



AIOT CLOUD CORP.

AIC OT-X

User Manual

AIOT CLOUD CORP.

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FAQ



User Guides

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PREFACE

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from AIOT CLOUD CORP. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: <https://www.aiotcloud.dev>. AIOT CLOUD CORP. shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

The AIC OT-X is a trademark of AIOT CLOUD CORP. All other product names mentioned herein are registered trademarks of their respective owners.

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.

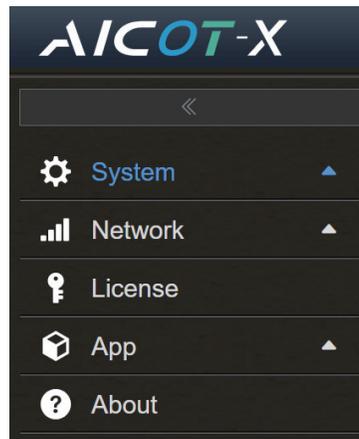
The preload AIC IoT Studio is the latest flow management tool for the Operational Technology (OT) and Information Technology (IT) integration. Our flows support device operation inspection, monitoring and automation to ensure the device running smoothly.

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.

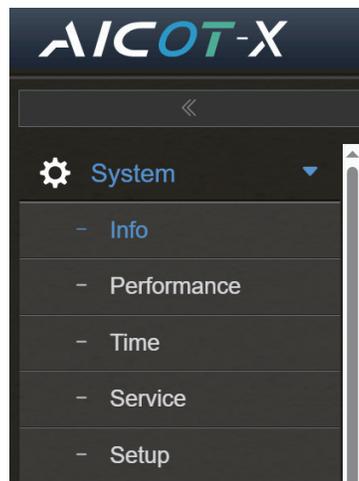
CHAPTER 2: AIC OT-X BASICS

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.



2.1.1 Info

The Info page contains Information and Disk List.

System - Info

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

Disk List

#	Disk Name	Model	Size (GB)	Serial Number	Removable
1	sda	VBOX HARDDISK	25.00	110.ATA VBOX HARDDISK VB39623838-03e64e29	false

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.

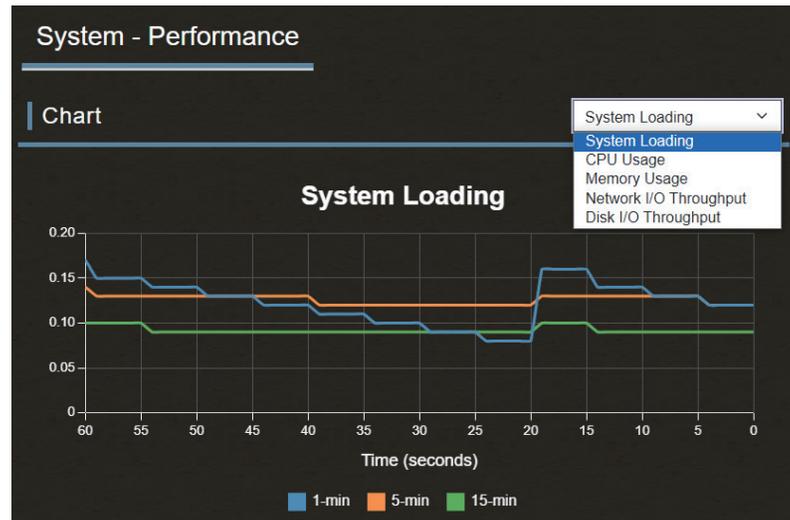
Information	
Hostname	deb-test2
CPU	Intel(R) Core(TM) i9-10900X CPU @ 3.70GHz
Architecture	x86_64
Logical CPU(s)	2
Socket(s)	1
Core(s)/Socket	2
Thread(s)/Core	1
Memory	4102111232
Swap	2147479552
Kernel	Linux 5.15.0-89-generic
Distro	Ubuntu 22.04.3 LTS

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

2.1.2 Performance

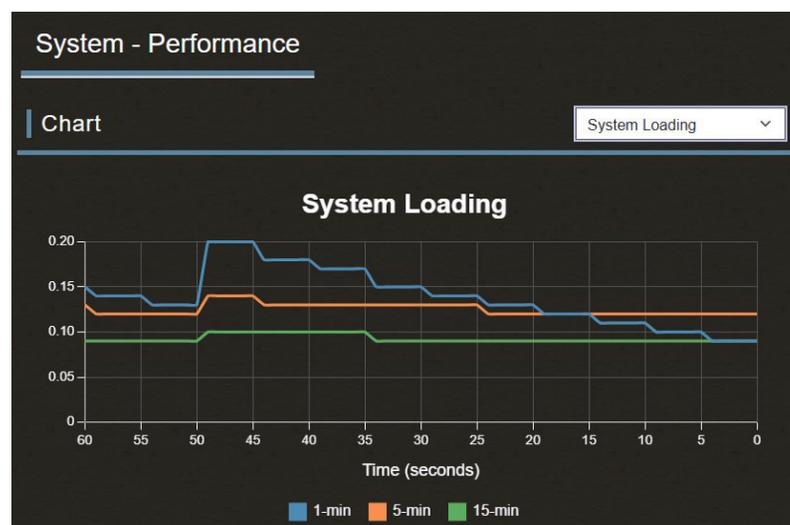
The Performance page displays 5 Charts of System Loading, CPU Usage, Memory Usage, Network I/O Throughput, and Disk I/O Throughput.



First Chart displays System Loading.

This chart provides users to check the current loading status of the machine.

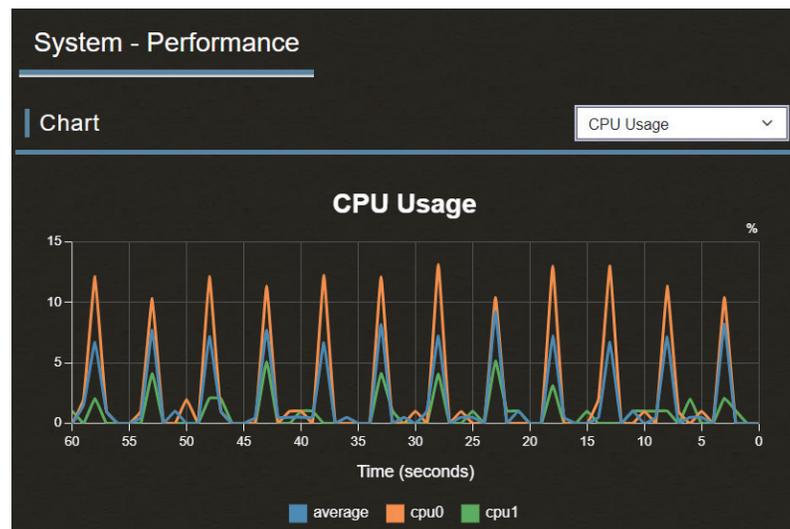
The sampling rates are: 1 minute, 5 minutes, and 15 minutes.



Second Chart displays CPU Usage.

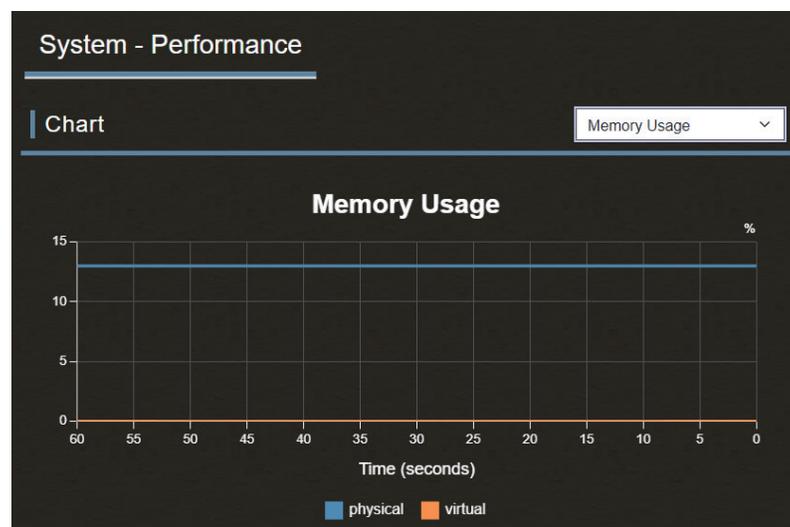
This chart provides users with a reference regarding the utilization of CPU when executing task(s). It shows the situation regarding the CPU utilization rate being occupied.

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).

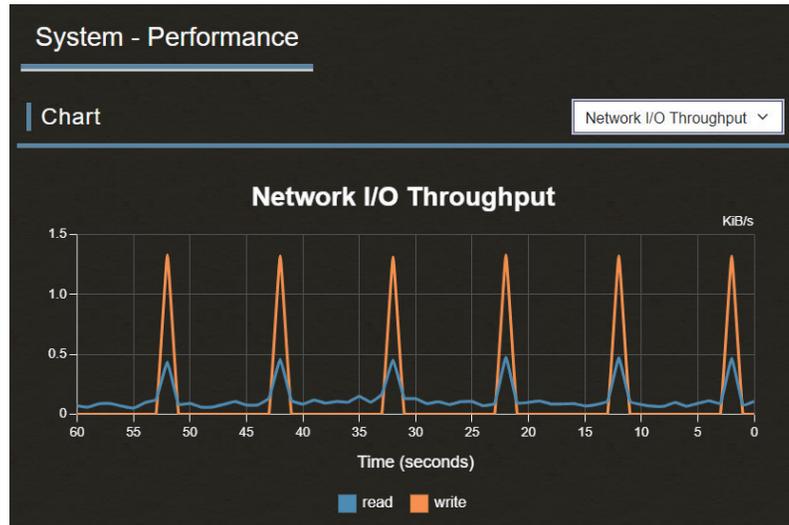


Third Chart displays Memory Usage.

