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Refer to the GenWatch3 Manual Overview for your full license. All license information contained on pages 4-7 (Book 600-2.16.4-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 GenWatch3 so that we can make it a better product for everyone.

Refer to the *Troubleshooting & Support* section of the GenWatch3 Manual Shell (Book 600-2.16.4-AA.1) for complete support and contact information.

Document History

Revision	Description	Author
2.0.2	Initial Release	JAW
2.0.3	Added the *Additional Setup* and *Delivery and Validation* chapters	JAW
2.0.3	Revision before release	JAW
2.0.4	Added Require Delivery Before Acking Status/Message option description	JAW
2.0.4	Updated Fig 1.2 and Command Security section	KIH
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2.0.6	Updated document path	CLB
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2.2	Added RPC CADI Setup description	MSR
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2.12	Revisions Before Release	JAW
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

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Goals

This manual describes the role and function of the GW_Halcyon module in the GenWatch3 solution.

Who Should Read This Manual?

This manual is written for the intended audience of novice to mid-level trunked radio system users and novice to mid-level PC users. If your GenWatch3 installation is licensed for RCM or RPC connections and you are responsible for setting up these connections, you should read this manual.

How This Manual Is Organized

This manual is organized as follows:

- **Overview:** Defines the GW_Halcyon module and GW_Halcyon Graphical User Interface (GUI) and gives instructions on configuring RCM and RPC connections.
- **Additional Setup:** Describes the GenWatch3 setup outside of GW_Halcyon required for GW_Halcyon to perform its RCM and RPC-based functions.
- **Delivery and Validation:** Describes how GW_Halcyon makes decisions when delivering and acknowledging radio events and when processing radio command requests.

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.

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This chapter defines the GW_Halcyon module and the GW_Halcyon GUI and gives instructions on configuring RCM and RPC connections.

This chapter contains the following sections:
- **Terms**: Defines terms used in this document.
- **What is GW_Halcyon?:** Defines the GW_Halcyon module and GW_Halcyon GUI.
- **RCM Connection:** Describes the RCM connection and its configuration.
- **RPC Connections:** Describes RPC connections and their configuration.
- **Notes on GW_Halcyon Connections:** Provides some additional information on these connections.
- **Other Connection Functions and Options:** Describes the Cancel, Update and Delete functions and the **Halcyon handles statuses and messages** option.
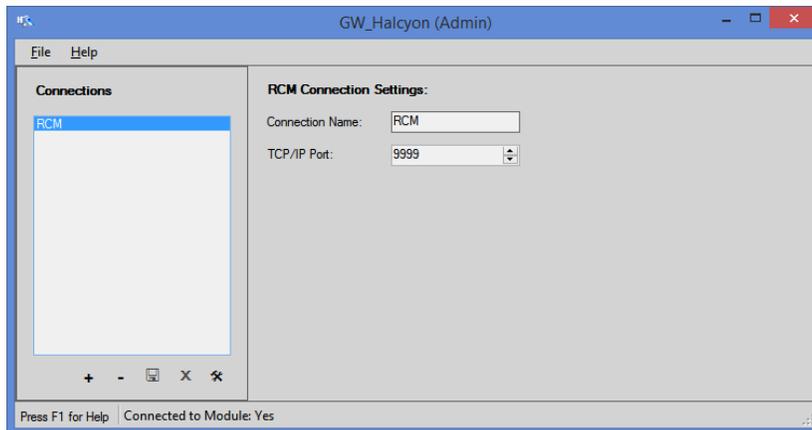
Figure 1.1 – GW_Halcyon GUI

Terms

- ⓘ **RCM Connection**: This is a TCP/IP (internet protocol) connection that allows GW_RCM users to connect to the GW_Halcyon module. The GW_RCM GUI is described in detail in the *GW_RCM module book*.
- ⓘ **RPC Connection**: This is a TCP/IP connection using the CAD protocol over RPC.
- ⓘ **Client**: A user connected to GW_Halcyon via an RCM connection.

What is GW_Halcyon?

The GenWatch3 GW_Halcyon module manages RCM and RPC connections. Managing these connections includes:

- Accepting connection requests from GW_RCM GUIs and RPC-capable consoles.
- Processing radio commands (such as Call Alert, Selective Inhibit, etc.) issued by GW_RCM and RPC clients.
- Relaying system events (such as Emergency Alarms, Statuses and Messages) to GW_RCM and RPC clients.
- Throttling redundant events received over the air down to a single event. Some systems send statuses, messages, emergency alarms and change me requests in bursts of four to ensure delivery through interference or corruption. GW_Halcyon ensures that only one occurrence of each event is delivered to a connected client (GenWatch3 user).

