

## **CICSCTG Lab - Preparing, Installing and Running the J2EE FVTCTGSession Application**

In this exercise you will:

Install the CICS Transaction Gateway 4.2, CTG.

Create a deployable CICSEXCI application using the Application Assembly Tool, AAT.

Deploy the application using the Systems Management EUI.

Invoke a client program that will run in the OMVS shell environment on OS/390 to verify that the CICS program can be accessed by the EJB successfully.

### **Part 1. Install the CICS Transaction Gateway Start**

1. Create an HFS for the CTG code.

Using the ISHELL

- From the File\_Systems pulldown menu select “New” .
- Create an HFS named “OMVS.CTG42.HFS” allocating 40 cylinders primary and 10 cylinders secondary.
- Create a mountpoint for the HFS that you just created by keying /u/user1/CTG42 on the primary ISHELL panel and hit enter.
- Set the filetype to directory and the permissions to 755.
- Mount the HFS at this mountpoint. From the File\_Systems pulldown select “Mount”. Specify the name of the HFS you just created and the type as “HFS”.

## 2. Install the CTG code.

The CTG code is contained in a compressed tar file **ctg-402m.tar.Z** located in the **/u/user1/CICSEXCILab** directory.

From the OMVS shell,

- Change directory to CTG42.
- Issue the following command to untar the file:  
`tar -xopvzf /u/user1/CICSEXCILab/ctg-402m.tar.Z`
- You should now have the CTG install script, `ctg_install` in the CTG42 directory.
- Run the install script. You will see the following message:  
*Not enough primary allocation space in the current directory to install the product. If you have enough secondary allocation the install may still succeed.*  
*Do you wish to continue? <YES/NO>:*
- Reply YES.
- The script will now display the License agreement which goes on for many pages. Unfortunately you must go through it all.
- When you see `--More--` on the bottom of the screen, hit the space bar and then “Enter”.
- When you reach the end of the agreement you should get the message:  
*Do you accept the license terms as described above? <YES/NO>:*
- Reply “YES”.
- The installation will now proceed.
- You should see the message:  
*CICS Transaction Gateway installed.*
- The code has now been installed in your HFS, but the job is not finished just yet.

The install created a `ctg` directory and several sub-directories.

In the **/CTG42/ctg/deployable** directory there are two Resource Archives, `.rar` files.

`cicseci.rar` - the files in this archive are used at development time  
`cicseciRRS.rar` - the files in this archive are used on the z/OS system at run time.

- Extract the files from the runtime archive using the following command:

```
jar -xvf cicseciRRS.rar
```

- You should have several jar files and two DLLs, the .so files.
- The jar files will be included in the CLASSPATH used by your application server, and the DLLs will be included in the LIBPATH of your application server.
- Change the file permissions on the DLLs so that they are executable by anyone: **chmod ugo+x \*.so**

## **Part 2: Assembling The Application - Build an .ear file for deployment in the WAS 4.01 runtime using the AAT.**

All the parts for the creation of the J2EE application have already been created for you. They are located in your **/u/Gen3lab** directory.

The application will be assembled using the Assembling Application Tool (AAT). The general flow for this part of the exercise is:

- Download the jar file, **FVTCTGSessionEJB.jar** from the z/OS system using ftp. Remember to use binary transfer.
- Start up the AAT.
- Create a new application.
- Import the EJBs.
- Modify the properties of the EJB - resource reference and authentication.
- Export the .ear file containing the deployed J2EE application.

