



Red Hat JBoss BPM Suite 6.0

Getting Started Guide

The Getting Started Guide for Red Hat JBoss BPM Suite

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Abstract

This guide is to help users install and set up Red Hat JBoss BPM Suite for the first time

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CHAPTER 1. INTRODUCTION

1.1. ABOUT RED HAT JBOSS BPM SUITE

Red Hat JBoss BPM Suite is an open source business process management suite that combines Business Process Management and Business Rules Management and enables business and IT users to create, manage, validate, and deploy Business Processes and Rules.

Red Hat JBoss BRMS and Red Hat JBoss BPM Suite use a centralized repository where all resources are stored. This ensures consistency, transparency, and the ability to audit across the business. Business users can modify business logic and business processes without requiring assistance from IT personnel.

To accommodate Business Rules component, Red Hat JBoss BPM Suite includes integrated Red Hat JBoss BRMS.

Business Resource Planner is included as a technical preview with this release.

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1.2. RED HAT JBOSS BPM SUITE COMPONENTS

The Red Hat JBoss BPM Suite contains the following components:

Execution Engine

The runtime environment for business assets (Processes, Tasks, Rules, etc.). For further details, refer to the *Red Hat JBoss BPM Suite Administration and Configuration Guide*

Artifact Repository (Knowledge Store)

A storage for business assets that provide revision control capabilities (connects GIT repositories with business assets).

Business Central

A web-based application for asset creation, management, and monitoring of business assets providing an integrated environment with the respective tools, such as, rule and process authoring tools, business asset management tool for work with Artifact Repository, runtime data management tools, resource editors, BAM (Business Activity Monitoring) tools, Task management tools, and BRMS tools. For further details, refer to the *Red Hat JBoss BPM Suite User Guide*

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1.3. USE CASE: PROCESS-BASED SOLUTIONS IN THE LOAN INDUSTRY

Red Hat JBoss BPM Suite (BPMS) can be deployed to automate business processes, such as automating the loan approval process at a retail bank. This is a typical 'Specific Process-Based' deployment that might be the first step in a wider adoption of BPM throughout an enterprise. It leverages both the BPM and business rules features of BPMS.

A retail bank offers several types of loan products each with varying terms and eligibility requirements. Customers requiring a loan must file a loan application with the bank, which then processes the application in several steps, verifying eligibility, determining terms, checking for fraudulent activity, and determining the most appropriate loan product. Once approved, the bank

creates and funds a loan account for the applicant, who can then access funds. The bank must be sure to comply with all relevant banking regulations at each step of the process, and needs to manage its loan portfolio to maximize profitability. Policies are in place to aid in decision making at each step, and those policies are actively managed to optimize outcomes for the bank.

Business analysts at the bank model the loan application processes using the BPMN2 authoring tools (Process Designer) in BPM Suite:

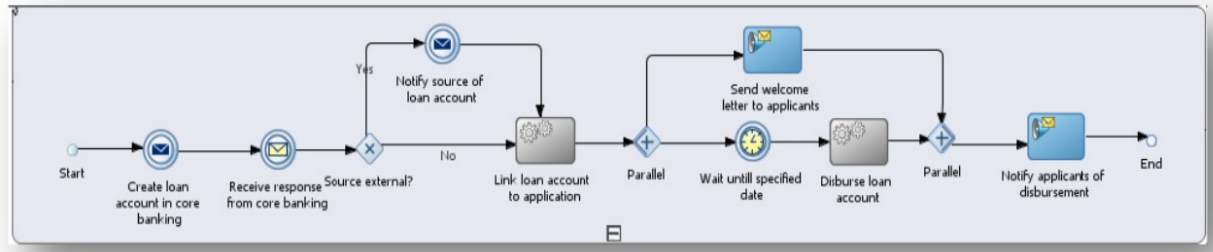


Figure 1.1. High-level loan application process flow

Business rules are developed with the rule authoring tools in BPM Suite to enforce policies and make decisions. Rules are linked with the process models to enforce the correct policies at each process step.

The bank's IT organization deploys the BPM Suite so that the entire loan application process can be automated.

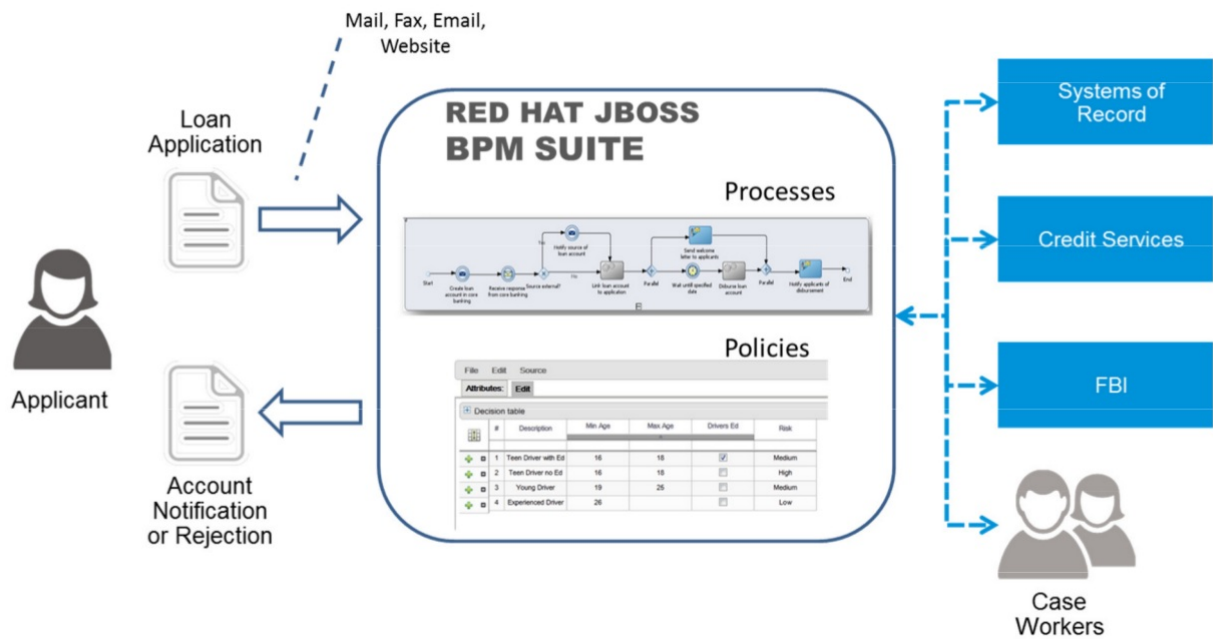


Figure 1.2. Loan Application Process Automation

The entire loan process and rules can be modified at any time by the bank's business analysts. The bank is able to maintain constant compliance with changing regulations, and is able to quickly introduce new loan products and improve loan policies in order to compete effectively and drive profitability.

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CHAPTER 2. QUICK START WITH RED HAT JBOSS BPM SUITE

In this section we download, install and run Red Hat JBoss BPM Suite with the minimum number of instructions. For more detailed steps and alternate methods of installation, skip this section and continue reading the rest of this guide.

These instructions assume that you have the minimum supported Java version installed on your system. An existing Red Hat JBoss EAP server is not required as the installer installs one if one cannot be detected.

Procedure 2.1. BPM Suite Quick Start

1. Download BPM Suite installer from access.redhat.com.

2. Run installer by executing the following command:

```
java -jar jboss-bpms-installer-VERSION.GA-redhat-MINOR.jar
```

3. Step through the GUI installer steps making note of the username/password for accessing the BPM Suite application after installation.
4. After successful installation, in a command prompt, navigate to the EAP home folder where you have installed BPM Suite.
5. Start the BPM Suite server by issuing the following command.

```
bin/standalone.sh
```

6. Open a web browser and login to Business Central by navigating to <http://localhost:8080/business-central/>. Login using the username/password combination for accessing the BPM Suite application that you created at installation time.

You have successfully installed and run BPM Suite. You can now do the following:

Learn more about roles: Section 3.1.3, “Defining Roles”
Create additional users: Section 3.1.4, “Creating users”
Create a Hello World Project: Chapter 5, Hello World project
Work through the BPM Example App Guide <i>Working with the BPM Suite Example App</i>
Look up detailed installation instructions for using the installer: <i>Installation Guide</i>

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CHAPTER 3. INSTALLATION OPTIONS

Red Hat JBoss BPM Suite comes in two versions:

- Executable jar installer for installation on Red Hat JBoss Enterprise Application Platform (EAP) 6.1.1.
- Zip file install which itself comes in two versions:
 - `jboss-bpms-6.MINOR_VERSION-redhat-x-deployable-eap6.x.zip`: version adapted for deployment on Red Hat JBoss Enterprise Application Platform (EAP 6.1.1).
 - `jboss-bpms-6.MINOR_VERSION-redhat-x-deployable-generic.zip`: the deployable version with additional libraries adapted for deployment on Red Hat JBoss Web Server (WS), Apache Tomcat 6, and Apache Tomcat 7.

Depending on your environment, you may choose the installation option best suited for your project needs.



NOTE

Red Hat JBoss BPM Suite is designed to work with UTF-8 encoding. If a different encoding system is used by the underlying JVM, unexpected errors might occur. To ensure UTF-8 is used by the JVM, use the following system property `"-Dfile.encoding=UTF-8"`.

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3.1. THE EAP6 BUNDLE INSTALLATION

This section describes installing the Red Hat JBoss BPM Suite package deployable for Red Hat JBoss Enterprise Application Platform (EAP).



NOTE

The minimum supported configuration of Red Hat JBoss EAP for Red Hat JBoss BPM Suite installation is 6.1.1 and not 6.1.0.

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3.1.1. Downloading the EAP6 package

To download the deployable Red Hat JBoss BPM Suite package for JBoss Enterprise Application Platform, do the following:

1. Go to the [Red Hat Customer Portal](#) and log in.
2. Click **Downloads** → **Products Downloads**.
3. In the **Product Downloads** page that opens, click **Red Hat JBoss BPM Suite**.
4. From the **Version** drop-down menu, select version 6.0.3.

5. On the **Software Downloads** page that opens, navigate to the **Red Hat JBoss BPM Suite 6.0.3 Deployable for EAP 6.1.1** row and click **Download**.

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3.1.2. Installing the EAP6 package

Installation on a fresh EAP instance

To install the deployable package for an EAP that has yet to be configured, do the following:

1. Extract the zip package deployable for EAP you downloaded from the [Red Hat Customer Portal](#).
2. Merge the extracted zip package deployable for EAP into the `EAP_SERVER_HOME` directory.



WARNING

This step must be performed by the same user account that was used to install EAP. This account must not be a superuser account.

3. In this process, multiple files in the `EAP_SERVER_HOME` directory will be overwritten and you must let the unzip process overwrite these files. An example of a file that is overwritten is the `SERVER_HOME/bin/product.conf` file. After a successful merge, this file must contain the string `slot=bpms`. You can open this file to verify that the files have been overwritten successfully.