These are just a few of the functions of the GW_Halcyon module. Most of its functions are transparent to (not seen by) the GW_RCM or RPC clients (GenWatch3 users).

The GW_Halcyon GUI (Figure 1.1 above) allows you to configure RCM or RPC connections. These connections interact with the GW_Halcyon module to provide radio system interaction (sending commands and monitoring for events) to end users. Through this GUI you can:

- Configure an RCM connection.
- Configure an RPC connection.

ⓘ For GenWatch3 Commander Series installs, the RCM connection may come pre-installed. Please use this book's instructions to verify the settings for these pre-installed connections.

Options Button

GW_Halcyon has options that are common among all connections. Click on the **Options** button to view these options.
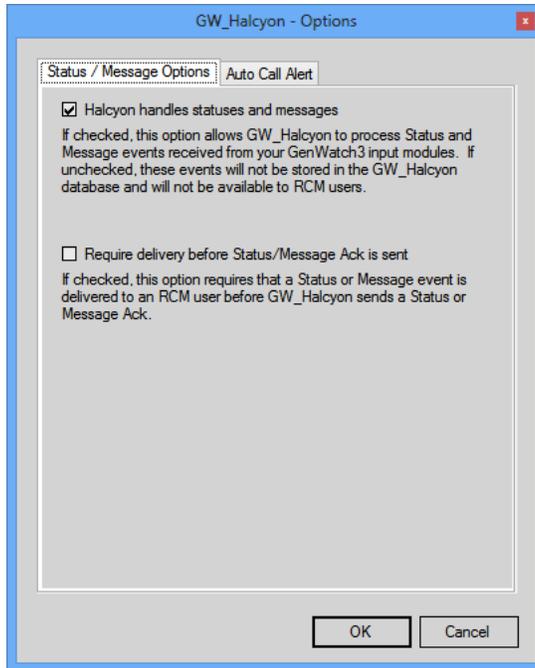
Figure 1.2 – Options Window – Status/Message Option Tab

The **Status / Message Options** tab contains the following options:

- **Halcyon handles statuses and messages:** If checked, this option allows GW_Halcyon to process status and message events received from your GenWatch3 input modules. If unchecked, these events will not be stored in the GW_Halcyon database and will not be available to RCM or RPC users.
- **Require Delivery before Status/Message Ack is sent:** If checked, GW_Halcyon will not acknowledge status and message events unless they are delivered to a RCM or RPC user.
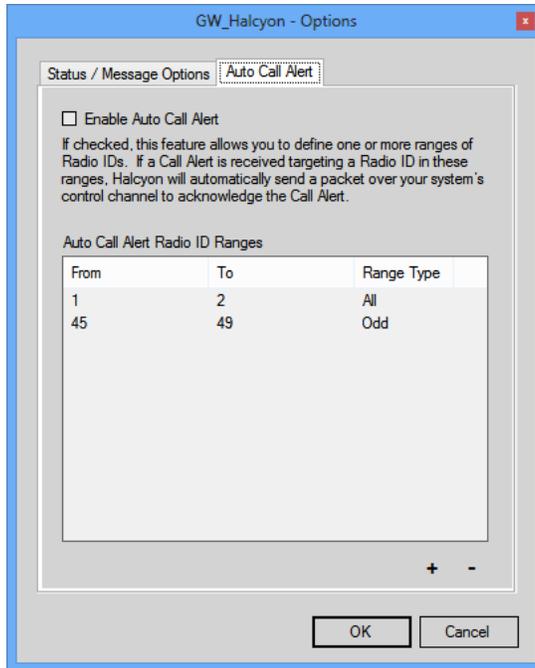
Figure 1.3 – Options Window – Auto Call Alert Tab

Auto Call Alert is a feature that allows you to define one or more ranges of radio IDs. If a call alert is received, targeting a radio ID in these ranges, GW_Halcyon will automatically send a packet over your system's control channel to acknowledge the call alert.

Additionally, a packet is sent out of the GenSPOut *SystemWatchII* custom output stream in the form of:
CA7xxxxx7yyyyy

where xxxxx is the originator and yyyyy is the target of the call alert.

