TRBOnet Swift CPS

User Guide

Version 2.1

Last revised on 14 October 2024

Contents

1   Introduction

1.1   About This Guide

This document is intended for engineers responsible for building MOTOTRBO radio networks and programming two-way radios for end users.

1.2   About TRBOnet Swift

TRBOnet Swift is a family of hardware products by Neocom Software, Ltd designed for use in MOTOTRBO radio networks. The TRBOnet Swift family hardware is presented by RoIP gateways A100 and A200, option board ST002.

1.3   Contacts

Region	Phone	Email & Support
EMEA	+44 203 608 0598	info@trbonet.com — general and commercial inquiries
Americas	+1 872 222 8726	support@trbonet.com — technical support
APAC	+61 28 607 8325	https://trbonet.com/kb/ — online knowledge base

2 Overview

2.1 About TRBOnet Swift CPS

TRBOnet Swift CPS is a configuration editor designed for programming MOTOTRBO GOB option boards and the TRBOnet Swift family electronic devices with Swift Event Logic on board.

TRBOnet Swift CPS can work with configuration files and with configurations loaded from devices. In addition, it can update the device firmware, read device memory, and program devices with an extended configuration provided by Neocom Software, Ltd by customer request.

The intuitive user interface serves to facilitate every step of device programming.

- Automatic detection of a connected device

  TRBOnet Swift CPS can connect devices using the USB, LAN, or OTAP interface. Devices connected to USB are detected automatically. The number of connected devices is only limited by the number of USB ports available on the computer.

- Device-specific settings only

  TRBOnet Swift CPS displays the configuration settings specific to a given type of device. Where possible, the recommended settings are set by default.

- Event Logic defined by rules

  Rule Editor facilitates the process of building Event Logic rules from configurable components. This tool allows the user to create new rules from copies with minimum effort.

- Sample configuration files

  TRBOnet Swift CPS comes with a set of sample configuration files for all supported devices. Sample configurations include the default device-specific settings and demonstrate the use of rules for setting up various Event Logic features. Sample files can serve as a starting point for creating device configurations when other configuration sources are not available.

2.2 About Swift Event Logic

TRBOnet Swift Event Logic is a unified programmable environment supported by TRBOnet Swift DT500, TRBOnet Swift ST002, and MOTOTRBO GOB. The basic configurable components of Swift Event Logic include events, conditions, and actions.

Swift Event Logic extends the capabilities of a standard radio network by implementing special features such as Lone Worker, Man Down, No Movement, Crash Detect, Speed Limit, Telemetry, GeoRoaming, and GeoFencing.

2.3 Software Requirements

Category	Requirements
CPU	Intel Core i5
Memory	4 GB
Display	1600x900 minimum resolution, 1920x1080 and higher resolution is recommended
Additional Devices	Speakers
Supported OS	Windows 10 (x64)/11
Software	.NET Framework 4.8

2.4 Licensed Features

TRBOnet Swift Event Logic features are available on terms of commercial licensing. The following table describes the licenses that you need to purchase and activate on your device to use particular features.

Note: If a configuration uses commercial features, they do not work until the required license is purchased and activated on that device.

License	Description	Related features
Location Tracking	This license enables getting GNSS and iBeacon data from the radio.	Sending GNSS reports to TRBOnet Server, Speed Limit, GeoRoaming, Geofencing, etc.
Personal Safety	This license enables getting data from the G-meter.	Man Down, No Movement, Crash Detect, etc.
Voice Recording	This license enables downloading voice call records and playing them back.	Voice Recording

The Lone Worker feature is enabled on a device when any of the above licenses is activated.

3   Installation and Upgrade

The following table describes how to install, uninstall, upgrade, and load new firmware to your TRBOnet Swift CPS software.

Notes: The distribution package for TRBOnet Swift CPS is available for download at www.trbonet.com. From the main page, go to **Downloads** and click **Firmware**. Click to download the latest version of Swift Utilities Pack.

Before installing TRBOnet Swift CPS make sure that your computer meets the minimum software requirements. For more information, refer to section 2.3, Software Requirements (page 4).

To install TRBOnet Swift CPS:

- Double-click the TRBOnet Swift distribution file to run the TRBOnet Swift CPS setup wizard. Click **Next**.
- Accept the terms of the license agreement. Click **Next**.
- Click **Install**, then click **Finish** to exit the setup wizard.

To uninstall TRBOnet Swift CPS from your computer:

- Double-click the TRBOnet Swift distribution file to run the TRBOnet Swift CPS setup wizard. Click **Next**.
- Select the **Remove** option.
- Click **Remove**, then click **Finish** to exit the setup wizard.

To upgrade TRBOnet Swift CPS to a newer version:

- Install the new version on your computer as described above. Uninstalling the previous version of the product is not required.

To load new firmware to TRBOnet Swift CPS:

Note: The firmware for all supported devices is integrated in TRBOnet Swift CPS. When new firmware is issued, you can load it to TRBOnet Swift CPS without upgrading the software to the next version.

- To load firmware to TRBOnet Swift CPS, open the SWU file. The firmware is unpacked and installed automatically.

4   Device Programming

This section describes how to connect your hardware to a computer for programming, how to update firmware, and how to create or update a configuration on a connected device.

4.1   Swift CPS Options

- On the toolbar, click **Tools > Options**.
- In the left pane, select **Options > General**.
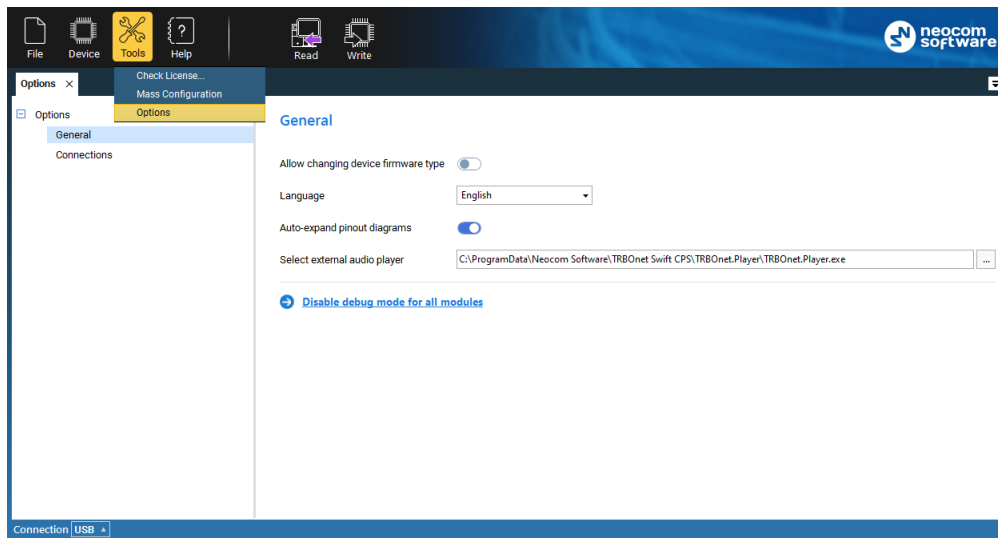
In the right pane, specify the following Swift CPS-related options:

- **Allow changing device firmware type**
  Setting this option to ON will allow you to select the device mode when updating firmware on the device (see section 4.3,Firmware Update, step 5).

- **Language**
  From the list, select the interface language.

- **Auto-expand pinout diagrams**
  If you set this option to ON, useful pinout diagrams will be expanded at the bottom of the right pane when configuring device's Audio Settings and I/O Settings.

- **Select external audio player**
  This is the full path to the TRBOnet audio player. If required, click the ellipsis button (**...**) and specify a different path for the audio player.

- **Disable debug mode for all modules**
  Click this link to disable the Debug mode in all available modules.

4.2   Device Connection

TRBOnet Swift CPS can communicate with supported hardware over USB, LAN, or OTA (Over the Air). To use a particular interface, launch TRBOnet Swift CPS, expand the **Connection** menu and choose the required option.
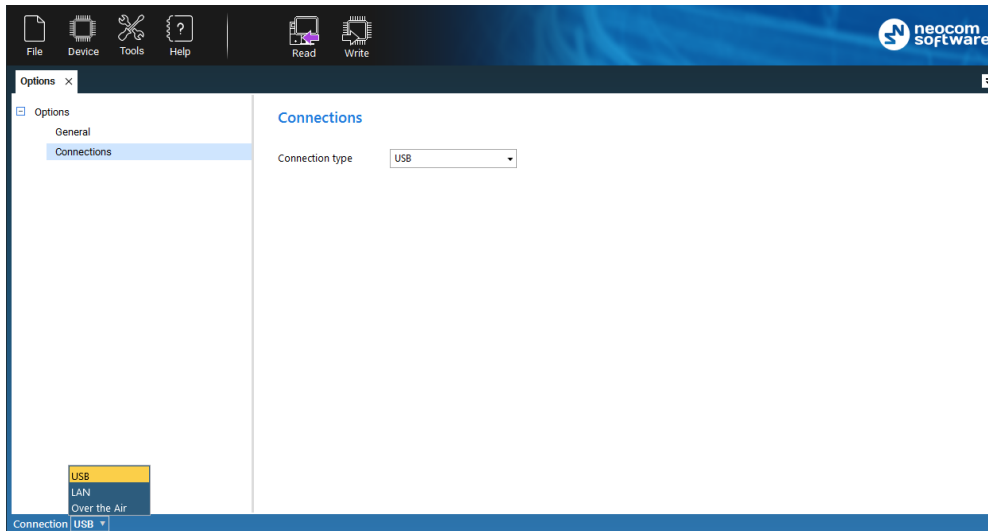
The selected connection appears on the status bar, for example, "Connection: USB".

USB connection

A USB connection is recommended for programming any supported hardware. This connection does not require any settings. Just connect the programming cable to the device and to a USB port of your computer, then launch TRBOnet Swift CPS and work with the device. Use the programming cable supplied with your device or recommended for use by the manufacturer of the device.

