



**GW3-TRBO®**  
**Trbo Module**  
**Software Version 2.17.4**  
**Module Book**

---

***GW3-TRBO***®

600-2.17.4-LL.1  
2/11/2021



## Trademarks

The following are trademarks of Motorola: MOTOTRBO™.

Any other brand or product names are trademarks or registered trademarks of their respective holders.

## The Genesis Group Trademark Information

GW3-TRBO® is a registered trademark of GenCore Candeo, LTD., a subsidiary of Burks GenCore Co., Inc. D.B.A. The Genesis Group and Phil Burks.

## Copyright

Copyright © 2006-2021; Burks GenCore Co., Inc. D.B.A. The Genesis Group and Phil Burks. All rights are reserved. No part of this publication or the associated program may be reproduced, transmitted, transcribed, in whole or in part, in any form or by any means, whether it is mechanical, magnetic, optical, electronic, manual or otherwise, without the prior written consent of Burks GenCore Co., Inc. D.B.A:

The Genesis Group and Phil Burks

5800 Eagles Nest Blvd.

Tyler, Texas 75703.

Includes technology licensed from Motorola.

## Disclaimer

The GW3-TRBO User's Manual is printed in the U.S.A. Burks GenCore Co., Inc. D.B.A. The Genesis Group and Phil Burks believe that the information included in this manual is correct; however, Burks GenCore Co., Inc. D.B.A. The Genesis Group and Phil Burks reserves the right to alter, revise and make periodic changes to the manual and its contents. Burks GenCore Co., Inc. D.B.A. The Genesis Group does not assume responsibility to notify any person of such revisions or changes. While we have taken strides to carefully examine our software and documentation and believe that it is reliable, the Genesis Group and Phil Burks assume no responsibility for the use of the manual, or GW3-TRBO software, nor for any patent infringements or other rights of third parties who may use the manual or the GW3-TRBO software. Burks GenCore Co., Inc. D.B.A. The Genesis Group and Phil Burks make no representations or warranties with respect to the contents or fitness for a particular purpose beyond the cost of the software paid by the end-user.

The software contains valuable trade secrets and proprietary information. Unauthorized use of the manual or software can result in civil damages and criminal prosecution. As an end user, you agree to abide by and heed these statements.

## License

Title to the media on which the program is recorded and to the documentation in support of the product is transferred to you, but title to the program, and all subsequent copies of the program, despite the form or media in or on license is not a sale of the original or any subsequent copy. You assume responsibility for the selection of the program to achieve your intended results, and for the installation, use, and results obtained from the program.

Refer to the GW3-TRBO Manual Overview for your full license. All license information contained on pages 4-7 (Book 600-2.17.4-AA.1) are to be considered as contained herein.

## Support

Customer satisfaction is our number one priority at Genesis. We are here to provide you with the best software possible, and we want to know when you have any questions, concerns or problems with GW3-TRBO so that we can make it a better product for everyone.

Refer to the *Troubleshooting & Support* section of the GW3-TRBO Manual Shell (Book 600-2.17.4-AA.1) for complete support and contact information.

## Document History

| Revision | Description  | Author |
|----------|--|--------|
| 2.0.5    | Initial Release  | REB    |
| 2.0.5    | Replaced GW3-TRBO trademark with registered trademark.                                   | JAW    |
| 2.0.6    | Added OTA Logging feature information.   | REB    |
| 2.0.6.6  | Revision before release  | CLB    |
| 2.0.6.9  | Updated Figure 2.3 Description   | CLB    |
| 2.2      | Initial Version Update   | CWF    |
| 2.2      | Document reviewed  | WRK    |
| 2.3      | Revision Before Release  | CWF    |
| 2.4      | Revision Before Release  | CWF    |
| 2.4      | Added Connect Plus and RDAC options  | REB    |
| 2.5      | Revisions Before Release   | CWF    |
| 2.6      | Revisions Before Release   | CWF    |
| 2.7      | Added Peer Open Firewall Timer setting   | REB    |
| 2.7      | Added Linked Capacity Plus mode.   | REB    |
| 2.8      | Revisions Before Release   | REB    |
| 2.9      | Updated with new interface for selecting which sites to activate with LCP site licenses. | REB    |
| 2.9      | Revisions before release   | REB    |
| 2.10     | Revisions before release   | ATG    |
| 2.10     | Updated for wireline interface.  | REB    |
| 2.10     | Added Connect to Satellite Receivers option.   | REB    |
| 2.11     | Conversion to docx   | BCY    |
| 2.11     | Revisions before release   | ATG    |
| 2.11     | Added option to specify local UDP port.  | REB    |
| 2.12     | Revisions before release   | ATG    |
| 2.12     | Connect Plus RDAC Connections connection   | JAW    |
| 2.12     | Added Emergency Shutdown feature description.  | REB    |
| 2.12     | Added Call Timeout Timer option.   | REB    |
| 2.12     | Added Expected Resource Not Found alarm option.  | REB    |
| 2.13     | Revisions Before Release   | ATG    |
| 2.14     | Revisions Before Release   | JAW    |
| 2.15     | Revisions Before Release   | REB    |
| 2.16     | Revisions Before Release   | JPS    |