The **Auto Call Alert** tab contains the following options:

- **Enable Auto Call Alert:** Enables the Auto Call Alert feature.
- **Auto Call Alert Radio Id Ranges:** Ranges of radio IDs that will result in an automatic call alert acknowledgement, if targeted by a call alert.
  - **Add:** Add an Auto Call Alert range. This button loads the *Add Radio Id Range* window, shown below.
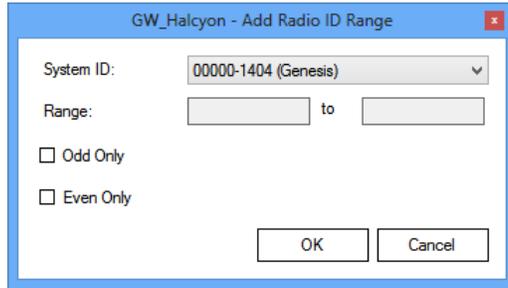

Figure 1.4 – Add Radio Id Range Window

  - **Remove:** Remove all selected ranges from the Auto Call Alert Radio Id Ranges list.
- **OK:** Close *Options* window and save changes.
- **Cancel:** Close *Options* window and cancel changes.

RCM Connection

If you are licensed for an RCM connection, you will need to configure it via the GW_Halcyon GUI. See the *GenWatch3 Core Manual* for more information on viewing your license.

To configure an RCM connection, take the following steps:
1. Load the GW_Halcyon GUI.
2. Click on the **Add** button (If you have no connections configured, the **Add** button will be flashing). This will bring up the *Connection Type* window shown below.

Figure 1.5 – Connection Type Window

3. Select *RCM* from the drop down list.
4. Click **OK.** This will close the *Connection Type* window and show the **RCM Connection Settings** panel as shown below.
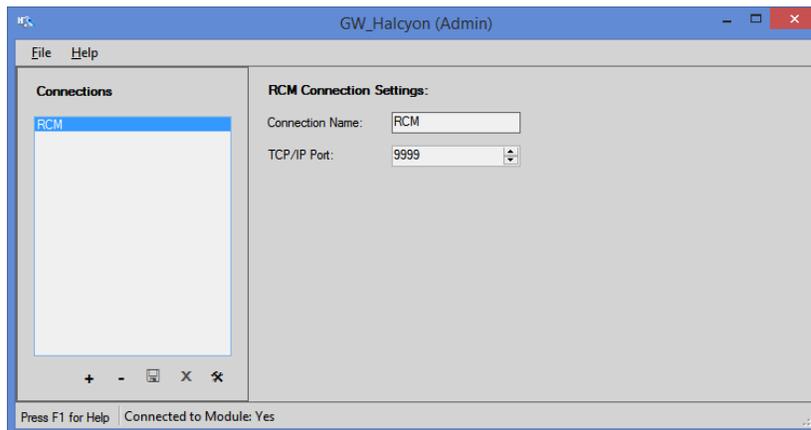

Figure 1.6 – RCM Connection Settings Panel

5. Enter a **Connection Name.** This is for reference only; it is not used by GenWatch3. This connection name is only displayed in the GW_Halcyon **Connections** list.

6. Enter a **TCP/IP Port.** In most cases the default port of 9999 will work. If this port interferes with another application on your GenWatch3 machine, you may need to change this port number.
7. Click the **Update** button. This will save your changes and inform the GW_Halcyon module of the new connection. If you wish to cancel adding this connection, click the **Cancel** button.

NOTE: You can only configure one RCM connection. All RCM clients are handled by a single RCM connection.

RPC Connection

If you are licensed for an RPC connection, you will need to configure it via the GW_Halcyon GUI. See the *GenWatch3 Core Manual* for more information on viewing your license.

RPC Overview

The GW_Halcyon RPC connection accepts and manages sessions with SiteLens CADI-compliant clients via remote procedure call (RPC). These clients are generally consoles and management applications.

RPC requires *port mapper* software to run on the GenWatch3 machine. This software coordinates communication between RPC clients and RPC-compliant programs.

Installing the Port Mapper Software

To install the port mapper software during the GenWatch3 installation, check the **Install NobleNet Port Mapper for TCP** option.

If you did not check the **Install NobleNet Port Mapper for TCP** option when installing GenWatch3, follow the steps below to manually install the port mapper:
1. Insert the GenWatch3 installation DVD.
2. Explore the GenWatch3 installation DVD (right-click on the DVD drive and choose *Explore*).
3. Copy the *NobleNet* folder under the *GenWatch3* folder to your GenWatch3 installation folder (by default *C:\Program Files\Genesis\GenWatch3*)
4. Browse to the *NobleNet* folder under the GenWatch3 installation folder (by default *C:\Program Files\Genesis\GenWatch3\NobleNet*).
5. Run the *portinst.exe* application.

Configuring an RPC Connection

To configure an RPC connection, take the following steps:
1. Load the GW_Security GUI.

2. Add a new user per the instructions in the *GenWatch3 Core Manual*. This new user must have the same user name and password as the CAD device that will be connecting to the RPC CADI port.
3. For this new user click **Add Groups…** to create a filter list of groups whose event information will be sent to the CAD device connecting with this user.

ⓘ**NOTE**: If the *View All Groups* privilege is checked for this user's role, then all groups' events will be sent to the CAD device regardless of the group filter.

4. For each group added also check/uncheck the event types to be handled by the RPC CADI connection.
5. When finished click **Update** to save the user.
6. Repeat steps 1-5 until all CAD users are set up.
7. Load the GW_Halcyon GUI.
8. Click on the **Add** button (If you have no connections configured, the **Add** button will be flashing). This will bring up the *Connection Type* window shown in Figure 1.5.
9. Select *RPC* from the drop down list.
10. Click **OK.** This will close the *Connection Type* window and show the RPC Connection Settings panel as shown in Figure 1.7.

RPC Connection Settings:

Connection Name: RPC

TCP/IP Port: 8700

RPC CAD Version: 2

Unit ID Format: Numeric

Talkgroup ID Format: Numeric

Default Site Information:
WACN 00000:System 1404:Zone 1:Site 1
Used as the target site for radio commands if the radio ID is not included in a Home RFSS Map and has no known affiliated RFSS.

Figure 1.7 – RPC Connection Settings Panel

11. Enter a **Connection Name**. This is for reference only; it is not used by GenWatch3. This connection name is only displayed in the GW_Halcyon **Connections** list.
12. Enter a **TCP/IP Port**. In most cases the default port of 8700 will work. This is the listening port for most CADI listening servers.
13. Select a value for **RPC CAD Version**. This is the latest version of RPC CAD supported by your CAD clients.
14. Select a value for **Unit ID Format** used by the CAD Client.
15. Select a value for **Talkgroup ID Format** used by the CAD Client.

16. Select a value for **Site Information**. This list contains each site (qualified by its RFSS and system) in the GW_Alias database. The selected site is used as the target site for any radio commands (such as selective inhibit) sent by RPC clients. But only if the radio's ID is not included in a Home RFSS Map and has no known affiliated RFSS.
17. Click the **Update** button. This will save your changes and inform the GW_Halcyon module of the new connection. If you wish to cancel adding this connection, click the **Cancel** button.

NOTE: You can only configure one RPC connection. All RPC clients are handled by a single RPC connection.

Other Connection Functions and Options

Updating an Existing Connection

When you create a connection, the properties of that connection are static (do not change). If for any reason you need to change the properties of a connection (RCM TCP/IP port needs to be changed, the connection name has a typo, etc.) take the following steps:

1. Select the connection that you wish to update from the **Connections** list. This will show the properties of this connection in the **Connection Settings** panel.
2. Change the settings that you wish to change.
3. Click the **Update** button. This will save your changes and inform the GW_Halcyon module of the changes. If you wish to cancel this update, click the **Cancel** button.

Deleting an Existing Connection

If you ever need to delete an existing connection, take the following steps:

1. Select the connection that you wish to delete from the **Connections** list. This will show the properties of this connection in the connection settings panel.
2. Click the **Delete** button. This will show the dialog shown below.
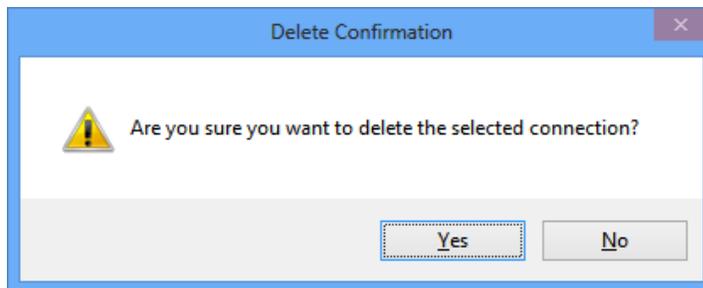

Figure 1.8 – Delete Confirmation Dialog

3. Click **Yes** to delete the connection. Click **No** to cancel the delete.

Notes on GW_Halcyon Connections

Commander Licensing

If you purchased the Commander Host bundle of GenWatch3, then you are licensed for up to:

- **25 RCM connections:** Up to 25 GW_RCM windows can connect to your GenWatch3 server machine.

In addition to creating the GW_Halcyon connections (described above), the following setup must be performed in order for GW_Halcyon to perform its various CAD and RCM based functions:

GW_Alias Setup

In the GW_Alias GUI, take the following actions:

- **Specify a Default Group for each radio ID:** *Default Group* has had many pseudonyms over the years, such as Home Talkgroup. This is the preferred group of the agency responsible for this radio ID.
- **Assign CAD Aliases (for CAD users only):** Supply CAD aliases to each radio ID and group. The GW_Alias GUI provides two aliases for radio IDs and groups, *Alias* and *CAD Alias*. The *CAD Alias* is important because it follows the restrictions of only 12 alpha-numeric characters. GenWatch3 only references a group or radio ID by *CAD Alias* in CAD connections within GW_Halcyon. If *CAD Alias* is the only alias you know for your radio IDs and groups, you may also want to assign the *CAD Alias* to the *Alias* property of each radio ID and group in *GW_Alias*. This way you will recognize your radio IDs and groups when they are shown in our other windows that show radio IDs and groups.
- **Specify the Agency for each radio ID and group within an agency:** This is the agency that the radio ID and group are assigned to.

 CAD Users: Make sure that the CAD Aliases you supply here are the same aliases that your CAD system uses for your radio IDs and groups. If they differ, your CAD terminal and GW_Halcyon cannot effectively communicate.

- **Assign Event Acknowledgement Responsibility:** Each group shown in GW_Alias provides the following acknowledgement options:
  - **Status/Message Acked By**: This setting indicates if GW_Halcyon should send acknowledgements to radios when it receives a status or message event from a radio ID that has this group assigned as its *Default Group.* These options include:
    - **Console:** GW_Halcyon *is not* responsible for sending status or message acknowledgements for this group.
    - **RCM/CADI:** GW_Halcyon *is* responsible for sending status or message acknowledgements for this group. These are only sent if the status or message event is successfully archived to the GW_Halcyon database.

- o **Emergencies Acked By:** This setting indicates if GW_Halcyon should send acknowledgements to radios when it receives an emergency alarm from a radio that is **currently affiliated** to this group. These options include:
  - ▪ **Console:** GW_Halcyon is not responsible for sending emergency alarm acknowledgements.
  - ▪ **RCM:** GW_Halcyon will send an emergency alarm acknowledgement if the emergency alarm is delivered to a GW_RCM user and archived to the GW_Halcyon database. (event delivery is described in the Event Delivery and Acknowledgement section below)
  - ▪ **CADI:** GW_Halcyon will send an emergency alarm acknowledgement if the emergency alarm is delivered to a CAD user and archived to the GW_Halcyon database (event delivery is described in the Event Delivery and Acknowledgement section below).
- o **Channels:** Set a distinct *Channel Position* for each Channel under each site. This value indicates the channel's position in your channel rack. Also mark each Failsoft channel by checking the *Failsoft* option. This value is used by CAD and GW_RCM users to issue Failsoft assignments to radios.

GW_Connect Setup

To utilize RPC/CAD GW_Halcyon connections you should setup a CADI connection in the GW_Connect module. Steps can be found in the *GW_Connect module book* under the chapter for *CADI Connections*.

GW_Location Setup

To utilize location based commands create an ASTRO® 25 Outdoor Locator connection. For detailed steps on creating a GW_Location connection reference the *GW_Location module book*.

GW_Security Setup

RPC connections and the GW_RCM tool rely on a GenWatch3 user and that user's role to determine:

- **Radio Event Delivery:** This includes status, message, emergency alarm (EA), change me (reprogram requests) and PTTs. GW_Halcyon validates the event's group or radio ID (by way of the radio ID's Default Group) before sending the event to an RPC connection or a connected GW_RCM tool. (see *Event Delivery Validation* section below for more information). RPC connections also use Group Rights (selected in the Group Filter section of GW_Security) to determine if an event should be delivered to an RPC connection.
- **Valid Radio Command Request Types:** These are requested from RPC connections or GW_RCM tools for GW_Halcyon to issue a radio command such as selective inhibit. GW_Halcyon validates command request types selected under the GW_Halcyon section of the user's role before sending the command.

In the GW_Security GUI, take the following actions:

- **Select Role Privileges:** In all GW_RCM roles, ensure that the appropriate privileges are selected under the GW_Halcyon section. Reference the *GenWatch3 Core Manual*, Chapter 8 for descriptions of the GW_Halcyon role privileges.
- **Establish User Group Filters:** For all GW_RCM users, ensure that all valid groups are selected in the **Group Filter** section or the appropriate agencies are selected in the **Agency Filter** section. If you want your users to have access to all groups, select the *ViewAllGroups* privilege on the user's role. This privilege overrides the *Group Filter* selection made at the user level and allows all users with this role access to all groups and all radio IDs.

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This section describes some of the decisions that GW_Halcyon has to make when delivering and acknowledging radio events and processing radio command requests.

Event Delivery and Acknowledgement

This section describes the validation path(s) that GW_Halcyon uses when determining if it should send an event to a particular RCM or RPC user and if it should acknowledge a radio event.

Event Delivery Validation

The following validation methods are used to determine if a particular RPC connection or connected GW_RCM tool should receive an event:

- **Statuses, Messages and Emergency Alarms:** The following must be true in order for a user to receive a status, message or emergency alarm event:
    - The user's **Group Filter** or **Agency Filter** (in GW_Security) must contain the group or the agency of the group the radio ID was **affiliated to** at the time of the event. Additionally for RPC, the corresponding **Group Filter** option must be checked (*Status*, *Message* or *Emergency Alarm*); RPC connections do not currently use agency filtering, RPC connections must use group filtering to be validated. Or the user's role must contain the *ViewAllGroups* privilege under the GW_Halcyon section. This privilege bypasses **Group Filter** validation.
    - The user's role must include the *Status Message* privilege to receive statuses or messages.

- **Radio Ack, Call Alert and ChangeMes (reprogram request):** The following must be true for a user to receive a radio ack or Change Me event:
    - o The user's **Group Filter** or **Agency Filter** (in GW_Security) must contain the agency associated with the **Default Group** or the **Default Group** assigned to the radio ID that issued the radio ack, call alert or change me. For RPC the corresponding **Group Filter** option must be checked (*Radio Ack, Call Alert* or *ChangeMe*), currently RPC connections do not validate on agency filtering. For RPC it is advisable to only user group filtering. If the user's role contains the *ViewAllGroups* privilege under the GW_Halcyon section all filtering is ignored and all activity will be validated.
    - o The user's role must include the *ChangeMe* privilege to receive ChangeMe events. This privilege bypasses **Group Filter** validation.
- **Affiliations and PTTs:** One of the following must be true for a user to receive an affiliation or PTT event:
    - o The user's **Group Filter** (in GW_Security) must contain either the **Default Group** assigned to the radio ID that issued the affiliation or PTT or the group the radio was affiliated to at the time of the event. Additionally for RPC, the corresponding **Group Filter** option must be checked (*Affiliation* or *PTT Display*). Or the user's role contains the *ViewAllGroups* privilege under the GW_Halcyon section.
    - o The user's **Agency Filter** has the agency/agencies assigned to the **Default Group** of the radio ID that issues the affiliation or PTT or the agency assigned to the group the radio was affiliated to at the time of the event. RPC connections currently do not validate based on Agency Filter and will not pass validation, it is not advised to use agency based filtering for RPC connections at this time.
    - o A combination of the two above mentioned filters may also result in validation of affiliations and PTTs so long as the radio ID's default group or the group the radio is affiliated to at the time are present in the user's **Agency Filter** or **Group Filter**. RPC connections currently do not validate based on agency filters, it is advised to only use group filtering on RPC connections.
    - o The user's role has the *ViewAllGroups* privilege checked under halcyon.

Event Acknowledgement Validation

The following validation methods are used to determine if GW_Halcyon should acknowledge a non-PTT event:
- **Statuses and Messages:** The *Halcyon Handles Statuses and Messages* option (described in Chapter 1) on the GW_Halcyon GUI must be checked. For these events, GW_Halcyon considers the **Status/Message**

Acked By option of the **Default Group** of the radio ID that issued the event: If this option is:
- o **Console:** GW_Halcyon will not issue an acknowledgement.
- o **RCM/CADI:** GW_Halcyon will acknowledge the event if the event is archived to the GW_Halcyon database.

- **Emergency Alarms:** For these events, GW_Halcyon considers the **Emergencies Acked By** option of the group the radio ID is **affiliated to** at the time of the event. If this options is:
  - o **Console:** GW_Halcyon will not send the acknowledgement.
  - o **RCM:** GW_Halcyon will send the acknowledgement if the event is delivered to a connected GW_RCM user and the event is archived to the GW_Halcyon database.
  - o **CADI:** GW_Halcyon will send the acknowledgement if the event is delivered to a connected CAD or RPC user and the event is archived to the GW_Halcyon database.

- **ChangeMes (reprogram requests):** GW_Halcyon sends a ChangeMe acknowledgement if the event is archived to the GW_Halcyon database and the event is delivered to a connected RPC or GW_RCM user.

Radio Command Validation

When GW_Halcyon validates a radio command (such as selective inhibit), it validates the command on two levels:

- **Command Type Validation:** Compares the command type to the command types defined as a privilege on a user's role. This is defined in the GW_Security GUI.
- **Group Filter Validation:** The validation of radio commands depends on the user's filters in GW_Security. A radio ID's default group is assigned in GW_Alias. The following are valid configurations for processing radio commands:
  1. **Group Filter**: The group of the radio command (if any) and the default group of the radio ID must be in the user's group filter.
  2. **Agency Filter**: The agency or agencies assigned to the command's group (if any) and the radio ID's default group must be present in the user's **Agency Filter**.
  3. **Group and Agency filtering**: A combination of the two above mentioned filters may also result in validation of radio commands so long as the command's group and the radio ID's default group are present in the user's **Agency Filter** or **Group Filter**.
  4. *ViewAllGroups*: In the Security module, if the user's role has the *ViewAllGroups* privilege under Halcyon all group filters are ignored and all radio commands will be processed.

Command Type Validation

RPC connections and GW_RCM tools can only issue radio command types that are included as privileges in their user's role under the GW_Halcyon section of **Role Privileges** in GW_Security. Each radio command is listed below with its required privilege(s):

Radio Command	Required Privilege(s) in the GW_Halcyon Section of GW_Security
Call Alert	Call Alert
Database Snapshot	Database Snapshot
Regroup Cancel Regroup	Dynamic Regrouping
Failsoft Assign Cancel Failsoft Assign	Dynamic Regrouping Failsoft Assignment
Selector Lock Cancel Selector Lock	Selector Lock or Unlock
Radio Check	Radio Check
Selective Inhibit Cancel Selective Inhibit	Selective Inhibit
Storm Plans	*Storm Plans

* The user must also be included as a user in each Storm Plan you wish them to have access to. Storm Plan Users are assigned in the Storm Plans section of GW_Alias.

Group Filter Validation

In addition to radio command specific role privileges, the user must have an **Agency Filter** where the agency is assigned to the group needed or **Group Filter** (in GW_Security) access to each radio ID and group in the command, or the user's role must have the *ViewAllGroups* privilege under the GW_Halcyon section of **Role Privileges** (set up in GW_Security at the Role level).

Validation Examples

To issue a Regroup command for radio ID 32226 on group 8093, your user's **Group Filter** must include the **Default Group** of radio ID 32226 and group 8093.

To issue a Radio Check command on radio ID 32226, your user's **Group Filter** must include the **Default Group** of radio ID 32226. Because no group is included in this radio command, only the **Default Group** of the radio ID is validated in the group filter validation.

In either of these above examples, if your user's role includes the *ViewAllGroups* privilege under the GW_Halcyon section of the **Role Privileges** section in GW_Security, your **Group Filter** list is not considered and the command will pass **Group Filter** validation.

In the above examples and alternative filtering option would be to include **Agency Filter**s that include agencies associated with the required groups above. This will cause the validation to check if the agencies in the user's filter are assigned to the groups needed to validate the activity.

Validation Rejection

Rejection occurs when a command is requested of GW_Halcyon and the user issuing the command fails command type or group filter validation.

For GW_RCM users, radio command rejection is a bit more subtle. GW_RCM users cannot access commands, radio IDs and groups that do not pass command type and group filter validation. Because all of these things are selected in GW_RCM (as opposed to typed), the user's invalid commands are proactively rejected.