AIOT CLOUD CORP.

AIC OT-X

User Manual

AIOT CLOUD CORP.
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FAQ

User Guides

Contents

Preface

Disclaimer 1
Acknowledgements 1

Chapter 1: AIC OT-X Introduction

Chapter 2: AIC OT-X Basics

2.1 System 3
2.1.1 Info 4
2.1.2 Performance 6
2.1.3 Time 9
2.1.4 Service 11
2.1.5 Setup 14
2.2 Network 16
2.2.1 Device 17
2.2.2 WiFi 18
2.2.3 Firewall 19
2.3 License 21
2.4 App 22
2.4.1 IoT Studio 22
2.4.1.1 Status 23
2.4.1.2 Users 26
2.4.1.3 Option 28
2.4.1.4 License 29
2.4.2 OpcUa Extender 31
2.4.2.1 Status 32
2.4.2.2 Endpoints 34
2.4.2.3 Users 37
2.4.2.4 Industrial Protocols 39
2.4.2.5 Historical 42
2.4.2.6 Alarm & Event 45
2.4.2.7 Option 47
2.4.2.8 License 48
2.5 About 51

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CONTENTS

Chapter 3: Advanced Functions

3.1 System App 52
3.2 Admin 53

Read me: How to Get IP Address

AIC OS-X 55
On Ubuntu Desktop: 57
Get IP address from terminal 57
Get IP address by UI 59
On Ubuntu Server: 61

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PREFACE

Disclaimer

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Acknowledgements

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Chapter 1: AIC OT-X Introduction

AIC OT-X is a software system developed based on the latest Ubuntu Operating System, it can transform your IPC into an Industry 4.0 gateway or edge server. It provides a web-interface for configuration and pre-defined configuration to make it easy to use.

The preload AIC IoT Studio is the latest flow management tool for the Operational Technology (OT) and Information Technology (IT) integration. Our flows support device operation inspection, monitoring and automation to ensure the device running smoothly.

The preload AIC OpcUa Extender supports up to 6000 nodes(*) to support standard and customized Information models with low latency throughput. The industrial protocols can directly access the PLC/HMI tags by Modbus RTU and Modbus TCP drivers or import nodes/tags from *.csv file. All time stamp historical data can be saved to MS SQL/My SQL for further AI/BI analytics.

AIC OT-X not only incorporates IPC hardware and software system information, but also features our in-house developed, powerful IoT Studio and OpcUa Extender. In addition, we have integrated well-known external applications such as Eclipse Mosquitto, Grafana, MS SQL, MySQL, and Portainer.

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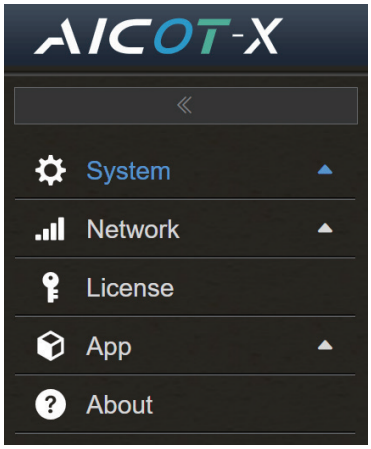
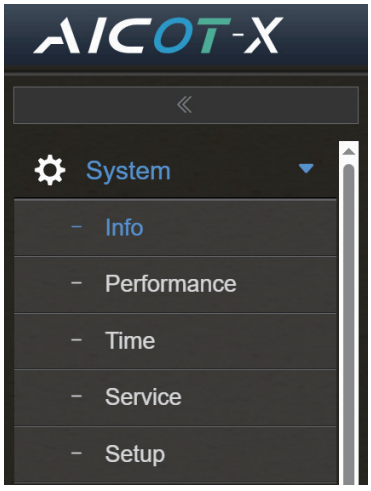
Chapter 2: AIC OT-X Basics

The AIC OT-X contains 5 parts of System, Network, License, App, and About.



2.1 System

The System page contains 5 parts of Info, Performance, Time, Service, and Setup.



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2.1.1 Info

The Info page contains Information and Disk List.

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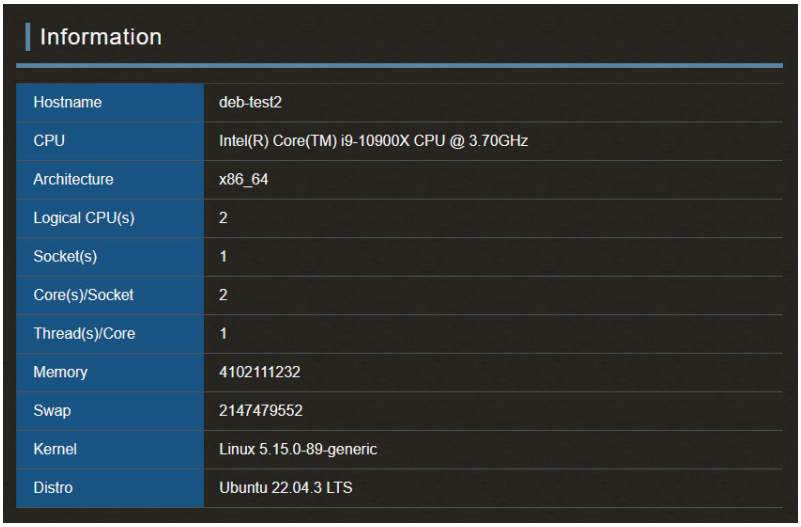
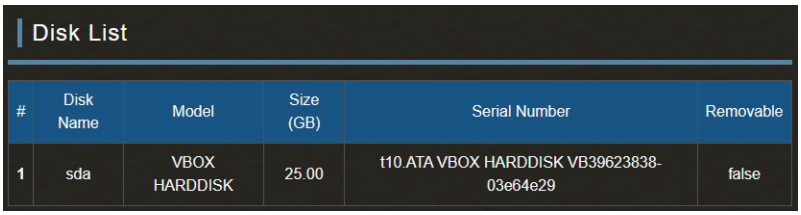
The Information displays Hostname, CPU, Architecture, Socket (s) … etc. of AIC OT-X System.
The information varies depending on the hardware configuration.
The following is just a reference example.



Information

Hostname	deb-test2
CPU	Intel(R) Core(TM) i9-10900X CPU @ 3.70GHz
Architecture	x86_64
Logical CPU(s)	2
Socket(s)	1
Core(s)/Socket	2
Thread(s)/Core	1
Memory	4102111232
Swap	2147479552
Kernel	Linux 5.15.0-89-generic
Distro	Ubuntu 22.04.3 LTS

The Disk List displays Disk Name, Model, its Size, and Serial Number.
The information varies depending on the hardware configuration.
The following is an example for reference.



Disk List

#	Disk Name	Model	Size (GB)	Serial Number	Removable
1	sda	VBOX HARDDISK	25.00	t10.ATA VBOX HARDDISK VB39623838-03e64e29	false

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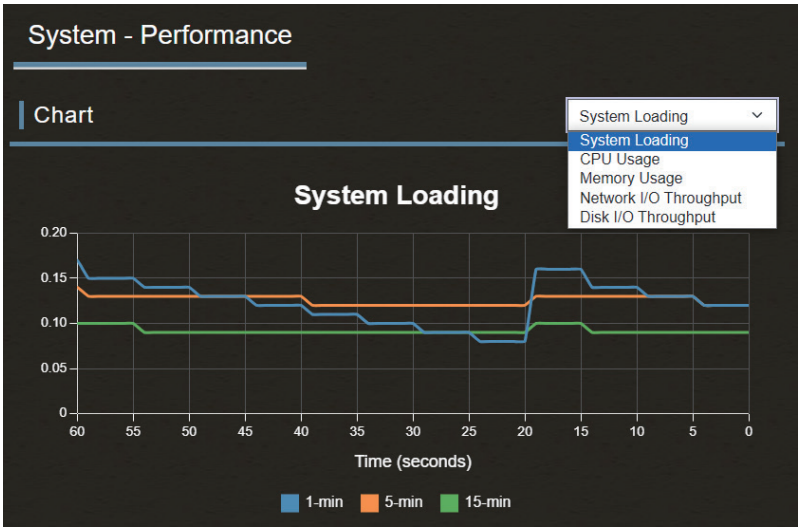
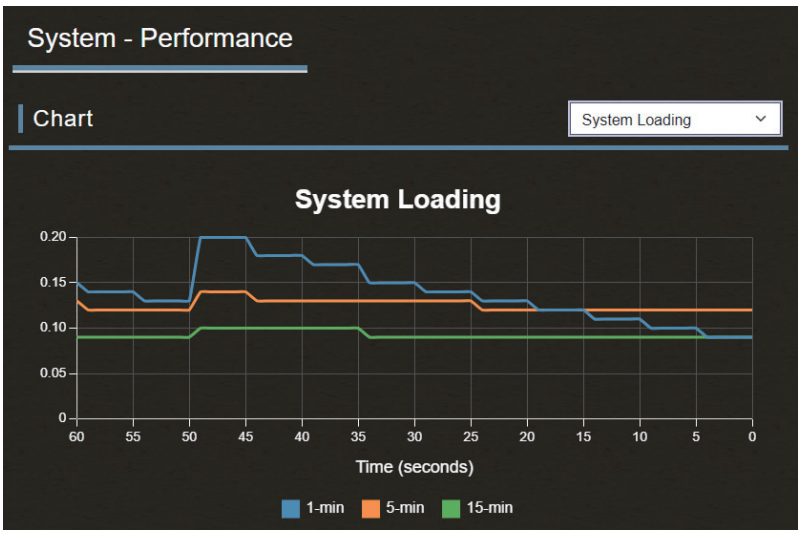
2.1.2 Performance

The Performance page displays 5 Charts of System Loading, CPU Usage, Memory Usage, Network I/O Throughput, and Disk I/O Throughput.



First Chart displays System Loading.
This chart provides users to check the current loading status of the machine.
The sampling rates are: 1 minute, 5 minutes, and 15 minutes.



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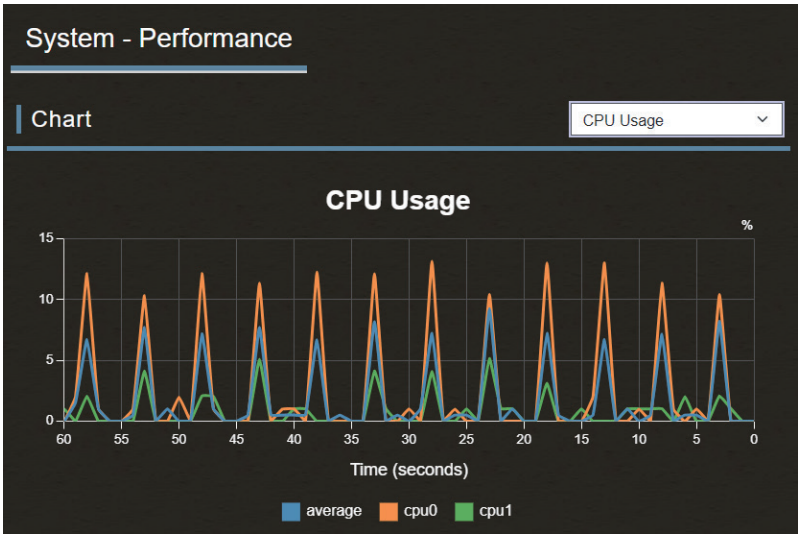
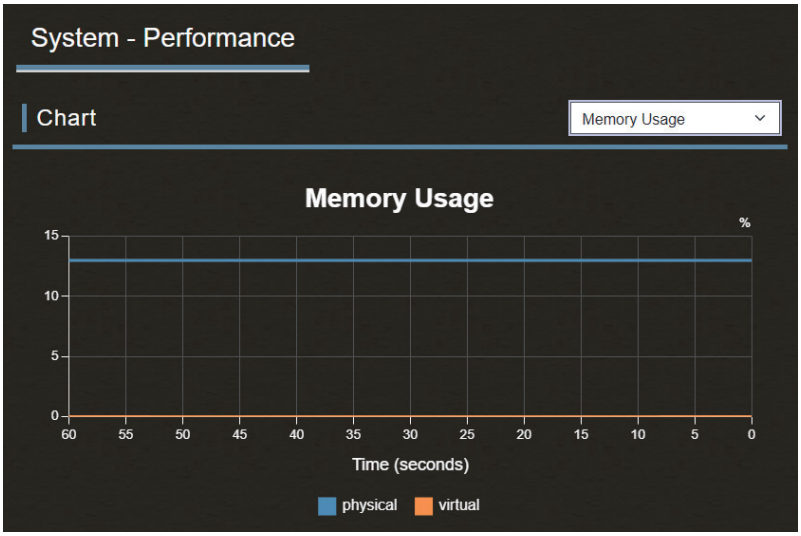
Second Chart displays CPU Usage.
This chart provides users with a reference regarding the utilization of CPU when executing task(s). It shows the situation regarding the CPU utilization rate being occupied.

If there are multiple CPUs, this chart will provide individual CPU utilization rates as well as the average CPU utilization. It offers users a reference regarding the utilization of CPU when executing task(s).



Third Chart displays Memory Usage.
This chart provides users with a reference regarding the utilization of memory when executing task(s).



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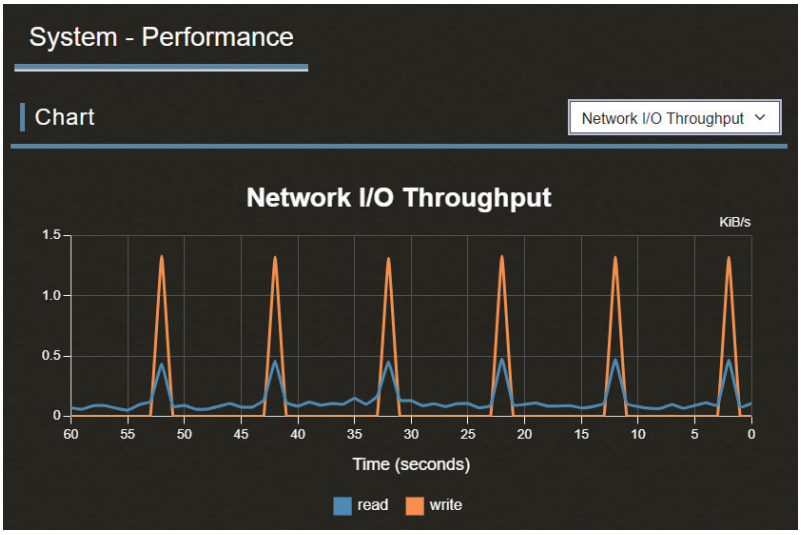
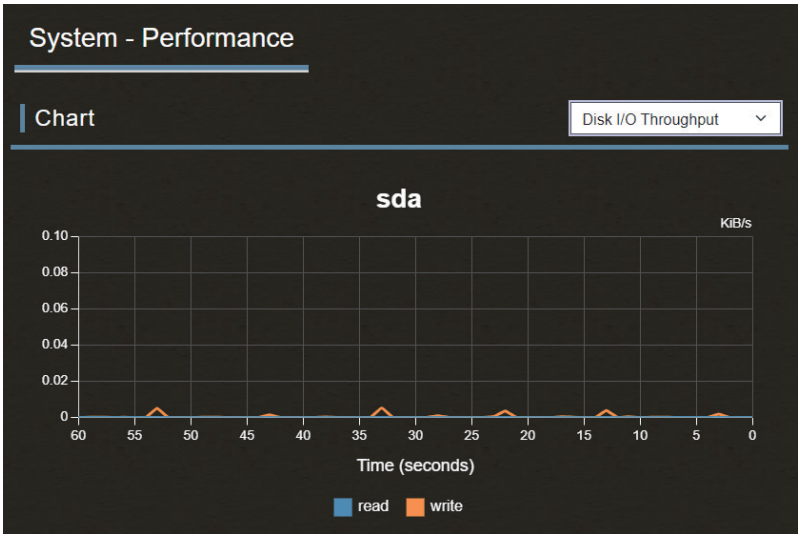
Fourth Chart displays Network I/O Throughput.



