Set Up DI Server and Tools

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Introduction

In this section, you do the minimum configuration tasks for the server, design tool, and utilities, so you can get started creating ETL solutions.

Prerequisites

Before you begin, you must have *installed* Pentaho Data Integration software. If you chose to install the Pentaho Business Analytics software you must go through *a different configuration process*.

Expertise

The topics in this section are written for IT administrators who know where data is stored, how to connect to it, details about the computing environment, and how to use the command line to issue commands for Microsoft Windows, Linux, or Microsoft OS.

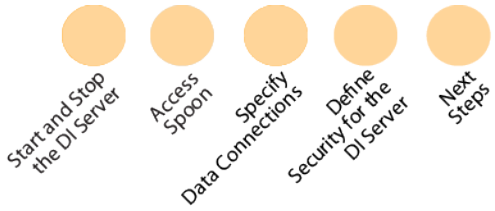
Tools

We provide a design tool, Spoon, that you use to perform most configuration tasks.

Login Credentials

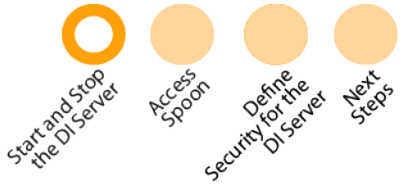
All of the configuration tasks that use Spoon require that you *login to Spoon* using a Pentaho administrator user name and password.

Configure the DI Server



Before you can use Pentaho Data Integration (PDI) to extract data, transform it into a useful format, and load it for analysis, you need to perform configuration tasks. Just follow the *guideposts* to make sure that you complete the entire process. It should take you approximately one hour or less.

Start and Stop the Data Integration Server



To work with Pentaho Data Integration you must have the DI server running. There may be times when you need to manage Pentaho Data Integration components, stopping the DI server to perform system maintenance and restarting it after you are done. As part of the Installation Wizard and Archive Installation, Pentaho provides different ways to help you start and stop the components depending on the operating system you use and the method you used for installation.

For Microsoft Windows, these are your options for starting and stopping the components.

- *Windows Pentaho Installation Wizard*
- *Windows Pentaho Archive Installation*
- *Windows Pentaho Archive Installation—Starting on Boot*

For Linux and Macintosh OS, these are your options for starting and stopping the components.

- *Linux Pentaho Installation Wizard*
- *Linux Pentaho Archive Installation*
- *Linux Pentaho Wizard or Archive Installation—Starting on Boot*

When you are done, please go to the next stop on the *guidepost*.

Windows Pentaho Installation Wizard

When you ran the Installation Wizard on Windows, the BA Server installed in a Tomcat Application server. You can manage the Tomcat and DI servers by clicking **Start** > **Pentaho Enterprise Edition** > **Server Management** and then selecting from these menu items.

- Start the DI Server
- Stop the DI Server

The wizard also registered the DI Server and the PostgreSQL solution repository as services. These services are set to run automatically, enabling them to start and stop when the computer running them boots or shuts down. You can use the Windows Services applet found in the Control Panel to start and stop the Pentaho servers and the solution repository.

1. Click **Start** > **Control Panel** > **Administrative Tools** > **Services**.
2. In the **Services** window, right-click one of these services in the list and choose **Start** or **Stop** from the menu that appears.
   - Data Integration
   - Pentaho Solution Repository

Windows Pentaho Archive Installation

If you used the Archive Installation, we provide individual control scripts to start and stop the DI server, and DI repository. Here is where you can find the individual control scripts.

DI Repository

- The Archive Installation enables you to install PostgreSQL, MySQL, or Oracle as the solution repository. Consult the third-party documentation for the RDBMS to find more information about starting and stopping.

  The solution repository must be started before the DI Server.

DI Server

- `/pentaho/server/data-integration-server`

Windows Pentaho Archive Installation—Starting on Boot

Because the Archive Installation does not provide a way to start the Tomcat web application server, solution repository, and DI Server automatically on boot or shut-down, here is an example of how you might approach creating a script to do this.

You must have the *Windows Resource Kit* installed in order to proceed. Change the paths in this example to match your environment.

1. Open the **Run** command prompt window and run the Tomcat `service.bat` script, as in this example.

   ```
   pentaho\server\data-integration-server\tomcat\bin\service.bat
   ```

2. Close all programs and restart Windows, then log in with the user account that controls the DI Server.
3. Navigate to the `\pentaho\server\data-integration-server\tomcat\bin` directory and run `tomcat6w.exe`.

