

Software Requirements

- **WorkStation:**

- 1) Windows NT/2000/XP
- 2) WebSphere Development Studio client for iSeries, version 5.1
- 3) Internet Explorer 5.5 or higher

- **iSeries:**

- 4) OS/400 V5R1 or V5R2 with latest PTFs applied
- 5) WebSphere Application Server for Express/Base 5.0.2 or 5.1 5733WS5 (plus latest group PTF for WAS 5.1)
- 6) IBM Http Server Powered by Apache 5722-DG1 IBM HTTP Server for iSeries

Lab Setup

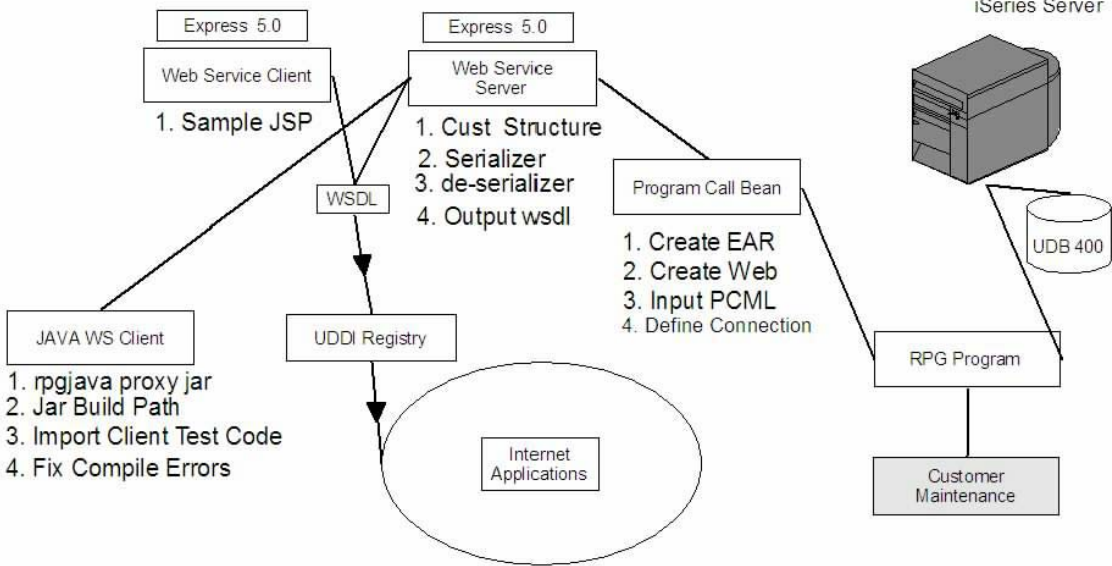
Before continuing with the exercises below, you first need to get your workstations applications started as follows:

- Start the Windows *Internet Explorer* by clicking **Start > Internet Explorer**, or the Windows desktop icon if available.
- Start the *WDS* by clicking **Start > Programs > IBM WebSphere Studio > Development Studio Client Advanced Edition for iSeries 5.1**. *WDS* takes a while to load, so continue onto the next step while it loads.
- Start a *5250 emulator session* by clicking the Windows desktop icon. Signon the iSeries using your team's user profile information found in the **Lab Usage** section of this document.

The lab exercises are designed to be done in the order in which they are documented. If you receive an error after a step, try to determine what might be wrong. If necessary, notify the instructor of the error. Do not continue with other lab exercises until the error condition is fixed. Begin with Exercise 1 and continue through Exercise 7. The exercises should not be done out of order.

Work at your own pace. If you have questions, raise your hand to get the instructor's attention

"RPGJAVA" Web Service Solution



Create the EAR Project

In the next several steps of the lab, we will create a new Web service **rpgjava Services** that utilizes an existing RPG program (wrappers the RPG program). SRCHNAMEServices is an Java program that will invoke the RPG program using the 'Program Call Bean' mechanism available with IBM Java Toolbox for iSeries. The Program Call Bean consists of Java client code that 'calls' an OS/400 host server, which in turn invokes the RPG program.

Using WDS, we will create a new Web project, import the source code and create the Web service. Later in the lab, this Web service will be invoked by a Web services client.

Perform the following steps.

Create a new Enterprise Application project called rpgjavaEAR to contain the Web service artifacts.

