E-mail Inbound Lab

What this exercise is about

The objective of this lab is to provide you with an understanding of the WebSphere® Adapter for Email and inbound event processing. In this lab you will install and deploy the WebSphere Adapter for Email and create an SCA application that polls for and processes inbound events from the file system

Lab Requirements

List of system and software required for the student to complete the lab.

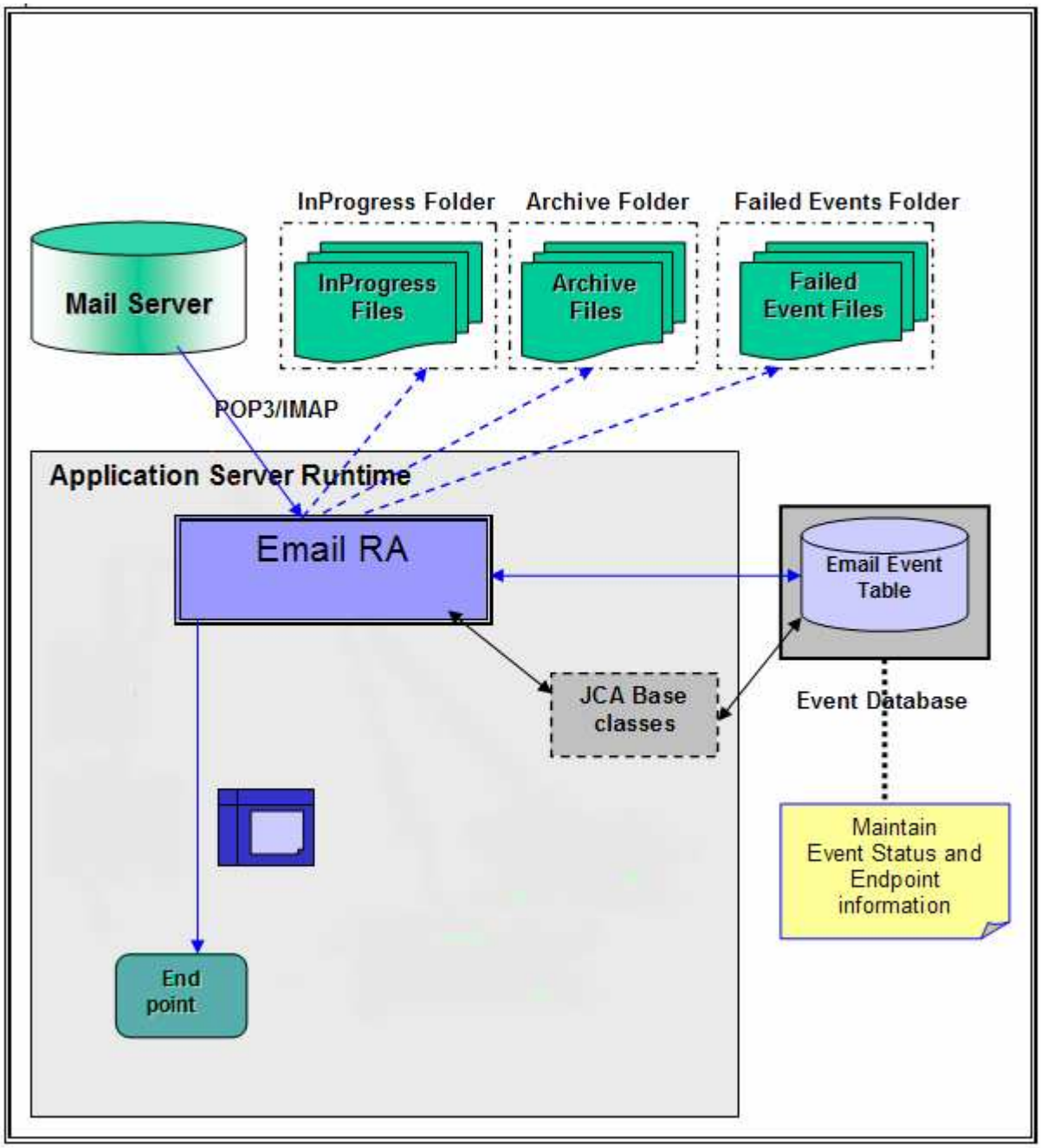
- WebSphere Integration Developer V6.0.2 installed
- WebSphere Process Server V6.0 Test Environment installed
- WebSphere Adapter for Email V6.0.2 installed
- Unzip LabFiles602.zip to your C:\ (your root) drive
- Complete WPIv602_AdapterInstallEmailServer lab successfully

What you should be able to do

At the end of this lab you should be able to:

- Import Email adapter RAR file into WebSphere Integration Developer
- Use WebSphere Process Server administrative console to create required JDBC provider and a Data source under it
- Use ESD wizard to configure the Activation Spec Properties Resource Adapter Properties to generate Business Objects and other artifacts
- Deploy the adapter application onto the WebSphere Process Server test environment
- Test the above deployed application using WebSphere Process Server test environment
- Restore server configuration

Introduction



The E-mail RA interacts with the mail server using JavaMail™ API that handles the underlying SMTP and IMAP/POP3 protocols. The adapter supplies the necessary parameters required by JavaMail to communicate to the mail server.

The E-mail RA polls on the PollFolders for that user on the specified mail server at regular intervals, and picks up all the unread mails as events. You can specify multiple e-mail folders for a user's mail account within the PollFolders property. The multiple e-mail folders are then polled sequentially in the same poll cycle. Optionally, you can specify search criteria to pick up event mails and when search criteria is specified, all unread mails meeting the search criteria, will be picked up for polling. When no search criteria are specified, all unread mails are picked up by default.

The E-mail RA writes all the polled mails to the InProgress file -folder, as files saved in the RFC822 format. The name of the RFC822 format file will be the Message_ID of the polled e-mail. The E-mail RA transforms the mail to an E-mail business object and delivers the same to configured endpoint. The event management framework takes care of delivering the event only once to the endpoint.

The contents of each e-mail will be parsed into an EmailRecord object. The EmailRecord will be routed through the Function Selector to the Email-specific data-binding. The E-mail-specific data-binding will be aware of the structure of the E-mail business object. It will parse the EmailRecord structure, and route the content of the mail and the attachments to the mime-specific data-bindings, according to their mime-types. It would then receive back the parsed structures and combine them back into the E-mail business object, and send it out to the configured endpoint.

The Email Event Database is part of the Event Persistence Framework. The event persistence feature ensures that the event is delivered to the end point once and only once.

Once the mail is read and stored in the InProgress folder, it is deleted from the mail server (per the POP3 specifications). Once a mail is processed, the mail is explicitly marked as deleted on the Mail Server (per the IMAP specifications). The mail will be archived or deleted from the InProgress folder. The archiving is based on the values for the properties ArchiveFolder and the FailedEventsFolder.

If the ArchiveFolder is specified, the successfully processed mails are moved into the ArchiveFolder from the InProgressFolder. If blank, then the successfully processed mails are just deleted from the InProgressFolder.

If the FailedEventsFolder is specified, the mails that failed processing are moved into the FailedEventsFolder from the InProgressFolder. If blank, then the failed mails are just deleted from the InProgressFolder.

If you specify multiple event folders separated by commas in the PollFolders property, the RA will create folders with the same name as the poll folder, under the user-specified ArchiveFolder and the FailedEventsFolders, and archives corresponding event files in these folders.

Exercise Instructions

Some instructions in this lab may be Windows® operating-system specific. If you plan on running the lab on an operating-system other than Windows, you will need to run the appropriate commands, and use appropriate files (.sh vs. .bat) for your operating system. The directory locations are specified in the lab instructions using symbolic references, as follows:

Reference Variable	Windows Location	AIX®/UNIX® Location
<WID_HOME>	C:\Program Files\IBM\ID\6.0	
<WPS_HOME>	<WID_HOME>\runtimes/bi_v6	
<EMAILADAPTER_HOME>	C:\Program Files\IBM\ResourceAdapters\Email\adapter\Email	
<WORKSPACE>	C:\LabFiles602\EmailInbound\workspace	
<LAB_FILES>	C:\Labfiles602	/tmp/Labfiles602
<INPROGRESS>	<LAB_FILES>\EMailInbound\InProgress	
<ARCHIVE>	<LAB_FILES>\EMailInbound\Archive	
<TEMP>	C:\temp	/tmp

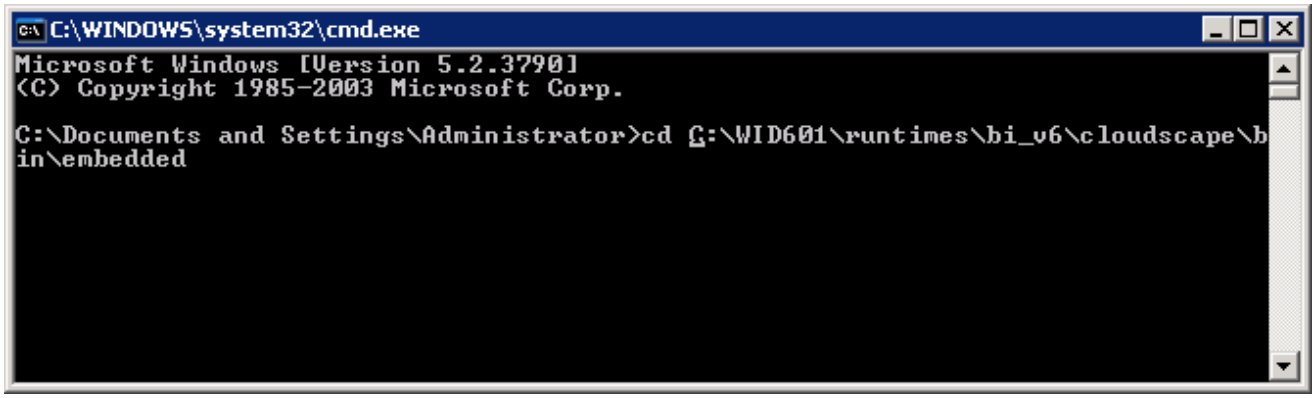
Windows users note: When directory locations are passed as parameters to a Java program such as EJBdeploy or wsadmin, it is necessary to replace the backslashes with forward slashes to follow the Java convention. For example, C:\LabFiles60\ would be replaced by C:/LabFiles60/

Part 1: Create Database in Cloudscape

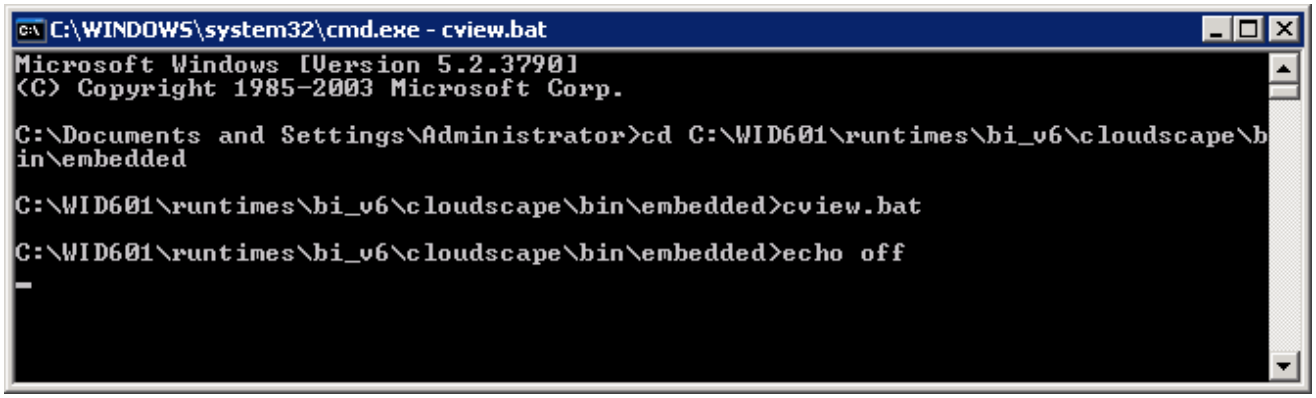
This part of the lab, describes the steps for creating the **EMAILDATABASE** database in Cloudscape which will contain the Event Distribution Table, **EMAILTABLE**. The **EMAILTABLE** will be created automatically for you during the install and deployment of the application containing the E-mail adapter to the WebSphere Process Server.

