Document Number	
Created By	Eric

GIoT Femto Cell User Guide

Modification History

Date	Change log	Author	Revision
2017/ 3/ 23	1st version	Eric, Joey	001

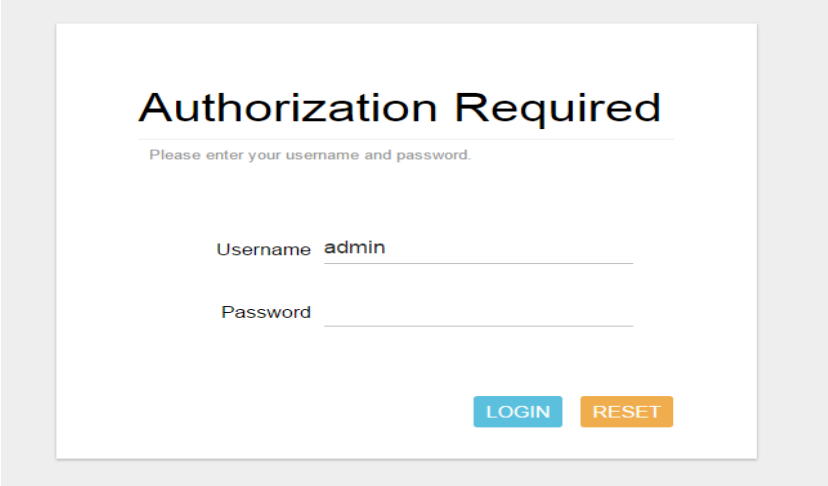
This GIoT Femto Cell User Guide will assist you in navigating the system with the

following comprehensive guidelines.

1. Open Admin GUI

Connect to Femto Cell via wifi (SSID: AP-last 6 numbers of mac address)
Access Femto Cell WebUI via IP address “192.168.55.1”.
Default username is “*admin*” and password is "*admin*“.

Figure 1



2. Status

The Status menu consists of the following categories: Overview, Routes, System Log, Kernel Log, Processes and Realtime Graphs. An introduction of each category will be distinctly stated in individual paragraphs.

2.1 Status - Overview

The purpose of this category is to view the following contents: system status, memory usage and network settings.
The contents are exhibited in one single page. Please scroll down the Status page to obtain an overall view. (figure2.A & figure 2.B & figure 2.C)

An “AUTO REFRESH ON/OFF” button is lodged on the top right of the panel. This function enables the status data to be refreshed every 5 seconds.
(figure3.A & figure3.B)

Figure 2.A - System Status

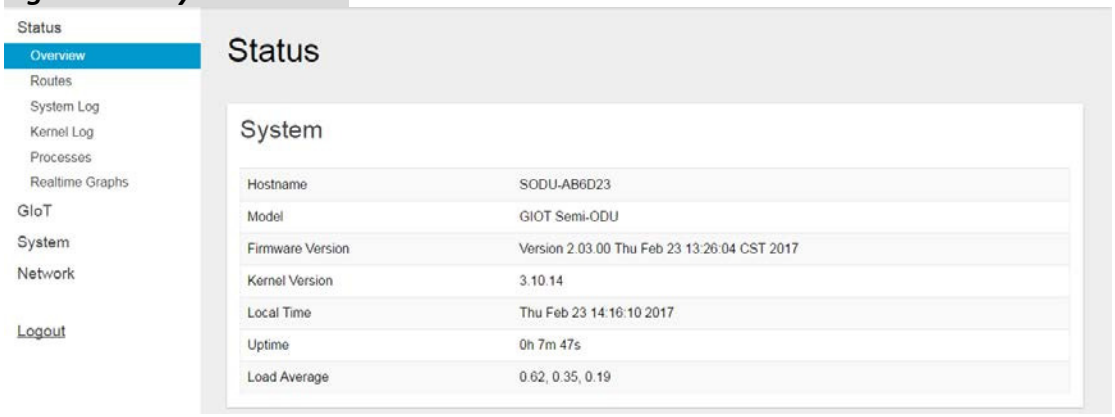


Figure 2.B - Memory Usage and Network Settings

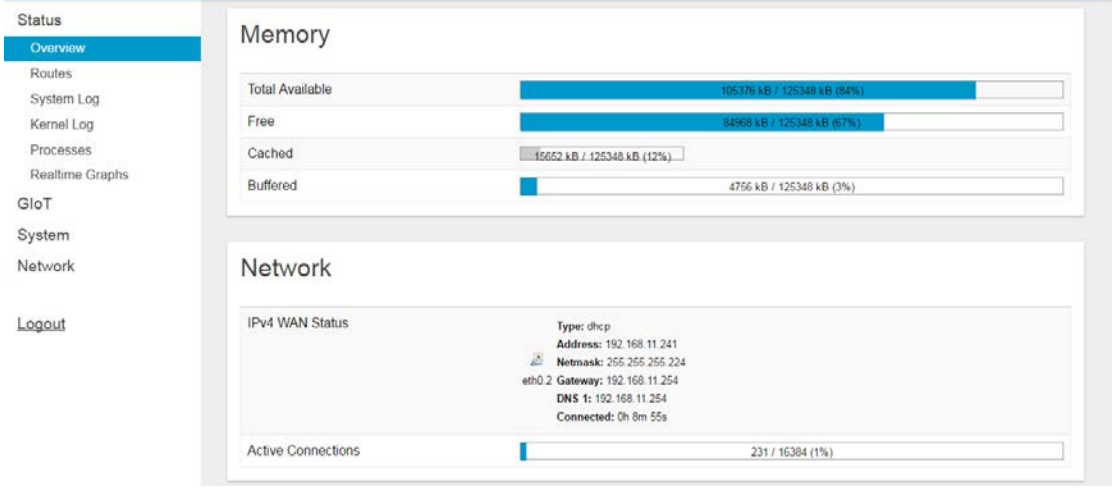


Figure 3.A - Status will auto refresh in 5 secs if “Auto Refresh ON” button is on

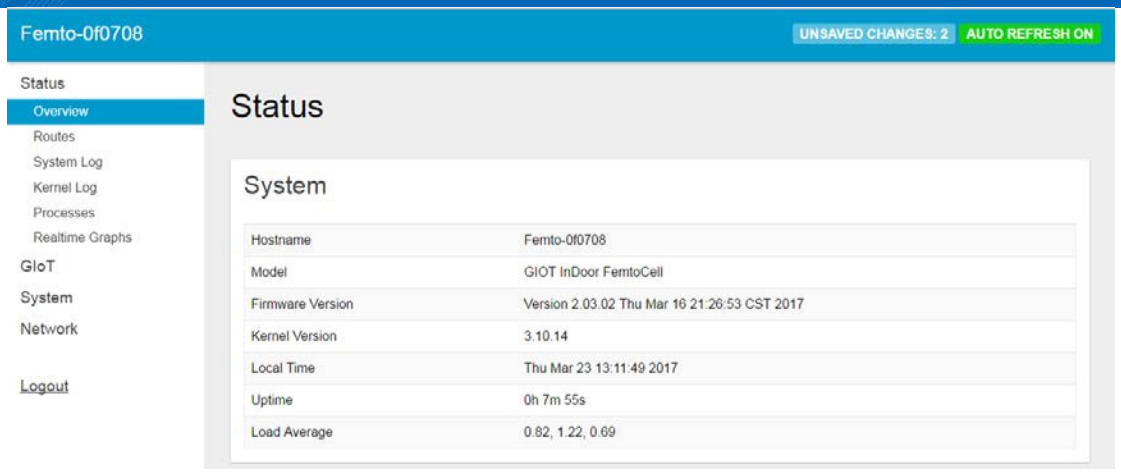
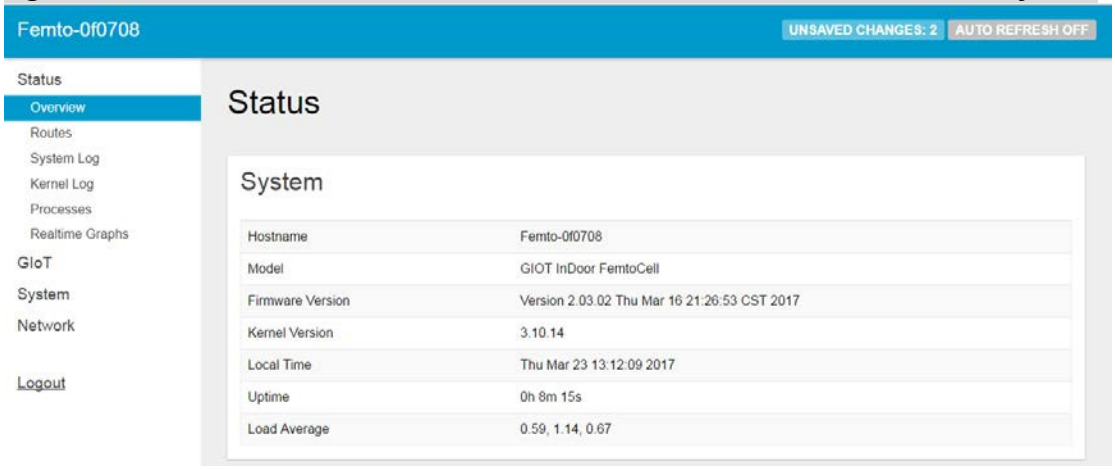