   The Tomcat **Service Configuration** dialog box appears.
4. In the **General** tab, change the **Startup type** to **Automatic**.

   If you did not log on as the user who controls the DI Server as a service, enter the proper Windows credentials for that user.
5. In the **Java** tab, set **Initial memory** to **2048** and **Maximum memory pool** to **2048**, or to your preferred DI Server Java `Xms` setting.
6. Click on the **Java** tab, and find the `-Dpentaho.installed.licenses.file` parameter. Add an absolute path to your Pentaho directory followed by the `.installedLicenses.xml` file name, as in this example.

   ```
   -Dpentaho.installed.licenses.file="C:\Documents and Settings\pentaho\pentaho
   \.installedLicenses.xml"
   ```

   This establishes a path to the file that stores your Pentaho licenses. If you have already installed licenses for this DI Server instance, setting this variable correctly should prevent any licensing issues from occurring. You may have to search your system for the `.installedLicenses.xml` file and change the path appropriately if performing this step does not work on your first attempt. If you have not yet installed licenses, this step is not necessary because the DI Server looks in several logical locations relative to the Tomcat directory.
7. Ensure the Pentaho solution repository is configured to start and run as a service on Windows.

   The solution repository must be started before the DI Server.
8. Restart Windows and ensure that the DI Server starts automatically, is available, and has access to any license files that you may have installed before executing this procedure.

Linux and Macintosh OS Pentaho Installation Wizard

When you ran the Installation Wizard on Linux, the DI Server was deployed in an included Apache Tomcat application server. You can control the Tomcat server using the start and stop scripts that come with the Pentaho installation. This script is also used as an easy way to start and stop the DI Server and the PostgreSQL repository. You can find this script at `/pentaho/ctlscript.sh`.

Here is a list of the script arguments you can use with the `data-integration-server` service.

Arguments

- start
- stop
- restart
- status
- help

```
./ctlscript.sh start data-integration-server
```

```
./ctlscript.sh status data-integration-server
```

```
./ctlscript.sh help
```

Linux and Macintosh OS Pentaho Archive Installation

If you used the Archive Installation, Pentaho provides individual control scripts to start and stop the Pentaho Tomcat application server, the DI Server, and the PostgreSQL server. Here is where you can find the individual control scripts.

DI Repository

- The Archive Installation enables you to install either PostgreSQL, MySQL, or Oracle as the solution repository. Consult the documentation for the RDBMS you selected for information about starting and stopping.

  The solution repository must be started before the DI Server.

DI Server

- `pentaho/server/data-integration-server/start-pentaho.sh and stop-pentaho.sh`

Linux and Macintosh OS Pentaho Wizard or Archive Installation—Starting on Boot

Because the Installation Wizard and the Archive Installation do not provide a way to start the DI repository and DI Server automatically on boot or shut-down, here are examples of how you might approach creating a script to do this.

This procedure assumes that you are running the DI Server under the `pentaho` local user account. If you are using a different account to start these services, substitute it in the script in step 2. This script also assumes you are using the PostgreSQL solution repository. Where `postgrtesql` appears in this script, change it to reflect the RDBMS you are using as a solution repository, either MySQL or Oracle. This script was tested on Red Hat Enterprise Linux. You may have to modify the details of the script if you use a different distribution of Linux or other Unix-like operating system, different shells, or different `init` systems.

1. With root permissions, create a file in `/etc/init.d/` named `pdi`.
2. Using a text editor, copy the following content into the new pentaho script, changing `postgresql` to the name of the `init` script for your database, if it is running on the remote machine, or remove `postgresql` entirely if you are using a remote database. You may also have to adjust the paths to the DI Server scripts to match your situation.

```
#!/bin/sh
### BEGIN INIT INFO
# Provides: start-data-integration-server stop-data-integration-server
# Required-Start: networking postgresql
# Required-Stop: postgresql
# Default-Start: 2 3 4 5
# Default-Stop: 0 1 6
# Description: Pentaho DI Server
### END INIT INFO

case "$1" in
"start")
su - pentaho -c "/home/pentaho/pentaho/server/data-integration-server/start-
pentaho.sh"
;;
"stop")
su - pentaho -c "/home/pentaho/pentaho/server/data-integration-server/stop-
pentaho.sh"
```

```
;;
*)
echo "Usage: $0 { start | stop }"
;;
esac
exit 0
```

