Cradlepoint Netcloud Configuration Guide

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Introduction

Cradlepoint NetCloud™ is a next generation software and services platform that provides software-defined and cloud-delivered management, connectivity, security services, and more. Login at www.cradlepointecm.com

This document includes the standard recommended configuration for operating a Cradlepoint IBR900 series router with the Axon Fleet system. Your purchase of Cradlepoint routers from Axon generally includes NetCloud licensing and a NetCloud administrator was chosen at the time of purchase. The NetCloud administrator should have received an invitation for account setup. Your administrator or designee must be available for access. Axon does not have access to your NetCloud account.

For more information about Cradlepoint devices or NetCloud Manager, see additional reading:

- https://customer.cradlepoint.com/s/article/Getting-Started-with-NetCloud-Manager
- https://customer.cradlepoint.com/s/article/IBR900-Getting-Started
- https://customer.cradlepoint.com/s/article/IBR1700-Getting-Started

NOTE: Each device should be registered and configured from NetCloud Manager. All changes should be made from the NCM interface and not the local device UI. However, the device changes outlined below may be referenced and applied via the local UI when necessary as a last resort.

IMPORTANT: An active, 2FF size SIM should be installed in the router's internal modem. **Use SIM slot 1**. For the IBR900, slot 1 is closest to the bottom of the router. A SIM is required for router GPS functions. For remote management of Cradlepoint routers, the router must have Internet access and should have a SIM installed with no restrictions on access to Cradlepoint servers. When using an APN with your cellular provider, network administrators must ensure access as outlined by Cradlepoint here: https://customer.cradlepoint.com/s/article/NetCloud-Manager-Configure-Your-Firewall-to-Allow-Cradlepoints-Access-to-NCM-on-Private-Network

Group Creation

Axon recommends creating three new groups to facilitate deployment and future scalability. The new groups are as follows:

NOTE: Groups are model specific. Be sure to select the proper device model when adding groups. If you are unsure which device to select, contact your Axon Sales Engineer.

- **Canary – In-house Test** (optional)

  This group is to support lab environments only. It is designed to be used with a device at a workbench or otherwise installed in a non-mission critical setup. This is used for testing settings alterations and firmware updates before pushing them to the field group.

- **Field Test**

  This group should contain limited field units. This group is the second phase of testing configuration changes and should be used for final validation before pushing alterations to the production group.

- **Production**

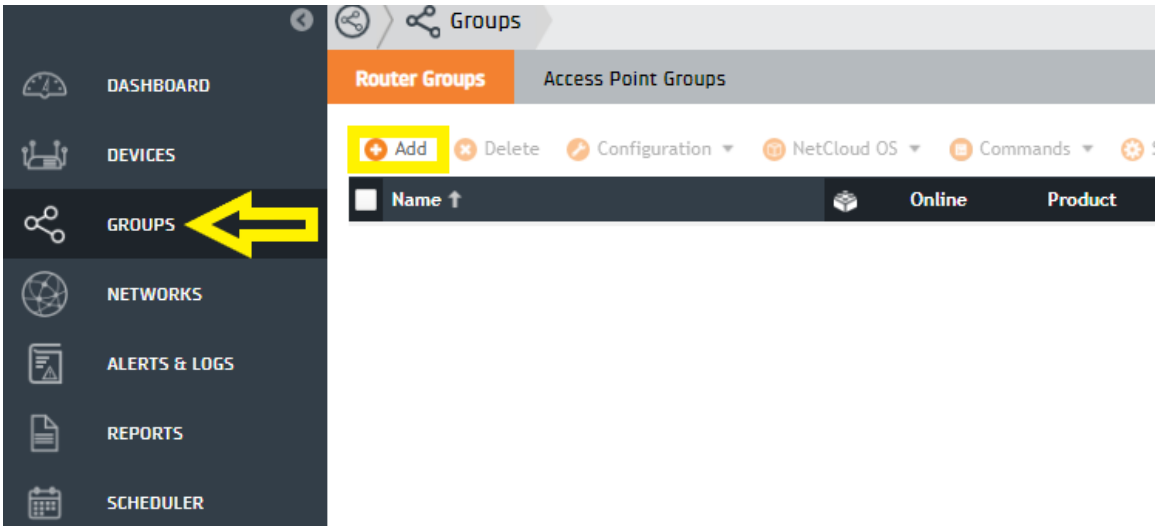
  The remainder of the deployed fleet is contained in this group. Alterations to configurations should be deployed here as a final phase only after testing in previous groups.

Use of a phased deployment for upgrades and alterations provides a smooth transition for the devices. In the event of any disabling changes, canary and/or test group changes can be reversed and mitigate system wide outages.

IMPORTANT: Some configuration changes and all firmware upgrades will cause online devices to go offline while the updates are applied. In some cases, the units may be offline for up to 15 minutes. Please take caution when applying updates to avoid downtime during critical events. Offline devices will update as soon as they connect after the update has been executed in NCM.

Add a Group

Navigate to the **Groups** tab in the NetCloud Manager web interface. Click **Add** at the top left to create a new group. This opens the Add Group dialog.



