ee/data/postgresql/create_quartz_postgresql.sql`
- `pentaho/server/biserver-ee/data/postgresql/create_repository_postgresql.sql`
- `pentaho/server/biserver-ee/data/postgresql/pentaho_mart_postgresql.sql`

Run SQL Scripts

Once you change the passwords, you will need to run these SQL scripts. You will need administrator permissions on the server in order to run these scripts. The list of SQL scripts is shown in the table below.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Run these scripts from the **PSQL Console** window in the **pgAdminIII** tool.

SQL Scripts

Action	SQL Script
Create Quartz	`\i <your filepath>/data/postgresql/create_quartz_postgresql.sql`
Create Hibernate repository	`\i <your filepath>/data/postgresql/create_repository_postgresql.sql`
Create Jackrabbit	`\i <your filepath>/data/postgresql/create_jcr_postgresql.sql`
Create Pentaho Operations mart	`\i <your filepath>/data/postgresql/pentaho_mart_postgresql.sql`

Verify PostgreSQL Initialization

After you run the scripts, this list will help you verify that databases and user roles have been created.

1. Open the **pgAdminIII** tool.
2. Verify that you can log in as **hibuser**.
3. Once logged in, make sure that the Quartz, Jackrabbit (JCR), Hibernate, and Pentaho Operations mart databases are present.
4. Exit from the **pgAdminIII**.

Configure PostgreSQL BA Repository Database

Now that you have initialized your repository database, you will need to configure Quartz, Hibernate, Jackrabbit, and Pentaho Operations Mart for a PostgreSQL database.

By default, the examples in this section are for a PostgreSQL database that runs on port 5432. The default password is also in these examples. If you have a different port or different password, complete all of the instructions in these steps.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Set Up Quartz on PostgreSQL BA Repository Database

Event information, such as scheduled reports, is stored in the Quartz JobStore. During the installation process, you must indicate where the **JobStore** is located. You do this by modifying the `quartz.properties` file.

1. Open the `pentaho/server/biserver-ee/pentaho-solutions/system/quartz/quartz.properties` file in any text editor.
2. Locate the `#_replace_jobstore_properties` section and set the `org.quartz.jobStore.driverDelegateClass` as shown here.

```
org.quartz.jobStore.driverDelegateClass = org.quartz.impl.jdbcjobstore.
PostgreSQLDelegate
```

3. Locate the `# Configure Datasources` section and set the `org.quartz.dataSource.myDS.jndiURL` equal to `Quartz`, like this.

```
org.quartz.dataSource.myDS.jndiURL = Quartz
```

4. Save the file and close the text editor.

Set Hibernate Settings for PostgreSQL

Modify the hibernate settings file to specify where Pentaho should find the BA Repository's hibernate config file. The hibernate config file specifies driver and connection information, as well as dialects and how to handle connection closes and timeouts. The files in this section are located in the `pentaho/server/biserver-ee/pentaho-solutions/system/hibernate` directory.

1. Open the `hibernate-settings.xml` file in a text editor. Find the `<config-file>` tags and confirm that it is configured for PostgreSQL.

```
<config-file>system/hibernate/postgresql.hibernate.cfg.xml</config-file>
```

2. Save the file if you made changes, and close the file.
3. Open the `postgresql.hibernate.cfg.xml` file in a text editor.
4. Make sure that the password and port number match the ones you specified in your configuration. Make changes if necessary, then save and close the file.

Modify Jackrabbit Repository Information for PostgreSQL

There are parts of code that you will need to alter in order to change the default jackrabbit repository to PostgreSQL.

1. Navigate to the `pentaho/server/biserver-ee/pentaho-solutions/system/jackrabbit` and open the `repository.xml` file with any text editor.
2. Following the table below, locate and verify or change the code so that the PostgreSQL lines are **not** commented out, but the MySQL, Oracle, and MS SQL Server lines **are** commented out.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Item:	Code Section:

Repository	`<FileSystem class="org.apache.jackrabbit.core.fs.db.DbFileSystem">`
	`  <param name="driver" value="org.postgresql.Driver"/>`
	`  <param name="url" value="jdbc:postgresql://localhost:5432/jackrabbit"/>`
	`  ...`
	`</FileSystem>`

DataStore	`<DataStore class="org.apache.jackrabbit.core.data.db.DbDataStore">`
	`  <param name="url" value="jdbc:postgresql://localhost:5432/jackrabbit"/>`
	`  ...`
	`</DataStore>`

Workspaces	`<FileSystem class="org.apache.jackrabbit.core.fs.db.DbFileSystem">`
	`  <param name="driver" value="org.postgresql.Driver"/>`
	`  <param name="url" value="jdbc:postgresql://localhost:5432/jackrabbit"/>`
	`  ...`
	`</FileSystem>`

PersistenceManager
(1st part)
	`<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.PostgreSQLPersistenceManager">`
	`  <param name="url" value="jdbc:postgresql://localhost:5432/jackrabbit"/>`
	`  ...`
	`</PersistenceManager>`

Versioning	`<FileSystem class="org.apache.jackrabbit.core.fs.db.DbFileSystem">`

Item:	Code Section:
	<param name="driver" value="org.postgresql.Driver"/> <param name="url" value="jdbc:postgresql://localhost:5432/jackrabbit"/> ... </FileSystem>
PersistenceManager (2nd part)	<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.PostgreSQLPersistenceManager"> <param name="url" value="jdbc:postgresql://localhost:5432/jackrabbit"/> ... </PersistenceManager>

Perform Tomcat-Specific Connection Tasks

After your repository has been configured, you must configure the web application servers to connect to the BA Repository. In this step, JDBC and JNDI connections are made to the Hibernate, Jackrabbit, and Quartz databases.

By default, the BA Server software is configured to be deployed and run on the Tomcat server. As such, connections have already been specified and only the Tomcat `context.xml` file must be modified.

If you plan to run the BA Server on Tomcat, you must modify JDBC Connection information.

Download Drivers and Install with the JDBC Distribution Tool

To connect to a database, including the BA Repository or DI Repository database, you will need to download and install a JDBC driver to the appropriate places for Pentaho components as well as on the the web application server that contains the Pentaho Server(s). Fortunately, the JDBC Distribution Tool makes this process easy.

NOTE:
Due to licensing restrictions, Pentaho cannot redistribute some third-party database drivers. This is why you have to download the file yourself and install it yourself.

1. Download a JDBC driver JAR from your database vendor or a third-party driver developer.
2. Copy the JDBC driver JAR you just downloaded to the `pentaho/jdbc-distribution` directory.

