

ThingsPro Proxy User Manual

Version 4.1, July 2022

www.moxa.com/products

MOXA®

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ThingsPro Proxy User Manual

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1. Introduction

ThingsPro Proxy (TPP) is a Windows-based provisioning tool for batch configuring Moxa IIoT gateways according to specific provisioning plans (hereinafter referred to as “plans”). The provisioning plans include details such as device configuration, cloud-enrollment information, and security settings. The ThingsPro Proxy plans allow field operators to quickly configure/enroll Moxa devices without requiring domain knowledge and without having to go through complex steps, thereby reducing the cost of operation. The device provisioning tasks can be linked to a plan for quick and effortless provisioning.

ThingsPro Proxy can be download from the Moxa website and installed in a Windows 10 environment. Version 3.0 of this user manual is based on **ThingsPro Proxy v1.3.0**.

ThingsPro Proxy leverages the ThingsPro Edge software installed on Moxa devices to provision the devices. ThingsPro Proxy and ThingsPro Edge together provide your devices with an IIoT gateway solution that includes streamlined data transportation from the endpoint to the cloud. Therefore, to provision Moxa devices via ThingsPro Proxy, you will need to install ThingsPro Edge (TPE) on the devices.

2. Installation Guide

In this chapter, we describe how to install the ThingsPro Proxy tool.

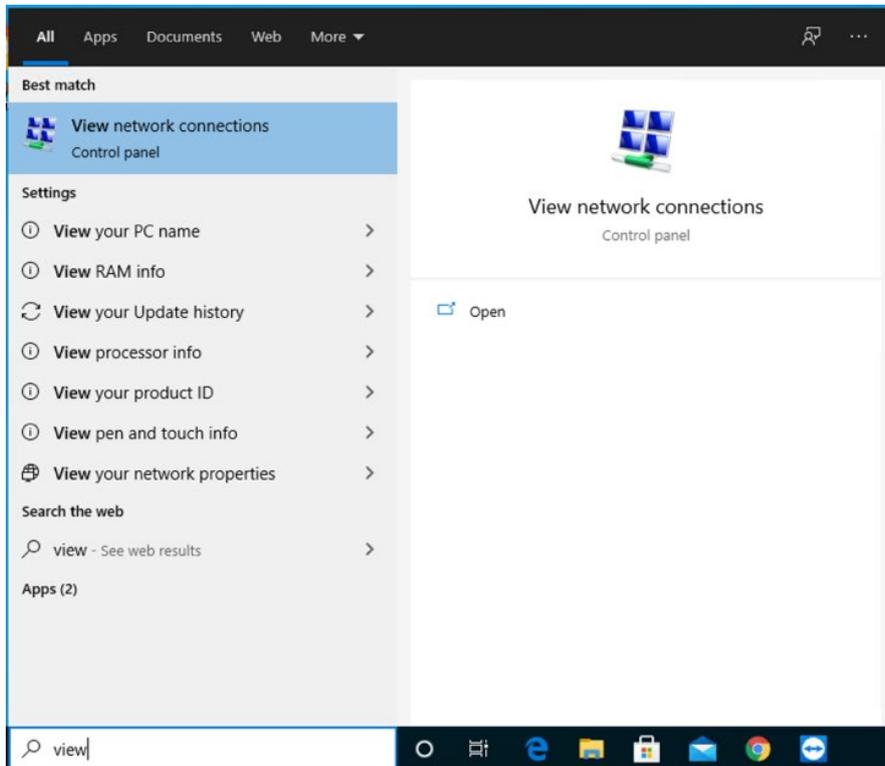
Installing ThingsPro Proxy

Prerequisites

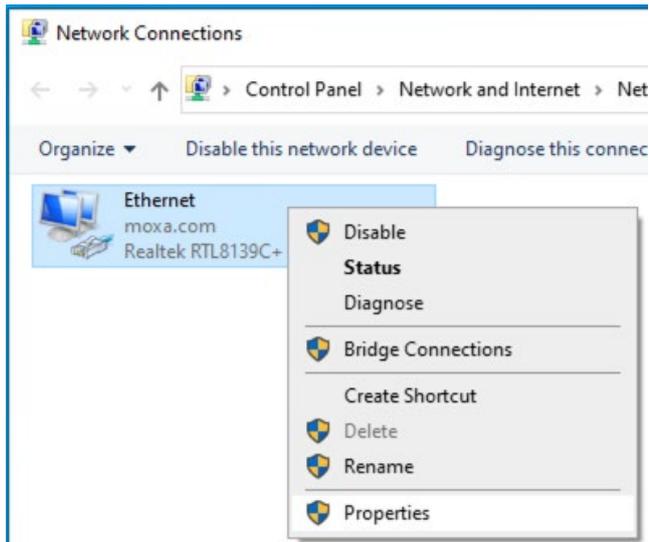
1. PC with Windows 10 OS and Google Chrome browser.
 - Windows 10 version 1809 or later
 - Google Chrome 86.0.4240.183 (64 bit) or later
2. Enable the Link-local IPv6 address on the PC.

To enable the Link-local IPv6 address, do the following:

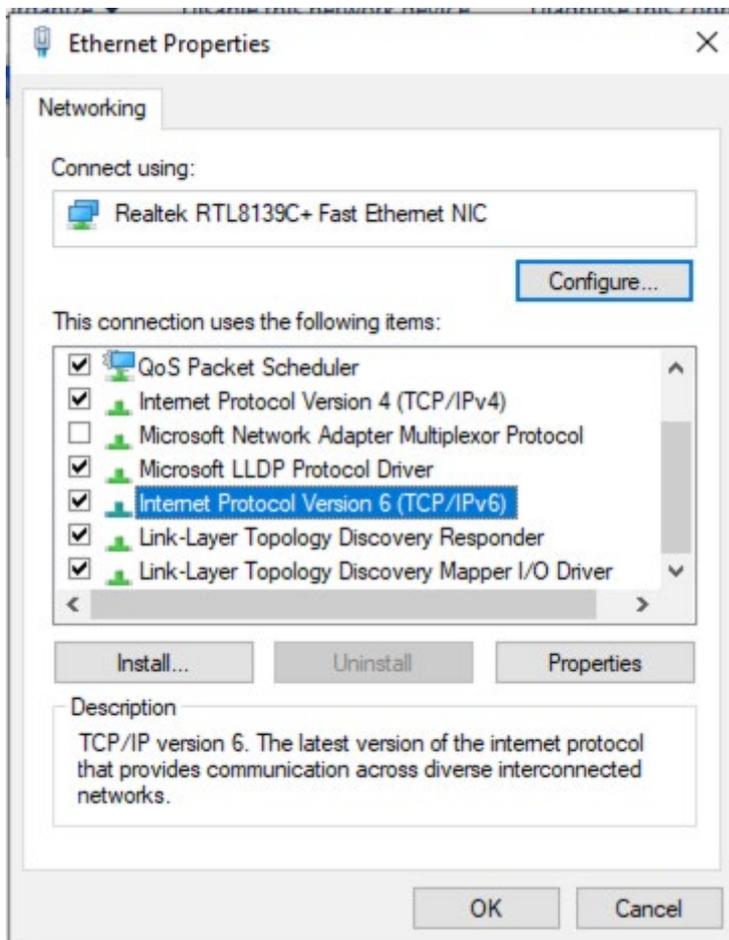
 - a. In the Windows Search box, enter **view network connections** and click **Open**.



- b. Select the network adapter that will be used to discover Moxa devices, right-click the network adapter, and select **Properties**.



- c. Select the **Internet Protocol Version 6 (TCP/IPv6)** option.



