IBM WebSphere[®] 6.0 – Lab Exercise

SCA and Web Services

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Task: Adding Remote Server to WebSphere Integration Developer Test Environment

What this exercise is about

This exercise will demonstrate the steps necessary to expose an SCA component as a Web service and invoke that Web service from another SCA module.

Lab Requirements

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

- WebSphere Integration Developer V6.0 installed
- WebSphere Process Server V6.0 test environment installed

What you should be able to do

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

• Import a project using the Project Interchange feature

- Export an SCA component using a Web Services binding
- Use the Web Service Explorer to test a Web Service
- Invoke a Web Service using a service import

Introduction

The following is an overview of the modules in this exercise:

····		1.1	- 1 CustomerService
PortfolioManager Mod			-• 1 🐼 Import1
····			• • • • • • • • • • • • • • • • • • •
→ ① 💞 StockQuoteServi	ceExport		•Service
StockQuoteManager	Module	•	•

Exercise Instructions

Some instructions in this lab might be 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
<lab_name></lab_name>	BrokerageWithWS	BrokerageWithWS
<wid_home></wid_home>	C:\Program Files\IBM\WebSphere\ID\6.0	/opt/IBM/WebSphere/ID/6.0
<wps_home></wps_home>	< WID_HOME >\runtimes\bi_v6	<wid_home>/runtimes/bi_v6</wid_home>
<lab_files></lab_files>	C:\Labfiles60\	/tmp/Labfiles60
<workspace></workspace>	C:\Labfiles60\BrokerageWithWS\workspace	/tmp/Labfiles60/BrokerageWithWS\worksp ace
<temp></temp>	C:\temp	/tmp
<solution></solution>	C:\Labfiles60\BrokerageWithWS\solution	/tmp/Labfiles60/BrokerageWithWS/solution

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, C:\LabFiles60\ would be replaced by C:/LabFiles60/

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 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></server_name>	server1	cl1sr01	
<was_home></was_home>	C:\Program Files\IBM\WebSphere\AppServer	/etc/cl1cell/AppServerNode1	
<hostname></hostname>	localhost	mvsxxx.rtp.raleigh.ibm.com	
<bootstrap_port></bootstrap_port>	2809	2809	
<telnet_port></telnet_port>	N/A	1023	
<profile_name></profile_name>	AppSrv01	default	
<userid></userid>	N/A	cl1admin	
<password></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 "<u>Task: Adding Remote Server to WebSphere Integration Developer</u> <u>Test Environment</u>".

Part 1: Setup Development Environment

- 1. Start WebSphere Integration Developer V6 with a new workspace.
 - ____a. Select Start > Programs > IBM WebSphere > Integration Developer V6.0 > WebSphere Integration Developer V6.0 from the start menu.
 - ____b. Enter <LAB_FILES>\<LAB_NAME>\workspace for your workspace and click OK when prompted.

Workspace Launcher	X
Select a workspace	
Eclipse Platform stores your projects in a directory called a workspace. Select the workspace directory to use for this session.	
Workspace: C:\Labfiles60\BrokerageWithWS\workspace Browse	
Use this as the default and do not ask again	
OK Cancel	

_c. Close the Welcome page after WebSphere Integration Developer V6.0 opens,.



Part 2: Import PortfolioManager and StockQuoteManager Projects

- 1. Import the project interchange file containing the initial code for the PortfolioManager and StockQuote applications.
 - ____a. Select File > Import.
 - ____b. Select **Project Interchange** from the Import dialog as the import source and click **Next**.
 - ____c. Use the Browse button to specify the following zipped file: <LAB_FILES>\<LAB_NAME>\import\BrokerageInitial.zip.
 - ____d. Enter <LAB_FILES>\<LAB_NAME>\workspace for the Project location root.
 - ____e. Click the Select All button to select all projects included in the project exchange .zip file.

🔙 Import Project Interchange Contents	
Import Projects Import Projects from a zip file.	Ţ
From zip file: C:\WBISVN\v6_0\Labfiles60\BrokerageWithWS\impo E Project location root: C:\Labfiles60\BrokerageWithWS\workspace E	Browse Browse
 ✓ PortfolioManager ✓ ⇒ StockQuoteManager 	
Select All Deselect All Select Referenced	
< Back Next > Finish C	Cancel

___ f. Click Finish.

Part 3: Export the StockQuoteService as a Web Service

- 1. Open the assembly diagram for **StockQuoteManager**.
 - ____a. Expand **StockQuoteManager** in the Business Integration view and double-click on **StockQuoteManger**.
- _____2. Export the **StockQuoteService** as a Web Service.
 - ____a. In the assembly diagram, right click on the **StockQuoteService** component and select **Export > Web Service Binding**.
 - ____b. Click **Yes** in the Binding File Generation dialog box.

