

## FTP Adapter Outbound Lab

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### What this exercise is about

The objective of this lab is to provide you with an understanding of the WebSphere® Adapter for FTP and outbound processing. In this lab you will deploy the WebSphere Adapter for FTP using WebSphere Integration Developer, and integrate it into an SCA application that processes outbound requests to the remote 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 FTP V6.0.2 installed
- Unzip LabFiles602.zip to your C:\ (your root) drive
- FTP server installed and configured

### What you should be able to do

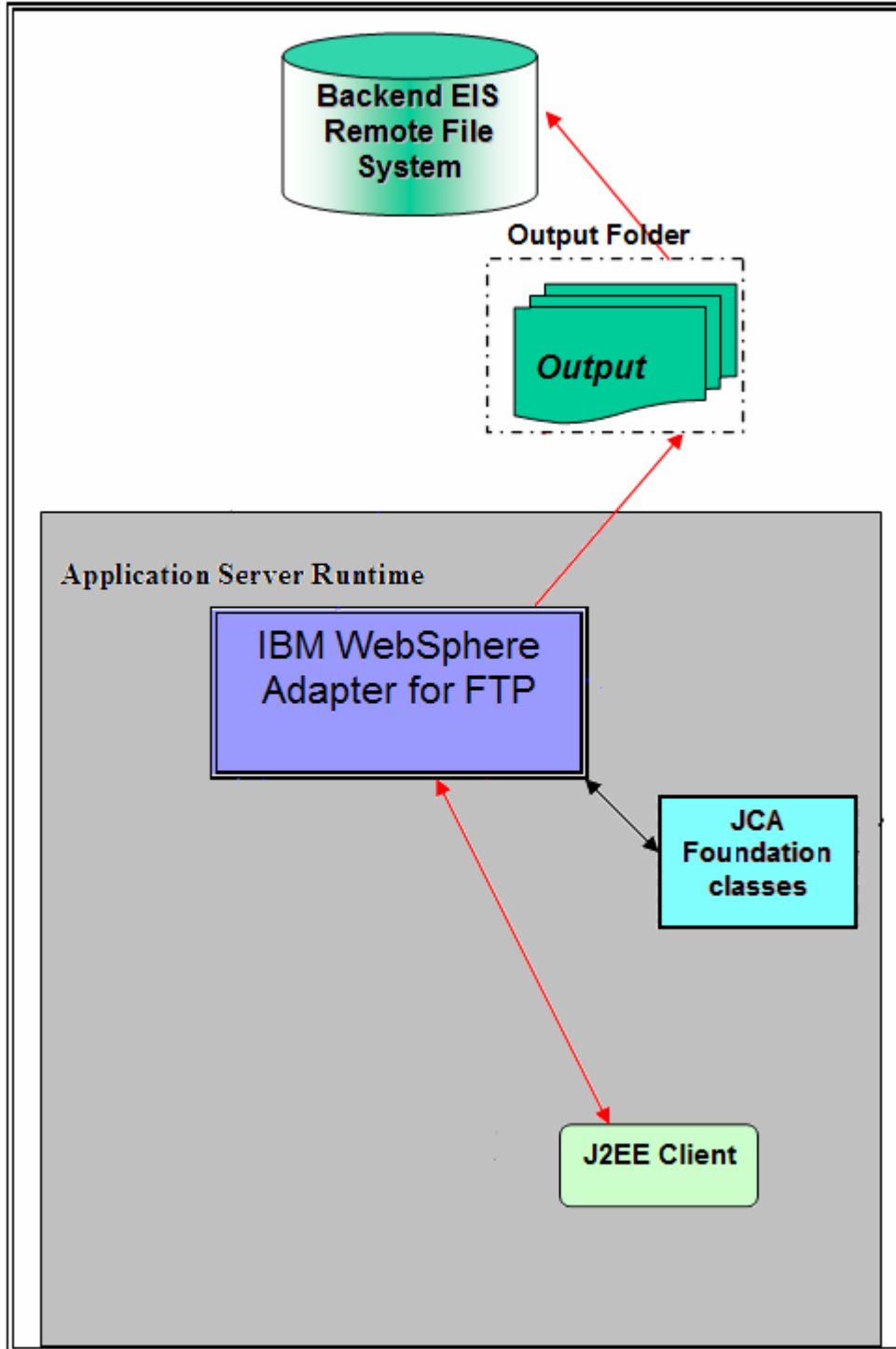
At the end of this lab you should be able to:

- Import FTP adapter RAR file into WebSphere Integration Developer
- Use Enterprise Service Discovery wizard to configure the FTP Managed Connection Factory Properties and Resource Adapter Properties to generate Business Objects and other artifacts

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- Deploy the adapter application onto the WebSphere Process Server test environment
  - Test the above deployed application using WebSphere Process Server test environment
  - Restore the server configuration
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## Introduction



The J2EE Client makes a SCA call by giving the outbound operation name and the input data object and then the custom data binding is called and it invokes other content-specific data binding based on the ContentType set in the child data object.

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The protocol specific properties like directory Name, file name which are required during outbound operation are populated in the wrapper data object present in BG. These values are set on to the FTPFileUnstructuredRecord in the custom data binding and sent to the adapter.

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## 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\WebSphere\6.0	
<WPS_HOME>	<WID_HOME>\runtimes\bi_v6	
<FFADAPTER_HOME>	C:\Program Files\IBM\ResourceAdapters\FTP\adapter\FTP	
<LAB_FILES>	C:\Labfiles602	/tmp/Labfiles60
<WORKSPACE>	C:\LabFiles602\FTPOutbound\workspace	
<TEMP>	C:\temp	/tmp

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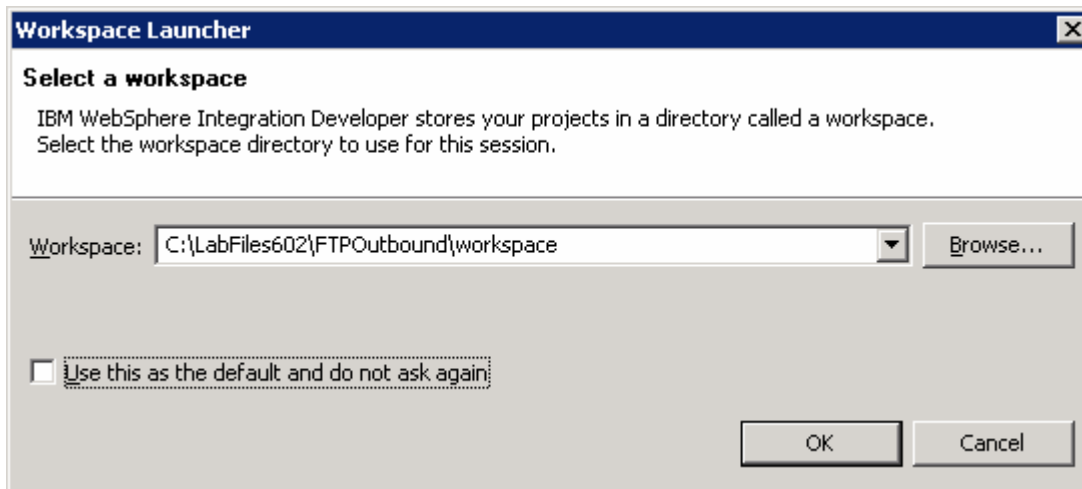
**Windows users note:** When directory locations are passed as parameters to a Java™ program such as EJBdeploy or wsadmin, it is necessary to replace the backslashes with forward slashes to follow the Java convention. For example, C:\LabFiles602\ would be replaced by C:/LabFiles602/


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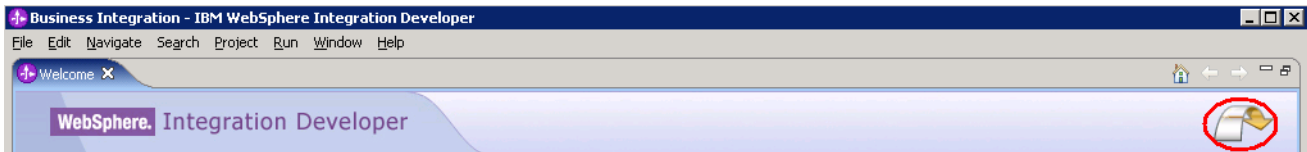
## Part 1: Initialize workspace and Import RAR file into WebSphere Integration Developer

This part of the lab will guide you through the steps for starting WebSphere Integration Developer with a new workspace, and then import the connector file **CWYFT\_FTPFile.rar** into your new workspace.

