



**GW3-TRBO®**  
**Trigger**  
**Software Version 2.23.5**  
**Module Book**

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***GW3-TRBO®***

**600-2.23.5-S.1**  
**10/31/2023**



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Refer to the Troubleshooting & Support section of the GW3-TRBO Manual Shell (Book 600-2.23.5-AA.1) for complete support and contact information.

## Document History

| Revision | Description  | Author |
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| 2.0.5    | Release Revisions  | JAW    |
| 2.0.5    | Replaced GW3-TRBO trademark with registered trademark.                               | JAW    |
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| 2.12     | Expanded details on Insert Field feature.  | REB    |
| 2.12     | Added brief description of diagnostic categories.                                    | REB    |
| 2.14     | Expanded description of minimum duration triggers                                    | REB    |
| 2.14     | Revisions Before Release   | JAW    |
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| 2.15     | Added Backhaul Repeater Alarms category.   | REB    |
| 2.16     | Revisions Before Release   | JPS    |
| 2.17.17  | Added Site Utilization trigger type.   | ATG    |

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### Goals

This manual describes the role and function of the Trigger module in the GW3-TRBO solution.

### Who Should Read This Manual?



This manual is written for the intended audience of experienced MOTOTRBO system users and mid-level PC users.

### How This Manual Is Organized

This manual is organized as follows:

- **Overview:** Provides an overview of the Trigger module.
- **Setup:** Describes the process required to set up a trigger.
- **GW3-TRBO GUI Notifications:** Describes the GUI notification process.

This manual contains the following images, used to indicate that a segment of text requires special attention:

-  **Additional Information:** Additional information is used to indicate shortcuts or tips.
-  **Warning:** Warnings are used to indicate possible problem areas, such as a risk of data loss or incorrect/unexpected functionality.





This chapter provides an overview of the Trigger module and its function within the GW3-TRBO solution.

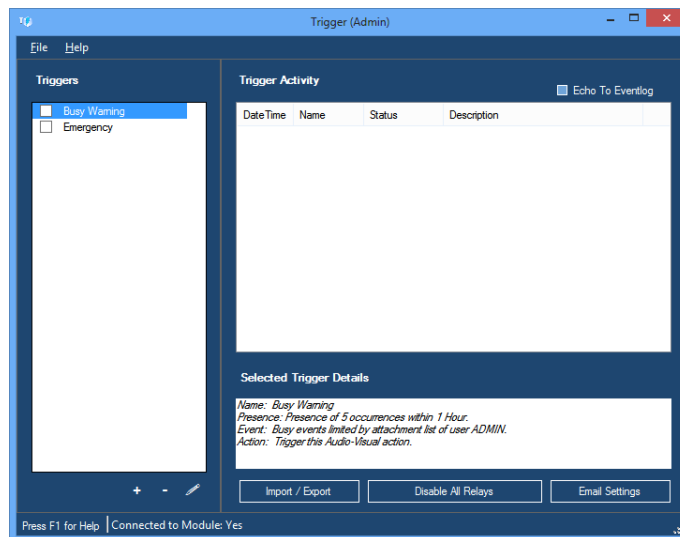
This chapter contains the following sections:

- **What Is Trigger?:** Describes the role and function of the Trigger module.
- **What is the Optional OnTrak Relay Device?:** Describes the OnTrak model ADU208 USB external relay device.
- **Viewing Trigger Activity:** Describes the *Trigger Activity* grid.

## What is Trigger?

Trigger is a module that allows you to set up real-time external relay, email, SNMP, red/amber/green light or audio-visual alerts. Practical applications include:

- Enabling a relay that will sound an alarm when an emergency alarm event is received from your MOTOTRBO system.
- Enabling a relay that lights an LED labeled for a particular group when the group receives a push-to-talk on your system.
- Enabling a relay that lights an LED labeled for a particular network state when the network device issues a notification via a simple network management protocol (SNMP) trap.



**Figure 1.1** – Trigger GUI

## ***What is the optional OnTrak Relay Device?***

Trigger offers functionality with the OnTrak model ADU208 USB external relay device. This optional hardware device connects to your GW3-TRBO host machine via USB. This device supports up to 8 external relay devices. The ADU208 can support a 5-amp DC load per contact. Trigger can enable/disable up to eight of these relays when a trigger executes.

## **Disabling All Relays**

The **Disable All Relays** button allows you to disable all relays on the OnTrak device. This simply closes all open relays. This does not permanently disable the relays.

## ***Viewing Trigger Activity***

The *Trigger Activity* list shows all trigger-based activity sent and received by the Trigger module. This list is cleared each time you close the Trigger graphical user interface (GUI).

## **Echo To Eventlog**

When the **Echo To Eventlog** option is enabled, the Trigger module will create an entry in the computer's event log each time a trigger is activated. The entry contains an event ID associated with the trigger.

This chapter describes the process required to set up a trigger, where to find instructions on how to install the OnTrak ADU208 hardware and how triggers interact with the GW3-TRBO solution.

This chapter contains the following sections:

- **Setting Up the Optional OnTrak ADU208 device:** Installing the OnTrak device.
- **Setting Up a Trigger:** Step-by-step setup process for creating a trigger.
- **Sample Triggers:** Examples of some real-world triggers.
- **Email Setup:** Describes the email configuration process.

### Setting up the Optional OnTrak ADU208 Device

Please refer to your OnTrak ADU208 device documentation for instructions on installing the OnTrakADU208 device.



The GW3-TRBO installer copies the *AduHid.dll* file to the GW3-TRBO install directory. If this file is ever removed from this directory, the OnTrak ADU208 device will not function.

### Setting up a Trigger

Triggers are added, updated and deleted from the Trigger GUI. The sections below provide instructions for maintaining triggers.

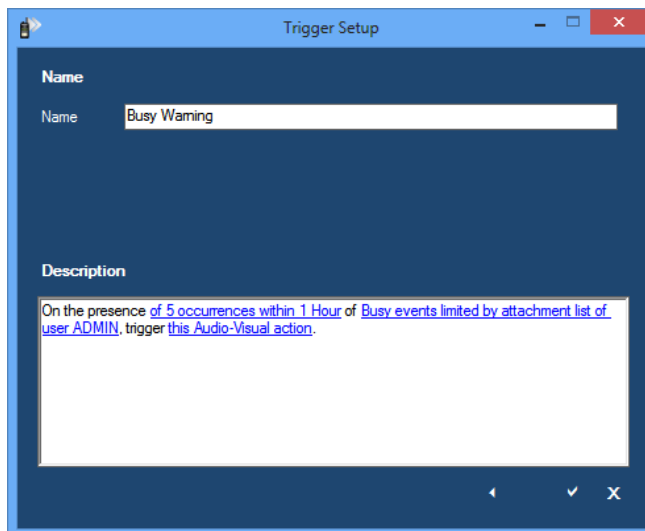


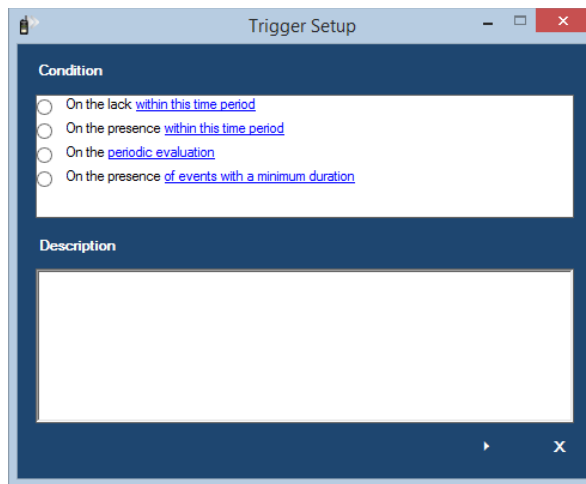
Figure 2.1 – Trigger Setup Window

## Adding a New Trigger

### Presence Options

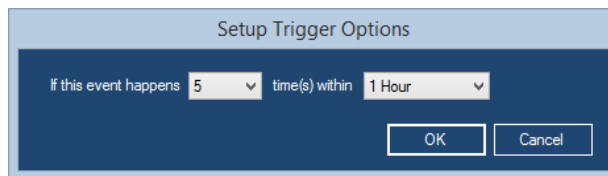
To add a new trigger, follow the steps below:

1. Click the **Add** button to load the *Trigger Setup* window (Figure 2.2).
2. Choose the trigger condition to monitor. The choices include:
  - a. **On the lack within this time period:** Fires if the event is not received a specified number of times (or at all) within the defined time period.
  - b. **On the presence within this time period:** Fires if the event is received a specified number of times (or at all) within the given time period.
  - c. **On the periodic evaluation:** See the *Periodic Evaluation* section.
  - d. **On the presence of events with a minimum duration:** See the *Minimum Duration Triggers* section.

