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WebSphere Business Monitor v6 End-to-End Scenario Lab

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What this exercise is about

The objective of this lab is to show you how to take a model from WebSphere Business Modeler and deploy it to WebSphere Process Server and WebSphere Business Monitor, then view your process data on the Monitor Dashboards, and export actual values from WebSphere Business Monitor back to the model.

Lab Requirements

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

- WebSphere Business Modeler v6
- WebSphere Integration Developer v6.0.1
- WebSphere Process Server v6.0.0 for Monitor Server
- WebSphere Process Server v6.0.1 for Runtime Server
- WebSphere Business Monitor v6 – Dashboard Client Server and Monitor Server

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What you should be able to do

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

- Use WebSphere Business Modeler to import a project, create the default business measures model, apply default implementation values, export the process model and business measures model
- Use WebSphere Integration Developer to import the process model, implement the Java and Human tasks, export an EAR file for deployment
- Use the WebSphere Process Server admin console to install the EAR
- Use the WebSphere Process Server admin console to run Monitor schema generation
- Run Monitor scripts to create the Monitor Server tables, replication manager artifacts, and start replication manager daemons
- Use the WebSphere Process Server admin console to import the business measures model
- Use the WebSphere Business Process Choreography Explorer to run process instances
- Use Cube Views OLAP Center on the Dashboard Client Server to import the cubes
- Use Alphablox on the Dashboard Client Server to define the cubes
- Use Portal to define a Dashboard and to view process data
- Use the Actual Values view on the Dashboard Client Server to export actual values
- Import actual values into your model

Introduction

In this lab you will learn how to deploy a model from end to end using WebSphere Business Modeler and WebSphere Business Monitor. This is a complex process, but note that you will be performing many different roles during this lab – user analyst, process architect, process developer, database administrator, dashboard architect and user. This lab will show you the basic procedure for implementing a simple model. To keep things as simple as possible, this lab will not attempt to cover the creation of metrics, KPIs and other components of the business measures model. It will simply import a process model that already contains a business measures model. Both models were created using WebSphere Business Modeler and the Business Measures editor.

Also, this lab shows you best practice deployment procedures for process implementation in WebSphere Integration Developer. This is especially important when re-deploying a process model to limit the amount of rework that will be necessary in WebSphere Integration Developer. To understand more about best practices for deployments in WebSphere Integration Developer, please refer to the lab 'Preparing a Process with WebSphere Business Modeler for WebSphere Integration Developer'.

Exercise Instructions

Some instructions in this lab may be Windows operating-system specific. If you plan on running the lab on an operating-system other than Windows, you will need to execute the appropriate commands, and use

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appropriate files (.sh vs. .bat) for your operating system. The directory locations are specified in the lab instructions using symbolic references, as follows:

Reference Variable	Windows Location	AIX/UNIX Location
<LAB_FILES>	C:\Labfiles60	/tmp/Labfiles60

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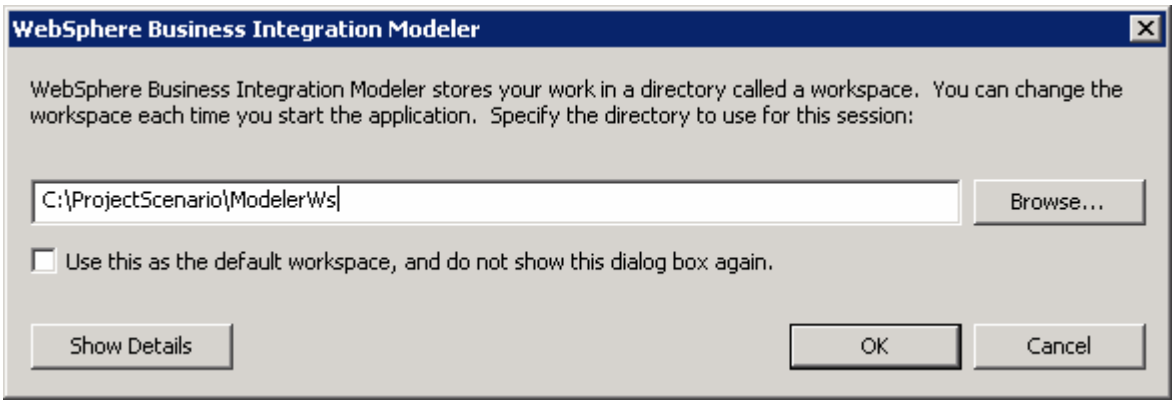
Part 1: Create the Business Measures Model

____ 1. Start WebSphere Business Modeler with a new workspace to hold the work you will do in this lab. Set the layout to 4-pane layout, and set the modeling mode to WebSphere Process Server.

__ a. Start WebSphere Business Modeler.

__ b. Enter the following to start a new folder **ProjectScenario** that will hold all of our artifacts in this lab: **C:\ProjectScenario\ModelerWs**



__ c. Click **OK**.

__ d. The following window will appear:

Note: If the Quick start wizard opens, de-select the '**Always show this wizard on startup**' option and click **Cancel**.

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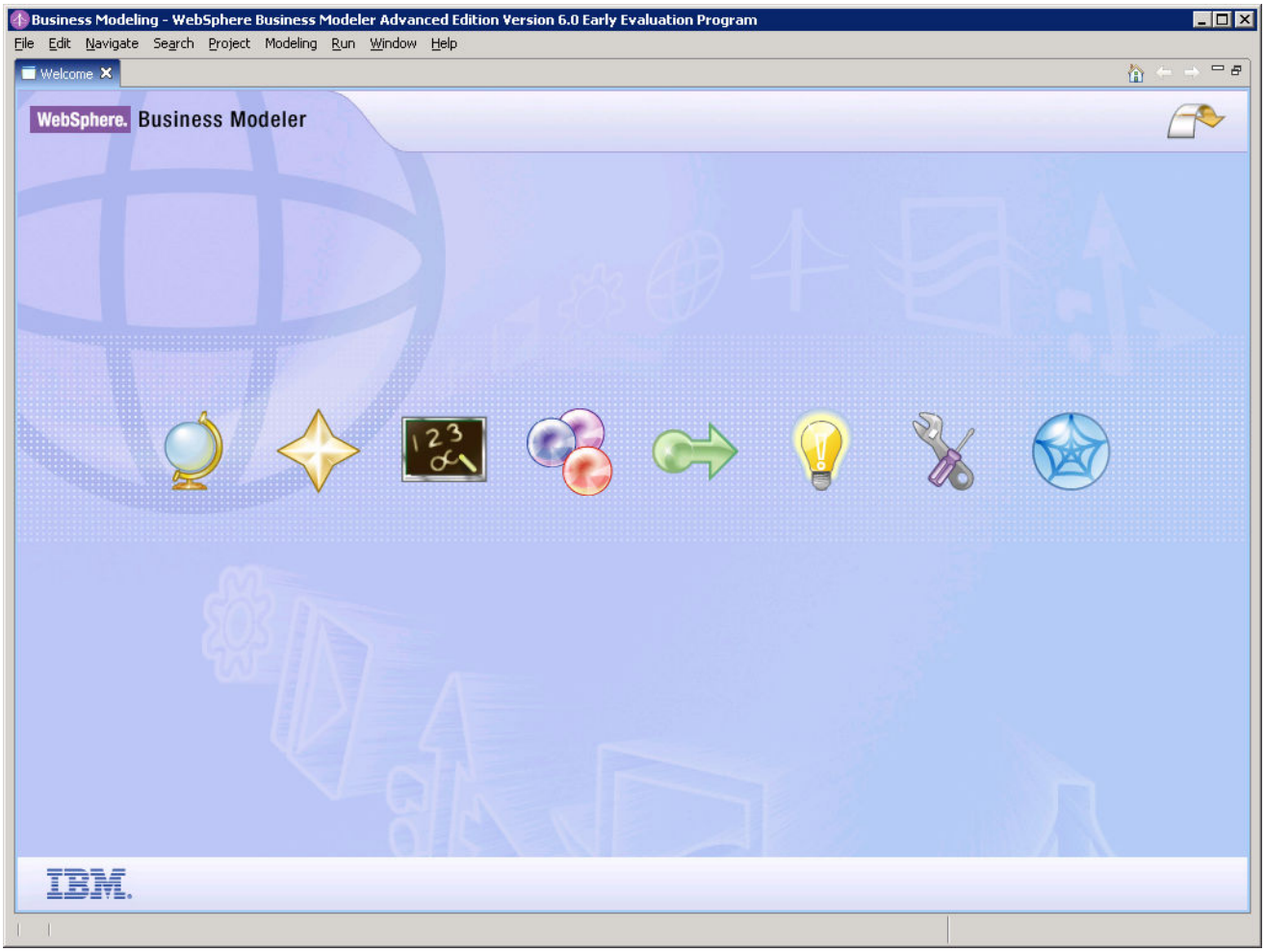

__ e. Close the welcome window by clicking the arrow in the top right corner of the welcome window.

__ f. Also, apply the 4-pane layout by clicking on the icon near the top:

__ g. Change the modeling mode by selecting **Modeling > Mode > WebSphere Process Server.**

____ 2. Create a new project and import the pre-created ProjectScenario model.

__ a. Right click in the Project Tree view, and then select **New > Business Modeling Project**. Enter the project name 'ProjectScenario' and uncheck 'Create process'.

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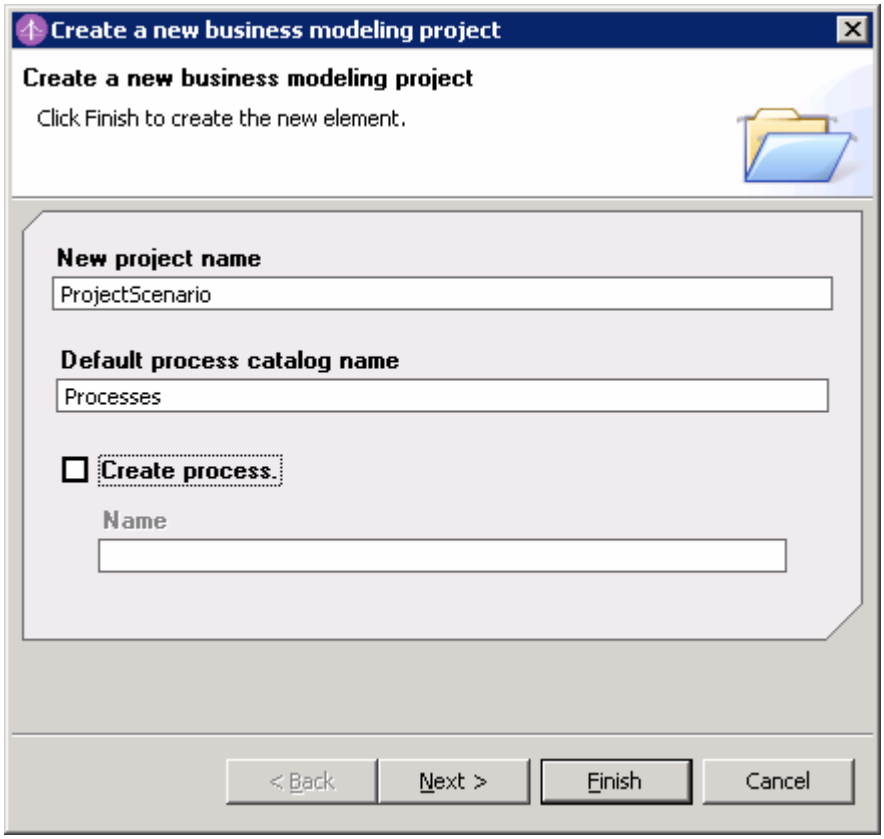

__ b. Click **Finish.**

__ c. Right click in the Project Tree view, then **Import.** Select **'WebSphere Business Modeler project (.zip)'**, then click **Next**

__ d. On the following window, navigate to '<LAB_FILES>\Scenario\ProjectScenarioWithBMModel.zip'.

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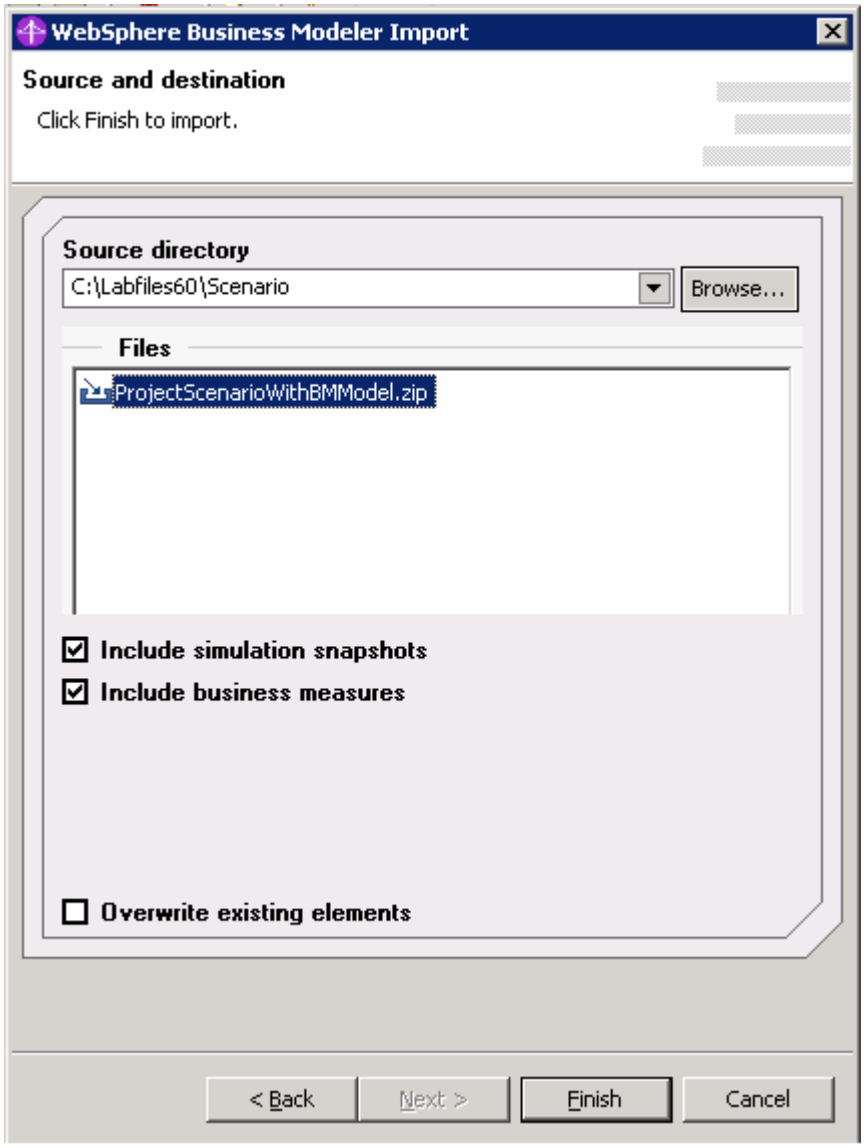
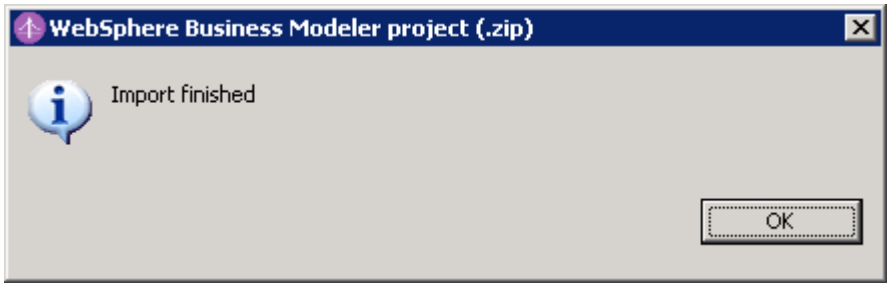


__ e. Click **Finish**.

__ f. You should see a confirmation window as follows.



__ g. Click **OK**.

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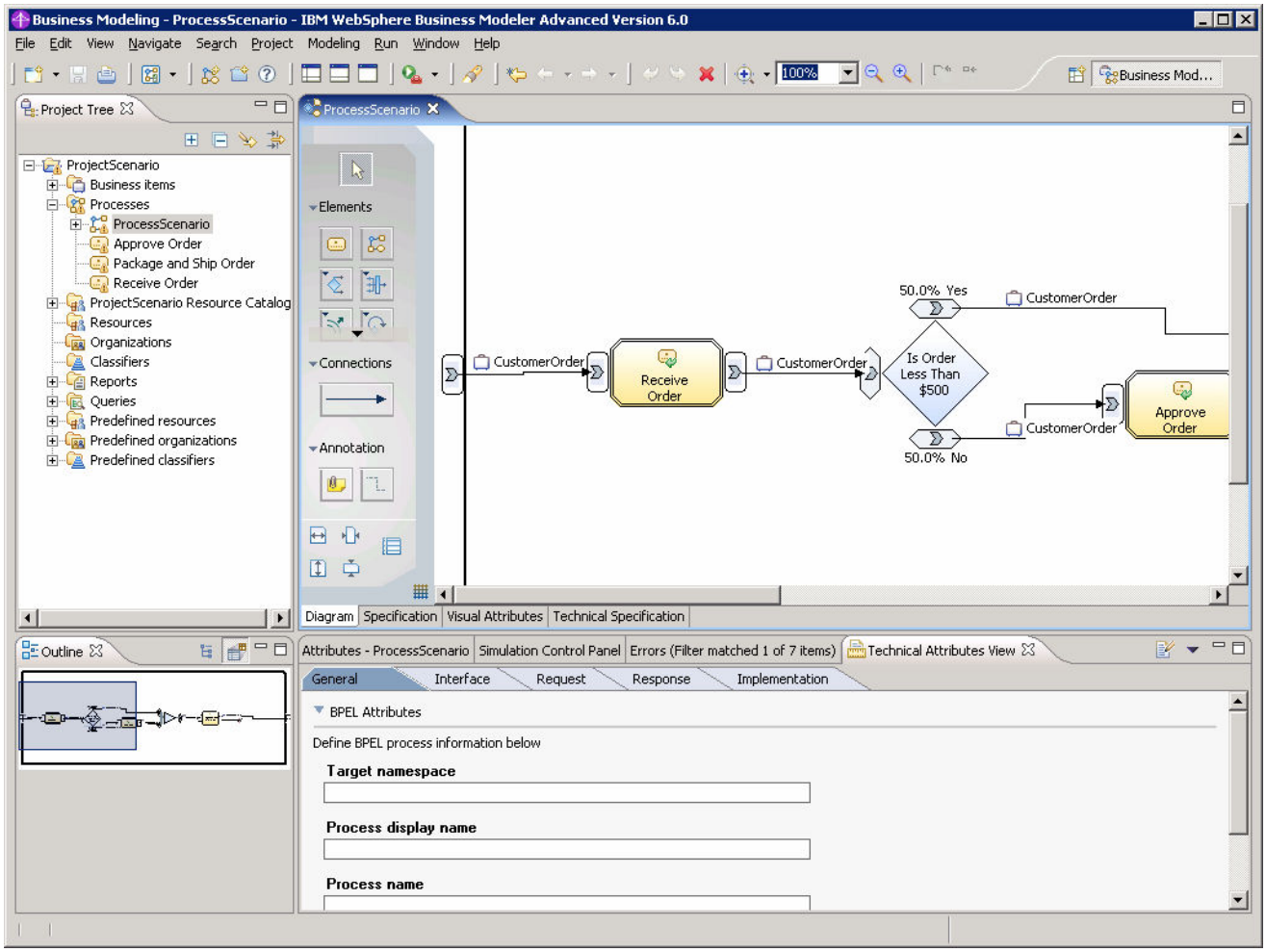
Review the model and business object.

__ h. In the Project Tree, expand **ProjectScenario**, then **Processes**. Double click on **ProcessScenario** to bring up the Process editor.



__ i. In this process, there are three tasks 'Receive Order', 'Approve Order' and 'Package and Ship Order'. Also, there is a Decision based on the OrderPrice of the CustomerOrder that determines whether the order must be approved. If the order price is greater than or equal to $500 then the order must be approved. Orders with a price less than $500 require no approval.

__ j. Expand ProcessScenario in the project tree. Double click on ProcessScenario Business Measures, and the business measures editor opens up. These business measures have already been created for you.

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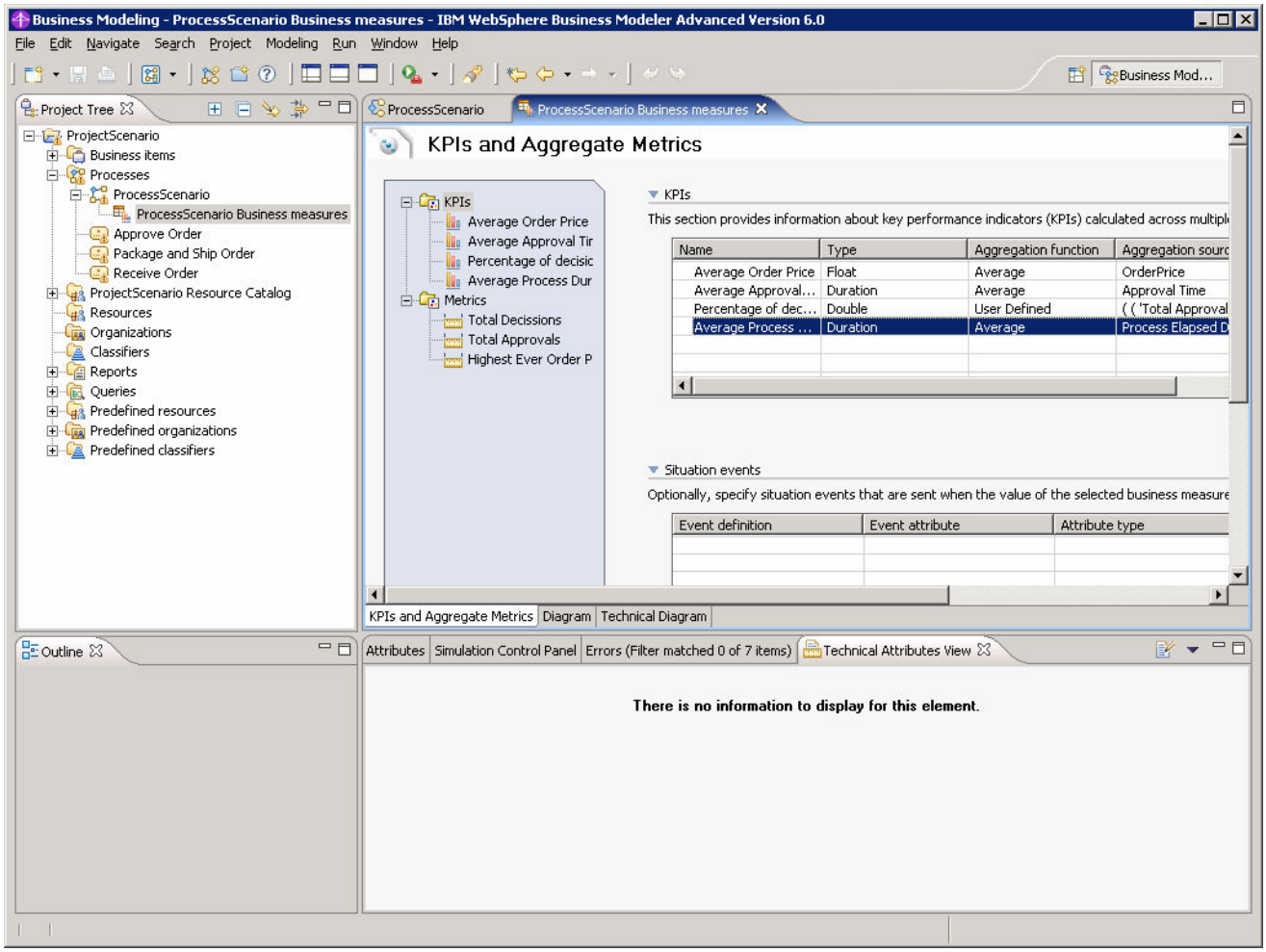

__ k. Expand **Business Items** in the Project Tree, and double click on **CustomerOrder** to view the attributes of this business item.

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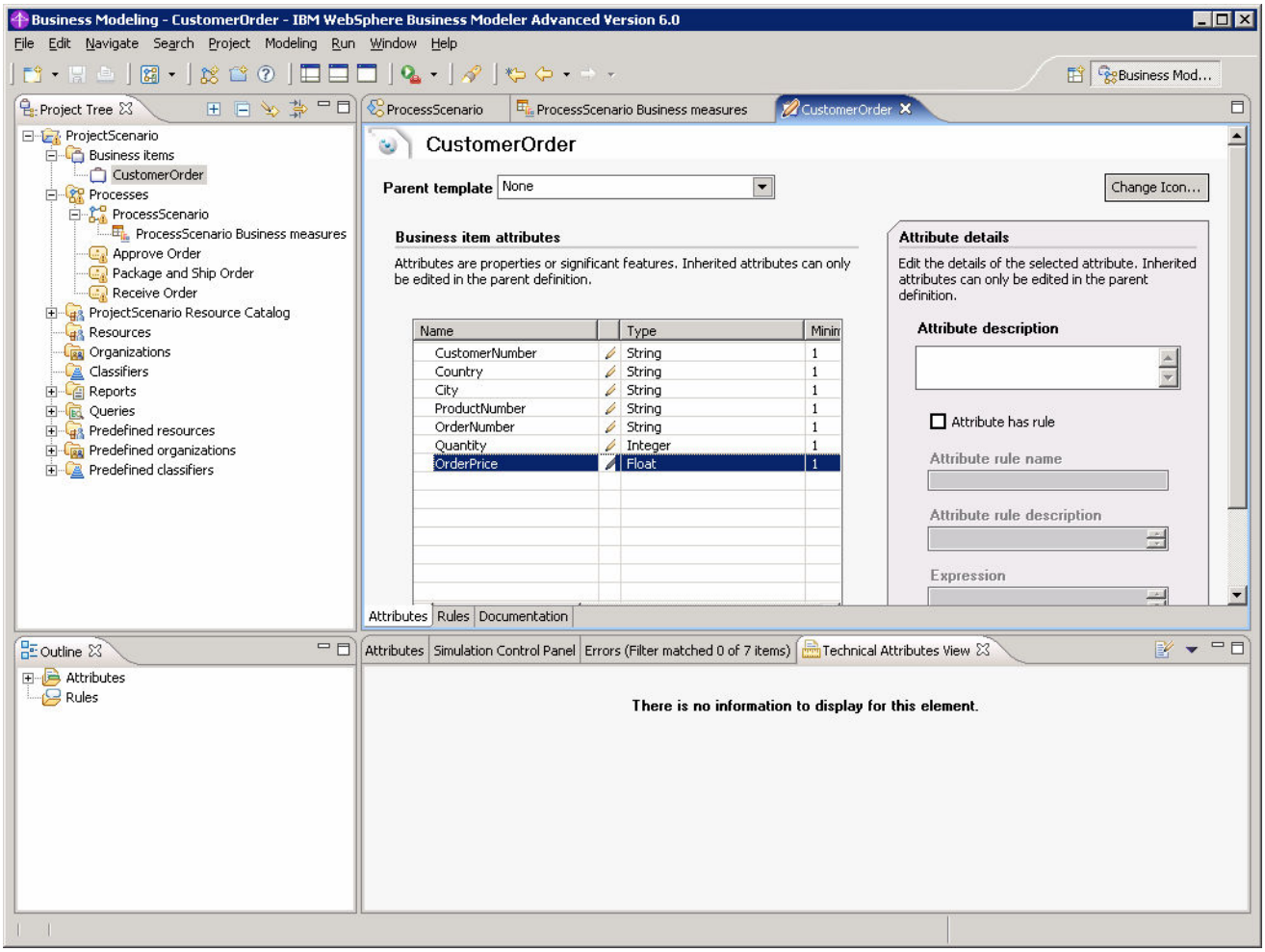

____ 3. Export the model to WebSphere Business Monitor and WebSphere Process Server.

__ a. At this point, you may want to click on the Errors tab and check to make sure there are not any errors. There might be some warnings but these should be okay.

__ b. Right click in the Project Tree, select **Export.**

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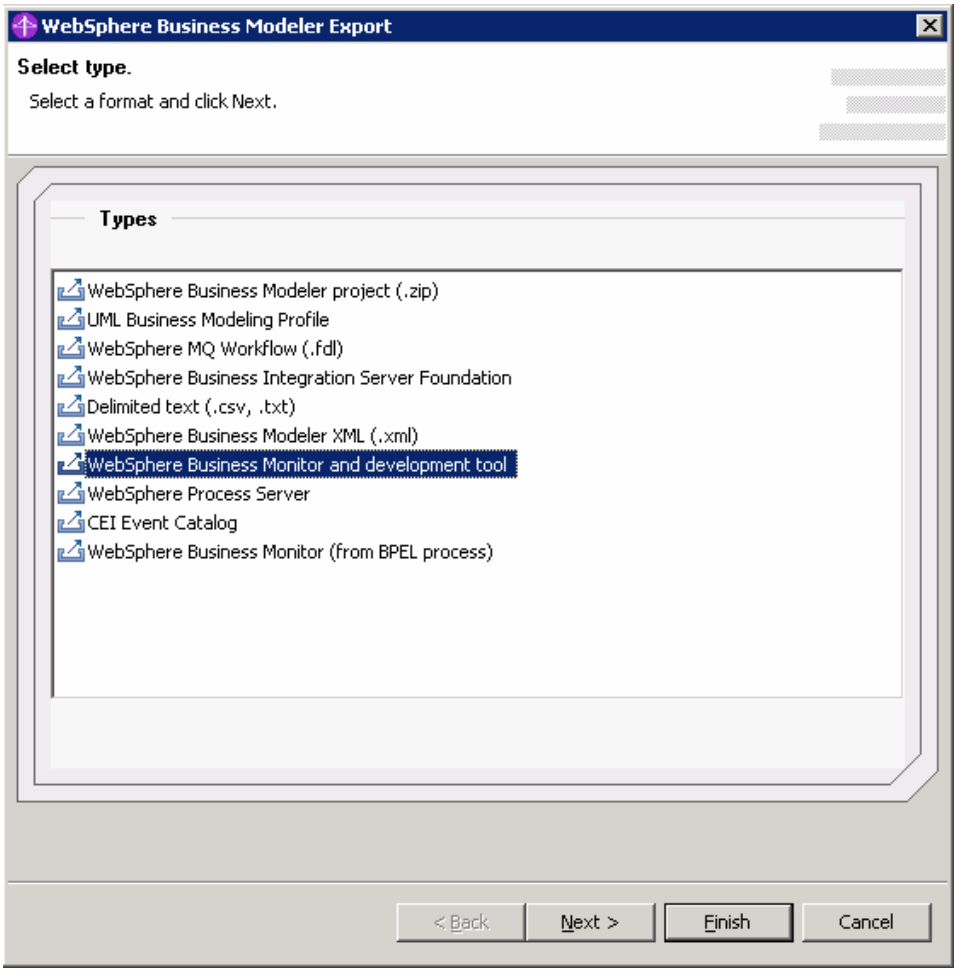

__ c. Select '**WebSphere Business Monitor and development tool**' from **Types** and click **Next**. On the following window, for the target directory browse to C:\ProjectScenario. For the project, select 'ProjectScenario'.

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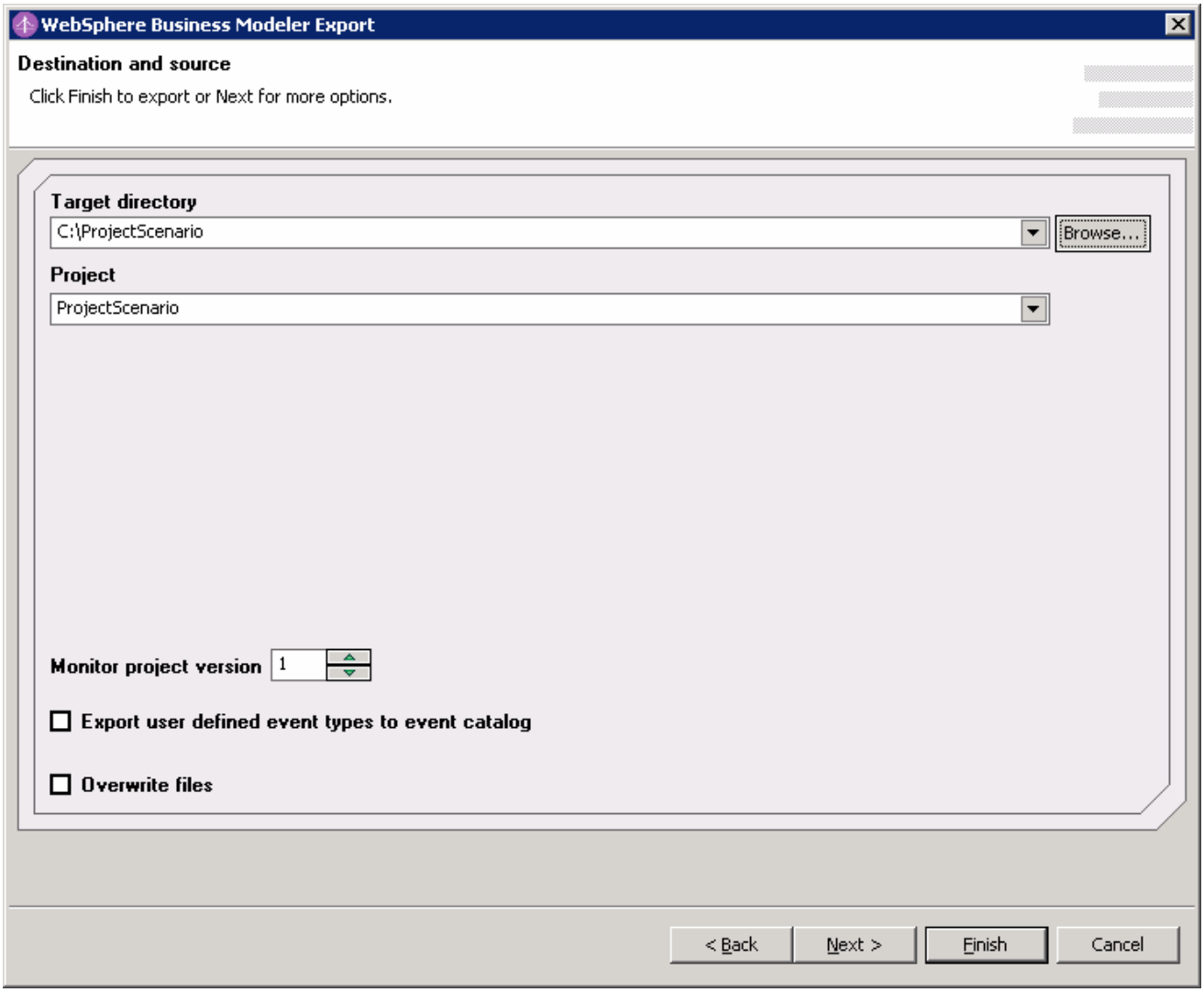

Note: This export will generate two files in the **ProjectScenario** directory, **Monitor.zip** file and **WebSphere Process Server** folder, which contains **ProjectScenario.zip**.

__ d. Click **Next.**

__ e. Select **Module project name** and enter **ProjectScenario** in the **WebSphere Process Server** export details window.

__ f. Select **Library project name** and enter **ProjectScenarioLibrary**. All interfaces for the process and global tasks will be placed in the library and available for use by other components not in the module containing the process.

__ g. Select **Project interchange name** and enter **ProjectScenario**.

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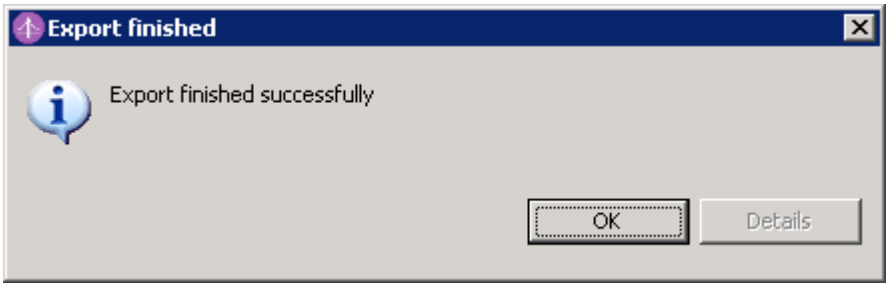
__ h. Click **Finish**

__ i. You should see a confirmation window as follows.



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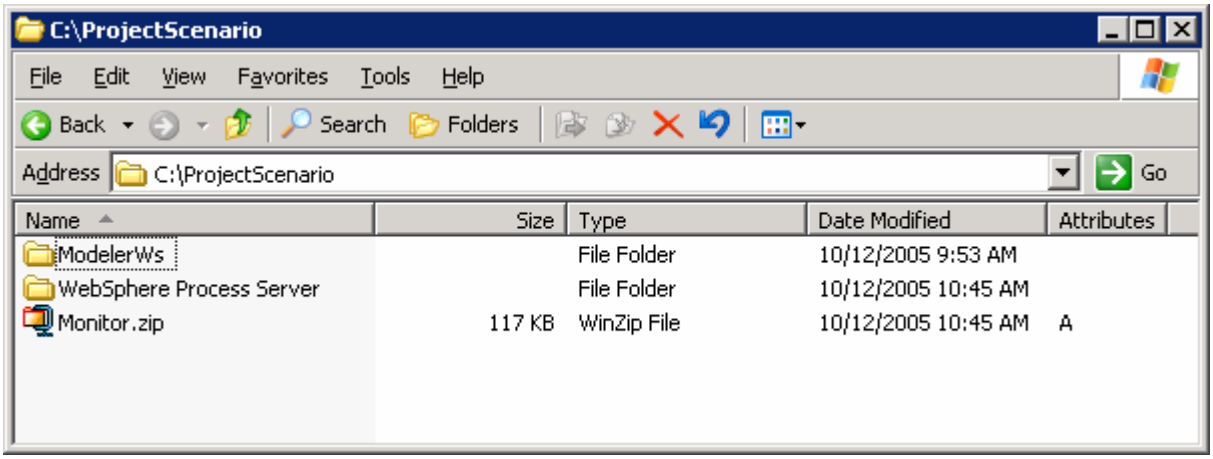
__ j. Click **OK.**

____ 4. Close WebSphere Business Modeler. (Select **File > Exit**)

__ a. If you take a look at our folder C:\ProjectScenario, you will see that the export created 2 artifacts – Monitor.zip and folder 'WebSphere Process Server'.



Note: The '**ModelerWs**' folder contains the Modeler workspace and was created earlier when you started WebSphere Business Modeler.

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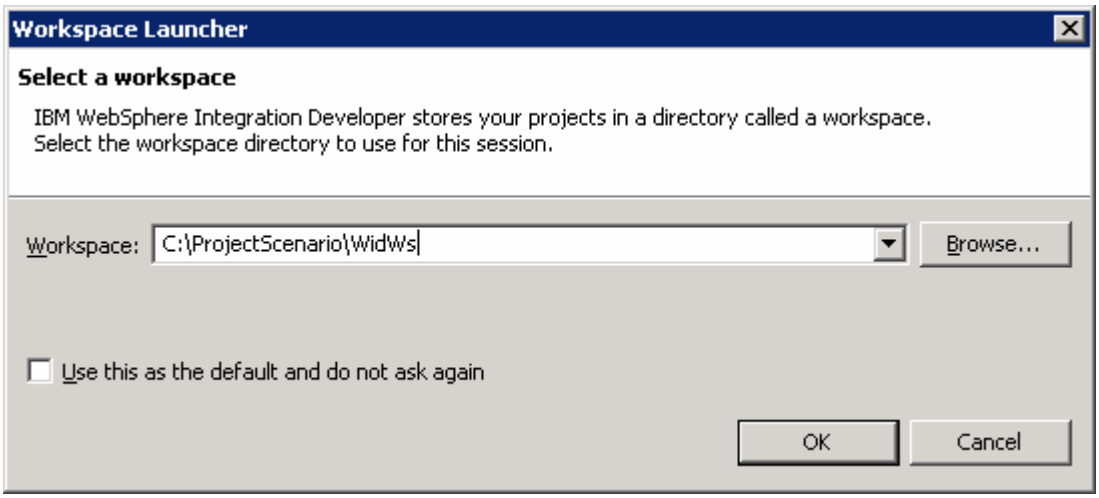
Part 2: Implement and Deploy the Process Model

In this part, the Process Model will be implemented using WebSphere Integration Developer and then deployed onto the **Runtime Server**.

____ 1. Start WebSphere Integration Developer creating a new workspace in the folder C:\ProjectScenario, and turn off the auto-build feature.

__ a. Start WebSphere Integration Developer. For the Workspace, enter C:\ProjectScenario\WidWs, so we will create a new workspace in our project folder.



__ b. Click **OK.**

__ c. Close the welcome window by clicking the arrow in the top right corner of the welcome window.

__ d. Select **Project > Build Automatically**, to turn off automatic builds.

____ 2. Import the Model into WebSphere Integration Developer

__ a. Select **File > Import** from the main menu.

__ b. From the **Import** window, select **Project Interchange** as the source and click **Next.**

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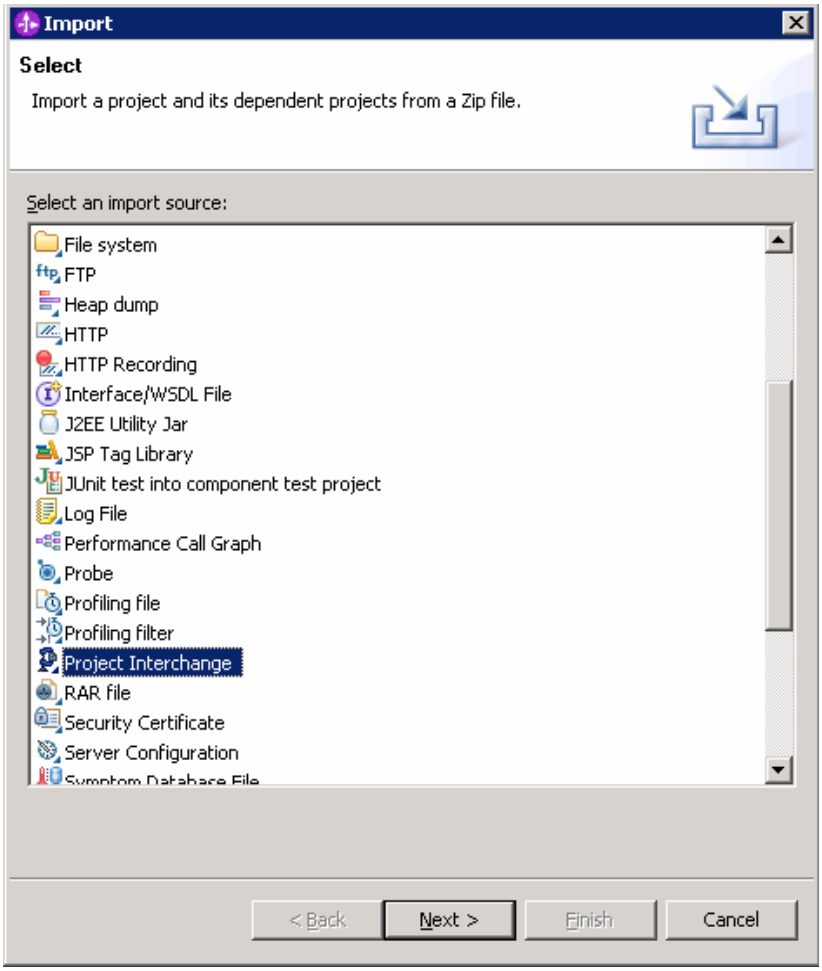

__ c. The **Import Project Interchange Contents** window will be opened.

__ d. Now click the first **Browse…** button and select **C:\ProjectScenario\WebSphere Process Server\ProjectScenario.zip** as the source zip file.

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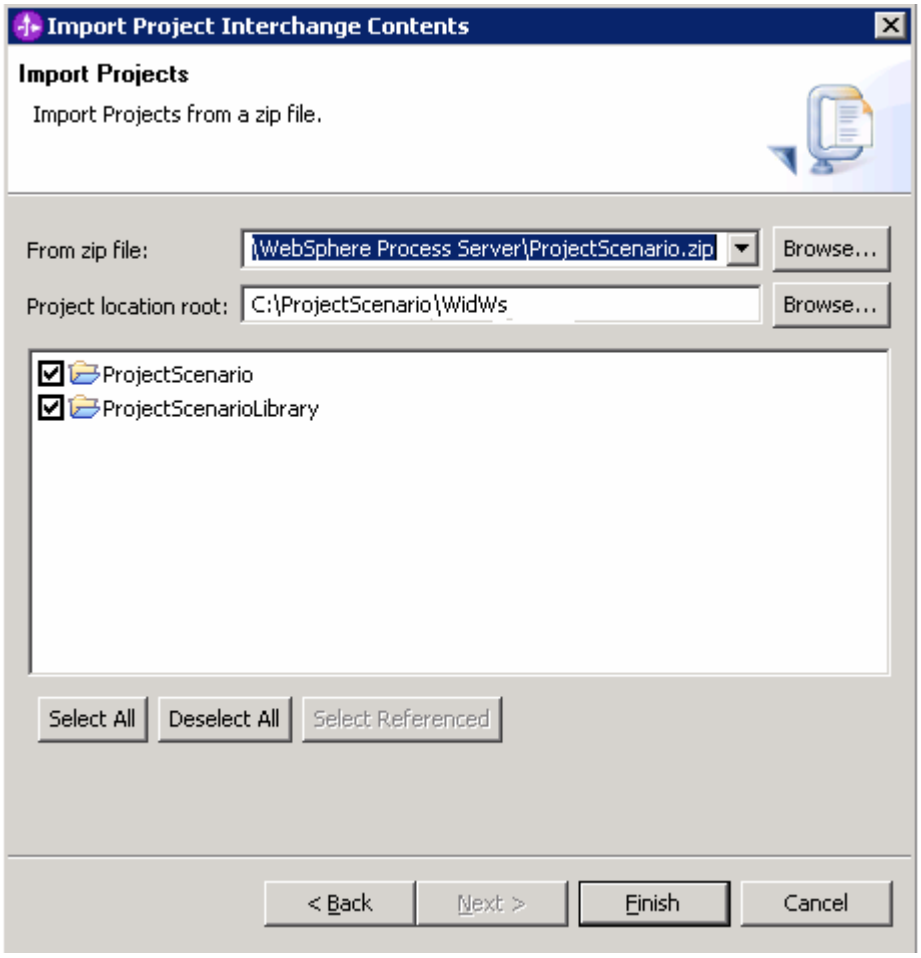
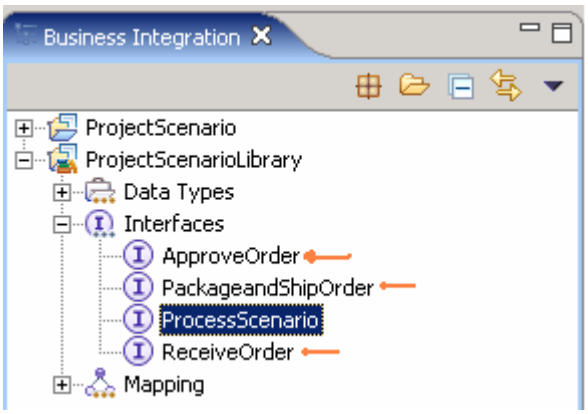


__ e. Click **Select All** and then click **Finish.**

____ 3. Review the imported artifacts

__ a. In the Business Integration view, notice the two projects. **ProjectScenario** is the module containing the process and **ProjectScenarioLibrary** is the library.

__ b. Expand **ProjectScenarioLibrary** > **Interfaces**. Notice there are 4 interfaces in the library, one for the process (**ProcessScenario**) and one for each task in the process. With the interfaces in the library, they can be used for components defined in other modules.