LAN connection

A LAN connection can be used for programming any hardware that can be connected to an IP network. Your device must be powered and connected to the same LAN where TRBOnet Swift CPS is installed. A brand new device has the following default IP settings:

- IP address: 192.168.0.[xxx]
- Subnet mask: 255.255.255.0
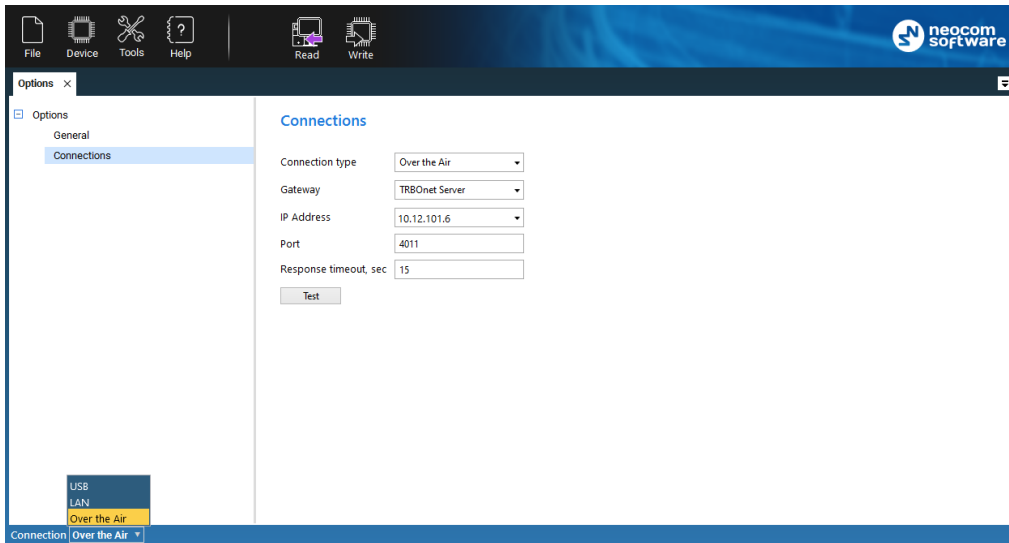- Default gateway: 192.168.0.1

You may need to adjust the IP settings of your computer accordingly.

Over the Air connection

An OTA connection is used for over-the-air programming of endpoint devices such as DT500 connected to a MOTOTRBO radio or an option board ST002 installed into a MOTOTRBO radio.

- On the **Connection** menu, select **Over the Air**, and go to **Tools> Options > Connections**.

- Specify the following OTA connection settings:

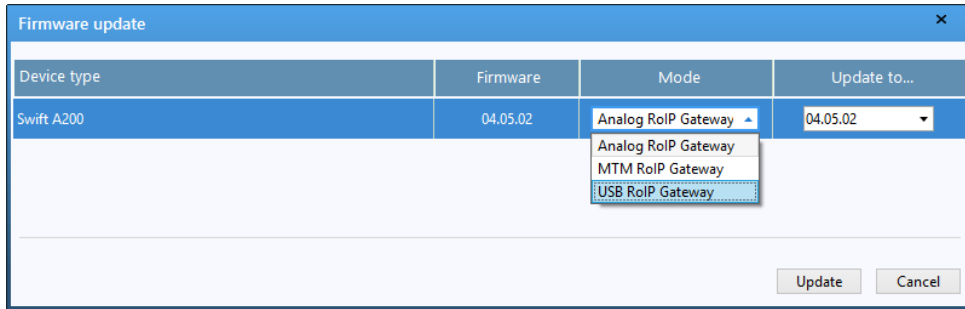| Setting	Description

Gateway	The gateway that can establish an IP connection with TRBOnet Swift CPS and that can communicate with the device over the air. Values:
	
	    • **TRBOnet Server**
	    • **Swift IP Gate A100/A200**

IP address	The IP address of the gateway selected above.
Port	The Forward Data service port of the TRBOnet Server (if selected above). Default: 4011 To get the port number, launch the TRBOnet Enterprise (PLUS) Server application and select **Radio Systems > Services** in the left pane. Find the port number under the **Forward Data service** option. Note: Make sure that the **Forward Data service** option is selected.
Response timeout	The time period, in seconds, to wait for a response from the server side (TRBOnet Server, Swift IP Gate).

4.3 Firmware Update

Before you proceed to device programming, we recommend that you update the device firmware to the latest version using TRBOnet Swift CPS.

If your device is already configured, the configuration will be cleared from the device memory after you update the firmware. To preserve the current configuration, save it to a file and reload it to the device after the firmware update.

To update the firmware version:

1. Launch TRBOnet Swift CPS on your computer.

2. Connect your device to the computer and point the connection type in the TRBOnet Swift CPS settings. For details, refer to section 4.2, Device Connection (page 6).

3. On the **Device** menu, click **Read**, or click the **Read** button on the toolbar.

4. In the **Device Information** pane, click **Update Firmware**.

5. In the **Firmware update** window, select your device connected through USB.

Firmware update			✕
Device type	Firmware	Mode	Update to...
Swift A200	04.05.02	Analog RoIP Gateway ▲	04.05.02 ▼
		Analog RoIP Gateway	
		MTM RoIP Gateway	
		USB RoIP Gateway	

Update   Cancel

> **Note:** If TRBOnet Swift CPS cannot detect a USB device, the cause may be the hardware driver not found on your computer. For details, refer to the user manual provided for your device.

6. Open the **Mode** menu and click the preferred mode.

> **Note:** If the **Mode** menu is read-only, close the **Firmware update** window. Then open the **Tools** menu and click **Options**. Make sure that the **Allow changing device firmware type** option is set to ON.

7. In the **Firmware update** window, open the **Update to** menu and click the firmware version to which the device will be updated. You can select the latest version or roll back to an earlier version if required.

8. Click **Update** to start the firmware update. The progress bar shows the progress of the operation.

4.4 Device Configuration

This section describes how to how to work with configuration files as well as perform read and write operations on a device.

4.4.1 Opening a Configuration File

In TRBOnet Swift CPS, you cannot create a configuration file from scratch. Instead, you need to open an existing configuration file, make the required changes, and save the result to a file or load it to a connected device.

You can open a configuration from a file, for instance, from a sample file installed with TRBOnet Swift CPS. Or, you can read a configuration file from a connected device.

To read a configuration from the device:

- Connect a configured device to a computer. Select the connection type.
- On the **Device** menu, click **Read**, or click the **Read** button on the toolbar.
- (Optional) Specify the connection settings and click **Read**.
- (Optional) If more than one connected device is detected, click the required device in the dialog box. Then click **OK**.

To open an existing configuration file:

- On the **File** menu, click **Open**. Navigate to the required folder and select the configuration file. Then click **Open**.
- Double-click the SWR file in the folder.
- Drag the SWR file and drop it within the TRBOnet Swift CPS window.

To open a sample configuration file:

- On the **File** menu, click **Open Sample**.
- In the folder, click the sample file intended for your type of device. Click **Open**.

TRBOnet Swift CPS displays each opened configuration on a separate page. The label of the page displays the name of the opened file or the device and the used connection.

If you open multiple configurations, they appear each on a separate page. You can work with them in parallel.

4.4.2 Updating a Configuration File

An opened configuration appears on a separate page in the main window of TRBOnet Swift CPS. The left panel of the page displays the logical sections of the configuration. If you click a particular section, the right panel shows the related configuration settings.

The **Device** section includes the general information such as the type of device (model), the firmware version, the last date when the configuration was updated on the device, and the statuses of all features that require a license. To learn how to apply a license, refer to section
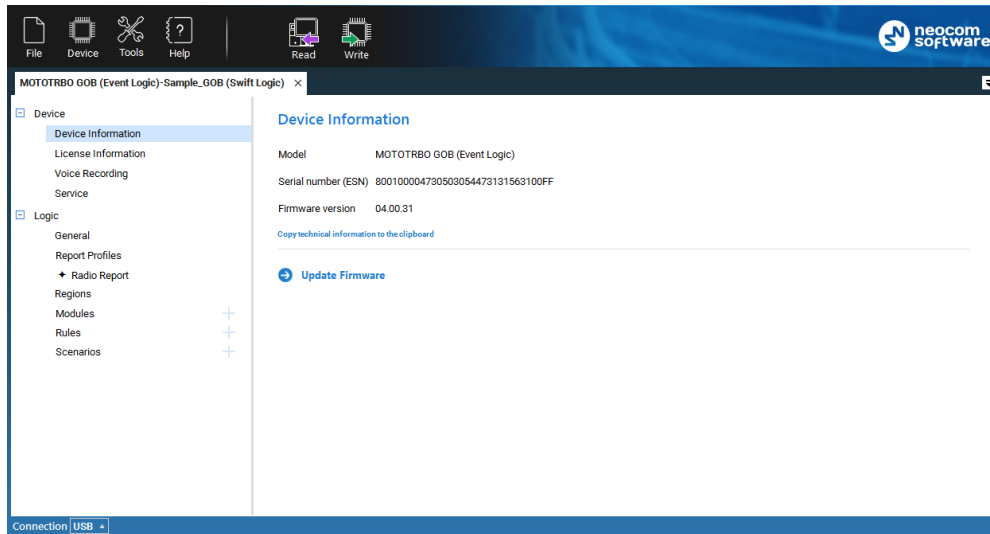
> Note: When you open a configuration file, the device information and the license information apply to the device whose configuration has been saved to the file.

If a device has external interfaces (RS-232, GPS, GPRS, other), the **Device** section includes additional sub-sections to configure communication through each external interface.

The **Logic** section includes the Swift Event Logic configuration settings such as report profiles, regions, modules, rules, and others. If a device does not support Swift Event Logic, the **Logic** section is hidden. To learn how to configure Swift Event Logic settings, refer to section 4.5, Swift Event Logic (page 12).

4.4.3   Saving a Configuration File

You can save an opened configuration to a file or load it to the memory of a connected device. If you just close the configuration page or the application window, you cancel all the changes without a prompt.

To write a configuration to a connected device:

- On the **Device** menu, click **Write**, or click the **Write** button on the toolbar.
- (Optional) Specify the connection settings and click **Write**.
- (Optional) If multiple connected devices are detected, point the required device in the dialog box. Click **OK**.
- (Optional) If you write the configuration initially created for a different type of device, confirm the operation.

> Note: A configuration written to a different type of device includes all definitions from the **Logic** section of the left panel. Connection settings in the **Device** section are not written to a different type of device.

To save a configuration to a file:

- On the **File** menu, click **Save As**.

- Go to the required folder. Click an existing SWR file to be updated, or type the name of a new configuration file that will be created. Click **Save**.

4.5 Swift Event Logic

This section describes how to configure the Swift Event Logic settings on a device.

