



# **Red Hat Process Automation Manager 7.1**

## **Installing and configuring Process Server on IBM WebSphere Application Server**



# Red Hat Process Automation Manager 7.1 Installing and configuring Process Server on IBM WebSphere Application Server

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## Abstract

This document describes how to configure IBM WebSphere Application Server for Process Server and how to install Process Server on that IBM server instance.

## Table of Contents

|  |           |
|--|-----------|
| <b>PREFACE</b> .....   | <b>3</b>  |
| <b>CHAPTER 1. RED HAT PROCESS SERVER</b> .....   | <b>4</b>  |
| <b>CHAPTER 2. IBM WEBSHERE APPLICATION SERVER</b> .....  | <b>5</b>  |
| <b>CHAPTER 3. INSTALLING AND RUNNING IBM WEBSHERE APPLICATION SERVER</b> .....   | <b>6</b>  |
| <b>CHAPTER 4. CONFIGURING IBM WEBSHERE APPLICATION SERVER FOR PROCESS SERVER</b> .....   | <b>8</b>  |
| 4.1. ENABLING ADMINISTRATIVE SECURITY .....  | 8         |
| 4.2. CONFIGURING JDBC DATA SOURCES IN IBM WEBSHERE APPLICATION SERVER .....  | 9         |
| 4.3. CONFIGURING JAVA MESSAGE SERVICE (JMS) .....  | 10        |
| 4.3.1. Create a service bus and add IBM WebSphere .....  | 10        |
| 4.3.2. Create JMS connection factories .....   | 10        |
| 4.3.2.1. JMS connection factories for Process Server .....   | 11        |
| 4.3.3. Create JMS queues .....   | 11        |
| 4.3.3.1. JMS queues for Process Server .....   | 12        |
| 4.3.4. Create JMS activation specifications .....  | 12        |
| 4.3.4.1. JMS activation specifications for Process Server .....  | 13        |
| 4.4. SETTING SYSTEM PROPERTIES IN IBM WEBSHERE APPLICATION SERVER .....  | 13        |
| 4.5. STOPPING AND RESTARTING IBM WEBSHERE APPLICATION SERVER .....   | 16        |
| <b>CHAPTER 5. INSTALLING AND RUNNING PROCESS SERVER WITH IBM WEBSHERE APPLICATION SERVER</b> .....                                     | <b>18</b> |
| 5.1. CREATING THE PROCESS SERVER GROUP AND ROLE .....  | 19        |
| 5.2. MAPPING THE PROCESS SERVER GROUP AND ROLE .....   | 19        |
| 5.3. CONFIGURING CLASS LOADING FOR PROCESS SERVER .....  | 20        |
| 5.4. VERIFYING THE INSTALLATION .....  | 20        |
| <b>CHAPTER 6. INSTALLING AND RUNNING THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER WITH IBM WEBSHERE APPLICATION SERVER</b> ..... | <b>22</b> |
| 6.1. CONFIGURING CLASS LOADING FOR THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER .....  | 23        |
| 6.2. SETTING SYSTEM PROPERTIES FOR THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER .....  | 23        |
| 6.3. MAPPING THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER GROUP AND ROLE .....   | 25        |
| 6.4. VERIFYING THE INSTALLATION .....  | 25        |
| <b>CHAPTER 7. NEXT STEPS</b> .....   | <b>27</b> |
| <b>APPENDIX A. VERSIONING INFORMATION</b> .....  | <b>28</b> |



# PREFACE

As a system administrator, you can configure your IBM WebSphere Application Server for Red Hat Process Server and install Process Server on that IBM server instance.

## Prerequisites

- An IBM WebSphere Application Server instance version 9.0 or later is installed. For complete installation instructions, see the [IBM WebSphere Application Server product page](#).
- You have access to the WebSphere Integrated Solutions Console, usually at <http://<HOST>:9060/ibm/console>.

## CHAPTER 1. RED HAT PROCESS SERVER

The Red Hat Process Server is the server where the rules and other artifacts for Red Hat Process Automation Manager are stored. Process Server is a standalone, built-in component that can be used to instantiate and execute rules through interfaces available for REST, Java Message Service (JMS), or Java client-side applications, as well as to manage processes, jobs, and Red Hat Business Optimizer functionality through solvers.

Created as a web deployable WAR file, Process Server can be deployed on any web container. The current version of the Process Server is included with default extensions for both Red Hat Decision Manager and Red Hat Process Automation Manager.

Process Server has a low footprint with minimal memory consumption and therefore can be deployed easily on a cloud instance. Each instance of this server can open and instantiate multiple containers, which enables you to execute multiple rule services in parallel.

Process Server can be integrated with other application servers, such as Oracle WebLogic Server or IBM WebSphere Application Server, to streamline Red Hat Process Automation Manager application management.



## CHAPTER 2. IBM WEBSPPHERE APPLICATION SERVER

IBM WebSphere Application Server is a flexible and secure web application server that hosts Java-based web applications and provides Java EE-certified run time environments. IBM WebSphere 9.0 supports Java SE 8 and is fully compliant with Java EE 7 since version 8.5.5.6.