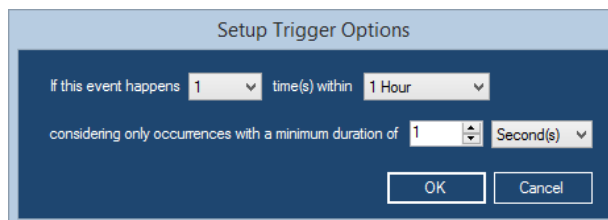


**Figure 2.2** – Trigger Setup Window – Condition

3. Click on the blue text at the bottom of the setup window. This will load the *Setup Trigger Options* window (Figure 2.3a or 2.3b).



**Figure 2.3a** – Time Period Options



**Figure 2.3b** – Time Period Options with Minimum Duration

4. Select the condition count in the first drop-down list.
5. Select the time frame in the second drop-down list.
6. For triggers using the “**On the presence of events with a minimum duration**” option, specify the threshold for each event’s duration using a combination of a quantity and unit of time from the numeric field and drop-down list provided.
7. Click the **OK** button.
8. Click the **Next** button. This will load the Event options (Figure 2.4).
9. Choose the trigger event. The choices include:
  - a. **Of this Radio System Event:** Events issued from or to a radio. These include:
    - **Affiliation:** When a radio reports affiliated group information to the system.
    - **Busy:** A busy or all trunks busy event occurred on a site.
    - **Call Alert:** A device issues a Call Alert page, requesting a call from the radio user.
    - **Call Alert Ack:** Radio acknowledges a Call Alert page.
    - **Call Update:** Radio issues an update to a call.
    - **Cancel IP Console Inhibit:** A device issues a Cancel IP Console Inhibit command to enable a radio’s ability to transmit or receive call activity on its current channel.
    - **Cancel IP Console Inhibit Ack:** Radio acknowledges a Cancel IP Console Inhibit command.
    - **Cancel Selective Inhibit:** A device issues a command to enable a radio.
    - **Cancel Selective Inhibit Ack:** Radio acknowledges a Cancel Selective Inhibit command.
    - **Channel Assignment:** Radio issues a group or private call, also known as a PTT (Push-To-Talk). This **Event Type** will monitor for all PTTs, including Emergency PTTs. See step 11.b for information on the Emergency PTT option.
    - **Deaffiliation:** Radio deaffiliates from a talkgroup.
    - **Emergency Alarm:** Radio issues an emergency alarm.
    - **Emergency Alarm Ack:** Radio acknowledges another radio’s emergency alarm.
    - **Frequency Command RM/RT:** A device issues an RM/RT command.
    - **IP Console Inhibit:** A device issues an IP Console Inhibit command to disable a radio’s ability to transmit or receive call activity on its current channel.
    - **IP Console Inhibit Ack:** Radio acknowledges an IP Console Inhibit command.
    - **Radio Kill:** Renders a radio inoperable. It cannot transmit events, receive conversation, or receive commands.

- **Radio Kill Ack:** Radio acknowledges a Radio Kill command.
  - **Registration:** Radio successfully registers on the system.
  - **Repeater Disable:** A device issues a Repeater Disable command.
  - **Repeater Disable Ack:** Repeater acknowledges a Repeater Disable command.
  - **Repeater Enable:** A device issues a Repeater Enable command.
  - **Repeater Enable Ack:** Repeater acknowledges a Repeater Enable command.
  - **Request Radio Affiliation:** A radio or peer issues a radio check command.
  - **Request Radio Affiliation Ack:** Radio acknowledges a radio check command.
  - **Selective Inhibit:** A device issues a command to disable a radio.
  - **Selective Inhibit Ack:** Radio acknowledges a Selective Inhibit command.
  - **Slot Disable:** A device issues a Slot Disable command, which disables the repeater's ability to repeat for the duration of the current PTT.
  - **Slot Disable Ack:** Repeater acknowledges a Slot Disable command.
  - **Status:** Radio issues a status.
- b. **\*Of this Radio System Diagnostic Event:** Device issues a diagnostic alarm. See the *Insert Fields* section below for additional information about the alarm type. Diagnostics are divided into several categories:
- **Repeater Alarms:** These alarms are received from the radio system and represent a problem on a repeater.
  - **Controller Alarms:** These alarms are received from the Connect Plus Network Manager through an XRC Diagnostics connection in the Connect module.
  - **Other Alarms:** These are diagnostics that don't fit into the other categories. These are sometimes informational and don't necessarily represent a problem on the radio system.
    - For a more detailed description of the *Expected Resource Not Found* diagnostic, see the *Connection Properties* section of the Trbo module book.
  - **Backhaul Repeater Alarms:** These alarms are received from a proxy repeater on an IPSC system on behalf of the backhaul repeaters.
- c. **Of this GW-TRBO Event:** GW3-TRBO events include:
- **Connection Started:** This event is sent when a connection in Trbo is started.

- **\*Connection Stopped:** This event is sent when a connection in Trbo is stopped.
  - **\*Loss of Data:** This event is sent when an input module's data connection is lost.
  - **\*MNIS Fault:** This event is sent when the MOTOTRBO Network Interface Service peer experiences a fault condition, or when the Trbo module connects to the MNIS when it has a preexisting fault condition. A fault condition occurs if the MNIS has not successfully established a connection with the Device Discovery and Mobility Service or the MNIS's MOTOTRBO Tunnel is not in the connected state.
  - **MNIS Online:** This event is sent when the Trbo module connects to the MNIS while it is not experiencing any fault conditions, or when the MNIS recovers from a fault condition.
  - **\*Repeater Disconnect:** This event is sent when a repeater or MNIS peer is removed from the Trbo module's peer list, indicating that GW3-TRBO has lost its connection to that peer.
  - **Return of Data:** This event is sent when an input module's data connection is restored after a Loss of Data event.
  - **Site Utilization:** This event is sent when a site's utilization exceeds the threshold specified in the trigger event. This event ignores Presence settings. The threshold is the percentage of available voice channels in use. If **Duration** is checked, utilization must remain above the threshold for the time specified. The **Include Data Calls** setting toggles whether a channel involved in a data call is counted as being in use. Optionally, adding sites to the **Site Overrides** list allows the triggers for those sites to be disabled or use a threshold that differs from the **Global Threshold**.
  - **Suspect Activity:** This event is sent when a new suspect is identified by SAM module.
  - **System Resources:** This event is sent when the system resources on the host machine exceed or drop below the level specified in the trigger event.
  - **Unattended EA:** This is an event sent from Halcyon if an emergency alarm was received on the system and not delivered to a connected RC user. *This option is only valid for GW3-TRBO installations that include the Halcyon module with the Emergency Alarm feature.*
- d. **Of this SNMP Trap:** Events raised by software or a device on the network. See the *SNMP Traps* section below.
- e. **Of this SNMP Message:** A message containing one or more SNMP values. These SNMP values are properties exposed by

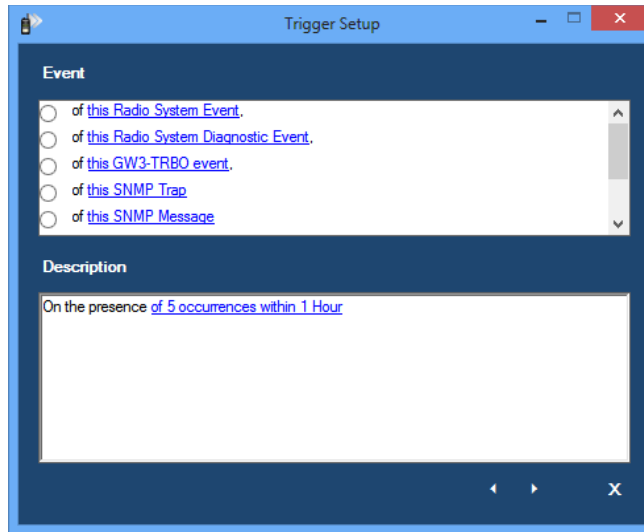
SNMP capable software or devices on the network. See the *SNMP Messages* section below.