1. Start WebSphere Integration Developer V6.0.2 with a new workspace
  - Select **Start > Programs > IBM WebSphere > Integration Developer V6.0.2 > WebSphere Integration Developer V6.0.2**
  - From the Workspace Launcher window, enter **<WORKSPACE>** for the Workspace field



- Click on the  button on the right hand corner to close the Welcome page and proceed with the workbench



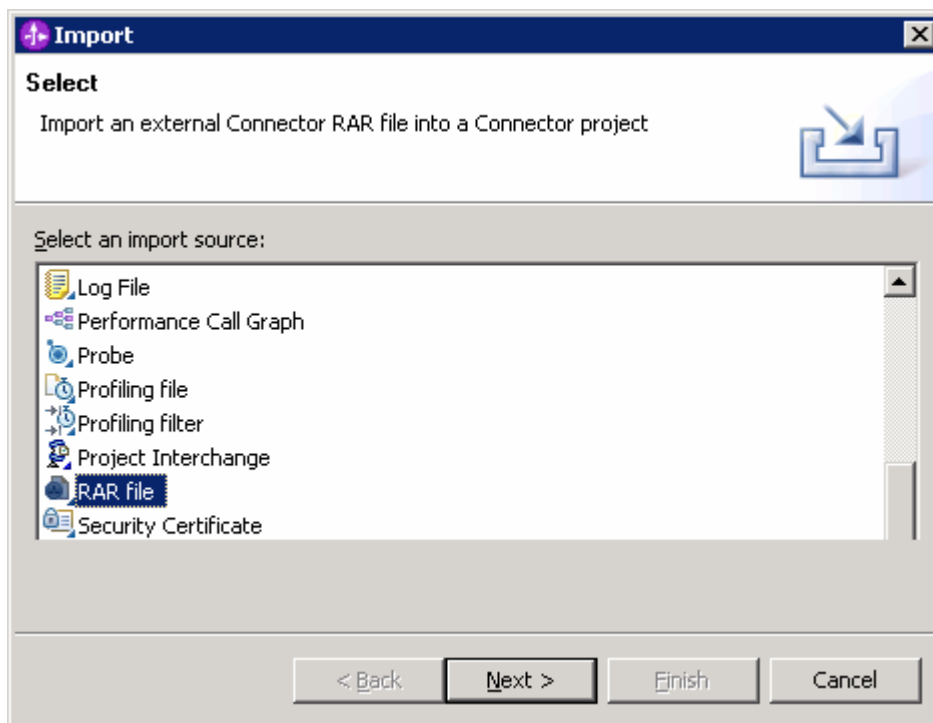
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2. Import FTP Adapter RAR file

- o From main menu, select **File > Import...**

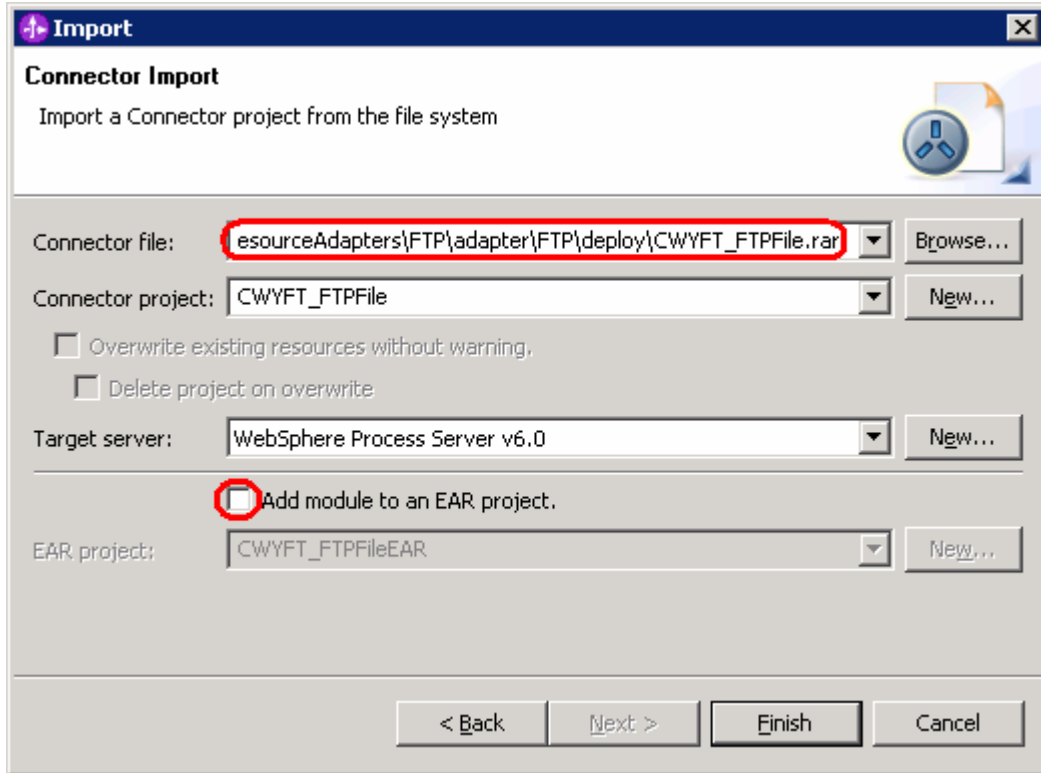


- o Select **RAR file** from the Import window and then click **Next**

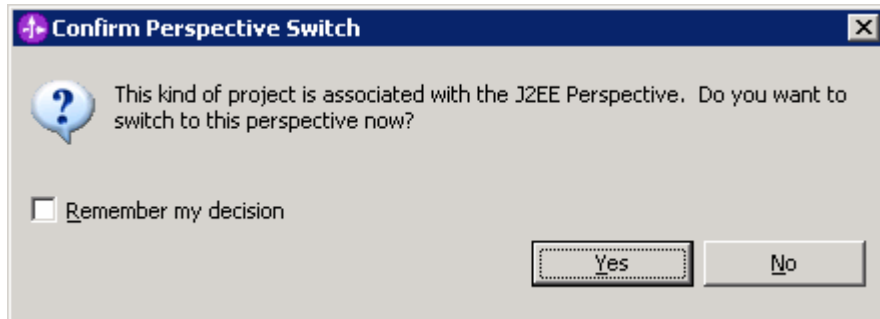


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- Click on the **Browse...** button next to the **Connector file** field to select the **CWYFT\_FTPFile.rar**
- Uncheck the check box next to **Add module to and EAR project** and click **Finish**



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

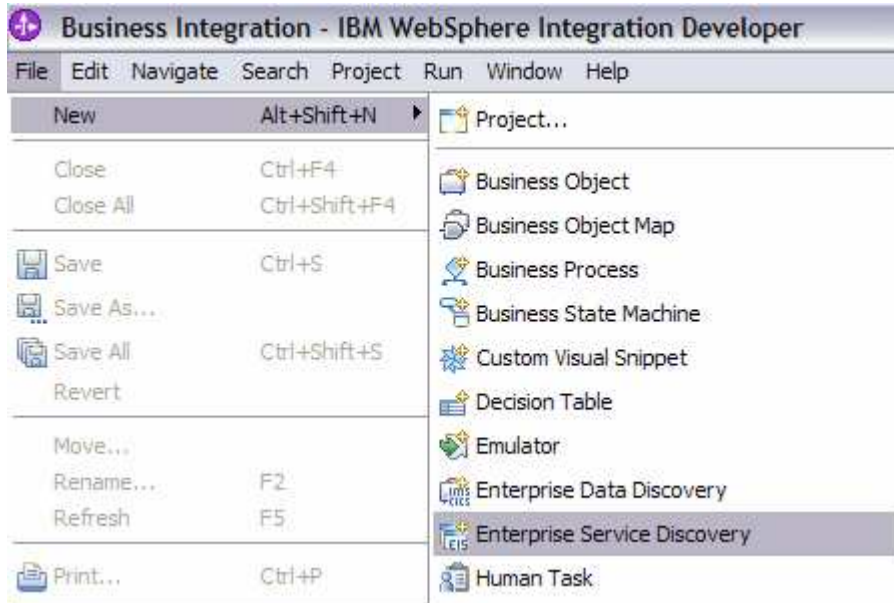


\_\_\_\_ 3. Create directory structure on your FTP Server

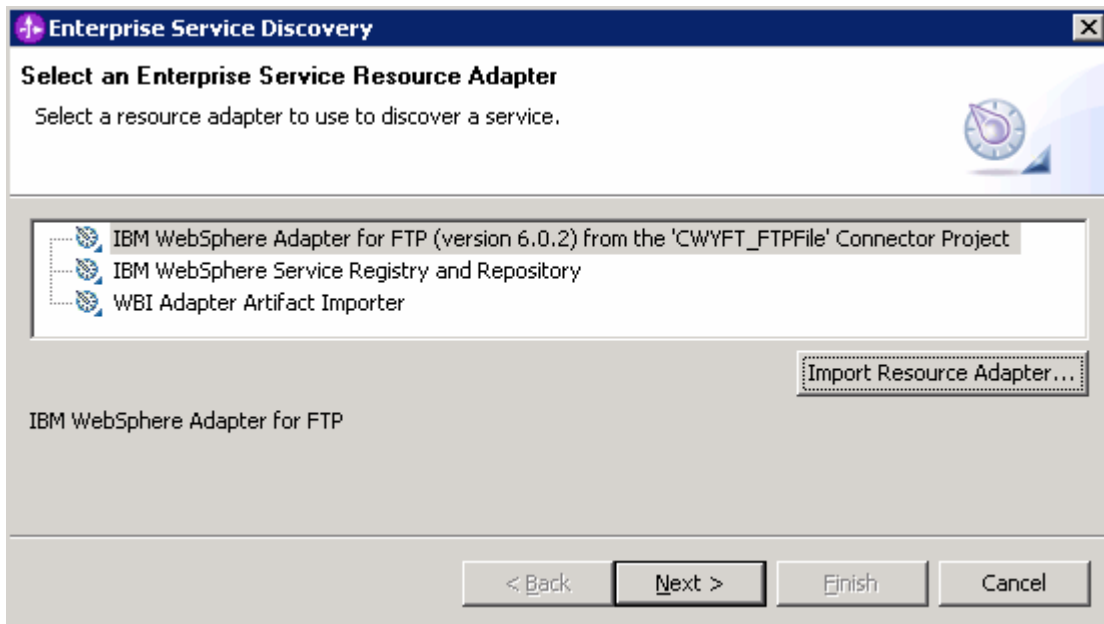
- Log onto your FTP Server using your ftpuser and password
- Create an Output directory named **Outputdir** under the user's home directory
  - **mkdir Outputdir**