# Table of Contents

|  |           |
|--|-----------|
| <i>Trademarks</i> .....                              | 3         |
| <i>The Genesis Group Trademark Information</i> ..... | 3         |
| <i>Copyright</i> .....                               | 3         |
| <i>Disclaimer</i> .....                              | 3         |
| <i>License</i> .....                                 | 3         |
| <i>Support</i> .....                                 | 3         |
| DOCUMENT HISTORY .....                               | 4         |
| <b>TABLE OF CONTENTS</b> .....                       | <b>5</b>  |
| <b>ABOUT THIS MANUAL</b> .....                       | <b>7</b>  |
| GOALS .....  | 7         |
| WHO SHOULD READ THIS MANUAL? .....                   | 7         |
| HOW THIS MANUAL IS ORGANIZED .....                   | 7         |
| <b>CHAPTER 1 OVERVIEW</b> .....                      | <b>9</b>  |
| WHAT IS THE TRBO MODULE?.....                        | 9         |
| <b>CHAPTER 2 MANAGING CONNECTIONS</b> .....          | <b>11</b> |
| TRBO CONNECTIONS .....                               | 11        |
| <i>Adding a Connection</i> .....                     | 12        |
| <i>Updating a Connection</i> .....                   | 12        |
| <i>Deleting a connection</i> .....                   | 12        |
| CONNECTION PROPERTIES .....                          | 13        |
| <i>Connection Settings</i> .....                     | 14        |
| <i>GW3-TRBO Settings</i> .....                       | 14        |
| <i>RSSI Debounce Feature</i> .....                   | 17        |
| <i>System Settings</i> .....                         | 17        |
| IP PEER CONNECTIONS .....                            | 18        |
| <i>IP Site Connect</i> .....                         | 18        |
| <i>Capacity Plus</i> .....                           | 19        |
| <i>Connect Plus RDACs Collection</i> .....           | 19        |
| Connect Plus RDACs Collection Grid .....             | 19        |
| <i>Linked Capacity Plus</i> .....                    | 21        |
| RF CONTROL STATION CONNECTIONS .....                 | 22        |
| <i>What is a control station?</i> .....              | 22        |
| <i>OTA Logging Feature</i> .....                     | 24        |
| <b>CHAPTER 3 FILTERING TRBO DATA</b> .....           | <b>25</b> |
| WHAT ARE CONNECTION FILTERS? .....                   | 25        |
| WHY WOULD I CREATE CONNECTION FILTERS? .....         | 25        |
| LOADING THE ADVANCED OPTIONS WINDOW .....            | 26        |
| CONNECTION FILTER OPTIONS .....                      | 27        |
| <i>More on Raw Data Files</i> .....                  | 27        |
| Changing the Raw Data File Directory .....           | 28        |



### Goals

This manual provides instructions on creating and managing Trbo connections. If you have already read the *Trbo Quickstart Guide*, then you are familiar with the high-level functions of the Trbo module. This document will provide further detail on the setup and maintenance of connections.

### Who Should Read This Manual?

This manual is intended for an audience of Motorola system administrators. In-depth knowledge of your Motorola system is required to complete many of the steps in this manual.

### How This Manual Is Organized

This manual is organized as follows:

- **Overview:** Describes the Trbo module and its role in the GW3-TRBO solution.
- **Managing Connections:** Describes how to create and manage Trbo connections.
- **Filtering Trbo Data:** Describes how to create a packet filter for a Trbo connection.

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 defines the Trbo module and its role in the GW3-TRBO product.

This chapter contains the following sections:

- **What is the Trbo Module:** Defines the Trbo module and its role in the GW3-TRBO solution.

## ***What is the Trbo Module?***

The Trbo module receives and decodes packets from a MOTOTRBO™ Professional Digital Two-Way Radio System. Trbo supports the following MOTOTRBO system configurations:

- Single-Repeater (conventional)
- IP Site Connect (conventional)
- Capacity Plus (trunking)
- Connect Plus RDAC (diagnostic monitoring only)
- Linked Capacity Plus (trunking)

The Trbo graphical user interface (GUI) allows you to manage each Trbo connection. The number of connections allowed within the Trbo GUI is restricted by your GW3-TRBO license.



This chapter gives instructions on how to manage Trbo connections.

This chapter contains the following sections:

- **Trbo Connections:** Describes Trbo connections.
- **Connection Properties:** Detailed description of the Trbo connection properties.

### Trbo Connections

Each connection shown in the *Connections* list, on the left side of the Trbo module GUI, represents a connection to a MOTOTRBO radio system. The status of each connection is represented by a radio icon that appears in the Windows system tray (the bottom right of your desktop). The icon has the following statuses:

-  : Connection is encountering an error.
-  : Connection has received packets within the past 5 seconds.
-  : Connection has not received packets within the past 5 seconds. (Blinks between red and white background.)
-  : Connection that manages multiple data sources is receiving data from at least one source, but at least one other source is either not receiving data or has a connectivity issue.

 When a connection goes up or down, Trbo will show a GUI notification window to alert the user that the link is up or down. “Link Up” indicates Trbo is connected to *at least one* data source (one repeater or one RF control station). “Link Down” indicates Trbo is not connected to any data sources. If a control station disconnects, Trbo will notify the user through a similar alert.

 A red light does not necessarily mean that the connection is offline or that the link is down. It could just mean that there has not been any activity for at least the last 5 seconds.

The number of active connections allowed is limited by your GW3-TRBO license. The license divides connections into three types, each with its own maximum number of available connections:

- **IP Connections** may be used for connections of any IP connection type (IP Site Connect, Capacity Plus, Linked Capacity Plus and Connect Plus RDAC).
- **RDAC Connections** may be used for any IP connection type, but only if the **RDAC Connection** box is checked. These connections receive repeater diagnostics but not radio activity. If you are licensed for an IP Connection, it may be used for an RDAC Connection.
- **RF Connections** may be used for any RF control station connection.

## Adding a Connection

To receive packets from a packet source, you must add a Trbo connection. Follow these steps to add a Trbo connection:

1. Click the **Add** button. This will create a new entry in the **Connections** list. The new entry will be named something like “New Connection 1.” This connection will contain defaults for all its values.
2. Select (click on) the new connection in the **Connections** list. This will show the properties of this connection.
3. Change the connection properties to the desired values.
4. Click the **Update** button.