## CHAPTER 3. INSTALLING AND RUNNING IBM WEBSHERE APPLICATION SERVER

IBM WebSphere Application Server must be installed and running for you to apply many of the configurations that accommodate Process Server. This section describes how to install and start IBM WebSphere.

For the most up-to-date and detailed installation instructions, see the [IBM WebSphere Application Server product page](#).

### Procedure

1. Download IBM Installation Manager version 1.8.5 or later from the [IBM Installation Manager and Packaging Utility download links](#) page. IBM Installation Manager is required for installing IBM WebSphere.

2. Extract the downloaded archive and run the following command as the root user in the new directory:

```
sudo ./install
```

The **IBM Installation Manager** opens.

3. Go to **File** → **Preferences** and click **Add Repository**.
4. In the **Add Repository** window, enter the repository URL for IBM WebSphere 9.0. You can find all the repository URLs in the [Online product repositories for IBM WebSphere Application Server offerings](#) page of the IBM Knowledge Center. For example:

```
http://www.ibm.com/software/repositorymanager/V9WASILAN
```

5. In your command terminal, navigate to the IBM WebSphere Application Server folder location that you specified during the installation.
6. Change to the **/bin** directory and run a command similar to the following example to create an IBM WebSphere profile, user name, and password. A profile defines the run time environment. The profile includes all the files that the server processes in the runtime environment and that you can change. The user is required for login.

```
sudo ./manageprofiles.sh -create -profileName testprofile -  
profilePath /profiles/testprofile -adminUserName websphere -  
adminPassword password123
```

7. In your command terminal, navigate to the **bin** directory within the profile that you created (for example, **/profiles/testprofile/bin**) and run the following command to start the IBM WebSphere Application Server instance:

```
sudo ./startServer.sh <SERVER_NAME>
```

**<SERVER\_NAME>** is the IBM WebSphere Application Server name defined in **Servers** → **Server Types** → **IBM WebSphere Application Servers** of the WebSphere Integrated Solutions Console.

8. Open the following URL in a web browser:

```
http://<HOST>:9060/ibm/console
```

**<HOST>** is the system name or IP address of the target server.

For example, to start the WebSphere Integrated Solutions Console for a local instance of IBM WebSphere running on your system, enter the following URL in a web browser:

```
http://localhost:9060/ibm/console
```

9. When the login page of the WebSphere Integrated Solutions Console appears, enter your administrative credentials.

## CHAPTER 4. CONFIGURING IBM WEBSPHERE APPLICATION SERVER FOR PROCESS SERVER

Before you deploy Process Server with IBM WebSphere Application Server, you must configure system properties, security settings, JMS requirements, and other properties on IBM WebSphere. These configurations promote an optimal integration with Process Server.

### Prerequisites

- IBM WebSphere Application Server is installed and running.
- You are logged in to the WebSphere Integrated Solutions Console.

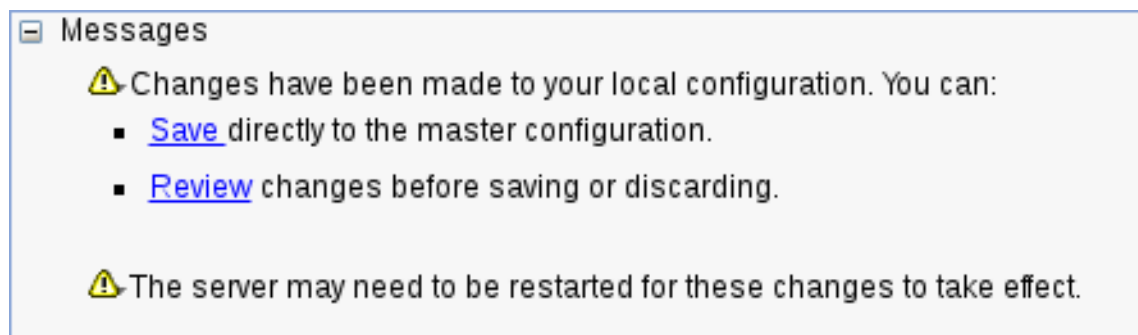
### 4.1. ENABLING ADMINISTRATIVE SECURITY

You must enable administrative security in the WebSphere Integrated Solutions Console so that you have the required permissions to create users and groups.

#### Procedure

1. In the WebSphere Integrated Solutions Console, click **Security** → **Global Security** and ensure that the option **Enable Application Security** is selected. This may already be selected and overridden at the server level.
2. Click **Security Configuration Wizard** and click **Next**.
3. Select the repository that contains the user information. For example, select **Federated repositories** for local configurations.
4. Click **Next**.
5. Enter the **Primary administrative user name** and **Password**.
6. Click **Next** and then click **Finish**.
7. Click **Save** in the **Messages** window to save your changes to the master configuration.

