



AquaLogic BPM Enterprise Configuration Guide

IBM WebSphere Edition

Version: 6.0

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Getting Started

This document provides information on configuring AquaLogic BPM Enterprise and the Process Execution Engine.

It assumes that you have followed the procedures for installing the ALBPM Enterprise in the [ALBPM Installation Guide](#). Depending on which component you are configuring, there may be additional prerequisites which you must perform. See specific sections for more information.

Enterprise Standalone Edition

This document provides information that is specific to the AquaLogic BPM Enterprise Standalone edition.

Enterprise for WebLogic Edition

This document provides information that is specific to AquaLogic BPM Enterprise for WebLogic Server edition.

Enterprise for WebSphere Edition

This document provides information that is specific to AquaLogic BPM Enterprise for WebSphere Application Server edition.

Document Scope and Audience

This document is a resource for system administrators who need to configure BEA's AquaLogic BPM Enterprise using IBM's WebSphere Application Server. It also provides information on integrating ALBPM Enterprise with other BEA products.

This document assumes that you have already performed a basic installation of ALBPM Enterprise.

Documentation Roadmap

The AquaLogic BPM Documentation Set provides comprehensive information for installing, configuring, and using each component of the ALBPM Product Suite.

The current version of the AquaLogic BPM documentation set is available at <http://edocs.bea.com>.

What is ALBPM Enterprise?

AquaLogic BPM Enterprise is the runtime environment for executing business processes implemented through an iterative methodology in AquaLogic BPM Studio. The ALBPM Enterprise package is composed of a set of different applications.

These applications are listed in the following table:

Application	Description
Admin Center	Administrative tool to setup an ALBPM Enterprise environment.
Process Execution Engine	Engine that executes business processes.

Application	Description
Process Administrator	Web-based interface that allows administrators manage an ALBPM Enterprise environment at runtime.
WorkSpace	Web-based application used by end users to collaborate with deployed business processes.
WorkSpace Administrator	Web-based administration console for the WorkSpace application.
Archive Viewer	Desktop application that allows you to view archived processes.

ALBPM Enterprise Editions

AquaLogic BPM Enterprise is available in the following editions:

Edition	Description
Standalone	Allows you to run the Process Execution Engine as a standalone Java application, outside of any application server. This edition uses an application server only for the web-based user interfaces (a version of Tomcat is included with the installation).
BEA WebLogic Server	Allows you to run the Process Execution Engine on top of BEA WebLogic Server. With this configuration you can take advantage of the J2EE container capabilities like transaction management, clustering and centralized administration.
IBM WebSphere Application Server	Allows you to run the Process Execution Engine on top of IBM WebSphere Application Server. With this configuration you can take advantage of the J2EE container capabilities like transaction management, clustering and centralized administration.

WorkSpace Extensions

In addition to the standard WorkSpace application, ALBPM provides a set of WorkSpace Extensions. Each WorkSpace Extension provides an alternative mechanism for presenting WorkSpace functionality to end users.

ALBPM provides the following WS Extensions:

WorkSpace Extension	Description
WorkSpace Extensions for Java Server Faces	Provides a standard web application deployable on any JSF-compliant container like BEA WebLogic Portal. See WebLogic Portal Configuration <i>The following sections show you how to configure AquaLogic BPM to work with the WebLogic Portal.</i> for more information.
WorkSpace Extensions for AquaLogic User Interaction	Provides integration with AquaLogic User Interaction. See Integrating with AquaLogic Interaction on page 21 for more information.
WorkSpace Extensions for Rich Site Summary (RSS)	Provides a standard web application that serves RSS feeds. This allows end users to receive inbox notifications within an RSS client.

What's New in ALBPM 6.0 Enterprise

This section provides an overview of the main new features, improvements and changes in this release of AquaLogic BPM Enterprise (all editions).

New features

- There is a new Configuration Wizard which provides a simple way for configuring a complete ALBPM Enterprise installation. It covers the most common configuration tasks, including: creation of Directory Service database,

creation of Engine definition and database, complete creation of WebLogic domain, and deployment of a sample project.

- ALBPM Directory Service can be configured in a *Hybrid* configuration where authentication and authorization can be delegated to Microsoft Active Directory or Sun One Directory Service while the rest of the metadata resides in a transactional RDBMS. This avoids the need for replication of participants and entitlements data.
- ALBPM now includes JDBC drivers for the most popular DBMS. This means you can integrate with Oracle, DB2 and Microsoft SQL Server right out of the box.
- ALBPM RSS Feeds Web Application allows end users to participate in business processes using their RSS Reader of choice being able to authentication and register with a specific view RSS Feed. Each View accessible through Workspace can be accessed from an RSS Reader like Outlook.
- PAPI WebService 1.0 has been deprecated in favor of the new PAPI WebService 2.0. PAPI-WS 1.0 is accessible through ALBPM WorkSpace while PAPI-WS 2.0 is accessible through its own new Web Application (papiws). This new version is functionally equivalent to the native Java PAPI, and adheres to the WS-Security specification using the UserNameToken Profile implementation as well as HTTP Basic Authentication.
- Native integration with AquaLogic Service Bus 2.6. You can now easily consume ALSB services from ALBPM and also register a business process in ALSB. In addition, a Custom Transport has been implemented over RMI to enforce security and transaction propagation when ALSB and ALBPM run on the same domain. This transport is provided as an Enterprise Application (.ear) which serves as a plugin for ALSB.
- Web Services in ALBPM now include support for WS-Security, Document-Literal style and WS-I compliance.

Changes and Improvements

- Configuring ALBPM Directory Service purely on top of LDAP provider is no longer possible.
- ALBPM project directories do not use the .fpr extension anymore.
- The Directory configuration file `directory.properties` is now XML-based and changes its name to `directory.xml`.
- ALBPM JSR-168 Portlets have been deprecated in favor of the new Workspace deployable in WebLogic Portal (WLP) 10.0 and ALUI 6.1MP1. This new interface matches the Workspace functionality as well as supporting SSO.
- It is now simpler to deploy ALBPM projects on WebLogic and WebSphere editions of ALBPM Engine. It is no longer necessary to generate and deploy an EAR file for each ALBPM project. Only the Engine EAR needs to reside in the J2EE container. The Engine application dynamically loads the project models and executable code from the Directory Service.
- ALBPM Workspace Extensions (for integration with ALUI) is now included with ALBPM Enterprise. This consolidates the installation and setup on a single install package.

WAS Basic Configuration

This section describes how to perform basic configuration of ALBPM Enterprise using IBM WebSphere Application Server.

Configuration Roadmap

This section provides a general overview of the steps required to configure ALBPM Enterprise for IBM WebSphere Application Server.

1. Review the configuration prerequisites to ensure that you have installed the correct software, that your system corresponds to the minimum system requirements, and that your platform is part of the supported configurations. See [Configuration Prerequisites Before performing a basic configuration of ALBPM Enterprise, ensure that you have met the following prerequisites.](#) for more information.
2. Use the ALBPM Configuration Wizard to perform the following tasks:
 - Create the ALBPM directory database.
 - Create a new ALBPM Process Execution Engine configuration.
 - Create the ALBPM Process Execution Engine database.

See [What is the ALBPM Configuration Wizard?](#) on page 32 for more information on the tasks the Configuration Wizard can perform.
3. [Configuring WebSphere App Server for ALBPM](#) on page 8.
4. Deploy ALBPM's applications to WebSphere Application Server.
5. Publish and deploy your ALBPM Project.

Using the Process Administrator, you can publish and deploy a project exported from ALBPM Studio. See [Deploying a Project](#) on page 19.

Running the Configuration Wizard for WebSphere

The Configuration Wizard provides an easy way for configuring the AquaLogic BPM applications.

To run the ALBPM Configuration Wizard:


1. Start the Admin Center.
2. Click **Configuration**.
3. Click **Add**.

The Configuration Wizard appears.

4. Run the Configuration Wizard as outlined in the following table:

Configuration Wizard Page	Notes
Configuration Wizard Tasks	<p>Select the following options:</p> <ul style="list-style-type: none"> • Create Directory Service • Create Process Engine • Publish and Deploy Sample Project

Configuration Wizard Page	Notes
Directory Provider Type	Select Use a database managed by ALBPM .
Directory Provider Selection	Enter the information for your database provider.
Configure Directory Provider	Enter connectivity information for your directory database provider.
Enter Directory Configuration Information	Enter the DBA user id and password.
Process Engine Provider Selection	Enter the information for your Process Execution Engine database provider.
Process Engine Provider Configuration	Enter connectivity information for your database provider.
Enter Process Engine Creation Information	Enter the DBA user id and password for the Process Execution Engine database.
Select EAR Files to Create	Select the application EAR files you want to create and deploy.

 **Note:** The specific pages that appear depend on the options you select. The table above assumes the following:


- You are configuring a new Directory and Process Execution Engine databases.
- You have DBA access privileges on these databases.

See [ALBPM Configuration Wizard](#) on page 32 for more information about other configuration options and reference information for each page of the Configuration Wizard.

Configuring WebSphere App Server for ALBPM

This section outlines how to create and configure the J2EE resources required by the ALBPM Engine to be deployed in IBM's WebSphere Application Server.

The following procedures assume you have already installed WebSphere Application Server. You will need access to WebSphere's Administration Console.

 **Note:** The following procedures provide geneneral guidelines for configuring AquaLogic BPM to work with IBM WebSphere Application Server. For questions on configuring and managing IBM WebSphere Application Server please refer to documentation for your version.

Install ALBPM Deployer

Install ALBPM Deployer to simplify the deployment and general management of ALBPM Enterprise applications deployed in WebSphere.

ALBPM Deployer is a j2ee application which must be installed on WebSphere's Admin server and acts as a bridge between ALBPM's Process Administrator and WebSphere. Once you have ALBPM Deployer installed and running, you can manage (start, stop, install/uninstall) your ALBPM applications directly from the ALBPM Process Administrator (without the need to use WebSphere's console).

1. Login to WebSphere's Administration Console.

By default, it runs on `http://host:9060/ibm/console`.