Fifth Chart displays HD I/O Throughput.



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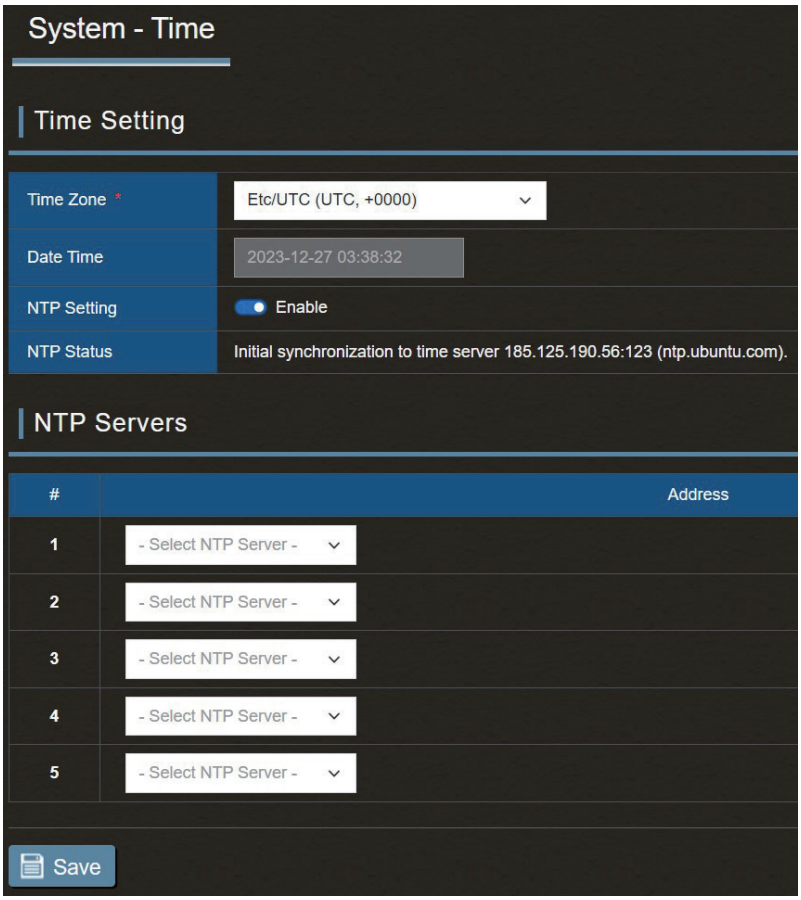
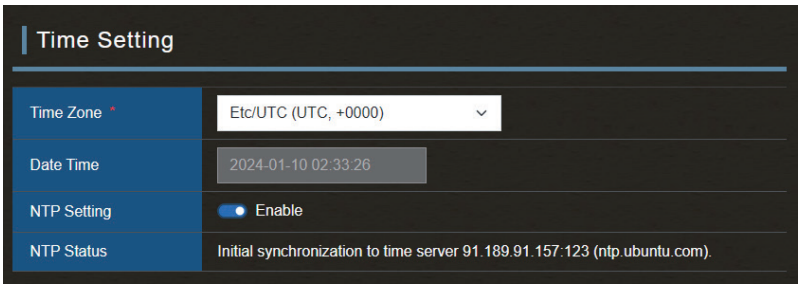
2.1.3 Time

The Time page contains 2 parts of Time Setting and NTP Servers.
It provides users to change time zone and NTP configuration settings.



Time Setting displays information as Time Zone, Date Time, NTP Setting, and NTP Status.



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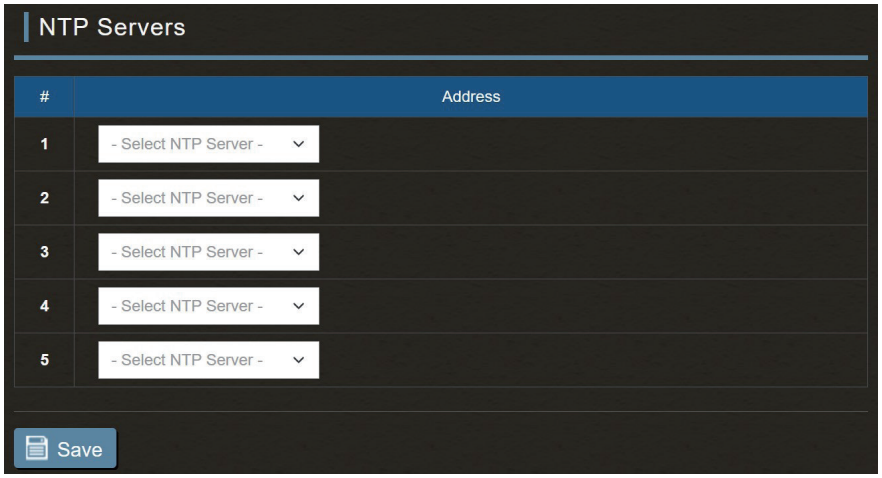
NTP Servers display the Addresses of the NTP Servers.



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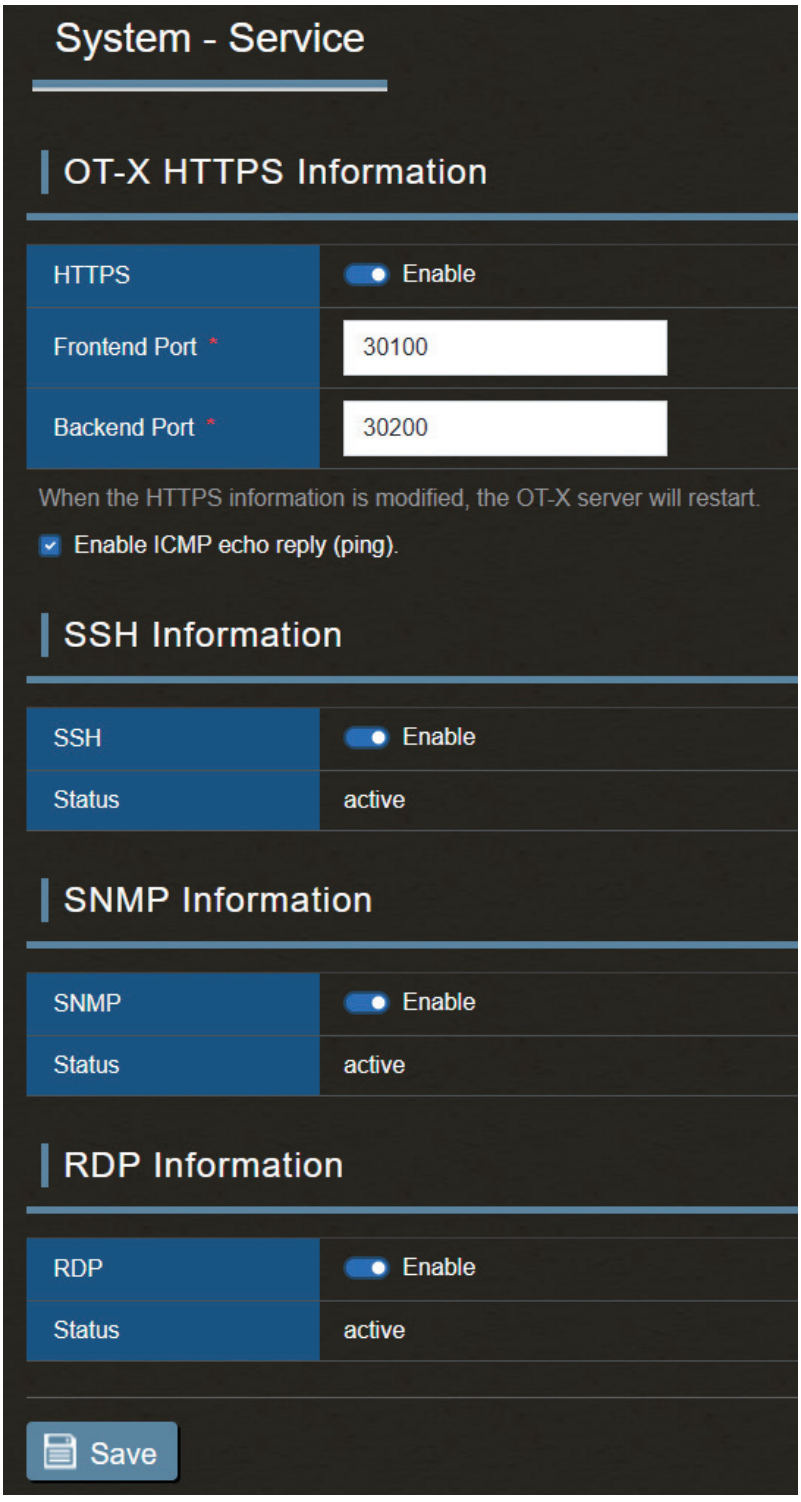
2.1.4 Service

The Service page contains four parts, OT-X HTTPS Information, SSH Information, SNMP Information, and RDP Information.



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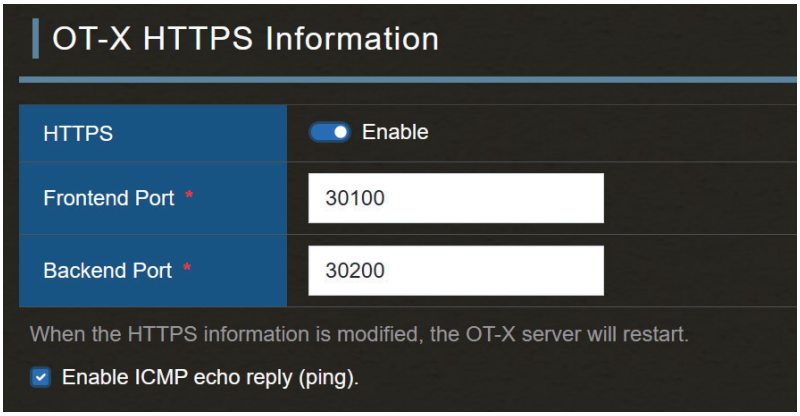
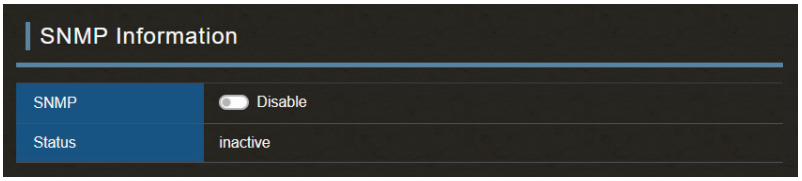
First part, OT-X HTTPS Information, for HTTPS configuration settings, including Disable, Enable, Current Status Info.
Regarding Port(s), OT-X by default uses ports 30100 and 30200. If there is other software installed on the device using the same ports, they can be modified as needed to avoid conflicts.



Second part, SSH Information, for SSH configuration settings, including Disable, Enable, and Current Status Info.

Third part, SNMP Information, for SNMP configuration settings, including Disable, Enable, and Current Status Info.



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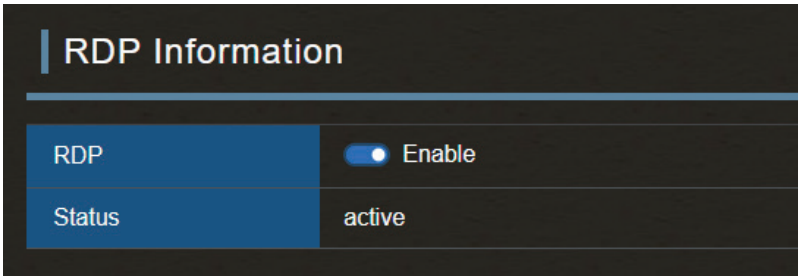
Fourth part, RDP Information, for RDP configuration settings, including Disable, Enable, Current Status Info.
Note: This part is divided into Server Edition and Desktop Edition. If you are using the Desktop Edition, it will display RDP Information.



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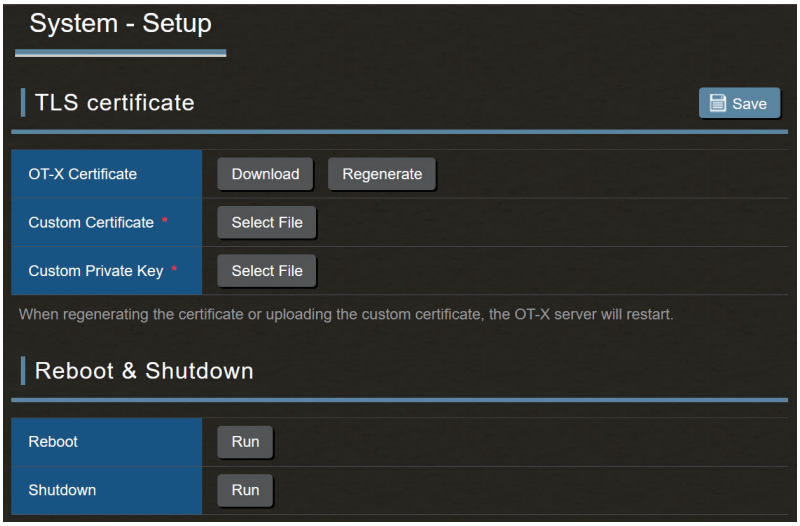
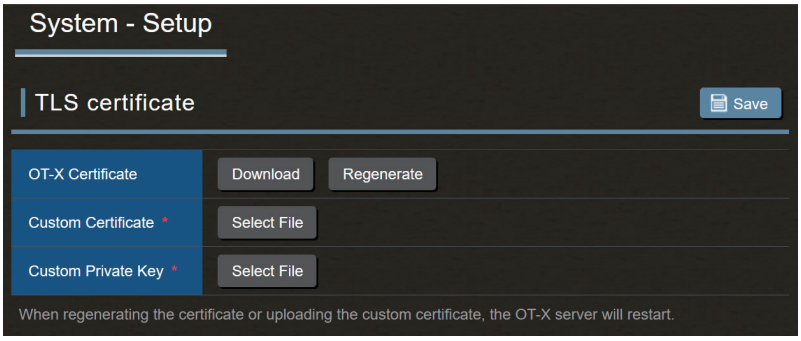
2.1.5 Setup

The Setup page contains two parts of TLS certificate, and Reboot & Shutdown.



First part, TLS certificate, you can download or regenerate OT-X Certificate here. Also, you can upload your Custom Certificate, Custom Private Key here as well. Please notice that if you regenerate the certificate or upload the custom certificate , a reboot is required for changes to take effect.



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Second part, Reboot & Shutdown, you can simply run system reboot, or shut down here.

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2.2 Network

The Network page contains 3 parts of Device, WiFi, and Firewall.