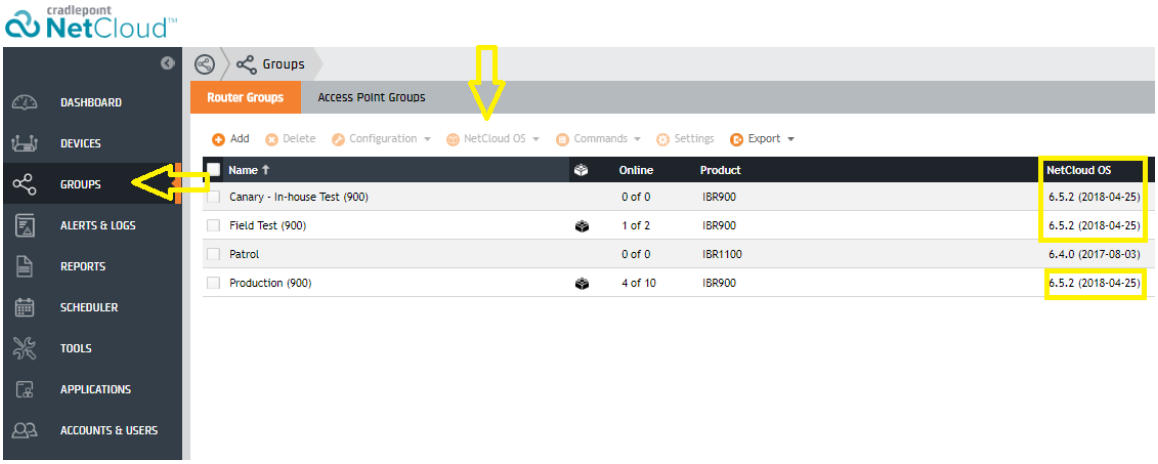
Complete the following fields when adding a new group:

- Group Name: Choose a name as outlined above.
- Subaccount: This defaults to your main account. Click the Change link to select one of your subaccounts.
- Product: Select your product name from the drop-down list (e.g., IBR900 or IBR1700).
- NetCloud OS: Select a NetCloud OS version from the drop-down list. This NetCloud OS version will be pushed to devices when you add them to the group. See here for the current version recommended by Axon: https://customer.cradlepoint.com/s/article/AXON-Verified-NCOS-Version

NetCloud OS

When necessary, you may update the NCOS from NCM by selecting the **Groups** tab in the left-side menu, selecting your desired group, and then selecting the proper NCOS from the **NetCloud OS** drop down at the top of the group table.

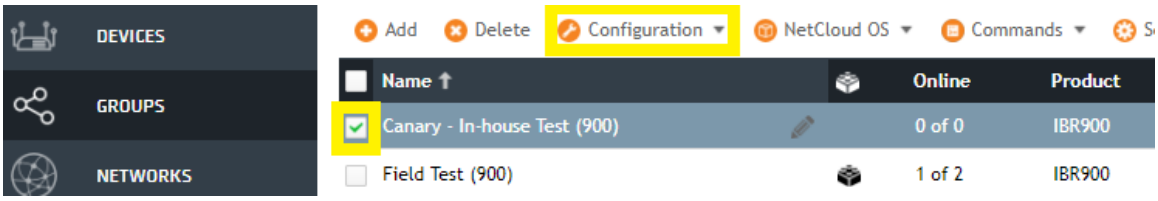
When updating NCOS, the preferred method is to update the groups in phases: Canary, Field Test, and then Production. As a general practice, routers should not be moved between groups for the sole purpose of updating. (e.g., creating a new group with an updated NCOS and then moving devices from group to group)



Group Configuration

Device settings should be applied at a group level. Take care not to alter group configurations with device specific configurations. As an example, the SSID is unique to an individual device and should not be altered at the group level.

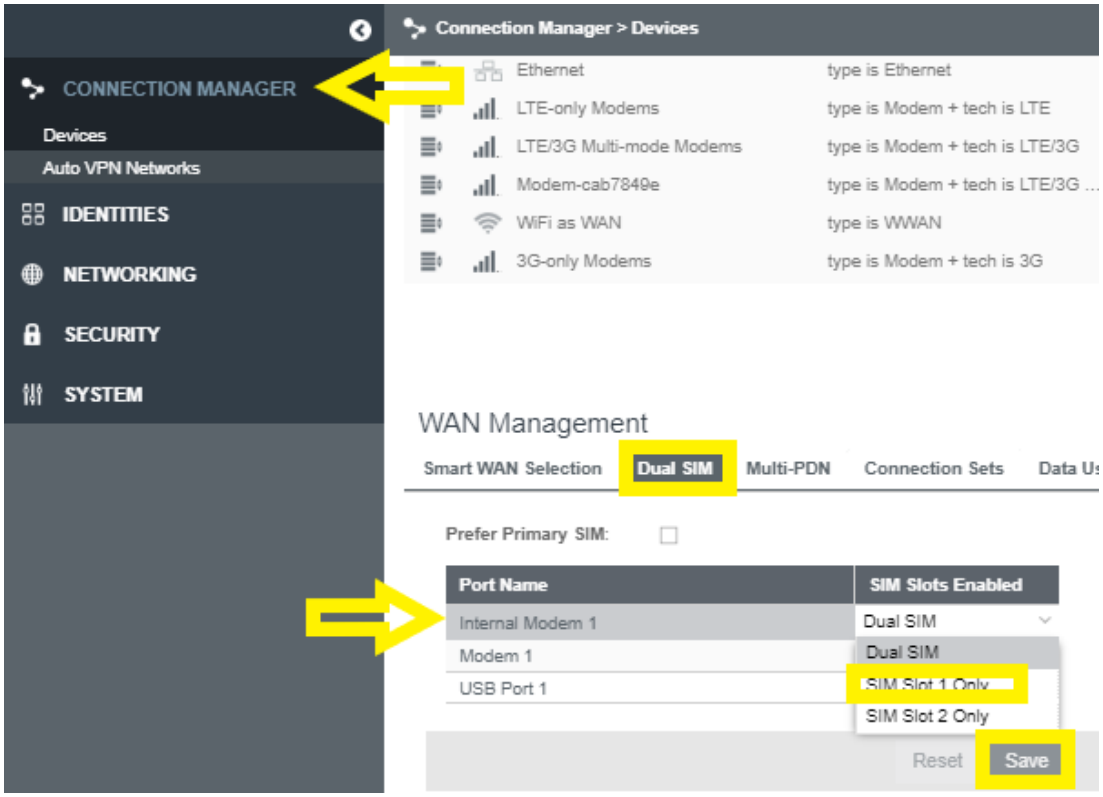
To modify the group configuration in NCM, select the **Groups** tab in the left-side menu and the select your desired group. Once selected, select the **Configuration** drop down menu at the top of the page and select **Edit**. This opens a window for entering group settings. Begin with the Canary group.



