ThingsPro® Software Suite Version 2
User's Manual

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www.moxa.com/product

ThingsPro® Software Suite Version 2 User's Manual

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1

Overview

The ThingsPro® Suite is a set of software packages built on the Debian Linux platform, an open platform that enables the integration of Fieldbus communications, computing, data acquisition, and wireless networking in a few simple steps. Featuring the Data Logger and Wireless Manager tools, ThingsPro empowers you to focus primarily on application development instead of the complex integration between things in the field and services in a centralized computing facility. ThingsPro Suite consists of the following three components:

Component	Description
ThingsPro Server (Server)	Software package for managing ThingsPro Gateways
ThingsPro Gateway (Gateway)	Software package to acquire data from Modbus devices connected to the gateway and to manage the devices.
ThingsPro Device Enablement utility	Utility for registering ThingsPro devices with the ThingsPro Server, running firmware upgrades, importing and exporting device configuration files, and for configuring basic device settings.

The following topics are covered in this chapter:

- **Introduction**
- **Installing ThingsPro Gateway on Eligible Devices**
  - Installing ThingsPro Gateway V2.5.0 on an Eligible Device
  - Installing ThingsPro Gateway V2.3 on an Eligible Device

Introduction

The ThingsPro Suite offers easy-to-use remote configuration for systems, peripherals, and wireless functions. With ThingsPro, you do not need comprehensive Modbus knowledge. You can easily configure and manage all your remote Modbus RTU and Modbus/TCP devices and acquire data from these devices in just a few steps. In addition, ThingsPro lets you schedule configuration and upgrade tasks on remote devices, essentially reducing human effort and maintenance cost. ThingsPro is a cellular-ready platform that provides the capability to keep the 4G-communication link always active, facilitating network troubleshooting and reducing system downtime.

Installing ThingsPro Gateway on Eligible Devices

NOTE Refer to the ThingsPro datasheet or product page on the Moxa website for a list of eligible devices.

Use the ThingsPro Gateway Installation SD Card to carry out the following instructions.

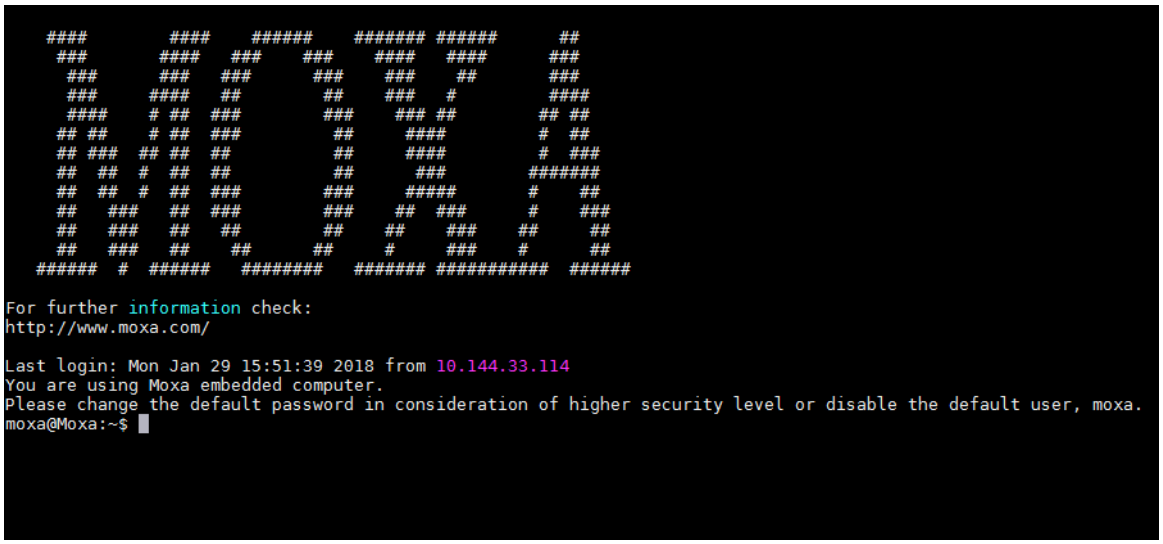
Installing ThingsPro Gateway V2.5.0 on an Eligible Device

Ensure that your device is a ThingsPro eligible device. A list of all eligible devices is available in the ThingsPro datasheet and product page. Download the ThingsPro Gateway V2.5.0 software package on to your computer from Moxa's website:

https://www.moxa.com/support/download.aspx?type=support&id=19092

To install the software on an eligible device, do the following:

1. Log in to your device using a valid username and password.



2. Upload the installation file directly to the device or copy it to an SD card.
3. If the installation file is stored in an SD card, insert the card into the SD card slot of the device.

   For instruction on installing the SD card in the SD-card slot of your device, refer to the quick installation guide or the hardware user's manual for the device.

4. Switch the working directory to the directory in which the installation file is stored and extract the contents of the installation file to the same directory.

```
moxa@Moxa:~$ ls
thingspro_release-thingspro_v2.5_armhf_20181129-015144.frm   thingspro.sh
```

You should see the following two files.

- **thingspro.sh**: The installation script
- **thingspro_release-thingspro_v2.5_armhf_20181129-015144.frm**: The ThingsPro Gateway V2.5.0 installation package

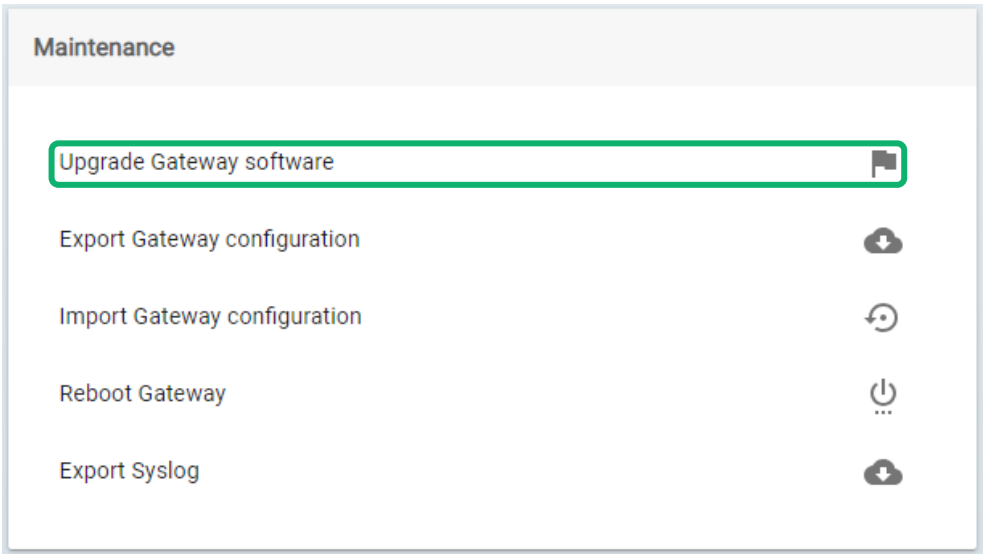
5. Run the following command on the device to install ThingsPro Gateway V2.5.0.

```
moxa@Moxa:~$ sudo bash thingspro.sh install
```

You can check the installation log by typing the following command.

```
moxa@Moxa:~$ sudo nano /var/log/thingspro_install_20181129-030138.log
```

6. You can upgrade your existing ThingsPro 2 version using the Firmware Upgrade function on the ThingsPro Gateway or Server.



You can use the following command to check the upgrade log.

```
moxa@Moxa:~$ sudo tail -f /var/log/upgrade.log
```

7. ThingsPro V2.5.0 includes a start/stop function.

Use the following command to start/stop the ThingsPro Gateway services.

```
moxa@Moxa:~$ sudo mx-tp-ctl -e <n>
```

- <n> = 0: Stop the ThingsPro Gateway
- <n> = 1: Start the ThingsPro Gateway

If the ThingsPro Gateway services are no longer required, use the following command to remove them from the system.

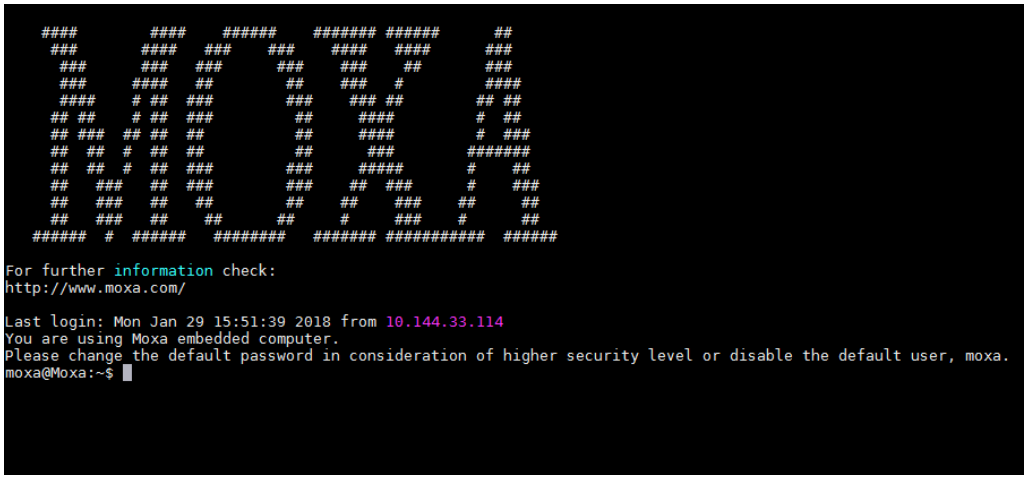
```
moxa@Moxa:~$ sudo thingspro.sh uninstall
```

This command removes all ThingsPro Gateway configuration files from the system; reconfirm that you want to remove all configuration files before you run this command and only use it if you intend to completely remove ThingsPro from your device.

Installing ThingsPro Gateway V2.3 on an Eligible Device

Ensure that your device is an eligible ThingsPro device. A list of all eligible devices is available in the ThingsPro datasheet and on the product page. Use the ThingsPro Gateway Installation SD Card to carry out the following instructions.

1. Log in to your device.



2. Insert the ThingsPro Gateway Installation SD Card in the SD card slot of the device.
   For instructions on installing the SD Card in the SD-card slot of your device, refer to the quick installation guide or the hardware user's manual for the device.
3. Switch the working directory to the SD Card where the installation files are located.

```
moxa@Moxa:~$ ls -al
total 165236
drwxr-xr-x 2 moxa moxa      4096 Jan 29 16:31 .
drwxr-xr-x 4 root root      4096 Jan 29 16:31 ..
-rwxr-xr-x 1 root root       522 Jan 26 00:54 install.sh
-rwxr-xr-x 1 root root 169185130 Jan 26 00:54 thingspro_amd64_20180125-173533.frm
```

4. Install ThingsPro Gateway on your device.

   Run a command below that matches the model name of your device.

```
moxa@Moxa:~$ sudo bash install.sh uc8100-mxcloud-cg
```

```
moxa@Moxa:~$ sudo bash install.sh uc8100me-mxcloud-cg
```

```
moxa@Moxa:~$ sudo bash install.sh mc1121-mxcloud-cg
```

   Use the following command to check the installation log.

```
moxa@Moxa:~$ sudo tail -f /var/log/thingspro-install.log
```

5. To upgrade ThingsPro from v2.1 to v2.3, use the Firmware Upgrade function on the ThingsPro Gateway or Server or type the following command in the console.

```
moxa@Moxa:~$ sudo sys-upgrade thingspro_amd64_20180125-173533.frm
```

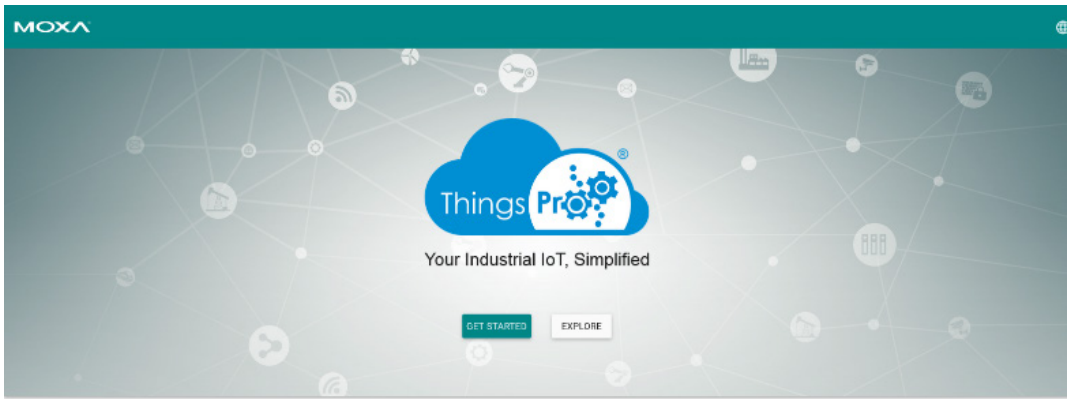
   Use the following command to check the upgrade log.

```
moxa@Moxa:~$ sudo tail -f /var/log/upgrade.log
```

> **WARNING**
>
> DO NOT power off the computer during the installation process because doing so may lead to firmware corruption.

6. The device will restart twice during the installation procedure.

To confirm that your device is ThingsPro-ready, connect a PC/laptop computer to LAN port 2 of the device and use the PC/laptop computer to access the address, http://192.168.4.127. If the following ThingsPro home page is displayed, the installation is successful.



Your device computer is now ThingsPro-enabled!

2

ThingsPro Gateway

This chapter describes how to configure the ThingsPro gateway.

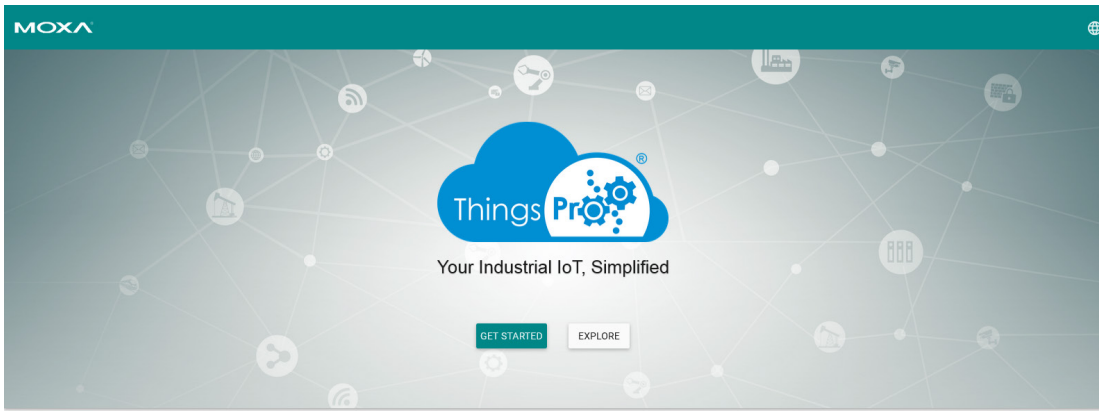
The following topics are covered in this chapter:

- **Basic Configuration**
  - Editing User Profiles
  - Choosing a Language for the User Interface
- **Using the Control Panel**
  - Device Information
  - Editing the Hostname
  - Editing the Device Name
  - Checking the Software Version
  - Checking the System Uptime
  - Checking the System Memory Size
- **Maintenance**
  - Upgrading the Firmware
  - Exporting the System Configuration File
  - Importing a System Configuration File
  - Rebooting the System
  - Exporting the System Log Files
- **Configuration Menu**
  - Configuring ThingsPro Gateways
  - Configuring Gateways
  - Managing User Accounts
  - Managing User Programs
  - Configuring Modbus Settings for Data Logging
  - Modbus Management
  - Managing Log Profiles
  - Managing Modbus Slave Devices
  - Managing IoT Applications

Basic Configuration

Accessing Your ThingsPro Gateway

1. Open a browser and connect to https://192.168.4.127.

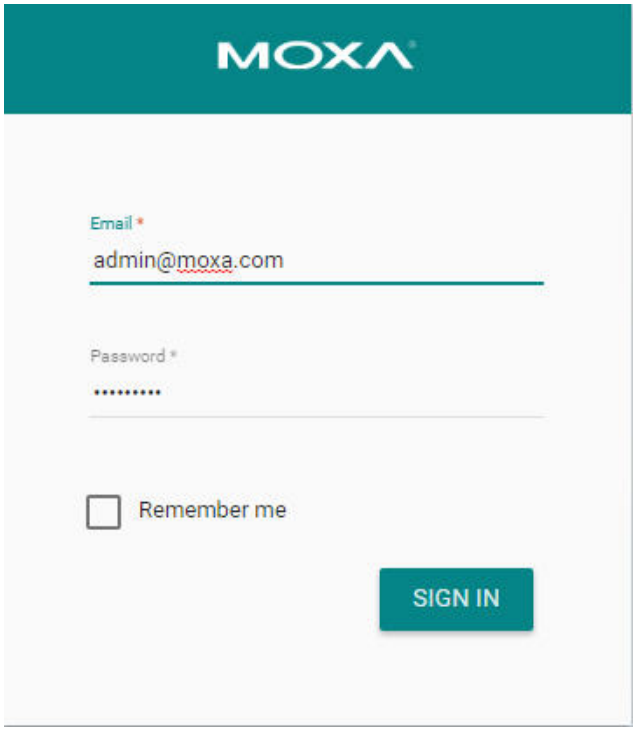


2. Click **Get Started** to continue and type the default username and password:

   Username: **admin@moxa.com**
   Password: **admin1234**

   For the root account, use the following information:

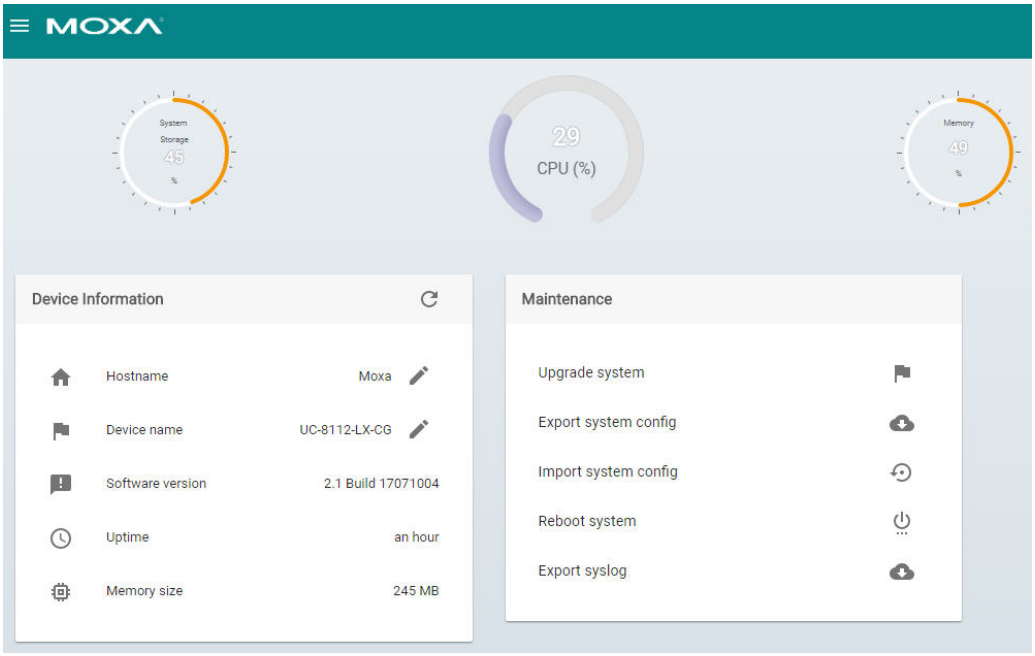
   Username: root@moxa.com
   Password: root1234



3. Click **Sign In** to continue. The ThingsPro dashboard and configuration page is displayed.

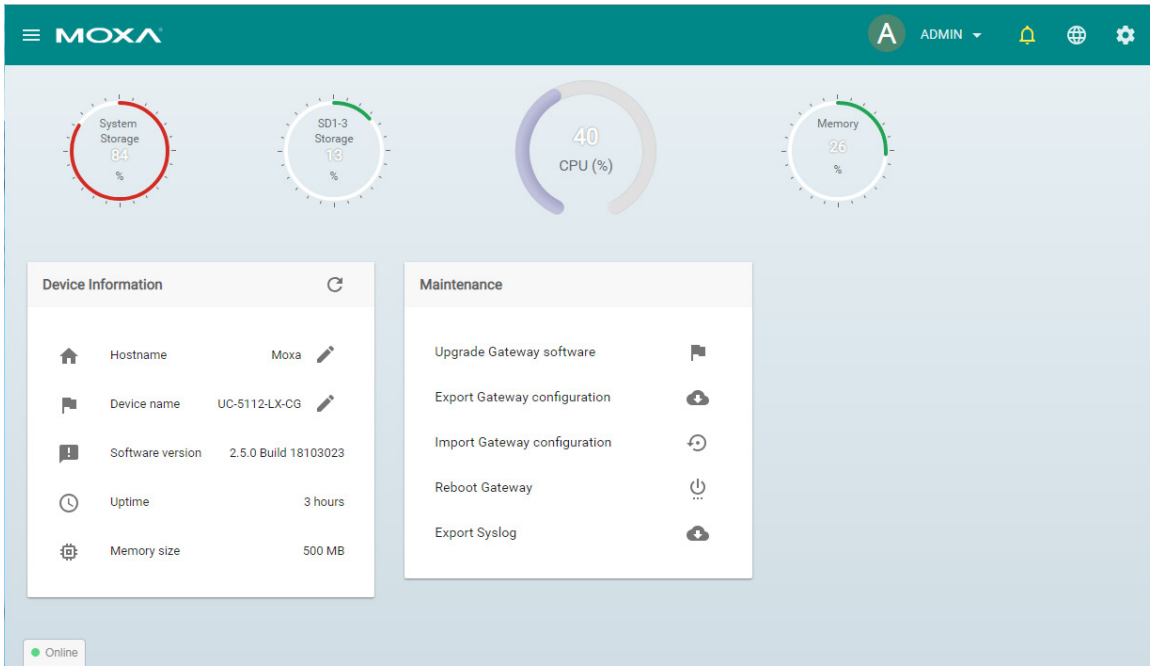
Viewing the Dashboard Status

The dashboard shows the real-time (update interval could be 15 to 30 seconds) status of your device. The information shown includes CPU, Memory, and Storage usage.



Dashboard Component	Description
Storage	Indicates how the system or external storage capacity is used
CPU	Indicates the current CPU usage
Memory	Indicates the current system memory usage

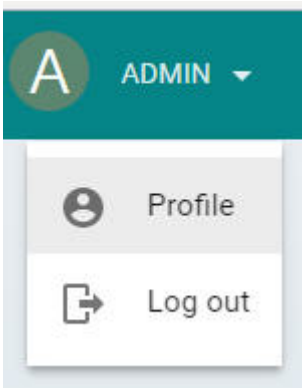
If an external storage device, such as an SD card or USB disk, has been inserted, the external storage icon will appear. All values are shown as percentages.



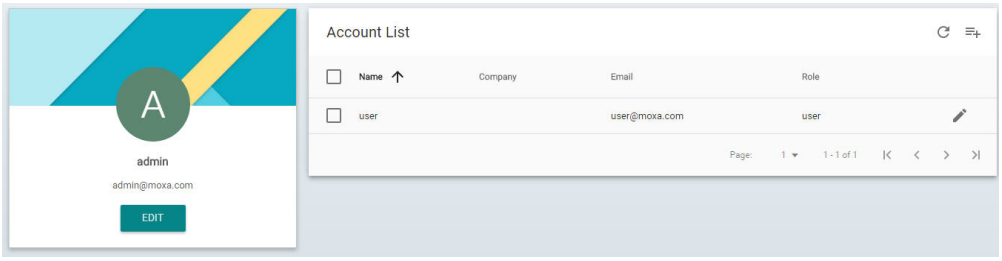
You may change the "Hostname" or "Device name" here. Also, you may proceed Maintenance tasks such as Upgrade system, export or import system configuration the quick maintenance panel.

Editing User Profiles

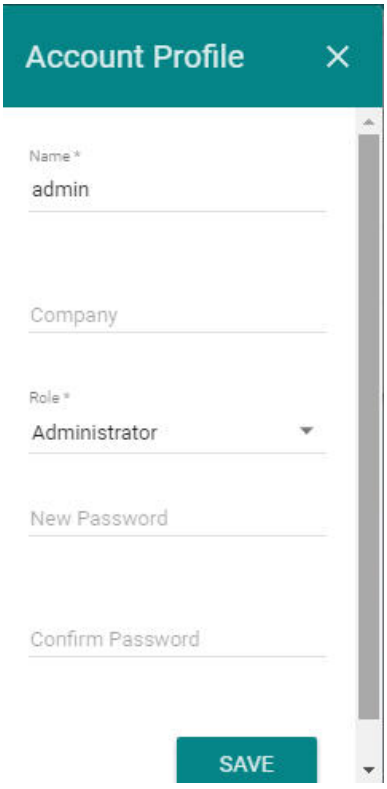
After you have successfully connected to the gateway, you can start configuring the ThingsPro Gateway functions. You might want to update your user profile first. Click on the **ADMIN** box on the upper-right corner of the main page and select **Profile.**



Click on **EDIT** to edit the profile.



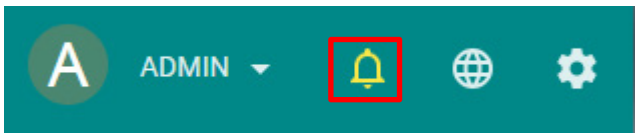
Type the account profile and information in the fields. When finished, click **SAVE** to complete.



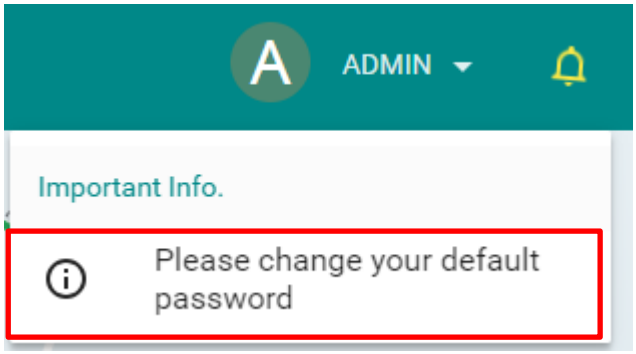
To add new users, click the add icon on the top right corner of the screen.

Checking System Notifications (only available in V2.5.0 or above)

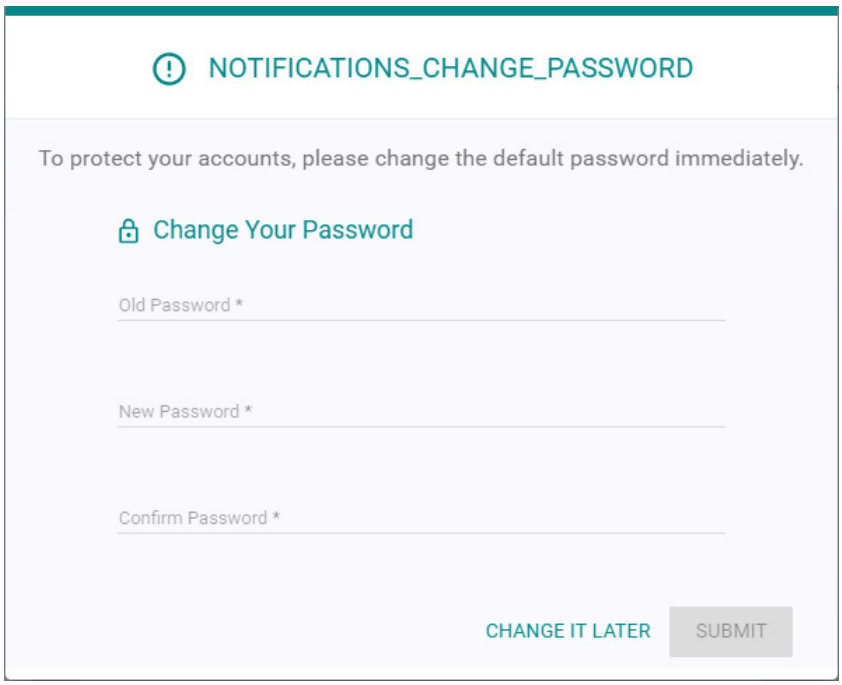
You can view the system notifications by clicking on the bell icon on the top-right corner of the main configuration page. The bell icon turns yellow and take the "ringing" position when there are unread notifications.



The system notifications consist of important system information that users are required to pay attention to or take actions. For example, users should change the default password to make the system more secure. When the system detects default passwords, it will send a notification to remind users to change their default passwords.

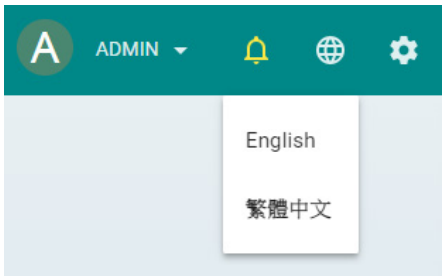


Usually, the system offers a quick and easy way to proceed with corrective actions. Take the example of the default password change; Users can click on the notification "Please change your default password" to open a dialog to change the password.



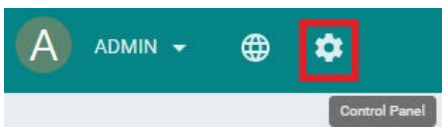
Choosing a Language for the User Interface

ThingsPro Gateway currently offers English and Traditional Chinese interfaces. Select from the language icon in the main configuration page.

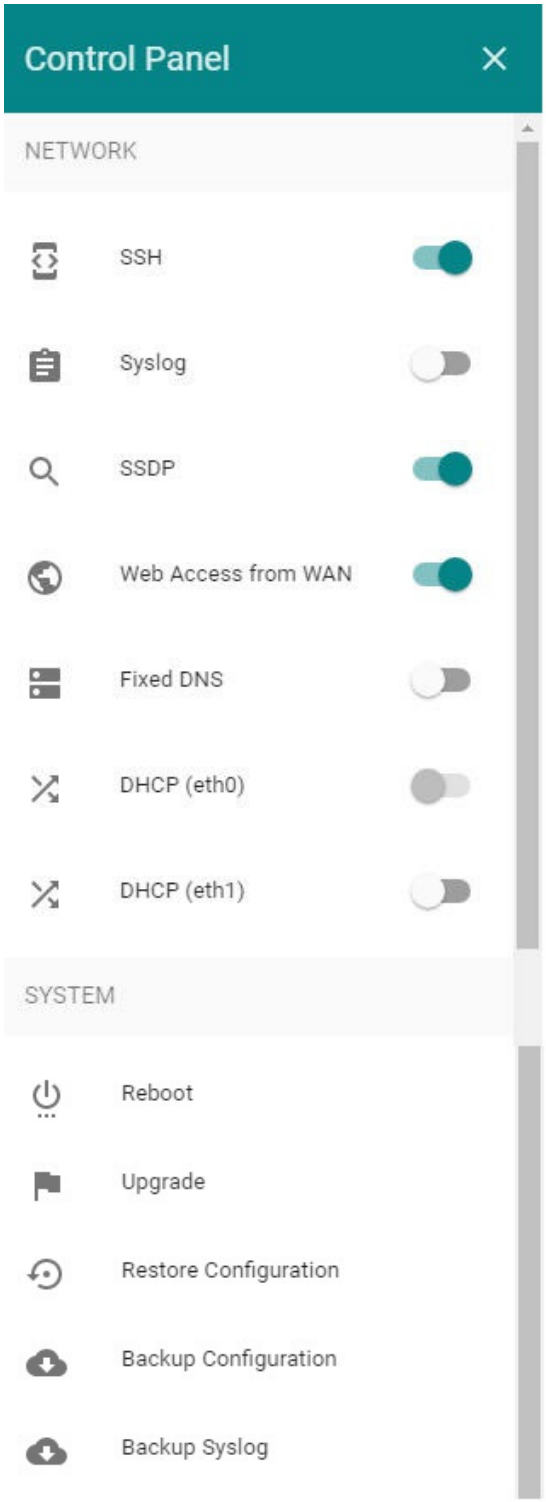


Using the Control Panel

ThingsPro Gateway provides a control panel that you can use to view, enable, or disable the some specific system settings. Click the Control Panel icon from the main page to access the panel.



View the current status of the settings from the page below. You can enable or disable the settings directly from the Control Panel page.

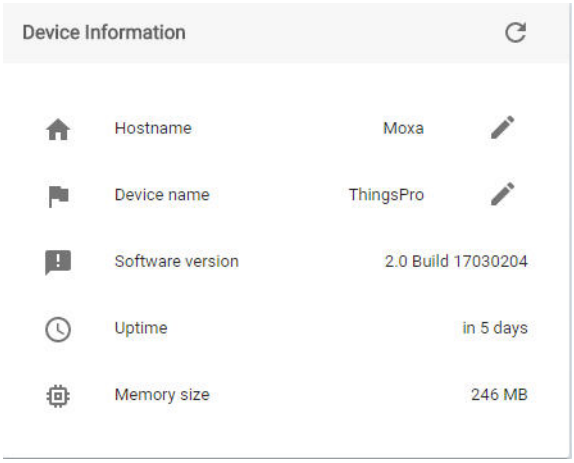


WARNING

Turning off the **Web Access from WAN** setting will disconnect the ThingsPro Gateway from the Server.

Device Information

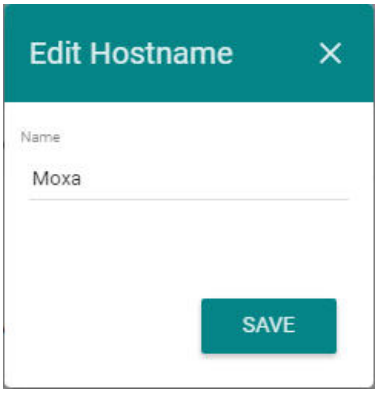
This section allows users to update system hostname and device name, and view the system status, such as software version, system uptime, and system memory size.



Editing the Hostname

In **Device Information**, click the edit icon, and edit the hostname.

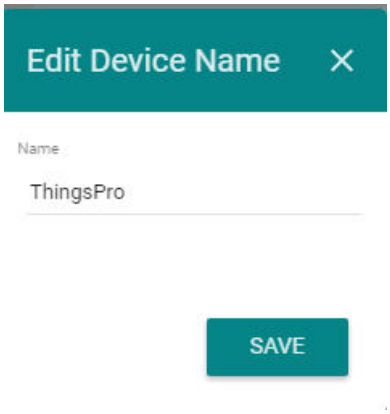
Provide the hostname in the field. When finished, click **SAVE**.



Editing the Device Name

In **Device Information**, click the edit icon, and edit the device name

Provide the device name in the field. When finished, click **SAVE**.



Checking the Software Version

You can check the software version from the control panel.

Checking the System Uptime

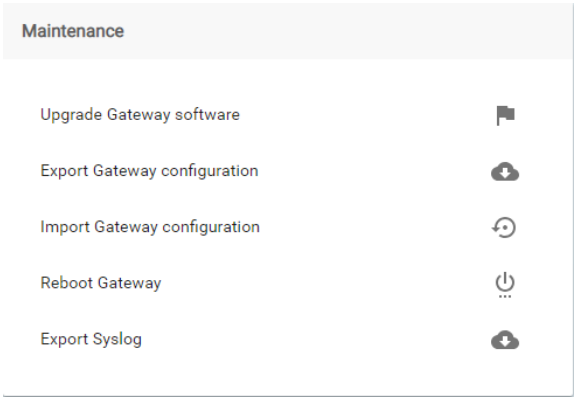
You can check the system uptime from the control panel.

Checking the System Memory Size

You can check the system memory size from the control panel.

Maintenance

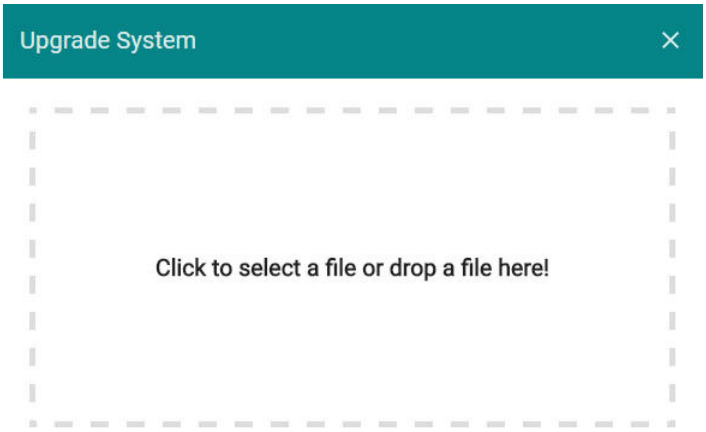
This section allows users to update various system settings.



Upgrading the ThingsPro Gateway

To upgrade the ThingsPro Gateway with the software packages provided by Moxa, click on the **Upgrade Gateway Software** icon in the **Maintenance** section.

Select the software package file in **.frm** format on your computer, or drop the file into the upgrade page. Wait for a few minutes for the system to upgrade.

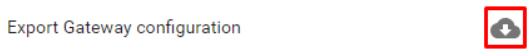


ATTENTION

A system upgrade with incorrect firmware can cause system damage or failure. Contact Moxa technical support before upgrading your system.

Exporting the Gateway Configuration File

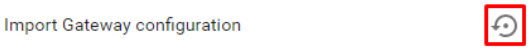
In the **Maintenance** section, click on the icon to export the gateway configuration file.



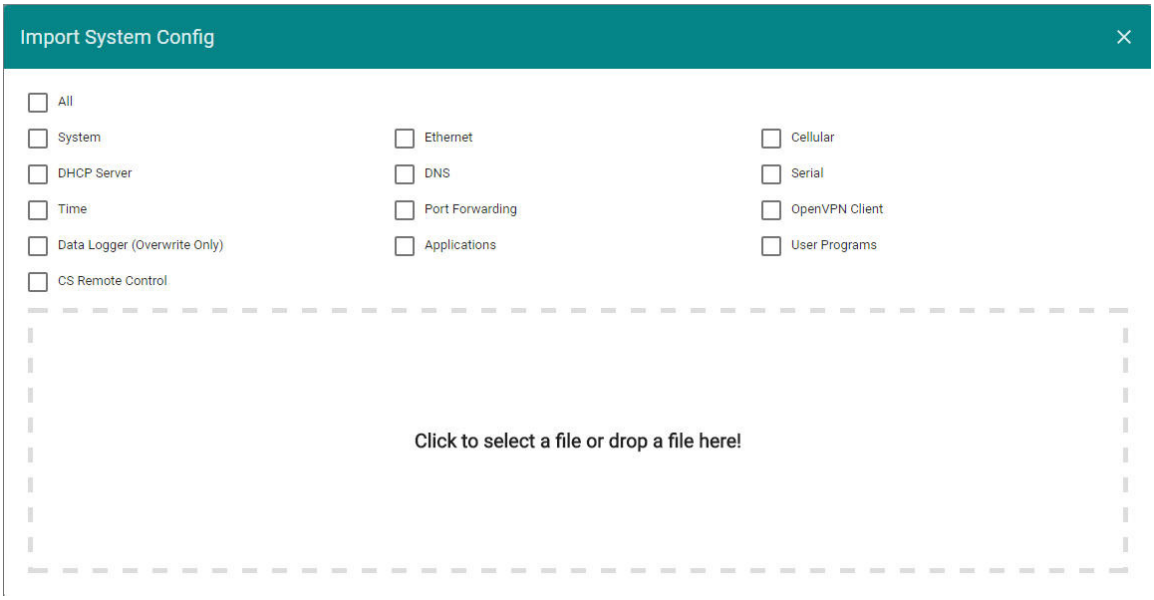
A gateway configuration file in the **tar.gz** format will be downloaded on to your computer.

Importing a Gateway Configuration File

In **Maintenance** section, click the icon to import the gateway configuration file. This function can help restore your system to the previous status, or save you time when configuring multiple gateways with similar configuration.



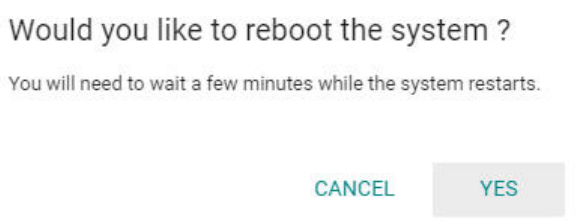
You can select the specific items you want to recover, or select **All** to recover the whole system.



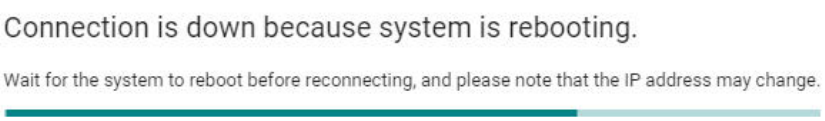
Rebooting the Gateway

In **Maintenance**, click on the **Reboot Gateway** icon to reboot the gateway.

Click **Yes** to reboot the gateway.



The following screen will appear; wait for the gateway to reboot.



Exporting the System Log Files

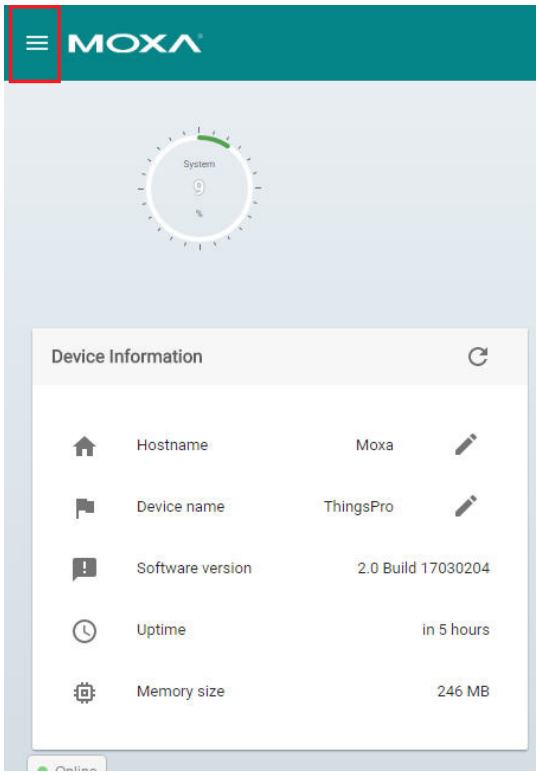
In **Maintenance**, click the icon to export the system.

A system log file in **tar.gz** format will be downloaded to your system.

Configuration Menu

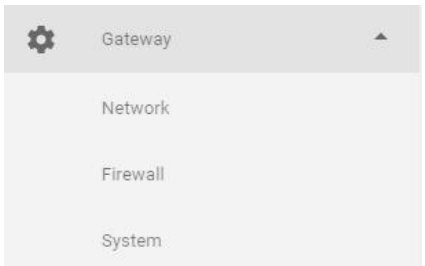
You can use the configuration menu for various ThingsPro Gateway settings.

Click the menu bar icon to access the configuration menu.



Configuring the Gateway

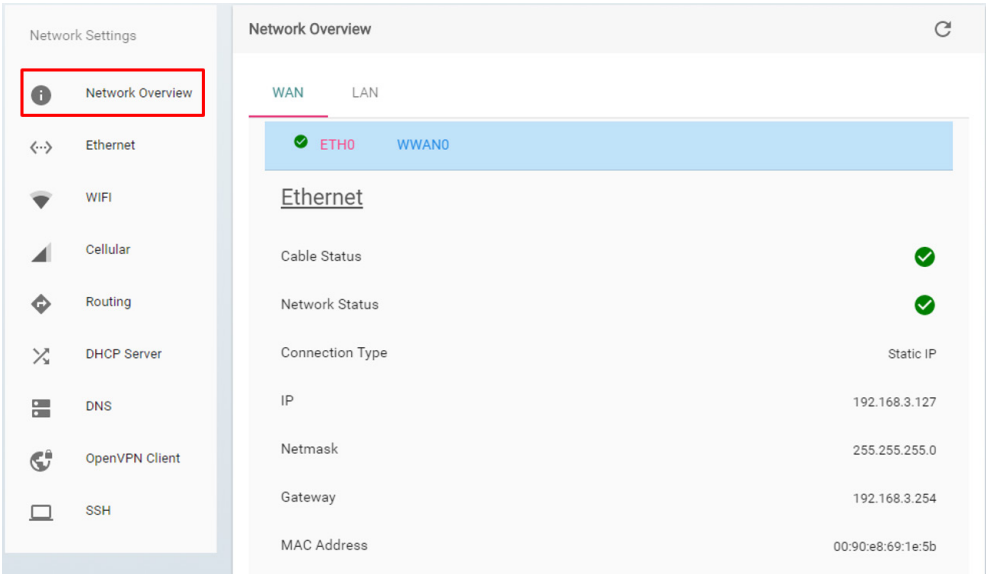
Click on the **Gateway** link to configure gateway settings, such as Network, Firewall, and System.



Configuring Network Settings

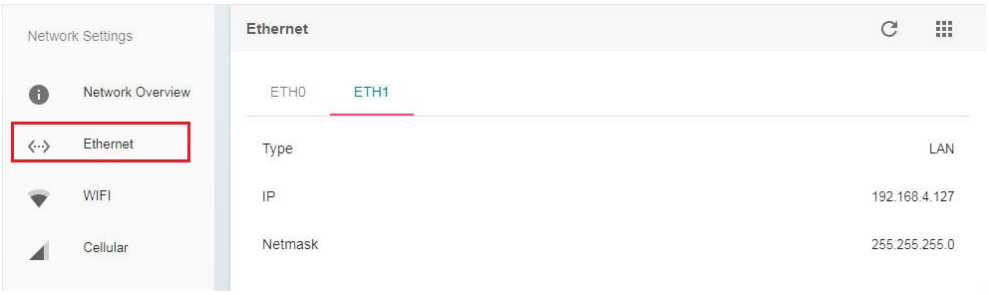
This section includes various network settings such as Ethernet, cellular, routing (only available in v2.3 and above), DCHP Server, DNS, Open VPN Client, and SSH.

Click **Network Overview** (only available in ThingsPro V2.3 and above) to check the current network status.



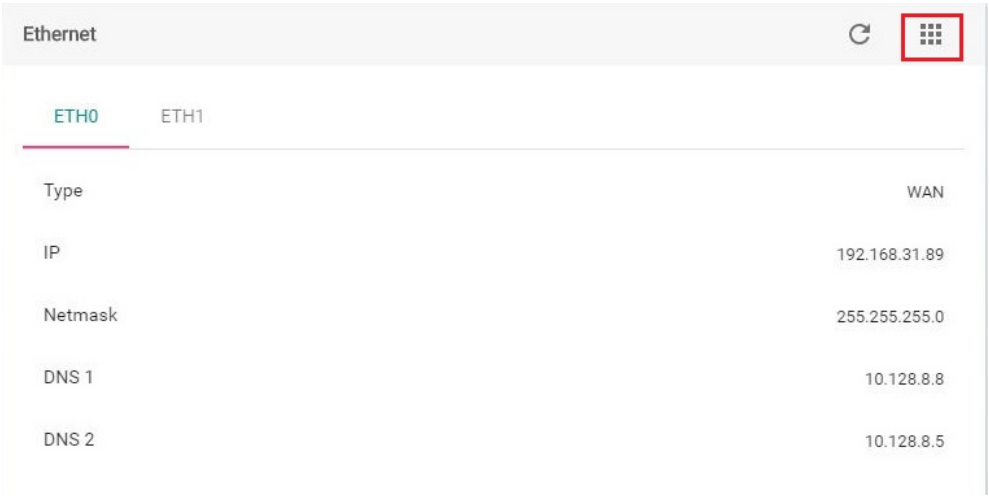
Configuring Ethernet Settings

Click **Ethernet** to view the current Ethernet settings.