____ 1. Start the Cloudscape Cview Graphical User Interface (GUI) by executing the **cview.bat** file

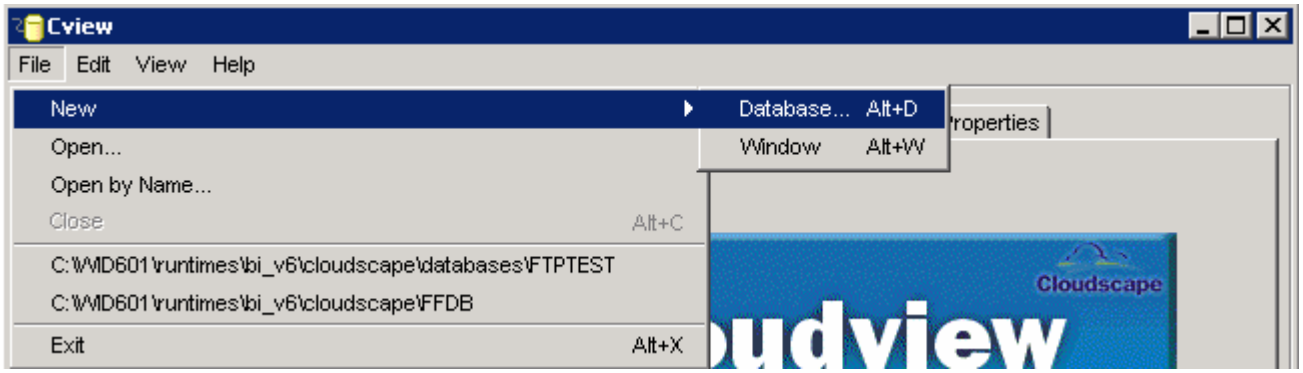
__ a. Open a command prompt window and change directories to <WPS_HOME>\cloudscape\bin\embedded



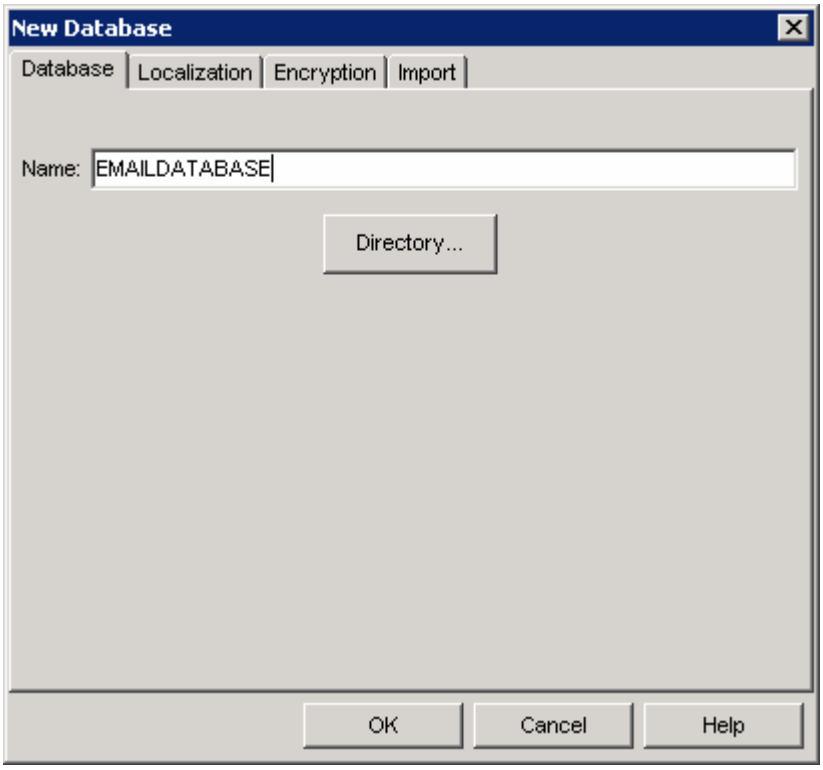
__ b. Type **cview.bat**



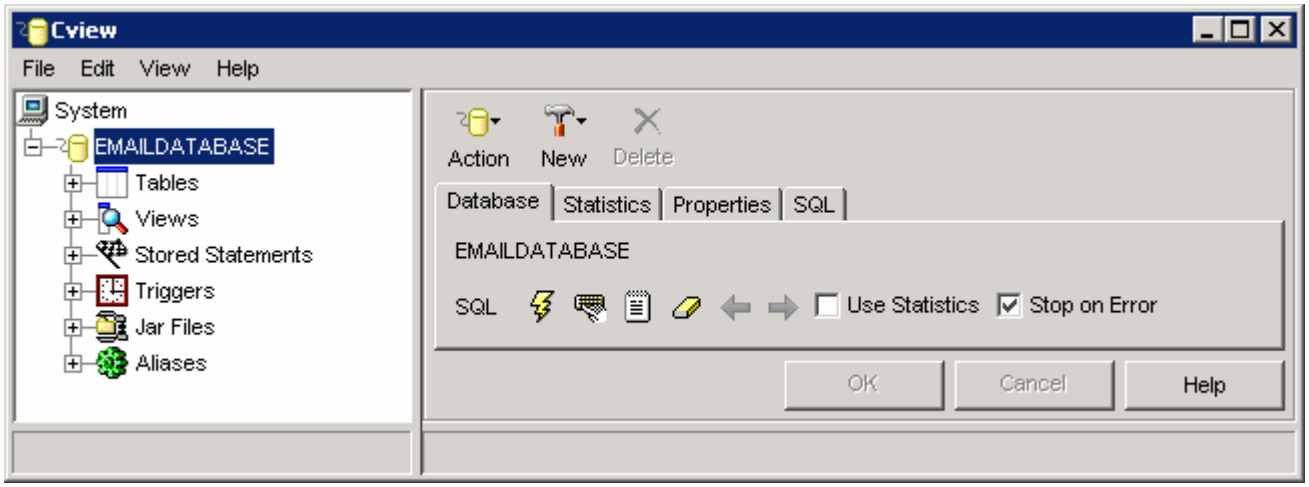
__ c. The Cview window will be opened. From that window, select **File > New > Database…**.



__ d. Enter **EMAILDATABASE** in the Name field and click **OK**.



__ e. You will see the **EMAILDATABASE** created in the left pane of the Cview window. Now select **File > Exit** to close the Cview GUI

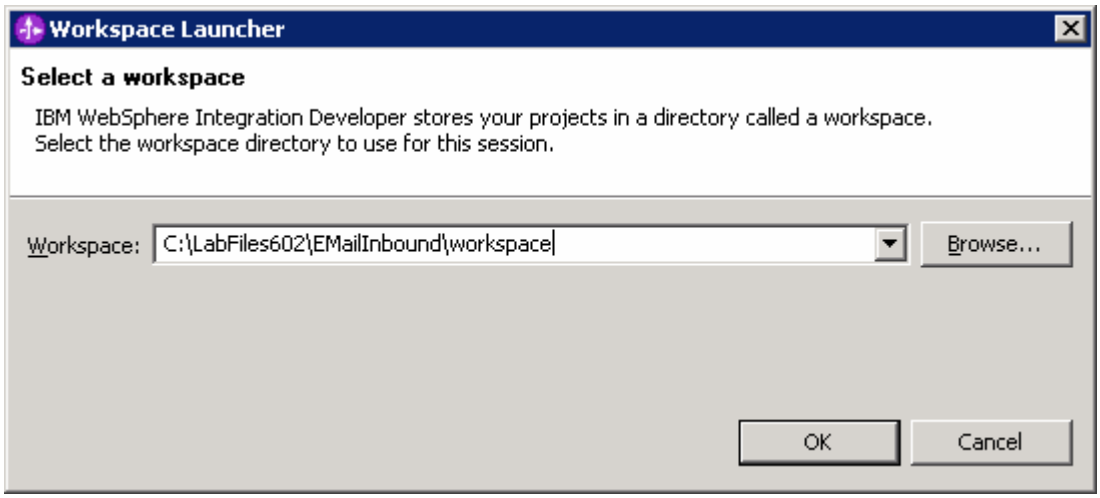


Part 2: Initialize workspace and Import RAR into WebSphere Integration Developer

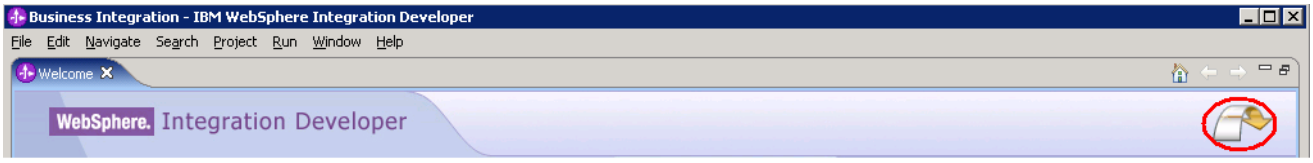
____ 1. Start the WebSphere Integration Developer V6.0.2 with a new workspace

__ a. Select **Start > Programs > IBM WebSphere > Integration Developer V6.0.2 > WebSphere Integration Developer V6.0.2**

__ b. From the Workspace Launcher window, enter **<WORKSPACE>** for the Workspace field

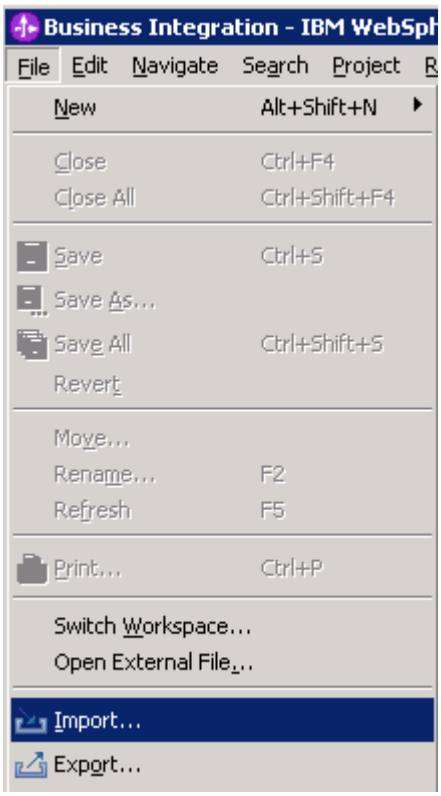


__ c. Click on the  button on the right hand corner to close the Welcome page and proceed with the workbench

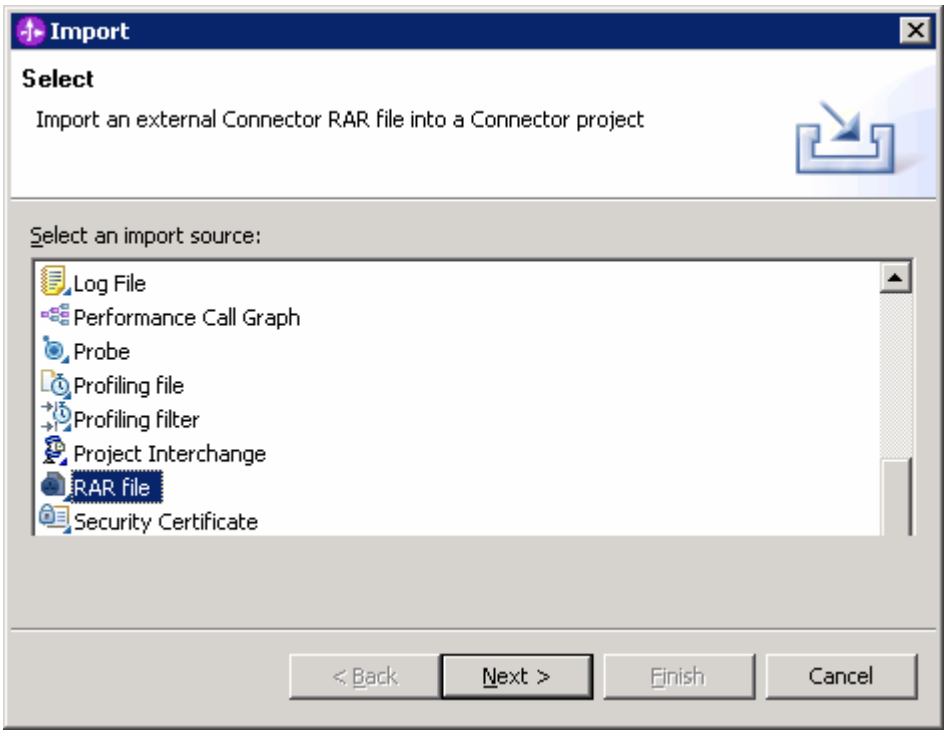


____ 2. Import the E-mail Adapter RAR file

__ a. From main menu, select **File > Import…**

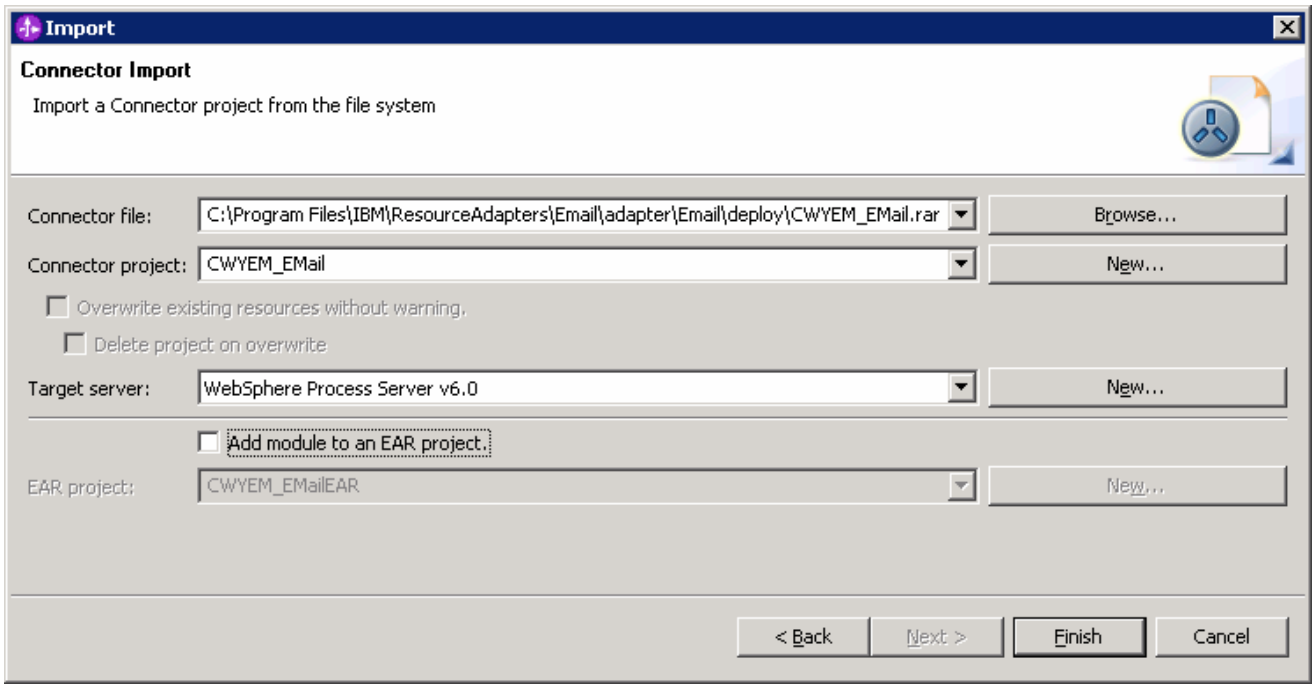


__ b. Select **RAR file** from the Import window and then click **Next**

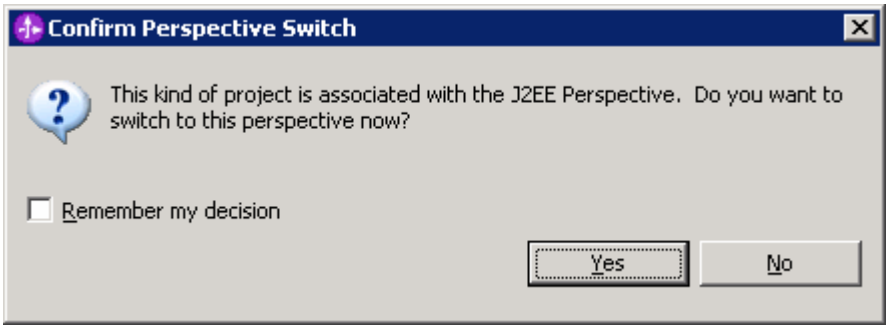


__ c. Click on the **Browse…** button next to the Connector file field to select **<EMAILADAPTER_HOME>\deploy\CWYEM_EMail.rar**