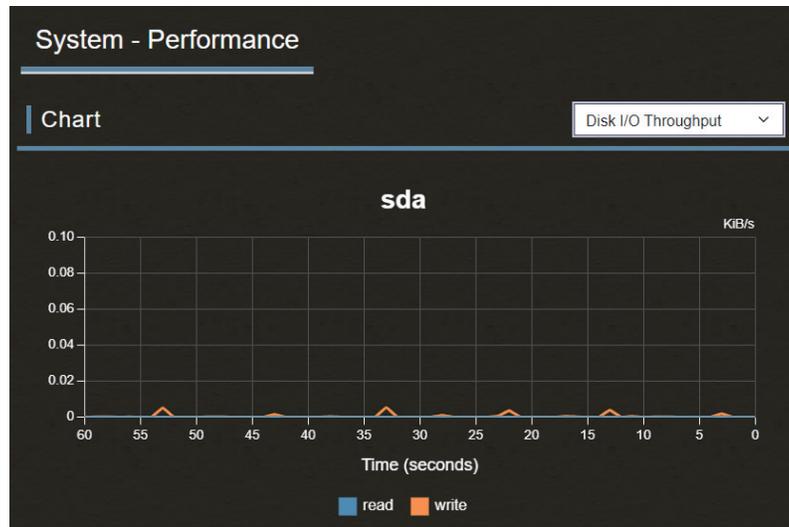
This chart provides users with a reference regarding the utilization of memory when executing task(s).



Fourth Chart displays Network I/O Throughput.



Fifth Chart displays HD I/O Throughput.



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.

System - Time

Time Setting

Time Zone *	Etc/UTC (UTC, +0000) ▼
Date Time	2023-12-27 03:38:32
NTP Setting	<input checked="" type="checkbox"/> Enable
NTP Status	Initial synchronization to time server 185.125.190.56:123 (ntp.ubuntu.com).

NTP Servers

#	Address
1	- Select NTP Server - ▼
2	- Select NTP Server - ▼
3	- Select NTP Server - ▼
4	- Select NTP Server - ▼
5	- Select NTP Server - ▼

Save

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

Time Setting

Time Zone *	Etc/UTC (UTC, +0000) ▼
Date Time	2024-01-10 02:33:26
NTP Setting	<input checked="" type="checkbox"/> Enable
NTP Status	Initial synchronization to time server 91.189.91.157:123 (ntp.ubuntu.com).

NTP Servers display the Addresses of the NTP Servers.

NTP Servers

#	Address
1	- Select NTP Server -
2	- Select NTP Server -
3	- Select NTP Server -
4	- Select NTP Server -
5	- Select NTP Server -

 Save

2.1.4 Service

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

System - Service

OT-X HTTPS Information

HTTPS	<input checked="" type="checkbox"/> Enable
Frontend Port *	<input type="text" value="30100"/>
Backend Port *	<input type="text" value="30200"/>

When the HTTPS information is modified, the OT-X server will restart.

Enable ICMP echo reply (ping).

SSH Information

SSH	<input checked="" type="checkbox"/> Enable
Status	active

SNMP Information

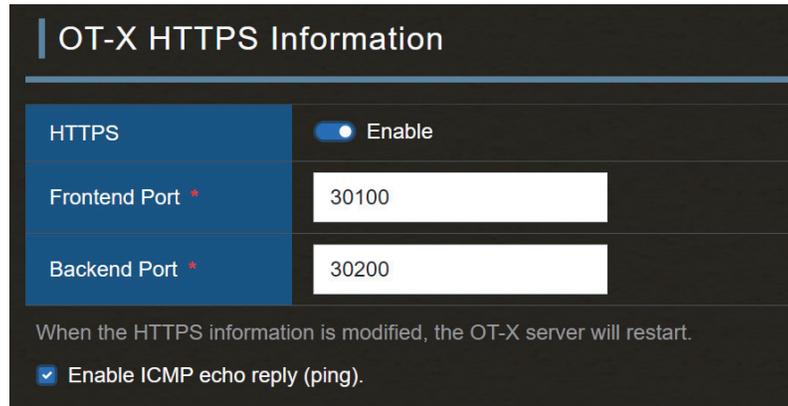
SNMP	<input checked="" type="checkbox"/> Enable
Status	active

RDP Information

RDP	<input checked="" type="checkbox"/> Enable
Status	active

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.



The screenshot shows the 'OT-X HTTPS Information' configuration page. It features a table with the following settings:

OT-X HTTPS Information	
HTTPS	<input checked="" type="checkbox"/> Enable
Frontend Port *	30100
Backend Port *	30200

When the HTTPS information is modified, the OT-X server will restart.

Enable ICMP echo reply (ping).

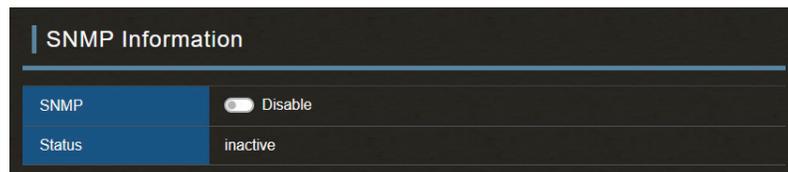
Second part, SSH Information, for SSH configuration settings, including Disable, Enable, and Current Status Info.



The screenshot shows the 'SSH Information' configuration page. It features a table with the following settings:

SSH Information	
SSH	<input checked="" type="checkbox"/> Enable
Status	active

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

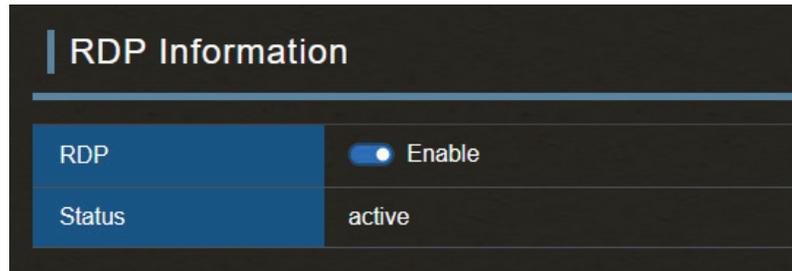


The screenshot shows the 'SNMP Information' configuration page. It features a table with the following settings:

SNMP Information	
SNMP	<input type="checkbox"/> Disable
Status	inactive

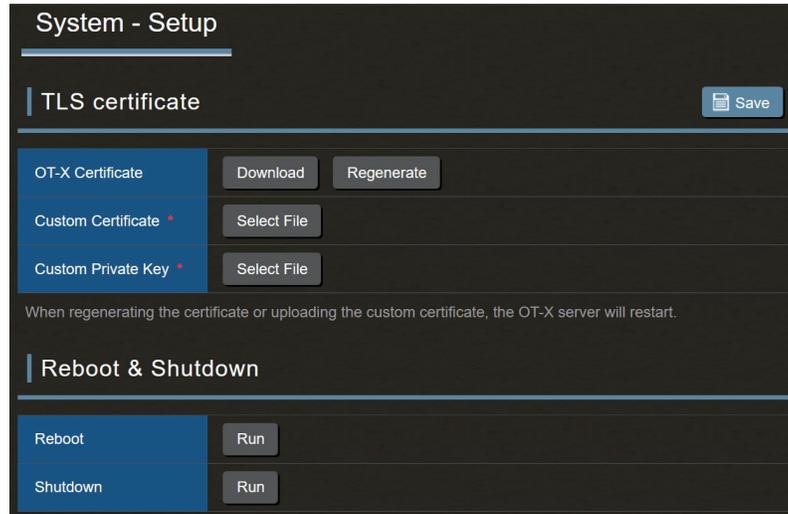
Fourth part, RDP Information, for RDP configuration settings, including Disable, Enable, Current Status Info.

Note: This part is divided into Server Edition and Desktop Edition. If you are using the Desktop Edition, it will display RDP Information.



2.1.5 Setup

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



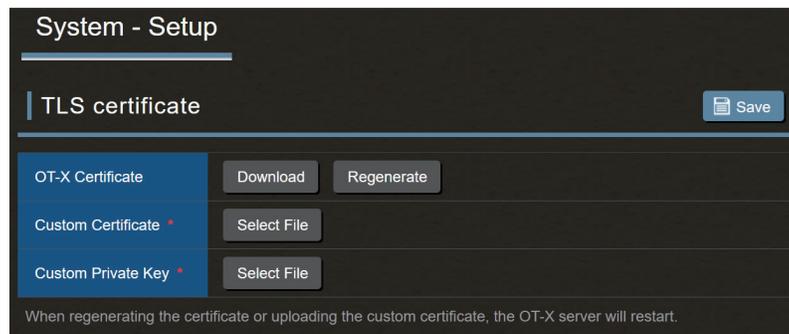
The screenshot shows the 'System - Setup' interface. It is divided into two main sections: 'TLS certificate' and 'Reboot & Shutdown'.
The 'TLS certificate' section has a 'Save' button in the top right. It contains three rows of controls:

- 'OT-X Certificate' with 'Download' and 'Regenerate' buttons.
- 'Custom Certificate *' with a 'Select File' button.
- 'Custom Private Key *' with a 'Select File' button.