A. Change Perspective

Window->Open Perspective->Other...->J2EE

B. Create Enterprise Application

File->New->Enterprise Application Project

Select: Create J2EE 1.3 Enterprise Application Project **click Next**

Project Name: rpgjavaEAR **click Next**

Select: New Module...

Un-select : Create default module projects

Select: web **click Next**

Project Name: rpgjavaServiceProvider **click Finish**

Select: New Module...

Un-select : Create default module projects

Select: web **click Next**

Project Name: rpgjavaServiceRequester **click Finish**

Click Finish

Specify iSeries Web Tools Run-time Configuration... For rpgjavaServiceProvider for Web service.

A. Change Perspective view.

In upper left side of screen for WDS, in that pane at bottom there are two tabs. One should be J2EE Hierarchy and the other view is Project Navigator. **Click Project Navigator View.**

B. Add iSeries Runtime Configuration.

Right Click: rpgjavaServiceProvider

Select: Specify iSeries Web Tools Run-time Configuration

iSeries host name: myServer

User ID: myUserId

Password: myPassword

Runtime library list: rpgjava **click Add**

Click: Finish

Import PCML file into rpgjavaServiceProvider

A. Import PCML file

Right Click: rpgjavaServiceProvider

Select: Import...

Select: File system **click Next**

From Directory: click **Browse**

Locate Folder of PCML file on your workstation. **Click OK**

Select: srchname.pcml

Click Finish

Generate Program Call Bean (Java Bean).

B. Import PCML file

Right Click: rpgjavaServiceProvider

Select: New->Other...

Expand: iSeries and **click Java**

Select: Program Call Bean **click Next**

Click: Import PCML....

Select PCML file from: Click drop box and select Workspace

Select: rpgjavaServiceProvider

In right pane select: srchname.pcml **Click Ok**

Click: Select All

Click: Ok

Click Next:

Package: rpgjavaCode

Click: Finish

Generate Web Service Provider and WSDL from Java Bean (Program Call Bean).

C. In J2EE - Project Navigator View (Upper left pane)

Expand: rpgjavaServiceProvider->JavaSource->rpgjavaCode

Right Click: SRCHNAMEServices.java

Select: New->Other...->Web Services

Select: Web Service

Click: Next

Web service type: Java bean Web Service

Click: Next

Click: Next

Click: Next

Click: Deselect All

In Methods frame Select the Following:

srchname_InputBean(rpgjavaCode.SRCHNAMEInput)

srchname_XML_InputBean(rpgjavaCode.SRCHNAMEInput)

In Style and Use frame Select: RPC/Literal

Click: Finish

Generate Web Service Requester or Client from WSDL file.

C. In J2EE - Project Navigator View (Upper left pane)

Right Click: rpgjavaServiceRequester

Select: New->Other...->Web Services

Select: Web Service Client

Click: Next

Client proxy type: Java proxy

Select the generated proxy box:

Click: Next

Click: Next

Enter an URI to a WSDL, WSIL, or HTML Document:

Click Browse:

Expand: rpgjavaServiceProvider->WebContent->wsdl->rpgjavaCode

Select: SRCHNAMEservices.wsdl **click OK**

Click Next

Click Finish

(If error appears, right click on rpgjavaServiceRequester and run validation)

Web Browser Launch.

C. In Web Browser Pane:

Left Methods pane click: srchname_XML_InputBean

Upper Right Inputs pane: myName **Invoke**

Lower Right Result pane: should see name and data.

If <SFREC> is greater than zero, but no data is displayed
There might be issue with generated Code.

D. Fix SRCHNAMEservices generate java code

In J2EE - Project Navigator View (Upper left pane)

Expand: rpgjavaServiceProvider->JavaSource->rpgjavaCode

Double Click: SRCHNAMEservices.java

Control F (for Find)

Find: getIntValue("SRCHNAME.60")

Should be located two places in java file.

Replace "SRCHNAME.60" with "SRCHNAME.SFREC"

Change Perspective view.

E. Restart Test Server.

In upper left side of screen for WDS, in that pane at bottom there are two tabs. One should be J2EE Hierarchy and the other view is Project Navigator. **Click J2EE Hierarchy View.**

Expand: Servers

Right Click: WebSphere Express v5.0 Test Environment

Click: Restart

Web Browser Launch.

F. In Web Browser Pane:

Left Methods pane click: srchname_XML_InputBean

Upper Right Inputs pane: myName **Invoke**

Lower Right Result pane: should see name and data.

