



# **JMS Point to Point Sample Application with WebSphere Application Server 5.x and Willow Technology's WebSphere MQ**

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## Introduction

This document and its instructions are designed to be used in a test environment. It illustrates how to configure and test a JMS Point-to-Point application with WebSphere Application Server 5.x using Willow Technology's WebSphere MQ. The JMS application used in this document was developed by Dharmesh Bhakta of IBM Corporation, Linux Integration Center, Austin, Texas. In this synchronous point-to-point application, a simulated banking environment is presented via jsp pages allowing the user to submit and view banking transactions whereby demonstrating the process of putting and getting messages on/from a queue.

This document assumes you have already installed and configured your WebSphere MQ environment and focuses more on the installation and configuration of WebSphere Application Server as well as the creation of the queue manager, queue, channel, and listener port that the application will use. Please read the Prerequisites section that follows to ensure that your test environment has been configured to work with this tutorial.

## Tasks to be Completed

The following tasks are listed in the order for which they will be completed.

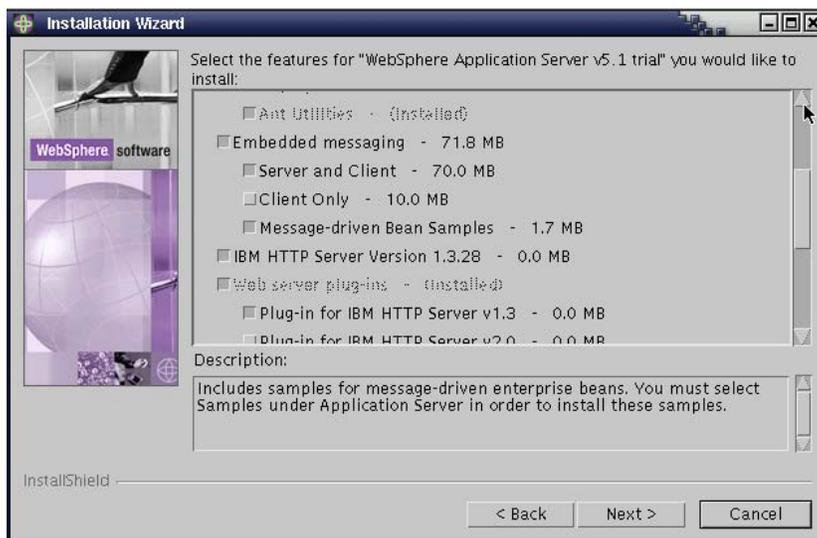
- Check Prerequisites For This Tutorial
- Start the Application Server and Verify its Installation
- Create the Queue Manager and Associated Objects that the Sample Application Requires
- Set MQ Environment Variable in WebSphere Application Server
- Create J2C Authentication Data Entry in WebSphere Application Server
- Configure Queue Connection Factory
- Configure Queue Destination and Test
- Install the Application

## Prerequisites

Ensure that the following list of prerequisites have been met prior to beginning this tutorial.

- Install Willow's WebSphere MQ. Refer to your platform's version of WebSphere MQ documentation for installing and configuring this product.
- Install WebSphere Application Server 5.x without Embedded Messaging. Refer to the installation instructions for installing this product.

**NOTE:** WebSphere Application Server installs Embedded Messaging by default. To ensure that this feature is not installed, select the Custom Install option from the Installation Wizard and de-select Embedded Messaging when the following window appears.

