



Upgrading to the Pentaho BI Suite 3.8



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Introduction



Danger: Do not skip ahead! If you omit any part of the upgrade process, you **will** be left with a non-functioning configuration and will very likely have to restore your previous configuration and start over from the beginning.

This guide provides procedures and advice for sysadmins who are upgrading from the Pentaho BI Suite Enterprise Edition 3.7.0-GA or 3.7.0.1-GA to version 3.8.0-GA. This encompasses the BI Server, DI Server and any Pentaho client tools that you may have purchased support modules for. **This guide is not intended for upgrades to or from any other BI Suite version, including release candidates (RC) and betas.**



Note: If you only need to update the Pentaho Data Integration server and client tools, you may find it easier to follow the *Pentaho Data Integration 4.1.0 to 4.1.2 Upgrade Guide* instead of trying to follow only the PDI sections of this larger BI Suite document.

You will upgrade to the latest BI and DI Server versions using either archive packages, or the manual WAR build and deployment process. Once the new version is installed, you'll migrate your solutions and server configuration settings from the old instance to the new one. Upgrading the Pentaho client tools is a much simpler operation that will take less time and effort. If you have a large number of client tool deployments, however, you may want to find a way to automate part or all of the client tool upgrade process.

New Features in Version 3.8

The Pentaho BI Suite 3.8 contains many new features and improvements:


- **Data Integration 4.1.2:** Improved performance in the enterprise repository and Hadoop.
 - **Impact:** If you intend to deploy PDI on your Hadoop cluster and create Hadoop jobs, you must expand your Pentaho support entitlement and install a new Pentaho BI Suite For Hadoop license key. Relevant installation, administration, and user instructions are available in all of the standard PDI documentation in the Pentaho Knowledge Base.
- **Pentaho Analyzer improvements:** Hyperlinks on row/column headers, ability to disable auto-refresh, and a new Schema view in the field list.
 - **Impact:** Analyzer users will need to read the appropriate documentation (*Pentaho User Console Guide* and/or *Pentaho Analysis Guide*) or receive training or instruction on how to use these features appropriately.
- **Dashboard Designer improvements:** New filter control types, ability to create cascading filter controls, content-to-content linking, and metadata support for multi-value parameters.
 - **Impact:** Dashboard Designer users will need to read the appropriate documentation (*Pentaho User Console Guide*) or receive training or instruction on how to use these features appropriately.
- **Ad hoc reporting improvements:** BI Server query execution caching, and metadata support for multi-value parameters.
 - **Impact:** Ad hoc reporting users will need to read the appropriate documentation (*Pentaho User Console Guide*) or receive training or instruction on how to use these features appropriately.
- **Myriad bug fixes and incremental improvements.**
 - **Impact:** You will have to examine old action sequences, charts, and dashboards to ensure that you are not employing old workarounds for bugs and limitations that have been addressed in version 3.8. Essentially this means that old content must be thoroughly tested prior to production redeployment.

Best Practices for Production Upgrades

In order to minimize downtime for your users and ensure the integrity of your solution data, it's best to perform the upgrade on a test server that has an exact copy of your production BI Server. Once you've verified the upgrade process on your test machine, you can perform the same procedure on your production server with confidence.

You can work with your test server at any time without having to worry about disturbing your users, but you may want to schedule the production upgrade for a weekend, evening, or other period of planned downtime so that no users are interrupted in the process.

Some users may need additional training or documentation for Report Designer, Analyzer, Metadata Editor, Pentaho Data Integration, and Dashboard Designer. All of the relevant documentation in the Pentaho Knowledge Base has been updated to accommodate these needs. You can also access professional, comprehensive documentation in both the Pentaho User Console and Report Designer by selecting **Documentation** in the **Help** menu. For updated administration documentation, click the help icon (question mark) in the upper right corner of the Pentaho Enterprise Console. To arrange for Web-based or classroom training sessions, contact your Pentaho sales representative.

 **Note:** With the exception of evaluation guides, all Pentaho documentation that is distributed with the BI Suite can also be found in HTML format in the Pentaho Knowledge Base at <http://kb.pentaho.com>.

Prerequisites

To complete the upgrade, you will need the following:


- A currently running Pentaho BI Server Enterprise Edition version 3.7.0-GA or 3.7.0.1-GA. **Other BI Server versions are not covered or supported in this guide.**
- A test server or virtual machine that contains a software environment identical to your production server.
- The knowledge and permissions to access and make changes to your production server.
- Administrator permissions in your existing Pentaho Enterprise Console.
- Sufficient time to complete each phase of the upgrade. The exact amount of time depends on the complexity of your security infrastructure, the size of your solution repository database, and the speed of your server hardware. Typical upgrades should take between 30 and 60 minutes. If you have many custom changes in your Pentaho configuration files, you can expect to spend about two hours on the upgrade.

System Requirements

Hardware and software requirements have not changed for the BI Suite, so your existing production hardware will probably not need to be upgraded. Virtually any Linux distribution; Solaris 10; OS X; and Windows XP, Vista, Server 2008, or 7 will work, as long as it has a Sun Java Runtime Environment (JRE) or Java Development Kit (JDK -- this is a strict requirement only for manual deployment upgrades) version 1.6. Manual deployment upgrades will also need Apache Ant version 1.7 in order to build a new Pentaho WAR package.

How to Check Your Java Version

The Pentaho BI Suite requires a Java Runtime Environment (JRE) or Java Development Kit (JDK) version 1.6 (sometimes referred to as 6.0). Follow the procedure below to see which version of Java is installed on your system and configured to be the default Java executable.

 **Note:** There may be multiple JREs or JDKs on your system, but only one can be set as the global default. Any of these Java instances can be explicitly used for any Java program; if no specific Java executable is called, the default is used. Pentaho establishes a specific system variable named **PENTAHO_JAVA_HOME** to declare which Java instance it will use.

1. Open a terminal or command prompt window.
2. Type this command in: **java -version** and press **Enter**.
Along with the Java version, the bit-ness (32-bit or 64-bit) and patch level will also show in the output.

```
java version "1.6.0_21"  
Java(TM) SE Runtime Environment (build 1.6.0_21-b06)  
Java HotSpot(TM) 64-Bit Server VM (build 17.0-b16, mixed mode)
```

Backing Up



Note: You must quit all Pentaho programs and stop all Pentaho-related services (including the BI Server, DI Server, Pentaho Enterprise Console, and the solution database) before creating backups. After this point, do not start any of these programs or services until directed to do so.

Before you proceed with a production upgrade, you should back up every part of the BI Server that will change. The easiest way to back up a directory is to create a compressed archive of it. Generally on a Windows system you would use the Zip or RAR formats through programs like 7-zip or WinRAR. On Linux, BSD, and Solaris, you would use GNU Tar or bsdtar. No matter which program you use, you should end up with either one single file that encompasses the entire `/pentaho/` directory (for graphical installer and archive deployments), or the `/pentaho/` directory plus the **pentaho.war** file from your application server (for manual deployments).

Renaming Your Old Pentaho Installation

Before you proceed, ensure that your BI Server, DI Server, and Pentaho Enterprise Console servers are stopped.

Rename your old `/pentaho/server/` directory to **`/pentaho/server_old/`** or some other appropriate name. Alternatively, you can move this directory to a different location.

```
mv /home/pentaho/pentaho/server/ /home/pentaho/pentaho/server_old/
```



Note: None of the software installed to this directory will work while it is renamed. If you need to abort the upgrade and start any servers in the server directory, you must rename it back to **server**.

Upgrading the BI Server


There are three upgrade paths for the BI Server, depending on how you installed the previous Pentaho release:

- 1. Manual deployment:** If you built a Pentaho WAR and deployed it to your own application server, you will follow the same process to upgrade it. After the WAR is deployed, you'll merge your old pentaho-solutions directory with the new one, then upgrade the Pentaho Enterprise Console. Client tools are upgraded separately by using archive packages.
- 2. Archive deployment:** If you deployed the BI Suite from individual archive packages, you'll download 3.8.0-GA packages, unpack them, and merge your old pentaho-solutions directory with the new one.
- 3. Graphical installer deployment:** If you previously used the graphical installation utility to install a BI Suite environment, the easiest upgrade path is to use a BI Server archive package to replace Enterprise Console and the BI Server, then merge your old pentaho-solutions directory with the new one.

Refer to the sections below that refer to your chosen upgrade path.

Manual WAR Deployment

If you previously used the manual deployment process to build a BI Server WAR, you should use the same process to upgrade to 3.8.0-GA.

 **Note:** If you aren't making any custom changes to the WAR, and you aren't running any other applications on your application server, it may be easier to use the archive-based deployment method instead. The BI Server archive package includes a preconfigured Tomcat 6.0 server with the pentaho.war already deployed.

Manual Deployment Upgrade Checklist

The Upgrade Checklist is a concise list of instructions intended to show a high-level overview of the upgrade process. It also serves as a method of verifying that each task is performed in the correct order. You may find it useful to print the checklist out and physically mark each step in the Done column as you complete it. **The checklist is not the complete instruction set;** consult the verbose instructions throughout this guide for more details on each step.

Step	Procedure	Done
Step 1	Download the upgrade materials from the Enterprise Edition FTP site or Pentaho Knowledge Base.	
Step 2	Stop your application server, the Pentaho Enterprise Console server, and your solution database.	
Step 3	Back up your <code>/pentaho/</code> directory and the Pentaho Web application (pentaho.war or the uncompressed WAR directory in your application server's deploy or webapps directory).	
Step 4	Rename the <code>/pentaho/server/</code> directory to <code>/pentaho/server_old/</code> .	
Step 5	Unpack the biserver-manual-ee package to a temporary location.	
Step 6	If you are using an Oracle solution repository, copy the quartz-oracle-1.5.2.jar file to the appropriate directory to be included in the WAR build.	
Step 7	If you have made any changes to web.xml , merge your customizations with the <code>/biserver-manual-ee/build-resources/pentaho-webapp/WEB-INF/web.xml</code> file, then copy that merged file to the <code>/biserver-manual-ee/build-resources/WEB-INF/</code> directory.	
Step 8	Copy your old context.xml file (for Tomcat deployments), or your pentahoHibernate-ds.xml and quartz-ds.xml files (for JBoss deployments) to the <code>/biserver-manual-ee/build-resources/custom-pentaho-webapp/META-INF/</code> directory.	
Step 9	Build new Pentaho WAR packages with the BI Server 3.8 manual deployment materials.	
Step 10	Remove the old pentaho.war and pentaho-style.war files or directories from your application server's webapps or deploy directory.	
Step 11	Delete any old Pentaho-related temporary files or directories created by your application server.	
Step 12	Copy the new WARs to the <code>/server/webapps/</code> directory in Tomcat, or the <code>/server/default/deploy/</code> directory in JBoss.	