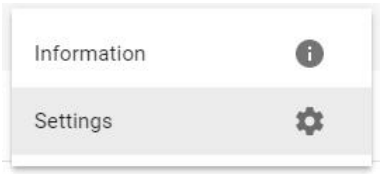


To configure the Ethernet settings:

1. Click on the tab for the Ethernet interface.
2. Click on the edit icon.

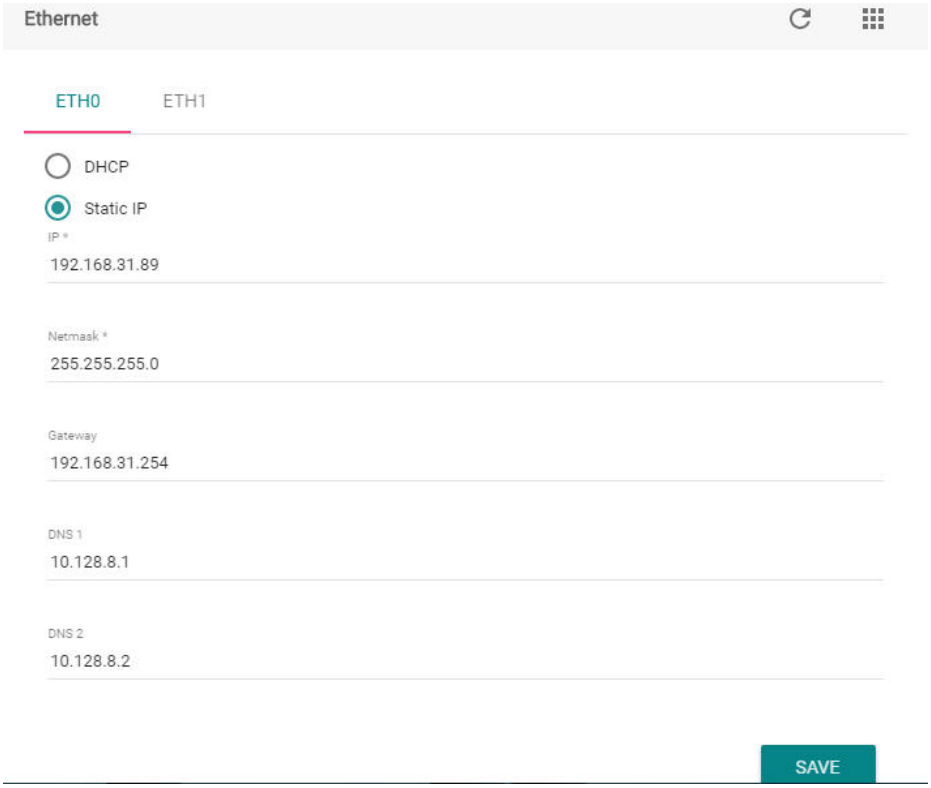


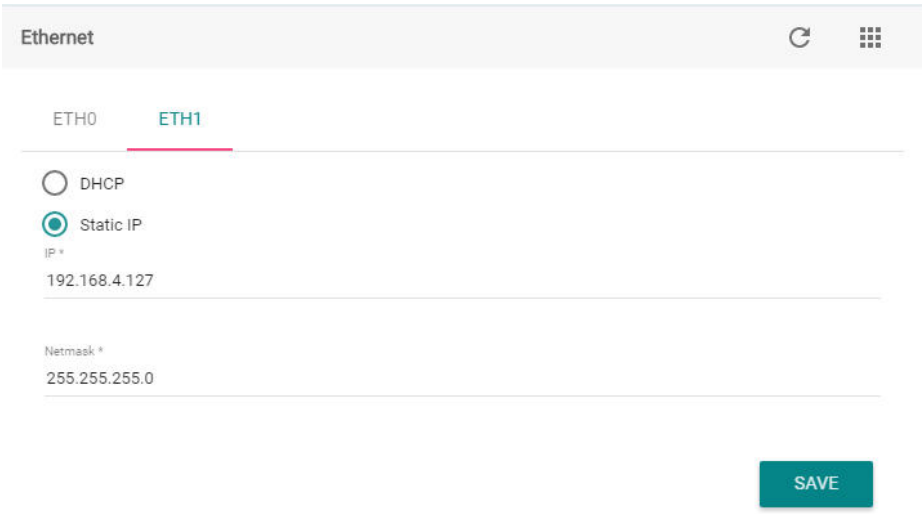
3. Select **Settings.**



4. Configure the Ethernet interface settings.

NOTE The **ETH0** Ethernet interface is used for the WAN and the **ETH1** interface is used for the LAN. The default IP addresses are:
eth0=192.168.3.127
eth1=192.168.4.127

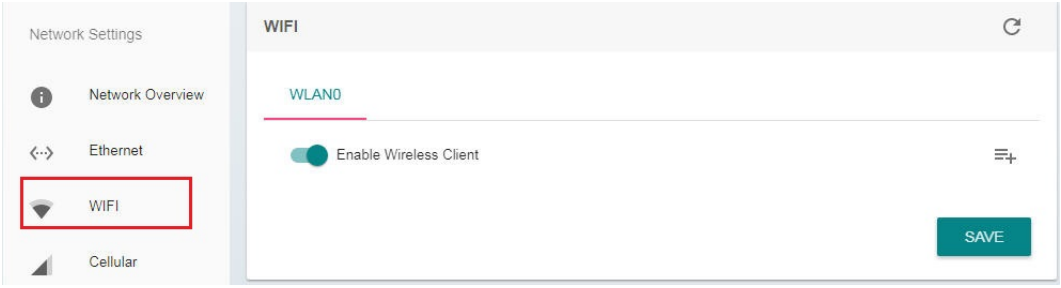




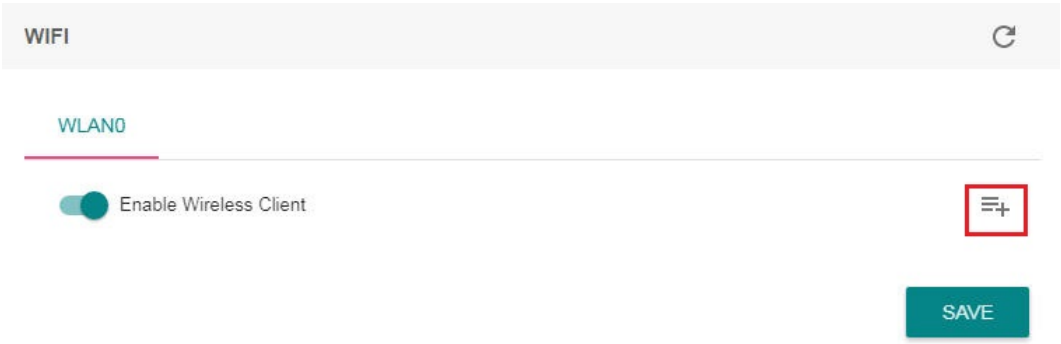
5. Click **SAVE**.

Configuring Wi-Fi Settings

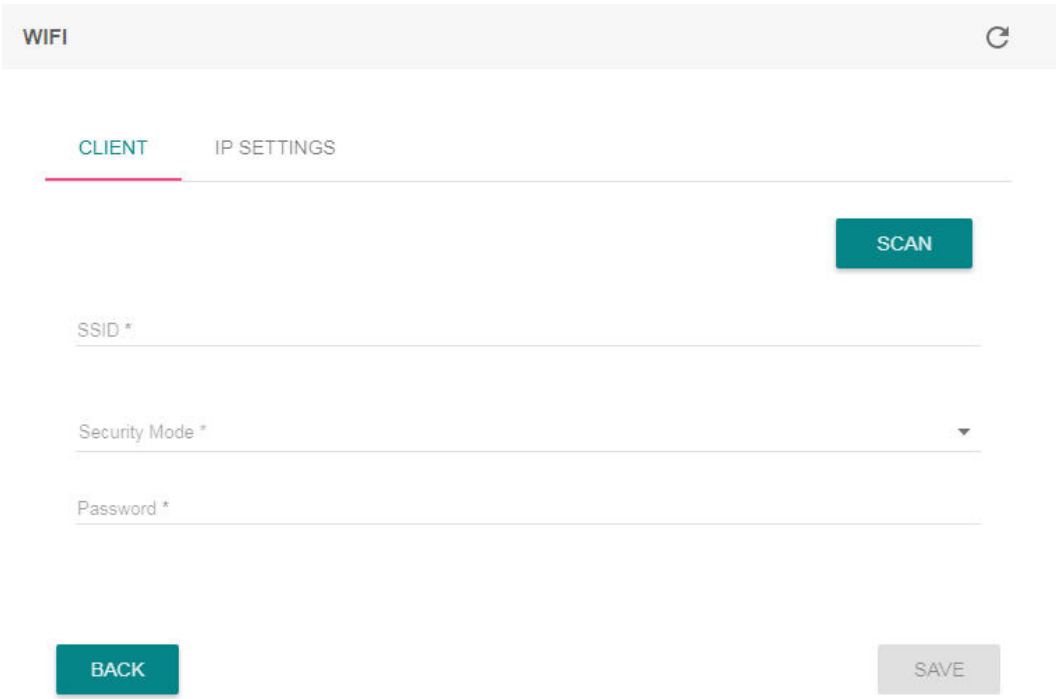
Click **WiFi** to check the current Wi-Fi status. Check **Enable Wireless Client** if you want this function to be activated.



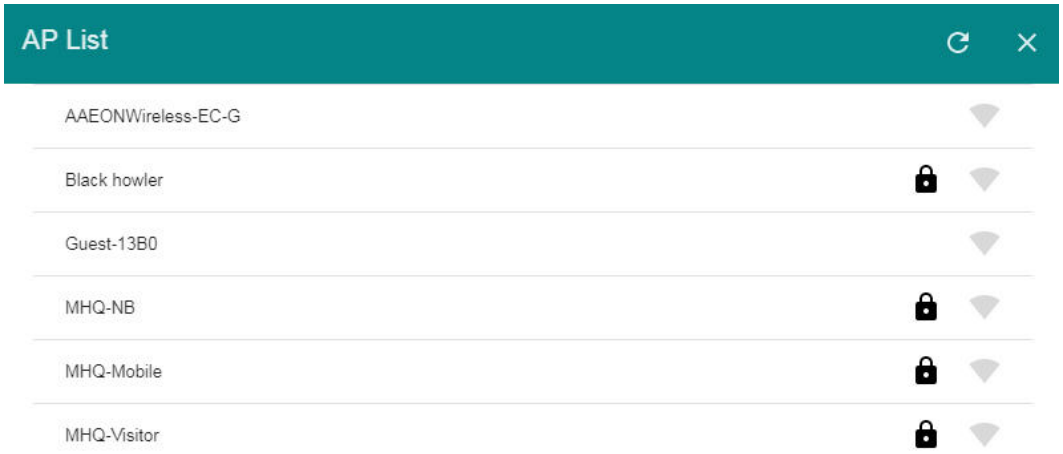
To add a Wi-Fi network, click the add icon.



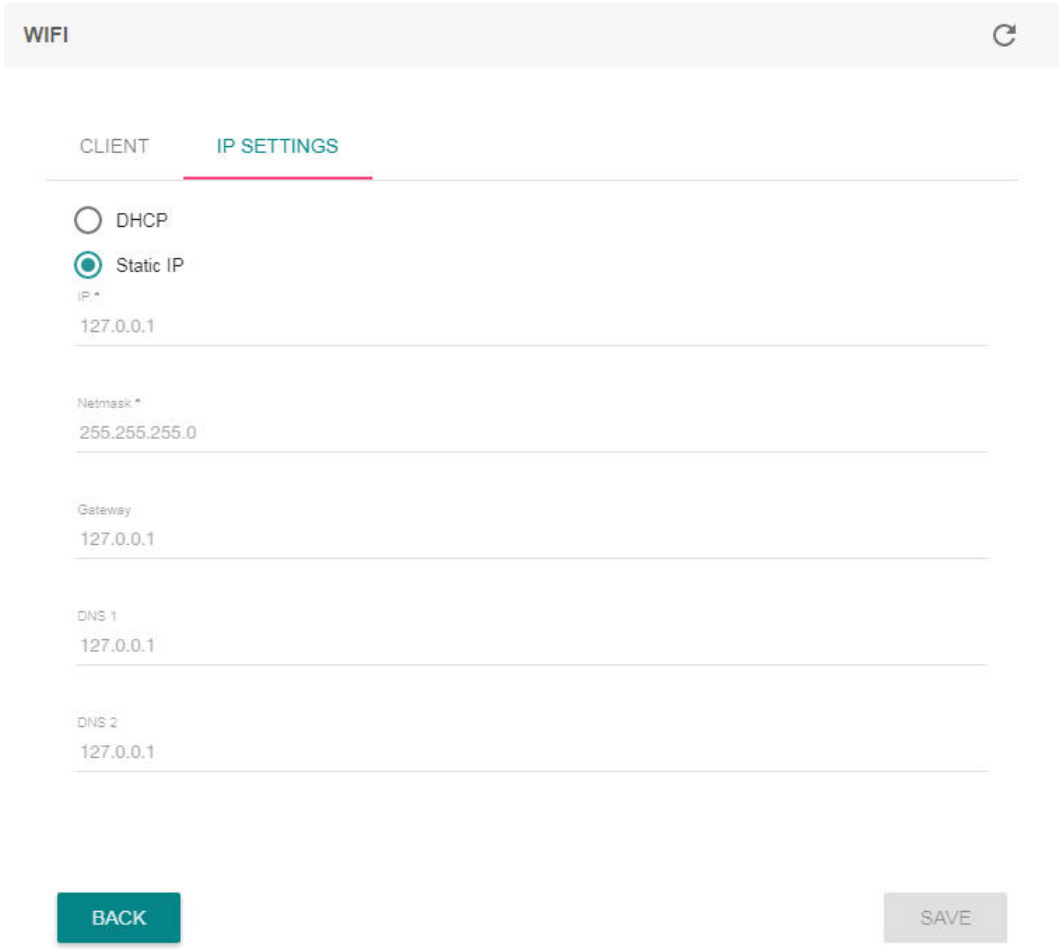
Click the **CLIENT** tab and enter the SSID, security mode, and the password for the wireless network you want to connect to. When finished, click **SAVE**.



You may also click **SCAN** to scan for all of the available access points that your computer can connect to. Select an access point to automatically fill in its SSID and security mode, then enter its password. You can also click the refresh icon to refresh the list.



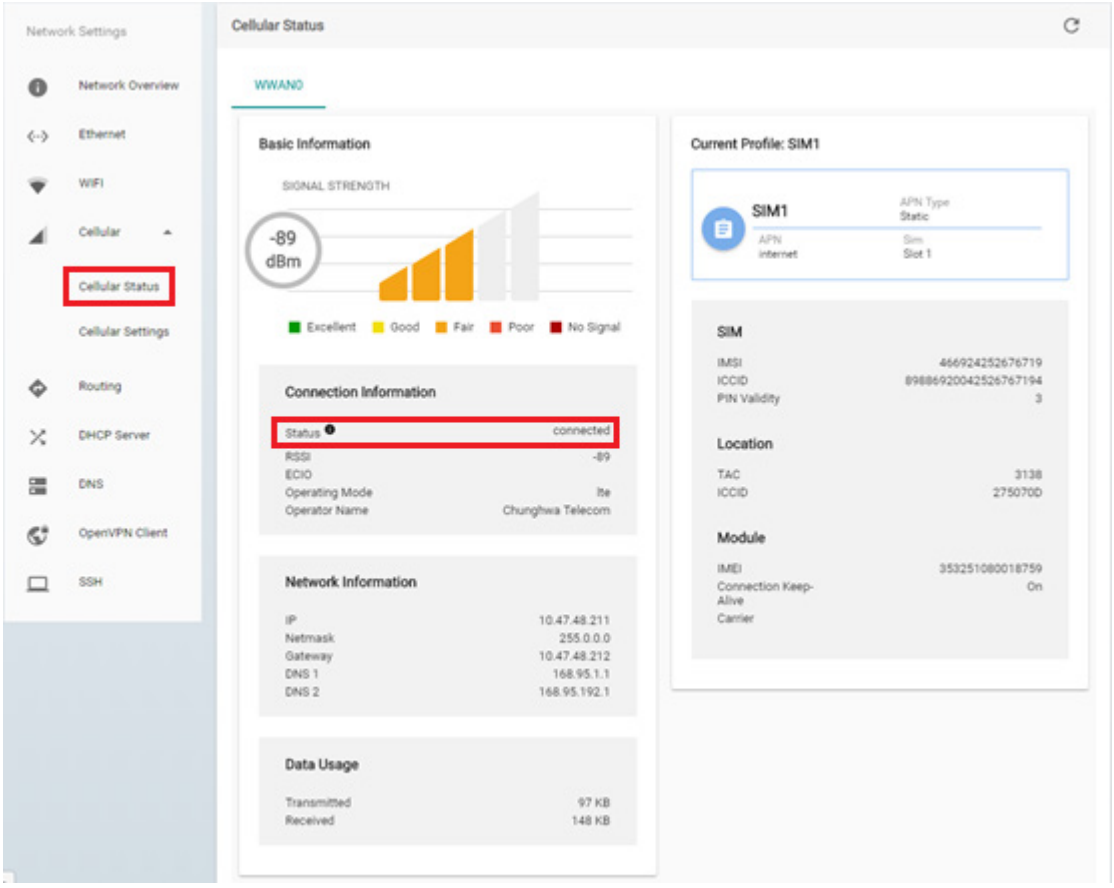
Click the **IP SETTINGS** tab to configure the IP settings. You may choose to set your IP using DHCP or static IP. If you select Static IP, enter all the necessary information in the text fields. When finished, click **SAVE**.



Configuring Cellular Settings

Viewing the Cellular Status

Click on the **Cellular Status** link to view the current settings. The **Basic Information** section shows a clear picture of the status of your cellular network including Signal Strength, Connection Information, Network Information, and Data Usage.



The table below lists the different statuses of a cellular connection and what they indicate.

Status	Description
initializing	Retrieving cellular module and SIM card information and unlocking the SIM card (if the SIM card is locked)
nosim	No SIM card detected or SIM card error
pin	SIM card is locked with a PIN code
ready	SIM card is ready for a connection
connecting	Establishing a connection
connect_failure	Connection failure or keep-alive function failure (if keep-alive is enabled)
connected	Connection succeeded with keep-alive enabled or disabled
powr_cycle	Power-cycling the cellular module
service_searching	Roaming*
service_attached	Connected to a base station
pin_error	PIN code error
switching_carrier	Switching between telecom carriers.
switching_sim	Switching between SIM card slots (only available in dual-SIM models).
initialize_failed	Initialization error

NOTE (*) If your device is stuck in the "service_searching" status for more than 5 minutes even though your SIM card works fine and the signal strength is good enough for a successful cellular connection, this might be due to the accidental activation of the flight mode. However, such cases are rare. When this happens, log in to your device's console and type the following command:

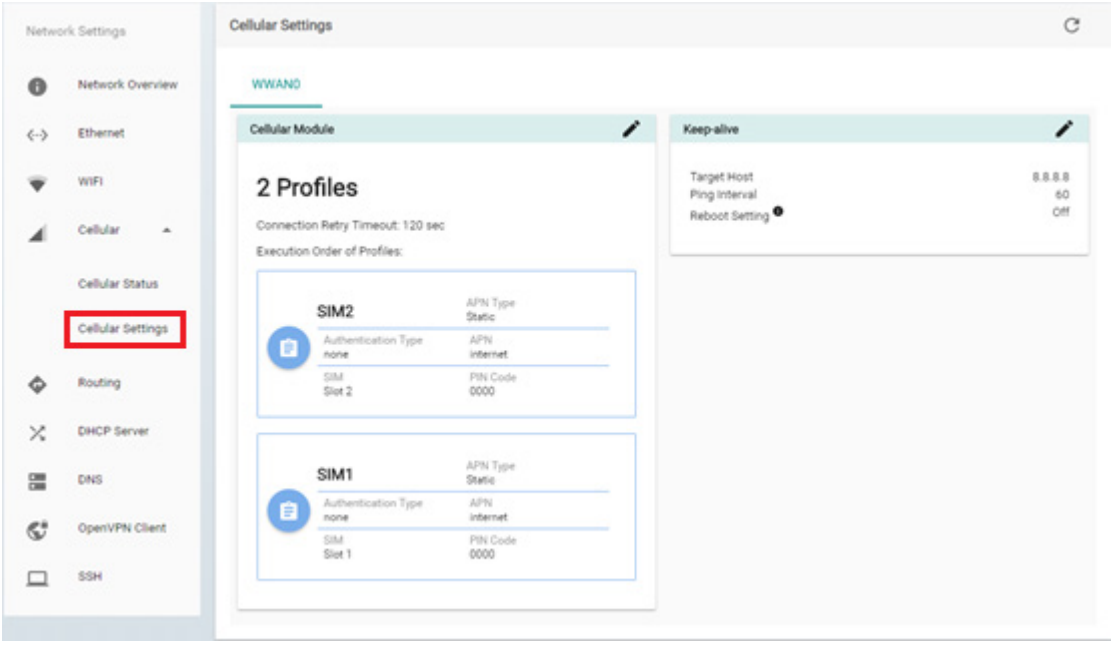
```
moxa@Moxa:/home/moxa$ sudo cell_mgmt set_flight_mode 0
```

For additional details on the cell_mgmt utility, refer to the *Arm-based Linux User's Manual.*

The **Current Profile** of your cellular connection (only available in V2.5.0 or above) along with the **SIM**, **Location,** and **Module** information is also displayed on the **Cellular Status** page.

Configuring the Cellular Settings

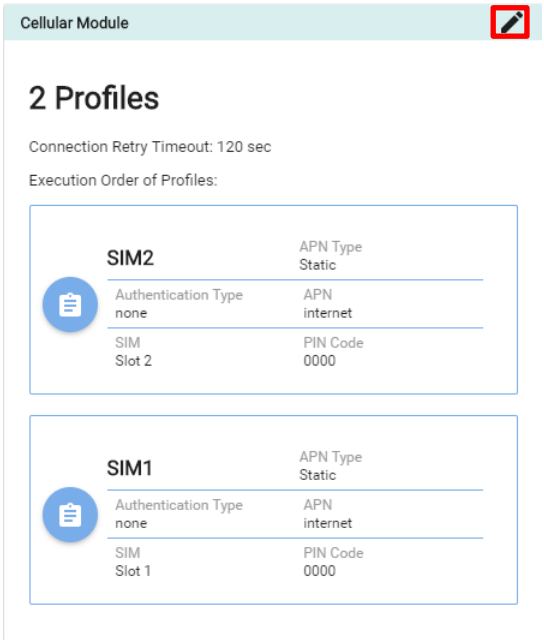
To modify the cellular network settings for your device, click on the **Cellular Settings** link (**Gateway** > **Network** > **Cellular** > **Cellular Settings)**.



You can check the status of the **Cellular Module** and **Keep-alive** function and modify the settings of your device's cellular network here.

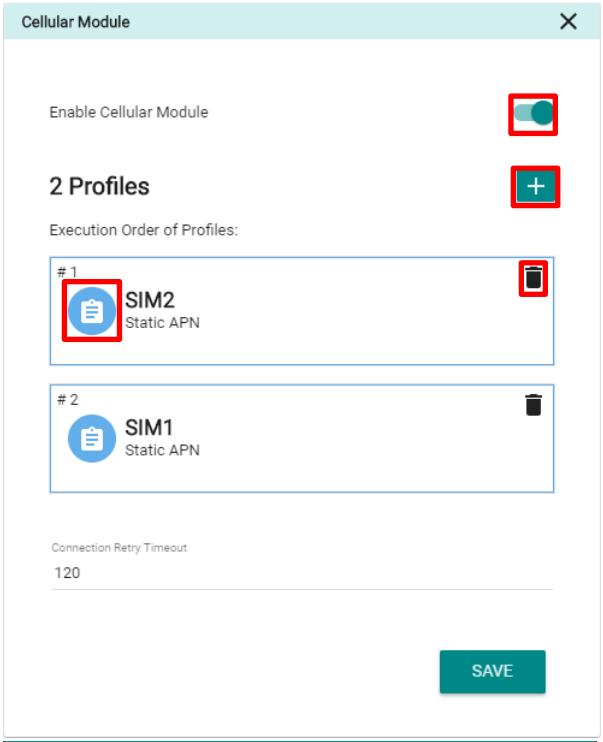
To modify the settings of your cellular module, do the following:

1. Click on the edit icon corresponding to the **Cellular Module** section.



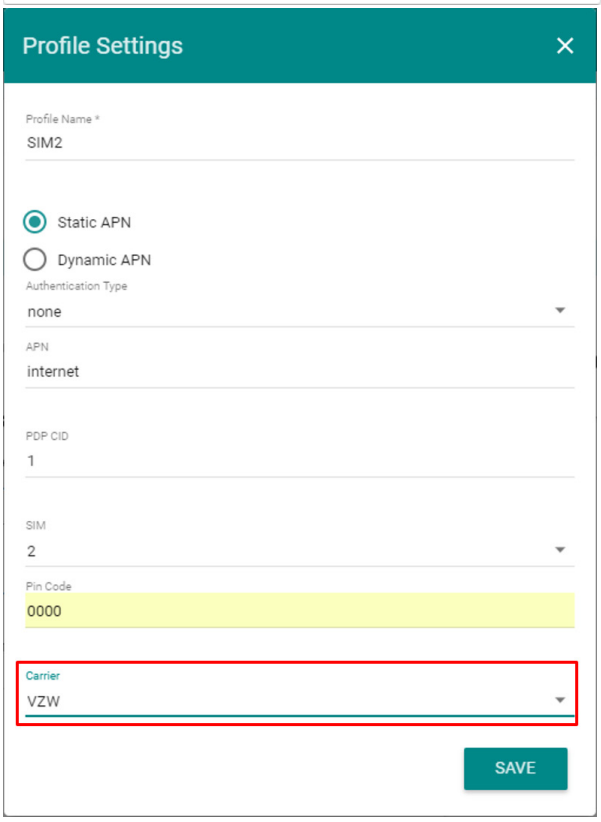
2. Configure the cellular module settings.

	Enable/disable the cellular module
	Add a new connection profile
	Modify an existing connection profile
	Remove an existing profile from the device



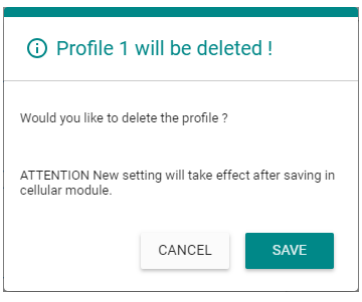
You can rearrange the profile boxes to change the priority in which the profiles are to be used, and specify the **Connection Retry Timeout value**.

3. If you are operating in the North American region, you will be able to switch between service providers.



4. Click **SAVE** to apply the changes.

To delete an existing profile, click on the delete icon for the profile. Click **SAVE** to confirm the deletion or **CANCEL** to retain the profile.

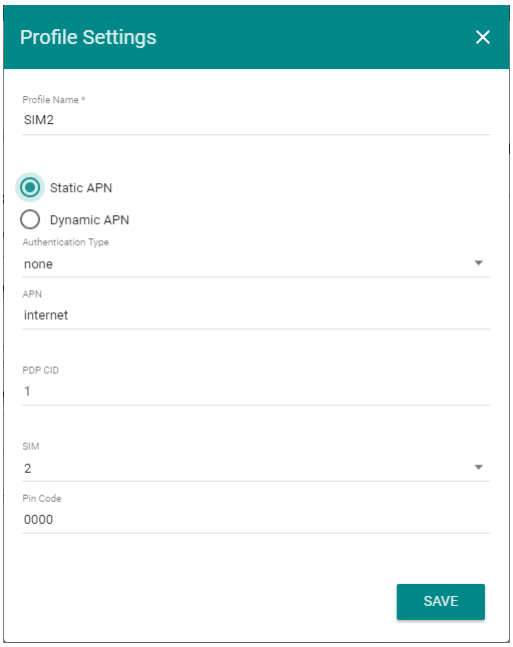


To create a new connection profile, do the following:

1. Click on the add icon.
2. Specify a unique name to the profile.
3. Refer to your carrier instruction to use **Static** or **Dynamic APN** and configure the corresponding settings.
4. If your carrier offers private network services, you may choose chap, pap, or both in the **Authentication Type**.
5. Enter your Username and Password to log in to the service network.
6. Enter the **PIN Code,** if your SIM card requests it (three wrong attempts will lock the SIM card).

   In ThingsPro V2.5.0 or above, ThingsPro supports Dual-SIM feature for eligible devices that have two SIM slots. You can assign a SIM card slot for each profile.
7. Click the **SAVE** SAVE button to save the **Profile Settings.**
8. Save the module settings by clicking on the **SAVE** button in the **Cellular Module** section.

NOTE: You can discard the changes at any time by clicking on the Cancel icon on the upper right corner.



When you click on the SAVE button on the **Cellular Module** section the module is restarted to apply the changes. The settings will take effect after the cellular module is successfully initialized.

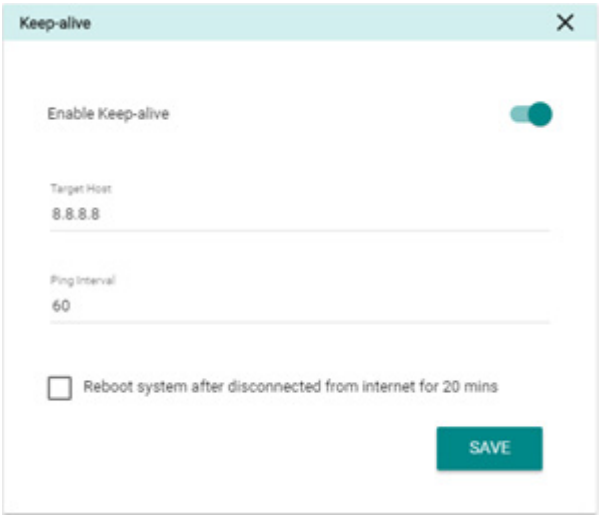
Keep-alive

Cellular carriers may disconnect user equipment (UE) when they are idle or do not transmit data via their cellular network for a certain period of time, depending on their policy. Once disconnected, your device will have to redial to connect back to the cellular network. The **Keep-alive** function will help you maintain the connection between your device and the carrier service by pinging a specific host on the Internet at periodic intervals.

To manage the **Keep-alive** settings for your cellular network, do the following.

1. Click the edit icon on keep-alive section.

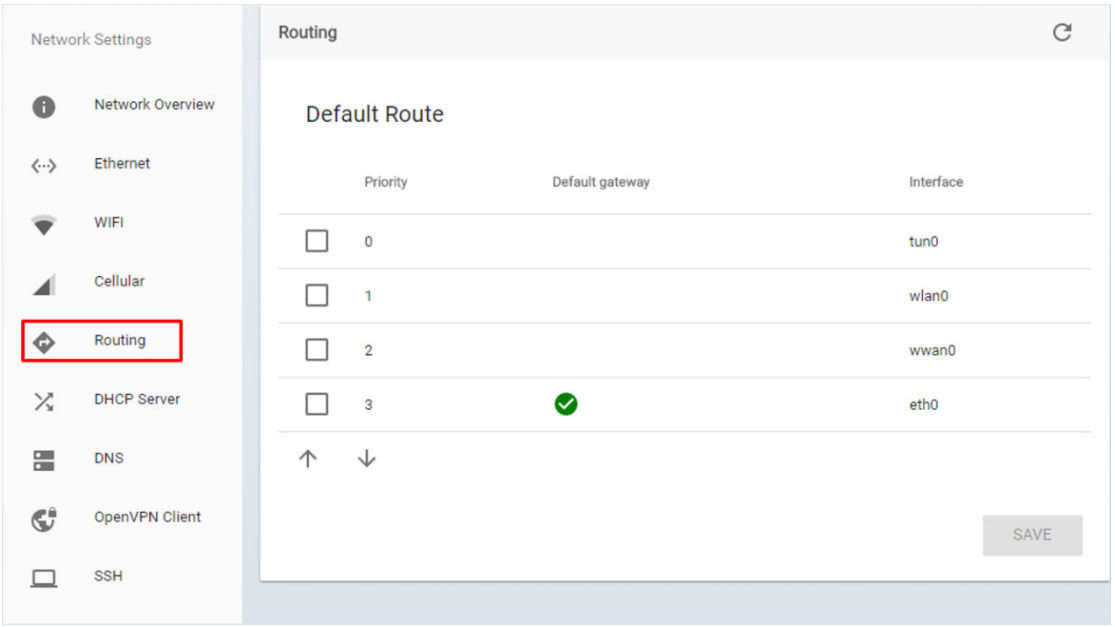
2. Enable the Keep-alive function



3. Specify the **Target Host** and the **Ping Interval** in seconds.
4. In some circumstances, a system reboot might bring an unstable or malfunctioning device back to normal state. You can select the **Reboot system after disconnected from Internet for 20 mins** to enable the system reboot function.
5. Click the SAVE SAVE button to apply the changes

Configuring Routing Settings (only available in v2.3 and above)

Click **Routing** to view the current default route settings.



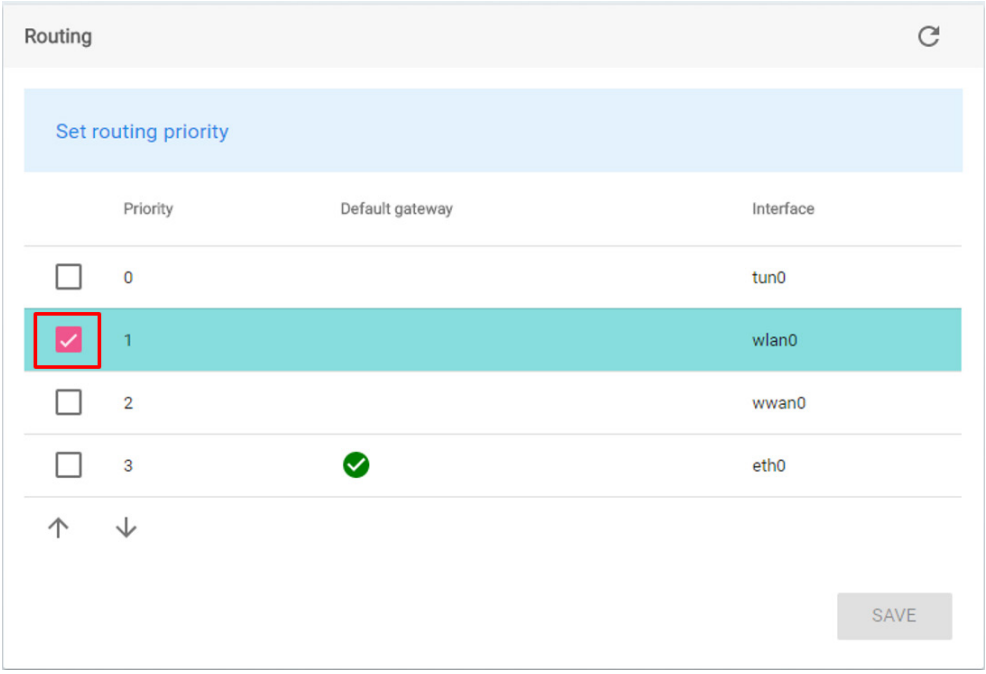
The routing sequence depends on the priority settings, with higher priorities (0 is the highest) given precedence. ThingsPro Gateway will use the interface associated with highest priority interface that is available.

Interfaces of your eligible device could include:

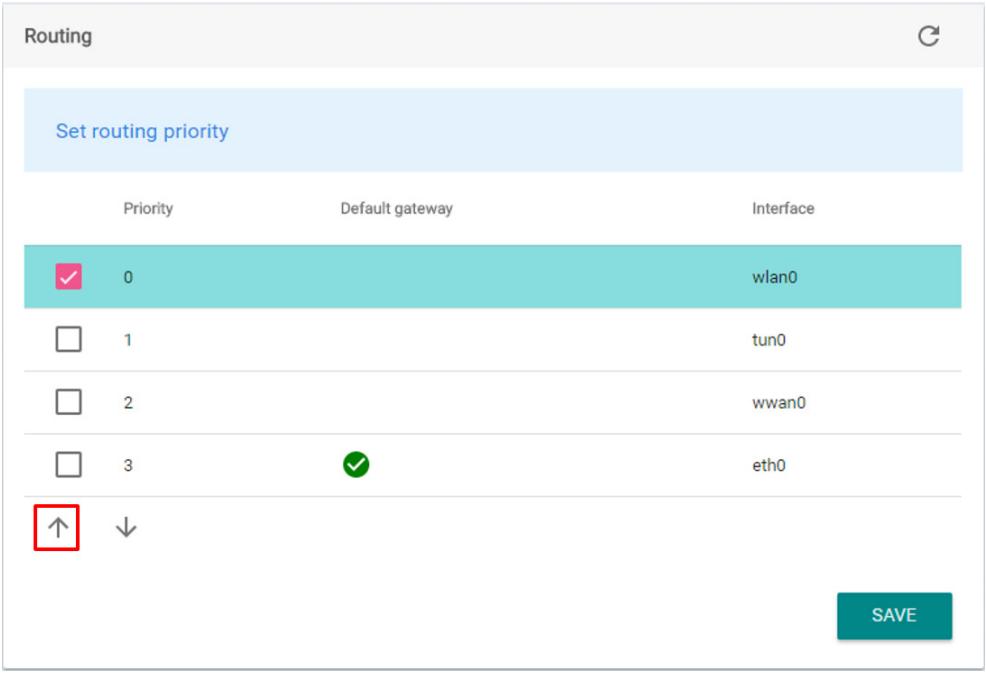
- *tun0*: VPN Tunnel
- *wlan0*: Wi-Fi
- *wwan0*: Cellular
- *eth0*: Ethernet (usually LAN1 when the default setting is WAN).

To change the priority of a certain interface, select the checkbox in front of the interface, and then click the arrow button to move the priority higher (move up) or lower (move down). Click the "SAVE" button to confirm the change. For example, the following steps apply to the Wi-Fi interface (wlan0):

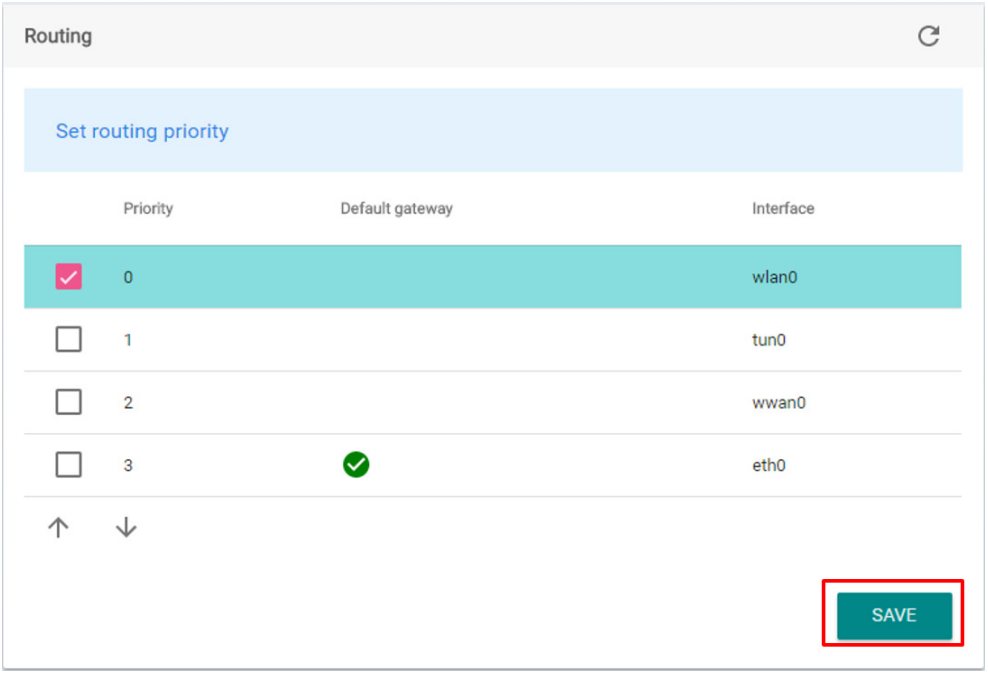
1. Select the "wlan0" (Wi-Fi) interface checkbox.



2. Click the "Up" arrow to set a higher priority.

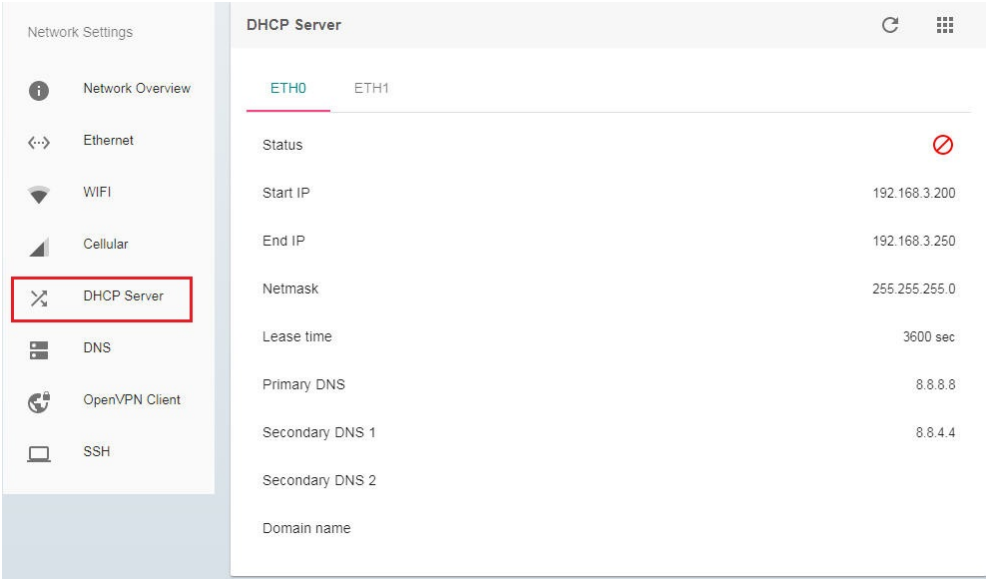


3. Click the "SAVE" button to confirm the changes to the routing settings.

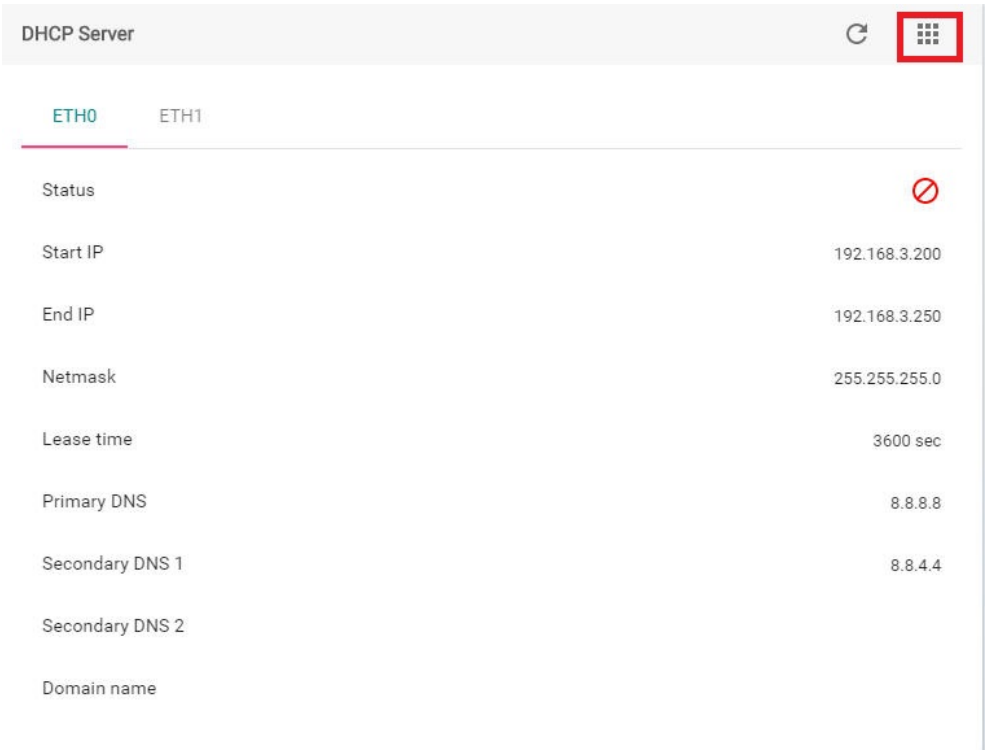


Configuring DHCP Settings

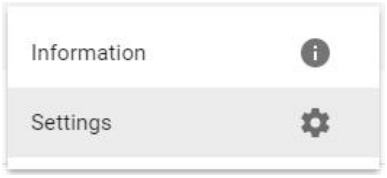
Click **DHCP Server** to view the current DHCP server settings on the main page.



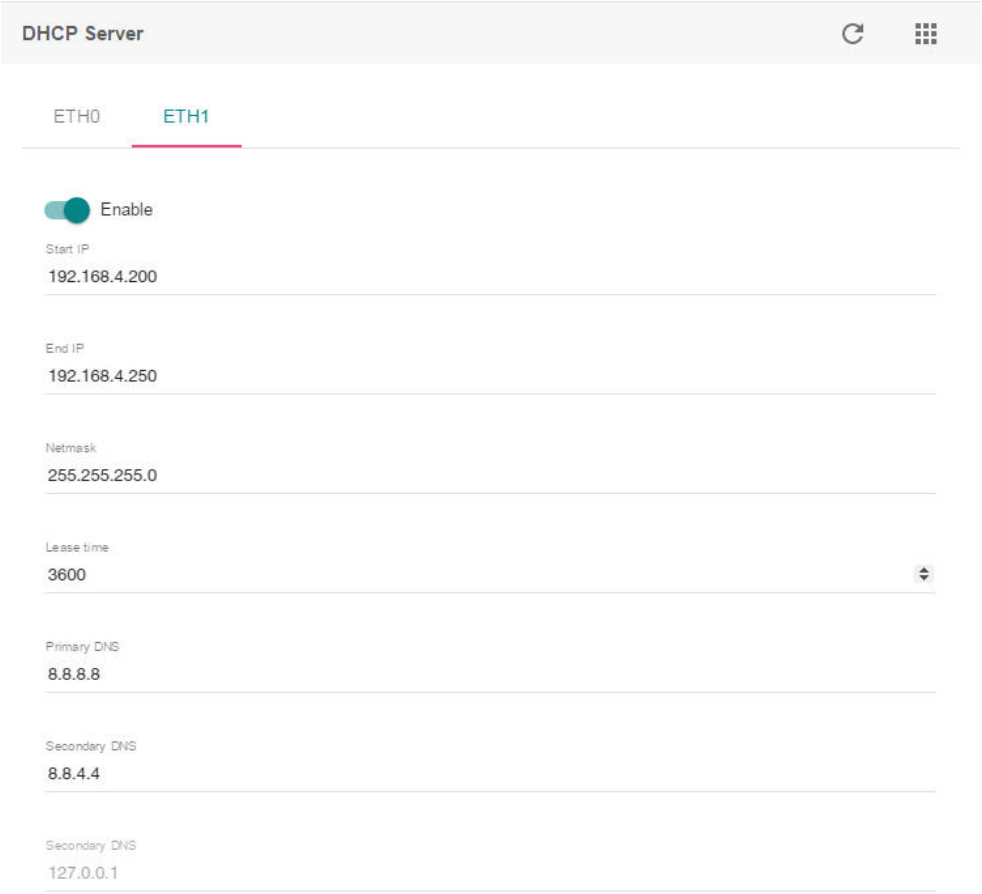
To configure the DHCP server settings, click the edit icon.