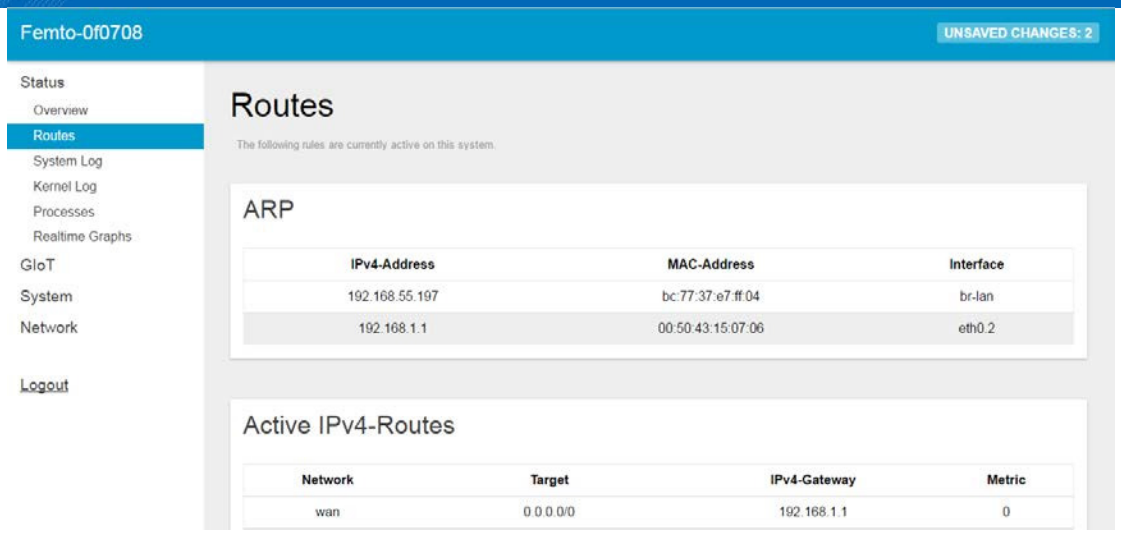
Figure 3.B - Click "AUTO REFRESH ON/OFF" button to enable/ disable auto refresh.



2.2 Status - Routes

The purpose of this category is to view the ARP table and active IPv4 routes information.

Figure 4 - ARP table and Active IPv4 Routes



2.3 Status - System Log

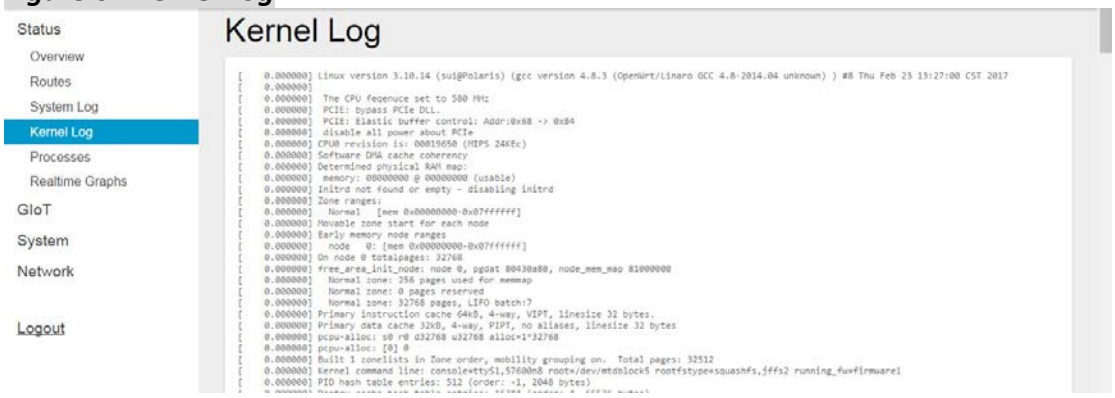
This category is to view system log information.

Figure 5 - System Log

2.4 Status - Kernel log

This category is to view kernel log information.

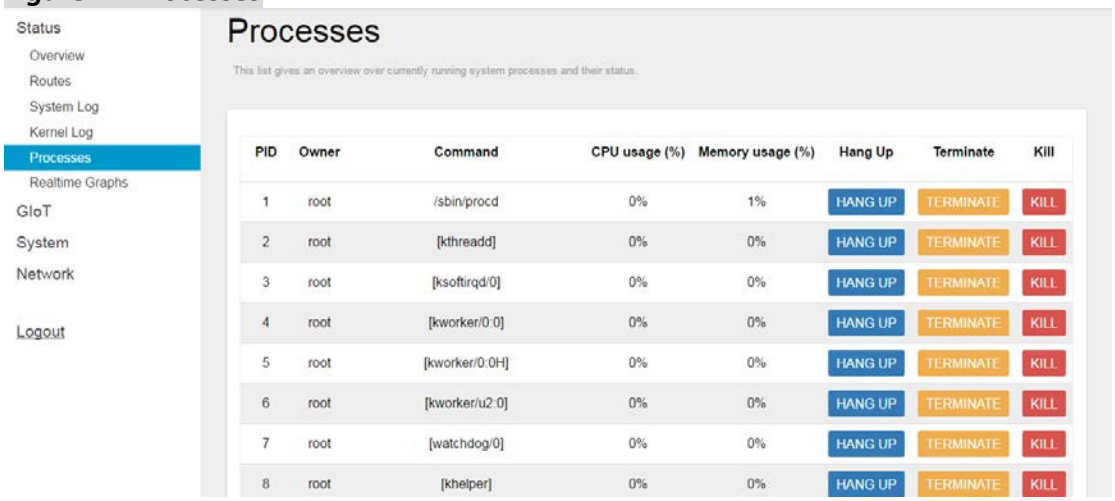
Figure 6 - Kernel Log



2.5 Status - Processes

The purpose of this category is to view the system processes that are in progress. Processes can be hung up, terminated, and killed for each indivFemto Cellal item.

Figure 7 - Processes



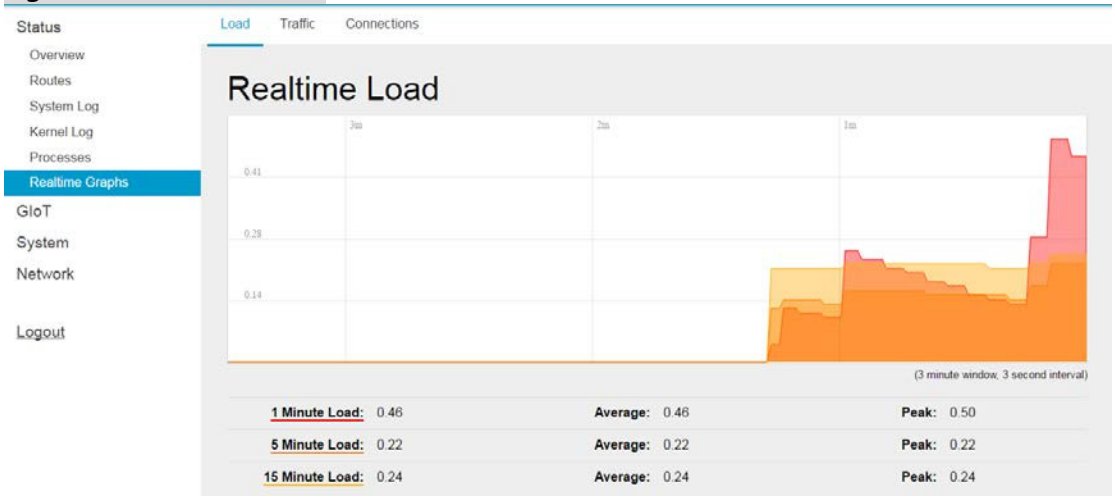
2.6 Status - Realtime Graphs

This category is further divided into the following sectors: Load, Traffic, and Connections. These options are lodged and labeled above the graph.

2.6.1 Load

To view the current load value and average of different time intervals.