2. Go to **Applications ► Install New Applications** and select ALBPM Deployer EAR file.

The ALBPM Deployer consists of an EAR file provided with the installation of ALBPM Enterprise. It is located under the following directory: `BEA_HOME/albpm6.0/j2eews/j2ee/websphere/deployer`.

Two copies are provided. You should pick one depending on whether your WebSphere environment has *Global Security* enabled:

- `wasj2eedeployer.ear`: If security is disabled.

- `wasj2eedeployersecured.ear`: If security is enabled.



Note: If WebSphere's Administration Console didn't prompt you for a password at login, it probably means *Global Security* is disabled.

3. Click **Next** and review the installation options.

Accepting the default installation options works for most cases. Always refer to WebSphere's official documentation for details.

4. Click **Next** and select the WebSphere server where to install ALBPM Deployer.

On a single-server setup, you must install it on the only server available.



Restriction: On a clustered WebSphere environment, ALBPM Deployer must be installed in the Deployment Manager server (*dmgr*). WebSphere's Console may not allow you to pick the Deployment Manager server as a target for installing applications; If this is the case, you must install ALBPM Deployer using other means, such as WebSphere's `wsadmin` command-line tool.

5. Click **Next** again, and **Finish** after reviewing all selected options.
You should get confirmation that *Fuego WebSphere Deployer* application was successfully installed.
6. Save your WebSphere configuration changes.
7. Go to **Applications ► Enterprise Applications** and start Fuego WebSphere Deployer application.

The ALBPM WebSphere Deployer is now installed and ready.

Add Authentication data for JDBC

Before creating JDBC datasources, you must define the authentication information for the JDBC connections.

You must create two sets of authentication data: one for the ALBPM Directory Database and one for ALBPM Engine's backend database.

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Go to **Security ► Secure administration, applications and infrastructure**, expand the **Java Authentication and Authorization Service** section on the right pane and click on **J2C authentication data**.
3. Click **New** to create a new entry for ALBPM Directory database.

Enter the following fields:

Option	Value
Alias	ALBPM Directory DB Auth
User ID	<i>The JDBC user id to access ALBPM Directory Database.</i>
Password	<i>The password for the above user to access ALBPM Directory Database.</i>

You must enter the same user id and password you specified when creating the ALBPM Directory database using the [Running the Configuration Wizard for WebSphere](#) on page 7.

4. Click **OK** to save.
5. Click **New** to create a new entry for ALBPM Engine database.

Enter the following fields:

Option	Description
Alias	ALBPM Engine DB Auth
User ID	<i>The JDBC user id to access ALBPM Engine Database.</i>

Option	Description
Password	The password for the above user to access ALBPM Engine Database.

You must enter the same user id and password you specified when creating the ALBPM Engine database using the [Running the Configuration Wizard for WebSphere](#) on page 7.

- Click **OK** to save.
- Click on **Save** to persist your WebSphere configuration changes.

The new J2C authentication data entries are ready to be used from a JDBC Datasource configuration.

Create new JDBC Provider

You must create and configure a new JDBC provider to use the JDBC drivers provided by BEA.

- Login to WebSphere's administration console.

By default, the administration console runs at: `http://host:9060/ibm/console`.

- Select **Resources ► JDBC ► JDBC Providers**
- Click **New** to add a new JDBC Provider.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

- Enter the following configuration values for the new provider:

Option	Value
Database type	User-Defined
Implementation class name	Enter one of the following class names depending on which database provider you are using: <ul style="list-style-type: none"> Oracle: <code>albpm.jdbcx.oracle.OracleDataSource</code> SQL Server: <code>albpm.jdbcx.sqlserver.SQLServerDataSource</code> DB2: <code>albpm.jdbcx.db2.DB2DataSource</code>
Name	BEA JDBC Provider



Note: Ensure that you select User-defined for each of the supported database types. You must select this option in order to configure the JDBC drivers supplied by ALBPM.

- Press **Next** to enter the JDBC Classpath information.

You must list the following .jar files:

```
BEA_HOME/albpm6.0/j2eews/libraries/bloracle.jar (Oracle only)
BEA_HOME/albpm6.0/j2eews/libraries/bldb2.jar (DB2 only)
BEA_HOME/albpm6.0/j2eews/libraries/blsqlserver.jar (SQL Server only)
BEA_HOME/albpm6.0/j2eews/libraries/blutil.jar
BEA_HOME/albpm6.0/j2eews/libraries/blresource.jar
BEA_HOME/albpm6.0/j2eews/libraries/blbase.jar
BEA_HOME/albpm6.0/j2eews/ext/fuego.database.websphere.helper.jar
```

These files are installed with ALBPM Enterprise. You must specify the full path to each of these jar files. Each must be defined on its own line.

To avoid hard-coding the full paths, you can copy the .jar files to a common directory, then define a new WebSphere environment variable (e.g. BEA_JDBC_DRIVERS_PATH) containing the path to this directory. You can then, specify the classpath as follows:

```
{BEA_JDBC_DRIVERS_PATH}/bloracle.jar
{BEA_JDBC_DRIVERS_PATH}/blutil.jar
{BEA_JDBC_DRIVERS_PATH}/blresource.jar
{BEA_JDBC_DRIVERS_PATH}/blbase.jar
{BEA_JDBC_DRIVERS_PATH}/fuego.database.websphere.helper.jar
```

6. Click **Next** again, and **Finish** after reviewing all selected options.
7. Click on **Save** to persist your WebSphere configuration changes.

The new JDBC provider using BEA's Oracle drivers is now configured.

Create JDBC Datasource for Directory Database

After creating a JDBC Provider, you must create a JDBC datasource to provide database connectivity to ALBPM applications. The following procedures show you how to create a JDBC datasource for the ALBPM directory database.

Before creating the JDBC Datasources you must have defined:

- A new JDBC provider containing the drivers provided by BEA, as explained in [Create new JDBC Provider](#) on page 10.
- Two authentication data entries: one for the ALBPM Directory Database and one for ALBPM Engine's backend database, as explained in [Add Authentication data for JDBC](#) on page 9.

To create a JDBC datasource for the directory DB:

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Go to **Resources** ► **JDBC** ► **JDBC Providers** and click on the BEA JDBC Provider you created previously.
3. Click on **Data sources**, located in the **Additional properties** section.
4. Click **New** to create a new Data source for ALBPM Directory database.

Enter the following configuration information for the new data source:

Option	Value
Data source name	ALBPM Directory Datasource
JNDI name	FDIDS
Component-managed Authentication Alias	<p><i>Select the Authentication entry you defined previously for ALBPM Directory database. Example:</i></p> <p><node>/ALBPM Directory DB Auth</p>

5. Click **Next** and enter the following Data store helper class name:
albpn.jdbc.websphere.ALBPMDataStoreHelper.
6. Click **Next**, then **Finish** after reviewing all selected options.
7. Select the data source you just created.
8. Click **Custom properties** located under the **Additional properties** section in the right pane.

You should see a complete list of all driver properties. If you do not see this list, there is an error with your configuration.

9. Configure the following required properties:

Oracle Connectivity Properties

Property	Value
serverName	<i>Your Database server host name.</i>
portNumber	<i>Your Database server TCP listener port.</i>
SID	<i>Your Oracle Database instance SID.</i>

DB2 Connectivity Properties

Property	Value
ServerName	The name or IP address of the database server.
Database Name	The name of the database to which you want to connect.
User	The case-sensitive user name used to connect to your DB2 database.
Password	A case-sensitive password used to connect to your DB2 database.

SQL Server Connectivity Properties

Property	Value
ServerName	Specifies either the IP address or the server name (if your network supports named servers) of the primary database server.
User	The case-insensitive user name used to connect to your Microsoft SQL Server database.
Password	A case-insensitive password used to connect to your Microsoft SQL Server database.

For more information on using the JDBC drivers provided with BEA products, see [JDBC Drivers](#).

10. Click **Save** to persist your WebSphere configuration changes.

11. Test your datasource configuration.

- Expand **JDBC ► JDBC Providers**
- Select the JDBC datasource you just configured
- Click **Data sources**
- Select the checkbox next to the datasource you want to test
- Click **Test Connection**

The JDBC datasources for the ALBPM Directory database is configured.

Create JDBC Datasource for Engine Database

After creating a JDBC datasource for the directory database, you another JDBC resource to provide database connectivity to ALBPM applications for the ALBPM engine database.

Before creating the JDBC Datasources you must have defined:

- A new JDBC provider containing the drivers provided by BEA, as explained in [Create new JDBC Provider](#) on page 10.
- Two authentication data entries: one for the ALBPM Directory Database and one for ALBPM Engine's backend database, as explained in [Add Authentication data for JDBC](#) on page 9.

To configure a JDBC datasource for the engine database:

- Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
- Go to **Resources ► JDBC ► JDBC Providers** and click on the BEA JDBC Provider you created previously.
- Click on **Data sources**, located in the **Additional properties** section.

- Click **New** to create a new Data source for ALBPM Engine database.

Enter the following configuration information for the new data source:

Option	Value
Data source name	ALBPM Engine Datasource
JNDI name	XAEngineDS
Component-managed Authentication Alias	<i>Select the Authentication entry you defined previously for ALBPM Engine database. Example:</i> <node>/ALBPM Engine DB Auth

- Click **Next** and enter the following Data store helper class name:
`albpn.jdbc.websphere.ALBPMDataStoreHelper`.
- Click **Next** again, and **Finish** after reviewing all selected options.
- Click on your newly created Data source. Then click on **Custom properties** located under the **Additional properties** section, on the right side. Add the following properties:

Oracle Connectivity Properties

Property	Value
serverName	<i>Your Database server host name.</i>
portNumber	<i>Your Database server TCP listener port.</i>
SID	<i>Your Oracle Database instance SID.</i>

DB2 Connectivity Properties

Property	Value
ServerName	The name or IP address of the database server.
Database Name	The name of the database to which you want to connect.
User	The case-sensitive user name used to connect to your DB2 database.
Password	A case-sensitive password used to connect to your DB2 database.

