WebSphere® Monitor

Version 6.0.2

Generating a Monitor Model to monitor data issued from an adapter

Table of Contents

What this sample provides 8
Software requirements 9
Introduction 10
Part 1: Creating a module containing the JDBC adapter and mediation flow 12
Part 2: Generating a monitor model from SCA and Mediation 49
Part 3: Deploying the Adapter and Mediation Application 75
Part 4: Deploying the monitor model 94
Part 5: Processing events to exercise the model 120
Part 6: Creating a dashboard 122
What you accomplished in this exercise 140
Appendix A. Import the J2EE application solution into WebSphere Integration Developer 141
Appendix B. Workaround for Step 5: Manage the DB2 Alphablox® cube 142

Table of Figures

Figure 1. Business-level diagram of the MonitorAdapter module 10
Figure 2. JDBCInboundInterface and MediationFilter 10
Figure 3. Filter determines gold customer 10
Figure 4. Add metrics to monitor the data 11
Figure 5. Business Integration – IBM WebSphere Integration Developer 12
Figure 6. Preferences 13
Figure 7. New ► Mediation Module 14
Figure 8. New Mediation Module 15
Figure 9. The Monitor Adapter Module 16
Figure 10. Import and select RAR file 17
Figure 11. Finish import and select RAR file 18
Figure 12. Switch to the J2EE perspective 18
Figure 13. See the CWYBC_JDBC project 19
Figure 14. Copy db2jcc.jar and db2jcc_license_cu.jar files 20
Figure 15. Right-click CWYBC_JDBC and click Refresh 21
Figure 16. Click the Java Build Path directory and switch to the Libraries tab 22
Figure 17. Select db2jcc.jar and db2jcc_license_cu.jar 23
Figure 18. New► Enterprise Service Discovery 25
Figure 19. JDBC EMD Adapter selection 26
Figure 20. Configure Settings for Discovery Agent 27
Figure 21. DB2ADMIN► Tables► CUSTOMER selection 28
Figure 22. The value for Service Type is Inbound 29
Figure 23. The Generate Artifacts window 30
Figure 24. The Database Vendor field 31
Figure 25. Double-click Assembly Diagram 32
Figure 26. Rename Mediation1 to MediationFilter 33
Figure 27. Link JDBCInboundInterface to MediationFilter 34
Figure 28. Select Generate Implementation 34
Figure 29. MonitorAdapter selected as the folder 35
Figure 30. Click createDb2adminCustomer 36
Figure 31. Click in the white space to add the EventEmitter primitive into the flow 37
Figure 32. Click EventEmitter1, then access the Properties view 38
Figure 33. Adding the Message Filter primitive to the flow 39
Figure 34. Add Output Terminal selection 40
Figure 35. Change the new terminal name to Gold. 41
Figure 36. Click Details and then click Add 42
Figure 37. Click Custom XPath 43
Figure 38. Click OK, then click Finish 44
Figure 39. Root is set as /body 45
Figure 40. The Gold customer will pass through the filter 46

Figure 41. Click MediationFilter and in the Properties view select Details 47
Figure 42. In response, click OK 48
Figure 43. Select MonitorAdapterApp as EAR project 48
Figure 44. Select Monitor Tools ► Generate Event Definitions 49
Figure 45. Select Monitor Tools ► Generate Event Definitions 50
Figure 46. Select Monitor Tools ► Generate Monitor Model 51
Figure 47. Type the name of the new business monitoring project 52
Figure 48. Type the monitor model name 52
Figure 49. Switch to switch to the Business Monitoring perspective 53
Figure 50. Generate a seed monitor model 53
Figure 51. Select New ► Inbound Event 54
Figure 52. Type EM BeforeFilter Data in the Name field 55
Figure 53. Select MonitorAdapter_MediationFilter_Req_Before 55
Figure 54. The inbound event will now represent the Common Base Event 56
Figure 55. Set the Correlation Expression 57
Figure 56. Setting the Correlation Expression 58
Figure 57. Select New ► Trigger 59
Figure 58. Type JDBCInbound Entry Trigger 60
Figure 59. On the right panel, click Add 60
Figure 60. Select the Terminate monitoring context check box 61
Figure 61. Select New ► Metric 62
Figure 62. For Name, type FName Metric 62
Figure 63. Select JDBCInbound Entry Trigger 63
Figure 64. Press Ctrl+Spacebar to use the content assist function 64
Figure 65. The FName Metric will be assigned the fname value 65
Figure 66. Add Is Gold Customer Metric 66
Figure 67. Switch to the Data Mart Model 67
Figure 68. Click Add Dimension… 68
Figure 69. CCode Metric selection 68
Figure 70. Select Count from the Aggregation Function menu 69
Figure 71. Generate Monitor EAR selection 70
Figure 72. Accept the default setting and click Finish 71
Figure 73. Right-click the EJB project MonitorAdapterMMEJB 72
Figure 74. Select Export… ► EAR file 73
Figure 75. Set the destination file name 74
Figure 76. Click Security ► Global Security 75
Figure 77. Authentication ► JAAS Configuration ► J2C Authentication Data 76
Figure 78. General Properties 76
Figure 79. Click Save when you receive this message 77
Figure 80. Click Save when you receive this message 77
Figure 81. Verify that the list includes the new entry 78
Figure 82. Click Applications ► Enterprise Applications 79
Figure 83. Browse to the MonitorAdapterApp.ear file 80
Figure 84. The subsequent screen appears 81
Figure 85. Click Step 9 Summary to install the new application 82
Figure 86. Click Finish 83

Figure 87. Save to Master Configuration 84
Figure 88. Click Save 85
Figure 89. See MonitorAdapterApp application 86
Figure 90. Select the MonitorAdapterApp check box 87
Figure 91. Select Applications ► Enterprise Applications 88
Figure 92. Click databaseURL 89
Figure 93. Click Integration Application ► Common Base Event Browser 90
Figure 94. Click All Events 91
Figure 95. Click Get Events 92
Figure 96. Click All Events, again 93
Figure 97. Select Applications ► Monitor Models 94
Figure 98. Browse to MonitorAdapterMM.ear 95
Figure 99. Click Next on this screen 96
Figure 100. Click Continue on this screen 97
Figure 101. Click Step 11 Summary 98
Figure 102. Click Finish 99
Figure 103. Click Save to Master Configuration 100
Figure 104. Click Save 100
Figure 105. Click the timestamp value 101
Figure 106. Click Setup Wizard 102
Figure 107. Enter the name of the output directory 103
Figure 108. Click Next when this screen appears 104
Figure 109. Run Step 2 and Step 3 105
Figure 110. Browse to C:\MonitorAdapter\schemagen\<timestamp> 106
Figure 111. Extract the DS_DMS_setup.zip file 107
Figure 112. Status of the scripts as they are run 108
Figure 113. Status of the scripts as they are run 109
Figure 114. Click Confirm when this window appears 110
Figure 115. Run Step 4 111
Figure 116. The DB2 command window 111
Figure 117. Sample error when cubes are being imported 112
Figure 118. Click Confirm in the administrative console 113
Figure 119. Click Step 5: Manage Alphablox Cube 114
Figure 120. Search for RMI Connector 115
Figure 121. Enter your RMI port value 115
Figure 122. Error message indicating a connection problem 116
Figure 123. Run Step 6 of the model life cycle 117
Figure 124. Run Step 7 of the model life cycle 118
Figure 125. The Startable column for the model with red indicator 119
Figure 126. The Startable column for the model with green indicator 119
Figure 127. CTX_MONITORADAPTERMM_MC table In the MONITOR database 120
Figure 128. FCT_MONITORADAPTERMM_MC table In the MONITOR database 121
Figure 129. Log in, then enter your Portal administrative user ID and password 122
Figure 130. Click Portlet Management ► Portlets 123
Figure 131. Enter MonitorAdapter_Dimensional as the new name 124
Figure 132. Enter MonitorAdapter_Instances as the new name 125

Figure 133. Click Portal User Interface ► Manage Pages 126
Figure 134. Click the leftmost radio button to select one-column layout 127
Figure 135. See the new page in the list 128
Figure 136. Click the Edit Page Layout icon 129
Figure 137. Navigate to the last page of the list to select both porlets 130
Figure 138.. Confirm that the views have been added 131
Figure 139. Confirm that there is now a tab 132
Figure 140. The window should look like this example 133
Figure 141. Select Member Filter.... 134
Figure 142. Select FName Count Measure as in this example 135
Figure 143. Select Drill Down 136
Figure 144. The window should look like this example 137
Figure 145. Click Next, then Next, then Next again, then Finish 138
Figure 146. The window should look like this example 139
Figure 147. Import the project interchange file 141
Figure 148. Confirm that the cube model is listed 142
Figure 149. Select the text in the Name field 143
Figure 150. Select Allow Blocked Content to continue 144
Figure 151. The window should look like this example 145
Figure 152. The window should look like this example 146
Figure 153. The window should look like this example 147
Figure 154. Confirm that it has been added 148
Figure 155. Click Runtime Management ► DB2 Alphablox Cubes 149
Figure 156. The status of the cube should be running as shown 150
Figure 157. The ModelID value in this example is MonitorAdapterMM 151
Figure 158. The versionDate value in this example is 1170240826 152
Figure 159. The window now indicates that step 5 complete 153

What this sample provides

To help you understand how to monitor data issued from an adapter, this sample provides a monitor model that is generated from a Service Component Architecture (SCA) interface operation and mediation flow, and is then completed in the Monitor Model Editor. The sample showcases both an SCA entry event and a mediation flow event-emitter's event with payload coming from a source adapter.

For this sample, an inbound interface operation and mediation flow for a Java Database Connectivity (JDBC) adapter were created in IBM® WebSphere® Integration Developer v6.0.2 and were used to generate event definitions within WebSphere Integration Developer.

A monitor model was also generated from this operation and mediation flow. This monitor model was augmented to process the generated events and to calculate metrics, and then was deployed. The module used in this sample is the MonitorAdapter module. All project interchange (PI) files are available in a .zip file called MonitorAdapter.zip.

You can import the MonitorAdapter.zip file into WebSphere Integration Developer and review the module, the generated events, and the augmented monitor model. You can then deploy the supplied Enterprise Archive (EAR) files, and test the monitor model using db2 commands.

Software requirements

You must have the following software to run this sample:

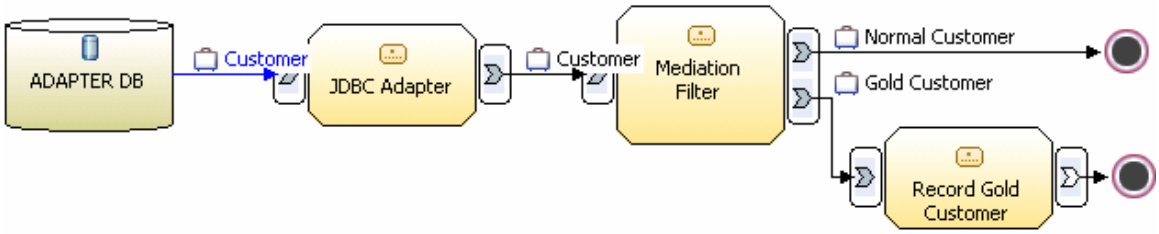
- WebSphere Integration Developer v6.0.2 GM Build and the Monitor Model Editor plug-in
- WebSphere Business Monitor v6.0.2 GM Build – Basic Installation including the Dashboard Server and Monitor Server

Note: If the WebSphere Integration Developer version is not consistent with WebSphere Business Monitor version, the Common Base Event definitions generated from WebSphere Integration Developer might not be consistent with the Common Base Events generated from WebSphere Process Server. That inconsistency will cause monitoring to fail. To avoid this failure, use the golden master (GM) build.

Introduction

This document explains the major steps required to build the MonitorAdapter module, generate the monitor model, augment the monitor model, deploy the monitor model, and show results on a dashboard. Here is a summary of the scenario used in this sample. When a new customer record is added to the adapter database, a JDBC adapter becomes aware of it and sends customer information to a mediation flow to process. The mediation flow acts as a filter: for a non-gold customer, the mediation flow does nothing; for a gold customer, the mediation flow creates a record for the customer. In the monitor model, you define metrics to monitor the data issued by the JDBC adapter and display that information on a dashboard.

Figure 1. Business-level diagram of the MonitorAdapter module

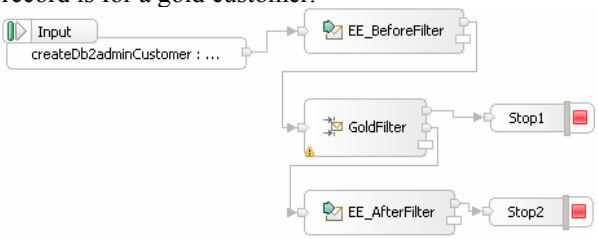


- The MonitorAdapter module has two components: JDBCInboundInterface and MediationFilter. After a customer record is added to the adapter database, the JDBC inbound interface operation is activated to invoke the mediation flow with the payload.

Figure 2. JDBCInboundInterface and MediationFilter

- In the mediation flow, a filter determines whether the record is for a gold customer.

Figure 3. Filter determines gold customer



- Based on the SCA operation and mediation flow, a monitor model is generated. In the Monitor Model Editor, you will add metrics to monitor the data from the adapter and mediation flow.

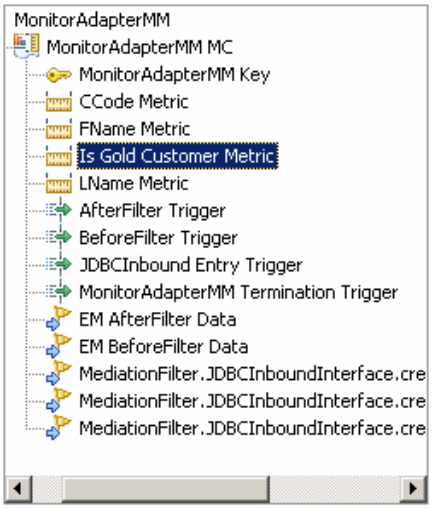


Figure 4. Add metrics to monitor the data

- To see the monitored result, use the Instances view or the Dimensional view.

Part 1: Creating a module containing the JDBC adapter and mediation flow

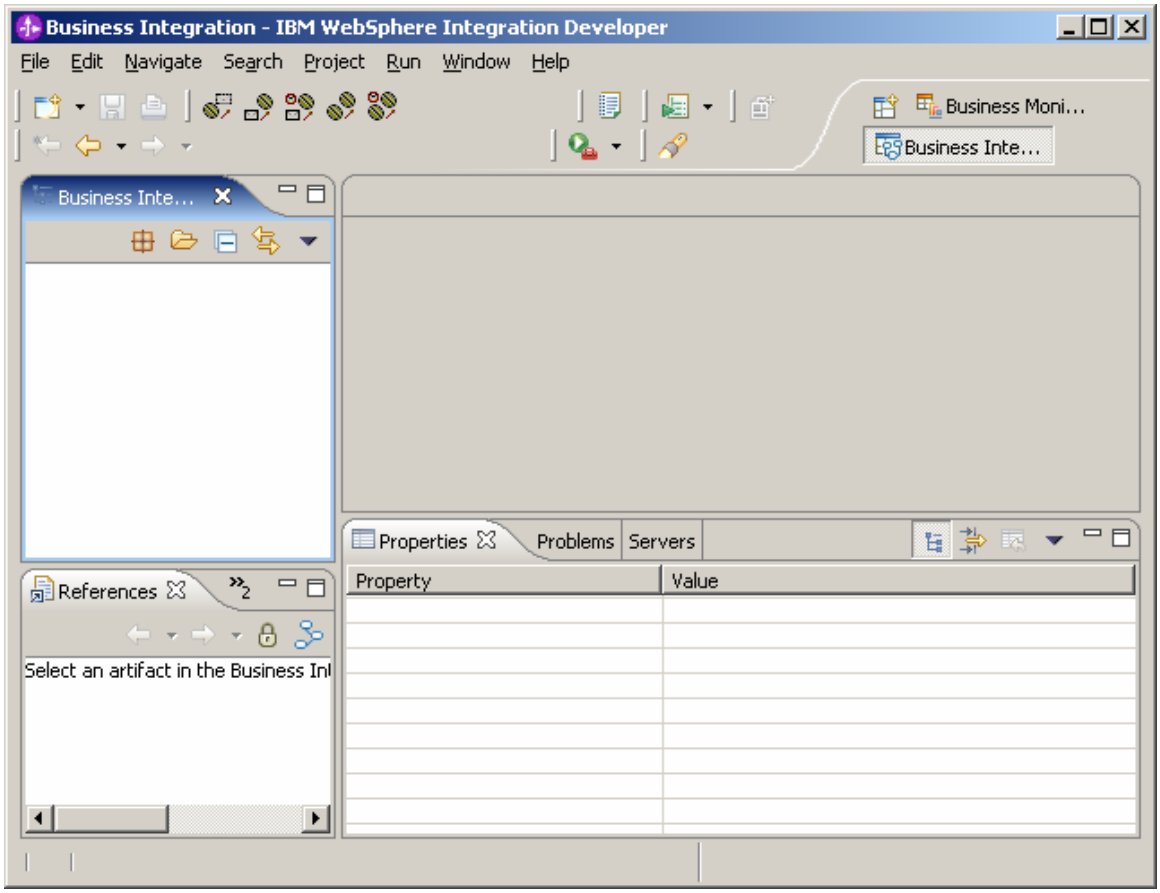
To skip the steps for creating this module, you can import the supplied project interchange file (MonitorAdapter.zip) into WebSphere Integration Developer. See Appendix A. Import the J2EE application solution into WebSphere Integration Developer on page 141, then proceed to step ____ 41 in this section.

____ 1. Start WebSphere Integration Developer and ensure that the current perspective is Business Integration.

___ a. If the perspective is not Business Integration, click **Window ►Open Perspective►Other**.

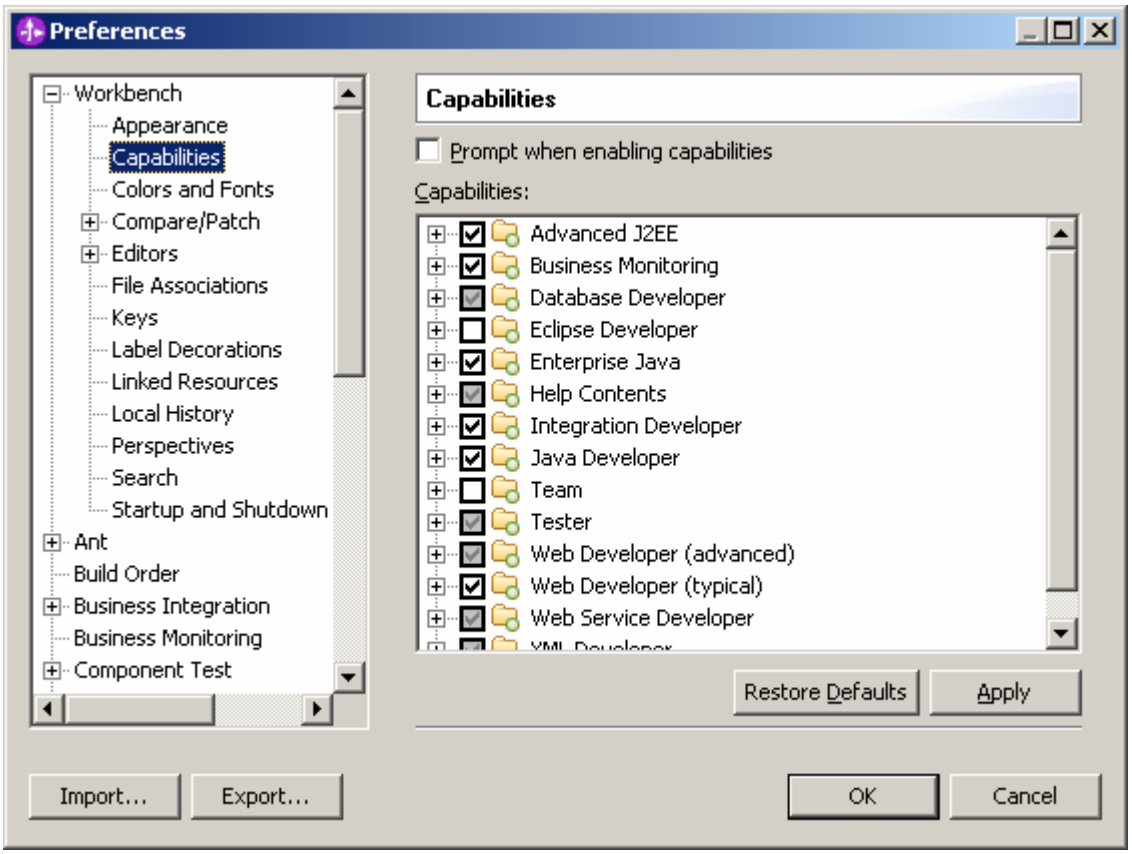
___ b. In the Select Perspective window, select the **Show all** check box, select Business Integration (default), and click **OK**.

Figure 5. Business Integration – IBM WebSphere Integration Developer



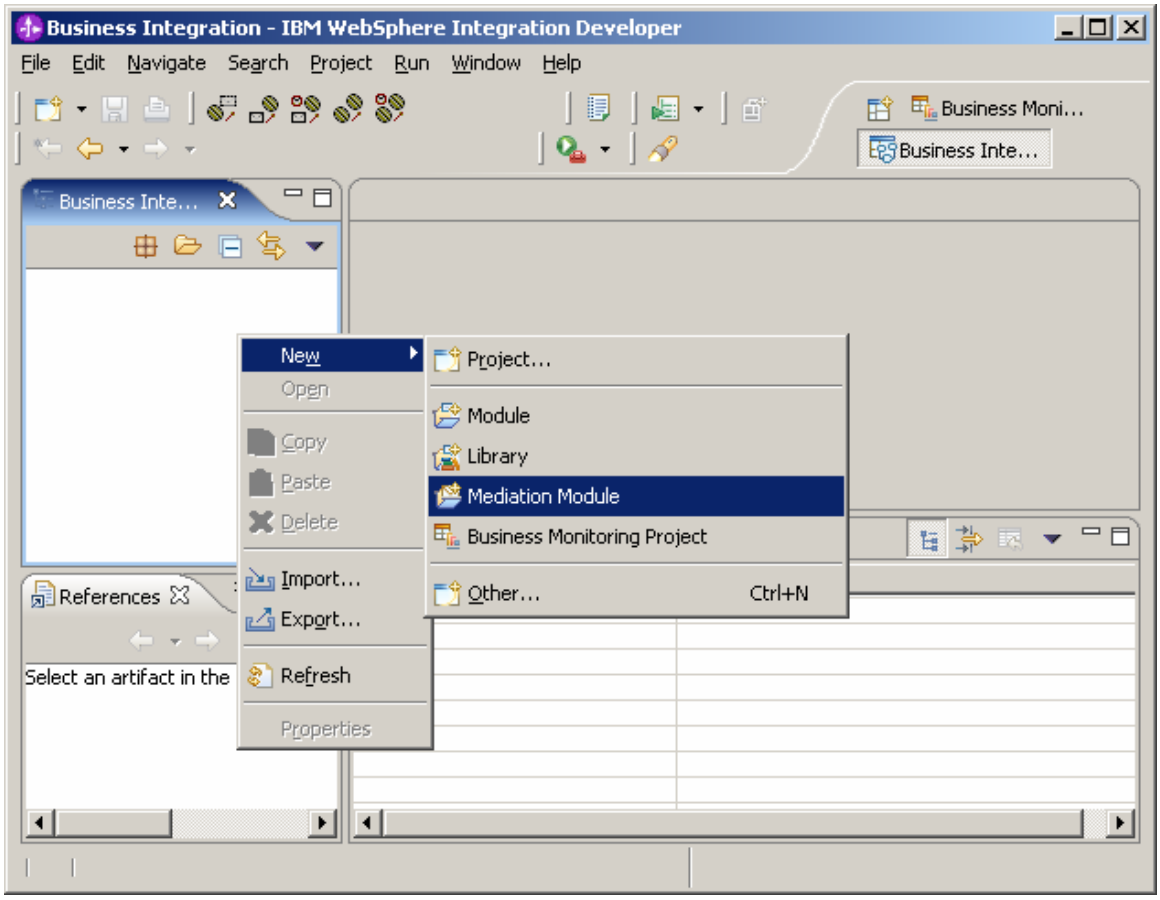
____ 2. Ensure that the **Advanced J2EE** setting is selected in the list of workbench capabilities. Click **Window ► Preferences ► Workbench**.

Figure 6. Preferences



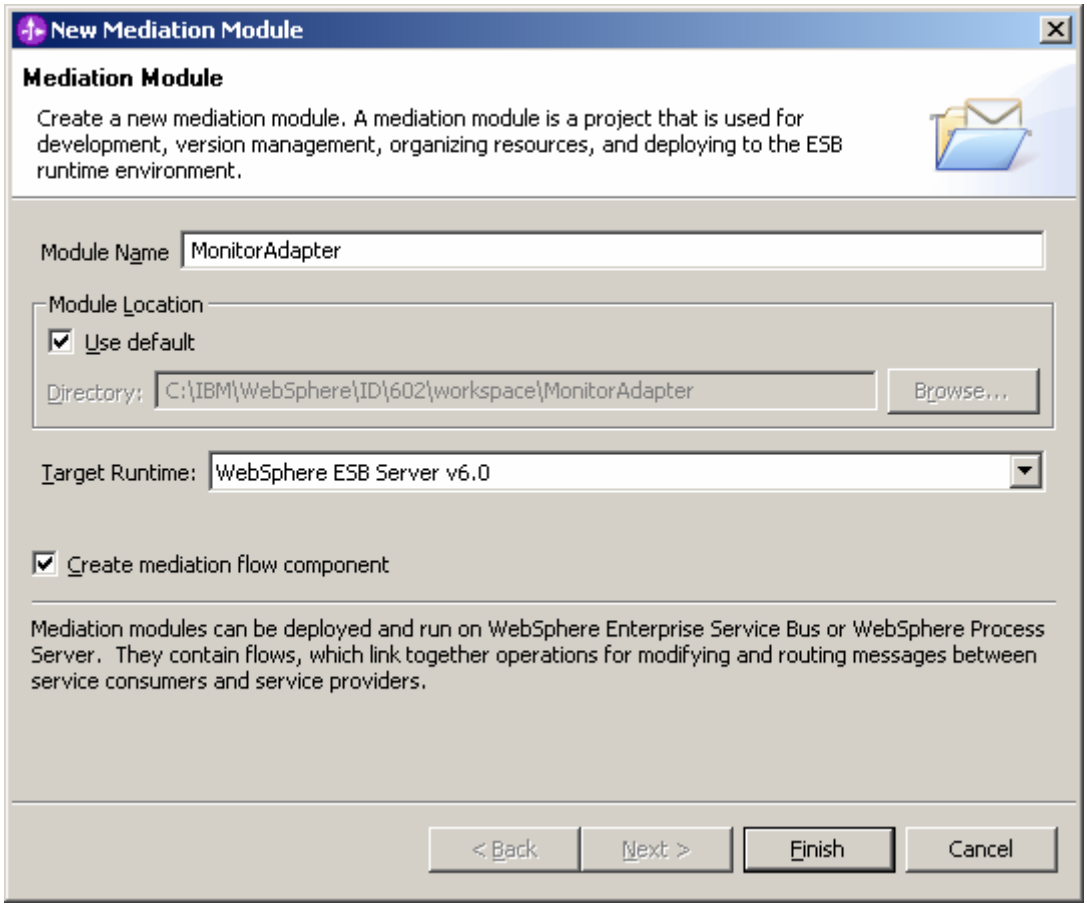
____ 3. Right-click **Business Integration**, then click **New ► Mediation Module**.

Figure 7. New ► Mediation Module



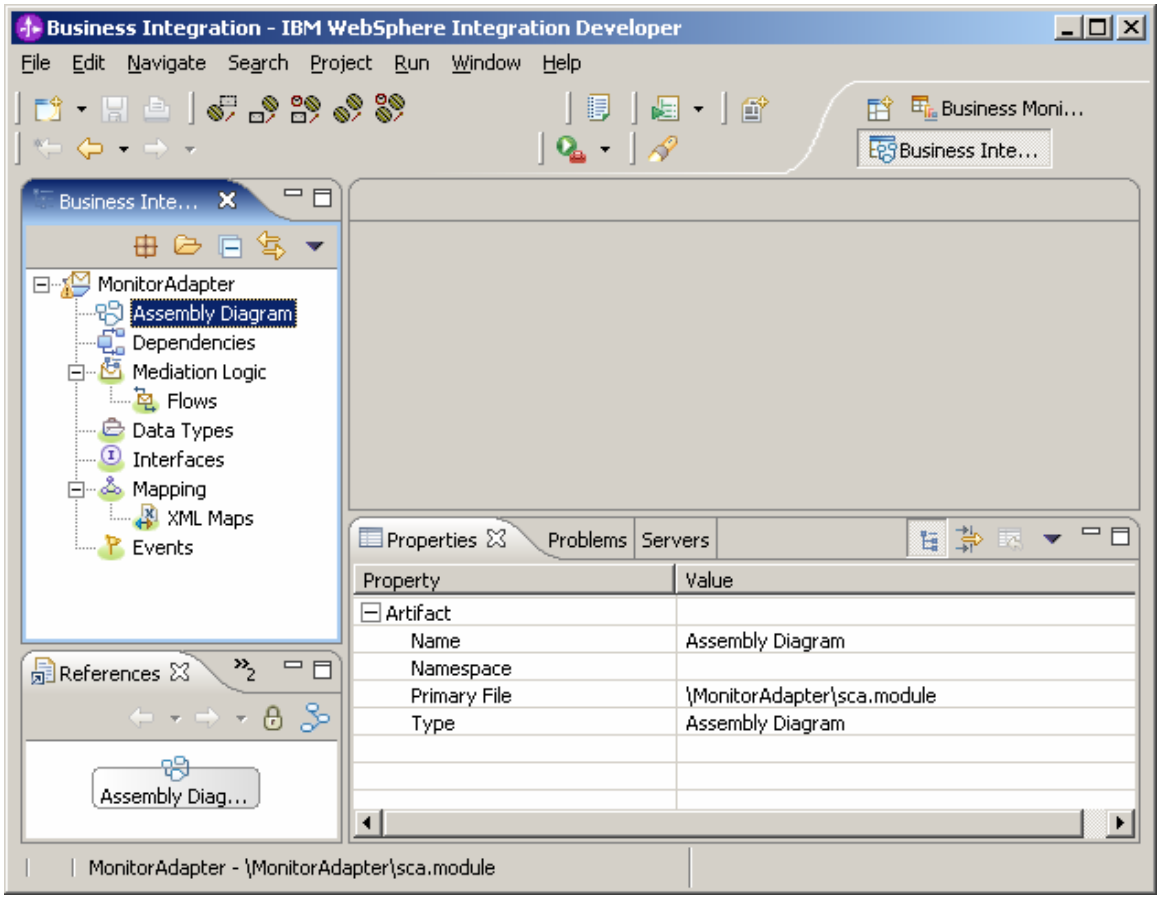
____ 4. Type **MonitorAdapter** as the name for the new mediation module.

Figure 8. New Mediation Module



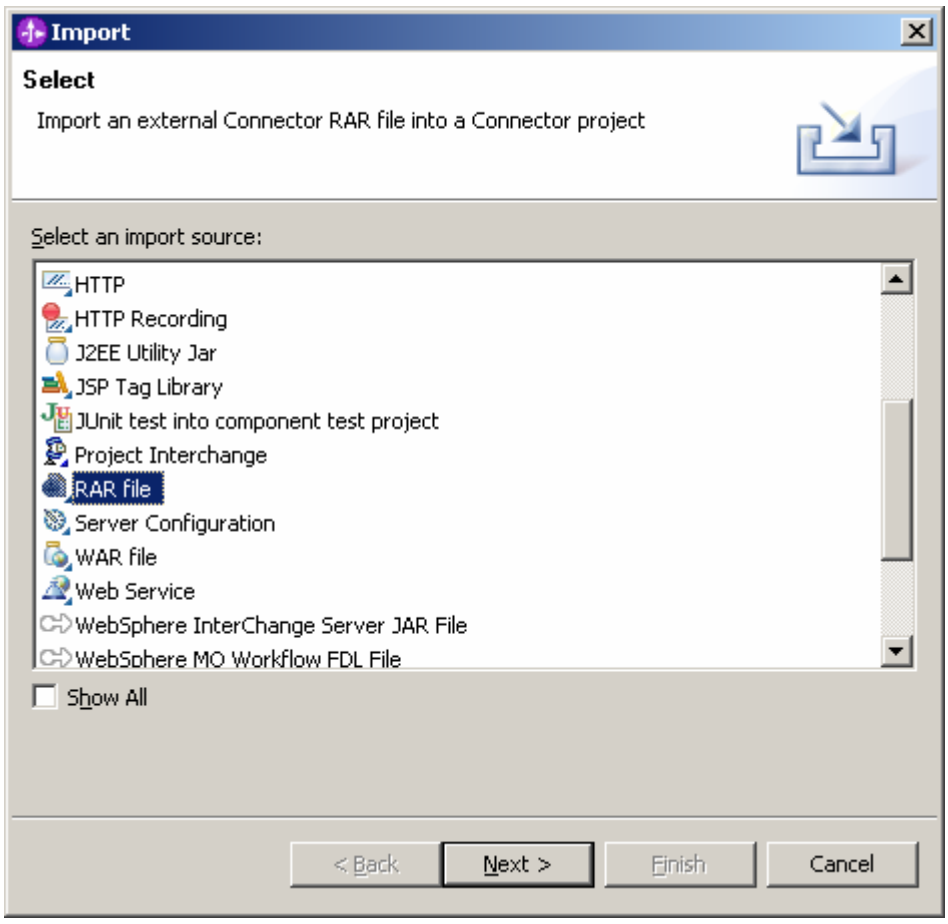
____ 5. Click **Finish** to create the new module.

Figure 9. The Monitor Adapter Module



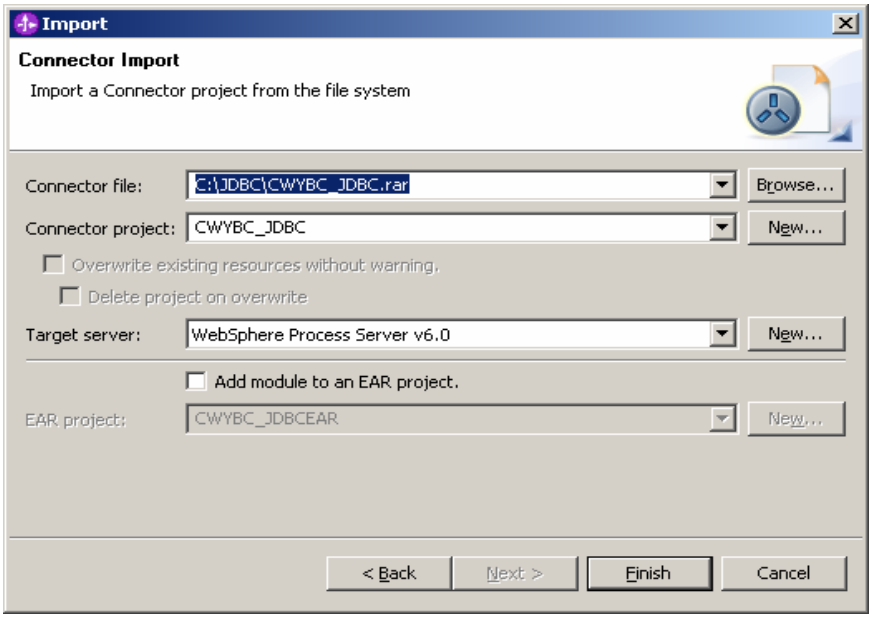
____ 6. Click **File ► Import** and select **RAR** file. Click **Next**.

Figure 10. Import and select RAR file



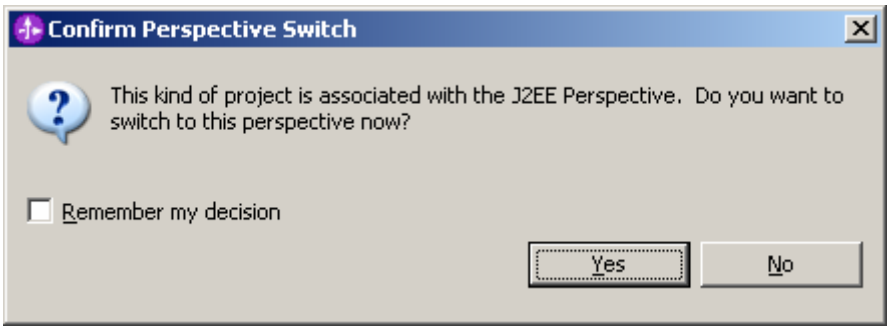
____ 7. Click **Browse** to find your installed JDBC adapter. If a JDBC adapter is not already installed, extract the supplied JDBC adapter build (JDBC.zip) and find the CWYBC_JDBC.rar in the extracted directory. Then clear the **Add module to an EAR project** check box and click **Finish**.

Figure 11. Finish import and select RAR file



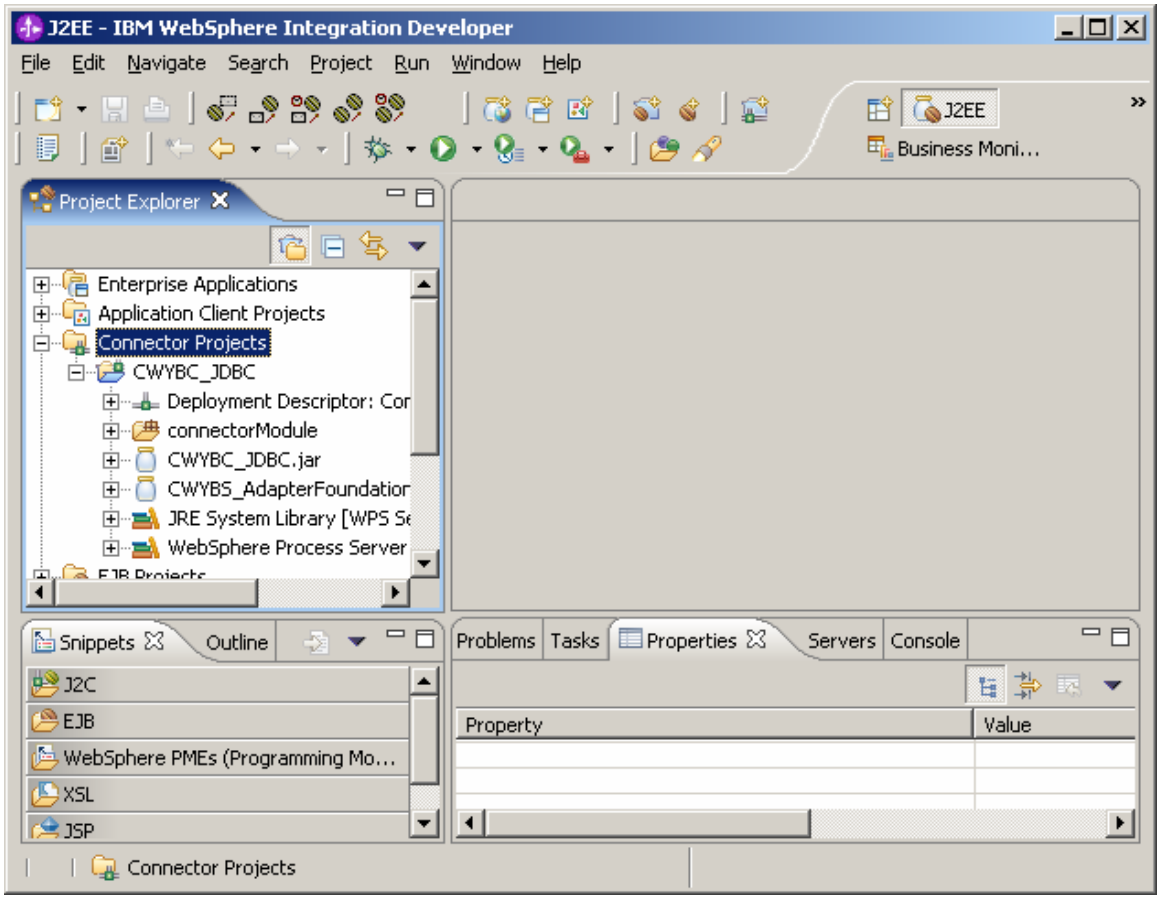
____ 8. In response to the prompt, click **Yes** to switch to the J2EE perspective.

Figure 12. Switch to the J2EE perspective



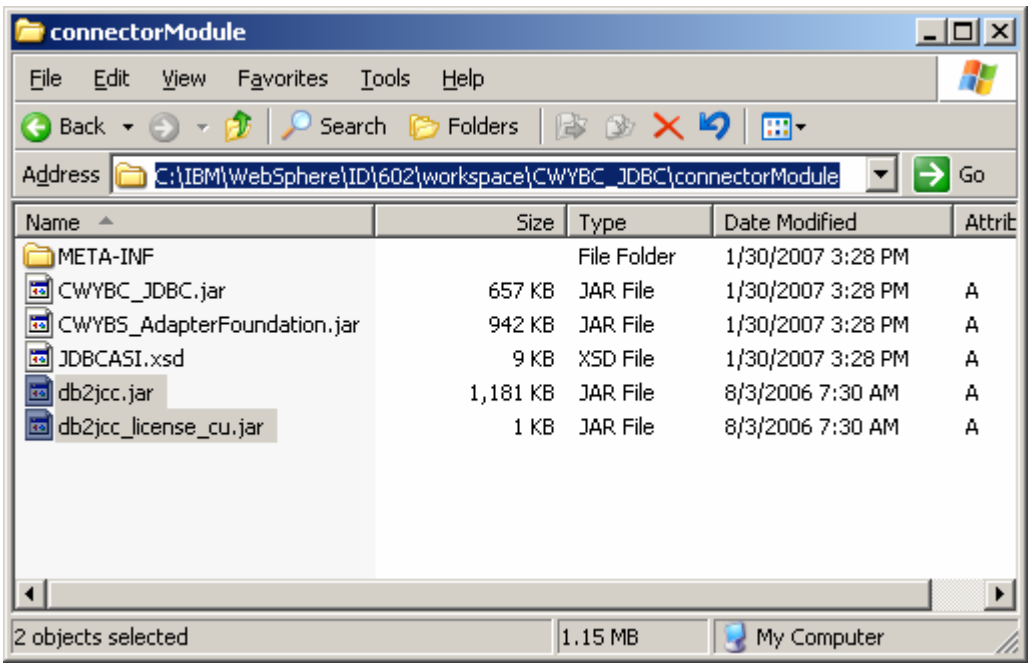
____ 9. Expand Connector Projects to see the **CWYBC_JDBC** project.

Figure 13. See the CWYBC_JDBC project



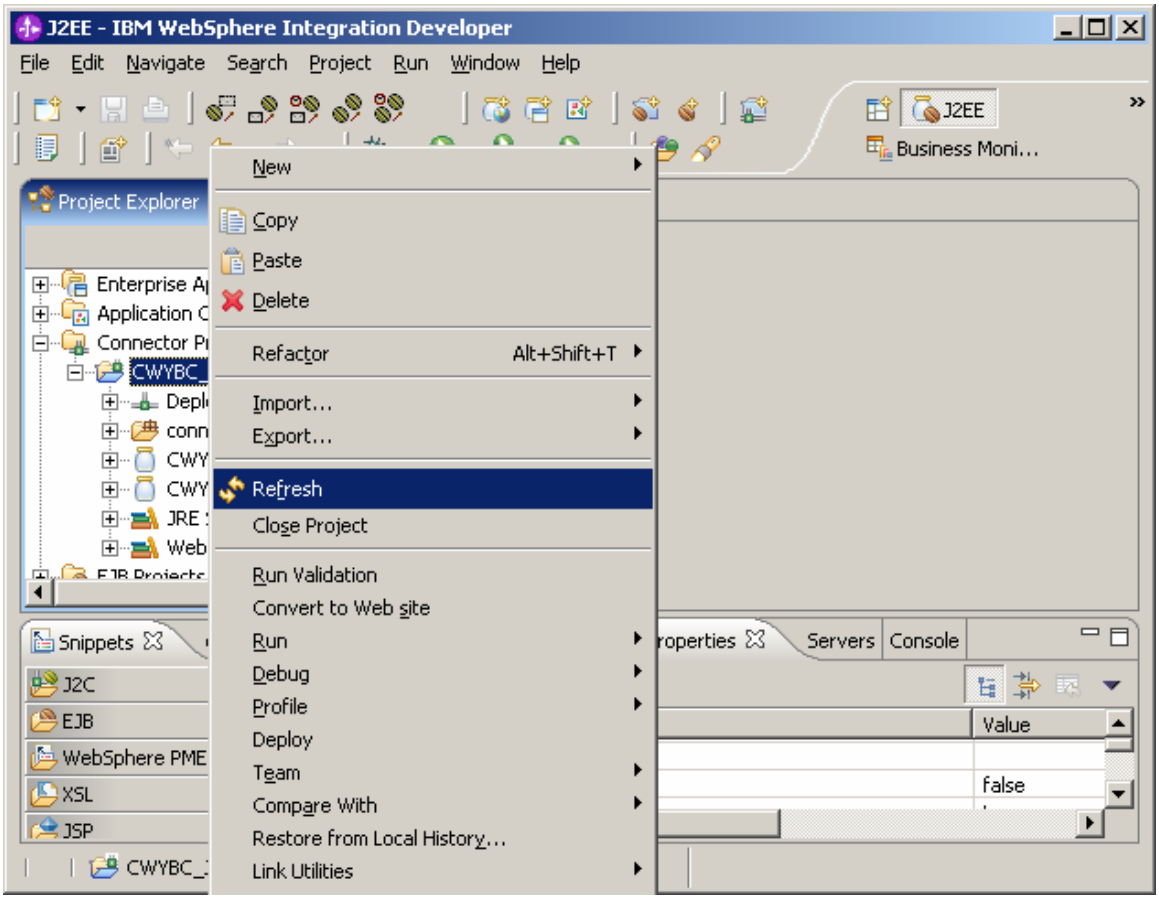
____ 10. To install the DB2 driver, copy the `db2jcc.jar` and `db2jcc_license_cu.jar` files from the `<DB2 home directory>\SQLLIB\java\` directory into the `connectorModule` directory of your CWYBC_JDBC project.

Figure 14. Copy db2jcc.jar and db2jcc_license_cu.jar files



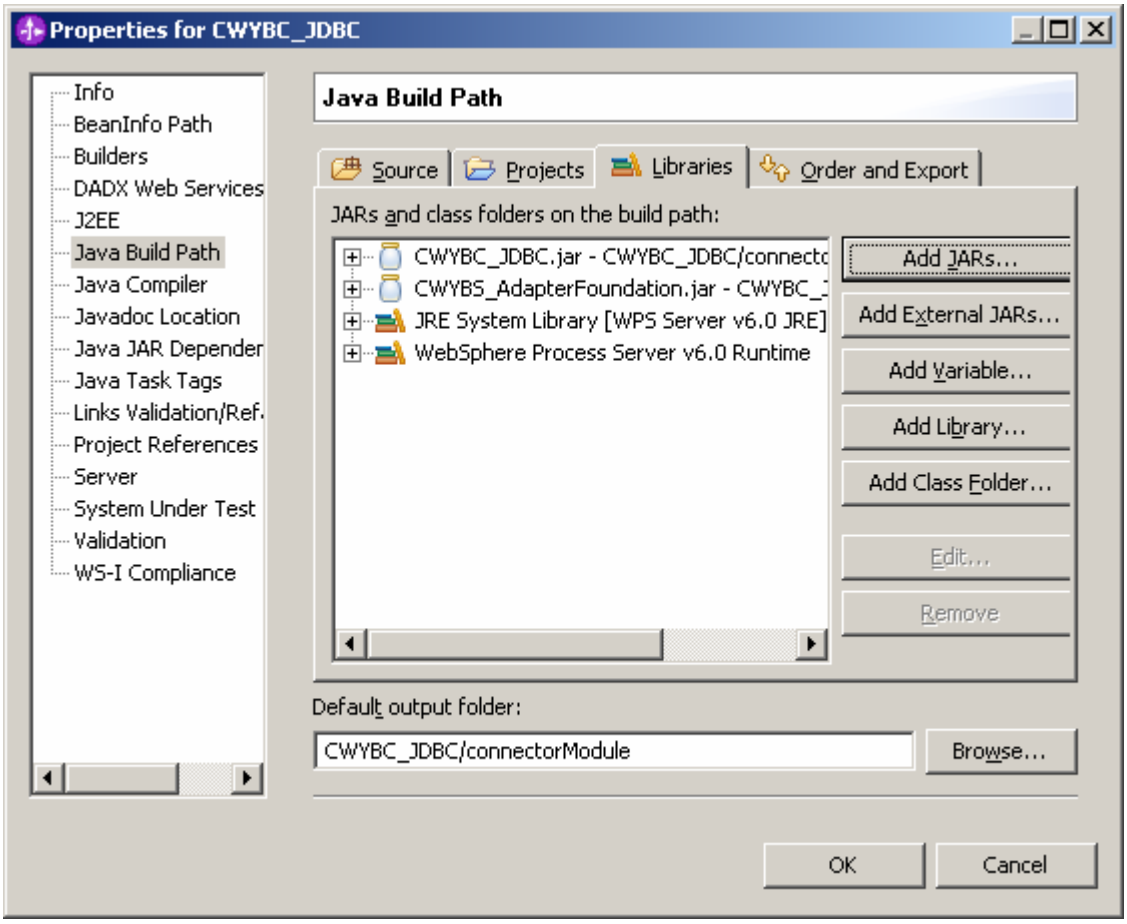
____ 11. Right-click **CWYBC_JDBC** and click **Refresh** to make project aware of the two JAR files.

Figure 15. Right-click CWYBC_JDBC and click Refresh



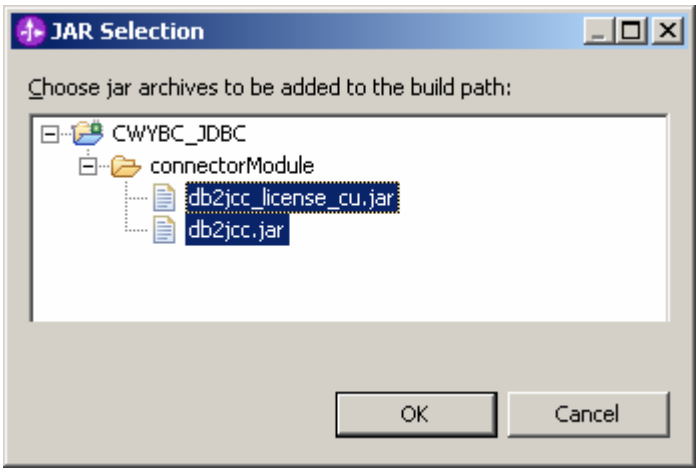
____ 12. Right-click **CWYBC_JDBC** and click **Properties**. Click the **Java Build Path** directory and switch to the **Libraries** tab. Click the **Add JARs…** button.

Figure 16. Click the Java Build Path directory and switch to the Libraries tab



____ 13. Select **db2jcc.jar** and **db2jcc_license_cu.jar**. Click **OK**.

Figure 17. Select db2jcc.jar and db2jcc_license_cu.jar



____ 14. Now that the DB2 driver has been added into JDBC adapter project, you need to install the DB2 artifact that you will use for the sample.

___ a. Using the DB2 wizard, create the **ADAPTER** database in DB2.

___ b. Open a DB2 command window, then run the following commands:

```
db2 connect to ADAPTER user
db2admin using <db2 password>

db2 -tvf MonitorAdapter_db2.sql

db2 disconnect ADAPTER
```

___ c. The MonitorAdapter_db2.sql file should contain the following information:

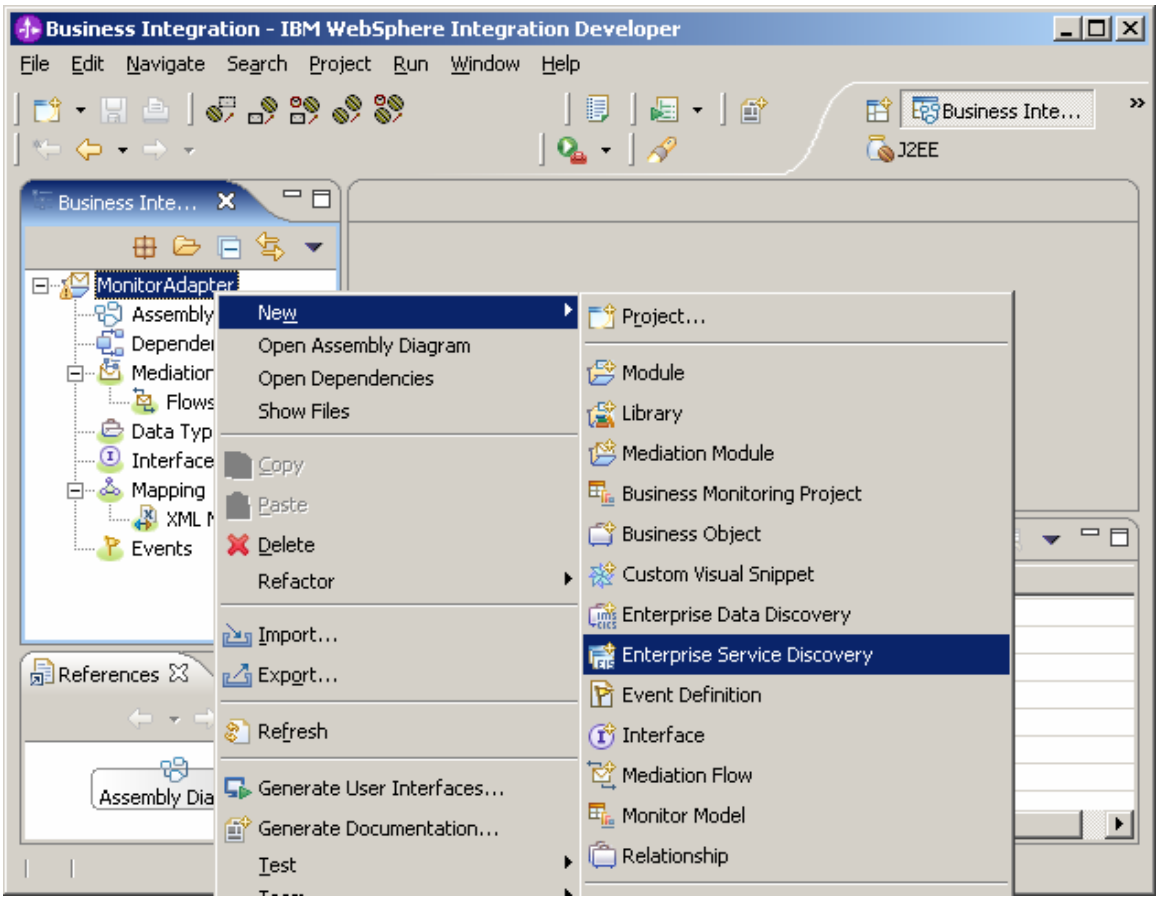
```
CREATE TABLE customer
(
        pkey            VARCHAR(10) NOT NULL   PRIMARY KEY,
        fname           VARCHAR(20),
        lname           VARCHAR(20),
        ccode           VARCHAR(10)
);

CREATE TABLE WBIA_JDBC_EventStore
(
        event_id                                                INTEGER NOT NULL
        GENERATED ALWAYS AS IDENTITY (START WITH 1, INCREMENT BY 1, NO CACHE )
                PRIMARY KEY,
        xid                             VARCHAR(200),
        object_key                                      VARCHAR(80)             NOT NULL,
        object_name                     VARCHAR(40)             NOT NULL,
        object_function                 VARCHAR(40)             NOT NULL,
        event_priority                  INTEGER                 NOT NULL,
        event_time                              TIMESTAMP       default CURRENT TIMESTAMP
NOT NULL,
        event_status                            INTEGER                 NOT NULL,
        event_comment                   VARCHAR(100)
);

CREATE TRIGGER event_create
AFTER INSERT ON CUSTOMER REFERENCING NEW AS N
FOR EACH ROW MODE DB2SQL
INSERT INTO wbia_jdbc_eventstore (object_key, object_name, object_function, event_priority,
event_status)
VALUES (N.pkey, 'Db2adminCustomerBG', 'Create', 1, 0);
```

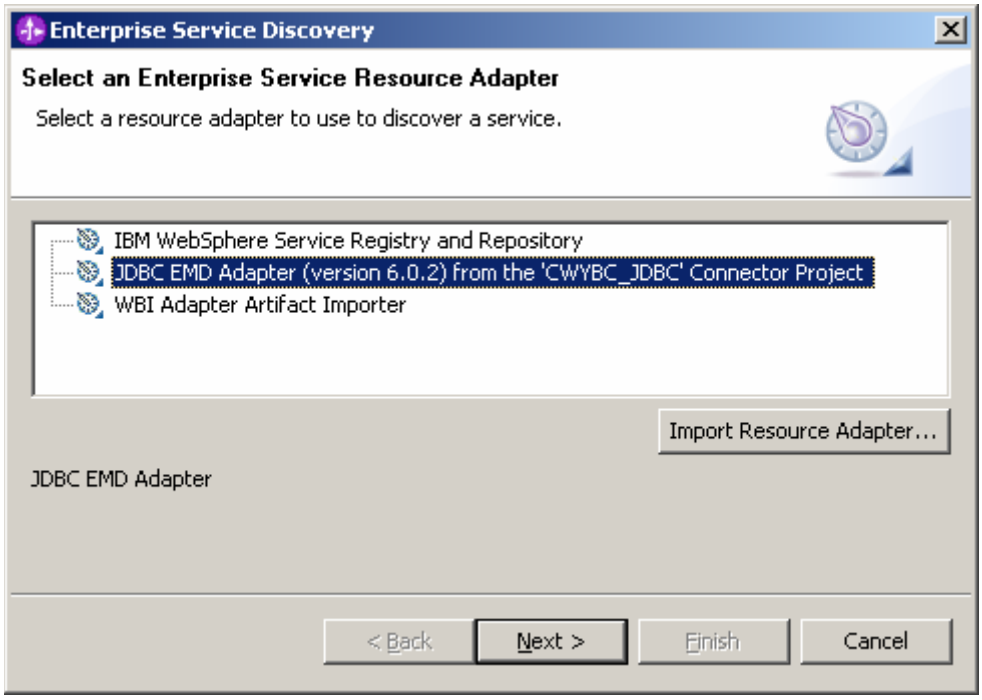
____ 15. Return to the **Business Integration** perspective. Right-click **MonitorAdapter** and select **New ► Enterprise Service Discovery**.

