Flat File adapter outbound lab

What this exercise is about

The objective of this lab is to provide you with an understanding of the IBM WebSphere Adapter for Flat Files and outbound processing. In this lab you will deploy the WebSphere Adapter for Flat Files, using WebSphere Integration Developer, and integrate it with an SCA application that processes outbound requests to the file system.

Lab requirements

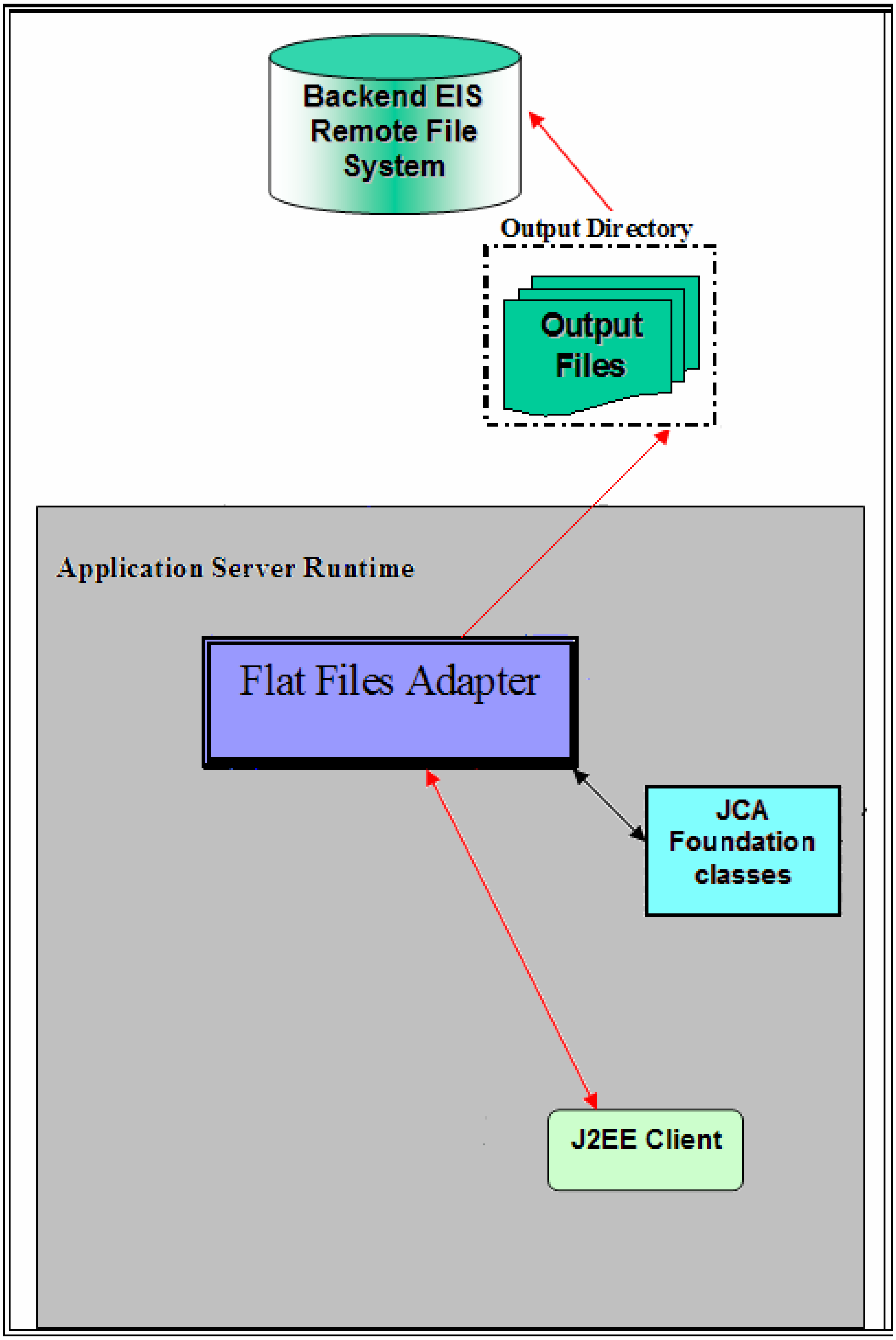
List of system and software required for the student to complete the lab

- WebSphere Integration Developer V7.0 installed and updated with latest fixes
- WebSphere Process Server V7.0 test environment installed and updated with latest fixes
- Extract Labfiles70.zip to your C:\ (your root) drive

What you should be able to do

- Import Flat Files adapter RAR file into WebSphere Integration Developer
- Use External Service wizard to configure Activation Spec Properties, Resource Adapter Properties to generate Business Objects and other artifacts and then define your Data Binding and Data Handler, and Operations
- Deploy the adapter application onto the WebSphere Process Server test environment
- Test the deployed application using WebSphere Process Server test environment for both pass-through and non pass-through using different scenarios and patterns
- Restore the server configuration

Introduction



The request to the FF RA (Flat File Resource Adapter) from an SCA client is sent with the information required for creating the output file - the directory to create the output file, the name of the output file and the operation. The file name is treated as the key for the Flat Files request/response BO entity.

FF RA uses the application server's connection pool to establish connections with an EIS. The adapter creates a new file connection for every outbound operation and closes it after the operation is completed based on the EIS connectivity requirement. The requests initiated from any SCA client results in a response being sent back to the client after the request is processed.

Exercise instructions

Some instructions in this lab are specific for Windows platforms. If you run the lab on a platform other than Windows, you will need to run the appropriate commands, and use appropriate files (for example .sh in place of .bat) for your operating system. The directory locations are specified in the lab instructions using symbolic references as follows:

Reference variable	Windows location	Linux location
<WID_HOME>	C:\Program Files\IBM\WID7Beta	
<WPS_HOME>	C:\<WID_HOME>\runtimes\bi_v70	
<FFADAPTER_HOME>	<WID_HOME>\ResourceAdapters\FlatFile_7.0.0.0\deploy	
<LAB_FILES>	C:\Labfiles70	/tmp/Labfiles70
<WORKSPACE>	<LAB_FILES>\FlatFileOutbound\workspace	
<OUT_DIR>	<LAB_FILES>\ FlatFileOutbound\output	
<FFFILES>	<LAB_FILES>\FFFiles	
<RETRIVE_ARCHIVE>	<LAB_FILES>\ FlatFileOutbound\retrievearchive	
<TEMP>	C:\temp	/tmp

Windows users: When directory locations are passed as parameters to a Java™ program such as EJBdeploy or wsadmin, you must replace the backslashes with forward slashes to follow the Java convention. For example, replace C:\Labfiles70\ with C:/Labfiles70/.

Instructions if using a remote server for testing

Note that the previous table is relative to where you are running WebSphere Integration Developer. The following table is related to where you are running the remote test environment:

Reference variable	Example: Remote Windows test server location	Example: Remote z/OS® test server location	Input your values for the remote location of the test server
<SERVER_NAME>	server1	sssr011	
<WAS_HOME>	C:\Program Files\IBM\WebSphere\AppServer	/etc/sscell/AppServer	
<HOSTNAME>	localhost	mvsxxx.rtp.raleigh.ibm.com	
<SOAP_PORT>	8880	8880	
<TELNET_PORT>	N/A	1023	
<PROFILE_NAME>	AppSrv01	default	
<USERID>	N/A	ssadmin	
<PASSWORD>	N/A	fr1day	

Instructions for using a remote testing environment, such as z/OS, AIX or Solaris, can be found at the end of this document, in the section "**Task: Adding remote server to WebSphere Integration Developer test environment**".

Part 1: Initialize the workspace and prepare for the lab

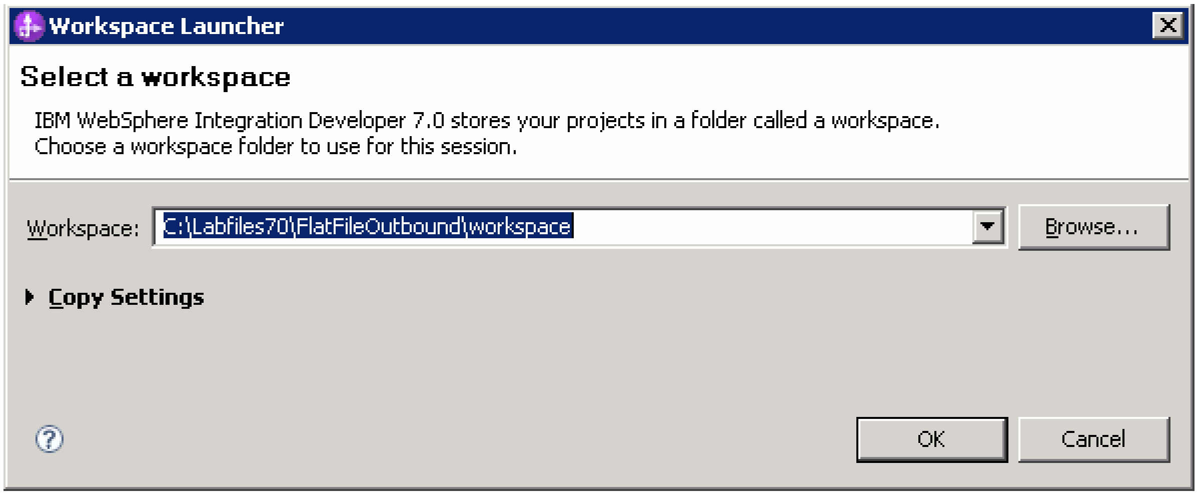
This part of the lab, you will start the WebSphere Integration Developer V7.0 with a new workspace and extract the lab files to your local system.

____ 1. Extract the provided Labfiles70.zip to your C:\ (root) drive, if you have not already done so. This will create the necessary subdirectory structure to complete the lab, and provides you with sample text files.

____ 2. Start the WebSphere Integration Developer V7.0 with a new workspace

__ a. Select **Start > All Programs > IBM WebSphere Integration Developer > IBM WebSphere Integration Developer V7.0 > WebSphere Integration Developer V7.0**

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



Workspace Launcher

Select a workspace

IBM WebSphere Integration Developer 7.0 stores your projects in a folder called a workspace.
Choose a workspace folder to use for this session.

Workspace: C:\Labfiles70\FlatFileOutbound\workspace

____ 3. Click the button on the right corner to close the Welcome page and proceed with the workbench

Part 2: Review properties

This part of the lab will give you brief description of some the properties which are used in this lab at various stages.

- **New from V6.2 for sequence file**: For each request, the adapter increments the number in the sequence file and the input type takes the sequence number that is currently stored in the sequence file. Sequence numbers are not maintained separately for different input data types.

  For compatibility with sequence files generated with previous versions of the adapter, where sequence numbers were maintained separately for different input data types, the adapter checks for all entries in the file that have the older format (<dirPath>/xyz.txt = 2, where xyz.txt is the file name and 2 is the sequence number to be used when the adapter receives another Create request on the same file). The adapter searches for all such sequence numbers for each input type and uses the highest sequence number as the sequence number for the next input type. The adapter then overwrites the entire file with the new (incremented) sequence number.

  Important: Unless they are part of a cluster, two adapter instances should not access the same sequence file, because this can result in delayed processing of batch requests.

  If the sequence file is deleted manually, the sequences are lost and will start from 1 again. You can also reset the sequence by changing the sequence value in the sequence file.

- **Default target file name**: This value if specified at Managed Connection factory level is used as default to create the new file. You can use this along with Sequence file.
- **chunkFileName:** this is populated during Inbound or on Retrieve operation during outbound and the presence of this indicates that it is a chunked file. This is used for Inbound and Retrieve outbound operations where chunking is enabled.
- **fileContentEncoding:** This encoding is used while writing to the file. If this property is not specified, the RA tries to write without using any specific encoding. You can specify any Java supported encoding set like UTF-8 for this attribute. If the file content is non-English, the corresponding encoding needs to be chosen so the adapter uses the encoding while writing to the file system.
- **includeEndBODelimiter:** This is used during the outbound Create/Append/Overwrite operations. The File content is appended with the value of IncludeEndBODelimiter. For example, if the operation chosen is Append and the specified values for this property is ####, when the BO content is written to the file, the include BO Delimiter content is also appended as part of the BO content at the end of the file.

- **stagingDirectory:** This directory is used only for the create and overwrite operations. The file is written to the staging directory completely and then just moved to the Output directory specified in the directoryPath
- **generateUniqueFile:** During outbound Create operation the adapter creates a unique file when this property is true. When this property is set to true the adapter ignores any value set for file name property.

  The name of the unique file generated by Flat Files adapter will have this format:

  A random number is prefixed by '**ffa**' and with an extension '**.tmp**'. For example, ffa23423.tmp

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Note: If the **Sequence file** has a value and an output file name is specified, with the 'generateUniqueFile' is set, the 'generateUniqueFile' property takes precedence.

- **createFileIfNotExists:** During Append and Overwrite operations, if the file does not exist, then the adapter creates the file when this property is set to true. If this property is false and file does not exist then the adapter flags an error.

  And while creating file for this condition, if 'generateUniqueFile' is also set to true, then the adapter generates a unique file. At this time the adapter ignores the value present in file name property. If the file to be appended does not exist and this property is set to false, a RecordNotFoundException is thrown to the calling component.

- **splitFunctionClassName:** This value takes a fully qualified class name of the class to be used in order to split the retrieved file during outbound retrieve operation. It takes two values as of now:

  com. ibm.j2ca.utils.filesplit.SplitBySize - a class which splits the file based on file size

  com.ibm.j2ca.utils.filesplit.SplitByDelimiter - a class which splits the file based on delimiter (used to separate BO's in event file)

  The delimiter or file size is given in SplitCriteria.

  If RetrieveContentType is null, then this is automatically set to class name which does splitting based on size.

- **splitCriteria:** This attribute takes different values based on value set in splitFunctionClassName.

  If splitFunctionClassName is set to com. ibm.j2ca.utils.filesplit.SplitByDelimiter, then splitCriteria must contain the delimiter which separates the BO's in the retrieved file.

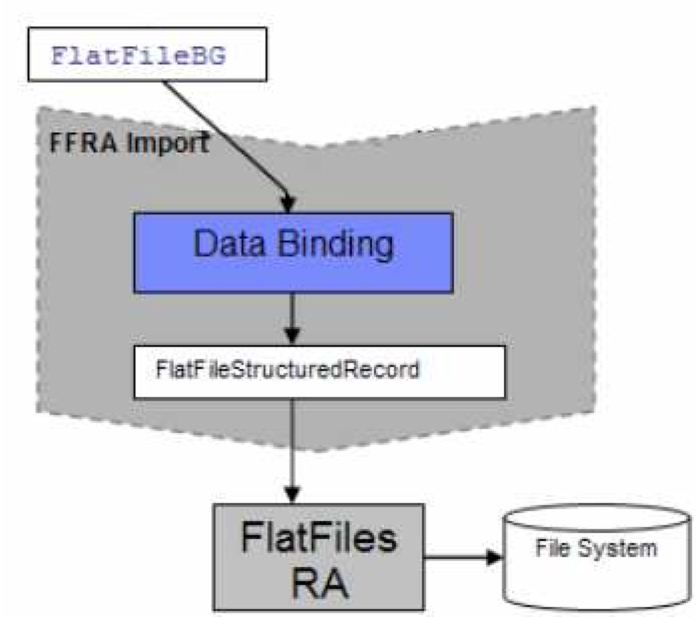
  If splitFunctionClassName is set to com. ibm.j2ca.utils.filesplit.SplitBySize, then splitCriteria must contain a valid number which represents the size in bytes. If retrieved file size is greater than this value, it is split into chunks of this value and so many chunks are posted. If file size is less than this value the entire event file is posted in one shot. When SplitCriteria=0, chunking is disabled.

- **deleteOnRetrieve:** If this property is set to true, during Retrieve operation, after the file content is retrieved, the file is deleted from the directory on the file system.

- **archiveDirectoryforDeleteOnRetrieve:** If the deleteOnRetrieve property is set to true, the adapter will optionally archive (if this directory is valid) the file to this folder before it is deleted.

Part 3: Pass through scenario

Outbound support can be broadly classified into two flows, one that involves data transformation and another without it (pass-through). The incoming BO can be a content specific BO or a generic Flat Files BO. This part of the lab deals with the pass through:



- In the Java EE client, the wrapper data object (FlatFile) is populated for protocol specific information. The actual data object where file content is present (for example: UnstructuredContent) is also set in the wrapper data object. The Java EE client sends the wrapper data object and the outbound operation name as input while making an SCA call.

- Based on the Data Binding (FlatFileBaseDataBinding) configured while running the Enterprise Metadata Discovery, that particular data binding is called and it gets the input data object (FlatFile / FlatFileBG).

- The FlatFileBaseDataBinding invokes the BaseDataBinding. Now, the name of this data object is UnstructuredContent. Based on this condition or the absence of a data handler, the DataBinding does a passThrough. It just instantiates the FlatFileInputStreamRecord, sets the actual content (byte[]) as an InputStream and sets the protocol specific information.

  The output of the outbound operation, if set, is a FlatFileStructuredRecord or FlatFileInputStreamRecord, which is sent back to the Data Binding and mapped to a data object. This data object is sent back to the Java EE client. For create, append and overwrite operations the specific wrapper is returned to the client and for other operations the generic FlatFile wrapper is returned

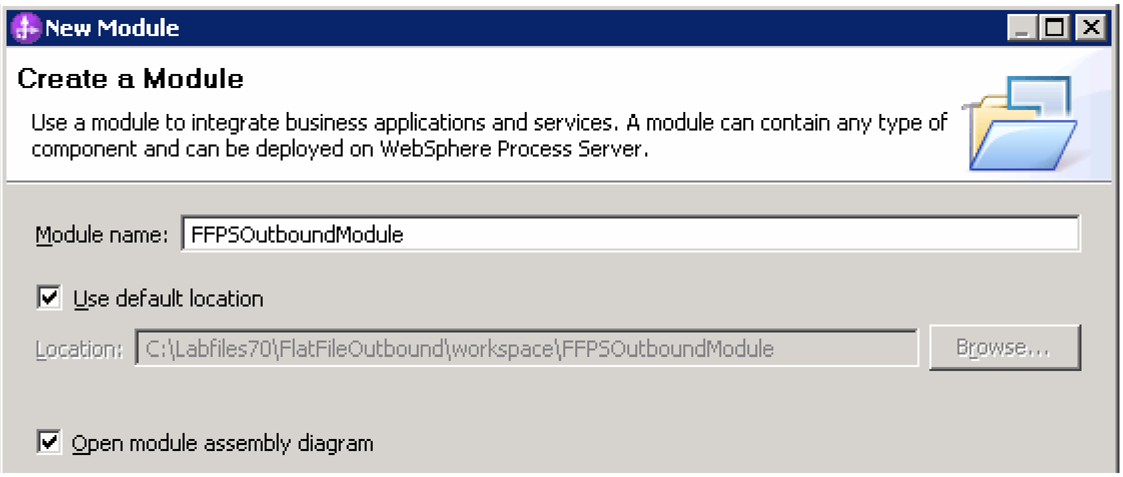
3.1. Configure pass through using external service wizard

In this part, you will use the new external service feature to create and configure the data binding and operations, which generates the business objects and other artifacts.

____ 1. Create the module: FFPSOutboundModule

__ a. From the Business Integration window, right-click and select **New > Module**

__ b. From the New Module window, enter **FFPSOutboundModule** for the Module Name



Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.

Module name: FFPSOutboundModule

☑ Use default location

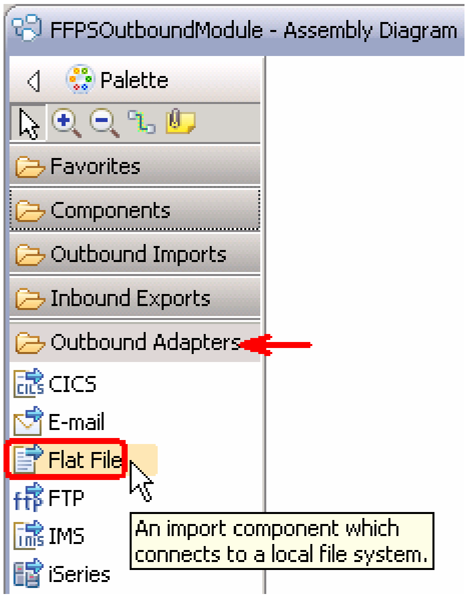
Location: C:\Labfiles70\FlatFileOutbound\workspace\FFPSOutboundModule

☑ Open module assembly diagram

__ c. Ensure that the box next to **Open module assembly diagram** is checked and then click **Finish**. You will now see a new module, FFPSOutboundModule, created in your Business Integration window

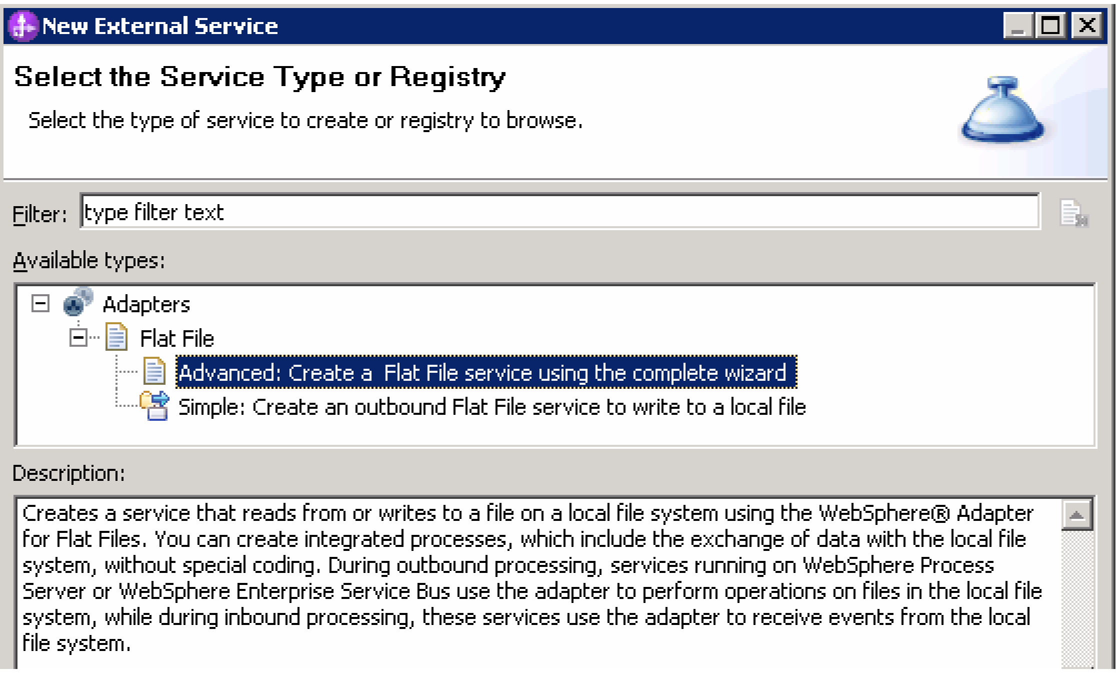
____ 2. To start External Service from the Palette:

__ a. From the **Palette** on the left side of Assembly Diagram, click **Outbound Adapters**:



____ 3. Under Outbound Adapters, click the **Flat File** and then click the empty canvas of the assembly diagram. The New Flat File Service wizard is opened

____ 4. From the New External Service window, expand **Adapters > Flat File** and select **Advanced: Create a Flat File service using the complete wizard**



New External Service

Select the Service Type or Registry

Select the type of service to create or registry to browse.

Filter: type filter text

Available types:

- Adapters
  - Flat File
    - Advanced: Create a Flat File service using the complete wizard
    - Simple: Create an outbound Flat File service to write to a local file

Description:

Creates a service that reads from or writes to a file on a local file system using the WebSphere® Adapter for Flat Files. You can create integrated processes, which include the exchange of data with the local file system, without special coding. During outbound processing, services running on WebSphere Process Server or WebSphere Enterprise Service Bus use the adapter to perform operations on files in the local file system, while during inbound processing, these services use the adapter to receive events from the local file system.

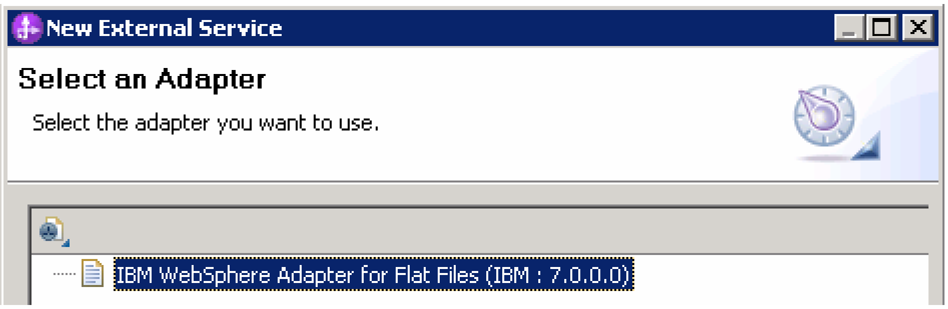
__ a. Click **Next**

Note: You can also start the External Service from the **File menu** option:

From the main menu, select **File > New > External Service**. This opens an External Service wizard that helps you obtain a service which establishes connectivity with other systems. The wizard provides three connectivity options – Adapters, Registers, and Messaging

Select the radio button next to **Adapters** and click **Next**

____ 5. On the Select an Adapter screen, select **IBM WebSphere Adapter for Flat Files (IBM : 7.0.0.0)** and click **Next**



New External Service

Select an Adapter

Select the adapter you want to use.

- IBM WebSphere Adapter for Flat Files (IBM : 7.0.0.0)

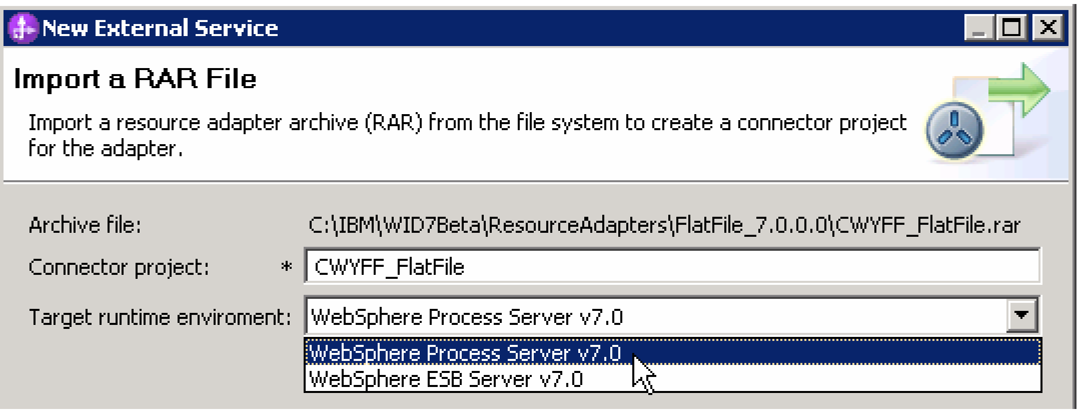
____ 6. Adapter Import screen:

In this step, you will import a connector resource adapter archive from the file system into your WebSphere Integration Developer workspace. The adapter RAR file already exists under **<FFADAPTER_HOME**>.

__ a. The default Connector file is selected which is shipped along with WebSphere Integration Developer

__ b. Accept the default name for Connector project, **CWYFF_FlatFile**. You can change it to any other name, but for this lab, you can leave the default name.

__ c. For Target server, ensure that **WebSphere Process Server v7.0** is selected



New External Service

Import a RAR File

Import a resource adapter archive (RAR) from the file system to create a connector project for the adapter.

Archive file: C:\IBM\WID7Beta\ResourceAdapters\FlatFile_7.0.0.0\CWYFF_FlatFile.rar

Connector project: * CWYFF_FlatFile

Target runtime enviroment: WebSphere Process Server v7.0

__ d. Click **Next**

Note: The resource adapter archive file is imported and a new connector project, **CWYFF_FlatFile**, is listed under Business Integration view.

Note: If you are using the **File menu** option to start the External Service wizard, you are asked to select the **Processing Direction** at this point. Select the radio button next to **Outbound** and click **Next** to proceed to the next step.

____ 7. Service Configuration Properties:

__ a. Deploy connector project: ensure that the default option **With module for use by single application** is selected

__ b. Click **Browse…** next to **Output Directory** and select **<OUTPUT_DIR>**

Note: Alternatively, you can also replace the absolute directory path with WebSphere variables for the Event directory, Archive directory. Refer to '**Flat File adapter – Processing COBOL copy book files lab**' for more details on this new feature introduced in V6.2.

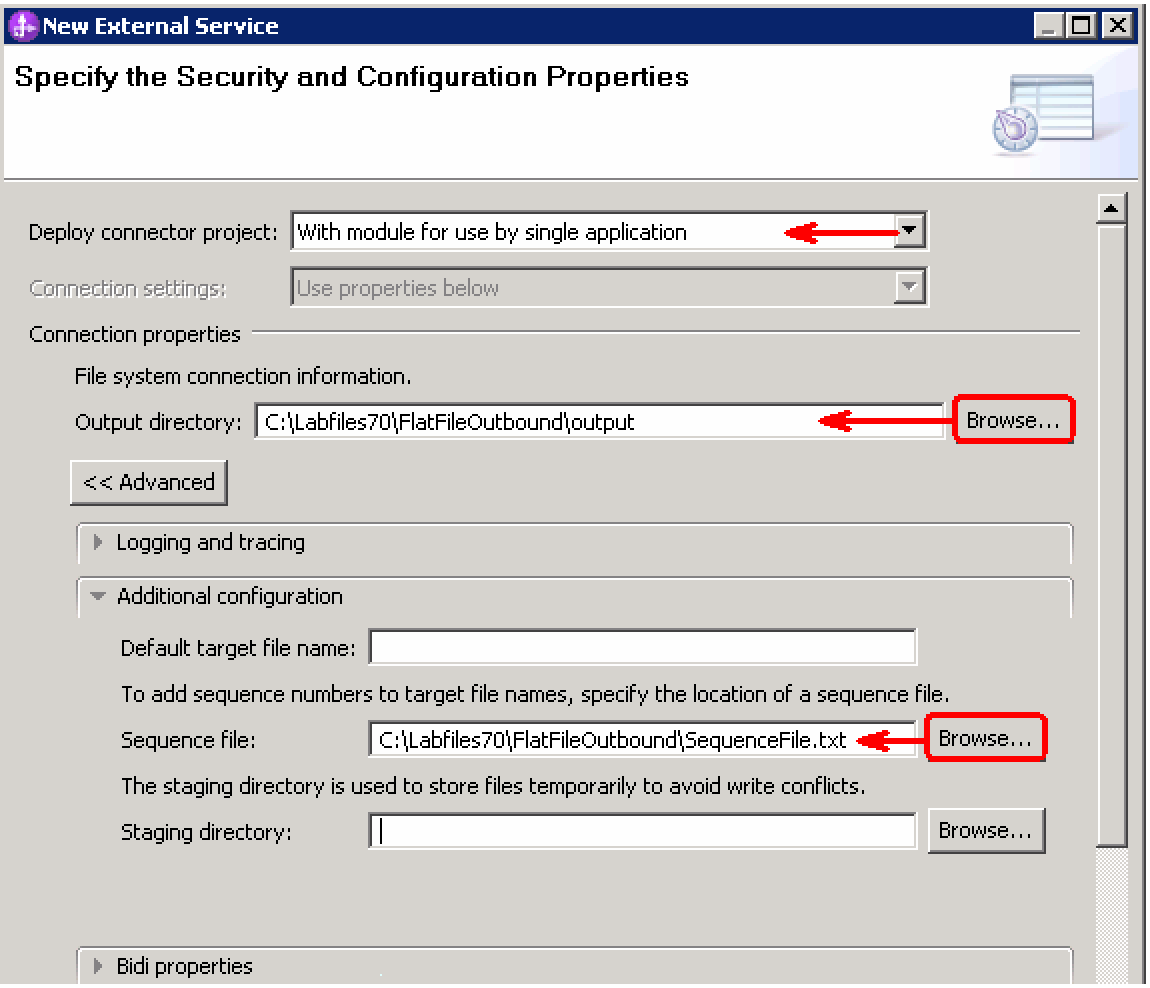
____ 8. Click **Advanced** at the bottom to see the Advanced properties

__ a. **Logging and tracing**: Refer to '**Log and confidential trace lab**' for more details on this new feature

__ b. Under **Additional configuration**, you will find three properties: **Default target file name** and **Sequence file** and Staging directory

__ c. Click **Browse…** next to **Sequence file** and enter any location. For ex: **<LABFILES>\FlatFileOutbound\SequenceFile.txt**

Note: Refer to Review Properties part of this lab for the detailed explanation of this new feature. This file should already be created at the specified location.



New External Service

Specify the Security and Configuration Properties

Deploy connector project: With module for use by single application

Connection settings: Use properties below

Connection properties

File system connection information.

Output directory: C:\Labfiles70\FlatFileOutbound\output

Logging and tracing

Additional configuration

Default target file name:

To add sequence numbers to target file names, specify the location of a sequence file.

Sequence file: C:\Labfiles70\FlatFileOutbound\SequenceFile.txt

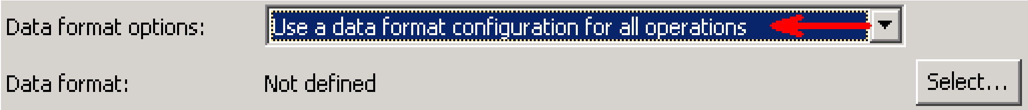
The staging directory is used to store files temporarily to avoid write conflicts.

Staging directory:

Bidi properties

____ 9. You can define data binding in two places - service level (current screen of External Service wizard) or later at the method level (Operations screen of the External Service wizard). In this lab, you will define data binding at the service level (from this screen)

__ a. From the dropdown menu next to Data format options, select '**Use a data binding configuration for all operations**'

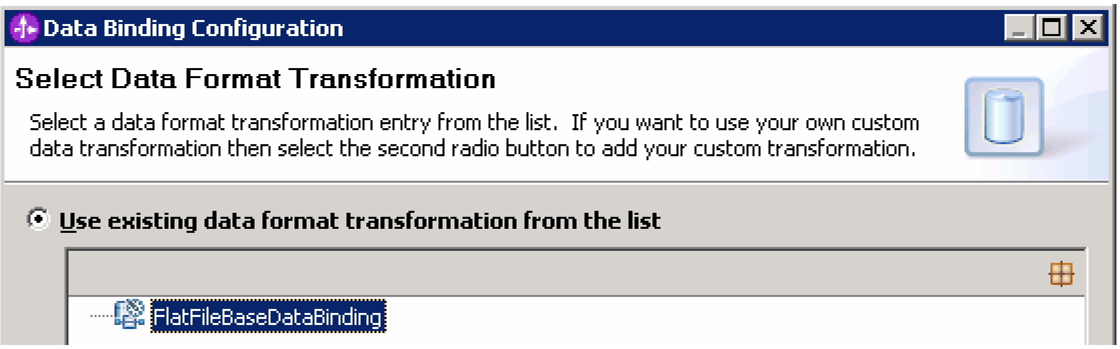


Data format options: Use a data format configuration for all operations

Data format: Not defined

__ b. Click **Select…** next to **Data format**. A Binding Resource Configuration window is opened.

__ c. Select the radio button for **'Use existing data format transformation from the list'** and then select **FlatFileBaseDataBinding**



Data Binding Configuration

Select Data Format Transformation

Select a data format transformation entry from the list. If you want to use your own custom data transformation then select the second radio button to add your custom transformation.