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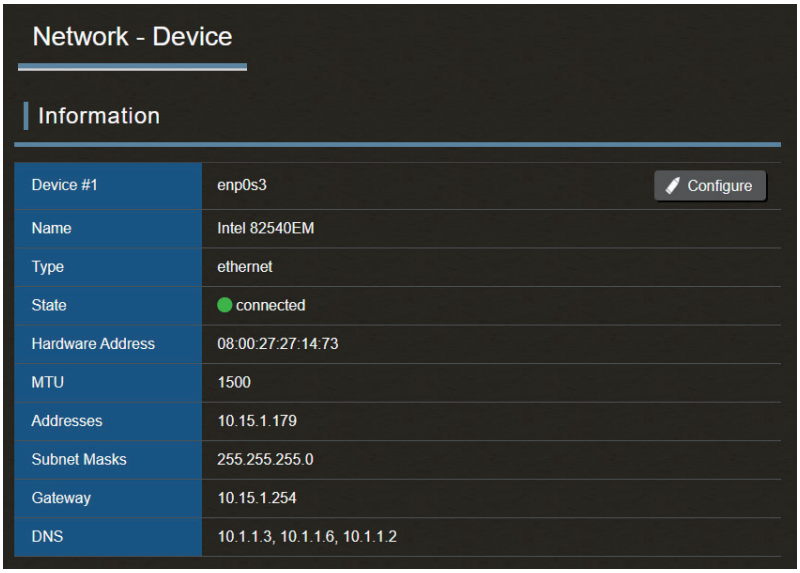
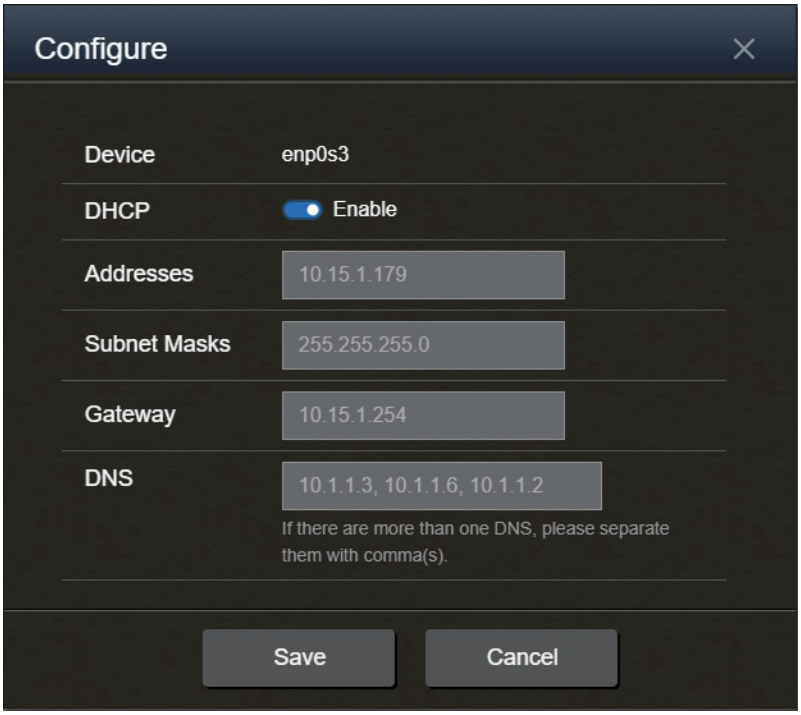
2.2.1 Device

The Device page displays Information of your devices, such as Device #, Name, Type, State, and so on.



Also, you can configure your IPC network interface card here.



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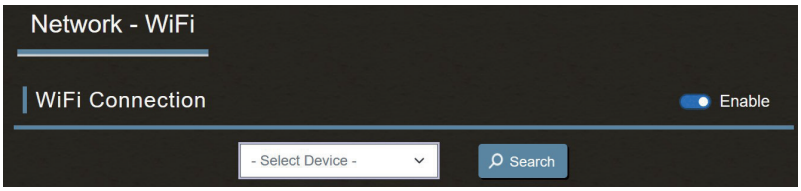
2.2.2 WiFi

If your IPC is equipped with an additional WiFi card, you can select your WiFi card on this page to configure the relevant connection settings.



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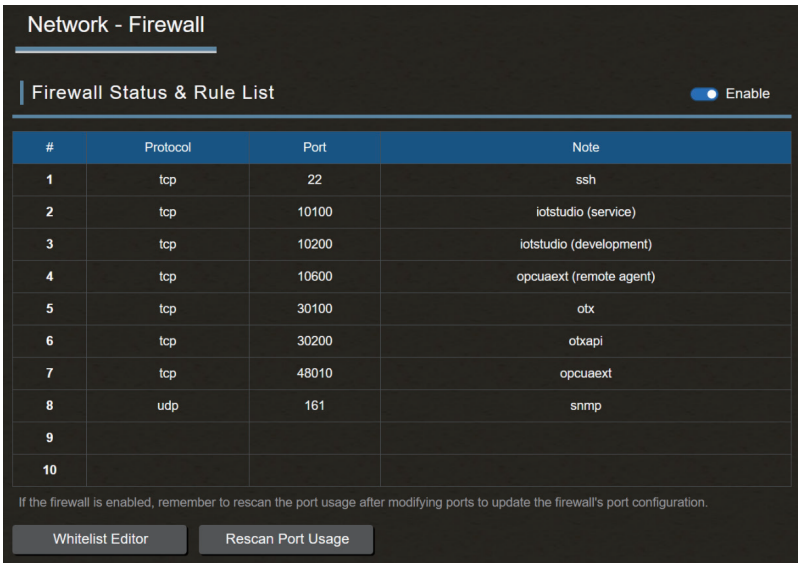
2.2.3 Firewall

Firewall page displays Firewall Status & Rule List. Please notice that if the firewall is enabled, remember to rescan the port usage after modifying ports to update the firewall's port configuration. Also, you can Disable/ Enable firewall feature.



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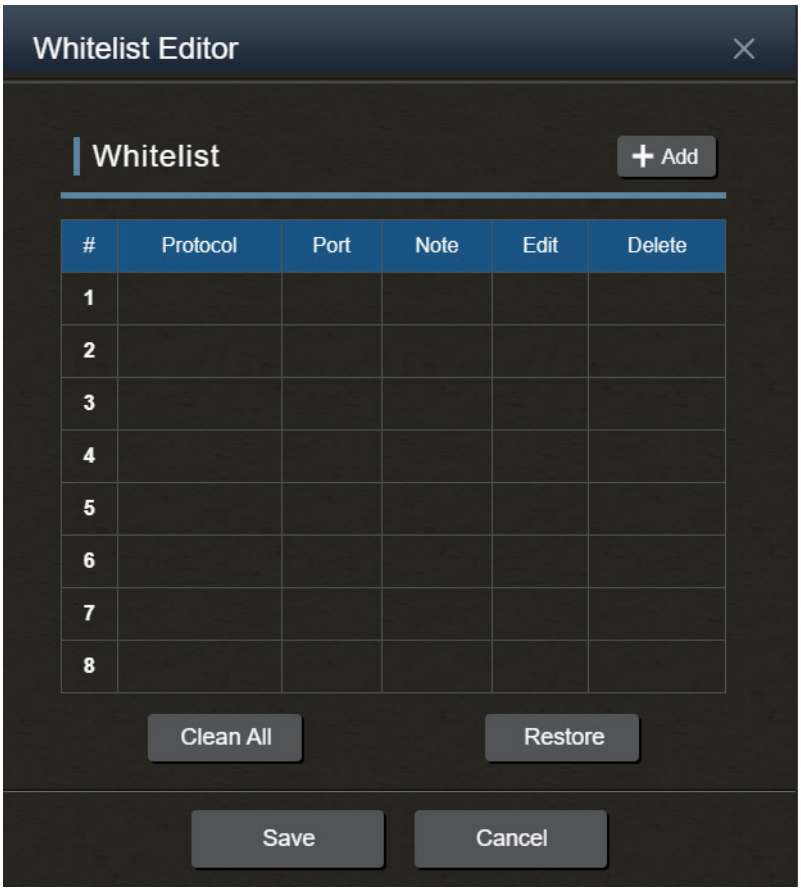
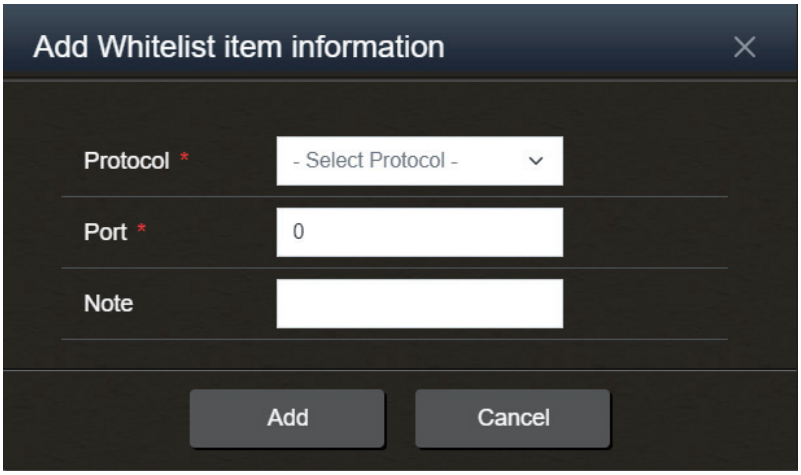
Besides, you can go to Whitelist Editor to Add Whitelist item information.





You have completed the editing of your whitelist.

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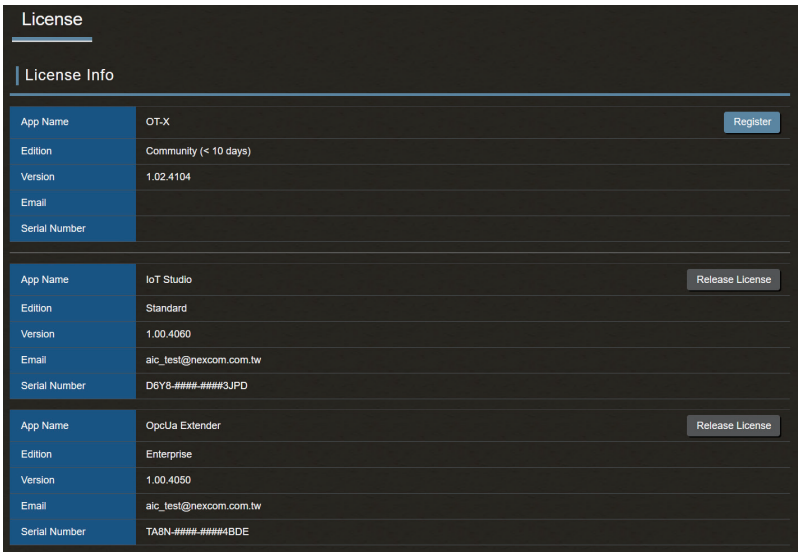
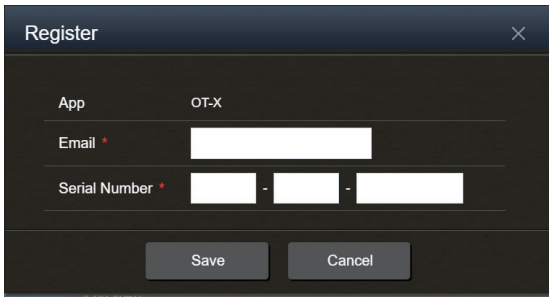
2.3 License

The License page displays License Information for three applications: OT-X, IoT Studio, and OpcUa Extender.

Please notice that one license of OT-X can activate IoT Studio and OpcUa Extender Community edition at the same time.

IoT Studio and OpcUa Extender are powerful applications of AIC, since Community edition only provides basic functions, if you want to upgrade IoT Studio and OpcUa Extender for advanced functions, then you will need to purchase additional licenses individually.
Here is a one-by-one step for registering a license down below.





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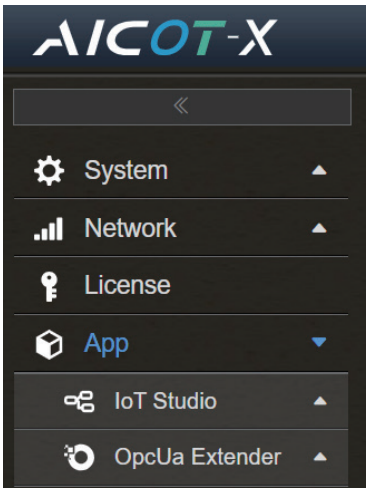
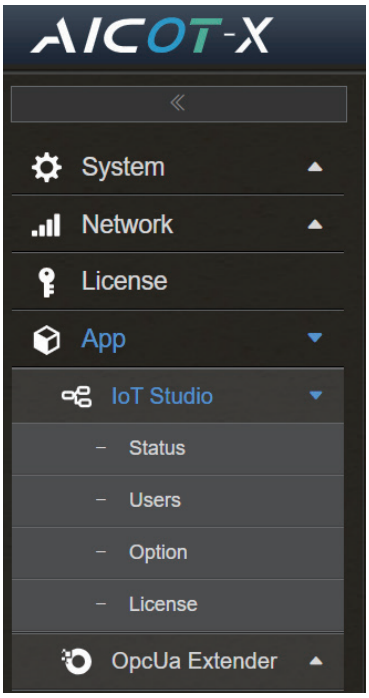
2.4 App

The App page contains two applications: IoT Studio and OpcUa Extender.



2.4.1 IoT Studio

The IoT Studio page contains four parts of Status, Users, Option, and License.



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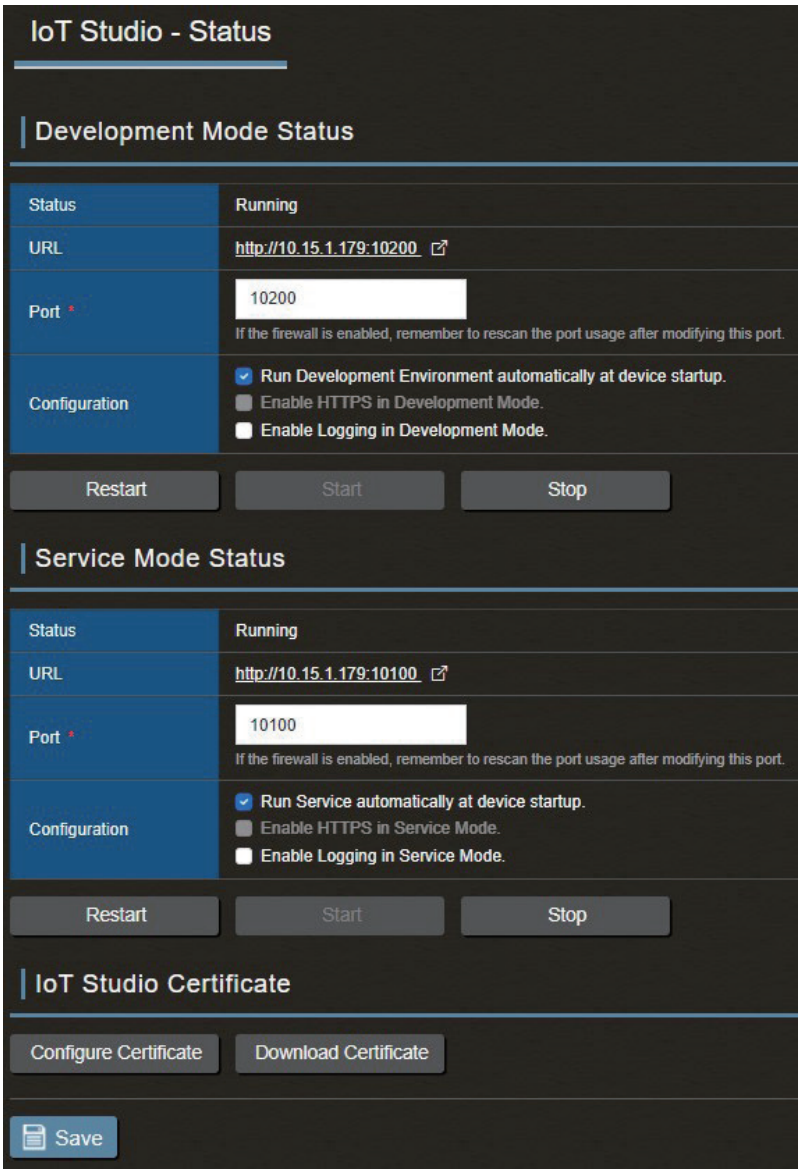
2.4.1.1 Status

The Status page contains three parts of Development Mode Status, Service Mode Status, and IoT Studio Certificate.



