SmartNotification 1.2
User's Guide

January 2006

Contents:

1. Introduction

The SmartNotification product is an extended version of the SmartLogger Notification Module add-on. It has the same features for sending e-mail and SMS notifications, but supports additional types of data sources.
SmartNotification is a good choice in mixed configurations where both old equipment and new software is required to make notifications.
With SmartNotification all administration regarding mail groups, recipients, filtering etc. is centralized and set up once.

SmartNotification can be used in connection with:

- SmartLogger 3.3 applications or newer
- SmartTranslator 2.1 applications or newer
- SmartOPC 1.0
- Any application that can print to a Windows printer
- Physical I/O boards for hardwired inputs or outputs

1.1 Conventions & definitions

	Important note
Control	The term 'control' is used when describing the user interface. A 'control' is a common name for edit-boxes, push buttons and other items on a dialog.
Event	A common name in the process industry for an occurrence that is reported to the operator and/or a printer. An event in the SmartLogger terminology means a sequence of characters normally sent to the printer followed by a carriage return.
Field	A field corresponds to a column in a database table.
I/O	Hardwired Input / Output
LPR	Line Printing Remote.
LPD	Line Printer Daemon. The LPD is a printer server that can receive print requests for several printers via TCP/IP network.
MDI	Multiple Documents Interface.

NM	Notification Module.
PDF	(Adobe) Portable Document Format. This is the format used for the online User's Guide.
Record	A record is one row of data in a database table or in a grid.
SMS	Short Message Service.

2. Installation and Set-up

2.1 System requirements

Computer
A 100% IBM PC compatible computer with a Pentium III 400 MHz processor and 128 MB RAM.

Operating system
Windows 2000/2003/XP.

Disk space
25 MB free space for application files.

Modem (optional)
Access to GSM modem for sending SMS notifications.

SMTP Server (optional)
Access to SMTP server for sending mail notifications.

I/O board (optional)
For hardwired data sources or notifications an I/O board from National Instruments is required.

2.2 Installation

1. Place the SmartNotification CD in the CD-ROM drive.
2. If autorun is activated on the PC, the installation menu will automatically be shown. If it does not start, run "?:\Runmenu.exe" (substitute '?' with your CD drive letter)
3. Select the appropriate installation kit from the menu and follow the instructions on the screen.

2.2.1 Dongle option

If the dongle option is used as copy protection, the dongle driver for the appropriate operating system must be installed.
To install, please select the appropriate driver from the installation menu.

2.2.2 Online User's Guide

The online User's Guide is available from the menu item *Help | User's Guide*. To view this User's Guide, you must have Adobe® Acrobat® reader 5.0 or higher installed on your system. If it is not installed, you can install it by selecting it from the installation menu. Adobe® Acrobat® reader is copyright of Adobe Systems Incorporated.

2.3 Registration

It is very important to register the SmartNotification product, as an unregistered SmartNotification only works within a limited period.

As long as the product is unregistered the following dialog will appear at start-up:

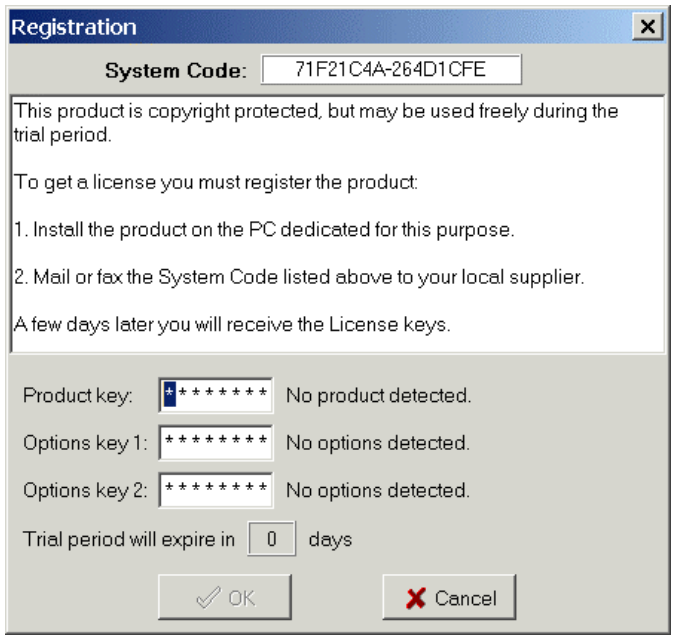


Figure 2-1

The SmartNotification supports two types of copy protection:

Softkey protection

To register the SmartNotification with a softkey protection, please follow these instructions:

1. Install the product on the PC dedicated for this application.
2. Mail or fax the System Code shown in the registration dialog to your local supplier.

A few days later you will receive a License key, which has to be entered in the 'Product Key' field in the Registration dialog.

The System Code is hardware dependent. It is therefore *very* important to register the product for the correct PC.

When a program is registered, the Registration dialog can no longer be called up from the menu.

Dongle protection

If the dongle option has been ordered, then a dongle is delivered together with the SmartNotification product. To install the dongle, please follow these instructions.

1. Install the appropriate driver as described in section 2.2.1.
2. Power down the PC.
3. Attach the dongle to the parallel port.
4. Power on the PC.
5. Start the SmartNotification application.

The registration will then be performed automatically.

3. Main view

The following figure shows the main view of SmartNotification:

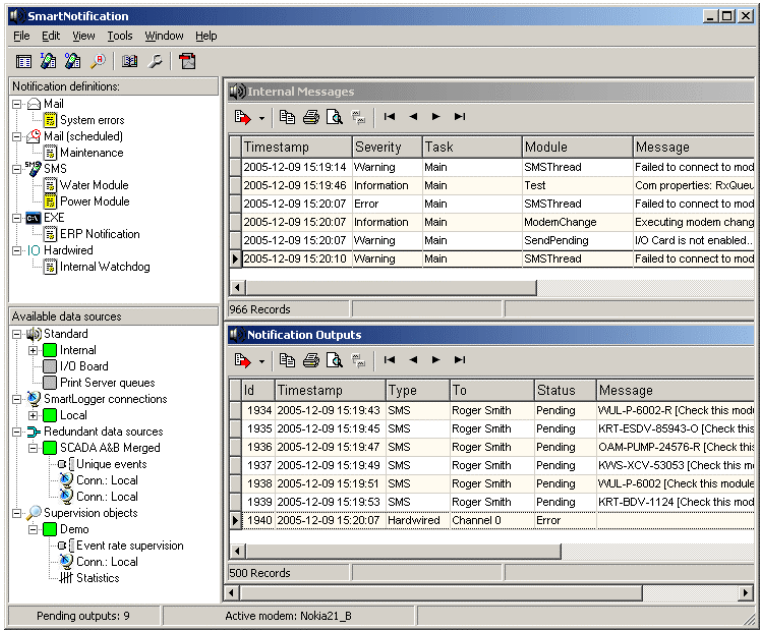


Figure 3-1

Notification definitions:
The tree view on the upper left side, shows the configured notification definitions ordered by type: Mail, Mail (scheduled), SMS, EXE or Hardwired.
Notifications can be added, modified, deleted, enabled and disabled from the pop-up menu by right clicking in the tree view.

A notification definition defines what to do when input is received from a data source.

Data source overview
This tree view on the lower left side, shows a list of all available data sources that can trigger a notification. The tree view also shows redundant objects, supervision objects and the current status for each data source, which is explained in detail in section 6 “Supervision objects” and in section 4 "Data sources".
Data sources can be added, modified and deleted from the pop-up menu by right clicking on the tree view.

3.1 Menu overview

Menu	Item	Description
File	Notification ▸	Shows the menu related to maintaining notification definitions.
	Data source ▸	Shows the menu related to maintaining data sources.
	Exit	Closes the application.
Edit	Disable Notification	Disables an active notification.
	Enable Notification	Tries to activate a disabled, or error marked, notification.
	Change active modem	If more modems are configured, the next modem can be set active by choosing this menu item.
	Clear Notification inputs	Clears the Notifications Inputs log.
	Cancel all pending outputs	Cancels all pending outputs. Outputs already in sending mode will ignore this cancellation.
View	Internal Messages…	Shows the Internal Messages log.
	Notification Inputs…	Shows the Notifications Inputs log.
	Notification Outputs…	Shows the Notifications Outputs log.
	Application trace log…	Opens the application trace log in notepad or other associated program.
	SMTP trace	Opens the SMTP trace log (mail

	log…	server communication) in notepad or other associated program.
	Get Modem Information…	Queries the active modem for relevant modem information. The result is listed in the notification trace log, which is automatically shown.
	Supervision Alarm History…	Shows the history of generated event-rate alarms.
Tools	Address book...	Opens the Windows Address Book tool.
	Utility Server...	Opens the Utility Server view.
	Simulate...	Opens the data source simulation dialog.
	Show status information...	Shows current status in text mode of all notifications [1].
	Options...	Opens the Options dialog.
Window	Tile Horizontal	Tiles all open windows horizontally.
	Tile Vertical	Tiles all open windows vertically.
	Cascade	Cascade all open windows.
Help	User's Guide	Shows this User's Guide in PDF format.
	Registration...[2]	Opens the registration dialog.
	About...	Shows credits and release version.