- f. **APM UDP Tx Traffic Event:** Transmit channel status information sent by the RFI Advanced Power Monitor device. The APM properties are:
  - **Combiner Insertion Loss:** Tx Combiner Insertion Loss in decibels.
  - **Forward Power Level:** Tx Power Level in watts.
  - **VSWR:** Transmit voltage standing wave ratio in ratio to 1. (for example, a VSWR of 1.2 is equal to 1.2:1).
- g. **APM UDP Rx Traffic Event:** Receive channel status information sent by the RFI Advanced Power Monitor device. The APM properties are:
  - **Combiner Insertion Loss:** Rx Combiner Insertion Loss in decibels.
  - **Forward Power Level:** Rx Power Level in watts.
- h. **APM Antenna Isolation Loss Test Event:** Result of an Antenna Isolation Loss Test sent by the RFI Advanced Power Monitor device. The APM properties are:
  - **Antenna Isolation Loss Fail:** Antenna isolation loss fail state. True=1, False=0.
  - **Rx Power Level:** Rx Power Level in watts.
- i. **Reported RSSI Value:** Packets containing an RSSI value and a Slot State: Reported RSSI Value properties are:
  - **Slot State:** Slot state to act on. The RSSI values below will only be evaluated if the packet contains this slot state. Values include:
    - **Active:** Slot is currently hosting a call. RSSI values reported in Start of Call and End of Call packets are assumed to be on active slots.
    - **Idle:** Slot is not currently hosting a call.
  - **RSSI value is <:** Minimum RSSI value in decibels (dB). The range is -150 to 0. If an RSSI value less than this value is received, the trigger will fire.
  - **RSSI value is >:** Maximum RSSI value in decibels (dB). The range is -150 to 0. If an RSSI value greater than this value is received, the trigger will fire.



\*If the marked trigger event is configured to create an SNMP action, it will also send an SNMP trap if and when the condition is cleared. The latter notification will contain the word “Clear” in the Trigger State field of the message.





**Figure 2.4** – Trigger Setup Window – Event

10. Click on the blue text of the trigger event that you chose in the previous step. This will load the *Setup Trigger Event Options* window (Figure 2.5).

**Figure 2.5** – Setup Trigger Event Options

11. Choose your event options. The *Setup Trigger Event Options* window will vary based on the selected category. This window can contain:
  - a. **Event Type**

- For *Radio System Events*, this will contain radio events described in step 9.a.
  - For *GW3-TRBO Events*, this will contain GW3-TRBO events described in step 9.c.
- b. **Emergency PTT:** For **Event Type** of *Channel Assignment*, check to monitor for Emergency PTTs only.
  - c. **Only Trigger On New Suspects:** For **Event Type** of *Suspect Activity*, check to monitor only for suspect activity that has not already been added to the suspect list in the SAM module.
  - d. **Diagnostic Filter:** Contains a list of all known diagnostic events.
  - e. **Event Filter:** Contains a list of possible suspect reasons.
  - f. **System ID:** The system ID to monitor for this event.
  - g. **Zone ID:** The zone ID to monitor for this event (if non-zero).
  - h. **Site ID:** The site ID to monitor for this event (if non-zero).
  - i. **Channel ID:** The channel ID to monitor for this event.
    - Enter *0 (Any Channel)* to match events that may or may not have a Channel Position.
    - Enter *-1 (No Channel)* to match only events that do not have a Channel Position.
  - j. **\*For Radio ID:** The specific radio ID on which to monitor this event.
  - k. **\*For Group ID:** The specific group ID on which to monitor this event.
  - l. **\*Groups within this User's Attachment List:** All radio IDs with a default talkgroup included in the selected user's attachment list are monitored for the event.



\*At least one of these selections must be made if present on form.



The *Select Units* grid is filtered based on your GW3-TRBO user's attachment list, unless your user has a role with the *ViewAllGroups* privilege for Alias. These options are available in Security.



To clear the **For Radio ID** value, click the **Select ID** button. Clear any selected radio IDs in the *Select Units* window and click the **OK** button.



If the user selected for **Group(s) within this User's Attachment List** has a role that contains the *ViewAllGroups* privilege for Alias, all radio IDs are included for this event. If the user does not have the *ViewAllGroups* privilege, this event will only include radio IDs that have a default group in the user's attachment list.

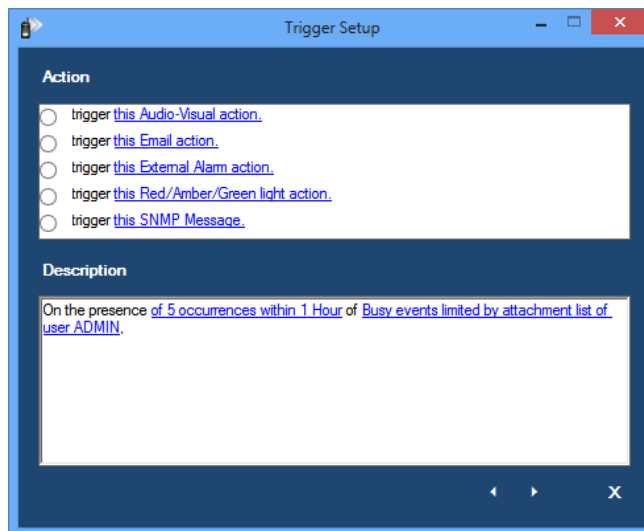


Users that do not have the Administrator role will only be able to select non-Administrator users for **Groups within this User's Attachment List**. If the user selected for **Groups within this User's Attachment List** has the Administrator role, only users with the Administrator role will be able to edit the trigger.



The **Only Trigger On New Suspects** option has no effect on Talkgroup based *Suspect Activity*. *Suspect Activity* events are only sent out when a talkgroup is first put into the suspect list in the SAM module.

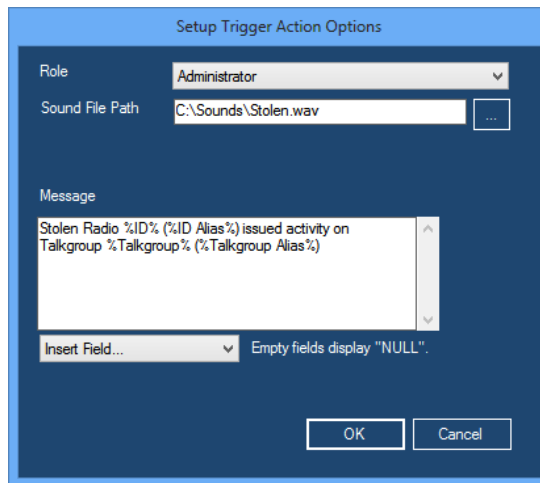
12. Click the **OK** button.
13. Click the **Next** button. This will load the Action options (Figure 2.6).
14. Choose the Trigger action (Figure 2.6). Options include:
  - a. **This Audio-Visual Action:** This option sends a predefined message to each GW3-TRBO user logged in with the selected role.
  - b. **This Email Action:** This option sends a predefined message to one or more specified email address(es). This option requires the Trigger license restriction *Email Action*.
  - c. **This External Alarm Action:** This option interacts with the OnTrak ADU208 device. It enables or disables relays permanently, for a given amount of time or until a user with the selected role acknowledges the event.
  - d. **This Red/Amber/Green Light Action:** This option sends a message with the description of the trigger to GUIs with threshold indication lights which will flash to get the user's attention.
  - e. **This SNMP Action:** This option broadcasts an SNMP trap containing a predefined message. This option requires the Trigger license restriction *SNMP Action*.