3. Save the file and close the text editor.
4. Open `/home/pentaho/pentaho/server/data-integration-server/start-pentaho.sh` with a text editor.
5. Change the last `if` statement to match the this example.

```
if [ "$?" = 0 ]; then
  cd "$DIR/tomcat/bin"
  export CATALINA_OPTS="-Xms2048m -Xmx2048m -XX:MaxPermSize=2048m -
Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000"
  env JAVA_HOME=$_PENTAHO_JAVA_HOME sh ./startup.sh
fi
```

6. Save the file and close the text editor.
7. Make the `init` script executable.

```
chmod +x /etc/init.d/pentaho
```

8. Add the pentaho `init` script to the standard run levels by using the `update-rc.d` command, so that it runs when the system starts, and stops when the system is shut down or rebooted.

   This command may not exist on your computer if it is not Debian-based. If that is the case, consult your distribution documentation or contact your distribution's support department to determine how to add `init` scripts to the default run levels.

```
update-rc.d pentaho defaults
```

Access Spoon

Spoon is a desktop application that you will use primarily as a graphical interface and editor for transformations and jobs. With Spoon you can author, edit, run, and debug transformations and jobs. You can also use Spoon to enter license keys, add data connections, and define security.

- *Start Spoon*
- *Enter Licenses*
- *Connect to the DI Repository*
- *Tour Spoon*
- *Change Administrator Password*

When you are done, please go on to the next stop on the *Guide Post* graphic.

Start Spoon

There are a few different ways to start Spoon. The method that you should use depends on the way you installed Pentaho Data Integration (PDI).

Start Spoon for Windows Pentaho Graphical Installation

1. *Start the DI server.*
2. From the Windows Start menu, select **All Programs** > **Pentaho Enterprise Edition** > **Design Tools** > **Data Integration**.

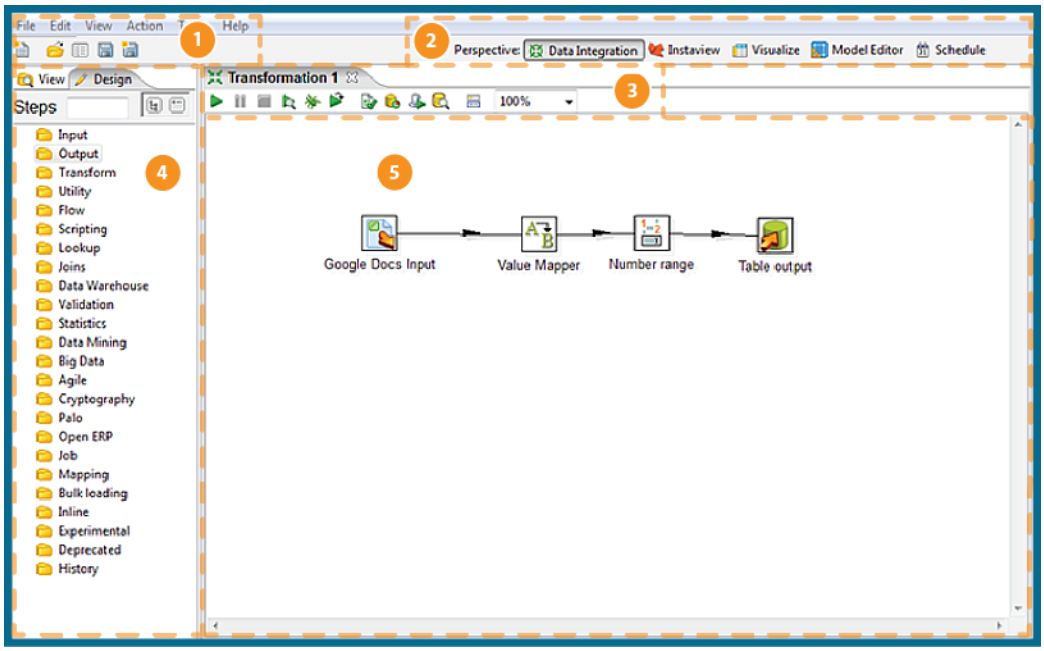
The PDI Design Tool, Spoon, appears.