Select **Settings**.

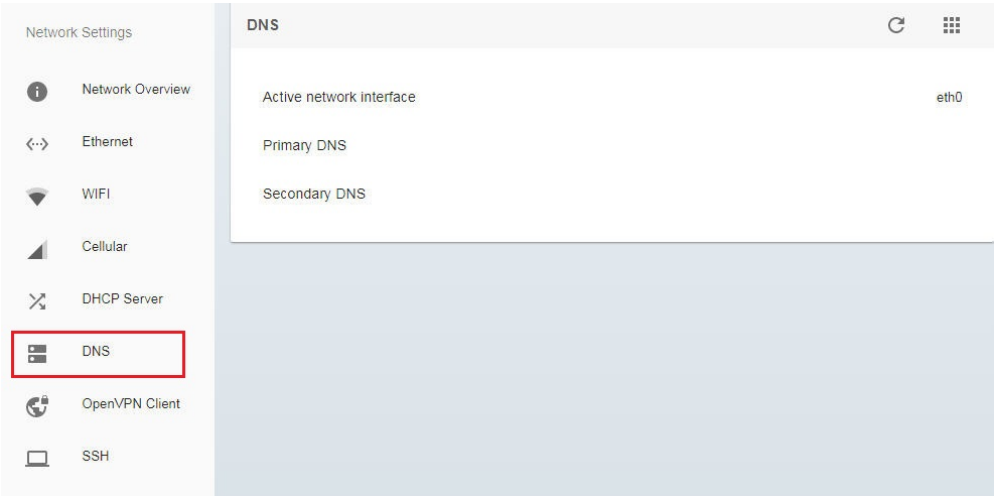


Configure the DHCP server for **ETH1**. Provide the necessary information, such as **Start IP, End IP, Netmask, Least time, Primary DNS, Secondary DNS**, and **Domain name**. When finished, click **SAVE**.

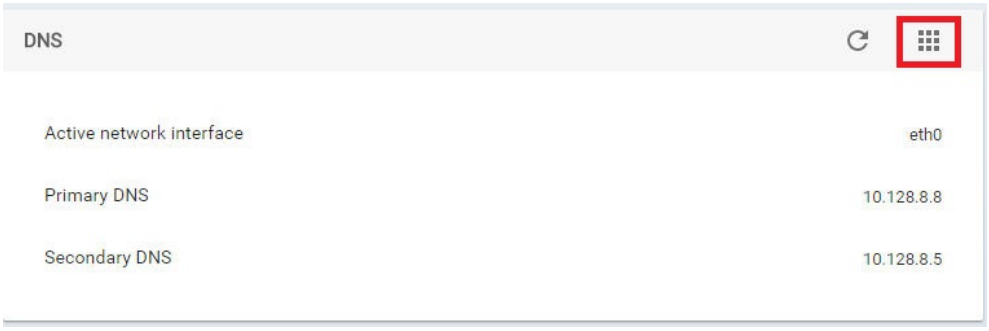


Configuring DNS Settings

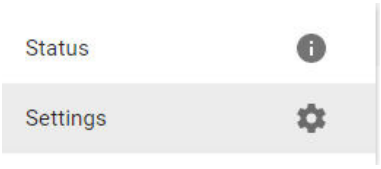
Click **DNS** to view the current DNS settings.



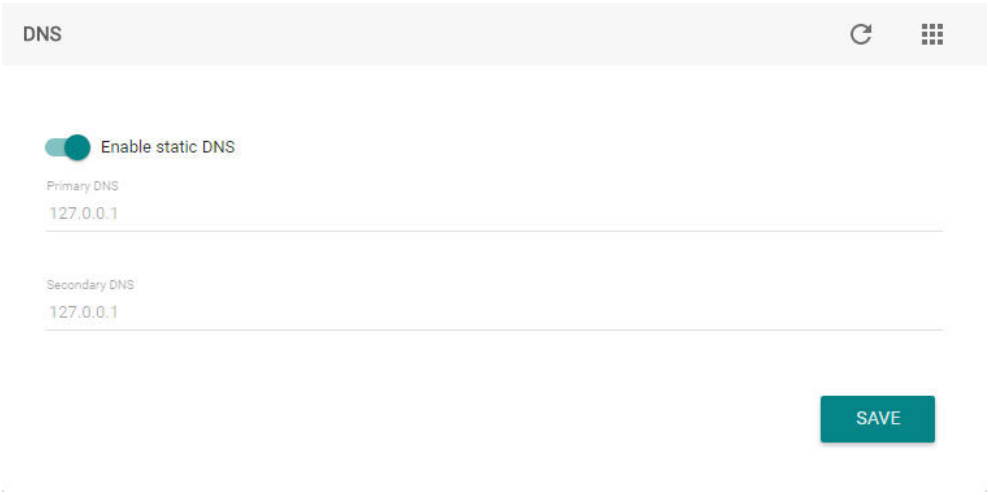
To configure the DNS settings, click the edit icon.



Select **Settings** to continue.

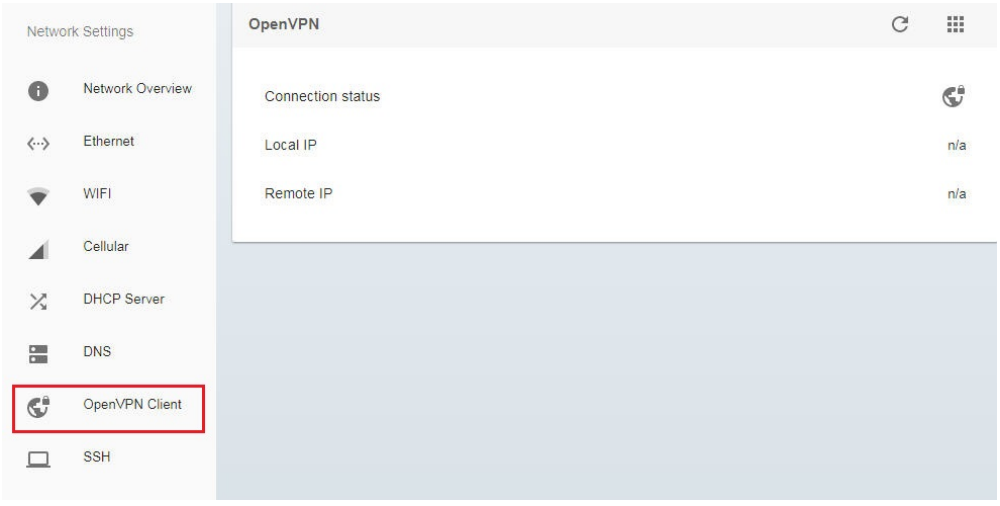


Select **Enable static DNS**, and provide **Primary DNS** and **Secondary DNS**. When finished, click **SAVE**.

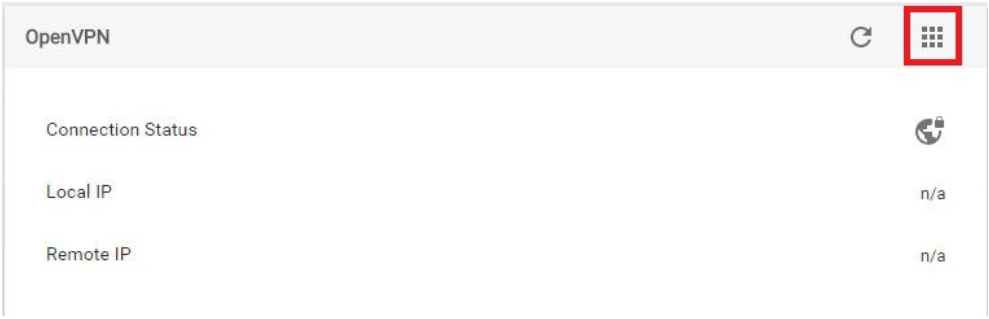


Configuring Open VPN Client Settings

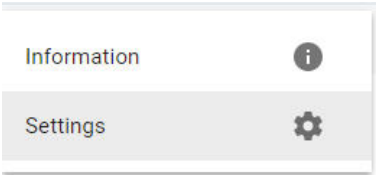
Click **OpenVPN Client** to view the current OpenVPN settings.



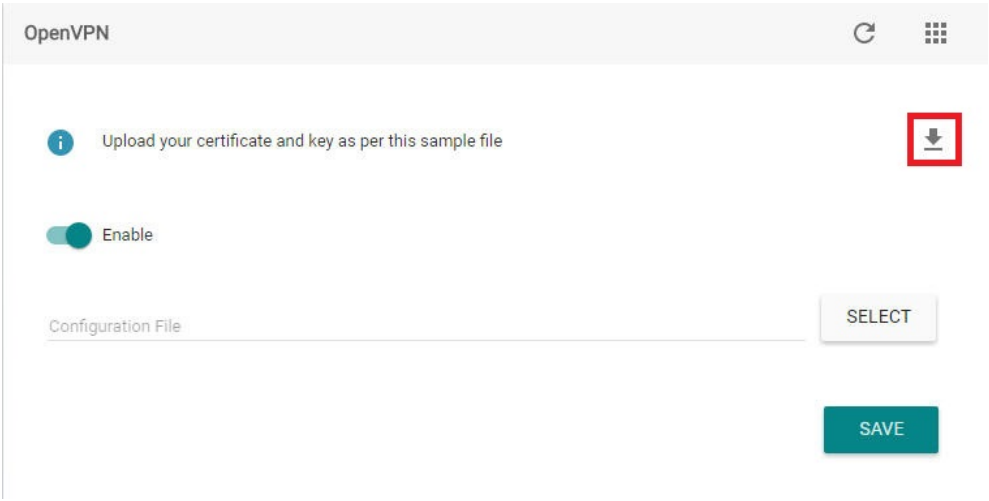
To configure the settings, click the edit icon.



Select **Settings**.

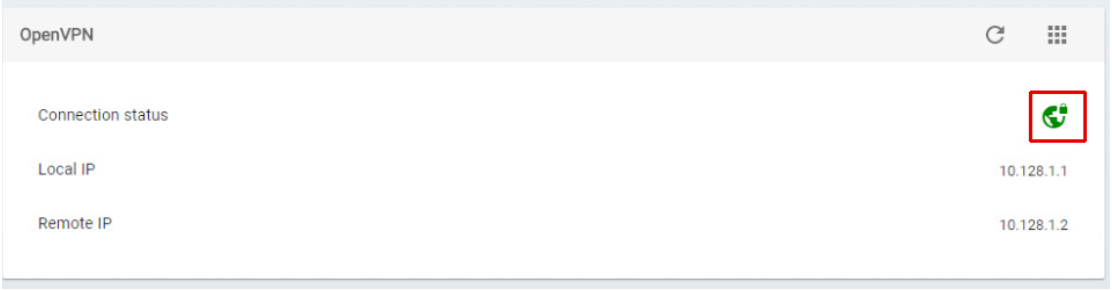


You can download an OpenVPN setting sample file by clicking on the download icon.



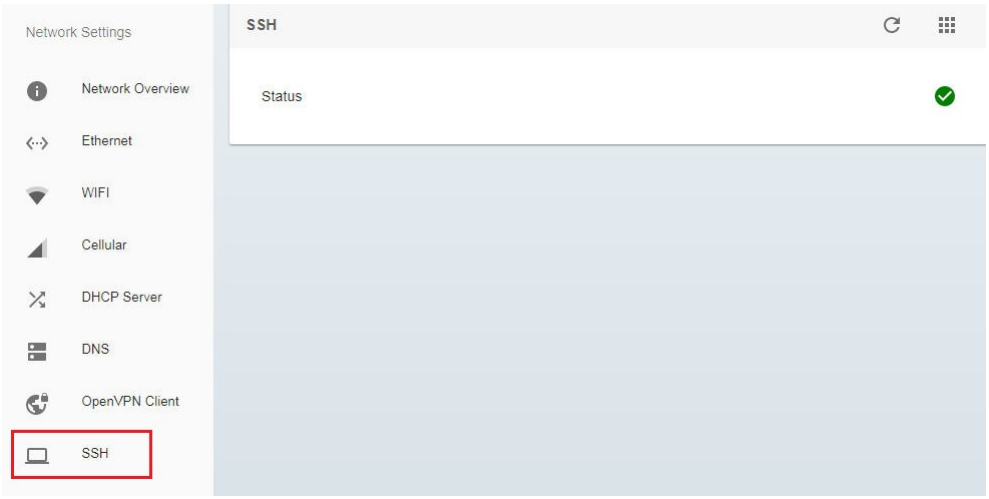
Select **Enable**, and then select the file from your computer, and then upload to the ThingsPro Gateway. When finished, click **SAVE**.

Check the **Connection status** icon. If the icon is green, the OpenVPN client is connected. If the icon remains gray, the client is not connected.



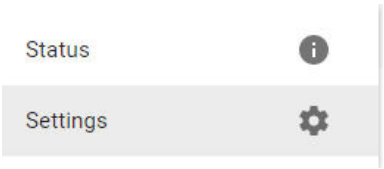
Configuring SSH Settings

Click **SSH** to view the current SSH settings.

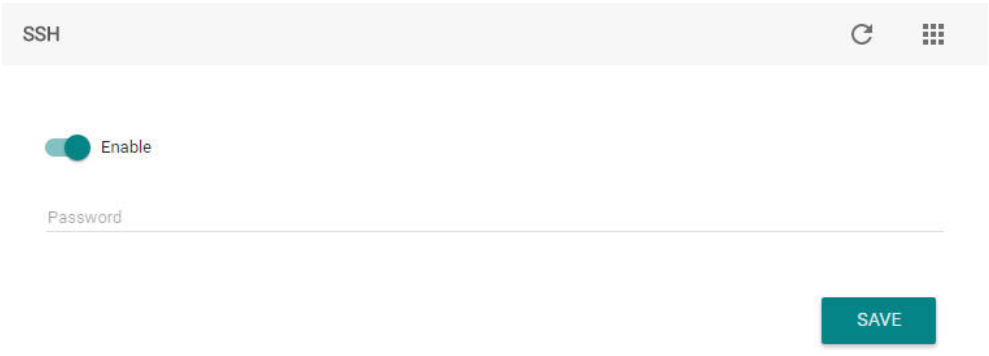


To configure the settings, click the edit icon.

Select **Settings** to continue.



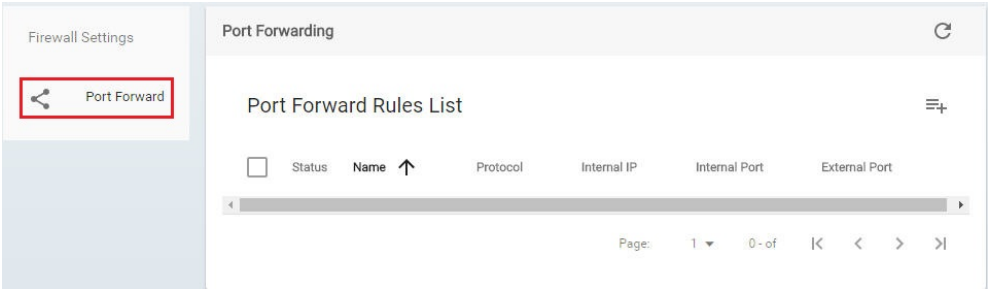
Select **Enable** and provide password. When finished, click **SAVE**.



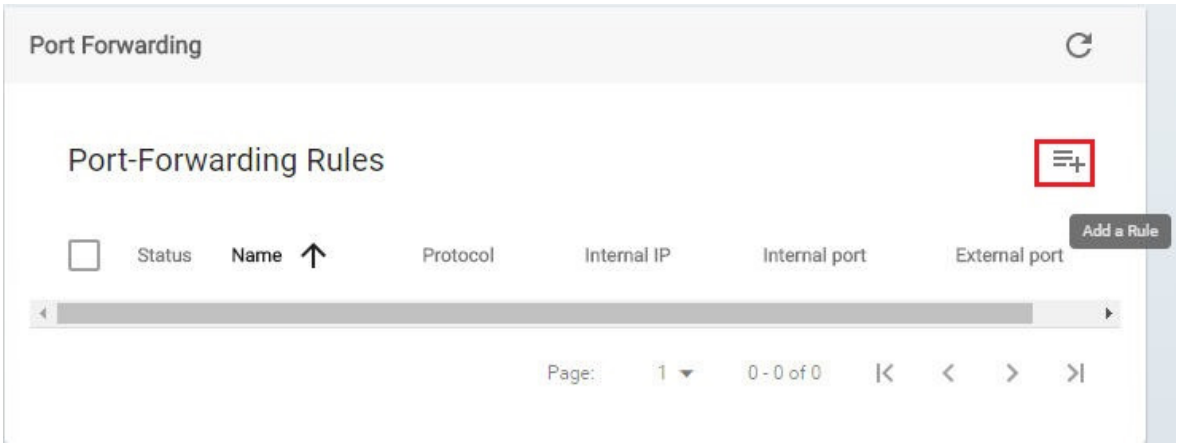
Configuring Firewall Settings

To configure firewall settings, select **Firewall** from the Gateway main menu.

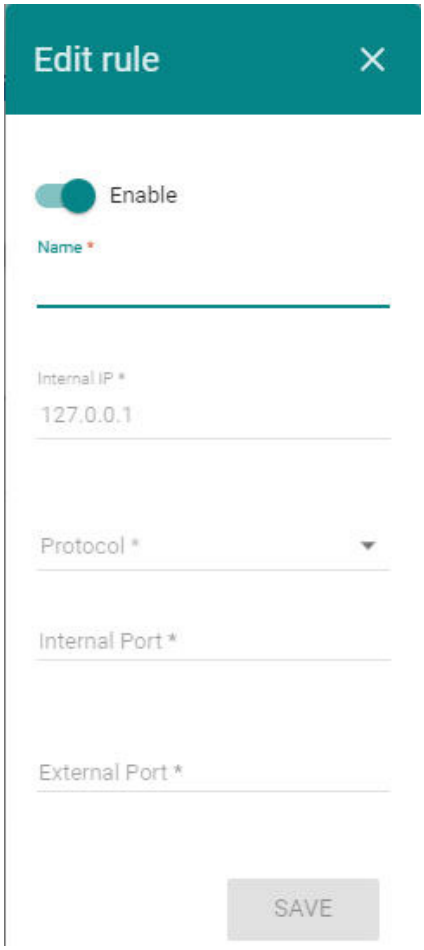
Select **Port Forward** to view the current firewall settings.



To add a new rule for port forward, click the icon.

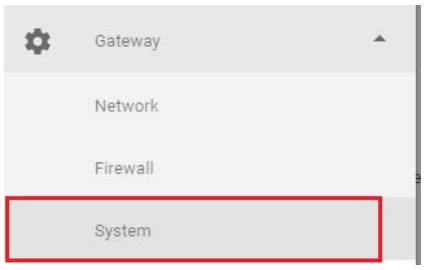


Select **Enable**, and then provide the necessary information such as **Name**, **Internal IP**, **Protocol**, **Internal Port**, and **External Port** in the specific fields. When finished, click **SAVE**.

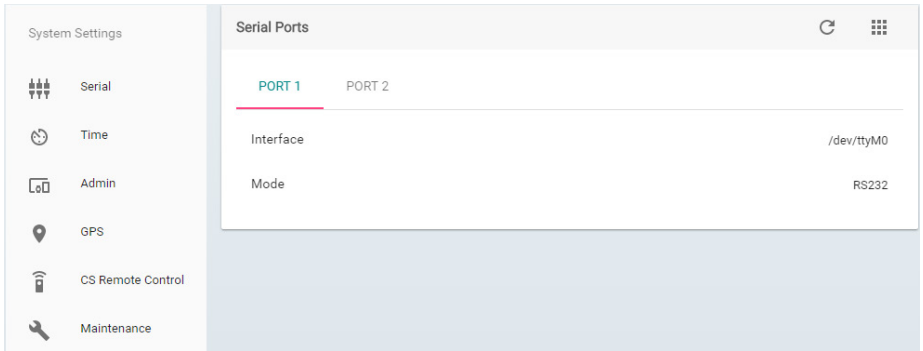


Configuring System Settings

Select **System** from the Gateway menu.

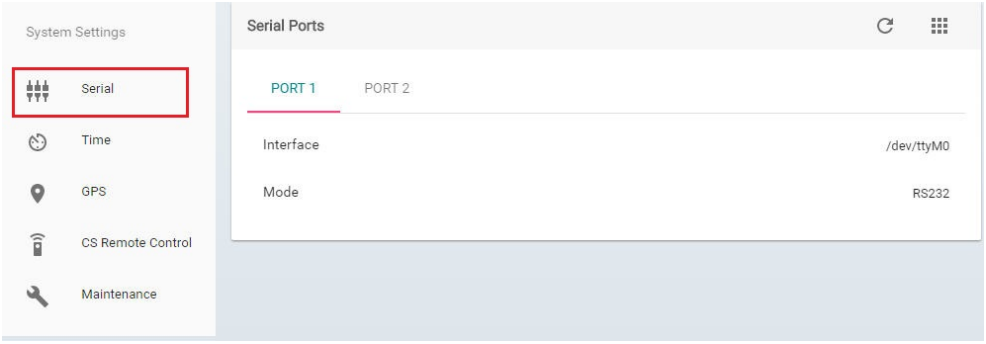


System settings include various options, such as **Serial**, **Time**, **Admin (only available in v2.3 and above)**, **GPS**, **CS Remote Control** and **Maintenance**.

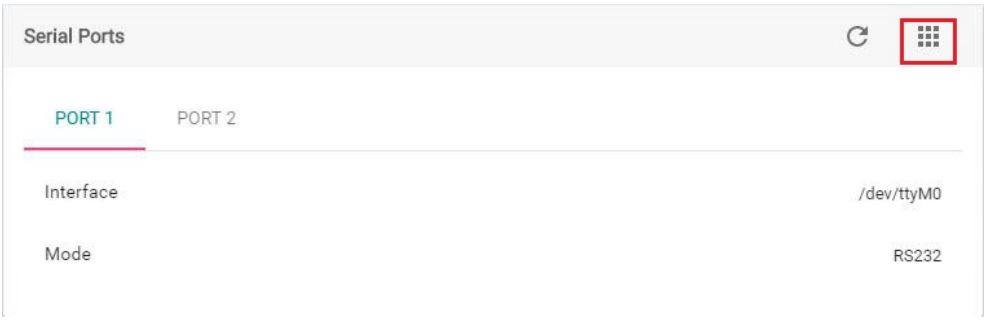


Configuring Serial Settings

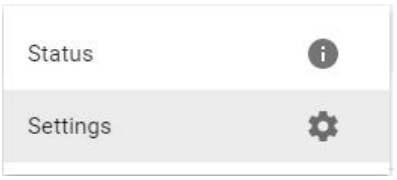
Select **Serial** to view the current serial settings.



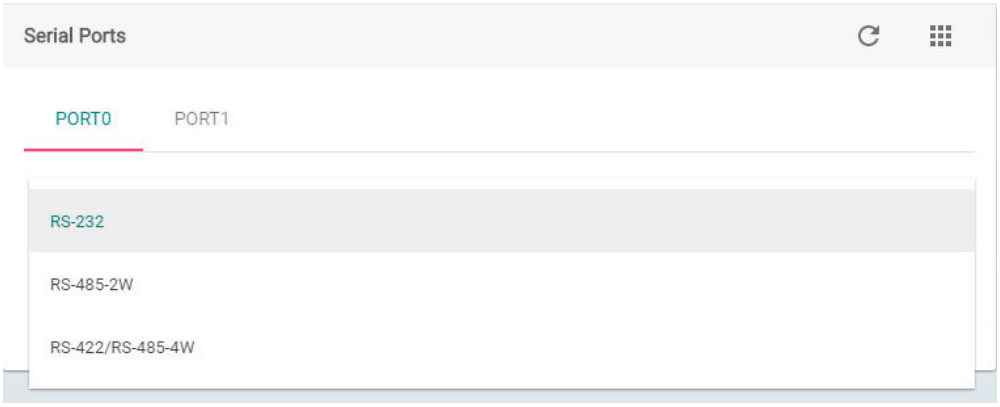
To configure the serial settings, click the edit icon.



Select **Settings**.

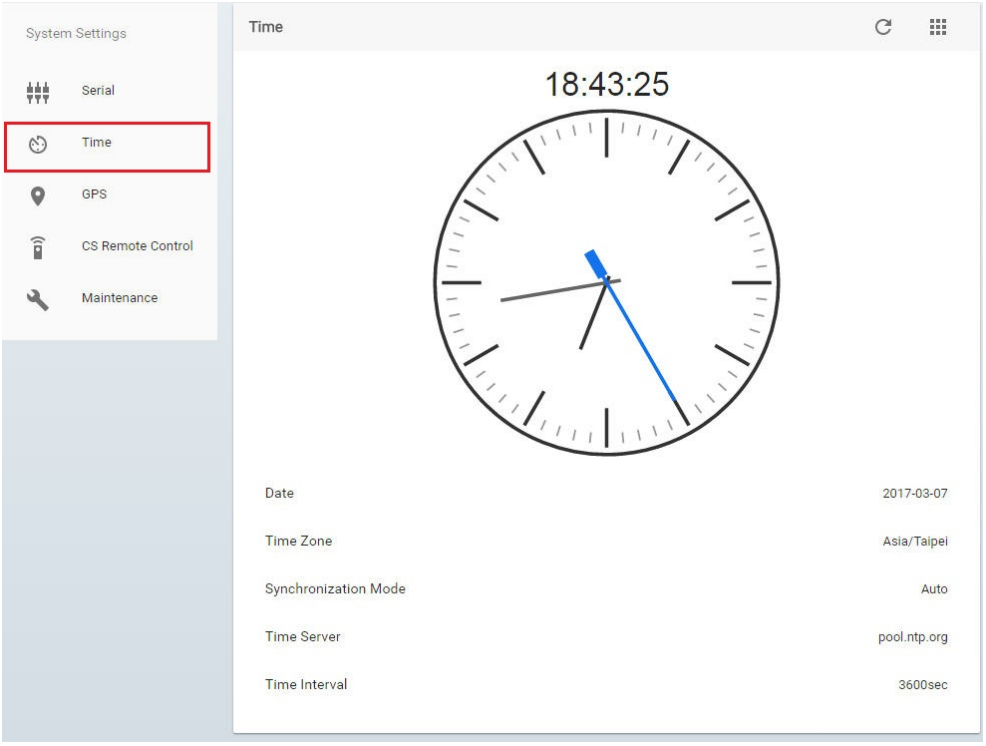


Configure the serial port interface by selecting from the drop-down list. When finished, click **SAVE**.

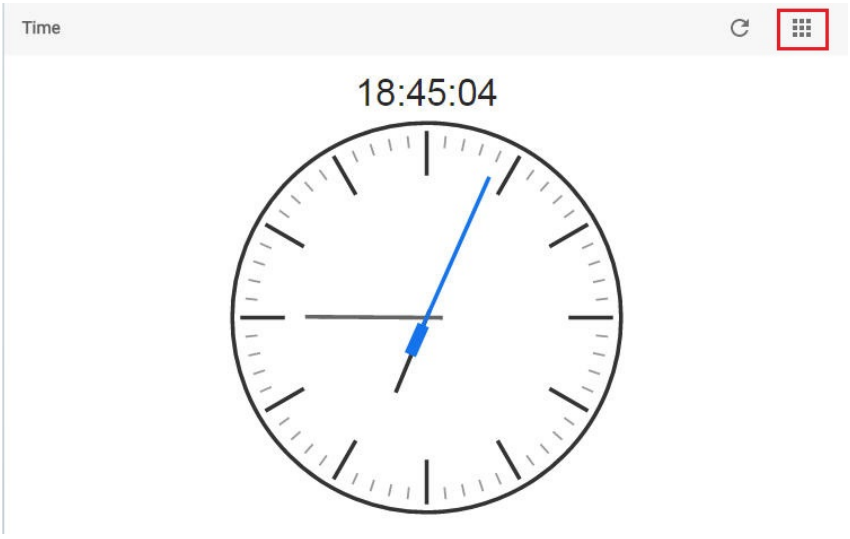


Configuring the System Time

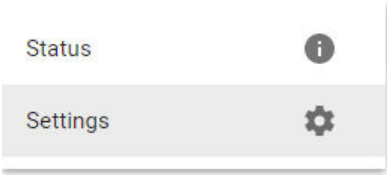
Select Time to view the current system time.



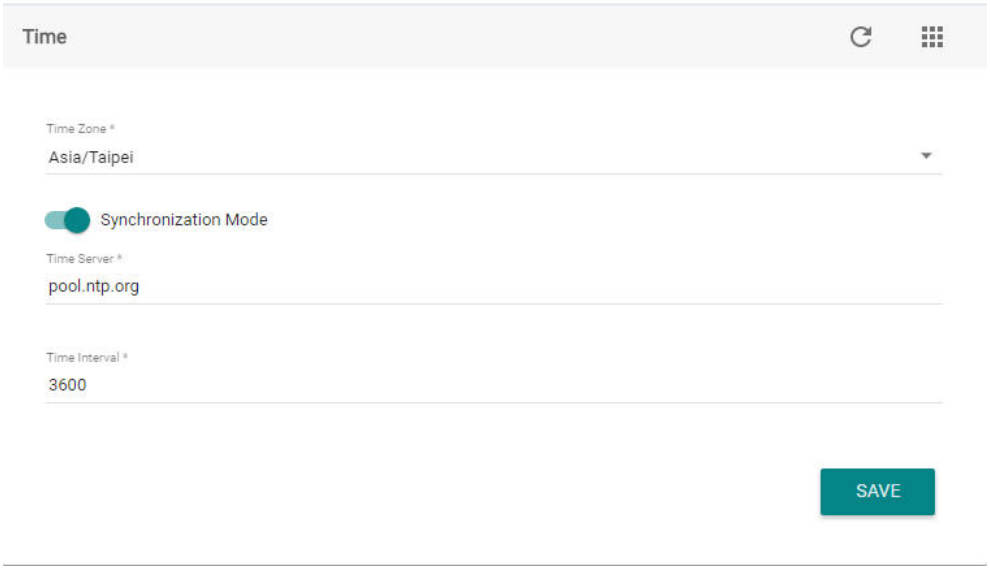
To configure the system time, click the edit icon.



Select **Settings**.

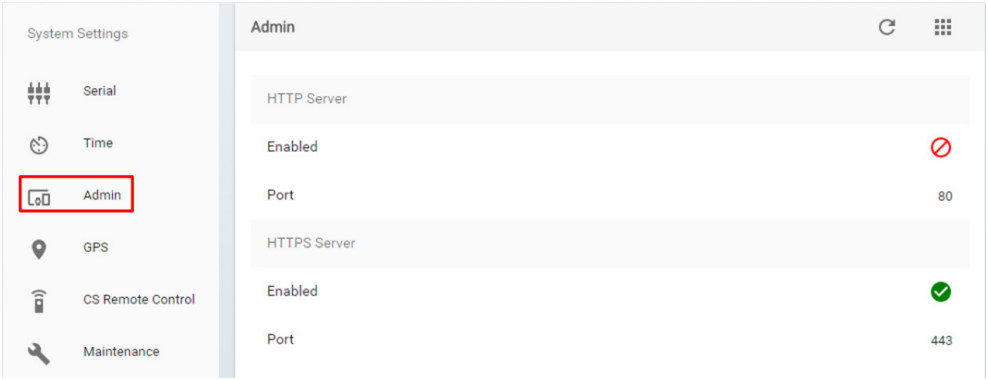


Select if you want to use **Synchronization Mode**, and offer the **Time Server** name and **Time Interval** value. When finished, click **SAVE**.

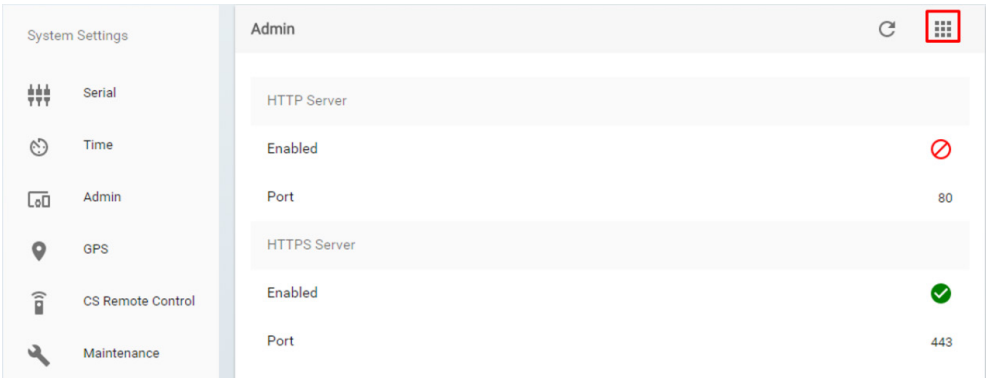


Configuring Admin Settings (only available with v2.3 and above)

Click **Admin** to view the current HTTP/HTTPS services settings and corresponding port number.

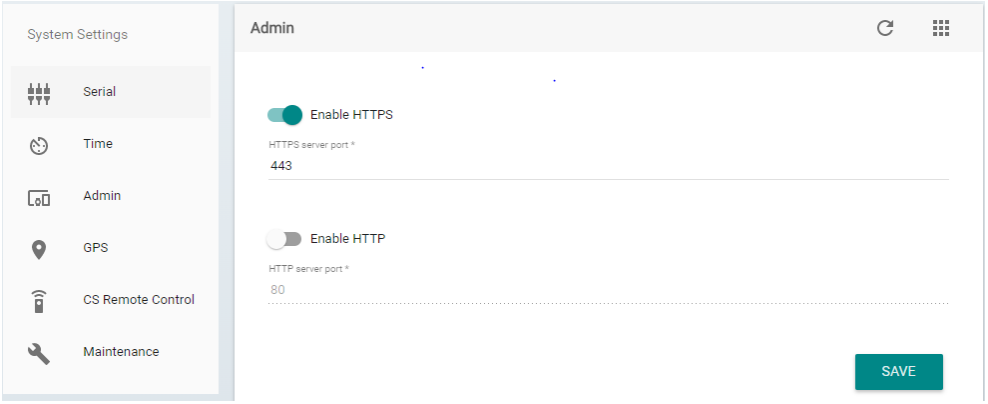


Click the edit icon to configure the Admin settings.



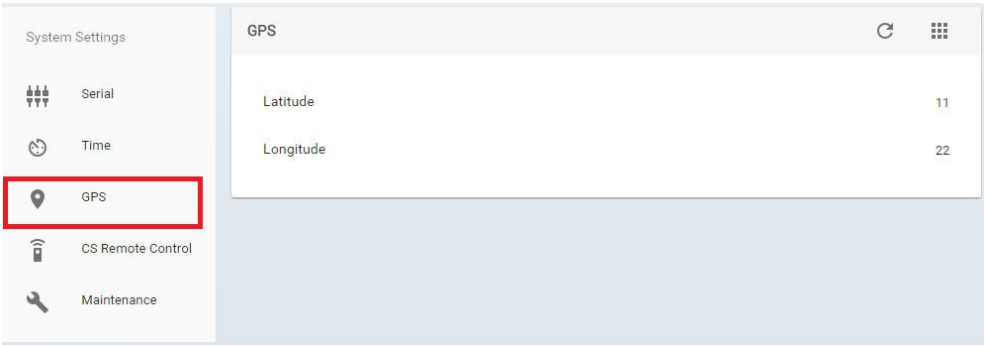
Select **Settings**.

Use the Toggle bars to enable/disable HTTPS and HTTP services for the current ThingsPro Gateway. You can assign a port to each of these two services. When finished, click **SAVE**.

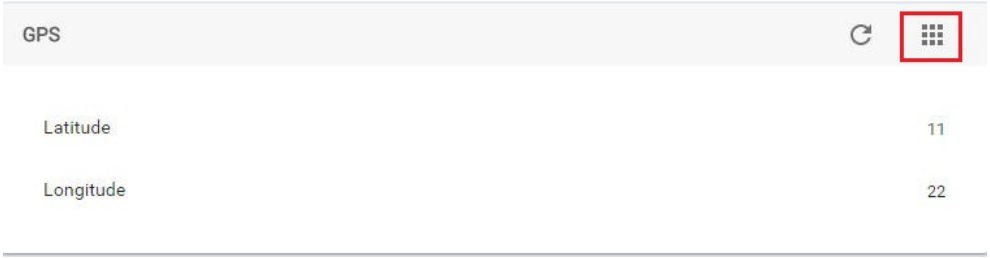


Configuring GPS Settings

Select GPS to view the current GPS settings.

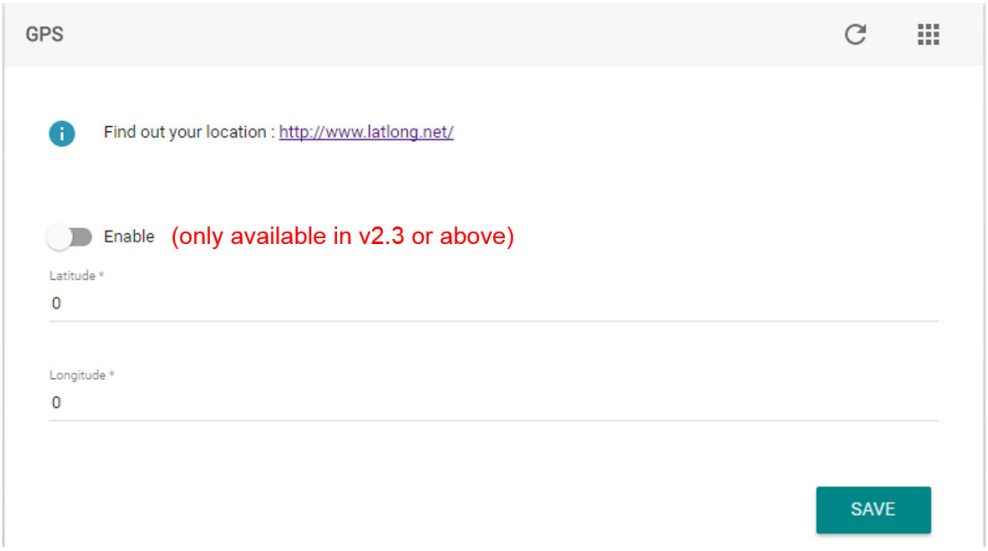


To configure the GPS settings, click the edit icon.



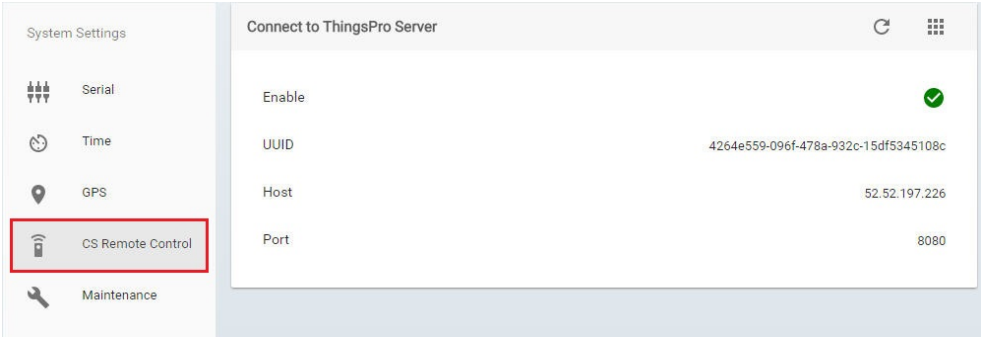
Select **Settings**.

Provide the Latitude and Longitude values in the appropriate fields. Starting with ThingsPro v2.3, you may get the location information from the GPS data retrieved by your eligible device if you have purchased and installed the cellular module w/ GPS feature. You can enable this function to get GPS data automatically. When finished, click **SAVE**.

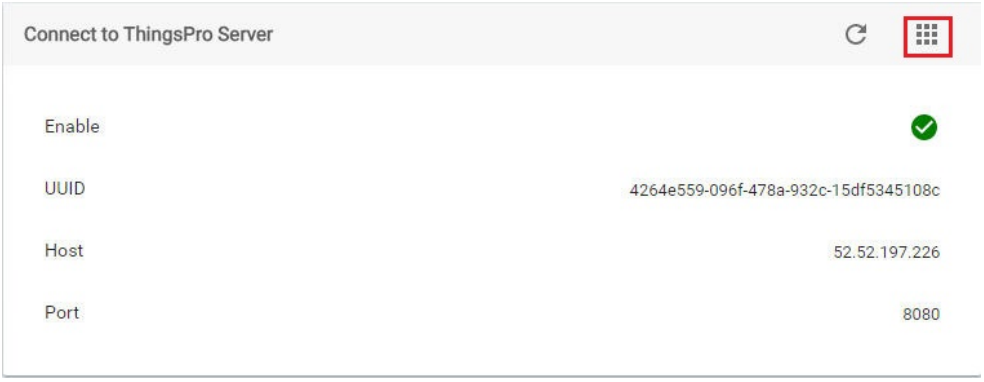


Configuring Remote Control Settings

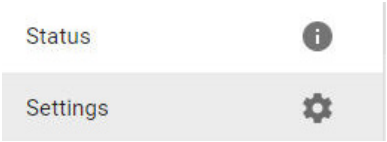
Select **CS Remote Control** to view the current settings. This allows you to remotely connect to ThingsPro Server. You can get this information during the Enablement Utility registration process.



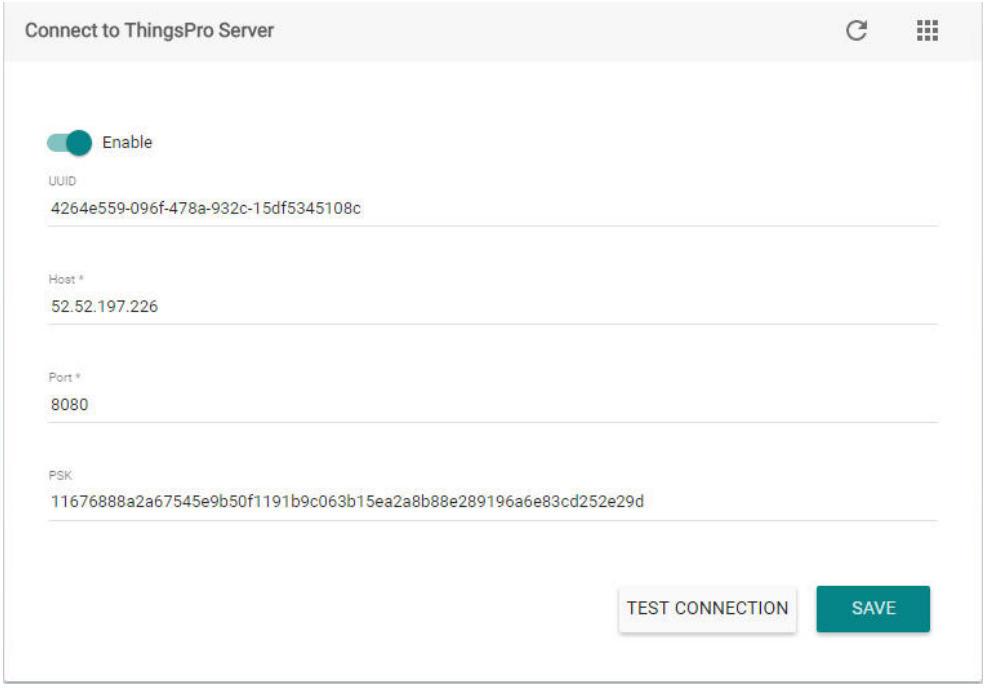
To configure, click the edit icon.



Select **Settings**.

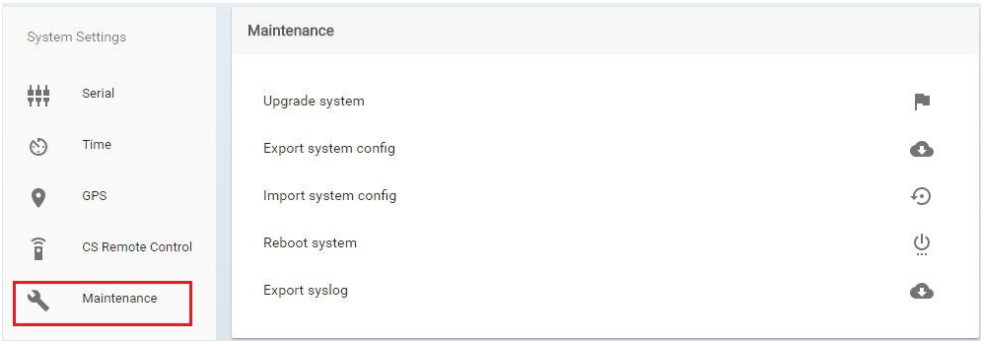


Select **Enable**, and provide the values for **Host**, **Port**, and **PSK**. You can click **TEST CONNECTION**, or **SAVE** to finish.



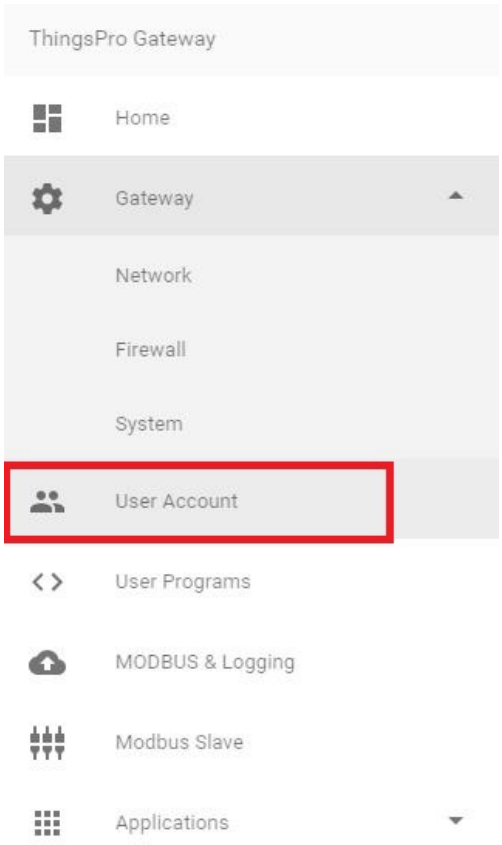
System Maintenance

This section is the same as the procedure in Maintenance in the main menu section. Refer to **Maintenance** section.