## Part 2: Use ESD Wizard to Generate Business Objects and other Artifacts

- \_\_\_ 1. Launch the Enterprise Service Discovery wizard
  - \_\_\_ a. Select **File > New > Enterprise Service Discovery**



- \_\_\_ 2. Select **IBM WebSphere Adapter for FTP (version 6.0.1)** from the 'CWYFT\_FTPFile' 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



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- \_\_\_ a. Click **Browse...** button next to the **Folder Name** field and select the folder **<FTPADAPTER\_HOME>\samples** that contains the XSD file for **Customer** Business Object

**Note:** For your convenience, the **Customer.xsd** is also placed under **<LAB\_FILES>\FTPFiles**.

- \_\_\_ b. Select **Big5** from the drop down list for the **Character Set** field
- \_\_\_ c. Select **text/xml** for the **Content Type** field. Once the content type is selected, the **DataBinding Type** will be automatically set to **XMLBOSerializerDataBinding**
- \_\_\_ d. Click the **Show Advanced >>** button to see the Log file location and Logging level options for discovery log and click **Next** leaving the default log file location

**Enterprise Service Discovery**

**Configure Settings for Discovery Agent**

Specify the properties to initialize the resource adapter and the enterprise service discovery agent.

Connection Configuration

Folder Name: C:\Program Files\IBM\ResourceAdapters\FTP\adapter\FTP\Samples Browse...

Charater Set: Big5

Content Type: text/xml

DataBinding Type: XMLBOSerializerDataBinding

Specify BO Properties

BiDi Properties

Bidi transformation

Bidi ordering schema: Implicit

Text direction: LTR

BIDI SymmetricSwapping

Bidi shaping:

Bidi numeric shaping: Nominal

Hide Advanced <<

Logging options

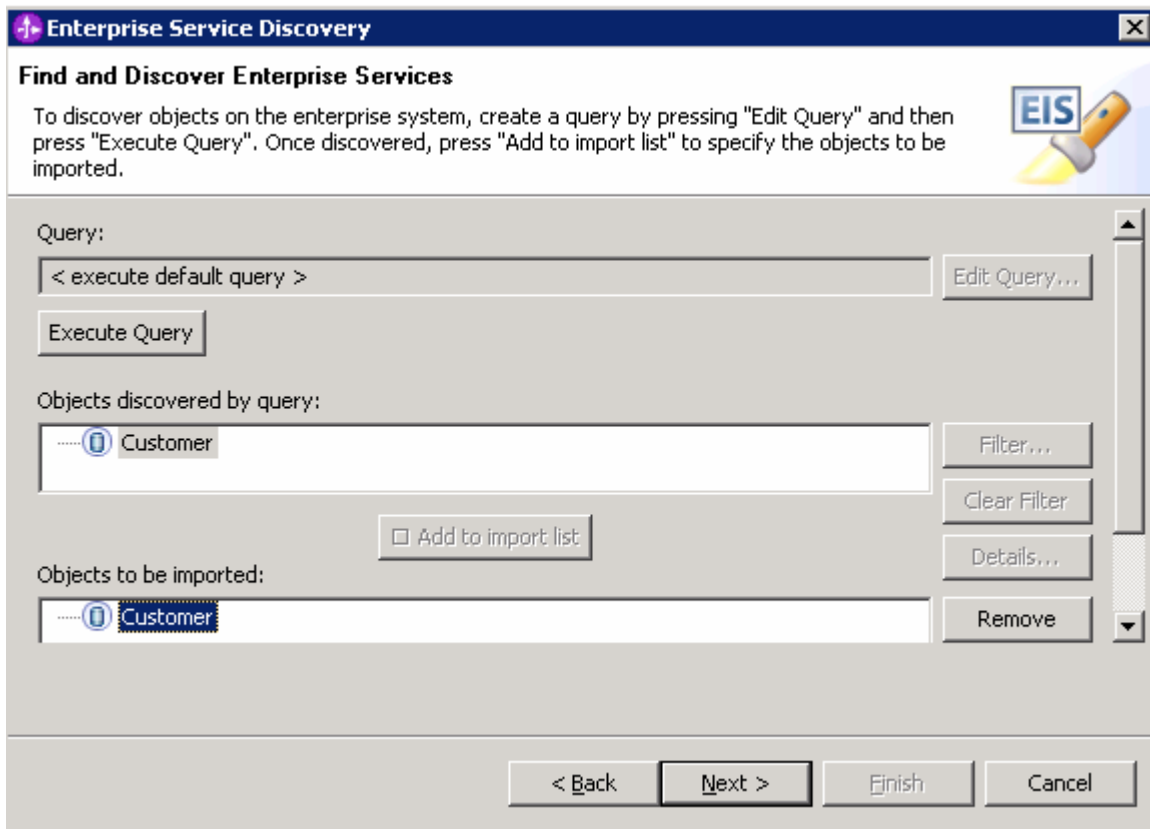
Log file output location:\* C:\Labfiles602\FTPInbound\workspace\metadata\FTPFileMetadataDiscoveryImpl.log Browse...

Logging Level: SEVERE

< Back Next > Finish Cancel

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- \_\_\_ 4. Find and discover the enterprise services. In this step you will select the business objects and services to be used with the adapter
  - \_\_\_ a. From the Enterprise Service Discovery window, click on **Execute Query** button. You will see a **Customer** business object under **Objects discovered by query**
  - \_\_\_ b. Select **Customer** business object and click **Add to import list** button. The Customer business object will now be displayed under the **Objects to be imported**



- \_\_\_ c. Click **Next**
- \_\_\_ 5. Configure the objects that will be imported by the discovery agent
  - \_\_\_ a. From the Configure objects window, select **Outbound** from the dropdown menu for the **Service Type**. Note the operations available for the selected Service Type

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\_\_ b. Enter the **BO Location** as **FTPOutBO** and click **Next**

The screenshot shows the 'Enterprise Service Discovery' window with the 'Configure Objects' tab selected. The window title is 'Enterprise Service Discovery'. Below the title bar, the text 'Configure Objects' is displayed, followed by the instruction 'Specify the properties for the objects that will be imported by the discovery agent.' The 'ServiceType' dropdown menu is set to 'Outbound'. The 'Namespace' field contains the URL 'http://www.ibm.com/xmlns/prod/websphere;j2ca/ftp'. The 'Operations' list includes: Create, Append, Overwrite, Delete, Exists, List, Retrieve, ExecuteFTPScript, and ServerToServerFileTransfer. The 'BO Location' field is set to 'FTPOutBO'. The 'Function Selector' field is set to 'WBIFunctionSelector'. At the bottom of the window, there are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

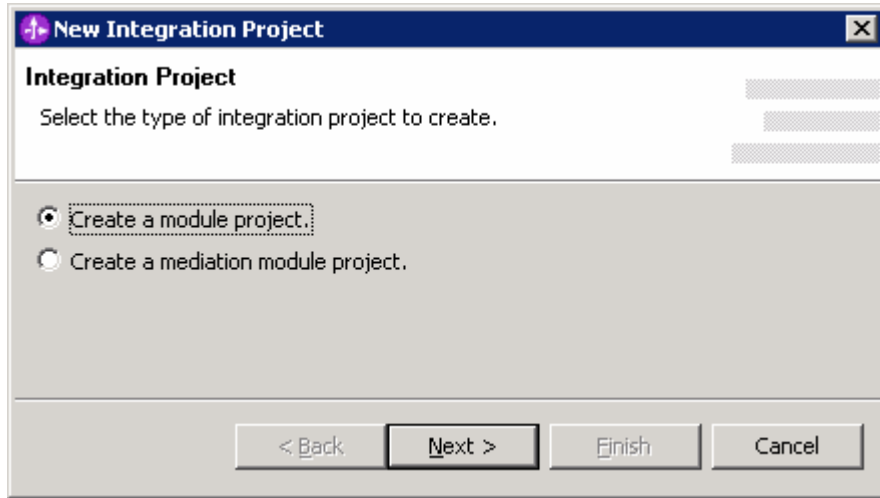
\_\_\_ 6. Specify the properties for the artifacts that will be generated in your workspace