Start AAT by clicking on

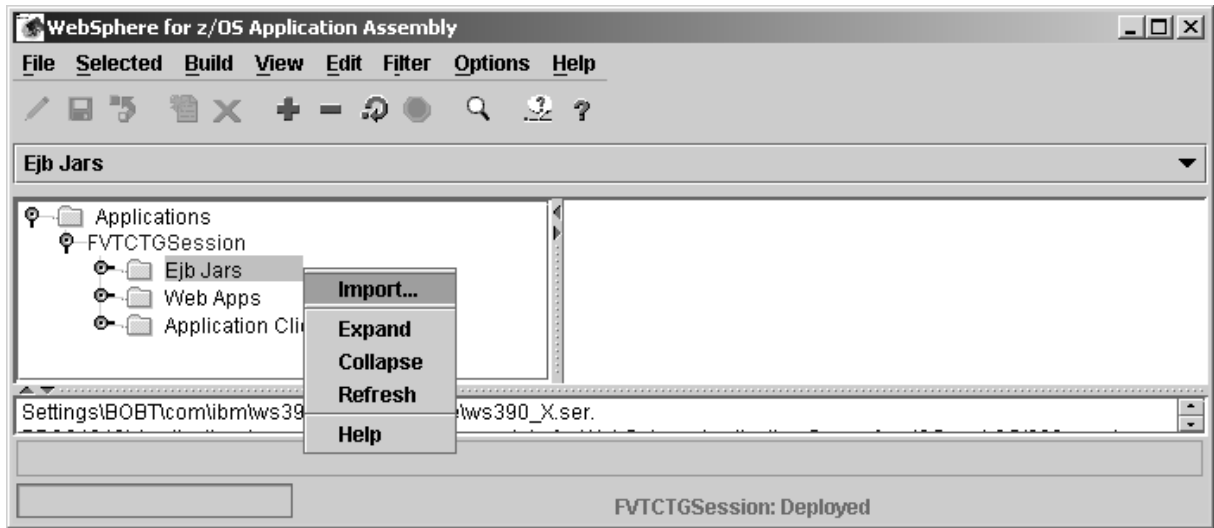
Start -> Programs -> IBM WebSphere for zOS -> Application Assembly

### **Create a new application**

Using the WebSphere/390 Application Assembly Tool (AAT):

- Right click on **Applications** folder and select->**ADD** to add a new application to the AAT.
- In the application window that appears, enter the application name, **FVTCTGSessionApp**
- Click on the diskette button to save the new application.

- The **FVTCTGSessionApp** will be added to the list of applications under the **Applications** folder.
- **Import the EJBs.**
  - Expand the application folder.
  - Highlight the EJB Jars folder and right mouse click
  - Select >IMPORT



In the **Import ejb jar** window that is displayed, enter the name of the **FVTCTGSessionEJB** jar file that you ftp'd to your workstation and click **OK** to complete the import.

This will result in the creation of a **FVTCTGSessionEJB.jar** entry under the **Ejb Jars** folder.

***Click No to ignore message BBO94053I any time this pop-up message is displayed. These class files will be resolved at execution time.***

You'll see a message "BBO94000I Ejb jar FVTCTGSessionEJB.jar was imported."

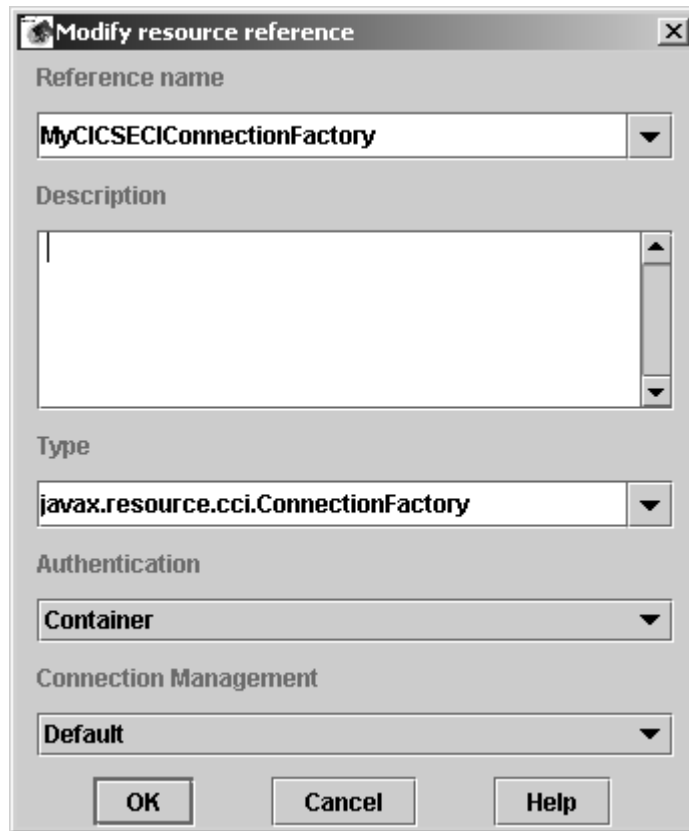
### **Modify the properties of the EJB - resource reference and authentication.**

The Session EJB in this application uses a CICS ConnectionFactory resource called **MyCICSEICConnectionFactory**.

- Expand the folders under the EJB jar file that was just imported so that you see the session bean, **FVTCTGSession**.