In Red Hat Enterprise Linux, you can use the following command to extract the BPMS zip file and merge it into your server directory correctly in one step, if you execute this command in the directory where you have downloaded the zip file:

```
unzip -u jboss-bpms-VERSION-TYPE.zip -d SERVER_HOME_PARENT_DIR
```

Example 3.1. The unzip command

```
unzip -u jboss-bpms-6.0.3-redhat-7-deployable-eap6.x.zip -d
/home/john/myServers/
```

On server start-up, Red Hat JBoss BPM Suite will be deployed.

Installation on an existing EAP configuration

**WARNING**

These instructions are for installing, and *NOT* for updating an existing BPMS instance. Make sure that there is no existing BPMS install in the target EAP.

To install the deployable package for a previously configured EAP, do the following:

1. Extract the zip package deployable for EAP you downloaded from the [Red Hat Customer Portal](#).
2. Unzip the downloaded zip archive; however, do not overwrite all of the files. Manually merge the following files into the `SERVER_HOME` directory.
 - o `jboss-eap-6.1/domain/configuration/*` - (please be aware that BPMS requires JMS, so JMS is added by default into all profiles in `domain.xml` provided by BPMS distribution.)
 - o `jboss-eap-6.1/standalone/configuration/*` - (please be aware that BPMS requires JMS, so JMS is added by default into all profiles config files (especially into `standalone.xml` and `standalone-ha.xml`) provided by BPMS distribution.)
 - o `jboss-eap-6.1/modules/layers.conf`
 - o `jboss-eap-6.1/bin/product.conf`
3. Ensure the target EAP does not include a deployment with a colliding name. Copy the folder `jboss-eap-6.1/standalone/deployments` into the `EAP_HOME` directory from the BPMS distribution.
4. Make sure no EAP module layer is already called BPMS and copy the folder `jboss-eap-6.1/modules/system/layers/bpms` into the EAP 6.1.1 folder.

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3.1.3. Defining Roles

Before starting the server and logging onto Business Central, you will need to create some user accounts. This section describes the different user roles that are used in Red Hat JBoss BPM Suite :

- **admin:** The users with admin role are the administrators of the application. Administrators can manage users, manage the repositories (create and clone) and have full access to make the required changes in the application. Admins have access to all areas within the system.
- **developer:** A developer has access to almost all features and can manage rules, models, process flows, forms and dashboards. They can manage the asset repository, they can create, build and deploy projects and they can even use Red Hat JBoss Developer Studio to view processes. Only certain administrative functions like creating and cloning a new repository are hidden for the developer role.
- **analyst:** An analyst role has access to all high-level features to model and execute their projects. However, **Authoring** → **Administration** access is unavailable to users with the

analyst role. Certain lower-level features targeted towards developers, like the **Deployment** → **Artifact Repository** view are not accessible for this role. However, the **Build & Deploy** button is available for the analyst role while using the Project Editor.

- **user:** User or a business user work on the business task lists that are used to operate a certain process. A user with this role can access the dashboard and manage processes.
- **manager:** A manager is a viewer of the system and is interested in statistics around the business processes and their performance, business indicators, and other reporting of the system. A user with this role has access to the BAM only.



NOTE

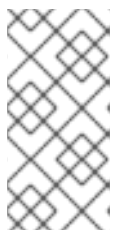
Enter the above mentioned roles during the user creation process.

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3.1.4. Creating users

To start adding new users, you will need to run the `add-user.sh` script on a Unix system or the `add-user.bat` file on a Windows system from the EAP bin directory.

1. Run `./add-user.sh` on a Unix system or `add-user.bat` on a Windows system from the bin directory.
2. Enter `b` to select an Application User at the type of user prompt and press Enter.
3. Accept the default Realm (ApplicationRealm): by pressing Enter.
4. At the username prompt, enter a user name and confirm. For example: `helloworlduser`.
5. Create the user's password at the password prompt and reenter the password. For example: `HelloWorld@123`.



NOTE

The password should be at least 8 characters in length and should contain upper and lower case alphabetic characters (e.g. A-Z, a-z), at least one numerical character (e.g. 0-9) and at least one special character (e.g. `~ ! @ # $ % ^ * () - _ + =`).

6. Enter a comma separate list of roles the user will need at the roles prompt (refer to [Section 3.1.3, “Defining Roles”](#)).

Business Central users need to have at least the `analyst` role, and dashbuilder users need to have the `admin` role. Roles should be entered as a comma-separated list.

7. Confirm you want to add the user.
8. Enter `yes` at the next prompt (this is to enable clustering in the future if required).

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3.2. THE GENERIC DEPLOYABLE BUNDLE INSTALLATION

To install Red Hat JBoss BPM Suite on Red Hat JBoss Web Server (WS), you need to use the generic deployable package of the product.

For installation on WS, the generic deployable package contains additional transaction manager and security libraries that are not part of Red Hat JBoss WS.

Note that the generic deployable package contains the following zip archives:

- **jboss-bpms-engine.zip**: supported execution engine libraries needed if you are embedding the engine into your application
- **jboss-bpms-manager.zip**: the **business-central.war** and **dashbuilder.war** web applications

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3.2.1. Downloading the generic deployable package

To download the generic deployable Red Hat JBoss BPM Suite package for JBoss Web Server, do the following:

1. Go to the [Red Hat Customer Portal](#) and log in.
2. Select **Downloads** → **Product Downloads**.
3. From the list of products click on **Red Hat JBoss BPM Suite**.
4. From the **Version** drop-down menu, select version 6.0.3.
5. In the Software Downloads section that comes up, navigate to the **Red Hat JBoss BPM Suite 6.0.3 Deployable for all supported containers** row and then click **Download**.

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3.2.2. Installing the generic deployable package

To install the generic deployable package, you need to set up the following after you have installed the underlying platform (Red Hat JBoss WS):

- Set up the database driver and the transaction manager (Bitronix) (refer to [Section 3.2.2.1, “Setting up transaction manager for Red Hat JBoss Web Server 2.0 \(Tomcat 7\)”](#)).
- Set up the Business Central application: set up users and roles and set up persistence (refer to [Section 3.2.2.2, “Setting up Business Central for Red Hat JBoss Web Server 2.0 \(Tomcat 7\)”](#)).
- Set up the Dashbuilder application: set up users and roles and set up persistence (refer to [Section 3.2.2.3, “Setting up Dashbuilder for Red Hat JBoss Web Server 2.0 \(Tomcat 7\)”](#)).

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3.2.2.1. Setting up transaction manager for Red Hat JBoss Web Server 2.0 (Tomcat 7)

1. Extract the generic deployable zip package you downloaded from [Red Hat Customer Portal](#). This zip package contains two more zip files: `jboss-bpms-engine.zip` and `jboss-bpms-manager.zip`.
2. Extract the contents of the `jboss-bpms-manager.zip` file to a temporary location. This zip file contains two web application archive folders: `business-central.war` and `dashbuilder.war` in exploded formats and these are now in your temporary location. Rename these folders to remove the `.war` extension.

Copy both these folders directly under the `$TOMCAT_DIR/webapps` folder.

You should end up with two folders in exploded format: `$TOMCAT_DIR/webapps/business-central` and `$TOMCAT_DIR/webapps/dashbuilder`.



NOTE

`$TOMCAT_DIR` stands for the home directory where your web server is located. Replace it with the actual path to your web server home directory, for example: `/home/john/jboss-ews-2.0/tomcat7/`

3. Extract the `jboss-bpms-engine` folder from the `jboss-bpms-engine.zip` archive to a temporary location from where you can copy the required libraries. This folder now contains all the core BPMS libraries under the extracted folder and a `lib` folder.
4. Install the transaction manager.



WARNING

Please note that the following section describes the setup of a transaction manager, Bitronix that is not officially supported by Red Hat.

Copy the following transaction manager jar libraries from the `lib` folder where you just extracted the `jboss-bpms-engine` libraries to `$TOMCAT_DIR/lib/` directory:

- o `btm-VERSION.jar`
- o `btm-tomcat55-lifecycle-VERSION.jar`
- o `jta-VERSION.jar`
- o `slf4j-api-VERSION.jar`
- o `slf4j-ext-VERSION.jar`

In addition, download the following library and copy it into the `$TOMCAT_DIR/lib/` folder as well:

- o [javax.security.jacc-api.jar](#)

5. Install the driver to your database: copy the jar file with the relevant database driver to

`$TOMCAT_DIR/lib/`.



NOTE

If using the embedded H2 database, the driver is available in `business-central/WEB-INF/lib/`.

6. Create the transaction manager configuration files in `$TOMCAT_DIR/conf/`:

- o `btm-config.properties`

```
bitronix.tm.serverId=tomcat-btm-node0
bitronix.tm.journal.disk.logPart1Filename=${btm.root}/work/btm1.t
log
bitronix.tm.journal.disk.logPart2Filename=${btm.root}/work/btm2.t
log
bitronix.tm.resource.configuration=${btm.root}/conf/resources.pro
perties
```

- o `resources.properties` (the `resource.ds1.uniqueName` defines the datasource name used in tomcat resource definition later - make a note of this value).

Make sure to change the values in the following definitions to match your environment.

Example 3.2. H2 datasource definition

```
resource.ds1.className=bitronix.tm.resource.jdbc.lrc.LrcXADataS
ource
resource.ds1.uniqueName=jdbc/jbpm
resource.ds1.minPoolSize=10
resource.ds1.maxPoolSize=20
resource.ds1.driverProperties.driverClassName=org.h2.Driver
resource.ds1.driverProperties.url=jdbc:h2:file:~/jbpm
resource.ds1.driverProperties.user=sa
resource.ds1.driverProperties.password=
resource.ds1.allowLocalTransactions=true
```

Example 3.3. MySQL 5.5 datasource definition

```
resource.ds1.className=com.mysql.jdbc.jdbc2.optional.MysqlXADat
aSource
resource.ds1.uniqueName=jdbc/jbpm
resource.ds1.minPoolSize=0
resource.ds1.maxPoolSize=10
resource.ds1.driverProperties.URL=jdbc:mysql://localhost:3306/s
ampled
resource.ds1.driverProperties.user=dbuser
resource.ds1.driverProperties.password=dbpassword
resource.ds1.allowLocalTransactions=true
```


Example 3.4. DB2 Type 4 datasource definition

```
resource.ds1.className=com.ibm.db2.jcc.DB2Driver
resource.ds1.uniqueName=jdbc/jbpm
resource.ds1.minPoolSize=0
resource.ds1.maxPoolSize=10
resource.ds1.driverProperties.URL=jdbc:db2://localhost:50000/sa
mpledbs
resource.ds1.driverProperties.user=dbuser
resource.ds1.driverProperties.password=dbpassword
resource.ds1.allowLocalTransactions=true
```

Example 3.5. Oracle datasource definition

```
resource.ds1.className=oracle.jdbc.xa.client.OracleXADataSource
resource.ds1.uniqueName=jdbc/jbpm
resource.ds1.minPoolSize=0
resource.ds1.maxPoolSize=10
resource.ds1.driverProperties.URL=jdbc:oracle:thin:@//localhost
:1521/bpms
resource.ds1.driverProperties.user=dbuser
resource.ds1.driverProperties.password=dbpassword
resource.ds1.allowLocalTransactions=true
```