__ d. Uncheck the check box next to **Add module to and EAR project** and click **Finish**



__ e. Click on **No** from Confirm Perspective Switch window to continue with the Business Integration perspective



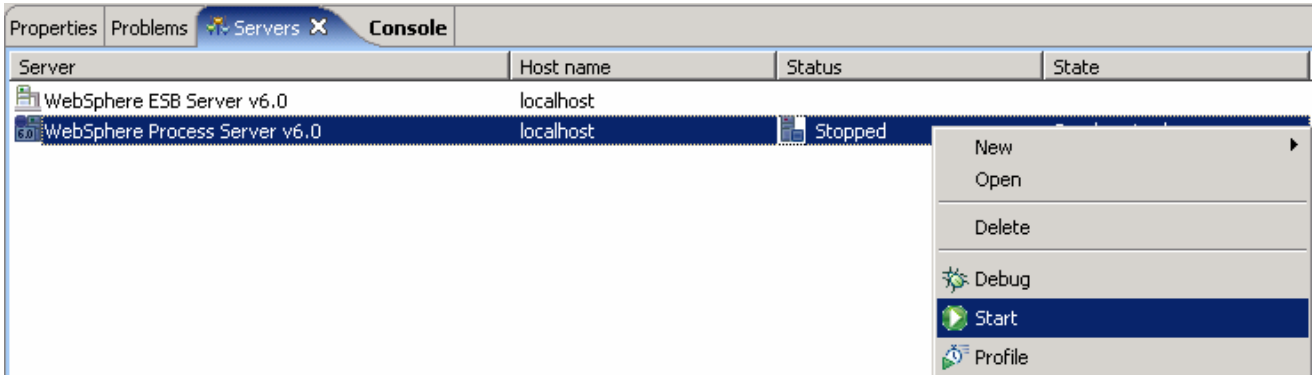
Part 3: Use WebSphere Process Server Administrative Console to Configure Data Sources

In this part of the lab, you will make use of WebSphere Process Server Administrative Console to create the required JDBC Provider and the Data source that will be used by the Adapter to configure itself to the end point.

____ 1. Start the WebSphere Process Server

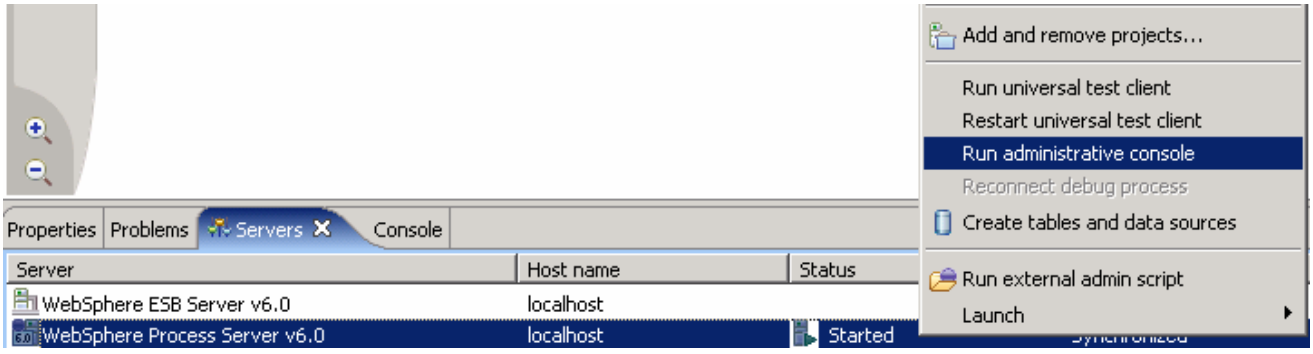
__ a. Select **Servers** view

__ b. Right-click on the row that contains WebSphere Process Server v6.0 and select **Start** from the context menu

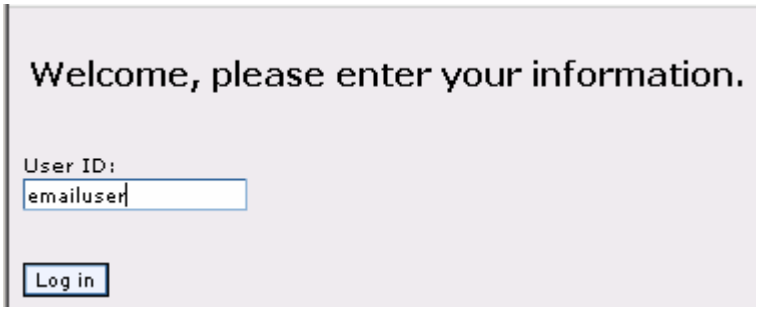


__ c. Wait until the test server status shows **Started**

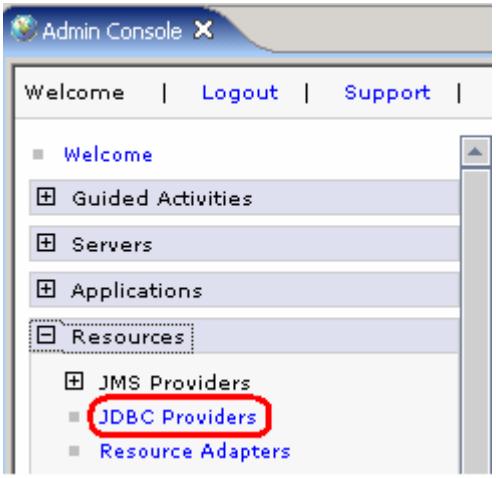
____ 2. Right-click on the row that contains WebSphere Process Server v6.0 and select **Run administrative console** from the context menu



____ 3. From the Administrative Console, enter any **User ID** and click on **Log In**.



____ 4. On the left pane expand **Resources** and select **JDBC Providers**



____ 5. Accept the default scope and click on **New**

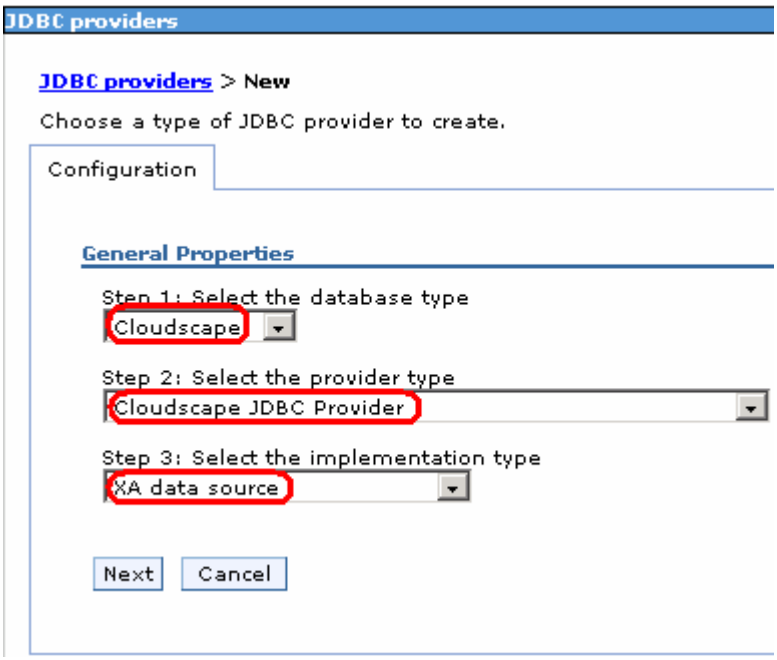
____ 6. In the next screen, for the General Properties, select the these values from the dropdown list:

__ a. Step 1: **Cloudscape**

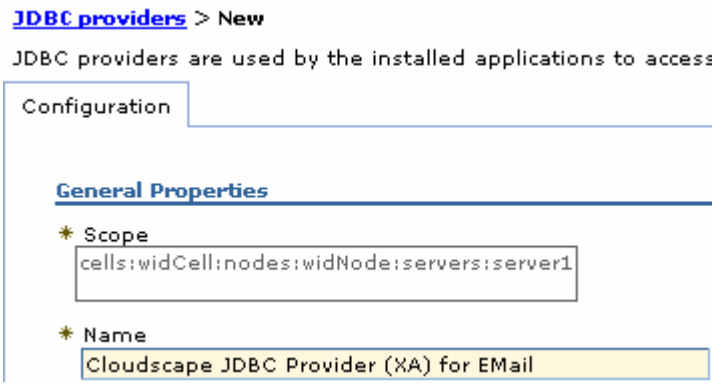
__ b. Step 2: **Cloudscape JDBC Provider**

__ c. Step 3: **XA data source**

____ 7. Click **Next**



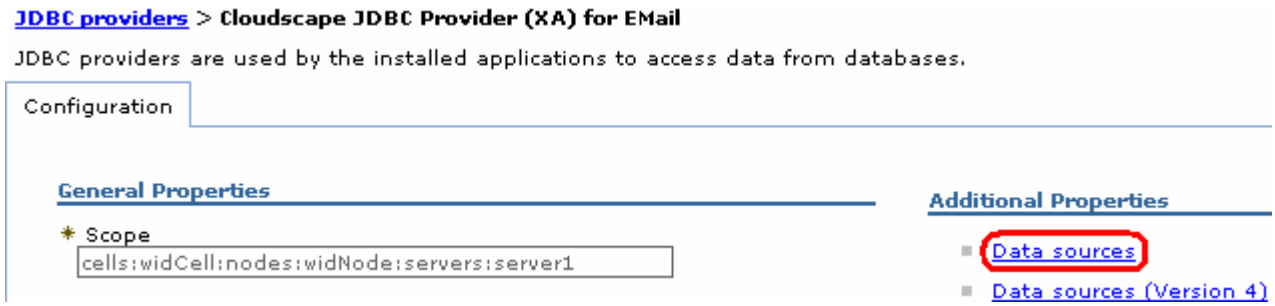
____ 8. Enter **Cloudscape JDBC Provider (XA) for EMail** in the **Name** field and then click **OK**



____ 9. Click **Save** on the top of the window, and then click on **Save** from the following screen

____ 10. Click **Cloudscape JDBC Provider (XA) for EMail** from the following screen

____ 11. Select **Data Sources** under **Additional Properties** on the right hand side



____ 12. Create the required JNDI Data source

__ a. Click **New**

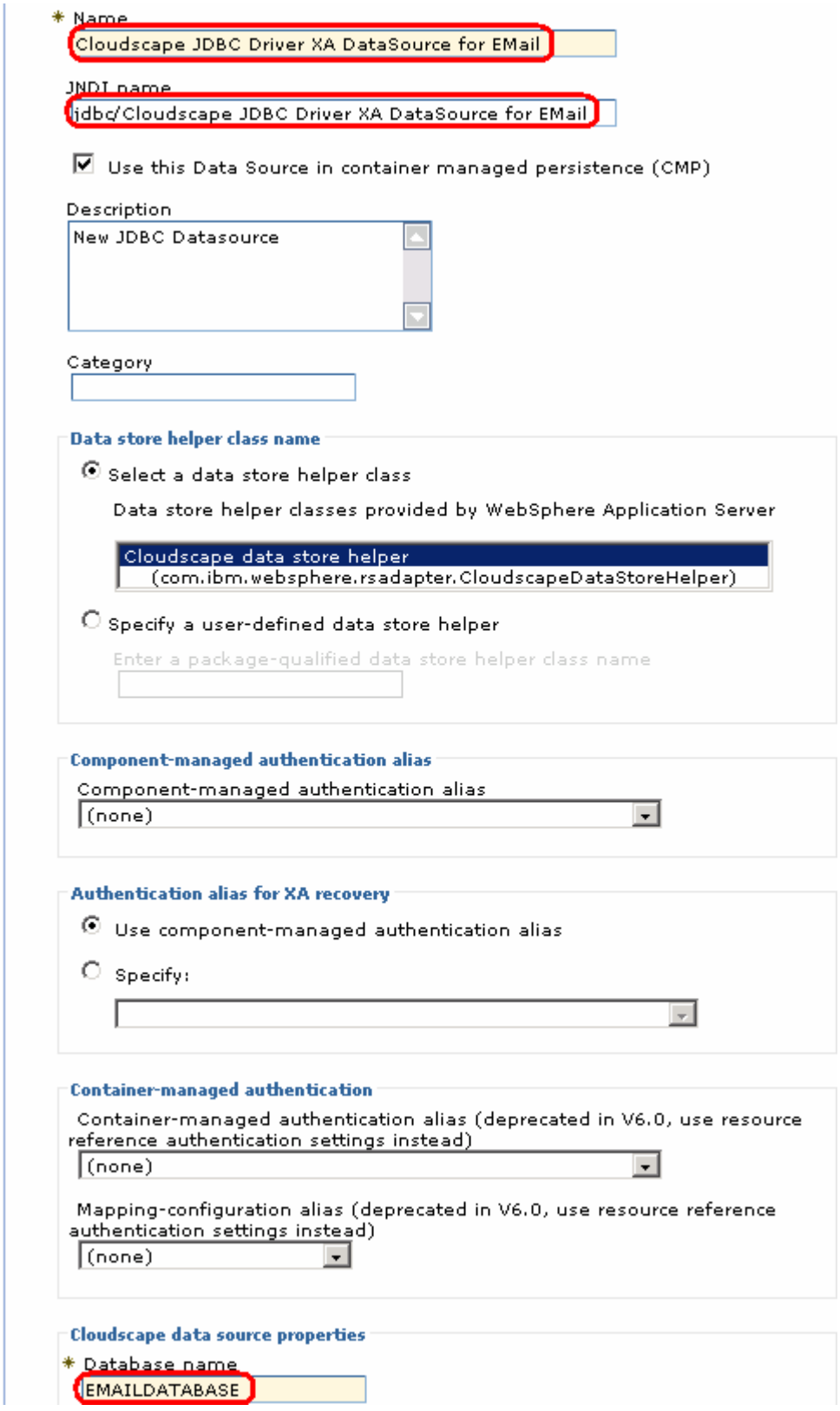
__ b. Enter the these values:

a) Name: **Cloudscape JDBC Driver XA DataSource for EMail**

b) JNDI Name: **jdbc/Cloudscape JDBC Driver XA DataSource for EMail**

c) Database name: **EMAILDATABASE**

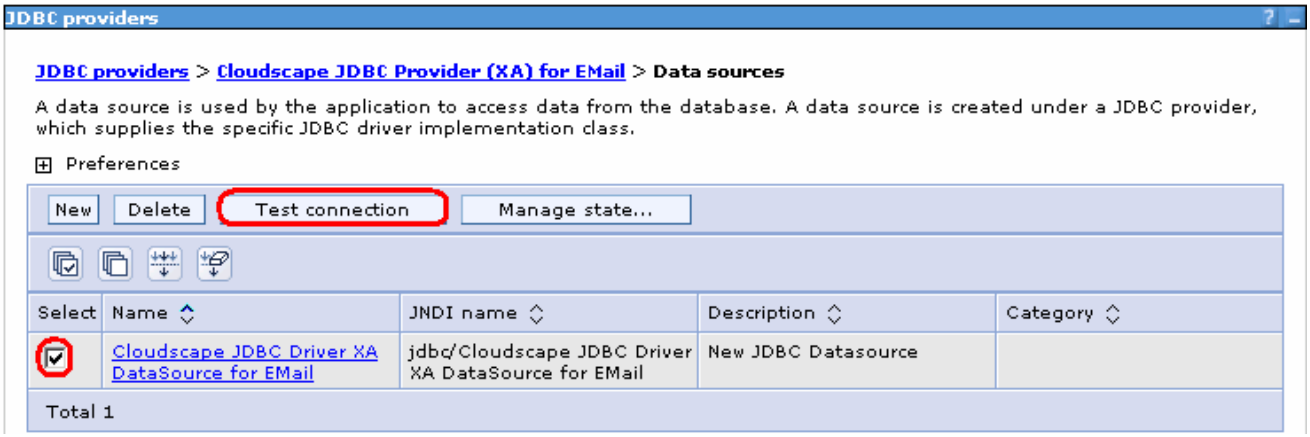
__ c. Click **OK**



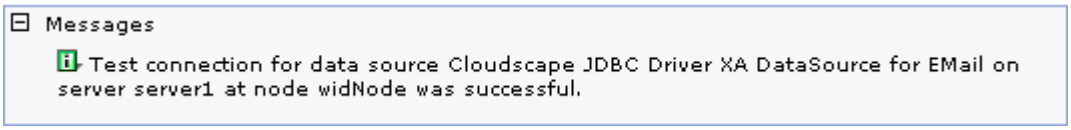
____ 13. Click on **Save** and then **Save** from the next screen

____ 14. Test the Data source connection

__ a. Check the box next to **Cloudscape JDBC Driver XA DataSource for EMail** and click on **Test connection** from the top of the screen



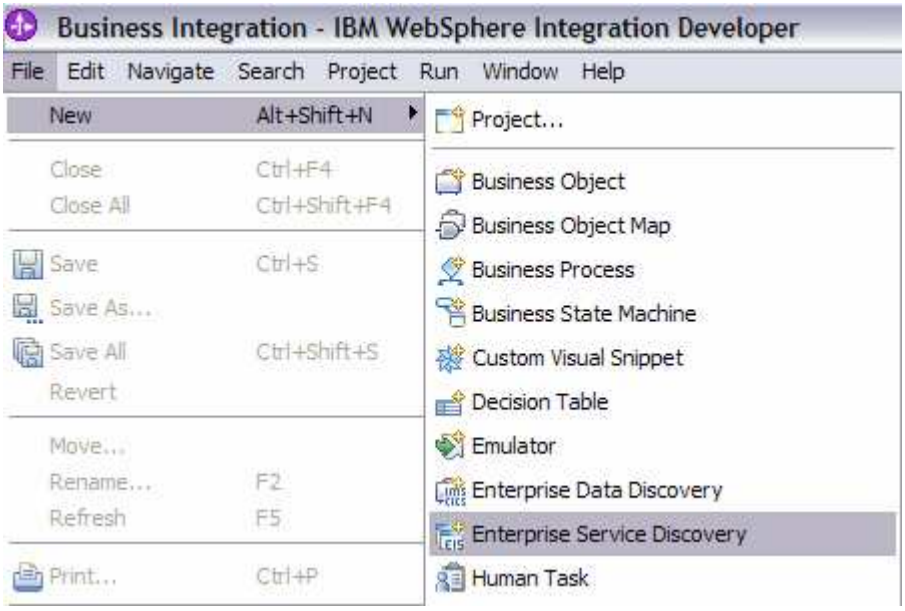
__ b. You should see this success message on the top of the screen:



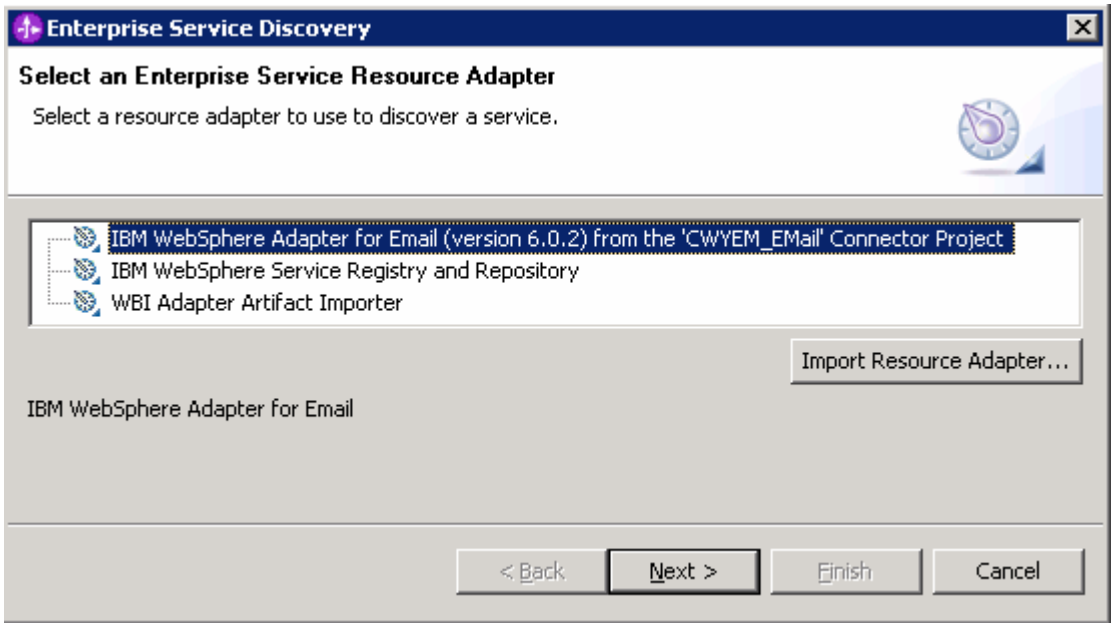
Part 4: Use Enterprise Service Discovery Wizard to Generate Business Objects and other Artifacts

____ 1. Launch the Enterprise Service Discovery wizard

__ a. From the top Menu bar, select **File > New > Enterprise Service Discovery**



____ 2. Select **IBM WebSphere Adapter for Email (version 6.0.2) from the 'CWYFT_EMail' Connector Project** and click **Next**



____ 3. Configure settings for the Discovery agent

You will specify the properties to initialize the Resource Adapter and Enterprise Service Discovery agent.

__ a. Unzip the **XSDs.zip** file under **<EMAILADAPTER_HOME>\Samples**. You will now see a XSDs folder under <EMAILADAPTER_HOME>\Samples

__ b. Click on the **Browse…** button next to the **Folder Name** field and select the folder **<EMAILADAPTER_HOME>\Samples\XSDs**, that contains the **Wbiaddress and Wbiphone** XSD files

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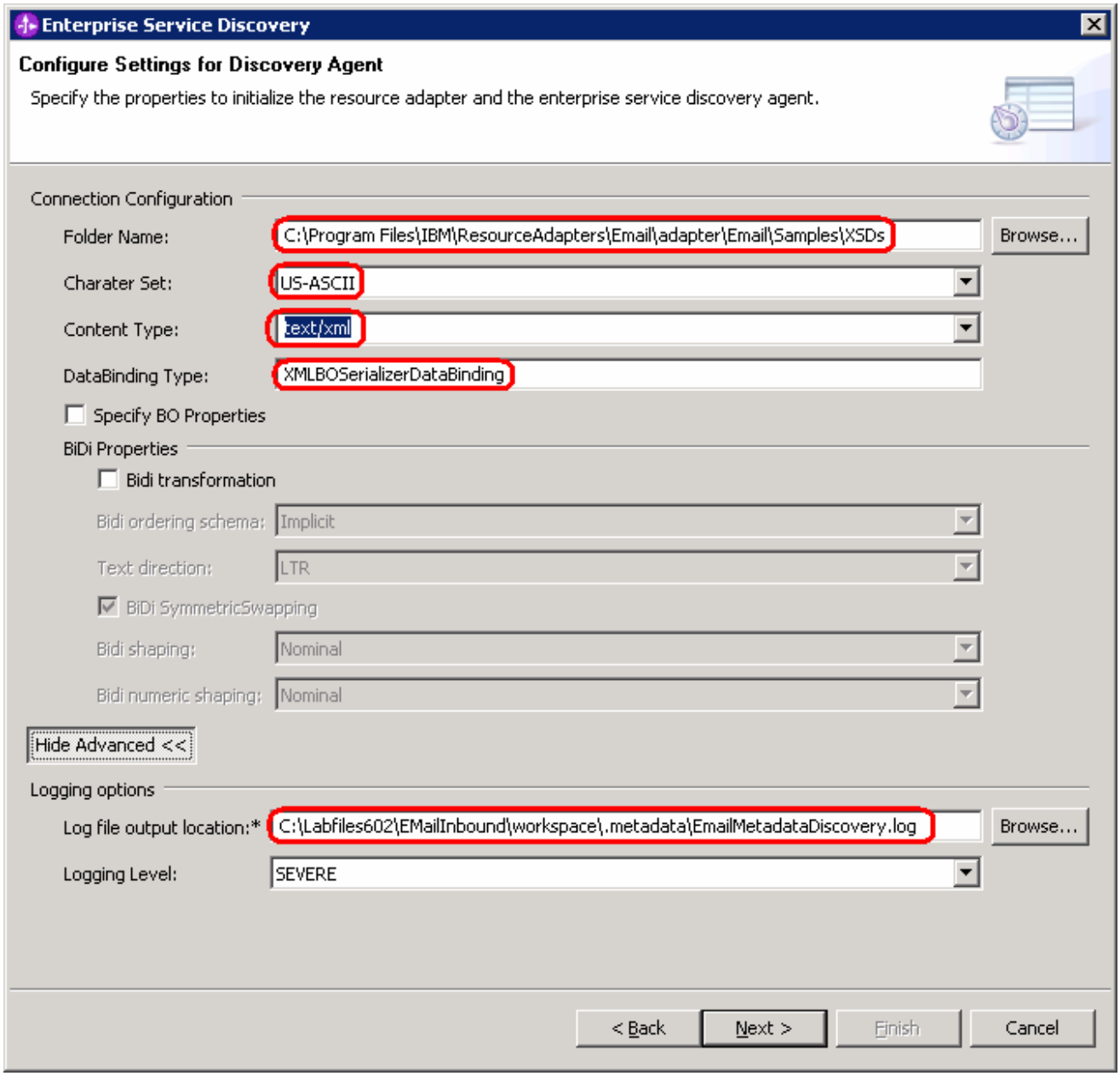
Note: For your convenience, **Wbiaddress** and **Wbiphone** xsd files are placed under **<LAB_FILES>\EmailFiles**