1) The status information shown is the same information that is sent via the data source “Internal – Status Information”.
2) Only visible when the SmartNotification is unregistered. If the SmartNotification is registered, this dialog can be viewed by pressing <Ctrl>-R.

4. Data sources

In order to generate a notification, the following two requirements must be fulfilled:

1. A notification definition is created and connected to a data source.
2. Data is received from the data source – where data can be an event, a print job, a system message etc. depending on the data source type used.

The content of the notification depends on the specifications made in the notification definition and the information available from the data source.
SmartNotification can be used in connection with different types of data sources. The following sections describe the supported types of data sources and how to configure them.
Data sources can be maintained from the menu item *File* | *Data source...* or from the popup menu associated with the data sources tree view.

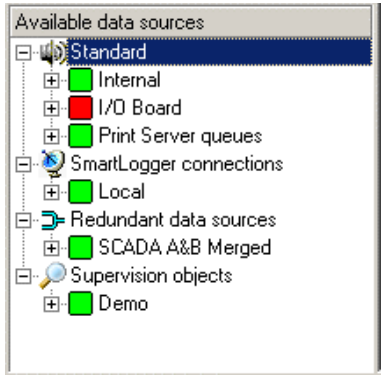


Figure 4-1

The tree view shows the current status of the available data sources:

- Data source is ok.
- This data source group has a warning, but is still working properly. Information about the warning can be found in the

Internal Messages log.

This data source group has an error and is not working properly.

Data source is available, but not used by any notification or supervision object.

Data source is available and has at least one notification or supervision object attached.

4.1 Internal

Internal data sources refer to internal SmartNotification functionality that can trigger a notification. These data sources are fixed and cannot be changed in any way.

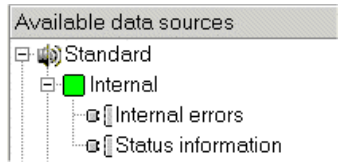


Figure 4-2

Internal errors

If a notification definition is attached to the data source "Internal errors", all errors related to the SmartNotification application itself will trigger the notification. This can be used to supervise the SmartNotification application and for example report modem errors or alike.

When using this kind of supervision, it is advisable to attach at least two notification types, like SMS and Mail. Otherwise serious errors might never be notified.
For example if there is an error with the modem and “Internal errors” is only attached to a SMS notification (which requires a modem).

Status information

This data source can only be used in combination with scheduled mail notifications. When scheduled the receiver will get status information about the application and all configured notifications.

4.2 I/O Board

I/O Board data sources can be used to supervise equipment, located close to the SmartNotification PC, by hardwiring an input to the I/O Board.
If for example the SmartNotification PC is located in a PC server room, then it can be used to supervise fan units and other cooling equipment.

In order to use I/O Board data sources, an I/O board is required. SmartNotification supports the National Instruments NI-DAQ driver interface, which again supports most of the available I/O boards from National Instrument.

> Although the NI-DAQ driver supports many different I/O boards, it is recommended to use the I/O board PCI-6503.

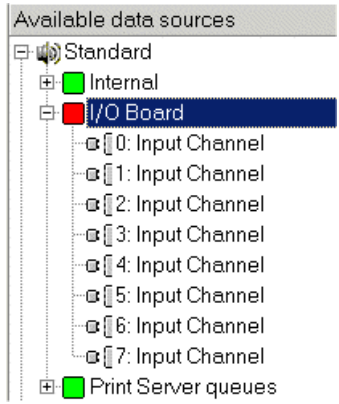


Figure 4-3

All inputs are as default labelled "X: Input Channel", where X refers to the channel number. The input label can be renamed, but for trace ability, it is recommended to keep the channel number as part of the label.

For information on how to install and configure the I/O board, please refer to the documentation from the board vendor.

For information on how to configure the I/O board in SmartNotification, please refer to section 7.4.3 "Data source options"

4.3 Print Server

The print server feature in SmartNotification makes it possible for *any* Windows application in your network to generate SMS or mail notifications:

1. Add a virtual print queue to the Print Server data source (shown on Figure 4-5).
2. Create a notification definition and attach it to the print queue just created (described in section 5.2 "Adding SMS/Mail notification").
3. Create a Windows printer on the remote PC that points to the SmartNotification printer server [1)].
4. Make your application print to the new virtual print queue.

1) For information on how to create a Windows printer, please refer to Appendix 9.2 "Creating a Windows printer".

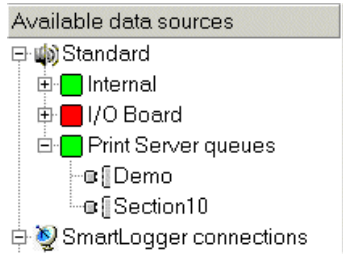


Figure 4-4

To add a new virtual print queue simply right-click in the tree view and select the pop-up menu item *Add print queue...*

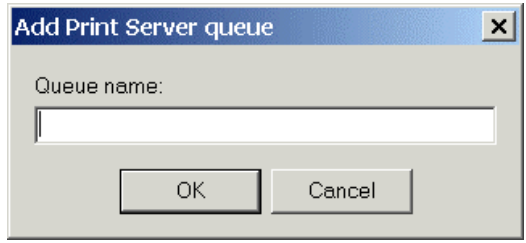


Figure 4-5

Enter a queue name, press the OK button and the printer queue is available as data source.

4.4 SmartLogger

SmartLogger data sources are a little different from the previous described data sources, as the available data sources are defined on the SmartLogger side. When adding a SmartLogger data source, a connection to the remote SmartLogger application is established and the available data sources are transferred to SmartNotification. The actual number of data sources might vary for different SmartLogger applications.

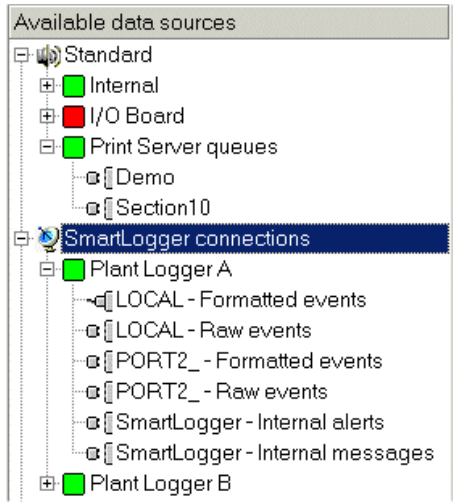


Figure 4-6

To add a new SmartLogger connection simply right-click on the “SmartLogger connections” group in the tree view and select the pop-up menu item *Add...*

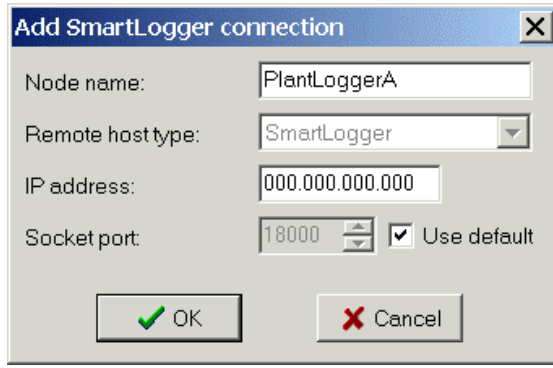


Figure 4-7

Add SmartLogger	
Node name	Name of the session to be shown in the tree view.
Remote host type	Always SmartLogger.
IP address	The IP address of the remote SmartLogger PC.
Socket port	The socket port used for communication. Must be equal to the listener port defined for the Utility Server module in the remote SmartLogger.
Use default:	If checked, the dialog will use the socket port that is default for the selected host type.

4.5 Redundant data sources

When SmartNotification is used in configurations with redundant SmartLogger applications it is necessary to create “Redundancy data source” objects to avoid duplicate notifications. The redundant data source object subscribes to events from both SmartLogger applications, but lets only unique events through to the attached notification(s).

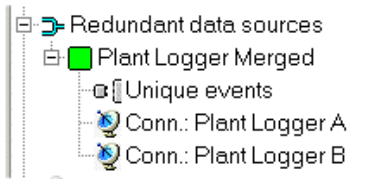


Figure 4-8

All Redundant objects have a data source named “Unique events” available. Every time a new event from either one of the subscribed data sources is detected, it is passed through the connected notifications.

To add a new redundant data source object right-click on the “Redundant data sources” group in the tree view and select the pop-up menu item *Add...*

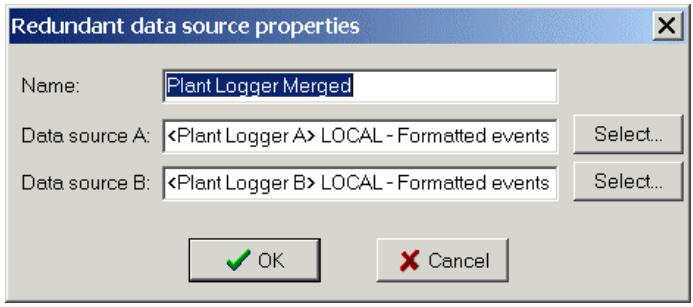


Figure 4-9

Add Redundant data source	
Name	Name (label) of the redundant data source
Data source A	Specifies data source A. Selected by pressing “Select”.
Data source b	Specifies to data source B. Selected by pressing “Select”.