Below these controls is a note: 'When regenerating the certificate or uploading the custom certificate, the OT-X server will restart.'
The 'Reboot & Shutdown' section contains two rows of controls:

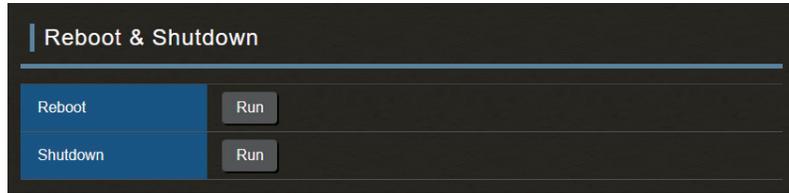
- 'Reboot' with a 'Run' button.
- 'Shutdown' with a 'Run' button.

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.



This is an identical screenshot to the one above, showing the 'System - Setup' interface with the 'TLS certificate' and 'Reboot & Shutdown' sections.

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



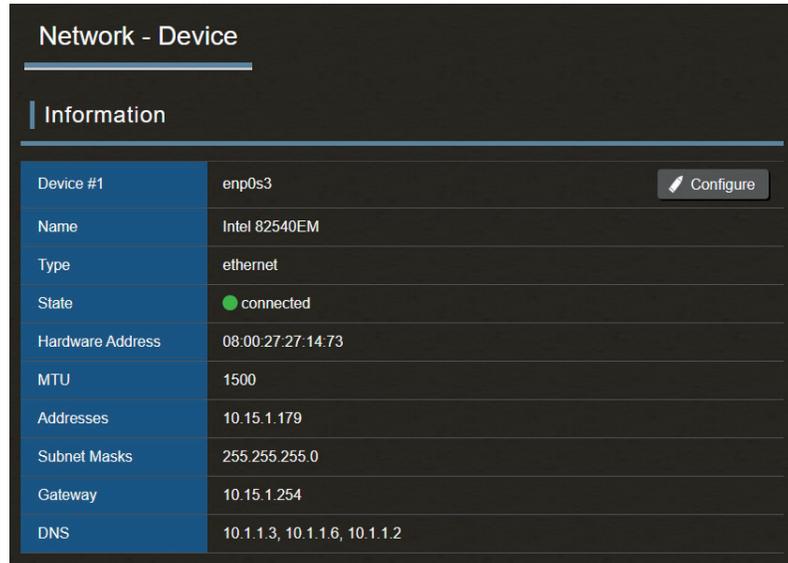
2.2 Network

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



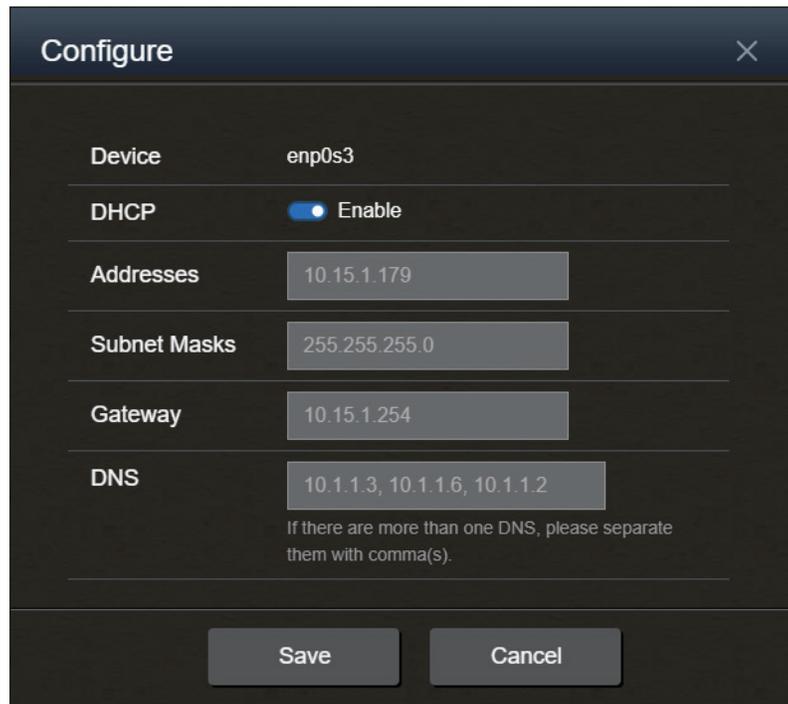
2.2.1 Device

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



Network - Device	
Information	
Device #1	enp0s3 Configure
Name	Intel 82540EM
Type	ethernet
State	connected
Hardware Address	08:00:27:27:14:73
MTU	1500
Addresses	10.15.1.179
Subnet Masks	255.255.255.0
Gateway	10.15.1.254
DNS	10.1.1.3, 10.1.1.6, 10.1.1.2

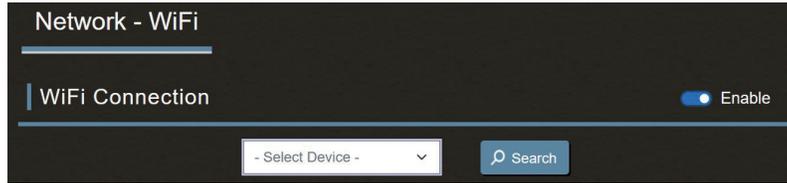
Also, you can configure your IPC network interface card here.



Device	enp0s3
DHCP	<input checked="" type="checkbox"/> Enable
Addresses	<input type="text" value="10.15.1.179"/>
Subnet Masks	<input type="text" value="255.255.255.0"/>
Gateway	<input type="text" value="10.15.1.254"/>
DNS	<input type="text" value="10.1.1.3, 10.1.1.6, 10.1.1.2"/> <small>If there are more than one DNS, please separate them with comma(s).</small>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

2.2.2 WiFi

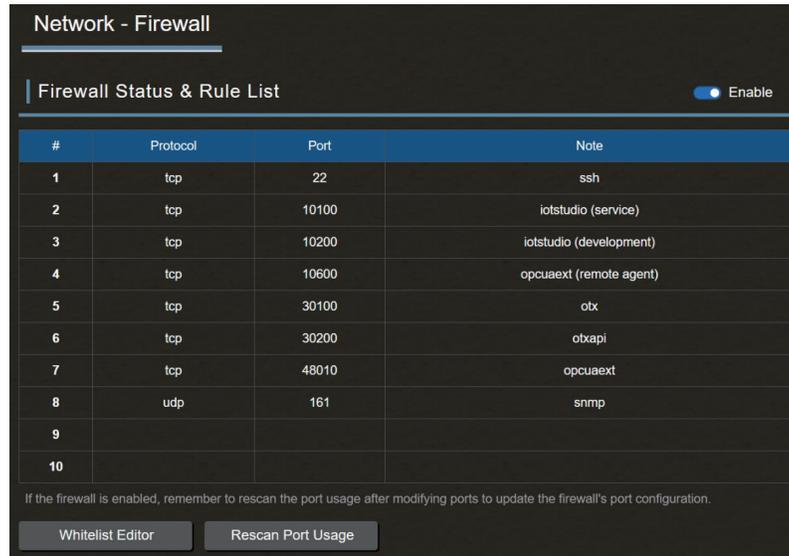
If your IPC is equipped with an additional WiFi card, you can select your WiFi card on this page to configure the relevant connection settings.



The screenshot shows a dark-themed configuration window titled "Network - WiFi". Below the title is a horizontal line. Underneath, the text "WiFi Connection" is displayed on the left, and a toggle switch labeled "Enable" is on the right, which is currently turned on. Below this, there is a dropdown menu with the text "- Select Device -" and a downward arrow. To the right of the dropdown is a blue button with a magnifying glass icon and the text "Search".

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.



