

## Deploying IBM MQ IVT `wmq.jmsra.ivt.ear` in WebSphere Application Server (WSAS) in Linux RHEL

<https://www.ibm.com/support/pages/node/7148280>

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IBM MQ Support

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+++ Objective +++

The purpose of this tutorial is to configure and run the WebSphere Application Server (WSAS) in a Linux (RHEL) server, with the intention to run the IBM MQ Installation Verification Test (IVT) ear file, `wmq.jmsra.ivt.ear`.

For this tutorial:

- The version of MQ is 9.3.0.15 LTS, but the steps are applicable to all supported versions of MQ.
- The version of WSAS is 9.0.5.1 and has been already installed, but the steps are applicable to all supported versions of WSAS.

### **+++ About the MQ IVT application**

1. The IVT sample is located in the MQ installation under the following directory (if the java client is installed):

```
<mq_install_dir>/java/lib/jca/wmq.jmsra.ivt.ear
```

2. It is a servlet that posts a message to an MQ queue and then uses an activation spec to consume the message.

3. This IVT sample is hard-coded to use a JMS Administrative object of type `jmsQueue` named `IVTQueue`.  
This JMS administrative object will refer to the real (base) MQ queue named `R93.LQ`

4. The sample can use whatever server-connection channel that you wish.

### **++ References**

<https://www.ibm.com/docs/en/ibm-mq/9.3?topic=adapter-verifying-resource-installation>  
IBM MQ / 9.3

Verifying the resource adapter installation

The installation verification test (IVT) program for the IBM® MQ resource adapter is supplied as an EAR file. To use the program, you must deploy it and define some objects as JCA resources.

The following tutorial is old, but still applicable.

It shows the steps to create the Resources for the JNDI (Connection Factories, etc)

<https://www.ibm.com/support/pages/node/322771>

Using WebSphere MQ V7 as JMS Provider for WebSphere Application Server V7, V8.0 and V8.5, and MQ 9.0 for WAS V9.0

### +++ MQ Queue Manager

#### ++ Full MQ Server package downloaded from IBM Passport Advantage

+ To download the full MQ Server package, see:

<https://www.ibm.com/support/pages/downloading-ibm-mq-93-lts>  
Downloading IBM MQ 9.3 LTS

For MQ 9.3: From IBM Passport Advantage you can download the manufacturing refresh: MQ 9.3.0.15 LTS that includes 9.3.0.0 + 9.3.0.1 + 9.3.0.2 + ... + 9.3.0.10 + ... + 9.3.0.15

Visit IBM Passport Advantage:

[https://www.ibm.com/software/passportadvantage/pao\\_customer.html](https://www.ibm.com/software/passportadvantage/pao_customer.html)

... search for Part Number for the single package that includes the queue manager, client and the rest of the components (except the MQ Explorer).

**MOGCGML => IBM MQ 9.3.0.15 Long Term Support release for Linux on x86 64-bit Multilingual elmage**

+ To install the MQ queue manager code, see:

The following tutorial can be helpful for the installation and uninstallation tasks when you want to have only 1 installation in the host. Keep in mind that the Fix Packs mentioned in the tutorial were the ones that were the latest at the time the tutorial was written. Even though the titles specify MQ 9.3, the same principles apply to all versions, release types (LTS/CD) and fix packs.

It applies also to the queue manager and/or client components.

All the tasks are done with the default Installation1 which is /opt/mqm

<https://www.ibm.com/support/pages/node/6988681>

Installing MQ 9.3, applying Fix Pack 9.3.0.5, uninstalling in Linux RHEL

+ Location of the MQ IVT ear file

These are the locations for the MQ RA rar and IVT ear files.

Linux:

```
[mqm@WSAS-MQ1 mqm93]
```

```
$ cd /opt/mqm93/java/lib/jca/
```

```
$ ls -l
```

```
-r--r--r-- 1 mqm mqm 10262 Nov 29 02:06 wmq.jakarta.jmsra.ivt.ear
```

```
-r--r--r-- 1 mqm mqm 25604 Nov 29 02:06 wmq.jmsra.ivt.ear
```

For completeness:

Windows:

Directory of C:\Program Files\IBM\MQ\java\lib\jca

05/31/2023 01:00 AM 10,242 wmq.jakarta.jmsra.ivt.ear

05/31/2023 01:00 AM 25,617 wmq.jmsra.ivt.ear

+ These ear files are provided by rpm fileset in Linux:

```
# rpm -qf /opt/mqm93/java/lib/jca/wmq.jmsra.ivt.ear
MQSeriesJava-9.3.0-15.x86_64
```

+ Local queue manager

Note: The default location for the MQ code is /opt/mqm, but in this tutorial a different location was used.

The RHEL host WSAS-MQ1 was used for this tutorial and MQ was installed in Installation1 at location:

/opt/mqm93

We will use a queue manager located in the same host of the WSAS server.

```
Queue manager name: R93
Host:                localhost
Port:                1414
Server-Connection channel: R93.SVRCONN with MCAUSER('mqm') set.
Queue:                R93.LQ
```

Because our focus is just to have a basic queue manager with minimum security for testing the MQ IVT application, the CONNAUTH and CHLAUTH are disabled.

One way to create such queue manager is by creating an mqsc file in /var/mqm such as:

/var/mqm/define-wsas-qm.mqsc

The contents of this mqsc file is:

+ begin of file (do not include this line)

```
** Define queues
DEFINE QLOCAL('R93.LQ')                                REPLACE

** Do not ask for password for remote access
ALTER AUTHINFO(SYSTEM.DEFAULT.AUTHINFO.IDPWOS) AUTHTYPE(IDPWOS) CHCKCLNT(OPTIONAL)
REFRESH SECURITY TYPE(CONNAUTH)

** Simplify the demo system by disabling channel and connection authentication
ALTER QMGR CHLAUTH(DISABLED) CONNAUTH(' ')
REFRESH SECURITY TYPE(CONNAUTH)

** Define channels to be used by a remote MQ client
```

```
DEFINE CHANNEL(R93.SVRCONN) CHLTYPE(SVRCONN) MCAUSER('mqm')
```

+ end of file (do not include this line)

Create the queue manager by issuing `crtmqm` with the flag `-ic` that points to the file that has the `mqsc` commands:

```
mqm@WSAS-MQ1.fyre.ibm.com:
$ crtmqm -u SYSTEM.DEAD.LETTER.QUEUE -p 1414 -ic /var/mqm/define-wsas-qm.mqsc R93
$ strmqm R93
```