3. Open a cmd prompt or shell tool, navigate to the `pentaho/jdbc-distribution` directory and enter one of the following:

Windows:

```
distribute-files.bat <name of JDBC driver JAR>
```

Linux:

```
./ distribute-drivers.sh
```

1. If you have run this utility as part of the installation process, you are done. Go to the next step of the installation instructions.
2. If you have run this utility so that you can connect to a new repository, restart the BA or DI Server and Design tools, then try to connect to the new repository. If you cannot connect, verify that the drivers are installed as shown in this table. Restart your Pentaho Server(s) and Client tools.

List of Products and Corresponding Locations for JDBC Drivers

Server or Design Tool	Directory
Business Analytics (BA) Server	pentaho/server/biserver-ee/tomcat/lib
Data Integration (DI) Server	pentaho/server/data-integration-server/tomcat/lib
Pentaho Data Integration (Spoon)	pentaho/design-tools/data-integration/lib
Pentaho Report Designer (PRD)	pentaho/design-tools/report-designer/lib/jdbc
Pentaho Aggregation Designer (PAD)	pentaho/design-tools/aggregation-designer/drivers
Pentaho Schema Workbench (PSW)	pentaho/design-tools/schema-workbench/drivers
Pentaho Metadata Editor (PME)	pentaho/design-tools/metadata-editor/libext/JDBC

Modify JDBC Connection Information in the Tomcat context.xml File

Database connection and network information, such as the username, password, driver class information, IP address or domain name, and port numbers for your BA Repository database are stored in the `context.xml` file. Modify this file to reflect the database connection and network information to reflect your operating environment. You also modify the values for the `validationQuery` parameters in this file if you have choosen to use an BA Repository database other than PostgreSQL.

CAUTION:

If you have a different port, password, user, driver class information, or IP address, make sure that you change the password and port number in these examples to match the ones in your configuration environment.

1. Consult your database documentation to determine the JDBC class name and connection string for your BA Repository database.

2. Go to the `biserver-ee/tomcat/webapps/pentaho/META-INF` directory and open the `context.xml` file with any file editor.

3. Comment out the resource references that refer to databases other than PostgreSQL such as MySQL, MS SQL Server, and Oracle. Then, add the following code to the file if it does not already exist. Be sure to adjust the port numbers and passwords to reflect your environment, if necessary.

```
<Resource validationQuery="select 1" url="jdbc:postgresql://localhost:5432/
hibernate" driverClassName="org.postgresql.Driver" password="password"
username="hibuser" maxWait="10000" maxIdle="5" maxActive="20" factory="org.
apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.DataSource"
auth="Container" name="jdbc/Hibernate"/>
<Resource validationQuery="select 1" url="jdbc:postgresql://localhost:5432/
hibernate" driverClassName="org.postgresql.Driver" password="password"
username="hibuser" maxWait="10000" maxIdle="5" maxActive="20" factory="org.
apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.DataSource"
auth="Container" name="jdbc/Audit"/>
<Resource validationQuery="select 1" url="jdbc:postgresql://localhost:5432/
quartz" driverClassName="org.postgresql.Driver" password="password"
username="pentaho_user" maxWait="10000" maxIdle="5" maxActive="20"
factory="org.apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.
DataSource" auth="Container" name="jdbc/Quartz"/>
<Resource validationQuery="select 1" url="jdbc:postgresql://localhost:5432/
hibernate" driverClassName="org.postgresql.Driver" password="password"
username="hibuser" maxWait="10000" maxIdle="5" maxActive="20" factory="org.
apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.DataSource"
auth="Container" name="jdbc/PDI_Operations_Mart"/>
```

4. Make sure that the `validationQuery` variable for your database is set to this: `validationQuery="select 1"`

5. Save the `context.xml` file, then close it.

6. To make sure that the changes that you made in the context.xml file take effect when Tomcat is started, navigate to the `tomcat/conf/Catalina` directory. If the `pentaho.xml` file is in the present, delete it. It will be generated again when you start the BA Server, but will contain the changes that you just made in the `context.xml` file.

Next Steps

Now it is time to start your server.

Use MySQL as Your Repository Database

Before you prepare your Business Analytics (BA) Repository, complete the tasks in Prepare Environment.

The BA Repository resides on the database that you installed during the Prepare Environment step, and consists of four repositories: *Jackrabbit*, *Quartz*, *Hibernate,* and *Pentaho Operations Mart*.

- *Jackrabbit* contains the solution repository, examples, security data, and content data from reports that you use Pentaho software to create.
- *Quartz* holds data that is related to scheduling reports and jobs.
- *Hibernate* holds data that is related to audit logging.
- *Pentaho Operations Mart* reports on system usage and performance.

Initialize MySQL BA Repository Database

To initialize MySQL so that it serves as the BA Repository, you will need to run a few SQL scripts to create the Hibernate, Quartz, Jackrabbit (JCR), and Pentaho Operations Mart databases.

NOTE:

Use the ASCII character set when you run these scripts. Do not use UTF-8 because there are text string length limitations that might cause the scripts to fail.

The next few sections take you through the steps to initialize the MySQL BA repository database.

Change Default Passwords

We recommend that you change the default passwords in the SQL script files. If you are evaluating Pentaho, you might want to skip this step.

If you do decide to make the databases more secure, use any text editor to change the passwords in these files:

- `pentaho/server/biserver-ee/data/mysql5/create_jcr_mysql.sql`
- `pentaho/server/biserver-ee/data/mysql5/create_quartz_mysql.sql`
- `pentaho/server/biserver-ee/data/mysql5/create_repository_mysql.sql`
- `pentaho/server/biserver-ee/data/mysql5/pentaho_mart_mysql.sql`

Run SQL Scripts

Once you change the passwords, you will need to run these SQL scripts. You will need administrator permissions on the server in order to run these scripts. The list of SQL scripts is shown in the table below.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Run these scripts from the **MySQL Command Prompt** window or from **MySQL Workbench**.

Action	SQL Script
Create Quartz	`> source <your filepath>\create_quartz_mysql.sql`
Create Hibernate repository	`> source <your filepath>\create_repository_mysql.sql`
Create Jackrabbit	`> source <your filepath>\create_jcr_mysql.sql`
Create Pentaho Operations mart	`> source <your filepath>\pentaho_mart_mysql.sql`

Verify MySQL Initialization

After you run the scripts, this list will help you verify that databases and user roles have been created.

1. Open the **MySQL Workbench** tool. **MySQL Workbench** is freely available at the MySQL development site.
2. Log in as **hibuser**.
3. Make sure that the Quartz, Jackrabbit (JCR), Hibernate, and Pentaho Operations Mart databases are present.
4. Exit from the **MySQL Workbench**.

Configure MySQL BA Repository Database

Now that you have initialized your repository database, you will need to configure Quartz, Hibernate, Jackrabbit, and Pentaho Operations Mart for a MySQL database.

