

# **SIEMENS**

## **SIMATIC RTLS**

### **Localization systems**

### **SIMATIC RTLS Message management**

### **(6GT2780-0DB10 / 6GT2780-0DB20)**

**Application manual**

**10/2018**

C79000-G8976-C530-01

## Legal information

### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

<b>⚠ DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
<b>⚠ WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
<b>⚠ CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

### Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

### Proper use of Agilion products

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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# 1 General

## 1.1 Audience and scope

This manual outlines the operation and setting of the message management within the enhanced version of the client “Network Configuration” (NWConfig\_Agilion.exe) of the version 2.2.1 of the Wireless Location System (WLS). The message management serves the purpose of notifying users about certain events occurring in the WLS. The manual at hand particularly aims to enable users to stipulate the rules determining the triggering events as well as the type of message ensuing.

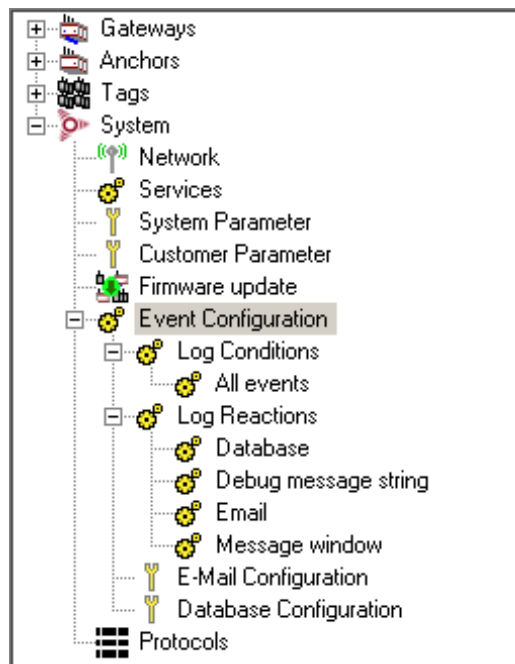
The settings required should only be made by experienced personnel such as integrators.

The client containing the message management options can be started from the WLS installation folder which can be found under C:\Program Files (x86)\Agilion\Clients\_Agilion in case the WLS has been installed using the default settings. Otherwise the path may differ according to the customer’s settings.

# 2 Application

## 2.1 General

The Message management can be found embedded into the client “Network Configuration” (NWConfig\_Agilion.exe) and there within the hierarchic structure under “System > Message management”.



Generally, all events concerning any of the services and clients are written into a database protocol. This log-file can be viewed using the Protocol View Client to be found in the installation folder (Default path: C:\ Program Files (x86)\Agilion\Clients\ProtocolViewer.exe).

The Message management on the other hand enables to set up message conditions and messages for certain events to be reported in the desired way. Such messages could be, for instance, a database entry notifying about the system's start-up or an email indicating a failed database connection.

The message conditions to be selected from are:

- Facility
- Severity
- Message code

The following message types are possible:

- A debug message string
- An email notification
- An entry into the database
- An entry into the Windows event log
- A SNMP trap

All message conditions, corresponding values and message options are described in detail below (see 3.2.2.1).

## 3 Configuration

### 3.1 Overview

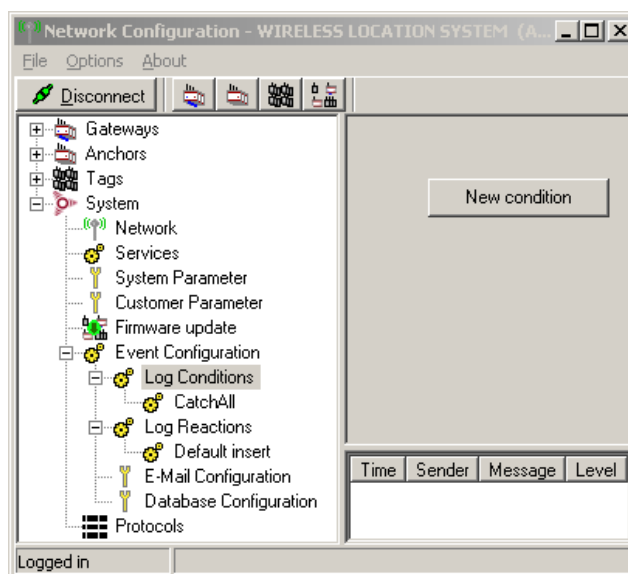
The Message management enables to:

- Create and configure message conditions (see 3.2)
- Configure and create messages as well as message types (see 3.3)
- Configure email and database login data concerning the corresponding message types (see 3.3.1.2 and 3.3.1.3)

### 3.2 Message conditions

#### 3.2.1 New conditions

New message conditions can be created by selecting “Message conditions” in the hierarchic structure and pressing the button “New condition” appearing on the right hand side of the GUI.



## 3.2.2 Condition configuration

It is mandatory to set the parameters appropriately for any existing or new condition to work properly. To this end select the desired Message condition in the hierarchic structure. Both name and description of the condition can be chosen freely. A condition can be activated or deactivated by checking or unchecking the checkbox  Active.

Three types of message conditions are available for selection from the drop-down menu. For every condition type a way of comparison and a value has to be selected. A number of condition types can be combined to create unique conditions triggering a reaction. Those types are connected as AND conditions, hence all set conditions have to be true to eventually triggering a reaction. The conditions have to be set up with utter precision in order to prevent contradictions inhibiting the desired message.

### 3.2.2.1 Condition types and corresponding values

The three condition types selectable in the left column of the condition configuration are Facility, Severity and Message code. The selectable values are, where deemed necessary, described following the condition type. All values are assigned with a numeric value in order to enable the various ways of comparison (see 3.2.2.2):

Type	Comparison	Value	
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And
[Inactive]	==		And



- Facility

This condition type relates to a certain scope of the WLS. The event itself may concern one of the following areas of the system:

- 0 Kernel  
Event occurred at any of the internal server modules, their database communication, gateway connections or life-signs.
- 1 UserLevel  
Facility is merely used for internal purposes.
- 2 Infrastructure  
Event occurred at an infrastructure device (gateway or anchor), e.g. a life-sign is resumed after a time-out.
- 3 MobileNode  
Event occurred at any of the mobile devices (transponder), e.g. a life-sign time-out.
- 15 Clock  
Facility is merely used for internal purposes.
- 16 to 23 Local0 to 7  
These events are triggered by changes to the parameters of devices or server functionalities.
  - 24 Statistic  
Facility is merely used for internal purposes.

- Severity

This condition type relates to the degree of difficulty of the occurring event. The drop-down menu offers ten different severity levels to select from:

- 0 Emergency  
Not used
- 1 Alert  
Not used
- 2 Critical  
The event concerns a crucial part of the WLS, jeopardizes its function and requires immediate adjustment. Message codes such as 10010 (Service timeout) or 20001 (Database error) are considered critical.

- 3 Error
 

Events constraining particular functions, but do not endanger the functioning of the entire system are reported as errors. They include events such as a device's heartbeat timeout (30001), lost or established connection of the Network Communication server to a gateway (30012) or that the housing of a gateway has been opened (30013).
- 4 Warning
 

Warnings indicate unexpected situations that should not compromise the functioning of the WLS, e.g. changes to the error memory of a device (30016).
- 5 Notice
 

Signals events such as the system start (10020), up-to-dateness of all parameters (10021) or a device's life-sign resume (30002).
- 6 Informational
 

Informs about the start of service components running in the background such as the logging service, localisation service or network management.
- 7 Debug
 

Severity level is merely used for internal purposes.
- 8 DebugSpam
 

Severity level is merely used for internal purposes.
- 9 unknown
 

Not used
- Message code
 

This condition relates to the various internal WLS message codes:

  - 10001 Service started (Informational)
 

This message code informs about the start of an internal WLS service (AgilionClientCommunication, AgilionLoggingService, AgilionLocalizationService, AgilionNetworkManagement, AgilionNetworkcommunication). A message will be put out for every single started service.
  - 10002 Service stopped (Informational)
 

This message code informs about the shut-down of an internal WLS service.
  - 10003 Service emergency stop (Critical)
 

This message code informs about an unexpected shut-down of an internal WLS service. The message is prompted by critical and exceptional errors such as the inability to write into database leading to an automatic shut-down of a service.