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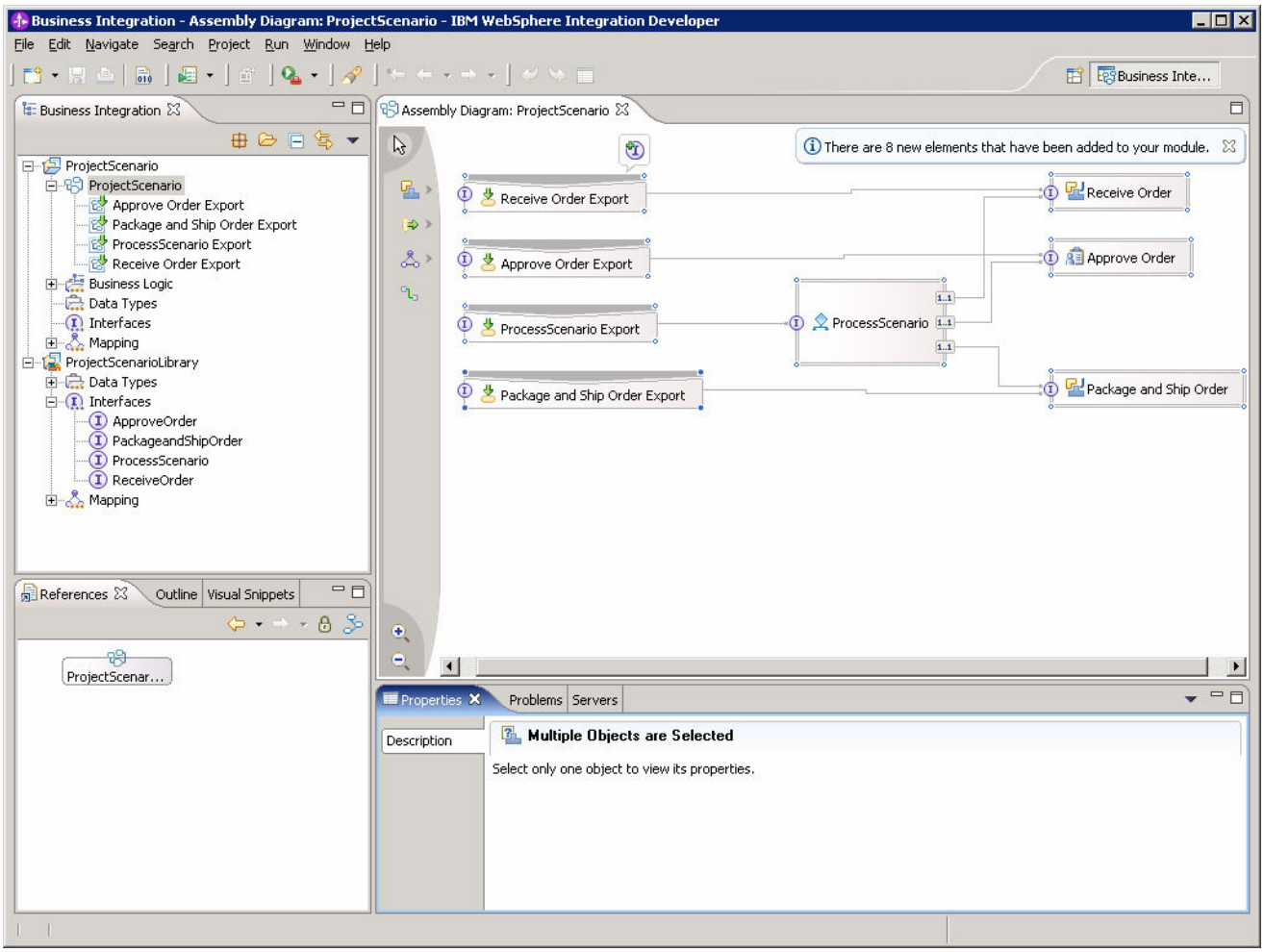
__ c. In the Business Integration view, expand **ProjectScenario** and then double-click **ProjectScenario**.



__ d. The assembly editor will be opened. Notice how the different tasks of the process are exposed as Java components. The **Approve Order** task is not exposed as a Java component since it was a local task and it had a resource assigned to it that was a Role (**Account Manager**). Even though the **Receive Order and Package and Ship Order** tasks are Java components, they are in the same module as the process. This packaging structure is simple and fine for the testing and deployment of small applications. However, when processes become larger and iterative development of the process occurs, it becomes problematic to keep the components updated when they are in the same module. When a process is changed, the implementation of the component may not change. For this reason, it is better to move these components and their implementation to a different module and use an SCA **Import**/**Export** to connect the components to the process. In the future, when changes are made to the process, the task implementation which is a separate component in a separate module can be left unchanged.

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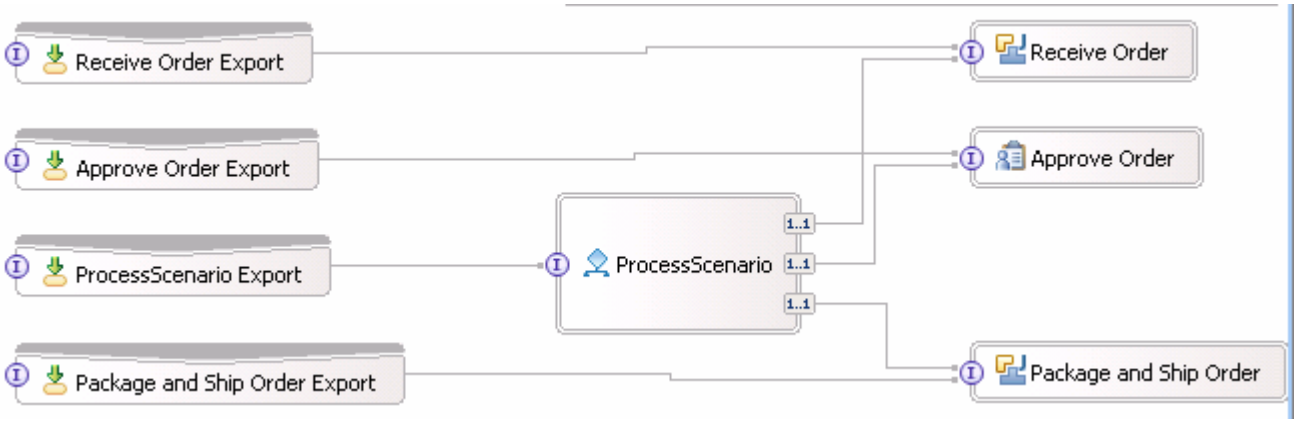
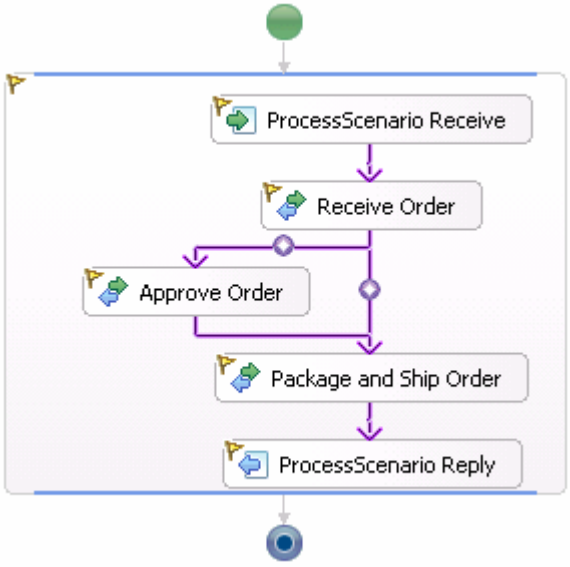


Double-click on the **ProcessScenario** component to open the process editor.



__ e. Close the process editor and the assembly editor

____ 4. In order for the **Receive Order, Package and Ship Order** and **Approve Order** component implementations to be isolated from changes in the process, separate modules for each component should be created.

__ a. Select **File > New > Project** from the main menu

__ b. Select **Module** from the **New Project** window and click **Next**

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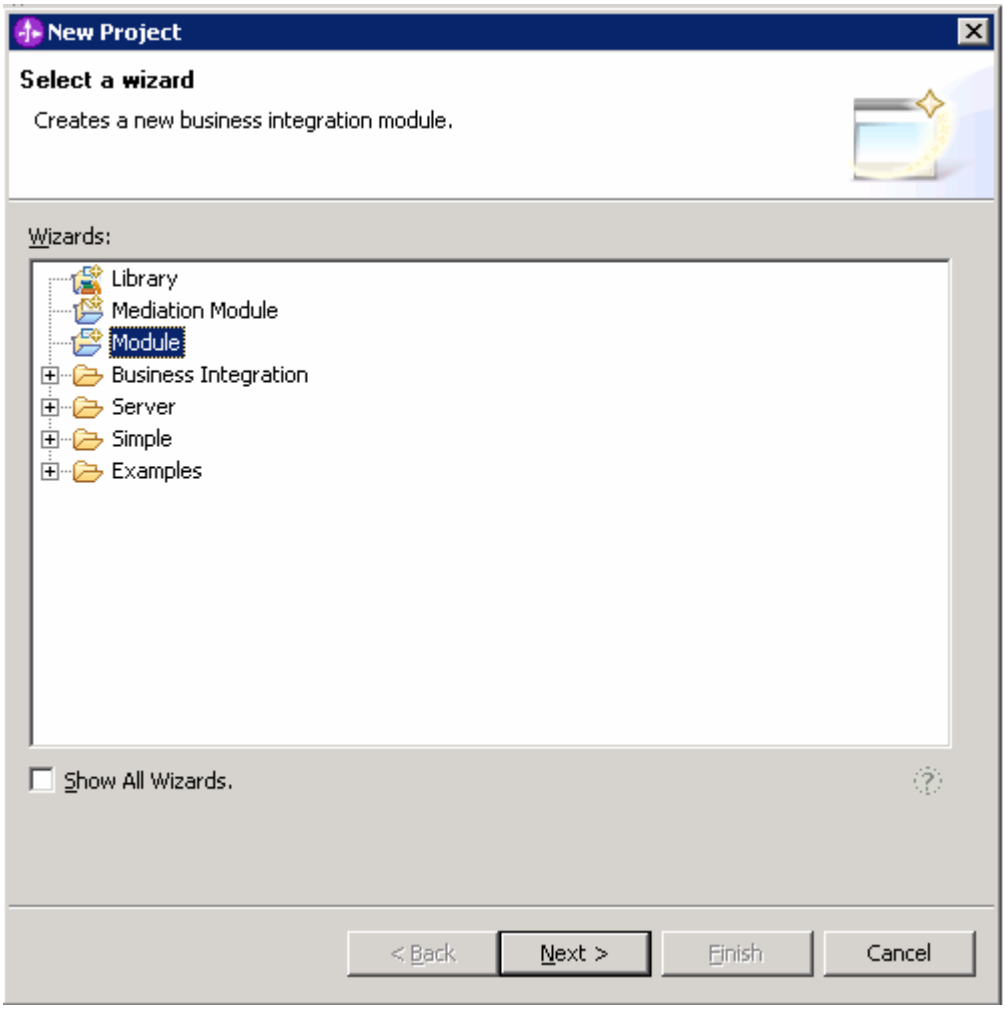

__ c. From **New Module** window enter **ReceiveOrder** as **Module Name** and click **Finish**

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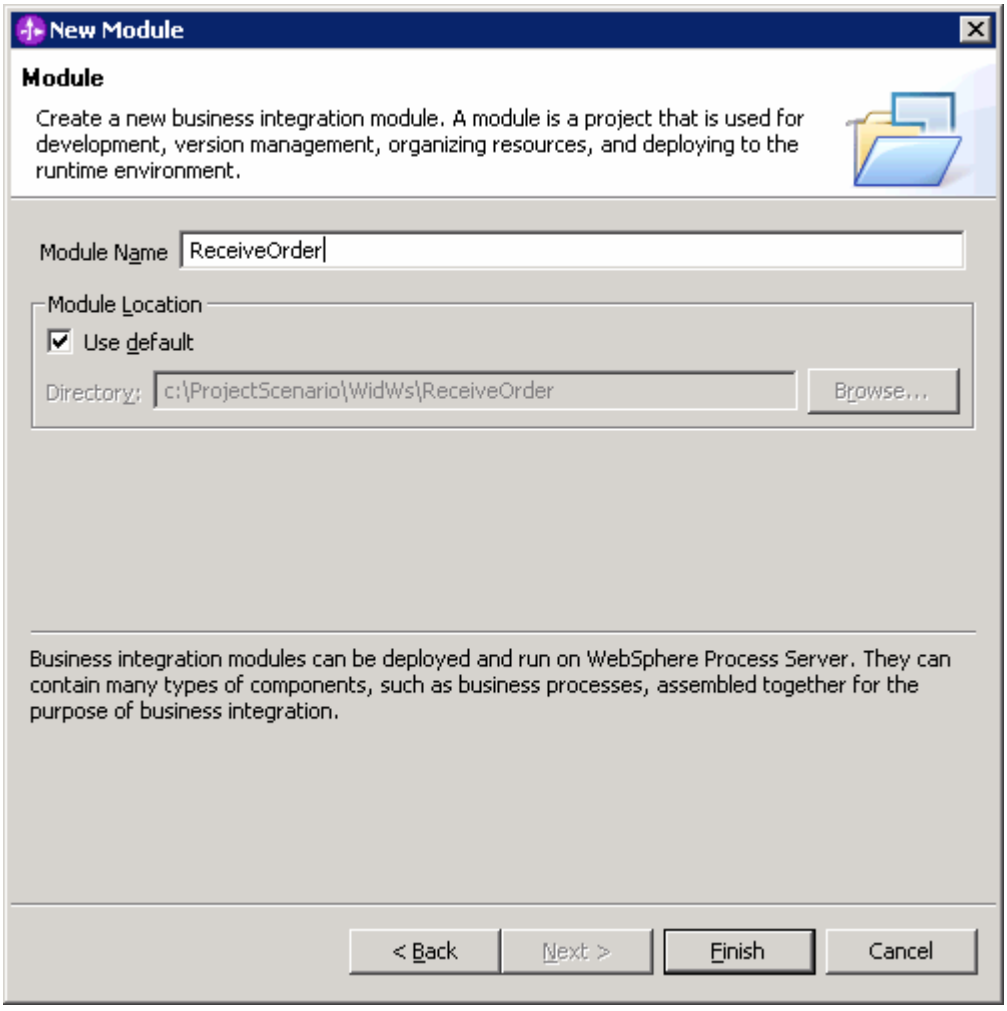
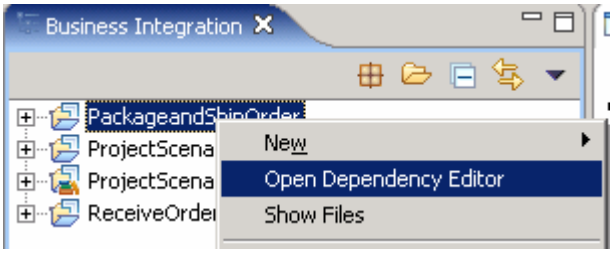


__ d. Repeat the above steps to create two more modules, **PackageandShipOrder** and **ApproveOrder.**

____ 5. In order for components in the new modules to be able to provide the implementation for the different tasks, the appropriate interfaces in the **ProjectScenarioLibrary** task must be used. A dependency between the module and the library must be established before the interface can be used for a component. Create the dependencies and add the library to the modules.

__ a. From the **Business Integration** view right click on **PackageandShipOrder** and select **Open Dependency Editor**



__ b. Click **Add** under the **Libraries** text area

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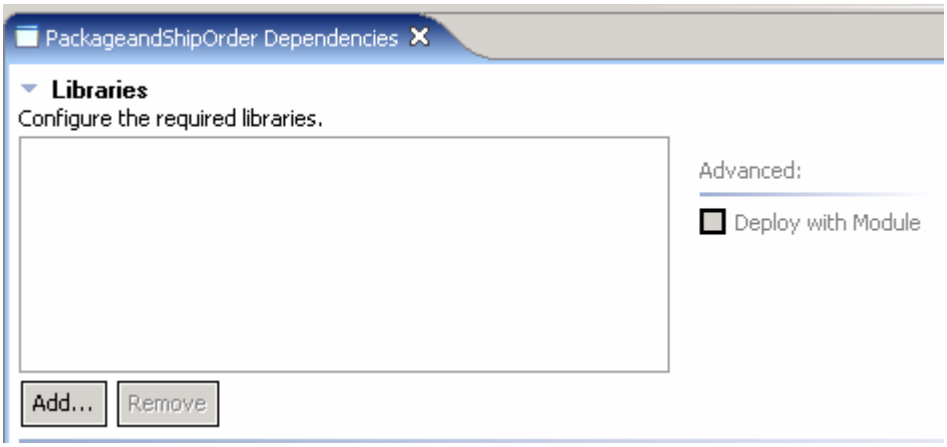
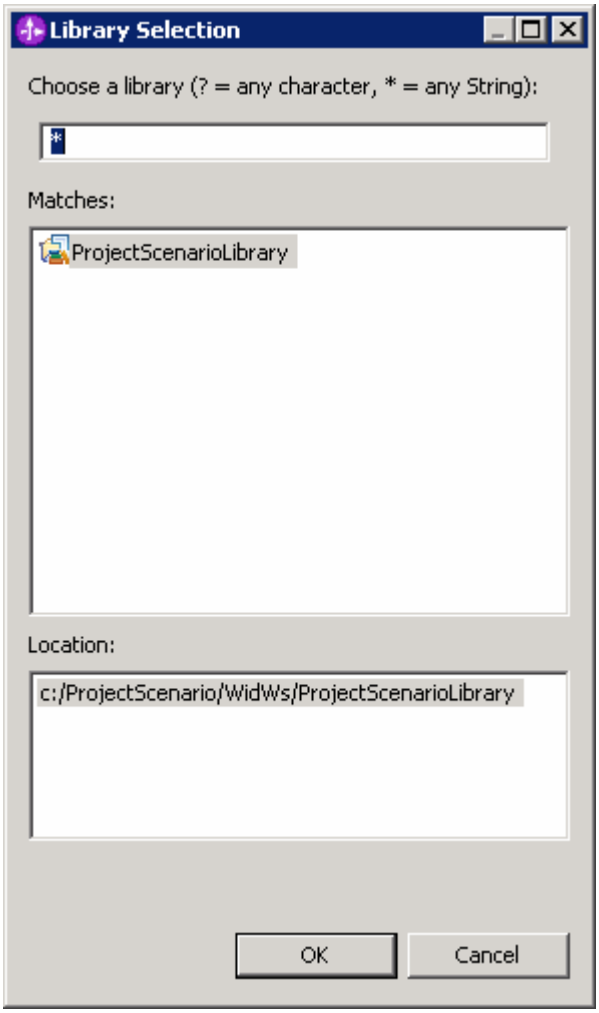


__ c. Select **ProjectScenarioLibrary** from the **Library Selection** window and click **OK**



__ d. Save **(Ctrl+S)** and close the Dependency Editor

__ e. Repeat the above steps for the **ReceiveOrder** module and the **ApproveOrder** module

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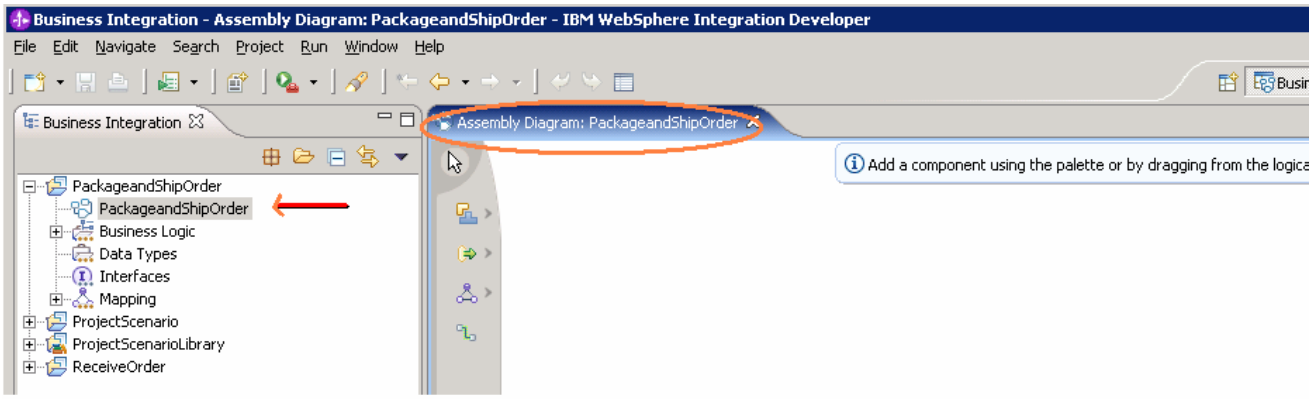
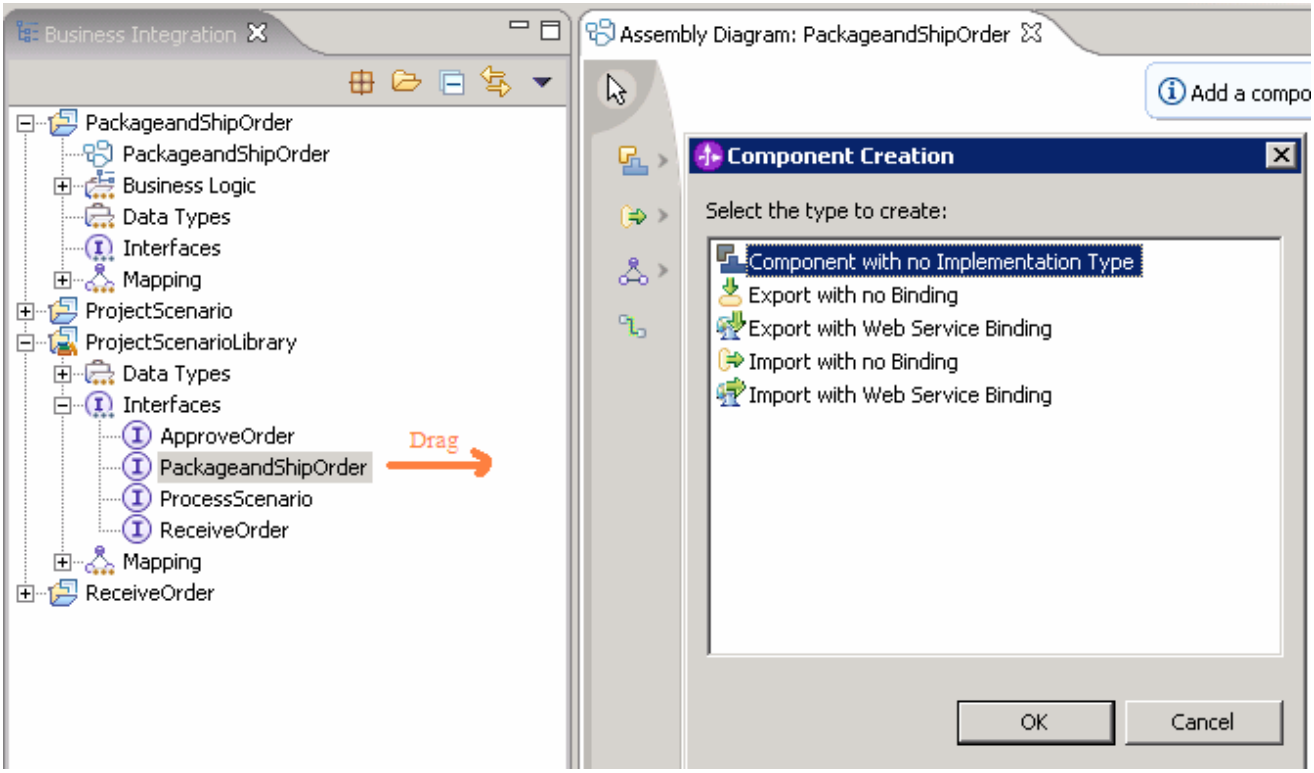
____ 6. Generate Java Implementation and Binding

__ a. In the Business Integration view, expand **PackageandShipOrder** and double-click the **PackageandShipOrder** module and you will see an Assembly diagram view for **PackageandShipOrder** opened on the right side window



__ b. Drag the **PackageandShipOrder** interface from **ProjectScenarioLibrary > Interfaces** and drop it onto the Assembly diagram



__ c. Select **Component with no Implementation Type** from the **Component Creation** window and click **OK**

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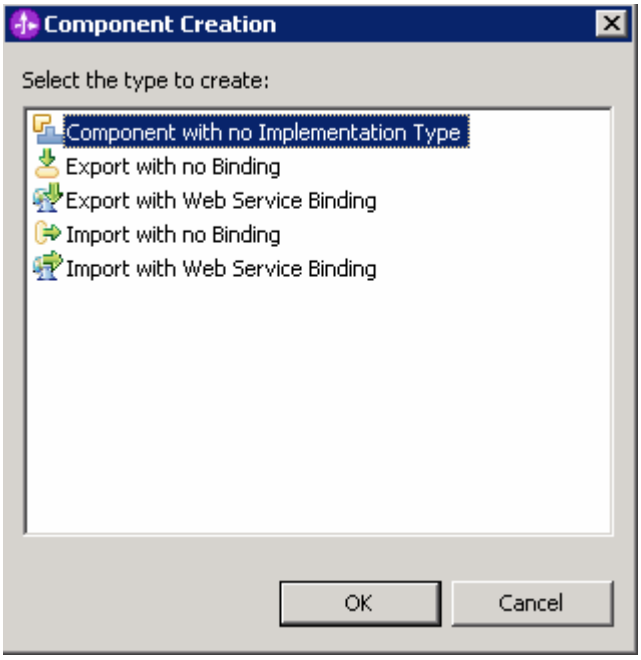
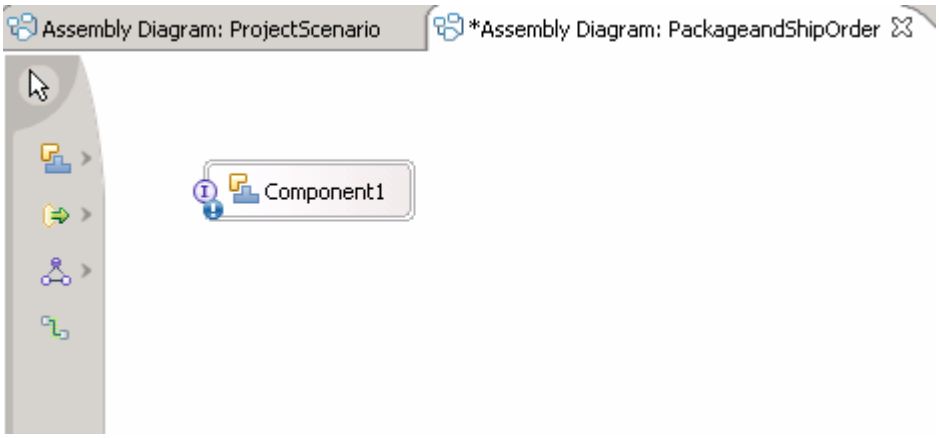


__ d. An unimplemented component will be created



__ e. Click on the Component1 and rename it to **PackageandShipOrder**

NOTE: You can also change the name by changing the Display name (Name field will automatically be changed filling Display name field) under the Description tab from Properties view of the Component1. If you change the name from the Assembly Diagram you should see the Display name and Name changed from Component1 to **PackageandShipOrder** in the Description tab of Properties View.

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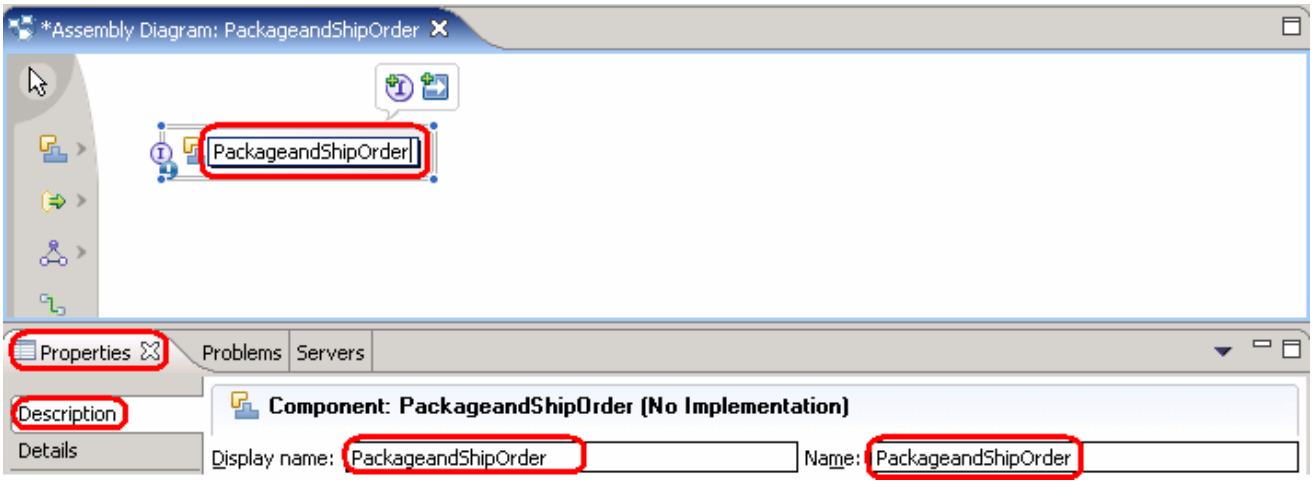
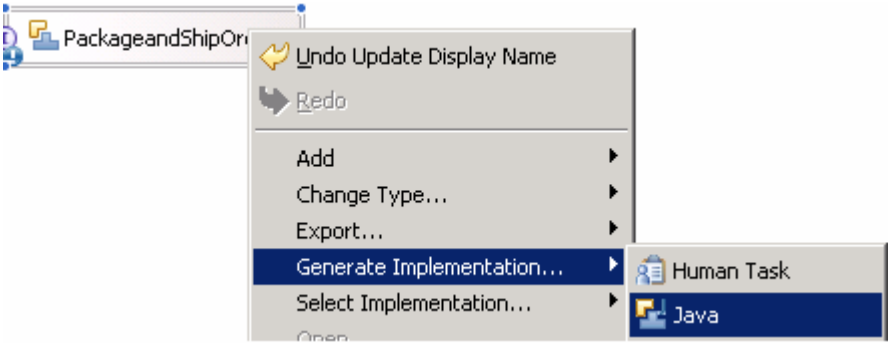


__ f. The component can be implemented any way as long as it uses the **PackageandShipOrder** interface. You could implement the component as a human task, business state machine, business rule or even a business process. For simplicity, right click on the **PackageandShipOrder** and select **Generate Implementation > Java**.



__ g. Accept the default package from Generate Implementation and click **OK**

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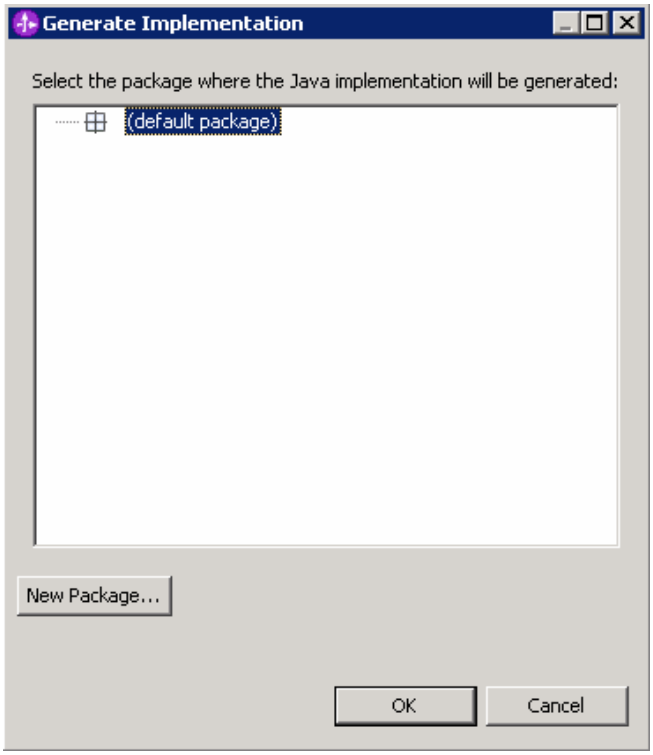


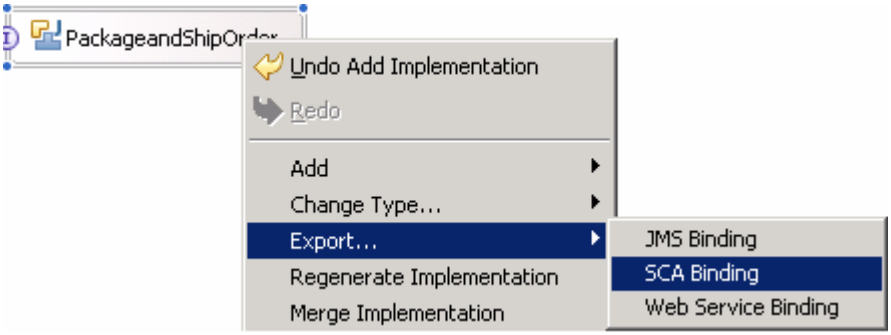
__ h. **PackageandShipOrderImpl.java** will be opened in the assembly editor. Change the return value from '**null**' to '**input**' within the method InputCriterion:

```
public DataObject InputCriterion(DataObject input) {

    return input;
}
```

__ i. Save your work **(Ctrl+S)**. Close the Java editor for **PackageandShipOrderImpl.java**

__ j. Right click on **PackageandShipOrder** in the PackageandShipOrder assembly diagram and select **Export > SCA Binding**. This will make the component available to be called from outside of the module.



__ k. Your **PackageandShipOrder** Assembly diagram will now look like this:

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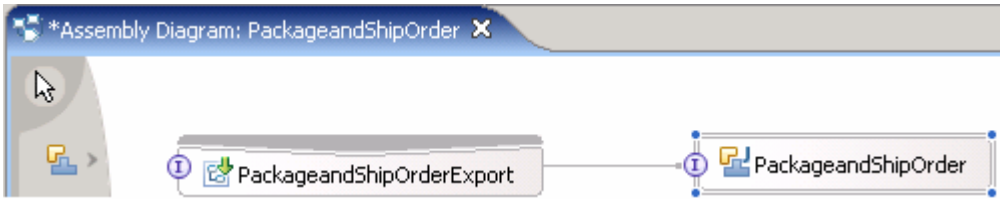
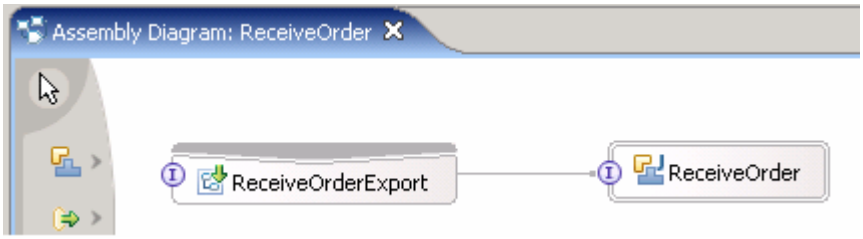


__ l. Save your work **(Ctrl+S)** and close the PackageandShipOrder Assembly diagram

__ m. Repeat the above steps for the **ReceiveOrder** module

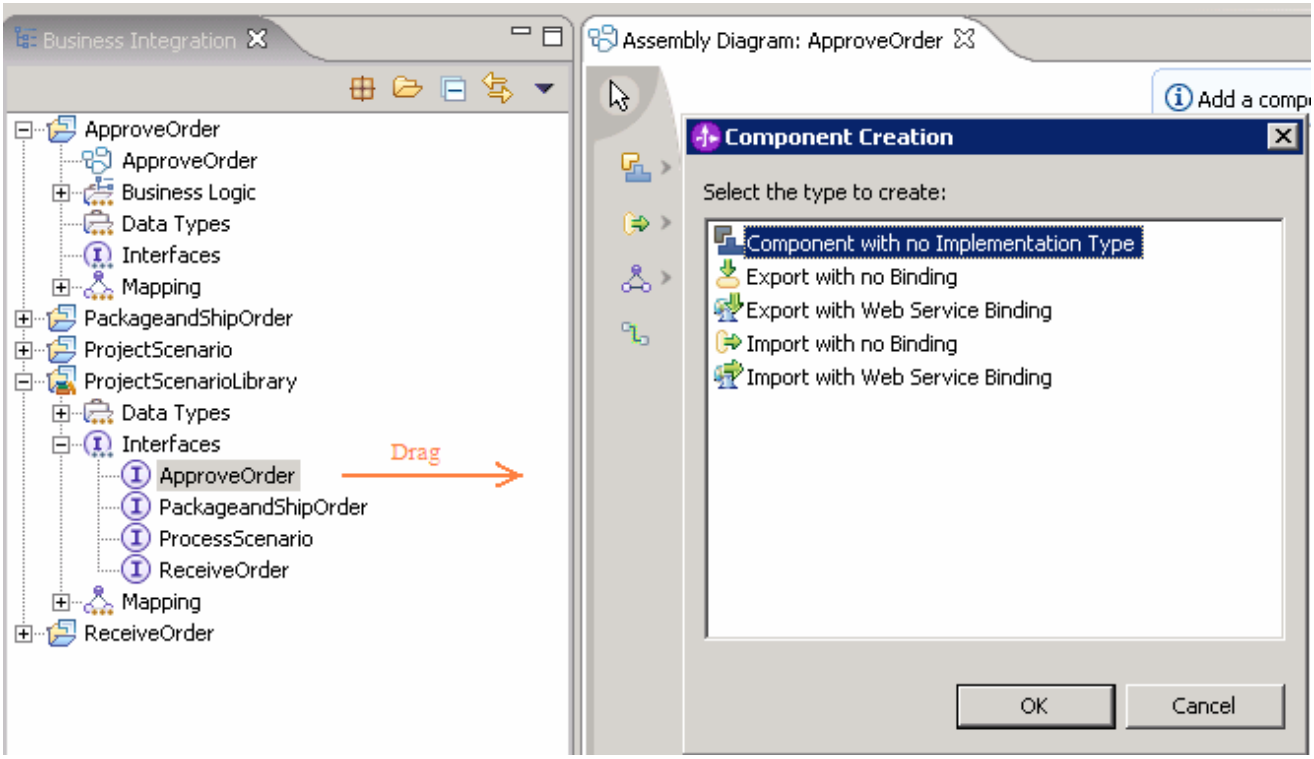
__ n. Your **ReceiveOrder** Assembly diagram will now look like this:



____ 7. Generate Human Task Implementation and Binding

__ a. In the Business Integration view, expand **ApproveOrder** and double-click the **ApproveOrder** module and you will see an assembly diagram view for **ApproveOrder** opened on the right side window

__ b. Drag the **ApproveOrder** interface from **ProjectScenarioLibrary > Interfaces** and drop it onto the assembly diagram



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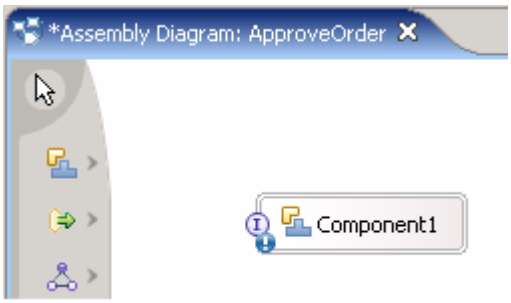
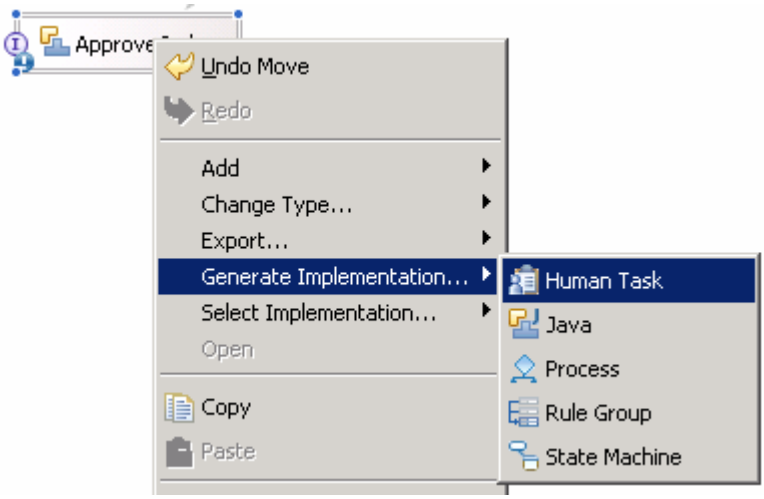
__ c. Select **Component with no Implementation Type** from the **Component Creation** window and click **OK**

__ d. An unimplemented component will be created



__ e. Click on the Component1 and rename it to **ApproveOrder**

__ f. The component can be implemented any way as long as it uses the ApproveOrder interface. You could implement the component as a human task, business state machine, business rule or even a business process. For now, right click on the **ApproveOrder** and select **Generate Implementation > Human Task**



__ g. Accept the ApproveOrder component from Generate Implementation and click **OK**

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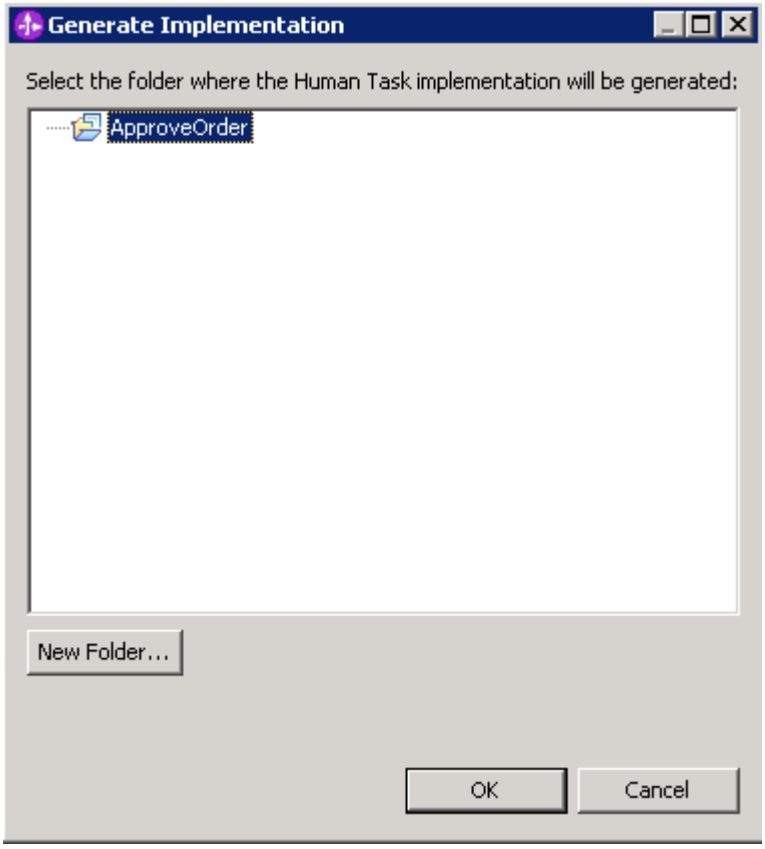
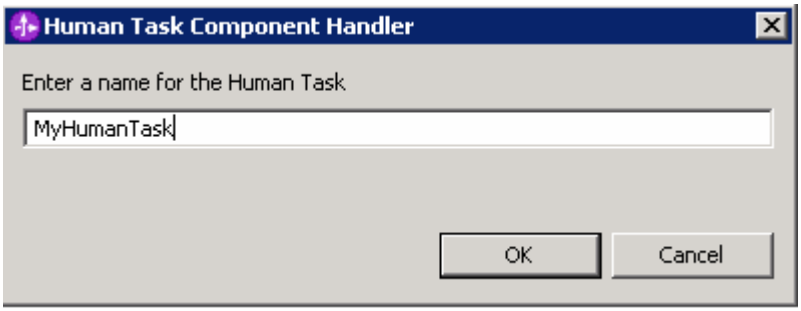


__ h. Enter the Human Task name as **MyHumanTask**



__ i. Click **OK.** The human task editor opens.

__ j. Click the button **MyHumanTask** at the top of the human task editor, then click tab **Details** and pick **bpe/staff/everybodyconfiguration** for the JNDI name of staff plug-in configuration as follows:

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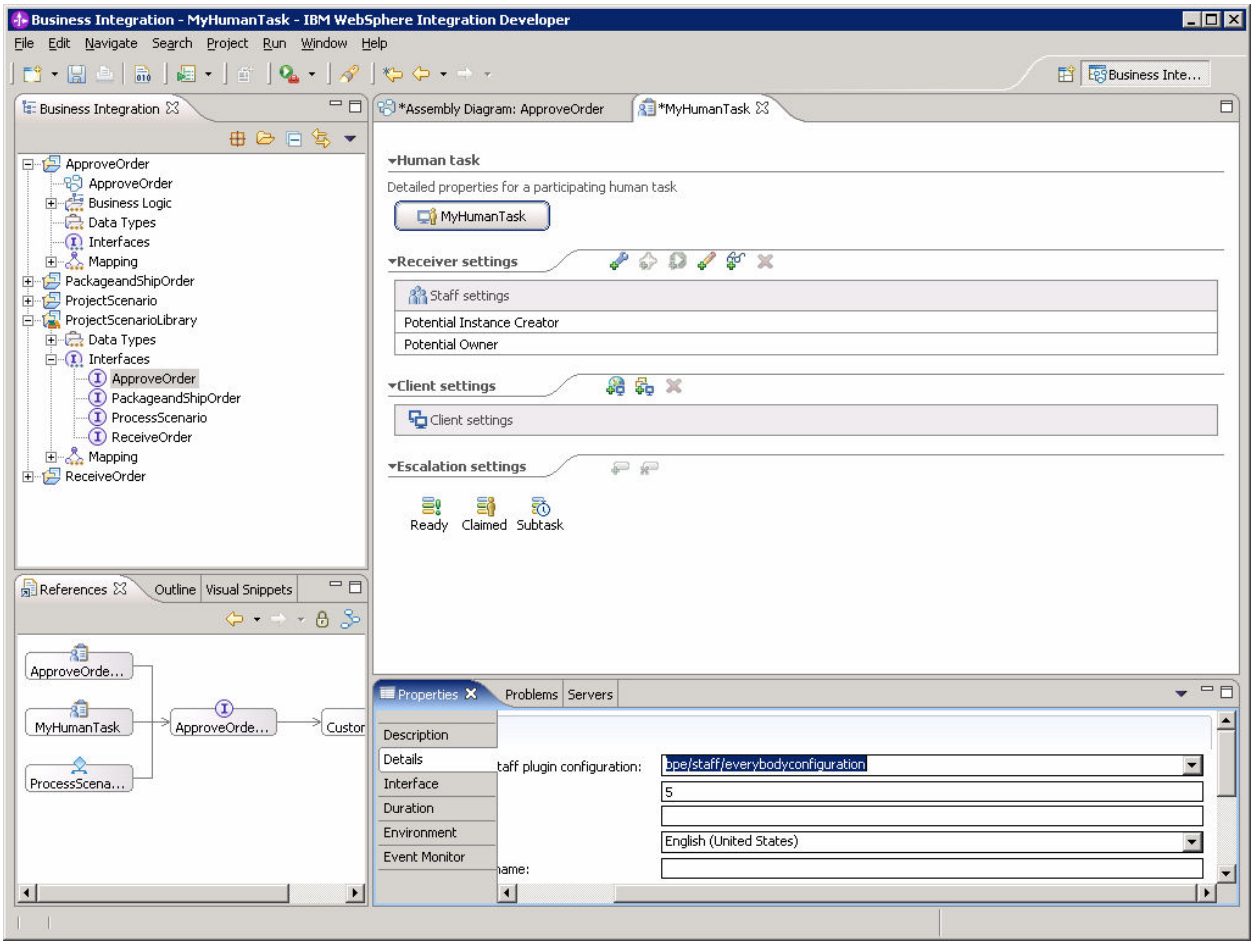

__ k. In the human task editor, click the **Administrator** icon in **Receiver Settings** (first icon on the left). This will add Administrator to the list of staff under **Receiver Settings**. Then press **Ctrl-S** to save it. You will see this:

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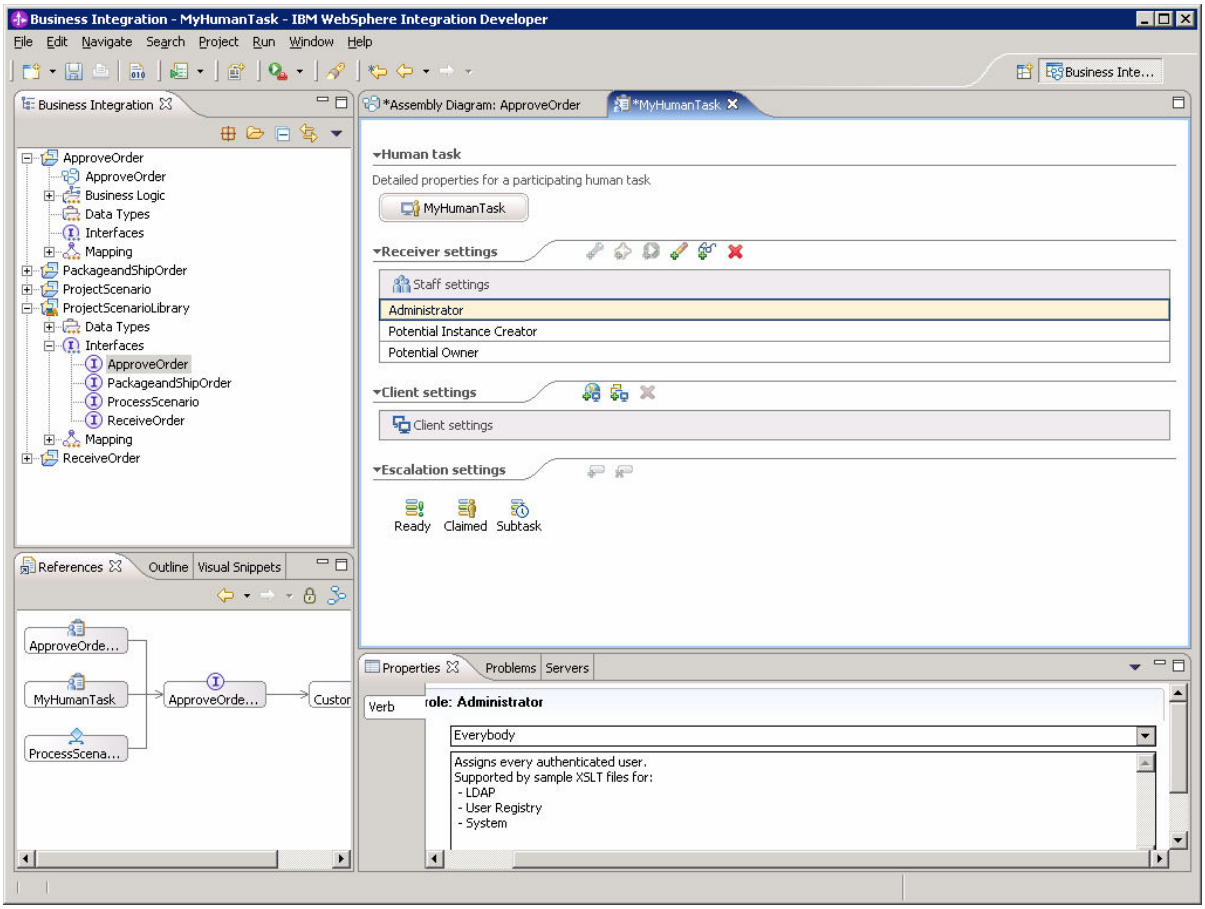
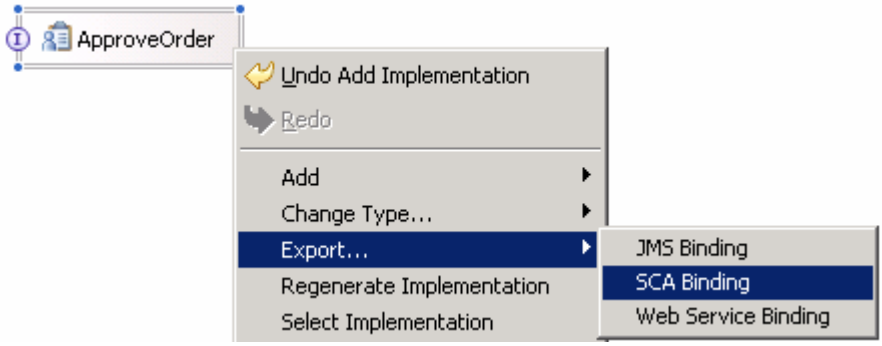


__ l. Close the human task editor

__ m. Right click on the **ApproveOrder** component in the Assembly Diagram view and select **Export > SCA Binding**. This will make the component available to be called from outside of the module.