\_\_ a. Create a new module

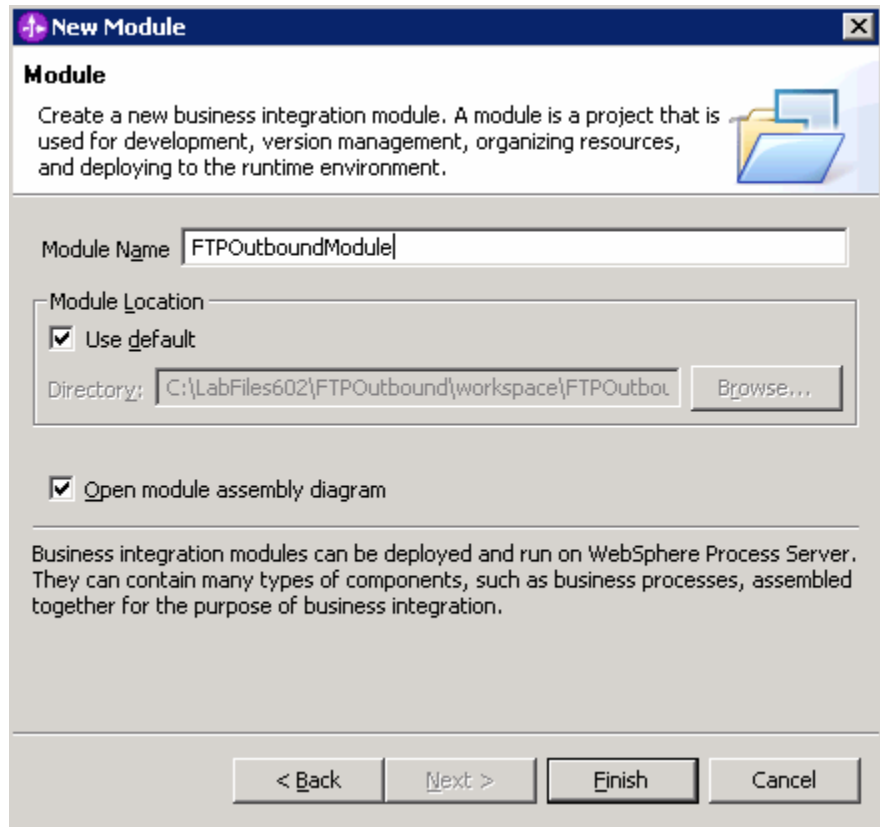
1) Click on the **New...** button next to the **Module** field

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

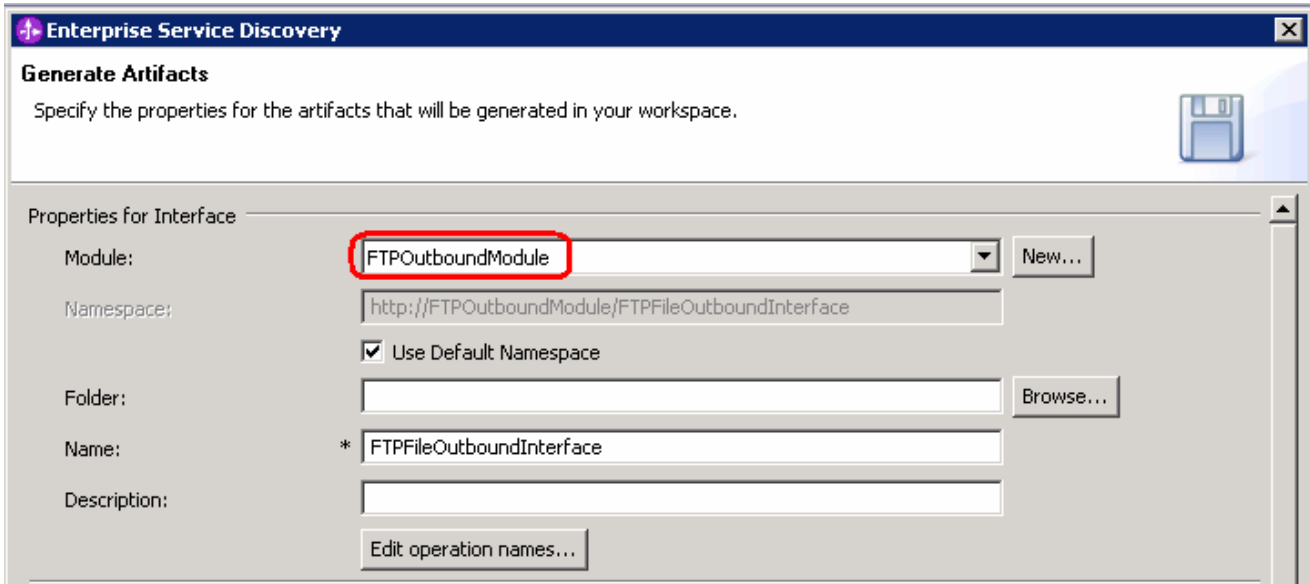


- 3) Enter **FTPOutboundModule** for the **Module Name** field and click **Finish**



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\_\_\_ b. The module which is created above will appear under the **Module** field of the Generate Artifacts window



\_\_\_ c. From the Generate Artifacts window, select the radio button next to **Use discovered connection properties**. This will make the FTP Adapter Managed Connection Factory and Resource Adapter Properties visible

\_\_\_ d. Enter the following fields under the FTP Adapter Managed Connection Factory Properties:

- 1) FtpUrl: **ftp://<FTP Server IP Address>**
- 2) UserName: **<user>** (username using which you connect to your FTP machine)
- 3) Password: **<password>** (password for the above user to connect to your FTP machine)
- 4) EisEncoding: **Big5** (from the drop down menu)

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\_\_\_ e. Enter the following fields under Resource Adapter Properties:

1) LogFilename: **C:\FTPRA\outlog.txt**

2) TraceFilename: **C:\FTPRA\outtrace.txt**

The screenshot shows the configuration interface for the FTP Adapter. It is divided into three main sections:

- Deployment properties:** Includes a checked checkbox for "Deploy connector with module" and a text field for "J2C Authentication Data Entry". Below this, there are radio buttons for "Use connection properties specified on server" (unselected) and "Use discovered connection properties" (selected).
- FTP Adapter ManagedConnection Factory Properties:** A list of fields for configuring the FTP connection:
  - Ftp Url: \* ftp://localhost
  - User Name: root
  - Password: \*\*\*\*\*
  - Staging Directory: (empty)
  - Custom Parser Class Name: (empty)
  - EIS Encoding: Big5
  - Second Server Directory: (empty)
  - Second Server User Name: (empty)
  - Second Server Password: (empty)
  - Socks Proxy Host: (empty)
  - Socks Proxy Port: 1080
  - Socks Proxy User Name: (empty)
  - Socks Proxy Password: (empty)
- ResourceAdapter Properties:** A section for logging and tracing:
  - Adapter ID [String]: \* ResourceAdapter
  - Log file size [Integer]: 0
  - Log file name [String]: C:\FTPRA\Outlog.txt
  - Log Files [Integer]: 1
  - Trace file size [Integer]: 0
  - Trace file name [String]: C:\FTPRA\Outtrace.txt
  - Trace files [Integer]: 1

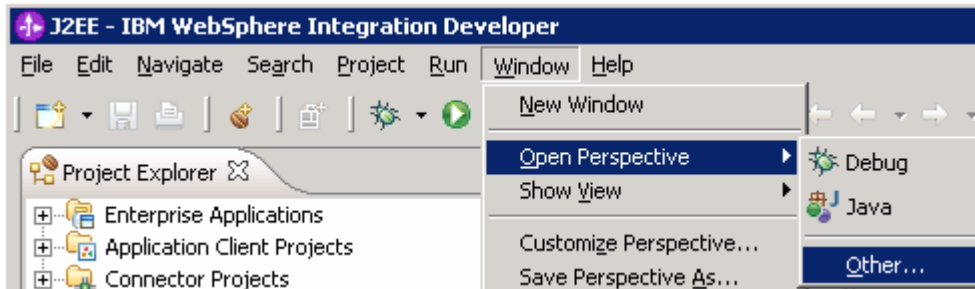
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\_\_\_ f. Click **Finish**

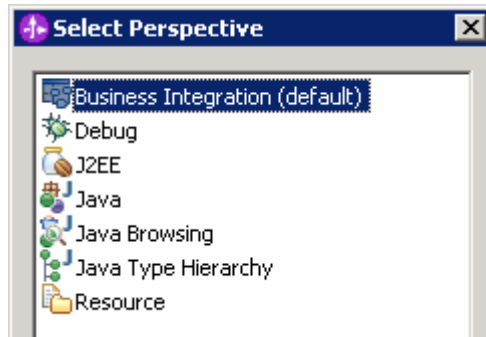
\_\_\_ 7. You can also configure/change the adapter properties using Assembly Editor

\_\_\_ a. Change to the Business Integration perspective if not open

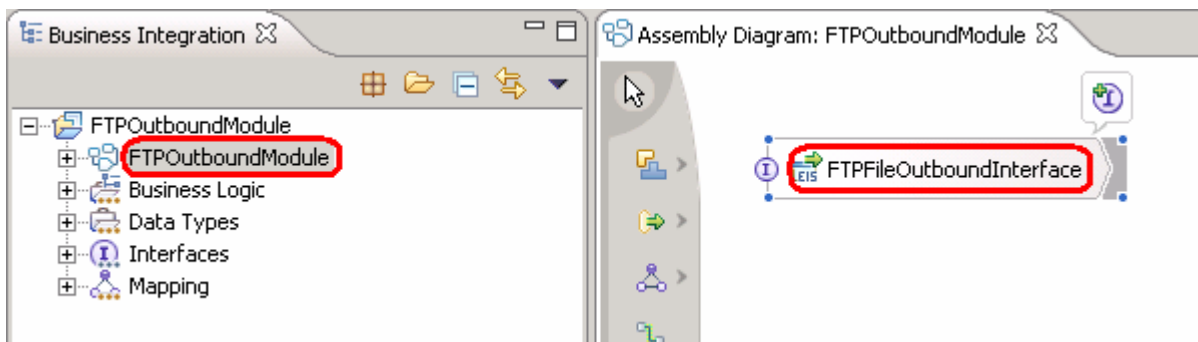
1) Select **Window > Open Perspective > Other....**