Example 3.6. Microsoft SQL Server datasource definition

```
resource.ds1.className=com.microsoft.sqlserver.jdbc.SQLServerDr
iver
resource.ds1.uniqueName=jdbc/jbpm
resource.ds1.minPoolSize=0
resource.ds1.maxPoolSize=10
resource.ds1.driverProperties.URL=jdbc:sqlserver://localhost:14
33;databaseName=bpms;
resource.ds1.driverProperties.user=dbuser
resource.ds1.driverProperties.password=dbpassword
resource.ds1.allowLocalTransactions=true
```

7. Set up the transaction manager listener in `$TOMCAT_DIR/conf/server.xml` to start and stop Bitronix on container startup and shutdown:

Add the following element as the last `<Listener>` element into the `<Server>` element:

```
<Listener
className="bitronix.tm.integration.tomcat55.BTMLifecycleListener" />
```

8. Define the `btm.root` system property and location where bitronix config file is placed:

In `$TOMCAT_DIR/bin/`, create the `setenv.sh` file with the following content:

```
CATALINA_OPTS="-Xmx512M -XX:MaxPermSize=512m -
Dbtm.root=$CATALINA_HOME -
Dbitronix.tm.configuration=$CATALINA_HOME/conf/btm-config.properties
-Dorg.jbpm.designer.perspective=RuleFlow -
Djbpm.tsr.jndi.lookup=java:comp/env/TransactionSynchronizationRegistry"
```

The property `org.jbpm.designer.perspective` is set to `RuleFlow` to allow the default perspective for the designer to be `RuleFlow` rather than `Full`. Grant the file execute permissions if applicable.

IMPORTANT

On Microsoft Windows systems, replace the `$CATALINA_HOME` value in the content of the file with the equivalent environment variable name or use the absolute path and add the values in `setenv.bat` file as shown here in the following example:

```
set "CATALINA_OPTS=-Xmx512M -XX:MaxPermSize=512m -
Dbtm.root=C:/Tomcat -
Dbitronix.tm.configuration=C:/Tomcat/conf/btm-
config.properties -
Dorg.jbpm.designer.perspective=RuleFlow"
```

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3.2.2.2. Setting up Business Central for Red Hat JBoss Web Server 2.0 (Tomcat 7)

To set up Business Central, do the following:

1. Set up a `Valve` so that the Business Central web application can load the users set up in Tomcat:
 - a. Define users and roles in `$TOMCAT_DIR/conf/tomcat-users.xml`. Note that Business Central requires users to have the roles specified as `admin` and/or `analyst` (for more information about user and role definitions, refer to the Tomcat 7 documentation).

The program listing below shows an example of how these two roles would be added and how a user named `bpmsadmin` will be assigned these roles.

```
<role rolename="admin"/>
<role rolename="analyst" />
<user username="bpmsadmin" password="P@ssw0rd"
roles="admin,analyst"/>
```

- b. Copy `kie-tomcat-integration-VERSION.jar` from `$TOMCAT_DIR/webapps/business-central/WEB-INF/lib/` to `$TOMCAT_DIR/lib/`.
- c. Copy `jaxb-api-VERSION.jar` from `$TOMCAT_DIR/webapps/business-central/WEB-INF/lib/` to `$TOMCAT_DIR/lib/`.

- d. In `$TOMCAT_DIR/conf/server.xml`, add the Tomcat Valve declaration in the relevant `<host>` element:

```
<Valve className="org.kie.integration.tomcat.JACCValve" />
```

- e. In `$TOMCAT_DIR/webapps/business-central/WEB-INF/web.xml`, uncomment entries marked with the `TOMCAT - JEE - SECURITY` comments.
- f. Set up the tomcat authentication source: in the `$TOMCAT_DIR/webapps/business-central/WEB-INF/classes/META-INF/services/` directory, rename the following files: `org.uberfire.security.auth.AuthenticationSource` to `org.uberfire.security.auth.AuthenticationSource-ORIGIN` and `org.uberfire.security.auth.AuthenticationSource-TOMCAT - JEE - SECURITY` to `org.uberfire.security.auth.AuthenticationSource`:

```
# Example command if you run this from $TOMCAT_DIR/webapps
directory
$ mv business-central/WEB-INF/classes/META-
INF/services/org.uberfire.security.auth.AuthenticationSource
business-central/WEB-INF/classes/META-
INF/services/org.uberfire.security.auth.AuthenticationSource-
ORIGIN
$ mv business-central/WEB-INF/classes/META-
INF/services/org.uberfire.security.auth.AuthenticationSource-
TOMCAT-JEE-SECURITY business-central/WEB-INF/classes/META-
INF/services/org.uberfire.security.auth.AuthenticationSource
```

- g. In `$TOMCAT_DIR/webapps/business-central/WEB-INF/beans.xml`, uncomment `JAASUserGroupInfoProducer` and comment `org.jbpm.kie.services.cdi.producer.DefaultUserGroupInfoProducer` (optional). The `alternatives` part of this file should now look like this:

```
<alternatives>
  <!--
  <class>org.jbpm.kie.services.cdi.producer.DefaultUserGroupInfoPro
  ducer</class> -->
  <!-- uncomment JAASUserGroupInfoProducer when using JEE
  security on Tomcat -->

  <class>org.jbpm.kie.services.cdi.producer.JAASUserGroupInfoProduc
  er</class>
</alternatives>
```

2. If you are using a datasource other than the default provided by the underlying H2 database, you will need to setup persistence. If you are using the default H2 database, then you can ignore the rest of the steps in this procedure.

In this procedure, you configure a datasource with the JNDI name `jdbc/myDatasource` as defined in `uniqueName=jdbc/jbpm` in the `bitronix/resources.properties` file earlier (for the MySQL option).

- a. In **business-central/META-INF/context.xml**, replace the datasource JNDI name in the `<Resource>` element. The `uniqueName` attribute refers to the `resource.ds1.uniqueName` property set in `resources.properties`:

```
<Resource name="jdbc/myDatasource" uniqueName="jdbc/jbpm"
auth="Container" removeAbandoned="true"
factory="bitronix.tm.resource.ResourceObjectFactory"
type="javax.sql.DataSource"/>
```

- b. In **business-central/WEB-INF/web.xml**, replace the datasource JNDI name in the `<res-ref-name>` element with your datasource name:

```
<resource-ref>
  <description>Console DS</description>
  <res-ref-name>jdbc/myDatasource</res-ref-name>
  <res-type>javax.sql.DataSource</res-type>
  <res-auth>Container</res-auth>
</resource-ref>
```

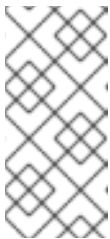
- c. Change **business-central/WEB-INF/classes/META-INF/persistence.xml**.

In this file, change the name of the hibernate dialect used for your database, if using a different database other than H2. The code below demonstrates the original database information for `persistence.xml`:

```
<property name="hibernate.dialect"
value="org.hibernate.dialect.H2Dialect"/>
```

This information can be updated in the following manner (as demonstrated with MySQL database below):

```
<property name="hibernate.dialect"
value="org.hibernate.dialect.MySQLDialect"/>
```



NOTE

The dialect for DB2 is `org.hibernate.dialect.DB2Dialect`, for DB2 on AS/400 is `org.hibernate.dialect.DB2400Dialect`, for Oracle is `org.hibernate.dialect.Oracle10gDialect` and for Microsoft SQL Server is `org.hibernate.dialect.SQLServerDialect`

- d. Change **business-central/WEB-INF/classes/META-INF/persistence.xml** file so that BPMS process engine can use the new database.

The code below demonstrates the original datasource information for `persistence.xml`:

```
<jta-data-source>java:comp/env/jdbc/jbpm</jta-data-source>
```

Change this value to the datasource defined earlier:

```
<jta-data-source>java:comp/env/jdbc/myDatasource</jta-data-source>
```

3. You can now start the JBoss Web Server to login to Business Central.

a. Run `startup.sh` in the `$TOMCAT_HOME/bin` directory.

```
./startup.sh
```

b. Navigate to <http://localhost:8080/business-central> in a web browser.

c. Login with the correct username/password as given in the `tomcat-users.xml` file where you defined user roles.

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3.2.2.3. Setting up Dashbuilder for Red Hat JBoss Web Server 2.0 (Tomcat 7)

To set up Dashbuilder on Red Hat JBoss Web Server, do the following:

1. Define users and roles in `$TOMCAT_DIR/conf/tomcat-users.xml`. Note that Dashbuilder requires users to have the role specified as `admin` and/or `analyst`. If you have already defined these users earlier for Business-Central, you don't need to define them again.
2. Enable single sign-on between Dashbuilder and Business Central by uncommenting the following lines in `$TOMCAT_DIR/conf/server.xml` file:

```
<Valve className="org.apache.catalina.authenticator.SingleSignOn" />
```

3. As with Business Central setup, if you are using a database other than the default and integrated H2 database, you will need to setup persistence.

In this procedure, you configure a datasource with the JNDI name `jdbc/dashbuilderDS` as defined in `uniqueName=jdbc/jbpm` in the bitronix `resources.properties` file:

- a. In `dashbuilder/META-INF/context.xml`, replace the datasource JNDI name in the `<Resource>` element. The `uniqueName` attribute refers to the `resource.ds1.uniqueName` property set in `resources.properties`:

```
<Resource name="jdbc/dashbuilderDS" uniqueName="jdbc/jbpm"
auth="Container" removeAbandoned="true"
factory="bitronix.tm.resource.ResourceObjectFactory"
type="javax.sql.DataSource"/>
```

**NOTE**

Depending upon your database, you may need to define some other properties here as well. For example, in an Oracle environment, this entry may look like the following listing.

```
<Resource name="jdbc/jbpm" uniqueName="jdbc/jbpm"
auth="Container" removeAbandoned="true"
factory="bitronix.tm.resource.ResourceObjectFactory"
type="javax.sql.DataSource" username="username"
password="password"
driverClassName="oracle.jdbc.xa.client.OracleXADataSou
rce" url="jdbc:oracle:thin:YOUR-URL:1521:YOUR-DB"
maxActive="8" />
```

- b. In **dashbuilder/WEB-INF/web.xml**, add the datasource JNDI name in the `<res-ref-name>` element with your datasource name:

```
<resource-ref>
  <description>Dashboard Builder Datasource</description>
  <res-ref-name>jdbc/dashbuilderDS</res-ref-name>
  <res-type>javax.sql.DataSource</res-type>
  <res-auth>Container</res-auth>
</resource-ref>
```

- c. In **dashbuilder/META-INF/context.xml**, define the transaction factory:

```
<Transaction
factory="bitronix.tm.BitronixUserTransactionObjectFactory"/>
```

- d. Update the datasource JNDI name in **dashbuilder/WEB-INF/etc/hibernate.cfg.xml** in the `<session-factory>` element:

```
<property
name="connection.datasource">java:/comp/env/jdbc/dashbuilderDS</p
roperty>
```

4. Restart Java Web server for these changes to take effect. Once restarted, you can navigate to Dashbuilder from within Business Central or directly via:
http://localhost:8080/dashbuilder.