Step	Procedure	Done
Step 13	Create a new <code>/pentaho/server/biserver-ee/</code> directory in the same location as the old one that you renamed earlier, and move the <code>/biserver-manual-ee/build/pentaho-solutions/</code> directory to it.	
Step 14	Unpack any Pentaho User Console plugins you may have licenses for (Analyzer, Dashboard Designer) to the <code>/pentaho/server/biserver-ee/pentaho-solutions/system/</code> directory.	
Step 15	If you have a Pentaho BI Suite For Hadoop license, unpack the <code>pdi-hadoop-plugin</code> and <code>pdi-hadoop-plugin-ee</code> archives to the <code>/pentaho/server/biserver-ee/pentaho-solutions/system/kettle/plugins</code> directory.	
Step 16	Perform the documented steps for upgrading single-sign on if you previously used this as your authentication method.	
Step 17	Copy all of your solutions directories from the <code>/pentaho/server_old/biserver-ee/pentaho-solutions/</code> directory to the new one.	
Step 18	Copy the files documented in Merging Your BI Server Configuration Files on page 29 to the new <code>pentaho-solutions</code> directory.	
Step 19	Edit the <code>pentahoObjects.spring.xml</code> file and add the three new bean nodes required in BI Server 3.8.	
Step 20	If you're a PDI Enterprise Edition customer, continue on to the section that describes the DI Server upgrade process.	
Step 21	Unpack the new Pentaho Enterprise Console from the archive package to the <code>/pentaho/server/</code> directory.	
Step 22	Copy the following files from the old Pentaho Enterprise Console to the new one: <code>console.xml</code> , <code>console.properties</code> , <code>login.properties</code> , <code>login.conf</code> , <code>log4j.xml</code> .	
Step 23	Start your Tomcat or JBoss server and the Pentaho Enterprise Console and check for any obvious errors or failures.	
Step 24	Ensure that all of your content is accessible. Log into the Pentaho User Console and verify that your product licenses work. Run at least two existing ad-hoc reports for each data source to ensure that there are no bugs or problems with them. Verify at least two existing analysis views or Analyzer reports for each data source. Verify that any previously created dashboards are functioning properly. Run all reports that have been published from Report Designer. Lastly, check all of your schedules to ensure that they are still properly configured and operational.	
Step 25	On workstations, unpack applicable client tools to the empty <code>/pentaho/design-tools/</code> directory.	
Step 26	If you are a Pentaho BI Suite For Hadoop customer, use the command line license installer to install the Hadoop licence key in Report Designer, Metadata Editor, and/or Pentaho Data Integration.	
Step 27	Verify that all client tools can access old content and publish to the BI Server. Verify that PDI can connect to the DI Server, if applicable.	
Step 28	Remove the <code>/pentaho/server_old/</code> directory on each upgraded machine, and any archive packages and temporary directories you used during the upgrade.	

Downloading and Unpacking the Upgrade Materials

The graphical BI Suite installation utility will not enable you to properly upgrade your existing BI Server, so you will be working with the manual deployment package instead. You can update the Pentaho client tools on your user workstations with the graphical installer, or you can download each client tool as a zip or tar.gz archive and deploy them individually.



Note: For brevity's sake this guide will only cover client tool installation through the graphical utility. If you'd like instructions on how to download and unpack client tool archive packages, ignore the instructions in this guide that reference the BI Suite graphical installer, and refer instead to the client tools section of the *Pentaho BI Suite Archive-Based Installation Guide*.

Before you proceed, log into the Pentaho Enterprise Edition FTP site. The address and login credentials were emailed to you with your new Welcome Kit. If you cannot find or were not sent a Welcome Kit, contact your Pentaho sales or support representative.

Once you're logged into the FTP server, download the following files:

1. `/3.8.0-GA/developers/biserver-manual-ee-3.8.0-GA.zip`

2. `/3.8.0-GA/server/windows/pec-ee-3.8.0-GA.zip` or `/3.8.0-GA/server/nix_osx/pec-ee-3.8.0-GA.tar.gz` for Linux, OS X and Solaris.
3. If you purchased Dashboards or Analysis support entitlements, you will also need one (for just Dashboards) or both (for Analysis) of the plugins in `/3.8.0-GA/server/plugins/`
4. Optionally, for client tool deployments, navigate to `/3.8.0-GA/installers/` and download the BI Suite installer for your platform -- Windows, Linux, or OS X.

These files contain the BI Server manual deployment package, the Pentaho Enterprise Console, the Dashboard Designer and Pentaho Analyzer plugins, and the BI Suite installer, respectively. The BI Server and Pentaho Enterprise Console packages are required; Dashboard Designer and Analyzer are only for customers who have a support entitlement for them; and the BI Suite graphical installer is for client tool deployments and is not required for a server upgrade. If you plan to unpack individual client tool packages on your workstations, download those instead of the graphical installer.

Once the files are downloaded, unpack the `biserver-manual-ee` file first. It doesn't matter where you unpack it to -- it is only a temporary directory that you will use to build a new Pentaho Web application.

Next, if you downloaded any plugins, unpack them into the newly created `/biserver-manual-ee/build-resources/pentaho-solutions/system/` directory.

You'll unpack the Pentaho Enterprise Console later when you're ready to replace the old one. For now, just leave it alone.

Copying the Oracle Quartz JAR Pre-Build

This section is only for administrators who are using an Oracle database for the Pentaho solution repository. You do not need to do this for Oracle data sources; only for Oracle solution repositories.

1. For Tomcat and JBoss WAR deployments, create a `/biserver-manual-ee/build-resources/custom-pentaho-webapp/WEB-INF/lib/` directory.
2. For Tomcat and JBoss WAR deployments, copy the `/biserver-manual-ee/build-resources/pentaho-third-party/quartz-oracle-1.5.2.jar` to the newly created `/biserver-manual-ee/build-resources/custom-pentaho-webapp/WEB-INF/lib/` directory.

You are now ready to proceed to the WAR build instructions.

Using an Existing JBoss Instance

Upgrade instructions for JBoss WARs are below.



Note: Support for JBoss versions prior to 5.1 is deprecated as of the BI Suite 3.8. You must use JBoss 5.1 for this upgrade.

Building and Deploying a New JBoss WAR

Ensure that the application server and solution database are halted before continuing with the upgrade.

This process walks you through building a new `pentaho.war` and deploying it to your application server. You will have to adjust the paths in the examples to match your environment.

1. If you have made any customizations to your old `web.xml` file in the `/jboss/server/default/deploy/pentaho.war/WEB-INF/` directory, merge them into the new `web.xml` in `/biserver-manual-ee/build-resources/pentaho-webapp/WEB-INF/` and copy the merged file to `/biserver-manual-ee/build-resources/custom-pentaho-webapp/WEB-INF/`.
2. Open a terminal window and navigate to the `/biserver-manual-ee/` directory.
3. Run the following Ant command, changing the database to whichever one you're currently using for your solution repository: `ant -Darchive.target=war-pentaho-jboss-no-portal -Ddb=mysql5`

This builds an application server- and database-specific WAR. Possible database values are:

- `mysql5`
- `postgresql`
- `oracle10g`

4. Delete all of the old Pentaho WARs from the `/jboss/server/default/deploy/` directory.

The relevant files are: `pentaho.war` and `pentaho-style.war`.

5. Copy the newly-built `pentaho.war` file from the `/biserver-manual-ee/build/pentaho-wars/jboss/portal/` directory to your existing `/jboss/server/default/deploy/` directory.
6. Copy the newly-built `pentaho-style.war` file from the `/biserver-manual-ee/build/pentaho-wars/` directory to your existing `/jboss/server/default/deploy/` directory.
7. Delete the `/jboss/server/default/tmp/` and `/jboss/server/default/work/` directories.

These directories contain temporary files that, when missing, will force your application server to recompile all of your JSPs. This is a necessary step and will not cause any harm to JBoss.

Your instance of the Pentaho BI Server is now updated to version 3.8, though there is much more to do before your upgrade is complete.

Using an Existing Tomcat Instance

Upgrade instructions for Tomcat WARs are below.



Note: Support for Tomcat 5.5 is deprecated as of the BI Suite 3.8. You must use Tomcat 6 for this upgrade.

Building and Deploying a New Tomcat WAR

Ensure that the application server and solution database are halted before continuing with the upgrade.

This process walks you through building and deploying a new BI Server WAR archive for Tomcat 6. You will have to adjust the paths in the examples to match your environment.

1. Copy your current `context.xml` file from your old Pentaho WAR directory to the **META-INF** subdirectory in `/biserver-manual-ee/build-resources/custom-pentaho-webapp/`.



Note: If you have made any changes to `context.xml`, you must delete the `pentaho.xml` file that Tomcat automatically generates based on the `context.xml` embedded in the Pentaho WAR. Tomcat will not overwrite this file on its own, so any `context.xml` changes will not be recognized until the old `pentaho.xml` is removed. Typically this file is located in `/tomcat/conf/Catalina/localhost/`. If this file is not present, then you probably didn't make any changes to `context.xml` and there is nothing to worry about.

```
cp /pentaho/server/biserver-ee/tomcat/webapps/pentaho/META-INF/context.xml /home/pgibbons/biserver-manual-ee/build-resources/custom-pentaho-webapp/META-INF/
```

2. If you have made any customizations to your old `web.xml` file in the `/tomcat/webapps/pentaho/WEB-INF/` directory, merge them into the new `web.xml` in `/biserver-manual-ee/build-resources/pentaho-webapp/WEB-INF/` and copy the merged file to `/biserver-manual-ee/build-resources/custom-pentaho-webapp/WEB-INF/`.
3. Delete the unpacked WAR directories in `/tomcat/webapps/`, which are: **pentaho** and **pentaho-style**.
4. Open a terminal window and navigate to the `/biserver-manual-ee/` directory.
5. Run the following Ant command, changing the database to whichever one you're currently using for your solution repository: `ant -Darchive.target=war-pentaho-tomcat -Ddb=mysql5`

This builds an application server- and database-specific WAR. Supported database values are:

- `mysql5`
- `postgresql`
- `oracle10g`

6. Copy the newly-built `pentaho.war` from the `/biserver-manual-ee/build/pentaho-wars/tomcat/` directory to your existing `/tomcat/webapps/` directory.

All of the WARs you deploy will automatically unpack when Tomcat starts, and create new directories to replace the ones you deleted previously.

7. Copy the `pentaho-style.war` file from the `/biserver-manual-ee/build/pentaho-wars/` directory to your existing `/tomcat/webapps/` directory.

Your instance of the Pentaho BI Server is now updated to version 3.8, though there is much more to do before your upgrade is complete.

Rebuilding the Solutions Directory

Follow the directions below to create a new pentaho-solutions directory. Modify the paths in the examples to match your scenario.

1. Create a new `/pentaho/server/biserver-ee/` directory in the exact location of the old one, which you earlier renamed to `/pentaho/server_old/biserver-ee/`.

```
mkdir -p /home/pentaho/pentaho/server/biserver-ee/
```

2. Copy the newly-built pentaho-solutions directory from `/biserver-manual-ee/build/` to the `/pentaho/server/` directory you just created.

```
cp -r /home/amenethil/downloads/biserver-manual-ee/build/pentaho-solutions/ /home/pentaho/pentaho/server/biserver-ee/
```

You now have a fresh solutions directory. You can now install the latest plugins, and migrate your settings and solutions to it according to the instructions later in this guide.