Merge of non-identical data sources
Although the main objective for redundant data source objects is to merge events from two identical data sources, it can also be used for non-identical data sources as well.
In that case all events will just be merged without filtering.

Note that, if the selected data sources have different field structures, it will be possible to select fields from both data sources when creating/modifying a notification definition. However, only fields available in the actual event can be translated.

An example:

Field structures:

A: Logdate, Tagname, Description, Status
B: Logdate, Objectname, Description, Property

If a mail notification is created with the following message text

> "Notification arrived %LOGDATE%. Please check %TAGNAME%"

Then the %TAGNAME% variable will only be translated for events coming from data source A.

4.6 Supervision objects

The intention of supervision objects is to supervise data sources and make notifications when unwanted behaviour is detected. For more information, refer to section 6 "Supervision objects".

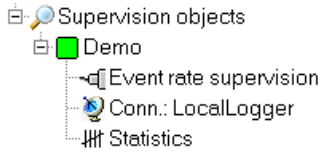


Figure 4-10

All supervision objects have a data source named "Event rate supervision" available. This "Event rate supervision" can be used to generate a notification when a specific event has exceeded its predefined limit, like 10 received events per minute.

Section 6 "Supervision objects" describes how to configure and maintain supervision objects and event rate limits.

5. Notification definitions

The 'Notification definitions' tree view contains a list of all configured notifications. The current status for each notification is shown by the colour of the icon:

The notification is active.

The notification is disabled (out of service).

The notification has an error and is inactive. Information about the error is shown in the status bar when the notification is selected.

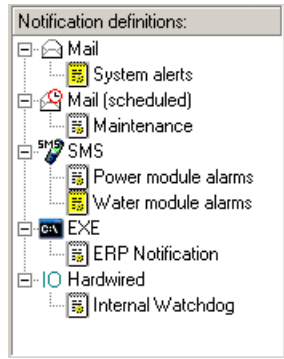


Figure 5-1

5.1 Notification types

The following notification types are supported:

Mail
Notifies the recipient via e-mail and requires access to a mail (SMTP) server. This type should only be used, when a notification does not require immediate action, as it cannot be assured, that the SMTP server does not delay the e-mail considerably.

Mail (scheduled)

Same as a mail notification except that events are buffered and sent at scheduled intervals. This type of notification is very useful for maintenance purposes where alerts, like maintenance alerts, can be buffered and sent to the maintenance responsible once every day.

SMS
Notifies the recipient by an SMS message and requires a GSM modem to be attached to the computer. This type is recommended when a notification requires immediate action.

EXE
Notifies the recipient by calling an external Windows application. This can be used for miscellaneous purposes like audible notifications and interfaces to other applications.
The external application is not part of the SmartNotification product.

Hardwired
Notifies a remote unit via a hardwired connection. This can be used to inform an operator via a blinking lamp or an alarm in a control system.

5.2 Adding SMS/Mail notification

To add a new SMS or mail notification choose the menu item *File* | *Notification* | *Add SMS…* or *File* | *Notification* | *Add Mail…*

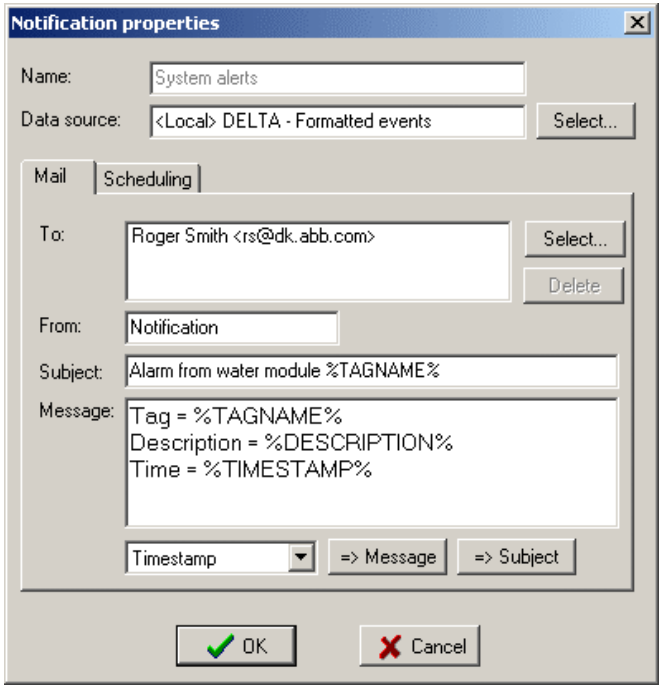


Figure 5-2

Add Notification (Mail or SMS)	
Name:	Name of the notification definition, which will be shown in the tree view.
Data source:	Identifies the data source selected for this Notification. Each input received from this data source will generate one notification per recipient specified. To change the data source, press the associated "Select" button and the Data Source browser dialog will be shown.
Mail/SMS properties [1)]	
To	Contains the list of recipients for this notification. To select new recipients, press the associated "Select" button.
From [2)]	Identifies the sender of the Notification.
Subject [2)]	A descriptive subject for this notification. Can be

	used to categorise the notifications for the recipients, like for example "Section 5 alarm", "Produced water alarm" etc.
Message	The message body. To insert information from the input data into the message, select the wanted field and press the "Insert" button. Inserted fields will be displayed as %<FIELDNAME>%.

1) Depends on the Notification type selected.
2) In SMS notifications the "From" and "Subject" entries will be part of the SMS message as: "From; Subject; Message text".

For SMS messages the total length of the message, including "From" and "Subject" text, cannot exceed 160 characters. Any additional characters will be cut off.

5.2.1 Schedule a mail notification

All mail notifications can be set to trigger at once, or on a scheduled basis. Scheduled events will be buffered until it is time for sending the notification.
The schedule settings can be modified on the second tab-sheet on the mail notification properties:

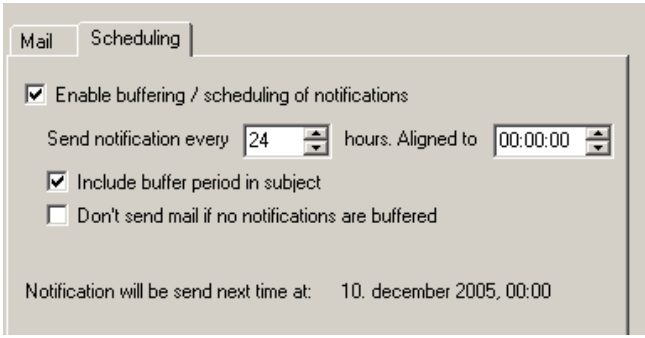


Figure 5-3

Scheduling	
Enable buffering / scheduling:	If set this mail notification will be triggered on a scheduled basis.
Send notification every:	This setting combined with the alignment setting determines the start time and interval between each notification. The text at the bottom of the dialog shows when the next schedule notification will be triggered.
Aligned to:	See above.
Include buffer period… :	If set the time period is included in subject of the mail notification.
Don't send… :	Normally a mail notification will be sent at every schedule, even when no events have been buffered. If empty notifications are unwanted check this option.

5.3 Adding EXE notification

To add a new EXE notification select the EXE notification type in the tree view and choose the menu item *File* | *Notification* | *Add EXE…*

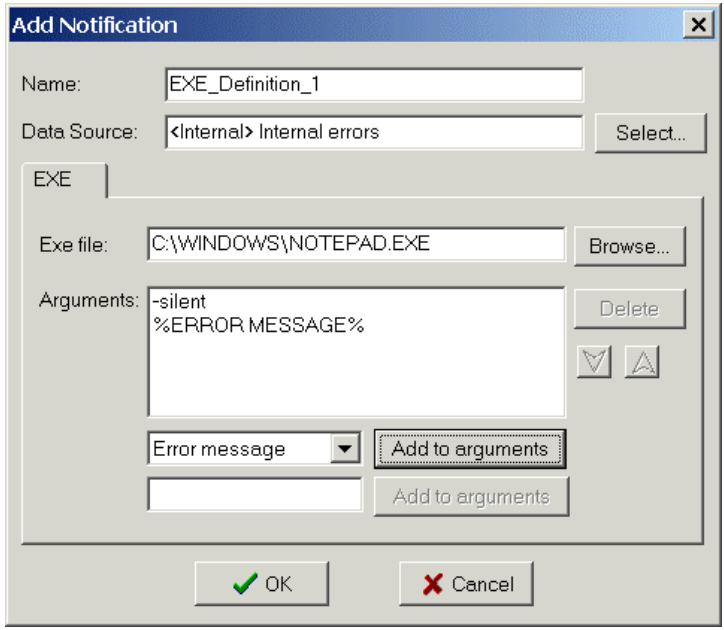


Figure 5-4

Add Notification (EXE)	
Name	Name of the notification definition, which will be shown in the tree view.
Data Source	Identifies the data source selected for this Notification definition. Inputs received from this data source will trigger the EXE file selected. To change the data source, press the associated "Select" button and the Data Source browser dialog will be shown.
EXE properties	
Exe file	Specifies the EXE file to be executed. To select an EXE file press the associated "Browse..." button.
Arguments	The argument list specifies the arguments that will be added to the shell command when launching the EXE file. Both static and dynamic arguments can be added as described below.