SQL Server Connectivity Properties

Property	Value
ServerName	Specifies either the IP address or the server name (if your network supports named servers) of the primary database server.
User	The case-insensitive user name used to connect to your Microsoft SQL Server database.
Password	A case-insensitive password used to connect to your Microsoft SQL Server database.

For more information on using the JDBC drivers provided with BEA products, see [JDBC Drivers](#).

- Click on **Save** to persist your WebSphere configuration changes.

The JDBC Datasource for ALBPM Engine database is configured.

Create WebSphere JMS Bus

You need to provide a JMS service to ALBPM applications. This procedure shows you how to configure WebSphere Application Server's Embedded JMS service. Other external JMS providers may be used. Check the Installation Guide for compatibility information.

WebSphere Application server defines the concept of a *Bus* to manage JMS resources. Before creating Queues and Topics, you must create a Bus.

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Create a new Bus
 - a) Go to **Service Integration ► Buses** press **New** to add a new Bus.
 - b) Enter a name for this Bus. Example: ALBPM Bus.
 - c) Press **Next** again, and **Finish**.

3. Add members (servers/clusters) to your newly created Bus.

Click on your Bus and then on **Bus members**, located in the **Topology** section.

For each server you want to add as a member:

- a) Press **Add** and select the server/cluster to add as member.
 - b) Press **Next** and select the type of message store you want. You may use the default.
 - c) Press **Next** and review the message store properties. You may use the default values.
 - d) Press **Next** again, and **Finish** after reviewing all selected options.
4. Create a Queue Destination in your Bus:
 - a) Go back to **Service Integration ► Buses**, and click on your newly created Bus.
 - b) Click on **Destinations** located in the **Destination Resources** section on the right.
 - c) Press **New** and select Queue for the destination type.
 - d) Enter ALBPMEngineQueue as the Identifier.
 - e) Press **Next** and select the bus member which will serve this Queue destination.
 - f) Press **Next** again, and **Finish**.
5. Create a Topic Space in your Bus:
 - a) Go back to **Service Integration ► Buses**, and click on your newly created Bus.
 - b) Click on **Destinations** located in the **Destination Resources** section on the right.
 - c) Press **New** and select Topic space for the destination type.
 - d) Enter ALBPMTopic as the Identifier.
 - e) Press **Next** and **Finish**.
6. Click on **Save** to persist your WebSphere configuration changes.

Create JMS Resources

You need to define a JMS Queue Connection Factory, a Queue, a Topic Connection Factory and a Topic for ALBPM applications.

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Create a Queue Connection Factory:
 - a) Go to **Resources ► JMS ► Queue connection factories**.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

- b) Press **New**. Select **Default messaging provider** and press **OK**.
 - c) Review the configuration properties for this Connection Factory.

Make sure you set the following properties:

Option	Value
Name	ALBPM QCF
JNDI Name	XAConnectionFactory
Bus name	Select the name of the JMS Bus you created (see Create WebSphere JMS Bus on page 14). Example: ALBPM Bus

d) Press **OK** when finished setting the configuration properties.

3. Create a Topic Connection Factory

a) Go to **Resources ► JMS ► Topic connection factories**.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

b) Press **New**. Select **Default messaging provider** and press **OK**.

c) Review the configuration properties for this Connection Factory.

Make sure you set the following properties:

Option	Value
Name	ALBPM TCF
JNDI Name	XATopicConnectionFactory
Bus name	Select the name of the JMS Bus you created (see Create WebSphere JMS Bus on page 14). Example: ALBPM Bus

d) Press **OK** when finished setting the configuration properties.

4. Create a Queue

a) Go to **Resources ► JMS ► Queues**.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

b) Press **New**. Select **Default messaging provider** and press **OK**.

c) Review the configuration properties for this Queue.

Make sure you set the following properties:

Option	Value
Name	ALBPM Engine Queue
JNDI Name	queue/ToDoQueue
Bus name	Select the name of the JMS Bus you created (see Create WebSphere JMS Bus on page 14). Example: ALBPM Bus
Queue name	Select the name of your Queue Destination (see Create WebSphere JMS Bus on page 14). Example: ALBPMEngineQueue

Option	Value
Delivery Mode	Nonpersistent

d) Press **OK** when finished setting the configuration properties.

5. Create a Topic

a) Go to **Resources ► JMS ► Topics**.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

b) Press **New**. Select **Default messaging provider** and press **OK**.

c) Review the configuration properties for this Topic.

Make sure you set the following properties:

Option	Value
Name	ALBPM Topic
JNDI Name	topic/EngineNews
Bus name	Select the name of the JMS Bus you created (see Create WebSphere JMS Bus on page 14). Example: ALBPM Bus
Topic space	Select the name of your Topic space (see Create WebSphere JMS Bus on page 14). Example: ALBPMTopic

d) Press **OK** when finished setting the configuration properties.

6. Create a JMS Activation specification

a) Go to **Resources ► JMS ► Activation specification**.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

b) Press **New**. Select **Default messaging provider** and press **OK**.

c) Review the configuration properties for this Activation Spec.

Make sure you set the following properties:

Option	Value
Name	ALBPM Activation
JNDI Name	EngineActiveSpec
Destination type	Queue
Destination JNDI name	queue/ToDoQueue
Bus name	Select the name of the JMS Bus you created (see Create WebSphere JMS Bus on page 14). Example: ALBPM Bus

d) Press **OK** when finished setting the configuration properties.

7. Click on **Save** to persist your WebSphere configuration changes.

Configure Work Manager

You need to create a Work Manager configuration in WebSphere to provide asynchronous transaction processing capabilities to ALBPM Engine.

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Go to **Resources** ► **Asynchronous beans** ► **Work managers** and press **New** to create a new Work Manager.



Note: You must select a WebSphere configuration *scope* for your new resources. You may select *cell* scope. Refer to WebSphere's official documentation for more details about its configuration scoping rules.

3. Enter the following configuration values for the new Work manager:

Option	Value
Name	ALBPM WorkManager
JNDI name	wm/albpmWorkManager

4. Press **OK** after reviewing all selected options.
5. Click on **Save** to persist your WebSphere configuration changes.

The new Work manager for ALBPM Engine is now configured.

Configure JVM Properties

You need to configure each WebSphere Server to use additional system properties when launching the Java Virtual Machine.

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Go to **Servers** ► **Application servers**. You will see a list of all available servers.
3. Follow this procedure for each Server in which you will install ALBPM applications:
 - a) Expand **Java and Process Management** and click on **Process Definition**
 - b) Click on **Java Virtual Machine** then on **Custom Properties**.
 - c) Add the following properties:

New Property	Value
java.awt.headless	true

Restart WebSphere Servers

After configuring all the needed resources in your WebSphere installation, you must re-start all your WebSphere Servers, Node managers and Deployment manager.

After re-starting WebSphere, you may want to check your Database connections:

1. Login to WebSphere's Administration Console. By default, it runs on `http://host:9060/ibm/console`.
2. Go to **Resources** ► **JDBC** ► **Data sources**.
3. Select your ALBPM Engine and ALBPM Directory data sources.
4. Click **Test Connection** button.

You might want to check WebSphere's log files in case of errors.

Set ALBPM properties for WebSphere

You must configure your Process Engine with some WebSphere-related properties via ALBPM Process Administrator.

You must have an ALBPM Engine for WebSphere configured in order to define this configuration properties.

1. Login to ALBPM Process Administrator. By default, it runs on `http://host:8686/webconsole`.
2. Click on **Engines** and then click on the name of your ALBPM Engine for WebSphere.
You should see the configuration properties for your Engine.
3. Click on the **Application Server** tab.
4. In the **JMX Engine Management Configuration** section you must specify the **Host** and **Port** of one of the WebSphere servers that will be running ALBPM Engine.

The port number is that of the WebSphere server's SOAP Connector address. You can obtain this value from the WebSphere Administration console: go to **Servers** ► **Application servers** ► **YOUR_SERVER** (e.g. **server1**) ► **Ports**, and look for the value of the **SOAP_CONNECTOR_ADDRESS** property.

For example, on a default single-node WebSphere configuration where ALBPM Process Admin is running on the same host as WebSphere you would use:

Host	localhost
Port	8880

5. Locate the **BPM Application Deployer URL** field, and change its value to match your WebSphere configuration.

For example, on a default single-node WebSphere configuration, it would be:

`http://localhost:9080/fuego/deployer/servlet/worker`

The URL should be that of the WebSphere server where ALBPM Deployer is installed, which must be your WebSphere's Deployment Manager server (dmgr).

Refer to [Install ALBPM Deployer](#) on page 8 for more details.

6. Change the **WebSphere Server/Cluster Name** field to match your WebSphere configuration. This is the name of the WebSphere Server or Cluster where you want to install the ALBPM applications.

For example, on a default single-node WebSphere configuration, it would be: `server1`.

Deploy ALBPM Apps in WebSphere

After WebSphere is properly configured, you can generate and install the ALBPM applications into WebSphere servers to complete your ALBPM Enterprise configuration on WebSphere.

Prepare ALBPM Applications

Some of the ALBPM applications need additional configuration changes before deploying them into WebSphere.

1. Copy file `albp6.0/j2eews/j2ee/websphere/was6stubs/fuegoj2ee-was6-stubs.jar` into each of following directories:

```
albp6.0/j2eews/webapps/archivingviewer/WEB-INF/lib
albp6.0/j2eews/webapps/feeds/WEB-INF/lib
albp6.0/j2eews/webapps/papiws/WEB-INF/lib
albp6.0/j2eews/webapps/portal/WEB-INF/lib
albp6.0/j2eews/webapps/portaladmin/WEB-INF/lib
albp6.0/j2eews/webapps/webconsole/WEB-INF/lib
albp6.0/j2eews/webapps/workspace/WEB-INF/lib
```

This is to allow client applications to connect with the EJB-based Process Engine running on WebSphere.

