WebSphere Business Events / Event Flow Monitor User Guide 1.0

First Edition, 3rd April 2009

Take Note!

Before using this User's Guide and the product it supports, be sure to read the general information under "Notices"

First Edition, January 2009

This edition applies to Version 1.0 of *WebSphere Business Events / Event Flow Monitor* and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

Preface

The current Event Flow capabilities of WebSphere Business Events 6.2 or earlier does not allow for graphical representation of the running application other than in the form of charts, graphs and reports. This Support Pac is intended to extend an application's visibility and allow users to not only model current Event Flows but to also display statistics both globally and by a particular context (stream or thread) of activity.

Any comments (good and bad) are welcome.
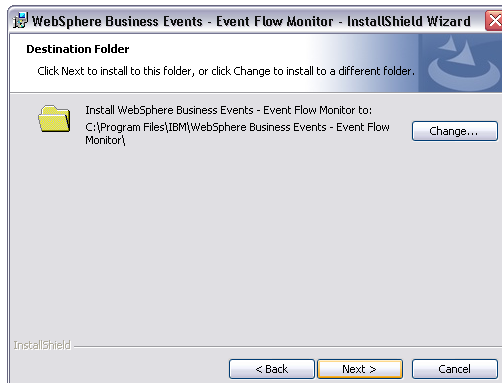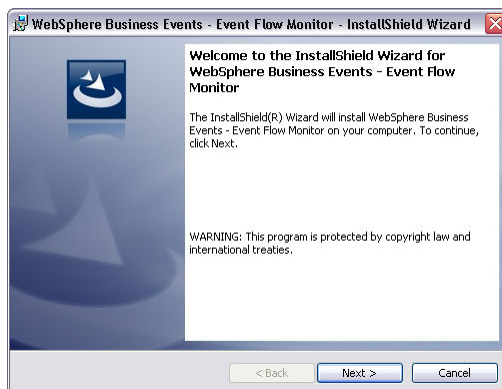
Chapter 1 – Event Flow Monitor

This document describes the functions and capabilities of the Event Flow Monitor SupportPac for WebSphere Business Events ("WBE").

Overview

The *Event Flow Monitor* allows for the visualization of run-time activity currently being processed by WebSphere Business Events. This is useful for debugging, simulation and monitoring a run-time application. The current version operates against the historical and correlation data stored in the WebSphere Business Events database and as such is not true real-time, rather "near" real-time. The refresh rate is configurable within the application which can be as low as once every second.

Installation

The *Event Flow Monitor* is distributed with a self-contained installer. To install the application, run the installer and follow the on-screen prompts.
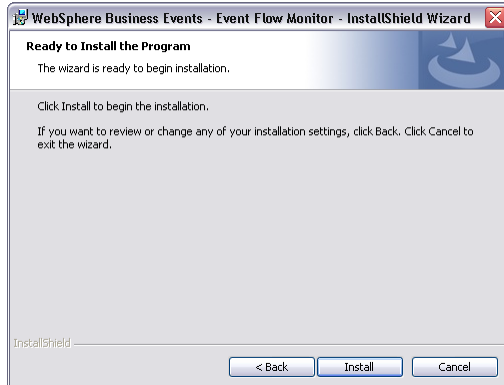
To confirm that the application has been installed successfully, check the programs menu. In Windows XP this can be done by navigating to **Start > Programs > IBM WebSphere Business Events 6.2** and clicking on the **Event Flow Monitor** item.

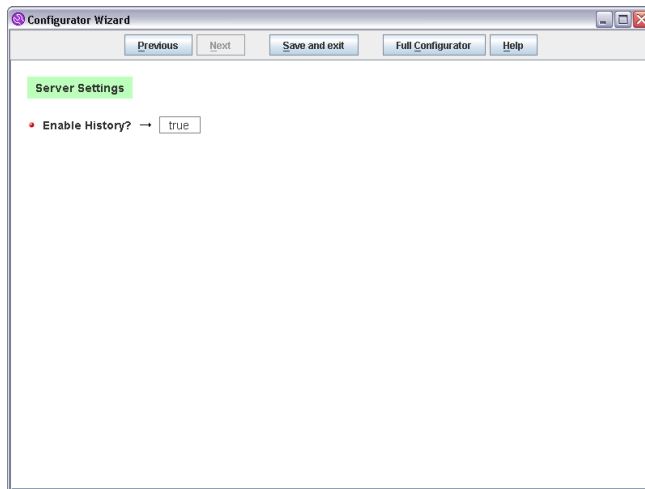## Enable History in WebSphere Business Events

In order for run-time information to be viewed in the Event Flow Monitor, the history module needs to be enabled within WebSphere Business Events. To do this, first start **WebSphere Business Events Properties**:

> Navigate to **Start > Programs > IBM WebSphere Business Events 6.2** and click on the **Properties** item.

Within the welcome screen, enter appropriate login information (the default is username: **admin**, password: **admin**).
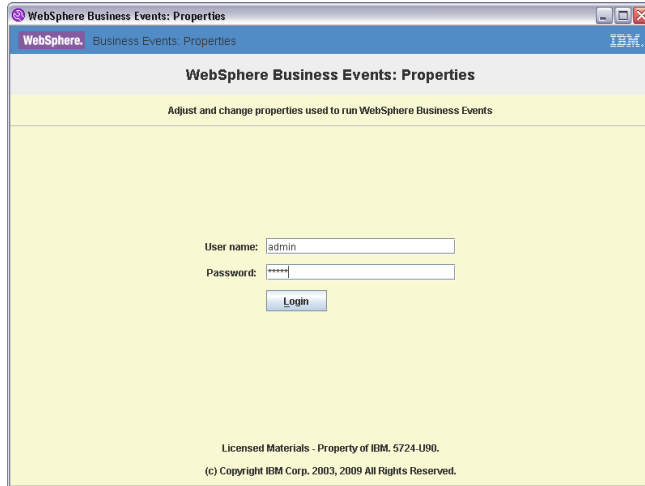
The next screen may take a few moments to load. Once it appears, click the **Next** button until the **Enable History?** property is visible. This value needs to be set to **true**. Then click the **Save and Exit** button.