- 10010 Service timeout detected (Critical)  
The message code informs about an internal WLS service timing out.
- 10020 System started (Notice)  
This message code notifies that all internal WLS services have started and signalled that they work properly.
- 10021 Parameter up to date (Notice)  
This message code notifies that the parameters of all devices have been read and checked for up-to-dateness.
- 10022 Initial ranging finished (Notice)  
This message code informs about the completion of the initial ranging. Initial ranging concerns primarily newly started WLS. All transponders within radio range will be switched from slow mode to pre-fast mode in order to determine their position. Initial ranging does not concern a (daily) restart of the WLS, unless it is set-up to specifically carry out this process.
- 100100 AuditTrail (Informational)  
This message code indicates the change of WLS parameters, e.g. localization area configurations, device parameters and such. Furthermore the message informs about the exact change, who has been carrying it out and when it has happened.
- 10200 No license  
This message code notifies about a missing license file.
- 20001 Database error (Critical)  
This message code informs about database errors such as a service's failure to connect to the database or inability to write into database due to a lack of memory.
- 20002 Database tasklet (Warning)  
This message code is merely used for internal purposes.
- 30001 Heartbeat timed out (Warning)  
This message code warns that a device's heartbeat has timed-out.
- 30002 Heartbeat resumed (Notice)  
This message code notifies that a device has resumed sending its heartbeat after timing out.
- 30011 Gateway disconnected (Warning)  
This message code warns that a gateway has lost its connection to the WLS server.

- 30012 Gateway connected (Warning)
 

This message code warns that a gateway has connected to the WLS server, implying that the gateway has been disconnected beforehand.
- 30013 Intrusion detected (Warning)
 

This message code warns that a device's entry sensor signals an open housing door.
- 30014 Parameter differs (Error)
 

This message code is merely used for internal purposes.
- 30015 Parameter verification failed (Error)
 

This message code is merely used for internal purposes.
- 30016 ERS change (Warning)
 

This message code warns about changes to the error memory of a device (infrastructure device or transponder).
- 40001 Low power detected (Notice)
 

This message code indicates that the voltage of a device (infrastructure or transponder) is too low. This message concerns devices run on batteries or accumulators such as certain types of transponders or solar powered infrastructure devices. Recharge transponders concerned using the appropriate recharging unit as soon as possible. Check the functioning of the charging functionality of solar panels, accumulators and such for solar powered infrastructure devices. It could well be that, for instance, the solar panel is shadowed or mechanically damaged.
- 80011 Sanity-check overlapping (Warning)
 

This message code warns that two vehicles have been located in the same place at the same time.
- 80012 Sanity-check process model check (Informational/Warning)
 

This message code indicates a problem within the localisation system, for instance, detecting a vehicle's presence in the depot or yard without detecting it entering in the first place.
- 80013 Sanity-check lane verification (Warning)
 

Message code represents a special case of overlapping (80011) and applies to a motor- or railway-vehicle being located outside its possible lane or rail. Warning indicates the need for optimisation of the localisation.

- 91001 Data export disconnected  
Disabled
- 91002 Data export disconnected (asynchronous) (Warning)  
Message code is merely used for internal purposes.
- 91003 Data export disconnect (synchronous) (Warning)  
Message code notifies that the data connection concerning synchronous (cyclical) transmission has been terminated.
- 99000 User-defined (user defined)  
Message code is merely used for internal purposes.
- 99001 Customer event (Warning)  
Message code is merely used for internal purposes.