2. Create a new directory named `jmxextensions` under `albp6.0/j2eews/webapps/webconsole/WEB-INF/`.

3. Copy file `WEBSHERE_HOME/AppServer/runtimes/com.ibm.ws.admin.client_6.1.0.jar` to the `jmxextensions` directory you just created on the previous step:
`albpm6.0/j2eews/webapps/webconsole/WEB-INF/jmxextensions/`.

This is to allow the Process Administrator application to connect with the Process Engines via JMX.

Build and Deploy Applications (.ear)

The ALBPM Process Administrator allows you to bundle the ALBPM applications as `.ear` files for installation on WebSphere.

Before creating the ALBPM application archives, you must have an ALBPM Engine for WebSphere configured.

1. Login to ALBPM Process Administrator. By default, it runs on `http://host:8686/webconsole`.
2. Click on **Engines** and then click on the name of your ALBPM Engine for WebSphere.
You should see the configuration properties for your Engine.
3. Click on the **Basic Configuration** tab and then on **J2EE Application Server Files**.

This page allows you to (re)create the `.ear` files of those ALBPM applications associated with this Engine.



Note: When you access this page, the Process Administrator gets the status of each of the applications by contacting ALBPM Deployer. You will get a warning message at the bottom of the page if there was any problem contacting ALBPM Deployer. If this is the case, make sure the **BPM Application Deployer URL** (within the **Application Server** tab) is correct and that ALBPM Deployer is up and running on WebSphere.

4. Click on the "new" icon (📄*) next to each of the applications you want to install.
5. Click on the "install" icon (📄) next to each of the applications you want to install.



Attention: This may take several minutes. Do not click any link on the page and do **back** in your browser until the page is automatically reloaded. When you click on the icon, ALBPM Process Administrator transfers the file over to WebSphere's Deployment Manager (by means of ALBPM Deployer) and then WebSphere goes through the application installation process.

Deploying a Project

The following procedures describe how to deploy an ALBPM Project using the Process Administrator.

1. Click **Launch Process Administrator**.

The Process Administrator appears in a browser window.

2. Enter the Process Administrator username and password.
3. Click **Login**.
4. Click **Projects**.
5. Click **Publish**.

The **Publication Source** pane appears.

6. Select the Publication Source

Option

Description

Project at Web Server host

Allows you to select an ALBPM Project from the file system of the server where the Process Administrator is running.

Exported Project

Allows you to select an exported ALBPM Project from the file system of the local computer where your web browser is running.

7. Select **Deploy processes after publishing them**.

8. Click **Ok**.

The **Publish Process pane** appears.

9. Expand **Role Mapping**.

10. Map the roles.

11. Click **Publish**.

The Deployment Topology pane appears.

12. Click **Ok**.

To perform a basic deployment of a project, use the default values for these fields.

Your project appears in the list of deployed projects.

Integrating with AquaLogic Interaction

This section provides information for integrating AquaLogic BPM within AquaLogic User Interaction.

ALBPM provides out-of-the-box integration using WorkSpace Extensions for AquaLogic User Interaction. WorkSpace Extensions for ALI allow you to use ALBPM with the following functionality:

- Use ALI as the user interface layer for ALBPM
- Use ALI to handle user authentication
- Use ALI Collaboration as the document repository for attachments.

See [What is ALBPM Enterprise?](#) on page 4 for general information about WorkSpace Extensions.

Configuration Prerequisites

The following prerequisites should be met before installing ALBPM WorkSpace Extensions.

Required Software

Ensure that you have installed and correctly configured the following software:

- BEA AquaLogic Interaction
- BEA AquaLogic Collaboration (Optional. BPM can use ALI Collaboration as the document repository for attachments).

See the *ALBPM Installation Guide* for information on the supported versions of this software.

Database Access

In order to create the required database schema, you need the following information:

- Database server connectivity information.
- DBA username and password.

Running the WorkSpace Extension Configuration Wizard

The following procedures show you how to run the WorkSpace Extension Configuration Wizard.

The WorkSpace Extension Configuration Wizard is located at:

`BEA_HOME/albpm6.0/j2eews/bin/weconfigwizard.exe`.

1. Run the Configuration Wizard as outlined in the following table:

Configuration Wizard Page	User Input
ALUI Database Type	Select the database type used by AquaLogic Interaction Portal.
ALUI Database Connection Information	Provide the connectivity information for the AquaLogic Interaction Portal database.
ALI Identity Service Database Type and Service Ports	Select the database type and service ports for the AquaLogic Interaction Identity Service (Hydrogen). You will have to create this database after running this Wizard.
ALI Identity Service Database Connection Information	Provide the connectivity information for the AquaLogic Interaction Identity Service (Hydrogen) database.
Show SQL Script	Copy the generated SQL script to the clipboard or save it to a file. You will use this script later to create the table structures for the ALI Identity Service Database.

Configuration Wizard Page	User Input
Enter Image Server URL	Provide the connectivity information to the ALI Image Server. With this information in place ALBPM WorkSpace will leverage ALI Image Server capabilities, improving overall performance.
Configuration Finished	Click Finish to close the WorkSpace Extensions configuration wizard.

The generated SQL script will be used to create the ALI Identity Service (Hydrogen) database.

Configuring the ALI Identity Service Database

This topic describes how to create the AquaLogic Identity Service database.

1. Create the database user and database schema that will contain the ALI Identity Service tables. You will need DBA privileges to perform this step.



Note: These new user id and password you create must match the ones you specified in the **ALI Identity Service Database** step of the WorkSpace Extensions configuration wizard.

For the case of Oracle:

1. You may create the new database user with the following script. Replace *aliis_db* and *password* with the ID and password for the new user you want to create:

```
create user aliis_db identified by password;
grant connect to aliis_db;
grant resource to aliis_db;
grant create view to aliis_db;
```

2. You need to have an Oracle tablespace in place where the ALI Identity Service database indexes will be created. A standard installation of ALI defines a "PLUMINDEX" tablespace; you may reuse it for Identity Service. If you don't have a tablespace available, you may create a new one following this example SQL script (assuming the database SID is "PLUM"):

```
REM * Create a tablespace for indexes.
REM *
CREATE TABLESPACE ALIIS_INDEX
  DATAFILE '$ORACLE_BASE/oradata/PLUM/aliisidx.dbf'
  SIZE 65536K REUSE AUTOEXTEND ON
  EXTENT MANAGEMENT LOCAL AUTOALLOCATE
  SEGMENT SPACE MANAGEMENT AUTO
;
```

On Windows, the DATAFILE path would be:

```
DATAFILE '%ORACLE_BASE%\oradata\PLUM\aliisidx.dbf'
```

3. You must modify the SQL script generated by the WorkSpace Extension Configuration Wizard to specify the right tablespace. In the following line, replace "PROCESSINDEX" with the name of your tablespace:

```
DEF IDX_TBSP=PROCESSINDEX
```

For example, to specify the "PLUMINDEX" tablespace you should change it to:

```
DEF IDX_TBSP=PLUMINDEX
```

2. Run the SQL script generated by the WorkSpace Extensions configuration wizard. You should run the script using the id of the user created in the previous steps to ensure the database objects are created on the right schema and namespace.

After running the SQL script, your database will contain the necessary ALI Identity Service tables.

Configuring the AquaLogic Identity Service

This procedure shows you how to configure the AquaLogic Identity Service for integrating ALBPM with ALUI.



Important: If you have an older version of ALI Identity Service installed on your system, you should un-install it first to avoid conflicts.

To install the ALI Identity Service:

1. Install the ALI Identity Service located in `BEA_HOME/albpm6.0/j2eews/ptids/1.2/bin` using the following command:

On Windows: `.\service.bat install`

2. Start the ALI Identity Service.

On Windows you may start the **BEA ALI Identity Service** from the standard Windows Services panel.

On Unix environments, you start the service with the following command:

`./service.sh start`

`./service.sh console` (to run on the foreground)

3. Verify that the ALI Identity Service started without errors.

You may check the log file located at: `BEA_HOME/albpm6.0/j2eews/ptids/1.2/logs/service.log`.

If the service started successfully, there should be no errors and the final line of the log should state `***Initial Sync Completed***`.

Deploying the .pte File

You must import the ALI (.pte) file in order to expose the WorkSpace and Process Administrator applications within the ALI Portal and access the Portal Community that hosts it. This file defines all the associations between ALI and the ALBPM environment.

The .pte file is provided with the ALBPM Enterprise and is located in `BEA_HOME/albpm6.0/j2eews/serverpackages/ALBPM-60-ALI-template.pte`.



Note: If you are installing WorkSpace extensions on BEA WebLogic Server or IBM WebSphere Application Server, you must edit the Remote Server objects in the portal to point to the application server. The Remote Server Objects are located in the Remote Server section in the Process folder of the Portal Administration Console.

See the [AquaLogic Interaction Administrator Guide](#) for more information on how to deploy the .pte file.

Assigning Process Administrators

You must add at least one ALI user to the Process Administrator group.

1. Login to ALI's portal as an Administrator. By default, it runs on `http://host:8080/portal/server.pt`.
2. Click on the **Administration** tab.
You should see a new **Process** folder
3. Click on the **Process** folder. Expand **Groups** and click on **Process Administrators**.
4. You may add new members to the group by pressing the **Add User/Group** button.

Restart ALI Services

You must re-start ALI services to force a quick replication of users and groups information from the ALI Portal database to ALI's Identity Service (Hydrogen).

1. Re-start of ALI Services

On Windows you may use the standard Windows Services panel to re-start the following services:

- **BEA ALI API Service**
- **BEA ALI Identity Service**

On UNIX: `BEA_HOME/alui/ptws/6.1/bin/apiserviced.sh restart`

Running the Configuration Wizard



The following procedures outline how to use the Configuration Wizard to configure WorkSpace Extensions.



To run the ALBPM Configuration Wizard:

1. Start the Admin Center.
2. Click **Configuration**.
3. Click **Add**.

The Configuration Wizard appears.