Figure 18. New► Enterprise Service Discovery



____ 16. Select **JDBC EMD Adapter…** and click **Next**.

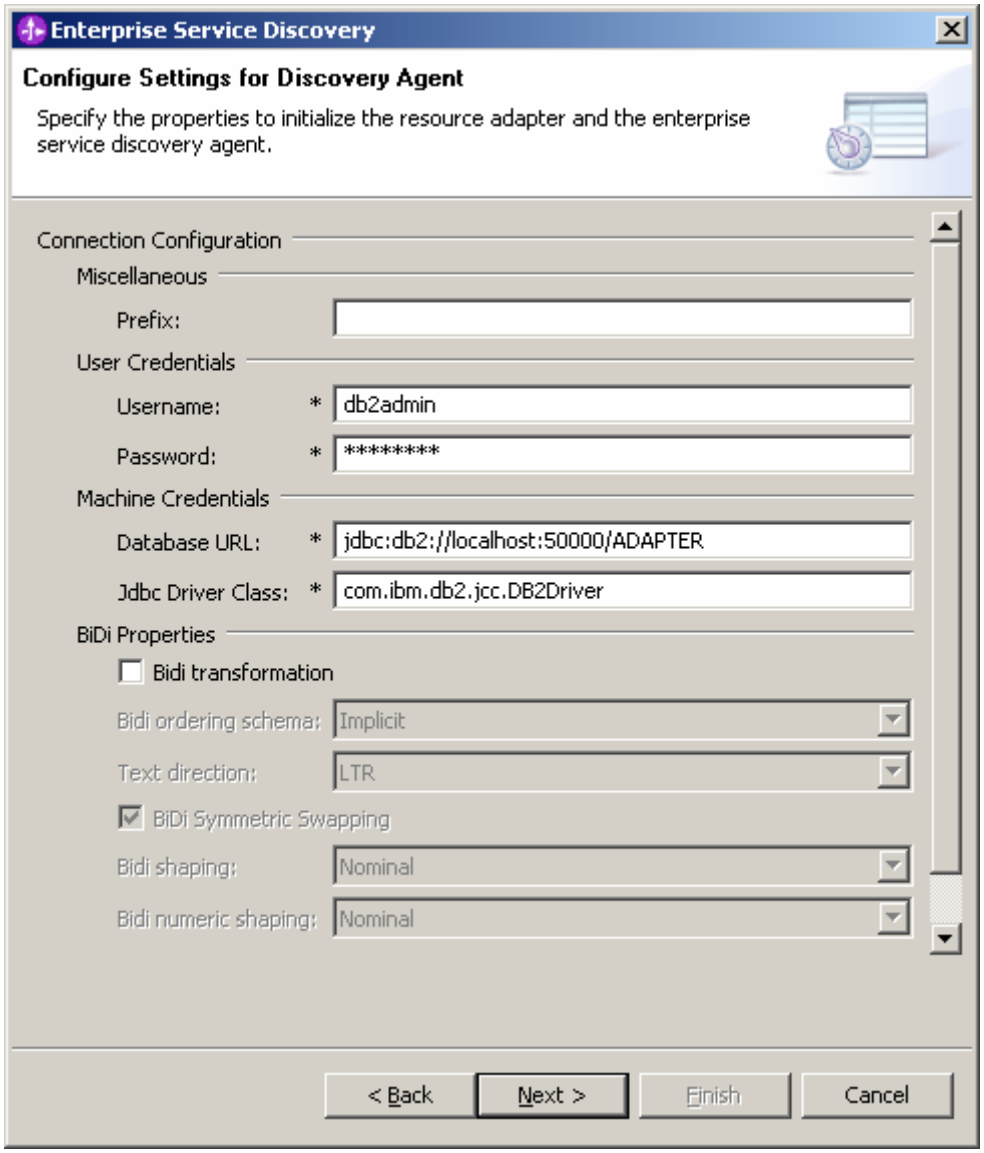
Figure 19. JDBC EMD Adapter selection



____ 17. Specify the following properties:

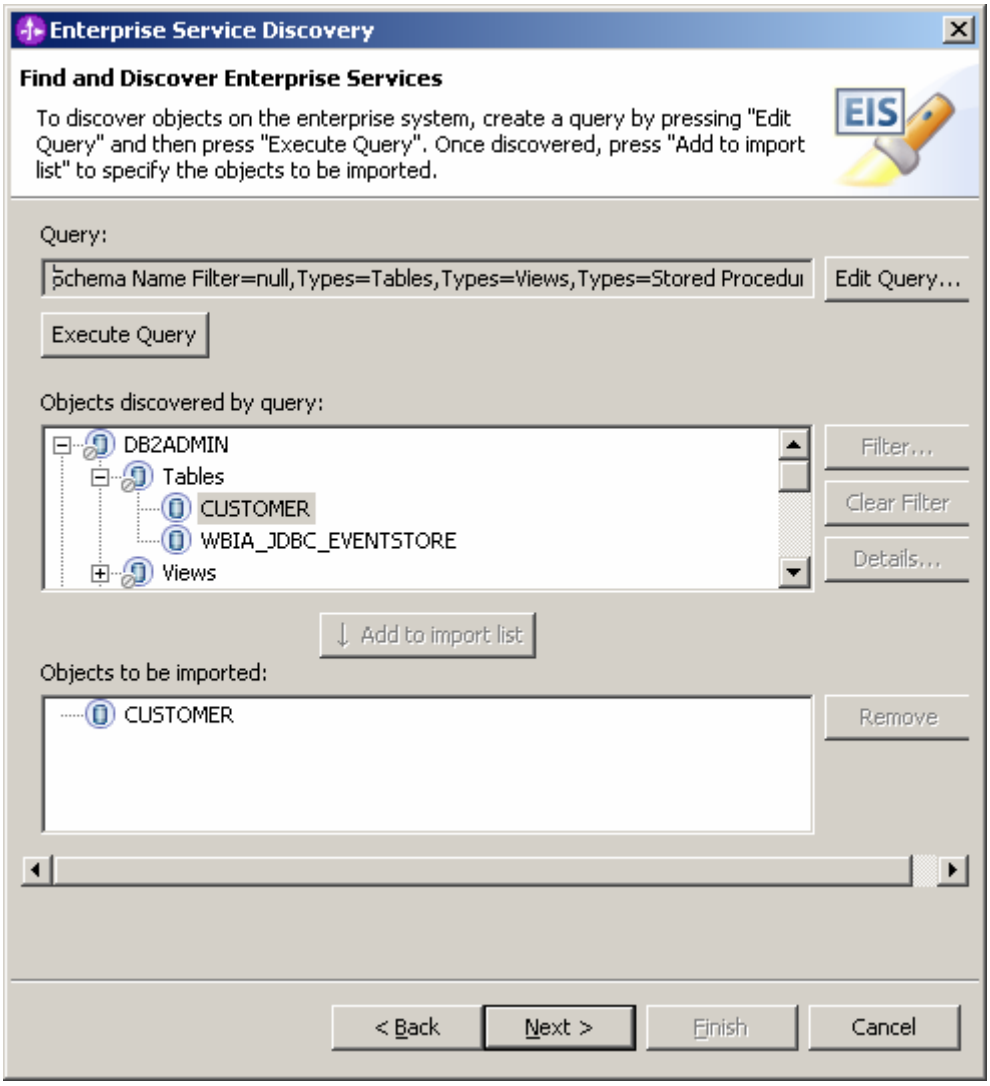
- **Username and password:** your DB2 user name and password
- **Database URL:** `jdbc:db2://<Machine IP>:50000/ADAPTER`
- **Jdbc Driver Class:** com.ibm.db2.jcc.DB2Driver

Figure 20. Configure Settings for Discovery Agent



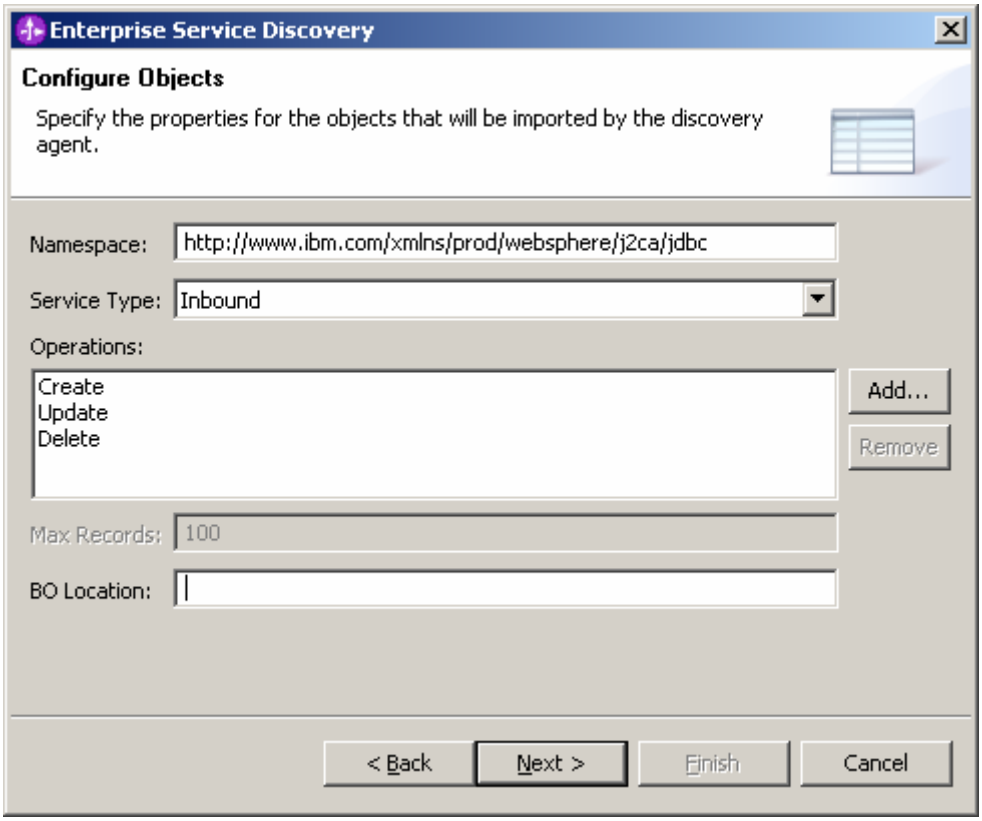
____ 18. Click **Next**, then click **Execute Query** to find the table lists. Select **DB2ADMIN►Tables► CUSTOMER** and click **Add to import list**. Click **Next**.

Figure 21. DB2ADMIN► Tables► CUSTOMER selection



____ 19. Ensure that the value for Service Type is Inbound. Click **Next**.

Figure 22. The value for Service Type is Inbound

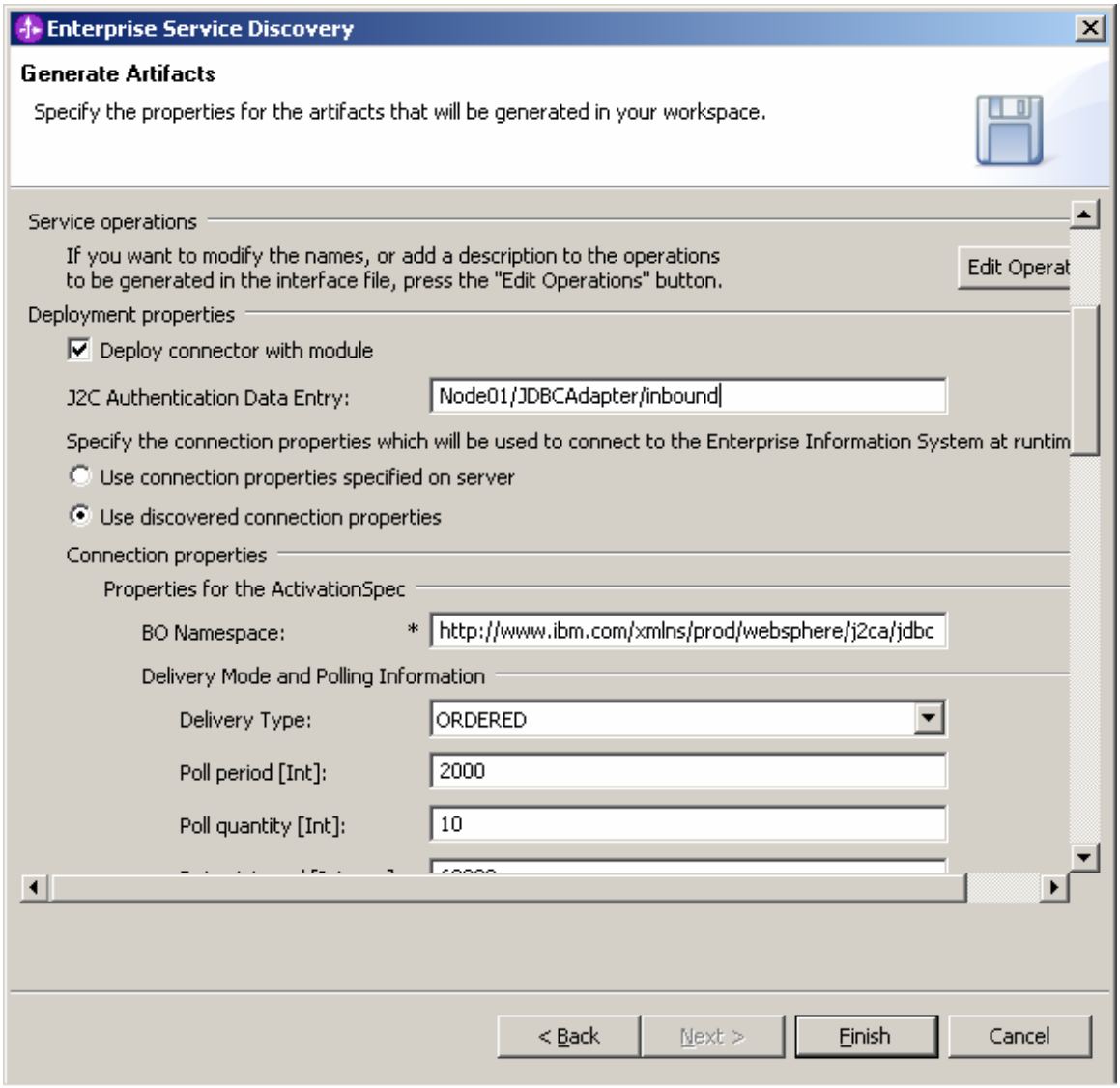


____ 20. In the **Generate Artifacts** window, enter the following values:

__ a. **J2C Authentication Data Entry:**
NodeName/JDBCAdapter/inbound

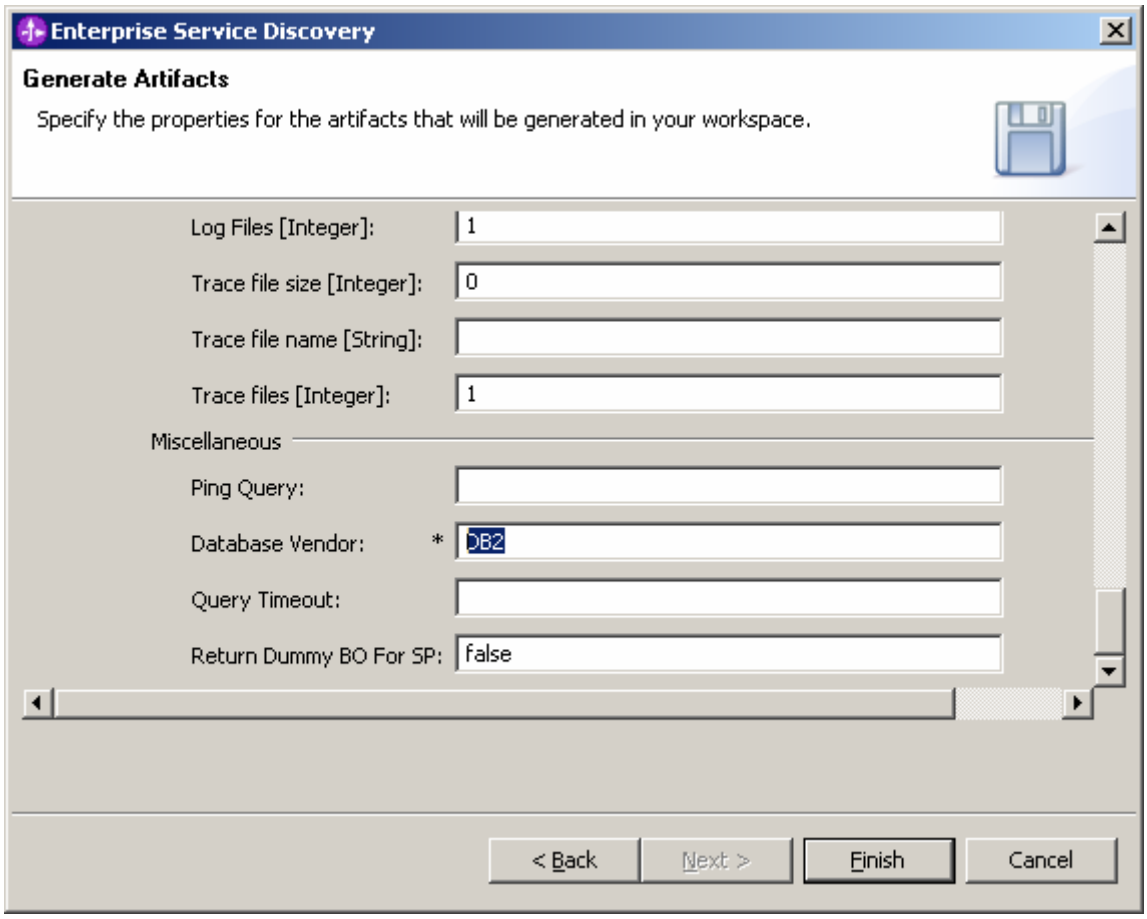
… where NodeName is the node name of the WebSphere Application Server server that will run this MonitorAdapter module.

Figure 23. The Generate Artifacts window



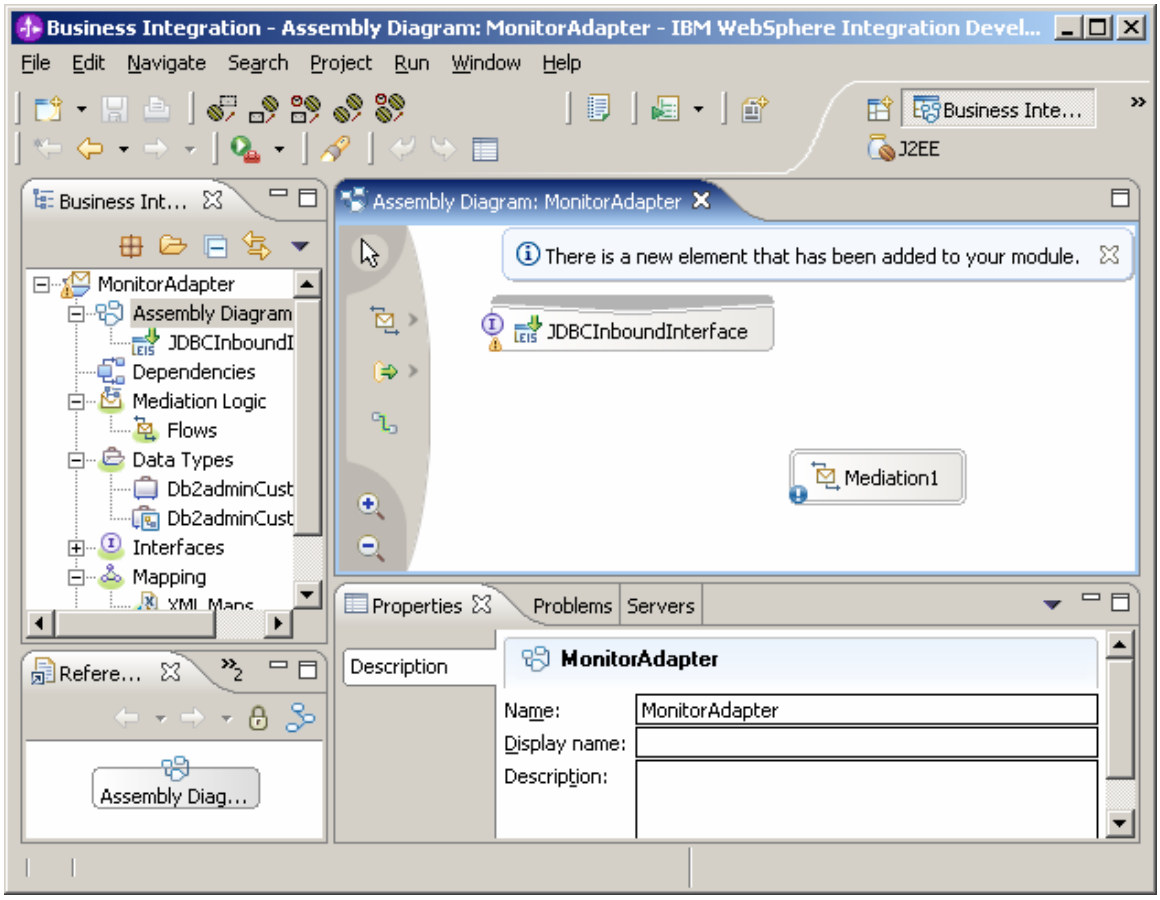
__ b. Database Vendor: **DB2**.

Figure 24. The Database Vendor field



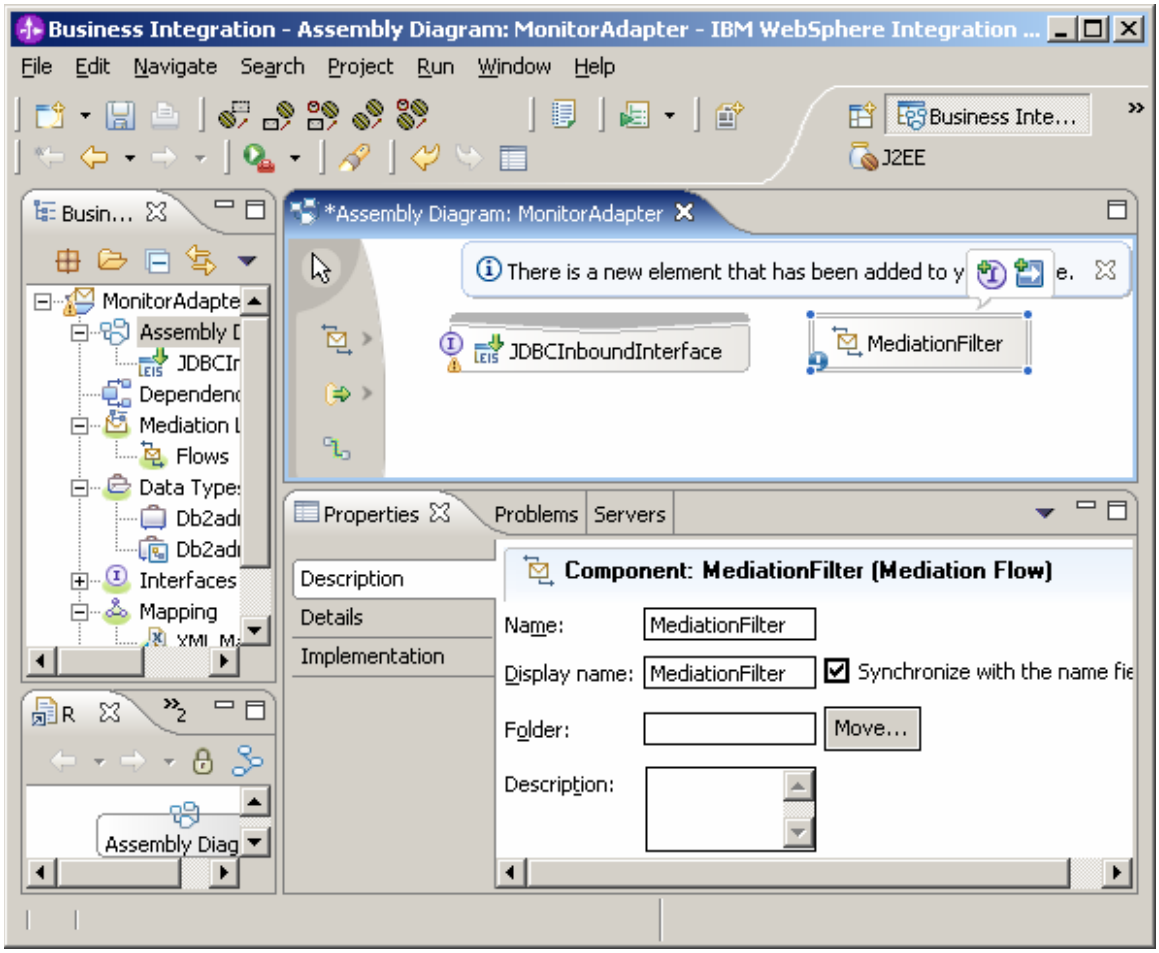
____ 21. Click **Finish**. Double-click **Assembly Diagram**. You will see that there are two elements: **JDBCInboundInterface**, which was created by the preceding steps, and **Mediation1**, which was created when the module was initially created.

Figure 25. Double-click Assembly Diagram



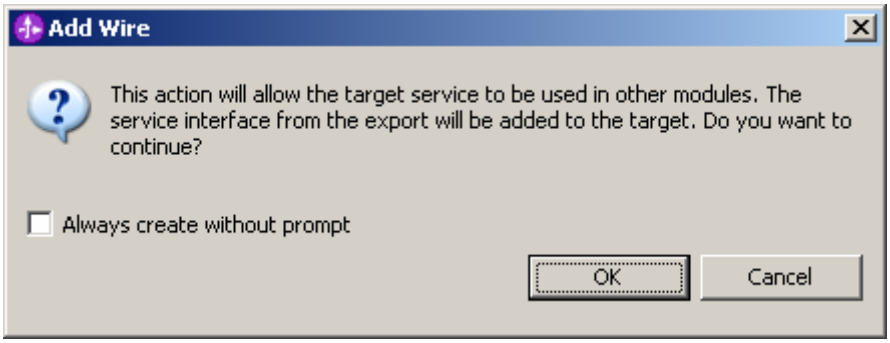
____ 22. For ease of use, rename **Mediation1** to **MediationFilter**.

Figure 26. Rename Mediation1 to MediationFilter



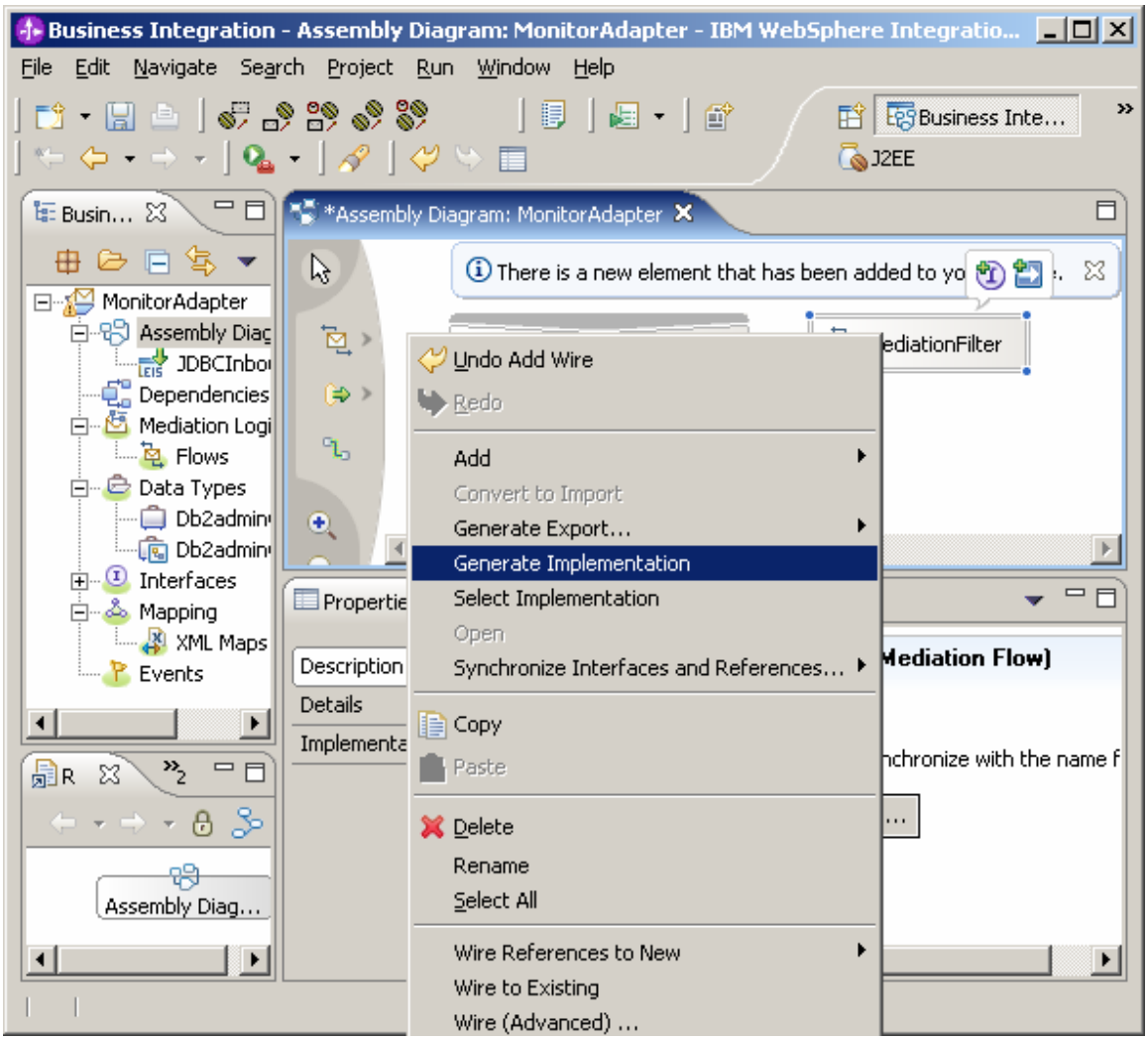
____ 23. In the diagram, link **JDBCInboundInterface** to **MediationFilter**. In response to the prompt, click **OK**.

Figure 27. Link JDBCInboundInterface to MediationFilter



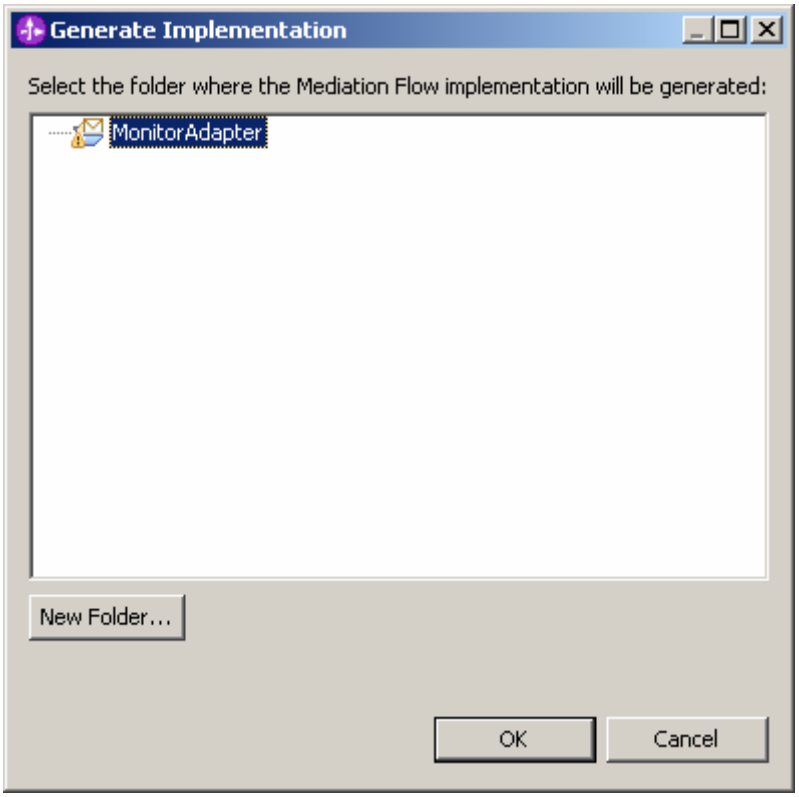
____ 24. Right-click **MediationFilter** and select **Generate Implementation**.

Figure 28. Select Generate Implementation



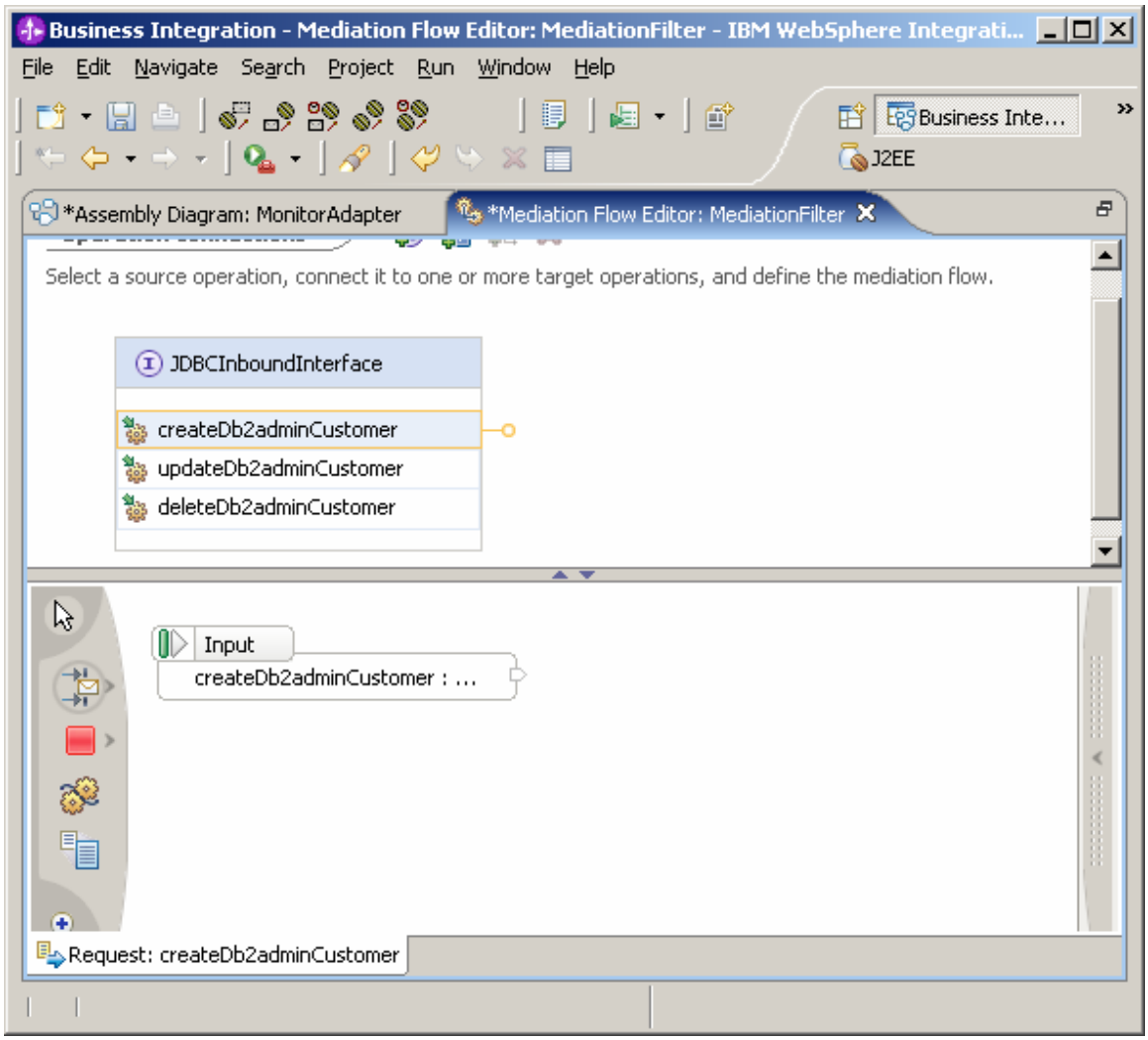
____ 25. Select **MonitorAdapter** as the folder. Click **OK**.

Figure 29. MonitorAdapter selected as the folder



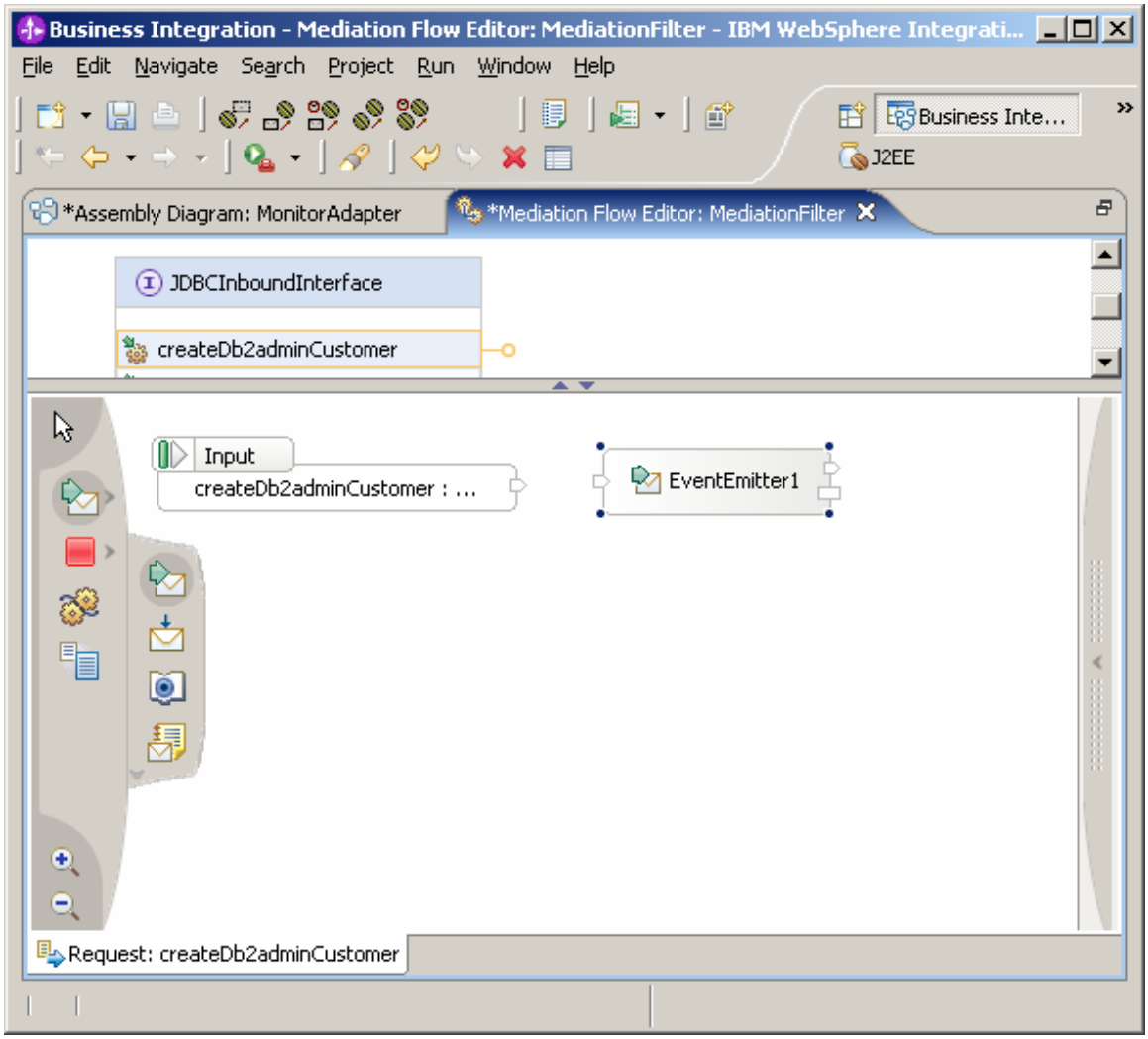
____ 26. In the **MediationFilter** window, click **createDb2adminCustomer**.

Figure 30. Click createDb2adminCustomer



____ 27. Select the **EventEmitter** primitive and click in the white space to add it into the flow. **EventEmitter** sends events to the Common Event Infrastructure.

Figure 31. Click in the white space to add the EventEmitter primitive into the flow



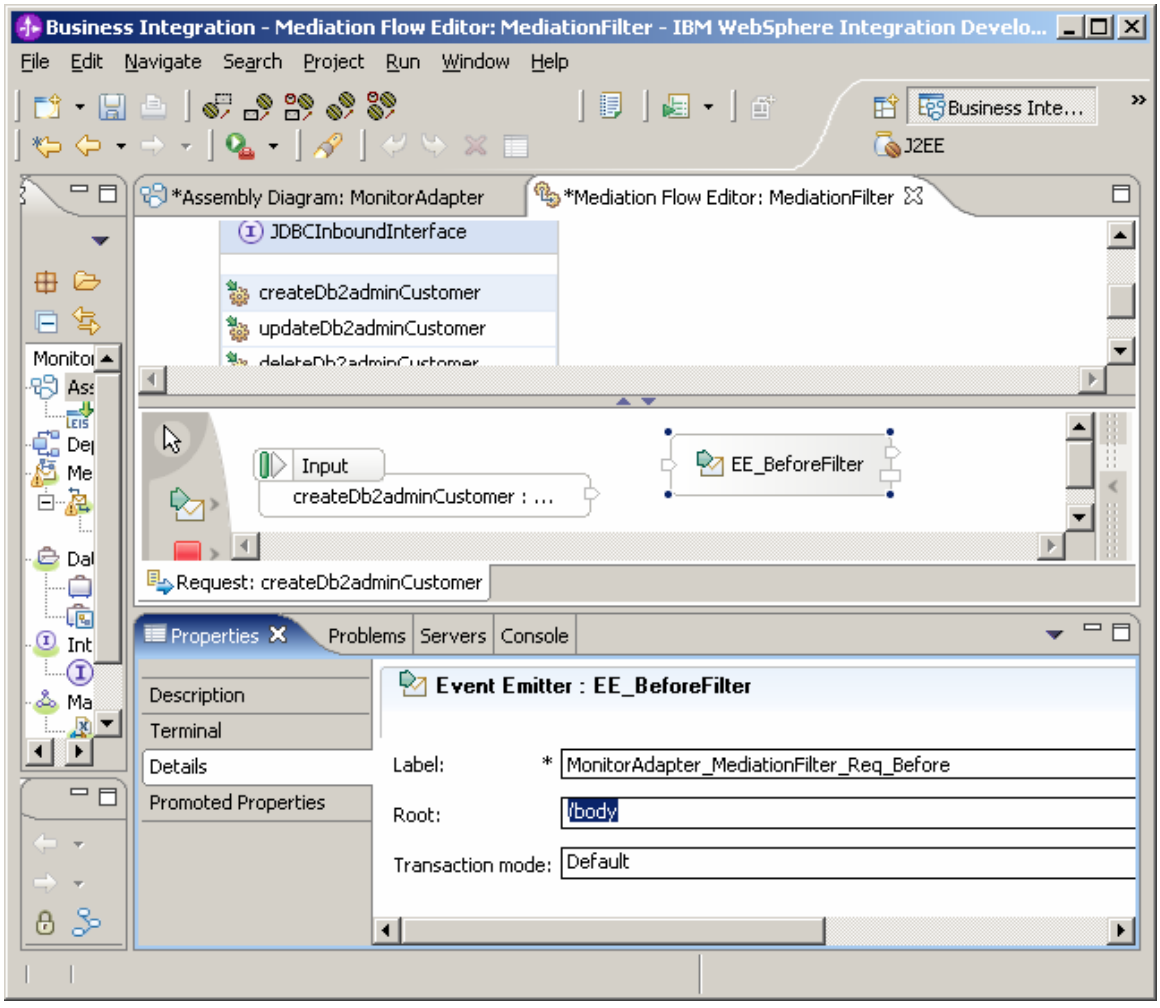
____ 28. To configure **EventEmitter1**, first click **EventEmitter1**, and then access the Properties view and specify the following values:

___ a. Select **Description**, and then change the **Display name** value to **EE_BeforeFilter**.

___ b. Select **Details**, and then change the Label value to **MonitorAdapter_MediationFilter_Req_Before**.

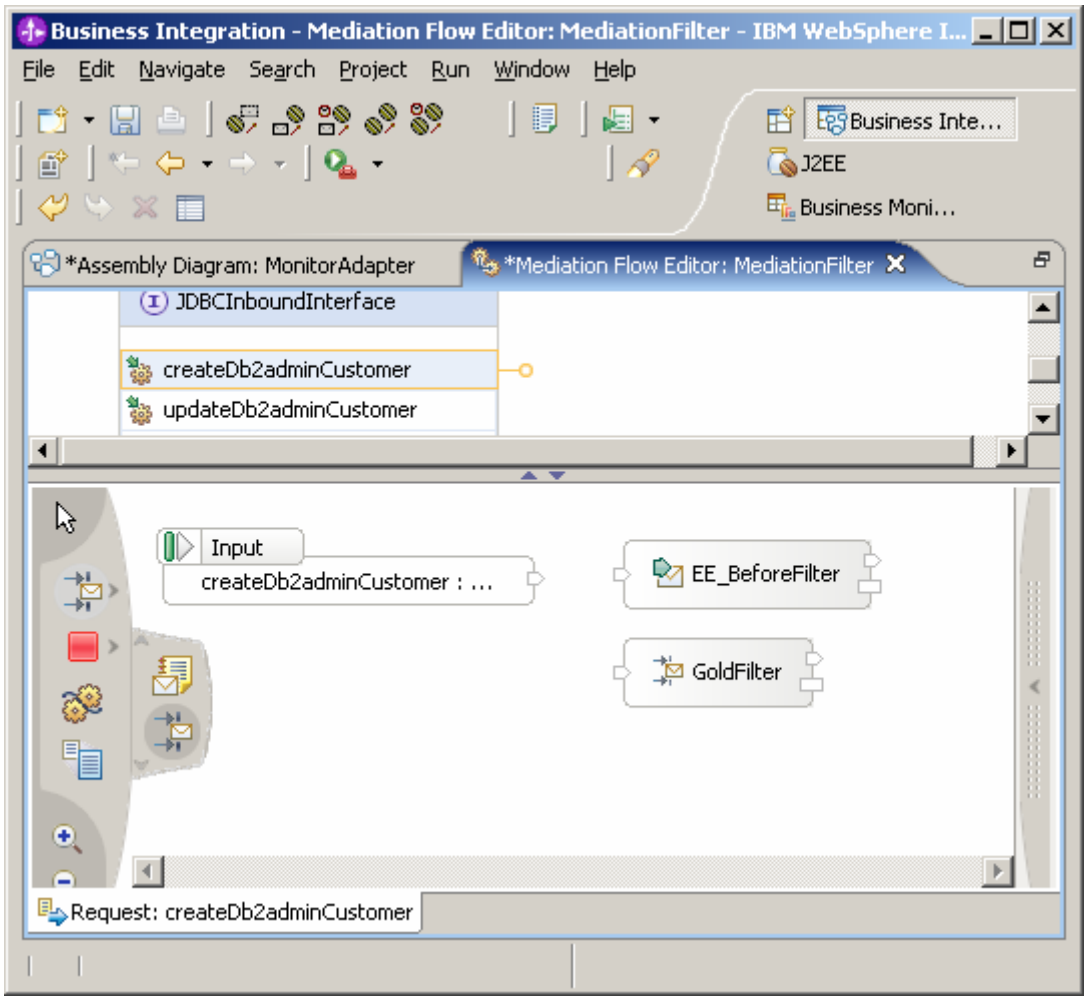
___ c. Set the **Root** value to **/body**.

Figure 32. Click EventEmitter1, then access the Properties view



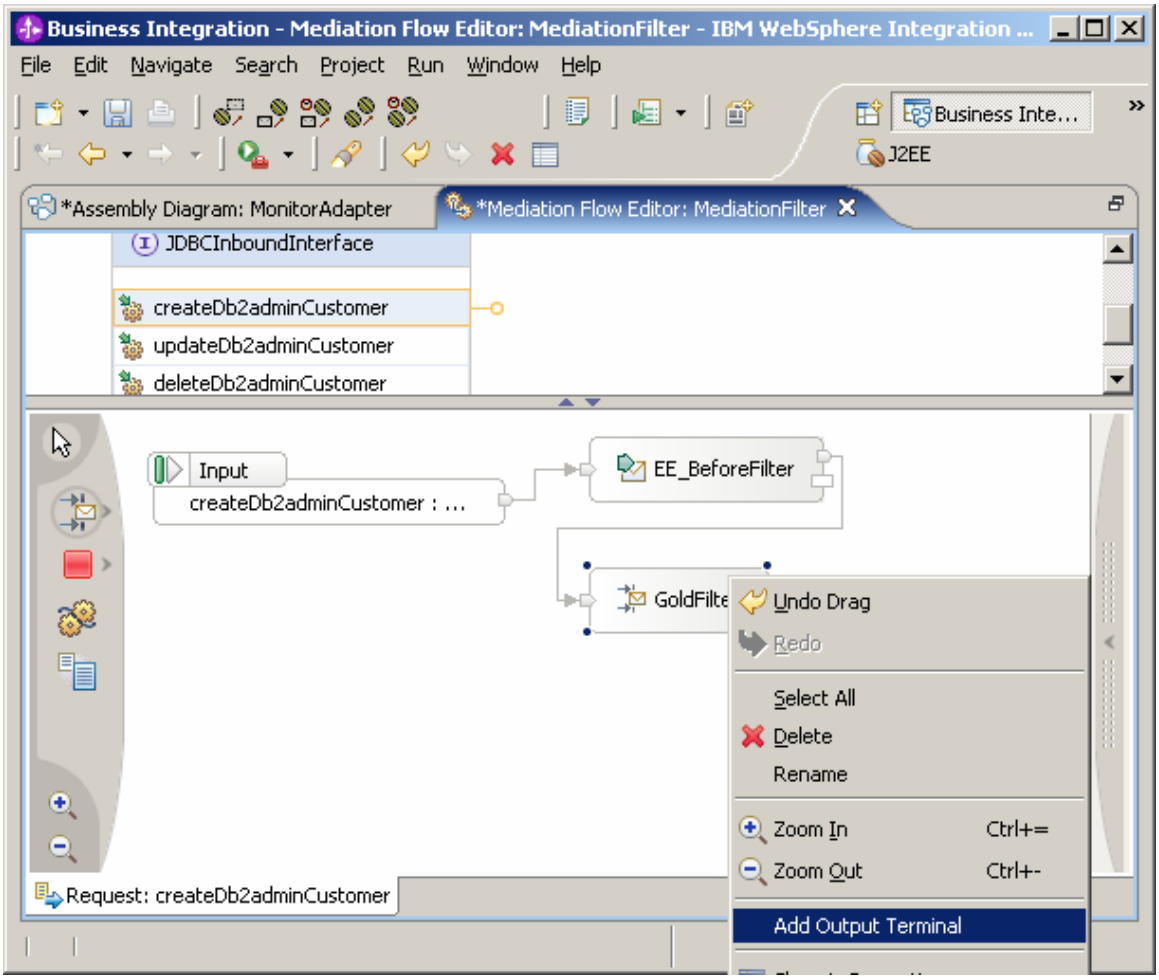
____ 29. Add the **Message Filter** primitive to the flow, and then change the **Display name** value to **GoldFilter**.

Figure 33. Adding the Message Filter primitive to the flow



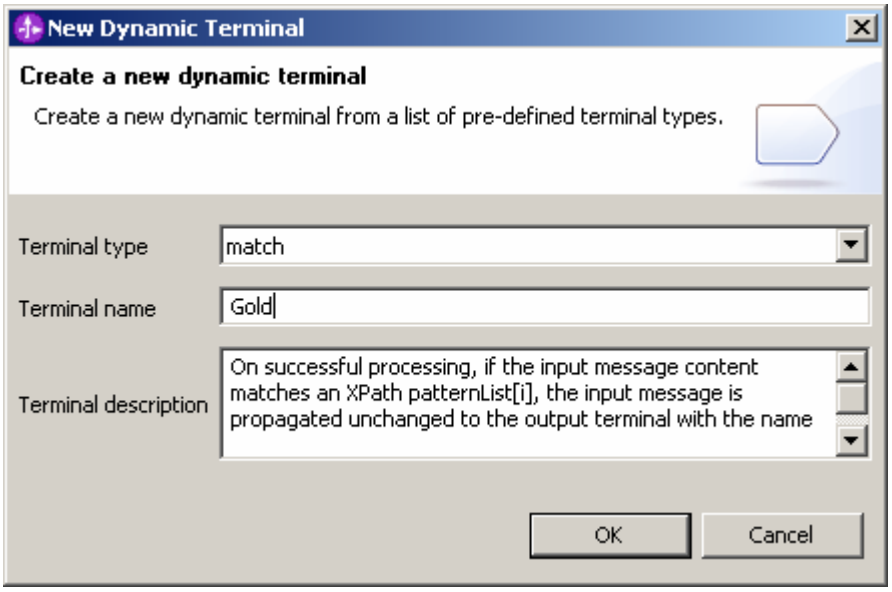
____ 30. Link the **Input** out terminal with **EE_BeforeFilter** in terminal; link **EE_BeforeFilter out** terminal with **GoldFilter in** terminal. Right-click **GoldFilter** and select **Add Output Terminal**.

Figure 34. Add Output Terminal selection



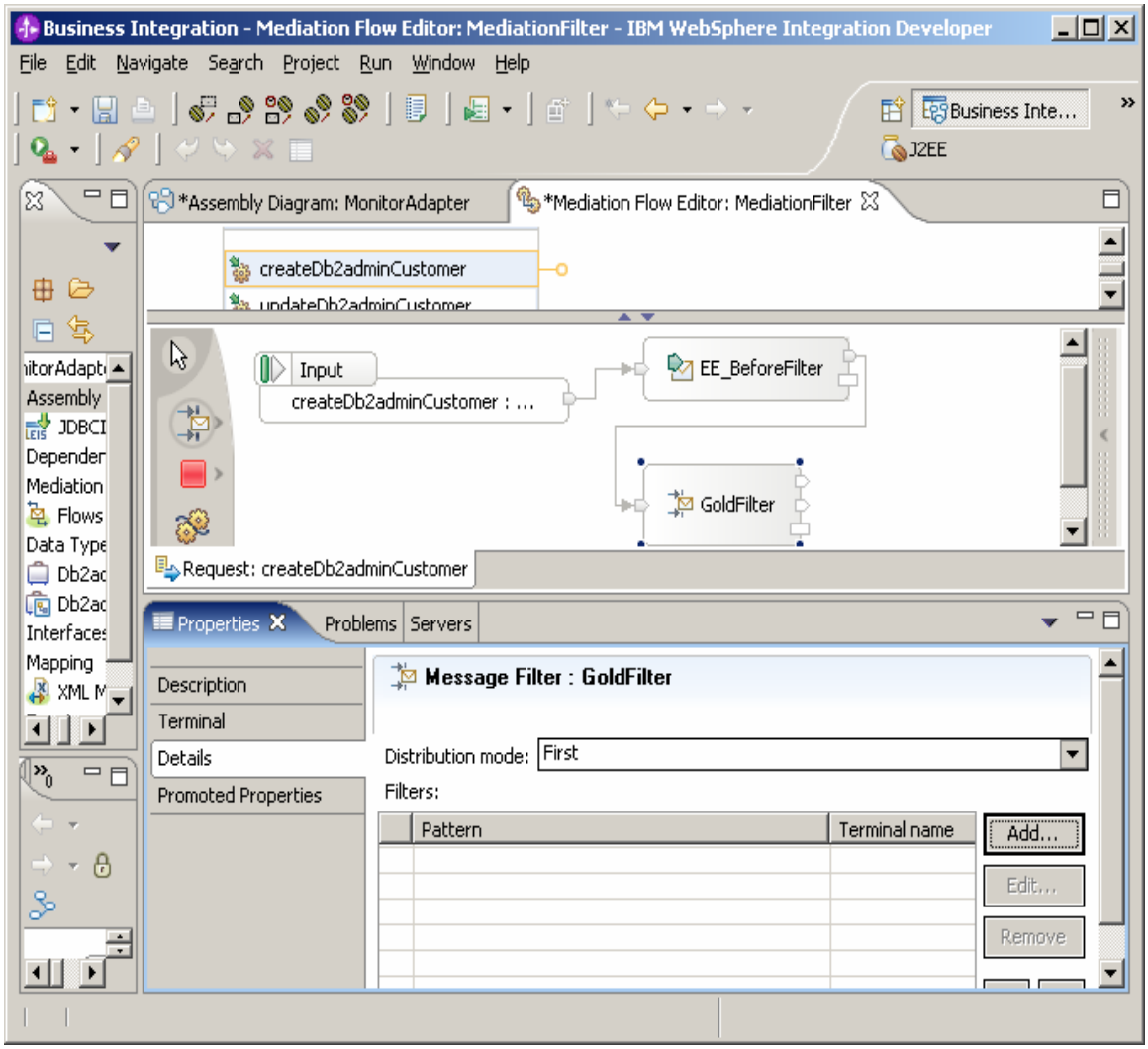
____ 31. Change the new terminal name to **Gold**. Click **OK**.

Figure 35. Change the new terminal name to Gold.



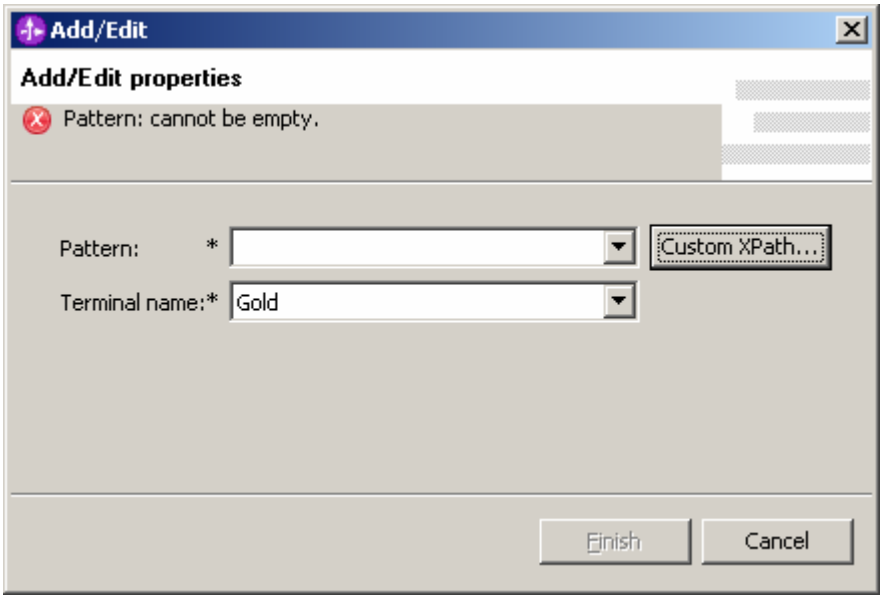
____ 32. Click **GoldFilter**. In the Properties view, click **Details** and then click **Add**.

Figure 36. Click Details and then click Add



____ 33. Click **Custom XPath**.

Figure 37. Click Custom XPath



____ 34. Set the **XPath** expression as follows:

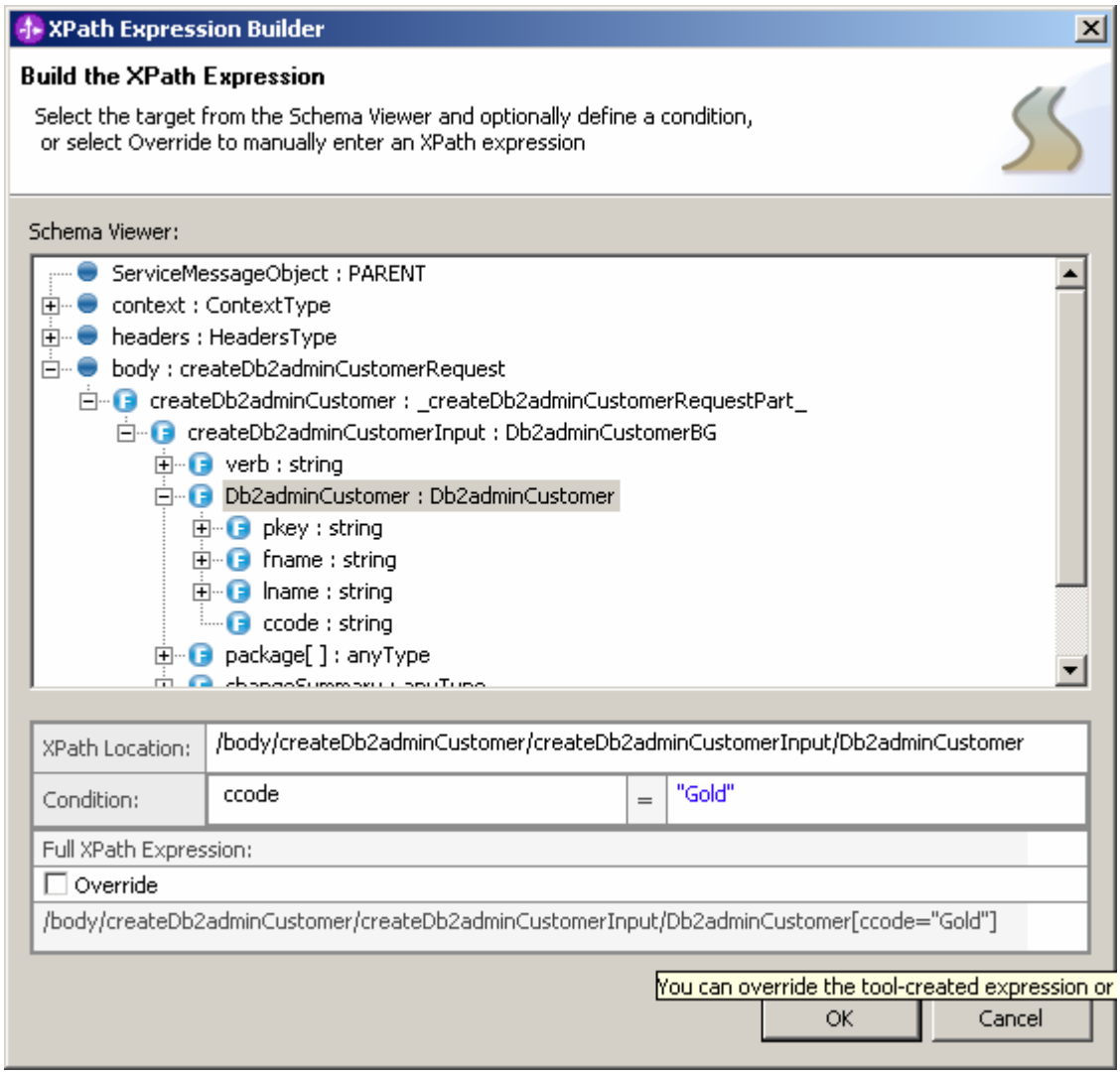
___ a. In the Schema Viewer, select **body ► createDb2adminCustomer : … ► createDb2adminCustomerInput : … ► Db2adminCustomer : …**

___ b. For the Location value for Condition, click **Location** and select **ccode**.

___ c. For the Condition value, enter **Gold** and make sure to enclose the text in double quotation marks.

___ d. Click **OK**, and then click **Finish**.

Figure 38. Click OK, then click Finish



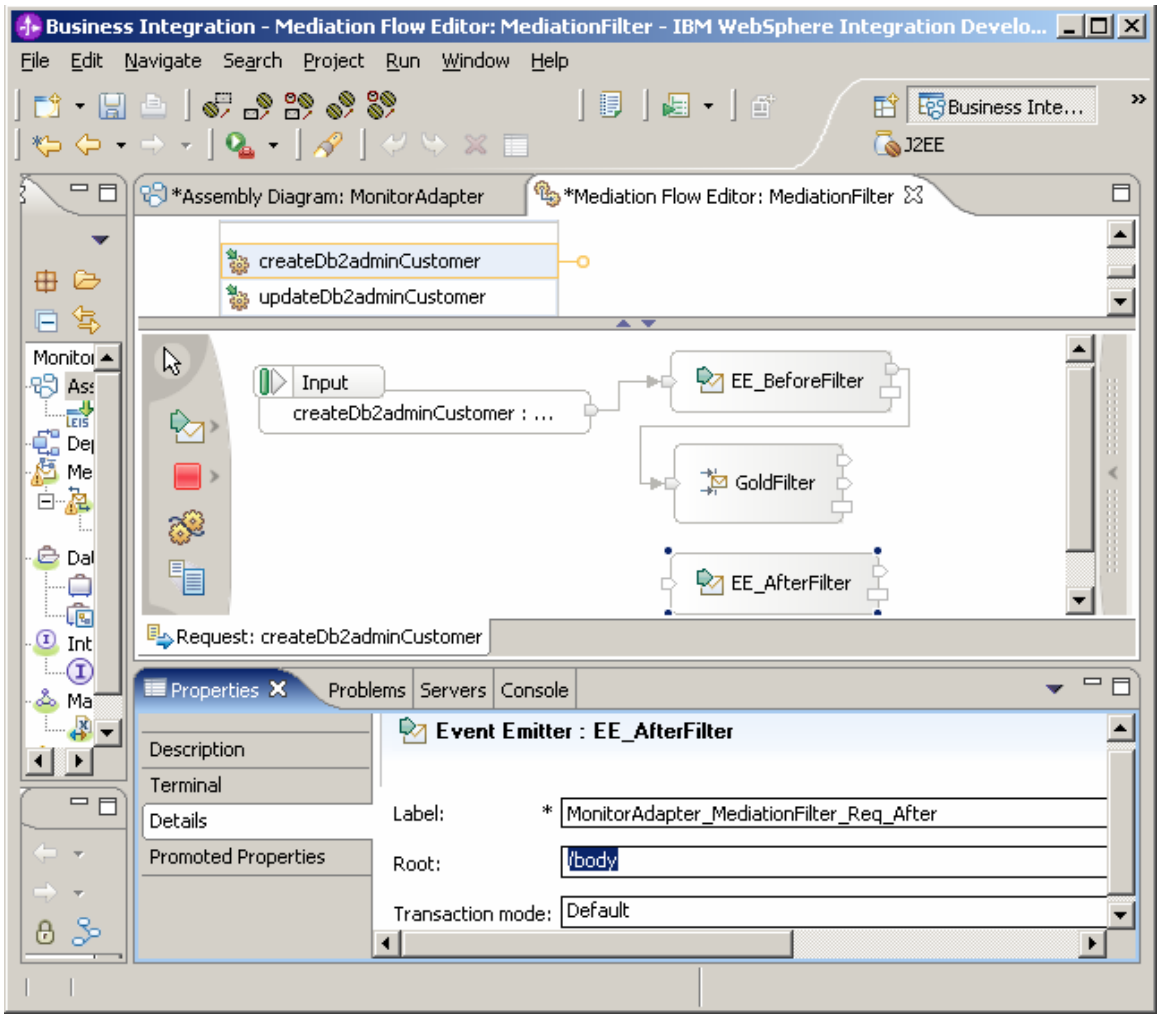
____ 35. Add another **Event Emitter** primitive to the flow.