## Updating a Connection

In most cases, after you configure a Trbo connection, you will not need to update it. However, you can update the Trbo connection properties in case you make a data entry error, if the settings change, or to stop the connection. Follow these steps to update an existing connection:

1. In the **Connections** list, select (click on) the connection that you wish to update. This will show the properties of this connection.
2. Change the connection properties to the desired values.
3. Click the **Update** button.

## Deleting a connection

In most cases, after you add a Trbo connection, you will not need to delete it. However, you can delete a Trbo connection in case you no longer want to monitor the connection’s packet source. Follow these steps to delete an existing connection:

1. In the **Connections** list, select (click on) the connection that you wish to delete. This will show the properties of this connection.
2. Click the **Delete** button: This will result in a confirmation prompt.
3. Click **Yes**.

## Connection Properties

Each Trbo connection represents a set of properties. These properties are defined in detail below. The available properties change based on the connection type specified in the **Source** drop-down box.

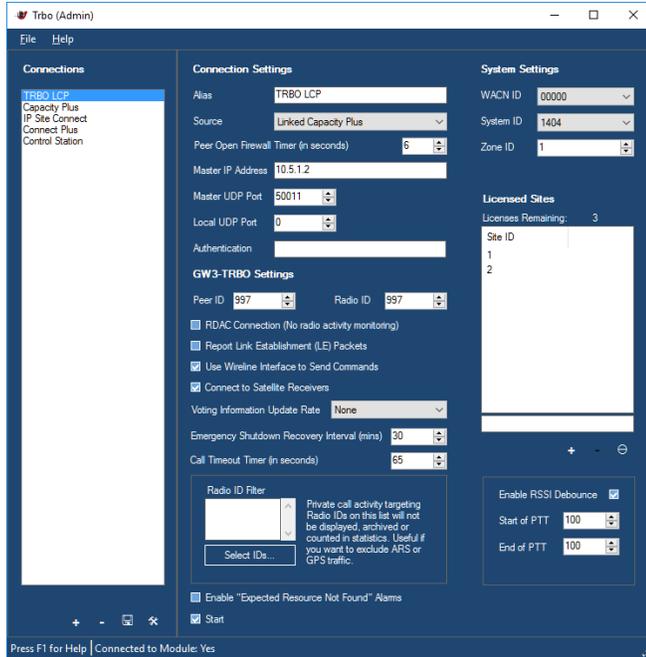


Figure 2.1 – Trbo GUI for an IP Connection

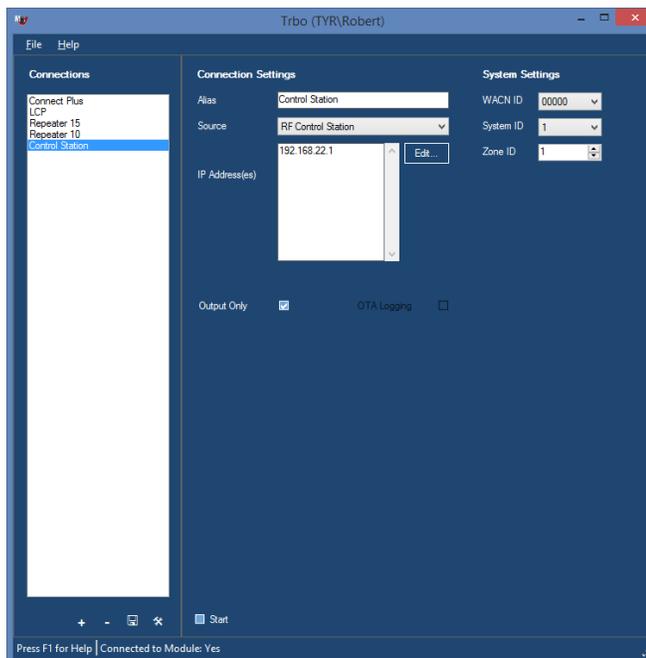


Figure 2.2 – Trbo GUI for an RF Control Station Connection

## Connection Settings

- **Alias:** A name that describes this connection.
- **Source:** One of the following options:
  - **RF Control Station:** Select this option to connect to an RF control station for over-the-air monitoring or for sending radio commands.
  - **IP Site Connect:** Select this option to connect via Ethernet to an IP Site Connect system.
  - **Capacity Plus:** Select this option to connect via Ethernet to a Capacity Plus system.
  - **Connect Plus RDACs Collection:** Select this option to monitor repeater alarms on a Connect Plus system via Ethernet.
  - **Linked Capacity Plus:** Select this option to connect via Ethernet to a Linked Capacity Plus system.
- **Master IP Address:** Static IP address of the master peer on the peer network.
- **IP Address(es):** IP Address(es) of the RF control station(s).
- **Master UDP Port:** The UDP port that the master peer uses to communicate with GW3-TRBO.
- **Local UDP Port:** The UDP port used by the GW3-TRBO host machine to communicate with the peer network. Specifying port 0 will allow the Trbo module to be dynamically assigned an available port.
- **Authentication:** The hexadecimal authentication key used by GW3-TRBO to connect to a MOTOTRBO peer network. All peers within the same repeater network must use the same authentication key. Valid characters are 0-9 and A-F. Up to 40 characters may be entered.
- **Peer Open Firewall Timer (in seconds):** Sets the amount of time between “keep-alive” packets sent by GW3-TRBO to each repeater. This setting should match the Peer Open Firewall Timer setting in the repeater programming.
- **Output Only:** If checked, the RF control station connection will be used *only* to send radio commands from GW3-TRBO. GW3-TRBO will not monitor system activity over the control station radio. Check this option if you are using a control station to issue radio commands in conjunction with an IP connection to monitor a Linked Capacity Plus system.
- **OTA Logging:** If checked, the control station radio will use Motorola’s OTA Logging feature to get a more complete view of system activity. This feature requires a radio using R01.06.00 or higher firmware.