<u>These are the recommended group settings:</u>

1. Select the **Connection Manager** tab on the left side of the page and scroll down to the WAN Management section.
    - Select the **Dual SIM** section
    - Click the gray pencil to the right of Internal Modem 1 for the drop-down menu
    - Select **SIM Slot 1 Only**
    - Click **Save**

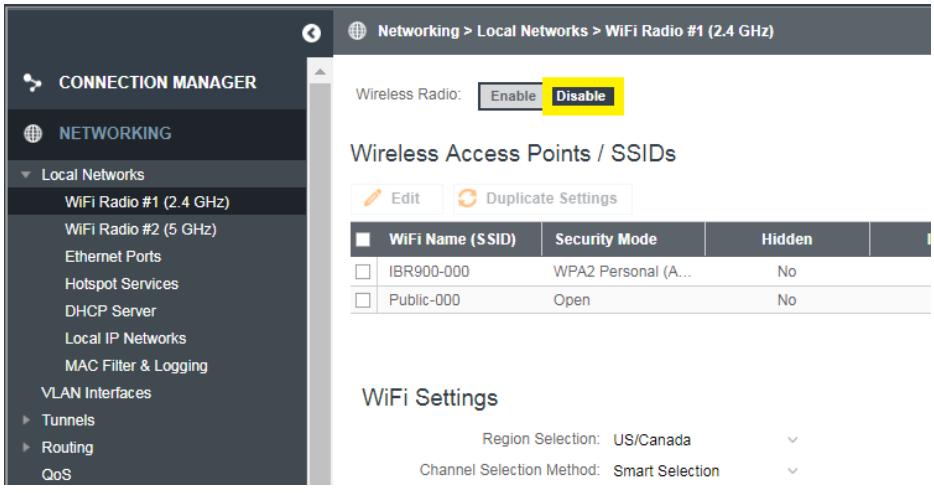
WARNING: The active SIM **must** be in SIM slot 1 to avoid service disruption when applying this setting. Applying this setting with the SIM in the appropriate slot will improve boot time.



2. Select the **Networking** tab on the left side of the page. Navigate to **Local Networks** > **WiFi Radio #1 (2.4Ghz)**

   EXCEPTION: If using the optional Axon Wireless Offload Server, skip this step.