___ a. Change the **Display name** to **EE_AfterFilter**.

___ b. Change **Label** to **MonitorAdapter_MediationFilter_Req_After**.

___ c. Set **Root** as **/body**.

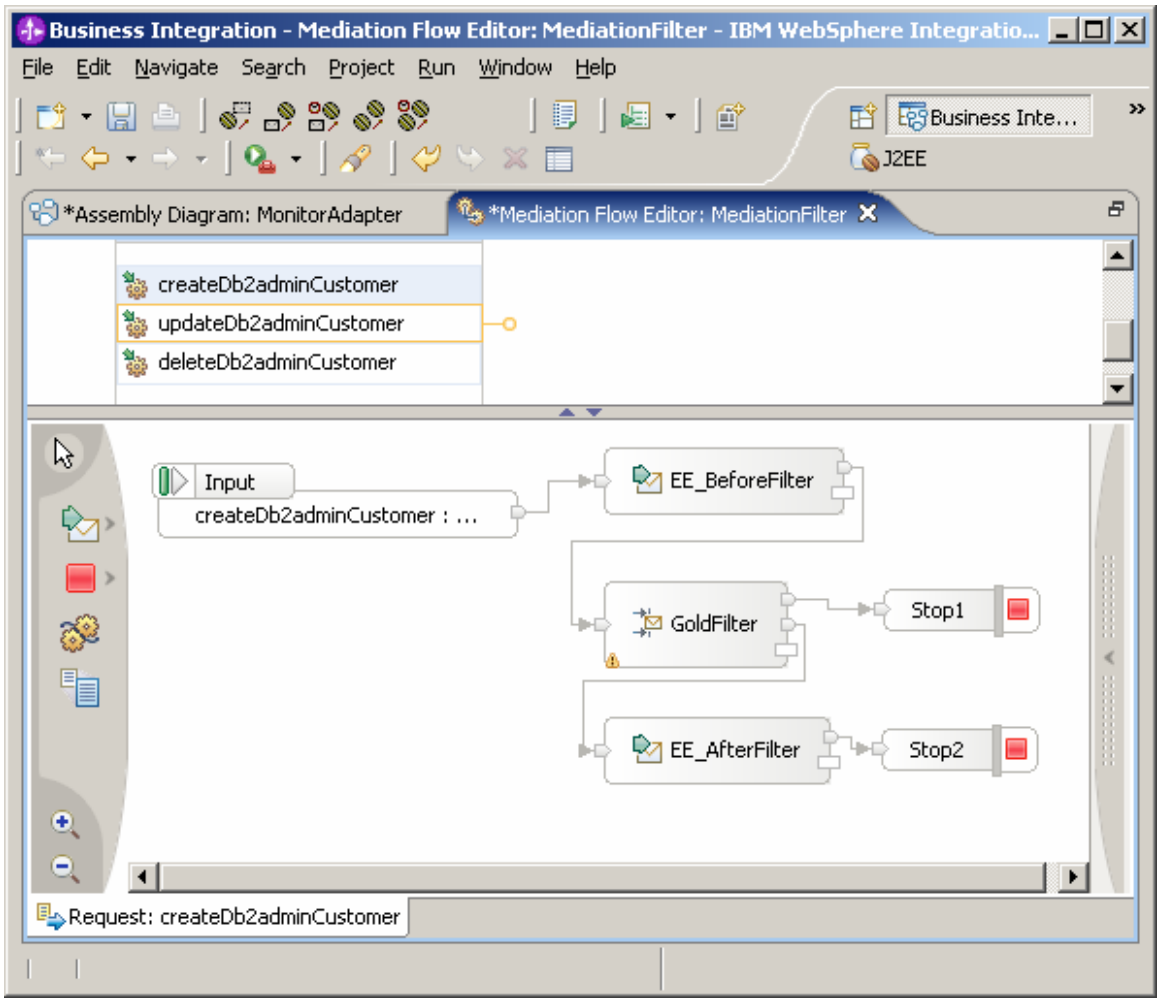
Figure 39. Root is set as /body



____ 36. Add two **Stop** primitives to the flow.

____ 37. Link the **GoldFilter** default terminal with **Stop1**, link the **GoldFilter** Gold terminal with **EE_AfterFilter**, and link **EE_AfterFilter** out terminal with **Stop2**. As a result, the Gold customer will pass through the filter and be sent as another Common Base Event; the other customer will stop at filter.

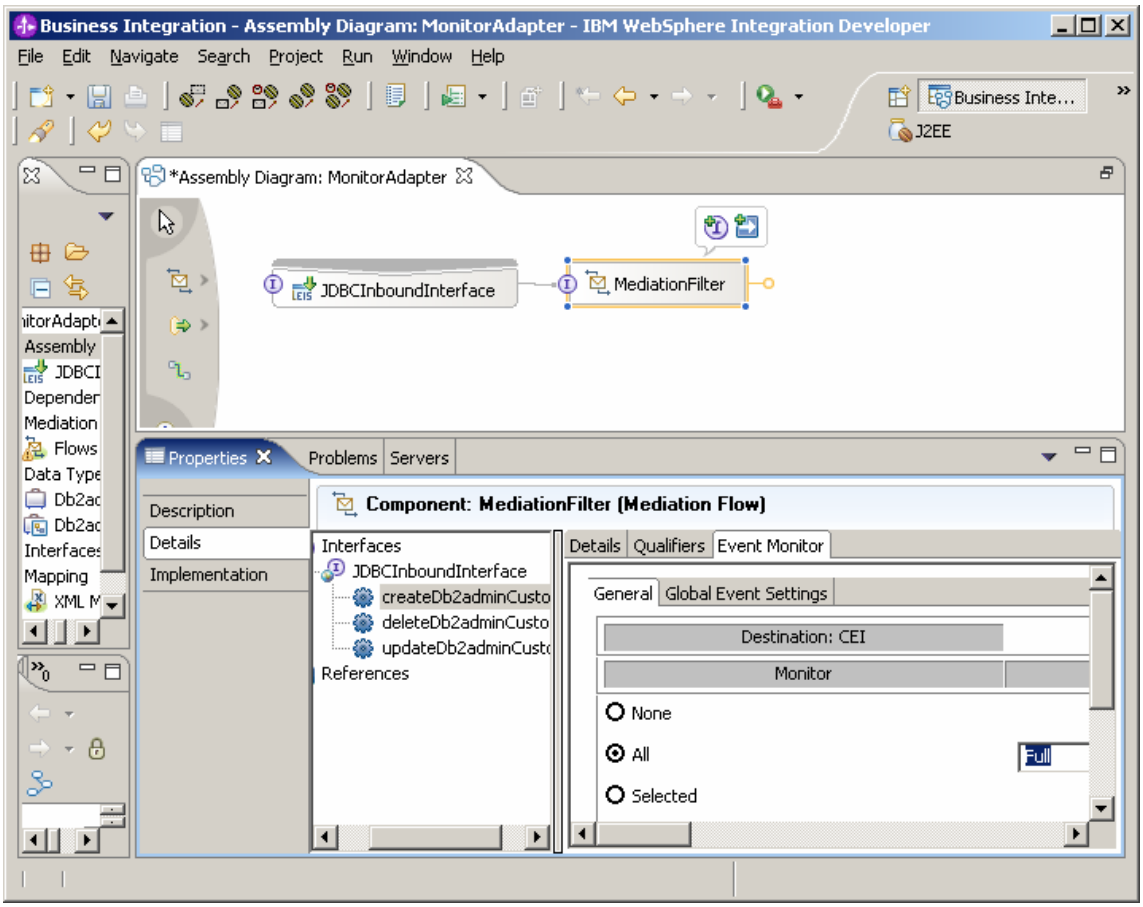
Figure 40. The Gold customer will pass through the filter



____ 38. Save the Mediation and then click **Assembly Diagram: MonitorAdapter**.

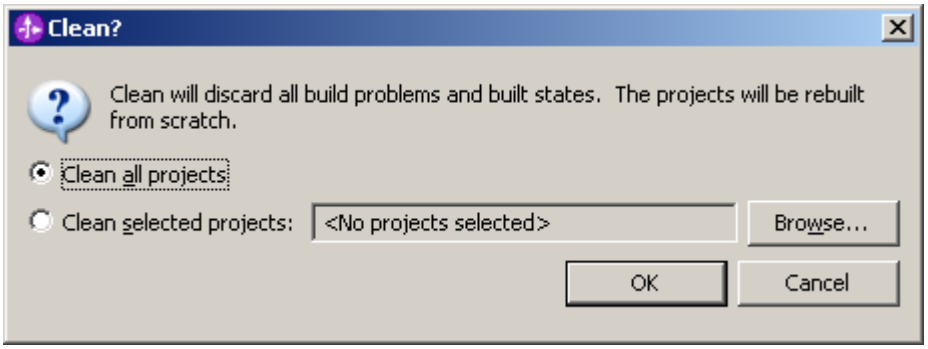
____ 39. Click **MediationFilter** and in the **Properties** view select **Details**. Go to **Interfaces ► JDBCInboundInterface ► createDb2adminCustomer ► Event Monitor**, select **All** for **Monitor** and select **Full** for **EventContent**.

Figure 41. Click MediationFilter and in the Properties view select Details



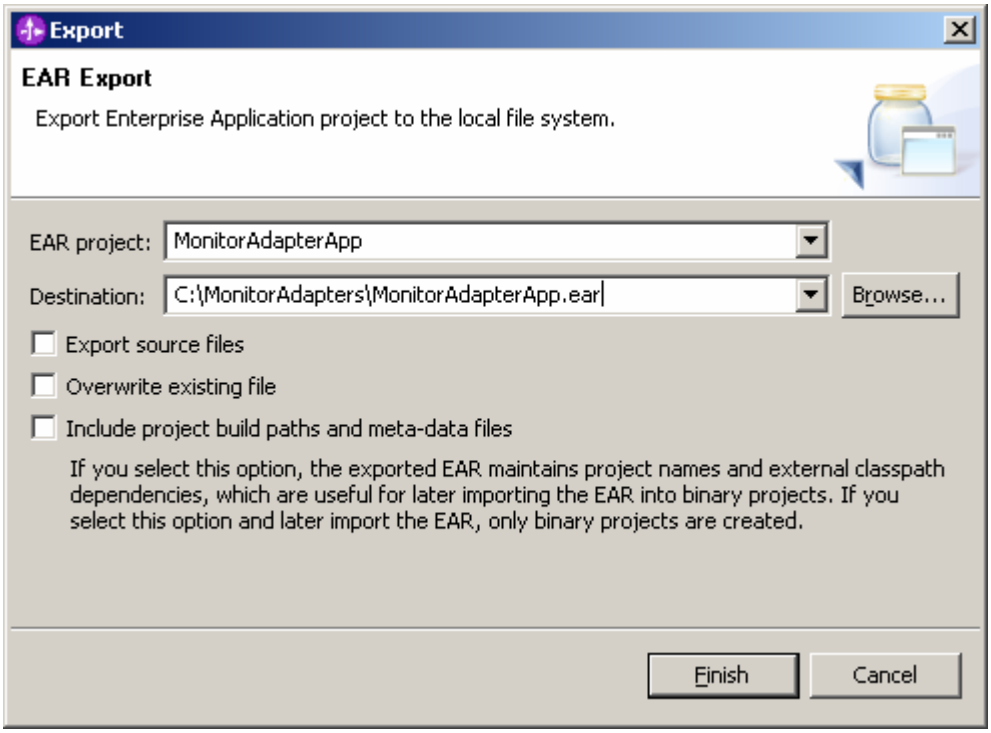
____ 40. Save the assembly diagram.
____ 41. In the menu bar, click **Project ► Clean…**. In response to the prompt, click **OK**.

Figure 42. In response, click OK



____ 42. In the menu bar, click **File ► Export…**.
____ 43. Select **EAR file** as the export destination.
____ 44. In the **EAR Export** window, select **MonitorAdapterApp** as **EAR project** and set the destination for the EAR file. Click **Finish**.

Figure 43. Select MonitorAdapterApp as EAR project



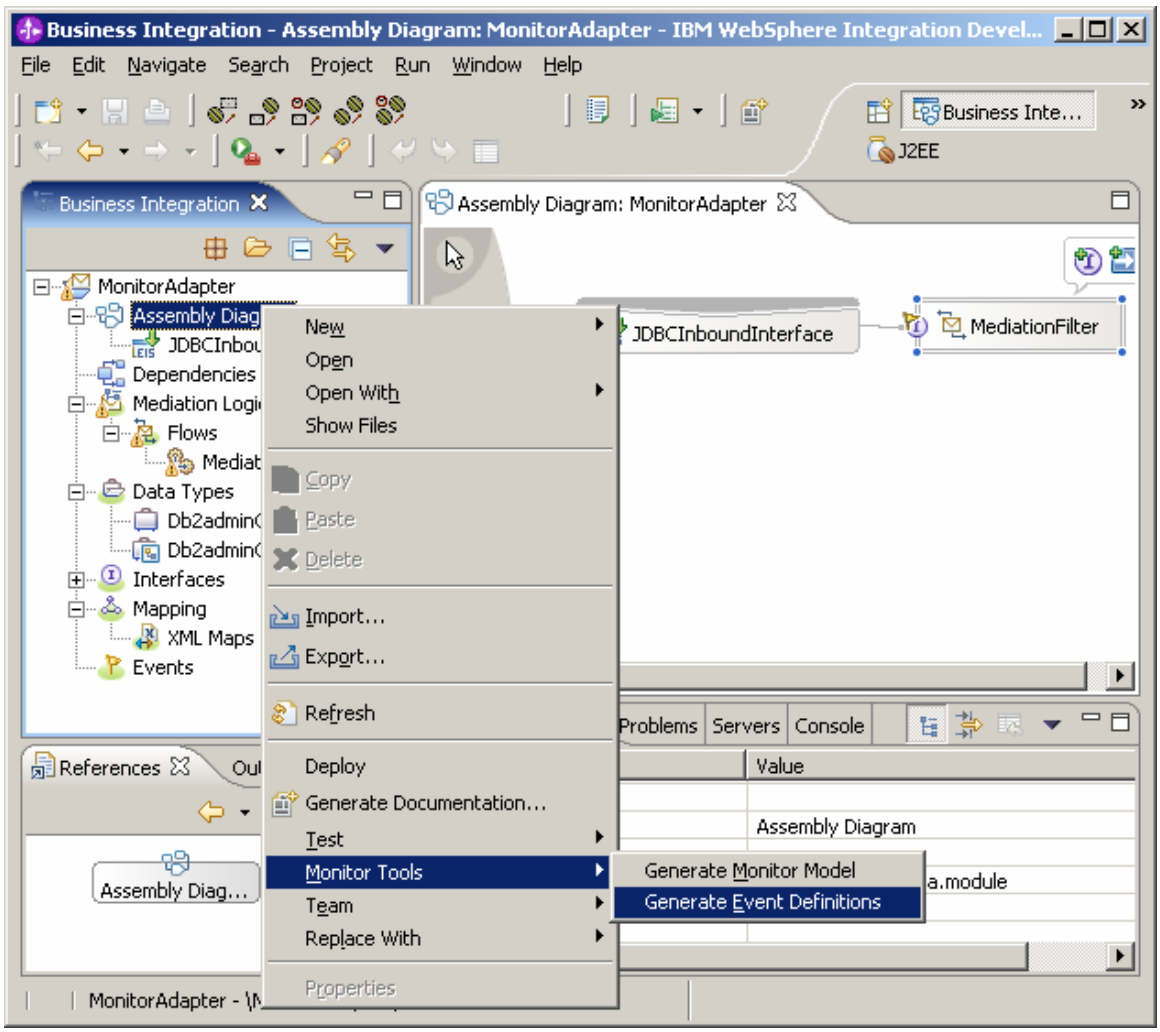
____ 45. You have now finished the task of creating the EAR file for future deployment into WebSphere Process Server.

Part 2: Generating a monitor model from SCA and Mediation

You will use the Monitor Model Editor in WebSphere Integration Developer to create a monitor model.

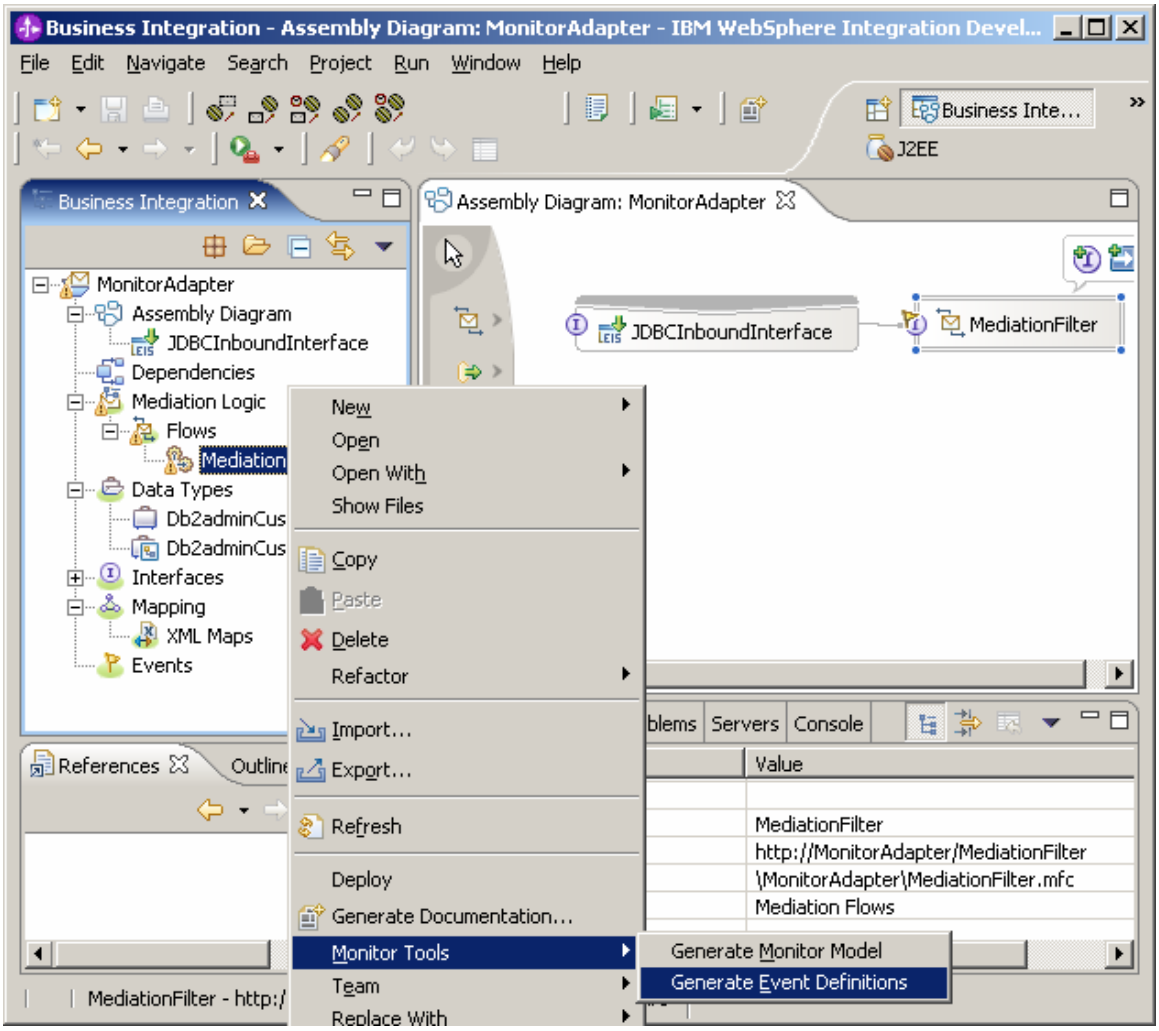
____ 1. Right-click **Assembly Diagram** and select **Monitor Tools ► Generate Event Definitions**.

Figure 44. Select Monitor Tools ► Generate Event Definitions



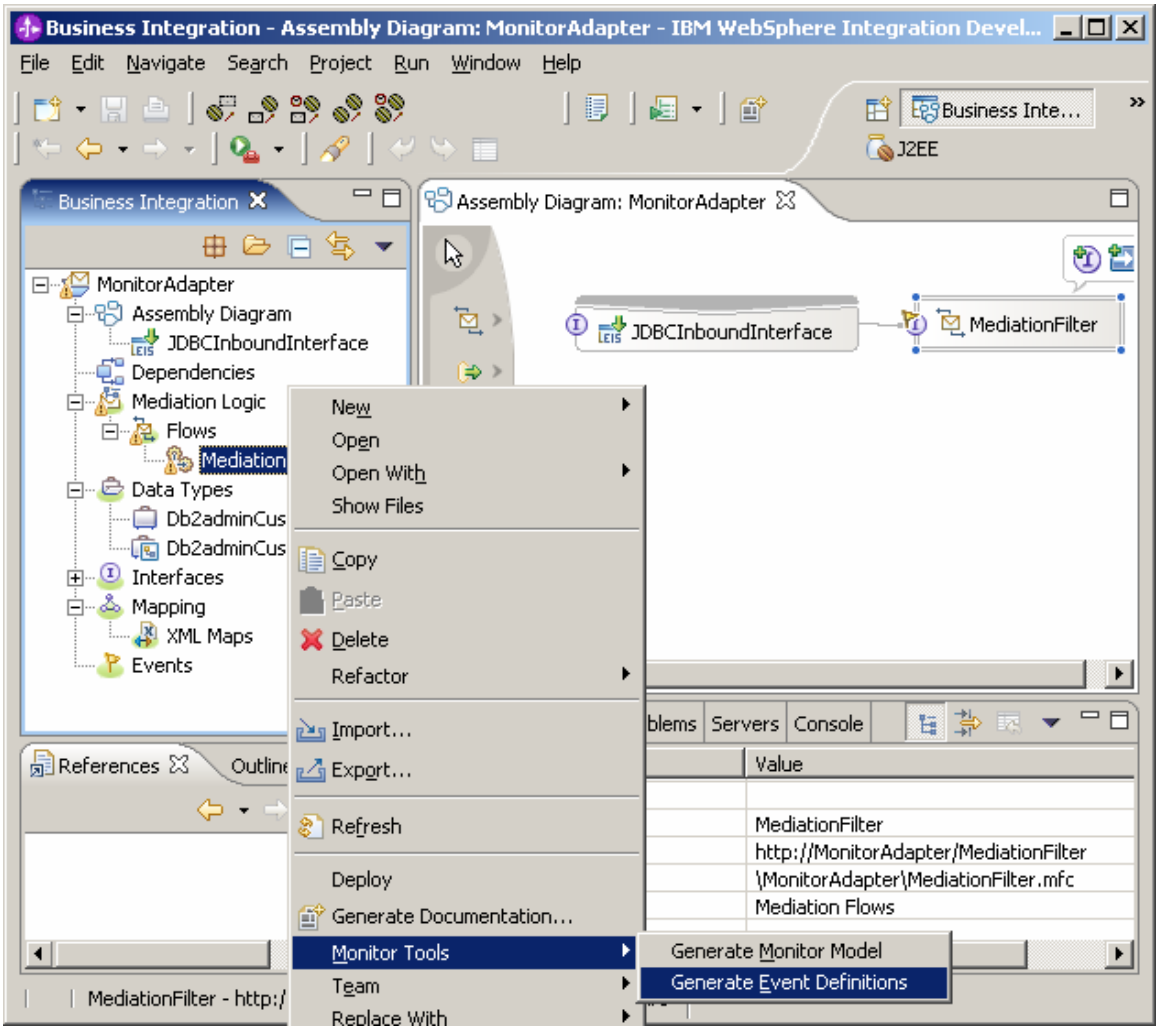
____ 2. Right-click **MediationFilter** and select **Monitor Tools ► Generate Event Definitions**.

Figure 45. Select Monitor Tools ► Generate Event Definitions



____ 3. Right-click **Assembly Diagram** and select **Monitor Tools ► Generate Monitor Model**.

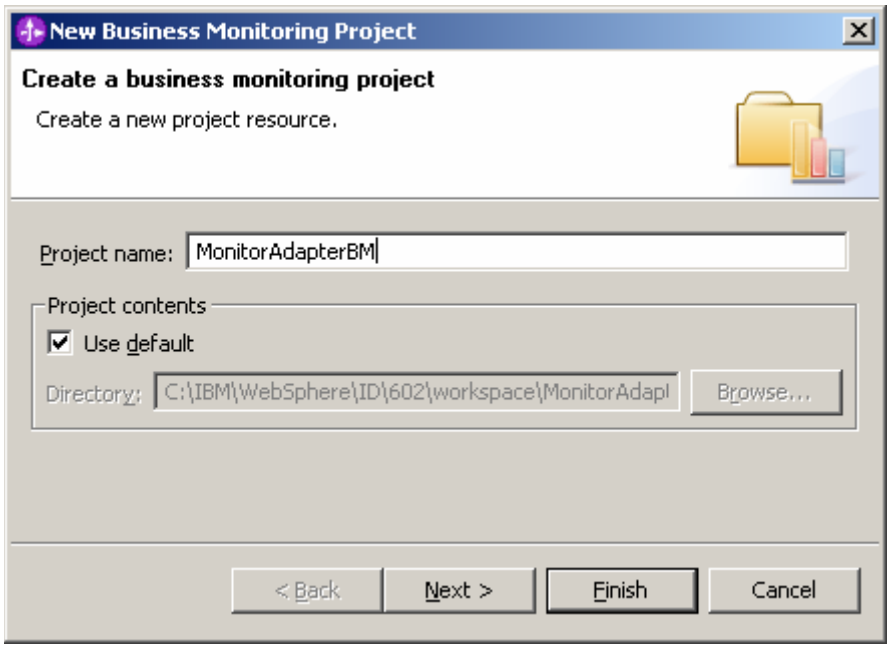
Figure 46. Select Monitor Tools ► Generate Monitor Model



____ 4. In the pop-up menu, click **New project**.

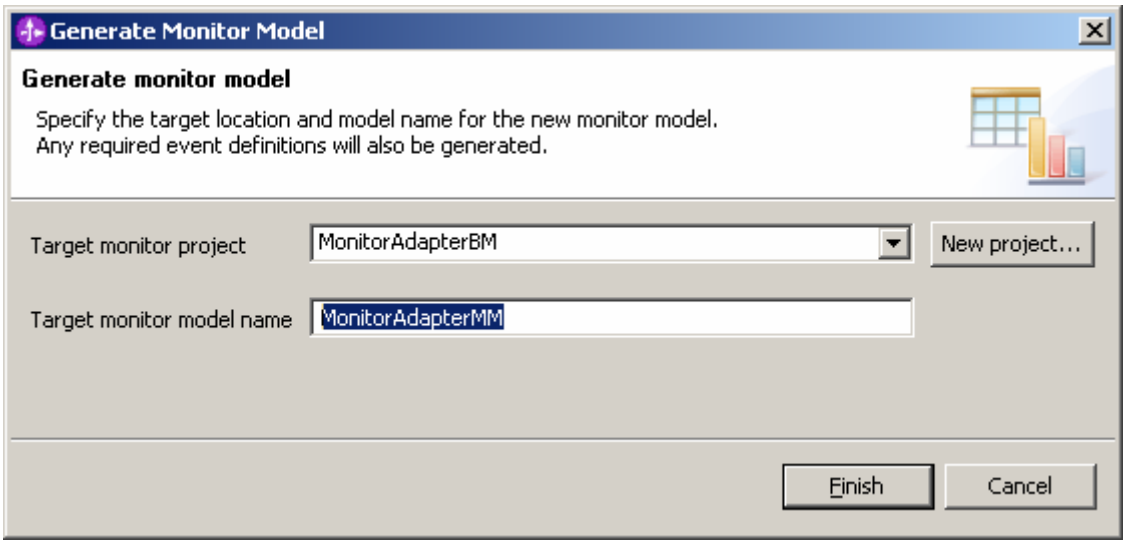
____ 5. For the name of the new business monitoring project, type **MonitorAdapterBM.** Click **Finish**.

Figure 47. Type the name of the new business monitoring project



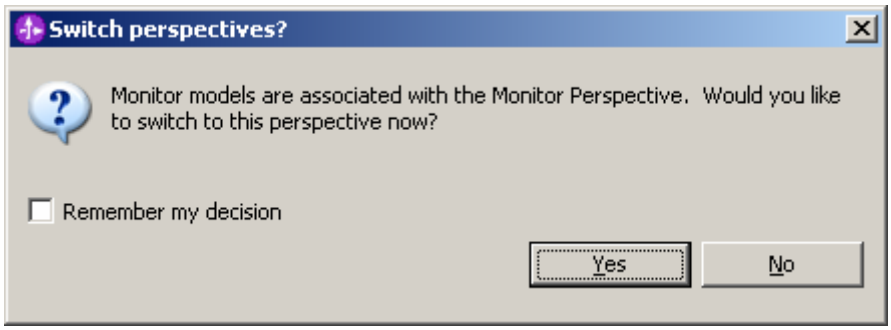
____ 6. For the name of the monitor model name, type **MonitorAdapterMM.** Click **Finish**.

Figure 48. Type the monitor model name



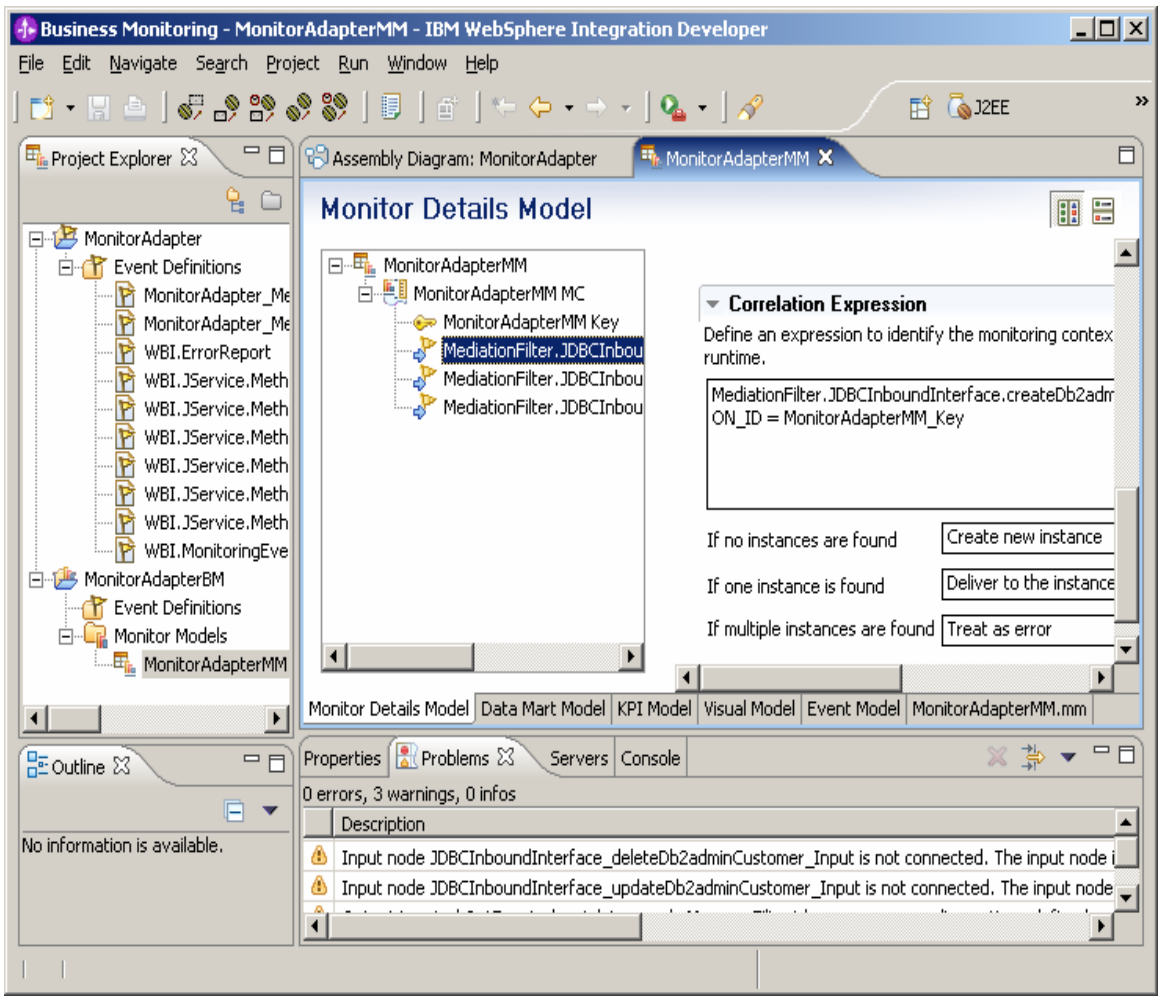
____ 7. In response to the prompt, click **Yes** to switch to switch to the **Business Monitoring** perspective.

Figure 49. Switch to switch to the Business Monitoring perspective



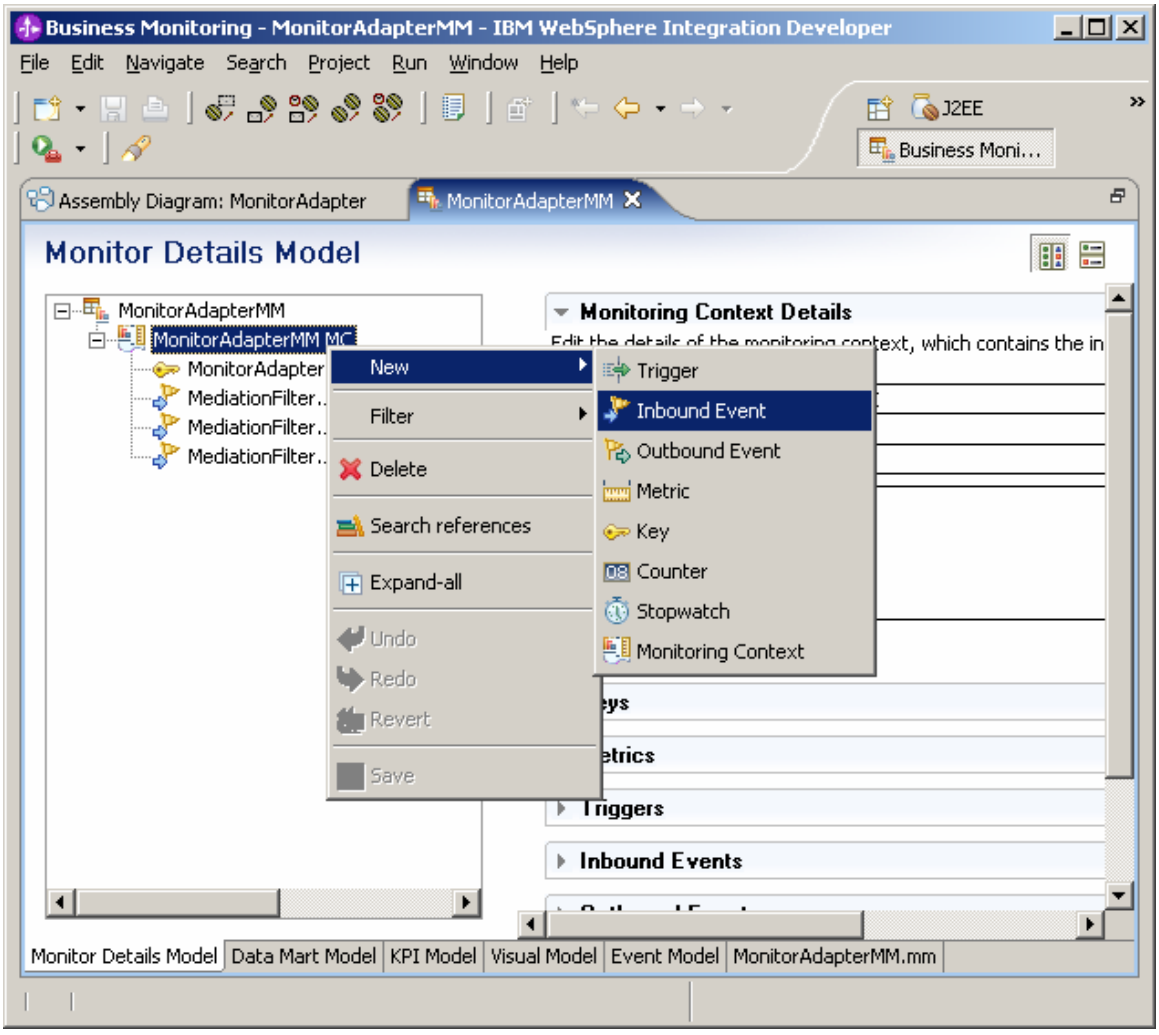
____ 8. A seed monitor model is generated, and will be augmented in the following steps.

Figure 50. Generate a seed monitor model



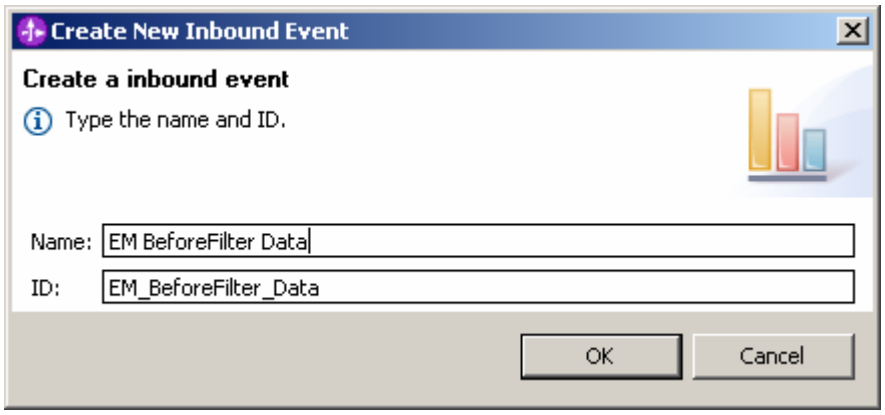
____ 9. Right-click **MonitorAdapterMM MC** and select **New ► Inbound Event**.

Figure 51. Select New► Inbound Event



____ 10. In the **Name** field, type **EM BeforeFilter Data.** Click **OK**.

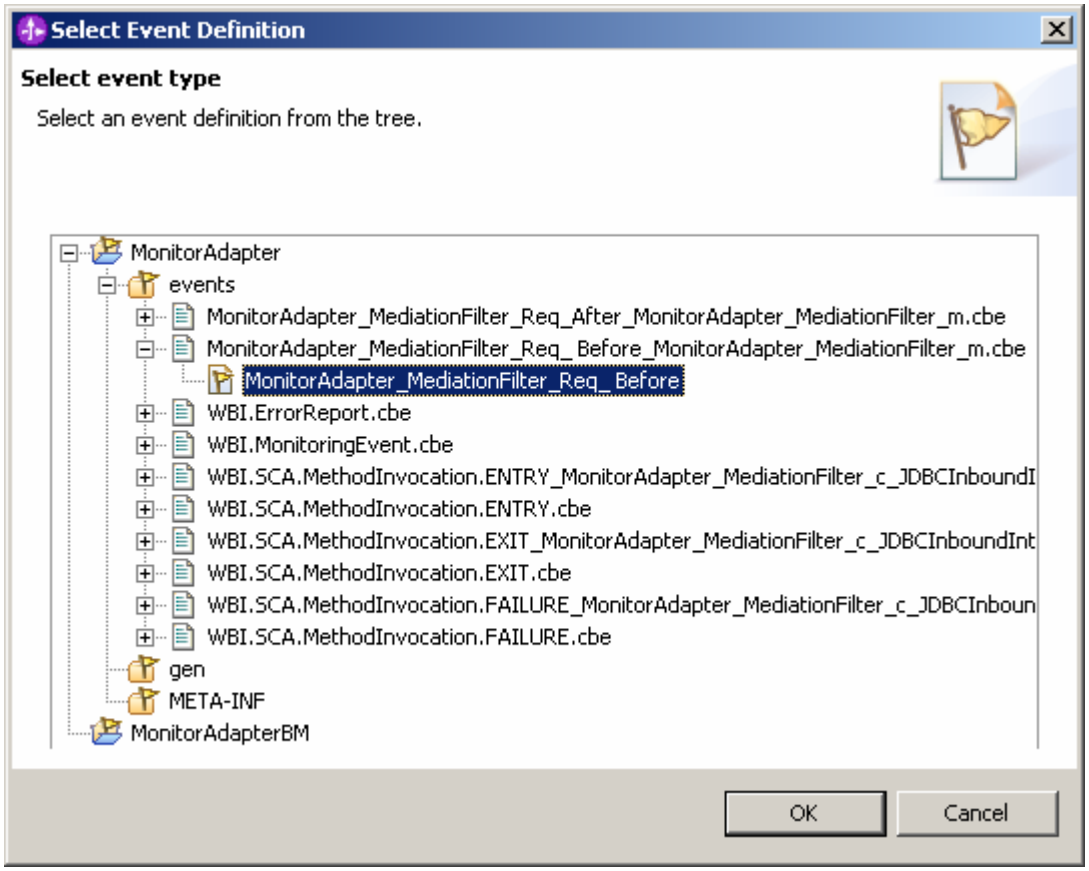
Figure 52. Type EM BeforeFilter Data in the Name field



____ 11. On the right panel, click **Inbound Event Details**, and then click **Browse…** to select a value for the **Type** property.

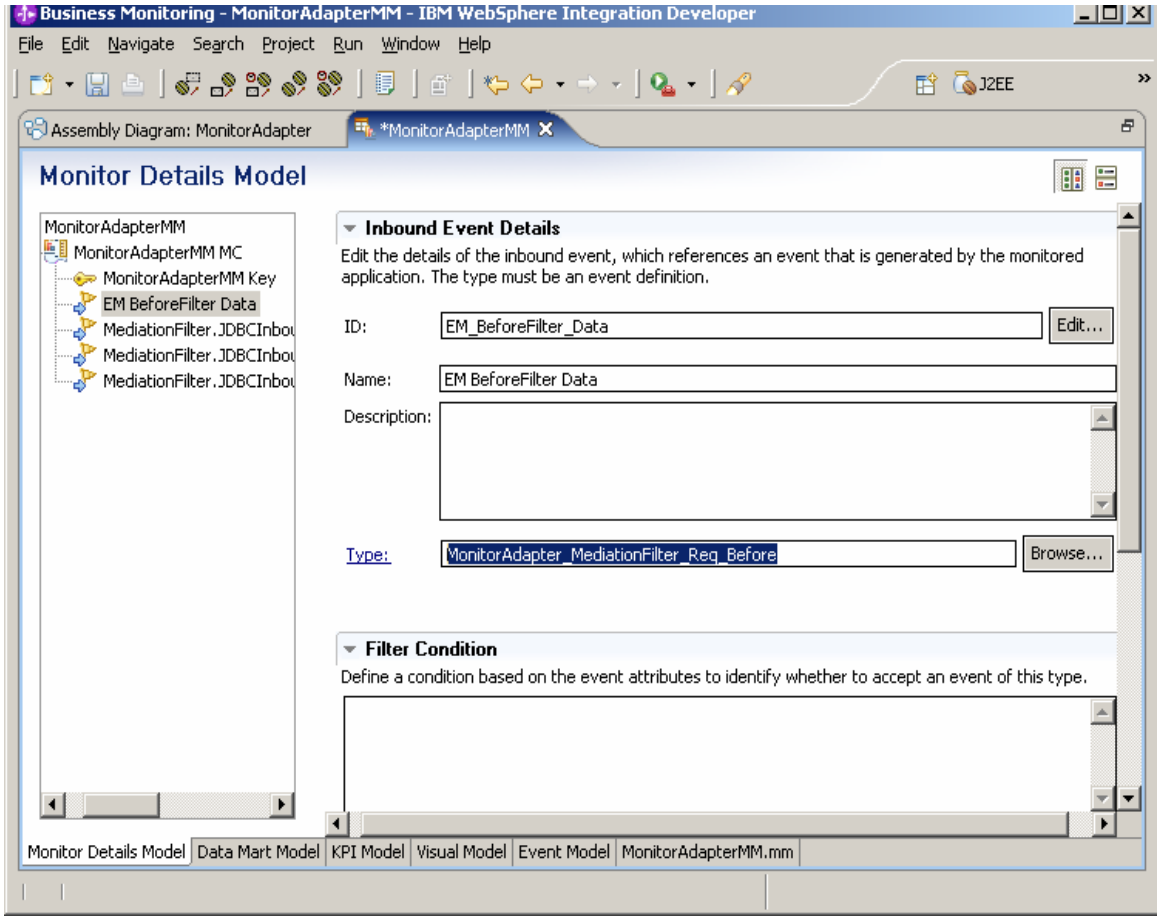
____ 12. Select **MonitorAdapter ► events ► MonitorAdapter_MediationFilter_Req_Before_Mon… ► MonitorAdapter_MediationFilter_Req_Before.** Click **OK**.

Figure 53. Select MonitorAdapter_MediationFilter_Req_Before



____ 13. The **EM BeforeFilter Data** inbound event will now represent the Common Base Event before the filter in mediation flow.

Figure 54. The inbound event will now represent the Common Base Event



____ 14. Continue working with the **EM BeforeFilter Data** event.

___ a. Scroll down the right panel.

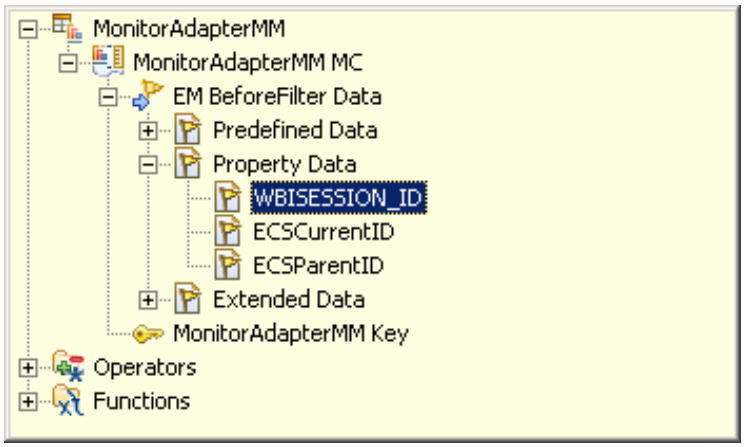
___ b. Set **Correlation Expression** using one of the following methods:

i. Enter the following expression directly:

```
EM_BeforeFilter_Data/property
Data/WBISESSION_ID =
MonitorAdapterMM_Key
```

ii. Press **Ctrl+Spacebar** to use the content assist function.

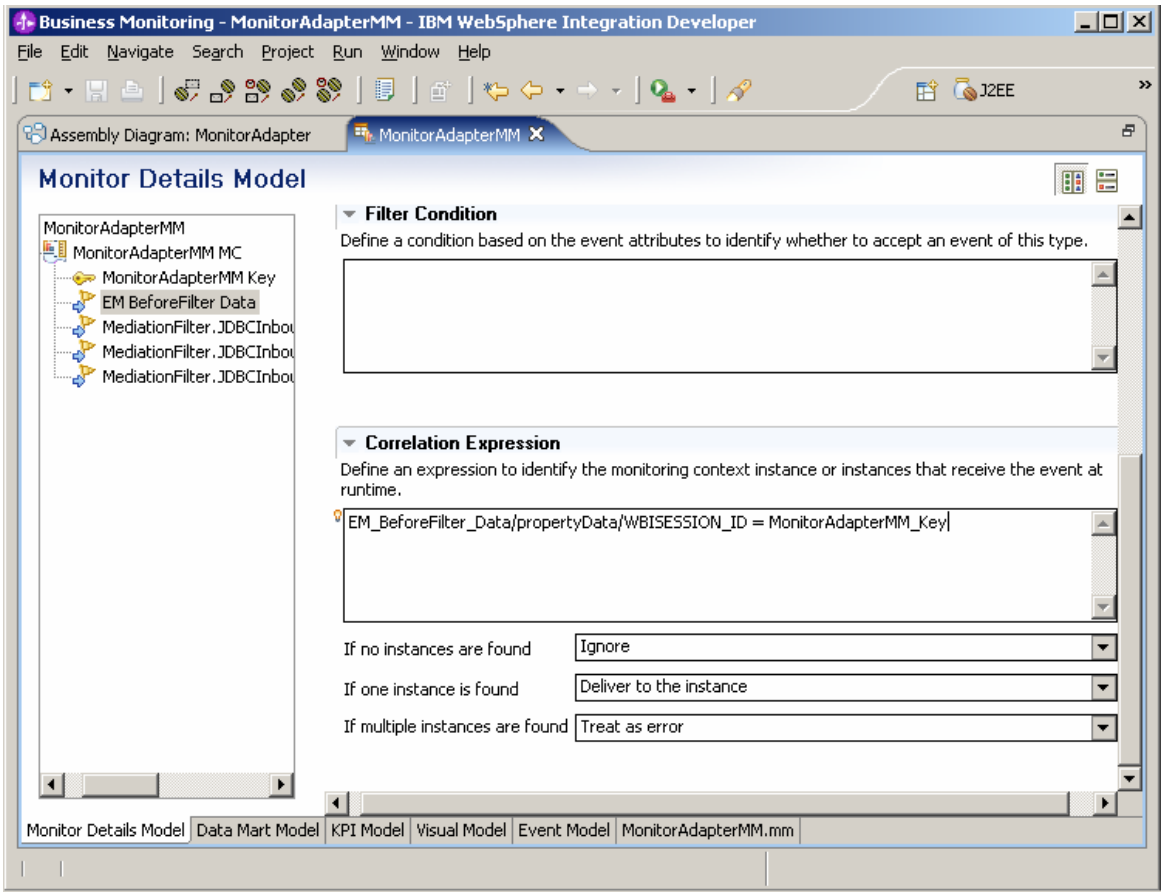
Figure 55. Set the Correlation Expression



___ c. For **If one instance is found**, select **Deliver to the instance**.

___ **d.** For **If multiple instances are found**, select **Treat as error**.

Figure 56. Setting the Correlation Expression



____ 15. Similarly, add an **EM AfterFilter Data** inbound event to represent the Common Base Event after the filter in the mediation flow.

___ a. Right-click **MonitorAdapterMM MC** and select **New ► Inbound Event**.

___ b. For **Name**, type **EM AfterFilter Data**.

___ c. Select **MonitorAdapter ► events ► MonitorAdapter_MediationFilter_Req_After_Mon… ► MonitorAdapter_MediationFilter_Req_After** as event type.

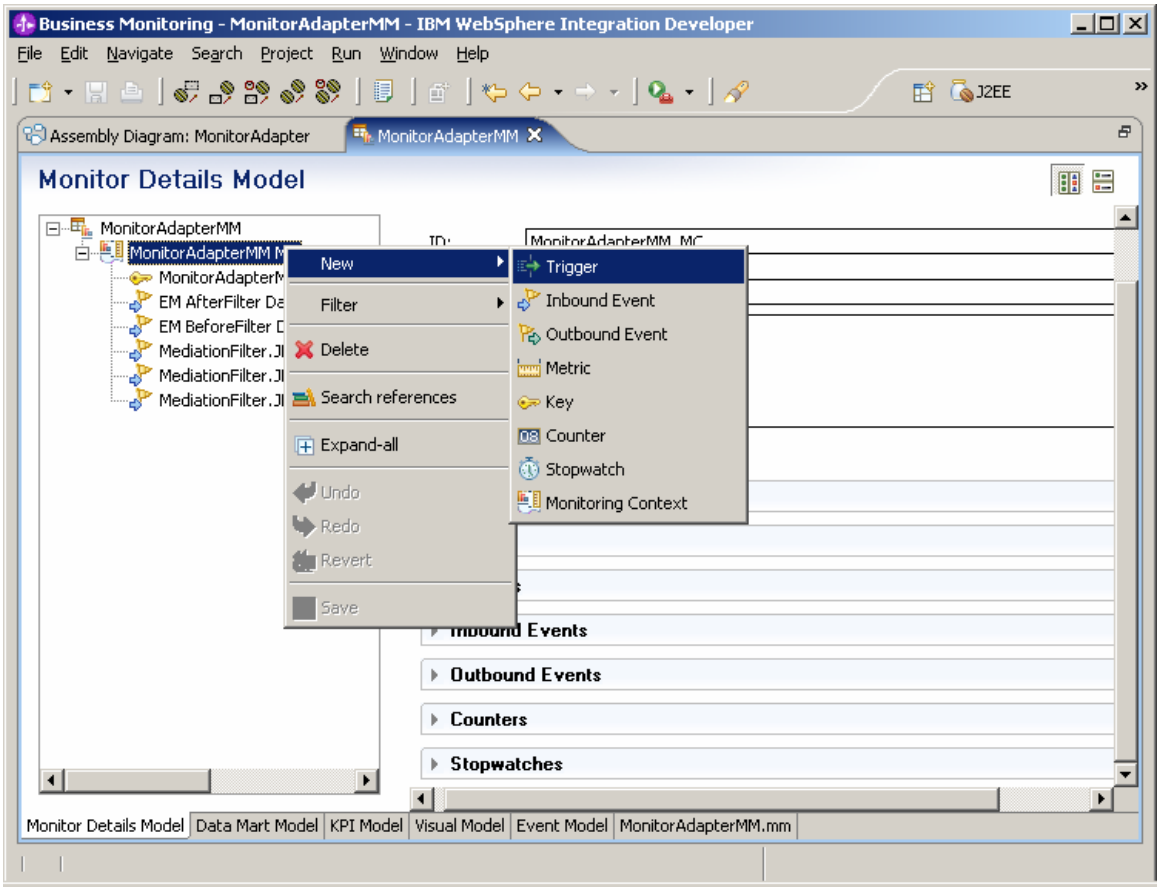
___ d. For **Correlation Expression** enter this value: **EM_AfterFilter_Data/propertyData/WBISESSION_ID = MonitorAdapterMM_Key**

___ e. For **If one instance is found**, select **Deliver to the instance**.

___ f. For **If multiple instances are found**, select **Treat as error**.

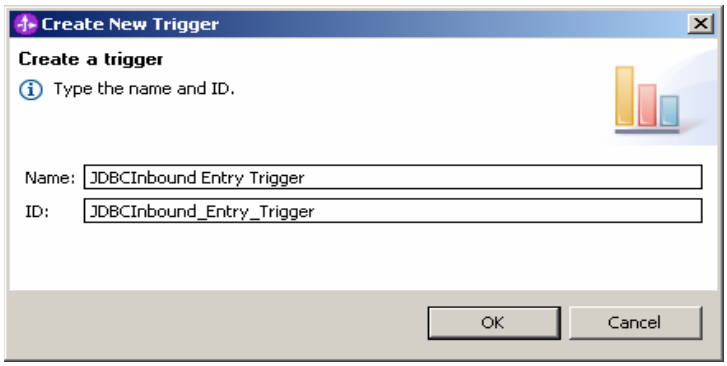
____ 16. Right-click **MonitorAdapterMM MC** and select **New ► Trigger.**

Figure 57. Select New► Trigger



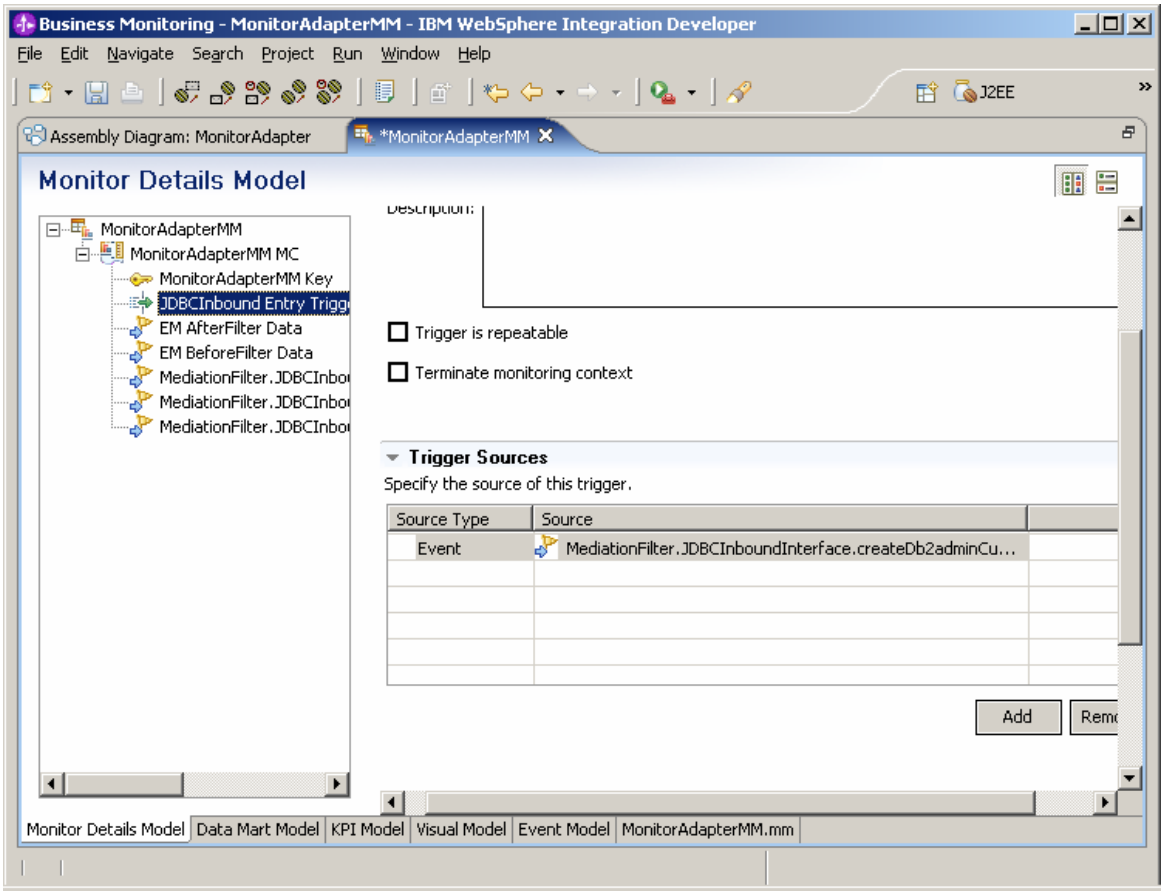
____ 17. For **Name**, type **JDBCInbound Entry Trigger**.

Figure 58. Type JDBCInbound Entry Trigger



____ 18. On the right panel, click **Add** to select **MediationFilter.JDBCInboundInterface.createDb2adminCustomer ENTRY** as the source event of trigger.

Figure 59. On the right panel, click Add



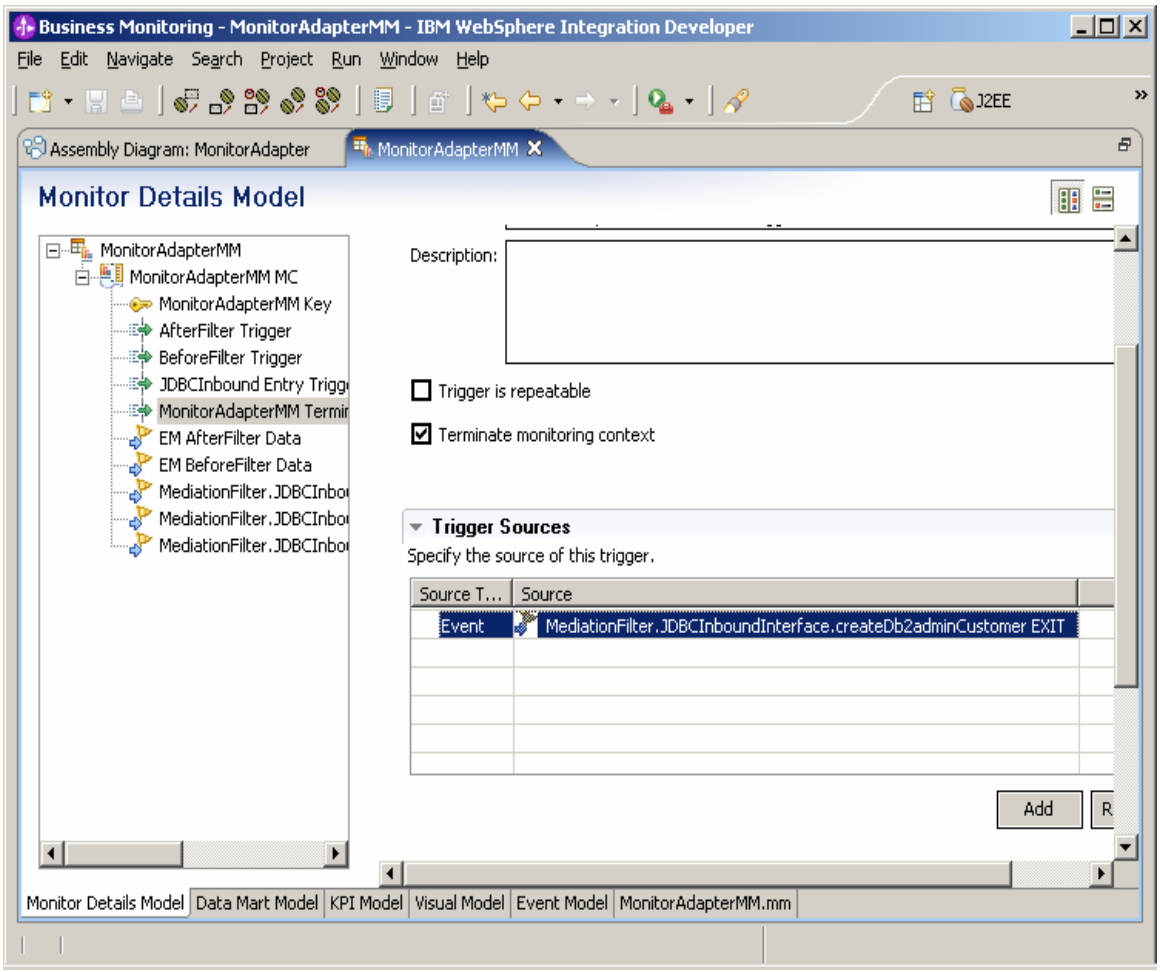
____ 19. Similarly, add trigger **BeforeFilter Trigger** with source event **EM BeforeFilter Data**.