Program arguments
It is possible to add both static and dynamic arguments when launching the EXE file. Arguments are added by using the following controls:

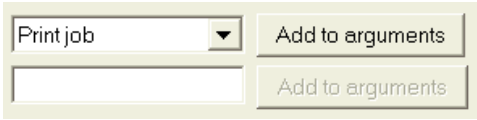


Figure 5-5

The upper "Add to arguments" button is used to at add fields from the input data to the argument list, while the lower button is used for static text.
An example with a SmartLogger data source:

Exe file: `C:\Windows\MyAppl.exe`
Arguments: `-s`
`%TAGNAME%`

If the tagname equals MY_TEST_TAG in the actual input, the Exe file would be called like this:

```
C:\Windows\MyAppl.exe -s MY_TEST_TAG
```

5.4 Adding Hardwired notification

To add a new hardwired notification choose the menu item *File* | *Notification* | *Add Hardwired…*

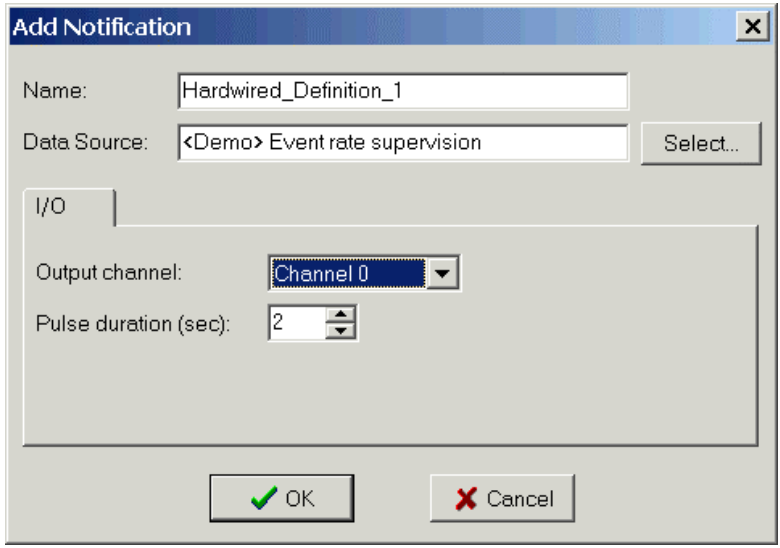


Figure 5-6

Add Notification (Hardwired)	
Name	Name of the notification definition, which will be shown in the tree view.
Data Source	Identifies the data source selected for this Notification definition. To change the data source, press the associated "Select" button and the Data Source browser dialog will be shown.
I/O properties	
Output channel	Specifies the output channel on the I/O board to be used for this notification.
Pulse duration	Specifies the number of seconds that an output is set to high state (1).

5.5 Data Source browser

A Data Source browser is used when creating or modifying a notification as described in the previous sections.

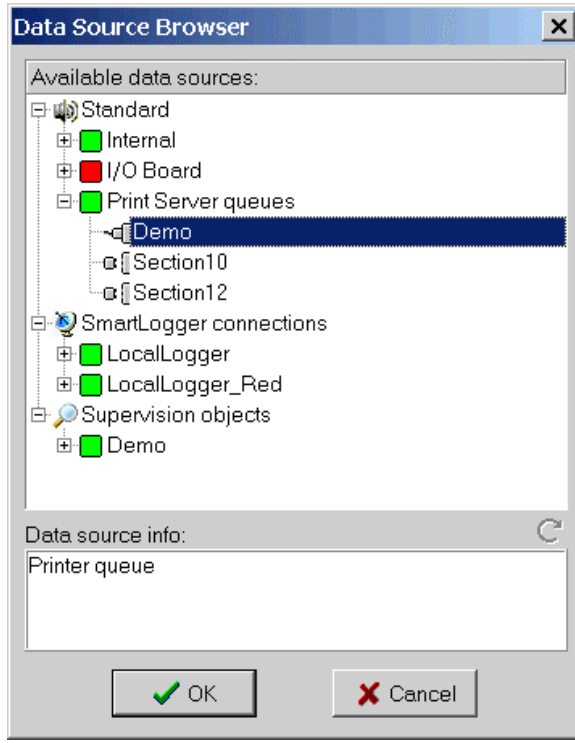


Figure 5-7

Data Source browser	
Available data sources	Shows a list of all available suppliers and data sources. For SmartLogger connections the data source list can be refreshed, by pressing the small circular arrow below the list box.
Data source info	Shows a descriptive text for the selected data source, if one is available.

6. Supervision objects

The intention of supervision objects is to supervise data sources and make notifications whenever unwanted behaviour is detected. When connected to a data source, a supervision object starts to calculate statistical data about the events received from the data source. This statistical data can be used for event rate supervision or manual data analysis.

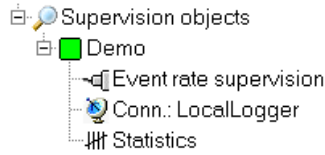


Figure 6-1

6.1 Creating a new Supervision Object

To create a new supervision object choose the menu item *File* | *Data Source* | *Add Supervision Object…*

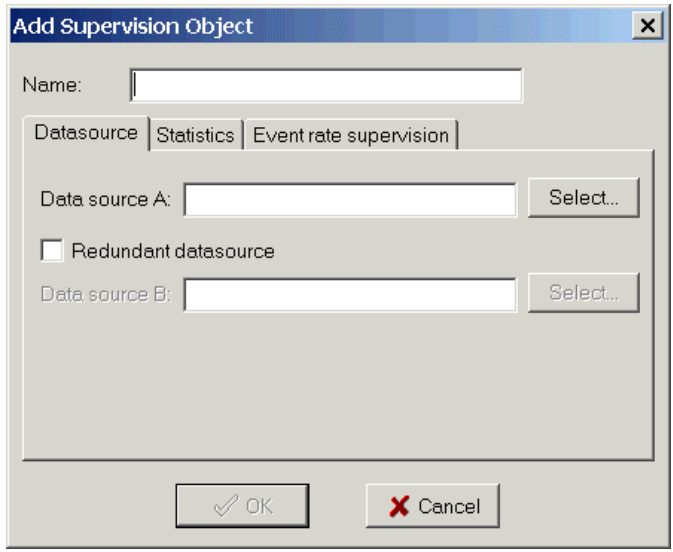


Figure 6-2

Add Supervision Object – Data source	
Name	Name of the object, which will be shown in the tree view.
Data source tab	
Data source A	Specifies the data source to be supervised. Press the “Select…” button to browse to a data source.
Redundant data source	Mark this check box, if this supervision object must collect data from two data sources. For more information see section 6.3 “Using redundant data sources”.
Data source B	Specifies the data source 2 in redundant configurations.

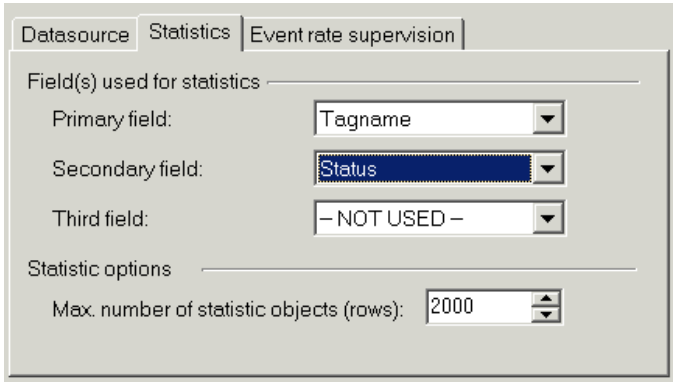


Figure 6-3

Add Supervision Object - Statistics	
Field(s) used for statistics	Up to three fields (primary, secondary and third) can be selected for statistics. These selections define the fields that make an event unique.
Max. number of statistic…	Specifies maximum number of rows that are remembered in the statistics list. If a supervision object is set up to supervise the “Tagname” field, then 2000 rows will be equal to 2000 events with different tag-names. When exceeded, the row with oldest timestamp is deleted.