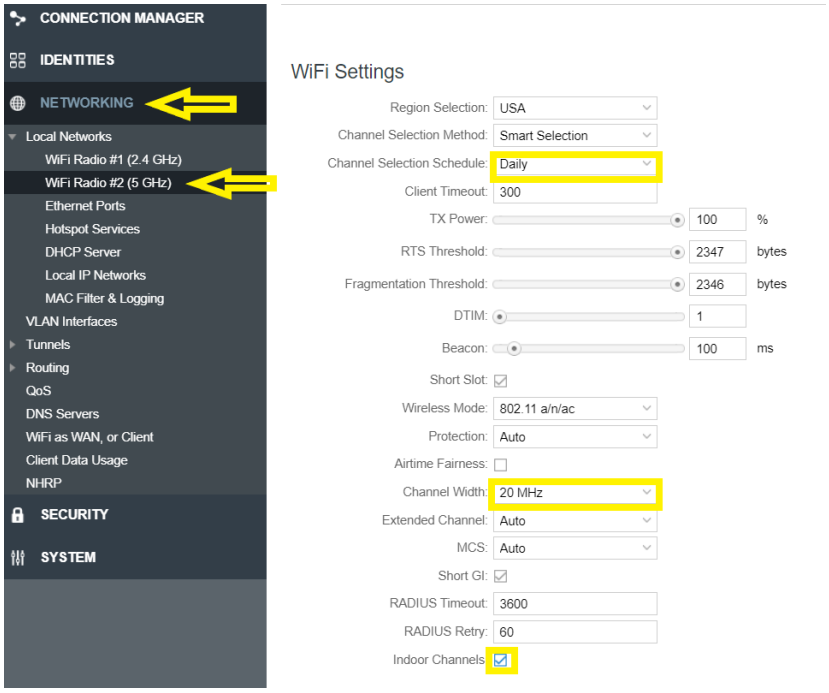
   - Set the radio to **Disabled**



3. Move to **WiFi Radio #2 (5GHz)** in the left menu. Alter the following settings to match:

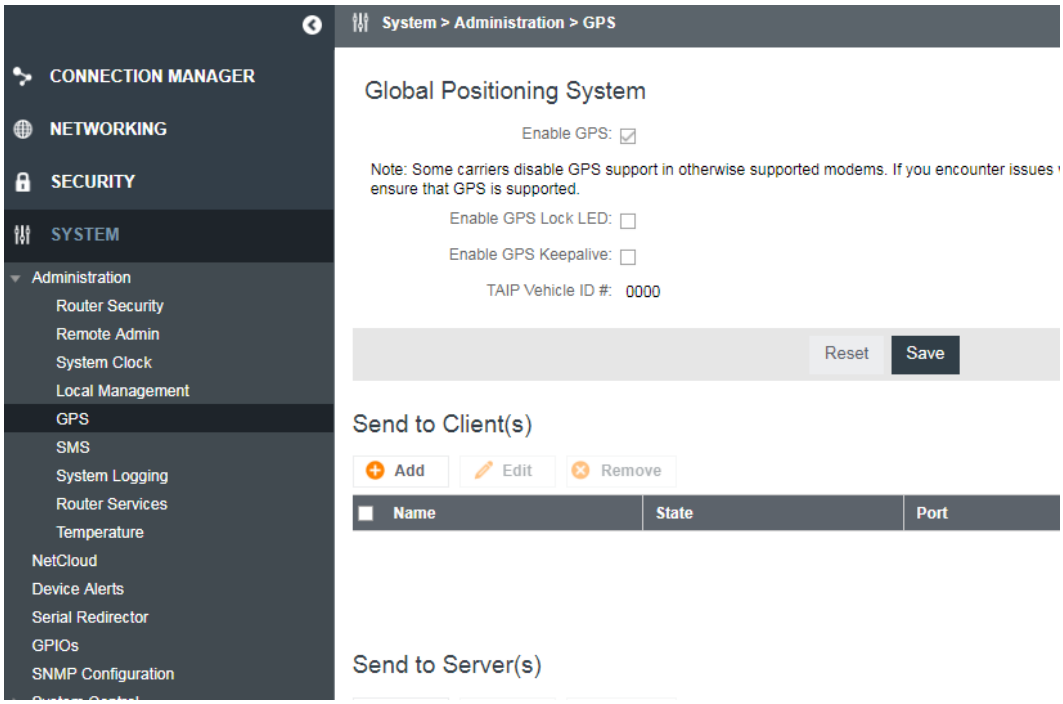
   - Channel Selection Schedule: **Daily**
   - Channel Width: **20MHz**
   - Indoor Channels: **Enabled**

   Click **Save** just below the Indoor Channel option.

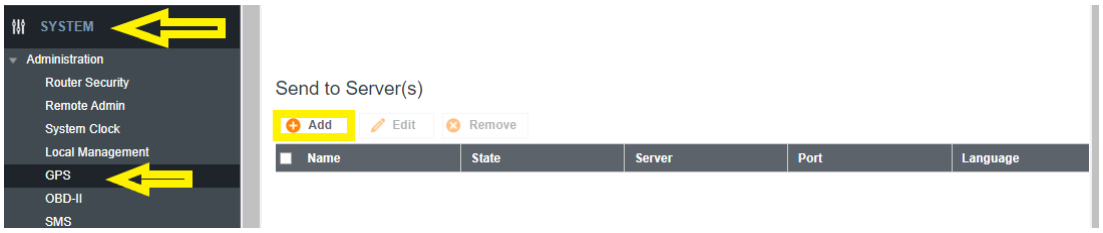


4. Go to **System** > **Administration** > **GPS** in the left menu.

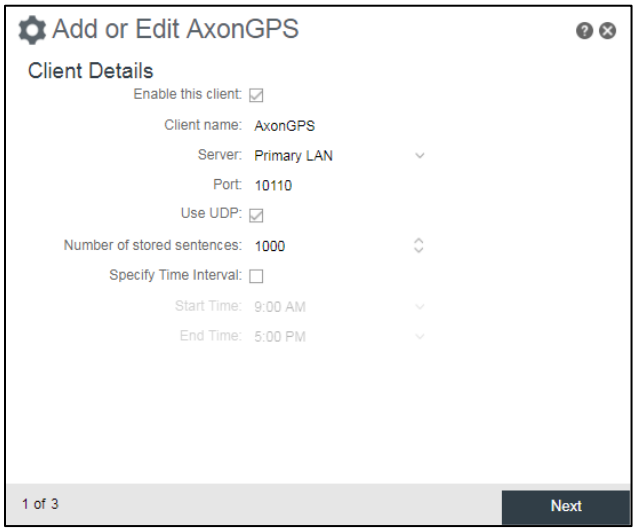
- Ensure **Enable GPS** is checked and save. Do not modify the TAIP Vehicle ID.