4. Run the Configuration Wizard as outlined in the following table:

Configuration Wizard Page	Notes
Configuration Wizard Tasks	Select Create Directory Service .
Directory Provider Type	Select Use an external directory service provider . This is to allow ALBPM to use ALI's Identity Service as the source of users and groups.
Directory and Organization Providers Selection	Select the database type for the ALBPM Directory provider and select ALI Identity Service as the Organization Provider.  Note: The BPM Administrator User must be an existing user in ALUI within the <i>Process Administrator</i> Group (see Assigning Process Administrators on page 23). The user and password are case-sensitive.
Configure ALBPM Directory Provider	Enter connectivity information for your directory database provider.
Configure Organization Provider	Enter the connectivity information for your ALI Identity Service.
Enter Directory Creation Information	Enter the DBA user ID and password for the directory database and the organization logical name.  Note: If you have chosen to generate SQL scripts, only the organization logical name appears on this screen.

Configuration Wizard Page	Notes
	 Note: The wizard needs the DBA user ID and password only once, to execute the SQL scripts for you. These credentials are not saved by the wizard.
Show SQL Script	Copy the generated SQL script to the clipboard or save it to a file.  Note: This page appears only if you have chosen to generate SQL scripts, only the organization logical name appears on this screen.
Process Engine Provider Selection	Select the type of database you want to use for your Process Execution Engine database.
Process Engine Provider Configuration	Enter connectivity information for you Process Execution Engine database.
Enter Process Engine creation information	If you have selected to have the Configuration Wizard create the database, provide information DBA username and password.
Show SQL Script	If you have selected to generate SQL scripts, you can choose to save it as a file or you can copy and paste it to a file.
Configuring ALBPM	Click Next to finish configuring the ALBPM Directory Service.
Configuration Complete	Click Finish to terminate the ALBPM Configuration Wizard.

See [ALBPM Configuration Wizard](#) on page 32 for more information for reference information for each page of the Configuration Wizard.

Verifying Your Installation

Follow this procedure to verify the configuration of ALBPM WorkSpace Extensions for ALUI.

1. Start ALBPM Web Applications.

See [Starting BPM Web Applications](#)The following procedures show you how to start ALBPM Web Applications using the Admin Center. for more information.


2. Verify that the ALBPM Process Administrator is correctly configured.


- Login to ALI's Portal as a user in the Process Administrator group. By default, it runs on `http://host:8080/portal/server.pt`.
- Click on the **Administration** tab.
- Select **Process Administrator** from the **Select Utility...** drop down.
The ALBPM Process Administrator welcome page should appear.
- You can go to **Organization ► Participants** and **Organization ► Groups** to verify that the ALI users appear as ALBPM Participants.

3. Verify that your Process Execution Engine is up and running.

- In the Process Administrator click on **Engines**. Verify that the **Status** of your Engine (by default named **albpengine**) is **Running**.

If the Engine status is **Not Running**, try to start it by clicking on the **Start** icon (▶).

 **Note:** If the Engine fails to start, click on the **Start-up log** icon (🔍) to look for errors.

 **Note:** By default, the Process Execution Engine uses TCP port 10099 to accept client connections. If ALBPM is running on the same box as the ALI components, you might need to change this default TCP port to avoid conflicts. To change this port click on **albpengine ► Engine Nodes ► [your_node_host]** and change the **Port** field.

4. Verify that the Process Portal Community is correctly configured.

- a) Click the **My Communities** drop-down option
- b) Select **Process Community**.

The ALBPM WorkSpace appears in the main Portal window.

BAM and Data Mart Configuration

BAM (Business Activity Monitoring) and Business Activity Data Mart data is a collection process load and execution time of measurements. The BAM database maintains current information, while the Data Mart database stores historical series.

Overview

BAM and Data Mart data is derived from audited events, and therefore depends on how audit event generation is configured. When enabling either BAM or the Data Mart, it will help you to understand event generation options. See [Audit Events Overview](#) on page 47.

The BAM and the Data Mart databases use similar (but not identical) schemas and are separate from the engine database. Neither is required for process execution, so you only need to configure a BAM or a Data Mart database if you intend to use it.

Configuration Steps

You must perform the following tasks to configure either BAM or Data Mart process monitoring services:

- Add the external resource reference
- Create the database
- Select the database external resource
- Enable automatic update

If you will set up both BAM and the Data Mart, you will need to do the preceding steps twice (once for each service). The steps below are common to both services:

- Configure process monitoring properties
- Install (depending on system) and start the updater service

You perform nearly all of these steps in the Process Administrator. The only exception is the updater service, which you must manage separately.

Updater Service

The process execution engine does not write data to the BAM and Data Mart databases. Instead, a separate updater service does the job. Although the BAM and Data Mart databases are independent, the same service updates both.

Adding the BAM or Data Mart Database External Resource

To configure a BAM or Data Mart, you must first add the corresponding database external resource.

To add the BAM or Data Mart database external resource:

1. In the navigator, click **External Resources** (🔍).
2. In the **External Resources** pane, click on the **Add** button.
The **Add External Resource** pane will appear.
3. In the **Name** field, enter a name for the data mart database, such as `ALBPMDataMart`.
4. In the **Type** drop-down list, select **SQL Database**.
5. In the **Subtype** drop-down list, select the database driver appropriate for your database.

When configuring an external resource for BAM and Data Mart data, you may only choose one of the following database drivers:

- BEA's DB2 Driver Versions: 8.x, 9.x
- BEA's MS SQL Server Driver Versions: 2005
- BEA's Oracle Driver Versions: 9.2, 10

6. Review all fields and click **Next**.

The **Edit External Resource** pane will appear.

7. Specify the database properties in the **Properties** section.

Most properties are common to all the supported databases, but some are database specific. The following table describes each property:

Property Name	Description
Host	Name or IP address of the host (real or virtual machine), where the database resides.
Port	Port number to connect to the database.
Schema	Enter the name of the database schema, for example, you could name the Data Mart database schema ALBPMDaMaMart. <i>Required for IBM DB2 and Oracle.</i>
Database	Enter the name of the database, for example, you could name the Data Mart database ALBPMDaMaMart. <i>Required for Microsoft SQL Server. Optional for Oracle.</i>
SID	System Identifier. <i>Required for Oracle only.</i>
User	Enter a user name to be used by the updater service to connect to the database.
Password	Password for the user described above.

If you are setting properties to connect to an Oracle data base, an **Advanced** section appears. In this section, you can specify the *Tablespace*, *Temporary Tablespace*, and *Profile* properties.

8. Set runtime and connection pool properties in their respective sections. Unless you have a specific requirement, you can leave the defaults.
9. If you must specify any additional connection properties, click **Add** and enter the property name and value. To remove an unneeded property, select the property's checkbox and click **Delete**.
10. Click **Save**.
The external resource is created.

You have added the external resource, but this step only makes ALBPM aware of the database properties. It does not create the database. You must create the database in a separate step. See [Creating the BAM or Data Mart Database](#) on page 30.

Configuring the Data Mart

You configure the Business Activity Data Mart from the **Process Monitoring** page of Process Administrator.

The Data Mart properties page includes properties common to both the Data Mart and BAM.

To configure Data Mart properties:

1. In the navigator, click **Process Monitoring** (🔍).
The **Process Monitoring** page will appear.
2. In the **Process Data Mart** pane, set the properties as described below:

Property Name	Description
Enable Automatic Update	If selected, the updater service will update the Data Mart database.
Runtime Database Configuration	Name of the external resource which points to the database where Data Mart information is stored.
Data Detail Level	You can select <i>hourly</i> or <i>daily</i> .
Snapshot Time	Time of day that will define the start and end of the 24 hour period. For example, you may want to configure your "transaction day" to go from 6 PM to 6 PM the following day.
Update Daily at Time	Time of day when the data will actually be updated. You can set this at low activity times, for performance reasons.
*Log Directory	Path of the folder where the Data Mart log file will be written.
*Messages Logged from Data Store Updater	Minimum message severity level you want the service to log.
*Language	Language you want logged messages to be in.
*Generate Performance Metrics	If selected, Data Mart information will include activity and process times.
*Generate Workload Metrics	If selected, quantity data such as the number of instances will be recorded.
Generate O3 Cubes	If selected, O3 Cubes will be generated after the Data Mart database has been updated.

** These properties also affect BAM*

3. Click **Save**.

Configuring BAM

You configure BAM from the **Process Monitoring** page of Process Administrator.

Before configuring BAM, you should have added the external resource reference to the BAM database, and you should have created the BAM database itself.

To configure BAM properties:

1. In the navigator, click **Process Monitoring** (📊).
The **Process Monitoring** page will appear.
2. In the **BAM** pane, set the properties as described below:

Property Name	Description
Enable Automatic Update	If selected, the updater service will update the BAM database.
Updater Database Configuration	Name of the external resource which points to the database where BAM information is stored.
Update Frequency	The time that will elapse between updates, in minutes.
Data Expiration Time	BAM data will expire after this period and be removed. Recall that BAM is meant for monitoring of current activity. If you want longer term measurements, use the Data Mart. This value is set in hours, and the default is 24.

3. Click **Save**.

Creating the BAM or Data Mart Database

Before enabling BAM or the Data Mart, you must create their respective databases. You can use Process Administrator to either create the database directly, or to generate an SQL script for execution by a database administrator.

Before you can create a BAM or Data Mart database, you should have added the external resource for it. See [Adding the BAM or Data Mart Database External Resource](#) on page 27.

The following instructions assume you are logged in to Process Administrator. You must perform these steps for each service you will use (BAM and Data Mart).

To create a BAM or Data Mart database:

1. Click on **Process Monitoring**.
The **Process Monitoring** page appears.
2. Select the BAM or Data Mart tab.
3. In the **Advanced Properties** section, click **Manage Database**.
The **Manage Database** page appears.
4. Select the **Create the database** and **Create the data structure** options.
5. If you have administrator access to the database, enter the database administrator user and password, and click **OK**.
If Process Administrator reports that the database has been created successfully, you are done. The instructions below are for users without administrator access to the database.
6. If you do not have administrator access, click **Show SQL Statements**.
Your web browser will ask you if you want to save the `sql.txt` file.
7. Save the file to any location, and send it to the database administrator, who will run the SQL statements in the file, creating the database.