Selecting fields for statistics

The fields to choose depend on the data source and the purpose of the supervision. If, for example, the event rate were supervised, then it would be relevant to choose three fields that make the event unique. An example:

LogDate	Tagname	Description	ProcS...	Status	Equipment
31-03-2005 21:44:45	WUL-P-6002-R	Centrifuge Pump	16	Run	Pump
31-03-2005 21:44:46	KRT-ESDV-85943-O	Shutdown Fuel Gas	2	Opening	Valve
31-03-2005 21:44:47	OAM-PUMP-24576-R	Mezz Oil Pump	12	Run	Pump
31-03-2005 21:44:48	KWS-XCV-53053	Prod Drain Valve	2	Open	Valve
31-03-2005 21:44:49	WUL-P-6002	Centrifuge Pump	16	Running	Pump
31-03-2005 21:44:50	KRT-BDV-1124	Turbine Blowdown	2	Opening	Valve
31-03-2005 21:44:51	OAM-PUMP-24576	Mezz Oil Pump	12	Running	Pump
31-03-2005 21:44:52	KRT-BDV-1124-O	Turbine Blowdown	2	Open	Valve
31-03-2005 21:44:53	OPS-PUMP-236-R	West Water Pump	12	Run	Pump
31-03-2005 21:44:54	KRT-ESDV-85943	Shutdown Fuel Gas	2	Open	Valve

Figure 6-4

In order to supervise on unique events, the following fields must be chosen:

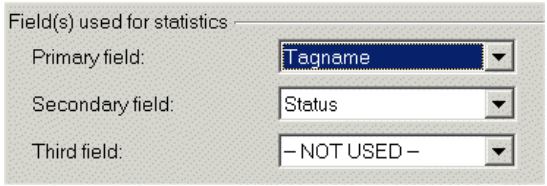


Figure 6-5

Supervision parameters

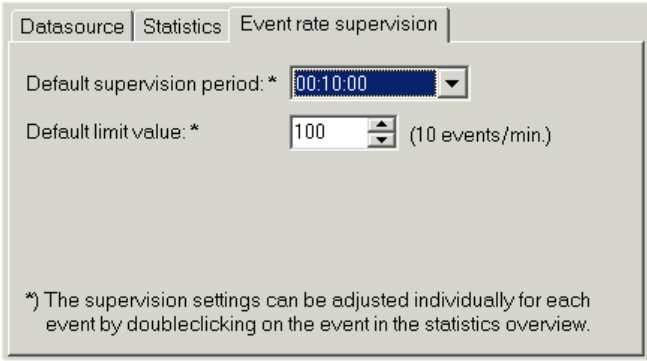


Figure 6-6

Add Supervision Object – Event rate supervision	
Default supervision period [1)]	When a new event is detected, it will be added to the statistics list with this default supervision period setting.
Default limit value [1)]	When a new event is detected, it will be added to the statistics list with this default limit value.

1) The supervision period and the limit together define the maximum allowed event rate.

Supervision objects always include a data source named “Event rate supervision”, which must be used as data source when creating a notification definition.

6.2 Modifying an existing Supervision Object

To modify an existing supervision object select the supervision object in the tree view and choose *File* | *Data sources* | *Properties…*

If the data source or the field list used for statistics is changed, the statistics will be cleared.

6.3 Using redundant data sources

If SmartNotification is used together with redundant SmartLogger configurations, it is possible to let supervision objects supervise the combined events from two identical SmartLogger data sources.

When redundancy is enabled, a *redundancy filter* is automatically enabled for this supervision object. This filter makes sure that doublets are removed observing the following limitations:

- The redundancy filter is based on text comparison on the whole event. These means that even the slightest difference in the two data formats will cause the filter to malfunction. This could happen if one of the data sources has defined an extra field – even though this is a non-supervised field.
- The redundancy filter will remember the previous 16.000 – 20.000 (rolling buffer [1)]) for comparison. If one of the data sources has been down and has not been able to send it's events before this buffer limit is exceeded, then the filter will not detect the doublet.

1) When the limit of 20.000 events is reached then the oldest 4000 is deleted from the comparison buffer.

Supervision Objects with redundant data sources have two SmartLogger connections in the tree view overview:

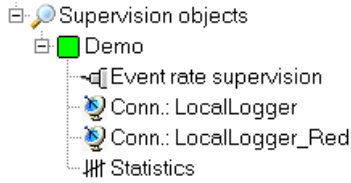


Figure 6-7

6.4 Statistical information

All supervision objects automatically have statistical information available. To open the statistical view, right-click on the Supervision Object in the tree view and chose *View* | *Statistics…*

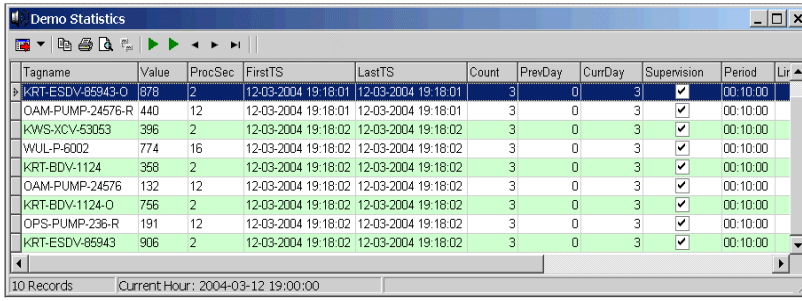


Figure 6-8

Each row in the statistics overview represents one unique event from the data source. The statistical overview contains the following information:

Column	Description
Column 1 – 3	The first 1-3 columns contain the information from the fields chosen for supervision.
FirstTS	First timestamp. Timestamp from the event, the first time this event was detected.
LastTS	Last timestamp. This is the timestamp from the event, the latest time it was detected.
Count	The number of times this event has been detected since “FirstTS”.
PrevDay	The number of times this event has been detected the previous day [1)].
CurrDay	The number of times this event has been detected today [1)].
Supervision	If marked this event is supervised. If not supervised this event will not trigger an event rate alarm even though the limit is exceeded.
Period	The “Period” and the “Limit” settings together define the maximal allowed event rate.
Limit	The “Period” and the “Limit” settings together define the maximal allowed event rate.
AlarmCount	The number of times this event has exceeded the allowed event rate.
AlarmLastTS	Last time the allowed event rate was exceeded.

Persistent	If checked, this event is never removed from the statistics. See also section 6.4.1 “Trimming supervision parameters”.
Statistics	Not used in this version.

1) Note that these day references refer to the “Current hour” time shown in the status bar. The “Current hour” time is decoded from the events and is therefore only updated when receiving events from the data source.

6.4.1 Trimming supervision parameters

When a supervision object has been active for period of time, it is often preferable to trim the supervision settings. This could be necessary due to events that occur very often and therefore are “spamming” the event rate supervision.
To modify the supervision parameters for a single event, just double-click on it in the statistics overview:

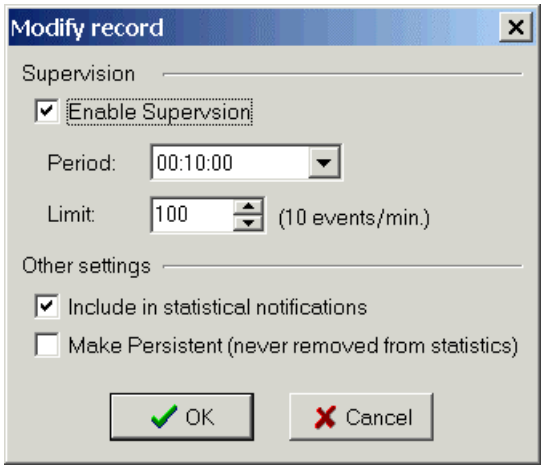


Figure 6-9

When one of settings is changed, then the “Persistent” checkbox is marked automatically. If a record is made persistent then it is never removed from the statistical list event even though the maximum number of records is exceeded.

It is possible to multi-edit several records at the same time by selecting the wanted records and choosing *Modify Selected…* from the pop-up menu.

6.5 Event rate supervision

All active supervision objects automatically provide a data source named *Event rate supervision*. The event rate supervision data source is triggered whenever an event from the supervised data source exceeds the specified number of events / minute.

To generate a notification, you will have to create a new notification definition and select the Supervision object as data source as shown below.

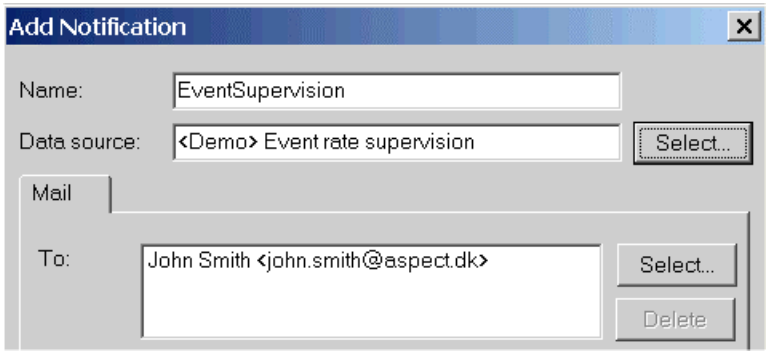


Figure 6-10

When using “Event rate supervision” data source the following fields are available for the message text generation when creating a notification definition:

Field	Description
Alarm message	A complete alarm message describing the supervision alarm. This field is recommended for standard configurations.
Alarm time	The timestamp of the event that triggered the supervision alarm

Limit	The limit value exceeded.
Period	The period of time where the limit was exceeded.
Reference	Used to identify the event. The reference text equals the three supervised fields separated by a comma.
Supervision Object	The name of the supervision object generating the alarm.