**Figure 4.1. Save security changes**



8. In your command terminal, navigate to the IBM WebSphere Application Server **/bin** directory location that you specified during installation, and run the following commands to stop and restart IBM WebSphere to apply the security changes:

```
sudo ./stopServer.sh <SERVER_NAME>
```

```
sudo ./startServer.sh <SERVER_NAME>
```

**<SERVER\_NAME>** is the IBM WebSphere Application Server name defined in **Servers** → **Server Types** → **IBM WebSphere Application Servers** of the WebSphere Integrated Solutions Console.

## 4.2. CONFIGURING JDBC DATA SOURCES IN IBM WEBSPHERE APPLICATION SERVER

A data source is an object that enables a Java Database Connectivity (JDBC) client, such as an application server, to establish a connection with a database. Applications look up the data source on the Java Naming and Directory Interface (JNDI) tree or in the local application context and request a database connection to retrieve data. You must configure data sources for IBM WebSphere Application Server to ensure proper data exchange between the servers and the designated database.

### Prerequisite

The JDBC providers that you want to use to create database connections are configured on all servers on which you want to deploy the data source. For more information about JDBC providers, see [Configuring a JDBC provider](#) in the IBM Knowledge Center.

### Procedure

1. In the WebSphere Integrated Solutions Console, navigate to **Resources** → **JDBC** → **Data sources**.
2. Select the scope at which applications can use the data source. You can choose a cell, node, cluster, or server.
3. Click **New** to open the **Create a data source** wizard.
4. Enter a unique name in the **Data source name** field and a Java Naming and Directory Interface (JNDI) name in the **JNDI name** field. The application server uses the JNDI name to bind resource references for an application to this data source.  
Do not assign duplicate JNDI names across different resource types, such as data sources versus J2C connection factories or JMS connection factories.

Do not assign duplicate JNDI names for multiple resources of the same type in the same scope.

5. Click **Next** and choose **Select an existing JDBC provider** if the provider has been created, or choose **Create new JDBC provider** to define details for a new provider. (Creating the JDBC provider before this point is recommended, as a prerequisite to adding data sources.)
6. On the **Enter database specific properties for the data source** panel, click **Use this data source in container managed persistence (CMP)** if container managed persistence (CMP) enterprise beans must access this data source. Then fill in any other database-specific properties.
7. Optionally, configure the security aliases for the data source. You can select **None** for any of the authentication methods, or choose one of the following types:
  - **Component-managed authentication alias:** Specifies an authentication alias to use when the component resource reference res-auth value is **Application**. To define a new alias, navigate to **Related Items** → **J2EE Connector Architecture (J2C) authentication data**

**entries.** A component-managed alias represents a combination of ID and password that is specified in an application for data source authentication. Therefore, the alias that you set on the data source must be identical to the alias in the application code.

- **Mapping-configuration alias:** Used only in the absence of a login configuration on the component resource reference. The specification of a login configuration and the associated properties on the component resource reference is the preferred way to define the authentication strategy when the `res-auth` value is set to **Container**. If you specify the **DefaultPrincipalMapping** login configuration, the associated property is a JAAS - J2C authentication data entry alias.
  - **Container-managed authentication alias:** Used only in the absence of a login configuration on the component resource reference. The specification of a login configuration and the associated properties on the component resource reference determines the container-managed authentication strategy when the `res-auth` value is set to **Container**.
8. Click **Next**, review the information for the data source, and click **Finish** to save the configuration and exit the wizard.
- The **Data sources** panel displays your new configuration in a table along with any other data sources that are configured for the same scope.

For more information about IBM WebSphere Application Server data sources, see [Configuring a JDBC provider and data source](#) in the IBM Knowledge Center.

## 4.3. CONFIGURING JAVA MESSAGE SERVICE (JMS)

The Java Message Service (JMS) is a Java API that Process Server uses to exchange messages with other application servers such as Oracle WebLogic Server and IBM WebSphere Application Server. You must configure your application server to send and receive JMS messages through Process Server to ensure proper collaboration between the two servers.

### 4.3.1. Create a service bus and add IBM WebSphere

You must create a service bus and add the IBM WebSphere Application Server as a member of it in order to use JMS.

#### Procedure

1. In the WebSphere Integrated Solutions Console, navigate to **Service Integration** → **Buses** → **New**.
2. Enter a new bus name and clear the **Bus Security** option.
3. Click **Next** and then **Finish** to create the service bus.
4. Select the service bus that you have created.
5. Under **Topology**, click **Bus Members** → **Add**.
6. In the **Add a New Bus Member** wizard, choose the IBM WebSphere Application Server and the type of message store for persistence. You can also specify the properties of the message store.
7. Click **Finish** to add the new bus member.

### 4.3.2. Create JMS connection factories

To enable messaging with Process Server, you must create certain JMS connection factories for sending and receiving messages.

### Prerequisite

You have created a service bus for IBM WebSphere Application Server.