You need to ensure that the following command should work fine without errors, in that way, when you later on start and run the WSAS server, any new errors will be directly related to the use of WSAS and not from a basic initial configuration.

```
$ export MQSERVER='R93.SVRCONN/TCP/localhost(1414) '
$ amqspc R93.LQ R93
Sample AMQSPUT0 start
target queue is R93.LQ
testing prior to start the WSAS server
Sample AMQSPUT0 end
```

## +++ WebSphere Application Server

To start server1 for the profile AppSrv01 issue:

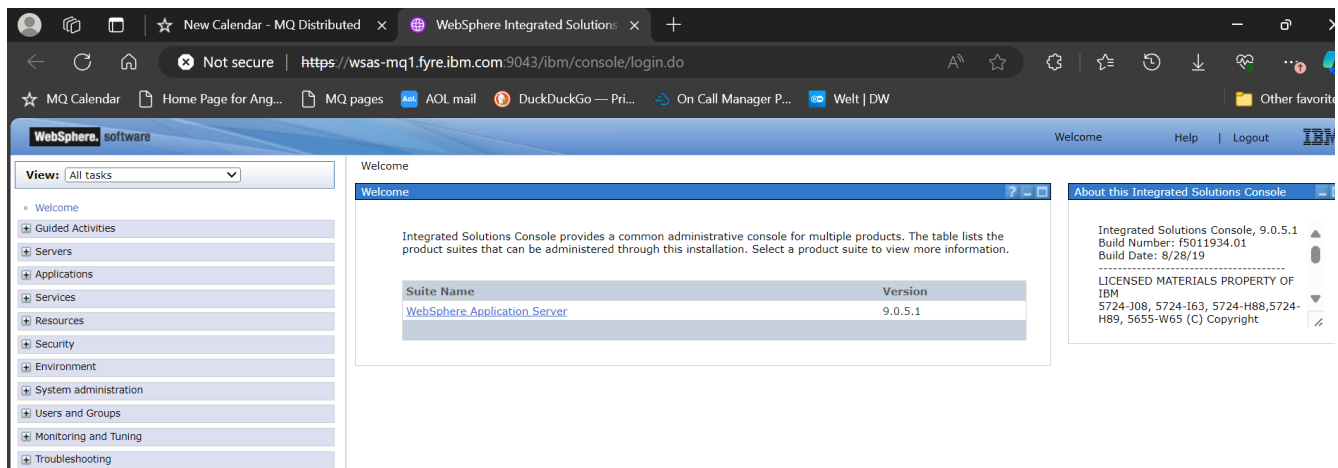
```
[root@WSAS-MQ1]
# cd /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
# ./startServer.sh server1
```

The log files will be located at:

/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/server1

The WSAS Web Console can be accessed via:

<https://wsas-mq1.fyre.ibm.com:9043/ibm/console/login.do>



The MQ Resource Adapter (RA), that is, the MQ JMS code, is provided by WSAS. The specific version of the MQ RA depends on the specific version of WSAS. See the following article for more details.

<https://www.ibm.com/support/pages/node/86587>

Which version of WebSphere MQ Resource Adapter (RA) is shipped with WebSphere Application Server?

Because the version of WSAS is 9.0.5.1, then the included version of the MQ RA is: WSAS 9.0.5.1 => MQ RA 9.1.0.2 (9.1.0.2-p910-002-190322)

### WebSphere Application Server V9.0

WebSphere Application Server Version 9.0 ships with the WebSphere MQ Version 9.0 Resource Adapter. The table below shows the level of the Resource Adapter that is included with specific releases of the application server.

| WebSphere Application Server Version | WebSphere MQ JCA resource adapter Version | Implementation Version, shown in WMSG1703I log entry during server startup |
|--------------------------------------|---|--|
| 9.0.5.1                              | 9.1.0.2                                   | 9.1.0.2-p910-002-190322  |

OK. At this point we have the 2 components running: the WSAS server and the MQ queue manager.

Now let's proceed to configure WSAS for the MQ IVT application.

### + Step 1: Create JMS Administrative objects

In WSAS you need to create 4 jndi resources at the cell scope.

The jndi names are hard coded in the MQ IVT application:

- A Connection Factory with a jndi name of:           jms/ivt/IVTCF
- A Connection Factory with a jndi name of:           jms/cf1
- An Activation Specification with a jndi name of:   jms/ivt/IVTACT
- A queue with a jndi name of:                        jms/ivt/IVTQueue