---

**Notice**

It is not recommend to combine Severity with Message codes, at least when comparing as equal, as every message code is connected to a distinct severity. Gateway connected, for example, is always considered as severity 4 Warning. No message will be sent, if the wrong severity is set.

---

### 3.2.2.2 Comparisons (condition type to condition value)

One of the following relational operators has to be selected for every combination of condition type and condition value activated. The respective effects of the operators are considered self-explanatory:

- < (less-than)

Means that condition values below the one selected from the drop-down menu constitute the condition for the condition type selected, e.g. if the condition configuration is set as “Severity”, “<”, “3 Error” only conditions with a lower value will trigger a message, hence “0 Emergency”, “1 Alert” and “2 Critical”.

Type	Comparison	Value	
Severity	<	3 Error	And

- <= (less-than-or-equal)
- > (greater-than)
- >= (greater-than-or-equal)
- == (equal)
- != (unequal)

### 3.2.2.3 Select message type

It is necessary to connect at least one message to every message condition created. To this end activate the desired message from the input field “Message” on the screen of the particular message condition. It is possible to select more than one message type, e.g. you may wish the event to trigger both, an email message as well as an entry into the data base. Messages have to be set-up first from subitem “Messages” within the hierarchic structure (see 3.3).

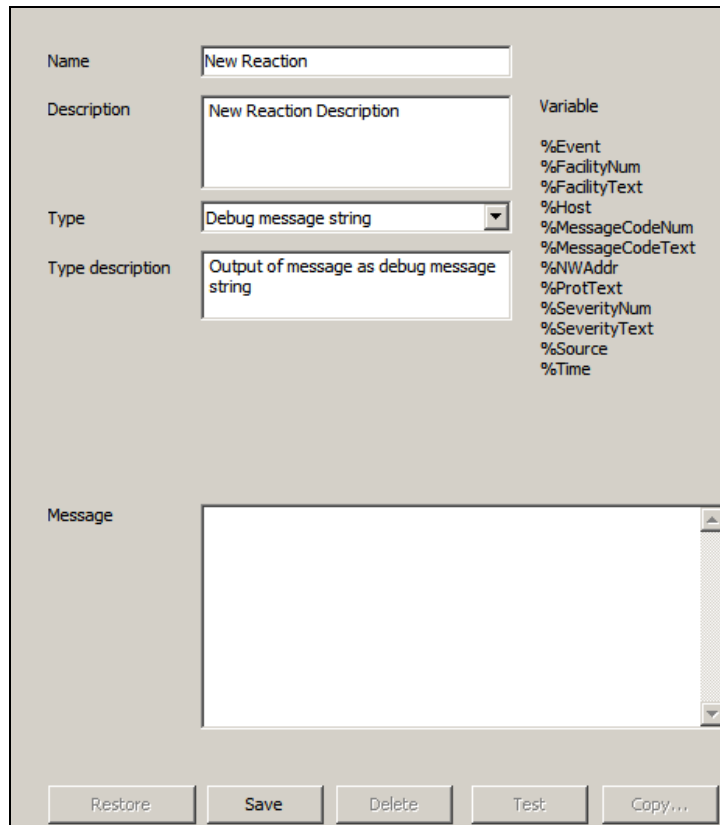
The screenshot shows a dialog box titled "Reaction" with a sub-section "Selection of reaction". It contains a list of message types with checkboxes:

- Database entry (Type: Database)
- Windows event log (Type: Windows Event Log)
- Email notification (Type: Email)
- Debug message string (Type: Debug message string)
- SNMP trap (Type: SNMP Trap Message)

At the bottom of the dialog, there are two buttons: "All" and "None".



## 3.3 Messages

Highlight “Messages” (System > Message management > Messages) in the hierarchic structure in order to create a new message. The name and description of a message can be chosen freely.