Dropping the BAM or Data Mart Database

After you disable BAM or the Data Mart, you can drop the respective database. You can use Process Administrator to either drop the database directly, or to generate an SQL statement for execution by a database administrator.

Bear in mind that dropping the database only executes a `DROP DATABASE` SQL statement on the BAM or Data Mart database. It does not remove the external resource.

1. Click on **Process Monitoring**.
The **Process Monitoring** page appears.
2. Select the **BAM** or **Data Mart** tab.
3. In the **Advanced Properties** section, click **Manage Database**.
The **Manage Database** page appears.
4. Select the **Drop the database**.
5. If you have administrator access to the database, enter the database administrator user and password, and click **OK**.
If Process Administrator reports that the database has been dropped successfully, you are done. The instructions below are for users without administrator access to the database.
6. If you do not have administrator access, click **Show SQL Statements**.
Your web browser will ask you if you want to save the `sql.txt` file.
7. Save the file to any location, and send it to the database administrator, who will run the SQL statement in the file, creating the database.

Note that this file will contain a single statement in the form:

```
DROP DATABASE database_name
```

You may simply be able to ask your DBA to drop the database by name. The advantage of sending an SQL file is to prevent dropping a similarly named database.

Configuring the Updater Service

BAM and Data Mart data is obtained and recorded by the ALBPM DataWarehouse service.

The updater service runs independently from the process execution engine, and may continue to run if the engine has stopped, or be stopped while the engine is running. The updater service does require access to the process engine database.

Instructions for running, stopping and configuring the updater service depend on the operating system.

Starting and Stopping the Updater Service in Unix

In Unix-like operating systems, the updater service is started and stopped with the `albpmwarehouse.sh` shell script.

To start or stop the updater service:

1. At a shell prompt, execute the following to start the updater service:

```
$ALBPM_HOME/bin$ ./albpmwarehouse.sh start
```

The updater service will start.

2. To stop the service, execute the following:

```
$ALBPM_HOME/bin$ ./albpmwarehouse.sh stop
```

The updater service will stop.

Installing and running the Updater Service in Windows

Under Microsoft Windows, you must install the updater service before it can run. You then control the updater service from the Windows Services console.

To install the updater service in Windows:

1. Goto the `ALBPM_HOME\bin` folder

In default Windows installations, the `ALBPM_HOME` folder is as follows:

Path	Edition
C:\bea\albpm6.0\enterprise	Standalone
C:\bea\albpm6.0\j2eew1	BEA WebLogic
C:\bea\albpm6.0\j2eews	IBM WebSphere

2. To install the updater service, enter the following at the command line prompt: `albpmwarehouse install`

Once the updater service is installed, you can control it from the Windows Services console. The service is called *ALBPM 6.0 DatawareHouse Service*.



Note: The updater service startup is installed set to *Automatic*, but is not started upon installation. You should start the service manually from the Services console. The service will then start automatically on system startup.

3. To remove the updater service, enter the following: `albpmwarehouse remove`

Enterprise Configuration Reference

The following sections contain reference information for ALBPM Enterprise configuration.

ALBPM Configuration Wizard

The following topics provide general information about the AquaLogic BPM Configuration Wizard. They also provide reference information for screen.

What is the ALBPM Configuration Wizard?

The ALBM Configuration Wizard provides a simple way of configuring ALBPM Enterprise.

The Configuration Wizard lets you choose between the following:

- Whether you want to create a new directory provider database or use an existing one. If you choose to create a new database, you can determine one of the following:
 - The Configuration Wizard adds a new database for you.
 - The Configuration Wizard generates SQL scripts that can be run by your DBA.
- Whether to create a new ALBPM Process Execution Engine database or use an existing one. If you choose to create a new database, you can determine one of the following:
 - The Configuration Wizard adds a new database for you.
 - The Configuration Wizard generates SQL scripts that can be run by your DBA.
- Whether to Publish and Deploy a sample project.
- Whether to use a single ALBPM database or a combination database and external directory provider.

Running the ALBPM Configuration Wizard

The following procedures show you how to use the Configuration Wizard. The exact path depends on the options you choose.

1. Determine what tasks you want the configuration Wizard to perform.

This allows you to define the tasks performed. See [Configuration Wizard Tasks](#) on page 33.

2. Determine if you want to use a database only or a hybrid.

See [Directory Provider Type](#) on page 33.

3. Enter information about your directory provider type.

See [Directory Provider Selection](#) on page 34. If you have chosen to implement the

4. Enter connectivity information about your database.

Provider	More information
Oracle	Configure Directory Provider - Oracle on page 34
DB2	Configure Directory Provider - DB2 on page 35
SQL Server	Configure Directory Provider - SQL Server on page 36

5. Enter connectivity information for you external organization provider.



Note: This page appears only when you have chosen to configure an external directory service for your organizational data.

6. Enter one of the following:

- If you have selected to have the Configuration Wizard create the database, provide information DBA username and password.
- If you have selected to generate SQL script, enter org log name.

7. If you have selected to generate SQL scripts, you can choose to save it as a file or you can copy and paste it to a file.

8. Select the type of database you want to use for your Process Execution Engine database

9. Enter connectivity information for you Process Execution Engine database

10. If you have selected to have the Configuration Wizard create the database, provide information DBA username and password.

11. If you have selected to generate SQL scripts, you can choose to save it as a file or you can copy and paste it to a file.

ALBPM Configuration Wizard Reference


The following topics provide detailed information for each page of the Configuration Wizard

Configuration Wizard Tasks

This page allows you to specify the tasks performed by the Configuration Wizard. These tasks can be groups according to the following:

- Configure the ALBPM Directory Service Database.
- Configure the ALBPM Process Engine Database.


You can determine which of these the Configuration Wizard performs by selecting from the following options:

Option	Description
Create Directory Service	Allows you to create a new ALBPM Directory Service
Use Existing Directory Service	Allows you to use an existing ALBPM Directory Service.  Note: If you choose to use an existing directory service, it must be created using the current version of AquaLogic BPM.
Generate Directory Service SQL Script only	Generates a SQL script that can be used to configure the database server and schema. Use this option if you do not have DBA permissions on the database. The generated scripts can be used by your DBA.
Create Process Engine	Allows you to create the Process Execution Engine database using the Configuration Wizard.
Generate Process Engine SQL Script only	Generates a SQL script that can be used to configure the database server and schema. Use this option if you do not have DBA permissions on the database. The generated scripts can be used by your DBA.
Publish and Deploy Sample Project	Allows the Configuration Wizard to publish and deploy ALBPM sample projects. This option is only available if you select to create the Process Execution Engine database.

Directory Provider Type



This page allows you to specify how the directory provider is configured.

Option	Description
Use a database managed by ALBPM	Uses only a database to store directory and process information.

Option	Description
Use an external directory service provider plus a database managed by ALBPM	<p>Uses both a database and directory service provider to store directory and process information.</p> <p> Note: When configuring WorkSpace Extensions, you must choose this option to select the AquaLogic Interaction Identity Service (Hydrogen).</p>


Directory Provider Selection

This page allows you to define the general information about the Directory Service Provider.

Option	Description
Directory Configuration Name	Defines a label used to refer to this configuration within Admin Center.
Description	Provides a useful description for the new directory service configuration.
Directory Provider	Specifies the database driver for the database used as directory provider.
BPM Administrator User	<p>Defines the BPM Administrator user ID.</p> <p> Note: The Configuration Wizard creates this new user ID in the database.</p> <p> Note: When configuring WorkSpace Extensions, this administrator ID must also be defined in the AquaLogic Integration Portal.</p>
BPM Administrator Password	Defines the BPM Administrator password.

Configure Directory Provider - Oracle

Basic Tab

Option	Description
Host	Specifies either the IP address or the hostname of the database server.
Port	Specifies the TCP port of the listener running on the database server. The default is 1521, which is the default port number when installing the Oracle database software.
User	Defines the user id used to connect to the database.
Password	Defines the password for the user id used to connect to the database. This password is case-insensitive.
SID	Specifies the Oracle System Identifier that refers to the instance of the Oracle database running on the server.
Schema	<p>Optionally, specifies the name of the schema used.</p> <p> Note: When using a schema, it is recommended that the schema name and user name be the same.</p>
URL	Defines the URL format to connect to the database.

Advanced Tab

Option	Description
Tablespace	Specifies the tablespace within the ALBPM database.
Temporary Tablespace	Specifies the temporary tablespace within the ALBPM database.
Profile	Specifies the profile for the ALBPM database. Profiles are as a way to limit which users can connect to the database.

Properties

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime

The following runtime configuration properties can be defined for this database:

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

These properties define the JDBC connection handling for ALBPM components when running outside a J2EE (for example, WebLogic Server). When running within a J2EE container, database connectivity information is supplied by the container itself.

Configure Directory Provider - DB2

This page defines the connection properties for the ALBPM directory database.

Basic Tab

Option	Description
Host	Specifies either the IP address or the hostname of the database server. For example, 122.23.15.12 or ALBPMDatabase.
Port	Specifies the TCP port of the listener running on the database server. The default is 1521, which is the default port number when installing the Oracle database software.
User	Defines the user id used to connect to the database.
Password	Defines the password for the user id used to connect to the database. This password is case-insensitive.
Database	Defines the name of the database used for the ALBPM directory service.
URL	Defines the URL format to connect to the database.

Properties Tab

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime

The following runtime configuration properties can be defined for this database:

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

These properties define the JDBC connection handling for ALBPM components when running outside a J2EE (for example, WebLogic Server). When running within a J2EE container, database connectivity information is supplied by the container itself.

Configure Directory Provider - SQL Server

Basic Tab

Option	Description
Host	Specifies either the IP address or the hostname of the database server.
Port	Specifies the port of the listener running on the database server.
User	Defines the user id used to connect to the database.
Password	Defines the password for the user id used to connect to the database.
Database	Specifies the name of the database.
URL	Defines the URL format to connect to the database.

