

# Opendiem Training

## Exercise 16

Opendiem-TRN-0016

Revision	5.0.0		
Status	Initials	Date	Comment
Released	RAC	11/18/2010	Updated format and content



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**OPENDIEM TRAINING EXERCISE 16**

## Exercise 16 – Opendiem Alert Service

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### Introduction

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The Alert Service is a reporting tool which requests and receives alarm messages from Opendiem Engine when an alarm is generated by the Alarm Manager. The Alert service provides different types of alerts to be generated based on different alarm conditions.

An Alarm Message contains information such as Alarm ID, Type, Description, Source Tag, Group Tag, Priority, and State.

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### Objective

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In this exercise you will use the Opendiem Alert service to create a number of filters and you will also discover how to send email and other system alerts based on alarm conditions.

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### Overview

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The Alert Service is configured with a number of filters that are used to check against the alarm message. A filter contains criteria such as alarm priorities and alarm status. When the Alert Service receives an Alarm Message, it processes it against the filters to determine whether an alert needs to be sent. If an alert is to be sent the alert service will then determine from the filters what types of alerts need to be sent, email, print, message or data.

The following diagram shows the functionality and the inter-relationships within the Alert Service.



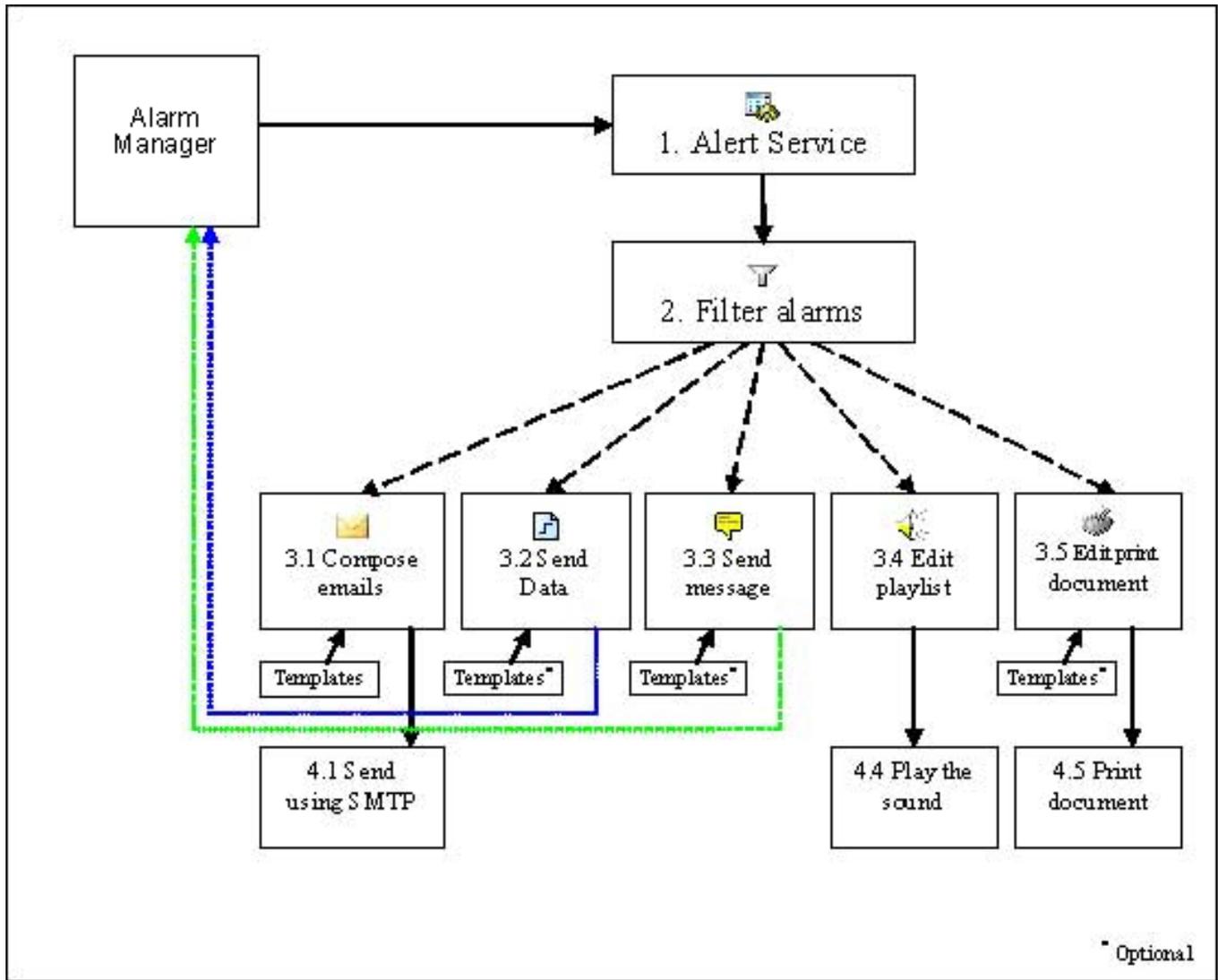
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## Opendiem Alarms Life Cycle

Before we begin with the Alert service it will be useful to review the life cycle of alarms in Opendiem.