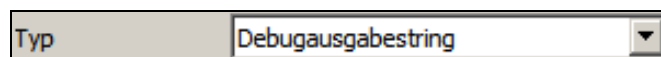
The screenshot shows a dialog box for creating a new message. It contains the following fields and controls:

- Name:** Text input field containing "New Reaction".
- Description:** Text input field containing "New Reaction Description".
- Type:** Drop-down menu showing "Debug message string".
- Type description:** Text input field containing "Output of message as debug message string".
- Variable:** A list of variables: %Event, %FacilityNum, %FacilityText, %Host, %MessageCodeNum, %MessageCodeText, %NWAddr, %ProtText, %SeverityNum, %SeverityText, %Source, %Time.
- Message:** A large empty text area for the message content.
- Buttons:** Restore, Save, Delete, Test, Copy...

Messages connected to a message condition (see 3.2.2.3) will feature a yellow icon  next to the message's name in the hierarchic structure, whereas inactive messages not connected to any message condition will display a grey icon .

### 3.3.1 Message type

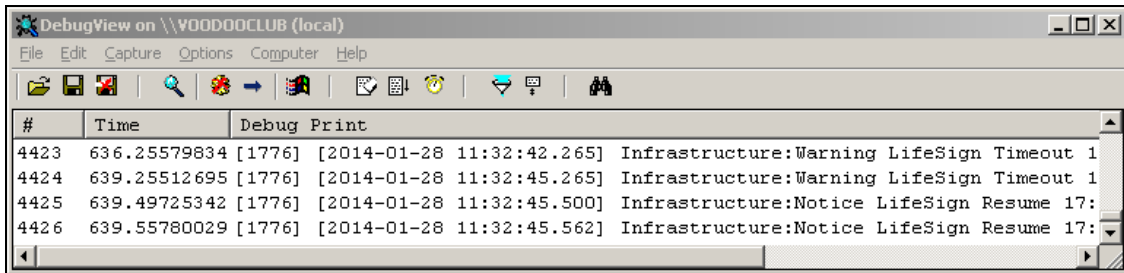
Select the message type you desire from the drop-down menu “Type”. There are five different types of messages available:



The image shows a close-up of the "Type" drop-down menu. The label "Typ" is on the left, and the selected value "Debugausgabestring" is shown in the text box. A small downward arrow is on the right side of the box.

### 3.3.1.1 Debug message string

This message type concerns software developers only and prompts a debug entry which can be viewed utilising the Windows™ tool “DebugView” (Dbgview.exe).



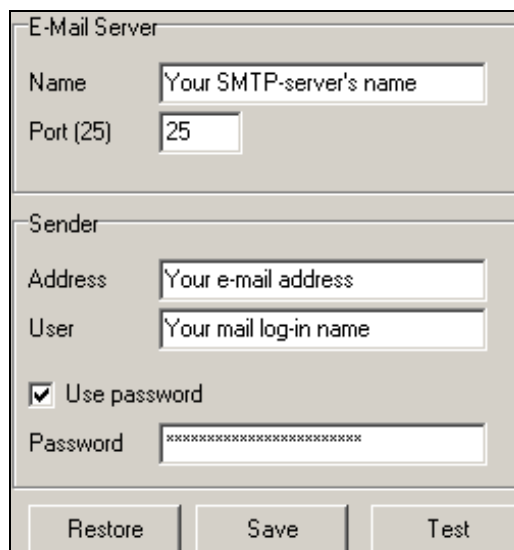
### 3.3.1.2 Email

This message type will prompt an email being sent to the recipients specified in the respective input field appearing as soon as “Email” has been selected from the drop-down menu. Use a new line for every recipient of the email notification.



It is necessary to configure an e-mail server and sender for the message to be sent under “Email configuration” in the hierarchic structure (System > Message management > Email configuration).

Fill in the fields appropriately and make sure that your firewall does not block outgoing messages. Press “Save” to confirm the settings.



The screenshot shows the "E-Mail Server" configuration dialog box with the following fields and options:

- Name: Your SMTP-server's name
- Port (25): 25
- Sender Address: Your e-mail address
- User: Your mail log-in name
- Use password
- Password: [Redacted]

Buttons: Restore, Save, Test



The outgoing connection entered can be tested by pressing the respective button. A message will be sent to the email server (outgoing email account) to confirm that the connection is working.