NOTE

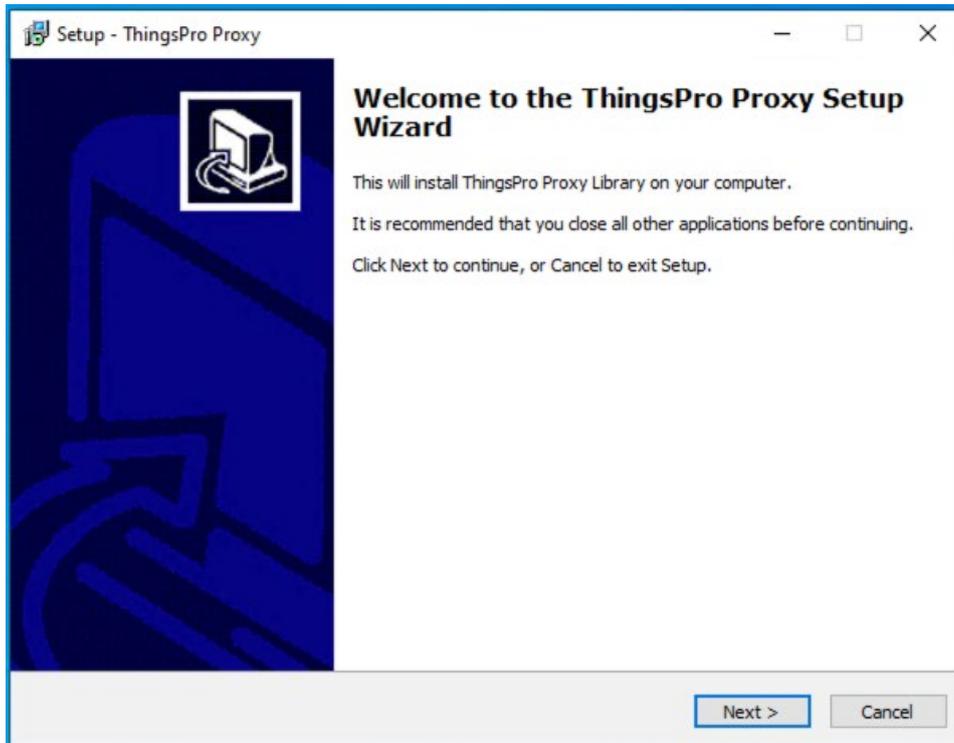
Ensure that the service port 5001 (local host) is available for the ThingsPro Proxy web server.

3. Click **OK** to apply the changes.

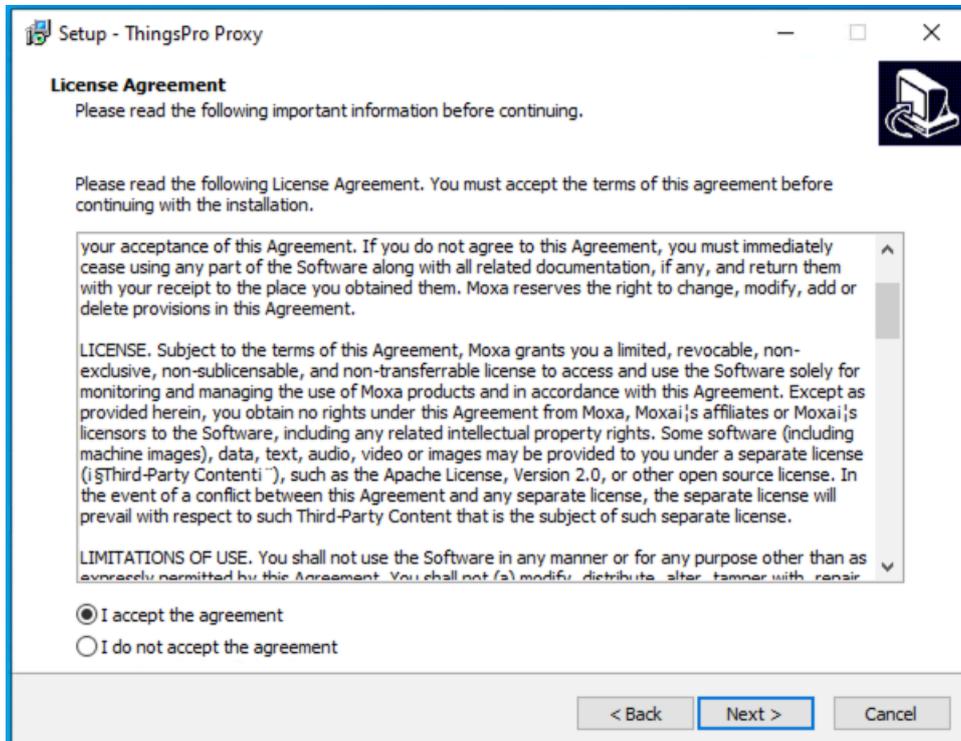
Installation

To install the ThingsPro Proxy App, do the following:

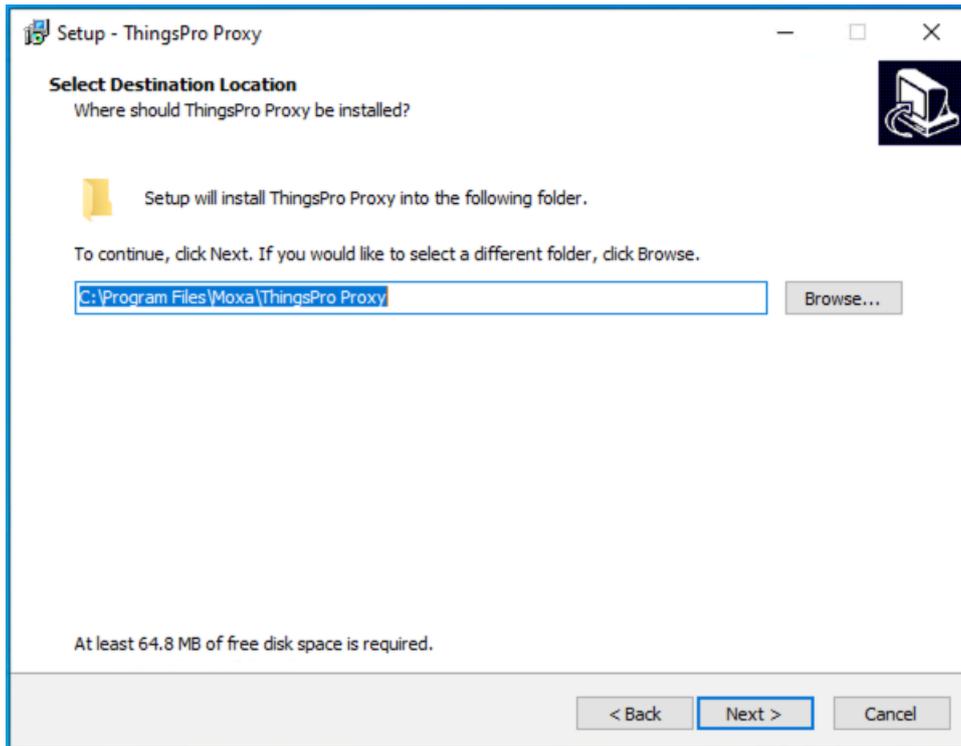
1. Download and run the ThingsPro Proxy installation file **ThingsProProxySetup-x.x.x-yyyyymmdd**.