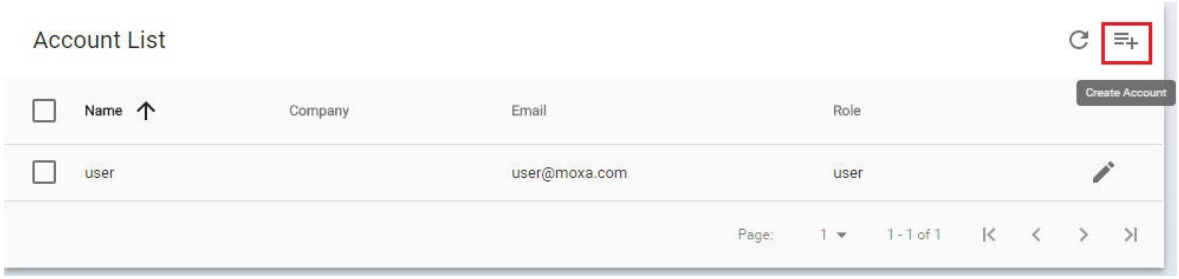
Managing User Accounts

This section describes how to add new account, and manage the existing account. Select **User Account** from the menu.

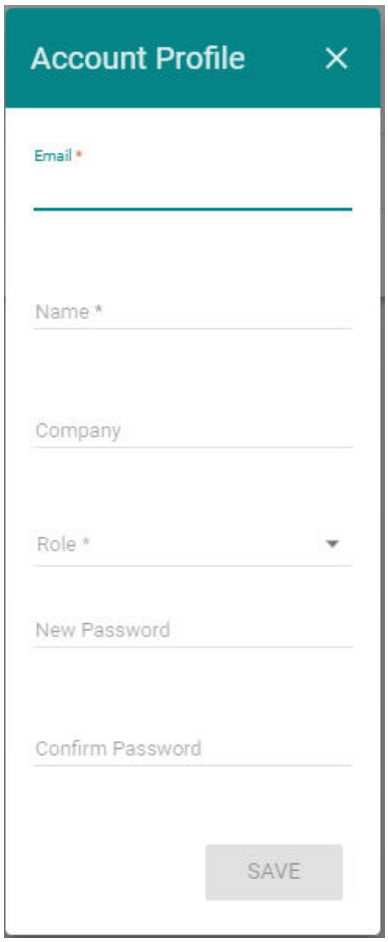


Creating a New Account

To create a new account, select the icon.

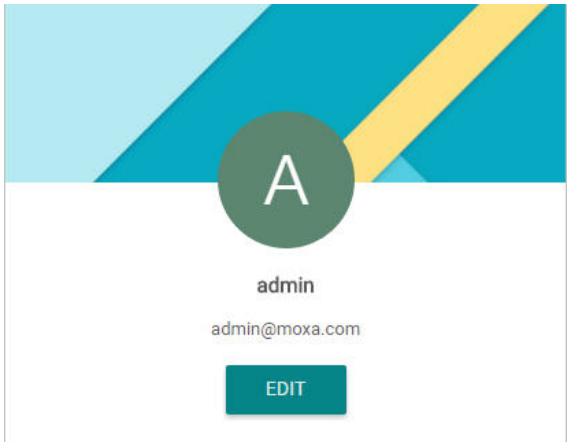


Provide the necessary information for the new account. When finished, click **SAVE**.

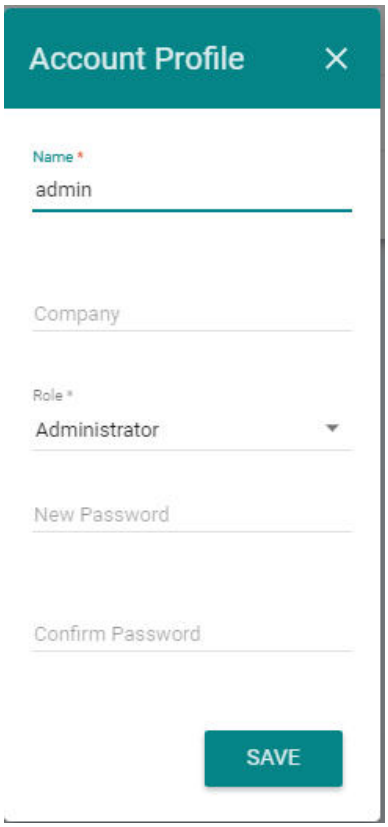


Editing the Administrator Information

To edit the administrator information, click **Edit**.

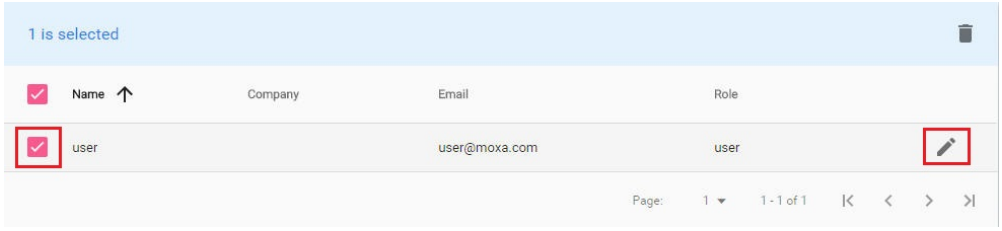


Edit the information in the specific fields. When finished, click **SAVE**.



Updating User Account Information

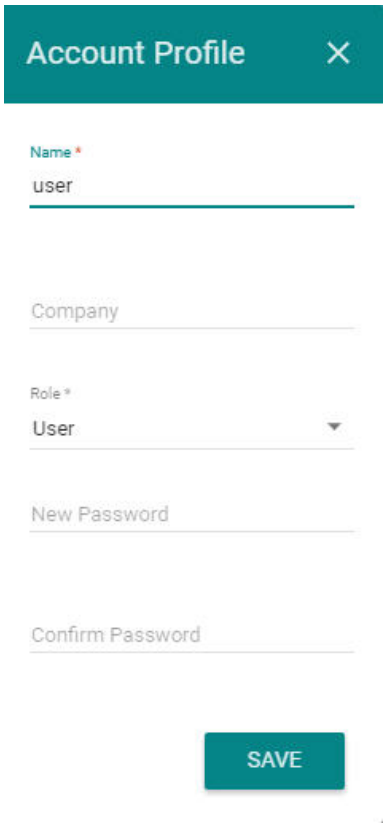
To update an existing user, check the user, and then select the edit icon.



For access rights of the root, admin, and user, refer to the following table.

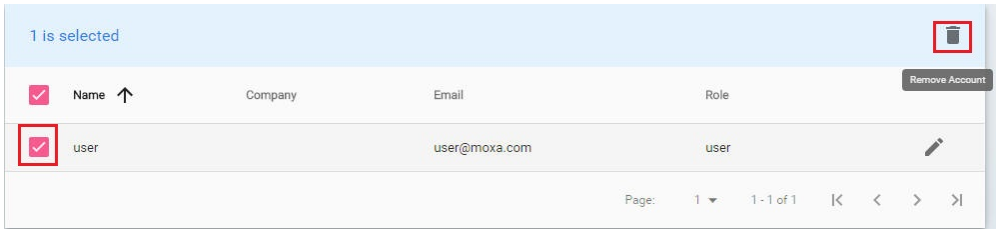
	Configuration	API Token
root	read/write	write
admin	read/write	N/A
user	read	N/A

Edit the information in the specific fields. When finished, click **SAVE**.



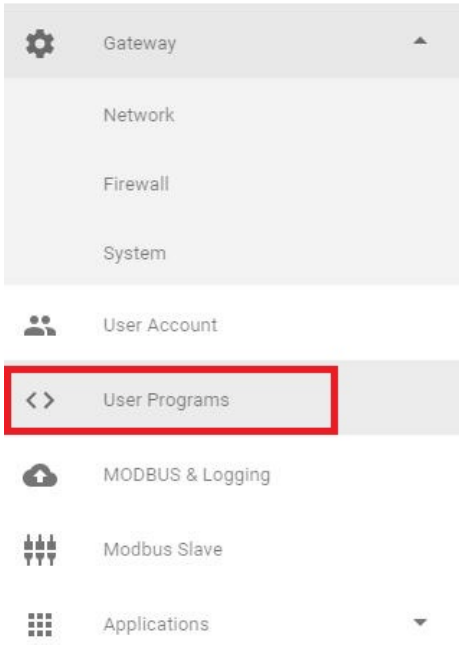
Deleting a User Account

To delete an account, select the account, and then click the delete icon.

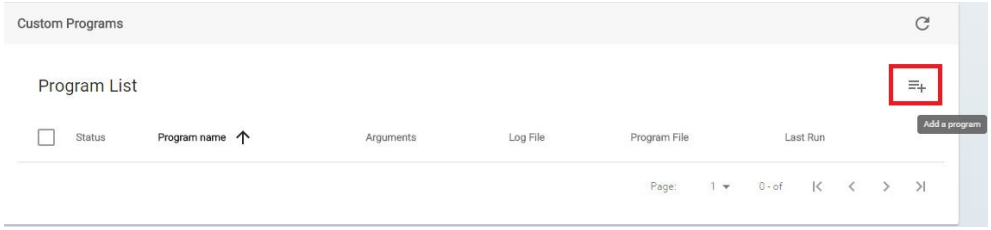


Managing User Programs

ThingsPro Gateway allows developers to develop their own programs or applications and upload them to ThingsPro Gateway. Select the **User Programs** tab from the main menu.



To add a program, click the add icon.



Select **Enable**, provide the name of the program, and select the file from a specific location (refer to the following example to create the file you want to upload). You can also specify when the program should run. For example, whenever the system starts up or at a periodic interval. When finished, click **SAVE**.

Example

Scenario: Synchronize system time with network time server every minute.

Follow the steps below to create the script file and upload it to ThingsPro gateway:

1. Connect to the UC-8112-LX computer through the console port or via an Ethernet cable. Log in to the computer.
2. Create a working directory on the ThingsPro Gateway.
   ```
   moxa@Moxa:~$ mkdir myproject
   ```
3. Enter this working directory and create a shell script file in this folder. The name of this file must be "exec". The content of this example shell script is:
   ```
   #! /bin/sh
   ntpdate $1
   ```
   Note: The UC-8112-LX computer generally supports C, C++, Python, shell script, and JavaScript. You may use these programming languages to develop your program.

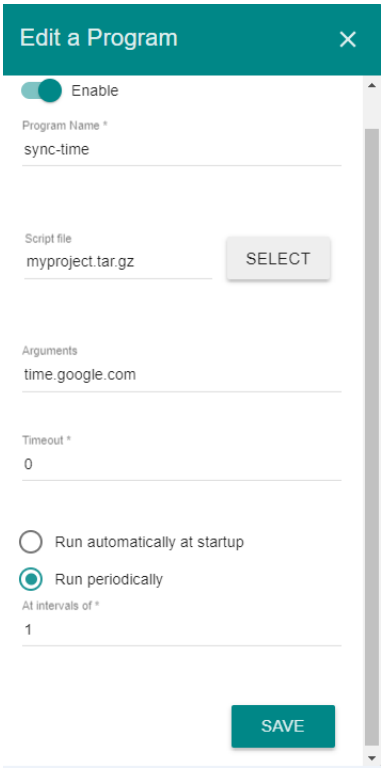
4. When you finish developing the program, set the "exec" file to have execution permissions.

```
moxa@Moxa:~/myproject$ chmod +x exec
```

5. Use the tar command to compress all files created in this folder.

```
moxa@Moxa:~/myproject$ tar cvzf myproject.tar.gz .
```

6. Enter a name for the program, then click **Select** to upload the compressed file. The shell script needs an argument to specify the network time server. ThingsPro Gateway will terminate the user program after the "timeout" value expires. If the timeout value is set to 0, then ThingsPro Gateway will leave the user program running permanently.

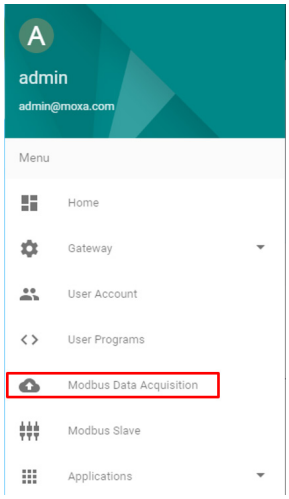


7. After clicking the **SAVE** button, the program will be available under the **User Programs** section of the main menu.

For more details on creating user programs, download the ThingsPro Programmer's Guide.

Configuring Modbus Settings for Data Acquisition

This section describes how to configure Modbus settings and logging. Select **Modbus Data Acquisition** on the main menu.



Equipment Template and Data Tag Management

You can use Modbus compatible templates to configure field devices in ThingsPro, and connect the devices to the gateway. By default, ThingsPro software includes preconfigured templates for Moxa ioLogik Series. You can modify the ioLogik templates to set up connections to Modbus /RTU or Modbus /TCP devices.

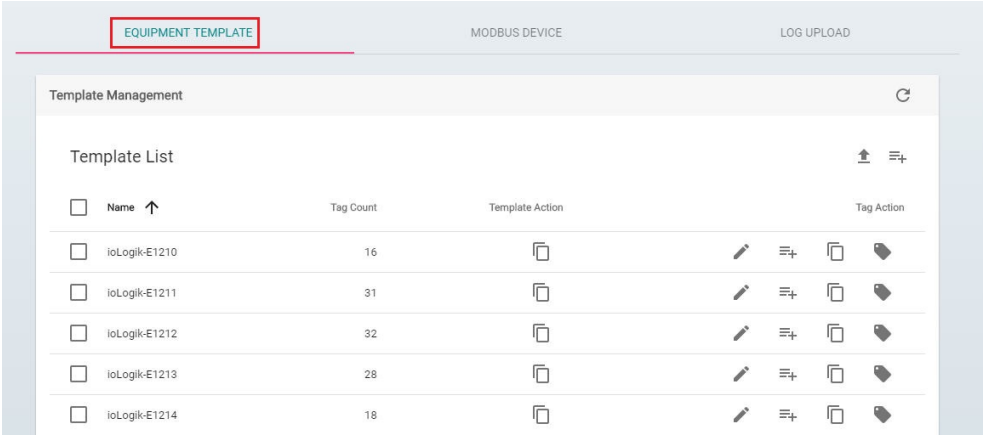
You can add, remove, or update equipment templates in the Equipment Template List section on the Settings page.

To configure a Modbus device in ThingsPro and connect it to the gateway, do the following:

1. Select a template from the **Equipment Template List**

   or

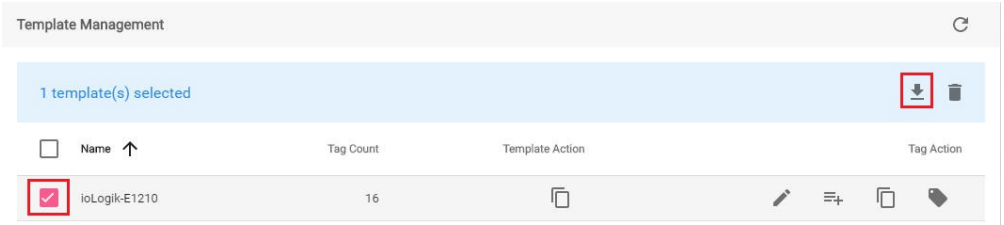
   Create a new template in the **Equipment Template List**.
2. Define a tag for the device in the template, and specify the device details.
3. Add the device to the ThingsPro system.



Downloading a Template

To download an equipment template, do the following:

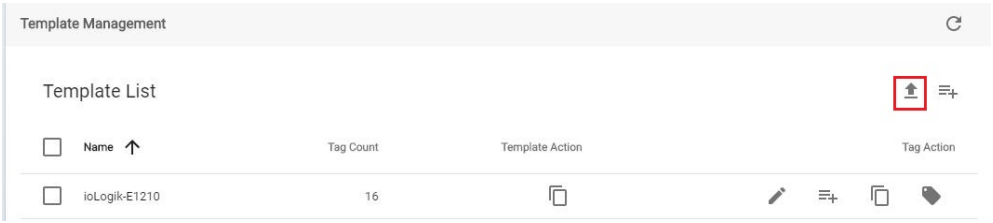
In the Equipment Template List, select the device and click download icon to download the current template to your local computer.



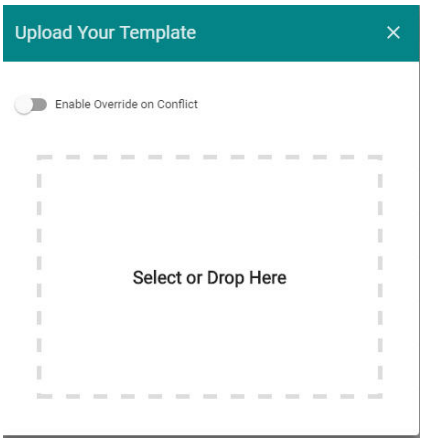
You can also select more devices and download all templates at one time.

Uploading a Template

To upload a template, click upload icon.

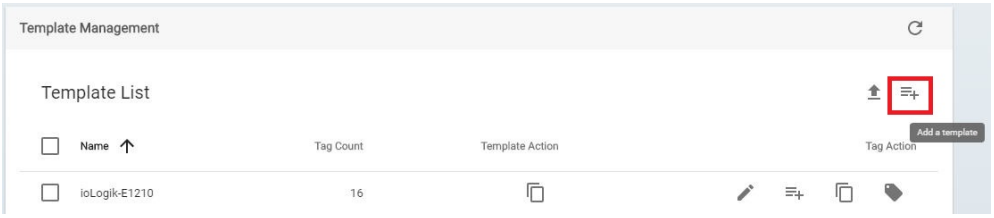


Select the template file from the local folder, and wait for a few second to complete the upload process.

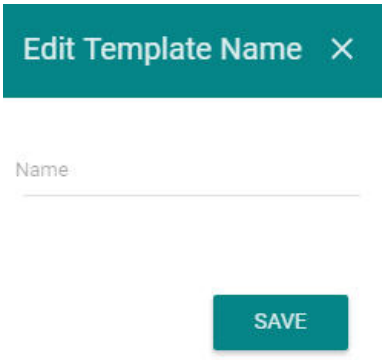


Adding a Template

To add a template, click the add icon.

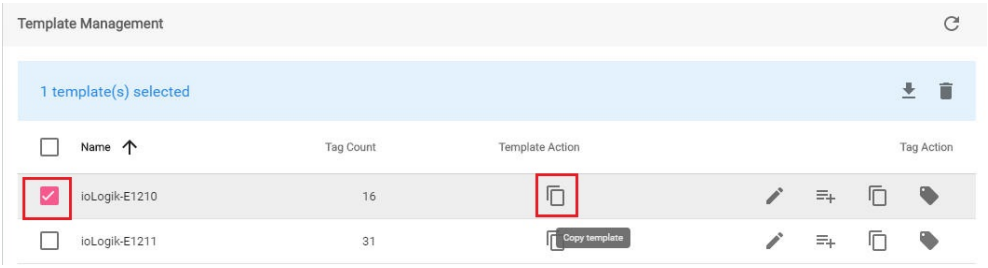


Add the template name. When finished, click **SAVE**.

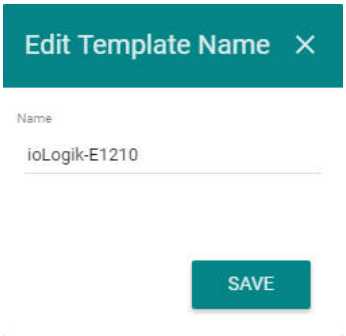


Copying a Template

Select the device, and then click the copy icon.

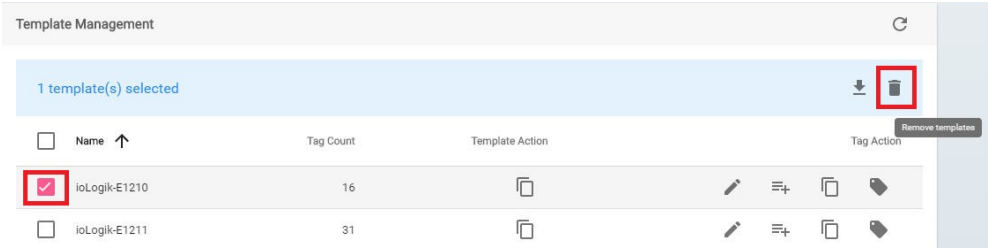


You can edit the new template name. When finished, click **SAVE**.



Removing a Template

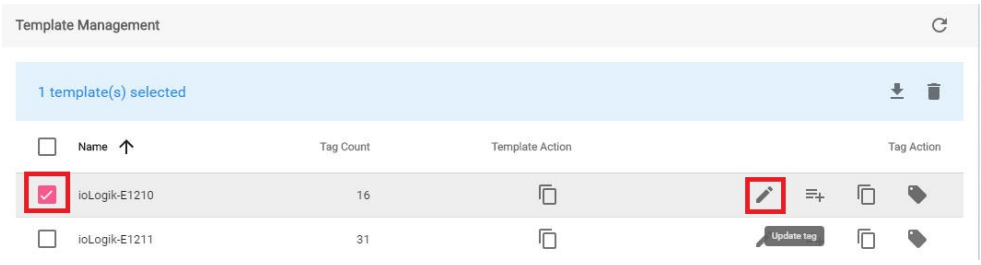
Select the device, and then click the remove icon. The template will be removed.



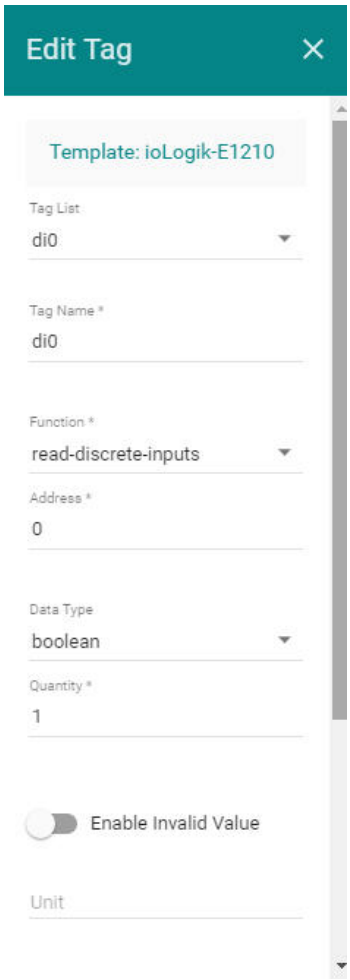
Note that if a Modbus template is being used, you cannot remove the template, and a device tag cannot be updated. Remove the device in Modbus Management page first.

Updating a Device Tag

Select the device, and then click the update tag icon.

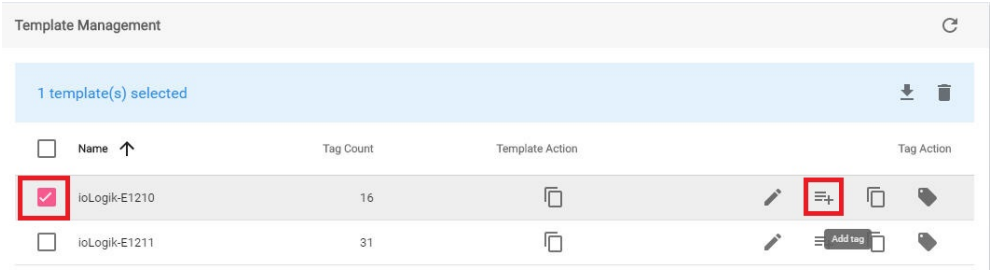


Update the tag in the following page. When finished, click **SAVE**.

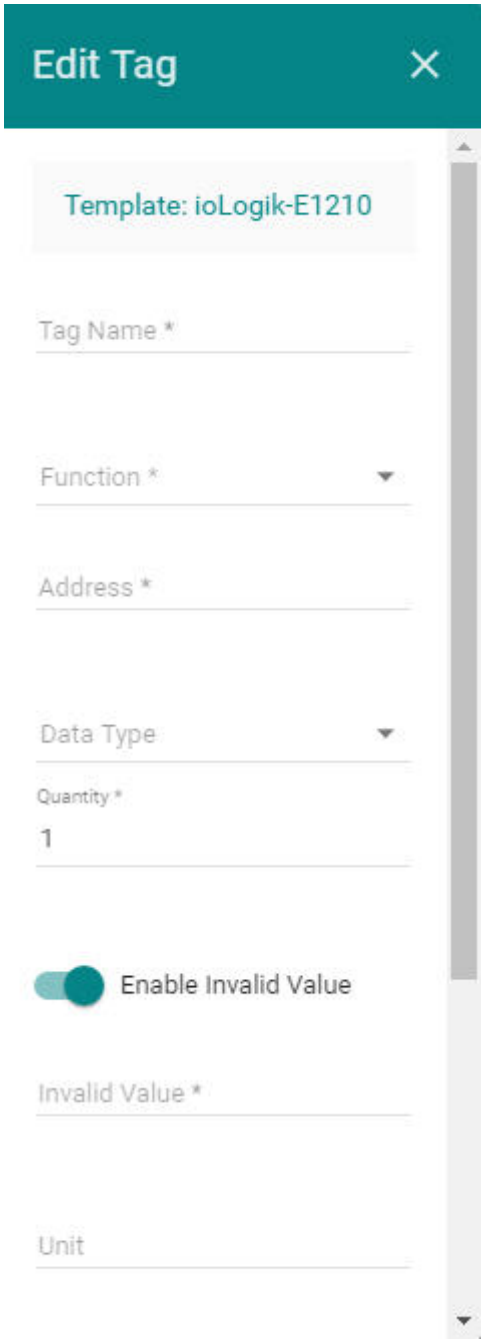


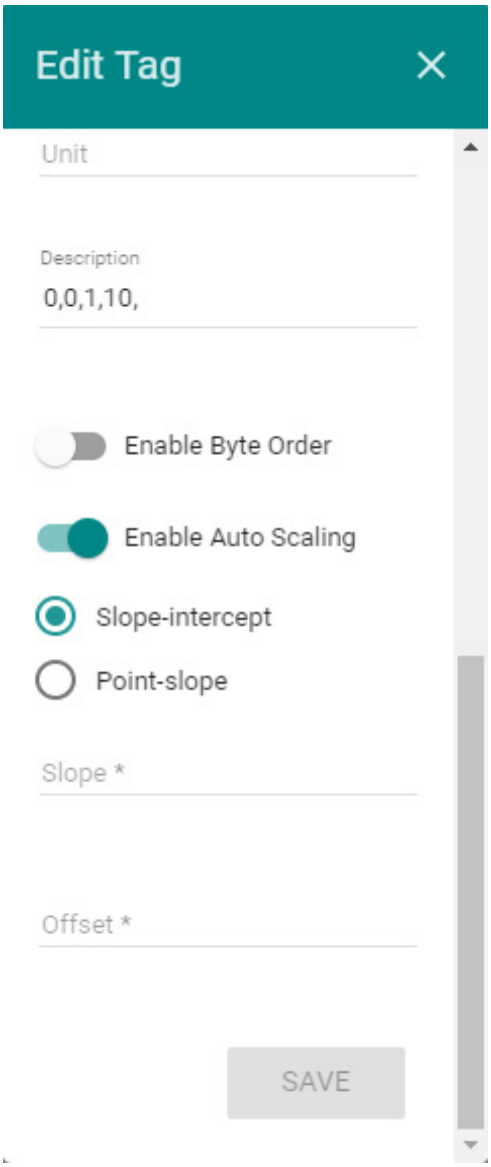
Adding a Device Tag

Select the device, and click the add tag icon to add a device tag.



Edit the tag information in the related fields. When finished, click **SAVE**.


Edit Tag
Template: ioLogik-E1210
Tag Name *
Function *
Address *
Data Type
Quantity *
1
Enable Invalid Value
Invalid Value *
Unit

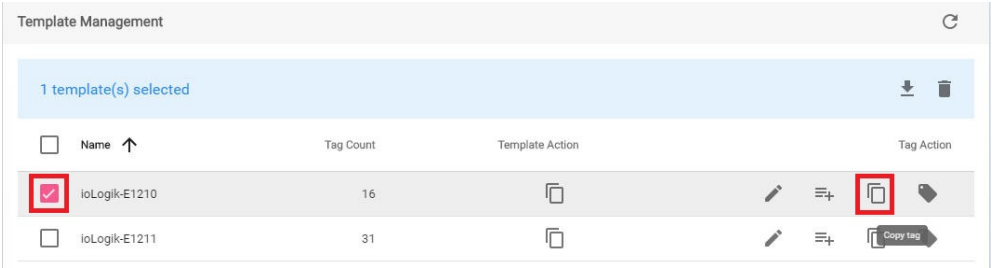

Edit Tag
Unit
Description
0,0,1,10,
Enable Byte Order
Enable Auto Scaling
Slope-intercept
Point-slope
Slope *
Offset *
SAVE

Refer to the following table for the description of the Modbus device details.

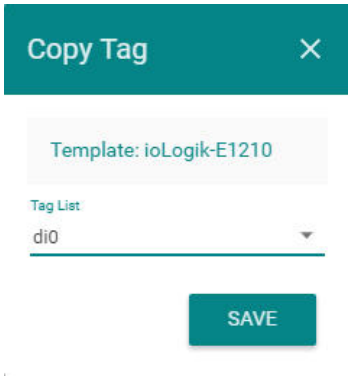
Field	Description
Tag Name	Assigns a tag name for the device
Function	Selects the Modbus read function for the device. The read functions supported include read-coils, read-input-registers, read-discrete-inputs, read-holding-registers, write-single-coil, write-single-register, write-multiple-coils, and write-multiple-registers.
Address	Specifies the read/write address of the device
Data Type	Specifies the data type for this tag/register for the device read operation (e.g.: uint16, uint8, uint32, float32, and float64). This field is mandatory.
Quantity	Specifies the amount of data read/write per read operation. For coil and input register, 1 means 1 bit; for input register and holding register, 1 means 1 word (16-bit).
Enable Invalid Value	Sets the specified number as an invalid value. First select the **Enable Invalid Value** option and then specify the value that you want to set as invalid in the field. When an invalid value is specified, ThingsPro will ignore the value and will retain only the valid value. This option will essentially reduce system loading and improve system efficiency. For example, if you do not want to receive 1, then 1 is set as an invalid value. When ThingsPro receives the value 1, it will ignore this value.
Unit	Specifies the unit that should be written into the logs for all the valid values received. For example, you can set the unit as MB, in which case, all values received will be logged with the unit "MB" next to the values. This option provides a way to make the logs more readable, which in turn makes it convenient for system administrators to analyze the data they receive.
Description	Provides additional description for the tag.
Enable Byte Order	Enables byte ordering of the composite data frame.
Enable Auto Scaling	Enables auto scaling of the value read from the device. The auto scaling is calculated based on the following formulas: **Slope-intercept: OUTPUT = Slope * INPUT + Offset** **Point-slope: OUTPUT =** **((INPUT-sourceMin) * (targetMax-targetMin) / (sourceMax-sourceMin)) + targetMin**

Copying a Device Tag

Select the tag you want to copy, and click the copy tag icon to copy a device tag.

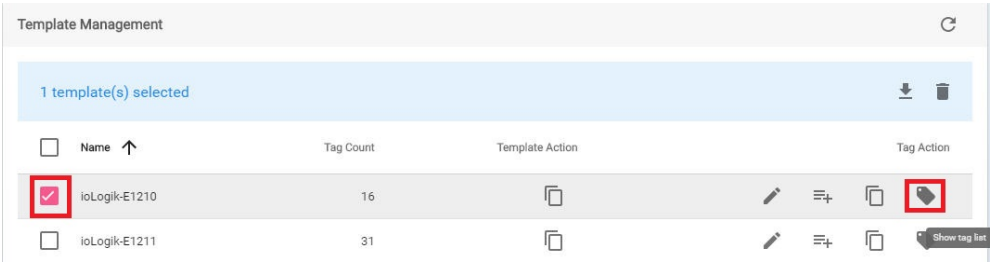


Select the tag from the list, and then click **SAVE**.

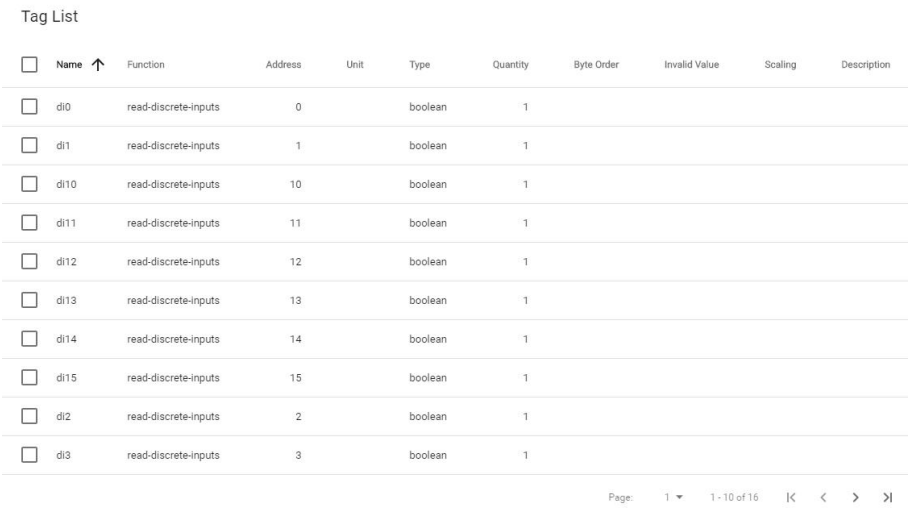


Showing a Tag List

Select the device, and click the show tag list icon to show a tag list.

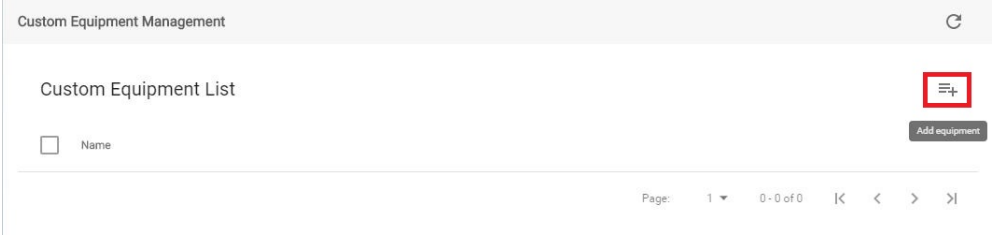


The tag list will be shown.

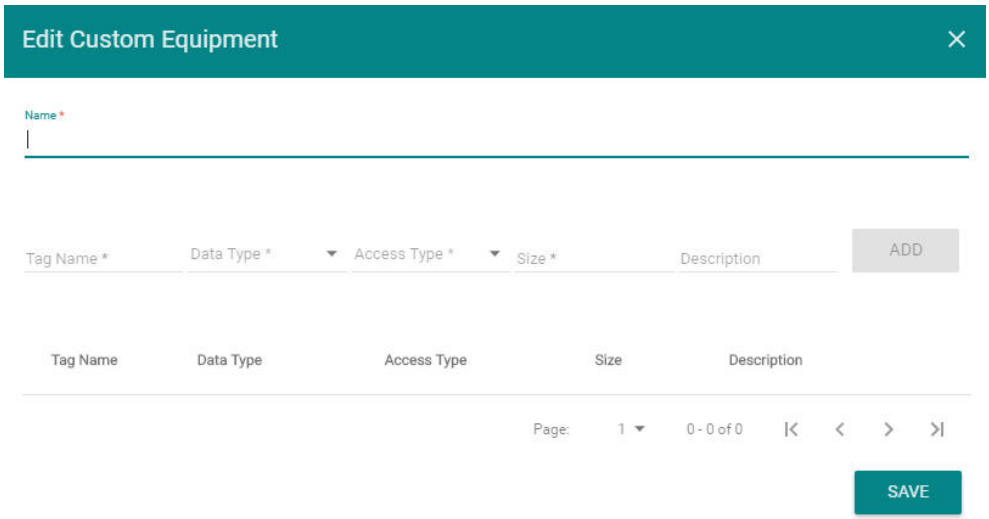


Custom Equipment Management

ThingsPro Gateway offers custom equipment list. To add an equipment, click the add equipment icon.



Provide the necessary information in the Edit Custom Equipment page. Click **Add** to add new equipment.



When finished, click **SAVE**.

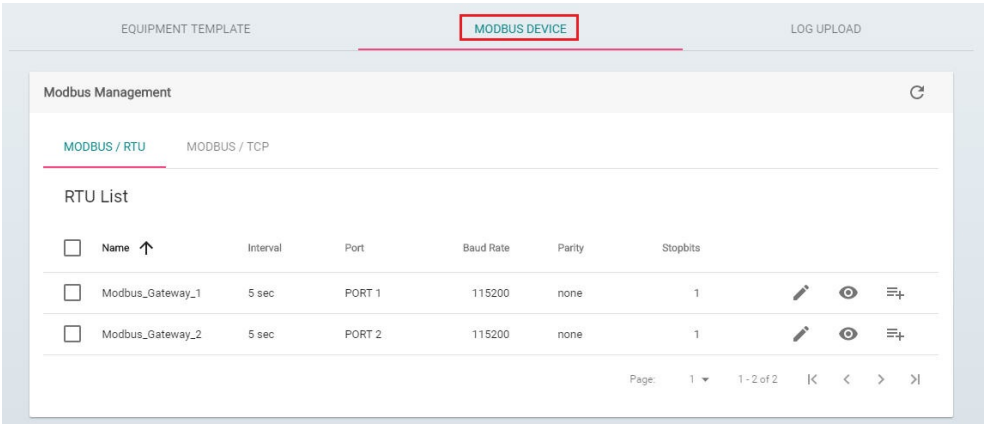
Modbus Management

This section helps users manage the Modbus/RTU, and Modbus/TCP devices.

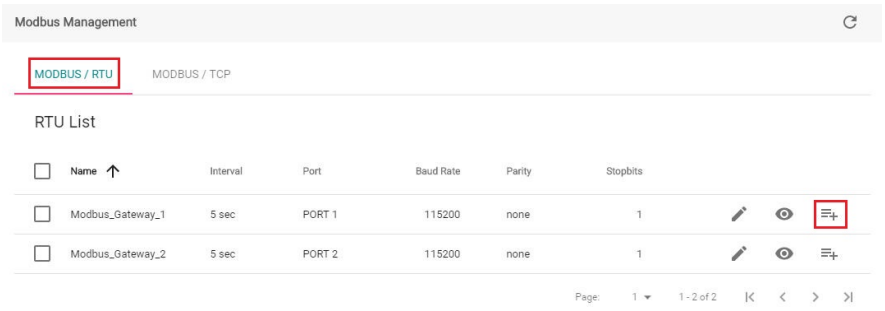
Add a Modbus/RTU Device

To add a Modbus/RTU device, do the following:

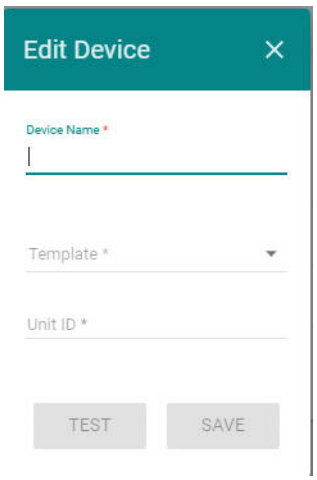
1. Click **MODBUS DEVICE** tab.



2. Select **MODBUS/RTU** tab, select under what port that you want to add a new device, and then click the add icon.

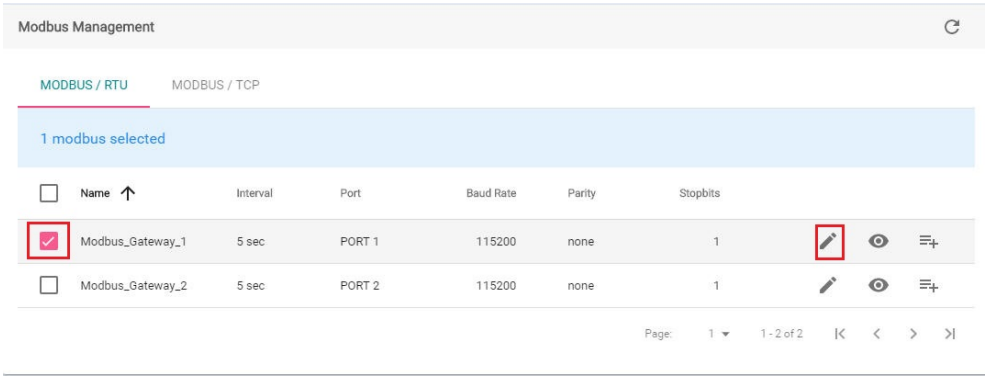


3. Edit the information for the new device. You can click **Test** for a testing connection, or **SAVE** to complete.

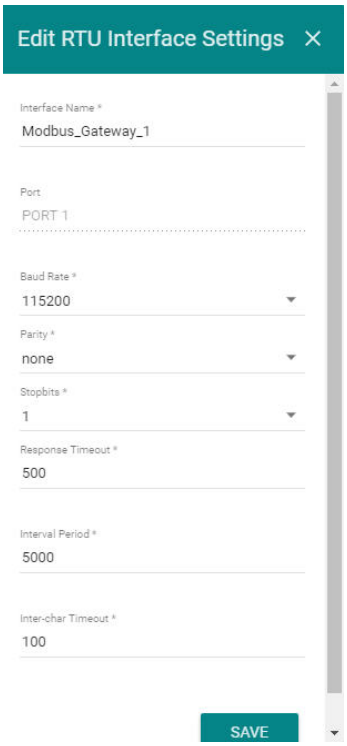


Edit Modbus/RTU Interface Settings

Click the edit icon.



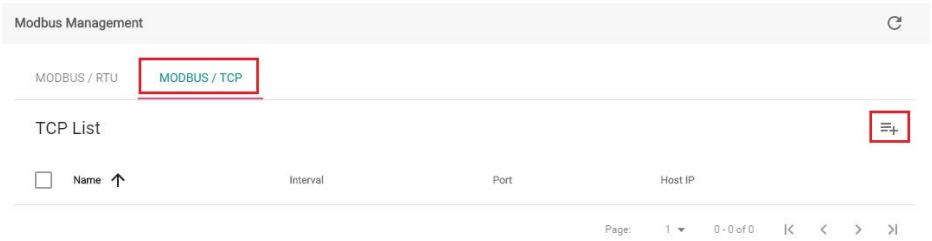
Edit the RTU interface settings in the following page. When finished, click **SAVE**.



Add a Modbus/TCP Device

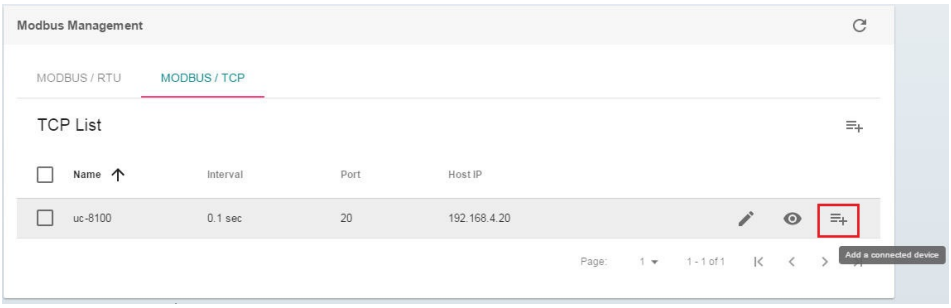
To add a Modbus/TCP device, do the following:

1. Select MODBUS/TCP tab, and click the add icon.

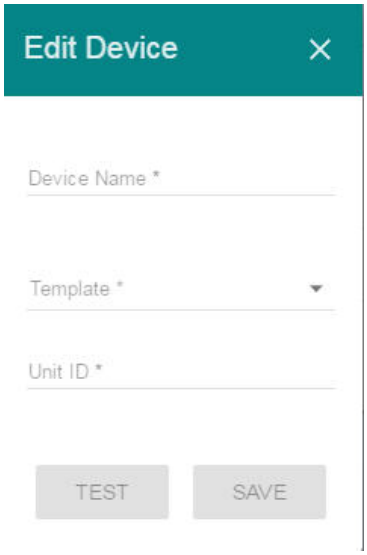


2. Edit the TCP interface settings.

3. When finished, click **SAVE**.
4. When a new TCP device is added, click Add a connected device to check the connection status.



5. Edit device in the fields, and click **SAVE** to complete.

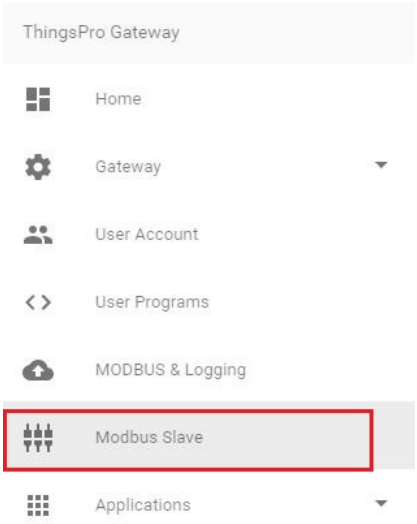


Managing Modbus Slave Devices

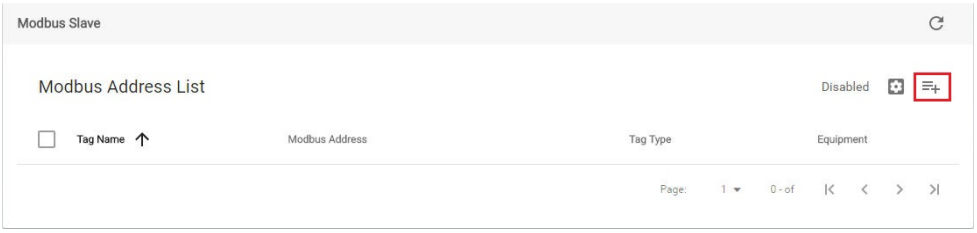
This section helps users manage Modbus Slave devices. The Modbus slave function helps users easily poll data from the connected end devices via ThingsPro Gateway to their system using Modbus protocol. This is a convenient design for users to acquire end-device data via ThingsPro Gateway without applying MQTT, which is useful for existing systems such as local SCADA.

Adding a New Modbus Slave Device

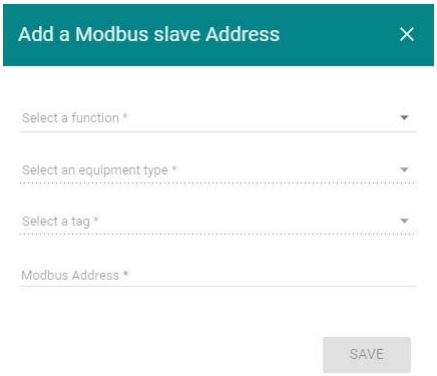
To add a Modbus Slave device, select **Modbus Slave** on the menu.



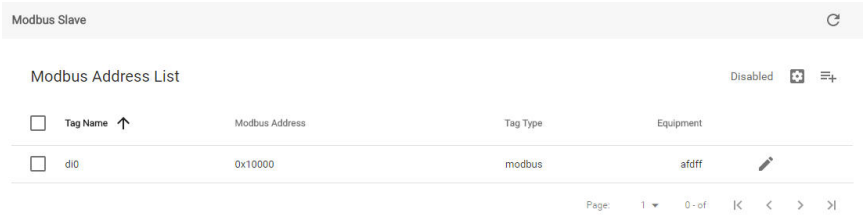
Click the add icon.



Provide the necessary information. When finished, click **SAVE**.

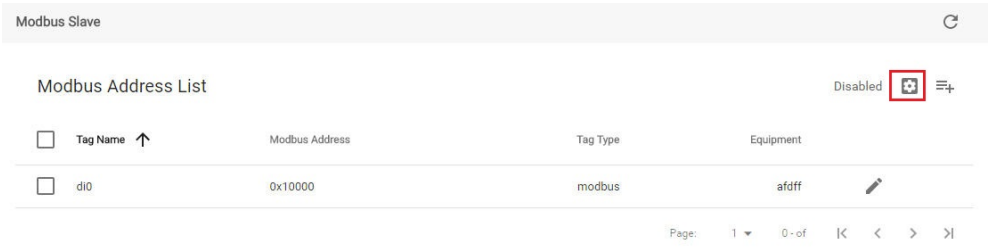


A new Modbus Slave device will be added.