If history was not previously enabled, the WebSphere Business Events application will need to be restarted before the setting will take effect.

ODBC Configuration

Because the Event Flow Monitor operates against the WebSphere Business Events database, a connection to this database needs to be established. Since multiple databases are supported, the current version of the Event Flow Monitor utilizes a Windows ODBC connection. In order to configure an ODBC connection to the WBE database, the following steps should be taken:

1. Open the control panel. In Windows XP, this is done by navigating to **Start > Settings > Control Panel**.

2. Open the **Administrative Tools** folder within the control panel.

3. Open **Data Sources (ODBC)**.

4. Click the **System DSN** tab, then click the **Add…** button.
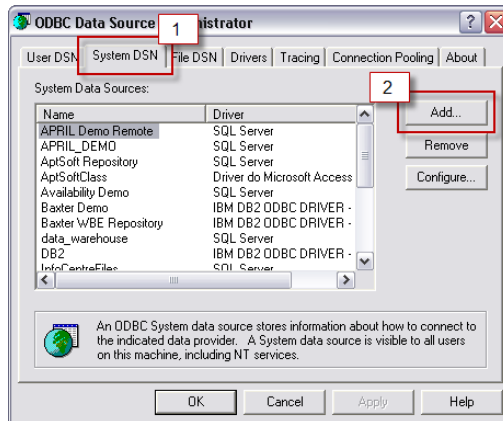
5. Select the appropriate driver depending on the host database (typically one of the following: IBM DB2 ODBC Driver, Oracle ODBC Driver or SQL Server). Click the **Finish** button.

    Note: If the correct driver does not appear in this list the database client may need to be installed on this machine.

6. Select the correct database and optionally enter the valid log-in information for the given data source (depending on the hosted system). If the source is a DB2 database the window may look like this:
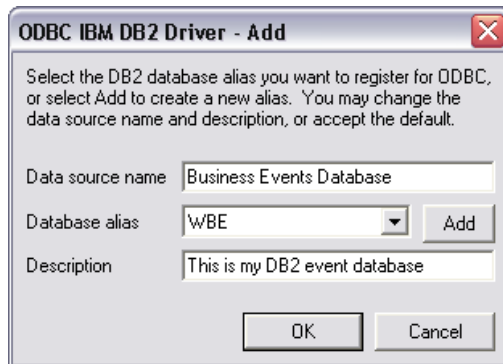
Chapter 2 – Getting Started

The Event Flow Monitor can be used in multiple roles to view run-time information of a WebSphere Business Events application. This information is retrieved from the Business Events database via an ODBC connection (which needs to be configured separately – see the previous section for details).

Start the Application

To start the application, navigate to **Start > Programs > IBM WebSphere Business Events 6.2** and clicking on the **Event Flow Monitor** item. After the splash screen, the initial window should look like this:
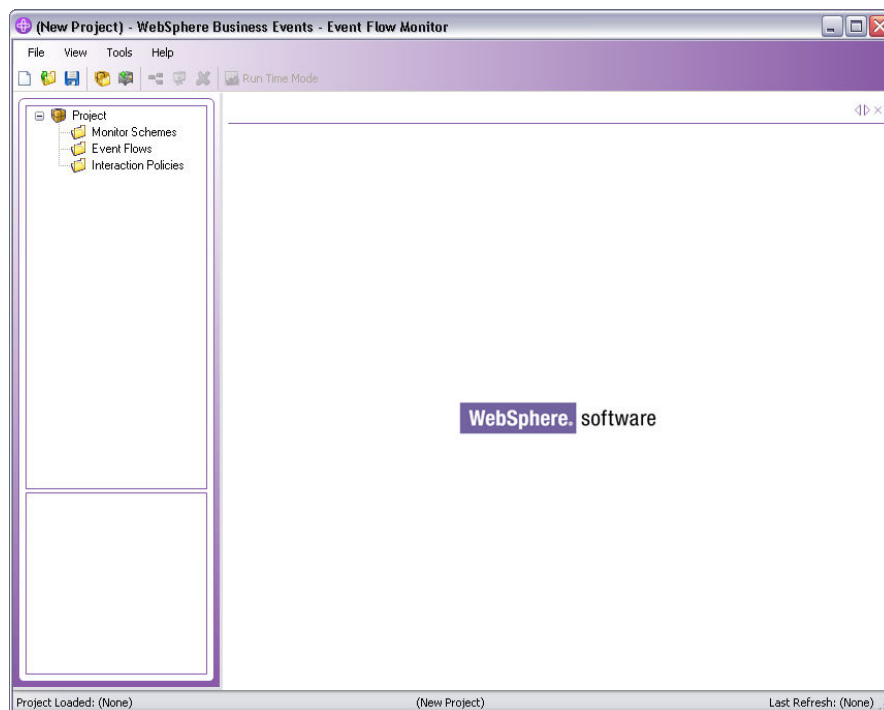

There are multiple file menu and toolbar options. These will be further described in **Chapter 5**.

Configuration

In order successfully view the repository and run-time information, the connection to the server database needs to be configured. Navigate to **Tools > Settings…**
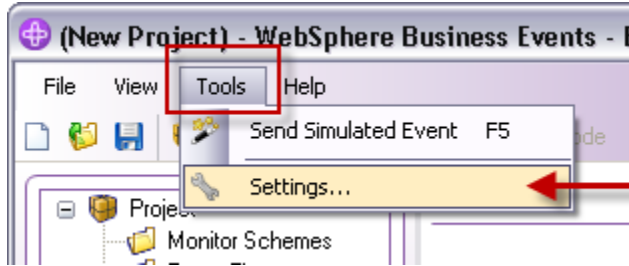
Verify that the server name and port are correct within the WBE URL and enter the repository and history database information (check the **Same as Repository** checkbox if these are the same – it would be unusual if they are different).
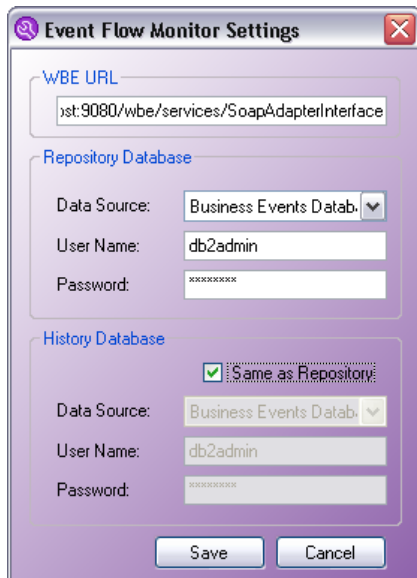

When the correct information has been entered, click the **Save** button. These settings will be saved for future use of the application.

Chapter 3 – Creating Event Flow Schemes

The flows created in the Event Flow Monitor are called "schemes" because the current application is only a read-only view of the existing environment so the flows are not pushed back into the server (so they are not true "event flows" in terms of the engine execution).

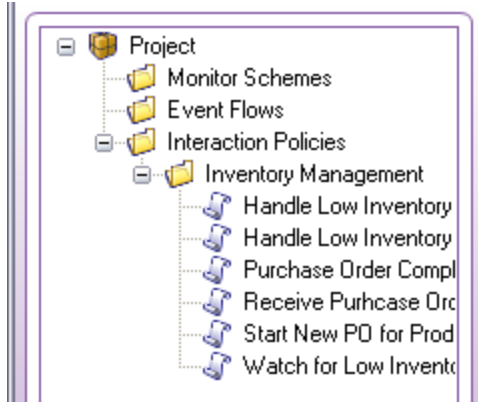## Importing a WebSphere Business Events project

There are two ways to load a project into the application. The first is to load the project directly from the repository database. This is the most common method as the project contained within the repository is typically the one which the user wishes to monitor. To import the project, either click the **Import WBE Project from Repository** button, select **File > Import WBE Project from Repository…** or click **CTRL-R**:
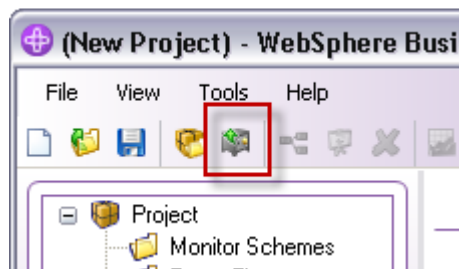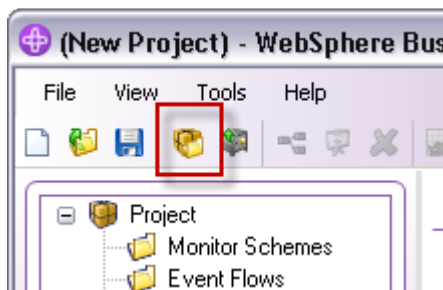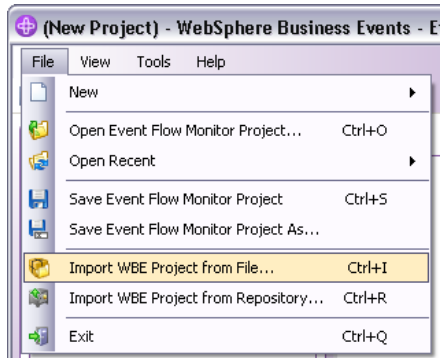

OR
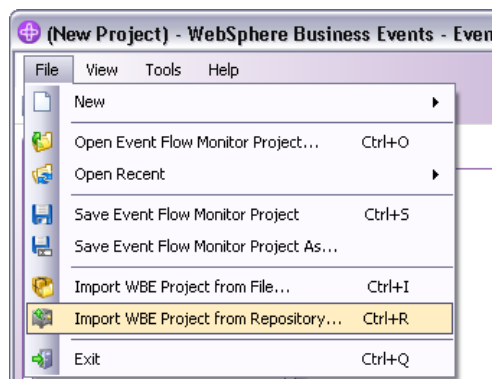
Once the WebSphere Business Events project is loaded, each of the Interaction Sets in that project will be visible in the tree.

The other, less common way to import a project into the application is to click the **Import WBE Project from File** button, select **File > Import Project from File…** or click **CTRL-I.**
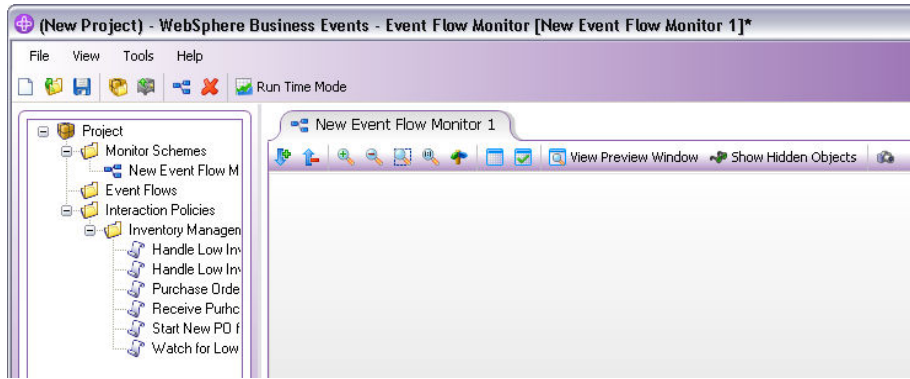

OR

Create a Monitor Scheme

Once a WebSphere Business Events project is successfully imported into the current application, multiple event flow schemes can be created. To create a new scheme, either click the **Create New Event Flow Scheme,** select **File > New > Event Flow Monitor Scheme…** or click **CTRL-N**.

A new tab will appear which will be the drawing space for the new flow.

Interaction Sets from the tree may now be dragged into this new drawing space to start creating the new flow. An event flow scheme can potentially contain only a single Interaction Set, or can have as many as are necessary. An Interaction Block is represented by a blue rectangle which can contain filters represented as yellow diamonds. Events and Actions should be represented with the appropriate icon depending on the connection properties as set in Design Data. Interaction Sets with more than one Interaction Block will be represented as multiple blocks with the same triggering events. Finally, any correlation filters (*context* functions) will depict related events with a dashed red arrow.

In this example, a single Interaction Set has been dragged into the scheme and it contains two Interaction Blocks. Each of the Interaction Blocks contains two filters, one of which referenced the event "Purchase Order" (note the dashed red arrow).
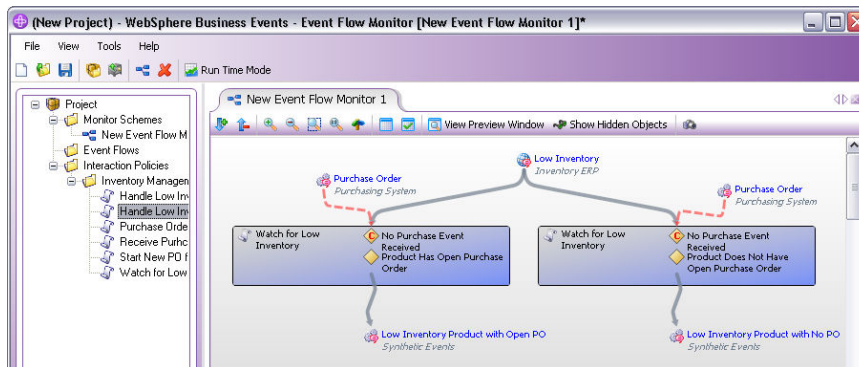
Additional Interaction Sets may be added to the flow by dragging in from the tree.

Note: *An Interaction Set may not be used more than once within a single flow.*

In this example, two new Interaction Sets have been dragged into the flow. Notice that the connections within the flow are not automatically created. In general, this is because the application will not *assume* any connections based on what the user wants to do.
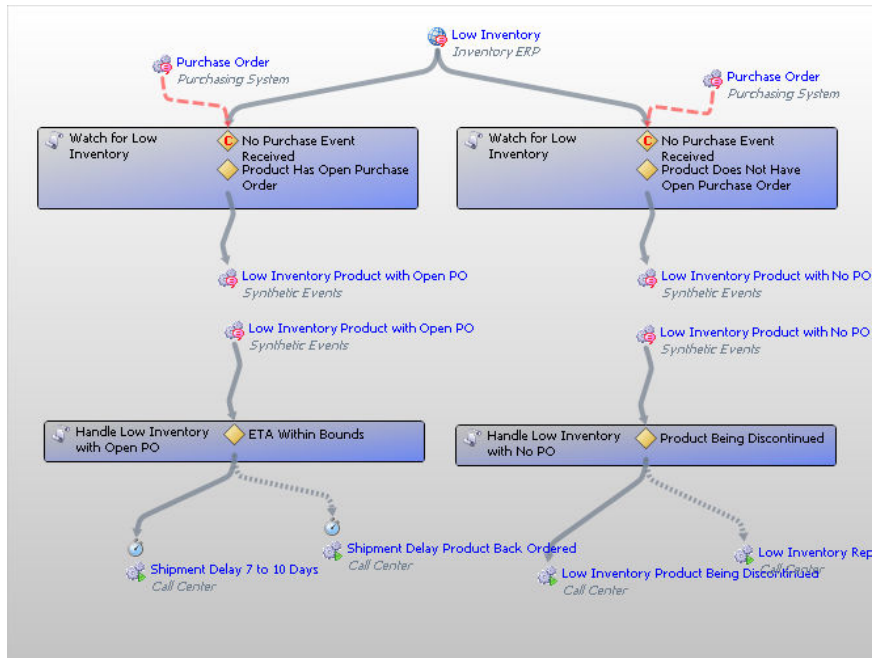
In order to connect the flow, the event in the following Interaction Set can be dragged onto the outbound action or synthetic event of the previous step. If the event is connecting to another event (such as with a synthetic event) then this will simply create a single event. If the next event is connected to an outbound action, then a *business step* is created.

In this example, the synthetic events are combined within this flow.
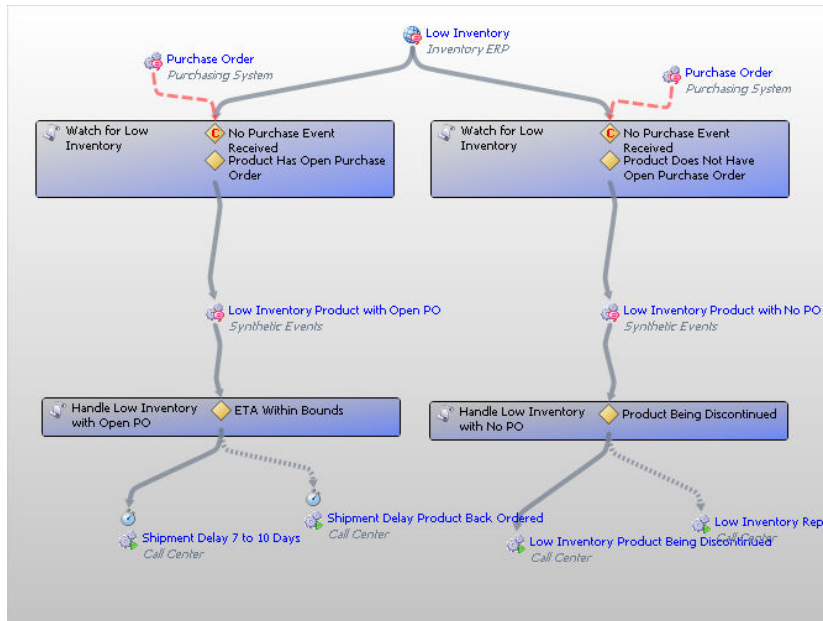
To illustrate the business step, two new Interaction Sets are added to the flow.
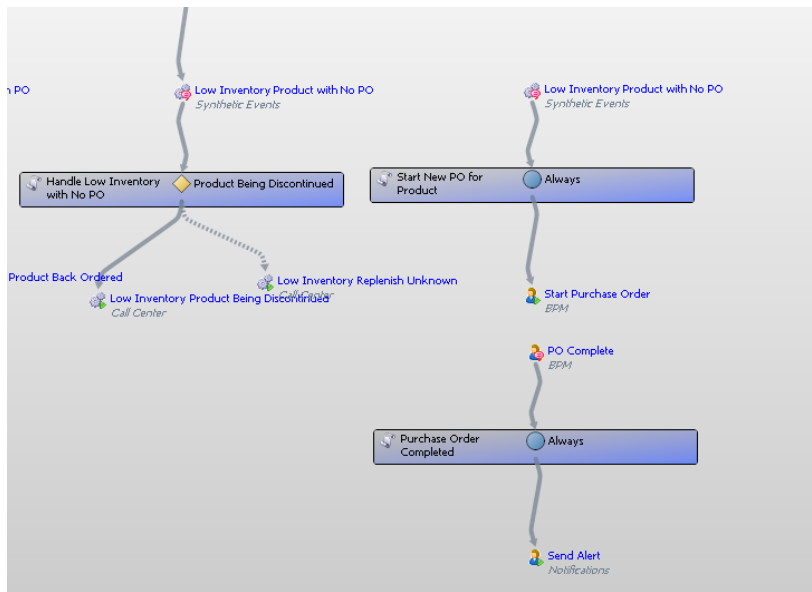
Now the objects are connected, and because the second connection has both an event and an action, connecting these will create a ***business step***.