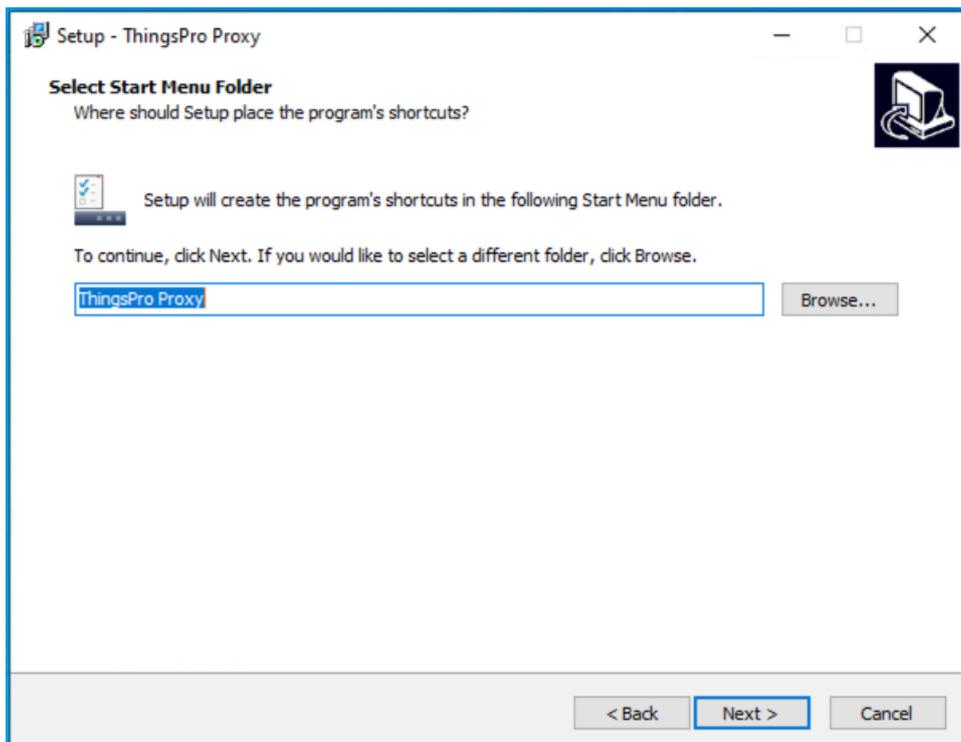
2. Click **Next**.
3. Select the **I accept the agreement** option and click **Next**.



- Specify the folder to install ThingsPro Proxy in and click **Next**.



- Specify the folder to create the ThingsPro Proxy shortcut in and click **Next**.

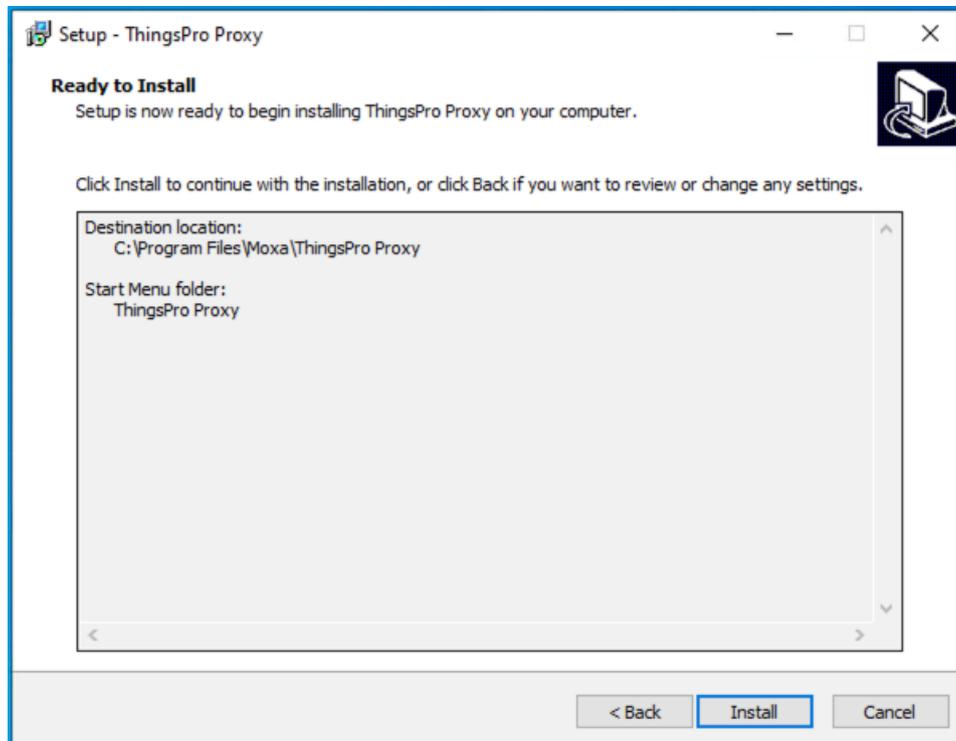


6. Click **Install**.

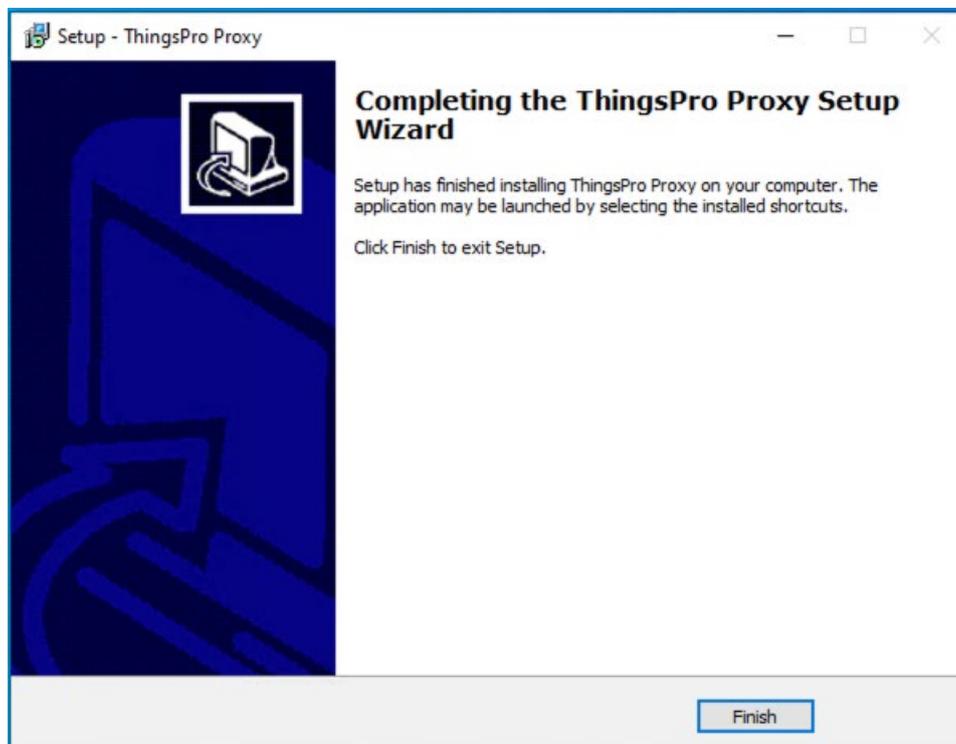


NOTE

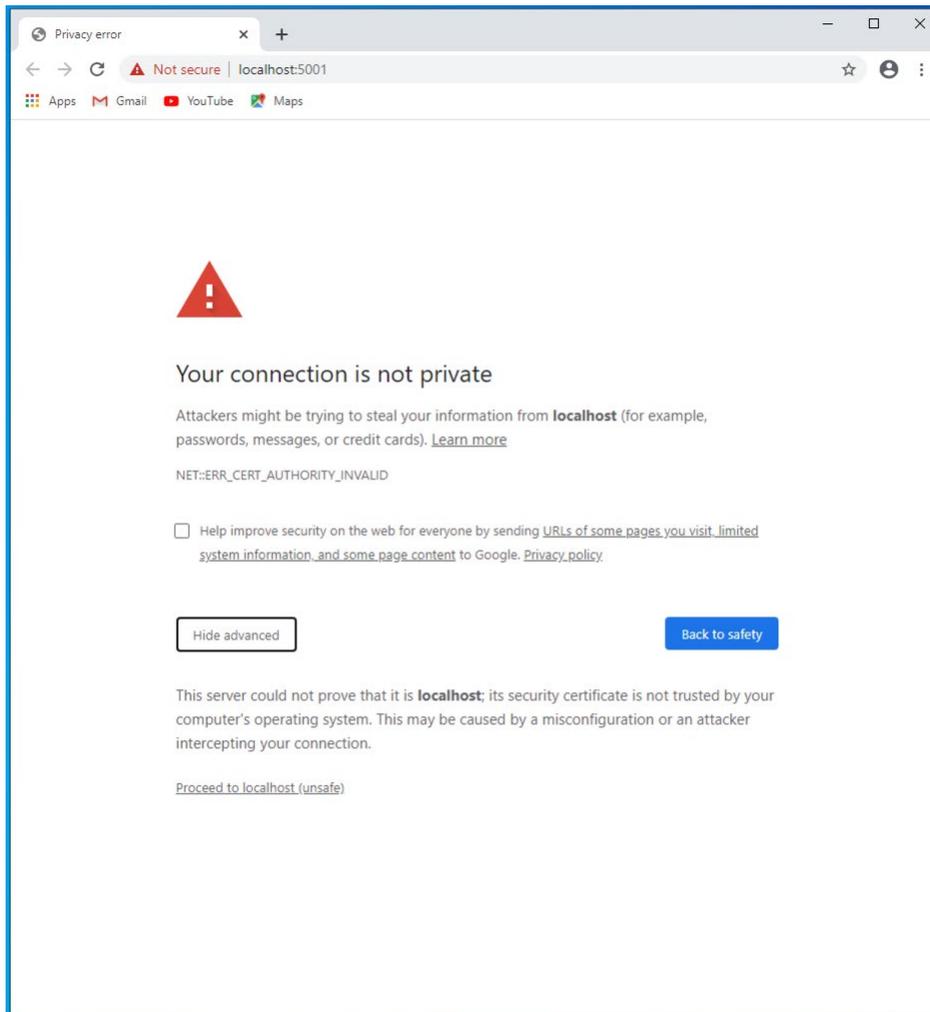
A command line console window (Windows cmd) will open during the installation process. DO NOT close the cmd window.