__ n. Your ApproveOrder Assembly diagram will now look like this:

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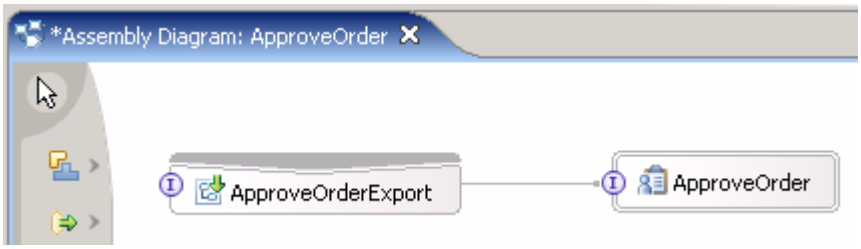
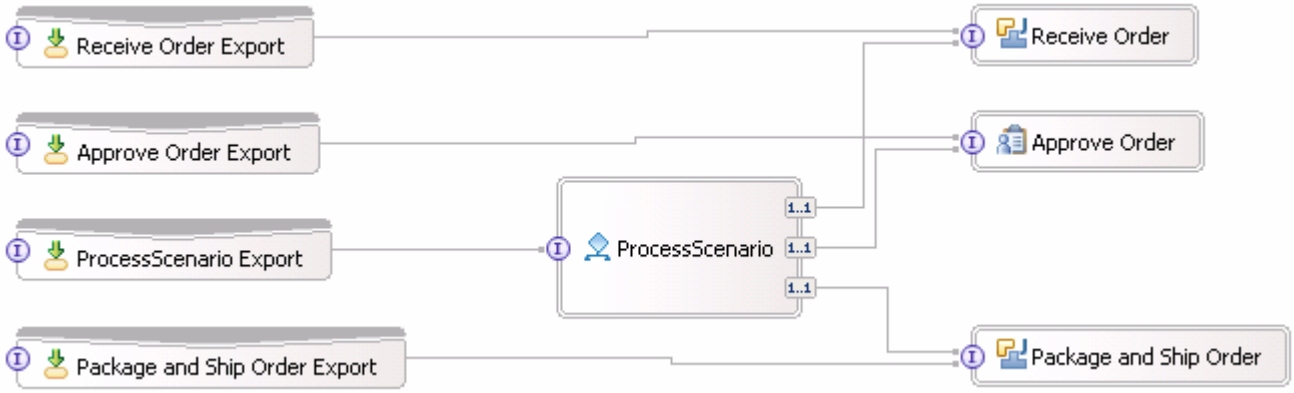


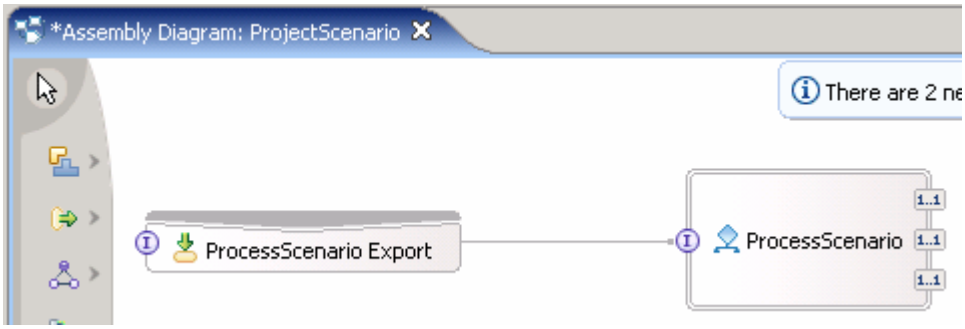
__ o. Save your work **(Ctrl+S)** and close the ApproveOrder assembly diagram

____ 8. Rewire process to components

__ a. Open the Assembly editor for **ProjectScenario** again by double-clicking on **ProjectScenario > ProjectScenario** in the Business Integration view.



__ b. Delete **Receive Order**, **Receive Order Export**, **Package and Ship Order**, **Package and Ship Order Export, Approve Order, Approve Order Export** components by right clicking on each of these



__ c. Save **(Ctrl+S)** your work

Note: You should save your assembly diagram after deleting the above elements. Otherwise, you will see these exports while selecting SCA exports.

__ d. In the **ProjectScenario** assembly diagram right click on **ProcessScenario** and select **Wire References to New > Imports**

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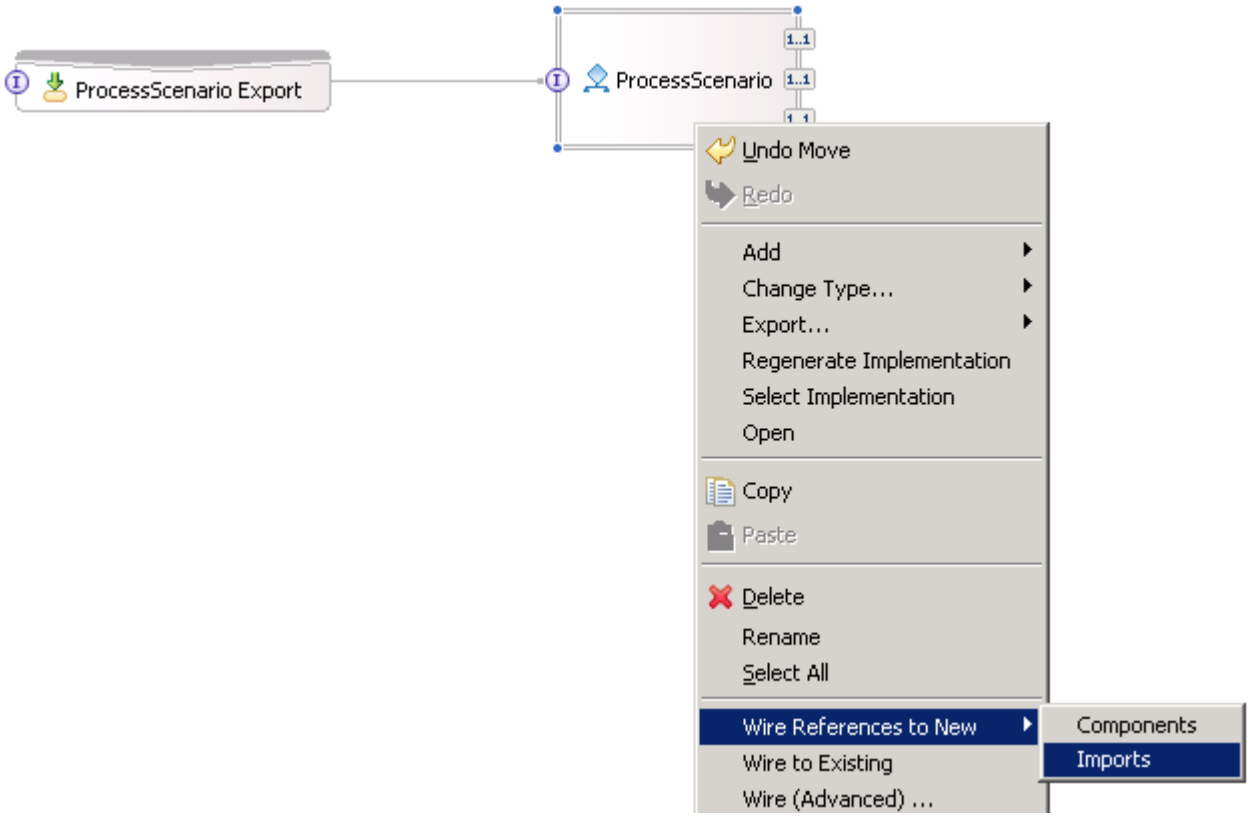
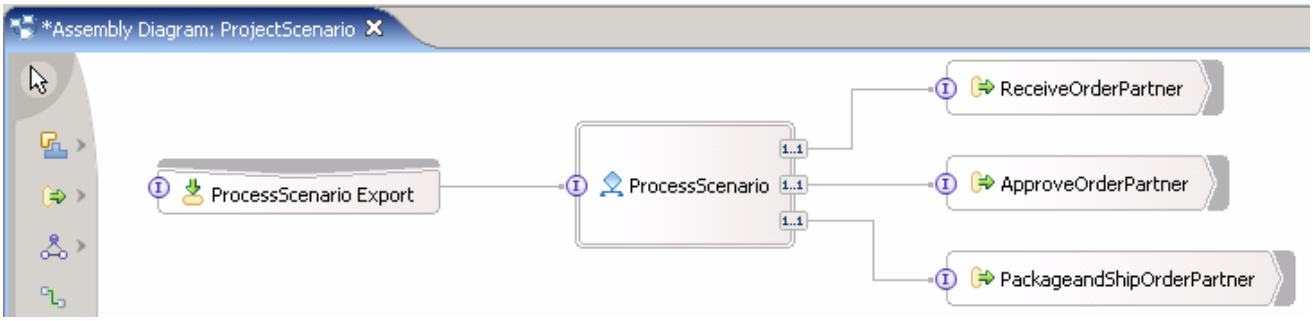


__ e. Imports which match **ReceiveOrder**, **PackageandShipOrder** and **ApproveOrder** interfaces will be created



__ f. Right click on **ReceiveOrderPartner** and select **Generate Binding > SCA Binding**

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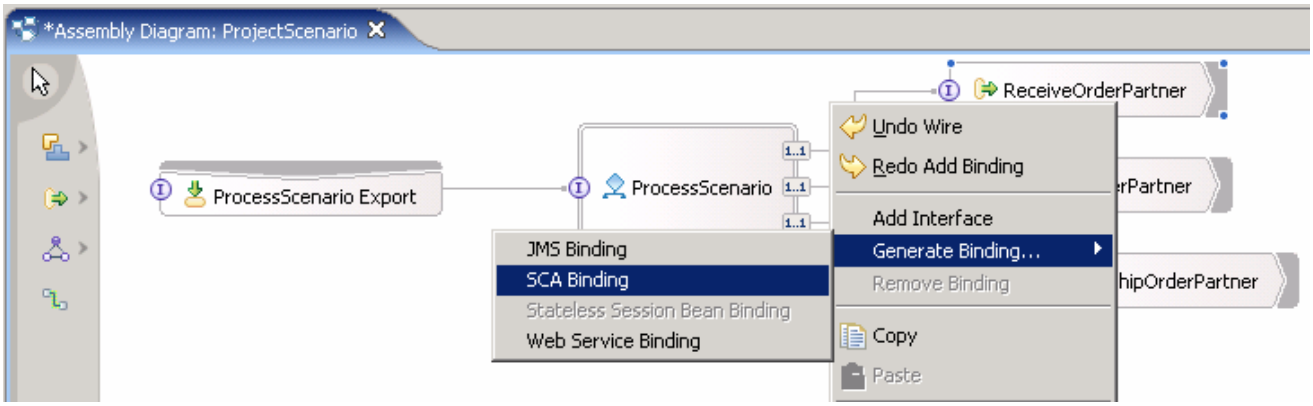
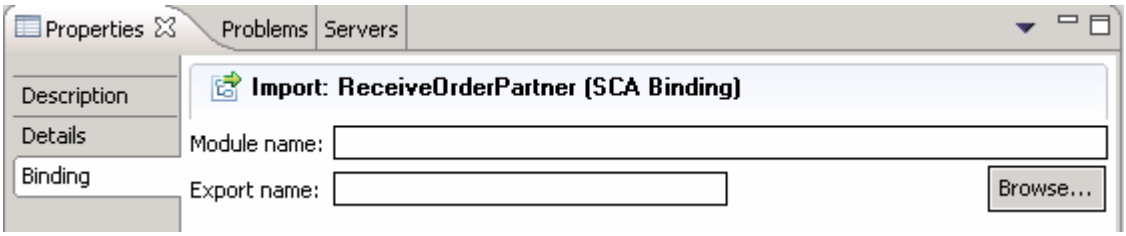


__ g. Right click on **PackageandShipOrderPartner** and select **Generate Binding > SCA Binding**

__ h. Right click on **ApproveOrderPartner** and select **Generate Binding > SCA Binding**

__ i. Select **ReceiveOrderPartner** and then from the **Properties** view at the bottom, select **Binding**



__ j. Click **Browse…**. SCA Export Selection window will be opened

__ k. Select **ReceiveOrderExport** under **Matches** and click **OK**

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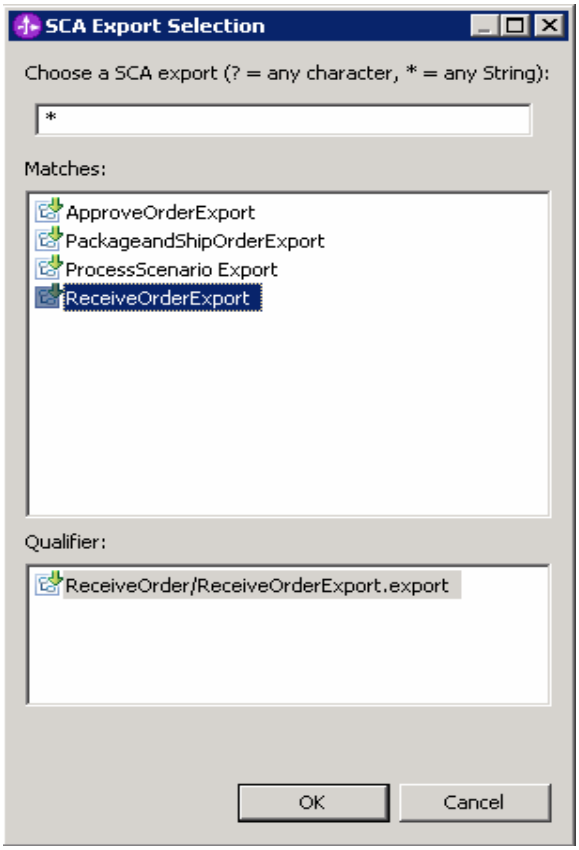

__ l. Select **PackageandShipOrderPartner** and select **Binding** from the Properties view.

__ m. Select **Browse…**.

__ n. Select **Package and Ship Order Export** under **Matches**

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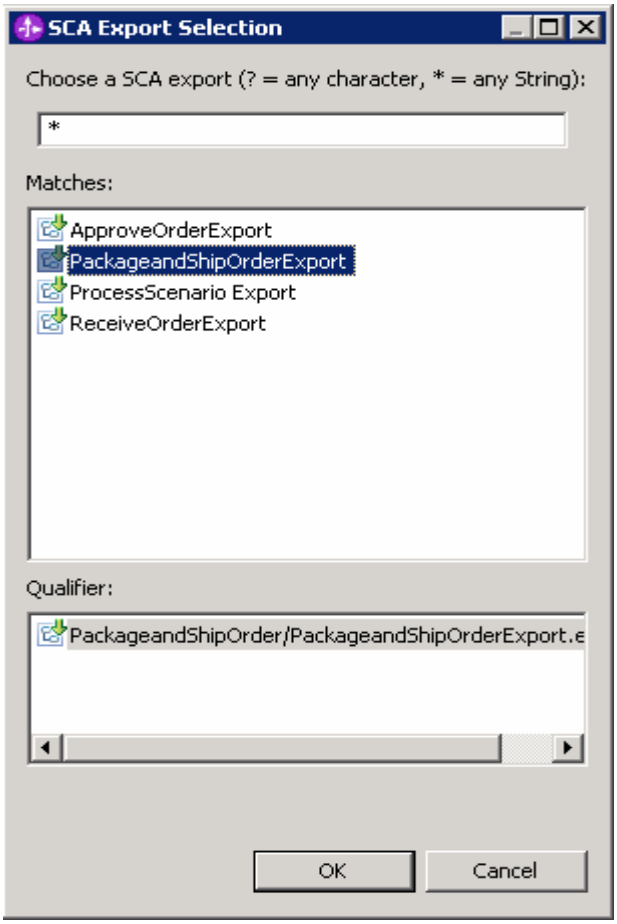

__ o. Click **OK**.

__ p. Select **ApproveOrderPartner** and select **Binding** from the Properties view.

__ q. Select **Browse…**.

__ r. Select **Approve Order Export** under **Matches**

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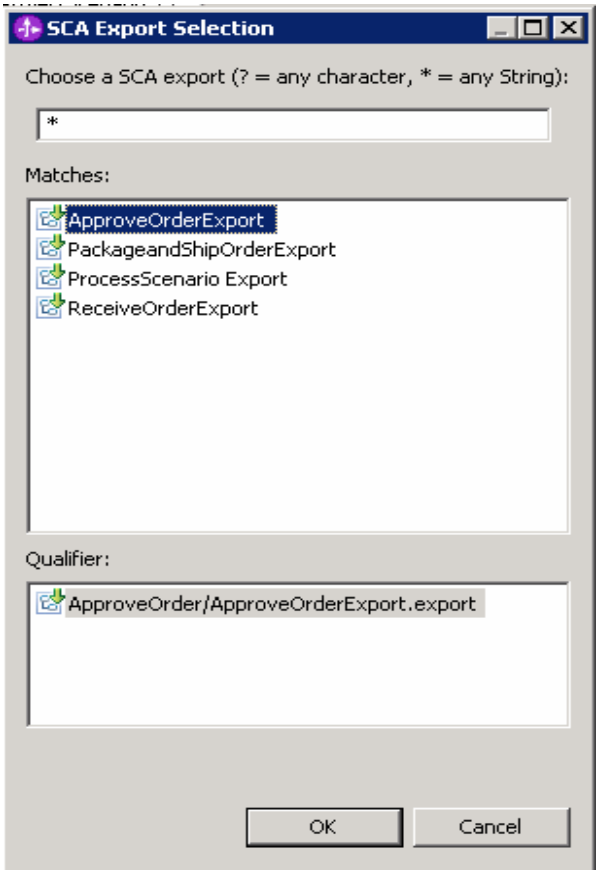
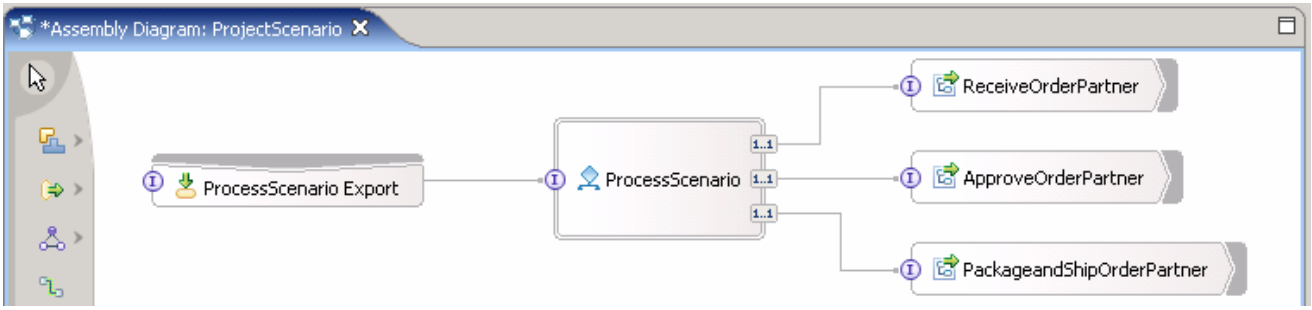


__ s. Click **OK**

__ t. Save your work **(Ctrl+S)**.

__ u. The process is complete and ready for deployment



____ 9. Build the project

__ a. From the main menu, select **Project > Clean…** and then click **OK**

__ b. At this point, you may want to click on the Problems tab and check to make sure there are not any errors. There might be some warnings but these should be okay.

____ 10. Export the EAR files.

__ a. From the main menu, select **File > Export … > EAR file** then click **Next**

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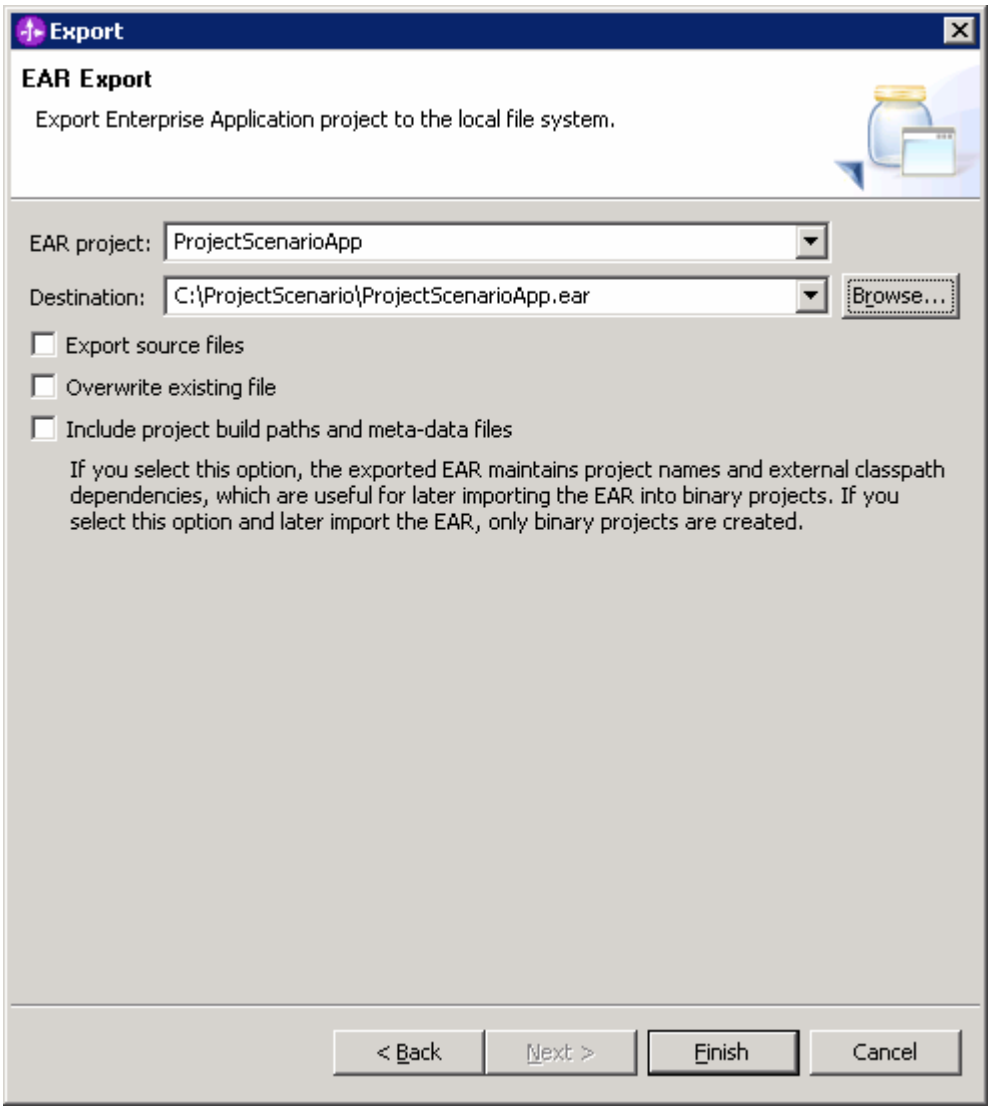
__ b. If you see the 'Confirm Enablement' window, click **OK**

__ c. On the following window, set the EAR project to ProjectScenarioApp, and set the destination to C:\ProjectScenario\ProjectScenarioApp.ear



__ d. Click **Finish**

__ e. Repeat the above steps to

1) export **ApproveOrderApp** to C:\ProjectScenario\ApproveOrderApp.ear

2) export **PackageandShipOrderApp** to C:\ProjectScenario\PackageandShipOrderApp.ear

3) export **ReceiveOrderApp** to C:\ProjectScenario\ReceiveOrderApp.ear

__ f. Close WebSphere Integration Developer

__ g. Now you can take a look at the project folder, and you will see the new WID workspace and the new EAR files.

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____ 11. Copy the EAR files to the **Runtime Server** (the Business Process Server, not the Monitor Server)

__ a. Copy the four EAR files to the **Runtime Server**

1) C:\ProjectScenario\ProjectScenarioApp.ear

2) C:\ProjectScenario\ApproveOrderApp.ear

3) C:\ProjectScenario\PackageandShipOrderApp.ear

4) C:\ProjectScenario\ReceiveOrderApp.ear

__ b. If necessary, start Process Server using **Start > All Programs > IBM WebSphere > Process Server 6.0 > profiles > ProcSrv01 > Start the server.**

Note: Your profile may have a different name than 'ProcSrv01'. Choose the correct one for you.

____ 12. Deploy the EAR files to the **Runtime Server**

__ a. Start the admin console (**Start > All Programs > IBM WebSphere > Process Server 6.0 > profiles > ProcSrv01 > Administrative console**) and log in. Then, select **Applications > Install New Application**. Browse to the EAR file: ProjectScenarioApp.ear.

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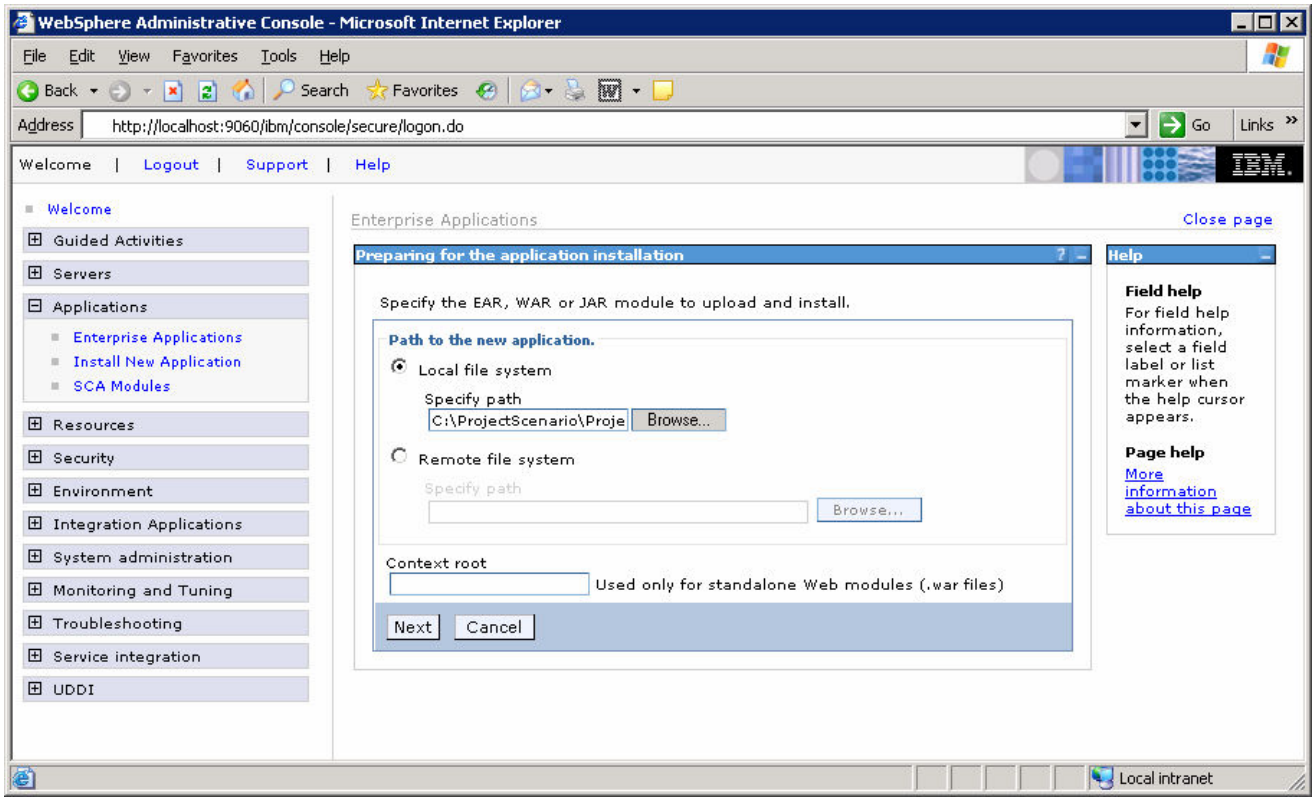

__ b. Click **Next**, then continue installing the application, accepting all the defaults.

__ c. This window shows a successful install.

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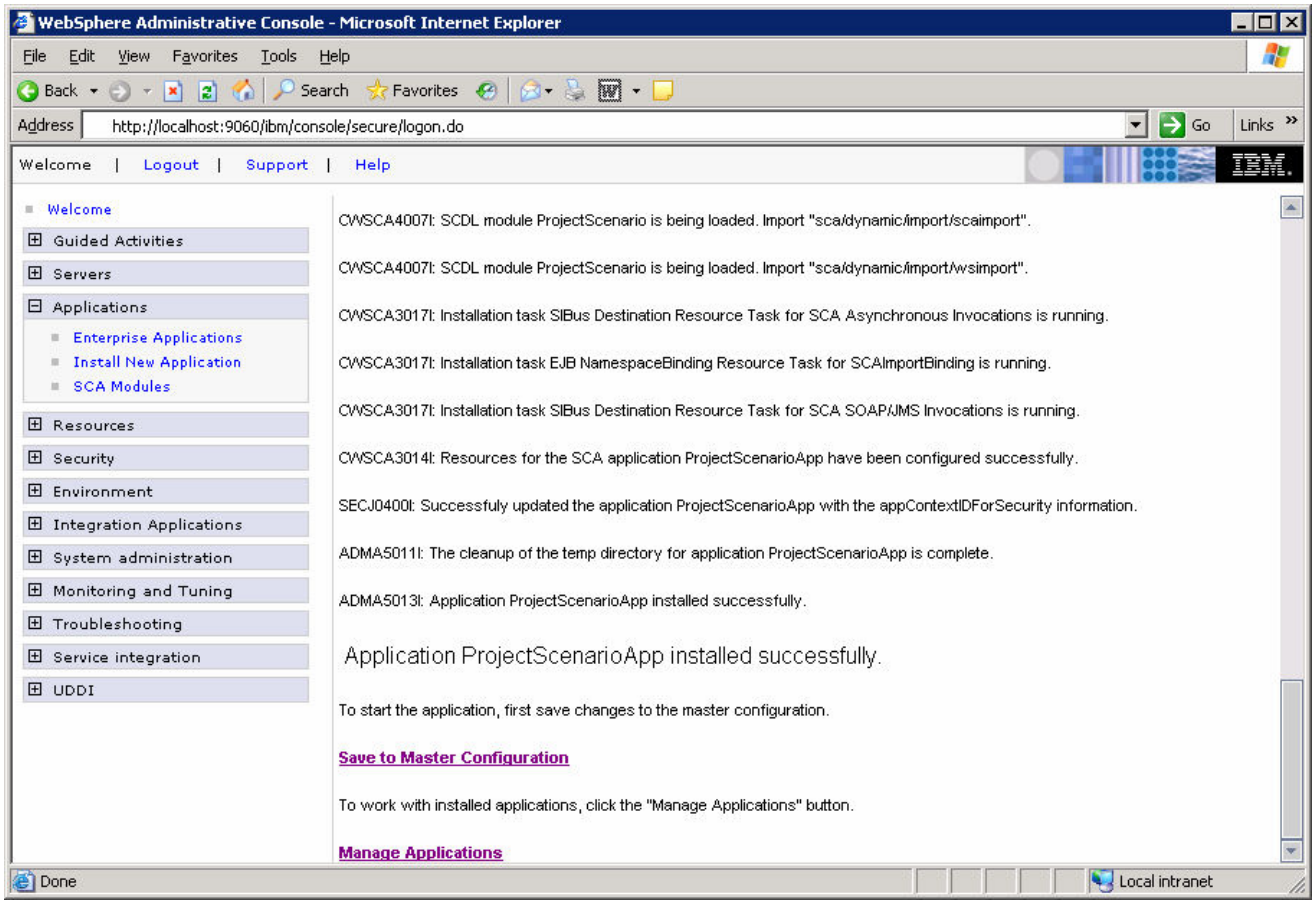

__ d. Save the configuration by clicking **Save to Master Configuration** and then clicking **Save.**

__ e. Navigate to **Applications > Enterprise Applications**, and then start application **ProjectScenarioApp.**

__ f. Repeat the above steps for the rest of the EAR files

1) C:\ProjectScenario\ApproveOrderApp.ear

2) C:\ProjectScenario\PackageandShipOrderApp.ear

3) C:\ProjectScenario\ReceiveOrderApp.ear

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Part 3: Run Schema Generator and execute the generated scripts

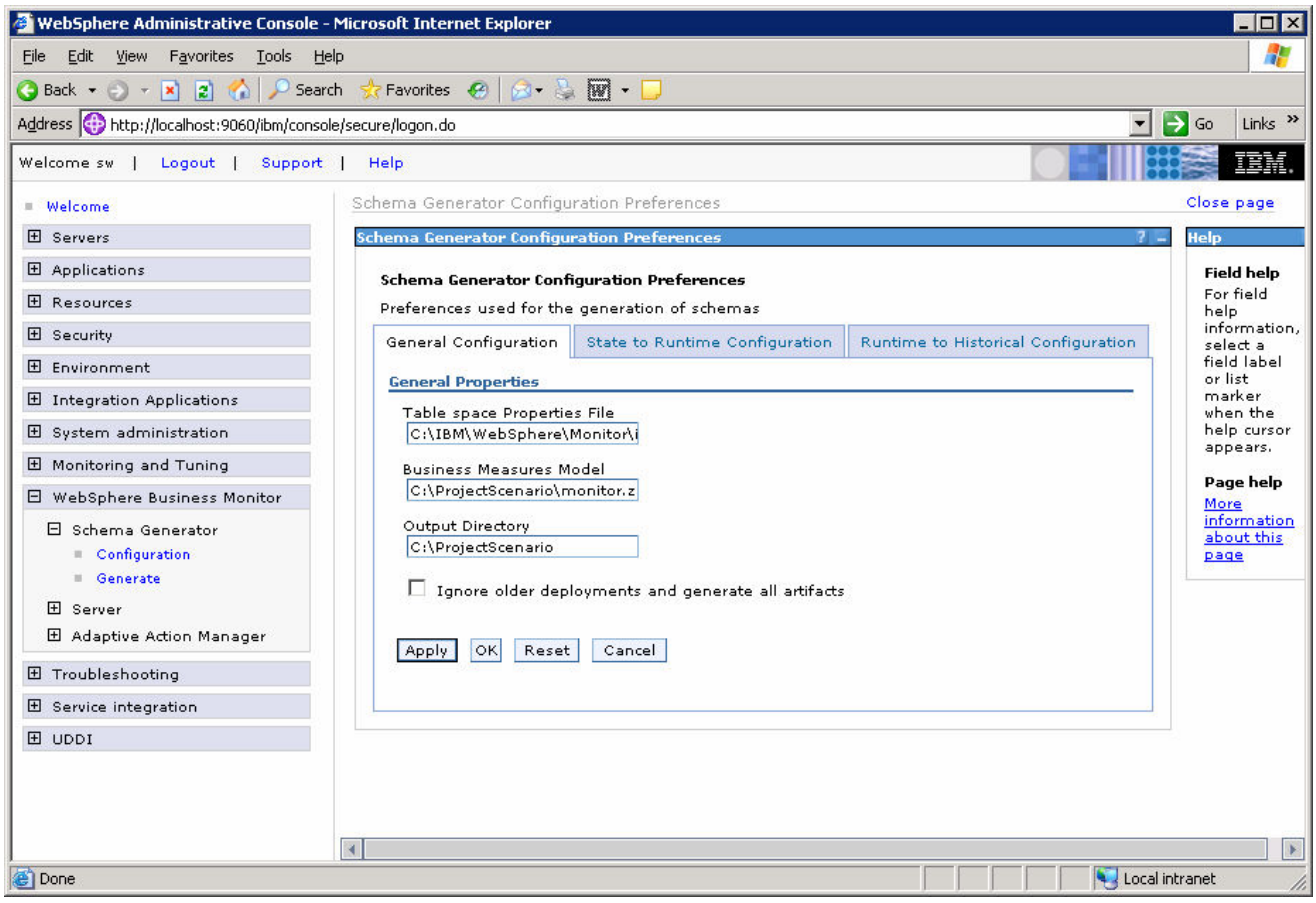
____ 1. Run the schema generator on the **Monitor Server** (not the Runtime Server)

__ a. Copy c:\ProjectScenario\monitor.zip (created in Part 1) to the **Monitor Server**

__ b. If necessary, start **Monitor Serve**r using **Start > All Programs > IBM WebSphere > Process Server 6.0 > profiles > monitor > Start the server**.

__ c. Start the admin console (**Start > All Programs > IBM WebSphere > Process Server 6.0 > profiles > monitor > Administrative console**) and log in.

__ d. In the Monitor Server admin console, navigate to **WebSphere Business Monitor > Schema Generator > Configuration**. For the Business Measures Model, enter C:\ProjectScenario\monitor.zip. For the output directory, enter C:\ProjectScenario. When you run schema generator, it will create a folder called 'schemagen' in this output directory, and it will place the generated artifacts there.



__ e. Click **Apply.**

__ f. Click tab '**State to Runtime Configuration**', and set your 'Runtime database population interval' to 2. This sets the replication interval to 2 minutes.

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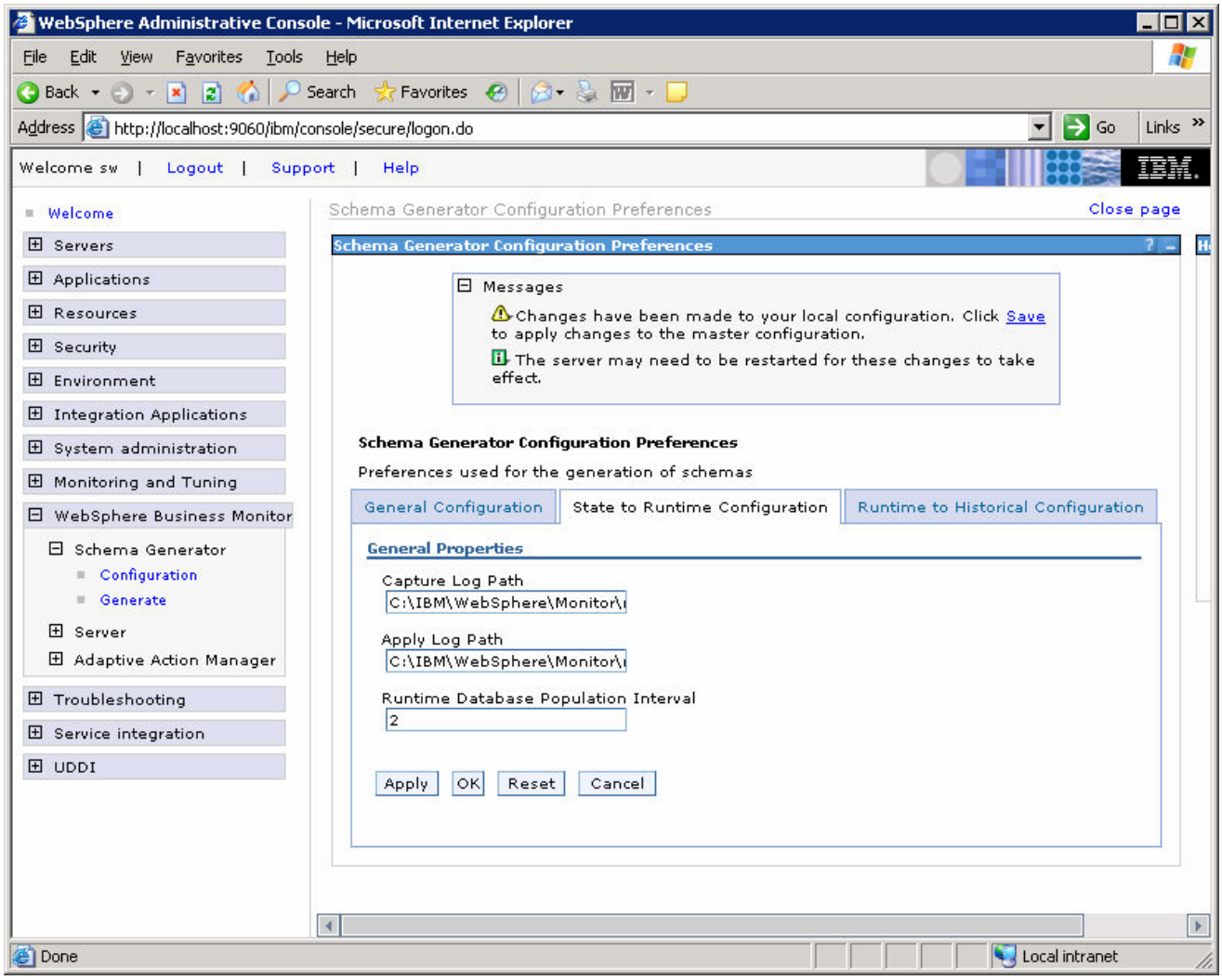

__ g. Click **Apply.**

__ h. Click tab '**Runtime to Historical Configuration**', and set your 'Historical database population interval' to 2. This sets the replication interval to 2 minutes.

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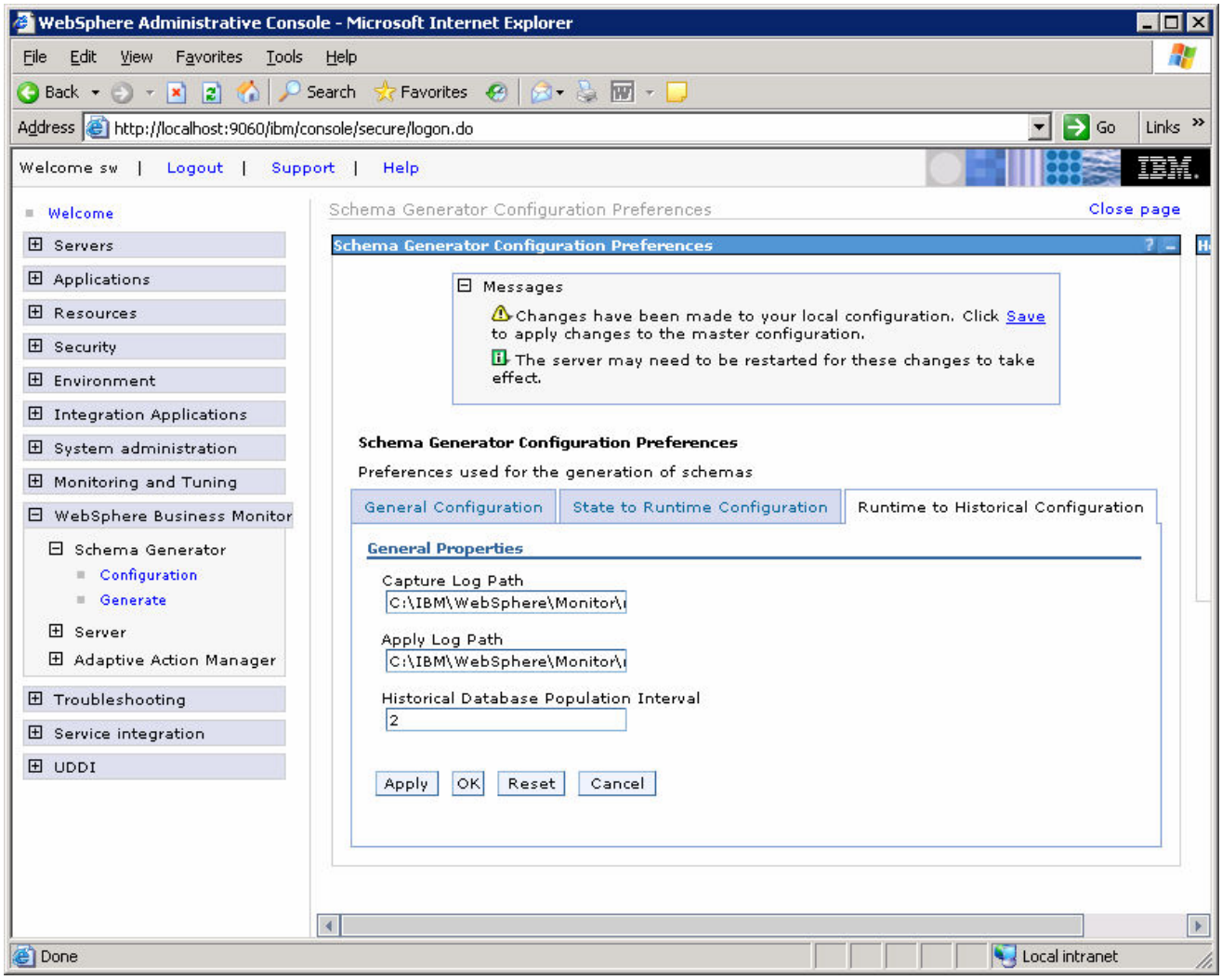

__ i. Click **Apply.**

__ j. Save the configuration by clicking on **Save** near the top of the admin console, and then click the **Save** button when it appears.