4.5.1 Operations with Logic

You can import and export the **Logic** section of a configuration using commands on the **Logic > General** page.
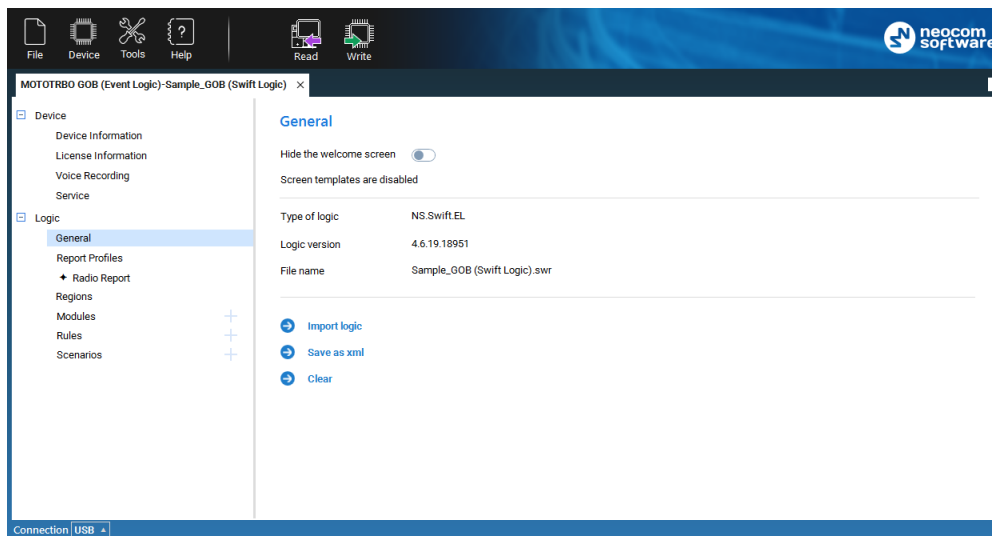
Use these commands only when requested by the support team of the product vendor. In all other cases, manage the device configuration as described in section 4.4, Device Configuration (page 9).

To save logic to XML file:

- On the **Logic > General** page, click **Save as xml** in the right panel.
- Go to the destination folder and save the file with the preferred name.

To import logic from XML or SWR file:

- On the **Logic > General** page, click **Clear** in the right panel. The **Logic** section now displays **Logic information** only.
- Click **Import logic**.
- In the system dialog box, select the type of file with the external logic – XML or SWR. Select the file and click **Open**.

  The logic imported from SWR is displayed in the **Logic** section. The logic imported from XML is not displayed, the **Logic** section only includes **Logic information**.

  The **Logic information** section shows the name of the source file.

4.5.2   Report Profiles

If configured accordingly, a device can collect incoming information in the memory, create data sequences (reports), and send them to TRBOnet Server over a radio channel or via a Wi-Fi connection. Reports typically include the current location of a connected radio and telemetry from the input pins.

To define rules for creating and sending reports, create a profile with report settings. You can create as many profiles as necessary. One profile must be indicated as default. The default profile is loaded to the device memory at startup.

To configure report settings in an opened configuration, click **Report Profiles** in the **Logic** section of the navigation panel.
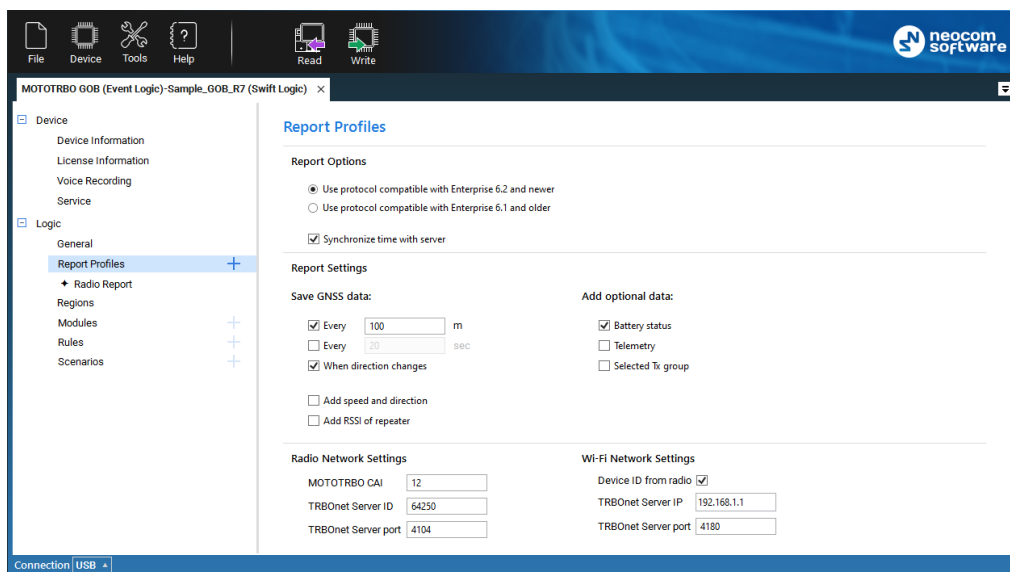
The **Report Profiles** page displays general settings that will be applied in all report profiles.

Report Options

- **Use protocol compatible with Enterprise 6.2 and newer**
  Choose this option to use the protocol compatible with Enterprise 6.2 and newer versions.

- **Use protocol compatible with Enterprise 6.1 and older**
  Choose this option to use the protocol compatible with Enterprise 6.1 and older versions.

  > Note: Choosing this option will disable EGPS report profiles.

- **Synchronize time with server**
  Select this checkbox so that the time on the radio will be synchronized with TRBOnet Server.

Report Settings

Save GNSS data

- **Every ... m**
  The GNSS data will be saved to the report each time the specified distance (in meters) is traveled.

- **Every ... sec**
  The GNSS data will be saved to the report each time the specified time interval (in seconds) elapses.

- **When direction changes**
  Select this option so that the GNSS data will be saved to the report each time the direction of travel changes.

  > Note: This option affects only mobile radios.

- **Add speed and direction**
  Select this option so that the GNSS data will be accompanied by speed and direction.

  > Note: This option is unavailable when an EGPS CSBK report profile is present in the list of report profiles.

- **Add RSSI of repeater**
  Select this option so that the GNSS data will be accompanied by RSSI level when the radio receives an incoming voice call via the repeater/control station. Note that if there are no incoming voice calls, the RSSI level won't be added to the report.

  > Note: This information can only be used in TRBOnet Watch v4.1 (and higher) to evaluate radio signal quality depending on location and generate RSSI maps.

Add optional data

- **Battery status**
  Select this option so that the battery status will be included in each report.

- **Telemetry**
  Select this option so that telemetry data will be included in each report.

- **Selected Tx group**
  Select this option so that the Tx group selected on the radio be included in each report.

Radio Network Settings

- **MOTOTRBO CAI**
  The MOTOTRBO network identity (CAI) (be default, 12).

- **TRBOnet Server ID**
  The unique radio ID of TRBOnet Server in the MOTOTRBO network (by default, 64250).

  > Note: For systems based on Control Stations or TRBOnet Swift Agents, enter the value of 'Radio ID'. Check it in Control Radio's configuration using Motorola CPS. Recommended value: 64250.
  >
  > For IP Site Connect systems **without NAI data**, enter the value of 'TRBOnet Radio ID'. Check it in connection settings of the IPSC system in TRBOnet. Recommended value: 64250.
  >
  > For IP Site Connect, Capacity Plus Single Site, and Capacity Plus Multi Site systems with NAI Data **with NAI data**, enter the value of 'MNIS Radio ID'. Check it in MNIS Data Gateway settings.
  >
  > For Capacity Max systems, enter the value of 'Data Gateway Radio ID'. Check it in Motorola RM, see MNIS Data Gateway.

- **TRBOnet Server port**
  The port of the PC where TRBOnet Server is running (by default, 4104).

Wi-Fi Network Settings

- **Device ID from radio**
  Select this option so that the Device ID will be taken from the radio ID.

- **Device ID**
  If the option above is unchecked, enter the Device ID of the radio.

- **TRBOnet Server IP**
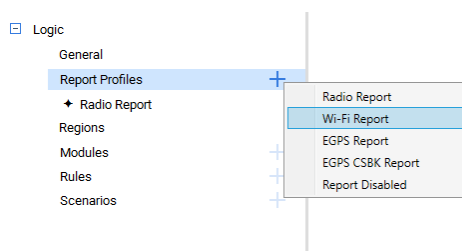 The IP address of the PC where TRBOnet Server is running.

- **TRBOnet Server port**
  The port of the PC where TRBOnet Server is running (by default, 4180).

4.5.2.1 Adding Report Profiles

To add a report profile:

- Click the plus sign icon on the right of the Report Profiles item, and from the drop-down list select the desired report profile.

You can add the following report profiles:

- Radio Report profile
- Wi-Fi Report profile
- EGPS Report profile
- EGPS CSBK Report profile
- Report Disabled profile

4.5.2.2 Radio Report Profile

This report profile is used to send periodic reports via MOTOTRBO digital voice or data channels in the following radio systems: Direct Channel, IP Site Connect, Capacity Plus Single Site, Capacity Plus Multi Site, and Capacity MAX.

A single report contains up to 100 coordinate pairs (up to 60 pairs for TRBOnet Enterprise 6.1 and older). Please note that this maximum number may decrease due to the inclusion of additional data in the report, such as battery status, telemetry events, iBeacon location data, and more.

It is recommended to send a report every 120 seconds.
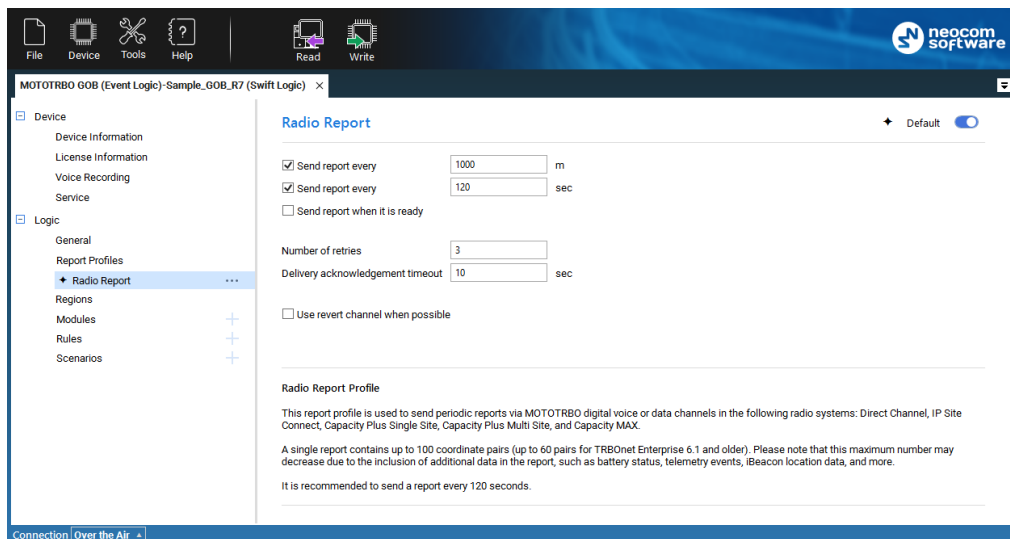
In the **Radio Report** page, specify the following options:

- **Send report every (m)**
  The radio will send a report each time the specified distance (in meters) is traveled.