By default, the examples in this section are for a MySQL database that runs on port 3306. The default password is also in these examples.

CAUTION:
If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Set Up Quartz on MySQL BA Repository Database

Event information, such as scheduled reports, is stored in the Quartz `JobStore`. During the installation process, you must indicate where the `JobStore` is located, by modifying the `quartz.properties` file.

1. Open the `pentaho/server/biserver-ee/pentaho-solutions/system/quartz/quartz.properties` file in any text editor.

2. Locate the `#_replace_jobstore_properties` section and set the `org.quartz.jobStore.driverDelegateClass` as shown here.

```
org.quartz.jobStore.driverDelegateClass = org.quartz.impl.jdbcjobstore.
StdJDBCDelegate
```

3. Locate the `# Configure Datasources` section and set the `org.quartz.dataSource.myDS.jndiURL` equal to `Quartz`, like this.

```
org.quartz.dataSource.myDS.jndiURL = Quartz
```

4. Save the file and close the text editor.

Set Hibernate Settings for MySQL

Modify the hibernate settings file to specify where Pentaho should find the BA Repository's hibernate config file.

NOTE:

The hibernate config file specifies driver and connection information, as well as dialects and how to handle connection closes and timeouts.

The files in this section are located in the `pentaho/server/biserver-ee/pentaho-solutions/system/hibernate` directory.

1. Open the `hibernate-settings.xml` file in a text editor. Find the `<config-file>` tags and change `postgresql.hibernate.cfg.xml` to `mysql5.hibernate.cfg.xml` as shown.
From:

```
<config-file>system/hibernate/postgresql.hibernate.cfg.xml</config-file>
```

To:

```
<config-file>system/hibernate/mysql5.hibernate.cfg.xml</config-file>
```

2. Save and close the file.
3. Open the `mysql5.hibernate.cfg.xml` file in a text editor.
4. Make sure that the password and port number match the ones you specified in your configuration. Make changes if necessary, then save and close the file.

Replace Default Version of Audit Log File with MySQL Version

Since you are using MySQL to host the BA Repository, you need to replace the `audit_sql.xml` file with one that is configured for MySQL.

1. Locate the `pentaho-solutions/system/dialects/mysql5/audit_sql.xml` file.
2. Copy it into the `pentaho-solutions/system` directory.

Modify Jackrabbit Repository Information for MySQL

There are parts of code that you will need to alter in order to change the default JCR repository to MySQL.

1. Navigate to the `pentaho/server/biserver-ee/pentaho-solutions/system/jackrabbit` and open the `repository.xml` file with any text editor.
2. Following the table below, locate and change the code so that the MySQL lines are **not** commented out, but the PostgreSQL, MS SQL Server, and Oracle lines **are** commented out.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Item:	Code Section:

Repository	`<FileSystem class="org.apache.jackrabbit.core.fs.db.DbFileSystem">`
	`<param name="driver" value="com.mysql.jdbc.Driver"/>`
	`<param name="url" value="jdbc:mysql://localhost:3306/jackrabbit"/>`
	…
	`</FileSystem>`

DataStore	`<DataStore class="org.apache.jackrabbit.core.data.db.DbDataStore">`
	`<param name="url" value="jdbc:mysql://localhost:3306/jackrabbit"/>`
	…
	`</DataStore>`

Workspaces	`<FileSystem class="org.apache.jackrabbit.core.fs.db.DbFileSystem">`
	`<param name="driver" value="com.mysql.jdbc.Driver"/>`
	`<param name="url" value="jdbc:mysql://localhost:3306/jackrabbit"/>`
	…
	`</FileSystem>`

PersistenceManager (1st part)	`<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.MySqlPersistenceManager">` `<param name="url" value="jdbc:mysql://localhost:3306/`

Item:	Code Section:
	jackrabbit"/> … </PersistenceManager>
Versioning	<FileSystem class="org.apache.jackrabbit.core.fs.db. DbFileSystem"> <param name="driver" value="com.mysql.jdbc.Driver"/> <param name="url" value="jdbc:mysql://localhost:3306/ jackrabbit"/> … </FileSystem>
PersistenceManager (2nd part)	<PersistenceManager class="org.apache.jackrabbit.core. persistence.bundle.MySqlPersistenceManager"> <param name="url" value="jdbc:mysql://localhost:3306/ jackrabbit"/> … </PersistenceManager>

Perform Tomcat-Specific Connection Tasks

After your repository has been configured, you must configure the web application servers to connect to the BA Repository. In this section, JDBC and JNDI connections are made to the Hibernate, Jackrabbit, and Quartz databases.

By default, the BA Server software is configured to be deployed and run on the Tomcat server. As such, connections have already been specified and only the Tomcat `context.xml` file must be modified.

The next couple of sections guide you through the process of working with the JDBC drivers and connection information for Tomcat.

Download Drivers and Install with the JDBC Distribution Tool

To connect to a database, including the BA Repository or DI Repository database, you will need to download and install a JDBC driver to the appropriate places for Pentaho components as well as on the the web application server that contains the Pentaho Server(s). Fortunately, the JDBC Distribution Tool makes this process easy.

NOTE:

Due to licensing restrictions, Pentaho cannot redistribute some third-party database drivers. This is why you have to download the file yourself and install it yourself.

1. Download a JDBC driver JAR from your database vendor or a third-party driver developer.
2. Copy the JDBC driver JAR you just downloaded to the `pentaho/jdbc-distribution` directory.
3. Open a cmd prompt or shell tool, navigate to the `pentaho/jdbc-distribution` directory and enter one of the following:

Windows:

```
distribute-files.bat <name of JDBC driver JAR>
```

Linux:

```
./ distribute-drivers.sh
```

1. If you have run this utility as part of the installation process, you are done. Go to the next step of the installation instructions.
2. If you have run this utility so that you can connect to a new repository, restart the BA or DI Server and Design tools, then try to connect to the new repository. If you cannot connect, verify that the drivers are installed as shown in this table. Restart your Pentaho Server(s) and Client tools.

List of Products and Corresponding Locations for JDBC Drivers

Server or Design Tool	Directory
Business Analytics (BA) Server	pentaho/server/biserver-ee/tomcat/lib
Data Integration (DI) Server	pentaho/server/data-integration-server/tomcat/lib
Pentaho Data Integration (Spoon)	pentaho/design-tools/data-integration/lib
Pentaho Report Designer (PRD)	pentaho/design-tools/report-designer/lib/jdbc
Pentaho Aggregation Designer (PAD)	pentaho/design-tools/aggregation-designer/drivers
Pentaho Schema Workbench (PSW)	pentaho/design-tools/schema-workbench/drivers
Pentaho Metadata Editor (PME)	pentaho/design-tools/metadata-editor/libext/JDBC

Modify JDBC Connection Information in the Tomcat context.xml File

Database connection and network information, such as the username, password, driver class information, IP address or domain name, and port numbers for your BA Repository database are stored in the `context.xml` file. Modify this file to reflect the database connection and network information to reflect your operating environment. You also modify the values for the `validationQuery` parameters in this file if you have choosen to use an BA Repository database other than PostgreSQL.