Installing Pentaho User Console Plugins

In order to proceed with this task, you must have already purchased an Enterprise Edition support entitlement for the products you want to install. Skip this process if you do not have the requisite support entitlements.

The Pentaho User Console is built with a plugin architecture that enables you to expand its functionality with new client tools and functions. Follow the directions below to install any of the following plugins:

- Pentaho Analyzer
- Pentaho Dashboard Designer



Note: Pentaho Analyzer requires that Dashboard Designer also be installed.

1. If you have not already done so, download the plugin packages from the Pentaho Enterprise Edition FTP site, or the Pentaho Knowledge Base.

The Dashboard Designer package name always begins with **pdd**; the Pentaho Analyzer package always begins with **paz**.

2. Unpack the plugin packages to the `/pentaho/server/biserver-ee/pentaho-solutions/system/` directory.

This will create a subdirectory for the plugin.

The plugins you downloaded are now installed, though you will still need to register your license files in the Pentaho Enterprise Console, or with the command line license management tool. There are instructions for that process later in this guide. For now, continue on to the next section.

Installing Hadoop Hive Plugins

In order to proceed with this task, you must have already purchased a Pentaho BI Suite For Hadoop support entitlement. Skip this process if you do not have one.

The BI Server requires special Pentaho Data Integration plugins in order to use Hive metadata, and to use PDI transformations in action sequences. Follow the instructions below to install these plugins in the BI Server.

1. If you have not already done so, download the plugin packages from the Pentaho Enterprise Edition FTP site, or the Pentaho Knowledge Base.

The package names are:

- `pdi-hadoop-plugin`
- `pdi-hadoop-plugin-ee`

2. Unpack the plugin packages to the `/pentaho/server/biserver-ee/pentaho-solutions/system/kettle/plugins/` directory.

The plugins you downloaded are now installed, though you will still need to register your license file in the Pentaho Enterprise Console, or with the command line license management tool. There are instructions for that process later in this guide. For now, continue on to the next section.

Upgrading Your Single-Sign On Configuration



Note: This only applies to people who have modified the BI Server to work with a Central Authentication Service.

You should test your BI Server and Pentaho Enterprise Console servers before continuing. If you are switching from some other authentication back-end to a Central Authentication Service, you should perform extra testing on the BI Server before you proceed, to ensure that any problems you encounter are strictly related to the SSO configuration, not some other aspect of the BI Server.

Follow the directions below to enable single sign-on in your newly upgraded BI Server.

1. Test your newly deployed BI Server to ensure that it starts and operates normally, then stop the application server.
2. Unpack your deployed Pentaho WAR file in place.
Tomcat will typically do this automatically when you start it. JBoss will not typically unpack the WAR on its own, but if you unpack it by hand, the directory must have a .war extension.
3. Open a terminal or command prompt window and navigate to the `/biserver-manual-ee/build-resources/pentaho-ss0/` directory.
4. Edit the **sso-replacements.properties** file and change the default options to match your CAS configuration.
Refer to the CAS properties reference below if you have any trouble figuring out what each property does. If you have the `sso-replacements.properties` file that you used to enable CAS support in the BI Suite 3.7.x, you can reuse it for this process, but you must ensure that the **cas.ticket.validator.url** property is updated according to the property reference below.
5. Use Ant to run the **sso-replacements** script with the **sso-pentaho** switch, as in the following example:

```
ant -f sso-replacements.xml sso-pentaho
```

Your upgraded SSO files are now in place.

CAS Property Reference

CAS Properties

These properties mostly refer to CAS services:

Property	Description	Example
<code>cas.authn.provider</code>	Required. Security back-end that CAS should use. Valid values are memory, jdbc, or ldap	ldap
<code>cas.login.url</code>	Required. CAS login URL.	<code>\${cas.base.url}/login</code>
<code>cas.ticket.validator.url</code>	Required. CAS ticket validator URL.	<code>\${cas.base.url}</code>
<code>cas.logout.url</code>	Required. CAS logout URL. A <code>service.logout.url</code> will be appended to this URL.	<code>\${cas.base.url}/logout?url=</code>
<code>_cas.base.url</code>	URL under which all CAS services reside.	<code>https://localhost:8443/cas</code>

Pentaho Properties

These are service URLs that serve as callbacks from the CAS server into the BI Platform:

Property	Description	Example
<code>pentaho.service.url</code>	Required. Processes CAS callback.	<code>\${_pentaho.service.base.url}/j_spring_cas_security_check</code>
<code>pentaho.service.logout.url</code>	Required. URL to go to after CAS logout.	<code>\${_pentaho.service.base.url}/Home</code>
<code>pentaho.service.solutions.system.dir</code>	Path to <code>pentaho-solutions/system</code> .	<code>/usr/local/pentaho/server/biserver-ee/pentaho-solutions/system/</code>
<code>pentaho.service.lib.dir</code>	Path to webapp lib directory.	<code>/usr/local/tomcat/common/lib/</code>
<code>pentaho.service.web.xml</code>	Path (including filename) of webapp's <code>web.xml</code> .	<code>/usr/local/tomcat/conf/web.xml</code>

Property	Description	Example
pentaho.service.appctx.cas.xml	Path (including filename) of new applicationContext-spring-security-cas.xml.	/usr/local/pentaho/server/biserver-ee/pentaho-solutions/system/applicationContext-spring-security-cas.xml
pentaho.service.jsp.dir	Path to directory containing webapp's JSPs.	/usr/local/tomcat/webapps/pentaho/jsp/
pentaho.service.spring.beans.xml	Path (including filename) of pentaho-spring-beans.xml.	/usr/local/pentaho/server/biserver-ee/pentaho-solutions/system/pentaho-spring-beans.xml
_pentaho.service.base.url	Service base URL.	http://localhost:8080/pentaho
_pentaho.service.pentaho.war.dir	Webapp exploded WAR directory.	/usr/local/tomcat/webapps/pentaho/
_pentaho.service.webinf.dir	Path to webapp's WEB-INF directory.	/usr/local/tomcat/webapps/pentaho/WEB-INF/

Archive-Based Deployment

To upgrade the BI Server via archive packages, you'll simply download new packages, unpack them, and merge your BI Server configuration and solutions by hand. Step-by-step instructions are below.

Archive Deployment Upgrade Checklist

The Upgrade Checklist is a concise list of instructions intended to show a high-level overview of the upgrade process. It also serves as a method of verifying that each task is performed in the correct order. You may find it useful to print the checklist out and physically mark each step in the Done column as you complete it. **The checklist is not the complete instruction set**; consult the verbose instructions throughout this guide for more details on each step.

Step	Procedure	Done
Step 1	Download the upgrade materials from the Enterprise Edition FTP site or Pentaho Knowledge Base.	
Step 2	Stop all Pentaho programs and services, including the solution repository database.	
Step 3	Back up your /pentaho/ directory and hibernate and quartz databases.	
Step 4	Rename the /pentaho/server/ directory to /pentaho/server_old/, then create a new, empty /pentaho/server/ directory.	
Step 5	Unpack the BI Server archive package to the empty /pentaho/server/ directory.	
Step 6	Copy any necessary JDBC drivers for your solution database and data sources to the /pentaho/server/biserver-ee/tomcat/lib/ directory.	
Step 7	Edit the web.xml to set the solution-path and fully-qualified-server-url, if necessary. If you've made custom changes to your old web.xml, or if you are unsure of what values to enter for the aforementioned elements, you can copy it over from your old /tomcat/webapps/pentaho/WEB-INF/ directory and move the value from the base-url element to the fully-qualified-server-url element.	
Step 8	Copy your context.xml file from the /server_old/biserver-ee/tomcat/webapps/pentaho/META-INF/ directory to the new one.	
Step 9	Unpack any Pentaho User Console plugins you may have licenses for (Analyzer, Dashboard Designer) to the /pentaho/server/biserver-ee/pentaho-solutions/system/ directory.	
Step 10	If you have a Pentaho BI Suite For Hadoop license, unpack the pdi-hadoop-plugin and pdi-hadoop-plugin-ee archives to the /pentaho/server/biserver-ee/pentaho-solutions/system/kettle/plugins directory.	
Step 11	Copy all of your solutions directories from the /pentaho/server_old/biserver-ee/pentaho-solutions/ directory to the new one.	
Step 12	Copy the files documented in Merging Your BI Server Configuration Files on page 29 to the new pentaho-solutions directory.	
Step 13	Edit the pentahoObjects.spring.xml file and add the three new bean nodes required in BI Server 3.8.	
Step 14	If you're a PDI Enterprise Edition customer, continue on to the section that describes the DI Server upgrade process.	

Step	Procedure	Done
Step 15	Copy the following files from the old Pentaho Enterprise Console to the new one: console.xml, console.properties, login.properties, login.conf, log4j.xml.	
Step 16	Move data source JDBC driver JARs from the old directories to the new ones.	
Step 17	Start the BI Server and Pentaho Enterprise Console and check for any obvious errors or failures.	
Step 18	Check that all of your content is accessible. Log into the Pentaho User Console and verify that your product licenses work. Run at least two existing ad-hoc reports for each data source to ensure that there are no bugs or problems with them. Verify at least two existing analysis views or Analyzer reports for each data source. Verify that any previously created dashboards are functioning properly. Run all reports that have been published from Report Designer. Lastly, check all of your schedules to ensure that they are still properly configured and operational.	
Step 19	On workstations, unpack applicable client tools to the empty <code>/pentaho/design-tools/</code> directory.	
Step 20	If you are a Pentaho BI Suite For Hadoop customer, use the command line license installer to install the Hadoop licence key in Report Designer, Metadata Editor, and/or Pentaho Data Integration.	
Step 21	Verify that all client tools can access old content and publish to the BI Server. Verify that PDI can connect to the DI Server, if applicable.	
Step 22	Remove the <code>/pentaho/server_old/</code> directory on each upgraded machine, and any archive packages and temporary directories you used for the upgrade.	

Obtaining the Installation Materials

As an Enterprise Edition customer, you can obtain the BI Server and client tool pre-configured packages from the Pentaho Enterprise Edition FTP site by using your Pentaho account login credentials. If you are unfamiliar with these details, consult the Welcome Kit provided to you by Pentaho customer support as part of the Enterprise Edition enablement process.

With the exception of Design Studio, which has separate packages for Linux, OS X, and Windows, all of the below-listed files are platform-agnostic, so there is only one download for all operating systems, databases, and application servers. Most Windows servers do not typically have software to unpack a .tar.gz file, so it is repackaged in .zip format for Windows admins. Other than this archive technology difference, the BI Suite packages are identical.

The Pentaho Enterprise Console is included in the BI Server package, so you do not need to download it separately.

The **Pentaho User Console plugins** items below refer to add-ons for the Pentaho User Console, such as Dashboard Designer and Pentaho Analyzer.