- Right click on the **FVTCTGSession** bean entry and select **Modify**. The properties window will open on the right showing a set of folders.
- Select the **Resources** folder.
- Click on **Add** at the bottom of the right half of the window to add a resource.
- In the **Add resource reference** window, enter the following:
  - a) Reference Name:  
Enter **MyCICSECICConnectionFactory** as the reference name of the resource. This is the reference name that was specified to the VAJ EAB command editor when the connector was defined to the command editor. It will be used by the FVTCTGCmd class during runtime to lookup the ConnectionFactory for connecting to CICS.
  - b) Type: (from the choices, select)  
**javax.resource.cci.ConnectionFactory**  
This connects the reference MyCICSECICConnectionFactiory request to the real connection factory.
  - c) Authentication:  
Specify **Container** authentication for the connector.
  - d) Connection management policy:  
Specify **Default** policy.

You should see the screen some thing like below:



- Select OK, to add the ConnectionFactory resource to the set of resources for the EJB and then click on the diskette button to save the set of resources.
- You will see “ **BBO90523I** Session bean FVTCTGSession was modified.”

### **Export the .ear file containing the deployed J2EE application.**

- Right click on the **FVTCTGSessionApp** in the left side of the AAT window and select ->**Deploy** to deploy the application,
- **Ignore message BBO94053I by replying no.**
- Right click on the **FVTCTGSessionApp** again and select ->**Export** to export the application.
- In the **Export application** pop-up that is displayed, enter the directory and the name of the application ear file to be exported.

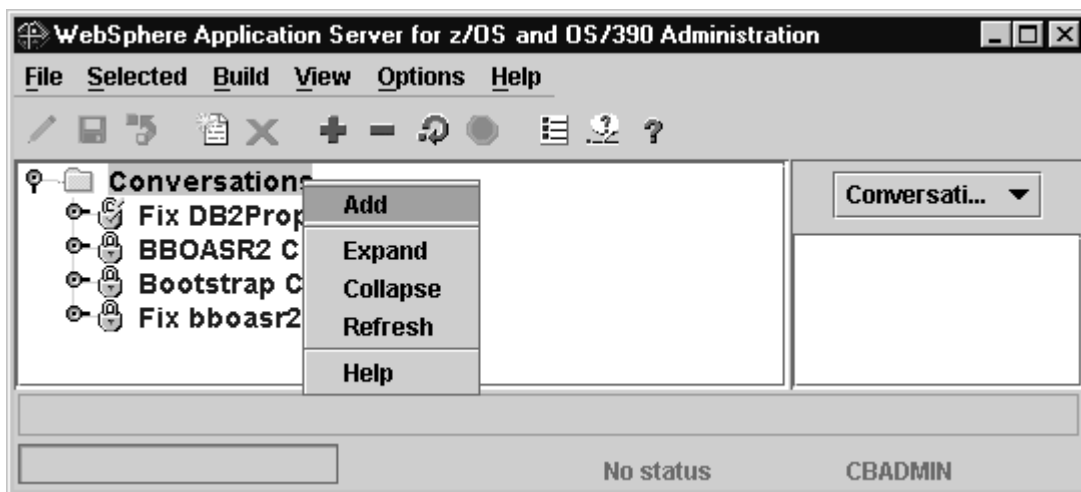
C:\unzipped\FVTCTGSessionEJB

- Click **OK** to complete the export.
- The message “BBO94010I Application FVTCTGSessionApp was exported to EAR file” should be displayed.
- Assembly of the FVTCTGSession EJB is now complete.