Network - Firewall

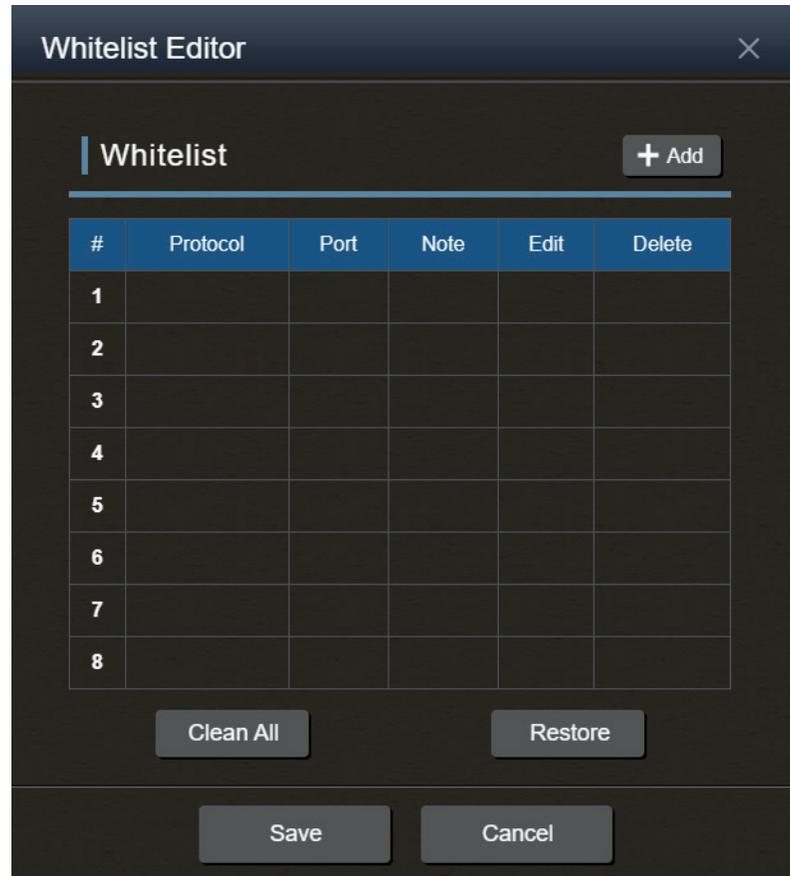
Firewall Status & Rule List Enable

#	Protocol	Port	Note
1	tcp	22	ssh
2	tcp	10100	iotstudio (service)
3	tcp	10200	iotstudio (development)
4	tcp	10600	opcuext (remote agent)
5	tcp	30100	otx
6	tcp	30200	otxapi
7	tcp	48010	opcuext
8	udp	161	snmp
9			
10			

If the firewall is enabled, remember to rescan the port usage after modifying ports to update the firewall's port configuration.

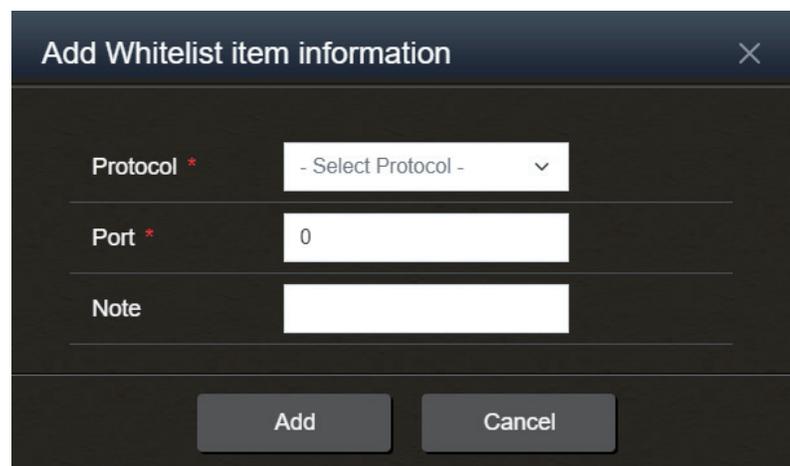
[Whitelist Editor](#) [Rescan Port Usage](#)

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



The Whitelist Editor window displays a table with 8 rows and 6 columns. The columns are labeled #, Protocol, Port, Note, Edit, and Delete. The table is currently empty. Below the table are buttons for 'Clean All', 'Restore', 'Save', and 'Cancel'. A '+ Add' button is located in the top right corner of the table area.

#	Protocol	Port	Note	Edit	Delete
1					
2					
3					
4					
5					
6					
7					
8					



The Add Whitelist item information dialog contains three input fields: Protocol (a dropdown menu with '- Select Protocol -'), Port (a text box with '0'), and Note (a text box). Below the fields are 'Add' and 'Cancel' buttons.

Protocol *

Port *

Note

You have completed the editing of your whitelist.

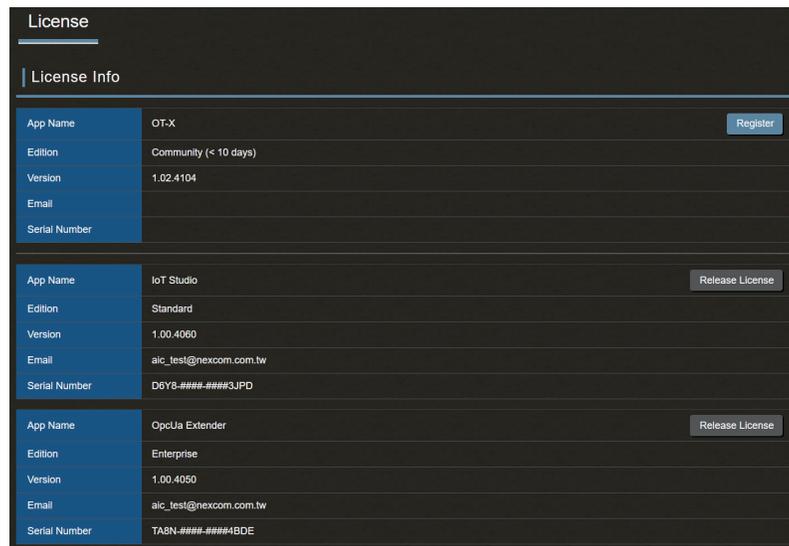
2.3 License

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.



License Info	
App Name	OT-X Register
Edition	Community (< 10 days)
Version	1.02.4104
Email	
Serial Number	
App Name	IoT Studio Release License
Edition	Standard
Version	1.00.4060
Email	aic_test@nexcom.com.tw
Serial Number	D6Y3-####-###3JPD
App Name	OpcUa Extender Release License
Edition	Enterprise
Version	1.00.4050
Email	aic_test@nexcom.com.tw
Serial Number	TABN-####-###4BDE



Register

App: OT-X

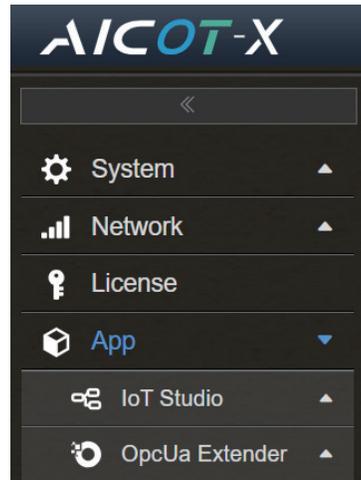
Email *

Serial Number * - -

Save Cancel

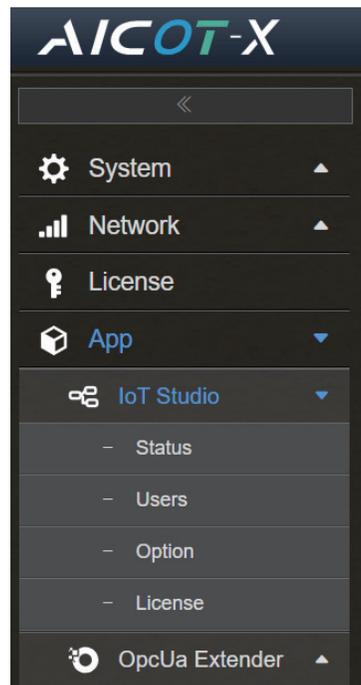
2.4 App

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.



2.4.1.1 Status

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

IoT Studio - Status

Development Mode Status

Status	Running
URL	http://10.15.1.179:10200 ↗
Port *	<input style="width: 100px;" type="text" value="10200"/> <small>If the firewall is enabled, remember to rescan the port usage after modifying this port.</small>
Configuration	<input checked="" type="checkbox"/> Run Development Environment automatically at device startup. <input type="checkbox"/> Enable HTTPS in Development Mode. <input type="checkbox"/> Enable Logging in Development Mode.

Restart
Start
Stop

Service Mode Status

Status	Running
URL	http://10.15.1.179:10100 ↗
Port *	<input style="width: 100px;" type="text" value="10100"/> <small>If the firewall is enabled, remember to rescan the port usage after modifying this port.</small>
Configuration	<input checked="" type="checkbox"/> Run Service automatically at device startup. <input type="checkbox"/> Enable HTTPS in Service Mode. <input type="checkbox"/> Enable Logging in Service Mode.

Restart
Start
Stop

IoT Studio Certificate

Configure Certificate
Download Certificate

Save

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

Development Mode Status

Status	Running
URL	http://10.15.1.179:10200
Port *	<input style="width: 100px;" type="text" value="10200"/> <small>If the firewall is enabled, remember to rescan the port usage after modifying this port.</small>
Configuration	<input checked="" type="checkbox"/> Run Development Environment automatically at device startup. <input type="checkbox"/> Enable HTTPS in Development Mode. <input type="checkbox"/> Enable Logging in Development Mode.

Restart
Start
Stop

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

Service Mode Status

Status	Stopped
URL	---
Port *	<input style="width: 100px;" type="text" value="10100"/> <small>If the firewall is enabled, remember to rescan the port usage after modifying this port.</small>
Configuration	<input checked="" type="checkbox"/> Run Service automatically at device startup. <input type="checkbox"/> Enable HTTPS in Service Mode. <input type="checkbox"/> Enable Logging in Service Mode.