## GW3-TRBO Settings

- **Peer ID:** The peer ID used by GW3-TRBO when connecting to the MOTOTRBO peer network. This ID must be distinct from every other peer on the network. If a duplicate peer ID exists on the system, it can cause severe connectivity issues on the repeater network.
- **Radio ID:** The radio ID used by GW3-TRBO when issuing radio commands on the MOTOTRBO radio network.

- **RDAC Connection:** If checked, the Trbo connection will not monitor radio activity, such as calls. The connection will be used only to report on diagnostic alarms from the repeaters.
- **Report Link Establishment (LE) Packets:** If checked, the Trbo connection will send LE packets to the other GW3-TRBO modules.
- **Use Wireline Interface to Send Commands:** If checked, the Trbo connection will use the wireline interface to send commands (call alert, IP console inhibit, etc.). To use this option, the Network Application Interface Data feature must be purchased by all repeaters in the network. This option requires R2.3 repeater firmware or higher.
- **Request Digital Backhaul Information:** (IP Site Connect only.) If checked, the connection will query each repeater as to whether it is a backhaul proxy. The connection will periodically send a request to any proxies found for their Backhaul Chain Status. Their status will be shown in Activity and the backhaul repeaters will be shown appropriately in SystemMap. When this option is checked, the **RDAC Connection** option will be enabled automatically; see the warning in the *IP Site Connect* section for more information.
- **Connect to Satellite Receivers:** If checked, the Trbo module will connect to any satellite receivers on the system. Leave this unchecked if the system does not have any satellite receivers.
- **Voting Information Update Rate:** Specifies the rate at which voting repeaters provide voting status updates. Voting status updates will be provided only when a change in voting status occurs. This is a global option for the repeater and will affect other applications that are connected. The options are:
  - **None:** The voting repeater will not provide voting status updates.
  - **Normal:** The voting repeater will provide voting status updates at most every three seconds.
  - **Diagnostic:** The voting repeater will provide voting status updates at most once a second.
- **Emergency Shutdown Recovery Interval (mins):** If GW3-TRBO detects a network routing condition that may result in unstable performance on the repeater network, GW3-TRBO will disable its connection automatically. This setting specifies the amount of time (in minutes) after an emergency shutdown before the Trbo module will attempt to restart the connection. Please note that if the network problem persists, performance issues on the repeater network may occur briefly each time the connection restarts. Choose 0 for the interval to require a manual restart of the connection.
- **Call Timeout Timer (in seconds):** Calls will be timed out after the specified number of seconds. This prevents calls from appearing to never end if the end-of-call notification is not received over the network. This field should always be set at least a few seconds higher than the Time-Out Timer (TOT) value in your radio or repeater programming.

- **Radio ID Filter:** Allows you to choose to filter out private call activity targeting certain radio IDs. This is not recommended, but it can be useful to cut down on reporting of calls generated by data transmissions such as ARS data. Any call activity whose *target radio ID* is listed on the **Radio ID Filter** control will not be visible anywhere in GW3-TRBO.
- **Enable RSSI Debounce:** Enables the RSSI debounce feature. See the *RSSI Debounce Feature* section.
- **Start of PTT:** RSSI Debounce milliseconds for start of PTT.
- **End of PTT:** RSSI Debounce milliseconds for end of PTT.
- **Enable “Expected Resource Not Found” Alarms:** Toggles whether to generate alarms when an “expected resource” is not found on the peer network.
  - “Expected resources” include:
    1. Any channel that has been defined in the Alias database under the connection’s zone and site(s), excluding those that are marked as **Offline** in the channel settings in Alias
    2. Connect Plus site controllers
  - Diagnostics will be created under the following circumstances:
    1. Trbo fails to connect to the master peer for two minutes. This will generate diagnostics for all the connection’s expected resources.
    2. The peer map provided by the master peer does not contain a channel identified in Alias.
    3. A repeater or controller disconnects from Trbo.
    4. The Trbo connection is stopped. This will generate diagnostics for all the resources connected at the time the connection is stopped.
  - An active Expected Resource Not Found diagnostic will be cleared when any of the following conditions are met:
    1. Trbo connects to the resource.
    2. A user deletes the channel in Alias.
    3. A user marks the channel as **Offline** in Alias.
- **Start:** If checked, the Trbo module will start this connection when the connection is saved, or the module is started. If you want to retain the settings for a connection, but do not want to receive packets from the connection, uncheck this option. In most cases, this option should be checked.



The **Report Link Establishment (LE) Packets** option is useful for troubleshooting but can cause high CPU load. It should be unchecked for normal operation.



If the **Enable “Expected Resource Not Found” Alarms** feature is enabled and then later disabled, some “Expected Resource Not Found” diagnostics may remain active. If you wish to clear the diagnostics, you can mark the affected channels as **Offline** in the Alias GUI to clear all alarm states, then uncheck the **Offline** checkbox.

## RSSI Debounce Feature

The RSSI debounce feature prevents processing and archiving of invalid “ramp up” or “ramp down” RSSI values. The “ramp up” period is the time required for a repeater to go from idle to active RSSI power. The “ramp down” period is the time required for a repeater to go from active to idle power.