### + Creating the Connection Factories

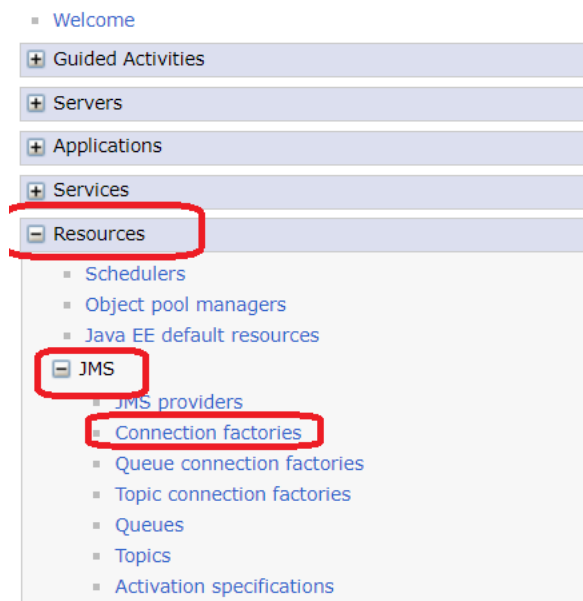
Start with the WSAS Web Console

<https://wsas-mq1.fyre.ibm.com:9043/ibm/console/login.do>

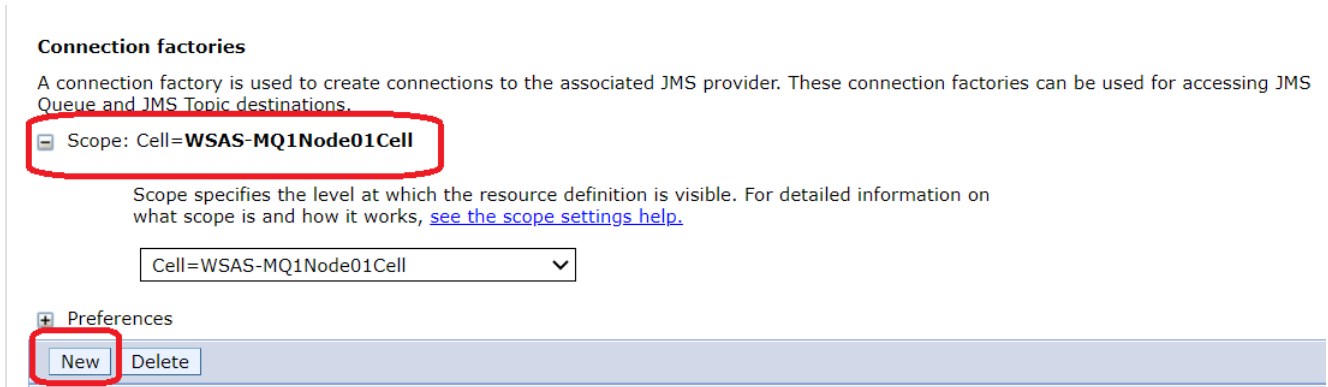
On the left navigational panel select:

Resources > JMS

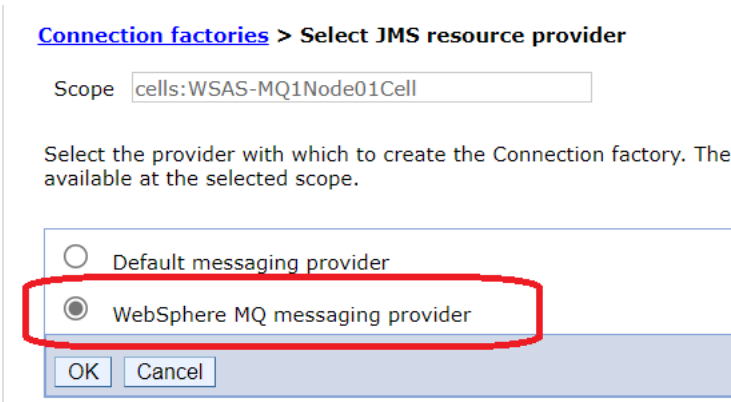
We will start with: Connection factories



On the right navigational panel, accept the default scope of: Cell  
Then click on: New



Under: Select JMS resource provider  
... select:  
(\* ) WebSphere MQ messaging provider





For Step 1, enter the basic attributes:

Name: IVTCF  
jndi name of: jms/ivt/IVTCF

The screenshot shows the 'Create IBM MQ JMS resource' wizard. The title bar reads 'Create IBM MQ JMS resource'. Below the title bar, it says 'This wizard creates a IBM MQ JMS resource'. The left sidebar shows four steps: 'Step 1: Configure basic attributes' (highlighted with a yellow arrow), 'Step 2: Select connection method', 'Step 3: Test connection', and 'Step 4: Summary'. The main panel is titled 'Configure basic attributes' and contains the instruction 'Configure the basic attributes to use for the new IBM MQ messaging provider resource'. There are three input fields: 'Name' with the value 'IVTCF', 'JNDI name' with the value 'jms/ivt/IVTCF', and a 'Description' text area which is empty. At the bottom, there are 'Next' and 'Cancel' buttons.

For Step 2, select:

(\*) Enter all the required information into this wizard

The screenshot shows the 'Create IBM MQ JMS resource' wizard at Step 2: 'Select connection method'. The left sidebar shows four steps: 'Step 1: Configure basic attributes', 'Step 2: Select connection method' (highlighted with a yellow arrow), 'Step 3: Test connection', and 'Step 4: Summary'. The main panel is titled 'Select connection method' and contains the instruction 'Decide what information to enter to determine how to connect to IBM MQ'. There are two radio button options: 'Enter all the required information into this wizard' (which is selected and circled in red) and 'Use a client channel definition table'.

For Step 2.1, enter the name of the queue manager: R93

The screenshot shows the 'Create IBM MQ JMS resource' wizard at Step 2.1: 'Supply queue manager details'. The left sidebar shows four steps: 'Step 1: Configure basic attributes', 'Step 2: Select connection method', and 'Step 2.1: Supply queue manager details' (highlighted with a yellow arrow). The main panel is titled 'Supply queue manager details' and contains the instruction 'Enter details about the queue manager or queue sharing'. There is one input field labeled 'Queue manager or queue sharing group name' with the value 'R93' entered, which is circled in red.

For Step 2.2, enter the details

Transport: Client

Hostname: localhost

Port: 1414

Server connection channel: R93.SVRCONN

**Step 1: Configure basic attributes**

**Step 2: Select connection method**

Step 2.1: Supply queue manager details

→ **Step 2.2: Enter connection details**

Step 3: Test connection

Step 4: Summary

### Enter connection details

Enter the details required to establish a connection to the queue manager or queue sharing group

Transport  
Client

Enter host and port information in the form of separate hostname and port values

Hostname  
localhost

Port  
1414

Enter host and port information in the form of a connection name list

Connection name list

Server connection channel  
R93.SVRCONN

For Step 3, it is highly recommended that you actually test the connection!

**Step 1: Configure basic attributes**

**Step 2: Select connection method**

Step 2.1: Supply queue manager details

Step 2.2: Enter connection details

→ **Step 3: Test connection**

### Test connection

To test establishing a connection using the information provided select the "Test Connection" button. It may take several seconds to perform this test. If you wish to skip this test, select the "Next" button.

Test connection

You can proceed only if the test was successful.

**Step 1: Configure basic attributes**

**Step 2: Select connection method**

Step 2.1: Supply queue manager details

Step 2.2: Enter connection details

Step 3: Test connection

→ **Step 3.1: Test connection result**

### Test connection result

Result of testing the connection

A connection was successfully made to IBM MQ.

Continue with the steps.

You should see now the new entry for the Connection Factory: IVTCF

**Connection factories**

A connection factory is used to create connections to the associated JMS provider. These connection factories can be used for accessing JMS Queue and JMS Topic destinations.

Scope: Cell=**WSAS-MQ1Node01Cell**

Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, [see the scope settings help](#).

Cell=WSAS-MQ1Node01Cell

Preferences

New Delete

| Select                   | Name                  | JNDI name     | Provider                        | Description | Scope                   |
|--------------------------|-----------------------|---------------|---------------------------------|-------------|-------------------------|
| <input type="checkbox"/> | <a href="#">IVTCF</a> | jms/ivt/IVTCF | WebSphere MQ messaging provider |             | Cell=WSAS-MQ1Node01Cell |

You can administer the following resources:

Repeat the steps to create the next Connection Factory: cf1

Name: cf1  
 jndi name of: jms/ivt/IVTCF

... with the same connection details.

