Opendiem Training

Exercise 10

Opendiem-TRN-0010

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Released	RAC	11/18/2010	Updated format and content

Engine   Connect   Designer

Exercise 10 – Opendiem Browser and Alarm Services

Introduction

The Opendiem Engine Browser service is the central component that you will use to set up other services.
Opendiem Browser contains three browsers:

- Engine Browser.   This presents the same tree view of the Project as Opendiem Designer Project Explorer and the same drag & drop interface to other services.

- Data Browser.   This service allows any item of data to be displayed with its live values. If the data is read/write then the values may also be updated. Values can be dragged onto the Data Browser from the Project Browser for an instant data value.

- Alarm Browser.   Alarms may be added to the Alarm Browser using 'drag-and-drop' to view existing alarms and to monitor for new ones.

The Opendiem Alarm Service generates and stores alarms based on set conditions occurring, it also controls the presentation of alarms and sends email & other alerts based on configured settings.

Objective

In this exercise you will use the Opendiem Browser service to monitor and adjust variables of various types using the drag & drop interface. You will learn the various formats in which you can enter data and you will also review the options for the Browser service.

Later in the exercise you will learn how to set up alarms, how to display and acknowledge alarms and how to filter alarms for particular views. You will also discover how to send email and other system alerts based on alarm conditions.

Starting Opendiem Browser Service

Exercise Instructions

Ensure that Opendiem Engine is running on your Server and if necessary (re)start it.

Starting Opendiem Browser

From the Services screen of Opendiem Engine check that the Opendiem Browser service is ready, if necessary add the service from the Client services.

Double click on the service to start it.
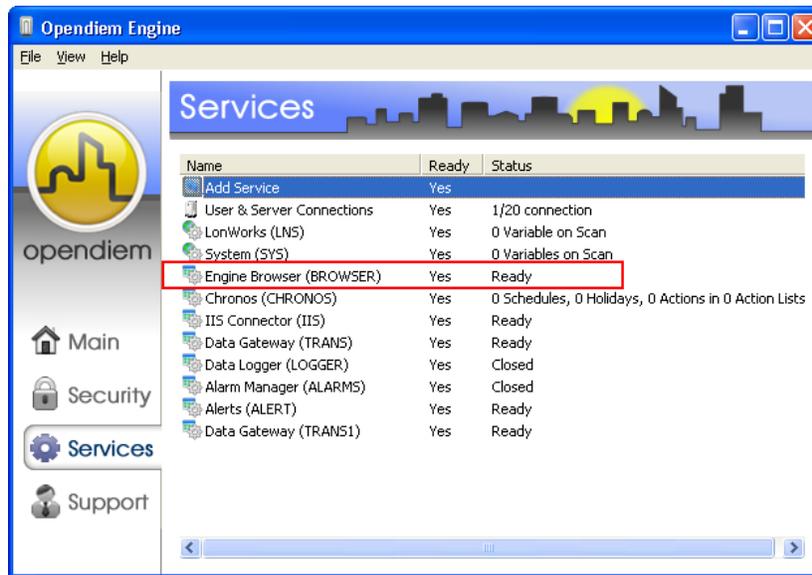
The following screen appears:

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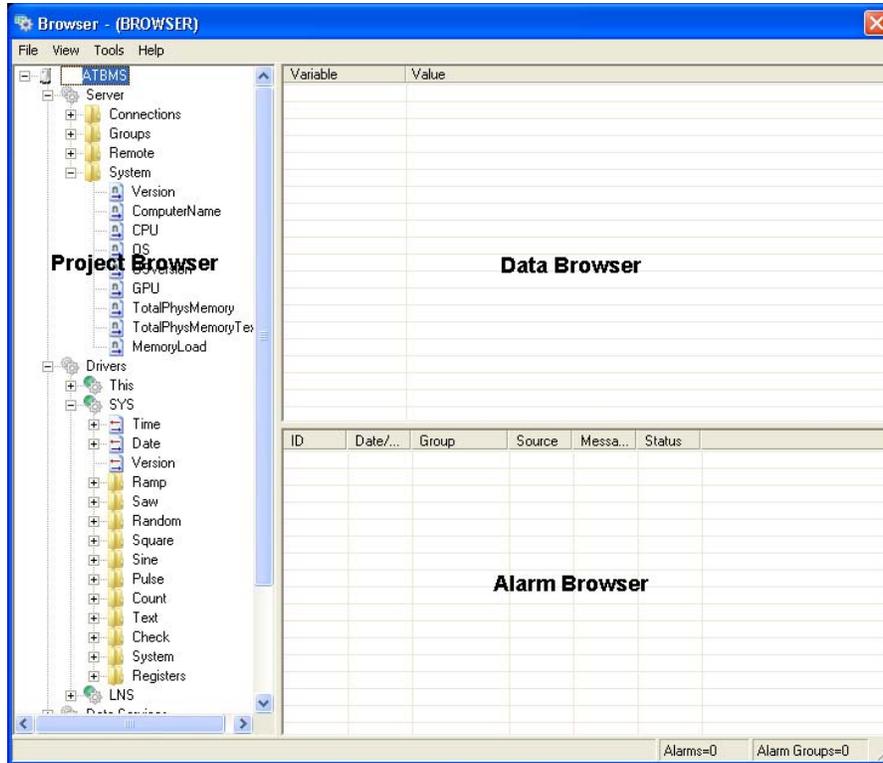
Users can expand the tree in the Project Browser to reveal the Network Variables within the installed devices or controllers. Selecting a network variable will show the full Tag name and the data type in the status bar of the browser as shown below. Drag some network variables onto the Data Browser pane and you will see the variable data appear.

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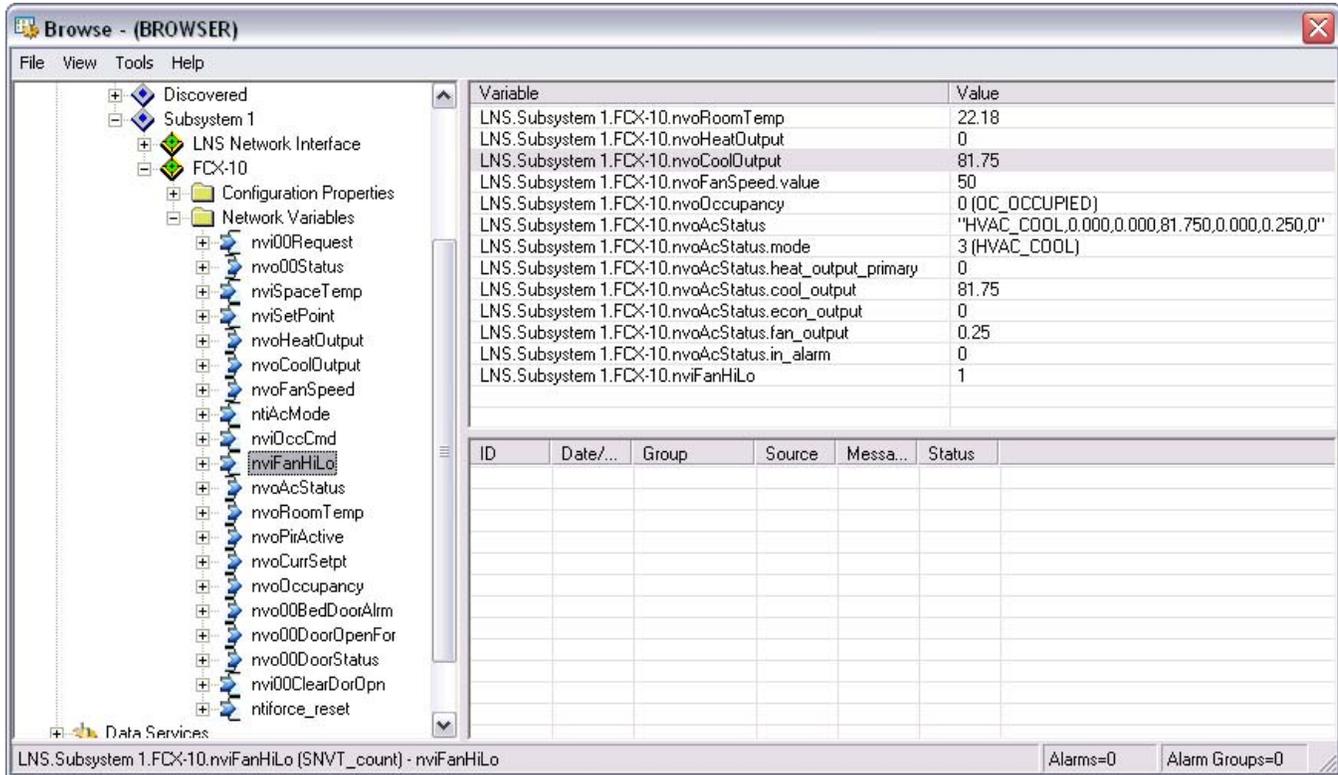
In the example above there are several data types that have been dragged onto the Data Browser.