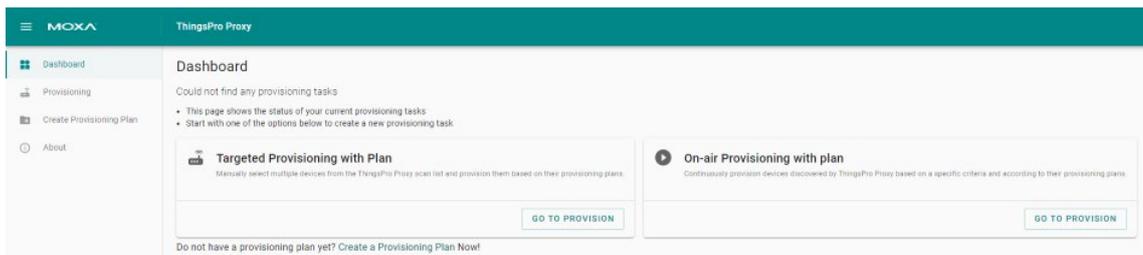
7. After the installation process is complete, click **Finish**.



8. Launch the ThingsPro Proxy App.
A webpage with privacy-related warnings will open.
9. Click **Advanced**.



10. Click **Proceed to localhost (unsafe)**.



NOTE

ThingsPro Proxy utilizes HTTPS to communicate with the web server. The Chrome browser will display a warning because the unsigned certificate used is flagged as a security issue.

3. Configuring ThingsPro Proxy

This chapter describes how to create a provisioning plan in ThingsPro Proxy and provision devices using the plan.

Configuring ThingsPro Proxy

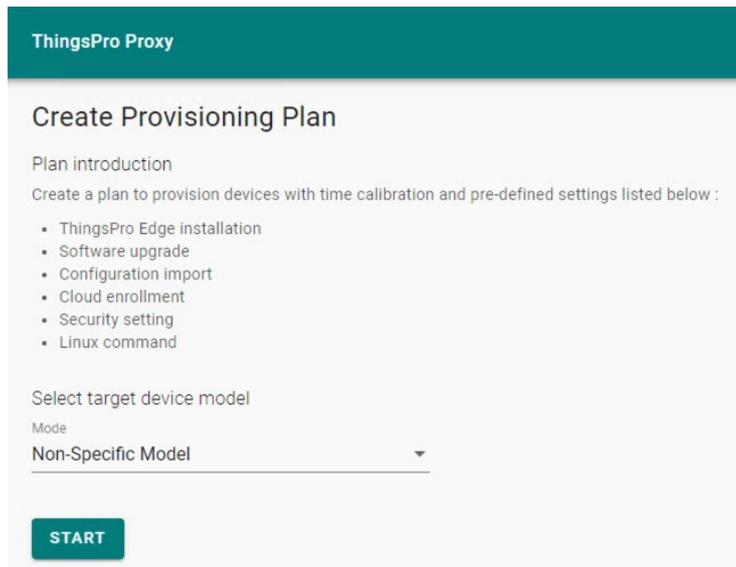
You will require at least one provisioning plan in ThingsPro Proxy before you can provision devices.

Creating a Provisioning Plan

A wizard will guide you through the process of creating a provisioning plan, which includes software upgrade, configuration import, cloud enrollment, and security settings. You can also view the settings before finalizing the plan.

To create a provisioning plan, do the following:

1. Click on the **Create Provisioning Plan** link.

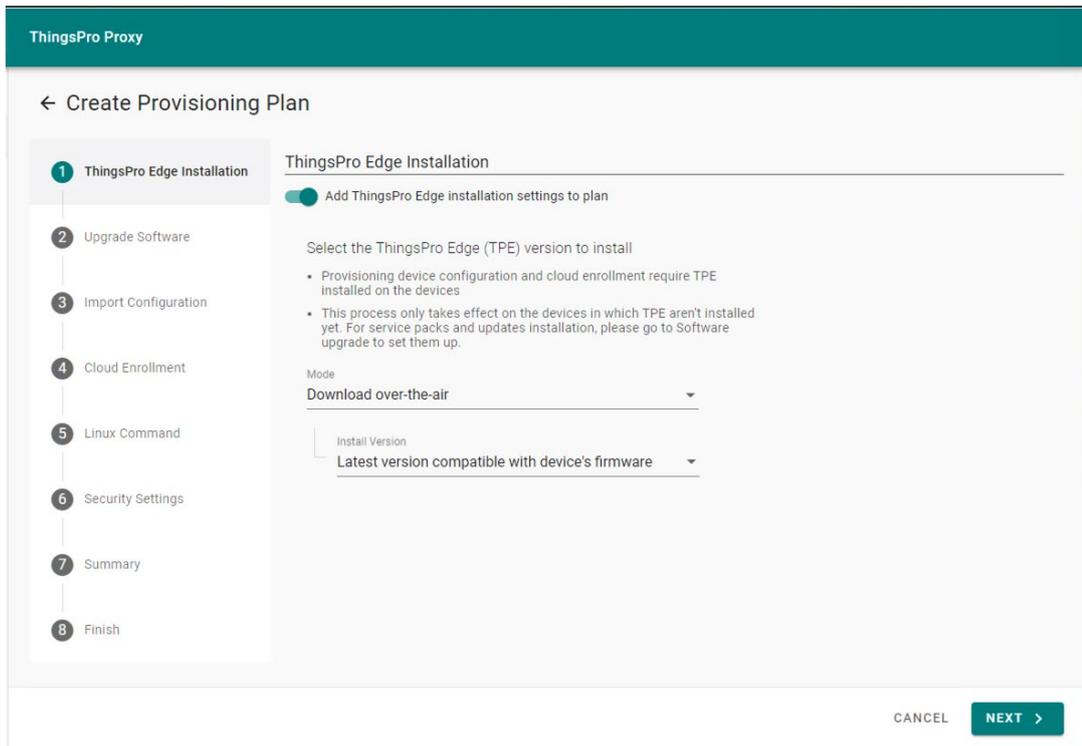


2. Select the target device model and click **START**.
3. Specify the **ThingsPro Edge (TPE) Installation** settings and click **NEXT**.
 - a. Enable/disable the TPE installation settings using the **Add ThingsPro Edge installation settings to plan** slider.
 - b. Select a mode.
 - i. **Download over-the-air:** Specify a version of ThingsPro Edge or select the latest version.
 - ii. **Upload from my local drive:** Upload a ThingsPro Edge file that you want to install.