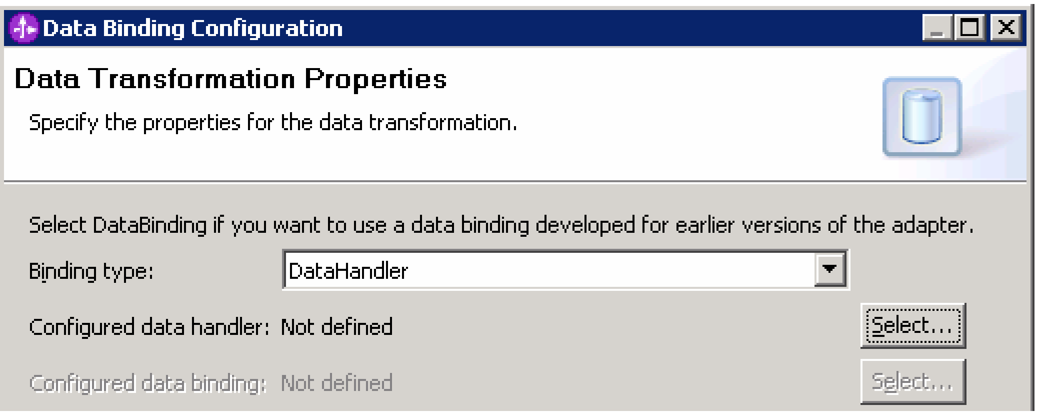
● Use existing data format transformation from the list

FlatFileBaseDataBinding

__ d. Click **Next**

Note: Data Handler Configuration: Since you are doing the pass through scenario, you do not need to configure any data handler.

__ e. Click **Next** from the Data Transformation Properties screen



Data Binding Configuration

Data Transformation Properties

Specify the properties for the data transformation.

Select DataBinding if you want to use a data binding developed for earlier versions of the adapter.

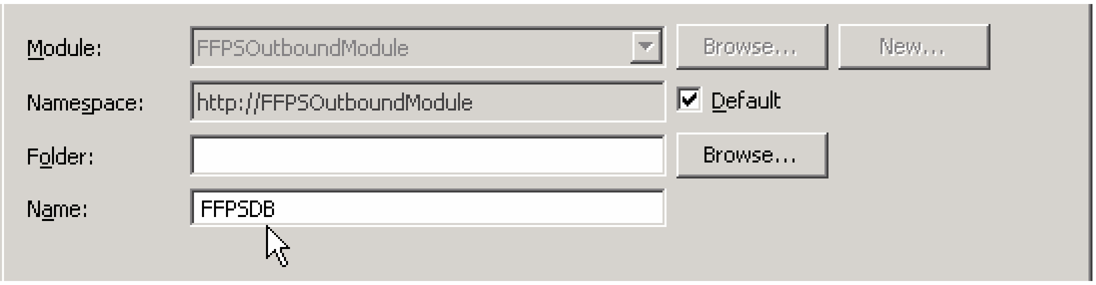
Binding type: DataHandler

Configured data handler: Not defined

Configured data binding: Not defined

__ f. Note that the selected module is **FFPSOutboundModule**

1) For the **Name**, enter **FFPSDB**



Module: FFPSOutboundModule

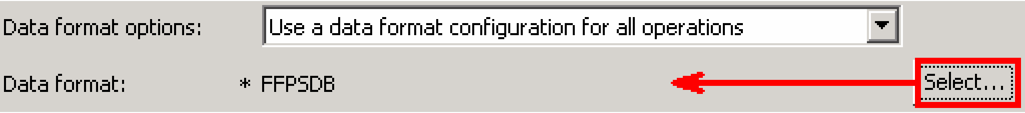
Namespace: http://FFPSOutboundModule ☑ Default

Folder:

Name: FFPSDB

2) Click **Finish**

__ g. Now the **FFPSDB** should be displayed for Data format



Data format options: Use a data format configuration for all operations

Data format: * FFPSDB

____ 10. Check the box next to **Change logging properties for wizard** to view the output location of the log file and the logging level. You can change the logging level using the drop down menu.

__ a. Click **Next**

Define Operations: In this screen, you will add the required operations that are used to access functions on the EIS

Note: The precedence of the parameters is as follows: WrapperBO, Interaction Spec, and Managed Connection Factory. The adapter will first search for the parameters passed in the WrapperBO; if it is not available there, it will then subsequently search in the Interaction Spec, and then the Managed Connection Factory instance. **In this lab, for all the operations, you will enter the values at the WrapperBO level in the later part using the WebSphere Integration Developer test client.**

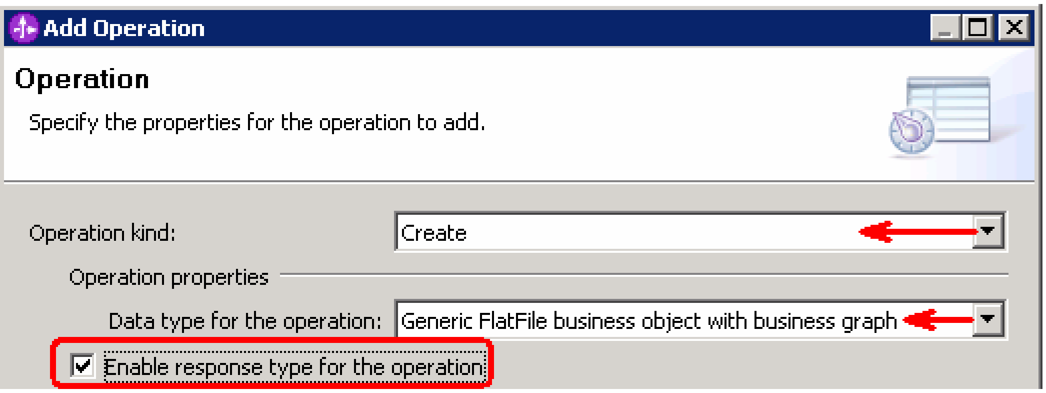
Define Operation: createFFBG

____ 11. Click **Add…** to open Add Operation window

__ a. For **Operation kind**, select **Create** from the drop down list

__ b. For **Data type for operation**, select **Generic FlatFile business object with business graph** from the drop down list

__ c. Select the check box for **'Enable response type for the operation'**



Operation

Specify the properties for the operation to add.

Operation kind: Create

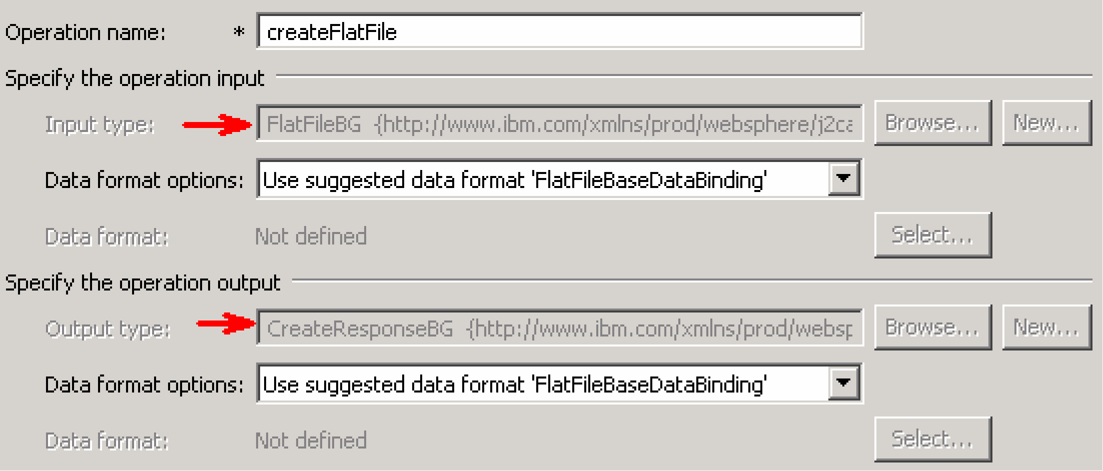
Operation properties

Data type for the operation: Generic FlatFile business object with business graph

☑ Enable response type for the operation

__ d. Click **Next**

The Data type for input and output are populated based on the selection of the Data type for the operation in the previous step. Since you have chosen Generic FlatFile business object with business graph, the **Input type** is **FlatFileBG** and because you have selected Output required box, the **Output type** is **CreateResponseBG**



Operation name: * createFlatFile

Specify the operation input

Input type: FlatFileBG {http://www.ibm.com/xmlns/prod/websphere/j2ca

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

Specify the operation output

Output type: CreateResponseBG {http://www.ibm.com/xmlns/prod/websp

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

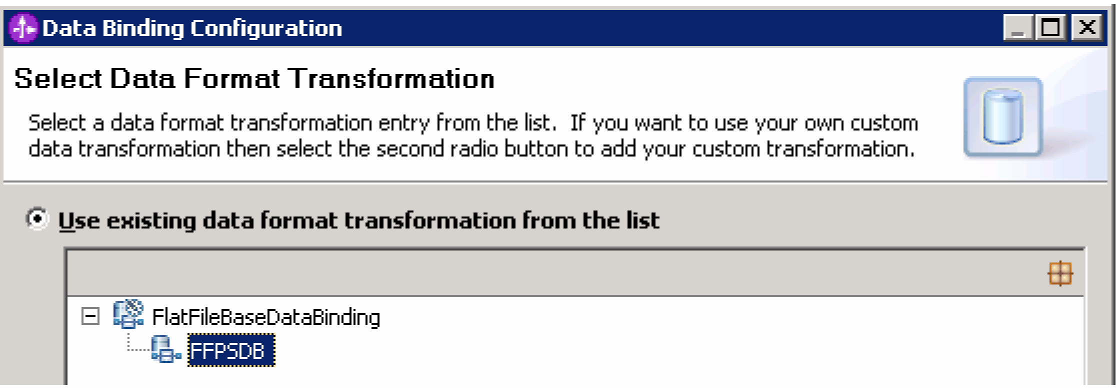
__ e. For Operation name, enter **createFFBG**

Define Data format for **input**:

__ f. For **Data format options**, select **Use a data binding configuration** from the dropdown list

__ g. Click **Select…** next to **Data format**. A Binding Resource Configuration window is opened

__ h. Ensure that the radio button for ‘Use existing data format transformation from the list’ and then select **FlatFileBaseDataBinding > FFPSDB**



Data Binding Configuration

Select Data Format Transformation

Select a data format transformation entry from the list. If you want to use your own custom data transformation then select the second radio button to add your custom transformation.

● Use existing data format transformation from the list

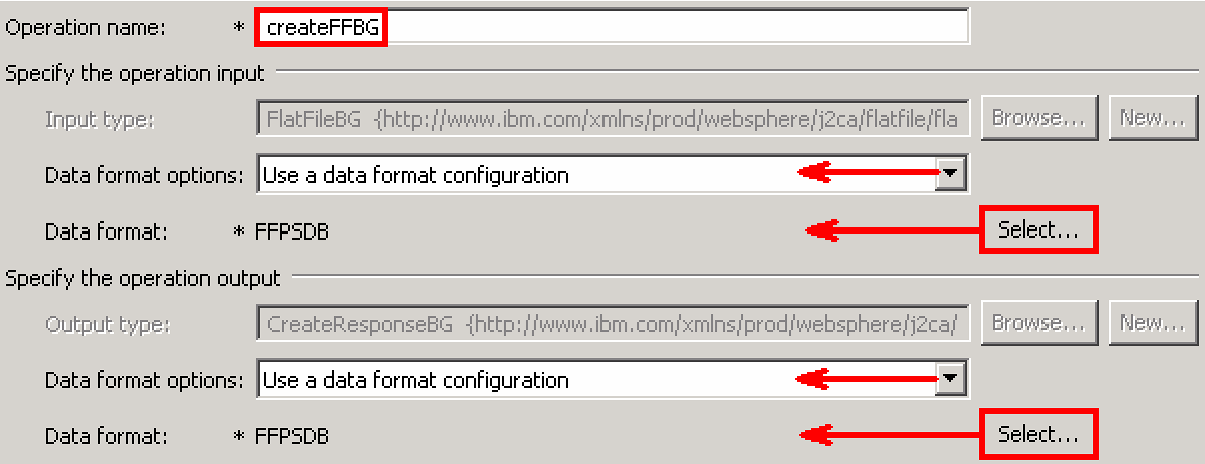
FlatFileBaseDataBinding
FFPSDB

__ i. Click **Finish**

Define Data format for **output**:

__ j. Repeat the steps that you did to define the data binding for input and select **FFPSDB**

The Operation screen now should look like this:



Operation name: * createFFBG

Specify the operation input

Input type: FlatFileBG {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/fla

Data format options: Use a data format configuration

Data format: * FFPSDB

Specify the operation output

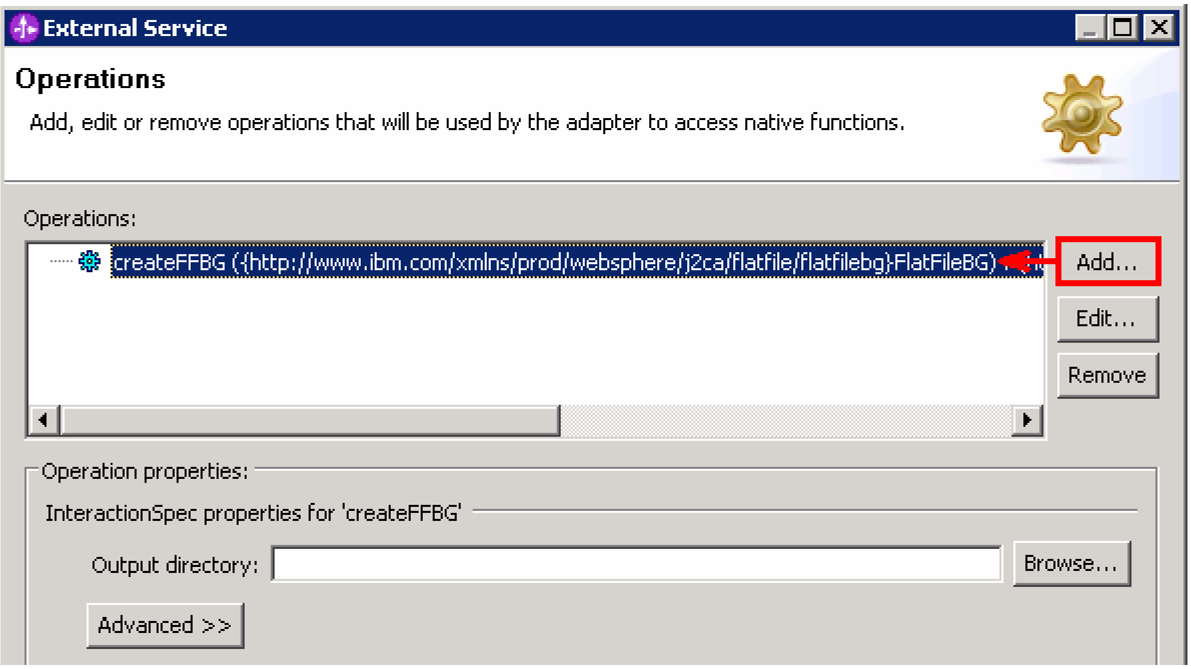
Output type: CreateResponseBG {http://www.ibm.com/xmlns/prod/websphere/j2ca/

Data format options: Use a data format configuration

Data format: * FFPSDB

__ k. Click **Finish** from the Add Operation window

The operation, createFFBG, will now be displayed under Operations list.



External Service

Operations

Add, edit or remove operations that will be used by the adapter to access native functions.

Operations:

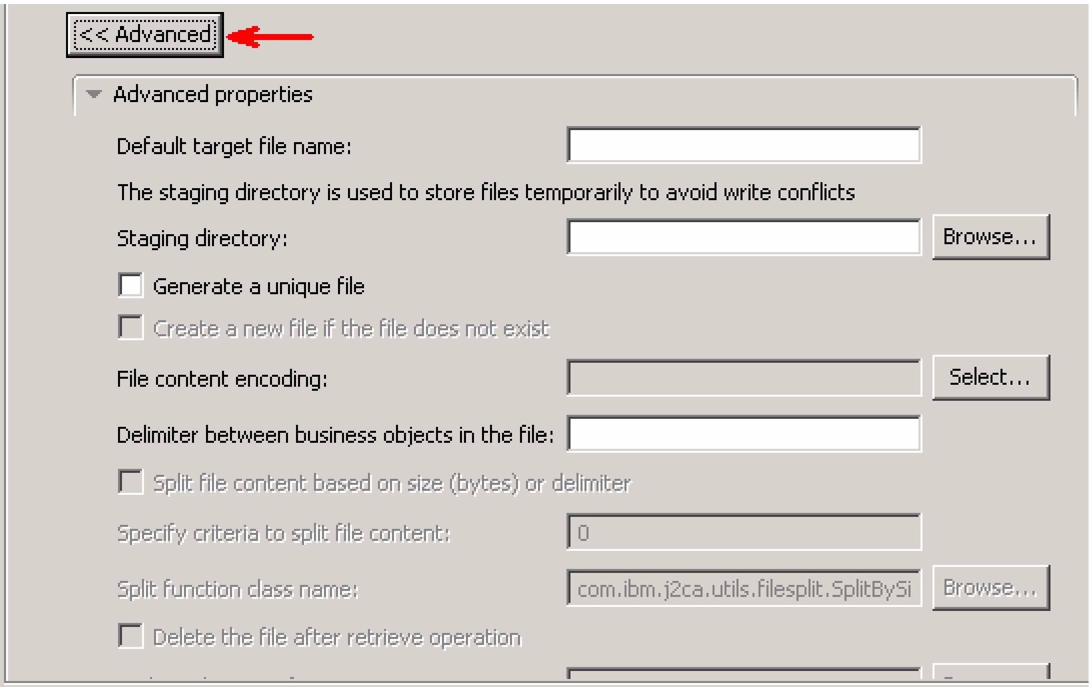
createFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG)

Operation properties:

InteractionSpec properties for 'createFFBG'

Output directory:

____ 12. You can click **Advanced >>** under 'InteractionSpec properties for createFFBG' to review the properties available at Interaction spec level



Default target file name:

The staging directory is used to store files temporarily to avoid write conflicts

Staging directory:

☐ Generate a unique file

☐ Create a new file if the file does not exist

File content encoding:

Delimiter between business objects in the file:

☐ Split file content based on size (bytes) or delimiter

Specify criteria to split file content: 0

Split function class name: com.ibm.j2ca.utils.filesplit.SplitBySi

☐ Delete the file after retrieve operation

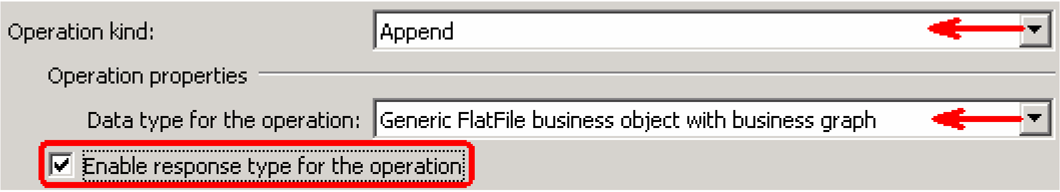
Define Operation: appendFFBG:

____ 13. Click **Add…** to open Add Operation window

__ a. For **Operation kind**, select **Append** from the drop down list

__ b. For **Data type for operation**, select **Generic FlatFile business object with business graph** from the drop down list

__ c. Select the check box for **'Enable response type for the operation'**



Operation kind: Append

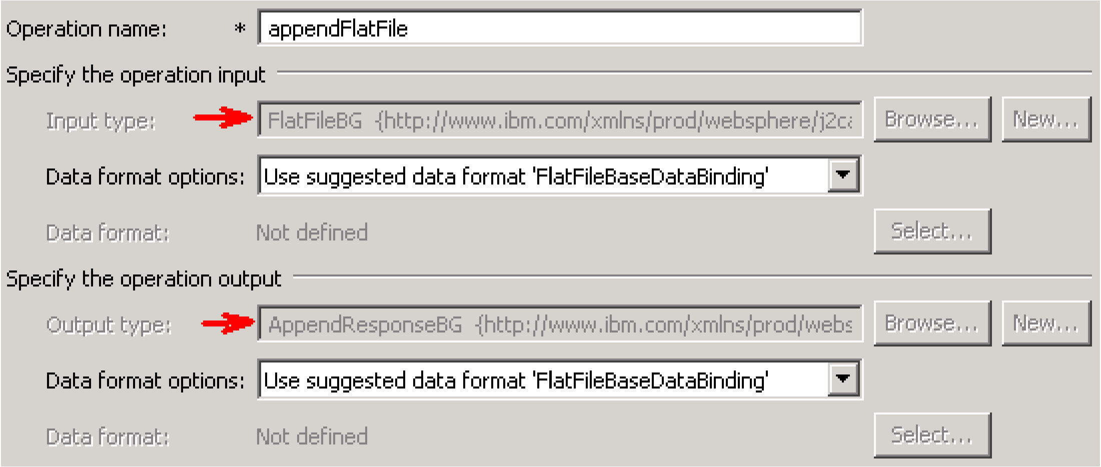
Operation properties

Data type for the operation: Generic FlatFile business object with business graph

☑ Enable response type for the operation

__ d. Click **Next**

The Data type for input and output are populated based on the selection of the Data type for the operation in the previous step. Since you have chosen Generic FlatFile business object with business graph, the Input type is **FlatFileBG** and because you have selected Output required box, the **Output** type is **AppendResponseBG**



Operation name: * appendFlatFile

Specify the operation input

Input type: FlatFileBG {http://www.ibm.com/xmlns/prod/websphere/j2ca

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

Specify the operation output

Output type: AppendResponseBG {http://www.ibm.com/xmlns/prod/webs

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

__ e. For Operation name, enter **appendFFBG**

Define Data format for **input**:

__ f. For **Data format options**, select **Use a data binding configuration** from the dropdown list

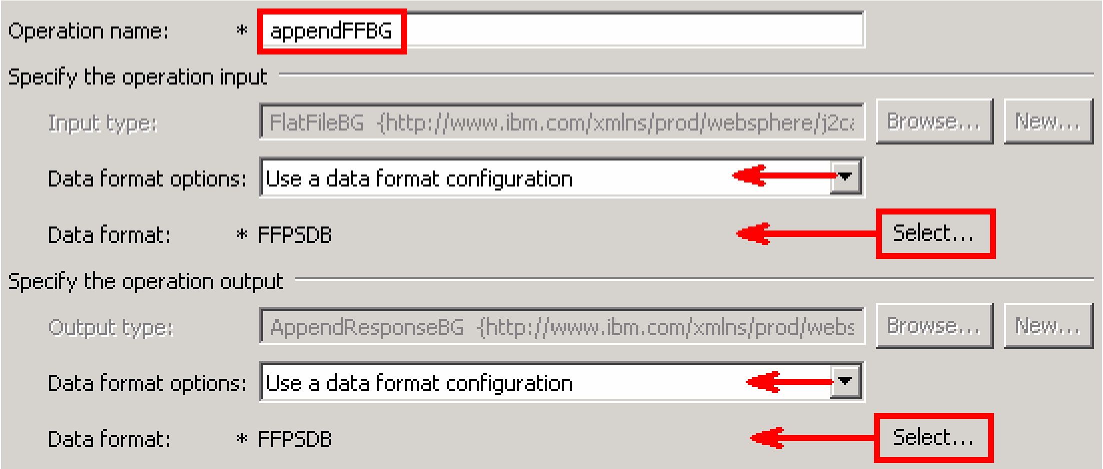
__ g. Click **Select…** next to **Data format**. A Binding Resource Configuration window is opened.

__ h. Ensure that 'Use existing data transformation from the list', select **FlatFileBaseDataBinding > FFPSDB** and click **Finish**

Define Data format for **output**:

__ i. Repeat the steps you did to select data format for input and select **FFPSDB** for output

The Operation screen now should look like this:



Operation name: * appendFFBG

Specify the operation input

Input type: FlatFileBG {http://www.ibm.com/xmlns/prod/websphere/j2ca

Data format options: Use a data format configuration

Data format: * FFPSDB

Specify the operation output

Output type: AppendResponseBG {http://www.ibm.com/xmlns/prod/webs

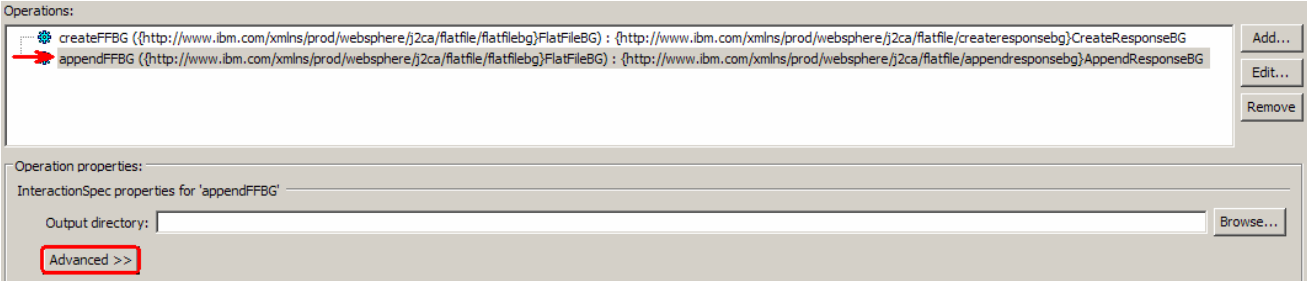
Data format options: Use a data format configuration

Data format: * FFPSDB

__ j. Click **Finish** from the Add Operation window

The operation, appendFFBG, will now be displayed under Operations list.

____ 14. You can click **Advanced >>** under 'InteractionSpec properties for appendFFBG' to review the properties available at Interaction spec level



Operations:

createFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/createresponsebg}CreateResponseBG

appendFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/appendresponsebg}AppendResponseBG

Operation properties:

InteractionSpec properties for 'appendFFBG'

Output directory:

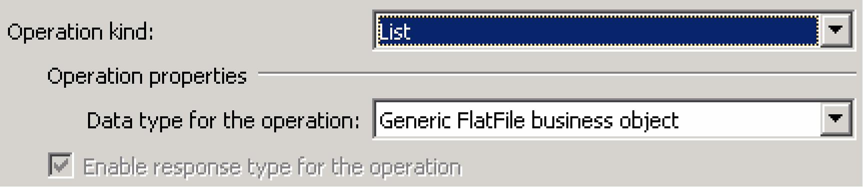
Define Operation: listFF:

____ 15. Click **Add…** to open Add Operation window

__ a. For **Operation kind**, select **List** from the drop down list

__ b. For **Data type for operation**, select **Generic FlatFile business object** from the drop down list

__ c. Note that the check box next to **'Enable response type for the operation'** is selected by default



Operation kind: List

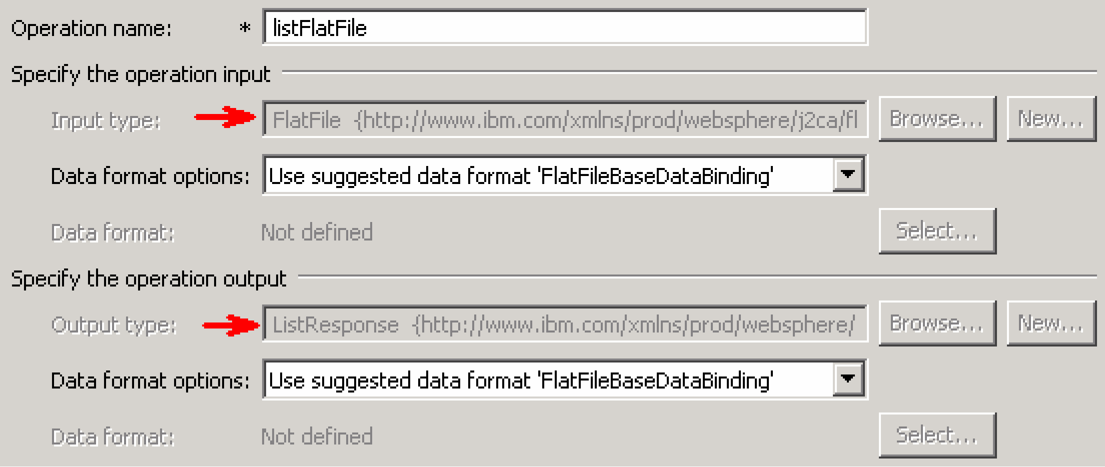
Operation properties

Data type for the operation: Generic FlatFile business object

☑ Enable response type for the operation

__ d. Click **Next**

The Data type for input and output are populated based on the selection of the Data type for the operation in the previous step. Since you have chosen Generic FlatFile business object, the **Input type** is **FlatFile** and because the Output required is also selected, the **Output type** is **ListResponse**



Operation name: * listFlatFile

Specify the operation input

Input type: FlatFile {http://www.ibm.com/xmlns/prod/websphere/j2ca/fl

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

Specify the operation output

Output type: ListResponse {http://www.ibm.com/xmlns/prod/websphere/

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

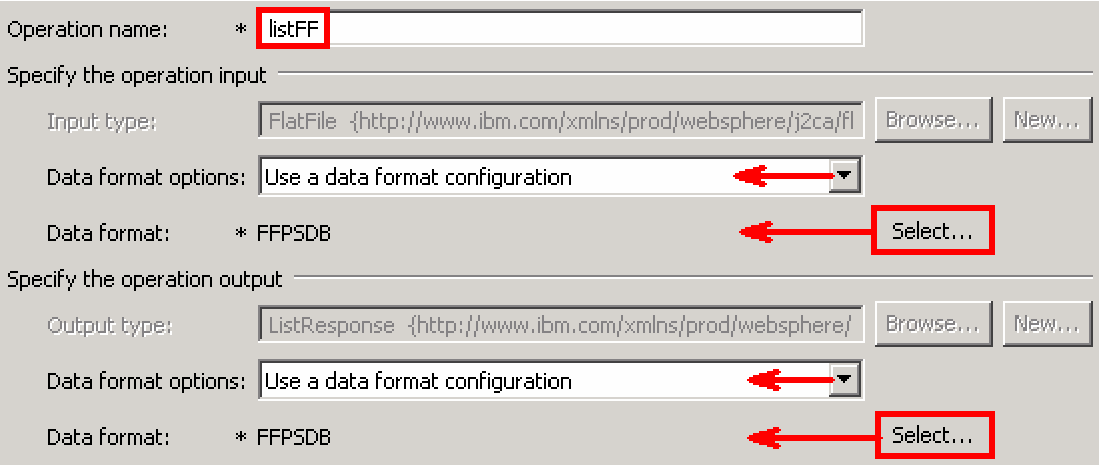
Data format: Not defined

__ e. For Operation name, enter **listFF**

Define Data format for **input** and **output**:

__ f. Repeat the steps you did for Create or Append operation to define the data format and select **FFPSDB** for both **input** and **output**

__ g. The Operation screen now should look like this:



Operation name: * listFF

Specify the operation input

Input type: FlatFile {http://www.ibm.com/xmlns/prod/websphere/j2ca/fl

Data format options: Use a data format configuration

Data format: * FFPSDB

Specify the operation output

Output type: ListResponse {http://www.ibm.com/xmlns/prod/websphere/

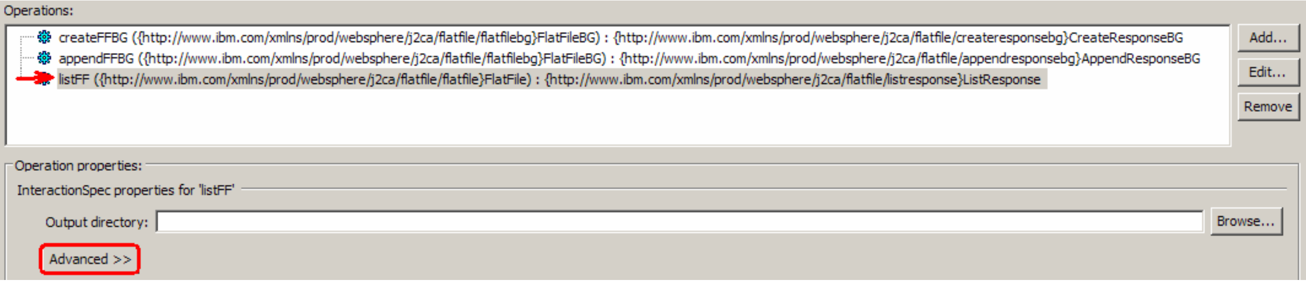
Data format options: Use a data format configuration

Data format: * FFPSDB

__ h. Click **Finish** from the Add Operation window

The operation, **listFF**, will now be displayed under Operations list.

____ 16. You can click **Advanced >>** under ‘InteractionSpec properties for listFF’ to review the properties available at Interaction spec level



Operations:

createFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/createresponsebg}CreateResponseBG

appendFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/appendresponsebg}AppendResponseBG

listFF ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfile}FlatFile) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/listresponse}ListResponse

Operation properties:

InteractionSpec properties for 'listFF'

Output directory:

Define Operation: retrieveFF:

____ 17. Click **Add…** to open Add Operation window

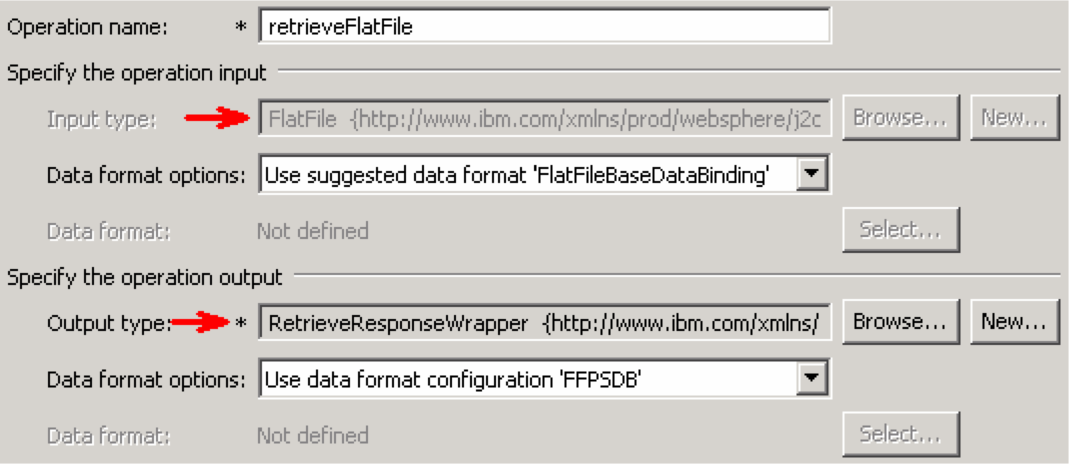
__ a. For **Operation kind**, select **Retrieve** from the drop down list

__ b. For **Data type for operation**, select **Generic FlatFile business object** from the drop down list

__ c. Note that the check box for **‘Enable response type for the operation’** is selected by default

__ d. Click **Next**

The Data type for input and output are populated based on the selection of the Data type for the operation in the previous step. Since you have chosen Generic FlatFile business object, the **Input type** is **FlatFile** and because the Output required is also selected, the **Output type** is **RetrieveResponseWrapper**. Also note that the Output type can be modified. But, for the pass through scenario, the output type is going to be the default, RetrieveResponseWrapper.



Operation name: * retrieveFlatFile

Specify the operation input

Input type: FlatFile {http://www.ibm.com/xmlns/prod/websphere/j2c

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

Specify the operation output

Output type: * RetrieveResponseWrapper {http://www.ibm.com/xmlns/

Data format options: Use data format configuration 'FFPSDB'

Data format: Not defined

__ e. For Operation name, enter **retrieveFF**

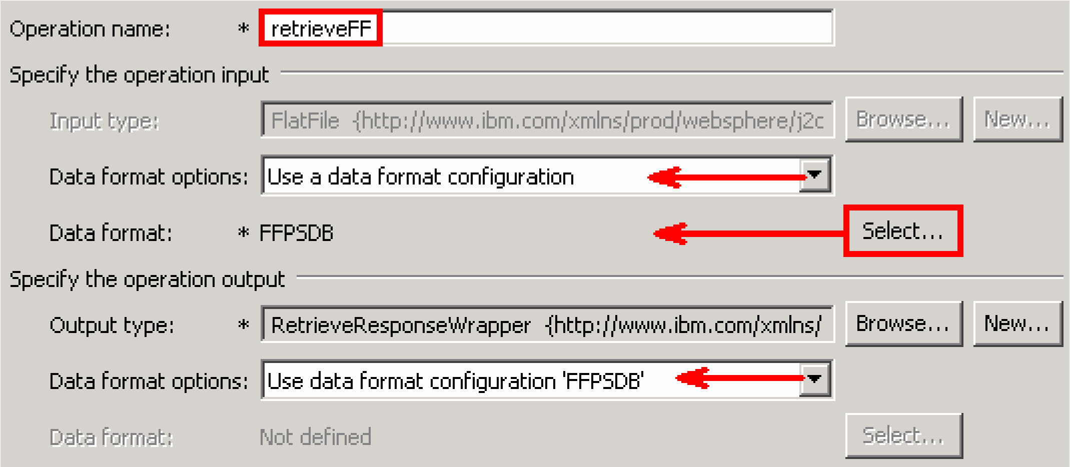
Define Data format for **input**:

__ f. Repeat the steps you did for Create or Append operation to define the data format and select **FFPSDB** for both **input**

Define Data format for **output**:

__ g. Accept the default selection, **Use data format configuration 'FFPSDB'**, from the drop down list

__ h. The Operation screen now should look like this:



Operation name: * retrieveFF

Specify the operation input

Input type: FlatFile {http://www.ibm.com/xmlns/prod/websphere/j2c

Data format options: Use a data format configuration

Data format: * FFPSDB

Specify the operation output

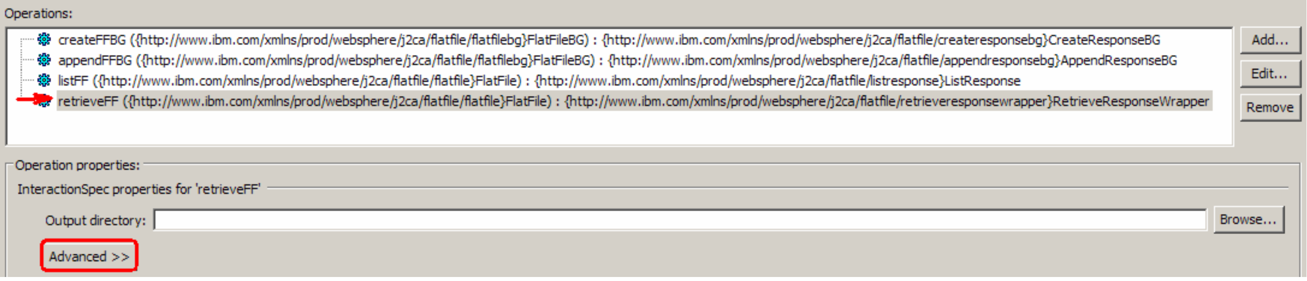
Output type: * RetrieveResponseWrapper {http://www.ibm.com/xmlns/

Data format options: Use data format configuration 'FFPSDB'

Data format: Not defined

__ i. Click **Finish** from the Add Operation window. The operation, retrieveFF, will now be displayed under Operations list.

____ 18. You can click **Advanced >>** under 'InteractionSpec properties for retrieveFF' to review the properties available at Interaction spec level



Operations:

createFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/createresponsebg}CreateResponseBG
appendFFBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileBG) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/appendresponsebg}AppendResponseBG
listFF ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfile}FlatFile) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/listresponse}ListResponse
retrieveFF ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfile}FlatFile) : {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/retrieveresponsewrapper}RetrieveResponseWrapper

Operation properties:

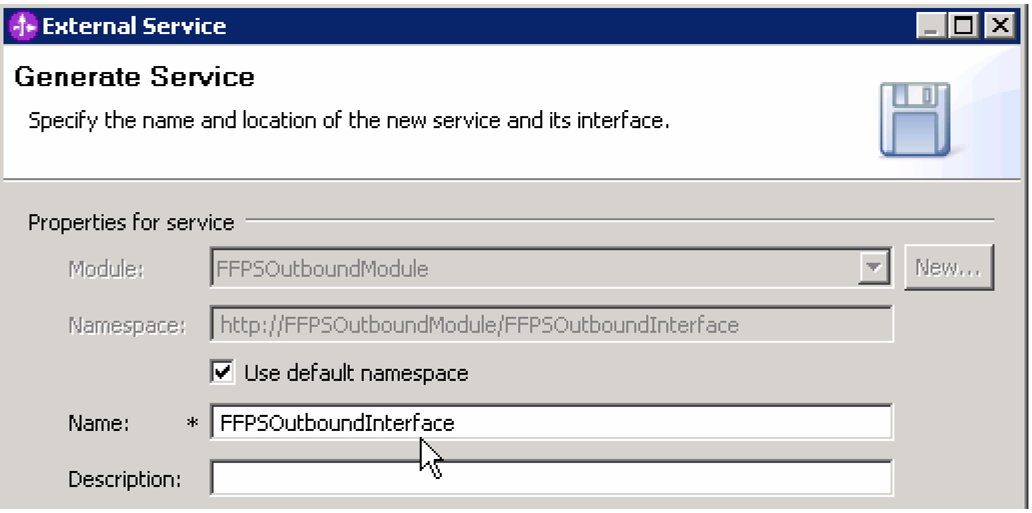
InteractionSpec properties for 'retrieveFF'

Output directory:

____ 19. Click **Next** from the Operations window

____ 20. From the Generate Artifacts screen, enter these:

__ a. For **Name**, enter **FFPSOutboundInterface**



External Service

Generate Service

Specify the name and location of the new service and its interface.

Properties for service

Module: FFPSOutboundModule

Namespace: http://FFPSOutboundModule/FFPSOutboundInterface

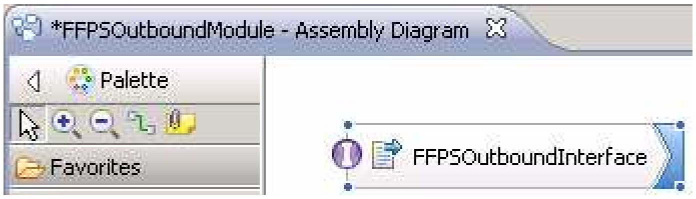
☑ Use default namespace

Name: * FFPSOutboundInterface

Description:

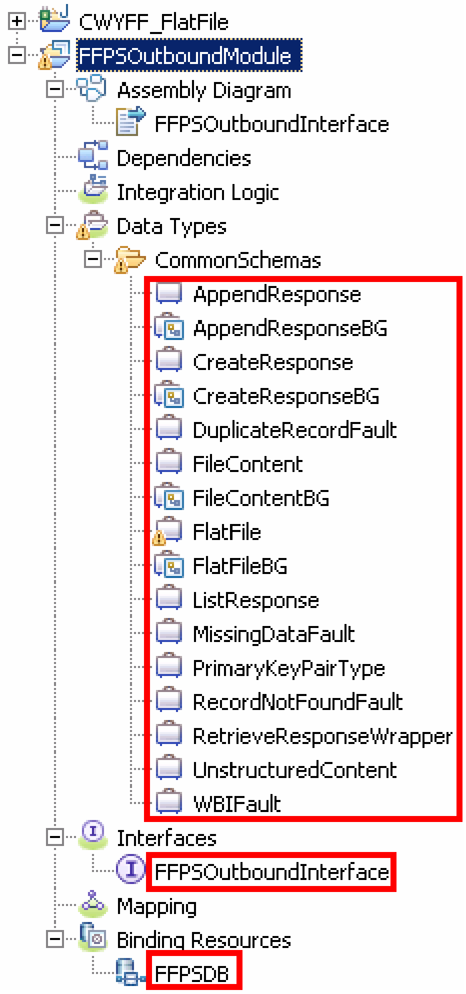
__ b. Click **Finish**

____ 21. You will now see a new import component, **FFPSOutboundInterface** in the assembly diagram of FFPSOutboundModule



__ a. Save **(Ctrl+S)** your changes to the assembly diagram

____ 22. Review the FFPSOutboundModule: The generated **Data Types**, **Interface**, and the Data binding (**FFPSDB**) under Configured Resources can be found inside FFPSOutboundModule



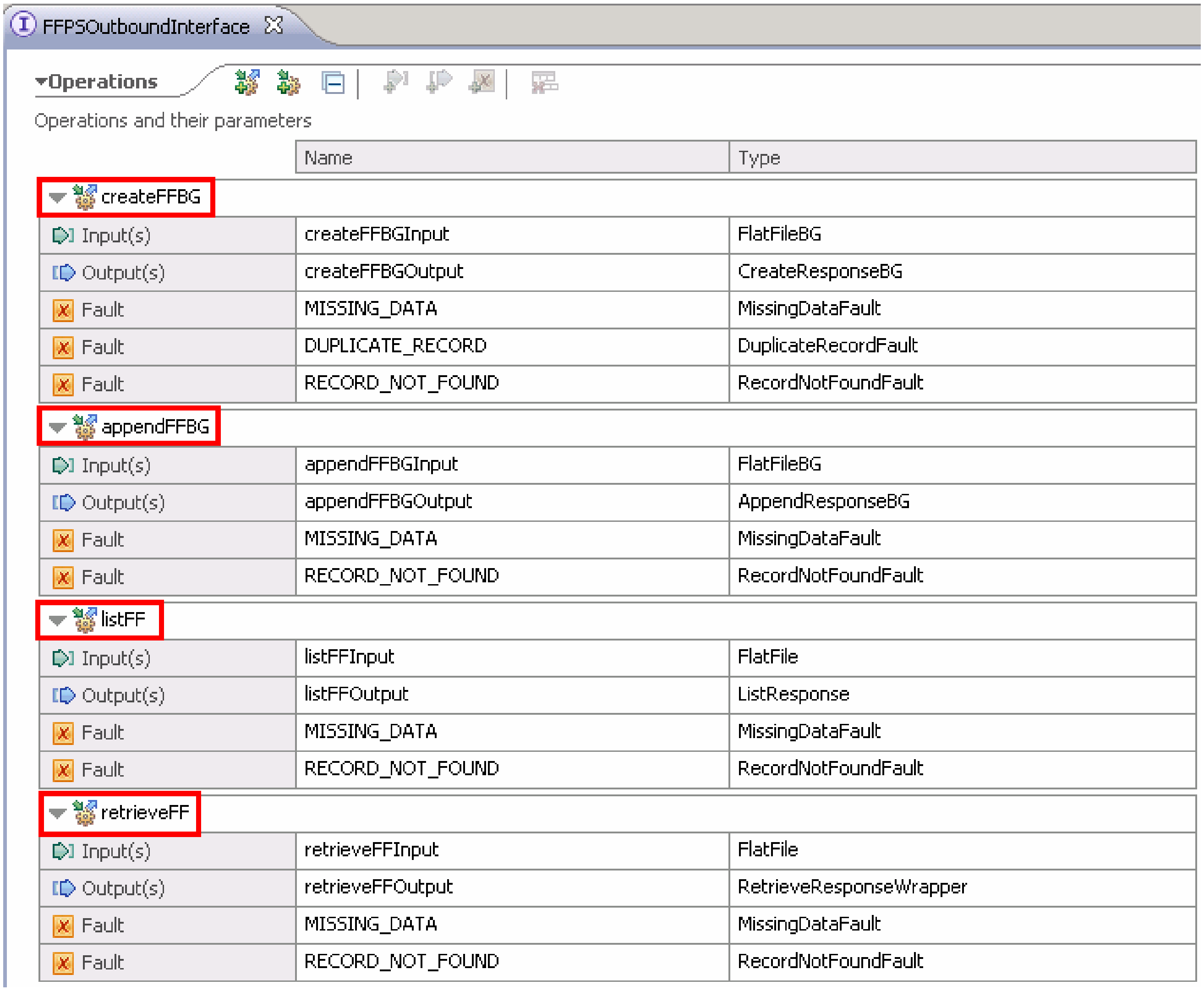
- CWYFF_FlatFile
- FFPSOutboundModule
  - Assembly Diagram
    - FFPSOutboundInterface
  - Dependencies
  - Integration Logic
  - Data Types
    - CommonSchemas
      - AppendResponse
      - AppendResponseBG
      - CreateResponse
      - CreateResponseBG
      - DuplicateRecordFault
      - FileContent
      - FileContentBG
      - FlatFile
      - FlatFileBG
      - ListResponse
      - MissingDataFault
      - PrimaryKeyPairType
      - RecordNotFoundFault
      - RetrieveResponseWrapper
      - UnstructuredContent
      - WBIFault
  - Interfaces
    - FFPSOutboundInterface
  - Mapping
  - Binding Resources
    - FFPSDB

You can open each of these generated artifacts and business objects and review the properties inside.

Review the created methods inside the interface:

__ a. From the Business Integration view, expand FFPSOutboundModule > Interfaces and then double-click **FFPSOutboundInterface** to open it

__ b. You should see these four operations. Note the Input and Output types, which should match the ones that were populated by default while defining each of the operations:



	Name	Type
createFFBG		
Input(s)	createFFBGInput	FlatFileBG
Output(s)	createFFBGOutput	CreateResponseBG
Fault	MISSING_DATA	MissingDataFault
Fault	DUPLICATE_RECORD	DuplicateRecordFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault
appendFFBG		
Input(s)	appendFFBGInput	FlatFileBG
Output(s)	appendFFBGOutput	AppendResponseBG
Fault	MISSING_DATA	MissingDataFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault
listFF		
Input(s)	listFFInput	FlatFile
Output(s)	listFFOutput	ListResponse
Fault	MISSING_DATA	MissingDataFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault
retrieveFF		
Input(s)	retrieveFFInput	FlatFile
Output(s)	retrieveFFOutput	RetrieveResponseWrapper
Fault	MISSING_DATA	MissingDataFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault

__ c. Close the interface, FFPSOutboundInterface

3.2. Test pass through scenario

____ 1. Start WebSphere Process Server (if not started already)

__ a. From the **Servers** view of WebSphere Integration Developer, right click **WebSphere Process Server v7.0** and select Start from the pop-up menu

__ b. Wait until the server **Status** shows as **Started**

____ 2. Add the project to the WebSphere Process Server test environment

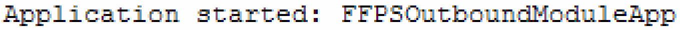
__ a. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

__ b. In the Add and Remove Projects window, select the **FFPSOutboundModuleApp** project from the Available projects panel

__ c. Click **Add >** to add it to the Configured projects panel

__ d. The project is now moved to Configured projects. Click **Finish**

Wait for the project to be published to the server and you can confirm this by seeing this message in the console messages:



```
Application started: FFPSOutboundModuleApp
```

____ 3. Open the test client for the module

__ a. From the Business Integration perspective, right-click the **FFPSOutboundModule** and select **Test > Test Module**

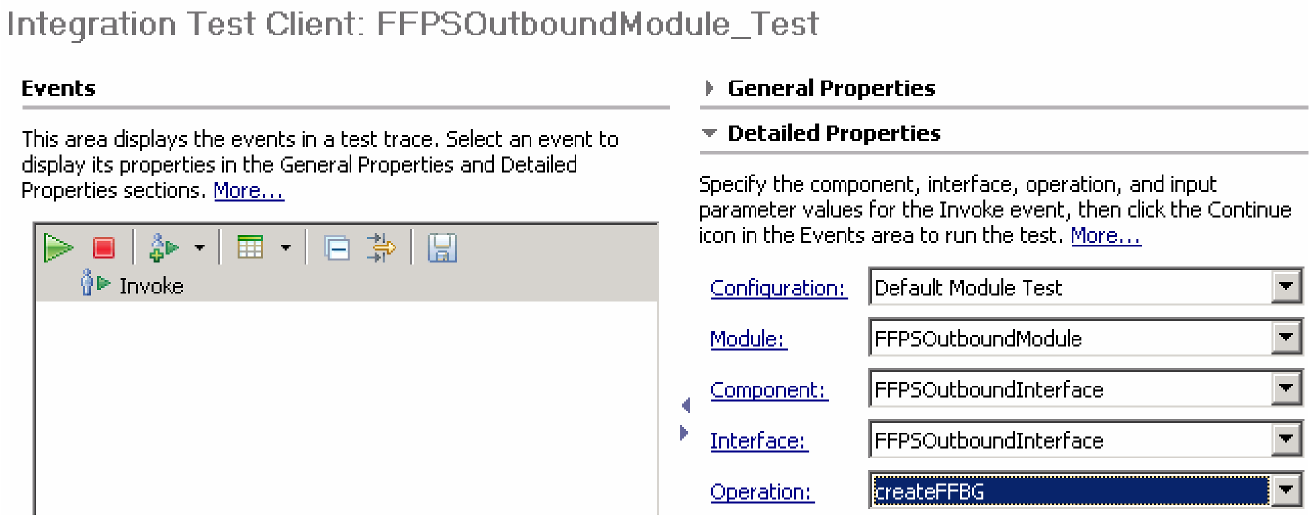
__ b. The **FFPSOutboundModule_Test** window is opened in the Assembly editor

You have four operations that were defined in the previous part in this module:

- createFFBG
- appendFFBG
- listFF
- retrieveFF

Test Create operation:

____ 4. Under **Detailed Properties**, for the **Operation** field, select **createFFBG** from the drop down menu



Integration Test Client: FFPSOutboundModule_Test

Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

Invoke

General Properties

Detailed Properties

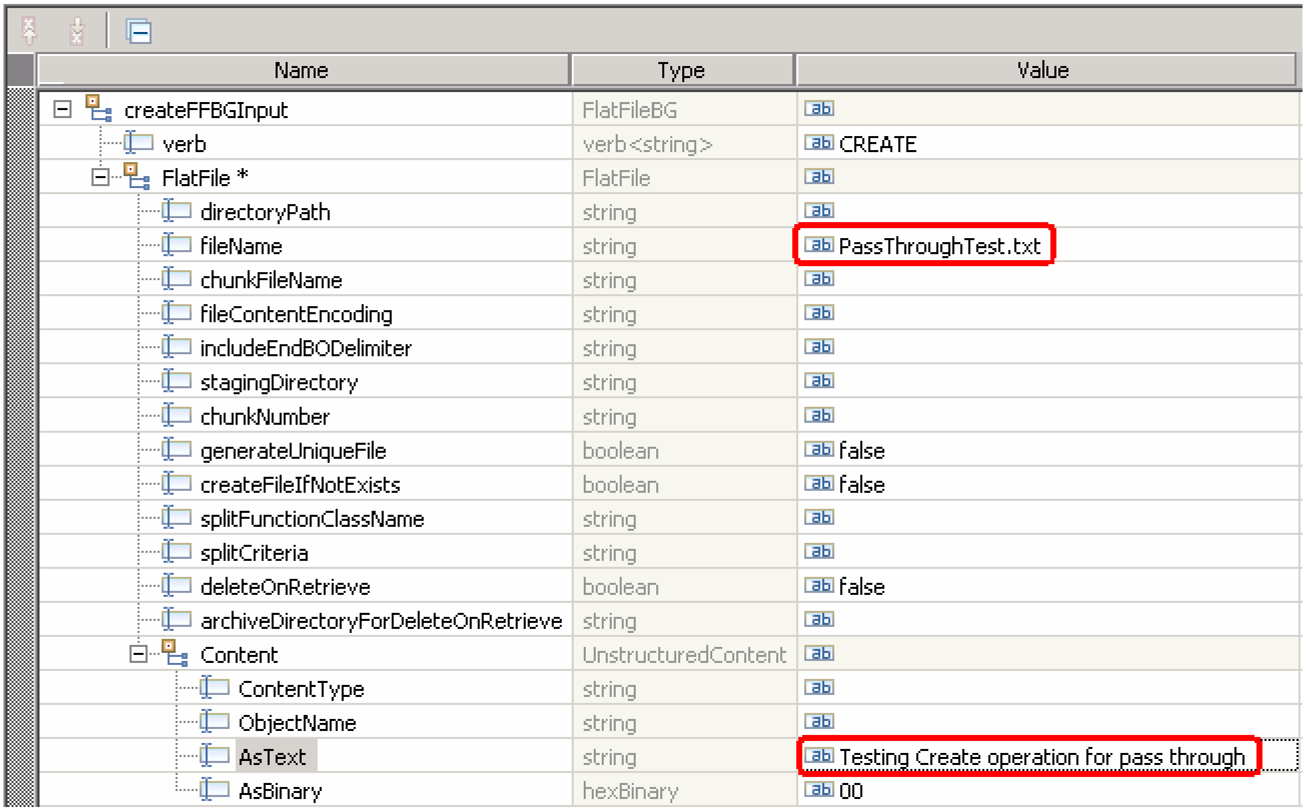
Specify the component, interface, operation, and input parameter values for the Invoke event, then click the Continue icon in the Events area to run the test. More...

Configuration:	Default Module Test
Module:	FFPSOutboundModule
Component:	FFPSOutboundInterface
Interface:	FFPSOutboundInterface
Operation:	createFFBG

____ 5. Fill out the fields for Initial request parameters:

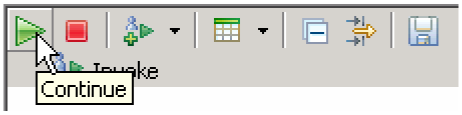
__ a. For **fileName**, enter any name, for Ex: PassthroughTest.txt

__ b. Under Content. for **AsText**, enter some test message, for Ex: **Testing Create operation for pass through**

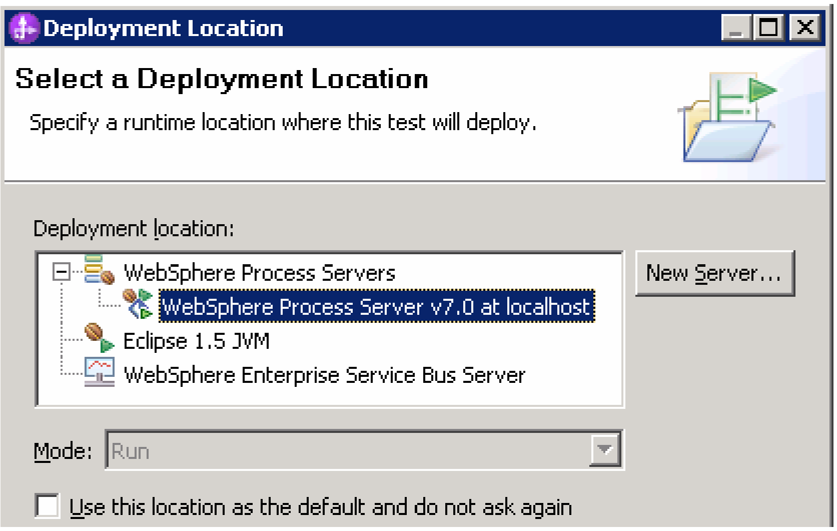


Name	Type	Value
createFFBGInput	FlatFileBG	
verb	verb<string>	CREATE
FlatFile *	FlatFile	
directoryPath	string	
fileName	string	PassThroughTest.txt
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	
Content	UnstructuredContent	
ContentType	string	
ObjectName	string	
AsText	string	Testing Create operation for pass through
AsBinary	hexBinary	00

__ c. Click **Continue** button under Events



__ d. From Deployment Location window, select **WebSphere Process Servers > WebSphere Process Server v7.0** and click **Finish**


Deployment Location

Select a Deployment Location

Specify a runtime location where this test will deploy.

Deployment location:

- WebSphere Process Servers
  - WebSphere Process Server v7.0 at localhost
- Eclipse 1.5 JVM
- WebSphere Enterprise Service Bus Server

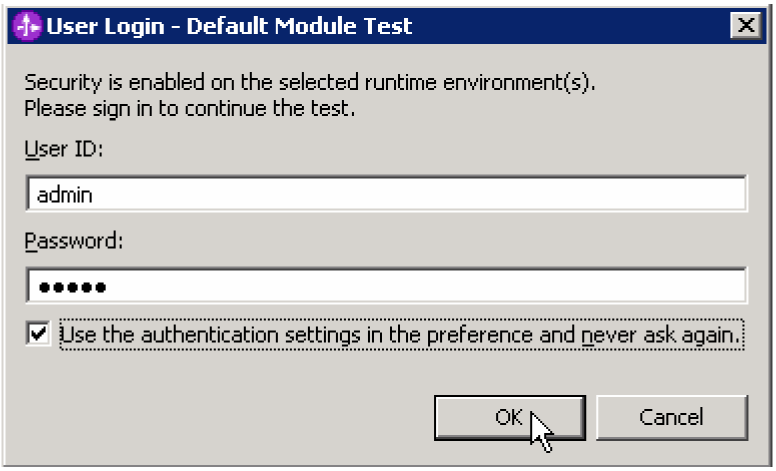
New Server...

Mode: Run

□ Use this location as the default and do not ask again

__ e. Provide Administrator User ID and Password

1) Optionally, select the box 'Use the authentication settings in the preference and never ask again' so that you do not have to enter the credentials next time when you start the test client


User Login - Default Module Test

Security is enabled on the selected runtime environment(s).
Please sign in to continue the test.

User ID: admin

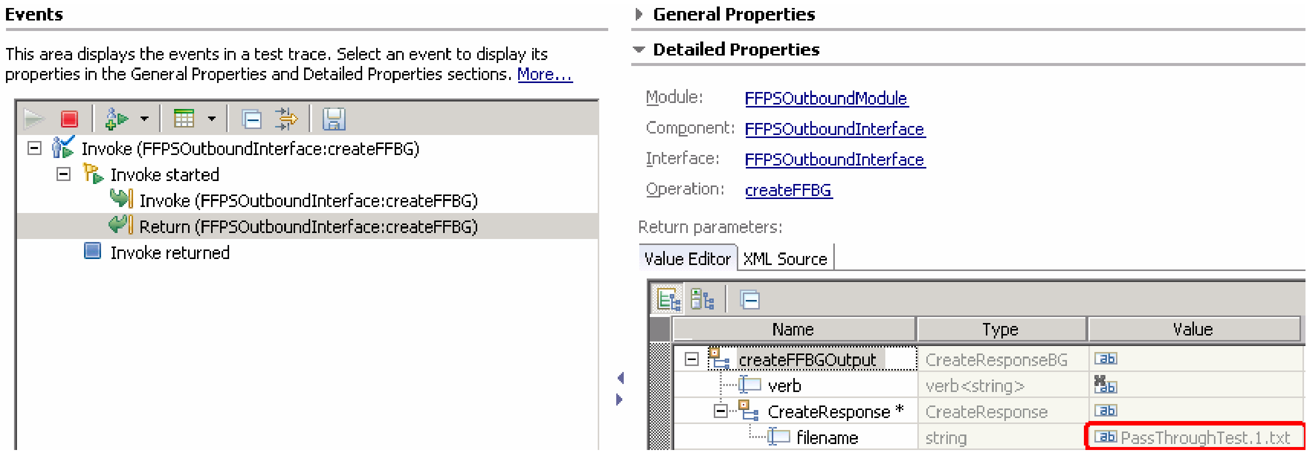
Password: •••••

☑ Use the authentication settings in the preference and never ask again.

OK Cancel

__ f. You should see a window similar to this, which contains the data you just entered in the previous steps:

Note: Since you have specified a Sequence File name while running the External Service, the file name is created with '1' appended to it.



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

- Invoke (FFPSOutboundInterface:createFFBG)
  - Invoke started
    - Invoke (FFPSOutboundInterface:createFFBG)
    - Return (FFPSOutboundInterface:createFFBG)
  - Invoke returned

General Properties

Detailed Properties

Module: FFPSOutboundModule

Component: FFPSOutboundInterface

Interface: FFPSOutboundInterface

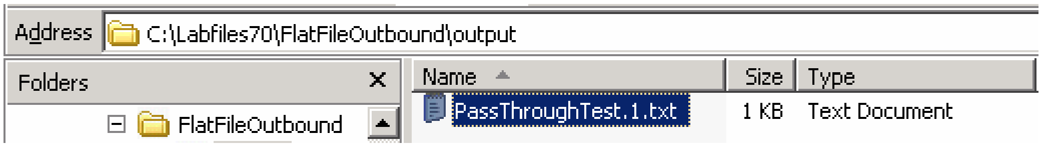
Operation: createFFBG

Return parameters:

Name	Type	Value
createFFBGOutput	CreateResponseBG	
verb	verb<string>	
CreateResponse *	CreateResponse	
filename	string	PassThroughTest.1.txt

____ 6. Verify the created file and its contents

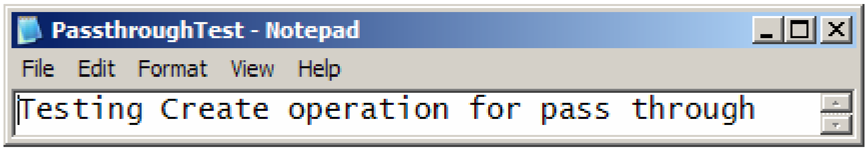
__ a. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>**



Address C:\Labfiles70\FlatFileOutbound\output

Name	Size	Type
PassThroughTest.1.txt	1 KB	Text Document

__ b. You will see a new file, **PassthroughTest.1.txt** created under that directory. Double-click it to open the file



PassthroughTest - Notepad

```
Testing Create operation for pass through
```

__ c. Now browse to <LAB_FILES>\FlatFileOutbound and open the **SequenceFile.txt** file. You should see a numeric entry in the file. Each time the file is created, the adapter increases the number by one.

Test generateUniqueFile: In this part you will make use of generateUniqueFile to create a unique file.

____ 7. Click **Invoke** ( ) under Events to start a new event

____ 8. Under **Detailed Properties**, for the **Operation** field, select **createFFBG** from the drop down menu

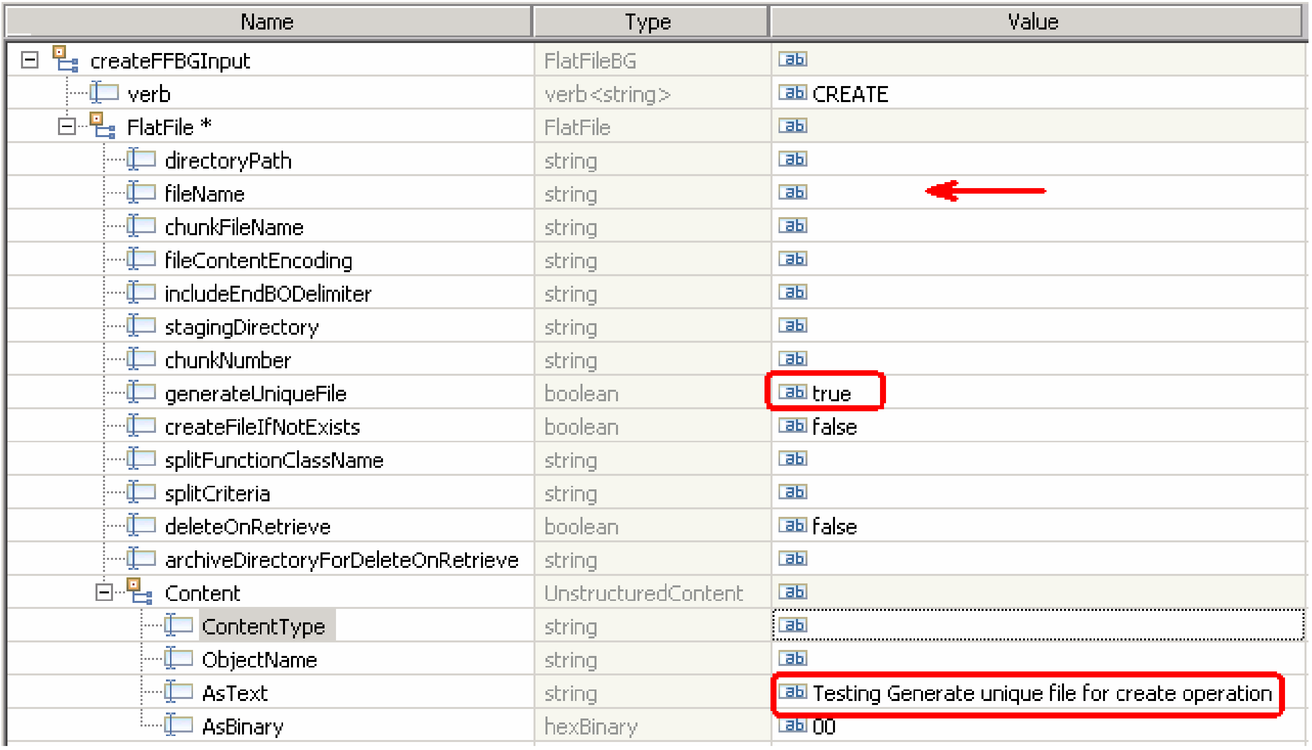
Fill out the fields for Initial request parameters:

__ a. You do not need to provide a fileName for this test

__ b. For **generateUniqueFile**, select **true** from the drop down list

New in V7.0: For append operation, generateUniqueFile property is not used. This property is only used for Create and Overwrite operations, where the adapter creates a unique file

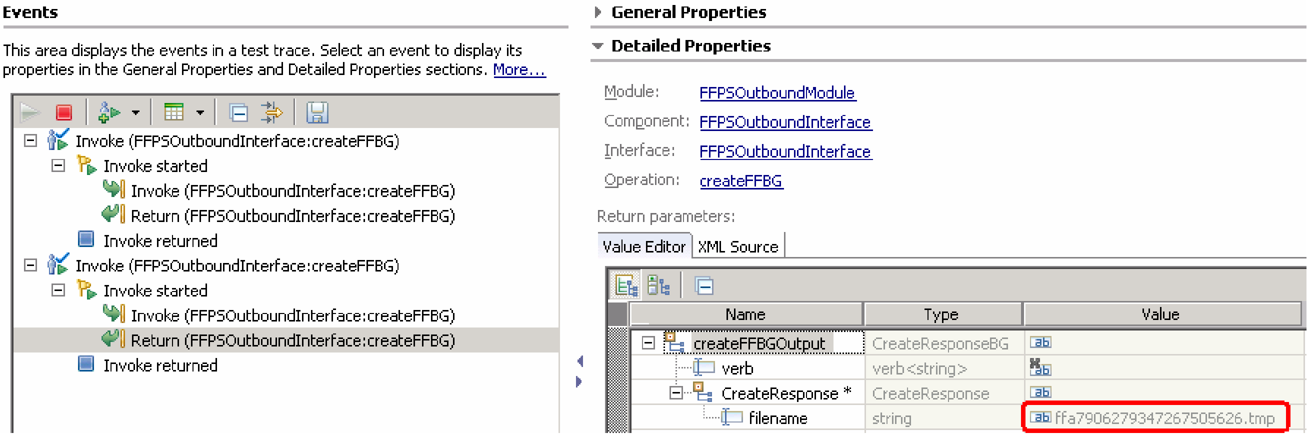
__ c. Under Content, for **AsText**, enter some test message, for Ex: **Testing Generate unique file for create operation**



Name	Type	Value
createFFBGInput	FlatFileBG	
verb	verb<string>	CREATE
FlatFile *	FlatFile	
directoryPath	string	
fileName	string	
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	true
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	
Content	UnstructuredContent	
ContentType	string	
ObjectName	string	
AsText	string	Testing Generate unique file for create operation
AsBinary	hexBinary	00

__ d. Click **Continue** button under Events

__ e. You should see a window similar to this, which contains the data you just entered in the previous steps:



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

- Invoke (FFPSOutboundInterface:createFFBG)
  - Invoke started
    - Invoke (FFPSOutboundInterface:createFFBG)
    - Return (FFPSOutboundInterface:createFFBG)
  - Invoke returned
- Invoke (FFPSOutboundInterface:createFFBG)
  - Invoke started
    - Invoke (FFPSOutboundInterface:createFFBG)
    - Return (FFPSOutboundInterface:createFFBG)
  - Invoke returned

General Properties

Detailed Properties

Module: FFPSOutboundModule

Component: FFPSOutboundInterface

Interface: FFPSOutboundInterface

Operation: createFFBG

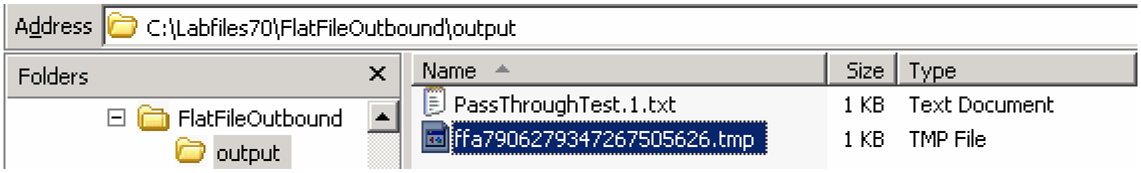
Return parameters:

Value Editor | XML Source

Name	Type	Value
createFFBGOutput	CreateResponseBG	
verb	verb<string>	
CreateResponse *	CreateResponse	
filename	string	ffa7906279347267505626.tmp

____ 9. Verify the created file and its contents

__ a. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>**

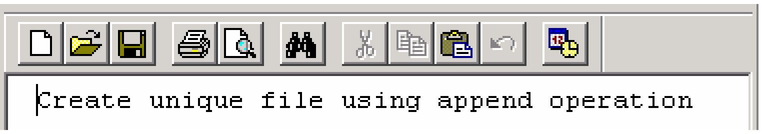


Address C:\Labfiles70\FlatFileOutbound\output

Name	Size	Type
PassThroughTest.1.txt	1 KB	Text Document
ffa7906279347267505626.tmp	1 KB	TMP File

__ b. You will see a new file, **ffa+<timestamp>.tmp** created under that directory. Open the file and observe the content.

Note: Because you set **generateUniqueFile** to true, a file with the name as random number prefixed by '**ffa**' and with an extension '**.tmp**' is created. So, the generated file name is going to be different for you.



```
Create unique file using append operation
```

Test Append operation:

____ 10. Click **Invoke** ( ) under Events to start a new event

____ 11. Under **Detailed Properties**, for the **Operation** field, select **appendFFBG** from the drop down menu

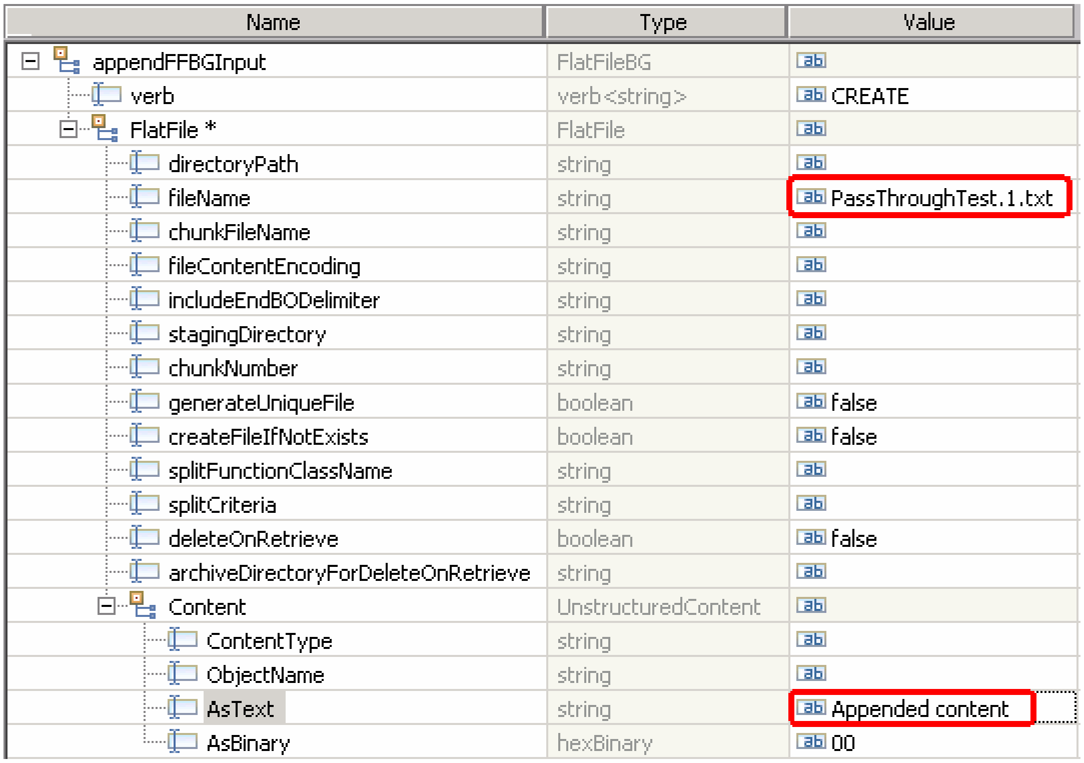
Fill out the fields for Initial request parameters:

__ a. For fileName, enter the name of the file you created in the previous test for create, PassThroughTest.1.txt (The file should already exist as you are not going to use createFileIfNotExists for this testing)

__ b. Set both **generateUniqueFile** and **createFileIfNotExists** to **false**

New in V7.0: Provided that you have not specified any value for 'EndBODelimiter' in the InteractionSpec properties during the External Service wizard, and if you set the includeEndBODelimiter to 'Unset' in this screen, by default <EndBO> is appended for append operation.

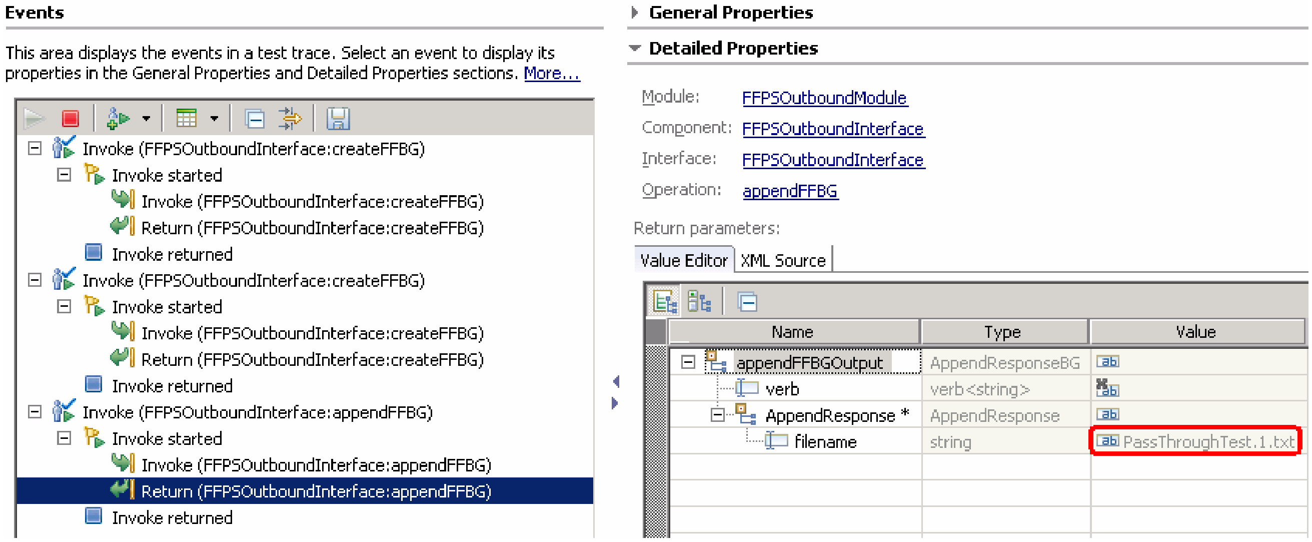
__ c. Under **Content**, for **AsText**, enter some test message, for Ex: **Appended content**



Name	Type	Value
appendFFBGInput	FlatFileBG	
verb	verb<string>	CREATE
FlatFile *	FlatFile	
directoryPath	string	
fileName	string	PassThroughTest.1.txt
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	
Content	UnstructuredContent	
ContentType	string	
ObjectName	string	
AsText	string	Appended content
AsBinary	hexBinary	00

__ d. Click **Continue** button under Events

__ e. You should see a window similar to this, which contains the data you just entered in the previous steps:



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

- Invoke (FFPSOutboundInterface:createFFBG)
  - Invoke started
    - Invoke (FFPSOutboundInterface:createFFBG)
    - Return (FFPSOutboundInterface:createFFBG)
  - Invoke returned
- Invoke (FFPSOutboundInterface:createFFBG)
  - Invoke started
    - Invoke (FFPSOutboundInterface:createFFBG)
    - Return (FFPSOutboundInterface:createFFBG)
  - Invoke returned
- Invoke (FFPSOutboundInterface:appendFFBG)
  - Invoke started
    - Invoke (FFPSOutboundInterface:appendFFBG)
    - Return (FFPSOutboundInterface:appendFFBG)
  - Invoke returned

General Properties

Detailed Properties

Module: FFPSOutboundModule

Component: FFPSOutboundInterface

Interface: FFPSOutboundInterface

Operation: appendFFBG

Return parameters:

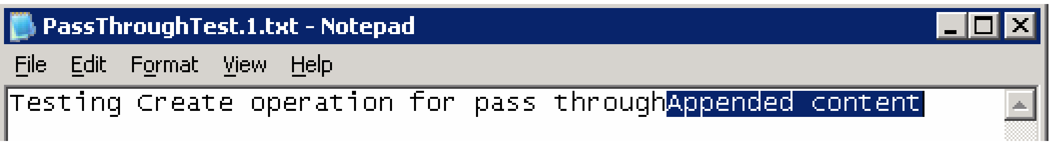
Value Editor | XML Source

Name	Type	Value
appendFFBGOutput	AppendResponseBG	
verb	verb<string>	
AppendResponse *	AppendResponse	
filename	string	PassThroughTest.1.txt

____ 12. Verify the created file and its contents

__ a. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>**

__ b. Open the file you specified and observe the highlighted content, which is appended to the original content

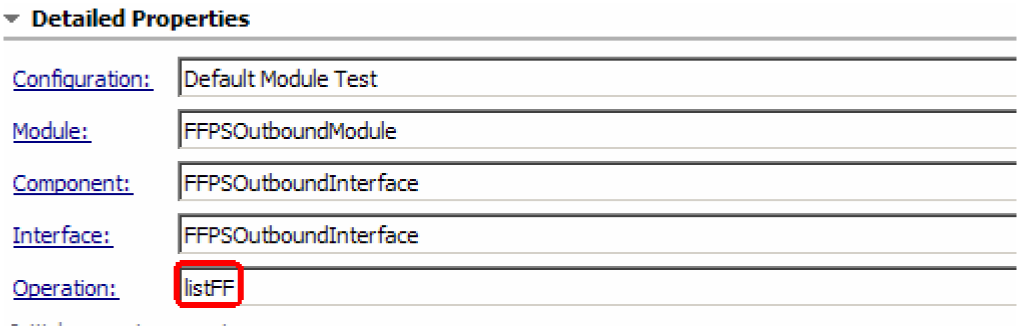


```
Testing Create operation for pass throughAppended content
```

Test List operation:

____ 13. Click **Invoke** () under Events to start a new event

____ 14. Under **Detailed Properties**, for the **Operation** field, select **listFF** from the drop down menu



Configuration: Default Module Test

Module: FFPSOutboundModule

Component: FFPSOutboundInterface

Interface: FFPSOutboundInterface

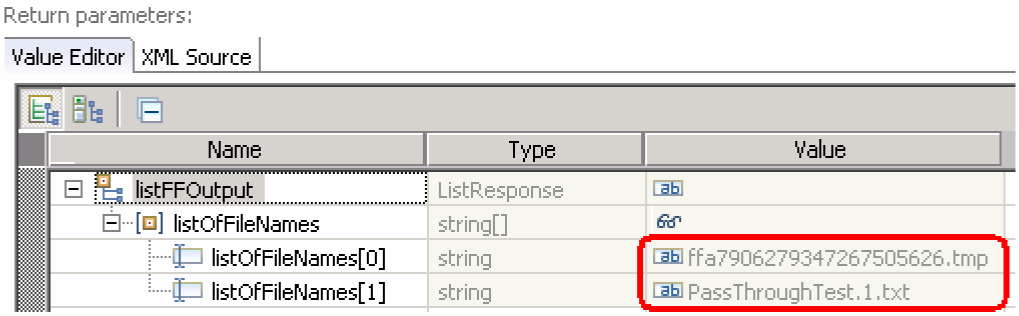
Operation: listFF

____ 15. Fill out the fields for Initial request parameters:

__ a. You can leave all the other fields empty. The directoryPath, <OUT_DIR>, is already provided at Managed Connection Properties level during the External Service Wizard

__ b. Click **Continue** button under Events

__ c. Test client will return the list of files under the <OUT_DIR>. You should see the two listOfFileNames: **ffa+<timestamp>.tmp**, **PassthroughTest.1.txt** since those are created in the previous steps.



Name	Type	Value
listFFOutput	ListResponse	
listOfFileNames	string[]	
listOfFileNames[0]	string	ffa7906279347267505626.tmp
listOfFileNames[1]	string	PassThroughTest.1.txt

Test Retrieve operation:

____ 16. Click **Invoke** () under Events to start a new event

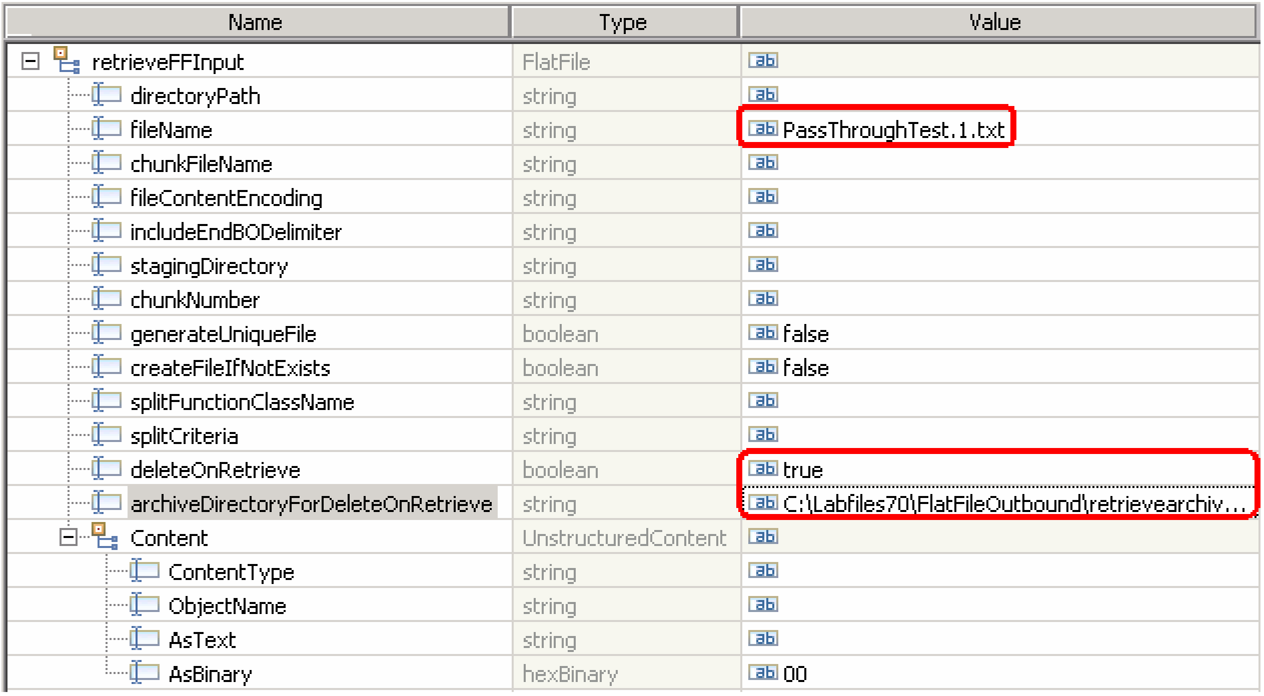
____ 17. Under **Detailed Properties**, for the **Operation** field, select **retrieveFF** from the drop down menu

Fill out the fields for Initial request parameters:

__ a. For **fileName**, enter the name of the file created using createFF operation, PassThroughTest.1.txt (The file name should already exist for retrieve operation)

__ b. For **deleteonRetrieve**, change it to **true** from the drop down list

__ c. For **archiveDirectoryForDeleteOnRetrieve**, enter the value **<RETRIEVE_ACHIVE>**

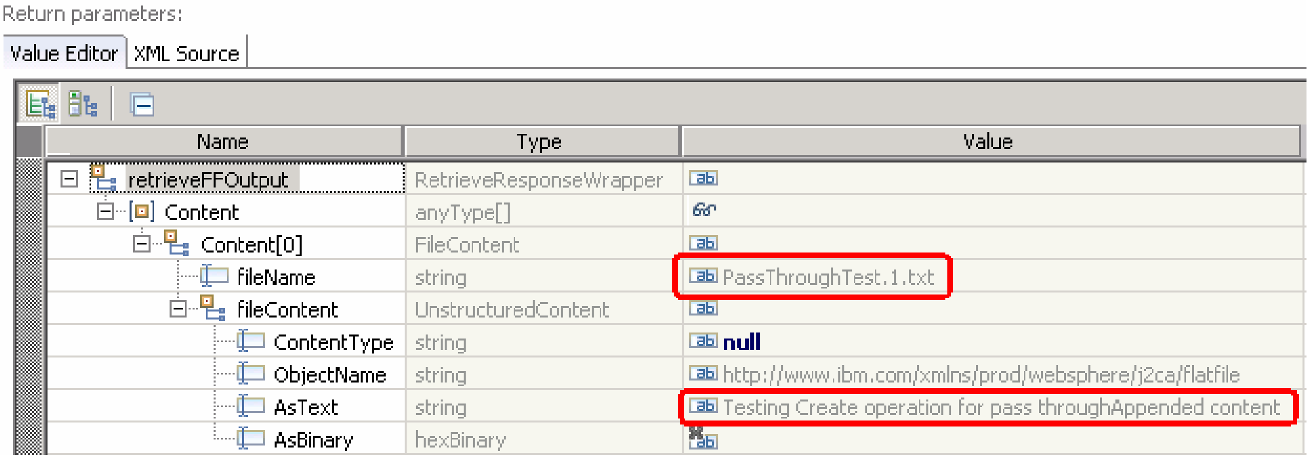


Name	Type	Value
retrieveFFInput	FlatFile	
directoryPath	string	
fileName	string	PassThroughTest.1.txt
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	true
archiveDirectoryForDeleteOnRetrieve	string	C:\Labfiles70\FlatFileOutbound\retrievearchiv…
Content	UnstructuredContent	
ContentType	string	
ObjectName	string	
AsText	string	
AsBinary	hexBinary	00

__ d. Click **Continue** button under Events

____ 18. Verify the results

__ a. You should see a window similar to this, which contains the data you just entered in the previous steps:

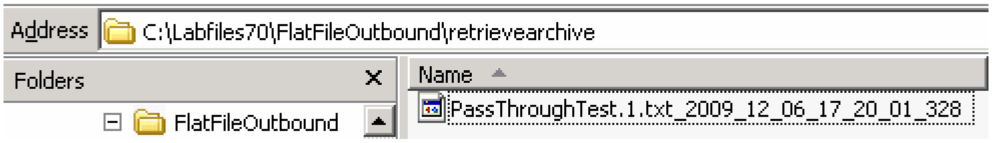


Return parameters:

Name	Type	Value
retrieveFFOutput	RetrieveResponseWrapper	
Content	anyType[]	
Content[0]	FileContent	
fileName	string	PassThroughTest.1.txt
fileContent	UnstructuredContent	
ContentType	string	**null**
ObjectName	string	http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile
AsText	string	Testing Create operation for pass throughAppended content
AsBinary	hexBinary	

__ b. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>**. The file PassThroughTest.1.txt is deleted from the list

__ c. From the windows explorer, browse to the subdirectory **<RETRIVE_ARCHIVE>** and you will see a new file created under that directory.

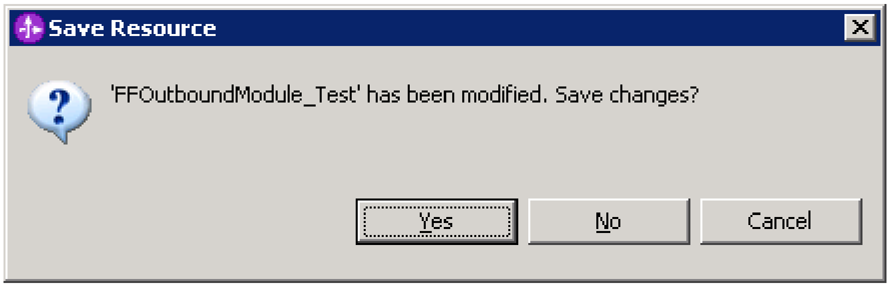

Address C:\Labfiles70\FlatFileOutbound\retrievearchive

PassThroughTest.1.txt_2009_12_06_17_20_01_328

__ d. Optionally, double-click it to open the file. Observe the contents of the file

____ 19. Restore server settings

__ a. Close the **FFPSOutboundModule_Test** window and click **No** for the Save Resources window



'FFOutboundModule_Test' has been modified. Save changes?

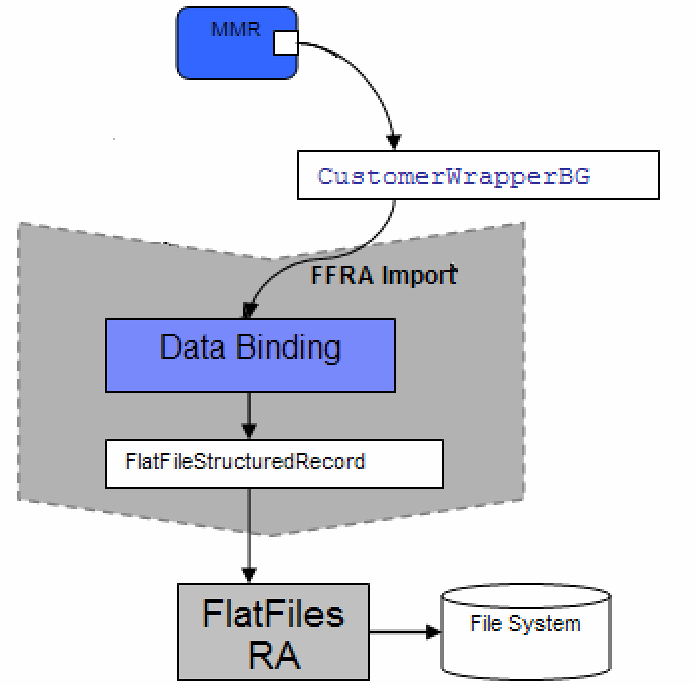
__ b. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

__ c. Select **FFPSOutboundModuleApp** under Configured projects and click **< Remove**

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

Part 4: Content specific (non-pass through) scenario

Of the two outbound flows, you have just tested the pass-through which does not involve data transformation. In this part of the lab you will perform the non-pass through that uses the data transformation:



- In the Java EE client, the content-specific wrapper data object (CustomerWrapper) is populated for protocol specific information. If you have specified the actual data object (for example: Customer) as the input type, the protocol specific information is picked up from either the interaction spec or the MCF. The Java EE client sends this wrapper data object and the outbound operation name as input by making an SCA call.
- Based on the Data Binding (FlatFileBaseDataBinding) configured while running the Enterprise Metadata Discovery, that particular data binding is called and it gets the WrapperBG data object.
- The FlatFileBaseDataBinding invokes the BaseDatabinding, which checks the value specified for the data handler property in the data binding properties. Based on the data handler set in the data binding properties, that particular content-specific data handler is invoked.
- The output of the FlatFileBaseDataBinding is a FlatFileInputStreamRecord. The output of the outbound operation is a FlatFileStructuredRecord which is sent back to the Data Binding and mapped to a data object. This data object is sent back to the Java EE client. For create, append and overwrite operations the specific content-specific object is returned to the client and for other operations the generic FlatFile object is returned.

4.1. Configure content specific (non-pass through) scenario using the external service wizard

In this part, you will use the new WebSphere Integration Developer feature, External Service, to create/configure the Data Binding, **Data Handler**, and Operations, which generates the business objects and other artifacts.

____ 1. Create the module: FFCustomOutboundModule

__ a. From the Business Integration window, right-click and select **New > Module**

__ b. From the New Module window, enter **FFCustomOutboundModule** for the Module Name

__ c. Ensure that the box next to **Open module assembly diagram** is checked and then click **Finish**

You will now see a new module, FFCustomOutboundModule, created in your Business Integration window

____ 2. Import required business objects

New in V7.0: Wrapper business objects for the business objects containing global elements are supported in this version. So, you can now pass the protocol specific information as part of each request.

__ a. Expand FFCustomOutboundModule (if not already expanded), right-click **Data Types** and select **Import…** from the pop-up menu

__ b. From the Import window, expand **General** and select **File System** and then click **Next**

__ c. Enter From directory

1) Click **Browse…** next to **From directory**

2) From the Import from directory window, select **<FFFILES>**and click **OK**

Now, you will see FFFiles folder added on the left side, and all the xsds and ear files under that folder on the right side.

__ d. Select the box next to **Customer.xsd**

__ e. Ensure that the **FFCustomOutboundModule** is selected for Into folder

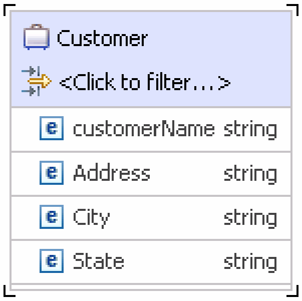
__ f. Click **Finish** from the Import window

The Business Integration window is updated with the imported business objects.

____ 3. Review the imported business objects:

__ a. Expand **FFCustomOutboundModule > Data Types** and you will now see a new data type **Customer** under it.

__ b. Double-click **Customer** to view its fields:



Customer
<Click to filter…>

customerName	string
Address	string
City	string
State	string

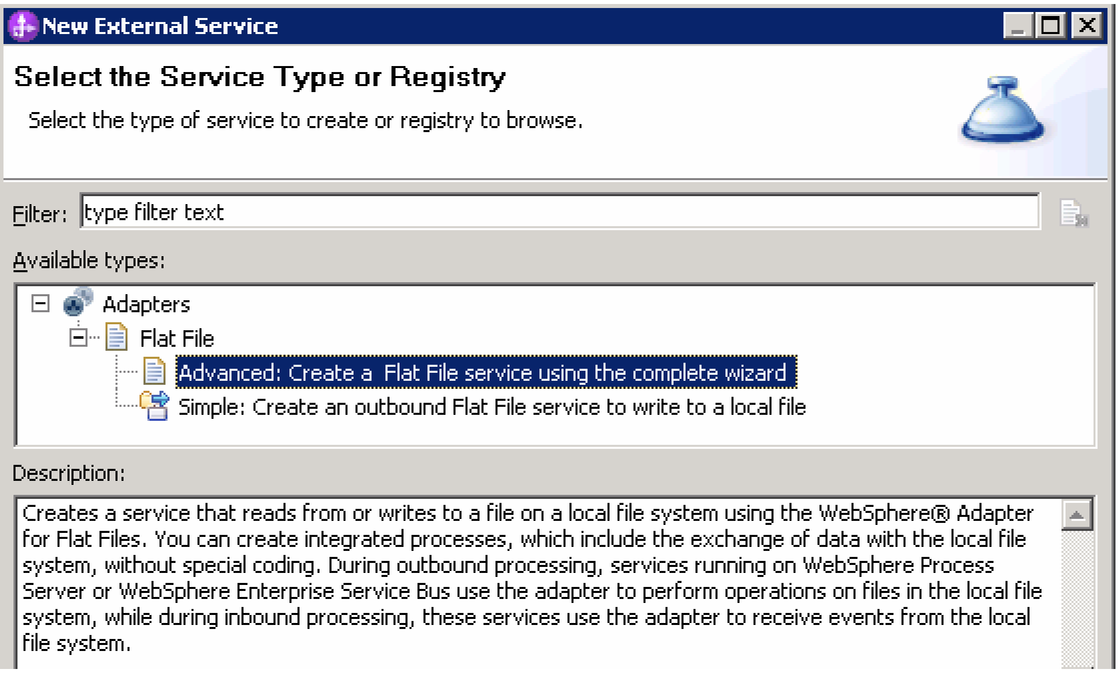
____ 4. After reviewing, close the Customer business object from the Assembly editor

____ 5. To start External Service from the Palette:

__ a. From the **Palette** on the left side of Assembly Diagram, click **Outbound Adapters**

____ 6. Under Outbound Adapters, click the **Flat File** and then click the empty canvas of the assembly diagram. The New Flat File Service wizard is opened

____ 7. From the New External Service window, expand **Adapters > Flat File** and select **Advanced: Create a Flat File service using the complete wizard**



New External Service

Select the Service Type or Registry

Select the type of service to create or registry to browse.

Filter: type filter text

Available types:

- Adapters
  - Flat File
    - Advanced: Create a Flat File service using the complete wizard
    - Simple: Create an outbound Flat File service to write to a local file

Description:

Creates a service that reads from or writes to a file on a local file system using the WebSphere® Adapter for Flat Files. You can create integrated processes, which include the exchange of data with the local file system, without special coding. During outbound processing, services running on WebSphere Process Server or WebSphere Enterprise Service Bus use the adapter to perform operations on files in the local file system, while during inbound processing, these services use the adapter to receive events from the local file system.

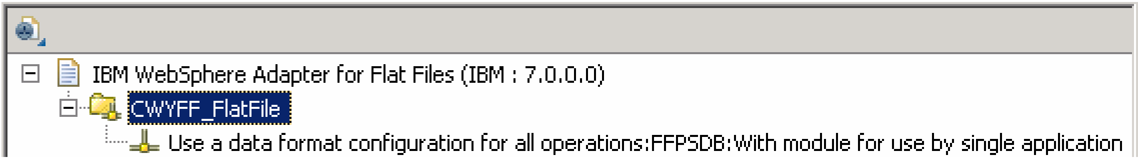
__ a. Click **Next**

Note: You can also start the External Service from the **File menu** option:

From the main menu, select **File > New > External Service**. This opens an External Service wizard that helps you obtain a service which establishes connectivity with other systems. The wizard provides three connectivity options – Adapters, Registers, and Messaging.

Select the radio button next to **Adapters** and click **Next**

____ 8. On the Select an Adapter screen, expand **IBM WebSphere Adapter for Flat Files (IBM : 7.0.0.0)** and select **CWYFF_FlatFile**



IBM WebSphere Adapter for Flat Files (IBM : 7.0.0.0)
CWYFF_FlatFile
Use a data format configuration for all operations:FFPSDB:With module for use by single application

__ a. Click **Next**

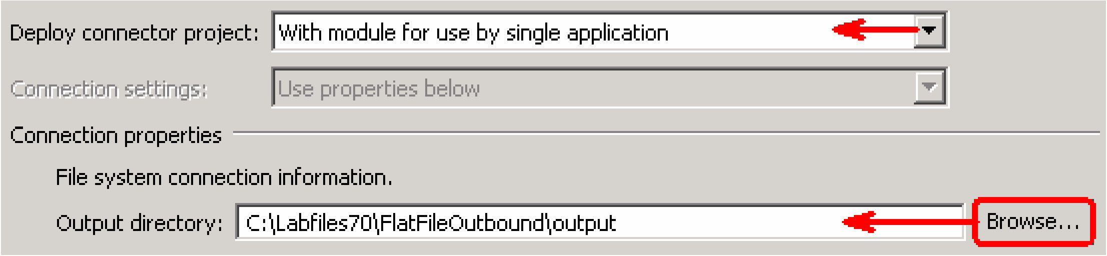
Note: If you are using the **File menu** option to start the External Service wizard, you are asked to select the **Processing Direction** at this point. Select the radio button next to **Outbound** and click **Next** to proceed to the next step.

____ 9. Service Configuration Properties:

__ a. Deploy connector project: ensure that the default option **With module for use by single application** is selected

__ b. Click **Browse…** next to **Output Directory** and select **<OUTPUT_DIR>**

__ c. Click **Advanced** at the bottom to see the Advanced and Bidi properties

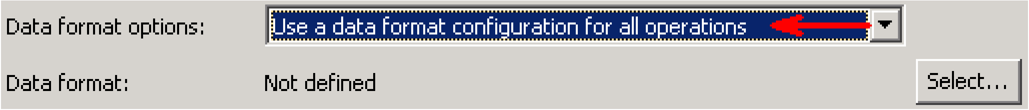


Deploy connector project: With module for use by single application
Connection settings: Use properties below
Connection properties
File system connection information.
Output directory: C:\Labfiles70\FlatFileOutbound\output

Data binding and Data handler configuration:

____ 10. You can define data binding in two places - service level (current screen of External Service wizard) or later at the method level (Operations screen of the External Service wizard). In this lab, you will define data binding at the service level (from this screen)

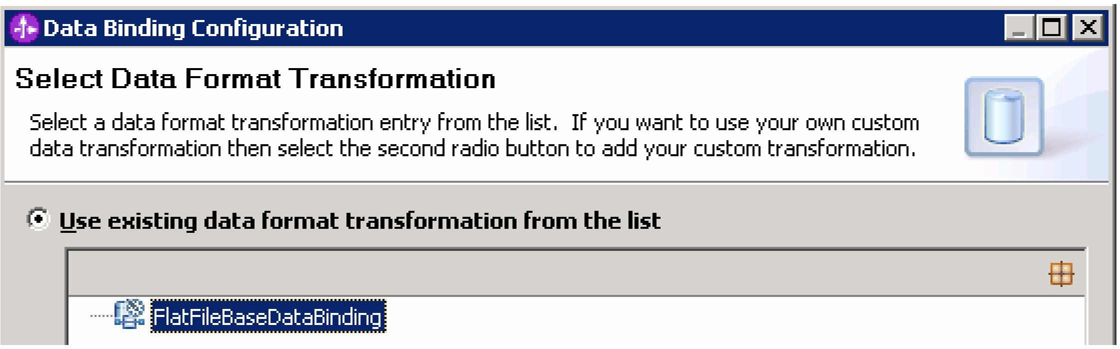
__ a. From the dropdown menu next to Data format options, select '**Use a data binding configuration for all operations**'



Data format options: Use a data format configuration for all operations
Data format: Not defined

__ b. Click **Select…** next to **Data format**. A Binding Resource Configuration window is opened

__ c. Select the radio button for **'Use existing data format transformation from the list'** and then select **FlatFileBaseDataBinding**



Data Binding Configuration

Select Data Format Transformation

Select a data format transformation entry from the list. If you want to use your own custom data transformation then select the second radio button to add your custom transformation.

● Use existing data format transformation from the list

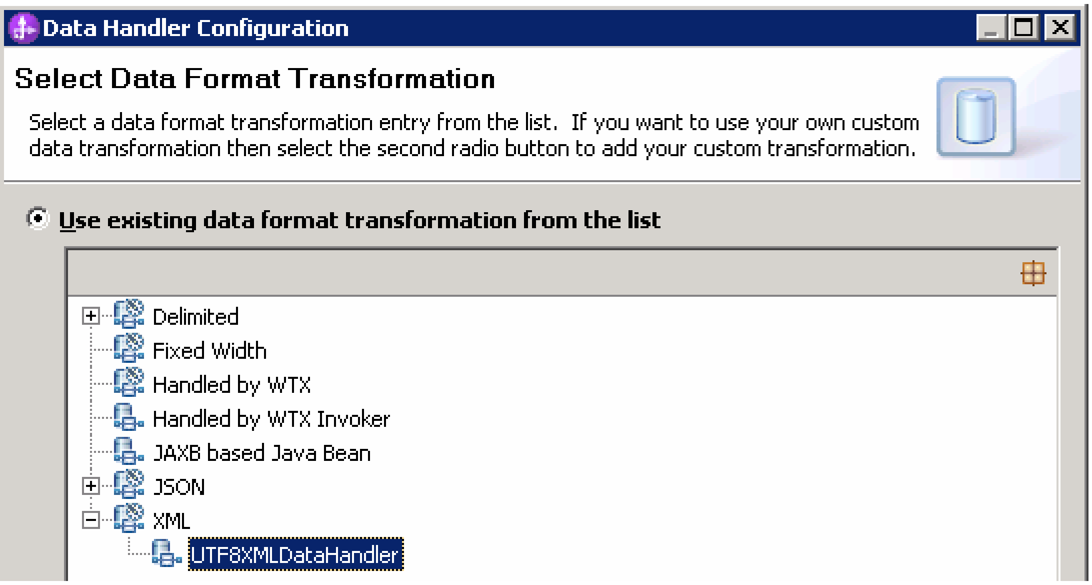
FlatFileBaseDataBinding

__ d. Click **Next**

____ 11. From Data Transformation Properties screen, click **Select…** next to **Configured data handler**. A Binding Resource Configuration window is opened for you to define the data handler

__ a. Select the radio button for **'Use existing data format transformation from the list'** and then select **XML > UTF8XMLDataHandler**

Note: UTF8XMLDataHandler listed under XML is the predefined data handler with UTF-8 as the encoding. You can also select XML and then select the encoding of your choice in the next screen to define a data handler of your choice.



Data Handler Configuration

Select Data Format Transformation

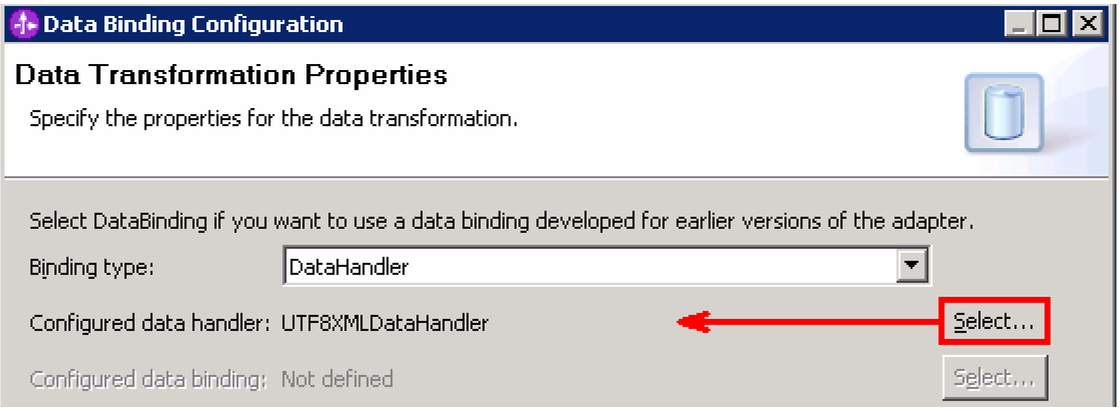
Select a data format transformation entry from the list. If you want to use your own custom data transformation then select the second radio button to add your custom transformation.

● Use existing data format transformation from the list

- Delimited
- Fixed Width
- Handled by WTX
- Handled by WTX Invoker
- JAXB based Java Bean
- JSON
- XML
  - UTF8XMLDataHandler

__ b. Click **Finish**

__ c. Back to ‘Data Transformation Properties’ screen, and the Configured data handler, **UT8XMLDatahandler** is displayed



Data Binding Configuration

Data Transformation Properties

Specify the properties for the data transformation.

Select DataBinding if you want to use a data binding developed for earlier versions of the adapter.

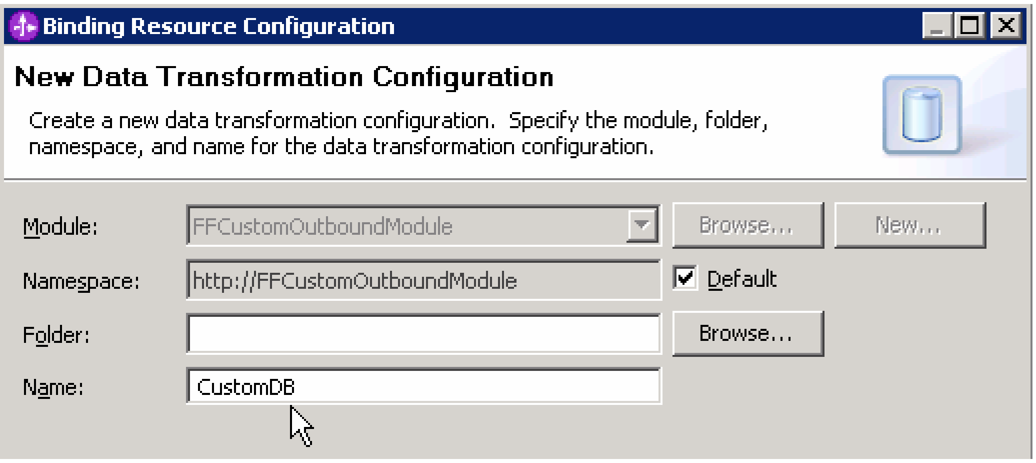
Binding type: DataHandler

Configured data handler: UTF8XMLDataHandler

Configured data binding: Not defined

__ d. Click **Next**

__ e. Ensure that the module selected is FFCustomOutboundModule and enter **CustomDB** for the Name of the data binding



Binding Resource Configuration

New Data Transformation Configuration

Create a new data transformation configuration. Specify the module, folder, namespace, and name for the data transformation configuration.

Module: FFCustomOutboundModule

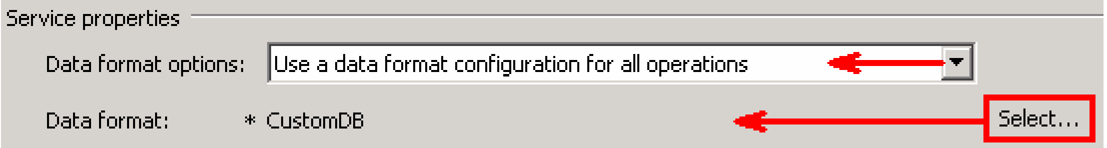
Namespace: http://FFCustomOutboundModule ☑ Default

Folder:

Name: CustomDB

__ f. Click **Finish**

__ g. Now the **CustomDB** should be displayed for **Data format**



Service properties

Data format options: Use a data format configuration for all operations

Data format: * CustomDB

____ 12. Check the box next to **Change logging properties for wizard** to view the output location of the log file and the logging level and click **Next**

Define Operations: In this screen, you will add the required operations that are used to access functions on the EIS

> **Note**: The precedence of the parameters is as follows: WrapperBO, Interaction Spec, and Managed Connection Factory. The adapter will first search for the parameters passed in the WrapperBO; if it is not available there, it will then subsequently search in the Interaction Spec, and then the Managed Connection Factory instance. **In this lab, for all the operations, you will enter the values at the WrapperBO level in the later part using the WebSphere Integration Developer test client.**

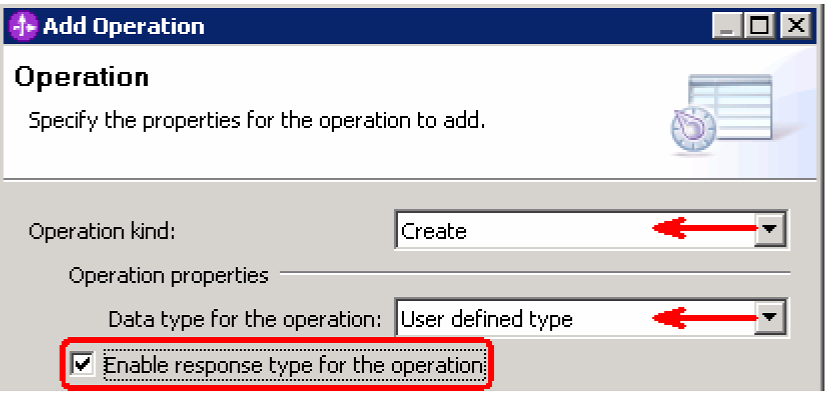
Define Operation: createCustomFile:

____ 13. Click **Add…** to open Add Operation window

__ a. For **Operation kind**, select **Create** from the drop down list

__ b. For **Data type for operation**, select **User defined type** from the drop down list

__ c. Select the check box next to **Enable response type for the operation**



Add Operation

Operation

Specify the properties for the operation to add.

Operation kind: Create

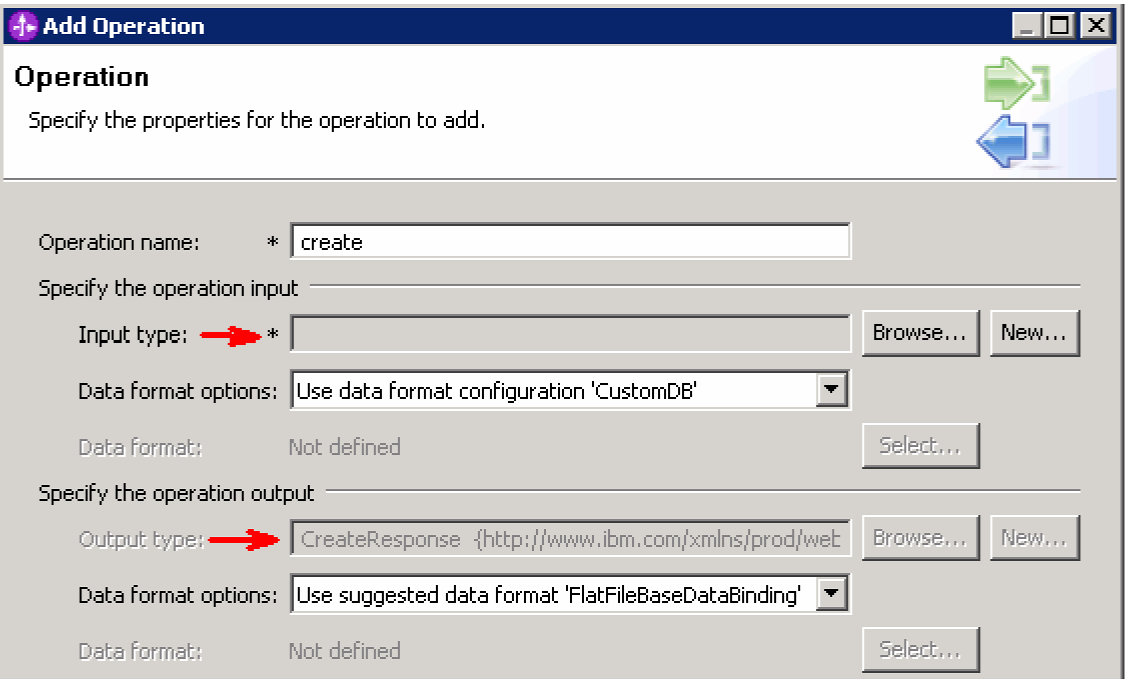
Operation properties

Data type for the operation: User defined type

☑ Enable response type for the operation

__ d. Click **Next**

The Data type for input and output are populated based on the selection of the Data type for the operation in the previous step. Since you have chosen User defined type, the **Input type** is **blank** and because you have selected Output required box, the **Output type** is **CreateResponse**



Operation

Specify the properties for the operation to add.

Operation name: * create

Specify the operation input

Input type: *

Data format options: Use data format configuration 'CustomDB'

Data format: Not defined

Specify the operation output

Output type: CreateResponse {http://www.ibm.com/xmlns/prod/wet

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

__ e. For Operation name, enter **createCustomFile**

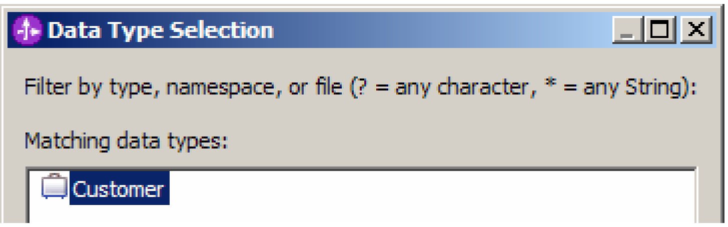
__ f. Define Input type:

1) Under **Specify the operation input**, click **New…** next to **Input type** to open a New Business Object window

2) Ensure that the Module selected is **FFCustomOutboundModule** and click **Next**

3) From this window, Click **Browse…** next to Data type

4) From the Data Type Selection window, select **Customer** under Matching data types:



Filter by type, namespace, or file (? = any character, * = any String):

Matching data types:

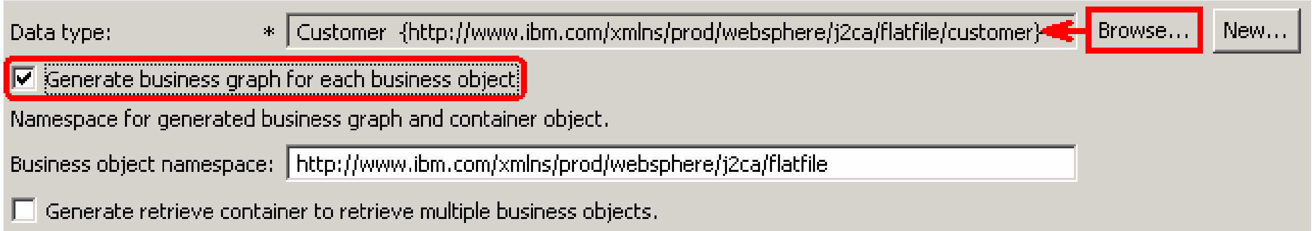
Customer

5) Click **OK**

__ g. From the Business Object window, **check** the box next to **Generate business graph for each business object**

__ h. **Do not** check the box for **'Generate retrieve container to retrieve multiple business objects'**

Note: The ‘Generate retrieve container to retrieve multiple business objects’ is used only during outbound retrieve operation.



Data type: * Customer {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customer}

☑ Generate business graph for each business object

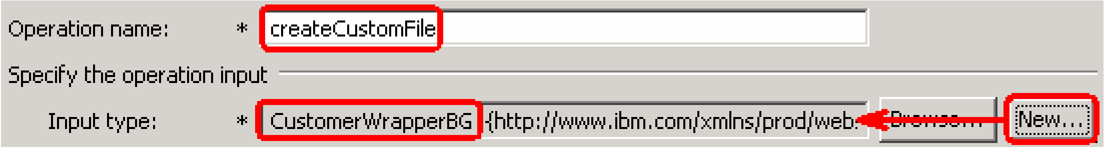
Namespace for generated business graph and container object.

Business object namespace: http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile

□ Generate retrieve container to retrieve multiple business objects.

__ i. Click **Finish**

__ j. In the Add Operation window, under Specify the operation input, you will see the Input type **CustomerWrapperBG** (because you have selected to have business graph (BG) generated)



Operation name: * createCustomFile

Specify the operation input

Input type: * CustomerWrapperBG {http://www.ibm.com/xmlns/prod/web

__ k. Accept the default Data format options selection, **Use data format configuration ‘CustomDB’**

Next define the Data format for **output**:

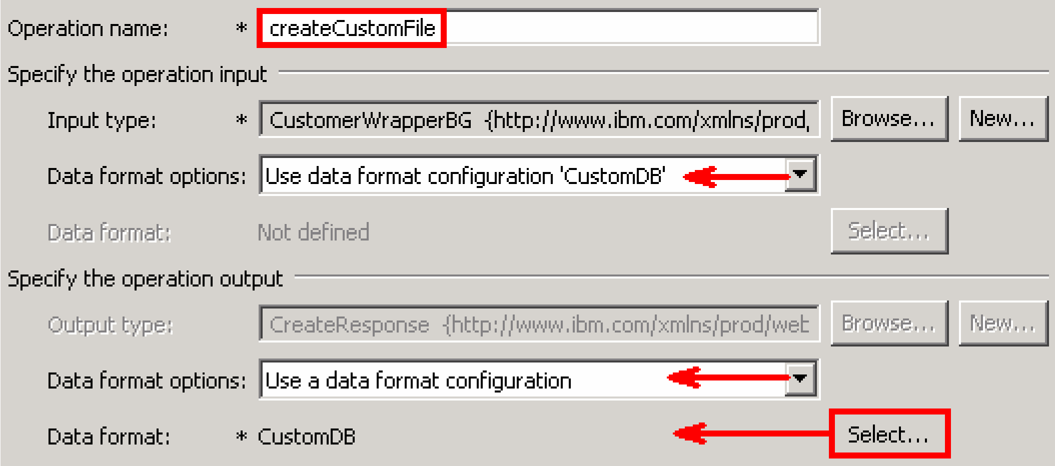
__ l. For **Data format options**, select **Use a data binding configuration** from the dropdown list

__ m. Click **Select…** next to **Data format**. A Binding Resource Configuration window is opened

__ n. Ensure that the radio button for ‘Use existing data format transformation from the list’ and then select **FlatFileBaseDataBinding > FixedWidthDB**

__ o. Click **Finish**

__ p. The Operation screen now should look like this:



Operation name: * createCustomFile

Specify the operation input

Input type: * CustomerWrapperBG {http://www.ibm.com/xmlns/prod,

Data format options: Use data format configuration 'CustomDB'

Data format: Not defined

Specify the operation output

Output type: CreateResponse {http://www.ibm.com/xmlns/prod/wet

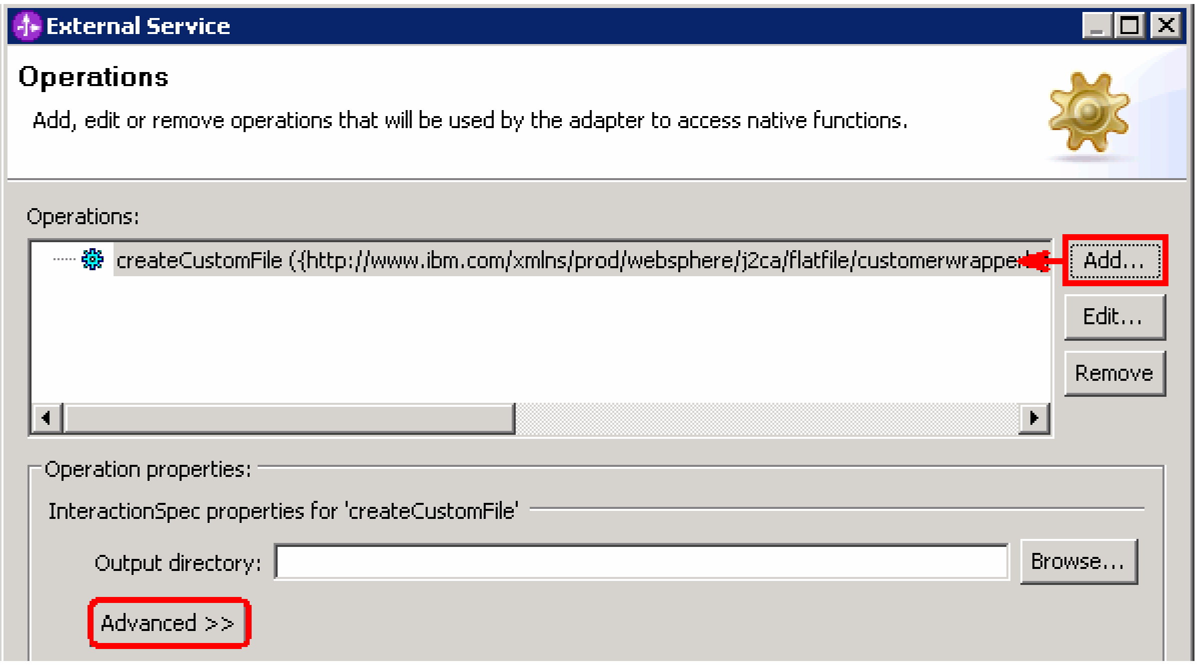
Data format options: Use a data format configuration

Data format: * CustomDB

__ q. Click **Finish** from the Add Operation window

The operation, createCustomFile, will now be displayed under Operations list.

__ r. You can click **Advanced >>** under 'InteractionSpec properties for createCustomFile' to review the properties available at Interaction spec level


External Service
Operations
Add, edit or remove operations that will be used by the adapter to access native functions.
Operations:
createCustomFile ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customerwrappe
Add...
Edit...
Remove
Operation properties:
InteractionSpec properties for 'createCustomFile'
Output directory:
Browse...
Advanced >>

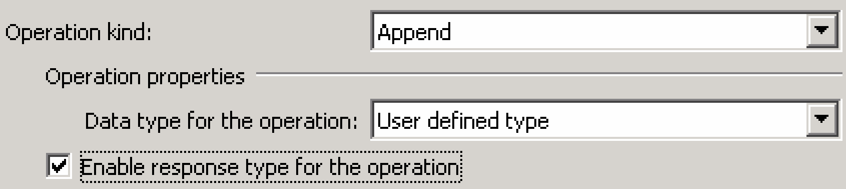
Add Operation: appendCustomFile:

____ 14. Click **Add…** to open Add Operation window

__ a. For **Operation kind**, select **Append** from the drop down list

__ b. For **Data type for operation**, select **User defined type** from the drop down list

__ c. Select the check box next to **Enable response type for the operation**



Operation kind: Append

Operation properties

Data type for the operation: User defined type

☑ Enable response type for the operation

You are back to Operation window and because you chose the User defined data type, the Input type and Output type is blank and because you have selected Output required box, the Output type is AppendResponse.

__ d. Click **Next**

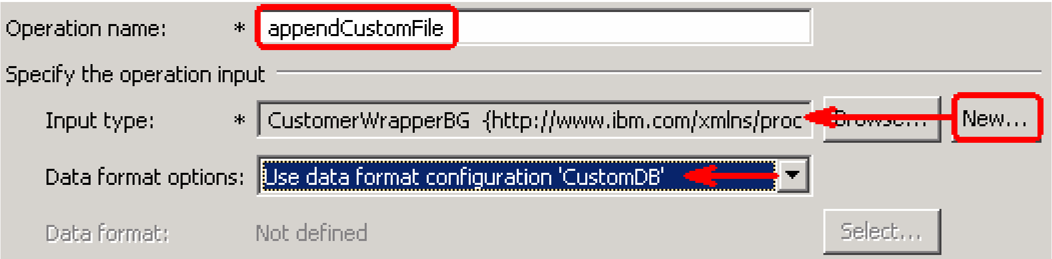
__ e. For Operation name, enter **appendCustomFile**

__ f. Define Data type for input:

1) Under **Specify the operation input**, click **Browse…** next to **Input type**

2) From the Data Type Selection window, select **CustomerWrapperBG** under Matching data types and click **OK**

__ g. Accept the default Data format options selection, **Use data format configuration 'CustomDB'**


Operation name: * appendCustomFile

Specify the operation input

Input type: * CustomerWrapperBG {http://www.ibm.com/xmlns/proc

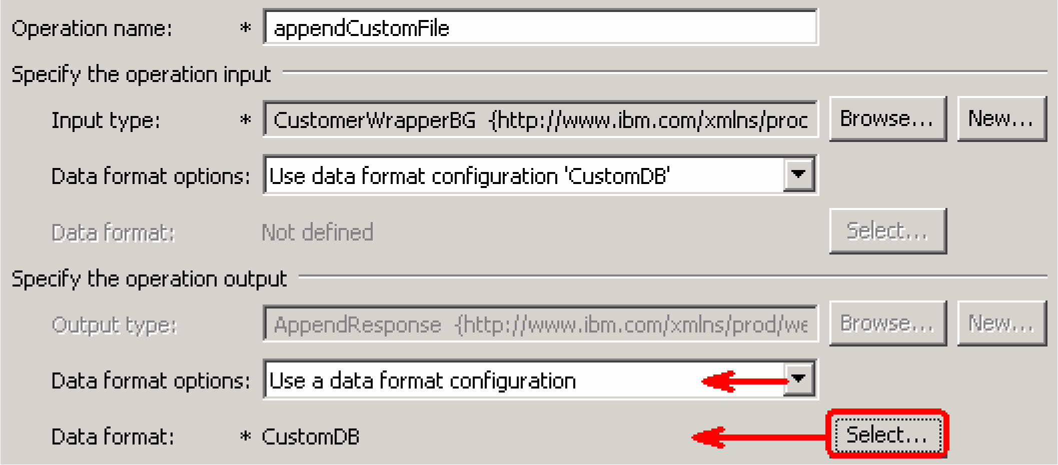
Data format options: Use data format configuration 'CustomDB'

Data format: Not defined

Define Data format for **output**:

__ h. Follow the instructions of defining data format for createCustomFile output and define **CustomDB**

__ i. The Operation screen now should look like this:


Operation name: * appendCustomFile

Specify the operation input

Input type: * CustomerWrapperBG {http://www.ibm.com/xmlns/proc

Data format options: Use data format configuration 'CustomDB'

Data format: Not defined

Specify the operation output

Output type: AppendResponse {http://www.ibm.com/xmlns/prod/we

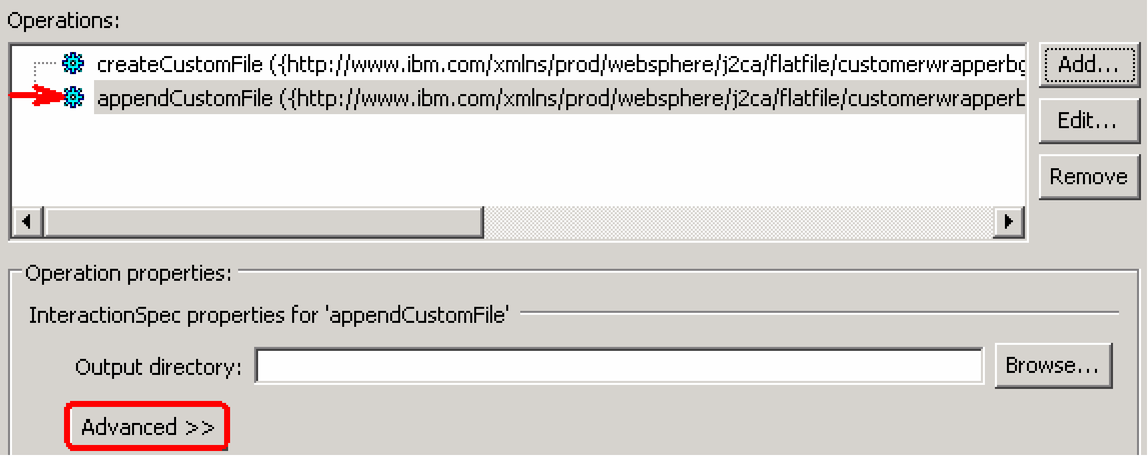
Data format options: Use a data format configuration

Data format: * CustomDB

__ j. Click **Finish** from Add Operation window

The operation, appendCustomFile, will now be displayed under Operations list.

____ 15. You can click **Advanced >>** under 'InteractionSpec properties for appendCustomFile' to review the properties available at Interaction spec level


Operations:

createCustomFile ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customerwrapperbg

appendCustomFile ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customerwrapperb

Operation properties:

InteractionSpec properties for 'appendCustomFile'

Output directory:

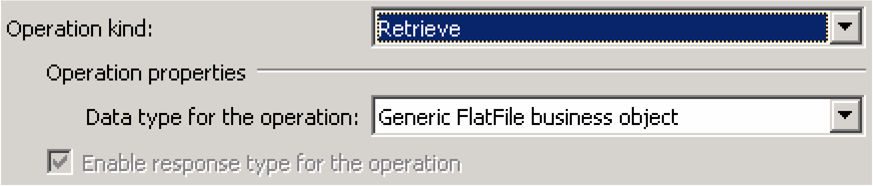
Add Operation: retrieveCustomFile

____ 16. Click **Add…** to open Add Operation window

__ a. For **Operation kind**, select **Retrieve** from the drop down list

__ b. For **Data type for operation**, select **Generic FlatFile business object** from the drop down list

__ c. Note that the box next to **Enable response type for the operation** is checked by default



Operation kind: Retrieve

Operation properties

Data type for the operation: Generic FlatFile business object

☑ Enable response type for the operation

__ d. Click **Next**

In the Add Operation window, under Specify the operation input, you will see the Input type **FlatFile** (because you have selected **not to** have business graph (BG)) and you will also see the Output type **RetrieveResponseWrapper** under Specify the operation output (because the Output was selected by default).

__ e. For Operation name, enter **retrieveCustomFile**

__ f. Define Data Binding type for **input**:

1) Follow the instructions of defining data binding for createCustomFile and select **CustomDB** for input data format

__ g. Define Data Binding type for **output**:

1) Accept the default Data format options selection, **Use data format configuration 'CustomDB'**

__ h. Define Output type:

1) Under **Specify the operation output**, click **New…** next to **Output type** to open a New Business Object window

2) Ensure that the Module selected is **FFCustomOutboundModule** and click **Next**

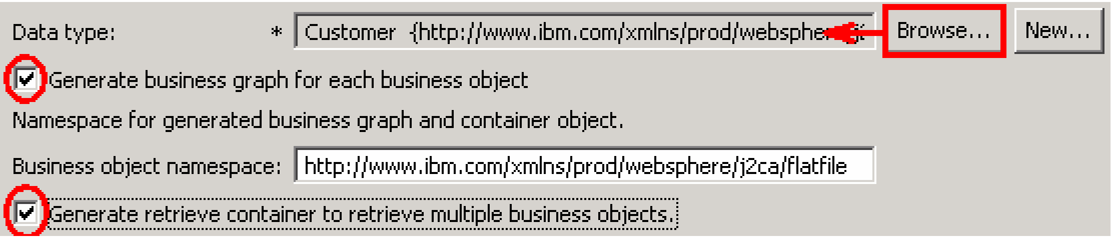
3) From this window, Click **Browse…** next to **Data type**

4) From the Data Type Selection window, select **Customer** under Matching data types and click **OK**

__ i. From the Business Object window, **check** the box next to **Generate business graph for each business object**

__ j. **Check** the box for **'Generate retrieve container to retrieve multiple business objects'**

Note: Selecting the **Generate retrieve container to retrieve multiple business objects** option creates **CustomerRetrieveWrapperBG**, which is used if there are multiple business object records in the file that the adapter is going to retrieve. For this lab, you are going to retrieve a Customer business object that has two customer records. You can also use the default 'RetrieveResponseWrapper' for this scenario.



Data type: * Customer {http://www.ibm.com/xmlns/prod/websphe…

☑ Generate business graph for each business object

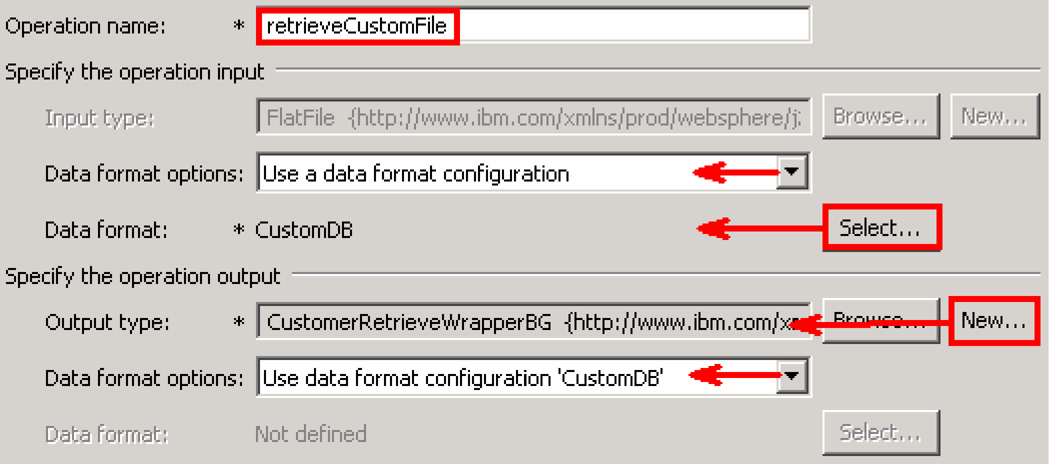
Namespace for generated business graph and container object.

Business object namespace: http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile

☑ Generate retrieve container to retrieve multiple business objects.

__ k. Click **Finish.** You should see that the output type 'RetrieveResponseWrapper' is replaced with **CustomerRetrieveWrapperBG**

__ l. You should now see this:



Operation name: * retrieveCustomFile

Specify the operation input

Input type: FlatFile {http://www.ibm.com/xmlns/prod/websphere/j

Data format options: Use a data format configuration

Data format: * CustomDB

Specify the operation output

Output type: * CustomerRetrieveWrapperBG {http://www.ibm.com/x

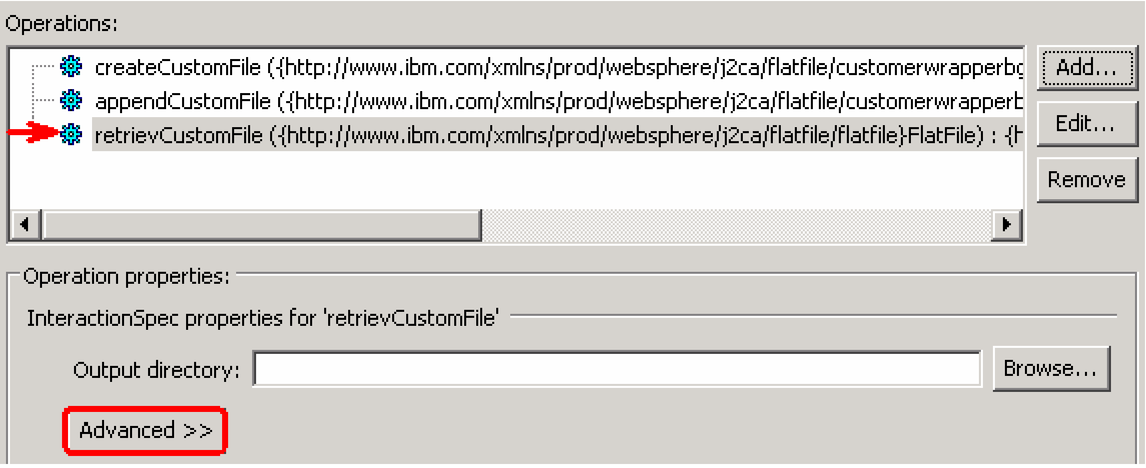
Data format options: Use data format configuration 'CustomDB'

Data format: Not defined

__ m. Click **Finish** from the Add Operation window

The operation, retrieveCustomFile, will now be displayed under Operations list.

____ 17. You can click **Advanced >>** under 'InteractionSpec properties for retrieveCustomFile' to review the properties available at Interaction spec level



Operations:

- createCustomFile ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customerwrapperbg
- appendCustomFile ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customerwrapperb
- retrievCustomFile ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfile}FlatFile) : {h

Operation properties:

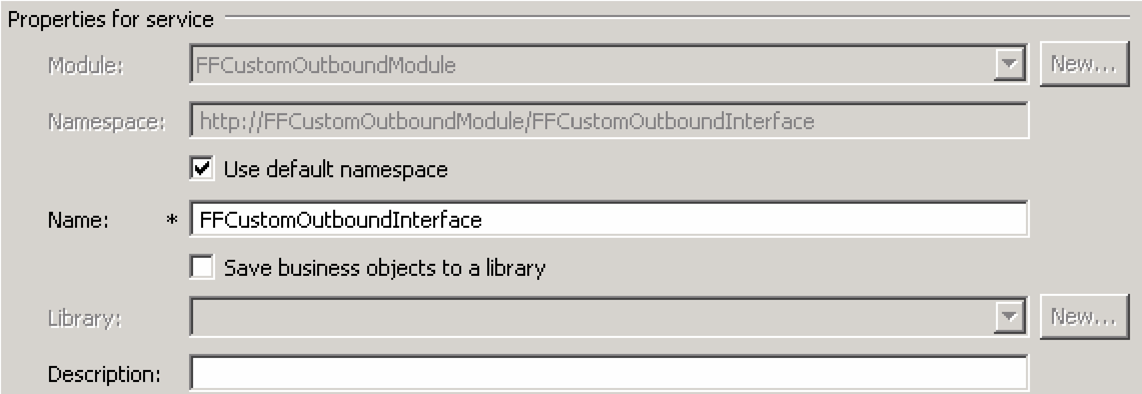
InteractionSpec properties for 'retrievCustomFile'

Output directory:

__ a. Click **Next** from the Operations window

____ 18. From the Generate Artifacts screen, enter these:

__ a. For Name, enter **FFCustomOutboundInterface**



Properties for service

Module: FFCustomOutboundModule

Namespace: http://FFCustomOutboundModule/FFCustomOutboundInterface

☑ Use default namespace

Name: * FFCustomOutboundInterface

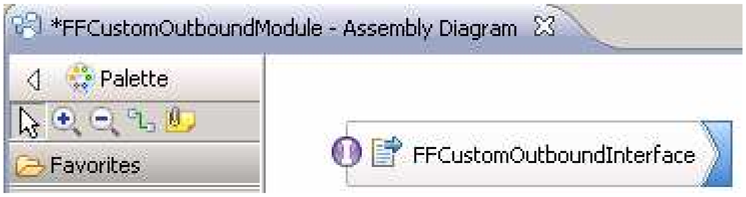
☐ Save business objects to a library

Library:

Description:

__ b. Click **Finish**

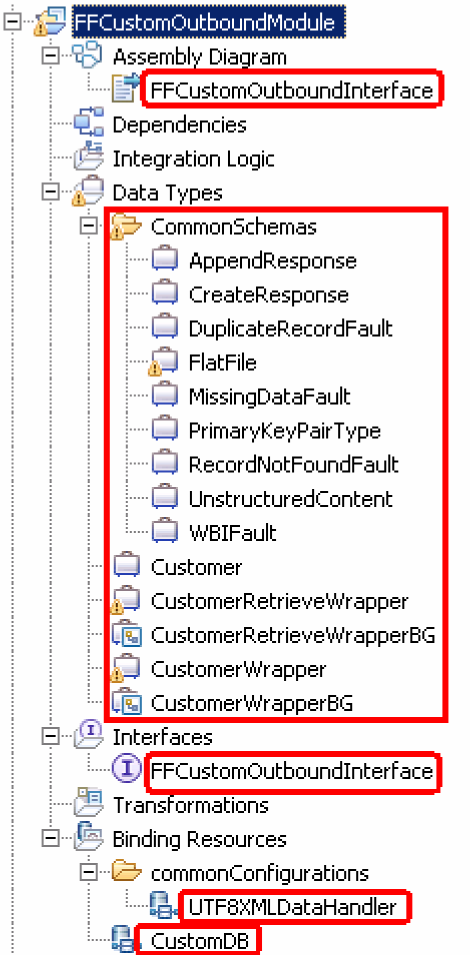
____ 19. You will now see a new import component, **FFCustomOutboundInterface** in the assembly diagram of FFCustomOutboundModule



*FFCustomOutboundModule - Assembly Diagram
Palette
Favorites
FFCustomOutboundInterface

__ a. Save **(Ctrl+S)** your changes to the assembly diagram

____ 20. Review the FFCustomOutboundModule: The generated **Data Types**, **Interface**, and the Data binding (**CustomDB**), and Data handler (**UTF8XMLDataHandler**) under Configured Resources can be found inside FFCustomOutboundModule

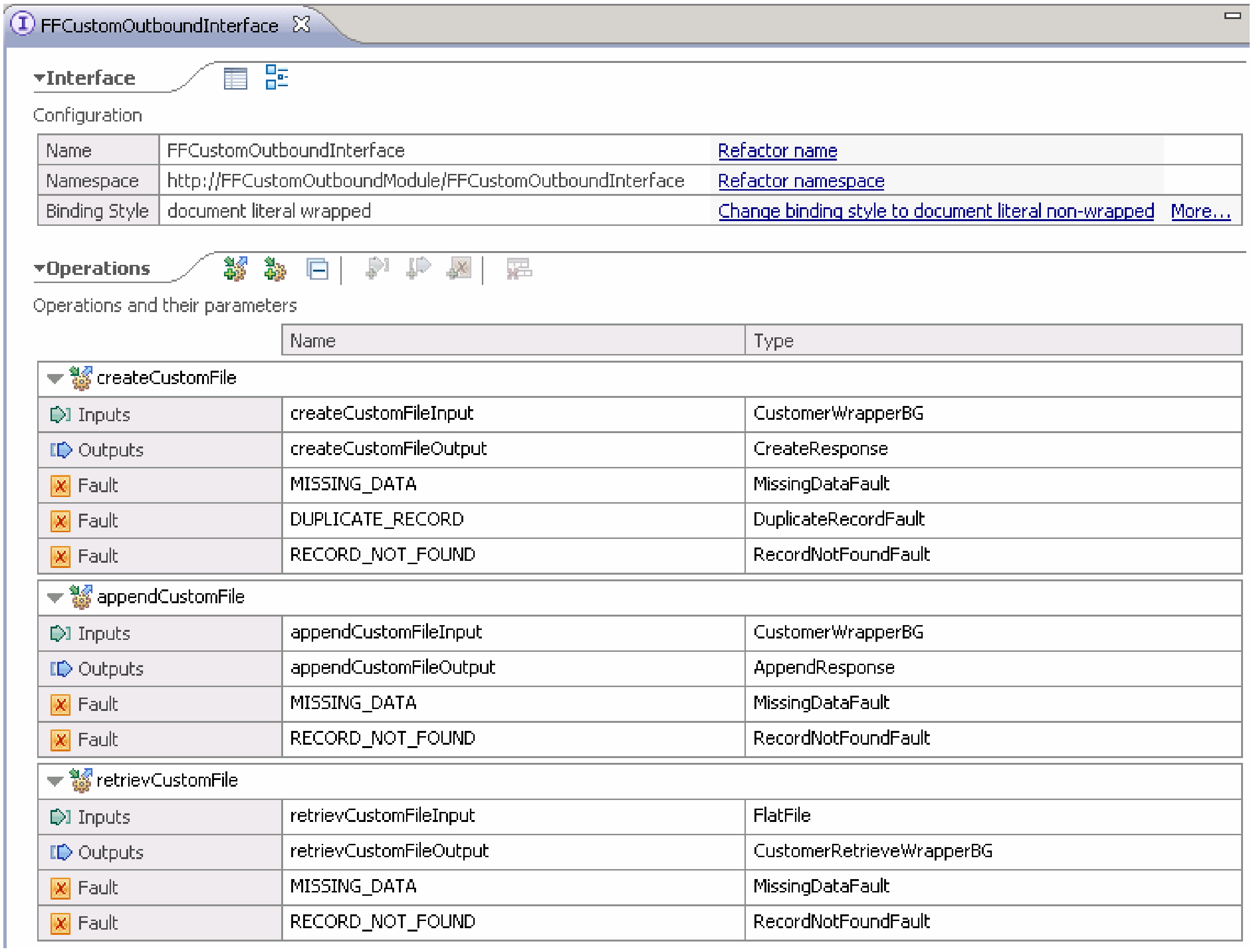


You can open each of these generated artifacts and business objects and review the properties inside.

Review the created methods inside the interface:

__ a. From the Business Integration view, expand FFCustomOutboundModule > Interfaces and then double-click **FFCustomOutboundInterface** to open it

__ b. You should see these three operations:



Configuration

Name	FFCustomOutboundInterface	Refactor name	
Namespace	http://FFCustomOutboundModule/FFCustomOutboundInterface	Refactor namespace	
Binding Style	document literal wrapped	Change binding style to document literal non-wrapped	More...

Operations and their parameters

	Name	Type
createCustomFile		
Inputs	createCustomFileInput	CustomerWrapperBG
Outputs	createCustomFileOutput	CreateResponse
Fault	MISSING_DATA	MissingDataFault
Fault	DUPLICATE_RECORD	DuplicateRecordFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault
appendCustomFile		
Inputs	appendCustomFileInput	CustomerWrapperBG
Outputs	appendCustomFileOutput	AppendResponse
Fault	MISSING_DATA	MissingDataFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault
retrievCustomFile		
Inputs	retrievCustomFileInput	FlatFile
Outputs	retrievCustomFileOutput	CustomerRetrieveWrapperBG
Fault	MISSING_DATA	MissingDataFault
Fault	RECORD_NOT_FOUND	RecordNotFoundFault

__ c. Close the interface, FFCustomOutboundInterface

4.2. Test content specific scenario

____ 1. Start WebSphere Process Server (if not started already)

__ a. From the **Servers** view of WebSphere Integration Developer, right click **WebSphere Process Server v7.0** and select Start from the pop-up menu

__ b. Wait until the server status shows as **Started**

____ 2. Add the project to the WebSphere Process Server test environment

__ a. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

__ b. In the Add and Remove Projects window, select the **FFCustomOutboundModuleApp** project from the Available projects panel

__ c. Click **Add >** to add it to the Configured projects panel

__ d. The project is now moved to Configured projects. Click **Finish**

Wait for the project to be published to the server.

____ 3. Open the test client for the module

__ a. From the Business Integration perspective, right-click the **FFCustomOutboundModule** and select **Test > Test Module**

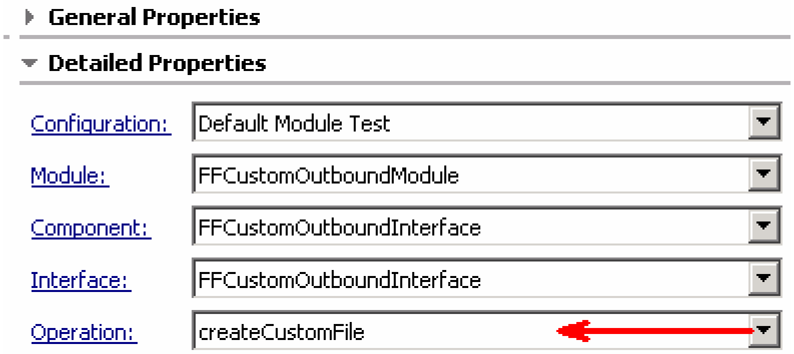
__ b. The **FFCustomOutboundModule_Test** window is opened in the Assembly editor

You have three operations that were defined in the previous part in this module:

- createCustomFile
- appendCustomFile
- retrieveCustomFile

Test Create operation:

____ 4. Under **Detailed Properties**, for the **Operation** field, select **createCustomFile** from the drop down menu



Configuration: Default Module Test
Module: FFCustomOutboundModule
Component: FFCustomOutboundInterface
Interface: FFCustomOutboundInterface
Operation: createCustomFile

____ 5. Fill out the fields for Initial request parameters:

__ a. For **fileName**, enter **UserDefined.xml**

__ b. For **includeEndBODelimiter**, enter #####

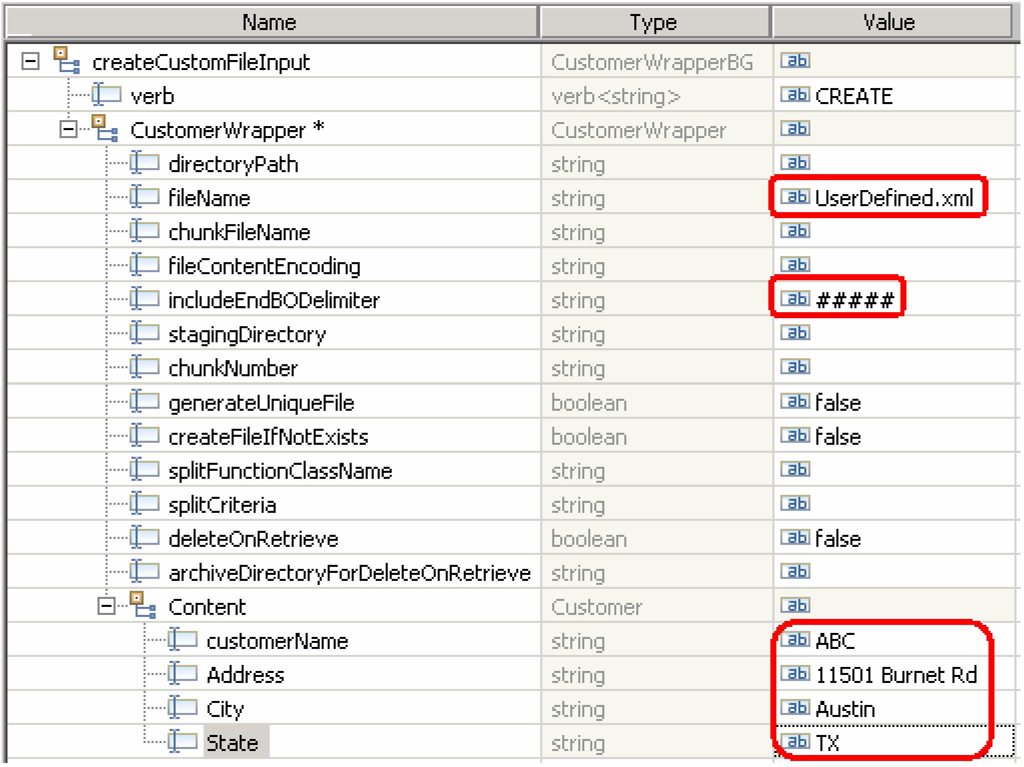
__ c. For **Content**, enter any random data. For Ex:

1) Name: ABC

2) Address: 11501 Burnet Rd

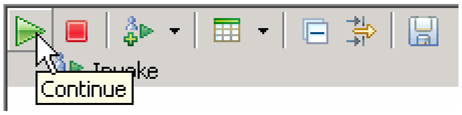
3) City: Austin

4) State: TX



Name	Type	Value
createCustomFileInput	CustomerWrapperBG	
verb	verb<string>	CREATE
CustomerWrapper *	CustomerWrapper	
directoryPath	string	
fileName	string	UserDefined.xml
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	#####
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	
Content	Customer	
customerName	string	ABC
Address	string	11501 Burnet Rd
City	string	Austin
State	string	TX

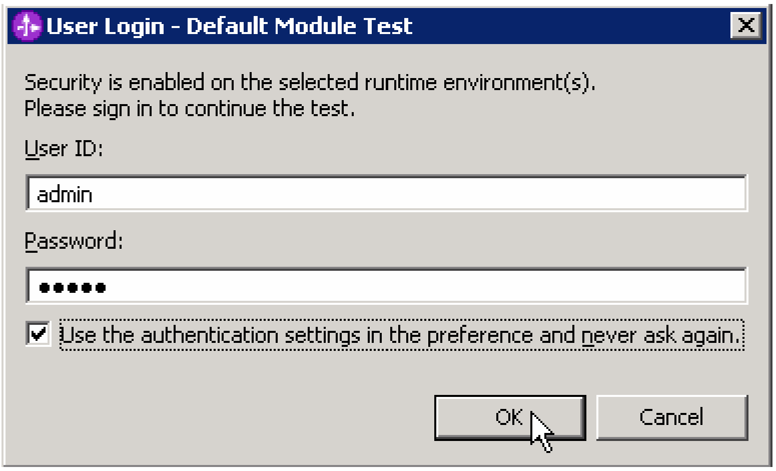
__ d. Click **Continue** button under Events



__ e. From Deployment Location window, select **WebSphere Process Servers > WebSphere Process Server v7.0 at localhost** and click **Finish**

__ f. Provide Administrator User ID and Password

1) Optionally, select the box 'Use the authentication settings in the preference and never ask again' so that you do not have to enter the credentials next time when you start the test client



User Login - Default Module Test

Security is enabled on the selected runtime environment(s).
Please sign in to continue the test.

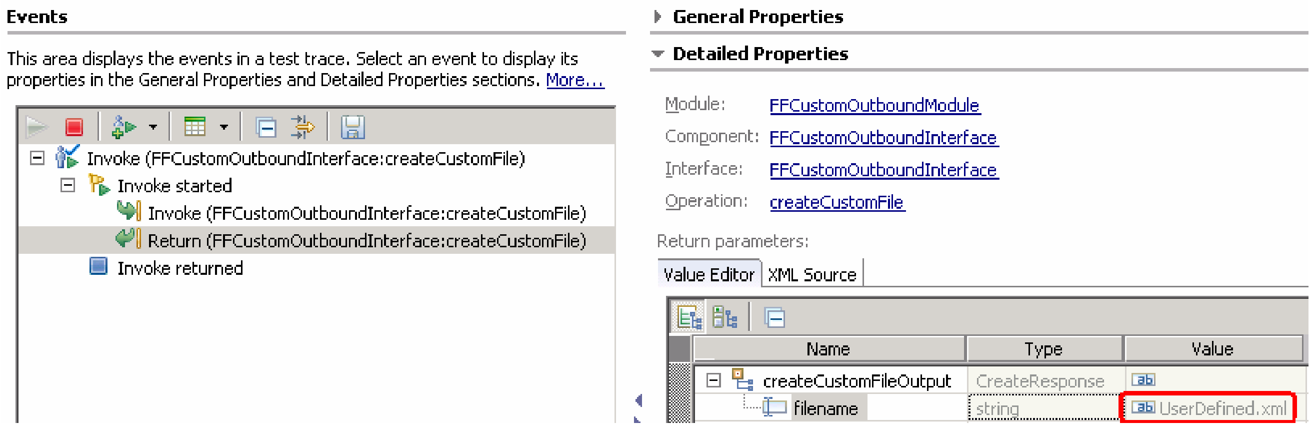
User ID: admin

Password: ●●●●●

☑ Use the authentication settings in the preference and never ask again.

____ 6. Verify the created file and its contents

__ a. You should see a window similar to this, which contains the data you just entered in the previous steps:



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

```
⊟ Invoke (FFCustomOutboundInterface:createCustomFile)
    ⊟ Invoke started
        Invoke (FFCustomOutboundInterface:createCustomFile)
        Return (FFCustomOutboundInterface:createCustomFile)
    Invoke returned
```

General Properties

Detailed Properties

Module: FFCustomOutboundModule

Component: FFCustomOutboundInterface

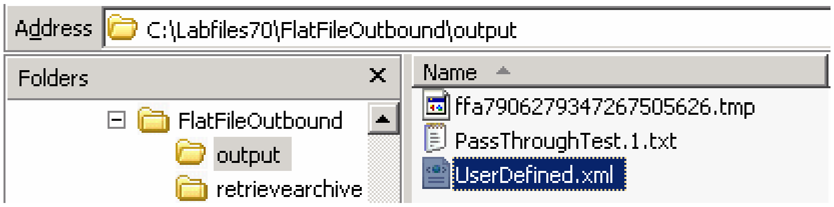
Interface: FFCustomOutboundInterface

Operation: createCustomFile

Return parameters:

Name	Type	Value
⊟ createCustomFileOutput	CreateResponse	
filename	string	UserDefined.xml

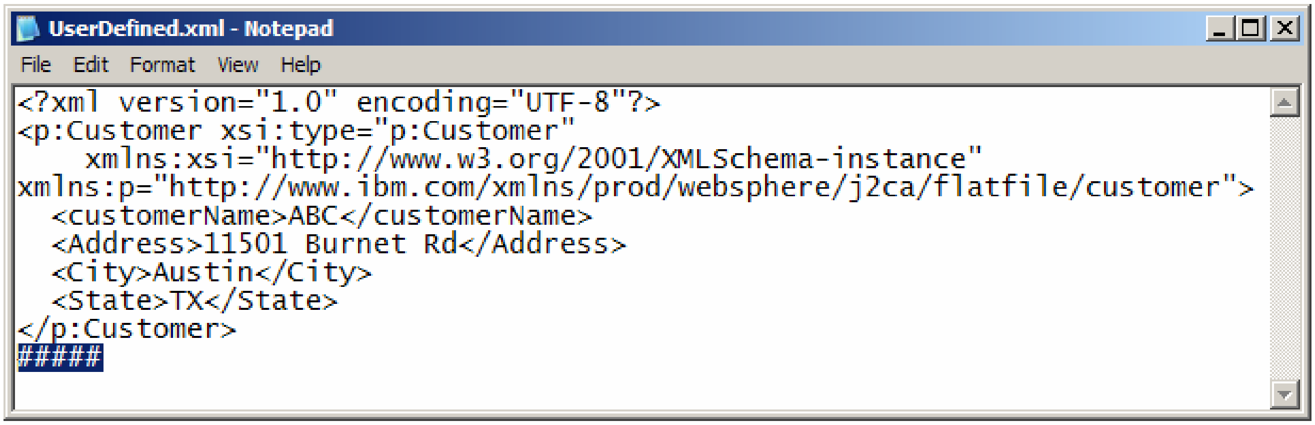
__ b. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>**. You will see a new file, **UserDefined.xml** created under that directory



Address: C:\Labfiles70\FlatFileOutbound\output

ffa7906279347267505626.tmp
PassThroughTest.1.txt
UserDefined.xml

__ c. Open the file and veriy the content that was entered and ##### at the end of the file



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

Test Append operation:

____ 7. Click **Invoke** (➕) under Events to start a new event

____ 8. Under **Detailed Properties**, for the **Operation** field, select **appendCustomFile** from the drop down menu

Fill out the fields for Initial request parameters:

__ a. For **fileName**, enter **UserDefined.xml** (The file name should already exist for append operation. PassThroughTest.txt was created during Create operation test)

__ b. For **includeEndBODelimiter**, enter **#####**

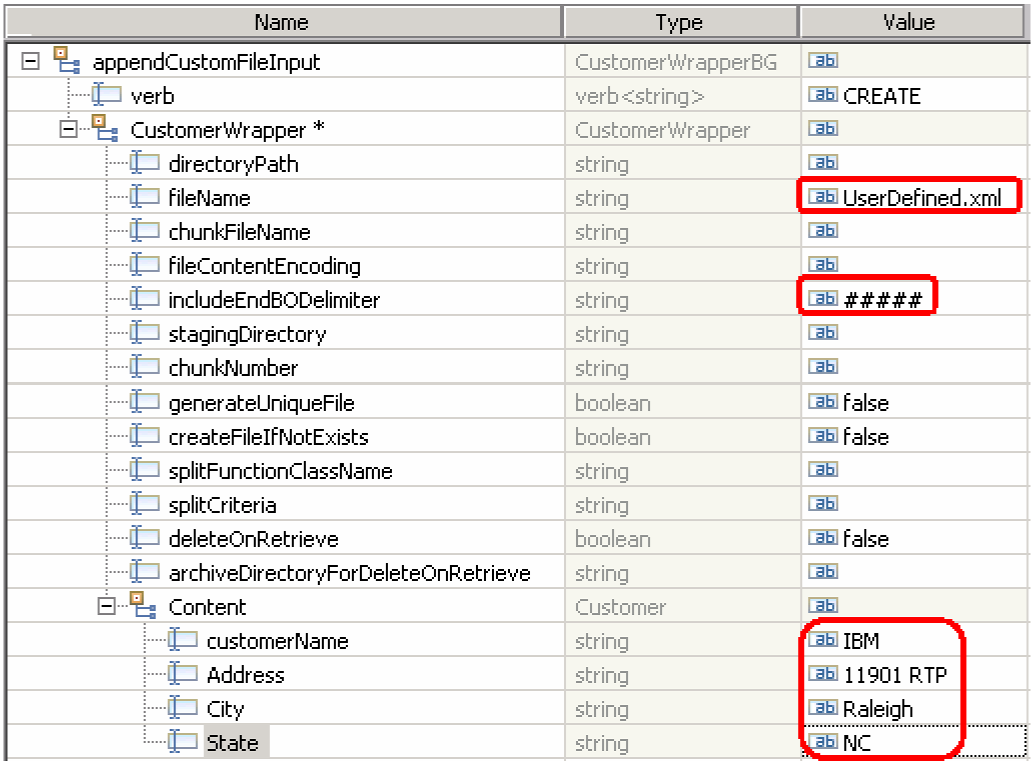
__ c. For **Content**, enter any random data. For Ex:

1) Name: IBM

2) Address: 11901 RTP

3) City: Raleigh

4) State: NC

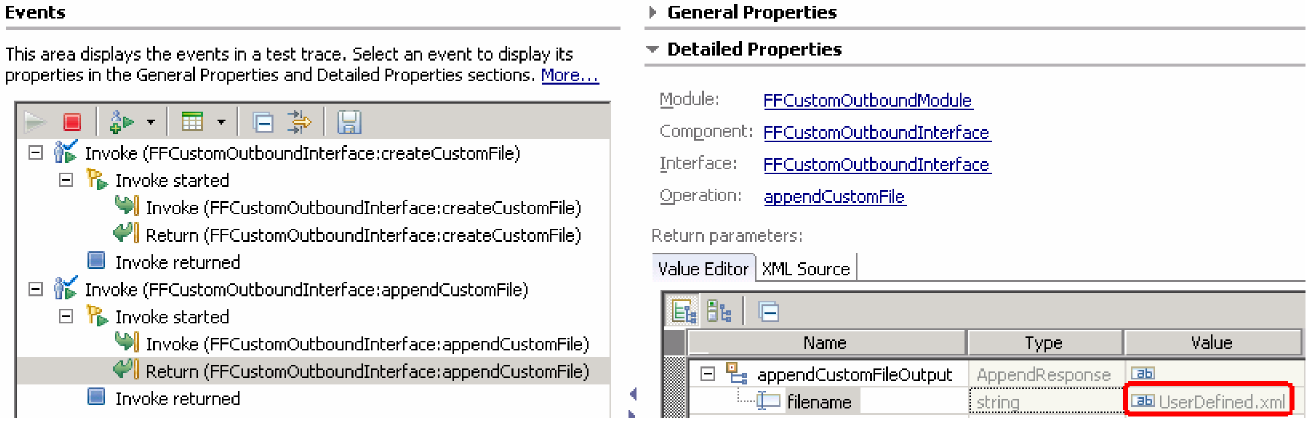


Name	Type	Value
appendCustomFileInput	CustomerWrapperBG	
verb	verb<string>	CREATE
CustomerWrapper *	CustomerWrapper	
directoryPath	string	
fileName	string	UserDefined.xml
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	#####
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	
Content	Customer	
customerName	string	IBM
Address	string	11901 RTP
City	string	Raleigh
State	string	NC

__ d. Click **Continue** button under Events

____ 9. Verify the results

__ a. You should see a window similar to this, which contains the data you just entered in the previous steps:



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

- Invoke (FFCustomOutboundInterface:createCustomFile)
  - Invoke started
    - Invoke (FFCustomOutboundInterface:createCustomFile)
    - Return (FFCustomOutboundInterface:createCustomFile)
  - Invoke returned
- Invoke (FFCustomOutboundInterface:appendCustomFile)
  - Invoke started
    - Invoke (FFCustomOutboundInterface:appendCustomFile)
    - Return (FFCustomOutboundInterface:appendCustomFile)
  - Invoke returned

General Properties

Detailed Properties

Module: FFCustomOutboundModule

Component: FFCustomOutboundInterface

Interface: FFCustomOutboundInterface

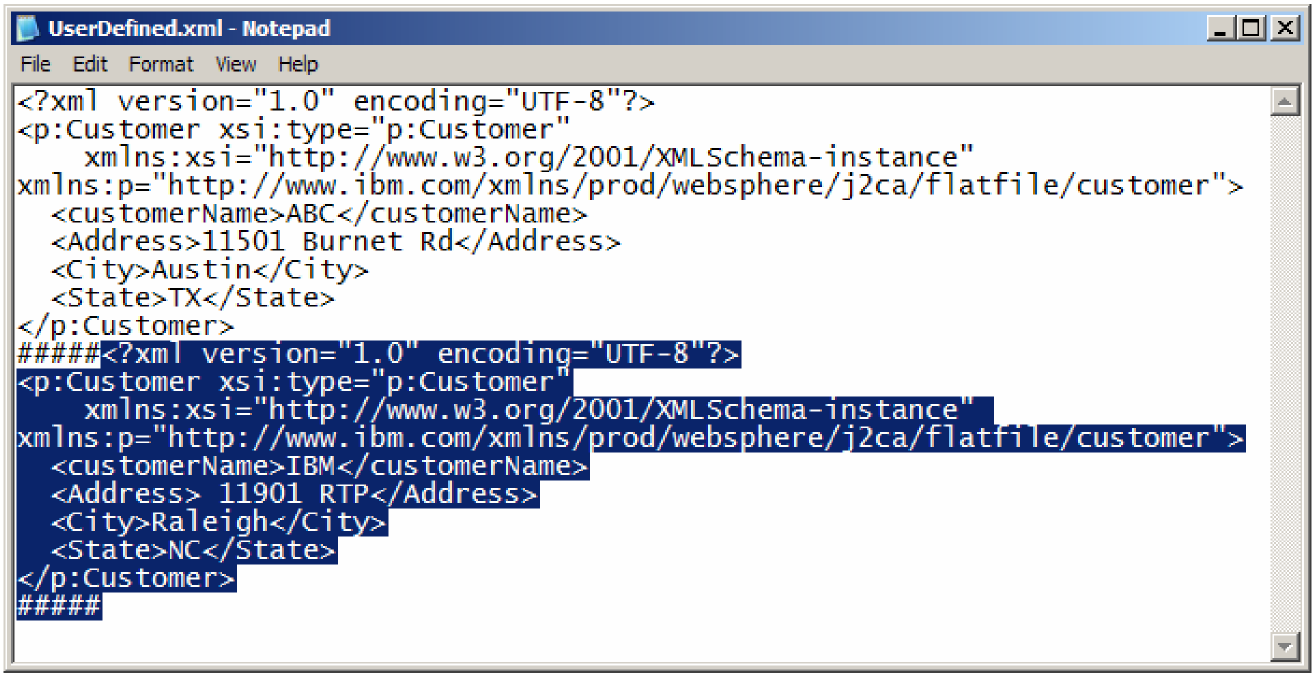
Operation: appendCustomFile

Return parameters:

Value Editor | XML Source

Name	Type	Value
appendCustomFileOutput	AppendResponse	
filename	string	UserDefined.xml

__ b. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>** and open the file **UserDefined.xml** file. Observe the highlighted message appended to the original message.



```
<?xml version="1.0" encoding="UTF-8"?>
<p:Customer xsi:type="p:Customer"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customer">
  <customerName>ABC</customerName>
  <Address>11501 Burnet Rd</Address>
  <City>Austin</City>
  <State>TX</State>
</p:Customer>
#####<?xml version="1.0" encoding="UTF-8"?>
<p:Customer xsi:type="p:Customer"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/customer">
  <customerName>IBM</customerName>
  <Address> 11901 RTP</Address>
  <City>Raleigh</City>
  <State>NC</State>
</p:Customer>
#####
```

Test Retrieve operation: In Retrieve operation, the adapter retrieves the file and parses it based on the configured SplittingFunctionClassName and SplitCriteria properties.

If splitting needs to be done based on file size, then splitFunctionClassName should be com.ibm.j2ca.utils.filesplit.SplitBySize which does the splitting functionality based on size and splitCriteria should be a number (a number representing the size in bytes). If the actual event file size is greater than this value, it is split into chunks else it is sent as one BO).

If splitting needs to be done based on a delimiter, then splitFunctionClassName should be com.ibm.j2ca.utils.filesplit.SplitByDelimiter which does this functionality and the splitCriteria (the delimiter which actually separates the BO's present in the event file) should be given.

This lab will guide you through the later splitting criteria, SplitByDelimiter.

____ 10. Click **Invoke** ( ) under Events to start a new event

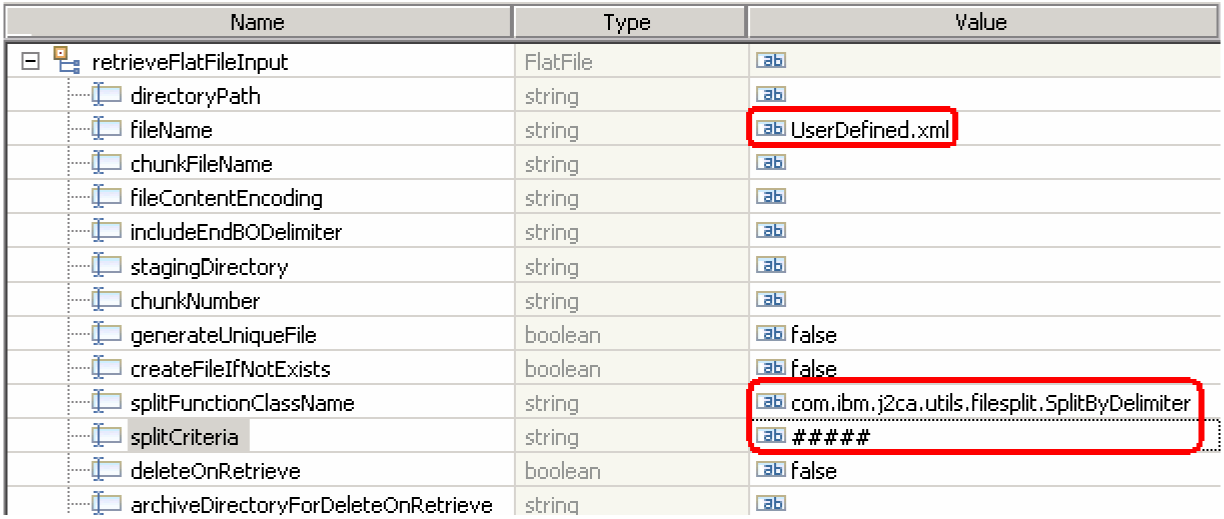
____ 11. Under **Detailed Properties**, for the **Operation** field, select **retrieveCustomFile** from the drop down menu

Fill out the fields for Initial request parameters:

__ a. For **fileName**, enter **UserDefined.xml** (The file name should already exist for retrieve operation. UserDefinedTest.xml was created during Create operation test)

__ b. For **splitFunctionClassName**, enter **com.ibm.j2ca.utils.filesplit.SplitByDelimiter**

__ c. For **splitCriteria**, enter #####

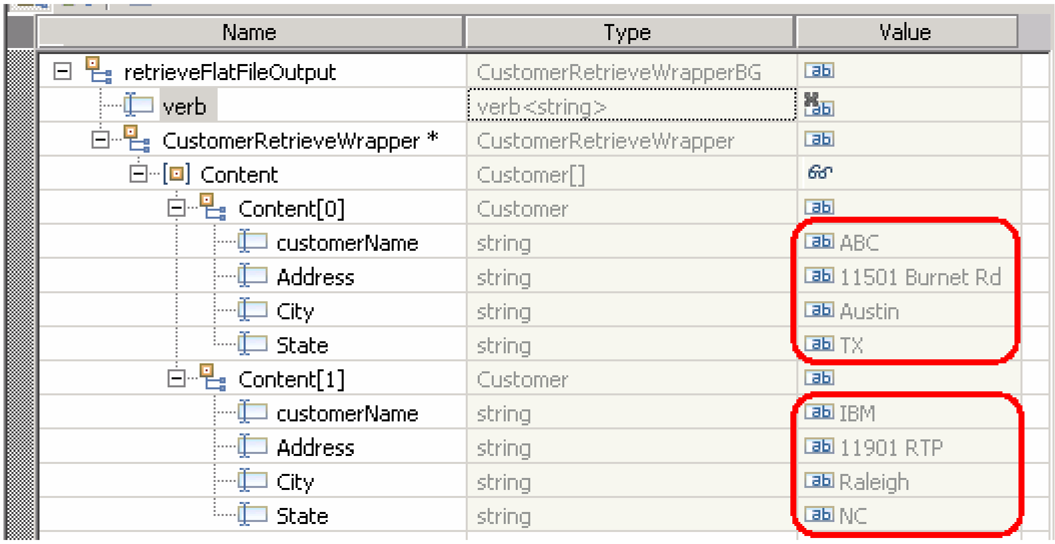


Name	Type	Value
retrieveFlatFileInput	FlatFile	
directoryPath	string	
fileName	string	UserDefined.xml
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	com.ibm.j2ca.utils.filesplit.SplitByDelimiter
splitCriteria	string	#####
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	

__ d. Click **Continue** button under Events

____ 12. Verify the results:

__ a. You should see a window similar to this, which contains the content of the two business objects existing in the UserDefined.xml file:



Name	Type	Value
retrieveFlatFileOutput	CustomerRetrieveWrapperBG	
verb	verb<string>	
CustomerRetrieveWrapper *	CustomerRetrieveWrapper	
Content	Customer[]	
Content[0]	Customer	
customerName	string	ABC
Address	string	11501 Burnet Rd
City	string	Austin
State	string	TX
Content[1]	Customer	
customerName	string	IBM
Address	string	11901 RTP
City	string	Raleigh
State	string	NC

____ 13. Restore server status

__ a. Close the **FFCustomOutboundModule_Test** window and click **No** for the Save Resources window

__ b. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

__ c. Select **FFCustomOutboundModuleApp** under Configured projects and click **< Remove**

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

Part 5: Use default data binding

This part of the lab will show you how to use the default use the default function selector and data binding options from the External Service wizard and generate other required artifacts.

When you use the default function selector, you cannot define the rules as you did in Part 2 and hence there will only be one method that handles all types of files.

When you use the default data binding, you cannot have multiple data types as in Part 3 and each data type is handled by different method. Instead, there will only be one method and one data type.

After running the External Service wizard, you will continue to test the adapter.

5.1. Configure outbound using default function selector and data binding

In this part of the lab you will use the default function selector and data binding options from the External Service wizard and generate other required artifacts to test the outbound scenario.

____ 1. Create FFDefaultsOutboundModule

__ a. From the Business Integration window, right-click and select **New > Module**

__ b. From the New Module window, enter **FFDefaultsOutboundModule** for the Module Name

__ c. Ensure that the box next to **Open module assembly diagram** is checked and then click **Finish**

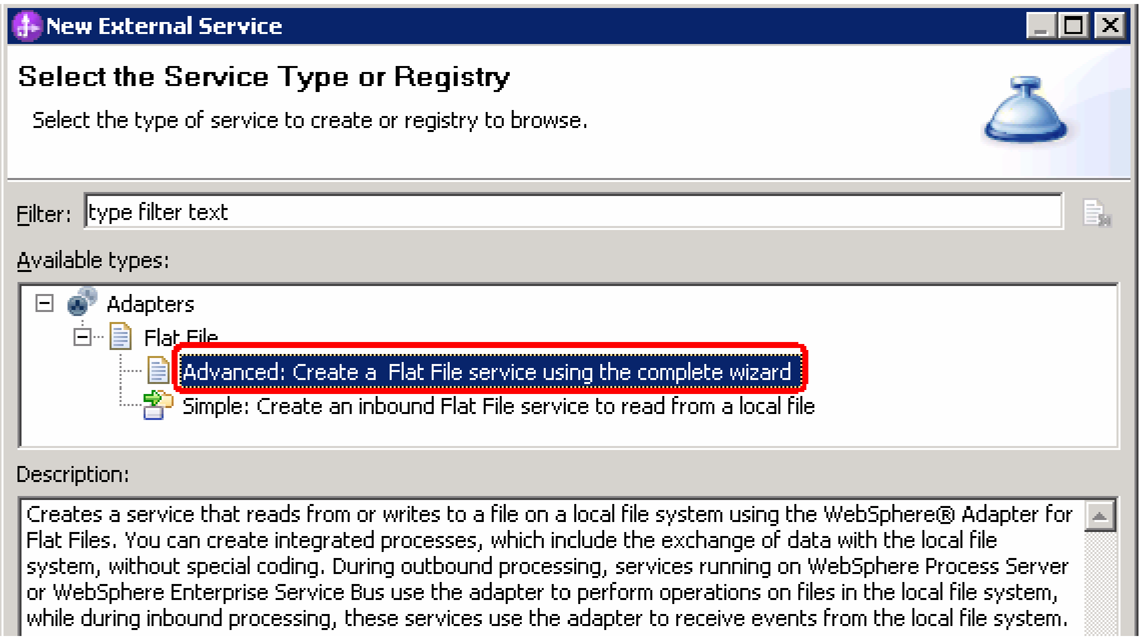
You will now see a new module, FFDefaultsOutboundModule, created from your Business Integration window

____ 2. To start External Service from the Palette:

__ a. From the **Palette** on the left side of Assembly Diagram, click **Outbound Adapters**

__ b. Under Outbound Adapters, click the **Flat File** and then click the empty canvas of the assembly diagram. The New Flat File Service wizard is opened

____ 3. From the New External Service window, expand **Adapters > Flat File** and select **Advanced: Create a Flat File service using the complete wizard**



Select the Service Type or Registry

Select the type of service to create or registry to browse.

Filter: type filter text

Available types:

- Adapters
  - Flat File
    - Advanced: Create a Flat File service using the complete wizard
    - Simple: Create an inbound Flat File service to read from a local file

Description:

Creates a service that reads from or writes to a file on a local file system using the WebSphere® Adapter for Flat Files. You can create integrated processes, which include the exchange of data with the local file system, without special coding. During outbound processing, services running on WebSphere Process Server or WebSphere Enterprise Service Bus use the adapter to perform operations on files in the local file system, while during inbound processing, these services use the adapter to receive events from the local file system.

__ a. Click **Next**

Note: You can also start the External Service from the **File menu** option:

From the main menu, select **File > New > External Service**. This opens an External Service wizard that helps you obtain a service which establishes connectivity with other systems. The wizard provides three connectivity options – Adapters, Registers, and Messaging

Select the radio button next to **Adapters** and click **Next**.

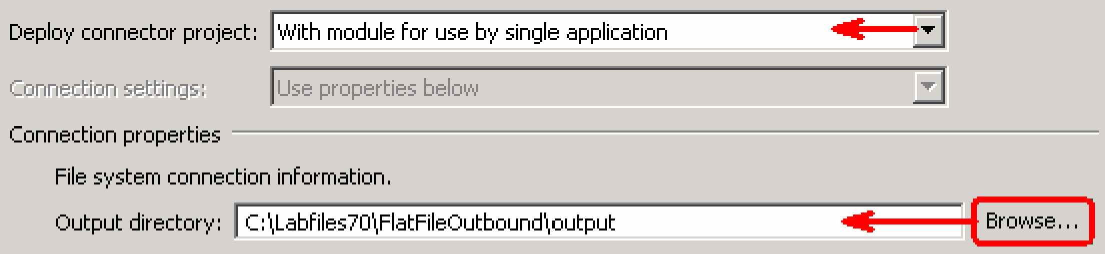
____ 4. On the Select an Adapter screen, expand **IBM WebSphere Adapter for Flat Files (IBM : 7.0.0.0)** and select **CWYFF_FlatFile**

__ a. Click **Next**

____ 5. Service Configuration Properties:

__ a. Deploy connector project: ensure that the default option **With module for use by single application** is selected

__ b. Click **Browse…** next to **Output Directory** and select **<OUTPUT_DIR>**



Deploy connector project: With module for use by single application

Connection settings: Use properties below

Connection properties

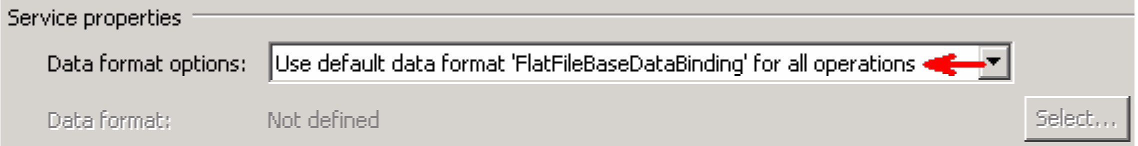
File system connection information.

Output directory: C:\Labfiles70\FlatFileOutbound\output

__ c. Click **Advanced >>** to see the hidden advanced properties that can be configured:

You can click each of the configurations and review the options available under it.

____ 6. For **Data binding**, select **Use default data binding ‘FlatFileBaseDataBinding’ for all operations** from the drop down list



Service properties

Data format options: Use default data format 'FlatFileBaseDataBinding' for all operations

Data format: Not defined

____ 7. Check the box next to **Change logging properties for wizard** to view the output location of the log file and the logging level and click **Next**

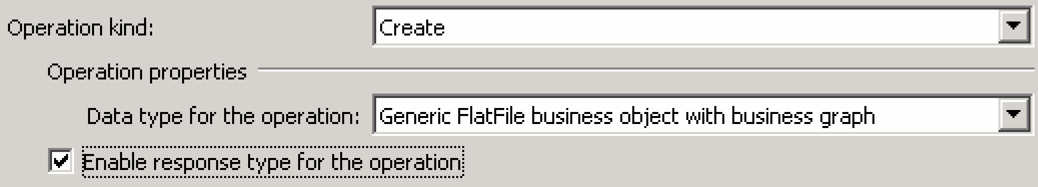
Define emitFlatFileBG operation:

____ 8. From the Operations screen, click **Add…**

__ a. Add Operation window is opened. Select **Generic FlatFile business object with business graph** for the Data type

__ b. Check the box for ‘**Enable response type for the operation**’

__ c. Click **Next**



Operation kind: Create

Operation properties

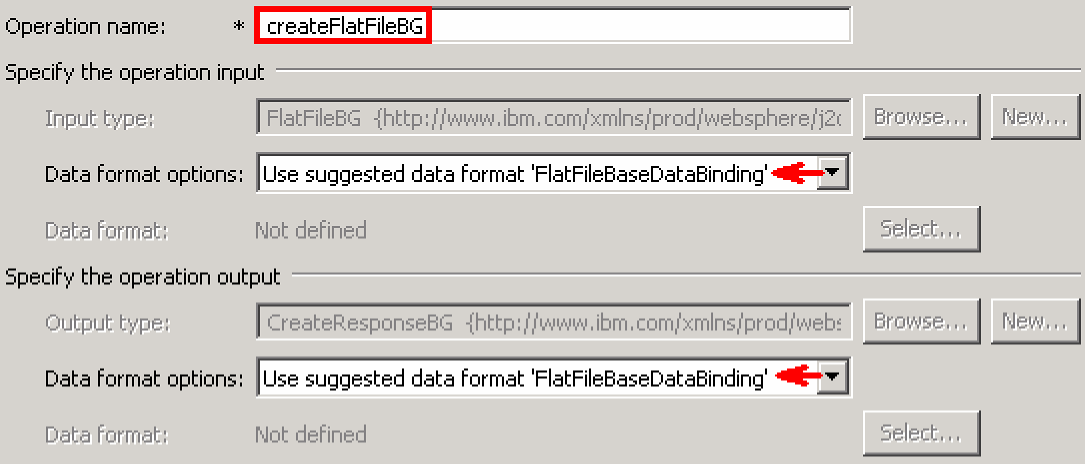
Data type for the operation: Generic FlatFile business object with business graph

☑ Enable response type for the operation

You are back to Operation window and because you have chosen the data type with business graph, the Input type is populated as **FlatFileBG**.

____ 9. For **Operation name**, enter any name, for Ex: **createFlatFileBG**

____ 10. Accept the default selection, **Use suggested data binding 'FlatFileBaseDataBinding'**, as **Data format** for both Input and Output



Operation name: * createFlatFileBG

Specify the operation input

Input type: FlatFileBG {http://www.ibm.com/xmlns/prod/websphere/j2c

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

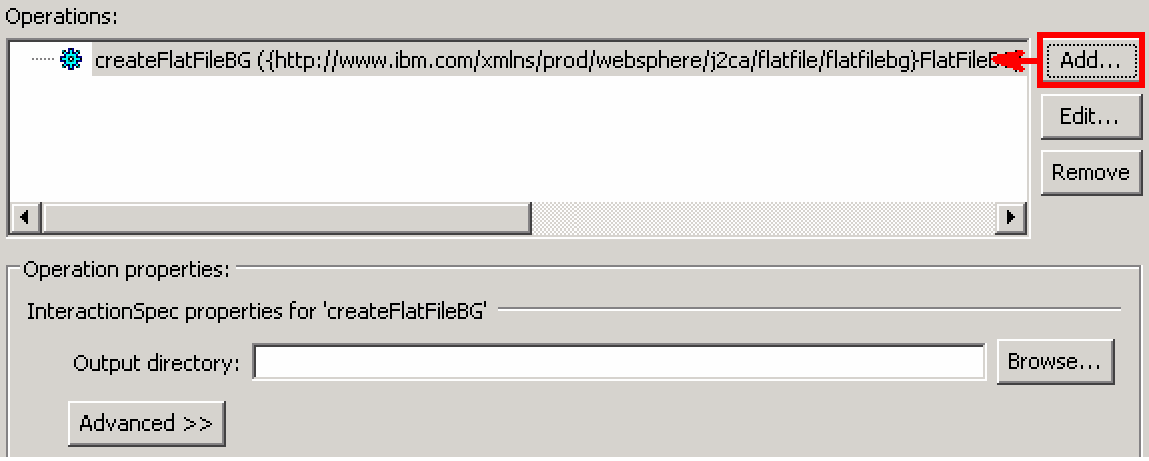
Specify the operation output

Output type: CreateResponseBG {http://www.ibm.com/xmlns/prod/webs

Data format options: Use suggested data format 'FlatFileBaseDataBinding'

Data format: Not defined

__ a. Click **Finish**. The defined operation, **createFlatFileBG**, is populated under Operations list



Operations:

createFlatFileBG ({http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/flatfilebg}FlatFileB

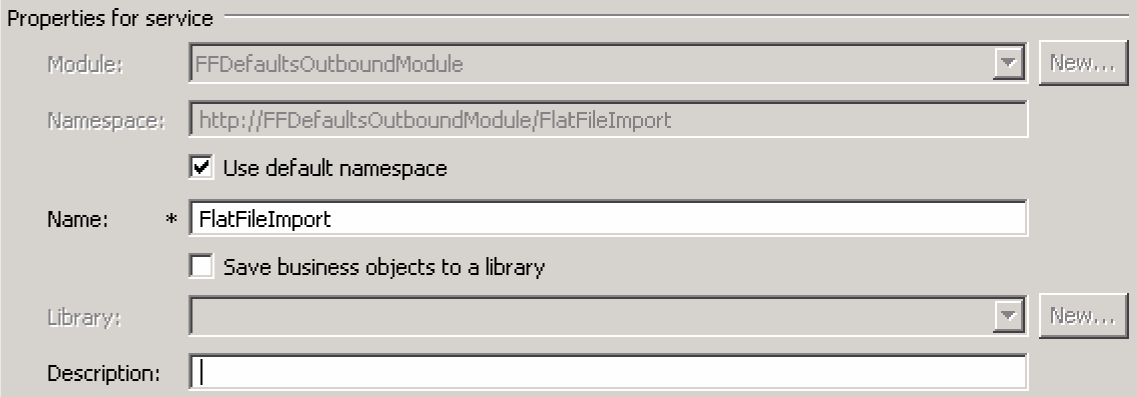
Operation properties:

InteractionSpec properties for 'createFlatFileBG'

Output directory:

__ b. Click **Next** from Operations screen

____ 11. From Generate Service screen, accept the default value, **FlatFileImport**, for **Name**



Properties for service

Module: FFDefaultsOutboundModule

Namespace: http://FFDefaultsOutboundModule/FlatFileImport

☑ Use default namespace

Name: * FlatFileImport

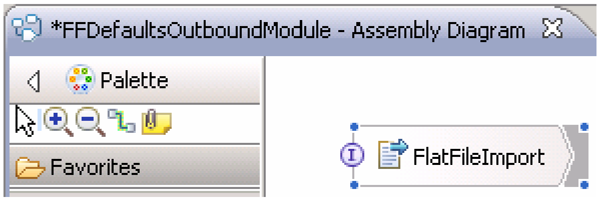
□ Save business objects to a library

Library:

Description:

__ a. Click **Finish**

____ 12. The Assembly diagram for FFDefaultsOutboundModule is opened with an Export component, **FlatFileImport**



____ 13. Save (**Ctrl + S**) changes to your assembly diagram

5.2. Test defaults scenario

In this part of the lab, you will use the WebSphere Process Server test environment to test the SCA application outbound processing for the pass through scenario.

____ 1. Add the project to the WebSphere test environment server

__ a. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

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

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

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

____ 2. Open the test client for the module

__ a. From the Business Integration perspective, right-click the **FFDefaultsOutboundModule** and select **Test > Test Module**

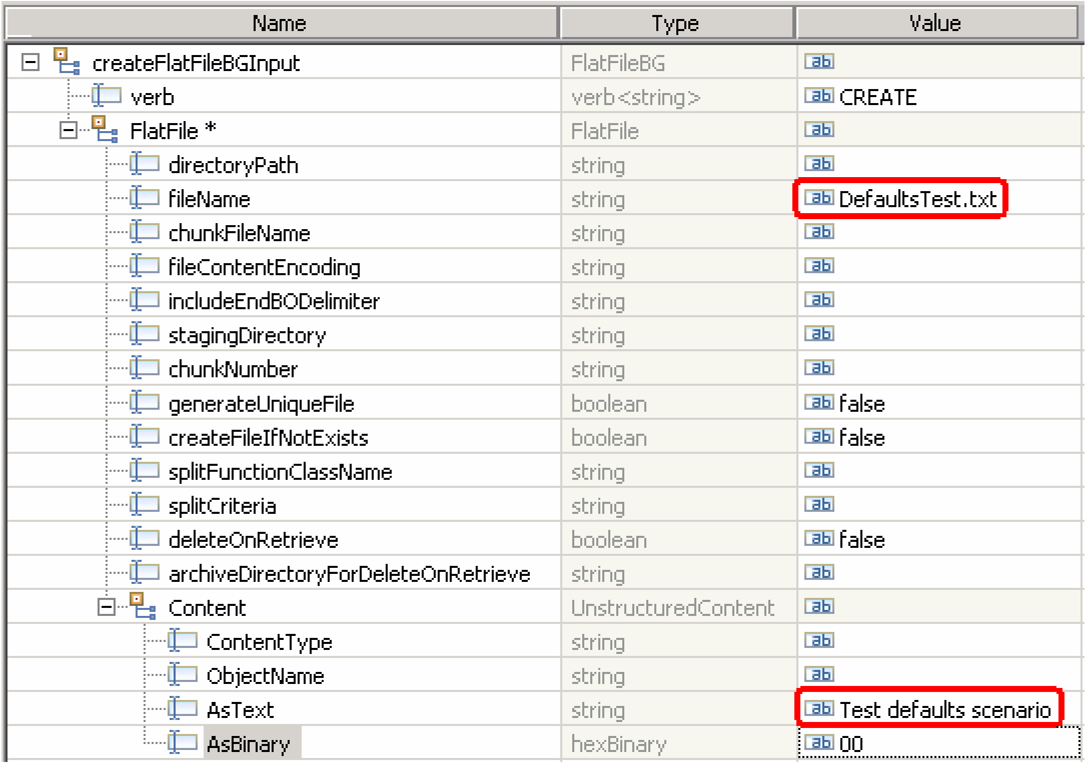
__ b. The **FFDefaultsOutboundModule_Test** window is opened in the Assembly editor

____ 3. Under **Detailed Properties**, note that the Operation is **createFlatFileBG**

__ a. Fill out the fields for Initial request parameters:

__ b. For **fileName**, enter any name, for Ex: **DefaultsTest.txt**

__ c. For **AsText**, enter any string. For Ex: **Test Defaults scenario**

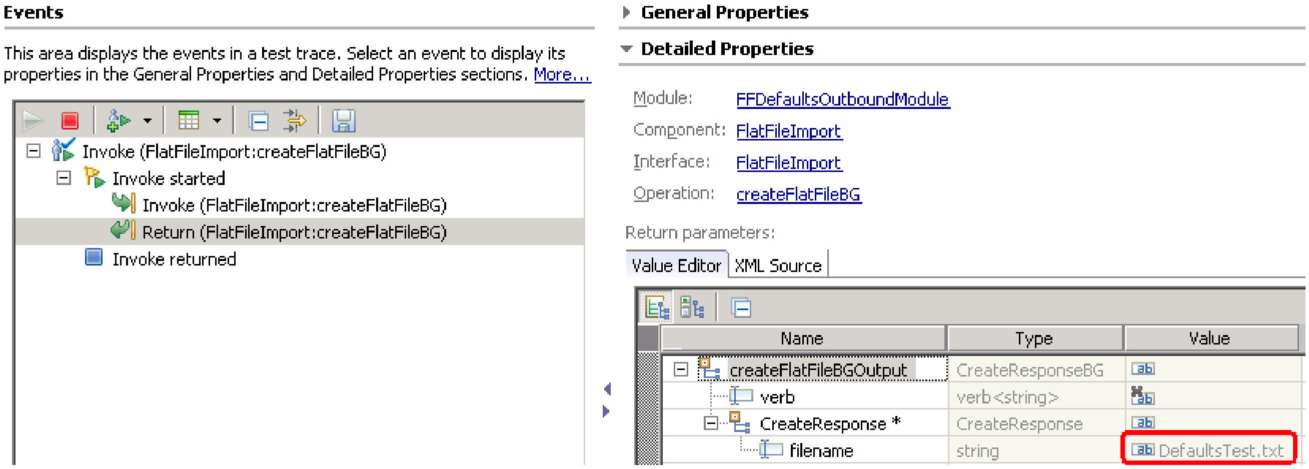


Name	Type	Value
createFlatFileBGInput	FlatFileBG	
verb	verb<string>	CREATE
FlatFile *	FlatFile	
directoryPath	string	
fileName	string	DefaultsTest.txt
chunkFileName	string	
fileContentEncoding	string	
includeEndBODelimiter	string	
stagingDirectory	string	
chunkNumber	string	
generateUniqueFile	boolean	false
createFileIfNotExists	boolean	false
splitFunctionClassName	string	
splitCriteria	string	
deleteOnRetrieve	boolean	false
archiveDirectoryForDeleteOnRetrieve	string	
Content	UnstructuredContent	
ContentType	string	
ObjectName	string	
AsText	string	Test defaults scenario
AsBinary	hexBinary	00

__ d. Click **Continue** button under Events

__ e. From Deployment Location window, select **WebSphere Process Servers > WebSphere Process Server v7.0** and click **Finish**

__ f. You should see a window similar to this, which contains the data you just entered in the previous steps:



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

- Invoke (FlatFileImport:createFlatFileBG)
  - Invoke started
    - Invoke (FlatFileImport:createFlatFileBG)
    - Return (FlatFileImport:createFlatFileBG)
  - Invoke returned

General Properties

Detailed Properties

Module: FFDefaultsOutboundModule

Component: FlatFileImport

Interface: FlatFileImport

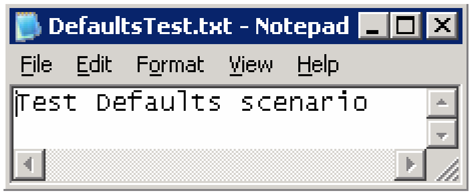
Operation: createFlatFileBG

Return parameters:

Name	Type	Value
createFlatFileBGOutput	CreateResponseBG	
verb	verb<string>	
CreateResponse *	CreateResponse	
filename	string	DefaultsTest.txt

____ 4. To verify your test results, check the **<OUT_DIR>** subdirectory which should contain a file with the name **DefaultsTest.txt**.

____ 5. Double-click to open the file, DefaultsTest.txt and it should contain the text entered for AsText field in your test client



Test Defaults scenario

____ 6. Restore the Sever Configuration

__ a. Close the **FFDefaultsOutboundModule_Test** window and click **No** for the Save Resources window

__ b. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

__ c. Select **FFDefaultsOutboundModuleApp** under Configured projects and click **< Remove**

__ d. Click **Finish** after you see the application moved to Available projects. Wait until the application is being unpublished

Part 6: Use ‘Create a service from a typical pattern’

In this part of the lab you will use the **typical pattern** option from the External Service wizard to create and configure the Data Binding and other required artifacts to test the outbound scenario.

Based on your selection, the Binding resources (data binding) are created which you will review later in this part.

After running the External Service wizard, you will continue to test the adapter.

6.1. Configure outbound using ‘Create a service from a pattern (typical)’ option

In this part of the lab you will use the **typical pattern** from the External Service feature to create and configure the Function Selector

____ 1. Create the module: FFTypicalOutboundModule

__ a. From the Business Integration window, right-click and select **New > Module**

__ b. From the New Module window, enter **FFTypicalOutboundModule** for the Module Name

__ c. Ensure that the box next to **Open module assembly diagram** is checked and then click **Finish**

You will now see a new module, **FFTypicalOutboundModule**, created from your Business Integration window and the Assembly diagram for the same module is opened in the Assembly Editor.

____ 2. Import required business objects

New in V7.0: Wrapper business objects for the business objects containing global elements are supported in this version. So, you can now pass the protocol specific information as part of each request.

__ a. Expand FFTypicalOutboundModule (if not already expanded), right-click **Data Types** and select **Import…** from the pop-up menu

__ b. From the Import window, expand **General** and select **File System** and then click **Next**

__ c. Enter From directory

1) Click **Browse…** next to **From directory**

2) From the Import from directory window, select **<FFFILES >** and click **OK**

Now, you will see FFFiles folder added on the left side, and all the xsds and files under that folder on the right side.

__ d. Select the box next to **Customer.xsd**

__ e. Ensure that the **FFTypicalOutboundModule** is selected for Into folder

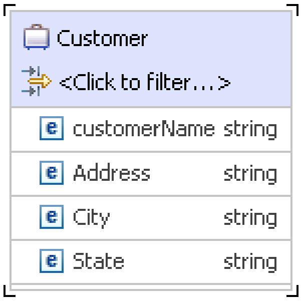
__ f. Click **Finish** from the Import window

The Business Integration window is updated with the imported business objects.

____ 3. Review imported business object:

__ a. Expand **FFTypicalOutboundModule > Data Types** and you will now see a new data type **Customer** and **Order** under it.

__ b. Double-click **Customer** review the fields inside the object:



Customer
<Click to filter…>

customerName	string
Address	string
City	string
State	string

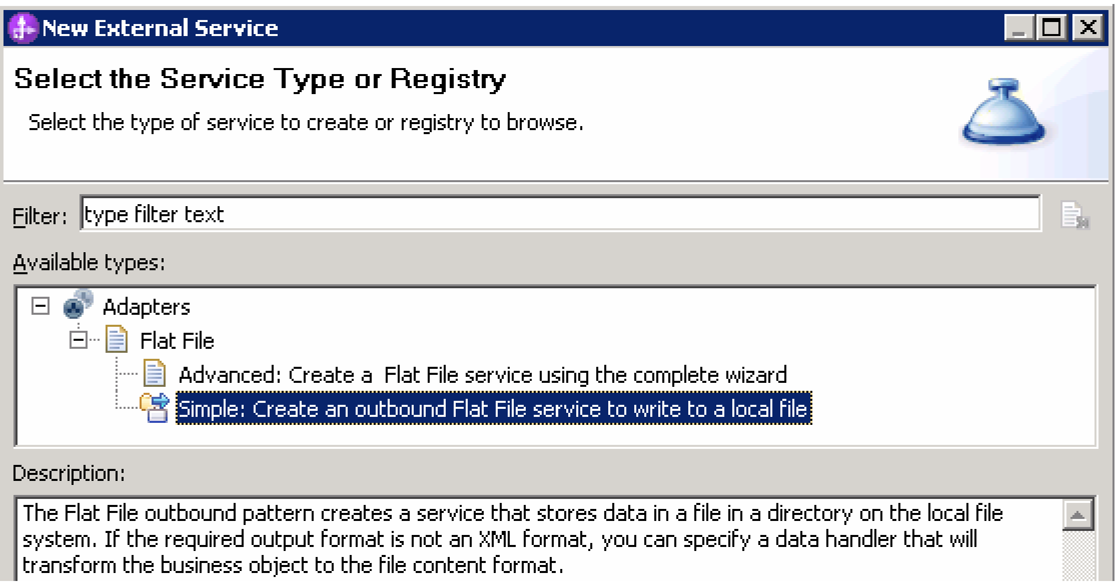
__ c. After reviewing, close the Customer business object from the Assembly editor

____ 4. To start External Service from the Palette:

__ a. From the **Palette** on the left side of Assembly Diagram, click **Outbound Adapters**:

____ 5. Under Outbound Adapters, click the **Flat File** and then click the empty canvas of the assembly diagram. The New Flat File Service wizard is opened

____ 6. From the New External Service window, expand **Adapters > Flat File** and select **Simple: Create an inbound Flat File service to read from a local file**



New External Service

Select the Service Type or Registry

Select the type of service to create or registry to browse.

Filter: type filter text

Available types:

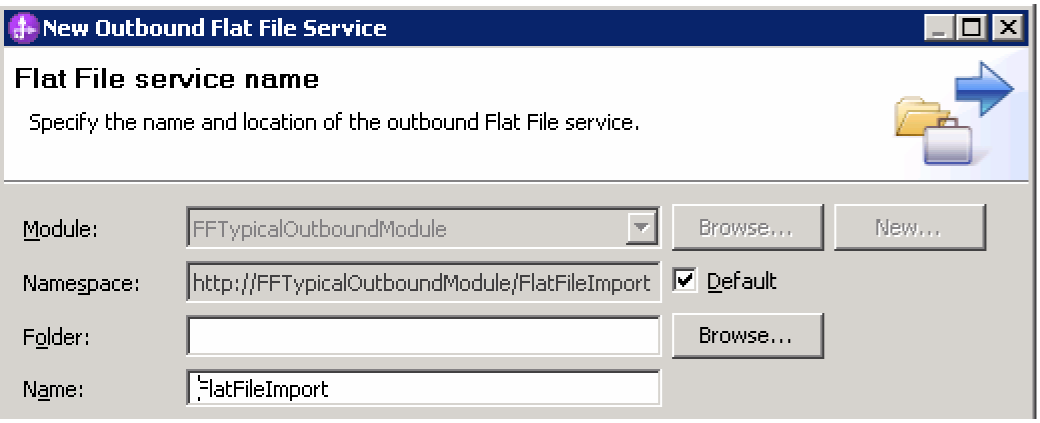
- Adapters
  - Flat File
    - Advanced: Create a Flat File service using the complete wizard
    - Simple: Create an outbound Flat File service to write to a local file

Description:

The Flat File outbound pattern creates a service that stores data in a file in a directory on the local file system. If the required output format is not an XML format, you can specify a data handler that will transform the business object to the file content format.