An alarm is generated by an Opendiem Alarm Manager in response to an external event such as a process value going out of range. Alarms can be generated in a number of different ways based on a number of different strategies. The following will describe a *Threshold Alarm* but the general life cycle applies to all alarm types.



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This takes a hypothetical temperature alarm that will enter a warning state as 72°F and a full alarm state at 77°F.

An alarm will start its life in an *Inactive* state and wait for the temperature to rise to 72°F where it will enter the warning state. A new unique *Alarm Id* will be assigned to this alarm event. If a user acknowledges this warning then it will enter a Warn/Ack state where it will remain.

If the temperature value then falls below 72°F and it has been acknowledged then the alarm will enter the *Finished* state and return to *Inactive* waiting for the next alarm. If it has not been acknowledged then it will enter the *Unacknowledged* state where it will remain until it is acknowledged then it will enter the *Finished* state.

If, on the other hand, the temperature continues to rise and rises above the 77°F threshold then it will enter into the *Alarm* state. It will enter this state regardless of whether it was previously in the Warn or the Warn/Ack state. If a user acknowledges this alarm then it will enter the *Alarm/Ack* state.

If the temperature value then falls below 72°F and it has been acknowledged then the alarm will enter the *Finished* state and return to *Inactive* waiting for the next alarm. If it has not been acknowledged then it will enter the *Unacknowledged* state where it will remain until it is acknowledged then it will enter the *Finished* state.

State	Description	Note
0	<i>Inactive</i>	<i>This is an internal state and will never be sent</i>
1	Warning	
2	Warn/Ack	
3	Alarm	
4	Alarm/Ack	
5	Unacknowledged	Inactive unacknowledged alarm
6	Finished	

Summary of alarm states



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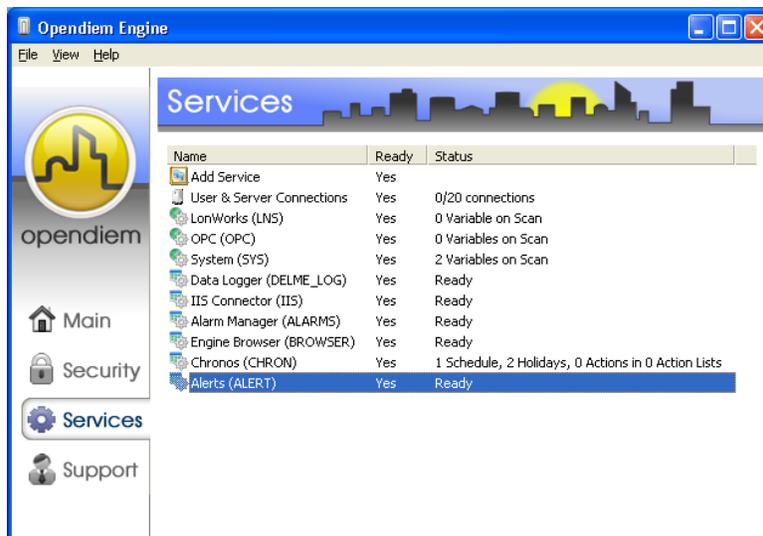
## Starting Opendiem Alert Service

### Exercise Instructions

Ensure that Opendiem Engine is running on your Server and if necessary restart it.

### Starting the Opendiem Alert Service

From the Services screen of Opendiem Engine check that the Alert service is ready, if necessary add the service from the Client services. When the Alert service starts it will take approximately 90 seconds before the system is initialized and ready for operation.