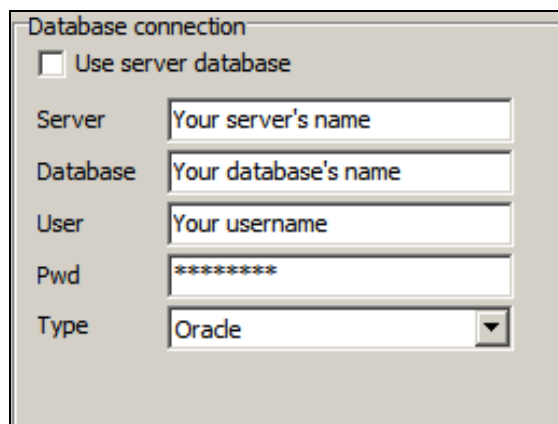


Ask the recipient to check his or her inbox to confirm the receipt of the notification.

### 3.3.1.3 Database entry

This message type prompts an entry into a database. Appropriate database settings have to be made in order to use this message type. To this end select "Database configuration" in the hierarchic structure (System > Message management > Database configuration).

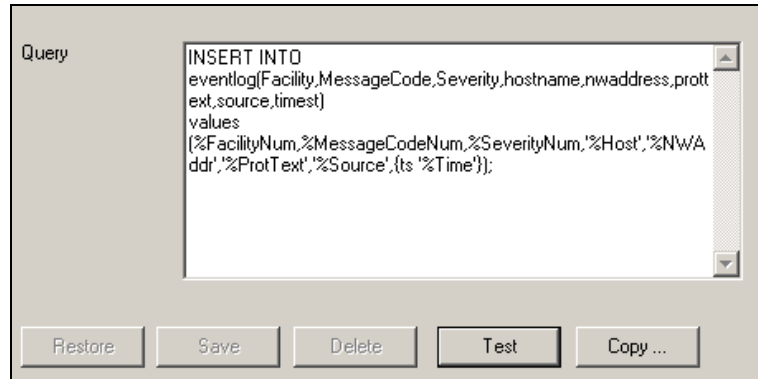
The messages will be written automatically into the WLS's database insofar as "Use server-database" is activated. Should you desire the messages to be written into another database, it is necessary to enter the required custom settings into the appropriate input fields. Press the button "state" for the system to check whether the entered database connection works.



Press the button "Test" on the screen of the database entry message to find out whether the notification works as desired. Check you database for the message output.

### 3.3.1.3.1 Query

The values (see 3.3.1.4) to be written into the database can be determined in the input field “Query”. The default setting, as shown below, contains all available values. Delete values, if you do not want them to be forwarded as a database entry.