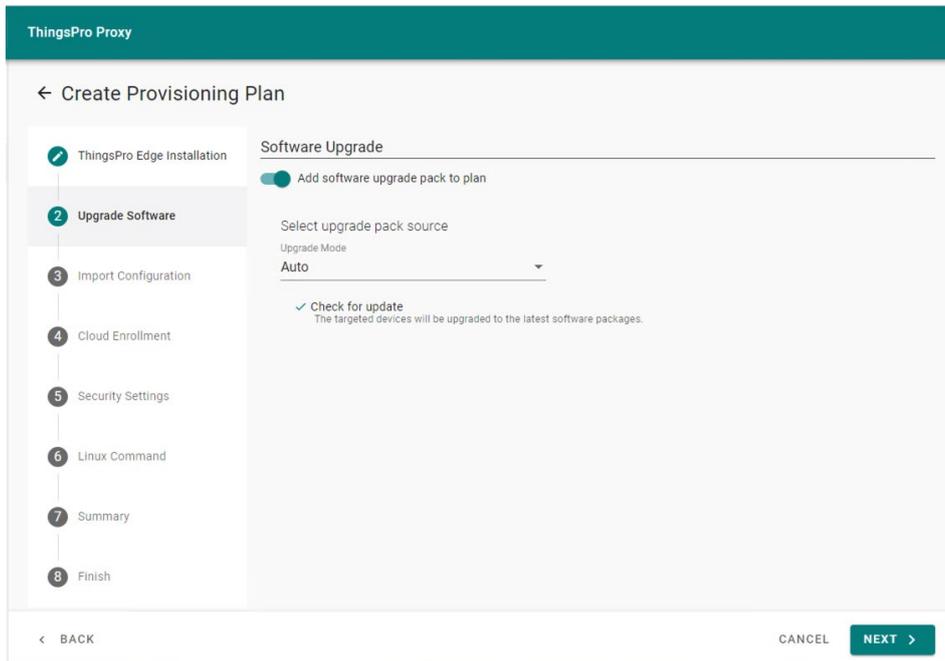


NOTE

The AIG series devices come with ThingsPro Edge preinstalled. Hence, the installation step is disabled for these models



4. Specify the software upgrade settings and click **NEXT**.
 - a. Enable/disable software upgrade using the **Add software upgrade pack to plan** slider.
 - b. If you have enabled software upgrade, choose a method to upgrade the software pack—**Auto** or **manual**—and browse to the folder path or specify a cloud URL.



- To import a configuration file, enable the **Add configuration settings to plan** slider, browse to the file, and specify the associated **Password**. Click **NEXT**.

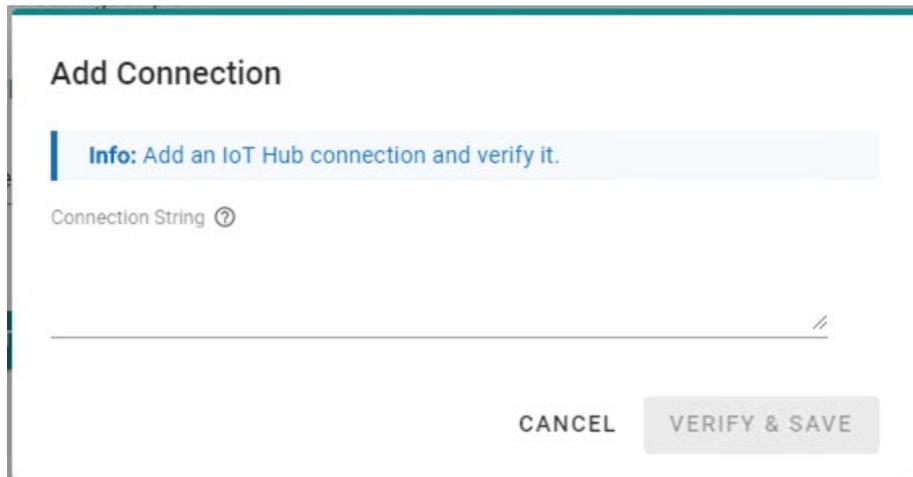
The screenshot shows the 'Import Configuration' step of the 'Create Provisioning Plan' wizard. On the left, a vertical progress bar lists steps 1 through 8: ThingsPro Edge Installation, Upgrade Software, Import Configuration (highlighted), Cloud Enrollment, Security Settings, Linux Command, Summary, and Finish. The main content area has a toggle switch for 'Add configuration settings to plan' which is turned on. Below it, the text 'Select configuration file to be uploaded' is followed by a 'Configuration File' label and a 'BROWSE...' button. Underneath is a 'Configuration Password' label and a text input field with a password icon.

- (optional) In the Cloud Enrollment page, click **Manage** and select **Edit** to change the settings. To add more cloud services, click **+ Add another**.

The screenshot shows the 'Cloud Enrollment' step of the 'Create Provisioning Plan' wizard. The progress bar on the left highlights step 4, 'Cloud Enrollment'. The main content area has a toggle switch for 'Add cloud service settings to plan' which is turned on. Below it, the text 'Enroll on to the cloud server' is followed by a cloud icon, the text 'Not selected cloud server', and a 'MANAGE' button with a dropdown arrow. Below that is a 'not completed' status and a '+ Add another' link.

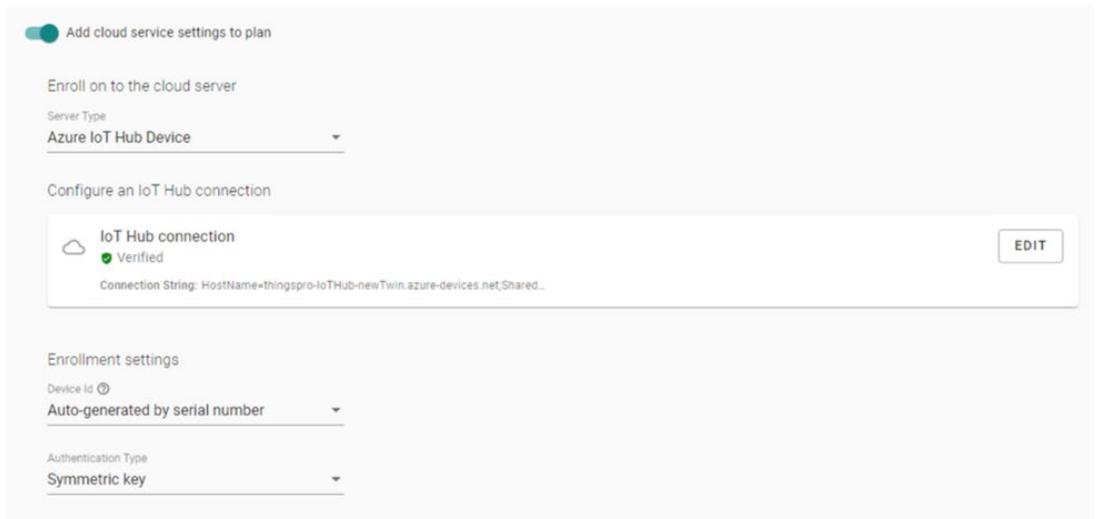
a. Azure IoT Device/ Azure IoT Edge

- i. Enter the **Connection String** and click **VERIFY & SAVE**.



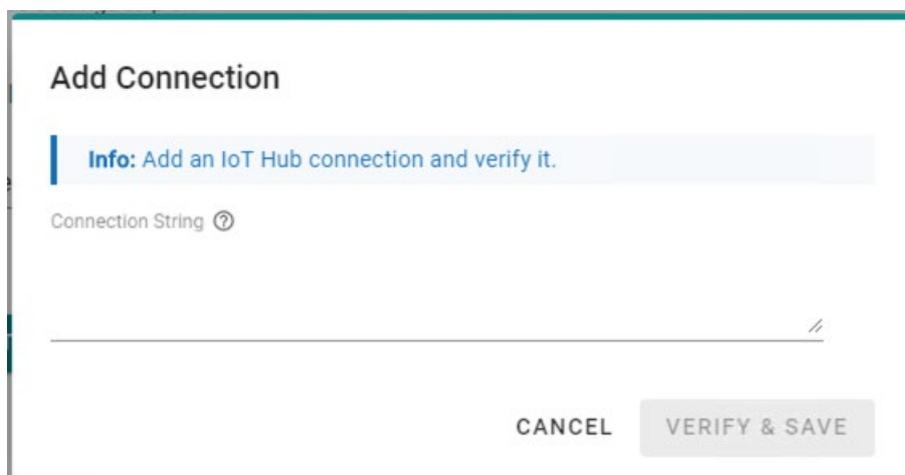
- ii. If you want to edit the **Connection String**, click **EDIT**.