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



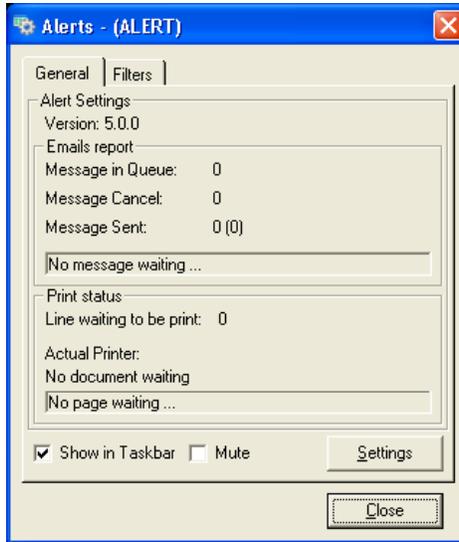
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The general tab displays status information on the Alert Service as detailed in the table below:

Section	Subsection	Details
Emails Report	Messages in Queue	This displays the number of email waiting to be sent. These are sent when the queue reaches the maximum size or after the specified timeout. Queue size and timeout are configured in the Settings.
	Message Cancel	This displays the number of emails that have failed to be sent. This could be due to a problem with the mail server.
	Message Sent	This displays the number of messages that have been sent since the Alert service was first configured. This can be reset to zero in the Settings.
	No Message Waiting	This text box displays status information while emails are being sent and starts with the queue timeout countdown.



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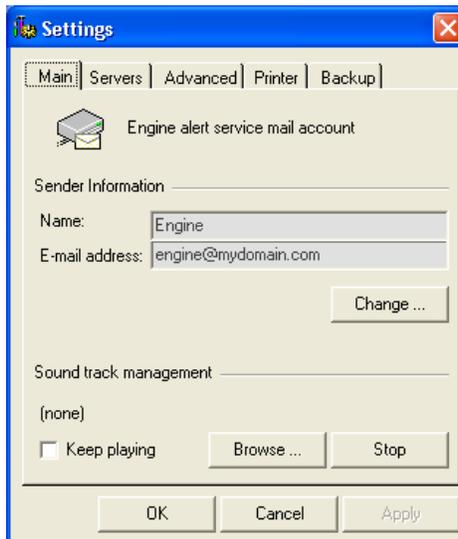


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Print Status	Line Waiting to Print	This displays the number of alerts waiting to print. These jobs will print after the printer timeouts configured in the Settings.
	Actual Printer	This displays the name of the printer that the alert report will be sent to.
	No Page Waiting	This text box displays status information during printing.
Show in Taskbar		This displays the Alerts service in the taskbar.
Mute		This is for sound alerts, it prevents any sound from being heard but does not stop the sound itself.

Go to the settings form, click **Settings**

The settings dialogue will appear as shown below.





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The Main tab is used to configure the sender information for Email alerts and to select sound files for Sound alerts.

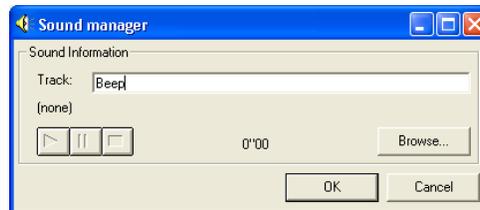
### Sender Information

This displays the name and email address of the account set up to send the email alerts. This is set by clicking on the **Change** button to display the contacts list. Many mail servers will not accept anonymous mail so it is important that this setting is complete.

### Sound Track Management

This displays the currently selected sound file. To use the sound function in the Alert service, a sound file has to be defined, which will play when a sound alert is generated.

To select a sound file click on the **Browse** button which will display the sound manager dialog.



Click **Browse** to display an Open dialog and then navigate to the required file and click OK. On Windows XP the system sound files can be found in the C:\WINDOWS\Media folder. The file name, file path and duration will then be displayed.

To test the file click on the Play button. Click **OK** to save changes.

Clicking Stop will stop the sound playing but if another alert is generated then the sound file will play again. This function can be accessed externally by an Opendiem message of "Stop Sound" from the Messenger service.

Click on the Servers tab and the dialogue below will appear.