CAUTION:

If you have a different port, password, user, driver class information, or IP address, make sure that you change the password and port number in these examples to match the ones in your configuration environment.

1. Consult your database documentation to determine the JDBC class name and connection string for your BA Repository database.
2. Go to the `biserver-ee/tomcat/webapps/pentaho/META-INF` directory and open the `context.xml` file with any file editor.
3. Comment out the resource references that refer to databases other than MySQL, such as PostgreSQL, MS SQL Server, and Oracle. Then, add the following code to the file if it does not already exist. Be sure to adjust the port numbers and passwords to reflect your environment, if necessary.

```
<Resource validationQuery="select 1" url="jdbc:mysql://localhost:3306/
hibernate" driverClassName="com.mysql.jdbc.Driver" password="password"
username="hibuser" maxWait="10000" maxIdle="5" maxActive="20" factory="org.
apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.DataSource"
auth="Container" name="jdbc/Hibernate"/>
<Resource validationQuery="select 1" url="jdbc:mysql://localhost:3306/
hibernate" driverClassName="com.mysql.jdbc.Driver" password="password"
username="hibuser" maxWait="10000" maxIdle="5" maxActive="20" factory="org.
apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.DataSource"
auth="Container" name="jdbc/Audit"/>
<Resource validationQuery="select 1" url="jdbc:mysql://localhost:3306/quartz"
driverClassName="com.mysql.jdbc.Driver" password="password" username="pentaho_
user" maxWait="10000" maxIdle="5" maxActive="20" factory="org.apache.commons.
dbcp.BasicDataSourceFactory" type="javax.sql.DataSource" auth="Container"
name="jdbc/Quartz"/>
<Resource validationQuery="select 1" url="jdbc:mysql://localhost:3306/pentaho_
operations_mart" driverClassName="com.mysql.jdbc.Driver" password="password"
username="hibuser" maxWait="10000" maxIdle="5" maxActive="20" factory="org.
apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.DataSource"
auth="Container" name="jdbc/PDI_Operations_Mart"/>
```

4. Make sure that the `validationQuery` variable for your database is set to this: `validationQuery="select 1"`
5. Save the `context.xml` file, then close it.
6. To make sure that the changes that you made in the context.xml file take effect when Tomcat is started, navigate to the `tomcat/conf/Catalina` directory. If the `pentaho.xml` file is in the present, delete it. It will be generated again when you start the BA Server, but will contain the changes that you just made in the `context.xml` file.

Next Steps

Now it is time to start your server.

Use Oracle as Your Repository Database

Before you prepare your Business Analytics (BA) Repository, complete the tasks in Prepare Environment.

The BA Repository resides on the database that you installed during the Prepare Environment step, and consists of four repositories: *Jackrabbit*, *Quartz*, *Hibernate,* and *Pentaho Operations Mart*.

- *Jackrabbit* contains the solution repository, examples, security data, and content data from reports that you use Pentaho software to create.
- *Quartz* holds data that is related to scheduling reports and jobs.
- *Hibernate* holds data that is related to audit logging.
- *Pentaho Operations Mart* reports on system usage and performance.

Initialize Oracle BA Repository Database

To initialize Oracle so that it serves as the BA Repository, you will need to run a few SQL scripts to create the Hibernate, Quartz, Pentaho Operations mart, and Jackrabbit (also known as the JCR) databases.

NOTE:

Use the ASCII character set when you run these scripts. Do not use UTF-8 because there are text string length limitations that might cause the scripts to fail.

These sections take you through the steps to initialize the Oracle BA repository database.

Change Default Passwords

Pentaho recommends that you change the default passwords in the SQL script files. If you are evaluating Pentaho, you might want to skip this step.

If you do decide to change the passwords, use any text editor to change the passwords in these files:

- `pentaho/server/biserver-ee/data/oracle10g/create_jcr_ora.sql`
- `pentaho/server/biserver-ee/data/oracle10g/create_quartz_ora.sql`
- `pentaho/server/biserver-ee/data/oracle10g/create_repository_ora.sql`
- `pentaho/server/biserver-ee/data/oracle10g/pentaho_mart_oracle.sql`

Run SQL Scripts

Once you change the passwords, you will need to run these SQL scripts. You will need administrator permissions on the server in order to run these scripts. The list of SQL scripts is shown in the table below.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Run these scripts from the **Command Prompt** window or from a **Terminal** window that runs **SQL*Plus**.

Action	SQL Script
Create Quartz	`> start <your filepath>\create_quartz_ora.sql`
Create Hibernate repository	`> start <your filepath>\create_repository_ora.sql`
Create Jackrabbit	`> start <your filepath>\create_jcr_ora.sql`
Create Pentaho Operations mart	`> start <your filepath>\pentaho_mart_oracle.sql`

Verify Oracle Initialization

After you run the scripts, this list will help you verify that databases and user roles have been created.

1. Open the Terminal or Command Prompt window that is running SQL*Plus.
2. Make sure that users have been created by running SELECT USERNAME FROM DBA_USERS.
3. If your databases do not appear, go to the beginning of these instructions and try running the scripts again.
4. Exit from the **SQL*Plus**.

Configure Oracle BA Repository Database

Now that you have initialized your repository database, you will need to configure Quartz, Hibernate, Jackrabbit, and Pentaho Operations Mart for an Oracle database.

By default, the examples in this section are for an Oracle database that runs on port 1521. The default password is also in these examples.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Set Up Quartz on Oracle BA Repository Database

Event information, such as scheduled reports, is stored in the Quartz JobStore. During the installation process, you must indicate where the **JobStore** is located, by modifying the `quartz.properties` file.

1. Open the `pentaho/server/biserver-ee/pentaho-solutions/system/quartz/quartz.properties` file in any text editor.
2. Locate the `#_replace_jobstore_properties` section and set the `org.quartz.jobStore.driverDelegateClass` as shown here.

```
org.quartz.jobStore.driverDelegateClass = org.quartz.impl.jdbcjobstore.oracle.
OracleDelegate
```

3. Locate the `# Configure Datasources` section and set the `org.quartz.dataSource.myDS.jndiURL` equal to `Quartz`, like this.

```
org.quartz.dataSource.myDS.jndiURL = Quartz
```

4. Save the file and close the text editor.

Set Hibernate Settings for Oracle

Modify the hibernate settings file to specify where Pentaho should find the BA Repository's hibernate config file. The hibernate config file specifies driver and connection information, as well as dialects and how to handle connection closes and timeouts.