When using the field “Alarm message” a message like in the following example is generated automatically:

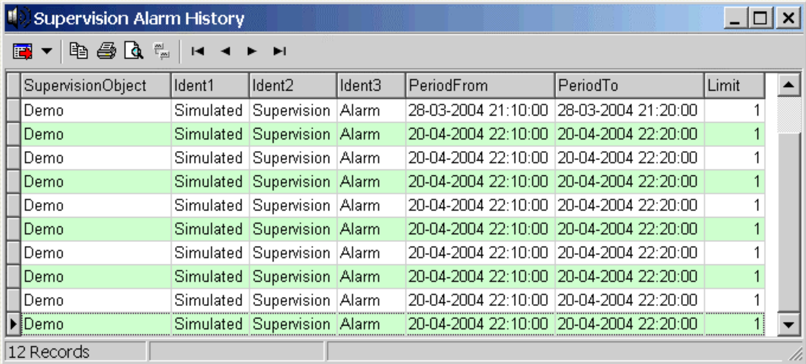
Supervision alarm received from "Demo", reference "WUL-P-6002,Motor,Running".
Event rate limit <20> exceeded during 2004-03-12 19:10:00 and 2004-03-12 19:20:00

If this message is suitable then it the notification definition should look like this:

Figure 6-11

6.6 Supervision alarm history

SmartNotification keeps track of the event rate supervision alarms generated. Each supervision alarm is added to a historical log, which can be shown from the menu item *View* | *Supervision Alarm History…*



SupervisionObject	Ident1	Ident2	Ident3	PeriodFrom	PeriodTo	Limit
Demo	Simulated	Supervision	Alarm	28-03-2004 21:10:00	28-03-2004 21:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1
Demo	Simulated	Supervision	Alarm	20-04-2004 22:10:00	20-04-2004 22:20:00	1

Figure 6-12

7. Maintenance

7.1 Notifications Inputs

The Notifications Inputs can be viewed by choosing the menu item *View* | *Notifications Inputs…*

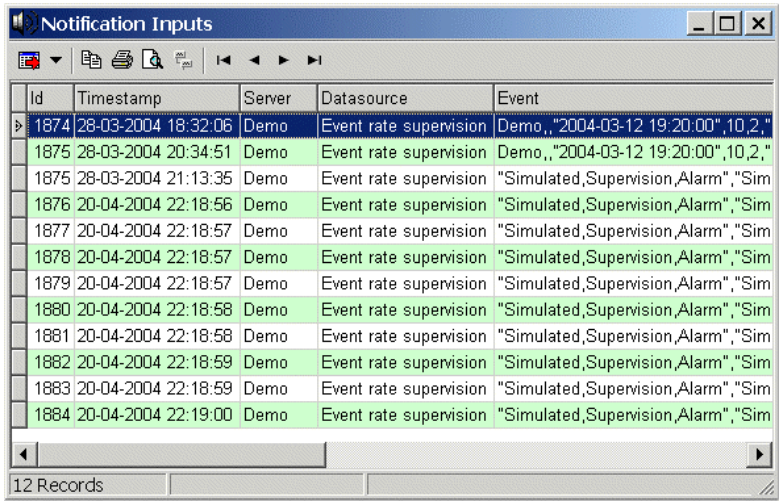


Figure 7-1

This log shows all inputs received from the available data sources. Each input is identified by the data source name and will trigger one or more notification outputs depending on the set-up.
The following information is listed in the data grid:

Field name	Description
Id	Unique id
Timestamp	Date and time showing when SmartNotification received the input. Not to be confused with the timestamp in an event from a SmartLogger data source.
Server	Name of the data source type supplying the input.

Data Source	Name of the data source supplying the input.
Event	The actual input data received.

The log contains the latest 500 inputs received.

7.2 Notifications Outputs

The Notifications Outputs can be viewed by choosing the menu item *View* | *Notifications Outputs…*

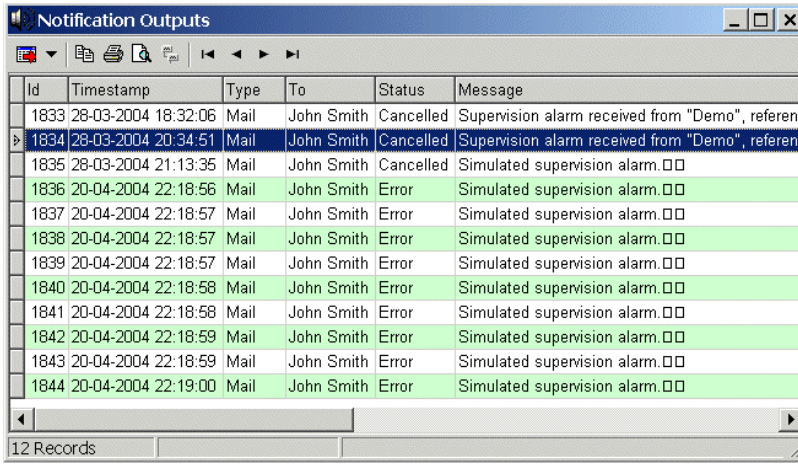


Figure 7-2

This log shows a historical view of all generated outputs and contains the following information in the data grid:

Field name	Description
Id	A unique number identifying the notification. This number is used as reference for all trace messages related to this notification.
Timestamp	Date and time showing when the output was stored in the output log.
Type	Output type: Mail, SMS, EXE or I/O.
To	Name of the recipient.
Status	Current status for the output: Pending, Sending,

	Sent, Error or Cancelled [1].
Message	The composed message sent to the recipient.
Data source	Name of the data source originally supplying the information for the output.

1) An output is set to "Cancelled", if the user has chosen "Cancel all pending outputs" from the menu or if SmartNotification was shut down while there were pending outputs.

The log contains the latest 500 notification outputs generated.

7.3 Internal Messages log

The Internal Messages log keeps track of all configuration changes and incidents, which may be of interest to an operator or system responsible.

The log can be viewed by choosing the menu item *View* | *Internal Messages…*

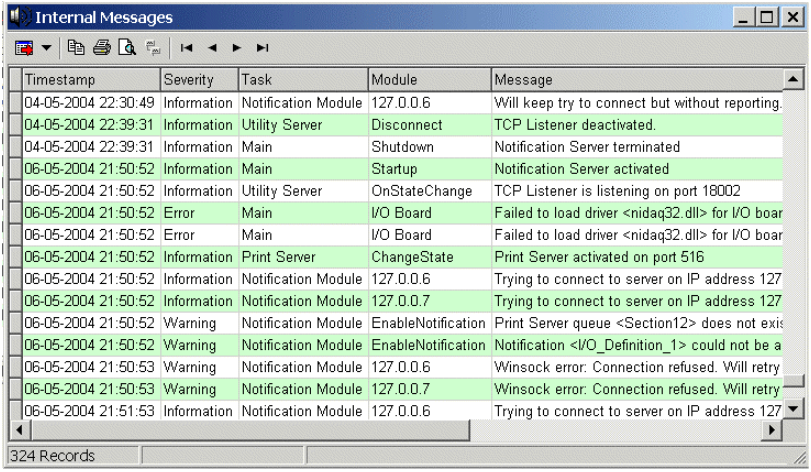


Figure 7-3

Field name	Description
Timestamp	Date and time showing when the message was stored in the log.
Severity	Severity level. See description of each severity level below this table.
Task	Together with "Module" this field defines the

	originator of the message.
Module	Together with "Task" this field defines the originator of the message.
Message	The actual message.

The messages are classified in the following severity levels:

Information	Standard messages indicating that the application has been started, configuration read etc.
Warning	Appears when SmartNotification has detected an error in a module, in data validation or other incidents that later on may lead to errors in notification.
Alert	A serious warning that requires action.
Error	Serious error has occurred.

7.4 Options

The options dialog can be accessed from the menu item *Tools* | *Options…*

7.4.1 Mail options

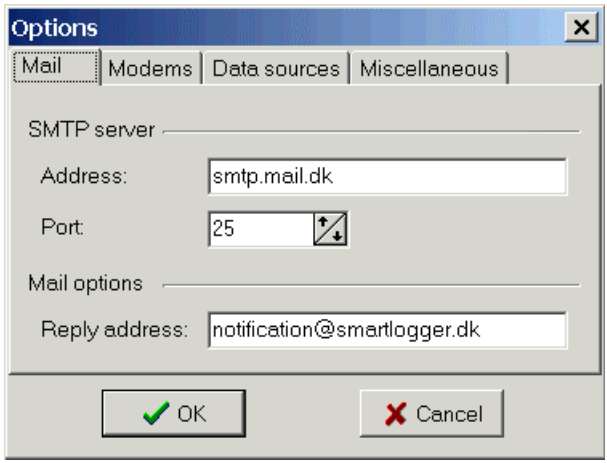


Figure 7-4

SMTP server	
Address	The internet address for the SMTP server to be used for mail notifications.
Port	Port to be used for connection. Should normally be set to 25.
Mail options	
Reply address	Specifies the reply address that will be used if recipients of mail notifications use the reply function in their mail program. Not to be confused with the "From" parameter in a notification definition, which is the name that is displayed in the mail header.