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



\_\_\_ b. Expand **FTPOutboundModule** and double-click **FTPOutboundModule** to open it in Assembly Editor

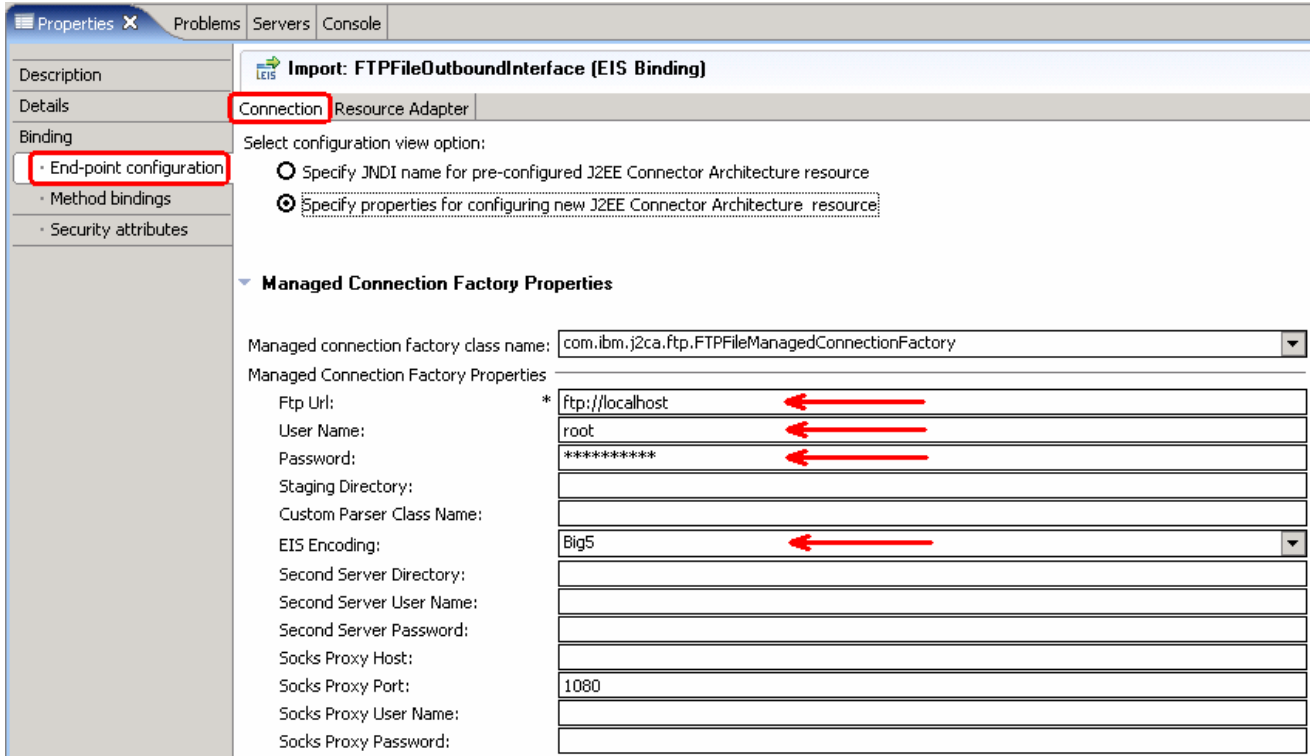


\_\_\_ c. Click on **FTPFileOutboundInterface** from the Assembly Editor and select **Properties** tab from the bottom

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

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- 1) Ensure the radio button next to **Specify properties for pre-configured new J2EE Connector Architecture resource** is selected and then click on **Managed Connection Factory Properties** to expand it. You can change the properties that you entered using the ESD wizard in the previous steps and save those changes before you deploy the application onto the server





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2) Click on **Resource Adapter** tab to view/change the Resource Adapter Properties

The screenshot shows the 'Properties' window for 'Import: FTPFileOutboundInterface (EIS Binding)'. The 'Resource Adapter' tab is active. The 'End-point configuration' section is highlighted with a red box. The 'Logging and Tracing' section contains the following fields:

Adapter ID [String]: *	ResourceAdapter
Log file size [Integer]:	0
Log file name [String]:	C:\FTPRA\Outlog.txt
Log Files [Integer]:	1
Trace file size [Integer]:	0
Trace file name [String]:	C:\FTPRA\Outtrace.txt
Trace files [Integer]:	1

Red arrows point to the 'Log file name' and 'Trace file name' fields.

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## Part 3: 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.

FTP adapter supports the following outbound operations:

**Create** –file with the specified name is created in the specified directory of the FTP Server. The content of the file can be given as either a part of the request from the client or it can be picked from the local file system where the adapter is running according to the configuration. If the file to be created already exists, an `FTPFileCreateException` is thrown. Existing file is not overwritten.

**Append** – the file with specified name in the specified directory of the FTP Server is appended with the content sent across in the request. If the file to be appended doesn't exist, an `FTPFileAppendException` is thrown to the calling component.

**Delete** – deletes the file from the specified directory in the FTP Server. If the file to be deleted doesn't exist, an `FTPFileDeleteException` is thrown to the calling component.

**Retrieve** – response returns the content of the file(s) which is/are specified in the request. The file names are input as comma separated in a `Filename` attribute. If the file doesn't exist, an `FTPFileRetrieveException` is thrown to the calling component.

**Overwrite** – overwrites the file in the directory with the content specified in the request. If the file to be updated doesn't exist, an `FTPFileOverwriteException` is thrown to the calling component.

**Exists** - checks the existence of a file. Returns true if the file name in the request exists in the specified directory and returns false if either directory or file name doesn't exist.

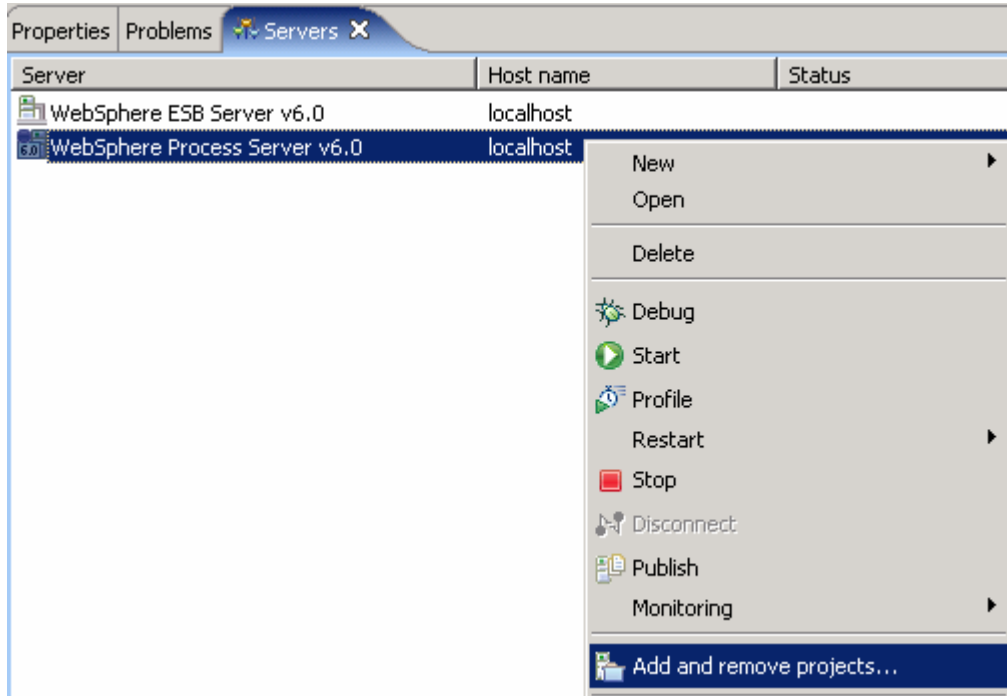
**List** - returns all the file names in the all directories specified in the request. If the directory specified doesn't exist, an `FTPFileListException` is thrown to the calling component.

**ServerToServerFileTransfer** –transfers the specified file from a directory of one FTP server to a directory of another FTP server. If all the details of the two servers are not specified, an `FTPFileServerToServerFileTransferException` is thrown.