The Device ID is auto generated by using the serial number of the device and authenticated via a symmetric key.



b. Azure DPS

- i. Enter the **Connection String** and click **VERIFY & SAVE**.



- ii. If you want to edit the Connection String, click **EDIT** and enter the **ID Scope**.

The Device ID is auto generated using the serial number of the device and authenticated via a symmetric key.

The screenshot shows the 'Enrollment settings' page in the ThingsPro Proxy interface. The page is divided into a left sidebar with navigation options (Dashboard, Provisioning, Create Provisioning Plan, About) and a main content area. The main content area contains the following settings:

- Id Scope:** A red error message 'The value is required' is displayed above the 'Device Id' field. The dropdown menu is set to 'Auto-generated by serial number'.
- Authentication Type:** A dropdown menu set to 'Symmetric key'.
- IoT Edge Device:** A checkbox labeled 'The provisioning device is an IoT Edge-capable device' is currently unchecked.
- Assign Policy:** A dropdown menu set to 'Evenly weighted distribution'.
- Assign To IoT Hubs:** A red error message 'The value is required' is displayed above this field.
- Re-provisioning Policy:** A dropdown menu set to 'Re-provision and migrate data'.
- Initial Device Twin State:** A text area containing a JSON object:

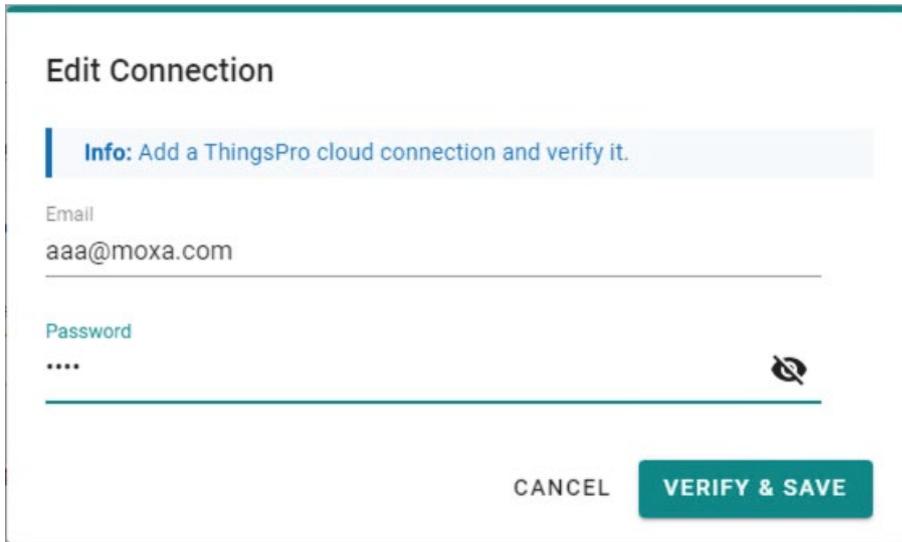
```
{
  "properties": {
    "desired": {}
  }
}
```

A '< BACK' button is located at the bottom left of the main content area.

- iii. (optional) Select **The provisioning device is an IoT Edge-capable device**.
- iv. Select an **Assign Policy**.
- v. Enter the name of the **IoT Hubs**.
- vi. Select a Re-provisioning policy.
- vii. (optional) Customize the Initial Device Twin State.
- viii. Click **NEXT**.

c. Moxa DLM Service

- i. Select the service type **Moxa DLM Service**.
- ii. Enter an **Email** (account) and **Password**.



Edit Connection

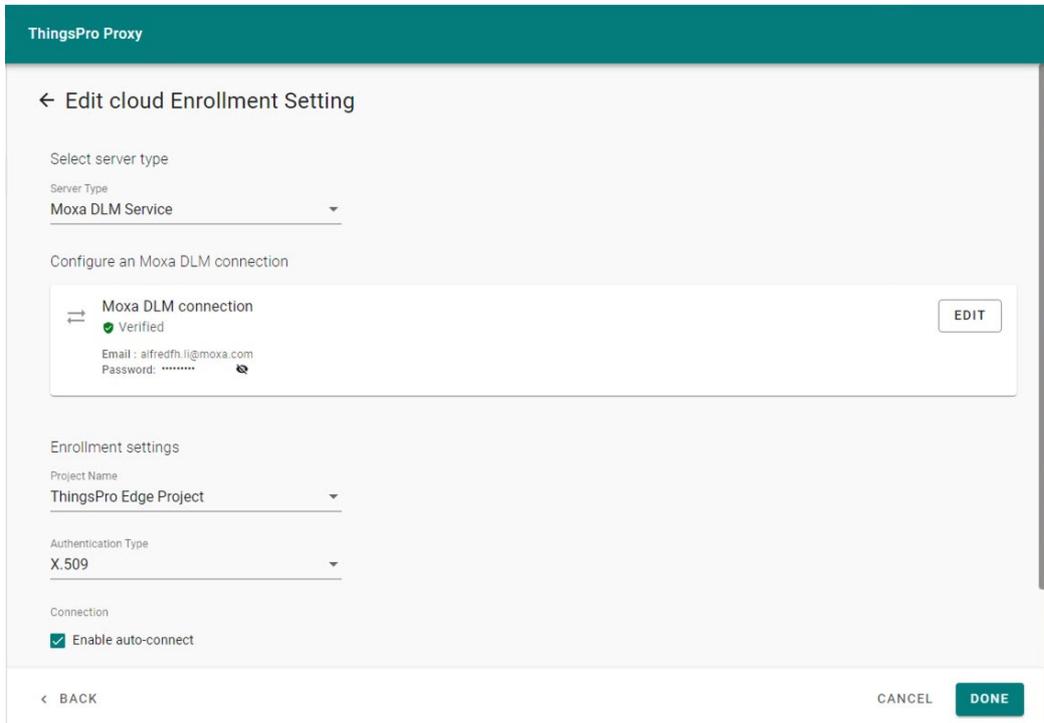
Info: Add a ThingsPro cloud connection and verify it.

Email
aaa@moxa.com

Password

CANCEL VERIFY & SAVE

- iii. Select a project name to register devices.



ThingsPro Proxy

← Edit cloud Enrollment Setting

Select server type

Server Type
Moxa DLM Service

Configure an Moxa DLM connection

Moxa DLM connection
✔ Verified
Email : alfredh.li@moxa.com
Password: *****

EDIT

Enrollment settings

Project Name
ThingsPro Edge Project

Authentication Type
X.509

Connection
 Enable auto-connect

< BACK CANCEL DONE

- iv. Click **NEXT**.

d. AWS IoT Core

- i. Enter the **Access Key ID** and **Secret Access Key** and click **VERIFY & SAVE**.

Add Connection

Info: Add an AWS IoT Core connection and verify it.

Access Key ID ?

Secret Access Key ?

CANCEL VERIFY & SAVE

- ii. If you want to edit the **Access Key ID** and **Secret Access Key**, click **EDIT**.
- iii. The Thing Name is auto generated by using the serial number of the device.