The files in this section are located in the `pentaho/server/biserver-ee/pentaho-solutions/system/hibernate` directory.

1. Open the `hibernate-settings.xml` file in a text editor. Find the `<config-file>` tags and change `postgresql.hibernate.cfg.xml` to `oracle10g.hibernate.cfg.xml` as shown.
From:

```
<config-file>system/hibernate/postgresql.hibernate.cfg.xml</config-file>
```

To:

```
<config-file>system/hibernate/oracle10g.hibernate.cfg.xml</config-file>
```

2. Save and close the file.
3. Open the `oracle10g.hibernate.cfg.xml` file in a text editor.
4. Make sure that the password and port number match the ones you specified in your configuration. Make changes if necessary, then save and close the file.

Replace Default Version of Audit Log File with Oracle Version

Since you are using Oracle to host the BA Repository, you need to replace the `audit_sql.xml` file with one that is configured for Oracle.

1. Locate the `pentaho-solutions/system/dialects/oracle10g/audit_sql.xml` file.
2. Copy it into the `pentaho-solutions/system` directory.

Modify Jackrabbit Repository Information for Oracle

There are parts of code that you will need to alter in order to change the default jackrabbit repository to Oracle.

1. Navigate to the `pentaho/server/biserver-ee/pentaho-solutions/system/jackrabbit` and open the `repository.xml` file with any text editor.
2. Following the table below, locate and change the code so that the Oracle lines are **not** commented out, but the PostgreSQL, MS SQL Server, and MySQL lines **are** commented out.

NOTE:

If you changed your password when you initialized the database during the Prepare Environment step, or if your database is on a different port, edit the url and password parameters in each section accordingly.

Item:	Code Section:

Repository	`<FileSystem class="org.apache.jackrabbit.core.fs.db.OracleFileSystem">`
	`  <param name="url" value="jdbc:oracle:thin:@localhost:1521/XE"/>`
	`  ...`
	`  <param name="tablespace" value="pentaho_tablespace"/>`
	`</FileSystem>`

DataStore	`<DataStore class="org.apache.jackrabbit.core.data.db.DbDataStore">`
	`  <param name="url" value="jdbc:oracle:thin:@localhost:1521/XE"/>`
	`  <param name="driver" value="oracle.jdbc.OracleDriver"/>`
	`  <param name="user" value="jcr_user"/>`
	`  <param name="password" value="password"/>`
	`  <param name="databaseType" value="oracle"/>`
	`  ...`
	`  </DataStore>`

Workspaces	`<FileSystem class="org.apache.jackrabbit.core.fs.db.OracleFileSystem">`
	`  <param name="url" value="jdbc:oracle:thin:@localhost:1521/XE"/>`
	`  ...`
	`  <param name="tablespace" value="pentaho_tablespace"/>`
	`  </FileSystem>`

PersistenceManager (1st part)	`<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.OraclePersistenceManager">`

Item:	Code Section:
	<param name="url" value="jdbc:oracle:thin:@localhost:1521/XE"/> <param name="driver" value="oracle.jdbc.OracleDriver"/> <param name="user" value="jcr_user"/> <param name="password" value="password"/> <param name="schema" value="oracle"/> <param name="schemaObjectPrefix" value="${wsp.name}_pm_ws_"/> <param name="tablespace" value="pentaho_tablespace"/> </PersistenceManager>
Versioning	<FileSystem class="org.apache.jackrabbit.core.fs.db.OracleFileSystem"> <param name="url" value="jdbc:oracle:thin:@localhost:1521/XE"/> ... <param name="tablespace" value="pentaho_tablespace"/> </FileSystem>
PersistenceManager (2nd part)	<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.OraclePersistenceManager"> <param name="url" value="jdbc:oracle:thin:@localhost:1521/XE"/> <param name="driver" value="oracle.jdbc.OracleDriver"/> ... <param name="tablespace" value="pentaho_tablespace"/> </PersistenceManager>

Perform Tomcat-Specific Connection Tasks

After your repository has been configured, you must configure the web application servers to connect to the BA Repository. In this step, JDBC and JNDI connections are made to the Hibernate, Jackrabbit, and Quartz databases.

By default, the BA Server software is configured to be deployed and run on the Tomcat server. As such, connections have already been specified and only the Tomcat context.xml file must be modified.

The next couple of sections guide you through the process of working with the JDBC drivers and connection information for Tomcat.

Download Drivers and Install with the JDBC Distribution Tool

To connect to a database, including the BA Repository or DI Repository database, you will need to download and install a JDBC driver to the appropriate places for Pentaho components as well as on the the web application server that contains the Pentaho Server(s). Fortunately, the JDBC Distribution Tool makes this process easy.

NOTE:

Due to licensing restrictions, Pentaho cannot redistribute some third-party database drivers. This is why you have to download the file yourself and install it yourself.

1. Download a JDBC driver JAR from your database vendor or a third-party driver developer.
2. Copy the JDBC driver JAR you just downloaded to the `pentaho/jdbc-distribution` directory.
3. Open a cmd prompt or shell tool, navigate to the `pentaho/jdbc-distribution` directory and enter one of the following:

Windows:

```
distribute-files.bat <name of JDBC driver JAR>
```

Linux:

```
./ distribute-drivers.sh
```

1. If you have run this utility as part of the installation process, you are done. Go to the next step of the installation instructions.
2. If you have run this utility so that you can connect to a new repository, restart the BA or DI Server and Design tools, then try to connect to the new repository. If you cannot connect, verify that the drivers are installed as shown in this table. Restart your Pentaho Server(s) and Client tools.

List of Products and Corresponding Locations for JDBC Drivers

Server or Design Tool	Directory
Business Analytics (BA) Server	pentaho/server/biserver-ee/tomcat/lib
Data Integration (DI) Server	pentaho/server/data-integration-server/tomcat/lib

Server or Design Tool	Directory
Pentaho Data Integration (Spoon)	pentaho/design-tools/data-integration/lib
Pentaho Report Designer (PRD)	pentaho/design-tools/report-designer/lib/jdbc
Pentaho Aggregation Designer (PAD)	pentaho/design-tools/aggregation-designer/drivers
Pentaho Schema Workbench (PSW)	pentaho/design-tools/schema-workbench/drivers
Pentaho Metadata Editor (PME)	pentaho/design-tools/metadata-editor/libext/JDBC

Modify JDBC Connection Information in the Tomcat context.xml File

Database connection and network information, such as the username, password, driver class information, IP address or domain name, and port numbers for your BA Repository database are stored in the `context.xml` file. Modify this file to reflect the database connection and network information to reflect your operating environment. You also modify the values for the `validationQuery` parameters in this file if you have choosen to use an BA Repository database other than PostgreSQL.