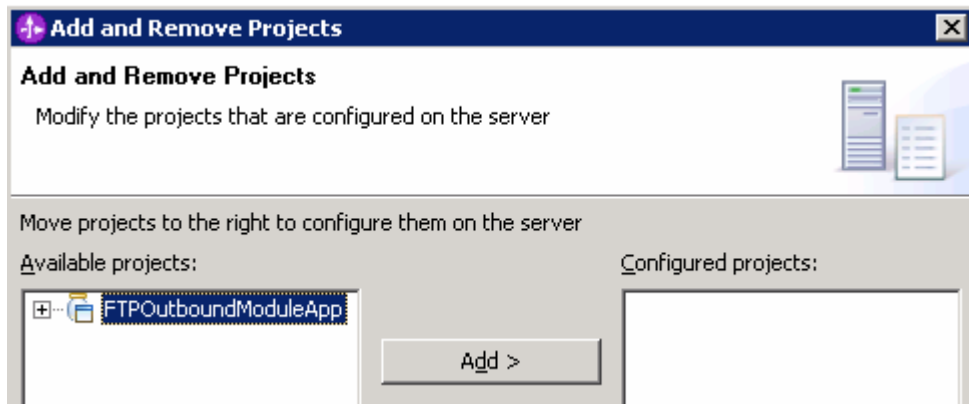
**ExecuteFTPScript** –executes the commands present in a FTP script file, which exists on the local machine where adapter is installed. The location of the script file is given in `DirectoryPath` and `Filename` attributes of the `FTPFileUnstructuredRecord`. This operation executes only the commands supported by FTP Server.

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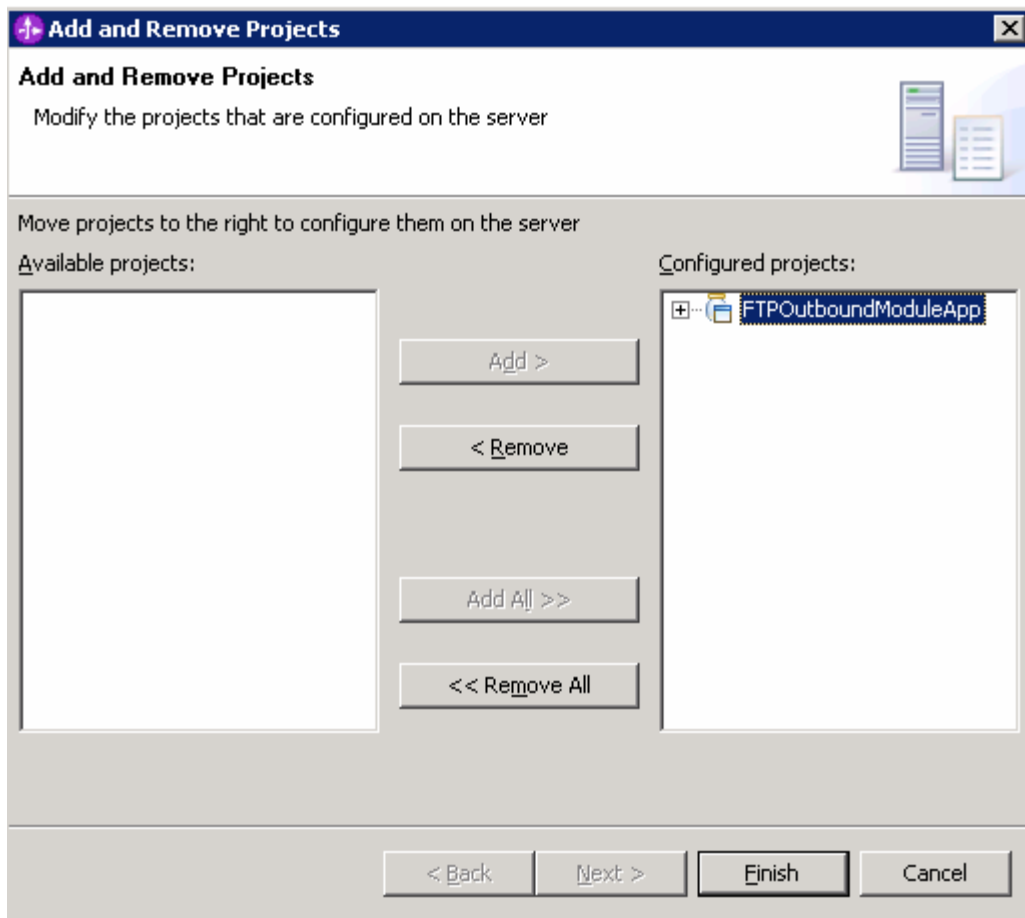
- \_\_\_ 1. Add the project to the server for the WebSphere Process Server Test Environment
  - \_\_\_ a. Right-click on **WebSphere Process Server v6.0** under the server view and **select Add and remove projects...** from the context menu



- \_\_\_ b. From the Add and Remove Projects window, select **FTPOutboundModuleApp** under Available projects panel and click **Add >**



\_\_ c. You will now see the **FTPOutboundModuleApp** added to the **Configured projects**. Click **Finish**

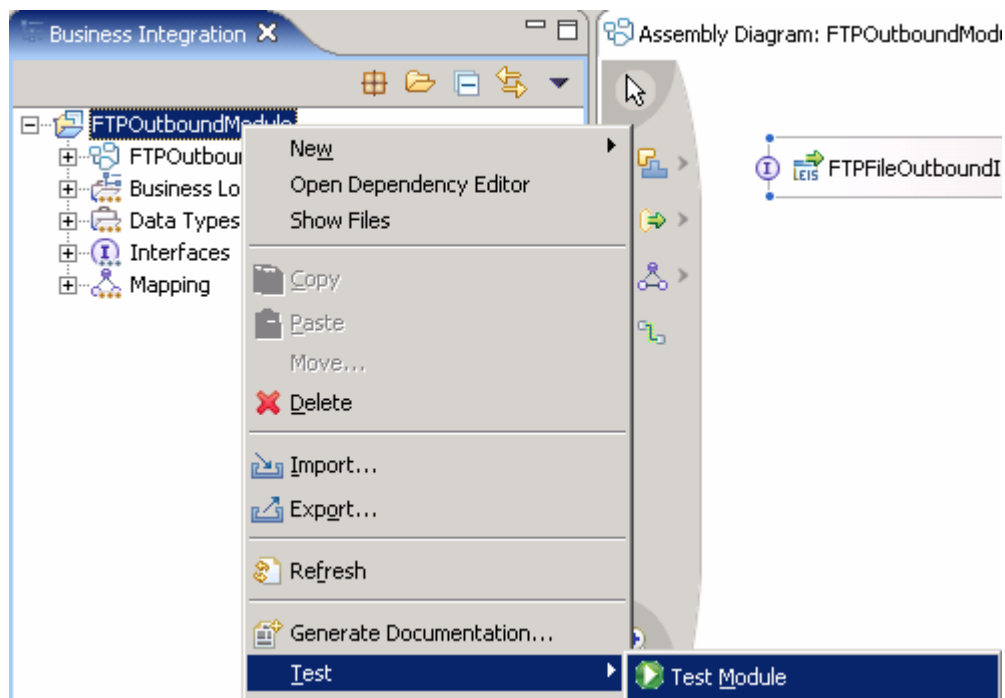


Wait for the project to be added to the server and the application to start. The server will be started in Debug mode if it is not already started before.

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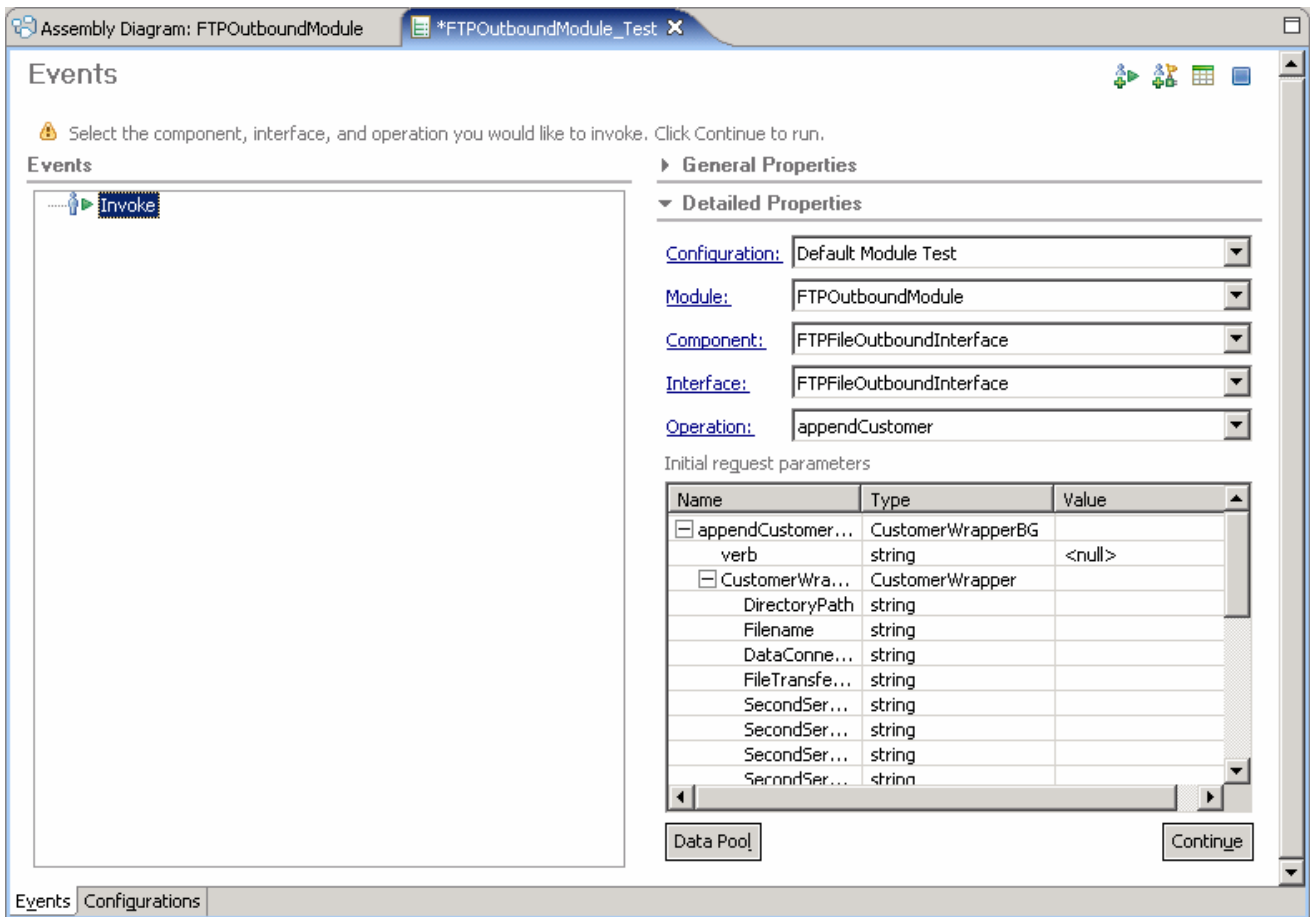
\_\_\_ 2. **Test Scenario:** outbound for **createCustomer** operation (Non\_PassThrough)