__ k. Navigate to **WebSphere Business Monitor > Schema Generator > Generate**. Click the **Generate** button. Messages in the window indicate the result:

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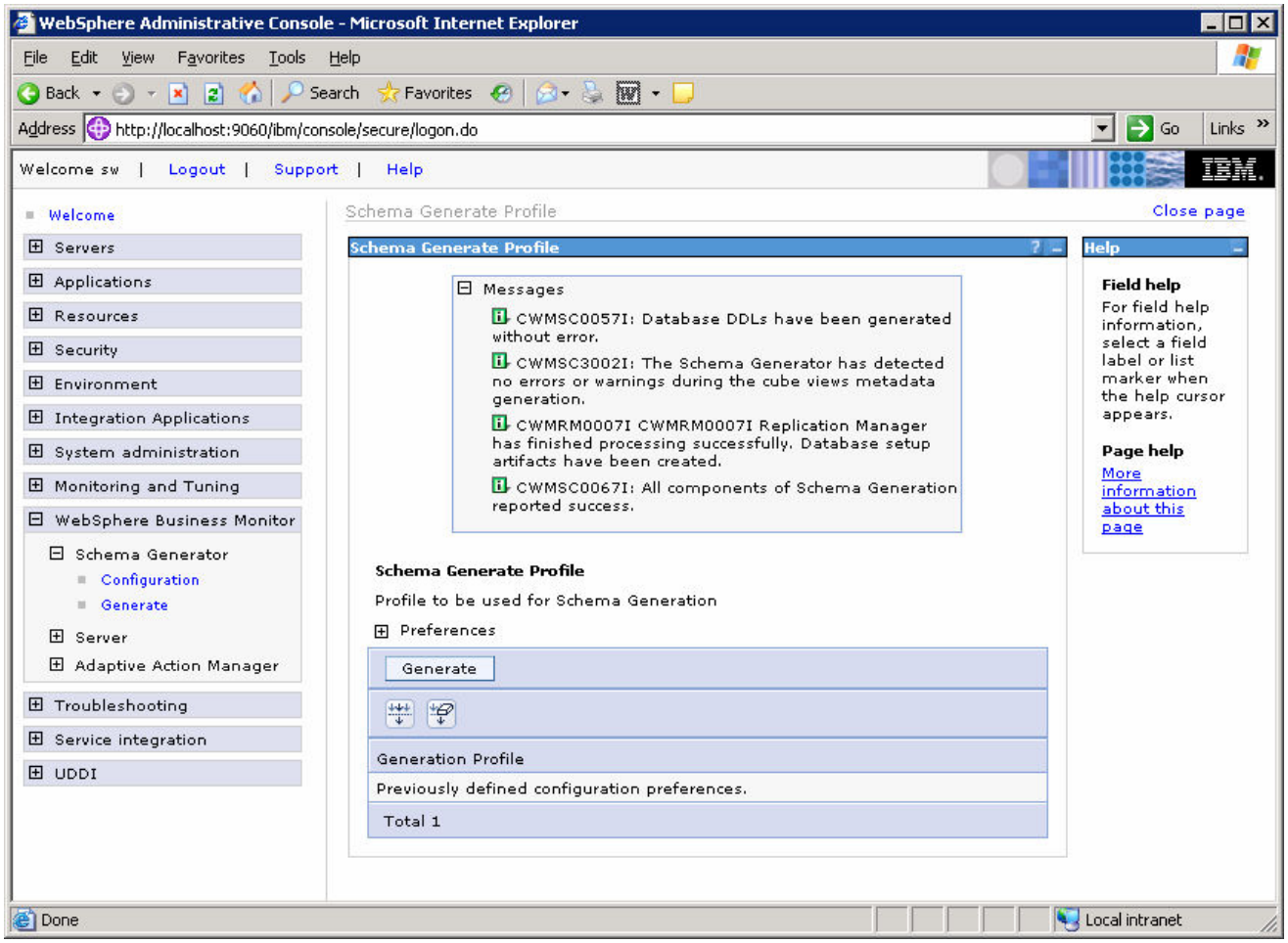

____ 2. Extract the script files to the Monitor Server and Dashboard Client Server.

__ a. On the Monitor Server, open the Windows File Explorer, and navigate to **C:\ProjectScenario\schemagen**.

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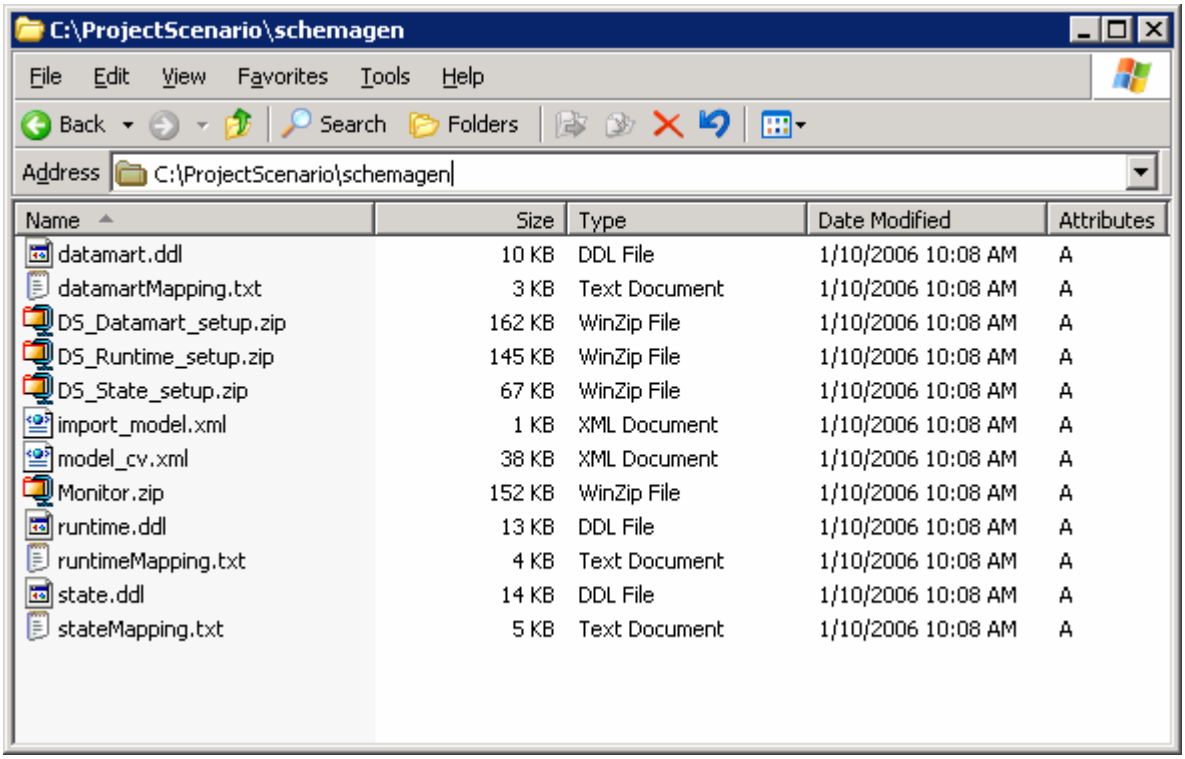

Note: The schema generation has created scripts to add your model to the STATE, HISTORY and RUNTIME databases. The STATE database scripts will be unzipped and executed on the Monitor Server because that is where the STATE database was created. The RUNTIME and HISTORY databases exist on the Dashboard Client Server so you will first need to copy the scripts for these databases to that server. Then you will unzip and later execute them on that server.

__ b. Copy the C:\ProjectScenario\schemagen directory to the same location on Dashboard Client machine

__ c. **On the Monitor Server** machine, unzip DS_State_setup.zip to C:\ProjectScenario\schemagen\State\

__ d. Your Monitor Server directory should look like this:

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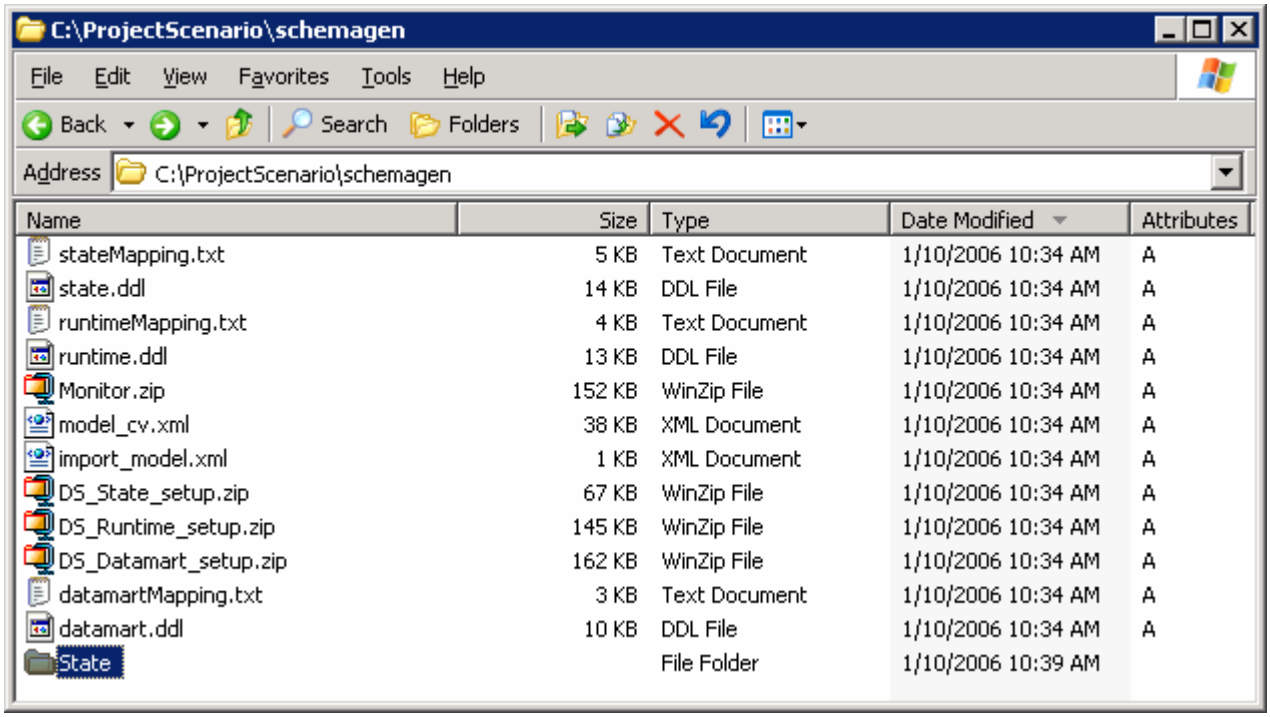
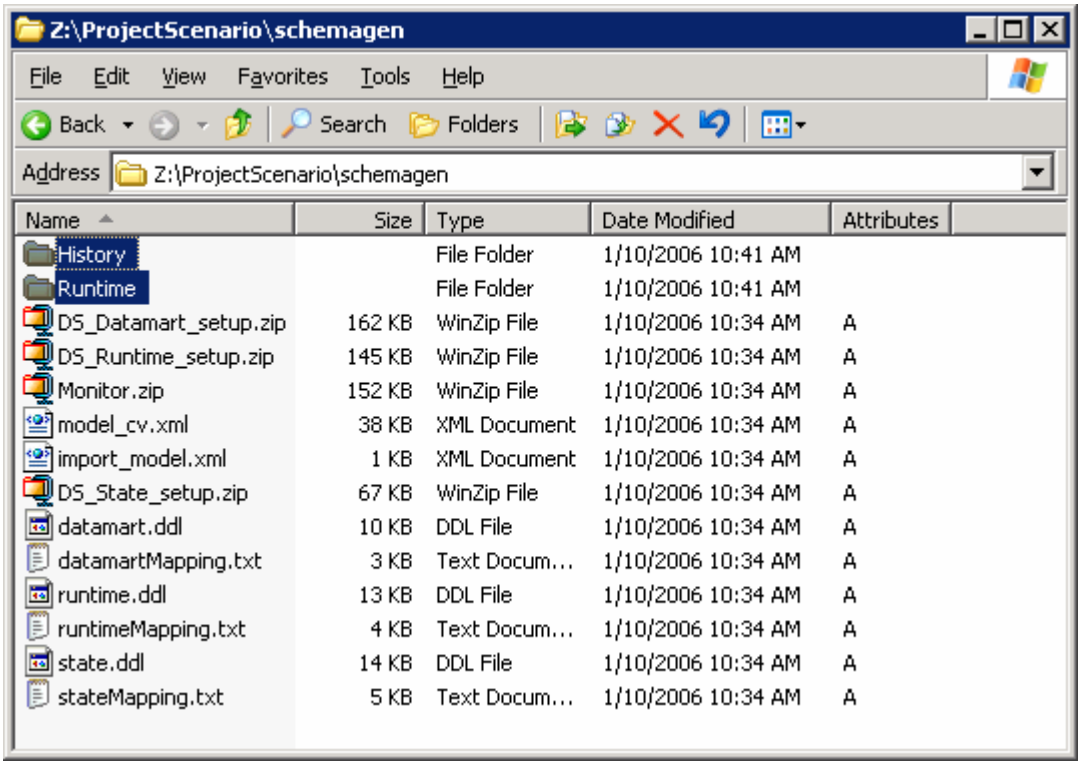


__ e. **On the Dashboard Client machine**, unzip DS_Runtime_setup.zip to C:\ProjectScenario\schemagen\Runtime\

__ f. **On the Dashboard Client machine**, unzip DS_Datamart_setup.zip to C:\ProjectScenario\schemagen\History\

__ g. Your Dashboard Client directory should look like this:



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____ 3. Create the dynamic database tables for the STATE table on the **Monitor Server**

The schema generation creates database scripts for updating the STATE, RUNTIME and HISTORY databases with tables that specifically correspond to the business measures model you have used for schema generation. You must execute these scripts for each database. Because the STATE database exists on the Monitor Server but the RUNTIME and HISTORY exist on the Dashboard Client server, you will execute each script on the appropriate server.

__ a. On the **Monitor Server**, open a DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ b. Change directory to C:\ProjectScenario\schemagen\

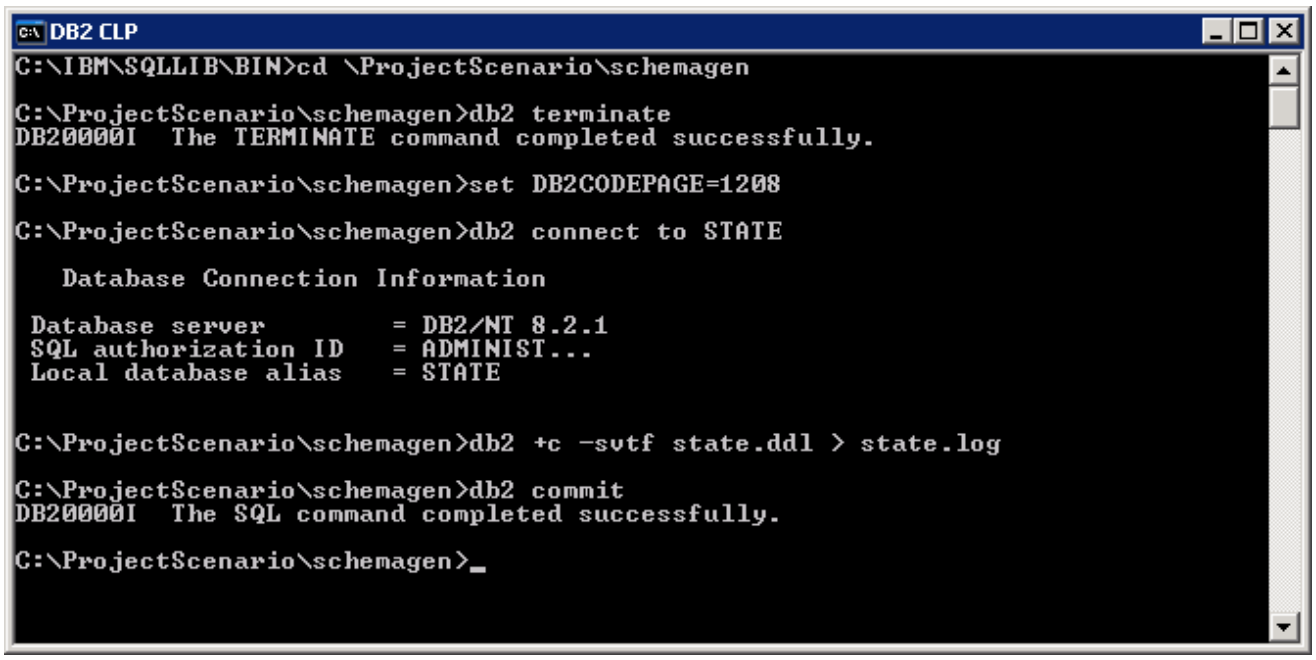
```
cd C:\ProjectScenario\schemagen\
```

__ c. Execute the following commands

```
db2 terminate
set DB2CODEPAGE=1208
db2 connect to STATE
db2 +c -svtf state.ddl > state.log
```

__ d. Check the log file (state.log). If there are no errors then execute this additional command

```
db2 commit
```



Note: If there are errors, enter 'db2 rollback' instead

____ 4. Create the dynamic database tables for the RUNTIME table

__ a. Switch to the **Dashboard Client** machine

__ b. On the Dashboard Client, open a DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ c. Change directory into C:\ProjectScenario\schemagen\

```
cd C:\ProjectScenario\schemagen\
```

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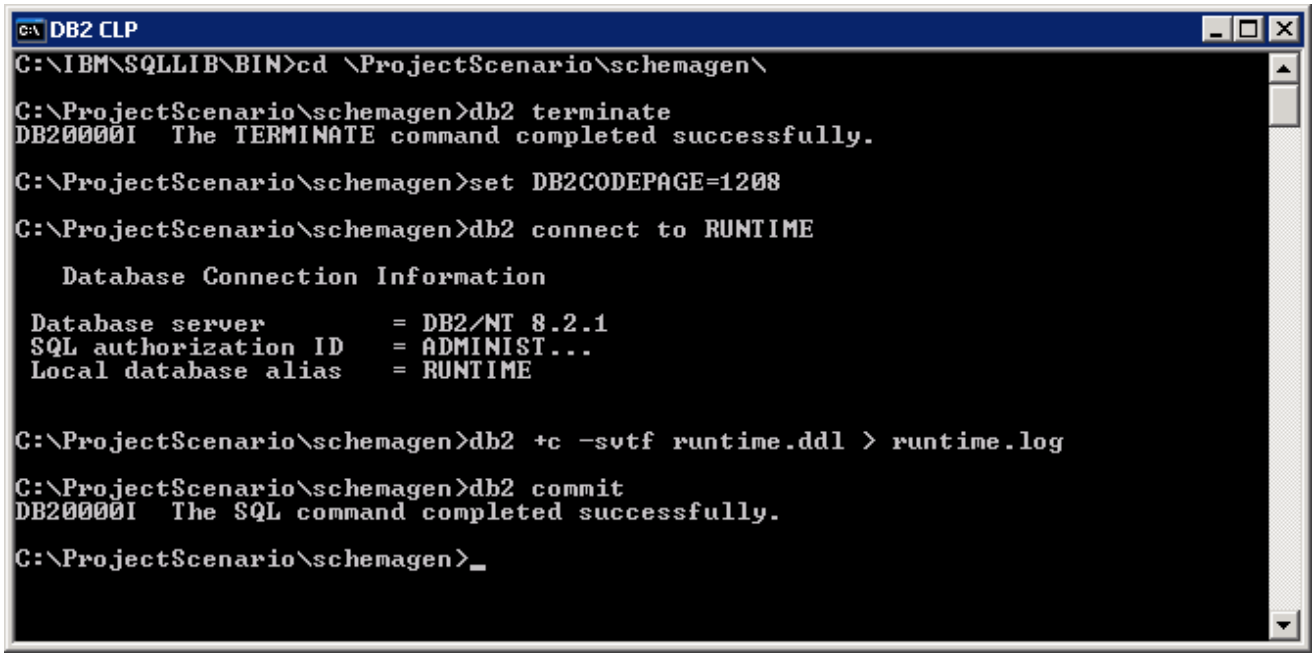
__ d. Execute the following commands

```
db2 terminate
set DB2CODEPAGE=1208
db2 connect to RUNTIME
db2 +c -svtf runtime.ddl > runtime.log
```

__ e. Check the log file (runtime.log). If there are no errors then execute this additional command

```
db2 commit
```



Note: If there are errors, enter 'db2 rollback' instead

____ 5. Create the dynamic database tables for the HISTORY table

__ a. Continue working on the Dashboard Client machine

__ b. On the Dashboard Client, open a DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ c. Change directory into C:\ProjectScenario\schemagen\

```
cd C:\ProjectScenario\schemagen\
```

__ d. Execute the following commands

```
db2 terminate
set DB2CODEPAGE=1208
db2 connect to HISTORY
db2 +c -svtf datamart.ddl > datamart.log
```

__ e. Check the log file (datamart.log). If there are no errors then execute this additional command

```
db2 commit
```

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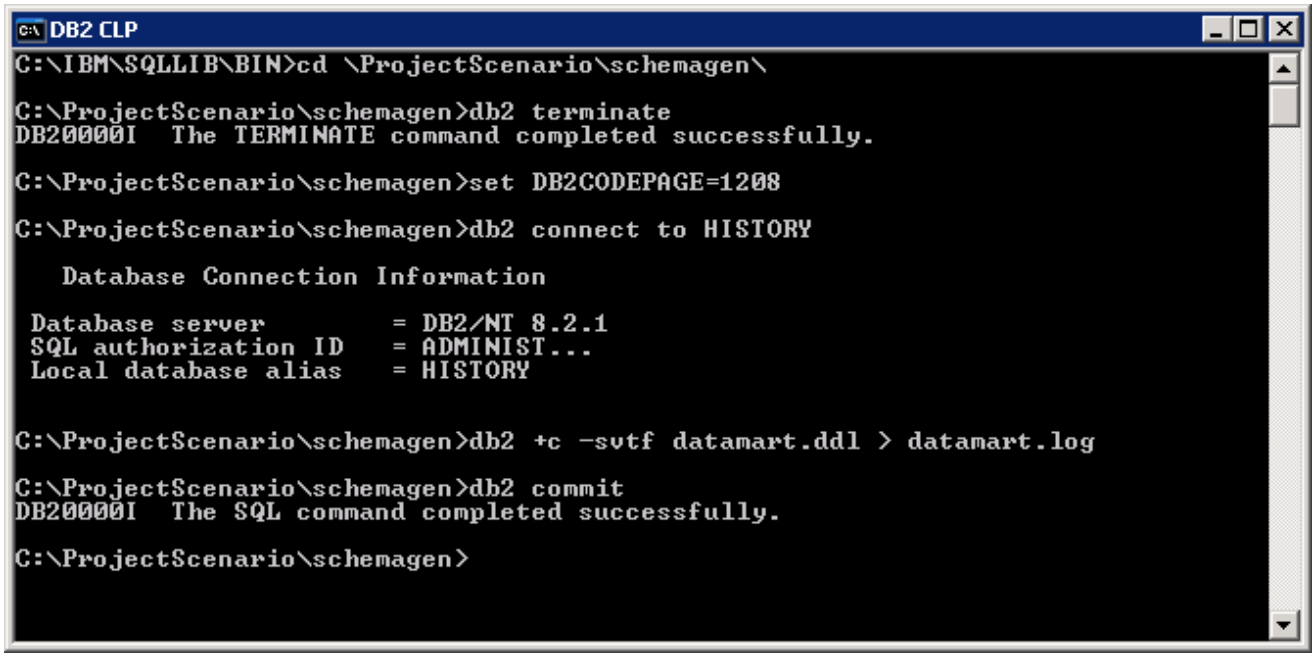

Note: If there are errors, enter 'db2 rollback' instead

____ 6. Execute the database replication setup scripts

Now that the dynamic tables have been added to the databases, you must configure the data replication between each database. This requires you to run the generated data movement replication scripts for each database.

Note: You will execute some scripts on the Monitor Server and some on the Dashboard Client server so please pay careful attention to which server is being used at each point

__ a. Switch to the **Monitor Server**

__ b. On the Monitor Server, open a DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ c. Change directory into C:\ProjectScenario\schemagen\State\

```
cd C:\ProjectScenario\schemagen\State\
```

__ d. Execute the following command

```
State_to_Runtime_setup_source.bat
```

Note: You will require a Java Runtime Environment to execute this script. If you do not have one installed on your Monitor Server then you will receive an error similar to this: *'java' is not recognized as an internal or external command,operable program or batch file.* You should install a JRE 1.4.2 environment, close all windows, and try the script again.

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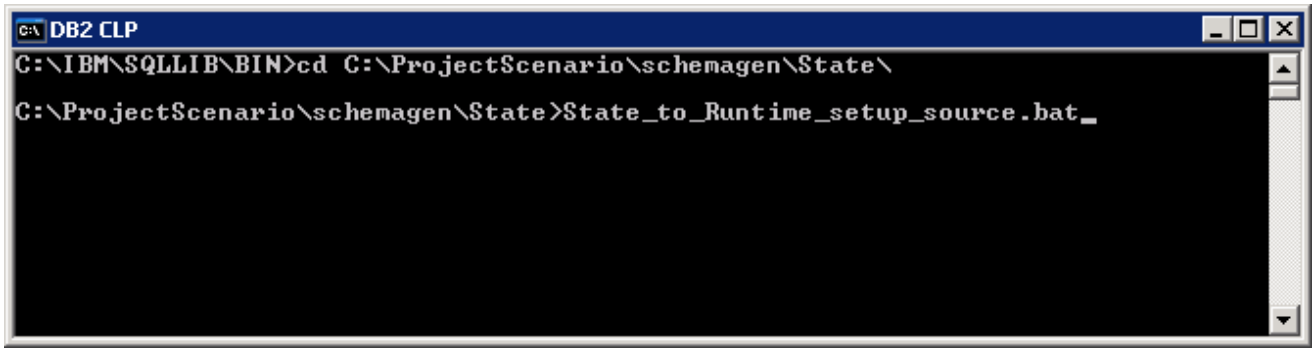
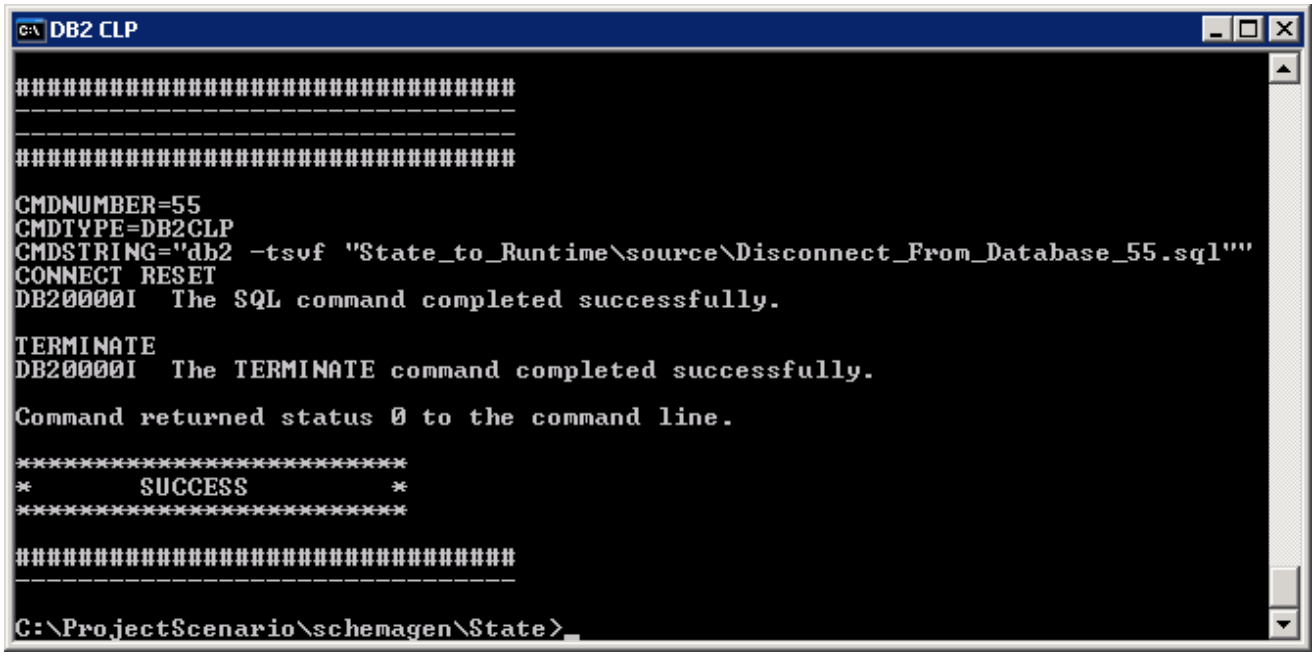


__ e. When prompted enter the user ID and password for the STATE database. The default values are 'db2admin' and 'monPa55w0rd'

__ f. The script must end in SUCCESS for the replication to be deployed correctly. Inspect the generated log file State_to_Runtime_setup_source.bat.log for any warning or error messages. You will see some WARNING responses but you should see no ERROR responses.



__ g. **Important:** Switch to the **Dashboard Client server**

__ h. On the Dashboard Client, open a DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ i. Change directory into C:\ProjectScenario\schemagen\Runtime\

```
cd C:\ProjectScenario\schemagen\Runtime\
```

__ j. Execute the following command

```
State_to_Runtime_setup_target.bat
```

Note: Again you will require a Java Runtime Environment to execute this script. If you do not have one installed on your Dashboard Client then you will receive an error similar to this: *'java' is not recognized as*

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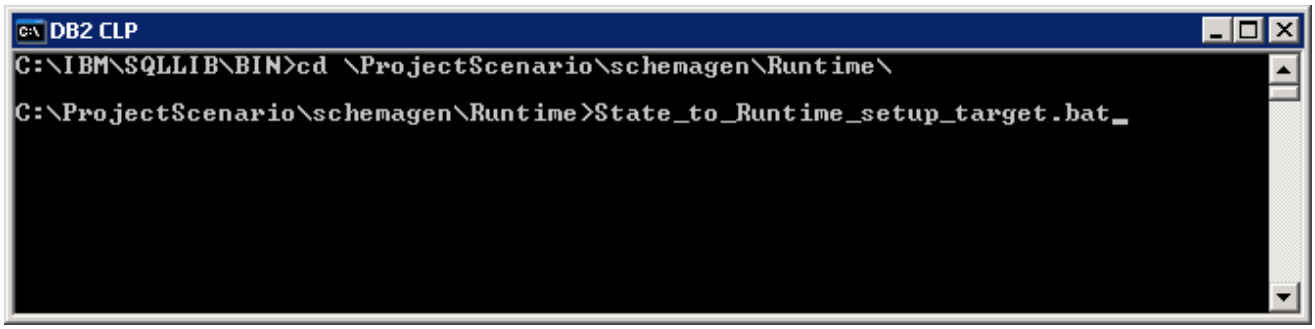
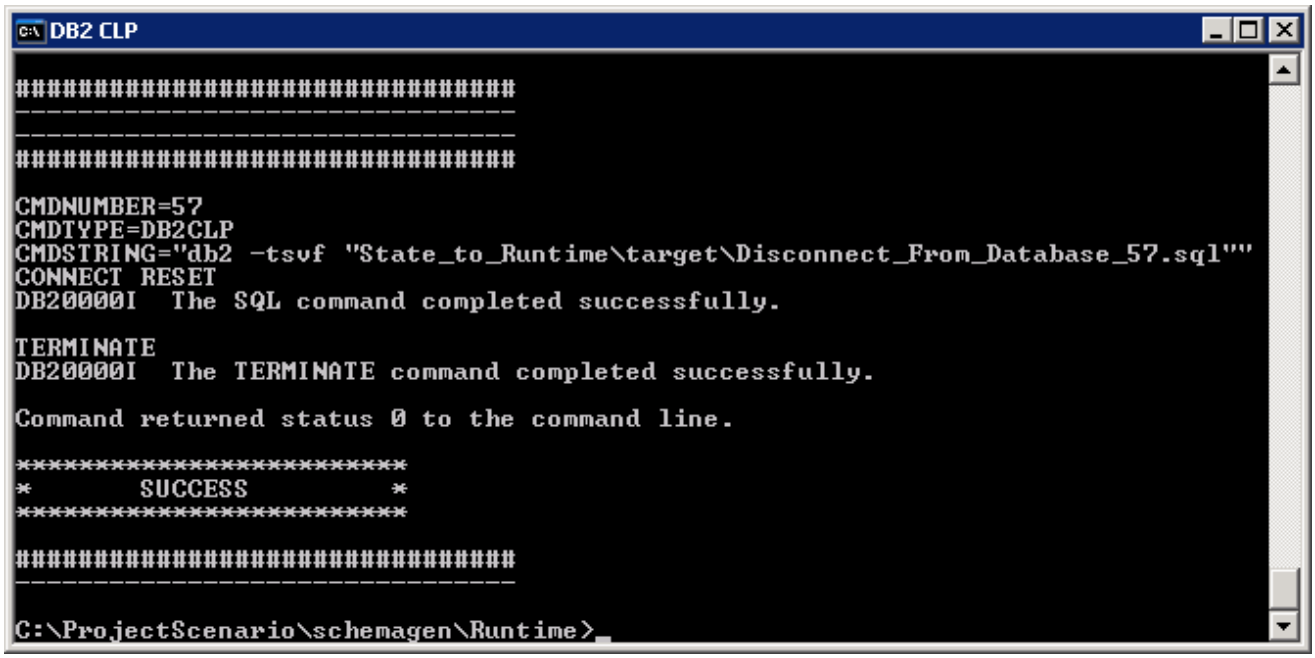
an internal or external command,operable program or batch file. You should install a JRE 1.4.2 environment, close all windows, and try the script again.



__ k. When prompted enter the user ID and password for the RUNTIME database, hosted locally on the Dashboard Client. Also when prompted, enter the User ID and password to connect to the remote STATE database, hosted remotely on the Monitor Server. In both cases, the default values are ‘db2admin’ and ‘monPa55w0rd’.

__ l. The script must end in SUCCESS for the replication to be deployed correctly. Inspect the generated log file State_to_Runtime_setup_target.bat.log for any warning or error messages. You will see some WARNING responses but you should see no ERROR responses.



__ m. Continue working on the **Dashboard Client server**, open a new DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ n. Change directory into C:\ProjectScenario\schemagen\Runtime\

```
cd C:\ProjectScenario\schemagen\Runtime\
```

__ o. Execute the following command

```
Runtime_to_Historical_setup_source.bat
```

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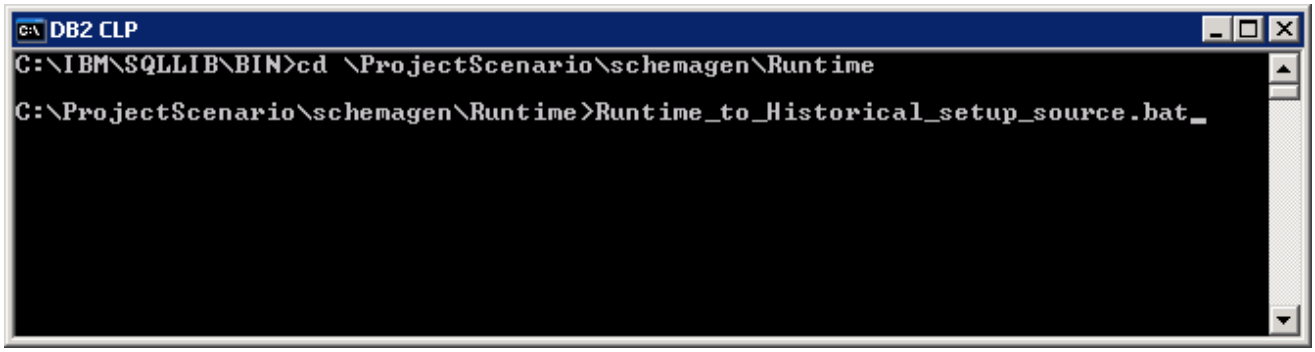
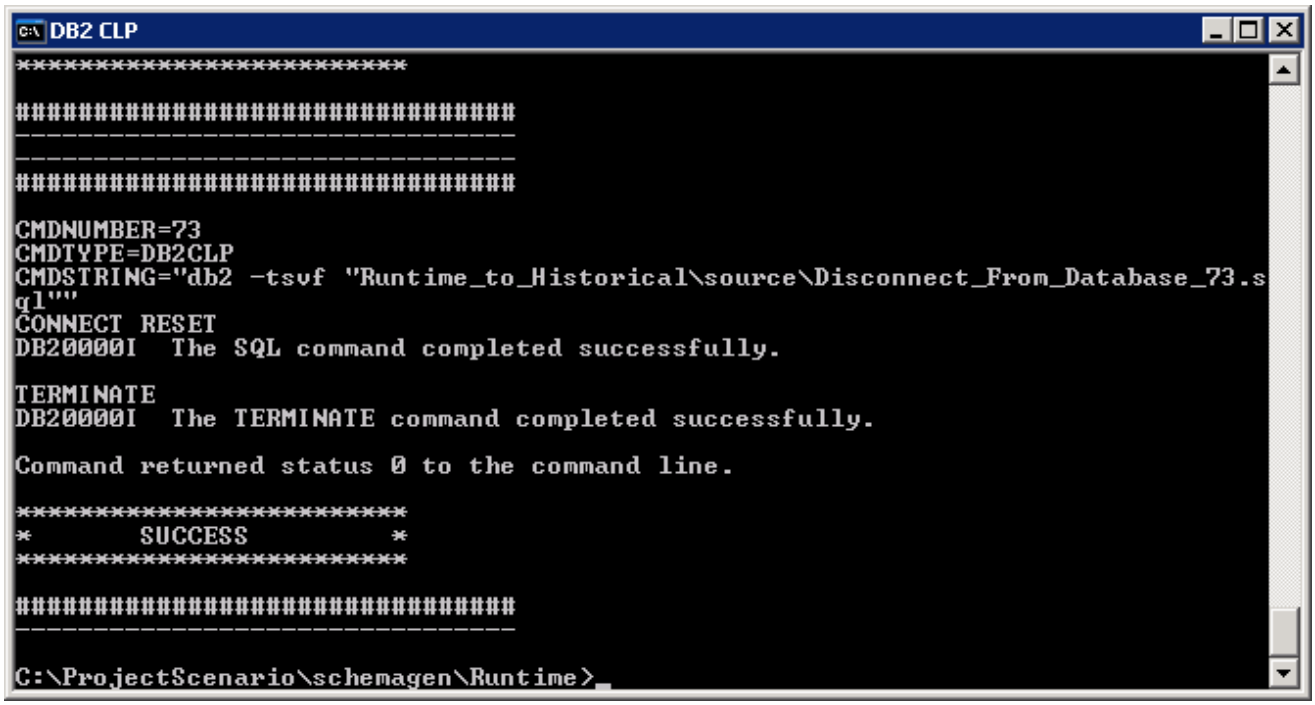


__ p. When prompted enter the user ID and password for the RUNTIME database, hosted locally on the Dashboard Client. When prompted, enter the User ID and password to connect to the remote STATE database, hosted remotely on the Monitor Server. In both cases, the default values are 'db2admin' and 'monPa55w0rd'.

__ q. The script must end in SUCCESS for the replication to be deployed correctly. Inspect the generated log file Runtime_to_Historical_setup_source.bat.log for any warning or error messages. You will see some WARNING responses but you should see no ERROR responses.



__ r. Continue working on the **Dashboard Client**, open a new DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ s. Change directory into C:\ProjectScenario\schemagen\History\

```
cd C:\ProjectScenario\schemagen\History\
```

__ t. Execute the following command

```
Runtime_to_Historical_setup_target.bat
```

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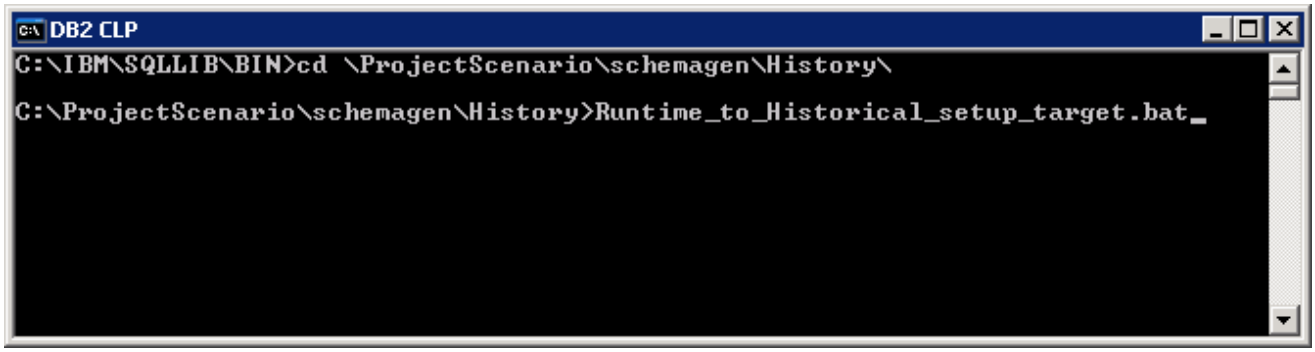
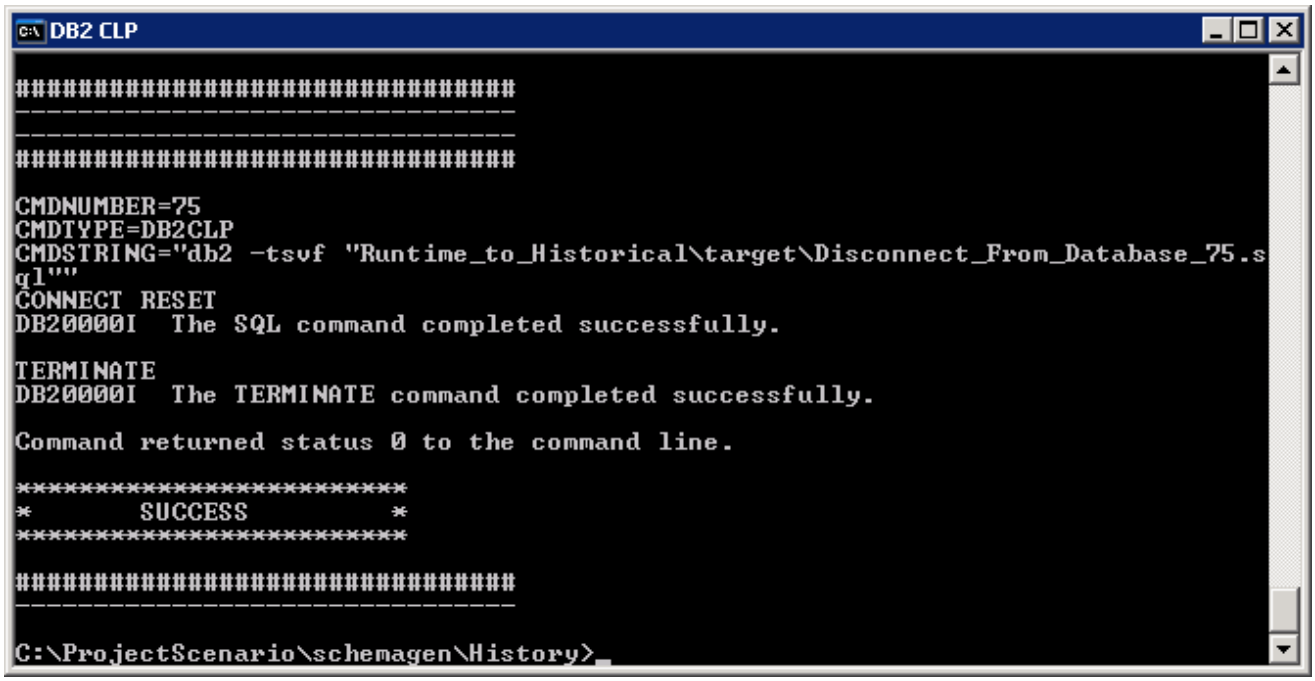


__ u. When prompted enter the user ID and password for the HISTORY database, hosted locally on the Dashboard Client. Also when prompted, enter the User ID and password to connect to the RUNTIME database, also hosted locally on the Dashboard Client. In both cases, the default values are ‘db2admin’ and ‘monPa55w0rd’.

__ v. The script must end in SUCCESS for the replication to be deployed correctly. Inspect the generated log file Runtime_to_Historical_setup_target.bat.log for any warning or error messages. You will see some WARNING responses but you should see no ERROR responses.



____ 7. Start the State to Runtime capture daemons on the **Monitor Server**

Now that the data movement replication has been configured, you must start the replication daemons so that data will be copied between STATE, RUNTIME and HISTORY databases. The capture daemons should be run on the same server as the database for which they are capturing changes. The apply daemons should be run on the same server as the database for which they are applying changes.

This means that the State to Runtime capture daemon will be executed on the Monitor Server (where the STATE database is). All of the other daemons will be run on the Dashboard Client (State to Runtime apply, Runtime to History capture, Runtime to History apply).