**Figure 2.6** – Trigger Setup Window – Action

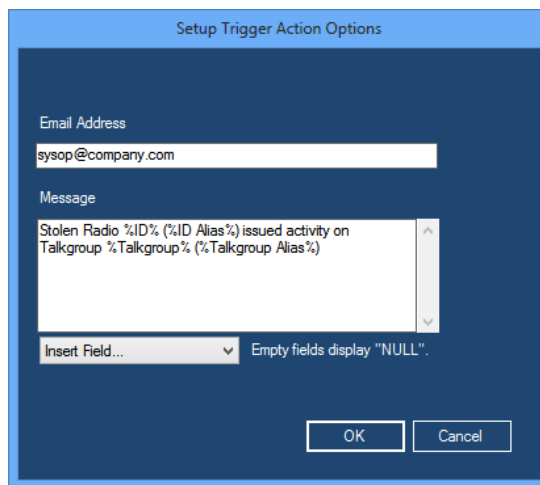
15. Click on the blue text of the trigger action you chose in the previous step. This will load the *Setup Trigger Action Options* window.
16. For **Audio-Visual Action** (Figure 2.7):
  - f. Choose a role.
  - g. Optionally provide a file name (remember that the file must be reachable by all GW3-TRBO clients, so a name *C:\myalarm.wav* may not work, when *\\MYPC\C\$\MyAlarm.wav* might).

- h. Type the message that you wish to display to the users with the target role. See the *Insert Fields* section below for additional options when building the message.



**Figure 2.7** –Setup Trigger Audio-Visual Action

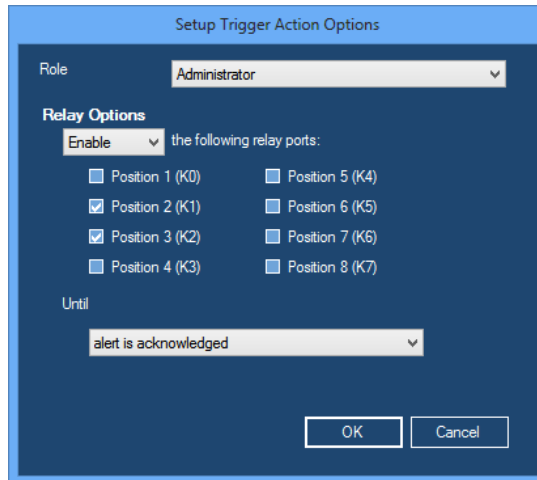
- 17. For **Email Action** (Figure 2.8):
  - i. Enter an email address
  - j. Type the message that you wish to display in the body of the email notification. See the *Insert Fields* section below for additional options when building the message.



**Figure 2.8** – Trigger Setup Email Action

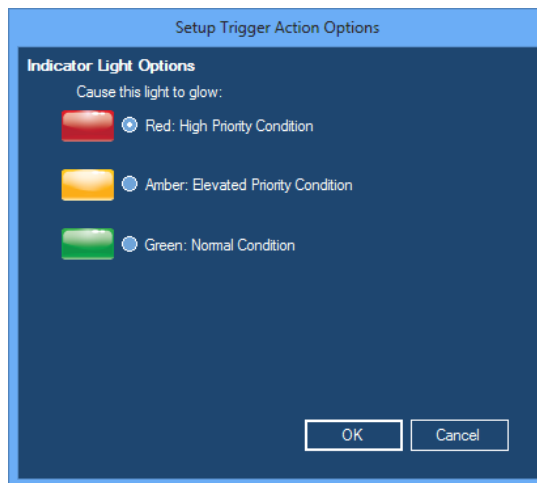
- 18. For **External Alarm Action** (Figure 2.9):
  - k. Choose a role.
  - l. Select one or more relay positions to enable or disable.
  - m. Select duration. If you choose “N/A,” the relay will remain disabled or enabled. If you choose “until alert is acknowledged,”

this will result in an audio-visual action as well as an external alarm action.



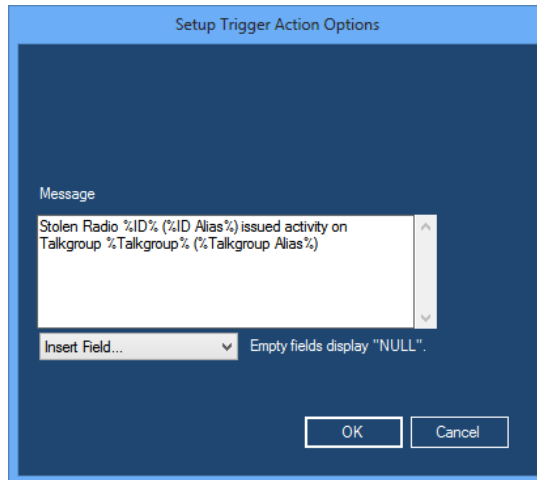
**Figure 2.9** – Trigger Setup External Alarm Action

19. For **Red/Amber/Green Light** Action (Figure 2.10):
- n. Choose which light to associate with this threshold.



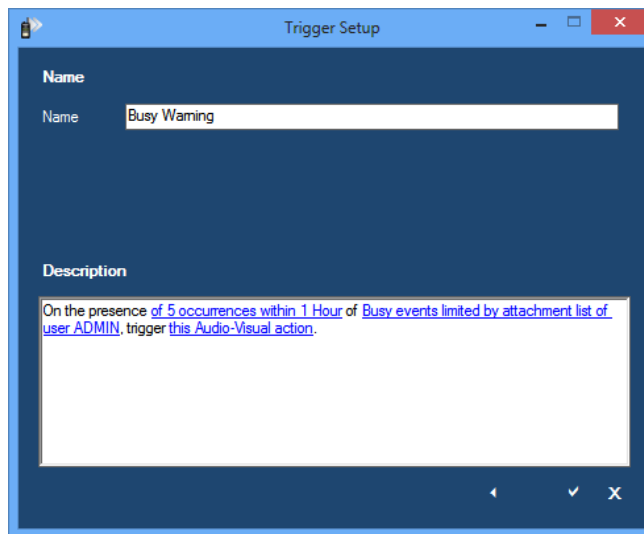
**Figure 2.10** – Trigger Setup Red/Amber/Green Light Action

20. For **SNMP Message** Action (Figure 2.11):
- o. Type the message that you wish to display in the SNMP notification. See the *Insert Fields* section below for additional options when building the message.



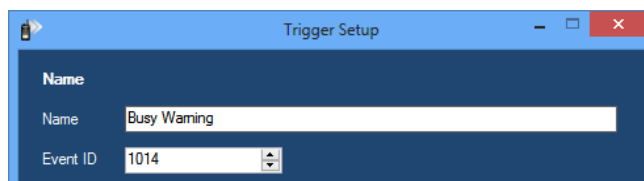
**Figure 2.11** – Trigger Setup SNMP Action

21. Click **OK**.
22. Click the **Next** button. This will load the Name options (Figure 2.12).
23. Type a name into the Name textbox.



**Figure 2.12** – Trigger Setup Window – Name

24. If **Echo To Eventlog** is enabled, set the desired Event ID.  
(This field is only displayed when **Echo To Eventlog** is enabled)



**Figure 2.13** – Trigger Setup Event ID

25. Click the **Finish** button to save the new trigger.

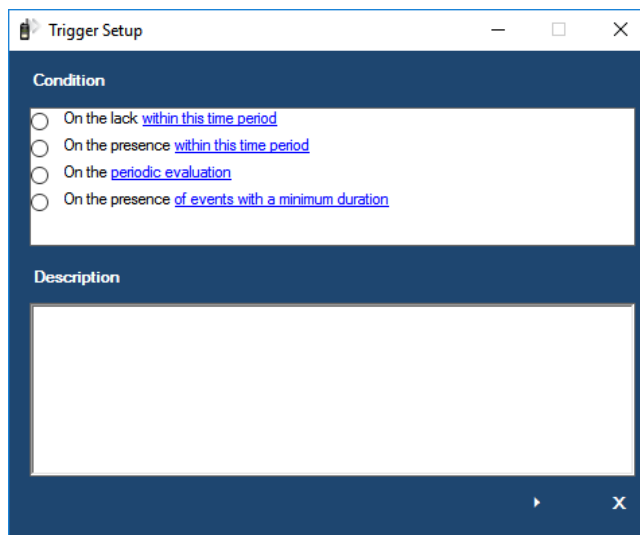


The Trigger module allows for the creation of up to 990 triggers.