Start Spoon for Archive or Manual Installation

1. *Start the DI server*.
2. Navigate to the folder where you have installed PDI. For example `...\pentaho\design-tools\data-integration`.
3. Launch Spoon in the best way for your operating system.
   a) **For Windows:** double-click **Spoon.bat**.
   b) **For Linux**: double-click **spoon.sh**
   c) **For Macintosh:** go to `.../pdi-ee/data-integration` and double click on the **Data Integration 32-bit** or **Data Integration 64-bit** icon depending on your system.

   The **Pentaho License Manager** dialog appears. You must *enter licenses*.

Tour Spoon



Component Name	Name	Function
1	Toolbar	Single-click access to common actions such as create a new file, opening existing documents, save and save as.
2	Perspectives Toolbar	Switch between the different perspectives. • **Data Integration** — Create ETL transformations and jobs • **Instaview** — Use pre-made templates to create visualizations from PDI transformations • **Visualize** — Test reporting and OLAP metadata models created in the Model perspective using the Report Design Wizard and Analyzer clients • **Model Editor** — Design reporting and OLAP metadata models which can be tested right from within the Visualization perspective or

Component Name	Name	Function
		published to the Pentaho BA Server • **Schedule** — Manage scheduled ETL activities on the Data Integration Server
3	Sub-toolbar	Provides buttons for quick access to common actions specific to the transformation or job such as **Run**, **Preview**, and **Debug**.
4	**Design and View Tabs**	The **Design** tab of the **Explore** pane provides an organized list of transformation steps or job entries used to build transformations and jobs. Transformations are created by simply dragging transformation steps from the **Design** tab onto the canvas and connecting them with hops to describe the flow of data. The **View** tab of the **Explore** pane shows information for each job or transformation. This includes information such as available database connections and which steps and hops are used. In the image, the **Design** tab is selected.
5	Canvas	Main design area for building transformations and jobs describing the ETL activities you want to perform

Enter Licenses

You must *start Spoon* before adding licenses.

1. Copy your license files to a convenient location.
2. Log into Spoon.
   The **Pentaho License Manager** dialog appears.
3. From within the **Pentaho License Manager**, click on the **Add** button.
4. Double-click on the license key to open it.
   A green check appears in the Status column to show that the license key installed correctly.
5. Click **Close** to close the dialog box.
6. Close any windows that appear and restart Spoon so that the license key will take effect.

Alternatively, you can *install licenses using the command line interface*.

Connect to the DI Repository

If *current license keys are installed* when you *start Spoon*, the **Repository Connection** dialog box appears. The DI Repository provides you a place to centrally store ETL jobs and transformations. You may choose to set up common connections for your users now or you can close the dialog box and allow your users to connect to the DI Repository themselves.

1. In the **Repository Connection** dialog box, click the add button.
2. Select **DI Repository: DI Repository** and click **OK**.
   The **Repository Configuration** dialog box appears.

3. Keep the default URL, which is `http://localhost:9080/pentaho-di`.
4. Click **Test** to ensure your connection is properly configured. If you get an error, make sure you have *started the DI Server*.
5. Click **OK** to exit the **Success** dialog box.
6. Enter an **ID** and **Name** for your repository.
7. Click **OK** to exit the Repository Configuration dialog box.
   Your new connection appears in the list of available repositories.
8. Log on to the repository by entering the following credentials: user name = **admin**, password = **password**.

Change the Administrator Password

After you have *logged into Spoon* for the first time, it is a best practice to *change the default administrator password*.

Define Security for the DI Server

Using security is a best practice, but is not required. If you want to get started quickly or do not have information about your user community, skip this for now and go on to the next stop on the *Guide Post* graphic. You can always come back to it later.

We support two different security options: Pentaho Security or advanced security providers, such as LDAP, Single Sign-On, or Microsoft Active Directory. This table can help you choose the option that is best for you. If you are using an advanced security provider, see *Implementing Advanced Security for the DI Server* before continuing the configuration process.

Table 1: Security Decision Table

Explore Considerations	Choose Options	
	Pentaho Security	***Advanced Security Providers—LDAP, Single Sign-On, or Microsoft Active Directory***
Summary	Pentaho Security is the easiest way to configure security quickly. Spoon enables you to define and manage users and roles. The DI Server controls which users and roles can access resources in the DI repository. Pentaho Security works well if you do not have a security provider or if you have a user community with less than 100 users.	If you are already using a security provider, such as LDAP, Single Sign-On, or Microsoft Active Directory, you can use the users and roles you have already defined with Pentaho. Your security provider controls which users and roles can access the DI repository. Advanced security scales well for production and enterprise user communities.
Expertise	Knowledge of your user community and which users should have which roles in the Pentaho system. Knowledge about security in general is *not* required.	Knowledge of your user community and which users should have which roles in the Pentaho system. Knowledge about your particular security provider and its options is required.