Restart
Start
Stop

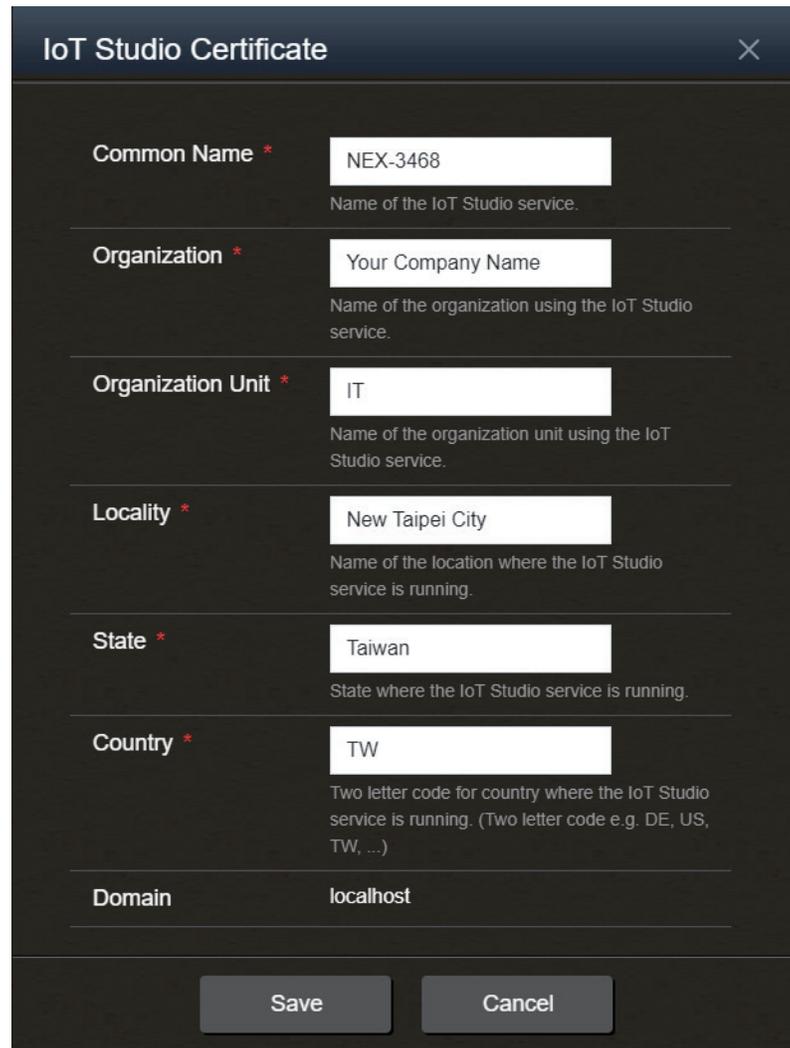
Third part, IoT Studio Certificate, you can execute 'Configure Certificate', and 'Download Certificate' here.

IoT Studio Certificate

Configure Certificate
Download Certificate

Save

The following steps will complete the configuration of the certificate.



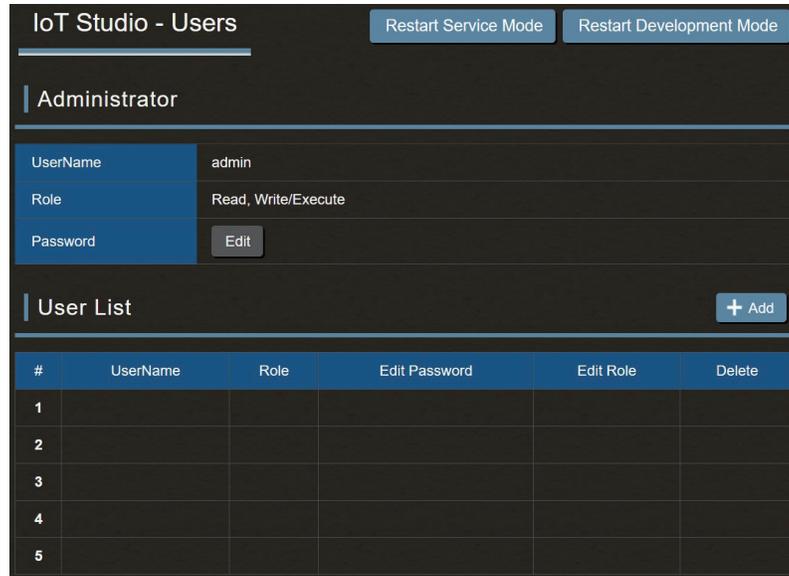
The image shows a dark-themed dialog box titled "IoT Studio Certificate" with a close button (X) in the top right corner. The dialog contains several input fields, each with a label, a value, and a descriptive subtitle. The fields are: "Common Name" with value "NEX-3468" (subtext: "Name of the IoT Studio service."), "Organization" with value "Your Company Name" (subtext: "Name of the organization using the IoT Studio service."), "Organization Unit" with value "IT" (subtext: "Name of the organization unit using the IoT Studio service."), "Locality" with value "New Taipei City" (subtext: "Name of the location where the IoT Studio service is running."), "State" with value "Taiwan" (subtext: "State where the IoT Studio service is running."), "Country" with value "TW" (subtext: "Two letter code for country where the IoT Studio service is running. (Two letter code e.g. DE, US, TW, ...)"), and "Domain" with value "localhost". At the bottom of the dialog are two buttons: "Save" and "Cancel".

Field	Value	Description
Common Name *	NEX-3468	Name of the IoT Studio service.
Organization *	Your Company Name	Name of the organization using the IoT Studio service.
Organization Unit *	IT	Name of the organization unit using the IoT Studio service.
Locality *	New Taipei City	Name of the location where the IoT Studio service is running.
State *	Taiwan	State where the IoT Studio service is running.
Country *	TW	Two letter code for country where the IoT Studio service is running. (Two letter code e.g. DE, US, TW, ...)
Domain	localhost	

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

2.4.1.2 Users

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



The screenshot shows the 'IoT Studio - Users' interface. At the top right, there are two buttons: 'Restart Service Mode' and 'Restart Development Mode'. Below the title, there are two main sections: 'Administrator' and 'User List'.

Administrator Section:

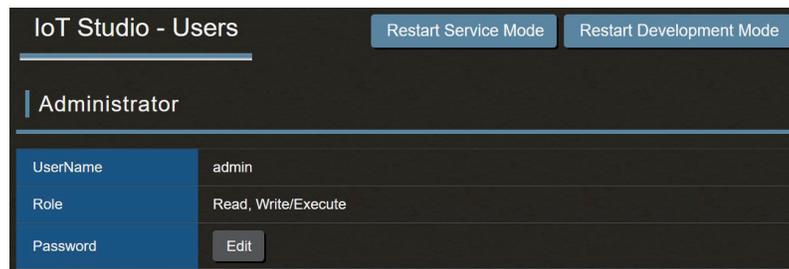
- UserName:** admin
- Role:** Read, Write/Execute
- Password:** [Edit button]

User List Section:

There is an '+ Add' button to the right of the 'User List' title. Below it is a table with the following structure:

#	UserName	Role	Edit Password	Edit Role	Delete
1					
2					
3					
4					
5					

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



This screenshot is identical to the previous one, but the 'Edit' button next to the 'Password' field in the Administrator section is highlighted in blue, indicating it is the focus of the next step.

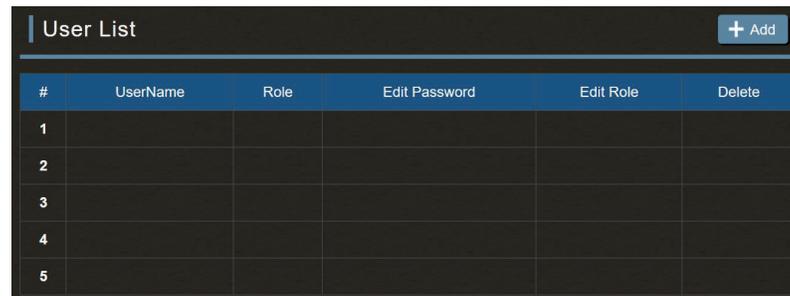


The 'Edit Admin's Password' dialog box is shown. It contains the following fields and options:

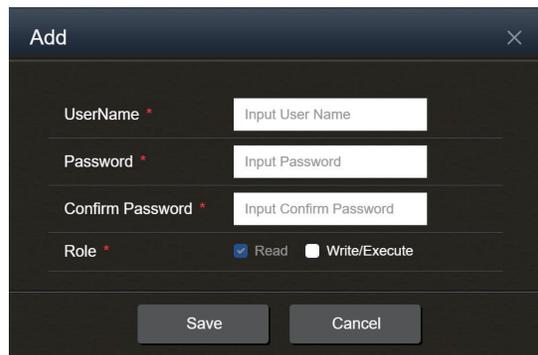
- UserName:** admin
- Password *:** Input Password
- Confirm Password *:** Input Confirm Password
- Role:** Read Write/Execute

At the bottom, there are two buttons: 'Save' and 'Cancel'.