CAUTION:

If you have a different port, password, user, driver class information, or IP address, make sure that you change the password and port number in these examples to match the ones in your configuration environment.

1. Consult your database documentation to determine the JDBC class name and connection string for your BA Repository database.
2. Go to the `biserver-ee/tomcat/webapps/pentaho/META-INF` directory and open the `context.xml` file with any file editor.
3. Comment out the resource references that refer to databases other than Oracle, such as PostgreSQL, MS SQL Server, and MySQL. Then, add the following code to the file if it does not already exist.

   Be sure to adjust the port numbers and passwords to reflect your environment, if necessary.

```
<Resource validationQuery="select 1 from dual"
url="jdbc:oracle:thin:@localhost:1521/XE" driverClassName="oracle.jdbc.
OracleDriver" password="password" username="hibuser" maxWait="10000"
maxIdle="5" maxActive="20" factory="org.apache.commons.dbcp.
BasicDataSourceFactory" type="javax.sql.DataSource" auth="Container"
name="jdbc/Hibernate"/>
<Resource validationQuery="select 1 from dual"
url="jdbc:oracle:thin:@localhost:1521/XE" driverClassName="oracle.jdbc.
OracleDriver" password="password" username="hibuser" maxWait="10000"
maxIdle="5" maxActive="20" factory="org.apache.commons.dbcp.
BasicDataSourceFactory" type="javax.sql.DataSource" auth="Container"
name="jdbc/Audit"/>
```

```
<Resource validationQuery="select 1 from dual"
url="jdbc:oracle:thin:@localhost:1521/XE" driverClassName="oracle.jdbc.
OracleDriver" password="password" username="quartz" maxWait="10000"
maxIdle="5" maxActive="20" factory="org.apache.commons.dbcp.
BasicDataSourceFactory" type="javax.sql.DataSource" auth="Container"
name="jdbc/Quartz"/>
<Resource validationQuery="select 1 from dual"
url="jdbc:oracle:thin:@localhost:1521/XE" driverClassName="oracle.jdbc.
OracleDriver" password="pentaho_operations_mart" username="pentaho_operations_
mart" maxWait="10000" maxIdle="5" maxActive="20" factory="org.apache.commons.
dbcp.BasicDataSourceFactory" type="javax.sql.DataSource" auth="Container"
name="jdbc/PDI_Operations_Mart"/>
```

4. Make sure that the `validationQuery` variable for your database is set to this: `validationQuery="select 1 from dual".`
5. Save the `context.xml` file, then close it.
6. To make sure that the changes that you made in the context.xml file take effect when Tomcat is started, navigate to the `tomcat/conf/Catalina` directory. If the `pentaho.xml` file is in the present, delete it. It will be generated again when you start the BA Server, but will contain the changes that you just made in the `context.xml` file.

Next Steps

Now it is time to start your server.

Use MS SQL Server as Your Repository Database

Before you prepare your Business Analytics (BA) Repository, complete the tasks in Prepare Environment.

The BA Repository resides on the database that you installed during the Prepare Environment step, and consists of three repositories: *Jackrabbit*, *Quartz*, *Hibernate and Pentaho Operations Mart.*

- *Jackrabbit* contains the solution repository, examples, security data, and content data from reports that you use Pentaho software to create.
- *Quartz* holds data that is related to scheduling reports and jobs.
- *Hibernate* holds data that is related to audit logging.
- *Pentaho Operations Mart* reports on system usage and performance.

Initialize MS SQL Server BA Repository Database

To initialize MS SQL Server so that it serves as the BA Repository, you will need to run a few SQL scripts to create the Hibernate, Quartz, and Jackrabbit (JCR) databases.

NOTE:

Use the ASCII character set when you run these scripts. Do not use UTF-8 because there are text string length limitations that might cause the scripts to fail.

The next few sections take you through the steps to initialize the MS SQL Server BA repository database.

Adjust MS SQL Server Configuration Settings

Configure the following MS SQL Server settings in Microsoft SQL Server Management Studio or other tool of your choice.

- Select **SQL Server and Windows Authentication Mode** to use mixed authentication.
- Enable TCP/IP for MS SQL Server.
- Make sure that MS SQL Server is listening on an external IP, and not localhost.

Change Default Passwords

We recommend that you change the default passwords in the SQL script files. If you are evaluating Pentaho, you might want to skip this step.

If you do decide to make the databases more secure, use any text editor to change the passwords in these files:

- `pentaho/server/biserver-ee/data/sqlserver/create_jcr_sqlServer.sql`
- `pentaho/server/biserver-ee/data/sqlserver/create_quartz_sqlServer.sql`
- `pentaho/server/biserver-ee/data/sqlserver/create_repository_sqlServer.sql`

- `pentaho/server/biserver-ee/data/sqlserver/pentaho_mart_sqlServer.sql`

Run SQL Scripts

Once you change the passwords, you will need to run these SQL scripts. You will need administrator permissions on the server in order to run these scripts. The list of SQL scripts is shown in the table below.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Run the scripts from the sqlcmd utility window or from Microsoft SQL Server Management Studio.

Action	SQL Script
Create Quartz	`-i <filepath to DDL>/create_quartz_sqlServer.sql`
Create Hibernate repository	`-i <filepath to DDL>/create_repository_sqlServer.sql`
Create Jackrabbit	`-i <filepath to DDL>/create_jcr_sqlServer.sql`
Create Pentaho Operations Mart	`-i <filepath to DDL>/pentaho_mart_sqlServer.sql`

Verify MS SQL Server Initialization

After you run the scripts, this list will help you verify that databases, users, and logins have been created.

1. Open MS SQL Server Management Studio.
2. In the **Object Explorer** section of the window, make sure that the Quartz, Jackrabbit (JCR), Hibernate, and Pentaho Operations Mart databases are present.
3. Navigate to Security > Logins and make sure that the appropriate users have been created.
4. Exit from MS SQL Server Management Studio tool.

Configure MS SQL Server BA Repository Database

Now that you have initialized your repository database, you will need to configure Quartz, Hibernate, Jackrabbit, and Pentaho Operations Mart for a MS SQL Server database.

By default, the examples in this section are for a MS SQL Server database that runs on port 1433. The default password is also in these examples.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Set Up Quartz on MS SQL Server BA Repository Database

Event information, such as scheduled reports, is stored in the Quartz `JobStore`. During the installation process, you must indicate where the `JobStore` is located, by modifying the `quartz.properties` file.