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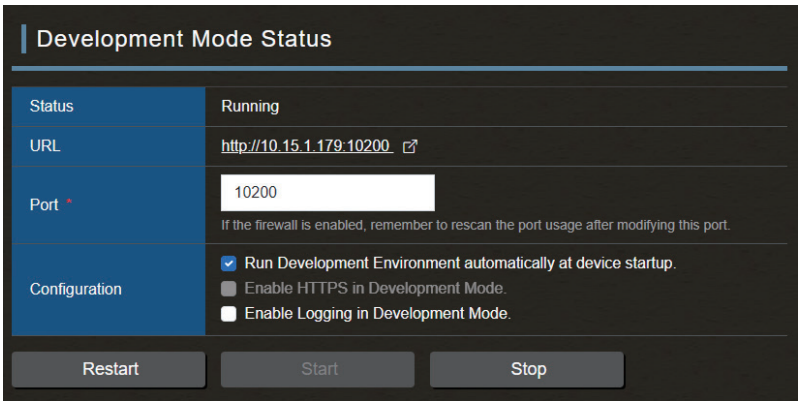
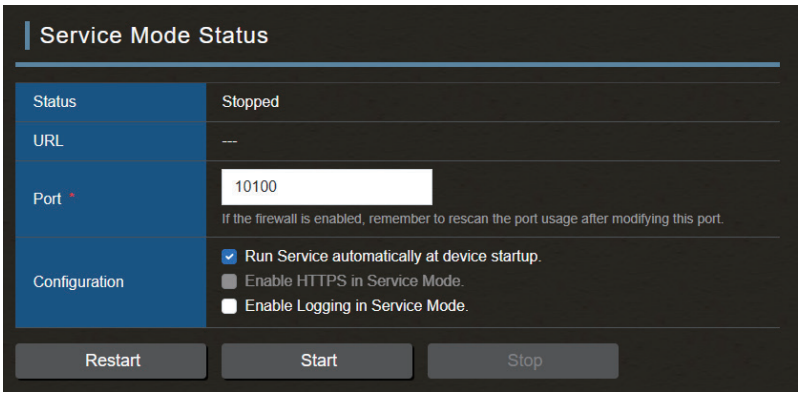
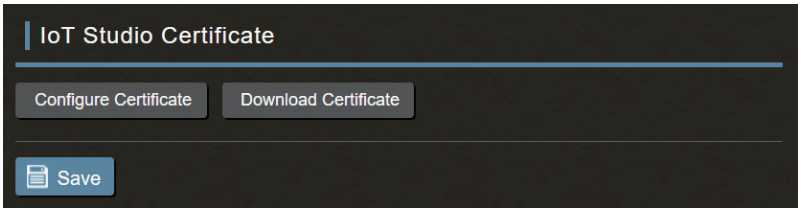
First part, Development Mode Status, you can modify the Port and Configuration settings for Development Mode.



Second part, Service Mode Status, you can modify the Port and Configuration settings for Service Mode.



Third part, IoT Studio Certificate, you can execute 'Configure Certificate', and 'Download Certificate' here.



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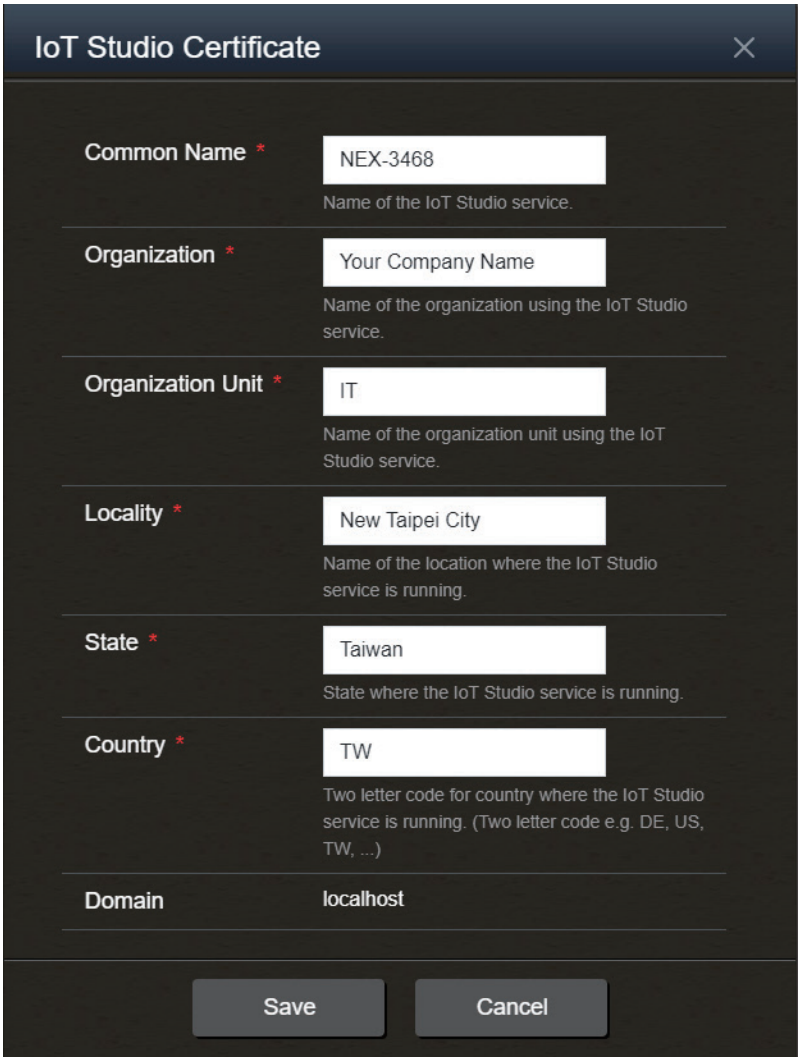
The following steps will complete the configuration of the certificate.



When you want to 'Download Certificate', you can use File Explorer to download folder to check the 'certificate.crt' file.

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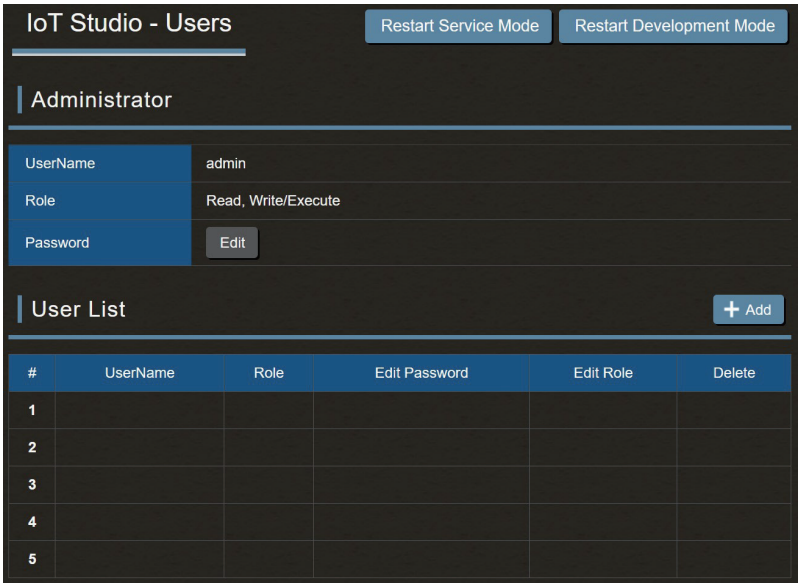
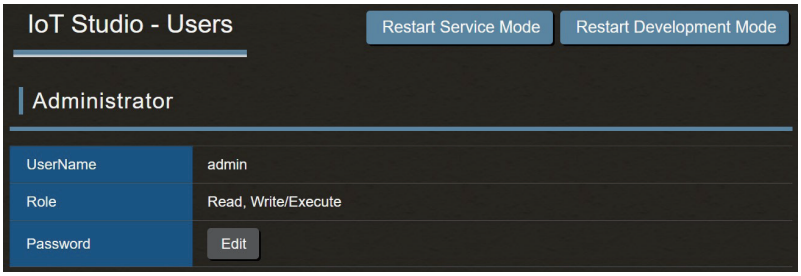
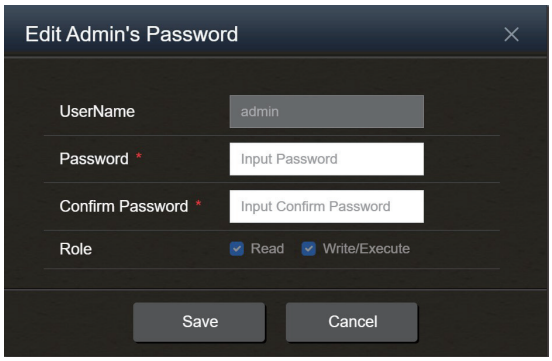
2.4.1.2 Users

The Users page contains two parts of Administrator, and User List.



First part, Administrator, you can Edit Admin's Password.





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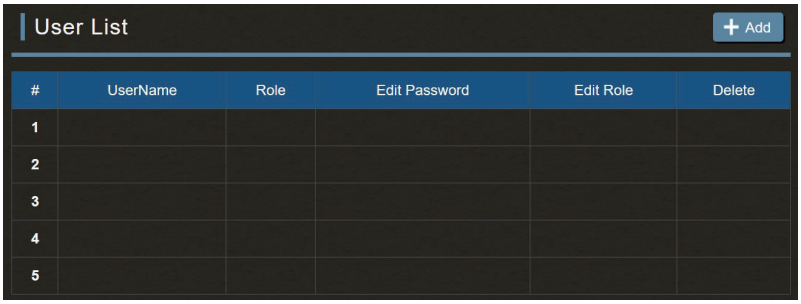
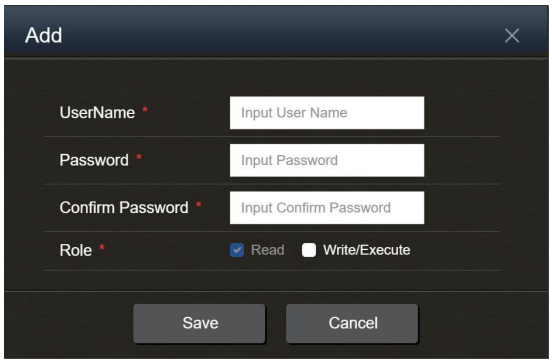
Second part, User List, you can Add new users to the list.





When you add/ delete/ modify users' info, please restart Service/ Development Mode to activate the system and apply the changes.

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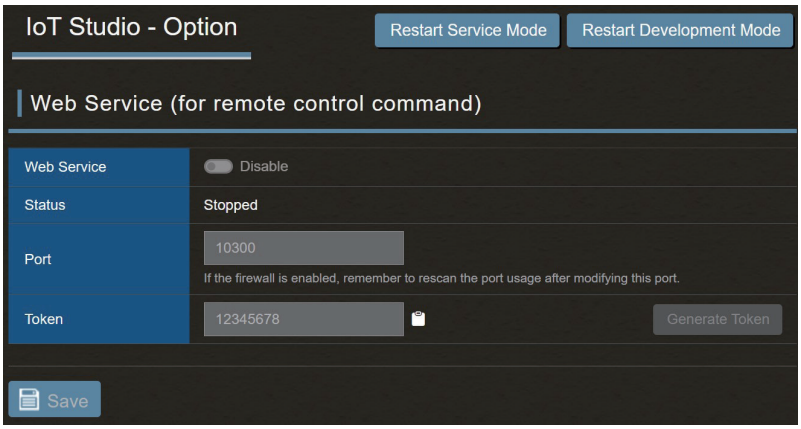
2.4.1.3 Option

The Option page displays Web Service (for remote control command). When you want to enable/ disable remote control features, you can execute configuration settings.

The Option page provides enable/ disable remote control features and its status.

In remote control configuration, you need to configure Port and Token.



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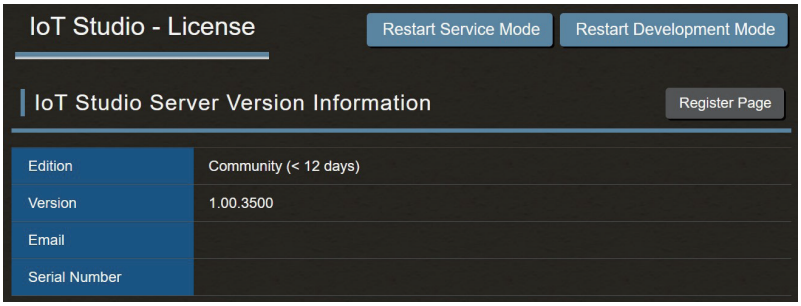
2.4.1.4 License

The License page contains two parts of IoT Studio Server Version Information, and Product Details.
This page displays the IoT Studio Server version and its edition.

First part, IoT Studio Server Version Information, you can get the info of its Edition and Version.



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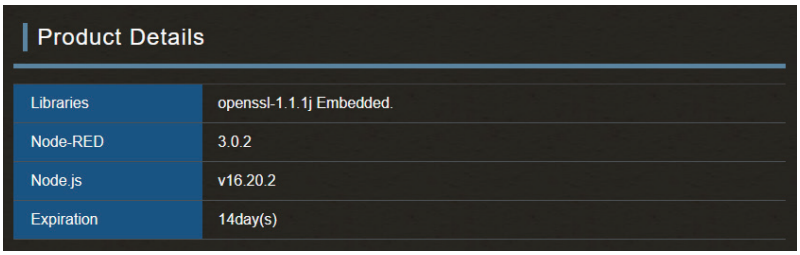
About Register License operation, please refer to 2.3 License.

Second part, Product Details, you can get Libraries, Node-RED version and other details of corresponding IoT Studio Server Version.
This page provides information on the versions and expiration dates of the related products that required to run IoT Studio.



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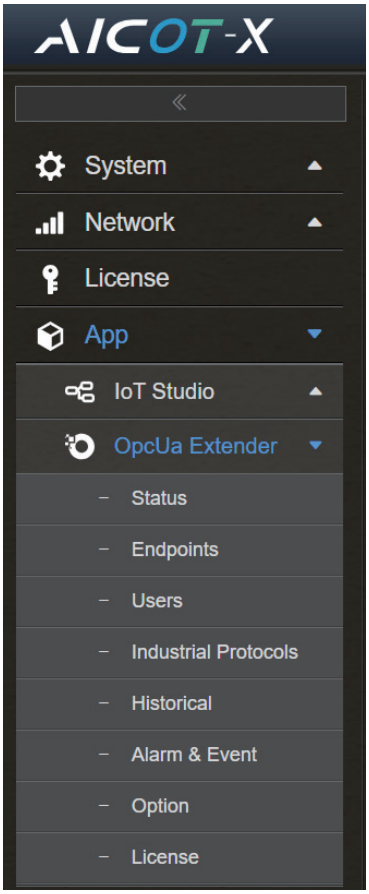
2.4.2 OpcUa Extender

The OpcUa Extender page contains eight parts of Status, Endpoints, Users, Industrial Protocols, Historical, Alarm & Event, Option, and License.