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3.3. STARTING THE SERVER

If you have installed BPMS using either the Installer or via the EAP6 bundle install, you can now start your server in one of two modes.

**NOTE**

If you installed BPMS using the generic deployable version on Red Hat Java Web Server, the instructions for download and install also contain the instructions for starting the server. You can ignore the following discussion.

The default startup script, `standalone.sh` that Red Hat JBoss BPM Suite ships with is optimized for performance. To run your server in the performance mode, do the following:

1. On the command line, move into the `$SERVER_HOME/bin/` directory.
2. In a Unix environment run:

```
./standalone.sh
```

In a Windows environment run:

```
./standalone.bat
```

Red Hat JBoss BPM Suite also ships with a separate script, `standalone-secure.sh` that is optimized for security. This script applies a security policy by default that protects against a known security vulnerability.

**NOTE**

It is recommended that production environments use `standalone-secure.sh` script.

**WARNING**

The use of a security manager imposes a significant performance penalty that you should be aware of. The tradeoff between security and performance must be made by taking into consideration individual circumstances. See [Section 3.4, “Java Security Manager and performance management”](#).

To run your server in the secure mode with this script, do the following:

1. On the command line, move into the `$SERVER_HOME/bin/` directory.
2. In a Unix environment run:

```
./standalone-secure.sh
```

In a Windows environment run:

```
./standalone-secure.bat
```

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3.4. JAVA SECURITY MANAGER AND PERFORMANCE MANAGEMENT

As noted earlier, enabling the Java Security Manager (JSM) to sandbox the evaluation of MVEL scripts in BPMS introduces a performance hit in high load environments. Environments and performance markers must be kept in mind when deploying a BPMS application. Use the following guidelines to deploy secure and high performance BPMS applications.

- In high load environments where performance is critical it is recommended to only deploy applications that have been developed on other systems and properly reviewed. It is also recommended not to create any users with Analyst role on such systems. If these safeguards are followed, it is safe to leave JSM disabled on these systems so it does not introduce any performance degradation.
- In testing and development environments without high loads, or in environments where rule and process authoring is exposed to external networks, it is recommended to have JSM enabled in order to achieve security benefits of properly sandboxed evaluation of MVEL.

Allowing users with Analyst role to log in to the Business Central console with JSM disabled is not secure and not recommended.

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CHAPTER 4. LOGGING ON TO BUSINESS CENTRAL

Log into Business Central after the server has successfully started.

1. Navigate to <http://localhost:8080/business-central> in a web browser. If the user interface has been configured to run from a domain name, substitute `localhost` for the domain name. For example <http://www.example.com:8080/business-central>.
2. Log in with the user credentials that were created during installation. For example: User = `helloworlduser` and password = `HelloWorld@123`.

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CHAPTER 5. HELLO WORLD PROJECT

To demonstrate basic features of Red Hat JBoss BPM Suite, this chapter will instruct you on how to set up the **Hello World** project with a **Hello World** business process. All that this business process will do, is display the **Hello World!** message and finish execution.

You will be instructed to do the following:

1. Create a Hello World repository in the Artifact repository.
2. Create the Hello World Project with the **HelloWorld** business process definition.
3. Model the Hello World process logic in the business process using the graphical Process Designer tool.
4. Build and deploy the project on the locally running Execution Engine.
5. Run the Hello World process.
6. Monitor the Process execution.

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5.1. CREATING REPOSITORY STRUCTURE

All business assets live in repositories that live in Organizational Units, which are directories in the Artifact repository. By default, the Artifact repository does not contain any organizational units. Therefore to be able to create your own business assets, such as a business process, you need to create an organizational unit in the Artifact repository and a (Git) repository in it. The repository can then contain your Project. A project can contain an arbitrary package structure, which allows you to structure its content into logical "directory" structure. Any package can contain your business assets (for more information on the Artifact repository, refer to the *Red Hat JBoss BPMS User Guide*).

To create the repository structure, do the following:

1. Open Business Central in your web browser (if running locally `http://localhost:8080/business-central`) and log in as a user with the **admin** role (**helloworlduser**).
2. Create an organizational unit in the Artifact repository:
 - a. Go to **Authoring** → **Administration**.
 - b. On the perspective menu, click **Organizational Units** → **Manage Organizational Units**.
 - c. In the displayed **Organizational Unit Manager** view, click **Add**.

In the displayed **Add New Organizational Unit** dialog box, define the unit properties and click **OK**:

- Name: **helloworld**
 - Owner: **helloworlduser**
3. Create a new repository in the helloworld organizational unit:

- a. Go to **Authoring** → **Administration**.
- b. On the perspective menu, click **Repositories** → **New repository**.
- c. In the displayed **Create Repository** dialog box, define the repository properties:
 - Repository Name: **helloworldrepo**
 - Organizational Unit: **helloworld**
4. Go to **Authoring** → **Project Authoring**.
5. In the Project Explorer in the organizational unit drop-down box, select **helloworld**, and in the repository drop-down box select **helloworldrepo**.

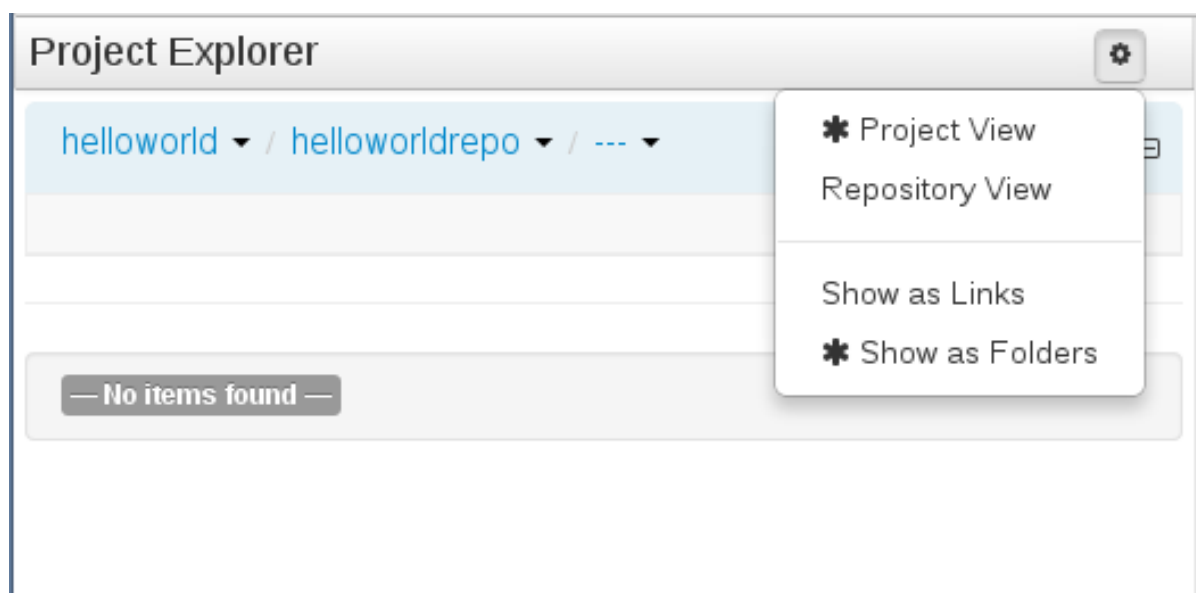


Figure 5.1. Selecting the helloworldrepo repository in the helloworld organizational group in Project Explorer

6. Create a project in the **helloworld** repository:
 - a. On the perspective menu, go to **New Item** → **Project**
 - b. In the displayed **Create new** dialog box, define your Project properties:
 - Resource Name (project name): **HelloWorld**
 - Path: **default://master@helloworldrepo/**
 - c. In the **New Project Wizard** dialog, define the maven properties of the Project. Press Enter after making each entry:
 - Group ID: **org.bpms**
 - Artifact ID: **HelloWorld**
 - Version ID: **1.0**
 - d. Click **Finish**.

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CHAPTER 6. HELLO WORLD PROCESS

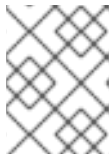
In this chapter, we will continue the Hello World example and create an end to end business process to demonstrate the creation of a basic Hello World Process.

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6.1. CREATING BUSINESS PROCESS

To create a new Business Process definition, do the following:

1. Display the Project Authoring perspective (**Authoring** → **Project Authoring**).
2. In the Project Explorer view on the left, select the `helloworld` organizational unit, the `helloworldrepo` repository, the `HelloWorld` project, and the `org.bpms` package: this defines the location in the Artifact repository, where you will create your Business Process definition.



NOTE

Make sure to select the package `org.bpms`. Selection of an incorrect package causes the deployment to fail.



3. On the perspective menu, click **New Item** → **Business Process** and define the Process definition details:
 - Enter the resource name as `HelloWorld`.
4. Click **OK**.

The Process Designer with the canvas of the created Process definition opens.

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6.2. MODELING BUSINESS PROCESS

After you have created the Business Process definition, you can design the business process in the Business Process designer: The Business Process designer should be open in a tab on the right. If you closed the tab, in the Project Explorer, click `HelloWorld` under **Business Processes** to re-open the Business Process designer. Make sure you select the correct package (`org.bpms.helloworld`). To design the Process content, do the following:

1. Expand the **Object Library** palette with Process Elements: click the double-arrow button () in the upper left hand corner of the Business Process designer tab.
2. A Start Event element appears on the canvas.
3. Click the Start Event element: the quick linker items appear around the node. Click the Task () icon to create an outgoing Sequence Flow and a Task element connected to the Start Event.

4. Create a Timer Event: from the palette, drag-and-drop the **Timer** (under **Catching Intermediate Events**) and connect the Task to the Timer Element using the quick linker menu.
5. Create the End Event element connected to the Timer Event element (either using the quick linker feature or dragging it from the palette).

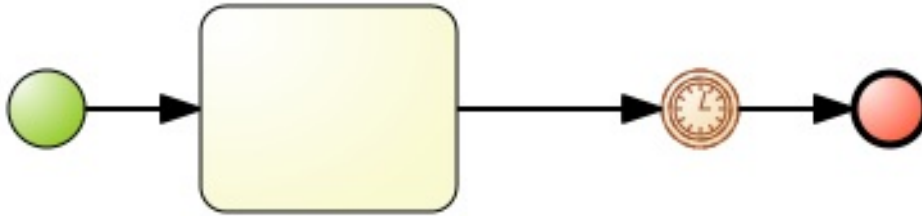



Figure 6.1. Draft of the HelloWorld Process

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6.3. DEFINING ELEMENT PROPERTIES

Now, you need to define the element properties:

1. Click the double-arrow () in the upper right hand corner to expand the **Properties** tab.
2. Click anywhere on the canvas. The **Properties** tab displays the properties of the **HelloWorld** Process. The required properties are pre-defined; however, you can change their values if necessary.
3. The Start Element and End Element have only optional properties. However, Task Elements need their type and then type-specific properties defined: click the Task element and define the required properties:

- o Name: **ScriptTask**
- o Task Type: **Script**
- o Script Language: **java**
- o Script: `System.out.println("Hello World!");`



Click **OK**.