🔚 Binding File Generation		
Should we automatically generate the ws	dl file with binding/se	ervice?
×	Yes	No

____ c. Select **soap/http** on the Select Transport dialog and click **OK**.

____ d. Verify that the assembly diagram looks like the following.

- 1 StockQuoteServiceExport
- ____e. Save and close the assembly diagram.
- ____ f. Go to the Window \rightarrow Show View and click on the Navigator
- ____g. In the Navigator view, expand the StockQuoteManager module
- __h. Select the StockQuoteServiceExport_StockQuoteInterfaceHttp_Service.wsdl file
- ____i. Right click and select Open with \rightarrow XML Source Page Editor
- ____j. Delete the localhost in the following line and replace it with the hostname of the remote WebSphere Process Server machine. Also make sure that the port being used corresponds to the remote WebSphere Process Server.

Example:

Change <soap:address location= "http://localhost:9080/StockQuoteManagerWeb/sca/StockQuoteServiceExport"/> to

<soap:address location=

"http://mvsxxx.rtp.raleigh.ibm.com:9080/StockQuoteManagerWeb/sca/StockQuoteServiceExport"/

Part 4: Test the StockQuoteService using the Web Services Explorer

- ____ 3. Start the server.
 - _____a. If using a remote testing environment, follow the directions provided in <u>Task: Adding</u> <u>Remote Server to WebSphere Integration Developer Test Environment</u> (at the end of this document) to add a server to the WebSphere Integration Developer test environment and start it. This is especially true for z/OS, AIX, Solaris remote test environment, where the WebSphere Integration Developer will be remote to the test environment.

If using a local testing environment, right click on the WebSphere Process Server V6.0 from the Server view and select **Start** from the context menu.

- ____b. Wait for the server to start.
- _____4. Add the **StockManager** project to the configured projects on the server.
 - ____a. Right click on the WebSphere Process Server V6.0 from the Server view and select Add and remove projects... from the context menu.
 - ____b. Select StockQuoteManagerApp from the available projects list and click Add.
 - ___ c. Click Finish.
 - _____5. Enable the Web Services Development capability.
 - ____a. Select **Window > Preferences** from the menu.
 - ____b. Expand Workbench and click on Capabilities.
 - _____ c. Check the box next to **Web Service Developer** in the capabilities list and click **OK**.
 - 6. Launch the Web Services Explorer for the **StockQuoteService** Web service.
 - _____a. Open the Physical Resources view by selecting Window > Show View > Others and then expand the Bussiness Integration and select Physical Resources from the menu. Click OK.
 - ___ b. Expand StockQuoteManager and right click on the file StockQuoteServiceExport_StockQuoteInterfaceHttp_Service.wsdI and select Web Services > Test with Web Service Explorer from the context menu.

Web Browser 🗙	e
Web Shttp://localhost:55068/wsexplorer/wsexplorer.jsp?com	n.ibm.etools.webservice.explorer=0 🗘 🗘 🕼 🖉 🖈
😪 Navigator 🔗 🖉	Actions
Burger Stock Solution Burger Aller, C:/Labfiles60/Test2/workspace/Stock	A WSDL Binding Details
E-22 StockQuoteServiceExport_StockQuoteI	Shown below are the details for this SOAP <binding> element. Click on an operation to fill in its parameters and invoke it or specify additional endpoints.</binding>
	Operations
	Name Documentation
	✓ Endpoints Add Remove
	Endpoints
	http://localhost:9080/StockQuoteManagerWeb/sca/StockQuoteServiceExport
	Go Reset
	i Status
	IWAB03811 file:/C:/Labfiles60/Test2/workspace/StockQuoteManager/StockQuoteServiceExport_StockQuoteInterface

____ c. Verify that the Web Service Explorer opens in your work area.

____d. Click on the getStockPrice link to test this operation.

2	WSDL	Binding	Details
---	------	---------	---------

Shown below are the details for this **SDAP**
binding> element. Click on an operation to fill in its parameters and invoke it or specify additional endpoints.

