



WebSphere® Monitor

Version 6.0.2



ClipsAndTacks Business Activity Monitoring sample

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The purpose of this sample

The purpose of this sample is to guide you through the process of building a monitor model in IBM WebSphere® Integration Developer, deploy it to WebSphere Business Monitor, and then view your monitoring data on the Monitor dashboards.

This lab demonstrates the use of Business Activity Monitoring (BAM) that involves event-based monitoring. With BAM, your monitored application can run anywhere, and can submit events to the Monitor server so that you can view monitored data. Normally, you identify the events that will be created by the application, and then create a monitor model that represents the monitored data that you want to collect from the events.

Sample requirements

To complete this sample, you need the following software:

- WebSphere Integration Developer, V6.0.2 and the Monitoring Model Editor plug-in
- WebSphere Business Monitor, V6.0.2 – Basic Installation including the Dashboard Server and Monitor Server
- Optionally, a Lightweight Directory Access Protocol (LDAP) server (for example, IBM Tivoli® Directory Server) if you would like to configure Action Manager to create alerts based on business-situation events

The goal of this exercise

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

- Use WebSphere Integration Developer to create the monitor model, and then export the monitor model as an enterprise archive (EAR) file.
- Use the WebSphere Process Server administrative console to install the EAR file.
- Use the WebSphere Process Server administrative console to run Monitor life-cycle steps for the model.

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- Run Monitor scripts to create the Monitor Server tables and replication-manager artifacts, and to start replication manager daemons.
- Import the cubes into Cube Views.
- Use a sample program to create events that represent events from your process.
- Use Portal to define a dashboard and to view monitored data.

Introduction

In this sample you will learn how to deploy a model from end to end using WebSphere Integration Developer and WebSphere Business Monitor. This is a complex process, and you will be performing many different roles — user analyst, process architect, process developer, database administrator, dashboard architect, and user. This sample will show you the basic procedure for creating and implementing a simple model.

This sample uses the ClipsAndTacks process model, which is also used in the IBM Redbooks™ publication *Business Process Management: Modeling through Monitoring Using WebSphere V6 Products, SG247148*. This publication refers to several models, but uses the Future 1 Process. In that publication, the process is implemented as a BPEL process running in WebSphere Process Server. This lab demonstrates Business Activity Monitoring (BAM), which can monitor events from any source. It simulates the running of the process by creating events that could have been sourced from anywhere: a Java™ 2 Platform, Enterprise Edition (J2EE) application or Business Process Execution Language (BPEL), or any other source.

Note: Monitor accepts only events that are in the form of Common Base Events, which is an OASIS standard for common event format, and which is used by the Common Event Infrastructure (CEI) in WebSphere Process Server.

This exercise also describes how to build a monitor model that has the same basic elements as the one that is defined in the Redbooks publication, namely, creating monitoring constructs in support of two key performance indicators (KPIs):

- Average order fulfillment is 3 days or less.
- Percentage of shipped orders is greater than 90 percent.

This exercise also describes how to create an additional KPI to demonstrate the usage of a monetary KPI.

- Average Order Price KPI

Because the exercise describes how to create situation events if Declined Orders is greater than or equal to 5, it uses an additional KPI:

- Declined order KPI

This exercise also describes how to create situation events if the order fulfillment time is greater than 3 days.

For dimensional analysis, the exercise describes how to create a Location dimension. This allows you to drill down on country and city. This exercise also describes how to add Order Status, which shows orders as New, Cancelled, or Shipped.

This sample also describes how to add measures for average order price, the sum of order price for all orders, and order count.

See the overview document for the samples based on Clips and Tacks for a depiction of the process.

Helpful Web addresses

You might find the following Web addresses helpful as you use this sample. Note that the port numbers for your installation might be different, depending on your configuration.

- WebSphere Process Server administrative console (for deploying monitor models)

<http://localhost:9062/ibm/console/>

- DB2 Alphablox® administrative pages (for deploying cubes)

<http://localhost:9081/AlphabloxAdmin/home>

- WebSphere Portal Server (for setting up and viewing Monitor dashboards)

<http://localhost:9081/wps/portal>

Note: WebSphere Business Monitor, V6.0.2 has improved support for concurrent versions of monitor models. In order to take advantage of the versioning capabilities in Monitor Server, each monitoring context must have a unique Common Base Event definition that is the single Inbound Event with the setting If no instances are found: Create new instance. Think of this as one Inbound Event carrying Create Monitor Context semantics, and all others as Update Monitor Context semantics. ClipsAndTacks also follows this pattern.

To cause the creation of the Monitoring Context, developers should always have a unique Inbound Event.

Part 1. Create the monitor model

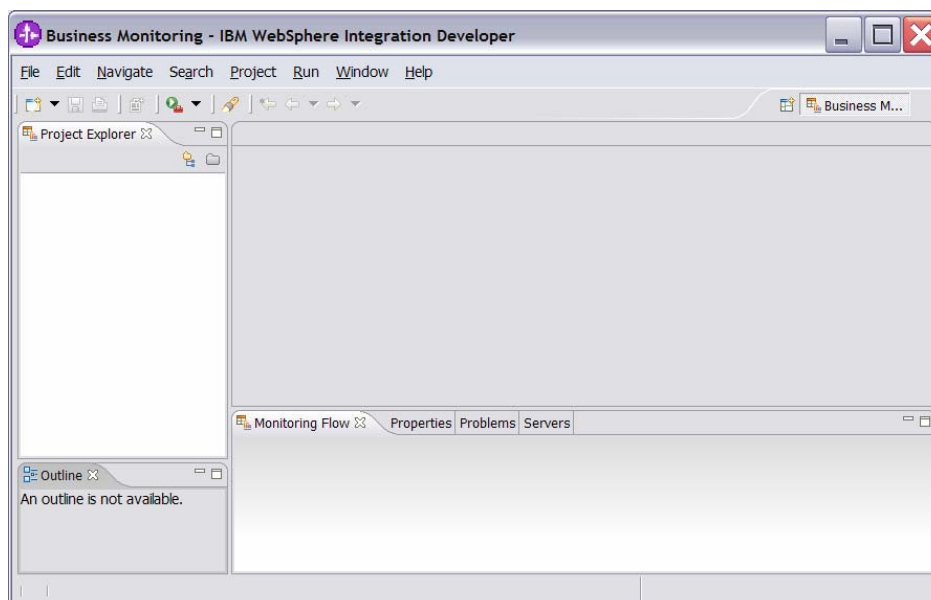
To create the monitor model, you will use the Monitoring Model Editor in WebSphere Integration Developer.

Note: There is a **Problems** page that displays errors concerning the model. Check this view periodically to see if you have any problems that need to be addressed.

If you would like to skip this section, a solution has been provided. You can import the supplied monitor model into WebSphere Integration Developer, using the instructions in Appendix 1, then proceed to the next section.

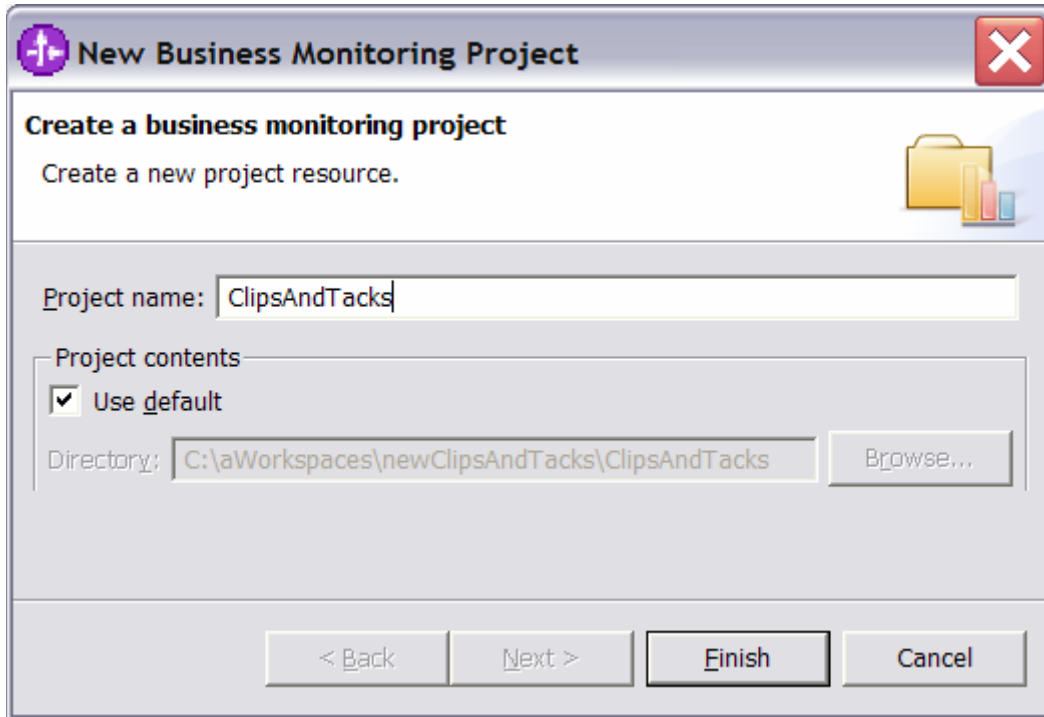
- ___ 1. Start WebSphere Integration Developer and set up the environment.
 - ___ a. Start WebSphere Integration Developer, V6.0.2, and when prompted, point to a new workspace, such as C:\workspaces\ClipsAndTacks.
 - ___ b. Close the Welcome page.
 - ___ c. Click **Window ► Close Perspective**.
 - ___ d. By default, you are in the Business Integration perspective. Open the Business Monitoring perspective. To do so, click **Window ► Open Perspective ► Other ► Show all ► Business Monitoring**.
 - 1) If you are asked to confirm enablement, click **OK**.
 - ___ e. You should see the following Business Monitoring perspective.

Figure 1. The Business Monitoring perspective



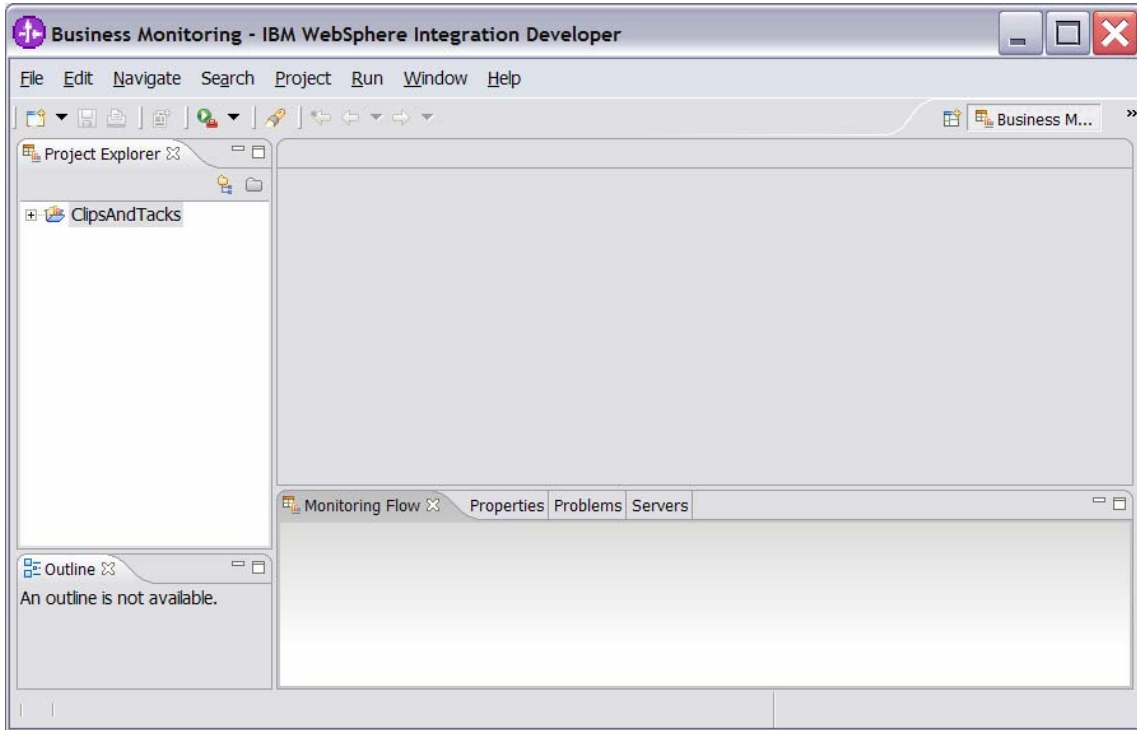
- ___ 2. Create a new monitoring project.
 - ___ a. Right-click in the **Project Explorer** pane, then click **New ► Business Monitoring Project**.
 - ___ b. For Project name, enter **ClipsAndTacks**.

Figure 2. Enter the Project name ClipsAndTacks



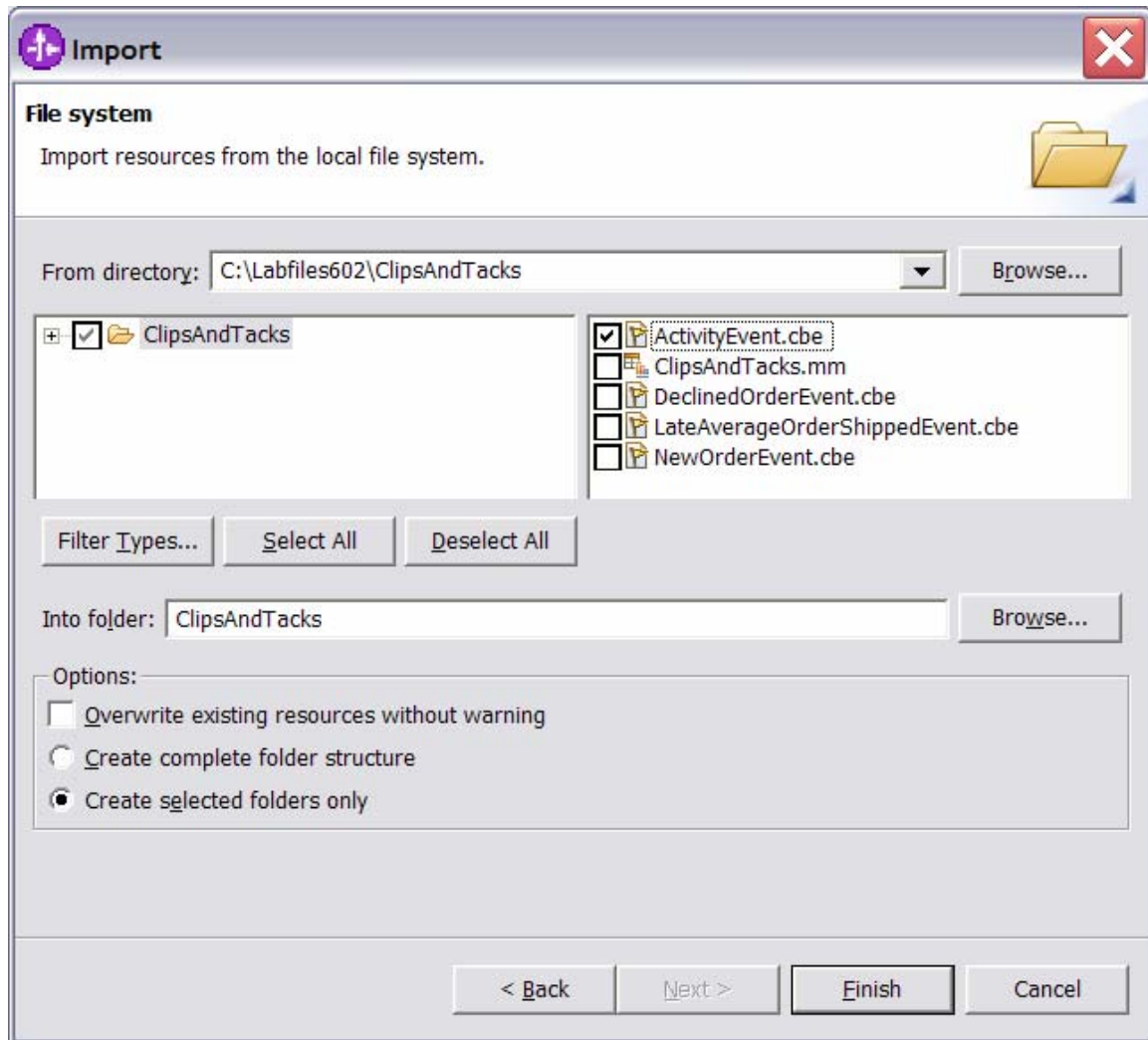
__ c. Click **Finish**. You will see the new project in the Project Explorer pane.

Figure 3. The new project in the Project Explorer pane



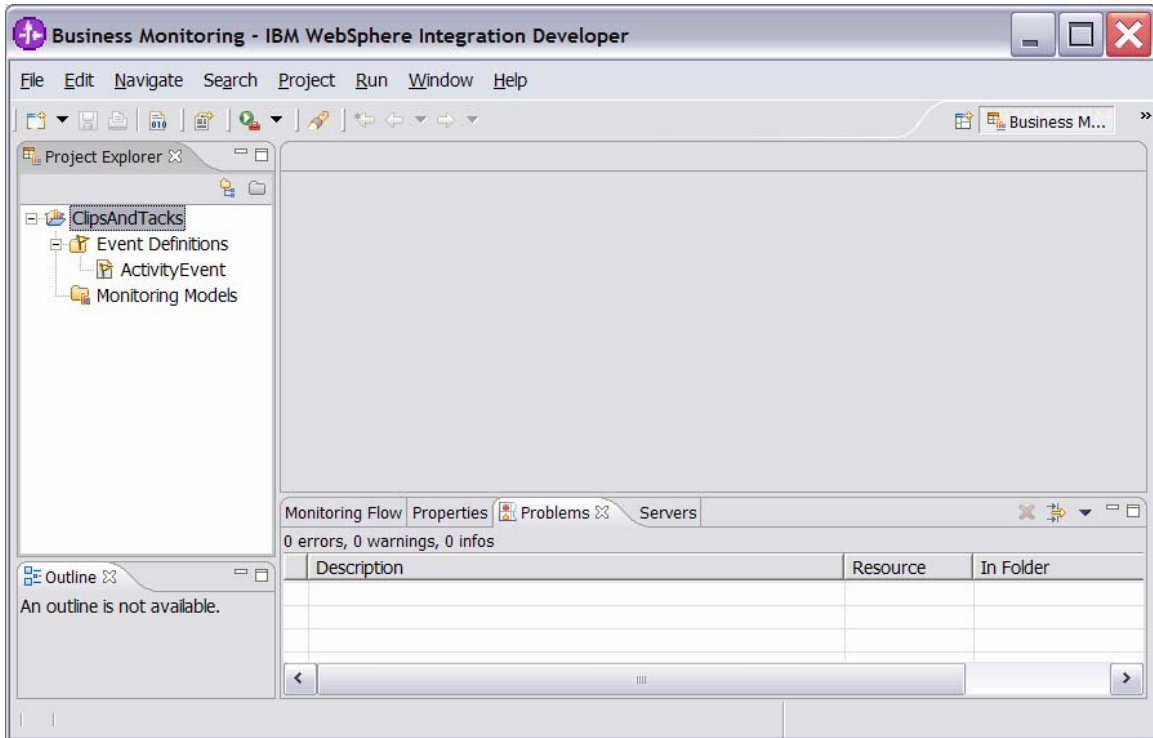
- ___ 3. This exercise has already described how to create a Common Base Event definition to represent the event layout for events processed in the model. Import the supplied Common Base Event for ActivityEvent.
- ___ a. Right-click in the **Project Explorer** pane, then select **Import**.
 - ___ b. Select **File system**, and then click **Next**.
 - ___ c. Browse to the location containing the Activity Event Common Base Event, for example, C:\Labfiles602\ClipsAndTacks.
 - ___ d. Select **ActivityEvent.cbe** as follows:

Figure 4. Select ActivityEvent.cbe



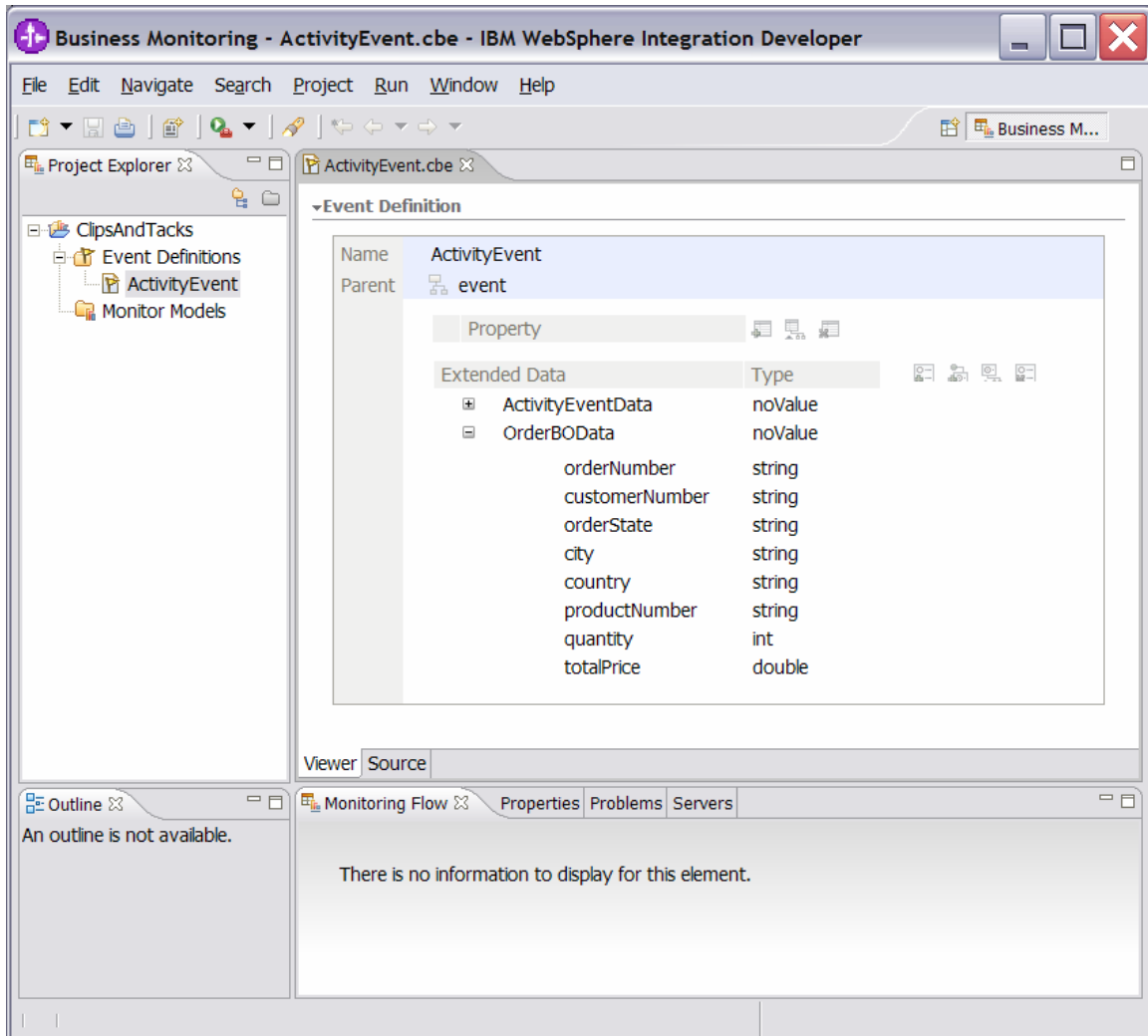
- ___ e. Click **Finish**.
- ___ f. Expand the project in the Project Explorer pane, and then expand Event Definitions to see the new event listed.

Figure 5. Expand the project and Event Definitions



- g. Double-click **ActivityEvent** to open the event editor. Browse the extended data elements to familiarize yourself with the event data for this model.
- 1) **ActivityEventData** contains data elements that relate to the activities in the process. This exercise uses `businessUnit` and `processName` to filter out unwanted events that do not relate to the particular model in use. It uses `activityName` to associate an event with a specific activity in the process. `eventType` is used to identify the state of the activity, either starting or completing.
 - 2) **OrderBOData** contains data elements that relate to the specifics of a customer order, such as `orderNumber`, `country`, `city`, and `totalPrice`.

Figure 6. OrderBOData contains data elements that relate to the customer order

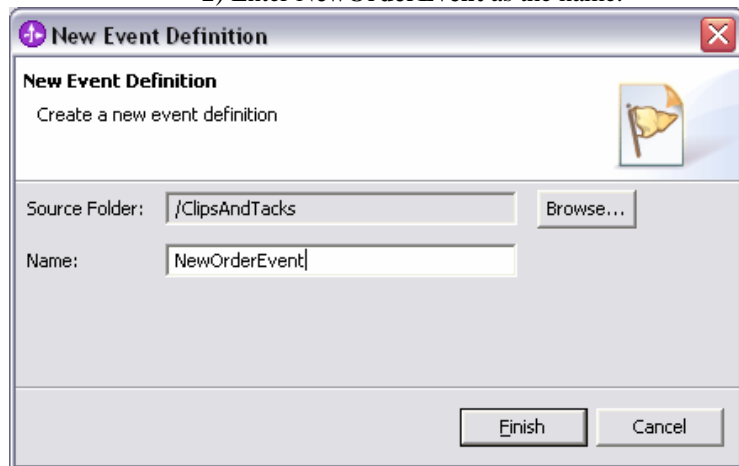


- ___ h. WebSphere Business Monitor, V6.0.2 has improved support for concurrent versions of monitor models. In order to take advantage of the versioning capabilities in Monitor Server, each monitoring context must have a unique Common Base Event definition that is the single Inbound Event with the setting **If no instances are found: Create new instance**. Think of this as one Inbound Event carrying **Create Monitor Context** semantics, and all others as **Update Monitor Context** semantics. ClipsAndTacks is a simple sample and could use a single event definition for the process. However, to satisfy the requirement of a unique Common Base Event definition for versioning, this exercise will now demonstrate how to create a simple Common Base Event definition.

- 1) Right-click Event Definitions and select **New Event Definition**.

- 2) Enter **NewOrderEvent** as the name.

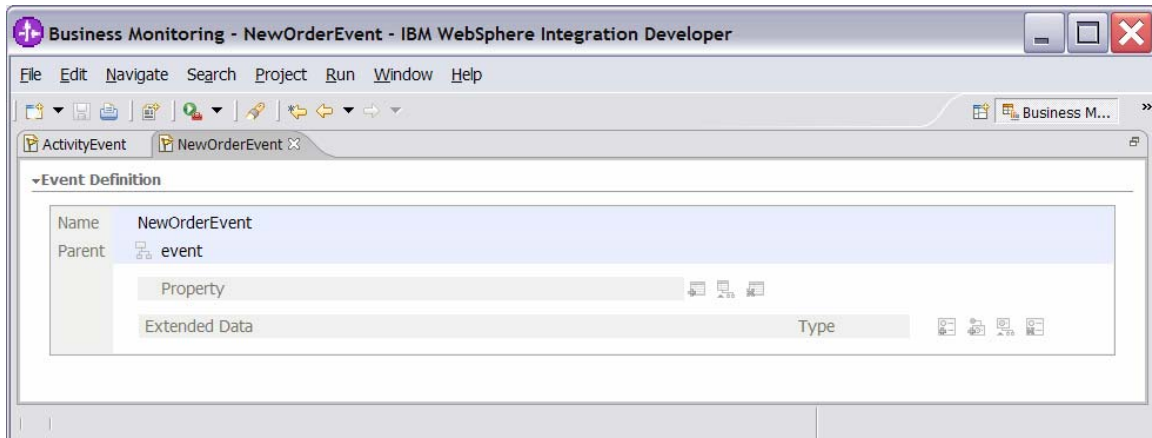
Figure 7. Enter the name NewOrderEvent



- 3) Click **Finish**.

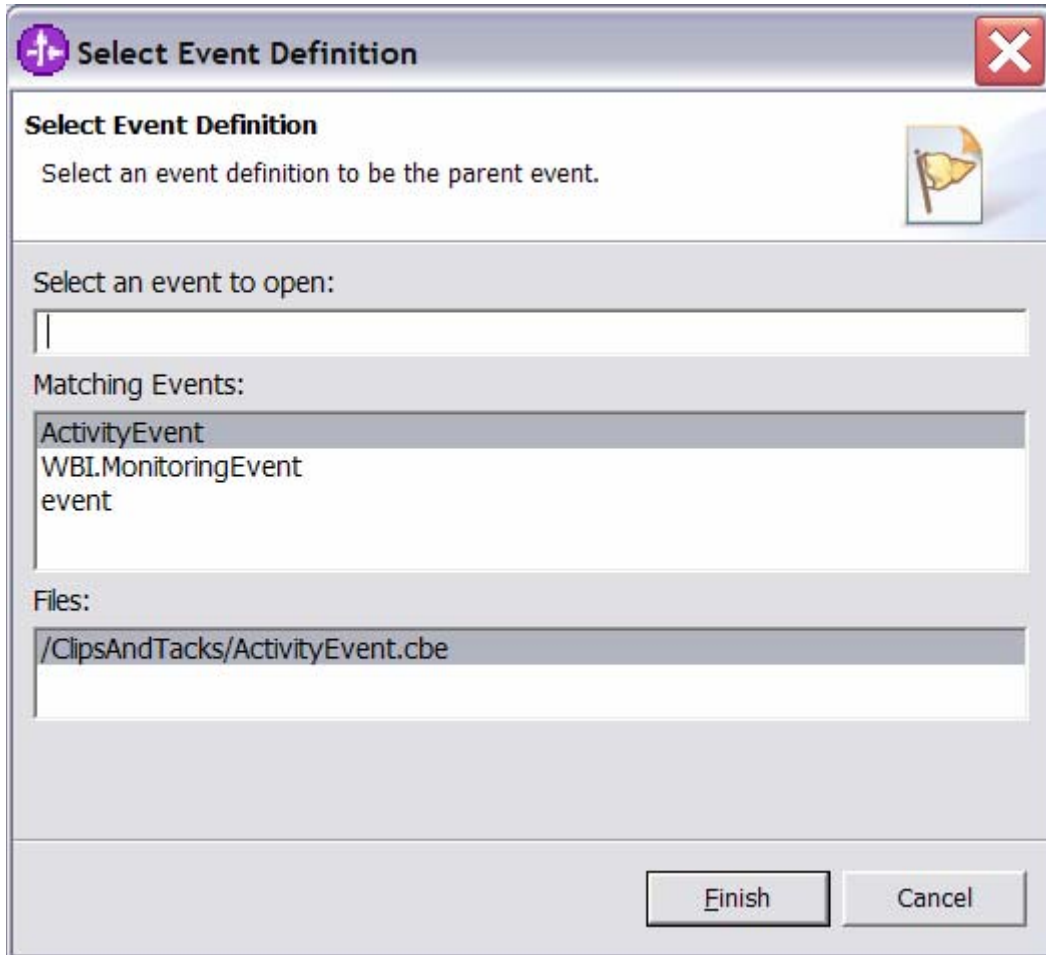
- 4) The Event Definition editor opens, displaying NewOrderEvent.

Figure 8. The Event Definition editor opens



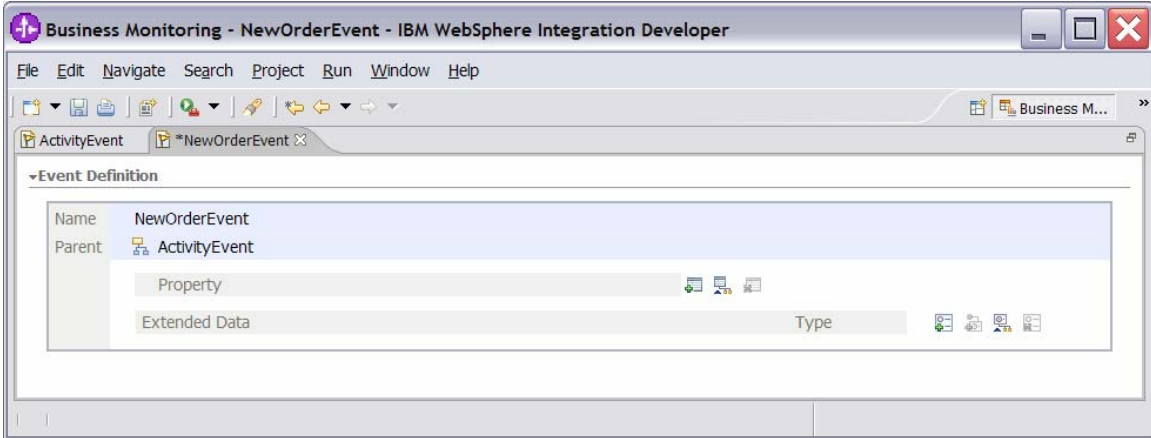
- 5) Double-click the hierarchical icon between the labels Parent and event.
- 6) In the Select Event Definition window, double-click **ActivityEvent**.

Figure 9. Double-click ActivityEvent in the Select Event Definition window



7) ActivityEvent is now shown as the parent of NewOrderEvent.

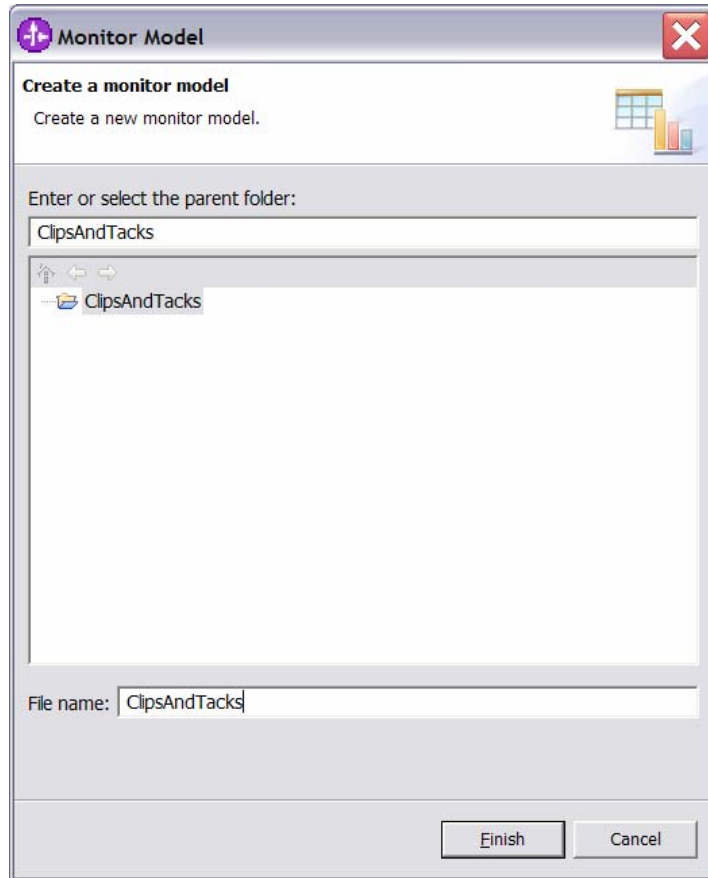
Figure 10. ActivityEvent is now shown as the parent



8) Press **Ctrl+S** to save your work.

- ___ 4. Create a new monitor model named **ClipsAndTacks**.
 - ___ a. Right-click in the **Project Explorer** pane, then click **New ► Monitor Model**.
 - ___ b. For the File name, enter **ClipsAndTacks**.

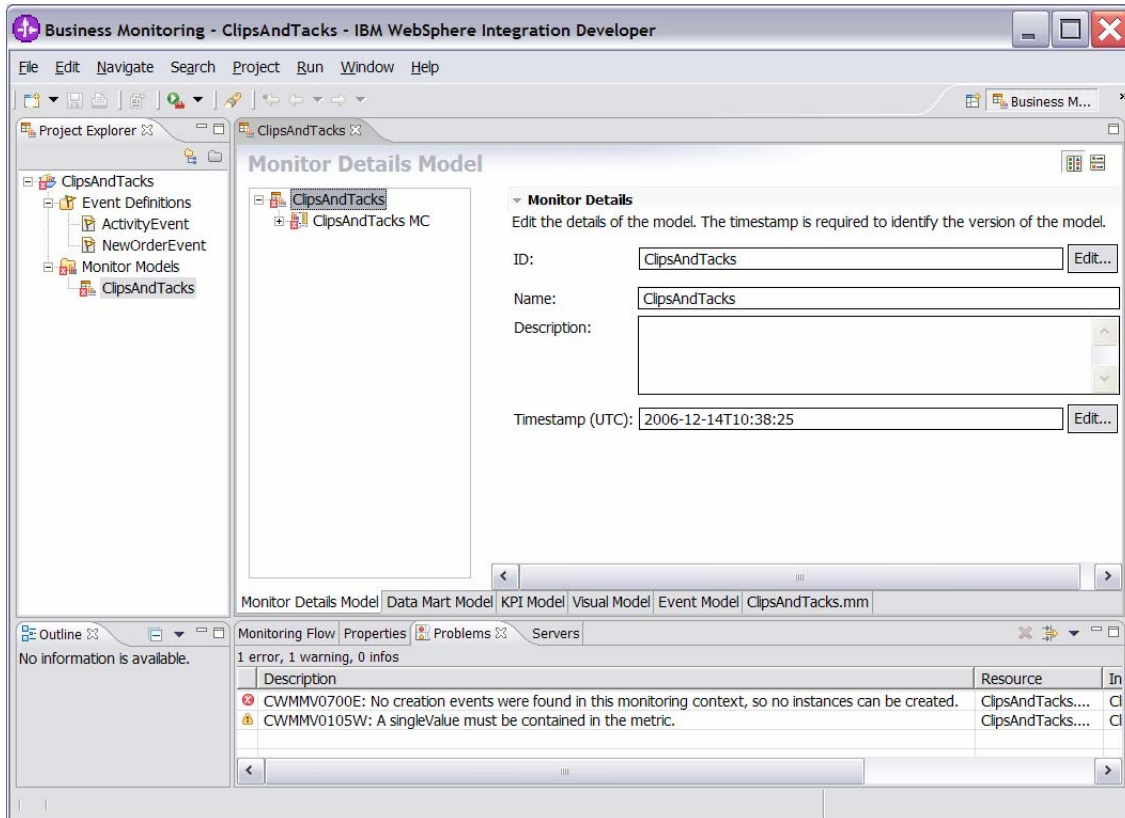
Figure 11. Enter ClipsAndTacks for the File name



- ___ c. Click **Finish**. The model editor is opened, as shown in the following example.

Note: When the model editor first opens, the model will contain errors. This is normal and signals that required elements are missing or incomplete. In the following steps, this exercise will describe how to complete the required elements.

Figure 12. The model will contain errors when the model editor first opens



- ___ 5. Notice in the Monitor Details Model navigation pane that a new model is created (ClipsAndTacks) along with a monitoring context (ClipsAndTacks MC). Now you need to specify the inbound events that will be processed by this model.

You need to indicate which event will create a new monitoring context instance and which event will terminate the monitoring context instance. You also need to identify the correlation information for the monitoring context so that Monitor knows which monitoring context should receive the events.

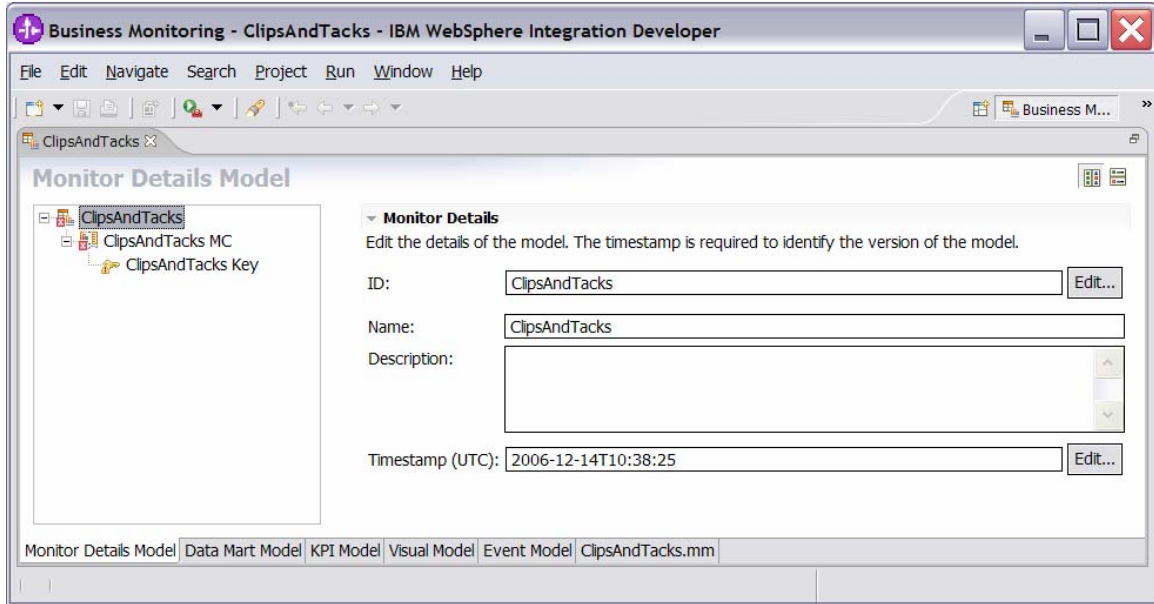
For the ClipsAndTacks model, this sample uses one event definition, ActivityEvent, to represent the layout of all of the events to be processed. NewOrderEvent, which is used for versioning, is derived from ActivityEvent but does not include additional event elements. In ActivityEvent,

ActivityName is a field used to identify specific activities in the ClipsAndTacks process. This sample uses ActivityName to determine when to terminate the monitoring context.

You will create a correlation that is based on orderNumber, which is another field defined in ActivityEvent.

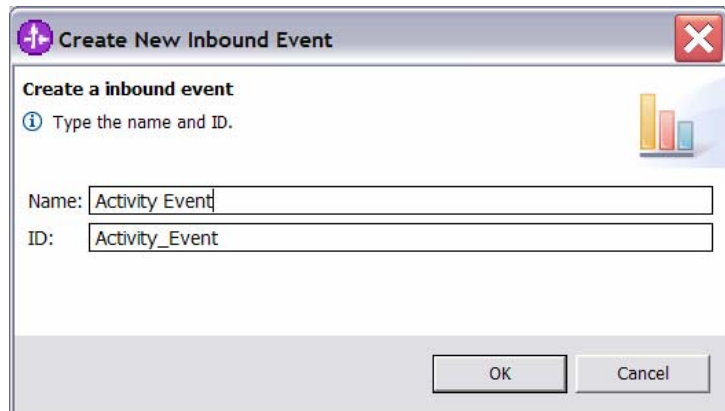
- ___ a. In the Monitor Details Model navigation pane, expand **ClipsAndTacks**. Then expand **ClipsAndTacks MC**. You will see that a key was automatically created when you created the model.

Figure 13. A key was automatically created when you created the model



- ___ b. Create a new inbound event Activity Event for the ClipsAndTacks monitoring context.
 - 1) In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then click **New ► Inbound Event**.
 - 2) For the name, type **Activity Event**. Notice that the ID is automatically set to the same name, but with underscores (Activity_Event).

Figure 14 The ID is automatically set to the same name, but with underscores



- 3) Click **OK**.
- 4) For Type, navigate to **ClipsAndTacks ► ActivityEvent.cbe ► ActivityEvent**.
- 5) To enter the filter condition, you can use Content Assist by pressing **Ctrl+Space**, or you can type the expression directly into the expression window. The complete expression should look like the following example. Note the single quotation marks used for string handling.

```
Activity_Event/extendedData/ActivityEventData/businessUnit = 'Clips And Tacks'
and
Activity_Event/extendedData/ActivityEventData/processName = 'Order Handling'
```

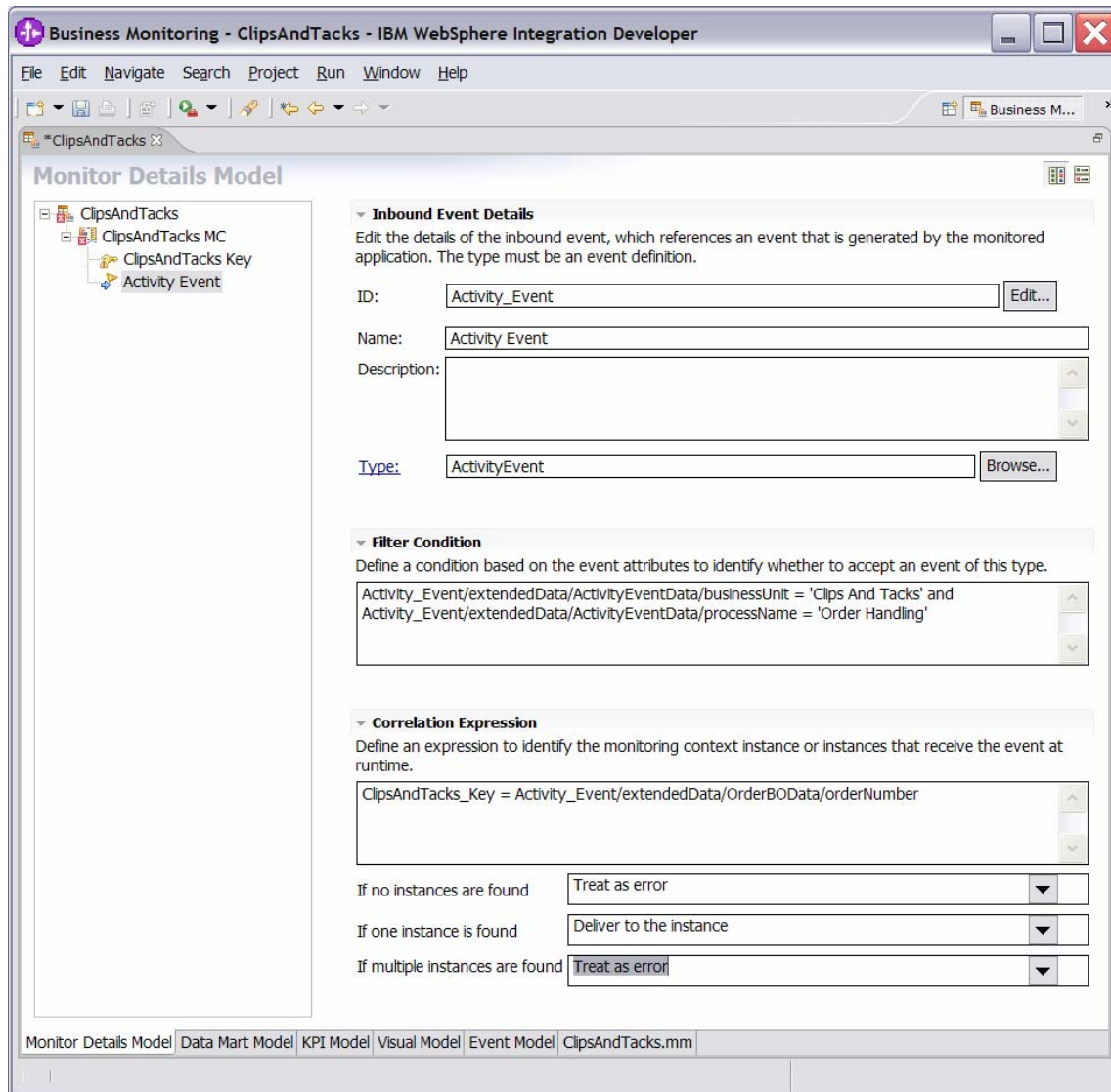
- 6) To enter the correlation expression, you can use Content Assist by pressing **Ctrl+Space**, or you can type the expression directly into the expression window. The complete expression should match the following example:

```
ClipsAndTacks_Key =
Activity_Event/extendedData/OrderBOData/orderNumber
```

- 7) For **If no instances are found**, select **Treat as error**.
- 8) For **If one instance is found**, select **Deliver to the instance**.
- 9) For **If multiple instances are found**, select **Treat as error**.

10) Confirm that the data you have specified matches the following sample:

Figure 15. The data that you specified should match this sample



11) Press **Ctrl+S** to save your work.

___ c. Create a new inbound event **New Orders Event** for the **ClipsAndTacks** monitoring context.

1) In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Inbound Event**.

- 2) For the name, type **New Order Event**. Notice that the ID is automatically set to the same name, but with underscores (**New_Order_Event**).

Figure 16. The ID is automatically set to the same name with underscores

- 3) Click **OK**.
- 4) For Type, navigate to **ClipsAndTacks ► NewOrderEvent.cbe ► NewOrderEvent**.
- 5) To enter the filter condition, you can use Content Assist by pressing **Ctrl+Space**, or you can type the expression directly into the expression window. The complete expression should look like the following example.