Windows

The packages you will need for a Windows server are:

- **BI Server (includes the Pentaho Enterprise Console):** `/3.8.0-GA/server/windows/biserver-ee-3.8.0-GA.zip`
- **Pentaho Analyzer plugin:** `/3.8.0-GA/server/plugins/paz/`
- **Pentaho Dashboard Designer plugin:** `/3.8/server/plugins/pdd/`
- **BI Server Hadoop plugin:** `/Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-1.0.2.zip`
- **BI Server Hadoop Enterprise Edition plugin:** `/Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-ee-1.0.2.zip`

The packages you will need for your Windows workstations are:

- **Report Designer:** `/3.8.0-GA/client/windows/prd-ee-3.8.0-GA.zip`
- **Metadata Editor:** `/3.8.0-GA/client/windows/pme-ee-3.8.0-GA.zip`
- ***Schema Workbench:** `/3.8.0-GA/client/windows/psw-ee-3.2.2.14144.zip`
- **Design Studio for 32-bit Windows:** `/3.8.0-GA/client/windows/pds-ee-win-32-3.8.0-GA.zip`
- **Design Studio for 64-bit Windows:** `/3.8.0-GA/client/windows/pds-ee-win-64-3.8.0-GA.zip`
- **Design Studio plugins for existing Eclipse installations:** `/3.8.0-GA/client/design-studio/org.pentaho.designstudio.editors.actionsequence_3.8.0.GA.zip`
- **Aggregation Designer:** `/3.8.0-GA/client/windows/pad-ee-1.2.2-GA.zip`

Linux and Solaris

The packages you will need for a Linux or Solaris server are:

- **BI Server (includes the Pentaho Enterprise Console):** /3.8.0-GA/server/nix/biserver-ee-3.8.0-GA.tar.gz
- **Pentaho Analyzer plugin:** /3.8.0-GA/server/plugins/paz/
- **Pentaho Dashboard Designer plugin:** /3.8/server/plugins/pdd/
- **BI Server Hadoop plugin:** /Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-1.0.2.zip
- **BI Server Hadoop Enterprise Edition plugin:** /Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-ee-1.0.2.zip

The packages you will need for your Linux or Solaris workstations are:

- **Report Designer:** /3.8.0-GA/client/nix/prd-ee-3.8.0-GA.tar.gz
- **Metadata Editor:** /3.8.0-GA/client/nix/pme-ee-3.8.0-GA.tar.gz
- ***Schema Workbench:** /3.8.0-GA/client/nix/psw-ee-3.2.2.14144.tar.gz
- **Design Studio for 32-bit Linux:** /3.8.0-GA/client/nix/pds-ee-linux-32-3.8.0-GA.tar.gz
- **Design Studio for 64-bit Linux:** /3.8.0-GA/client/nix/pds-ee-linux-64-3.8.0-GA.tar.gz
- **Design Studio plugins for existing Eclipse installations:** /3.8.0-GA/client/design-studio/org.pentaho.designstudio.editors.actionsequence_3.8.0.GA.zip
- **Aggregation Designer:** /3.8.0-GA/client/nix/pad-ee-1.2.2-GA.tar.gz



Note: The PSW package name's exact version number may change between the publication of this list and the GA release.

Deploying the BI Server

Follow the directions below to install a new BI Server and the Pentaho Enterprise Console. The examples assume a Linux or Solaris environment; adjust the paths accordingly for Windows-based machines.



Note: Solaris users: The default behavior of the tar utility in Solaris 10 is to truncate long file names when unpacking an archive created with GNU tar, as the Pentaho archives are. Therefore, you must use GNU tar instead of Solaris tar for this procedure. The path to GNU tar on Solaris 10 is typically `/usr/sfw/bin/gtar`. If you do not have `gtar` installed on your system, you will need to install it or some other GNU tar-compatible utility (such as `star`).

1. Re-create the `/pentaho/server/` directory that you renamed earlier.

```
mkdir -p /home/pentaho/pentaho/server/
```

2. Untar or unzip the **biserver-ee-3.8.0-GA** archive from wherever you downloaded it to the new location.

```
tar zxvf /home/amenethil/downloads/biserver-ee-3.8.0-GA.tar.gz -C /home/pentaho/pentaho/server/
```

This will create new **biserver-ee** and **enterprise-console** subdirectories.

The BI Server and Pentaho Enterprise Console are now extracted into the proper directories. Continue on to the next several sections to install drivers, change the hostname and port if necessary, and install any plugins that you have support entitlements for.

Copying Solution Database JDBC Drivers

This is only for Pentaho solution databases. You will also need to install JDBC drivers for your data sources at a later time, but the instructions in this section are focused solely on solution database configuration and connectivity with the BI Server.

Follow the below process to enable the BI Server to connect to an Oracle, MySQL, or PostgreSQL solution database.

1. Find or retrieve a JDBC driver JAR from your database vendor or third-party driver developer.

Due to licensing restrictions, Pentaho is unable to provide the necessary JDBC driver JARs. You can retrieve a JDBC driver from your database vendor. To that end, you may find these links helpful:

- **Oracle:** http://www.oracle.com/technology/tech/java/sqlj_jdbc/index.html
- **MySQL:** <http://www.mysql.com/downloads/connector/j/>
- **PostgreSQL:** <http://jdbc.postgresql.org/download.html>

2. Copy the appropriate JDBC driver JAR file to the `/tomcat/lib/` directory for Tomcat, or the `/jboss/server/default/lib/` directory for JBoss.

The BI Server now has the necessary driver to communicate with your solution repository database.

Copying context.xml and web.xml

The `web.xml` and `context.xml` files contain important configuration information that must be transferred to your new BI Server instance. There have been no changes in the default values of these files between BI Server 3.7.0 and 3.8, but there are several server-specific customizations that must be ported over, such as the solution database connection details and the solution directory location. The easiest way to port the customizations is by copying the files directly.

1. Copy your old **context.xml** from `/server_old/biserver-ee/tomcat/webapps/pentaho/META-INF/` to `/server/biserver-ee/tomcat/webapps/pentaho/META-INF/`.
2. Copy your old **web.xml** from `/server_old/biserver-ee/tomcat/webapps/pentaho/WEB-INF/` to `/server/biserver-ee/tomcat/webapps/pentaho/WEB-INF/`.

Your `context.xml`, which contains solution repository and schedule database configuration information, and the relevant configuration options from `web.xml` have been transferred to your new BI Server.

Installing Pentaho User Console Plugins

In order to proceed with this task, you must have already purchased an Enterprise Edition support entitlement for the products you want to install. Skip this process if you do not have the requisite support entitlements.

The Pentaho User Console is built with a plugin architecture that enables you to expand its functionality with new client tools and functions. Follow the directions below to install any of the following plugins:

- Pentaho Analyzer
- Pentaho Dashboard Designer



Note: Pentaho Analyzer requires that Dashboard Designer also be installed.

1. If you have not already done so, download the plugin packages from the Pentaho Enterprise Edition FTP site, or the Pentaho Knowledge Base.
The Dashboard Designer package name always begins with **pdd**; the Pentaho Analyzer package always begins with **paz**.
2. Unpack the plugin packages to the `/pentaho/server/biserver-ee/pentaho-solutions/system/` directory.
This will create a subdirectory for the plugin.

The plugins you downloaded are now installed, though you will still need to register your license files in the Pentaho Enterprise Console, or with the command line license management tool. There are instructions for that process later in this guide. For now, continue on to the next section.

Installing Hadoop Hive Plugins

In order to proceed with this task, you must have already purchased a Pentaho BI Suite For Hadoop support entitlement. Skip this process if you do not have one.

The BI Server requires special Pentaho Data Integration plugins in order to use Hive metadata, and to use PDI transformations in action sequences. Follow the instructions below to install these plugins in the BI Server.

1. If you have not already done so, download the plugin packages from the Pentaho Enterprise Edition FTP site, or the Pentaho Knowledge Base.
The package names are:
 - `pdi-hadoop-plugin`
 - `pdi-hadoop-plugin-ee`
2. Unpack the plugin packages to the `/pentaho/server/biserver-ee/pentaho-solutions/system/kettle/plugins/` directory.

The plugins you downloaded are now installed, though you will still need to register your license file in the Pentaho Enterprise Console, or with the command line license management tool. There are instructions for that process later in this guide. For now, continue on to the next section.

Removing Pentaho Sample Data and Solutions

By default, Pentaho provides a sample data source and a solution directory filled with example content. These samples are provided for evaluation and testing. Once you are ready to move from an evaluation or testing scenario to development or production, you should remove the samples so that they do not get in the way of your BI content. Follow the instructions below to completely remove the Pentaho sample data and solutions.

1. Stop the BI Server.
2. Edit the `/pentaho/WEB-INF/web.xml` file inside of the deployed `pentaho.war`.

As laid down by the Pentaho graphical installer and archive packages, this path should be `/pentaho/server/biserver-ee/tomcat/webapps/pentaho/WEB-INF/web.xml`. If you performed a manual WAR build and deployment, then you must adjust the path to fit your configuration.

3. Remove the sample servlets by commenting them out or removing them from the file:

```
<!-- [BEGIN SAMPLE SERVLETS] -->
<servlet>
  <servlet-name>UpdateSampleEmails</servlet-name>
  <jsp-file>/jsp/UpdateSampleEmails.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>Widgets</servlet-name>
  <jsp-file>/jsp/Widgets.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SampleDashboard</servlet-name>
  <jsp-file>/jsp/SampleDashboard.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>ChartSamplesDashboard</servlet-name>
  <jsp-file>/jsp/ChartSamplesDashboard.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SampleDrill</servlet-name>
  <jsp-file>/jsp/SampleDrill.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SWDashboard</servlet-name>
  <jsp-file>/jsp/SWDashboard.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>Map</servlet-name>
  <jsp-file>/jsp/Map.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SampleFlashDashboard</servlet-name>
  <jsp-file>/jsp/SampleFlashDashboard.jsp</jsp-file>
</servlet>
<!-- [END SAMPLE SERVLETS] -->
```

4. Remove the sample servlet mappings in the same fashion:

```
<!-- [BEGIN SAMPLE SERVLET MAPPINGS] -->
<servlet-mapping>
  <servlet-name>UpdateSampleEmails</servlet-name>
  <url-pattern>/UpdateSampleEmails</url-pattern>
</servlet-mapping>

<servlet-mapping>
```

```

<servlet-name>Widgets</servlet-name>
<url-pattern>/Widgets</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>SampleDashboard</servlet-name>
<url-pattern>/SampleDashboard</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>ChartSamplesDashboard</servlet-name>
<url-pattern>/ChartSamplesDashboard</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>SampleDrill</servlet-name>
<url-pattern>/SampleDrill</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>SWDashboard</servlet-name>
<url-pattern>/SWDashboard</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>Map</servlet-name>
<url-pattern>/Map</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>SampleFlashDashboard</servlet-name>
<url-pattern>/SampleFlashDashboard</url-pattern>
</servlet-mapping>
<!-- [END SAMPLE SERVLET MAPPINGS] -->