## Periodic Evaluation

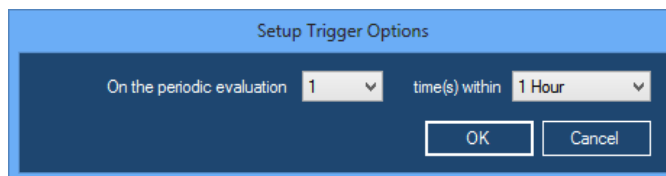
To add a new periodic evaluation trigger, follow the steps below:

1. Click the **Add** button. This will load the *Trigger Setup* window. (Figure 2.14).
2. Choose periodic evaluation as the trigger condition to monitor. This condition fires whenever Trigger performs a periodic check (defined by the user) that meets the specified trigger conditions (specified by the user). See the *Periodic Evaluation Triggers* section below.



**Figure 2.14** – Trigger Setup Window – Condition

3. Click on the blue **periodic evaluation** text at the bottom of the setup window: This will load the *Setup Trigger Options* window (Figure 2.15).

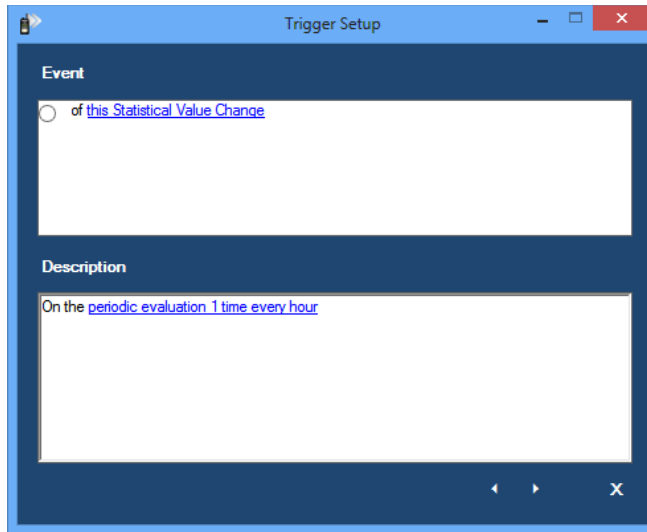


**Figure 2.15** – Trigger Setup Time Period Options (periodic evaluation)

4. Select the number of evaluations in the first drop-down list.
5. Select the time frame in the second drop-down list.
6. Click the **OK** button.
7. Click the **Next** button. This will load the Event options (Figure 2.16).
8. Choose the trigger event. The choices include:
  - a. **Of this Statistical Value Change:** Event type

- **Affiliated Radio ID Threshold:** This event is sent when the change in the number of radio IDs affiliated exceeds the user specified threshold.
- **All Calls Threshold:** This event is sent when the change in the number of calls (of all types) exceeds the user specified threshold.
- **All Data Calls Threshold:** This event is sent when the change in the number of data calls (calls with a Radio Data flag) exceeds the user specified threshold.
- **All Voice Calls Threshold:** This event is sent when the change in the number of voice calls (calls without a Radio Data flag) exceeds the user specified threshold.
- **Data Revert Channel Activity Threshold:** This event is sent when the change in the number of data revert channel activities (channel activities with a Data Revert flag) exceeds the user specified threshold.
- **Group Voice Calls Threshold:** This event is sent when the change in the number of group voice calls (calls with a Group flag and without a Radio Data flag) exceeds the user specified threshold.
- **Private Data GPS Threshold:** This event is sent when the change in the number of private data GPS activities (channel activities with a Data Type of GPS, a Radio Data flag and a Private flag) exceeds the user specified threshold.
- **Private Data Non-GPS Threshold:** This event is sent when the change in the number of private data Non-GPS activities (channel activities with a Data Type other than GPS, a Radio Data flag and a Private flag) exceeds the user specified threshold.
- **Private Voice Calls Threshold:** This event is sent when the change in the number of private voice calls (calls with a Private flag and without a Radio Data flag) exceeds the user specified threshold.





**Figure 2.16** – Trigger Setup Window – Event

9. Click on the blue text of the trigger event that you chose in the previous step. This will load the *Setup Trigger Event Options* window (Figure 2.17).

**Figure 2.17** – Setup Trigger Event Options (Statistical Value Change event)

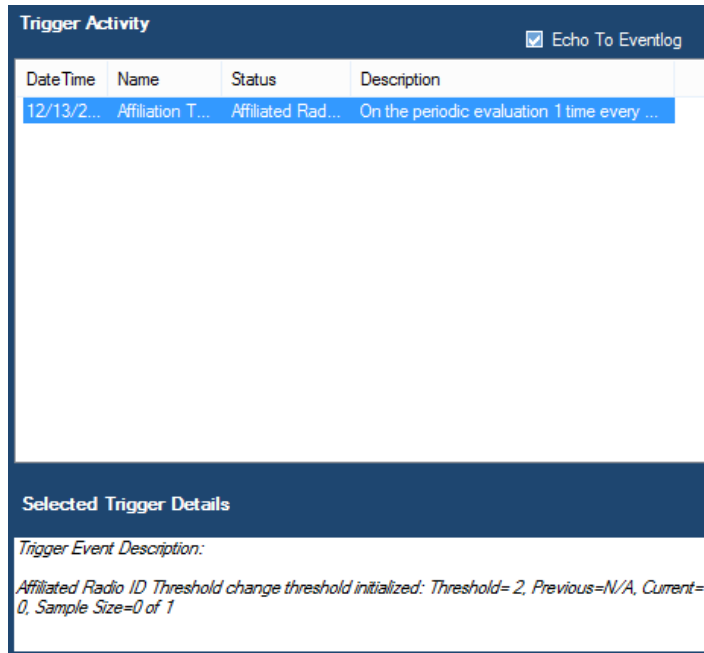
10. Choose your event options. The *Setup Trigger Event Options* window will vary based on the selected category. This window can contain:

- a. **Event Type**
    - For *Statistical Value Change*, this will contain event(s) described in step 8.a.
  - b. **Affiliation Count:** Threshold for the amount of change in affiliated/registered radios. (See the *Periodic Evaluation Triggers* section below.)
  - c. **Affiliation Timeout:** The amount of time before an affiliation state is no longer considered in the **affiliation count**.
  - d. **System ID:** The system ID to monitor for this event (required).
  - e. **Zone ID:** The Zone ID to monitor for this event (if non-zero). See the *Affiliation Rules* section below.
  - f. **Site ID:** The site ID to monitor for this event (if non-zero). This field only applies to IP Site Connect and Connect Plus.
  - g. See the *Affiliation Rules* section below.
  - h. **For Group ID:** The specific group ID on which to monitor this event. See the *Affiliation Rules* section below.
- 11. Click the **OK** button.
  - 12. Click the **Next** button.
  - 13. Choose the Trigger action. This information is described in the previous section.