Note: Single quotation marks used for string handling.

```
New_Order_Event/extendedData/ActivityEventData/businessUnit='Clips And Tacks'
and
New_Order_Event/extendedData/ActivityEventData/processName='Order Handling'
```

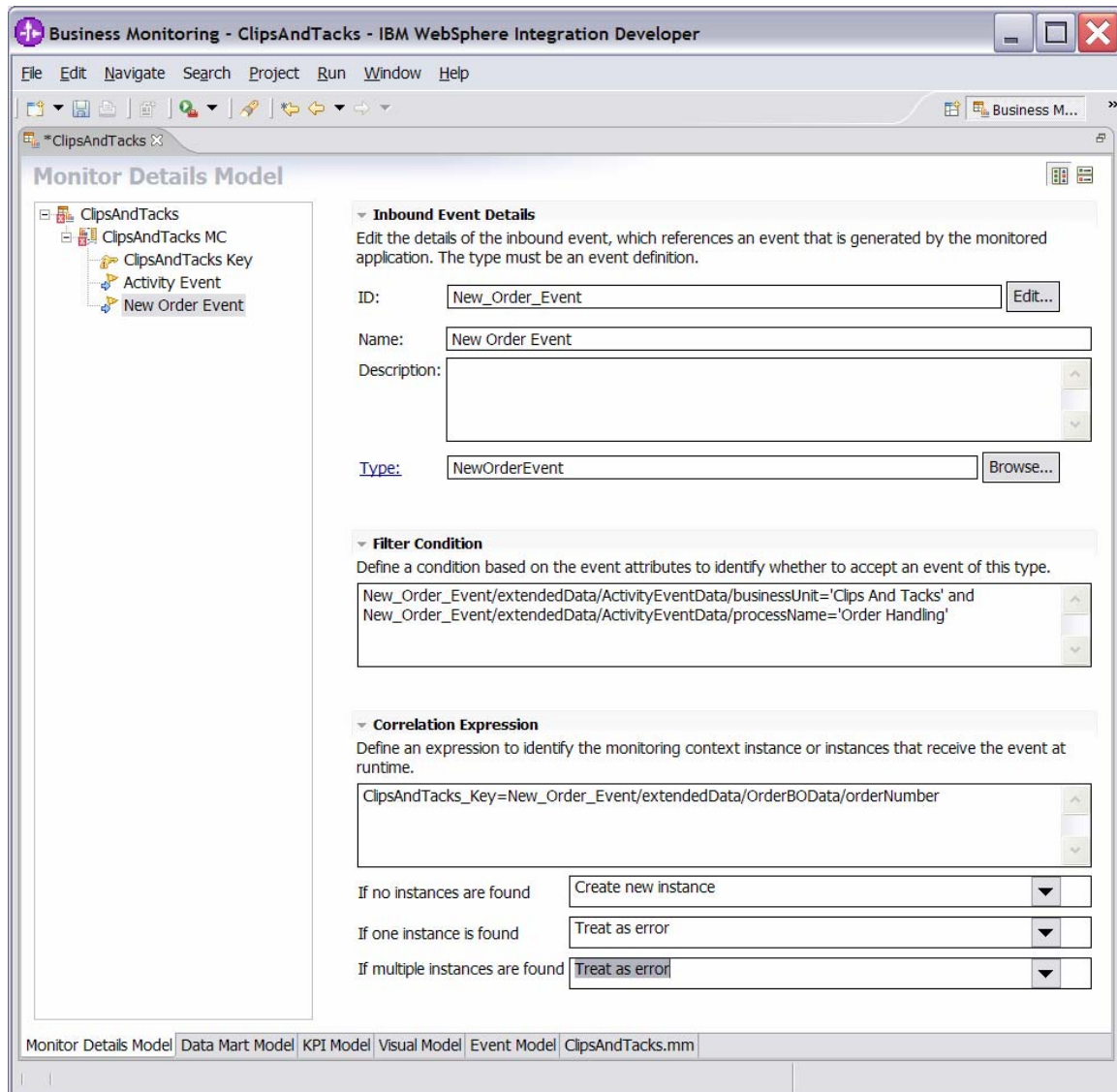
- 6) To enter the correlation expression, you can use Content Assist by pressing **Ctrl+Space**, or you can type the expression directly into the expression window. The complete expression should match the following example:

```
ClipsAndTacks_Key=New_Order_Event/extendedData/OrderBOData/orderNumber
```

- 7) For **If no instances are found**, select **Create new instance**.
- 8) For **If one instance is found**, select **Treat as error**.
- 9) For **If multiple instances are found**, select **Treat as error**.

10) Confirm that the data you have specified matches the following sample:

Figure 17. The data that you specified should match this sample



11) Press **Ctrl+S** to save your work.

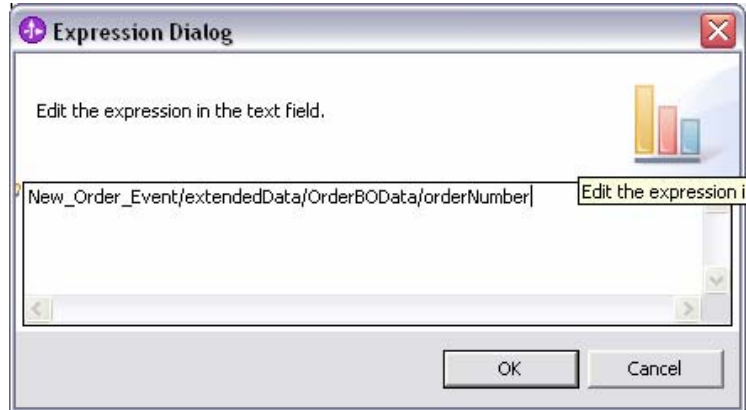
___ d. Define an expression that will set the value of the key.

- 1) In the Monitor Details Model navigation pane, double-click **ClipsAndTacks Key** to open the key in the editor.
- 2) For **Key Value Maps**, click **Add**.
- 3) A row is added to the table, and the expression cell shows << No expression specified >>. Click this cell of the table, then click the button that is displayed to open the expression editor. You can use Content Assist, or type this expression directly into the window:

```
New_Order_Event/extendedData/OrderBODat
a/orderNumber
```

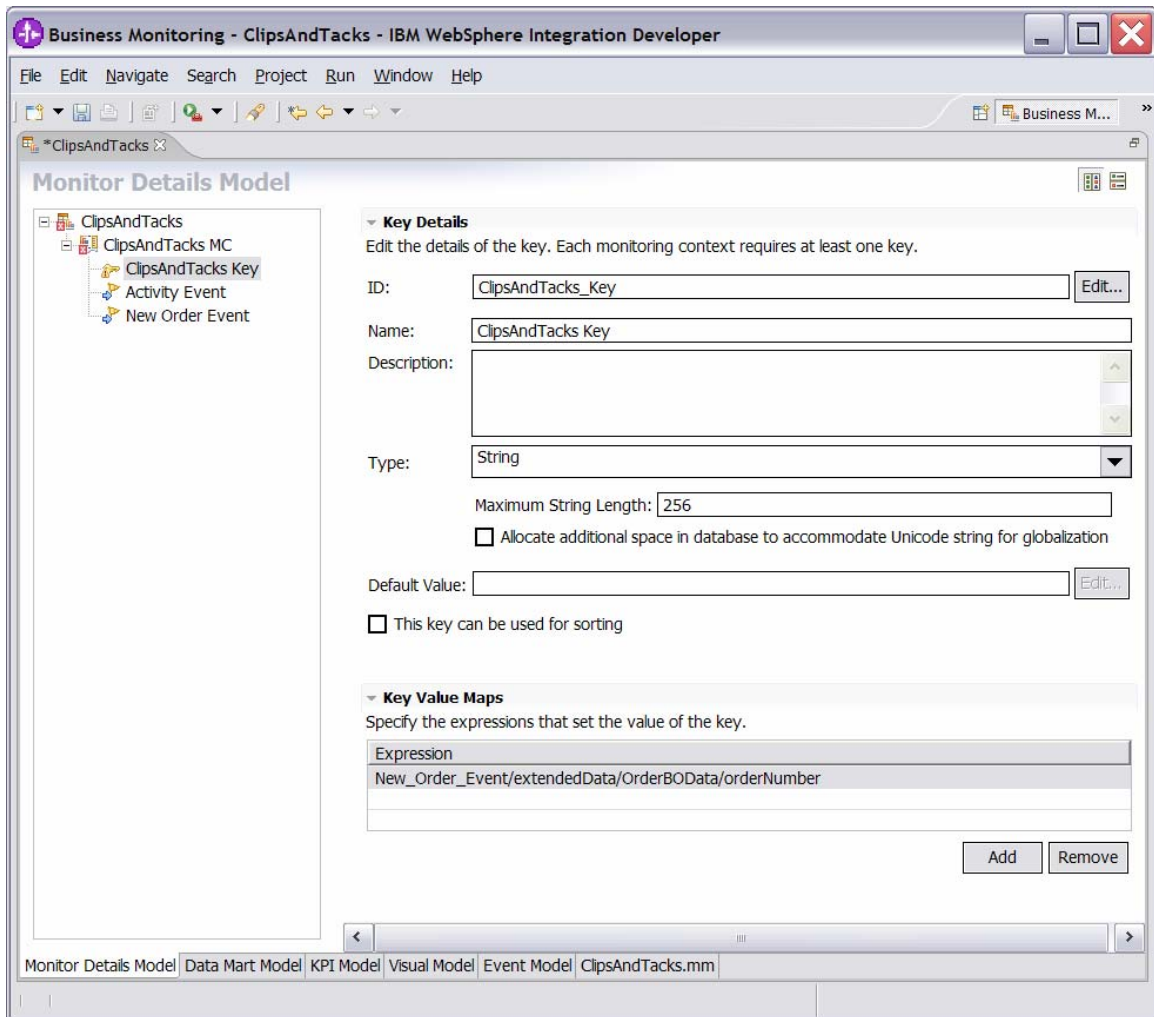
Figure 18. The data that you specified should match this sample

4) Confirm that the data you have specified matches the following sample:



5) Click **OK**. Confirm that the information displayed for the key matches the following sample:

Figure 19. The information displayed for the key should match this sample



6) Press **Ctrl+S** to save your work.

Note: At this point, the model should contain no errors. The errors were initially displayed because the monitoring context key was not complete.

___ 6. Create triggers that indicate the end of the monitoring context.

___ a. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Trigger**. Enter these values:

1) For **Name**, type **Ship Order to Customer Trigger**.

2) For **ID**, type **Ship_order_to_Customer_Trigger**.

3) Select the **Terminate monitoring context** check box.

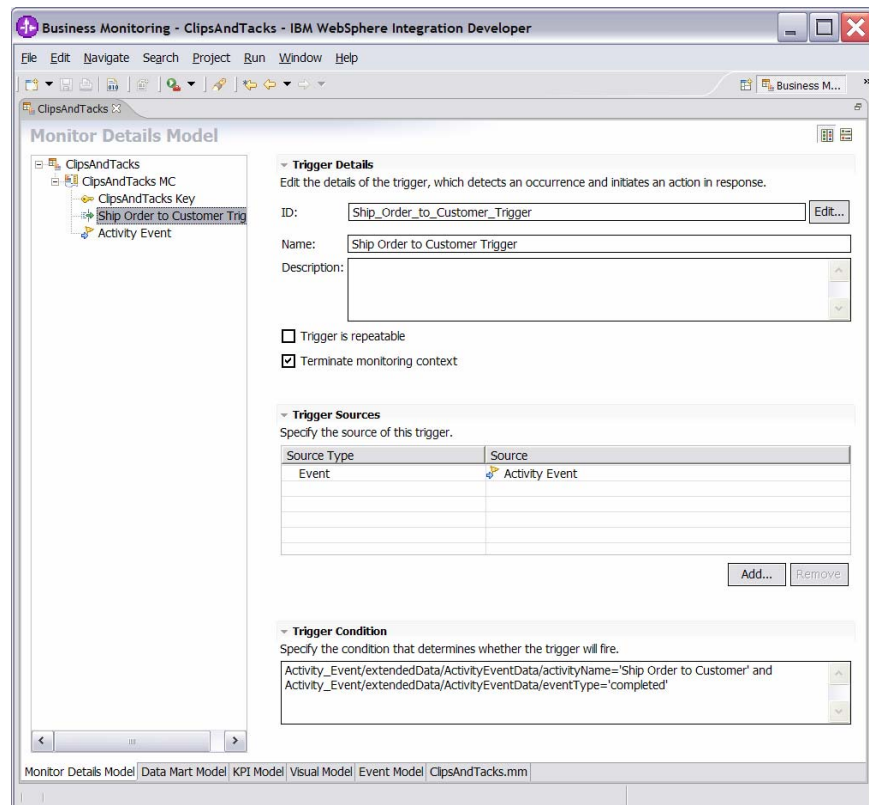
4) For Trigger Sources, click **Add**, then select **Other source type ► Activity Event**, then click **OK**.

5) For Trigger condition, enter:
 Activity_Event/extendedData/ActivityEventData/activityName='Ship Order to Customer' and
 Activity_Event/extendedData/ActivityEventData/eventType='completed'

___ b. Press **Ctrl+S** to save your work.

___ c. Confirm that the information displayed for the trigger matches the following sample:

Figure 20. The information displayed for the trigger should match this sample



___ d. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Trigger**. Enter these values:

- 1) For **Name**, type **Cancel Trigger**.
- 2) For **ID**, type **Cancel_Trigger**.
- 3) Select the **Terminate monitoring context** check box.
- 4) For **Trigger Sources**, click **Add**, then select **Other source type ► Activity Event**, then click **OK**.
- 5) For **Trigger condition**, enter:

```
Activity_Event/extendedData/ActivityEventData/activityName='Cancel Order and Send Notification' and Activity_Event/extendedData/ActivityEventData/eventType='completed'
```

___ e. Press **Ctrl+S** to save your work.

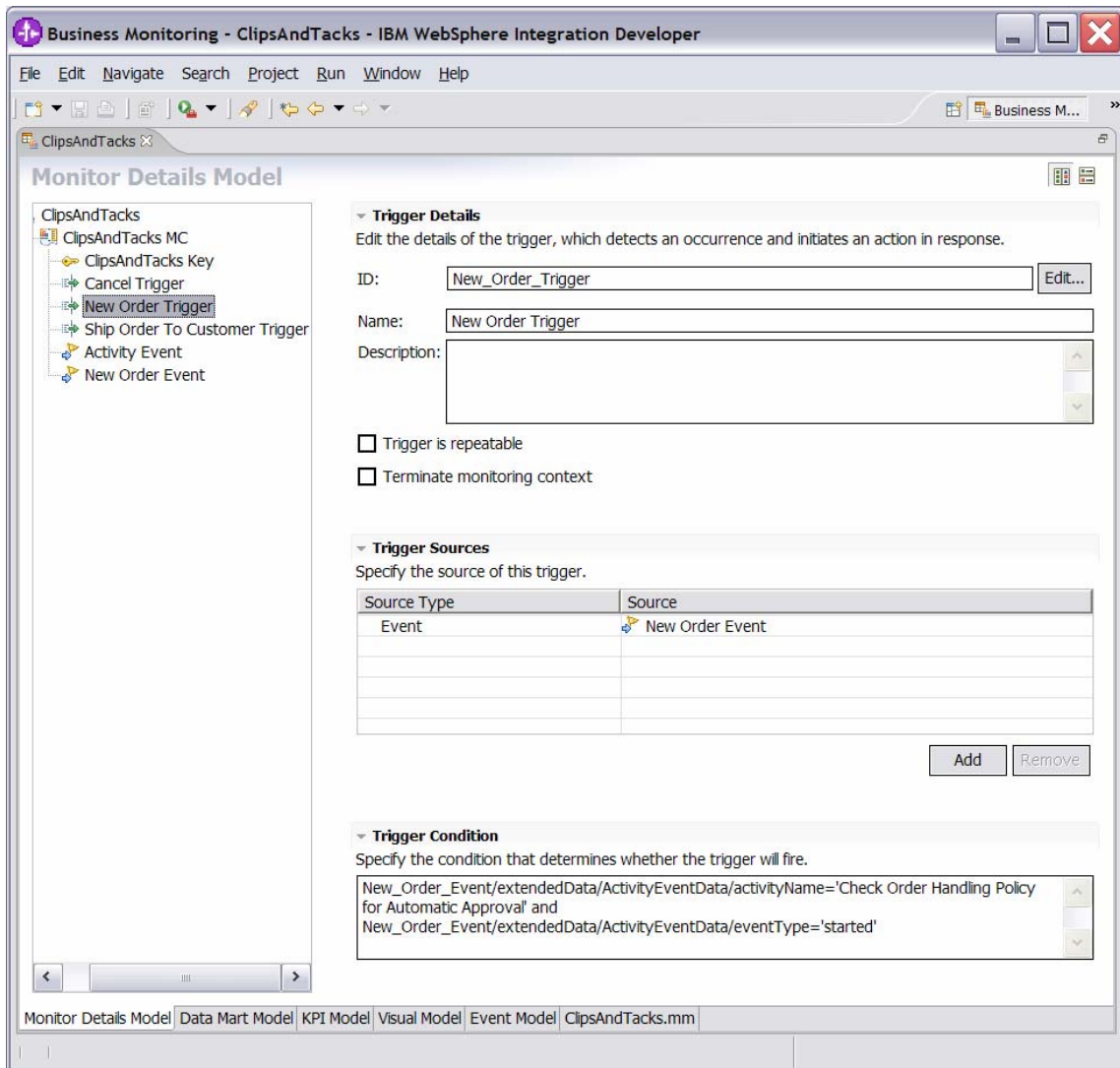
____ 7. Create a KPI for an average fulfillment time of three days or less.

- a. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New Trigger**. Enter these values:
 - 1) For **Name**, type **New Order Trigger**.
 - 2) For **ID**, type **New_Order_Trigger**.
 - 3) For **Trigger Sources**, click **Add**, then select **Other source type** ► **New Order Event**, then click **OK**.
 - 4) For **Trigger condition**, enter:

```
New_Order_Event/extendedData/ActivityEventData/activityName='Check Order Handling Policy for Automatic Approval' and
New_Order_Event/extendedData/ActivityEventData/eventType='started'
```

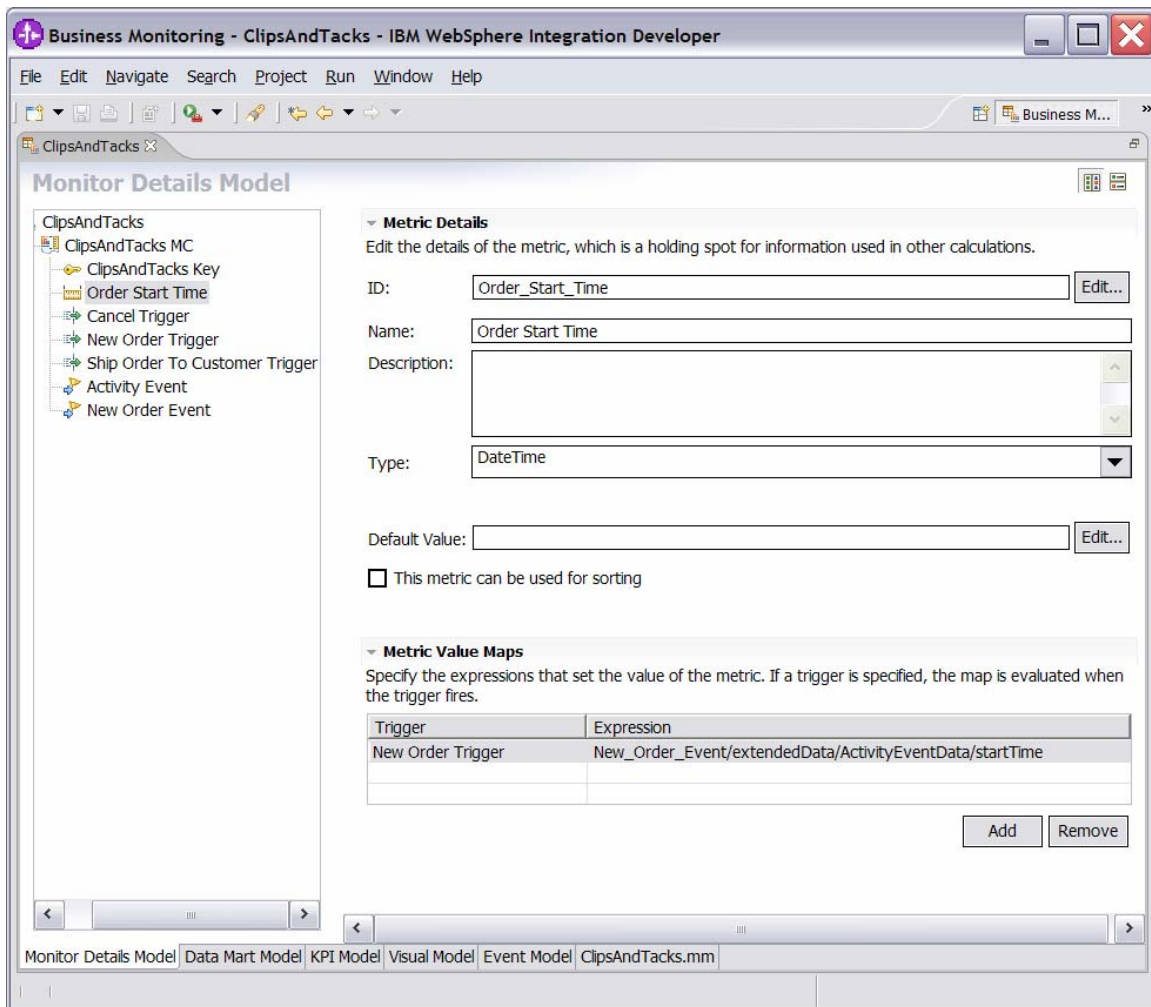
- 5) Press **Ctrl+S** to save your work.

Figure 21. Enter these values for the new trigger



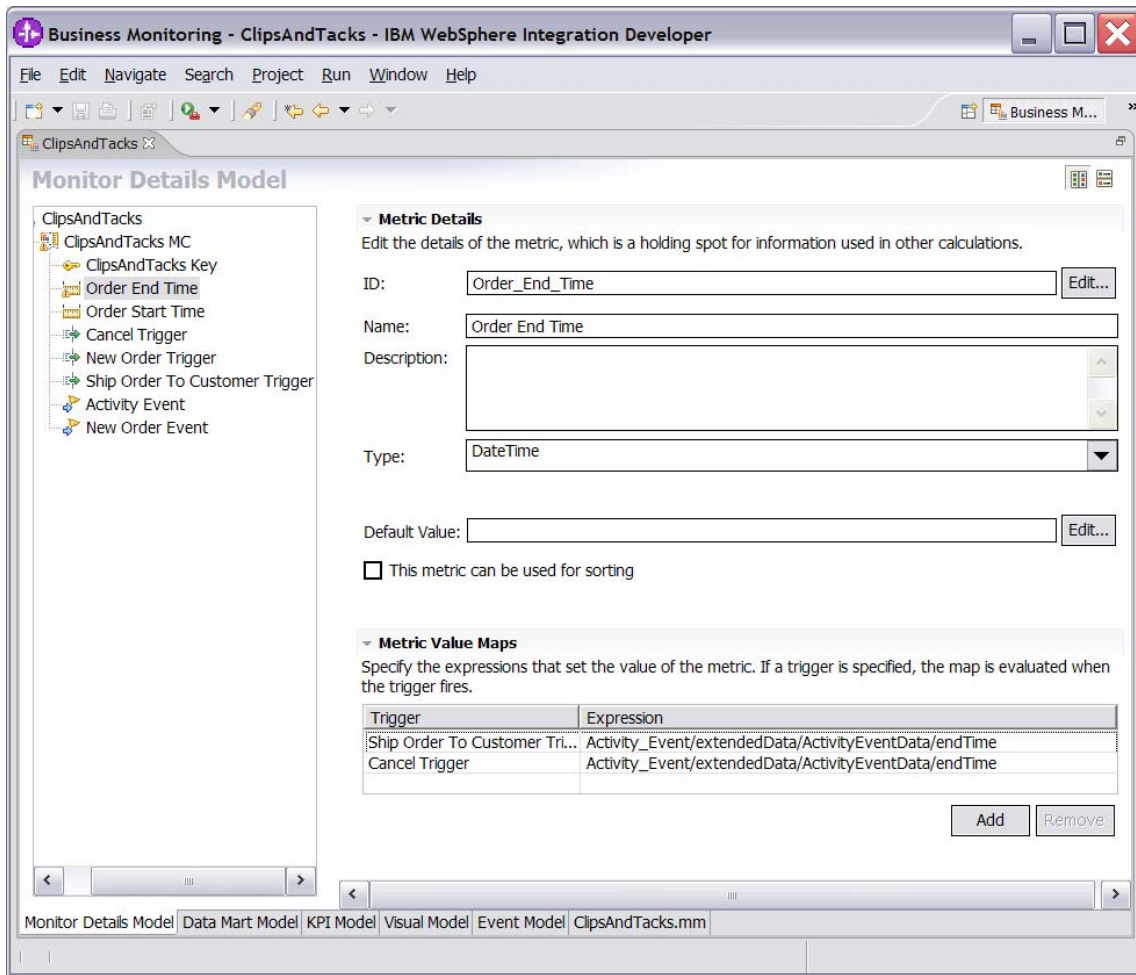
- ___ b. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New Metric**. Enter these values:
- 1) For **Name**, type **Order Start Time**.
 - 2) For **ID**, type **Order_Start_Time**.
 - 3) For **Type**, type **DateTime**.
 - 4) For **Metric Value Maps**, click **Add**.
 - 5) In the first row of the Metric Value Maps table, select the cell under the Trigger column, and then click **Trigger type ► ClipsAndTacks MC ► New Order Trigger**, then click **OK**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
New_Order_Event/extendedData/ActivityEventData/startTime
 - 7) Click **OK**.
 - 8) Press **Ctrl+S** to save your work.

Figure 22. Enter these values for the new metric



- ___ c. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Metric**. Enter these values:
- 1) For **Name**, type **Order End Time**.
 - 2) For **ID**, type **Order_End_Time**.
 - 3) For **Type**, type **DateTime**.
 - 4) For **Metric Value Maps**, click **Add**.
 - 5) In the first row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► Ship Order to Customer Trigger**, then click **OK**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
Activity_Event/extendedData/ActivityEventData/endTime
 - 7) Click **OK**.
 - 8) For **Metric Value Maps**, click **Add**.

Figure 23 Complete the metric value maps detail

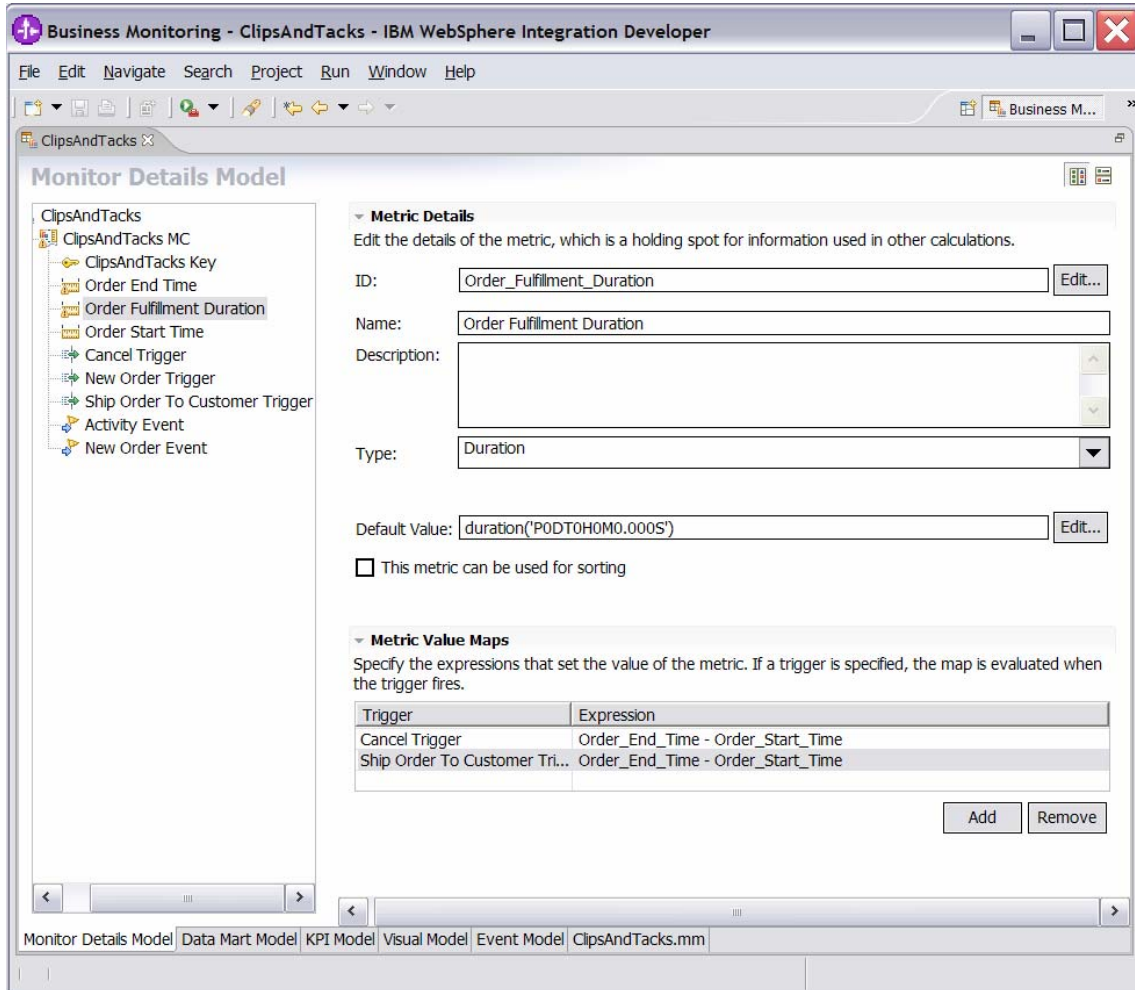


- 9) In the second row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed, Click **Trigger type ► ClipsAndTacks MC ► Cancel Trigger**, and then click **OK**.
 - 10) In the second row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
`Activity_Event/extendedData/ActivityEventData/endTime`
 - 11) Click **OK**.
- ___ d. Press **Ctrl+S** to save your work.
- ___ e. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Metric**. Enter these values:
- 1) For **Name**, type **Order Fulfillment Duration**.
 - 2) For **ID**, type **Order_Fulfillment_Duration**.
 - 3) For **Type**, select **Duration**.
 - 4) For **Default Value**, click **Edit...**
 - 5) On the **Select Duration window**, click **OK**
 - 6) For **Metric Value Maps**, click **Add**.
 - 7) In the first row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► Ship Order to Customer Trigger**, then click **OK**.
 - 8) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
`Order_End_Time - Order_Start_Time`
 - 9) Click **OK**.
 - 10) For **Metric Value Maps**, click **Add**.
 - 11) In the second row of the Metric Value Maps table, select the cell under the **Trigger** column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► Cancel Trigger**, and then click **OK**.

- 12) In the second row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:

Order_End_Time - Order_Start_Time

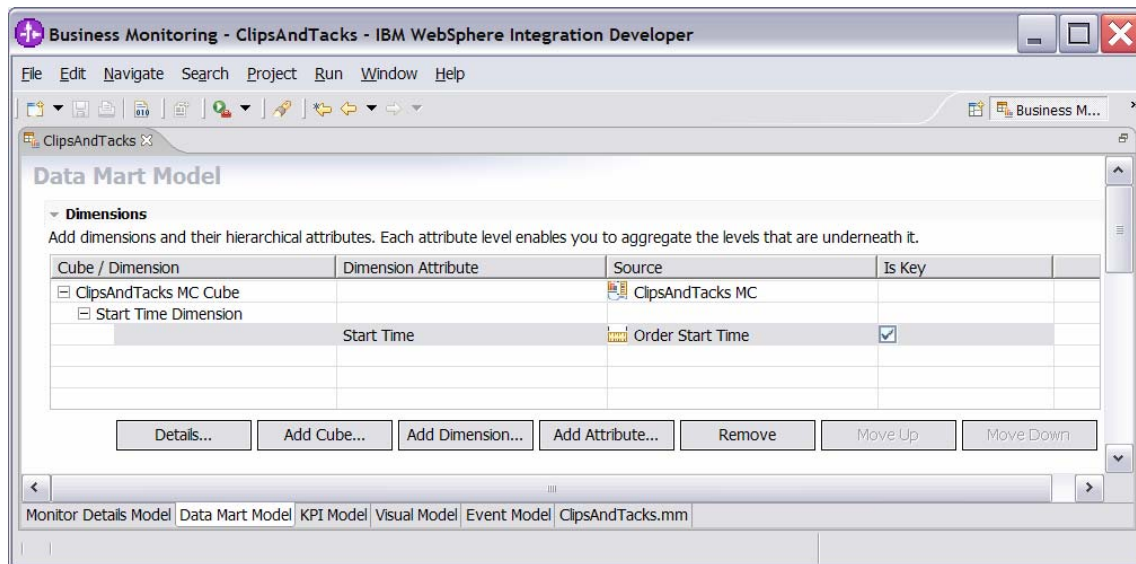
Figure 24. Complete the order fulfillment duration trigger



- 13) Click **OK**.
 ___ f. Press **Ctrl+S** to save your work.

- ___ g. Click the **Data Mart Model** tab.
- ___ h. Add Start Time as a dimension to the Data Mart Model. This will be used in a subsequent step when creating the definition of the KPI.
 - 1) In the Dimensions table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Dimension**.
 - a) For **Name**, type **Start Time Dimension**.
 - b) For **ID**, type **Start_Time_Dimension**.
 - 3) Click **Add Attribute**.
 - a) For **Name**, type **Start Time**.
 - b) For **ID**, type **Start_Time**.
 - 4) In the Dimensions table, in the row containing the Dimension Attribute value Start Time, click the cell in the Source column. Click the button that is displayed, and then click **ClipsAndTacks MC ► Order Start Time**. Click **OK**.
 - 5) Press **Ctrl+S** to save your work.

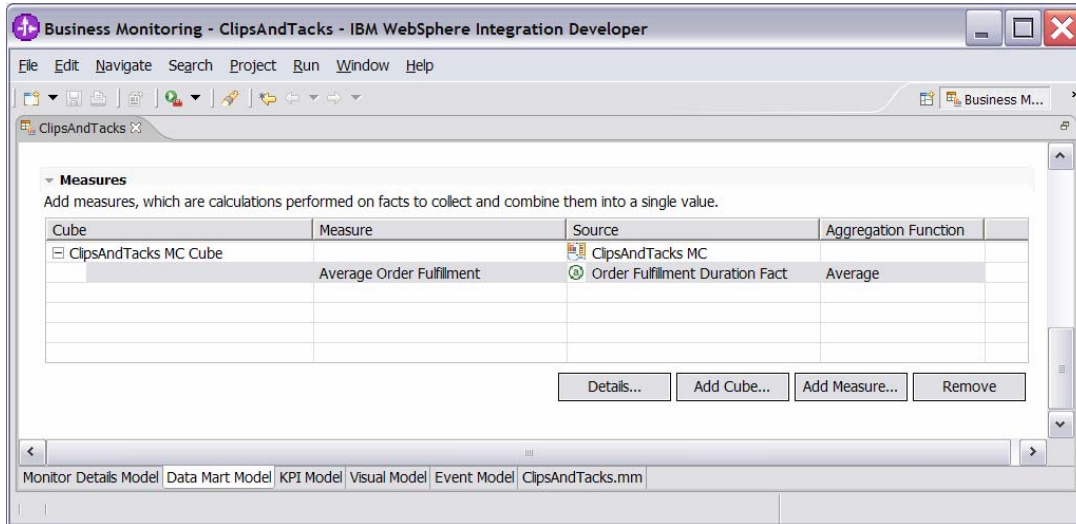
Figure 25. Add Start Time as a dimension to the Data Mart Model



- ___ i. In the Data Mart Model, add a measure for average order fulfillment.
 - 1) In the Measures table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Measure**.
 - a) For **Name**, type **Average Order Fulfillment**.
 - b) For **ID**, type **Average_Order_Fulfillment**.
 - 3) In the Measures table, in the row containing the Average Order Fulfillment measure, click the cell in the Source column. Click the button that is displayed, and then click **ClipsAndTacks MC Fact Table ► Order Fulfillment Duration Fact**. Click **OK**.

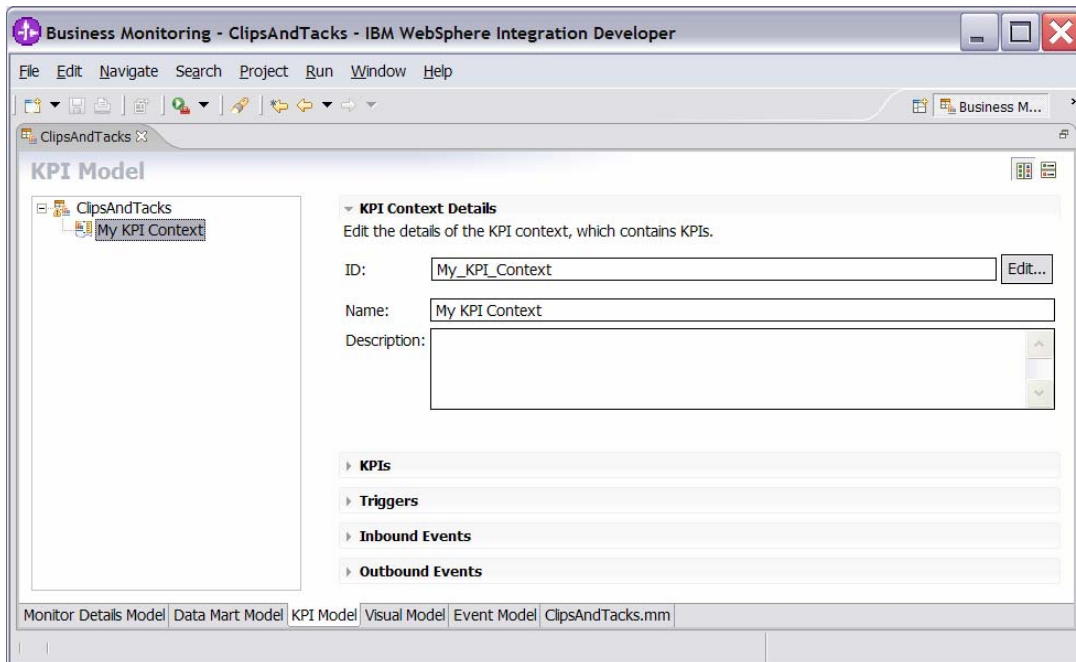
- 4) Notice that the Aggregation Function value for this measure properly defaults to Average.
- 5) Press **Ctrl+S** to save your work.

Figure 26. Add a measure for average order fulfillment in the Data Mart Model



- ___ j. Ensure that the **KPI Model** tab is selected.
- ___ k. Create a KPI context to store KPIs.
 - 1) In the KPI Model navigation pane, right-click **ClipsAndTacks**, then select **New ► KPI Context**.
 - a) For **Name**, type **My KPI Context**.
 - b) For **ID**, type **My_KPI_Context**.

Figure 27. Create a KPI context to store KPIs



- ___ l. Create the average order fulfillment KPI.

The following exercise addresses creation of the KPI based on events for August 2006. This will work regardless of the month or year that you perform this lab. Because the timestamps in the test data are based on August 2006, your results will be the same as those used in these lab instructions.

- 1) Click the **KPI Model** tab.
- 2) In the KPI Model navigation pane, right-click **My KPI Context**, then select **New ► KPI**.
 - a) For **Name**, type **Average Order Fulfillment KPI August 2006**.
 - b) For **ID**, type **Average_Order_Fulfillment_KPI_August_2006**.
- 3) Enter these values:
 - a) For **Type**, select **Duration**.
 - b) In KPI Target and Ranges, for **Target** click **Details**. Change the value to **3 Days**, and then click **OK**.
 - c) In KPI Target and Ranges, for **Ranges** select **Actual values**.
 - d) In the Range table, define a range:
 - (1) Click **Add**.
 - (2) Change Name to **Day 1**, and ID to **Day_1**. A row is created in the Range table with a range name **Day 1**.
 - (3) In this new row, select the cell in the Start value column and click the button that is displayed. Change all values to **0**, then click **OK**.
 - (4) In this row, select the cell in the End value column and click the button that is displayed. Change Days to **1** and the other values to **0**, then click **OK**.
 - e) You have now created one range called Day 1. Repeat the preceding step to create four additional ranges as follows:
 - (1) Day 2 with start values 1 Days and end value 2 Days
 - (2) Day 3 with start values 2 Days and end value 3 Days
 - (3) Day 4 with start values 3 Days and end value 4 Days
 - (4) Day 5 with start values 4 Days and end value 5 Days

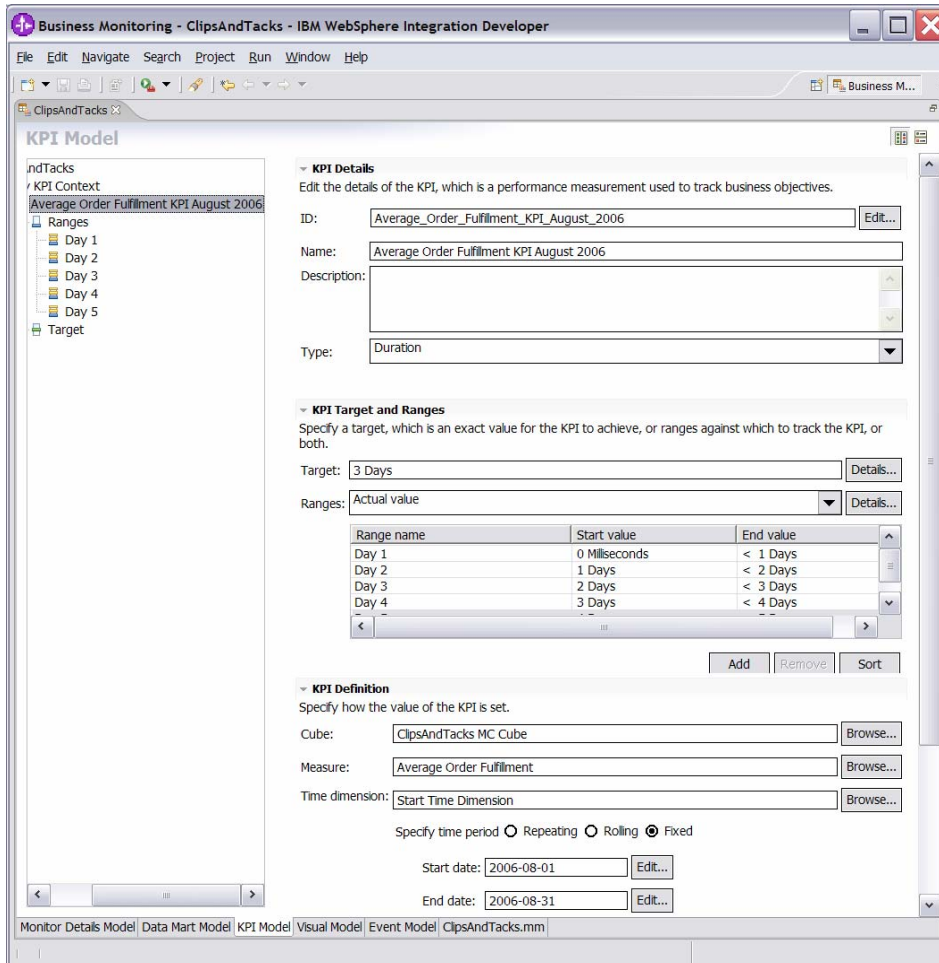
(5)

- f) For **Cube**, click **Browse**, then select **ClipsAndTacks DMM** ► **ClipsAndTacks MC Cube**, then click **OK**.
- g) For **Measure**, click **Browse**, then select **ClipsAndTacks MC Cube** ► **Average Order Fulfillment**, then click **OK**.
- h) For **Time dimension**, click **Browse**, then select **Referenced Dimension** ► **Start Time Dimension**, then click **OK**.
- i) For **Specify time period**, select **Fixed**.
- j) For **Start date**, click **Edit**, and then select **2006-08-01**.
- k) For **End date**, click **Edit**, and then select **2006-08-31**.

Note: The Start Time Dimension is based on the startTime from the Common Base Event.

4) Press **Ctrl+S** to save your work.

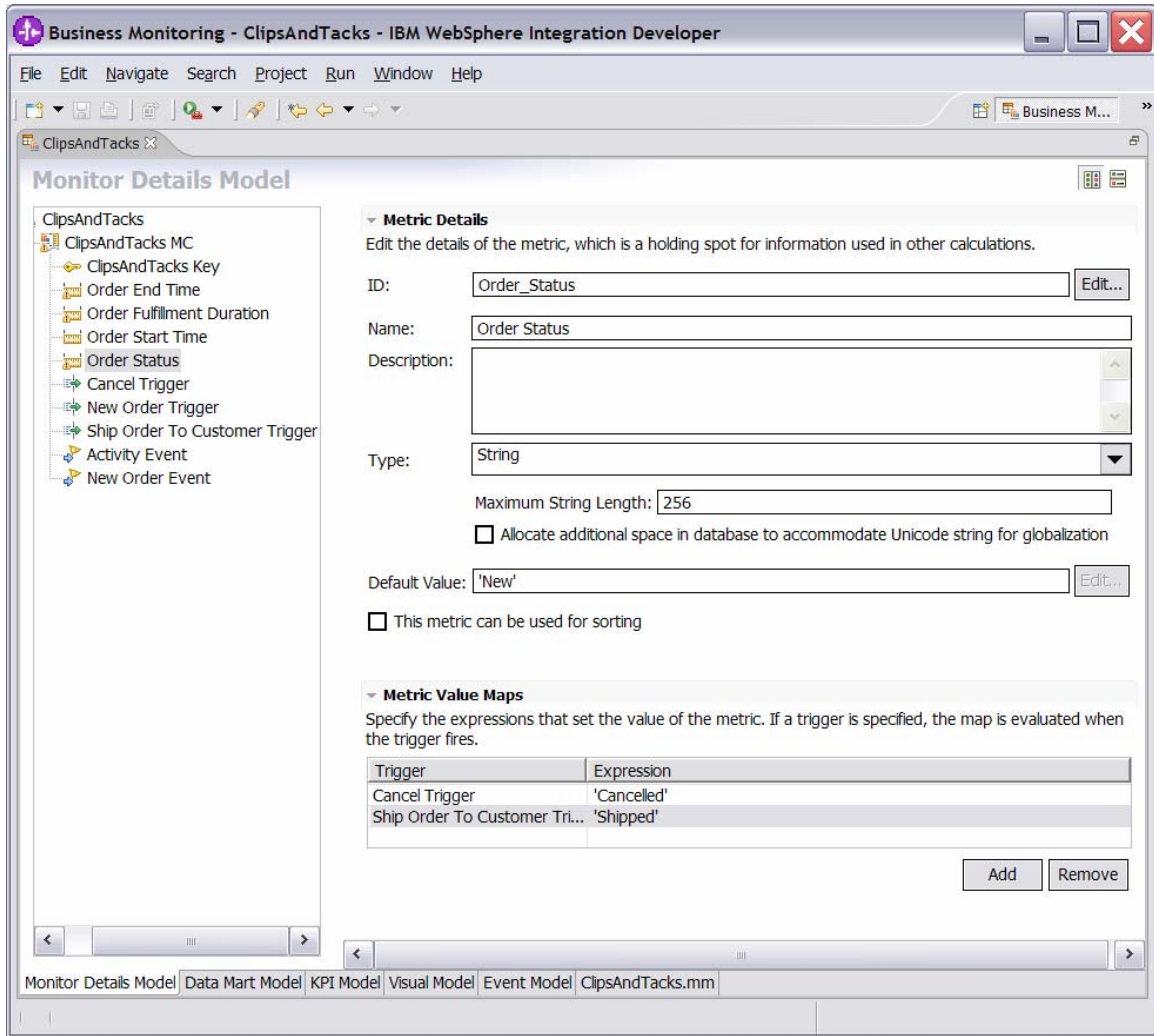
Figure 28. Repeat the step to create four additional ranges



- ___ m. Note that this KPI currently averages order-fulfillment time for shipped orders and cancelled orders, but this exercise has no interest in the cancelled orders. The sample now updates the average order fulfillment KPI to show the values for shipped orders only.
- ___ n. Click the **Monitor Details Model** tab.
- ___ o. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Metric**. Enter the following values:
 - 1) For **Name**, type **Order Status**.
 - 2) For **ID**, type **Order_Status**.
 - 3) For **Type**, select **String**.
 - 4) For **Default Value**, type 'New'. (Include the single quotation marks.)
 - 5) For **Metric Value Maps**, click **Add**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► Cancel Trigger**, and then click **OK**.
 - 7) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text, including the single quotation marks: **'Cancelled'**
 - 8) Click **OK**.
 - 9) For **Metric Value Maps**, click **Add**.
 - 10) In the second row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► Ship Order to Customer Trigger**, then click **OK**.
 - 11) In the second row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text, including the single quotation marks: **'Shipped'**

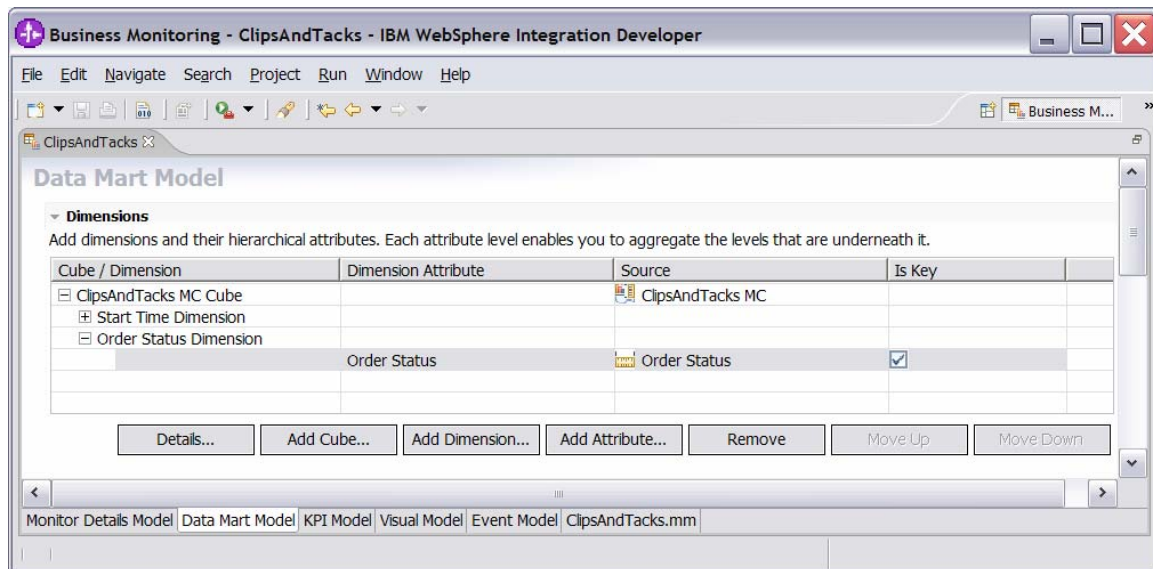
12) Press **Ctrl+S** to save your work.