```

5. Remove the **SampleDataStartupListener**:

```

<listener>
  <listener-class>org.pentaho.platform.web.http.context.HsqldbStartupListener</
listener-class>
</listener>

```


6. Remove the **hsqldb-databases** section:

```

<!-- [BEGIN HSQLDB DATABASES] -->
  <context-param>
    <param-name>hsqldb-databases</param-name>
    <param-value>sampdata@../..data/hsqldb/sampdata</param-value>
  </context-param>
<!-- [END HSQLDB DATABASES] -->

```

7. Remove the **SystemStatusFilter** filter:

 **Note:** This is not part of the Pentaho samples; it provides error status messages that are only useful for development and testing purposes, and should be removed from a production system.

```

<filter>
  <filter-name>SystemStatusFilter</filter-name>
  <filter-class>com.pentaho.ui.servlet.SystemStatusFilter</filter-class>
  <init-param>
    <param-name>initFailurePage</param-name>
    <param-value>InitFailure</param-value>
    <description>This page is displayed if the PentahoSystem fails to properly
initialize.</description>
  </init-param>
</filter>

```

8. Remove the filter mapping for the **SystemStatusFilter**:

```

<filter-mapping>
  <filter-name>SystemStatusFilter</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>


```

9. Save and close the web.xml file.
10. Delete the `/pentaho/server/biserver-ee/data/` directory.
This directory contains a sample database, control scripts for that database and the environment settings it needs to run, and SQL scripts to initialize a new Pentaho solution repository.
11. Start the BI Server and ensure that your production content is still working as intended.

Your BI Server instance is now cleaned of samples and development/testing pieces, and is streamlined for production.

BI Suite Graphical Installer Deployment

If you used the graphical installation utility previously, it's easiest to use archive packages to replace certain parts of the BI Suite that have changed. **There is no simple way to upgrade by using the latest BI Suite installation utility**, and presently Pentaho does not have the ability to automatically upgrade an existing installation. Therefore you will have to merge your old settings and solutions by hand. All of the necessary instructions for this process are below.

 **Note:** If you are concerned about the complexity of this upgrade process and do not feel that you can complete it on your own, you can hire a consultant to perform it for you. Contact Pentaho Services through your sales or support representative to learn more.

Graphical Installer Deployment Upgrade Checklist

The Upgrade Checklist is a concise list of instructions intended to show a high-level overview of the upgrade process. It also serves as a method of verifying that each task is performed in the correct order. You may find it useful to print the checklist out and physically mark each step in the Done column as you complete it. **The checklist is not the complete instruction set**; consult the verbose instructions throughout this guide for more details on each step.

Step	Procedure	Done
Step 1	Download the upgrade materials from the Enterprise Edition FTP site or Pentaho Knowledge Base.	
Step 2	Stop all Pentaho programs and services, including the solution repository database.	
Step 3	Back up your <code>/pentaho/server/</code> directory and hibernate and quartz databases.	
Step 4	Rename the <code>/pentaho/server/</code> directory to <code>/pentaho/server_old/</code> , and create a new empty <code>/pentaho/server/</code> directory to replace it.	
Step 5	Unpack the BI Server archive package to the empty <code>/pentaho/server/</code> directory.	
Step 6	Copy any necessary JDBC drivers for your solution database and data sources to the <code>/pentaho/server/biserver-ee/tomcat/lib/</code> directory.	
Step 7	Copy your old web.xml and context.xml from the old Pentaho WAR to the new one.	
Step 8	Unpack any Pentaho User Console plugins you may have licenses for (Analyzer, Dashboard Designer) to the <code>/pentaho/server/biserver-ee/pentaho-solutions/system/</code> directory.	
Step 9	If you have a Pentaho BI Suite For Hadoop license, unpack the pdi-hadoop-plugin and pdi-hadoop-plugin-ee archives to the <code>/pentaho/server/biserver-ee/pentaho-solutions/system/kettle/plugins</code> directory.	
Step 10	Copy over the scripts directories from the old <code>enterprise-console</code> and <code>tomcat</code> directories to the new ones. If you are on Linux, modify the Tomcat ctl.sh script accordingly.	
Step 11	Remove the Pentaho sample content.	
Step 12	Copy all of your solutions directories from the <code>/pentaho/server_old/biserver-ee/pentaho-solutions/</code> directory to the new one.	
Step 13	Modify your Dashboard Designer templates as documented, if applicable.	
Step 14	Copy the files documented in Merging Your BI Server Configuration Files on page 29 to the new <code>pentaho-solutions</code> directory.	
Step 15	Edit <code>pentahoObjects.spring.xml</code> file and add the three new bean nodes introduced in BI Server 3.8.	
Step 16	If you're a PDI Enterprise Edition customer, continue on to the section that describes the DI Server upgrade process.	
Step 17	Copy the following files from the old Pentaho Enterprise Console to the new one: <code>console.xml</code> , <code>console.properties</code> , <code>login.properties</code> , <code>login.conf</code> , <code>log4j.xml</code> .	
Step 18	Move necessary data source JDBC drivers from the old directories to the new ones.	

Step	Procedure	Done
Step 19	Start the BI Server and Pentaho Enterprise Console and check for any obvious errors or failures.	
Step 20	Check that all of your content is accessible. Log into the Pentaho User Console and verify that your product licenses work. Run at least two existing ad-hoc reports for each data source to ensure that there are no bugs or problems with them. Verify at least two existing analysis views or Analyzer reports for each data source. Verify that any previously created dashboards are functioning properly. Run all reports that have been published from Report Designer. Lastly, check all of your schedules to ensure that they are still properly configured and operational.	
Step 21	On workstations, unpack applicable client tools to the empty <code>/pentaho/design-tools/</code> directory.	
Step 22	If you are a Pentaho BI Suite For Hadoop customer, use the command line license installer to install the Hadoop licence key in Report Designer, Metadata Editor, and/or Pentaho Data Integration.	
Step 23	Verify that all client tools can access old content and publish to the BI Server. Verify that PDI can connect to the DI Server, if applicable.	
Step 24	Remove the <code>/pentaho/server_old/</code> directory, and any archive packages and temporary directories you used for the upgrade.	

Obtaining the Installation Materials

As an Enterprise Edition customer, you can obtain the BI Server and client tool pre-configured packages from the Pentaho Enterprise Edition FTP site by using your Pentaho account login credentials. If you are unfamiliar with these details, consult the Welcome Kit provided to you by Pentaho customer support as part of the Enterprise Edition enablement process.

With the exception of Design Studio, which has separate packages for Linux, OS X, and Windows, all of the below-listed files are platform-agnostic, so there is only one download for all operating systems, databases, and application servers. Most Windows servers do not typically have software to unpack a .tar.gz file, so it is repackaged in .zip format for Windows admins. Other than this archive technology difference, the BI Suite packages are identical.

The Pentaho Enterprise Console is included in the BI Server package, so you do not need to download it separately.

The **Pentaho User Console plugins** items below refer to add-ons for the Pentaho User Console, such as Dashboard Designer and Pentaho Analyzer.

Windows

The packages you will need for a Windows server are:

- **BI Server (includes the Pentaho Enterprise Console):** `/3.8.0-GA/server/windows/biserver-ee-3.8.0-GA.zip`
- **Pentaho Analyzer plugin:** `/3.8.0-GA/server/plugins/paz/`
- **Pentaho Dashboard Designer plugin:** `/3.8/server/plugins/pdd/`
- **BI Server Hadoop plugin:** `/Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-1.0.2.zip`
- **BI Server Hadoop Enterprise Edition plugin:** `/Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-ee-1.0.2.zip`

The packages you will need for your Windows workstations are:

- **Report Designer:** `/3.8.0-GA/client/windows/prd-ee-3.8.0-GA.zip`
- **Metadata Editor:** `/3.8.0-GA/client/windows/pme-ee-3.8.0-GA.zip`
- ***Schema Workbench:** `/3.8.0-GA/client/windows/psw-ee-3.2.2.14144.zip`
- **Design Studio for 32-bit Windows:** `/3.8.0-GA/client/windows/pds-ee-win-32-3.8.0-GA.zip`
- **Design Studio for 64-bit Windows:** `/3.8.0-GA/client/windows/pds-ee-win-64-3.8.0-GA.zip`
- **Design Studio plugins for existing Eclipse installations:** `/3.8.0-GA/client/design-studio/org.pentaho.designstudio.editors.actionsequence_3.8.0.GA.zip`
- **Aggregation Designer:** `/3.8.0-GA/client/windows/pad-ee-1.2.2-GA.zip`

Linux and Solaris

The packages you will need for a Linux or Solaris server are:

- **BI Server (includes the Pentaho Enterprise Console):** /3.8.0-GA/server/nix/biserver-ee-3.8.0-GA.tar.gz
- **Pentaho Analyzer plugin:** /3.8.0-GA/server/plugins/paz/
- **Pentaho Dashboard Designer plugin:** /3.8/server/plugins/pdd/
- **BI Server Hadoop plugin:** /Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-1.0.2.zip
- **BI Server Hadoop Enterprise Edition plugin:** /Pentaho_Data_Integration/4.1.2-GA/server/plugins/pdi-hadoop-plugin-ee-1.0.2.zip

The packages you will need for your Linux or Solaris workstations are:

- **Report Designer:** /3.8.0-GA/client/nix/prd-ee-3.8.0-GA.tar.gz
- **Metadata Editor:** /3.8.0-GA/client/nix/pme-ee-3.8.0-GA.tar.gz
- ***Schema Workbench:** /3.8.0-GA/client/nix/psw-ee-3.2.2.14144.tar.gz
- **Design Studio for 32-bit Linux:** /3.8.0-GA/client/nix/pds-ee-linux-32-3.8.0-GA.tar.gz
- **Design Studio for 64-bit Linux:** /3.8.0-GA/client/nix/pds-ee-linux-64-3.8.0-GA.tar.gz
- **Design Studio plugins for existing Eclipse installations:** /3.8.0-GA/client/design-studio/org.pentaho.designstudio.editors.actionsequence_3.8.0.GA.zip
- **Aggregation Designer:** /3.8.0-GA/client/nix/pad-ee-1.2.2-GA.tar.gz



Note: The PSW package name's exact version number may change between the publication of this list and the GA release.

Deploying the BI Server

Follow the directions below to install a new BI Server and the Pentaho Enterprise Console onto your server. The examples assume a Linux environment; adjust the paths accordingly for Windows-based machines.

1. Create a new server directory to replace the one you renamed earlier.

```
mkdir /home/pentaho/pentaho/server/
```

2. Untar or unzip the **biserver-ee-3.8.0-GA** archive from wherever you downloaded it to the new server directory.

```
tar zxvf /home/amenethil/downloads/biserver-ee-3.8.0-GA.tar.gz -C /home/pentaho/pentaho/server/
```

This will create new **biserver-ee** and **enterprise-console** subdirectories.