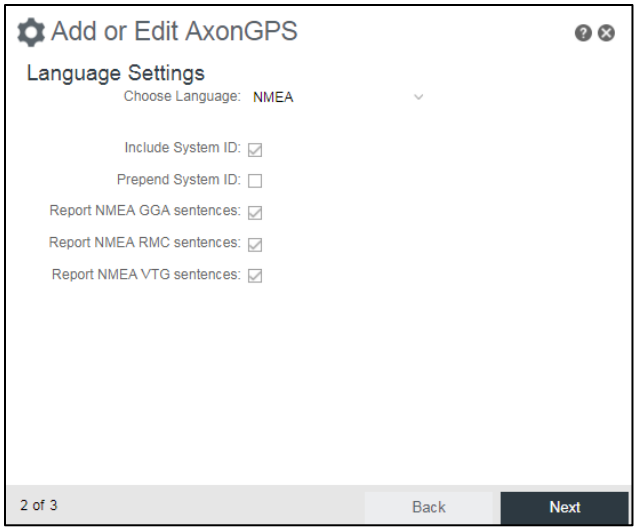


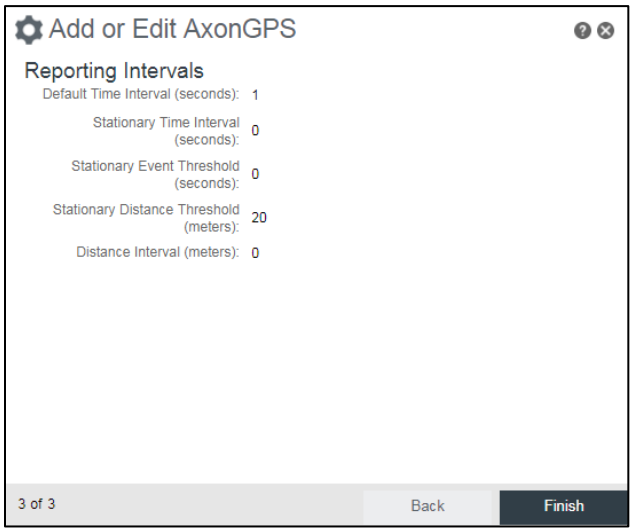
5. Scroll down to the Send to Server(s" section and select **Add**:



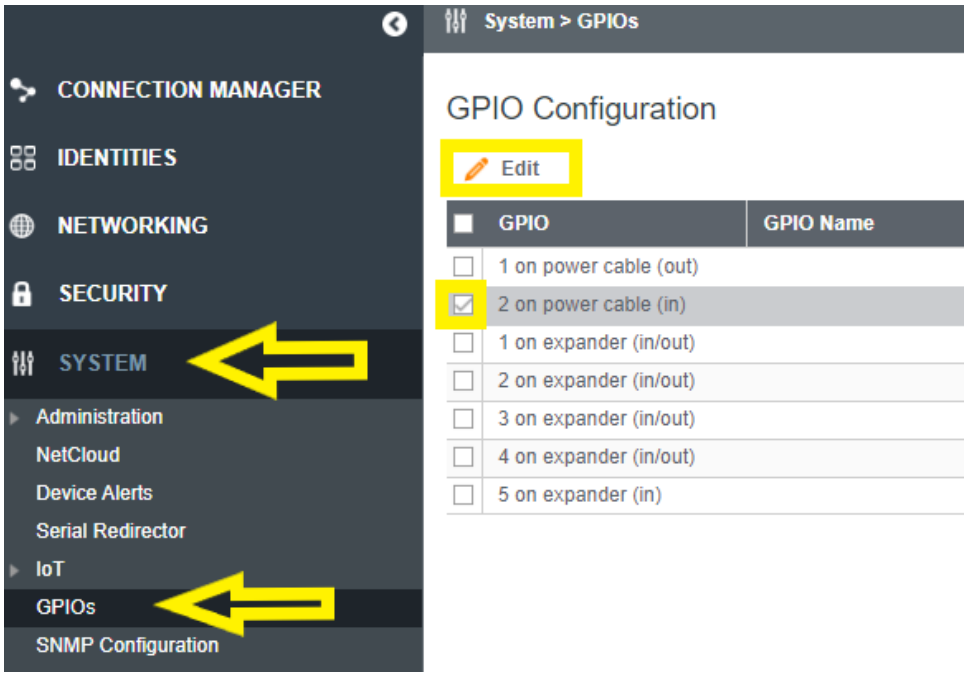
6. Add the rule listed below:



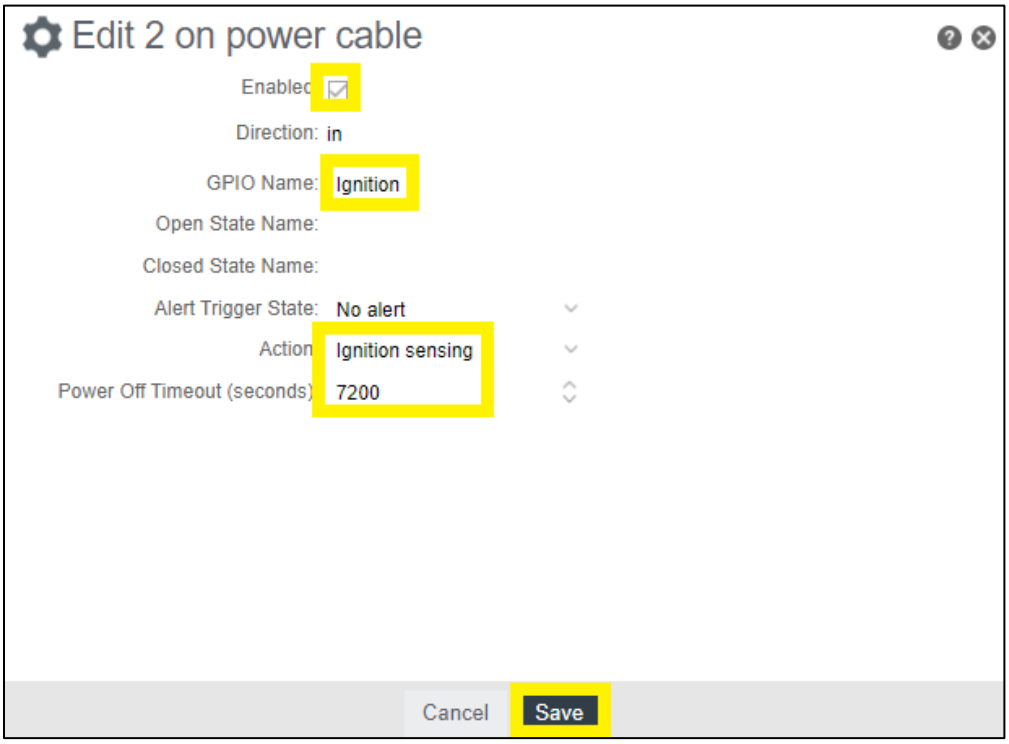

Add or Edit AxonGPS
Language Settings
Choose Language: NMEA
Include System ID:
Prepend System ID:
Report NMEA GGA sentences:
Report NMEA RMC sentences:
Report NMEA VTG sentences:
2 of 3
Back
Next