This feature applies only to *RDAC Radio Status Reply* packets containing RSSI values. If an RSSI RDAC Radio Status Reply packet is received for a slot within *Start of PTT* milliseconds of a start of a PTT on the slot, the RSSI value is discarded. Similarly, if an RSSI RDAC Radio Status Reply packet is received for a slot within *End of PTT* milliseconds of an end of a PTT on the slot, the RSSI value is discarded.

## System Settings

- **WACN ID:** Five-digit hexadecimal WACN ID assigned to your infrastructure. (These values are limited to the WACN IDs in your license.)
- **System ID:** Four-digit, hexadecimal system ID assigned to your infrastructure. (These values are limited to the systems in your license under the selected WACN ID.)
- **Zone ID:** Decimal zone ID (values 1-64). This logical zone ID allows the user to easily distinguish connections from each other.
- **Site ID:** Decimal site ID (values 1-128). This logical site ID allows the user to easily distinguish connections from each other. IP Site Connect, Linked Capacity Plus and RF Control Station (with **Output Only** checked) connections do not use a **Site ID**.
- **Licensed Sites:** The GW3-TRBO license restricts the number of Linked Capacity Plus sites that may be monitored by connections in the Trbo module. When creating an LCP connection, you must assign site IDs to the connection using your available site licenses. The **Licenses Remaining** counter will indicate how many sites may still be added. If the connection receives packets from a site that is not in the **Licensed Sites** list, they will be flagged as corrupt and will not be processed by GW3-TRBO.
  - To add a site, enter a site ID or a range of site IDs into the text entry field under the **Licensed Sites** list, then press **Enter** or click the **Add Site** button. Ranges may be specified with numbers separated by commas or hyphens. Examples of valid ranges: “1” or “1-5” or “1,6” or “1-3,7-10.”
  - To remove a site, select the site ID in the **Licensed Sites** list and click the **Delete Site** button. Alternately, you can select the site and press the **Delete** key or right-click the site and click the **Delete** option from the context menu.

- To remove all sites from the **Licensed Sites** list, click the **Clear Sites** button.
- To export the list of sites, right-click in the **Licensed Sites** list and click the **Export Sites to Clipboard** option from the context menu. This places the text into your Windows clipboard so it can be pasted into another connection or application.

## **IP Peer Connections**

In an IP peer connection, as used for an IP Site Connect, Capacity Plus, Linked Capacity Plus or Connect Plus system, all repeaters must be able to communicate with the GW3-TRBO computer via UDP. The GW3-TRBO host must be connected to the same network.

GW3-TRBO will connect to the master peer repeater you specified in the Trbo module connection settings. No additional configuration is needed for GW3-TRBO to monitor activity on the other repeaters on the network.

In addition to the repeaters, GW3-TRBO will attempt to connect to all other peers on the network, including other applications and MOTOTRBO Network Interface Service (MNIS) peers. On Capacity Plus and Linked Capacity Plus systems, each site also includes a “virtual peer,” which is an abstraction of the rest slot used for trunking. Note that the following activity packets are not archived in the database when generated by a virtual peer:

- *[GW3] Peer Disconnected*
- *[GW3] Peer Connected*
- *[GW3] Peer Status Changed*

## **IP Site Connect**

When connected via IP to an IP Site Connect system, GW3-TRBO can monitor all activity on your system and issue radio commands over the IP backbone, all in one connection.

To create an IP Site Connect connection, select **IP Site Connect** from the **Source** drop-down list and enter the settings detailed above.

 IPSC systems using digital backhaul repeaters do not support the call monitoring interface that GW3-TRBO uses to monitor call activity. For these systems, GW3-TRBO can monitor and report on repeater diagnostic information only.

## Capacity Plus

Monitoring a Capacity Plus MOTOTRBO system using GW3-TRBO works in much the same way as on an IP Site Connect system.

To create your Capacity Plus connection, first create an IP connection using the option **Capacity Plus** from the **Source** drop-down list. Fill out the information for the IP connection.

## Connect Plus RDACs Collection

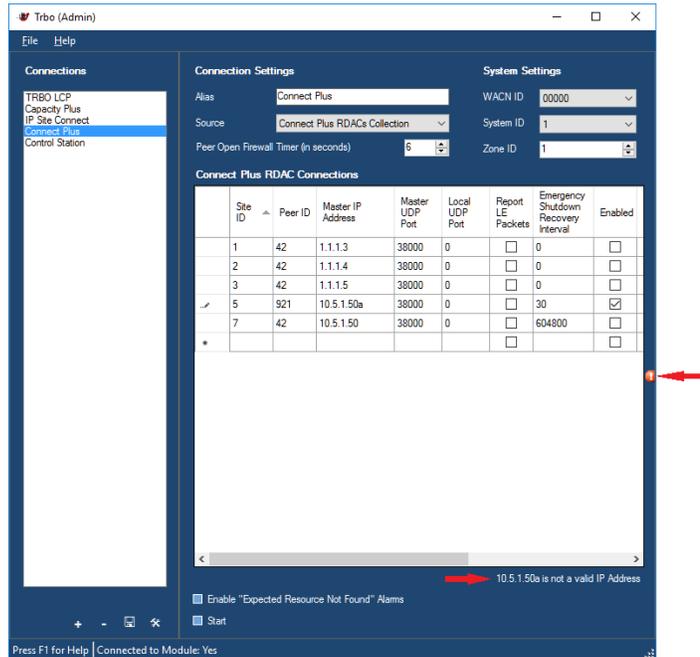
Trbo also can be used to monitor repeater alarms on a Connect Plus system. The Trbo module cannot interpret call activity on a Connect Plus system. To monitor call activity, see the *Connect Module Book* for information on setting up a Connect Plus connection.