### Procedure

1. In the WebSphere Integrated Solutions Console, navigate to **Resources** → **JMS** → **Connection Factories**.
2. Select the correct scope and click **New**.
3. Select the **Default Messaging Provider** option and click **OK**.
4. For each of the following required connection factories, enter the name of the connection factory (for example, **KIE.SERVER.REQUEST**) and the JNDI name (for example, **jms/cf/KIE.SERVER.REQUEST**), and then select the service bus from the **Bus Name** drop-down list. Leave the default values for the remaining options.
5. Click **Apply** and **Save** to save the changes to the master configuration, and repeat for each required factory.

#### 4.3.2.1. JMS connection factories for Process Server

The following are the required Java Message Service (JMS) connection factories that enable JMS messaging with Process Server:

**Table 4.1. Required JMS connection factories for Process Server**

| Name                       | Default value                     | Used for   |
|----------------------------|-----------------------------------|--|
| <b>KIE.SERVER.REQUEST</b>  | <b>jms/cf/KIE.SERVER.REQUEST</b>  | Sending all requests to Process Server             |
| <b>KIE.SERVER.RESPONSE</b> | <b>jms/cf/KIE.SERVER.RESPONSE</b> | Receiving all responses produced by Process Server |
| <b>KIE.SERVER.EXECUTOR</b> | <b>jms/cf/KIE.SERVER.EXECUTOR</b> | Process Server executor services                   |

#### 4.3.3. Create JMS queues

JMS queues are the destination end points for point-to-point messaging. You must create certain JMS queues to enable JMS messaging with Process Server.

### Prerequisite

You have created a service bus for IBM WebSphere Application Server.

### Procedure

1. In the WebSphere Integrated Solutions Console, navigate to **Resources** → **JMS** → **Queues**.

2. Select the correct scope and click **New**.
3. Select the **Default Messaging Provider** option and click **OK**.
4. For each of the following required queues, enter the name of the queue (for example, **KIE.SERVER.REQUEST**) and the JNDI name (for example, **jms/queue/KIE.SERVER.REQUEST**), and then select the service bus from the **Bus Name** drop-down list.
5. From the **Queue Name** drop-down list, select the **Create Service Integration Bus Destination**, enter a unique identifier, and select the bus member that you created previously.
6. Click **Apply** and **Save** to save the changes to the master configuration, and repeat for each required queue.

#### 4.3.3.1. JMS queues for Process Server

The following are the required Java Message Service (JMS) queues that enable JMS messaging with Process Server:

**Table 4.2. Required JMS queues for Process Server**

| Name                       | Default value                        | Used for   |
|----------------------------|--------------------------------------|--|
| <b>KIE.SERVER.REQUEST</b>  | <b>jms/queue/KIE.SERVER.REQUEST</b>  | Sending all requests to Process Server             |
| <b>KIE.SERVER.RESPONSE</b> | <b>jms/queue/KIE.SERVER.RESPONSE</b> | Receiving all responses produced by Process Server |
| <b>KIE.SERVER.EXECUTOR</b> | <b>jms/queue/KIE.SERVER.EXECUTOR</b> | Process Server executor services                   |

#### 4.3.4. Create JMS activation specifications

A JMS activation specification is required in order to bridge the queue and the message-driven bean that enables JMS.

##### Prerequisites

- You have created a service bus for IBM WebSphere Application Server.
- You have created JMS queues.

##### Procedure

1. In the WebSphere Integrated Solutions Console, navigate to **Resources** → **JMS** → **Activation Specifications**.
2. Select the correct scope and click **New**.
3. Select the **Default Messaging Provider** option and click **OK**.
4. For each of the following required activation specifications, enter the name of the activation



specification (for example, **KIE.SERVER.REQUEST**) and the JNDI name (for example, **jms/activation/KIE.SERVER.REQUEST**), and then select the service bus from the **Bus Name** drop-down list.

- From the **Destination Type** drop-down list, select **Queue** and enter the name of the corresponding queue as a **Destination lookup** (for example, **jms/queue/KIE.SERVER.REQUEST**).
- Click **Apply** and **Save** to save the changes to the master configuration, and repeat for each required activation specification.

#### 4.3.4.1. JMS activation specifications for Process Server

The following are the required Java Message Service (JMS) activation specifications that enable JMS messaging with Process Server:

**Table 4.3. Required JMS activation specifications for Process Server**

| Name                       | Default value                             | Used for   |
|----------------------------|---|--|
| <b>KIE.SERVER.REQUEST</b>  | <b>jms/activation/KIE.SERVER.REQUEST</b>  | Sending all requests to Process Server             |
| <b>KIE.SERVER.RESPONSE</b> | <b>jms/activation/KIE.SERVER.RESPONSE</b> | Receiving all responses produced by Process Server |
| <b>KIE.SERVER.EXECUTOR</b> | <b>jms/activation/KIE.SERVER.EXECUTOR</b> | Process Server executor services                   |

## 4.4. SETTING SYSTEM PROPERTIES IN IBM WEBSHERE APPLICATION SERVER

Set the system properties listed in this section on your IBM WebSphere Application Server before you deploy Process Server.