Figure 29. Complete trigger types in the Metric Value Map



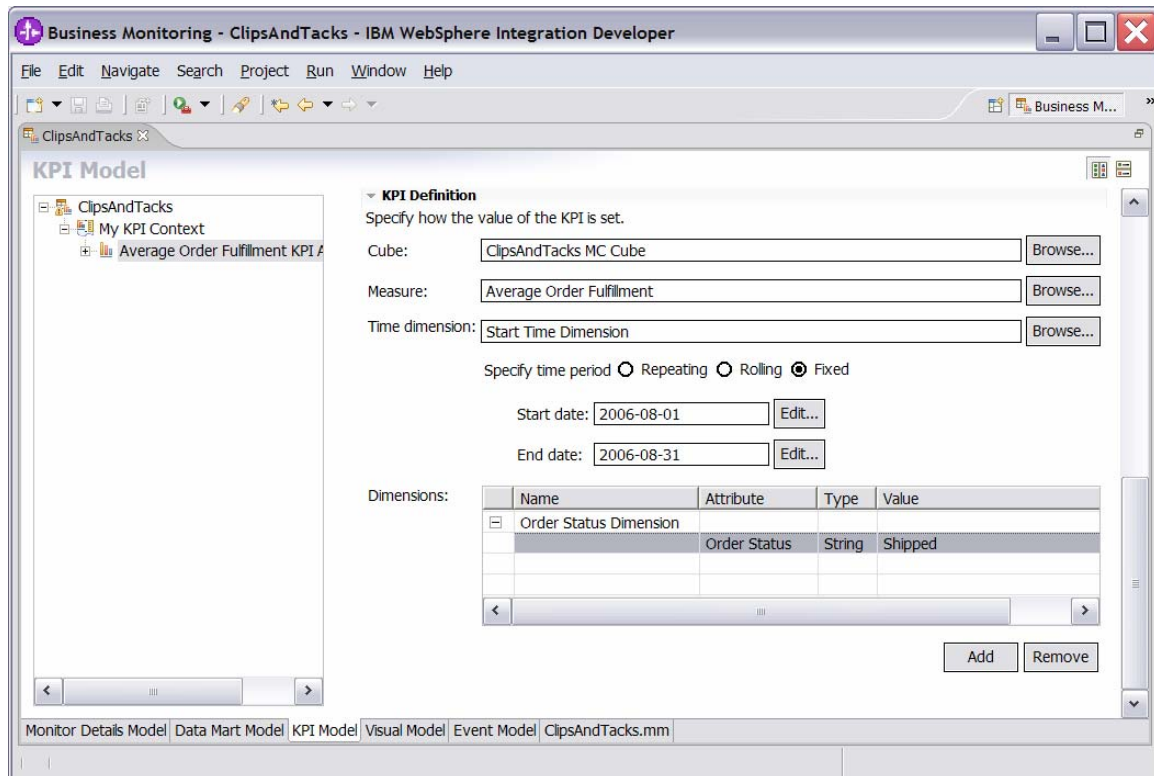
- ___ p. Click the **Data Mart Model** tab.
- ___ q. Add order status as a dimension to the **Data Mart Model**.
 - 1) In the Dimensions table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Dimension**.
 - a) For **Name**, type **Order Status Dimension**.
 - b) For **ID**, type **Order_Status_Dimension**.
 - c) Click **OK**.
 - 3) Click **Add Attribute**.
 - a) For **Name**, type **Order Status**.
 - b) For **ID**, type **Order_Status**.
 - 4) In the Dimensions table, in the row containing the Dimension Attribute value Order Status, click the cell in the Source column. Click the button that is displayed, then select **ClipsAndTacks MC ► Order Status**. Then click **OK**.
 - 5) Press **Ctrl+S** to save your work.

Figure 30. Add order status as a dimension to the Data Mart Model



- ___ r. Update the order fulfillment KPI to use the order status dimension as a filter.
- 1) Click the **KPI Model** tab.
 - 2) In the KPI Model navigation pane, navigate to **ClipsAndTacks ► My KPI Context ► Average Order Fulfillment KPI August 2006**.
 - 3) In the KPI Definition section for this KPI, underneath the Dimensions table, click **Add**.
 - 4) Navigate to **ClipsAndTacks MC Cube ► Order Status Dimension ► Order Status**, then click **OK**.
 - 5) In the Dimensions table, expand **Order Status Dimension**.
 - 6) In the row containing Attribute Order Status, click the cell in the Value column, then enter this text (without quotation marks): Shipped
 - 7) Press **Ctrl+S** to save your work.

Figure 31. Update the order fulfillment KPI to use the order status dimension as a filter



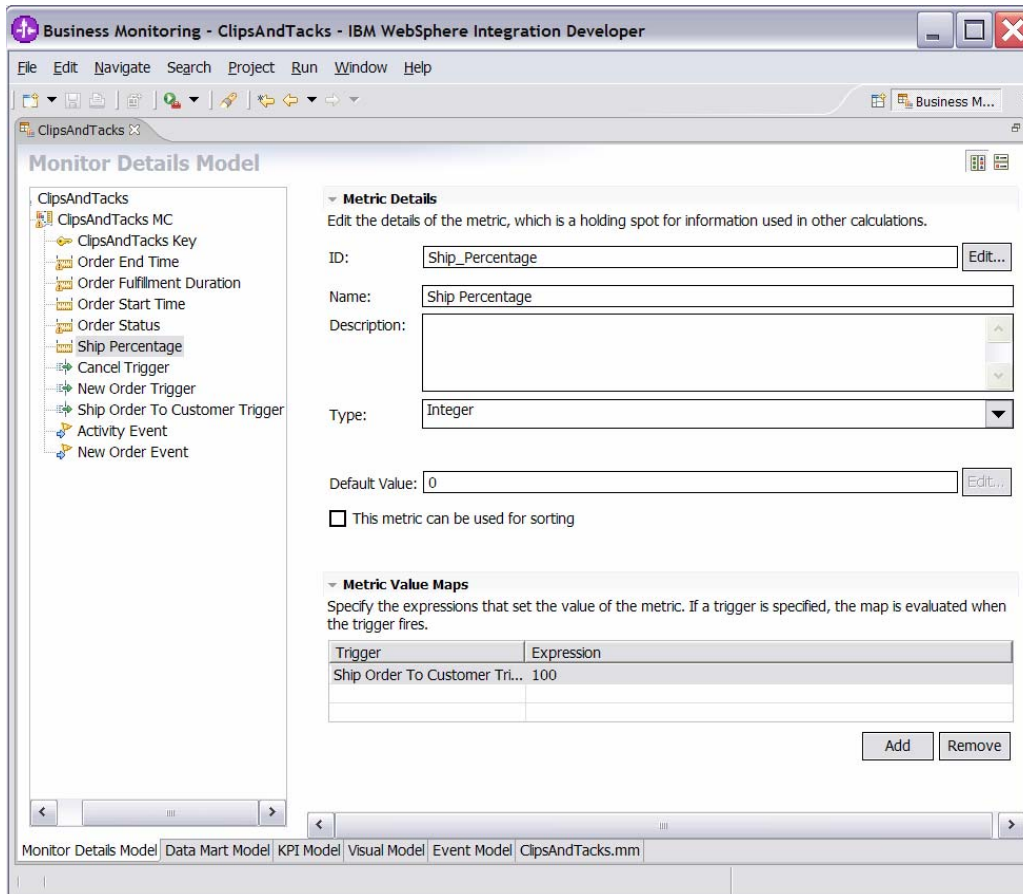
- ___ 8. Create a KPI for number of approved orders greater than 90 percent. For KPIs, you cannot have user-defined functions, for example, '(Shipped Orders / Total Orders) * 100'. The exercise, therefore demonstrates how to accomplish this in another way.

This exercise now describes how to create a metric that will have one of two values for each monitoring context. For shipped orders it will be 100, for cancelled orders it will be 0. It will next describe how to average this metric across monitoring contexts.

Note: This exercise sets the value of the metric explicitly to 100 when shipping the order. It will not be necessary to set it explicitly when canceling an order since this sample describes how to set the default for the metric to 0.

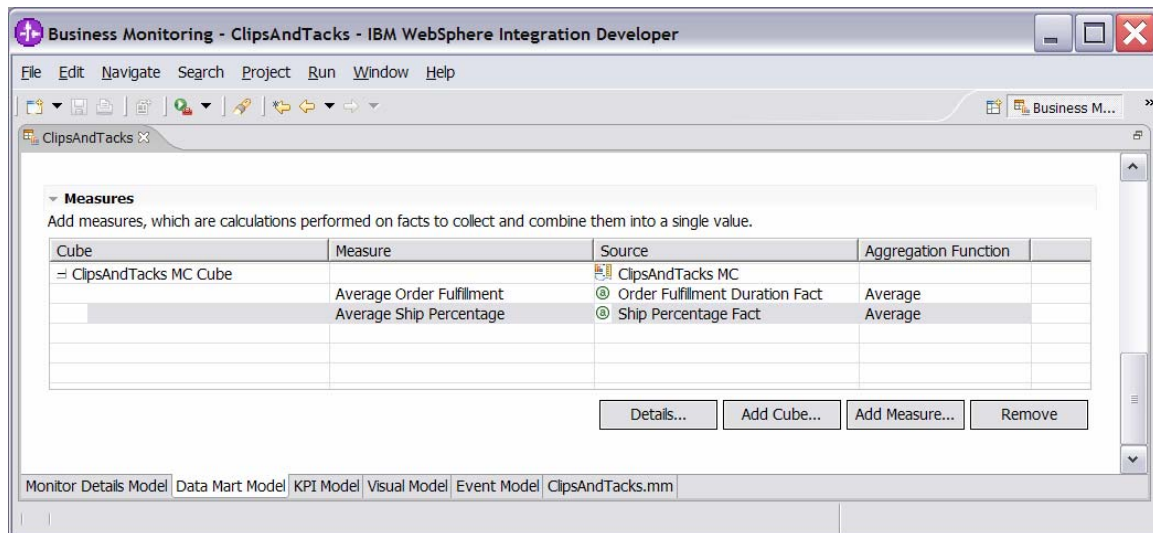
- a. Click the **Monitor Details Model** tab.
- b. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New Metric**. Enter these values:
 - 1) For **Name**, type **Ship Percentage**.
 - 2) For **ID**, type **Ship_Percentage**.
 - 3) For **Type**, select **Integer**.
 - 4) For **Default value**, type **0**.
 - 5) For **Metric Value Maps**, click **Add**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Trigger column, then click the button that is displayed. Click **Trigger type ▶ ClipsAndTacks MC ▶ Ship Order to Customer Trigger**, then click **OK**.
 - 7) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text: **100**
 - 8) Click **OK**.
 - 9) Press **Ctrl+S** to save your work.

Figure 32. Create a KPI for number of approved orders greater than 90 percent



- ___ c. Click the Data Mart Model tab.
- ___ d. In the Data Mart Model, add a measure for average ship percentage.
 - 1) In the Measures table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Measure**.
 - a) For **Name**, type **Average Ship Percentage**.
 - b) For **ID**, type **Average_Ship_Percentage**.
 - 3) In the Measures table, in the row containing measure Average Ship Percentage, click the cell in the Source column. Click the button that is displayed, then click this button and select **ClipsAndTacks MC Fact Table ► Ship Percentage Fact**. Then click **OK**.
 - 4) Notice that the default Aggregation Function value for this measure is properly set to Average.
 - 5) Press **Ctrl+S** to save your work.

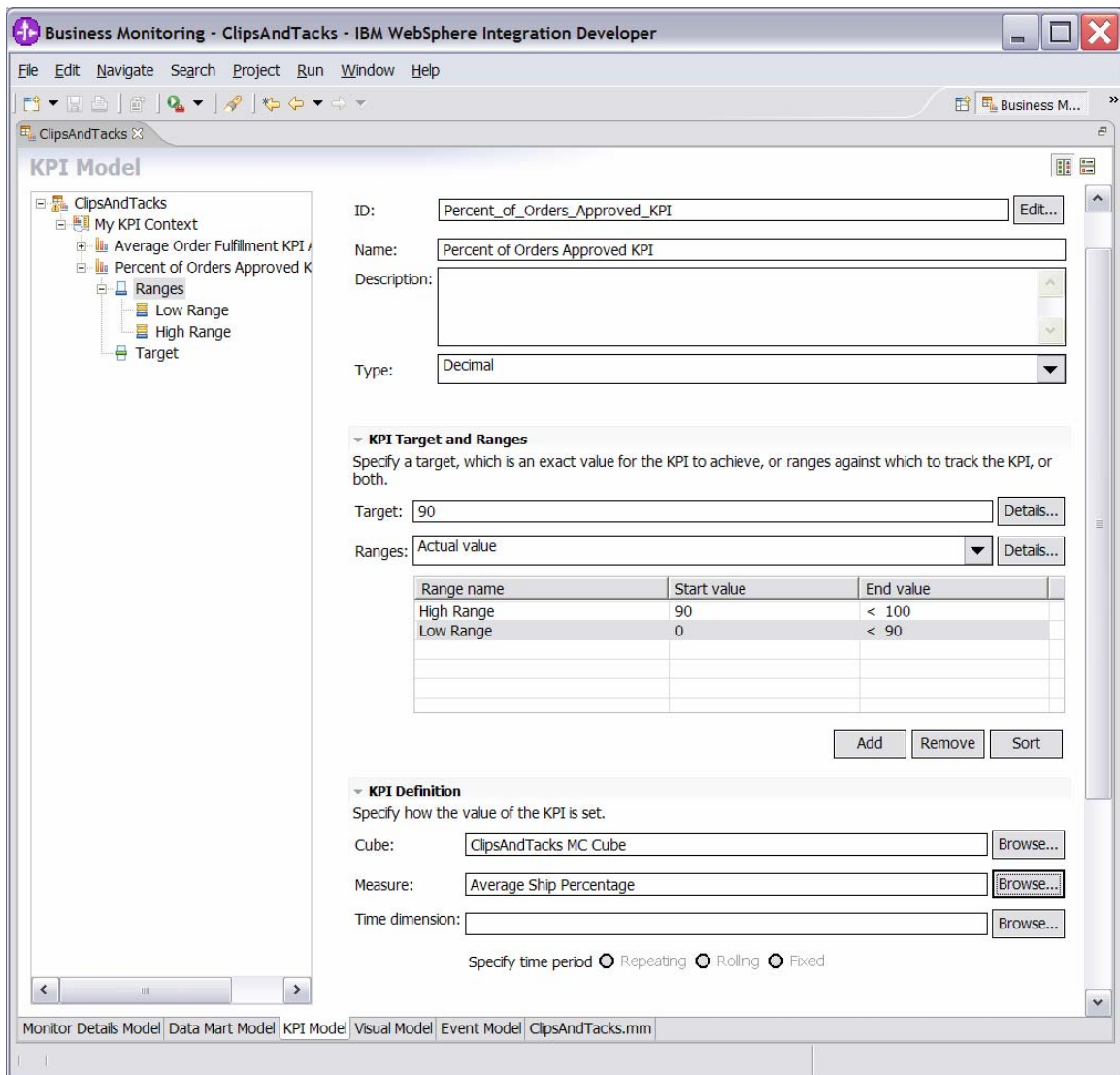
Figure 33. Add a measure for average ship percentage in the Data Mart Model



- ___ e. Click the **KPI Model** tab.
- ___ f. In the KPI Model navigation pane, right-click **My KPI Context**, then select **New ► KPI**.
 - 1) For **Name**, type **Percent of Orders Approved KPI**.
 - 2) For **ID**, type **Percent_of_Orders_Approved_KPI**.
- ___ g. Enter these values:
 - 1) For **Type**, select **Decimal**.
 - 2) For **Target**, type **90**.
 - 3) For **Ranges**, select **Actual value**.
 - 4) In the Range table:
 - a) Click **Add**.

- b) Change **Name** to **High Range**, and **ID** to **High_Range**. A row is created in the Range table with a range name High Range.
 - c) In this new row, select the cell in the **Start value** column. Click the button that is displayed, then change the value to **90**, and then click **OK**.
 - d) In this new row, select the cell in the **End value** column. Click the button that is displayed, then change the value to **100**, and then click **OK**.
- 5) You have now created one range called High Range. Repeat the preceding step to create another range:
- a) **Low Range** with start value **0** and end value **90**.

Figure 34. Complete the Range table with a range name and values



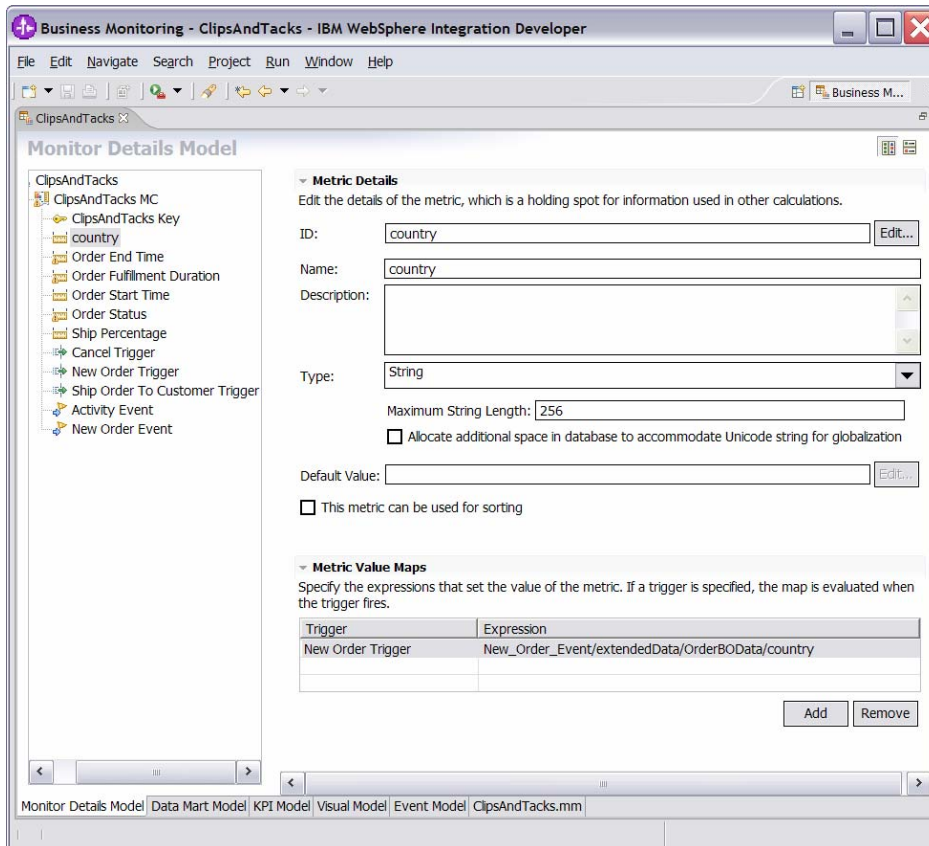
- 6) For **Cube**, click **Browse**, then select **ClipsAndTacks DMM ► ClipsAndTacks MC Cube**, then click **OK**.
- 7) For **Measure**, click **Browse**, then select **ClipsAndTacks MC Cube ► Average Ship Percentage**, then click **OK**.
- 8) For **Time dimension**, select a value if you want to base the KPI on a specific period of time.

Note: The Start Time Dimension is based on the startTime values from the Common Base Event. If you want to add a time dimension, review the startTime values in the Common Base Events to determine what range is appropriate for your testing.

9) Press **Ctrl+S** to save your work.

9. You might like to see the total order price, the average order price and the total number of orders. You might also be interested in seeing this information arranged by country and city. You will now create dimensions and measures that allow you to see this information. In order to see the country and city information, you will create a multilevel location dimension containing country as the first level and city as the second level.

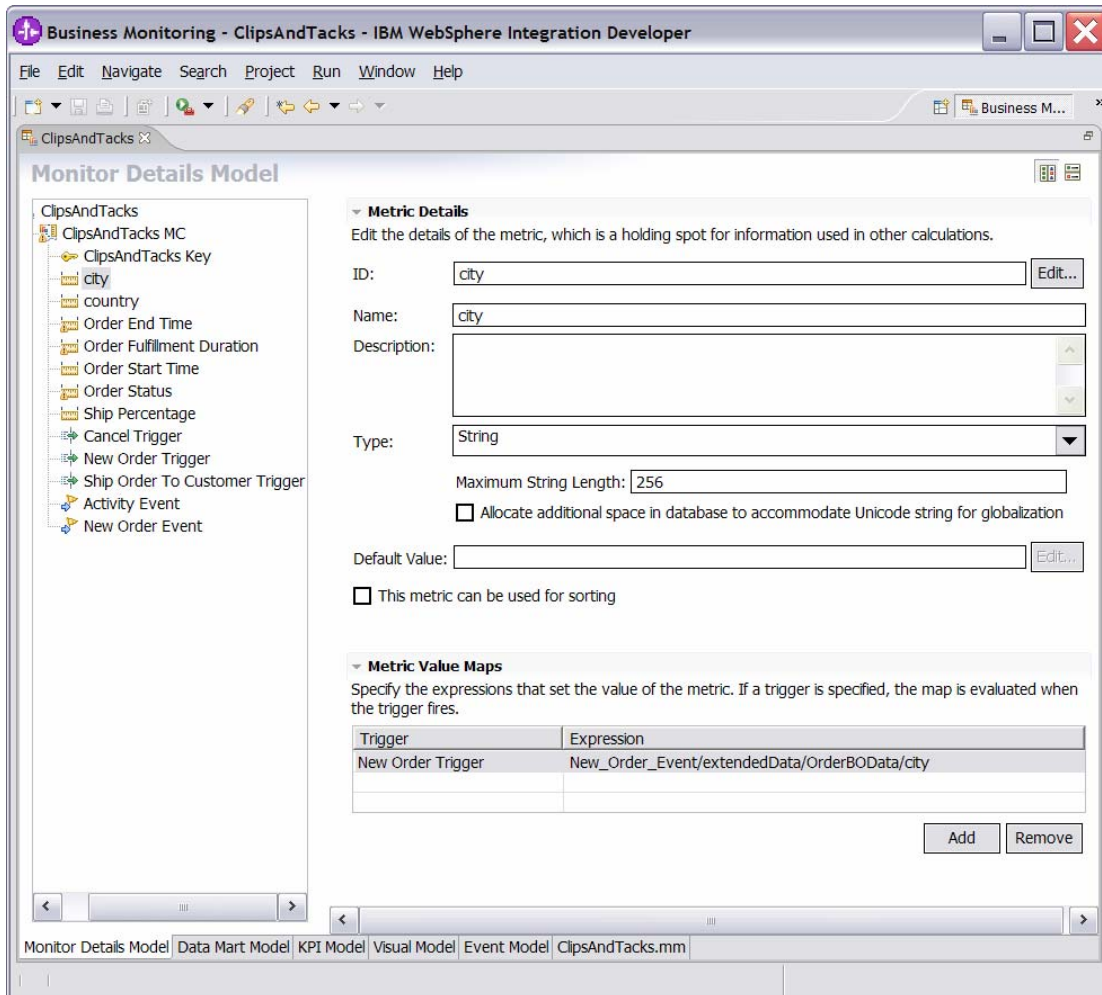
Figure 35. Multilevel location dimension containing country and city



- ___ a. Click the **Monitor Details Model** tab.
- ___ b. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Metric**. Enter these values:
 - 1) For **Name**, type **country**.
 - 2) For **ID**, type **country**.
 - 3) For **Type**, select **String**.
 - 4) For **Metric Value Maps**, click **Add**.
 - 5) In the first row of the Metric Value Maps table, select the cell under the **Trigger** column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► New Order Trigger**, and then click **OK**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
New_Order_Event/extendedData/OrderBOData/country
 - 7) Click **OK**.
 - 8) Press **Ctrl+S** to save your work.

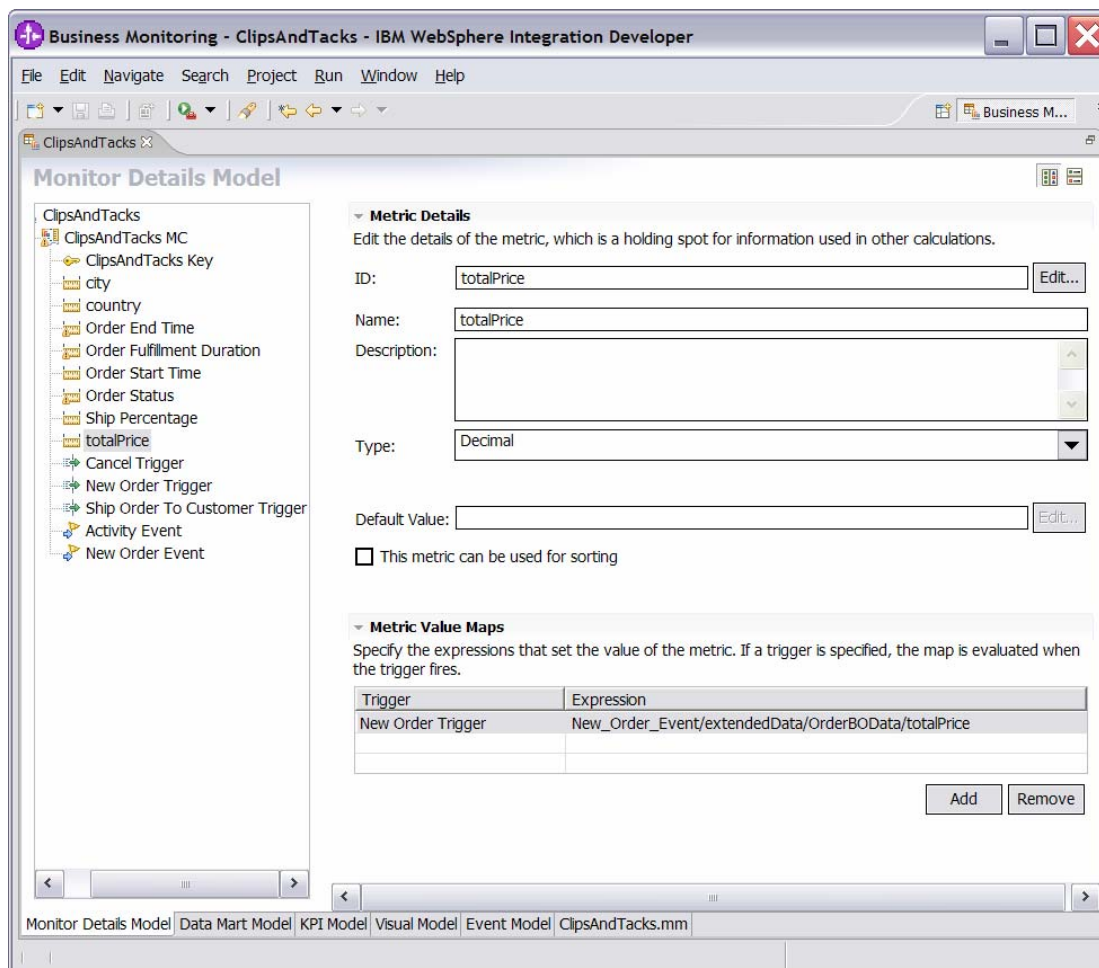
- ___ c. In the Monitor Details Model navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Metric**. Enter these values:
- 1) For **Name**, type **city**.
 - 2) For **ID**, type **city**.
 - 3) For **Type**, select **String**.
 - 4) For **Metric Value Maps**, click **Add**.
 - 5) In the first row of the Metric Value Maps table, select the cell under the **Trigger** column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► New Order Trigger**, and then click **OK**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
New_Order_Event/extendedData/OrderBOData/city
 - 7) Click **OK**.
 - 8) Press **Ctrl+S** to save your work.

Figure 36. Add a new order trigger - city



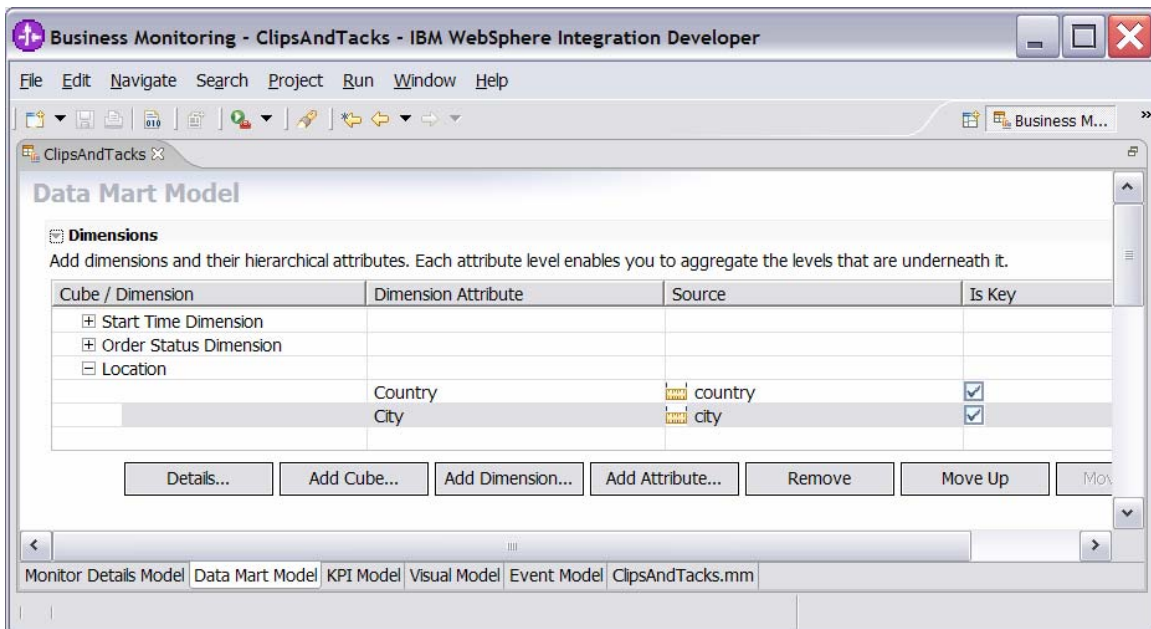
- ___ d. In the **Monitor Details Model** navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Metric**. Enter these values:
- 1) For **Name**, type **totalPrice**.
 - 2) For **ID**, type **totalPrice**.
 - 3) For **Type**, select **Decimal**.
 - 4) For **Metric Value Maps**, click **Add**.
 - 5) In the first row of the **Metric Value Maps** table, select the cell under the **Trigger** column, then click the button that is displayed. Click **Trigger type ► ClipsAndTacks MC ► New Order Trigger**, and then click **OK**.
 - 6) In the first row of the Metric Value Maps table, select the cell under the Expression column, then click the button that is displayed and enter this text:
New_Order_Event/extendedData/OrderBODData/totalPrice
 - 7) Click **OK**.
 - 8) Press **Ctrl+S** to save your work.

Figure 37 Add a new order trigger - totalPrice



- ___ e. Click the **Data Mart Model** tab.
- ___ f. Add location as a dimension to the Data Mart Model.
 - 1) In the **Dimensions** table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Dimension**.
 - a) For **Name**, type **Location**.
 - b) For **ID**, type **Location**.
 - 3) Click **Add Attribute**.
 - a) For **Name**, type **Country**.
 - b) For **ID**, type **Country**.
 - 4) In the **Dimensions** table, in the row containing Dimension Attribute Country, click the cell in the Source column. Click the button that is displayed, and then click **ClipsAndTacks MC ► country**. Then click **OK**.
 - 5) Click **Add Attribute**.
 - a) For **Name**, type **City**.
 - b) For **ID**, type **City**.
 - 6) In the **Dimensions** table, in the row containing Dimension Attribute City, click the cell in the Source column. Click the button that is displayed, then click **ClipsAndTacks MC ► city**. Then click **OK**.
 - 7) Press **Ctrl+S** to save your work.

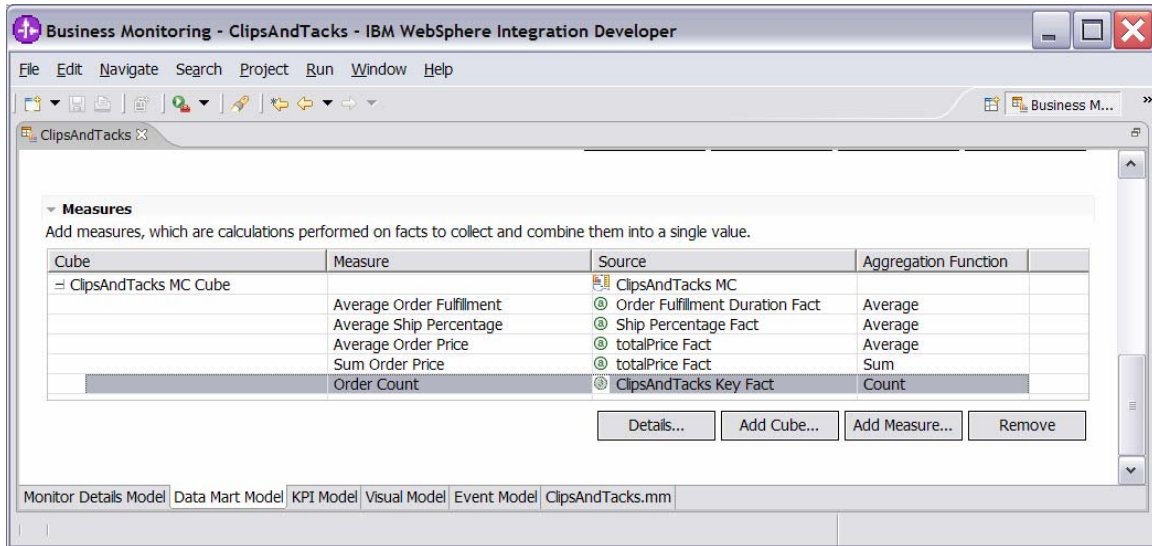
Figure 38. Add location as a dimension to the Data Mart Model



- ___ g. Ensure that the **Data Mart Model** tab is selected.
- ___ h. In the Data Mart Model, add a measure for average order price.
 - 1) In the **Measures** table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Measure**.
 - a) For **Name**, type **Average Order Price**.
 - b) For **ID**, type **Average_Order_Price**.
 - 3) In the **Measures** table, in the row containing measure **Average Order Price**, click the cell in the **Source** column. Click the button that is displayed, and then click **ClipsAndTacks MC Fact Table ► totalPrice Fact**. Then click **OK**.
 - 4) Notice that the **Aggregation Function** for this measure properly defaults to **Average**.
- ___ i. In the Data Mart Model, add a measure for sum of order price.
 - 1) In the **Measures** table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Measure**.
 - a) For **Name**, type **Sum Order Price**.
 - b) For **ID**, type **Sum_Order_Price**.
 - 3) In the **Measures** table, in the row containing measure **Sum Order Price**, click the cell in the **Source** column. Click the button that is displayed, and then click **ClipsAndTacks MC Fact Table ► totalPrice Fact**. Then click **OK**.
 - 4) In the **Measures** table, in the row containing measure **Sum Order Price**, click the cell in the **Aggregation Function** column. Select **Sum** from the list.

- ___ j. In the **Data Mart Model**, add a measure for order count.
 - 1) In the **Measures** table, click **ClipsAndTacks MC Cube**.
 - 2) Click **Add Measure**.
 - a) For **Name**, type **Order Count**.
 - b) For **ID**, type **Order_Count**.
 - 3) In the **Measures** table, in the row containing measure **Order Count**, click the cell in the **Source** column. Click the button that is displayed, and then click **ClipsAndTacks MC Fact Table ► ClipsAndTacks Key Fact**. Then click **OK**.
 - 4) In the **Measures** table, in the row containing measure **Order Count**, click the cell in the **Aggregation Function** column. Select **Count** from the list.
- ___ k. Press **Ctrl+S** to save your work.

Figure 39. Add a measure for order count in the Data Mart Model



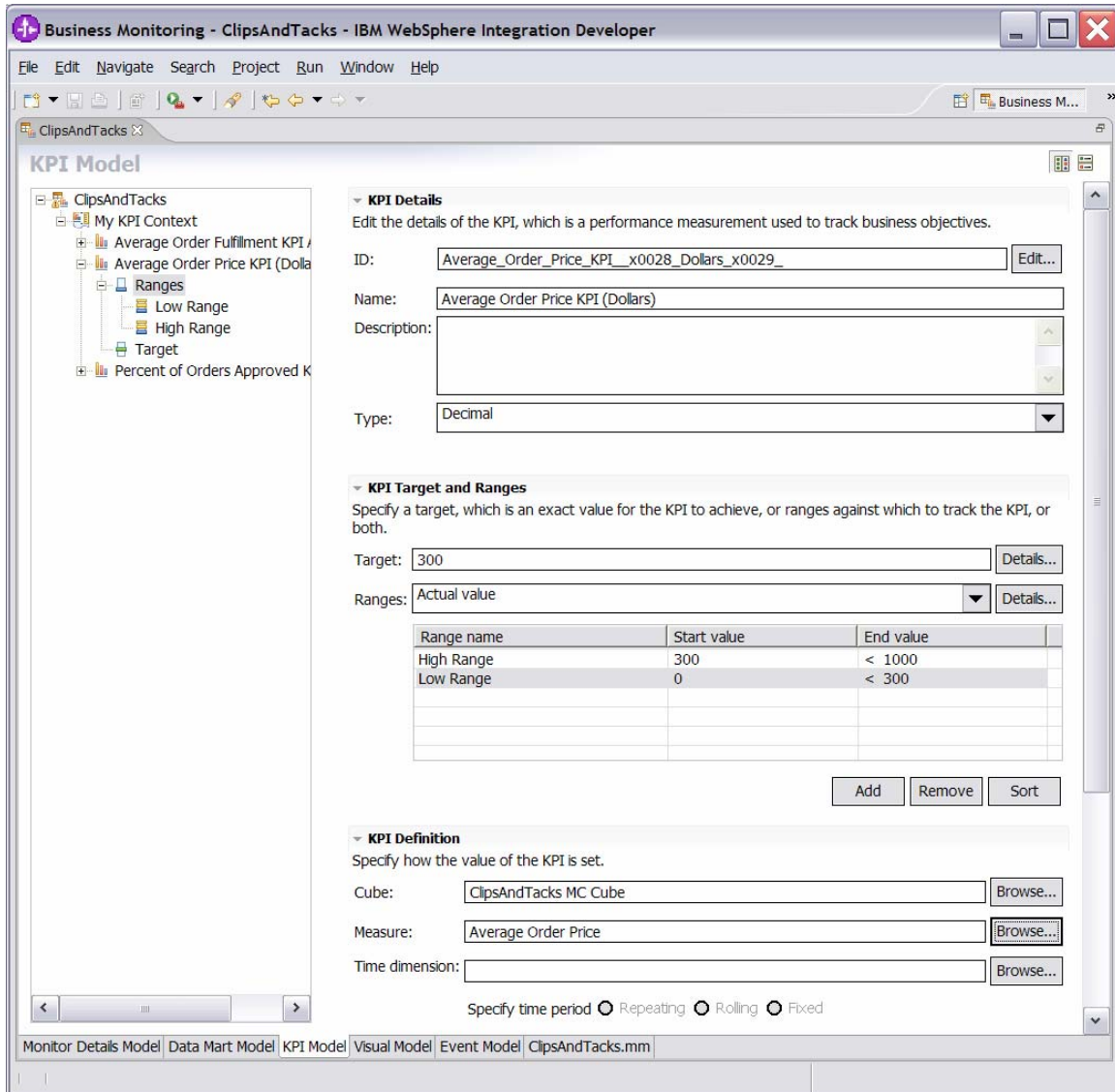
- ___ 10. With Average Order Price now as a measure in the Data Mart Model, you will now create a KPI for it.
 - ___ a. Click the **KPI Model** tab.
 - ___ b. In the **KPI Model** navigation pane, right-click **My KPI Context**, then select **New ► KPI**.
 - 1) For **Name**, type **Average Order Price KPI (Dollars)**.
 - 2) For **ID**, type **Average_Order_Price_KPI__x0028_Dollars_x0029_**.
 - ___ c. Enter these values:
 - 1) For **Type**, select **Decimal**.
 - 2) For **Target**, type **300**.
 - 3) For **Ranges**, select **Actual value**.
 - 4) In the **Range** table:
 - a) Click **Add**.

- b) Change **Name** to **High Range**, and **ID** to **High_Range**. A row is created in the Range table with a range name High Range.
 - c) In this new row, select the cell in the **Start value** column. Click the button that is displayed, then change the value to **300**, and then click **OK**.
 - d) In this new row, select the cell in the **End value** column. Click the button that is displayed, then change the value to **1000**, and then click **OK**.
- 5) Now you have created one range called **High Range**. Repeat the preceding step to create another range:
- a) **Low Range** with start value **0** and end value **300**.
- 6) For **Cube**, click **Browse**, then select **ClipsAndTacks DMM ► ClipsAndTacks MC Cube**, then click **OK**.
- 7) For **Measure**, click **Browse**, then select **ClipsAndTacks MC Cube ► Average Order Price**, then click **OK**.
- 8) For **Time dimension**, select a time dimension if you want to base the KPI on a specific period of time.

Note: The Start Time Dimension is based on the startTime values from the Common Base Event. If you want to add a time dimension, check the startTime value in the Common Base Events to determine what range is appropriate for your testing.

9) Press **Ctrl+S** to save your work.

Figure 40. Create KPI for Average Order Price as measure in Data Mart Model

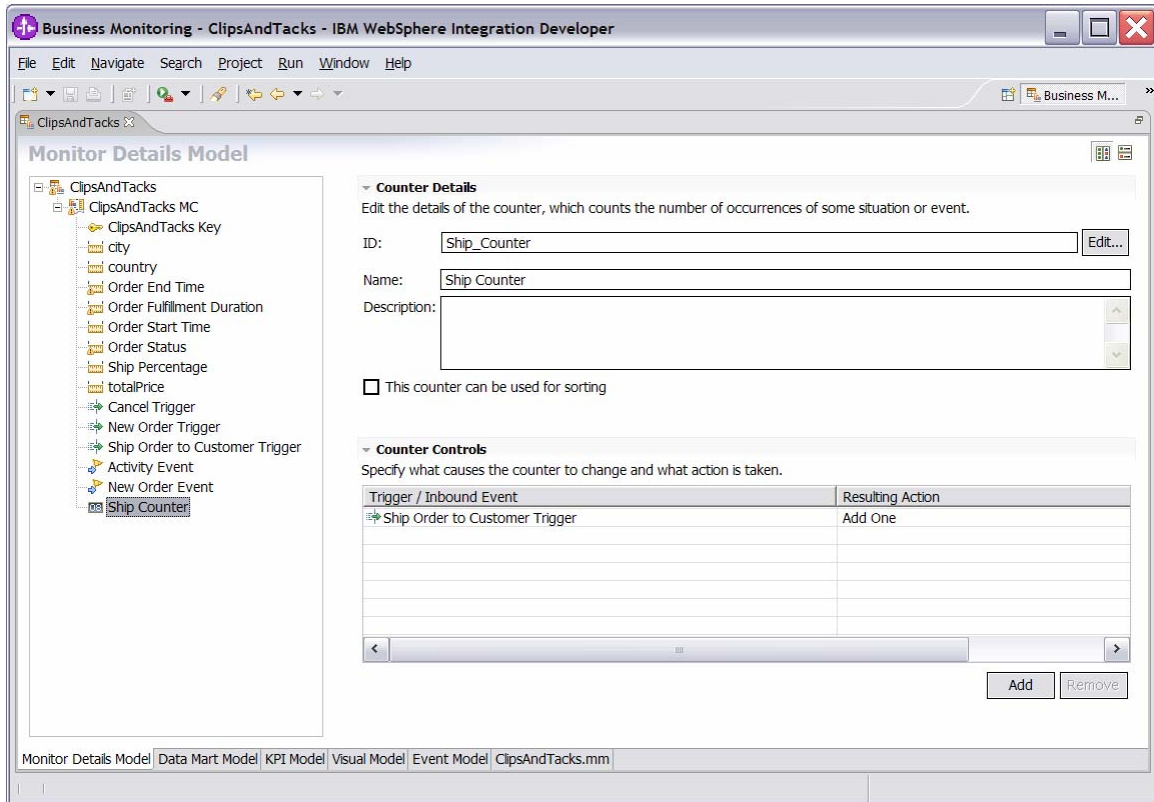


(Optional) The following step shows a common technique for counting a subset of instances. Specifically, it explains how to use a counter that is incremented if you ship the order (versus canceling the order). For every monitoring context, this counter will either be zero or one depending on whether the order is cancelled or shipped. Counters are more useful in other scenarios, such as to count the number of times an iterated activity is run.

- ____ 11. (Optional) In the **Monitor Details Model** navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Counter**. Enter these values:
- __ a. For **Name**, type **Ship Counter**.
 - __ b. For **ID**, type **Ship_Counter**.

- ___ c. For **Counter Controls**, click **Add**, then select **ClipsAndTacks MC ► Ship Order to Customer Trigger**, then click **OK**.
- ___ d. Note that the default value for **Resulting Action** is **Add One**, which is correct.
- ___ e. Click **OK**.
- ___ f. Press **Ctrl+S** to save your work.

Figure 41. Technique for counting a subset of instances

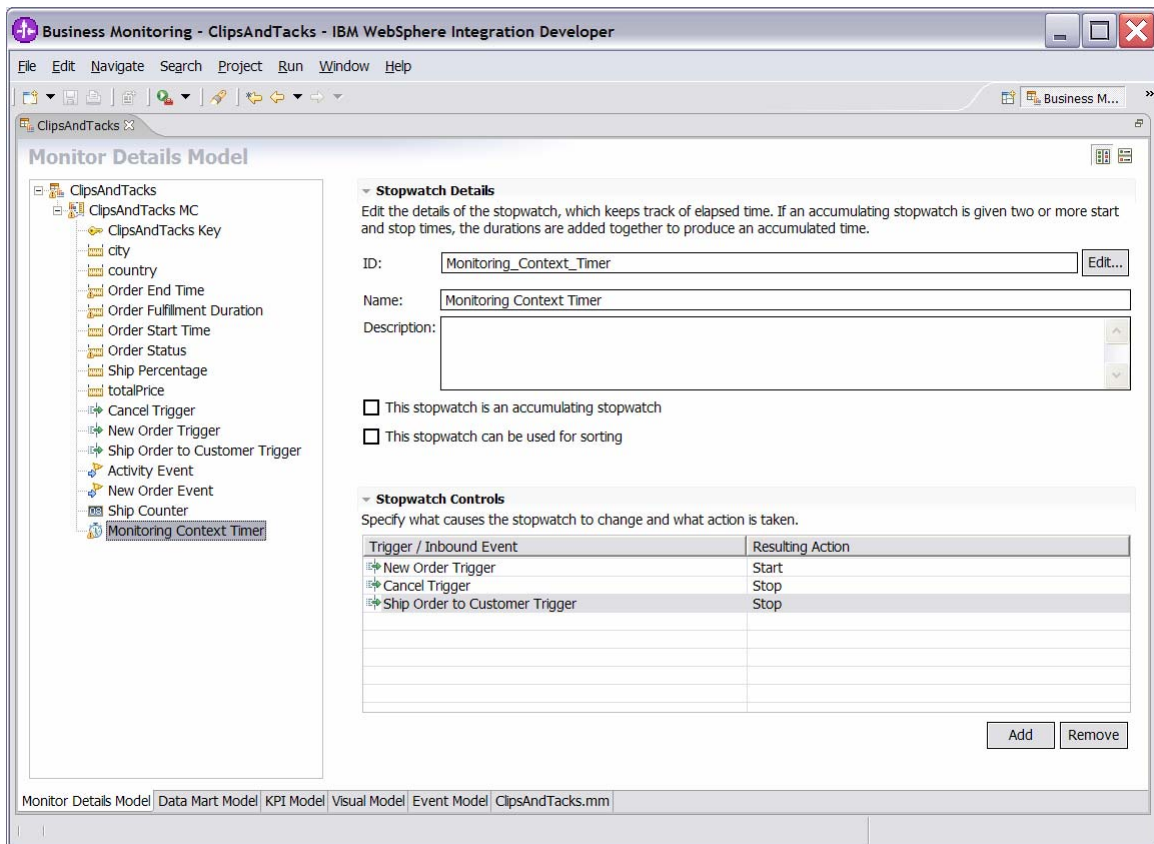


(Optional) The following step shows how to use a stopwatch. Specifically, it explains how to create a timer that measures the duration of the monitoring context. You might find this useful to quickly see which monitoring contexts have not been ended.

- ___ 12. (Optional) In the **Monitor Details Model** navigation pane, right-click **ClipsAndTacks MC**, then select **New ► Stopwatch**. Enter these values:
 - ___ a. For **Name**, type **Monitoring Context Timer**.
 - ___ b. For **ID**, type **Monitoring_Context_Timer**.
 - ___ c. For **Stopwatch Controls**, click **Add**, then select **ClipsAndTacks MC ► New Order Trigger**, then click **OK**.
 - ___ d. Note that the default value for **Resulting Action** is **Start**.
 - ___ e. For **Stopwatch Controls**, click **Add**, then select **ClipsAndTacks MC ► Ship Order to Customer Trigger**, then click **OK**.