- **Send report every (sec)**
  The radio will send a report each time the specified time interval (in seconds) elapses.

- **Send report when it is ready**
  Select this option so that a report will be sent as soon as it is ready.

- **Number of retries**
  Enter the number of retries for sending a report on the radio channel.

- **Delivery acknowledgement timeout**
  Enter the time interval, in seconds, to wait for the delivery confirmation.

- **Use revert channel when possible**
  Select this option so that a report will be sent via a data revert channel, if available.

4.5.2.3 Wi-Fi Report Profile

This report profile is used to send periodic reports via an IP channel using the Wi-Fi module of the radio.

A single report contains up to 100 coordinate pairs (up to 60 pairs for TRBOnet Enterprise 6.1 and older). Please note that this maximum number may decrease due to the inclusion of additional data in the report, such as battery status, telemetry events, iBeacon location data, and more.

It is recommended to send a report every 5 seconds.

4.5.2.4 EGPS Report Profile

The Enhanced GPS (EGPS) allows subscribers to make reservations for "windows" in which GPS data can be transmitted. Also note that the report may contain only compressed iBeacon location data. For all iBeacons, their Major ID must be set to 1.

The table below represents the maximum number of coordinate pairs that can be included in the report depending on the window size.

Window size	Coordinates
5	3
6	6
7	9
8	12
9	15
10	18

Note that the maximum number of coordinate pairs may decrease due to the inclusion of additional data in a report, such as battery status, telemetry events, iBeacon location data, and more.

It is recommended to send a report every 30 seconds.

In the **EGPS Report** page, specify the following options:

- **Window size**
  From the list, select the desired window size for Enhanced GPS report.
- **Update interval**
  From the list, select the update interval for the window.

4.5.2.5 EGPS CSBK Report Profile

This report profile is used to send periodic reports via MOTOTRBO data channels in the following radio systems: IP Site Connect, Capacity Plus Single Site, Capacity Plus Multi Site, and Capacity MAX.

The Enhanced GPS (EGPS) with CSBK data allows subscribers to make reservations for "windows" in which GPS data can be transmitted. With this report profile, direction and speed won't be added to the report. The corresponding option will be disabled in report profile settings. Also note that the report may contain only compressed iBeacon location data. For all iBeacons, their Major ID must be set to 1.

It is recommended to send a report every 7.5 seconds.

4.5.2.6 Report Disabled Profile

This report profile is used to stop sending periodic reports.

4.5.3 Regions

The Event Logic rules use geographical regions as input parameters. A region is an area selected on the online map and given a unique name. Allowed are polygonal regions and circular regions with the maximum radius of 65.00 kilometers.

To define regions, click **Regions** in the **Logic** section of the navigation panel.

4 Device Programming
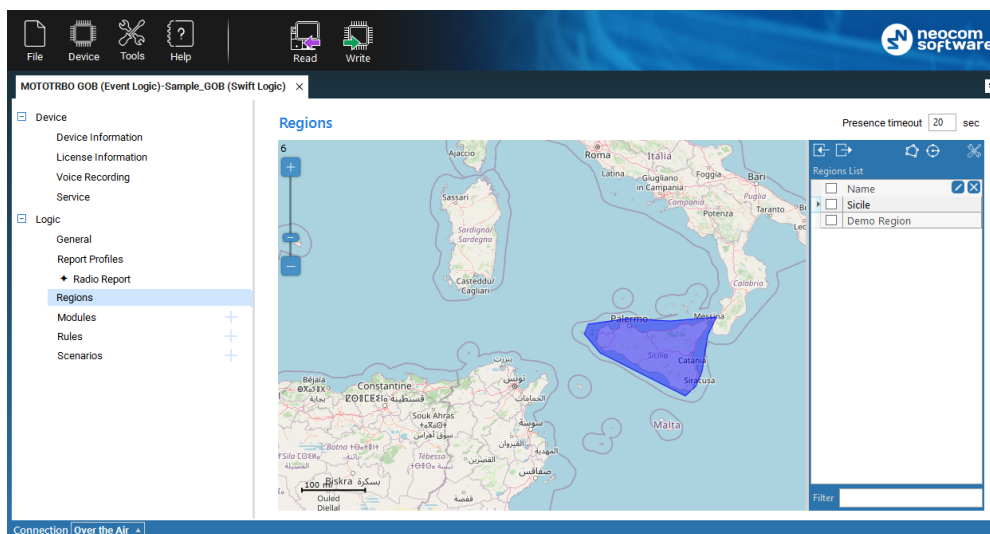
In the **Presence timeout** box, specify the minimum duration of stay within (if entered) or out (if left) of the region. This value will be used for Geofencing events.

Regions appear on the map as colored areas. The region names are displayed in the right panel.

The following useful features will help you work with the map:

To pan the map:

- Keep the left mouse button pressed and move the mouse cursor to the required direction.

To adjust the scale level:

- Scroll the mouse wheel to zoom the map.

To select a different map:

- Click the **Edit Map Configuration** button ( ) in the right panel.
- In the **Map Configuration** window, from the **Tile source** drop-down list, select the preferred map.
- Click **Apply**.

Note that in the offline mode, the map is loaded from cache.

To select the cache folder:

- Click the **Edit Map Configuration** button ( ) in the right panel.
- In the **Map Configuration** window, click the **Browse** button next to the **Root cache directory** field. Find the destination folder and confirm the choice. Or, specify the folder path manually.
- Click **Apply**.

You can perform the following operations with map regions.

To add a polygonal region:

- Click the **Create Polygonal Region** button ( ).
- Click the map where the region border will start. Draw the shape of the region, clicking where you want to place nodes. The added nodes connected with lines make a region border.
- Double-click to finish. The first and the last nodes will be connected with a line. The new polygonal region will appear in the right panel under the **Regions List**.

To add a circular region:

- Click the **Create Circular Region** button ( ).
- Click the map where the center of the region will be located.

- Release the mouse button and move the cursor away from the center. The distance from the center (in km) is displayed near the region. The radius of a circular region is restricted to 65 km.
- Double-click to finish. The new circular region will appear in the right panel under the **Regions List.**

To edit a region:

- Double-click inside the region on the map, or in the **Regions List**. The region on the map is highlighted and all of its nodes are displayed.
- To drag a node to a different position, click it and keep the mouse button pressed. To drop the node, release the mouse button.
- To delete a node, right-click it.
- To move the entire region, point to its central point, click and drag it to the new position on the map.
- To save changes, double-click on the map. Or, press Esc to cancel editing.
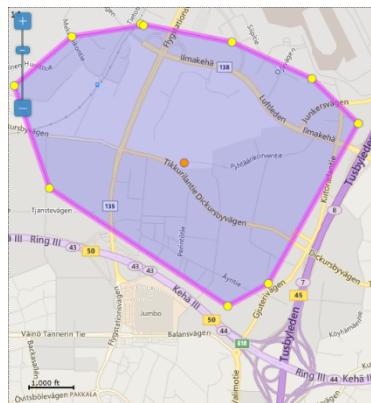
To import regions:

- Click the **Import from KML** button (⬅).
- Confirm to replace all regions.
- In the **Import from KML** window that appears browse for the desired *.KML file, and click **Open**.

To export regions:

- Select desired regions.
- Click the **Export to KML** button (➡).
- In the **Export to KML** window that appears locate the folder where you want to save the file, type a filename, and click Save.

To delete a region:

- Select the region under the Regions List and click the Delete button.

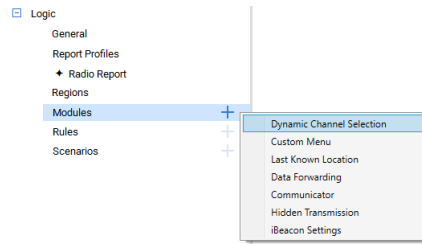Note: The deleted region cannot be restored with the Undo command.

4.5.4   Modules

4.5.4.1 Adding Modules

This section describes how to add modules.

To add a module:

- Click the plus sign icon on the right of the **Modules** item, and from the drop-down list select the desired module.


You can add the following modules:

- Dynamic Channel Selection
- Custom Menu
- Las Known Location
- Data Forwarding
- Communicator
- Hidden Transmission
- iBeacon Settings

4.5.4.2 Dynamic Channel Selection

The Dynamic Channel Selection module allows for automatic selection of the radio zone/channel depending on the geographical region and/or the proximity of certain iBeacons.

- Click the plus sign icon on the right of the **Modules** item, and from the drop-down list select **Dynamic Channel Selection**
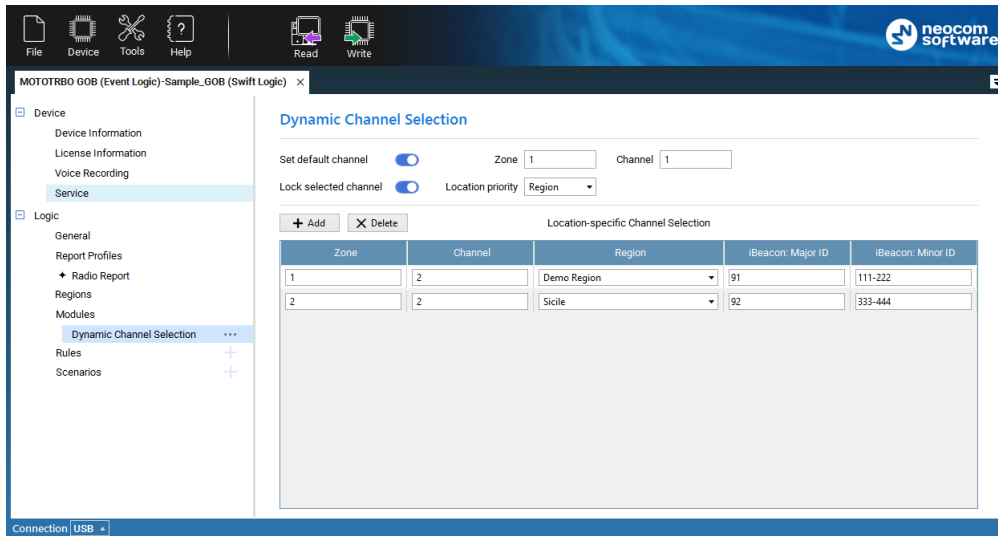
In the right pane, specify the following Dynamic Channel Selection-related settings:

- **Set default channel**
  Select this option and specify the default channel and zone. This channel/zone will be automatically set on the radio when its location is not available or outside designated regions/iBeacons.