1. Open the `pentaho/server/biserver-ee/pentaho-solutions/system/quartz/quartz.properties` file in any text editor.
2. Locate the `#_replace_jobstore_properties` section and set the `org.quartz.jobStore.driverDelegateClass` as shown here.

```
org.quartz.jobStore.driverDelegateClass = org.quartz.impl.jdbcjobstore.MSSQLDelegate
```

3. Locate the `# Configure Datasources` section and set the `org.quartz.dataSource.myDS.jndiURL` equal to `Quartz`, like this.

```
org.quartz.dataSource.myDS.jndiURL = Quartz
```

4. Save the file and close the text editor.

Set Hibernate Settings for MS SQL Server

Modify the hibernate settings file to specify where Pentaho should find the BA Repository's hibernate config file.

NOTE:

The hibernate config file specifies driver and connection information, as well as dialects and how to handle connection closes and timeouts.

The files in this section are located in the `pentaho/server/biserver-ee/pentaho-solutions/system/hibernate` directory.

1. Open the `hibernate-settings.xml` file in a text editor. Find the `<config-file>` tags and change `postgresql.hibernate.cfg.xml` to `sqlserver.hibernate.cfg.xml` as shown.
From:

```
<config-file>system/hibernate/postgresql.hibernate.cfg.xml</config-file>
```

To:

```
<config-file>system/hibernate/sqlserver.hibernate.cfg.xml</config-file>
```

2. Save and close the file.
3. Open the `sqlserver.hibernate.cfg.xml` file in a text editor.
4. Make sure that the password and port number match the ones you specified in your configuration. Make changes if necessary, then save and close the file.

Replace Default Version of Audit Log File with MS SQL Server Version

Since you are using MS SQL Server to host the BA Repository, you need to replace the `audit_sql.xml` file with one that is configured for MS SQL Server.

1. Locate the `pentaho-solutions/system/dialects/sqlserver/audit_sql.xml` file.
2. Copy it into the `pentaho-solutions/system` directory.

Modify Jackrabbit Repository Information for MS SQL Server

There are parts of code that you will need to alter in order to change the default JCR repository to MS SQL Server.

1. Navigate to the `pentaho/server/biserver-ee/pentaho-solutions/system/jackrabbit` and open the `repository.xml` file with any text editor.
2. Following the table below, locate and change the code so that the MS SQL Server lines are **not** commented out, but the MySQL, PostgreSQL and Oracle lines **are** commented out.

CAUTION:

If you have a different port or different password, make sure that you change the password and port number in these examples to match the ones in your configuration.

Item:	Code Section:

Repository	`<FileSystem class="org.apache.jackrabbit.core.fs.db.MSSqlFileSystem">`
	`<param name="driver" value="com.microsoft.sqlserver.jdbc.SQLServerDriver"/>`
	`<param name="url" value="jdbc:sqlserver://localhost:1433;DatabaseName=jackrabbit"/>`
	…
	`<param name="schema" value="mssql"/>`
	`</FileSystem>`

DataStore	`<DataStore class="org.apache.jackrabbit.core.data.db.DbDataStore">`
	`<param name="url" value="jdbc:sqlserver://localhost:1433;DatabaseName=jackrabbit"/>`
	…
	`<param name="schema" value="mssql"/>`
	`</DataStore>`

Workspaces	`<FileSystem class="org.apache.jackrabbit.core.fs.db.MSSqlFileSystem">`

Item:	Code Section:
	<param name="driver" value="com.microsoft.sqlserver.jdbc.SQLServerDriver"/> <param name="url" value="jdbc:sqlserver://localhost:1433;DatabaseName=jackrabbit"/> … <param name="schema" value="mssql"/> </FileSystem>
PersistenceManager (1st part)	<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.MSSqlPersistenceManager"> <param name="url" value="jdbc:sqlserver://localhost:1433;DatabaseName=jackrabbit"/> … <param name="schema" value="mssql"/> </PersistenceManager>
Versioning	<FileSystem class="org.apache.jackrabbit.core.fs.db.MSSqlFileSystem"> <param name="driver" value="com.microsoft.sqlserver.jdbc.SQLServerDriver"/> <param name="url" value="jdbc:sqlserver://localhost:1433;DatabaseName=jackrabbit"/> … <param name="schema" value="mssql"/> </FileSystem>
PersistenceManager (2nd part)	<PersistenceManager class="org.apache.jackrabbit.core.persistence.bundle.MSSqlPersistenceManager"> <param name="url" value="jdbc:sqlserver://localhost:1433;DatabaseName=jackrabbit"/> … <param name="schema" value="mssql"/> </PersistenceManager>

Perform Tomcat-Specific Connection Tasks

After your repository has been configured, you must configure the web application servers to connect to the BA Repository. In this section, JDBC and JNDI connections are made to the Hibernate, Jackrabbit, and Quartz databases.

By default, the BA Server software is configured to be deployed and run on the Tomcat server. As such, connections have already been specified and only the Tomcat `context.xml` file must be modified.

The next couple of sections guide you through the process of working with the JDBC drivers and connection information for Tomcat.

Download Drivers and Install with the JDBC Distribution Tool

To connect to a database, including the BA Repository or DI Repository database, you will need to download and install a JDBC driver to the appropriate places for Pentaho components as well as on the the web application server that contains the Pentaho Server(s). Fortunately, the JDBC Distribution Tool makes this process easy.

NOTE:

Due to licensing restrictions, Pentaho cannot redistribute some third-party database drivers. This is why you have to download the file yourself and install it yourself.

1. Download a JDBC driver JAR from your database vendor or a third-party driver developer.
2. Copy the JDBC driver JAR you just downloaded to the `pentaho/jdbc-distribution` directory.
3. Open a cmd prompt or shell tool, navigate to the `pentaho/jdbc-distribution` directory and enter one of the following:

Windows:

```
distribute-files.bat <name of JDBC driver JAR>
```

Linux:

```
./ distribute-drivers.sh
```

1. If you have run this utility as part of the installation process, you are done. Go to the next step of the installation instructions.
2. If you have run this utility so that you can connect to a new repository, restart the BA or DI Server and Design tools, then try to connect to the new repository. If you cannot connect, verify that the drivers are installed as shown in this table. Restart your Pentaho Server(s) and Client tools.

List of Products and Corresponding Locations for JDBC Drivers

Server or Design Tool	Directory
Business Analytics (BA) Server	pentaho/server/biserver-ee/tomcat/lib
Data Integration (DI) Server	pentaho/server/data-integration-server/tomcat/lib

Server or Design Tool	Directory
Pentaho Data Integration (Spoon)	pentaho/design-tools/data-integration/lib
Pentaho Report Designer (PRD)	pentaho/design-tools/report-designer/lib/jdbc
Pentaho Aggregation Designer (PAD)	pentaho/design-tools/aggregation-designer/drivers
Pentaho Schema Workbench (PSW)	pentaho/design-tools/schema-workbench/drivers
Pentaho Metadata Editor (PME)	pentaho/design-tools/metadata-editor/libext/JDBC

Modify JDBC Connection Information in the Tomcat context.xml File

Database connection and network information, such as the username, password, driver class information, IP address or domain name, and port numbers for your BA Repository database are stored in the `context.xml` file. Modify this file to reflect the database connection and network information to reflect your operating environment. You also modify the values for the `validationQuery` parameters in this file if you have choosen to use an BA Repository database other than PostgreSQL.