Now we have a 2nd Connection Factory: cf1

New Delete

| Select                   | Name   | JNDI name                          | Provider                        | Description  | Scope                   |
|--------------------------|--|------------------------------------|---------------------------------|--|-------------------------|
| <input type="checkbox"/> | <a href="#">IVTCF</a>                          | jms/ivt/IVTCF                      | WebSphere MQ messaging provider |  | Cell=WSAS-MQ1Node01Cell |
| <input type="checkbox"/> | <a href="#">built-in-jms-connectionfactory</a> | jms/built-in-jms-connectionfactory | Default messaging provider      | EE7 Default JMS Connection Factory for the WebSphere Application Server. | Cell=WSAS-MQ1Node01Cell |
| <input type="checkbox"/> | <a href="#">cf1</a>                            | jms/cf1                            | WebSphere MQ messaging provider |  | Cell=WSAS-MQ1Node01Cell |

Total 3

Let's create a Destination Queue.

From the left navigation panel, select:

Resources > JMS > Queues



Proceed to specify that the provider is:  
(\*) WebSphere MQ messaging provider

... and the rest of the information:

Name: IVTQueue  
Destination jndi: jms/ivt/IVTQueue  
Name real queue:

A screenshot of the 'General Properties' configuration page for a JMS Queue. The page is divided into two sections: 'Administration' and 'IBM MQ Queue'. In the 'Administration' section, the 'Provider' field is set to 'WebSphere MQ messaging provider'. The 'Name' field is 'IVTQueue' and the 'JNDI name' is 'jms/ivt/IVTQueue', both of which are highlighted with red boxes. In the 'IBM MQ Queue' section, the 'Queue name' field is 'R93.LQ', also highlighted with a red box. A red arrow points from the text 'Name of real queue' to the 'Queue name' field. The 'Queue manager or Queue sharing group name' field is empty.

You will see:

| + Preferences                               |                          |                  |                                 |             |                         |
|---|--------------------------|------------------|---------------------------------|-------------|-------------------------|
| New Delete                                  |                          |                  |                                 |             |                         |
|   |                          |                  |                                 |             |                         |
| Select                                      | Name                     | JNDI name        | Provider                        | Description | Scope                   |
| You can administer the following resources: |                          |                  |                                 |             |                         |
| <input type="checkbox"/>                    | <a href="#">IVTQueue</a> | jms/ivt/IVTQueue | WebSphere MQ messaging provider |             | Cell=WSAS-MQ1Node01Cell |
| Total 1                                     |                          |                  |                                 |             |                         |

Let's create an Activation Specification.  
From the left navigation panel, select:

Resources > JMS > Activation specifications



On the right navigation panel click: New

Proceed to create a new Activation Specification with the following values:

Name: IVTACT  
jndi name of: jms/ivt/IVTACT  
Destination jndi: jms/ivt/IVTQueue

The steps are very similar to the creation of a Connection Factory, with the exception that a Destination (queue) needs to be specified.

But instead of the name of the queue, it is necessary to specify the "jndi name":  
jms/ivt/IVTQueue

Step 1: Configure basic attributes

→ **Step 1.1: Specify MDB destination data**

Step 2: Select connection method

Step 3: Test connection

Step 4: Summary

### Specify MDB destination data

Enter information about the destination from which messages will be delivered to Message Driven Beans that are associated with the new activation specification.

Destination JNDI name  
jms/ivt/IVTQueue

Message selector

Destination type  
Queue

Proceed with the prompts.  
We will see a new entry.

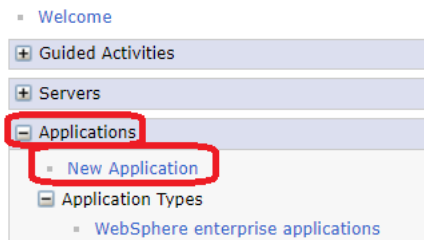
| Select                   | Name                   | JNDI name      | Provider                      | Description | Scope                              |
|--------------------------|------------------------|----------------|-------------------------------|-------------|------------------------------------|
| <input type="checkbox"/> | <a href="#">IVTACT</a> | jms/ivt/IVTACT | WebSphere MQ Resource Adapter |             | Node=WSAS-MQ1Node01,Server=server1 |
| Total 1                  |                        |                |                               |             |                                    |

## + Step 2: Deploy the MQ IVT Enterprise Application

Now that we have defined the JNDI Resources, let's proceed to install and deploy the IVT application.

On the left navigation panel of the WSAS Console, select:

Applications > New Application



On the right navigation panel select:  
New Enterprise Application



Specify the full path name of: wmq.jmsra.ivt.ear

The term "Local file system" refers to the LOCAL HOST of the WEB BROWSER!  
For example, if your browser is in Windows, the "local file system" would be the one provided by our MQ queue manager installation in Windows:  
C:\Program Files\IBM\MQ\java\lib\jca\wmq.jmsra.ivt.ear

In Linux would be:  
/opt/mqm/java/lib/jca/wmq.jmsra.ivt.ear

You can copy the IVT ear to a path under the WSAS directory (which will be the "remote file system" in the dialog.  
For example:  
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/installedApps/WSAS-MQ1Node01Cell/wmq.jmsra.ivt.ear

Specify the EAR, WAR, JAR, or SAR module to upload and install.

The screenshot shows a dialog box titled "Path to the new application". It has two radio button options: "Local file system" (which is selected) and "Remote file system". Under "Local file system", there is a "Full path" label above a text input field containing "No file chosen" and a "Choose File" button. The "Choose File" button and the "Full path" label are circled in red. Under "Remote file system", there is a "Full path" label above an empty text input field and a "Browse..." button.

Accept the default:  
(\* ) Fast Path - Prompt only when additional information is required

The screenshot shows a dialog box titled "Preparing for the application installation". It has a section titled "How do you want to install the application?" with two radio button options: "Fast Path - Prompt only when additional information is required." (which is selected) and "Detailed - Show all installation options and parameters.". This section is circled in red. Below this section is a checkbox labeled "Choose to generate default bindings and mappings" which is checked. At the bottom, there are three buttons: "Previous", "Next", and "Cancel".



In "Step 1: Select installation options" you need to enable the checkbox:  
(\* ) Deploy enterprise beans

Specify options for installing enterprise applications and modules.