The BI Server and Pentaho Enterprise Console are now extracted into the proper directories. Continue on to the next several sections to install drivers, change the hostname and port if necessary, and install any plugins that you have support entitlements for.

Copying Solution Database JDBC Drivers

This is only for Pentaho solution databases. You will also need to install JDBC drivers for your data sources at a later time, but the instructions in this section are focused solely on solution database configuration and connectivity with the BI Server.

Follow the below process to enable the BI Server to connect to an Oracle, MySQL, or PostgreSQL solution database.

1. Find or retrieve a JDBC driver JAR from your database vendor or third-party driver developer.

Due to licensing restrictions, Pentaho is unable to provide the necessary JDBC driver JARs. You can retrieve a JDBC driver from your database vendor. To that end, you may find these links helpful:

- **Oracle:** http://www.oracle.com/technology/tech/java/sqlj_jdbc/index.html
- **MySQL:** <http://www.mysql.com/downloads/connector/j/>
- **PostgreSQL:** <http://jdbc.postgresql.org/download.html>

2. Copy the appropriate JDBC driver JAR file to the `/tomcat/lib/` directory for Tomcat, or the `/jboss/server/default/lib/` directory for JBoss.

The BI Server now has the necessary driver to communicate with your solution repository database.

Copying context.xml and web.xml

The `web.xml` and `context.xml` files contain important configuration information that must be transferred to your new BI Server instance. There have been no changes in the default values of these files between BI Server 3.7.0 and 3.8, but

there are several server-specific customizations that must be ported over, such as the solution database connection details and the solution directory location. The easiest way to port the customizations is by copying the files directly.

1. Copy your old **context.xml** from `/server_old/biserver-ee/tomcat/webapps/pentaho/META-INF/` to `/server/biserver-ee/tomcat/webapps/pentaho/META-INF/`.
2. Copy your old **web.xml** from `/server_old/biserver-ee/tomcat/webapps/pentaho/WEB-INF/` to `/server/biserver-ee/tomcat/webapps/pentaho/WEB-INF/`.


Your `context.xml`, which contains solution repository and schedule database configuration information, and the relevant configuration options from `web.xml` have been transferred to your new BI Server.

Installing Pentaho User Console Plugins

In order to proceed with this task, you must have already purchased an Enterprise Edition support entitlement for the products you want to install. Skip this process if you do not have the requisite support entitlements.

The Pentaho User Console is built with a plugin architecture that enables you to expand its functionality with new client tools and functions. Follow the directions below to install any of the following plugins:

- Pentaho Analyzer
- Pentaho Dashboard Designer

 **Note:** Pentaho Analyzer requires that Dashboard Designer also be installed.

1. If you have not already done so, download the plugin packages from the Pentaho Enterprise Edition FTP site, or the Pentaho Knowledge Base.

The Dashboard Designer package name always begins with **pdd**; the Pentaho Analyzer package always begins with **paz**.

2. Unpack the plugin packages to the `/pentaho/server/biserver-ee/pentaho-solutions/system/` directory.

This will create a subdirectory for the plugin.

The plugins you downloaded are now installed, though you will still need to register your license files in the Pentaho Enterprise Console, or with the command line license management tool. There are instructions for that process later in this guide. For now, continue on to the next section.

Installing Hadoop Hive Plugins

In order to proceed with this task, you must have already purchased a Pentaho BI Suite For Hadoop support entitlement. Skip this process if you do not have one.

The BI Server requires special Pentaho Data Integration plugins in order to use Hive metadata, and to use PDI transformations in action sequences. Follow the instructions below to install these plugins in the BI Server.

1. If you have not already done so, download the plugin packages from the Pentaho Enterprise Edition FTP site, or the Pentaho Knowledge Base.

The package names are:

- `pdi-hadoop-plugin`
- `pdi-hadoop-plugin-ee`

2. Unpack the plugin packages to the `/pentaho/server/biserver-ee/pentaho-solutions/system/kettle/plugins/` directory.

The plugins you downloaded are now installed, though you will still need to register your license file in the Pentaho Enterprise Console, or with the command line license management tool. There are instructions for that process later in this guide. For now, continue on to the next section.

Copying Startup Scripts

The BI Suite installer includes a series of **ctl** scripts that start and stop Pentaho services, all controlled by a master script called **ctlscrip**t. These scripts are not included in the archive packages, so you must copy them over from various directories in your old Pentaho instance.


1. Copy your old `/server_old/biserver-ee/tomcat/scripts/` directory to the new tomcat directory.

2. Copy your old `/server_old/enterprise-console/scripts/` directory to the new enterprise-console directory.

All of the necessary BI Server startup scripts have been copied. However, if you installed the BI Server, its scripts will be copied later as part of the BI Server upgrade procedure.

Modifying BI Server Control Scripts for Linux

Due to an application server version upgrade, some manual changes must be made to your old Pentaho-supplied service control scripts on Linux systems.

 **Note:** If you are using BI Server 3.7.0.1, this process is unnecessary; the lines you'll be asked to remove in the instructions below will not exist. If this is the case, you can skip this section.

1. Edit the `/pentaho/server/biserver-ee/tomcat/scripts/ctl.sh` file with a text editor.
2. Starting at the top of the file, remove lines 6, 7, and 35:

- `CATALINA_PID=@@BITROCK_TOMCAT_ROOTDIR@@/temp/catalina.pid`
- `export CATALINA_PID`
- `rm $CATALINA_PID`

3. Remove this entire block of text, from line 43 to line 82:

```
get_pid() {
    PID=""
    PIDFILE=$1
    # check for pidfile
    if [ -f $PIDFILE ] ; then
        PID=`cat $PIDFILE`
    fi
}

get_tomcat_pid() {
    get_pid $CATALINA_PID
    if [ ! $PID ]; then
        return
    fi
    if [ $PID -gt 0 ]; then
        CATALINA_PID=$PID
    fi
}

is_service_running() {
    PID=$1
    if [ "x$PID" != "x" ] && kill -0 $PID 2>/dev/null ; then
        RUNNING=1
    else
        RUNNING=0
    fi
    return $RUNNING
}

is_tomcat_running() {
    get_tomcat_pid
    is_service_running $CATALINA_PID
    RUNNING=$?
    if [ $RUNNING -eq 0 ]; then
        TOMCAT_STATUS="tomcat not running"
    else
        TOMCAT_STATUS="tomcat already running"
    fi
    return $RUNNING
}
```

4. Remove lines 92-94:

```
elif [ "x$1" = "xstatus" ]; then
    is_tomcat_running
    echo $TOMCAT_STATUS
```

5. Save and close the file.

Your service control scripts are now compatible with BI Server 3.8.

Removing Pentaho Sample Data and Solutions

By default, Pentaho provides a sample data source and a solution directory filled with example content. These samples are provided for evaluation and testing. Once you are ready to move from an evaluation or testing scenario to development or production, you should remove the samples so that they do not get in the way of your BI content. Follow the instructions below to completely remove the Pentaho sample data and solutions.

1. Stop the BI Server.

2. Edit the `/pentaho/WEB-INF/web.xml` file inside of the deployed `pentaho.war`.

As laid down by the Pentaho graphical installer and archive packages, this path should be `/pentaho/server/biserver-ee/tomcat/webapps/pentaho/WEB-INF/web.xml`. If you performed a manual WAR build and deployment, then you must adjust the path to fit your configuration.

3. Remove the sample servlets by commenting them out or removing them from the file:

```
<!-- [BEGIN SAMPLE SERVLETS] -->
<servlet>
  <servlet-name>UpdateSampleEmails</servlet-name>
  <jsp-file>/jsp/UpdateSampleEmails.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>Widgets</servlet-name>
  <jsp-file>/jsp/Widgets.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SampleDashboard</servlet-name>
  <jsp-file>/jsp/SampleDashboard.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>ChartSamplesDashboard</servlet-name>
  <jsp-file>/jsp/ChartSamplesDashboard.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SampleDrill</servlet-name>
  <jsp-file>/jsp/SampleDrill.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SWDashboard</servlet-name>
  <jsp-file>/jsp/SWDashboard.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>Map</servlet-name>
  <jsp-file>/jsp/Map.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>SampleFlashDashboard</servlet-name>
  <jsp-file>/jsp/SampleFlashDashboard.jsp</jsp-file>
</servlet>
<!-- [END SAMPLE SERVLETS] -->
```

4. Remove the sample servlet mappings in the same fashion:

```
<!-- [BEGIN SAMPLE SERVLET MAPPINGS] -->
<servlet-mapping>
  <servlet-name>UpdateSampleEmails</servlet-name>
  <url-pattern>/UpdateSampleEmails</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>Widgets</servlet-name>
  <url-pattern>/Widgets</url-pattern>
```

```

</servlet-mapping>

<servlet-mapping>
  <servlet-name>SampleDashboard</servlet-name>
  <url-pattern>/SampleDashboard</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>ChartSamplesDashboard</servlet-name>
  <url-pattern>/ChartSamplesDashboard</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>SampleDrill</servlet-name>
  <url-pattern>/SampleDrill</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>SWDashboard</servlet-name>
  <url-pattern>/SWDashboard</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>Map</servlet-name>
  <url-pattern>/Map</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>SampleFlashDashboard</servlet-name>
  <url-pattern>/SampleFlashDashboard</url-pattern>
</servlet-mapping>
<!-- [END SAMPLE SERVLET MAPPINGS] -->

```

5. Remove the **SampleDataStartupListener**:

```

<listener>
  <listener-class>org.pentaho.platform.web.http.context.HsqldbStartupListener</
listener-class>
</listener>

```


6. Remove the **hsqldb-databases** section:

```

<!-- [BEGIN HSQLDB DATABASES] -->
  <context-param>
    <param-name>hsqldb-databases</param-name>
    <param-value>sampdata@../..../data/hsqldb/sampdata</param-value>
  </context-param>
<!-- [END HSQLDB DATABASES] -->

```

7. Remove the **SystemStatusFilter** filter:

 **Note:** This is not part of the Pentaho samples; it provides error status messages that are only useful for development and testing purposes, and should be removed from a production system.

```

<filter>
  <filter-name>SystemStatusFilter</filter-name>
  <filter-class>com.pentaho.ui.servlet.SystemStatusFilter</filter-class>
  <init-param>
    <param-name>initFailurePage</param-name>
    <param-value>InitFailure</param-value>
    <description>This page is displayed if the PentahoSystem fails to properly
initialize.</description>
  </init-param>
</filter>

```

8. Remove the filter mapping for the **SystemStatusFilter**:

```

<filter-mapping>
  <filter-name>SystemStatusFilter</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>

```

9. Save and close the web.xml file.

10.Delete the `/pentaho/server/biserver-ee/data/` directory.

This directory contains a sample database, control scripts for that database and the environment settings it needs to run, and SQL scripts to initialize a new Pentaho solution repository.

11.Start the BI Server and ensure that your production content is still working as intended.

Your BI Server instance is now cleaned of samples and development/testing pieces, and is streamlined for production.