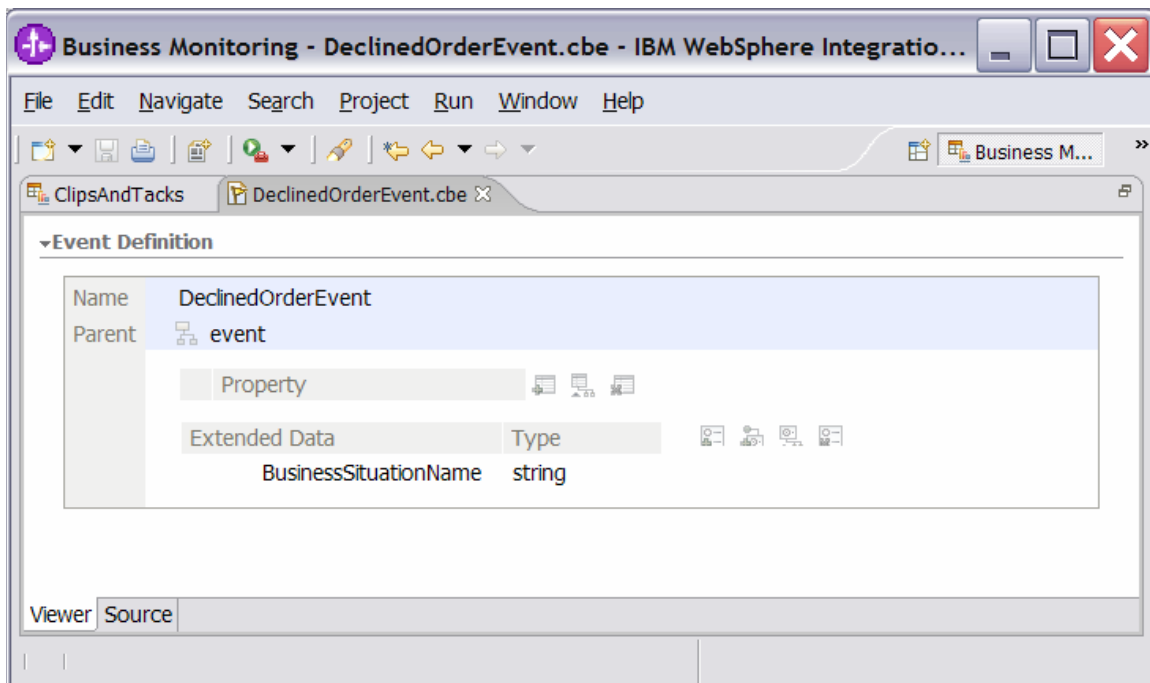
- ___ f. Note that the default value for **Resulting Action** is **Start**, but you will need to change it to **Stop** for this trigger. So click the second row in the **Resulting Action** column, and then select **Stop** from the list.
- ___ g. For **Stopwatch Controls**, click **Add**, then select **ClipsAndTacks MC ► Cancel Trigger**, and then click **OK**.
- ___ h. Note that the default value for Resulting Action is **Start**, but you need to change it to **Stop** for this trigger. Therefore, click the second row in the **Resulting Action** column, then select **Stop** from the list.
- ___ i. Press **Ctrl+S** to save your work.

Figure 42. Timer that measures the duration of the monitoring context



- ___ 13. Create a business-situation event when the number of declined orders is greater than or equal to 3.
- ___ a. In the **Project Explorer** pane, right-click **ClipsAndTacks** and select **New ► Event Definition**.
 - ___ b. For **Name**, type **DeclinedOrderEvent**.
 - ___ c. Click **Finish**.
 - ___ d. In the **Event Definition**, click the **Add Extended Data** icon to add a row to the **Extended Data** table.
 - ___ e. For the new data element, change the **Extended Data** name to **BusinessSituationName**.
 - ___ f. For the new element, change the type to **string**.
 - ___ g. Press **Ctrl+S** to save your work.

Figure 43. Business-situation event when declined orders >= 3



- ___ h. Click the **KPI Model** tab for the **ClipsAndTacks** model.
- ___ i. In the **KPI Model** navigation pane, right-click **My KPI Context**, then select **New ► KPI**.
 - 1) For **Name**, type **Declined Order KPI**.
 - 2) For **ID**, type **Declined_Order_KPI**.
- ___ j. Enter these values:
 - 1) For **Type**, select **Decimal**.
 - 2) For **Target**, enter **3**.
 - 3) For **Ranges**, select **Actual value**.
 - 4) In the **Range** table:
 - a) Click **Add**.
 - b) Change **Name** to **High Range**, and **ID** to **High_Range**. A row is created in the **Range** table with a range name **High Range**.

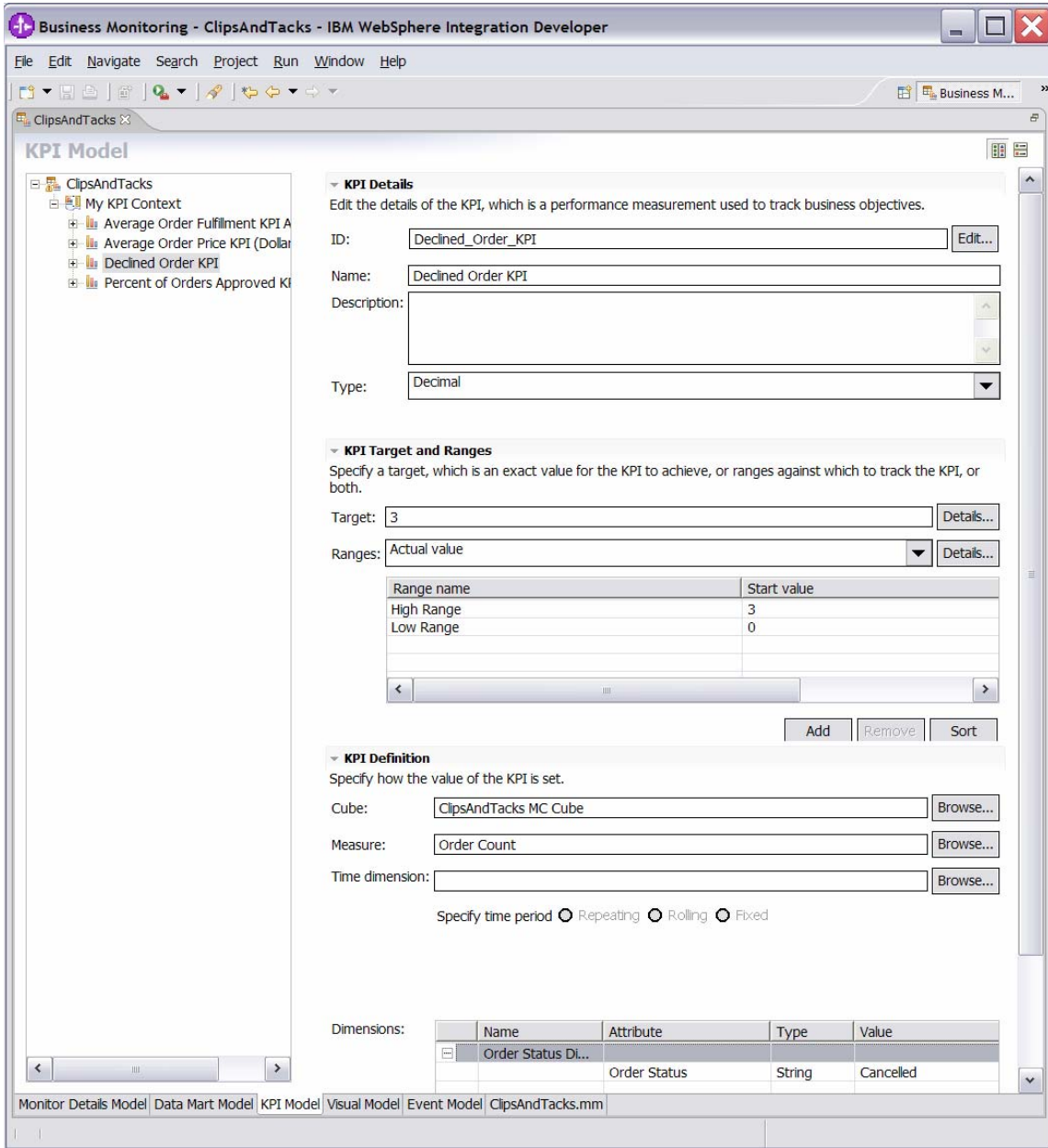
- c) In this new row, select the cell in the **Start value** column. Click the button that is displayed, then change the value to **3**, and then click **OK**.
- d) In this new row, select the cell in the **End value** column. Click the button that is displayed, then change the value to **10**, and then click **OK**.
- 5) Now you have created one range called **High Range**. Repeat the preceding step to create another range:
 - Low Range** with start value **0** and end value **3**.
- 6) For **Cube**, click **Browse**, then select **ClipsAndTacks DMM ► ClipsAndTacks MC Cube**, then click **OK**.
- 7) For **Measure**, click **Browse**, then select **ClipsAndTacks MC Cube ► Order Count**, then click **OK**.
- 8) For **Time dimension**, select a time dimension if you want to base the KPI on a specific period of time.

Note: The Start Time Dimension is based on the startTime values from the Common Base Event. If you want to add a time dimension, check the startTime values in the Common Base Events to determine what range is appropriate for your testing.

- 9) In the **Dimensions** table, click **Add**.
- 10) Navigate to **ClipsAndTacks MC Cube ► Order Status Dimension ► Order Status**, then click **OK**.
- 11) In the **Dimensions** table, expand **Order Status Dimension**.
- 12) In the row containing **Attribute Order Status**, click the cell in the **Value** column, then enter this text (without quotation marks):
Cancelled

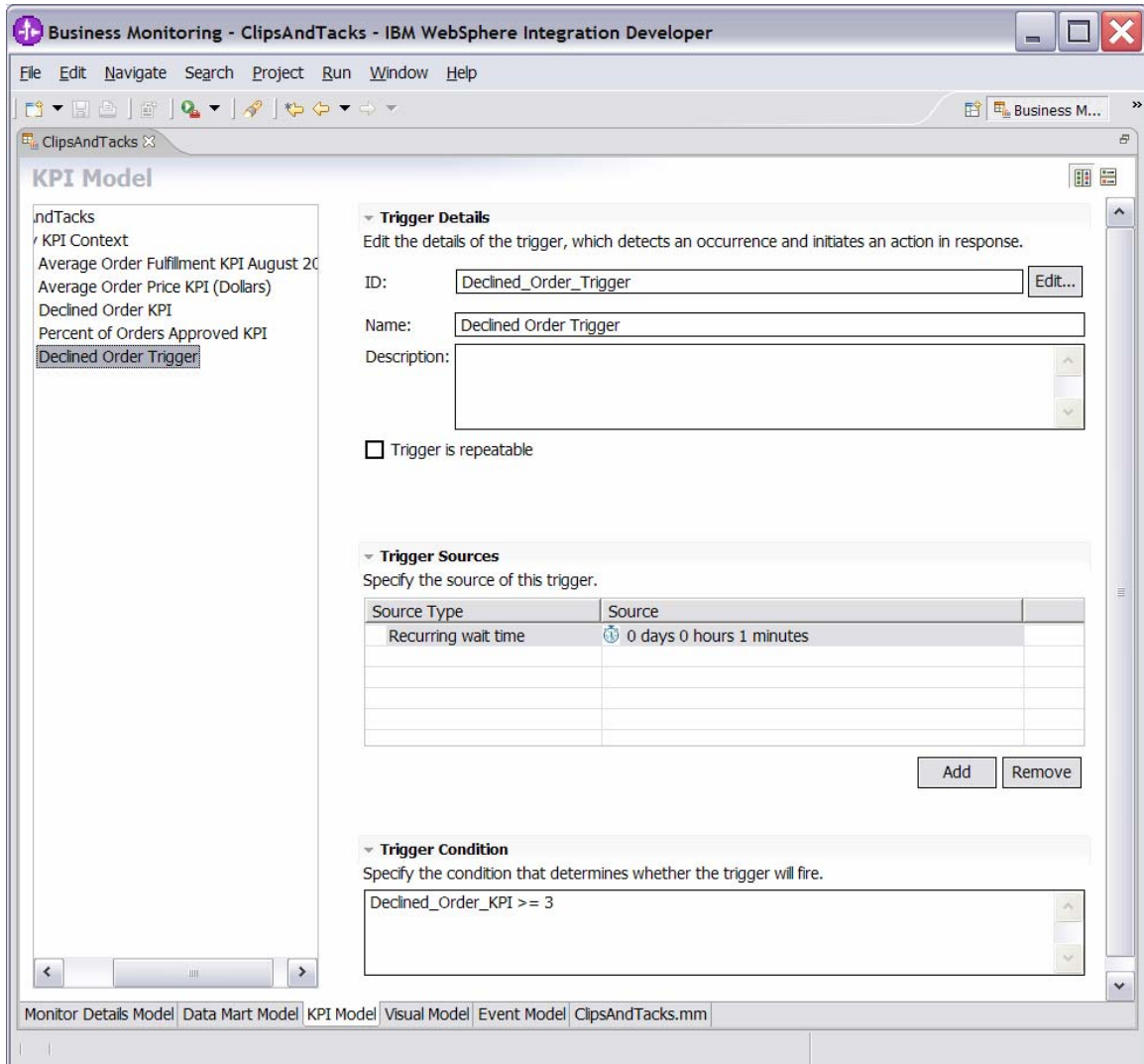
13) Press **Ctrl+S** to save your work.

Figure 44. Check the `startTime` values to add a time dimension



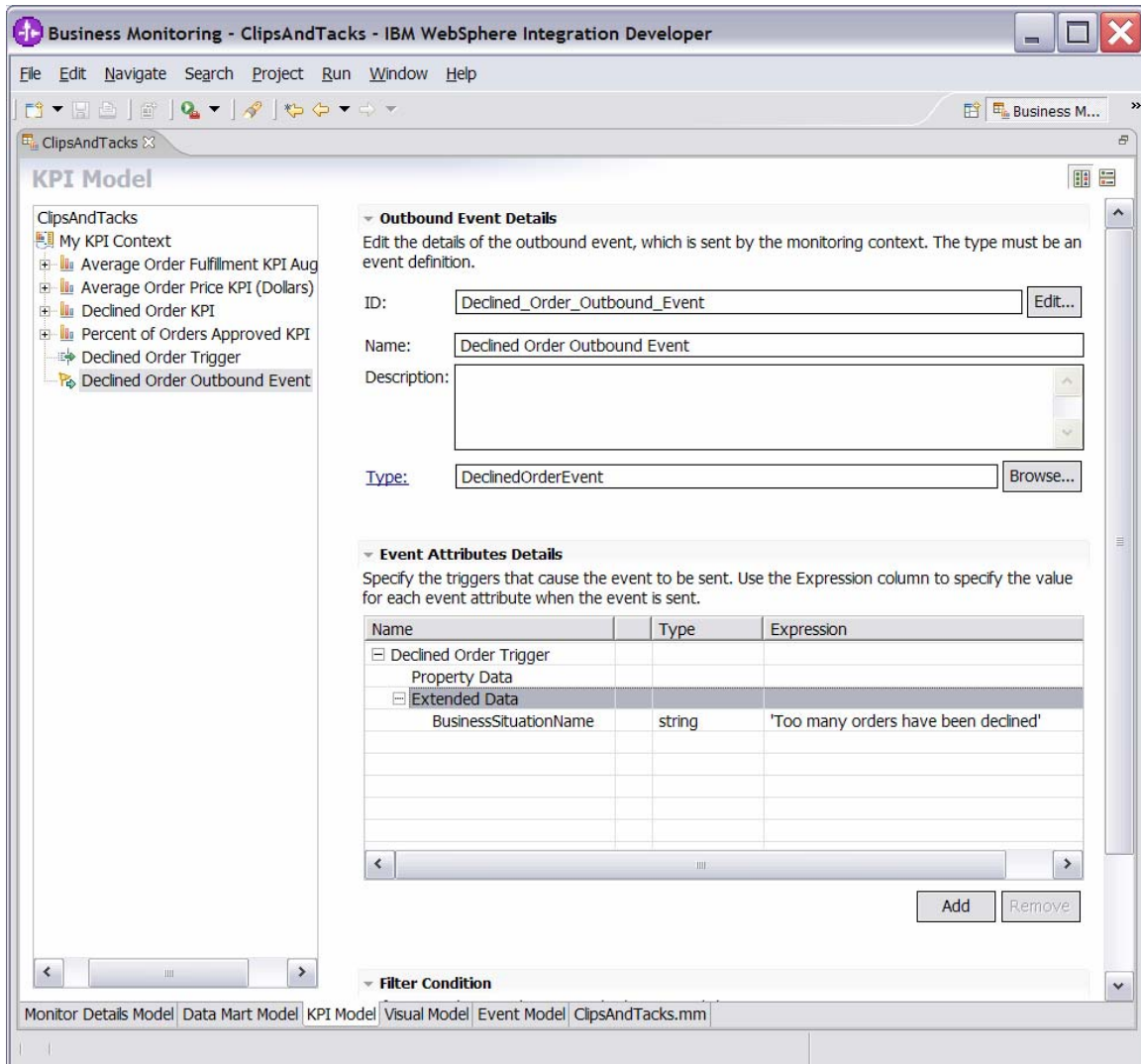
- ___ k. In the **KPI Model** navigation pane, right-click **My KPI Context**, then select **New ► Trigger**.
 - 1) For **Name**, type **Declined Order Trigger**.
 - 2) For **ID**, type **Declined_Order_Trigger**.
- ___ l. Enter these values:
 - 1) Under **Trigger Sources**, click **Add**.
 - 2) Select **Recurring wait time**, then click **OK**.
 - 3) In the **Source** column you see the default wait time is **1 minute**.
 - 4) In **Trigger Condition**, enter this text:
Declined_Order_KPI >= 3
- ___ m. Press **Ctrl+S** to save your work.

Figure 45. Right-click My KPI Context, then select New ► Trigger in KPI Model



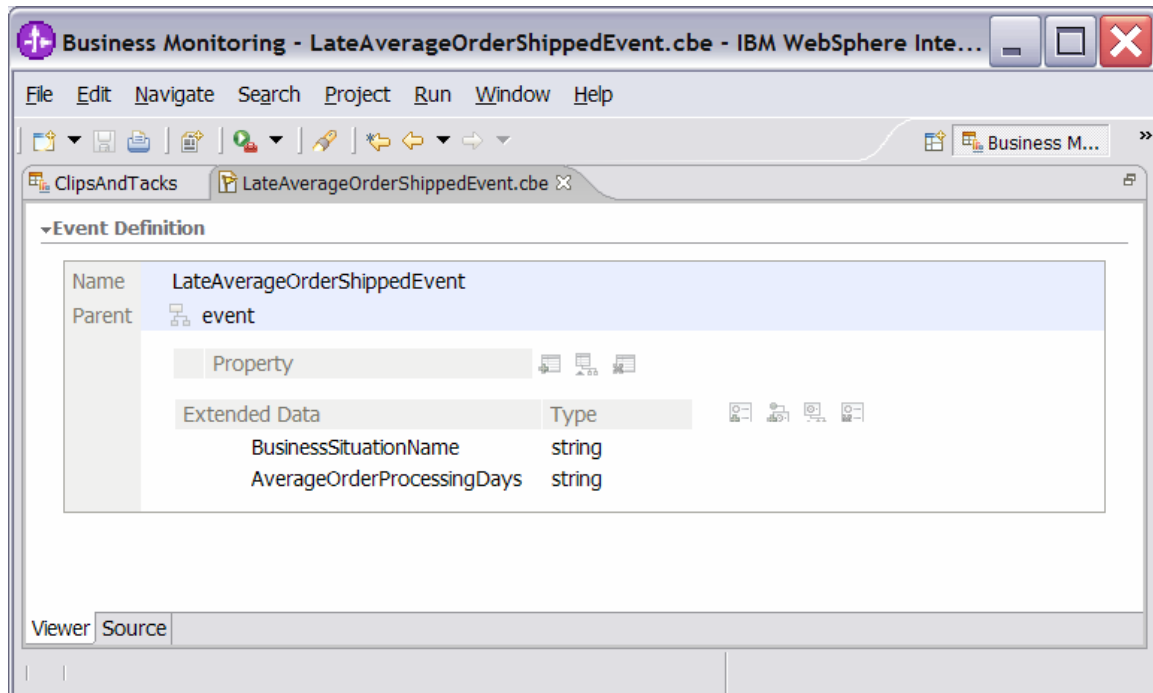
- ___ n. In the **KPI Model** navigation pane, right-click **My KPI Context**, then select **New ► Outbound Event**.
 - 1) For **Name**, type **Declined Order Outbound Event**.
 - 2) For **ID**, type **Declined_Order_Outbound_Event**.
- ___ o. Enter these values:
 - 1) For **Type**, select **DeclinedOrderEvent**.
 - 2) Under **Event Attributes Details**, click **Add**.
 - 3) Select **My KPI Context ► Declined Order Trigger**, then click **OK**.
 - 4) In the table, in the same row as **BusinessSituationName**, set **Expression** to this value (include the single quotation marks): **'Too many orders have been declined'**
- ___ p. Press **Ctrl+S** to save your work.

Figure 46. Set Expression to 'Too many orders have been declined'



- ___ 14. Create a business-situation event when the order fulfillment duration is greater than 3 days.
- ___ a. In the **Project Explorer** pane, right-click **New ► Event Definition**.
 - ___ b. For **Name**, enter **LateAverageOrderShippedEvent**.
 - ___ c. Click **Finish**.
 - ___ d. In the event definition, click the **Add Extended Data** icon to add a row to the **Extended Data** table.
 - ___ e. For the new data element, change the **Extended Data** name to **BusinessSituationName**.
 - ___ f. For the new element, change the **type** to **string**.
 - ___ g. In the event definition, click the **Add Extended Data** icon to add a second row to the **Extended Data** table.
 - ___ h. For the second data element, change the **Extended Data** name to **AverageOrderProcessingDays**.
 - ___ i. For the second element, change the **type** to **string**.
 - ___ j. Press **Ctrl+S** to save your work.

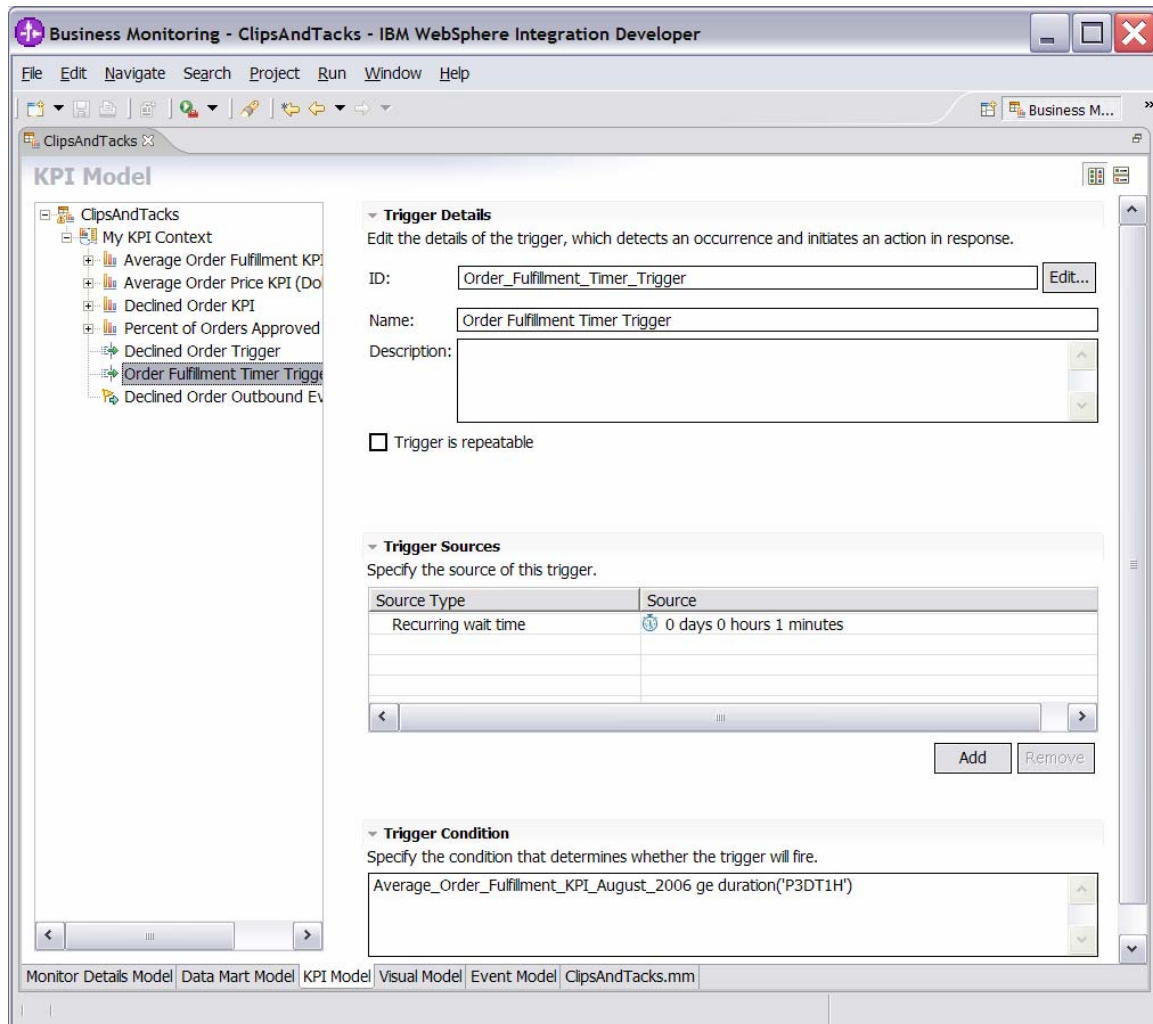
Figure 47. Business-situation event when order fulfillment duration > 3 days



- ___ k. In the **KPI Model** navigation pane, right-click **My KPI Context**, then select **New ► Trigger**.
 - 1) For **Name**, type **Order Fulfillment Timer Trigger**.
 - 2) For **ID**, type **Order_Fulfillment_Timer_Trigger**.
- ___ l. Enter these values:
 - 1) Under **Trigger Sources**, click **Add**.
 - 2) Select **Recurring wait time**, then click **OK**.

- 3) In the **Source** column you see the default wait time is **1** minute.
- 4) In **Trigger Condition**, enter this text:
Average_Order_Fulfillment_KPI_August_2006 ge duration('P3DT1H')
 ___ m. Press **Ctrl+S** to save your work.

Figure 48. Enter the trigger condition



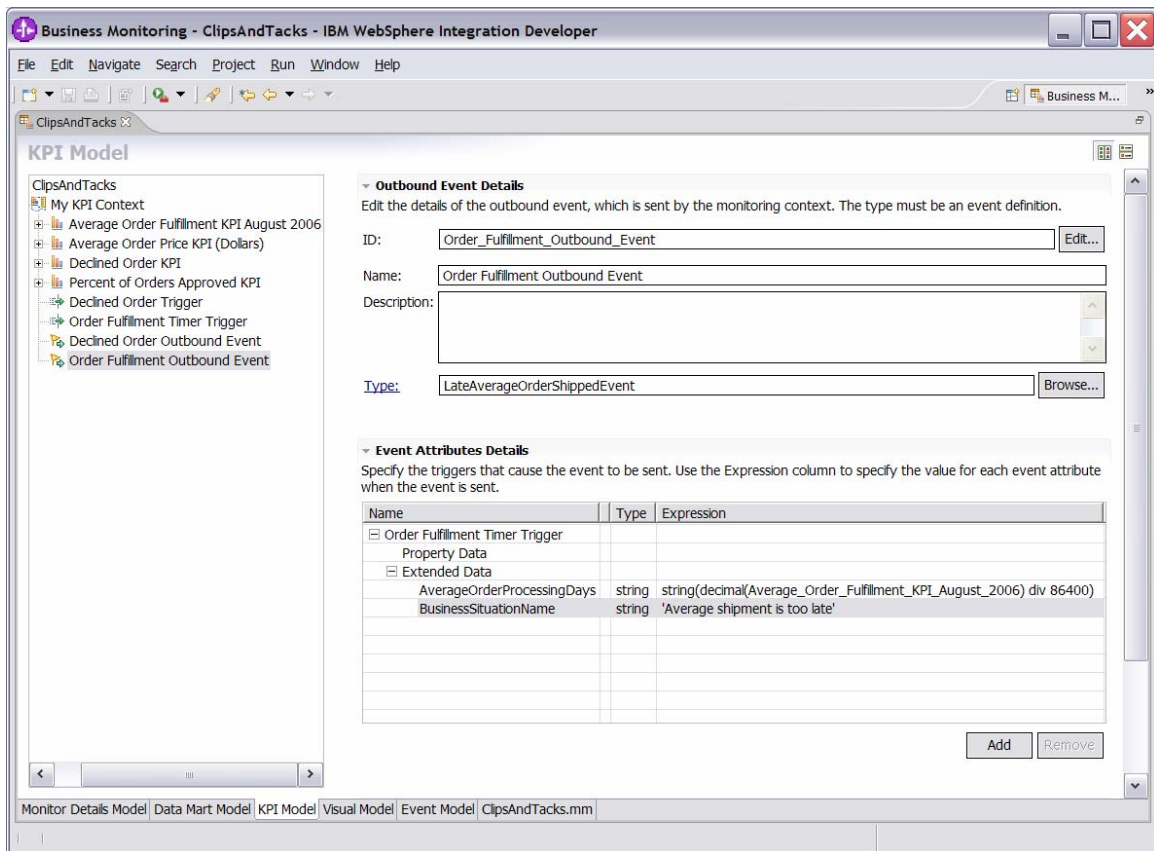
- ___ n. In the **KPI Model navigation** pane, right-click **My KPI Context**, then select **New ► Outbound Event**.
 - 1) For **Name**, type **Order Fulfillment Outbound Event**.
 - 2) For **ID**, type **Order_Fulfillment_Outbound_Event**.
- ___ o. Enter these values:
 - 1) For **Type**, select **LateAverageOrderShippedEvent**.
 - 2) Under **Event Attributes Details**, click **Add**.
 - 3) Select **My KPI Context ► Order Fulfillment Timer Trigger**, then click **OK**.

- 4) In the table, in the same row as **BusinessSituationName**, set **Expression** to this value (include the single quotation marks):
'Average shipment is too late'
- 5) In the table, in the same row as **AverageOrderProcessingDays**, set Expression to:
string(decimal(Average_Order_Fulfillment_KPI_August_2006) div 86400)

Note: The decimal function converts the duration to seconds, so it can be divided by 86400 to give you the number of days.

___ p. Press **Ctrl+S** to save your work.

Figure 49. Select New ► Outbound Event



___ 15. Before continuing, access the **Problems** view and resolve any errors.

Part 2. Generate the EAR file for the monitor model

This exercise describes how to use WebSphere Integration Developer to create the EAR file that will be deployed to the Monitor server.

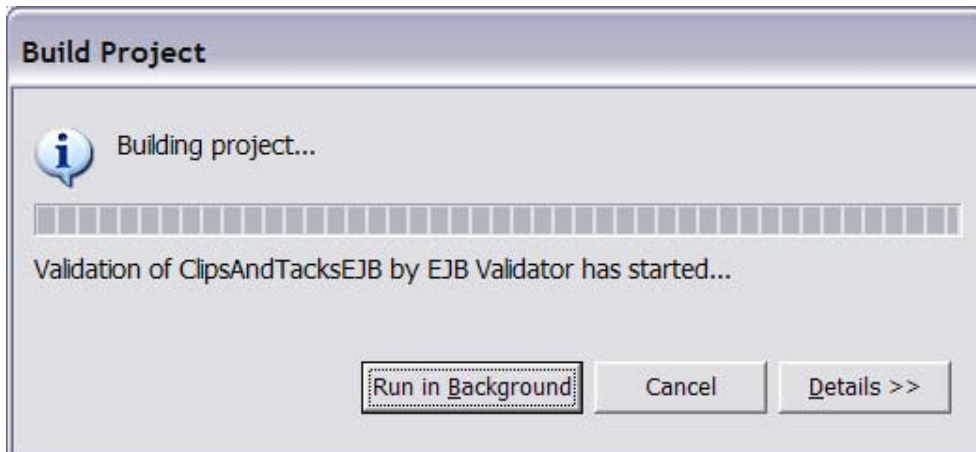
- ___ 1. In the **Project Explorer** pane, right-click **ClipsAndTacks ► Monitoring Models ► ClipsAndTacks**, then select **Generate Monitor EAR**.
- ___ 2. Select **Overwrite existing projects**, and then click **Finish**.
A progress window shows the status of the operation, and it closes when the operation is complete:

Figure 50. Progress window showing the status of the operation



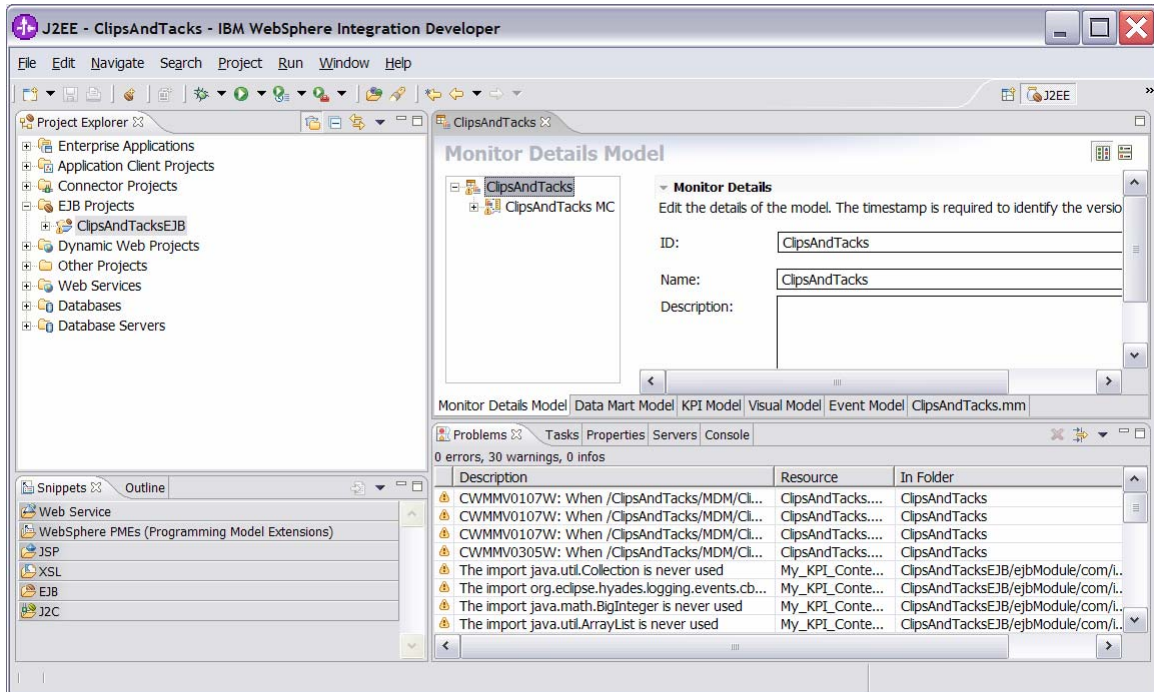
- ___ 3. Select **Window ► Open Perspective ► Other**, then click **J2EE**.
- ___ 4. In the **Project Explorer** pane, right-click **EJB Projects ► ClipsAndTacksEJB**, then select **Build Project**. (If **Project ► Build Automatically** is selected, then **Build Project** is not shown in the context menu nor enabled in the **Project** menu. In this case, the project has already been built.) A progress window shows the status of the operation, and it closes when the operation is complete:

Figure 51. The progress window closes when the operation is complete



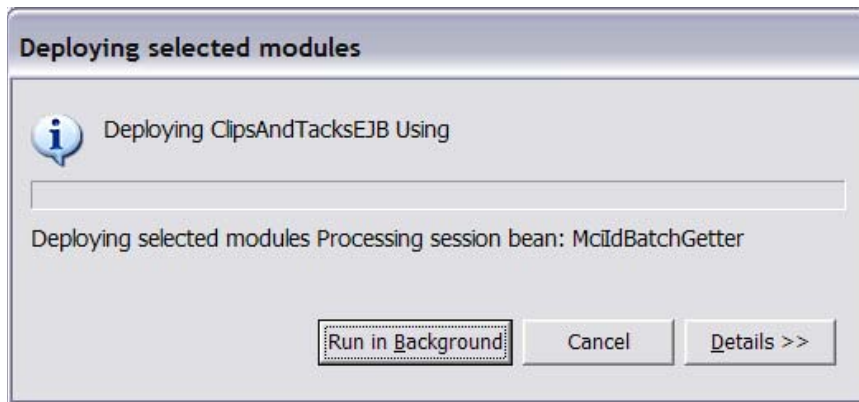
- ____ 5. Check for errors in the **Problems** view. There might be warnings, but there should not be any errors:

Figure 52. Check for errors in the Problems view



- ____ 6. In the **Project Explorer** pane, right-click **EJB Projects** ► **ClipsAndTacksEJB**, then select **Deploy**. A progress window shows the status of the operation, and it closes when the operation is complete:

Figure 53. A progress window shows the status of the operation



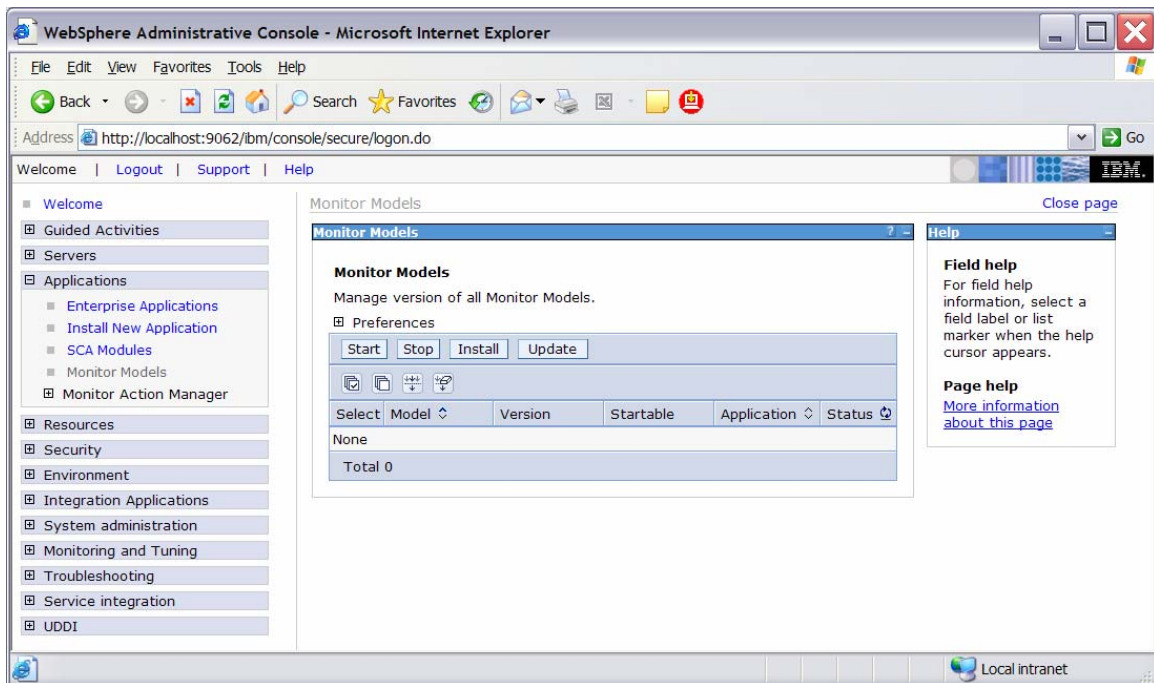
- ____ 7. In the **Project Explorer** pane, right-click **Enterprise Applications** ► **ClipsAndTacksEAR**, then select **Export** ► **EAR file**.
- ____ 8. Enter the name of a destination folder, and then click **Finish**. ClipsAndTacksEAR.ear will be created in this folder.

Part 3. Deploy the monitor model

The following exercise describes how to use the WebSphere Process Server administrative console to complete the life-cycle steps to deploy the monitor model.

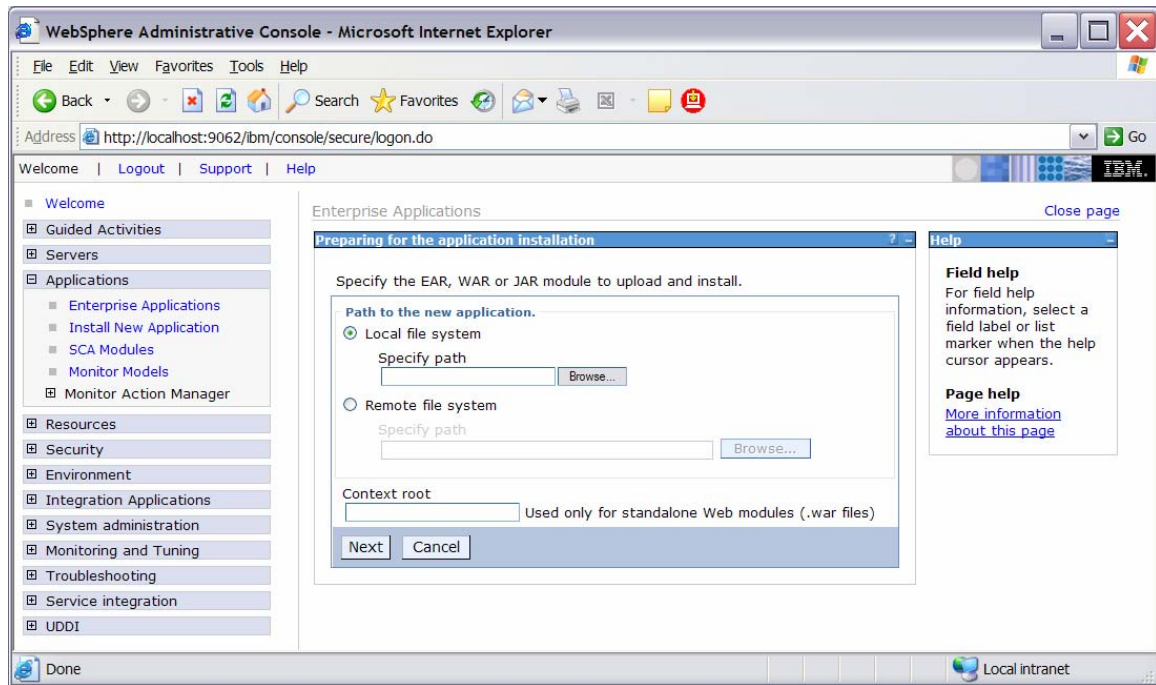
- ___ 1. Start the Monitor server and then start the administrative console.
 - ___ a. In Windows, select **Start ► All Programs ► IBM WebSphere ► Process Server 6.0 ► Profiles ► wbmonitor ► Start the server.**
 - ___ b. In Windows, select **Start ► All Programs ► IBM WebSphere ► Process Server 6.0 ► Profiles ► wbmonitor ► Administrative console.**
- ___ 2. Install the monitor model.
 - ___ a. In the administrative console menu, select **Applications ► Monitor Models.**

Figure 54. Complete life-cycle steps to deploy the monitor model



___ b. Click **Install**.

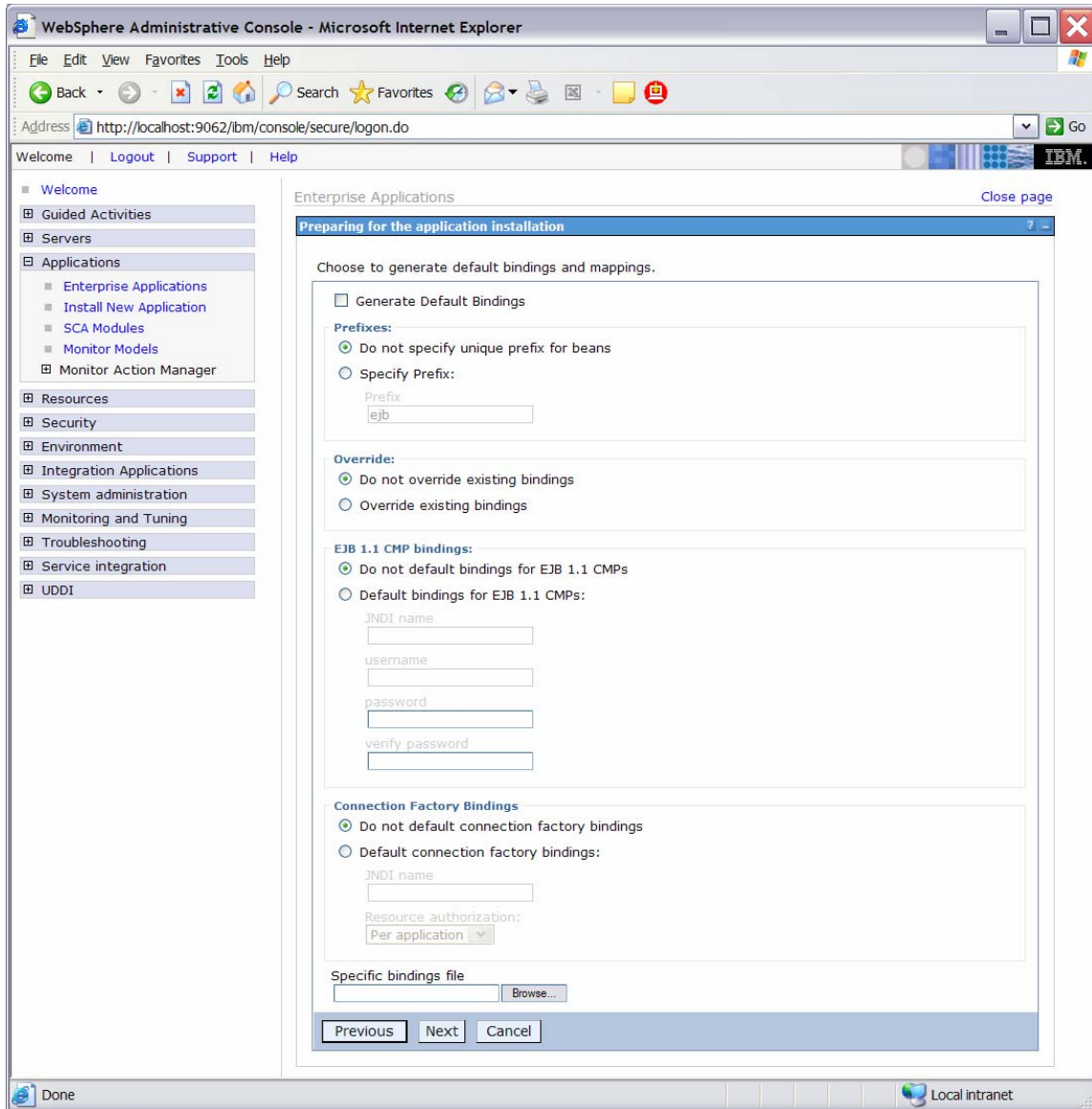
Figure 55. Select Applications ► Monitor Models



___ c. Browse to **ClipsAndTacksEAR.ear**. This is the EAR file that you created in WebSphere Integration Developer.

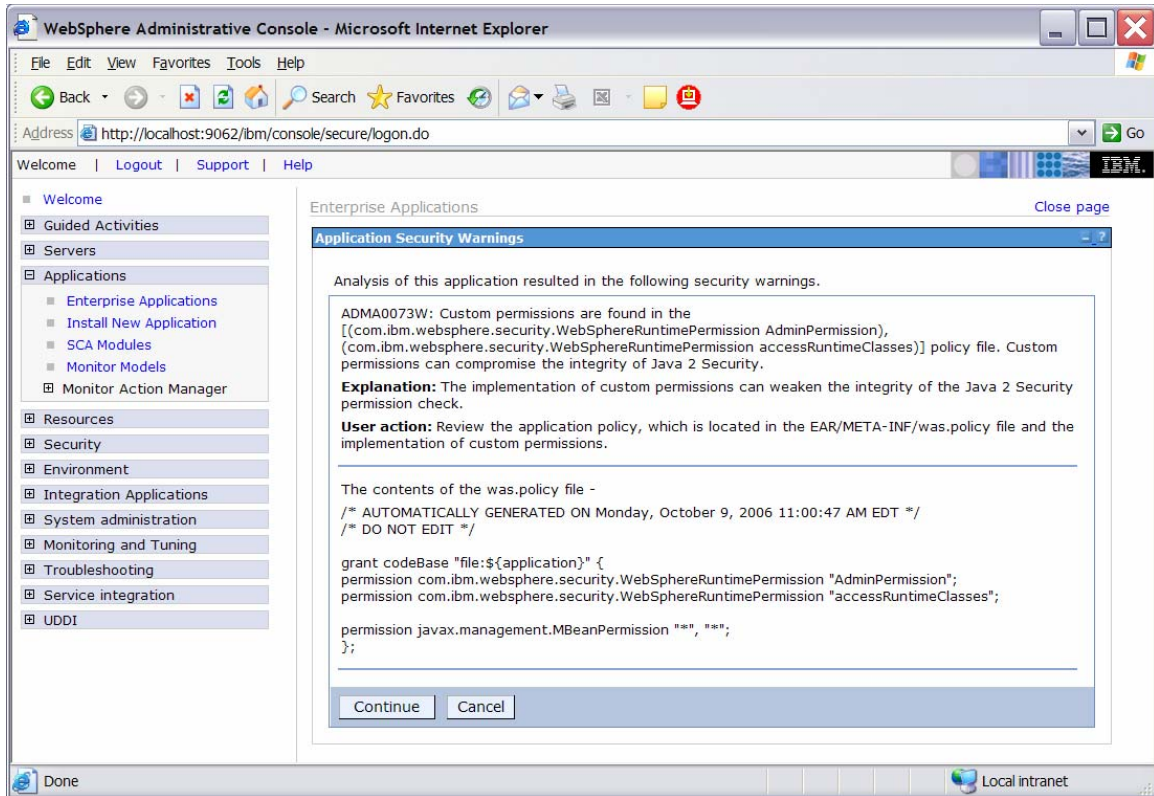
__ d. Click Next.