**→ Step 1: Select installation options**

Step 2 Map modules to servers

\* Step 3 Bind listeners for message-driven beans

\* Step 4 Map resource references to resources

\* Step 5 Map resource environment references to resources

\* Step 6 Map virtual hosts for Web modules

Step 7 Summary

### Select installation options

Specify the various options that are available for your application.

Precompile JavaServer Pages files

Directory to install application

Distribute application

Use Binary Configuration

Deploy enterprise beans

Application name

Create MBeans for resources

Override class reloading settings for Web and EJB modules

Reload interval in seconds

In "Step 2: Map modules to servers" enable the check boxes and click "Apply"

Step 1 Select installation options

**Step 2: Map modules to servers**

\* Step 3 Bind listeners for message-driven beans

\* Step 4 Map resource references to resources

\* Step 5 Map resource environment references to resources

\* Step 6 Map virtual hosts for Web modules

### Map modules to servers

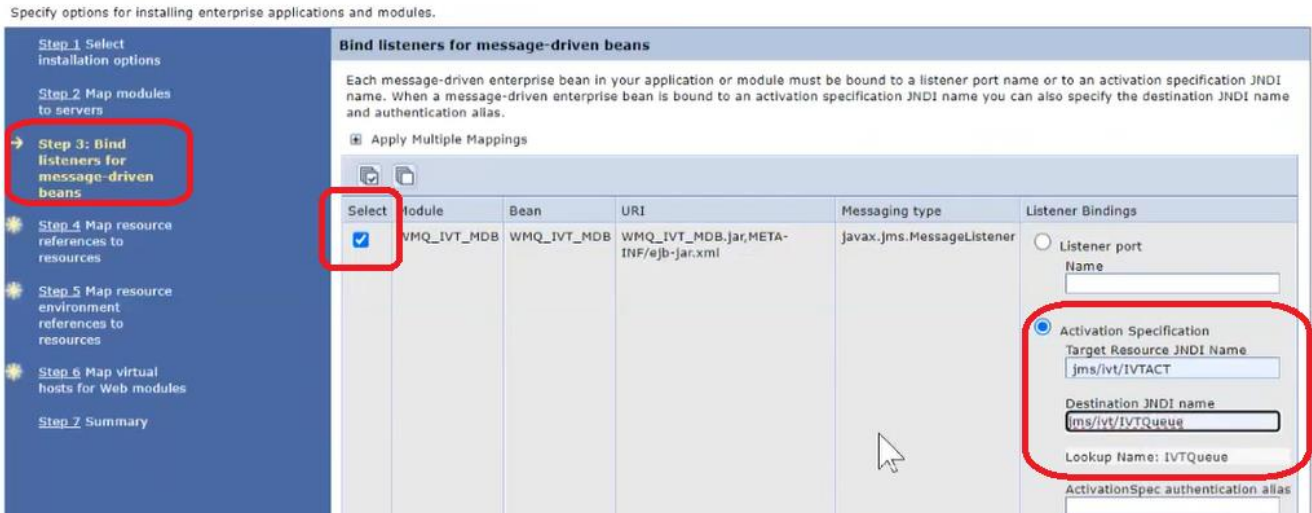
Specify targets such as application servers or clusters of application servers where you want to install the modules that are co application. Modules can be installed on the same application server or dispersed among several application servers. Also, spe servers as targets that serve as routers for requests to this application. The plug-in configuration file (plugin-cfg.xml) for each generated, based on the applications that are routed through.

Clusters and servers:

| Select                              | Module      | URI                                  | Server   |
|-------------------------------------|-------------|--------------------------------------|--|
| <input checked="" type="checkbox"/> | WMQ_IVT_MDB | WMQ_IVT_MDB.jar,META-INF/ejb-jar.xml | WebSphere:cell=WSAS-MQ1Node01Cell,node=WSAS-MQ1Node01,server=server1 |
| <input checked="" type="checkbox"/> | WMQ_IVT     | WMQ_IVT.war,WEB-INF/web.xml          | WebSphere:cell=WSAS-MQ1Node01Cell,node=WSAS-MQ1Node01,server=server1 |

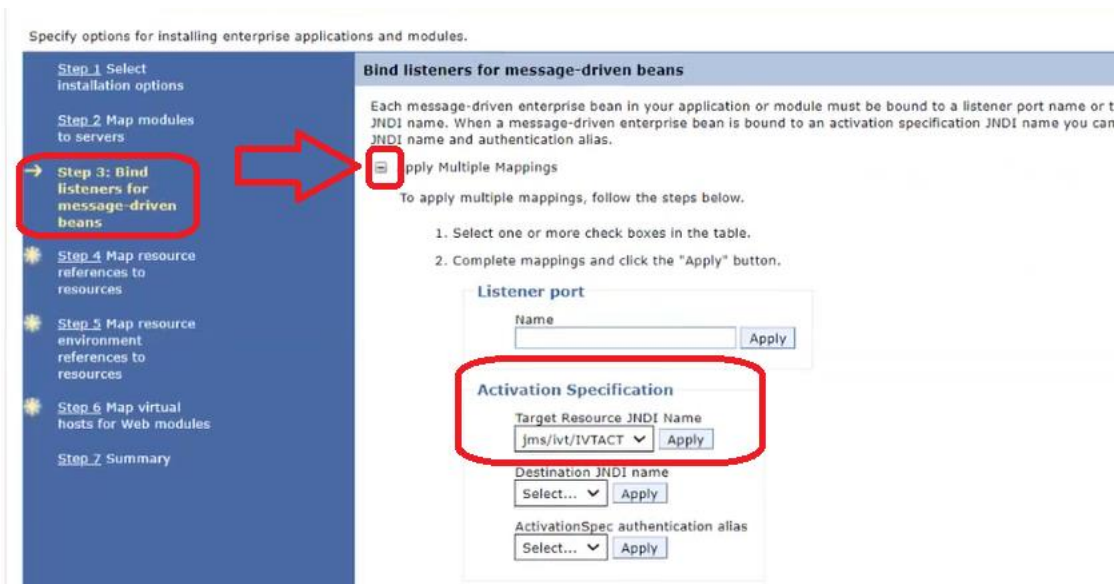
**TRICKY STEP!**

In "Step 3: Bind listeners for message-driven beans". You need to select you Activation Spec and perform an additional step on this page.



The **tricky part** is that you must click on: Apply Multiple Mappings

... and specify the Activation Specification



Again, you need to ensure that you specify an Activation Specification and that you select the item in the bottom panel.