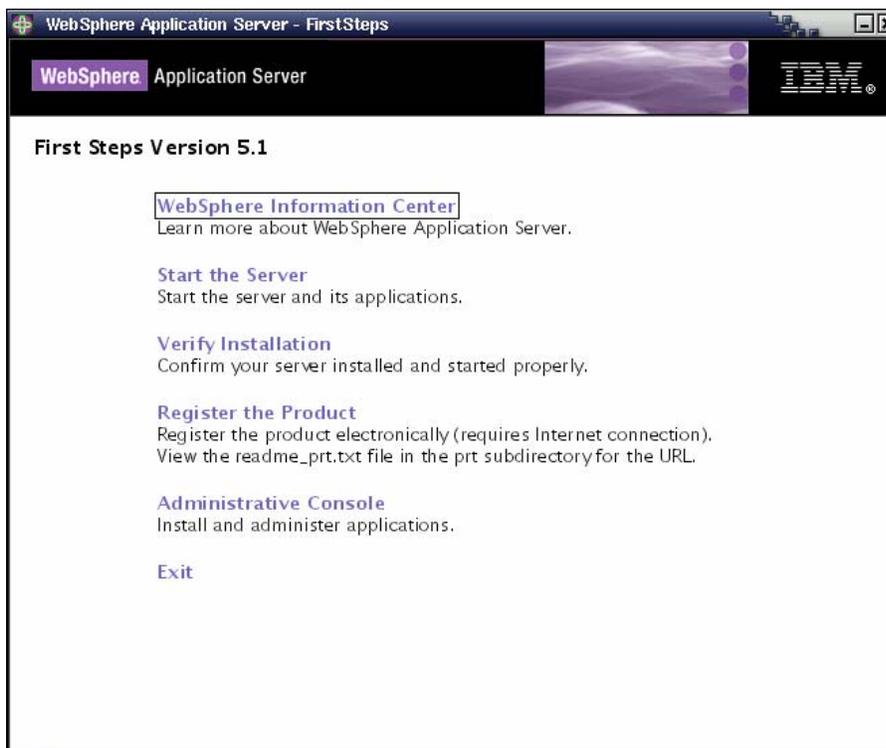


## Starting the Application Server and Verifying Installation

After completing the installation of WebSphere Application Server, start the server and verify the installation. To accomplish this, run the test from the FirstSteps tool that appears immediately upon completion of the installation. The FirstSteps tool provides a place for you to easily access links to commonly performed tasks (depending on which components you chose to install) such as starting and stopping the Administrative Console, running Sample Applications, and running the Verification Application. If this tool does not appear after setup has completed, run the following command:

- On Windows platforms: `install_root\bin\firststeps.bat`
- On Unix platforms: `install_root\bin\firststeps.sh`

The FirstSteps tool looks like this:



Select the option “Verify Installation”. This will first start the server, and then run a program that checks that the server is installed and operating normally.

As mentioned previously, you can also use the FirstSteps tool to start and stop the server. Alternatively, issue the following commands:

### To start the server:

- On Windows platforms: `install_root\bin\startServer.bat server1`
- On Unix platforms: `install_root\bin\startServer.sh server1`

### To stop the server:

- On Windows platforms: `install_root\bin\stopServer.bat server1`
- On Unix platforms: `install_root\bin\stopServer.sh server1`

## Create Queue Manager, Queue, and Channel and Define the Listener Port

Before configuring WebSphere Application Server for a point-to-point application, first define the queue manager and other necessary MQ objects that the sample application requires.

Follow the steps outlined below to define your MQ objects:

- Ensure that you are logged on as mqm.
- Issue the following commands, one line at a time:

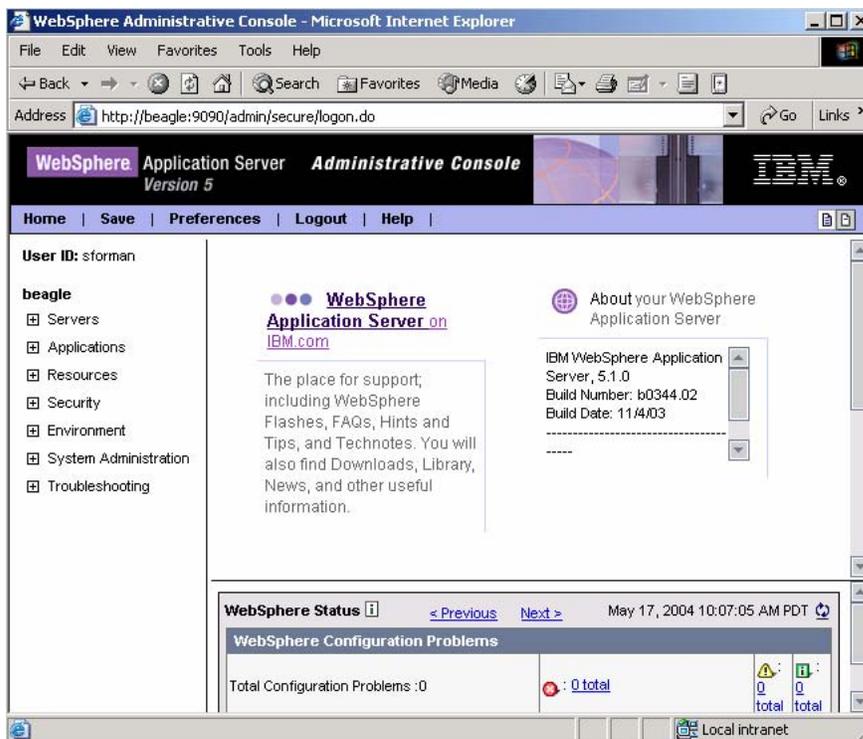
```
crtmqm -u SYSTEM.DEAD.LETTER.QUEUE TESTQM
strmqm TESTQM
strmqcsv TESTQM
runmqsc TESTQM
DEFINE QLOCAL(TESTQ)
DEFINE CHANNEL(TESTCHANNEL)
CHLTYPE(SVRCONN)
END
runmqclsr -m TESTQM -t TCP -p 3600 &
```

## Set WebSphere Application Server Environment Variable for MQ Install Root

So that WebSphere Application Server can communicate with MQ, ensure that the **MQ\_INSTALL\_ROOT** environment variable has been set and accurately reflects the filesystem path to the installation directory for MQSeries.

### Step 1 – Start the WebSphere Application Server Admin Console:

This can be done in a number of ways. You can either select the “Administrative Console” option from the FirstSteps tool, or you can open a browser and browse to the following address: **http://HOST\_NAME:9090/admin**. Where HOST\_NAME is the name of the machine where WebSphere Application Server is installed. When the Admin Console first opens, you will be required to provide a user name. This name is used to track the work you perform while logged on to the console and can be any name you choose. Pick a name that easily identifies you as the user. Once logged on, here is what you will see:



### Step 2 – Set the MQ\_INSTALL\_ROOT Environment Variable:

- Expand **Environment** and then select **Manage WebSphere Variables**.
- A list of WebSphere’s variables will be displayed in the pane to the right. Scroll down through the list and locate **MQ\_INSTALL\_ROOT**. Verify that a value has been assigned to this variable and that it is indeed the correct installation root for your MQ configuration.

## Create WebSphere Application Server J2C Authentication Data Entry

Specify an authentication alias for use by the Queue Connection Factory that will be created in the next section:

- Expand **Security** → **JAAS Configuration** and then select **J2C Authentication Data**.
- Click on the **New** button in the pane to the right and complete the form with the following values:

Alias = MQAUTH  
User ID = mqm

- You may leave the **Password** and **Description** fields blank. Click the **OK** button to complete this task.

## Configure Queue Connection Factory

A Queue Connection Factory provides a connection to a JMS provider of a JMS Queue Destination. In this section we will configure the settings for the Queue Connection Factory, and in the next section we will configure the settings for the Queue Destination.