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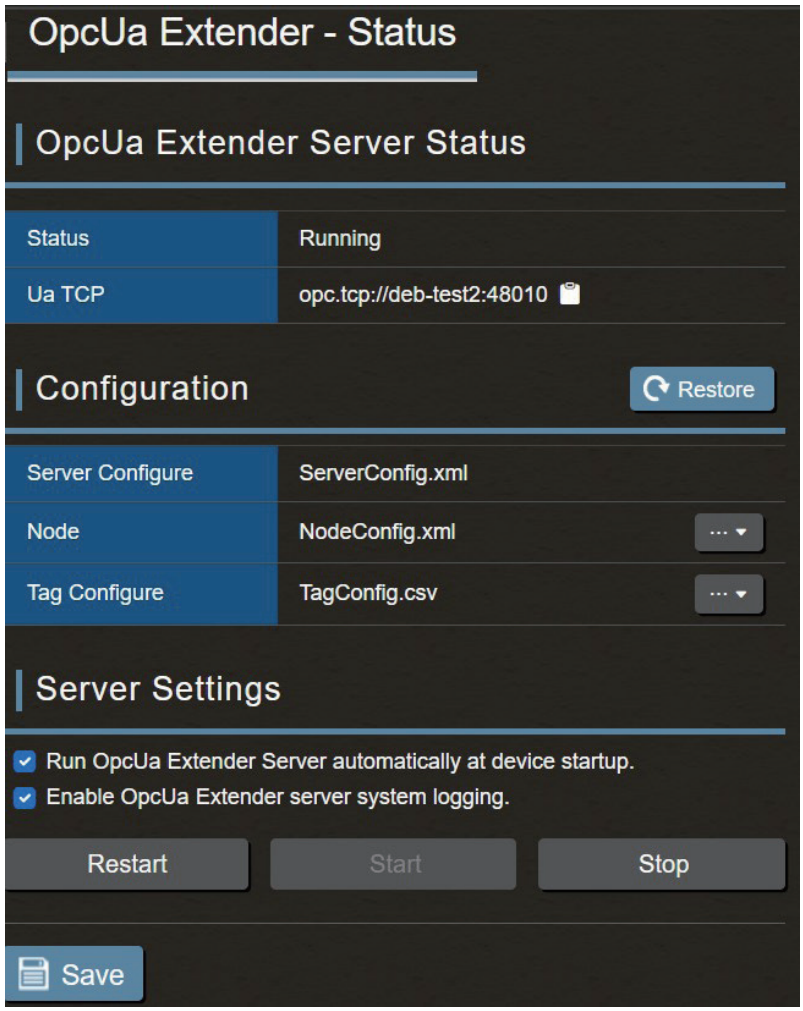
2.4.2.1 Status

The Status page contains three parts of OpcUa Extender Server Status, Configuration, and Server Settings.



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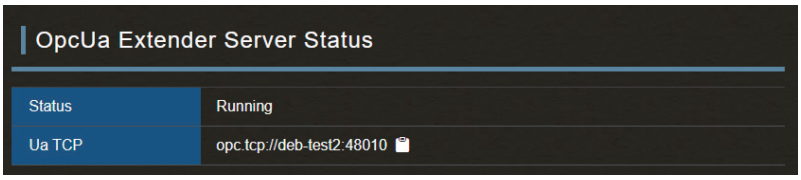
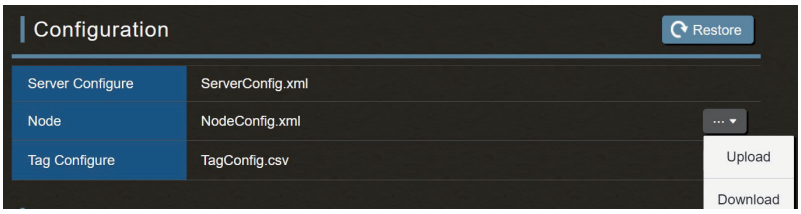
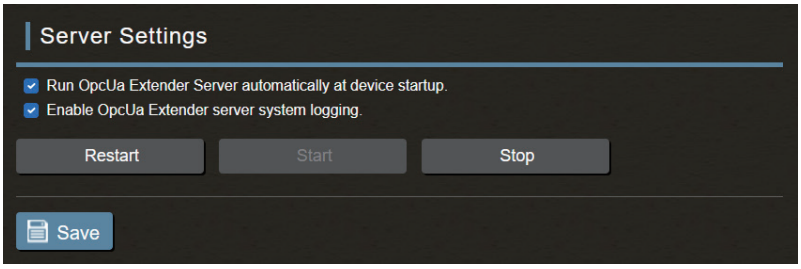
First part, OpcUa Extender Server Status, you can check the server status and copy the Ua TCP URL here.



Second part, Configuration, you can configure server, upload/ download NodeConfig.xml file, and upload/ download TagConfig.csv file.



Third part, Server Settings, you can set server auto run when device startup and enable server system logging features.



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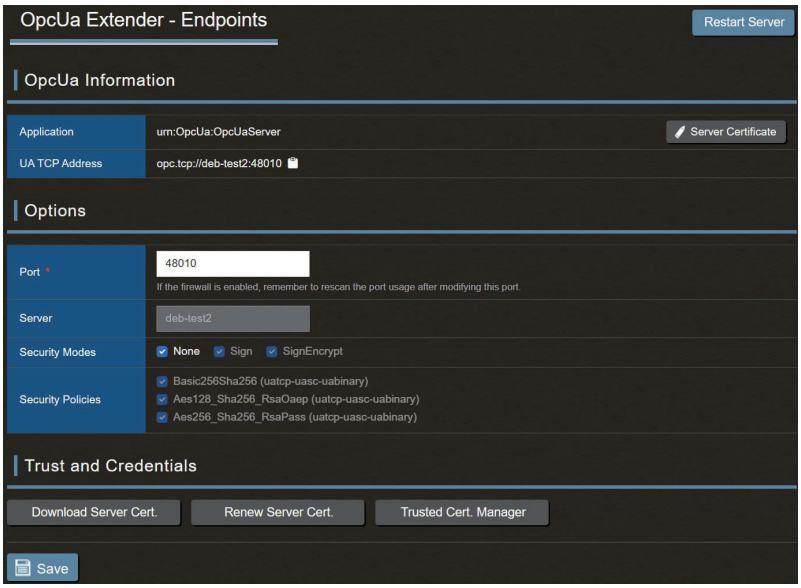
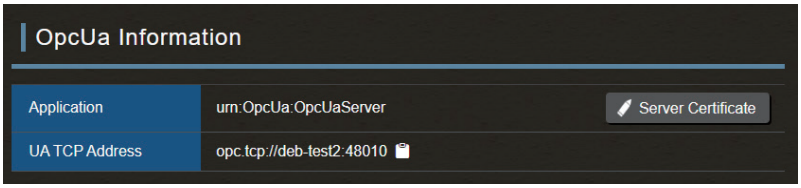
2.4.2.2 Endpoints

The Endpoints page contains three parts of OpcUa Information, Options, and Trust and Credentials.



First part, OpcUa Information is mainly about the OpcUa server application name and URL, besides, it also provides Server Certificate info and functions for editing certificate.



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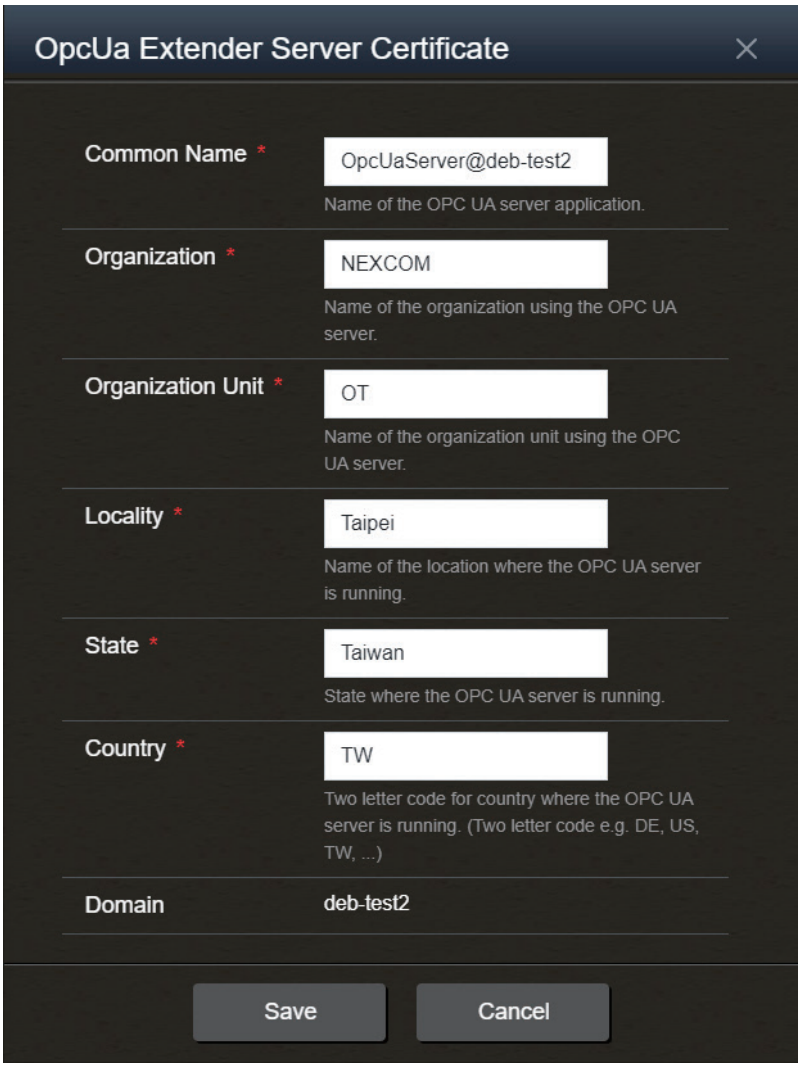
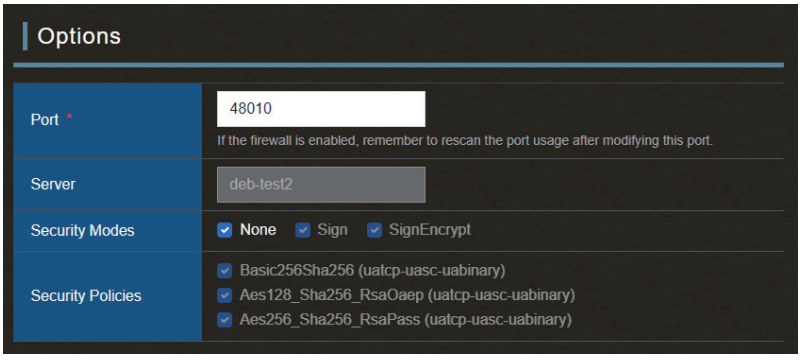


Second part, Options, is as below. You can only modify Port info and Security Modes' None feature and also provide Security Policies for connection reference.



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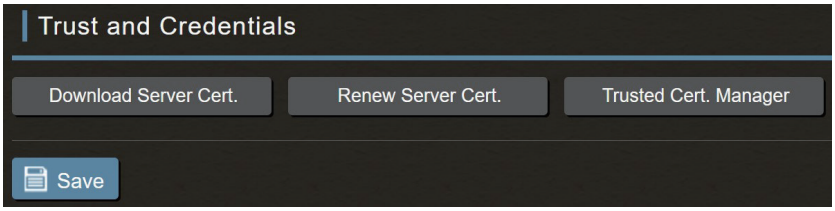
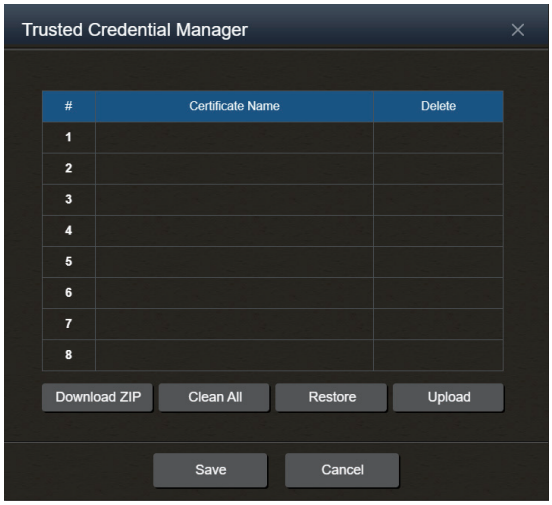
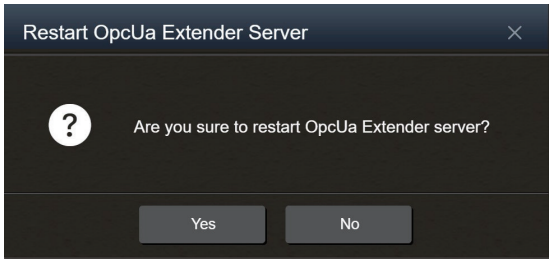
Third part, Trust and Credentials, you can download, renew server certificate.
For trust authorization use, you can add/ delete customer's own certificate features.





When you modify/ add/ delete on this page, please restart OpcUa Extender Server to activate the system and apply the changes.



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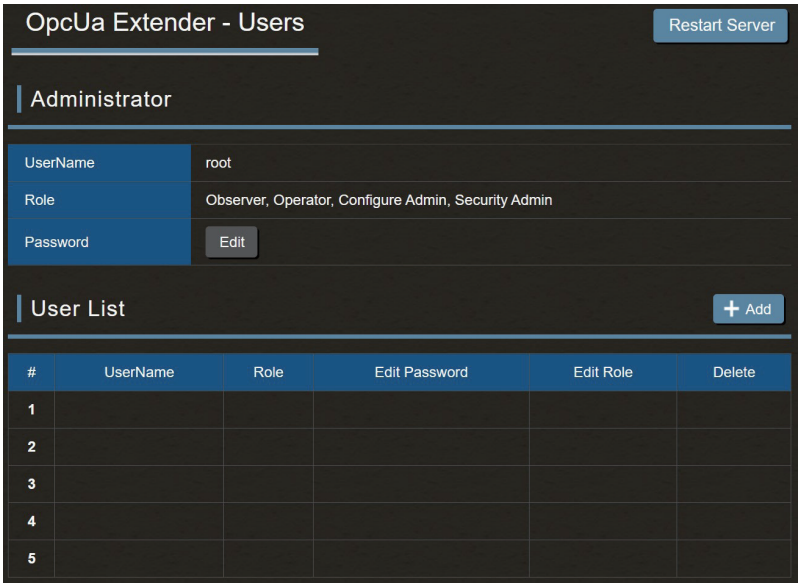
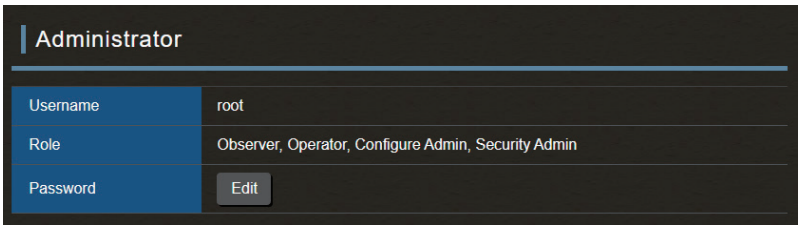
2.4.2.3 Users

The Users page contains two parts of Administrator, and User List.



First part, Administrator, you can edit admin's password.



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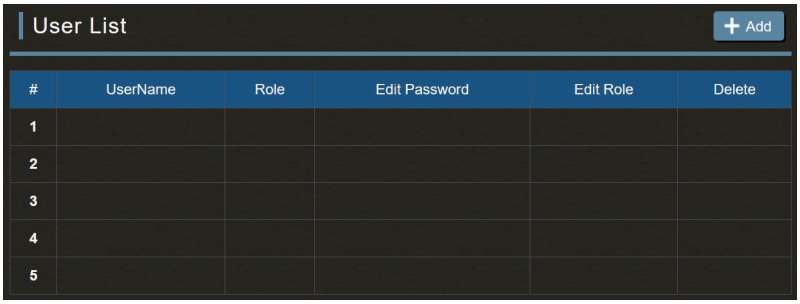
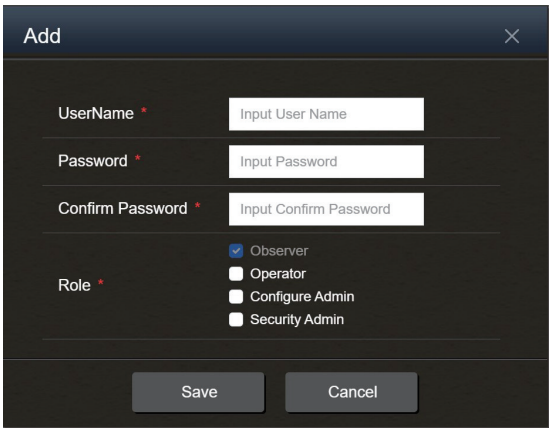
Second part, User List, you can add/ delete/ modify user accounts.





When you add/ delete/ modify users' info, please restart OpcUa Extender Server to activate the system and apply the changes.