Add or Edit AxonGPS
Reporting Intervals
Default Time Interval (seconds): 1
Stationary Time Interval (seconds): 0
Stationary Event Threshold (seconds): 0
Stationary Distance Threshold (meters): 20
Distance Interval (meters): 0
3 of 3
Back
Finish

7. Go to **System** > **GPIOs** in the left menu.



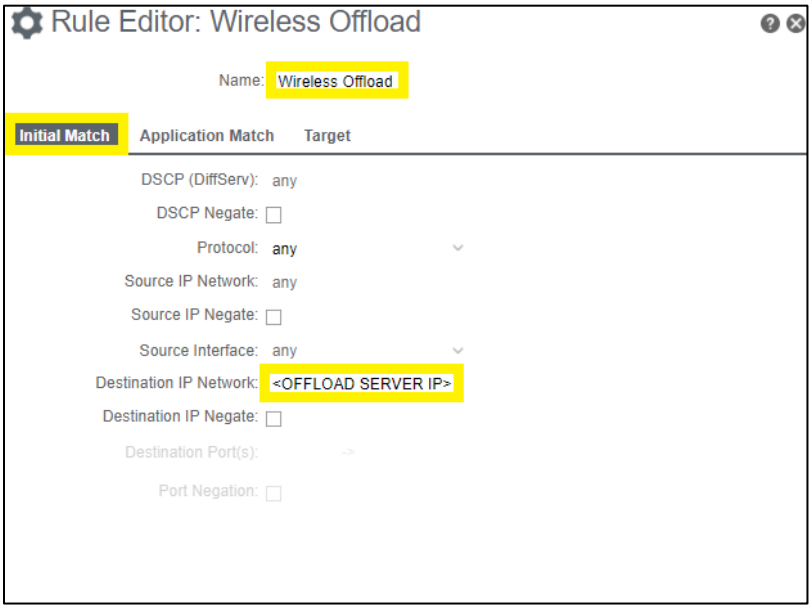
- Select **2 on power cable (in)** and click **Edit**. Set the values as indicated below and then click **Save**.