Step 2 Map modules to servers

**Step 3: Bind listeners for message-driven beans**

Step 4 Map resource references to resources

Step 5 Map resource environment references to resources

Step 6 Map virtual hosts for Web modules

Step 7 Summary

JNDI name. When a message-driven enterprise bean is bound to an activation specification JNDI name you can also specify the destination JNDI name and authentication alias.

Apply Multiple Mappings

To apply multiple mappings, follow the steps below.

1. Select one or more check boxes in the table.
2. Complete mappings and click the "Apply" button.

**Listener port**

Name

**Activation Specification**

Target Resource JNDI Name

Destination JNDI name

ActivationSpec authentication alias

| Select                              | Module      | Bean        | URI                                  | Messaging type            | Listener Bindings   |
|-------------------------------------|-------------|-------------|--------------------------------------|---------------------------|---|
| <input checked="" type="checkbox"/> | WMQ_IVT_MDB | WMQ_IVT_MDB | WMQ_IVT_MDB.jar,META-INF/ejb-jar.xml | javax.jms.MessageListener | <input type="radio"/> Listener port<br>Name <input type="text"/><br><input checked="" type="radio"/> Activation Specification<br>Target Resource JNDI Name <input type="text" value="jms/ivt/IVTACT"/><br>Destination JNDI name <input type="text" value="jms/ivt/IVTQueue"/><br>Lookup Name: IVTQueue<br>ActivationSpec authentication alias |

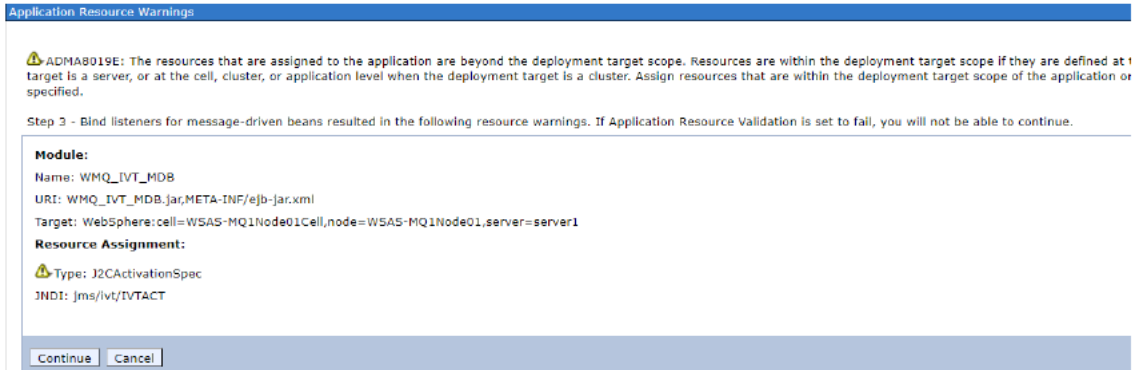
In "Step 4: Map resource references to resources" you need to ensure that the "select" boxes are enabled and that the column "Target Resource JNDI Name" is properly populated.

The image shows a software development environment with a sidebar on the left and two configuration windows on the right. The sidebar contains a list of steps: "Step 3 Bind listeners for message-driven beans", "Step 4: Map resource references to resources" (highlighted with a red box), "Step 5 Map resource environment references to resources", "Step 6 Map virtual hosts for Web modules", and "Step 7 Summary".

The top configuration window is titled "javax.jms.ConnectionFactory". It features a table with the following columns: "Select", "Module", "Bean", "URI", "Resource Reference", "Target Resource JNDI Name", and "Login configuration". Two rows are visible, both with checked "Select" boxes (circled in red). The first row has "Module" WMQ\_IVT\_MDB, "Bean" WMQ\_IVT\_MDB, "URI" WMQ\_IVT\_MDB.jar;META-INF/ejb-jar.xml, "Resource Reference" IVTCF, and "Target Resource JNDI Name" jms/ivt/IVTCF (circled in red). The second row has "Module" WMQ\_IVT, "Bean" WMQ\_IVT, "URI" WMQ\_IVT.war;WEB-INF/web.xml, "Resource Reference" IVTCF, and "Target Resource JNDI Name" jms/ivt/IVTCF (circled in red).

The bottom configuration window is titled "javax.jms.Queue". It has a similar table structure. One row is visible with a checked "Select" box (circled in red). The "Module" is WMQ\_IVT\_MDB, "Bean" is WMQ\_IVT\_MDB, "URI" is WMQ\_IVT\_MDB.jar;META-INF/ejb-jar.xml, "Resource Reference" is IVTQueue, and "Target Resource JNDI Name" is jms/ivt/IVTQueue (circled in red).

**Attention:**  
If you get the following warning/error, you need to start again!



Let's assume that you did not get the above warning/error, then proceed with "Step 5: Map resource environment references to resources".

Ensure to Select the item and that the "Target Resource JNDI Name" is correct.



In "Step 6: Map virtual hosts for Web modules" select the item.



In "Step 7: Summary" you will see something like this:

Step 1 Select installation options

Step 2 Map modules to servers

Step 3 Bind listeners for message-driven beans

Step 4 Map resource references to resources

Step 5 Map resource environment references to resources

Step 6 Map virtual hosts for Web modules

→ Step 7: Summary

| Summary   |   |
|---|---|
| Summary of installation options                           |   |
| Options   | Values                                      |
| Precompile JavaServer Pages files                         | No  |
| Directory to install application                          |   |
| Distribute application                                    | Yes   |
| Use Binary Configuration                                  | No  |
| Deploy enterprise beans                                   | Yes   |
| Application name  | wmq.jmsra.iwt                               |
| Create MBeans for resources                               | Yes   |
| Override class reloading settings for Web and EJB modules | No  |
| Reload interval in seconds                                |   |
| Deploy Web services                                       | No  |
| Validate Input off/warn/fail                              | warn  |
| Process embedded configuration                            | No  |
| File Permission   | .*\,dll=755#.*\,so=755#.*\,a=755#.*\,sl=755 |
| Application Build ID                                      | 9.3.0.0-p930-L220606                        |
| Allow dispatching includes to remote resources            | No  |
| Allow servicing includes from remote resources            | No  |
| Business level application name                           |   |
| Asynchronous Request Dispatch Type                        | Disabled                                    |
| Allow EJB reference targets to resolve automatically      | No  |
| Deploy client modules                                     | No  |
| Client deployment mode                                    | Isolated                                    |
| Validate schema   | No  |
| Cell/Node/Server  | <a href="#">Click here</a>                  |

Click "Finish".