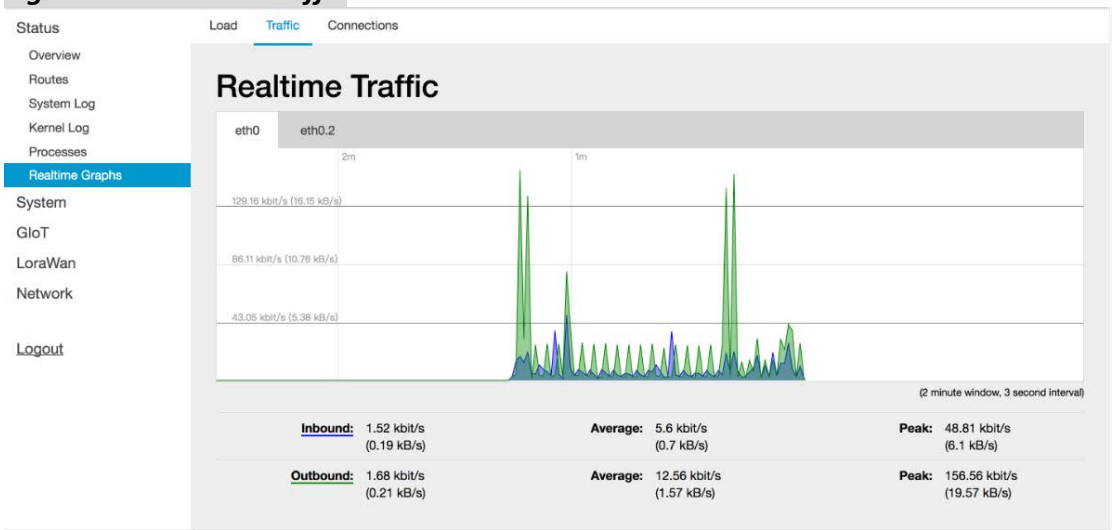
Figure 8 - Realtime Load



2.6.2 Traffic

To view the network traffic of each interface.

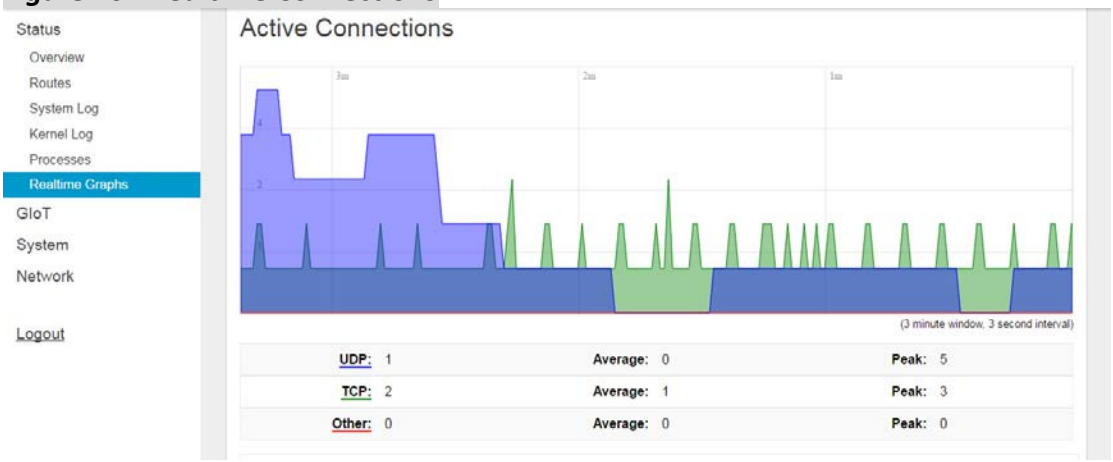
Figure 9 - Realtime Traffic



2.6.3 Connections

To view the currently active network connections.

Figure 10 - Realtime Connections



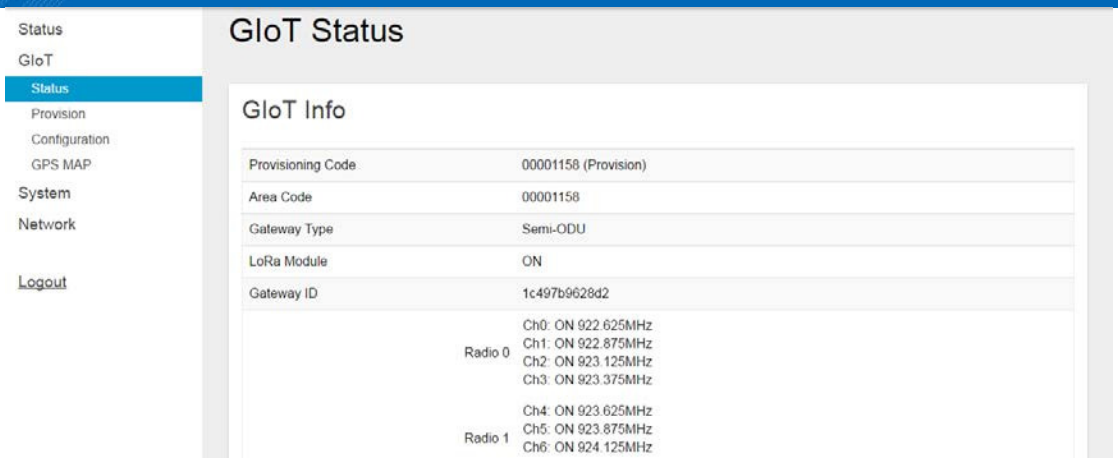
3. GIoT

The GIoT menu consists of the following categories: Status, Provision, Configuration and GPS MAP.

3.1 GIoT - Status

The purpose of this category is to view GIoT information as in its provision code, gateway type, gateway ID or LoRa modules, channels, spreading factor, and GPS status.

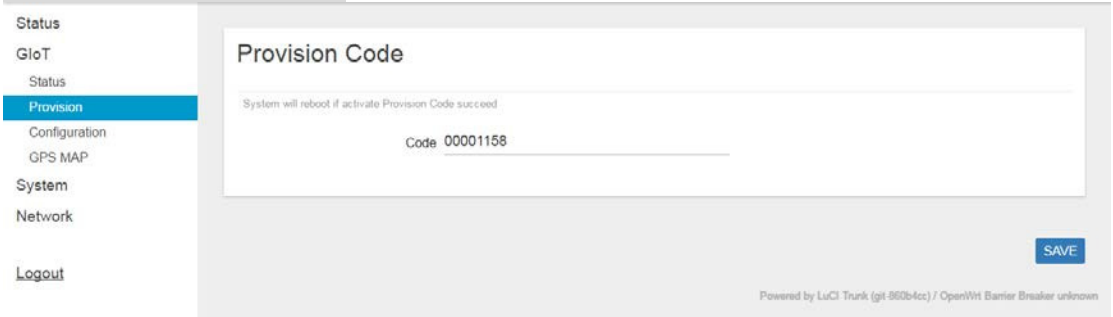
Figure 11 - GIoT Info



3.2 GIoT - Provision

GIoT provision code can be setup on this page.

Figure 12 - Provision Code

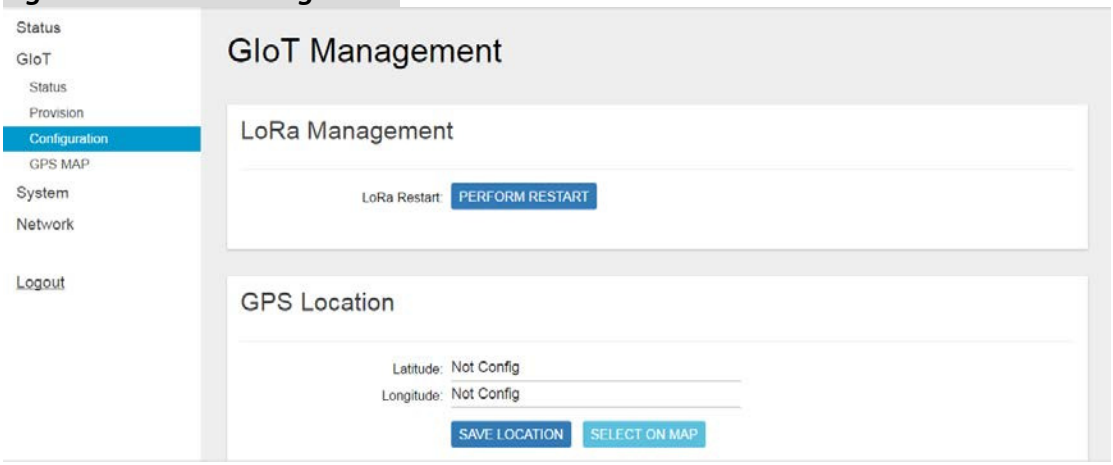


3.3 GIoT - Configuration

Click "*PERFORM RESTART*" button to restart LoRa server.

The latitude and longitude coordinates can be manually embedded in this page. Click "*SAVE LOCATION*" button after inserting the coordinates or click "*SELECT ON MAP*" button to be redirected to the map in GPS Settings.