  - **Zone**
    Enter the default zone.

  - **Channel**
    Enter the default channel.

- **Lock selected channel**
  Select this option so that the radio will prevent the user from changing the automatically selected channel.

- **Location priority**
  From the list, select the priority to use for Dynamic Channel Selection.

- **Add**
  Click this button and specify the following Dynamic Channel Selection parameters:

  - **Zone**
    Enter the zone to be set automatically when the radio stays in the selected region and/or in the vicinity of the specified iBeacon(s). The value 0 means that the current zone won't be changed.

  - **Channel**
    Enter the channel to be set automatically when the radio stays in the selected region and/or in the vicinity of the specified iBeacon(s).

  - **Region**
    From the list, select the region within which the radio must stay so that the specified channel/zone will be set automatically.

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- **iBeacon: Major ID/ iBeacon: Minor ID**
  Specify the Major ID and Minor ID of the beacon(s) in the vicinity of which the radio must stay so that the specified channel/zone will be set automatically.

- **Delete**
  Click this button to remove the selected row from the Channel Selection Table.

4.5.4.3 Custom Menu

The Custom Menu module allows you to replace certain menu items on the radio (Contacts, Scan, or Zone) with your own menu items.

To configure your custom menu:

- Click the plus sign icon on the right of the **Modules** item, and from the drop-down list select **Custom Menu**.
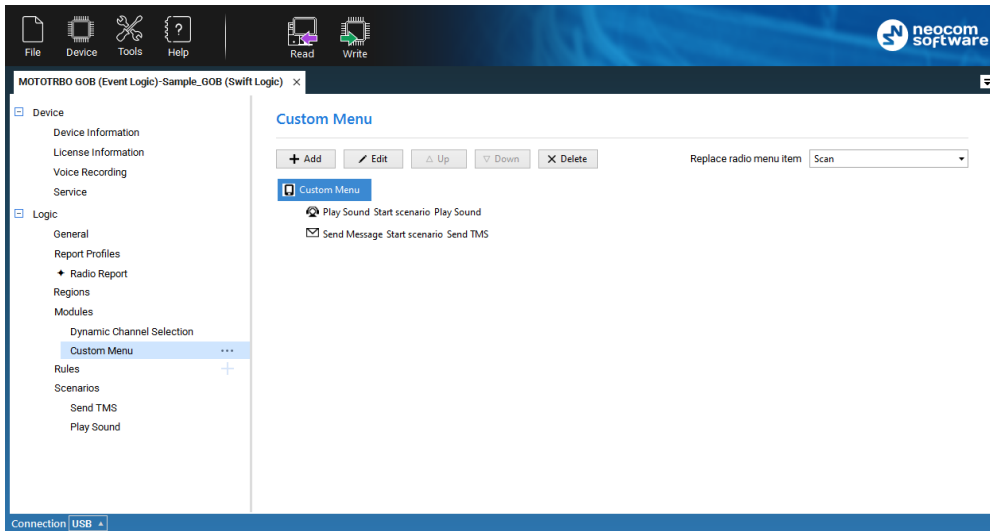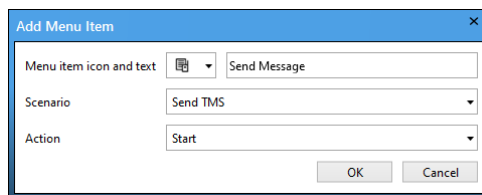

In the **Custom Menu** pane, do the following:

- **Replace radio menu item**
  From the list select one of the three radio menu items (Contacts, Scan, or Zone) that will be replaced with your custom menu.

To create a menu item:

- Select the menu item under which you want to create a submenu and click **Add**.

In the dialog that opens, enter the following:

- **Menu item icon and text**
  From the drop-down list, select the icon that will be displayed in front of the menu name.
  In the text box, enter the name of the menu item.
- **Scenario**
  From the drop-down list, select the scenario for the menu item.
  If you select 'None', the menu item will only contain submenu items and perform no actions.

  > Note: Only enabled scenarios will be available in this list. See section 4.5.6, Scenarios.

- **Action**
  From the drop-down list, select ether to **Start** or **Stop** the specified scenario.

4.5.4.4 Last Known Location

In this module you define how to save the radio's current location, also known as the last known location.

- Click the plus sign icon on the right of the **Modules** item, and from the drop-down list select **Last Known Location**.
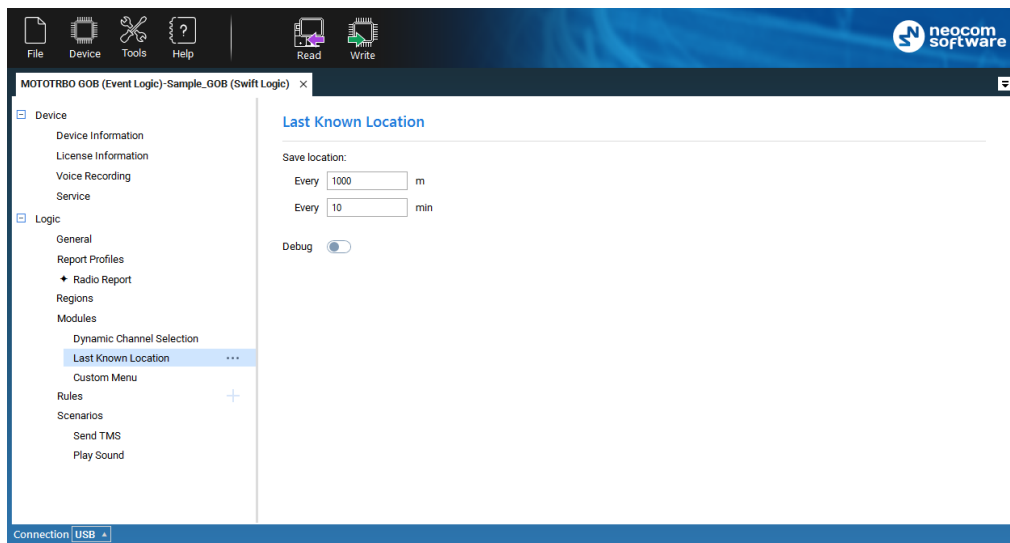
4.5.4.5 iBeacon Settings

This module defines iBeacon-related settings that will be used for iBeacon Tracking and Security Tokens.

- Click the plus sign icon on the right of the **Modules** item, and from the drop-down list select **iBeacon Settings**.
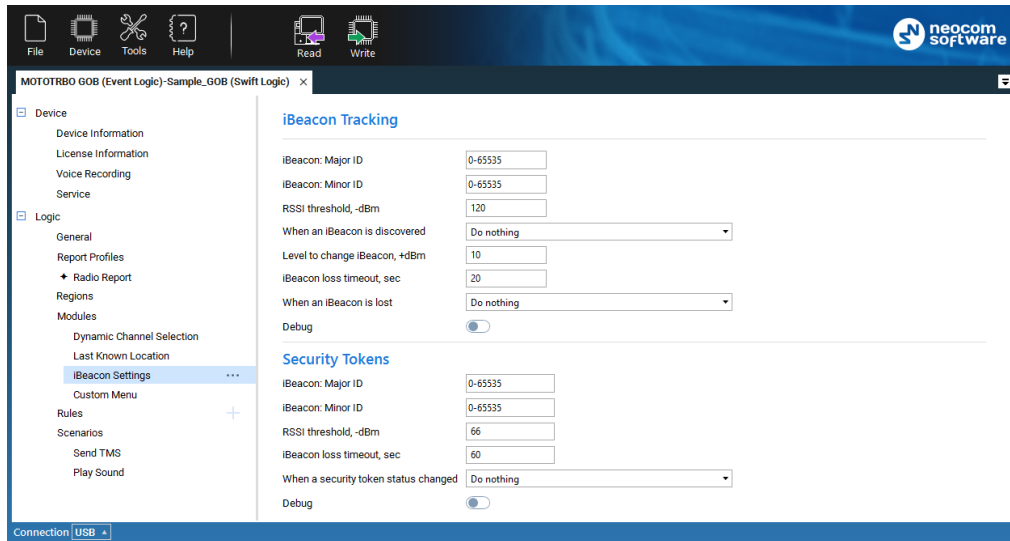
iBeacon Tracking

- **iBeacon: Major ID/ iBeacon: Minor ID**
  Enter the Major ID and Minor ID (the values or the ranges of values) of the iBeacons that will be used for iBeacon-based Tracking.

- **RSSI threshold**
  Set the minimum signal strength, in negative decibels, of an iBeacon to consider it as discovered.

- **When an iBeacon is discovered**
  From the drop-down list, select what to do when an iBeacon is discovered.

  - **Do nothing**
    This will not add information about a discovered iBeacon to the report.

  - **Add to report**
    This will just add information about a discovered iBeacon to the report, which, in turn, will be sent according to the corresponding report profile.

  - **Send report normally (selected channel or data channel)**
    This will add information on a discovered iBeacon to the report that will be sent to TRBOnet in the normal way. If the selected radio channel or data channel is busy, the report will be queued up for sending.

  - **Immediately send report (selected channel)**
    This option means that the corresponding report will be sent to TRBOnet immediately on the selected channel. If the selected radio channel is busy, the report will be put at the front of the queue.

  - **Send report with interrupt (selected channel)**
    This option means that the corresponding report will be sent to TRBOnet immediately, interrupting the current transmission, if the selected radio channel is busy.

> Note: Use the last two options carefully in order to avoid a high load of the radio channel.

- **Level to change iBeacon**
  Set the difference in signal strength, in positive decibels, between the simultaneously discovered iBeacons that will be used to consider the iBeacon with a stronger signal strength as detected by the radio.

- **iBeacon loss timeout**
  Enter the timeout, in seconds, within which an iBeacon is not considered as lost.

- **When an iBeacon is lost**
  From the drop-down list, select what to do when the last of the detected iBeacons is lost.

  - **Do nothing**
    This will not add information about the lost iBeacon to the report.

  - **Add to report**
    This will just add information about the lost iBeacon to the report, which, in turn, will be sent according to the corresponding report profile.

  - **Send report normally (selected channel or data channel)**
    This will add information about the lost iBeacon to the report that will be sent to TRBOnet in the normal way. If the selected radio channel or data channel is busy, the report will be queued up for sending.

  - **Immediately send report (selected channel)**
    This option means that the corresponding report will be sent immediately on the selected channel. If the selected radio channel is busy, the report will be put at the front of the queue.

  - **Send report with interrupt (selected channel)**
    This option means that the corresponding report will be sent immediately, interrupting the current transmission, if the selected radio channel is busy.

- **Debug**
  Select this option to show debug information on the radio display.