7.4.2 Modem options

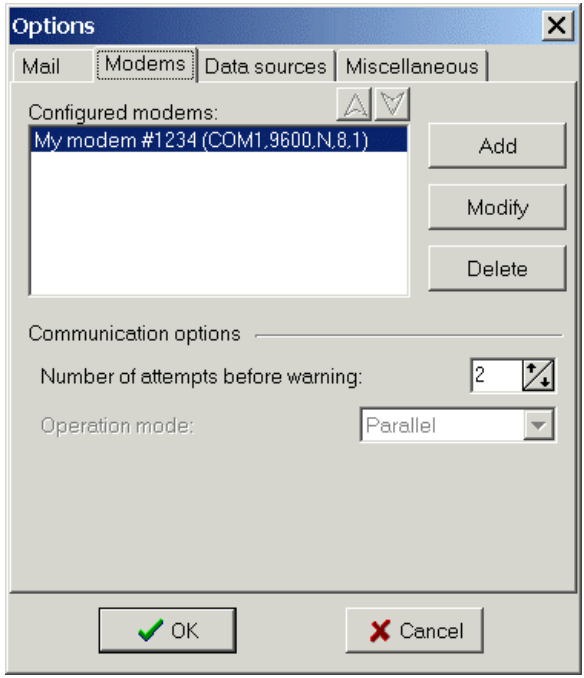


Figure 7-5

Modem connection	
Configured modems	Shows a list of configured modems. To add new modems press the Add button.
Communication options	
Number of attempts…	Specifies the number of send attempts to be executed before a SMS message is reported as failed.
Operation mode	Defines the operation mode if multiple modems are defined. Only *Parallel* mode is supported in this version.

When adding a new modem the following dialog will appear:

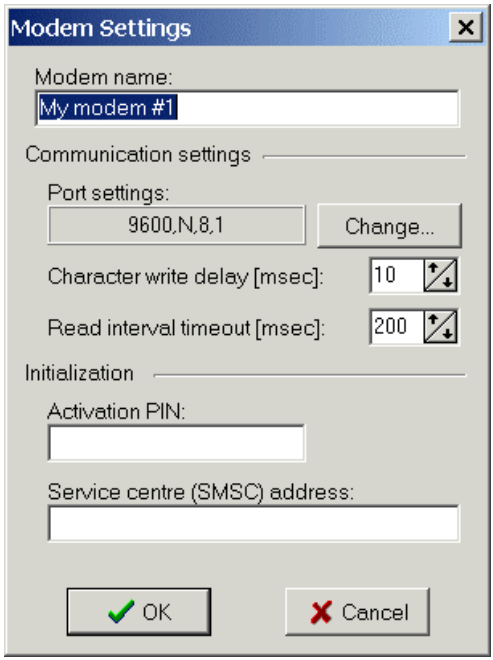


Figure 7-6

Modem Settings	
Modem name	The name of the modem.
Communication settings	
Port settings	Shows the specified baudrate, parity, databit and stopbit. To change the port settings press the *Change...* button.
Character write delay	Some mobile devices are sensitive to fast communication. If a modem connection often reports communication errors, increasing this parameter might help. Recommended settings for selected Nokia devices: Nokia 22: 0 msec Nokia 6210: 80 msec
Read interval timeout	This parameter indicates how long time a read operation will wait for more characters before it returns. Recommended setting is 200 msec.
Initialization	
Activation PIN	Needed if your GSM modem has pin code activation enabled.
Service centre	Optional. Specifies your Service centre (SMSC) address. May be used for SMS notifications.

7.4.3 Data source options

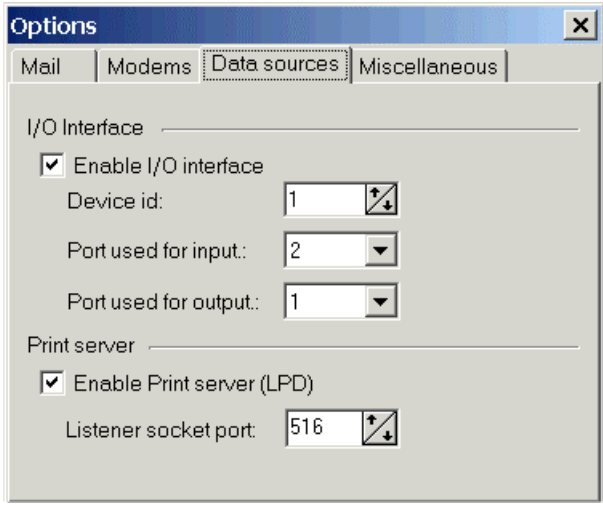


Figure 7-7

I/O Interface	
Enable I/O...	Enables or disables the I/O board interface.
Device id	Defines which I/O board to use. Please refer to board vendor documentation for more information.
Port used for input	Specifies the port on the I/O board to be used as input for hardwired data sources. [1)]
Port used for Output	Specifies the port on the I/O board to be used as output for hardwired notifications. [1)]
Print server	
Enable Print server (LPD)	Enables or disables the Print server.
Listener socket port	Listener port used for print server. Default socket port number for LPD is 515.

1) Some I/O boards support multiple ports (or bytes). These are typically referred to as Port 0, Port 1 etc. or PA, PB etc. Setting the Port number to 1 is equal to PB.

7.4.4 Miscellaneous options

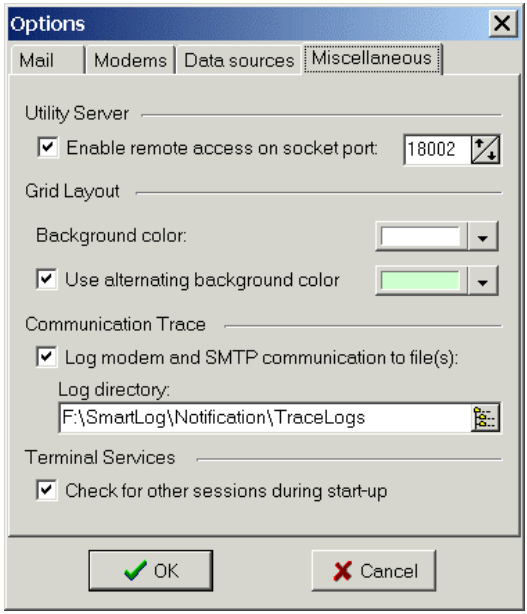


Figure 7-8

Utility Server	
Enable remote access...	Enables or disables the possibility of remote access from SmartStatus applications. For more information please refer to section 8.1 "Utility Server".
Socket port	Socket port used for TCP/IP listener. Remote clients must use this port when connecting to SmartNotification.
Grid Layout	
Background color.	The background color used in all data grids.
Use alternating…	If checked, all grids will use alternating background colors.
Communication trace	
Log modem and SMTP…	If checked then trace files are created for all communication towards modems and mail server [1)].

Log directory:	Location of trace files.
Terminal Services	
Check for other sessions...:	If SmartNotification is installed on a server with Terminal Services enabled, users might run a new instance of the application by mistake. If this options is checked, SmartNotification will check for other sessions during start-up.

1) All log files are restricted to a maximum of 2 MB per log file. When exceeded the log file is renamed to “old” and a new one is created,

7.5 Address Book

SmartNotification uses the standard Windows Address Book (WAB) API, which is included as standard on most Windows installations today.
The Address Book can be accessed from the menu item *Tools* | *Address Book…*

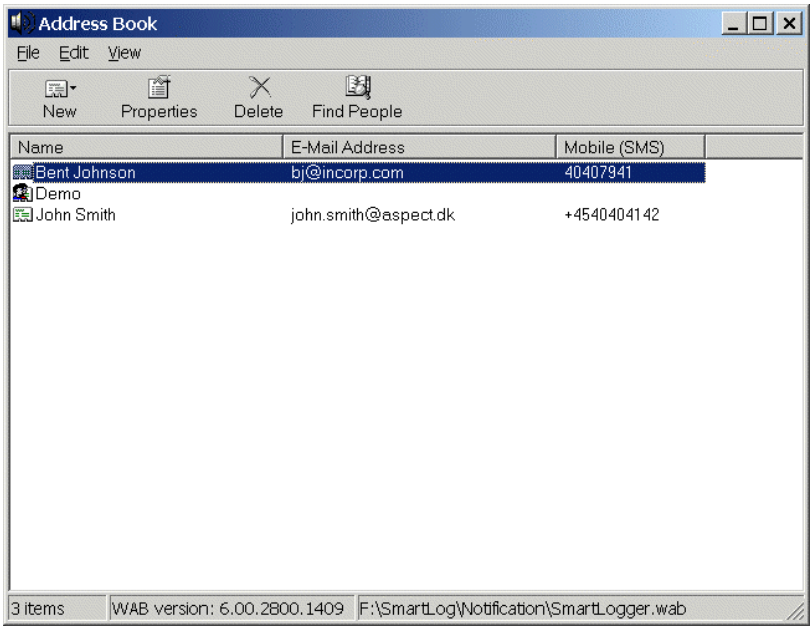


Figure 7-9

In order for SmartNotification to work properly, the following must be specified for each entry in the address book:

Name:	First/Middle/Last name can be specified under the "Name" tab.
E-Mail:	Can be specified under the "Name" tab-sheet. Required for "Mail" notifications.
Mobile:	Can be specified under the "Home" tab-sheet. Required for "SMS" notifications.

