Lab 3: Migrating Applications from WebSphere Application Server ND V6.1 to WebSphere Application Server ND V8.5

What this Lab Exercise is about

This lab exercise describes how to migrate two different applications from WebSphere Application Server ND V6.1 to WebSphere Application Server ND V8.5

Assumptions

It is assumed that you are using the WebSphere Version to Version Migration Workshop VMWare image that has been pre-installed with a WebSphere Application Server ND V6.1 standalone server profile containing the PlantsByWebSphere and StockQuote applications. It is also assumed that you have completed Lab1: Installing WebSphere Application Server ND V8.5

Introduction

This exercise will illustrate how to use the Application Migration Tool to help with Application Migration from one version of WebSphere Application Server to another. You will migrate two applications (Plants by WebSphere and Stock Quote) from WebSphere Application Server V6.1 to WebSphere Application Server V8.5.

Plants by WebSphere

The Plants by WebSphere application is an application that is available with the WebSphere Application Server samples gallery. As the name suggests, the application demonstrates several JEE functions using an online store that specializes in selling plants, trees, and accessories. Using the Plants by WebSphere storefront, customers can open accounts, browse for items to purchase, view product details, and place orders. The Plants by WebSphere application uses container-managed persistence (CMP), container-managed relationships (CMR), stateless session beans, a stateful session bean, JSP pages, and servlets. This application is only intended to showcase the capabilities of WebSphere Application Server itself. Nevertheless, it is useful in many testing and development scenarios. The source code of Plants by WebSphere is distributed with WebSphere Application Server, and, as such, you can modify it freely as you wish. "Plants by WebSphere" is included with WebSphere Application Server in all versions greater than 5.0.

The Plants by WebSphere Sample incorporates the following technologies:

- Container-managed persistence (CMP) entity beans
- Bean-managed persistence (BMP) entity beans
- Stateless session beans
- Stateful session beans
- Servlets
- JavaServer Pages (JSP) files and HTML
- Container-managed relationships (CMR)
- Java 2 platform, enterprise edition (J2EE) security

• Java API for XML-based remote procedure call (JAX-RPC)

The Plants by WebSphere application is supported through a series of JSP pages and HTML pages. These pages communicate with the following servlets: AccountServlet, ShoppingServlet, ImageServlet, and AdminServlet. The servlets use the various enterprise bean business methods, which in turn, access data from the database as needed. In general, stateless session beans are used to interface with the entity beans, in order to reduce the number of transactions. The high level architecture of the application is shown below.



Stock Quote

The Stock Quote application is a Web Services application based on the Axis 2 Web Services engine. Web services are a technology that allows applications to be invoked using internet standards and protocols. The applications are divided into multiple tiers, typically at least two: client and server. These two pieces communicate using XML messages defined by the SOAP 1.1 or 1.2 protocols.

WebSphere Application Server version 6.1 provides support for using the JAX-RPC and JAX-WS protocols and provides additional features such as a UDDI registry and extensions to the SOAP protocol known as WSIF.

The WebSphere Application Server also supports several additional protocols that build on top of the basic web services protocol such as WS-Notification and WS-ReliableMessaging. All of these functions are provided by the web services engine provided by the application server. However in some circumstances you need to use a third party web services engine, such as Axis

2. For example if you wish to deploy applications that use a single runtime across various application servers such as WebSphere Application Server, JBoss, and WebLogic you would use such a third party engine.

Note, however, that even though IBM supports the enablement of third party JAX-WS runtimes to run on WebSphere Application Server, and ensures the successful deployment of applications that use such runtimes, IBM does not provide support for resolving JAR file conflict problems, or any problem that a stack trace indicates is in the third party code. In addition using a third party web services engine will prevent the application server from recognizing that web services

provided by the third party engine are, in fact, web services and hence prevents the use of application level policy sets such as WS-Security, WS-RM, and WS-Transactions policy sets and also prevents the use of WSDM or the use of JNDI lookups to retrieve JAX-WS Services or Port Instances

The Stock Quote application is an example of an application that uses a third party web services engine, specifically the Axis2 web services engine. The application is extremely simple (in fact, it provides just two web services), but demonstrates the potential problems of migrating such an application.

The application provides a stock quote service that a client can use to discover stock prices by providing the symbol of the required stock price as input. The Axis Object Model (AXIOM) is used to allow arbitrary pieces of XML to be passed and returned in the body of the web services messages. In this example, of course, a simple Plain Old Java Object (POJO) could have been used as the implementation of the web service together with a suitable definition of the web service. The developer of this particular application chose to use the AXIOM style for the web service.

Exercise Instructions

Part 1 – Execute PlantsByWebSphere on WAS ND 6.1

- 1. Start the WAS ND 6.1 standalone server:
 - *a.* Open a Command Prompt
 - **b.** Navigate to
 - C:\IBM\WebSphere\AppServer61\profiles\AppSrv02\bin
 - c. Issue the command startServer.bat server1

📾 Command Prompt	- 🗆 🗙
Microsoft Windows XP [Version 5.1.2600] (C) Copyright 1985-2001 Microsoft Corp.	_
C:\Documents and Settings\wasadmin>cd \ibm\WebSphere\AppServer61\profiles\Ap 02\bin	pSrv
C:\IBM\WebSphere\AppServer61\profiles\AppSrv02\bin>startserver server1 ADMU0116I: Tool information is being logged in file c:\IBM\WebSphere\AppServer61\profiles\AppSrv02\logs\server1\start	Serv
er.log ADMU0128I: Starting tool with the AppSrv02 profile ADMU3100I: Reading configuration for server: server1 ADMU3200I: Server launched. Waiting for initialization status. ADMU3000I: Server server1 open for e-business; process id is 2752	

- 2. Open a Browser and navigate to http://127.0.0.1:9081/PlantsByWebSphere
- 3. Register a new Account:

a. Click Login			
🕙 Plants by WebSphere - M	lozilla Firefox		
<u>File E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> o	okmarks <u>T</u> ools <u>H</u> e	lp	
Plants by WebSphere	+		*
€ → 127.0.0.1:9081,	/PlantsByWebSphere/		☆ - C) 🚼 - Google 🔎 🏫
PLANTS BY WEBSPHER	RE		
Flowers Fruits & Vege	tables Trees	Accessories	HOME SHOPPING CART LOGIN HELP
		1	A CONTRACTOR OF THE

b. Click the link to register for your own account here

c. Enter the required information (you will need the E-mail address and password later on) and click **Register**

Login Information

E-mail address	* migration@ibm.com
Password	* *******
Verify Password	* ••••••
Contact Info	rmation
First Name	* Version
Last Name	* Migration
Address Line 1	* IBM
Address Line 2	
City	* New York
State	* NY
Zip Code	* 12356
Phone (daytime)* 999-999-9999

- 4. Login and make a purchase:
 - a. Click Login again, enter your E-mail address and Password and click sign-in
 - **b.** Click the **Bonsai Tree** special

Register



c. Change the Quantity to 3 and click Add to cart

Bonsai



Bonsais are great miniature replicas of your favorite yard tree. They can be indoors or out -- and their size makes them perfect for tabletop decoration.

ITEM#	DESCRIPTION	PRICE	QUANTITY
тоооз	0.5 gallon mature tree	\$30.00	3

d. Click Checkout now

e. Complete the Shipping Information and Payment Information and then click **Continue**

Shipping Information

Check here if the shipping address is the same as the billing address.

Full Name	*	Version Migration
Address Line 1	*	IBM
Address Line 2		
City	*	New York
State	*	NY
Zip Code	*	12356
Phone (daytime)	*	999-999-9999

Shipping Method

Select a shipping method below. Your order total will be updated on the next page.

Shipping Method	* Standard Ground (3 to 6 business days) \$4.99 💌
Credit Card	* American Express 💌
Card Number	* 222222222222
Expiration Month	* 01 💌
Expiration Year	* 2006 💌
Cardholder Name	* IBM
	Continue

f. On the "Review your order" page, click **Submit Order Review Your Order**

Review your order below and select 'Submit Order' at the bottom to place your order. You can also add more items to your order by selecting 'Continue Shopping'.