Security Tokens

- **iBeacon: Major ID/ iBeacon: Minor ID**
  Enter the Major ID and Minor ID (the values or the ranges of values) of the iBeacons that will be used as security tokens.

- **RSSI threshold**
  Set the minimum signal strength, in negative decibels, of an iBeacon to be considered as discovered.

- **iBeacon loss timeout**
  Enter the timeout, in seconds, within which an iBeacon is not considered as lost.

- **When a security token status changed**
  From the drop-down list, select what to do when a token status changes.

  - **Do nothing**
    This will not add information about a changed token status to the report.

  - **Add to Report**
    This will just add information about a changed token status to the report.

  - **Send report normally (selected channel or data channel)**
    This will add information about a changed token status to the report that will be sent to TRBOnet in the normal way. If the selected radio channel or data channel is busy, the report will be queued up for sending.

  - **Immediately send report (selected channel)**
    This option means that the corresponding report will be sent immediately on the selected channel. If the selected radio channel is busy, the report will be put at the front of the queue.

  - **Send report with interrupt (selected channel)**
    This option means that the corresponding report will be sent immediately, interrupting the current transmission, if the selected radio channel is busy.

    Note: Use the last two options carefully in order to avoid a high load of the radio channel.

- **Debug**
  Select this option to show debug information on the radio display.

4.5.5 Rules

A rule describes a specific event to which a programmed device will respond with a predefined sequence of actions, such as playing back tone or displaying text on the radio display, sending text to other radios, changing the radio channel, sending alarms, and other.
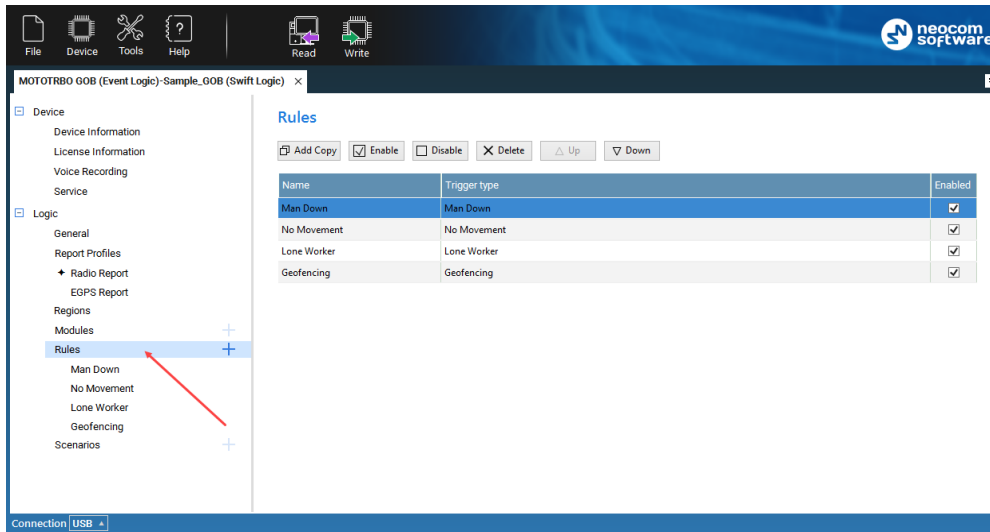
To configure rules, expand the **Logic** section and click **Rules** in the left panel.

To create a copy of a rule:

- In the left pane, select the rule and click the ellipsis icon on the right side. From the drop-down menu, select **Add Copy**.

- As a result, a copy of the selected rule will appear in the list of rules.

To delete a rule

- In the left pane, select the rule and click the ellipsis icon on the right side. From the drop-down menu, select **Delete**.

- Confirm the deletion in the dialog box that appears.

To enable a rule:

- In the left pane, select the rule and click the ellipsis icon on the right side. From the drop-down menu, select **Enable**.
 Or, in the right pane, select the **Enable** option next to the rule name.

To enable the debug mode (if available):

- In the left pane, select the rule.

- In the right pane, select the **Debug** option on the right of the **Trigger** description.

Note: If the debug mode is selected, the debug information will be shown on the radio display when the trigger starts.

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4.5.5.1 Adding a Rule

To add a rule:
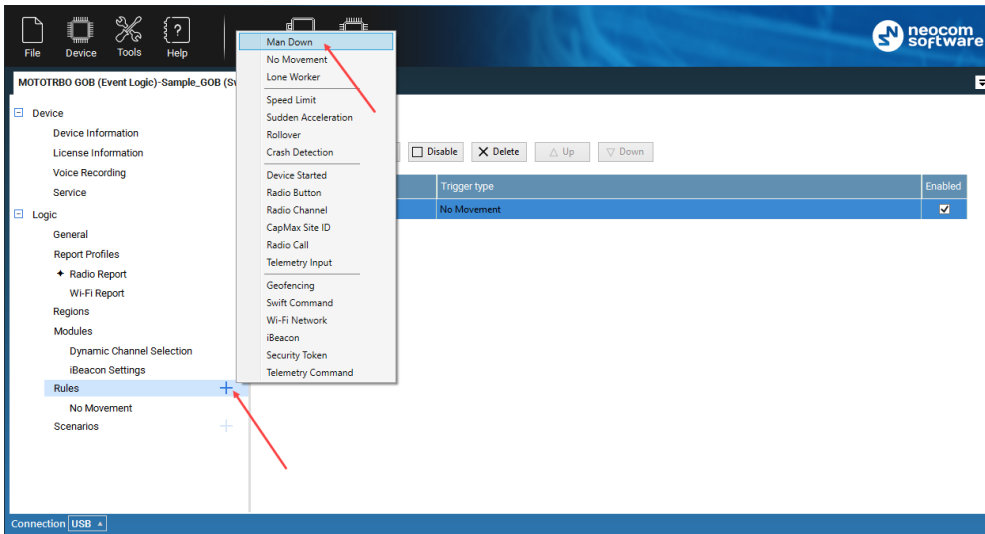
- Click the plus icon on the right of the **Rules** item in the left pane.
- From the drop-down menu, select the desired rule type.
- In the right pane, configure the desired trigger settings (1), conditions (2), and actions (3) for the rule.
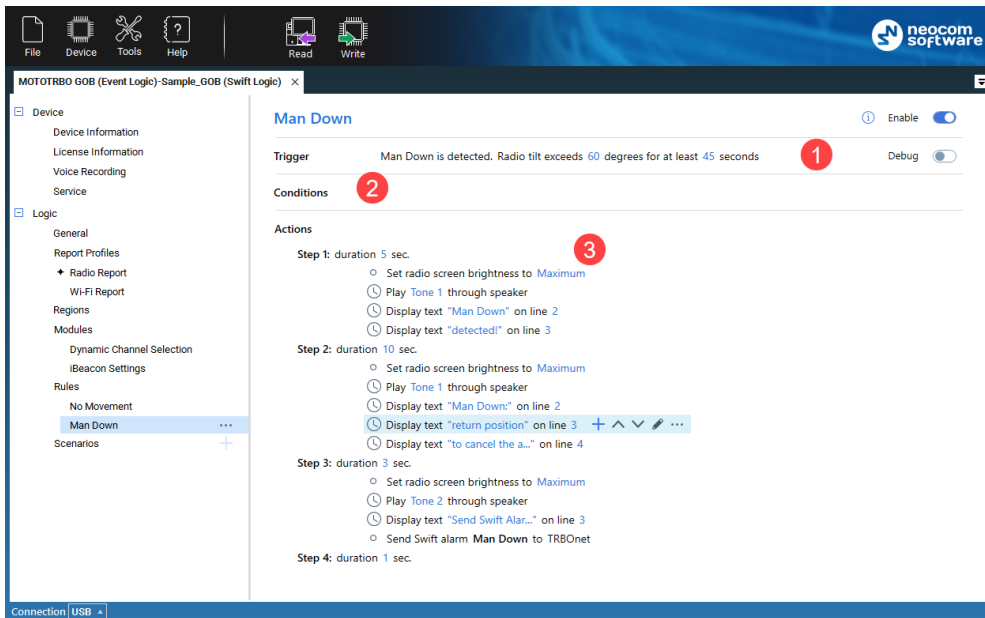
4.5.5.2 Triggers

The following table summarizes information about all supported triggers and their configurable properties.

Trigger	Description
Man Down	This trigger starts when the radio tilt exceeds the threshold angle for a time longer than the pre-alarm duration. ▪ **Threshold angle**: The minimum vertical angle, in degrees, at which the radio is still considered up. ▪ **Pre-alarm duration**: The timeout (seconds) after detecting the radio tilt. Note: Before enabling this event, you need to set a custom axis orientation of the accelerometer. This is done by clicking **Set a custom axis orientation of the accelerometer** in the **Service** page.
No Movement	This trigger starts when the radio acceleration is below the threshold for a time longer than the wait time. ▪ **Acceleration threshold**: The minimum acceleration at which the radio is still considered to be at normal speed. ▪ **Wait time**: The timeout, in seconds, that starts after the radio acceleration has fallen below the threshold.
Lone Worker	This trigger starts when there is no user activity for a time longer than the response time. The timer will restart after pressing any radio button or knob. ▪ **Response time**: The timer, in seconds, that restarts after a button push, a talk, or use of the channel selector was detected on the radio.
Speed Limit	This trigger starts when the measured speed exceeds or falls below the threshold. ▪ **Speed**: The math operator. Values: greater than, less than. ▪ **Threshold**: The maximum or minimum allowed speed in kilometers per hour. Note: The speed measurement error may be as high as 5 to 10%, depending on the type of a two-way radio (less for mobile, higher for portable) and on the satellite signal reception quality.
Sudden Acceleration	This trigger starts when the radio acceleration experiences a sharp change along the given axis. This trigger can be used, for example, to detect hard braking of the vehicle. ▪ **Axis**: Select the axis along which to detect the sudden change of acceleration. ▪ **Acceleration threshold**: The maximum acceleration that shall be exceeded to trigger the event.