Business steps are key concepts within WebSphere Business Events. These represent logic that is taking place outside the system, and can be immediate or last an indeterminate amount of time. An example of an immediate business step would be if the action was performing a database update and the event was the result event from that transaction. Another type of business step would be where the action was sending an email with a discount to a customer and the next expected event is that the customer makes a purchase. Days, weeks or months could elapse before the next event returns to the system. Also note that the outbound system and the inbound system can be completely different. This does not matter as far as the engine or the event flow is concerned.

In this example, the business step is representing a BPM process to create a purchase order. The outbound and inbound systems are the same ("BPM"), but the amount of time is unknown because the process may involve manual steps.
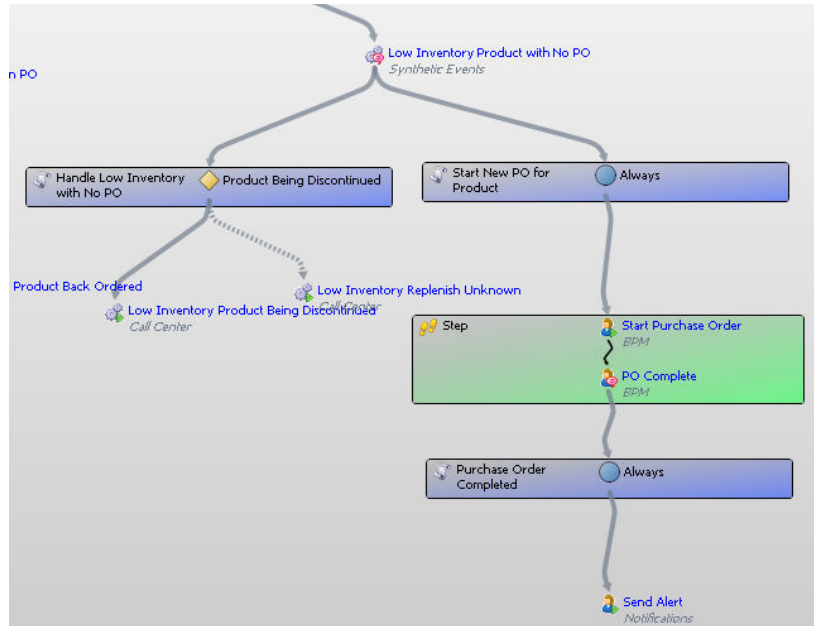
Saving an Event Flow Monitor Project

In the current version of the Event Flow Monitor, any new objects (specifically the event flow schemes) are *NOT* checked into the Business Events repository. Instead, the current project (called an "Event Flow Monitor Project") can be saved locally. The current project can be saved by either clicking the **Save Event Flow Monitor Project** button, selecting **File > Save Event Flow Monitor Project**, selecting **File > Save Event Flow Monitor Project As…** or clicking **CTRL-S**.

These files are saved with the extension "**.wbe**" so as to not confuse them with the standard WebSphere Business Events project file.

Loading an Event Flow Monitor Project

An existing project may be loaded by clicking the **Open Event Flow Monitor Project**, seleicing **File > Open Event Flow Monitor Project** or clicking **CTRL-O**.

IMPORTANT: Because the Event Flow Monitor projects are not linked with the run-time system, it is possible that the scheme will no longer function if the WebSphere Business Events project is modified in any way. Because of this, it may be necessary to re-create the schemes in order to successfully view the run-time information.

Chapter 4 – Monitoring Event Flow Schemes

Once one or more event flow schemes have been drawn the visualization of the run-time can take place.