1. nvoRoomTemp is a regular variable type and its value is shown formatted as a SNVT_temp_p, in degrees centigrade.
2. nvoFanSpeed.value is showing the data from an element of a structure.
3. nvoOccupancy is an enumerated type and both the raw value and the standard LON enumerated text is shown.
4. nvoAcStatus is the whole structure. Each element of the structure is comma separated. Beneath nvoAcStatus the individual elements have been displayed
5. nviSetpoint and nviFanHiLo are both output NV's.

Other data types may be added to the Data Browser Pane, experiment with other data such as the SYS driver to display random values for testing, date and time, etc.

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Modifying Variable Values

To change the value of an output variable, click right on the variable in the Data Browser pane and from the context menu select **Edit Value...** and enter the desired value and select **OK**. The browser will accept data either as raw data or as enumerated text, for example a variable of type SNVT_lev_disc could have the value entered as '4' or 'ST_ON' for on state.

To Add a Variable for Monitoring

1. Right Click and select **Add Variable...** from the context menu.
2. This displays an Add Variable dialog box, which allows variables to be added to the browser by typing in the full name. E.g. Sys.Ramp.Value. Alternatively drag the variable from the Project Browser pane and drop it into the Data Browser pane.

To Remove a Variable

1. Right click on the desired variable and select **Remove Variable** from the context menu.
2. The variable is deleted out of the Data Browser.

To Modify a Variable Name (Tag)

3. Right click on the desired variable and select **Edit Variable...** from the context menu.
4. This displays a Modify Variable dialog box, which allows you to type in a new variable name.
5. The new variable is added into the Browser pane to replace the selected variable, which is removed.

To Clear the Entire Data Browser pane

1. Right click and select **Remove All** from the context menu.
2. All the variables will be removed from the Data Browser.

The context menu allows you to add a variable, remove a variable, edit a value, edit a variable and remove all variables from the Data Browser pane.

The Alarm Browser Pane

The Alarm Browser pane allows groups of alarms to be added for monitoring. As no alarms have yet been set this feature will be covered as part of the Alarm service exercise.

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Opendiem Browser Options

From the main menu select **Tools | Options...** and the screen below shows. From this menu it is possible to save the configuration of the Data Browser and Alarm Browser in the project database so they are preserved between sessions.

The second option preserves the variables on the scan list even when the browser is hidden.
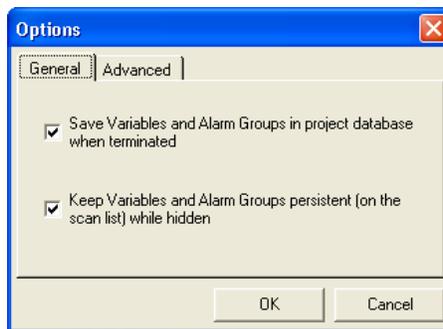
Click on the **Advanced** tab, the option **Use multi-server variable names** is for use with the Opendiem Enterprise Manager and allows the use of fully qualified variable names which are preceded by the Server ID. The Enterprise Manager is a software component available from Building Clouds which offers many features required for managing and maintaining multiple distributed Servers.
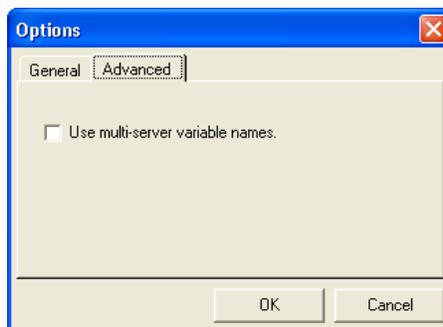
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Starting Opendiem Alarm Service