____ 20. Add trigger **AfterFilter Trigger** with source event **EM AfterFilter Data**.

____ 21. Add trigger **MonitorAdapterMM Termination Trigger** with source event **MediationFilter.JDBCInboundInterface.createDb2adminCustomer EXIT**.

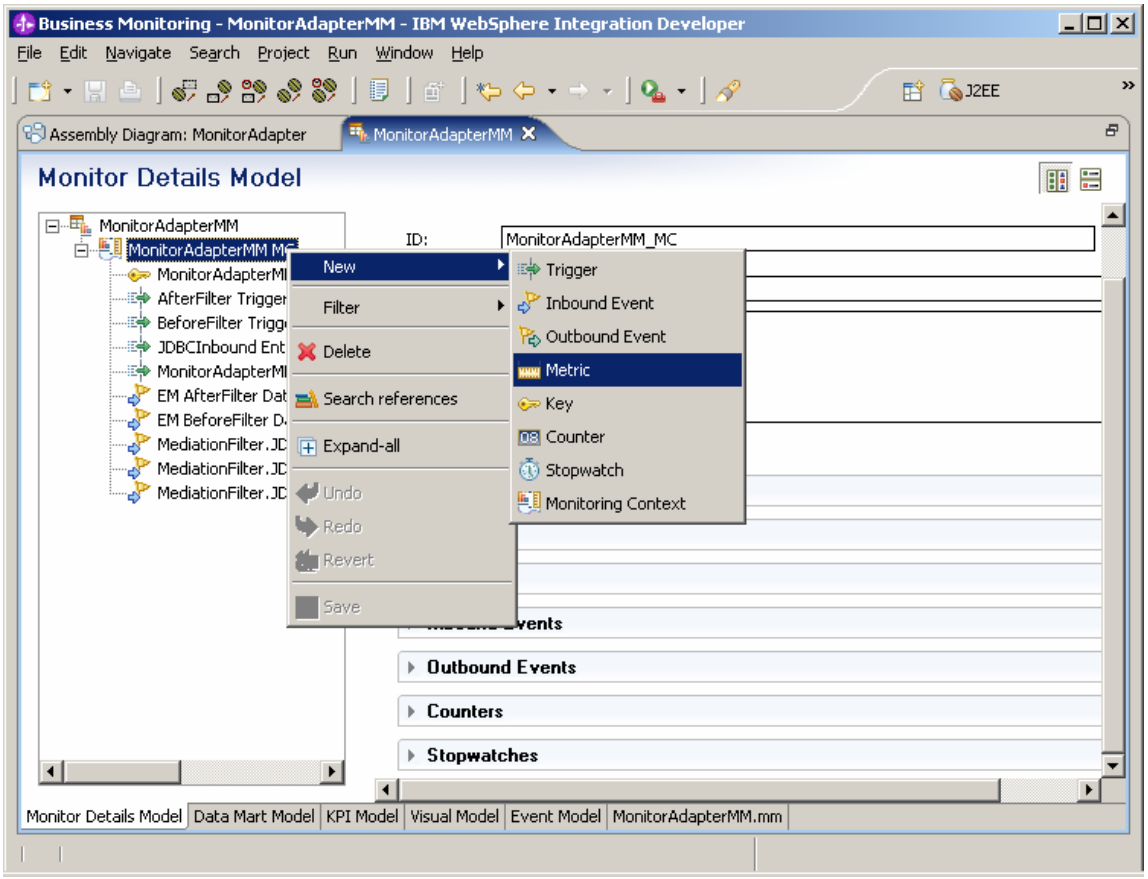
Note: Select the **Terminate monitoring context** check box. This will cause the current monitor context instance to be terminated when the EXIT event occurs.

Figure 60. Select the Terminate monitoring context check box



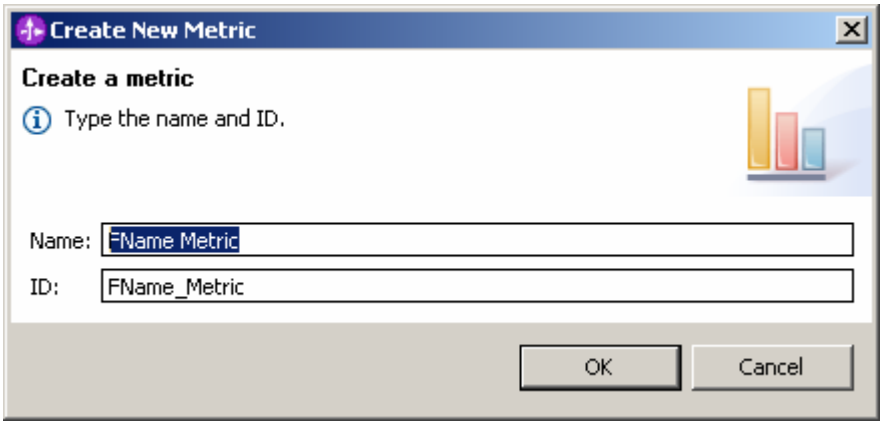
____ 22. Right-click **MonitorAdapterMM MC** and select **New ► Metric**.

Figure 61. Select New► Metric



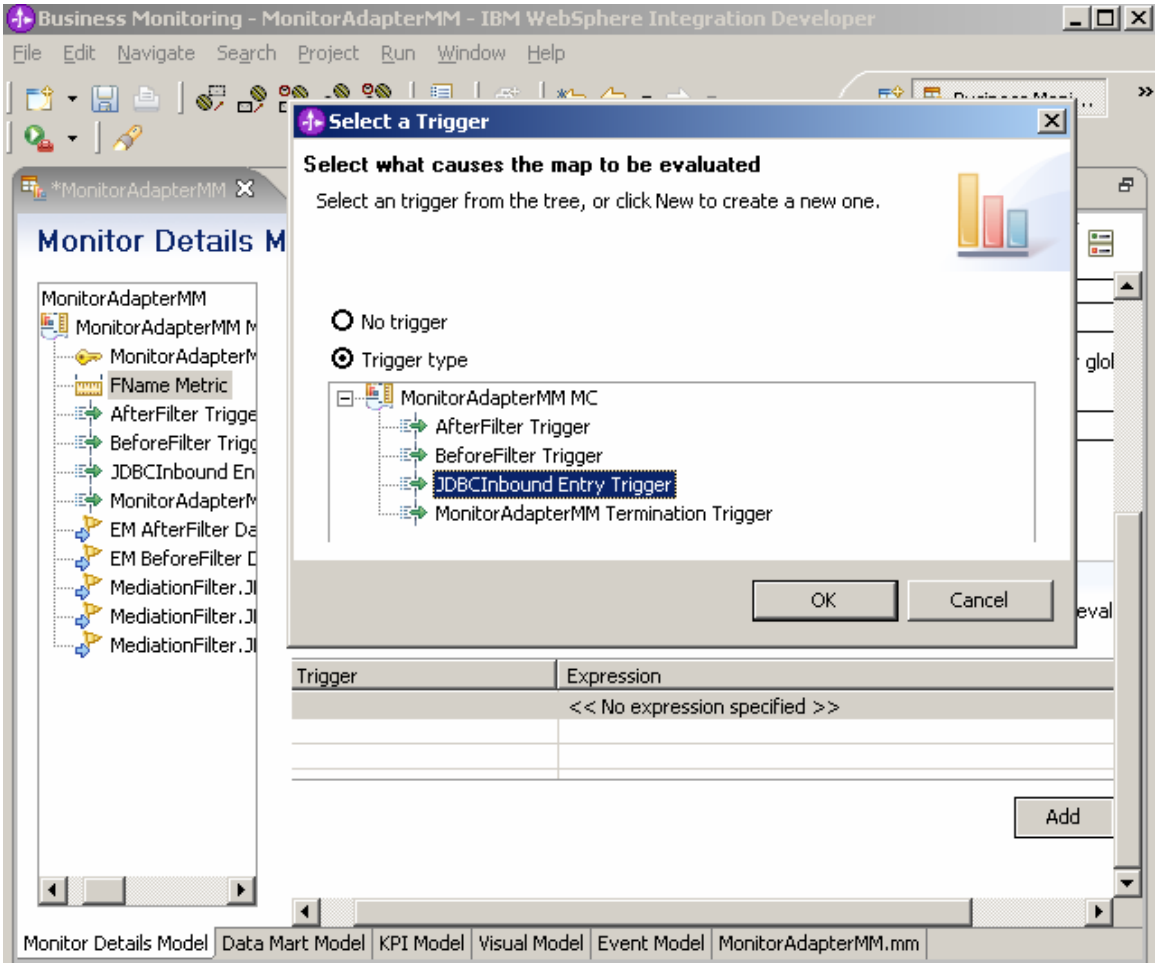
____ 23. For **Name**, type **FName Metric**. Click **OK.**

Figure 62. For Name, type FName Metric



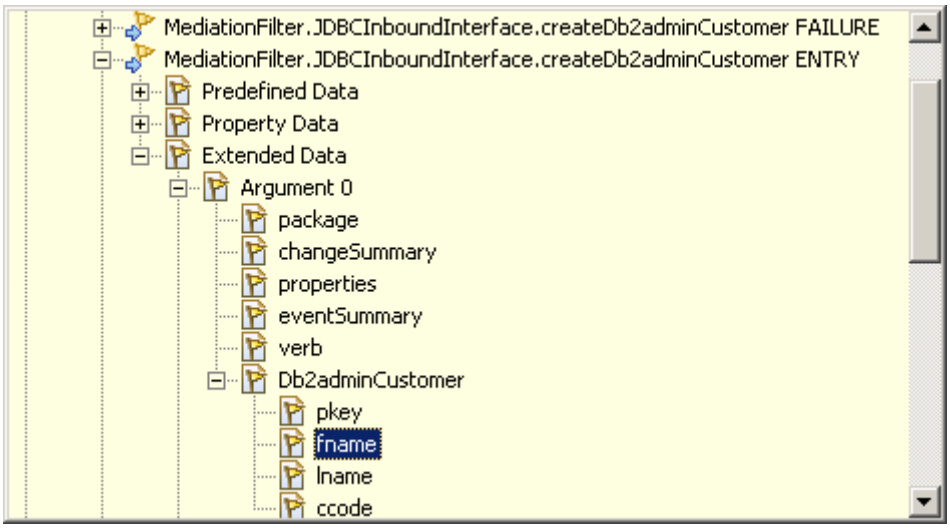
____ 24. On the right panel, click **Add** under **Metric Value Maps**.
____ 25. Click in the space under **Trigger**. Click the button that is displayed and select **JDBCInbound Entry Trigger**. Then click **OK**.

Figure 63. Select JDBCInbound Entry Trigger



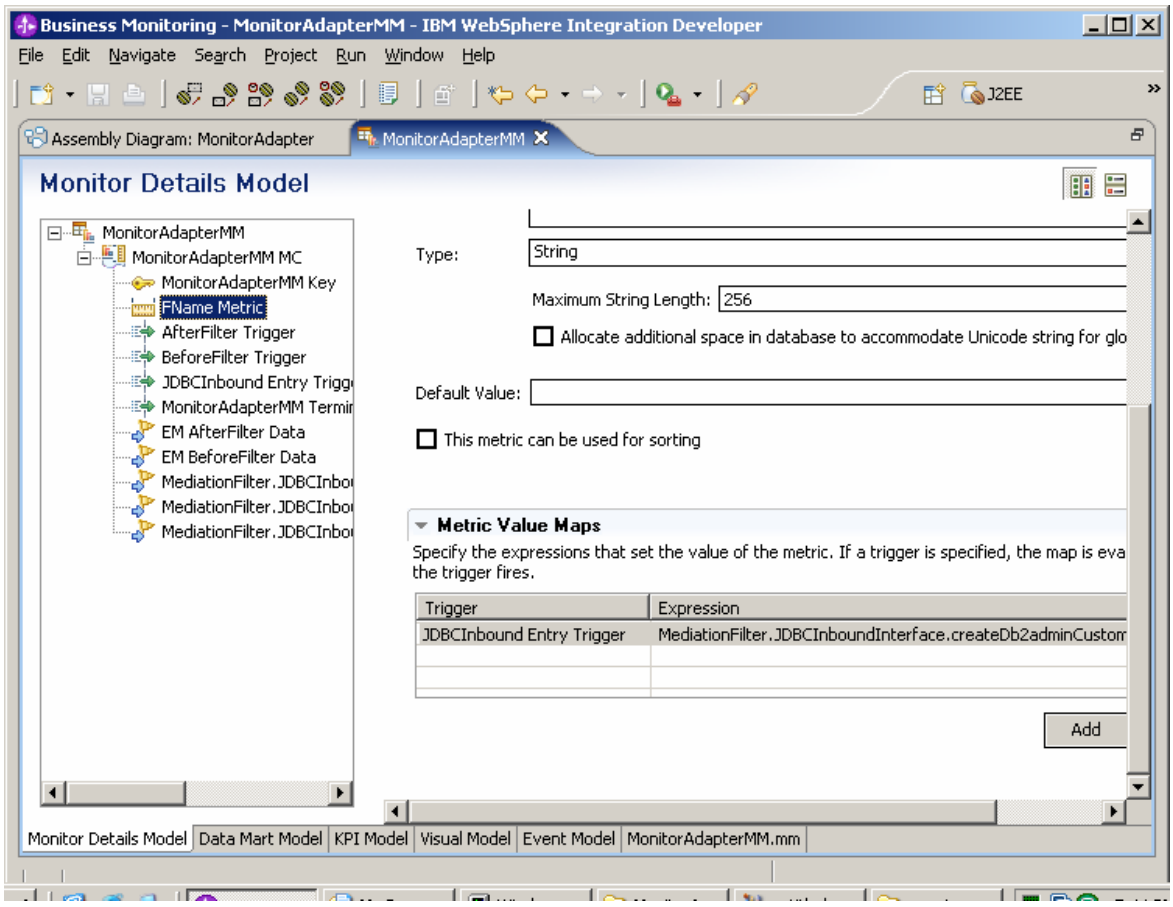
____ 26. Click in the space under **Expression**. Click the button that is displayed. In the Expression window, press **Ctrl+Spacebar** to use the content assist function to select **MonitorAdapterMM ► MonitorAdapterMM MC ► MediationFilter.JDBCInboundInterface.createDb2adminCustomer ENTRY ► Extended Data ► Argument 0 ► Db2adminCustomer ► fname**.

Figure 64. Press Ctrl+Spacebar to use the content assist function



____ 27. Click **OK**. The **FName Metric** is finished and will be assigned the **fname** value.

Figure 65. The FName Metric will be assigned the fname value



____ 28. Similarly, add **LName Metric** with **JDBCInbound Entry Trigger** and expression :

```
MediationFilter.JDBCInboundInterface.createDb2adminCustomer_ENTRY/extendedData/'Argument0'/Db2adminCustomer/lname.
```

____ 29. Add **CCode Metric** with **JDBCInbound Entry Trigger** and expression:

```
MediationFilter.JDBCInboundInterface.createDb2adminCustomer_ENTRY/extendedData/'Argument0'/Db2adminCustomer/ccode.
```

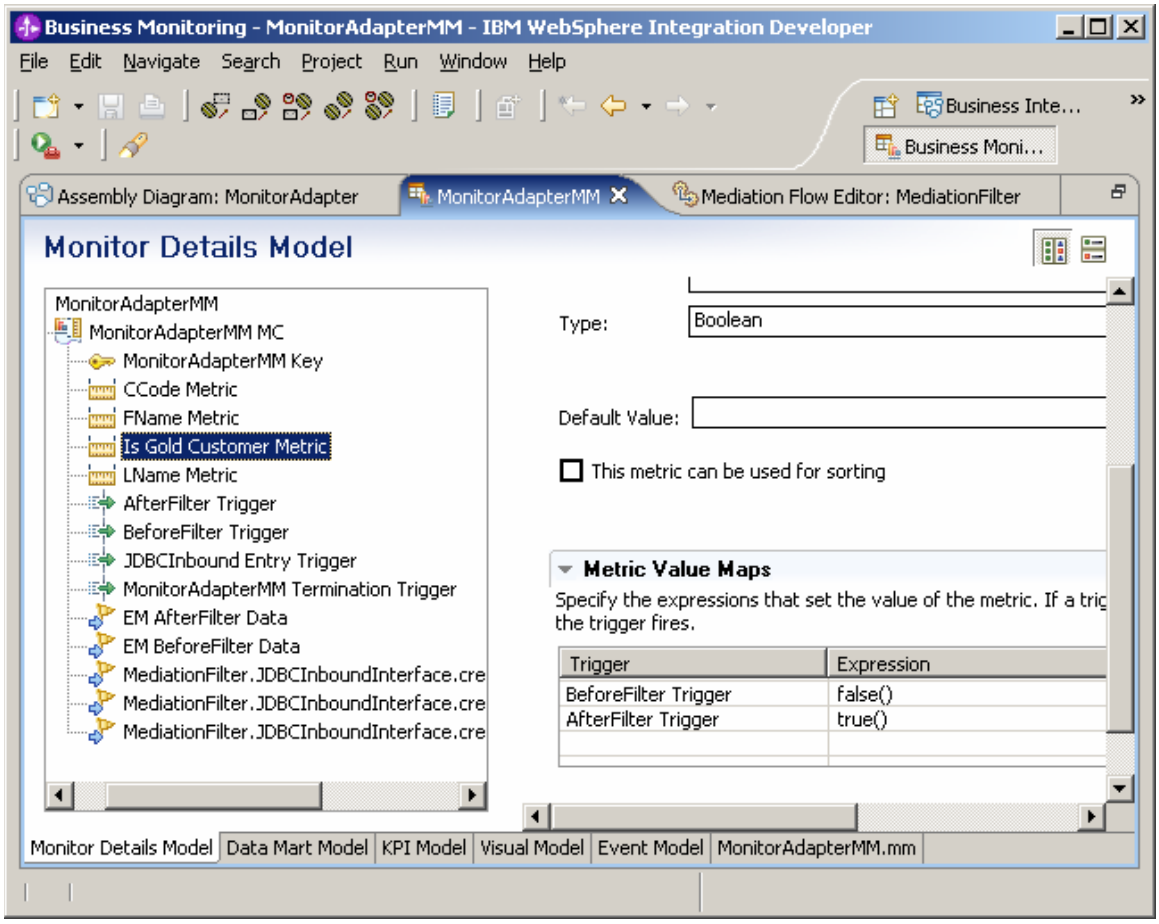
____ 30. Add **Is Gold Customer Metric**.

___ a. On the right panel, change **Type** to **Boolean**.

___ b. Add the following triggers:

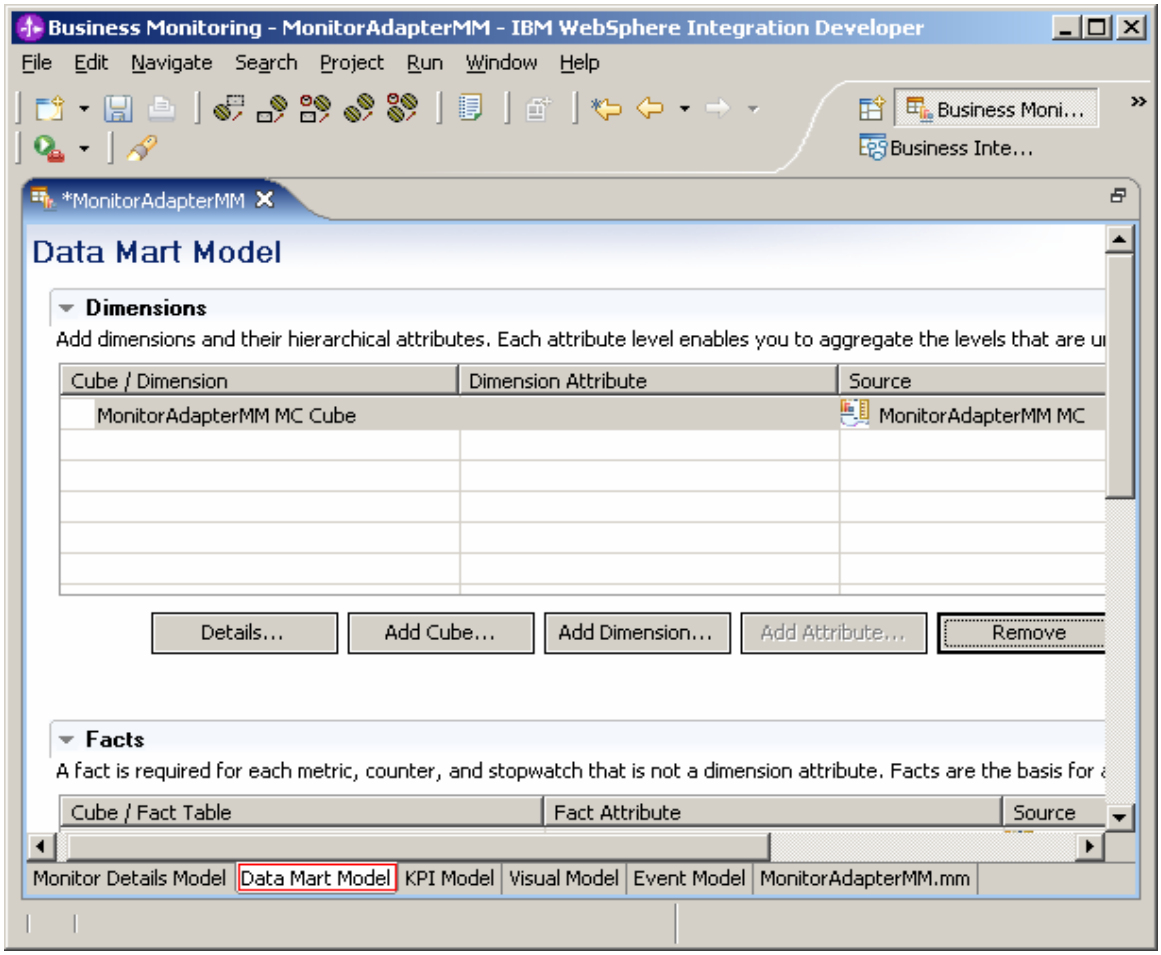
- **BeforeFilter Trigger** with Expression set to `false()`
- **AfterFilter Trigger** with Expression set to `true()`

Figure 66. Add Is Gold Customer Metric



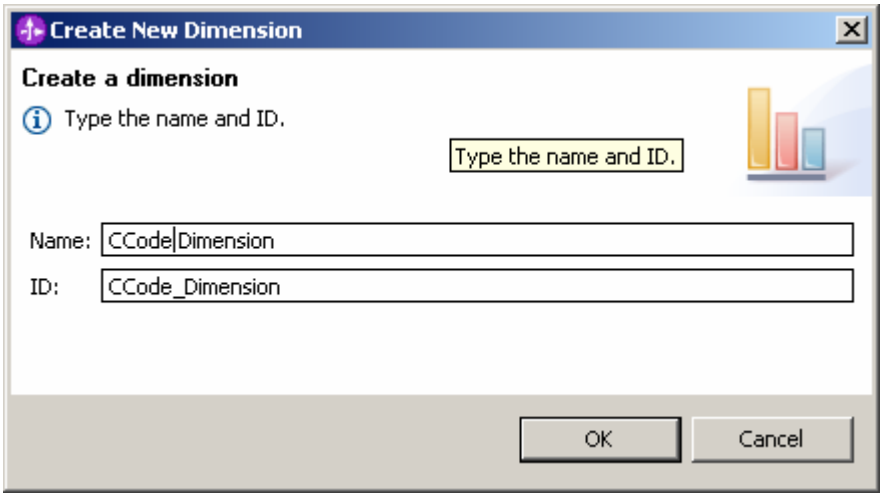
____ 31. Switch to the **Data Mart Model** panel by clicking **Data Mart Model** in the bottom of **MonitorAdapterMM** view.

Figure 67. Switch to the Data Mart Model



____ 32. Select **MonitorAdapterMM MC Cube** in the Dimensions view. Click **Add Dimension…** and type **CCode Dimension** as the name. Click **OK**.

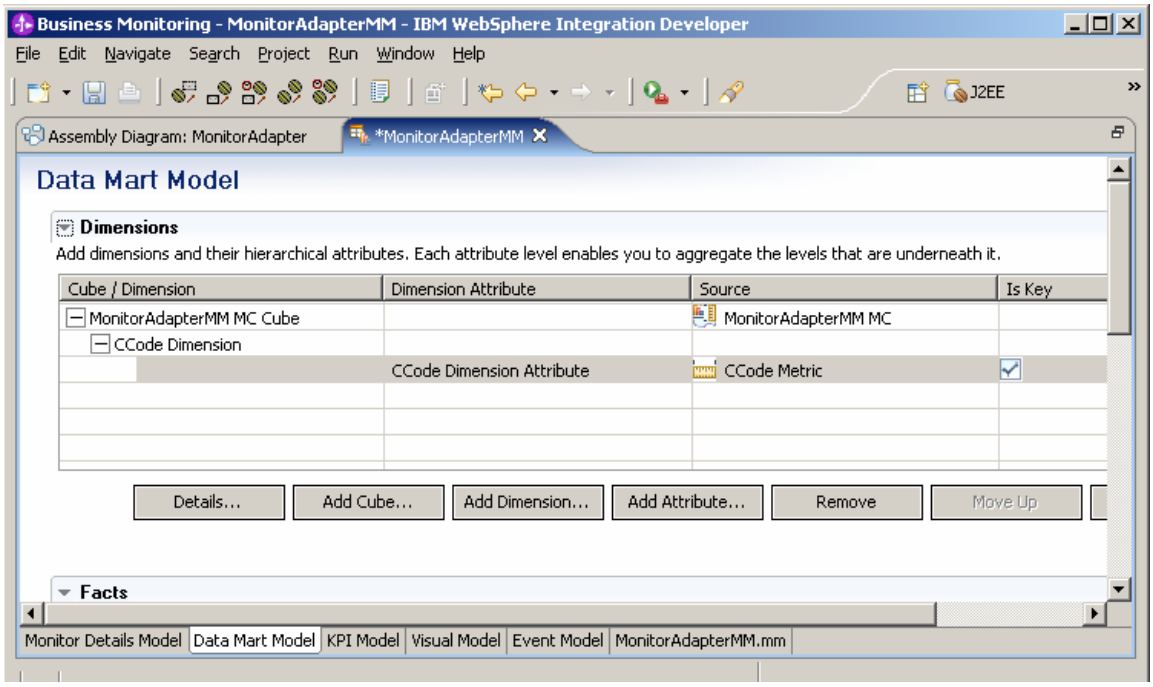
Figure 68. Click Add Dimension…



____ 33. Click **Add Attribute…** button and type **CCode Dimension Attribute** as the name.

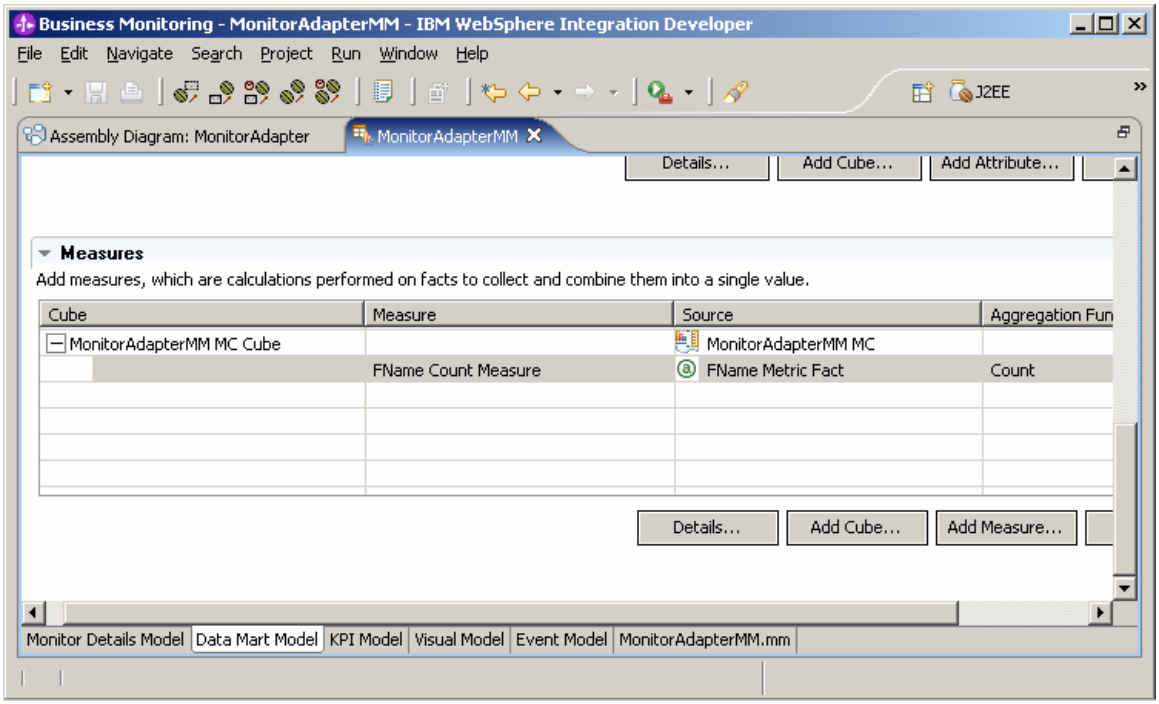
____ 34. Click in the space on the right of **CCode Dimension Attribute**. Click the button that is displayed and select **CCode Metric**. Click **OK**.

Figure 69. CCode Metric selection



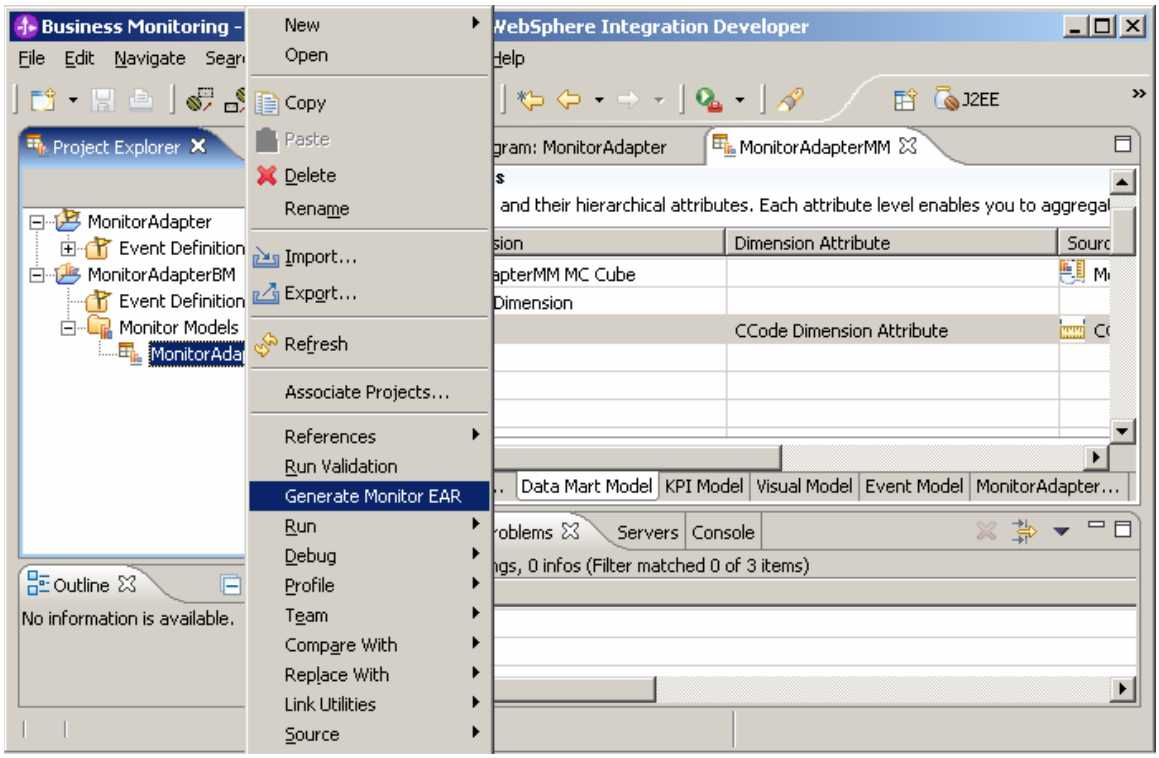
____ 35. Scroll down to the **Measures**.
- ___ a. Click **MonitorAdapterMM MC Cube**
- ___ b. Click **Add Measure…**.
- ___ c. Set **FName Count Measure** as name.
- ___ d. Click in the space on the right of **FName Count Measure**. Click the button that is displayed and select **FName Metric Fact**.
- ___ e. From the **Aggregation Function** menu, select **Count**.

Figure 70. Select Count from the Aggregation Function menu



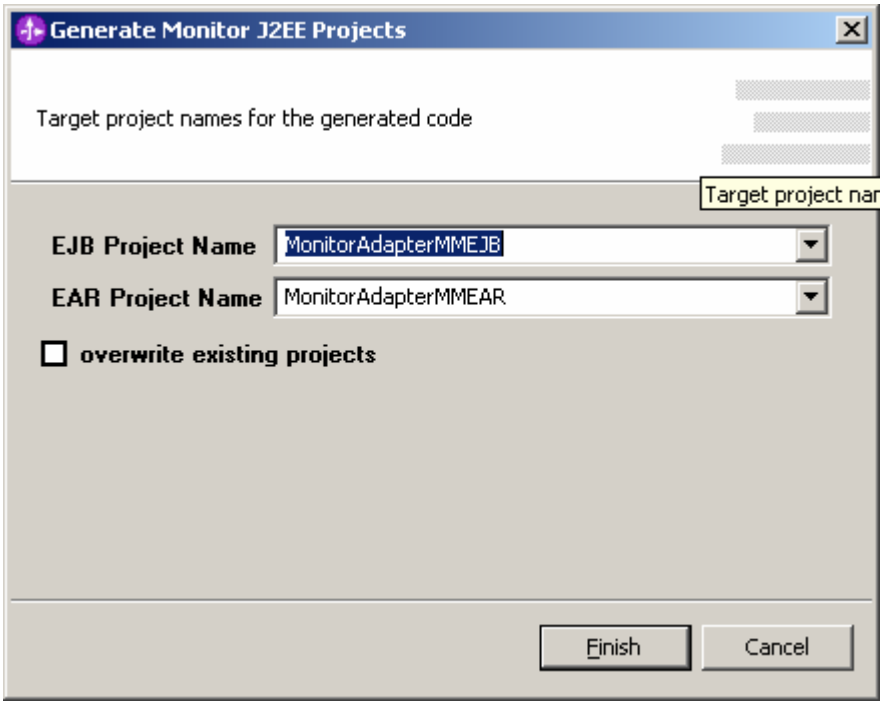
____ 36. Press **Ctrl+S** to save the monitor model.
____ 37. Right-click **MonitorAdapterMM** and select **Generate Monitor EAR**.

Figure 71. Generate Monitor EAR selection



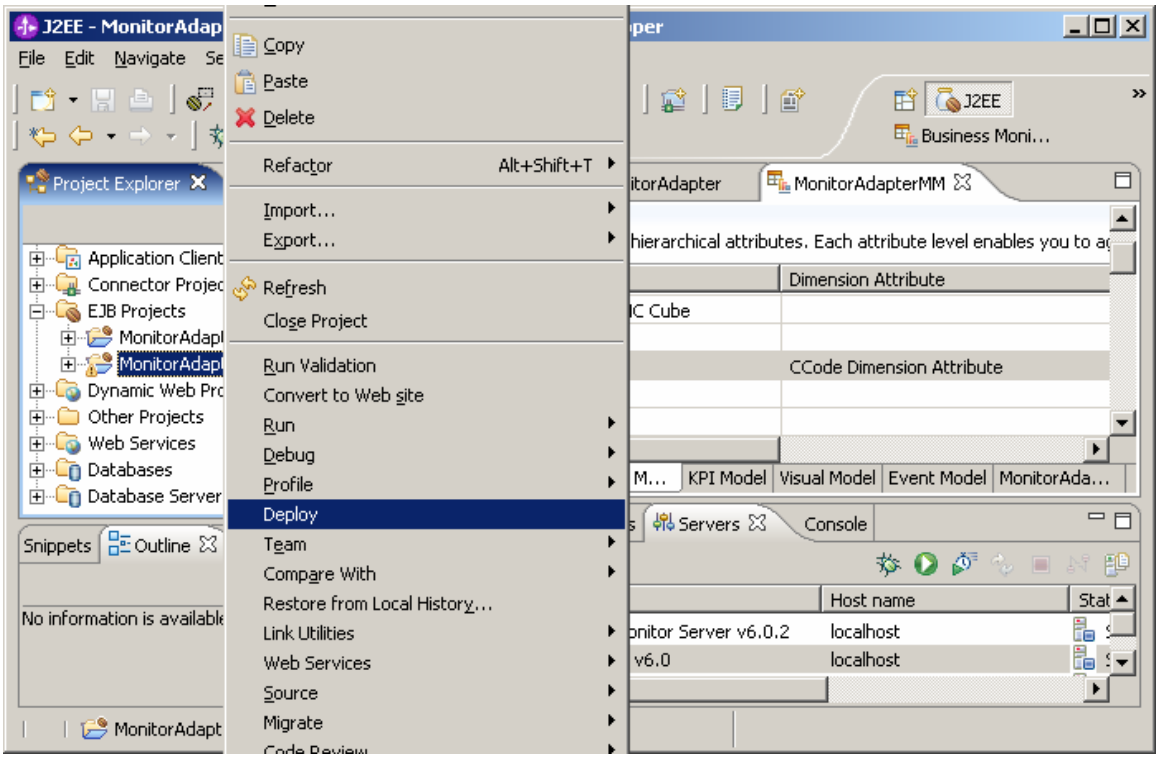
____ 38. In the window that is displayed, accept the default setting and click **Finish**.

Figure 72. Accept the default setting and click Finish



____ 39. Go to the **J2EE** perspective.
____ 40. If **Build Automatically** is turned off, select and build the EJB project – MonitorAdapterMMEJB.
____ 41. Right-click the EJB project **MonitorAdapterMMEJB** and select **Deploy**.

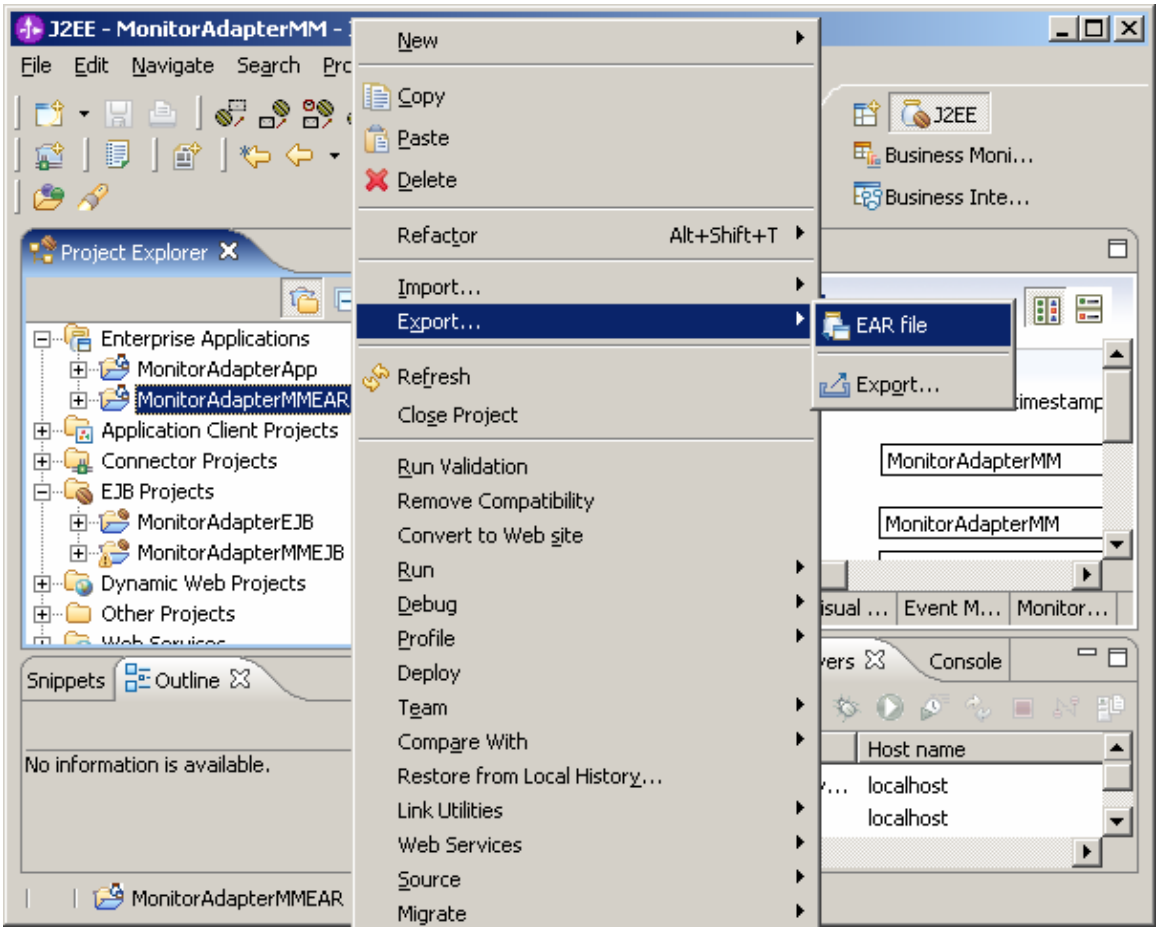
Figure 73. Right-click the EJB project MonitorAdapterMMEJB



____ 42. If **Build Automatically** is turned off, select and build the EAR project – MonitorAdapterMMEAR.

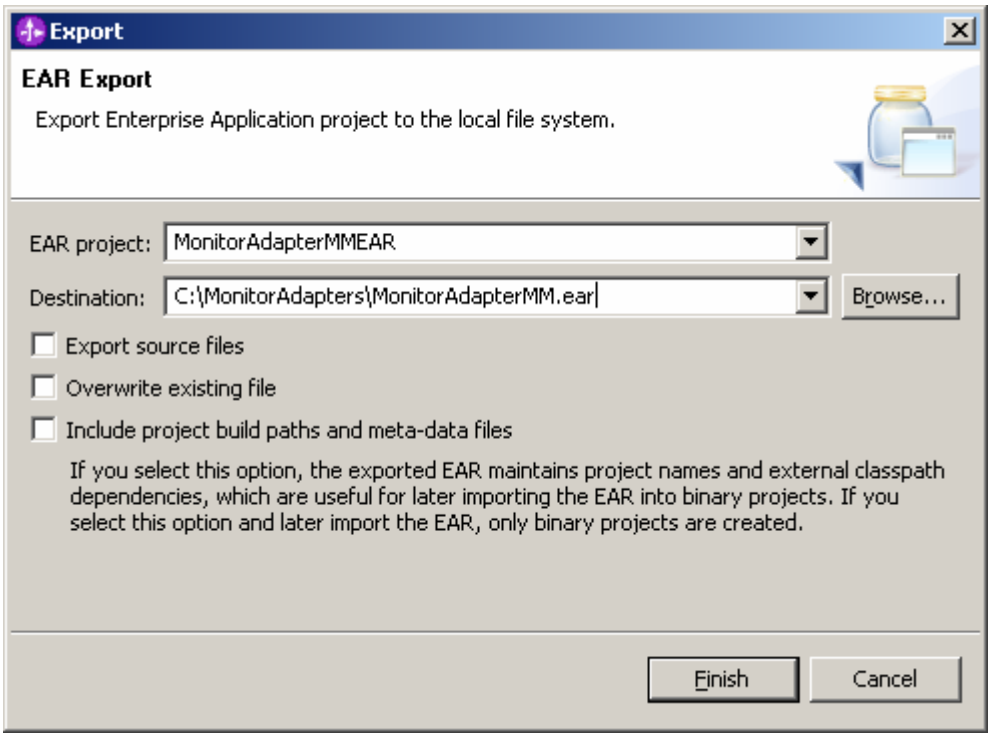
____ 43. Right-click **Enterprise Applications ► MonitorAdapterMMEAR** and select **Export… ► EAR file**.

Figure 74. Select Export… ► EAR file



____ 44. Set the destination file name. Click **Finish**.

Figure 75. Set the destination file name



____ 45. You now have a monitor model EAR file, which will be deployed in monitor server later.

Part 3: Deploying the Adapter and Mediation Application

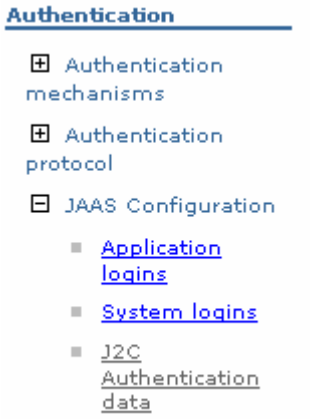
In this section you will use the WebSphere Process Server administrative console to install the EAR file that was created in Part1. To deploy this EAR file, you will use the same WebSphere Process Server that the WebSphere Business Monitor server resides in.

____ 1. Start the Monitor server, and then bring up the administrative console.
   ___ a. In Windows, click **Start ► All Programs ► IBM WebSphere ► Process Server 6.0 ► Profiles ► wbmonitor ► Start the server**.
   ___ b. In Windows, click **Start ► All Programs ► IBM WebSphere ► Process Server 6.0 ► Profiles ► wbmonitor ► Administrative console**.
____ 2. Click **Log in** to login.
____ 3. From the left menu, click **Security ► Global Security**.

Figure 76. Click Security ► Global Security

____ 4. Click **Authentication ►JAAS Configuration ►J2C Authentication Data**.

Figure 77. Authentication ► JAAS Configuration ► J2C Authentication Data



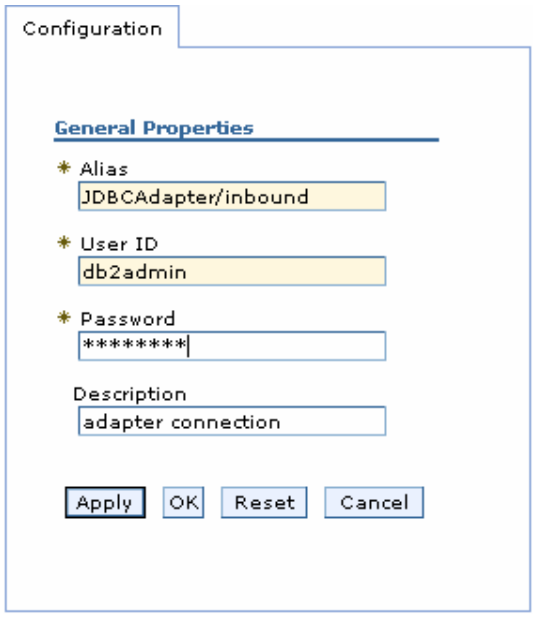
____ 5. Click **New** and enter the following information:

___ a. **Alias:** JDBCAdapter/inbound (This should be consistent with the value set in Part 1: Creating a module containing the JDBC adapter and mediation flow and must not contain the node name.)

___ b. **User ID:** db2admin

___ c. **Password:** the password for db2admin

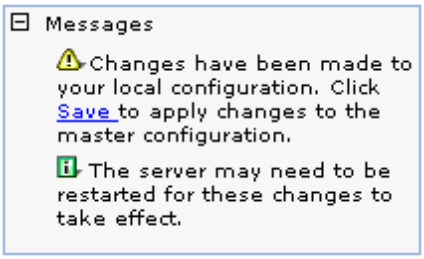
Figure 78. General Properties



____ 6. Click **Apply**.

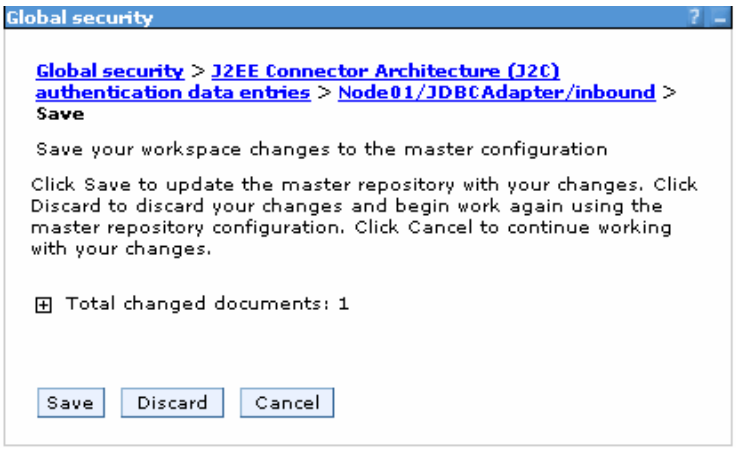
____ 7. When you see the following message, click **Save**.

Figure 79. Click Save when you receive this message



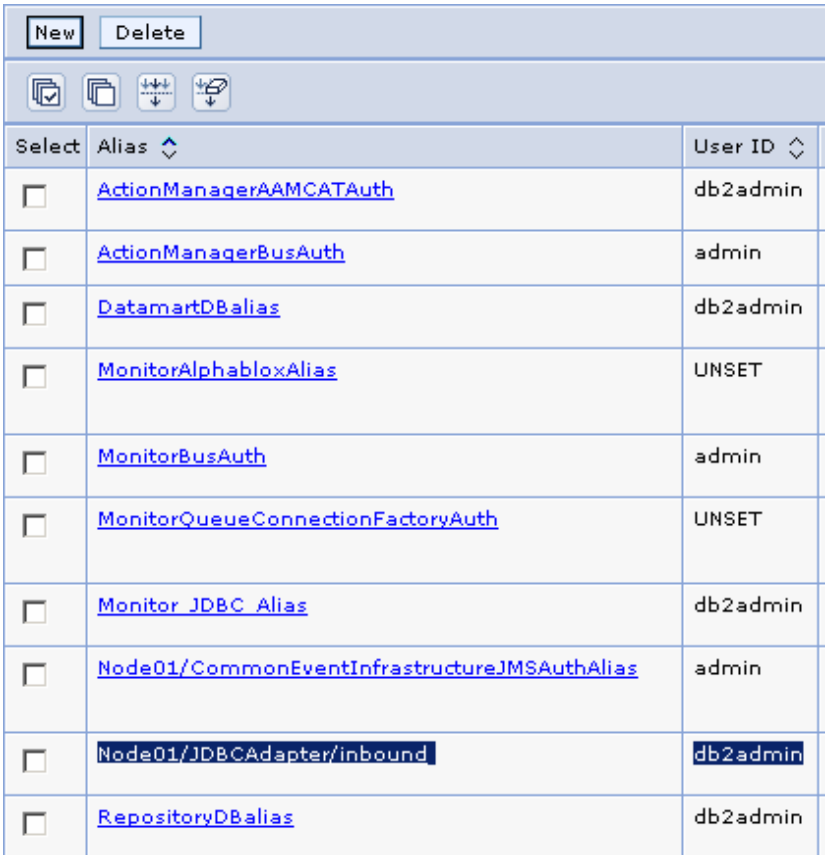
____ 8. When the next window is displayed, click **Save** again.

Figure 80. Click Save when you receive this message



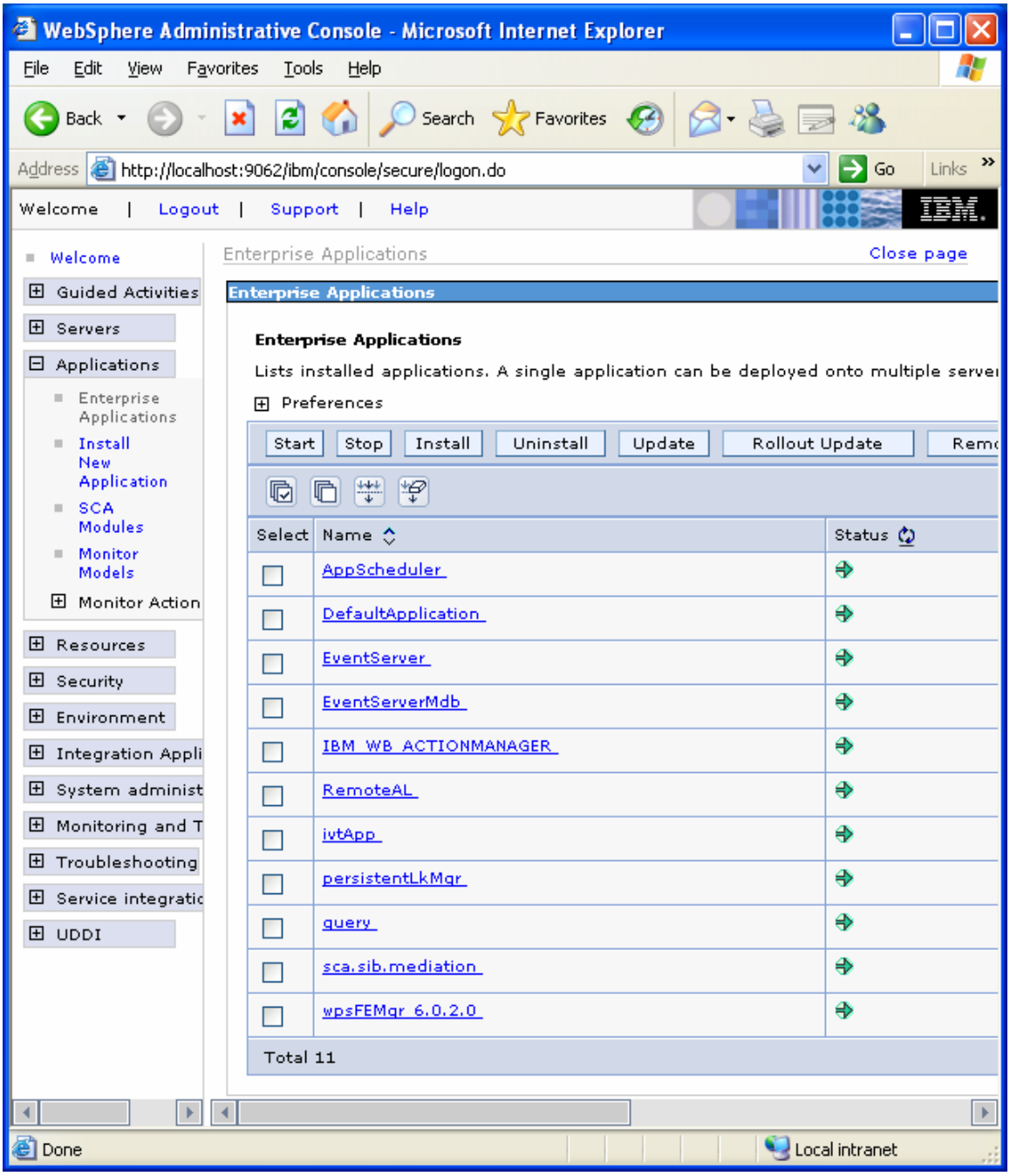
____ 9. Verify that the list includes the new entry. The alias name for the entry starts with the node name followed by a forward slash (such as Node01/), and the complete alias name matches the value set in Part 1: Creating a module containing the JDBC adapter and mediation flow.

Figure 81. Verify that the list includes the new entry



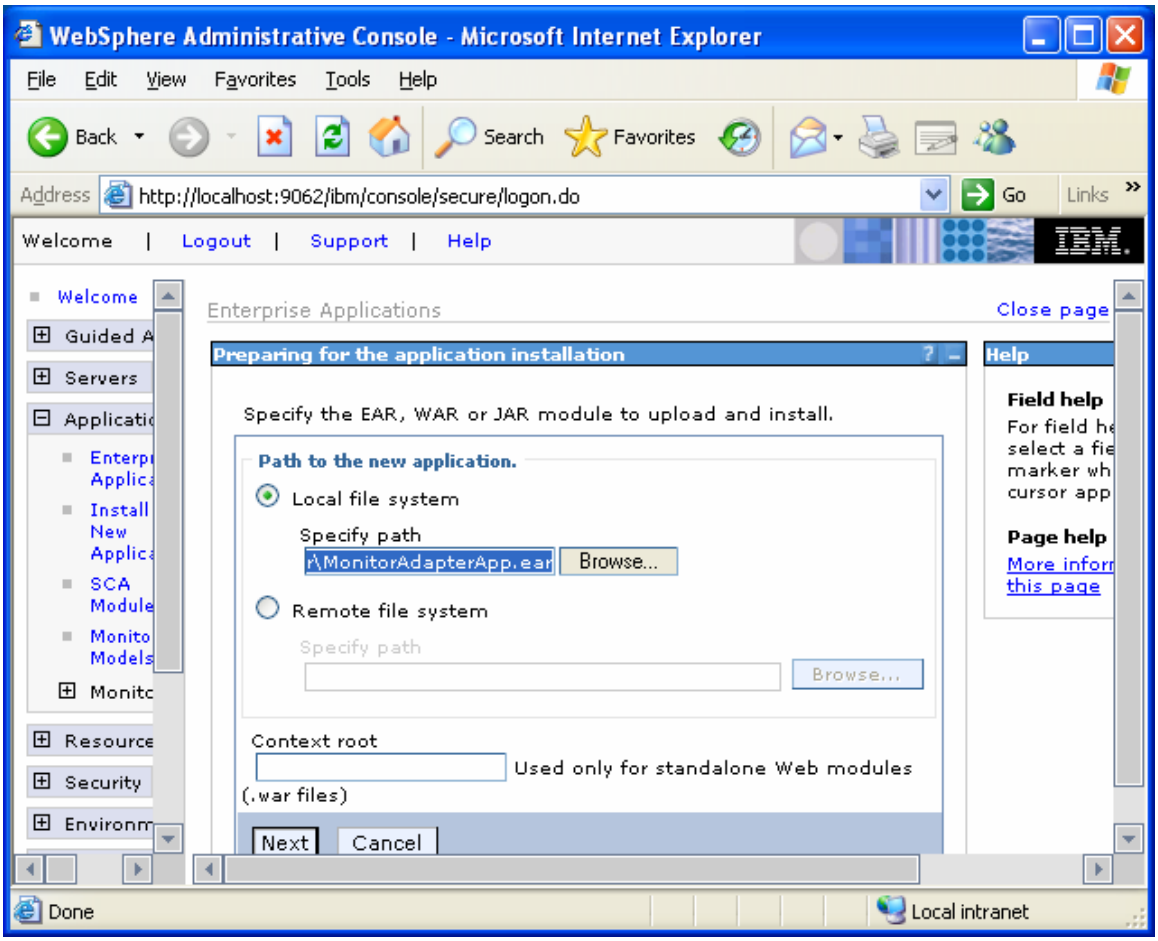
____ 10. From the left menu of administrative console, click **Applications ► Enterprise Applications**.