### Part 3: Install the J2EE CICSEXCI application into an existing WAS390 server, WASASR2, using Systems Management EUI.

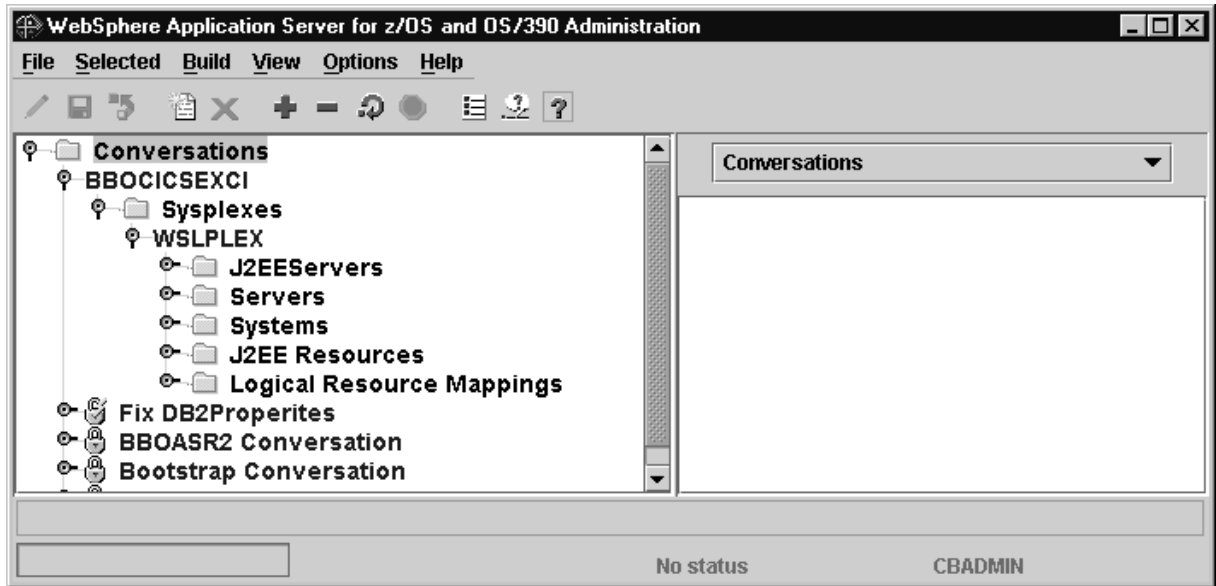
We will be using the WASASR2 server that was defined for you to install the J2EE CICSEXCI application.

- Start the WebSphere/390 Systems Management EUI, and create a new conversation (i.e., configuration)
- To create a conversation, highlight Conversations and then right click and select->**Add**.



- In the Conversation window that is displayed, enter a name (i.e. BBOCICSEXCI) and description for the new conversation and then click on the diskette button ( or Select -> **Selected** -> **Save** ) to save/create the new conversation.

- You will see a message displayed: “ BBON0515I Conversation BBOCICSEXC I was added.)
- Once the new conversation is added, expand the conversation hierarchy down



to and including the specific sysplex where the example EJB application will be installed. You should see the following:

- Before installing the EJB, you must first define a J2EE Resource and Resource Instance that will be needed to associate a target CICS region with the ConnectionFactory resource used by the FVTCTGSession EJB:



- Right click on **J2EE Resources** and select ->**Add**.
- In the J2EE Resource window displayed on the right
  - add the following and then click on the diskette to save the definition:
  - J2EE Resource Name: **CICSECI\_Res1**
  - J2EE Resource Type: **CICSECIConnectionFactory**
- (A message, “**BBON0515I J2EE Resources CICSECI\_Res1 was added.**” will be displayed after the definition saved successfully. )
- Now left click on the button for the **CICSECI\_Res1** that was added. This will display, “**J2EE Resource Instances**”.
- Right click on **J2EE Resource Instances** and select->**Add**.
- In the J2EE Resource Instance window displayed on the right, add the following information and then click on the diskette to save the definition:

a) J2EE Resource Instance Name: **CICSECI\_Res1\_Inst1**

b) System Name: **the name of the system where you’ll run the server.**  
**For our lab, it is WG31.**

c) Input Properties:

CICS application id: **specify application id of target CICS region,**

**For the lab, it is:**

**C176A1**

Optional transaction name: **null** (leave set to null)

(A message, “**BBON0515I J2EE Resource instance CICSECI\_Res1\_Inst1 was added.**” will be displayed after the definition saved successfully.)

### **Install the FVTCTGSession EJB.**

To do so, do the following:

- Under the **J2EEServers**, select the Server, **WASASR2**.
- Right click on the selected server and select->**Install**.
- In the **Install J2EE application** pop-up that appears, specify the fully qualified directory name of the **FVTCTGSessionEJB.ear** file that you generated as output from the AAT and specify the **Destination FTP Server, wg31**.
- Then, click **OK**.
- This will result in a **Resource and Reference Resolution** window being displayed for the FVTCTGSessionApp identified by the ear file.

- In the **Resource and Reference Resolution** window expand the folders.
- Left click on the **FVTCTGSession bean**. This will display the following 3 folders:
  - **EJB**
  - **Reference**
  - **J2EE Resource**
- In the **EJB folder** set the JNDI path and name as follows:
  - **JNDI Path:** clear this field
  - **JNDI Name:** FVTCTGSessionHome
- In the **J2EE Resource folder** associate the J2EE resource you defined, i.e., **CICSECI\_Res1**, with the resource reference.  
**MyCICSECICConnectionFactory.**
- Then select->**OK**.
- The Systems Management EUI will use the **Destination FTP Server** you specified to FTP the application into the HFS on that server.