From the Services screen of Opendiem Engine check that the Alarm Service is ready, if necessary add the service from the Client services.
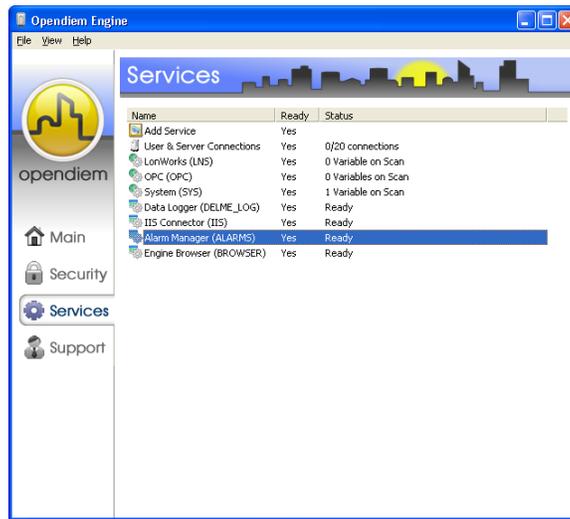
On starting the Alarm service for the first time there may be no alarm database or the database may be closed. The Alarm service has ODBC drivers built in which allow it to operate with ODBC compliant databases such as SQL. Operation with these database formats is beyond the scope of this training class and we will therefore be operating on an Access database resident on the Server.

To create a new Alarm database:

Select **File | New Database...**
Browse to 'C:\Documents and Settings\yourfolder\My Documents\Opendiem\ yourproject' and enter a name for the database e.g. 'alarmtraining.mdb'.
Select **Save**. An Alarms icon appears on the Alarms tab.

To open an existing database:

Select **File | Open Database...**
Select the database type. For this training class select a standard database file (*.mdb). Other database types are beyond the scope of this training class.
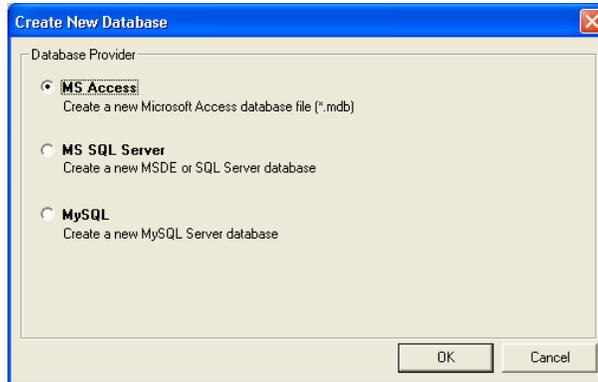
Browse to the database and select **Open**.
Any Alarms configured in the database appear in the Alarm Manager window.
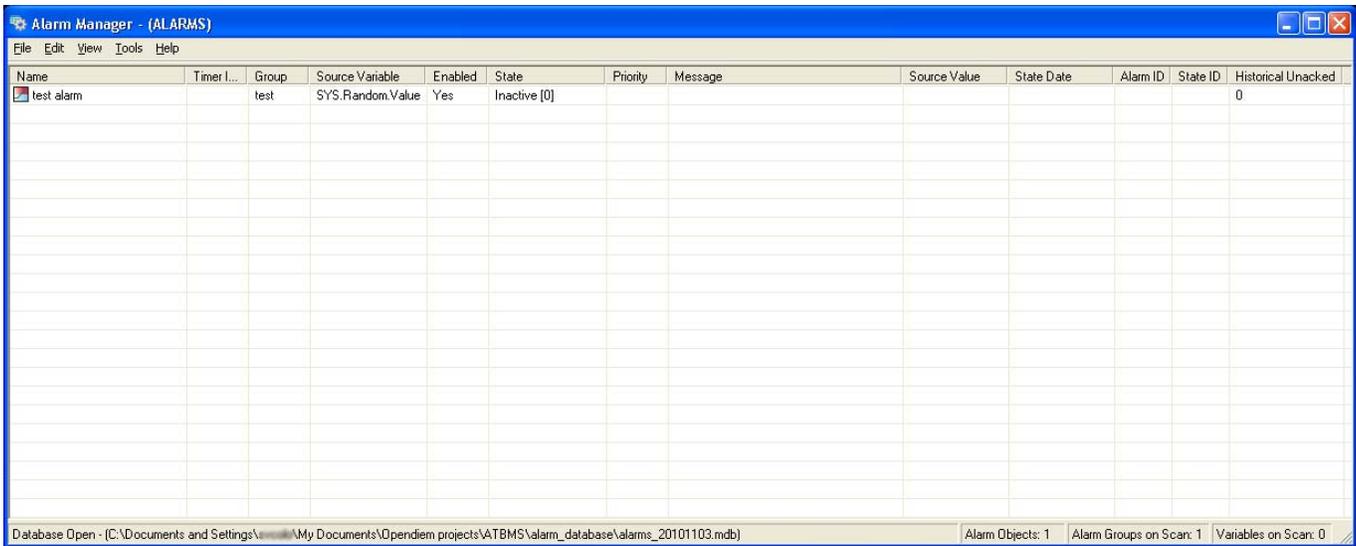
Add an alarm by right clicking in the Alarm Manager window and selecting **Add Alarm…**
An Alarm Details dialogue will appear as shown below.
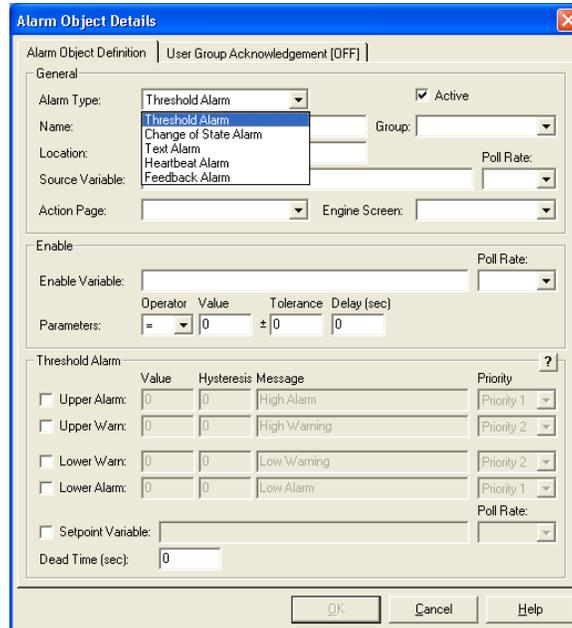
The default alarm type is set to Threshold Alarm. There are currently five alarm types configured in the Alarm service, Threshold alarm, Change of State Alarm, Text Alarm, Heartbeat Alarm, and Feedback Alarm. Each of these types is described below.

	Threshold Alarm	The Threshold Alarm defines an upper and/or lower threshold for the value of an Opendiem Variable. If the value of the variable exceeds (or falls below) the threshold value then an alarm is generated.
	Change of State Alarm	The Change Of State Alarm generates an alarm whenever a variable changes state
	Text Alarm	The Text alarm allows a freeform text message to be decoded and generate an alarm. A freeform text message may be generated by a controller type that does not have a structured alarm output. The message is decoded using a template to allow formatting.
	Heartbeat Alarm	The Heartbeat alarm monitors values for changes and generates an alarm if the value does not change within a specified time. This can be used for checking communications with devices.
	Feedback Alarm	The Feedback alarm monitors the value of a feedback variable and expects it to match the source value. If the value of the source changes then an alarm will be generated if the value of the feedback does not match within the specified time.