Figure 56. Proceed to the Next screen



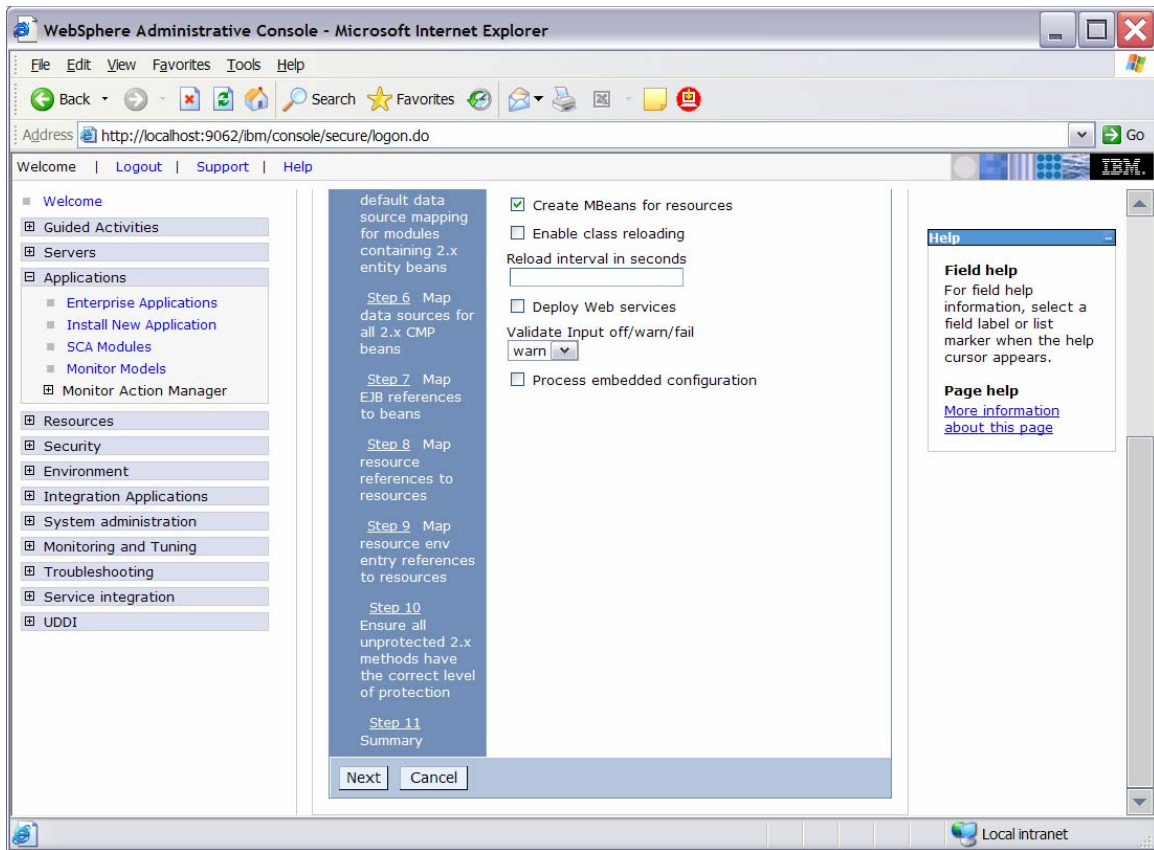
__ e. Click **Next**.

Figure 57. Proceed to the Next screen



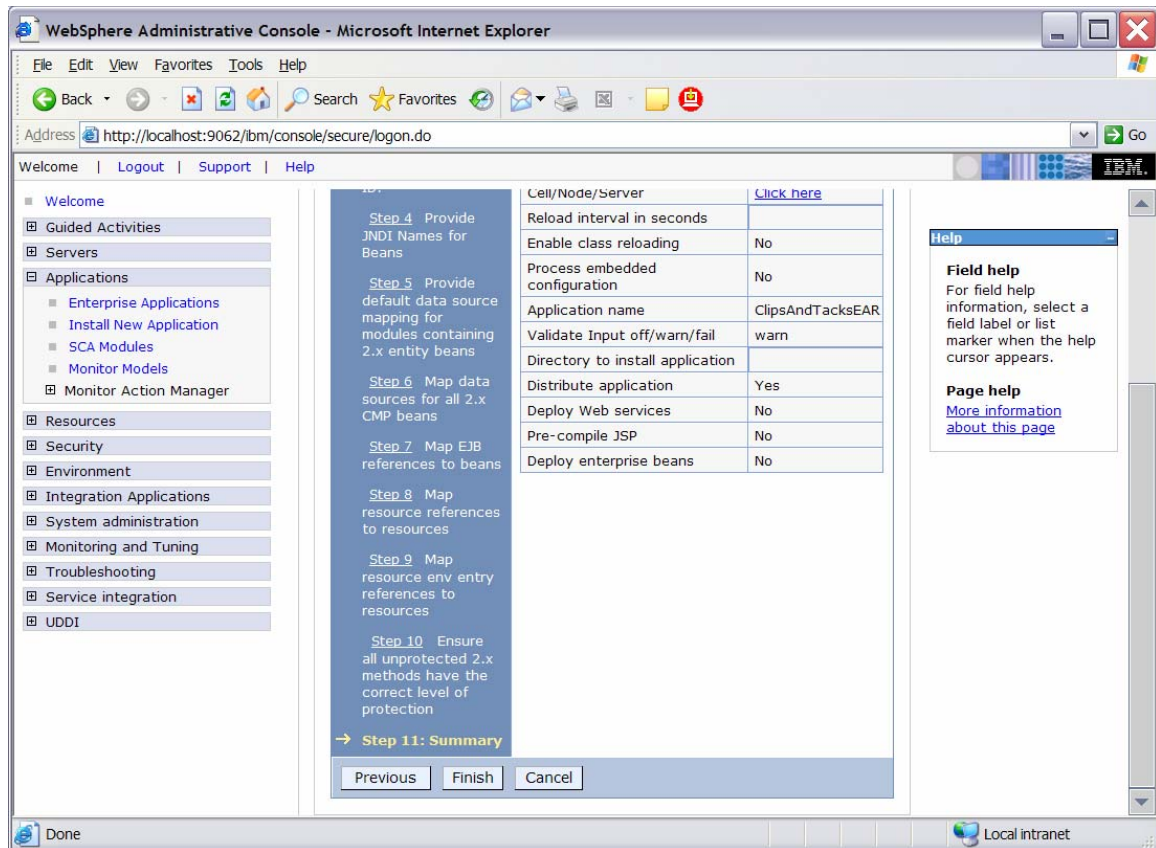
__ f. Click **Continue**.

Figure 58. Click Continue



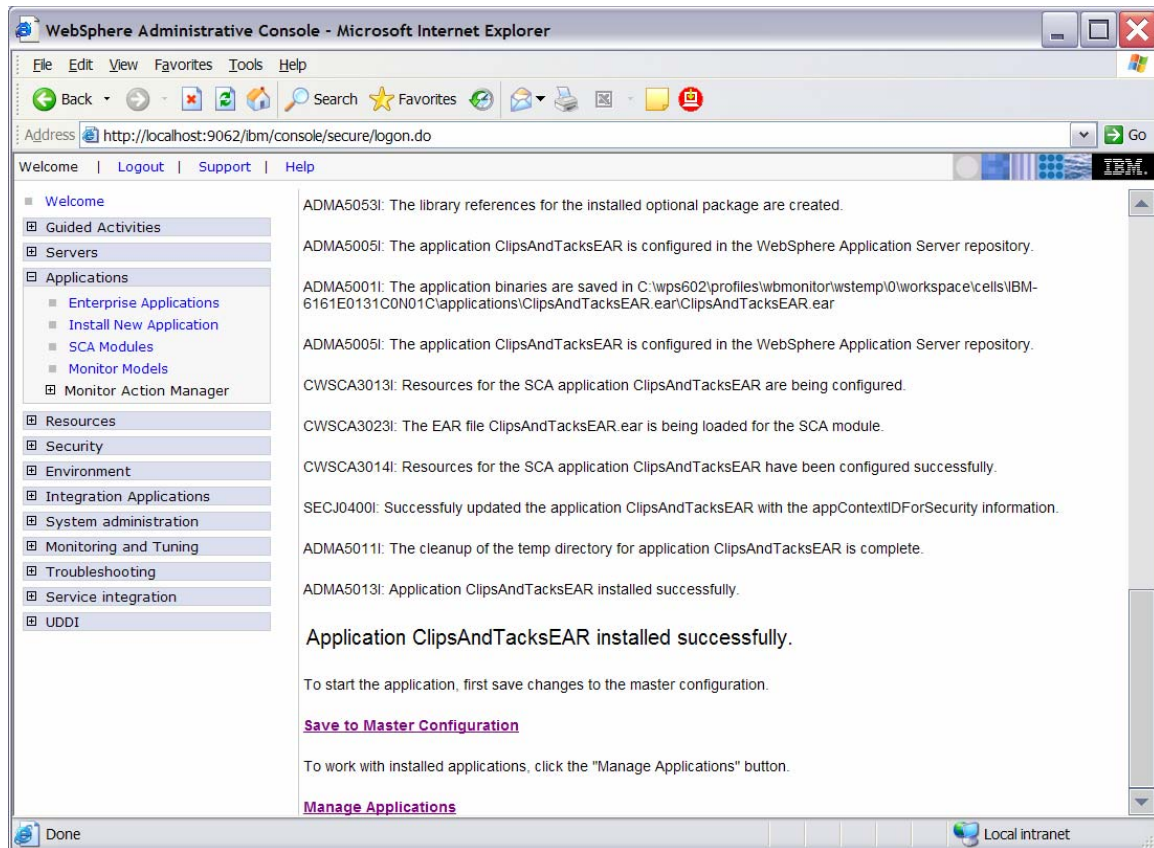
— g. To install the application using the defaults, click Step 11.

Figure 59. Click Step 11: Summary



___ h. Click **Finish**.

Figure 60. Click Save to Master Configuration



___ i. Click **Save to Master Configuration**, then click **Save**.

- _____ 3. Run step 1 of the model life cycle.
 ___ a. In the administrative console menu, select
Applications ► Monitor Models.

Figure 61. Select Applications ► Monitor Models

WebSphere Administrative Console - Microsoft Internet Explorer

Address: <http://localhost:9062/ibm/console/secure/logon.do>

Welcome | Logout | Support | Help

Monitor Models Close page

Monitor Models

Lists all versions of monitor models and their associated applications. To start or stop a version of a monitor model, you must start or stop the associated application. Additional options are available by clicking the Model, Version, or Application links.

Preferences

Start Stop Install Update

Select	Model	Version	Startable	Application	Status
<input type="checkbox"/>	ClipsAndTacks	2006-11-02T09:13:58		ClipsAndTacksEAR	

Total 1

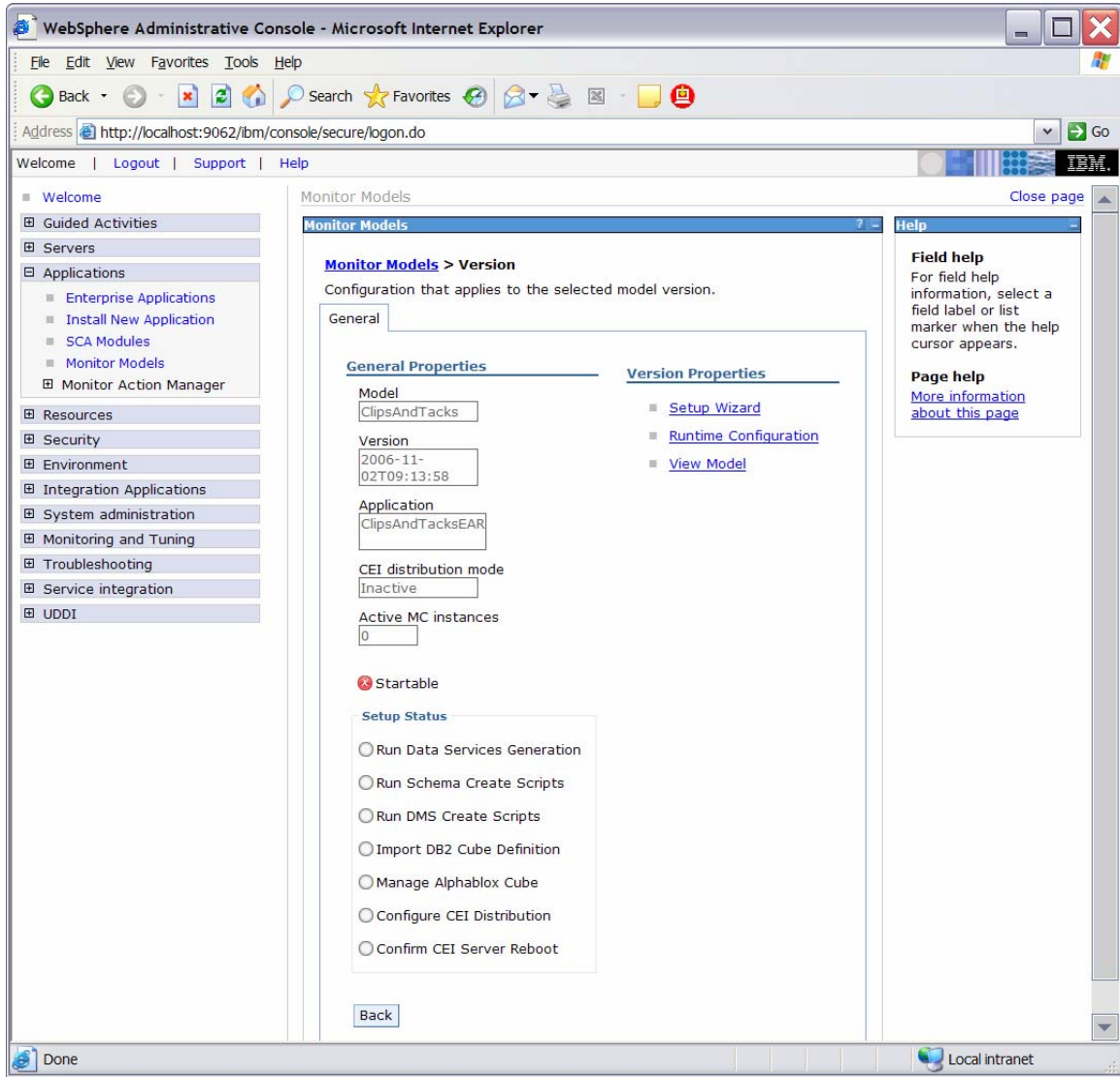
Field help
For field help information, select a field label or list marker when the help cursor appears.

Page help
[More information about this page](#)

Local intranet

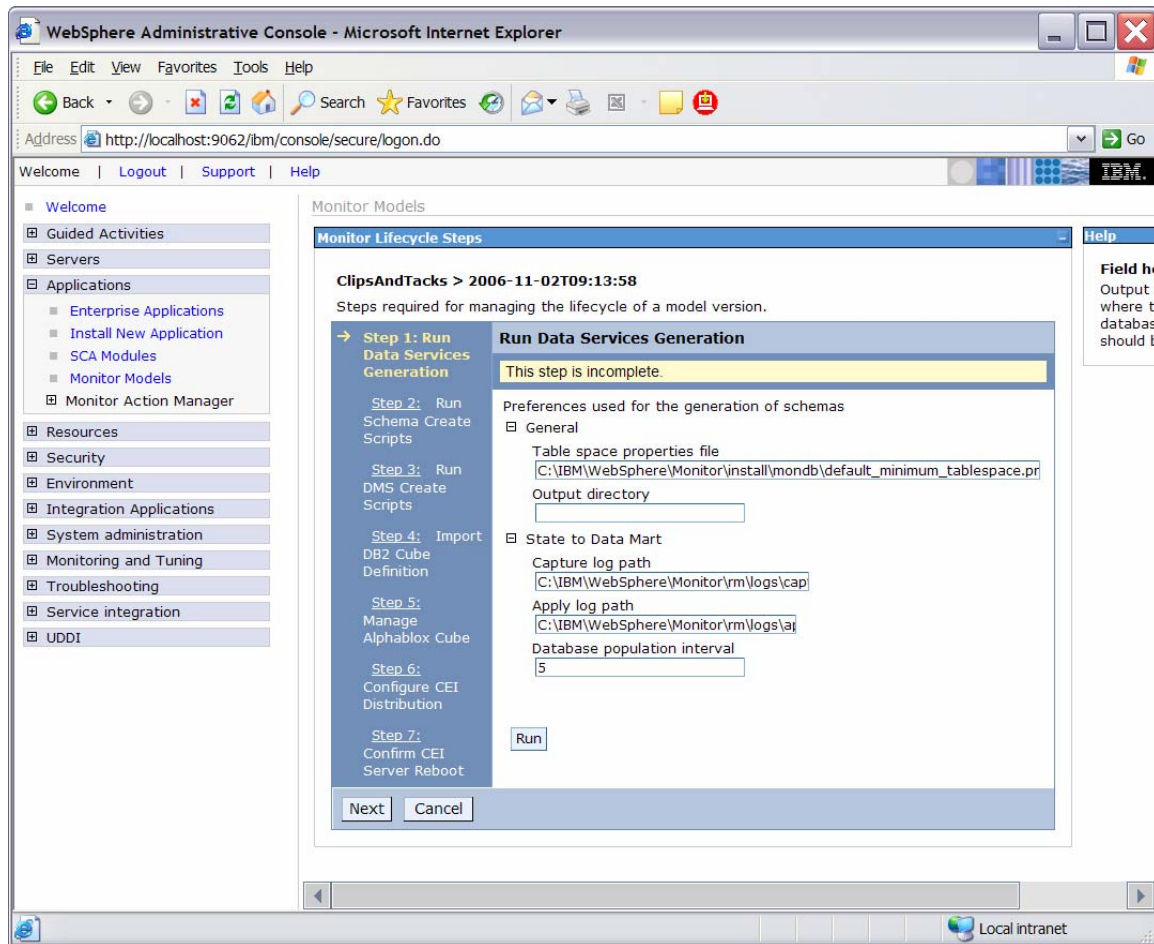
___ b. Click the timestamp value that is listed in the **Version** column.

Figure 62. Click the timestamp value listed in the Version column



___ c. Click **Setup Wizard**.

Figure 63. Change the Database population interval value to 2

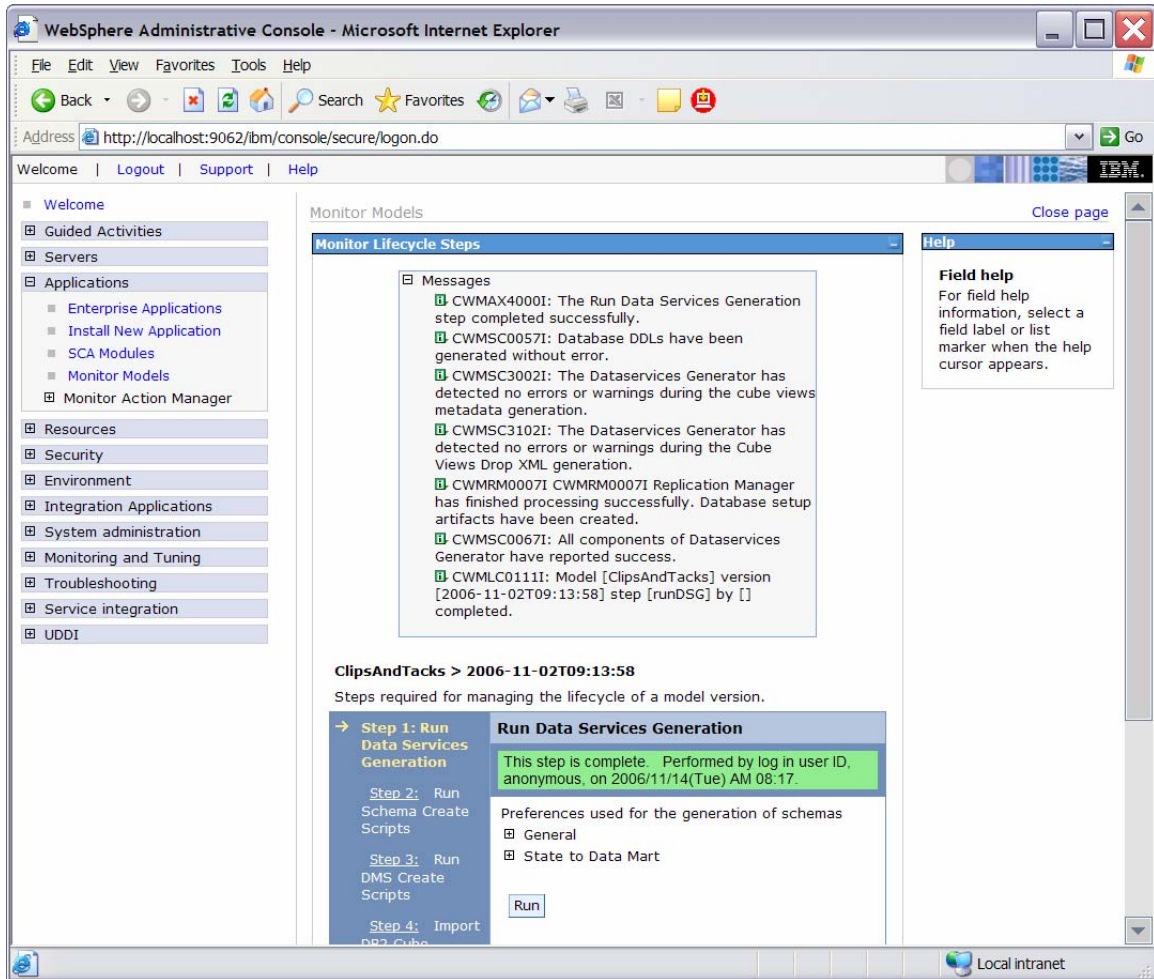


- ___ d. Enter the name of the output directory, such as **C:\ClipsAndTacks**. When you run the data services generation, the **schemagen** folder will be created in the specified output directory.
- ___ e. Change the Database population interval value to **2**. For development purposes, replication 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**.

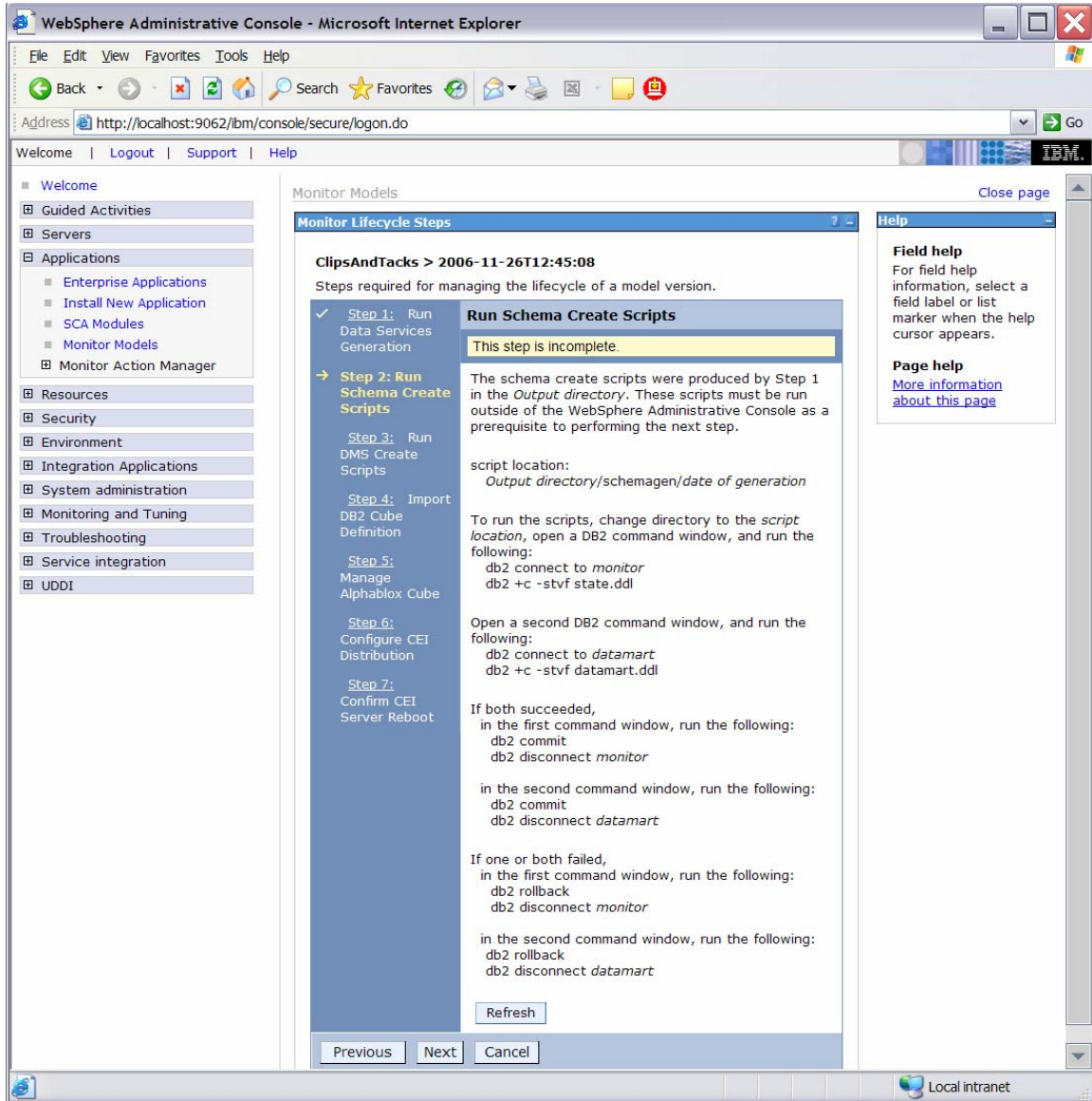
Figure 64. Click Run



__ g. Click **Next**.

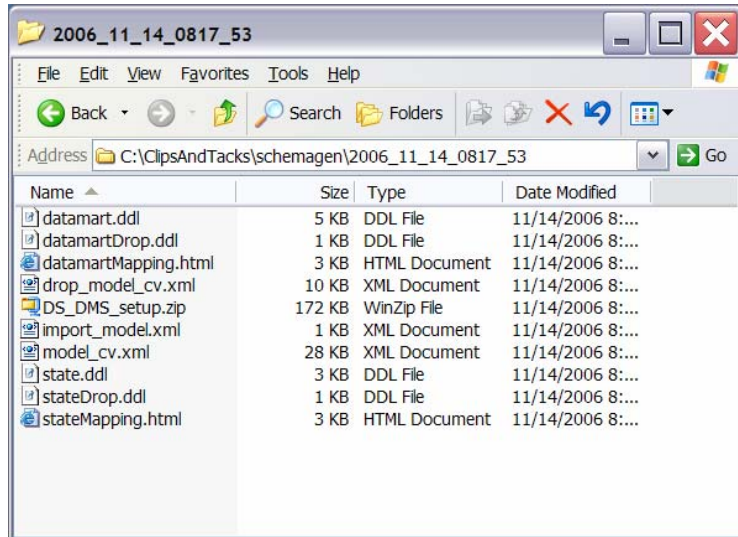
- ___ h. Confirm that you see a panel indicating the commands used to run the schema scripts.

Figure 65. Click Next



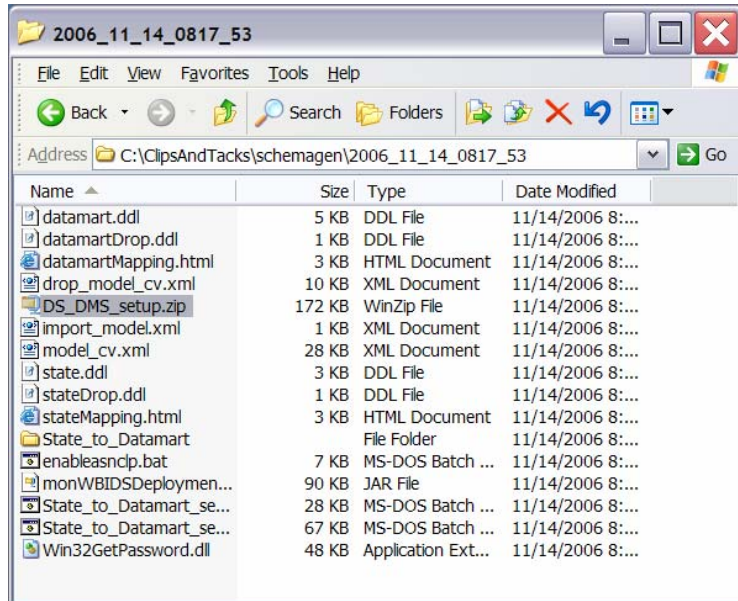
4. Run step 2 and step 3 of the model life cycle.
- a. In Windows File Explorer, browse to
C:\ClipsAndTacks\schemagen<timestamp>.

Figure 66. Browse to
 C:\ClipsAndTacks\schemagen<timest
 amp>



- b. Extract the DS_DMS_setup.zip file into this same folder.

Figure 67. Extract the
 DS_DMS_setup.zip file



- c. To create the tables for the monitor model, enter the following commands in a 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, state_to_datamart_setup_source.bat.
- 1) Open a DB2 command window:
 - a) Select **Start ► Run**.

- b) Enter the **db2cmd** command.
 - 2) Enter these commands into the DB2 command window:
 - a) cd
 \ClipsAndTacks\schemagen\ - b) db2 connect to MONITOR
 - c) db2 +c -stvf state.ddl >
 state.log
 - 3) Open a second DB2 command window:
 - a) Select **Start ► Run**.
 - b) Enter the **db2cmd** command.
 - 4) Enter these commands into the second DB2 command window:
 - a) cd
 \ClipsAndTacks\schemagen\ - b) db2 connect to DATAMART
 - c) db2 +c -stvf datamart.ddl >
 datamart.log
 - 5) If all the commands succeeded:
 - a) Enter these commands into the first DB2 command window:
 - (1) db2 commit
 - (2) db2 disconnect MONITOR
 - b) Enter these commands into the second DB2 command window:
 - (1) db2 commit
 - (2) db2 disconnect DATAMART
 - 6) If any of the commands failed:
 - a) Enter these commands into the first DB2 command window:
 - (1) db2 rollback
 - (2) db2 disconnect MONITOR
 - b) Enter these commands into the second DB2 command window:
 - (1) db2 rollback
 - (2) db2 disconnect DATAMART
 - 7) Close the second DB2 command window.
- ___ d. Browse the newly created state.log and datamart.log files to verify that they are correct.
 - ___ e. Run the replication setup scripts.
 - 1) In the same DB2 command window, you should still be in folder
 \ClipsAndTacks\schemagen\
 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 \ClipsAndTacks\schemagen\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.
- __ f. Start the replication daemons.
- 1) In the same DB2 command window, you should still be in folder \ClipsAndTacks\schemagen\ - a) 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:
 - a) 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 68. A window displays the status of the scripts

```

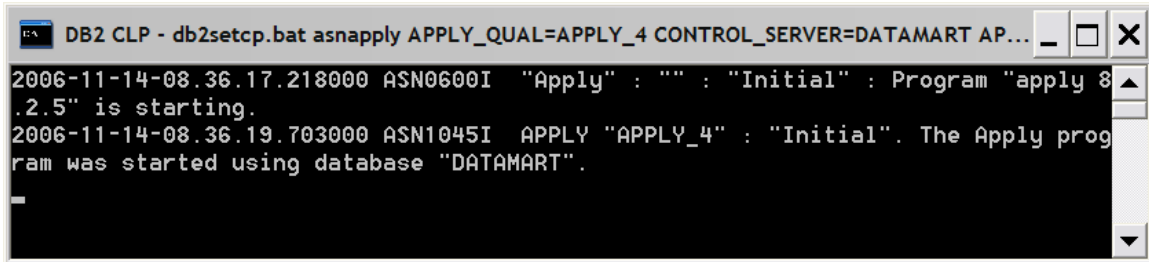
DB2 CLP - db2setcp.bat asncap CAPTURE_SERVER=MONITOR CAPTURE_SCHEMA=CAPTURE_...
2006-11-14-08.36.12.140000 ASN0600I "Capture" : "" : "Initial" : Program "capture 8.2.5" is starting.
2006-11-14-08.36.16.171000 ASN0102W CAPTURE "CAPTURE_2" : "WorkerThread". The Capture program switches to cold start because the warm start information is insufficient.
2006-11-14-08.36.16.203000 ASN0100I CAPTURE "CAPTURE_2" : "WorkerThread". The Capture program initialization is successful.
2006-11-14-08.36.16.203000 ASN0109I CAPTURE "CAPTURE_2" : "WorkerThread". The Capture program has successfully initialized and is capturing data changes for "0" registrations. "0" registrations are in a stopped state. "1" registrations are in an inactive state.

```

- 4) In the DB2 command window, type this command:
 - a) 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:
 - a) 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 69. A window displays the status of the scripts



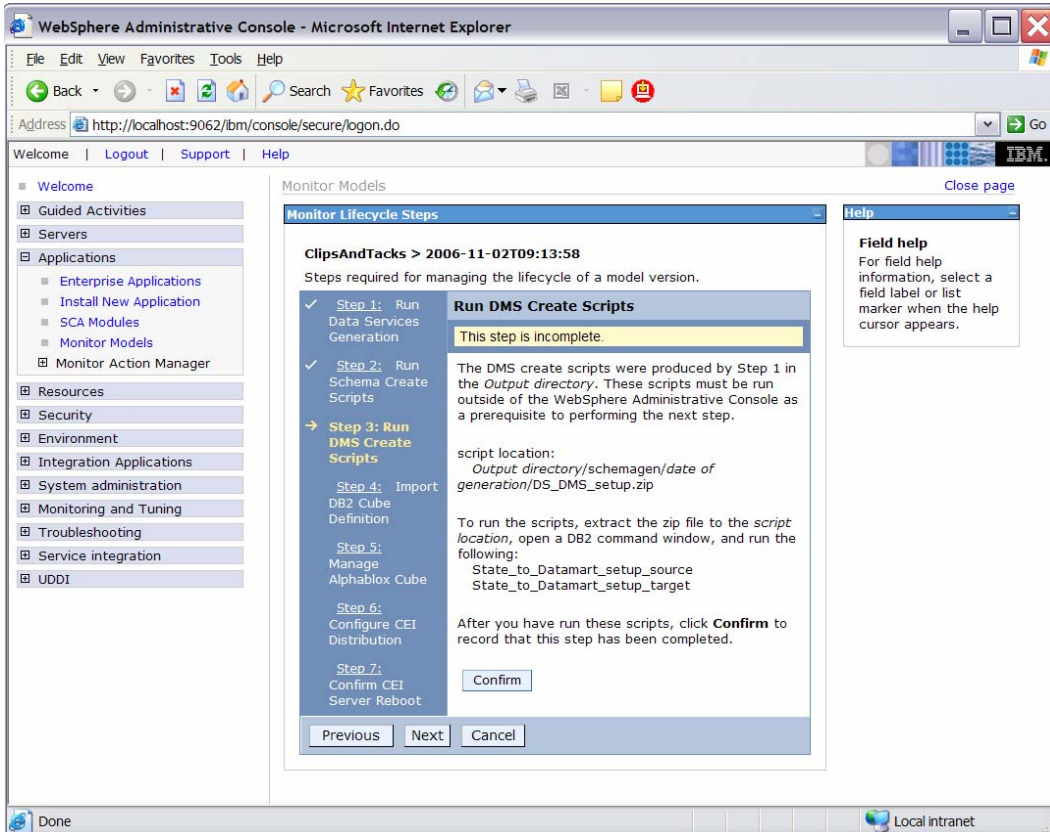
```

DB2 CLP - db2setcp.bat asnapply APPLY_QUAL=APPLY_4 CONTROL_SERVER=DATAMART AP...
2006-11-14-08.36.17.218000 ASN0600I "Apply" : "" : "Initial" : Program "apply 8
.2.5" is starting.
2006-11-14-08.36.19.703000 ASN1045I APPLY "APPLY_4" : "Initial". The Apply prog
ram was started using database "DATAMART".

```

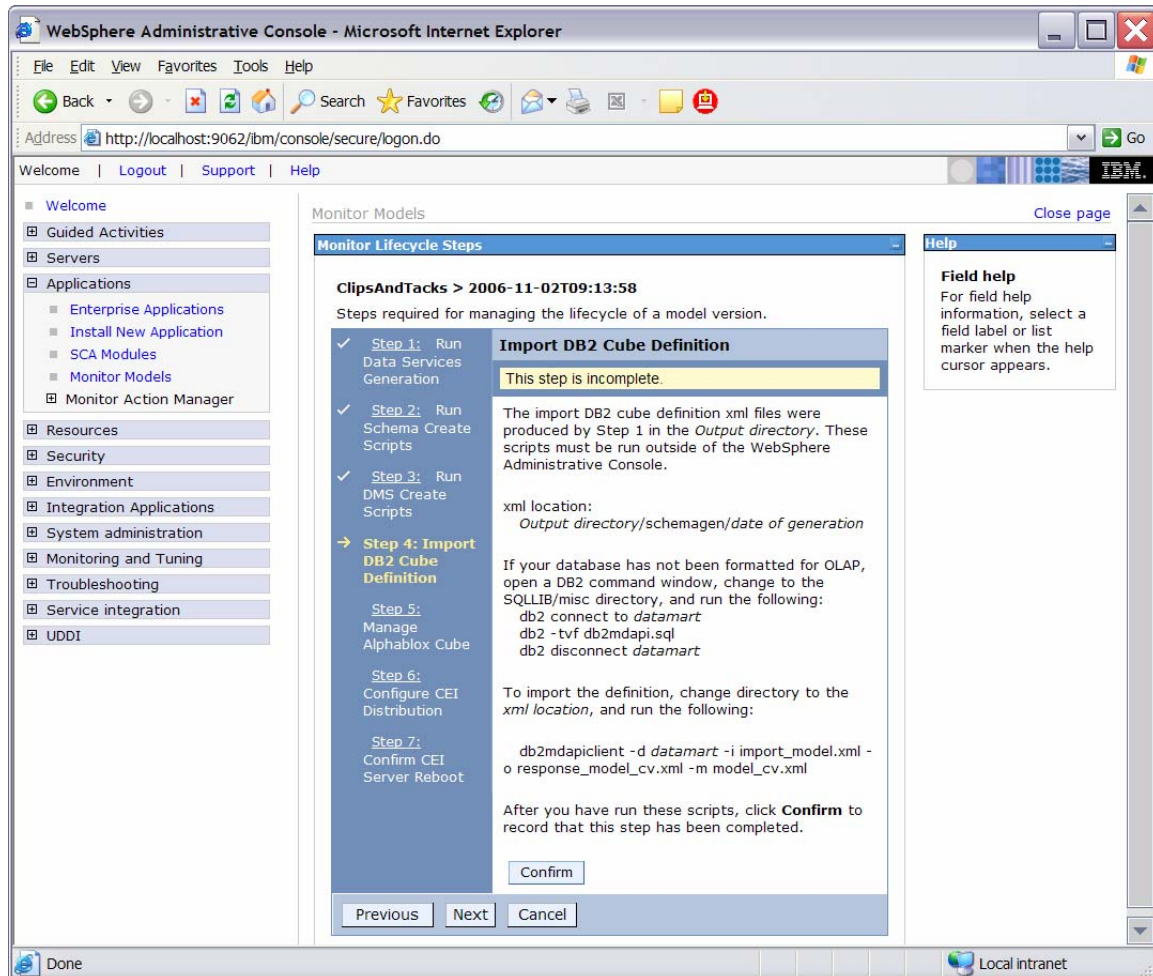
- ___ g. Close the original DB2 command window where you have been typing the commands.
- ___ h. In the administrative console menu, select **Applications ► Monitor Models**.
- ___ i. Click the timestamp value in the Version column.
- ___ j. Click **Setup Wizard**. The administrative console should detect that step 2 is complete and automatically proceed to step 3 as follows:

Figure 70. The administrative console automatically proceeds to step 3



- ___ k. Click **Confirm**.
- ___ 5. Run step 4 of the model life cycle.
- ___ a. Click **Step 4**.

Figure 71. Run step 4 of the model life cycle

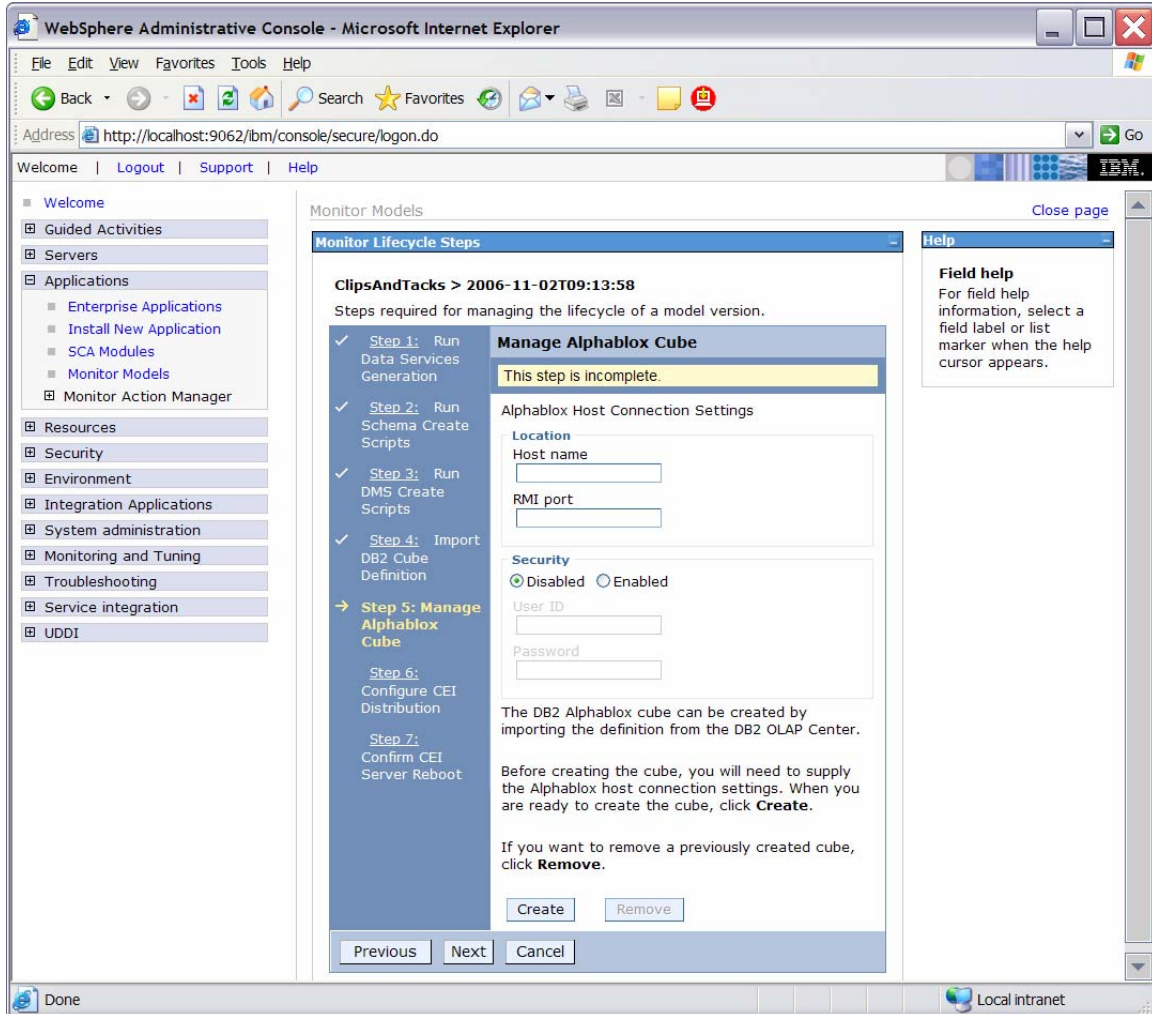


- ___ b. Import the cubes to DB2 Cube Views.
 - 1) Open a DB2 command window:
 - a) Select **Start ► Run**.
 - b) Enter the db2cmd command.
 - 2) Enter these commands in the DB2 command window:
 - a) `cd \IBM\DB2\SQLLIB\MISC`
 - b) `db2 connect to DATAMART`
 - c) `db2 -tvf db2mdapi.sql`
 - d) `db2 disconnect DATAMART`
 - e) `cd \ClipsAndTacks\schemagen\`


```
f) db2mdapiclient -d DATAMART -i
import_model.xml -o
response_model_cv.xml -m
model_cv.xml
```

- 3) Close the command window.
- ___ c. In the administrative console, verify that you are in step 4 of the life cycle of the model.
- ___ d. Click **Confirm**.
- ___ 6. Run step 5 of the model life cycle.
 - ___ a. Click **Step 5**.

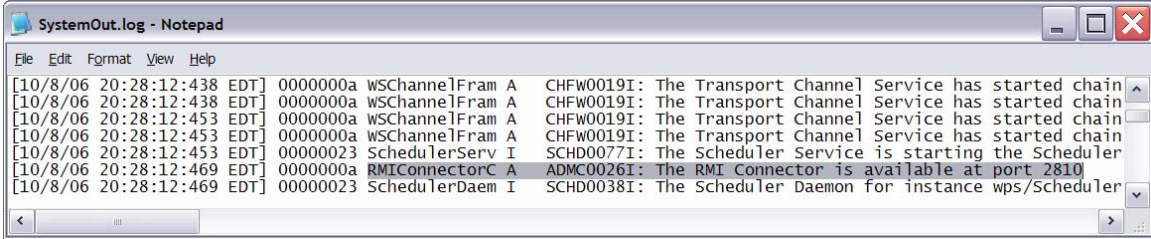
Figure 72. Run step 5 of the model life cycle



- ___ 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.

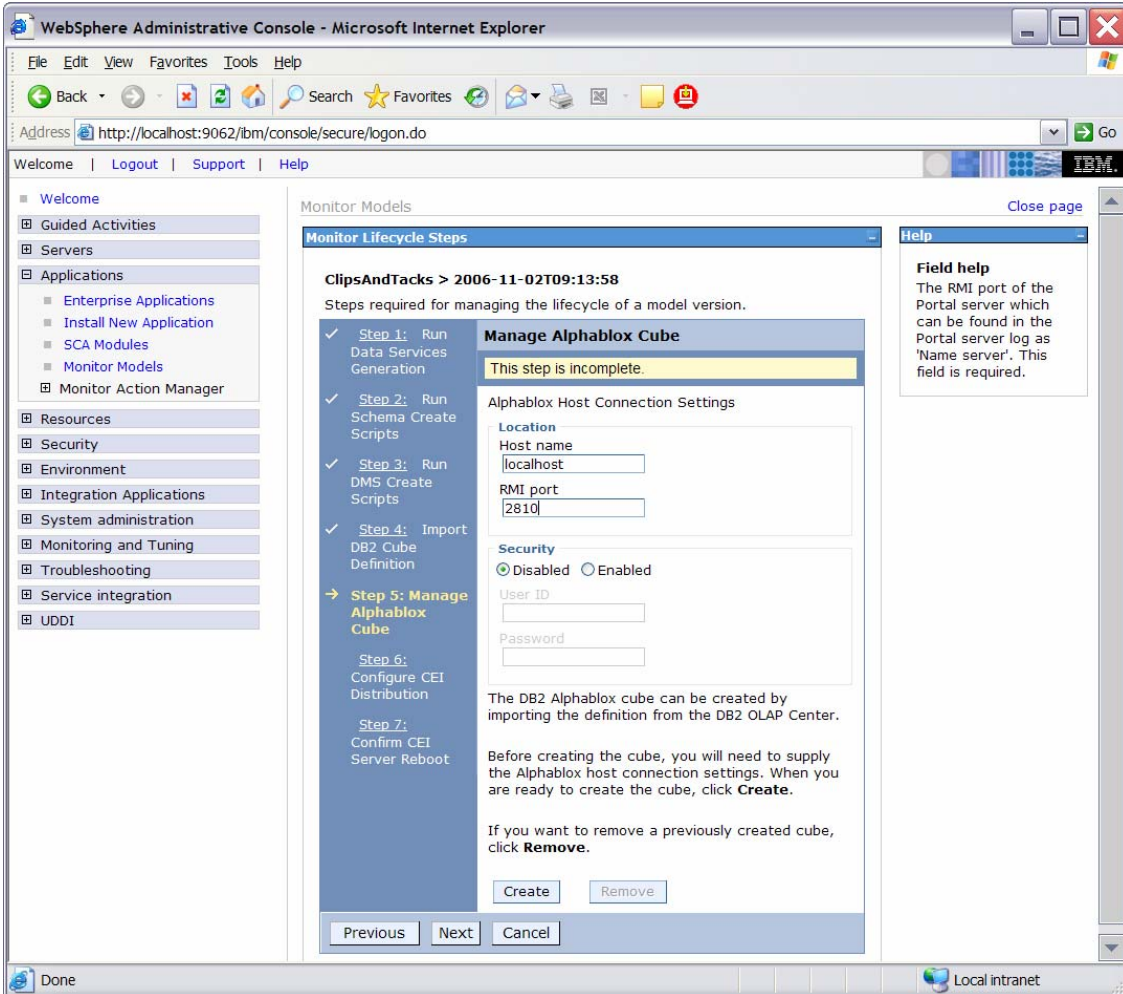
- 2) Search for RMI Connector. For example, in the following screen capture you see that Portal RMI is port 2810.