Migrating Your Solutions

BI Server content is stored in the `/pentaho/server_old/biserver-ee/pentaho-solutions/` directory. However, this is also where the BI Server's configuration files are stored, as well as Pentaho-supplied sample content. You must move your BI content from your old solutions directory to the new one. Copying the settings and other configuration information will happen in the next section.



Note: You must use the archive flag or option when you copy if you want a minimal impact on your solution database. If you copy without the archive option, all of the dates on your solution files and directories will reset to today's date, which will force the solution repository to refresh.

When you copy your solution directories, which are stored in `/pentaho/server_old/biserver-ee/pentaho-solutions/`, this should include all reports, analysis views, dashboards, charts, and action sequences you've created and published. **Do not copy** any other directories at this time.



Important: Be sure that you transfer **all** of the solution directories that you've created. Some people may only have one solution directory, and some may have many directories to segregate content for different departments or data sources. If you fail to copy over a solution directory, the content it contains will not be carried over to your new Pentaho instance.



Danger: Do not ignore the previous Important note.

With this in mind, the pentaho-solutions upgrade process is as follows:

After you have copied your solutions to your new solutions directory, proceed to the next section to learn how to migrate your settings.

Updating Dashboard Designer Templates

This process only applies to Pentaho Dashboard Designer customers who have created custom dashboard templates. Follow the instructions below to upgrade your custom Dashboard Designer templates to be compatible with BI Suite 3.8.

1. Open a custom template file with an XML editor.
2. Find the following XML tag:

```
<vbox id="widget-area" pho:type="scrollarea" flex="1">
```

3. Paste the following XML tag in after that line:

```
<box id="FilterPanel" pho:type="povpanel" height="100" hidden="true"></box>
```

4. Save and close the file, then repeat this process for all other Dashboard Designer templates.

Your old dashboard templates are now compliant with BI Suite 3.8 standards.

Merging Your BI Server Configuration Files

Only one BI Server configuration file has changed between version 3.7 and 3.8: `pentahoObjects.spring.xml`. Instructions for merging changes into this file are in the next subsection. Before you get to that point, however, there are a few customized configuration files that you must copy over from your old `pentaho-solutions` directory to the new one. These files cover security, solution repository, and audit log configuration. While they have not changed in version 3.8, they are customized according to your BI Server settings.

Copy the following files -- **but not any subdirectories** -- from your old BI Server `/pentaho-solutions/` directory to the new one:

- `/system/*`
- `/admin/audit/*`
- `/system/olap/datasources.xml`
- `/system/mondrian/mondrian.properties`
- `/system/google/googlesettings.xml` (if you are using your own Google Maps API key)

Copy the following **directories** and all of the files and subdirectories therein from your old BI Server `/pentaho-solutions/` directory to the new one:

- `/system/dialects/`
- `/system/hibernate/`
- `/system/content/`
- `/system/metadata/`

These directories contain Pentaho samples. If they exist in your current BI Server installation, you should replace them with the new versions. If they do not exist, don't copy over the new ones:

- `/bi-developers/`
- `/steel-wheels/`

After you've copied all of these files to the proper locations in your new `pentaho-solutions` directory, continue on to the next subsection to learn how to merge your `pentahoObjects.spring.xml` file.

Merging `pentahoObjects.spring.xml`

Follow the instructions below to bring your old `pentahoObjects.spring.xml` file up to date for the BI Server 3.8.

1. Open your recently copied `/pentaho-solutions/system/pentahoObjects.spring.xml` file with a text editor.
2. Add the following bean nodes to the end of the file:

```
<bean id="ReportCache"
  class="org.pentaho.reporting.platform.plugin.cache.DefaultReportCache"
  scope="singleton" />
<bean id="metadataqueryexec-SQL"
  class="org.pentaho.platform.plugin.services.connections.metadata.sql.SqlMetadataQueryExec"
  scope="prototype" />
<bean id="sqlGenerator" class="org.pentaho.metadata.query.impl.sql.SqlGenerator"
  scope="prototype" />
```

3. Save the file and close the text editor.

Your `pentahoObjects.spring.xml` file is now brought up to modern standards.

Downloading DI Server Upgrade Packages

If the Data Integration Server is part of your BI Suite upgrade process, download the correct package for your platform before continuing:


- **DI Server for Windows:** `pdi-ee-server-4.1.2-GA.zip`
- **DI Server for Linux/Solaris/OS X:** `pdi-ee-server-4.1.2-GA.tar.gz`



Note: The DI Server will use the same Enterprise Console instance as the BI Server.

Upgrading a Data Integration Server

Ensure that the DI Server and Pentaho Enterprise Console are stopped before continuing. You must have a PDI 4.1.0 DI Server installed in order to follow this procedure; if you do not use the DI Server, this upgrade task is unnecessary.


 **Note:** For a smoother post-upgrade test experience, you should perform this procedure before upgrading your PDI workstations.

Follow the instructions below to upgrade your Data Integration Server to version 4.1.2.

1. Remove the `/pentaho/server/license-installer/` directory if it exists.

A new license installer will be unpacked with the new PDI archive. The new license utility will work with the version of PDI you're upgrading from, so there is no need to back it up. There may not be an existing license-installer directory in your PDI 4.1.0 installation; this is provided with the archive package, but not the graphical installer.

2. Rename the `/data-integration-server/` directory to **data-integration-server-old**.

 **Note:** If you are coming from a BI Server upgrade, you already have a `server_old` directory. If this is the case, use `/server_old/data-integration-server/` in place of `/data-integration-server-old/`.

```
mv /home/pentaho/pentaho/server/data-integration-server/ /home/pentaho/pentaho/server/data-integration-server-old/
```

3. Unpack the **pdi-ee-server-4.1.2-GA** package to the parent of the directory you just renamed.

```
tar zxvf ~/downloads/pdi-ee-server-4.1.2-GA.tar.gz -C /home/pentaho/pentaho/server/
```

4. Copy all of the **applicationContext** files from the `/data-integration-server-old/pentaho-solutions/system/` directory to the new one, overwriting the equivalent files that are already there.

```
cp applicationContext-* ~/pentaho/server/data-integration-server/pentaho-solutions/system/
```

5. Copy the **pentaho-spring-beans.xml** file from the `/data-integration-server-old/pentaho-solutions/system/` directory to the new one, overwriting the equivalent file that is already there.

```
cp pentaho-spring-beans.xml ~/pentaho/server/data-integration-server/pentaho-solutions/system/
```

6. Transfer the information about the **admin role** from the following two old files to the new ones: **/pentaho-solutions/system/pentaho.xml** and **/pentaho-solutions/system/repository.spring.xml**

```
<acl-voter>
<!-- What role must someone be in to be an ADMIN of Pentaho -->
  <admin-role>Admin</admin-role>
</acl-voter>
```

```
<!-- The name of the authority which is granted to all admin users in single-tenancy mode. -->
<bean id="singleTenantAdminAuthorityName" class="java.lang.String">
  <constructor-arg value="Admin" />
</bean>
```

7. Copy the entire **quartz** directory from `/data-integration-server-old/pentaho-solutions/system/` to the new one.

```
cp -r ./quartz ~/pentaho/server/data-integration-server/pentaho-solutions/system/
```

8. Copy the entire **hibernate** directory from `/data-integration-server-old/pentaho-solutions/system/` to the new one.

```
cp -r ./hibernate ~/pentaho/server/data-integration-server/pentaho-solutions/system/
```

9. Copy the entire **repository** directory from `/data-integration-server-old/pentaho-solutions/system/jackrabbit/` to the new one.

```
cp -r ./jackrabbit/repository/ ~/pentaho/server/data-integration-server/pentaho-solutions/system/jackrabbit/
```


10. Copy the **context.xml** file from `/data-integration-server-old/tomcat/webapps/pentaho-di/META-INF/` to the new one.

```
cp ./context.xml ~/pentaho/server/data-integration-server/tomcat/webapps/pentaho-di/META-INF/
```

11. Copy the **log4j.xml** file from `/data-integration-server-old/tomcat/webapps/pentaho-di/WEB-INF/classes/` to the new one.

```
cp ./log4j.xml ~/pentaho/server/data-integration-server/tomcat/webapps/pentaho-di/WEB-INF/classes/
```

12. Copy the **scripts** directory from `/data-integration-server-old/` directory to the new `data-integration-server` directory.

 **Note:** The `scripts` directory will only exist if you installed PDI from a graphical installation utility. If you installed via archive packages, it won't be there. If you do not see a `scripts` directory, then skip this step.

13. Optional: Copy the entire **jre** directory from `/data-integration-server-old/` to the new one.

```
cp -r jre ~/pentaho/server/data-integration-server/
```

This step is optional. If you already have a supported JRE or JDK installed on your system, you can skip copying this directory and simply ensure that you have a `JAVA_HOME` or `PENTAHO_JAVA_HOME` system variable that points to your Java instance.


14. If you have not already done so, merge any custom changes you have made to DI Server configuration files from the old ones to the new ones.

Your DI Server is now upgraded to version 4.1.2. Continue on to the next subsection to upgrade the Pentaho Enterprise Console.

Modifying DI Server Control Scripts for Linux

This process only applies to customers who used either the PDI or BI Suite graphical installation utility to install the Data Integration Server version 4.1.0 on Linux.

Due to an application server version upgrade, some manual changes must be made to your old Pentaho-supplied service control scripts.

 **Note:** If you are upgrading from PDI 4.1.1 or 4.1.2, this process is unnecessary; the lines you'll be asked to remove in the instructions below will not exist. If this is the case, you can skip this section.

1. Edit the `/pentaho/server_old/data-integration-server/tomcat/scripts/ctl.sh` file with a text editor.
2. Starting at the top of the file, remove lines 6, 7, and 35:
 - `CATALINA_PID=@@BITROCK_TOMCAT_ROOTDIR@@/temp/catalina.pid`
 - `export CATALINA_PID`
 - `rm $CATALINA_PID`
3. Remove this entire block of text, from line 43 to line 82:

```
get_pid() {
    PID=""
    PIDFILE=$1
    # check for pidfile
    if [ -f $PIDFILE ] ; then
        PID=`cat $PIDFILE`
    fi
}

get_tomcat_pid() {
    get_pid $CATALINA_PID
    if [ ! $PID ]; then
        return
    fi
    if [ $PID -gt 0 ]; then
        CATALINA_PID=$PID
    fi
}

is_service_running() {
    PID=$1
    if [ "x$PID" != "x" ] && kill -0 $PID 2>/dev/null ; then
```



```

        RUNNING=1
    else
        RUNNING=0
    fi
    return $RUNNING
}

is_tomcat_running() {
    get_tomcat_pid
    is_service_running $CATALINA_PID
    RUNNING=$?
    if [ $RUNNING -eq 0 ]; then
        TOMCAT_STATUS="tomcat not running"
    else
        TOMCAT_STATUS="tomcat already running"
    fi
    return $RUNNING
}

```

4. Remove lines 92-94:

```

elif [ "$x$1" = "xstatus" ]; then
    is_tomcat_running
    echo $TOMCAT_STATUS

```

5. Save and close the file.

Your service control scripts are now compatible with DI Server 4.1.3.