Figure 82. Click Applications ► Enterprise Applications



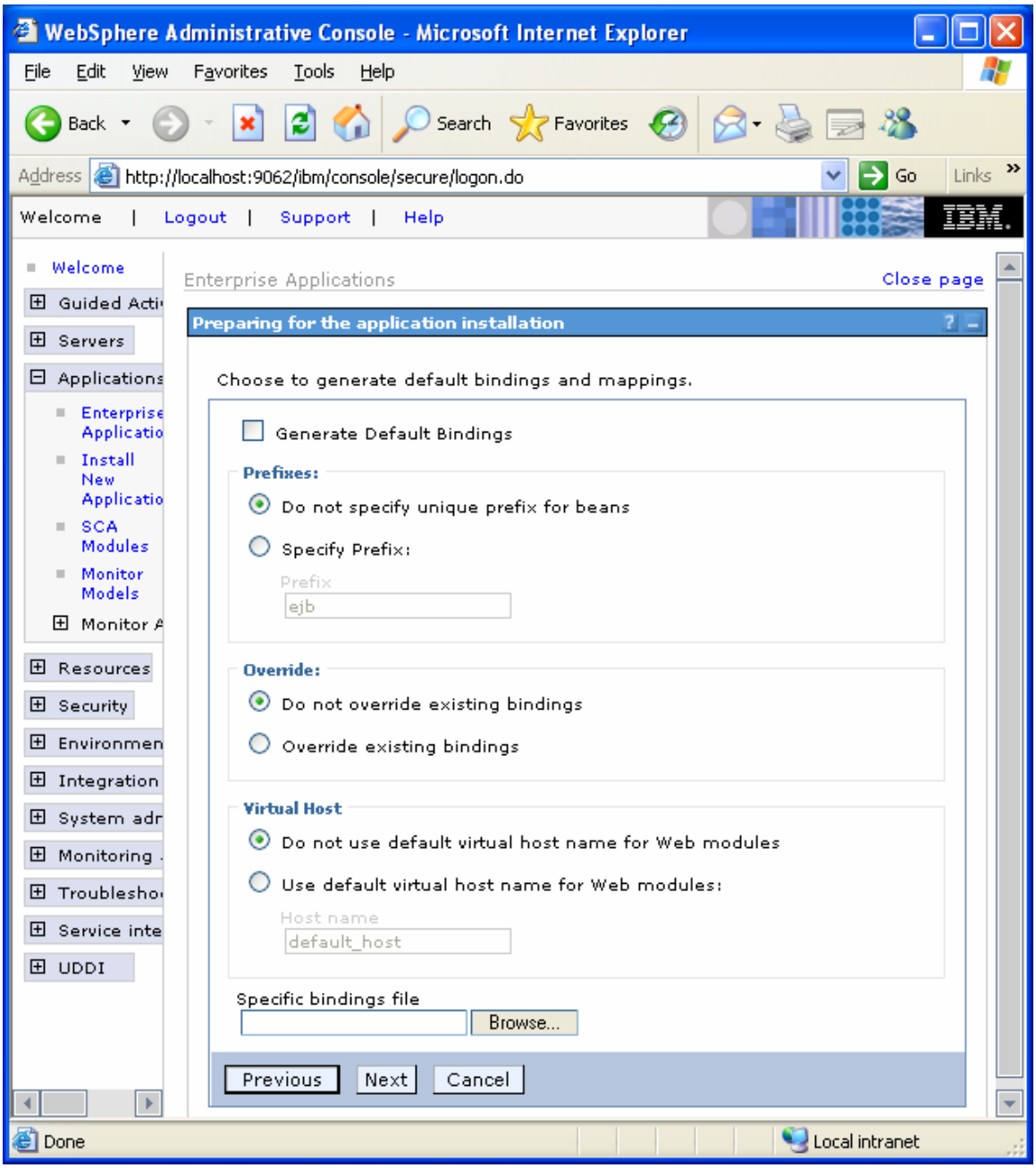
____ 11. Click **Install** button.
____ 12. Browse to the MonitorAdapterApp.ear file, which was exported into WebSphere Integration Developer in Part 2: Generating a monitor model from SCA and Mediation, and click **Next**.

Figure 83. Browse to the MonitorAdapterApp.ear file



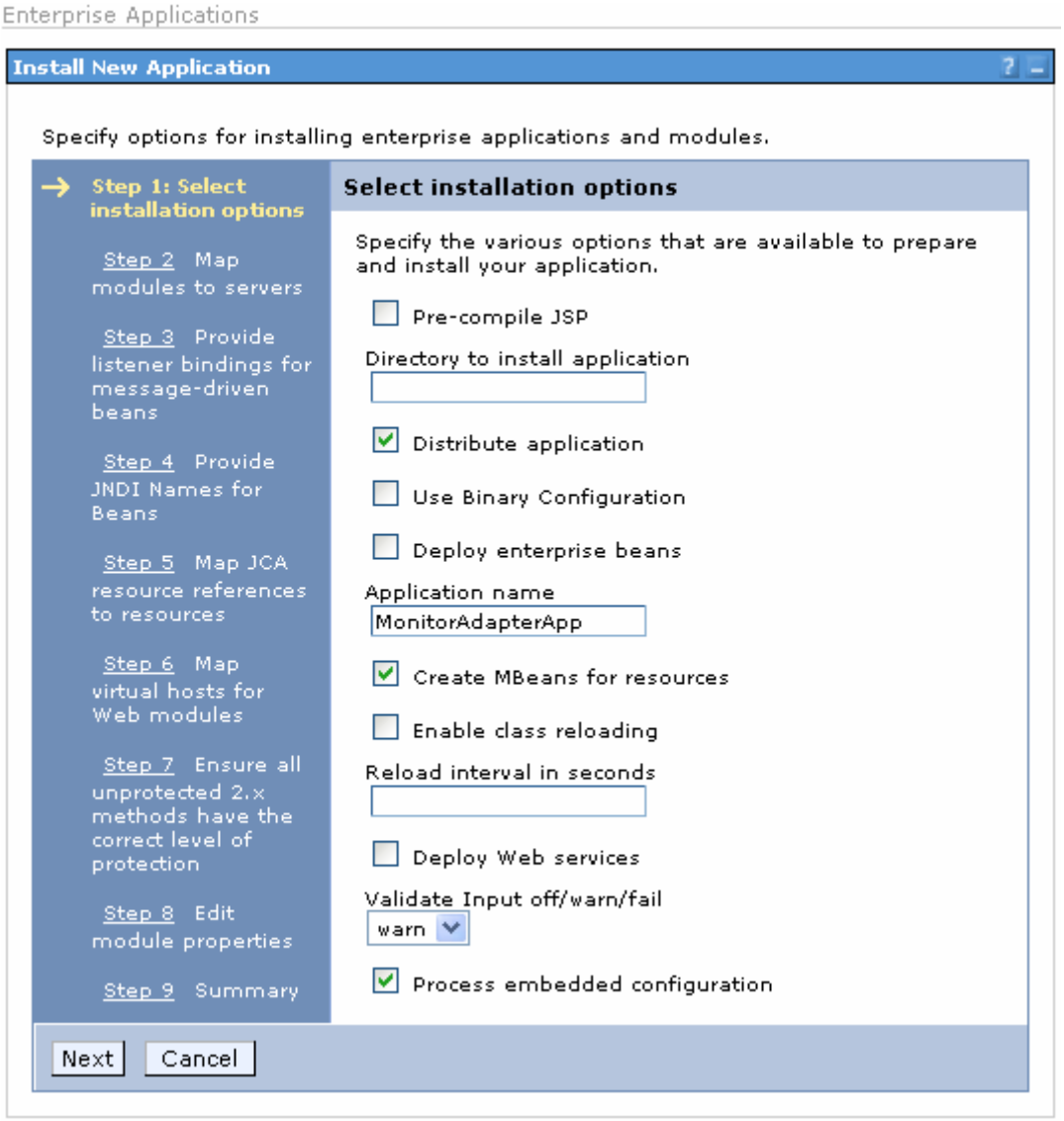
____ 13. Click **Next**.

Figure 84. The subsequent screen appears



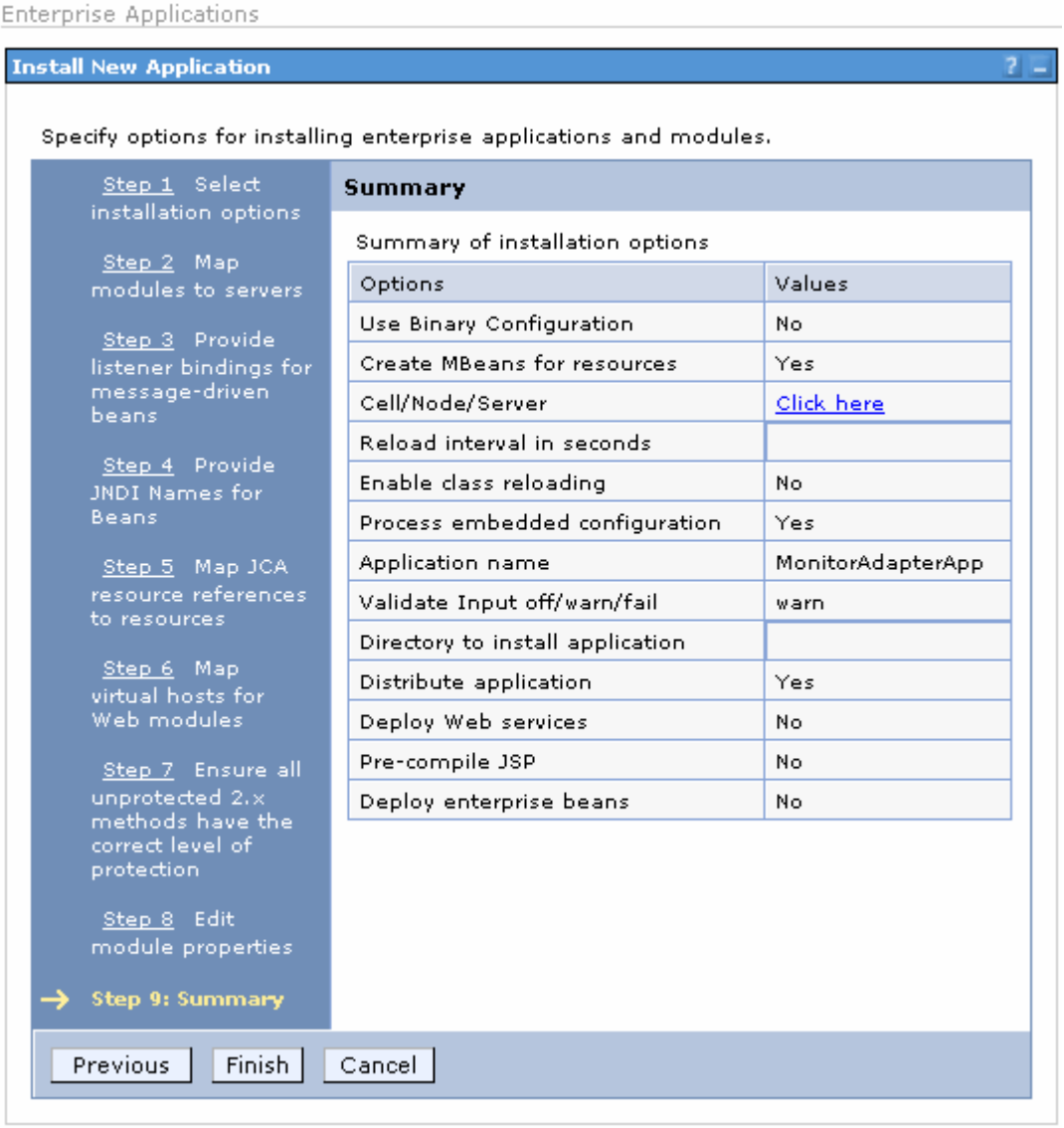
____ 14. To install the new application using the defaults, click **Step 9 Summary**.

Figure 85. Click Step 9 Summary to install the new application



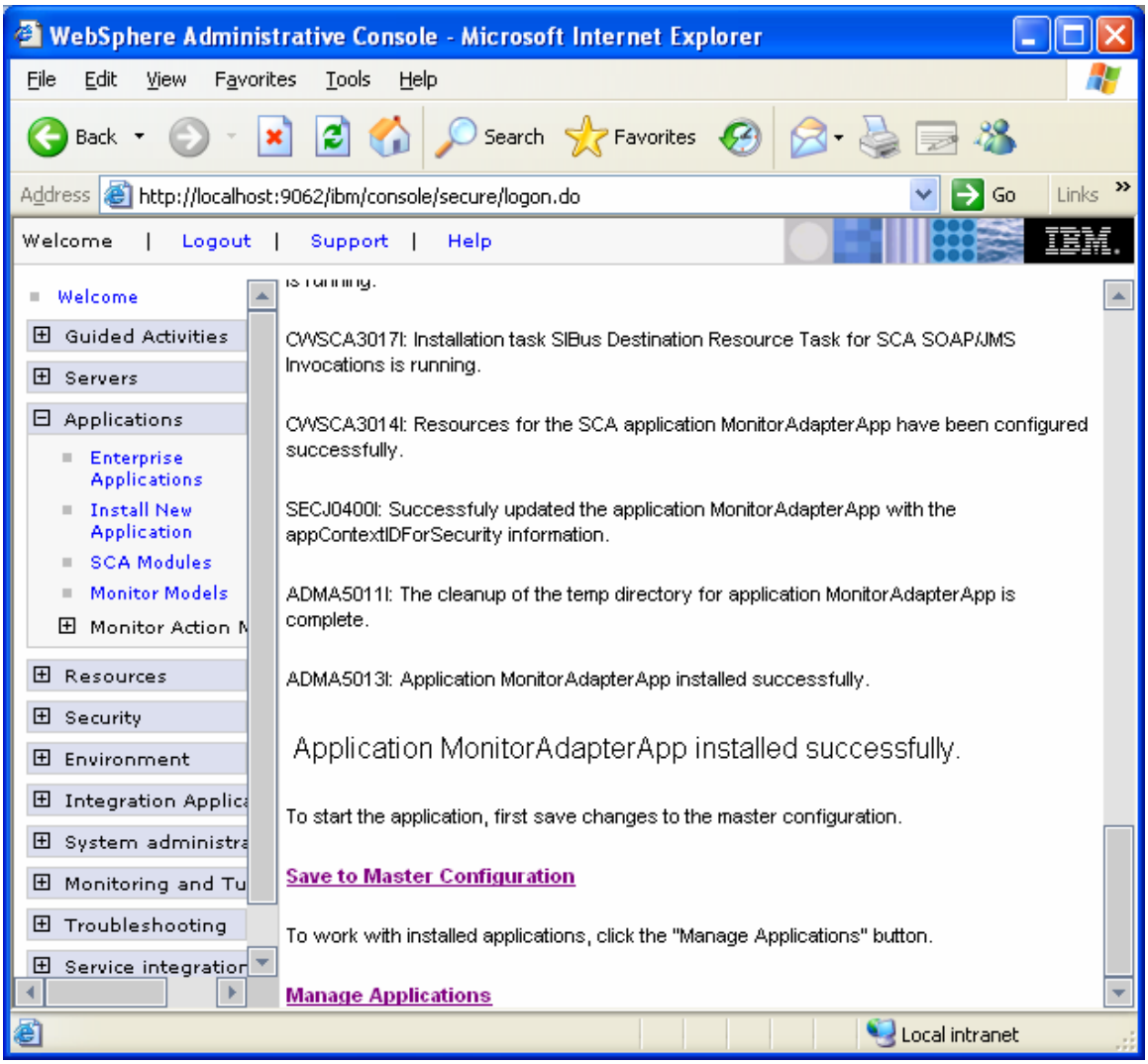
____ 15. Click **Finish**.

Figure 86. Click Finish



____ 16. Click **Save to Master Configuration**.

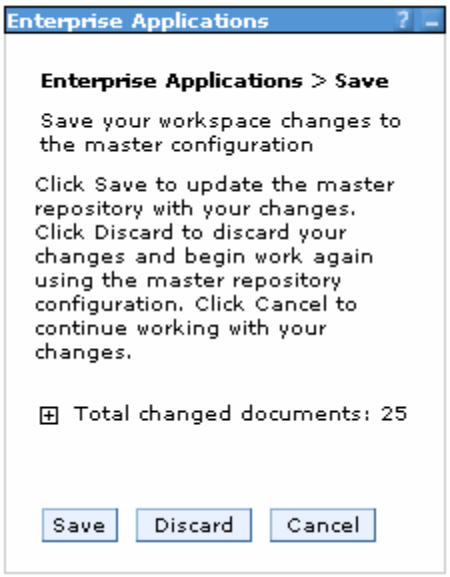
Figure 87. Save to Master Configuration



____ 17. When the following message is displayed, click **Save**.

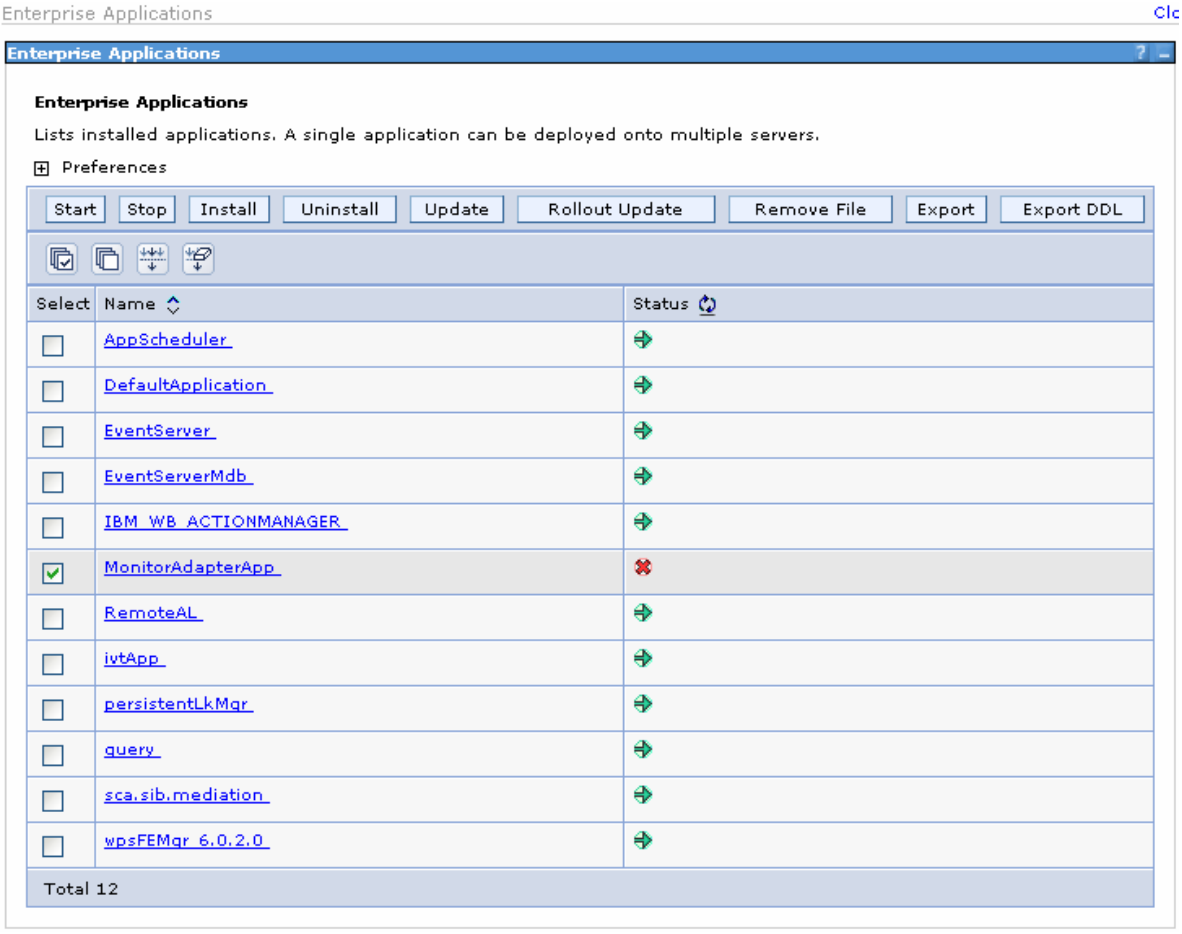
Enterprise Applications

Figure 88. Click Save



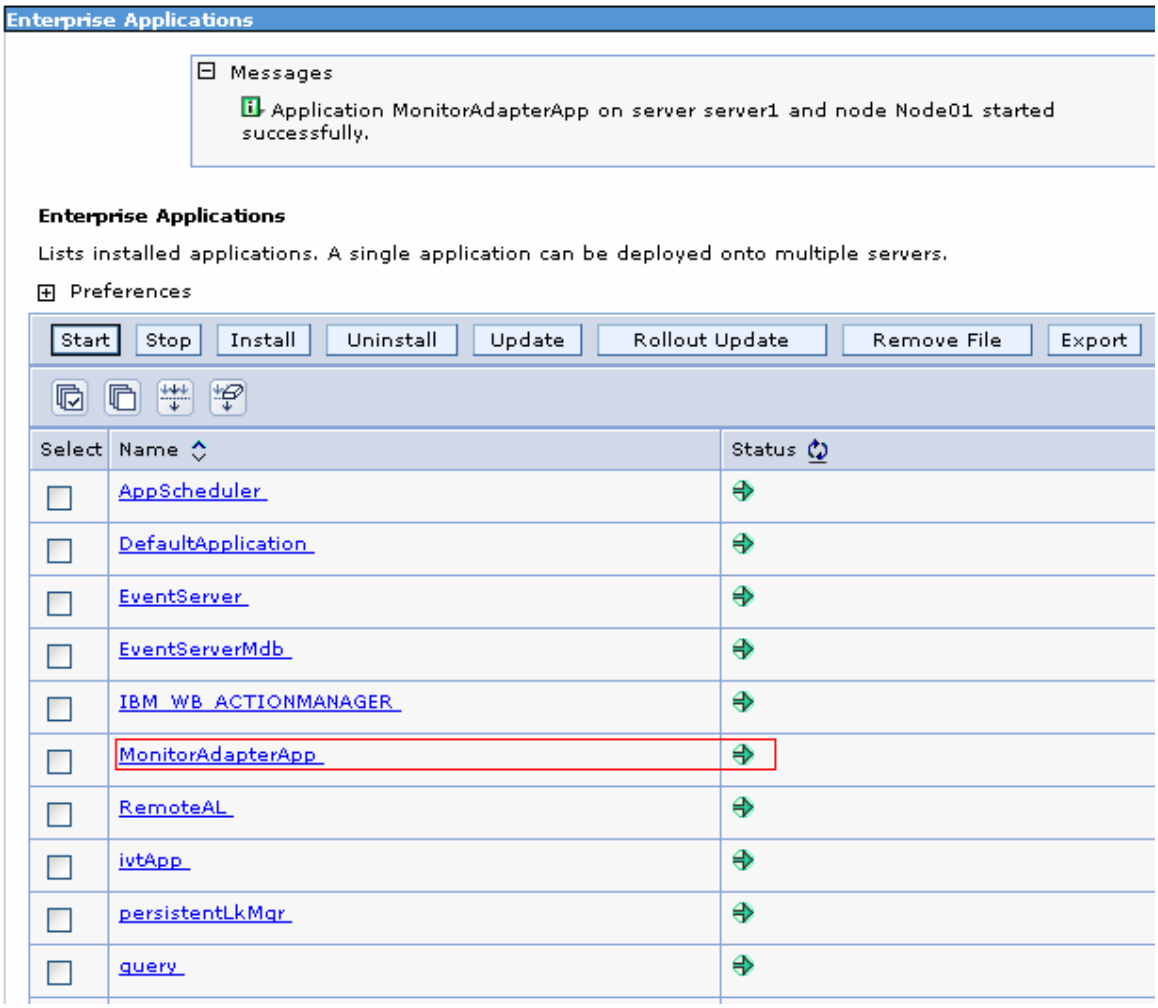
____ 18. From the left menu on the welcome page, click **Applications ► Enterprise Applications.** The list should include the newly installed MonitorAdapterApp application.

Figure 89. See MonitorAdapterApp application



____ 19. To start the application, select the **MonitorAdapterApp** check box and click **Start**.

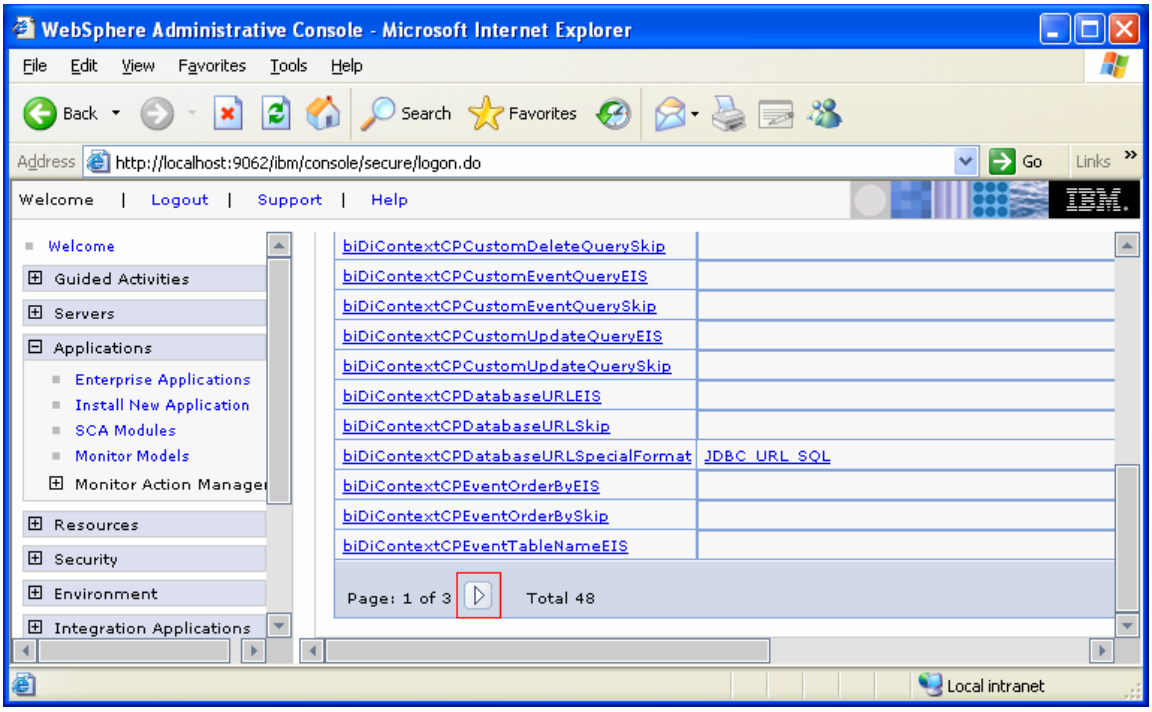
Figure 90. Select the MonitorAdapterApp check box



____ 20. If the application does not start, check whether the IP address for the server where the database resides was changed. This problem should not occur if you followed the example provided by this document and used localhost, as the IP address for the database. But if your database is remote and requires a different IP address from the one used in Part 1: Creating a module containing the JDBC adapter and mediation flow, follow these steps to configure the IP address:

___ a. In the administrative console, select **Applications ► Enterprise Applications ► MonitorAdapterApp ► Connector Modules ► CWYBC_JDBC.rar ► Resource Adapter ► J2C Activation specifications ► MonitorAdapter.JDBCInboundInterface_AS ► J2C activation specification custom properties**.

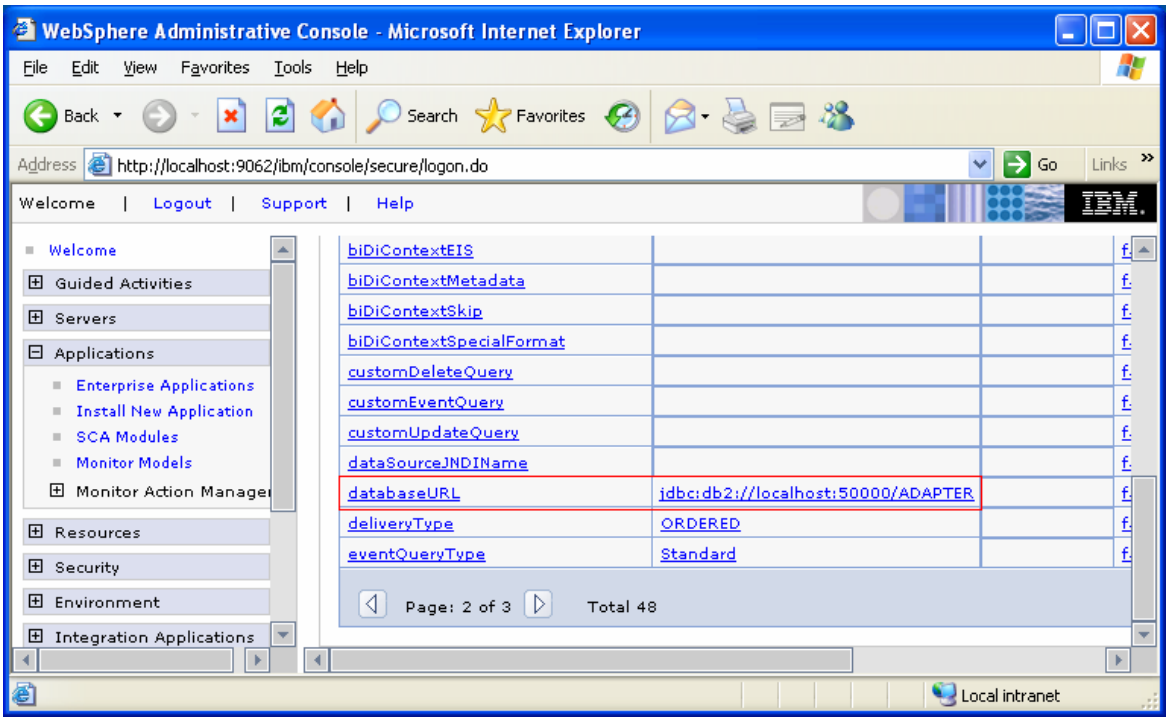
Figure 91. Select Applications ► Enterprise Applications



___ b. Click the arrow to proceed to **Page 2**.

___ c. Click **databaseURL**, and then change the IP address for the database.

Figure 92. Click databaseURL



___ d. Then click **OK**, **Save,** and **Save** to finish the configuration.

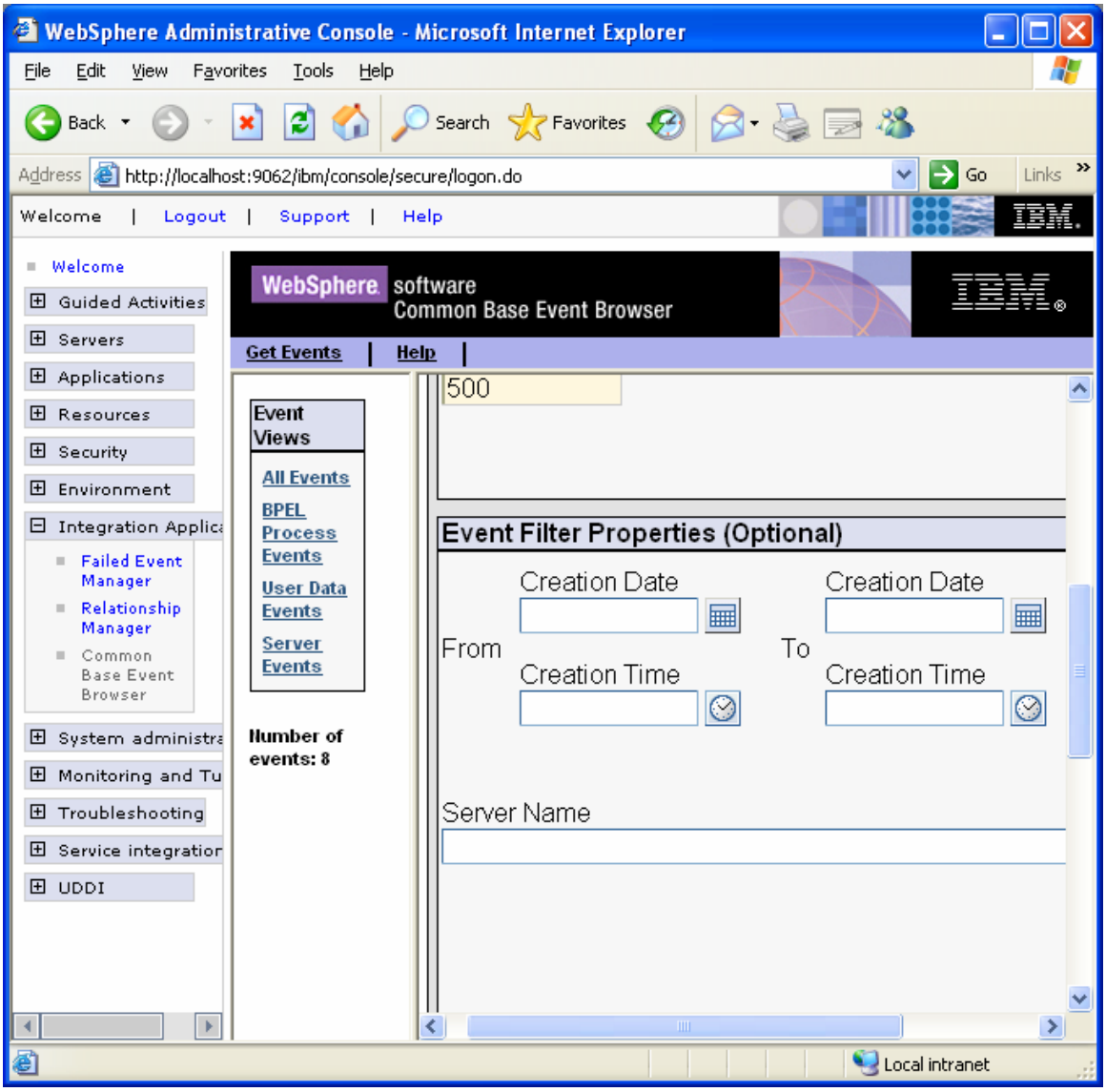
____ 21. To verify that the application works correctly, open a DB2 command window. Then run the following commands:

___ a. db2 connect to ADAPTER user db2admin using <db2admin password>

___ b. db2 insert into customer values ('1', 'Yi', 'Che', 'Regular')

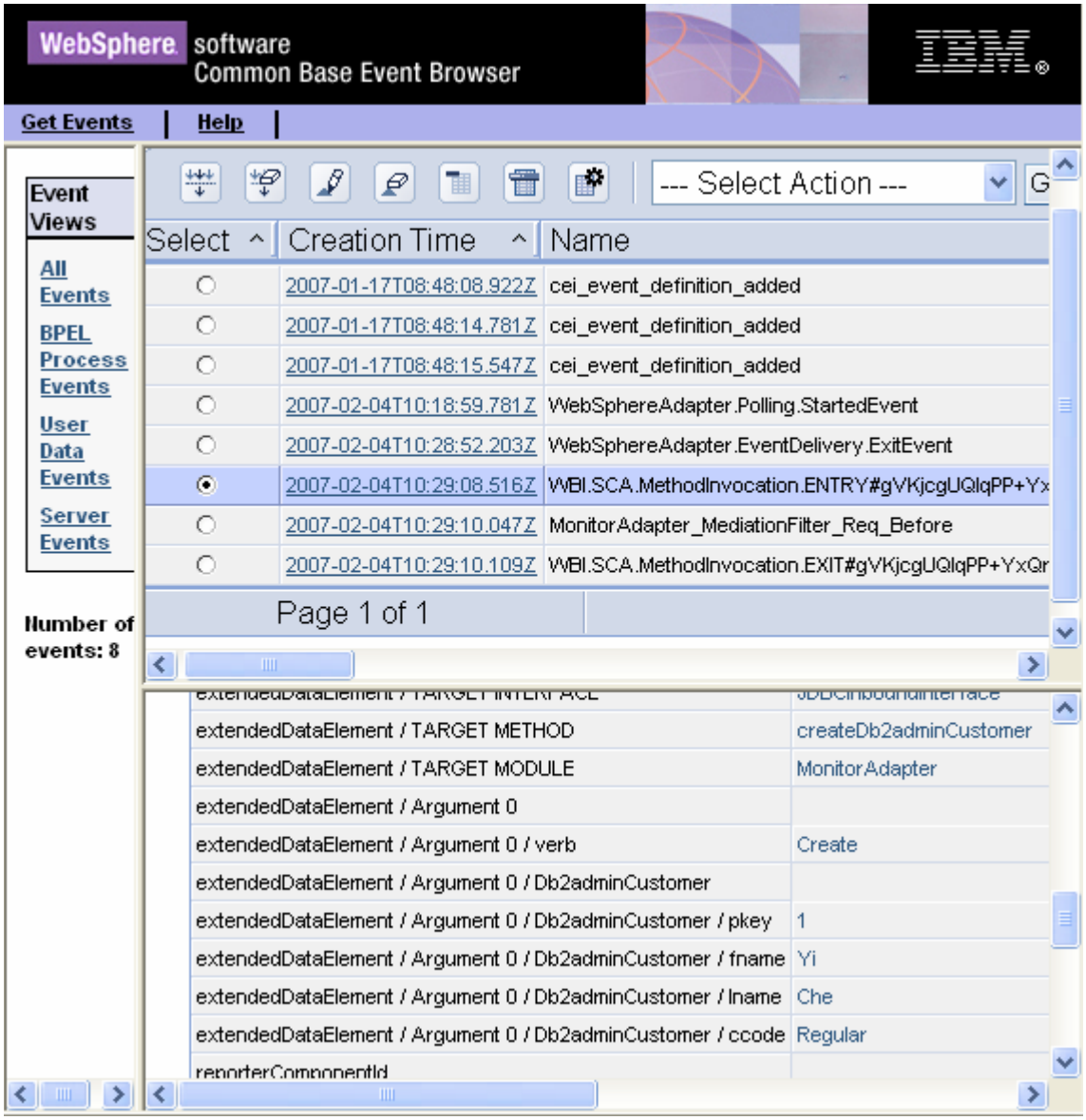
____ 22. From the left menu of the administrative console, click **Integration Application►Common Base Event Browser** and wait briefly for the Common Base Event browser to be initialized.

Figure 93. Click Integration Application► Common Base Event Browser



____ 23. From the left menu of the Common Base Event browser, click **All Events**. The list should include the events related to the record that you just inserted.

Figure 94. Click All Events

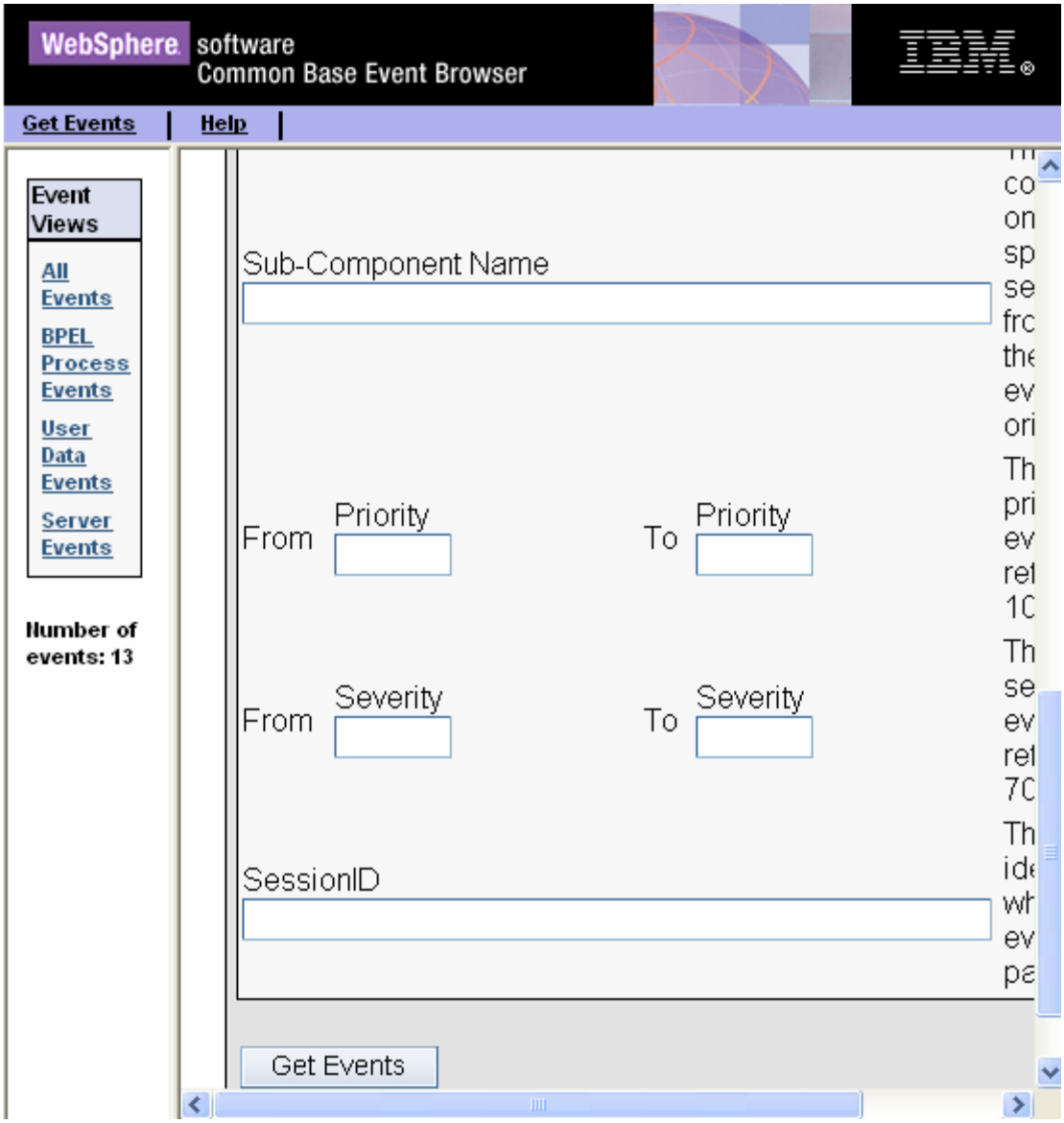


____ 24. To add a Gold customer, open a DB2 command window. Then run the following commands:

___ a. db2 insert into customer values ('2', 'James', 'Bond', 'Gold')
___ b. db2 disconnect ADAPTER

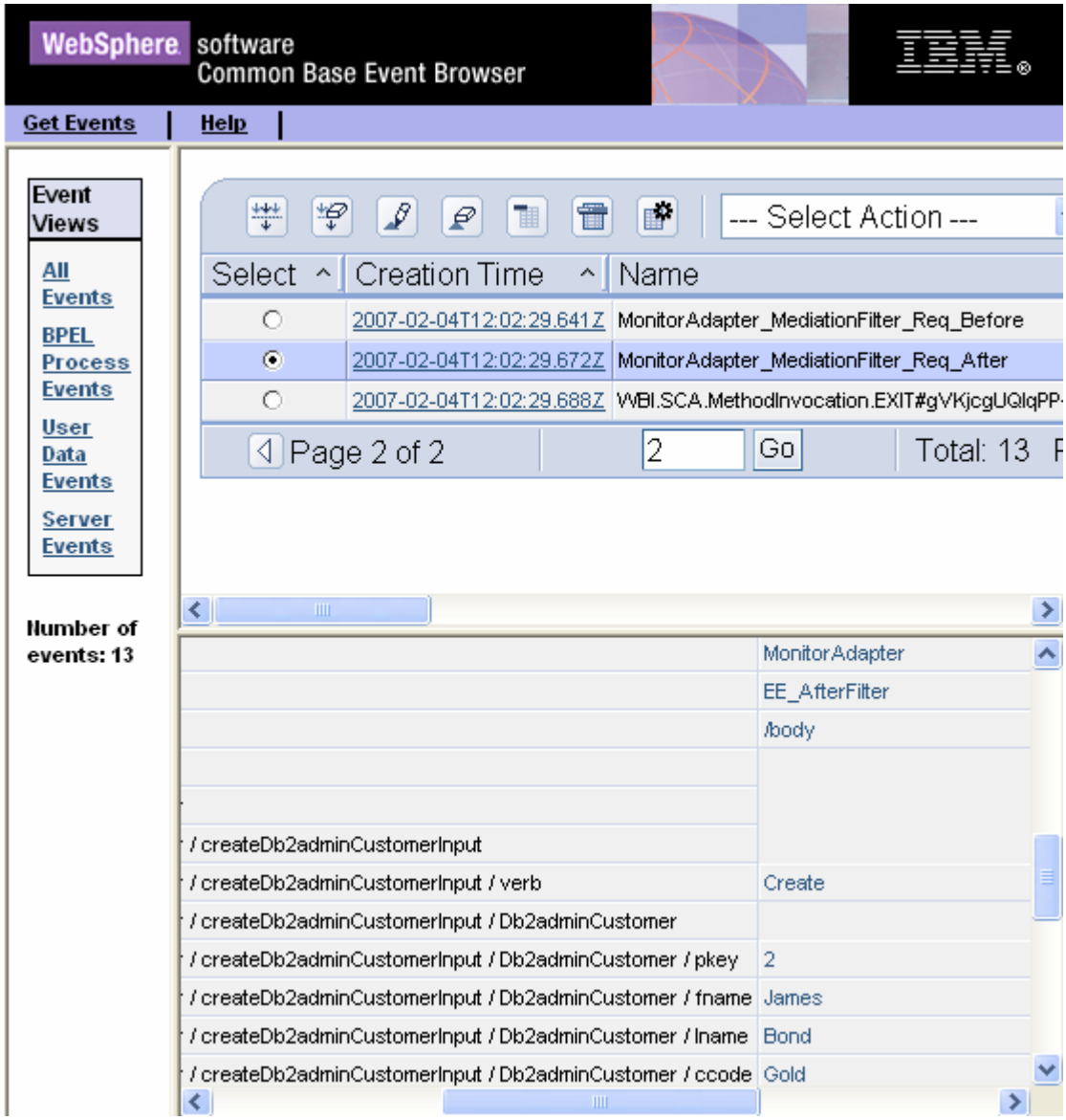
____ 25. From the top menu of Common Base Event browser, click **Get Events**. Wait briefly for the browser to be updated.

Figure 95. Click Get Events



____ 26. Click **All Events** again. The list should include the **MonitorAdapter_MediationFilter_Req_After** event that demonstrates that the filter works well and recognizes the Gold customer.

Figure 96. Click All Events, again

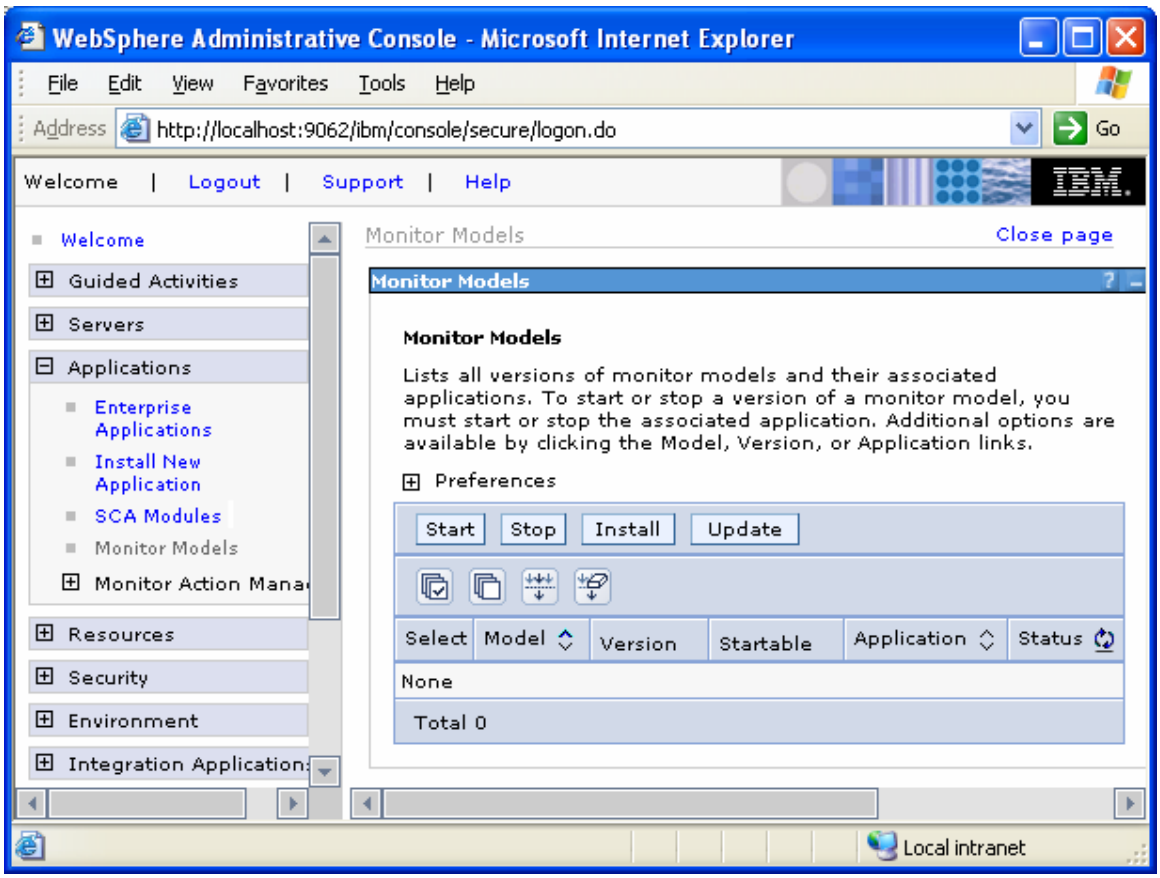


Part 4: Deploying the monitor model

In this section you will use the WebSphere Process Server administrative console to perform the life-cycle steps to deploy the monitor model.

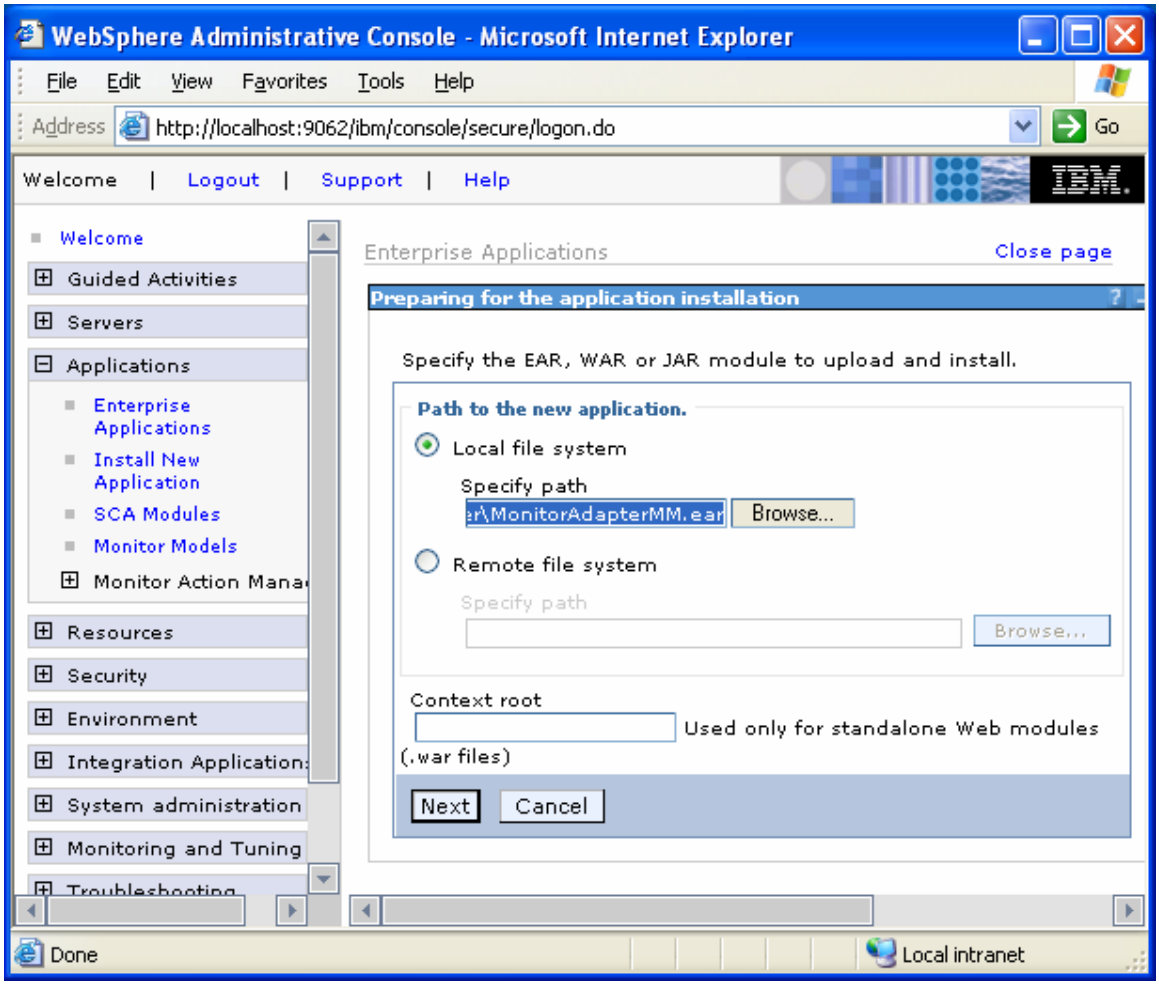
____ 1. Install the monitor model.
___ a. In the administrative console menu, select **Applications ► Monitor Models**.
___ b. Click **Install**.

Figure 97. Select Applications ► Monitor Models



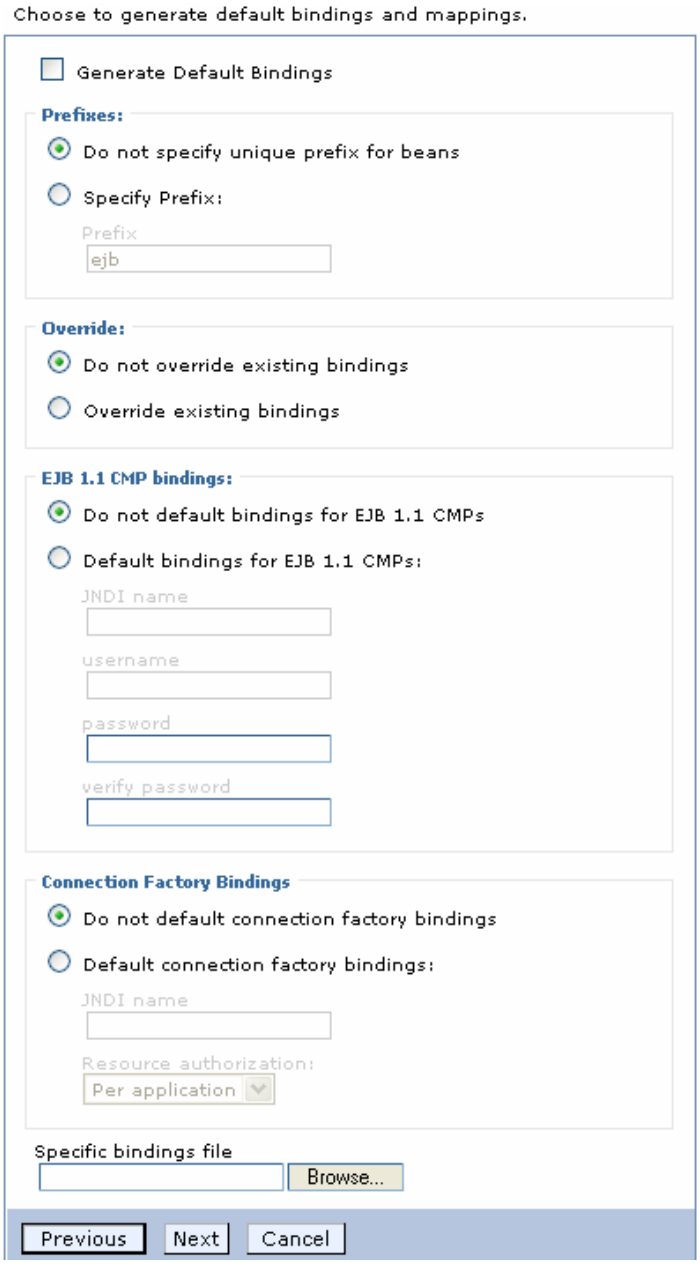
___ c. Browse to **MonitorAdapterMM.ear**. This is the EAR file that you created in WebSphere Integration Developer.
___ d. Click **Next**.

Figure 98. Browse to MonitorAdapterMM.ear



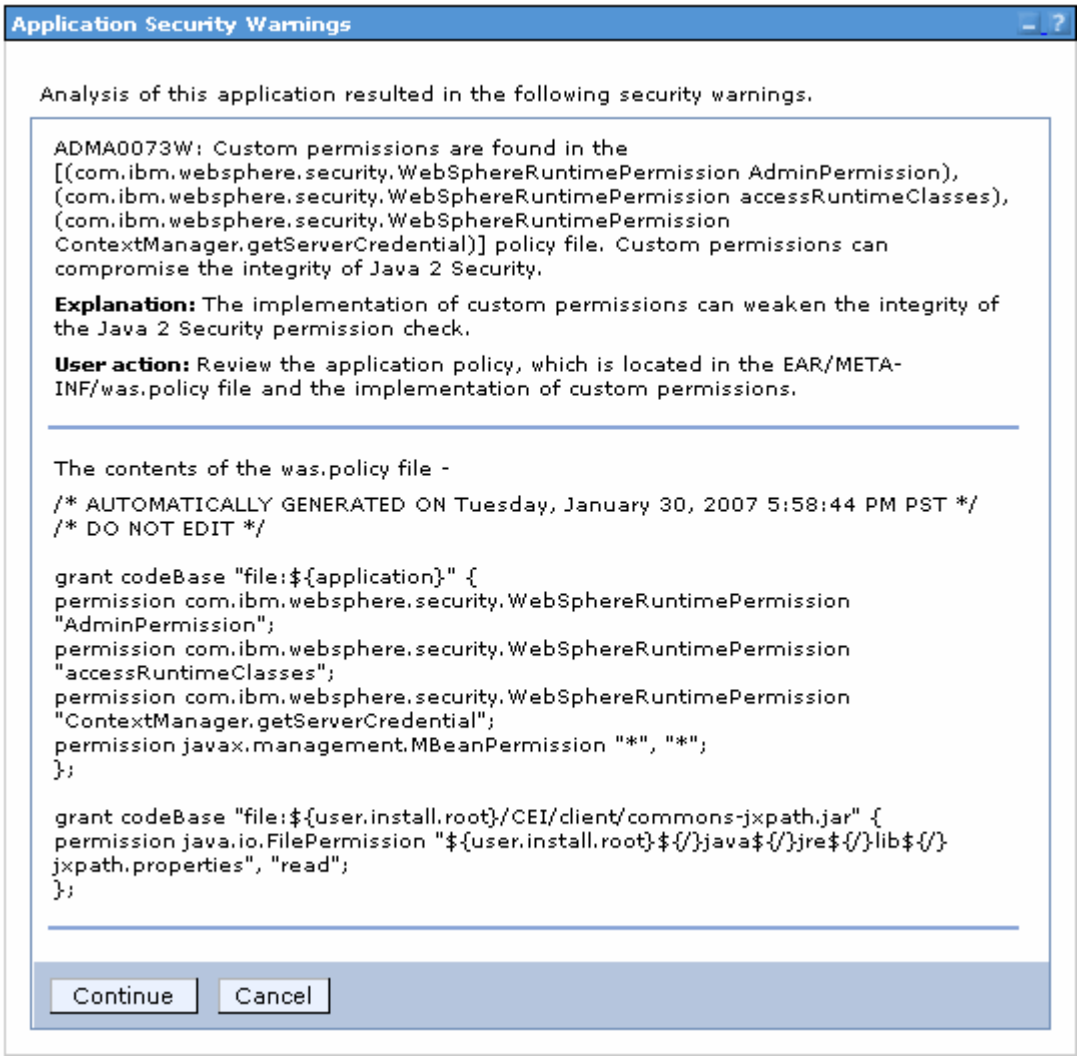
___ e. Click **Next**.

Figure 99. Click Next on this screen



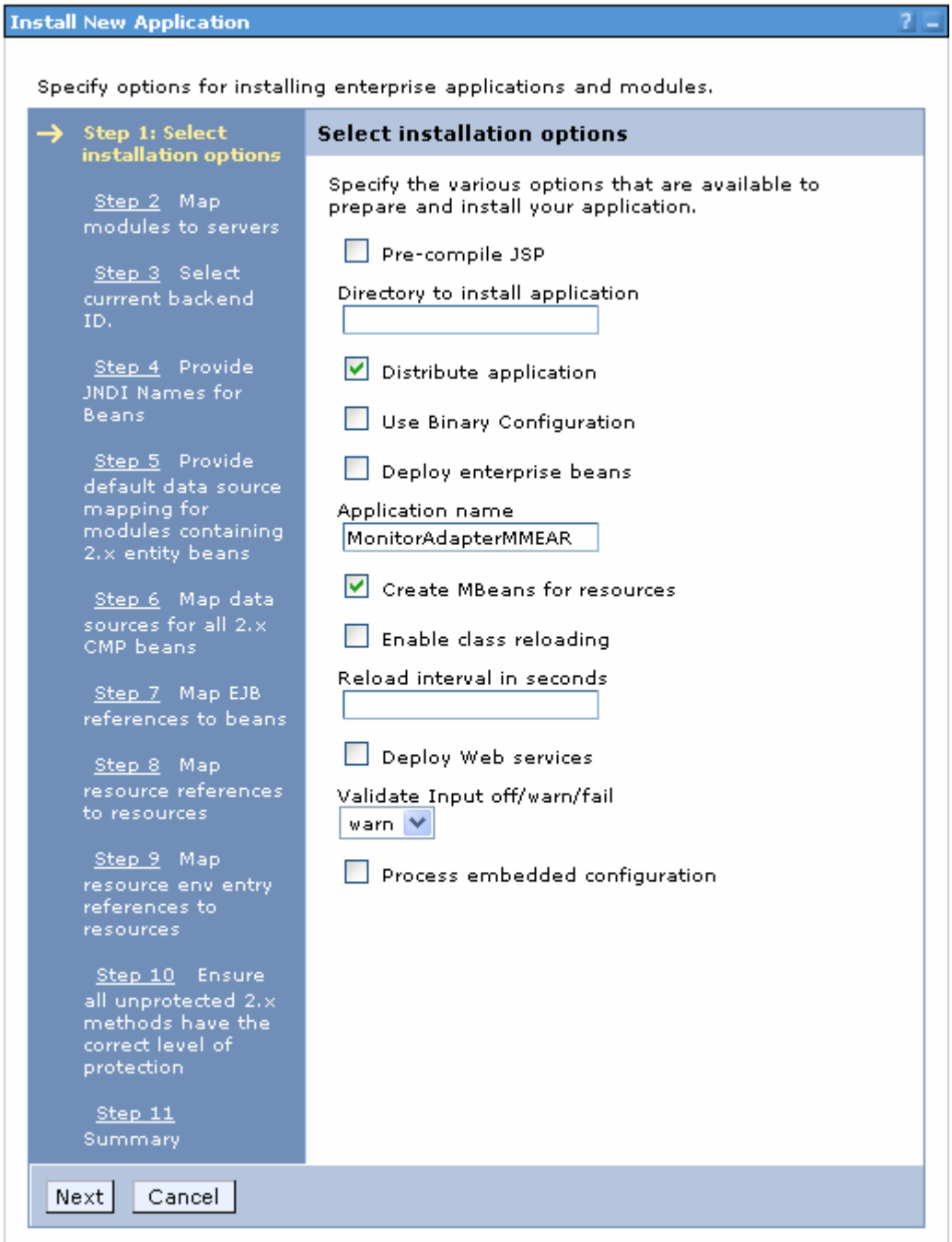
___ f. Click **Continue**.