Properties Tab

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Configure Organization Provider - Active Directory

Basic Tab

Options	
Initial Context Factory	Specifies the JNDI class name that creates sessions with the directory service.
URL	Specifies the URL used to connect to the directory service.
Principal	Specifies the user id to connect to the directory service.
Credentials	Specifies the password used to connect to the directory service.

Properties

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime Tab

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Configure Organization Provider - Hydrogen

This page displays configuration information used by the ALI Identity Service (Hydrogen).

Basic Tab

Option	Description
Hydrogen Service Host	Specifies the host where the ALI Identity Service (Hydrogen) is deployed.
Hydrogen Service Port	Specifies the port where the ALI Identity Service is listening.
Service Endpoint URL	Specifies the URL of the ALI Portal Query Service.

Runtime Tab

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.

Option	Description
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Configure Organization Provider - Sun LDAP

Basic Tab

Options	
Initial Context Factory	Specifies the JNDI class name that creates sessions with the directory service.
URL	Specifies the URL used to connect to the directory service.
Principal	Specifies the user id to connect to the directory service.
Credentials	Specifies the password used to connect to the directory service.

Properties

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime Tab

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Enter Directory Creation Information

The page allows you to enter the database administrator username and password. The Configuration Wizard uses this information to connect to the database and create run the SQL scripts to create database schema.



Note: This page does not appear if you have chosen to generate SQL scripts.

Option	Description
DBA User	Specifies the Database Administrator user id.
DBA Password	Specifies the Database Administrator password.
Organization Logical Name	Defines the organization logical name for this ALBPM environment. This symbolic name is used in contexts where processes in different environments communicate with each other.

Show SQL Script

The page displays the generated SQL scripts for the ALBPM directory database. This page is displayed only if you have chosen to generate a SQL script instead of having the Configuration Wizard connect to the database. The DBA of the directory service database can use the script to create the necessary tables and schema.


Option	Description
Copy to clipboard	Allows you to copy the generated script to the clipboard.
Save to file	Allows you to save the generated script to a file.

Process Engine Provider Selection

Option	Description
Engine Database Provider	Specifies the database vendor of your Process Engine database.

Process Engine Provider - Oracle

Basic Tab

Option	Description
Host	Specifies either the IP address or the hostname of the database server.
Port	Specifies the TCP port of the listener running on the database server. The default is 1521, which is the default port number when installing the Oracle database software.
User	Defines the user id used to connect to the database.
Password	Defines the password for the user id used to connect to the database. This password is case-insensitive.
SID	Specifies the Oracle System Identifier that refers to the instance of the Oracle database running on the server.
Schema	Optionally, specifies the name of the schema used.  Note: When using a schema, it is recommended that the schema name and user name be the same.
Advanced	Selecting the Advanced checkbox allows you to specify a specific database to connect to. This is defined in the Database field.
URL	Defines the URL format to connect to the database.

Advanced Tab

Option	Description
Tablespace	Specifies the tablespace within the ALBPM database.
Temporary Tablespace	Specifies the temporary tablespace within the ALBPM database.
Profile	Specifies the profile for the ALBPM database. Profiles are as a way to limit which users can connect to the database.

Properties

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Process Engine Provider - DB2

Basic Tab

Option	Description
Host	Specifies either the IP address or the hostname of the database server. For example, 122.23.15.12 or ALBPMDatabase.
Port	Specifies the TCP port of the listener running on the database server. The default is 1521, which is the default port number when installing the Oracle database software.
User	Defines the user id used to connect to the database.
Password	Defines the password for the user id used to connect to the database. This password is case-insensitive.
Database	Defines the name of the database used for the ALBPM directory service.
URL	Defines the URL format to connect to the database.

Properties

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Process Engine Provider - SQL Server

Basic Tab

Option	Description
Host	Specifies either the IP address or the hostname of the database server.
Port	Specifies the port of the listener running on the database server.
User	Defines the user id used to connect to the database.
Password	Defines the password for the user id used to connect to the database.
Database	Specifies the name of the database.
URL	Defines the URL format to connect to the database.

Properties

This tab allows you to specify additional properties that are supported by the JDBC driver. Properties are defined using name/value pairs.

Runtime

Option	Description
Maximum Pool Size	Specifies the maximum number of connections within the connection pool. Database connections are grouped together within a connection pool to improve performance.
Maximum connections per user	Specifies the maximum number of connections within the connection pool for each user.
Connection Idle Time (minutes)	Specifies how long a connection can be idle before it times out.
Minimum Pool Size	Specifies the minimum number of connections with the connection pool.
Maximum Opened Cursors	Specifies how many queries can be created for each connection.

Enter Process Engine Creation Information

Option	Description
DBA User	Specifies the Database Administrator user id.
DBA Password	Specifies the Database Administrator password.

Show SQL Script

This page displays the generated SQL script which is used by your database administrator to create the necessary tables and schema.

Option	Description
Copy to clipboard	Allows you to copy the generated script to the clipboard.
Save to file	Allows you to save the generated script to a file.

Configuring ALBPM

This page appears while the ALBPM Configuration Wizard is running. It may take several minutes for this to complete.

ALBPM Configuration Complete

This page appears after the ALBPM Configuration Wizard is complete. Click **Finish** to close the configuration wizard.

Example web.xml for WebLogic Portal

When configuring AquaLogic BPM to work with WebLogic Portal you must use the following web.xml as part of your WebLogic Portal configuration.

This file can be downloaded at: http://edocs.bea.com/albsi/docs60/resources/workspace_wlp/web.xml. See *WebLogic Portal Configuration* for more information.

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app id="WebApp_ID" version="2.4" xmlns="http://java.sun.com/xml/ns/j2ee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/web-app_2_4.xsd">
  <display-name>WorkSpaceWebProject</display-name>
  <welcome-file-list>
    <welcome-file>index.html</welcome-file>
    <welcome-file>index.htm</welcome-file>
    <welcome-file>index.jsp</welcome-file>
    <welcome-file>default.html</welcome-file>
    <welcome-file>default.htm</welcome-file>
    <welcome-file>default.jsp</welcome-file>
  </welcome-file-list>
  <context-param>
    <param-name>javax.faces.STATE_SAVING_METHOD</param-name>
    <param-value>server</param-value>
  </context-param>
  <context-param>
    <param-name>com.sun.faces.validateXml</param-name>
    <param-value>true</param-value>
  </context-param>
  <context-param>
    <param-name>com.sun.faces.verifyObjects</param-name>
    <param-value>true</param-value>
  </context-param>
  <servlet>
    <servlet-name>Faces Servlet</servlet-name>
    <servlet-class>javax.faces.webapp.FacesServlet</servlet-class>
  </servlet>
  <filter>
    <filter-name>PageFlowJspFilter</filter-name>
    <filter-class>org.apache.beehive.netui.pageflow.PageFlowJspFilter</filter-class>
  </filter>
  <filter>
    <filter-name>PageFlowForbiddenFilter</filter-name>
    <filter-class>org.apache.beehive.netui.pageflow.PageFlowForbiddenFilter</filter-class>

    <init-param>
      <param-name>response-code</param-name>
      <param-value>404</param-value>
    </init-param>
  </filter>
  <filter>
    <filter-name>Character Encoding</filter-name>
    <filter-class>fuego.web.filter.CharsetFilter</filter-class>
  </filter>
  <filter>
    <filter-name>SingleThreadPerSessionFilter</filter-name>
    <filter-class>fuego.web.filter.SingleThreadPerSessionFilter</filter-class>
    <init-param>
      <param-name>enabled</param-name>
      <param-value>true</param-value>
    </init-param>
  </filter>
</web-app>
```

```

<filter>
  <filter-name>CacheResourcesFilter</filter-name>
  <filter-class>fuego.web.filter.CacheResourceFilter</filter-class>
  <init-param>
    <param-name>enabled</param-name>
    <param-value>true</param-value>
  </init-param>
</filter>
<filter-mapping>
  <filter-name>CacheResourcesFilter</filter-name>
  <url-pattern>*.js</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>CacheResourcesFilter</filter-name>
  <url-pattern>*.css</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>CacheResourcesFilter</filter-name>
  <url-pattern>*.gif</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>CacheResourcesFilter</filter-name>
  <url-pattern>*.png</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>SingleThreadPerSessionFilter</filter-name>
  <url-pattern>*.xhtml</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>SingleThreadPerSessionFilter</filter-name>
  <url-pattern>/servlet/*</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>Character Encoding</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>PageFlowJspFilter</filter-name>
  <url-pattern>*.jsp</url-pattern>
  <dispatcher>FORWARD</dispatcher>
  <dispatcher>REQUEST</dispatcher>
  <dispatcher>INCLUDE</dispatcher>
</filter-mapping>
<filter-mapping>
  <filter-name>PageFlowJspFilter</filter-name>
  <url-pattern>*.jspx</url-pattern>
  <dispatcher>FORWARD</dispatcher>
  <dispatcher>REQUEST</dispatcher>
  <dispatcher>INCLUDE</dispatcher>
</filter-mapping>
<filter-mapping>
  <filter-name>PageFlowForbiddenFilter</filter-name>
  <url-pattern>*.java</url-pattern>
  <dispatcher>REQUEST</dispatcher>
</filter-mapping>
<filter-mapping>
  <filter-name>PageFlowForbiddenFilter</filter-name>
  <url-pattern>*.jsfb</url-pattern>
  <dispatcher>REQUEST</dispatcher>
</filter-mapping>
<filter-mapping>
  <filter-name>PageFlowForbiddenFilter</filter-name>
  <url-pattern>*.jpfs</url-pattern>
  <dispatcher>REQUEST</dispatcher>
</filter-mapping>
<listener>
<listener-class>org.apache.beehive.netui.pageflow.PageFlowContextListener</listener-class>
</listener>
</listener>

```

```

<listener-class>org.apache.beehive.netui.pageflow.HttpSessionMutexListener</listener-class>

</listener>
</listener>

<listener-class>fuego.workspace.execution.WorkspaceExecutionSessionListener</listener-class>