## Periodic Evaluation Triggers

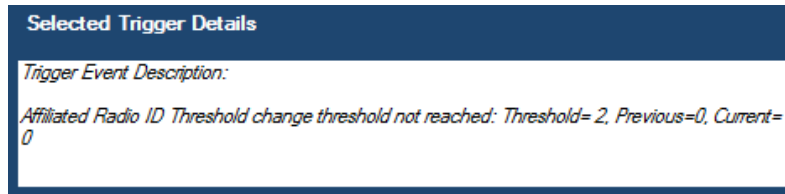
The periodic evaluation trigger tracks changes on your system resources. These triggers function by choosing the following settings:

- **Setup Trigger Options:** The *within* is the time window. We divide the *within* by *N times* to determine the sample interval. During each sample interval, trigger checks the value of the statistic. This value is stored as a sample in the sample set. Once a complete sample set is gathered (i.e. *N times* samples are gathered), the average of the samples in the sample set are used as the *previous value*. At this point the new sample acts as the *current value*. After *the previous value* is compared to the *current value* to determine if this trigger's threshold (such as *Affiliation Count*) was reached, the *current value* is added to the sample set and the oldest sample is removed from the sample set.
- **Event Type:** Specifies which condition you would like updates on.
- **Change Threshold:** This value indicates the percent or instances of change in the current interval compared to the average of the sample set required to trigger this event. A positive value creates an **increase threshold** while a negative value creates a **decrease threshold**. Percent changes range from -100% to 65,535% while Instances changes range from -65,535% to 65,535%.
- **Affiliation Timeout:** Setting a timeout is often desirable on certain activity types (if a radio affiliates then 45 minutes later it has no activity you may choose to not consider that affiliation anymore).
- **Selected Event Location:** Specify what system you would like this trigger to monitor, you may also be more specific on which part of a system you would like to monitor.
- **Selected Event Participants:** Here the user may select a specific group to track changes on.



**Figure 2.18a** - Periodic evaluation trigger activity.

The *Selected Trigger Details* panel for periodic evaluation triggers contains information regarding user-defined trigger settings as well as the current sample size, the average of the values in the last sample set and whether or not the threshold the user set has been reached (Figure 2.18a). New trigger entries will be received at the rate defined by the user in the *Setup Trigger Options* window (Figure 2.15) until the sample size is reached. After the sample size is reached, the last trigger in the *Trigger Activity* list will be updated as long as the threshold has not been reached.



**Figure 2.18b** – Periodic evaluation trigger details with a complete sample.

An example of a periodic evaluation trigger that evaluates 5 times every 5 minutes would execute the trigger every minute [timeframe / number of evaluations] (as seen in Figure 2.18a). If that same trigger has settings to be a Statistical Value change trigger on *Affiliated Radio ID Threshold* with *Affiliation Count* of 2 (Figure 2.17), the threshold value will be 2 in the *Selected Trigger Details*. The Current value shows the current count of affiliations for the user defined interval (one minute for this example). The Sample Size shows how many samples exist already out of the user defined sample size as well as the user defined sample size (number of times per time interval the trigger should run). The Previous entry will show N/A (Figure 2.18a) until a full sample has been collected, when a full sample exists the Previous entry will display the average affiliation count of all the sample set.

### **Affiliation Rules**

Radios are considered affiliated to a group if the radio:

- Issues an affiliation targeting the group.
- Issues a call on the group.

Radios are no longer considered affiliated to a group if the radio:

- Fails to issue an affiliation or a group call on the group before the *Affiliation Timeout* occurs.
- Issues a deaffiliation.
- Issues an affiliation on another group.
- Issues a call on another group.

## Group Affiliation Rules for Capacity Max systems

Radios are considered affiliated to a group if the radio:

- Issues an affiliation targeting the group.

Radios are no longer considered affiliated to a group if the radio:

- Fails to issue an affiliation on the group before the *Affiliation Timeout* occurs.
- Issues a deaffiliation.
- Issues a Multiple Group Affiliation that does not contain the group.

Radios are considered affiliated (registered) to a Zone and Site if the radio:

- Issues a registration targeting the Zone and Site.

## Minimum Duration Triggers

A trigger using the **on the presence of events with a minimum duration** presence option fires if the event is received a specified number of times within the given time period. Only events that meet or exceed the minimum duration specified are counted toward the trigger's presence threshold. The trigger will fire once per qualifying event, even if the presence threshold is set higher than one occurrence.

If this presence option is selected, the selectable trigger events will be limited to activities that have a beginning and an end. Single-packet events – such as Affiliations – will be excluded because they do not have a measurable duration.

Event Types include:

- Radio Events
  - Busy
  - Channel Assignment
- Diagnostic Events
  - All non-controller alarm diagnostic events

An event's duration is checked against the minimum duration threshold in two ways:

- When an event ends, its ending time is compared with the starting time.
- Trigger periodically checks the duration of ongoing events. This check occurs every 10 seconds, beginning when the trigger is created. For triggers with a minimum duration of 24 hours or more, the time between checks is increased to 60 seconds. Due to the time between checks, the trigger may not fire immediately after an ongoing event reaches the minimum duration.

## Insert Fields

Audio-Visual, Email, and SNMP Message action types allow you to insert field names into the trigger message as a placeholder for an actual value. When a trigger fires, Trigger will attempt to replace the placeholder with the value of the named field from the packet that caused the trigger to fire. Due to the wide range of trigger configurations and activity types available, it can be difficult to know how to set up fields effectively. The following guidelines can help when inserting fields into a message:

- Common fields can be selected from the **Insert Field...** drop-down list. These common fields occur in many different packet types but are not guaranteed to be present in any given packet.
- Field name placeholders are not limited to the common fields in the drop-down list. Custom field name placeholders can be typed using the following rules:
  - A percentage sign (%) must be placed before and after the field name placeholder. Example: To enter the *Site ID* field into the message, type *%Site ID%*.
  - Because a single percentage sign indicates the start of a field name placeholder, if the message should display a percentage sign, %% must be used instead. Example: To add the text *15% increase* to a message, enter the text *15%% increase*.
  - For Radio System Diagnostic triggers, the field name placeholder *%Device%* can be entered manually to display the type of diagnostic.
- Field name placeholders are replaced by the value of the field with the same name in the packet that caused the trigger to fire. If a field name is not present in the packet, the placeholder will be replaced by the word *NULL*.
  - For “presence of” and “presence with a minimum duration” triggers with an event type other than *this GW3-TRBO event*, this packet will be the activity specified in the trigger setup. You can see which fields are likely to be in an activity by viewing the **Packet Details** window for a packet of that type in the Activity GUI.
  - Most triggers of the event type *this GW3-TRBO event* are not triggered by packets received from the radio system and thus do not contain standard field names. Using field name placeholders for these triggers is not recommended.
  - If a trigger is set up to fire on the presence of multiple occurrences of the activity, the field name placeholder will be replaced using the last packet received that met the trigger conditions. Example: A trigger is set up to fire on 5 occurrences within 1 minute of Channel Assignment activities, and a placeholder is set up for *%ID%*. If Channel Assignment packets are received from radios 2, 15, 4, 65 and 40 (in that order), the trigger will display 40.

- For “presence with a minimum duration” triggers, the trigger instead will fire once per event that meets the minimum duration criteria. Each instance of the trigger firing will contain the fields from that event.
- For “lack of presence” and “periodic evaluation” triggers, the trigger fires due to a timer instead of a packet; therefore, the field names will be displayed as *NULL*.



## Editing a Trigger

To edit an existing trigger, follow the steps below:

1. Select the trigger that you wish to edit in the **Triggers** list.
2. Click the **Edit** button. You can also double-click on a trigger in the **Triggers** list.
3. Click on the blue underlined text at the bottom of the setup window of the trigger property that you wish to change.
4. If you wish to change the trigger condition, event or action, click the **Previous** button to access these options.
5. Click the **Next** button until the **Finish** button appears.
6. Click **Finish** when done.

## Enable/Disable a Trigger

Each trigger can be enabled or disabled using the checkbox next to the trigger name in the **Triggers** list. All triggers are initially enabled.

To enable a trigger:

1. Select the trigger that you wish to enable in the **Triggers** list.
2. Check the checkbox beside the trigger: This will result in a confirmation dialog box.
3. Click **Yes** to enable the trigger.

To disable a trigger:

1. Select the trigger that you wish to disable in the **Triggers** list.
2. Uncheck the checkbox beside the trigger: This will result in a confirmation dialog box.
3. Click **Yes** to disable the trigger.

## Deleting a Trigger

To delete an existing trigger, follow the steps below:

1. Select the trigger that you wish to delete in the **Triggers** list.
2. Click the **Delete** button: This will result in a confirmation dialog box.
3. Click **Yes** to delete the trigger.