Generate WebServices Requester (Java Client).

A. In upper left side of screen for WDS, in that pane at bottom there are two tabs. One should be

J2EE Hierarchy and the other view is Project Navigator. **Click Project Navigator View.**

Right Click: rpgjavaServiceRequester->New->Project...

Select: Java **and in right pane** Java Project

Project Name: rpgjavaClient

Click: Finish

(Do you want to switch perspective?? Click No)

B. Setup Build Environment:

Right Click: rpgjavaClient

Select: Properties

Click: Java Build Path

Click: Libraries

Click: Add Variable...

Click: WAS_50_PLUGINDIR **and Click** Extend...

Select: lib/webservices.jar

Click: Ok

Click: Add Variable...

Click: WAS_50_PLUGINDIR **and Click** Extend...

Select: lib/qname.jar

Click: Ok

Click: Projects

Select check box: rpgjavaServiceRequester

Select: Order and Export

Select check box: rpgjavaServiceRequester

Click: OK

C. Import Java Client Code:

Right Click: rpgjavaClient

Select: Import...

Select: File System

Click: Next

From Directory Click: Browse...

(Locate Directory where rpgjavaClientTest.java is located)

Click: Ok

Select: rpgjavaClientTest.java

Click: Finish

D. Run Java Client Code

In project Navigator:

Expand and select: rpgjavaClient->(default package)->rpgjavaClientTest.java

Click: Run->Run As->Java Application

(Should see search values returned in lower system console, as application executes.)

Click Finish

Make Changes to code for Deploy on iSeries WAS Base/Express (etc...).

A. First Go to Green Screen on iSeries Server with :

Enter: QSH

Enter:

`/QIBM/ProdData/WebAS51/Base/bin/crtwasinst -instance rpgjava1 -portblock 30180`

Notice: internal http port value:_____

Enter:

`/QIBM/ProdData/WebAS51/Base/bin/startServer -instance rpgjava1`

B. On WDS Sc make following changes to Source

On WSDL file:

Expand: rpgjavaServiceProvider->WebContent->wsdl->rpgjavaCode

Double Click: SRCHNAMEServices.wsdl

In upper right Frame Click: Source (view)

(Scroll down to bottom)

(Enter your iSeries server and internal http port)

`<wsdlsoap:address location="http://localhost:7080/....`

localhost should be replaced with iSeries Server

port should be replaces with internal http port value

C. Change generated ServiceRequester Generated source:

Expand: rpgjavaServiceRequester->JavaSource->rpgjavaCode

Select: SRCHNAMEServicesServiceLocator.java

(locate "http://localhost:7080....")

localhost should be replaced with iSeries Server

port should be replaces with internal http port value

D. Export EAR file to deploy on iSeries WAS 5.1

Right Click: rpgjavaEAR

Select: Export...

Select: EAR file click Next

Destination: c:\temp\rpgjava.ear

Click: Finish

E. Install the EAR file on iSeries WAS 5.1

Open: Internet Explorer on workstation
Address: http://iSeriesName:30190/admin
User ID: myiSeriesID **click OK**
Expand: Applications and select **Install New Application**
Local Path, click Browse...
Navigate and select: C:\temp\rpgjava.ear **Select Open**
Click Next
Click Next
Click Next
Click Next
Click Next
Click Next
Click Finish
Click: Save to Master Configuration
Click: Save

Select: Application->Enterprise Applications
Select check box: rpgjavaEAR
Click: Start

F. Bring Up WebService JSP Client on Internet Explorer Browser:

Open another Internet Explorer Window:

Address:

<http://myiSeries:30189/rpgjavaServiceRequester/sample/SRCHNAMEServices/TestClient.jsp>

In Web Browser Pane:

Left Methods pane click: srchname_XML_InputBean

Upper Right Inputs pane: myName **Invoke**

Lower Right Result pane: should see name and data.

G. Test Web Service Requester (Java Client):

Go back to WDS and in upper left corner, frame.

Expand: rpgjavaClient->(default package)

Select: rpgjavaClientTest.java

Select: Run->Run As-> Java Application

Ensure Runtime Console Displays:

Service Endpoint Interface = <http://myiSeries:30189/...>

Thus completes the SRCHNAME portion of Web Services accessing rpgjava program.

You may repeat some these steps to generate ADD / Delete /Search by Zip.