Continue Shopping Submit Order		
		Order Total: \$94.99
	Shipping,	Standard Ground: \$4.99
		Order Subtotal: \$90.00
T0003 Bonsai	0.5 gallon mature tree 3	\$30.00 \$90.00
ITEM # ITEM DESCRIPTION	PACKAGING Q	UANTITY PRICE SUBTOTAL
Order Details		
	New York, NY 12356 999–999–9999	New York, NY 12356 999-999-9999
\$94.99	Version Migration IBM	Version Migration IBM
ORDER TOTAL	SHIPPING ADDRESS	BILLING ADDRESS
Order Information		

g. After a short while your order will complete and the page shown below will appear

Order Completion

Thank you for making your Plants By WebSphere purchase!

Order number 2

Expected arrival in 5-7 business days.

- 5. Review the SystemOut.log for any errors
 - a. Open the
 C:\IBM\WebSphere\AppServer61\profiles\AppSrv02\logs\server1
 \SystemOut.log file
 - **b.** Scroll to the end of the file and check that no errors have been thrown

📕 SystemOut.log - Notepad		
File Edit Format View Help		
SystemOut.log - Notepad File Edit Format View Help [10/26/12 12:07:02:812 EDT] [10/26/12 12:07:02:843 EDT] [10/26/12 12:07:02:843 EDT] [10/26/12 12:07:03:859 EDT] [10/26/12 12:07:03:859 EDT] [10/26/12 12:07:03:859 EDT] [10/26/12 12:07:03:862 EDT] [10/26/12 12:07:03:80 EDT] [10/26/12 12:07:03:109 EDT] [10/26/12 12:07:03:214 EDT] [10/26/12 12:07:03:218 EDT] [10/26/12 12:07:03:250 EDT] [10/26/12 12:07:03:281 EDT] [10/26/12 12:07:03:312 EDT] [10/26/12 12:07:03:312 EDT] [10/26/12 12:07:03:328 EDT] [10/26/12 12:07:03:328 EDT] [10/26/12 12:07:03:328 EDT] [10/26/12 12:07:03:328 EDT]	0000001b Systemout 0000001b Systemout 0000001b Systemout 0000001b Systemout 0000001b Systemout 0000001b Systemout 0000001b Systemout 0000001b ApplicationMg 00000000 WSChannelFram 00000000 WSChannelFram 000000000 WSChannelFram 00000000 WSChannelFram 00000000 KMLConnestorC 00000001 WorkSpaceMana 00000000 WSCPVFImpl 0000002 WebContainer	<pre>0 [INFO] Deploying module: ping-1.6.2 - file:/c:/IBM/websphere/AppServer 0 [INFO] Deploying module: soapmonitor-1.6.2 - file:/c:/IBM/websphere/AppServer 0 [INFO] Deploying module: soapmonitor-1.6.2 - file:/c:/IBM/websphere/AppServer 0 [INFO] Deploying web service: StockQuoteservice.aar - file:/c:/IBM/websphere/AppServer 0 [INFO] Deploying web service: version-1.6.2.aar - file:/c:/IBM/websphere/AppServer 1 SRVE02421: [stock_quote_example_axis2_war] [/stockquote] [Axisservlet 1 SRVE02501: web Module Apache-Axis2 has been bound to default_host[*:9] 4 wSvR02211: Application started: stock_quote_example_axis2_war 1 TCPC00011: TCP Channel TCP_1 is listening on host * (IPv4) port 9042 1 A CHFW00191: The Transport Channel Service has started chain wCInboundd 1 TCPC00011: TCP Channel TCP_2 is listening on host * (IPv4) port 9043 1 A CHFW00191: The Transport Channel Service has started chain wCInboundd 1 TCPC00011: TCP Channel TCP_4 is listening on host * (IPv4) port 9044 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Transport Channel Service has started chain SOAPAccept 1 A CHFW00191: The Scheduler Service has completed starting the Schedulers. 1 SCHD00771: The Scheduler Service has completed starting the Schedulers. 2 A AMC02661: The RMI Connector is available at port 2811 2 A WSVR0</pre>
10/26/12 12:00:56:453 EDT 10/26/12 12:00:56:453 EDT 10/26/12 12:00:56:453 EDT 10/26/12 12:11:43:062 EDT 10/26/12 12:14:00:062 EDT 10/26/12 12:14:10:605 EDT 10/26/12 12:14:10:625 EDT 10/26/12 12:14:10:625 EDT 10/26/12 13:59:18:937 EDT 10/26/12 13:59:19:578 EDT 10/26/12 13:59:19:578 EDT 10/26/12 13:59:19:578 EDT 10/26/12 13:59:19:506 EDT 10/26/12 14:00:31:500 EDT 10/26/12 14:00:52:560 EDT	0000002c webcontainer 0000002c webcontainer 0000002c Servletwrappe 0000002c Servletwrappe 0000002c InternalGener 0000002c InternalGener 0000002c InternalGener 0000002c InternalGener 00000031 Servletwrappe 00000031 Servletwrappe 00000031 Servletwrappe 0000002f Servletwrappe	<pre>A wsykouoll: Server Server open of e-business E sRvE0255E: A webGroup/virtual Host to handle /favicon.ico has not bee E sRvE0255E: A webGroup/virtual Host to handle /favicon.ico has not bee SRvE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [/register.jsp]: Ini SRvE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [AccountServlet]: I SRvE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [AccountServlet]: DSRA82031: Database product name : Apache Derby I DSRA82051: JDBC driver name : Apache Derby SRA82051: JDBC driver version : 10.1.2.4 I SRvE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [Shoppingservlet] I SRVE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [Shoppingservlet] I SRVE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [Shoppingservlet] I SRVE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [/product.jsp]: I I SRVE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [/product.jsp]: I I SRVE02421: [PlantsBywebSphere] [/PlantsBywebSphere] [/cart.jsp]: Init I SRVE02421: [PlantSBywebSphere] [/PlantSBywebSphere] [/cart.j</pre>
[10/26/12 14:02:21:359 EDT] [10/26/12 14:03:31:984 EDT]	0000002f servletwrappe 0000002f servletwrappe	I SRVE0242I: [PlantsBywebSphere] [/PlantsBywebSphere] [/checkout_final. I SRVE0242I: [PlantsBywebSphere] [/PlantsBywebSphere] [/orderdone.jsp]:

6. Close the Browser and SystemOut.log file

Part 2 – Install Eclipse

The Migration Toolkit can be installed in to either Rational Application Developer or Eclipse. For this exercise we are going to use Eclipse (Indigo) which has been downloaded for you.

- 1. Unzip Indigo
 - a. Open a Windows Explorer and navigate to
 - C:\Workshop\Binaries\Eclipse
 - b. Right-click on eclipse-jee-indigo-SR2-win32.zip and select 7-Zip
 → Extract Files...

😂 Eclipse							Γ
File Edit View Favorites	Tools	Help				2	
🕒 Back 🔹 🕥 🕤 🏂		iearch 🝺 Folders 🕼 爹	× 9 📖	•			ŀ
Address 🛅 C:\WORKSHOP\Bina	ries\Ecl	ipse				💌 🄁 Go	
Folders	×	Name 🔺	Size	Туре	Date Modified		
 Ib Iogs optionalLibraries plugins profiles 	~	eclipse-jee-indigo-SR2-win32 ai emf-transaction-runtime-1.5. emf-validation-runtime-1.5.0. gmf-runtime-1.6.0.zip wdt-update-site_8.5.0.WDTE	Open Search Explore	Compressed (zippe Compressed (zippe Compressed (zippe Compressed (zippe Compressed (zippe	10/9/2012 2:36 PM 10/24/2012 4:41 PM 10/24/2012 4:42 PM 10/24/2012 4:42 PM 10/24/2012 5:08 PM		н
The profile Templates The properties The properties		-	7-Zip Open With Send To	Open archive Extract files Extract Here Extract to "eclipse-j	ee-indigo-5R2-win32\"		1. 51 76 0

c.	Change the	Extract to:	directory to	o C :∖ a	and click	OK

Ez Extract	
Extract to:	
Path mode:	Password
Full pathnames 🔽 🗸	
Overwrite mode:	Show Password
Ask before overwrite	
ОК	Cancel Help