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



#	UserName	Role	Edit Password	Edit Role	Delete
1					
2					
3					
4					
5					



Add

UserName *

Password *

Confirm Password *

Role * Read Write/Execute

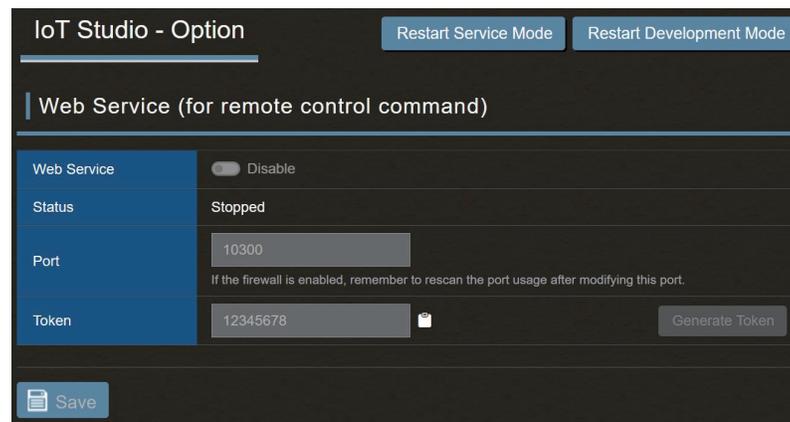
When you add/ delete/ modify users' info, please restart Service/ Development Mode to activate the system and apply the changes.

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.



IoT Studio - Option		Restart Service Mode	Restart Development Mode
Web Service (for remote control command)			
Web Service	<input type="checkbox"/> Disable		
Status	Stopped		
Port	10300		
If the firewall is enabled, remember to rescan the port usage after modifying this port.			
Token	12345678	<input type="button" value="Generate Token"/>	
<input type="button" value="Save"/>			

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.



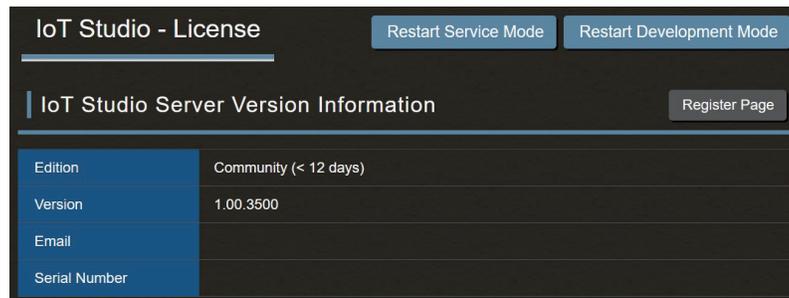
The screenshot shows the 'IoT Studio - License' page. At the top right, there are two buttons: 'Restart Service Mode' and 'Restart Development Mode'. Below the title bar, there is a section for 'IoT Studio Server Version Information' with a 'Register Page' button. This section contains a table with the following data:

Edition	Community (< 12 days)
Version	1.00.3500
Email	
Serial Number	

Below this is a section for 'Product Details' with another table:

Libraries	openssl-1.1.1j Embedded.
Node-RED	3.0.2
Node.js	v16.20.2
Expiration	14day(s)

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



This screenshot is a close-up of the 'IoT Studio - License' page, focusing on the 'IoT Studio Server Version Information' section. It shows the same table as the previous screenshot:

Edition	Community (< 12 days)
Version	1.00.3500
Email	
Serial Number	

About Register License operation, please refer to [2.3 License](#).

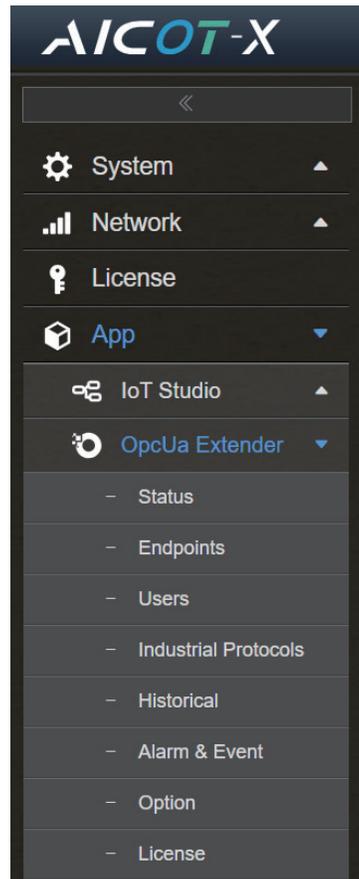
Second part, Product Details, you can get Libraries, Node-RED version and other details of corresponding IoT Studio Server Version.

This page provides information on the versions and expiration dates of the related products that required to run IoT Studio.

Product Details	
Libraries	openssl-1.1.1j Embedded.
Node-RED	3.0.2
Node.js	v16.20.2
Expiration	14day(s)

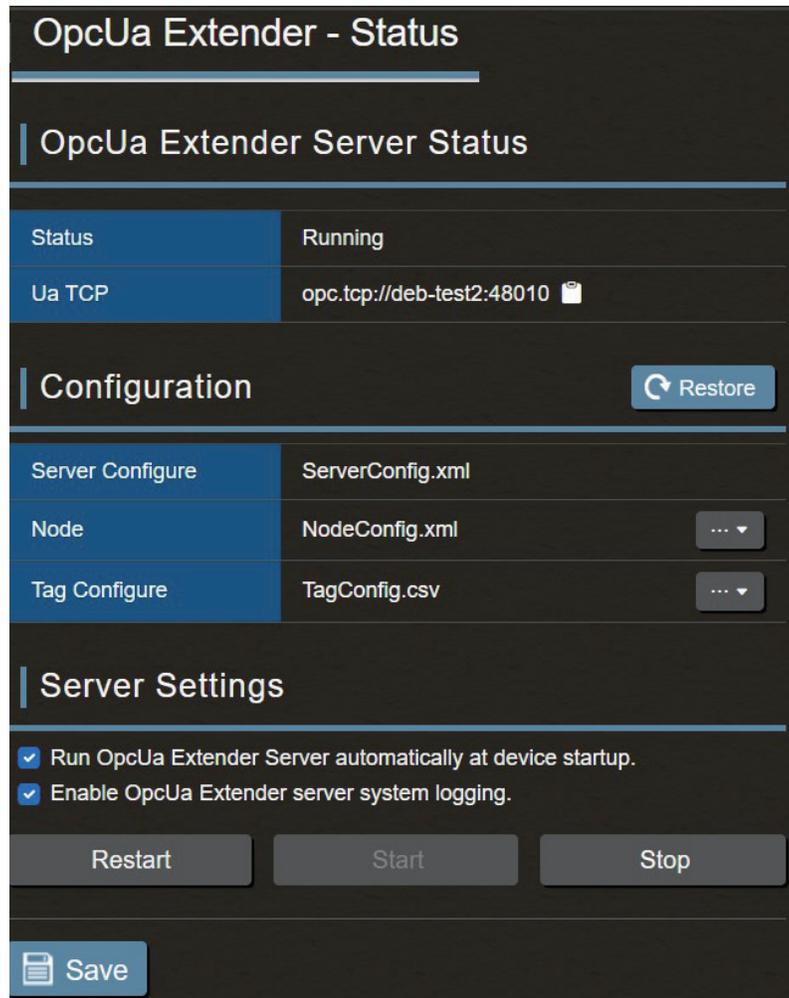
2.4.2 OpcUa Extender

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



2.4.2.1 Status

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



The screenshot displays the 'OpcUa Extender - Status' page, which is divided into three main sections: Status, Configuration, and Server Settings.

OpcUa Extender - Status

OpcUa Extender Server Status

Status	Running
Ua TCP	opc.tcp://deb-test2:48010 

Configuration

[Restore](#)

Server Configure	ServerConfig.xml
Node	NodeConfig.xml ...
Tag Configure	TagConfig.csv ...

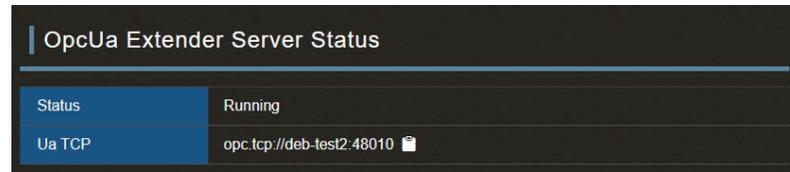
Server Settings

- Run OpcUa Extender Server automatically at device startup.
- Enable OpcUa Extender server system logging.

[Restart](#) [Start](#) [Stop](#)

[Save](#)

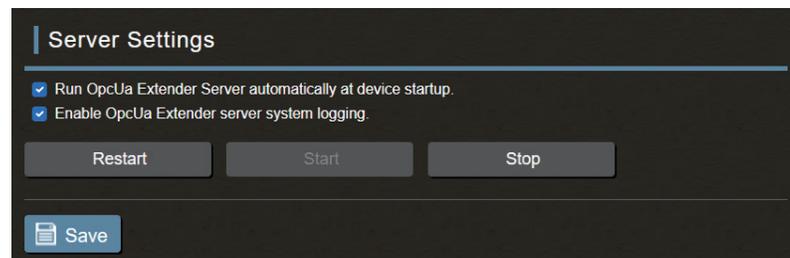
First part, OpcUa Extender Server Status, you can check the server status and copy the Ua TCP URL here.