__ a. Switch to the **Monitor Server**

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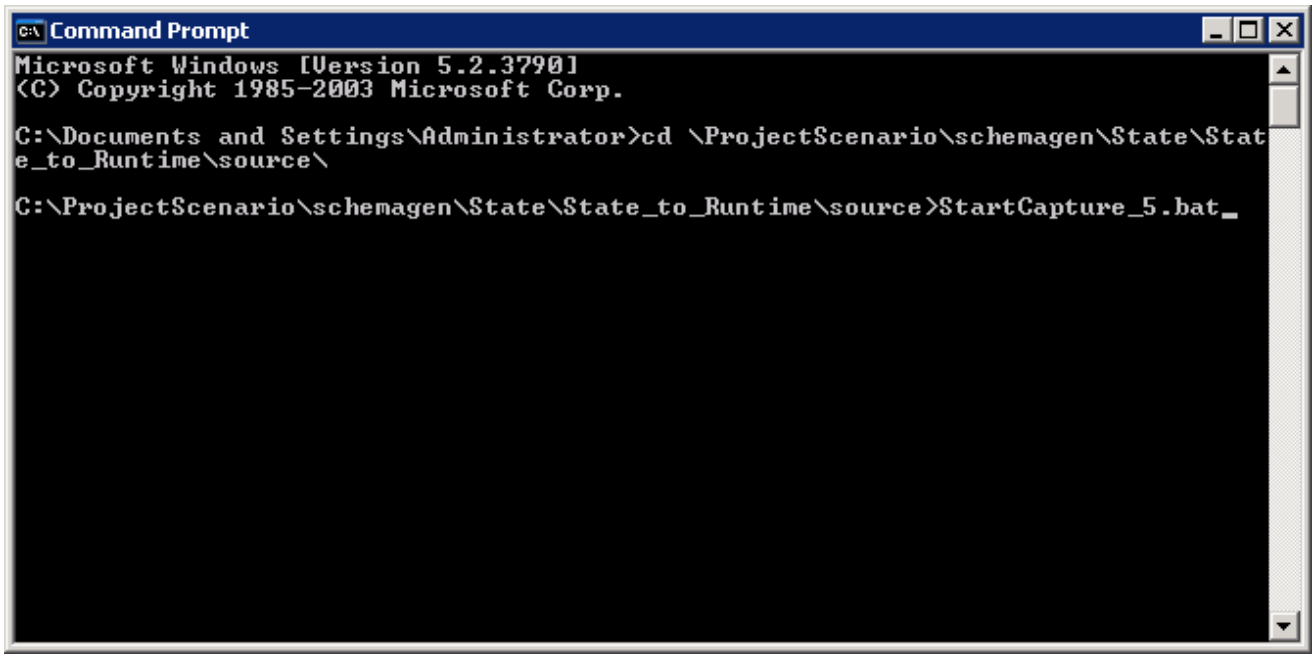
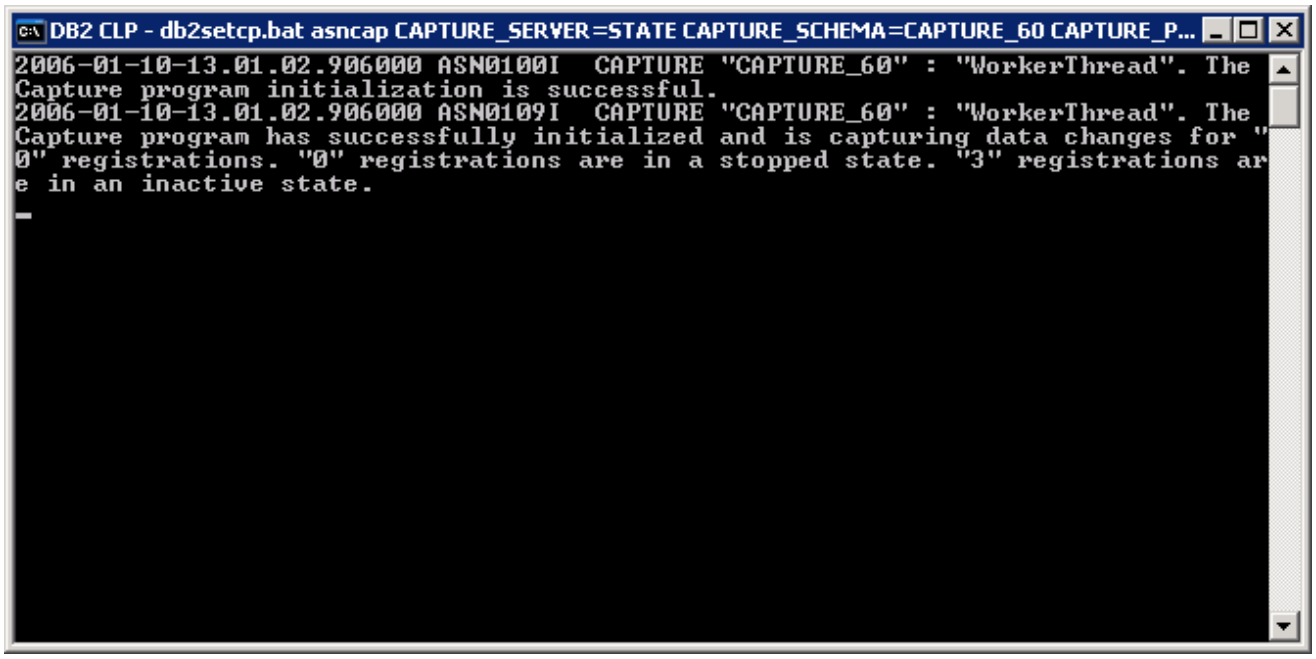
__ b. Open a Command Prompt and enter the following commands

```
cd C:\ProjectScenario\schemagen\State\State_to_Runtime\source\
StartCapture_<number>.bat
```

Note: You must execute all StartApply scripts – there should be only one for this lab



__ c. The Capture daemon for the State to Runtime replication will be started in a new window. You can close the other windows but you must leave this one open:



__ d. At this stage you should have one daemon running on the Monitor Server

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____ 8. Start the State to Runtime apply daemons on the **Dashboard Client server**

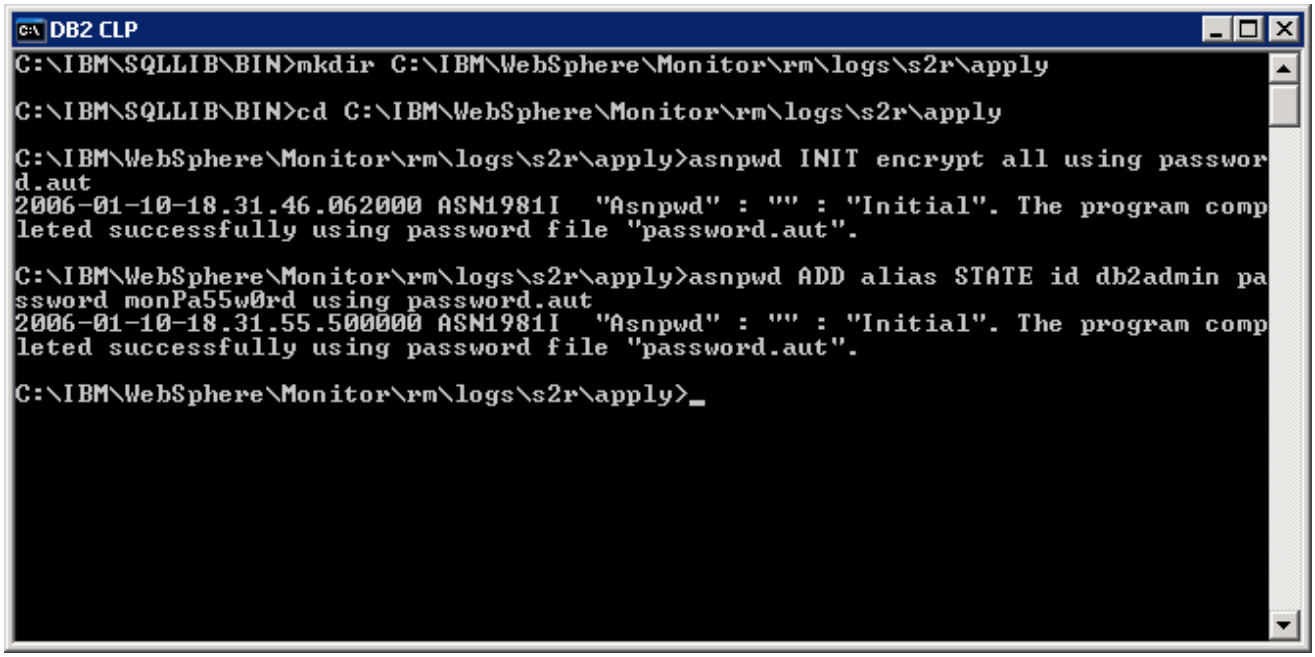
Note: Because the STATE database is remote from where this Apply daemon will be running, it is necessary to perform additional steps to provide connection credentials to the daemon so that it can access the remotely cataloged database.

__ a. **Important:** Switch to the **Dashboard Client**

__ b. Open a new DB2 Command Window, **Start > All Program > IBM DB2 > Command Line Tools > Command Window**

__ c. Execute the following commands

```
mkdir C:\IBM\WebSphere\Monitor\rm\logs\s2r\apply
cd C:\IBM\WebSphere\Monitor\rm\logs\s2r\apply
asnpwd INIT encrypt all using password.aut
asnpwd ADD alias STATE id db2admin password monPa55w0rd using
password.aut
```



__ d. Close the DB2 Command Window

__ e. Now you must change any StartApply scripts to use the password credentials that you have saved in the password.aut file. Open a File Explorer window and locate all StartApply script in C:\ProjectScenario\schemagen\Runtime\State_to_Runtime\target\. There should be only one for this lab. Open this file in Notepad and amend the final line to add:

```
pwdfile="password.aut"
```

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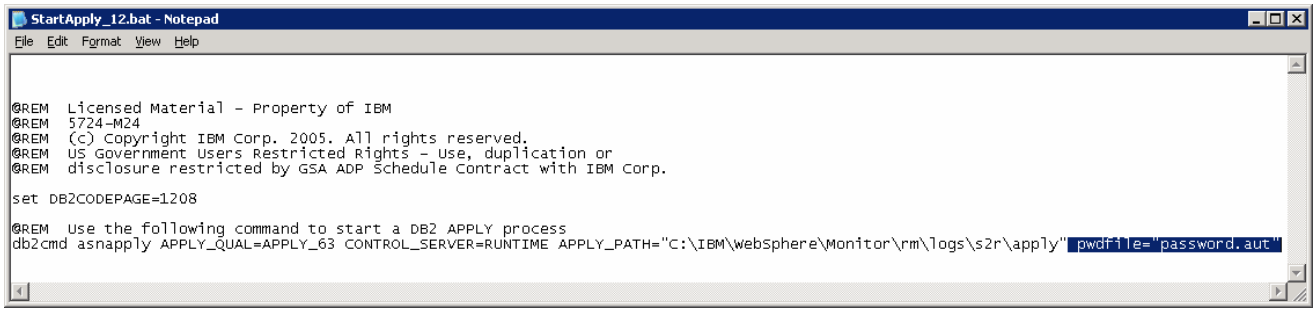
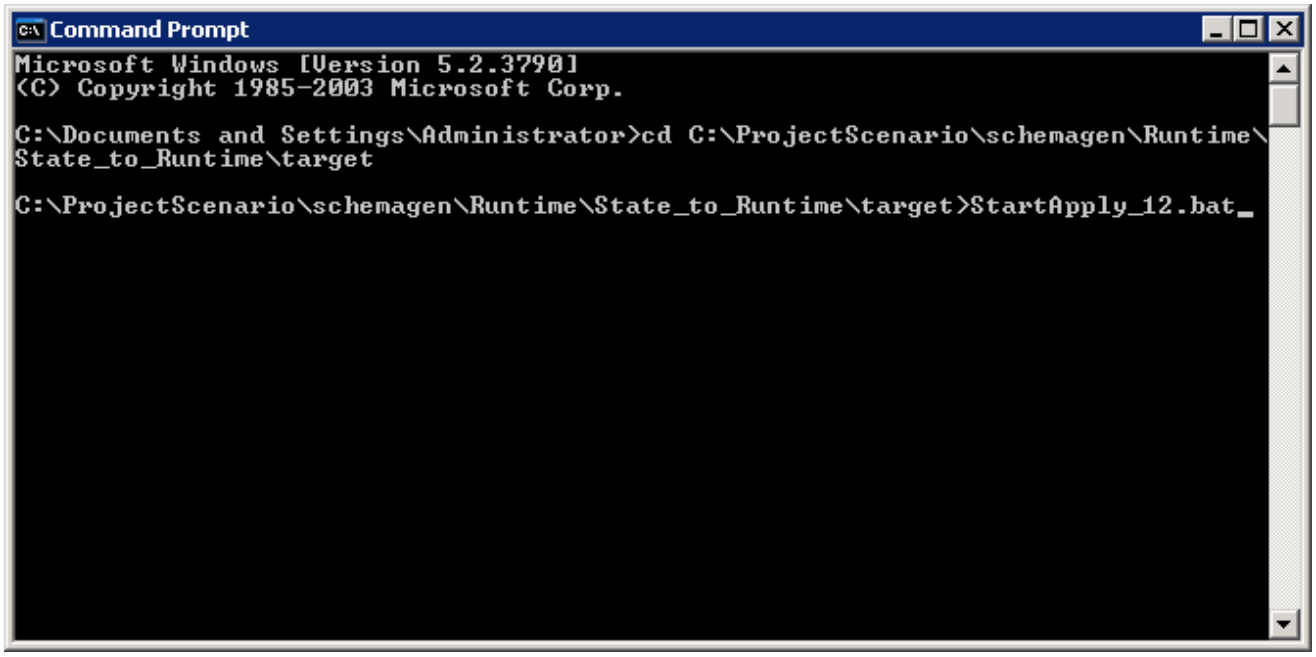


__ f. Save and close the Notepad window.

__ g. Open a Command Prompt and enter the following commands

```
cd C:\ProjectScenario\schemagen\Runtime\State_to_Runtime\target
StartApply_<number>.bat
```

Note: You must execute all StartApply scripts – there should be only one for this lab



__ h. The Apply daemon for the State to Runtime replication will be started in a new window. You can close the other windows but you must leave this one running:

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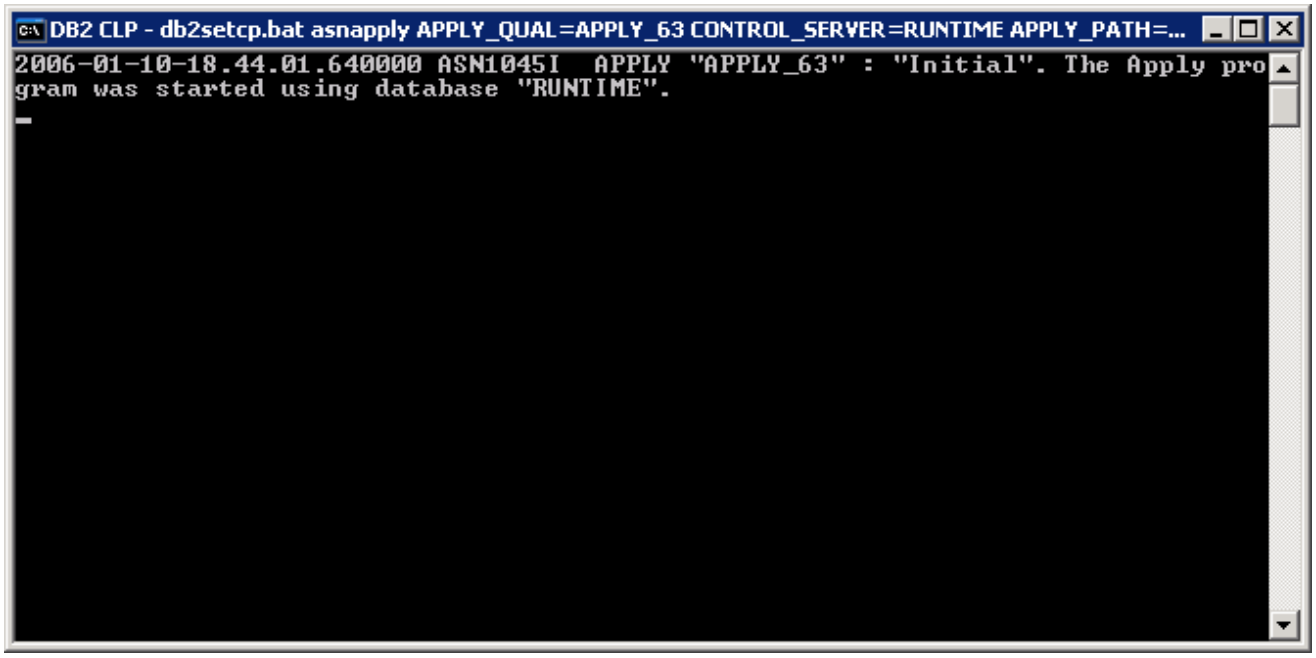


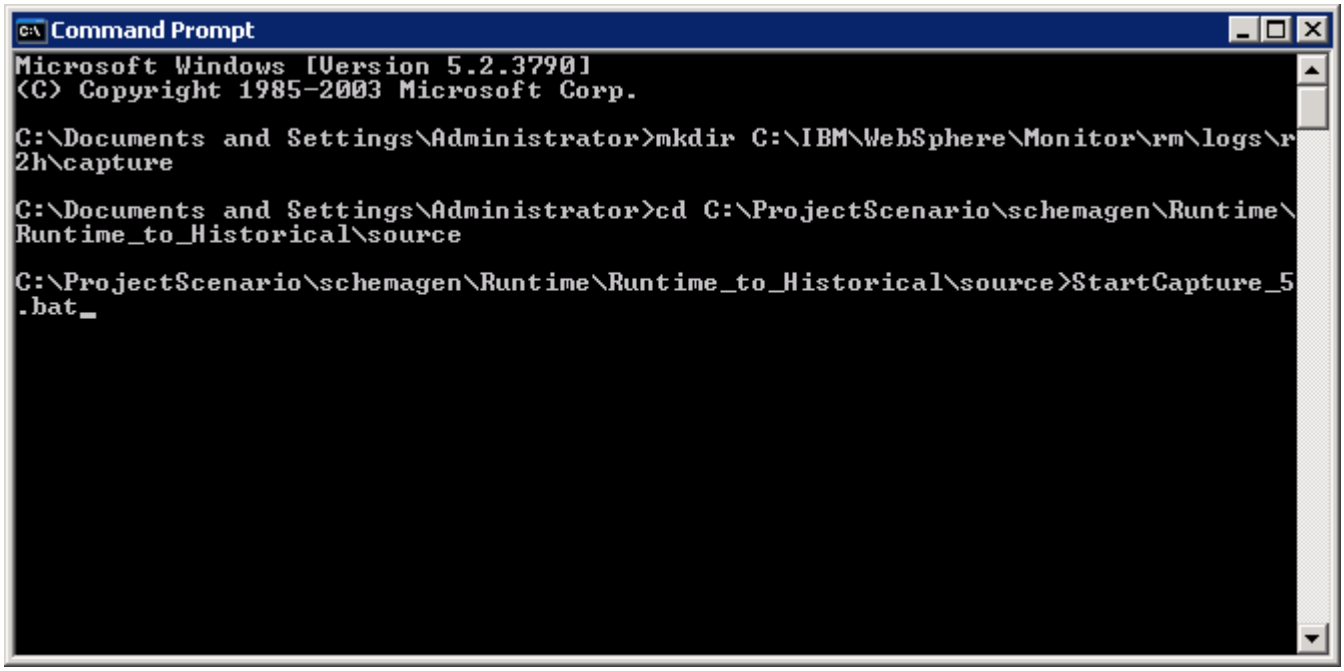
____ 9. Start the Runtime to History capture daemons on the **Dashboard Client server**

__ a. Continue working on the **Dashboard Client**

__ b. Open a Command Prompt and enter the following commands

```
mkdir C:\IBM\WebSphere\Monitor\rm\logs\r2h\capture
cd C:\ProjectScenario\schemagen\Runtime\Runtime_to_Historical\source
StartCapture_<number>.bat
```

Note: You must execute all StartCapture scripts – there should be only one for this lab



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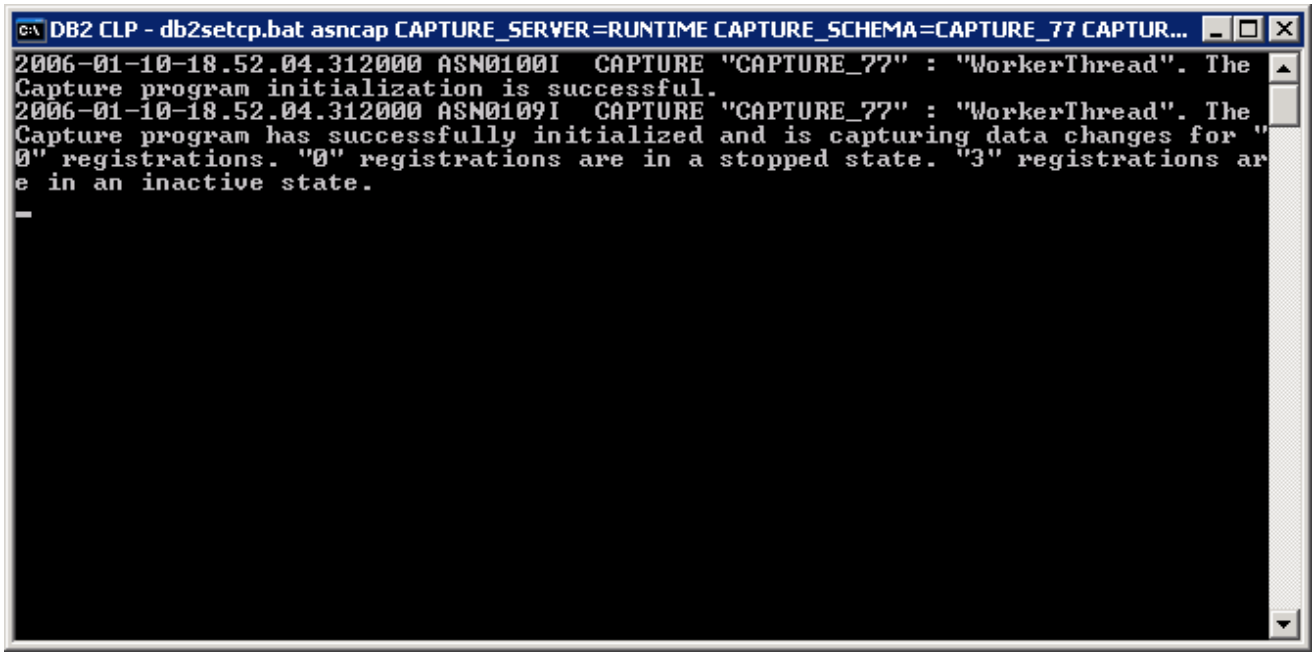
__ c. The Capture daemon for the Runtime to Historical replication will be started in a new window. You can close the other windows but you must leave this one open. Be careful to not close the State to Runtime Apply daemon that you started previously.



____ 10. Start the Runtime to History apply daemons on the **Dashboard Client server**

__ a. Continue working on the **Dashboard Client server**

__ b. Open a Command Prompt and enter the following commands

```
mkdir C:\IBM\WebSphere\Monitor\rm\logs\r2h\apply
cd C:\ProjectScenario\schemagen\History\Runtime_to_Historical\target
StartApply_<number>.bat
```

Note: You must execute all StartApply scripts – there should be only one for this lab

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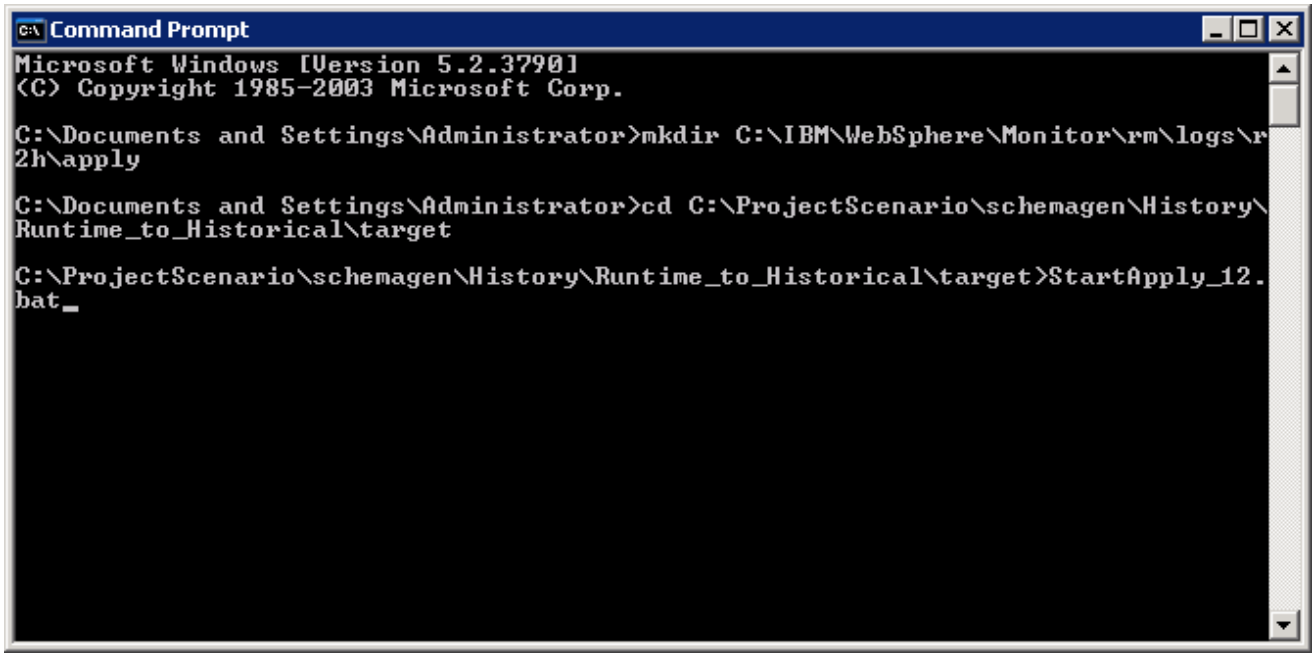
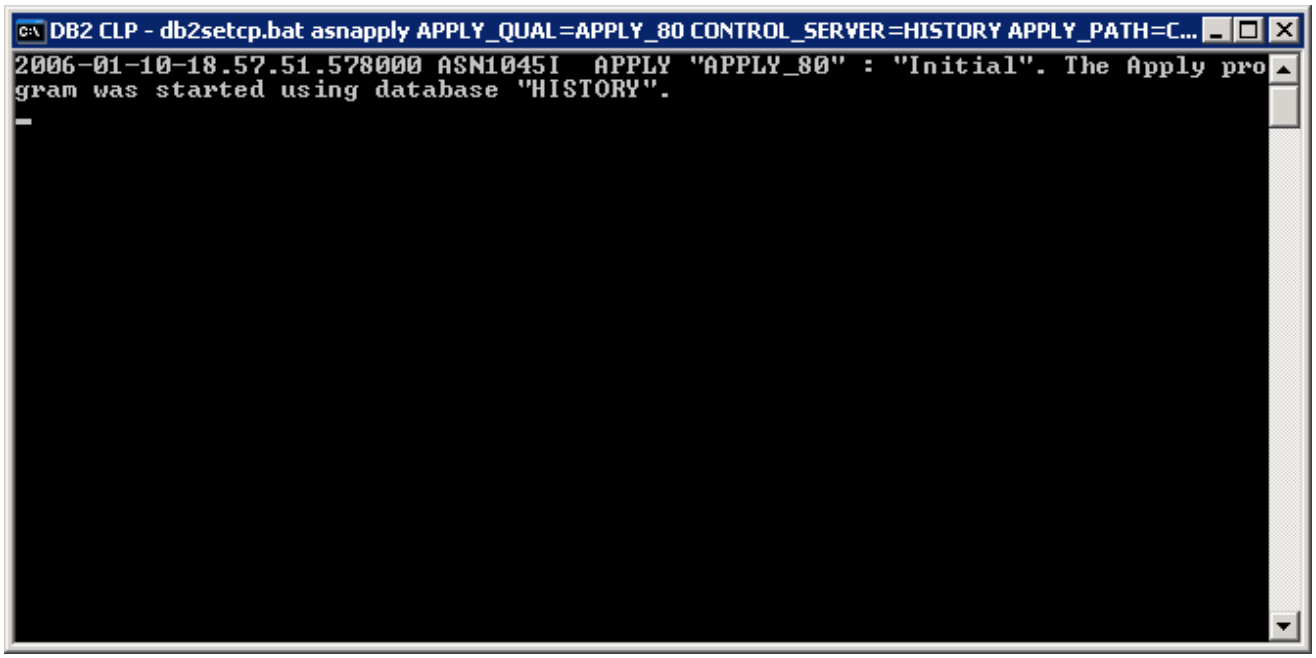


__ c. The Apply daemon for the Runtime to Historical replication will be started in a new window. You can close the other windows but you must leave this one open. Be careful to not close the two daemons that you started previously.



__ d. At this stage you should have three daemons running on the Dashboard Client

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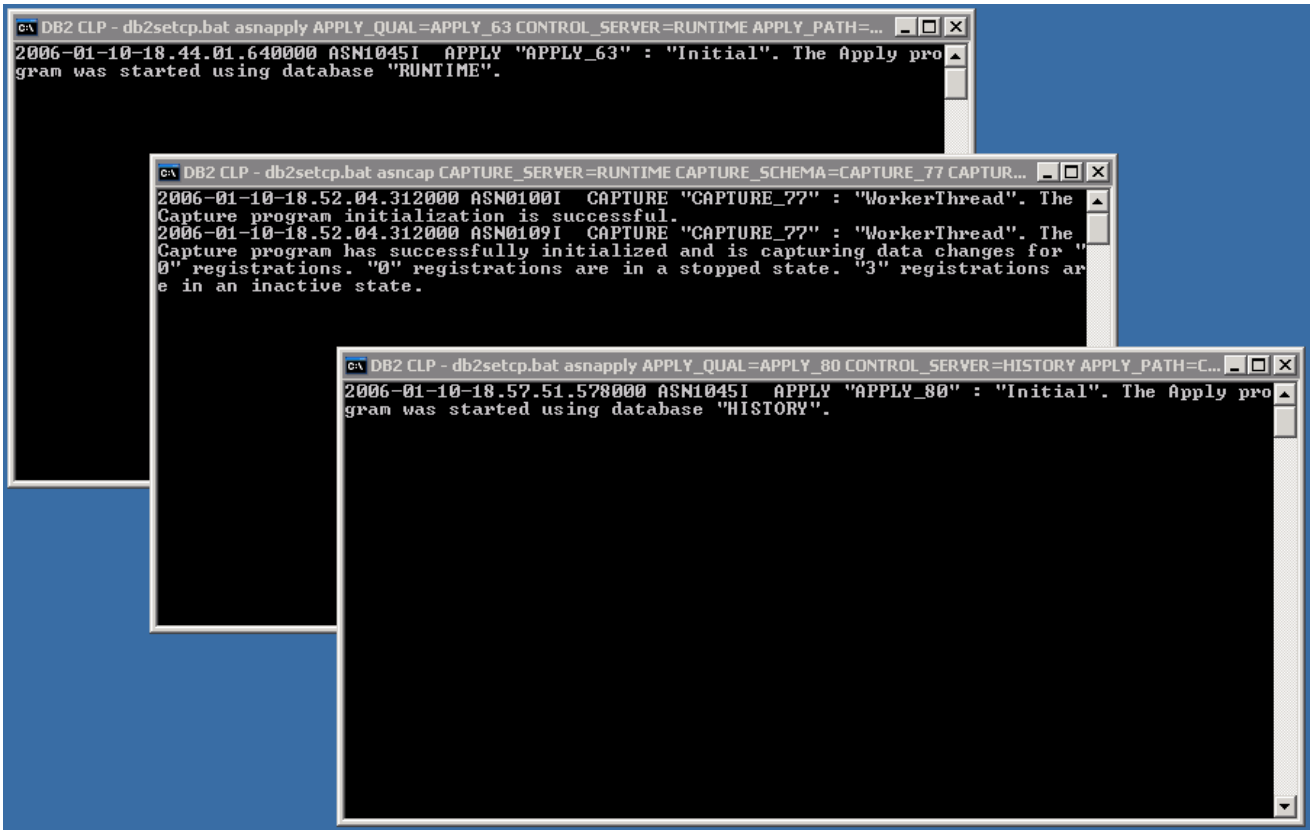

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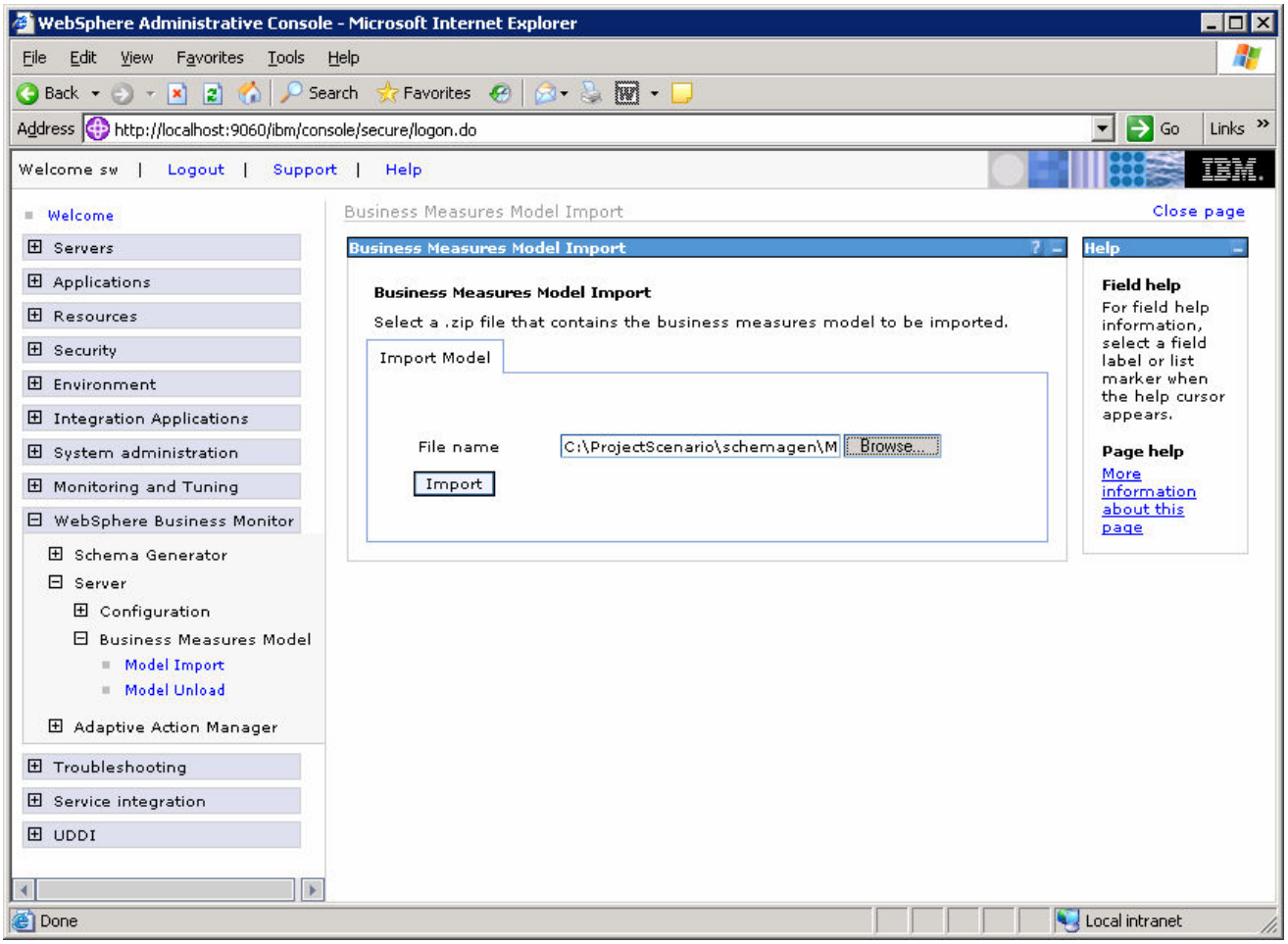
Part 4: Import the Model and Run Process Instances

____ 1. Import the business measures model into the **Monitor Server**

__ a. In the **Monitor Server** admin console, navigate to **WebSphere Business Monitor > Server > Business Measures Model > Model Import**. Navigate to C:\ProjectScenario\schemagen\Monitor.zip

Note: You must specify the path to the Monitor.zip file in the **schemagen** folder, not the one in the parent folder (C:\ProjectScenario) that you specified earlier.



__ b. Click **Import.**

Note: This may take some time.

__ c. You should see a successful message when it completes:

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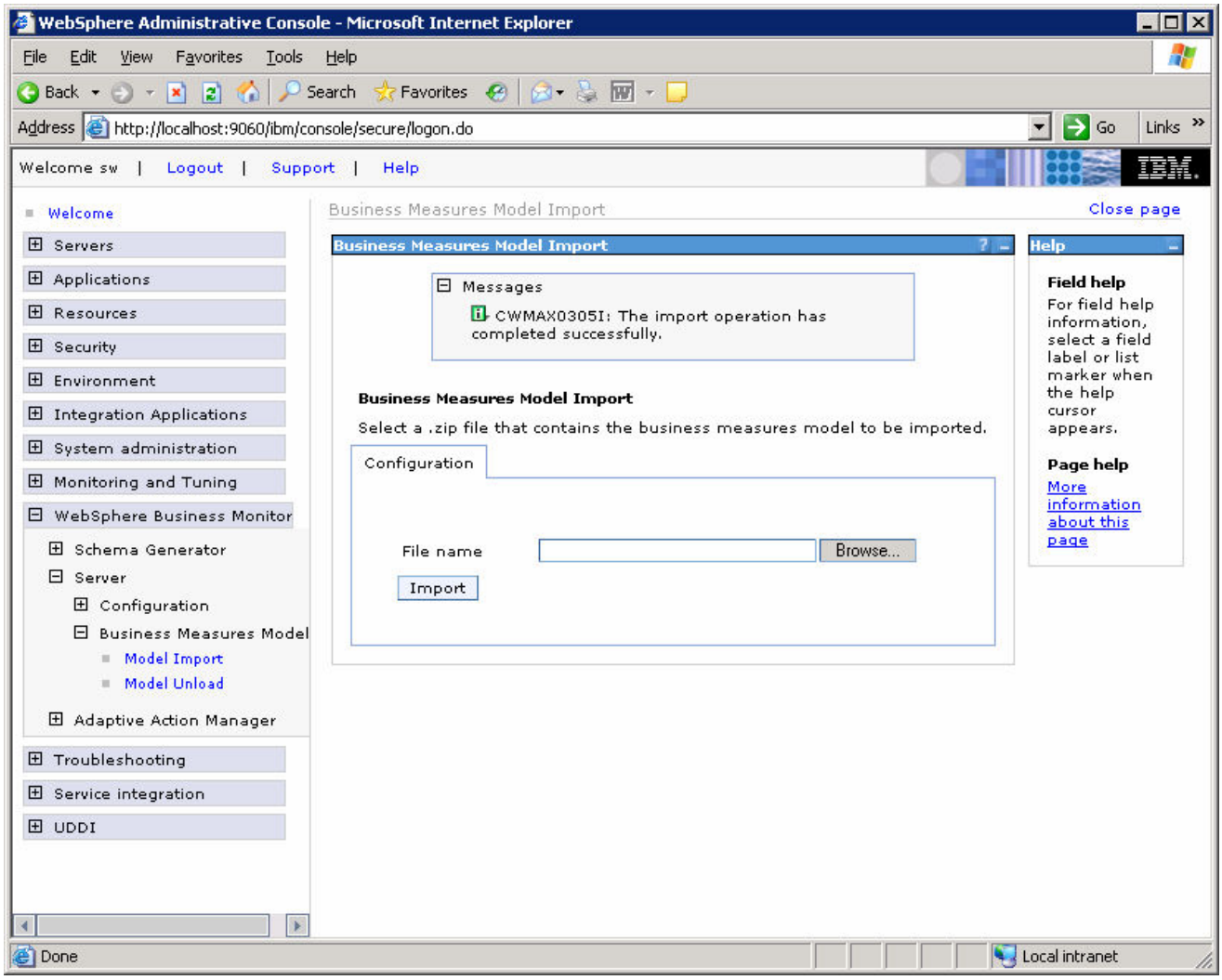

____ 2. Run some process instances on the **Runtime Server**.

__ a. Start the BPC Explorer on the **Runtime Server** (by default this is accessible at http://localhost:9080/bpc), and run several instances of the ProcessScenario template. This shows the process template:

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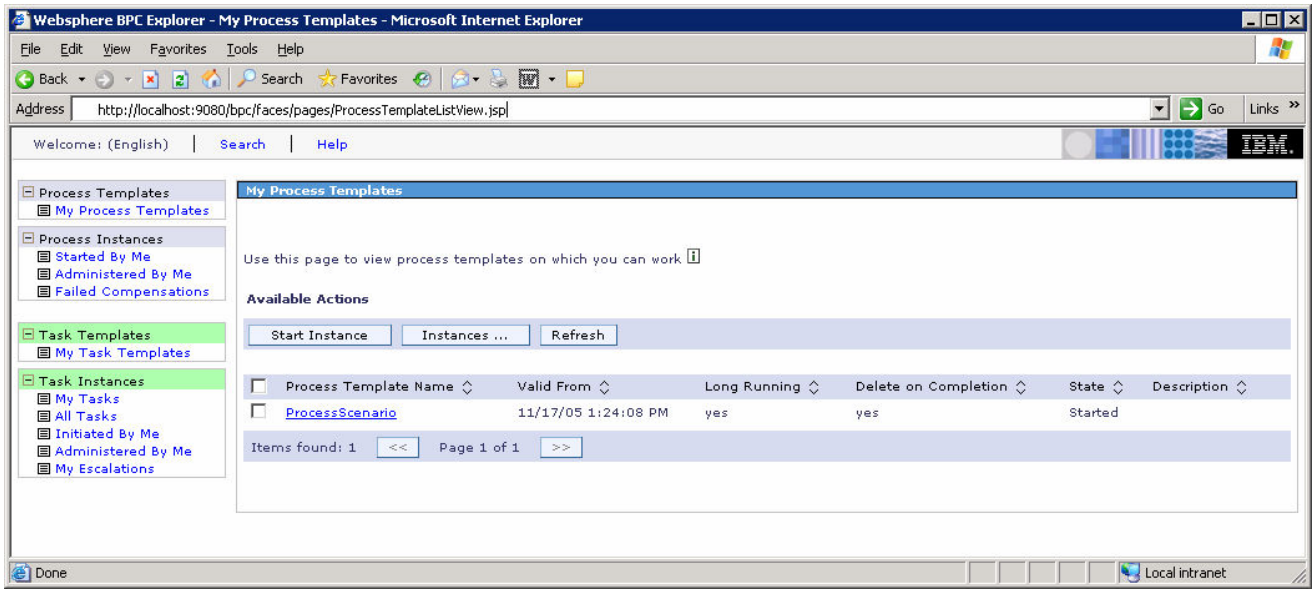

__ b. You should run several processes with an OrderPrice less than 500. The processes will run and complete immediately. You should run at least one with an OrderPrice greater than or equal to 500. This instance will stop, waiting for human task interaction (the Order Approval task). Do not complete the human task, so that this instance will display in the Active Instances view in the Dashboard Server. Note that the process instances are deleted when they are complete, so you will not see them listed in the Process Instances list after completion. This shows the window for entering data for a process instance:

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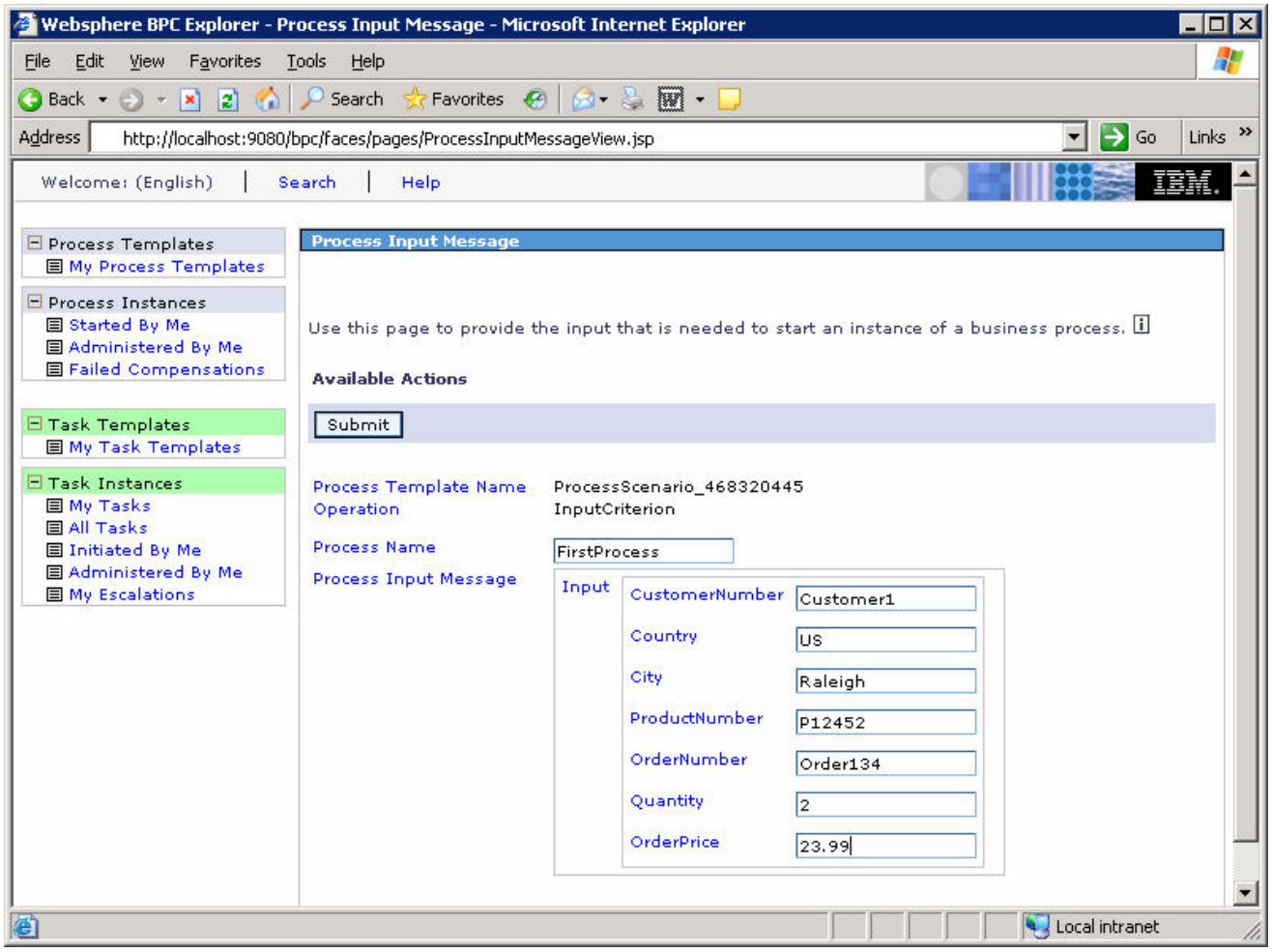

____ 3. Verify that the process instance data is being stored in the Monitor State database and the Monitor Runtime database. Note that the process instance data is deleted from the State database after it has been moved to the Runtime database. So, if you delay in checking this, then the tables may show empty in the State database, but then there should be data in the Runtime database.

__ a. Start the DB2 Control Center on the **Monitor Server**. Select **Start > Programs > IBM DB2 > General Administration Tools > Control Center.** In the State database look for a table name like **CTX_***, and the comment **ProcessScenario**. This is the process instance data for our process.