- 2. Install the IBM Java 6.0 JRE
 - a. Open a Windows Explorer and navigate to C:\WORKSHOP\Binaries\Java
 - b. Double-click on ibm-java-jre-60-win-i386.exe
 - c. Click **OK** on the Language Dialog to accept United States (English)
 - d. When the "Welcome" screen appears, click **Next**
 - e. When the "License Agreement" screen appears, click Yes
 - f. When the "Choose Destination" screen appears, change the Destination Folder to C:\IBM\Java60 and click Next

IBM 32-bit Runtime Environment	for Java v6 - InstallShield Wizard 🛛 🛛 🔀
Choose Destination Location	
Select folder where setup will install file	s.
Setup will install IBM 32-bit Runtime En	wironment for Java v6 in the following folder.
To install to this folder, click Next. To in another folder.	nstall to a different folder, click Browse and select
C Destination Folder	
C:\IBM\Java60	Browse
InstallShield	
	<pre></pre>

g. Answer Yes to the "Install this Java Runtime Environment as the System JVM?"

question			
Question			\times
2	Install this Java Runtim	ne Environment as the System	JVM?
	Yes	No	

- h. When the "Start Copying Files" dialog is displayed, click Next
- i. When the "Browser Registration" dialog is displayed, click Next
- j. When the "Installation Wizard complete" dialog is displayed, click **Finish**
- 3. Install the WebSphere Developer Tools prerequisites
 - a. Open a Windows Explorer and navigate to
 - C:\Workshop\Binaries\Eclipse
 - b. Right-click on emf-transaction-runtime-1.5.0.zip and select 7-Zip

→ Extract Files...

c. Change the **Extract to:** directory to C:\ and change the **Overwrite mode:** to Overwrite without prompt click **OK**

🖸 Extract	X
Extract to: C:V	.
Path mode:	Password
Full pathnames 🛛 👻	
Overwrite mode: Overwrite without prompt	Show Password
ОК	Cancel Help

- d. Repeat steps a-c for emf-validation-runtime-1.5.0.zip
- e. Repeat steps a-c for gmf-runtime-1.6.0.zip
- 4. Install the WebSphere Developer Tools
 - a. Open a Command Prompt and navigate to C:\Eclipse
 - b. Issue the following command: eclipse -clean

ex Command Prompt

C:\IBM\WebSphere\AppServer61\profiles\AppSrv02\bin>cd \eclipse C:\eclipse>eclipse -clean

C:\eclipse>

c. When the Workspace Launcher is displayed, change the Workspace to C:\workspace\PlantsMigration and click **OK**

😌 Workspace Launcher	
Select a workspace	
Eclipse stores your projects in a folder called a workspace. Choose a workspace folder to use for this session.	
Workspace: C:\workspace\PlantsMigration	Browse
Use this as the default and do not ask again	
	OK Cancel

d. Click the **Workbench** icon to close the Welcome Screen.



e. Click *Help* → *Install New Software*

f. Click Add	
🔘 Install	
Available Software Select a site or enter the location of a site.	
Work with: ⁰ type or select a site	Find more software by working with the <u>"Available Software Sites"</u> preferences.

g. Click Archive...

🔘 Add F	Repository		X
Name:			Local
Location:	http://		Archive
?		OK	Cancel

h. Navigate to C:\WORKSHOP\Binaries\Eclipse\wdt-update-

site 8.5.0.WDT85iFix1-I20120801 1708.zip and click Open

i. When you are returned to the Add Repository dialog, click **OK**

j. Select the WebSphere Application Server Developer Tools for Eclipse V8.5 and click Next

I			
I	Work with:	jar:file:/C:/WORKSHOP/Binaries/Eclipse/wdt-update-site_8.5.0.WDT85iFix1-I20120801_1708.zip!/	~
		Find more software by working with the "A	vailable Software Site
I			
I			
I	Name	Version	
I	🕀 🔽 💷 🗸	VebSphere® Application Server Developer Tools for Eclipse V8.5	

- k. When the Install Details screen is displayed, click Next
- When the Review Licenses screen is displayed, accept the Licenses and click
 Finish

m.	when the Security warning is displayed, click UK
🔘 Sec	curity Warning
<u>.</u>	Warning: You are installing software that contains unsigned content. The authenticity or validity of this software cannot be established. Do you want to continue with the installation?
	OK Cancel Details >>

n. When the installation completes the Software Updates screen will be displayed. Click **Restart Now**

Software Updates		×		
You will need to restart Eclipse for the installation changes to take effect. You may try to apply the changes without restarting, but this may cause errors.				
Restart Now	Not Now	Apply Changes Now		

Part 3 – Import the PlantsByWebSphere Application

- 1. Start Eclipse (if it isn't already running from the previous step)
 - a. Open a Windows Explorer and navigate to C:\eclipse
 - b. Double-click on eclipse.exe
 - c. When the Workspace Launcher is displayed, change the Workspace to C:\workspace\PlantsMigration and click **OK**

O Workspace Launcher	×
Select a workspace	
Eclipse stores your projects in a folder called a workspace. Choose a workspace folder to use for this session.	
Workspace: C:\workspace\PlantsMigration	Browse
Use this as the default and do not ask again	
	OK Cancel

- 2. Import the PlantsByWebSphere Application Code
 - a. Click *File* → *Import*
 - b. When the "Select" dialog is displayed, select Java $EE \rightarrow EAR$ file and click

Next

Select an import source:		
type filter text		
🗄 🗁 General		
🚊 🗁 CVS		
🚊 🗁 EJB		
🗄 🗁 Install		
🚊 🧀 Java EE		
🔤 🛃 App Client JAR file		
TE, EAR file		
🔁 Java EE Utility Jar		
🔜 🔍 RAR file		
🕀 🗁 Plua-in Development		

c. Click **Browse...** (EAR file) and navigate to

C:\WORKSHOP\Applications\Plants\DeliveryTargetPlantsByWebSp here.ear d Click New (Target runtime)

u. Click	New (Target Tuntine)	
🔘 Import		
Enterprise Ap Import an Enter	pplication Import prise Application project based on selected resources.	G.
EAR file:	OP\Applications\Plants\DeliveryTargetPlantsByWebSphere.ear	Browse
EAR project: Target runtime:	<pre>Online></pre>	✓ New
	L	

e. Select WebSphere Application Server v8.5 from the list and click Next

ONew Server Runtime Environment	
New Server Runtime Environment Define a new server runtime environment	
Download additional ser Select the type of runtime environment: type filter text	ver adapters
Apache Basic Basic Besic Besic	
WebSphere Application Server v8.5	~

f. Click Browse... (Installation Directory)

😂 New Server Runtime Environment	
WebSphere Application Server Runtime Environment Specify the WebSphere Application Server installation directory.	
Name:	
WebSphere Application Server v8.5	
Installation directory:	
	Browse
(For example, /opt/WebSphere/AppServer)	
JRE for the runtime environment:	
×	
JRE location:	

g. Navigate to C:\IBM\WebSphere\AppServer85 and click OK

	Name:
	WebSphere Application Server v8.5
	Installation directory:
	C:\IBM\WebSphere\AppServer Browse
	(For example, /opt/WebSphere/AppServer)
	JRE for the runtime environment:
	WebSphere Application Server JRE 1.6, 32 bit
	JRE location:
	C:\IBM\WebSphere\AppServer\java\jre
]	h. Click Finish

.

i	. When	you are returned to the Enterprise Application In	nport dialog,	click Next
ĺ	🔘 Import			
	Enterprise Ap Import an Enter	oplication Import prise Application project based on selected resources.	G.	
	EAR file:	C:\WORKSHOP\Applications\Plants\DeliveryTargetPlantsByWeb	Browse	
	EAR project:	DeliveryTargetPlantsByWebSphere	~	
	Target runtime:	WebSphere Application Server v8.5	Vew	
	?	< Back Next > Finish	Cancel	

- On the Utility JARs and web libraries dialog, click Next j.
- k. On the EAR modules and Utility JAR projects dialog, click Finish

Part 4 – Install and Configure the Application Migration Toolkit

The Application Migration Toolkit is a downloadable plugin to Eclipse. It has already been downloaded for you and can be installed in to Eclipse using the following steps.