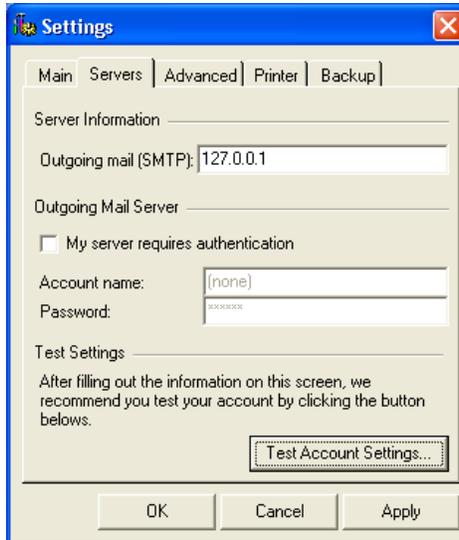
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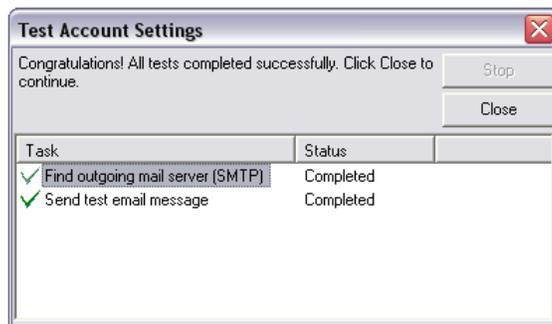
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This dialogue is used to configure mail server information for Email alerts. Before you can send email alerts you must first configure an email server, The Alert service supports one SMTP server. Microsoft Windows provides an SMTP service which can be configured through IIS. (A free mail server is available from Argosoft at <http://www.argosoft.com/rootpages/MailServer/Default.aspx> ).

The Outgoing Mail (SMTP) box must be filled in with the IP address or DNS entry of the mail server to be used. If the mail server that you are using requires authentication then you can check the "My server requires authentication" checkbox and enter the account name and password.

Once you have configured the mail server settings click on the "**Test Account Settings...**" button and if successful you will see a dialogue similar to the one below.





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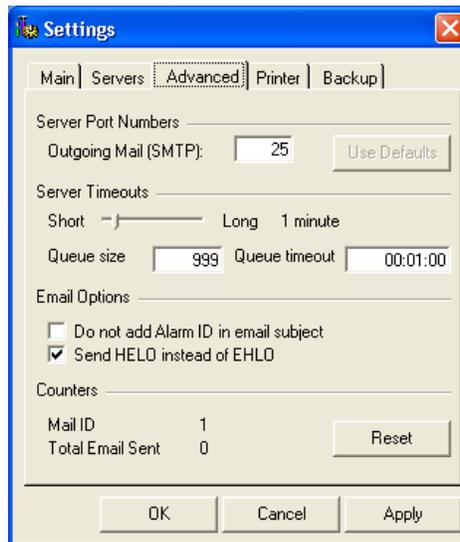


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Click on the **Advanced** tab and you will see a dialogue similar to the one below.



This tab allows you to change settings on the email alerts such as the TCP/IP port. This setting should be left at port 25 for standard configurations, however it may be reconfigured for firewall or other reasons if required.

The **Server Timeout** defines how long the Alert Service will wait for an answer from the server.

The **Queue Size defines** the number of messages to hold pending in the message queue before they are sent.

The **Queue Timeout** is the length of time the Alert service will wait before sending the message queue.

The **Counters** display the next mail ID reference and the number of emails that have been sent. These can be reset to zero by clicking the Reset button.

Click on the **Printer** tab and the dialogue below will appear:



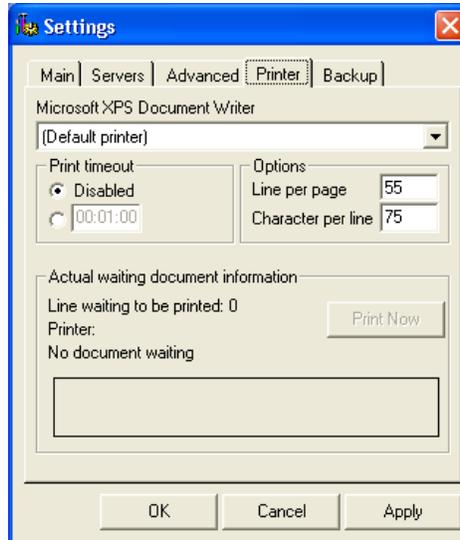
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You can select the printer to use by selecting it from the drop down list. This is automatically set to the default printer if you have not selected an alternative.

The **Print Timeout** setting is the length of time the Alert service will wait before printing the alerts. The default setting disabled.

In the **Options** section you can set the number of lines per page, this sets the number of pending lines before the alerts are printed. This can be useful if a laser printer is being used and you don't want one alert per page. The function can be disabled by entering 0. When an alert is generated it will then be printed immediately.

Document Information is provided in the bottom section of the form and shows the number of lines of alerts which are pending which can be printed immediately by clicking the Print Now button. Any error messages or status information will be displayed in the box at the bottom of the page.