You have defined a Task that will perform a script on execution. The script is defined in Java and executes the method `System.out.println("Hello World!");`, that means it will write **Hello World!** to the standard output of the server (by default, the standard output of the server is the console the server was started in).

4. You still need to define properties of the Timer Event to make the process wait on runtime, so you can inspect its execution: click the Timer Element and define the time it will wait for execution:
 - o Edit Time Duration: **1m** and press Enter.

The Process will therefore wait for 1 minute on the Timer Event after it executes the Script

Task.

5. Give the Timer Event a name via the properties, and then save your Process: open the **Save** menu () and click **Save**.
6. Click the () button on the toolbar of the Process Designer with the Process to make sure the defined Process is valid. The outline of any element with one or multiple validation mistakes turns orange (refer to the *Red Hat JBoss BPM Suite User Guide* for information on the validation feature).

Further information on Process Elements and their properties is available in the *Red Hat JBoss BPM Suite User Guide*.

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6.4. BUILDING AND DEPLOYING

Before you can instantiate, that is, run, your **Hello World** Process, you need to build the entire Project and deploy it to the Execution Server:

1. On the main menu of Business Central, go to **Authoring** → **Project Authoring**.
2. In the Project Explorer, locate the Hello World project.
3. Open the Project in the Project editor: on the perspective menu, click **Tools** → **Project Editor**.
4. Check that the correct Project details are displayed on the **Project** Screen and click the **Build & Deploy** button in the upper right hand corner of the Project Screen view.

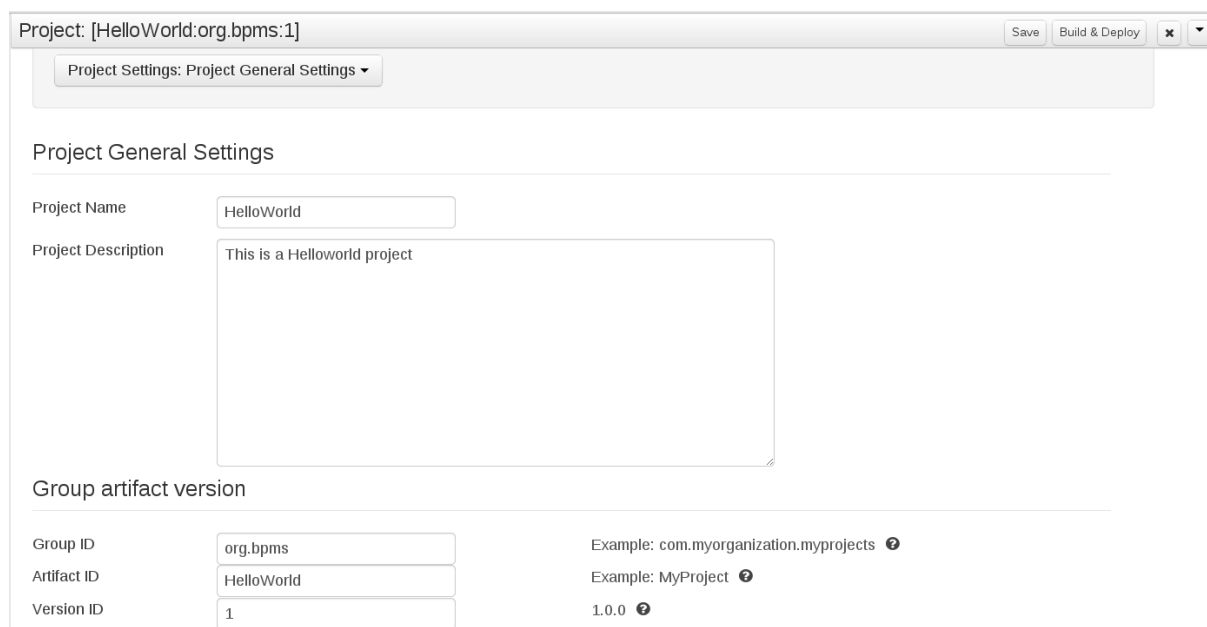


Figure 6.2. Project editor with the helloWorld project properties

A green notification appears in the upper part of the screen informing you that the project has been built and deployed to the Execution Server and is available for instantiation.

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6.5. INSTANTIATING BUSINESS PROCESS

To create an instance of the `Hello World` process, that is, to run the business process, do the following:

1. Click **Process Management** → **Process Definitions** on the main menu.
2. On the displayed **Process Definitions** tab, locate the `Hello World` process. You might need to click the **Refresh** button to have the deployment displayed on the list.
3. Click the **Start** (▶) button next to the Process definition entry and in the **Form** dialog box, click the **Start** button again to confirm that you want to instantiate the process.

The Process is instantiated with the currently logged-in user as the process owner and the process form is displayed (the form can serve to request input from a user on Process instantiation if defined; refer to the *Red Hat JBoss BPM Suite User Guide*).

The **Process Instance Details** view is displayed with details about the started Process instance. The `Hello World!` message appears in standard output, typically the terminal emulator in which the server was started. Then the Process instance waits on the Timer Event. Click on **Options** - **Process Model** to see the current execution status.

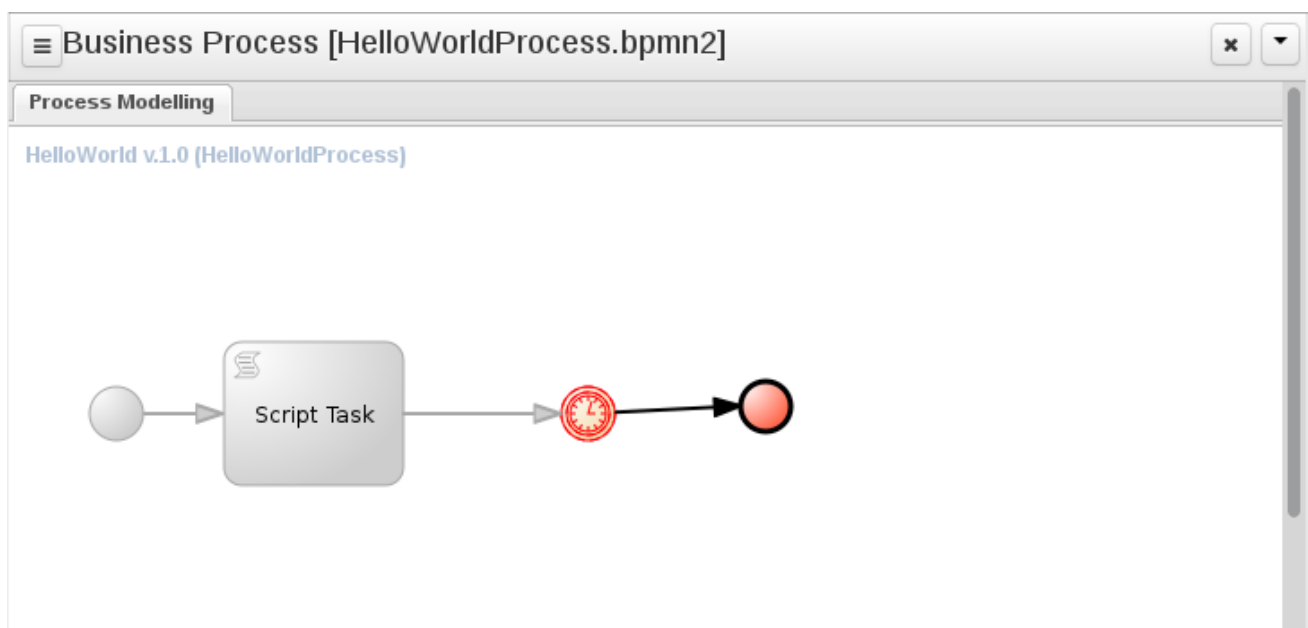






Figure 6.3. HelloWorld realtime execution diagram: the Timer Event being executed

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6.6. ABORTING BUSINESS PROCESS

At the moment, an instance of the `HelloWorld` Process is running on the Execution Server (being executed). You can check in the **Process Instances** view: to display the view, go to **Process Management** → **Process Instances**.

From here you can view the details of any process instance using the details () button and perform basic administration actions, such as, send a Signal to a Process instance () and abort it ().

Since, the **HelloWorld** Process instance is waiting on the Timer Event, abort it: click the () on the line with the information on the **HelloWorld** Process instance: the instance will disappear from the list of active Process instances and appear in the list of **Aborted** instances.


Process Instances							Bulk Actions	Refresh	✕	▼
Showing:		Active	Related To Me	Completed	Aborted					
	Name	Initiator	Version	State	Start Date	Actions				
<input type="checkbox"/>	helloWorld	helloworlduser	1.0	Aborted	17/Oct/13 17:41:54					

Figure 6.4. Aborted Process instances including the HelloWorld Process instance

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CHAPTER 7. HELLO WORLD BUSINESS RULE

Since BPMS comes with BRMS integrated, this chapter provides an introduction to how business rules work and integrate into BPMS.

You will add a new Task, a Business Rule Task, to the HelloWorld process, which will fire (check) a business rule of a particular business rule group.

Note that this is a very simple integration case and in production you might need to use a more advanced concept and techniques, such as decision tables. For more information on business rules and BRMS refer to the *Red Hat JBoss BRMS User Guide*

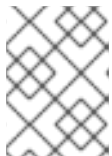
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7.1. CREATING THE BUSINESS RULE

Business rules are defined as when-then statements: when something is true, then something happens (for example, when the person is older than 18, they can access the particular content). Business rules are stored in DRL files.

To define the `helloworldrule` business rule in the `HelloWorld` project, do the following:

1. In **Project Explorer**, select the `helloworld` organizational unit, the `helloworldrepo` repository, the `HelloWorld` project, and the default package.



NOTE

Make sure to select the default package. Selection of an incorrect package causes the deployment to fail.

2. Create the DRL file:
 - a. On the perspective menu, click **New Item** → **DRL file**.
 - b. In the **Create new** dialog box, define the resource name as `helloworldrule` and check that the destination path is `default://master@helloworldrepo/HelloWorld/src/main/resources`.
 - c. Click **OK**.
3. In the displayed DRL editor with the `helloworldrule.drl` file, define the rule:

```
rule "helloworldrule"
ruleflow-group "helloworldgroup"
when
then
    System.out.println("Hello World!");
end
```

This rule does not define any when condition, that is, it will always be true when fired (called to execute) and the `Hello World!` phrase will be printed.

4. Click **Save**.

5. A **Save this item** prompt is displayed. Enter the **Check-in comment** and click **Save**.



NOTE

The check-in comment would be a short description of the kind of change you made and has to be entered every time an asset is saved.

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7.2. ADDING THE BUSINESS RULE TASK

A Business Rule Task is a task which fires rules that belong to a certain ruleflow group.