Figure 100. Click Continue on this screen



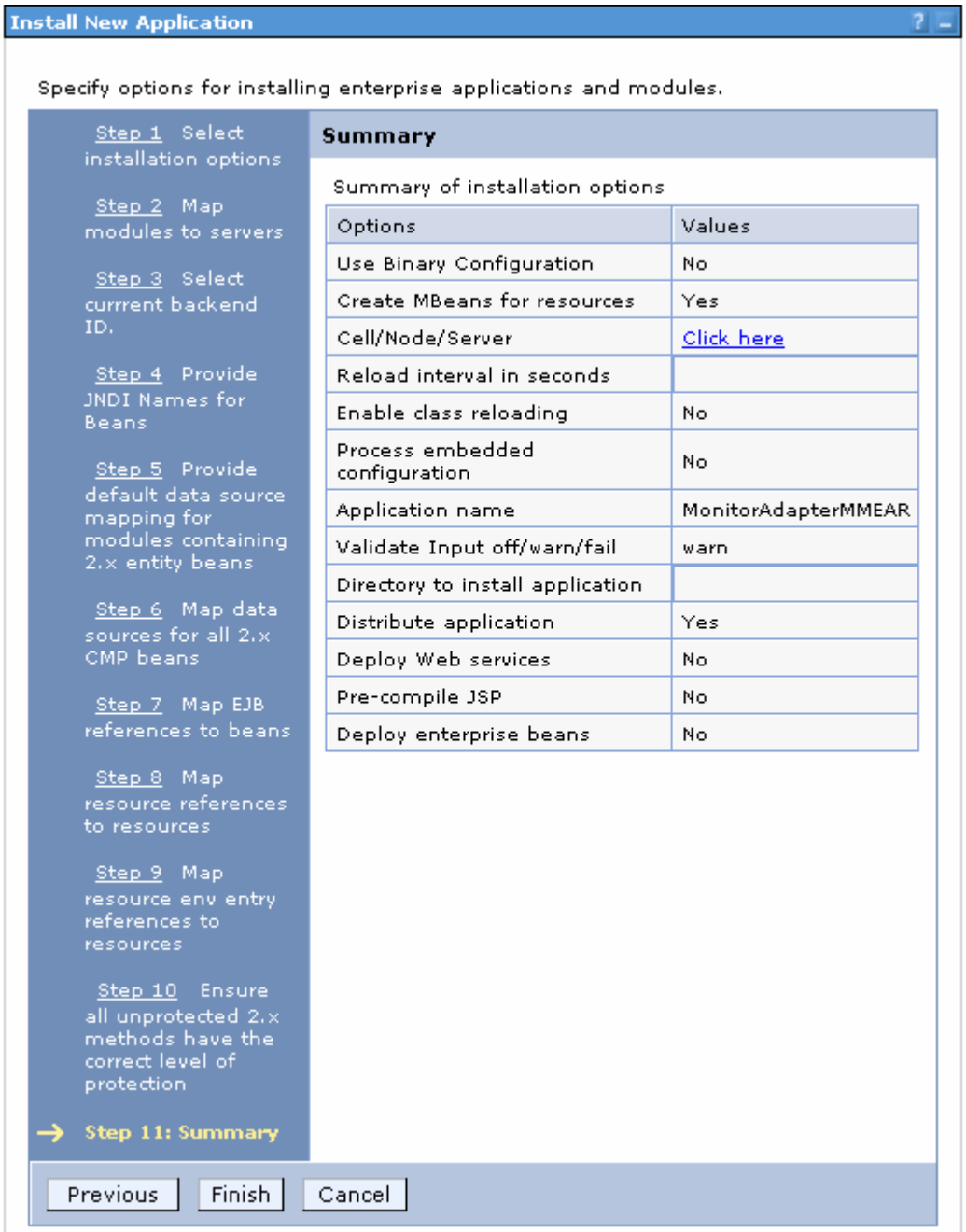
___ g. To install the application using the defaults, click **Step 11: Summary**.

Figure 101. Click Step 11 Summary



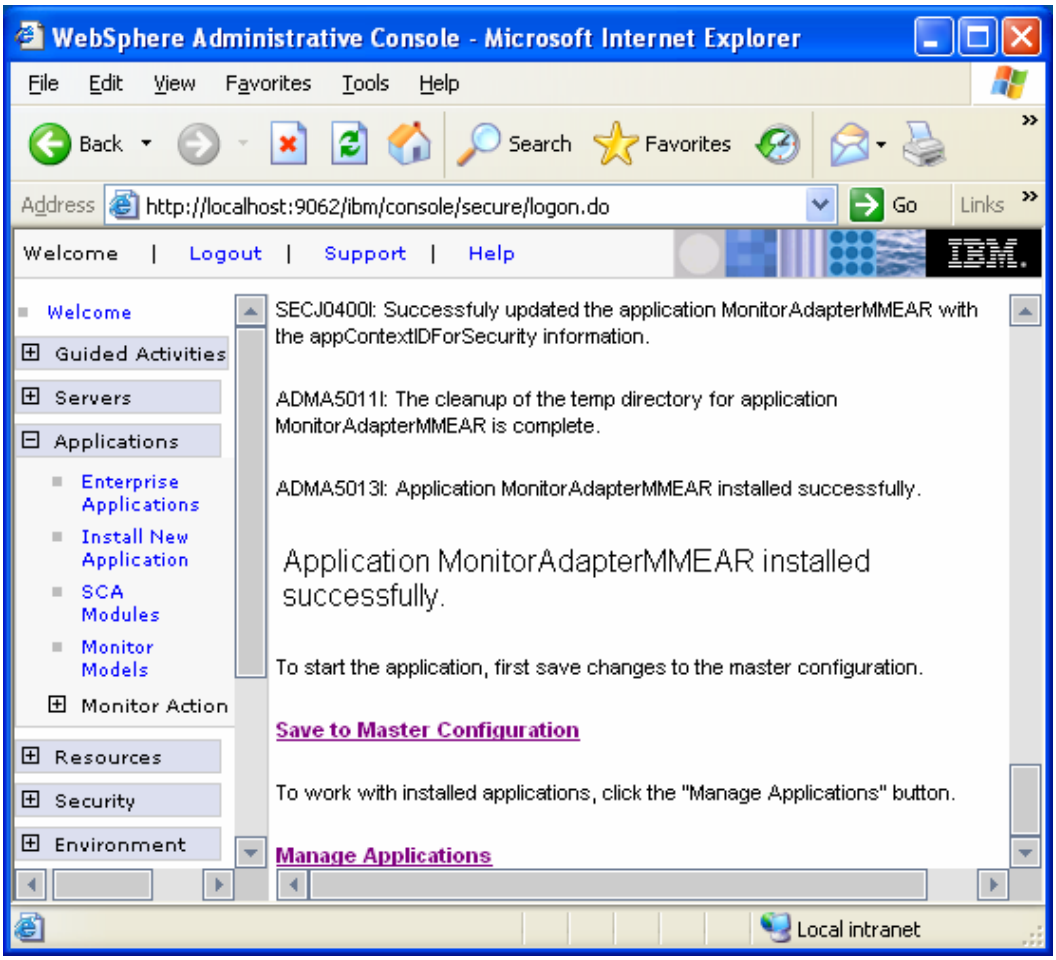
___ h. Click **Finish**.

Figure 102. Click Finish



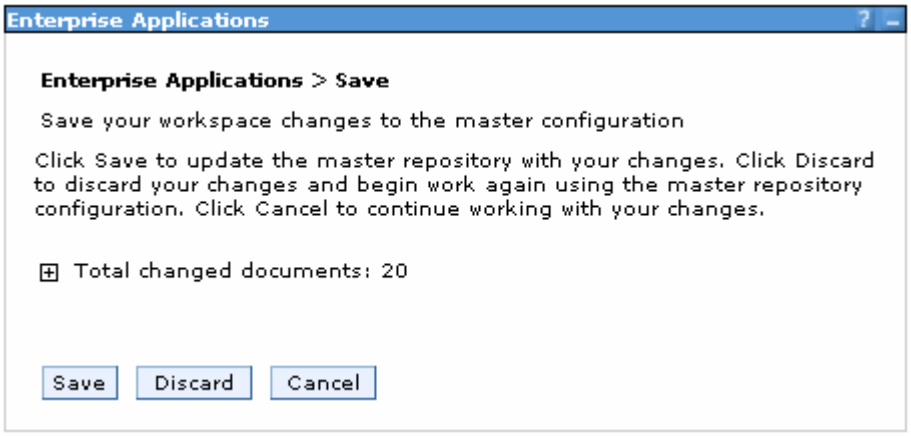
___ i. Click **Save to Master Configuration**.

Figure 103. Click Save to Master Configuration



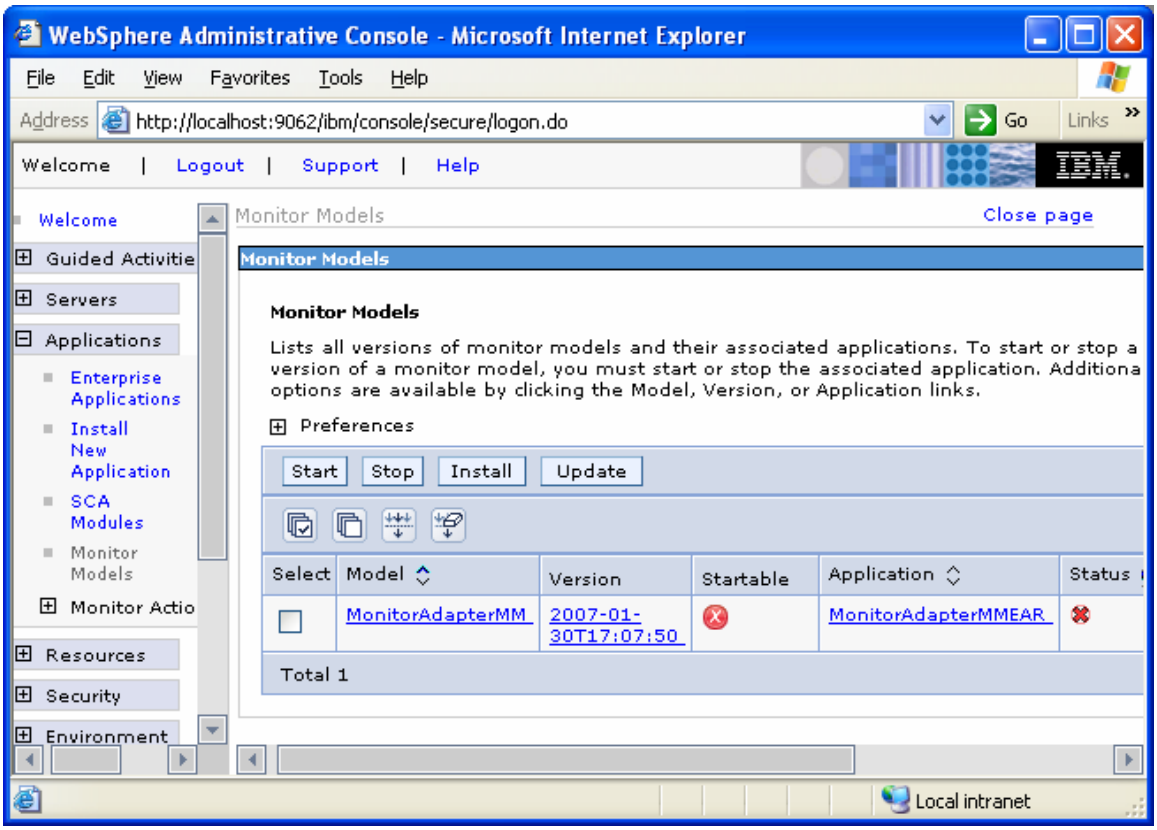
___ j. Then, click **Save**.again.

Figure 104. Click Save



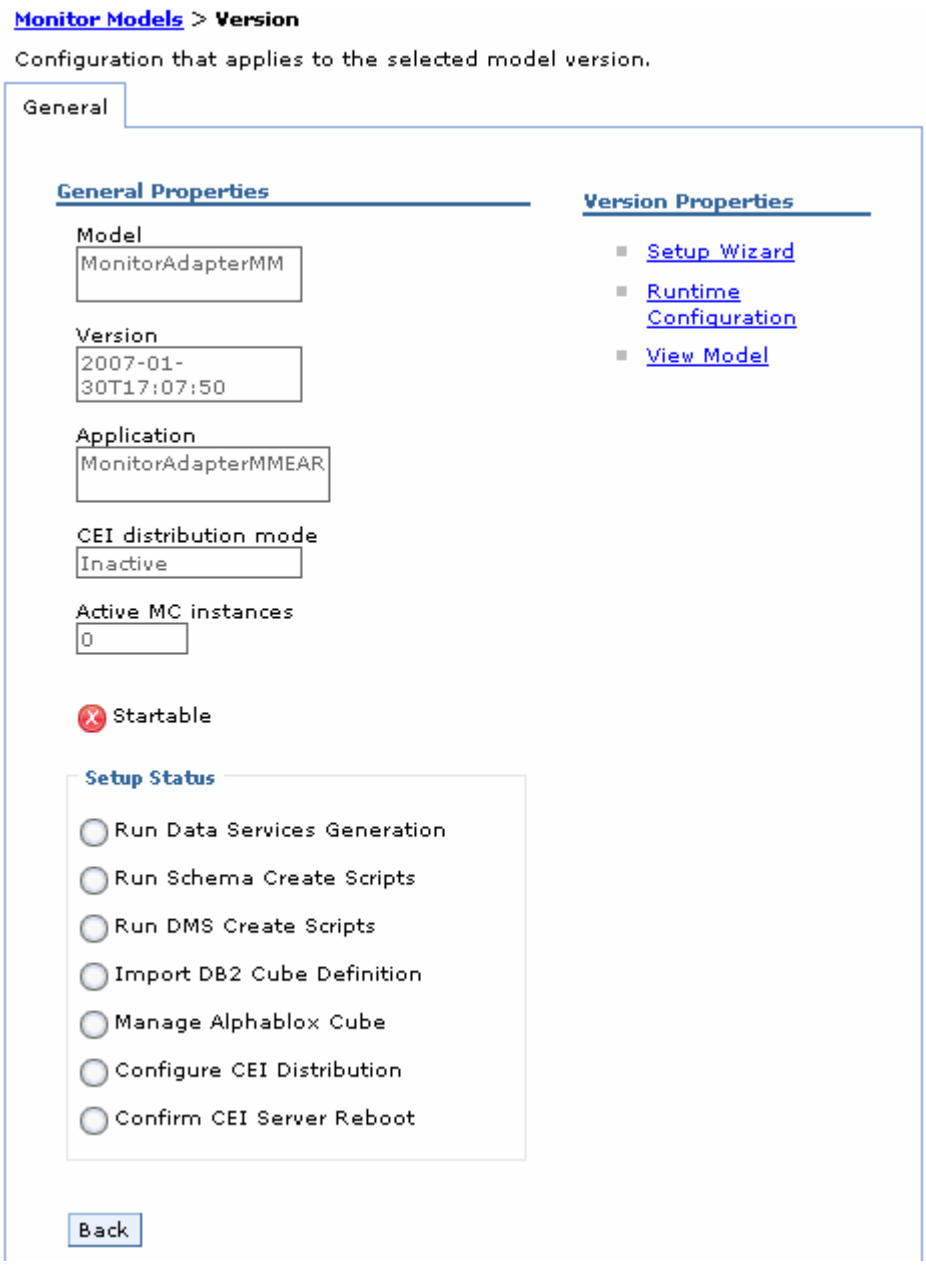
____ 2. Run step 1 of the model life cycle.
___ a. In the administrative console menu, select **Applications ► Monitor Models**.
___ b. Click the **timestamp** value that is listed in the **Version** column.

Figure 105. Click the timestamp value



___ c. Click **Setup Wizard**.

Figure 106. Click Setup Wizard

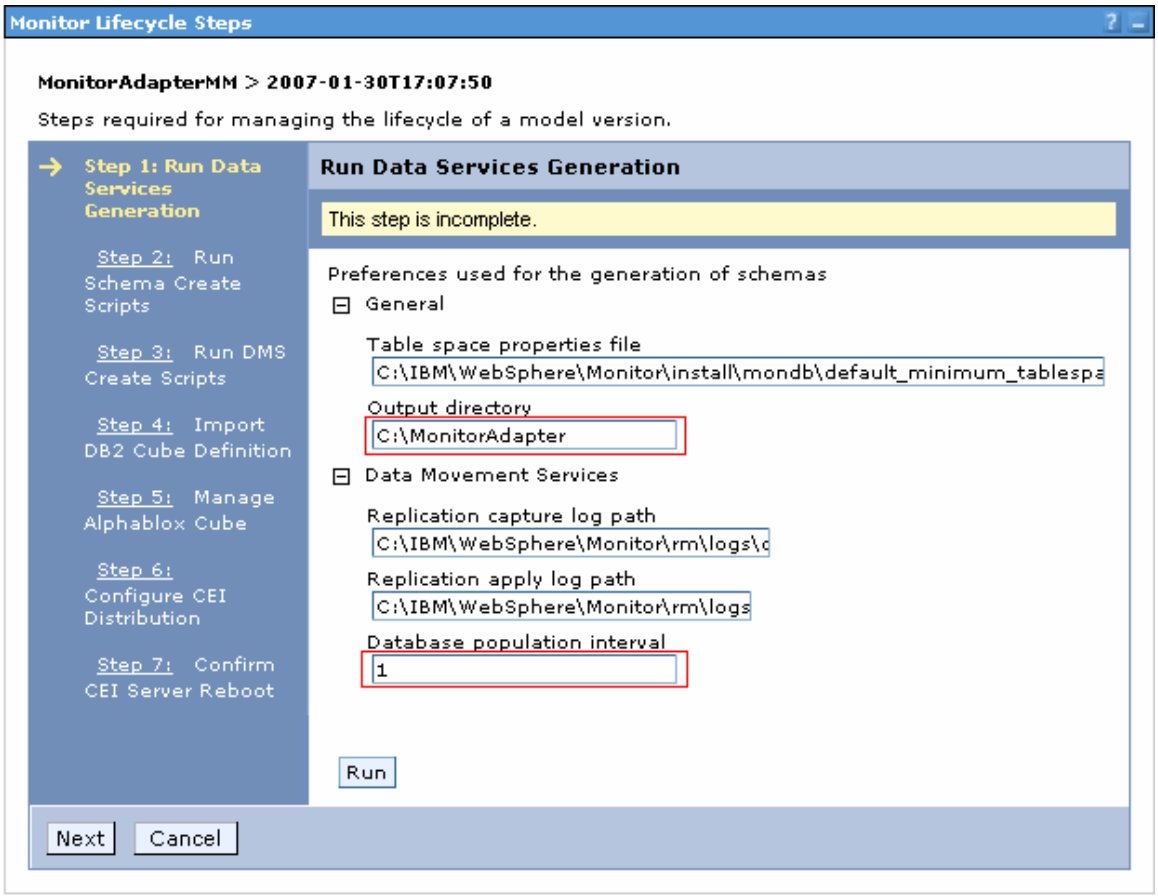


___ d. Enter the name of the output directory, such as **C:\MonitorAdapter**. When you run the data services generation, the schemagen folder will be created in the specified output directory.

___ e. Change the Database population interval value to **1**. For development purposes, replication should run often so that you do not have to wait to see the updates in the DATAMART database.
Note: This interval number represents minutes.

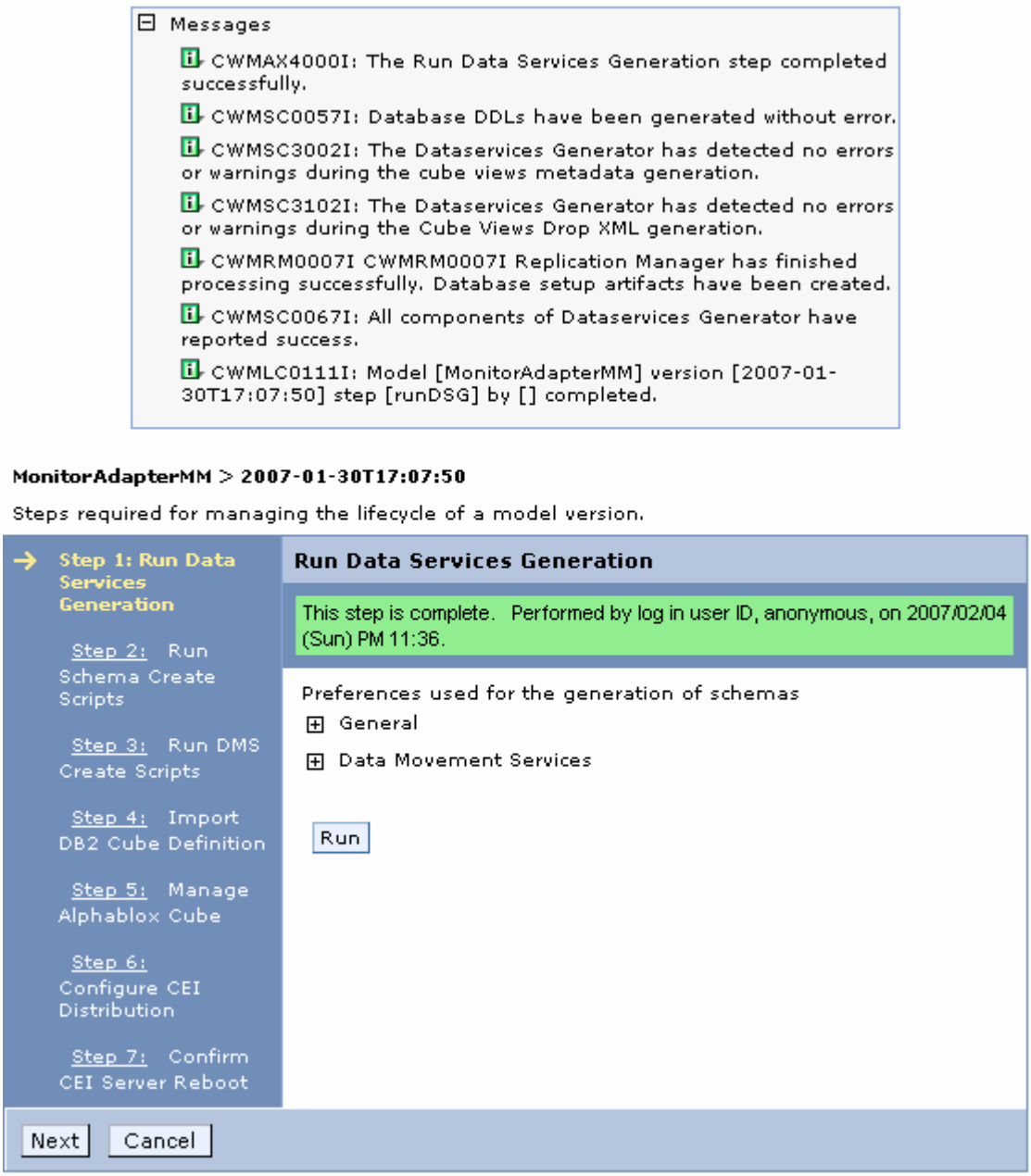
___ f. Click **Run**.

Figure 107. Enter the name of the output directory



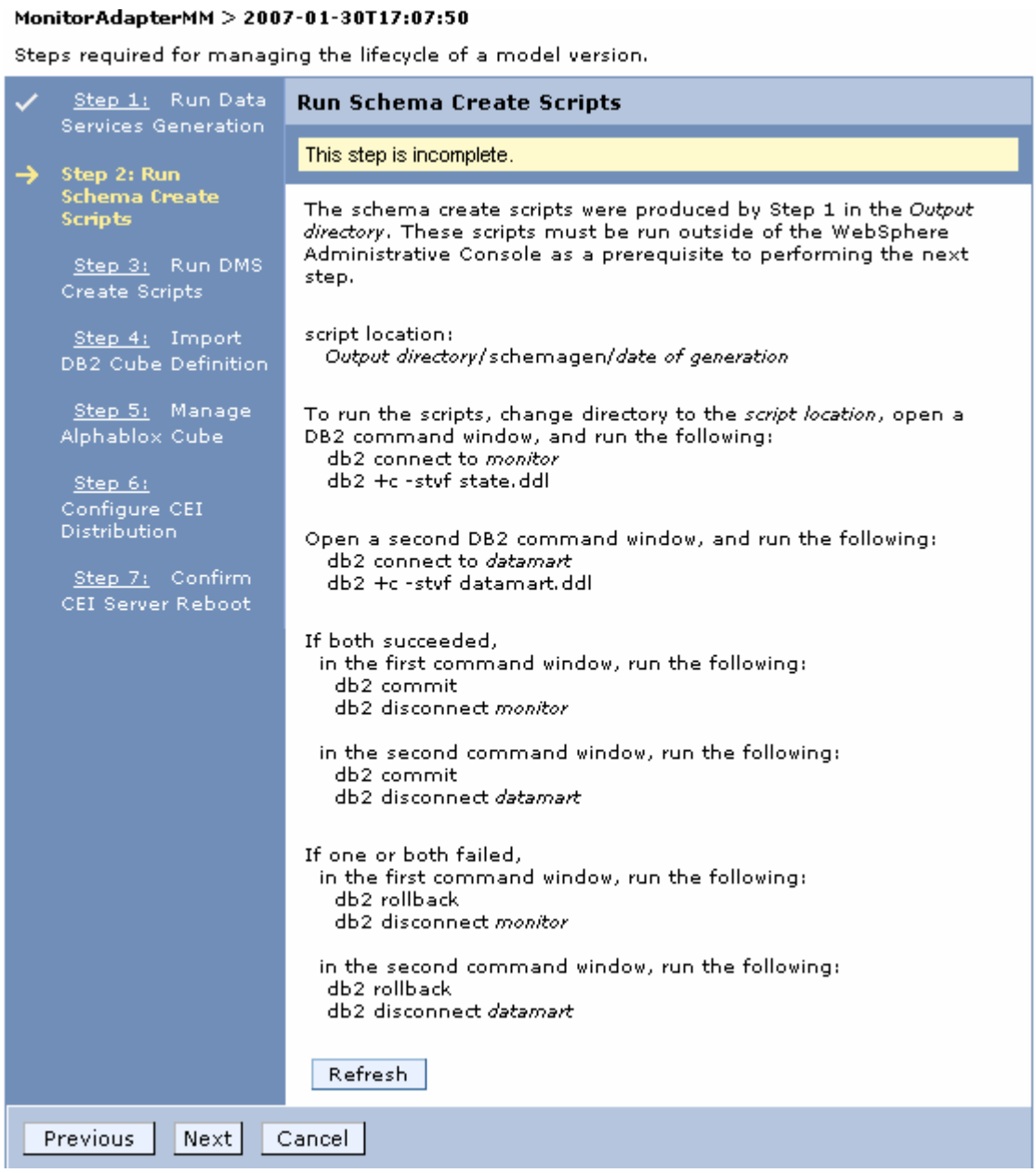
___ g. Click **Next**.

Figure 108. Click Next when this screen appears



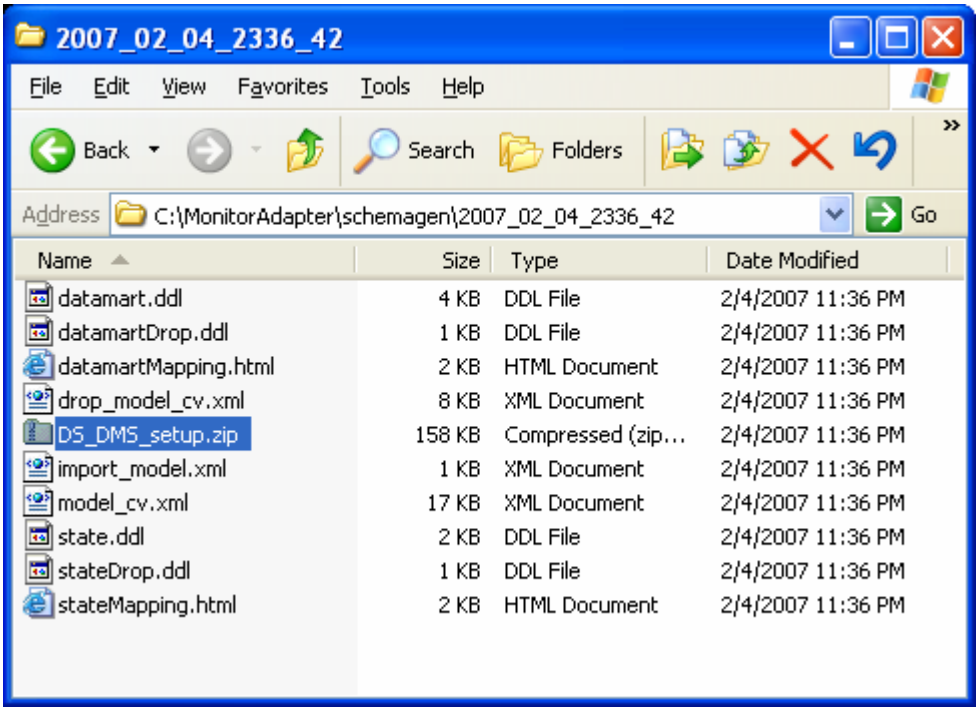
____ 3. Run **Step 2: Run Schema Create Scripts** and **Step 3: Run DMS Create Scripts** of the model life cycle.

Figure 109. Run Step 2 and Step 3



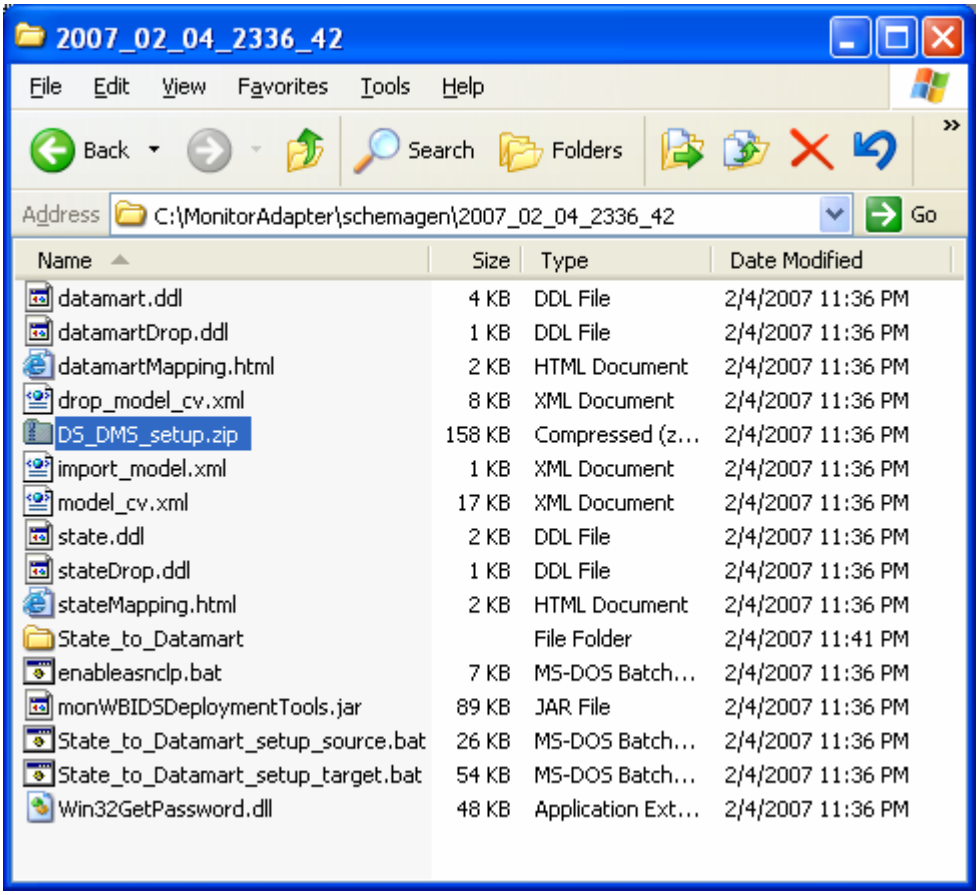
___ a. In Windows File Explorer, browse to **C:\MonitorAdapter\schemagen\<timestamp>**.

Figure 110. Browse to C:\MonitorAdapter\schemagen\<timestamp>



___ b. Extract the **DS_DMS_setup.zip** file into this same folder.

Figure 111. Extract the DS_DMS_setup.zip file



___ c. Open a DB2 command window:
  (1) Select **Start ► Run**.
  (2) Enter the db2cmd command.

___ d. To create the tables for the monitor model, enter the following commands in the DB2 command window. **Note:** Monitor and state are used interchangeably. The database is defined as MONITOR, but you will see references to state such as state.ddl, state.log, and state_to_datamart_setup_source.bat, for example.
  (1) cd \MonitorAdapter\schemagen\<timestamp>
  (2) db2 connect to MONITOR
  (3) db2 –tvf state.ddl > state.log
  (4) db2 disconnect MONITOR
  (5) db2 connect to DATAMART
  (6) db2 –tvf datamart.ddl > datamart.log
  (7) db2 disconnect DATAMART

___ e. Browse the newly created state.log and datamart.log files to verify that they are correct.

___ f. Run the replication setup scripts.
  (1) In the same DB2 command window, you should still be in folder

\MonitorAdapter\schemagen\<timestamp>, so type this command:

State_to_Datamart_setup_source.bat

(2) Each time that you are prompted to enter a user ID, press **Enter**.

(3) Browse the newly created State_to_datamart_setup_source.log file to check for errors.

(4) In the same DB2 command window, you should still be in folder **\MonitorAdapter\schemagen\<timestamp>**, so type this command:

State_to_Datamart_setup_target.bat

(5) Each time that you are prompted to enter a user ID, press **Enter**.

(6) Browse the newly created State_to_datamart_setup_target.log file to check for errors.

(7) If any errors occurred, run the scripts again. They should succeed after this second attempt.

___ g. Start the replication daemons.

(1) In the same DB2 command window, you should still be in folder **\MonitorAdapter\schemagen\<timestamp>**, so type this command:

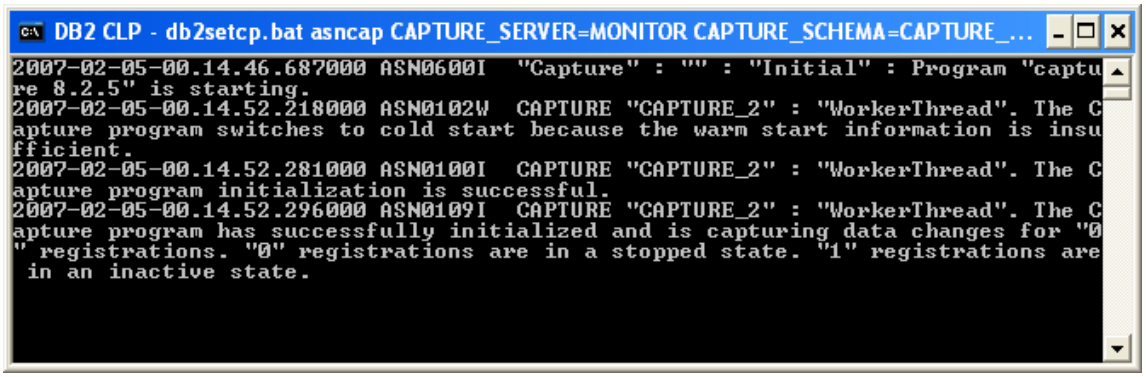
cd State_to_Datamart\source

(2) Find all scripts starting with the prefix StartCapture, and run them. (For this scenario there will be only one.) For example, type the following command:

StartCapture_5.bat

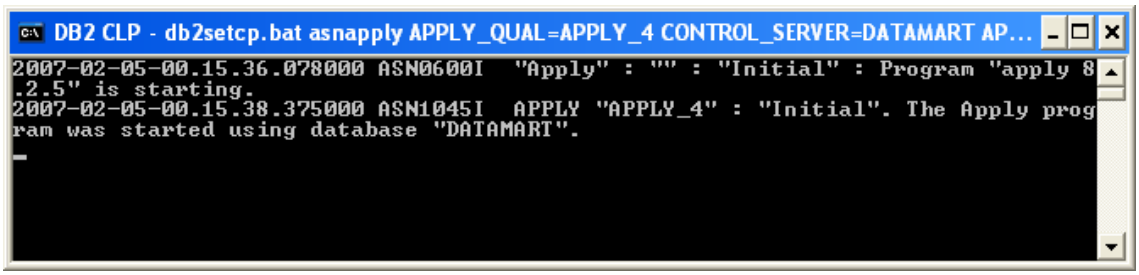
(3) A new window is opened to display the status of the scripts as they are run. Leave this window open. Do not enter any commands in this window.

Figure 112. Status of the scripts as they are run



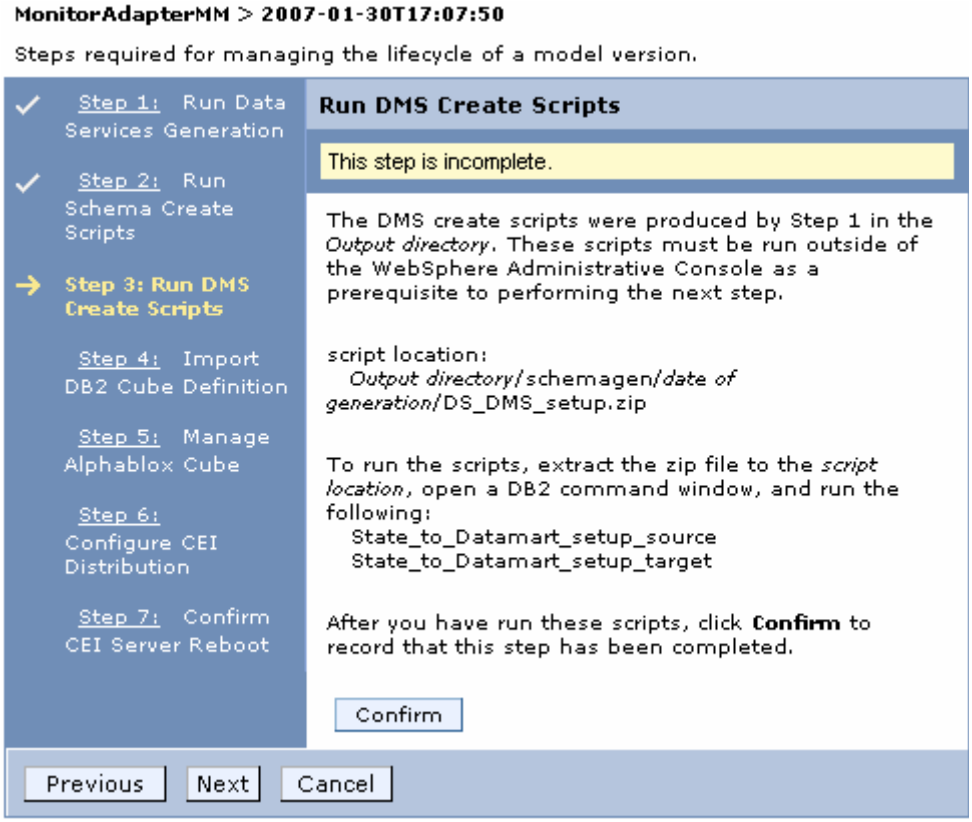
(4) In the DB2 command window, type this command:
    cd ..\target
(5) Find all scripts starting with the prefix StartApply, and run them. (For this scenario there will be only one.) For example, type the following command:
    StartApply_10.bat
(6) A new window is opened to display the status of the scripts as they are run. Leave this window open. Do not enter any commands in this window. (Three command windows are now open.)

Figure 113. Status of the scripts as they are run



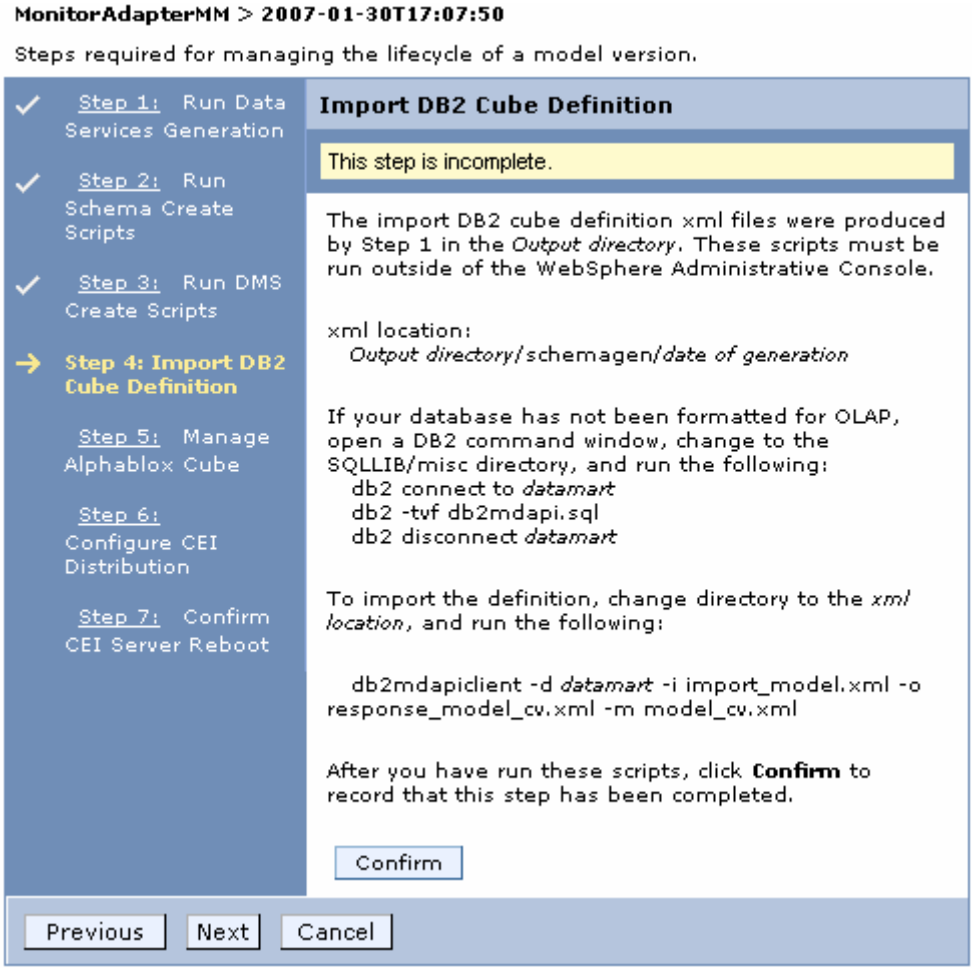
___ h. Close the original DB2 command window where you have been typing the commands.
___ i. In the administrative console, click **Refresh**.
___ j. When the window indicates that step 2 is complete, click **Next** to proceed to step 3.
___ k. Click **Confirm**.

Figure 114. Click Confirm when this window appears



____ 4. Run Step 4 of the model life cycle.
___ a. Click **Step 4**.

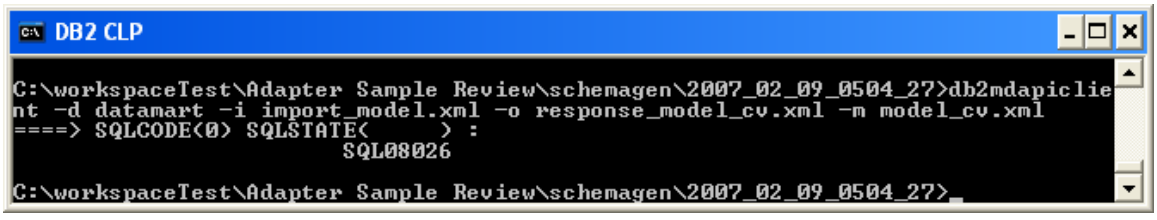
Figure 115. Run Step 4



___ b. Open a DB2 command window:
(1) Select **Start ► Run**.
(2) Enter the db2cmd command.
(3) Click **OK**.
___ c. Import the cubes into DB2 OLAP.

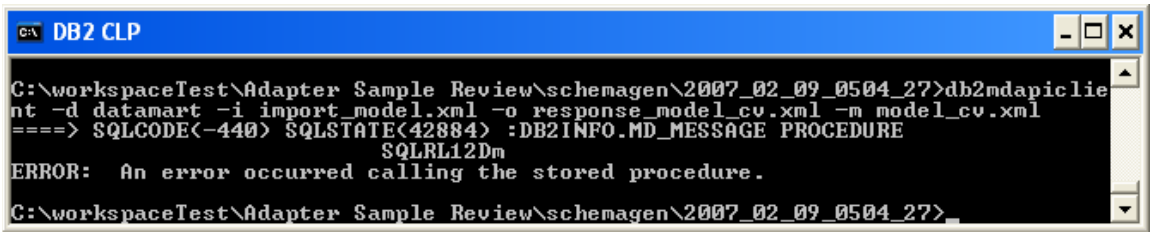
(1) cd \MonitorAdapter\schemagen\<timestamp>
(2) db2mdapiclient -d datamart -i import_model.xml -o response_model_cv.xml -m model_cv.xml

Figure 116. The DB2 command window



___ d. If an error occurs when the cubes are being imported, follow these steps to format the database for OLAP. Here is a sample of the error:

Figure 117. Sample error when cubes are being imported

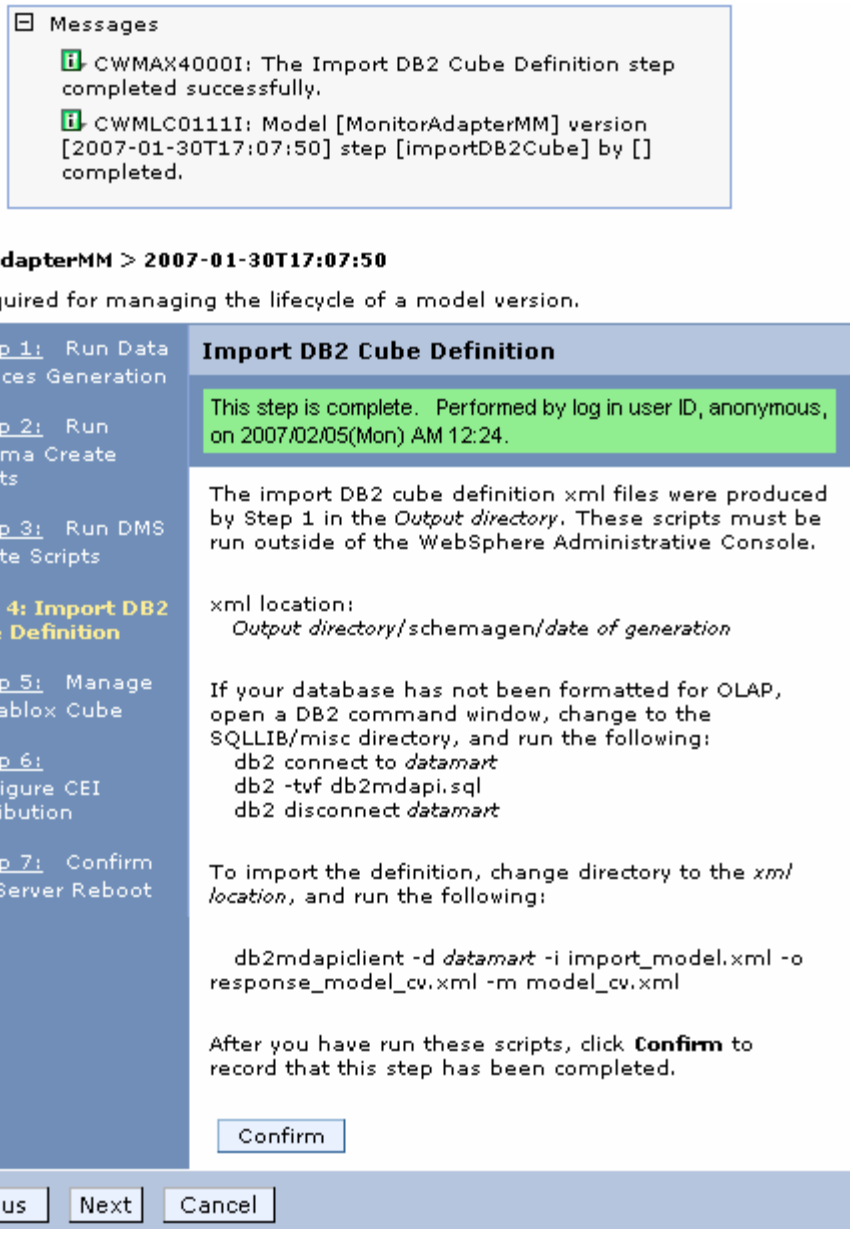


(1) cd %DB2 Home%\SQLLIB\MISC
(2) db2 connect to datamart
(3) db2 -tvf db2mdapi.sql
(4) db2 disconnect datamart
(5) Repeat step c to import the cubes to DB2 OLAP again.

___ e. After the cubes are imported, return to the administrative console and verify that you are in step 4 of the model life cycle.

___ f. Click **Confirm**.

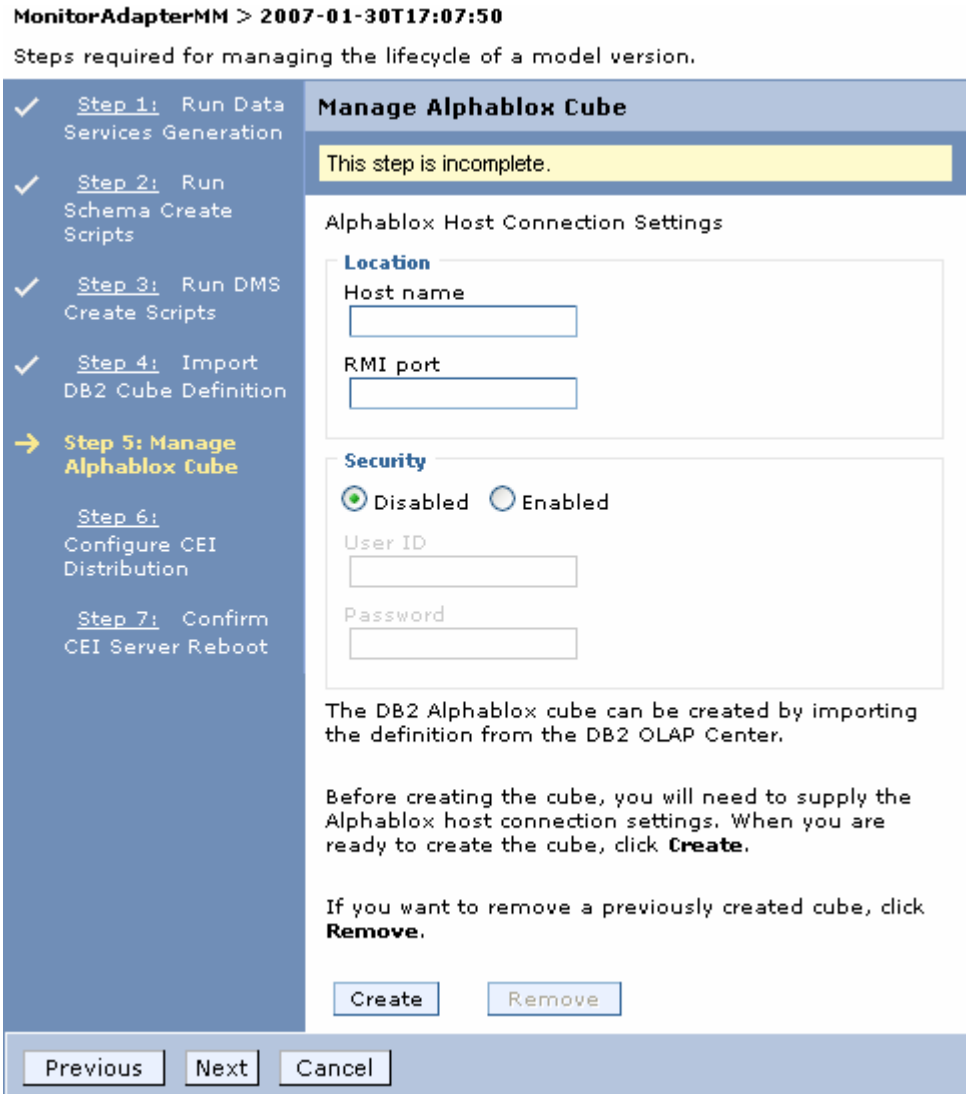
Figure 118. Click Confirm in the administrative console



____ 5. Run step 5 of the model life cycle.

___ a. Click **Step 5: Manage Alphablox Cube**.

Figure 119. Click Step 5: Manage Alphablox Cube



___ b. Start WebSphere Portal Server.

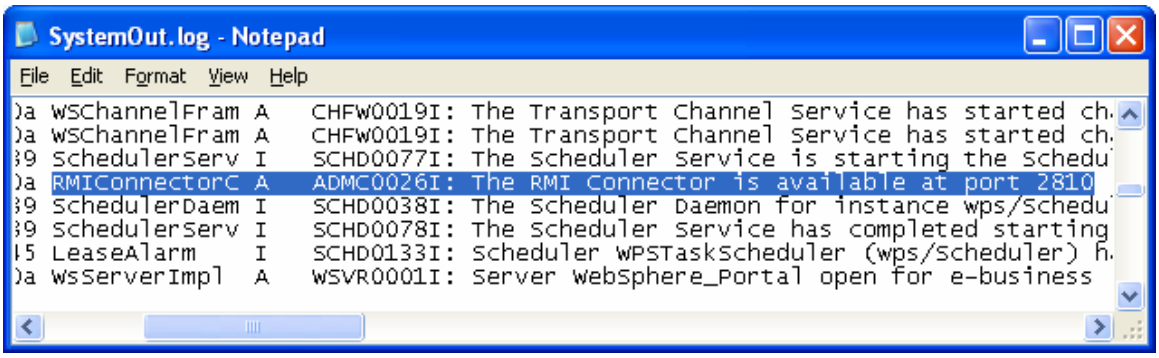
(1) In Windows, select **Start ► All Programs ► IBM WebSphere ► Portal Server v5.1 ► Start the server.**

___ c. Find the Portal RMI port in the Portal log.

(1) Browse the Portal log, for example, C:\IBM\PortalServer\log\SystemOut.log.

(2) Search for **RMI Connector**. For example, in the following screen capture you see that Portal RMI is port 2810.

Figure 120. Search for RMI Connector

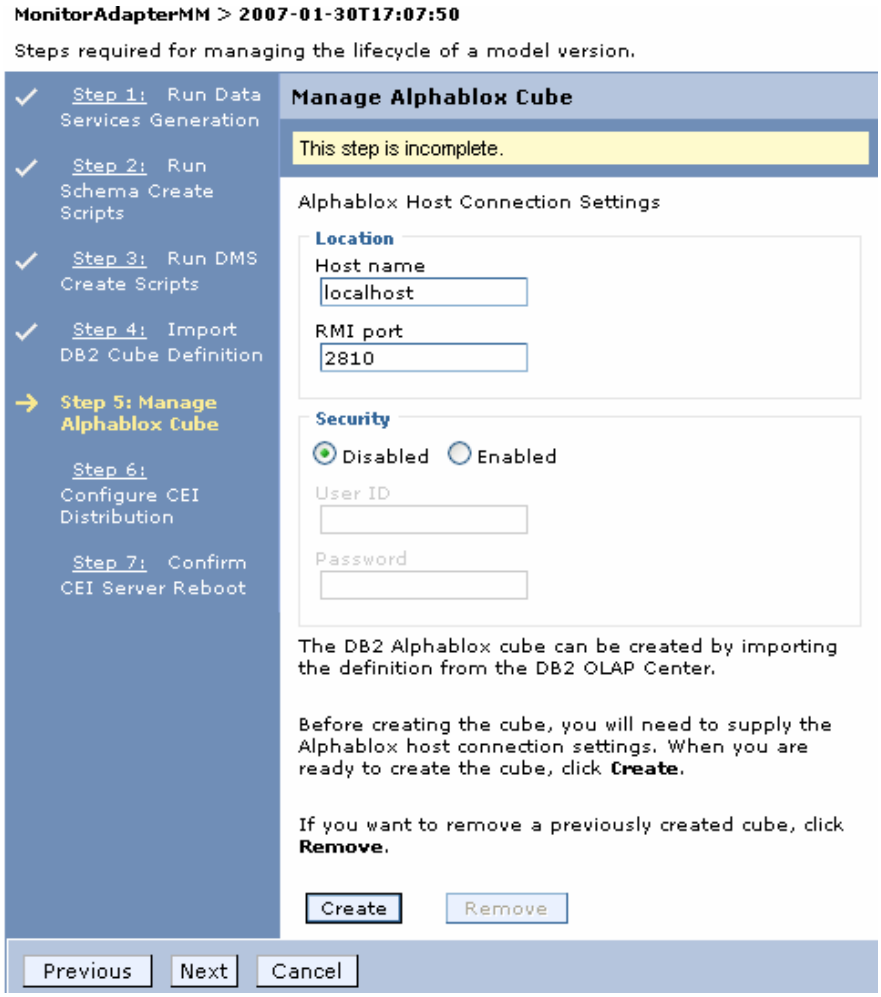


___ d. In the administrative console, in step 5 of the model life cycle, enter localhost for Host name.

___ e. Enter your RMI port value that you found in the Portal log.

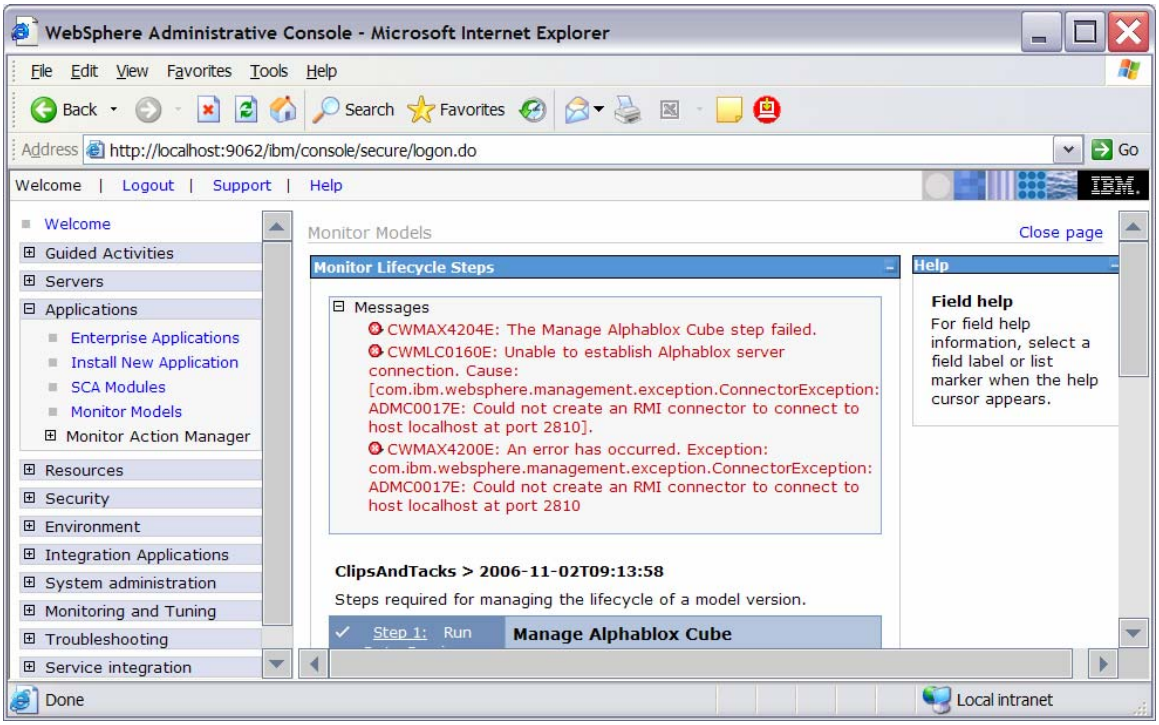
___ f. Click **Create**.