__ c. Select **US-ASCII** from the drop down list for the **Character Set** field

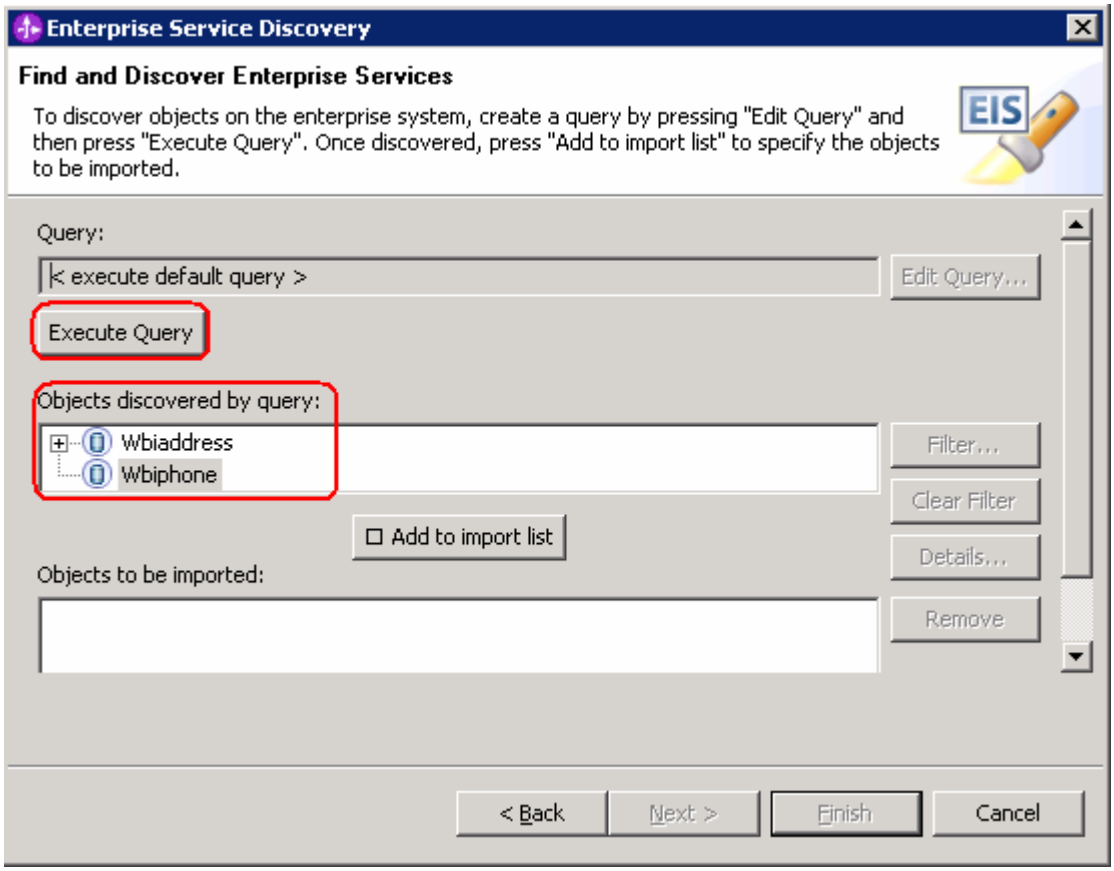
__ d. Select **text/xml** for the **Content Type** field. Once the content type is selected, the **DataBinding Type** field will be automatically set to **XMLBOSerializerDataBinding**

__ e. Click the **Show Advanced >>** button to see the Log file location and Logging level options for the discovery log and then click **Next** leaving the default log file location



____ 4. To Find and Discover the enterprise services, you will select the business objects and services to be used with the adapter

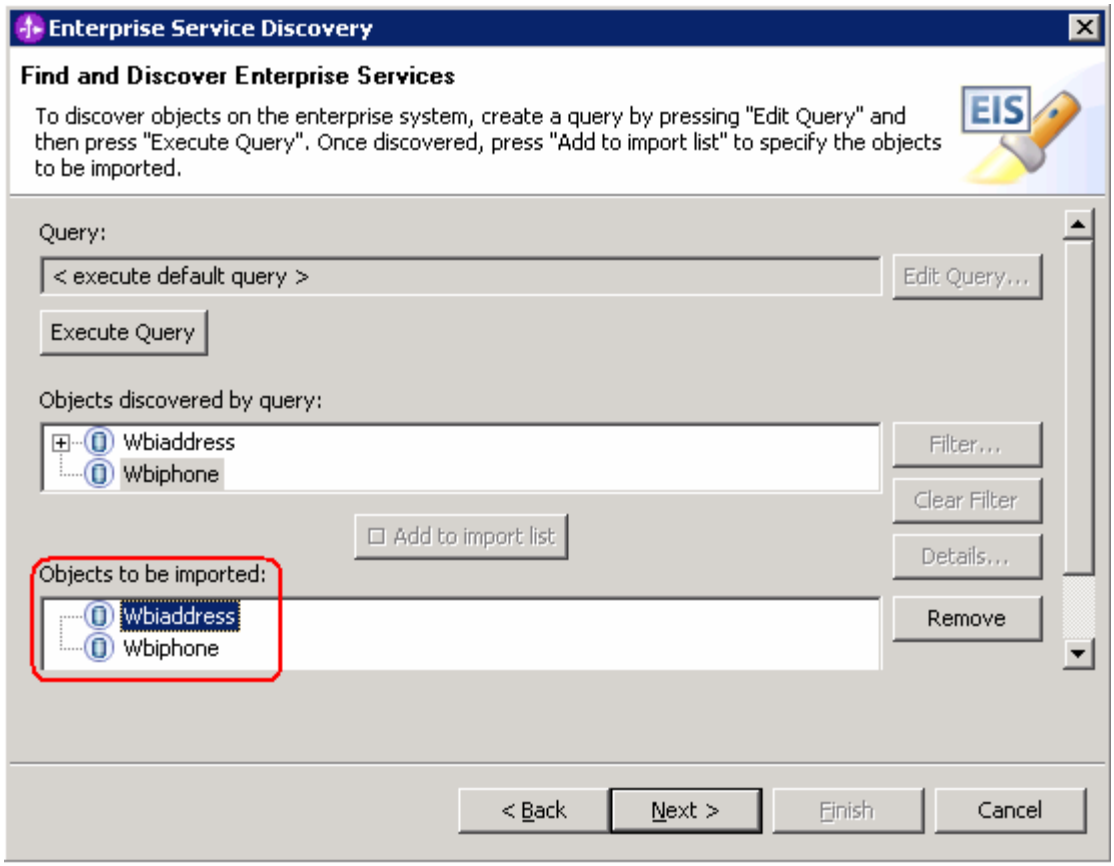
__ a. From the Enterprise Service Discovery window, click on **Run Query** button. You will see a **Wbiaddress** and **Wbiphone** business object under **Objects discovered by query**



__ b. Select **Wbiaddress** business object and click **Add to import list** button. The Wbiaddress business object will now be displayed under the **Objects to be imported**

__ c. Repeat the above step to add **Wbiphone** business object

__ d. You should now see the two business objects – Wbiaddress and Wbiphone under **Objects to be imported** area

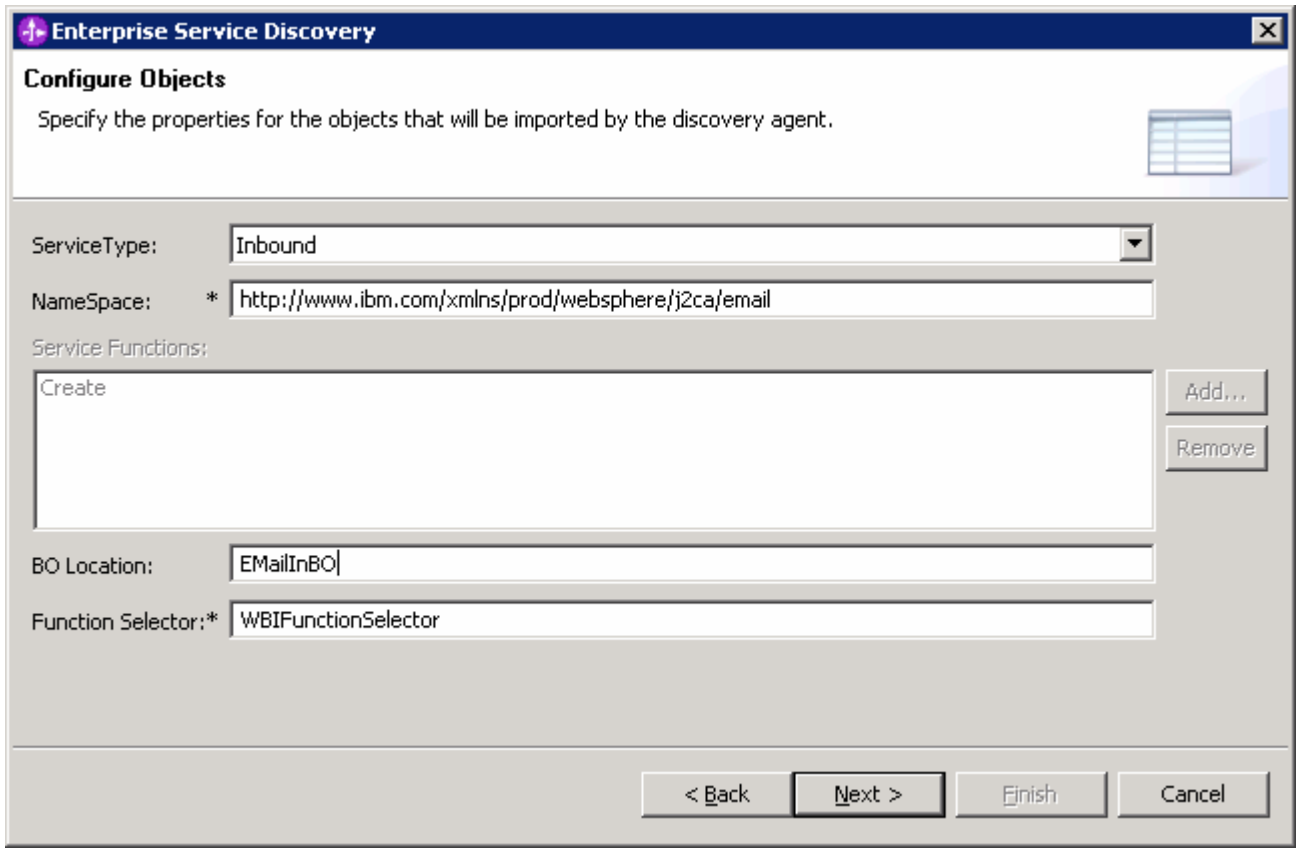


__ e. Click **Next**

____ 5. Configure the objects that will be imported by the discovery agent

__ a. From the Configure objects window, select **Inbound** from the dropdown list for the **Service Type** field. Note the operations available for the selected Service Type

__ b. Enter the **BO Location** as **EMailInBO** and click **Next**

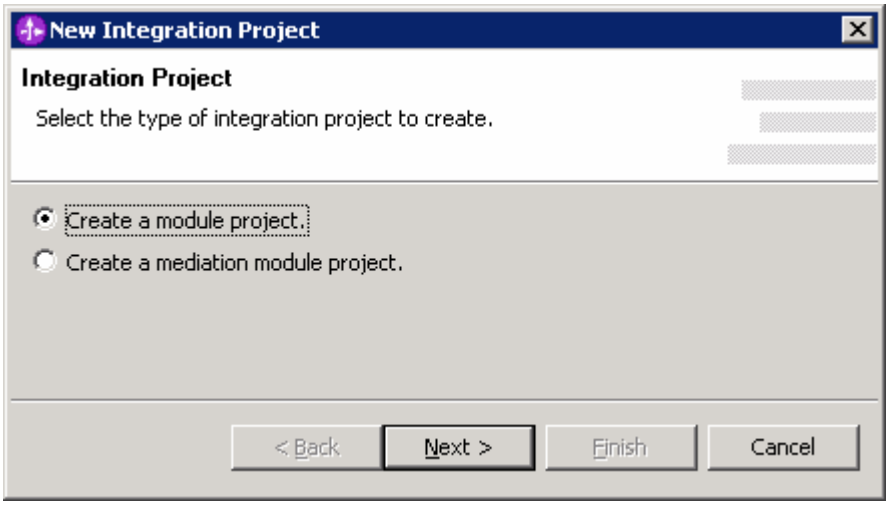


____ 6. Specify the properties for the artifacts that will be generated in your workspace

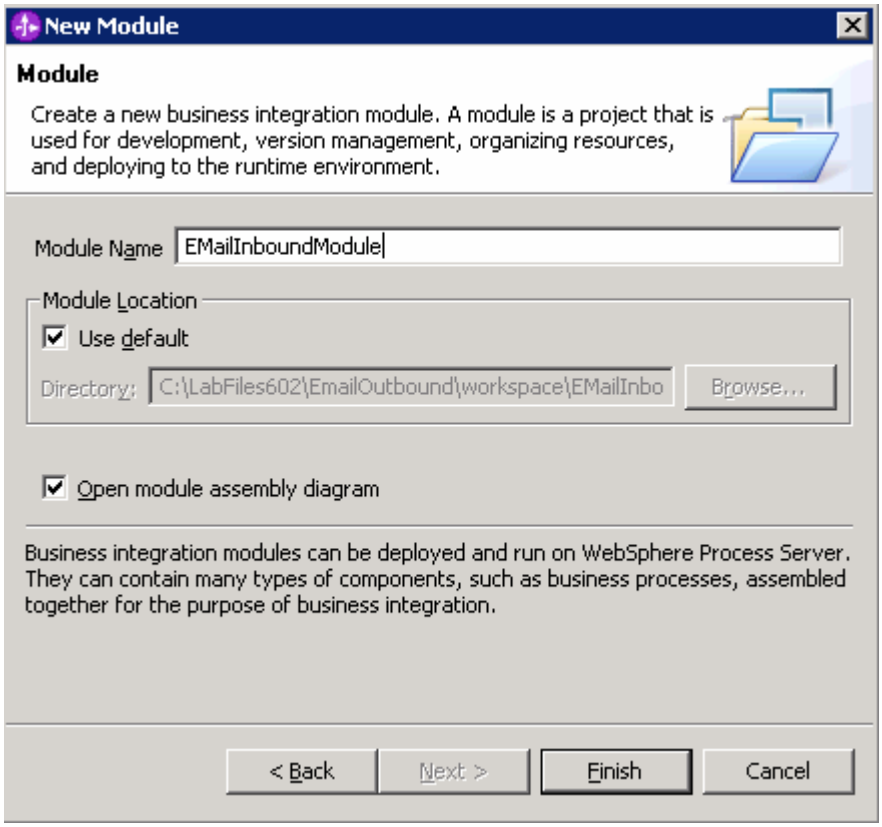
__ a. Create a new module

1) Click on the **New…** button next to the **Module** field

2) From the New Integration Project window, ensure that the radio button next to **Create a module project** is selected and click **Next**