</listener>
<listener>
  <listener-class>fuego.workspace.context.WorkspaceContextListener</listener-class>
</listener>
<listener>
  <listener-class>com.sun.faces.config.ConfigureListener</listener-class>
</listener>
<servlet>
  <servlet-name>action</servlet-name>
  <servlet-class>org.apache.beehive.netui.pageflow.PageFlowActionServlet</servlet-class>

  <init-param>
    <param-name>config</param-name>
    <param-value>/_pageflow/struts-config.xml</param-value>
  </init-param>
  <init-param>
    <param-name>debug</param-name>
    <param-value>2</param-value>
  </init-param>
  <init-param>
    <param-name>detail</param-name>
    <param-value>2</param-value>
  </init-param>
  <load-on-startup>2</load-on-startup>
</servlet>
<servlet>
  <servlet-name>XmlHttpRequestServlet</servlet-name>

<servlet-class>org.apache.beehive.netui.pageflow.xmlhttprequest.XmlHttpRequestServlet</servlet-class>

</servlet>
<!-- Executor Servlet -->
<servlet>
  <servlet-name>ExecutorServlet</servlet-name>
  <servlet-class>fuego.workspace.servlet.ExecutorServlet</servlet-class>
  <load-on-startup>1</load-on-startup>
</servlet>
<!-- Image Servlet -->
<servlet>
  <servlet-name>ImageViewer</servlet-name>
  <servlet-class>fuego.workspace.servlet.ImageViewer</servlet-class>
  <load-on-startup>1</load-on-startup>
</servlet>
<!-- Instance Detail Servlet -->
<servlet>
  <servlet-name>Controller</servlet-name>
  <servlet-class>fuego.workspace.servlet.Controller</servlet-class>
  <load-on-startup>1</load-on-startup>
</servlet>
<!-- Download Attachment Servlet -->
<servlet>
  <servlet-name>DownloadAttachmentServlet</servlet-name>
  <servlet-class>fuego.workspace.servlet.DownloadAttachmentServlet</servlet-class>
  <load-on-startup>1</load-on-startup>
</servlet>
<servlet-mapping>
  <servlet-name>action</servlet-name>
  <url-pattern>*.jpf</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>action</servlet-name>
  <url-pattern>*.do</url-pattern>
</servlet-mapping>

```

```

<servlet-mapping>
  <servlet-name>XmlHttpRequestServlet</servlet-name>
  <url-pattern>*.xhr</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>XmlHttpRequestServlet</servlet-name>
  <url-pattern>*.render</url-pattern>
</servlet-mapping>
<!-- extension mapping -->
<servlet-mapping>
  <servlet-name>ExecutorServlet</servlet-name>
  <url-pattern>/servlet/executor</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>ImageViewer</servlet-name>
  <url-pattern>/servlet/image</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>Controller</servlet-name>
  <url-pattern>/servlet/controller</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>DownloadAttachmentServlet</servlet-name>
  <url-pattern>/servlet/download</url-pattern>
</servlet-mapping>
<!-- Use Documents Saved as *.xhtml
-->
<context-param>
  <param-name>javax.faces.DEFAULT_SUFFIX</param-name>
  <param-value>.xhtml</param-value>
</context-param>
<context-param>
  <param-name>com.sun.faces.NUMBER_OF_VIEWS_IN_SESSION</param-name>
  <param-value>15</param-value>
</context-param>
<context-param>
  <param-name>fuego.upload.FILE_MAX_SIZE</param-name>
  <param-value>1000000</param-value>
</context-param>
<context-param>
  <param-name>facelets.DEVELOPMENT</param-name>
  <param-value>false</param-value>
</context-param>
<context-param>
  <param-name>facelets.VIEW_MAPPINGS</param-name>
  <param-value>*.xhtml</param-value>
</context-param>
<context-param>
  <param-name>facelets.REFRESH_PERIOD</param-name>
  <param-value>-1</param-value>
</context-param>
<context-param>
  <param-name>facelets.LIBRARIES</param-name>
  <param-value>
    /WEB-INF/facelets/bpmWorkspace.taglib.xml;
    /WEB-INF/facelets/bpmWorkspaceLibrary.taglib.xml;
    /WEB-INF/facelets/fuegojsf.taglib.xml;
    /WEB-INF/facelets/htmlib.taglib.xml;
  </param-value>
</context-param>
<context-param>
  <param-name>javax.faces.CONFIG_FILES</param-name>
  <param-value>
    /WEB-INF/application.xml,/WEB-INF/navigation.xml,/WEB-INF/managed-beans.xml,/WEB-INF/components.xml

  </param-value>
</context-param>
<context-param>
  <param-name>com.bea.opencontrols.RESOURCE_SUFFIX</param-name>
  <param-value>.resource</param-value>

```

```

</context-param>
<context-param>
  <param-name>com.bea.opencontrols.WLP</param-name>
  <param-value>true</param-value>
</context-param>
<filter>
  <filter-name>PageFlowFacesFilter</filter-name>
  <filter-class>org.apache.beehive.netui.pageflow.PageFlowFacesFilter</filter-class>
</filter>
<filter-mapping>
  <filter-name>PageFlowFacesFilter</filter-name>
  <url-pattern>*.faces</url-pattern>
  <dispatcher>FORWARD</dispatcher>
  <dispatcher>REQUEST</dispatcher>
  <dispatcher>INCLUDE</dispatcher>
</filter-mapping>
<filter-mapping>
  <filter-name>PageFlowFacesFilter</filter-name>
  <url-pattern>*.jsf</url-pattern>
  <dispatcher>FORWARD</dispatcher>
  <dispatcher>REQUEST</dispatcher>
  <dispatcher>INCLUDE</dispatcher>
</filter-mapping>
<servlet-mapping>
  <servlet-name>Faces Servlet</servlet-name>
  <url-pattern>*.faces</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>Faces Servlet</servlet-name>
  <url-pattern>*.resource</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>Faces Servlet</servlet-name>
  <url-pattern>/faces/*</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>Faces Servlet</servlet-name>
  <url-pattern>*.xhtml</url-pattern>
</servlet-mapping>
<error-page>
  <exception-type>java.lang.Exception</exception-type>
  <location>/jsp/errorPage.jsp</location>
</error-page>
<error-page>
  <error-code>500</error-code>
  <location>/jsp/errorPage.jsp</location>
</error-page>
<jsp-config>
  <jsp-property-group>
    <url-pattern>*.jsf</url-pattern>
    <is-xml>false</is-xml>
  </jsp-property-group>
  <jsp-property-group>
    <url-pattern>*.jsp</url-pattern>
    <url-pattern>*.jspx</url-pattern>
    <el-ignored>true</el-ignored>
  </jsp-property-group>
</jsp-config>
<mime-mapping>
  <extension>png</extension>
  <mime-type>image/png</mime-type>
</mime-mapping>
</web-app>

```

Audit Events Overview

When Audit Events are Generated

You can define which process activities will generate auditing events.

You set whether an activity generates events in design time, and you can set this for each activity, for activity groups, or for the whole process. You can also set whether the process engine generates events or not at run time.

Design Time

Design time event generation options are set in Studio. At design time, the following options are available for each *activity*:

Setting	Description
<i>Default</i> (default setting)	Indicates that the activity will record events according to the group or process default, as described below.
<i>Generate Events</i>	The activity will generate events, regardless of the group or process default.
<i>Do not Generate Events</i>	The activity will not generate events, regardless of the process default.

Also at design time, the following options are available for each *group*:

Setting	Description
<i>Default</i> (default setting)	Indicates that the group's activities will record events according to the process setting, as described below.
<i>Generate Events</i>	The default for the group's activities will be to generate events, regardless of the process default.
<i>Do not Generate Events</i>	The default for the group's activities will be not to generate events, regardless of the process default.

The following options are available for each *process*. These settings will be used by activities or groups set to *Default*. If a group or activity is not set to *Default*, it will ignore the process setting.

Setting	Description
<i>Generate Events for Interactive Activities</i> (default setting)	Each activity set to the <i>Default</i> option will generate events if it is interactive, and will not generate events if it is automatic.
<i>Generate Events for all Activities</i>	Each activity or group set to <i>Default</i> will generate events.
<i>Do not Generate Events</i>	Each activity or group set to <i>Default</i> will not generate events.

Run Time

You set run time event generation in Process Administrator, for each process engine. You can set each process engine to one of the following event recording modes:

Setting	Description
<i>Depends on Process</i> (default setting)	Indicates that the process engine will follow the settings of each process. That is, it will follow the design time settings as described in the section above.
<i>Never</i>	No events are recorded, except instance begin and end activities. Design time settings are ignored.

Setting	Description
<i>Always</i>	All activities generate events, regardless of process, group, or activity settings. Design time settings are ignored.

Remarks

If all settings are left at their defaults, a process will generate events for interactive activities and not for automatic activities. Begin and End activities are always generated.

This is a reasonable default because activities that require human interaction have the most variable execution times. However, you may want to measure some automatic activities, for example those that invoke external systems that for whatever reason have variable execution times.

Each event generated has a slight performance cost. This cost is not important for interactive activities since these activities spend most of their time waiting for participants to execute them. However, it may have significant impact on automatic activities that are performed frequently.

Which Audit Events are Generated

The following auditing events are generated:

- All the activities generate the same events (IN, OUT, EXECUTE, SELECT, UNSELECT, among others.)
- The Begin activity has no Activity IN event as the instance is created in it.
- The End activity has no Activity OUT event as the instance terminates there.
- The Join activity generates events only if the Split associated activity generates events.
- When an instance is created, a CREATION event is generated instead of an Enter event. This event is always automatically generated if the Engine stores events. All original instances (copy 0) have the CREATION event.
- When an instance is finished, an END event is generated. This event is always automatically generated if the Engine stores events. All terminated original instances (copy 0) have the END event.
- Interactive activities have additional events that occur between the Enter and End events.

If you have any Generates events check box selected, the Audit Trail in WorkSpace is enabled. The Audit Trail displays all events that have occurred for an instance.