Explore Considerations	Choose Options	
	Pentaho Security	*Advanced Security Providers—LDAP, Single Sign-On, or Microsoft Active Directory*
Time	It takes approximately 5 minutes per user and role to configure Pentaho Security.	It takes approximately 1 hour to configure the DI Server to use your existing security provider.
Recommendation	**Recommended for the Pentaho Trial Download, evaluating, and rapid development.**	**Recommended for production.**

Use Pentaho Security on the DI Server

You must log into Spoon as an administrator to manage users and roles for Pentaho Security. This section provides an overview of the out-of-box users and roles, along with the permissions that are included with each role. Permissions can be further refined on the file- or folder-level from the **Browser** view of the User Console.

Here is how you can manage users.

- *Add Users*
- *Change Passwords Using Spoon*
- *Delete Users*
- *Assign Users to Roles*
- *Edit User Information*

Here is how you can manage roles.

- *Add Roles*
- *Edit Roles*
- *Delete Roles*
- *Make Changes to the Admin Role*
- *Assign Permissions in the Repository Using Spoon*
- *Enable System Role Permissions*

Before changing security settings, play it safe and back up these relevant files.

- If you installed using the Installation Wizard or the Archive Installation, back up all Data Integration directories.
- If you installed manually, back up the Pentaho `.war` and solutions.

Control users and roles in the DI Repository with a point-and-click user interface. The users and roles radio buttons allow you to switch between user and role settings. You can add, delete, and edit users and roles from this page.

Default Users and Roles

Viewing default users and roles gives you an idea of how you can define your specific users and roles. To view the default users and roles, log into Spoon, click **Tools** > **Repository** > **Explore** and select the **Security** tab. Highlighting a user in the users list shows which roles are available for that user, as well as which role is currently defined for that user.

Out-of-Box Role	Out-of-Box User	Permissions
Administrator	admin	• **Administer Security** • **Read Content** • **Publish Content** • **Create content** • **Schedule Content**
Power User	suzy	• **Schedule Content**
Report Author	tiffany	• **Publish Content**

Out-of-Box Role	Out-of-Box User	Permissions
		• **Schedule Content**
Business Analyst	pat	• **Publish Content**

Add Users

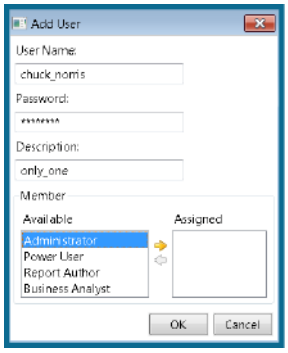
1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The Repository Explorer opens.
2. Click the **Security** tab.

   Note: The **Users** radio button is selected by default.

3. Next to **Available**, click the round green plus button, **Add**.
   The **Add User** dialog box appears.
4. Type the **User Name** and **Password** associated with your new user account in the appropriate fields.

   Note: An entry in the **Description** field is optional.

5. If you have available roles that can be assigned to the new user, under **Member**, select a role and click **OK**.



   The role you assigned to the user appears in the right pane under **Assigned**.
6. Click **OK** to save your new user account and exit the Add Users dialog box.

The name of the user you added appears in the list of Available users.

Change Passwords Using Spoon

1. Launch Spoon as described in *Start Spoon*.
2. Click on **Tools** > **Repository** > **Explore**.
3. Click on **Security**.
4. Select **Users**, **Roles**, or **System Roles** from the option button.
5. Select the role for which you want to change the password and click the **Edit** icon.
6. In the **Password** field, type the new password. Click **OK**.

Delete Users

You must be logged into the DI Repository as an administrative user.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The Repository Explorer opens.
2. Click the **Security** tab.
3. Select the user you want to delete from the list of available users.
4. Next to **Users**, click **Remove**.
   A confirmation message appears.
5. Click **Yes** to delete the user.

If a user or role is deleted in the DI Repository, content that refers to the deleted user, either by way of owning the content or having an ACL that mentions the user or role, is left unchanged. This makes it possible to create a new user

or role using an identical name. In this scenario, content ownership and access control entries referring to the deleted user or role now apply to the new user or role.

To avoid this problem, we recommend that you disable a user or role instead of deleting it. This prevents a user or role with an identical name from ever being created again. Use these alternatives rather than deleting the user or role.