Figure 13 - GIoT Management

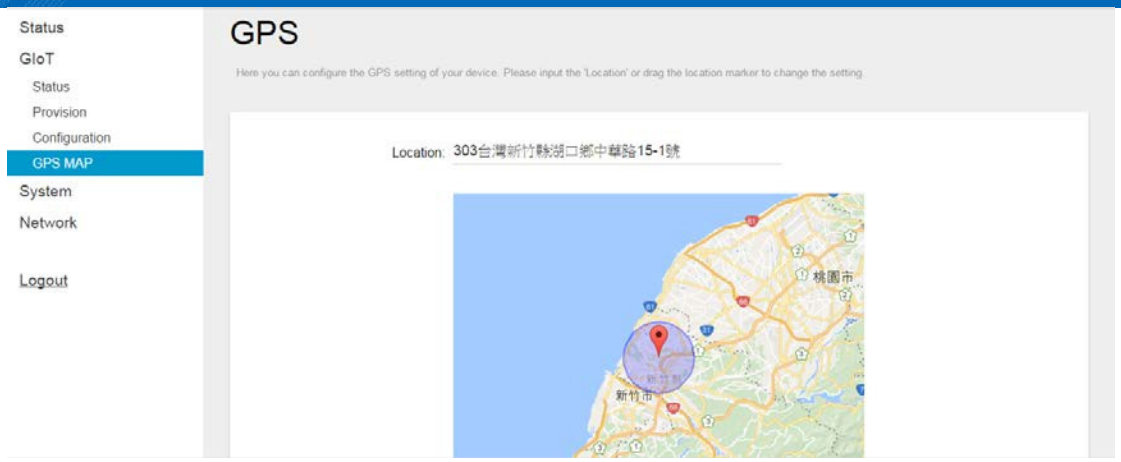


3.4 GIoT - GPS MAP

To setup the GPS location, simply input your address location in the "Location" text field above the map or pinpoint your location on the map by dragging the red marker to the correct spot.

Once the location is confirmed, the system will verify and apply the new Latitude/Longitude coordinates into its GPS setting.

Figure 14 - GPS Setting


Status
GIoT
Status
Provision
Configuration
GPS MAP
System
Network
Logout
GPS
Here you can configure the GPS setting of your device. Please input the 'Location' or drag the location marker to change the setting
Location: 303台灣新竹縣湖口鄉中華路15-1號
桃園市
新竹市

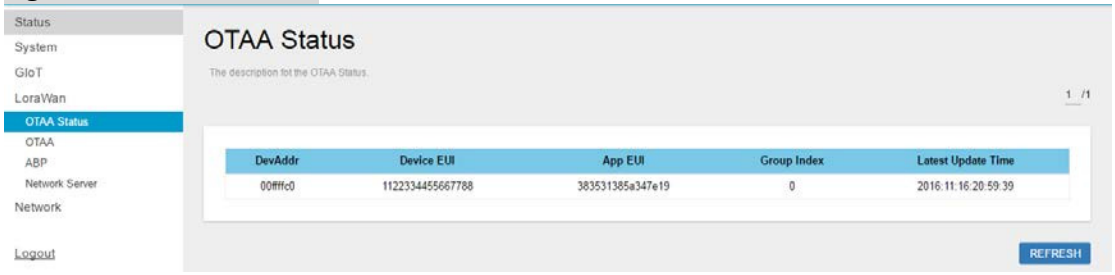
4. LoRaWan

The LoRaWan menu consists of the following categories: OTAA Status, OTAA, ABP and Network Server. The proper provision code has to be in place to reveal and access the LoRaWan features on the system menu. Please contact GIoT personnel if needed.

4.1 LoRaWan - OTAA Status

The purpose of this feature is to view the process status of a node joining Femto Cell via OTAA.

Figure 15 - OTAA Status



4.2 LoRaWan - OTAA

Click "*ADD*" button to create an OTAA rule entry.
To delete entries, select one or more OTAA rule entries and click "DELETE" button.
To edit an entry, select a rule entry and click "EDIT" button to proceed.
Please note that 1. The OTAA settings will be cleared after Femto Cell is reset to default.
2.The Aging Out Time must be at least 60 minutes.

Figure 16.A - OTAA - Add

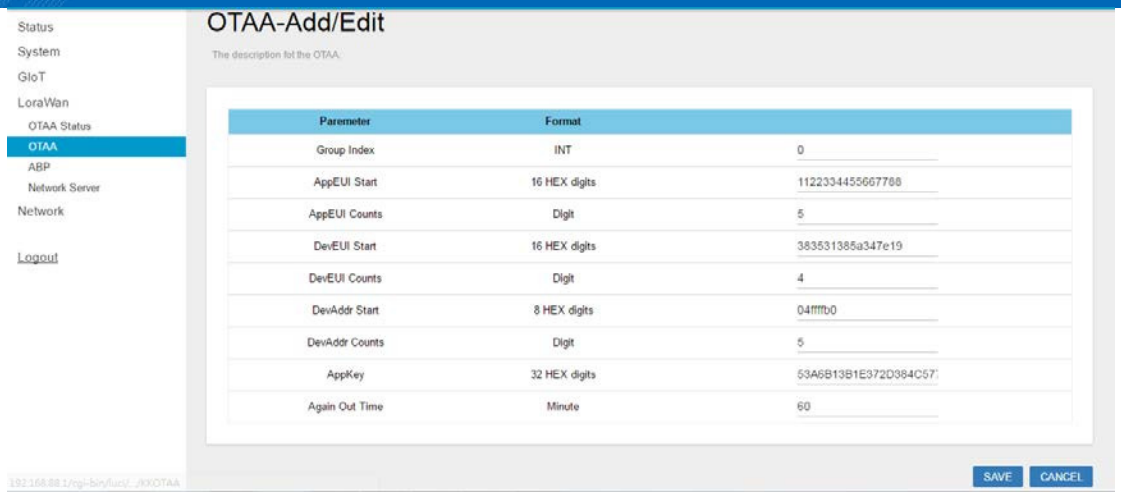


Figure 16.B - OTAA

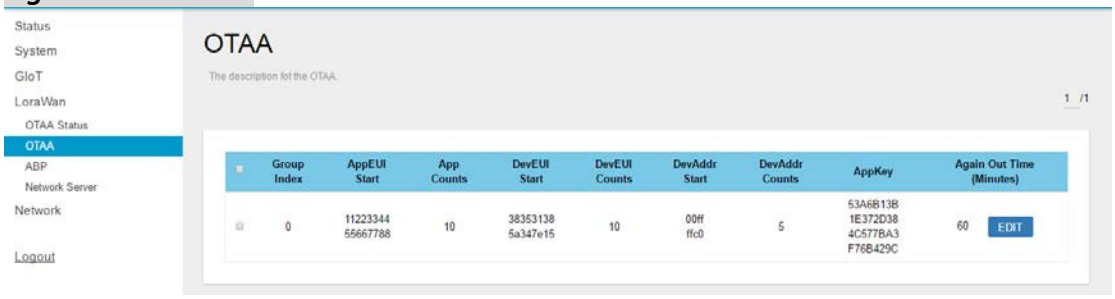
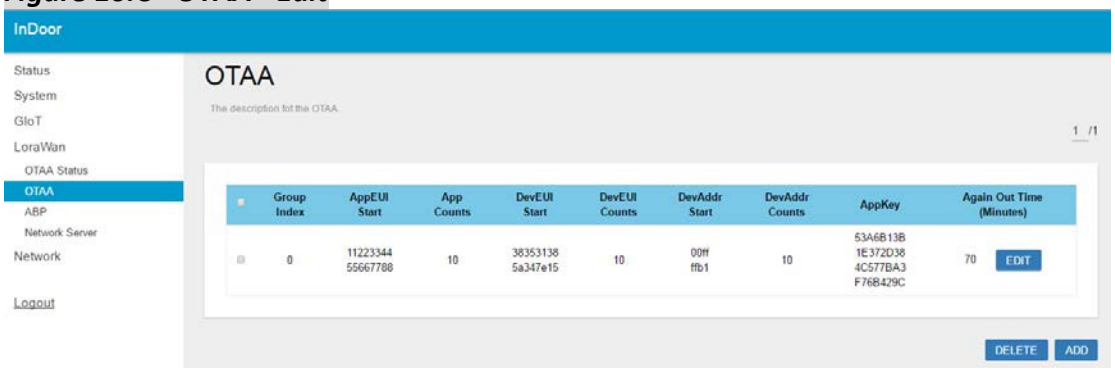


Figure 16.C - OTAA - Edit



4.3 LoRaWan - ABP

The main function of this feature is to add/delete/edit ABP rule entries on this page.
The ABP menu consists of the following categories: Individual and NetID Group.

4.3.1 INDIVIDUAL

Click "**INDIVIDUAL**" button to enter the INDIVIDUAL function page.
Click "*ADD*" button to create an ABP (INDIVIDUAL) rule entry.
To delete rule entries, select one or more ABP (INDIVIDUAL) rule entries and click "DELETE" button.
To edit a rule entry , select an ABP (INDIVIDUAL) rule entry and click "EDIT" button to proceed.
Please note that the ABP (INDIVIDUAL) settings will be cleared after Femto Cell is reset to default.