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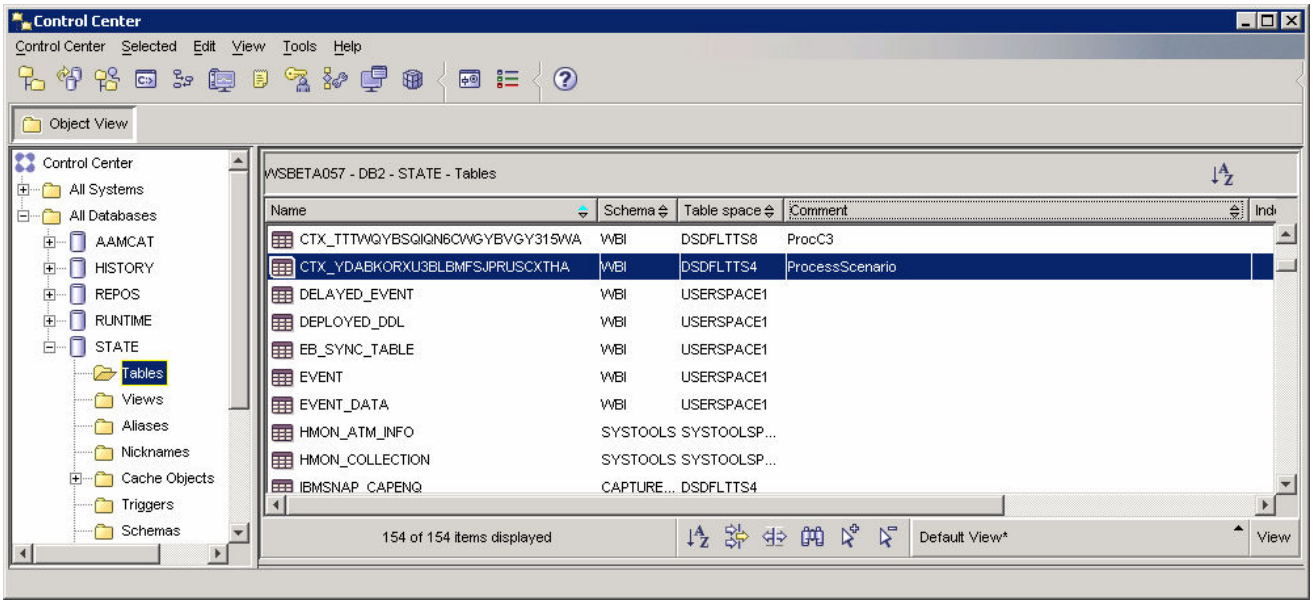
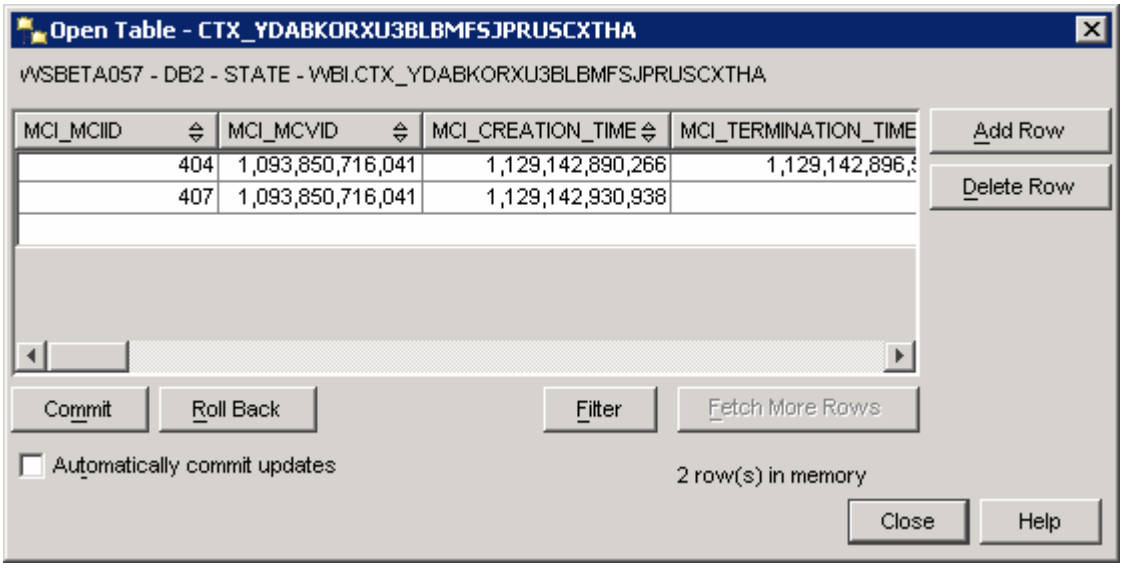


__ b. Double click on this table and you should see several rows showing process instance data:



__ c. In the **State** database look for a table name like **AI_***, and the comment '**Task instance table for business measure grouop ProcessScenario**'. This is the task instance data for our process.

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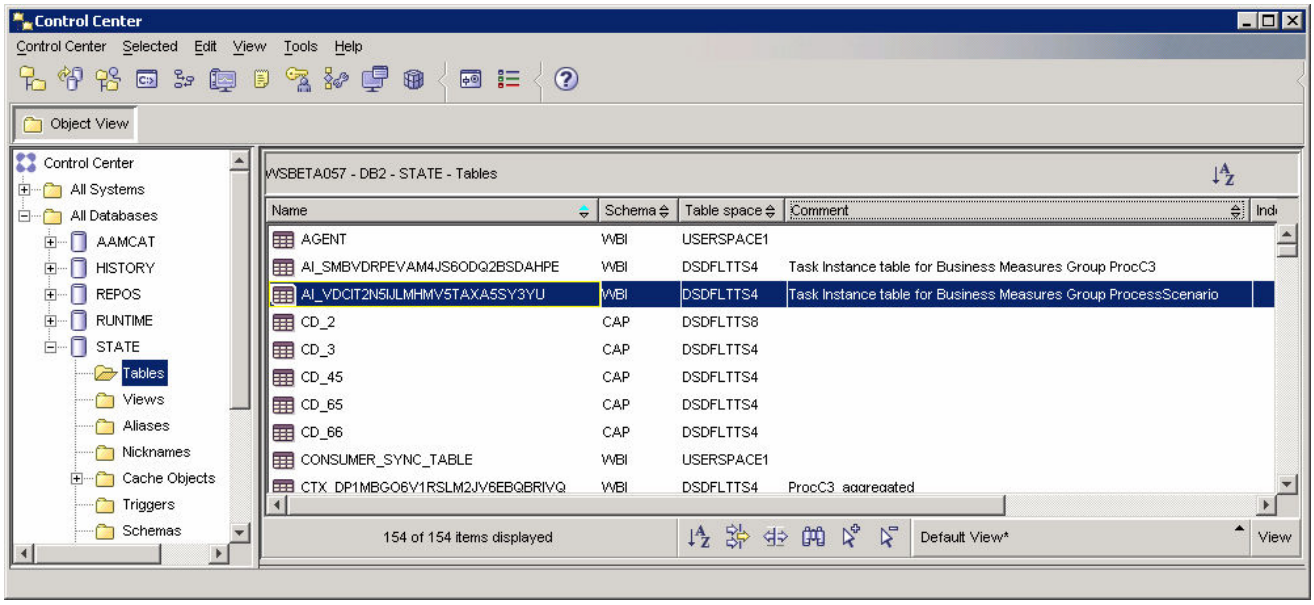
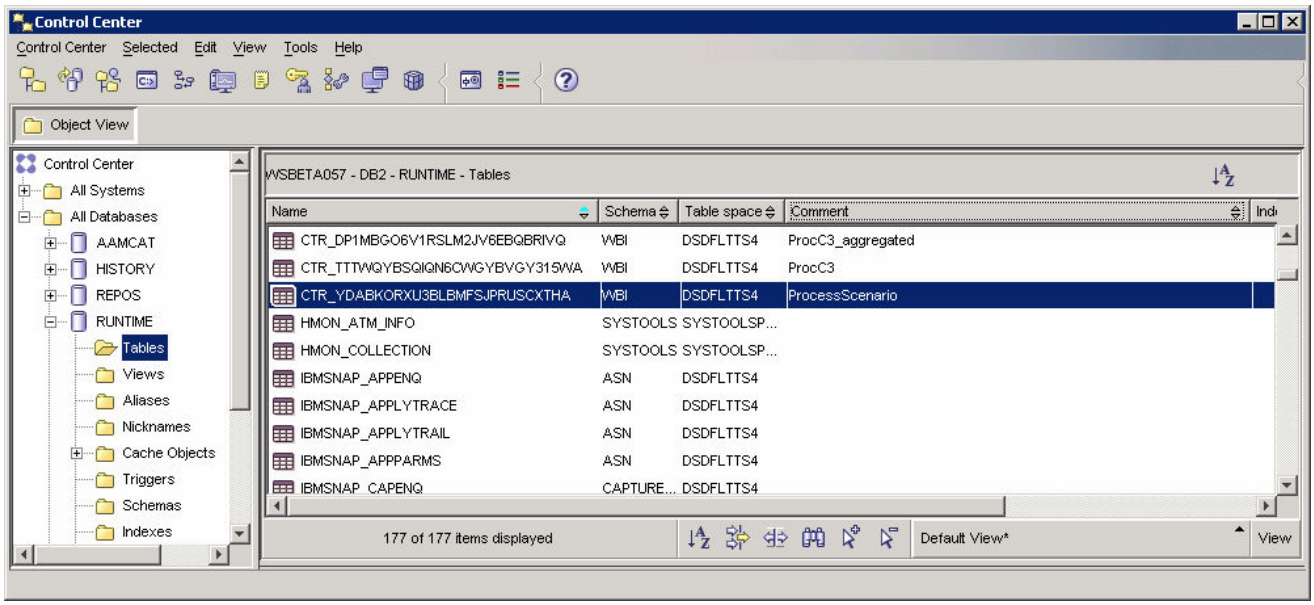


__ d. In the **Runtime** database look for a table name like **CTR_*,** and the comment **ProcessScenario**. This is the process instance data for completed instances.



__ e. You should see some rows in this table. But note that we set the replication frequency to 2 minutes, so this information will not show up in this table until the time period has elapsed following the completion of the process instance. You may need to wait a few minutes, and then click **View > Refresh** in the DB2 Control Center before checking the table again.

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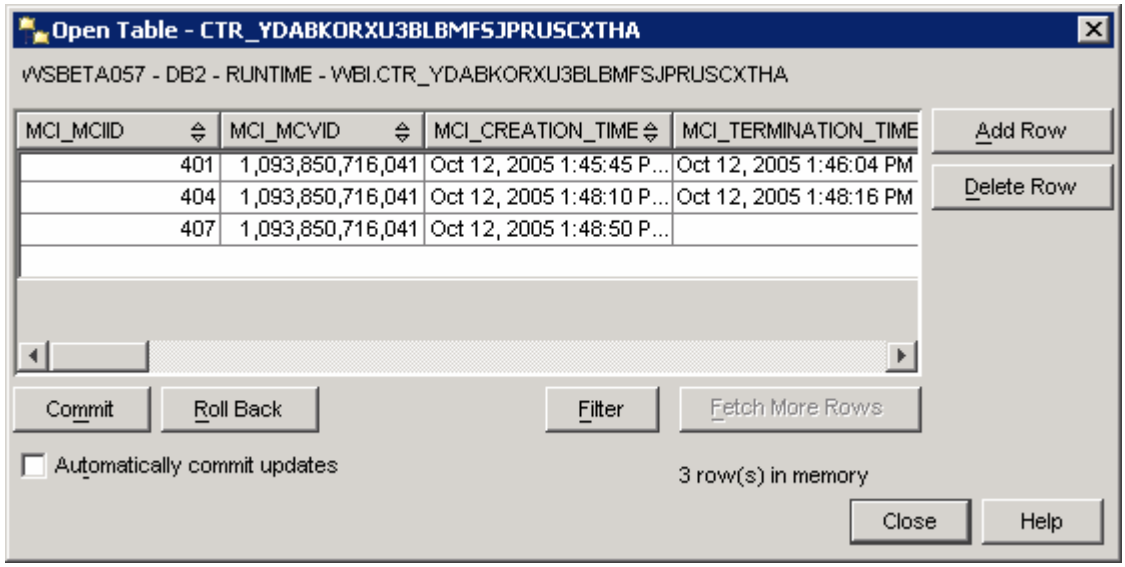

__ f. If you do not see data in the State database nor the Runtime database, then something is wrong.

1) Ensure that CEI logging is turned on in the Runtime Server -- **Admin Console > Servers > Application servers > server1 > Business process container settings > Business process container > Enable Common Event Infrastructure logging**.

2) Turn on the Monitor trace in the Monitor Server, run a few more process instances and check for errors in the trace log. To get trace details, **Monitor Server Admin Console > Troubleshooting > Logs and Trace > server1 > Change Log Detail Levels**. Specify log level for sub-components of *com.ibm.wbimonitor* . Then the trace is stored with the Process Server logs as trace.log.

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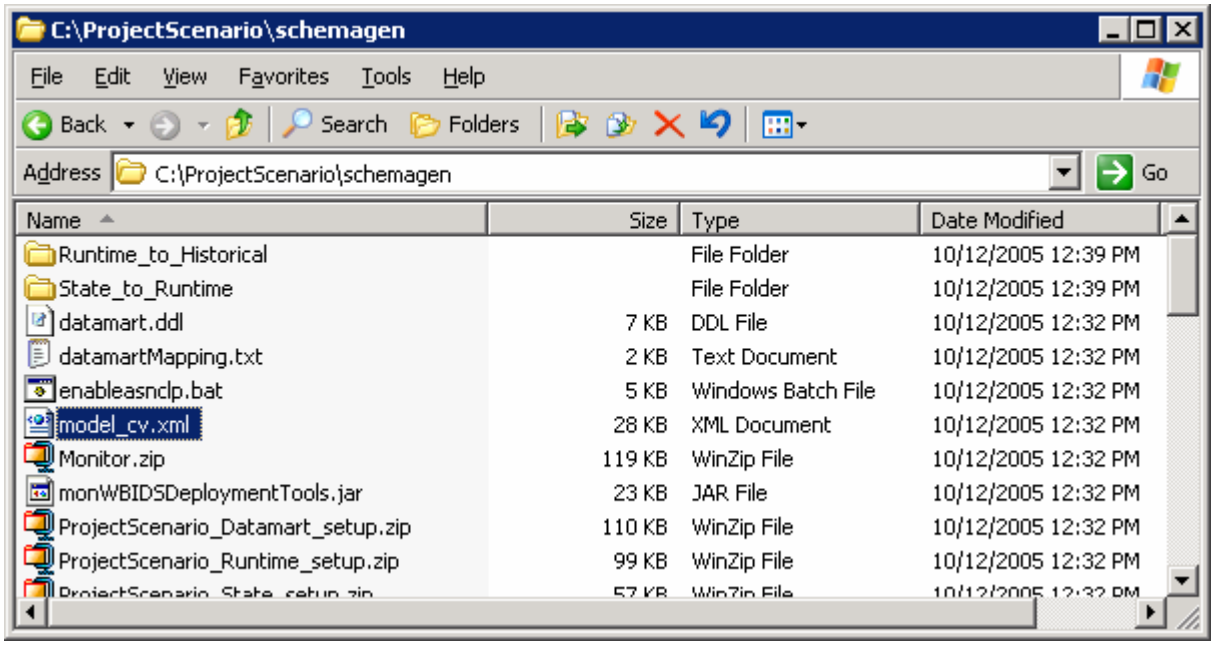
Part 5: Import Cubes in the Dashboard Server

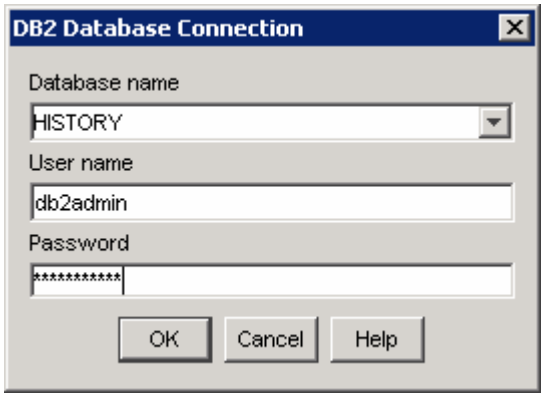
____ 1. Import the cube models into DB2 Cube Views. Note that the remainder of the lab will happen on the **Dashboard Server**.

__ a. Copy the file C:\Project\Scenario\schemagen**model_cv.xml** from the **Monitor Server** to the **Dashboard server**.



__ b. On the Dashboard Server, select **Start > Programs > IBM DB2 > Business Intelligence Tools > OLAP Center.**

__ c. When prompted, use userid: db2admin, password: monPa55w0rd.



__ d. The first time you connect to the database, you will get this message.

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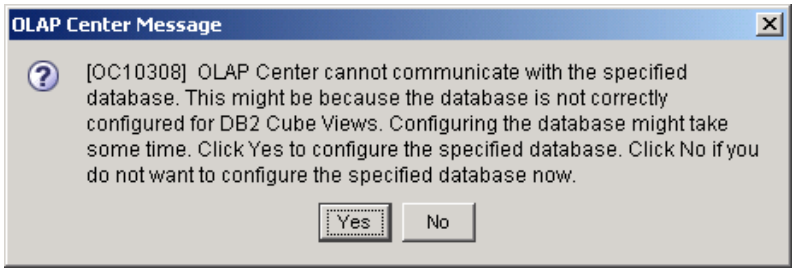
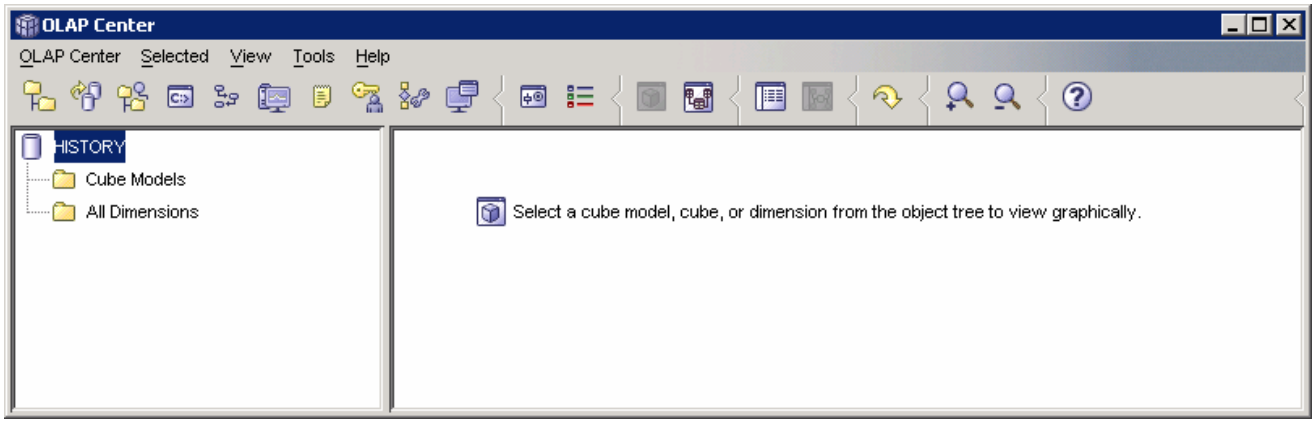
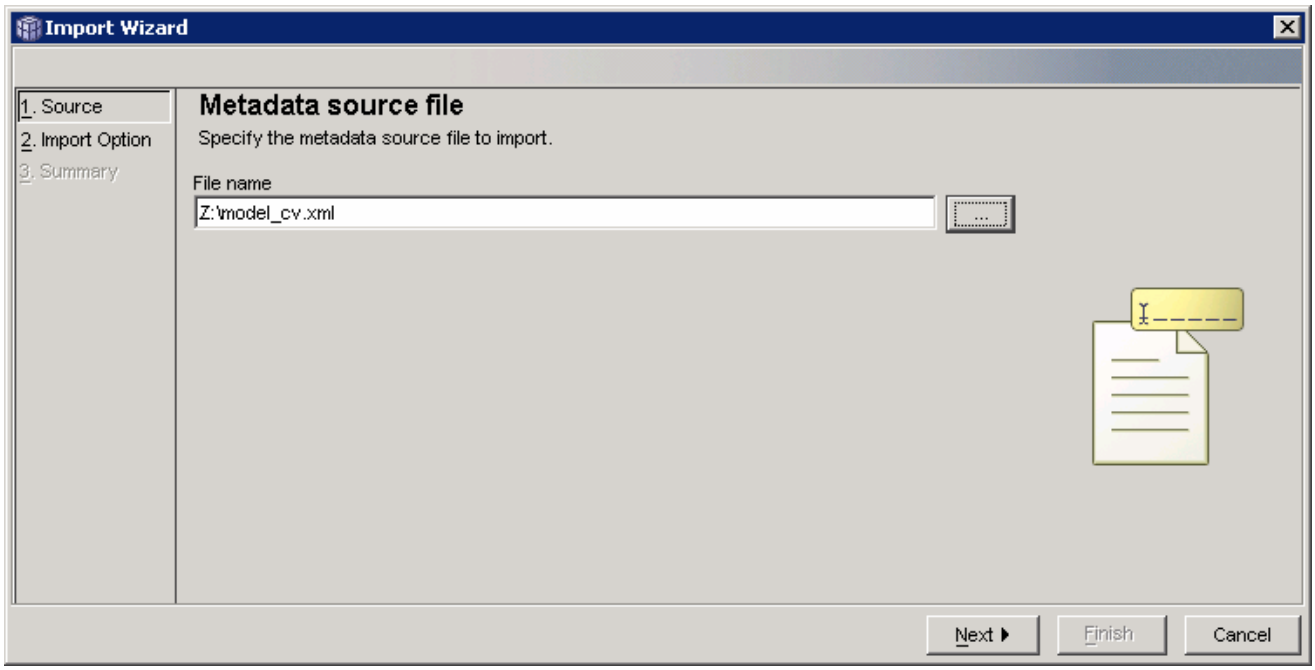


__ e. Click **Yes.**

__ f. The window should look like this.



__ g. Select **OLAP Center > Import.** For file name, browse (the **…** button) to the file **model_cv.xml.**



__ h. Click **Next.**

__ i. You should see a window like this.

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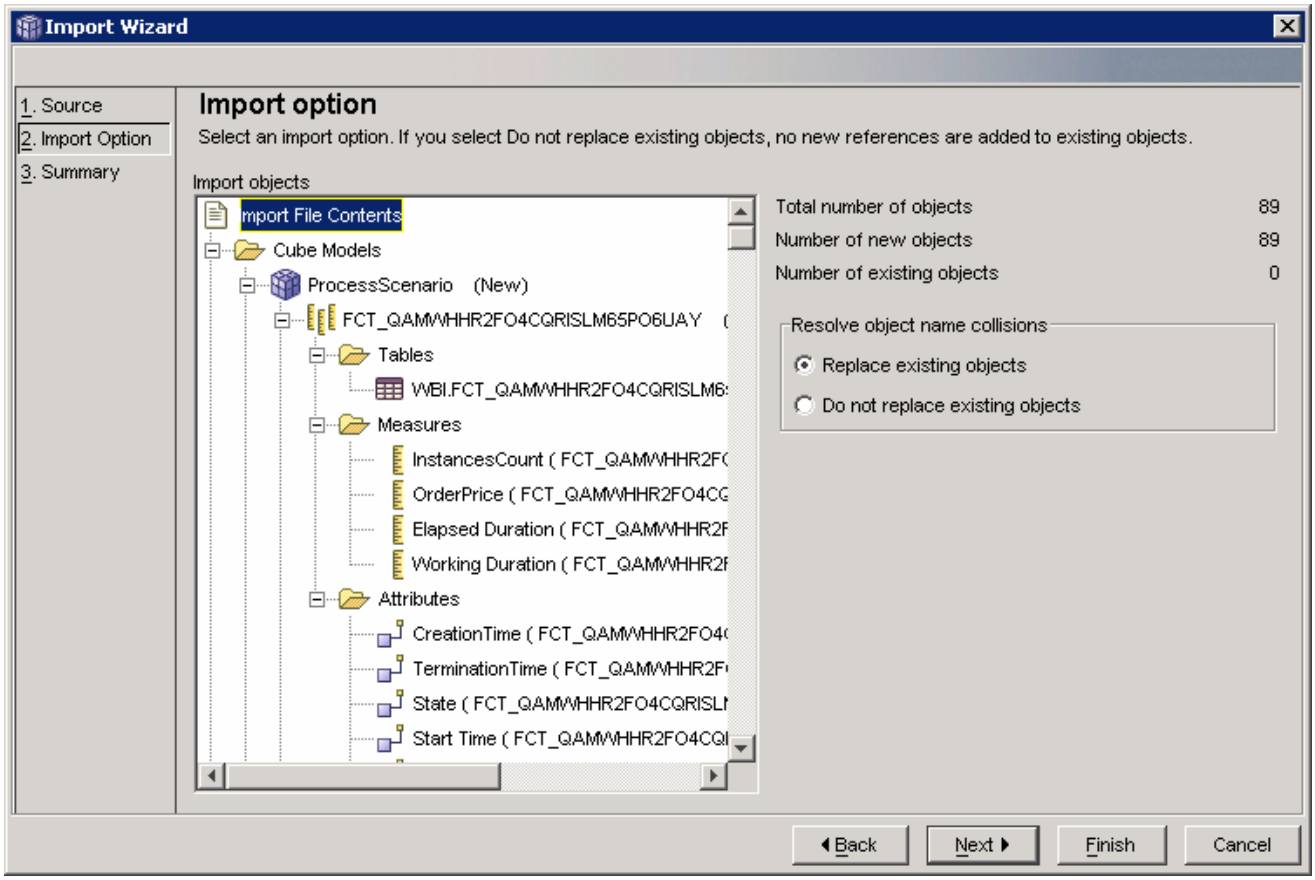
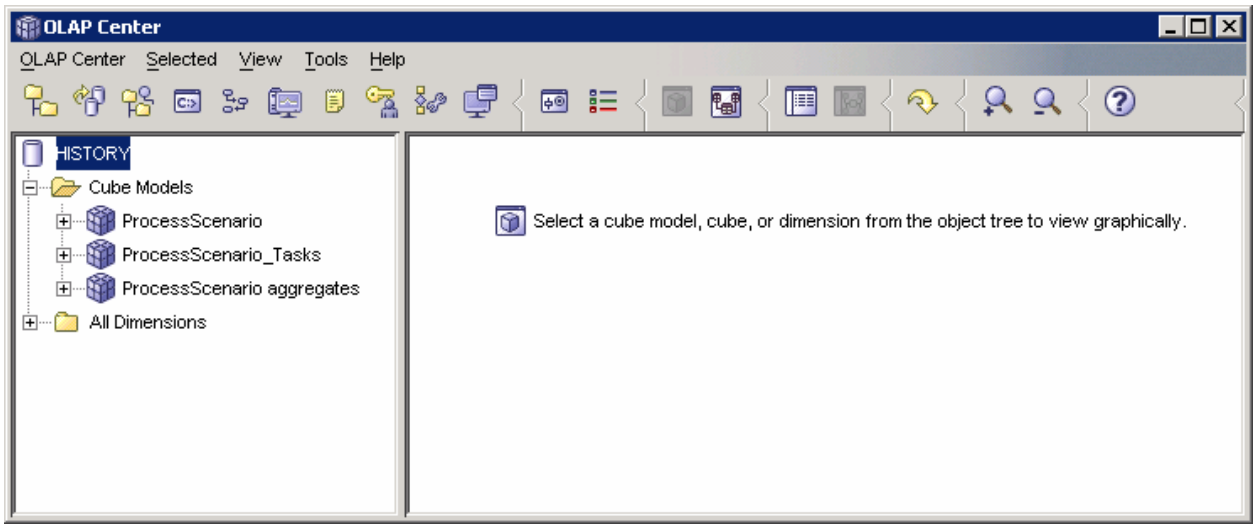


__ j. Click **Finish.**

__ k. Now you will see three models listed in the OLAP Center as follows.



__ l. Close the OLAP Center.

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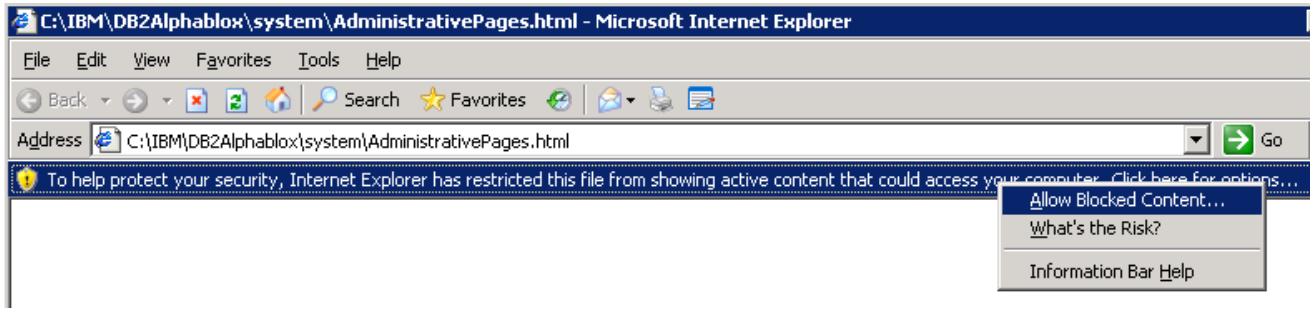
____ 2. Define the cubes to Alphablox.

__ a. If the WebSphere Portal server is not running, start it using **Start > IBM WebSphere > WebSphere Portal v5.1 > Start the Server.**

__ b. Start Alphablox in a browser **Start > All Programs > IBM DB2 Alphablox 8.3 > AlphabloxAnalytics > DB2 Alphablox Administrative Pages**.

Note: You may find that Windows will block your attempt to access the page and you should see this in the Internet Explorer window in a yellow information bar at the top. Click on this bar and select Allow Blocked Content… to continue:



__ c. When it prompts for it, enter userid: admin, password: password. You should see a window like this:

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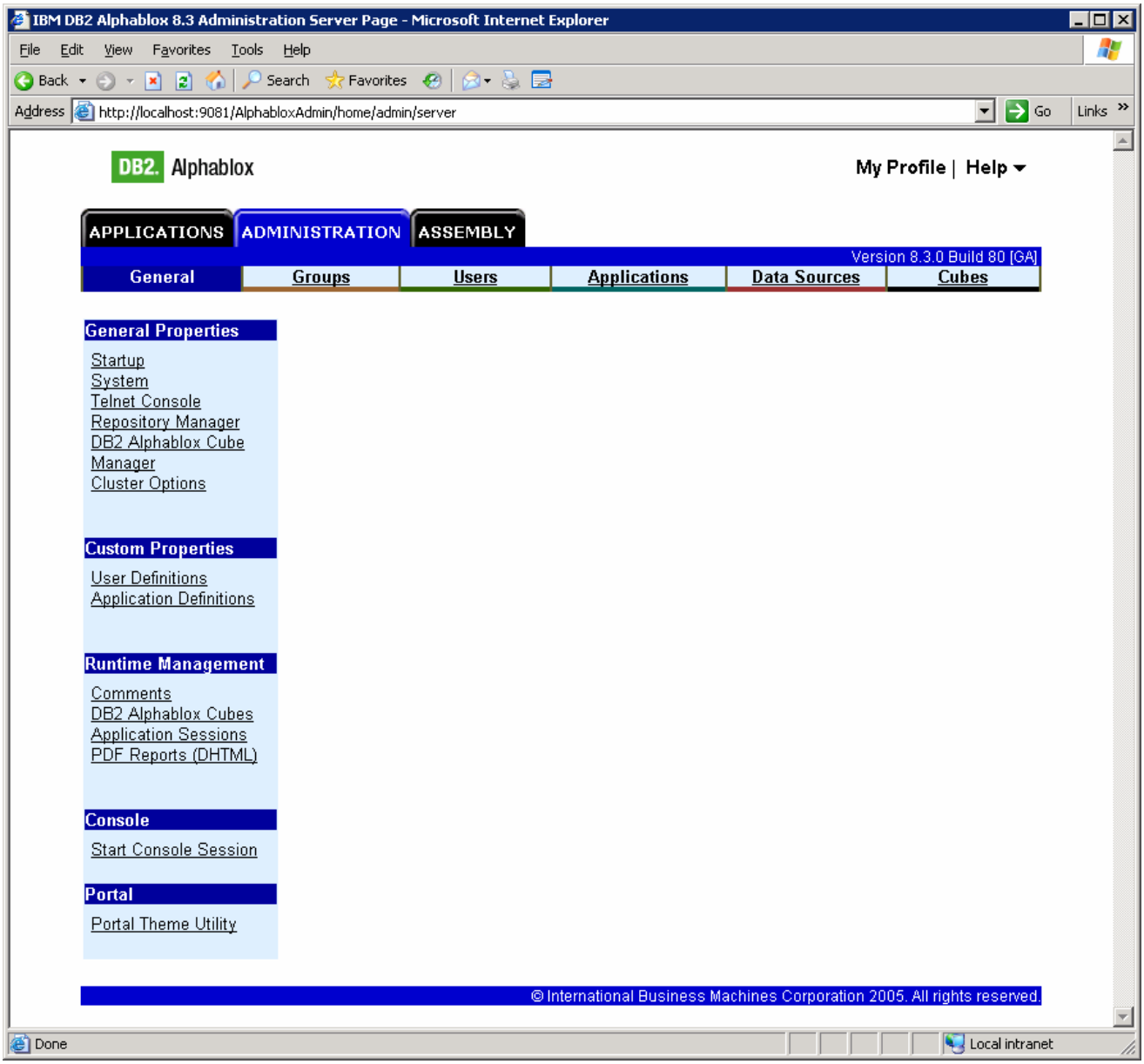

__ d. Click on tab '**Cubes**' at the top of the Alphablox window. Click **Create**. You should see a window like this:

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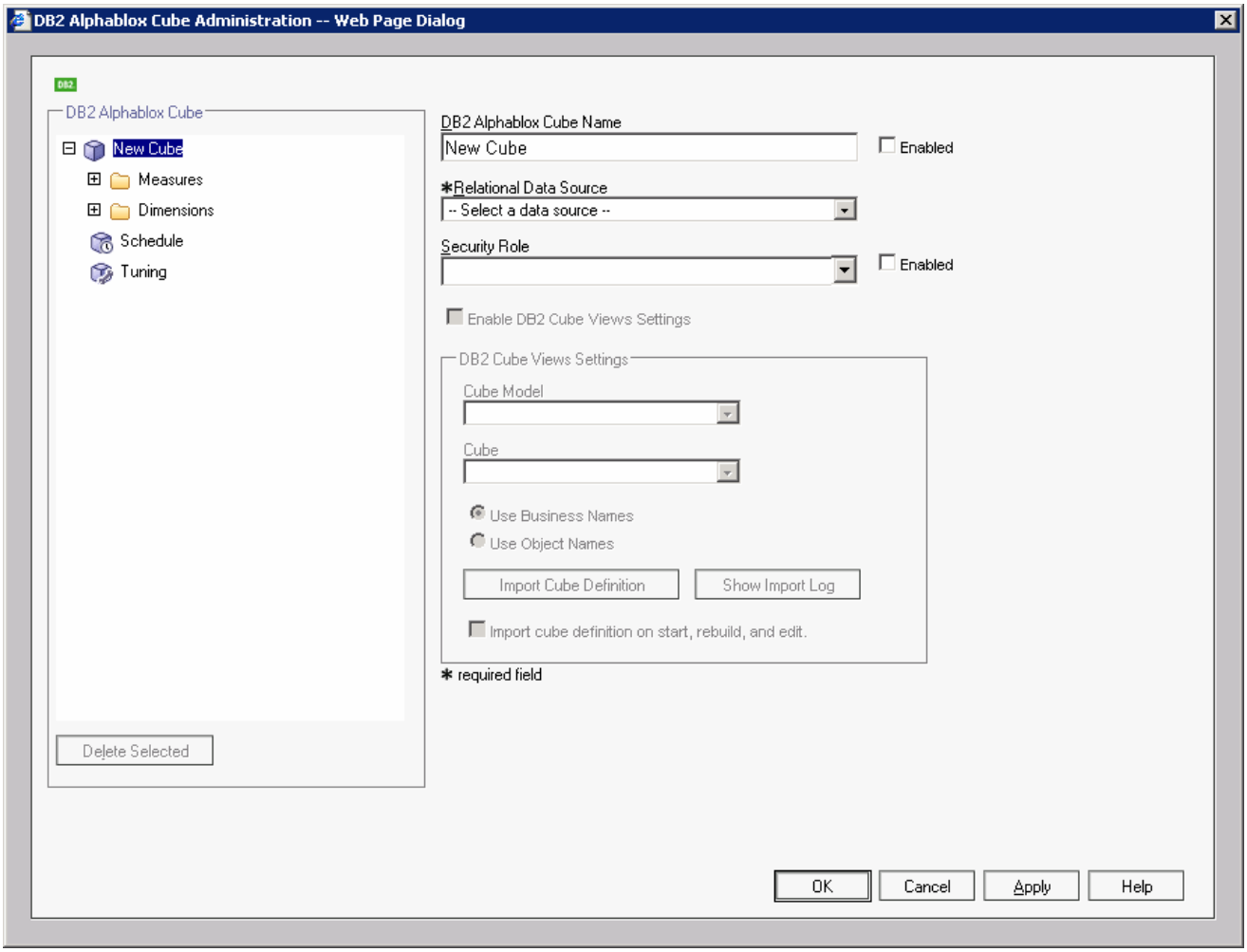

__ e. Click the checkbox '**Enabled**' next to the **DB2 Alphablox Cube Name**.

__ f. Select **HISTORY** for the Relational Data Source.

__ g. Click the checkbox '**Enable DB2 Cube Views Settings**'.

__ h. Select '**WBI.ProcessScenario**' for the Cube Model, then click button '**Import Cube Definition**'.

__ i. Type **ProcessScenario** for the **DB2 Alphablox Cube Name** (do not include the WBI). You should have a screen like this:

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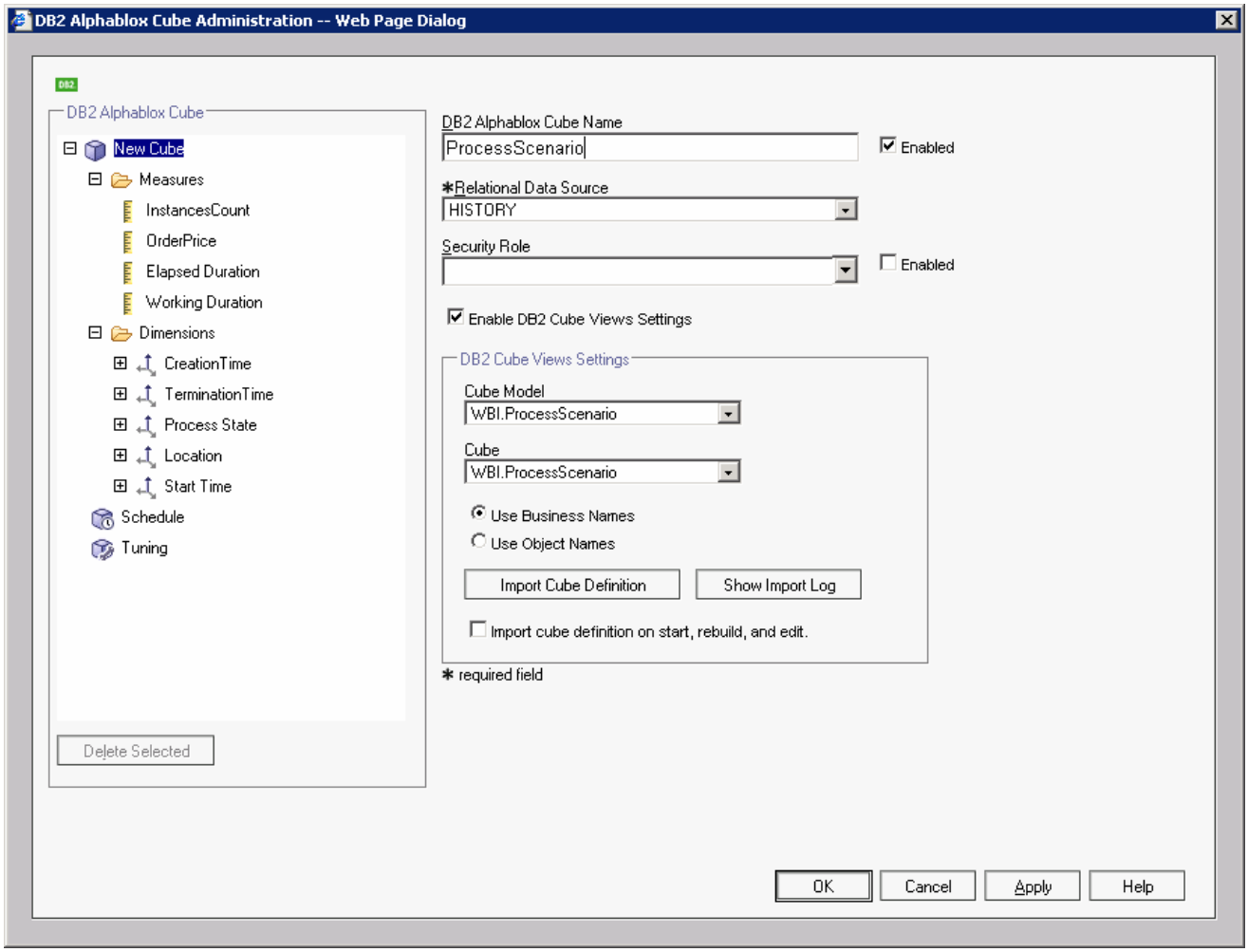

__ j. Click **OK** to save the definition. Then you will see it added to the list as follows:

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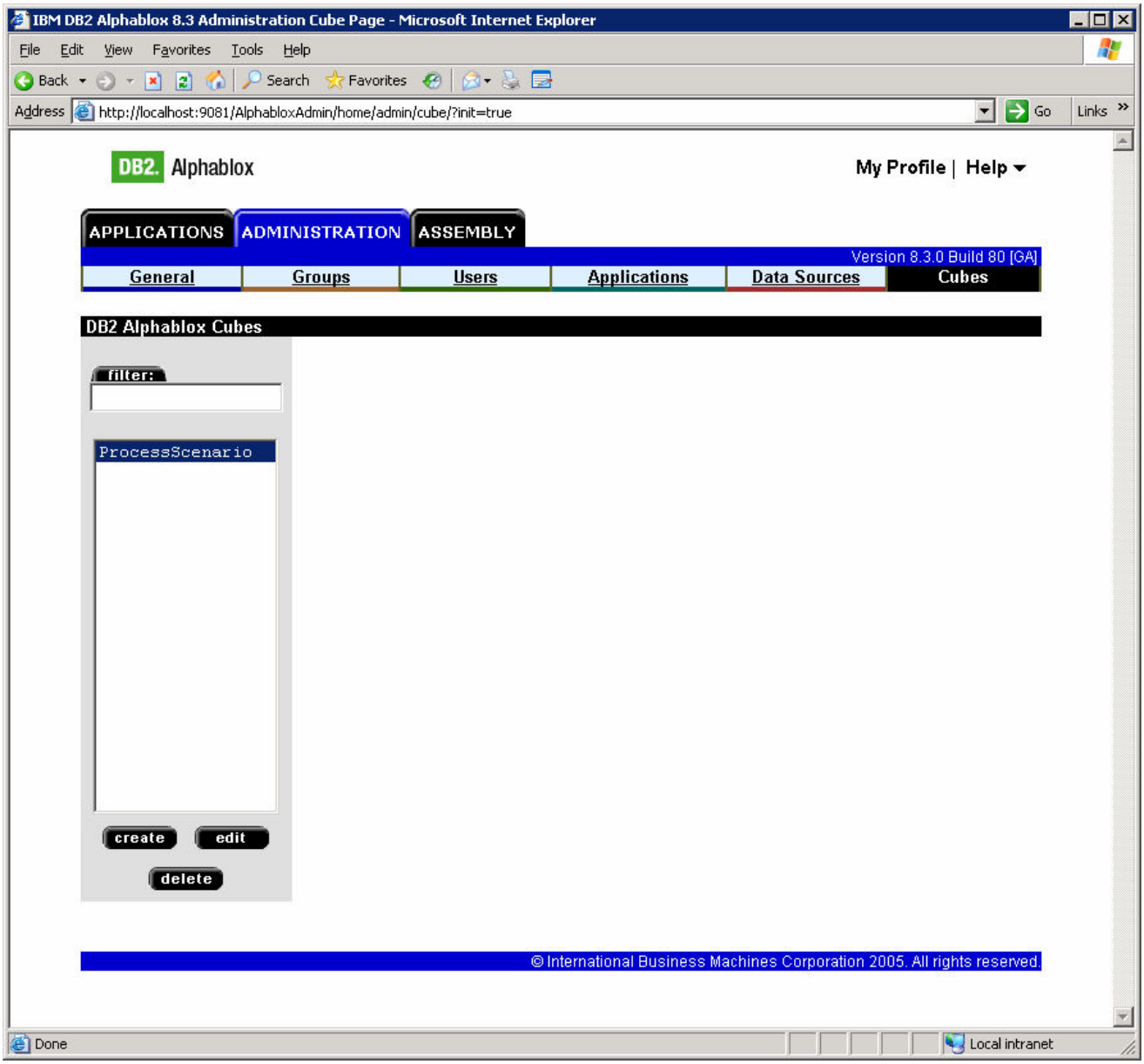

__ k. You will repeat this for each cube in the model. In this case there are three cubes, and they are listed in the pulldown for Cube Model.