### Procedure

- In the WebSphere Integrated Solutions Console, navigate to **Servers** → **Server Types** → **IBM WebSphere Application Servers**.
- In the list of application servers, choose the server on which you are going to deploy Process Server.
- Under the **Server Infrastructure**, click **Java and Process Management** → **Process Definition**.

**Figure 4.2. WebSphere configuration page**

Application servers

[Application servers](#) > **server1**

Use this page to configure an application server. An application server is a server that provides services required to run enterprise applications.

**Runtime** **Configuration**

---

**General Properties**

Name  
server1

Node name  
dhcp-4-116Node01

☐ Run in development mode

☒ Parallel start

☐ Start components as needed

Access to internal server classes  
Allow ▼

**Server-specific Application Settings**

ClassLoader policy  
Multiple ▼

Class loading mode  
Classes loaded with parent class loader first ▼

Apply OK Reset Cancel

**Container Settings**

- [Session management](#)
- ⊕ SIP Container Settings
- ⊕ Web Container Settings
- ⊕ Portlet Container Settings
- ⊕ EJB Container Settings
- ⊕ Container Services
- ⊕ Business Process Services

**Applications**

- [Installed applications](#)

**Server messaging**

- [Messaging engines](#)
- [Messaging engine inbound transports](#)
- [WebSphere MQ link inbound transports](#)
- [SIB service](#)

**Server Infrastructure**

- ⊖ Java and Process Management
  - [Class loader](#)
  - [Process definition](#)
  - [Process execution](#)
- ⊕ Administration
  - [Java SDKs](#)

- Under **Additional Properties**, click **Java Virtual Machine**.

**Figure 4.3. Process definition configuration page**

Application servers

[Application servers](#) > [server1](#) > Process definition

Use this page to configure a process definition. A process definition defines the command line information necessary to start or initialize a process.

Configuration

**General Properties**

Executable name

Executable arguments

Start command

Start command arguments

Stop command

Stop command arguments

Working directory

Executable target type

Executable target

**Additional Properties**

- Java Virtual Machine
- Environment Entries
- Process execution
- Process Logs
- Logging and tracing

Apply OK Reset Cancel

This opens the configuration properties for the JVM that is used to start IBM WebSphere.

- Set both the **Initial heap size** and **Maximum heap size** to **2048** and click **Apply** to increase the Java Virtual Machine (JVM) memory size. Process Server has been tested with these values. If you do not increase the JVM memory size, IBM WebSphere Application Server freezes or causes deployment errors when deploying Process Server.
- Under **Additional Properties**, click **Custom Properties**.
- Click **New** → **Custom JVM Properties** and add the following properties to IBM WebSphere:

**Table 4.4. System properties for Process Server**

| Name  | Value                                      | Description  |
|---|--|--|
| <code>kie.server.jms.queues.response</code> | <code>jms/queue/KIE.SERVER.RESPONSE</code> | The JNDI name of JMS queue for responses used by Process Server.           |
| <code>org.kie.server.domain</code>          | <code>WSLogin</code>                       | JAAS <b>LoginContext</b> domain used to authenticate users when using JMS. |

| Name  | Value  | Description  |
|---|--|--|
| <code>org.kie.server.persistence.ds</code>      | <code>jdbc/jbpm</code>   | Data source JNDI name for Process Server.  |
| <code>org.kie.server.persistence.tm</code>      | <code>org.hibernate.engine.transaction.jta.platform.internal.WebSphereJtaPlatform</code> | Transaction manager platform for setting Hibernate properties.   |
| <code>org.kie.server.persistence.dialect</code> | Example:<br><code>org.hibernate.dialect.H2Dialect</code>                                 | Specifies the Hibernate dialect to be used. Set according to data source.  |
| <code>org.kie.executor.jms.queue</code>         | <code>jms/queue/KIE.SERVER.EXECUTOR</code>   | Job executor JMS queue for Process Server.   |
| <code>org.kie.executor.jms.cf</code>            | <code>jms/cf/KIE.SERVER.EXECUTOR</code>  | Job executor JMS connection factory for Process Server.  |
| <code>org.kie.server.router</code>              | Example:<br><a href="http://localhost:9000">http://localhost:9000</a>                    | (Optional) Specifies one or more URLs for one or more Process Server routers (Smart Routers) that the application server is part of in a clustered Process Server environment.   |
| <code>org.jboss.logging.provider</code>         | <code>jdk</code>   | This property is only required where a <b>CA SiteMinder TAI (SMTAI)</b> is installed in the environment. Using this property forces Hibernate to use <b>JDK</b> instead of <b>log4j</b> for logging within Dashbuilder. <b>CA SiteMinder TAI (SMTAI)</b> contains an old version of <b>log4j</b> , which causes conflicts. |

- Click **Save** to save the changes to the master configuration.

## 4.5. STOPPING AND RESTARTING IBM WEBSHERE APPLICATION SERVER

After you have configured all required system properties in IBM WebSphere Application Server, stop and restart the IBM server to ensure that the configurations are applied.