3) Enter **EMailInboundModule** for the **Module Name** field and click **Finish**



__ b. The module which is created above will appear in the **Module** field of the Generate Artifacts window

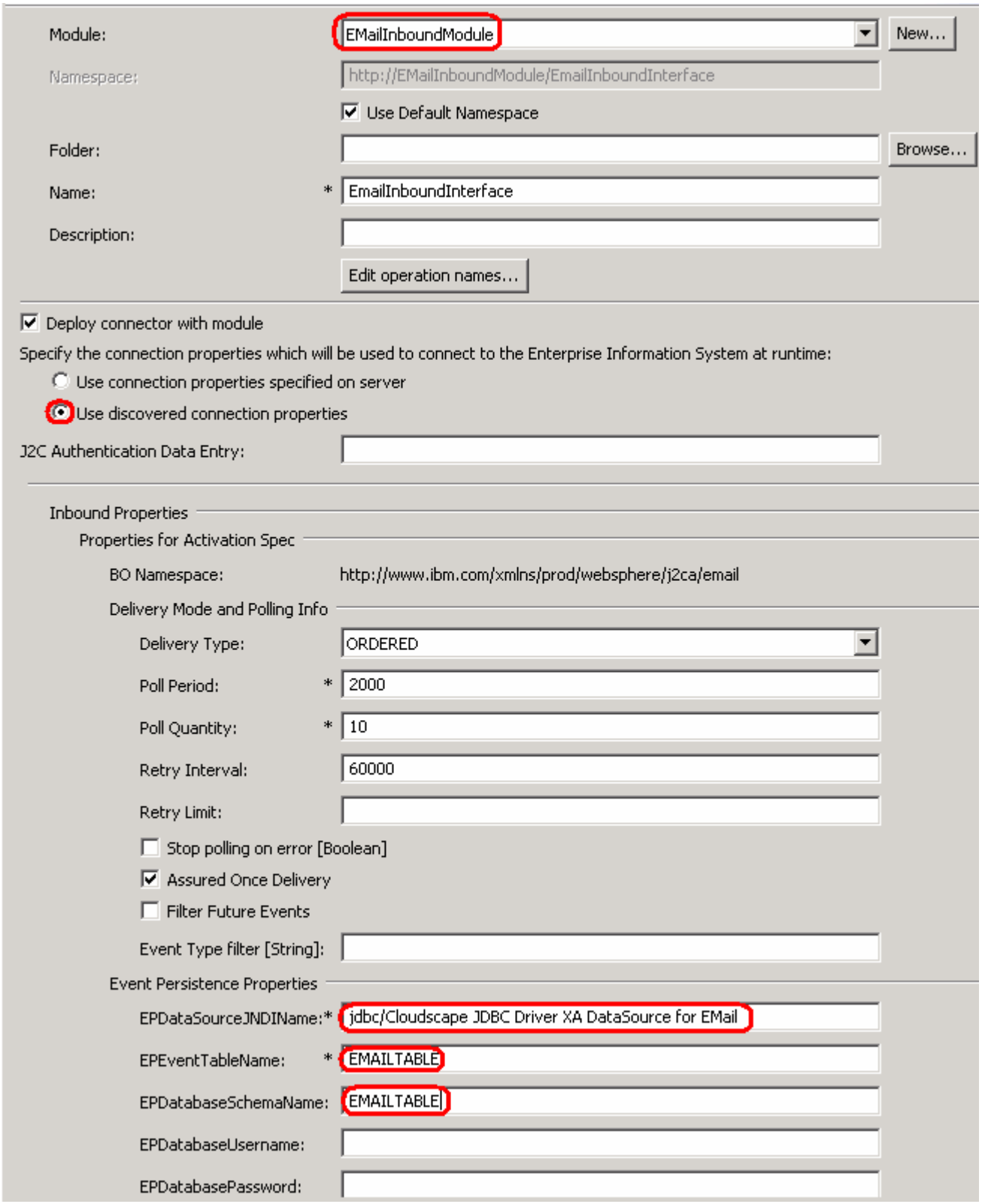
__ c. From Generate Artifacts window, select the radio button next to **Use discovered connection properties**. This will make the Activation Spec Properties and Resource Adapter Properties visible

__ d. Enter the these values for **Event Persistence Properties** of Activation Spec Properties:

1) EPDataSourceJNDIName: **jdbc/Cloudscape JDBC Driver XA DataSource for EMail**

2) EPEventTableName: **EMAILTABLE**

3) EPDatabaseSchemaName: **EMAILTABLE**



__ e. For Inbound Connection Properties, enter these values:

Note: You will use the configured details of the **WPIv602_AdapterInstallEmailServer** lab for the following step.

1) HostName: **localhost** (default)

2) PortNumber: **110** (the port number on which your selected protocol, POP3/IMAP, runs)

3) Protocol: **POP3** (from drop down menu)

Note: You can select IMAP also from the dropdown menu for the Protocol. For the IMAP selection you can specify multiple PollFolders from where the E-mail RA polls events.

4) UserName: **<user>@<domain_name>** (Ex: Emailuser1@aimcp3x4.rchland.ibm.com)

5) Password: **<password for the user>** (Ex: password1)

6) PollFolder(s): **Inbox** (Inbox is the default folder from where E-mail RA polls the events, you can also give different folder)

Note: If the selected Protocol is IMAP, you can enter multiple number of Poll folders separated by the delimiter "**,**" (comma).

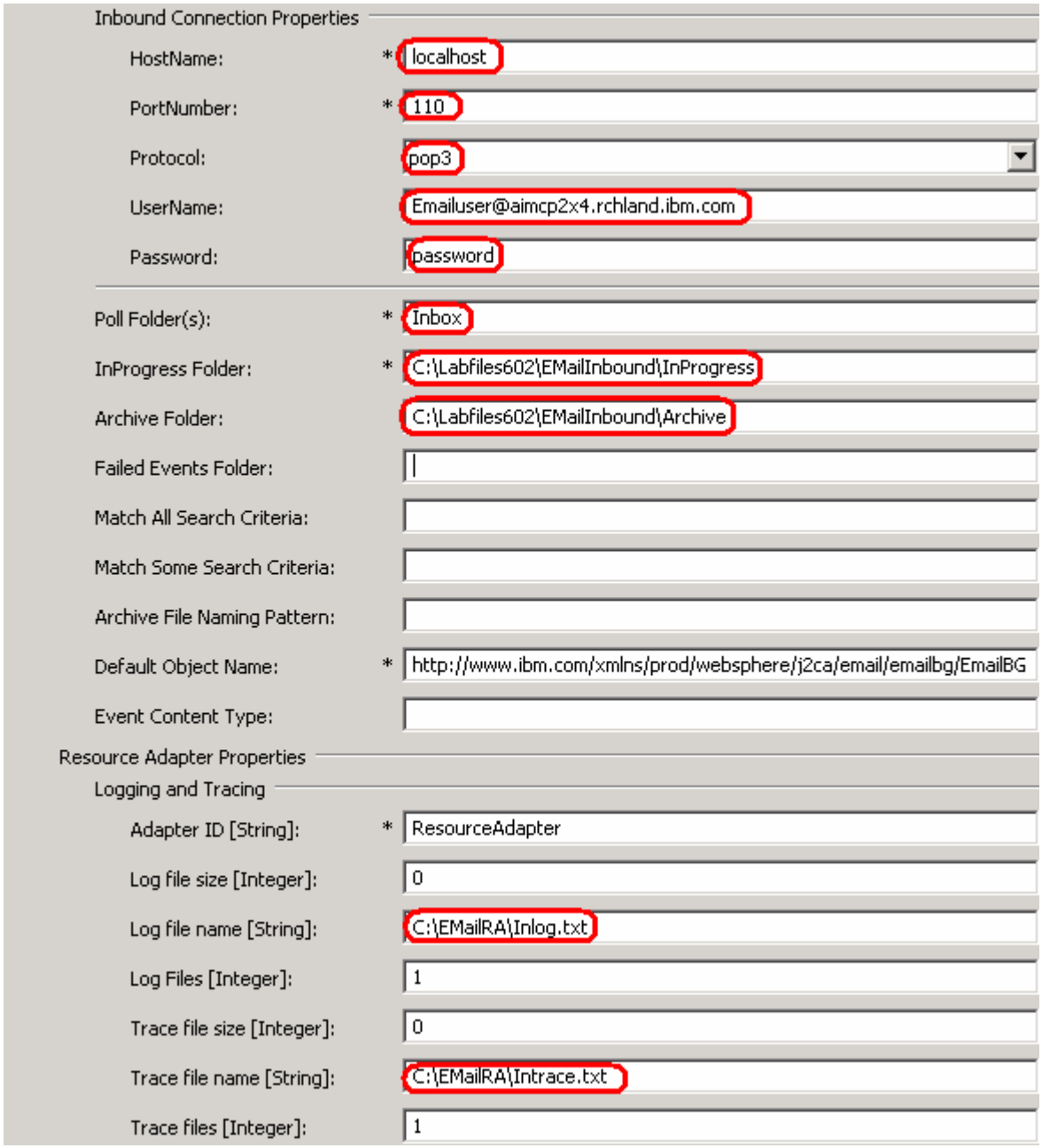
7) InProgress Folder: **<INPROGRESS>**

8) Archive Folder: **<ARCHIVE>**

__ f. For Resource Adapter Properties you can enter these values:

1) Log file name [String]: **C:\EMailRA\Inlog.txt**

2) Trace file name[String]: **C:\EMailRA\Intrace.txt**

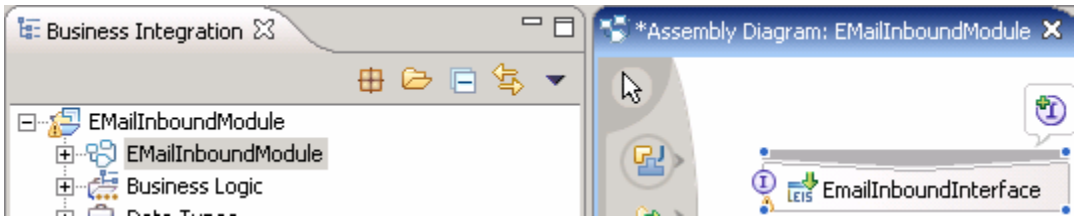


__ g. Click **Finish**

____ 7. Create a Java Component and wire it to the **EMailInboundInterface**

__ a. From the Business Integration perspective, expand the **EMailInboundModule** folder

__ b. Double-click the **EMailInboundModule** module to open it in Assembly editor

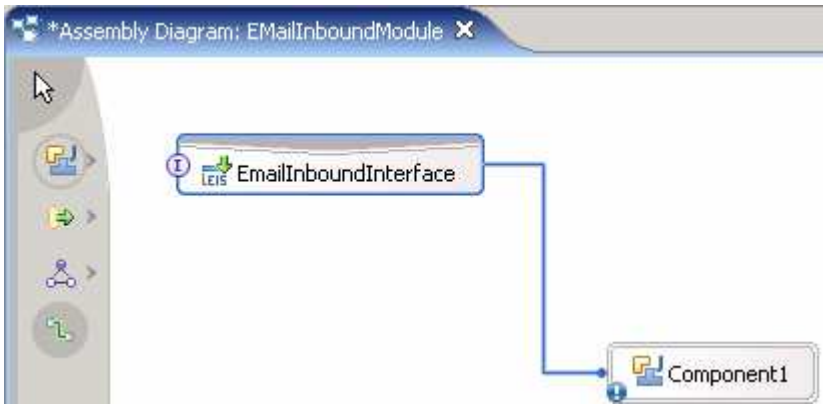


__ c. From the palette, click the **Component (with no implementation type)** icon, and select Java component icon from the popup menu and then click in the Assembly Diagram's empty space to drop it there

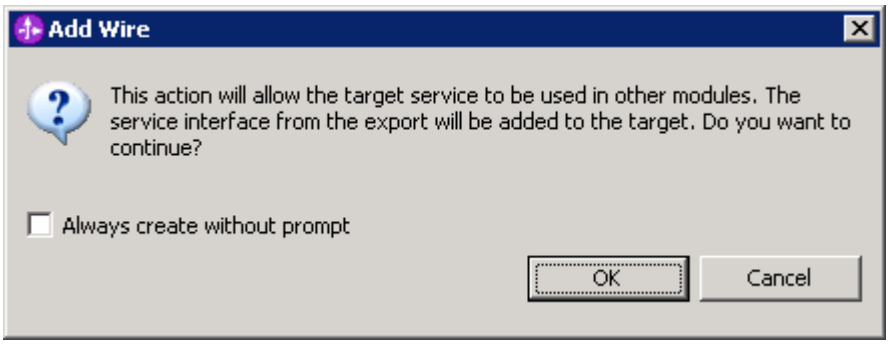
__ d. Wire the EmailInboundInterface to the Java Component.

1) Select the **wire** icon from the palette.

2) Click on **EmailInboundInterface** and then click on **Component1** to wire them together.