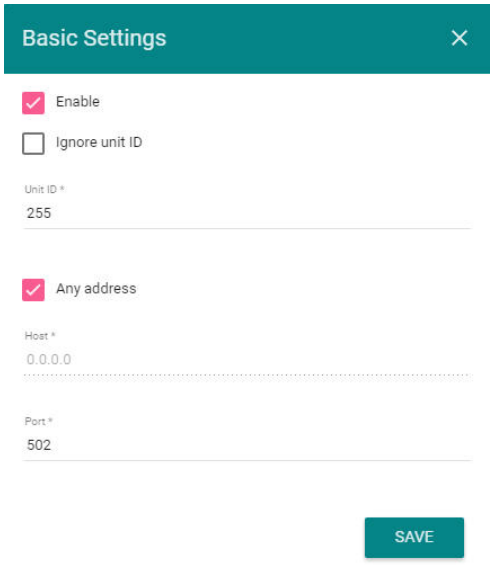


Enabling a Modbus Slave Device

To enable a Modbus Slave device, click Basic Settings icon.

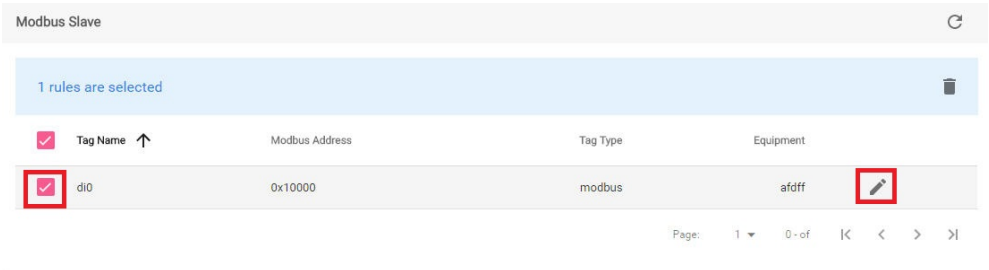


Check **Enable**, and configure the basic settings. When finished, click **SAVE**. If **ignore unit ID** is not checked, the Modbus master needs to set the same unit ID for Modbus access.

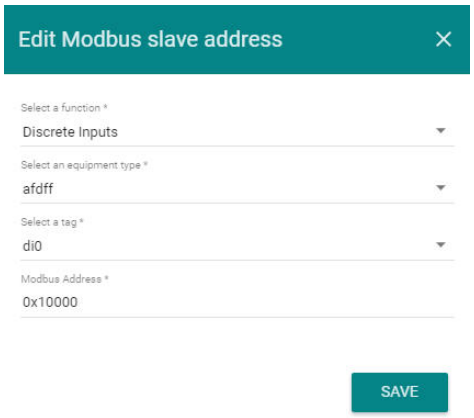


Editing a Modbus Slave Device

To edit a Modbus Slave device, select the device, and click the edit icon.

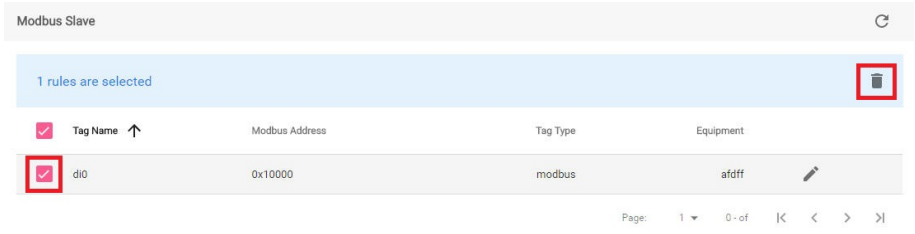


Edit the device, and click **SAVE** to finish.



Deleting a Modbus Slave Device

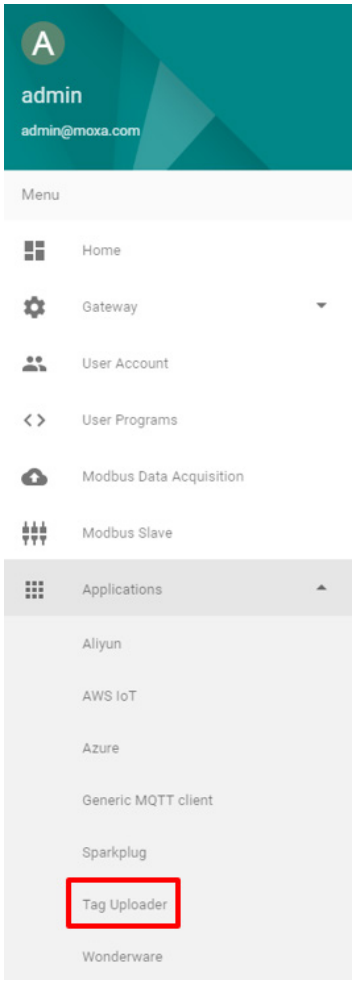
To delete a Modbus Slave device, select the device, and then click the delete icon.



Managing Log Profiles

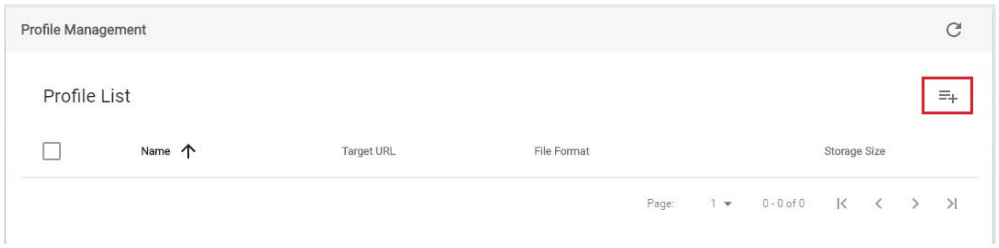
Log profiles are used to configure storage instructions for data files generated by ThingsPro. Once you have created a log profile, you can use it to automatically send data log files to a specified remote server. For example, you can connect a Modbus I/O module to a gateway, pull in data from the field devices and sensors connected to the I/O module, and store the data in the gateway. You can configure a log profile in ThingsPro to specify the remote server to which the data log files should be sent and the interval at which to send them. ThingsPro will send the log files to the remote server at the intervals that you have specified in the log profile.

To configure a log profile, update an existing one, or delete a log profile, click on the **Tag Uploader** link on the main menu.

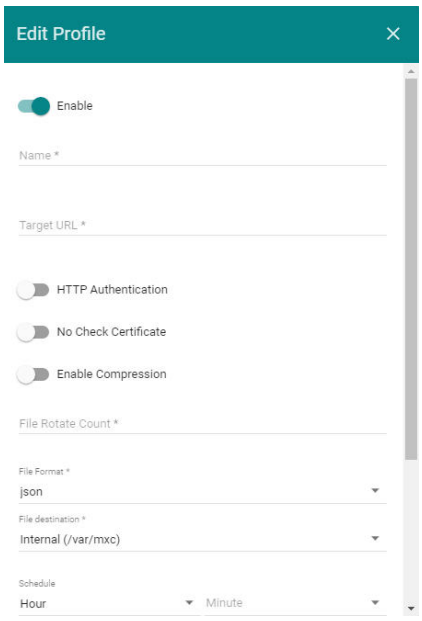


Adding a Data Log Profile

To add a new data log profile, click the add icon.



Edit the profile interface in the following page.



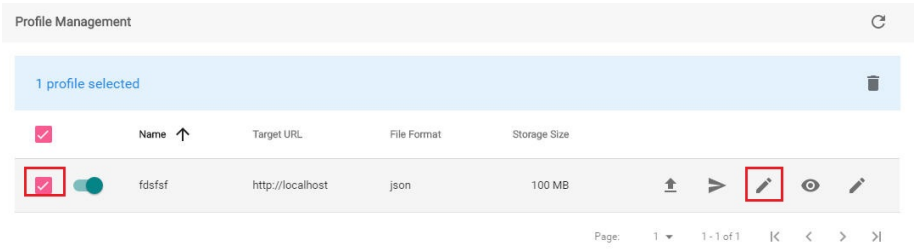
Refer to the following table for the detailed description.

Field	Description
Profile Name	Specify a name for the new log profile. Length: 3-255 characters Format: a-z, A-Z, 0-9, '_', '-'
Target URL	Specify the complete URL of the remote server to which the data log files associated with this profile should be uploaded.
Enable HTTP Basic Authentication	Select this option to enable HTTP basic authentication
No Check Certificate	Select this option to skip the certificate check on the HTTPS connection.
Enable Compression	Enable file compression of the data files.
File Rotate Count	Select file rotation unit. 1 unit is 1 MB. A file with capacity more than 1 MB will be generated as a new file.
File Format	Select a file format: XML, JSON, or CSV NOTE: These formats are not that of the device log file, but are the file formats that you can use to download/upload data from the data logger.
File Destination	Specifies the temporary storage destination when the log profile capacity is exceeded. ThingsPro will detect if there's an external storage device, such as an SD card, inserted. If an external storage is detected then you can specify the log files to be stored in this storage. If not, the log profile files can be saved only in the internal storage, "internal (var/mxc)".
Schedule	Sets an upload schedule for the data log files. For example, daily at a specified time, hourly, or even every minute. A data log file is uploaded only when the data size exceeds 1 MB as described below: 1. When a data log entry is generated, it will be saved in the RAM. 2. When this log increases and exceeds 1 MB, the data is saved as a file to the **File Destination** that you specify. 2. The log files can be retrieved by the minute, hour, or day, based on your configuration settings.
Options: create headers	Provide optional name and value for new headers.

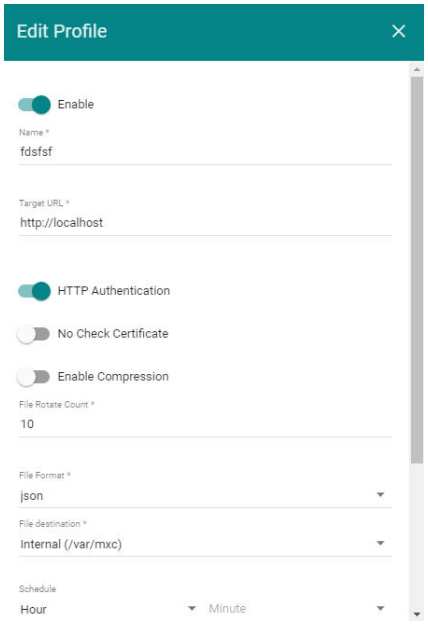
When finished, click **SAVE**.

Updating a Log Profile

To update a log profile, select the device and click edit icon.

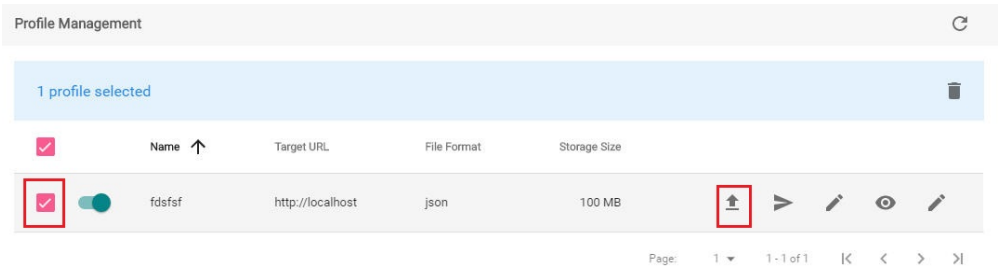


Update the information in the following page. When finished, click **SAVE**.



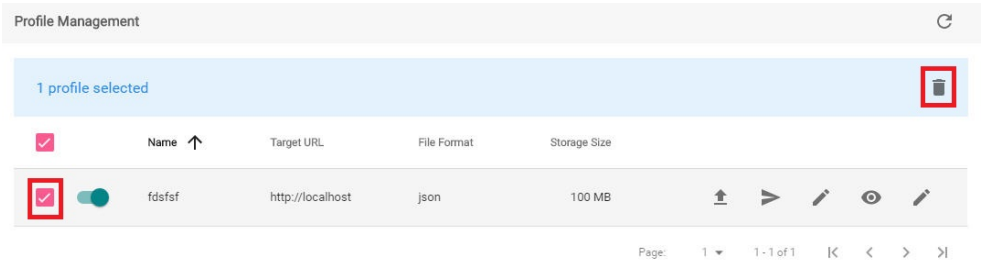
Uploading a Log Profile

To upload a log profile, select the log, and click the upload icon.



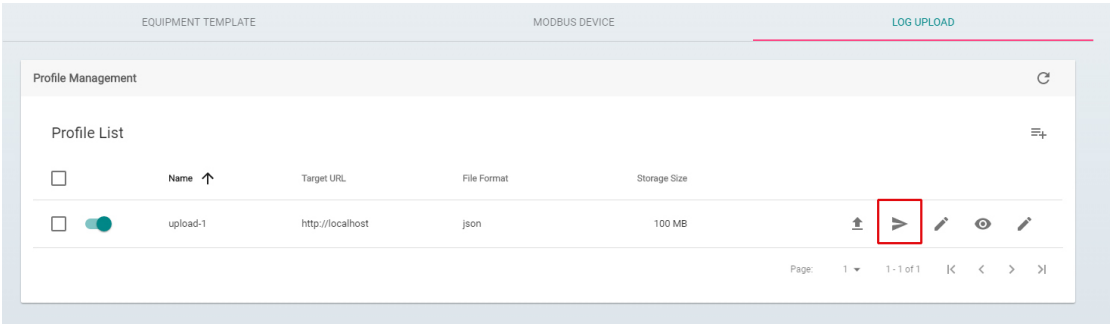
Deleting a Log Profile

To delete a log profile, select the log, and click the delete icon.



Testing Target Connection

Click Test target connect icon to test if the connection to target URL is successful.



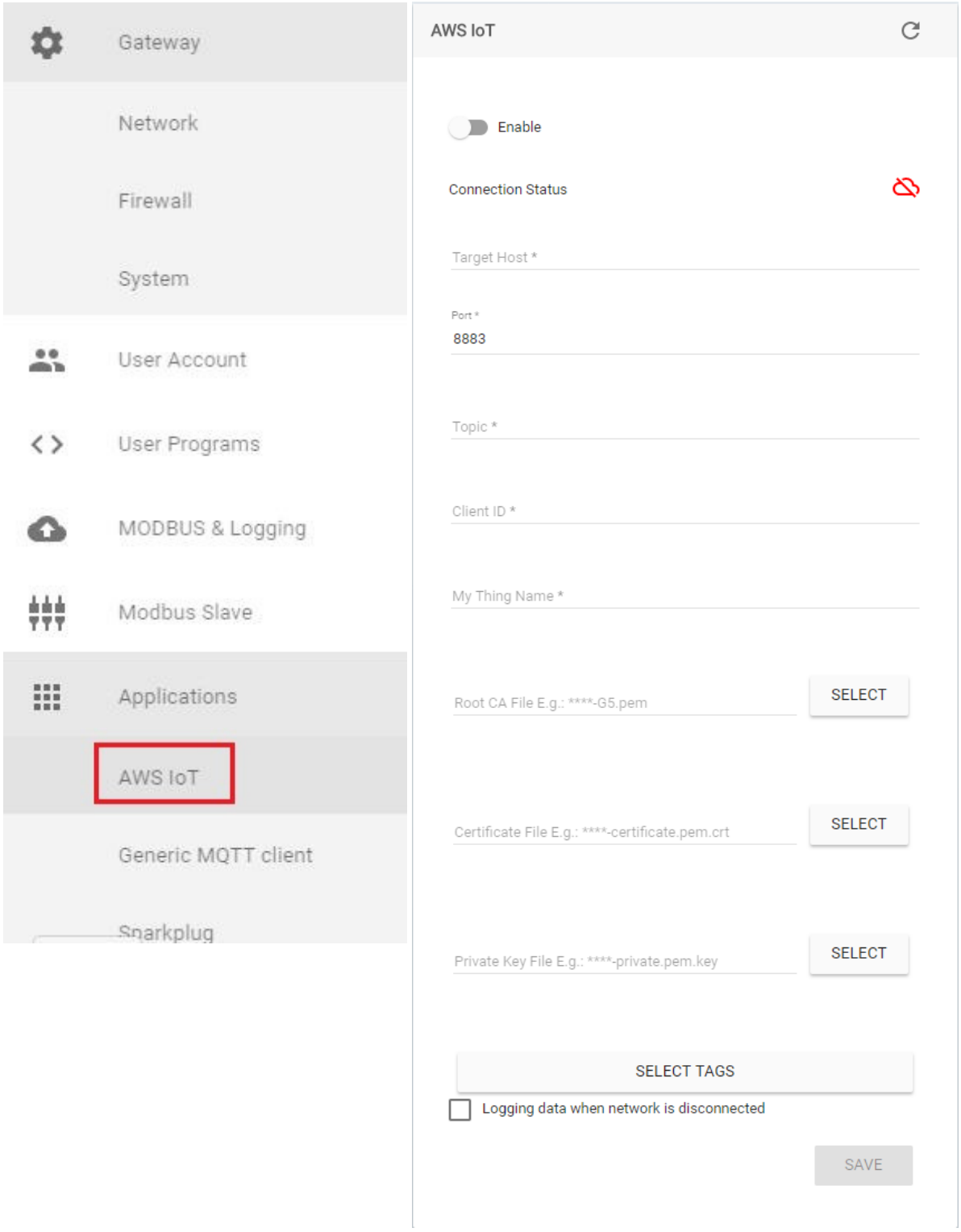
Managing IoT Applications

This section describes how to manage the three IoT applications integrated with the ThingsPro Gateway.

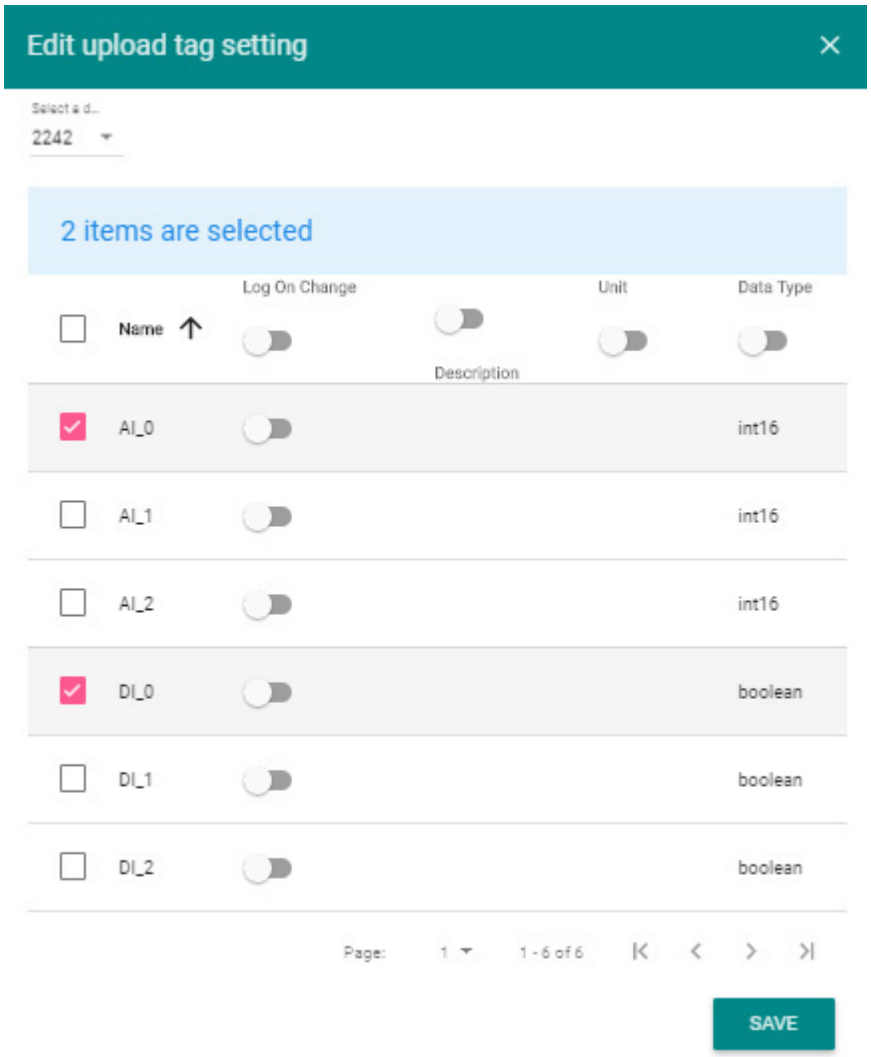
Managing AWS IoT Service for IoT Applications

To manage the AWS IoT Service for your IoT application, select **AWS IoT** from the main menu. Select **Enable** and fill in the AWS IoT service parameters. For details on obtaining the parameters of the AWS IoT service, refer to the *How to get the AWS IoT parameters for ThingsPro* section in the tech note, How to Build an IoT Application with Moxa's ThingsPro and AWS IoT Service.

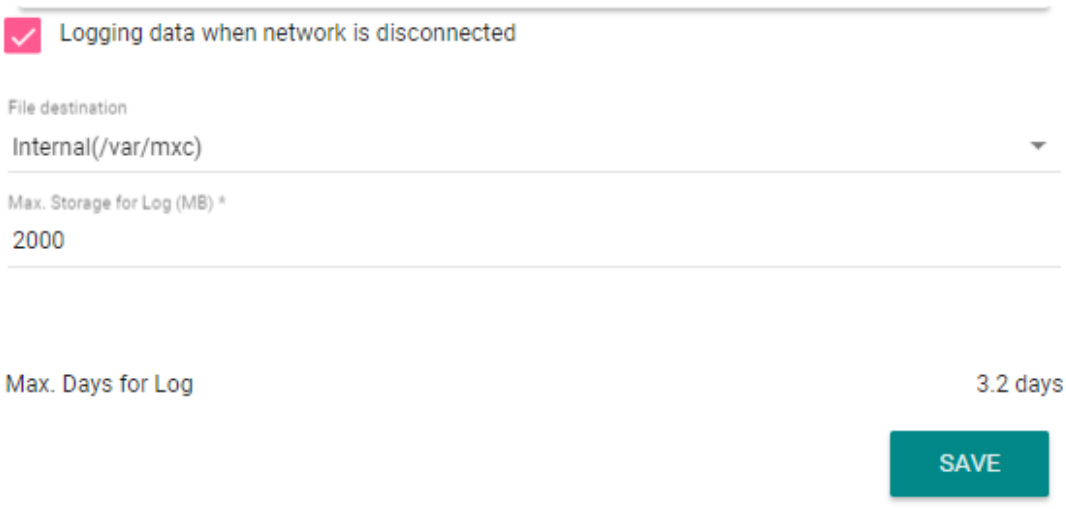
NOTE You will need to register an AWS account on the Amazon Web Services website to be able to managing the AWS IoT service for your IoT application.



Click on the **SELECT TAGS** button (only available in v2.3 and above) to select the tags you want to upload to the AWS IoT service. If you want to enable data caching in the Gateway when the network connection is down, check the **Logging data when network is disconnected** (only available in v2.3 and above) option and specify the **File destination** and the **Max. Storage for Log**.



Click **SAVE.**



The built-in AWS IoT client will use the information provided here to establish a connection with the AWS IoT service. Data collected from your AWS IoT application is then uploaded to the AWS IoT service in real time.

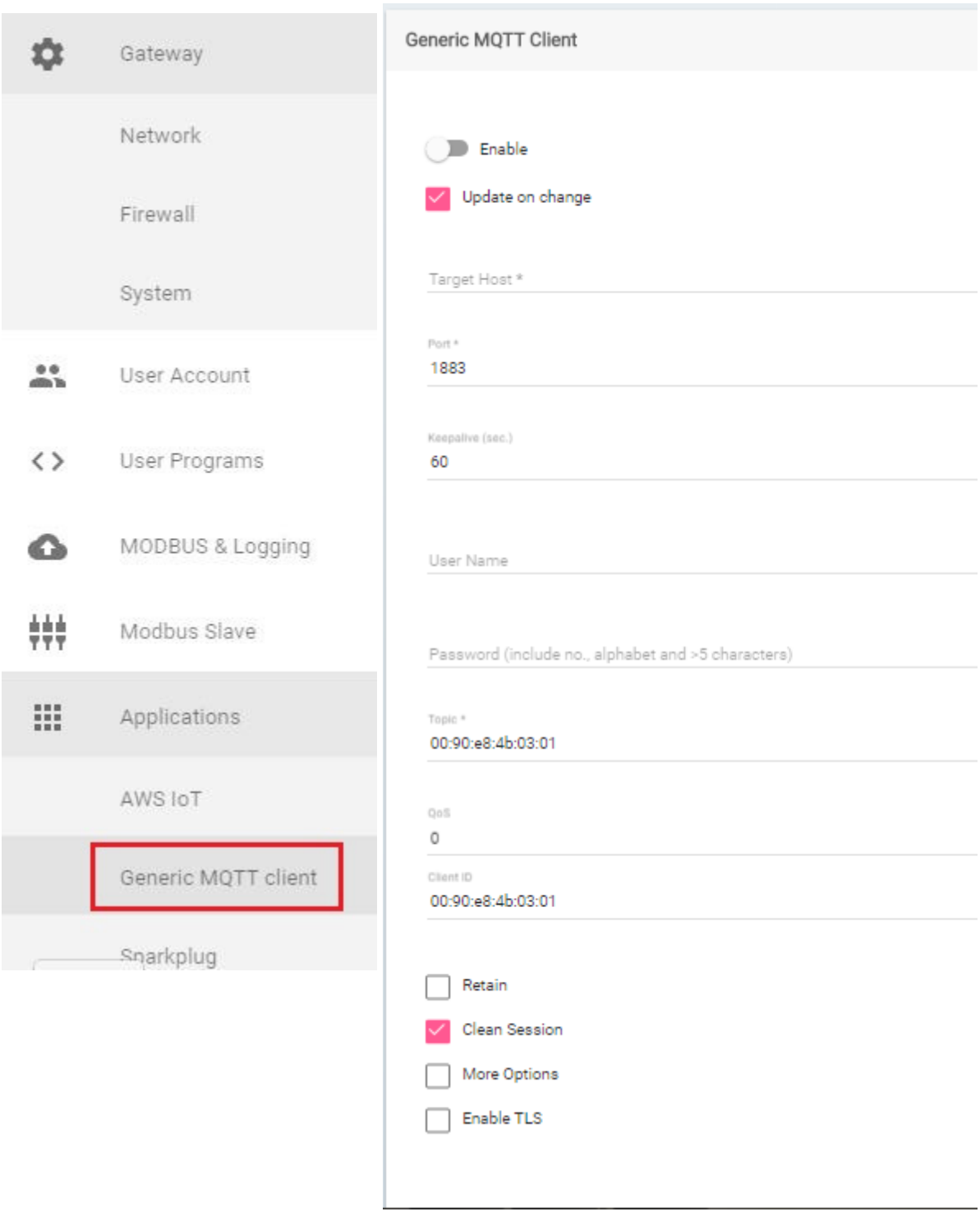
The **Connection Status** (only available in v2.3 and above) icon turns green once the AWS Client App successfully connects to the AWS service.

If you have selected the **Logging data when network is disconnected** option, the data collected from your IoT application will be cached locally in the gateway when the network connection is down. The cached data will be transmitted to the AWS IoT service once the network connection is restored.

NOTE The **SELECT TAGS, Logging data when the network is disconnected,** and **connection status** functions are only available with ThingsPro version v2.3 and above and also apply to other IoT applications such as Generic MQTT Client, Aliyun, Microsoft Azure, and Wonderware Online.

Managing a Generic MQTT Client

The ThingsPro Gateway offers generic MQTT protocol support for your IIoT applications. To manage the MQTT Client, select the **Generic MQTT Client** item on the main menu. Select **Enable**. Check **Update on change** if you want to save data transmission workload as data will be updated only when the data tag has been changed from your Modbus devices. Provide all necessary information on the configuration page. Click **SAVE** to finish.

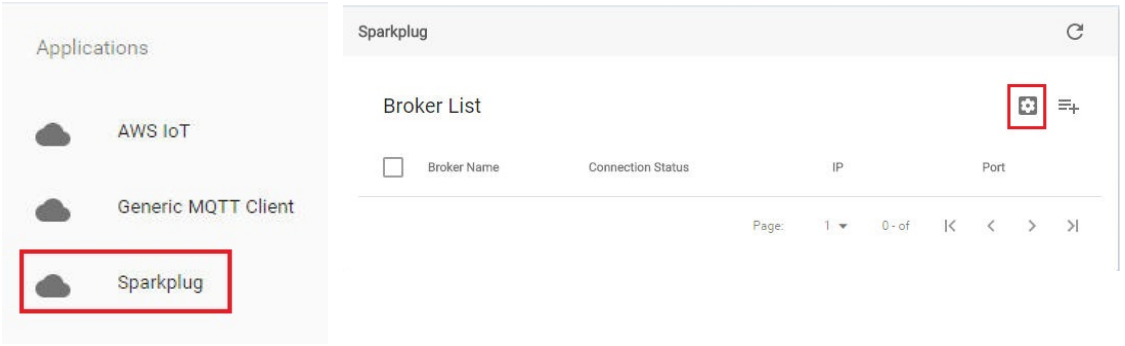


Managing SparkPlug Connections

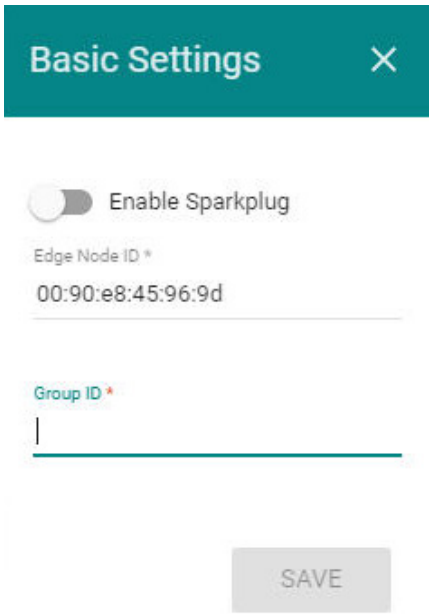
Sparkplug is a specification for MQTT-enabled devices and applications to send and receive messages in a stateful way. Sparkplug also provides a mechanism for ensuring that the messages from remote device or application are current and valid. ThingsPro provides an interface to enable sparkplug-based communication between the Server, Gateway, and edge devices.

To enable the sparkplug interface on ThingsPro, do the following:

1. Click on the **Sparkplug** link in the **Applications** section of the main menu.
2. Click on the (Basic Settings) icon.



3. Click on **Enable Sparkplug** to activate the function.
   The Edge Node ID will be automatically retrieved and displayed.
   You will also need to provide the group ID.

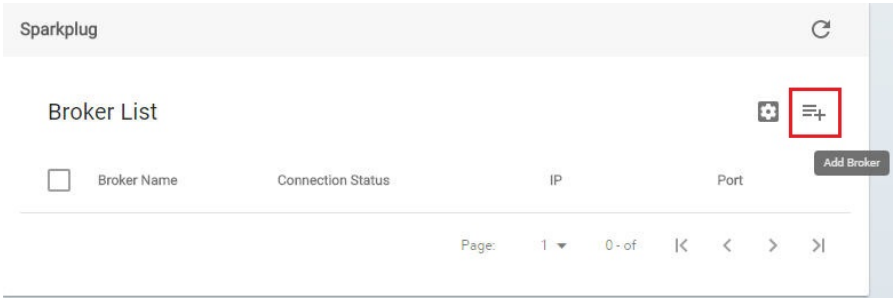


4. Click **SAVE**.

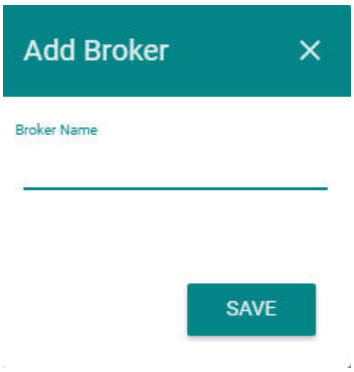
Adding a Message Broker

You must create a message broker in the Sparkplug interface.
To create a message broker, do the following:

1. Click on the (Add Broker) icon.



2. Specify the **Broker Name**.

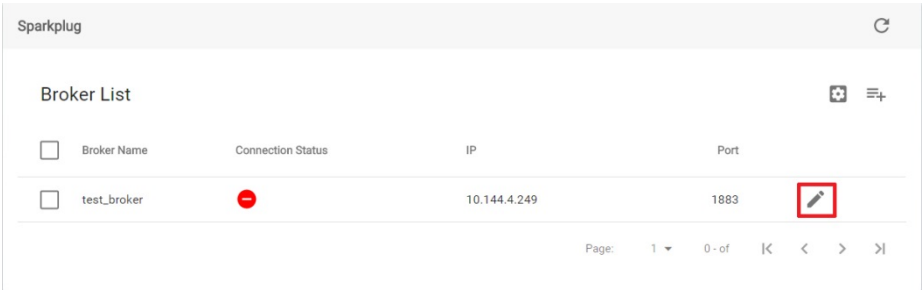


3. Click **SAVE**.

Configuring Broker Settings

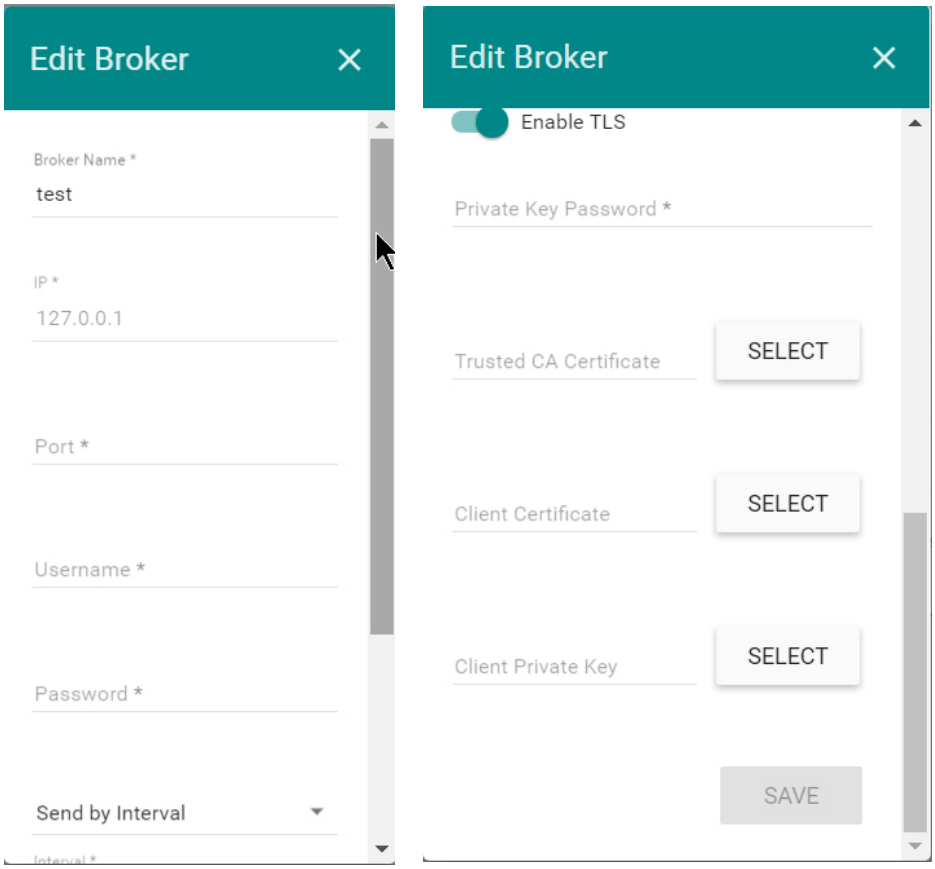
To configure/modify Broker settings, do the following:

1. Click on the (Edit Broker) icon on the Sparkplug configuration page.



2. Enter the broker configuration details.

   If necessary, enable TLS and fill in the certificate information for the TLS connection.



3. Click **SAVE**.

3

ThingsPro Server

ThingsPro Server is a software platform for remote management of IIoT Gateways. This platform provides ThingsPro Gateway customers with remote monitoring and controlling services to build their IIoT applications, which they can use to remotely access and manage large-scale deployments of their IIoT Gateways at their sites.

The following topics are covered in this chapter:

- **Overview**
- **Basic Configuration**
  - Signing Into the ThingsPro Server
  - ThingsPro Server Dashboard
  - Editing a User Profile
  - Choosing a Language for the Web UI
  - Viewing the Location of Devices (Map View)
  - Remote Management of ThingsPro Gateways (List View)
  - Managing User Accounts
  - Managing Tokens

Overview

ThingsPro Server enables you to configure, monitor, and control your ThingsPro Gateways from anywhere and at all times using a web browser. You can use the intuitive configuration and monitoring functions provided by the web UI, or use the RESTful APIs provided by the ThingsPro Software Suite to integrate the ThingsPro Gateway functions into your software applications.

Key Benefits

- Greater visibility into the performance of your IIoT Gateways
- Remote configuration, monitoring, and control of your IIoT Gateways from anywhere and at any time.
- Faster and easier development of IIoT applications for remote tasks on the IIoT Gateway via RESTful APIs

Key Capabilities

- Visualized device management console: Map view, List view
- Role-based user-account management for access control
- Task queue for batch task assignment and scheduling for groups of IIoT Gateways
- VPN tunneling for secure remote access of IIoT Gateways
- RESTful APIs for IIoT Gateway management and remote task execution through ThingsPro Server
- Client interface to leverage the global scalability of Amazon Web Services (AWS)

Basic Configuration

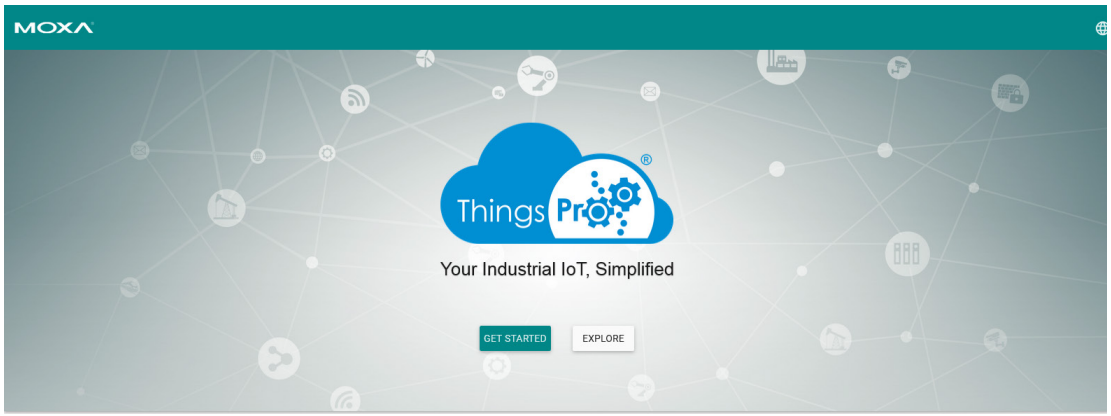
Signing Into the ThingsPro Server

You will need a user account to sign in to ThingsPro Server. We assume that you have already got your account information from the administrator for your organization.

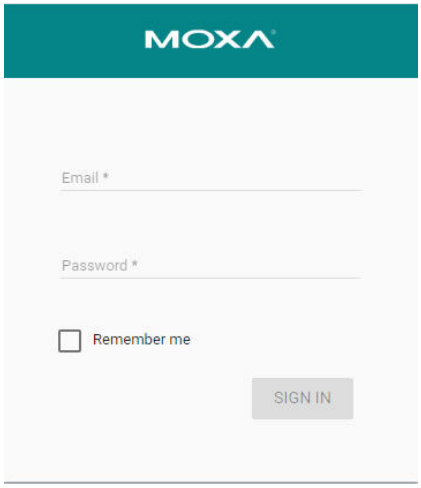
1. Type the URL of the ThingsPro Server in the address field of Google's Chrome web browser.

NOTE The URL of a ThingsPro Server depends on the IP address associated with the Server instance of your organization. Currently, Google Chrome is the only web browser supported.

2. Click **GET STARTED**



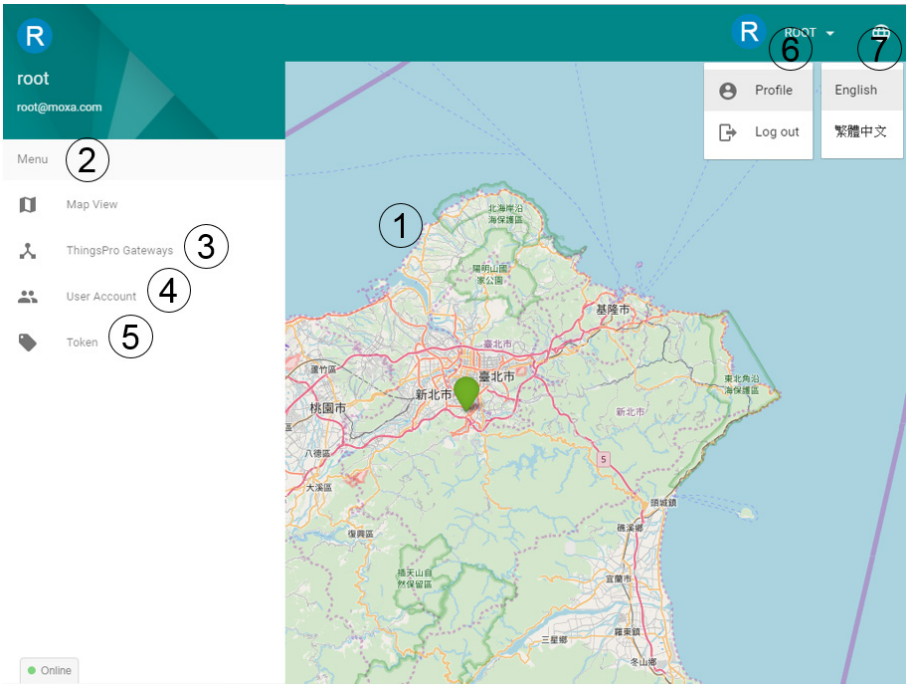
3. Enter the **Email** and **Password** for the server.



4. Click **SIGN IN.**

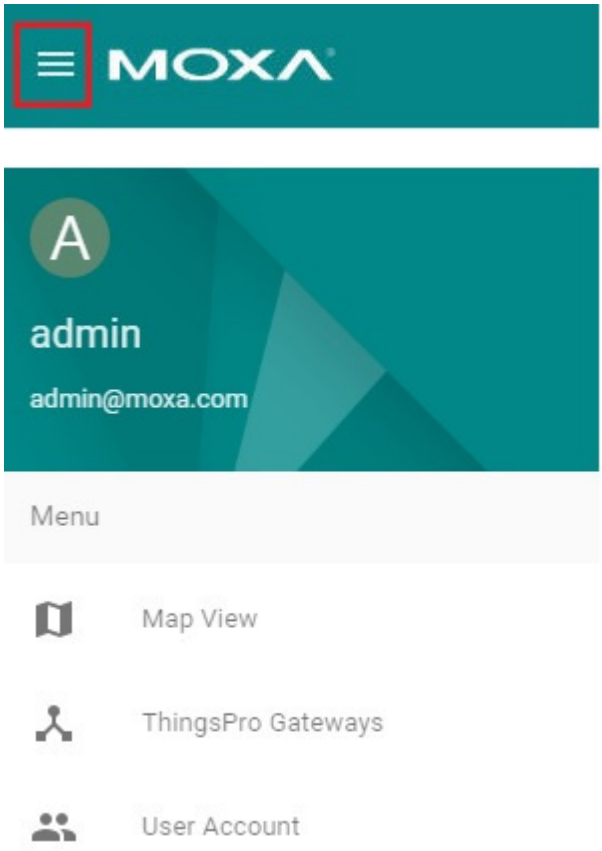
ThingsPro Server Dashboard

Once you log in to ThingsPro Server, you will see the dashboard where you may access different functions offered by the device management service.



- ① Map view of ThingsPro Gateways—A visual device management console
- ② Main menu—Access to various functions of the device-management service
- ③ List view of ThingsPro Gateways—Listing of all ThingsPro Gateways registered to this Server and the ability to access and manage the gateways either individually or in groups
- ④ User Account—Managing the user accounts for this Server.
- ⑤ API Token management—Viewing and controlling the access to API tokens
- ⑥ User Profile—Viewing and editing your account information and log out
- ⑦ Language menu—Changing the language setting for the web UI.
  Currently, only English and Traditional Chinese are supported.

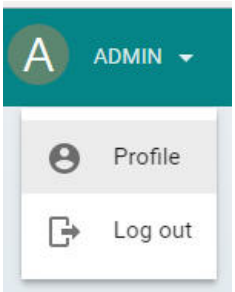
To get started, click on the main menu icon on the upper-left corner.



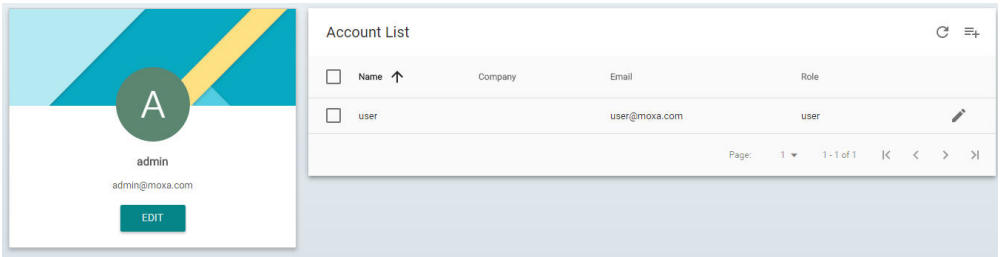
Editing a User Profile

Once you log in into the ThingsPro Server, you might want to check and edit your user profile.
To edit your profile:

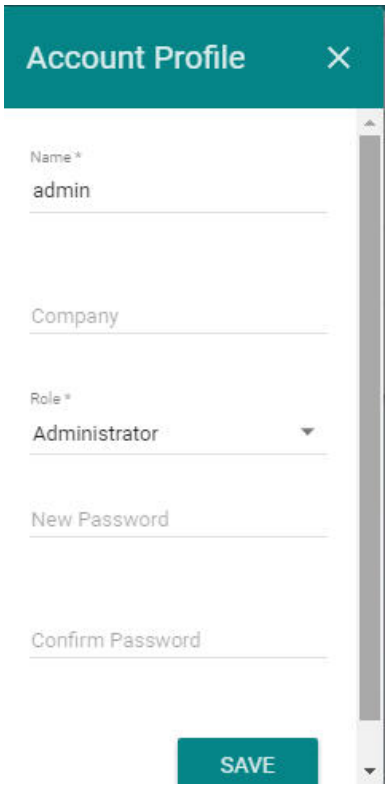
1. Click on the arrow next to the username (ADMIN in this case) at the upper-right corner of the main page and select the **Profile** option.



2. Click **EDIT**.



3. Edit the profile information and click **SAVE.**

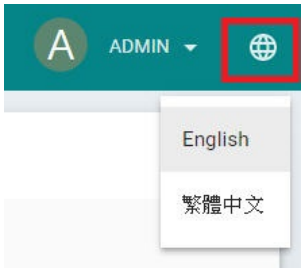


To add a new user, click on the icon at the upper-right corner of the **Account List** page.