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| Trigger	Description
Rollover	This trigger starts when the mobile radio tilt exceeds the threshold angle for a time longer than the pre-alarm duration. ▪ **Threshold angle**: The minimum vertical angle (in degrees) at which the radio is still considered up. ▪ **Pre-alarm duration**: The timeout (seconds) after detecting the radio tilt. Note: After installing the radio in the working position in a car, you need to set a custom axis orientation of the accelerometer. This is done by clicking **Set a custom axis orientation of the accelerometer** in the **Service** page.
Crash Detection	This trigger starts when the radio acceleration exceeds the impact threshold, the speed drops to zero within the idle timeout, and then there is no movement for the duration of the wait timeout. ▪ **Impact acceleration threshold**: The maximum acceleration that shall be exceeded to suspect a car crash. ▪ **Wait timeout**: The timeout, in seconds, that starts after the suspected car crash and during which no acceleration measurements are taken. ▪ **Acceleration threshold**: The minimum acceleration that must be gained during the control time to confirm the normal speed mode. ▪ **Idle timeout**: The timeout, in seconds, that starts after the wait timeout.
Device Started	This trigger starts when the radio is turned on.
Radio Button	This trigger starts when the designated radio button is pressed/released. ▪ **Button**: Select the radio button. ▪ **Action**: Select the type of action. This can be 'Short press', 'Long press', or 'Release'.
Radio Channel	This trigger starts when the active channel/ zone is changed on the radio. ▪ **Zone**: Enter the zone number. ▪ **Channel**: Enter the channel number.
CapMax Site ID	This trigger starts when the radio registers on a CapMax site with a specified **Site ID**.
Radio Call	This trigger starts when an incoming or outgoing call starts, or a call (either incoming or outgoing) ends. In addition, you can select the call type for this event. ▪ **Call trigger**: Select one of the three triggering conditions. ▪ **Call type**: Select one of the call types. ▪ **Radio/Group ID**: Enter the ID of the radio/radio group if the call type is Radio/Radio Group.
Telemetry Input	This trigger starts when the status of any I/O pin has changed on the device. ▪ **Telemetry**: Select the Input pin #.

Trigger	Description
	▪ **Trigger**: Select the type of change occurring to the pin (turned on, off or toggled)
Geofencing	This trigger starts when the radio enters/leaves the selected region for a time longer than the presence timeout (see section 4.5.3, Regions). ▪ **Region:** Select **the** region the borders of which are monitored. ▪ **Direction:** Select if **the** region is entered or left.
Swift Command	▪ This trigger starts when the radio receives the Swift command.
Wi-Fi Network	This trigger starts when the radio is connected/disconnected to/from Wi-Fi network for a time longer than the wait timeout. ▪ **Network trigger**: Select whether the Wi-Fi network is connected or disconnected. ▪ **Wait timeout**: **Enter the minimum duration of staying connected/disconnected.**
iBeacon	This trigger starts when the radio enters/leaves the coverage zone of the selected iBeacon. ▪ **iBeacon**: Select whether the iBeacon is found or lost. ▪ **Major ID**: Enter the beacon's major ID exactly as specified in the iBeacon device. ▪ **Minor ID**: Enter the beacon's minor ID exactly as specified in the iBeacon device.
Security Token	This trigger starts when one of the following Security Tokens event has occurred: ▪ User Logged In ▪ User Logged Out ▪ Token Not In Range.
Telemetry Command	This trigger starts when the radio receives the telemetry command. ▪ **Target**: Select the VIO number. ▪ **Command**: Select the telemetry command.

4.5.5.3 Conditions

> Note: Adding conditions to a rule is optional. If you add multiple AND conditions, ALL OF THEM must be TRUE for the actions to be executed. If you add OR conditions, at least one of them must be TRUE.

To add a condition:

- In the left pane, select the rule.
- In the right pane, select **Conditions** and click the plus icon on the right.
- From the drop-down menu, select the desired condition type.

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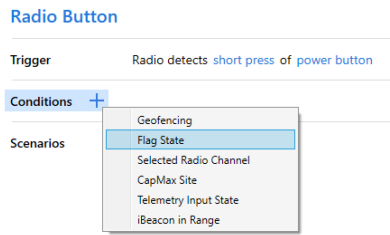
- **Geofencing**

  In the **Condition: Geofencing** dialog box specify the following parameters:

  - **Region**
    From the drop-down list, select the desired region.

  - **Position**
    From the drop-down list, select 'Inside' or 'Outside' position in a region.

- **Flag State**

  In the **Condition: Flag State** dialog box specify the **Flag** (a number from 1 to 32) and its **State** (On/Off).

- **Selected Radio Channel**
  In the **Condition: Selected Radio Channel** dialog box, specify the **Channel** and **Zone**.

- **CapMax Site**
  In the **Condition: CapMax Site** dialog box, specify the **Site ID**.
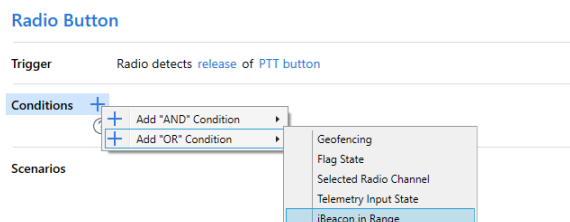
- **Telemetry Input State**

  In the **Condition: Telemetry Input State** dialog box specify the **Telemetry** input (Input 1 – Input 8) and its **State** (On/Off).

- **iBeacon In Range**

  In the **Condition: iBeacon In Range** dialog box specify the iBeacon's **Major ID** and **Minor ID**.

To add an AND/OR condition:

Once you have added the first condition, you may add other conditions by clicking the plus icon:

- Select **Conditions** and click the plus icon on the right.
- Click **Add AND Condition** or **Add OR Condition** and from the drop-down menu, select the desired condition type.

A combination of multiple conditions may look like in the figure below:

To edit condition settings:

- Double-click the desired condition.
  In the dialog box that opens, edit the required condition parameters.

To delete a condition:

- Select the desired condition and click the ellipsis icon on the right side. From the drop-down menu, select **Delete**.

Note: Conditions can also be added to the step of actions.

4.5.5.4 Actions

If the rule already contains predefined actions:

- Select **Actions** and click the plus icon on the right.
  As a result, the new step will appear at the bottom of the list of steps.
- Click the duration field and specify the step duration, in seconds.
- Click the plus icon on the right of the selected step.
  - Click **Add Action** and from the drop-down menu, select the desired action.
  - Click **Add Condition** and from the drop-down menu, select the desired condition. For a description of conditions, see section 4.5.5.3, Conditions.

Note: Only AND conditions can be added to the step of actions.

- To edit an action, double-click it, and in the dialog that appears, specify the required parameters of the action.
- To edit a condition, double-click it, and in the dialog that appears, specify the required parameters of the condition.

If there are no predefined actions for the rule, you may add actions with the help of Scenarios.

- Select **Scenarios** and click the plus icon on the right.
  - If there are still no scenarios in the list of scenarios, the new scenario will be created.
  - If the list of scenarios is not empty,
    click **Add start scenario > Create new scenario**,
    or select one of the already created scenarios from the list.
- See above for information on how to edit actions.

The following table summarizes information about all supported actions and their configurable properties.

| Action	Description
Play Tone	This action forces the radio to play back the specified tone. ▪ **Tone**: The **tone** to be played back. ▪ **Tone Type**: Choose whether to play the tone momentarily or repetitively. ▪ **Volume shift**: The volume boost (in MOTOROLA's units of measure).
Play Announcement	This action forces the radio to play back a pre-recorded voice announcement. ▪ **Voice Announcement**: Select one of the pre-recorded voice announcements.
Change Volume	This action forces the radio to change the volume of its speaker. ▪ **Action**: Select the action to be executed (Increase Volume or Decrease Volume).
Display Text	This action forces the radio to display text. ▪ **Text**: Enter the text to display on the radio. ▪ **Position**: The display line from which the text starts. **Options**: Line 1, Line 2, Line 3, Line 4. ▪ **Alignment**: Select the alignment of the text. ▪ **Font**: Select the font style (Normal or Bold). ▪ **Background**: Select the background color for the text.
Set Display Brightness	This action will set the radio display brightness to a specified level. ▪ **Brightness**: Select one of the options: 'Increase' (one step), 'Decrease' (one step), 'Maximum', 'Minimum' or 'Default'.
Set Power Level	This action will set the radio's transmission power level for the current channel. ▪ **Power**: The values are 'Low' and 'High'.
Set Radio Channel	This action forces the radio to select a different radio channel/zone. Properties: ▪ **Zone**: The zone to be set. ▪ **Channel**: The radio channel to be set. Note: These are numerical values that are represented in *MOTOTRBO CPS, Channels>Zone>Channel* (in the Position column).

Action	Description
Change Radio Channel	This action forces the radio to change the radio channel: ▪ **Increment Radio Channel** ▪ **Decrement Radio Channel**
Set Telemetry Output	This action will set the selected telemetry output to the specified state. ▪ **Output**: Select the radio's output to perform the specified action on. ▪ **Action:** Select the action for the output (Toggle, On, Off).
Press Button	This action will short-press the specified Accessory Button on the radio (No Dot Button, 1-Dot Button, or 2-Dot Button). ▪ **Short press**: Select the desired Accessory Button.
Lock Controls of Radio	This action will lock/unlock the radio's keyboard.
Manage Emergency	This action activates/deactivates the alarm mode on the radio.
Send Text (TMS)	This action forces the radio to send text to a specified radio or radio group. ▪ **Text**: The message to be sent. ▪ **Destination**: The recipient of the message. Values: radio, radio group. ▪ **Radio ID**: The radio ID of the recipient.

Send Report	This action will send a report to TRBOnet Server.
	▪ **Priority**:
	  o High (selected channel)
	    The report will be sent immediately over the selected channel. If the selected radio channel is busy, the report will be put at the front of the queue.
	  o With Interrupt (selected channel)
	    The report will be sent immediately over the selected channel, interrupting the current transmission, if the channel is busy.

Send Swift Command	This action will send a Swift command to TRBOnet Server. ▪ **Command**: Select the Swift command to be sent. ▪ **Parameter**: Enter the parameter if the Swift command contains a parameter. ▪ **Destination**: Select one of the destinations (TRBOnet, Radio, or Radio group)**.** ▪ **Radio/Group ID:** Enter the Radio/Group ID if the Radio or Radio group are selected as the destination. ▪ **Target Device:** Select the device connected to the target radios: an option board (Swift OB, GOB) or a DT series controller (Swift DT200/ DT600). ▪ **Priority**: Select either 'Immediately send to TRBOnet' or 'Immediately send to TRBOnet with interrupt'. The latter option means that the selected command will be sent immediately, interrupting the current transmission, if the radio channel is busy.