Figure 17.A - Individual

Figure 17.B - Individual – Add

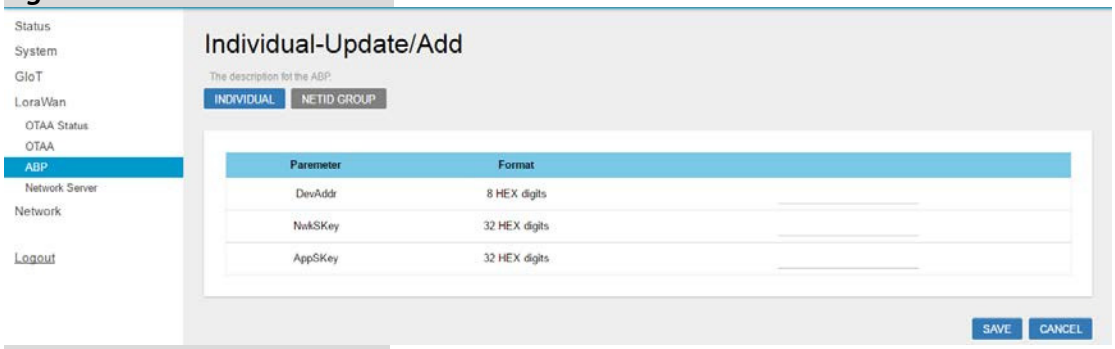


Figure 17.C - Individual – Edit

4.3.2 NETID GROUP

Click **"NETID GROUP"** button to enter NETID GROUP function page.

Click "*ADD*" button to create a ABP (NETID GROUP) rule entry.

To delete rule entries, select one or more ABP (NETID GROUP) rules and click "DELETE" button.

To edit a rule entry, select a ABP (NETID GROUP) rule entry and click “EDIT” button to proceed.
Please note that the ABP (NETID GROUP) settings will be cleared after Femto Cell is reset to default.

Figure 18.A - NETID GROUP

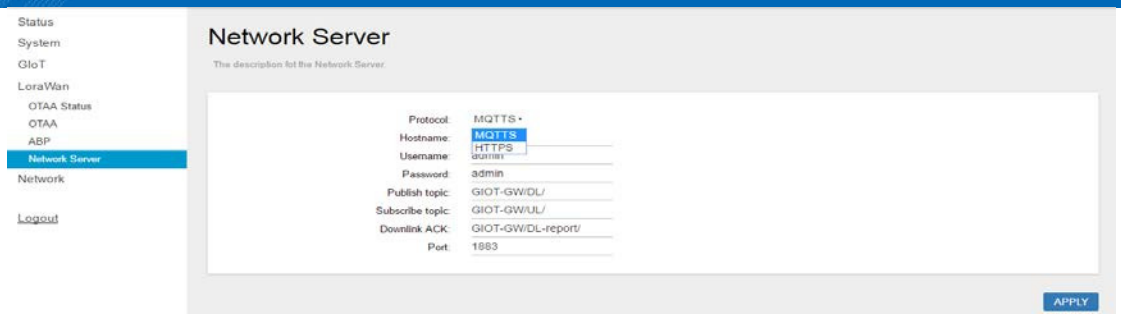
Figure 18.B - NETID GROUP - ADD

Figure 18.C - NETID GROUP - EDIT

4.4 LoRaWan - Network Server

The user can configure Network Server settings on this page.
The Femto Cell connects to the lora data center via CURL or MQTT.
Note that the node data will be sent to Gemtek lora data center if you select CURL.

Figure 19 - Network Server


Status
System
GloT
LoraWan
OTAA Status
OTAA
ABP
Network Server
Network
Logout
Network Server
The description fot the Network Server
Protocol:
MQTTS
Hostname:
Username:
Password:
admin
Publish topic:
GIOT-GW/DL/
Subscribe topic:
GIOT-GW/UL/
Downlink ACK:
GIOT-GW/DL-report/
Port:
1883
MQTTS
HTTPS
APPLY

5. System

The System menu consists of the following categories: System, Administration, Backup, System Firmware, Reboot. Introduction and input procedures for each category are described in the following paragraphs.

5.1 System - System

Hostname and Timezone can be customized in the system properties.
Click "*Sync with Browser*" button (figure20.A) to adjust the local time.
Place a checkmark next to "*Enable NTP Client*" (figure20.B) to synchronize the time with NTP server.
If you choose to use another NTP server, please place a checkmark next to "*Provide NTP server*" and fill out the "NTP server candidates" text field.

Figure 20.A - System: System Properties

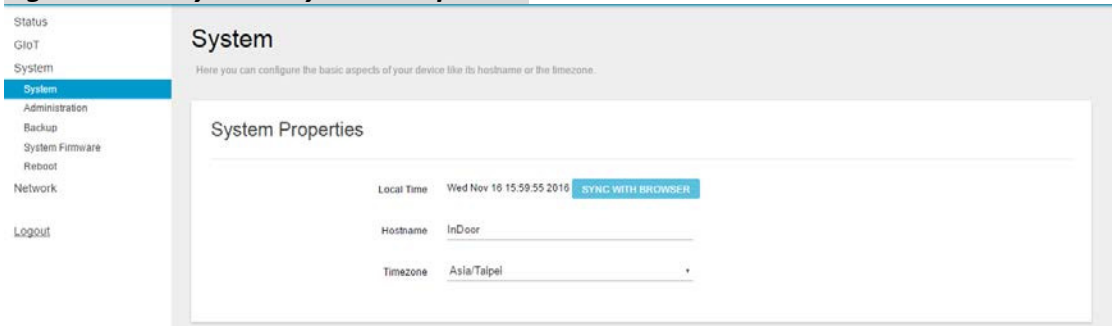
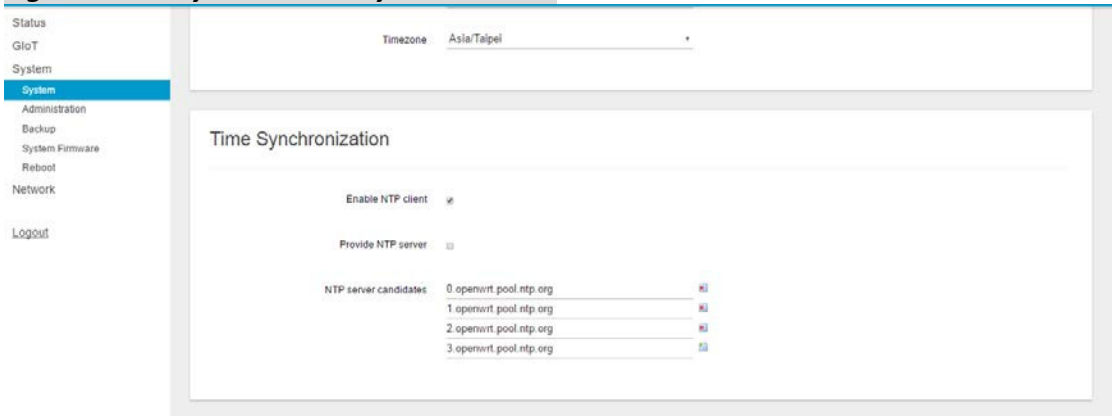


Figure 20.B - System: Time Sychronization



5.2 System - Administration

Gateway login password and SSH accessibility can be configured in this page.

Figure 21.A - Administration: Router Password

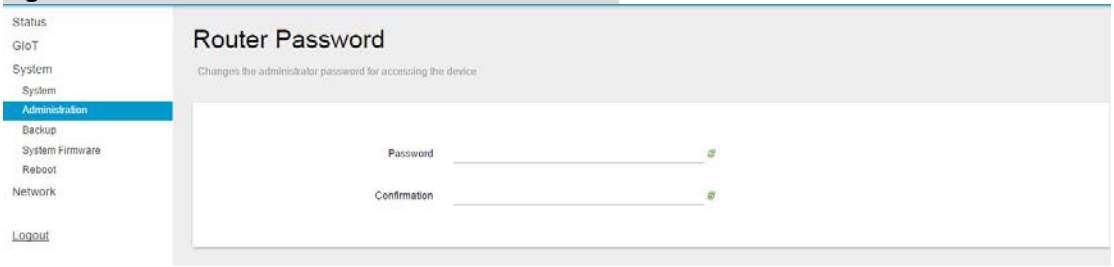
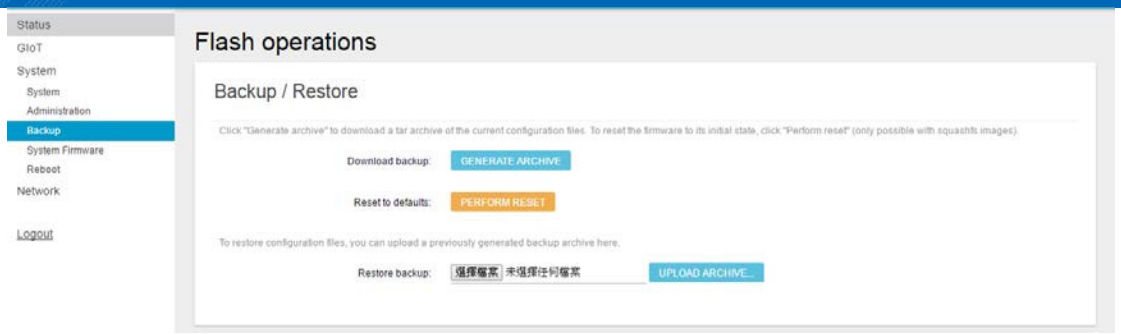


Figure 21.B - Administration: SSH Access

5.3 System - Backup

Click "*GENERATE ARCHIVE*" button to download the configuration file with the current gateway settings.