← Edit cloud Enrollment Setting

Select server type

Server Type
AWS IoT Core

Configure an AWS IoT Core connection

↔ AWS IoT Core connection
Verified
Access Key ID: AKIATM2PBA27J7E2GFYX
Secret Access Key: ***** EDIT

Enrollment settings

Region *
Asia Pacific (Hong Kong)

Thing Name ?
Auto-generated by serial number

The thing will use "ThingsProEdge-default" as the default policy. Moreover, ThingsPro Proxy will create the policy automatically if it's not existed. The default policy will allow all the resources. We recommend the users should modify the policy with some restrictions later via the AWS portal.

- 7. (optional) You can disable a provisioning service to prevent devices from being discovered or modify the current password. Click **NEXT** to apply the changes.

Set security settings on devices

Disable Provision Service
These devices cannot be found after provision service gets disabled

Change password

Password

Confirm Password

- (optional) You can upload Linux command scripts and deploy them to targeted devices. The supported file formats include tar.gz, bash, binary, executables, and Python3 package.

The screenshot shows the 'Create Provisioning Plan' interface in ThingsPro Proxy. On the left is a vertical progress bar with steps: ThingsPro Edge Installation, Upgrade Software, Import Configuration, Cloud Enrollment, Security Settings, Linux Command (highlighted with a '6'), Summary, and Finish. The main area is titled 'Linux Command' and contains a toggle switch 'Add linux command settings to plan' which is turned on. Below it, there is a section 'Select linux command file to be uploaded' with a 'Linux Command File' label and a 'BROWSE...' button. At the bottom of this section, there is an 'Execution Timeout (sec)' field with the value '600'. At the very bottom of the screen are 'BACK', 'CANCEL', and 'NEXT >' buttons.



NOTE

You must include the following command in the Linux command file to request an authentication token for the ThingsPro Edge API.

curl https://127.0.0.1:8443/api/v1/auth

```
token=$(curl https://127.0.0.1:8443/api/v1/auth -X POST -H "Content-Type:application/json" -d '{"name":"admin","password":"admin@123"}' -k | jq -r .data.token)
curl https://127.0.0.1:8443/api/v1/function \
-X PATCH -H "Content-Type:application/json" \
-H "x-api-token:$token" \
-d '{"name":"demo","enabled":true,"trigger":{"driver":"lineDriven","dataDriver":{"tags":{},"events":{},"lineDriver":{"mode":"boot","intervalSec":1,"cronJob":""},"expose":{"tags":{}}
```

- Specify a plan name, assign a password, and click **CREATE**. The password is used to encrypt the plan and then decrypt it before importing the plan.

This screenshot is identical to the one above, showing the 'Create Provisioning Plan' interface in ThingsPro Proxy, specifically the 'Linux Command' step. It includes the progress bar, the 'Add linux command settings to plan' toggle, the 'BROWSE...' button for the Linux Command File, and the 'Execution Timeout (sec)' field set to 600.

10. Click **DOWNLOAD & FINISH** to download the plan.
The plan will be downloaded as a *.zip file.



NOTE

ThingsPro Proxy uses plans to provision devices. Plans can be stored in a secure location and used in the different workplaces where ThingsPro Proxy is installed.

Provisioning Devices

There are two ways to provision devices: **Targeted Provisioning** and **On-air Provisioning**.

- Targeted Provisioning** You can specify a batch of devices for provisioning based on the device model, firmware version, ThingsPro Edge version, and communication interfaces.
- On-air Provisioning** ThingsPro Proxy will automatically scan all compatible devices in LAN and batch deploy the configuration based on the specified plan.



NOTE

ThingsPro Proxy relies on the UDP port 40404 for scanning devices in the same network. Be sure to add UDP port 40404 to the firewall allowed list for proper device discovery.

To provision devices, do the following:

1. After you have created a provisioning plan, click on the **Provisioning** link.
2. Choose the mode of provisioning: **Targeted Provisioning** or **On-air Provisioning**.

| Model Name | Permission | Serial No. | TPE Installed | TPE Version | Firmware Version |
|---|------------|--------------|-------------------------------------|-------------|------------------|
| <input type="checkbox"/> UC-8100A-ME-TLX | Granted | TAICB1046775 | <input checked="" type="checkbox"/> | 2.2.0-2895 | 1.5 |
| <input checked="" type="checkbox"/> AIG-301-T-US-AZU-LX | Granted | TRDSMP000009 | <input checked="" type="checkbox"/> | 2.1.0-2412 | 1.0 |
| <input type="checkbox"/> UC-8210-T-LX | Granted | TBZKB1022297 | <input checked="" type="checkbox"/> | 2.1.1-2821 | 1.2 |

3. (optional) Edit the default credential to discover your devices.
You can click **EDIT** in the **Device Access** section to change the default credentials so that the devices whose default credentials have been changed can be discovered.
4. Select devices to discover or press **SCAN** to re-scan the LAN for devices.
5. Click **NEXT**.
6. Select the provisioning plan file.
 - **New plan file:** Select this option to browse to a file in a local computer.
 - **Recent plan files:** Choose from an existing plan and enter the associated password.
7. Click **UPLOAD**.

Provisioning

General settings — 2 Settings for actions — 3 Confirm

Select provisioning plan file

New plan file
Select a new provisioning plan file from local.

Recent plan files
Select a used plan file in the history list of plans.

Plan File
MoxaDLMEnroll_0823b424-41b6-4076-9906-d46430f358c2

Plan Password *

UPLOAD

Did not have the plan? [Create Provisioning Plan Now !](#)

8. Click **NEXT**.

Provisioning

General settings — 2 Settings for actions — 3 Confirm

Select provisioning plan file to be uploaded

Plan File
DLMenroll_5518d337-a208-4071-8c14-4b36d9fa36ce.zip

Plan Content

ThingsPro Edge Installation
Installation Version : -

Upgrade software

Configuration
Configuration File : -
Configuration Password : -

Cloud Enrollment
Server Type : Moxa DLM Service
Email : alfredh.li@moxa.com
Authentication Type : X.509
Project Name : Demo - TPE-inside

< BACK CANCEL **NEXT** >

9. Click **APPLY**.

Provisioning

General settings — 2 Settings for actions — 3 Confirm

Confirm plan and device list

DLMenroll
TPE Installation: -
Software Upgrade: -
Configuration Import: - DETAIL

Eligible Device (1) Ineligible Device (0)

Device list can be provisioned SEARCH

| Model Name | Serial No. | TPE Installed | TPE Version | Firmware Version | Message |
|--------------------|--------------|---------------|-------------|------------------|---------|
| AIG-301-TUS-AZU-LX | TRDSMP000009 | Installed | 2.1.0-2412 | 1.0 | - |

Items per page: 10 1 - 1 of 1 |< < > >|



NOTE

For ThingsPro Proxy to be able to discover devices correctly, the Ethernet interfaces should have a proper IP address, subnet mask, and default gateway configured. We recommended enabling a DHCP server to allocate IP addresses to devices instead of assigning them manually.



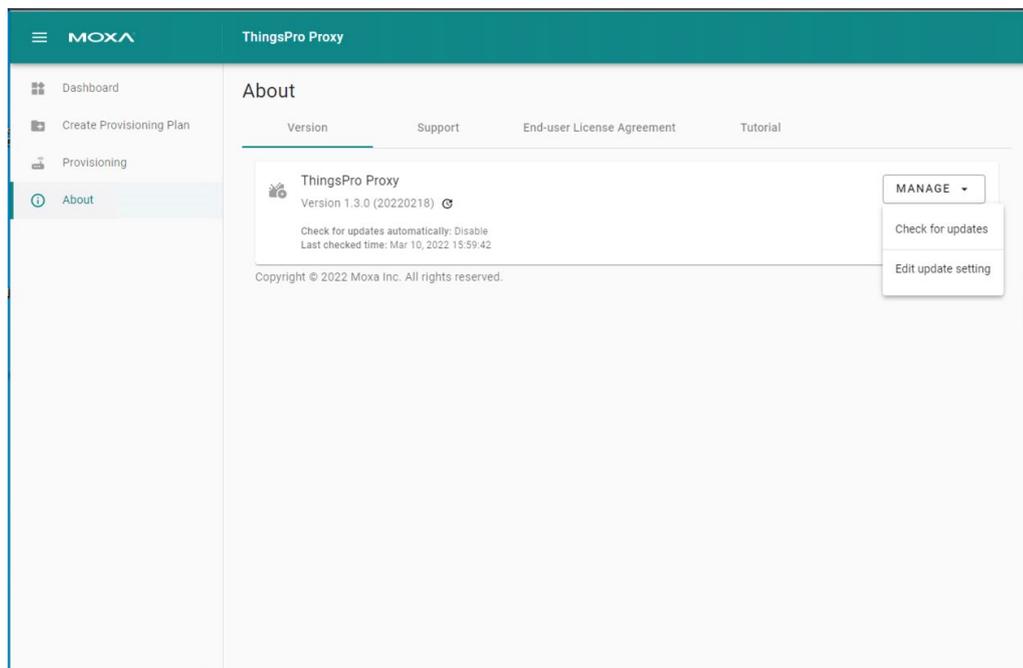
NOTE

Before running the provisioning plan, ThingsPro Proxy will synchronize your server time on to the devices.