Enable Run Time Mode

To start monitoring the scheme, click the **Run Time Mode** button
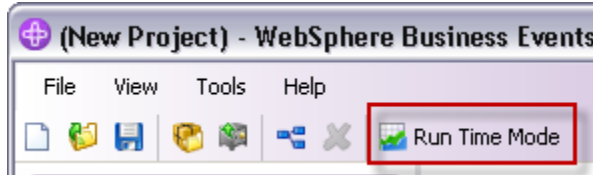
There will be an immediate difference in the view of the application. Most notably a new toolbar will appear (1), run-time statistics will immediately be visible in the monitor scheme (2) and an event "heartbeat" view will appear at the bottom left (3).
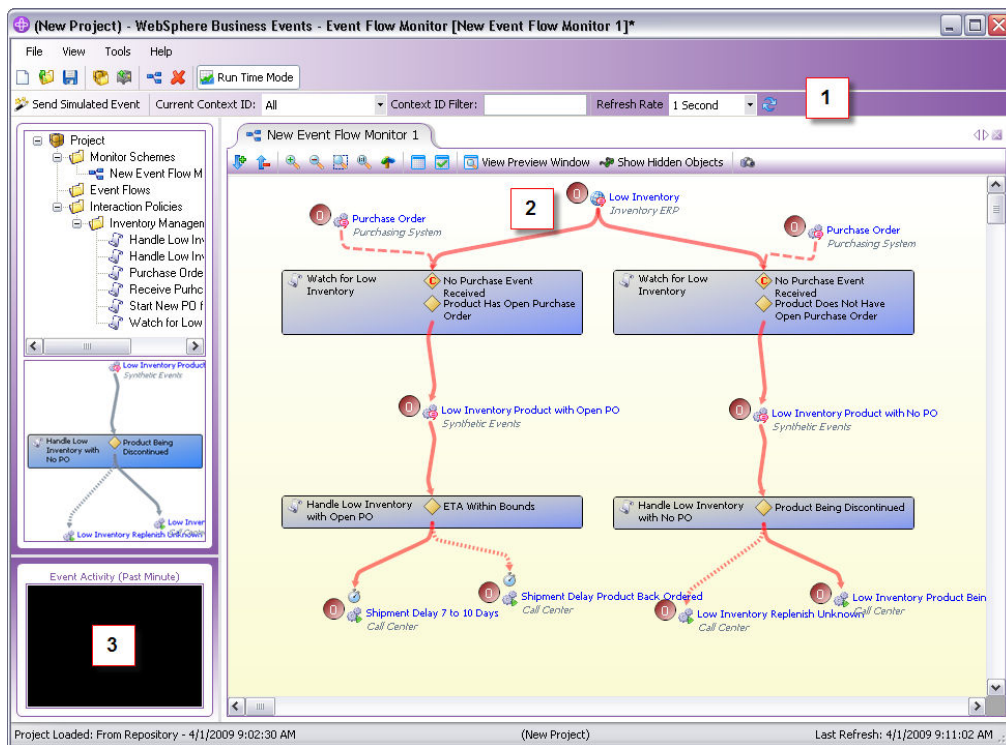

Simulating Events

Because the application is connected to a live system, if there is already event data flowing then statistics will be immediately be visible in this window. However, if the environment is used for development, testing or demoing then events may need to be simulated. This can be done either via the WebSphere Business Events User Console **Send Events** function, or events can be sent directly from the Event Flow Monitor.

To send events from the Event Flow Monitor, right click on an event in the scheme and select **Send Simulated Event**.
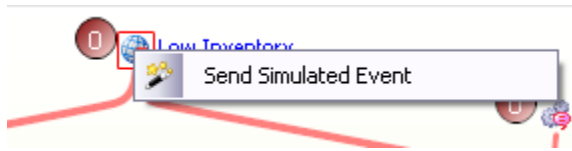
Alternatively, the **Send Simulated Event** button may be clicked.
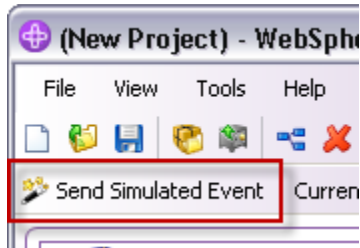
If the context menu is used, or if an event is selected, the event to fire will default to that which is selected in the scheme. Either way, any event defined in the current WebSphere Business Events project may be simulated. The event data can be entered here and the event will be sent to the run-time server.

> *Note*: The sending event functionality does not currently support sending arrays of data. If this is necessary, it is recommended to configure a connector to do this or to send the event via the **cmdline** routine from the **director** folder.
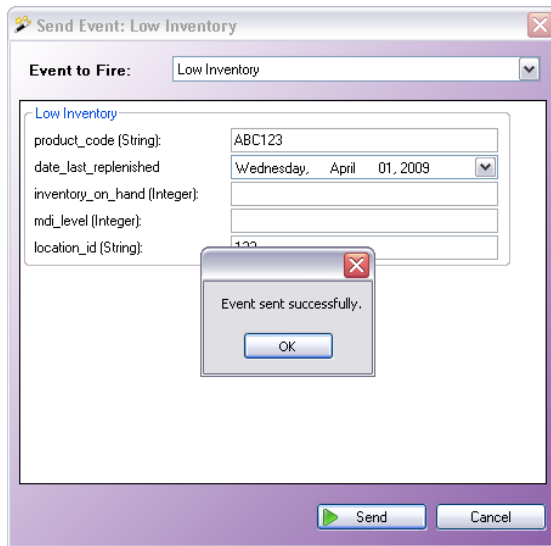

Once the **Send** button is clicked, a confirmation window should appear.

> *Note*: The first time the event is sent from the application since the server restarted, this may take a few moments.

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When returning to the screen, the view should be updated based on the Interaction Sets within the flow. Note that the event heartbeat (at the bottom left) has also updated.
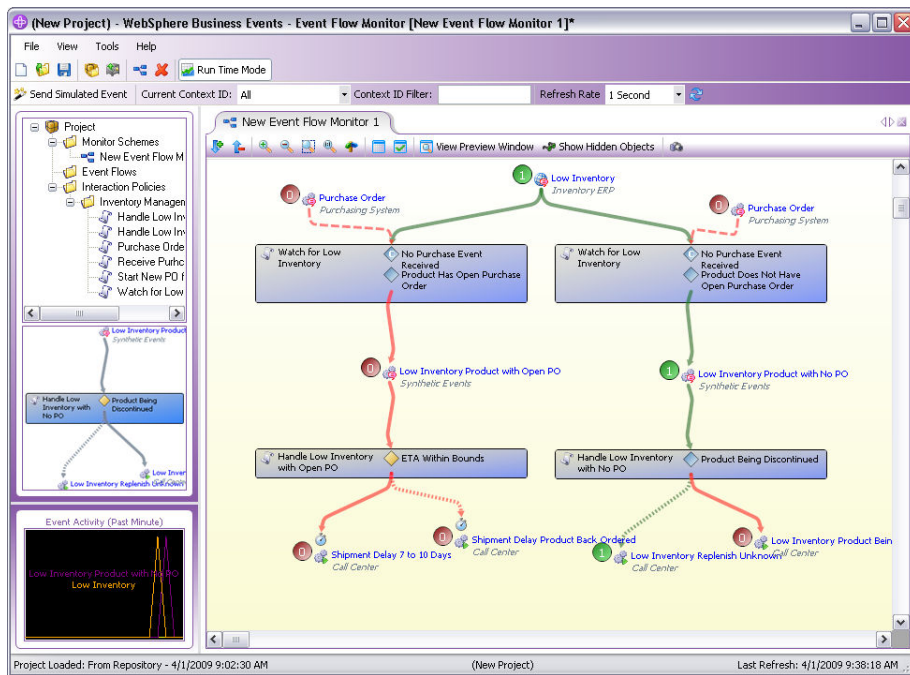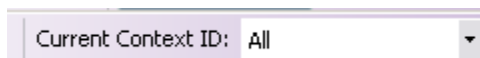

The current view is the "global" view. This means it is showing all of the possible data within the current environment. This is indicated by the **Current Context ID** selection of **All**.