## Copying a Trigger

To copy an existing trigger, follow the steps below:

1. Right-click the trigger that you wish to copy in the **Triggers** list.
2. Click the **Copy** option on the right-click menu. The *Trigger Setup* window will display. Copied settings can be modified.
3. Click the **Next** button until the **Finish** button appears.
4. Enter a new name for the trigger.
5. Click **Finish** when done.

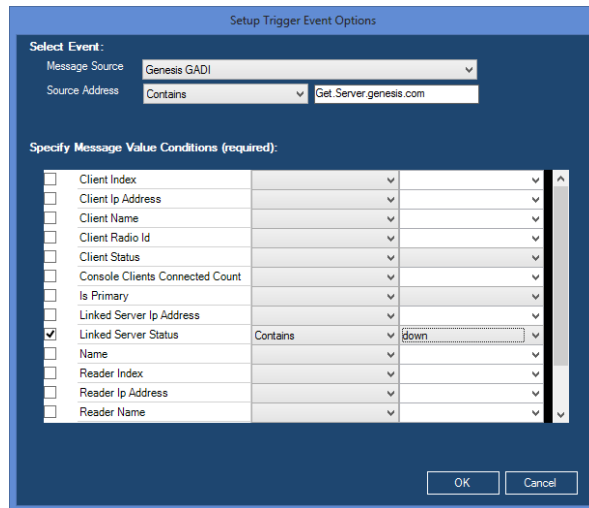
## What is SNMP?

SNMP (simple network management protocol) provides a common status and event language for network software and devices. Using the Connect GUI, you can create an SNMP connection to a Genesis SNMP Remote Manager. The Remote Manager monitors network events (SNMP traps) and reported SNMP values (SNMP messages). SNMP messages are the result of the Remote Manager polling (querying) one or more values exposed by an SNMP-capable device or software.

The Genesis SNMP Remote Manager is part of the GET (Genesis Enterprise Trunking) product line. For more information on this product, please refer to the GET documentation or contact your GW3-TRBO support provider.

## SNMP Messages

SNMP messages are sent out by SNMP-capable software or devices as a result of a poll (query) on one or more values exposed by the software or device. For example, you may want to monitor the status of a GenGET data reader. In this case, you would create an SNMP Message trigger with the event options shown in Figure 2.19 below.



The image shows a screenshot of the 'Setup Trigger Event Options' window. It has a blue header bar with the title 'Setup Trigger Event Options'. Below the header, there is a 'Select Event:' section with two dropdown menus: 'Message Source' set to 'Genesis GADI' and 'Source Address' set to 'Contains' with a value of 'Get.Server.genesis.com'. Below this is a section titled 'Specify Message Value Conditions (required):'. It contains a list of message values with checkboxes and dropdown menus for conditions. The 'Linked Server Status' entry is checked, and its condition is set to 'Contains' with a value of 'down'. Other entries include 'Client Index', 'Client Ip Address', 'Client Name', 'Client Radio Id', 'Client Status', 'Console Clients Connected Count', 'Is Primary', 'Linked Server Ip Address', 'Name', 'Reader Index', 'Reader Ip Address', and 'Reader Name'. At the bottom right, there are 'OK' and 'Cancel' buttons.

| Message Value  | Condition | Value |
|--|-----------|-------|
| <input type="checkbox"/> Client Index                    |           |       |
| <input type="checkbox"/> Client Ip Address               |           |       |
| <input type="checkbox"/> Client Name                     |           |       |
| <input type="checkbox"/> Client Radio Id                 |           |       |
| <input type="checkbox"/> Client Status                   |           |       |
| <input type="checkbox"/> Console Clients Connected Count |           |       |
| <input type="checkbox"/> Is Primary                      |           |       |
| <input type="checkbox"/> Linked Server Ip Address        |           |       |
| <input checked="" type="checkbox"/> Linked Server Status | Contains  | down  |
| <input type="checkbox"/> Name                            |           |       |
| <input type="checkbox"/> Reader Index                    |           |       |
| <input type="checkbox"/> Reader Ip Address               |           |       |
| <input type="checkbox"/> Reader Name                     |           |       |

**Figure 2.19** –Setup Trigger SNMP Message Event Options window

SNMP messages will contain one or more SNMP values (described below). The *Setup Trigger Event Options* window allows you to choose one or more specific message values to monitor. In order to fire the trigger, the SNMP message must:

- Pass the condition defined for Source Address, if the Source Address condition is set to anything other than *N/A*.
- Contain all selected (checked) values.
- Pass the condition defined for each selected value.

## SNMP Values

SNMP values are name and value pairs included in SNMP messages and some SNMP traps.

If the target of the SNMP message query has never been set, the message value will contain *Null*. For example, if you attempt to query the *Linked Server Status* of a GenGET reader that has never been set, you will receive a *Linked Server Status* of *Null*.

If the target of the SNMP message query is unavailable, the message value will contain *Unavailable*. For example, if you attempt to query the *Reader Packet Count* of a GenGET reader that is offline, you will receive a *Reader Packet Count* of *Unavailable*.

## SNMP Traps

SNMP traps are events sent out on the network by SNMP-capable software or devices.

Setup Trigger Event Options

Select Event:

Event Type: GADI Client Online

Source Address: Contains Get.Server.genesis.com

Specify Trap Value Conditions (optional):

|                                     |                   |          |           |
|-------------------------------------|-------------------|----------|-----------|
| <input checked="" type="checkbox"/> | Client Ip Address | Equal To | 10.1.1.37 |
| <input type="checkbox"/>            | Client Name       |          |           |
| <input type="checkbox"/>            | Client Radio Id   |          |           |

OK Cancel

**Figure 2.20** – Trigger Setup Event Options

SNMP traps may contain one or more SNMP values (described above). The *Setup Trigger Event Options* window allows you to choose one or more specific trap values to monitor. In order to fire the trigger, the SNMP trap must:

- Be the trap specified in **Event Type**.
- Pass the condition defined for **Source Address**, if the **Source Address** condition is set to anything other than *N/A*. The In condition will compare the source address of the trap to the provided comma-delimited list of source addresses.
- Contain all selected (checked) values.
- Pass the condition defined for each selected value.

If the trap does not contain SNMP values, SNMP value validation does not occur.

## Sample Triggers

This section describes some sample triggers.

### PTT Notification

In this scenario, the system administrator GW3-TRBO user would like to be notified when a stolen radio keys up (radio ID 1301). This notification will target the *Administrator* role and will show each user with this role a GW3-TRBO Notification message.

**Name:** Radio PTT 1301

**Presence:** On the presence of 1 occurrence(s) within any time period.

**Event:** PTT events limited by radio ID of 1301.

**Action:** Trigger this Audio-Visual action (targeting the role of Administrator).

### Unacknowledged Emergency Alarms

In this scenario, the system administrator GW3-TRBO user would like to be notified when any radio issues an emergency alarm that is not acknowledged within 1 minute. This notification will target the *Administrator* role and will show each user with this role a GW3-TRBO Notification message.

**Name:** No Emergency Ack

**Presence:** On the lack of 1 occurrence(s) within 1 Minute.

**Event:** of Emergency Ack events limited by attachment list of user ADMIN.

**Action:** Trigger this Audio-Visual action (targeting the role of Administrator).

### Busy Threshold

In this scenario, the system administrator GW3-TRBO user would like to be notified when the number of acceptable busies in an hour is exceeded. This notification will be displayed using the Red light from the Red/Amber/Green notification on Channel.

**Name:** Busy Threshold

**Presence:** On the presence of 5 occurrence(s) within 1 hour.

**Event:** Busy events limited by attachment list of user ADMIN.

**Action:** Trigger a flashing Red threshold light.

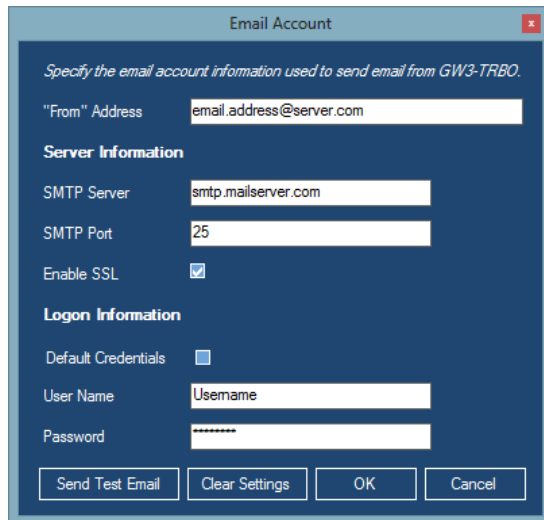
## Email Setup

This section must be completed before an email action can be configured.