### Defining Alert Filters

Alerts are set up using filters which are set up from the Filters tab. It is recommended that the Alerts Service is configured first before setting up any alerts. Click on the Filters tab and the dialogue below will appear:



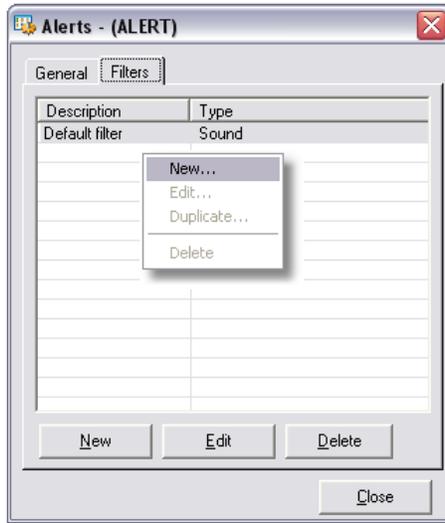
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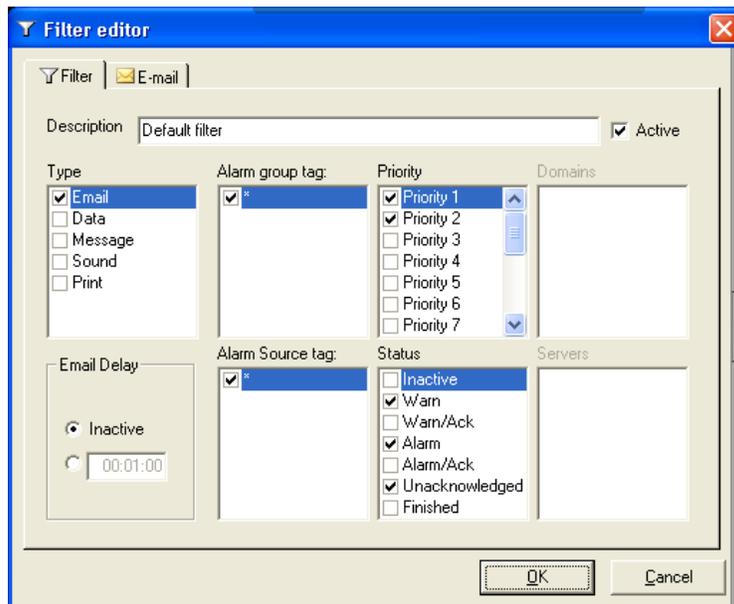
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To define a new filter right click on the table and select **New...** from the context menu or click **New** on the form, a dialogue similar to the one below will show. Select the types of filter you wish to define in the type box, for each selected type a new tab will appear as shown below. Make sure you have the Email Type selected.



The other settings on the Filter tab are as follows:



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Setting	Description
Description	The name of the filter which defaults to Default Filter. This should be changed to a meaningful name.
Active (Check box)	Allows the filter to be disabled. While a filter is disabled it will not generate any alerts.
Type	There are five types of Alert available and as each one is selected the relevant tab will become available.
Alarm Group tag	<p>This lists the available alarm groups. By default * is selected which represents all the alarm groups. To only generate alerts for a particular group, un-select * and select the required group.</p> <p>Alarm groups may be drag &amp; dropped from the Opendiem Browser into this section</p>
Priority	Allows alarms to be filtered by priority. By default Priority 1 and Priority 2 are selected. This means an alert will be generated if a Priority 1 or Priority 2 alarm message is received.
Email Delay	<p>Allows a delay to be added to an email so it is not sent out immediately. With a delay enabled when an alarm message is received that passes the filter criteria it will then be checked against the messages in the delay buffer.</p> <p>If the Alarm ID matches the ID of a message that is already in the buffer then the buffer will be updated with the details of the new alarm. If the message no longer satisfies the filter criteria then it will be removed from the buffer and will not be sent. By default this function is disabled.</p>
Alarm Source tag	Lists alarm sources if available. By default * is selected.