To create a Connect Plus RDACs Collection connection, select **Connect Plus RDACs Collection** from the **Source** drop-down list and enter the settings detailed above. Each connection can monitor alarms on multiple sites. Enter the settings for each site in the Connect Plus RDAC Connections grid. All sites must be on the same LAN or VPN. For each connection, the **IP Address** field must contain the IP address of the XRC 9000 controller for the selected site. In each Connect Plus site, the XRC 9000 controller acts as the master repeater.

### Connect Plus RDACs Collection Grid

For Connect Plus RDACs Collection connections, the Connect Plus RDACs collection grid allows you to manage many Connect Plus RDAC connections.

Data entry on the Connect Plus RDACs collection grid is validated as you leave each edited cell. If validation for a cell's value fails, you will see the warnings indicated by red arrows in the image below. If you move your mouse over the red-and-white exclamation point icon, you will see the validation message shown in the text under the grid. Before you can leave the cell, you must correct the validation error, or press the **Esc** key on your keyboard to abandon the edit.



**Figure 2.3** – Trbo GUI for Connect Plus RDACs Collection

To add a Connect Plus RDAC Connection:

1. Navigate to the grid row with an asterisk in the far-left column.
2. Start typing in the grid row, using the **Tab** and **Shift + Tab** keys to navigate between columns.
3. Repeat for each new Connect Plus RDAC connection.
4. Click the **Update** button to save your changes.

To update a Connect Plus RDAC Connection:

1. Navigate to the grid row you wish to update.
2. Start typing in the grid row, using the **Tab** and **Shift + Tab** keys to navigate between columns.
3. Repeat for each Connect Plus RDAC Connection you wish to edit.
4. Click the **Update** button to save your changes.

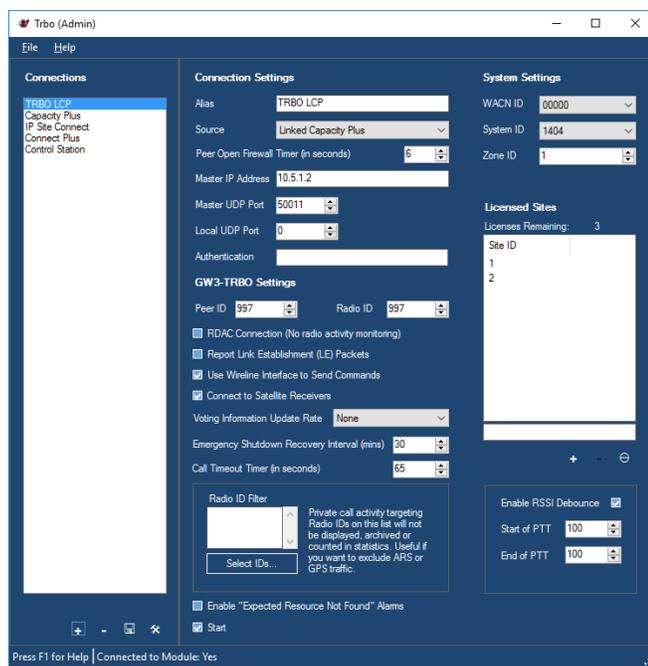
To delete a Connect Plus RDAC Connection:

1. Click on the far-left column of the grid row you wish to delete. This will highlight the grid row.
2. Press the **Delete** key.
3. Repeat for each Connect Plus RDAC Connection you wish to delete.
4. Click the **Update** button to save your changes.

## Linked Capacity Plus

Monitoring a Linked Capacity Plus system works in much the same way as on an IP Site Connect or Capacity Plus system. However, to send radio commands over the IP connection, you will need to check the **Use Wireline Interface to Send Commands** option and purchase the Network Application Interface Data feature for all the repeaters on the network.

If your repeaters do not have the Network Application Interface Data feature, GW3-TRBO allows you to create an RF control station connection to be used in concert with your IP connection. The IP link will monitor the activity on your system, while the control station connection will be used only to issue radio commands from GW3-TRBO.



**Figure 2.4** – Trbo GUI for an LCP system with two sites

To create your Linked Capacity Plus connection, first create an IP connection using the option **Linked Capacity Plus** from the **Source** drop-down list. Fill out the information for the IP connection. In the **Licensed Sites** list, you must specify which site IDs you wish to monitor. The number of sites you may assign is limited by your GW3-TRBO license. See the *Connection Properties* section above for more information on assigning sites to a connection.

Next, create a second connection using the option **RF Control Station** from the **Source** drop-down list. Click the **Edit...** box to bring up a window where you can enter the IP address of the control station radio. (For more on control stations, see below.) Be sure to check the **Output Only** box—this will tell GW3-TRBO not to monitor your system with the control station and prevent duplicate activity from

showing up in GW3-TRBO. Finally, ensure that the **Zone ID** of your control station connection matches the zone setting of your IP connection.

## ***RF Control Station Connections***

### **What is a control station?**

A *control station* is an ordinary radio (portable or mobile) that has been physically connected to the GW3-TRBO host computer to listen to activity on a system.