1. Install the ApplicationMigration Toolkit

Eclipse should already be running and open in the **PlantsMigration** workspace a. from the previous step. If it is not already open, use the steps from Part 3 to open it.

- Click *Help* → *Install New Software* b.
- Click Add... c.

0

© Install	
Available Software Select a site or enter the location of a site.	
Work with: ⁰ type or select a site	Add Find more software by working with the <u>"Available Software Sites"</u> preferences.

d. (Click Archive		
🔘 Add F	Repository		
Namer			Local
l and la	Luc		Aushius
LUCACION:	nup;//		Archive.
?		ОК	Cancel

e. Navigate to C:\WORKSHOP\Binaries\Toolkit\Application_Migration_Tool_Web Sphere Version to Version v3.5.0.zip and click Open

f. When you are returned to the Add Repository dialog, click **OK**

g. Select **Application Migration Tools** from the Available Software list and click **Next**

Work with:	jar:file:/C:/WORKSHOP/Binaries/Toolkit/Application_Migration_ Fin	Tool_WebSphere_Version_to_Version_v3.5.0.zip!/
type filter	ext	
Name		Version
	Application Migration Tools Application Migration Tool - Common Feature Application Migration Tool - JRE Feature Application Migration Tool - WebSphere Version to Version	3.5.0.v20120525_1132 3.5.0.v20120525_1132 3.5.0.v20120525_1132

h. When the Install Details screen is displayed, click Next

i. When the Review Licenses screen is displayed, accept the Licenses and click **Finish**

j. When the installation completes the Software Updates screen will be displayed. Click **Restart Now**

2. Configure the Application Migration Toolkit

a. Right-click on **PlantsByWebSphere** in the Enterprise Explorer and select **Software Analyzer → Software Analyzer Configurations...**

•/		v	
😤 Enterprise Explorer	🛛 📌 Services 📄 🔄		
🕀 🎦 DeliveryTargetF	PlantsByWebSphere		
PlantsByWebSp	New	•	
🗄 🔁 PlantsGallery	Go Into		
	Show In	Alt+Shift+W	
	📄 Сору	Ctrl+C	
	🛅 Copy Qualified Name		
	💼 Paste	Ctrl+V	
	💢 Delete	Delete	
	€ Remove from Context	Ctrl+Alt+Shift+Down	
	Build Path	•	
	Refactor	Alt+Shift+T	
	Import	•	
	Export	•	
	🔊 Refresh	F5	
	Close Project		
	Close Unrelated Projects		
	Validate		
	Show in Remote Systems v	iew 🦷	
	Software Analyzer		Software Analyzer Configurations
	Run As	•-	

b. Right-click on Software Analyzer and select New

Software Analyzer Configurations			
Create, manage, and run configurations Select a range of inputs from the scope tab and at least one rule from			
type filter text	Configure launch settings from t		
New	ate ass the 'Delete' button I ass the 'Filter' button to		

c. Set the Name to Version to Version and ensure that the Scope is set to Analyze entire workspace

Ν	lame: Version to Version		
1	🖶 Scope 🛛 🗠 Rules		
ſ	Analyze entire workspace	^	
	O Analyze a resource working set		

d. Switch to the **Rules** tab, select WebSphere Application Server Version Migration from the **Rule Sets** list and click Set...

Name: Ver	sion to Version
💮 Scope	
Rule Sets	WebSphere Application Server Version Migration 🗸 Set
Applusic D	Demoios and Dulos

e. Change the **Source application server** to WebSphere Application Server V6.1, the **Target application server** to WebSphere Application Server V8.5 and click **OK**

Rule set configuration				
WebSphere Application Server Migration Tool rule selection details				
Source application server:	WebSphere Application Server V6.1	*		
Target application server:	WebSphere Application Server V8.5	*		
Source Java version:	Java 5	~		
Target Java version:	Java 6	*		
	OK Cance			

f. On the Software Analyzer Configurations dialog, click **Apply** and then click **Close**

Part 4 – Analyze and Migrate the PlantsByWebSphere Application

- 1. Run the Application Migration Toolkit
 - *a.* Right-click on **PlantsByWebSphere** in the Enterprise Explorer and select **Software Analyzer → Software Analyzer Configurations...**
 - **b.** Click Version to Version and then click Analyze
 - *c.* The Software Analyzer Results dialog will appear and should show 124 results.



2. Analyze the Java Code Review items

a. In the **Software Analyzer Results** dialog, change to the **Java Code Review** tab and open the tree. Note that the results have **Yellow** Warning icons to highlight that action is required. Right click on the **MailerBean.java** Result and click **View Result**

Snippets 🗔 Annotations 된 Software Analyzer Results 🛛	
JSP Code Review Java Code Review XML File Review	
	\$ 12 6
 Ava SE version migration [1 result in 70ms] Java SE 6 compatibility impacts [1 result in 70ms] Check for Duration and XMLGregorianCalendar equals() method compatibility [1 result in 19ms] MailerBean.java:88 Check for Duration and XML GregorianCalendar equals() method compatibility View Result 	
Ignore Result Image: Constraint of the second se	

b. The Java Code for MailerBean.java is displayed and line 88 is highlighted.

```
Duration d = df.newDuration(duration);
Duration zero = df.newDuration(0);
if (!d.equals(zero)) { // If the duration isn't zero build a new date
    XMLGregorianCalendar cal = df.newXMLGregorianCalendar(new GregorianCalendar());
    cal.add(d);
    return ((DateFormat)DateFormat.getDateInstance().clone()).format(cal.toGregorianCalendar().getTime());
}
else {
    return "";
}
```

NOTE: This rule flags the use of the *equals(Object param)* method on *javax.xml.datatype.Duration or javax.xml.datatype.XMLGregorianCalendar*. Java 6 now returns false if the parameter passed is null. It used to throw a *NullPointerException* in earlier versions of Java. In this case, the code handles the true/false Boolean return correctly, so no code changes are required.

c. In the Software Analyzer Results dialog, change to the Java Code Review tab and open the tree. Right click on the MailerBean.java Result and click Ignore Result*d.* Note the changes that were made when you chose to ignore the result.



3. Analyze the XML File Review items

a. In the **Software Analyzer Results** dialog, change to the **XML File Review** tab and open the tree. Note that the results have **Green** icons next to them to highlight that action is not required. Both of these results refer to functions that have been deprecated but not removed from WebSphere.



NOTE: In this instance the first of the results refers to the use of *method-level access intent for entity beans*. Method level access intent was deprecated because it might run into data access problems, like deadlock. While it is possible to modify the deployment descriptor for each of the entity beans to use a *bean-level access intent*, it is more likely that code changes will be required to achieve the same functionality without using deprecated features.

NOTE: The second of the results refers to the use of *reloadInterval* and *reloadingEnabled* attributes of the IBM deployment descriptor extensions which has been deprecated, including both the WAR file extension (WEB-INF/ibm-web-ext.xmi) and the application extension (META-INF/ibm-application-ext.xmi). Instead of using deployment descriptor extensions, you should use the reload enable and interval options provided during application deployment.

b. As the results returned by the Application Migration Tool do not require any code changes as the functions that are noted are only deprecated, we are going to proceed without making any changes.

c. If you choose, you can open *PlantsByWebSphere/WebContent/WEB-INF/ibm-web-ext.xmi* in a Text Editor and review the reloadInterval and reloadingEnabled parameters.



4. Analyze the problems that were not discovered by the Application Migration Toolkit. While the Application Migration Tool detects many migration problems, there are a few classes of migration problems that are currently not detected by the tools:

- Migration problems in applications originally written for versions of WebSphere Application Server prior to version 5.1
- Migration problems in Java code included as snippets inside of JSPs.
- Migration problems in Java code where the migration problem is hidden by the use of java reflection.

If you suspect that an application being migrated has code that falls into any of these categories, you will need to put in place a plan to manage the risks of undetected migration problems, for example, by putting in place a manual code review plan for the affected application or application parts.