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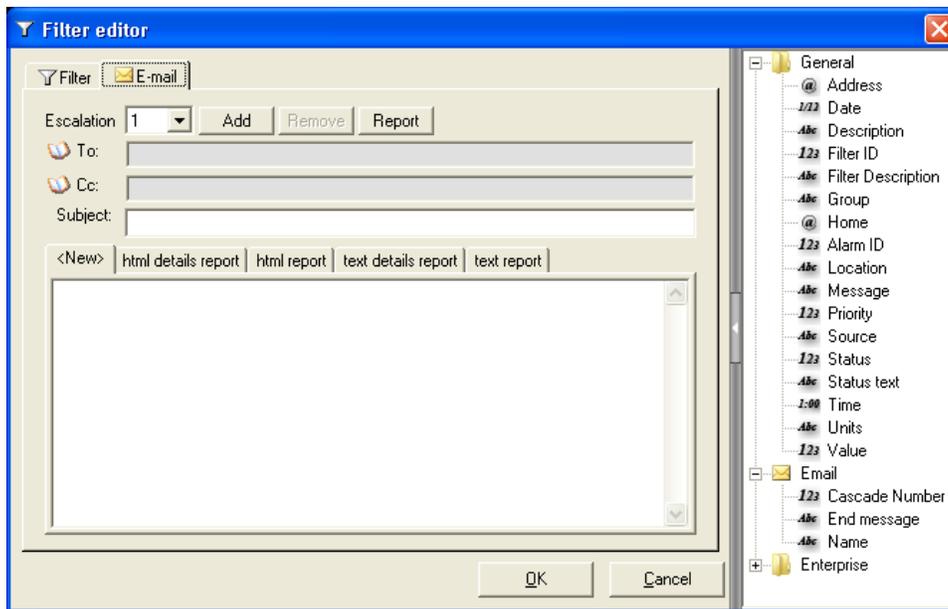
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Status	This allows alarm messages to be filtered by status. If only Alarm is selected then an alert will only be generated when an alarm message is received with a status of Alarm.
Domains/Servers	These are only relevant if the Opendiem Engine is part of an enterprise and Opendiem Enterprise Manager is being used.

Click on the Email tab and a screen similar to the one below will appear:



The E-mail tab is where email alerts are configured. Email alerts have the added option of specifying element markers within the message. A tag tree opens on the right hand side from which the required element markers can be dragged and dropped into the message. (Element markers are special defined sequences that indicate which item of the alarm message should be inserted into the text of the message. An element marker begins with an ampersand character (&) and ends with a semicolon (;). The name of the element appears between these characters e.g.: &element\_name; )

Note: To include an ampersand (&) in the text of a template, use a double ampersand (&&) which will be replaced with a single once the template is processed by the alarm service.

(If the right hand alert tag pane does not appear click on the expand button on the right edge of the window.)



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The following is a list of element markers that may be used in an alarm template:

Category	Description	Type	Tag
<b>General</b>	IP Address of server	Address IP	&ADDR
<b>General</b>	Alarm date using 'short date' format as defined in the Windows Control Panel	Date	&DATE
<b>General</b>	Alarm point Description	Alpha	&DESC
<b>General</b>	Filter ID	Numeric	&FILTER
<b>General</b>	Filter Description	Alpha	&FILTERDESCR
<b>General</b>	Alarm group name	Alpha	&GROUP
<b>General</b>	Address of web server	Address IP	&HOME
<b>General</b>	Alarm Id Number	Numeric	&ID
<b>General</b>	Alarm location	Alpha	&LOCATION
<b>General</b>	Alarm message	Alpha	&MSG
<b>General</b>	Alarm priority (1-16)	Numeric	&PRIORITY
<b>General</b>	Alarm source tag name.	Alpha	&SOURCE
<b>General</b>	Alarm status number	Numeric	&STATUS
<b>General</b>	Alarm status text translation	Alpha	&STATUS_TEXT
<b>General</b>	Alarm time using 'short time' format as defined in the Windows Control Panel	Time	&TIME
<b>General</b>	Units of the source tag for this alarm (if available).	Alpha	&UNITS
<b>General</b>	Tag value that gave rise to the alarm	Numeric	&VALUE
<b>Email</b>	Cascade Number	Numeric	&CASCADE
<b>Email</b>	End message for email message (depend of alarm status)	Alpha	&END
<b>Email</b>	Recipient name (included To, Cc excluded Bcc)	Alpha	&NAME
<b>Enterprise</b>	Domain of the Opendiem Enterprise Server	Alpha	&DOMAIN
<b>Enterprise</b>	Server of the Opendiem Enterprise Server	Address IP	&SERVER