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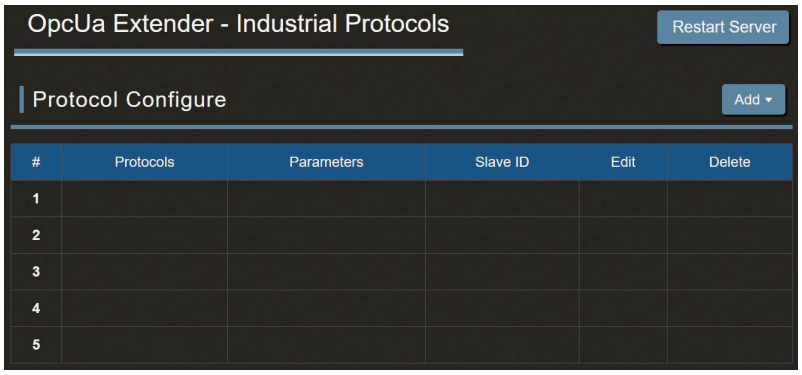
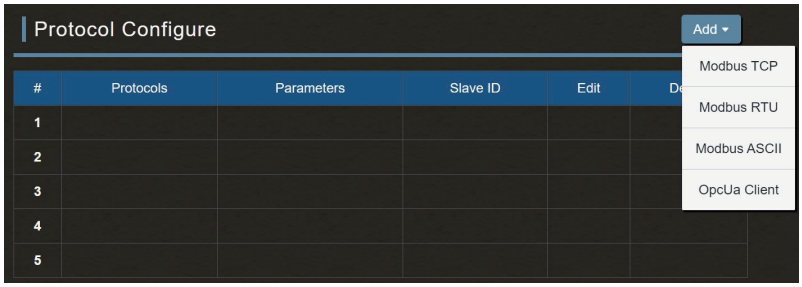
2.4.2.4 Industrial Protocols

The Industrial Protocols page displays Protocol Configure list.



You can Add four types of Industrial Protocols: Modbus TCP, Modbus RTU, Modbus ASCII, OpcUa Client.



Before setting Modbus TCP/ RTU/ ASCII Configuration, you must have Modbus Protocol know-how, if you have any questions, please call AIC for help. (support@aiotcloud.dev)

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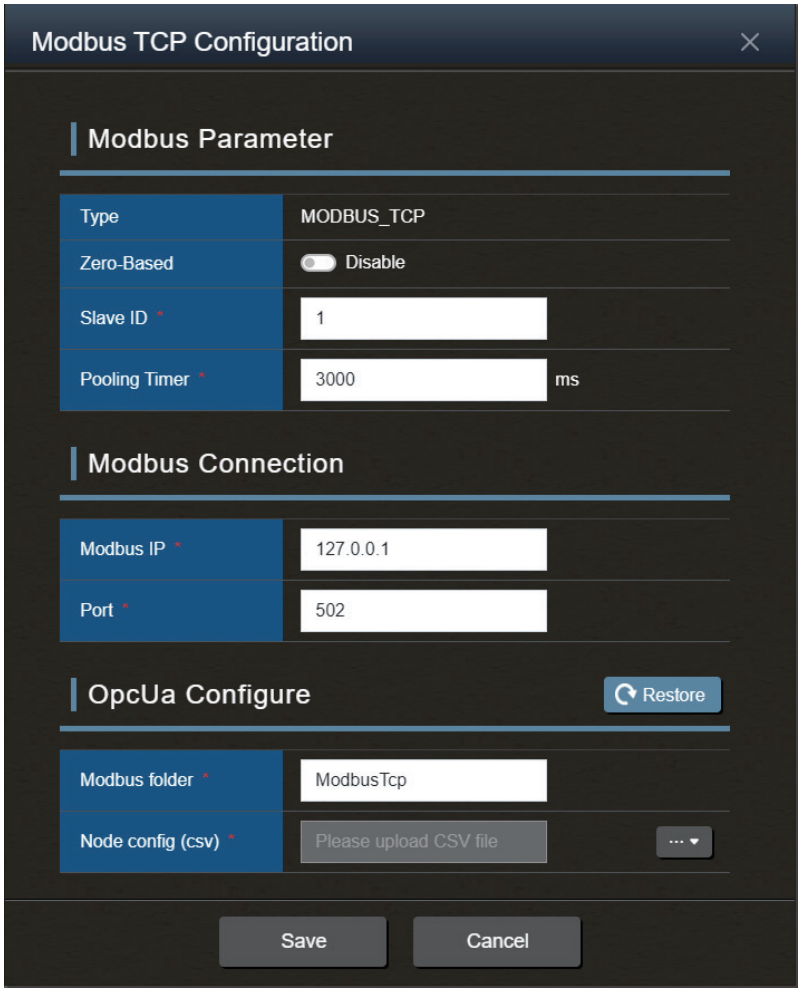
The explanation of Modbus TCP Configuration settings is down below. Modbus RTU/ASCII settings are similar, so they will be omitted.

a. Modbus TCP Configuration, you can modify Modbus Parameter, execute Modbus Connection, and set OpcUa Configure here.



b. Before setting OpcUa Client Configuration, you must have OpcUa Protocol know-how, if you have any questions, please call AIC for help. (support@aiotcloud.dev)

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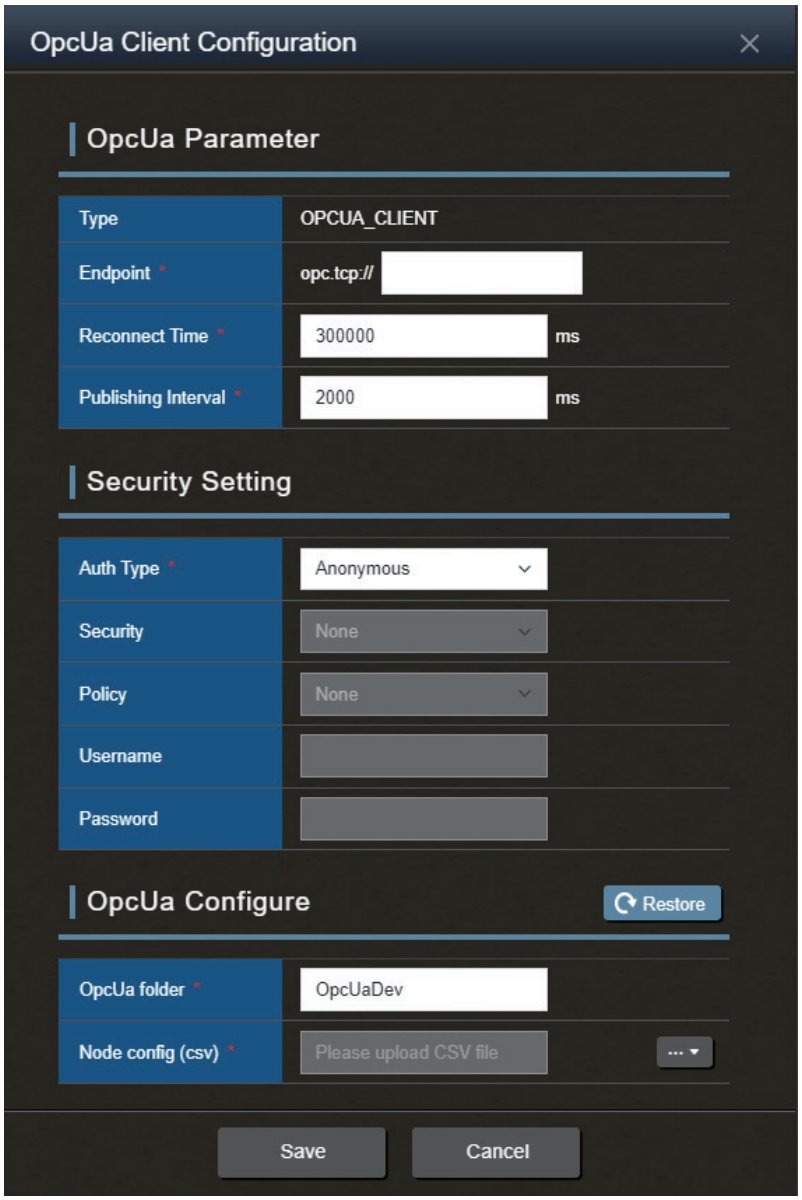

OpcUa Client Configuration, when you add/ delete/ modify users' info, please restart OpcUa Extender Server to activate the system and apply the changes.

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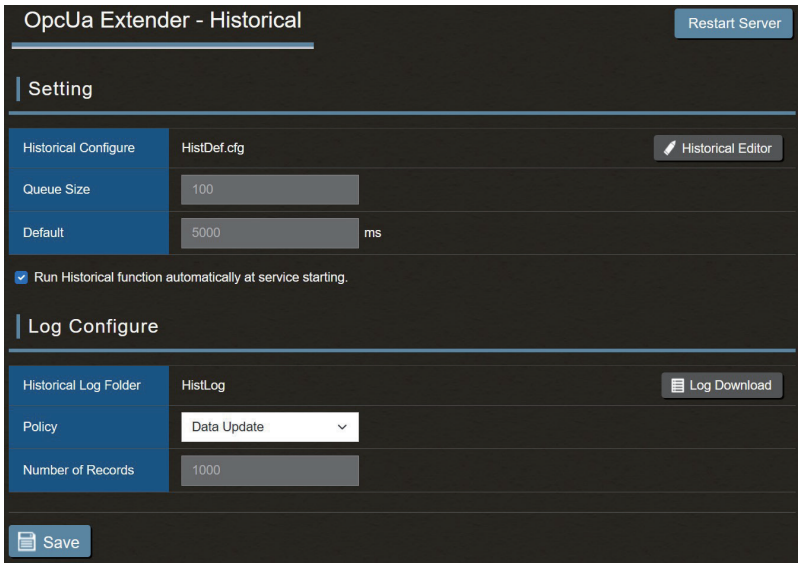
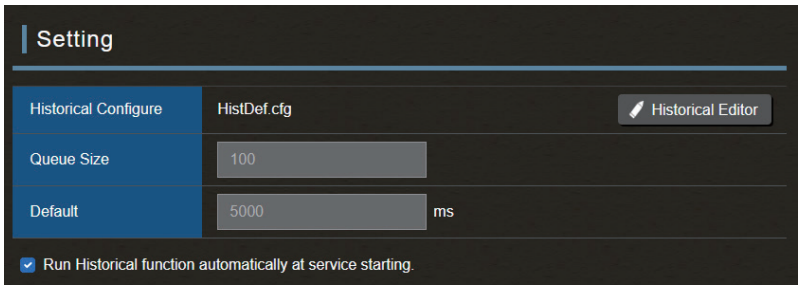
2.4.2.5 Historical

The Historical page contains two parts of Setting and Log Configure.



First part, Setting, you can add/ edit historical info of Node(s) by Historical Editor.



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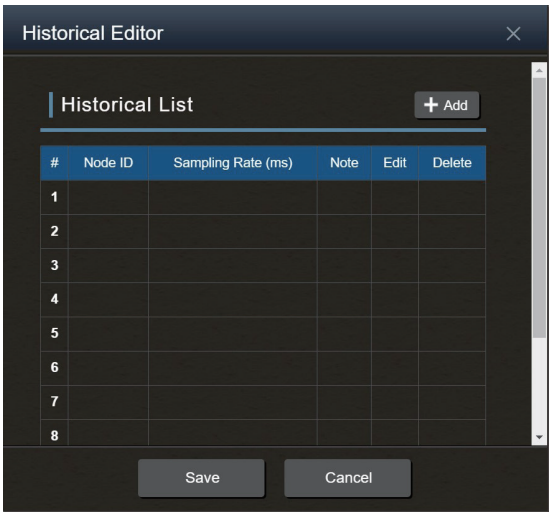
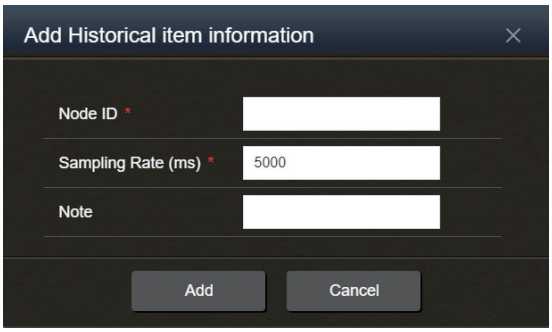
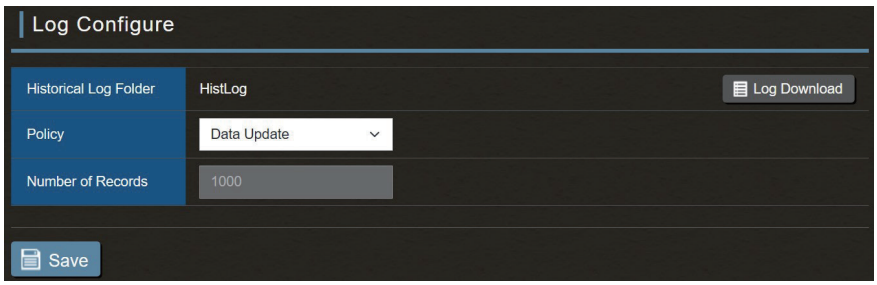




Second part, Log Configure, is used to set log's policy.
The Policy including two types, Data Update and Sampling Rate.



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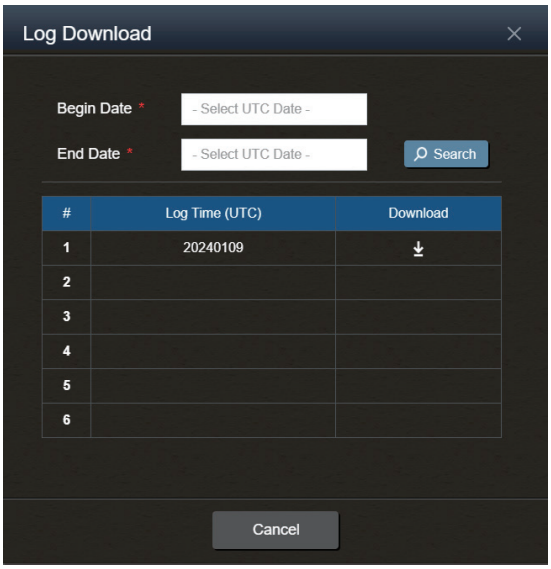
If you want to get the log data, you can press the 'Log Download' button.



When you add/ delete/ modify Historical' info, please restart OpcUa Extender Server to activate the system and apply the changes.