Action	Description
Send DTMF	This action will force the radio to send the specified DTMF sequence on the radio channel. ▪ **Sequence**: The sequence of digits to be sent. ▪ **Pretime**: The duration of silence (ms) prior to sending the first DTMF tone. ▪ **Duration**: The duration of the DTMF tone digits in milliseconds (ms). ▪ **Interval**: The duration of the intervals between the DTMF tone digits in a transmission sequence in milliseconds (ms).
Send Swift Alarm	This action will send the corresponding Swift alarm (Man Down, No Movement, etc.) to TRBOnet Server.
Select Report Profile	This action will force a device to use the specified profile with report settings. Note: A profile with report settings defines rules for sending reports to TRBOnet Server. See also section 4.5.2, Report Profiles (page 13). ▪ **Profile**: Select the report profile to switch to.
Set Flag	This action will set the selected flag to the specified state. ▪ **Action**: Select the action for the flag (Toggle, On, Off). ▪ **Flag**: Specify the flag (a number from 1 to 32).
Log Out User	This action will log out the user (deallocate the radio).
Manage Scenario	This action will start/stop the desired scenario. See section 4.5.6, Scenarios. ▪ **Scenario**: Select the desired scenario. ▪ **Action**: Select either to Start or Stop the desired scenario. ▪ **With delay**: Specify the delay, in seconds.
Add Trigger to Report	This action will add the corresponding trigger (Man Down, No Movement, etc.) to the report.

4.5.6   Scenarios

A scenario is a sequence of steps/conditions/actions that can be then started/stopped in a particular place of a rule by clicking **Add Action > Manage Scenario**.
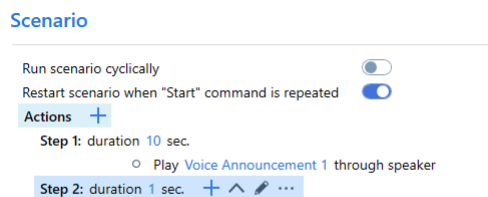
To configure scenarios, expand the **Logic** section and click **Scenarios** in the left panel.
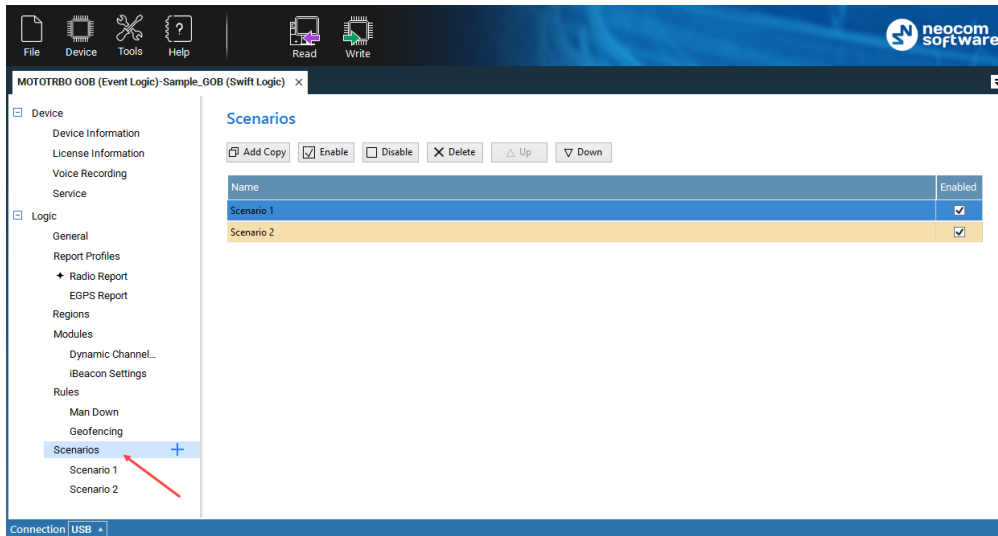
The **Scenarios** pane displays a set of the scenarios. You can manage the scenarios as described below.

To create a scenario:

- Click the plus icon on the right of the **Scenarios** item in the left pane.
  As a result, the new scenario will appear in the list of scenarios.

- Select a scenario in the left pane. In the right pane, specify the following parameters:

  - **Run scenario cyclically**
    Select this option so that the scenario will run cyclically until stopped.

  - **Restart scenario when Start command is repeated**
    Select this option so that the scenario will be restarted from the beginning when the Start command is repeated during the scenario execution.

- Select **Actions** and click the plus icon on the right to add a step.

  For more details on editing actions, see section 4.5.5.4, Actions.

To create a copy of an existing scenario:

- In the left pane, select the scenario and click the ellipsis icon on the right side.
  From the drop-down menu, select **Add Copy**.

- As a result, a copy of the selected scenario will appear in the list of rules.

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To edit a scenario:

- Double-click the scenario or select it in the list and click **Edit**.

To delete a scenario:

- In the left pane, select the scenario and click the ellipsis icon on the right side.
  From the drop-down menu, select **Delete**.
- Confirm the deletion in the dialog box that appears.

4.6 Mass Configuration

You can configure multiple option boards at once by using the Mass Configuration mode. The OTA connection is used for over-the-air programming of endpoint devices such as DT500 connected to a MOTOTRBO radio or an option board ST002 installed into a MOTOTRBO radio.

- On the toolbar, click **Tools > Mass Configuration**.
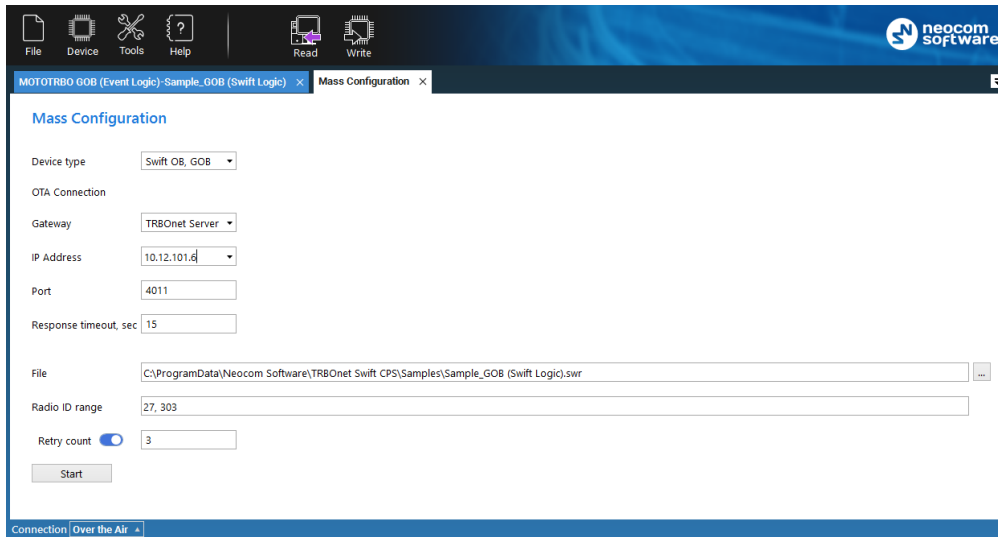

- In the **Mass Configuration** page, enter the following parameters:
  - **Device type**
    From the drop-down menu, select either 'Swift OB, GOB', 'Swift DT500' or 'Swift DT200/ DT600'.
  - **OTA Connection**
    In this section, specify the OTA (over-the-air) Connection-related settings.
    - **Gateway**
      The gateway that can establish an IP connection with TRBOnet Swift CPS and that can communicate with the device over the air.
      Values: TRBOnet Server, Swift IP Gate: Swift A100/ A200
    - **IP address**
      The IP address of the gateway selected above.
    - **Port**
      This is the Forward Data service port of the TRBOnet Server (if selected above). Default: **4011**.
      To get the port number, launch the TRBOnet Enterprise (PLUS) Server application and select **Radio Systems > Services** in the left pane. Find the port number under the **Forward Data service** option. Also make sure that the **Forward Data service** option is selected.

- **Response timeout**
  The time period, in seconds, to wait for a response from the server side (TRBOnet Server, Swift IP Gate).

- **File**
  Enter the full path name for the configuration file (*.swr) that will be sent to the radios specified below.

- **Radio ID range**
  Enter the range of Radio IDs to which the configuration file selected above will be sent.

  > Note: Separate each Radio ID with a comma, for example, "105,106,111", or enter the range using the following example: "105-111".

- **Retry count**
  Enter the number of retries allowed.

- Once you have specified the desired configuration settings, click **Start**.

5 Licensed Features

To learn the statuses of all licensed features on a device, connect the device to your computer and read the configuration of the device in TRBOnet Swift CPS. In the left panel, click **Device** and **License Information**.
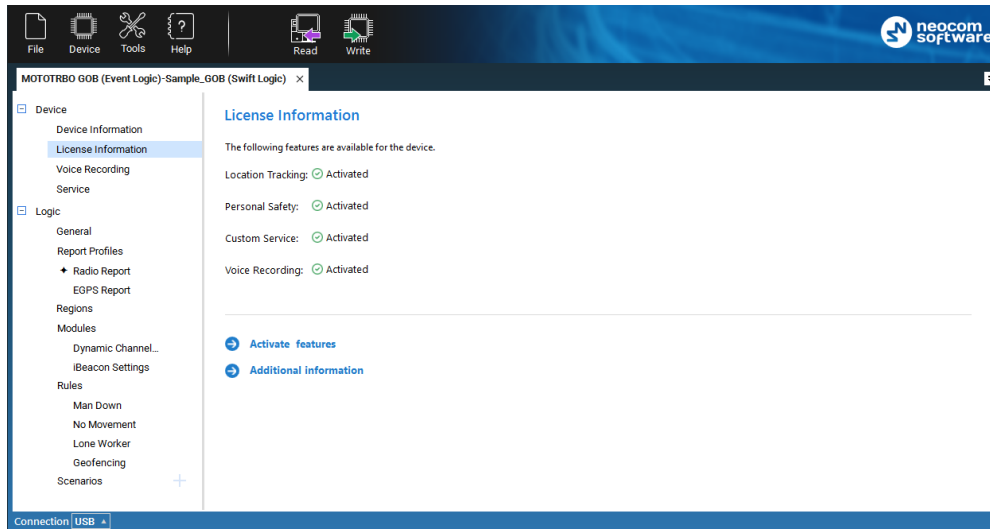
In the right panel, all the licensed features that are supported by your device are marked as **Activated**, **Available for activation**, or **Not available** (not supported on your type of device).

- The **Location Tracking** license item allows the option board to receive GPS and iBeacon location data from the radio.

- The **Personal Safety** license item allows the option board to receive G-meter data from the radio.

- The **Voice Recording** license item allows the option board to receive voice recording data from the radio.

5.1   Activating Features

To activate features on a device:

1. Click **Activate features**.
2. In the **Activate features** window, enter the license key.
3. If the license key is valid, the **Activate features** window displays all features included into the license. You can learn how many times each feature was activated on different devices using this license, and how many more activations are allowed.
4. Click the **Activate features** button. If this button is unavailable (grayed out), your device works in the demo mode. Click the **Restore features** button to return to the normal mode and activate all purchased features on the device.

> **Note:** When you choose the demo mode and then the normal mode on a device, the license counter is not incremented.