Figure 22.A - Backup/Restore



Click "*PERFORM RESET*" button to reset the firmware to its initial state.
Please note that the LoRa provision settings will NOT be reset by this action.

Figure 22.B - Backup/Restore

Choose the most recent backup file and click "*UPLOAD ARCHIVE*" to restore the configuration file. (figure 22.C & figure 22.D)

Figure 22.C - Backup/Restore

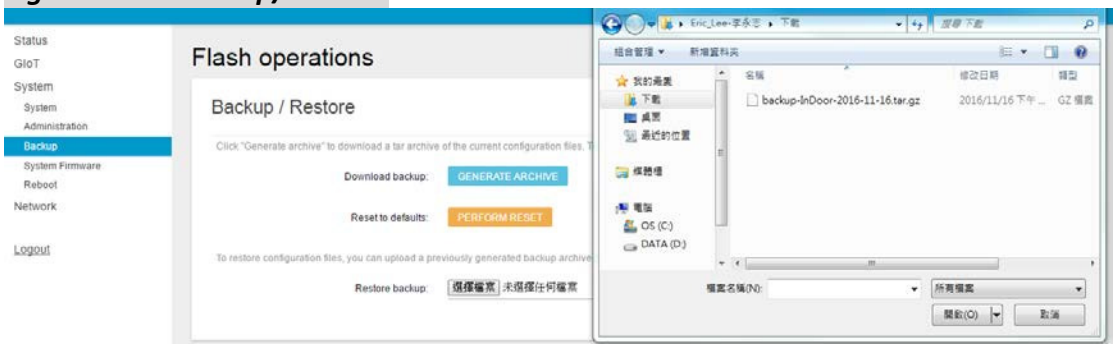
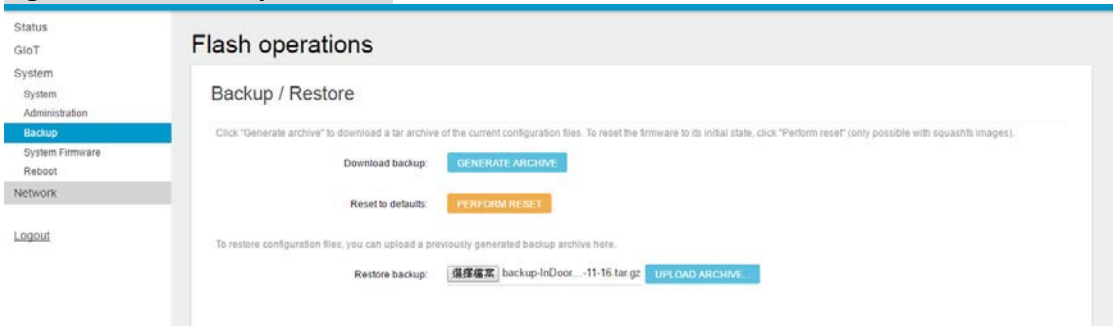


Figure 22.D - Backup/Restore



5.4 System - System Firmware

Click "*CHECK NEW FIRMWARE*" button to search the OTA server for the latest version of the new system firmware. Once a new system firmware version is detected on the OTA server, click "*UPGRADE NOW*" button to upgrade the newest system firmware from OTA server.

Figure 23.A - System Firmware

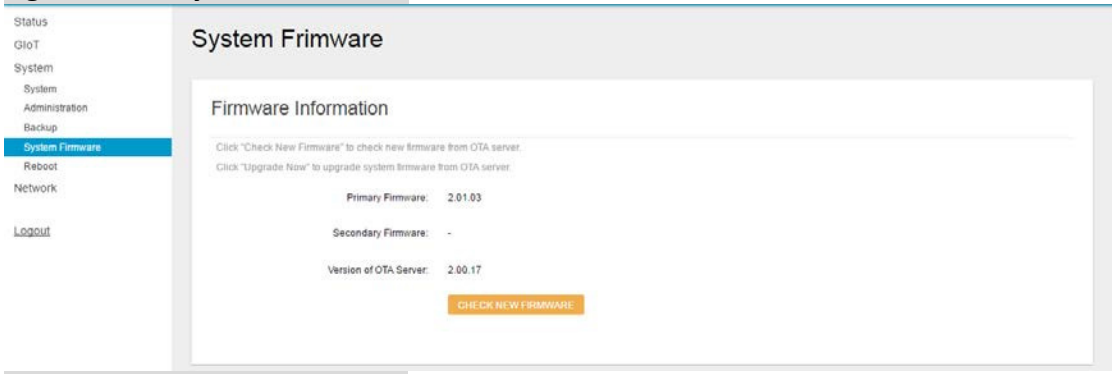
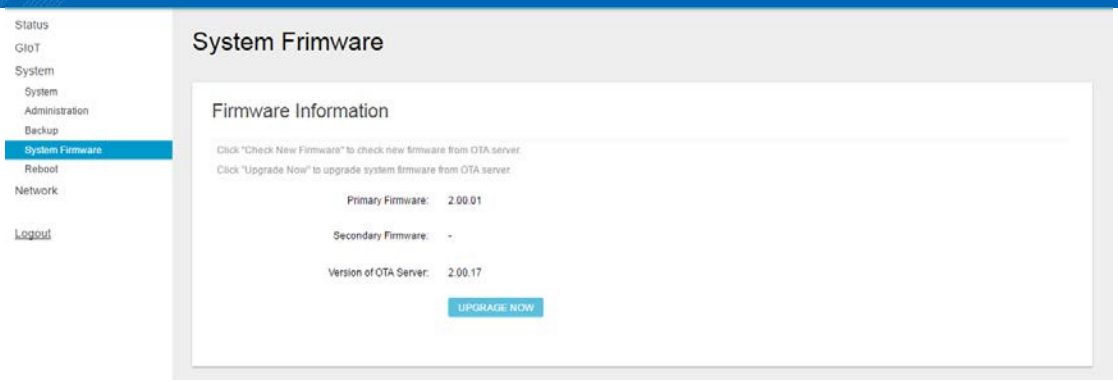


Figure 23.B - System Firmware



5.5 System - Reboot

Click "*PERFORM REBOOT*" to reboot your gateway.

Figure 24 - System Firmware

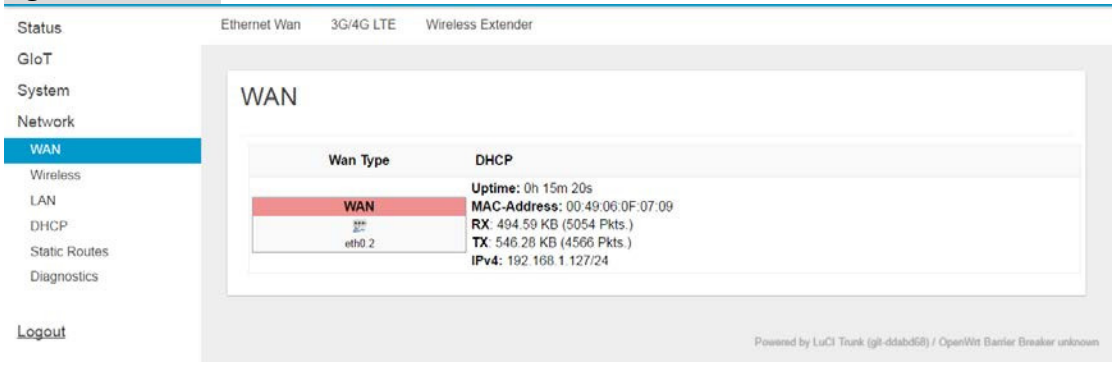
6 Network

The System menu consists of the following categories: WAN, Wireless, LAN, DHCP, Static Routes and Diagnostics. Introduction and input procedures for each category are described in the following paragraphs.

6.1 Network - WAN

The purpose of this category is to view current WAN settings.
This category is further divided into three sectors: Ethernet Wan, 3G/4G LTE and Wireless Extender. These individual options are lodged and labeled above the main content panel.

Figure 25 - WAN



6.1.1 Ethernet WAN

This page is to setup the connection type in terms of Static IP, DHCP client or PPPoE. The three different options can be selected in the drop-down menu in “wantype”. Please fill in the respective fields exhibited under each selection. Please make sure the Ethernet cable is connected to a WAN port.