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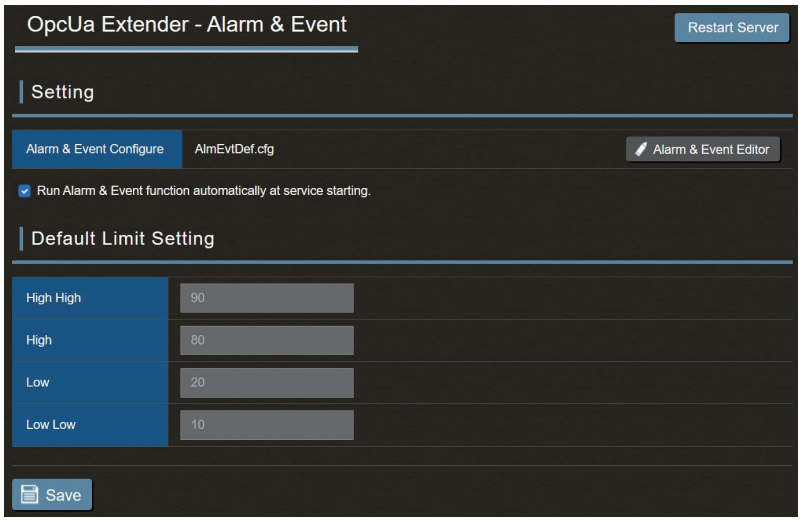
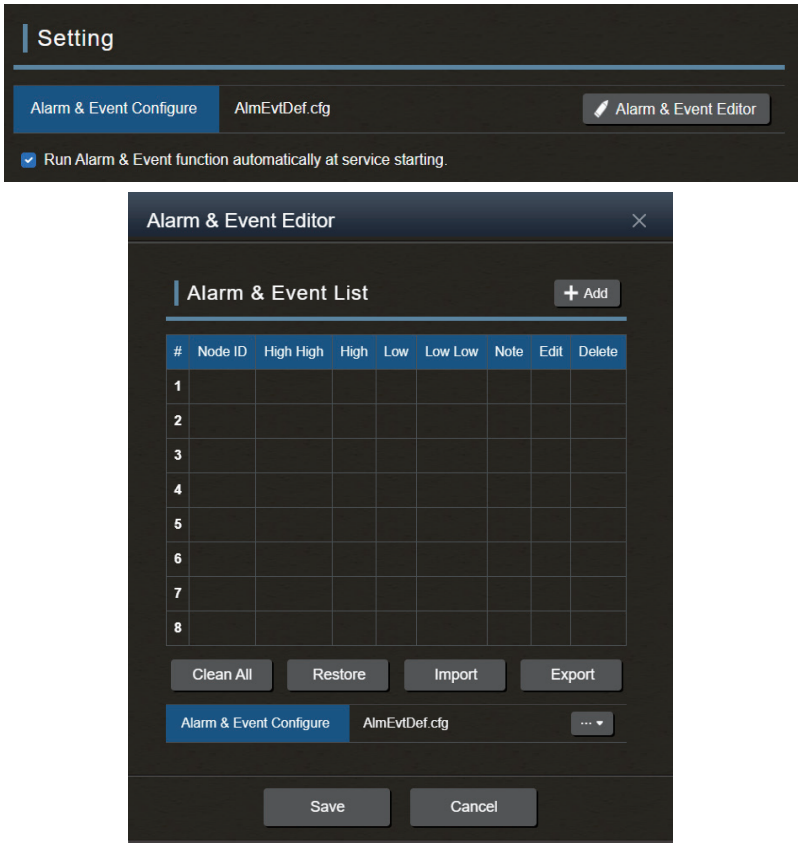
2.4.2.6 Alarm & Event

This Alarm & Event page contains two parts of Setting and Default Limit Setting.



First part, Settings, you can add/ edit Node(s) of Alarm & Event by Alarm & Event Editor.



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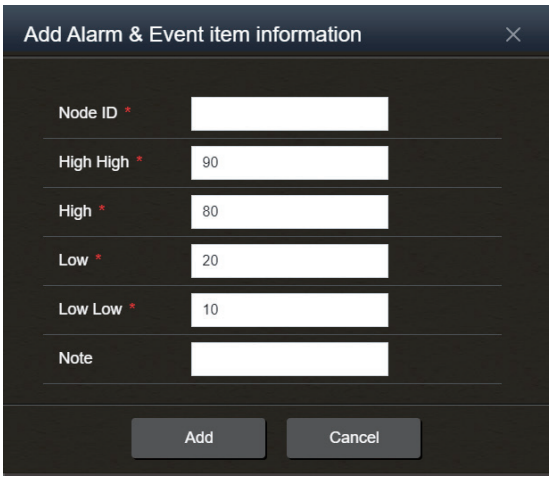
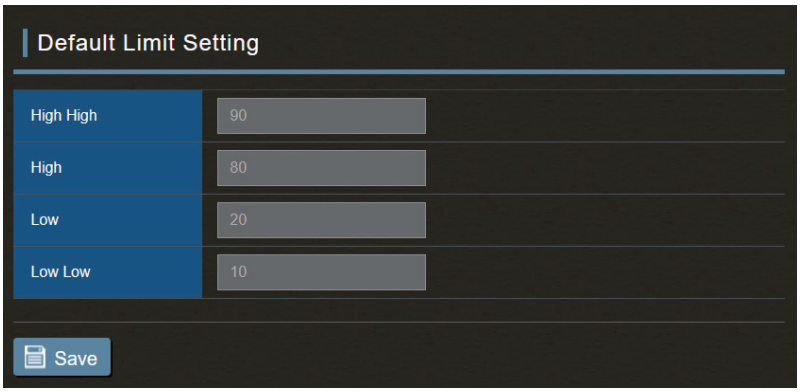


Second part, Default Limit Settings, this is about Node Alarm & Event configuration.



When you add/ delete/ modify Alarm & Event' info, please restart OpcUa Extender Server to activate the system and apply the changes.

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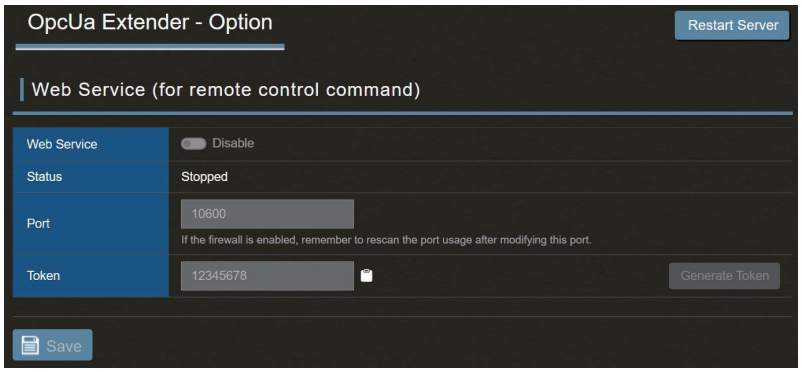
2.4.2.7 Option

The Option page displays Web Service for remote control command. Please refer to 2.4.1.3 Option.



When you add/ delete/ modify Alarm & Event' info, please restart OpcUa Extender Server to activate the system and apply the changes.

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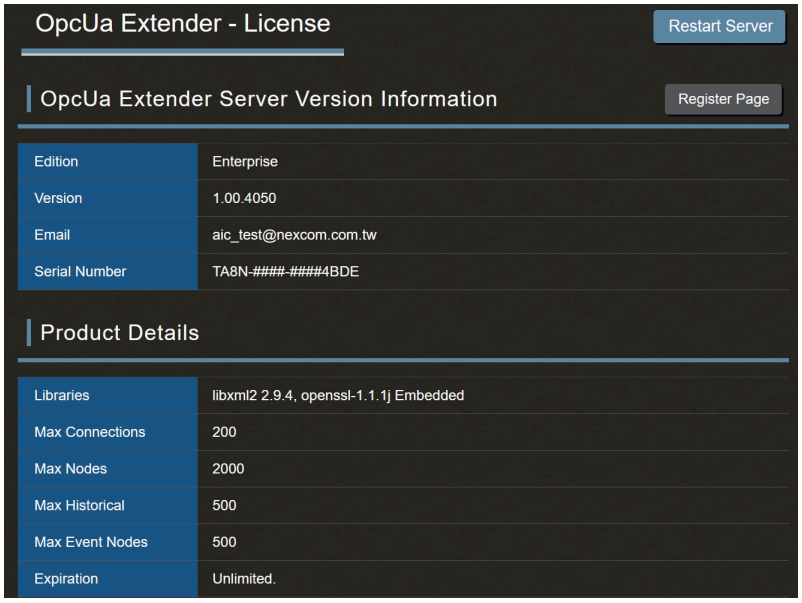
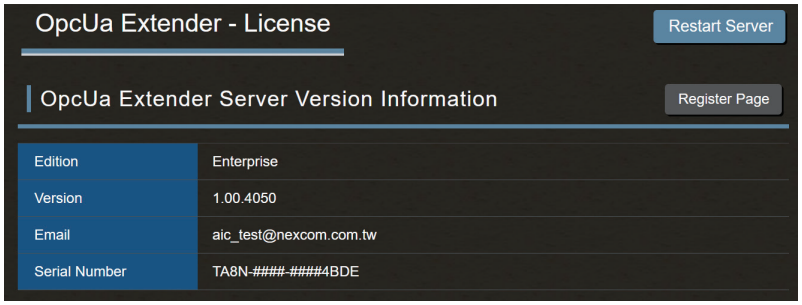
2.4.2.8 License

The License page contains two parts of OpcUa Extender Server Version Information and Product Details.

First part, OpcUa Extender Server Version Information, please refer to 2.4.1.4 License.





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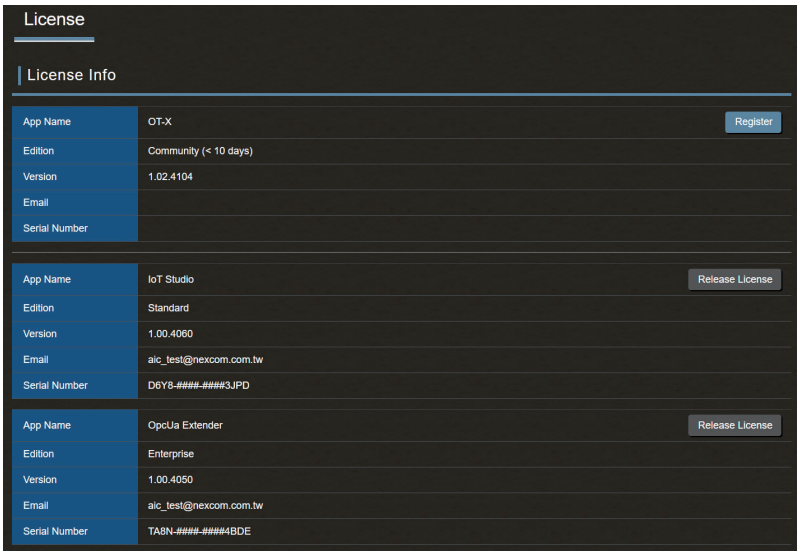

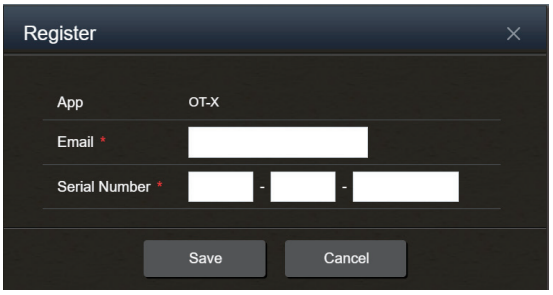

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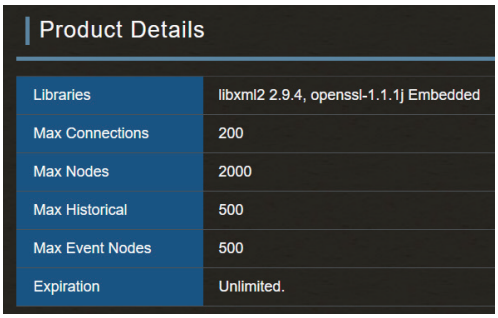
Second part, Product Details, you can get Libraries, Max Connections, Max Nodes, expiration dates and other details of corresponding OpcUa Extender Server Version.

Regarding Max Connections/ Nodes/ Historical/ Event Nodes, these four settings may have numerical differences based on the edition.

For detailed information, please refer to the "Ver. Info" section on the AIC Official Website.



When you add/ delete/ modify License' info, please restart OpcUa Extender Server to activate the system then take effect.

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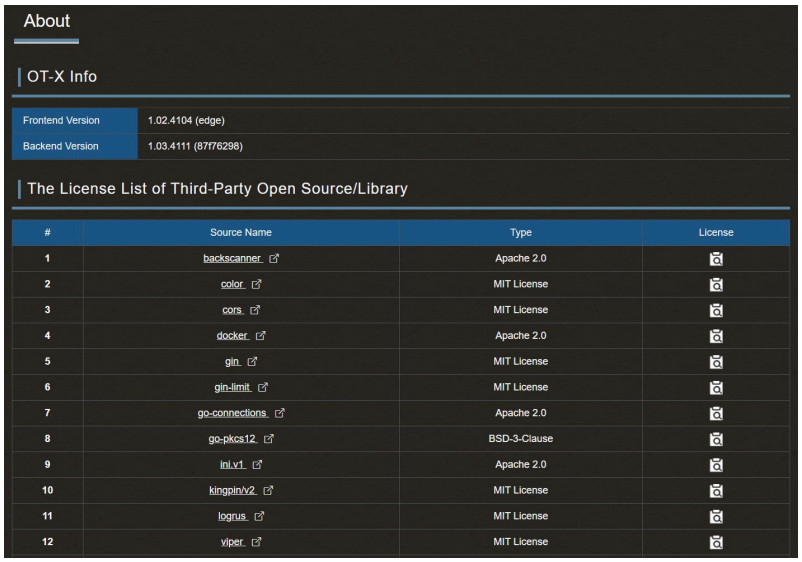
2.5 About

The About page contains two parts of OT-X Info and The License List of Third-Party Open Source/ Library. This page is including OT-X Versions info and used open source library modules info.



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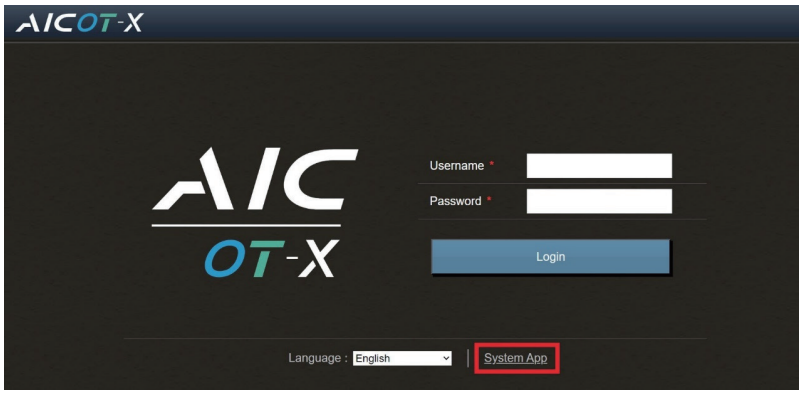
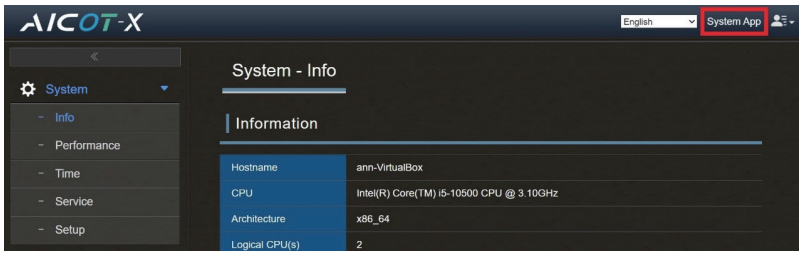
Chapter 3: Advanced Functions

3.1 System App

There are two ways to login the **System App**.





Additional System App list

App	URL
Eclipse Mosquitto	https://mosquitto.org/
Grafana	https://grafana.com/
MS SQL	https://www.microsoft.com/zh-tw/sql-server/sql-server-2022
MySQL	https://www.mysql.com/
Portainer	https://www.portainer.io/

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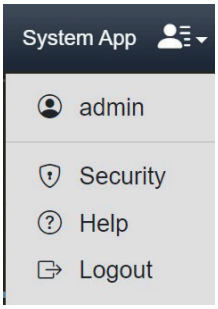
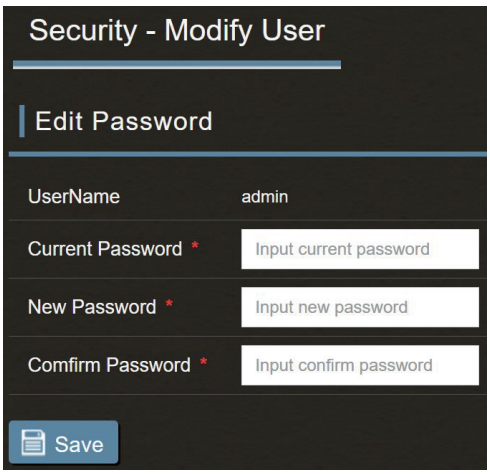
3.2 Admin

In the top right corner of the AIC OT-X webpage, there is an icon of a person's portrait; this represents the 'admin'.