NOTE	Only the **`root`** user and users with administrator role can create new users. For the **`root`** account login details, refer to the "Basic Configuration" section in *Chapter 3 ThingsPro Gateway*.

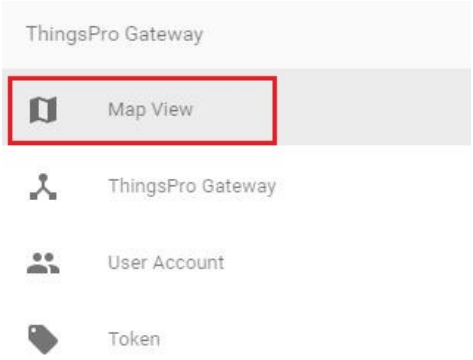
Choosing a Language for the Web UI

ThingsPro Server currently provides English and Traditional Chinese user interfaces. Click on the icon at the upper-right corner of the main page to select a language for the user interface.



Viewing the Location of Devices (Map View)

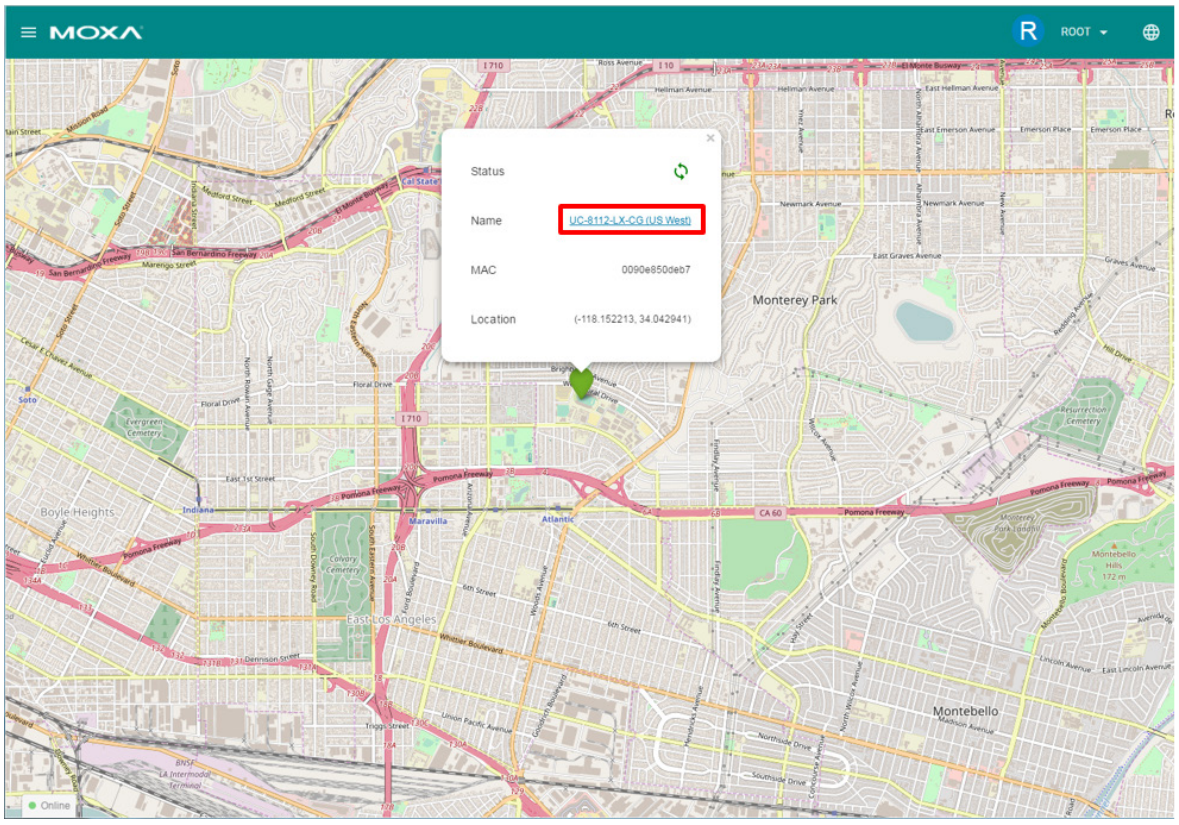
When you log in to ThingsPro Server, you will see the map view, a visualization of the geographic location of your ThingsPro Gateways that are registered with the Server. You can also click on the **Map View** link in the main menu to access it.



On the map, you may see locations pins that indicate where your devices are located. Use the mouse-wheel to zoom-in/out, and hold and drag the map to change the location shown on the map.

- Green location pin: The device is online.
- Red location pin: The device is offline.

To view the basic information of a device, click on the location pin corresponding to the device to view basic information, including **(connection) Status**, **(device) Name**, **MAC (Address)**, and **(geographic) Location**.

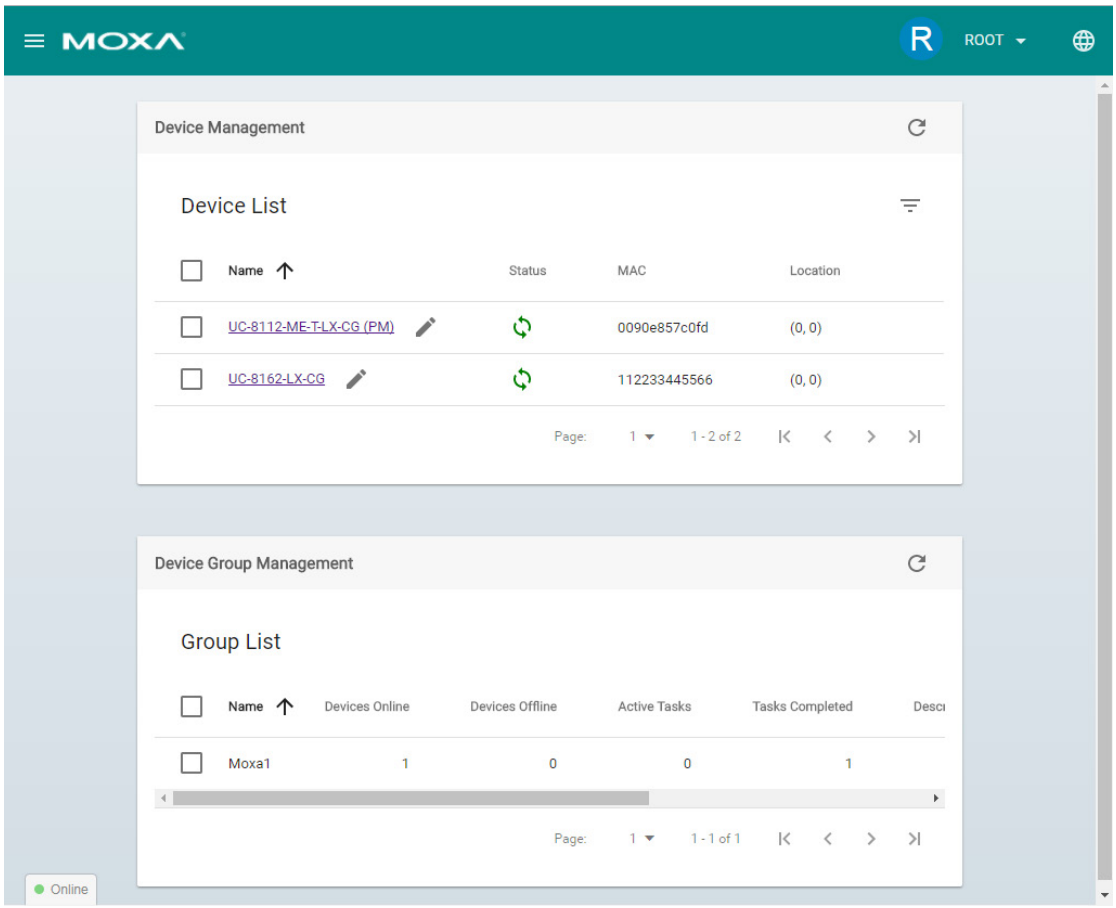


Click on the URL for the device provided in the basic information box to view additional details regarding the device.

Remote Management of ThingsPro Gateways (List View)

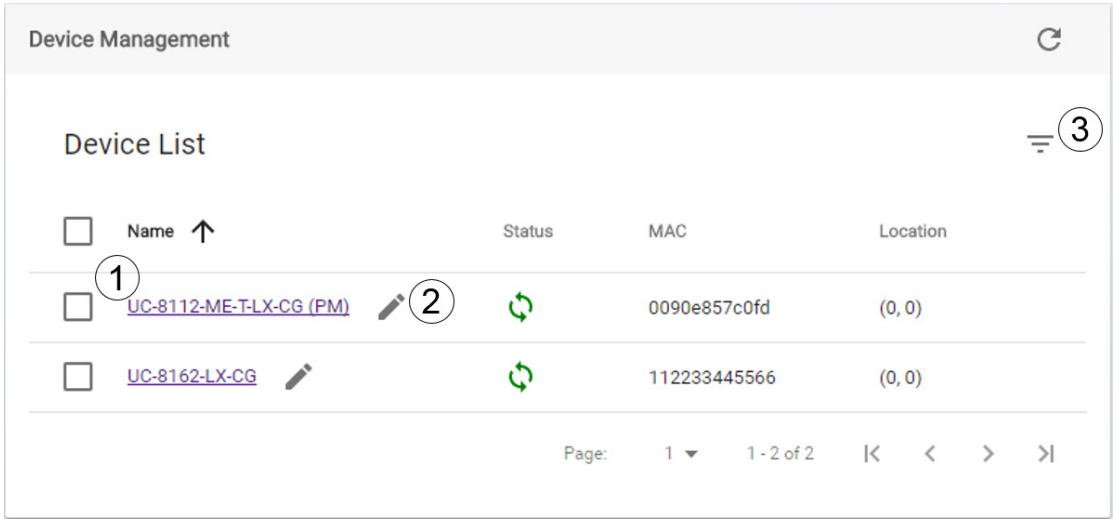
ThingsPro Server offers the following capabilities for you to manage ThingsPro Gateway (devices) remotely:

- Viewing the basic information of registered ThingsPro Gateways
- Creating and maintaining device groups for batch tasks



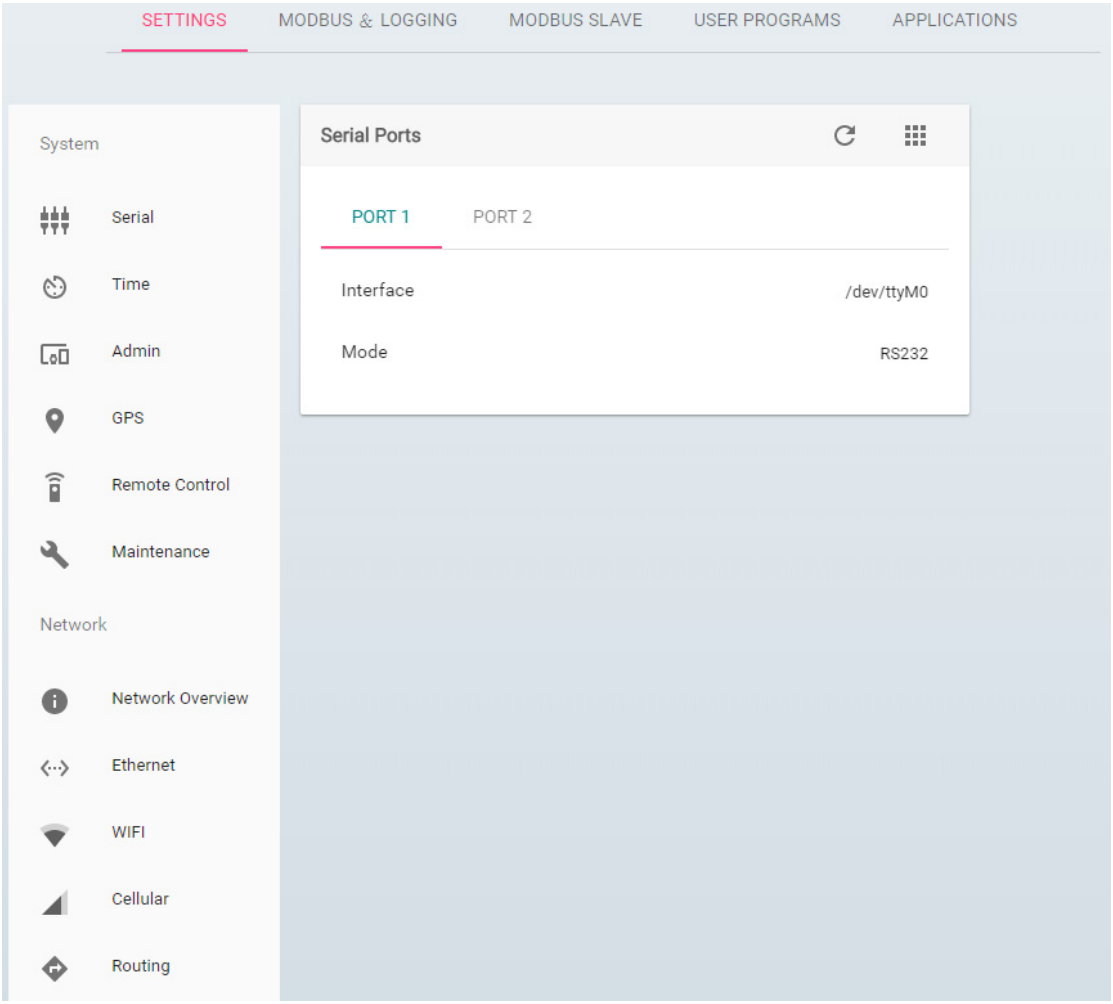
Device List

The Device List shows basic information for devices (ThingsPro Gateways) registered with the ThingsPro Server. The information includes *(device)* ***Name****, (connection)* ***Status****,* ***MAC*** (Address)*, and (geographic)* ***Location***.

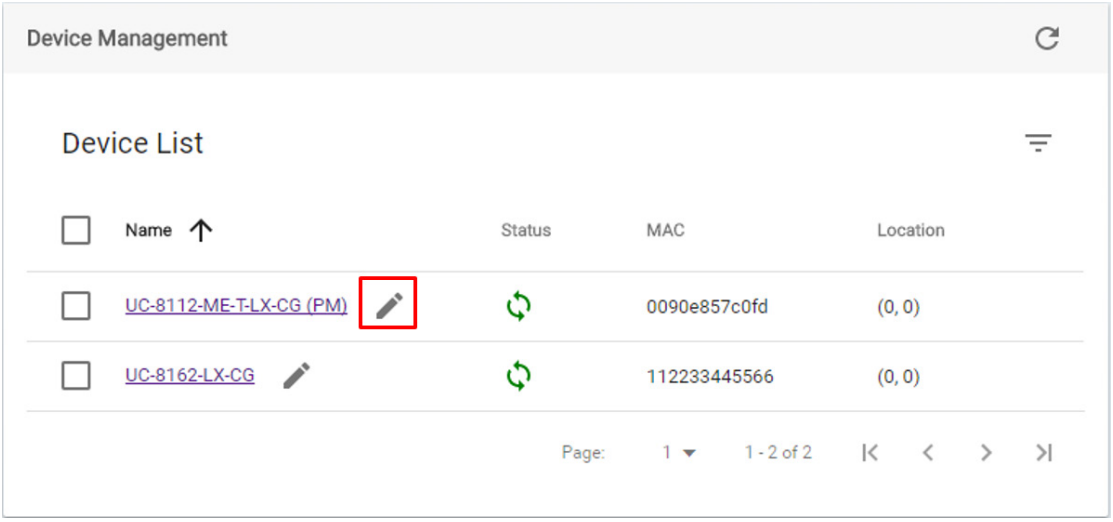


You may also perform the following tasks from the Device Management page:

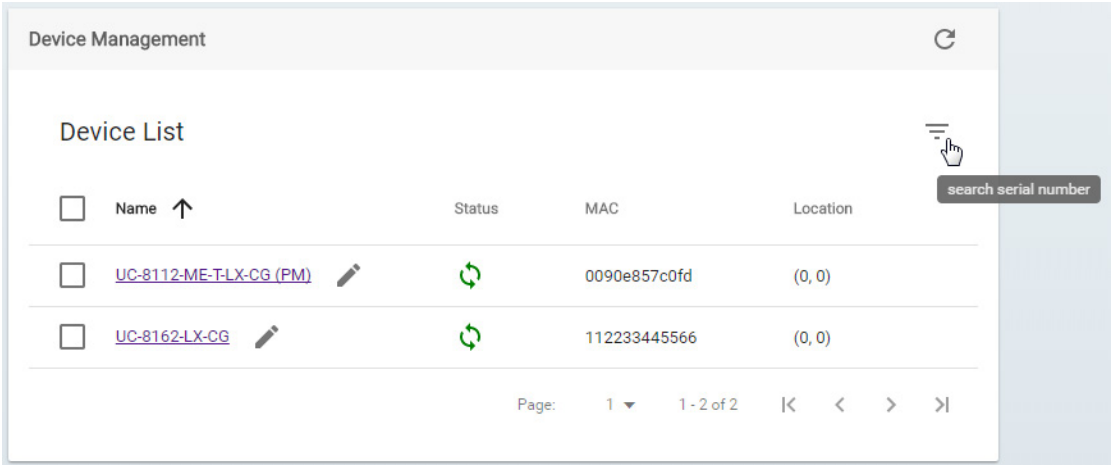
- ① Configure a Device—Clicking a device in the list allows you to configure the device. For more details, refer to the *Configuring ThingsPro Gateways* section in *Chapter 3: ThingsPro Gateway*.



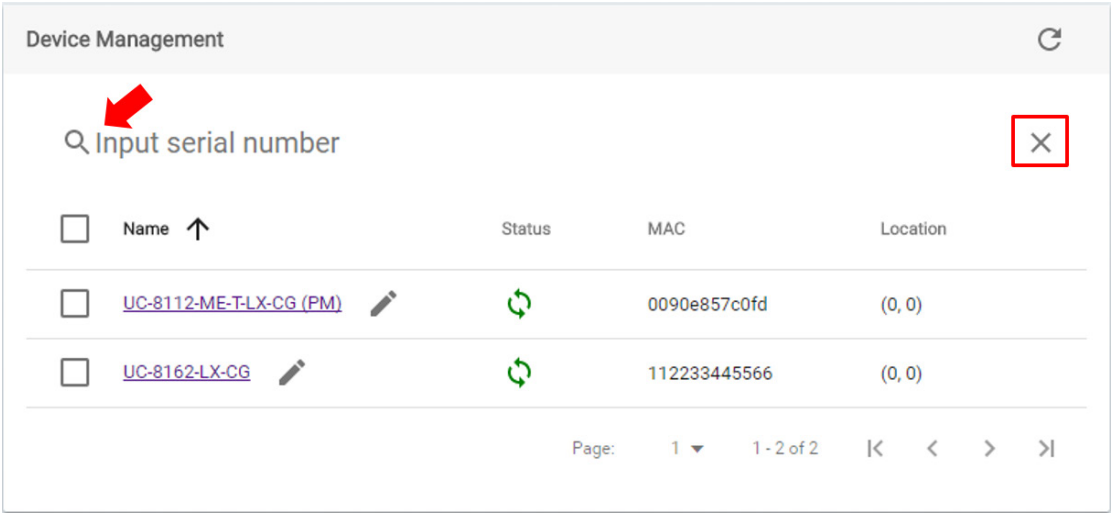
- ② Renaming a Device—Click the rename icon next to the device name to rename the device. This function is only available for devices that are online.



- ③ Searching for a Device (only available in v2.3 and above)—Click on the search icon in the upper left corner of Device List to show the input field for the serial number.

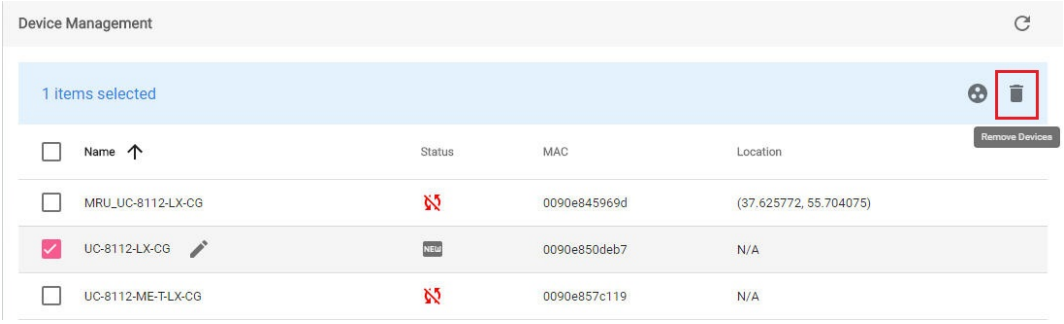


Input the serial number of the ThingsPro Gateway you want to search in the input field and press Enter to start the search. To exit the search function, click X.

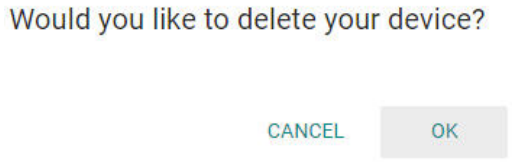


Unregistering Devices

Select the devices you want to remove, and then click the remove icon.



Click **OK** to remove the selected devices.

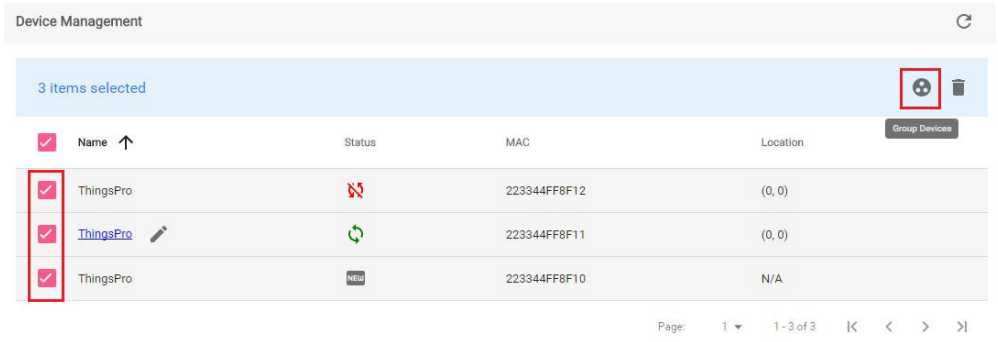


Grouping Devices

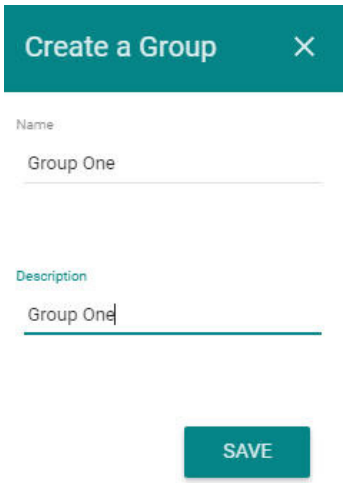
NOTE A device can only be part of one group. If the device is already in an existing group, the grouping request will fail.

To create a group of devices:

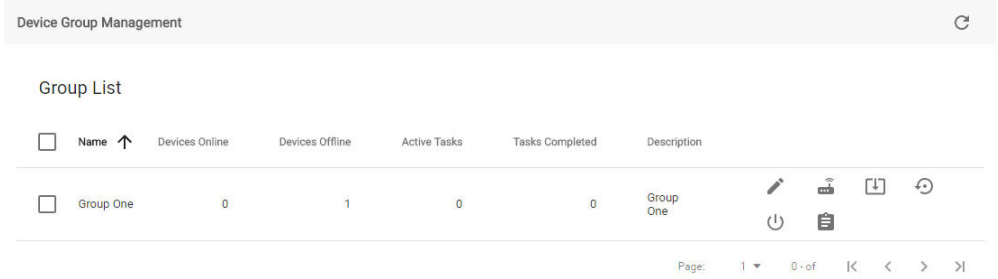
1. Select the devices from the device list
2. Click on the group icon.



Provide the name and description for the group, and click **SAVE** to finish.

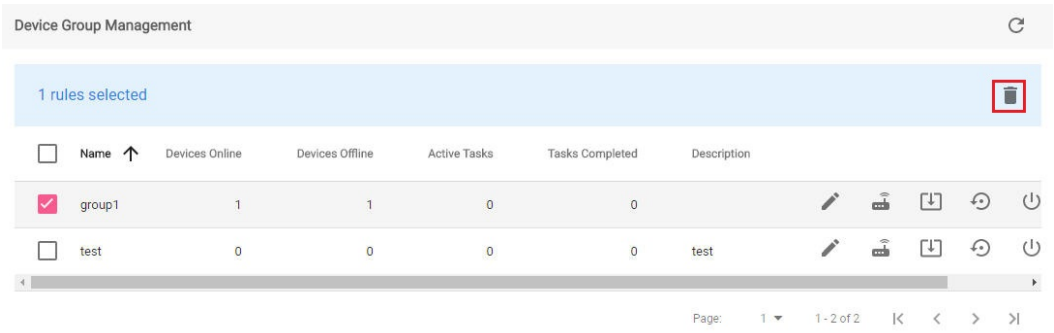


The group will be shown in the Group List.

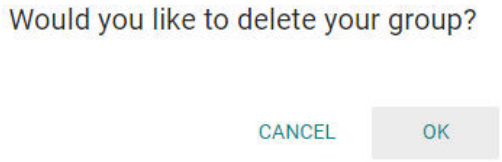


Deleting a Group

Select the groups you want to delete, and then click the delete icon.



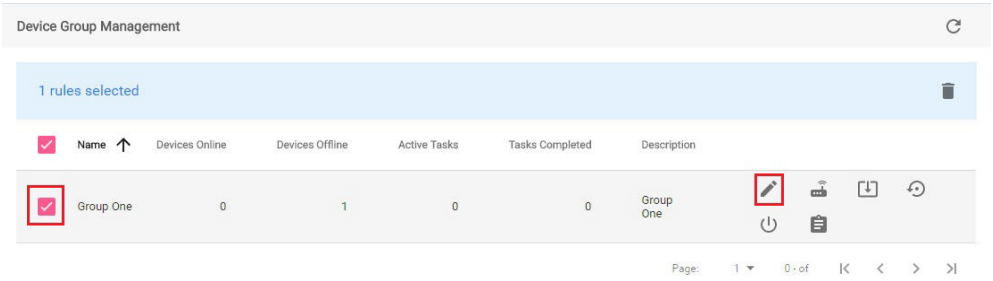
Click **OK** to confirm.



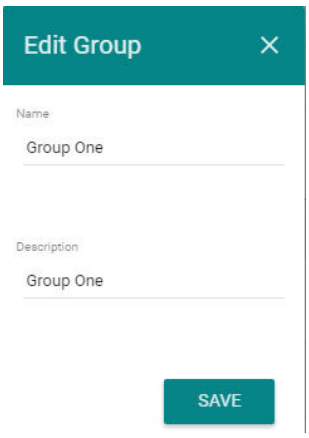
Editing the Settings of a Device Group

To edit a group, select the group and the click on the edit icon.

NOTE	Currently users cannot modify, add, or remove a single device in the group.

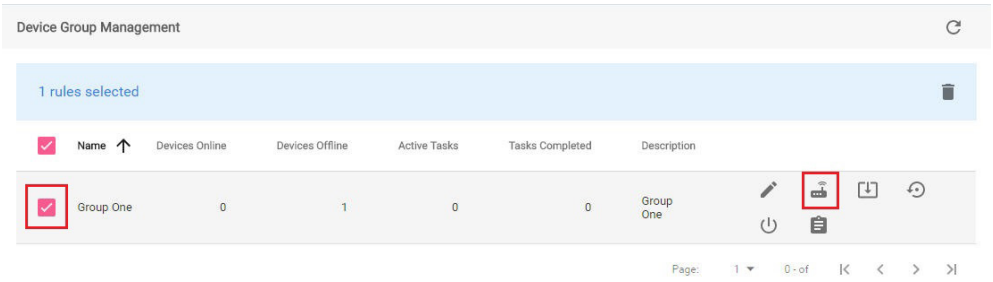


Edit the name and description. Click **SAVE** to finish.



Viewing the Devices in a Group

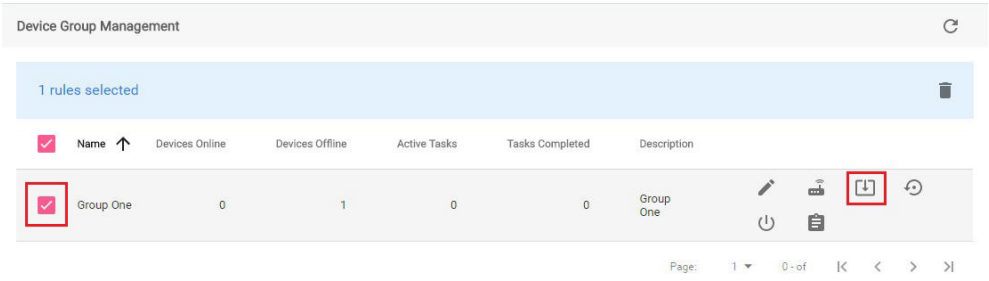
Select the group and the icon.



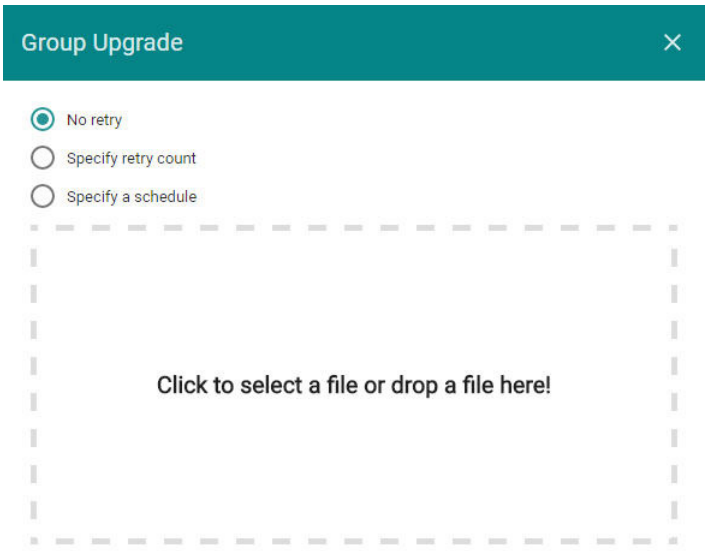
The device will be shown in the device list page.

Upgrading the Devices in a Group

To upgrade the group, select the upgrade icon.



Select the file you want to upgrade, and select the settings, such as No Retry, Retry Count, or Schedule for the upgrade.

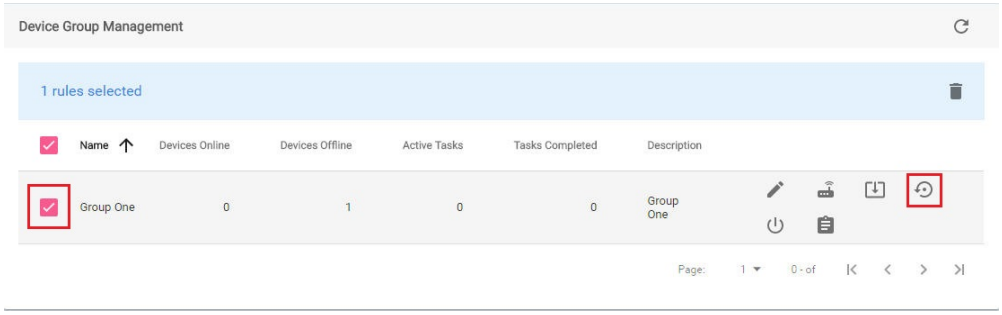


ATTENTION

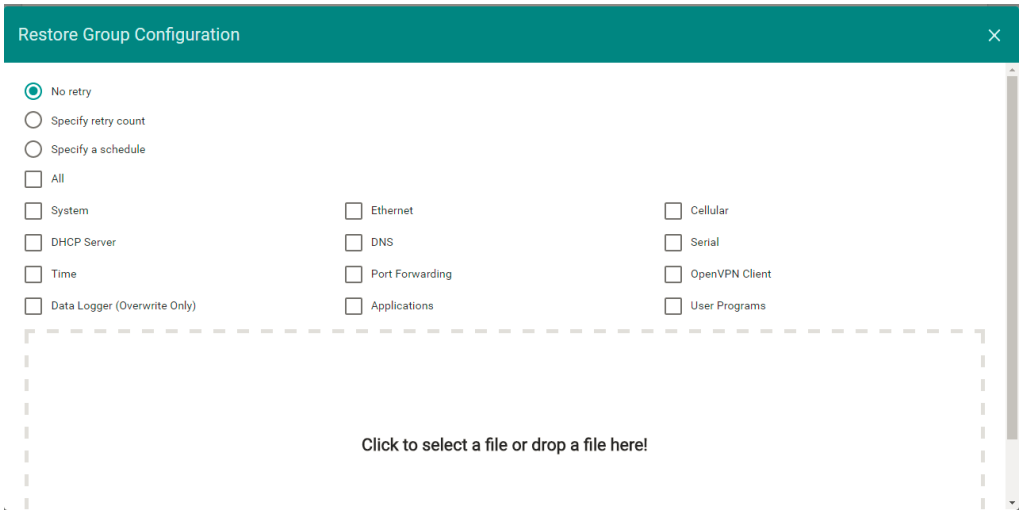
Group task function can only handle one action, including reboot, restore, configure, at one time. You need to wait until the current task is complete or cancel the task before performing another task.

Restoring the Configuration Setting for a Device Group

This function allows you to restore the configurations for your device simultaneously. Select the group, and the restore icon.

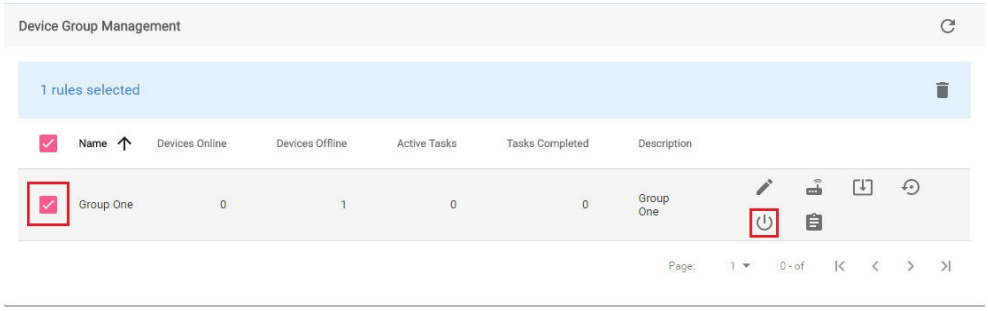


Select the configuration file, and select the items that you want to restore to the previous status.

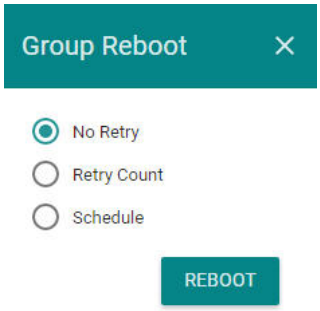


Rebooting the Devices in a Group

This function allows you to reboot all the devices in a group. Select the group and click on the reboot icon.

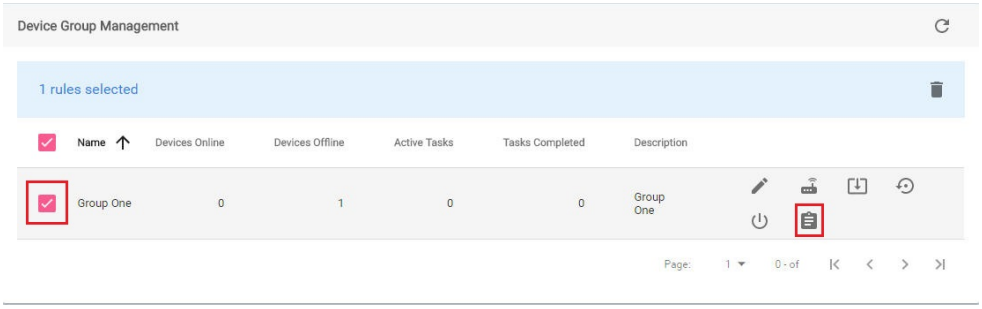


Select the reboot settings, and click **REBOOT**.

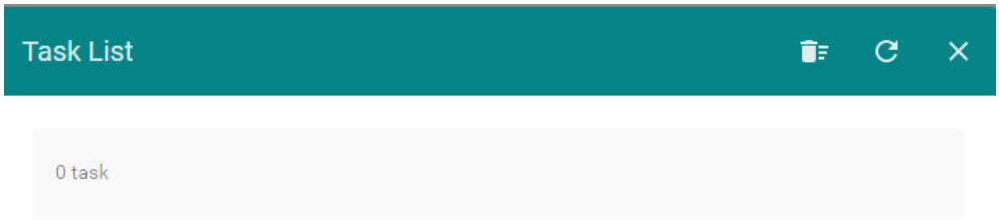


Viewing Group Tasks

Select the group and click on the group task icon.



All the group tasks will be shown here.

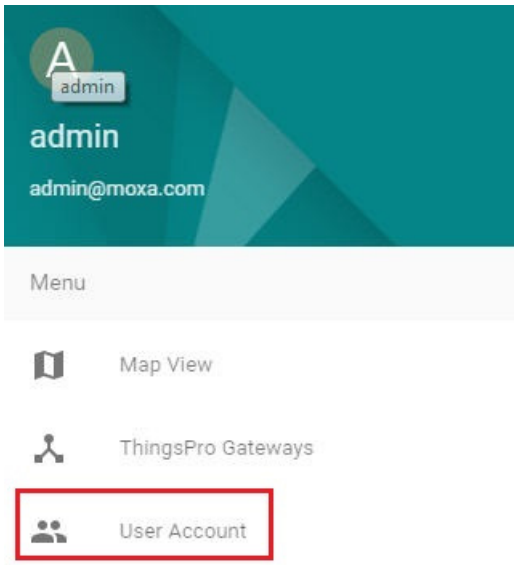


Deleting a Group Task

If you want to delete a group task, select the task in the Task List page and click on the delete icon.

Managing User Accounts

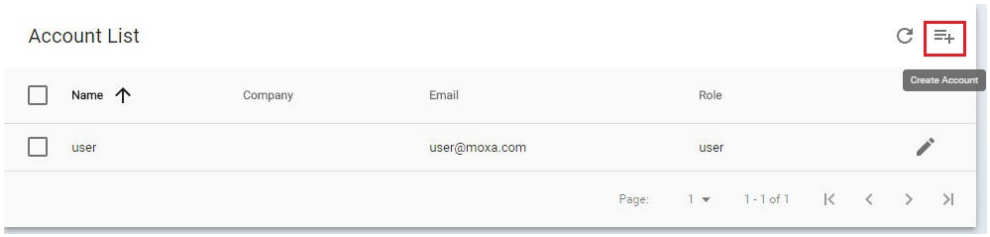
This section describes how to add new account, and manage the existing account. Select **User Account** from the menu.



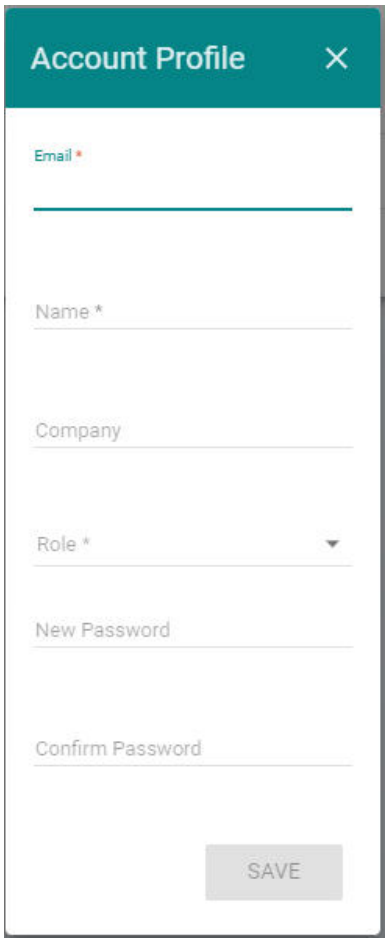
Creating a New Account

NOTE Only the Root user and users with Administrator privileges can create a new user account.

To create a new account, select the icon.

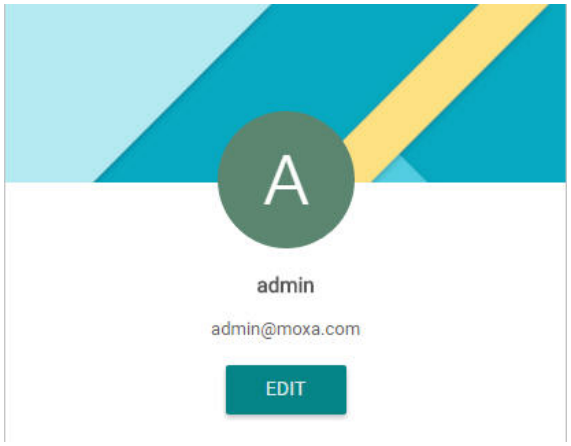


Provide the necessary information for the new account. When finished, click **SAVE**.

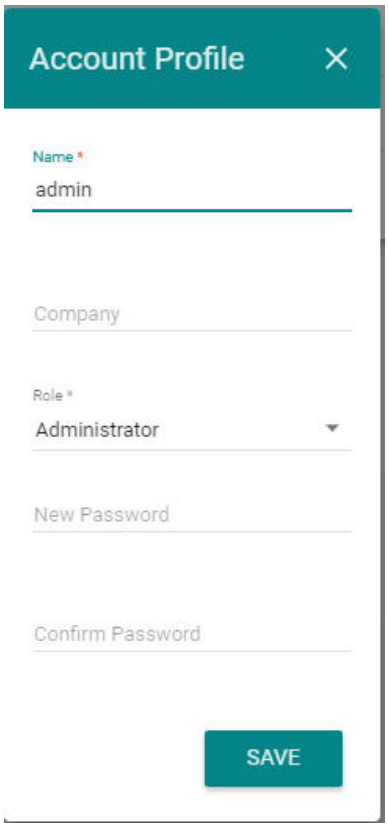


Editing the Administrator Information

To edit the administrator information, click **Edit**.

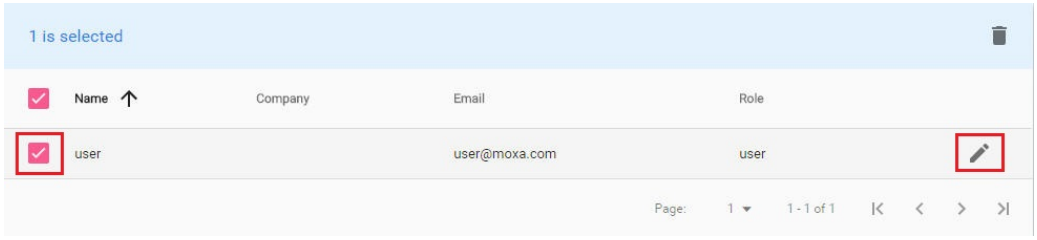


Edit the information in the specific fields and click **SAVE**.

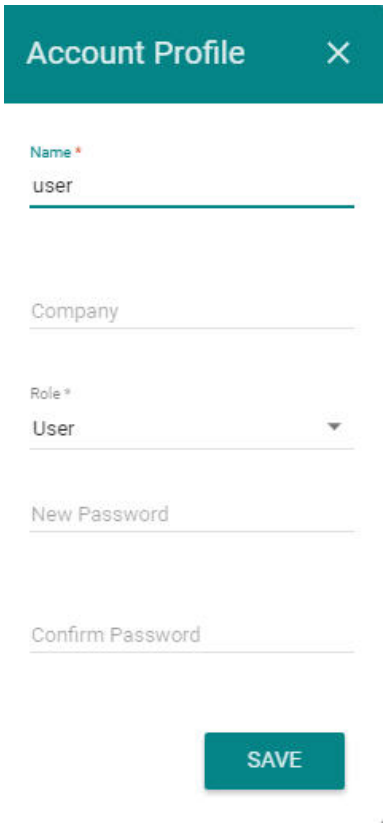


Update the Existing Account Information

To update the existing user, check the user, and then select the edit icon.



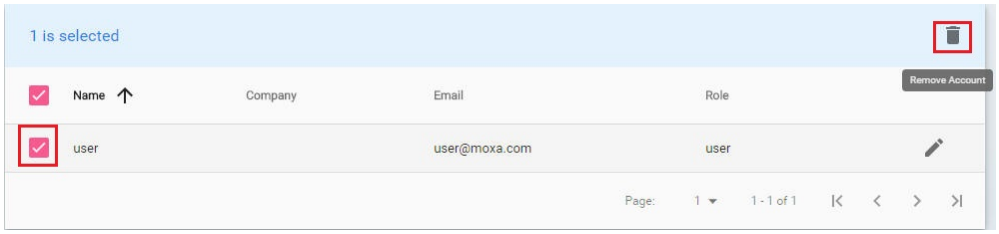
Edit the information in the specific fields. When finished, click **SAVE**.



Deleting a User Account

NOTE Only the **Root** user and users with **Administrator** privileges can create a new user account.

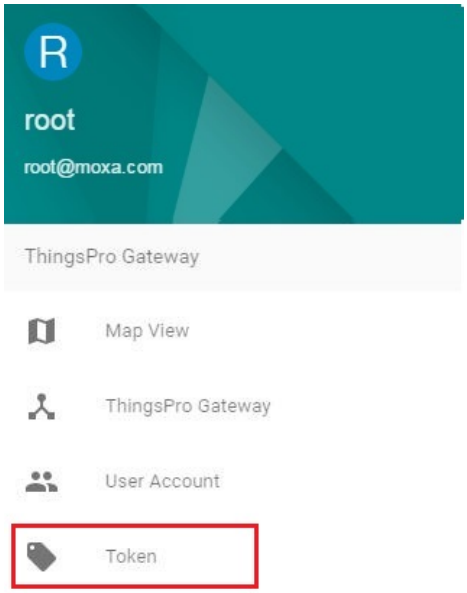
To delete an account, select the account, and then click the delete icon.



Managing Tokens

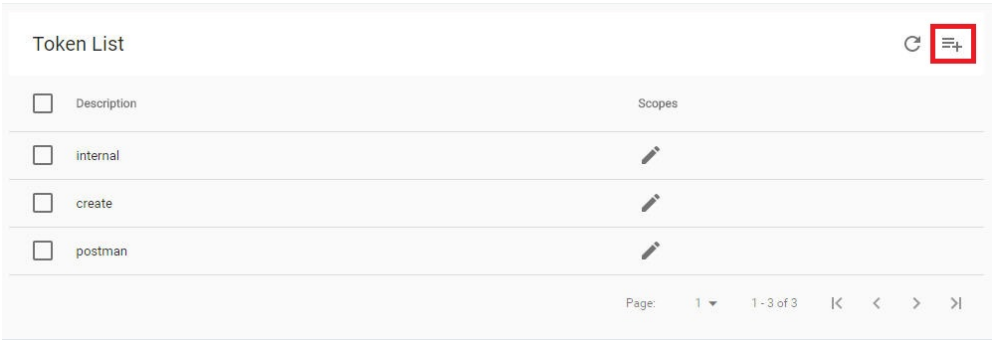
NOTE Only the **root** account has access to the Token function.