This list will be updated dynamically based on the data within the current system. In this case, there is a single context **ABC123** since there has been only a single event.

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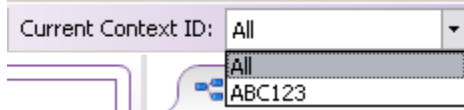
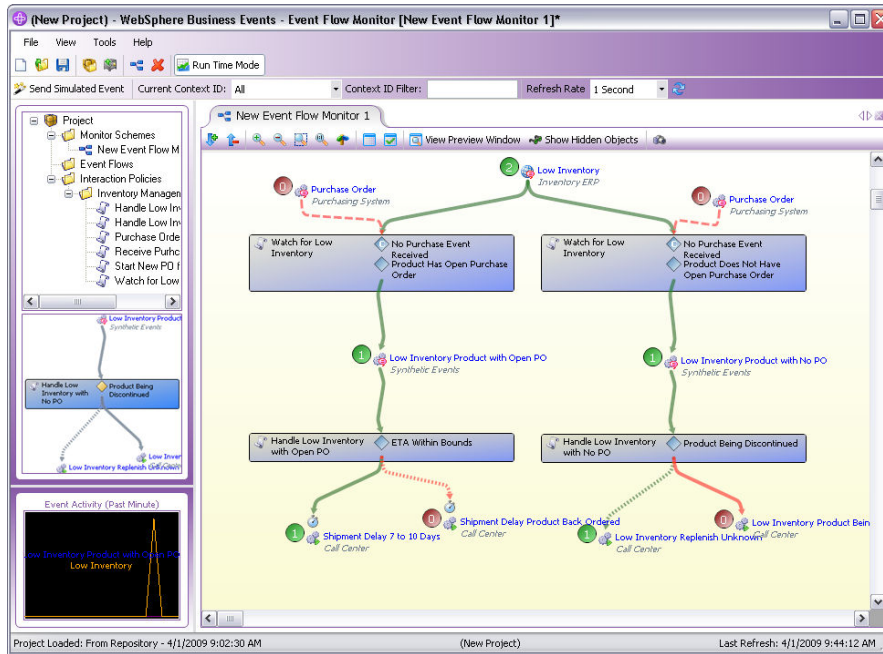If a second event is simulated with a different context (**DEF456**), the event flow scheme will show both contexts because the Current Context ID is still set to **All**. Note there are two original events ("Low Inventory"), however they each split to a different branch, so the rest of the events and actions have only a single occurrence.


To drill down on or view a specific context, select a context other than "All". In this example, the context **ABC123** is selected.
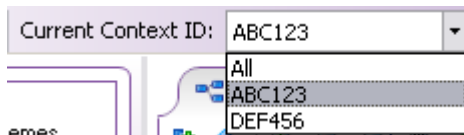

The resulting view will update with a few changes. First, only events and actions for this context will be shown. Second, the filters will change colors depending on what the evaluation was *for the last correlation* (so if a filter for a given context evaluated true three times and then the last was false, the filter will be displayed as red even though the filter had evaluated true in the past). This allows a user to determine why a flow took the path that it did. In this case, the product **ABC123** does not have an open purchase order (note the red filter in the first Interaction Set) so it took the right-hand branch. Since this product was not discontinued, it triggered the action **Low Inventory Replenish Unknown**.

> **Note**: *Actions with a dotted connection arrow represent the **default** action (the "else" condition) of the Interaction Set.*