To configure email settings, follow the steps below:

1. Click the **Email Settings** button. This will load the *Email Account* window (Figure 2.21).
2. Enter the required SMTP information.
  - a. **“From” Address:** Emails sent from GW3-TRBO will come from this account. Email addresses with special international characters (UTF-8) are not supported.
  - b. **SMTP Server:** Enter the SMTP server for this account. This information can be obtained from your mail provider.
  - c. **SMTP Port:** Enter the SMTP Port for this account. The default is port 25. Your provider may use a different port.
  - d. **Enable SSL:** Check to use secure socket layer when sending mail.
  - e. **Default Credentials:** Check if SMTP server does not require authentication.
  - f. **User Name:** Enter the account user name. This is the same user name used to access the account.
  - g. **Password:** Enter the account password. (This field is encrypted for storage.)
3. Click **Send Test Email** to generate a test message using the settings provided. The email will be sent to the same address entered in the **From Address** field. Verify that the email was received.

4. Click the **OK** button to save these settings.



The image shows a Windows-style dialog box titled "Email Account". Inside the dialog, there is a subtitle: "Specify the email account information used to send email from GW3-TRBO." Below this, there are several input fields and checkboxes. The "From" Address field contains "email.address@server.com". The "Server Information" section includes "SMTP Server" (smtp.mailserver.com), "SMTP Port" (25), and "Enable SSL" (checked). The "Logon Information" section includes "Default Credentials" (unchecked), "User Name" (Username), and "Password" (masked with asterisks). At the bottom, there are four buttons: "Send Test Email", "Clear Settings", "OK", and "Cancel".

| Email Account  |                                     |
|--|-------------------------------------|
| <i>Specify the email account information used to send email from GW3-TRBO.</i> |                                     |
| "From" Address   | email.address@server.com            |
| <b>Server Information</b>  |                                     |
| SMTP Server  | smtp.mailserver.com                 |
| SMTP Port  | 25                                  |
| Enable SSL   | <input checked="" type="checkbox"/> |
| <b>Logon Information</b>   |                                     |
| Default Credentials  | <input type="checkbox"/>            |
| User Name  | Username                            |
| Password   | *****                               |
| Send Test Email  | Clear Settings                      |
| OK   | Cancel                              |

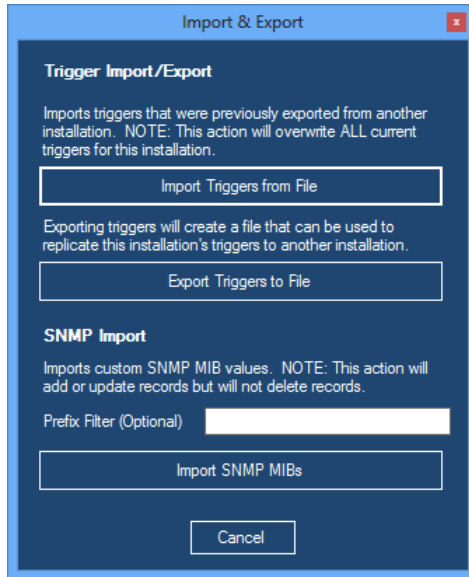
**Figure 2.21** – Email Account Setup

## Importing and Exporting

It is also possible to import and export triggers to and from installations of GW3-TRBO.

### Exporting Triggers to a File

To export triggers that you have configured in Trigger, click on the **Import / Export** button. This will bring up the *Import & Export* window:



**Figure 2.22** – Import & Export window

Click on the **Export Triggers to File** button. This will prompt you for a location and name for the export file. When you have specified the name and location, the export will immediately proceed and prompt you when it is done. The resulting file can then be imported into another GW3-TRBO installation.

### Importing Triggers from a File

To import triggers that were previously exported to a file, click on the **Import / Export** button. This will bring up the same *Import & Export* window shown above. Click on the **Import Triggers from File** button.

This will prompt you for the file that you want to import. Simply browse to the file that you previously exported and select it. The import will proceed immediately after you select a file. You will be notified when the import is complete, and the triggers will be updated.



The import process will **OVERWRITE** any triggers you currently have configured in Trigger. It is recommended that you perform an export prior to adding any additional settings to an installation.



## Importing SNMP MIBs

To import SNMP MIBs, click on the **Import / Export** button. This will bring up the same *Import & Export* window shown in Figure 2.22.

The **Prefix Filter** allows you to filter the MIB Nodes to be imported by specifying what the Object ID (OID) begins with. Example: 1.3.6.1.4.1.3167

Click on the **Import SNMP MIBs** button and you will be prompted for the file that you want to import. The import will proceed immediately after you select a file. When the import is complete you will be notified regarding how many SNMP Sources, Variables and Traps were imported or updated.



The importer will report a successful import even if the import file contains non-MIB data. To ensure that the desired values were imported, check the MIB Import results for added or updated Sources, Values and Traps.



The import may display a message like “One of the MIB files specified contains errors and could not be imported: The MIB file containing module <MIB1> has not been loaded. This is an import required by <MIB2>. Fatal compile error.” This means that MIB1 must be imported before MIB2.



This chapter describes the GUI notification process.

This chapter contains the following sections:

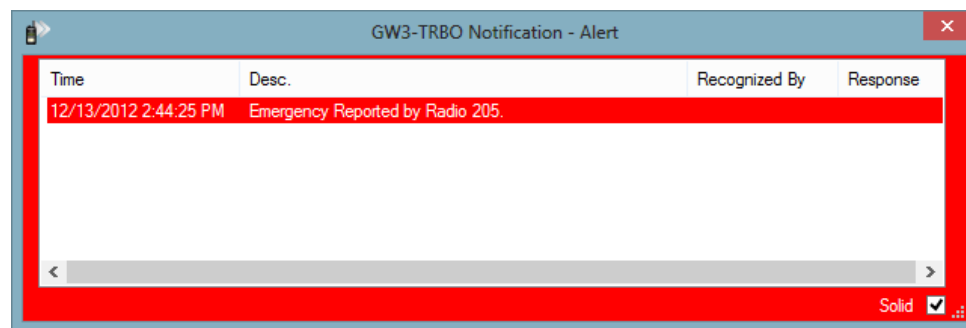
- **What is a GUI Notification?:** Defines the GUI Notification.

### **What is a GUI Notification?**

A GUI Notification (GUIN) is a packet that originates from the Trigger module and is sent to all the GW3-TRBO modules. Each GUIN originates as a result of a defined trigger being “triggered.”

Trigger GUINs target a specific GW3-TRBO user role (roles are defined in the Security module). Each GW3-TRBO client machine with a GW3-TRBO user logged in that is registered to the target role will show a *GW3-TRBO Notification* window (Figure 3.1), describing the trigger event. Once a user clicks on the event in the list, the event is acknowledged, and is shown as acknowledged for all users that received the GUIN.

For example, let’s say you have user “Bob” and user “Jake,” who are both assigned the *Dispatcher* role. If you set up a Trigger that issues a GUIN whenever radio ID 123 issues a PTT (Push-To-Talk), both users would receive the GUIN. If Bob acknowledged the GUIN by clicking on it, it will appear as acknowledged on Jake’s window, as well.



**Figure 3.1** – GW3-TRBO Notification Window



When you first receive a GUIN, the *GW3-TRBO Notification* window will be translucent. Click on the **Solid** checkbox in the bottom-right-hand corner of the window to make the window solid.

You must set up a trigger in one of the following ways to receive a trigger GUIN:

1. Create a trigger with an Audio-Visual action.
2. Create an External Alarm trigger that keeps the relay enabled/disabled until the event is acknowledged by a user.



If you close the Notification window without acknowledging all events, the window will reappear within 5 seconds.