Operations

Name	Documentation
getStockPrice	

____e. Enter **IBM** for the symbol and click **Go**.

 getStockPrice
<u>symbol</u> string
IBM 🗲
Go Reset

_____f. Verify that you see the following result in the status window at the bottom of the Web Service Explorer.

i Status	<u>I</u>
	<u>Source</u>
▼ getStockPriceResponse	
price (float): 90.0	-

___g. Switch back to **Business Integration** view by selecting **Window > Show View > Bussiness Integration**.

Part 5: Import StockQuoteService into PortfolioManager as a Web Service

- 1. Open the assembly diagram for **PortfolioManager**.
 - ____a. Expand **PortfolioManager** in the Business Integration view and double-click on **PortfolioManager**.
- 2. Import the StockQuoteService using a web service binding.
 - ____a. Locate the **StockQuoteInterface** in the Business Integration view under **PortfolioManager > Interfaces**.
 - ____b. Drag and drop the **StockQuoteInterface** on the **PortfolioManager** assembly diagram.
 - ___ c. Select Import with Web Service Binding when the component creation dialog appears and click OK.

🚝 Component Creation	×
Select the type to create:	
Component with No Implementation Type Export with No Binding Export with Web Service Binding Import with No Binding Import with Web Service Binding 	
OK Cancel	

- 3. Create a wire between the **PorfolioService** component and the **Import1** component.
 - $_$ a. Select the wire tool (\square) and then click on the PorfolioService.
 - ____b. Click on the Import1 component.
 - ____ c. Click **OK** when you see the message appear indicating that a matching reference will be created on the source node.

_d. Click **No** when prompted if you would like to convert the WSDL interface to a Java interfaces.



4. Verify that your diagram looks like the following:



- 5. Copy the StockQuoteServiceExport_StockQuoteInterfaceHttp_Service.wsdl file into the PortfolioManager project.
 - ____a. Locate the StockQuoteServiceExport_StockQuoteInterfaceHttp_Service.wsdI file in the Physical Resources view under StockQuoteManager.
 - ____b. Right click and select **Copy** from the context menu.
 - ____ c. Remain in the Physical Resources view and right click on the **PortfolioManager** project and select **Paste** from the context menu.
- ____6. Update the bindings for Import1.
 - ____a. Click on Import1 in the assembly editor and go to the binding tab in the Properties view.
 - ___ b. Click the Browse button Next to Service and select StockQuoteServiceExport_StockQuoteInterfaceHttp_Service.wsdl from the list.
 - __ c. Select StockQuoteServiceExport_StockQuoteInterfaceHttpPort on the select a port dialog and click OK.
- 7. Save and Close the assembly editor file.
- _____ 8. Import the client JSP file.
 - ____a. Select File > Import from the menu.
 - ____b. Select 'File System' and click Next.
 - __ c. Click the Browse button from the File system import dialog and choose the following From directory: <LAB_FILES>\<LAB_NAME>\import.

____d. Check the box next to the index.jsp file and click the Browse button to select **PortfolioManagerWeb\WebContent** as the Into folder.

🔚 Import	
File system Import resources from the local file system.	
From directory: C:\WBISVN\v6_0\Labfiles60\Brokerage\import\PortfolioManager	Browse
Filter Types Select All Deselect All Into folder: PortfolioManagerWeb/WebContent	Browse
Options: Overwrite existing resources without warning O Create complete folder structure Oreate selected folders only	
< Back Next > Finish	Cancel

___e. Click Finish.

Part 6: Test the PorfolioManager Application

- 1. Add the PortfolioManager project to the configured projects on the server.
 - ____a. Right click on the WBI Server V6.0 from the Server view and select Add and remove projects... from the context menu.
 - ____b. Select PortfolioManagerApp from the available projects list and click Add.
 - ___ c. Click **Finish**.
 - __2. Test the PortfolioService service component.
 - ____a. Open a web browser and enter the following URL.

http://<HOSTNAME>:9080/PortfolioManagerWeb/index.jsp

NOTE: To open the embedded browser within WebSphere Integration Developer V6 select **Window** > **Customize Perspective** from the menu. Click on the Commands tab in the Customize Perspective dialog and scroll to the bottom of the available command groups list until you find Web Browser. Check the box next to Web Browser and click **OK**. Click the web browser icon () now in your toolbar to open the embedded web browser.

____b. Verify that you see the following page displayed in the browser.

Portfolio Application

Enter Customer ID:	
--------------------	--

Submit

____ c. Enter **123-45-6789** for the Customer ID and click **Submit**.

____d. Verify that you see the following output.

	Portfolio Application
	Enter Customer ID:
	Submit
<	The value is: 11500.0

Part 7: Restore Server Configuration

- 1. Remove the StockManager and PortfolioManager project from the configured projects on the server
 - ____a. Right click on the WebSphere Business Integration Server V6.0 from the Server view and select **Add and remove projects...** from the context menu.
 - ____b. Select PortfolioManager from the configured projects list and click **Remove**.
 - ____c. Select StockManager from the configured projects list and click **Remove**.
 - ___ d. Click Finish.
 - ___2. Stop the server.
 - ____a. Right click on WebSphere Process Server V6.0 server from the Servers view and select **Stop** from the context menu.

What you did in this exercise

In this exercise you used WebSphere Integration Developer V6 tools to do the following tasks:

- Import a project using the Project Interchange feature
- Export an SCA component using a Web Services binding
- Use the Web Service Explorer to test a Web Service
- Invoke a Web Service using a service import

Solution Instructions

- 1. Start WebSphere Integration Developer V6 with a new workspace.
 - ____a. Follow the instructions outlined in Part 1 of this exercise.
- 2. Import the project interchange file BrokerageWithWS_PI.zip from <LAB_FILES>\<LAB_NAME>\solution directory.
 - ____a. Select File > Import from the menu.
 - ____b. Select **Project Interchange** in the **Import** dialog and click **Next**.

🔙 Import		
Select Import a project and its d	ependent projects from a Zip file.	Ľ
Select an import source: Probe Profiling file Project Interchange RAR file Security Certificate Server Configuration		
	< Back Next >	Finish Cancel

- ____c. Click on the **Browse** button and select the **BrokerageWithWS_PI.zip** in the <LAB_FILES>\<LAB_NAME>\solution director for the **From zip file**.
- ____d. Enter <LAB_FILES>\<LAB_NAME>\workspace for the Project location root and click Next.
- ____e. Click the Select All button and click **Finish**.
- 3. Continue with the lab and do Part 4, 6, and 7 of this lab.

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. The sample will use a z/OS machine.

- _____1. Create a new remote server.
- _____2. Right click on the background of the Servers view to access the pop-up menu.
- _____ 3. Select New > Server.

Properties Problems 👫 Servers 🗙 Console		🌣 🕥 🤣	🍫 🔳 🙌 📪 🗖
Server	Host name	Status	State
HebSphere ESB Server v6.0	localhost	🚡 Stopped	Synchronized
WebSphere Process Server v6.0	localhost	指 Stopped	Synchronized
New 🕨 📑 Server			

- 4. Specify hostname to the remote server, <HOSTNAME>.
 - _ 5. Ensure that 'WebSphere Process v6.0 Server' is highlighted in the server type list.



7. On the WebSphere Server Settings page, select the radio button for **RMI** and change the ORB bootstrap port to the correct setting (**<BOOTSTRAP_PORT>**).

🚯 New Server
WebSphere Server Settings Input settings for the new WebSphere server
WebSphere profile name:
Server connection type and admin port Server connection type and admin port RMI (Better performance)
ORB bootstrap port: 9131
C SOAP (More firewall compatible)
SOAP connector port: 8880
Run server with resources within the workspace Security is enabled on this server Current active authentication settings: User ID:
Password:
Server name: server1
Server type BASE, Express or unmanaged Network Deployment server Network Deployment server
Network Deployment server name: The server name is in the form of: <cell name="">/<node name="">/<server name=""> For example, localhost/localhost/server1.</server></node></cell>
Click this button to detect the server type.
< Back Next > Finish Cancel

- _____ 8. Click Finish.
- 9. The new server should be seen in the Server view.

Properties Problems 👯 Servers 🗙 Console		🌣 🕥 🖉	🤣 🔳 🙌 🕑 🗖 🗟
Server	Host name	Status	State
🗄 WebSphere ESB Server v6.0	localhost	🖥 Stopped	Synchronized
WebSphere Process Server v6.0	localhost	🖥 Stopped	Synchronized
WebSphere Process v6.0 Server @ mvsxxx.rtp.ral	mvsxxx.rtp.raleigh.ibm.com	Started	Synchronized
▲			Þ

- ____10. Start the remote server if it is not already started. WebSphere Integration Developer does not support starting remote servers from the Server View.
 - _____ 11. From a command prompt, telnet to the remote system if needed:

'telnet <HOSTNAME> <TELNET_PORT>'

userid : <USERID>

pw: <PASSWORD>

_____ 12. Navigate to the bin directory for the profile being used:

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

- 13. Run the command file to start the server: ./startServer.sh <SERVER_NAME>
- _____ 14. Wait for status message indicating server has started:

ADMU3200I: Server launched. Waiting for initialization status.

ADMU3000I: Server cllsr01 open for e-business; process id is 000001200000002

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