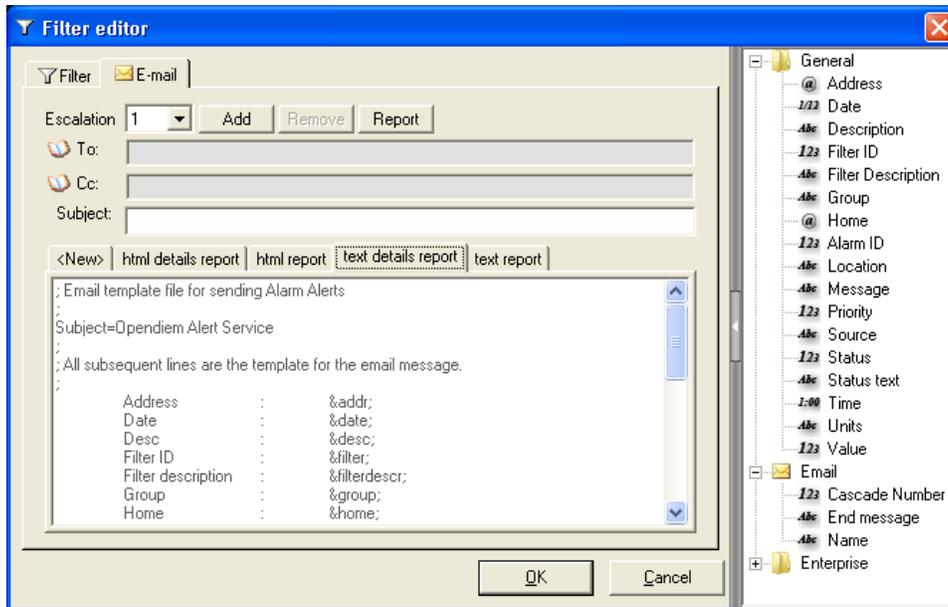


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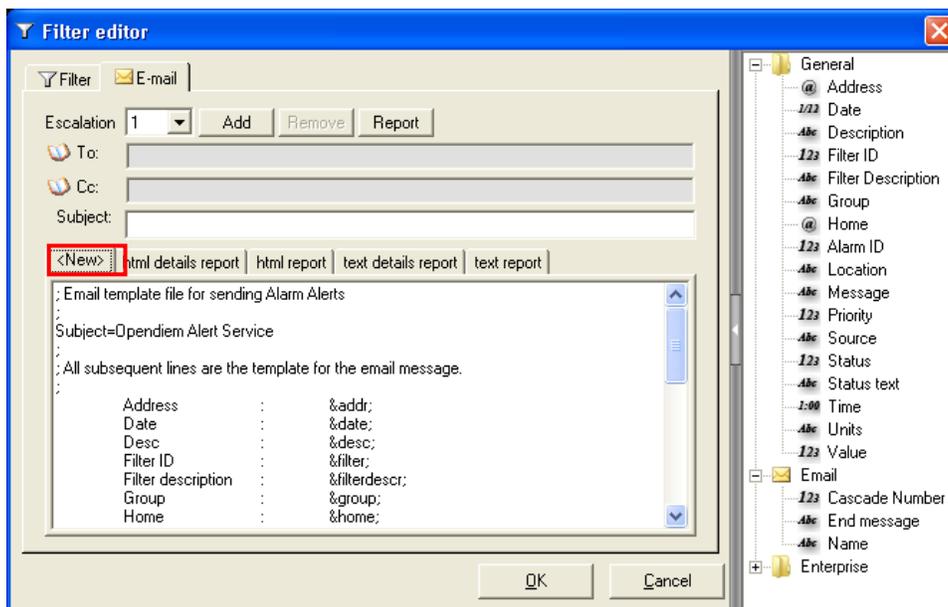
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Click on one of the pre-defined templates and you will see an example of a template, the element markers are replaced by the actual value in the email message by the alert service when the message is sent.



Right click on one of the templates and a context menu will appear which allows you to copy an existing template to the **New** template, once copied to **New** the template may be modified and saved as a new template by right clicking on **New** and selecting **Save template** as shown below.





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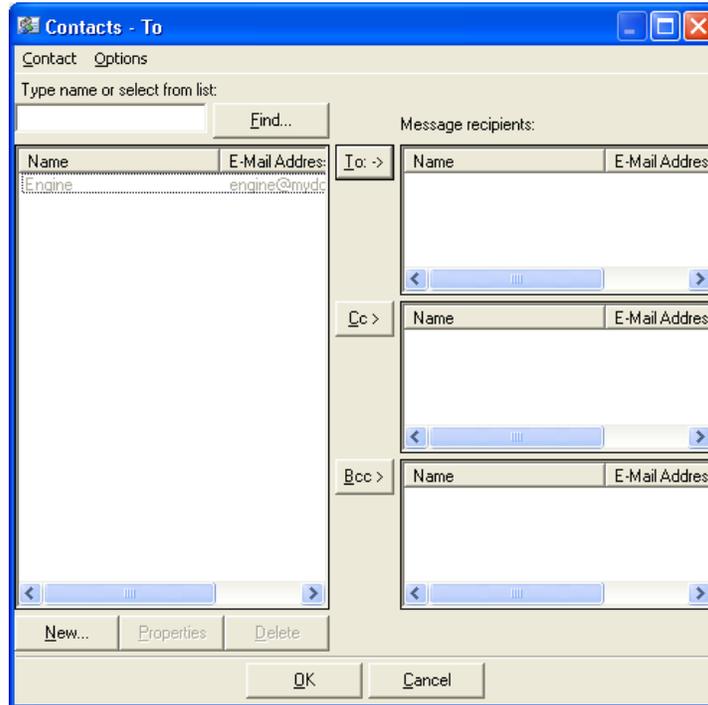