You will see the progress status...

```

Installing...
If there are enterprise beans in the application, the EJB deployment process can take several minutes. Do not save the configuration until the process completes.
Check the SystemOut.log on the deployment manager or server where the application is deployed for specific information about the EJB deployment process as it occurs.
ADMA5016I: Installation of wmq.jmsra.iwt started.
ADMA5067I: Resource validation for application wmq.jmsra.iwt completed successfully.
ADMA5058I: Application and module versions are validated with versions of deployment targets.
ADMA5018I: The EJBDeploy program is running on file /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/wstemp/3500252/upload/wmq.jmsra.iwt.ear.
Starting workbench
EJB Deploy configuration directory: /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/ejbdeploy/configuration/
framework search path /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/http/plugins
build RADWEJ895-I20150829_0214
    
```

You need to ensure to click on "Save" at the end:

```

0 Errors, 0 Warnings, 0 Informational Messages
ADMA5007I: The EJBDeploy program completed on file /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/wstemp/3500252/upload/wmq.jmsra.iwt.ear
ADMA5005I: The application wmq.jmsra.iwt is configured in the WebSphere Application Server repository.
ADMA5005I: The application wmq.jmsra.iwt is configured in the WebSphere Application Server repository.
ADMA5081I: The bootstrap address for client module is configured in the WebSphere Application Server repository.
ADMA5053I: The library references for the installed optional package are created.
ADMA5005I: The application wmq.jmsra.iwt is configured in the WebSphere Application Server repository.
ADMA5001I: The application binaries are saved in /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/wstemp/3500252/workspace/cells/WSAS-MQ1Node01Cell/applications/wmq.jmsra.iwt.ear/wmq.jmsra.iwt.ear
ADMA5005I: The application wmq.jmsra.iwt is configured in the WebSphere Application Server repository.
ADMA5005I: The application wmq.jmsra.iwt is configured in the WebSphere Application Server repository.
ADMA5005I: The application wmq.jmsra.iwt is configured in the WebSphere Application Server repository.
ADMA5113I: Activation plan created successfully.
ADMA5011I: The cleanup of the temp directory for application wmq.jmsra.iwt is complete.
ADMA5013I: Application wmq.jmsra.iwt installed successfully.
To start the application, first save changes to the master configuration.
Changes have been made to your local configuration. You can:
    
```

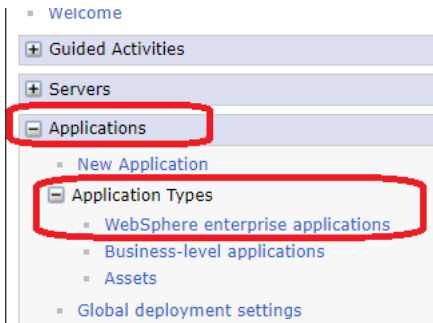


\*Save directly to the master configuration.

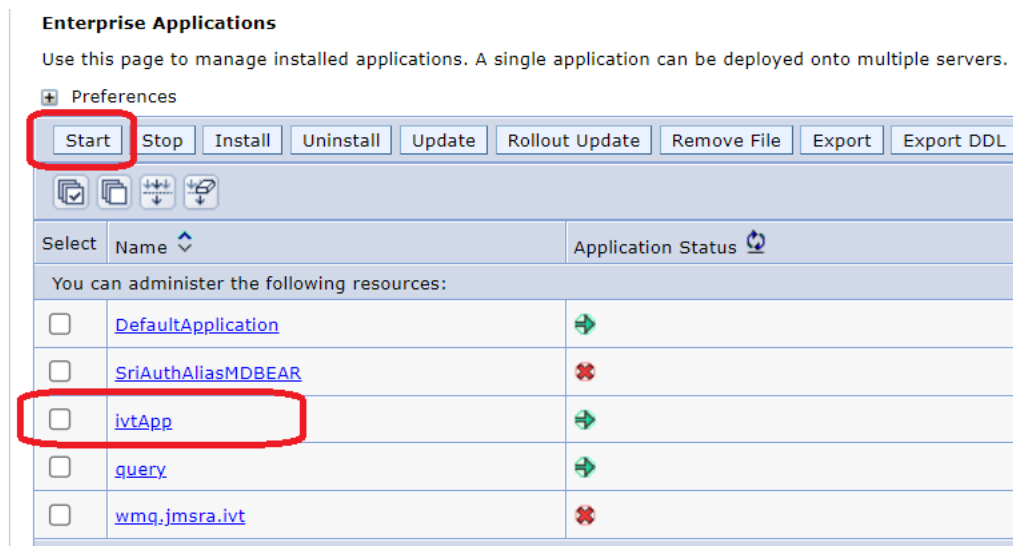
Now that the IVT application has been deployed, you can start it.

In the left navigation panel, select:

Applications > Application Types > WebSphere enterprise applications



In the right navigation panel, if "ivtApp" is not running (green arrow in column "Application Status"), then you can select it and click on the button "Start".