This section describes how to manage the token function for the ThingsPro Server. Select **Token** on the menu.

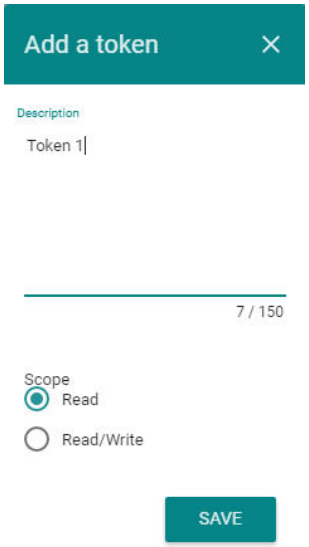


Adding a Token

To add a token, click on the add icon.



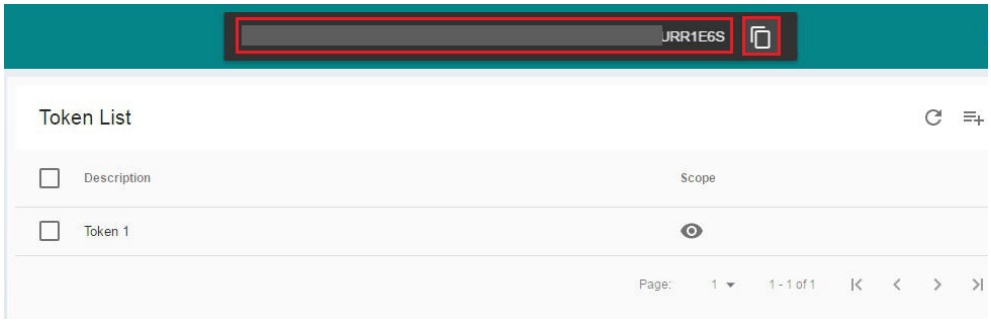
Provide a name for the token, and select the scope. Click **SAVE** to continue.



A series of specific keys will be generated, and can be used for the communication between ThingsPro Server and the RESTful API. For details, refer to ThingsPro RESTful API Reference available in the ThingsPro Programmer's Guide.

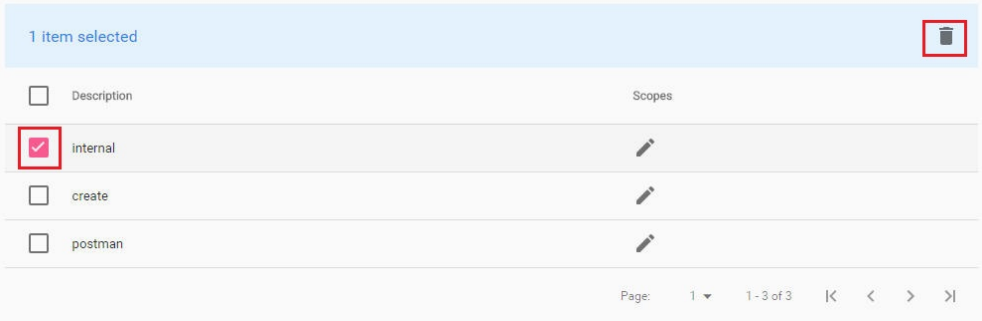
IMPORTANT!

Use the copy icon to copy the key and store it in a file for future use. ThingsPro will discard the key once you leave the page. You must therefore copy the key and store it in a separate file so that you can retrieve it when you require the key. If you forget the key, you might want to delete the token from the token list and generate a new one.



Deleting a Token

To delete a token, select the token, and the delete icon.



For more ThingsPro Gateway settings, please refer to *Chapter 3. ThingsPro Gateway*.

4

ThingsPro Device Enablement Utility

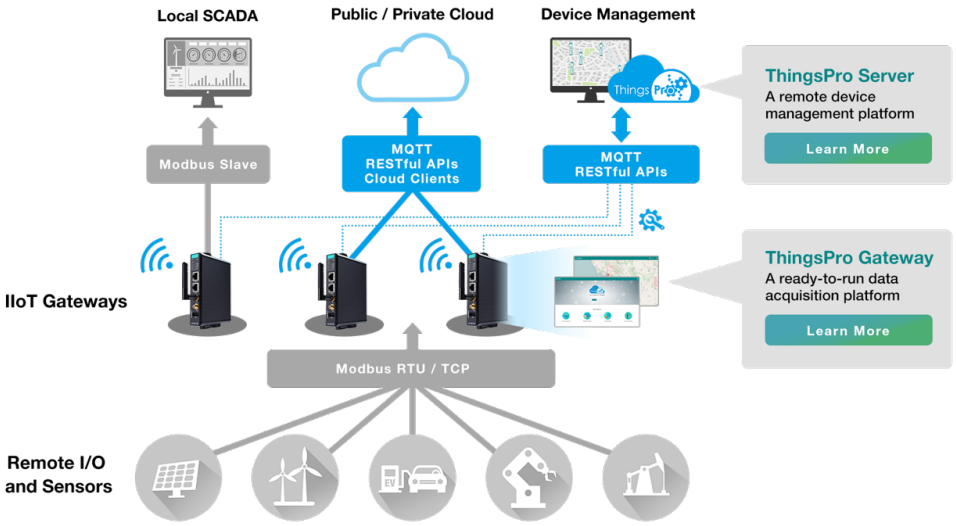
ThingsPro Suite includes a ThingsPro Device Enablement utility, which you can use to register ThingsPro gateways to the ThingsPro Server, run firmware upgrades on the gateways, and change the gateway configuration. This section describes how to use the ThingsPro Device Enablement utility.

The following topics are covered in this chapter:

- **Introduction**
- **Installing the ThingsPro Device Enablement Utility**
- **Scanning for ThingsPro Gateways**
- **Configuring Basic Network Settings**
- **Registering ThingsPro Gateways**
  - Registering ThingsPro Gateways with the ThingsPro Server
  - Registering ThingsPro Gateways with the AWS IoT Service
- **Exporting the Device Configuration**
- **Importing a Configuration File**
- **Upgrading the Firmware on the ThingsPro Gateway**
- **Preparing a ThingsPro Gateway Sample**

Introduction

Any new device needs to be configured to enable it to connect to a cloud server. ThingsPro Suite provides a ThingsPro Device Enablement utility that makes it easy to set up the ThingsPro gateway and connect it to a cloud server. The process involves setting up the cloud interface on the gateway and using the ThingsPro Device Enablement utility to register the gateway with the ThingsPro Server. A connection between ThingsPro Server and the gateway device is then established after the server authenticates the gateway device. This process is illustrated in the diagram below:



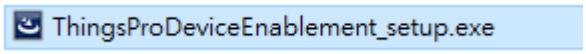
Installing the ThingsPro Device Enablement Utility

Prerequisites:

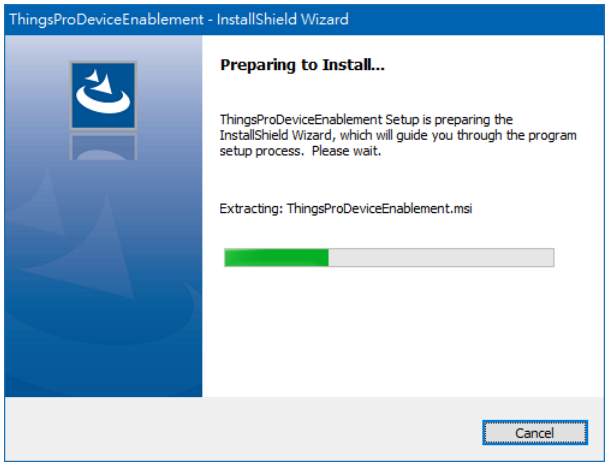
1. Laptop computer/PC
2. Enable the IPv6 function in the laptop/PC
3. Connect the laptop/PC to the Internet.
4. Configure ThingsPro Gateway tool on the laptop/PC (see *Chapter 4 ThingsPro Gateway*).
5. In the Control Panel, check if the SSDP service in ThingsPro Gateway is enabled.
   The default setting is "enabled".
6. Connect the LAN 2 port of the laptop/PC to the same network subnet as the gateway devices.
7. Procure the installation file for the ThingsPro Device Enablement utility, which is available in the ThingsPro Suite CD or can be downloaded from the Moxa website.

To install the ThingsPro Device Enablement utility, do the following:

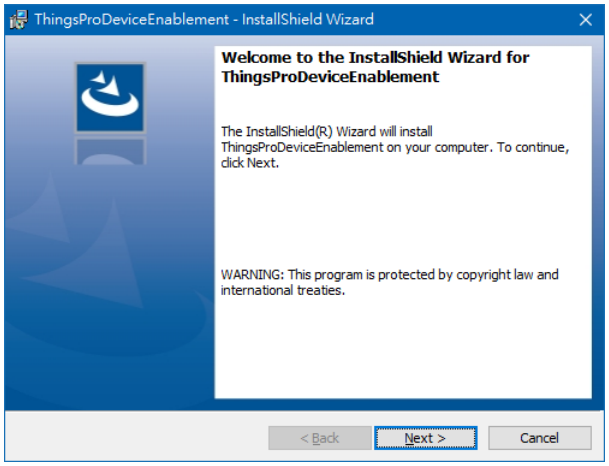
1. Open the installer for the enablement utility.



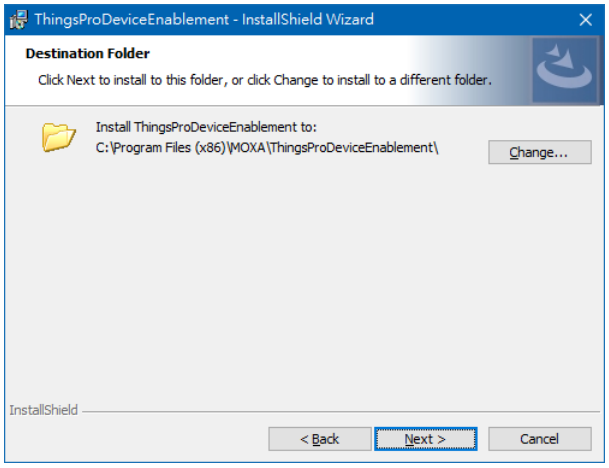
2. Click **Run**.



3. In the Welcome screen, click **Next** to continue.

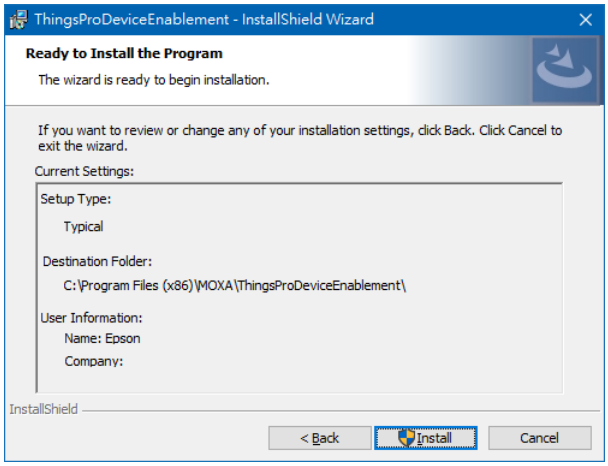


4. (Optional) Click **Change** to change the destination folder.

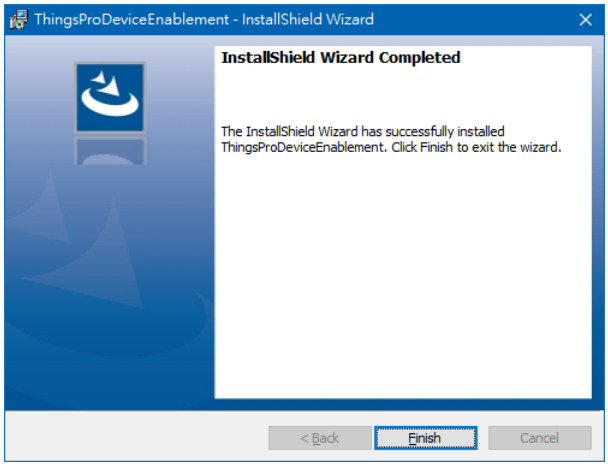


5. Click **Next** to continue with the installation process

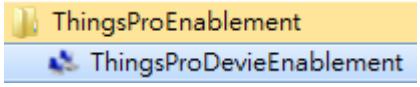
6. Click **Install**.



7. Wait for the installation process to complete and click **Finish** to exit the installer.

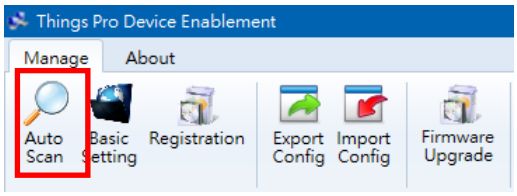


To run the enablement utility, select the **ThingsProEnablement** item under **Start > moxa > ThingsProEnablement** on your PC/laptop computer.

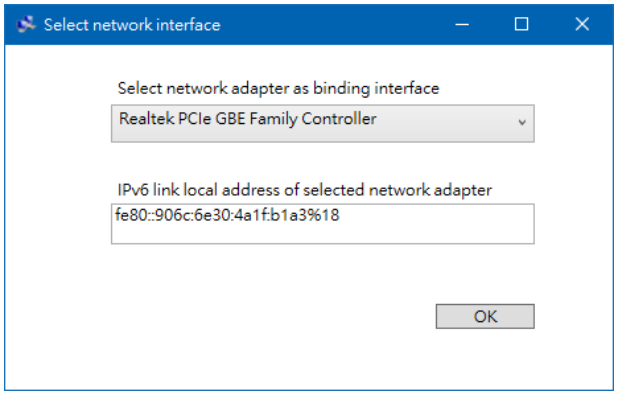


Scanning for ThingsPro Gateways

1. In the **Manage** tab of the ThingsPro Device Enablement utility, click **Auto Scan.**



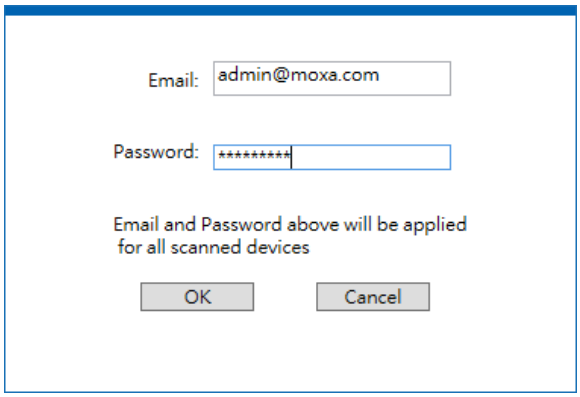
2. Select a network adapter from the drop-down list and click **OK** to continue.



IMPORTANT!

Ensure that the computer and the ThingsPro gateways are in the same network domain.

3. Enter the **Email** and **Password** and click **OK** to continue.

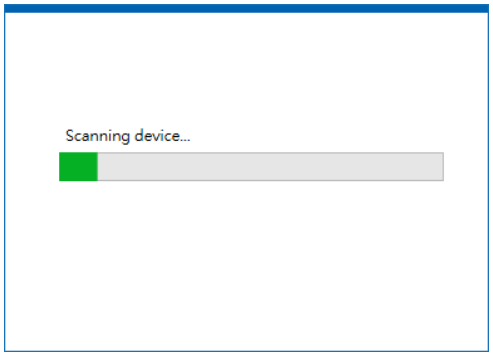


The default values are:

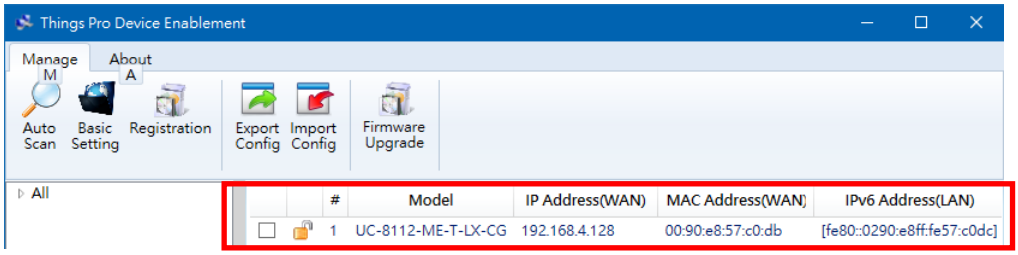
Email: admin@moxa.com

Password: admin1234

4. Wait for the scanning process to complete.



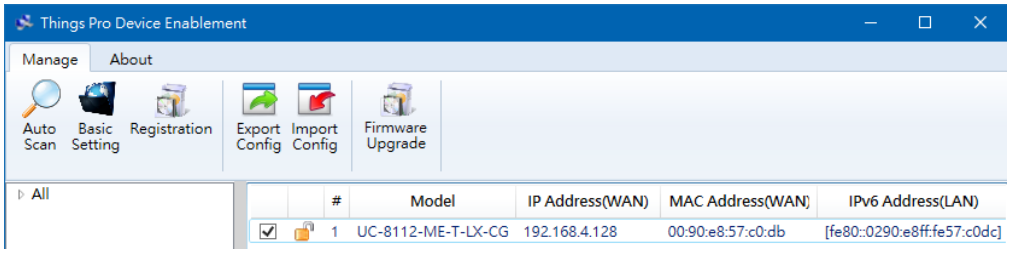
When the scan is complete, a list of ThingsPro gateways is displayed in the main window.



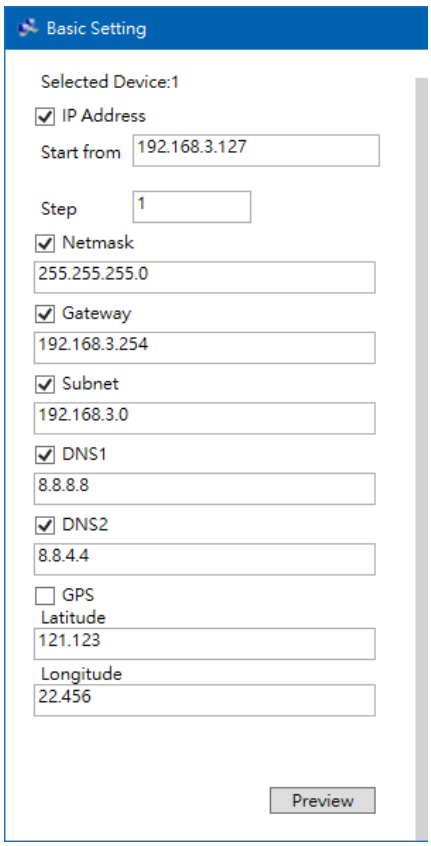
Configuring Basic Network Settings

The **Basic Setting** function in the ThingsPro Device Enablement utility is designed to easily configure network settings for multiple ThingsPro gateways.

1. Select one or more devices using the checkbox in front of the devices and click on the **Basic Setting** icon.

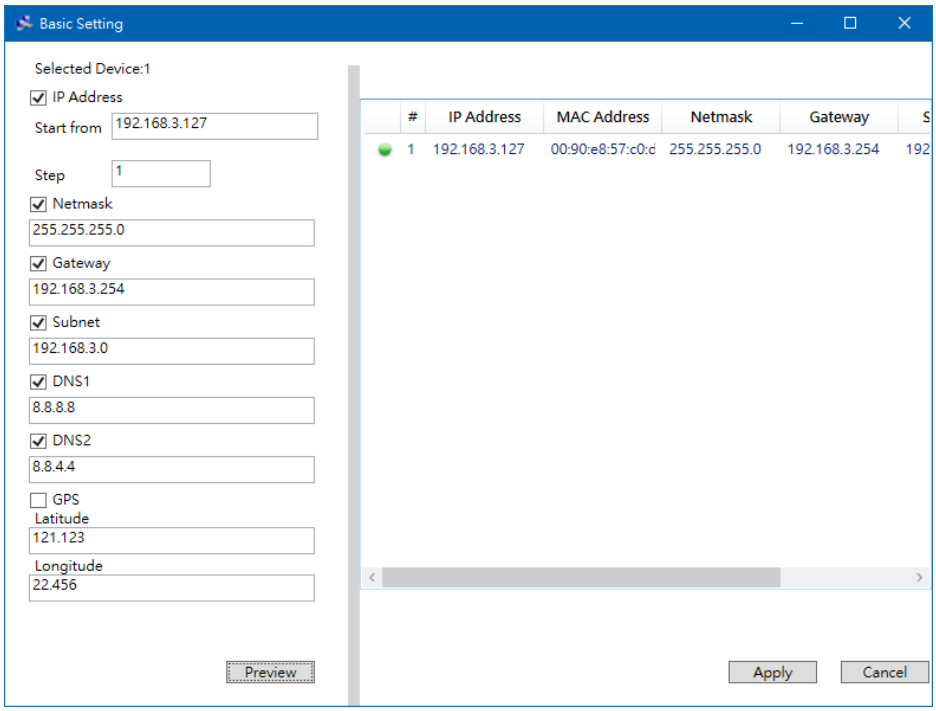


2. Edit the device settings displayed in the left pane of the utility window and click **Preview**.

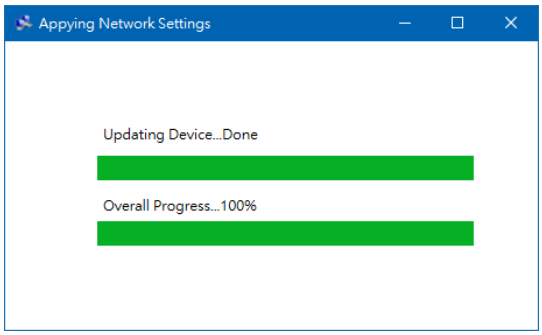


3. Check the device settings displayed in the right pane.

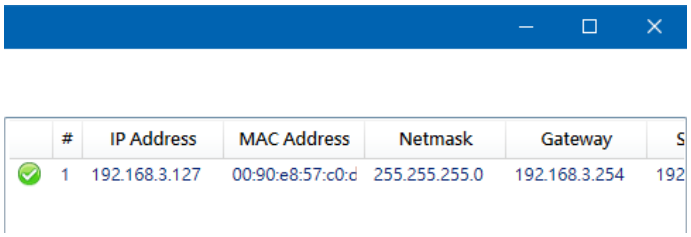
4. Click **Apply**.



5. Wait for the update process to complete.



When the process is complete, the current device settings are displayed in the right pane.

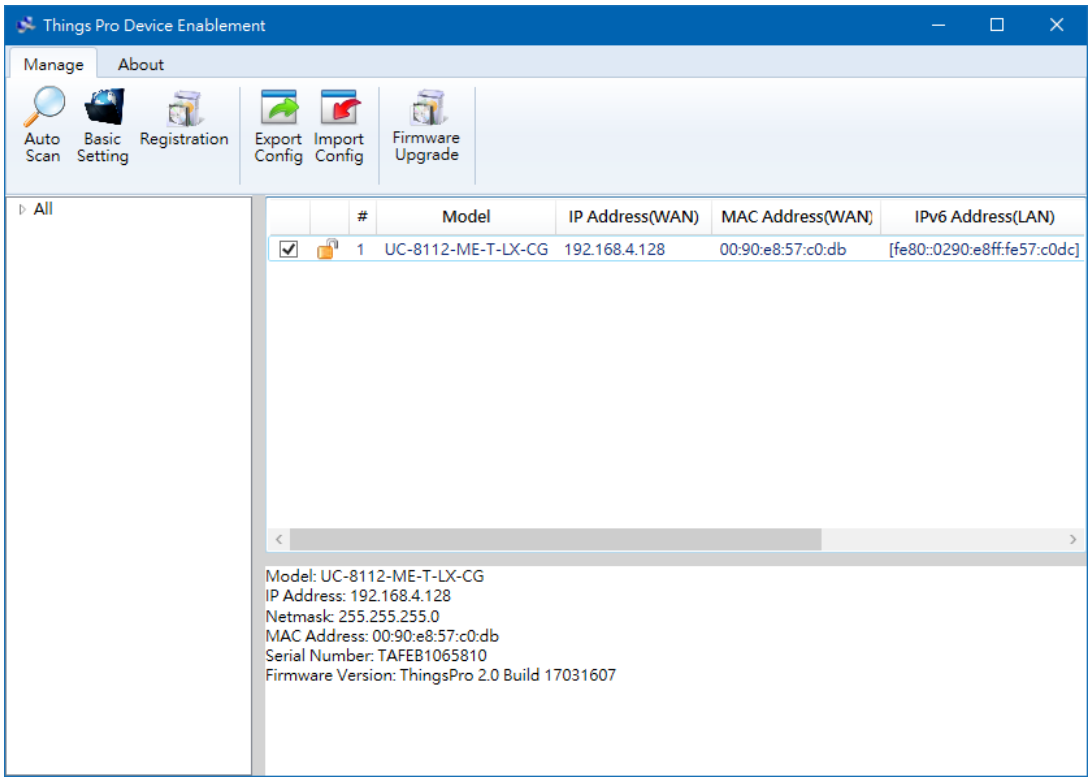


Registering ThingsPro Gateways

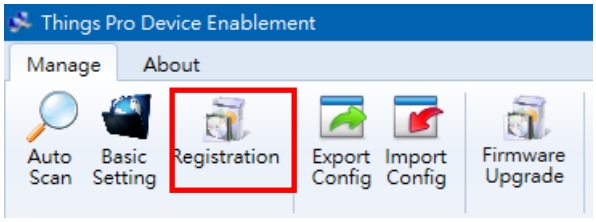
Registering ThingsPro Gateways with the ThingsPro Server

To register a ThingsPro gateway with the ThingsPro Server, do the following:

1. In the ThingsPro Device Enablement utility, select the device from the device list.

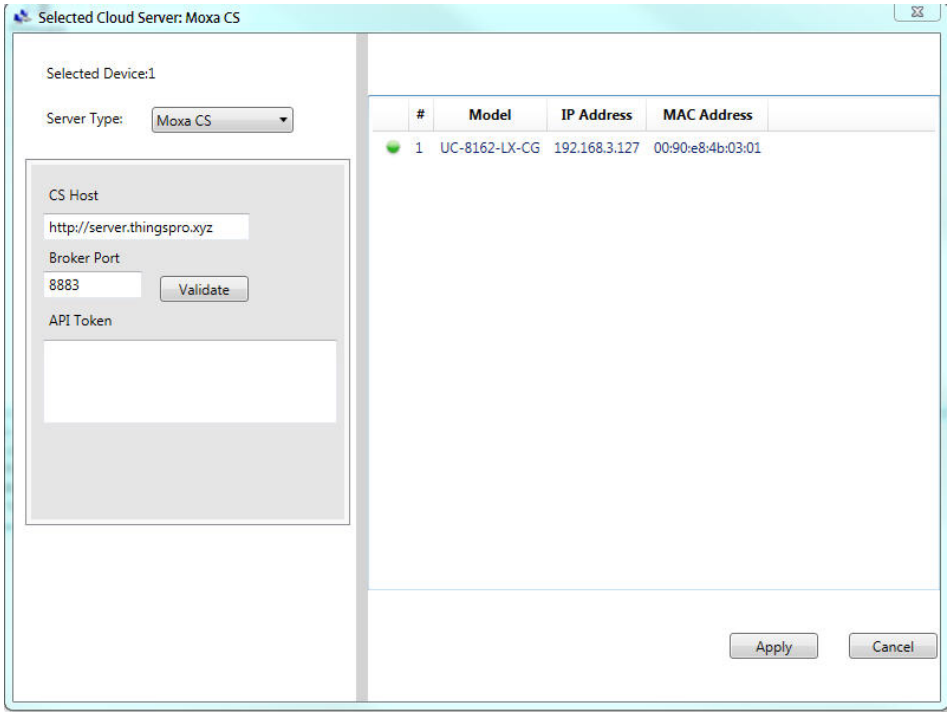


2. Click on the **Registration** icon.

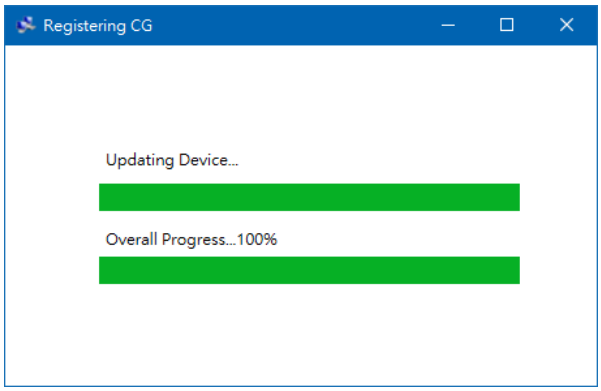


3. Select **Moxa CS** (Moxa Cloud Server) in the **Server Type** field**,** enter the cloud server details, and click **Apply**.

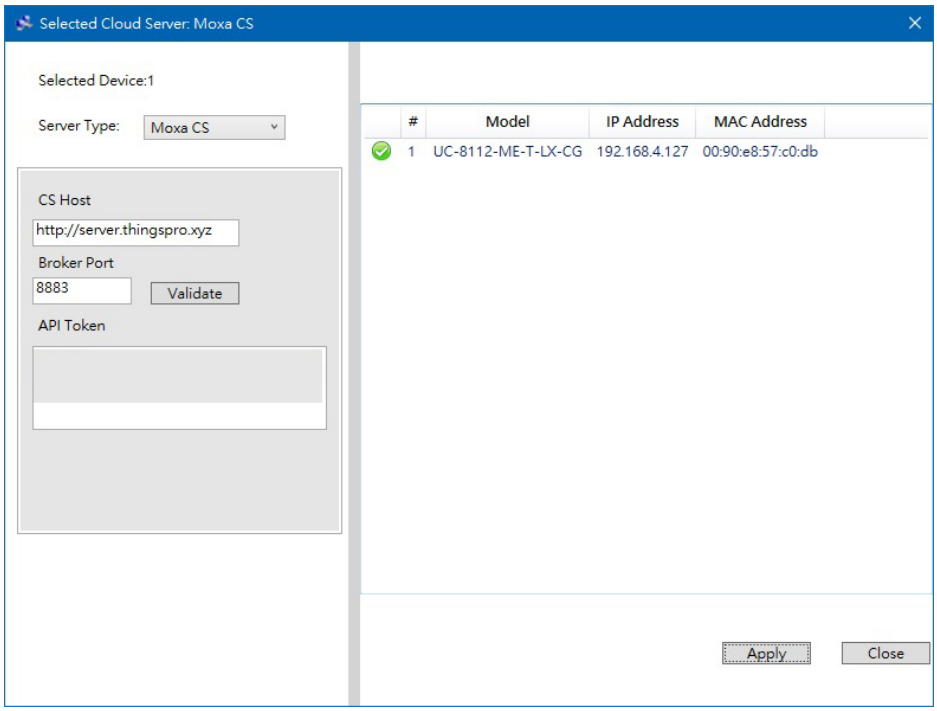
   For details on generating an API token, refer to the "Adding a Token" topic under the *Managing Tokens* section in *Chapter 3 ThingsPro Server*.



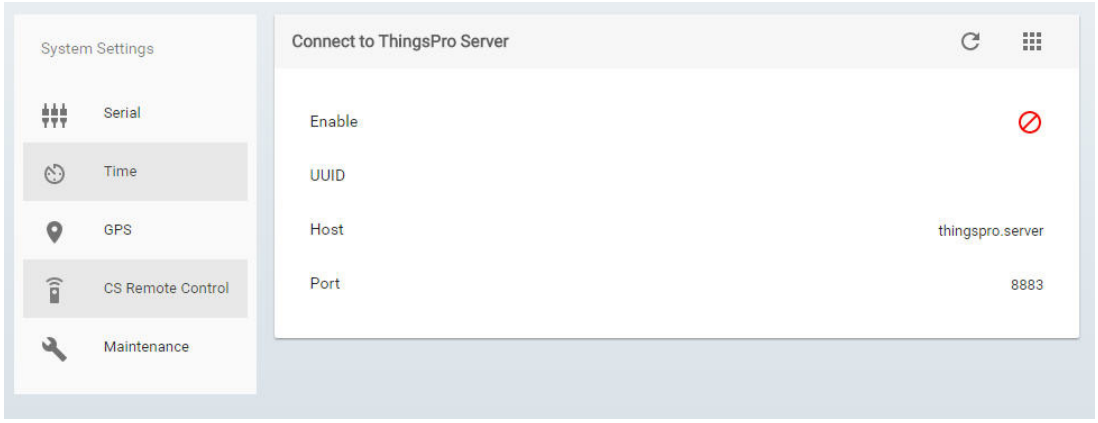
4. Wait for the registration process to complete.



The completion of the registration process is indicated by a green check mark as shown below:



5. Open the ThingsPro Gateway web user interface (web UI) for the device and check the parameters at **System > CS Remote Control** to confirm that the device is registered with the server.

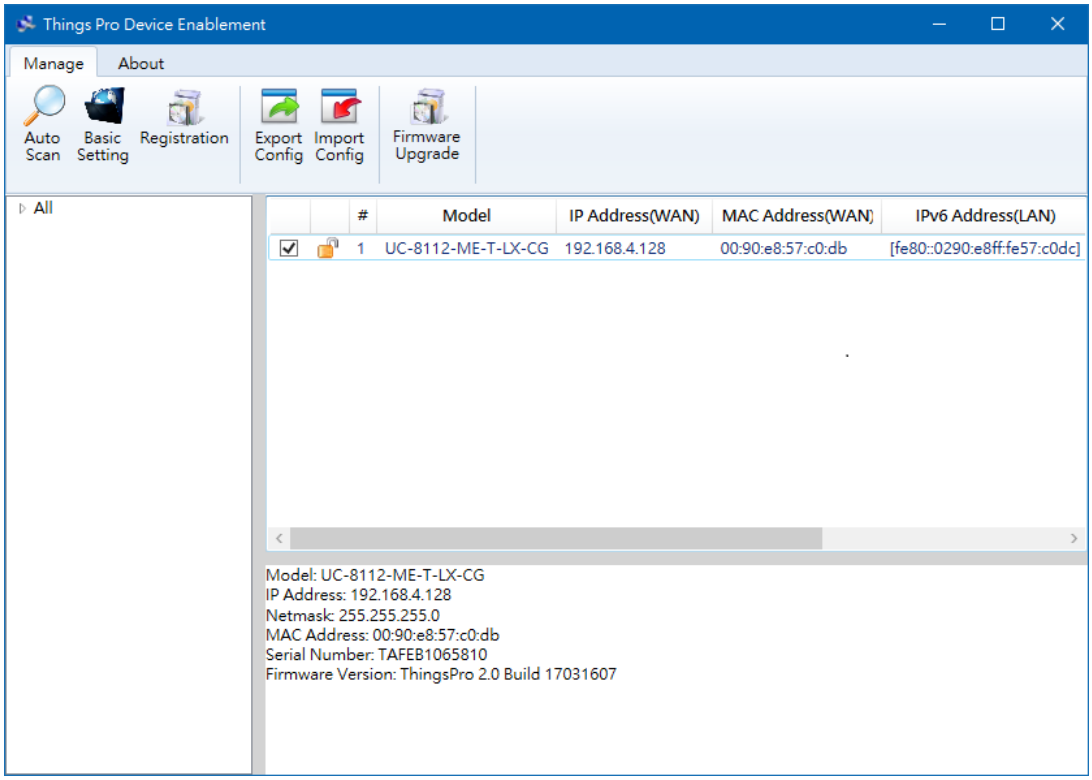


Registering ThingsPro Gateways with the AWS IoT Service

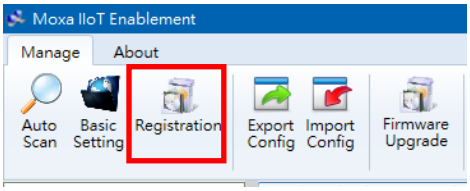
Before using the AWS IoT Service, you need to install and configure the AWS CLI. Refer to *Appendix A Installing the AWS Command Line Interface* for details.

To register your ThingsPro gateway with the AWS IoT service, do the following:

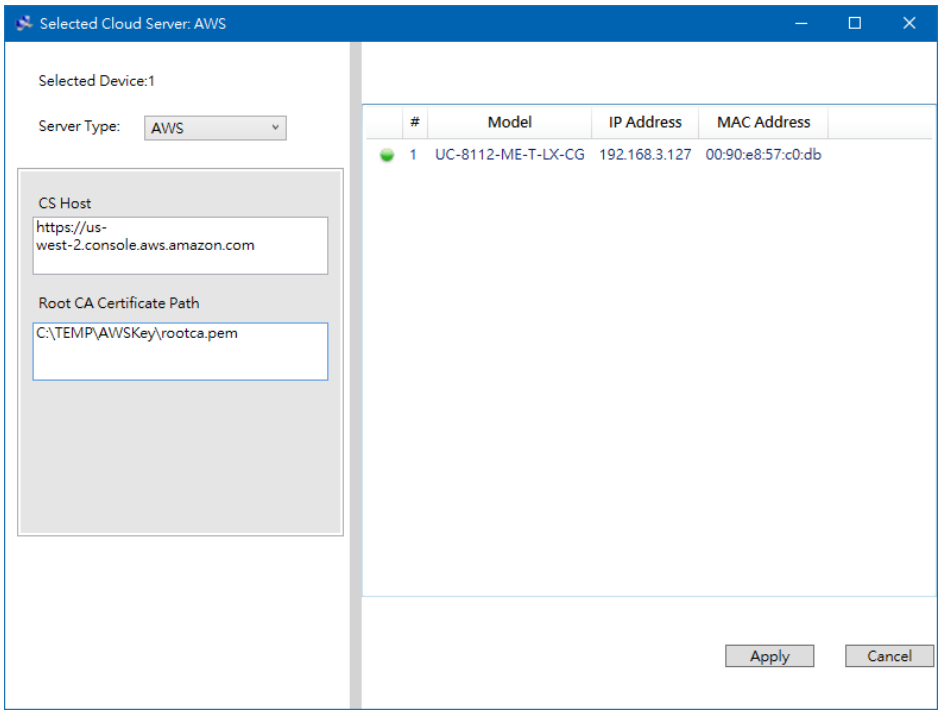
1. Select the device from the list.



2. Click on the **Registration** icon.

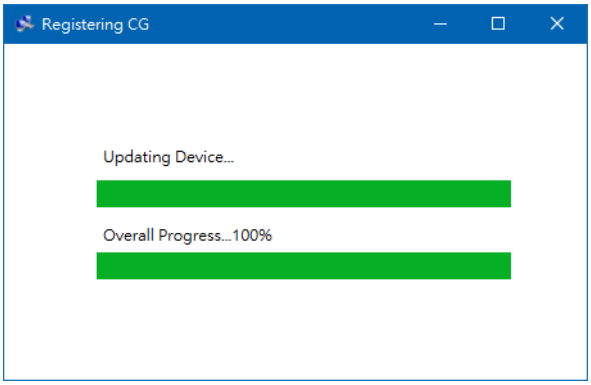


3. Select **AWS** in the **Server Type** field, enter the **CS Host** and **Root CA Certificate Path**, and click **Apply**.

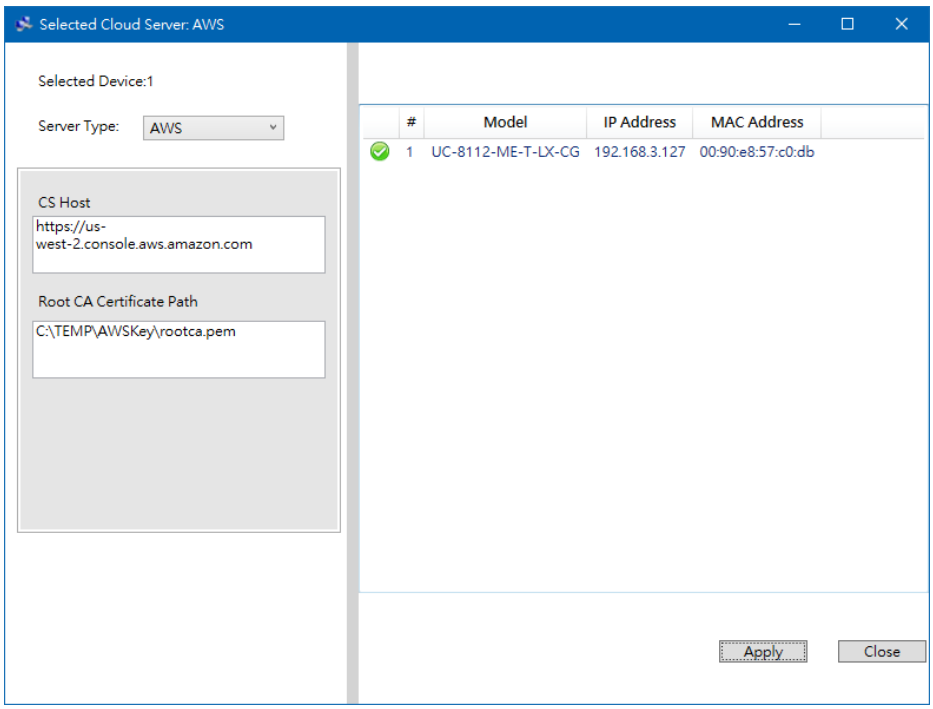


You can acquire both the **CS Host** and **ROOT CA Certificate Path** information when you register your device with the AWS IoT service.

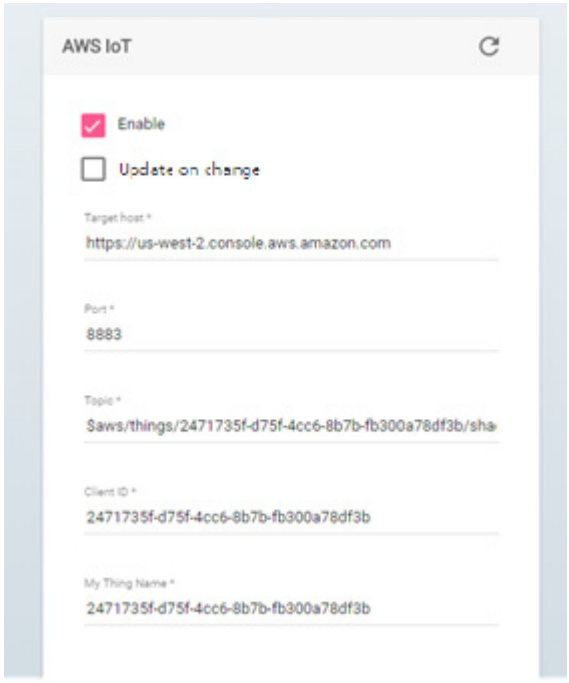
1. Wait for the registration process to complete.



The completion of the registration process is indicated by a green check mark as shown below:



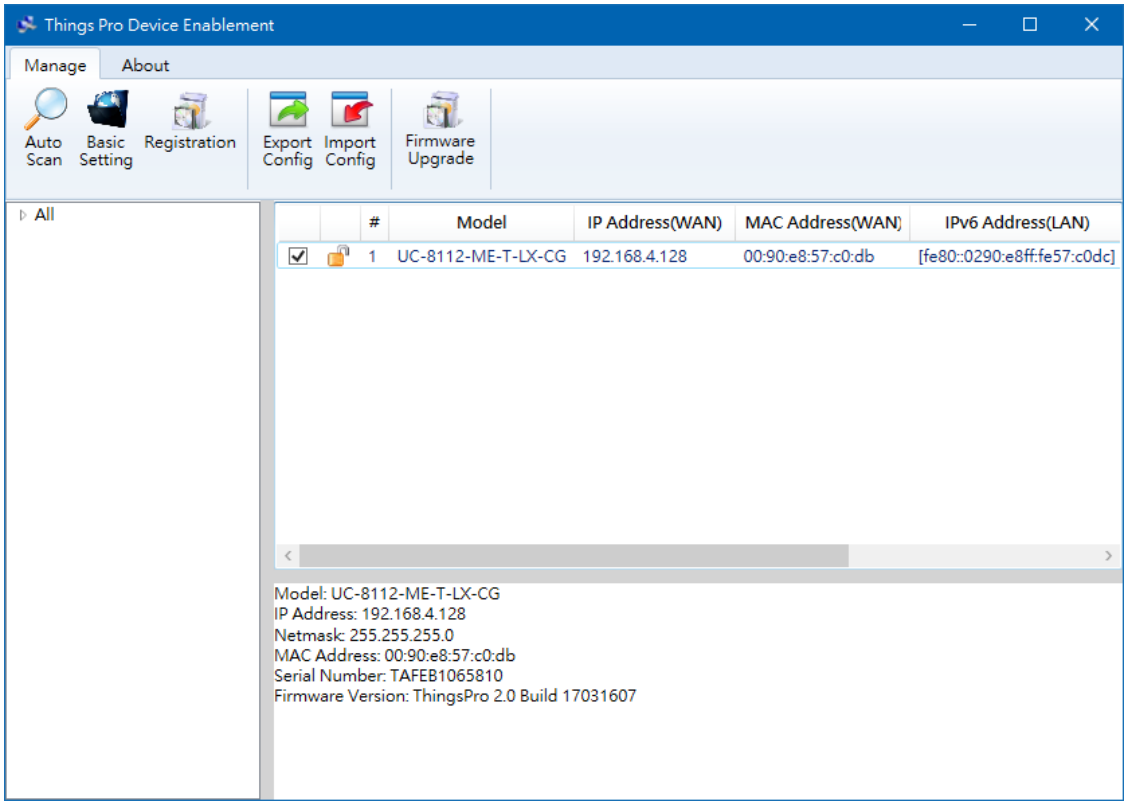
2. Open the ThingsPro Gateway web user interface (web UI) for the device.
3. Select **Applications > AWS IoT** in the main menu to confirm that the device is registered with the AWS IoT service.



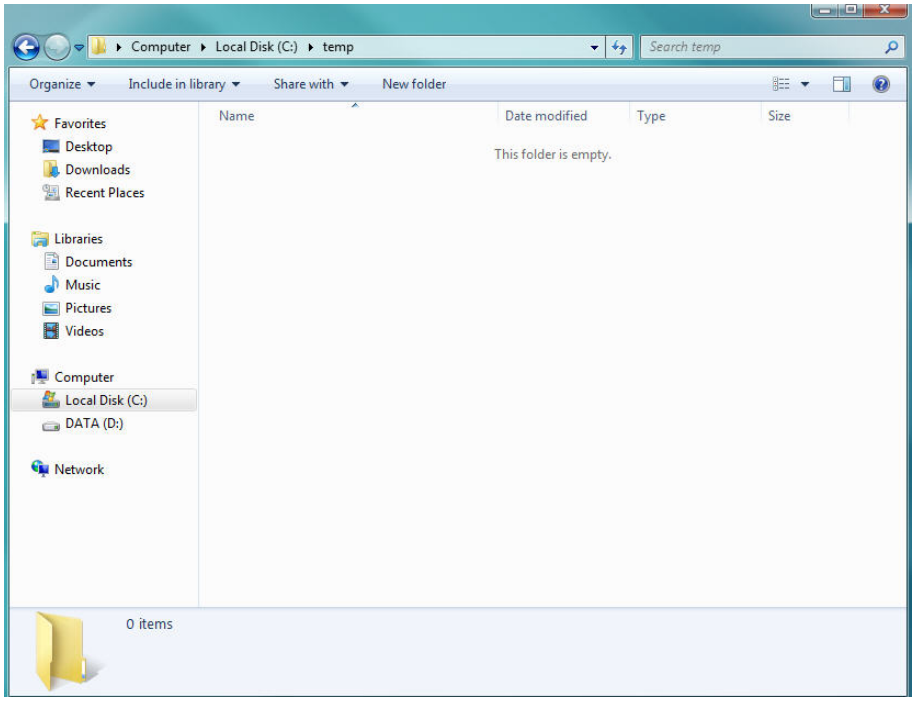
Exporting the Device Configuration

To export the configuration file of a device, do the following:

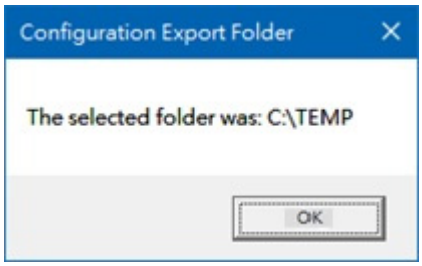
1. In the ThingsPro Device Enablement utility, select the device and click on the **Export Config** icon.