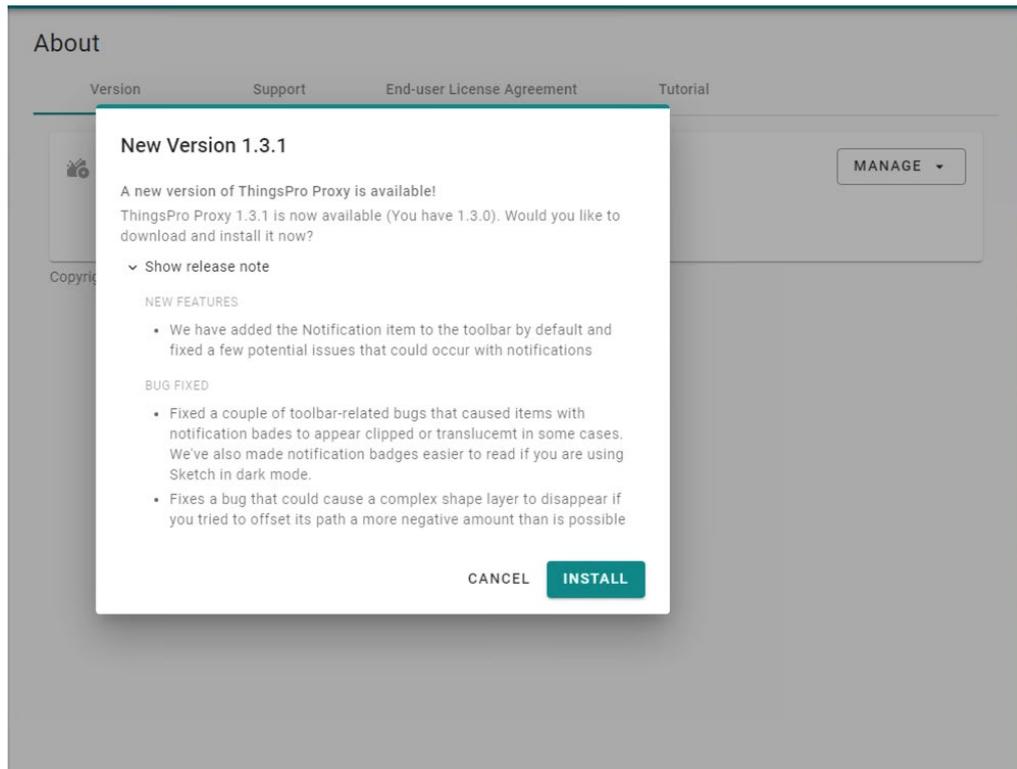
Checking for Updates

You can configure ThingsPro Proxy to update automatically. To configure auto-update, do the following:

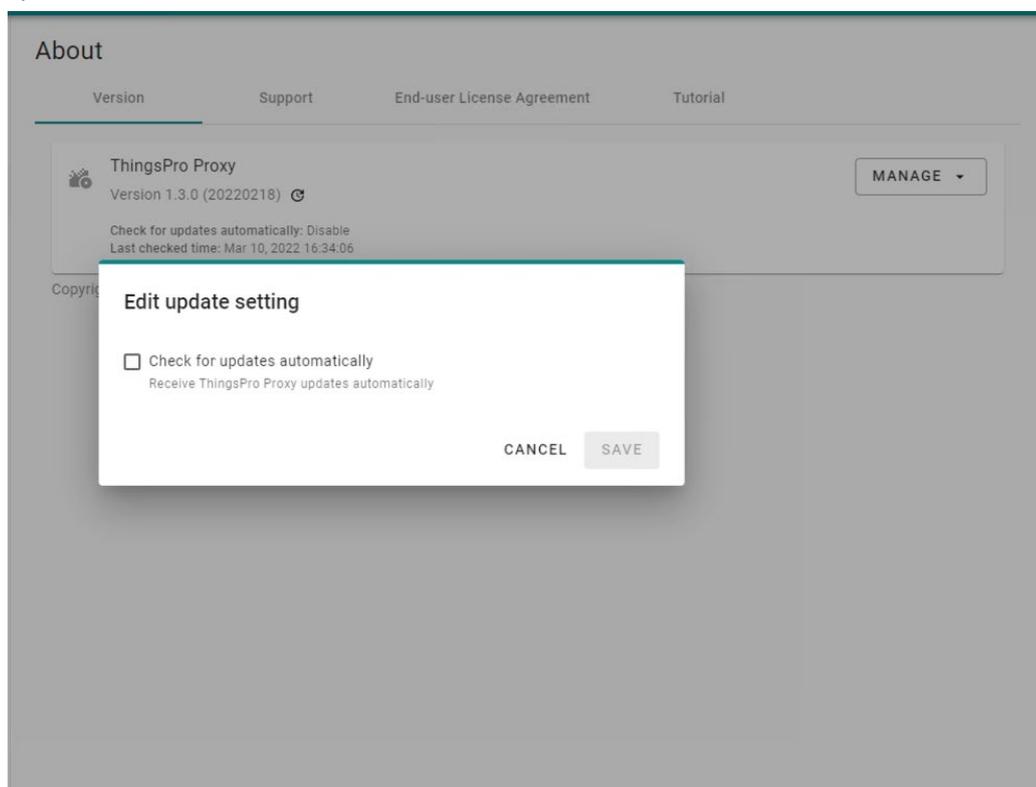
1. Go to the About page.
2. Click **MANAGE** and select **Check for updates**.



3. If a new version is available, the information will be presented. Click **INSTALL** to install the new version as needed.



4. (optional) Automatic check for updates is disabled by default. You can select the **Edit update setting** option under **MANAGE** to enable this service.



4. Known Issues and Limitations

1. ThingsPro Proxy v1.x.x does not support running multiple plans simultaneously.
2. A connection failed message is displayed if the Ethernet interfaces are not able to get an IP address assigned after ThingsPro Edge is installed. The LAN1 interface of ThingsPro Edge is DHCP enabled by default and this error results in the ThingsPro Proxy not being able to access ThingsPro Edge.



NOTE

If devices are discovered via Wi-Fi (Client mode), they cannot be provisioned (grayed-out in the search results).

3. DO NOT insert SIM cards before the provisioning process is complete.
4. ThingsPro Edge has about 15 minutes to provisioning a device after it is powered on.
Before starting the provisioning process, ensure that the ThingsPro Proxy tool is ready, and the devices are powered on.
5. The time taken to install ThingsPro Edge (TPE) is subject to the capacity of the devices. For example, it might take around 30 minutes to install TPE on a UC-8100A-ME-T Series device.
6. If the TPP web GUI is disconnected for an extended period and does not reconnect, you can stop and restart the service.
Click on the Windows Start button and select the ThingsPro Proxy folder. Click **Stop ThingsPro Proxy Service** and then **Start ThingsPro Proxy Service** to relaunch the TPP service.
7. Devices newly registered with AWS IoT Core sometimes require a reboot to be available.