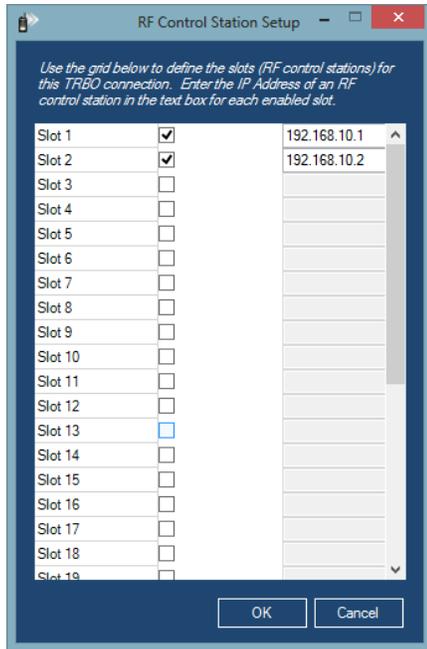
An RF Control Station connection in GW3-TRBO allows you to use an ordinary MOTOTRBO radio to monitor activity on your system. You may use either a portable or mobile radio for this purpose. A local connection to MOTOTRBO utilizes the same USB cable required for programming the radios with the Customer Programming Software (CPS); therefore, the MOTOTRBO radio must be located near the PC to connect the cable.

A control station is required for each timeslot you wish to monitor, and each control station can listen to activity on up to 16 talkgroups. If there are more than 16 talkgroups operating on a single timeslot, additional control stations must be connected. For example, if you have 32 talkgroups operating on two timeslots, then you will need two control stations for each timeslot – one to monitor talkgroups 1-16, the other to monitor talkgroups 17-32.



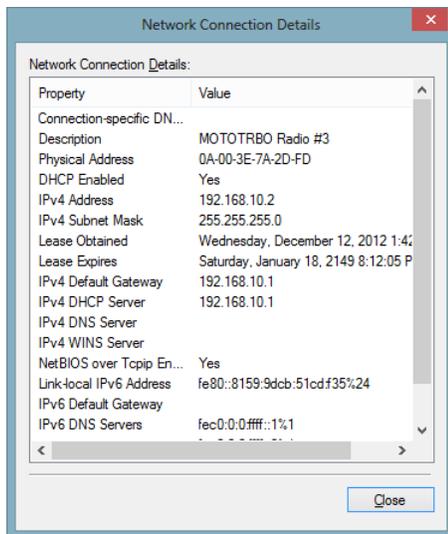
**Control station limitations:** A radio being used as a control station can monitor only activity on the timeslot and talkgroups for which it is programmed. For example, if the radio is programmed for Talkgroups 1 and 2, it will not decode a group call on Talkgroup 4. Control stations will never detect private calls unless the radio used as a control station is the target of the private call. To change the talkgroups monitored by a control station, update its group list in Motorola's CPS or RM.

To set up a control station connection, select the **RF Control Station** option from the **Source** drop-down list. Click the **Edit...** box to bring up a window where you can enter the IP addresses of the control station radios.



**Figure 2.5** –RF Control Station setup

If you do not know the IP address of the radios, go to the Windows **Control Panel** and select **Network and Sharing Center**. There will be a network for each radio plugged into the computer via USB. Click **View Status**, followed by **Details...**. Then copy the address contained in the *IPv4 Default Gateway* field.



**Figure 2.6** – Network Connection Details

## OTA Logging Feature

A radio that is using the R01.06.00 firmware version or higher can take advantage of MOTOTRBO's Over-The-Air Logging feature to receive a more complete view of radio system activity than is possible through a normal control station connection. Using OTA Logging allows a single control station to monitor all over-the-air activity — group or private, voice or data — on a single repeater timeslot.

One control station is required per logical channel to be monitored. Each control station must be programmed to listen for transmissions on the channel it will monitor and must be in range to receive those transmissions over the air.



To monitor a Capacity Plus system, the control station for each channel must be programmed as if it were monitoring an IP Site Connect channel. That is, it must be configured in CPS or RM to use a Digital Channel instead of a Capacity Plus Voice Channel. This is necessary because a radio in Capacity Plus mode adjusts its listening frequency to follow the rest slot, which would result in missed activity.

To activate OTA Logging mode, check the box on the Trbo GUI labeled **OTA Logging**.

The table below compares the types of activity reported by a standard control station versus a control station using the OTA Logging feature.

| Activity Type        | Reported by Standard Control Station?                        | Reported by OTA Logging Radio? |
|----------------------|--|--------------------------------|
| Group Voice Call     | Only if programmed to receive calls on the target talkgroup. | Yes                            |
| Private Voice Call   | Only if the control station is the target of the call.       | Yes                            |
| Group Data Call      | No   | Yes                            |
| Private Data Call    | No   | Yes                            |
| Radio Commands       | Only if the control station is a party to the command.       | Yes                            |
| Repeater Diagnostics | No   | No                             |

**Figure 2.6** – Comparison of radio activity reported by a standard control station versus an OTA Logging-enabled control station

This chapter gives instructions on how to manage Trbo connection filters.

This chapter contains the following sections:

- **What are Connection Filters?:** Describes the Trbo connection filter.
- **Why Would I Create Connection Filters?:** Explains how connection filters can be used to offload monitoring and reporting to agencies.
- **Loading the Advanced Options Window:** Instructions on how to load the Trbo **Advanced Options** window.
- **Connection Filter Options:** Instructions on managing the Trbo connection filter.

### *What are Connection Filters?*

Each Trbo connection allows packet filtering based on groups assigned to a GW3-TRBO user. Information that is filtered out on this level is not passed to the rest of the GW3-TRBO modules. If a filter is set up, then only packets that reference talkgroups selected in the user's groups or radio IDs that reference this group as their default group are included.

 **NOTE:** Default groups are assigned to radio IDs in the Alias GUI.

This means that packets such as link establishment and diagnostics are not passed on to the rest of the modules because these packets do not reference groups or radio IDs.

 If you wish to filter at this level, it is best to create a new GW3-TRBO user that is used only as the **Filter User**.