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Set the recipients by adding users from the address book, clicking on the **To:** button brings up the address book where you can select existing email addresses or add new entries.



An important feature of the Alert Service is that it allows you to set cascade alerts. This means that after a message has been sent, if the alarm is not acknowledged within a predefined time limit, then a new message will be sent to the next person in the cascade list. This function only works with the Warning state if the Alarm state is not selected.

To add a new escalation click on **Add**, a dialogue will appear by default Add a new level is selected. Insert in Level 1 will add a new level as the first level, ahead of all existing levels. Click on **OK** to display a new cascade level email and add an extra option, Interval. Interval is entered in the format hh:mm:ss (hours, minutes and seconds) and is the duration waited after sending the previous email, before this email is sent. If the alarm is acknowledged during this waiting time then the email is not sent.





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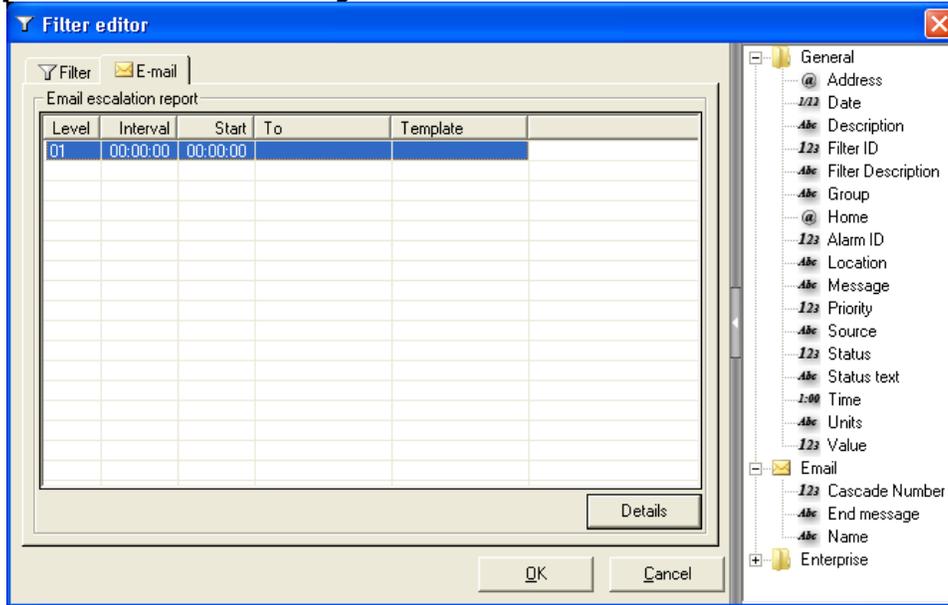


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Click on the **Report** button and a dialogue similar to the one below will show:



The report screen shows the following information:

Field	Details
Level	The escalation level number
Interval	The duration between the escalation alerts.
Start	When each escalation email will be sent. Level 3 will not be sent for 40 minutes because although the interval is 30 minutes, the 10 minutes from level 2 needs to be included.
To	The recipient(s) of the email.
Template	The template being used by each escalation level.

Click on **Details** to return to the previous screen

### Excercise

Other alerts allow you to set a data variable based on an alarm condition or to send a message to another Opendiem service. For example you could send a message to the Data Logger service that instructs the Logger Service to log a group of values when a specific alarm occurs. The Alarm



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## OPENDIEM TRAINING EXERCISE 16

Printer alert is designed to work with a line printer, the printer alert has the same template options as the Email alert.

As an exercise create an alarm and link it to the Alert service using the information you have learned in this section. Try creating other alert types such as message and sound alerts. Ask your instructor to help if you need assistance.

### End of Exercise 16

In this exercise you have learned how the Opendiem Alert service is configured, you have seen how the server settings are setup and how alerts are based on configurable filters. In this exercise you have also setup an email filter and seen how to define custom templates.

As an additional exercise you investigated the other alert service types such as data and sound.



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Notes:

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