Figure 73. Portal RMI is port 2810



- ___ d. Back in the administrative console, in step 5 of the model life cycle, enter localhost for Host name.
- ___ e. Enter the RMI port value that you identified in the Portal log.

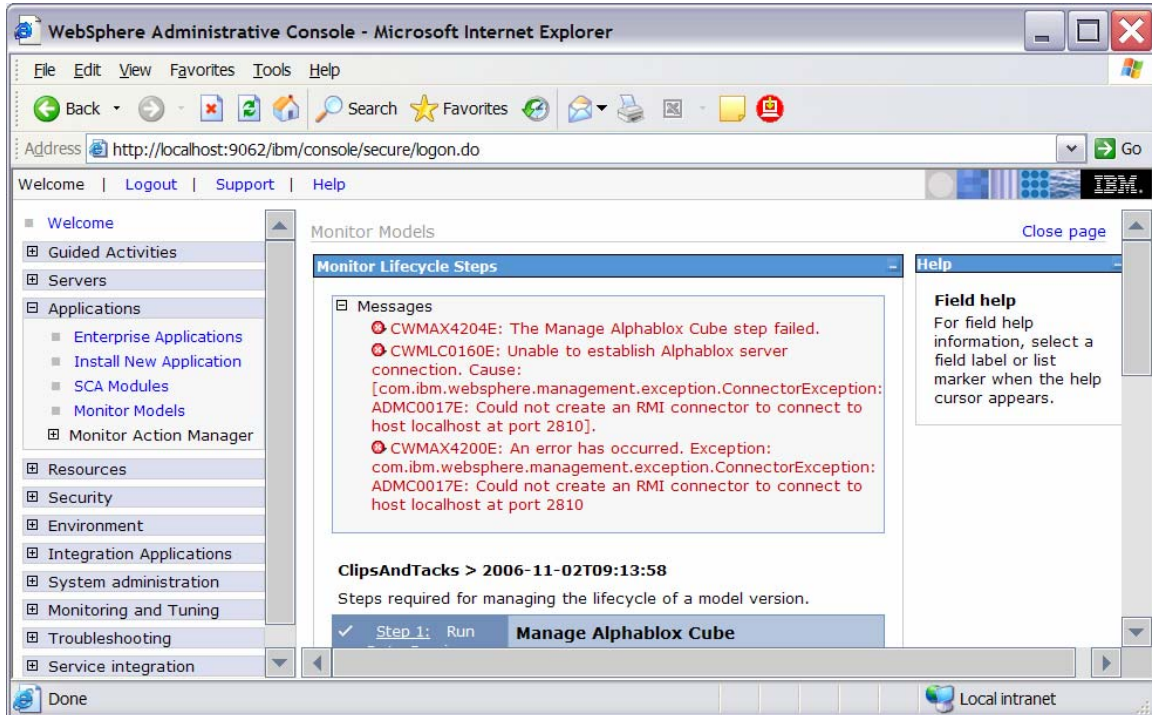
Figure 74. Enter the RMI port value that you identified



- ___ f. Click **Create**.

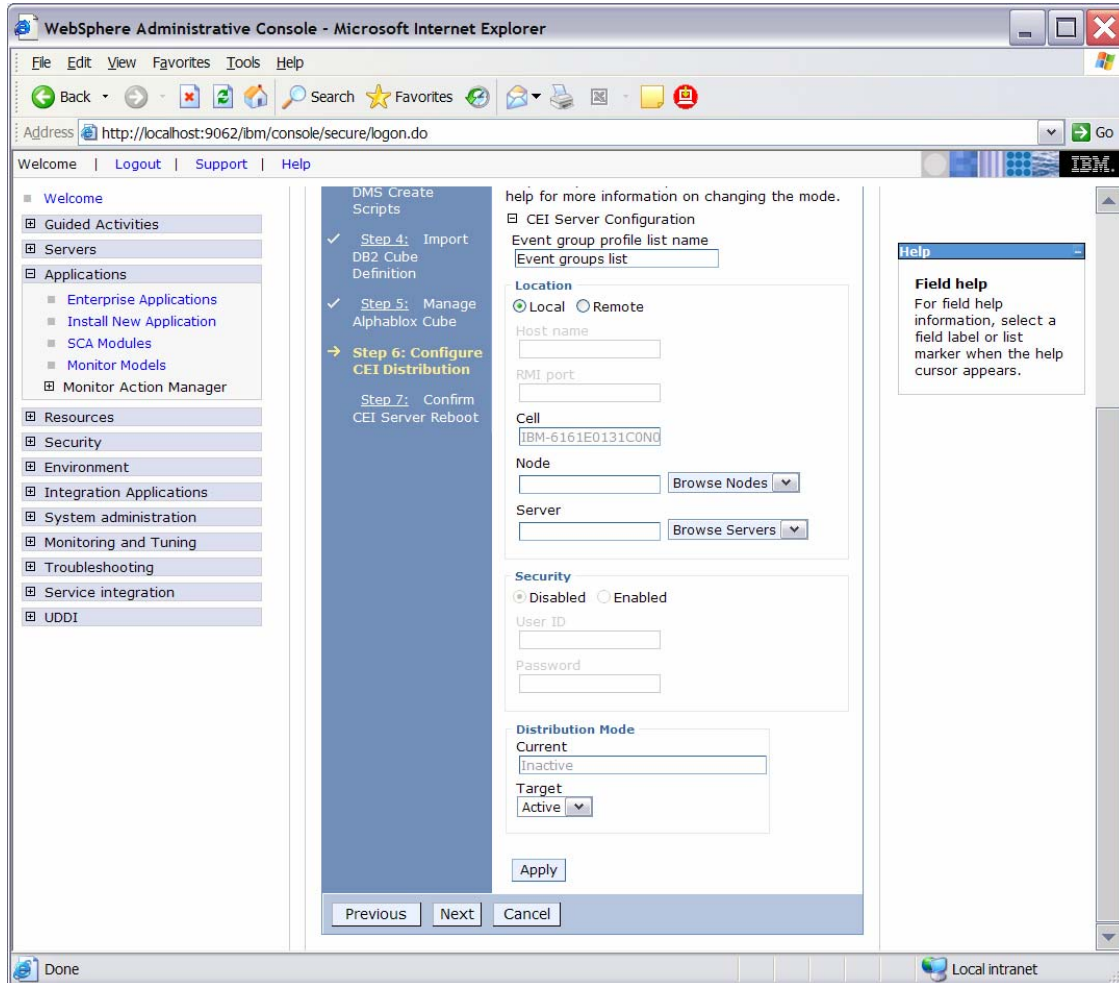
If an error message indicates that there is a connection problem, you might need to correct the Portal configuration. Go to Appendix 2 now and follow the steps there as a workaround for this problem. After completing the workaround, please return here and proceed with the next step. Here is a sample of the error message:

Figure 75. You might need to correct the Portal configuration



- ___ 7. Run step 6 of the model life cycle.
 ___ a. Click **Step 6**.

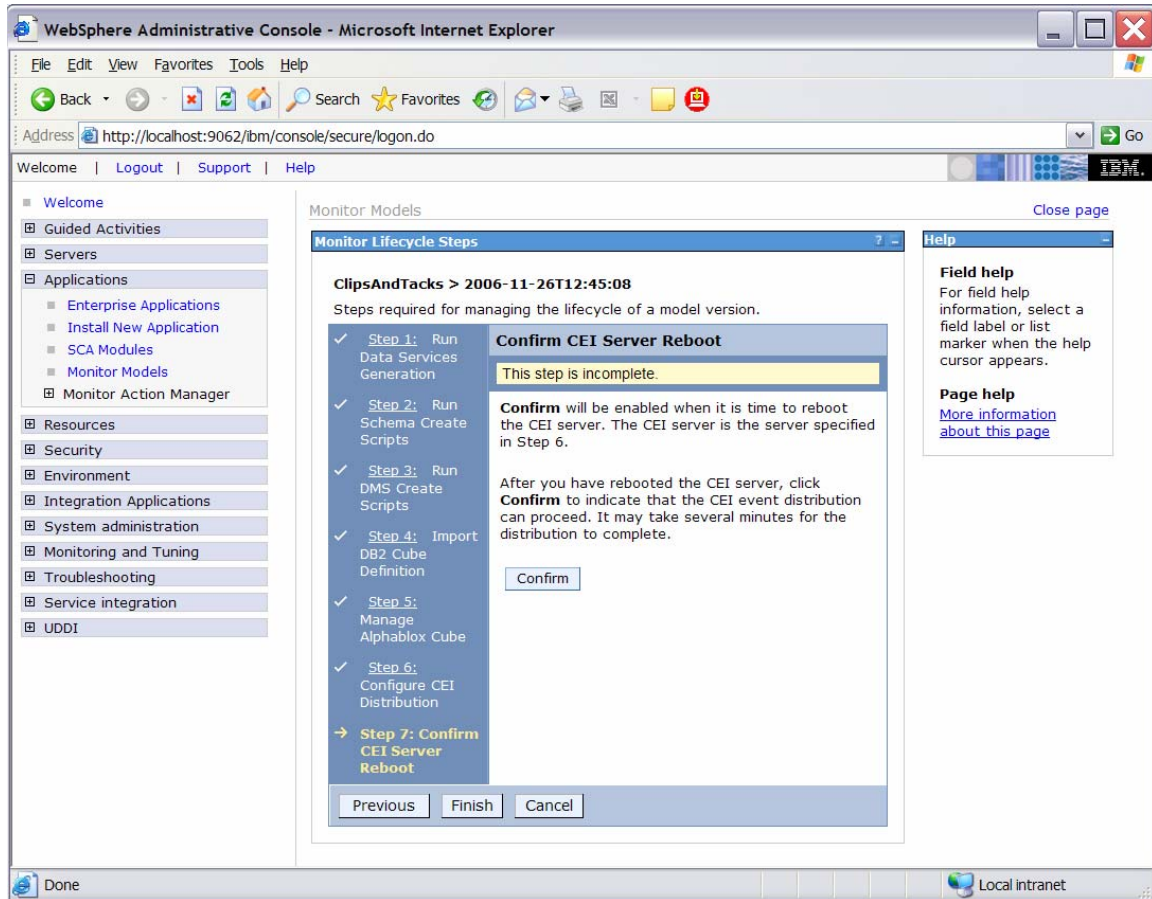
Figure 76. Run step 6 of the model life cycle



- ___ b. Click **Apply**.
- ___ 8. Run step 7 of the model life cycle.
 ___ a. Click **Step 7**.
 ___ b. Verify 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 administrative console navigation pane, 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 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 proceed to step 7 as follows:

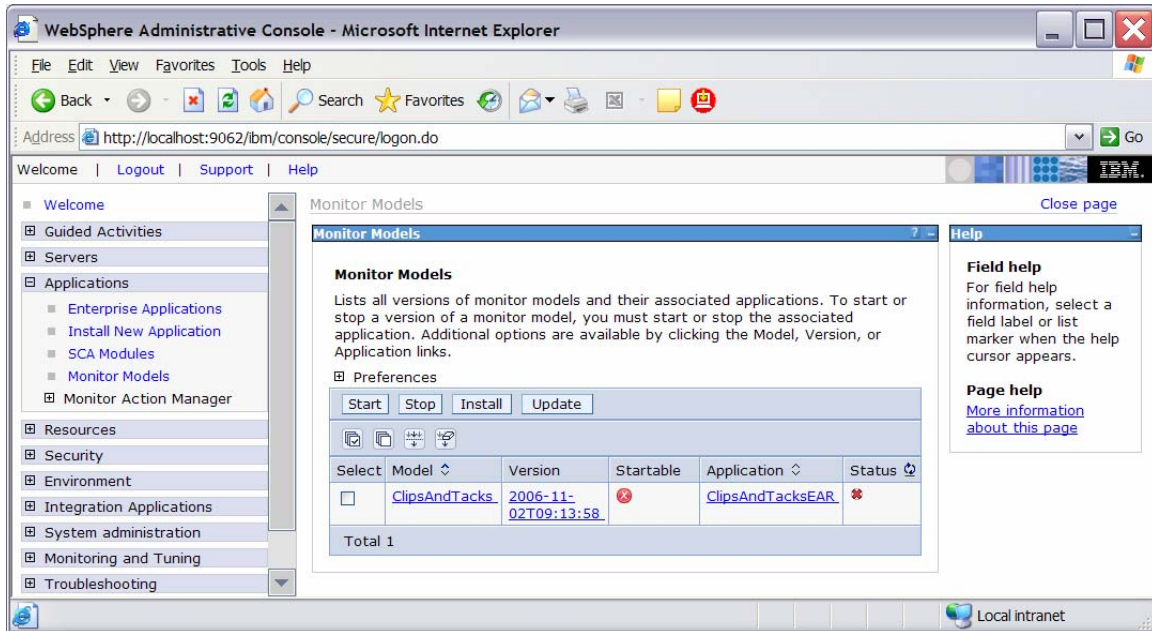
Figure 77. Proceed to step 7 of the model life cycle



- ___ i. Click **Confirm**.

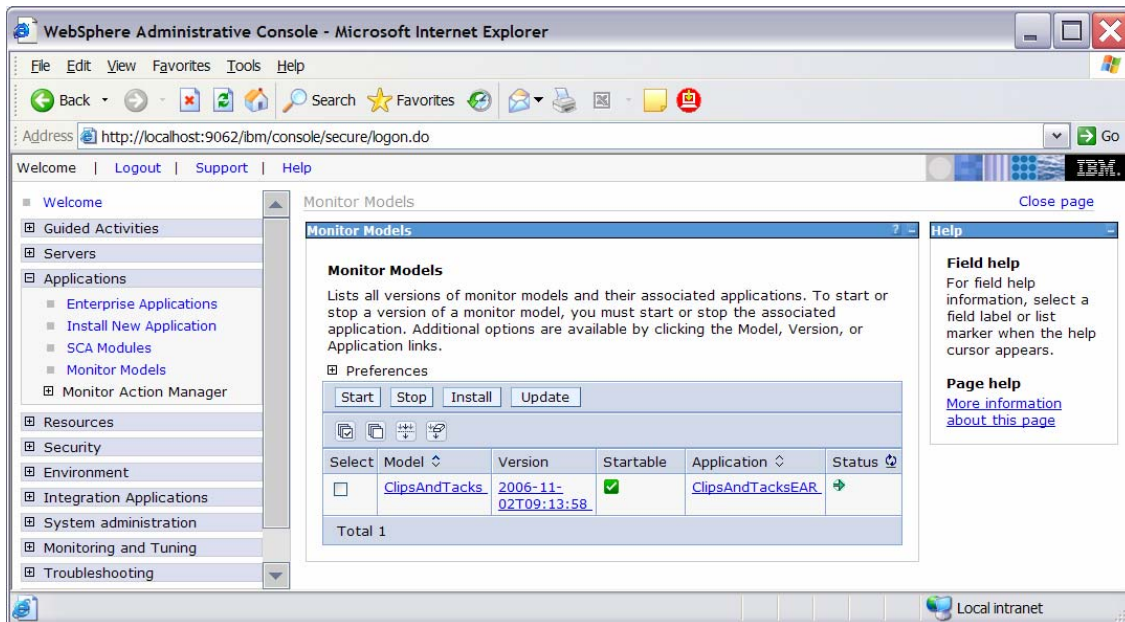
___ j. Click **Finish** to return to the Monitor Models window.

Figure 78. Return to the Monitor Models window



___ 9. If the Startable column for the model shows a red circle, it is stopped. Wait a moment, then refresh by clicking the icon to the right of **Status** in the last column of the table. The 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 79. Continue refreshing until this column displays a green check mark



- _____ 10. Check the Process Server log to ensure that there are no problems. For example, check
C:\IBM\WebSphere\ProcServer\profiles\wbmonitor\logs\server1\SystemOut.log.

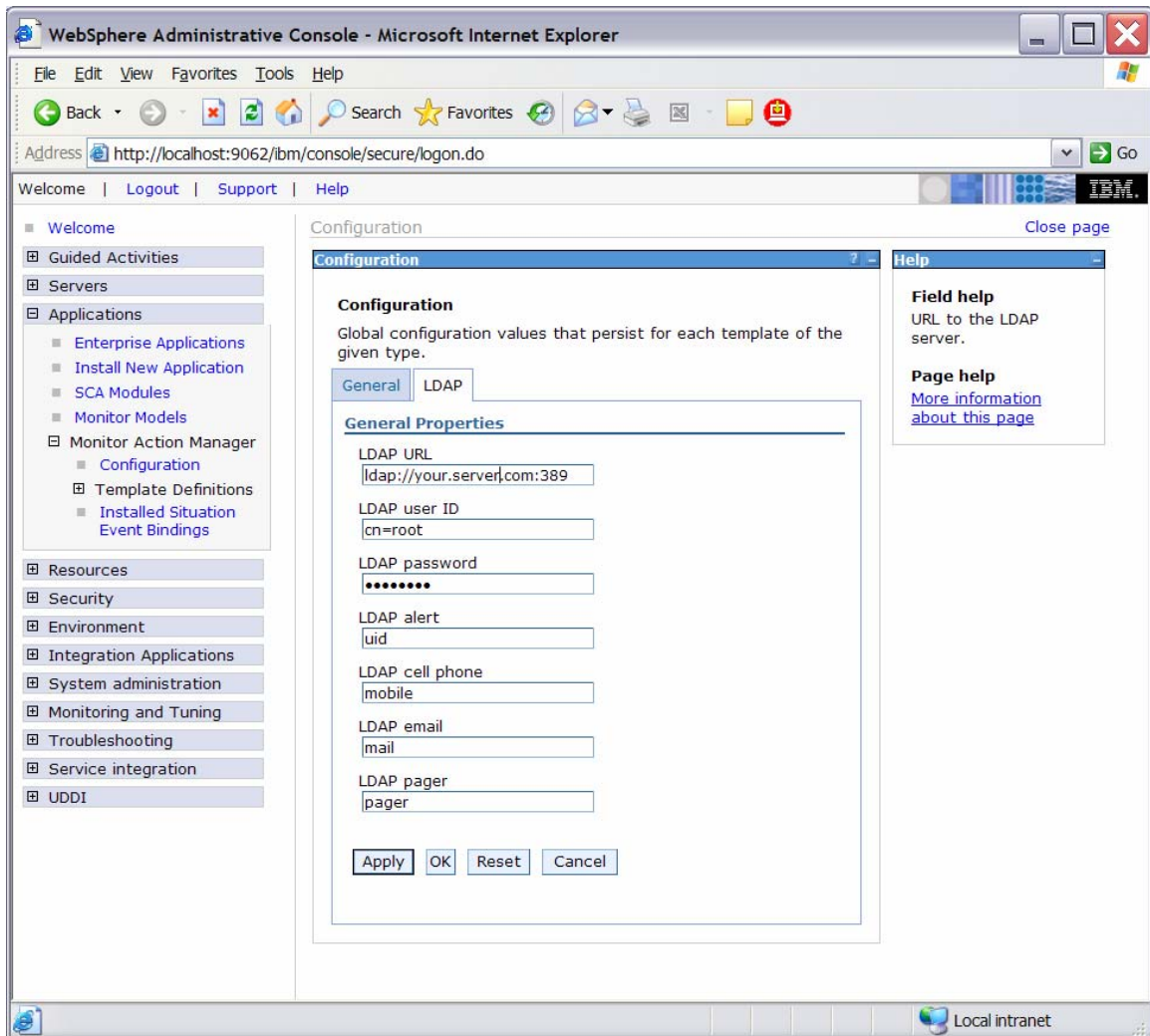
Part 4. Configure Action Manager for business situation events

If you have an LDAP server, follow the steps in this section to learn how to configure Action Manager to create alerts based on business situation events defined in the monitor model. The alerts will be visible in the Alert view on your dashboard.

If you do not have an LDAP server, skip this section. The outgoing events will be created for the business situations, but they will not result in entries in the Alert view on your dashboard.

- ___ 1. Configure the LDAP Server in Action Manager.
 - ___ a. In the Monitor administrative console, navigate to **Applications ► Monitor Action Manager ► Configuration**.
 - ___ b. Click the **LDAP** tab.
 - ___ c. Add your LDAP information as in this sample:

Figure 80. Add your LDAP information

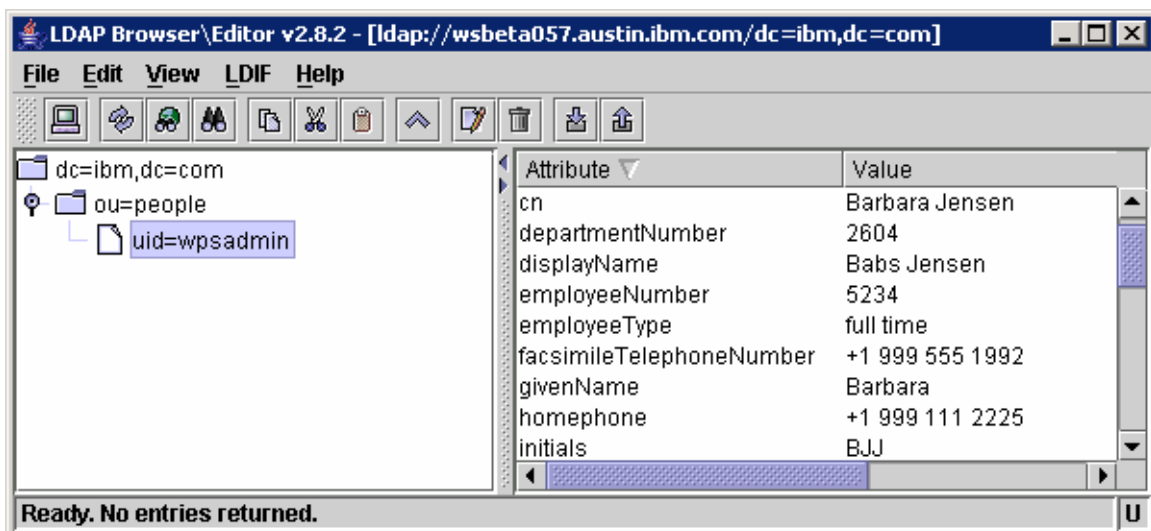


- ___ d. You will now set up an Alert, so make sure the LDAP Alert field is set to the identifier for the user ID that you want to use from your directory server. You also need a user defined in Portal on the Dashboard Server that matches this user ID.

This example recommended the definition `uid = wpsadmin` in the directory server. You will login to Portal with this same user ID to see the alerts. Click **OK**.

- ___ e. Confirm that the definition of the user ID in the directory server matches the following example:

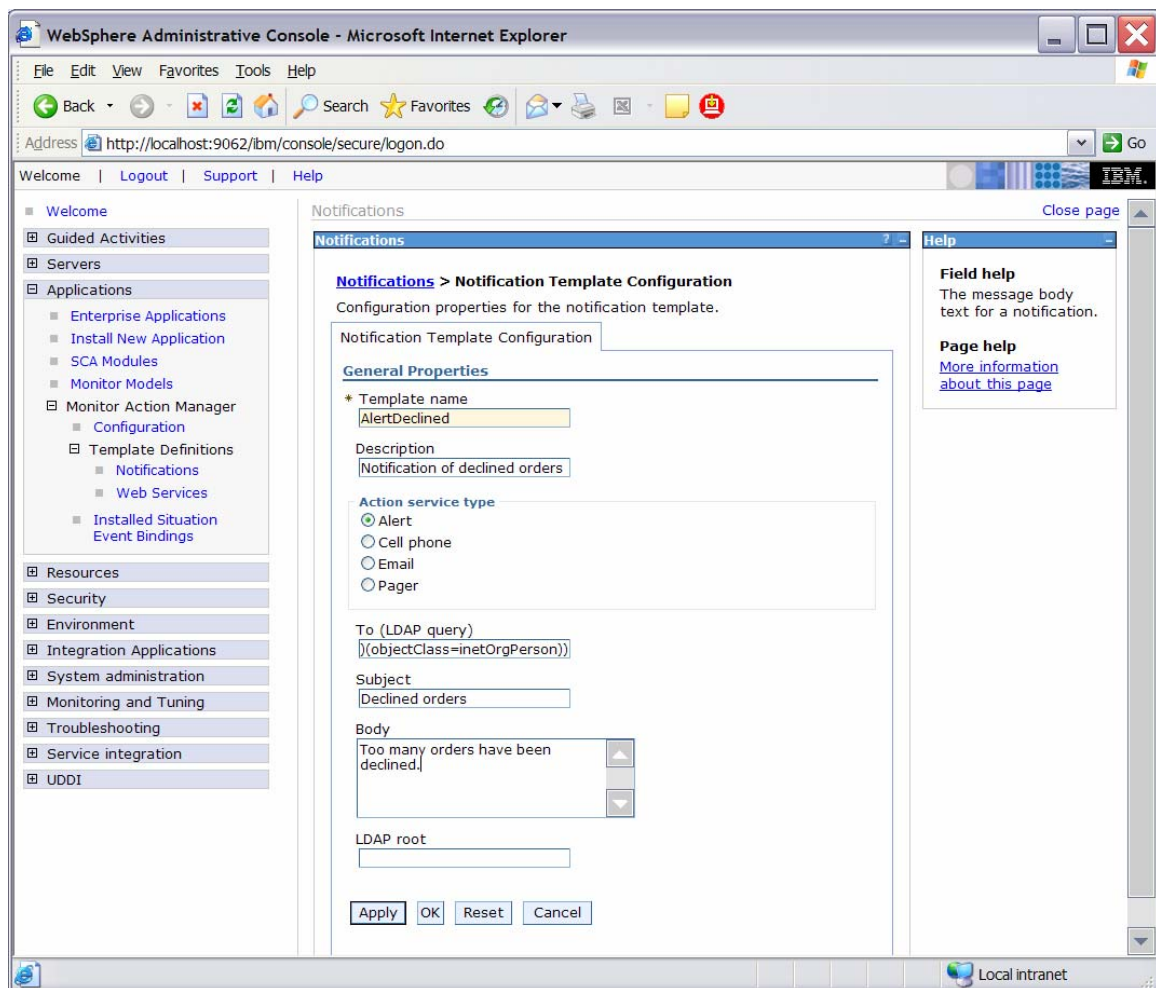
Figure 81. The user ID in the directory server should match this example



- ___ 2. Restart the Action Manager application for the configuration changes to take effect.
 - ___ a. In the administrative console, navigate to **Applications ► Enterprise Applications**.
 - ___ b. Select the **IBM WB ACTIONMANAGER** check box, and then click **Stop**.
 - ___ c. Select the **IBM WB ACTIONMANAGER** check box, and then click **Start**.

- ___ 3. Add a template for declined order alerts.
 - ___ a. In the administrative console, navigate to **Applications ► Monitor Action Manager ► Template Definitions ► Notifications**.
 - ___ b. Click **New**.
 - ___ c. Enter a name for the template and a description.
 - ___ d. Select **Alert**.
 - ___ e. Enter an LDAP Query value that will start the user that you want to alert. To alert multiple users, define the query to match multiple users. To start all the users in the directory, you could enter this: **(&(objectclass=top)(objectClass=inetOrgPerson))**.
 - ___ f. Enter a subject for the message.
 - ___ g. Enter the body of the message.

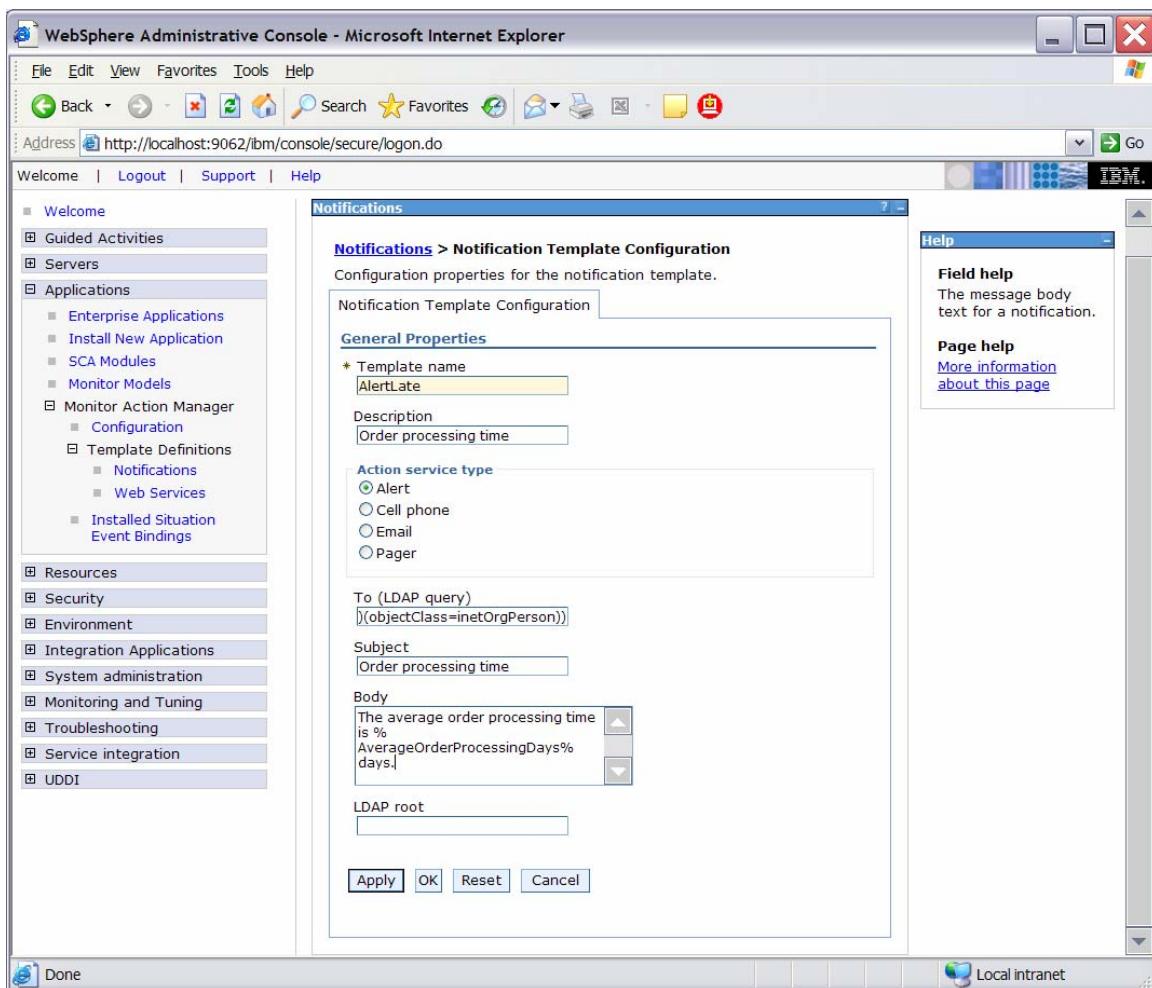
Figure 82. Enter the body of the message



- ___ h. Click **OK**.

- ___ 4. Add a template for order processing time alerts.
 - ___ a. In the administrative console, navigate to **Applications ► Monitor Action Manager ► Template Definitions ► Notifications**.
 - ___ b. Click **New**.
 - ___ c. Enter a name for the template and a description.
 - ___ d. Select **Alert**.
 - ___ e. Enter an LDAP Query that will start the user that you want to alert. To alert multiple users, define the query to match multiple users. To start all the users in the directory, you could enter this:
 (&(objectclass=top)(objectClass=inetOrgPerson)).
 - ___ f. Enter a subject for the message.
 - ___ g. Enter the body of the message, and optionally enter a substitution variable as shown in the following example. For the actual alert that is sent, the average order processing time from the event payload will be substituted for %AverageOrderProcessingDays% in the body of the message.

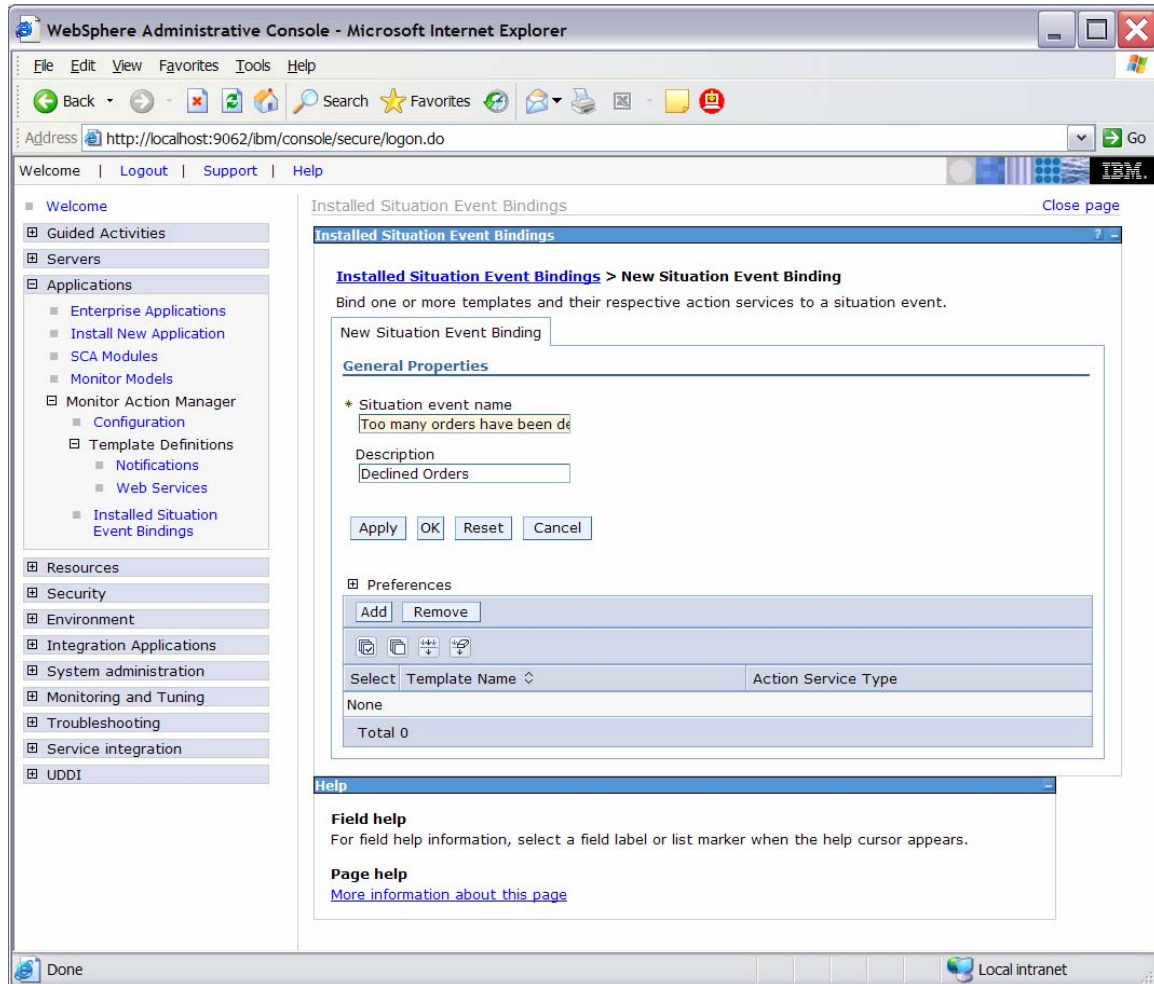
Figure 83. Optionally enter a substitution variable as shown



- ___ h. Click **OK**.

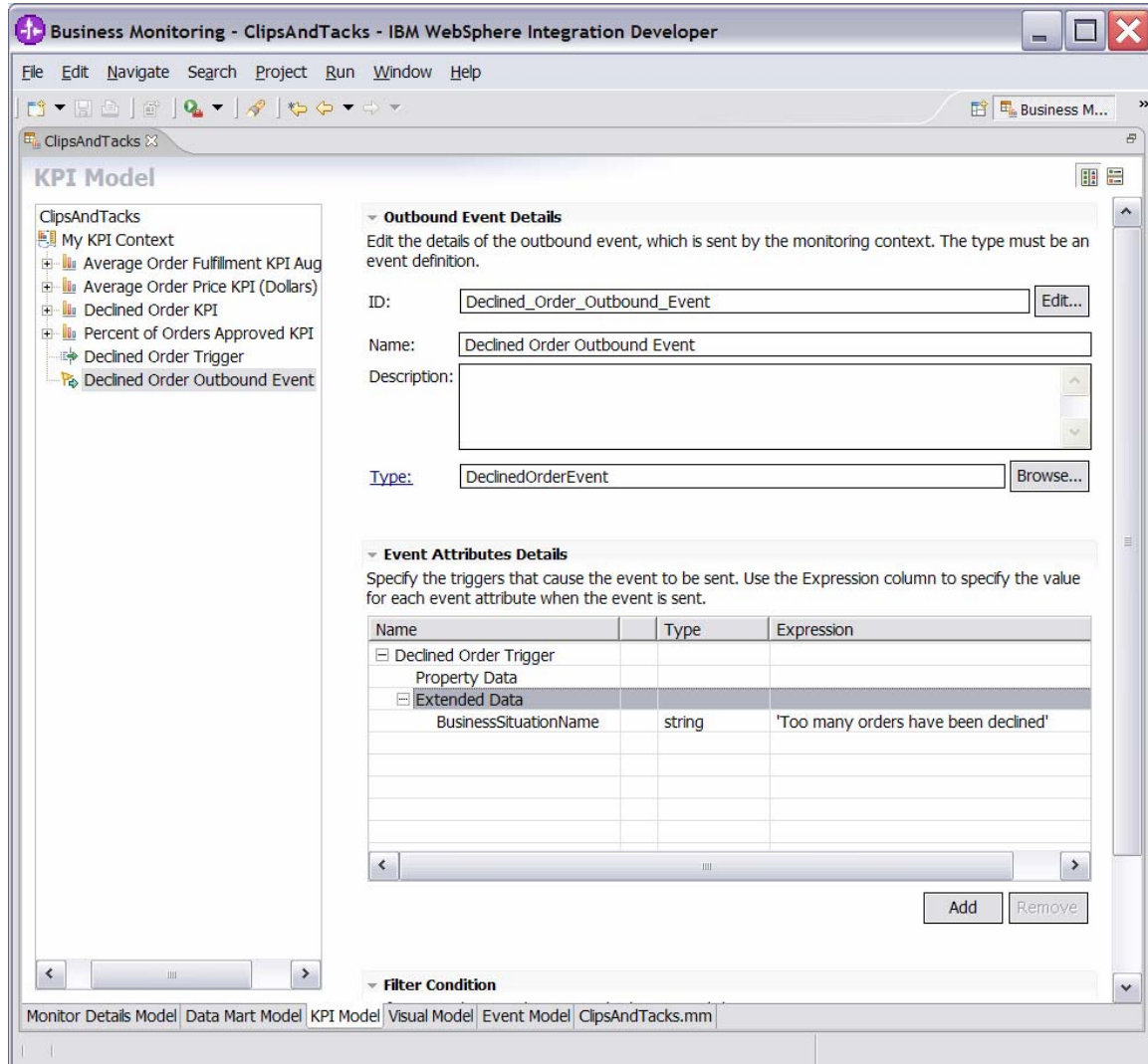
- ___ 5. Add the binding from the situation event to the action type for declined orders.
 - ___ a. In the administrative console, navigate to **Applications ► Monitor Action Manager ► Installed Situation Event Bindings**.
 - ___ b. Click **New**.
 - ___ c. Enter the situation event name that you defined in the model. In this lab, you created a business-situation name *Too many orders have been declined*.

Figure 84. Enter the situation event name that you defined



- ___ d. To ensure that the situation event name exactly matches the value in the BusinessSituationName field in the outbound event, copy and paste that name from the model. Here is a screen capture from the model showing the Declined Order Outbound Event:

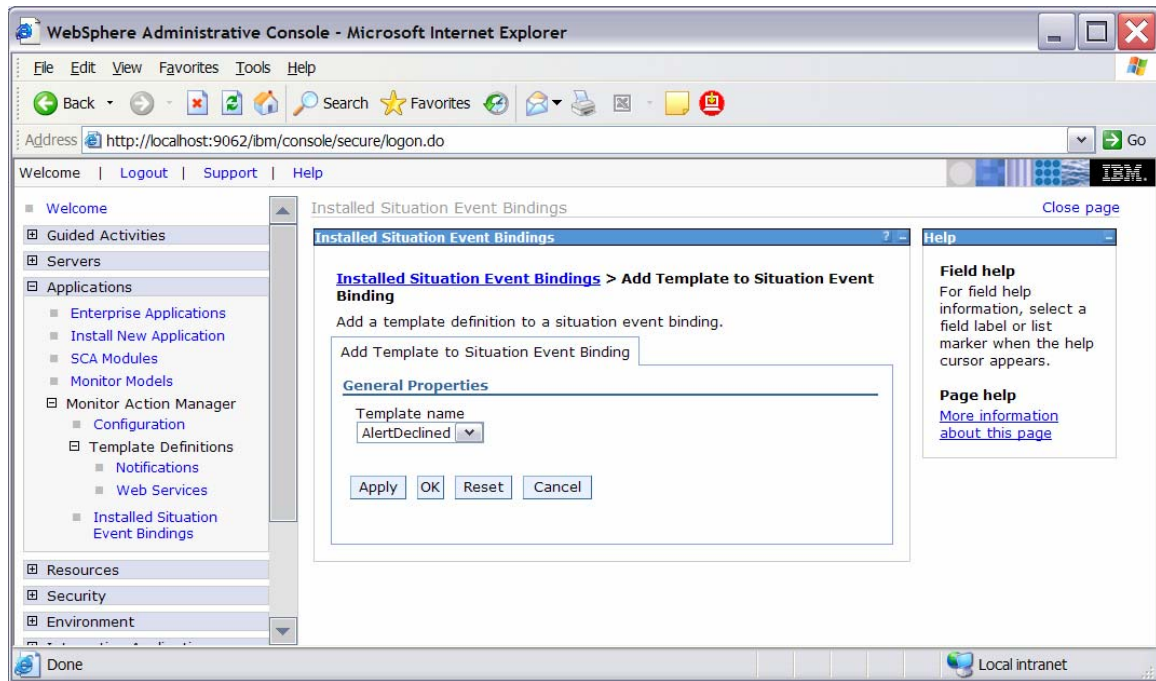
Figure 85. Copy and paste the situation event name



- ___ e. Enter a description, and then click **Apply**.
 ___ f. Click **Add**.

__ g. Select the template **AlertDeclined**.

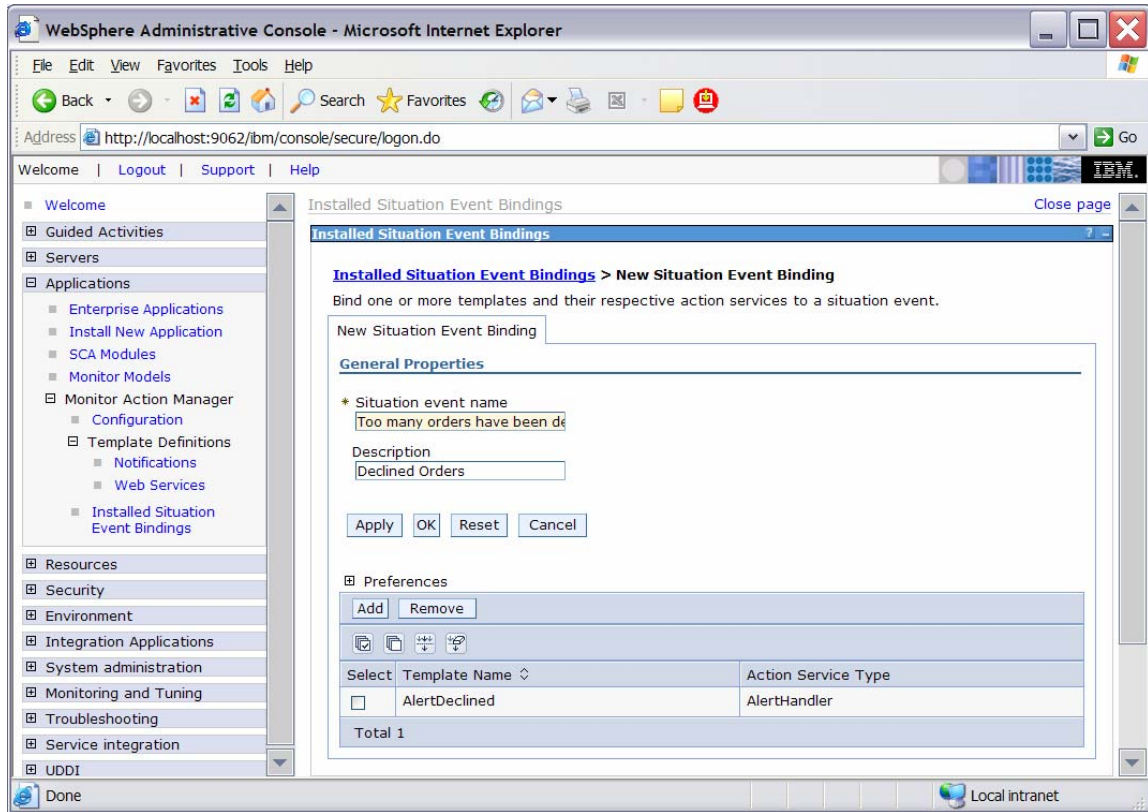
Figure 86. Select the template AlertDeclined



__ h. Click **OK**.

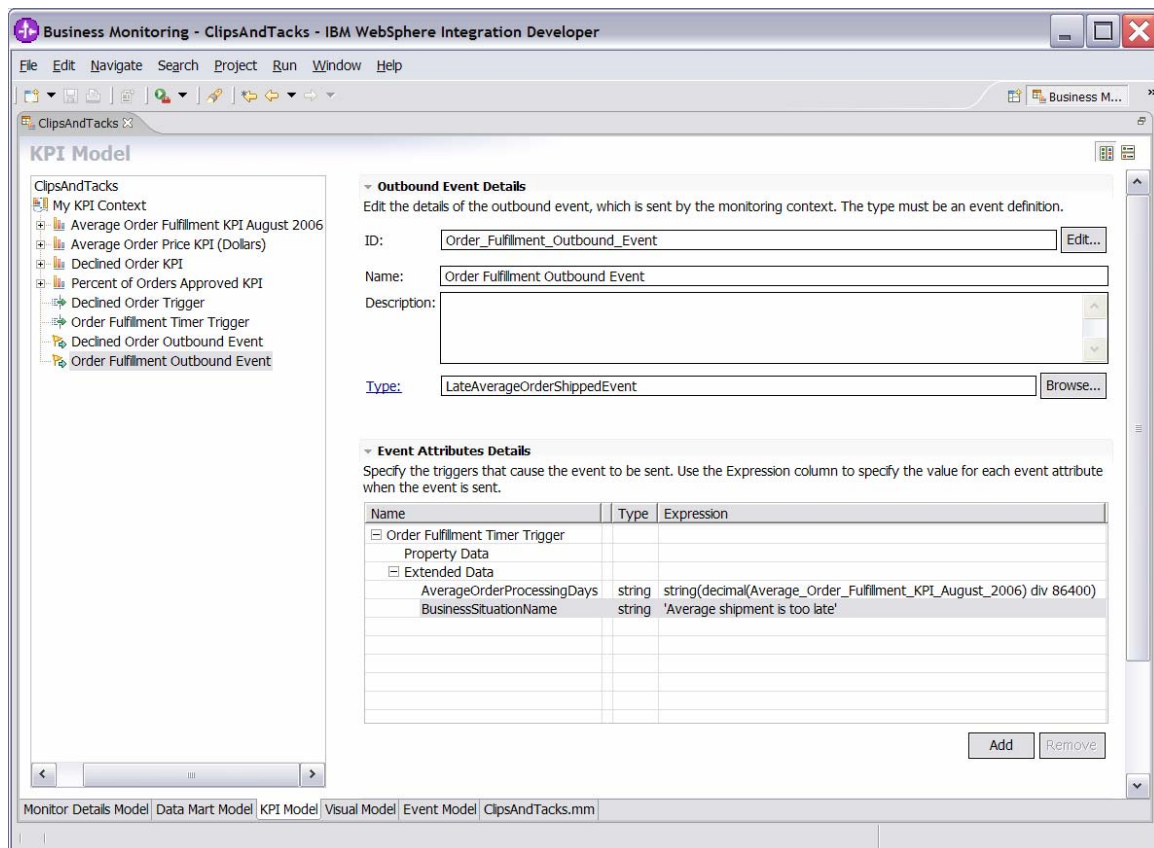
- ___ i. Notice that you now have one action defined for this situation event. If you had other action templates defined, you could add more actions to this event. For example, you could send a notification for this situation to multiple destinations including e-mail, alerts and Web services.