CAUTION:

If you have a different user or password, make sure that you change the user and password in these examples to match the ones in your configuration environment.

1. Consult your database documentation to determine the JDBC class name and connection string for your BA Repository database.
2. Go to the `biserver-ee/tomcat/webapps/pentaho/META-INF` directory and open the `context.xml` file with any file editor.
3. Comment out the resource references that refer to databases other than MS SQL Server, such as PostgreSQL, MySQL, and Oracle. Then, add the following code to the file if it does not already exist. Be sure to adjust the port numbers and passwords to reflect your environment, if necessary.

```
<Resource validationQuery="select 1"
url="jdbc:sqlserver://localhost:1433;DatabaseName=hibernate"
driverClassName="com.microsoft.sqlserver.jdbc.SQLServerDriver"
password="password" username="hibuser" maxWait="10000" maxIdle="5"
maxActive="20" factory="org.apache.commons.dbcp.BasicDataSourceFactory"
type="javax.sql.DataSource" auth="Container" name="jdbc/Hibernate"/>
<Resource validationQuery="select 1"
url="jdbc:sqlserver://localhost:1433;DatabaseName=hibernate"
driverClassName="com.microsoft.sqlserver.jdbc.SQLServerDriver"
password="password" username="hibuser" maxWait="10000" maxIdle="5"
maxActive="20" factory="org.apache.commons.dbcp.BasicDataSourceFactory"
type="javax.sql.DataSource" auth="Container" name="jdbc/Audit"/>
<Resource validationQuery="select 1"
```

```
url="jdbc:sqlserver://localhost:1433;DatabaseName=quartz" driverClassName="com.
microsoft.sqlserver.jdbc.SQLServerDriver" password="password"
username="pentaho_user" maxWait="10000" maxIdle="5" maxActive="20"
factory="org.apache.commons.dbcp.BasicDataSourceFactory" type="javax.sql.
DataSource" auth="Container" name="jdbc/Quartz"/>
<Resource validationQuery="select 1"
url="jdbc:sqlserver://localhost:1433;DatabaseName=hibernate"
driverClassName="com.microsoft.sqlserver.jdbc.SQLServerDriver"
password="password" username="hibuser" maxWait="10000" maxIdle="5"
maxActive="20" factory="org.apache.commons.dbcp.BasicDataSourceFactory"
type="javax.sql.DataSource" auth="Container" name="jdbc/PDI_Operations_Mart"/>
```

4. Modify the username, password, driver class information, IP address (or domain name), and port numbers so they reflect the correct values for your environment.
5. Make sure that the `validationQuery` variable for your database is set to this: `validationQuery="select 1"`
6. Save the `context.xml` file, then close it.
7. To make sure that the changes that you made in the context.xml file take effect when Tomcat is started, navigate to the `tomcat/conf/Catalina` directory. If the `pentaho.xml` file is in the present, delete it. It will be generated again when you start the BA Server, but will contain the changes that you just made in the `context.xml` file.

Next Steps

Now it is time to start your server.

Start BA Server

How you start the BA Server depends on your operating system.

- Windows
- Linux or Mac

Starting BA Server on Windows

Modify Tomcat Windows Startup Script

The Tomcat startup script must be modified to include the CATALINA_OPTS variable. CATALINA_OPTS indicates the amount of memory to allocate. It also indicates where Pentaho licenses are installed.

1. Make sure the Tomcat web application server is not running by starting the Windows **Task Manager** and looking for **Tomcat** in the **Applications** tab. If the server is running, stop it.
2. Use a text editor to open the `start.bat` file, which is in the biserver-ee directory.
3. Add the java option pentaho.installed.licenses.file to `CATALINA_OPTS`. You need to modify setting of `CATALINA_OPTS` variable by adding the java option. See the following example.

```
set CATALINA_OPTS=-Xms4096m -Xmx6144m -XX:MaxPermSize=256m -Dsun.rmi.dgc.client.
gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000 -Dpentaho.installed.
licenses.file=%PENTAHO_INSTALLED_LICENSE_PATH%
```

1. Save and close the file.

Start BA Server

1. Open a web browser and enter this URL: `http://localhost:8080/pentaho`.
2. The **User Console Log On** window appears.
3. Note that you will be prompted to install a license. Information on how to do that appears in the Set Up BA Server instructions.

Problems Starting the BA Server?

Check out our Troubleshooting Guide for help.

Next Steps

Read the next steps.

Starting BA Server on Linux

Modify the Tomcat Linux Startup Script

The Tomcat startup script must be modified to include the `CATALINA_OPTS` variable. `CATALINA_OPTS` indicates the amount of memory to allocate. It also indicates where Pentaho licenses are installed.

1. Make sure the Tomcat web application server is not running by opening a **Terminal** window and typing `ps -A` at the prompt. If the server is running, stop it.
2. Use a text editor to open the `start-pentaho.sh` file, which is in the biserver-ee directory.
3. Add the java option pentaho.installed.licenses.file to CATALINA_OPTS. You need to modify setting of CATALINA_OPTS variable at the end of the file by adding the java option. See the following example.

```
export CATALINA_OPTS="-Xms4096m -Xmx6144m -XX:MaxPermSize=256m -Dsun.rmi.dgc.
client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000 -Dpentaho.
installed.licenses.file=$PENTAHO_INSTALLED_LICENSE_PATH"
```

1. Save and close the file.

Start BA Server

1. Run the startup script for your web application server by launching the `start-pentaho.sh` file.
2. Open a web browser and enter this URL: `http://localhost:8080/pentaho`. The **User Console** Log On window appears. Note that you will be prompted to install a license. Information on how to do that appears in the Set Up BA Server instructions.

Problems Starting the BA Server?

Check out our Troubleshooting Guide for help.

Next Step

Read the next steps.

Next Steps

Now that you've installed the BA Server, do two things.

- Install the BA design tools, so you can generate models and reports.
- Configure the BA Server and design tools so you can install licenses, set up datasources, and choose a security method, and more. You must install the license to log into the BA Server.

Note: If you have installed the BA Server so that you can migrate content from the old system to this one, make sure that your license keys have been installed, then view the Upgrade BA and DI System instructions.

Learn More

- Web-Based Data Analysis, Reports, and Dashboards Tutorial using the User Console