__ l. We have defined ProcessScenario, now we will define **ProcessScenario aggregates.**

__ m. Click **create** to create the cube definition.

__ n. Click the checkbox '**Enabled**' next to the **DB2 Alphablox Cube Name**.

__ o. Select **HISTORY** for the Relational Data Source.

__ p. Click the checkbox '**Enable DB2 Cube Views Settings**'.

__ q. Select '**WBI.ProcessScenario aggregates**' for the Cube Model, then click button '**Import Cube Definition**'.

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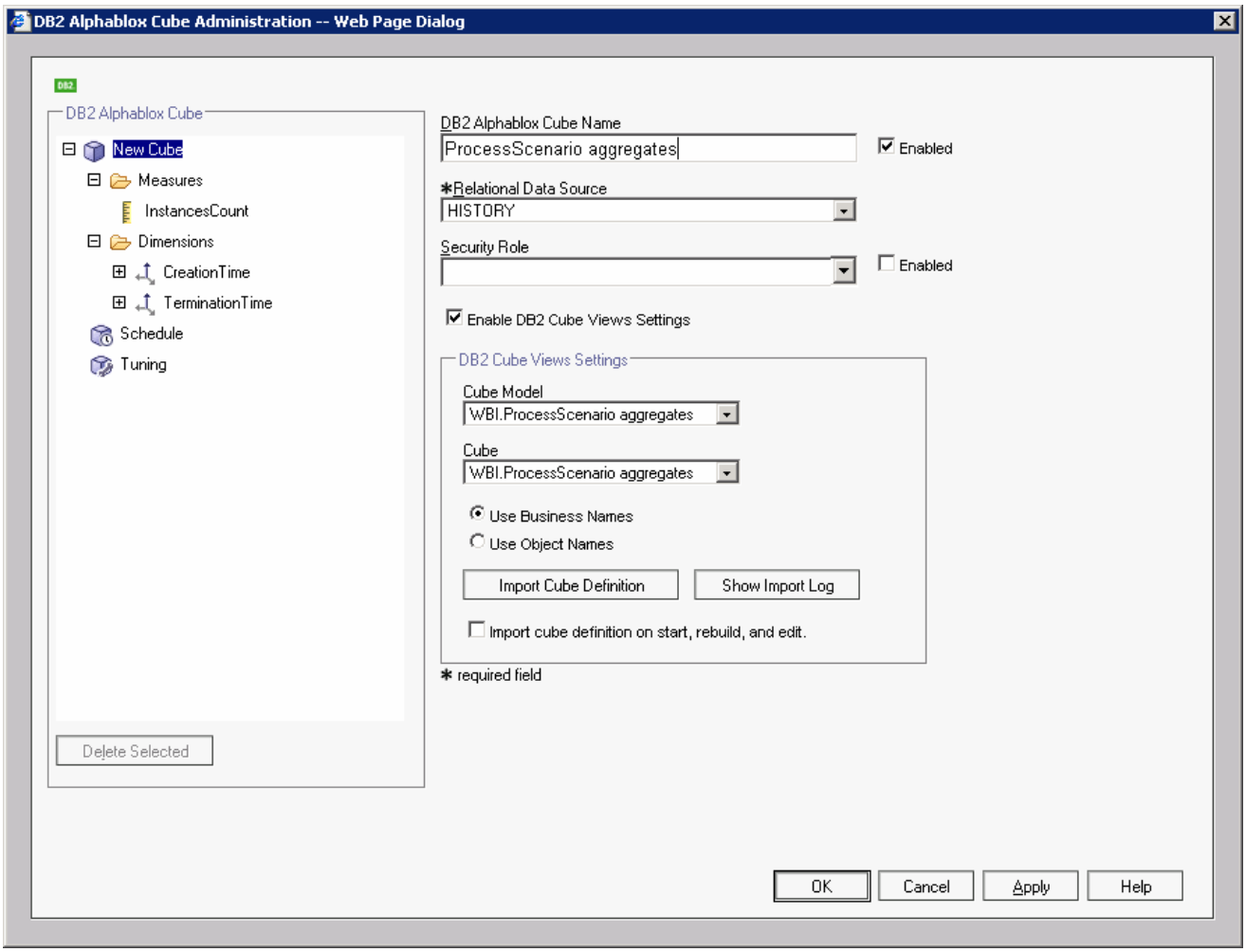
__ r. Type **ProcessScenario aggregates** for the **DB2 Alphablox Cube Name** (do not include the WBI.) You should have a screen like this:



__ s. We have defined ProcessScenario and ProcessScenario aggregates, now we will define **ProcessScenario_Tasks.**

__ t. Click **create** to create the cube definition.

__ u. Click the checkbox **'Enabled'** next to the **DB2 Alphablox Cube Name**.

__ v. Select **HISTORY** for the Relational Data Source.

__ w. Click the checkbox **'Enable DB2 Cube Views Settings'**.

__ x. Select **'WBI.ProcessScenario_Tasks'** for the Cube Model, then click button **'Import Cube Definition'**.

__ y. Type **ProcessScenario_Tasks** for the **DB2 Alphablox Cube Name** (do not include the WBI.) You should have a screen like this:

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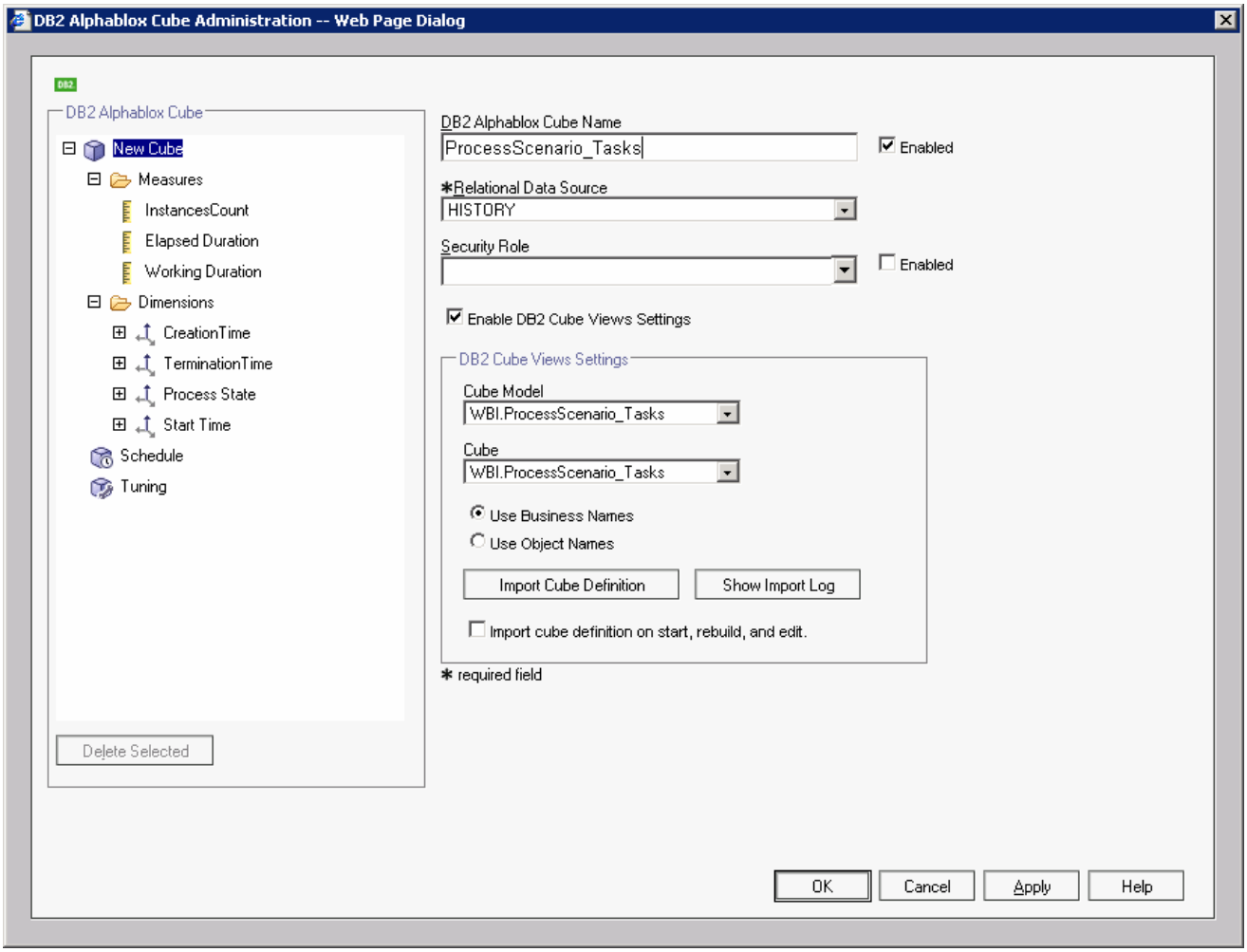

__ z. Click **OK**. Then you will see a window showing all three cubes in the list.

__ aa. Click on the **General** tab at the top of the Alphablox window. Then click **Runtime Management > DB2 Alphablox Cubes**.

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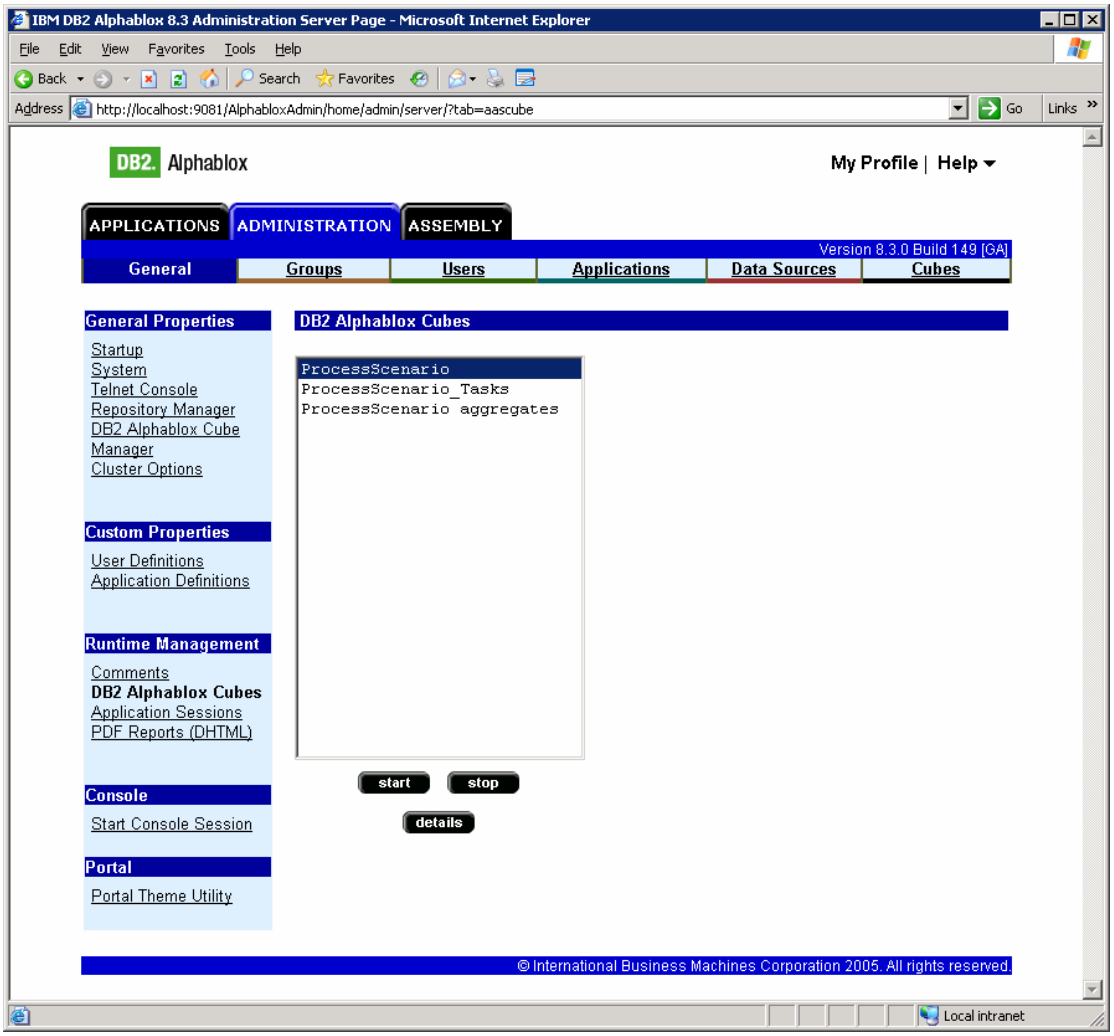

__ bb. For each of the cubes listed, click the **Start** button. The status should show as 'Running' for each cube. Here is an example:

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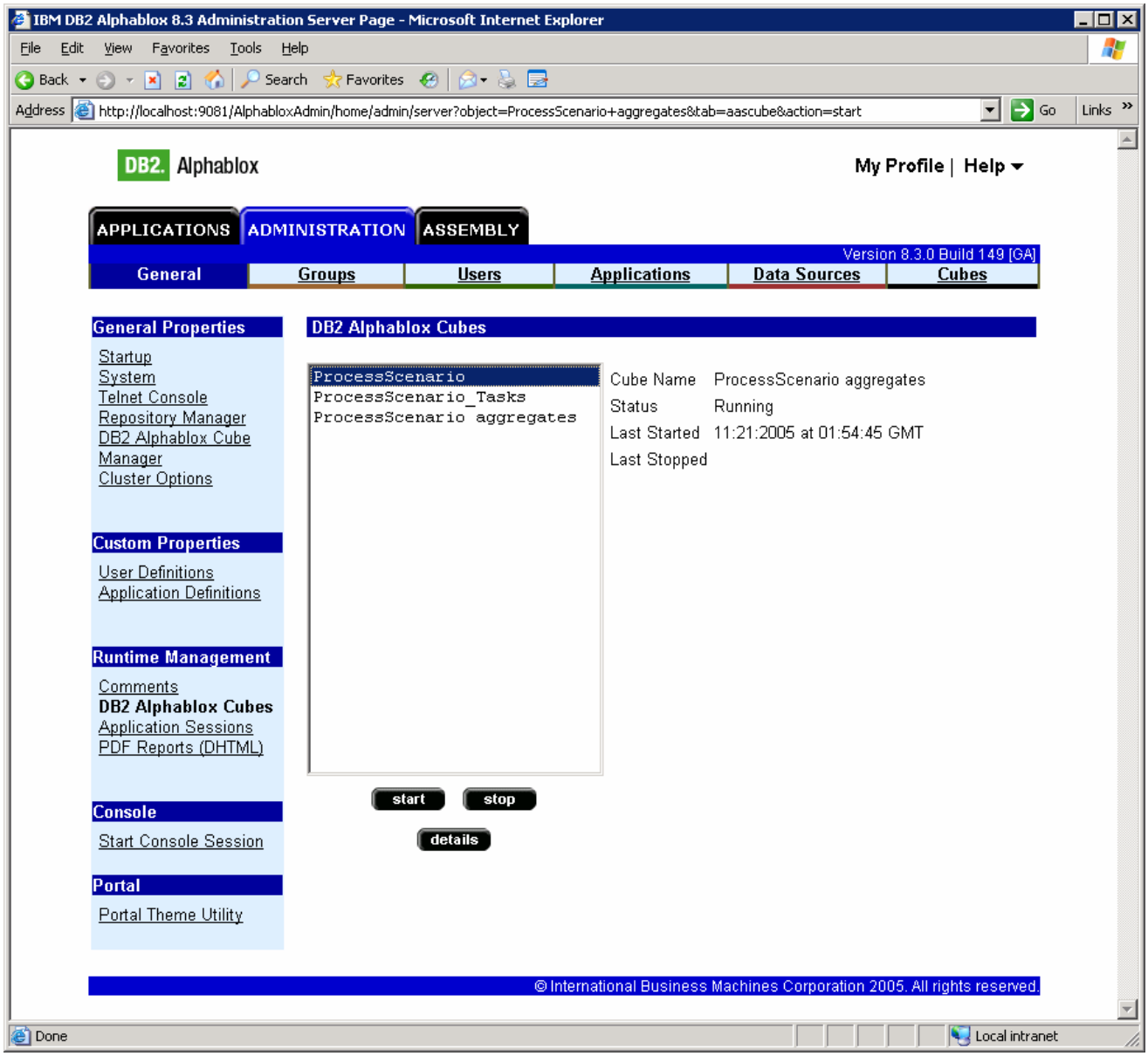

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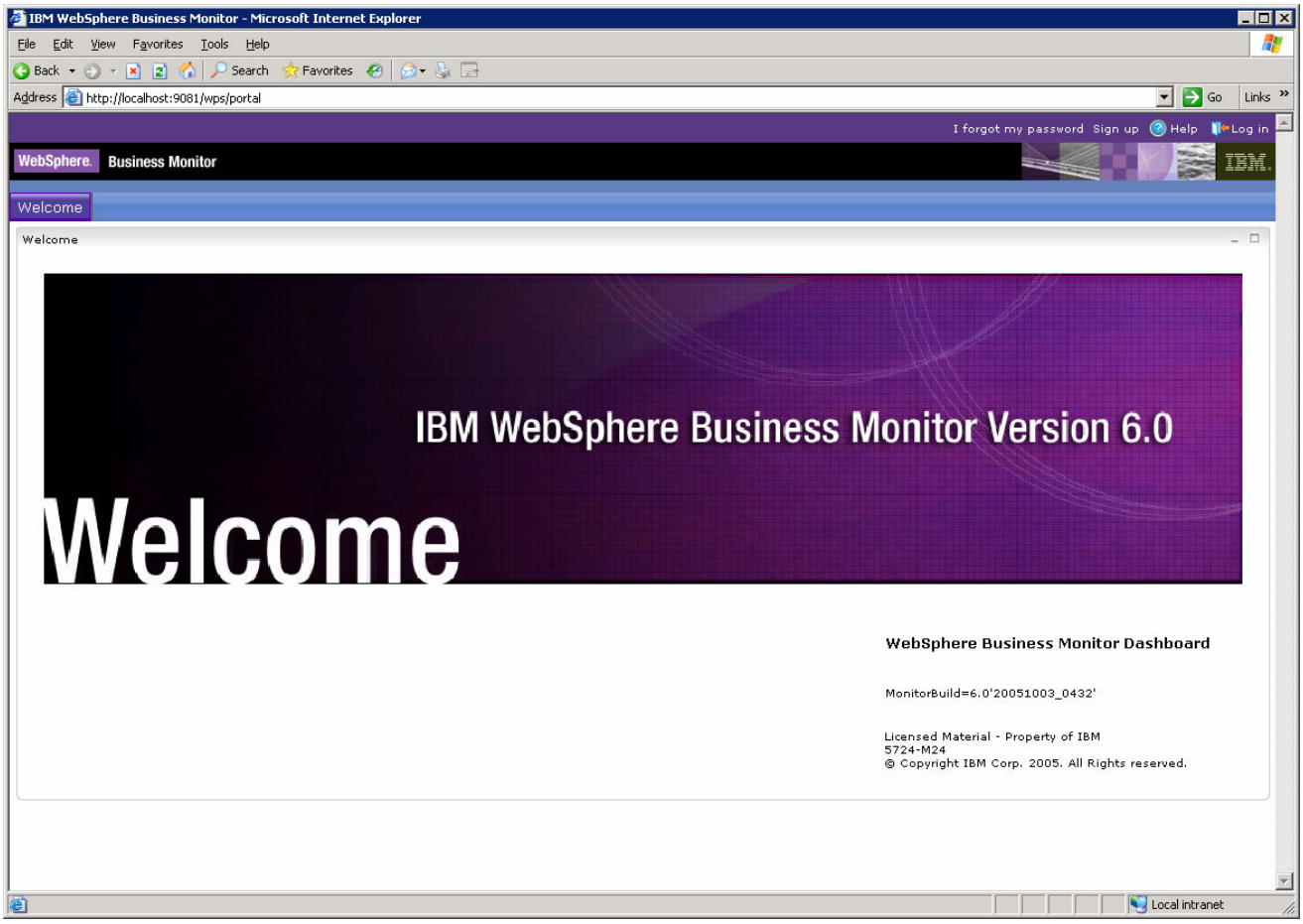
Part 6: Configure Dashboards

____ 1. Make copies of the portlets that we want to use: Active Instances and Reports. You should not configure the original portlets, since the configuration cannot be removed once it is applied. So we will make copies of the portlets, then we will configure the copies.

__ a. Start Portal: http://localhost:9081/wps/portal.



__ b. Click '**Log in**' in the upper right-hand corner. When prompted, enter userid: wpsadmin password: wpsadmin.

__ c. Click on **Administration** at the top of the page, and then click **Portlet Management > Portlets**.

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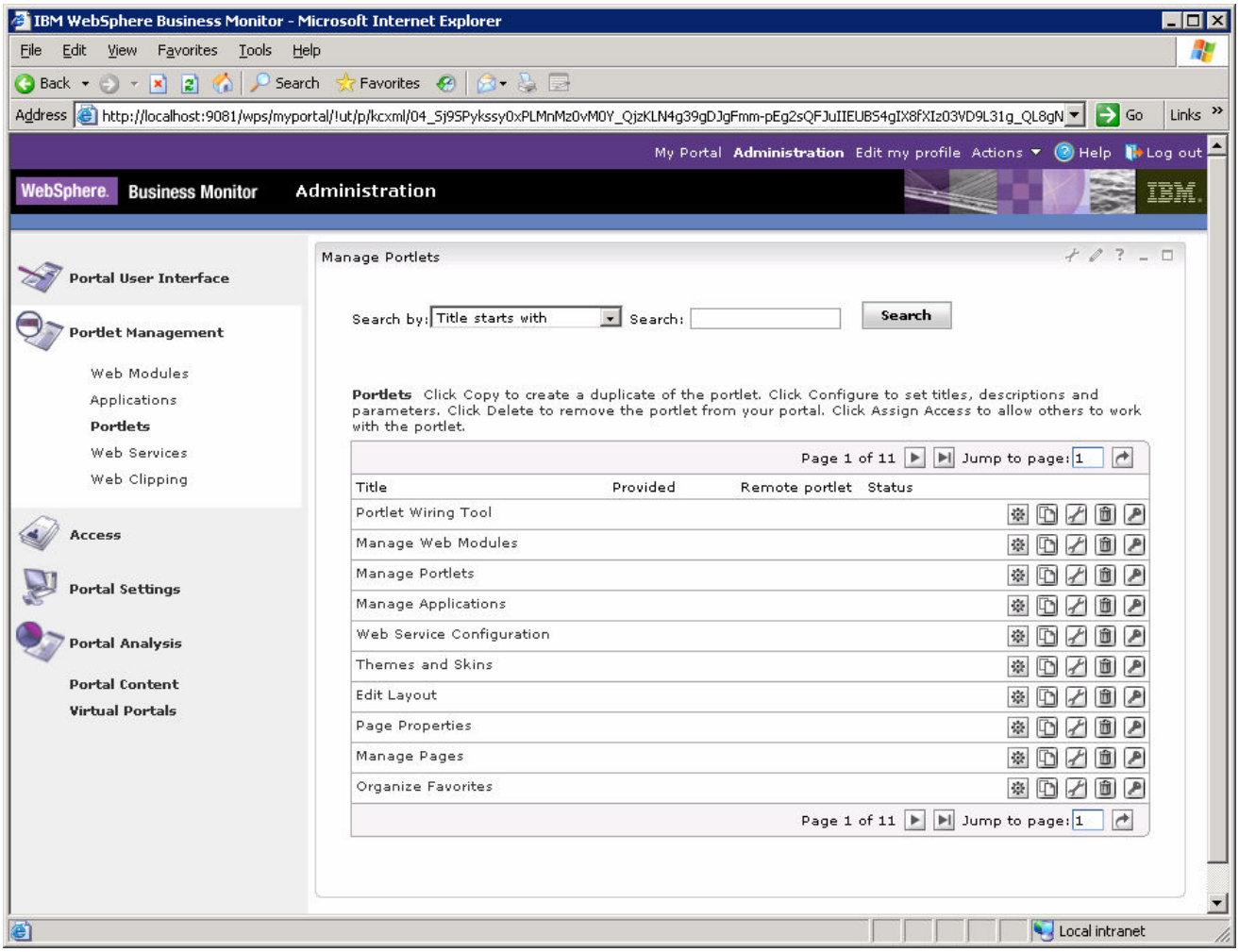

__ d. **Browse to page 11** by clicking on the arrow icons. This page should show the portlets for Active Instances and Reports.

__ e. On the row containing **Active Instances**, click the icon for **Copy portlet (** **)** You should see this window:

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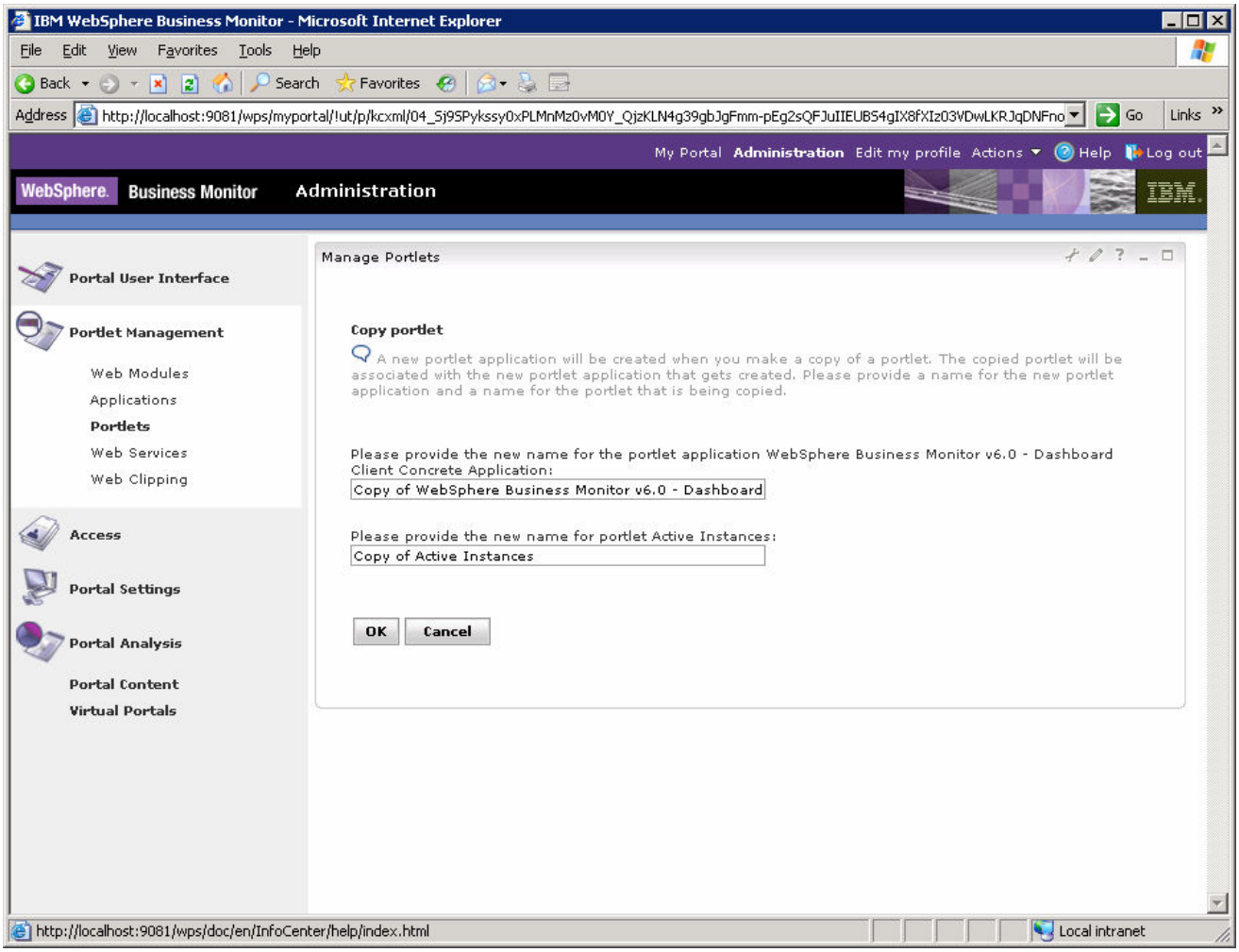

__ f. Click **OK**.

__ g. On the row containing **Reports**, click the icon for **Copy portlet (** **).** On the next window, click **OK.**

__ h. Now **Browse to page 12** by clicking on the arrow icons. This page should show the copies of the portlets for Active Instances and Reports.

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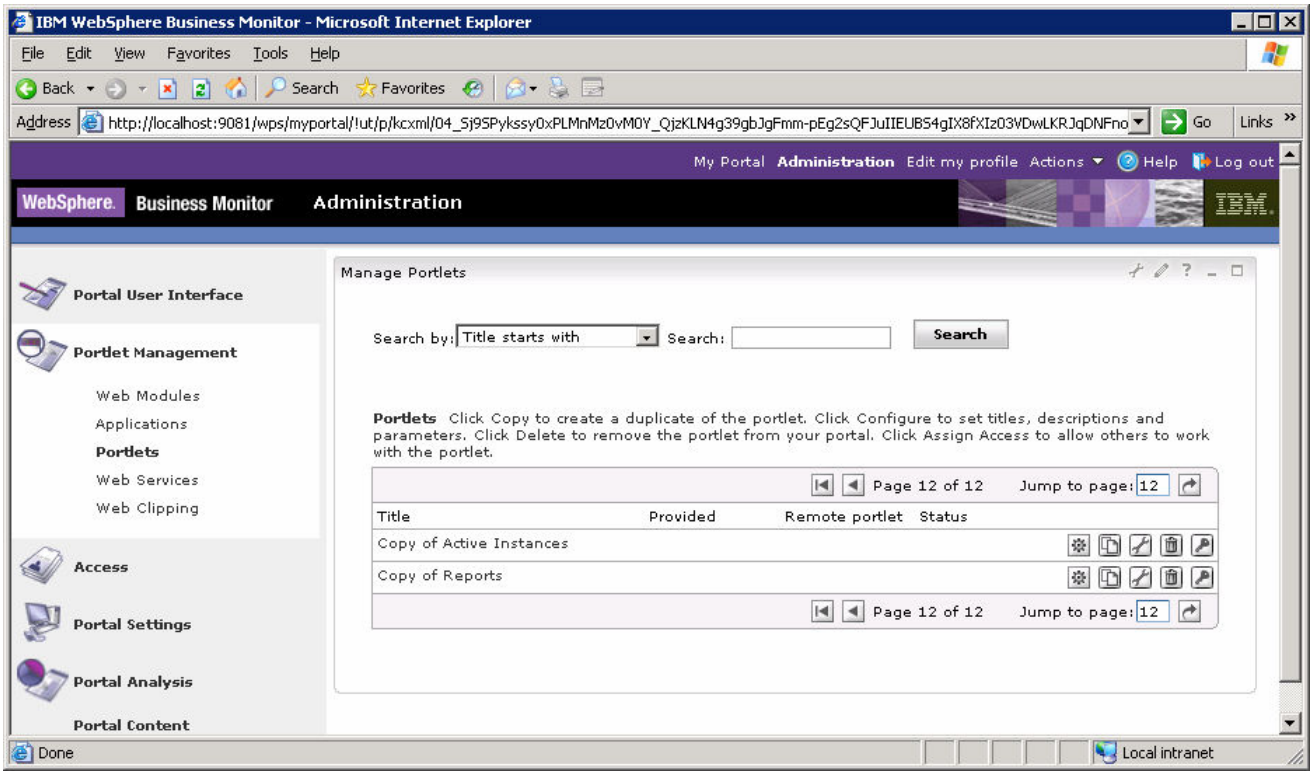

____ 2. Create a page containing two views: Active Instances and Reports.

__ a. Click on **Administration** at the top of the page, and then click **Portal User Interface > Manage Pages**.

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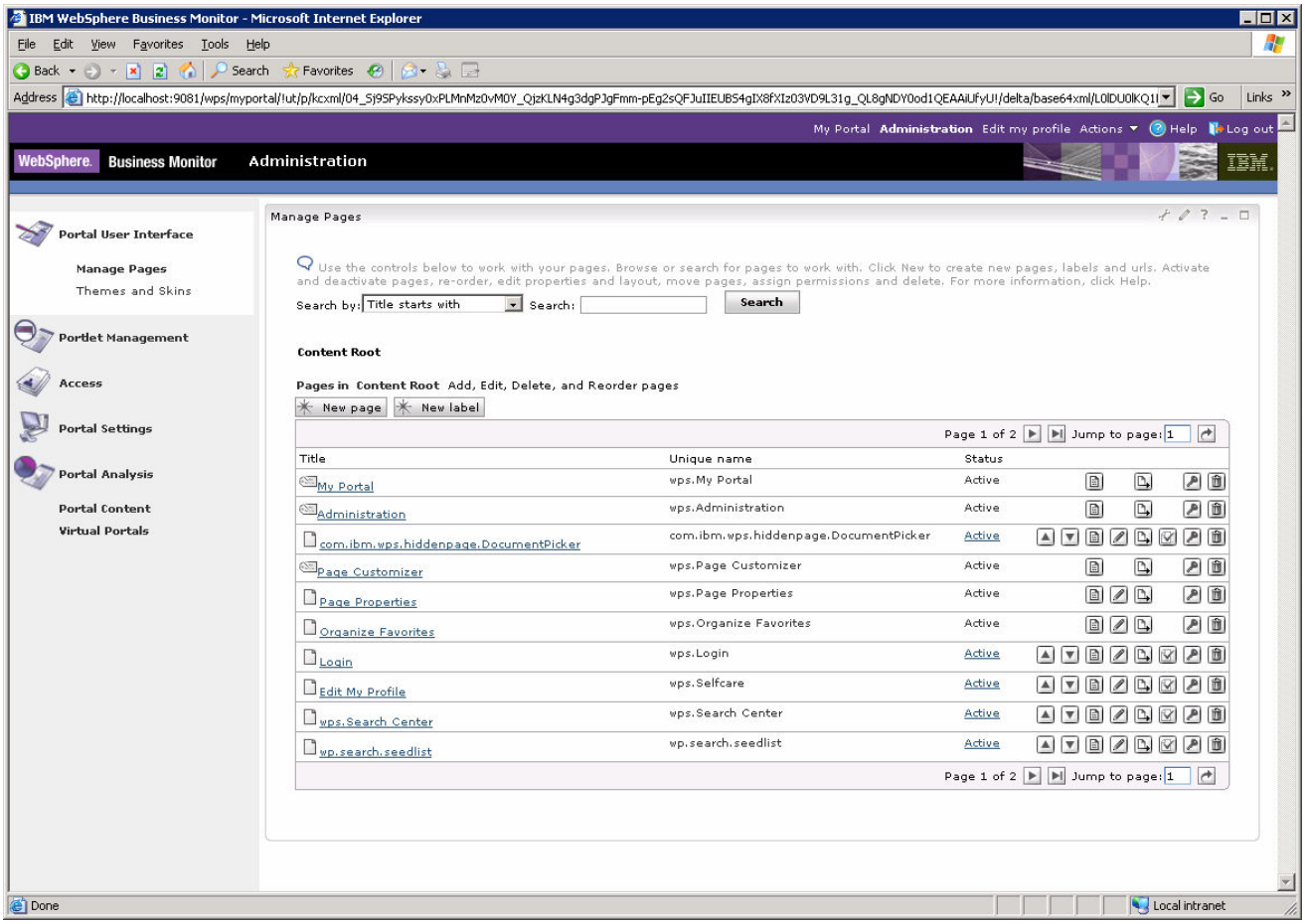

__ b. Click **My Portal**, then click the button **'New Page'**. Enter a page title 'NewPage', click **OK**, click **OK**. Now you should see the new page in the list as follows:

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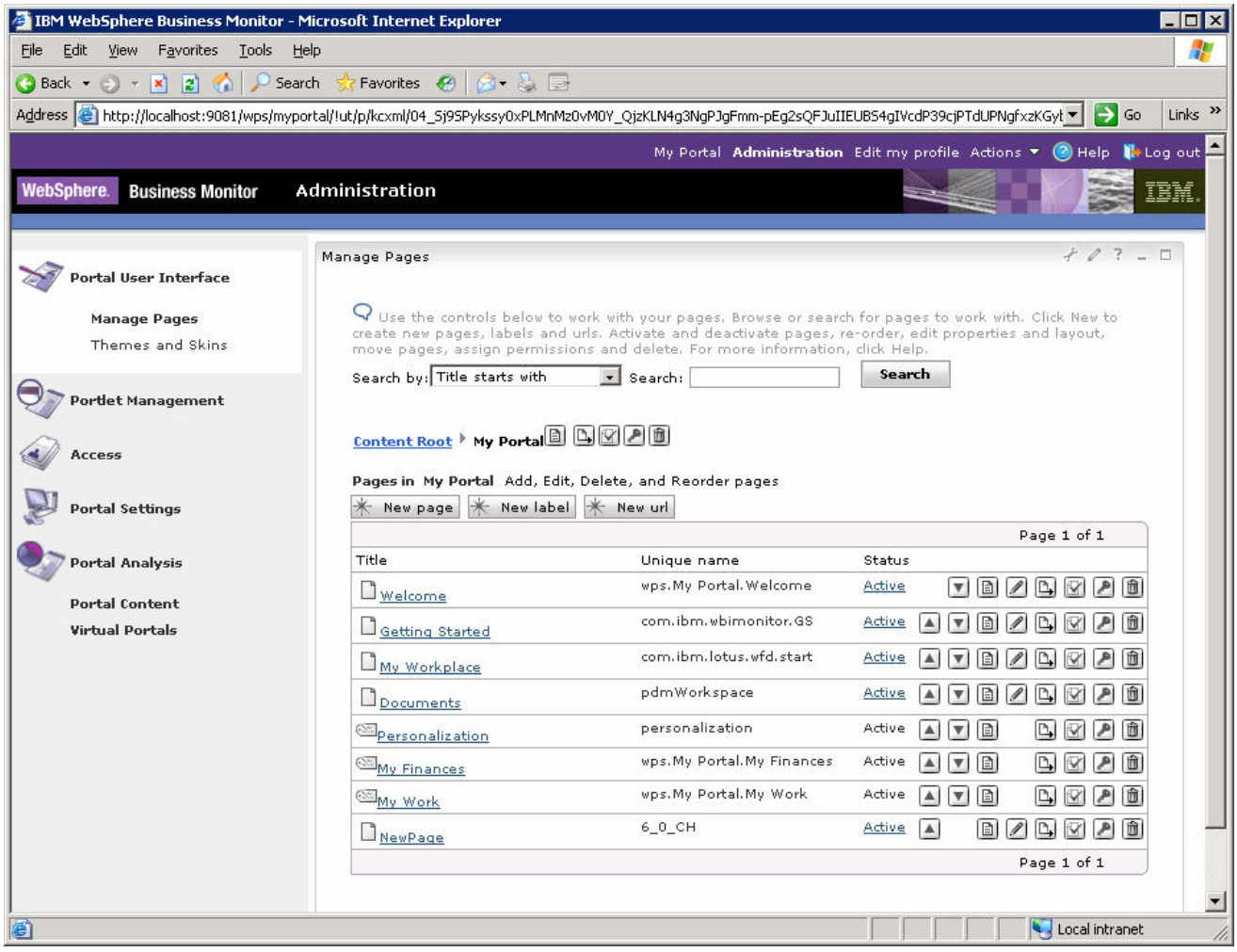

__ c. Click on the '**Edit Page Layout**' icon for NewPage. You will find it to the right side of the row for NewPage: . This will open the editor for this page.

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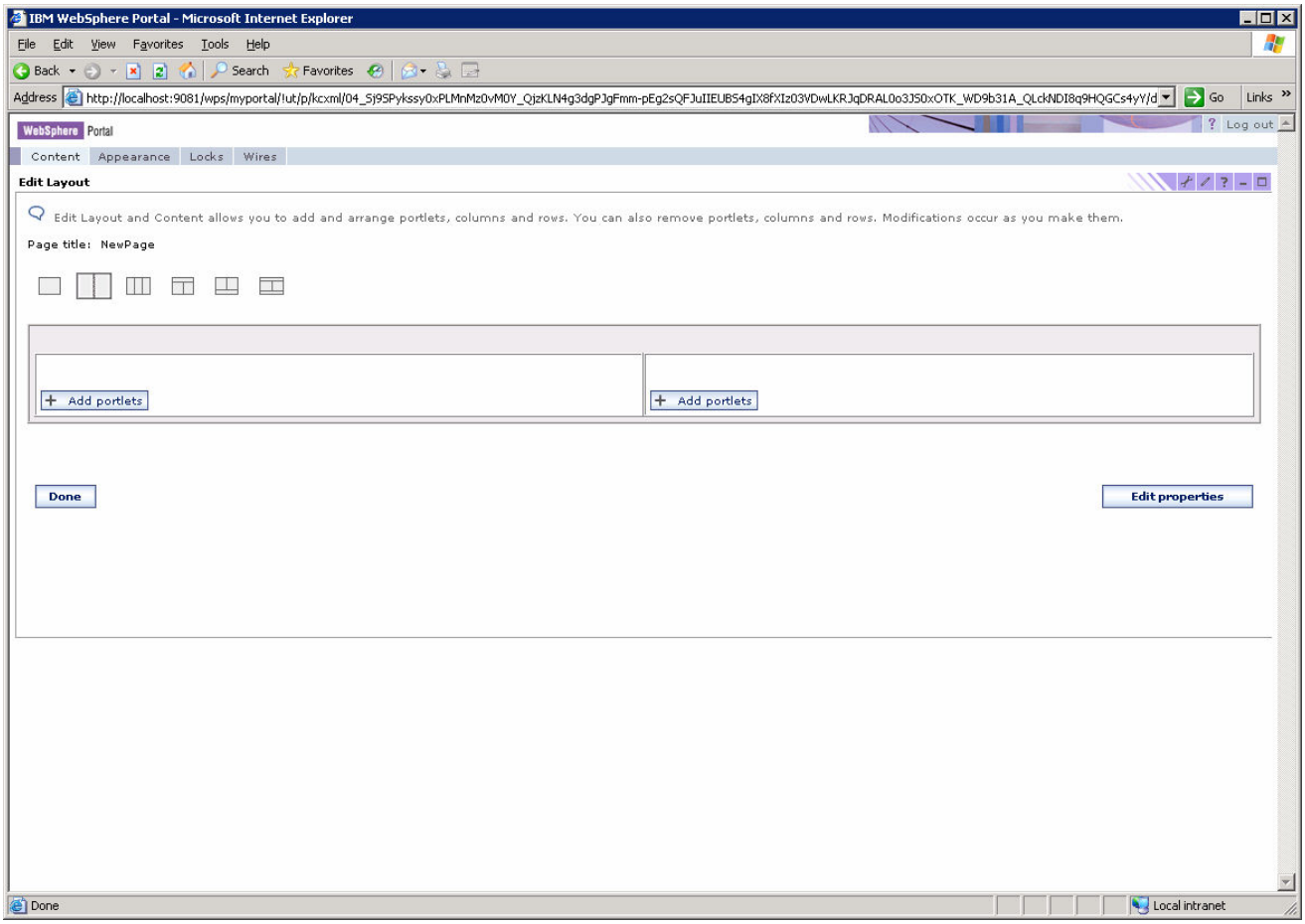

__ d. Click button **'Add portlets'** on the *left* side of the screen. You will see a list of portlets. There are multiple pages of these and you can use the navigation at the bottom of the list to look at them. Find **'Copy of Active Instances'** (it is on the last page), check it.

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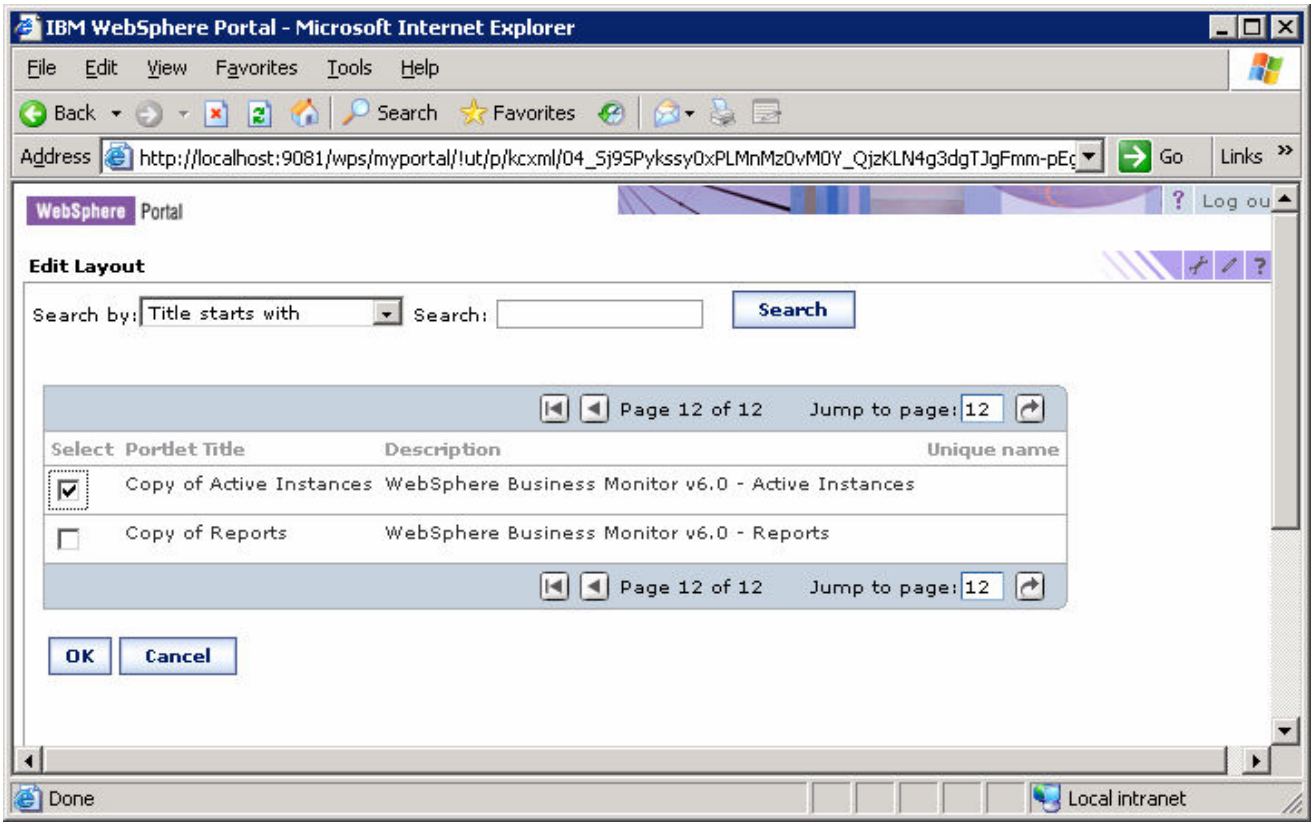

__ e. Click **OK.**

__ f. This shows that the **Copy of Active Instances** view has been added to the page:

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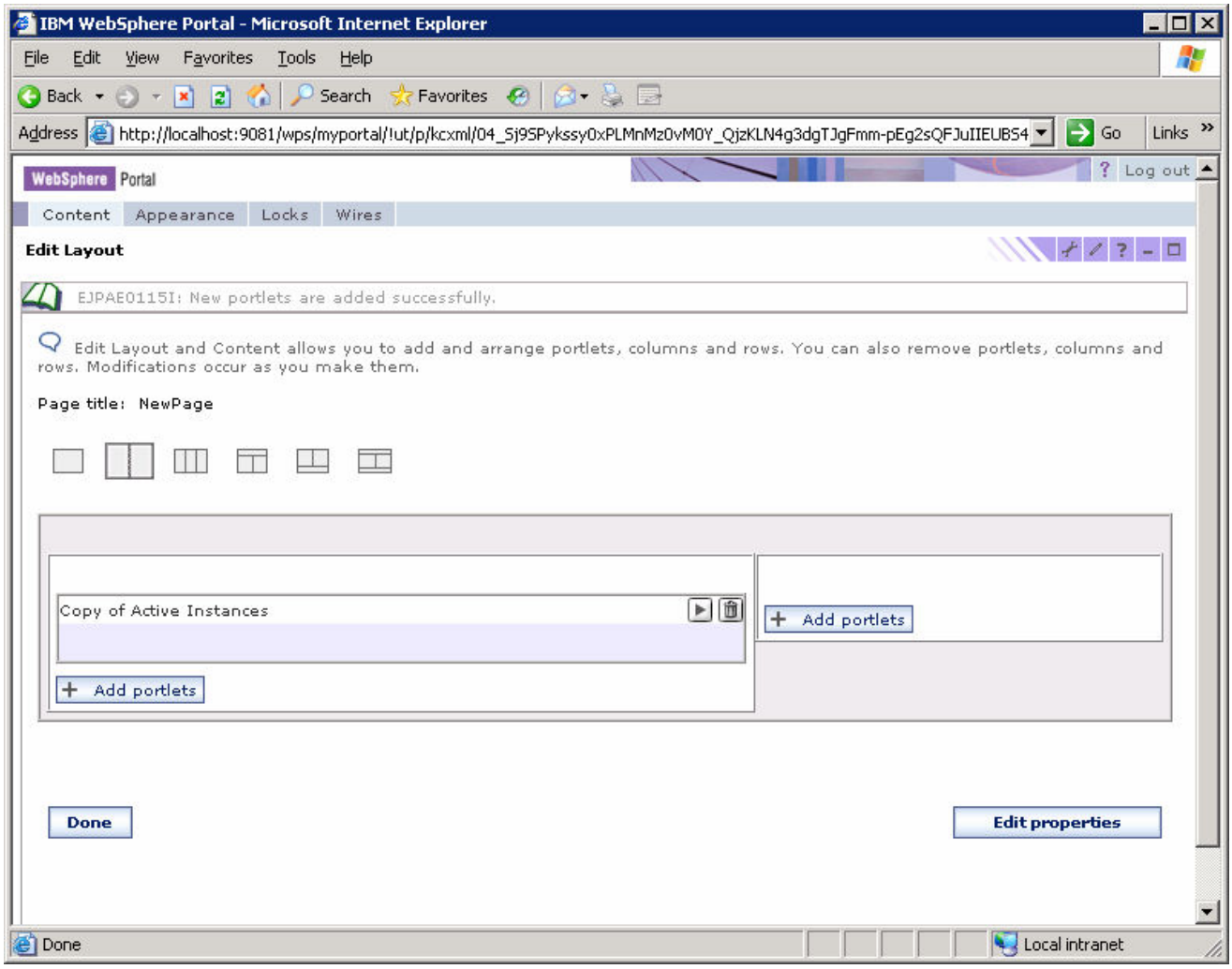

__ g. Click button '**Add portlets**' on the *right* side of the screen. Find '**Copy of Reports**' on the last page, check it.