As it happens the PlantsByWebSphere application actually has such a problem in one of its JSP files. The error.jsp file has a section of Java code, as shown below, that uses java reflection to invoke the getStackTrace method on the ServletErrorReport class provided by the WebSphere Application Server. This method was modified in WebSphere 5.1 to avoid a conflict caused by a change in Java 1.4 to the Throwable class. This particular change thus falls into all three of the categories of potential application migration problems that are not detected by the application migration tools.

a. Open *PlantsByWebSphere/WebContent/error.jsp* in a Text Editor and navigate to line 68 to view the use of getStackTrace

🧟 error.jsp 🛛	
	//does not exist at compile time there will not be a problem //if this class does not exist we will juse use the attributes specified by Servlet 2.2
	Class myClass = Class.forName("com.ibm.websphere.servlet.error.ServletErrorReport"); Method myMethod = myClass.getMethod("getErrorCode", null);
	Object o = myMethod.invoke(myKeport_null); status_code = ((Integer) o).intValue();
▲	myMethod = myClass.getMethod("getMessage", null); o = myMethod.invoke(myReport, null); message = (java.lang.String) o;
	<pre>myMethod = myClass.getMethod("getStackTrace", null);</pre>
()	<pre>o = mymethod.invoke(mykeportnull); exception_info = (java.lang.String) o; needInfo = 0; method = "Using attribute of type com.ibm.websphere.servlet.error.ServletErrorReport to get information.";</pre>

NOTE: We are not going to fix this problem at this time; we will demonstrate that the problem occurs at runtime and then return to fix it.

Part 5 – Execute PlantsByWebSphere on WAS ND 8.5

- 1. Export the EAR file from Eclipse
 - a. Right-click on **DeliveryTargetPlantsByWebSphere** in the Enterprise Explorer and select $Export \rightarrow EAR$ file



b. Set the **Destination** to be

c:/DeliveryTargetPlantsByWebSphere.ear, ensure that the **Target runtime** is set to WebSphere Application Server v8.5 and click **Finish**

💭 Export				
EAR Export Export Enterprise Application project to the local file system.				
EAR project: Destination:	DeliveryTargetPlantsByWebSphere c:/DeliveryTargetPlantsByWebSphere.ear	Browse		
Target runtin Optimize f WebSphere	ne for a specific server runtime Application Server v8.5	✓		

Lab 3 - Migrating Applications from WAS ND 6.1 to WAS ND 8.5

2. Create a new WebSphere Application Server V8.5 standalone profile

a. Click Start \rightarrow Programs \rightarrow IBM WebSphere \rightarrow IBM WebSphere Application Server V8.5 \rightarrow Tools \rightarrow Profile Management Tool

b. Click Create...

c. When the Environment Selection dialog is displayed, click **Next** to select the default option of Application Server

4	Profile Management Tool 8.5						
E	Environment Selection						
	Select a specific type of environment to create.						
	Environments:						
	WebSphere Application Server						
	Cell (deployment manager and a federated application server)						
	···· Management						
	- Application server						
	···· Custom profile						
	End Secure proxy (configuration-only)						
	Secure proxy (configuration-only)						

d. When the Profile Creation dialog is displayed click **Next** to accept the default option of Typical Profile Creation

Profile Management Tool 8.5	
Profile Creation Options	10
	- D
Choose the profile creation process that meets your needs. Pick the Typical option to allow the Profile Management Tool to assign a set of default configurat the profile. Pick the Advanced option to specify your own configuration values for the profile.	ion values to
• Typical profile creation	
Create an application server profile that uses default configuration settings. The Profile Management Tool assigns unique names to the profile, node, The tool also assigns unique port values. The administrative console and the default application will be installed. You can optionally select whether to administrative security. The tool might create a system service to run the application server depending on the operating system of your machine and privileges assigned to your user account.	and host. enable the
Note: Default personal certificates expire in one year. Select Advanced profile creation to create a personal certificate with a different expiration.	
O Advanced profile creation	
Create application server using default configuration settings or specify your own values for settings such as the location of the profile and names of node, and host. You can assign your own port values. You can optionally choose whether to deploy the administrative console and Sample applicatior create a Web server definition. You might have the option to run the application server as a system service depending on the operating system of yo and the privileges assigned to your user account.	the profile, ns, and ur machine

e. Enter User name = admin and Password = admin for the Administrative User and click Next

Profile Management Tool 8.5						
Administrative Security						
Choose whether to enable administrative security. To enable security, supply a user name and p created in a repository within the application server. After profile creation finishes, you can add						
Enable administrative security						
User name:						
admin						
Password:						
••••						
Confirm password:						
•••••						

f. When the Review dialog is displayed, click **Create**

g. When the Profile Creation Complete dialog is displayed, **uncheck** the Launch the First Steps Console and click Finish

- 3. Start the WebSphere Application Server V8.5 standalone server
 - *a.* Open a Command Prompt
 - **b.** Navigate to

C:\IBM\WebSphere\AppServer85\profiles\AppSrv02\bin

- *c*. Issue the command startServer.bat server1
- 4. Create the JDBC Provider

JDBC providers

a. Click Start → Programs → IBM WebSphere → IBM WebSphere Application Server V8.5 → Profiles → AppSrv02 → Administrative Console

- **b.** Log in as User name = admin Password = admin
- c. Navigate to **Resources** \rightarrow **JDBC** \rightarrow **JDBC Providers**
- *d.* Set the Scope to Node=ibm-ff14964ad3eNode03, Server=server1 and click New

1DBC provider				
Use this page to edit properties of a JDBC provider. The JDBC provider object encapsulates the specific JDBC driver implementation class for access to the specific vendor database of your environment. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.				
Scope: Cell=ibm-ff14964ad3eNode02Cell, Node=ibm-ff14964ad3eNode03, Server=server1				
Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, <u>see the scope</u> <u>settings help.</u>				
Node=ibm-ff14964ad3eNode03, Server=server1 💟				
Preferences				
New Delete				

- *e.* Select Derby from the Database list
- *f.* Select Derby JDBC Provider 40 from the Provider Type list

g.	Select XA data source from the Implementation Type list					
→	Step 1: Create new JDBC provider					
	Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values.				
		Scope				
		cells:ibm- ff14964ad3eNode02Cell:nodes:ibm- ff14964ad3eNode03:servers:server1				
		* Database type Derby 💟				
		* Provider type				
		Derby JDBC Provider 40 🛛 👻				
		* Implementation type XA data source				
		* Name Derby JDBC Provider 40 (XA)				

- *h*. Click Next
- *i.* On the Summary Dialog, click **Finish**
- *j.* Save the changes to the Master Configuration
- 5. Create the JDBC DataSource
 - a. Navigate to **Resources** \rightarrow **JDBC** \rightarrow **JDBC Providers**

Jata sources				
Data sources				
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. object supplies your application with connections for accessing the database. Learn more about this ta <u>activity</u> . A guided activity provides a list of task steps and more general information about the topic.				
Scope: Cell=ibm-ff14964ad3eNode02Cell, Node=ibm-ff14964ad3eNode03, Server=server1				
Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings help.</u> Node=ibm-ff14964ad3eNode03, Server=server1 💌				
Preferences				
New Delete Test connection Manage state				

- *c*. Set the **Data source name** = **PLANTSDB**
- *d*. Set the JNDI name = jdbc/PlantsByWebSphereDataSource



e. Click Next

f. Select Derby JDBC Provider 40 (XA) from the Existing JDBC Provider list

Create a data source					
Create a data source					
Step 1: Enter basic	Select JDBC provider				
 Step 2: Select JDBC provider Step 3: Enter database specific properties for the data source 	Specify a JDBC provider to support the datasource. If you choose to create a new JDBC provider, it will be created at the same scope as the datasource. If you are selecting an existing JDBC provider, only those providers at the current scope are available from the list.				
Step 4: Setup security aliases Step 5: Summary	 Create new JDBC provider Select an existing JDBC provider Derby JDBC Provider 40 (XA) 				
Previous Next Cancel					

- g. Click Next
- *h.* Set **Database Name** = \${APP_INSTALL_ROOT}/\$ {CELL}/PlantsByWebSphere.ear/Database/PLANTSDB



- *i.* Click Next
- *j.* On the Security Aliases dialog, click **Next**
- *k.* On the Summary dialog, click **Finish**
- *l.* Save the changes to the Master Configuration
- 6. Deploy the PlantsByWebSphere application
 - a. Navigate to Applications \rightarrow Application Types \rightarrow WebSphere enterprise applications
 - **b.** Click Install
 - c. Click Browse...
 - *d.* Navigate to C:\DeliveryTargetPlantsByWebSphere.ear
 - e. Click Next
 - f. On the "How do you want to install the application?" dialog, click Next
 - g. On the "Select installation options" dialog, click Next
 - *h.* On the "Map modules to servers" dialog, click Next
 - *i.* On the "Map virtual hosts for Web modules" dialog, click Next
 - *j.* On the "Summary" dialog, click **Finish**
 - *k.* Save the changes to the Master Configuration
 - *l.* Navigate to Applications \rightarrow Application Types \rightarrow Enterprise Applications
 - *m.* Select PlantsByWebSphere and click Start

Enterprise Applications							
Enterp	Enterprise Applications						
Use this page to manage installed applications. A single application can be deplo							
Preferences Start Stop Install Uninstall Update Rollout Update Remove Fil							
Select	Name 🛟	Application Status ሷ					
You c							
	DefaultApplication	⇒					
	<u>PlantsByWebSphere</u>	8					

- 7. Open a Browser and navigate to http://127.0.0.1:9082/PlantsByWebSphere
- 8. Register a new Account:

а.	C	lick Login							
🚯 WebSphere Integrated Solutions Console 🛛 🗌 Integrated Solutions Console 🛛 👋 🗌 Plants by W						Plants by WebSphere	x	+	Ŧ
127.0.0.1:9082/PlantsByWebSphere/					☆ - C	<mark>}</mark> ▼ Google	Ļ		
PLANTS BY WEBSPHERE									
	Flowers	Fruits & Vegetables	Trees	Accessories		номе	SHOPPING CART	LOGIN	HELP
									~

b. Click the link to register for your own account here

c. Enter the required information (you will need the E-mail address and password later on) and click **Register**

Login Information

E-mail address 🔹	migration@ibr	m.com
Password *	•••••	
Verify Password*	•••••	

Contact Information

First Name	*	Version		
Last Name	*	Migration		
Address Line 1	*	IBM		
Address Line 2				
City	*	New York		
State	*	NY		
Zip Code	*	12356		
Phone (daytime)*		999-999-9999		

Register

- 9. Login and make a purchase:

- *a.* Click Login again, enter your E-mail address and Password and click sign-in
- b. Click the Bonsai Tree special Specials Bonsai Tree \$30,00 each Red Delicious Strawberries \$3,50 (50 seeds) Tulips \$17.00 (10 bulbs)
- *c*. Change the **Quantity** to **3** and click **Add to cart**

Bonsai



- *d.* Click Checkout now
- *e*. Complete the Shipping Information and Payment Information and then click **Continue**

Shipping Information

Check here if the shipping address is the same as the billing address.

Full Name	*	Version Migration
Address Line 1	*	IBM
Address Line 2		
City	*	New York
State	*	NY
Zip Code	*	12356
Phone (daytime)	*	999-999-9999

Shipping Method

Select a shipping method below. Your order total will be updated on the next page.

Shipping Method	* Standard Ground (3 to 6 business days) \$4.99 ⊻
Credit Card	* American Express 💌
Card Number	* 222222222222
Expiration Month	* 01 🗸
Expiration Year	* 2006 💌
Cardholder Name	* IBM
	Continue

f. On the "Review your order" page, click **Submit Order**

Review Your Order

Review your order below and select 'Submit Order' at the bottom to place your order. You can also add more items to your order by selecting 'Continue Shopping'.

Order Information		
ORDER TOTAL	SHIPPING ADDRESS	BILLING ADDRESS
\$94.99	Version Migration IBM New York, NY 12356 999-999-9999	Version Migration IBM New York, NY 12356 999-999-9999
Order Details		
ITEM # ITEM DESCRIPTION	PACKAGING	UANTITY PRICE SUBTOTAL
T0003 Bonsai	0.5 gallon mature tree 3	\$30.00 \$90.00
		Order Subtotal: \$90.00
	Shipping,	Standard Ground: \$4.99
		Order Total: \$94.99
Continue Shopping Submit Order		

g. After a short while your order will complete and the page shown below will appear

Order Completion

Thank you for making your Plants By WebSphere purchase!

Order number 2

Expected arrival in 5-7 business days.

10. Review the SystemOut.log for any errors

a. Open the
C:\IBM\WebSphere\AppServer85\profiles\AppSrv02\logs\server1
\SvstemOut.log file

- **b.** Scroll to the end of the file and check that no errors have been thrown
- 11. You have now migrated and tested the PlantsByWebSphere application. Close the Browser and SystemOut.log file

Part 6 – Analyze and Fix error.jsp

In Part 4 we decided to leave fixing the error.jsp file until later. In this Part we will trigger an error which will load the JSP file, analyze and fix the problem with the Java Snippet and then deploy and test the change.

1. Open a Browser and navigate to <u>http://127.0.0.1:9082/PlantsByWebSphere/index1.jsp</u> note that the message shown is a generic one based on the status_code and that no stack trace is displayed.

> > 127.0.0.1:9082/PlantsByWebSphere/index1.jsp

An Error has occured during PlantsByWebSphere processing

Jsp Error Page

Using attributes javax.servlet.error.message ...status_code ...exception as specified by Servlet 2.2 to get information

Processing request:http://127.0.0.1:9082/PlantsByWebSphere/error.jsp StatusCode: 404 Message:JSPG0036E: Failed to find resource /index1.jsp Exception: java.io.FileNotFoundException: JSPG0036E: Failed to find resource /index1.jsp Please Check the application server log files for details...

PLANTS BY WEBSPHERE

2. Analyze and fix the JSP file

a. Eclipse should already be running and open in the PlantsMigration workspace from the previous step. If it is not already open, use the steps from Part 3 to open it. *b.* Open *PlantsByWebSphere/WebContent/error.jsp* in a Text Editor and navigate to line 68 to view the use of getStackTrace

🙆 e	rror.jsp 🛛
	//does not exist at compile time there will not be a problem
	//if this class does not exist we will juse use the attributes specified by Servlet 2.2
	Class myClass = Class.forName("com.ibm.websphere.servlet.error.ServletErrorReport");
	Method myMethod = myClass.getMethod("getErrorCode", null);
	Object o = myMethod.invoke(myReport, null);
	<pre>status_code = ((Integer) o).intValue();</pre>
	<pre>myMethod = myClass.getMethod("getMessage", null);</pre>
	<pre>o = myMethod.invoke(myReport, null);</pre>
	message = (java.lang.String) o;
	<pre>myMethod = myClass.getMethod("getStackTrace", null);</pre>
	o = mymethod.invokeimykeport, mull);
	exception_info = (java.lang.String) o;
	needInfo = 0;
	<pre>method = "Using attribute of type com.ibm.websphere.servlet.error.ServletErrorReport to get information.";</pre>

c. As mentioned in Part 4, *getStackTrace* was used in WebSphere 5.1 to work around a problem with Java 1.4 and the Throwable class. It isn't detected by the Application Migration Toolkit because it is a reflection (not a direct use of the class) and is in a Java Snippet in a JSP file. The fix is to use the *getStackTraceAsString* method instead.

d. Modify the JSP file, replacing *getStackTrace* with *getStackTraceAsString* as shown below

```
myMethod = myClass.getMethod("getStackTraceAsString", null);
o = myMethod.invoke(myReport, null);
exception_info = (java.lang.String) o;
needInfo = 0;
method = "Using attribute of type com.ibm.websphere.servlet.error.ServletErrorReport to get information.";
```

- *e.* Save the change.
- 3. Export the new EAR file

a. Right-click on **DeliveryTargetPlantsByWebSphere** in the Enterprise Explorer and select *Export* \rightarrow *EAR file*



b. Set the **Destination** to be

c:/DeliveryTargetPlantsByWebSphere.ear, ensure that the **Target runtime** is set to WebSphere Application Server v8.5 and that **Overwrite existing file** is selected, then click **Finish**

🖉 Export			
EAR Export Export Enterp	rise Application project to the local file system.		
EAR project: Destination: Target runtin	DeliveryTargetPlantsByWebSphere c:/DeliveryTargetPlantsByWebSphere.ear e or a specific server runtime	Browse	
WebSphere Application Server v8.5 Export source files Overwrite existing file			

4. Update the running PlantsByWebSphere EAR file

a. Click Start \rightarrow Programs \rightarrow IBM WebSphere \rightarrow IBM WebSphere Application Server V8.5 \rightarrow Profiles \rightarrow AppSrv01 \rightarrow Administrative Console

b. Log in as User name = admin Password = admin

c. Navigate to Applications \rightarrow Application Types \rightarrow WebSphere enterprise applications

d. Select **PlantsByWebSphere** and click **Update**

Start	Stop Install Uninstall Update Rollout Updat	e Remove File Exp				
Select	Name 🛟	Application Status ሷ				
You can administer the following resources:						
	DefaultApplication	€				
	<u>PlantsByWebSphere</u>	€				

e. Click **Browse...**

- f. Navigate to C: \DeliveryTargetPlantsByWebSphere.ear
- g. Click Next
- *h.* On the "How do you want to install the application?" dialog, click Next
- *i.* On the "Select installation options" dialog, click Next
- *j.* On the "Map modules to servers" dialog, click Next

- *k.* On the "Summary" dialog, click **Finish**
- *l.* **Save** the changes to the Master Configuration
- 5. Test the change to error.jsp
- *a.* Open a Browser and navigate to

<u>http://127.0.0.1:9082/PlantsByWebSphere/index1.jsp</u> not that message shown is a now a specific one and now includes a stack trace.

Image: 127.0.0.1:9082/PlantsByWebSphere/index1.html	🟫 र 🕑 🚼 र Google 🛛 🔎
An Error has occured during PlantsByWebSphere pro	ocessing
Jsp Error Page	
Using attribute of type com.ibm.websphere.servlet.error.ServletErrorReport to get in	formation.
Processing request:http://127.0.0.1:9082/PlantsByWebSphere/error.jsp StatusCode: 404 Message:java.io.FileNotFoundException: SRVE0190E: File not found: /index1.htm Exception:com.ibm.ws.webcontainer.webapp.WebAppErrorReport: java.io.FileNo	l tFoundException: SRVE0190E: File not found:
/index1.html at com.ibm.ws.webcontainer.webapp.WebAppErrorReport.constructEr com.ibm.ws.webcontainer.webapp.WebAppErrorReport.constructErrorReport(Web com.ibm.ws.webcontainer.filter.WebAppFilterManager.invokeFilters(WebAppFilter) com.ibm.ws.webcontainer.webapp.WebApp.handleRequest(WebApp.java:3703) at	rrorReport(WebAppErrorReport.java:153) at AppErrorReport.java:194) at Manager.java:1039) at
com.ibm.ws.webcontainer.webapp.WebGroup.handleRequest(WebGroup.java:304) com.ibm.ws.webcontainer.WebContainer.handleRequest(WebContainer.java:962) at com.ibm.ws.webcontainer.WSWebContainer.handleRequest(WSWebContainer.java com.ibm.ws.webcontainer.channel.WCChannelLink.ready(WCChannelLink.java:19)	at t a:1662) at 5) at
com ibm.ws.http.channel inbound.impl.HttpInboundLink.handleDiscrimination(HttpIn com ibm.ws.http.channel inbound.impl.HttpInboundLink.handleNewRequest(HttpInb com ibm.ws.http.channel inbound.impl.HttpInboundLink.processRequest(HttpInbour	nboundLink.java:458) at boundLink.java:522) at ndLink.java:311) at

You have now fixed Error.jsp to run correctly on WebSphere Application Server V8.5

Part 7 – Execute StockQuote on WAS ND 6.1

The StockQuote application is already installed on WAS ND 6.1 but it is necessary to import the Client application in to Indigo in order to test it.

- 1. Open Eclipse with a new Workspace
 - a. Open a Windows Explorer and navigate to C:\eclipse
 - b. Double-click on eclipse.exe
 - c. When the Workspace Launcher is displayed, change the Workspace to
 - C:\workspace\StockQuoteMigration and click OK
- 2. Import the stockquoteclient.zip project into the Workspace
 - a. Click *File* → *Import*

b. When the "Select" dialog is displayed, select General \rightarrow Existing Projects into Workspace and click Next



c. Click Select archive file

d. Click **Browse...** and navigate to

C:\WORKSHOP\Applications\StockQuote\stockquoteclient.zip

O Import	
Import Projects Select a directory to search for existing Eclipse projects.	
Select root directory: Select archive file: C:\WORKSHOP\Applications\StockQuote\stock Projects:	Browse
▼ StockQuoteClientSideUnitTest (StockQuoteClientSideUnitTest)	Select All Deselect All Refresh

e. Click **Finish**

3. Fix the Java Build Problems.

a. Right-click on StockQuoteClientSideUnitTest in the Enterprise Explorer and select Build Path -> Configure Build Path

- b. Change to the Libraries tab
- c. Select all of the jar files that have a red x icon next to them and click Remove



d. Click Add External JARs...

e. Navigate to c:\axis2-1.6.2\lib, select all of the JARs in the folder and click **Open**



- f. In the Java Build Path dialog, click **OK**
- g. The project should now rebuild without issues.

- 4. Update the StockQuote Service URL
 - a. Open the StockQuoteClientSideUnitTest/src/Stock/JUnitTest.java file
 - b. Locate Line 17

c. Modify the URL to use Port 9081 as shown below. The rest of the URL is correct, it is only the Port that needs to be modified

D	unitTest.java 🛛	1
	actory; = {	
	<pre>ence STOCK_SERVICE_EPR = new EndpointReference "http://localhost:9081/stockquote/services/StockQuoteService" TORY = OMAbstractFactory.getOMFactory(); nNs = FACTORY.createOMNamespace("http://www.developerworks.com/example", "example");</pre>);

- d. Save your changes
- 5. Execute the JUnit Test

a. Right-click on StockQuoteClientSideUnitTest/src/Stock/JUnitTest.java in the Enterprise Explorer and select Run As \rightarrow JUnit Test

b. Ignore the messages in the **Console** window and select the **JUnit tab**



c. When the test completes, there should be **Runs: 2/2** with no Errors or Failures

🛃 Markers 🔲 Properties 🖟	👯 Servers 🙀 Data Source Explorer 🛛	🚡 Snippets 🗔 Annotations 🔂 JUnit 🛛	📮 Console	0 🕂 🔤 🛃 🔍 🐘 🔳 🗐 🗸 🖓 🖓		
Finished after 2.36 seconds	inished after 2.36 seconds					
Runs: 2/2	🛛 Errors: 0	Failures: 0				
stock. JunitTest [Runn testIBM (2.250 s) testTes (0.047 s)	er: JUnit 3] (2,297 s)					

You have tested that the StockQuote application runs correctly on WebSphere Application Server V6.1

Part 8 – Analyze and Migrate the StockQuote Application

- 1. Import the StockQuote Application using a WAR file
 - a. Click *File* \rightarrow *Import*
 - b. When the "Select" dialog is displayed, select $Web \rightarrow WAR$ file and click Next
 - c. Click **Browse...** (WAR file) and navigate to

C:\WORKSHOP\Applications\StockQuote\stock_quote_example_axi s2.war

- d. Click New... (Target runtime)
- e. Select $IBM \rightarrow WebSphere Application Server v8.5$ from the list and click Next
- f. Click Browse... (Installation Directory)

- g. Navigate to C: \IBM\WebSphere\AppServer85 and click OK
- h. Click **Finish**
- i. When you are returned to the Enterprise Application Import dialog, click Finish

💭 Import			
WAR Import Import a WAR fi	le from the file system		
WAR file:	C:\WORKSHOP\Applications\StockQuote\stock_quote_example.	Browse	
Web project:	stock_quote_example_axis2		
Target runtime:	: WebSphere Application Server v8.5 🔹 New		
EAR membersh	nip : to an EAR me: stock_quote_example_axis2EAR	Project	
?	< Back Next > Finish	Cancel	

2. Configure the Application Migration Toolkit

a. Right-click on stock_quote_example_axis2 in the Enterprise Explorer and select Software Analyzer \rightarrow Software Analyzer Configurations...

b. Right-click on Software Analyzer and select New



c. Set the Name to Version to Version and ensure that the Scope is set to Analyze entire workspace

Name: Version to Versi	ion	
🖶 Scope 🛛 🗟 Rules	s	
 Analyze entire work 	space	^
O Analyze a resource	working set	

d. Switch to the **Rules** tab, select WebSphere Application Server Version Migration from the **Rule Sets** list and click Set...