Figure 121. Enter your RMI port value



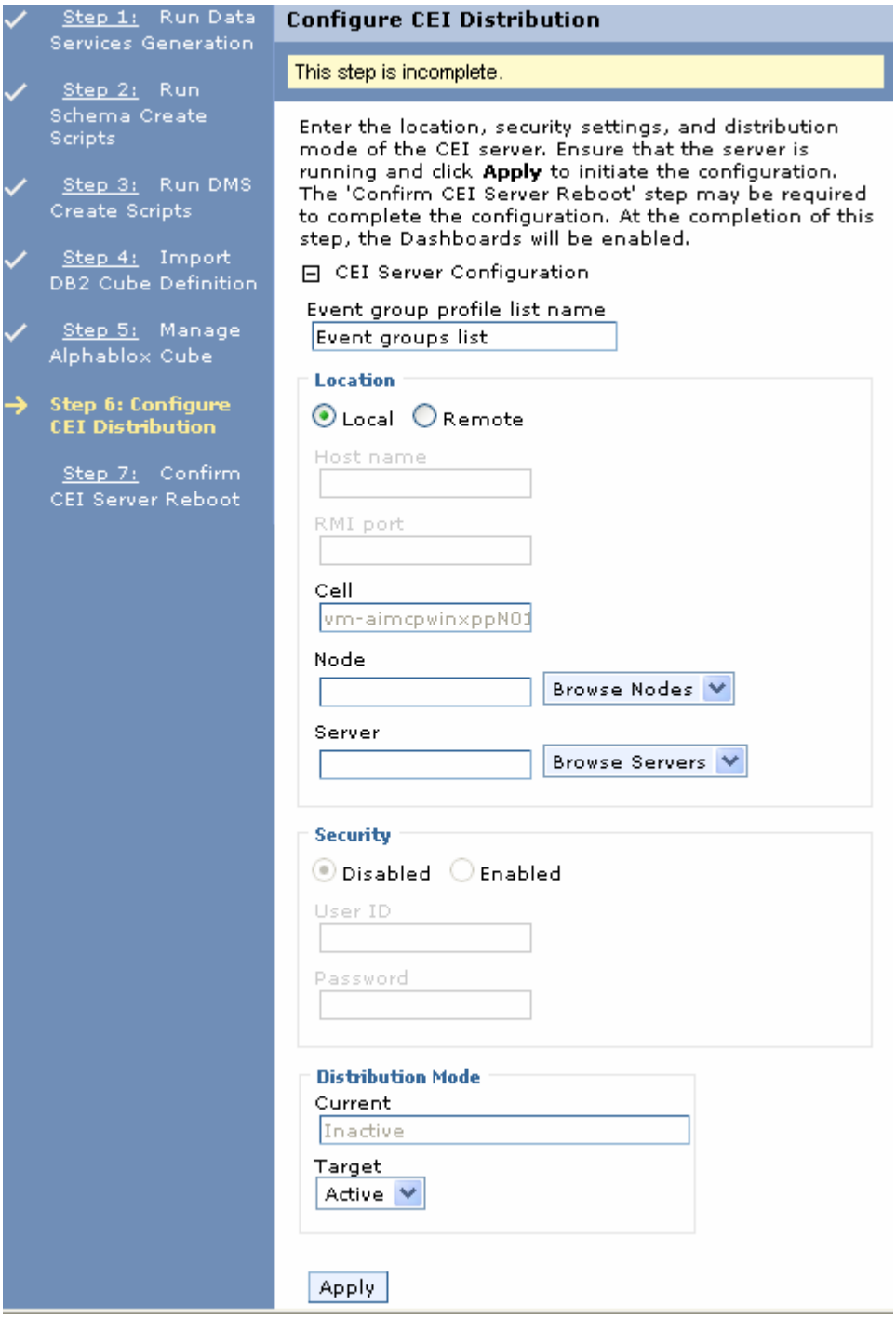
If an error message indicates that there is a connection problem, you might need to correct the Portal configuration. Go to Appendix B. Workaround for Step 5: Manage the DB2 Alphablox® cube now and follow the steps there as a workaround for this problem. After completing the workaround, return here and proceed with the next step. Here is a sample of the error:

Figure 122. Error message indicating a connection problem



____ 6. Run step 6 of the model life cycle.
___ a. Click **Step 6: Configure CEI Distribution**.

Figure 123. Run Step 6 of the model life cycle



___ b. Click **Apply**.
____ 7. Run **Step 7:** of the model life cycle.
___ a. Click **Step 7: Confirn CEI Server Reboot .**

___ b. Confirm that the Confirm button on the window for step 7 is enabled. If it is not, wait a few minutes, and then refresh the window. When the Confirm button is enabled, continue with the following steps.

___ c. In the navigation pane for the administrative console, select **System administration ► Save Changes to Master Repository**, then click **Save**.

___ d. Recycle WebSphere Process Server.

(1) In Windows, select **Start ► All Programs ► IBM WebSphere ► Process Server 6.0 ► Profiles ► wbmonitor ► Stop the server**.

(2) In Windows, select **Start ► All Programs ► IBM WebSphere ► Process Server 6.0 ► Profiles ► wbmonitor ► Start the server**.

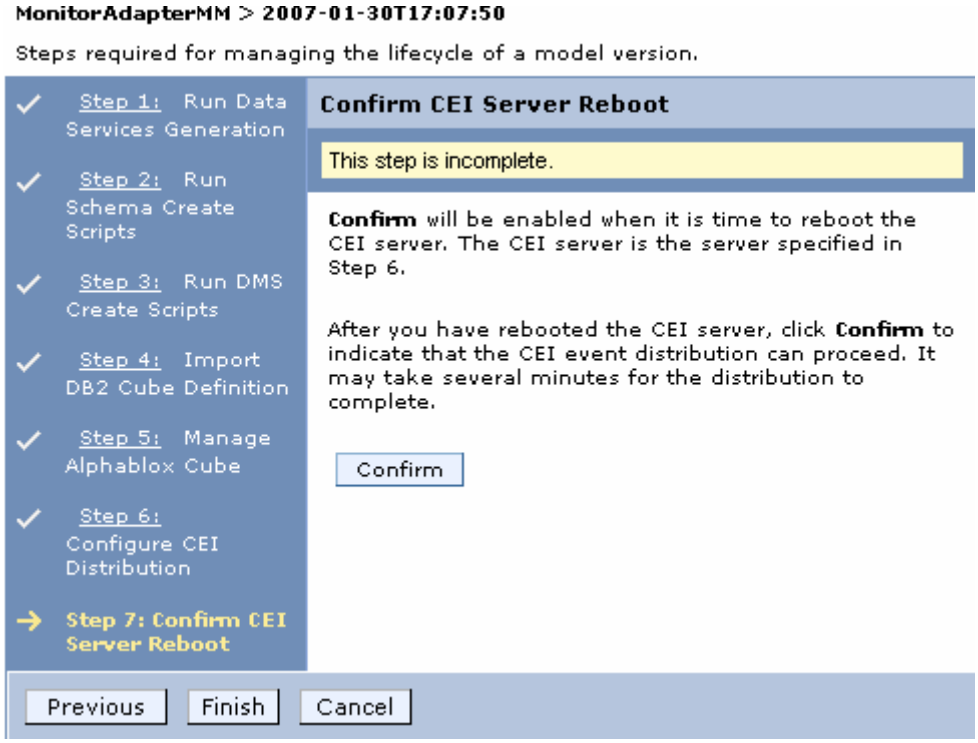
___ e. Re-open the administrative console for WebSphere Process Server.

___ f. In the administrative console menu, click **Applications ► Monitor Models**.

___ g. Click the **timestamp** value in the Version column.

___ h. Click **Setup Wizard**. The administrative console should detect that Step 6 is complete and automatically move to Step 7 as follows:

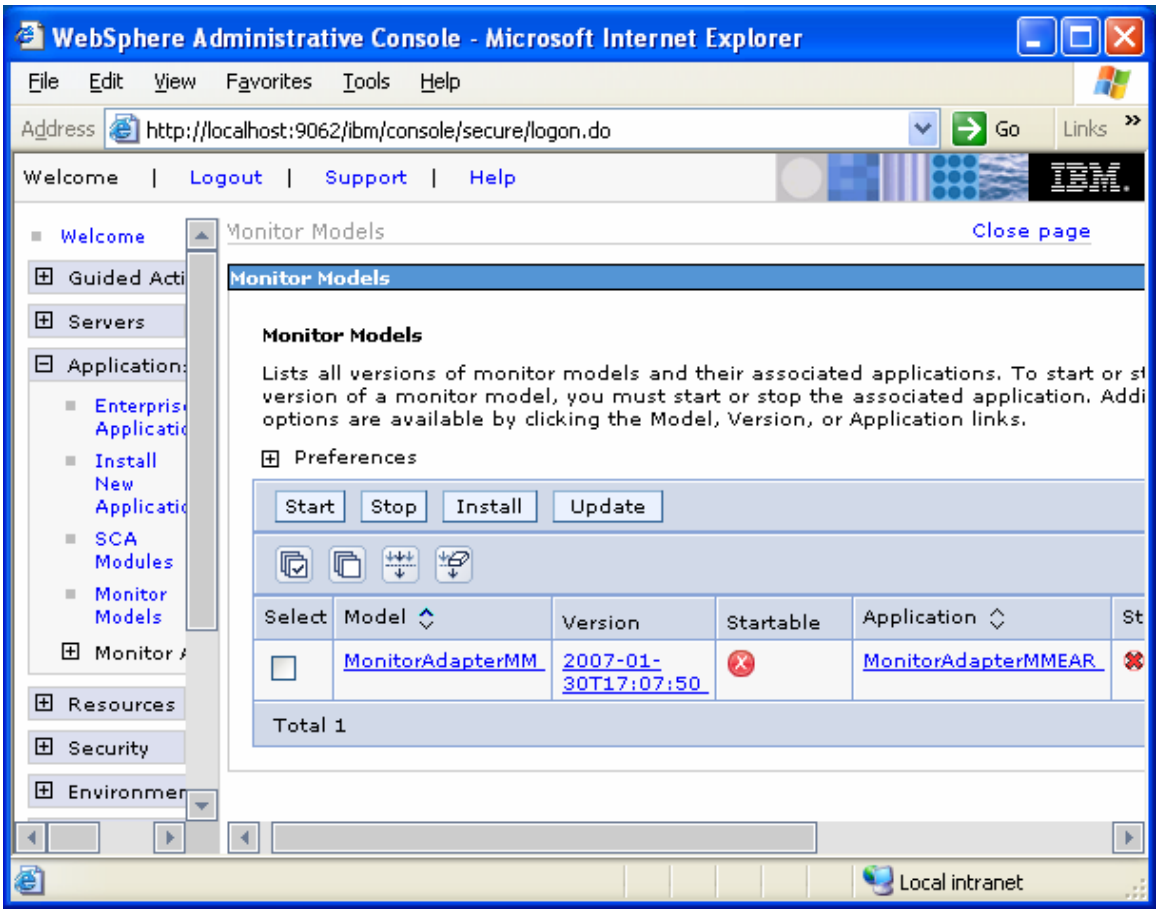
Figure 124. Run Step 7 of the model life cycle



___ i. Click **Confirm**.

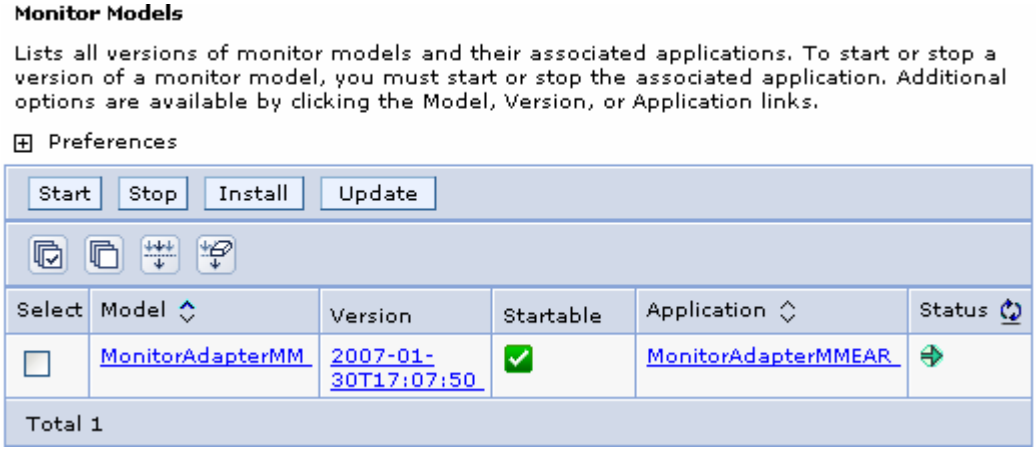
___ j. Click **Finish** to return to the Monitor Models window.

Figure 125. The Startable column for the model with red indicator



____ 8. If the Startable column for the model shows a red circle, it is stopped, Wait a moment, then click **Applications ► Monitor Models**. The Startable column for the model should now show a green check mark. If this column does not show a green check mark, be patient and continue refreshing until it does.

Figure 126. The Startable column for the model with green indicator



Part 5: Processing events to exercise the model

As at the end of Part 3, you will now run some events to verify that the monitor model works correctly.

____ 1. Open a DB2 command window. Then run the following commands:

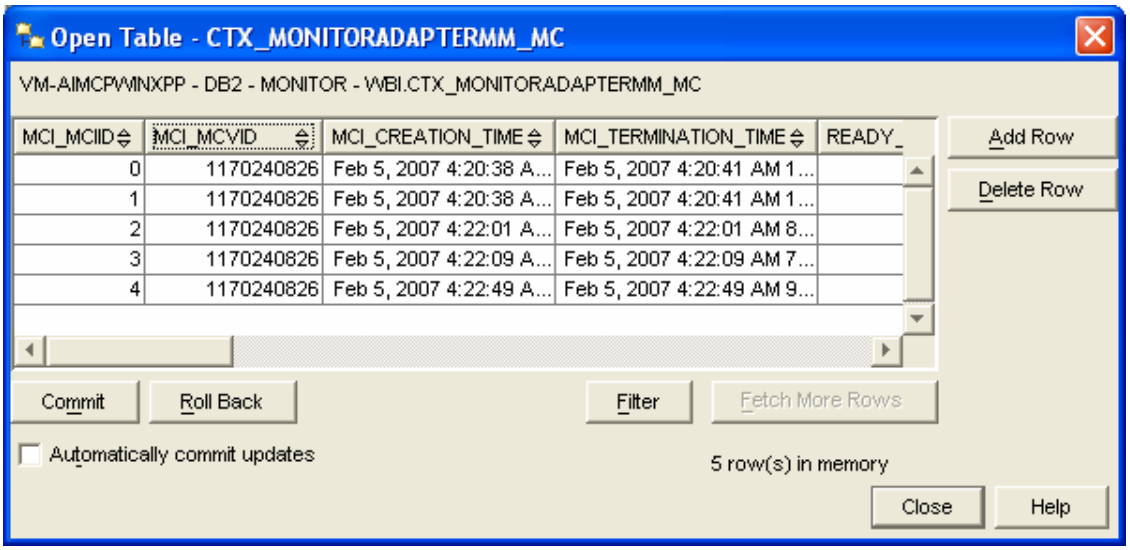
```
___ a.  db2 connect to ADAPTER user db2admin
        using <db2admin password>
___ b.  db2 insert into customer values ('3',
        'Michael', 'Davis', 'Regular')
___ c.  db2 insert into customer values ('4',
        'Paul', 'Smith', 'Silver')
___ d.  db2 insert into customer values ('5',
        'Joe', 'Williams', 'Gold')
___ e.  db2 insert into customer values ('6',
        'Daniel', 'Johnson', 'Regular')
___ f.  db2 insert into customer values ('7',
        'Tim', 'Ross', 'Gold')
___ g. db2 disconnect ADAPTER
```

____ 2. Wait briefly so that the monitor model can process the events.

____ 3. To verify that the monitor model is processing these events properly, open the DB2 Control Center. In Windows, select **Start ► All Programs ► IBM DB2 ► General Administrative Tools ► Control Center**.

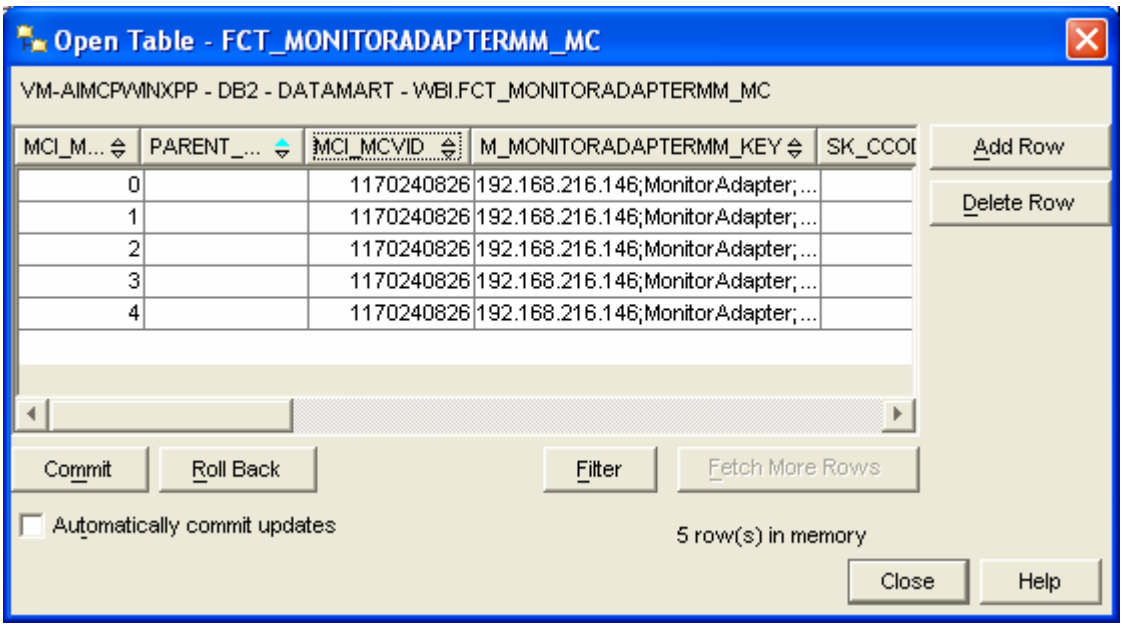
___ a. In the MONITOR database, open table CTX_MONITORADAPTERMM_MC. You might see records as in this example. Note, however, that the replication daemons are running. As a result, you might not see any records, because they have already been deleted and moved to the DATAMART database. In that case, proceed to the next step to check the DATAMART database.

Figure 127. CTX_MONITORADAPTERMM_MC table In the MONITOR database



___ b. In the DATAMART database, open table FCT_MONITORADAPTERMM_MC. You should see records as in this example. If you do not see the records, you might have to wait a few minutes for the Replication Manager daemons to run. In that case, wait a few minutes, and then click **View ► Refresh** in the Control Center.

Figure 128. FCT_MONITORADAPTERMM_MC table In the MONITOR database



___ c. Close the DB2 Control Center.

Part 6: Creating a dashboard

In this section you will build a dashboard in WebSphere Portal Server. You will add portlets to the dashboard and configure them.

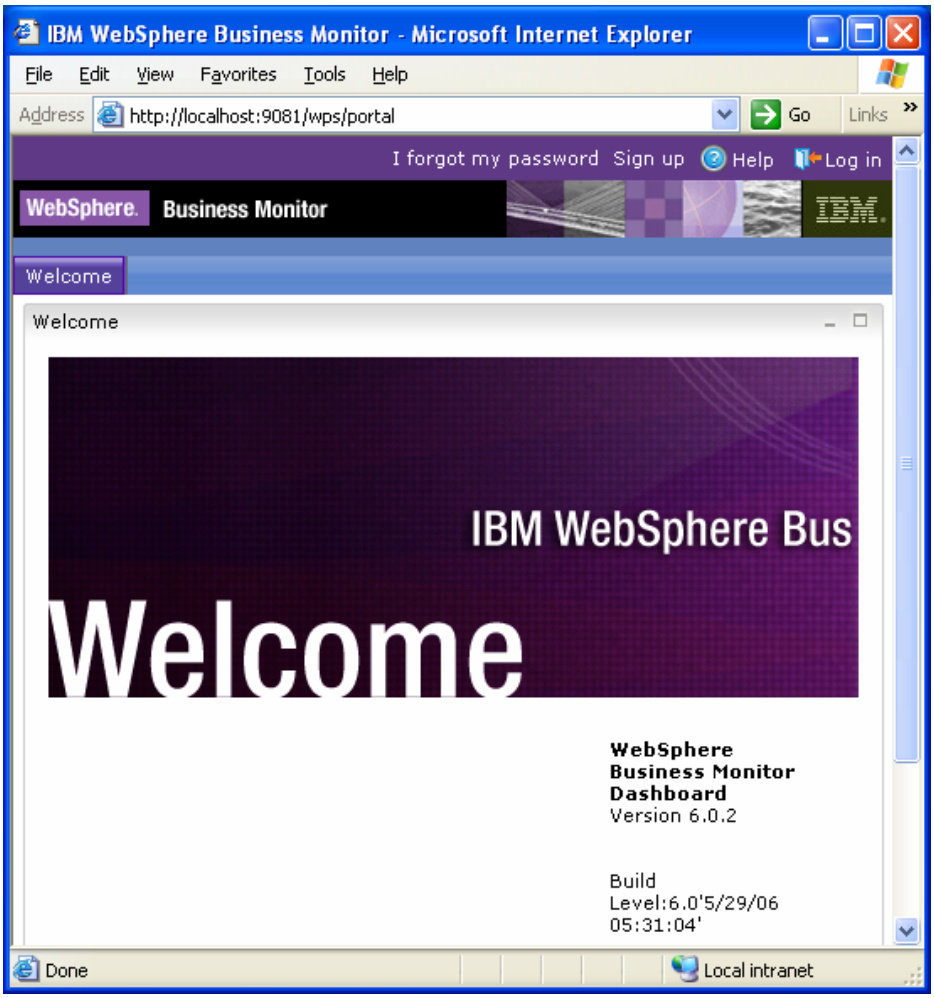
____ 1. Make copies of the portlets that you want to use: Instances and Dimensional View.

You should not configure the original portlets, because the configuration cannot be removed after it is applied. So, you will first make copies of the portlets, and then you will configure the copies.

___ a. Open the Portal page: http://localhost:9081/wps/portal.

___ b. Click **Log in**, and then enter your Portal administrative user ID and password (commonly wpsadmin and wpsadmin).

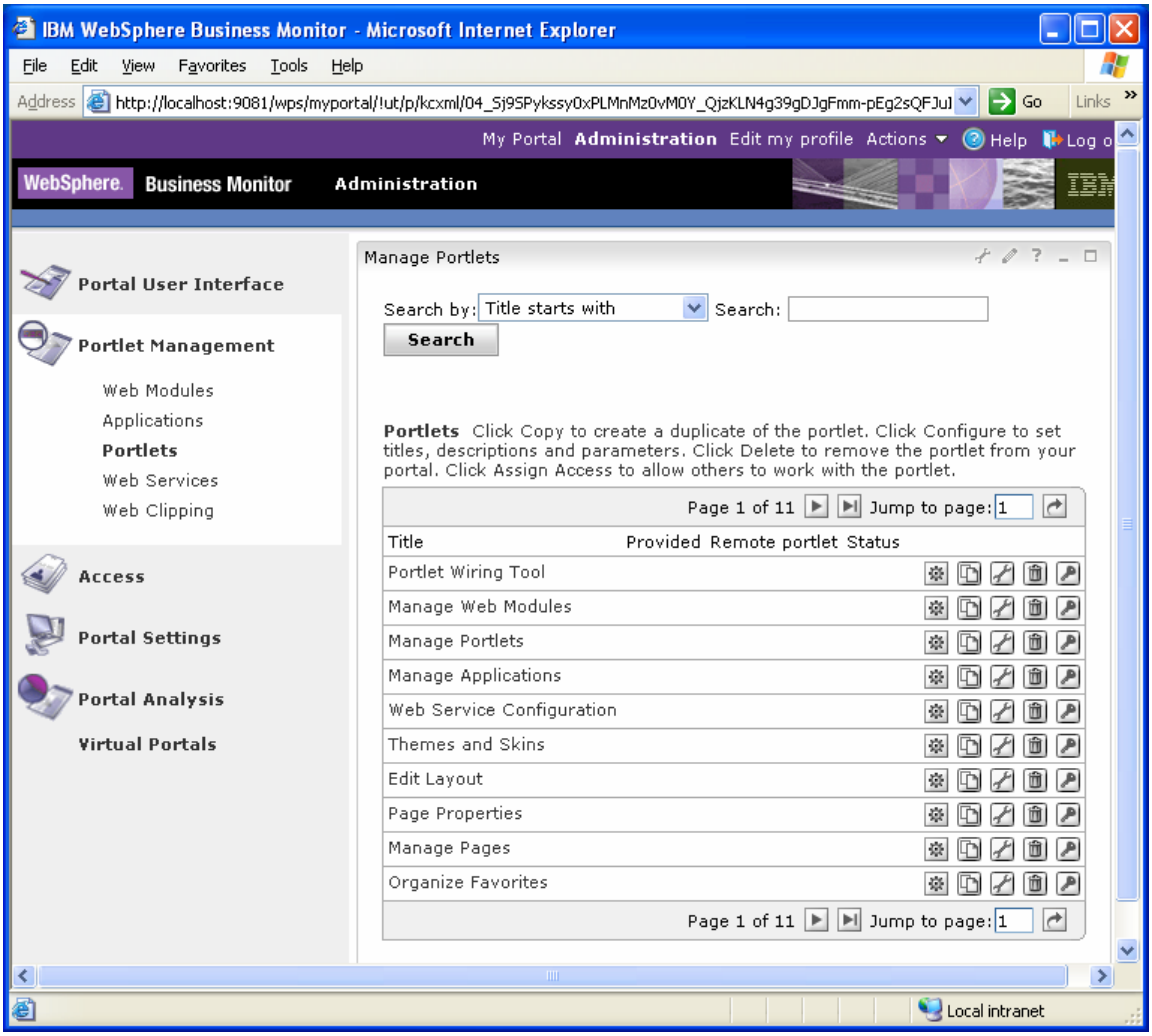
Figure 129. Log in, then enter your Portal administrative user ID and password



____ 2. Create copies of the WebSphere Business Monitor portlets.

___ a. Click **Administration** at the top of the page, and then click **Portlet Management ► Portlets**.

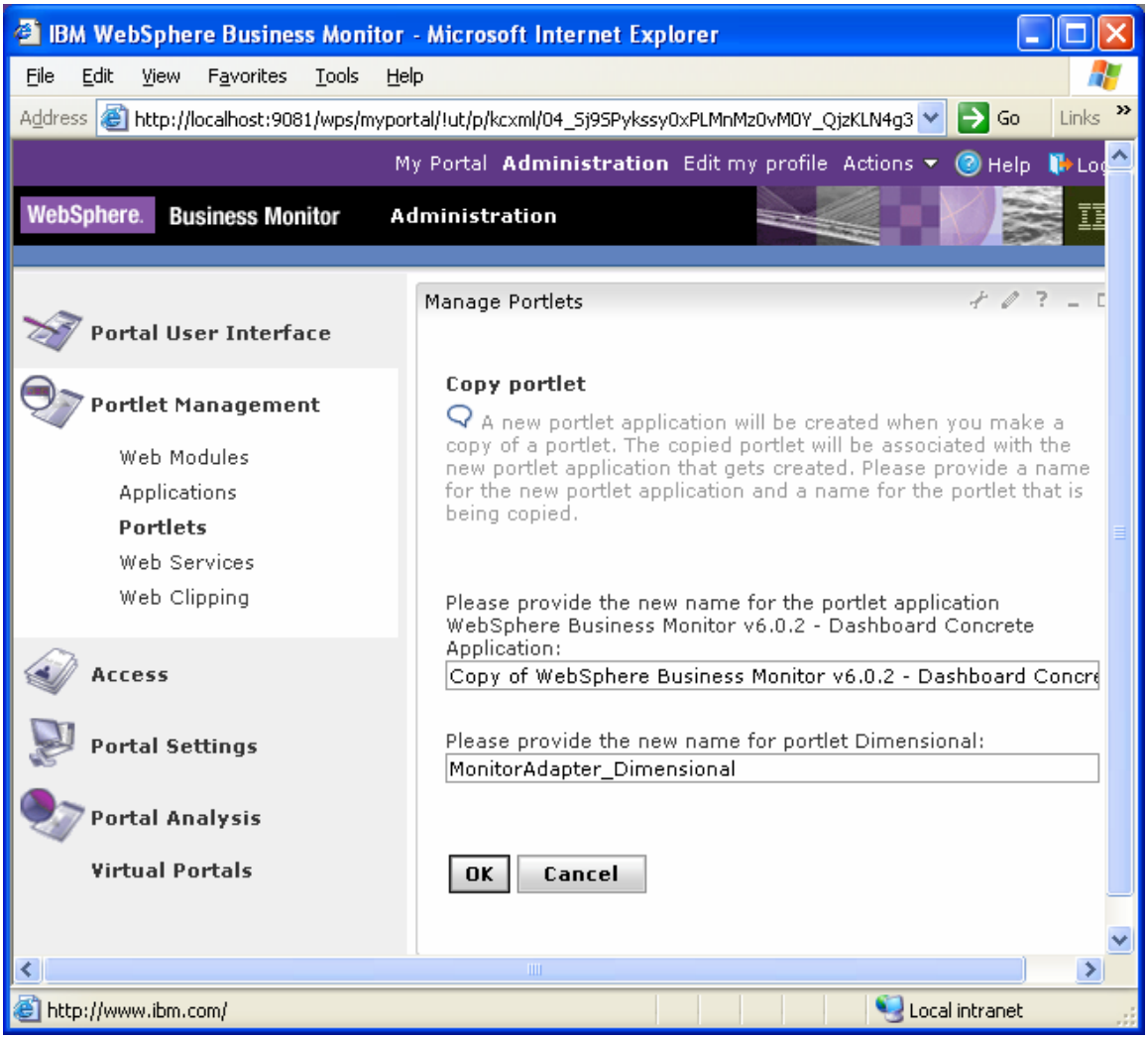
Figure 130. Click Portlet Management ► Portlets



___ b. Browse to page 10 by clicking the right-arrow icon, or by entering the page number in the 'Jump to page' field and then clicking the arrow icon to its right. This page should show the portlets for Dimensional View and Instances.

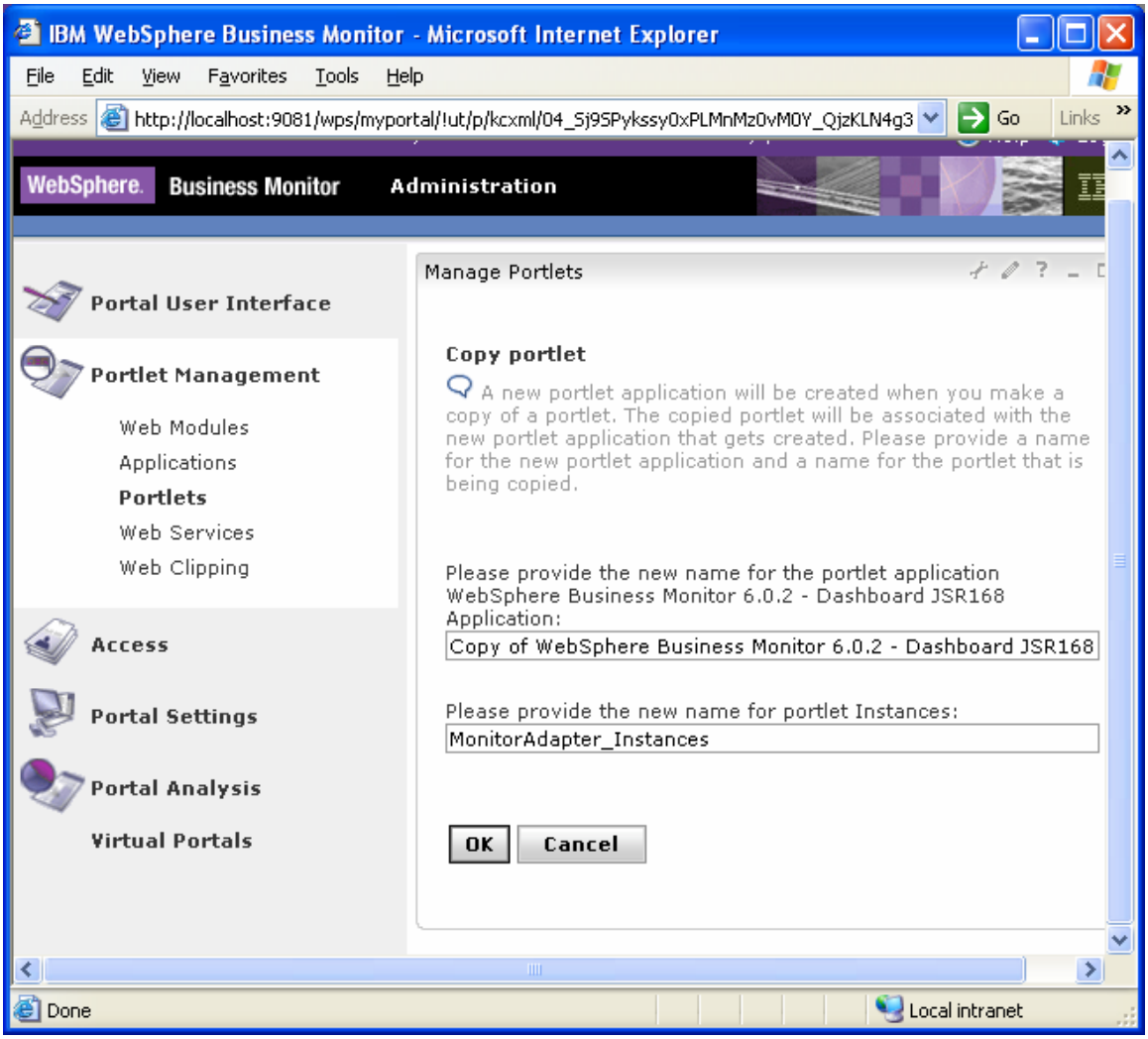
___ c. On the row containing Dimensional View, click the Copy portlet icon. In the next window, enter **MonitorAdapter_Dimensional** as the new name of the portlet and click **OK**.

Figure 131. Enter MonitorAdapter_Dimensional as the new name



___ d. Similarly, on the row containing **Instances**, click the Copy portlet icon. In the next window, enter **MonitorAdapter_Instances** as the new name of the portlet and click **OK**.

Figure 132. Enter MonitorAdapter_Instances as the new name

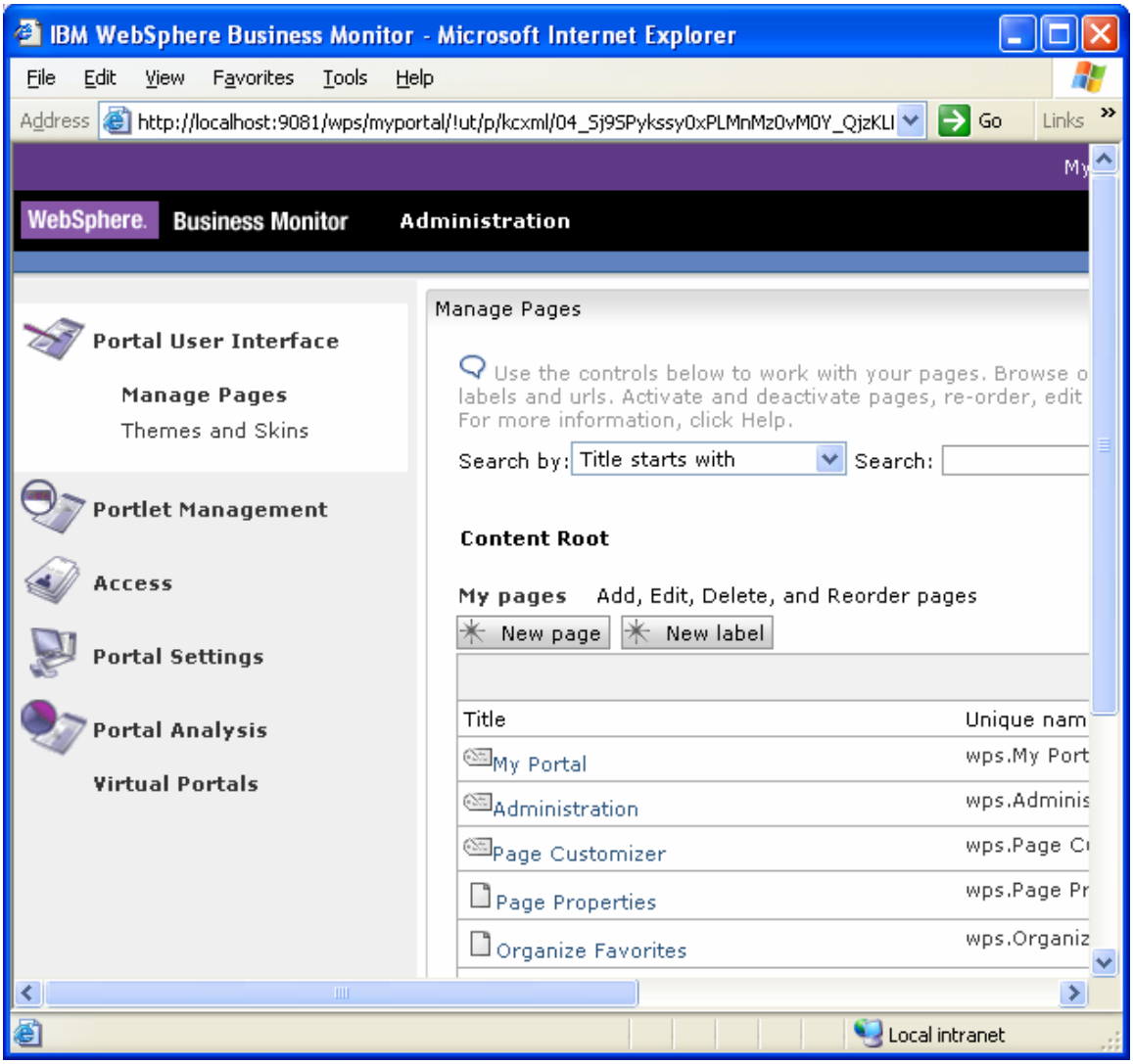


___ e. Now browse to page 11 by clicking the arrow icons. This page should show the portlet KPI View plus the copies of the portlets for Dimensional and Instances.

____ 3. Create a page containing the views: Instances and Dimensional

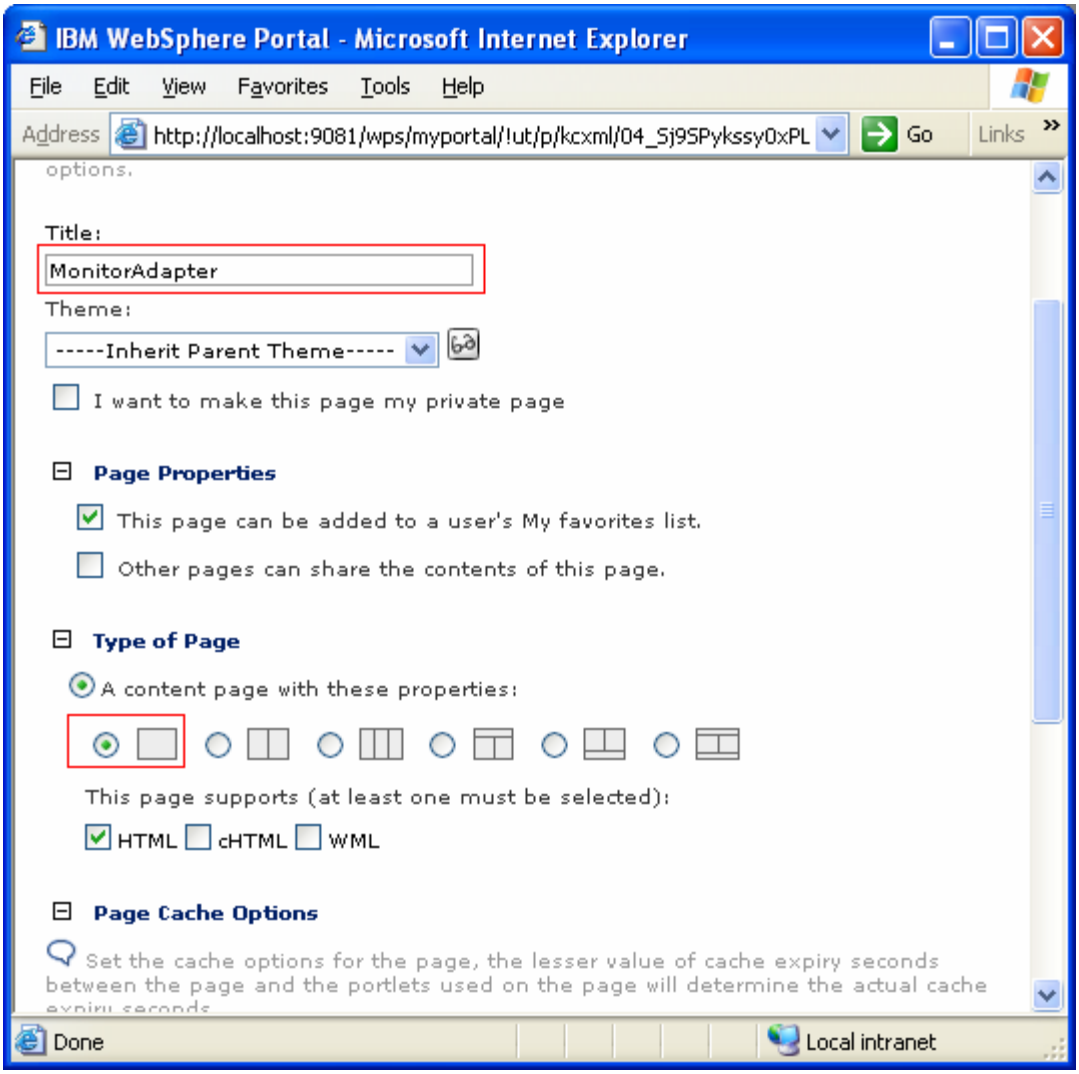
___ a. Click **Administration** at the top of the page, and then click **Portal User Interface ► Manage Pages**.

Figure 133. Click Portal User Interface ► Manage Pages



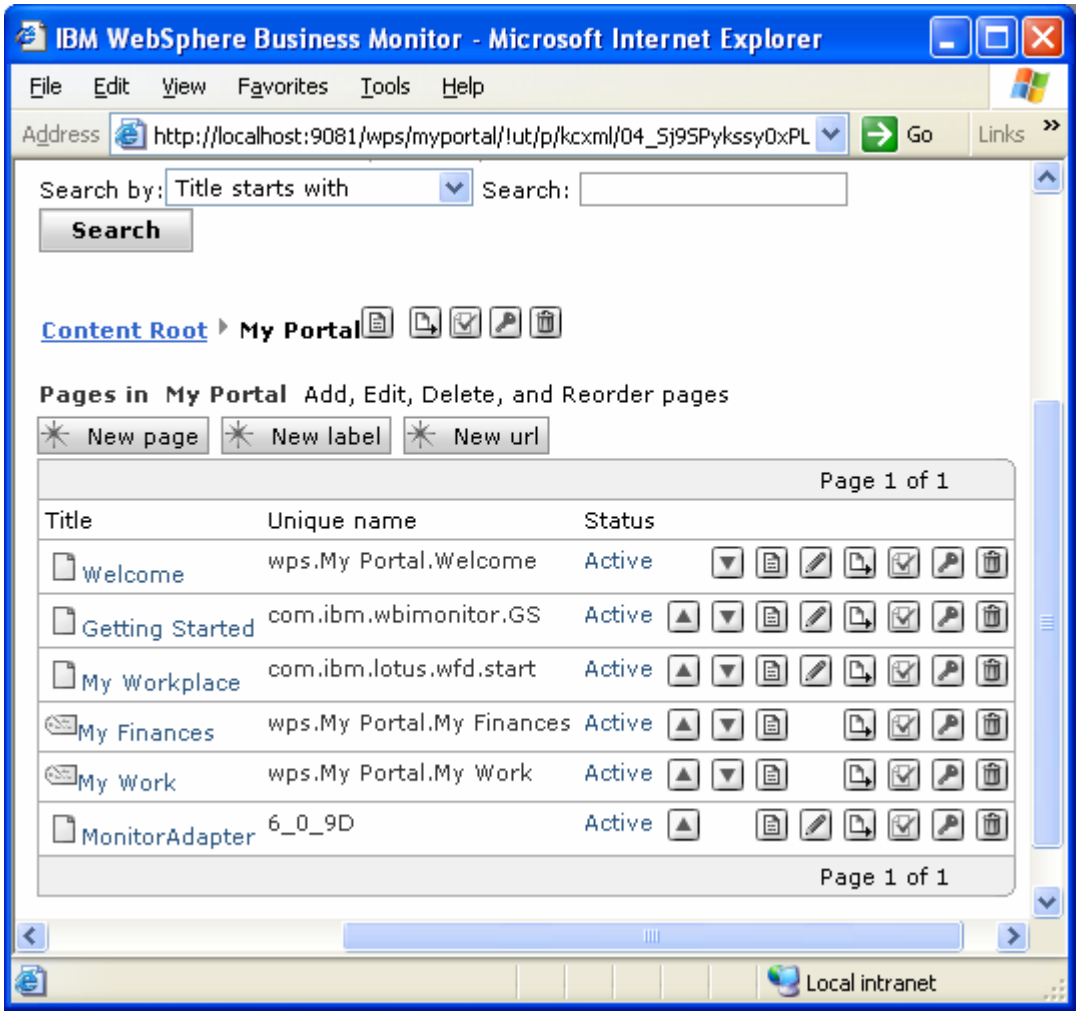
___ b. Click **My Portal**, and then click **New Page**. Enter **MonitorAdapter** as the page title. Under Type of Page, click the leftmost radio button on the far left to select one-column layout.

Figure 134. Click the leftmost radio button to select one-column layout



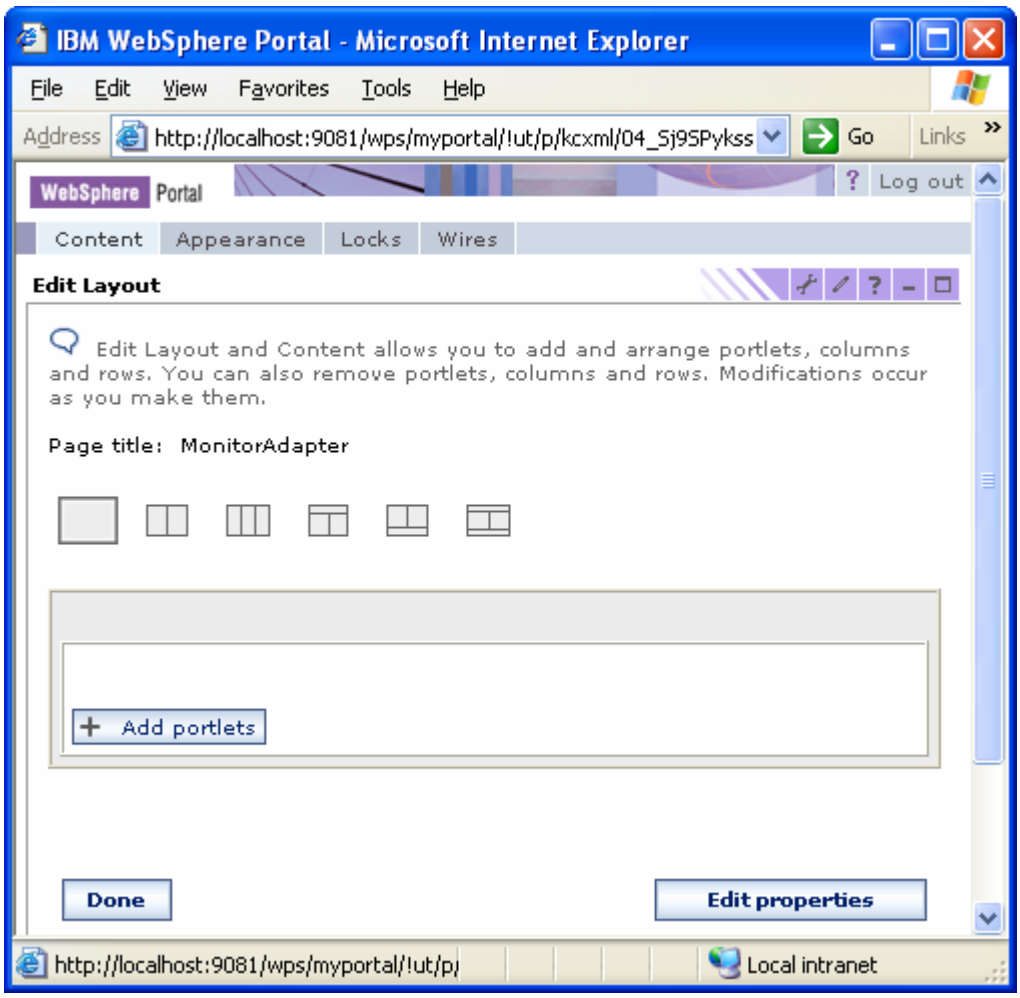
___ c. Click **OK**, and then click **OK** again. Now you should see the new page in the list as follows:

Figure 135. See the new page in the list



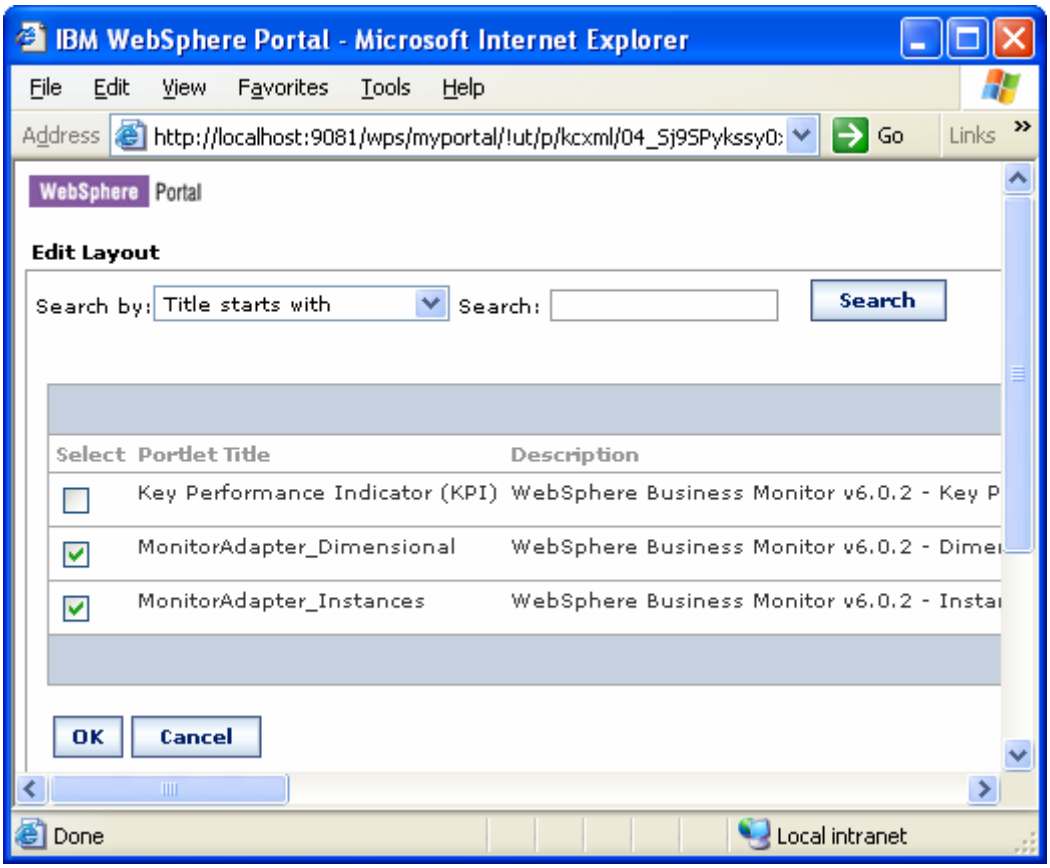
___ d. To edit the Dashboard page, click the **Edit Page Layout** icon on the right side of the row for Dashboard.

Figure 136. Click the Edit Page Layout icon



___ e. Click **Add portlets**. Navigate to the last page of the list to locate the **MonitorAdapter_Dimensional** and **MonitorAdapter_Instances** porlets, and select both of them.

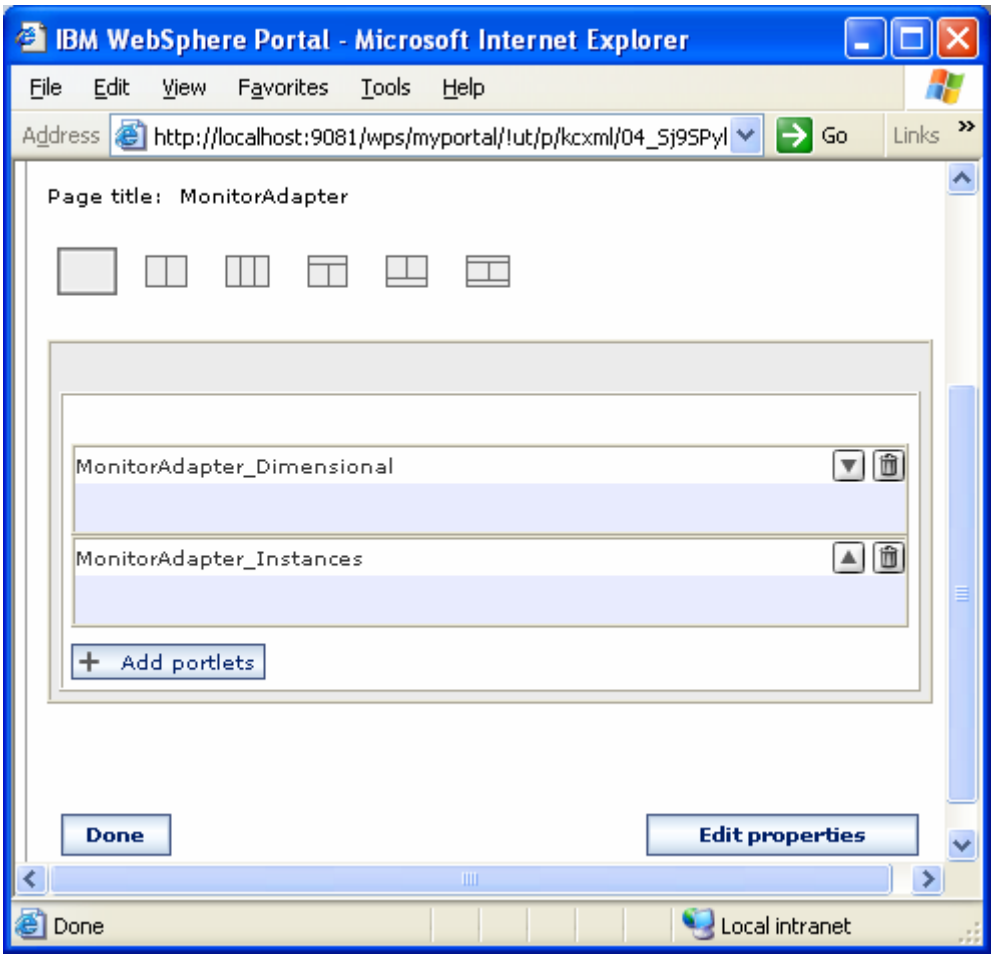
Figure 137. Navigate to the last page of the list to select both porlets



___ f. Click **OK**.

___ g. In the next window, confirm that the views have been added to the page.

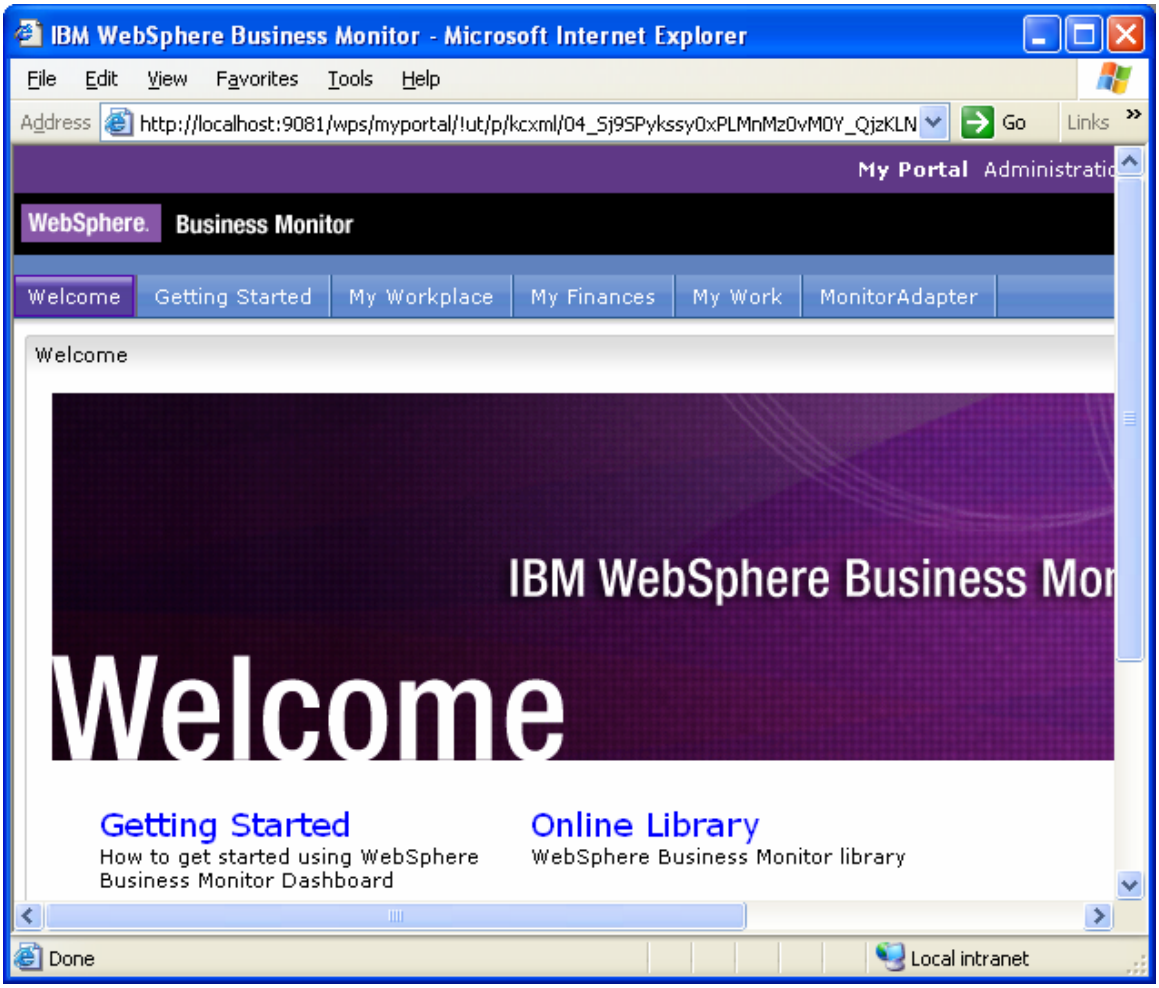
Figure 138.. Confirm that the views have been added



___ h. Click **Done**.

___ i. Click **My Portal** at the top of the page. In the new window, confirm that there is now a tab for **MonitorAdapter**.

Figure 139. Confirm that there is now a tab



____ 4. Configure the views on your new page.

___ a. Click the tab for **MonitorAdapter**.

___ b. Click the configure icon on the MonitorAdapter_Dimensional view.

___ c. For Model, select **MonitorAdapterMM**.

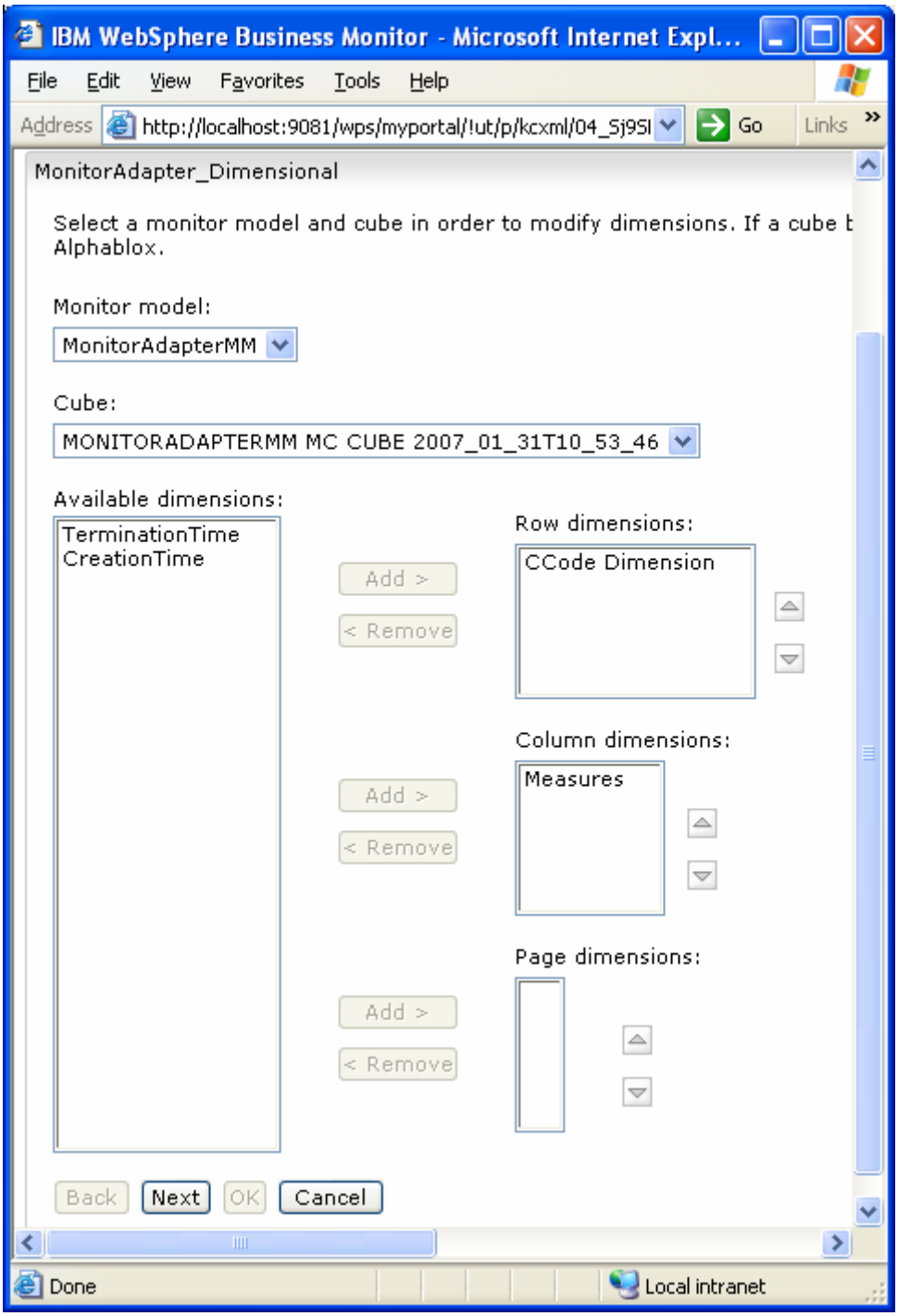
___ d. For Subject area, select **MONITORADAPTERMM MC CUBE <timestamp>**.