Figure 26.A - WAN: Static IP

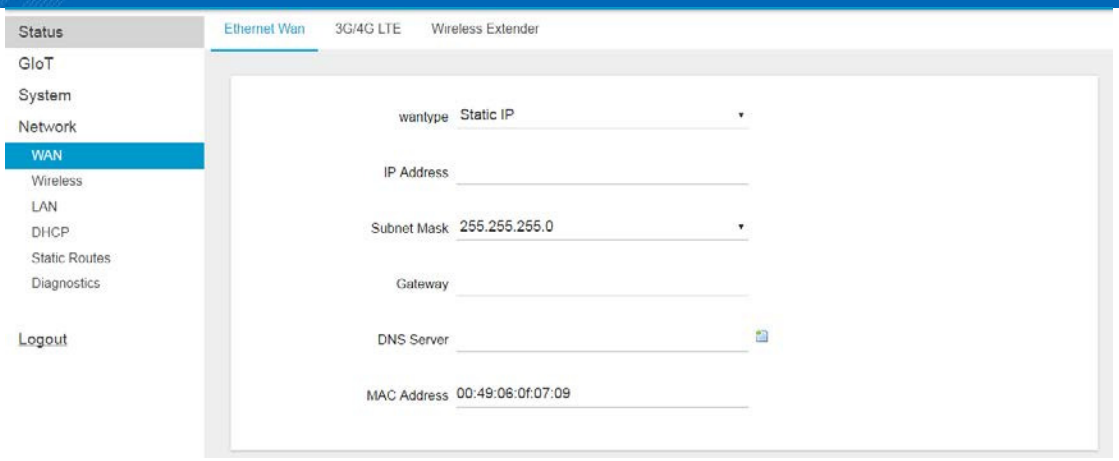

Status
GIoT
System
Network
WAN
Wireless
LAN
DHCP
Static Routes
Diagnostics
Logout
Ethernet Wan
3G/4G LTE
Wireless Extender
wantype
Static IP
IP Address
Subnet Mask
255.255.255.0
Gateway
DNS Server
MAC Address
00:49:06:0f:07:09

Figure 26.B - WAN: DHCP Client

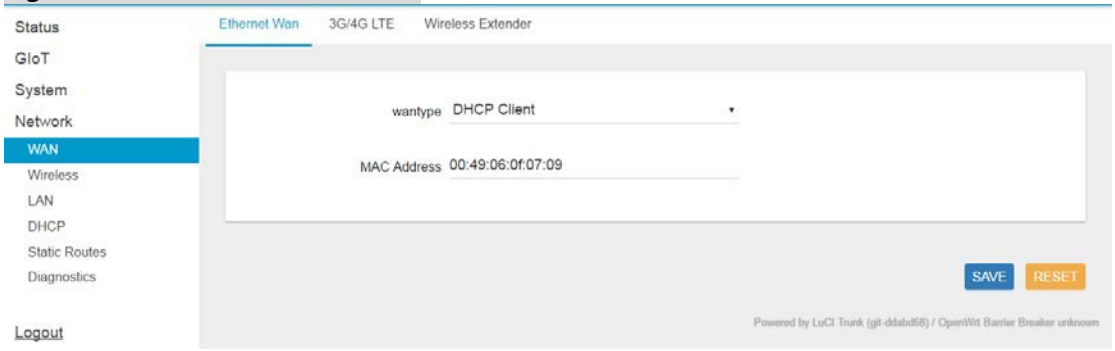
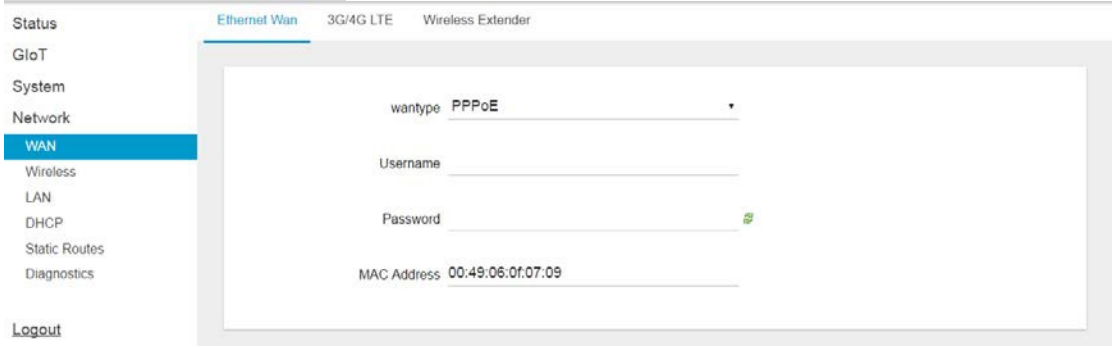


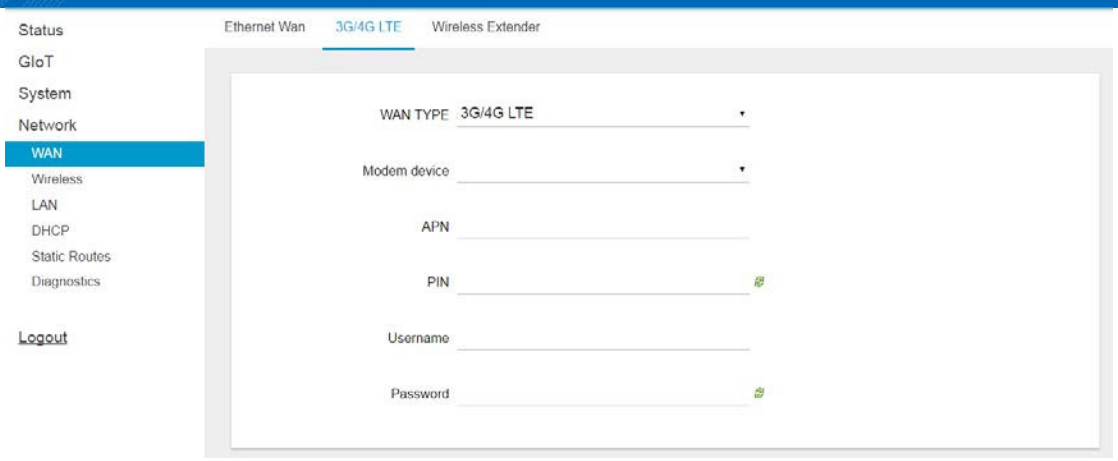
Figure 26.C - WAN: PPPoE



6.1.2 3G/4G LTE

This page is to setup required information.
Make sure the SIM card is installed.

Figure 27 - WAN: 3G/4G LTE



6.1.3 Wireless Extender

This page is to setup the Wireless Extender Mode for WAN connection. To activate the extended wireless connection, please select "*Enable*" from the Extender mode drop-down menu (figure 24.A). Click the "*SCAN*" button to obtain the list of available Access Points within your surrounding vicinity (figure 24.B).

Figure 28.A - WAN: Wireless Extender

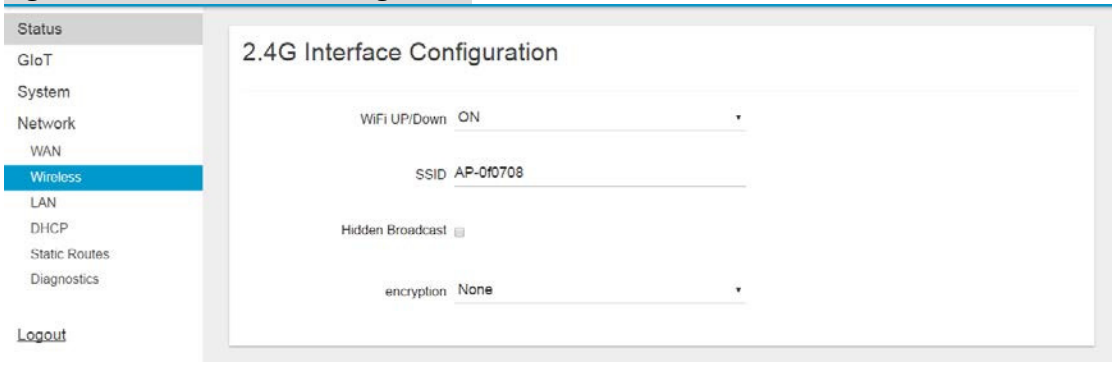
6.2 Network - Wireless

The Wireless Setting is divided into two sectors in the same page: 2.4G and 5G.

6.2.1 2.4G

2.4G Interface Configuration to setup 2.4G wireless.
SSID, encryption type, and channels can be lodged within this sector.