8. Utilities

8.1 Utility Server

The Utility Server can be used in connection with the SmartStatus application for remote access and supervision of the SmartNotification application.

The SmartStatus application is freeware and can be downloaded from the web-site www.smartlogger.dk.

The Utility Server main view can be shown by selecting the menu item *Tools* | *Utility Server…*

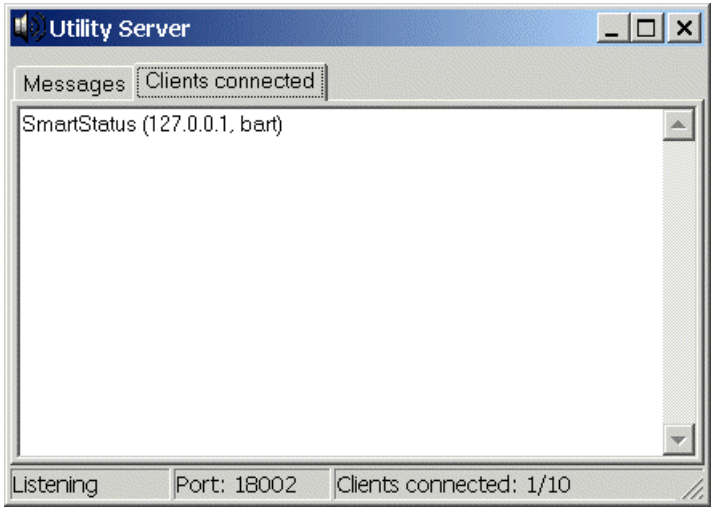


Figure 8-1

From remote SmartStatus clients it is possible to get/see the following information about the SmartNotification application:

- System information, like operating system, memory, build-version etc.
- Current status for different modules.
- The internal system log.
- The input log (incoming events from data sources).
- The output log (outgoing notifications).

8.2 Simulation panel

When testing SmartNotification it is possible to simulate the different notifications by using the simulation panel.

The Simulation tool can be shown by selecting the menu item *Tools* | *Simulate…*

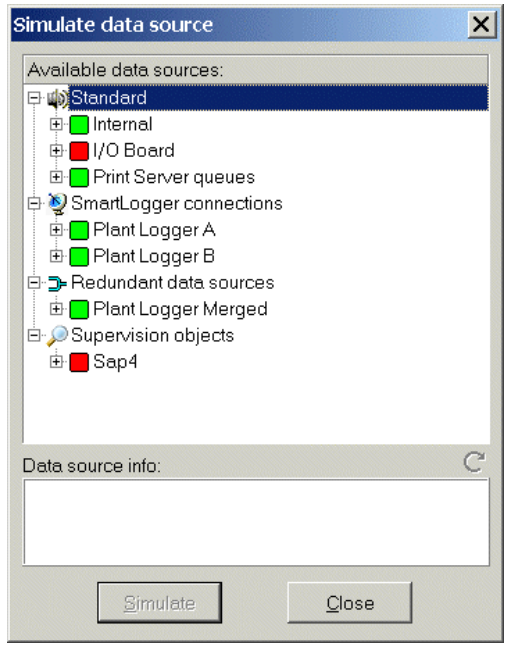


Figure 8-2

Just select the wanted data source and press *Simulate*, then an event is triggered as if it had come from the data source itself. Note that it is only possible simulate data sources with attached notifications. If no notification is attached, the Simulate button will be disabled.

9. Appendix

9.1 Event rate supervision calculation method

When calculating an event rate, there are several issues to take into consideration:

1. Is the data source sending its data continuously or can there be "holes" in the transmission?
2. Should the events per minute rate be based on the timestamp from the event or the time when the event is received by the supervision object?
3. If the event rate is based on the timestamp from the event then what to do with events that may be several minutes or hours old?
4. What if the data source is not sending its events in correct order?

As supervision objects are intended for any kind of event generating equipment, there is one golden rule: You cannot be sure of anything. In other words the event rate calculation method must handle incorrect sequence, holes in transmission, event bursts etc.
To manage this, the calculation method is based on the following terms:

Current hour:	This parameter defines the current hour for the calculation. The value is extracted from the event and is changed when a newer timestamp is detected in an event. Example: If the event timestamp is 16:47, the current hour is 16:00->17:00.
Previous hour:	*Current hour* minus 1.
Timeslot	An hour is divided into 6 timeslots, each covering a period of 10 minutes.
Period	Defines the supervision period, which can be in the range from 10 minutes (1 timeslot) to 1 hour (6 timeslots).

Suspend time Defines the minimum time allowed between two event-rate alarms from the same event. Is as default set equal to *Period*.

Limit The maximum number of occurrences that is allowed within the specified *Period* before an alarm is generated.

Counting events

For each unique event (row in the statistics) a counting object is created. This counting object keeps track on the event rate for this specific event and notifies the supervision object when the limit is exceeded. Each counting object has 12 timeslot counters covering the *Current hour* and *Previous hour* according to the figure below:

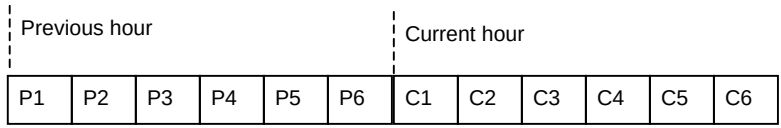


Figure 9-1

The event counting is handled according to these timeslots as shown below:

Current hour = 2004-03-12 14:00->15:00

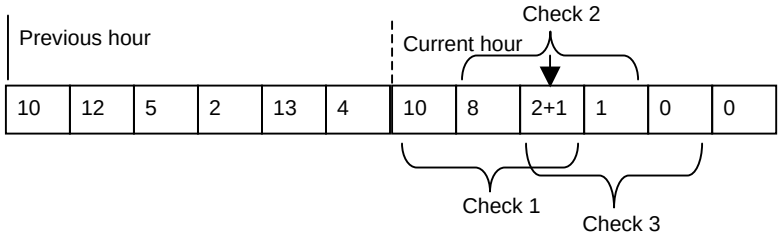
Event timestamp	Action
2004-03-12 14:08	Timeslot count C1 is increased by 1
2004-03-12 14:22	Timeslot count C3 is increased by 1
2004-03-12 13:52	Timeslot count P3 is increased by 1
2004-03-12 12:22	Event is ignored
2004-03-12 15:02	Current hour is changed to 15:00 causing timeslot counters in C1-C6 to be moved to P1-P6 and reset. Timeslot counter C1 is then increased by 1.

Checking the event rate limit

If the *Period* parameter is set to 10 minutes, it is quite easy to check the event rate limit, as the period equals one timeslot.
If the *Period* parameter is set to larger periods, the neighbouring timeslots have to be taking into consideration as shown in the following example:

Current hour = 2004-03-12 14:00->15:00
Limit / Period = 20 events / 30 minutes
Event timestamp = 2004-03-12 14:23

According to the event timestamp, the counter in C3 will be increased. In order to check the limit properly three checks (summarising timeslots) will be made as shown in the figure below:



In this case check 1 will generate an event rate alarm as 10+8+3 is greater than the limit of 20 event / 30 minutes. The event rate alarm period will be shown as 14:00 through 14:30.

Suspend time
The *Suspend time* parameter defines the minimum time allowed between two event-rate alarms from the same event. This parameter is added to ensure that many events in a single timeslot, do not trigger multiple alarms and thereby flooding the receiver.
The *Suspend time* parameter is as default set equal to the *Period*, which means that a Counting object with *Period* set to 30 minutes can as maximum can generate an alarm every 30 minutes.

9.2 Creating a Windows printer

This section describes how to configure a network printer on a Windows 2000 (Professional or Server) PC that can be used for sending notification to a SmartNotification application via a TCP/IP network.

1. Go to Start->Settings->Printers and double click on "Add Printer".
2. The "Add Printer Wizard" should now be shown. Click Next to start the set-up. Select "Local printer", uncheck automatic detection, and click Next.

3. Select the option "Create a new port" and for the Type choose "Standard TCP/IP Port". Click Next.
4. The "TCP/IP Printer Port Wizard" should now start. Click Next. For the Printer Name, enter the IP address of the computer where the SmartNotification application is located. The Port Name is generated automatically, but can be changed if desired. If the printer is created on the same PC as SmartNotification then localhost can be used (127.0.0.1). When ready click Next.
5. The dialog "Additional port information required" should now be shown. Select "Custom" device type and click Settings. Select "LPR" protocol, enter queue name (**note**) and click Ok. Click Next. Click Finish.
   Note: Queue name must equal one of the queue names defined in SmartNotification.
6. You should now be back to the "Add Printer Wizard". Select "Generic" from the manufactures list and select the printer "Generic / Text only". Click Next. If you are asked to keep existing driver, select it and click Next.
7. Next the Printer Wizard will ask for a Printer name and whether you would like it to be your default printer. The printer name is the name that applications will display when you select Print. Give the printer a name, like "NotificationPrinter". Click Next and Next again.
8. Answer "No" to the "Print test page" question, click Next, and finally click Finish.

The printer will now be created. The best way to test the connection is to print some text from Notepad or a similar program.