___ e. In Available dimensions, select **Measures**, then next to Column dimensions, click **Add**.

___ f. In Available dimensions, select **CCode Dimension**, then next to Row dimensions, click **Add**.

___ g. Confirm that the window looks like the following example.

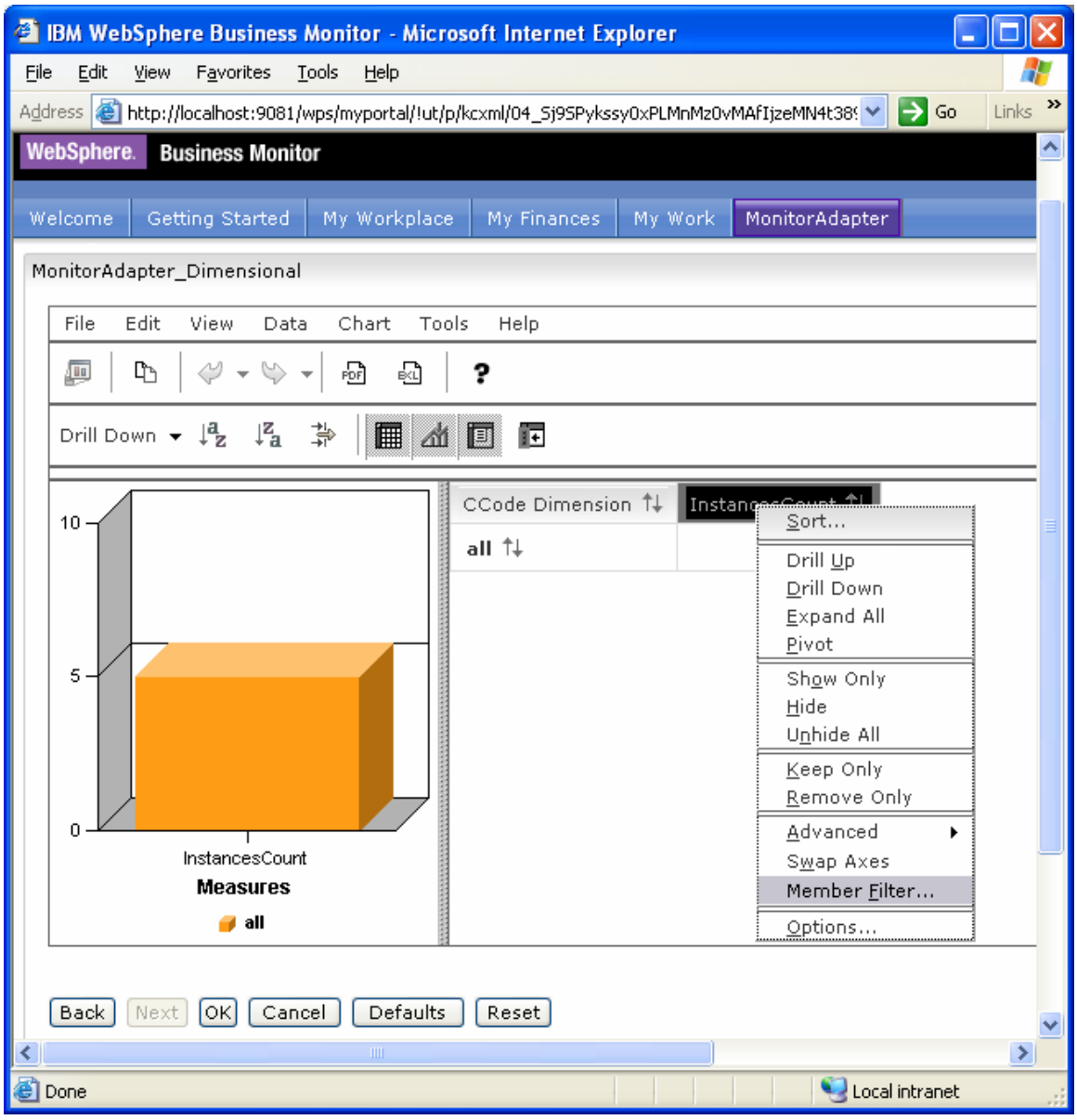
Figure 140. The window should look like this example



___ h. Click **Next**.

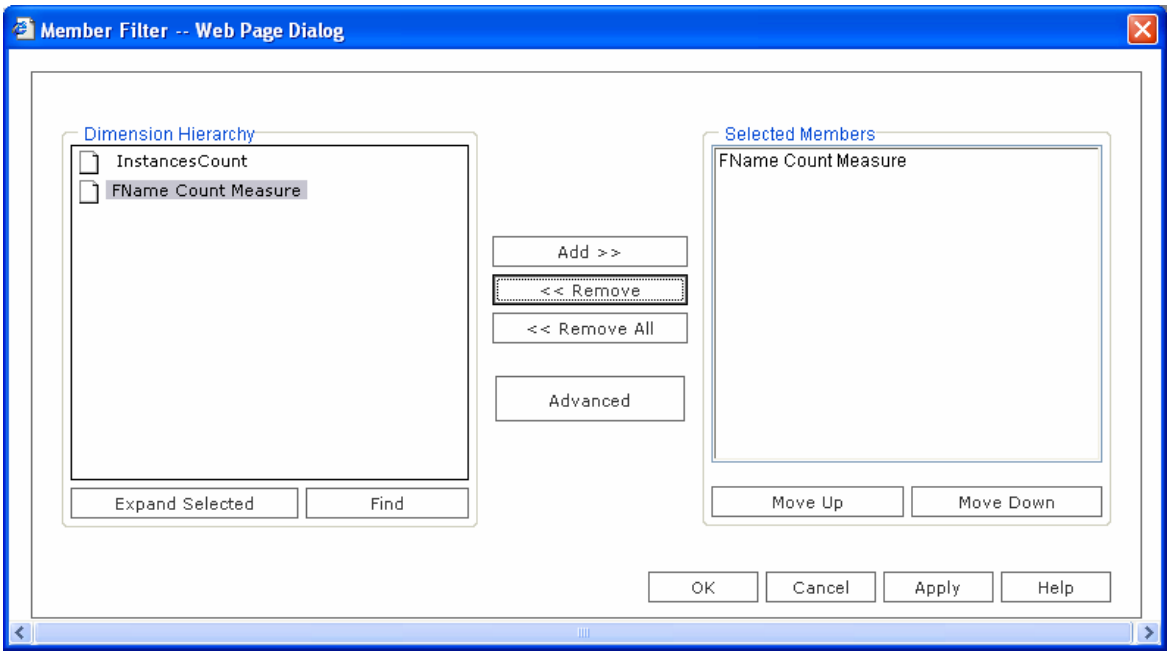
___ i. Right-click **InstancesCount** and select **Member Filter...**.

Figure 141. Select Member Filter....



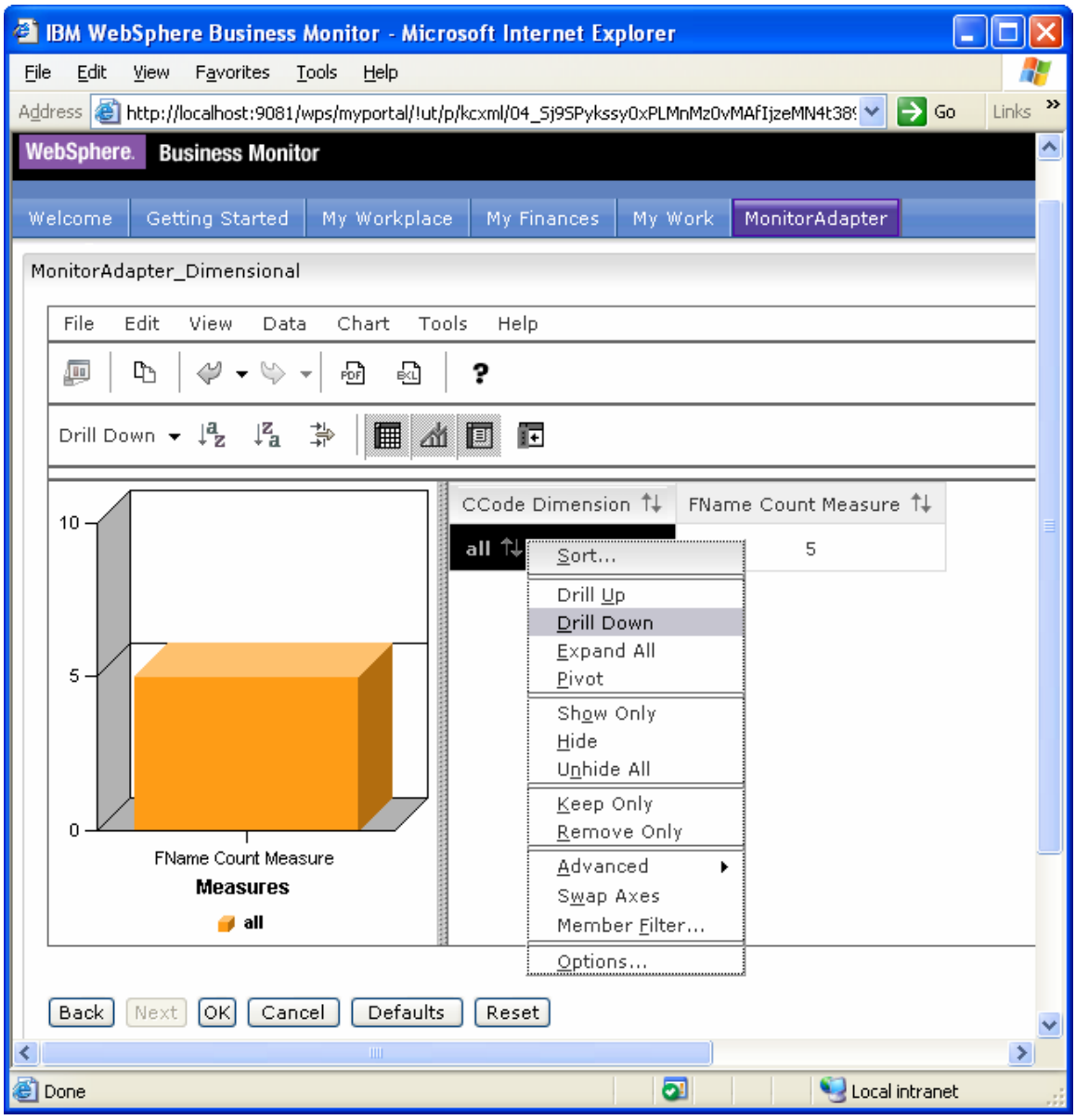
___ j. In the **Member Filter** window, select **FName Count Measure** as in the following example. Then click **OK**.

Figure 142. Select FName Count Measure as in this example



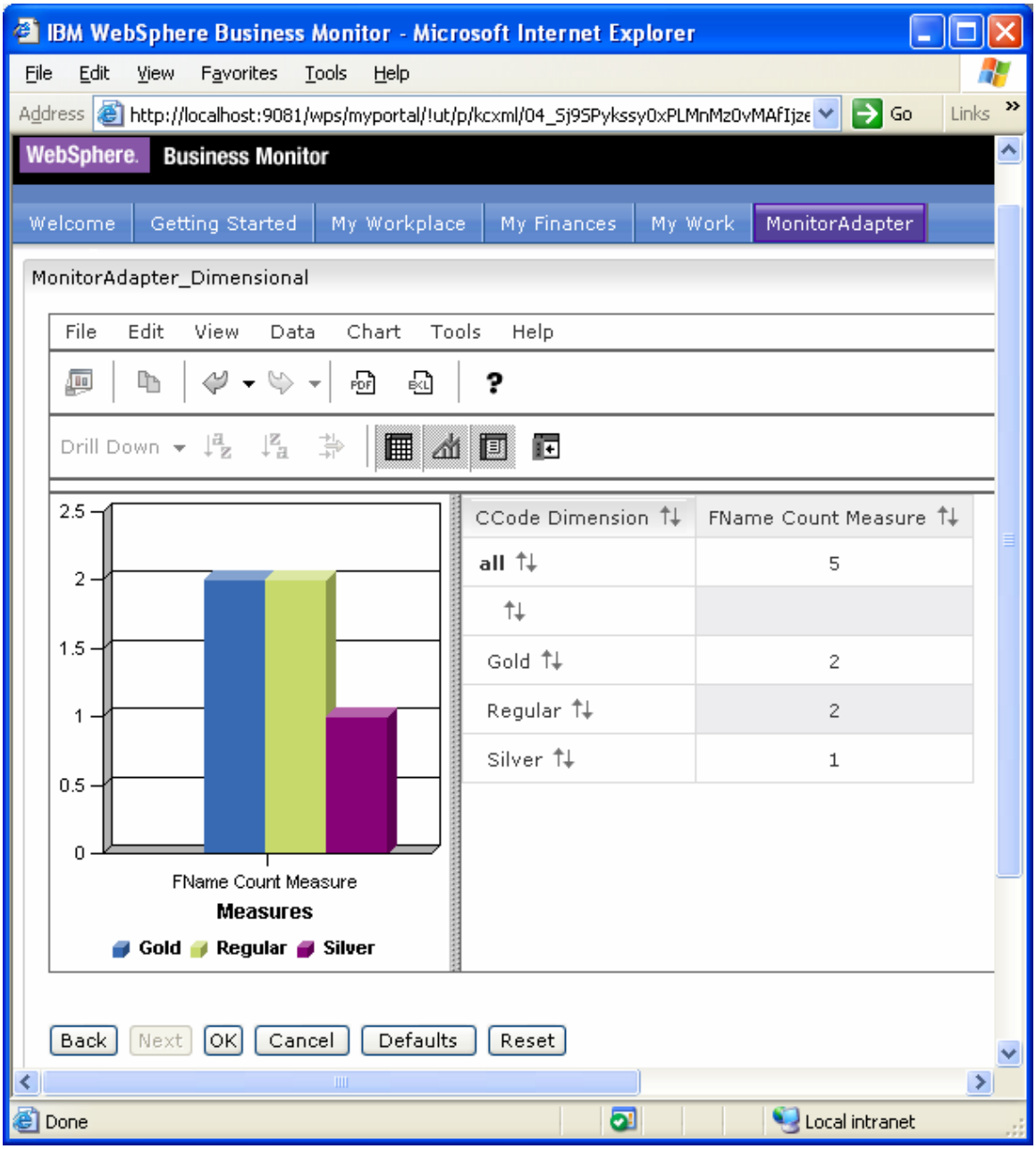
___ k. Right-click **all** and select **Drill Down**.

Figure 143. Select Drill Down



___ l. Confirm that the view looks like the following example.

Figure 144. The window should look like this example



___ m. Click **OK**.

___ n. Click the configure icon for the **MonitorAdapter_Instances** view.

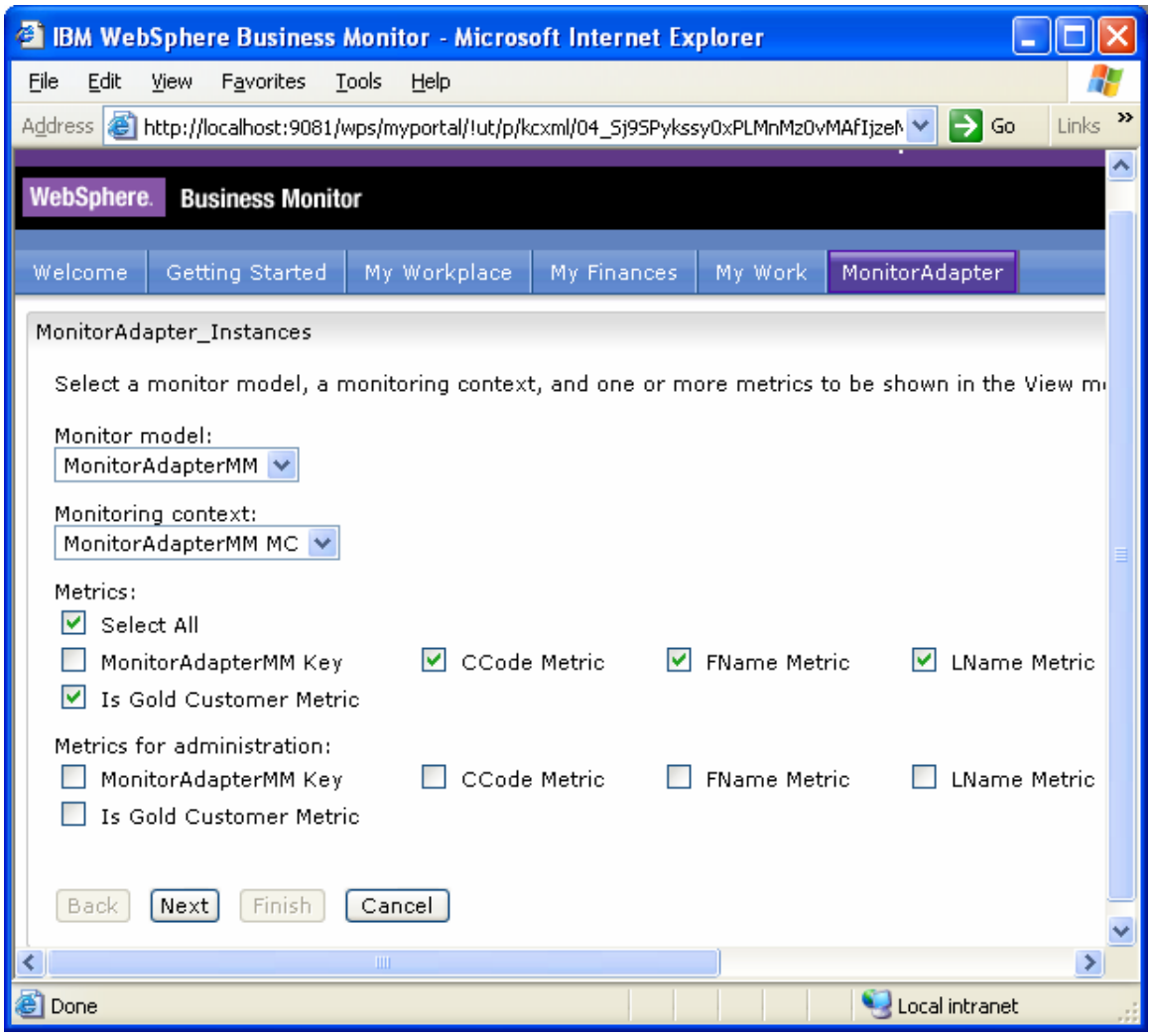
___ o. For Monitor model, select **MonitorAdapterMM**.

___ p. For Monitoring context, select **MonitorAdapterMM MC**.

___ q. Under Metrics, select the **Select All** check box, and then clear the **MonitorAdapterMM Key** check box under Metrics for administration.

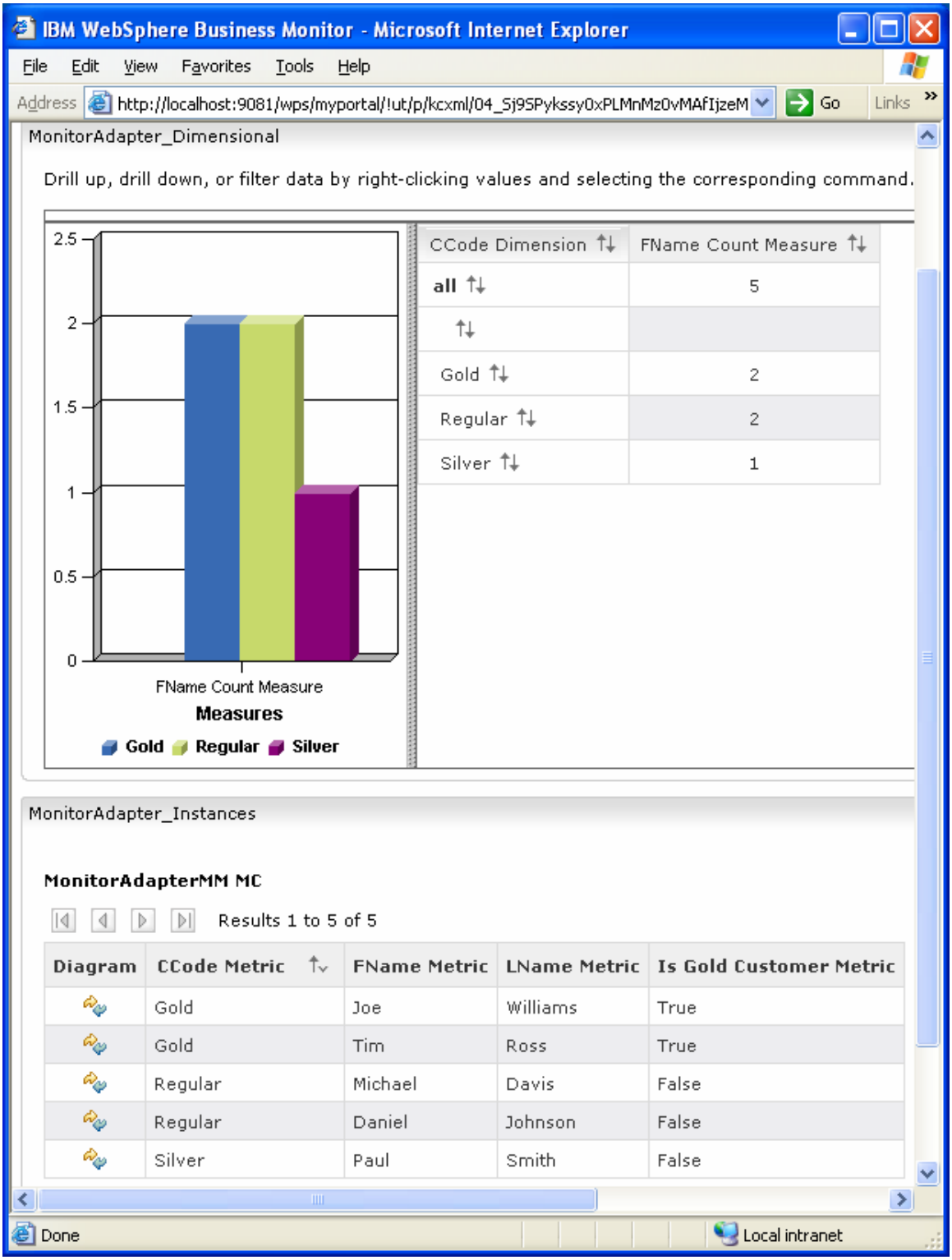
___ r. Click **Next**, then **Next**, then **Next** again, and then **Finish**.

Figure 145. Click Next, then Next, then Next again, then Finish



___ s. Confirm that the final view of MonitorAdapter looks like the following example.

Figure 146. The window should look like this example



What you accomplished in this exercise

In this exercise, you created a J2EE application using WebSphere Integration Developer. In the application, JDBC adapter acts as an event resource to fetch data from a database and then send that data to mediation filter to distinguish gold customers from other customers.

You then created a monitor model using the Monitor Model Editor and defined the metrics to monitor the data issued from JDBC adapter.

You next deployed the application and monitor model to WebSphere Business Monitor.

You used db2 commands to trigger the monitored application to submit events.

Finally, you configured dashboards and viewed monitored data in several different views.

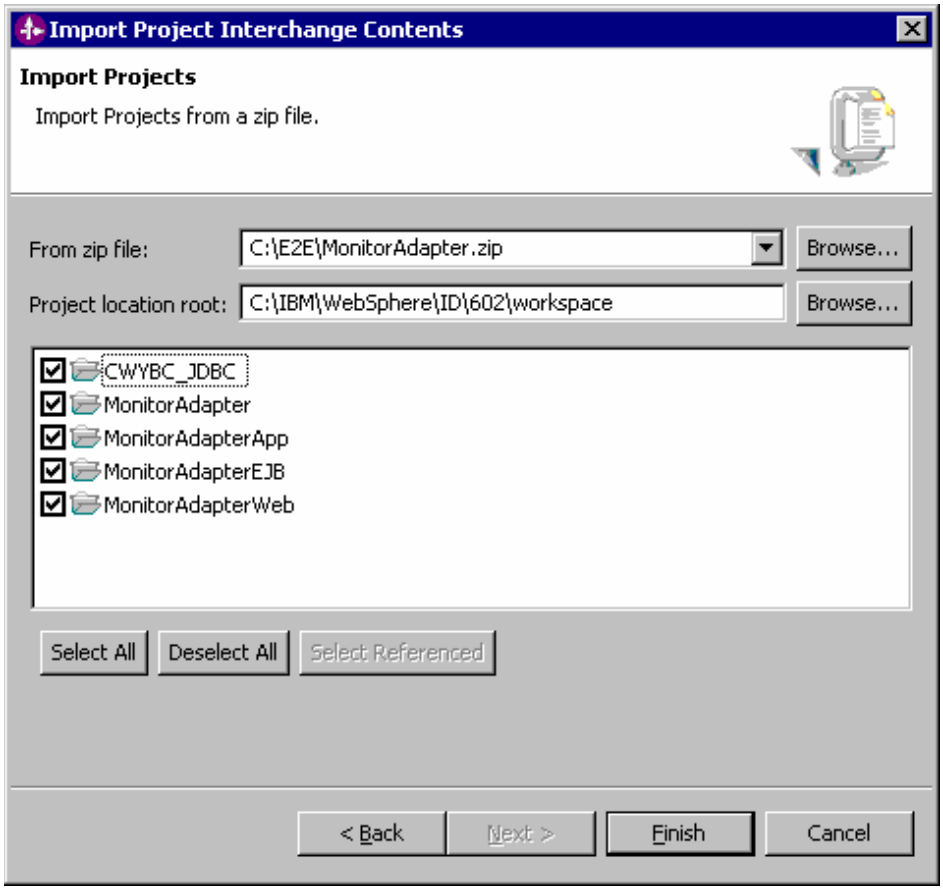
Appendix A. Import the J2EE application solution into WebSphere Integration Developer

A solution has been provided so that you do not have to build the J2EE application from scratch. This section shows you how to import the application into WebSphere Integration Developer. After importing, you can proceed to generate the EAR file and deploy it.

____ 1. Start WebSphere Integration Developer and set up the environment.
   ___ a. Start WebSphere Integration Developer V 6.0.2, and when prompted, point to a new workspace, such as C:\workspaces\MonitorAdapter.
   ___ b. Close the Welcome tab.
   ___ c. Select **Window ► Preferences ► Workbench ► Capabilities**. Assure you have selected 'Advanced J2EE'.

____ 2. Import the project interchange file **MonitorAdapter.zip** into WebSphere Integration Developer 6.0.2 as shown below. Wait for the project to be built, which takes a few minutes.

Figure 147. Import the project interchange file

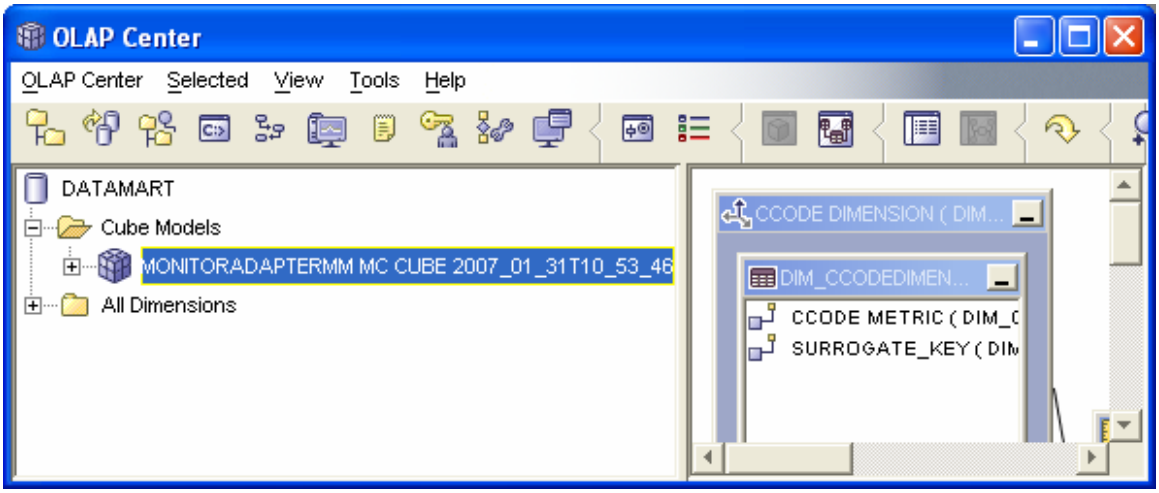


Appendix B. Workaround for Step 5: Manage the DB2 Alphablox® cube

If you receive a connection error while running step 5 of the life-cycle steps, use this appendix to complete a workaround. In this section you will manually import the cube into DB2 Alphablox, and then you will mark this step complete in the life cycle table.

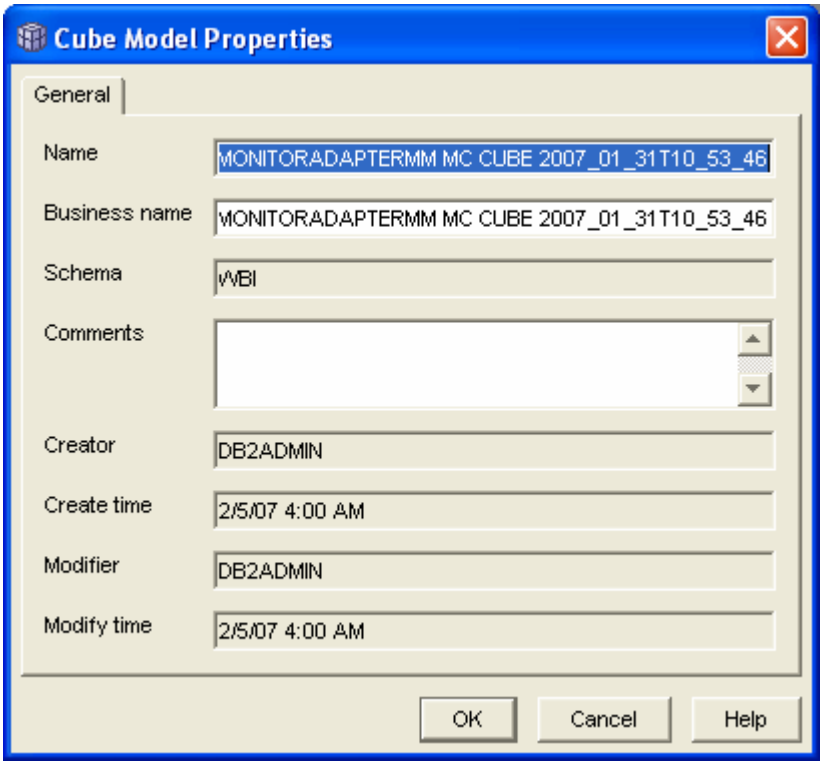
____ 1. Copy the cube name from OLAP Center.
- ___ a. In Windows, select **Start ► All Programs ► IBM DB2 ► Business Intelligence Tools ► OLAP Center**.
- ___ b. Enter your DB2 user ID and password.
- ___ c. Confirm that the cube model is listed as in the following example.

Figure 148. Confirm that the cube model is listed



___ d. Right-click the cube model, then select Properties.
___ e. Using the mouse, select the text in the Name field as shown in the following example.

Figure 149. Select the text in the Name field

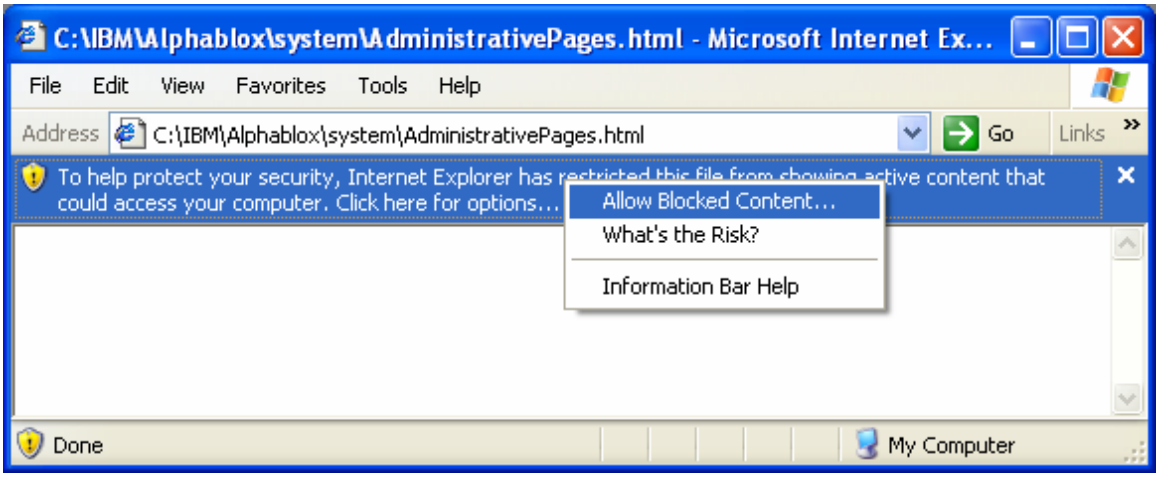


___ f. Press **Ctrl+C** to copy the text to the clipboard.
___ g. Click Cancel, and then close the OLAP Center.

____ 2. Define the cube to Alphablox.
___ a. If WebSphere Portal Server is not running, start it by clicking **Start ► All Programs ► IBM WebSphere ► WebSphere Portal v5.1 ► Start the Server**.
___ b. To start Alphablox in a browser, click **Start ► All Programs ► IBM DB2 Alphablox 8.4 ► AlphabloxAnalytics ► DB2 Alphablox Administrative Pages**.

Note: If Windows blocks your attempt to access the page, an information bar at the top of the window displays the following message. Click this bar and select Allow Blocked Content to continue.

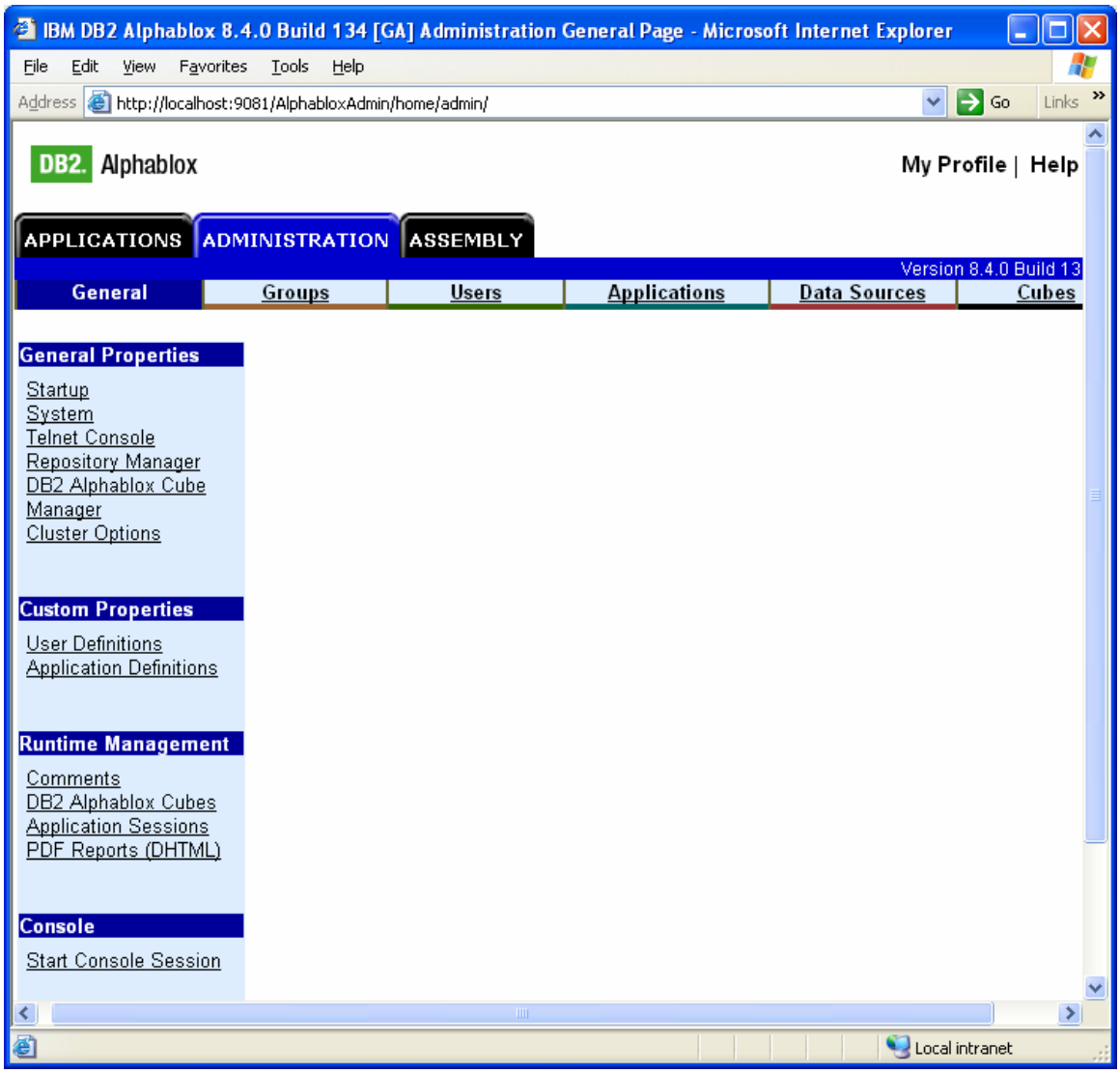
Figure 150. Select Allow Blocked Content to continue



___ c. In response to the prompt, enter admin for the user ID and password for the password.

Confirm that the next window looks like the following example.

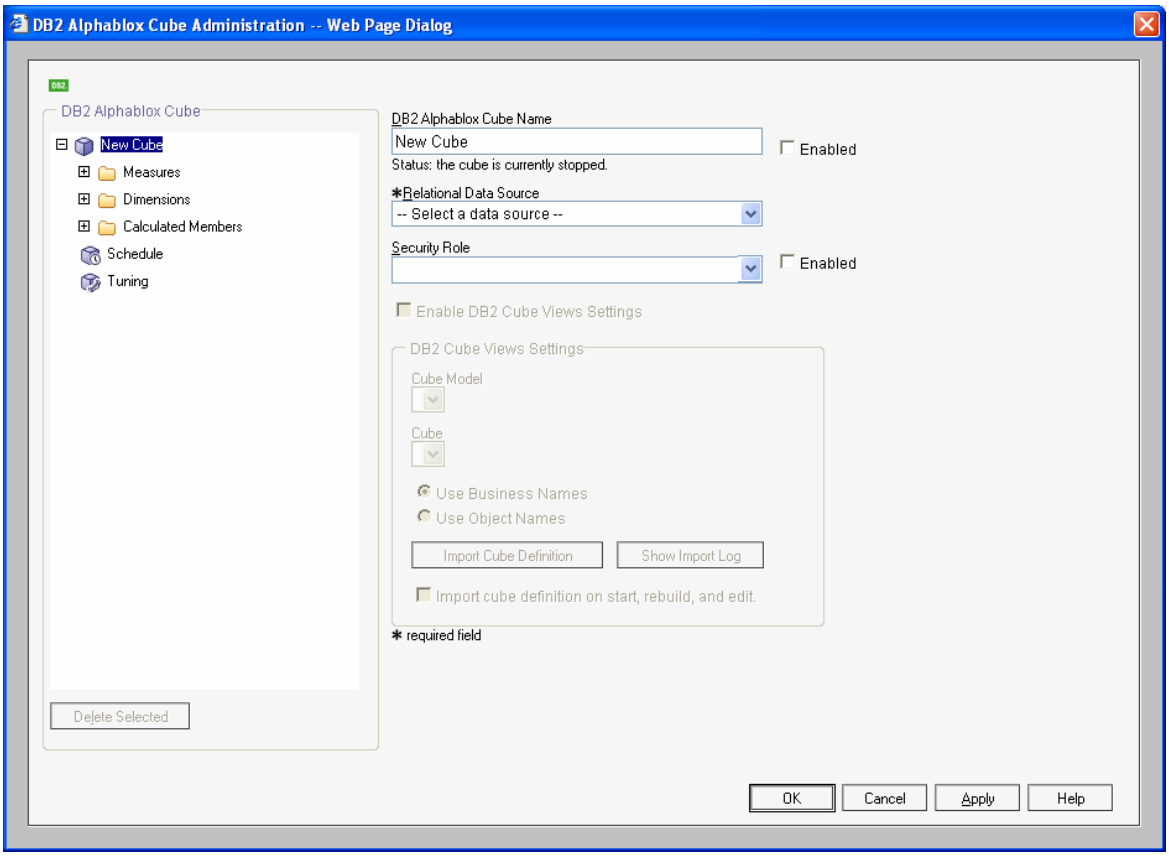
Figure 151. The window should look like this example



___ d. Click the Cubes tab at the top of the Alphablox window. Click **Create**.

You should see a window like this:

Figure 152. The window should look like this example



___ e. Next to the **DB2 Alphablox Cube Name** field, select the **Enabled** check box.

___ f. Press **Ctrl+V** to replace New Cube with the correct cube name.

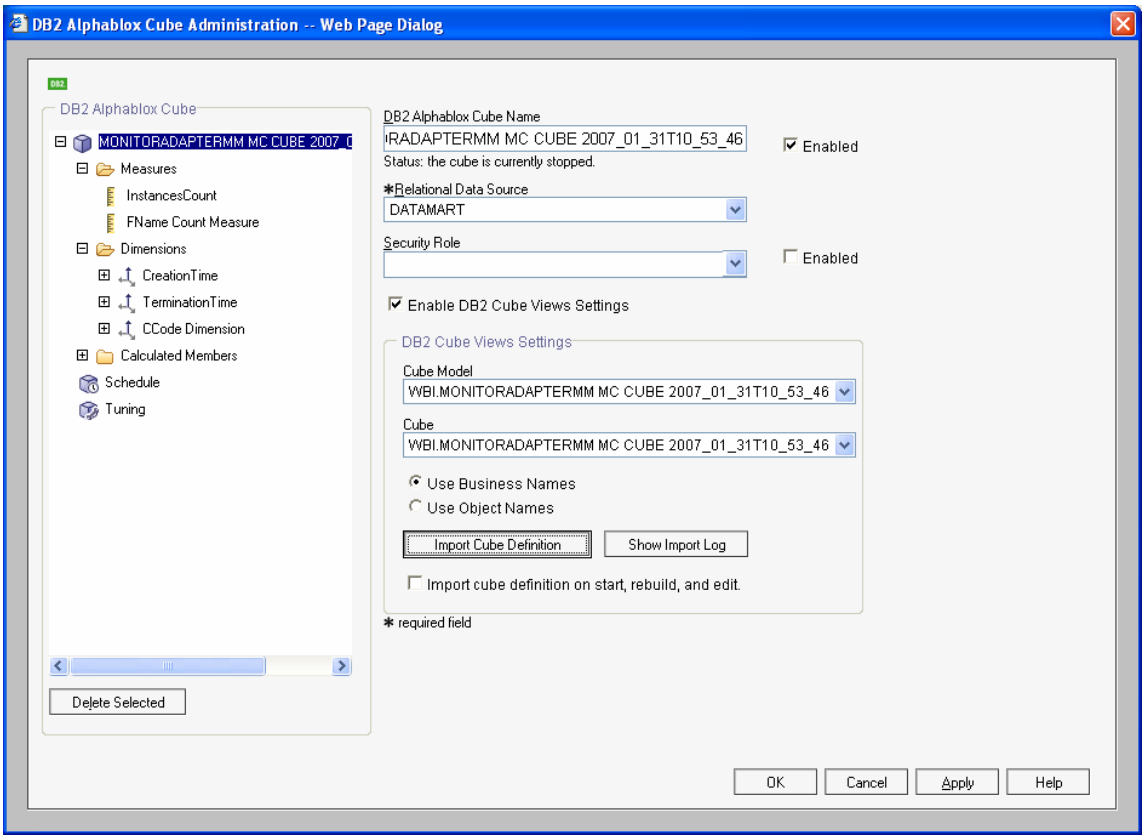
___ g. For Relational Data Source, select **DATAMART**.

___ h. Select the **Enable DB2 Cube Views Settings** check box.

___ i. From the Cube Model list, select the model. Then click **Import Cube Definition**.

___ j. Confirm that the information in the window looks like the following example.

Figure 153. The window should look like this example

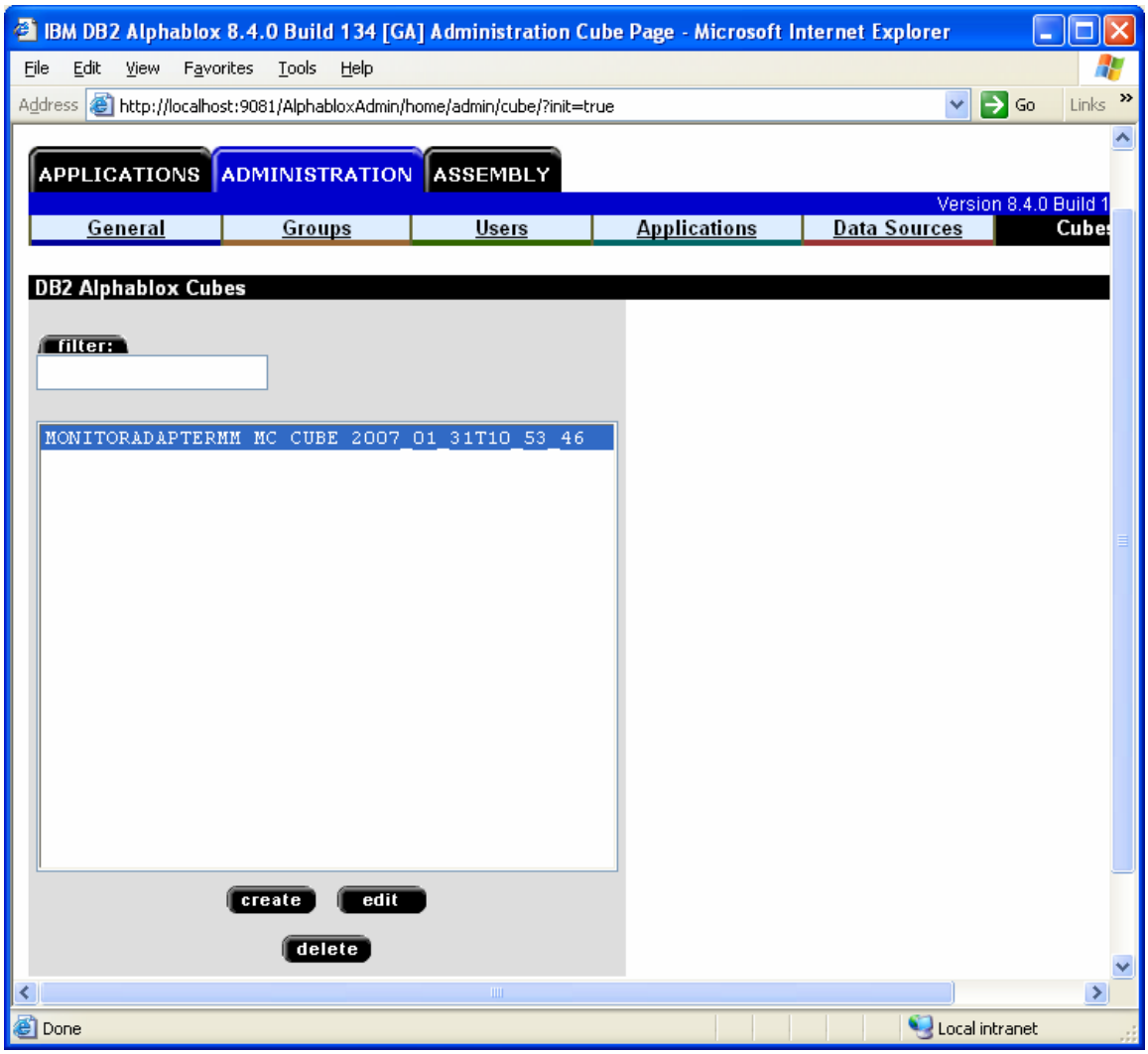


___ k. The DB2 Alphablox Cube Name must exactly match the Cube Model name, without the 'WBI.' prefix.

___ l. Click **OK** to save the definition.

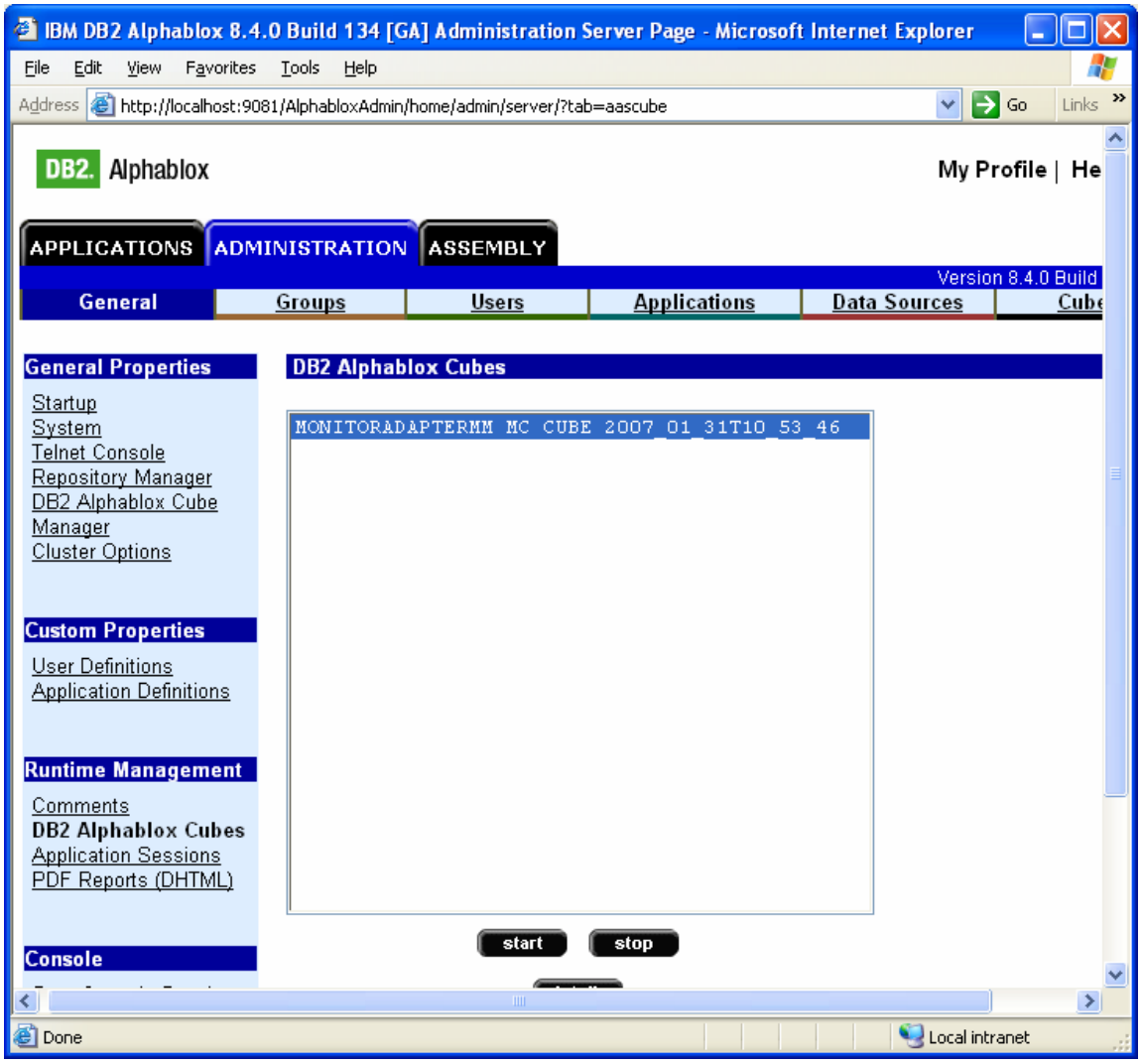
Confirm that it has been added to the list as follows:

Figure 154. Confirm that it has been added



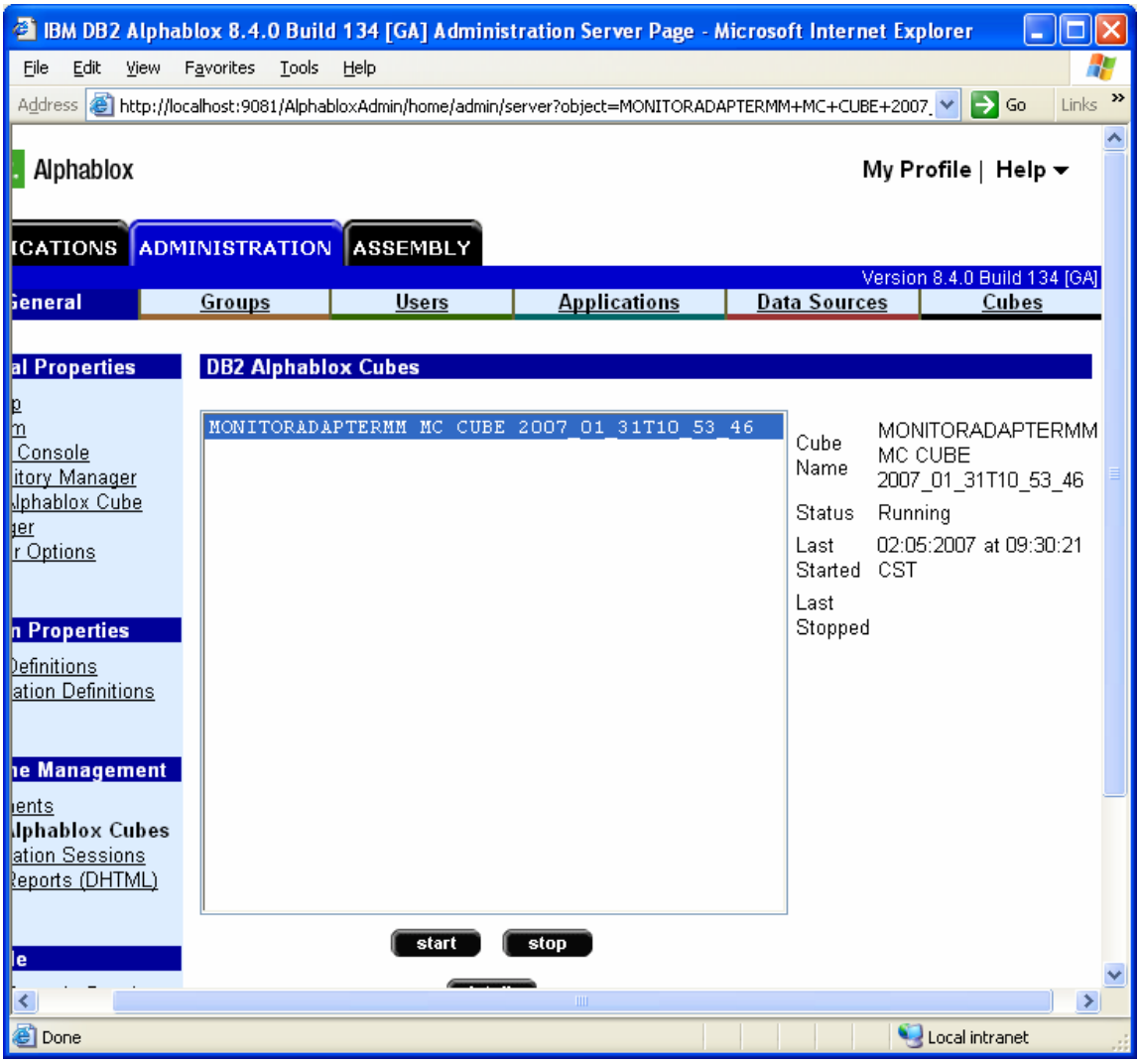
___ m. Click the **General** tab at the top of the Alphablox window. Then click **Runtime Management ► DB2 Alphablox Cubes**.

Figure 155. Click Runtime Management ► DB2 Alphablox Cubes



___ n. Select the cube in the list, and then click **start**. The status of the cube should be running, as shown in the following example.

Figure 156. The status of the cube should be running as shown



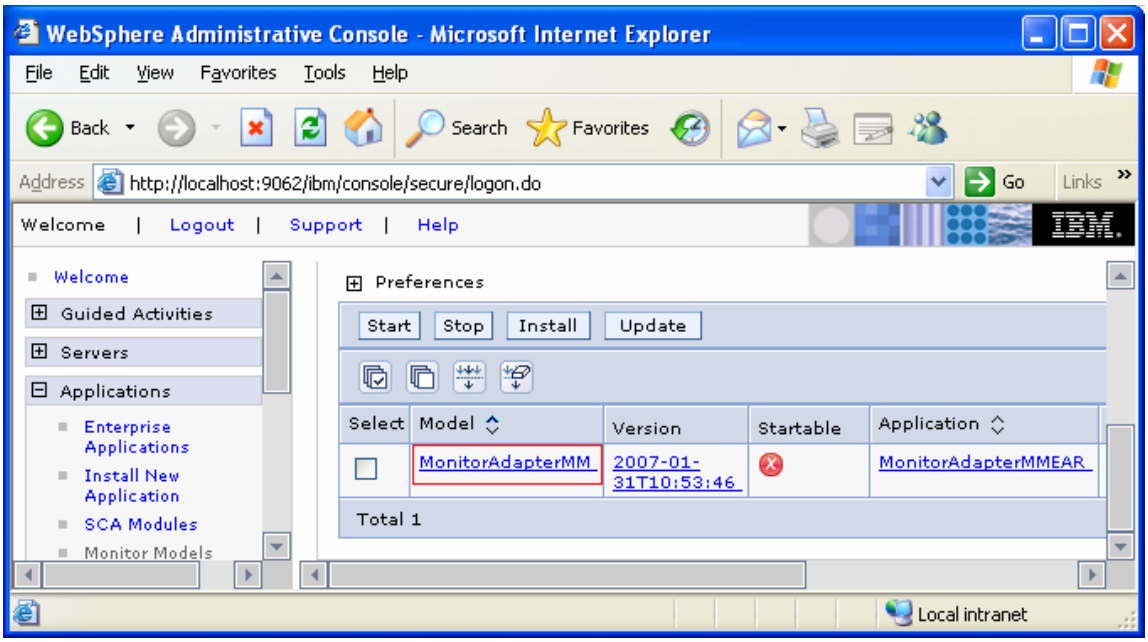
____ 3. Update the life cycle for step 5.

__ a. Find the ModelID value.

1) In the administrative console, select **Applications ▶ Monitor Models**.

2) The **Model** column lists the ModelID value. For example, in the following screen capture, the ModelID value is MonitorAdapterMM.

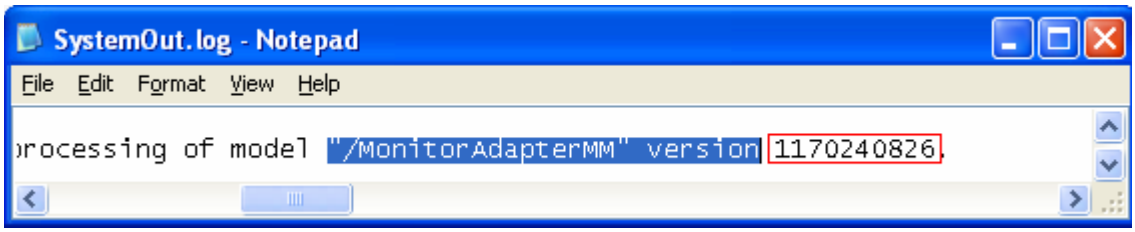
Figure 157. The ModelID value in this example is MonitorAdapterMM



__ b. Find the versionDate value.

1) Browse the WebSphere Process Server log, for example, C:\wps602\profiles\wbmonitor\logs\server1\SystemOut.log.
2) Search for ‘ **/ModelID** version ’. In this example, you would search for **/MonitorAdapterMM** version. As shown in the following screen capture, the versionDate value is 1170240826.

Figure 158. The versionDate value in this example is 1170240826



___ c. Open a command prompt window

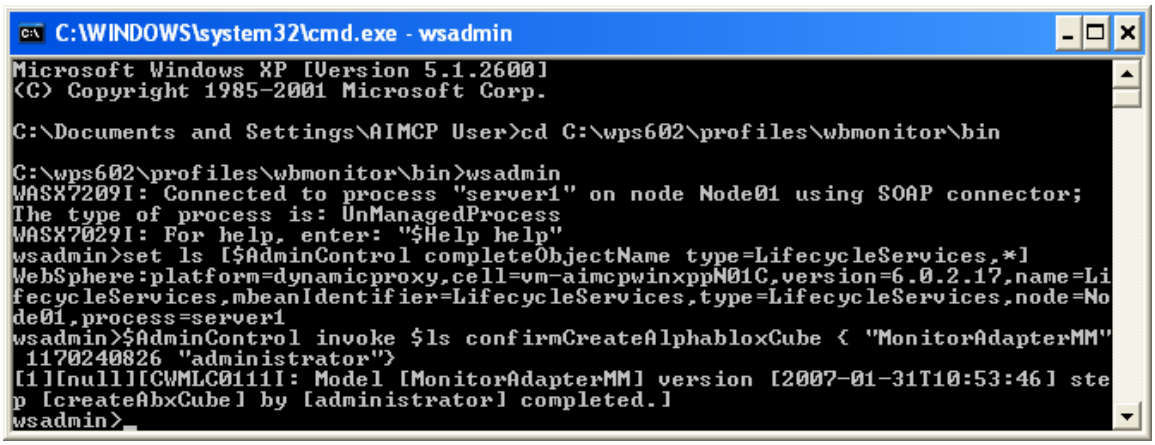
1) In Windows, click **Start > Run**.
2) Enter the cmd command.
3) Click **OK**.

___ d. Update the life cycle using an MBean method:

```
1) cd
   %WAS_HOME%\profiles\wbmonitor\bin
2) wsadmin
3) set ls [$AdminControl
   completeObjectName
   type=LifecycleServices,*]
```

```
4) $AdminControl invoke $ls
   confirmCreateAlphabloxCube {
   "ModelID" versionDate "userID"} For
   example, $AdminControl invoke $ls
   confirmCreateAlphabloxCube {
   "MonitorAdapterMM" 1170240826
   "administrator"}( using ModelID and
   versionDate values that you found
   in the previous steps)
```

Figure 159. The window now indicates that step 5 complete



___ e. If the administrative console still displays step 5 of the life cycle, reload the page in the browser. The window should now indicate that step 5 is complete.

___ f. Return to the instructions for the life-cycle steps, starting at step 6.

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