IF	THEN
You are dealing with a role	Unassign all current members associated with the role
You are dealing with a user	Reset the password to a password that is so cryptic that it is impossible to guess and is unknown to any users

Assign Users to Roles

You must be logged into the DI Repository as an administrative user.

You can assign users to roles and roles to users when you add a new user or role. You can also assign users to roles as a separate task.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The Repository Explorer opens.
2. Click the **Security** tab.
3. Click the **Roles** radio button.
   The list of available roles appear.
4. Select the role to which you want to assign one or more users.

   Note: If the role has users currently assigned to it, the names of the users appear in the table on the right under **Members**. You can assign or unassign any users to a role. You can select a single item or multiple items from the list of members. Click **Remove** to remove the user assignment.
5. Next to **Members**, click **Add**.
   The **Add User to Role** dialog box appears.
6. Select the users you want assigned to the role and click **Add**.
   The users assigned to the role appear in the right pane.
7. Click **OK** to save your entries and to exit the Add User to Role dialog box.

The specified users are assigned to the specified role.

Edit User Information

You must be logged into the DI Repository as an administrative user.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The Repository Explorer opens.
2. Click the **Security** tab.

   Note: The **Users** radio button is selected by default.
3. Select the user whose details you want to edit from the list of available users.
4. Click **Edit**.
   The **Edit User** dialog box appears.
5. Make the appropriate changes to the user information.
6. Click **OK** to save changes and exit the **Edit User** dialog box.

Add Roles

You must be logged into the DI Repository as an administrative user.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The Repository Explorer opens.
2. Click the **Security** tab.
3. Click the **Roles** radio button.
   The list of available roles appear.
4. Click **Add**.

The **Add Role** dialog box appears.

5. Enter the **Role Name** in the appropriate field.

Note: An entry in the **Description** field is optional.

6. If you have users to assign to the new role, select them (using the <**SHIFT**> or <**CTRL**> keys) from the list of available users and click the yellow arrow to move it from the left pane to the right pane.
The user(s) assigned to your new role appear in the right pane.
7. Click **OK** to save your entries and exit the Add Role dialog box.

The specified role is created and is ready to be assigned to user accounts.

Edit Roles

You must be logged into the DI Repository as an administrative user.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
The Repository Explorer opens.
2. Click the **Security** tab.
3. Click the **Roles** radio button.
The list of available roles appear.
4. Select the role you want to edit and click **Edit**.
The **Edit Role** dialog box appears.
5. Make the appropriate changes.
6. Click **OK** to save your changes and exit the **Edit Role** dialog box.

Delete Roles

You must be logged into the DI Repository as an administrative user.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
The Repository Explorer opens.
2. Click the **Security** tab.
3. Select the role you want to delete from the list of available roles.
4. Click **Remove**.
A confirmation message appears.
5. Click **Yes** to delete the role.

The specified role is deleted.

Make Changes to the Admin Role

The assigning of action-based permissions, (read, create, and administrate), associated with the administrator role in the DI Repository cannot be edited in the user interface. The administrator role is the only role that is assigned the *Administrate* permission; the Administrate permission controls user access to the **Security** tab.

Deleting the administrator role prevents *all users* from accessing the **Security** tab, unless another role is assigned the administrator permission.

These are the scenarios that require a configuration change not available through Spoon:

- You want to delete the administrator role
- You want to unassign the administrator permission from the administrator role
- You want to configure LDAP

Follow these instructions to change the administrator role:

1. Shut down the DI Server.
2. Open the **repository.spring.xml** file located at `\pentaho\server\data-integration-server\pentaho-solutions\system\`.
3. Locate the element with an ID of **immutableRoleBindingMap**.

4. Replace the entire node with the XML shown below. Make sure you change **yourAdminRole** to the role that will have **Administrate** permission.

```
<util:map id="immutableRoleBindingMap">
    <entry key="yourAdminRole">
      <util:list>
        <value>org.pentaho.di.reader</value>
        <value>org.pentaho.di.creator</value>
        <value>org.pentaho.di.securityAdministrator</value>
      </util:list>
    </entry>
</util:map>
```

5. Restart the DI Server.

The administrator role changes according to your requirements.

Assign User Permissions in the Repository using Spoon

You must be logged into the repository as an administrative user.

You can restrict what users see by assigning roles to users. For example, you can create administrative groups who are allowed to administer security and create new content.