### *Why Would I Create Connection Filters?*

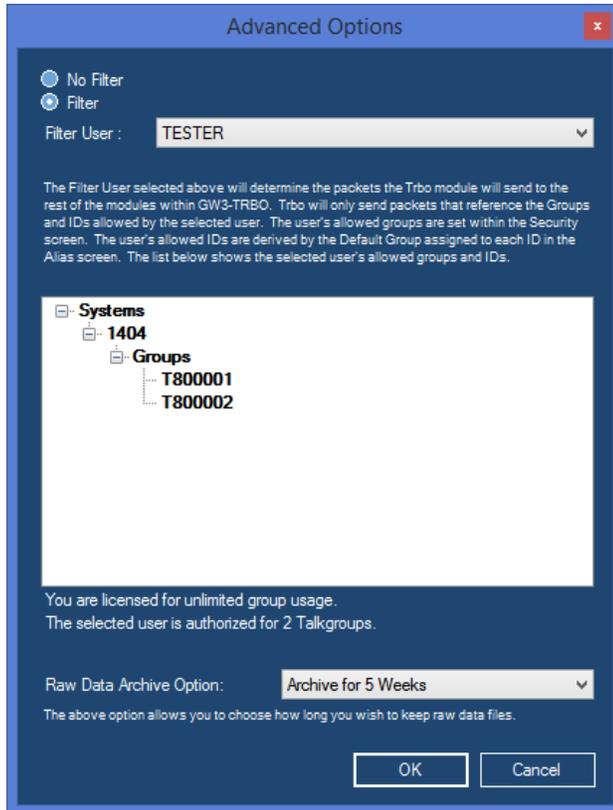
Connection filters are designed to allow system owners to offload the GW3-TRBO monitoring and reporting capabilities onto agencies. In these installations, system owners would install and set up GW3-TRBO. During the setup an "Agency A" GW3-TRBO user is defined, containing only the groups available to that agency. This GW3-TRBO user is used for the connection filter.

In the end, only the system owners know the logins that would allow changes to the GW3-TRBO users. The system owners also create various GW3-TRBO users to be used by Agency A. Agency A is now allowed to monitor and report on only the groups and radio IDs used by its agency.

## Loading the Advanced Options Window

To load the *Advanced Options* window, take the following steps:

1. Load the Trbo GUI.
2. In the **Connections** list, click on a connection. This will show the properties of this connection and enable the **Options** button (bottom left of the window). You must be logged in as a user whose role contains the *SetupFilters* privilege for the Trbo module in order to see the **Options** button.
3. Click the **Options** button. This will show the **Advanced Options** window.



**Figure 3.1** – Advanced Options Window



In addition to this filter, there is also an infrastructure filter. The infrastructure filter limits what you receive based on your license. The difference is that the infrastructure filter will pass individual activity (private calls) through, while filters defined here (via an attachment list associated with a user) will not.

## Connection Filter Options

Each Trbo connection has a single connection filter. The list below describes the connection filter options:

- **No Filter:** If selected, then all packets will be passed to the GW3-TRBO modules, regardless of radio ID or group (this option is only available if you are not licensed for a fixed number of groups).
- **Filter:** If selected, GW3-TRBO will only process packets with a group or radio ID matching ones defined in the **Filter User's** groups.
- **Filter User:** User whose group filter settings will be used to filter Trbo packets. When you select a **Filter User**, the tree below the **Filter User** shows the group and radio IDs that are allowed by the selected user.
- **License Threshold:** Two labels at the bottom of the **Connection Filters** window indicate how many groups you are licensed for and how many groups the selected user includes. If you are licensed for a fixed number of groups, you cannot select a **Filter User** whose group filter settings include more groups than are included in your license.
- **Raw Data Archive Option:** This option allows you to choose how long the GW3-TRBO raw data files remain on your GW3-TRBO computer.
  - **Do Not Archive:** GW3-TRBO should not archive raw data files.
  - **Archive for 1 Week:** GW3-TRBO should archive one week's worth of raw data files.
  - **Archive for 2 Weeks:** GW3-TRBO should archive two weeks' worth of raw data files.
  - **Archive for 5 Weeks:** GW3-TRBO should archive five weeks' worth of raw data files (default).

### More on Raw Data Files

GW3-TRBO stores raw data files on your GW3-TRBO computer. Genesis and Motorola support personnel use these files to help diagnose any issues you may have with GW3-TRBO.

By default, GW3-TRBO will keep five weeks' (approximately 520 MB) worth of raw data files. You may wish to conserve hard drive space by choosing to keep only one week's worth of raw data files. We suggest you keep the full five weeks, just in case it takes you awhile to notice a problem.

These raw data files are stored in the following directory:

*C:\ProgramData\Genesis\GenWatch3\RawData\Trbo\<SystemId>\<ZoneId>\<SiteId>*

For example, in the default GW3-TRBO installation directory, if the System ID is 1404, the Zone ID is 1 and the Site ID is 10, the GW3-TRBO raw data directory is:

*C:\ProgramData\Genesis\GenWatch3\RawData\Trbo\1404\1\10*

The files in this directory are in the following format:

*GW3\_<year><month><day>\_<hour>.RAW*

For example, the raw data file for the 3 p.m. hour on 10/12/2020 would be:

*GW3\_20201012\_15.RAW*

### **Changing the Raw Data File Directory**

Changing the GW3-TRBO raw data directory is usually not recommended. However, if the default location might not have enough disk space to store the raw data, you may wish to move this archive operation to another drive. For instructions on how to change the raw data file directory, see the *GenWatch3 Config Files* section of *Chapter 3 – GenWatch3 Service* in the *GenWatch3 Core Manual*.



**Warning:** Make sure you only change the *RawDataFilePath* setting. Changing other GenWatch3.config settings can cause your computer to become unstable or even unusable. When in doubt, ask for assistance from your IT department or Genesis support.