A message “**BBON0470I EAR file FVTCTGSessionEJB\_resolved.ear has been successfully installed on server ...**” will be displayed after the definition is saved successfully.

In order for your server to be able to run CICS applications, you must provide the connector’s run-time jar files in the CLASSPATH and the DLLs in the LIBPATH.

Update the CLASSPATH for the J2EE Server, WASASR2.

- Right click on the name of the J2EE Server where you installed the **EJB** and select->**Modify** to modify the server. Server property information will be displayed on the right.
- Scroll down to the bottom of the server information and locate the **Environment variable list**.
- In this list, double click on the value currently associated with the CLASSPATH variable.
- A pop-up window will appear that will allow you to modify the current definition.
- Add the connection management runtime jar file **/usr/lpp/WebSphere401/lib/bboaxrt.jar**, along with the Connector runtime jar files that you extracted from the cicseciRRS.rar file earlier.  
**ccf2.jar**

ctgclient.jar  
ctgserver.jar  
cicseciRRS.jar  
cicsframe.jar

They should be in /u/user1/CTG42/ctg/deployable

- Path entries in z/OS are delimited with a colon.
- Fully qualify the entries with the HFS directory where they are installed.

/usr/lpp/WebSphere401/lib/bboaxrt.jar:  
/u/user1/CTG42/ctg/deployable/ccf2.jar: etc.....

- Modify the LIBPATH variable in the same way by double clicking on the current value shown for the variable.
- Add the directory where the two DLLs are located.  
/u/user1/CTG42/ctg/deployable  
*Do not specify the actual .so files.*
- Click the diskette icon to save the server modification.
- Validate the new conversation by selecting the conversation name to highlight it and then selecting->**Build->Validate**.
- A message “BBON0442I Conversation BBOCICSEXCI is valid.” will be displayed.
- Commit the new conversation.
- Ensure all preparation tasks for the new conversation have been completed. (In this case, there aren’t any tasks to perform.)
- Select the conversation name and right mouse click.
- Select->**Complete->All Tasks** to indicate completion.
- Activate the new conversation.
- A message “BBON0449I Conversation BBOCICSEXCI was activated.” will be displayed
- During the activation process, the application server will **register the FVTCTGSessionHome** in the name space.
- Use your LDAP Browser to verify that the home interface is actually registered.

## Part 4. Run the FVTCTGSession Client

- 1) Ensure that the target CICS application region, CICSMAST, is started.

From SDSF issue:

/S CICSMAST

- 2) Ensure the WS/390 Server, WASASR2, under which the FVTCTGSession EJB was installed is started.
- 3) Copy the FVTCTGSessionClient.jar from **/u/Gen3lab** directory into your **/u/user1/CICSEXCILab** directory.
- 4) Copy the shell script `bcclnt.sh` from the `/u/Gen3lab` directory to the `/u/user1/CICSEXCILab` directory.
- 5) Edit the shell script and change the references to `/usr/lpp/WebSphere` to `/usr/lpp/WebSphere401`.  
Change the CLASSPATH entry for the client jar file to point to the directory into which you copied the client code.
- 6) Run the shell script, `bcclnt.sh`

The client will invoke the FVTCTGSession EJB to create, retrieve, update, and delete a FVTCTG account.

## This is what you should see.

```
=====
>>>> FVTCTG SESSION CLIENT STARTED !!!!!!!
=====
>>>> Initialize Access Bean
>>>> Instantiate FVTCTGSession Bean

>>>> Creating Account: 99988000S1
>>>> Account Created: 99988000S1
>>>> Retrieve Account: 99988000S1
>>>> Account Retrieved:
>>>>   Account ID..... 99988000
>>>>   Account ResType..... S1
>>>>   Account Type..... Z
>>>>   Account Balance..... 0
>>>>   Account Utilities... TO BE ADDED

>>>> Update Account: 99988000S1
>>>> Account Updated:
>>>>   Account ID..... 99988000
>>>>   Account ResType..... S1
>>>>   Account Type..... Z
>>>>   Account Balance..... 124998
>>>>   Account Utilities... ACCOUNT-OPENED(03/31/2001)

>>>> Delete Account: 99988000S1
>>>> Account Deleted: 99988000S1
>>>> After deletion try to retrieve Account: 99988000S1
>>>> Deleted Account 99988000S1 Not Found
=====
>>>> FVTCTG SESSION CLIENT SUCCESSFUL !!!!!!!
=====
```

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End of Lab