\_\_\_ a. Right-click the **FTPOutboundModule** and select **Test > Test Module** from the context menu



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\_\_\_ b. The FTPOutboundModule\_Test editor will be opened in Assembly Editor



\_\_\_ c. Under **Detailed Properties**, for the **Operation** field, select **createCustomer** from the drop down list

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\_\_\_ d. Fill out the fields for **Initial request parameters**:

1) DirectoryPath: **<Outputdir>**

**Note:** Outputdir is the output directory that you created in Step 3 of Part 1.

2) Filename: **Customer.xml**

3) Give any values for the fields (CustomerName, Address, City, and State) under Content

► **General Properties**

▼ **Detailed Properties**

**Configuration:** Default Module Test

**Module:** FTPOutbound

**Component:** FTPFileOutboundInterface

**Interface:** FTPFileOutboundInterface

**Operation:** createCustomer

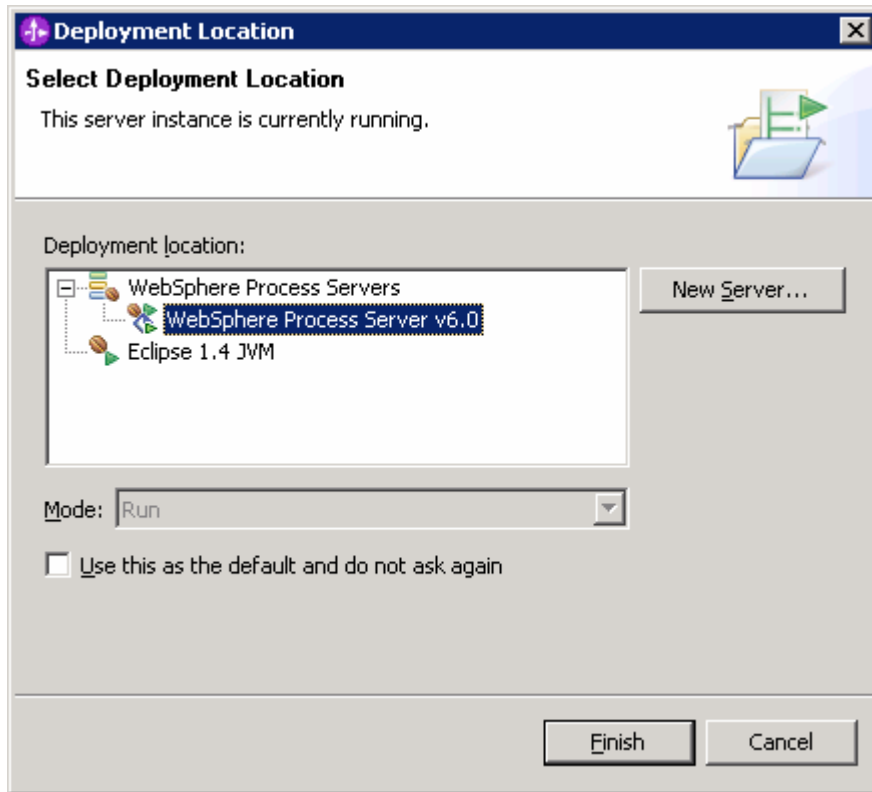
Initial request parameters

Name	Type	Value
<input type="checkbox"/> createCustomerInput	CustomerWrapperBG	
verb	string	<null>
<input type="checkbox"/> CustomerWrapper	CustomerWrapper	
DirectoryPath	string	/root/OutputDir
Filename	string	Customer.xml
DataConnectionMode	string	
FileTransferType	string	
SecondServerDirec...	string	
SecondServerUser...	string	
SecondServerPass...	string	
FileContentEncoding	string	
IncludeEndBODEli...	string	
FileInLocalDirectory	boolean	false
LocalDirectoryPath	string	
LocalArchivingEna...	boolean	false
LocalArchiveDirFor...	string	
StagingDirectory	string	
<input type="checkbox"/> Content	Customer	
CustomerName	string	ABC
Address	string	11501 Burnet Rd
City	string	Austin
State	string	TX

o Click **Continue**

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- From Deployment Location window, select **WebSphere Process Servers > WebSphere Process Server v6.0** and click **Finish**





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- \_\_\_ e. Click on the **Invoke (FTPFileOutboundInterface:createCustomer)** and you will see a window similar to the following, that contains the data you just entered in the previous steps:

The screenshot shows the 'Events' window on the left with a tree view containing 'Invoke (FTPFileOutboundInterface:createCustomer)', 'Started', 'Invoke (FTPFileOutboundInterface:createCustomer)', and 'Stopped'. A red box highlights the 'Invoke' event. On the right, the 'General Properties' and 'Detailed Properties' are shown. The 'Detailed Properties' section includes a table for 'Initial request parameters' with the following data:

Name	Type	Value
createCustomerInput	CustomerWrapperBG	
verb	string	<null>
CustomerWrapper	CustomerWrapper	
DirectoryPath	string	/root/OutputDir
Filename	string	Customer.xml
DataConnectionMode	string	
FileTransferType	string	
SecondServerDirec...	string	
SecondServerUser...	string	
SecondServerPass...	string	
FileContentEncoding	string	
IncludeEndBODEli...	string	
FileInLocalDirectory	boolean	false
LocalDirectoryPath	string	
LocalArchivingEna...	boolean	false
LocalArchiveDirFor...	string	
StagingDirectory	string	
Content	Customer	
CustomerName	string	ABC
Address	string	11501 Burnet Rd
City	string	Austin
State	string	TX

- \_\_\_ f. To verify the results, check the **Outputdir** folder on the machine where you have FTP server. You should have a **Customer.xml** file created under that directory with the following contents:

```
<?xml version="1.0" encoding="UTF-8"?>
<customer:Customer xsi:type="customer:Customer" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:customer="http://www.ibm.com/xmlns/prod/websphere/j2ca/ftp/customer">
  <CustomerName>ABC</CustomerName>
  <Address>11501 Burnet Rd</Address>
  <City>Austin</City>
  <State>TX</State>
</customer:Customer>
```

\_\_\_ 3. **Test Scenario:** outbound for **createFTPFile** operation (PassThrough)

- \_\_\_ a. Click on Invoke button at the top from the FTPOutboundModule\_Test window
- \_\_\_ b. FTPOutboundModule\_Test window will be opened in Assembly Editor
- \_\_\_ c. Under **Detailed Properties**, for the **Operation** field, select **createFTPFile** from the drop down menu
- \_\_\_ d. Fill out the fields for **Initial request parameters**:

1) DirectoryPath: **<Outputdir>**

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**Note:** Outputdir is the output directory that you created in Step 3 of Part 1.

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2) Filename: **ftptest.txt**

- On the row that contains **Content**, under Type and select browse button and then select **UnstructuredContent** from the Data Type Selection window

3) Enter some string data for **AsText** field

► **General Properties**

---

▼ **Detailed Properties**

**Configuration:** Default Module Test

**Module:** FTPOutbound

**Component:** FTPFileOutboundInterface

**Interface:** FTPFileOutboundInterface

**Operation:** createFTPFile

Initial request parameters

Name	Type	Value
[-] createFTPFileInput	FTPFileBG	
verb	string	<null>
[-] FTPFile	FTPFile	
DirectoryPath	string	/root/OutputDir
Filename	string	ftptest.txt
ChunkInfo	string	
DataConnectionMode	string	
FileTransferType	string	
SecondServerDirec...	string	
SecondServerUser...	string	
SecondServerPass...	string	
FileContentEncoding	string	
IncludeEndBODeli...	string	
FileInLocalDirectory	boolean	false
LocalDirectoryPath	string	
LocalArchivingEna...	boolean	false
LocalArchiveDirFor...	string	
StagingDirectory	string	
[-] Content	UnstructuredContent [any...	
ContentType	string	
ObjectName	string	
AsText	string	FTP Testing
AsBinary	hexBinary	0

Data Pool Continue

\_\_\_ e. Click **Continue**

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- o Click on the **Invoke (FTPFileOutboundInterface:createFTPFile)** and you will see a window similar to the following, that contains the data you just entered in the previous steps:

The screenshot displays the 'Events' window on the left and the 'General Properties' and 'Detailed Properties' panels on the right.