To add a Business Rule Task to your process, do the following:

1. Open your Business Process in Process Designer: in **Project Explorer**, select the **HelloWorld** project, the **org.bpms** package, click on **BUSINESS PROCESSES** and click the **HelloWorld** process.



NOTE

Make sure to select the **org.bpms** package. Selection of an incorrect package causes the deployment to fail.

2. In the displayed Business Process designer with the helloworld process, expand the **Object Library** palette with Process Elements: click the double-arrow button () in the upper left hand corner of the Business Process designer tab.
3. Expand the **Tasks** menu and drag-and-drop the Business Rule task to the canvas on the right.

Adjust flow connections so as to integrate the task into the workflow.

4. Select the Business Rule Task and define its properties in the **Properties** panel:
 - o Name: **BusinessRule**
 - o Ruleflow Group: **helloworldgroup**

The Ruleflow Group property defines the group of rules that should be fired when the Task is being executed. In this example, only one rule, the **helloworldrule** rule defined in the **helloworldrule.dr1** file, is present in the **helloworldgroup** group.

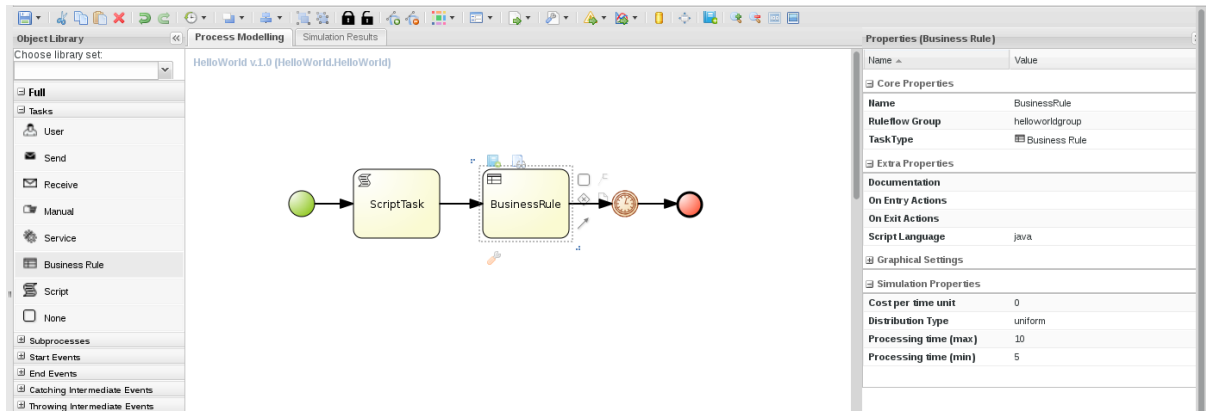


Figure 7.1. The helloworld process with the Business Rule Task and its properties

5. Click the save button to save the changes.

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7.3. BUILDING AND DEPLOYING

Build the entire Project and deploy it to the Execution Server:

1. On the main menu of Business Central, go to **Authoring** → **Project Authoring**.
2. In the Project Explorer, locate the Hello World project.
3. Open the Project in the Project editor: on the perspective menu, click **Tools** → **Project Editor**.
4. Check that the correct Project details are displayed on the **Project** Screen and click the **Build & Deploy** button in the upper right hand corner of the Project Screen view.

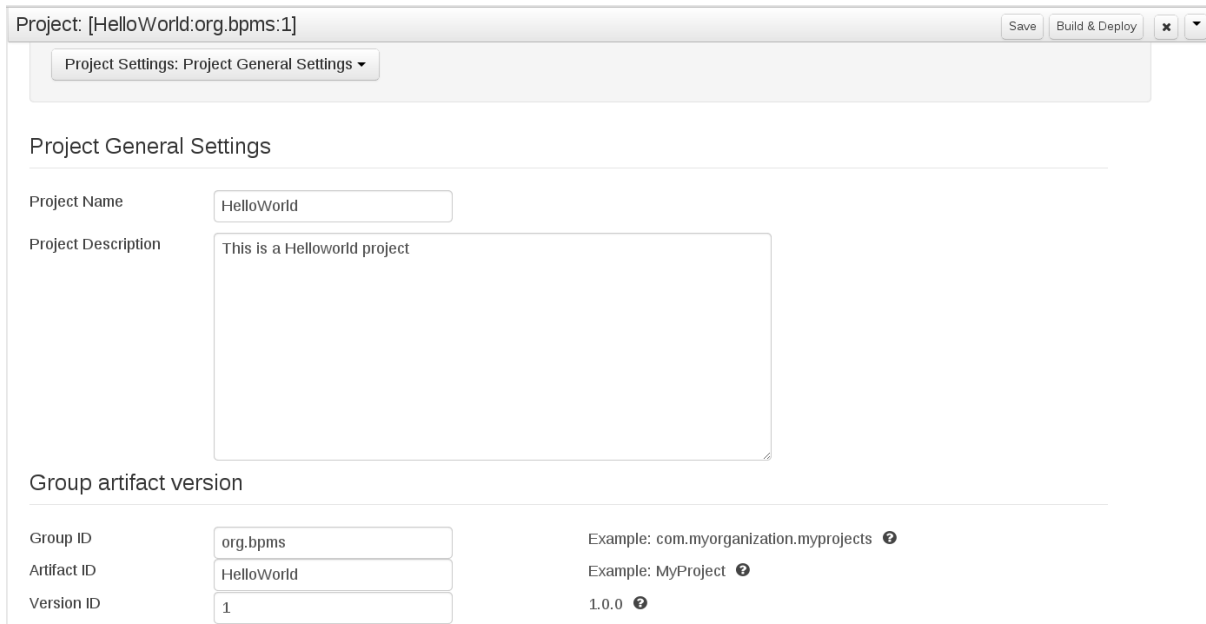


Figure 7.2. Project editor with the helloWorld project properties

A green notification appears in the upper part of the screen informing you that the project has been built and deployed to the Execution Server and is available for instantiation. Note that the previous version of the `helloworld` deployment is substituted with the new version with the Business Rule Task. To keep both deployments, change the version number of the Project in the Project editor.

[Report a bug](#)

7.4. INSTANTIATING BUSINESS PROCESS

To create an instance of the **Hello World** process, that is, to run the business process, do the following:

1. Click **Process Management** → **Process Definitions** on the main menu.
2. On the displayed **Process Definitions** tab, locate the **Hello World**. You might need to click **Refresh** to have the deployment displayed on the list.
3. Click the **Start** (▶) button next to the Process definition entry and in the **Form** dialog box, click the play (▶) button to confirm that you want to instantiate the process.

The Process is instantiated with the currently logged-in user as the process owner and the process form is displayed (the form can serve to request input from a user on Process instantiation if defined; refer to the *Red Hat JBoss BPMS User Guide*).

The **Process Instance Details** view is displayed with details about the started Process instance. The **Hello World!** message appears in standard output twice, typically the terminal emulator in which the server was started. Then the Process instance waits on the Timer Event. Click on the **Views - Process Model** to see the current execution status.

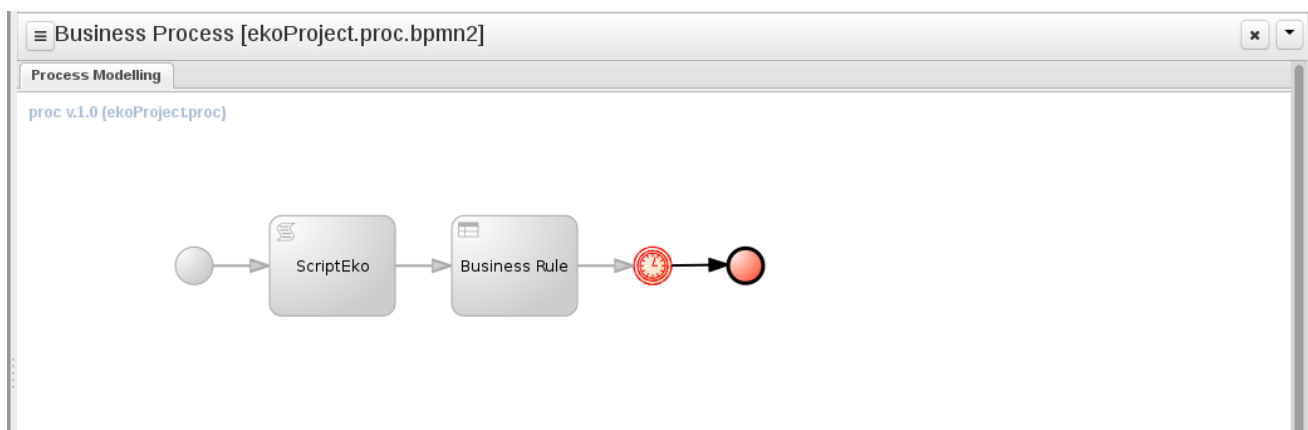


Figure 7.3. HelloWorld realtime execution diagram: the Timer Event being executed

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CHAPTER 8. BAM

8.1. ACCESSING RED HAT JBOSS BPM SUITE DASHBUILDER

Dashbuilder is the Red Hat JBoss BPM Suite web-based user interface for Business Activity Monitoring. To access the Dashbuilder from Business Central, go to **Dashboards** → **Process & Task Dashboards**.

The displayed dashboard provides statistics on runtime data selected on the left. You can create your own dashboard in the Dashbuilder. To do so, display the Dashbuilder by clicking **Dashboards** → **Business Dashboards**.

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8.2. MONITORING INSTANCES

The Dashbuilder provides a special dashboard that allows you to monitor the status of runtime data (Process instances and Tasks) on your Execution Engine.

To view this data, go to **Dashboards** → **Process & Task Dashboard**.

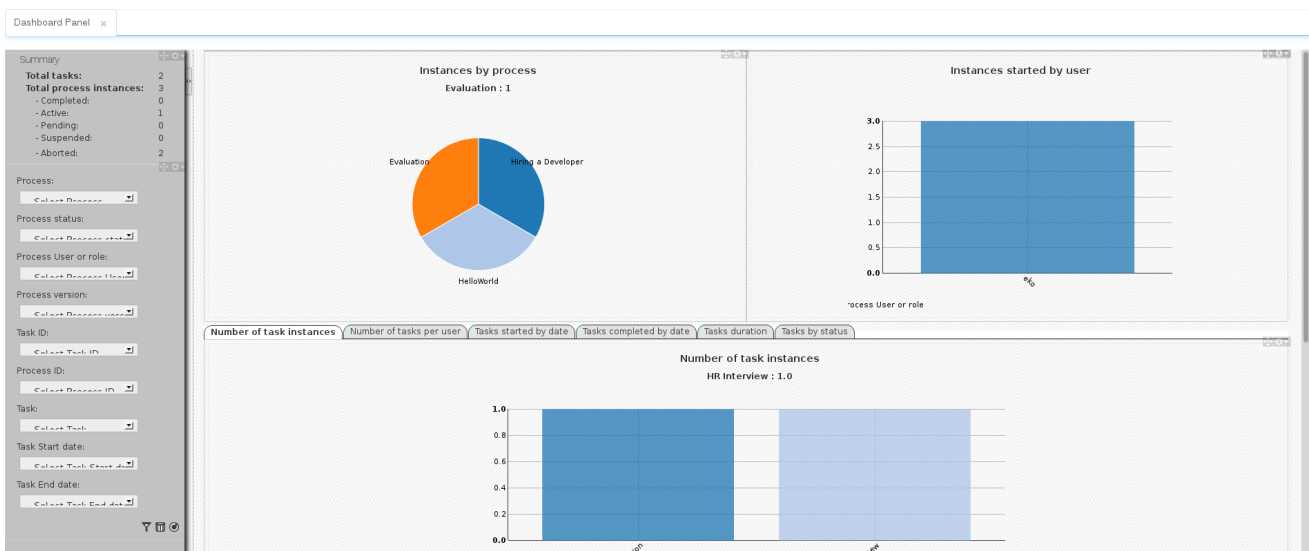


Figure 8.1. Process and Task dashboard

On the left panel, you can select an entity to display the statistics for. The charts and data on the right is then updated accordingly.