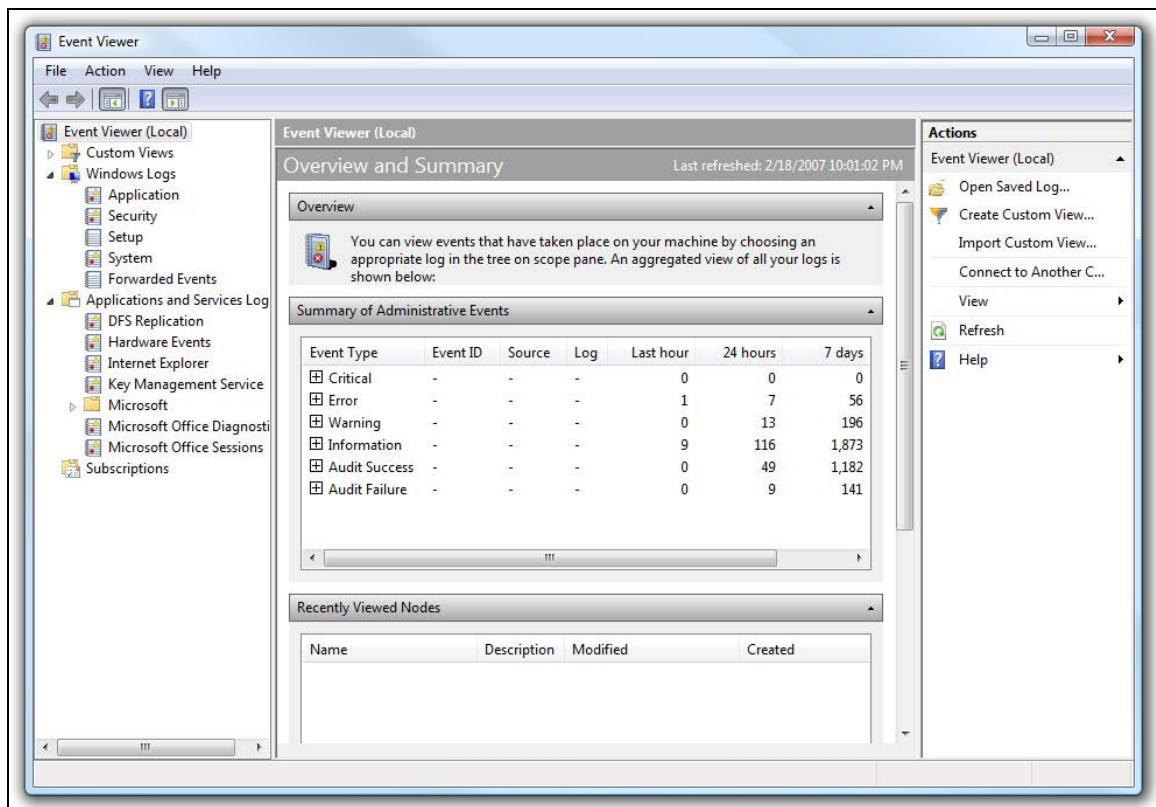


### 3.3.1.4 Windows event log

This message type prompts an entry into the Windows event log.

View the Windows event log using the Windows Event Viewer to be found via the Windows start menu.

Open “Applications and Services Log” and then “Agilion” within the Event Viewer. The WLS’s messages can be found there when highlighting “LogEvents”.



### 3.3.1.5SNMP trap

At least a trap receiver software is required in order to receive SNMP trap messages.

The message type “SNMP trap” can be configured either in v3 or in v2c mode. The latter will send unencrypted (“public”) messages only.

When using the v3 mode enter user name, password and target IP address according to the settings made in the trap receiver software.

Use v3	<input checked="" type="checkbox"/>
Username	Name
Password	Password
Community	public
Target IP	127.0.0.1

The v2c mode merely requires the community name and the target IP address.

---

#### Notice

The trap message cannot be delivered insofar user name or password have been entered incorrectly. The WLS will not give out an error message, should that happen. Ensure that the data is put in correctly and check whether the SNMP traps are delivered as desired after saving the log in data. Use the button “Test” to do so and check the incoming traps in your trap receiver software. The settings are wrong, if the test message is not delivered.

---

A trap receiver software will display SNMP traps as follows or similar to the illustration:

The screenshot shows the iReasoning MIB Browser interface. The address is 192.168.4.18 and the OID is .1.3.6.1.2.1. The main window displays a 'Trap Receiver' window with a table of traps and detailed variable bindings.

Description	Source	Time	Severity
trapOID: .1.3.6.1.4.1.44091.1.5.5.5	127.0.0.1	2015-10-23 12:54:04	
trapOID: .1.3.6.1.4.1.44091.1.5.5.5	127.0.0.1	2015-10-23 12:54:02	
trapOID: .1.3.6.1.4.1.44091.1.5.5.5	127.0.0.1	2015-10-23 12:54:00	
trapOID: .1.3.6.1.4.1.44091.1.5.5.5	127.0.0.1	2015-10-23 12:53:58	
trapOID: .1.3.6.1.4.1.44091.1.5.5.5	127.0.0.1	2015-10-23 12:53:56	
trapOID: .1.3.6.1.4.1.44091.1.5.5.30012	127.0.0.1	2015-10-23 12:52:19	