### Procedure

In your command terminal, navigate to the IBM WebSphere Application Server **/bin** directory location that you specified during installation, and run the following commands to stop and restart IBM WebSphere to apply the configuration changes:

```
sudo ./stopServer.sh <SERVER_NAME>
```

```
sudo ./startServer.sh <SERVER_NAME>
```

**<SERVER\_NAME>** is the IBM WebSphere Application Server name defined in **Servers** → **Server Types** → **IBM WebSphere Application Servers** of the WebSphere Integrated Solutions Console.

## CHAPTER 5. INSTALLING AND RUNNING PROCESS SERVER WITH IBM WEBSHERE APPLICATION SERVER

After you have configured all required system properties in IBM WebSphere Application Server, you can install Process Server with IBM WebSphere to streamline Red Hat Process Automation Manager application management.

### Prerequisite

An IBM WebSphere Application Server instance is configured as described in [Chapter 4, Configuring IBM WebSphere Application Server for Process Server](#).

### Procedure

1. Navigate to the [Software Downloads](#) page in the Red Hat Customer Portal (login required), and select the product and version from the drop-down options:
  - **Product:** Process Automation Manager
  - **Version:** 7.1
2. Download **Red Hat Process Automation Manager 7.1.0 Process Server for All Supported EE7 Containers**.
3. Extract the **rhpm-7.1.0-kie-server-ee7.zip** archive to a temporary directory. In the following examples this directory is called **TEMP\_DIR**.
4. Repackage the **kie-server.war** directory:
  - a. Navigate to the **TEMP\_DIR/rhpm-7.1.0-kie-server-ee7/kie-server.war** directory.
  - b. Select the contents of the **TEMP\_DIR/rhpm-7.1.0-kie-server-ee7/kie-server.war** directory and create the **kie-server.zip** file.
  - c. Rename **kie-server.zip** to **kie-server.war**. This is the file that you will use to deploy Process Server.
  - d. If desired, copy the new **kie-server.war** file to a location that is more convenient to deploy from.
5. In the WebSphere Integrated Solutions Console, navigate to **Applications** → **Application Types** → **WebSphere Enterprise Applications**.
6. Click **Install**.
7. Navigate to the **kie-server.war** file that you repackaged and select it to upload.
8. Select **Fast Path** and click **Next**.  
The **Install New Application** wizard opens.
9. Change the **Application Name** to **kie-server** and click **Next**.
10. Map the Process Server modules to servers according to your specific requirements and click **Next**.

11. For **Bind Listeners for Message-Driven Beans**, select **Activation Specification** for both beans, enter `jms/activation/KIE.SERVER.REQUEST` in the **Target Resource JNDI Name** field, and enter the `jms/cf/KIE.SERVER.REQUEST` JNDI name for the **KIE.SERVER.REQUEST** connection factory.
12. In the **Map Virtual Hosts for Web Modules** section, keep the default values and click **Next**.
13. Set the context root to **kie-server**.
14. In the **Metadata for Modules** section, keep the default values and click **Next**.
15. Click **Finish** to install Process Server and click **Save** to save the changes to the master configuration.

## 5.1. CREATING THE PROCESS SERVER GROUP AND ROLE

After Process Server is installed, you must create the **kie-server** group and a user.

### Prerequisite

- Process Server is installed on the IBM WebSphere Application Server instance.

### Procedure

1. In the WebSphere Integrated Solutions Console, click **Users and Groups** → **Manage Groups**.
2. In the **Manage Groups** screen, click **Create**.
3. In the **Create a Group** screen, enter **kie-server** in the **Group name** box, then click **Create**.
4. To create a user to add to the **kie-server** group, click **Users and Groups** → **Manage Users**.
5. In the **Create a User** screen, complete the required information.
6. Click **Group Membership**.
7. In the **Group Membership** screen, click **kie-server**, move it to **Mapped To**, and click **Close**.
8. On the **Create a User** screen click **Create**.

## 5.2. MAPPING THE PROCESS SERVER GROUP AND ROLE

After Process Server is installed, you must map the **kie-server** role to the **kie-server** group in the WebSphere Integrated Solutions Console to run Process Server.

### Prerequisites

- Process Server is installed on the IBM WebSphere Application Server instance.
- IBM WebSphere Application Server has the **kie-server** group with at least one user.

### Procedure

1. In the WebSphere Integrated Solutions Console, navigate to **Applications** → **Application Types** → **WebSphere Enterprise Applications** and select the newly installed **kie-server** application.
2. Under **Detail Properties**, click **Security Role to User/Group Mapping**.
3. Select the **kie-server** role and click **Map Groups** to search for the **kie-server** group.
4. Move the **kie-server** group from the **Available** list to the **Selected** list and click **OK**.  
This mapping gives users in the IBM WebSphere Application Server **kie-server** group access to Process Server.
5. Click **Save** to complete the mapping.

### 5.3. CONFIGURING CLASS LOADING FOR PROCESS SERVER

After Process Server is installed, you must configure class loading to set parent classes to load last.

#### Procedure

1. Navigate to **Applications** → **Application Types** → **WebSphere Enterprise Applications** and click **kie-server**.
2. Click **Class Loading and Update Detection** under the **Detail Properties** heading on the left.
3. In the properties, change *Class Loader Order* to **Classes loaded with local class loader first (parent last)** and *WAR Class Loader Policy* to **Single class loader for application**.
4. Save the changes to the master configuration.

### 5.4. VERIFYING THE INSTALLATION

After you install Process Server and define the Process Server group mapping, verify that the server is running.

#### Prerequisites

- Process Server is installed on the IBM WebSphere Application Server instance.
- You have set all required system properties for the headless Process Automation Manager controller.
- You have defined the Process Server group mapping in IBM WebSphere Application Server.

#### Procedure

Navigate to the Process Server URL <http://<HOST>:<PORT>/kie-server> to verify that the server is running, or send a **GET** request to <http://<HOST>:<PORT>/kie-server/services/rest/server> to check whether the Process Server REST API responds.

**<HOST>** is the ID or name of the Process Server host, for example, **localhost** or **192.7.8.9**.

**<PORT>** is the port of the Process Server host, for example, **9060**.



If Process Server is not running, stop and restart the IBM WebSphere Application Server instance and try again to access the Process Server URL or API.

## CHAPTER 6. INSTALLING AND RUNNING THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER WITH IBM WEBSHERE APPLICATION SERVER

To use the Process Server REST API or Java Client API to interact with Process Server, install the headless Process Automation Manager controller with IBM WebSphere Application Server. The headless Process Automation Manager controller manages Process Server configuration in a centralized way so that you can use the headless Process Automation Manager controller to create and maintain containers and perform other server-level tasks.



### NOTE

For optimal results, install Process Server and the headless Process Automation Manager controller on different servers in production environments. In development environments, you can install Process Server and the headless Process Automation Manager controller on the same server.

### Prerequisites

- The IBM WebSphere Application Server instance is configured as described in [Chapter 4, Configuring IBM WebSphere Application Server for Process Server](#).
- Process Server is installed on the IBM WebSphere Application Server instance.
- You have sufficient user permissions to complete the installation.

### Procedure

1. Navigate to the [Software Downloads](#) page in the Red Hat Customer Portal (login required), and select the product and version from the drop-down options:
  - **Product:** Process Automation Manager
  - **Version:** 7.1
2. Download **Red Hat Process Automation Manager 7.1.0 Add-Ons**.
3. Extract the downloaded **rhpm-7.1.0-add-ons.zip** file to a temporary directory.
4. Extract the **rhpm-7.1.0-add-ons.zip** file to a temporary directory. In the following examples this directory is called **TEMP\_DIR**.
5. Extract the **rhpm-7.1.0-add-ons/rhpm-7.1.0-controller-ee7.zip** file.
6. Repackage the **controller.war** directory:
  - a. Navigate to the **TEMP\_DIR/rhpm-7.1.0-add-ons/rhpm-7.1.0-controller-ee7/controller.war** directory.
  - b. Select the contents of the **TEMP\_DIR/rhpm-7.1.0-add-ons/rhpm-7.1.0-controller-ee7/controller.war** directory and create the **controller.zip** file.
  - c. Rename **controller.zip** to **controller.war**. This is the file that you will use to deploy the headless Process Automation Manager controller.

- d. If desired, copy the new **controller.war** file to a location that is more convenient to deploy from.
7. In the WebSphere Integrated Solutions Console, navigate to **Applications** → **Application Types** → **WebSphere Enterprise Applications**.
8. Click **Install**.
9. Navigate to the **controller.war** file that you repackaged and select it to upload.
10. Select **Fast Path** and click **Next**.  
The **Install New Application** wizard opens.
11. Change the **Application Name** to **controller** and click **Next**.
12. Map the headless Process Automation Manager controller modules to servers according to your specific requirements and click **Next**.
13. For **Bind Listeners for Message-Driven Beans**, select **Activation Specification** for both beans, enter **jms/activation/KIE.SERVER.REQUEST** in the **Target Resource JNDI Name** field, and enter the **jms/cf/KIE.SERVER.REQUEST** JNDI name for the **KIE.SERVER.REQUEST** connection factory.
14. In the **Map Virtual Hosts for Web Modules** section, keep the default values and click **Next**.
15. Set the context root to **controller**.
16. In the **Metadata for Modules** section, keep the default values and click **Next**.
17. Click **Finish** to install the headless Process Automation Manager controller and click **Save** to save the changes to the master configuration.

## 6.1. CONFIGURING CLASS LOADING FOR THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER

After the headless Process Automation Manager controller is installed, you must configure Process Server class loading to set parent classes to load last.

### Procedure

1. Navigate to **Applications** → **Application Types** → **WebSphere Enterprise Applications** and click **kie-server**.
2. Click **Class Loading and Update Detection** under the **Detail Properties** heading on the left.
3. In the properties, change *Class Loader Order* to **Classes loaded with local class loader first (parent last)** and *WAR Class Loader Policy* to **Single class loader for application**.
4. Save the changes to the master configuration.