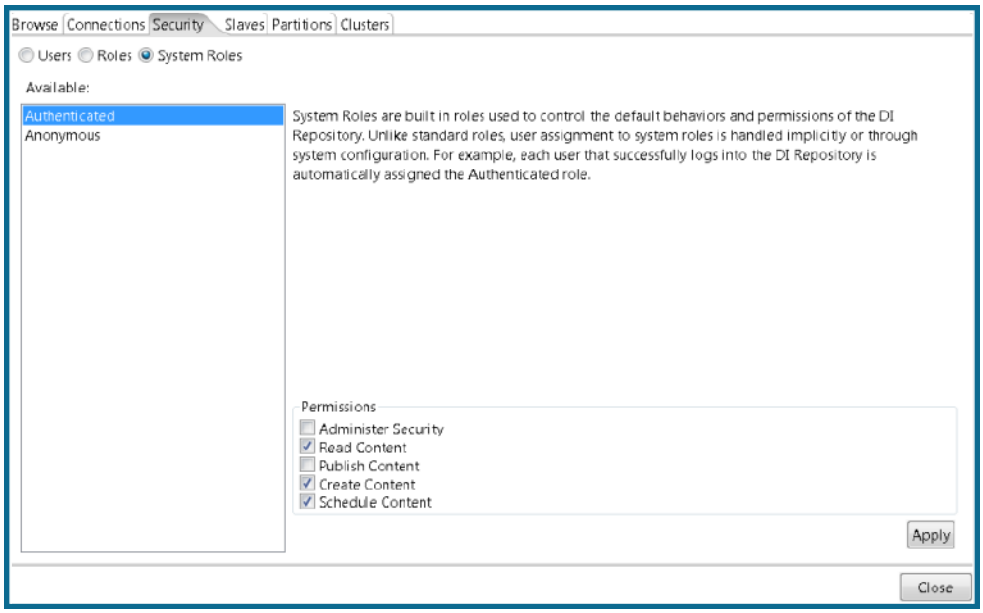
To assign permissions in the repository, follow these instructions.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The **Repository Explorer** opens.
2. Click the **Security** tab.
3. Click the **Roles** radio button.
   The list of available roles appear.
4. Select the role to which you want to assign permissions.
5. Enable the appropriate permissions and click **Apply**.

The permissions you enabled for the role take effect the next time the specified users log in.

Enable System Role Permissions

When users log into the DI Repository, they are automatically assigned the **Authenticated** system role in addition to the role you assigned them. Pentaho requires the **Authenticated** system role for users to log into the DI Repository. This includes administrative users. By default, the **Authenticated** system role provides **Read Content** and **Create Content** permissions to all users who are logged in. You can change these permissions as needed.



Note: **Important!** The Anonymous system role is not being used at this time.

Follow the steps below to change permissions for the Authenticated system role.

1. In Spoon, go to **Tools** > **Repository** > **Explore**.
   The Repository Explorer opens
2. Click the **Security** tab.
3. Click the **System Roles** radio button.
   The list of available system roles appear.

   Note: The Anonymous role is not functional.

4. Select the **Authenticated** role from the list of available roles.
5. Under **Permissions**, enable the appropriate permissions for this role.
6. Click **Apply** to save your changes.

The specified permissions are enabled for the **Authenticated** system role.

Next Steps

After you have performed these tasks, *configure the PDI tool and utilities*.

Configure the PDI Design Tools and Utilities

Before you can use the Pentaho Data Integration tools, you need to perform configuration tasks for each workstation that runs the tools and utilities. Just follow the *Guide Post* graphics to ensure you complete the entire process. It should take you less than 1 hour for each workstation running the design tools.

If you used the **Pentaho Trial Download** and the Installation Wizard, the DI Server and its tools and utilities reside on the same workstation. If you used any of the other installation techniques, the DI Server and its tools and utilities may reside on separate workstations.

Here is the list of the Pentaho Data Integration tools and utilities and what they do.

Tool or Utility	What It Does
Carte	• Enables remote execution of jobs and transformations continuously in the background • Enables distribution and coordinated job execution across a collection of computers, a process known as clustering
Kitchen	• Provides a command-line method to run jobs immediately • Typically used after the ETL development phase for production environments
Pan	• Provides a command-line method to run transformations immediately • Typically used after the ETL development phase for production environments
Spoon	Allows users to design and manage complex ETL workloads with a graphical user interface

Start and Stop PDI Design Tools and Utilities

Each of the DI tools has a *specific function*, so you start and stop each one individually. As part of the Installation Wizard and Archive Installation, we provide different ways to help you start each tool and utility, depending on the operating system you use. This table shows you options. After you have decided how you want to start and stop the tool and utilities, please go on to the next stop on the *Guide Post* graphic.