Configuring an Alarm

In this exercise we will set up a Threshold alarm as it is the most comprehensive, other alarm types are configured in the same way. Consult the Opendiem Help file for information on configuring the other alarm types.
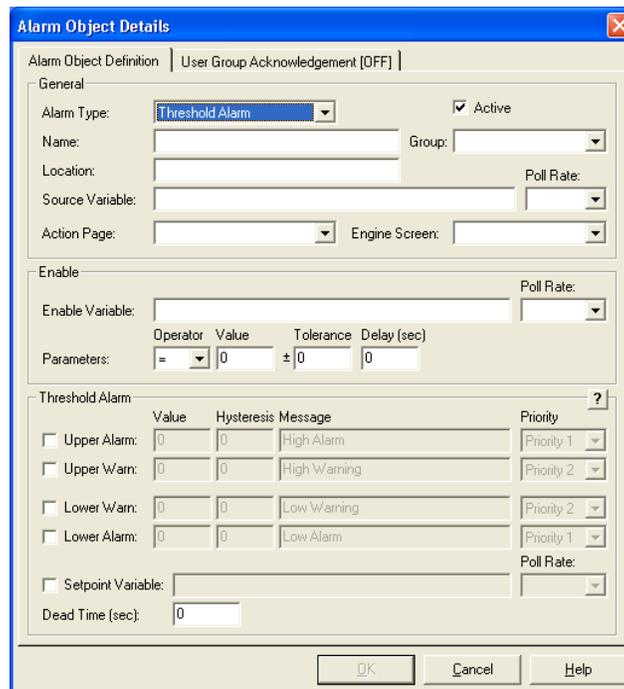
General Options

Alarm Type.　　　　This drop down list presents the five alarm types available.

Name.　　　　The Name field is present to document the alarm function and is optional.

Group.　　　　Each alarm must belong to a group. Enter a group name e.g. Critical Alarms. The group field is mandatory.

Location.　　　　The Location field is present to document the location details of the alarm and is optional.

Source Variable.　　　　The Source variable is the Tag name of the variable to be monitored for an alarm condition. Either enter the full Tag name or 'drag & drop' the variable from the Opendiem Project Browser as shown below.
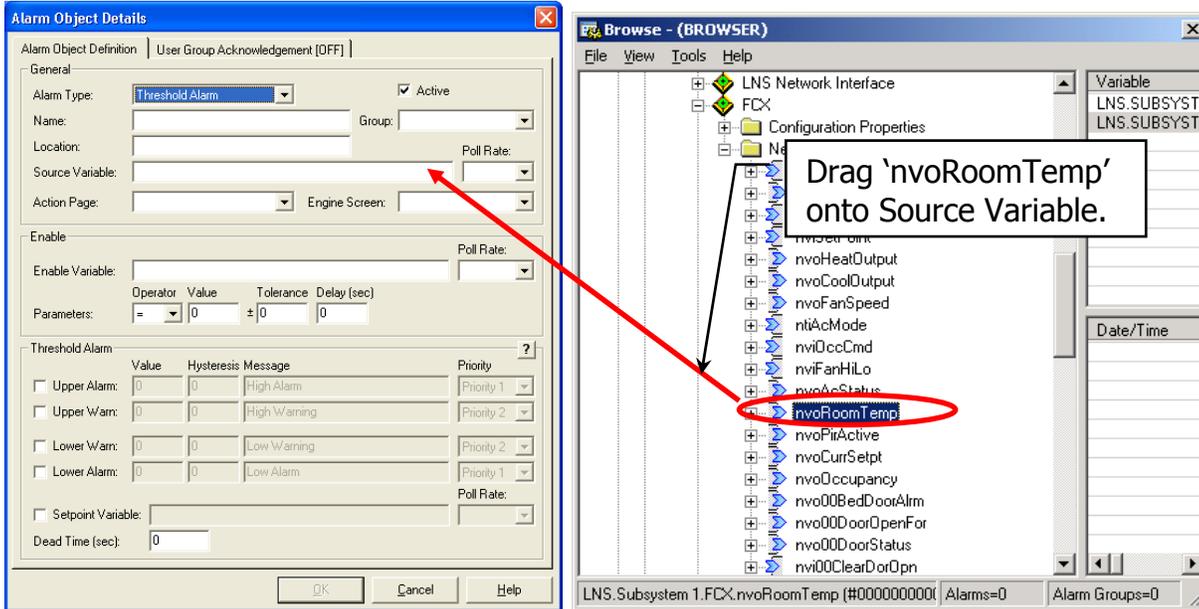
Action Page.
This drop down list contains all of the HTML pages in the current project for selection. Opendiem has a dynamic Alarm List box that appears within a web Browser, one of the available fields is an Action Page. When this alarm is active the alarm will appear within the Alarm List box in the Web Browser (if the screen is showing in a Web Browser). The operator will be able to click on an action button that will automatically load the Action Page selected here. This HTML Action Page could contain, for example, information on what steps the operator needs to take to correct the fault.

Engine Screen.
This drop down list contains all of the Opendiem '.oscreen' pages in the current project for selection. Opendiem has a dynamic Alarm List box that appears within a web Browser, one of the available fields is an Opendiem Screen to load. When this alarm is active the alarm will appear within the Alarm List box in the Web Browser (if the screen is showing in a Web Browser). The operator will be able to click on the Opendiem Screen button that will automatically load the Opendiem Screen selected here. This screen option is similar to the Action Page above except the screen is an Opendiem Screen and may therefore contain dynamic graphics & values.

Active (top of window)

This checkbox allows the alarm to be enabled and disabled.

Enable Options

The Enable fields contain details on an optional variable that may enable & disable this alarm.

Enable Variable	This field contains the Tag reference for the enabling variable and may be dragged from the Project Explorer as shown previously.
Operator	The mathematical operator that will be used then comparing the value Opendiem Variable to the specified enable value.
Value	The value that will be compared to the value of the Opendiem Variable when determining whether to enable this alarm.
Tolerance	The tolerance that will be applied to the comparison if the operator that is being used is equals (=) or not equals (<>).
Delay	A delay (in seconds) between the conditions for enabling the alarm being met and the alarm actually being enabled.

Threshold Alarm Options

In this section, the Upper and Lower, Warning and Alarm values are selected. Alarm messages and priority levels are also assigned here.

Each Warning and Alarm level may be individually enabled & disabled here (each are optional).

Value	This field contains the value at which this alarm / warning condition should be active.
Message	Enter text to document this alarm. This text appears in the dynamic Alarm List Box within the Web Browser, and email Alerts, it is therefore used by operators to identify the alarm condition. Enter some text to document your alarm condition.
Priority	Each alarm state may be assigned one of 16 priority levels from this drop down list. These alarm priorities are used to filter display of alarms within the Alarm List Box in the Web Browser and also to route alerts such as emails to recipients based on priority. Assign some different priorities to your alarms so you can experiment with the priority later in the exercise.

Setpoint   When selected this option makes the alarm value relative to some other variable. For example if the temperature is being controlled relative to a thermostat setpoint then the alarm will track the setpoint and the alarm could be set to, say, 3 Degrees above setpoint etc.

The alarm configuration is now complete. Select **OK**. The alarm appears in the Alarm window in a list view.

Acknowledge the alarm by right clicking on the alarm in the preview window and selecting **Acknowledge**. The alarm state will change depending on the current temperature to inactive, alarm/ack or warn/ack.

Experiment with adding other alarm types and source variables. Try adding alarms from other sources such as the SYS driver.

The Opendiem Browser Alarm Pane

You will recall that the Opendiem Browser has an Alarm pane, now that we have set up an alarm we can see how that functions.

Switch to the Opendiem Browser, refresh the Project Browser tree by pressing **F5** on your keyboard. Expand the tree to reveal Client Services, Alarms, Alarm Groups, Test. Drag the alarm group named **Test** onto the Alarm pane. You will see the alarm item (and any others that you may have set up in this group).

When an alarm condition exists you can right click on the alarm and **Ack alarm** to acknowledge it. Enter some text to comment the acknowledgement. This text is added to the alarm database.