3) Click **OK** on the Add Wire popup window



4) Click on the **Selection Tool** to get back to the normal cursor mode

__ e. Right-click on **Component1** and select **Generate Implementation** from the context menu

__ f. Select **default package** from the Generate Implementation window and click **OK**

__ g. **Component1Impl.java** will be opened in Assembly editor. Scroll down to the method **emitEmail(DataObject emitEmailInput**) method and enter this code:

System.out.println("*** REACHED END POINT***");

```
public void emitEmail(DataObject emitEmailInput) {
    //TODO Needs to be implemented.
    System.out.println("**** REACHED END POINT ****");
}
```

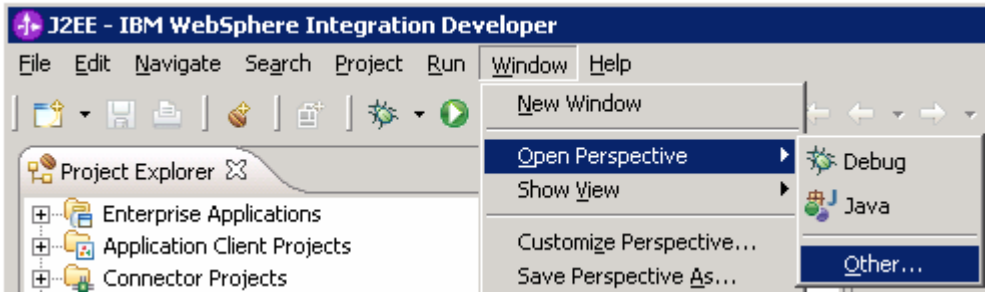
__ h. Save (**Ctrl + S**) and close the **Component1Impl.java** window

__ i. Save (**Ctrl +S**) and close the Assembly Diagram: **EMailInboundModule**

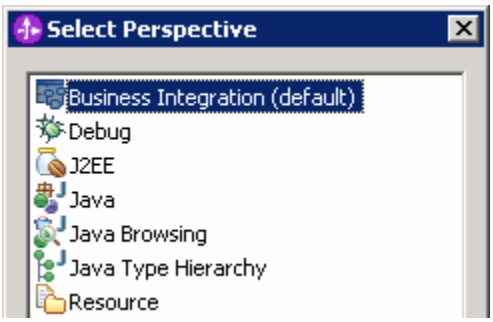
____ 8. You can also configure/change the adapter properties using Assembly Editor

__ a. Change to Business Integration perspective if you are in a different perspective

1) Select **Window > Open Perspective > Other…**.



2) From the Select Perspective window, select **Business Integration (default)** and click **OK**.

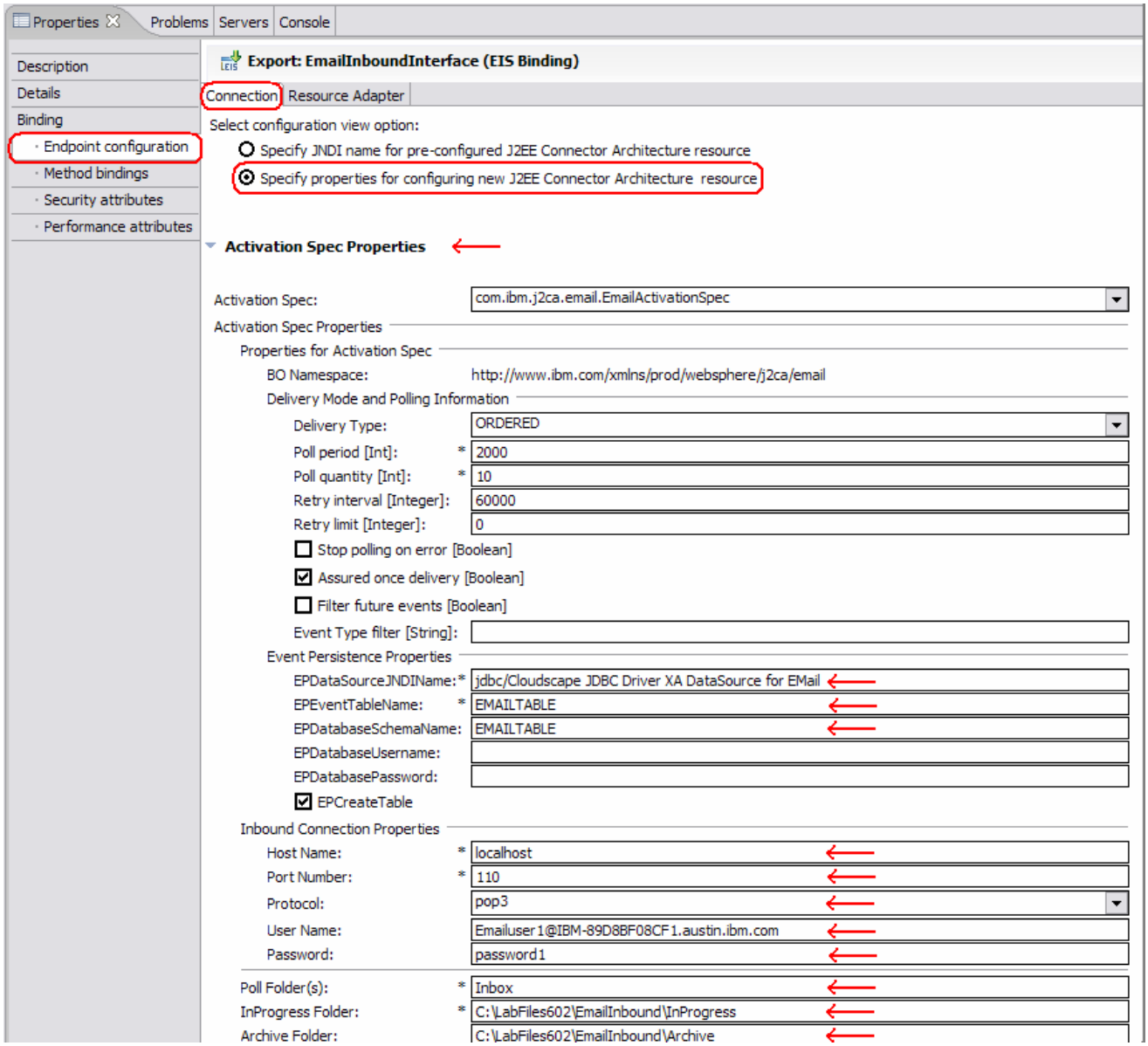


__ b. Expand **EMailInboundModule** and double-click EMailInboundModule to open it in Assembly Editor

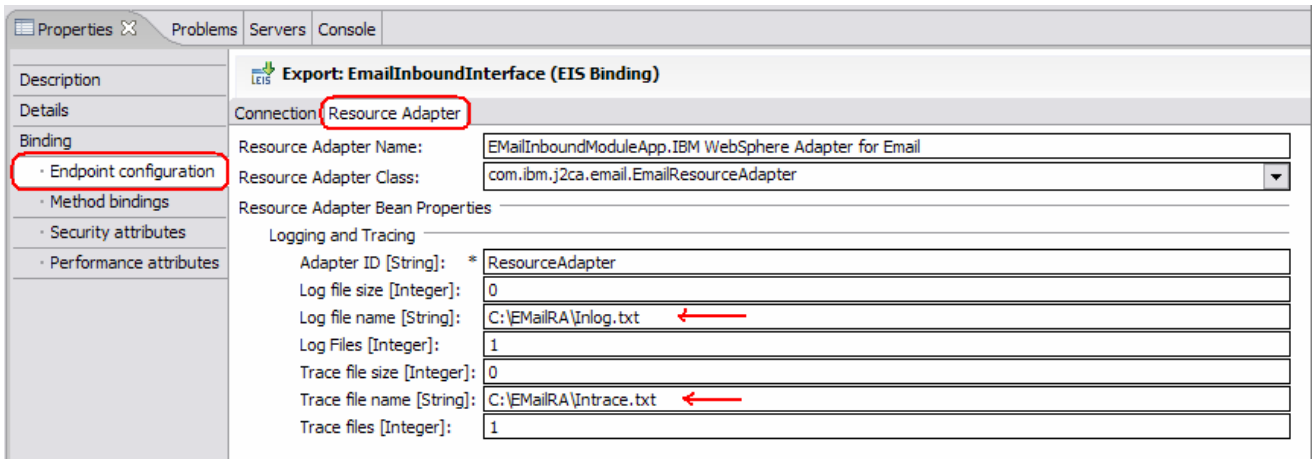
__ c. Click on **EMailInboundInterface** from the Assembly Editor and select **Properties** tab from the bottom

__ d. Select **Binding** under Properties and select **Endpoint Configuration** under Binding itself and then select the **Connection** tab

Ensure the radio button next to **Specify properties for pre-configured new J2EE Connector Architecture recourse** is selected and then **c**lick on **Activation Spec Properties** to expand them. You can change these properties, which you entered using the ESD wizard in the previous steps, and make sure that you save those changes before you deploy the application onto the server



__ e. You can also select **Resource Adapter** tab and review/change those properties



Part 5: Test the Adapter Application using WebSphere Process Server Test Environment

In this part of the lab, you will use the WebSphere Process Server Test Environment to test the SCA application outbound processing.

____ 1. Create events to be polled by the adapter

__ a. Unzip **EmailEventCreator.zip** from <EMAILADAPTER_HOME>\Samples the same directory. You will see a EmailEventCreator folder, that contains the **createEvents.bat** file along with other sample batch files, under the Samples directory

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Note: For your convenience, **createEvents.bat** file is also placed under **<LAB_FILES>\EmailEventCreater** folder.

__ b. Edit the **createEvents.bat** file to specify the appropriate parameters and save those changes

createEvents.bat file has the following structure:

<host> <port> <number of events to be created> <from> <to> <cc> <bcc> <subject> <content> <path for event filename> <Boolean for passthrough/nonpassthrough>

where,

Path for event file name - is the path on the local folder where the event file attachment has been placed.

Boolean for pass-through/non-pass-through – has true or false values. **True** indicates pass-through and **False** indicates non-pass-through.

1) Pass-through mode:

a) Edit the createEvents.bat file as shown below to create 10 events from the user Emailuser2@aimcp3x4.rchland.ibm.com on the localhost mail server to the inbox of the user Emailuser1@aimcp3x4.rchland.ibm.com with the file Inboundtest.txt as an attachment. You can also add cc, bcc, subject, content as shown below:

java -cp .\;.\mail.jar;.\activation.jar EmailEventCreator localhost 25 10 Emailuser2@aimcp3x4.rchland.ibm.com Emailuser1@aimcp3x4.rchland.ibm.com Emailuser3@aimcp3x4.rchland.ibm.com Emailuser4@aimcp3x4.rchland.ibm.com "Test mail" "Testing PassThrough Content" "<LABFILES>\Inboundtest.txt" **true**

b) Save (**Ctrl +S**) and close **createEvents.bat** file

c) Double-click **createEvents.bat** file to create 10 events in the inbox, with txt file as an attachment

2) Non-pass-through mode:

a) Edit the createEvents.bat file as shown below to create 10 events from the user Emailuser2@aimcp3x4.rchland.ibm.com on the localhost mail server to the inbox of the user Emailuser1@aimcp3x4.rchland.ibm.com with the file MyAddress.xml as an attachment. You can also add cc, bcc, subject, content as shown below:

java -cp .\;.\mail.jar;.\activation.jar EmailEventCreator localhost 25 10 Emailuser2@aimcp3x4.rchland.ibm.com Emailuser1@aimcp3x4.rchland.ibm.com

Emailuser3@aimcp3x4.rchland.ibm.com Emailuser4@aimcp3x4.rchland.ibm.com "Test mail" "Testing XML Content" "<LABFILES>\Address.xml" **false**

b) Save (**Ctrl +S**) and close **createEvents.bat** file

c) Double-click **createEvents.bat** file to create 10 more events in the inbox, with xml file as an attachment

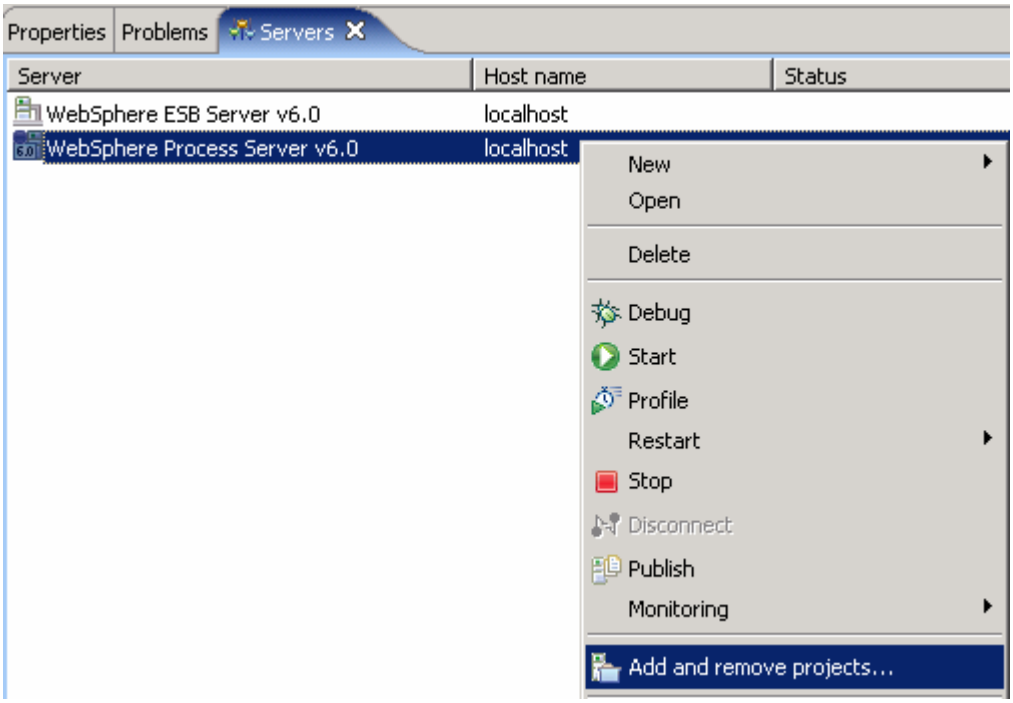
---

Note: For your convenience, **createEvents_sample_passthrough** and **createEvents_sample_nonpassthrough** batch files are placed at <LAB_FILES>\EmailEventCreator which creates the above mentioned events.