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CHAPTER 9. RED HAT JBOSS DEVELOPER STUDIO

Red Hat JBoss Developer Studio is the JBoss integrated development environment (IDE) based on Eclipse and available from the Red Hat customer support portal at <https://access.redhat.com>. JBoss Developer Studio provides plug-ins with tools and interfaces for Red Hat JBoss BRMS and Red Hat JBoss BPM Suite. These plugins are based on the community version of these products. So, the BRMS plugin is called the Drools plugin and the BPM Suite plugin is called the jBPM plugin.

Refer to the *Red Hat JBoss Developer Studio* documentation for installation and set-up instructions.

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9.1. JBOSS CENTRAL

When JBoss Developer Studio 7.0 is first started, JBoss Central is displayed in the main window of the workbench. From JBoss Central it is possible to create new projects by selecting the menu options under **Start from scratch**. Example projects can be started by selecting the links under **Start from a sample**.



NOTE

Due to issues in GWT3, JBDS should be configured to not use it. You can do this by setting the system property to 0:

```
# Don't use GTK 3
export SWT_GTK3=0
```

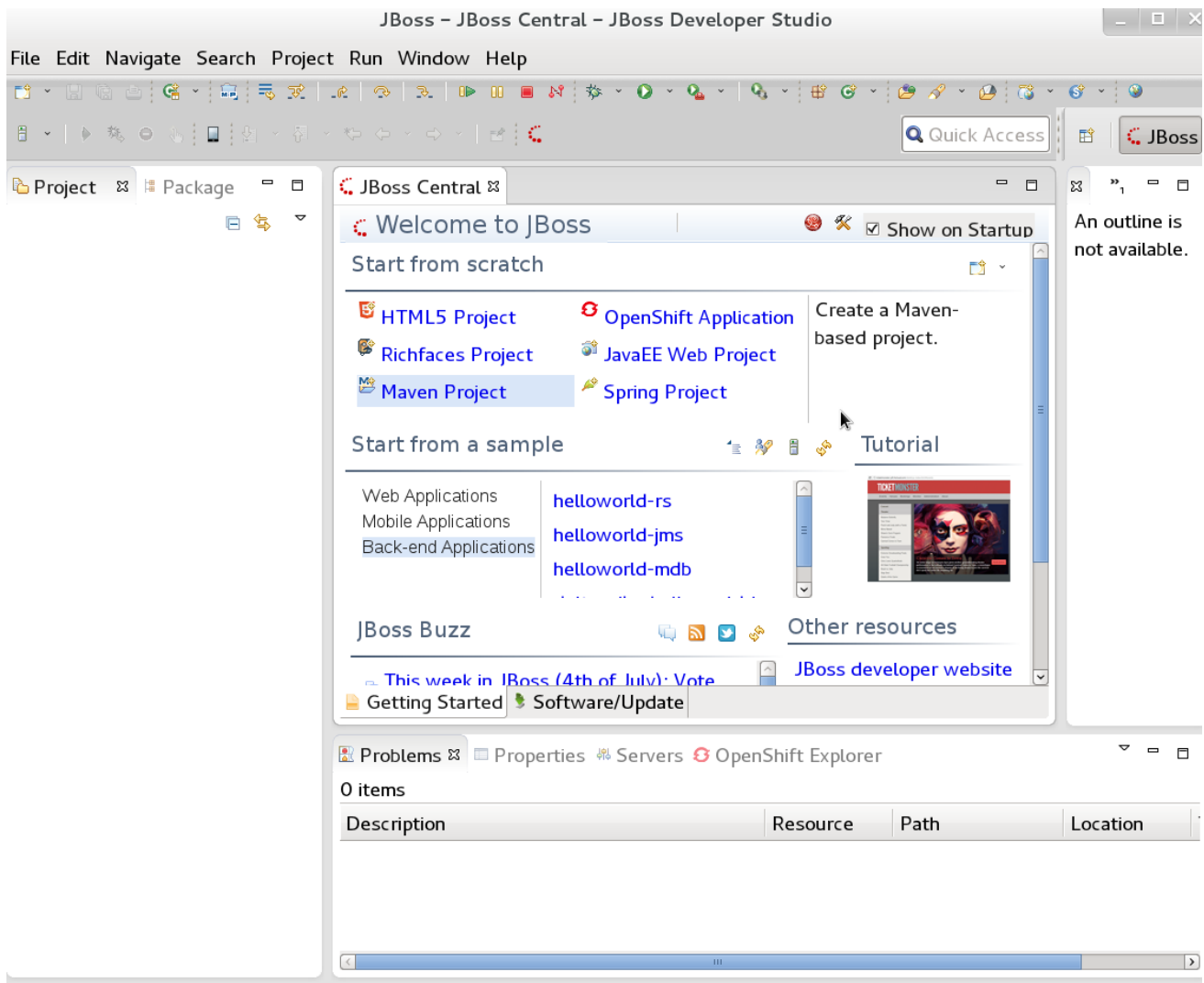


Figure 9.1. JBoss Central

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9.2. INSTALLING THE JBOSS DEVELOPER STUDIO PLUG-INS

The Drools and jBPM plug-ins for JBoss Developer Studio are available via the update site.

Procedure 9.1. Install the Drools and jBPM JBoss Developer Studio Plug-in

1. Start JBoss Developer Studio.
2. Select **Help** → **Install New Software**.
3. Click **Add** to enter the **Add Repository** menu.
4. Give the software site a name next to **Name** field and add the following url in the **Location** field: <https://devstudio.jboss.com/updates/7.0/integration-stack/>
5. Click **OK**
6. Select the **JBoss Business Process and Rule Development** feature from the available options and click **Next** and then **Next** again.
7. Read the license and accept it by selecting the appropriate radio button, and click **Finish**.

8. After installation of the plug-ins has completed, restart JBoss Developer Studio.

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9.3. SETTING THE DROOLS RUNTIME

In order to use the JBoss BRMS plug-in with Red Hat JBoss Developer Studio, it is necessary to set up the runtime.

A runtime is a collection of jar files that represent a specific release of the software and provides libraries needed for compilation and running of your business assets.

Procedure 9.2. Configure BRMS Runtime

1. Extract the runtime jar files located in the `jboss-brms-engine.zip` archive of the JBoss BRMS Generic Deployable zip archive (not the EAP6 deployable zip archive) available from [Red Hat Customer Portal](#).
2. From the JBoss Developer Studio menu, select **Window** and click **Preferences**.
3. Select **Drools** → **Installed Drools Runtimes**.
4. Click **Add . . .**; provide a name for the new runtime, and click **Browse** to navigate to the directory where you extracted the runtime files in step 1. Click **OK** to register the selected runtime in JBDS.
5. Mark the runtime you have created as the default Drools runtime by clicking on the check box next to it.
6. Click **OK**. If you have existing projects, a dialog box will indicate that you have to restart JBoss Developer Studio to update the Runtime.

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9.4. SETTING THE JBPM RUNTIME

In order to use the jBPM plug-in with Red Hat JBoss Developer Studio, it is necessary to set up the runtime.

A runtime is a collection of jar files that represent a specific release of the software.

If you have previously downloaded the JBoss BPM Suite Generic Deployable zip archive from [Red Hat Customer Portal](#), the jar files that make up the runtime are located in the `jboss-bpms-engine.zip` archive.

Procedure 9.3. Configure jBPM Runtime

1. From the JBoss Developer Studio menu, select **Window** and click **Preferences**.
2. Select **jBPM** → **Installed jBPM Runtimes**.
3. Click **Add . . .**; provide a name for the new runtime, and click **Browse** to navigate to the directory where the runtime is located.

4. Click **OK**, select the new runtime and click **OK** again. If you have existing projects, a dialog box will indicate that you have to restart JBoss Developer Studio to update the Runtime.

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9.5. CONFIGURING THE JBOSS BPM SUITE SERVER

JBoss Developer Studio can be configured to run the Red Hat JBoss BPM Suite Server.

Procedure 9.4. Configure the Server

1. Open the jBPM view by selecting **Window** → **Open Perspective** → **Other** and select **jBPM** and click **OK**.
2. Add the server view by selecting **Window** → **Show View** → **Other...** and select **Server** → **Servers**.
3. Open the server menu by right clicking the Servers panel and select **New** → **Server**.
4. Define the server by selecting **JBoss Enterprise Middleware** → **JBoss Enterprise Application Platform 6.1+** and clicking **Next**.
5. Set the home directory by clicking the **Browse** button. Navigate to and select the installation directory for JBoss EAP 6.1.1 which has JBoss BPM Suite installed.
6. Provide a name for the server in the **Name** field, make sure that the configuration file is set, and click **Finish**.

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9.6. IMPORTING PROJECTS FROM A GIT REPOSITORY INTO JBOSS DEVELOPER STUDIO

JBoss Developer Studio can be configured to connect to a central Git asset repository. The repository is the space where versions of rules, models, functions and processes are stored. This Git repository must already be defined by the KIE Workbench.

Users can either clone a remote Git repository or import a local Git repository.

Procedure 9.5. Cloning a Remote Git Repository

1. Start the Red Hat JBoss BPM Suite server (if not already running) by selecting the server from the server tab and click the start icon.
2. Simultaneously, start the Secure Shell server, if not running already, by using the following command. The command is Linux and Mac specific only. On these platforms, if sshd has already been started, this command will fail and you may safely ignore this step.

```
■ /sbin/service sshd start
```

3. In JBoss Developer Studio, select **File** → **Import...** and navigate to the Git folder. Open the Git folder to select **Projects from Git** and click **Next**.
4. Select the repository source as **Clone URI** and click **Next**.

5. Enter the details of the Git repository in the next window and click **Next**.

Figure 9.2. Git Repository Details

6. Select which branch you want to import in the following window and click **Next**.
7. You will be presented with the option to define the local storage for this project. Enter (or select) a non-empty directory, make any configuration changes and click **Next**.
8. Import the project as a general project in the following window and click **Next**. Name the project and click **Finish**.