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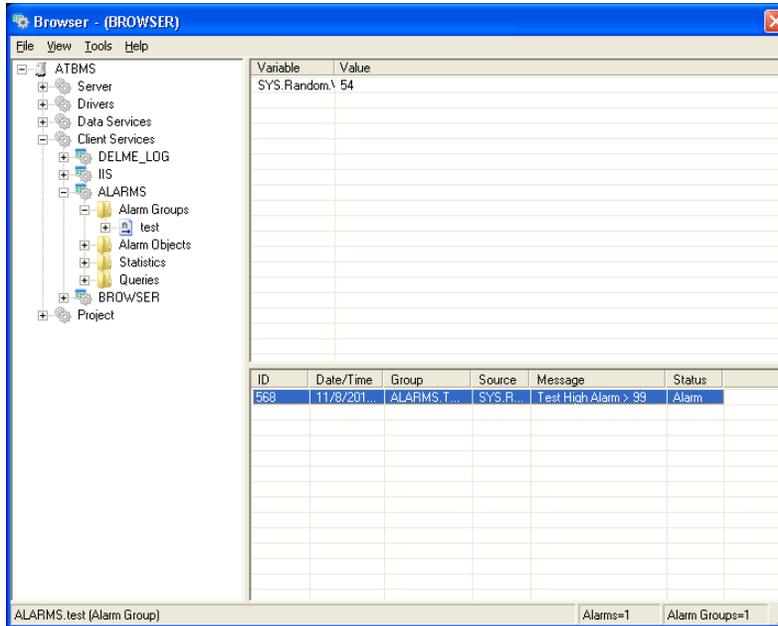
Presenting Alarms in the Web Browser

Alarms are presented within the browser by using the Alarms List Box tool.

Start Designer and create a new screen, remember to place navigation buttons to the start screen or change your default screen to this alarms screen.

Place an Alarm List Box on the Design Screen and stretch it out to the full width of the screen.
Right click on the Alarm List Box and select the **Alarms** properties tab.
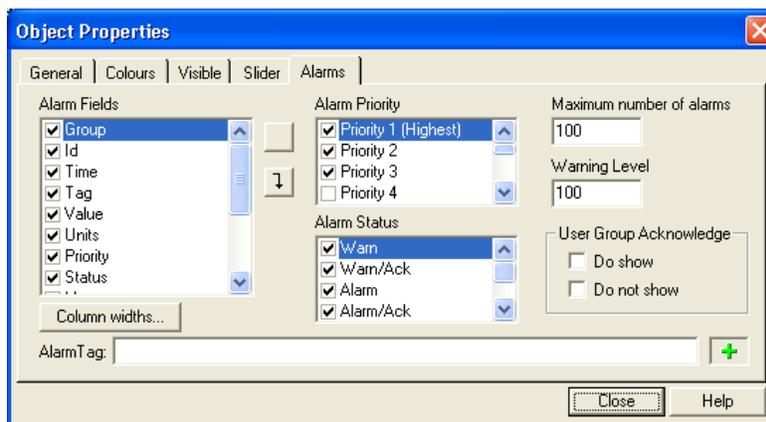
Select the Alarm Fields that you wish to present. The order of the fields can be changed with the up and down arrow buttons.

Select the alarm priority levels that you wish this Alarm List Box to contain.

From the Project Explorer drag the **Alarms.Alarm Groups.test** alarm group into the tag box. Multiple alarm groups can easily be added to the list, simply drag the Alarm group tag onto the **+** box to the right of the Tag box (shown above).

Click on the Column widths button (**...)** and the dialogue below will appear. Select the width of the columns by dragging the column dividers.

Select the color combinations for the various alarm states and select 'OK'.

Save your work and check the results in the browser.

Adding an Acknowledge button.

To add a button that the user can acknowledge the alarms, create a button on the screen.

Change the caption to Acknowledge.

In the Click actions for the button, select the Alarms tab and in the drop down list select the Alarm List Box control. Checking the **Operator Comments When Acknowledging** allows the user to comment the alarm when acknowledging it.

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Load the screen into the browser and experiment with acknowledging alarms.

End of Exercise 10

In this exercise we introduced the Opendiem Browser service and learned about the various panes and their functions. We also explored the different formats in which data can be presented and changed.

We also took an in depth look at the Alarm service, how to set up alarms and how the Alarm service relates to the Opendiem Browser service. You also learned how to set up an Alarm List Box that dynamically shows alarms within the system.

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