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

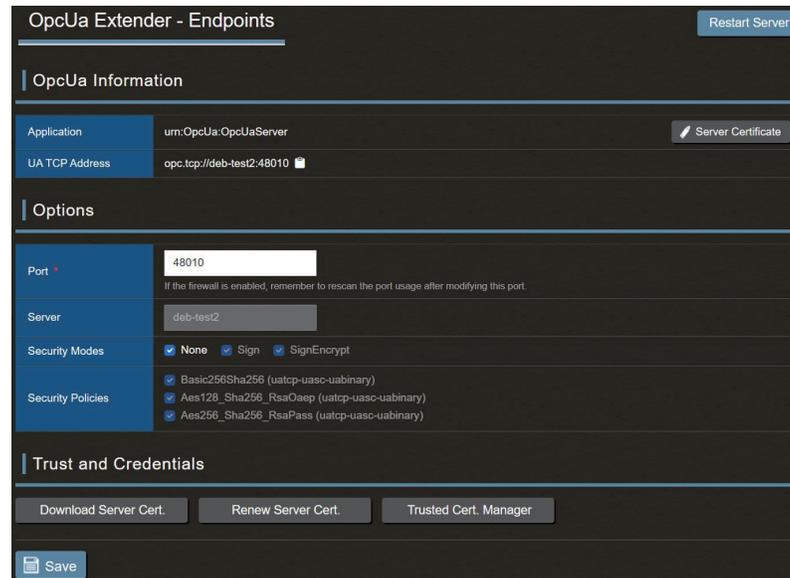


Third part, Server Settings, you can set server auto run when device startup and enable server system logging features.



2.4.2.2 Endpoints

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



OpcUa Extender - Endpoints Restart Server

OpcUa Information

Application	urn:OpcUa.OpcUaServer	Server Certificate
UA TCP Address	opc.tcp://deb-test2:48010	

Options

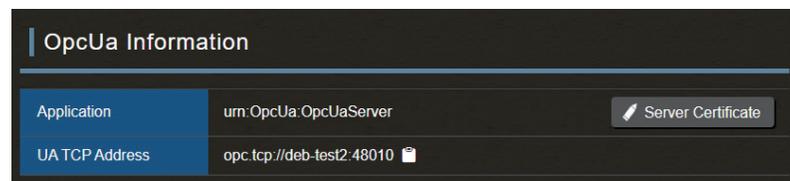
Port *	48010	<small>If the firewall is enabled, remember to rescan the port usage after modifying this port.</small>
Server	deb-test2	
Security Modes	<input checked="" type="checkbox"/> None <input checked="" type="checkbox"/> Sign <input checked="" type="checkbox"/> SignEncrypt	
Security Policies	<input checked="" type="checkbox"/> Basic256Sha256 (uatcp-uasc-uabinary) <input checked="" type="checkbox"/> Aes128_Sha256_RsaOaep (uatcp-uasc-uabinary) <input checked="" type="checkbox"/> Aes256_Sha256_RsaPass (uatcp-uasc-uabinary)	

Trust and Credentials

Download Server Cert. Renew Server Cert. Trusted Cert. Manager

Save

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.



OpcUa Information

Application	urn:OpcUa.OpcUaServer	Server Certificate
UA TCP Address	opc.tcp://deb-test2:48010	

OpcUa Extender Server Certificate ✕

Common Name *
Name of the OPC UA server application.

Organization *
Name of the organization using the OPC UA server.

Organization Unit *
Name of the organization unit using the OPC UA server.

Locality *
Name of the location where the OPC UA server is running.

State *
State where the OPC UA server is running.

Country *
Two letter code for country where the OPC UA server is running. (Two letter code e.g. DE, US, TW, ...)

Domain

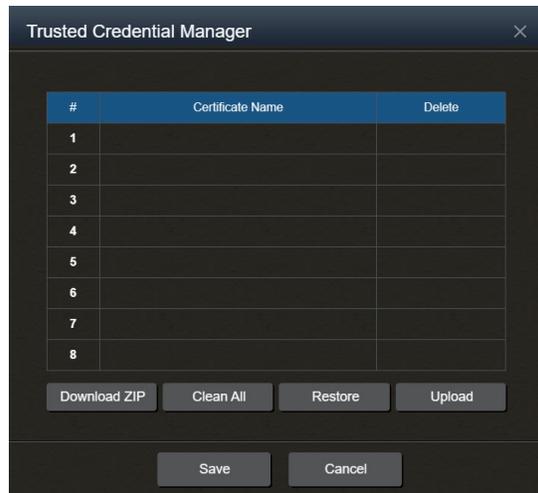
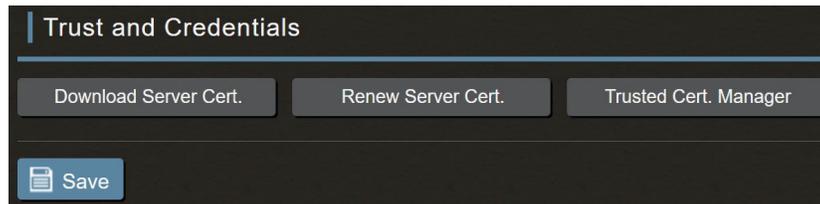
Second part, Options, is as below. You can only modify Port info and Security Modes' None feature and also provide Security Policies for connection reference.

Options

Port *	<input style="width: 100%;" type="text" value="48010"/> <small>If the firewall is enabled, remember to rescan the port usage after modifying this port.</small>
Server	<input style="width: 100%;" type="text" value="deb-test2"/>
Security Modes	<input checked="" type="checkbox"/> None <input checked="" type="checkbox"/> Sign <input checked="" type="checkbox"/> SignEncrypt
Security Policies	<input checked="" type="checkbox"/> Basic256Sha256 (uatcp-uasc-uabinary) <input checked="" type="checkbox"/> Aes128_Sha256_RsaOaep (uatcp-uasc-uabinary) <input checked="" type="checkbox"/> Aes256_Sha256_RsaPass (uatcp-uasc-uabinary)

Third part, Trust and Credentials, you can download, renew server certificate.

For trust authorization use, you can add/ delete customer's own certificate features.

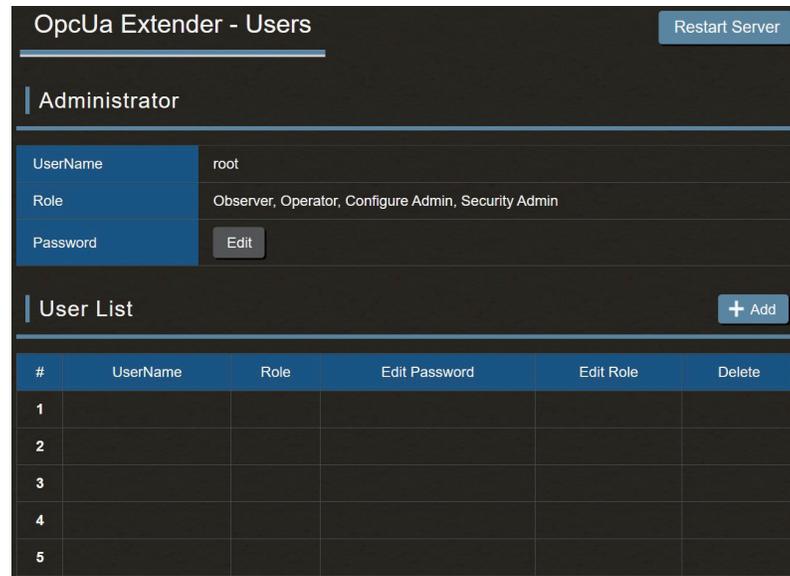


When you modify/ add/ delete on this page, please restart OpcUa Extender Server to activate the system and apply the changes.



2.4.2.3 Users

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



OpcUa Extender - Users Restart Server

Administrator

UserName: root

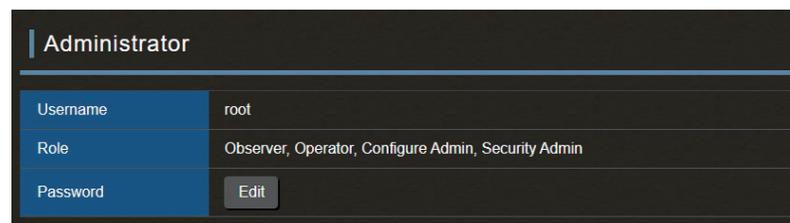
Role: Observer, Operator, Configure Admin, Security Admin

Password: Edit

User List + Add

#	UserName	Role	Edit Password	Edit Role	Delete
1					
2					
3					
4					
5					

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



Administrator

Username: root

Role: Observer, Operator, Configure Admin, Security Admin

Password: Edit



Edit Root's Password ×

UserName:

Password *

Confirm Password *

Role: Observer, Operator, Configure Admin, Security Admin

Save Cancel

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

#	UserName	Role	Edit Password	Edit Role	Delete
1					
2					
3					
4					
5					

Add ✕

UserName *

Password *

Confirm Password *

Role * Observer
 Operator
 Configure Admin
 Security Admin

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

Restart OpcUa Extender Server ✕

 Are you sure to restart OpcUa Extender server?