**Events:** A tree view shows two 'Invoke (FTPFileOutboundInterface:createFTPFile)' events. The second event is expanded, showing 'Started', 'Invoke (FTPFileOutboundInterface:createFTPFile)', and 'Stopped' sub-events. The 'Invoke' sub-event is highlighted with a red box.

**Detailed Properties:**

- Configuration: [Default Module Test](#)
- Module: [FTPOutbound](#)
- Component: [FTPFileOutboundInterface](#)
- Interface: [FTPFileOutboundInterface](#)
- Operation: [createFTPFile](#)

**Invocation parameters:**

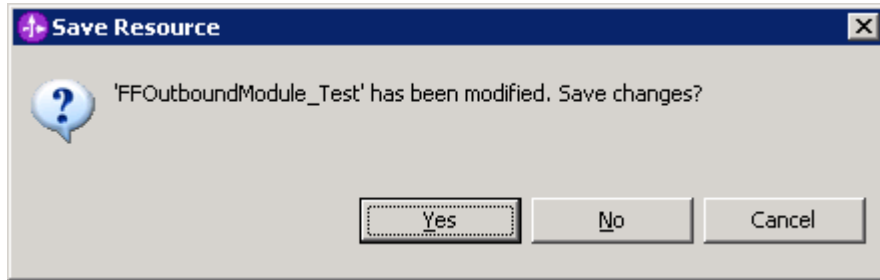
Name	Type	Value
createFTPFileInput	FTPFileBG	
verb	VerbType	<unset>
FTPFile	FTPFile	
DirectoryPath	String	/root/OutputDir
Filename	String	ftpctest.txt
ChunkInfo	String	
DataConnectionMode	String	
FileTransferType	String	
SecondServerDirec...	String	
SecondServerUser...	String	
SecondServerPass...	String	
FileContentEncoding	String	
IncludeEndBODell...	String	
FileInLocalDirectory	Boolean	false
LocalDirectoryPath	String	
LocalArchivingEna...	Boolean	false
LocalArchiveDirFor...	String	
StagingDirectory	String	
Content	UnstructuredContent	
ContentType	String	
ObjectName	String	
AsText	String	FTP Testing
AsBinary	Bytes	[B@d877129]

- \_\_ f. To verify the results, check the **Outputdir** folder on the machine where you have FTP server. You should have the **ftpctest.txt** file created under that directory with the following contents:

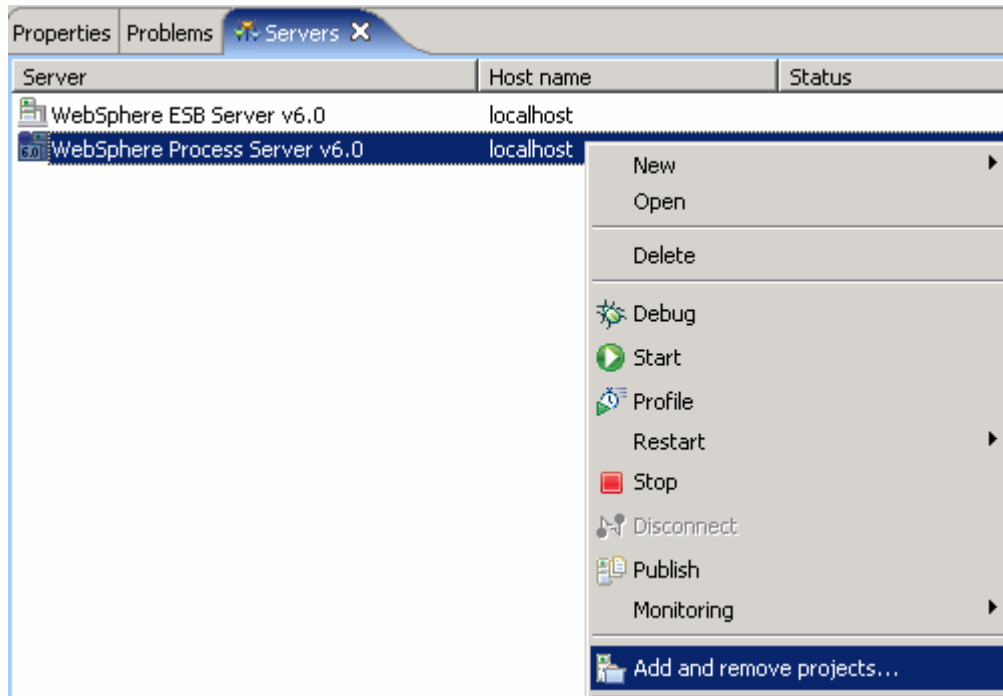
**FTP Testing**

## Part 4: Restore Server Configuration

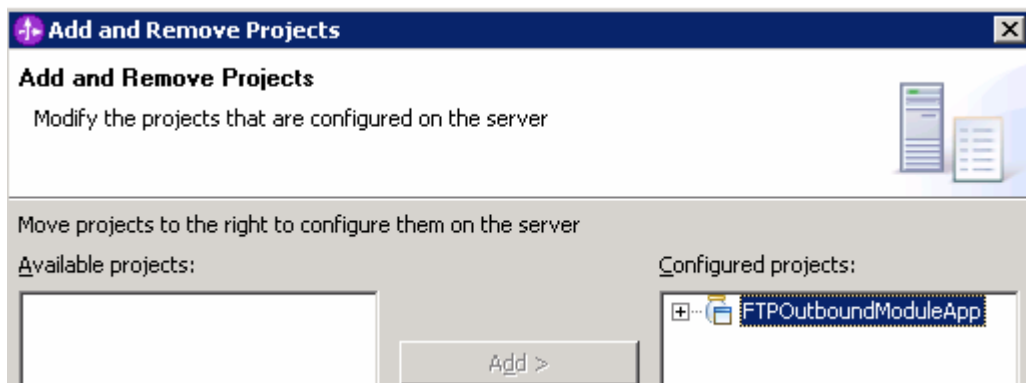
- \_\_\_ 1. Close the **FTPOutboundModule\_Test** window and click **No** for the Save Resources window



- \_\_\_ 2. Right-click on **WebSphere Process Server v6.0** under the Servers view and select **Add and remove projects...** from the context menu

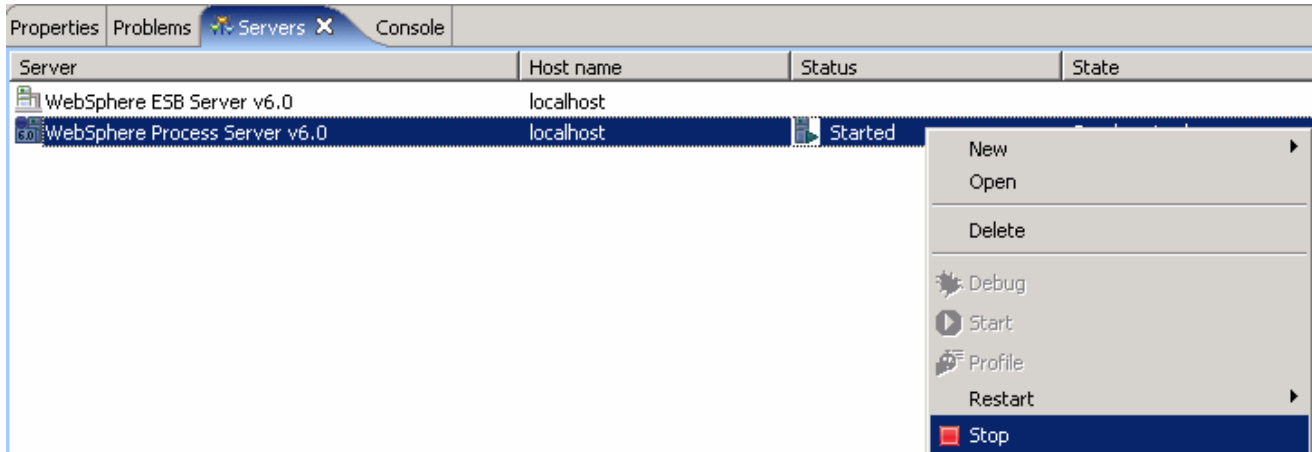


- \_\_\_ 3. Select **FTPOutboundModuleApp** under Configured projects and click **< Remove**



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- \_\_\_ 4. Click **Finish** after you see the application moved to Available projects. Wait until the application is unpublished
  
- \_\_\_ 5. 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 imported the FTP Adapter RAR file into your WebSphere Integration Developer workspace and integrated it into an SCA application that creates a file to the file system.

You made use of Enterprise Service Wizard available in WebSphere Integration Developer to specify Managed Connection Factory 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 for the operations available.