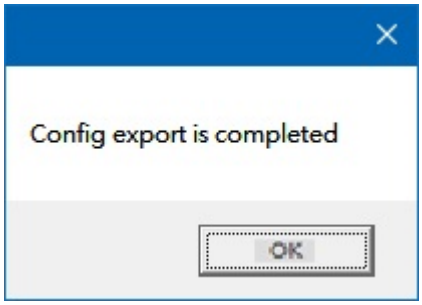
2. Select a folder to save the configuration file to.



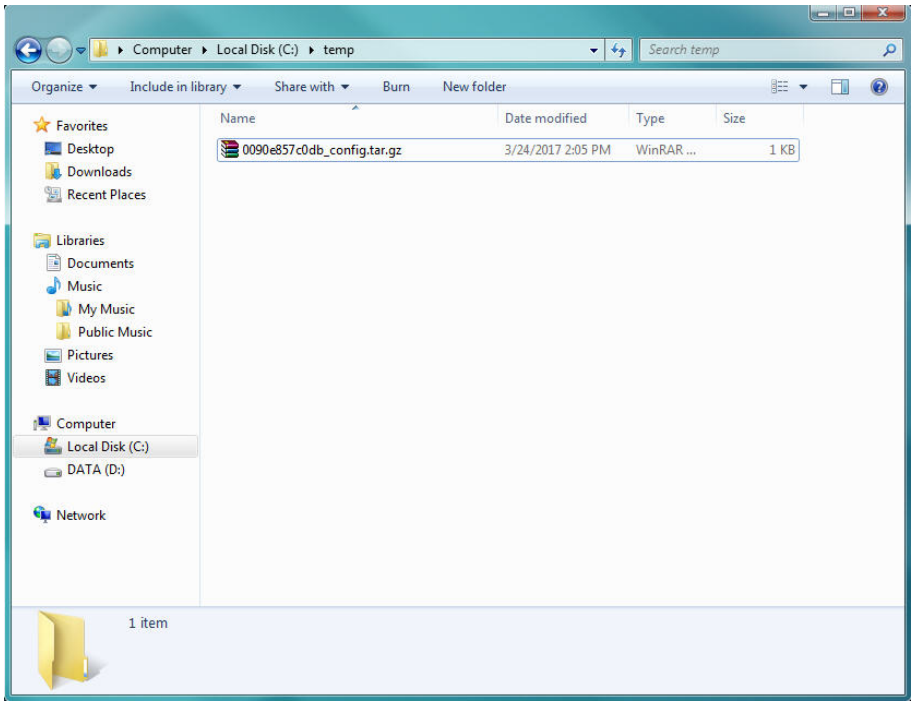
3. Click **OK** to continue.



4. Click **OK** to save the file.



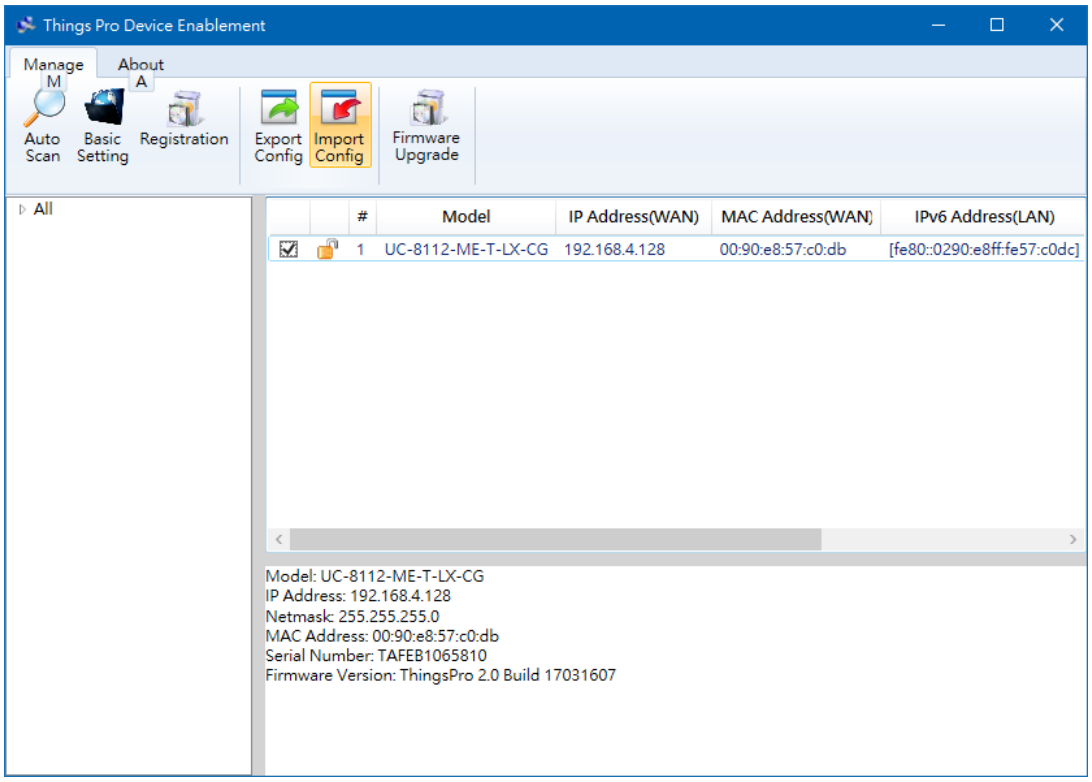
5. The configuration file will be named after the MAC address of the device and saved in the folder specified.



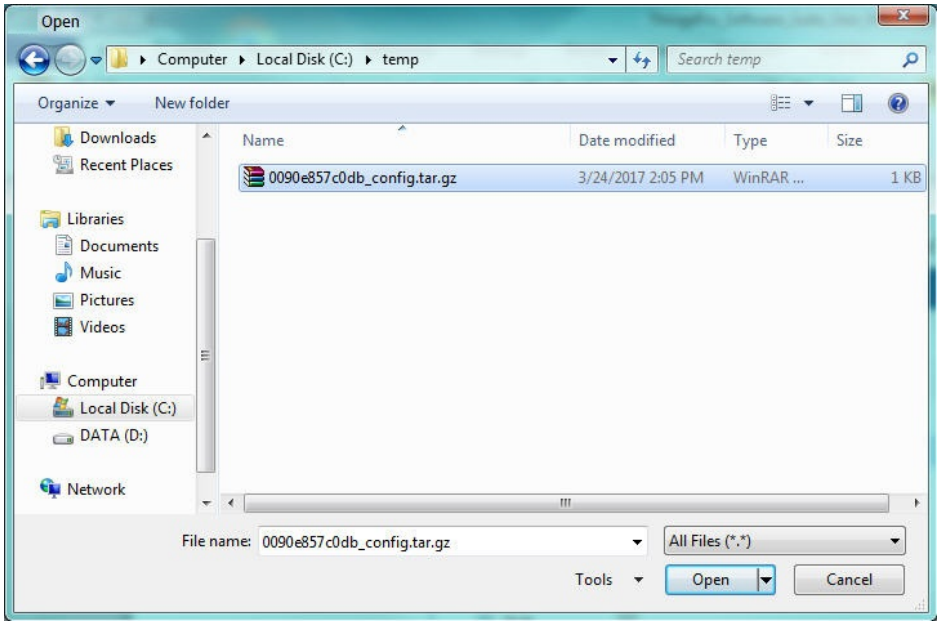
Importing a Configuration File

Follow these steps to import a configuration file into the ThingsPro gateway:

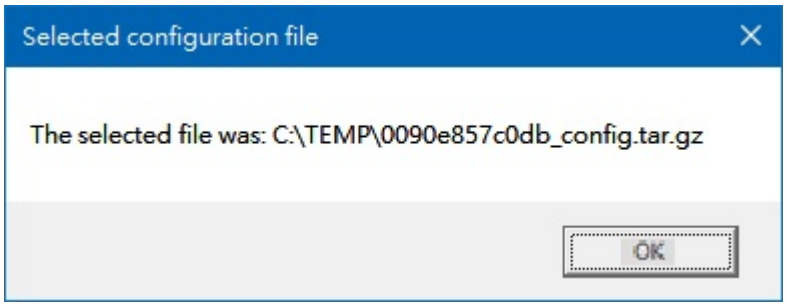
1. In the ThingsPro Device Enablement utility, select the device and click on the **Import Config** icon



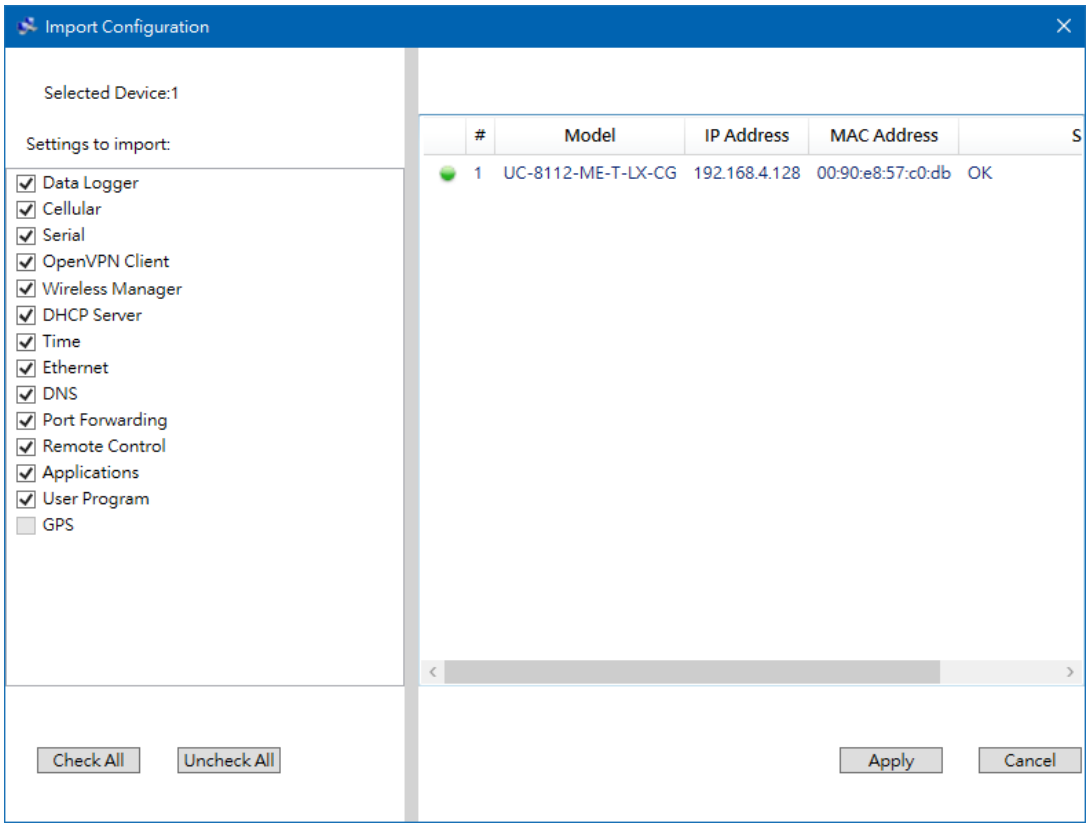
2. Select the configuration file and then click **Open**.



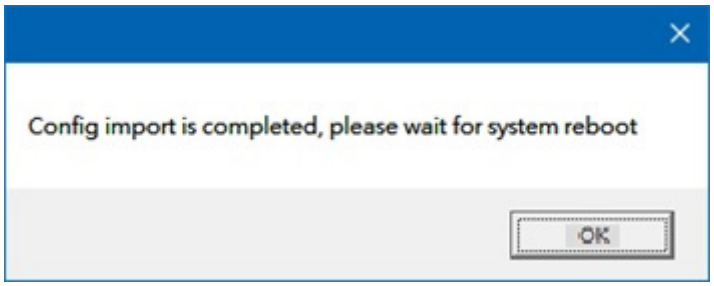
3. Click **OK** to continue.



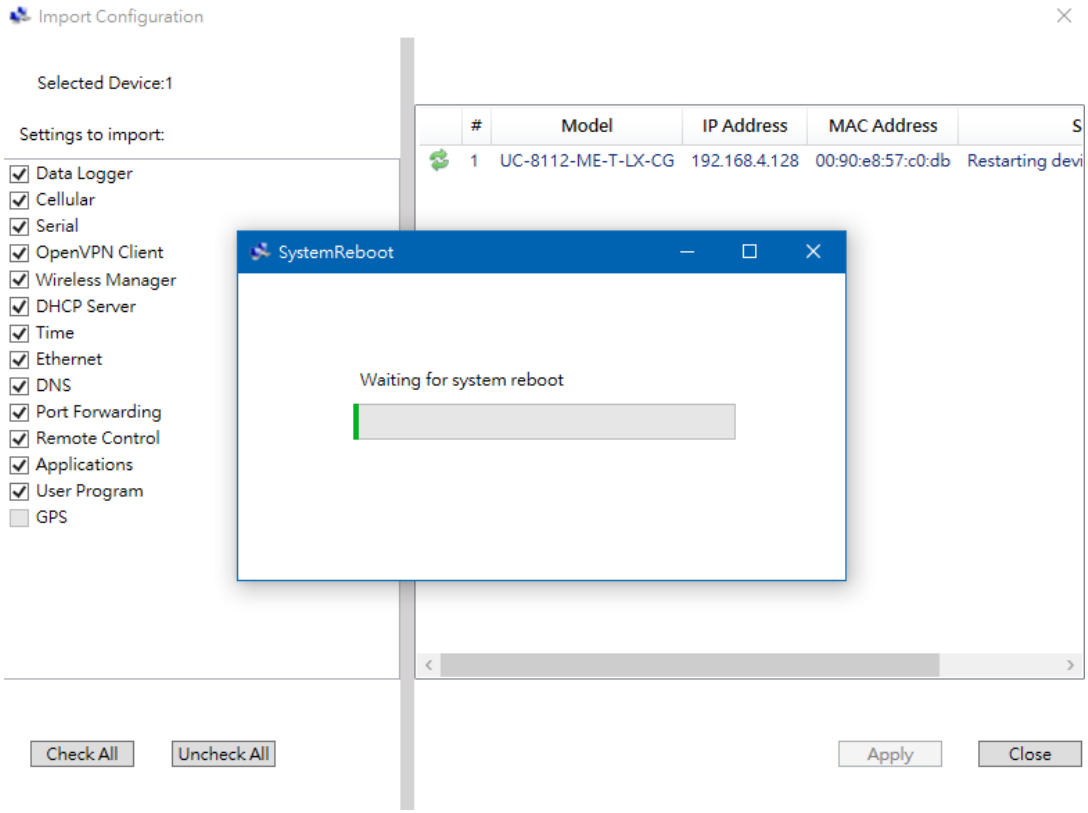
4. Select the settings to import in the left-pane and click **Apply**.



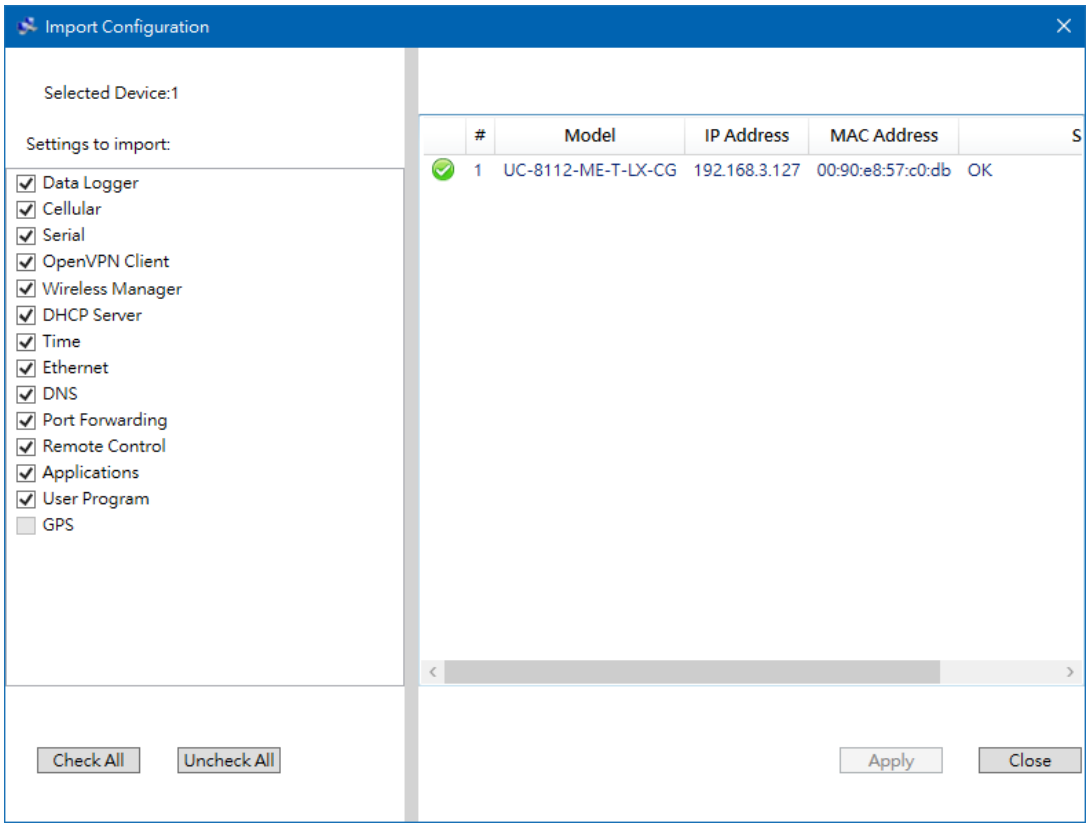
5. Click **OK**.



6. Wait until the system reboots.



7. Check the imported configuration from the list. Click **Close** to complete.

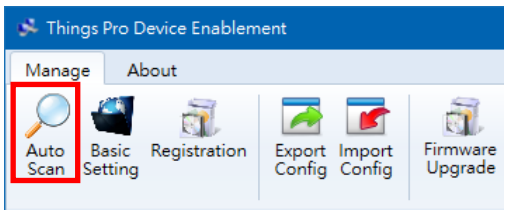


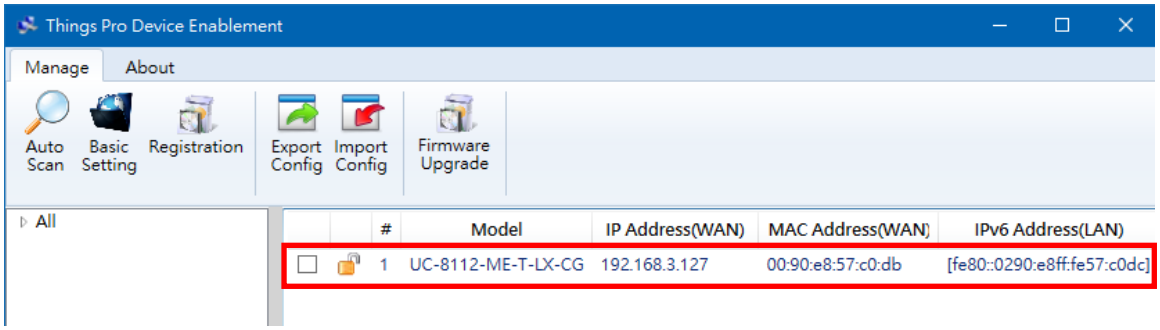
Upgrading the Firmware on the ThingsPro Gateway

This section describes how to upgrade the firmware on your ThingsPro gateway. Contact Moxa technical support staff to get the latest version of the firmware.

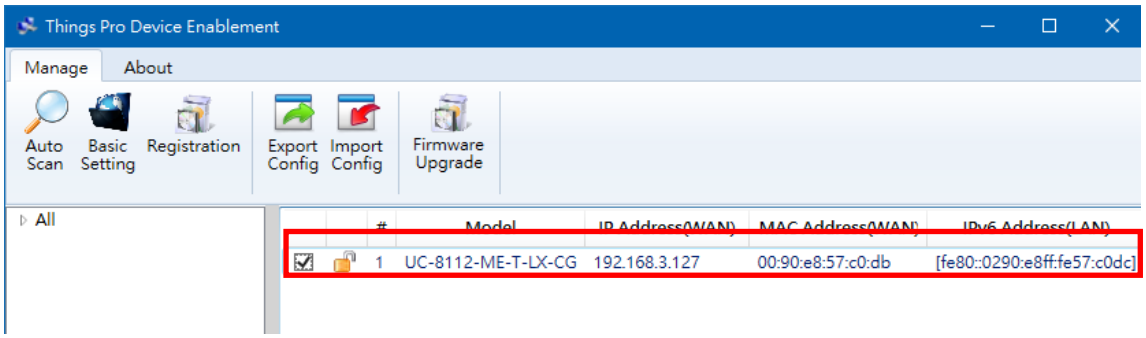
To upgrade the firmware on your ThingsPro gateway, do the following:

1. Download the firmware file (*.frm) from the Moxa website or contact a Moxa support staff for assistance.
2. Run the **ThingsProEnablement** utility from **All Programs > Moxa > ThingsProEnablement**
3. Click **Auto Scan** to update the ThingsPro gateway list.

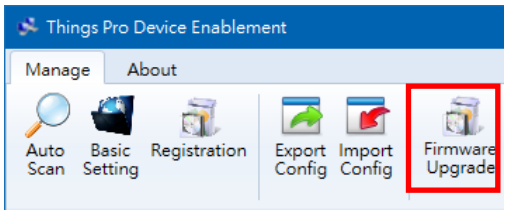




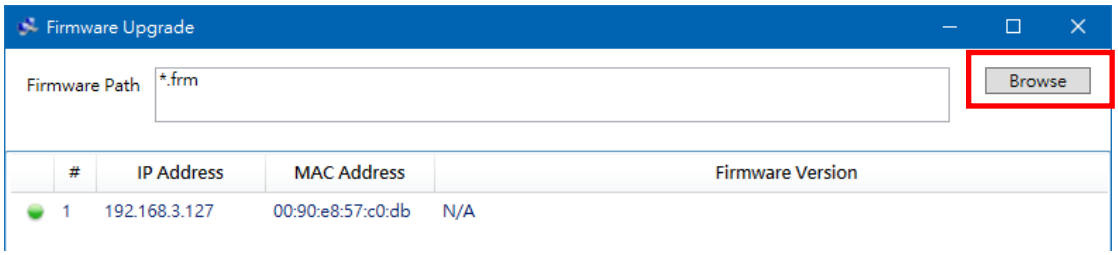
4. Select the ThingsPro gateway.



5. Click **Firmware Upgrade**.

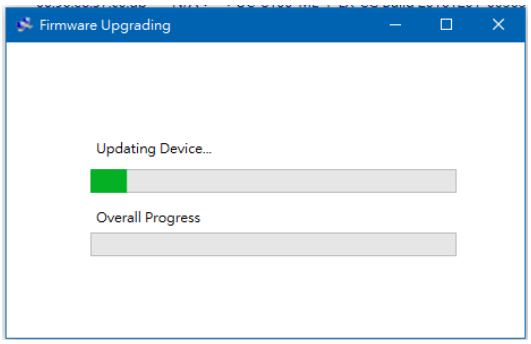


6. Click **Browse** and then select the firmware path



7. Click **Upgrade**.

8. Wait for the upgrade progress to complete.



9. Reboot the gateway.

ATTENTION

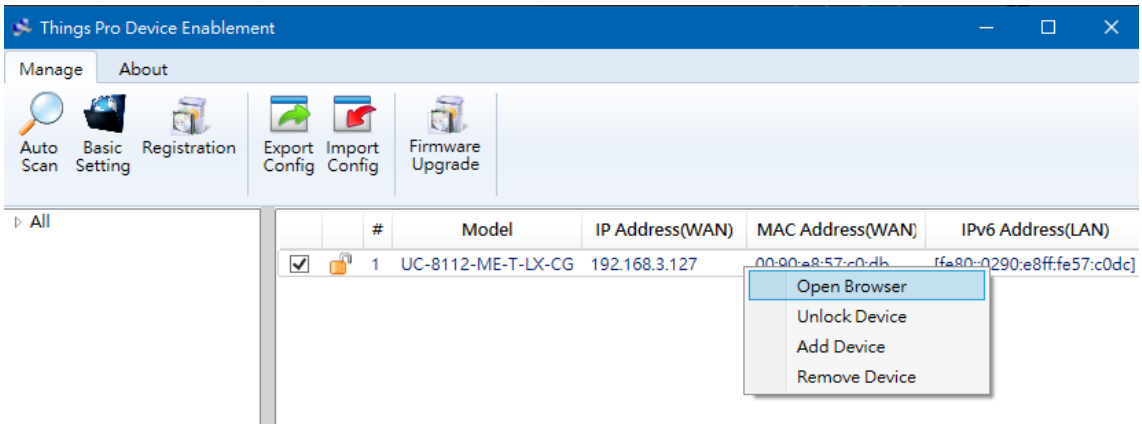
Improper firmware upgrade can lead to system failure due to corruption of the firmware on your system. Contact Moxa technical support before you upgrade the firmware on your ThingsPro gateway.

Preparing a ThingsPro Gateway Sample

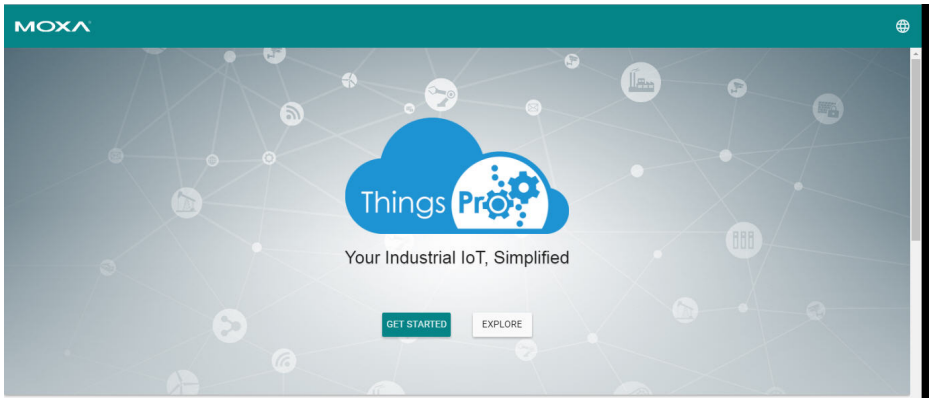
This section describes how to prepare a sample ThingsPro gateway so that all configuration files can be easily imported to other ThingsPro gateways. The sample device is useful when there are multiple ThingsPro gateways that need to be configured.

To create a sample ThingsPro gateway in the ThingsPro Device Enablement utility, do the following:

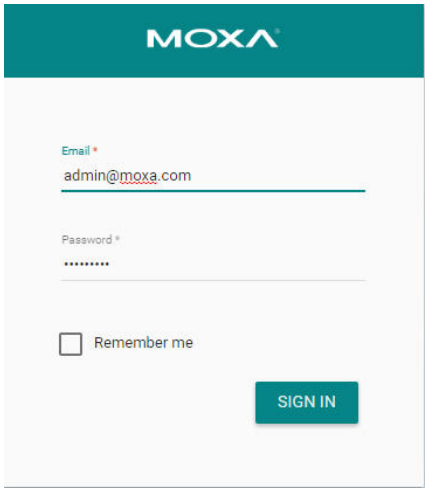
1. Right-click on a device in the device list and select **Open Browser**.



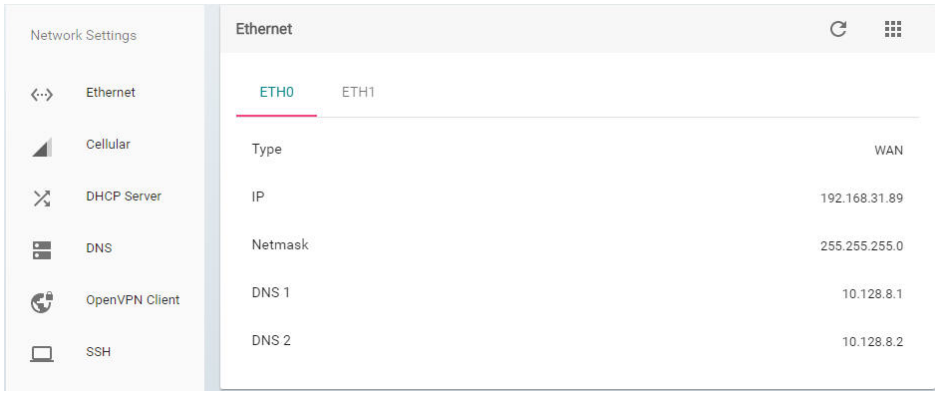
2. Click **Get Started**.



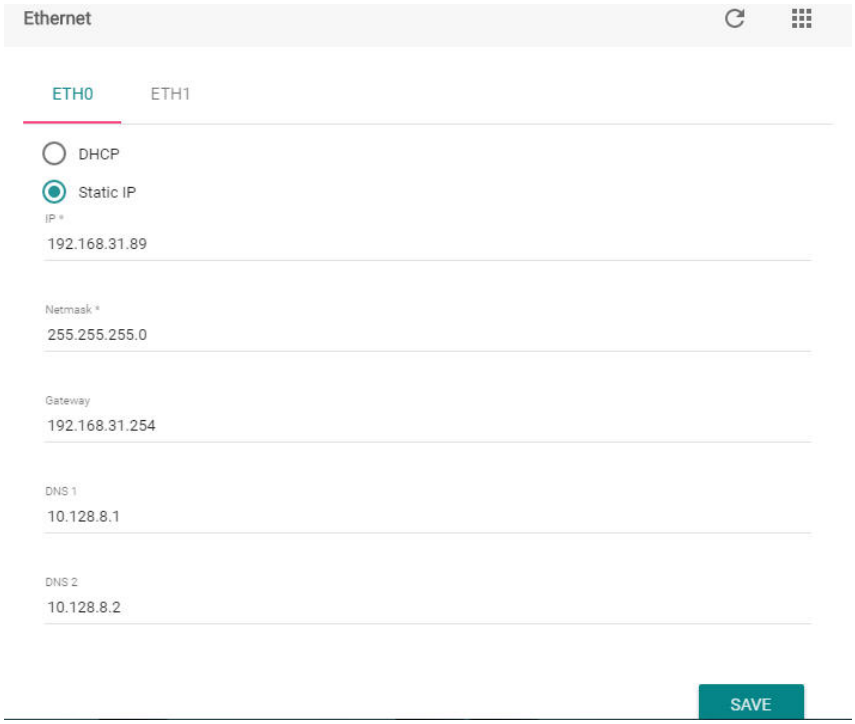
3. Enter the **Email** and **Password** and click **SIGN IN**.



4. In the main menu, select **ThingsPro Gateways** → **Device List** and edit the network settings as required.



5. Click **SAVE.**



For instructions on exporting the configuration of the sample device, refer to the "*Exporting the Device Configuration*" section. To import the new configuration file into other devices, follow the instruction in the "*Importing a Configuration File*" section.

A

Installing the AWS Command Line Interface

Before you can use the AWS service, you need to install and configure the AWS Command Line Interface (CLI) on the ThingsPro Server.

The following topics are covered in this appendix:

- **Installing the AWS CLI for Windows**
- **Configuring the AWS CLI Environment**

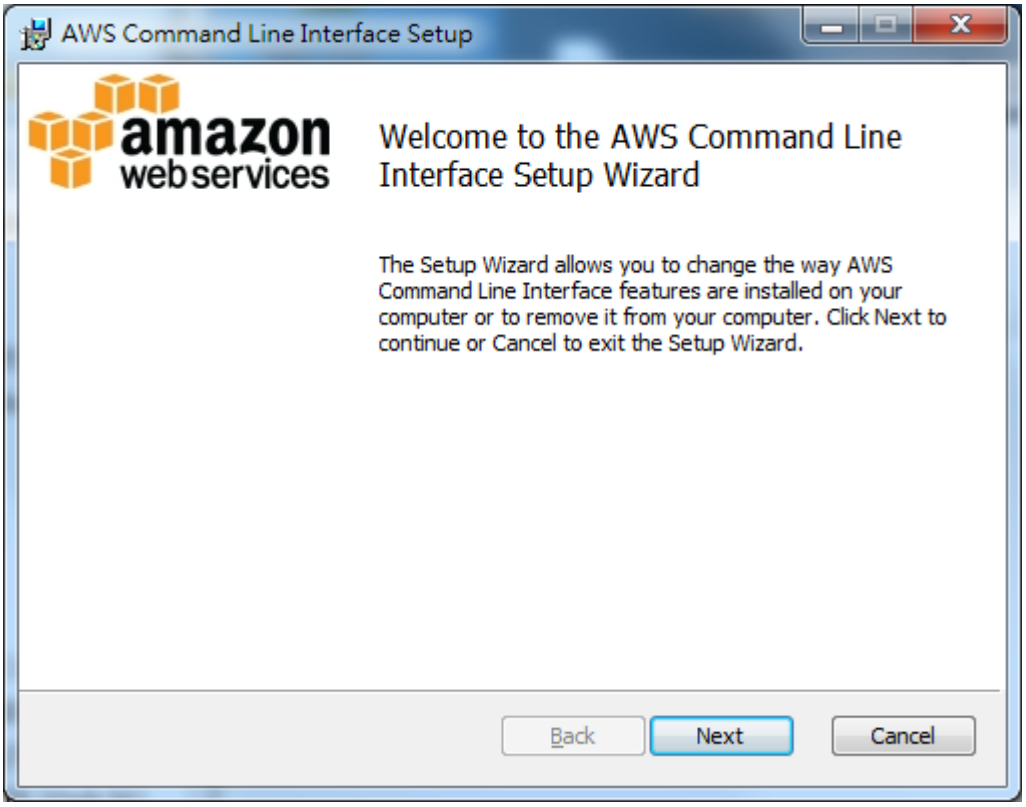
Installing the AWS CLI for Windows

The AWS CLI function can be used on the ThingsPro Server to search for ThingsPro gateway devices on the same local network.

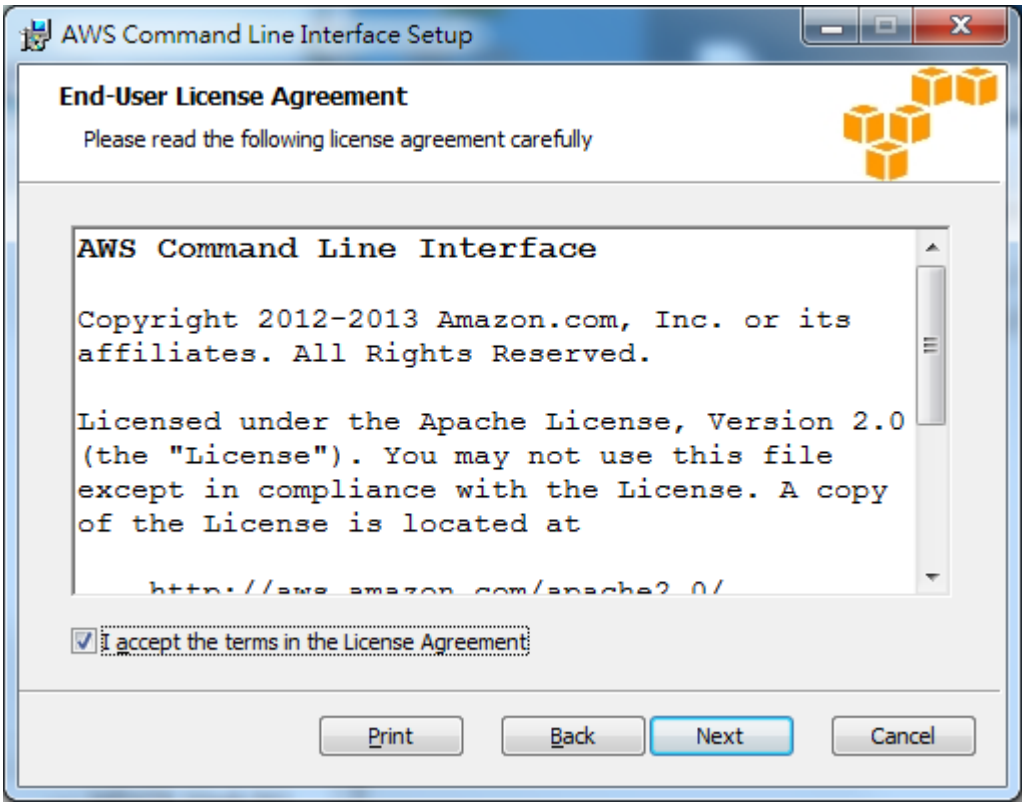
To install the AWS CLI function, do the following

1. Download the AWS CLI software from the following link:
   http://docs.aws.amazon.com/cli/latest/userguide/awscli-install-windows.html
2. Run either the **AWSCLI32.exe** or **AWSCLI64.exe** file depending on the Windows platform on your computer.

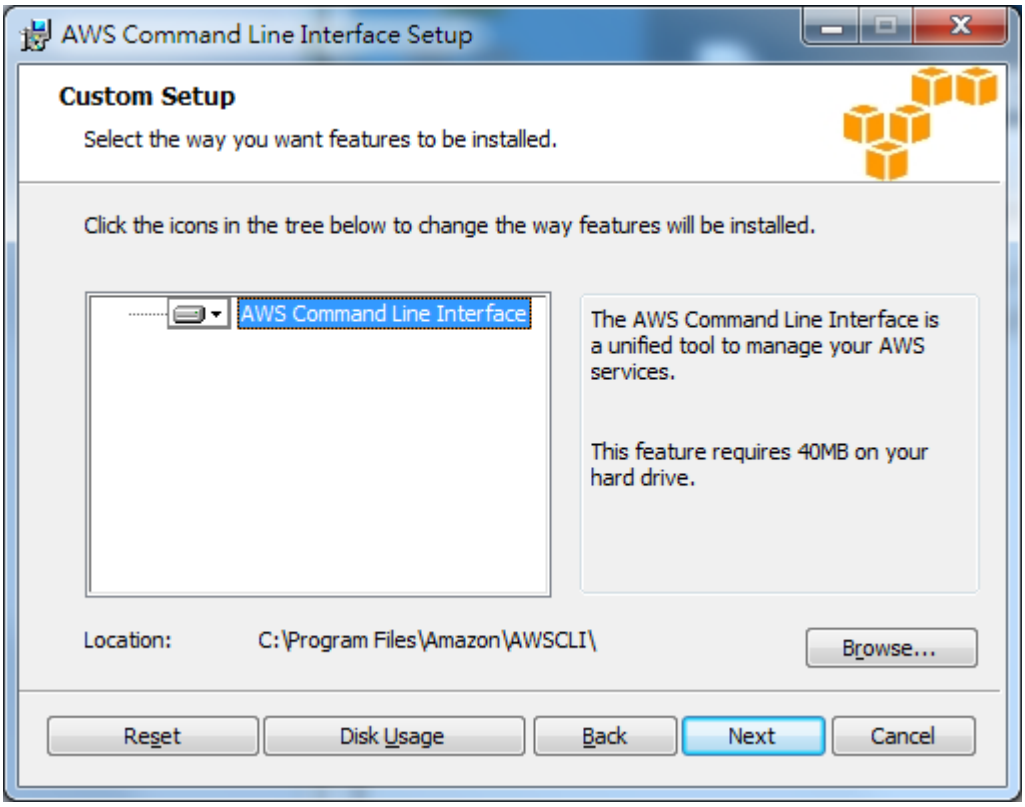
3. Click **Next** to continue**.**



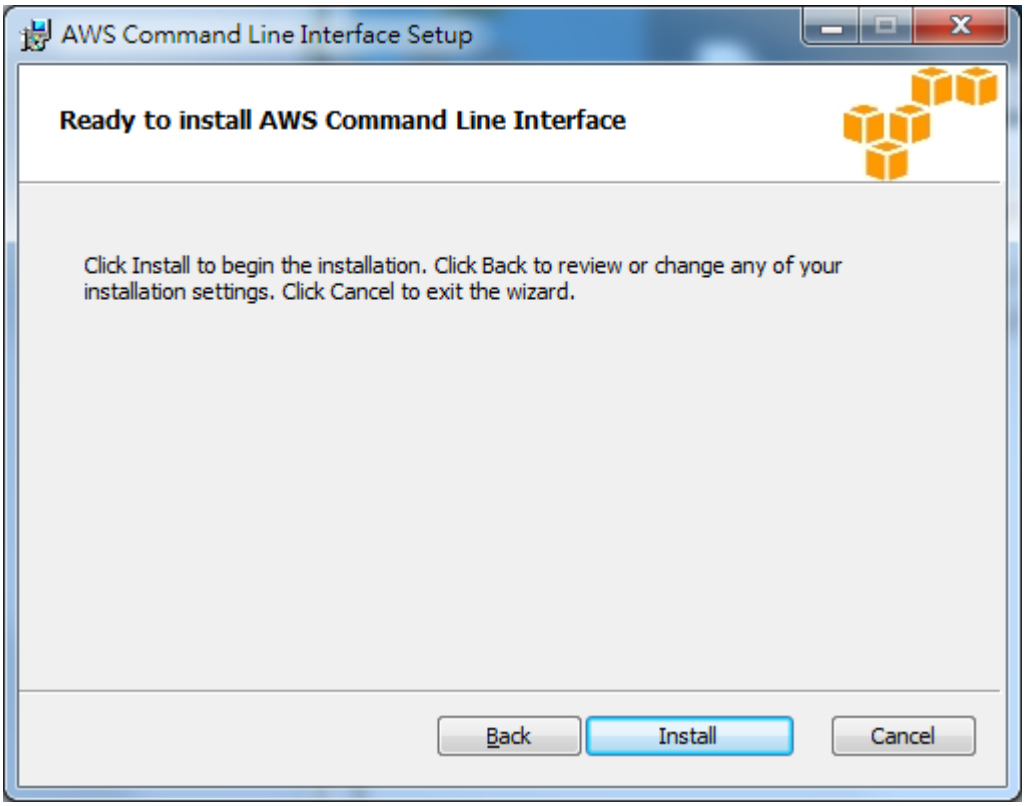
4. Confirm that you accept the license agreement and Click **Next.**



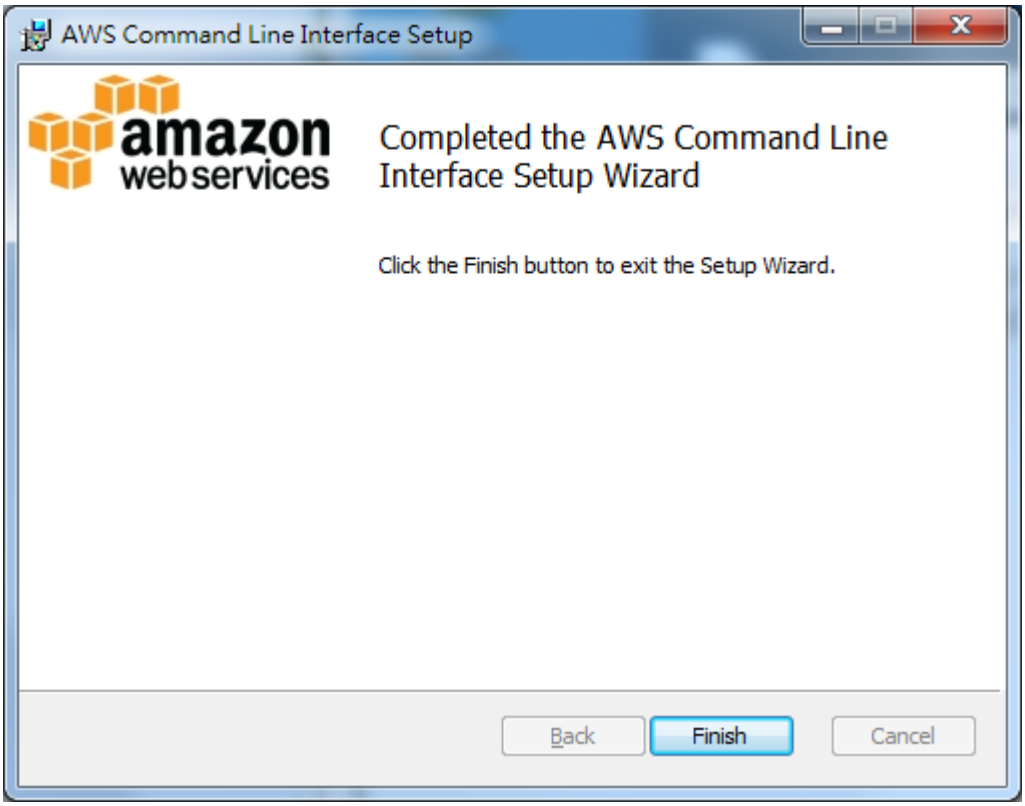
5. If required, click **Browse** to specify a new location.
6. Click **Next.**



7. Click **Install** to start the installation.



8. Wait for the installation to complete and click **Finish** to close the installer.



Configuring the AWS CLI Environment

To configure the AWS CLI environment on your computer, do the following:

1. Register with the Amazon Web Services to get an *access key ID* and *access secret key*.
2. Look up the region code for your region. For example, us-west-2 for US West (Oregon)

Application Auto Scaling

Region Name	Region	Endpoint	Protocol
US East (N. Virginia)	us-east-1	autoscaling.us-east-1.amazonaws.com	HTTP and HTTPS
US West (N. California)	us-west-1	autoscaling.us-west-1.amazonaws.com	HTTP and HTTPS
US West (Oregon)	us-west-2	autoscaling.us-west-2.amazonaws.com	HTTP and HTTPS
Asia Pacific (Singapore)	ap-southeast-1	autoscaling.ap-southeast-1.amazonaws.com	HTTP and HTTPS
Asia Pacific (Sydney)	ap-southeast-2	autoscaling.ap-southeast-2.amazonaws.com	HTTP and HTTPS
Asia Pacific (Tokyo)	ap-northeast-1	autoscaling.ap-northeast-1.amazonaws.com	HTTP and HTTPS
EU (Frankfurt)	eu-central-1	autoscaling.eu-central-1.amazonaws.com	HTTP and HTTPS
EU (Ireland)	eu-west-1	autoscaling.eu-west-1.amazonaws.com	HTTP and HTTPS
South America (São Paulo)	sa-east-1	autoscaling.sa-east-1.amazonaws.com	HTTP and HTTPS

3. Run the **aws configure** command in the command line interface on your computer and provide the AWS registration information as follows:

```
C:\Program Files\Amazon\AWSCLI>aws configure
AWS Access Key ID [****************SGWA]:
AWS Secret Access Key [****************DLQR]:
Default region name [us-west-2]:
Default output format [json]:

C:\Program Files\Amazon\AWSCLI>
```