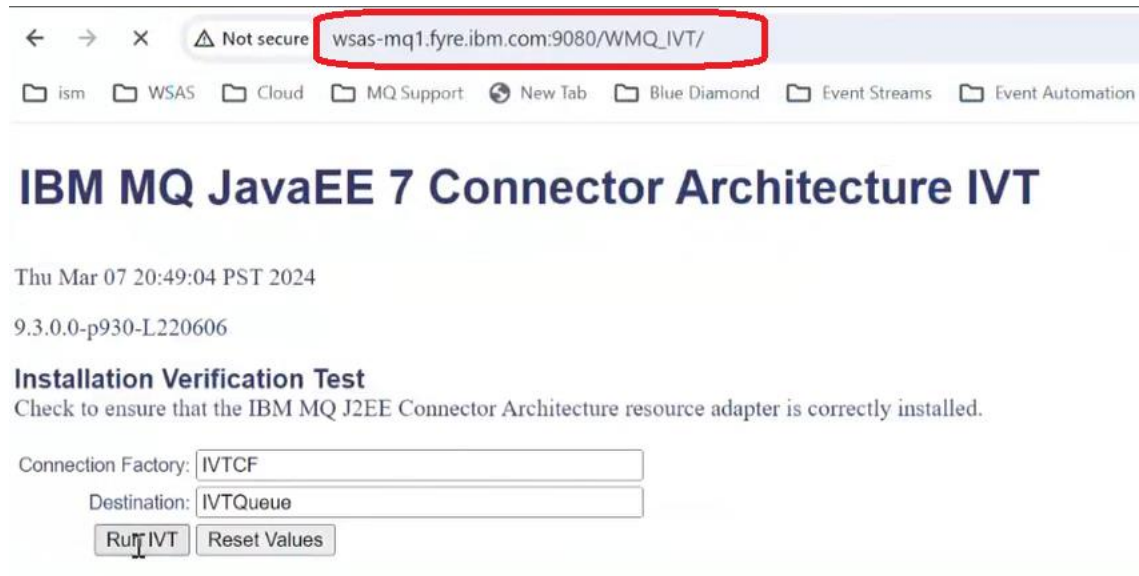


+ Open a Web Browser and specify the URL for the IVT

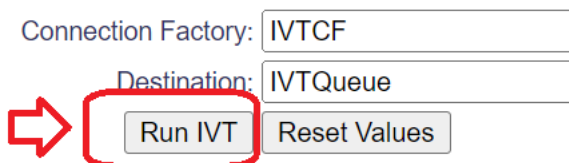
Using the Microsoft Edge browser from a Windows PC:

[http://wsas-mq1.fyre.ibm.com:9080/WMQ\\_IVT/](http://wsas-mq1.fyre.ibm.com:9080/WMQ_IVT/)

You will see the following:



Now click on the button:


















And you should see:

# IBM MQ JavaEE 7 Connector Architecture IVT

Sat Aug 19 08:25:21 PDT 2023

## Running Installation Verification Test:

Using Connection Factory:*IVTCF*  
Using Destination:*IVTQueue*

- Creating initial context... 
- Looking up MQ Connection Factory... 
- Looking up Destination... 
- Creating connection... 
- Starting connection... 
- Creating session... 
- Creating a temporary reply queue... 
- Creating message consumer... 
- Creating message producer... 
- Creating message... 
- Sending message to the MDB... 
- Receiving response message from the MDB... 
- Closing connection... 

## Installation Verification Test completed successfully!

[View Message Contents](#)

[Re-run Installation Verification Test](#)

YEAH!!!

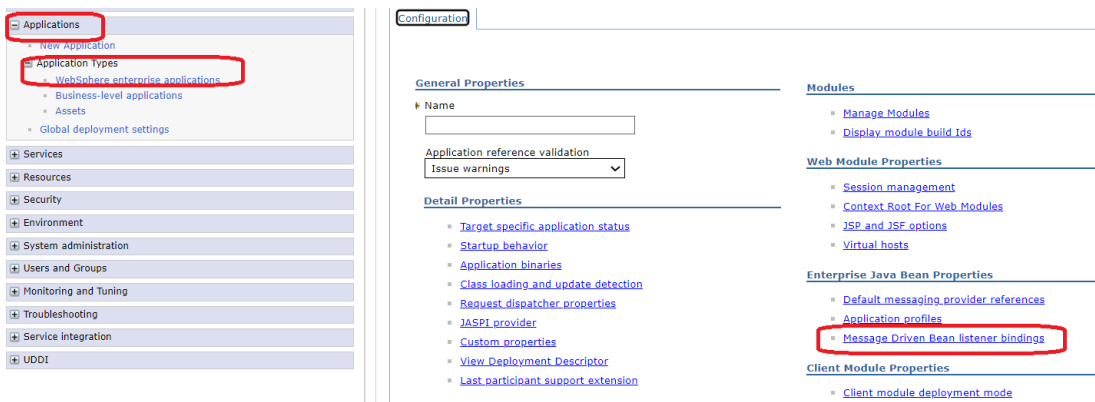
### + (If necessary) Troubleshooting

What if the application does not start?

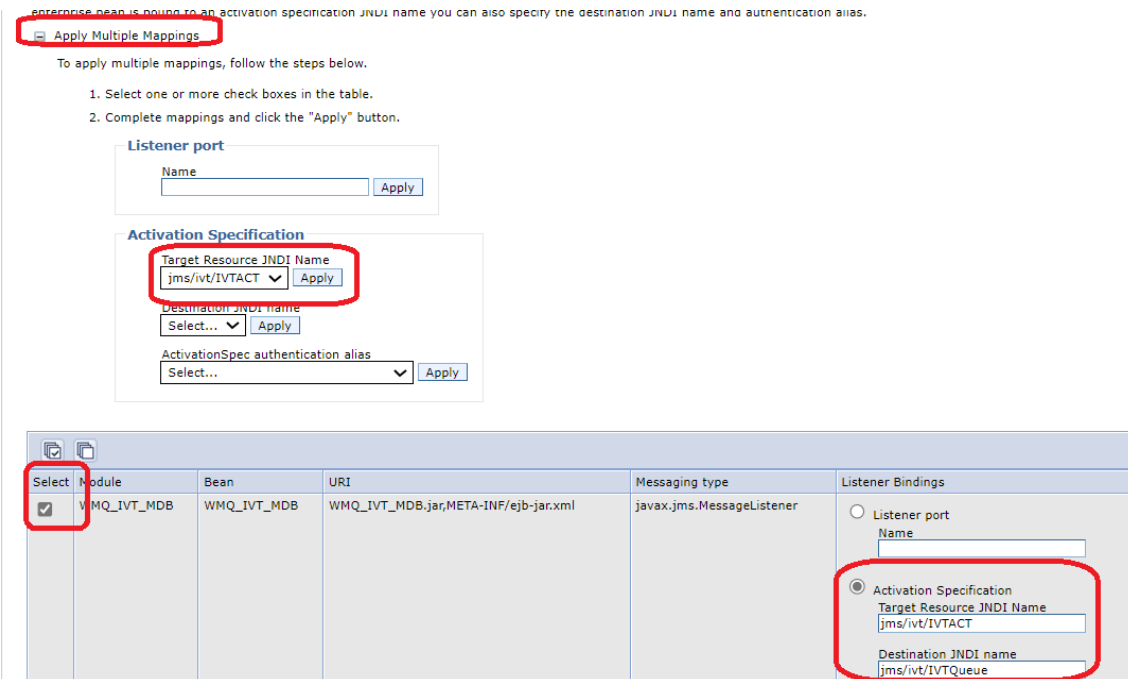
1) Check the SystemOut.log of the WSAS server for errors or warnings:

/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/server1/SystemOut.log

2) From the WSAS Console, try clicking on the App, then click on “Message Driven Bean Listener Bindings”.



This will take you back the bindings dialog screens, where you can redo the “apply” for the Activation Spec and make sure the box is checked.



+++ end +++