**Source:** 127.0.0.1 **Timestamp:** 5 hours 5 minutes 1 second **SNMP Version:** 2  
**Trap OID:** .1.3.6.1.4.1.44091.1.5.5.5  
**Variable Bindings:**

**Name:** iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0  
**Value:** [TimeTicks] 5 hours 5 minutes 1 second (1830149)

**Name:** snmpTrapOID  
**Value:** [OID] .1.3.6.1.4.1.44091.1.5.5.5

**Name:** .1.3.6.1.4.1.44091.1.5.9.3  
**Value:** [OctetString] 2015-10-23T12:54:04.753

**Name:** .1.3.6.1.4.1.44091.1.5.9.4  
**Value:** [Gauge] 10001

**Name:** .1.3.6.1.4.1.44091.1.5.9.5  
**Value:** [OctetString] VOODOOCLUB

**Name:** .1.3.6.1.4.1.44091.1.5.9.6  
**Value:** [OctetString] AgilionClientCommunication

**Name:** .1.3.6.1.4.1.44091.1.5.9.10  
**Value:** [OctetString] ManagerId:3

**Description:**

## 3.3.2 Message text/values

Some message types include the option to define the output text according to your requirements. Email messages can be designed freely according to your requirements. Certain variables can be used in order to receive specific information. These variables can be entered into the input field "Message" in the screen of a particular message. The variables are as follows:

- %Event

This message text contains a string of values that varies between different message codes. It may contain values such as the event's and/or device's timestamp, facility text, severity text, message code text, network address and protocol text.

- %FacilityNum

This message text indicates the numeric value of the facility an event has occurred at, e.g. 0 (see 3.2.2.1).

- %FacilityText

This message text indicates the name of the facility an event has occurred at, e.g. Kernel (see 3.2.2.1).

- %Host

This message text states the name of the computer running the WLS server.

- %MessageCodeNum

This message text states the occurring message code number, e.g. 30002 (see 3.2.2.1)

- %MessageCodeText

This message text states the corresponding message code, e.g. LifeSign resume (3.2.2.1)

- %NWAddr

This message text displays the network address of the device that has triggered the event or that is concerned by the event, e.g. 17:85:00:02:1a:20.

- %ProtText

The protocol text provides additional descriptions of the event.

- %SeverityNum

This message text states the severity number of the triggered event, e.g. 0 (see 3.2.2.1).

- %SeverityText

This message text states the text of the corresponding severity code, e.g. Emergency (see 3.2.2.1).

- %Source

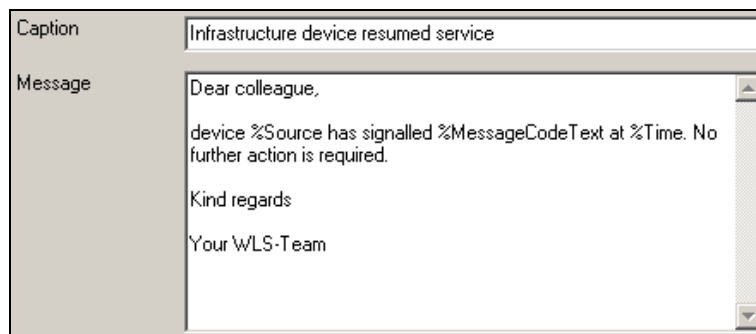
This message text displays the name of the device, service or client triggering the event, e.g. NetworkCom Server.

- %Time

This message text states the time the event has occurred in format YYYY-MM-DD hh:mm:ss.sss.

Examples of the output text can be found on the right hand side of the screen of any log reaction highlighted in the hierarchic structure. You may select the variables according to your requirements. Furthermore, the log reactions “Email” and “Message” facilitate the option to integrate the variables into a continuous text or to add messages as desired.

Example showing the configuration of an email message:



The preview of the message can be viewed on the right hand side of the GUI:

