



**GenWatch3®**  
**GW\_Halcyon**  
**Software Version 2.17.4**  
**Module Book**

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# **GenWatch<sub>3</sub>**



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Refer to the *Troubleshooting & Support* section of the GenWatch3 Manual Shell (Book 600-2.17.4-AA.1) for complete support and contact information.

## Document History

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2.14	Revisions Before Release	JAW
2.15	Revisions Before Release	REB
2.16	Revisions Before Release	JPS

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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.

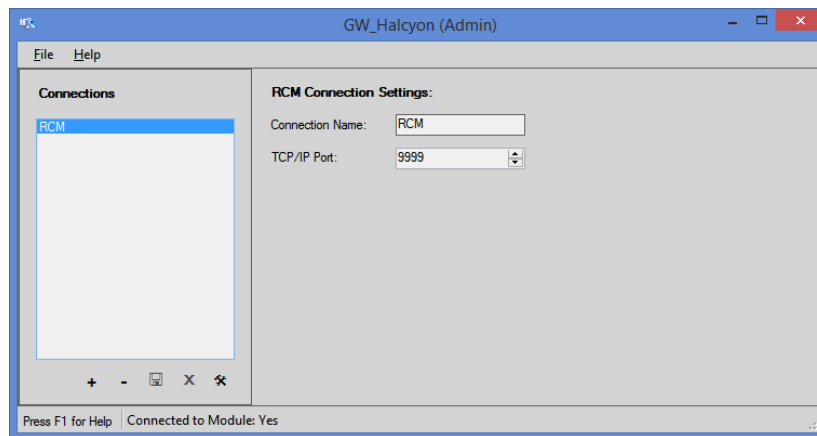




This chapter defines the GW\_Halcyon module and the GW\_Halcyon GUI and gives instructions on configuring RCM and RPC connections.

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:

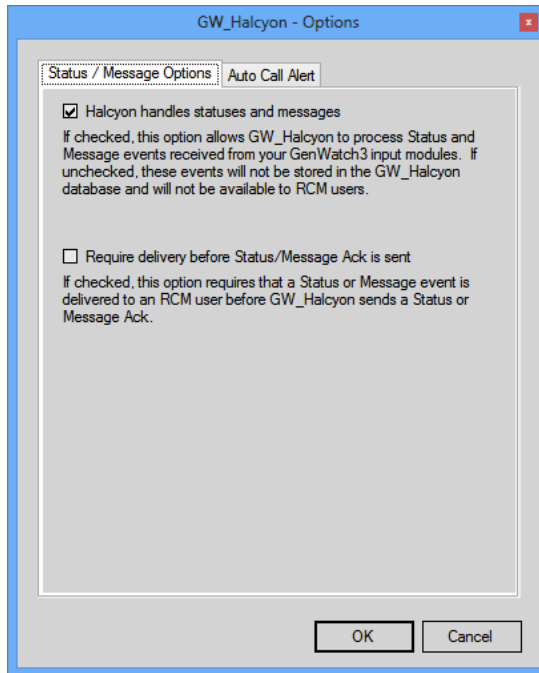
- Accepting connection requests from GW\_RCM GUIs and RPC-capable consoles.
- Processing radio commands (such as call alert, selective inhibit, etc.) issued by GW\_RCM and RPC clients.
- Relaying system events (such as emergency alarms, statuses and messages) to GW\_RCM and RPC clients.
- Throttling 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) 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.

## Options Button

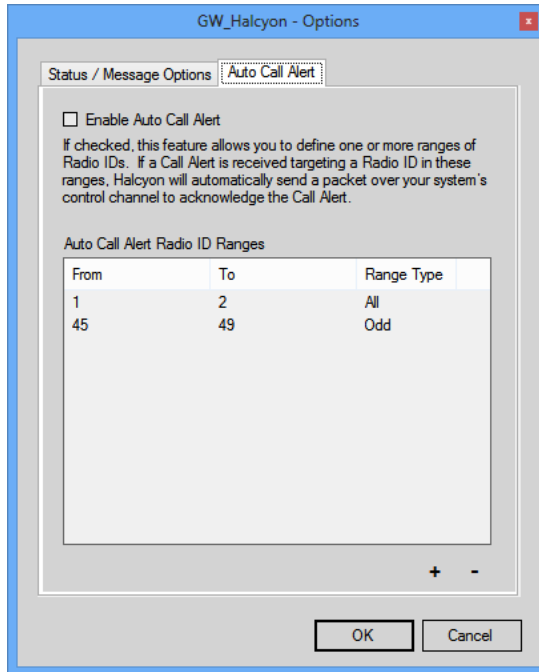
GW\_Halcyon has options that are common among all connections. Click on the **Options** button to view these options.



**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 an 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.

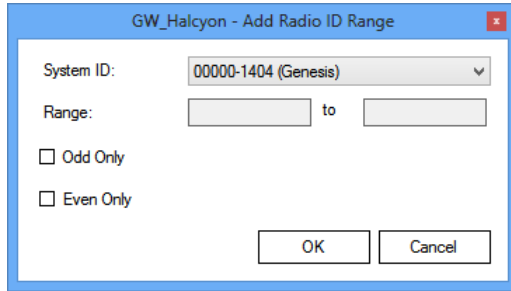
Additionally, a packet is sent out of the GenSPOut *SystemWatchII* custom output stream in the form of:

**CA7xxxxx7yyyyy**

where xxxxx is the originator and yyyy 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

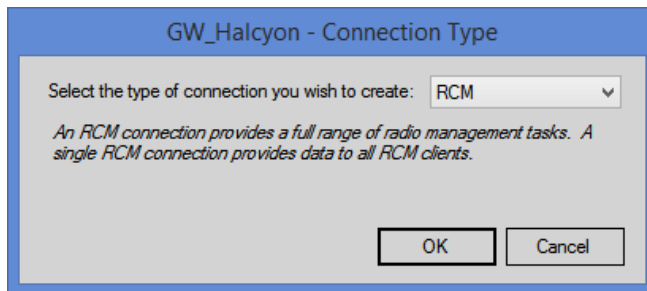
- **Remove:** Remove all selected ranges from the *Auto Call Alert Radio ID Ranges* list.
- **OK:** Close the *Options* window and save changes.
- **Cancel:** Close the *Options* window and cancel changes.

## 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.

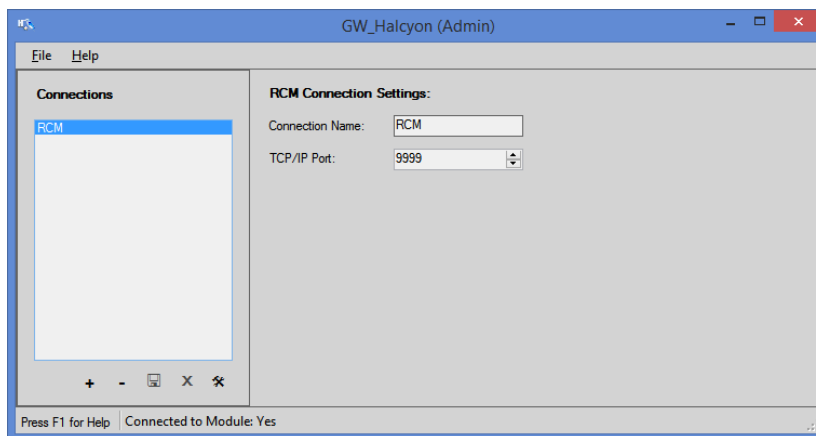
To configure an RCM connection, take the following steps:

1. Load the GW\_Halcyon GUI.
2. Click 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 (Figure 1.6).



**Figure 1.6** – RCM Connection Settings Panel

5. Enter a **Connection Name**. This is used only for identifying the connection 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 configure only 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. Browse to the GenWatch3 installation media.
2. Copy the *NobleNet* folder under the installation media's *Redist* folder to your GenWatch3 installation folder (by default, *C:\Program Files\Genesis\GenWatch3*)
3. Browse to the *NobleNet* folder under the GenWatch3 installation folder (by default *C:\Program Files\Genesis\GenWatch3\NobleNet*).
4. 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 username and password as the CAD device that will be connecting to the RPC CADI port.
  - a. For RPC CAD Version 1 connections, the username can be no longer than 9 characters.
  - b. For RPC CAD Version 2 and 3 connections, the username can be no longer than 49 characters.
  - c. For all three versions, the user's password can be no longer than 31 characters.
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 *ViewAllGroups* 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 the **Add** button. (If you have no connections configured, the **Add** button will be flashing.) This will bring up the *Connection Type* window (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 (Figure 1.7).

**RPC Connection Settings:**

Connection Name:

TCP/IP Port:

RPC CAD Version:

Unit ID Format:

Talkgroup ID Format:

Default Site Information:

Raw Data Archive Option:

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.

The above option allows you to choose how long you wish to keep raw data files.

**Figure 1.7** – RPC Connection Settings Panel

11. Enter a **Connection Name**. This is used only for identifying the connection 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 target radio's ID is not included in a Home RFSS Map and has no known affiliated RFSS.
17. Select a value for **Raw Data Archive Option**. This determines whether the connection will archive raw data sent to and received from clients and for how long it will retain that archived data.
18. 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 configure only one RPC connection. All RPC clients are handled by a single RPC connection.

## Other Connection Functions and Options

### Updating an Existing Connection

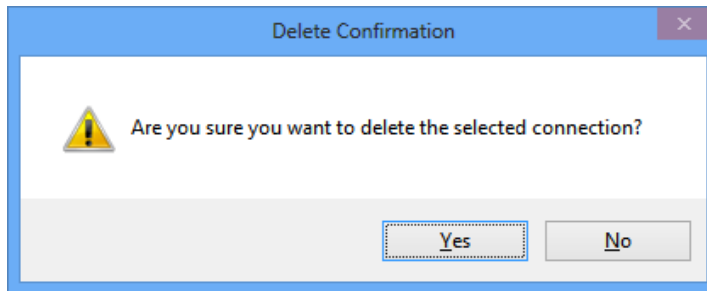
If for any reason you need to change the properties of a connection (RCM TCP/IP port needs to be changed, the connection name has a typo, etc.) after it has been created, take the following steps:

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 a confirmation dialog (Figure 1.8).



**Figure 1.8** – Delete Confirmation Dialog

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



In addition to creating the GW\_Halcyon connections (described in the previous chapter), the following setup must be performed 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 synonyms 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 alphanumeric 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.



**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.

- **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.
- **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 sent only if the status or message event is successfully archived to the GW\_Halcyon database.
  - **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).
- **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 set up a CADI connection in the GW\_Connect module. Steps can be found in the *GW\_Connect Module Book* under the chapter for *CADI Connections*.

To utilize IMW-based location commands, create an IMW connection in the GW\_Connect module. Steps can be found in the *GW\_Connect Module Book* under the chapter for *IMW Connections*.

## **GW\_Location Setup**

To utilize UNS 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 the following:

- **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 *Privileges* section of the *GW\_Security Module GUI* chapter in the *GenWatch3 Core Manual* 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.





This section describes some of the decisions that GW\_Halcyon must 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 specific 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 specific RPC connected client or connected GW\_RCM tool should receive an event:

- **Statuses, Messages and Emergency Alarms:** The following must be true 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; they 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:
  - 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.
  - 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:
  - 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 must contain the *ViewAllGroups* privilege under the *GW\_Halcyon* section.
  - 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.
  - 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.
  - The user's role has the *ViewAllGroups* privilege checked under *GW\_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 earlier in this document) 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:
  - **Console:** GW\_Halcyon will not issue an acknowledgement.
  - **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 option is:
  - **Console:** GW\_Halcyon will not send the acknowledgement.
  - **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.
  - **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 **Group Filter** (in GW\_Security) access to each radio ID and group in the command, the appropriate **Agency Filter** 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 Filters** 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 these things are selected in GW\_RCM (as opposed to typed), the user's invalid commands are proactively rejected.