Under "admin", there are three features, including Security, Help, and Logout.



Security, in this page, you can modify/ edit admin' password.



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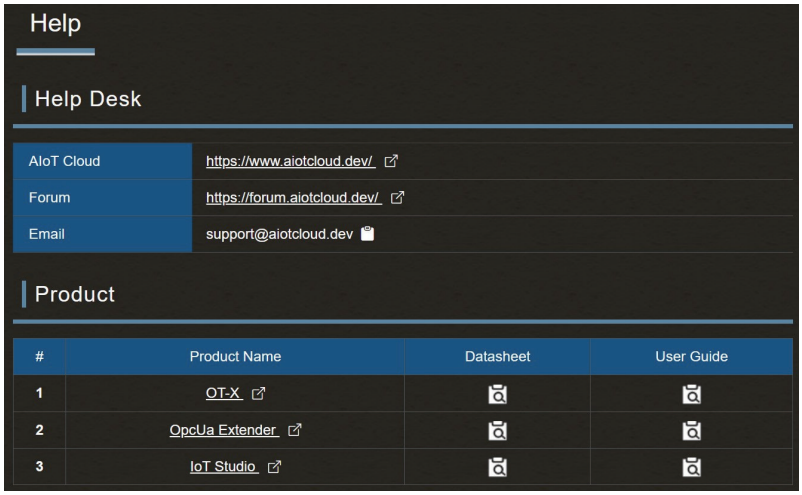
Help, this page contains two parts of Help Desk and Product.
First part, Help Desk, you can link to AIoT Cloud and Forum website for more info. Also, you can call AIC for help through Email: support@aiotcloud.dev.

Second part, Product, you can download Datasheet and User Guide of three products, including OT-X, OpcUa Extender, and IoT Studio.



Logout, if you want to logout AIC OT-X, you can simply click the 'Logout' button.

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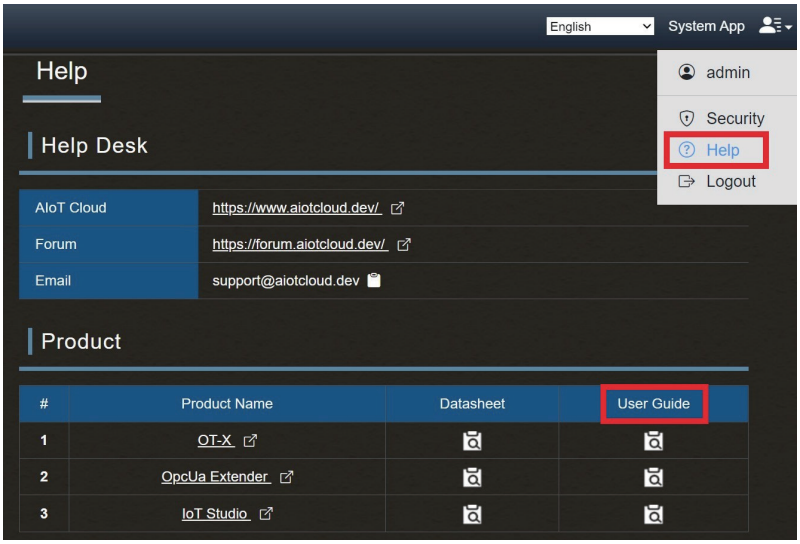
Read me: How to Get IP Address

AIC OT-X

- How to launch AIC OT-X?
  https://[machine IP address]:30100/
- How to read User Guide?
  There is a link in Help for users to click and open the user guide.



- How to purchase License?
  https://[machine IP address]:30100/

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- About AIC OT-X port

1. OT-X uses 30100 and 30200 ports by default. If the system is installed with any other software utilizing either port, you can modify the port per your requirements to avoid conflicts.
2. As discussed, we add a link to the User Guide in Help for users to click and open it.
3. After receiving and opening the system, you will find a Quick Guide enclosed, illustrating the following things.

   - Unpackaging
   - Connecting to power and the Internet
   - Turning on the system
   - Logging in through a browser
     - https://192.168.10.1:30100
     - Default password
   - Scan the QR code to read the full version of the User Guide.
   - Other QR codes, official websites, forums, and more.

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- How to get OT-X IPC machine IP address?
  Please refer to the article below.

  OT-X support two Ubuntu platforms: Ubuntu Desktop 22.04.3 LTS and Ubuntu Server 22.04.3 LTS.

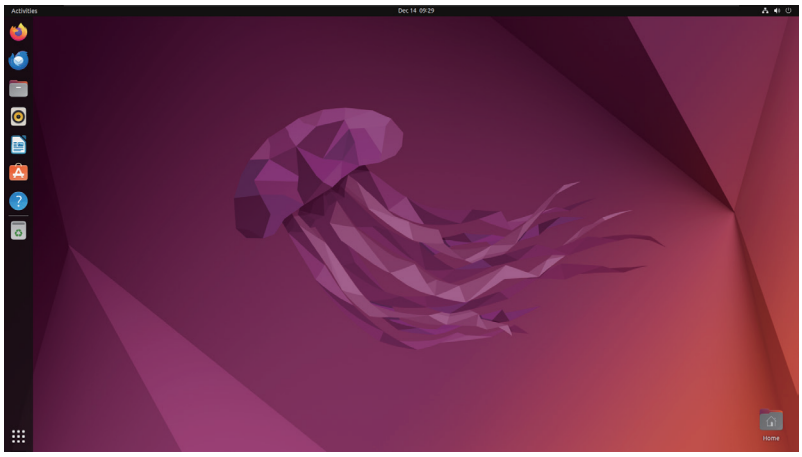
  Setup the machine with a keyboard, mouse, screen, and plugin network. When machine power on. The Ubuntu will auto login by default account/password (OT-X/0000) and got a DHCP IP address.

  Before use OT-X need to get the machine IP address in below:

On Ubuntu Desktop:

Get IP address from terminal

1. Go to Ubuntu Desktop



2. Press “Ctrl+Alt+T” to open terminal

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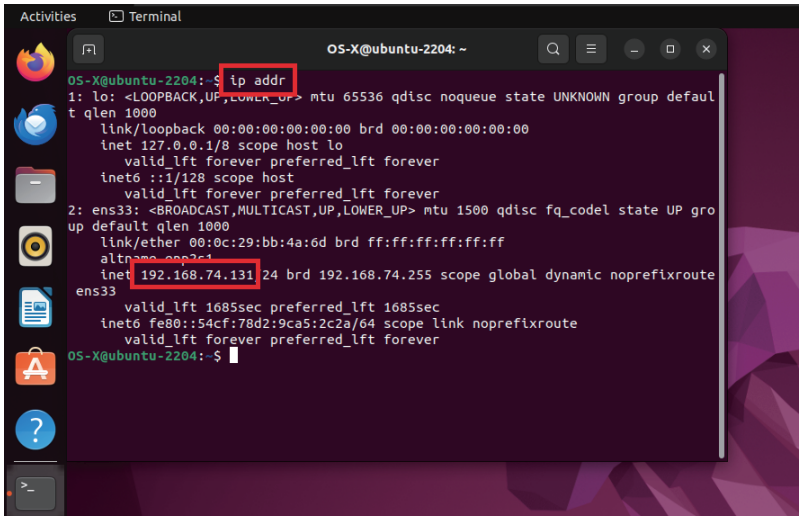
3. Get IP address by running the "**ip addr**" then press "Enter"



4. The IP address is 192.168.74.131 in image

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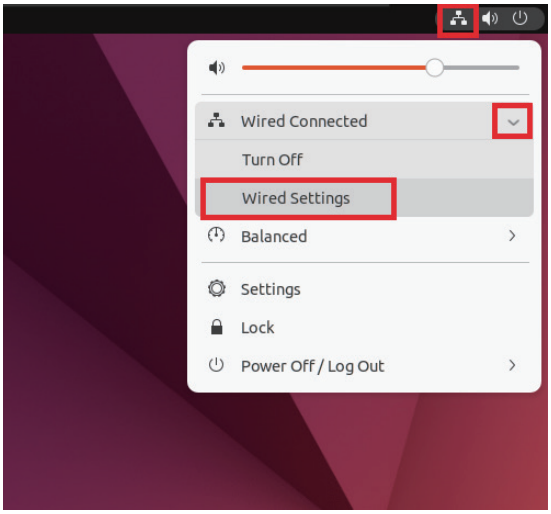
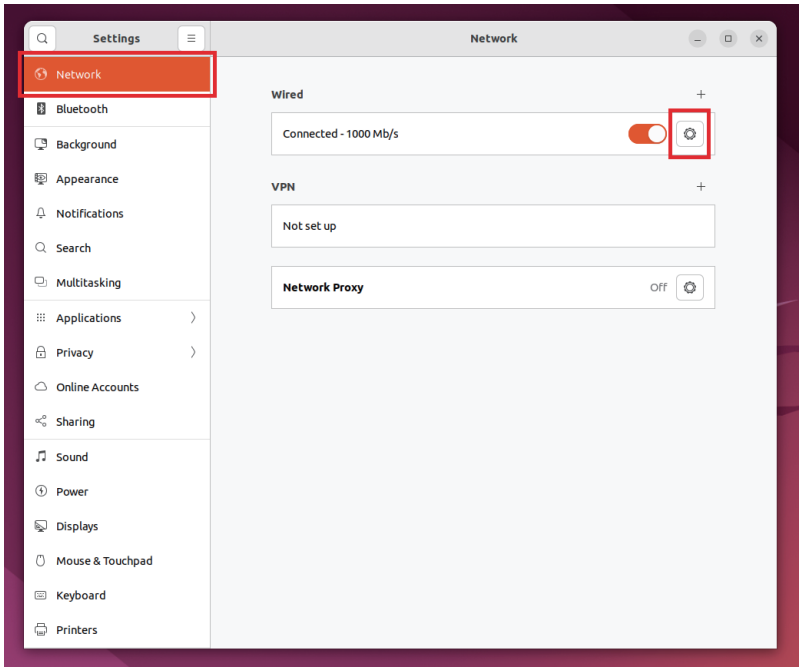
Get IP address by UI

1. Click the network icon in the upper right corner
2. Then expend the Wired Connected dropdown
3. Click on "**Wired Setting**" as shown below image



4. A network settings dialog box will appear
5. Click "**Network**" in left sidebar
6. Under the **Wired** section, click the Gear icon as showing in below image



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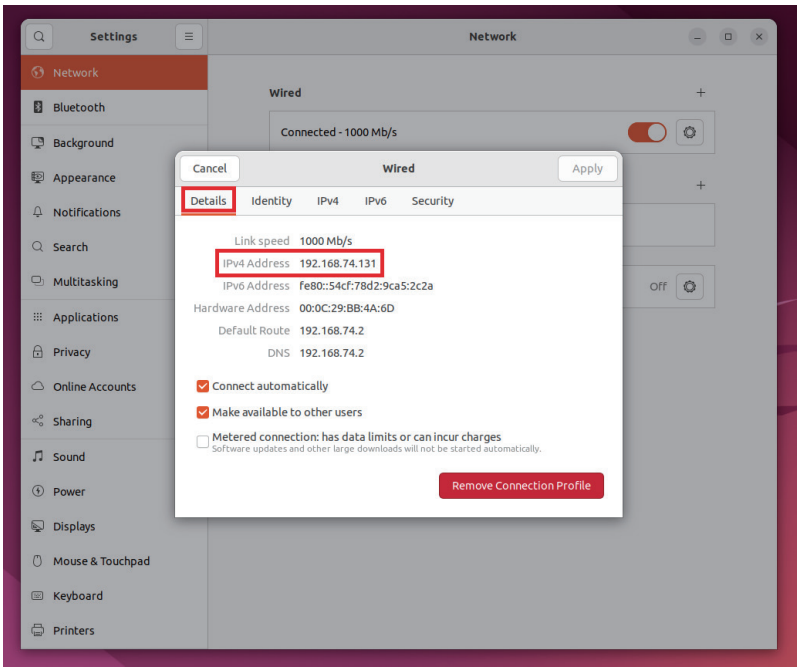
7. Wired dialog box will appear
8. In "**Details**" tab, the **IPv4 Address** is the machine IP address in below image



9. The IP address is 192.168.74.131 in image

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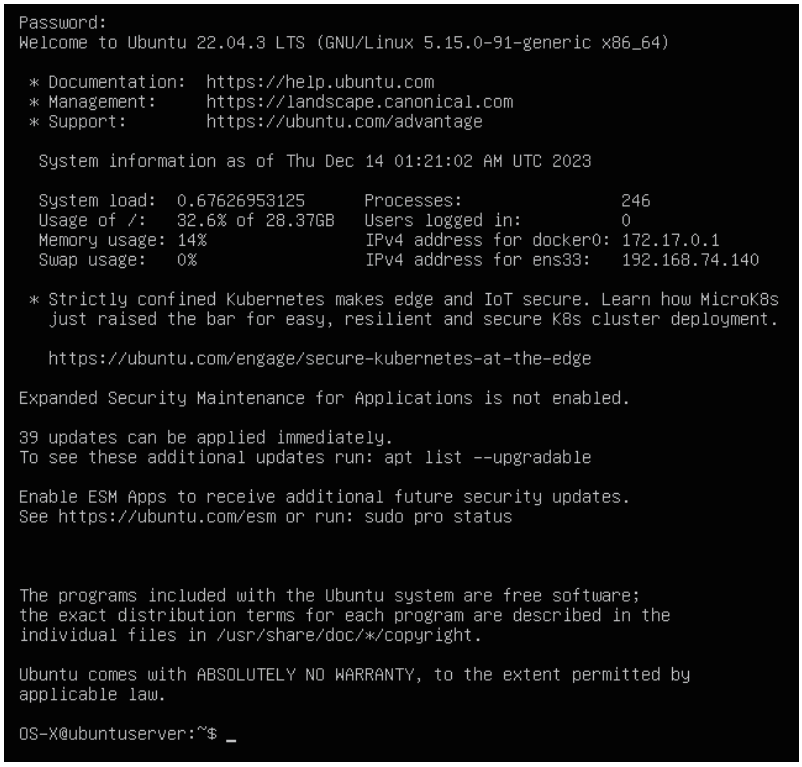
On Ubuntu Server:

1. Go to Ubuntu Server Terminal in below image



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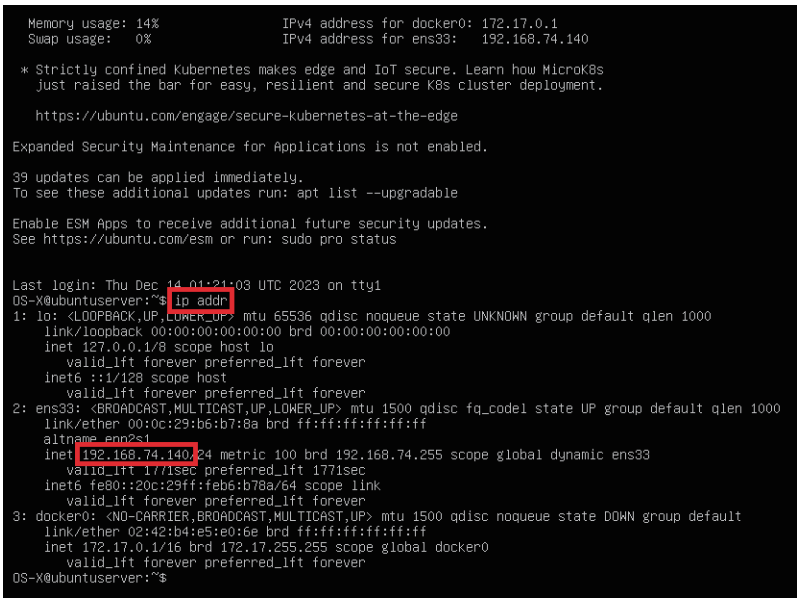
2. Key in the “ip addr” then press “Enter” will get the machine IP address in below image



3. The IP address is 192.168.74.140 in image

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