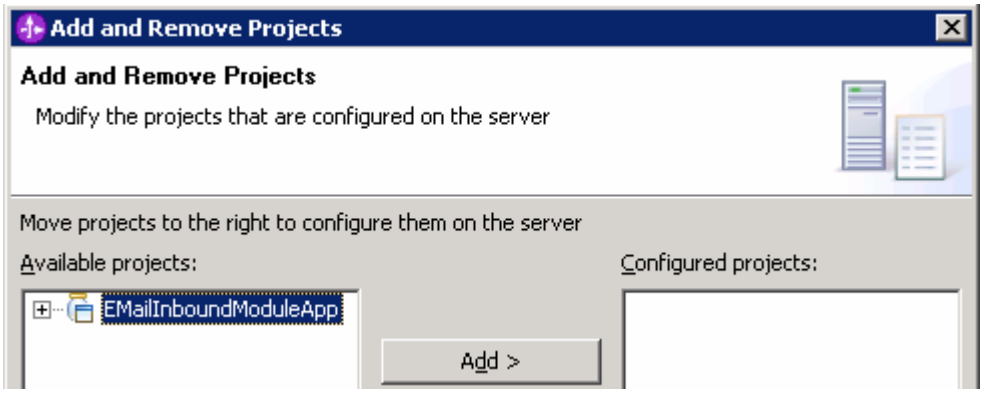
__ c. You can configure your mail client and use it to verify the above created events

____ 2. Add the project to the WebSphere Process Server Test Environment

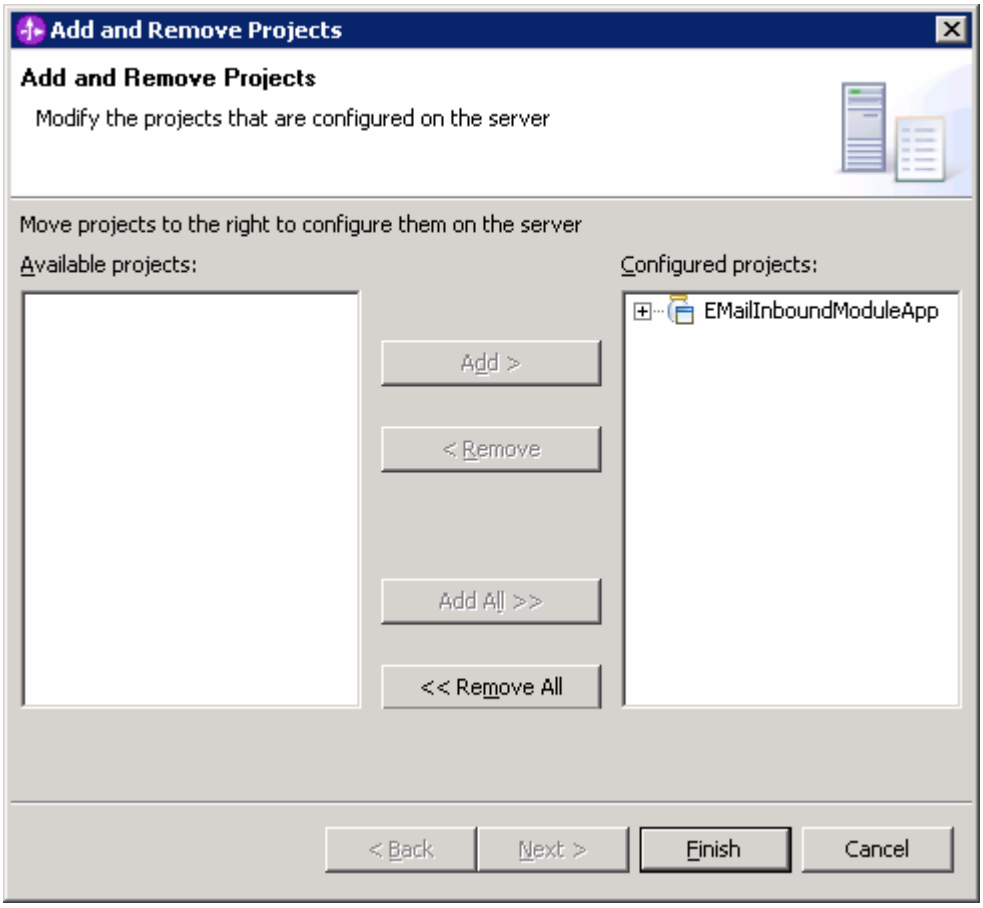
__ a. Right-click on **WebSphere Process Server v6.0** under the server view and **select Add and remove projects…** from the context menu



__ b. From the Add and Remove Projects window, select **EMailInboundModuleApp** under Available projects panel and click **Add >**



__ c. You will now see the **EMailInboundModuleApp** added to the **Configured projects**



__ d. Click **Finish**. Wait until the project is being published onto the server. The server will be started in Debug mode if it is not already started before

__ e. The application will be started along and so does the polling

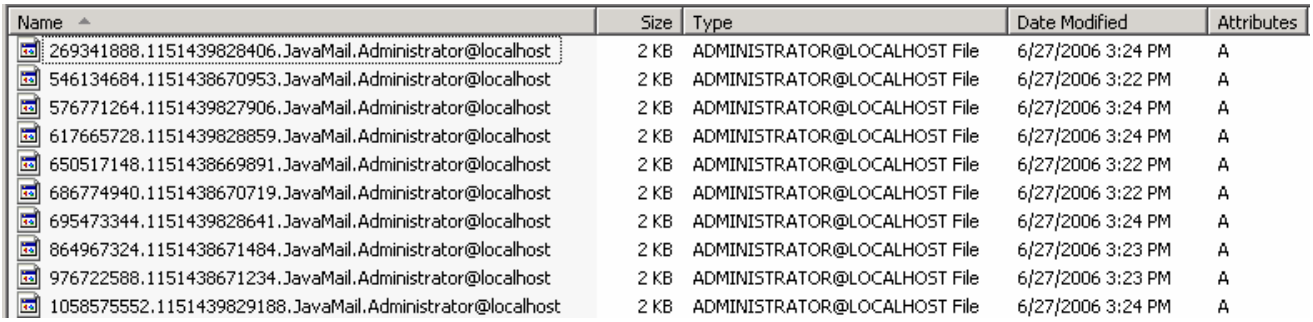
____ 3. Verify the results

__ a. Check the **<INPROGRESS>** folder as soon as the adapter starts polling. E-mail RA polls the events from the inbox and places them in **<INPROGRESS>**. Quickly, the files will be moved to **<ARCHIVE>** folder from there

You might not see any events in **<INPROGRESS>** folder after they are moved to Archive folder

__ b. An **INBOX** folder will be created under <ARCHIVE> directory that contains the 20 events

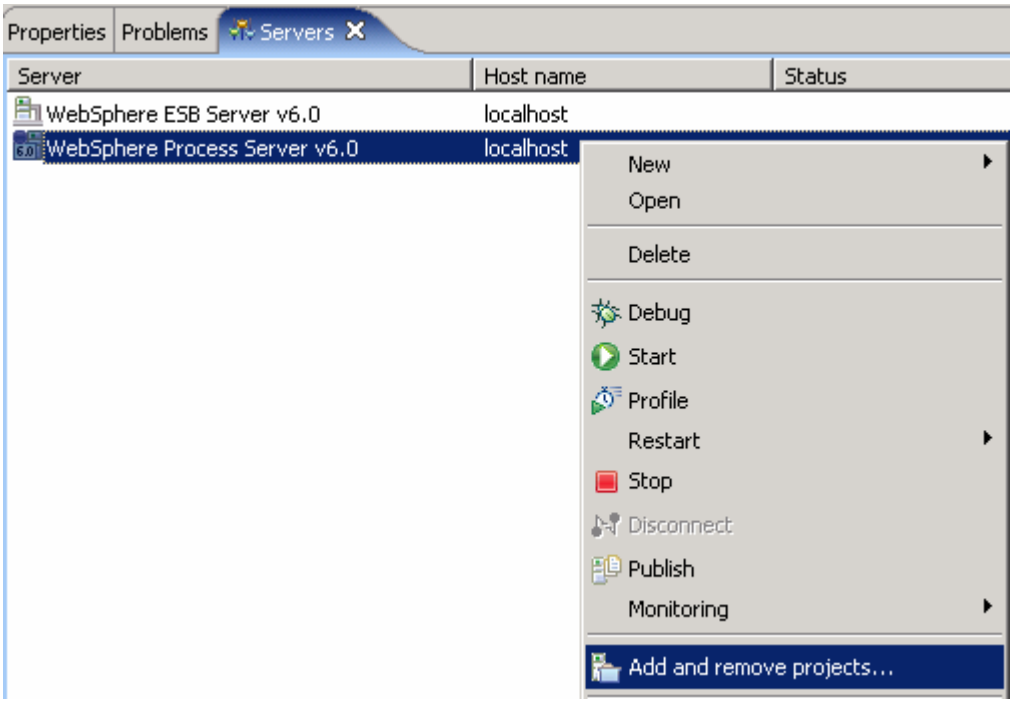
__ c. Each file will be the Message_ID appended with Administrator@localhost



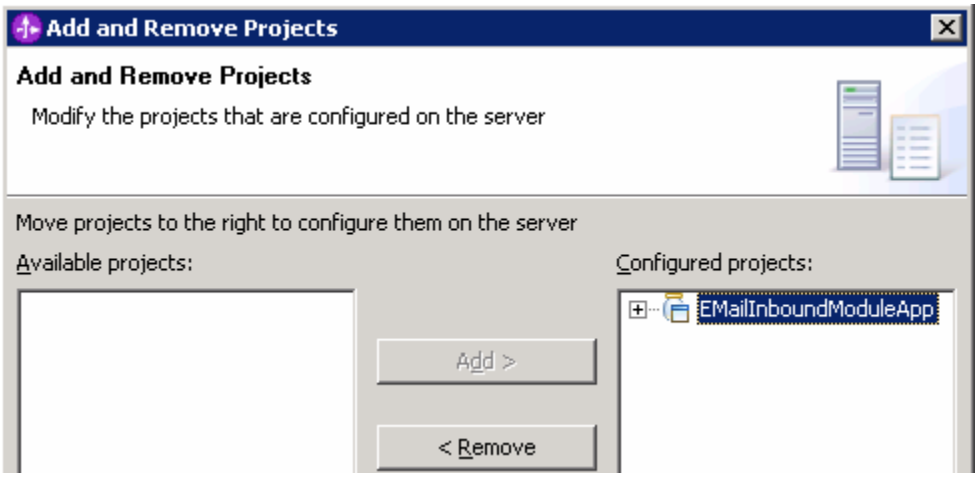
Name	Size	Type	Date Modified	Attributes
269341888.1151439828406.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:24 PM	A
546134684.1151438670953.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:22 PM	A
576771264.1151439827906.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:24 PM	A
617665728.1151439828859.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:24 PM	A
650517148.1151438669891.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:22 PM	A
686774940.1151438670719.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:22 PM	A
695473344.1151439828641.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:24 PM	A
864967324.1151438671484.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:23 PM	A
976722588.1151438671234.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:23 PM	A
1058575552.1151439829188.JavaMail.Administrator@localhost	2 KB	ADMINISTRATOR@LOCALHOST File	6/27/2006 3:24 PM	A

Part 6: Restore Server Configuration

____ 1. Right-click on **WebSphere Process Server v6.0** under the Servers view and select **Add and remove projects…** from the context menu

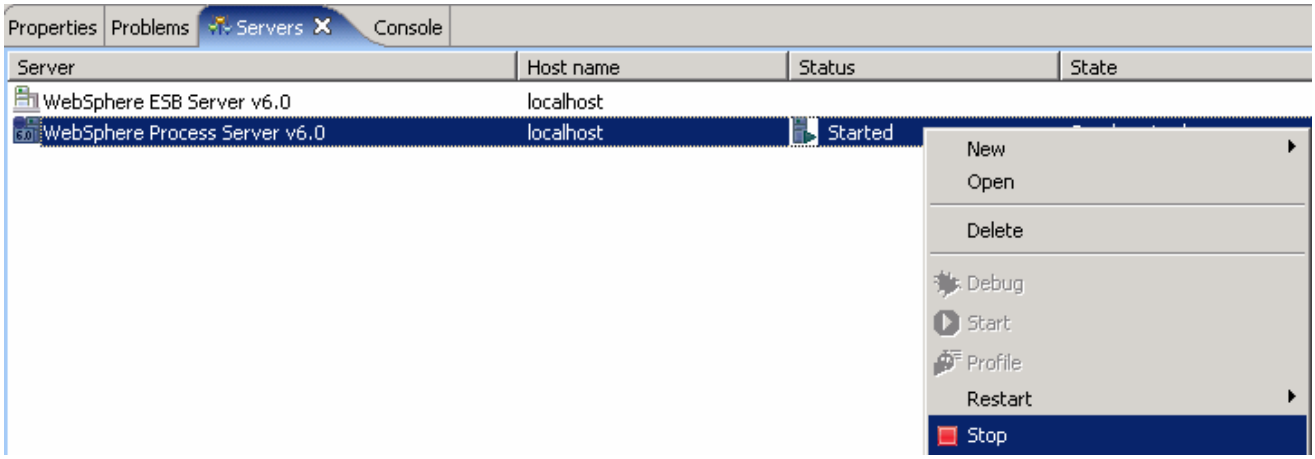


____ 2. Select **EMailInboundModuleApp** under Configured projects and click **< Remove**



____ 3. Click **Finish** after you see the application moved to Available projects. Wait until the application is unpublished

____ 4. Right-click on **WebSphere Process Server v6.0** from the Servers view and select **Stop** from the context menu



What you did in this exercise

In this lab, you created the database in Cloudscape required for this lab. You continued with importing the E-mail Adapter RAR file into your WebSphere Integration Developer workspace. Then, used your WebSphere Process Server administrator console and configured it to create the Data source required to complete this lab.

You made use of Enterprise Service Wizard available in WebSphere Integration Developer to specify Activation Spec Properties and Resource Adapter Properties which, after deploying onto the server will generate Business Objects and other artifacts.

In the end you deployed and then tested the adapter application and restored the server configuration.