Upgrading the Pentaho Enterprise Console

The new BI Server will not work properly without upgrading the Pentaho Enterprise Console. To upgrade, follow the below process.

1. If you used the manual deployment process, you must now unpack the `pec-ee-3.8.0-GA` zip or tar.gz file to the `/pentaho/server/` directory.

This will create a new **enterprise-console** directory with default settings.



Note: If you took the archive-based or graphical installer upgrade paths, you do not need to retrieve a new Enterprise Console package; it was included in the BI Server archive package. This step is only for people who have performed a manual WAR deployment.


2. Copy the following files from your old `/enterprise-console/resource/config/` directory into the new one:


- `console.xml`
- `console.properties`
- `login.properties`
- `login.conf`
- `log4j.xml`

```
cp /home/pentaho/pentaho/server_old/enterprise-console/resource/config/console.* /  
home/pentaho/pentaho/server/enterprise-console/resource/config/ && cp /home/pentaho/  
pentaho/server_old/enterprise-console/resource/config/log* /home/pentaho/pentaho/  
server/enterprise-console/resource/config/
```


The Pentaho Enterprise Console has been upgraded to version 3.8.

Moving JDBC Drivers


 **Note:** JDBC driver versions prior to 4 may have issues with Java 6. Read your database vendor's compatibility notes carefully before moving or downloading driver JARs.

 **Note:** Microsoft SQL Server users frequently use an alternative, non-vendor-supported driver called JTDS. Ensure that you are downloading the expected driver before installing it.

Before you can add a data source to a Pentaho server or client tool, you must copy the appropriate JDBC driver JAR to certain directories. To add support for a database, obtain the correct version of the JDBC driver from your database vendor and copy it to the following locations, depending on which products need to connect to this database:

 **Note:** Ensure that there are no other versions of the same vendor's JDBC driver installed in these directories before copying driver JARs. If there are other versions of the same driver, you may have to remove them to avoid confusion and potential class loading problems. This is of particular concern when you are installing a driver JAR for a data source that is the same database type as your Pentaho solution repository. If you have any doubts as to how to proceed, contact your Pentaho support representative for guidance.

- **BI Server:** /pentaho/server/biserver-ee/tomcat/lib/
- **Data Integration Server:** /pentaho/server/data-integration-server/tomcat/lib/
- **BI Server and Data Integration Server:** /pentaho/server/enterprise-console/jdbc/
- **Data Integration client:** /pentaho/design-tools/data-integration/libext/JDBC/
- **Report Designer:** /pentaho/design-tools/report-designer/lib/jdbc/
- **Schema Workbench:** /pentaho/design-tools/schema-workbench/drivers/
- **Aggregation Designer:** /pentaho/design-tools/agg-designer/drivers/
- **Metadata Editor:** /pentaho/design-tools/metadata-editor/libext/JDBC/

 **Note:** If you installed a new driver to the BI Server or DI Server, you must restart all affected servers (BI Server, DI Server, and the Pentaho Enterprise Console) to load the new database driver.

Testing Your New BI Server

Your server is now ready to test. From an end-user workstation, start a Web browser and navigate to **http://example.com:8080/pentaho** (change **example.com** to your BI Server's hostname, domain name, or IP address). You should see a screen like the picture below:



Click the **Login** button, log in normally with an existing user account, and verify that you can run all of your old BI content. Also verify that your schedules are still in place and functional. Specifically, Pentaho recommends that you verify the following actions if they apply to your Enterprise Edition scenario:

1. Open a report that requires no user prompts.
2. Open a report that requires user prompting (a parameterized report).
3. Create a report using ad-hoc reporting.
4. If you are a Pentaho Analysis Enterprise Edition customer, create a new Analyzer report.
5. Open a dashboard if you have a Dashboard Designer support entitlement.
6. Create a new chart using Chart Designer if you have a Dashboard Designer support entitlement.
7. Publish a report from Report Designer.
8. Publish an analysis schema from Spoon.
9. After all other tests have been performed, check your server status in the Pentaho Enterprise Console.
10. Check your application server log for any errors.

Upgrading the Pentaho Client Tools

Upgrading the Pentaho client tools on each user's workstation is considerably easier than upgrading the BI Server. You can either download and run the BI Suite installer, or download and unpack individual client tool archive packages. If you choose the installer option, simply rename or remove the old client tools, then run the installer, un-check the default options, select the client tools you want to install, and proceed through the rest of the installation. If you choose the archive package option, simply remove or rename the old client tool's directory, then unpack the new archive to the original location.

The only Pentaho client tools that store user settings are Report Designer and Pentaho Data Integration (Spoon). When upgrading these programs, the new instance will detect the custom settings from the old instance and use them automatically. These settings for Report Designer are stored in the **/.pentaho** directory, and the settings are stored in the **/.kettle** directory, both in each user's home or user directory. No settings or content files are stored in the `/pentaho/design-tools/report-designer/` or `/pentaho/design-tools/data-integration/` directories (or the subdirectories for any other client tools). This means that you can safely remove the old Report Designer and Data Integration instances without harming the custom user settings.

Post-Upgrade Configuration

Once your upgrade is complete, the only configuration you have to do is in regards to any new software you have installed. If you installed any new BI Server plugins, such as:

- Dashboard Designer
- Analyzer
- Hadoop (or Hive metadata support)

Or any new PDI plugins related to Hadoop, then you will have to install the appropriate license keys in the same manner that you previously installed your BI Suite licenses.



Note: You do not need to reinstall any extant valid license keys.

Cleanup

Now that your new BI Server version 3.8 is built, deployed, and tested, you can clean up some old or temporary files. Typically this would include:

- The temporary **biserver-manual-ee** or **biserver-ee** (from the archive package) directory
- Your **server_old** directory
- Archive packages for client tools, servers, and plugins
- 3.7.0 backup artifacts, though you may want to keep these for a while, in case you need to roll back

Troubleshooting

This section contains known problems and solutions relating to the procedures covered in this guide.

File Names and Paths



Note: This is the most common installation problem.

Many of the configuration files and paths in this guide are similar, and it is easy to confuse them, which could result in modifying the wrong files or copying to the wrong locations. Double-check your file names and paths and ensure that you've copied all of the right files to all of the correct directories.

Trailing slashes are important; both their inclusion and their absence, depending on the file and parameter or element you are modifying. Follow the examples in this guide exactly unless otherwise directed.

Examining Log Files

If the BI Server fails to start or work properly, the log file you should consult is **pentaho.log** in the `/pentaho/server/biserver-ee/tomcat/bin/` directory. The contents of this file will assist you in tracking down the problem.

JDBC Driver Problems

First, ensure that the correct JDBC driver JARs are installed to the correct locations, then check to make sure that there aren't conflicting driver versions. The BI Server installation instructions explain how to add driver JARs to the correct locations; there is also a section titled **Adding a JDBC Driver** in the *Pentaho BI Suite Administrator's Guide* that explains driver locations for all parts of the BI Suite.



Note: Some database vendors (and driver developers) require using JDBC version 4 drivers with a Java 6 environment. Check with your database or driver vendor if you suspect you have having JDBC driver compatibility issues.

Unable to Use the Database Init Scripts for PostgreSQL

The **pg_hba.conf** file contains host-based authentication information. If you can't run the SQL scripts that generate the Hibernate and Quartz databases, it's probably because the default user accounts for each database don't have the right permissions. To change this, edit the file to ensure that connections from local users created by the Pentaho sql scripts (**hibuser** and **pentaho_user**) will be able to connect. The default on Debian-based systems is for local connections yo use **ident** authentication, which means that database users must have local user accounts. In other words, to continue using **ident**, you would have to create local **hibuser** and **pentaho_user** accounts. It's easier to just change the authentication method to something less restrictive, if your IT manager permits you to do so.

context.xml Changes Do Not Take Effect After Re-deploying a WAR

Re-deployment of a WAR or EAR with a custom **context.xml** will, in some cases, cause the original context.xml that you deployed with the original WAR or EAR to become permanently cached. Tomcat in particular will generate a WAR-specific context configuration file, and keep it in place even after the WAR is deleted. The location and naming convention for this file are: **\$CATALINA_HOME/conf/Catalina/<host>/<war name>.xml**. Typically this will be something like: **/tomcat/conf/Catalina/localhost/pentaho.xml**. If this file exists, you will have to delete it prior to re-deploying pentaho.war if you have made any changes to context.xml.

Dashboards Created Prior to 3.8 No Longer Work

If you execute a dashboard that has been known previously to work but now only displays a white screen with an edit panel, then your dashboard templates need to be upgraded. You might also see an error in your browser console similar to this:

```
e is null
e.style.display = this.isPovPanelShown() ? 'block' : 'none';
```

To fix this problem you must upgrade your dashboard templates to be compliant with BI Suite 3.8 standards. Refer to [Updating Dashboard Designer Templates](#) on page 28.

Tomcat Logs Report Memory Leaks

When shutting down Tomcat, you may see some SEVERE-level warnings in the log file similar to these:

```
Dec 17, 2010 10:18:19 AM org.apache.catalina.loader.WebappClassLoader
clearReferencesJdbc
SEVERE: The web application [/pentaho] registered the JDBC driver
[mondrian.olap4j.MondrianOlap4jDriver] but failed to unregister it when the web
application was stopped. To prevent a memory leak, the JDBC Driver has been forcibly
unregistered.
Dec 17, 2010 10:18:19 AM org.apache.catalina.loader.WebappClassLoader
clearReferencesThreads
SEVERE: The web application [/pentaho] appears to have started a thread named [HSQLDB
Timer @49cf9f] but has failed to stop it. This is very likely to create a memory leak.
Dec 17, 2010 10:18:19 AM org.apache.catalina.loader.WebappClassLoader
clearReferencesThreads
SEVERE: The web application [/pentaho] appears to have started a thread named [MySQL
Statement Cancellation Timer] but has failed to stop it. This is very likely to create
a memory leak.
Dec 17, 2010 10:18:19 AM org.apache.catalina.loader.WebappClassLoader
clearThreadLocalMap
SEVERE: The web application [/pentaho] created a ThreadLocal
with key of type [java.lang.InheritableThreadLocal] (value
[java.lang.InheritableThreadLocal@a1320e]) and a value of type
[org.pentaho.platform.engine.security.session.TrustedSystemStartupSession] (value
[org.pentaho.platform.engine.security.session.TrustedSystemStartupSession@111089b]) but
failed to remove it when the web application was stopped. This is very likely to create
a memory leak.
```

These warnings are nothing to be concerned about when shutting down the Tomcat server, since they report problems with processes that are immanently being killed. However, they can have significance if you are only restarting or redeploying the Pentaho BI Server or DI Server Web applications. To avoid any memory leak problems in redeployment, you should restart Tomcat instead of redeploying or restarting the Web application with a live server.