Procedure 9.6. Importing a Local Git Repository

1. Start the Red Hat JBoss BPM Suite server (if not already running) by selecting the server from the server tab and click the start icon.
2. In JBoss Developer Studio, select **File** → **Import...** and navigate to the Git folder. Open the Git folder to select **Projects from Git** and click **Next**.

3. Select the repository source as **Existing local repository** and click **Next**.

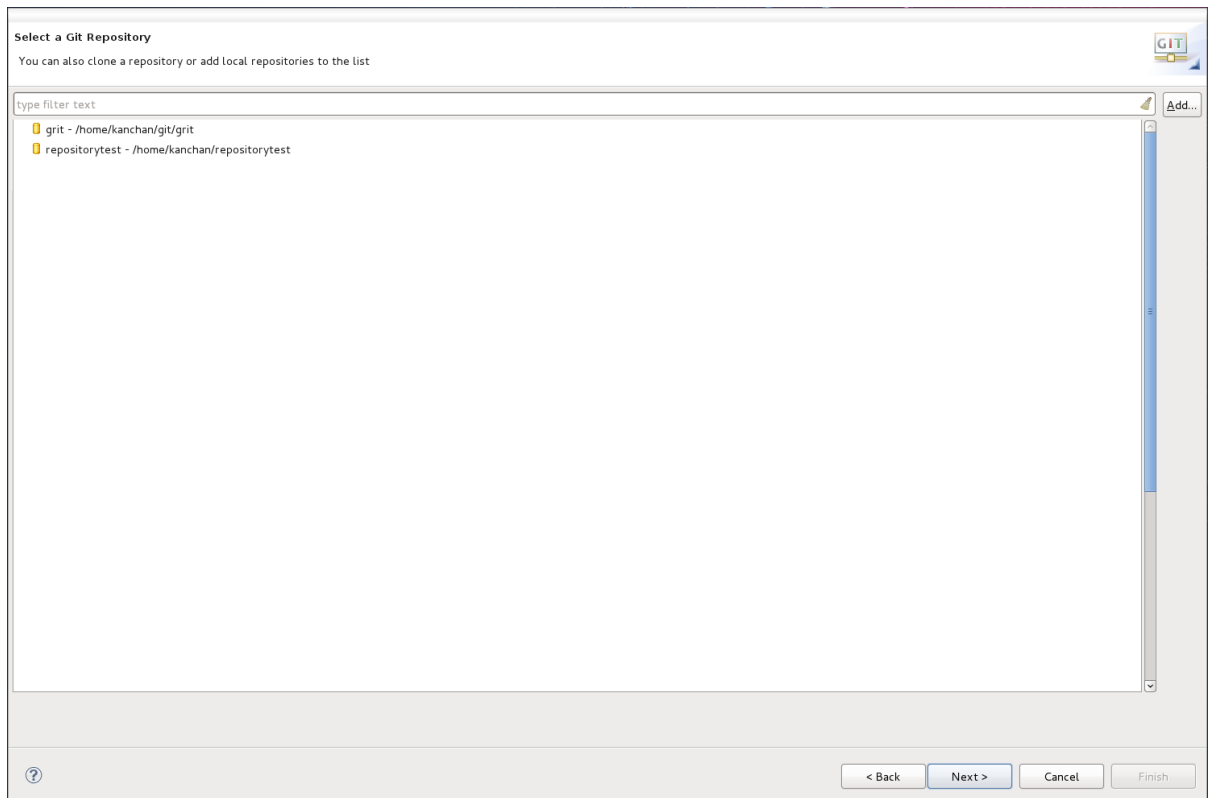


Figure 9.3. Git Repository Details

4. Select the repository that is to be configured from the list of available repositories and click **Next**.
5. In the dialog that opens, select the radio button **Import as general project** from the **Wizard for project import group** and click **Next**. Name the project and click **Finish**.

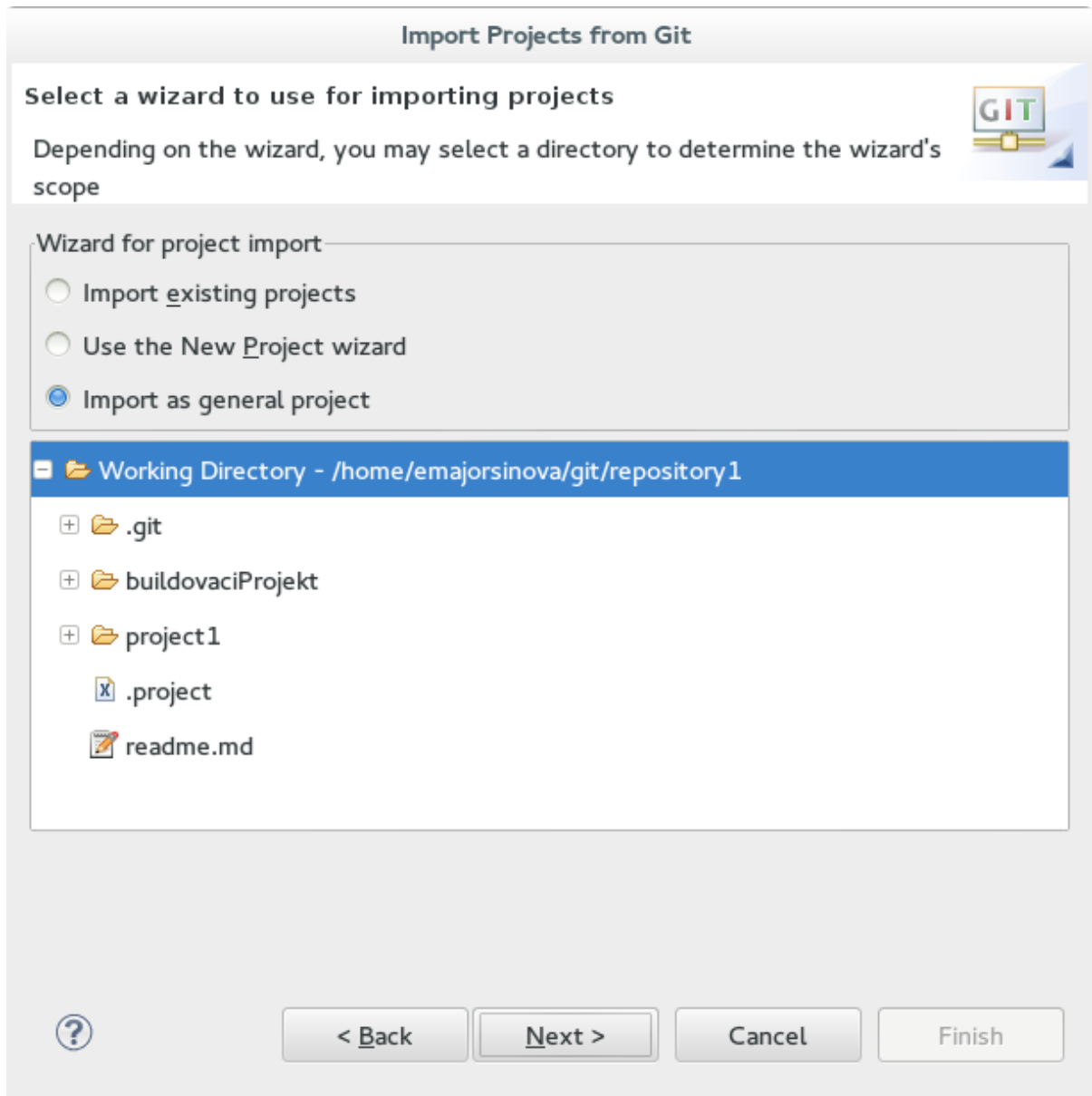


Figure 9.4. Wizard for Project Import

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9.7. CREATING A DROOLS PROJECT

Procedure 9.7. Creating a New Red Hat JBoss Developer Studio Project

1. From the main menu, select **File** → **New** → **Project**.

Select **Drools** → **Drools Project** and click **Next**.

2. Enter a name for the project into the **Project name**: text box and click **Next**.



NOTE

JBoss Developer Studio provides the option to add a sample HelloWorld Rule file to the project. Accept this default by clicking **Next** to test the sample project in the following steps.

3. Select the Drools runtime (or use the default).
4. Select code compatible with **Drools 6.0.x**. Enter a **GroupID**, an **ArtifactID**, and **Version**, and click **Finish**.
5. To test the project, right click the Java file that contains the main method and select **Run** → **run as** → **Java Application**.

The output will be displayed on the console tab.

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9.8. CREATING A JBPM PROJECT

Procedure 9.8. Creating a New Red Hat JBoss Developer Studio Project

1. From the main menu, select **File** → **New** → **Project**.
Select **jBPM** → **jBPM Project** and click **Next**.
2. Enter a name for the project into the **Project name:** text box and click **Next**.



NOTE

JBoss Developer Studio provides the option to add a sample HelloWorld Rule file to the project. Accept this default by clicking **Next** to test the sample project in the following steps.

3. Select the jBPM runtime (or use the default).
4. Select generate code compatible with **jBPM 6 or above**, and click **Finish**.
5. To test the project, right click the Java file that contains the main method and select **Run** → **run as** → **Java Application**.

The output will be displayed in the console tab.

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CHAPTER 10. BUSINESS RESOURCE PLANNER

Business Resource Planner is available as a technical preview with Red Hat JBoss BPM Suite. Business Resource Planner is a lightweight, embeddable planning engine that optimizes planning problems. It helps normal Java™ programmers solve planning problems efficiently, and it combines optimization heuristics and metaheuristics with very efficient score calculations.

Planner helps solve various use cases like the following:

- **Employee/Patient Rosters.** Planner helps create timetables for nurses and keeps track of patient bed management.
- **Educational Timetables.** Planner helps schedule lessons, courses, exams, and conference presentations.
- **Shop Schedules:** Planner tracks car assembly lines, machine queue planning, and workforce task planning.
- **Cutting Stock:** Planner minimizes waste by reducing the consumption of resources such as paper and steel.

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10.1. INSTALLING BUSINESS RESOURCE PLANNER

1. Navigate to the [Red Hat Customer Portal](#) and log in with your user credentials.
2. Select **Downloads** → **Product Downloads**.
3. In the **Product Downloads** page that opens, click **Red Hat JBoss BPM Suite**.
4. From the **Version** drop-down menu, select version 6.0.3.
5. Select **Red Hat JBoss BPM Suite 6.0.3 Business Resource Planner** and then click **Download**.

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10.2. RUNNING THE BUSINESS RESOURCE PLANNER EXAMPLES

1. On the command line, move into the `examples/` directory.
2. In a Unix environment, run the following command:

```
./runExamples.sh
```

In a Windows environment, run the following command:

```
./runExamples.bat
```

3. Pick an example from the Examples GUI application that opens and run it in your favorite IDE.

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APPENDIX A. REVISION HISTORY

Revision 1.0.0-35

Mon Dec 01 2014

Vikram Goyal

Built from Content Specification: 22690, Revision: 729898 by vigoyal