Name: Version to Version				
Scope 🗠 Rules				
Rule Sets: WebSphere Application Server Version Migration	🗸 Set			
Applysis Dempine and Dulos				

e. Change the **Source application server** to WebSphere Application Server V6.1, the **Target application server** to WebSphere Application Server V8.5 and click **OK**

🗑 Rule set configuration 🛛 🛛 🔀					
WebSphere Application Server Migration Tool rule selection details					
Source application server: WebSphere Application Server V6.1 💌					
Target application server: WebSphere Application Server V8.5					
Source Java version:	Java 5 💽				
Target Java version:	Java 6 💌				
	OK Cancel				

f. On the Software Analyzer Configurations dialog, click **Apply** and then click **Close**

3. Run the Application Migration Toolkit

a. Right-click on stock_quote_example_axis2 in the Enterprise Explorer and select Software Analyzer → Software Analyzer Configurations...

- **b.** Click Version to Version and then click Analyze
- *c.* The Software Analyzer Results dialog will appear and should show 0 results.



NOTE: The analysis reports no problems were detected. However version 3.5 of the Migration Toolkit does not check for the use of third party web services engines such as axis2 and hence does not report that some small changes are needed to the configuration of that engine in order to successfully run the application in WebSphere Application Server v8.5.

4. Update the axis2.xml file to specify EnableChildFirstClassLoading

Starting with version 1.5.5 of the axis2 web services engine, a new parameter was added to the axis2 configuration. This parameter controls how class loaders created by the axis2 web service

engine behave. In order to operate correctly in WebSphere Application Server v8.5, this parameter needs to be changed from the default of false to true.

a. Open the stock_quote_exercise_axis2/WebContent/WEB-INF/conf/axis2.xml file in a text editor

- b. Locate Line 34
- c. Modify the value of the EnableChildFirstClassLoading parameter to be true

<parameter name="EnableChildFirstClassLoading">true</parameter>

d. Save your changes and close axis2.xml

5. Disable web services annotation scanning for the application

By default the WebSphere application server will perform annotation scanning for all installed applications to determine what web services are provided by those applications. When using a third party web services engine this is unnecessary and can cause problems. To disable the annotation scanning for this application we update the MANIFEST.MF file for the application's war file to add DisableIBMJAXWSEngine

- a. Open the **stock_quote_exercise_axis2/WebContent/META-INF/MAINFEST.MF** file in a text editor
- b. Add **DisableIBMJAXWSEngine: true** to the file as shown below

■ axis2.xml ■ MANIFEST.MF ⊠ Manifest-Version: 1.0 DisableIBMJAXWSEngine: true Archiver-Version: Plexus Archiver Created-By: Apache Maven Built-By: sagara Build-Jdk: 1.6.0_22

c. Save your changes and close MAINFEST.MF

Part 9 – Execute StockQuote on WAS ND 8.5

1. Export the WAR file from Eclipse

a. Right-click on stock_quote_exercise_axis2 in the Enterprise Explorer and select *Export* → *WAR file*

b. Set the **Destination** to be C:/stock_quote_example_axis2.war, ensure that the **Target runtime** is set to WebSphere Application Server v8.5 and click **Finish**

🔘 Export		
WAR Export Export Web pr	oject to the local file system.	
Web project:	stock_quote_example_axis2	
Target runtim	e	Browse
WebSphere	Application Server v8.5	~

- 2. Import the WAR into WebSphere Application Server V8.5
 - a. Click Start → Programs → IBM WebSphere → IBM WebSphere Application Server V8.5 → Profiles → AppSrv02 → Administrative Console
 - **b.** Log in as User name = admin Password = admin
 - c. Navigate to Applications \rightarrow Application Types \rightarrow WebSphere enterprise

applications

- d. Click Install
- e. Click Browse...
- f. Navigate to C:\stock quote exercise axis2.war
- g. Click Next
- *h.* On the "How do you want to install the application?" dialog, click Next
- *i.* On the "Select installation options" dialog, click Next
- *j.* On the "Map modules to servers" dialog, click Next
- *k.* On the "Map virtual hosts for Web modules" dialog, click Next
- *l.* On the "Map context roots for Web modules" enter stockquote for the Apache-

Axis2 Context Root and then click Next

	<u>Step 1</u> Select	Map context roots for Web modules				
		Configure values for context roots in web modules.				
	<u>step 2</u> map modules to servers	Web module	URI	Context Root		
	Step 3 Map virtual	Apache-Axis2	stock_quote_example_axis2.war,WEB- INF/web.xml	stockquote		
	nosts for web modules					
•	Step 4: Map context roots for Web modules					

- *m.* On the "Summary" dialog, click **Finish**
- *n*. Save the changes to the Master Configuration
- 3. Update the Class Loader for the Stock Quote application
 - a. Navigate to Applications \rightarrow Application Types \rightarrow WebSphere enterprise applications
 - **b.** Click stock_quote_example_axis2_war
 - c. Click Manage Modules

Enterprise Applications > stock_quote_example_axis2_war

Use this page to configure an enterprise application. Click the links to access pages for further configuring the application or its modules.

Configuration		
General Pro	perties	- Modules
* Name		Manage Madulas
stock_qua	te_example_axis2_war	 Manage Modules Display module build Ids
۰!: ± :		

d. Click Apache-Axis2

Remove Update Remove File Export File					
Select	Module	URI	Module Type	Server	
	Apache-Axis2	stock_quote_example_axis2.war,WEB- INF/web.xml	Web Module	WebSphere:cell=ibm- ff14964ad3eNode02Cell,node=ibm- ff14964ad3eNode03,server=server1	

e. Change the Class loader order to Classes loaded with local class loader first (parent last) and click OK

General Properties	Additional Properties
* URI stock_quote_example_axis2.war	 <u>View Module Class Loader</u> <u>Custom properties</u>
Alternate deployment descriptor	Target specific application status
* Starting weight	View Deployment Descriptor
10000	Session Management
★ Class loader order Classes loaded with local class loader first (parent last)	
Apply OK Reset Cancel	

- *f*. **Save** your changes to the Master Configuration
- 4. Start the Stock Quote Application

a. Navigate to Applications → Application Types → WebSphere enterprise applications

- **b.** Select stock_quote_example_axis2_war and click Start
- 6. Update the StockQuote Service URL

a. In Eclipse, open the **StockQuoteClientSideUnitTest/src/Stock/JUnitTest.java** file

b. Locate Line 17

c. Modify the URL to use Port 9082 as shown below. The rest of the URL is correct, it is only the Port that needs to be modified



- d. Save your changes
- 7. Execute the JUnit Test

a. Right-click on StockQuoteClientSideUnitTest/src/Stock/JUnitTest.java in the Enterprise Explorer and select Run As \rightarrow JUnit Test

b. Ignore the messages in the **Console** window and select the **JUnit tab** Markers Properties & Servers Data Source Explorer Simplets Annotations **JU JUnit** Console <terminated> JunitTest[JUnit]C:\IBM\Java60\jre\bin\javaw.exe(Oct 27, 2012 11:35:48 AM) log4j:WARN No appenders could be found for logger (org.apache.axis2.context.AbstractContext). log4j:WARN Please initialize the log4j system properly.

c. When the test completes, there should be **Runs: 2/2** with no Errors or Failures

🖹 Markers 🔲 Properties 🦇 Servers 🙀 Data Source Explorer 🔂 Snippet	s 🗔 Annotations 🗗 JUnit 😣 📮 Console	- + +				
inished after 2.36 seconds						
Runs: 2/2 Errors: 0	E Failures: 0					
	E Failure Trace					

You have tested that the StockQuote application runs correctly on WebSphere Application Server V8.5