Operating System	Installation Method	Start the Tools and Utilities
Microsoft Windows	Pentaho Installation Wizard	**Spoon** • Click **Start** > **Programs** > **Pentaho Enterprise Edition** > **Design Tools** and double-click on **Data Integration** the item to launch Spoon. For these tools and utilities, you must navigate to a directory to launch the `.bat` file. **Carte** • `\pentaho\design-tools\data-integration\carte.bat` **Kitchen** • `\pentaho\design-tools\data-integration\kitchen.bat` **Pan** • `\pentaho\design-tools\data-integration\pan.bat`
Microsoft Windows	Pentaho Archive or Manual Installation	Create shortcuts to the `.bat` file or each design tool and add them to the *Start menu*. Or, navigate to the one of these directories and run the design tool's `.bat` file to launch it. **Carte** • `\pentaho\design-tools\data-integration\carte.bat` **Kitchen** • `\pentaho\design-tools\data-integration\kitchen.bat` **Pan** • `\pentaho\design-tools\data-integration\pan.bat` **Spoon** • `\pentaho\design-tools\data-integration\spoon.bat`
Linux and Mac OS	Pentaho Wizard, Archive, or Manual Installation	Navigate to one of these directories and run the design tool `.sh` file to launch it. **Carte** • `pentaho/design-tools/data-integration/carte.sh` **Kitchen** • `pentaho/design-tools/data-integration\kitchen.sh` **Pan** • `/pentaho/design-tools/data-integration/pan.sh` **Spoon** • `/pentaho/design-tools/data-integration/spoon.sh`

Enter Licenses and Connect to the DI Repository

You must also use Spoon to set up each workstation.

- *Start Spoon*
- *Enter Licenses*
- *Make a Connection to the DI Repository*

When you are done, please go on to the next stop on the *Guide Post* graphic.

Start Spoon

1. Start the DI server.
2. Navigate to the folder where you have installed Pentaho Data Integration; for example `...\pentaho\design-tools\data-integration`.
3. Launch Spoon in the best way for your operating system.
   a) **For Windows:** double-click **Spoon.bat**.
   b) **For Linux**: double-click **spoon.sh**
   c) **For Macintosh:** go to `.../pdi-ee/data-integration` and double click on the **Data Integration 64-bit** icon depending on your system.

   The **Pentaho License Manager** dialog appears. You must *enter licenses*.

Enter Licenses

You must *start Spoon* before adding licenses.

1. Copy your license files to a convenient location.
2. Log into Spoon.
   The **Pentaho License Manager** dialog appears.
3. From within the **Pentaho License Manager**, click on the **Add** button.
4. Double-click on the license key to open it.
   A green check appears in the Status column to show that the license key installed correctly.
5. Click **Close** to close the dialog box.
6. Close any windows that appear and restart Spoon so that the license key will take effect.

Connect to the DI Repository

If *current license keys are installed* when you *start Spoon*, the **Repository Connection** dialog box appears. The DI Repository provides you a place to centrally store ETL jobs and transformations. You may choose to set up common connections for your users now or you can close the dialog box and allow your users to connect to the DI Repository themselves.

1. In the **Repository Connection** dialog box, click the add button.
2. Select **DI Repository: DI Repository** and click **OK**.
   The **Repository Configuration** dialog box appears.
3. Keep the default URL, which is `http://localhost:9080/pentaho-di`.
4. Click **Test** to ensure your connection is properly configured. If you get an error, make sure you have *started the DI Server*.
5. Click **OK** to exit the **Success** dialog box.
6. Enter an **ID** and **Name** for your repository.

7. Click **OK** to exit the Repository Configuration dialog box.
   Your new connection appears in the list of available repositories.
8. Log on to the DI Repository by entering the following credentials: user name = **admin**, password = **password**. If you have changed the credentials, then those are the credentials you must use.

Next Steps

After you have performed these tasks, you can choose your next steps.

- If you want to create jobs and transformations with your data, you must *connect to your data* and then *connect to the DI Repository* so you have somewhere to save your jobs and transformations.