__ a. Click **Next**

____ 7. From the **Flat File service name** screen, for **Name**, accept the default value ‘**FlatFileImport**’ and click **Next**


New Outbound Flat File Service

Flat File service name

Specify the name and location of the outbound Flat File service.

Module: FFTypicalOutboundModule

Namespace: http://FFTypicalOutboundModule/FlatFileImport ☑ Default

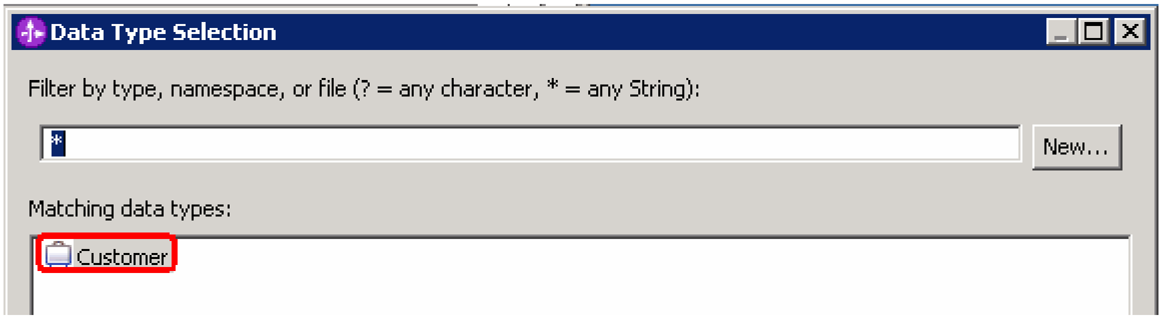
Folder:

Name: FlatFileImport

____ 8. From the **Business object and directory screen**, enter these:

__ a. Click **Browse…** next to **Business object** and a Data Type Selection window is opened

__ b. Select **Customer** under Matching data types and click **OK**


Data Type Selection

Filter by type, namespace, or file (? = any character, * = any String):

*

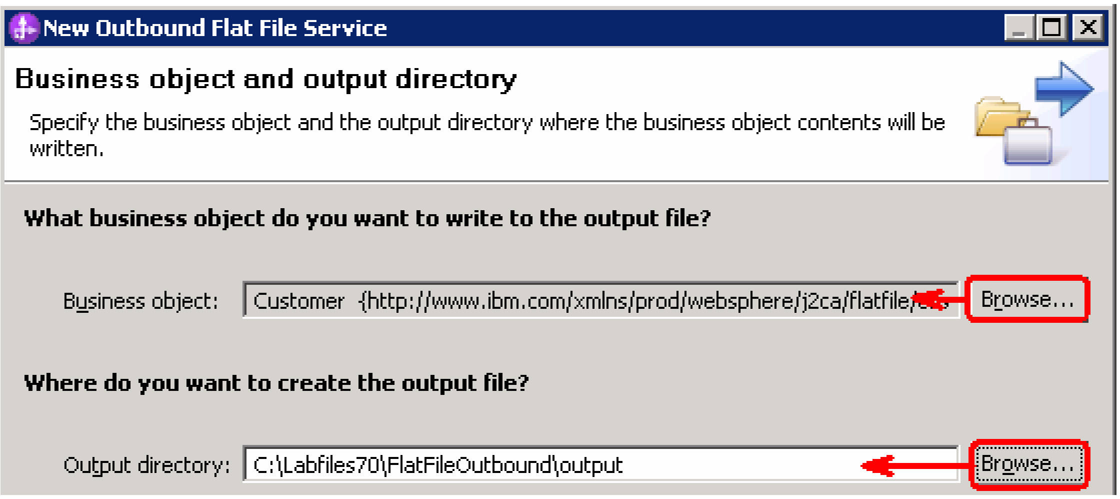
Matching data types:

Customer

__ c. Now, click **Browse…** next to **Output Directory** and a ‘Browse For Folder’ window is opened

__ d. From this window, navigate to select **<OUTPUT_DIR**> and click **OK**

__ e. Your Business object and directory screen should look like this:


New Outbound Flat File Service

Business object and output directory

Specify the business object and the output directory where the business object contents will be written.

What business object do you want to write to the output file?

Business object: Customer {http://www.ibm.com/xmlns/prod/websphere/j2ca/flatfile/...

Where do you want to create the output file?

Output directory: C:\Labfiles70\FlatFileOutbound\output

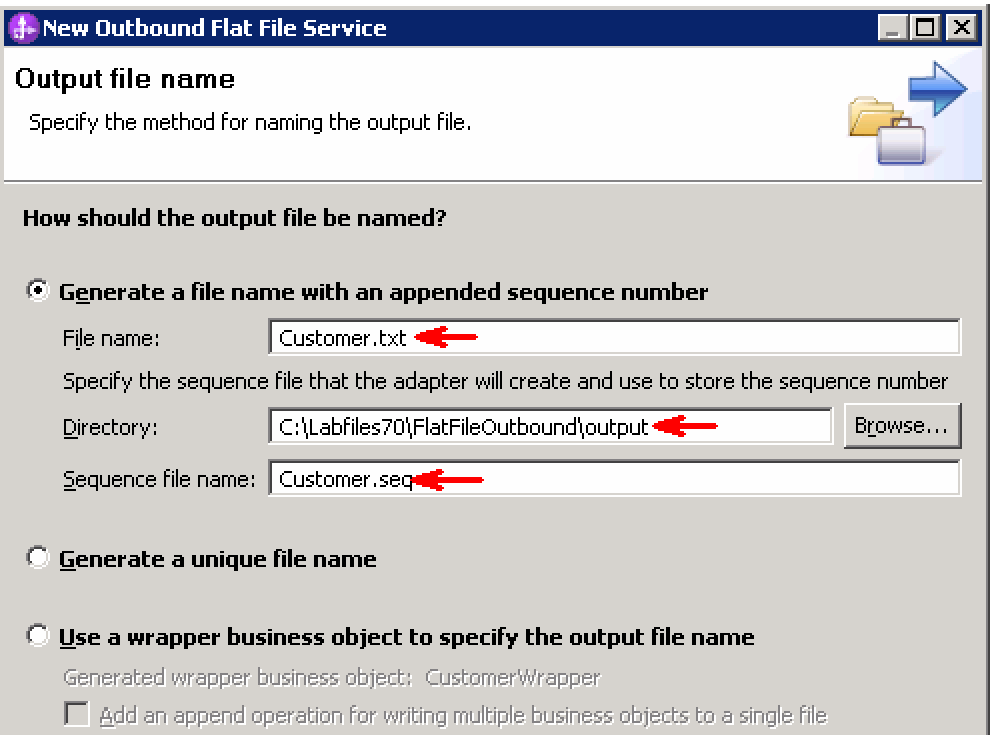
__ f. Click **Next**

____ 9. From the **Output file name** screen, enter these:

__ a. Select the radio button next to '**Generate a file name with an appended sequence number**'

__ b. Accept and note the default values for **File name**, **Directory**, and **Sequence file name**

Note: If you select 'Generate a file name with and appended sequence number', the adapter will not generate the wrapper business object, instead uses the File name and Directory entered in this screen.



New Outbound Flat File Service

Output file name

Specify the method for naming the output file.

How should the output file be named?

● Generate a file name with an appended sequence number

File name: Customer.txt

Specify the sequence file that the adapter will create and use to store the sequence number

Directory: C:\Labfiles70\FlatFileOutbound\output

Sequence file name: Customer.seq

○ Generate a unique file name

○ Use a wrapper business object to specify the output file name

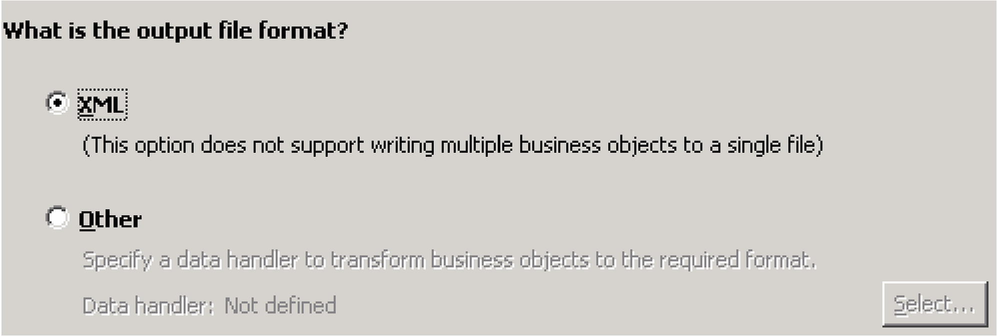
Generated wrapper business object: CustomerWrapper

□ Add an append operation for writing multiple business objects to a single file

__ c. Click **Next**

____ 10. From the Output file format screen, enter these:

__ a. Select the radio button next to **XML**



What is the output file format?

● XML

(This option does not support writing multiple business objects to a single file)

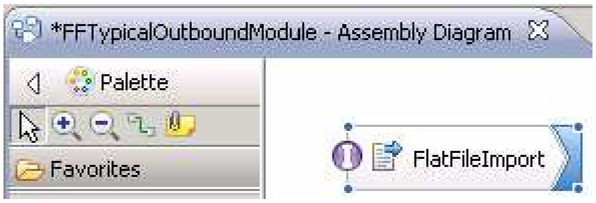
○ Other

Specify a data handler to transform business objects to the required format.

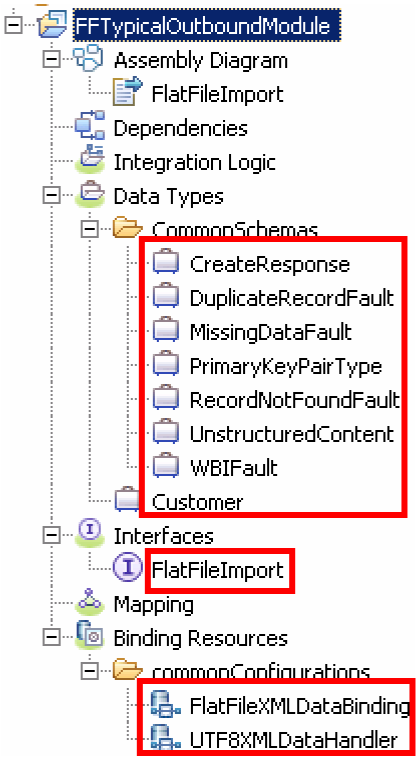
Data handler: Not defined

__ b. Click **Finish**

____ 11. Save (**Ctrl + S**) changes to your assembly diagram



____ 12. Review the FFTypicalOutboundModule and the generated artifacts: The generated **Data Types**, **Interface**, Data handler (**UTF8XMLDataHandler**) and Data binding (**FlatFileXMLDataBinding**) under Configured Resources can be found under FFTypicalOutboundModule. You can open each of these generated artifacts, business objects and review the properties inside.



6.2. Test typical pattern scenario

In this part of the lab, you will use the WebSphere Process Server test environment to test the SCA application Outbound processing for the typical pattern with input file having single business object.

____ 1. Add the project to the WebSphere test environment server

__ a. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

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

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

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

Wait for the project to be published to the server.

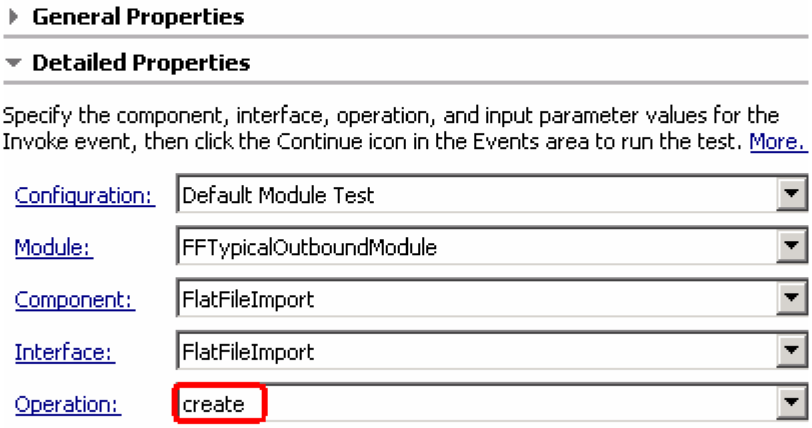
____ 2. Open the test client for the module

__ a. From the Business Integration perspective, right-click the **FFTypicalOutboundModule** and select **Test > Test Module**

__ b. The **FFTypicalOutboundModule_Test** window is opened in the Assembly editor

____ 3. Under **Detailed Properties**, fill out these:

__ a. Note that the **Operation** name is **create**



Specify the component, interface, operation, and input parameter values for the Invoke event, then click the Continue icon in the Events area to run the test. More.

Configuration: Default Module Test

Module: FFTypicalOutboundModule

Component: FlatFileImport

Interface: FlatFileImport

Operation: create

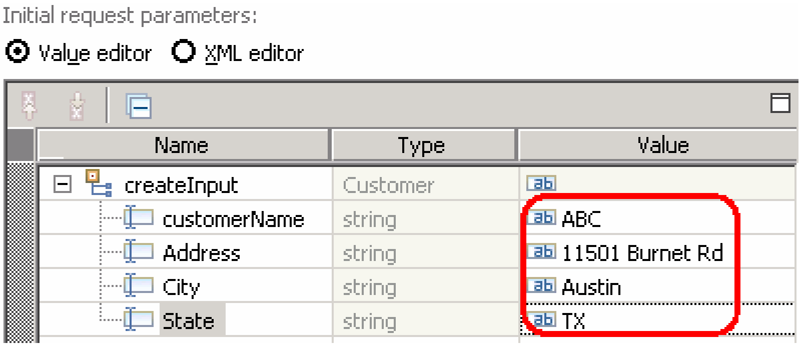
__ b. Enter these for Initial request parameters:

1) customerName: ABC

2) Address: 11501 Burnet Rd

3) City: Austin

4) State: TX



Initial request parameters:

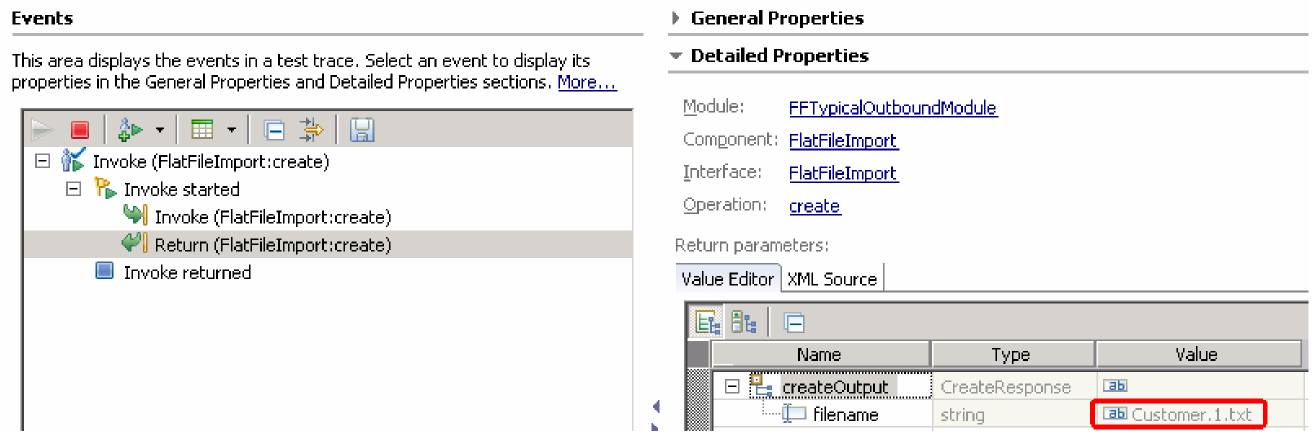
● Value editor ○ XML editor

Name	Type	Value
createInput	Customer	
customerName	string	ABC
Address	string	11501 Burnet Rd
City	string	Austin
State	string	TX

__ c. Click **Continue** button under Events

__ d. From Deployment Location window, select **WebSphere Process Servers > WebSphere Process Server v7.0** and click **Finish**

__ e. You should see a window similar to this, which contains the data you just entered in the previous steps:



Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...

- Invoke (FlatFileImport:create)
  - Invoke started
    - Invoke (FlatFileImport:create)
    - Return (FlatFileImport:create)
  - Invoke returned

General Properties

Detailed Properties

Module: FFTypicalOutboundModule

Component: FlatFileImport

Interface: FlatFileImport

Operation: create

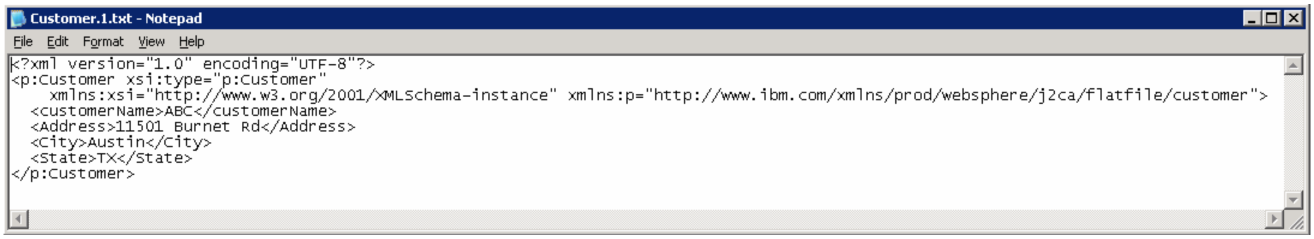
Return parameters:

Name	Type	Value
createOutput	CreateResponse	
filename	string	Customer.1.txt

Note: Since you have specified a Sequence File name while running the External Service, the file name is created with '1' appended to it.

____ 4. Verify the created file and its contents

__ a. Open Windows Explorer and browse to the subdirectory **<OUT_DIR>**. You will see a new file, **Customer.1.txt** created under that directory. Double-click it to open the file



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

____ 5. You should see one more file, **Customer.seq**, created in the same directory. Open it using note pad. You should see an entry in the file. For each request, the adapter increments the number in the sequence file and the input type takes the sequence number that is currently stored in the sequence file. Sequence numbers are not maintained separately for different input data types

____ 6. Restore the Sever Configuration

__ a. Close the **FFTypicalOutboundModule_Test** window and click **No** for the Save Resources window

__ b. Right-click **WebSphere Process Server v7.0** under the Servers view and select **Add and remove projects…** from the pop-up menu

__ c. Select **FFTypicalOutboundModuleApp** under Configured projects and click **< Remove**

__ d. Click **Finish** after you see the application moved to Available projects. Wait until the application is being unpublished

Solution instructions

____ 1. Start WebSphere Integration Developer V7.0 with a new workspace

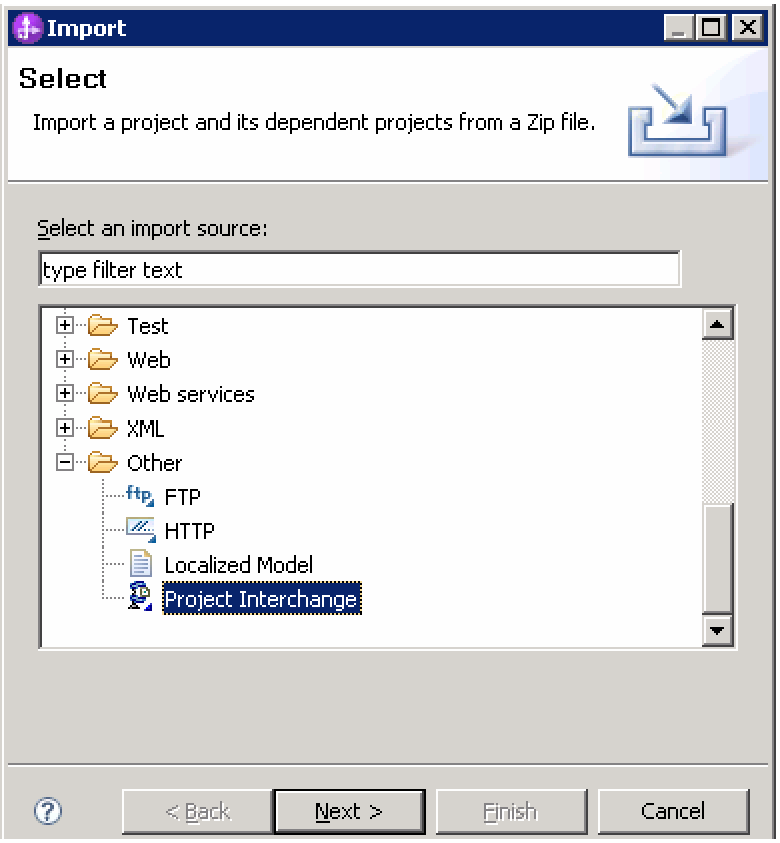
__ a. Follow the instructions outlined in **Part 1** of this exercise

____ 2. Import the solution Project Interchange

__ a. Import the project interchange file **FFOutbound_PI.zip** from **<LAB_FILES>\FlatFileOutbound\solution** directory

__ b. Select **File → Import** from the menu

__ c. Select **Other → Project Interchange** in the **Import** dialog and click **Next**



Import

Select

Import a project and its dependent projects from a Zip file.

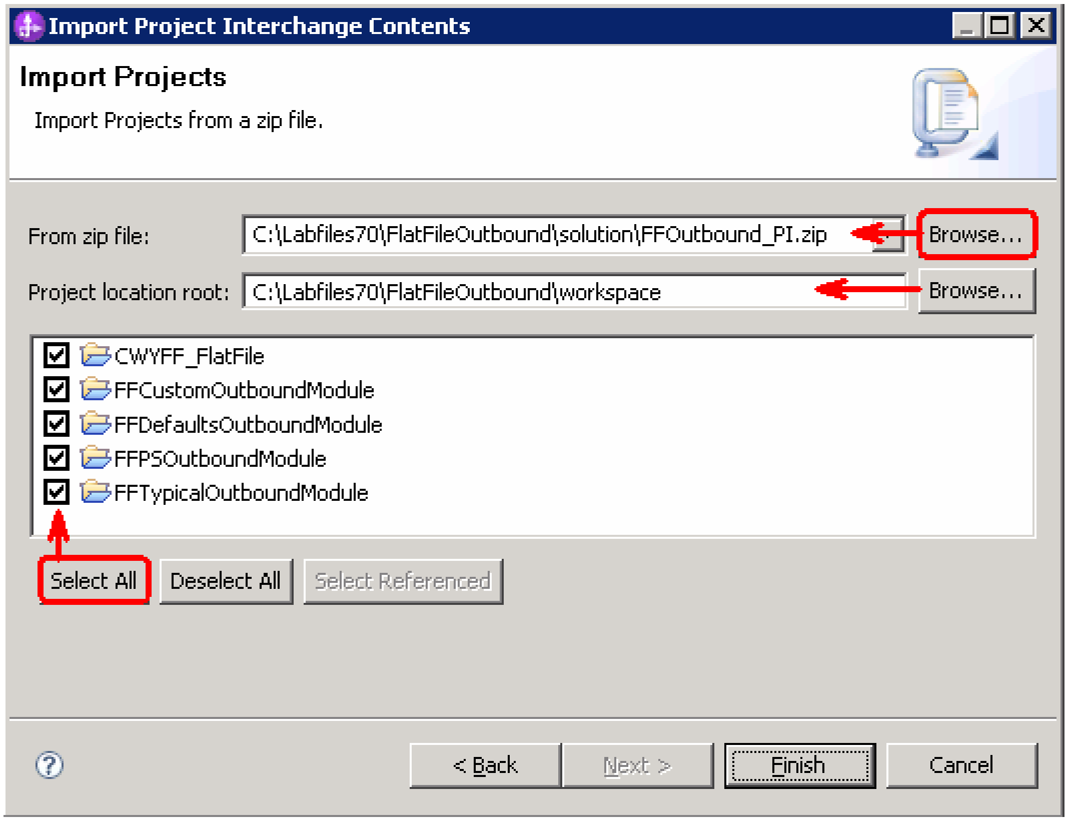
Select an import source:

type filter text

__ d. For the **From zip file**, click on the **Browse** button and select the **FFOutbound_PI.zip** in the **<LAB_FILES>>\ FlatFileOutbound\solution** directory

__ e. Enter **<LAB_FILES>\FlatFileOutbound\workspace** for the **Project location root**

__ f. Click the **Select All** button. This will select all modules: **CWYFF_FlatFile, FFCustomOutboundModule, FFDefaultsOutboundModule, FFPSOutboundModule,** and **FFTypicalOutboundModule**



Import Project Interchange Contents

Import Projects

Import Projects from a zip file.

From zip file: C:\Labfiles70\FlatFileOutbound\solution\FFOutbound_PI.zip

Project location root: C:\Labfiles70\FlatFileOutbound\workspace

☑ CWYFF_FlatFile
☑ FFCustomOutboundModule
☑ FFDefaultsOutboundModule
☑ FFPSOutboundModule
☑ FFTypicalOutboundModule

__ g. Click **Finish**

____ 3. Test outbound pass through scenario: Continue with **Part 3.2** of this lab

____ 4. Test outbound non pass through scenario: Continue with **Part 4.2** of this lab

____ 5. Test outbound scenario with default data binding and data handler: Continue with **Part 5.2** of this lab

____ 6. Test outbound scenario using typical pattern: Continue with **Part 6.2** of this lab

What you did in this exercise

In this lab, you imported the Flat File Adapter RAR file into your WebSphere Integration Developer workspace and integrated it into an SCA application that creates a file to the file system. Next, you made use of the External Service wizard available in WebSphere Integration Developer to specify Activation Spec Properties, define Data binding, Data handler, and Operations which, after deploying onto the server, will generate Business Objects and other artifacts for different scenarios.

At the end of each part, you deployed and then tested the adapter application for the scenarios - pass-through test scenario (create, append, list, retrieve Operations), content specific or non pass through test scenario (create, append, and retrieve operations), using all defaults (default data binding) scenario (create operation), and then finally using the typical pattern (create operation).

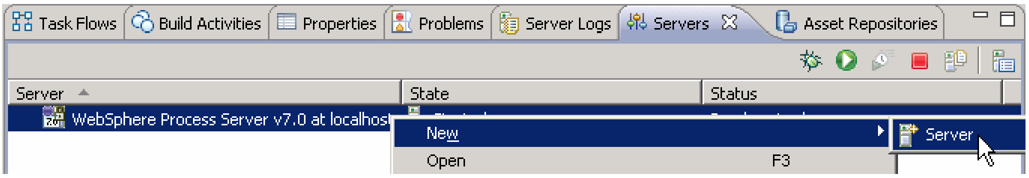
Task: Adding remote server to WebSphere Integration Developer test environment

This task describes how to add a remote server to the WebSphere Integration Developer Test environment. This example uses a z/OS machine.

____ 1. Define a new remote server to WebSphere Integration Developer.

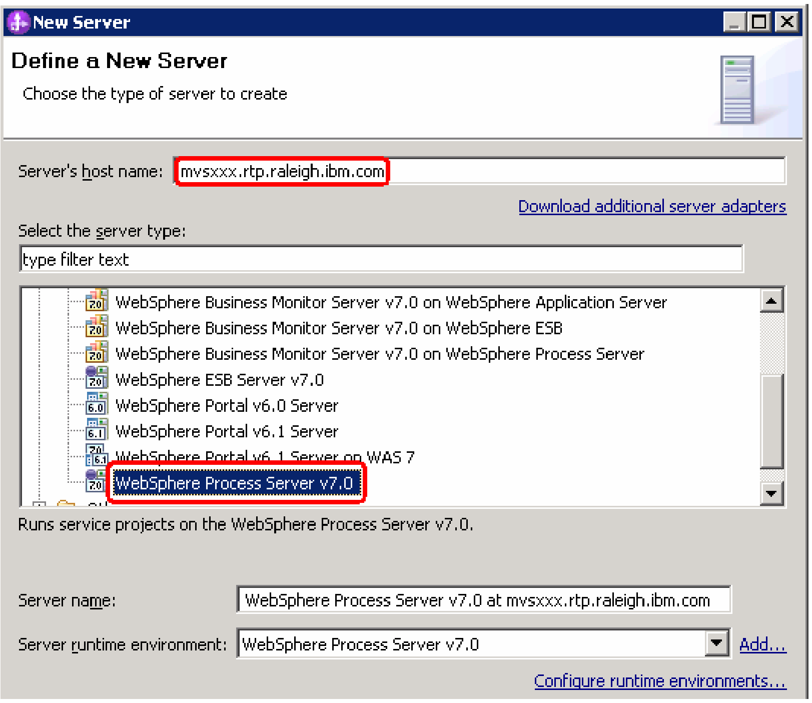
__ a. Right click the background of the Servers view to access the pop-up menu.

__ b. Select **New → Server**.



__ c. In the New Server dialog, specify the remote server's host name, **<HOSTNAME>**.

__ d. Ensure that the appropriate server type, '**WebSphere Process Server v7.0**' or '**WebSphere ESB Server v7.0**', is highlighted in the server type list



New Server

Define a New Server

Choose the type of server to create

Server's host name: mvsxxx.rtp.raleigh.ibm.com

Download additional server adapters

Select the server type:

type filter text

- WebSphere Business Monitor Server v7.0 on WebSphere Application Server
- WebSphere Business Monitor Server v7.0 on WebSphere ESB
- WebSphere Business Monitor Server v7.0 on WebSphere Process Server
- WebSphere ESB Server v7.0
- WebSphere Portal v6.0 Server
- WebSphere Portal v6.1 Server
- WebSphere Portal v6.1 Server on WAS 7
- WebSphere Process Server v7.0

Runs service projects on the WebSphere Process Server v7.0.

Server name: WebSphere Process Server v7.0 at mvsxxx.rtp.raleigh.ibm.com

Server runtime environment: WebSphere Process Server v7.0 Add...

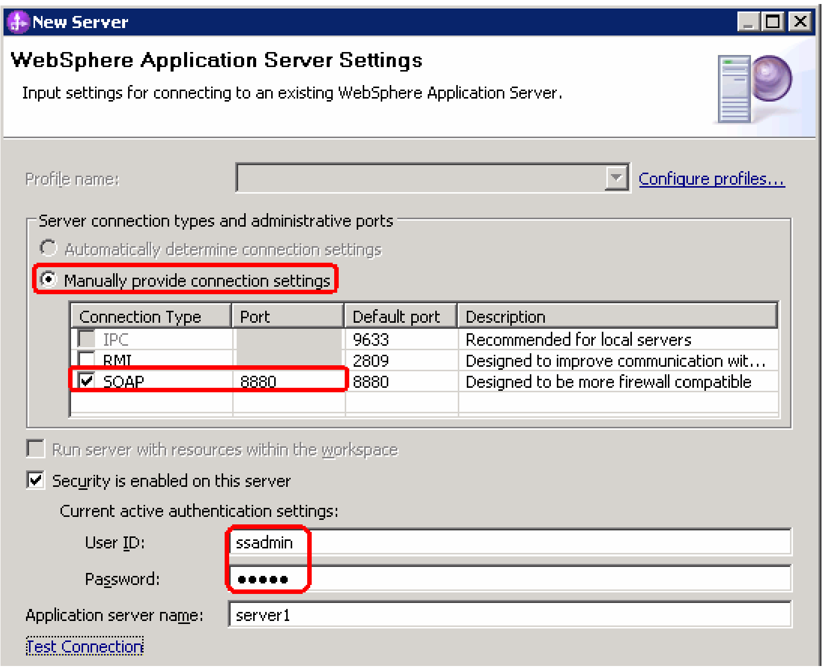
Configure runtime environments...

__ e. Click **Next**

__ f. On the WebSphere Server Settings page, leave the radio button for **Manually provide connection settings** selected, and select the box for SOAP

__ g. Enter the correct setting (**<SOAP_PORT>**) for **Port** column

__ h. If security is enabled on your server, select the box for **'Security is enabled on this server'** and enter **<USERID>** for the user ID and **<PASSWORD>** for the password.



WebSphere Application Server Settings

Input settings for connecting to an existing WebSphere Application Server.

Profile name: [ ] Configure profiles...

Server connection types and administrative ports

○ Automatically determine connection settings

● Manually provide connection settings

Connection Type	Port	Default port	Description
□ IPC		9633	Recommended for local servers
□ RMI		2809	Designed to improve communication wit...
☑ SOAP	8880	8880	Designed to be more firewall compatible

□ Run server with resources within the workspace

☑ Security is enabled on this server

Current active authentication settings:

User ID: ssadmin

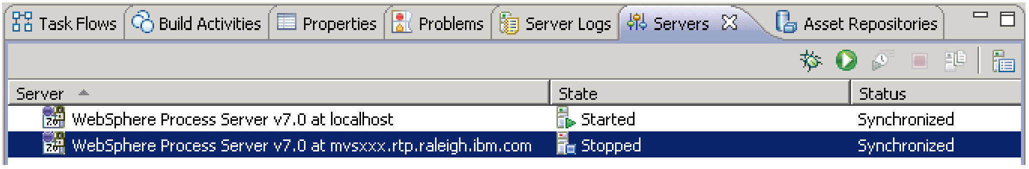
Password: ●●●●●

Application server name: server1

Test Connection

__ i. Click **Finish**.

__ j. The new server should be seen in the Server view.



Server	State	Status
WebSphere Process Server v7.0 at localhost	Started	Synchronized
WebSphere Process Server v7.0 at mvsxxx.rtp.raleigh.ibm.com	Stopped	Synchronized

____ 2. Start the remote server if it is not already started. WebSphere Integration Developer does not support starting remote servers from the Server view.

__ a. From a command prompt, telnet to the remote system if needed:

'**telnet <HOSTNAME> <TELNET_PORT>**'

User ID : **<USERID>**

Password : **<PASSWORD>**

__ b. Navigate to the bin directory for the profile being used:

cd <WAS_HOME>/profiles/<PROFILE_NAME>/bin

__ c. Run the command file to start the server: **./startServer.sh <SERVER_NAME>**

__ d. Wait for status message indicating server has started:

```
ADMU3200I: Server launched. Waiting for initialization status

ADMU3000I: Server sssr01 open for e-business; process id is 0000012000000002
```