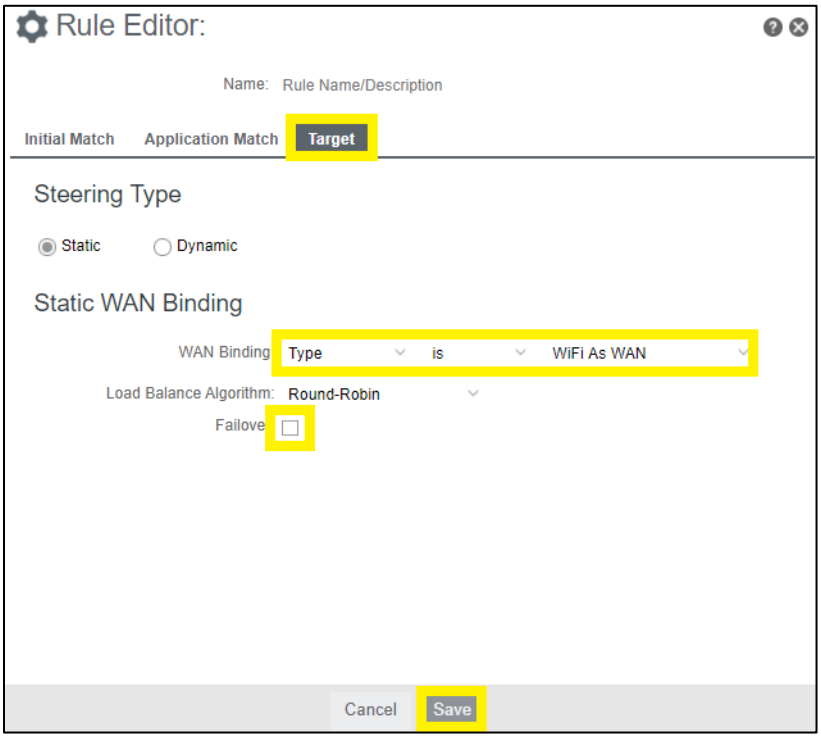


8. If using the optional Axon Wireless Offload Server continue with this step, if not skip to step 9.

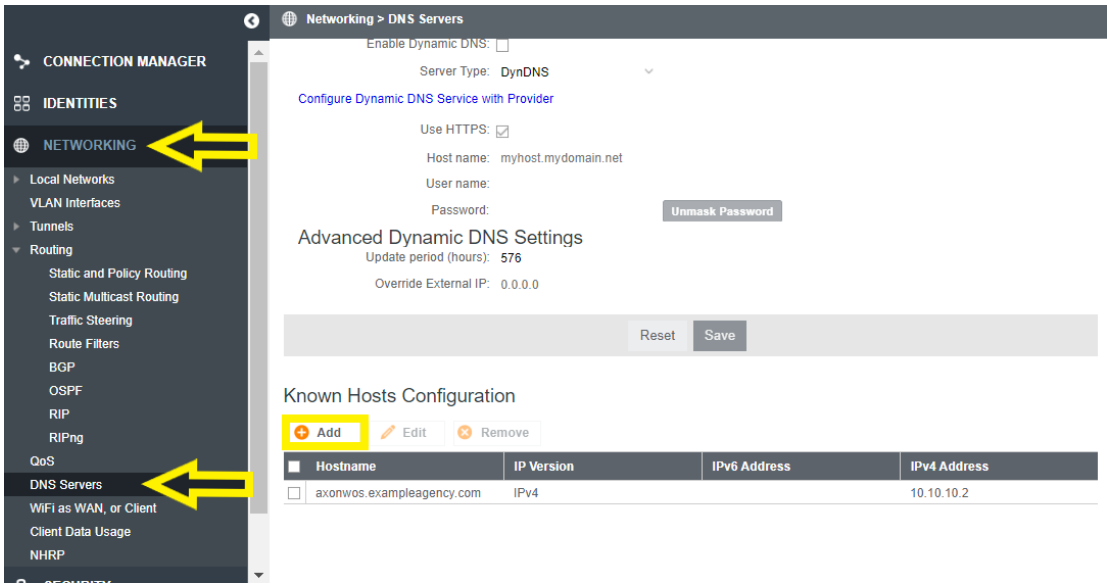
- Select **Networking** > **Routing** > **Traffic Steering** in the left menu. Select **Add** to open the rule editor.
  Name the rule **Wireless Offload Server** and add the destination IP address or network address of the Axon Wireless Offload Server. Select the **Target** tab and set the WAN Binding to **Type is WiFi as WAN**. Click **Save**.

  NOTE: When using multiple servers, repeat this rule for ever server IP if using the server IP address or for every unique network address as required.





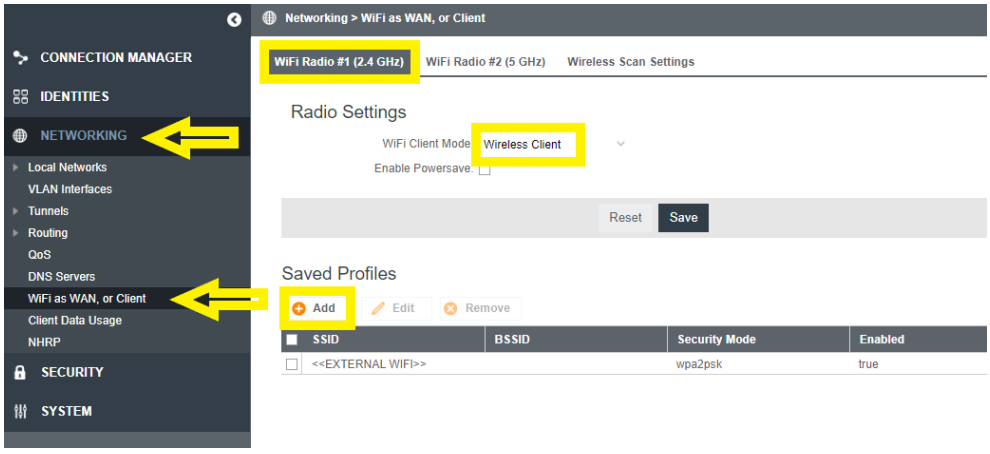
- Move on to **Networking** > **DNS Servers** in the left menu. Scroll down to the Known Hosts Configuration section and select **Add**.



Add the appropriate host name and IP address. Repeat as necessary for each server.

NOTE: Known Host entries are not required when your server configuration in Evidence.com contains a host name of the server IP address. Values contained in the pictures are for illustration purposes only.

- Move on to **Networking** > **WiFi as WAN, or Client** in the left menu. Select **WiFi Radio #1 (2.4 GHz)** from the tabs near the top of the table. Set the WiFi Client mode to **Wireless Client** and click **Save**. Then select **Add** in Saved Profiles. Enter the appropriate WLAN details of the Wireless Offload Infrastructure.



9. This concludes the Group Configuration.

   IMPORTANT: You must click **Commit Changes** at the bottom right of the configuration window to set the changes you've made to the group.

Copy Group Configuration

Once you have completed the initial group configuration for the Canary group, the configuration should be applied to the remaining groups.

1. From the **Groups** tab, select the Canary group.
2. Select **Configuration**.
3. Select **Copy to**.
4. Select the **Test** group
5. Click **OK**.
6. Repeat this process for the Production group.

Move Devices into Groups

All devices should be moved into a group so they each receive the proper group settings. Devices should be split between the groups as you desire. The recommendation is to place a workbench or IT vehicle router in the Canary group (when possible), at least two routers in the Test group, and the remainder of devices in the Production group. These numbers will vary based upon the size of your fleet. To move devices into groups:

1. From the **Devices** tab, select the check box for the devices you want to move into a group.
2. Select **Move** at the top of the devices table.
3. Select the appropriate group.
4. Click **OK**.