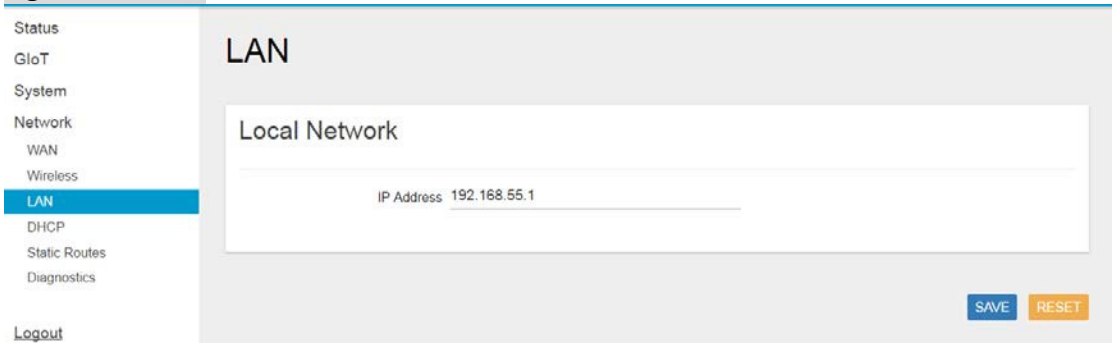
Figure 29.A - Wireless Setting: 2.4G



6.3 Network - LAN

LAN IP can be setup in this page.

Figure 30 - LAN

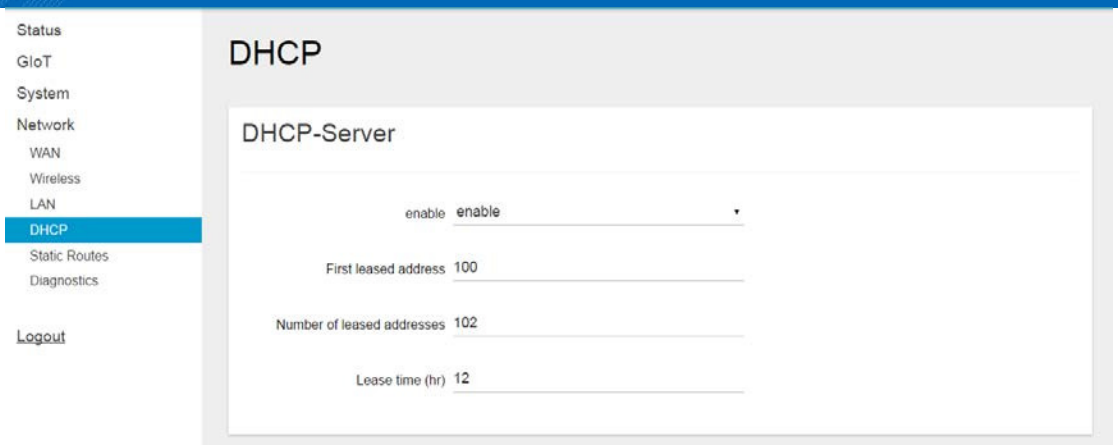


6.4 Network - DHCP

You can manage detailed DHCP server settings, which includes First leased address, the allowed Number of leased addresses and Lease time.

Information on Active Leases can be viewed at the bottom of this page.

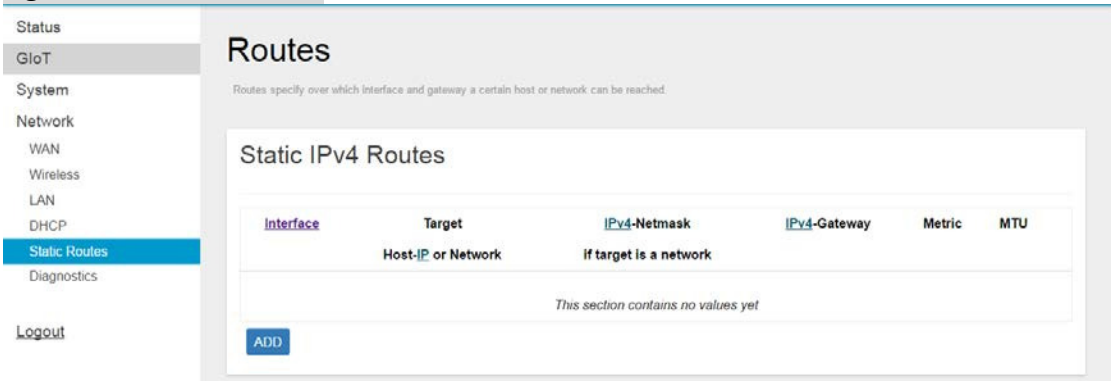
Figure 31 - DHCP



6.5 Network - Static Routes

Static routes can be established by clicking the “ADD” button to enter proper settings. Click “Delete” to erase the entry.
Always click the “SAVE” button to apply your settings.

Figure 32 - Static Routes



6.6 Network - Diagnostic

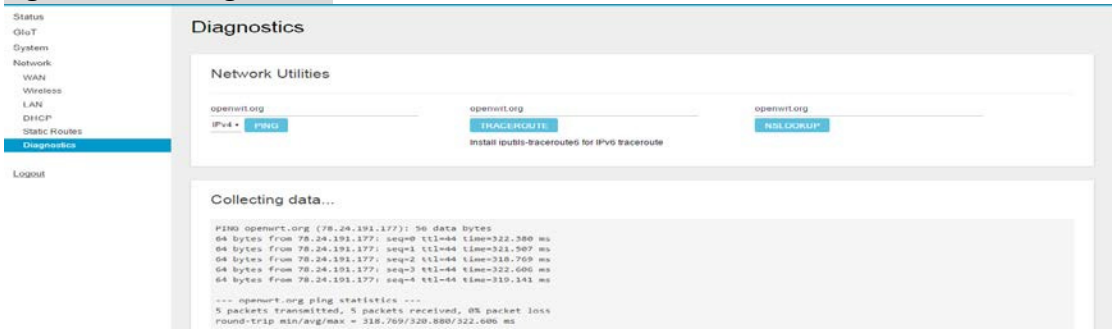
Diagnostics is divided into three parts on the same page: PING, TRACEROUTE and NSLOOKUP. Please see the following for input guidelines.

6.6.1 PING

Input a specific IP address in the text field above “*PING*”.

Click the "*PING*" button to ping the IP you have specified.

Figure 33.A - Diagnostics



6.6.2 TRACEROUTE

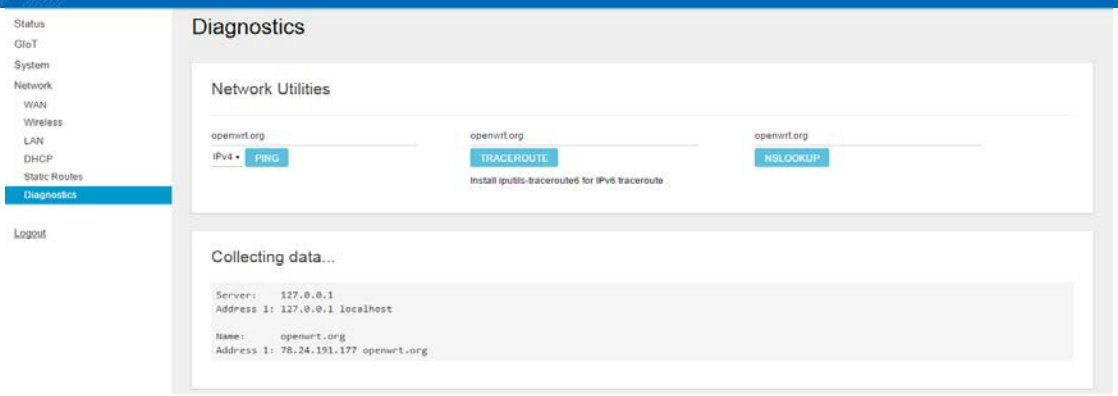
Input a specific URL or IP address above "*TRACEROUTE*".
Click the "*TRACEROUTE*" button to trace the URL or IP address you have specified.

Figure 33.B - Diagnostics

6.6.3 NSLOOKUP

Input a specific URL or IP address above "*NSLOOKUP*".
Click the "*NSLOOKUP*" button to view the DNS server of the URL or IP address you have specified.

Figure 33.C - Diagnostics


Status
GIoT
System
Network
WAN
Wireless
LAN
DHCP
Static Routes
Diagnostics
Logout
Diagnostics
Network Utilities
openwrt.org
IPv4
PING
openwrt.org
TRACEROUTE
Install iputils-traceroute6 for IPv6 traceroute
openwrt.org
NSLOOKUP
Collecting data...
Server: 127.0.0.1
Address 1: 127.0.0.1 localhost
Name: openwrt.org
Address 1: 78.24.191.177 openwrt.org

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/CANADA
Operation of this device is restricted to indoor use only.

Professional installation instruction

Please be advised that due to the unique function supplied by this product, the device is intended for use with our interactive entertainment software and licensed third-party only. The product will be distributed through controlled distribution channel and installed by trained professional and will not be sold directly to the general public through retail store.

1. Installation personal

   This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

2. Installation location

   The product shall be installed at a location where the radiating antenna can be kept 20cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

3. External antenna

   Use only the antennas which have been approved by Gemtek Technology Co., Ltd.. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.

4. Installation procedure

   Please refer to user's manual for the detail.

5. Warning

   Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.