## 6.2. SETTING SYSTEM PROPERTIES FOR THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER

After you install the headless Process Automation Manager controller, set the system properties listed in this section on your application server or servers to enable proper interaction with the headless Process Automation Manager controller.



## NOTE

For optimal results, install Process Server and the headless Process Automation Manager controller on different servers in production environments. In development environments, you can install Process Server and the headless Process Automation Manager controller on the same server. In either case, be sure to make these property changes on all application servers where the headless Process Automation Manager controller is installed.

## Prerequisite

Process Server and the headless Process Automation Manager controller are installed on the application server instance.

## Procedure

1. Specify the following JVM property values on the application server instance where the headless Process Automation Manager controller is installed:

**Table 6.1. Required properties for the headless Process Automation Manager controller**

| Name                             | Requirement  |
|----------------------------------|--|
| <code>org.kie.server.user</code> | A user with the <b>kie-server</b> role   |
| <code>org.kie.server.pwd</code>  | The password for the user specified in the <b>org.kie.server.user</b> property |

2. Specify the following JVM property values on the application server instance where Process Server is installed:

**Table 6.2. Required properties for Process Server when headless Process Automation Manager controller is installed**

| Name  | Requirement  |
|---|--|
| <code>org.kie.server.controller.user</code> | A user with the <b>kie-server</b> role   |
| <code>org.kie.server.controller.pwd</code>  | The password for the user specified for the <b>org.kie.server.controller.user</b> property   |
| <code>org.kie.server.id</code>              | The ID or name of the Process Server installation, such as <b>rhdm700-decision-server-1</b>  |
| <code>org.kie.server.location</code>        | The URL of the Process Server, <a href="http://&lt;HOST&gt;:&lt;PORT&gt;/kie-server/services/rest/server">http://&lt;HOST&gt;:&lt;PORT&gt;/kie-server/services/rest/server</a> |

| Name                             | Requirement  |
|----------------------------------|--|
| <b>org.kie.server.controller</b> | The URL of the headless Process Automation Manager controller, <a href="http://&lt;HOST&gt;:&lt;PORT&gt;/controller/rest/controller">http://&lt;HOST&gt;:&lt;PORT&gt;/controller/rest/controller</a> |

**<HOST>** is the ID or name of the Process Server host, for example, **localhost** or **192.7.8.9**.

**<PORT>** is the port of the Process Server host, for example, **7001**.

## 6.3. MAPPING THE HEADLESS PROCESS AUTOMATION MANAGER CONTROLLER GROUP AND ROLE

After the headless Process Automation Manager controller is installed, in the WebSphere Integrated Solutions Console, you must create the **kie-server** group and then map the **kie-server** role to the **kie-server** group.

### Prerequisite

- The headless Process Automation Manager controller is installed on the IBM WebSphere Application Server instance.

### Procedure

1. In the WebSphere Integrated Solutions Console, create the **kie-server** group and a user for that group, as described in [Creating the Process Server group and role](#).
2. Navigate to **Applications** → **Application Types** → **WebSphere Enterprise Applications** and select the newly installed headless Process Automation Manager controller.
3. Under **Detail Properties**, click **Security Role to User/Group Mapping**.
4. Select the **kie-server** role and click **Map Groups** to search for the **kie-server** group.
5. Move the **kie-server** group from the **Available** list to the **Selected** list and click **OK**.  
This mapping gives the previously created administrator user access to Process Automation Manager.
6. Click **Save** to complete the mapping.

## 6.4. VERIFYING THE INSTALLATION

After you install the headless Process Automation Manager controller and define the required system properties and role requirements on the application server, verify that the headless Process Automation Manager controller works correctly.

### Prerequisites

- Process Server and the headless Process Automation Manager controller are installed on the application server instance.

- You have set all required system properties and role requirements for the headless Process Automation Manager controller on the application server.

## Procedure

In your command terminal, enter the following command to verify that the headless Process Automation Manager controller is working:

```
curl -X GET "http://<HOST>:  
<PORT>/controller/rest/controller/management/servers" -H "accept:  
application/xml" -u '<CONTROLLER>:<CONTROLLER_PWD>'
```

**<HOST>** is the ID or name of the Process Server host, for example, **localhost** or **192.7.8.9**.

**<PORT>** is the port of the Process Server host, for example, **7001**.

**<CONTROLLER>** and **<CONTROLLER\_PWD>** are the user credentials that you created in this section.

The command should return information about the Process Server instance.



### NOTE

Alternatively, you can use the Process Server Java API Client to access the headless Process Automation Manager controller.

If the headless Process Automation Manager controller is not running, stop and restart the application server instance and try again to access the headless Process Automation Manager controller URL or API.

## CHAPTER 7. NEXT STEPS

- *Getting started with decision services*
- *Designing a decision service using guided decision tables*

## APPENDIX A. VERSIONING INFORMATION

Documentation last updated on Friday, October 12, 2018.