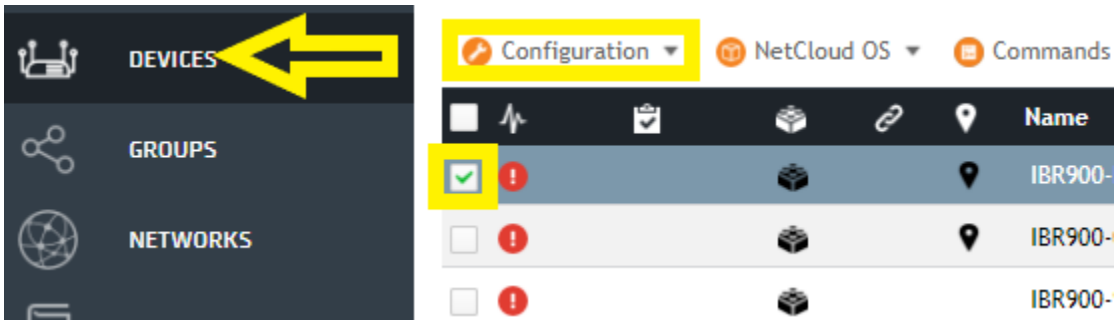
NOTE: Once a device is moved into a group, the group settings will be applied when the device connects to NetCloud. If the new group has a different NCOS from the device, the device's NCOS will be updated. Devices will go temporarily offline during this update.

Device Configuration

Each individual device must have a unique setting. For this, navigate to the **Devices** tab on the left side of the main NetCloud Manager web interface.

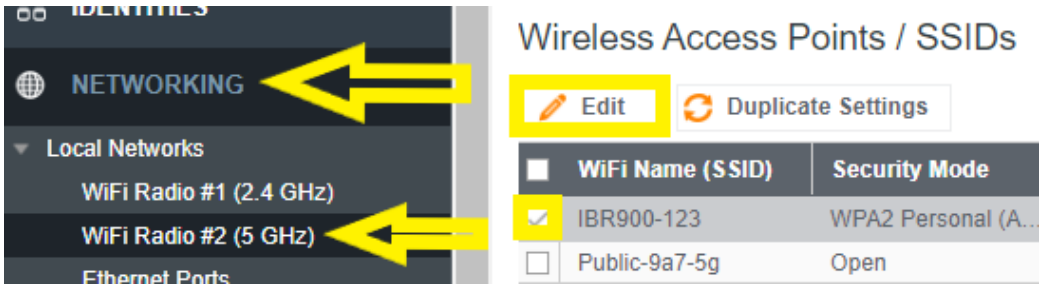
NOTE: The following steps must be repeated for each individual device.

1. Select the device from the device list and click the **Configuration** drop down menu at the top of the table and the select **Edit**. This will open a device configuration window similar to the group configuration window.



2. Go to **Networking** > **Local Networks** > **WiFi Radio #2 (5GHz)**.

   - Select the first SSID in the table and **Edit**.

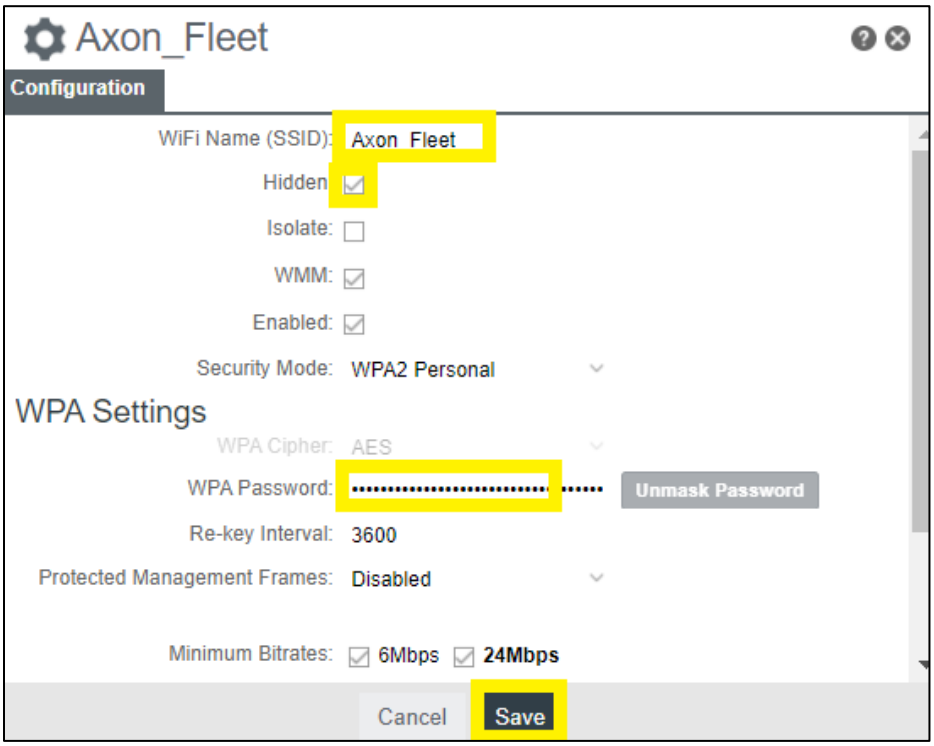


   - Change the **SSID** to the desired name.

     IMPORTANT: Each vehicle must have a unique SSID.

   - Set the Password as desired. **WPA2-Personal is required**.

- If preferred, the password may be set in the group configuration to have a single password for all router WLANs.



This completes the Device Configuration.

IMPORTANT: You must click **Commit Changes** at the bottom right of the configuration window to set the changes you've made to the device.

Repeat configurations per device as necessary.

Device Naming

It is best to assign a Description to each device to easily identify the unit where the device is installed. This is usually the unit number and for your agency is currently being used. To add a device description, navigate to the **Devices** menu in the main NetCloud Manager window. Double-click the **Description** column of a device and name as desired.

This completes the Cradlepoint NCM and NCOS router setup for your Axon Fleet system.