Figure 87. One action has been defined for this situation event



- ___ 6. Add the binding from the situation event to the action type for order processing time.
 - ___ a. In the administrative console, navigate to **Applications ► Monitor Action Manager ► Installed Situation Event Bindings**.
 - ___ b. Click **New**.
 - ___ c. Enter the situation event name that you defined in the model. In this lab, you created a business-situation name *Average shipment is too late*. To ensure that the situation event name exactly matches the value in the BusinessSituationName field in the outbound event, copy and paste the name from the model. Here is a screen capture from the model showing the Order Fulfillment Outbound Event:

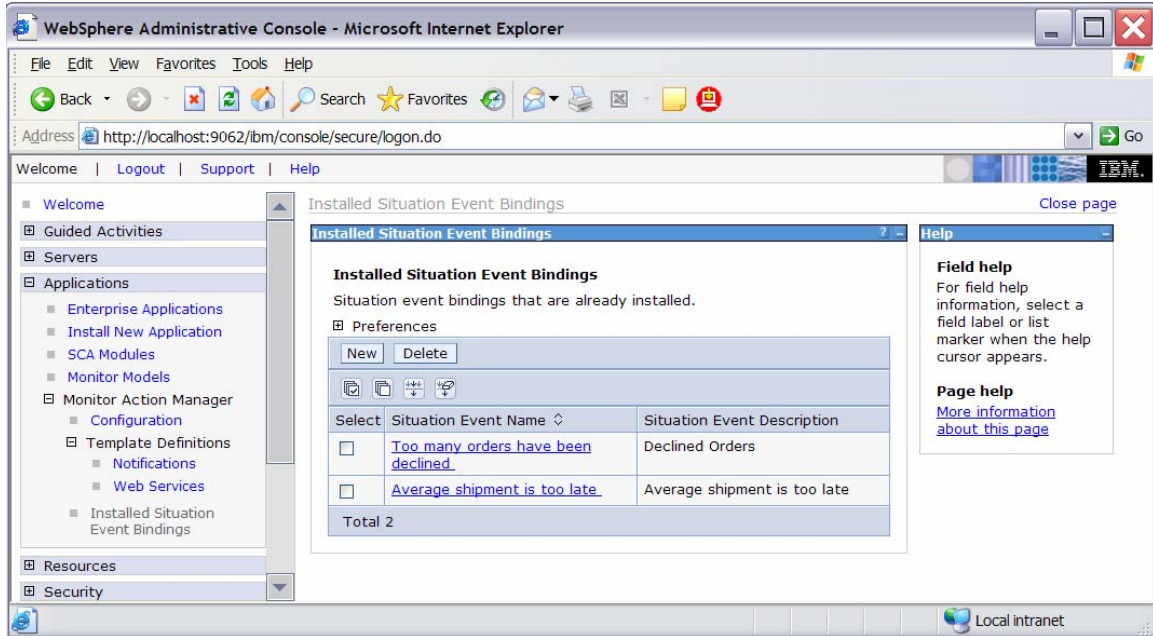
Figure 88. copy and paste the situation event name from the model



- ___ d. Enter a description, and then click **Apply**.
- ___ e. Click **Add**.
- ___ f. Select the template **AlertLate**, and then click **OK**.

- ____ 7. In the administrative console, navigate to **Applications ► Monitor Action Manager ► Installed Situation Event Bindings**. You should see two bindings as follows:

Figure 89. You should see two bindings



- ____ 8. Before continuing, make sure that your LDAP Server is started.

Part 5. Run events to exercise the model

Rather than installing a J2EE application to actually create the events that you would like to monitor, you are going to use a program to simulate the submission of events from the application.

The supplied program is `BatchCBewriter` and it will submit the events to the Common Event Infrastructure. Look for the program in `\Labfiles602\ClipsAndTacks\BatchCBewriter`. This program reads XML files that represent the Common Base Events for the model.

- _____ 1. Update `BatchCBewriter.bat` to point `JAVA_HOME` to a Java 1.4.2 Runtime folder, such as the one in Process Server, for example: `'set
JAVA_HOME=C:\IBM\WebSphere\ProcServer\java'`.
- _____ 2. Update `config.properties` and set the `serverName` and `portNumber` values. To find the port number, browse the Process Server log and look for bootstrap port. For example, check for the log at `C:\IBM\WebSphere\ProcServer\profiles\wbmonitor\logs\server1\SystemOut.log`. Here is an example of the `config.properties` settings:
 - o `connect.serverName = localhost`
 - o `connect.portNumber = 2811`
- _____ 3. Open a command window, and then change the directory to the folder containing `BatchCBewriter`. For example, type this command:


```
cd  
  \Labfiles602\ClipsAndTacks\BatchCBewriter
```
- _____ 4. Run commands to load the Common Base Events to Process Server. In the following example replace `<x_y>` with the actual value in the file names:


```
BatchCBewriter -  
Dsource.filename=c:\Labfiles602\ClipsAndTacks\cbe\flow<x_y>.xml
```

Note: Because there are 20 Common Base Event files, running this command 20 times can become tedious. To avoid this problem, store all of the files in a separate folder. Then, to process all the files in the folder just one time, invoke the `BatchCBewriter` as shown in the following example:

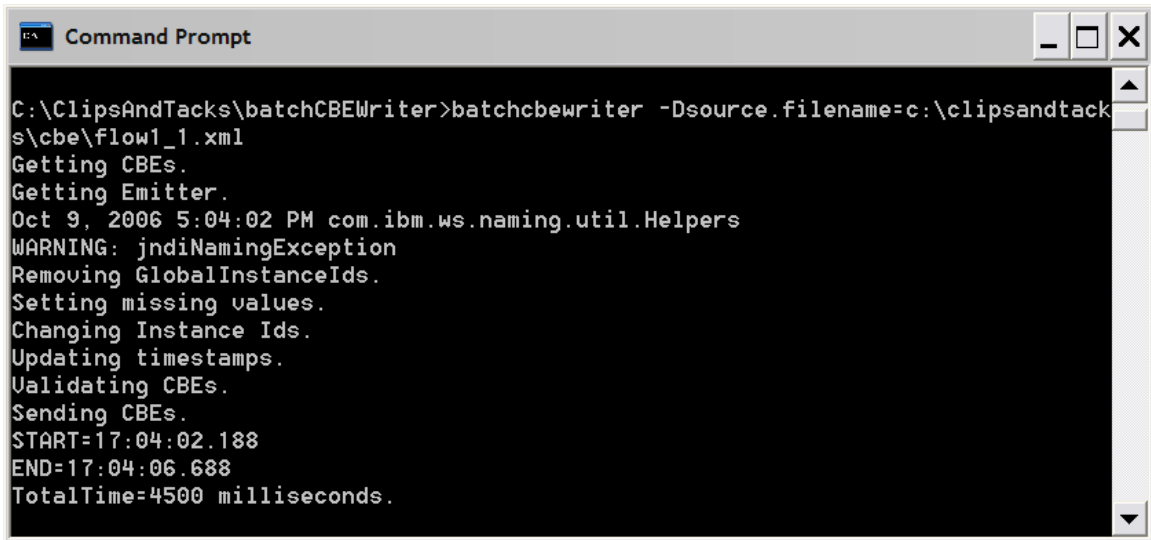
```
BatchCBewriter -Dsource.filename=<path to  
folder>
```

Substitute your folder name for `<path to folder>`, for example:

```
BatchCBewriter -  
Dsource.filename=c:\Labfiles602\ClipsAndTacks\cbe
```

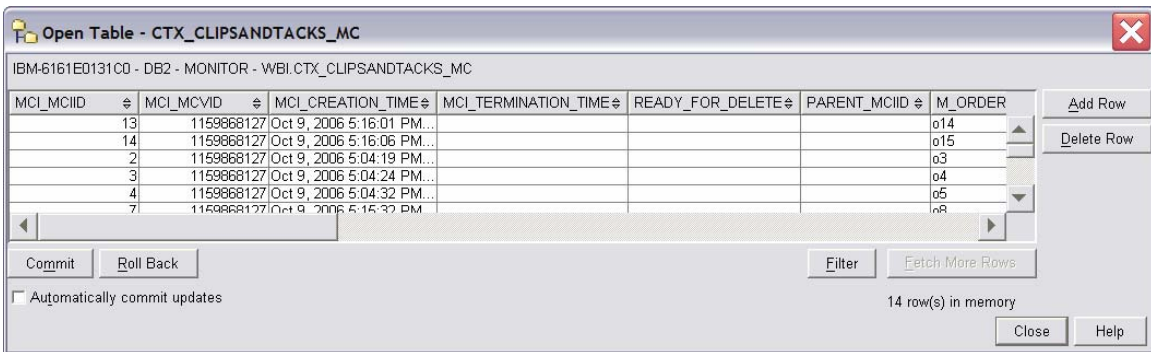

- _____ 5. When you run BatchCBEWriter, confirm that the results look like the following example:

Figure 90. Confirm the results as follows



- _____ 6. To verify that Monitor is processing these 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_CLIPSANDTACKS_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 91. Open table CTX_CLIPSANDTACKS_MC



- ___ b. In the DATAMART database, open table FCT_CLIPSANDTACKS_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 92. Open table FCT_CLIPSANDTACKS_MC

MCI_MCIID	PARENT_MCIID	MCI_MCVID	M_ORDER_KEY	SK_STARTTIMEDIMENSION	M_ORDE
0		1159868127	o1	4237	Aug 7, 20
1		1159868127	o2	4237	Aug 7, 20
5		1159868127	o6	4252	Aug 22, 2
6		1159868127	o7	4252	Aug 22, 2
10		1159868127	o11	4253	Aug 23, 2
11		1159868127	o12	4253	Aug 23, 2
15		1159868127	o16	4254	Aug 24, 2
16		1159868127	o17	4254	Aug 24, 2

- ___ c. Close the DB2 Control Center.

Part 6. Create a dashboard

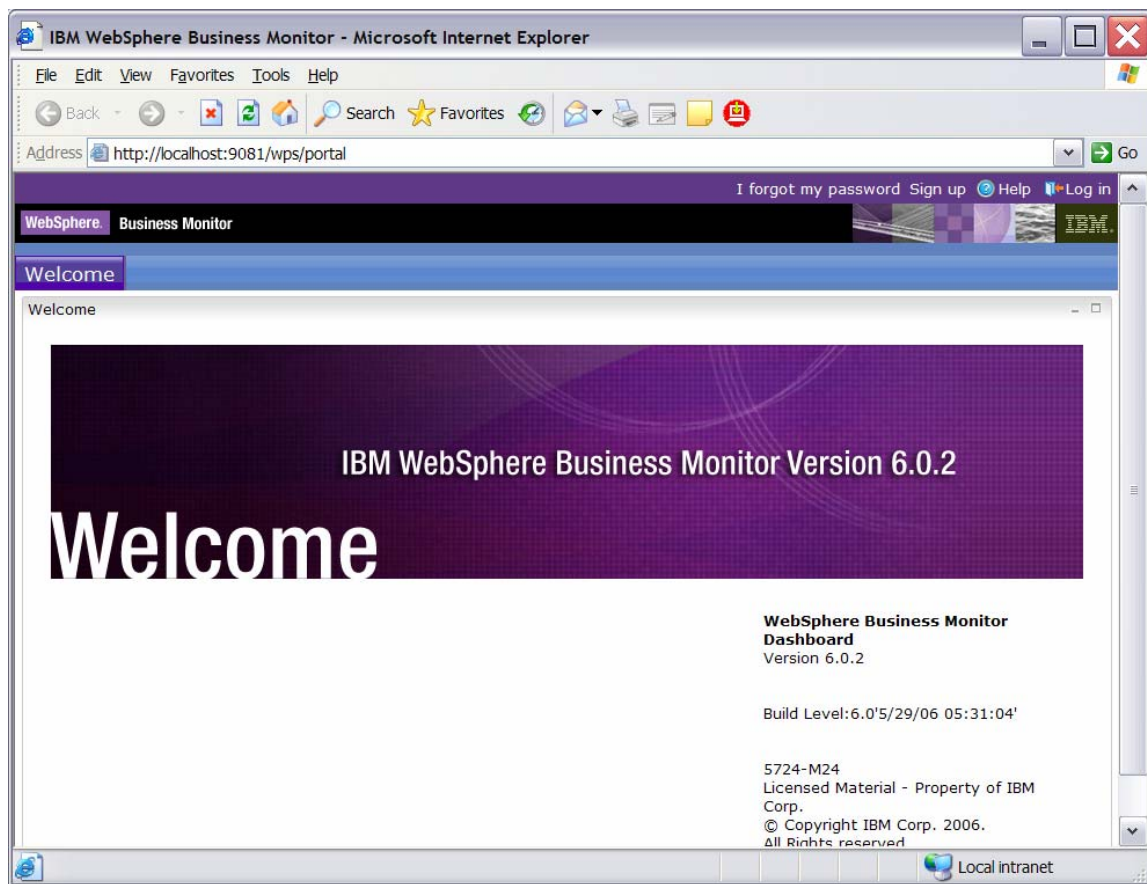
In this section you will build a dashboard in WebSphere Portal Server. You will add portlets to the dashboard and configure them.

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

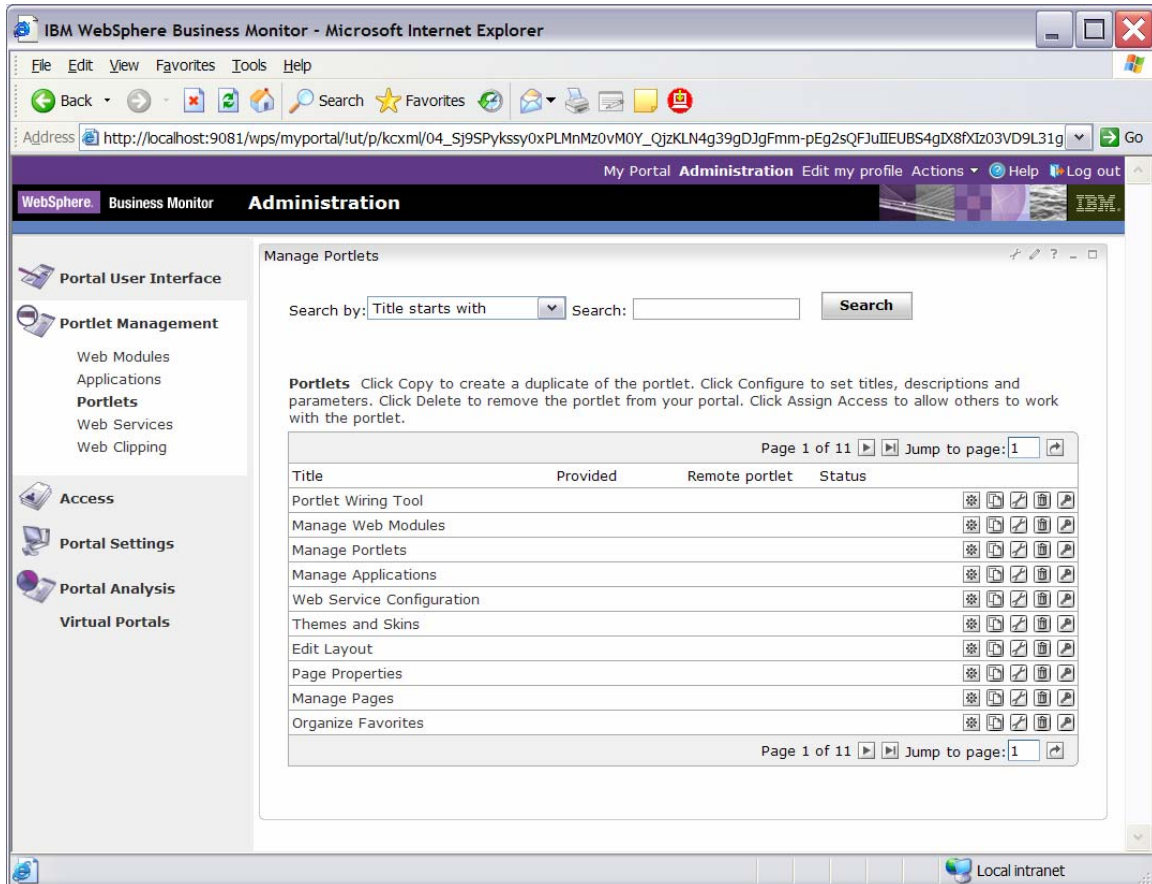
Figure 93. Open the Portal page



- b. Click **Log in**, and then enter your Portal administrative user ID and password (commonly wpsadmin and wpsadmin).
2. Create copies of the WebSphere Business Monitor portlets.

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

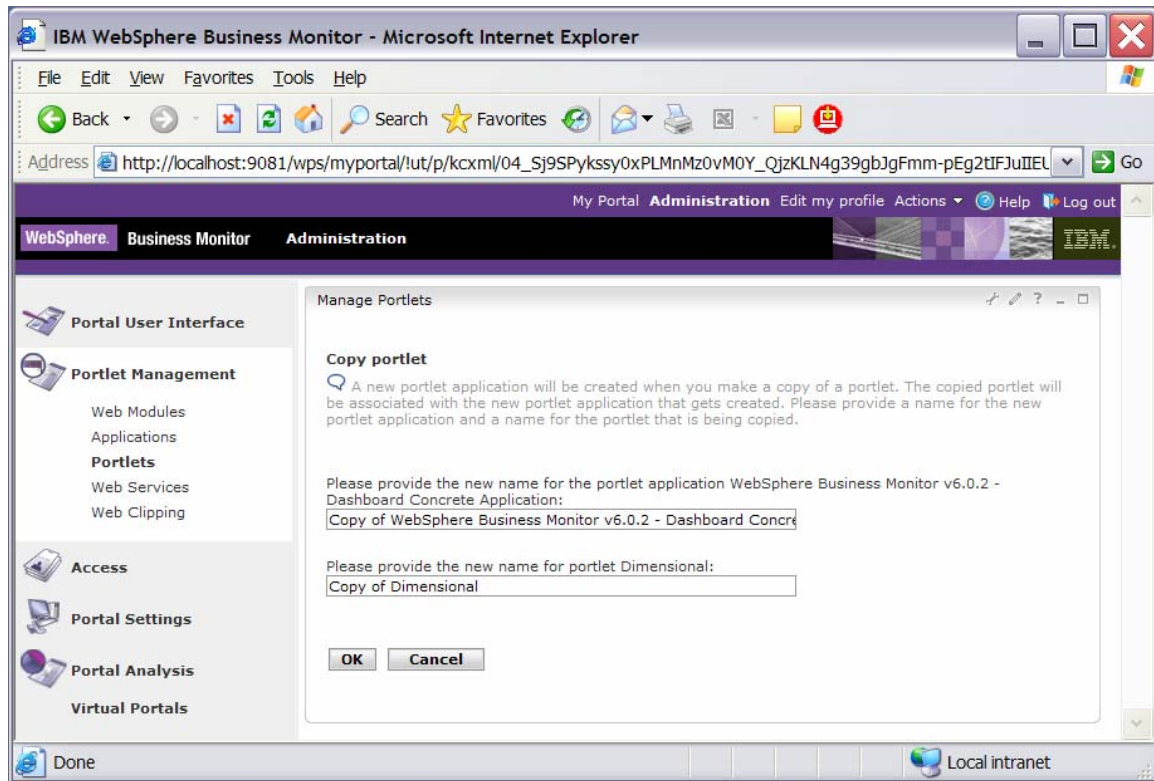
Figure 94. Click Portlet Management ► Portlets



- ___ 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, click the **Copy portlet** icon. You should see this window:

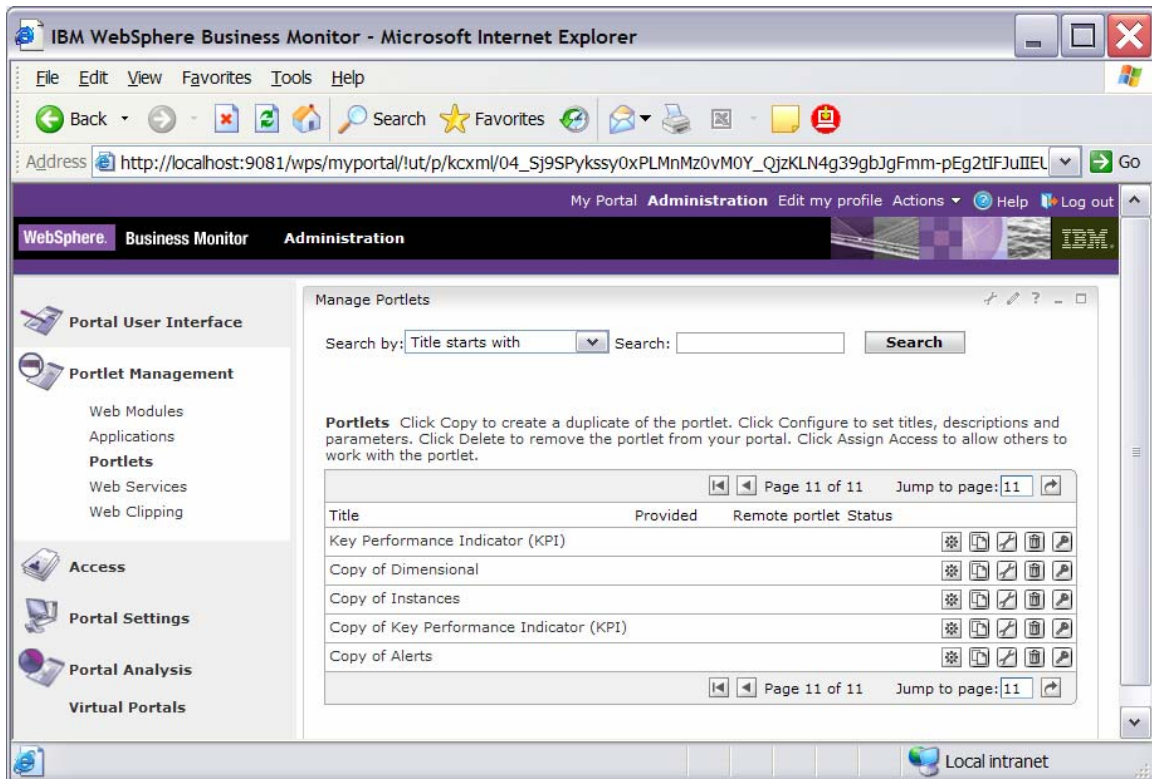
Figure 95. Click the Copy portlet icon



- ___ d. Click **OK**.
- ___ e. On the row containing Instances, click **Copy portlet** icon. In the next window, click **OK**.
- ___ f. Browse to page 11 by clicking the arrow icons. This page should show the portlet Key Performance Indicator (KPI) plus the copies of the portlets for Dimensional and Instances.
- ___ g. On the row containing Key Performance Indicator (KPI), click the **Copy portlet** icon. In the next window, click **OK**.
- ___ h. Browse to page 10 by clicking the arrow icons. This page should show the portlet Alert.
- ___ i. On the row containing Alerts, click the **Copy portlet** icon. In the next window, click **OK**.

___ j. Browse to page 11 by clicking the arrow icons. This page should show the four portlets that you copied.

Figure 96. This page shows the four portlets that you copied



3. Create a page containing four views: Instances, Dimensional, Key Performance Indicator (KPI), Alerts.
 - a. Click **Administration** at the top of the page, and then click **Portal User Interface ► Manage Pages**.

Figure 97. Click Portal User Interface ► Manage Pages

The screenshot shows the IBM WebSphere Business Monitor Administration console in a Microsoft Internet Explorer browser. The browser address bar shows the URL: `http://localhost:9081/wps/myportal/tut/p/kcxml/04_S9SPykssy0xPLMnMz0VM0Y_QjzKLN4g3dgXJgFmm-pEg2sQFJuIIEUBS4gDX8FXz03VD9L31g_QL8gNDY`. The page title is "Administration".

The left sidebar contains the following navigation options:

- Portal User Interface
 - Manage Pages (selected)
 - Themes and Skins
- Portlet Management
- Access
- Portal Settings
- Portal Analysis
- Virtual Portals

The main content area is titled "Manage Pages". It includes a search bar with the text "Search by: Title starts with" and a "Search" button. Below the search bar, there is a "Content Root" section and a "My pages" section with the text "Add, Edit, Delete, and Reorder pages".

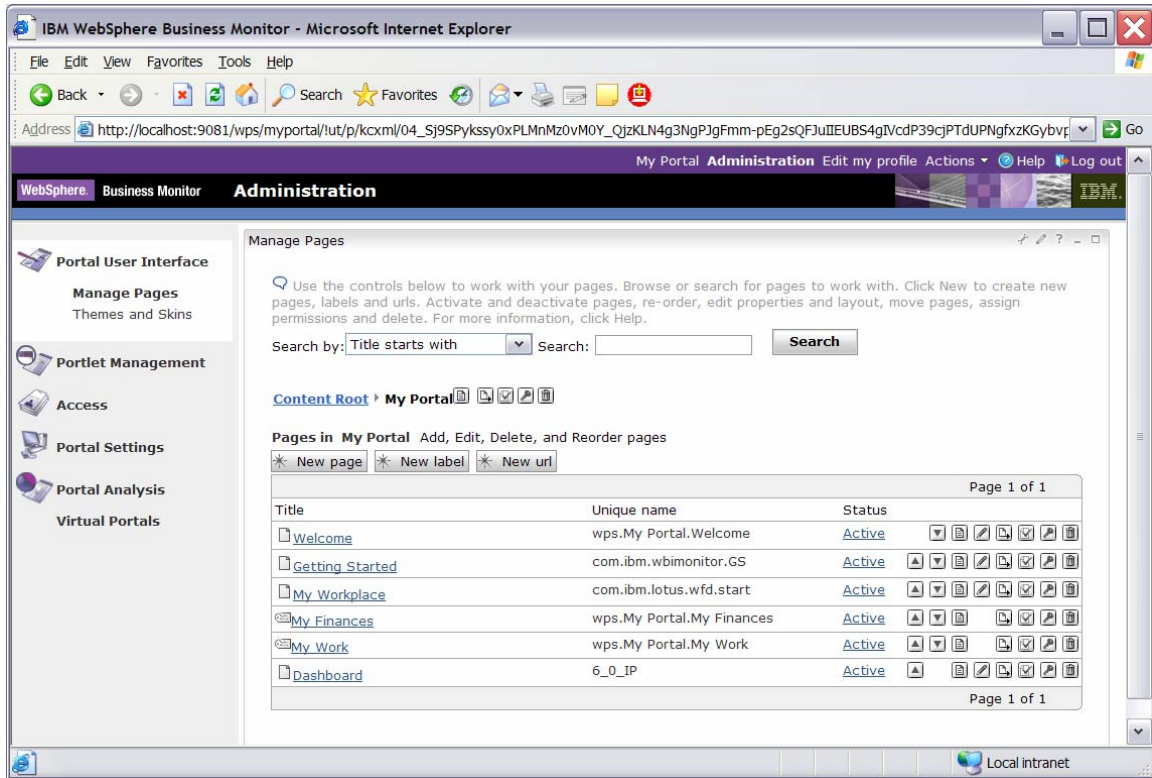
The "My pages" section contains a table of pages:

Title	Unique name	Status				
My Portal	wps.My Portal	Active				
Administration	wps.Administration	Active				
Page Customizer	wps.Page Customizer	Active				
Page Properties	wps.Page Properties	Active				
Organize Favorites	wps.Organize Favorites	Active				
Login	wps.Login	Active				
Edit My Profile	wps.Selfcare	Active				
wps.Search Center	wps.Search Center	Active				
wp_search_seedlist	wp.search.seedlist	Active				
Hidden Page for Workplace Directory Search	lotus.workplace.hiddenpage.PeoplePicker	Active				

At the bottom of the page, there is a "Page 1 of 2" indicator and a "Jump to page: 1" button. The browser status bar shows "Local intranet".

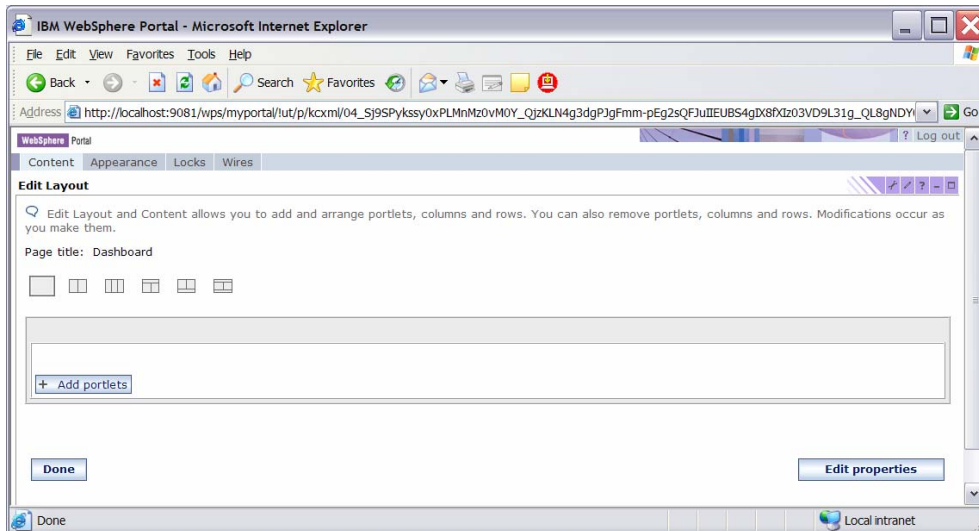
- ___ b. Click **My Portal**, and then click **New Page**. Enter **Dashboard** as the page title. Under **Type of Page**, click the leftmost radio button to select one-column layout. Click **OK**, and then click **OK** again. Now you should see the new page in the list as follows:

Figure 98. You should see the new page in the list



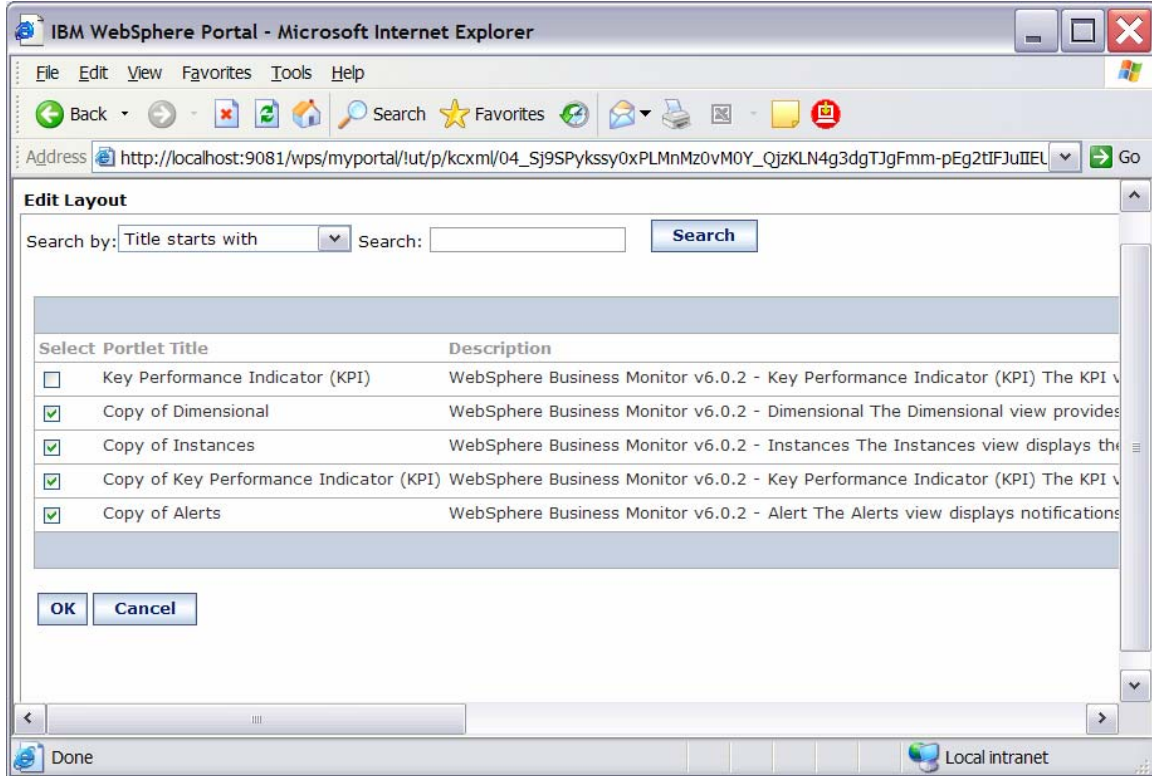
- ___ c. To edit the Dashboard page, click the **Edit Page Layout** icon on the right side of the row for Dashboard.

Figure 99. Click the Edit Page Layout icon



- ___ d. Click **Add portlets**. Navigate to the last page of the list to locate the **Copy of Dimensional**, **Copy of Instances**, **Copy of Key Performance Indicator (KPI)**, and **Copy of Alerts** portlets, and select all of them.

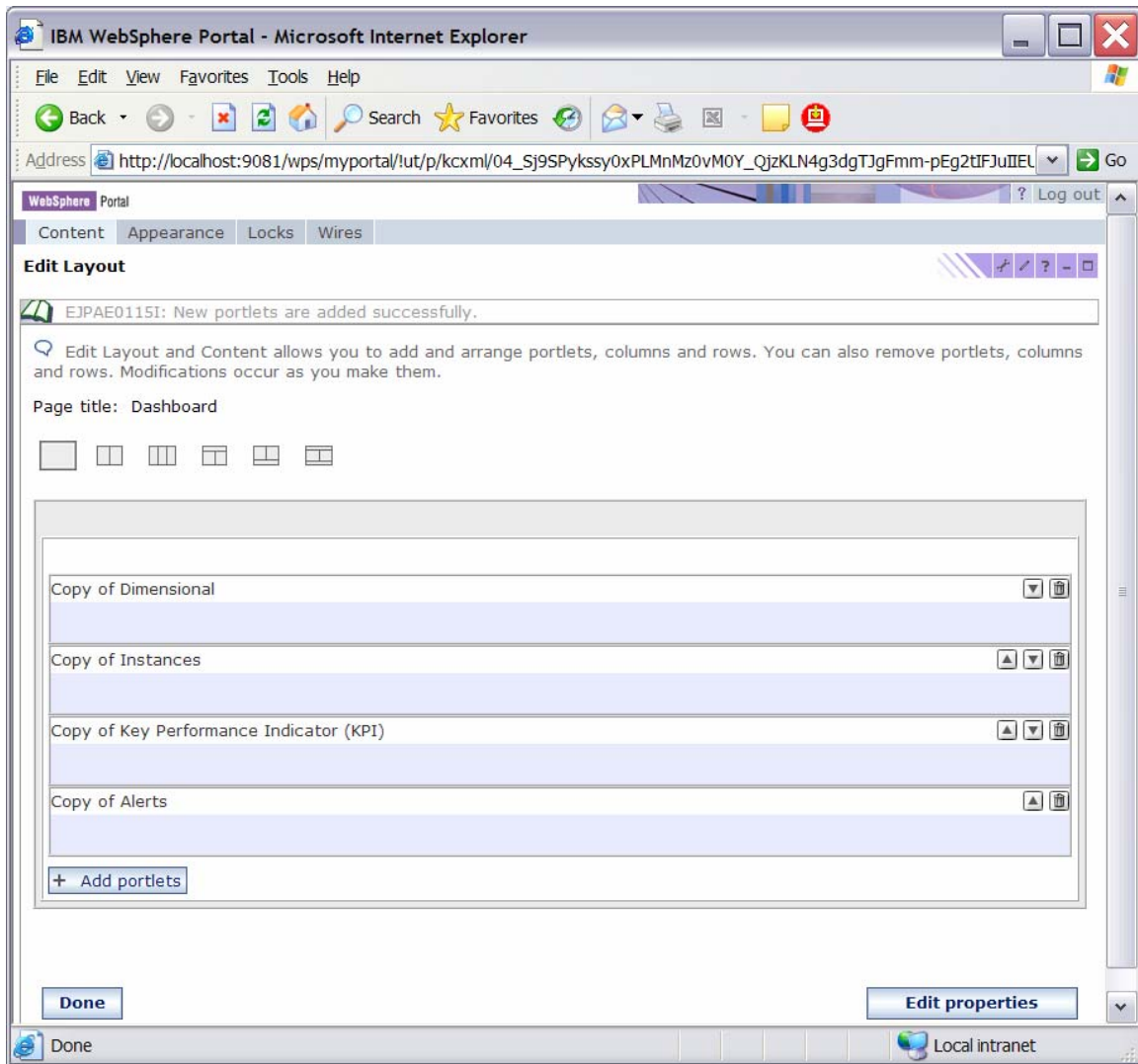
Figure 100. Select all of the recommended portlet titles



- ___ e. Click **OK**.

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

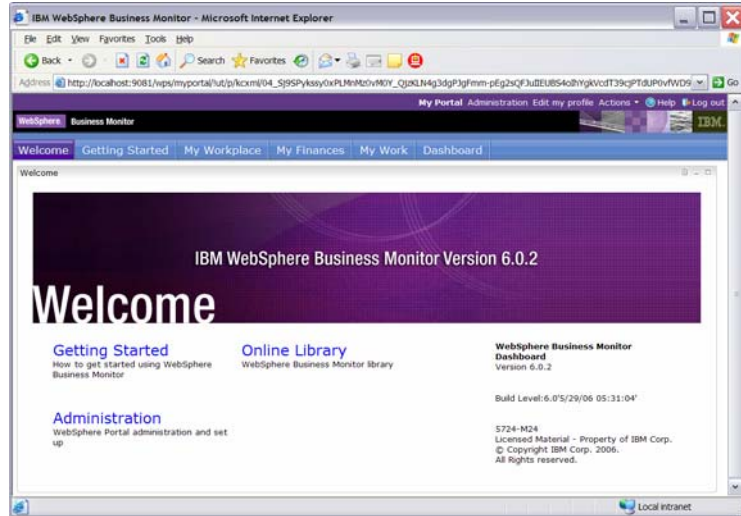
Figure 101. Confirm that the views have been added



- ___ g. Click **Done**.

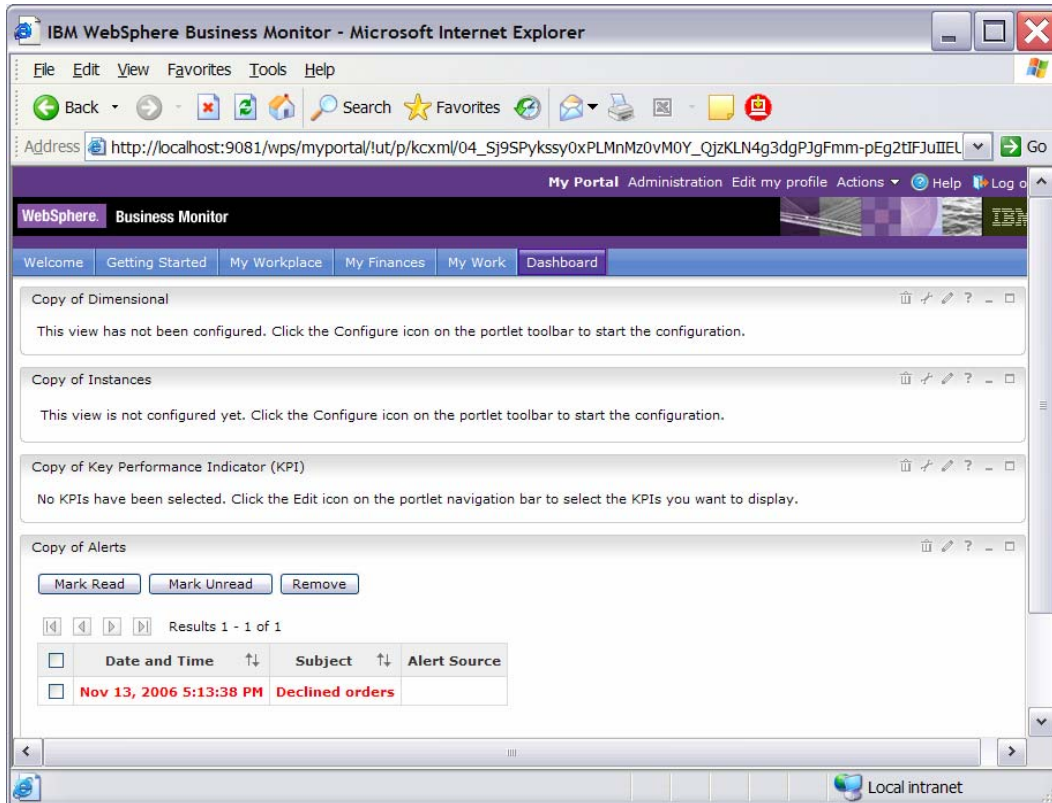
- ___ h. Click **My Portal** at the top of the page. In the new window, confirm that there is now a tab for Dashboard.

Figure 102. Confirm that there is now a tab for Dashboard



- ___ 4. Configure the views on your new page.
 - ___ a. Click the **Dashboard** tab. Although you can use the Alert view immediately, you must configure the other views before you can use them.

Figure 103. Configure the other views before you use them




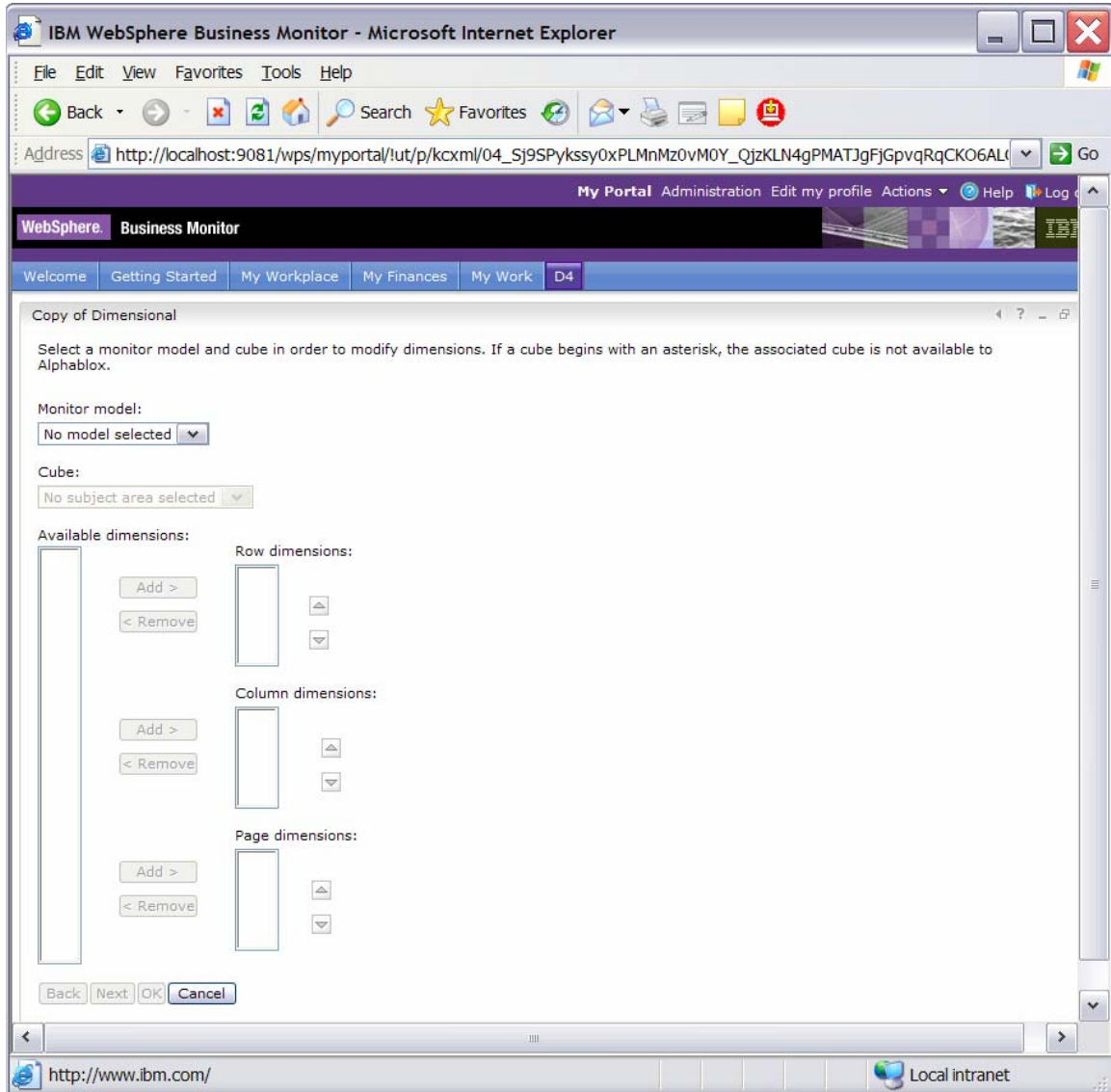
- ___ b. Click the **Configure** icon  on the **Copy of Dimensional** portlet.

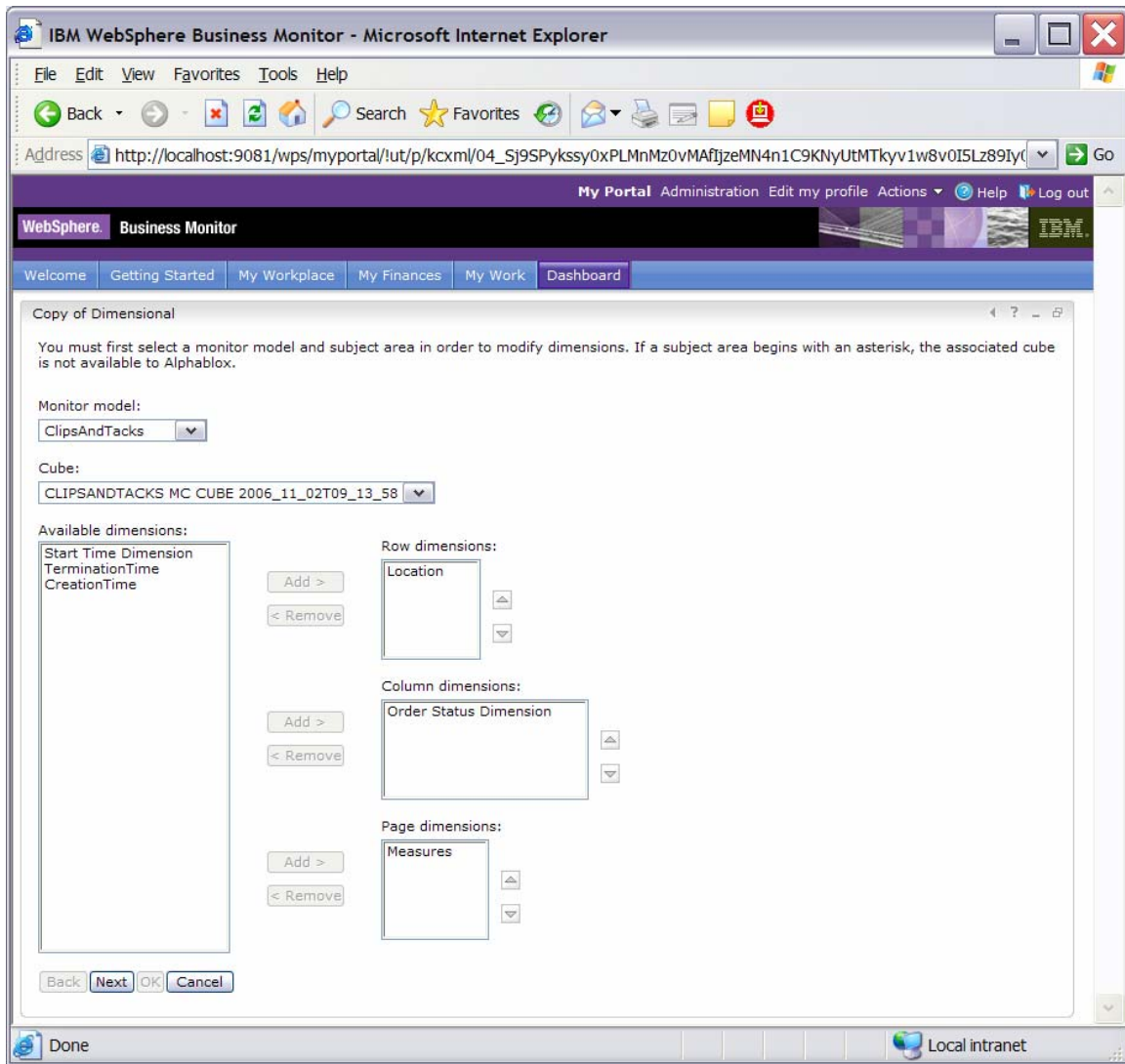
Figure 104. Click the Configure icon



- ___ c. For Monitor model, select **ClipsAndTacks**.
- ___ d. For Cube, select **CLIPSANDTACKS MC CUBE <timestamp>**.
- ___ e. In Available dimensions, select **Measures**, then next to Page dimensions, click **Add**.
- ___ f. In Available dimensions, select **Location**, then next to Row dimensions, click **Add**.
- ___ g. In Available dimensions, select **Order Status Dimension**, then next to Column dimensions, click **Add**.

- ___ h. Confirm that the window looks like the following example:

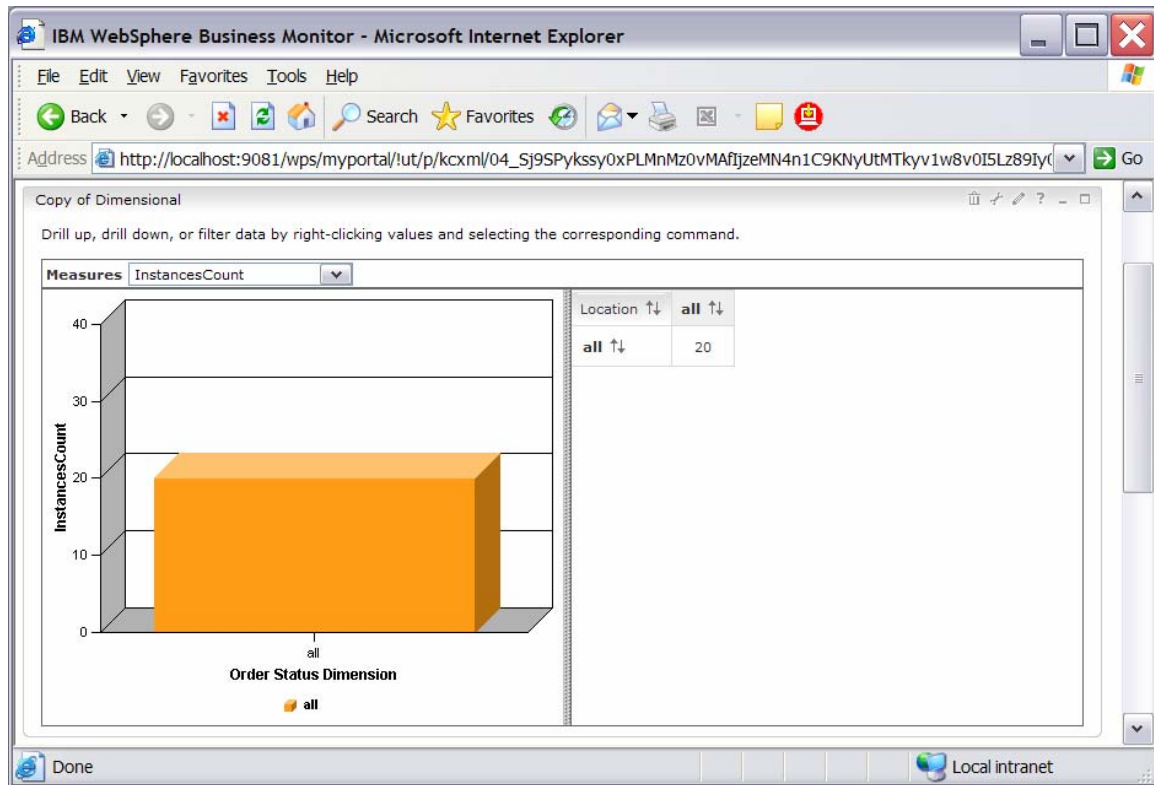
Figure 105. Confirm that the window looks like this



- ___ i. Click **Next**, then click **OK**.