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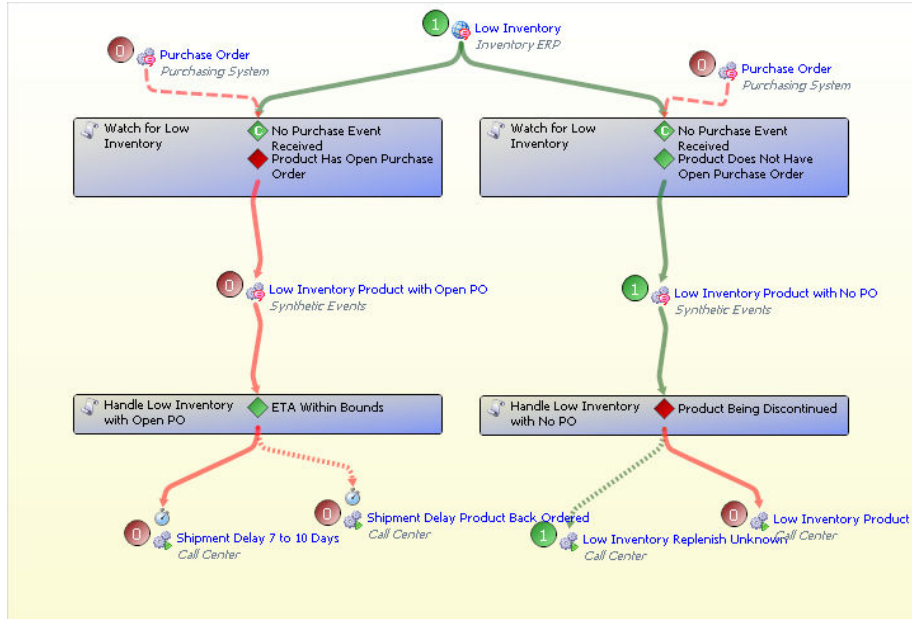
By selecting the other context ID **DEF456**, the details on that flow can be seen as well. In this example, the product does have an open purchase order and the ETA is within bounds, so it triggered the action **Shipment Delay 7 to 10 Days**.
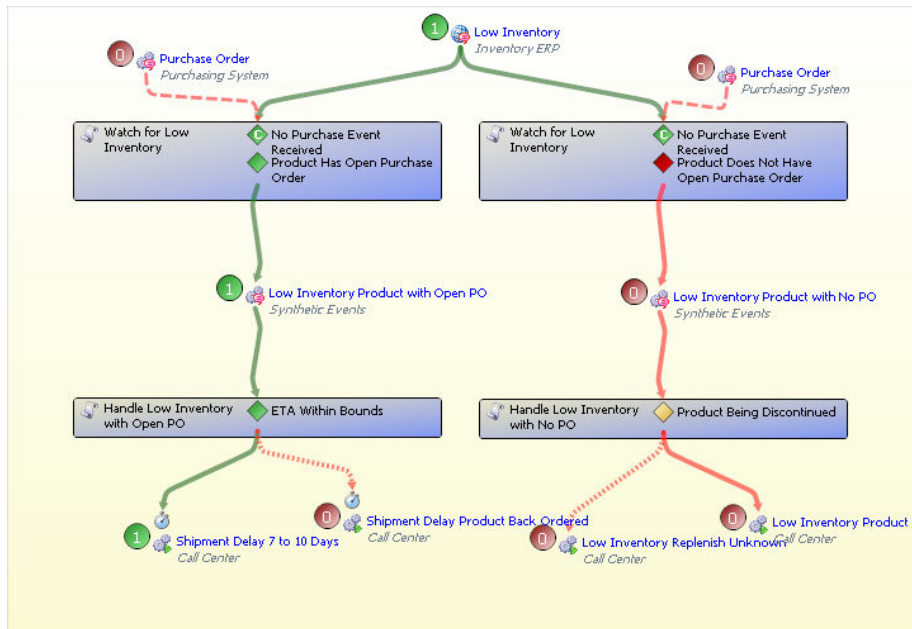
Because the context list may become very large, it is also possible to filter the list by entering text into the **Context ID Filter**. For example, if only context IDs containing **ABC** should be available, the text "ABC" should be entered into the filter.
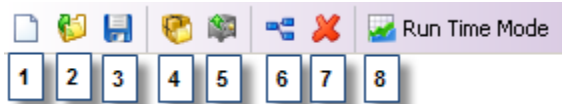
Chapter 5 – Toolbar Functions

There are many other functions available within the application and this section is intended to briefly describe each of these.

Main Toolbar

The main toolbar is always visible, although some options may not be enabled in certain cases (for example, the delete option will not be enabled if there is nothing to delete).

1. **New Event Flow Monitor Project**

    Clear the current Event Flow Monitor Project and start a new one

2. **Open Event Flow Monitor Project**

    Open an Event Flow Monitor project from file

3. **Save Event Flow Monitor Project**

    Save the current Event Flow Monitor project to a local file

4. **Import WBE Project from File**

    Import a WebSphere Business Events project from a local project file

5. **Import WBE Project from Repository**

    Import a WebSphere Business Events project directly from the current repository

6. **Create New Event Flow Monitor Scheme**

    Start a new flow to monitor

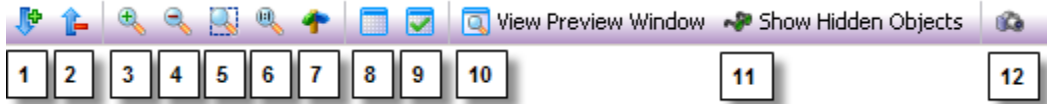7. **Delete Selected Event Flow Monitor Scheme**

    Delete the selected monitor scheme from the current project and the tree

8. **Run Time Mode**

    Enable the run-time visualization and simulation mode of the application

Monitor Scheme Toolbar

The monitor scheme toolbar is visible on all monitor scheme tabs.

1. **Expand All Rules**

   Expands all of the Interaction Sets and Business Steps to be fully visible

2. **Collapse All Rules**

   Collapses all of the Interaction Sets and Business Steps so that only a single icon is visible which represents that object

3. **Zoom In**

   Zoom in on the current flow

4. **Zoom Out**

   Zoom out of the current flow

5. **Zoom All**

   Zoom out so that all objects within the flow are visible within the window

6. **Reset Zoom**

   Reset the zoom to where it was when the monitor scheme was originally created

7. **Pan Drawing Space**

   Toggles a "panning" mode where the drawing space can be dragged to

   Note: Panning can always be done by clicking and holding the middle mouse button.

8. **View Grid**

   Toggle a background grid for reference

9. **Snap to Grid**

   Snap objects to the grid while dragging within the flow

10. **View Preview Window**

    Toggle a preview window that displays the entire flow
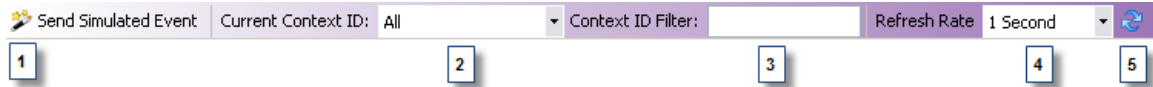
11. **Show Hidden Objects**

    Toggle the visibility of "hidden" objects

12. **Save Snapshot**

    Allows a user to save the current view to a local image file

Run Time Toolbar

The run-time toolbar is only visible when the application is in run-time mode.

1. **Send Simulated Event**

   Send an event to the WebSphere Business Events engine from the current application

2. **Current Context ID List**

   Select the context ID to view or select "All" for global

3. **Context ID Filter**

   Filter the Current Context ID list by certain text

4. **Refresh Rate**

   Set how often to contact the server for data updates

5. **Refresh Statistics Now**

   Issue a manual refresh of all of the data (if refresh rate is set to a large interval)