- Expand **Resources** and select **WebSphere MQ JMS Provider**.
- In the pane to the right, under **Additional Properties**, select **WebSphere MQ Queue Connection Factories**.
- Click on the **New** button and complete the form with the following values:

Name = ebuQcf

JNDI Name = jms/ebuQcf

Container-managed Auth Alias = HOST\_NAME/MQAUTH (where HOST\_NAME is the name of the machine where WebSphere App Server is installed)

Queue Manager = TESTQM

Host = HOST\_IP\_ADDRESS (provide the ip address of the host machine)

Port = 3600

Channel = TESTCHANNEL

- Click **OK**.

## Configure Queue Destination and Test

Follow the steps below to configure the properties for the Queue Destination:

### Step 1 – Configure Queue Destination:

- Expand **Resources** and select **WebSphere MQ JMS Provider**.
- In the pane to the right, under **Additional Properties**, scroll down to the bottom and select **WebSphere MQ Queue Destinations**.
- Click on the **New** button and complete the form with the following values:

Name = ebuQ

JNDI Name = jms/ebuQ

Base Queue Name = TESTQ

Base Queue Manager Name = TESTQM

Queue Manager Host = HOST\_IP\_ADDRESS (provide the ip address of the host machine)

Queue Manager Port = 3600

Server Connection Channel Name = TESTCHANNEL

User ID = mqm

- Click **OK**.

### Step 2 – Test Connection Between Queue Connection Factory and Queue Destination:

- Log out of the admin console and then stop and restart the application server.
- Once the server has started, expand **Resources** and select **WebSphere MQ JMS Provider**.
- In the pane to the right, under **Additional Properties**, select **WebSphere MQ Queue Destinations**.
- Select **ebuQ**.
- Scroll down to the bottom and select **MQ Config** from the **Additional Properties** section. If everything has been configured properly, the window that opens next will display information about your queue manager, queue, channel, listener port, etc.... You should not see any error messages. If you do, then you will need to debug and assess your configuration to figure out what is causing the problem.

## Install the Sample JMS Point-to-Point Application

In this section we will install and run the application. Complete the following steps to accomplish this.

### Step 1 – Install the Application:

- In the Admin Console, expand **Applications** and select **Install New Application**.
- Browse to THE directory where **btcsApp2004-Willow.ear** is saved.
- Click **Next**.
- Accept defaults and click **Next** on all windows until you are finally able to install.
- Once installed, you should receive a message that the application installed successfully. Save the configuration.

### Step 2 – Configure Listener Port

- Expand **Servers** and select **Application Servers**.
- From the pane at the right, select **server1**.
- Select **Message Listener Service**.
- Select Listener Ports and click New. Provide the following values:

Name = TestPort

Connection factory JNDI name = jms/ebuQcf

Destination JNDI name = jms/ebuQ

- Click **OK**.
- Logout of the Admin Console by clicking **Logout** from the menu at the top.
- Stop and restart the Admin Console.

### Step 3 – Start the Application:

- Once the app server has restarted, open a browser and type **http://HOSTNAME:9080/btcsApp** to start the sample application. Here is what you will see:

http://beagle:9080/btcsApp/ - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://beagle:9080/btcsApp/

 **Backoffice  
Transaction  
Confirmation  
System**

[Clerk Login](#)  
[Manager Login](#)

**Welcome to the  
Linux Integration Center's  
Backoffice Transaction Confirmation System!**

The purpose of this application is to enable you to see the power of integrating WebSphere Portal Server with DB2 and WebSphere MQ. This scenario is one of many that could occur in the workplace. For this scenario, we have chosen a banking environment where you complete transactions either as a clerk or as a manager. The actions you can perform include:

**Clerk View**

- Submit a transaction for approval
- Browse submitted transactions

**Manager View**

- Submit a transaction for approval
- Browse submitted transactions
- Delete submitted transactions
- Approve submitted transactions

- Here you have two options of where you can browse to next. You can either select **Clerk Login**, or you can select **Manager Login**.
- Once you've selected one of these options, choose the **Submit Transaction** link. Enter some data into the form that appears and click the **Submit** button. This action puts a message on the queue.
- To get the information that you just sent to the queue, select the **Browse Transactions** link.