___ j. Confirm that the configured portlet looks like the following example:

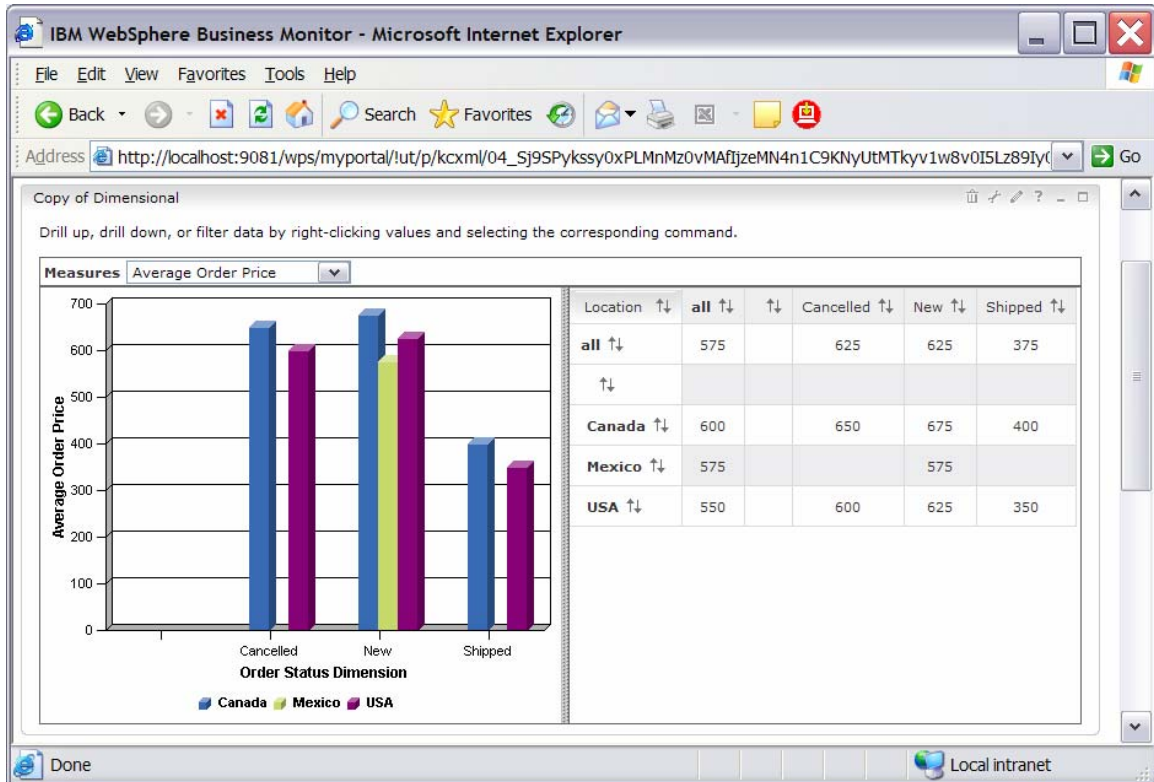
Figure 106. Confirm that the configured portlet looks like this



___ k. You are currently looking at the instances count. To see other measures, click the **Measures** list, then select **Average Order Price**.

- 1. Currently you are seeing data at the top level. In the tabular view on the right, double-click all in the column to drill down on **Order Status**. Double-click **all** in the first column to drill down on **Location**. Here is a sample:

Figure 107. Double-click all in the first column to drill down on Location




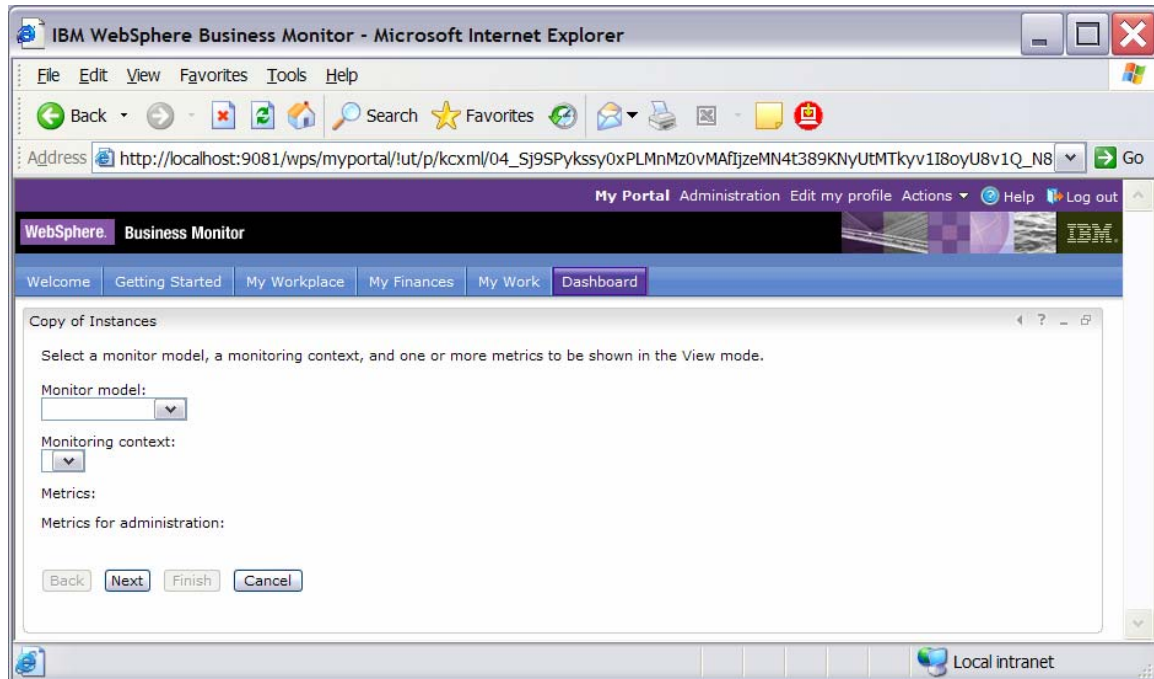
___ m. Click the **Configure** icon  for the **Copy of Instances** portlet.

Figure 108. Click the Configure icon

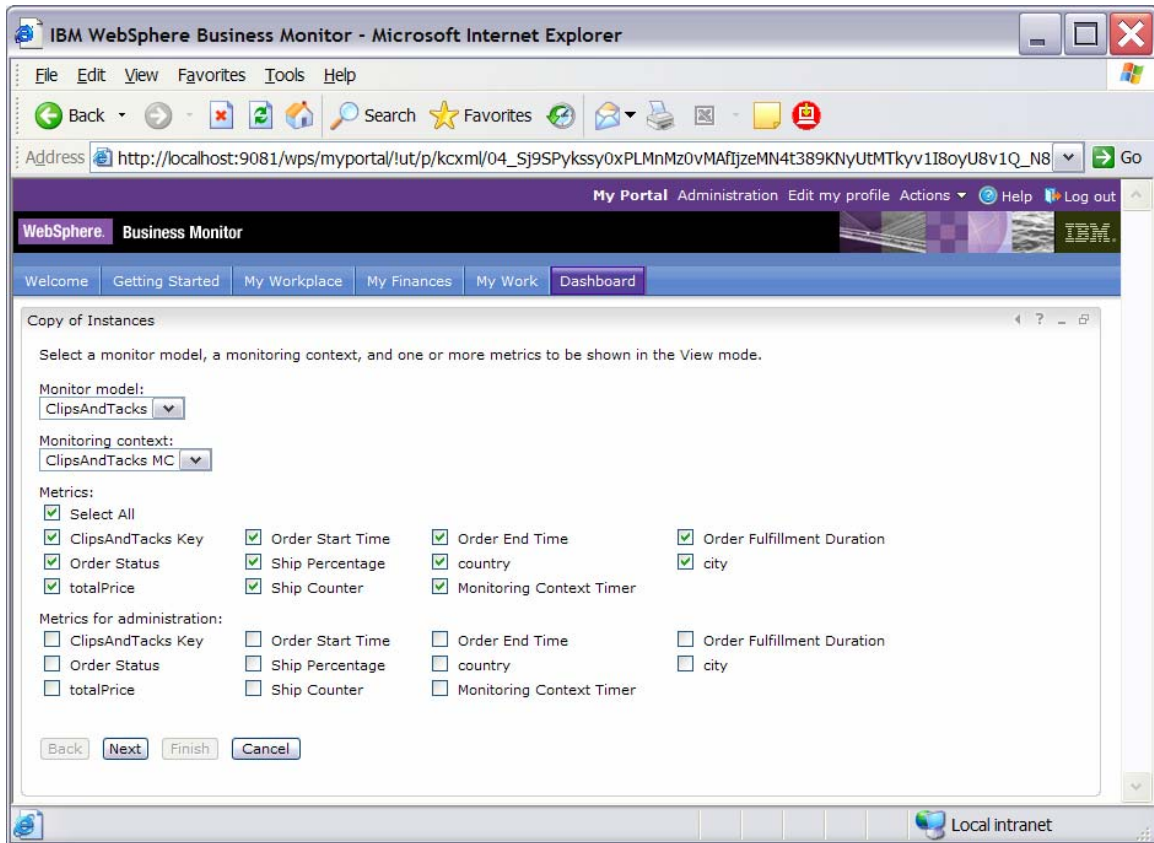


___ n. For model, select **ClipsAndTacks**.

___ o. For monitoring context, select **ClipsAndTacks MC**.

___ p. For metrics, select **All**.

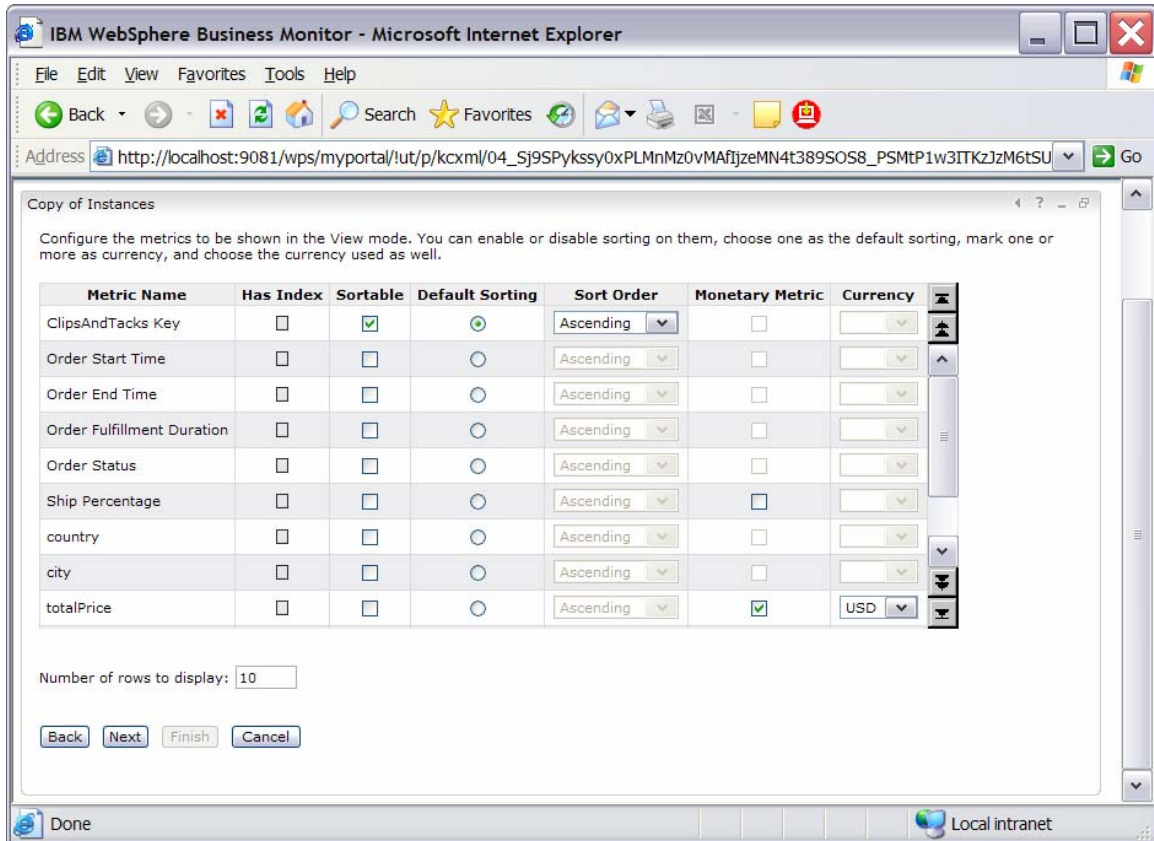
Figure 109. Select All for metrics



___ q. Click **Next**.

- __ r. In the next window, select the **Monetary Metric for totalPrice** check box, and select **USD** for Currency, as show in the following example:

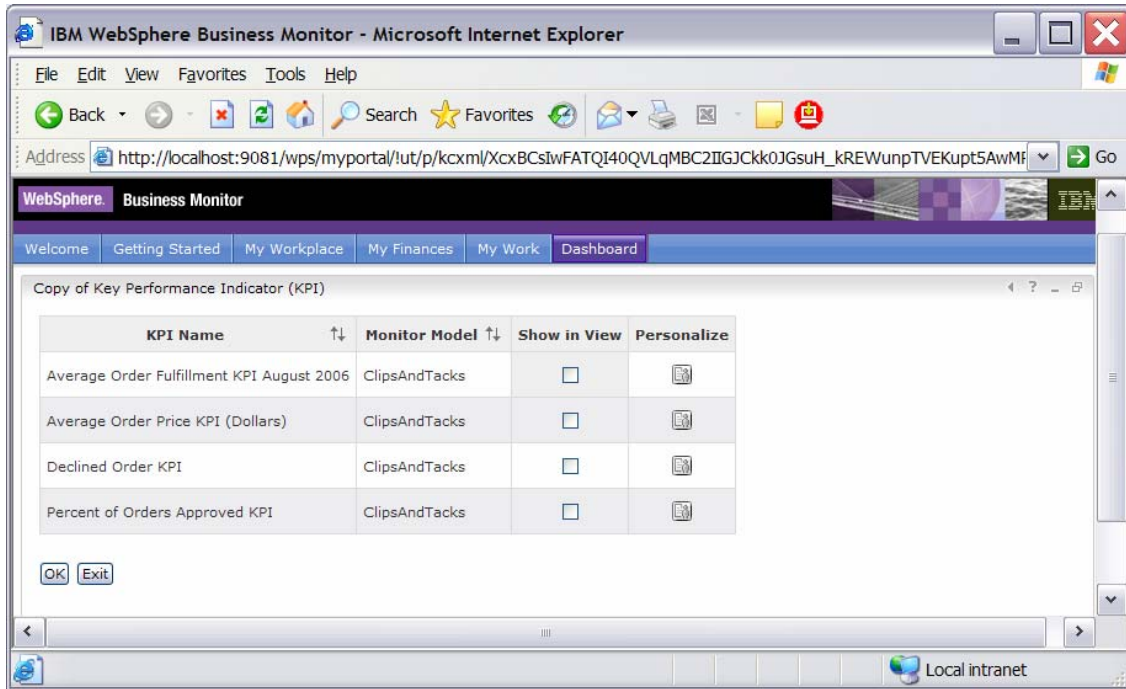
Figure 110. Select Monetary Metric totalPrice check box and USD Currency



- __ s. Click **Next**, then **Next** again, and then **Finish**.

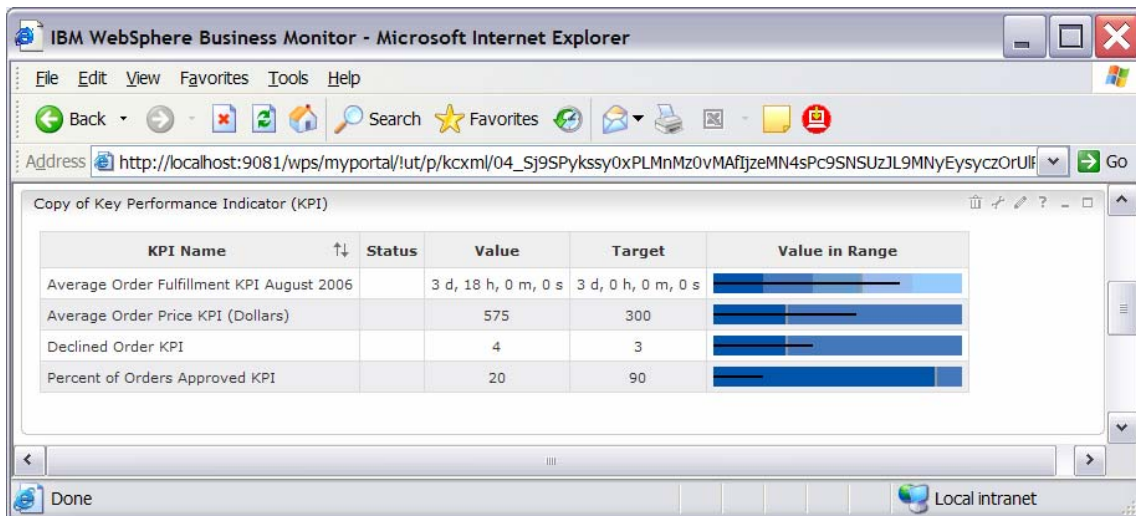
- ___ t. By taking the defaults, you configured the view to show both active instances and completed instances.
- ___ u. Click the Edit icon for the **Copy of Key Performance Indicator (KPI)** portlet.

Figure 111. Click the Edit icon for the Copy of KPI portlet



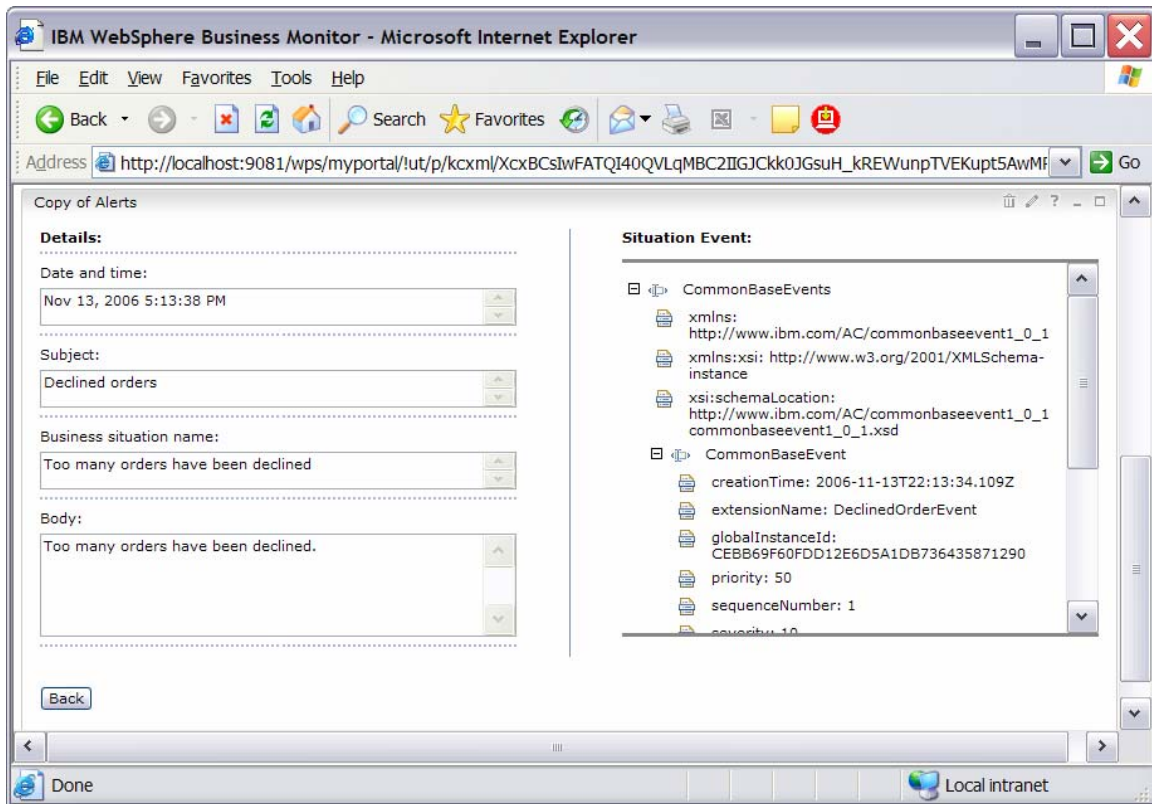
- ___ v. In column **Show in View**, select all four check boxes. Then click **OK**. Confirm that the window looks like the following example.

Figure 112. Confirm that the window looks like this



- w. For the Alerts portlet, no configuration is needed. Click one of the alerts in the Subject column to see the details for the alert.

Figure 113. Click one of the alerts in the Subject column



What you accomplished in this exercise

In this exercise, you created a monitor model using WebSphere Integration Developer.

Then you deployed the model to WebSphere Business Monitor.

You ran model life-cycle steps, and created Monitor database and replication-manager artifacts. You then started the replication manager daemons.

You imported the cubes to Cube Views.

If you had an LDAP server, you also configured Action Manager to create alerts based on business-situation events.

You used the supplied program to simulate the submission of events from the monitored application.

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

Appendix A. Import the solution into the WebSphere Integration Developer

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

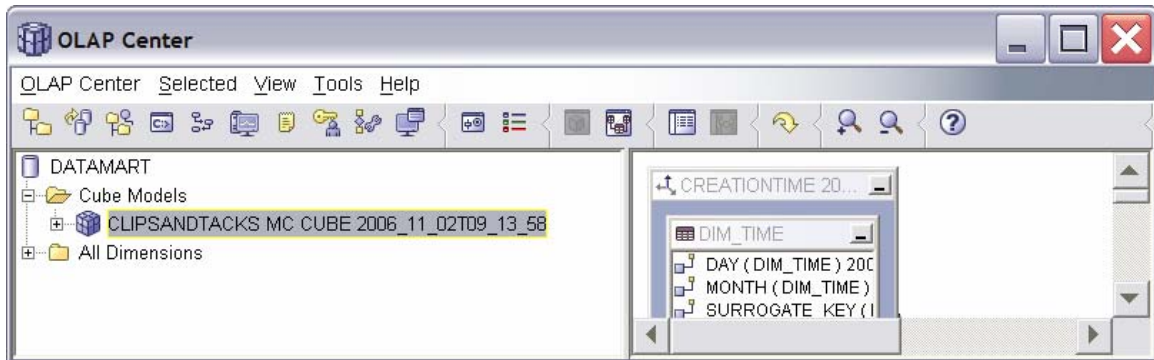
- ___ 1. Start WebSphere Integration Developer and set up the environment.
 - ___ a. Start WebSphere Integration Developer, V6.0.2, and when prompted, point to a new workspace, such as C:\workspaces\ClipsAndTacks.
 - ___ b. Close the Welcome page.
 - ___ c. Select **Window ► Preferences ► Workbench ► Capabilities**. Make sure that **Advanced J2EE** is selected.
 - ___ d. By default, you are in the Business Integration perspective. Open the Business Monitoring perspective. Select **Window ► Open Perspective ► Other ► Show all ► Business Monitoring**.
 - ___ e. If you are asked to confirm enablement, click **OK**.
- ___ 2. Create a new monitoring project.
 - ___ a. Right-click in the **Project Explorer** pane, then select **New ► Business Monitoring Project**.
 - ___ b. For Project name, enter **ClipsAndTacks**.
 - ___ c. Click **Finish**. You will see the new project in the Project Explorer pane.
- ___ 3. Import the supplied .mm and .cbe files.
 - ___ a. Right-click in the **Project Explorer** pane, and then select **Import**.
 - ___ b. Select **File system**, and then click **Next**.
 - ___ c. Browse to the location containing the files, for example, C:\Labfiles602\ClipsAndTacks.
 - ___ d. Select **ActivityEvent.cbe**.
 - ___ e. Select **ClipsAndTacks.mm**.
 - ___ f. Select **DeclinedOrderEvent.cbe**.
 - ___ g. Select **LateAverageOrderShippedEvent.cbe**.
 - ___ h. Select **NewOrderEvent.cbe**.
 - ___ i. Click **Finish**.
- ___ 4. Expand the project in the **Project Explorer** pane, and then expand **Event Definitions** to see the new events listed. Expand **Monitor Models** to see the new ClipsAndTacks model listed.
- ___ 5. Now proceed to **Part 2** to generate the EAR file for the monitor model.

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

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

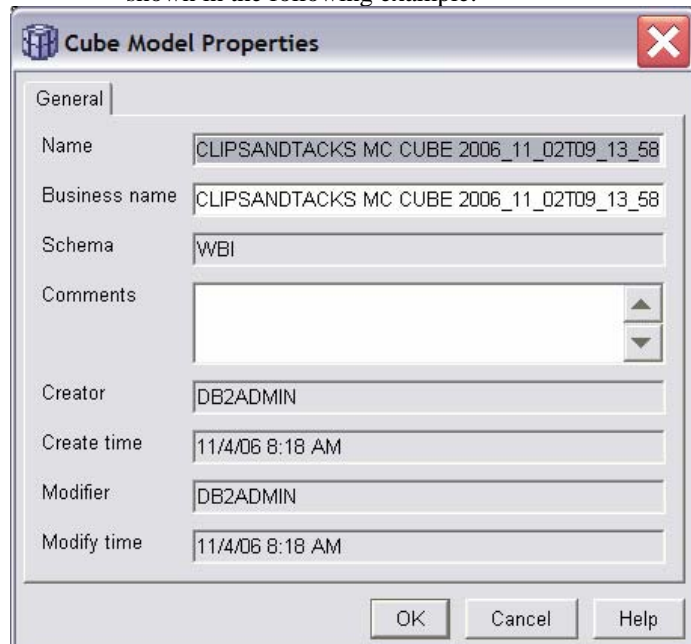
- ___ 1. Copy the cube name from OLAP Center.
 - ___ a. In Windows, select **Start ► All Programs ► IBM DB2 ► Business Intelligence Tools ► OLAP Center**.
 - ___ b. Enter your DB2 user ID and password.
 - ___ c. Confirm that the cube model is listed as in the following example:

Figure 114. Confirm that the cube model is listed



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

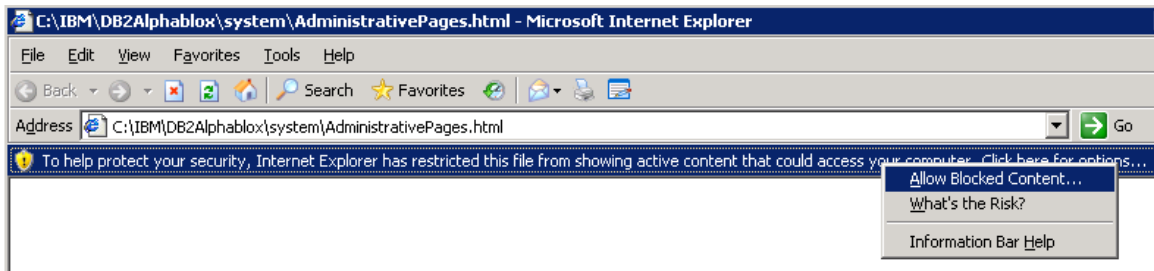
Figure 115. Select the text in the Name field as shown



- ___ 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**.

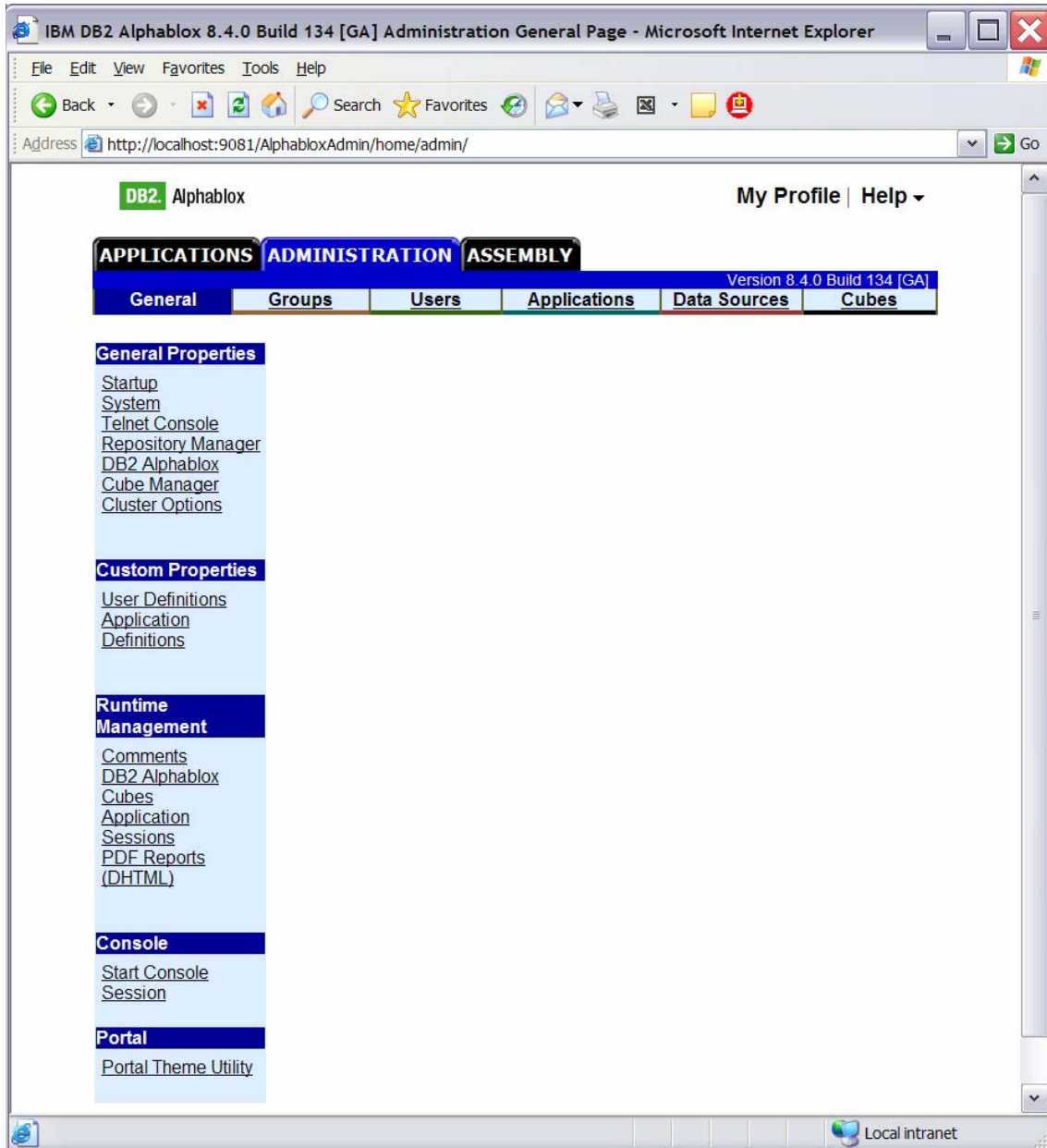
Note: If Windows blocks your attempt to access the page, an information bar at the top of the window displays the following message. Click this bar and select **Allow Blocked Content** to continue.

Figure 116. 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 117. Confirm that the next window looks like this



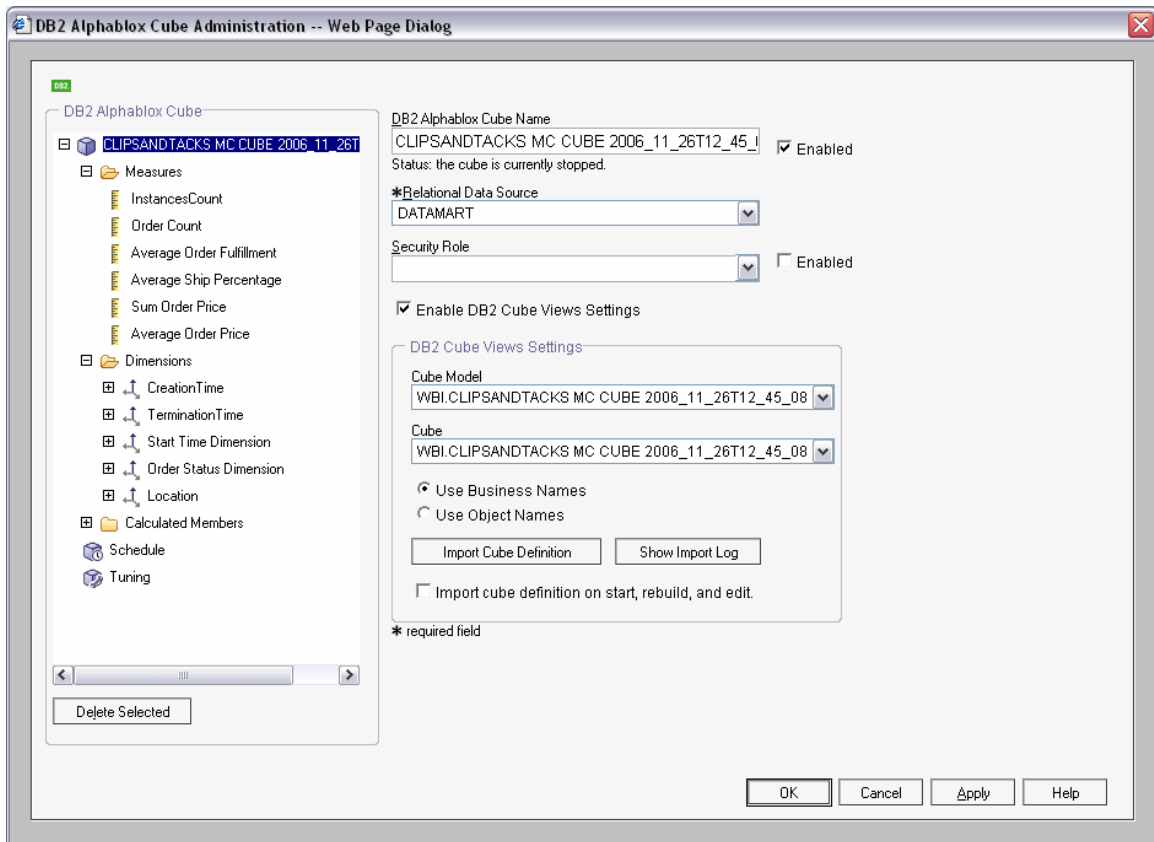
- ___ d. Click the **Cubes** tab at the top of the Alphablox window, and then click **Create**. You should see a window like this:

Figure 118. Confirm that the next window looks like this

- ___ 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.

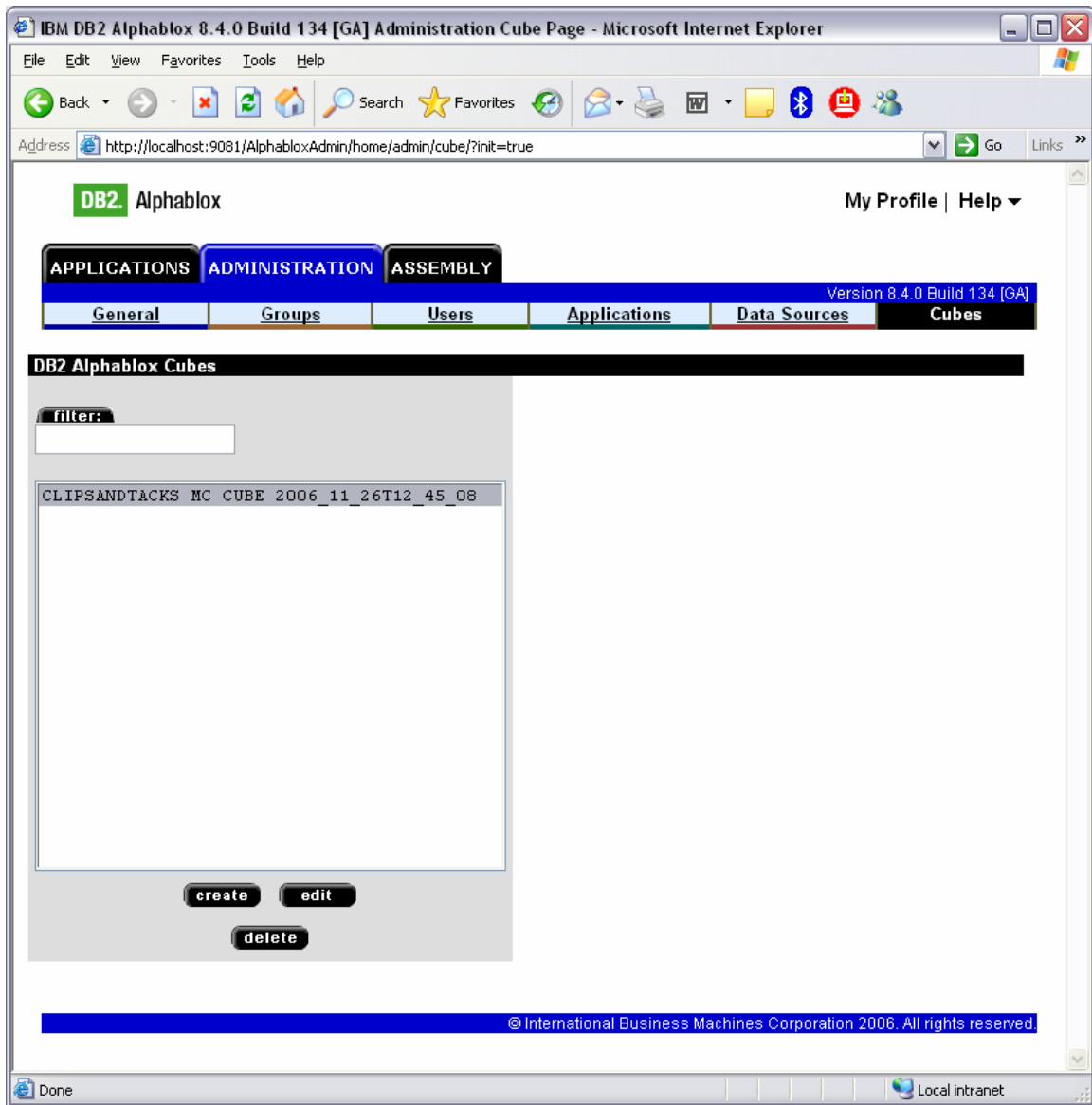
Figure 119. Confirm that the next window looks like this



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

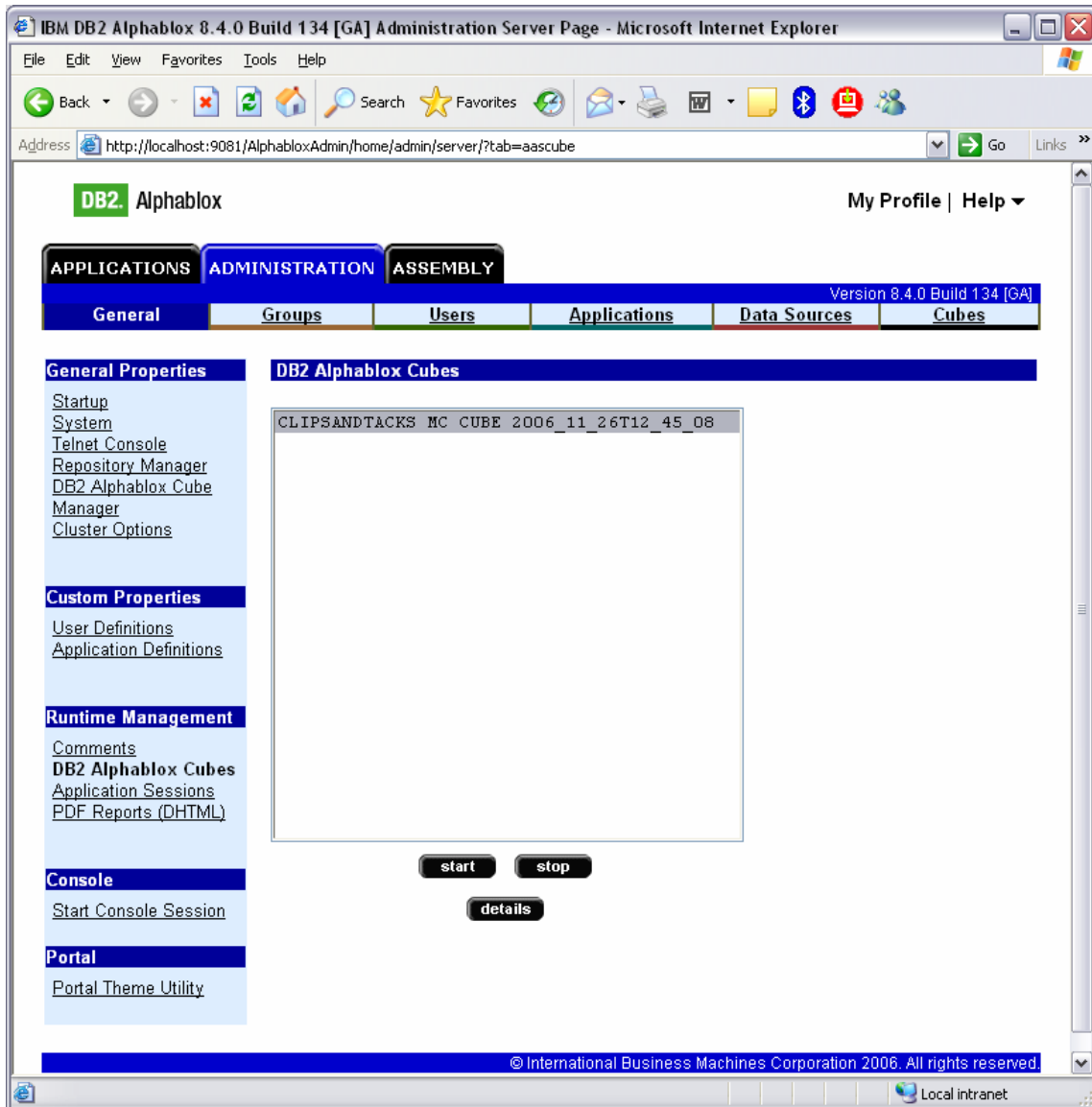
- 1. Click **OK** to save the definition. Confirm that it has been added to the list as follows:

Figure 120. Confirm that the definition has been added to the list



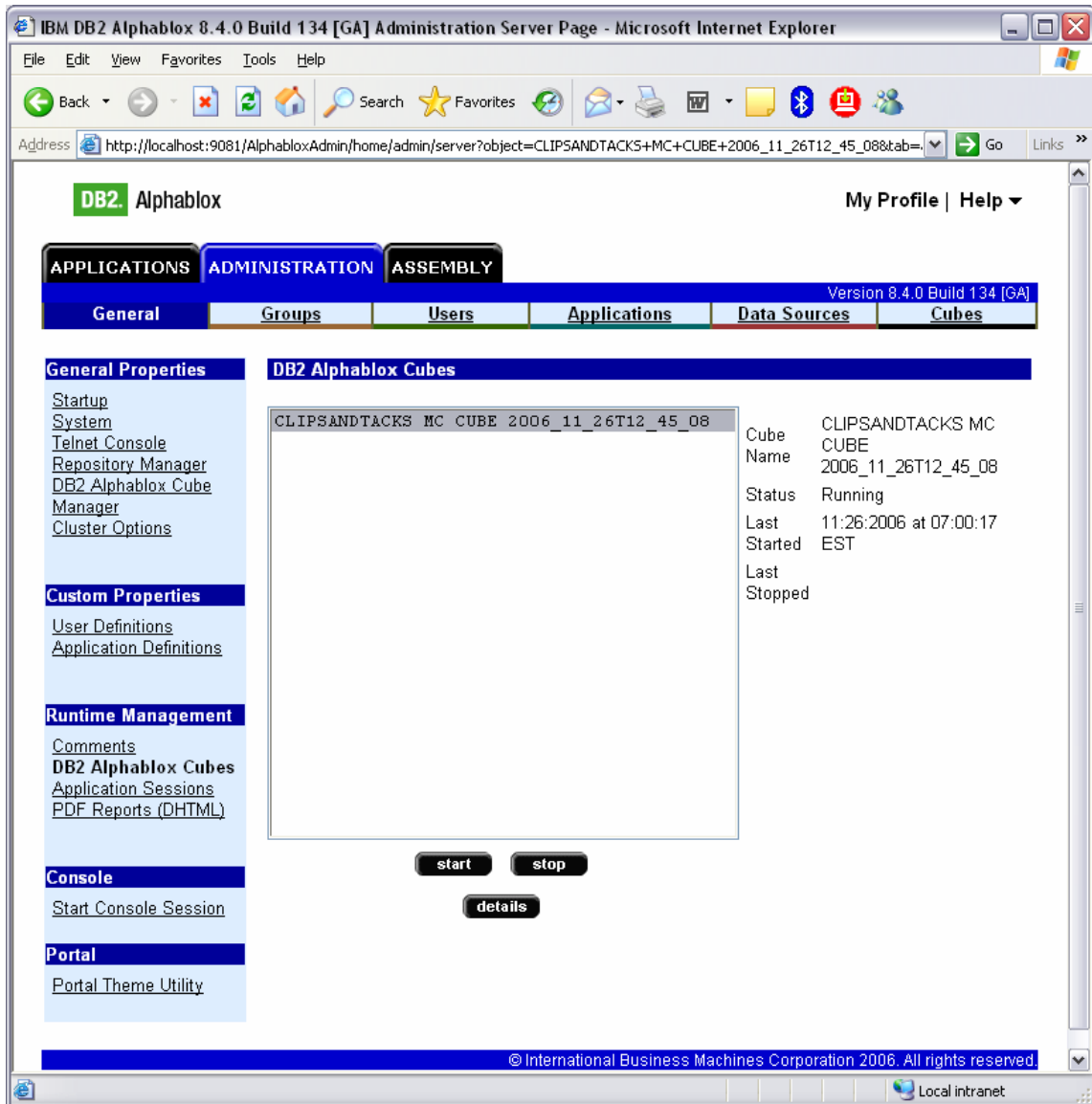
- ___ m. Click the **General** tab at the top of the Alphablox window. Then click **Runtime Management** ► **DB2 Alphablox Cubes**.

Figure 121. Click Runtime Management ► DB2 Alphablox Cubes



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

Figure 122. The status of the cube should be Running



- ___ 3. Update the life-cycle table for step 5.
___ a. Open the DB2 Control Center. In Windows, select **Start ► All Programs ► IBM DB2 ► General Administrative Tools ► Control Center**.

- ___ b. In the MONITOR database, open the LC_STEP table. In the row containing createAbxCube as the STEPNAME value, type 1 in the ISCOMPLETE column. Here is an example:

Figure 123. Open the LC_STEP table

IBM-6161E0131C0 - DB2 - MONITOR - REPOS.LC_STEP

MODELEID	VERSIONDATE	STEPNAME	LASTSUCCESSRUNTIME	LASTFAILRUNTIME	ISCOMPLETE	USER
ClipsAndTacks	1162458838	register	Nov 4, 2006 8:12:45 AM 06...		1	anony
ClipsAndTacks	1162458838	install	Nov 4, 2006 8:12:51 AM 28...		1	anony
ClipsAndTacks	1162458838	runDSG	Nov 4, 2006 8:13:50 AM 71...		1	
ClipsAndTacks	1162458838	createSchema				
ClipsAndTacks	1162458838	createDMS	Nov 4, 2006 8:16:56 AM 10...		1	
ClipsAndTacks	1162458838	importDB2Cube	Nov 4, 2006 8:25:14 AM 43...		1	
ClipsAndTacks	1162458838	createAbxCube		Nov 4, 2006 9:58:22 ...	1	
ClipsAndTacks	1162458838	updateCEIConfig				
ClipsAndTacks	1162458838	configCEIDist				
ClipsAndTacks	1162458838	enableDashboards				
ClipsAndTacks	1162458838	rebootCEI				
ClipsAndTacks	1162458838	disableDashboards				
ClipsAndTacks	1162458838	update				
ClipsAndTacks	1162458838	updateModelProps				
ClipsAndTacks	1162458838	updateVersionPro...				
ClipsAndTacks	1162458838	removeAbxCube				
ClipsAndTacks	1162458838	uninstall				
ClipsAndTacks	1162458838	unregister				
ClipsAndTacks	1162458838	purge				

Buttons: Commit, Roll Back, Filter, Fetch More Rows

Automatically commit updates

19 row(s) in memory

Buttons: Close, Help

- ___ c. Click **Commit** to save your changes, then click **Close**.
- ___ d. Close the DB2 Control Center.
- ___ e. If the Process Server administrative console still displays step 5 of the life cycle, reload the page in the browser. The window should indicate that step 5 is now complete.
- ___ f. Return to the instructions for the life-cycle steps, starting at step 6.



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