__ h. Click **OK**.

__ i. This shows that both views have been configured on the page:

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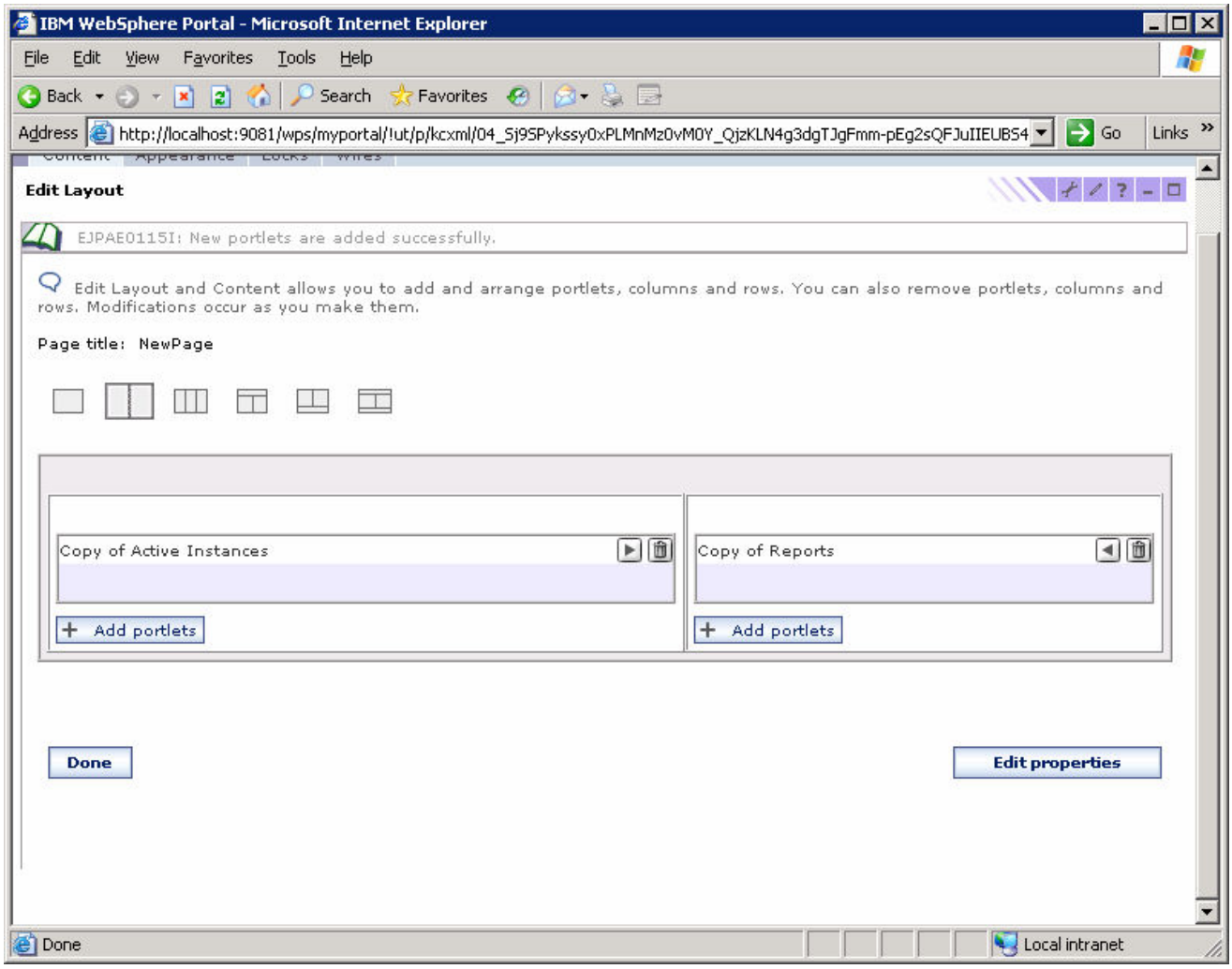

__ j. Click **Done**.

__ k. Click **My Portal** at the top of the page. This window opens and you see that there is now a tab for **NewPage**.

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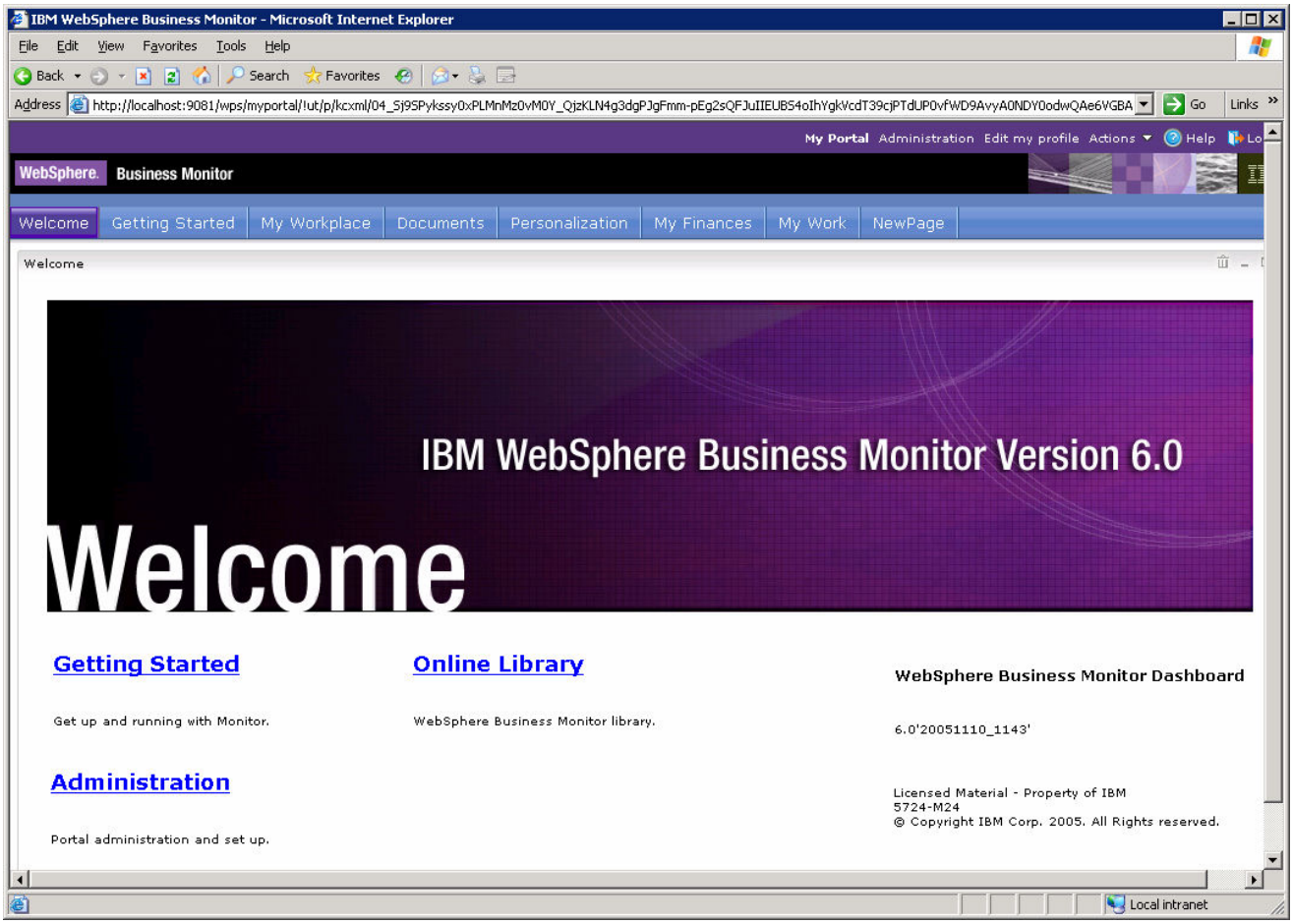

____ 3. Configure the two views on our new page.

__ a. Click on the tab for **NewPage**. This window shows the two views, but they need to be configured:

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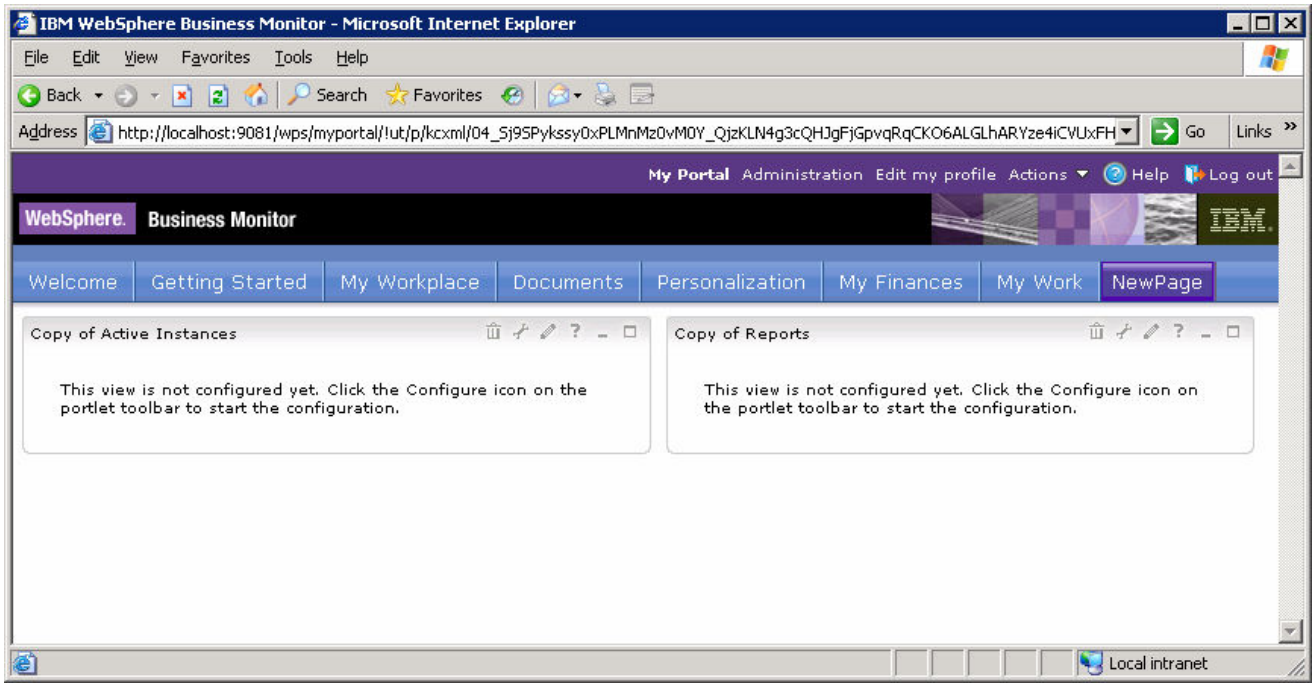

__ b. Click on the **Configure** icon for the **Copy of Active Instances** view.

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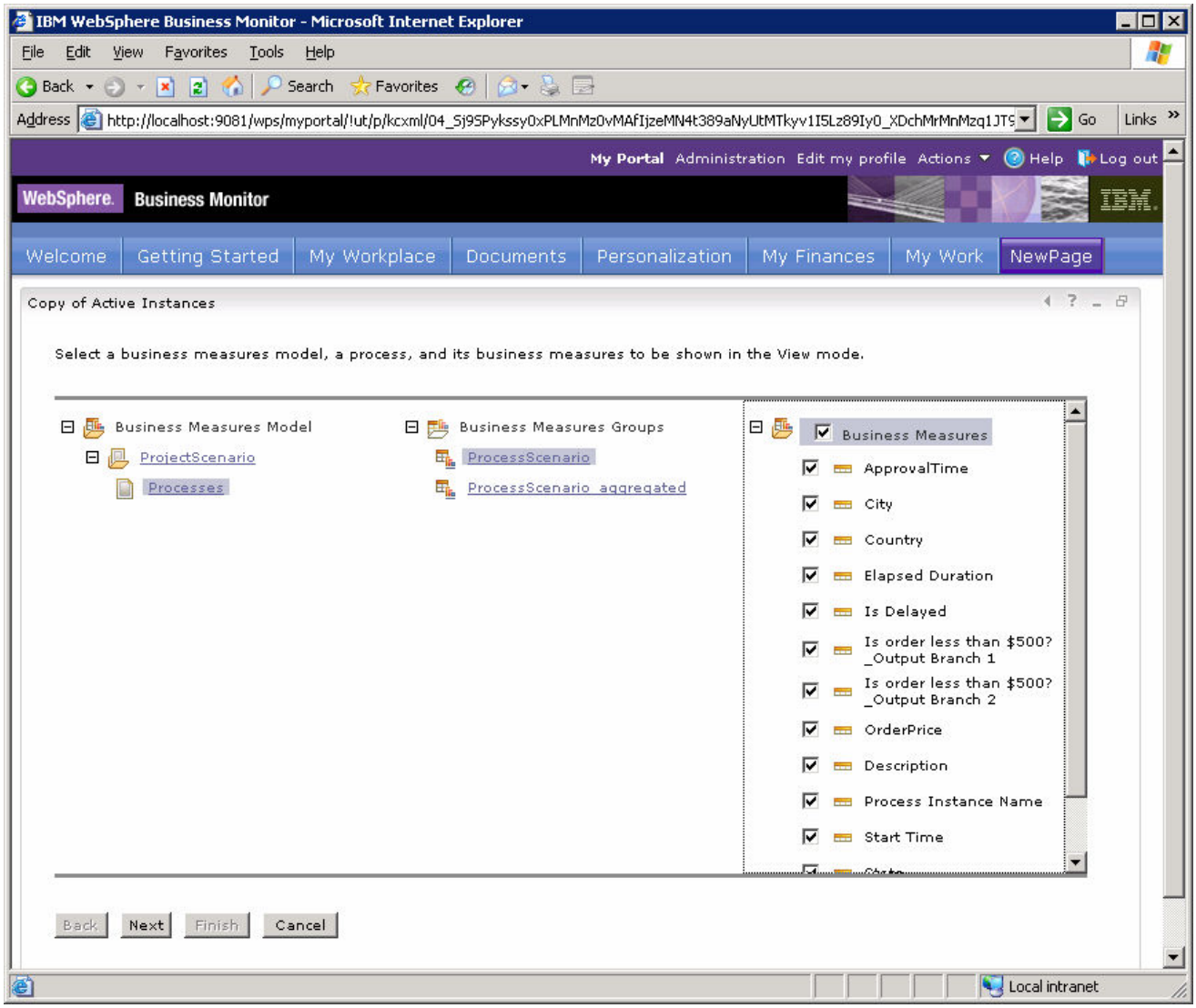

__ c. Click **Business Measures Model > ProjectScenario > Processes**.

__ d. Click **Business Measures Groups > ProcessScenario**.

__ e. Click the checkbox next to **Business Measures** to select all of the measures.

__ f. Click **Next, Next, Next, Finish**.

__ g. Here is the window showing one active process instance in the view:

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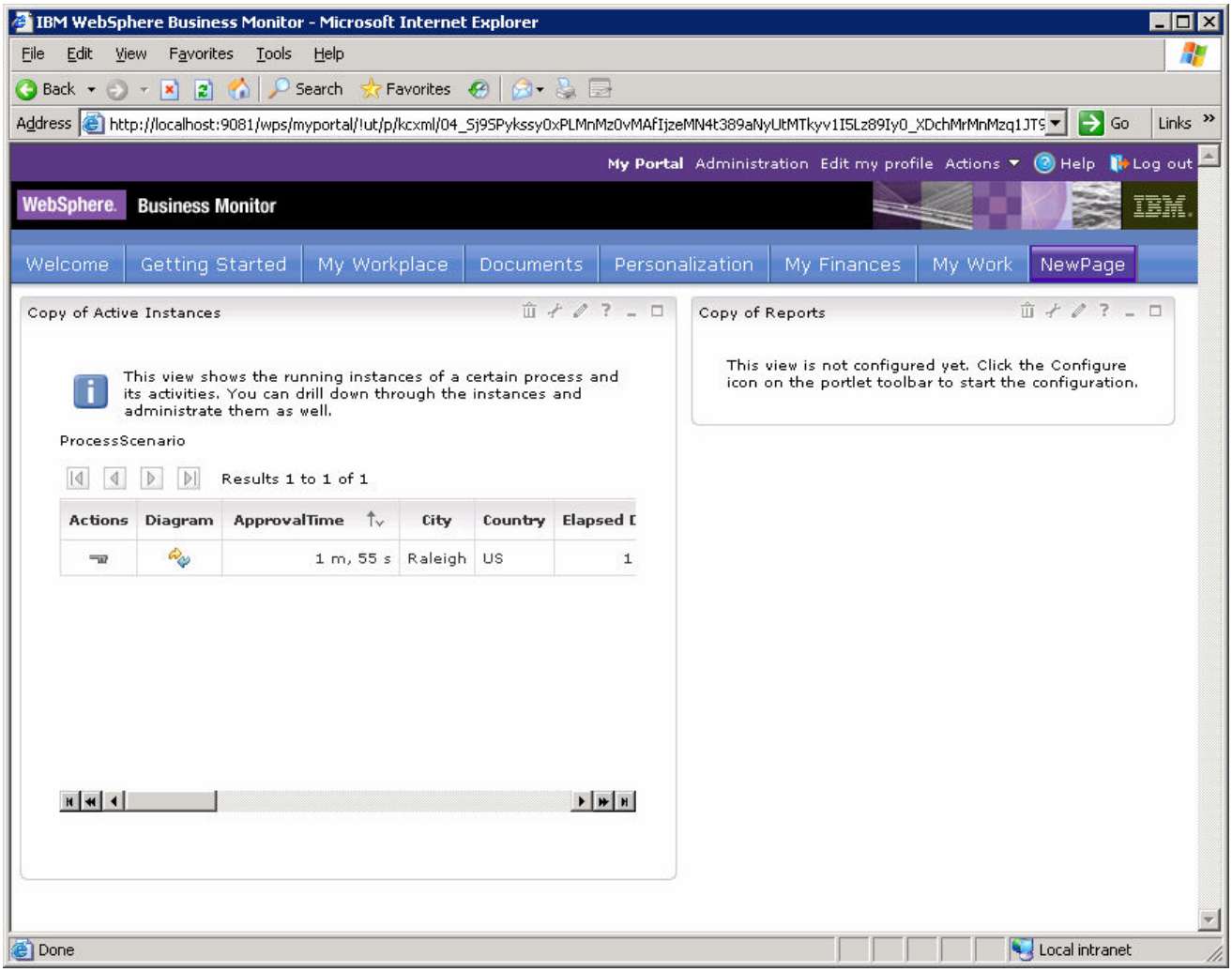

Note: You will only see instances in here if you ran an order process with a value of over $500 and then you did not complete the approval task. This results in an active instance.

__ h. Click the **Configure** icon on the **Copy of Reports** view.

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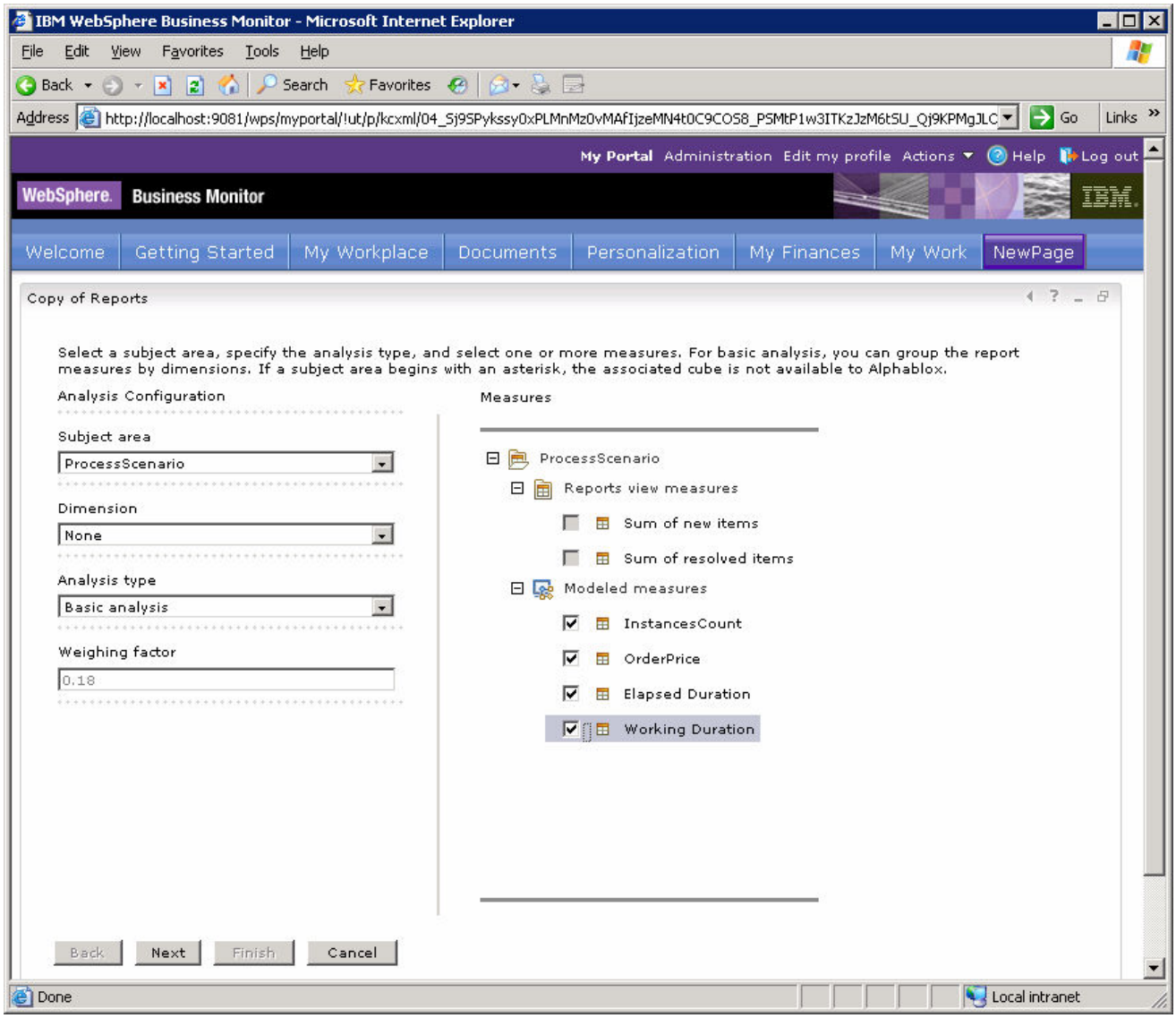

__ i. Click Subject area and select **ProcessScenario** on the left side of the window.

__ j. Click all of the **Modeled measures** on the right side of the window.

__ k. Click **Next.**

__ l. Click **Finish**.

__ m. This windows shows both views configured and showing process data:

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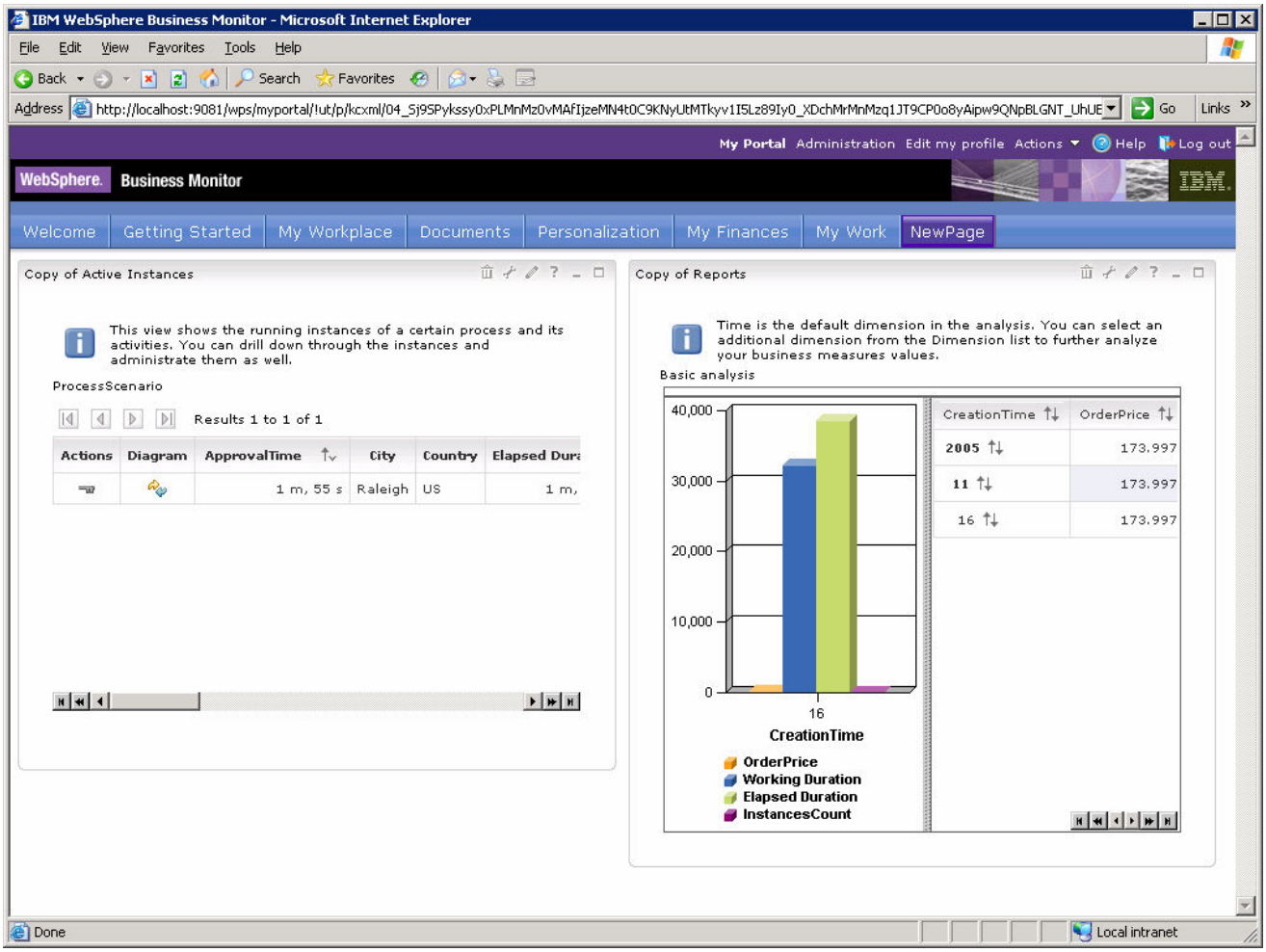

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Part 7: Export Actual Values from Monitor and Import into Modeler

____ 1. Make a copy of the portlet **Export Values**.

__ a. Click on **Administration** at the top of the page, and then click **Portlet Management > Portlets**.

__ b. **Browse to page 11** by clicking on the arrow icons. This page should show the portlet for Export Values.

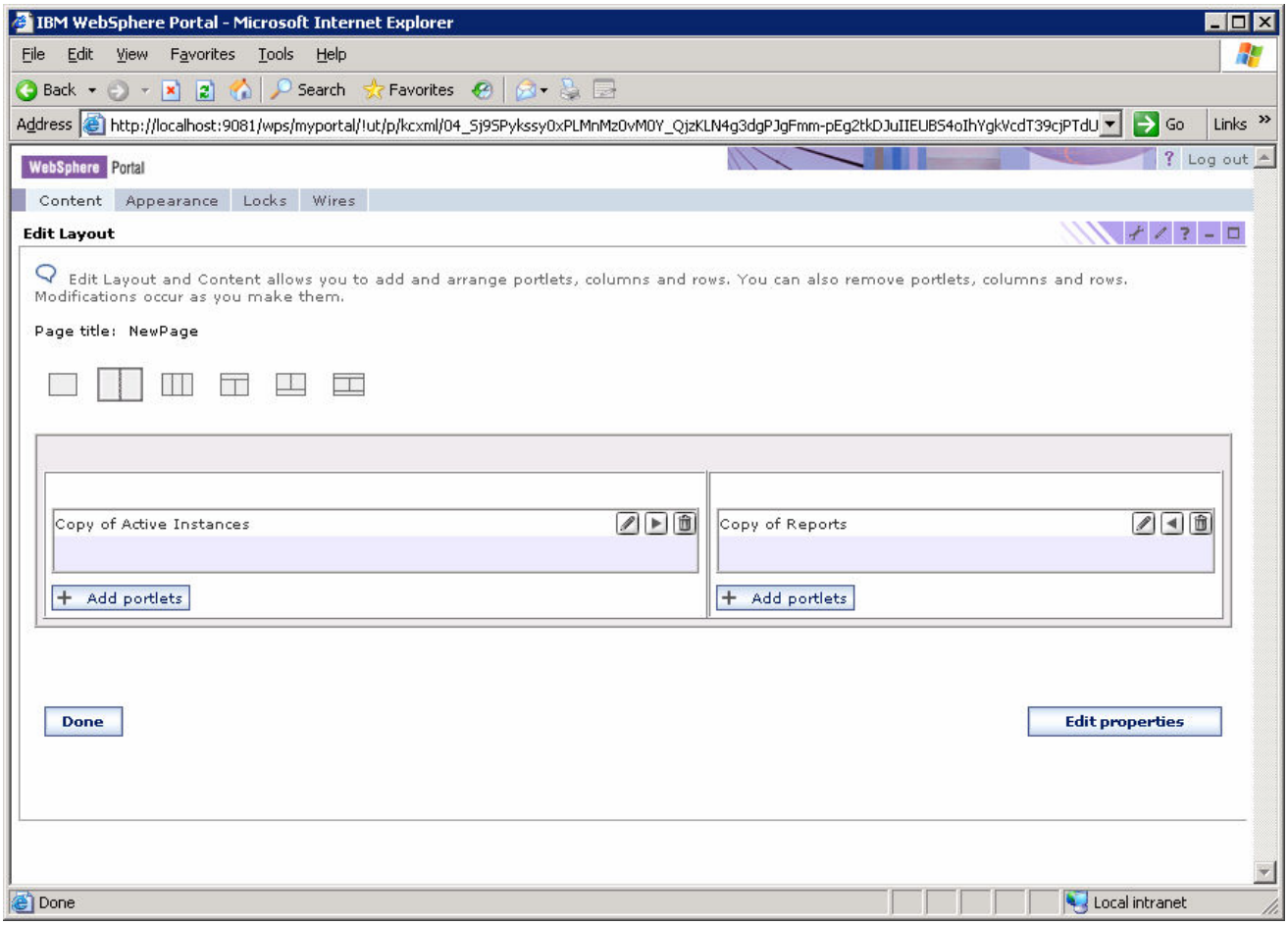
__ c. On the row containing **Export Values**, click the icon for **Copy portlet.**

__ d. Click **OK**.

____ 2. Add the view **Copy of Export Values** to our existing Portal page 'NewPage'.

__ a. Click on **Administration** at the top of the page, and then click **Portal User Interface > Manage Pages**.

__ b. You should see a list of pages. Click on the **'Edit Page Layout'** icon for NewPage. You will find it to the right side of the row for NewPage: . This will open the editor for this page.



__ c. Click the button **'+ Add portlets'** on the *left* side of the screen.

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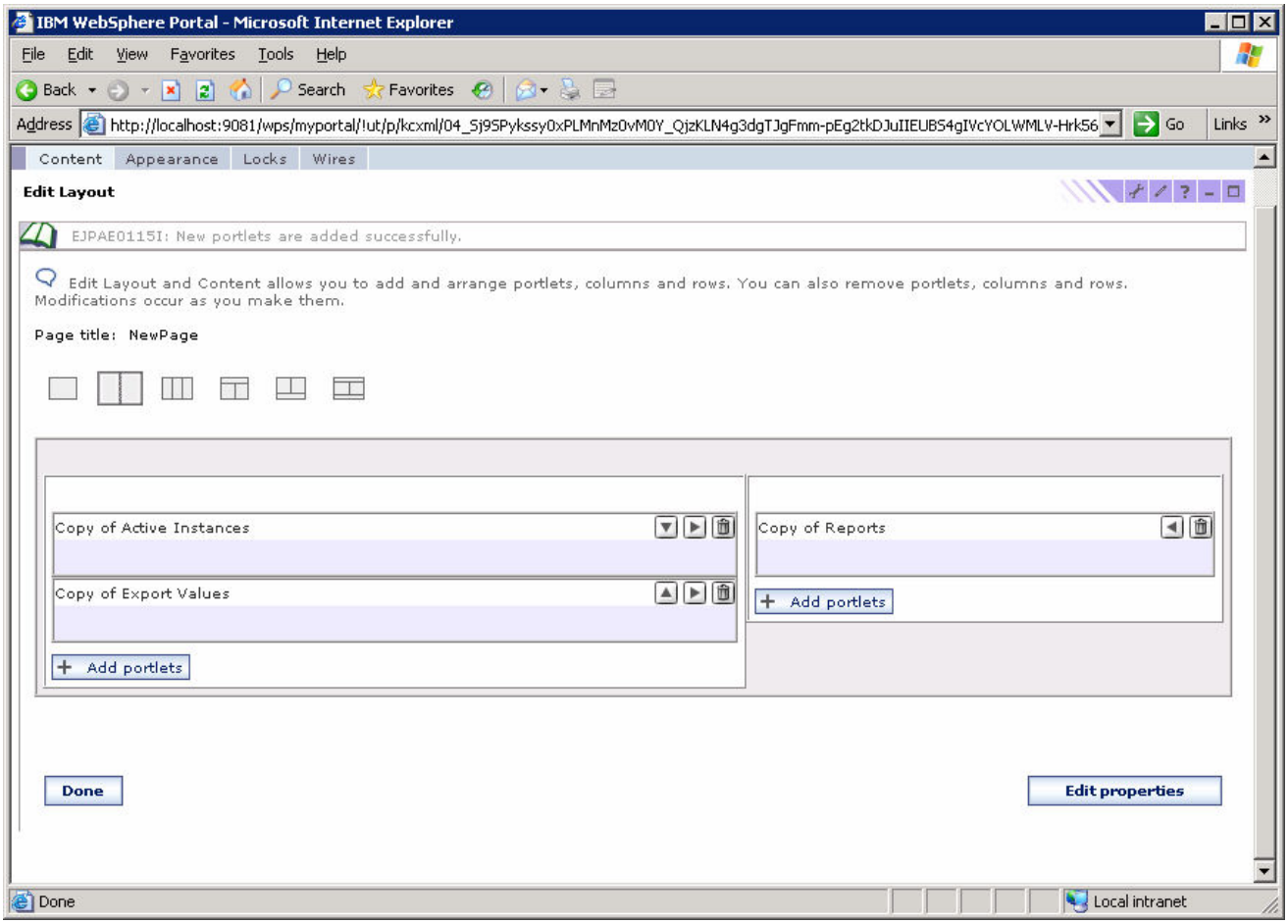
__ d. Navigate to page 12, select **Copy of Export Values**, and then click **OK**.

__ e. Now, you should see the **Copy of Export Values** view has been added to the page:



__ f. Click **Done**.

____ 3. Export Actual Values to a file.

__ a. Click on '**My Portal**' at the top of the window.

__ b. Click on the tab '**New Page**' and you will see the new view **Copy of Export Values**.

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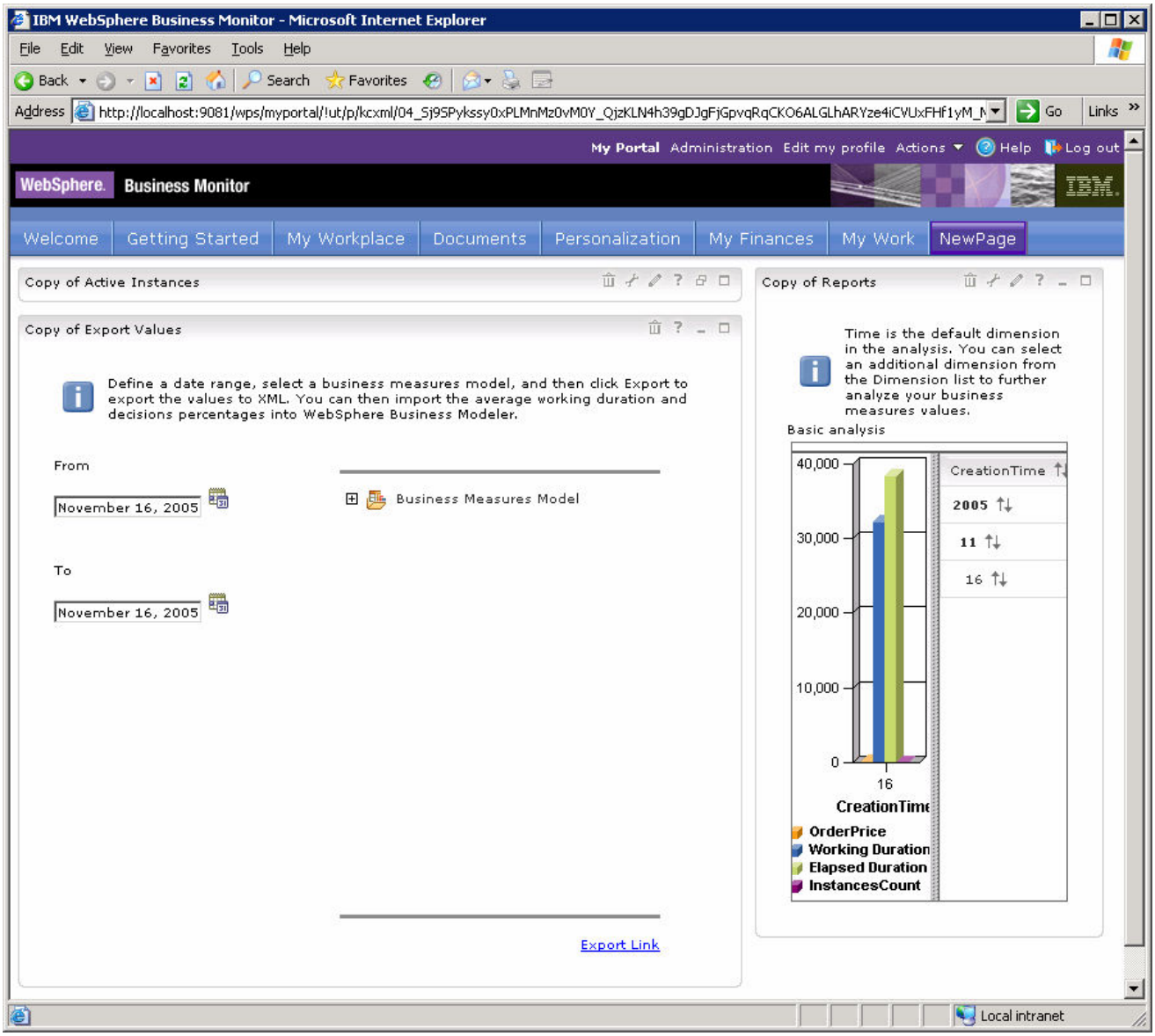

__ c. Set the dates for ‘From’ and ‘To’ to valid dates for your process instances.

__ d. Expand **Business Measures Model**, then **ProcessScenario** and select **Processes**.

__ e. Click **Export Link**, you should see a dialog for **File Download**. Click **Save** and it will store the file on your disk as ‘exportedFile.xml’.

____ 4. Import the Actual Values to Modeler.

__ a. Start WebSphere Business Modeler pointing to workspace C:\ProjectScenario\ModelerWs.

__ b. If it is open, close the editor for the process ProcessScenario.

__ c. Right click on **ProjectScenario** in the project tree, and then click **Import**.

__ d. Select import type ‘Monitoring result (.xml)’ then click **Next**.

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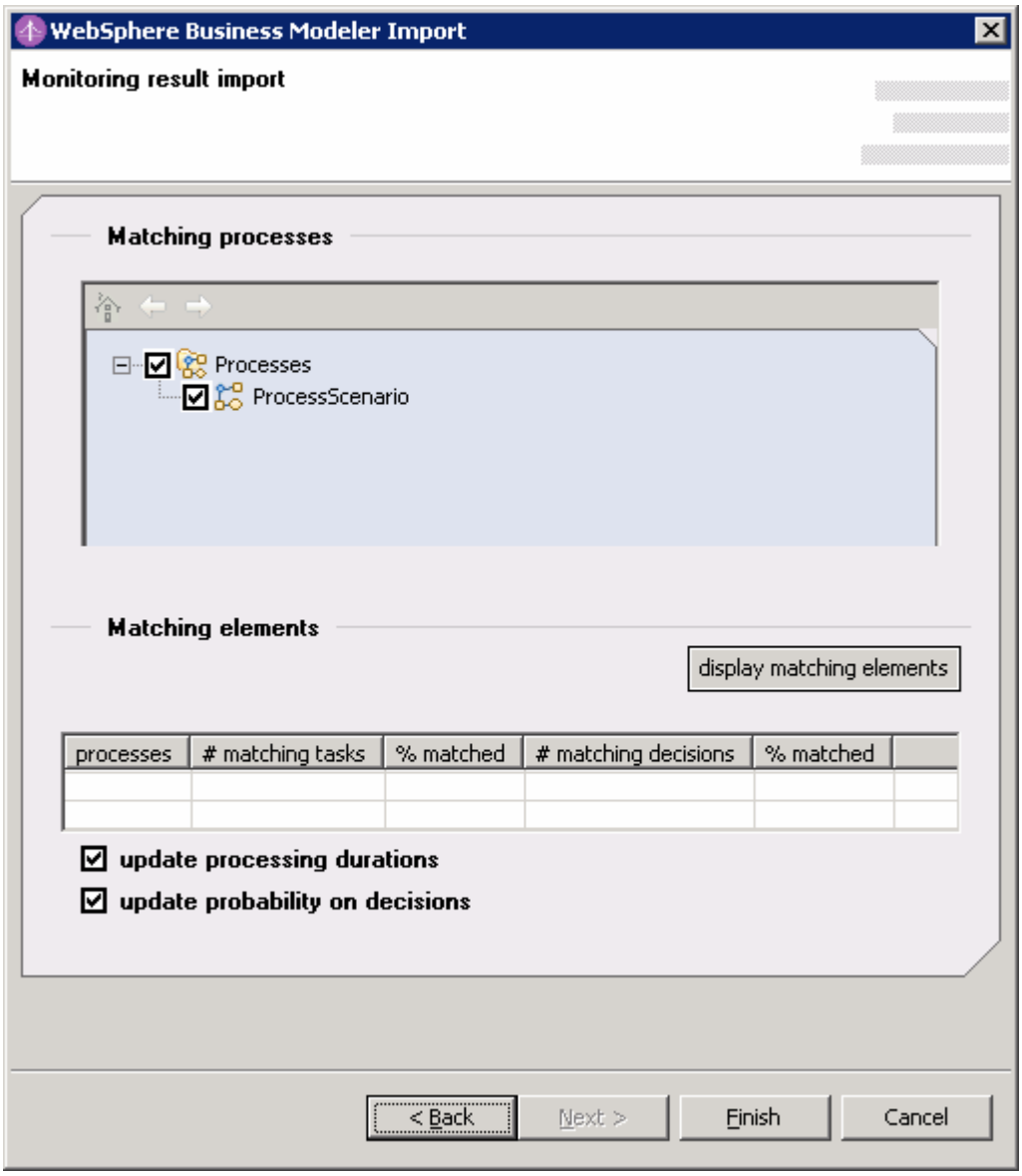
__ e. Browse to the directory containing 'exportedFile.xml', then select the file in the list then click **Next**. You should see this window:



__ f. If you would like to see a list of matching elements, click 'display matching elements'.

__ g. Click **Finish**.

__ h. After the import completes, you should see a dialog box indicating that it finished successfully; click **OK**.

__ i. Double click on **ProcessScenario > Processes > ProcessScenario** in the Project Tree to open the editor for the process and then click the tab **Diagram**.

__ j. In the process diagram, you will see that the decision percentages have been updated with actual values on the decision 'Is order less than $500?'. Originally they were set to 50% each.

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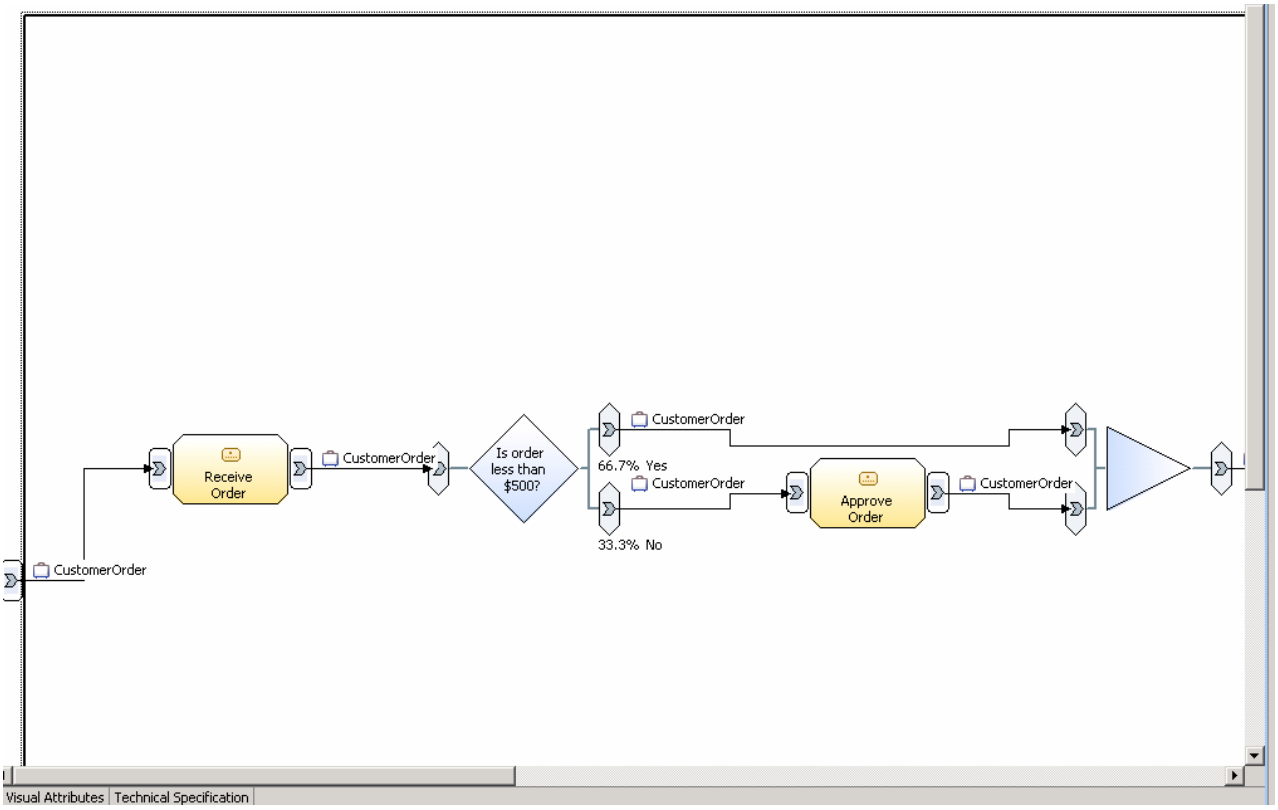
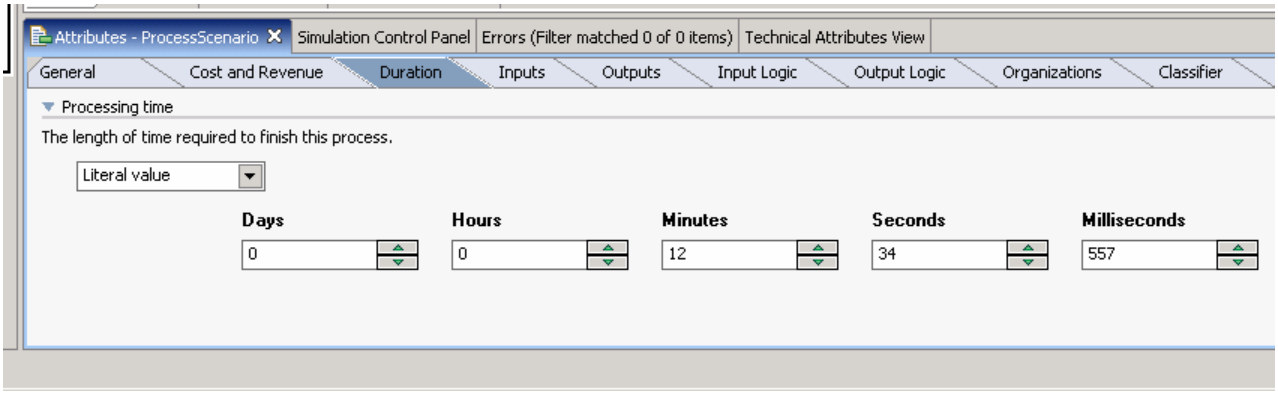


__ k. Click on the white background in the process diagram, under the tab '**Attributes – ProcessScenario**', click on sub-tab **Duration**. Here you see that the estimated duration of the process has been updated with actual values.



__ l. Also, you can click on any of the three tasks, and then under the tab '**Attributes – <taskName>**', click on sub-tab **Duration**. Here you see that the estimated duration of the task has been updated with actual values.

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What you did in this exercise

In the lab, you imported a model into WebSphere Business Modeler, created business measures and exported it to Monitor and WebSphere Process Server.

Then you imported the process model into WebSphere Integration Developer and implemented the process model. Then you deployed the process to WebSphere Process Server.

You ran schema generation, created Monitor database and replication manager artifacts. You started the replication manager daemons.

You imported the cubes to Cube Views and Alphablox.

You configured Dashboards and viewed process data in two different types of views.

Finally, you exported actual values from WebSphere Business Monitor and imported them into WebSphere Business Modeler.

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