2.4.2.4 Industrial Protocols

The Industrial Protocols page displays Protocol Configure list.



OpcUa Extender - Industrial Protocols					
Protocol Configure					
#	Protocols	Parameters	Slave ID	Edit	Delete
1					
2					
3					
4					
5					

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



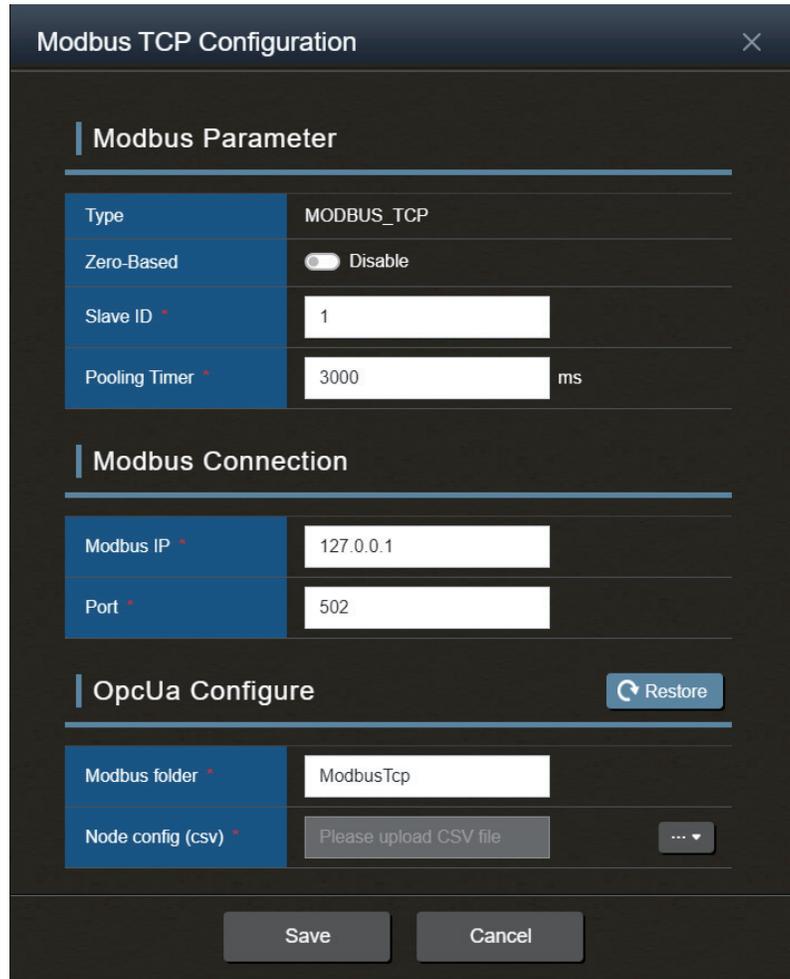
Protocol Configure					
#	Protocols	Parameters	Slave ID	Edit	Delete
1					
2					
3					
4					
5					

- 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)

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.



Modbus Parameter	
Type	MODBUS_TCP
Zero-Based	<input type="checkbox"/> Disable
Slave ID *	1
Pooling Timer *	3000 ms

Modbus Connection	
Modbus IP *	127.0.0.1
Port *	502

OpcUa Configure	
Modbus folder *	ModbusTcp
Node config (csv) *	Please upload CSV file

Buttons: Save, Cancel, Restore

- 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)*

OpcUa Client Configuration

OpcUa Parameter

Type	OPCUA_CLIENT	
Endpoint *	opc.tcp://	<input style="width: 100%;" type="text"/>
Reconnect Time *	<input style="width: 80%;" type="text" value="300000"/>	ms
Publishing Interval *	<input style="width: 80%;" type="text" value="2000"/>	ms

Security Setting

Auth Type *	<input style="width: 100%;" type="text" value="Anonymous"/>	
Security	<input style="width: 100%;" type="text" value="None"/>	
Policy	<input style="width: 100%;" type="text" value="None"/>	
Username	<input style="width: 100%;" type="text"/>	
Password	<input style="width: 100%;" type="text"/>	

OpcUa Configure

[Restore](#)

OpcUa folder *	<input style="width: 100%;" type="text" value="OpcUaDev"/>	
Node config (csv) *	<input style="width: 80%;" type="text" value="Please upload CSV file"/>	<input style="width: 20%;" type="button" value="..."/>

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

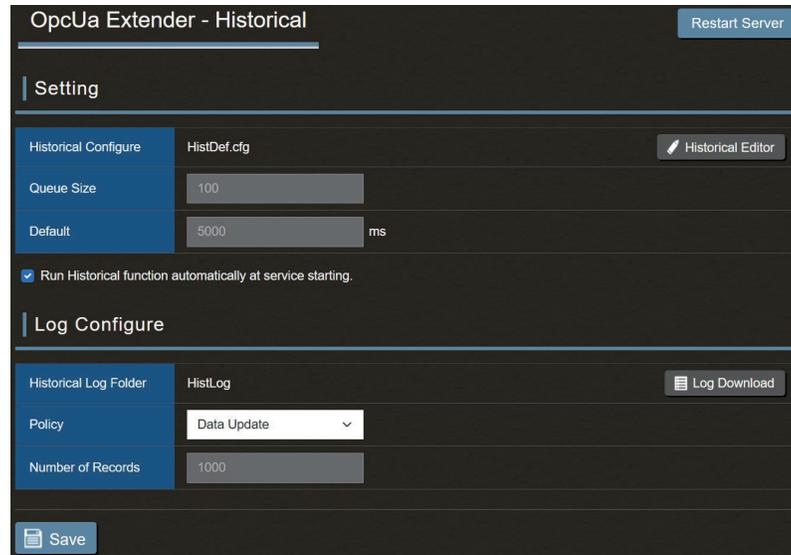
Restart OpcUa Extender Server

?

Are you sure to restart OpcUa Extender server?

2.4.2.5 Historical

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



OpcUa Extender - Historical Restart Server

Setting

Historical Configure: HistDef.cfg Historical Editor

Queue Size: 100

Default: 5000 ms

Run Historical function automatically at service starting.

Log Configure

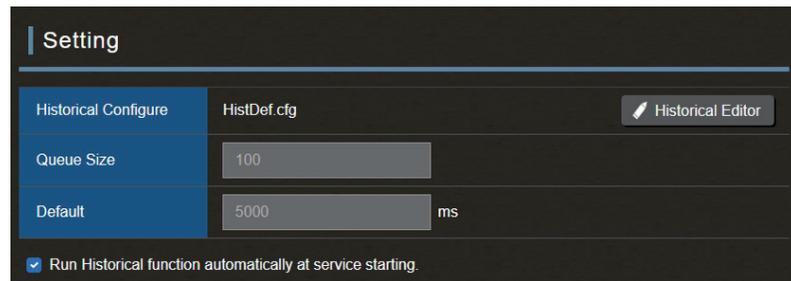
Historical Log Folder: HistLog Log Download

Policy: Data Update

Number of Records: 1000

Save

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



Setting

Historical Configure: HistDef.cfg Historical Editor

Queue Size: 100

Default: 5000 ms

Run Historical function automatically at service starting.

Historical Editor

Historical List + Add

#	Node ID	Sampling Rate (ms)	Note	Edit	Delete
1					
2					
3					
4					
5					
6					
7					
8					

Save Cancel

Add Historical item information

Node ID *

Sampling Rate (ms) *

Note

Add Cancel

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

Log Configure

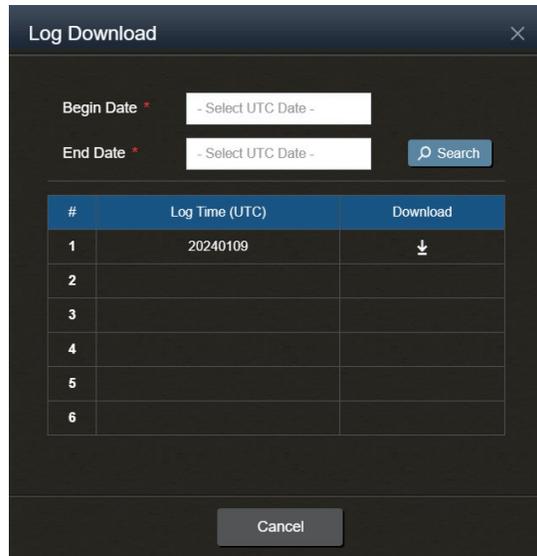
Historical Log Folder: HistLog Log Download

Policy: Data Update ▼

Number of Records: 1000

Save

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



The 'Log Download' dialog box features a title bar with a close button. It contains two date selection fields: 'Begin Date' and 'End Date', both with a dropdown menu showing '- Select UTC Date -'. A 'Search' button is located to the right of the 'End Date' field. Below these fields is a table with three columns: '#', 'Log Time (UTC)', and 'Download'. The table has six rows, with the first row containing the value '20240109' in the 'Log Time (UTC)' column and a download icon in the 'Download' column. A 'Cancel' button is positioned at the bottom center of the dialog.

#	Log Time (UTC)	Download
1	20240109	↓
2		
3		
4		
5		
6		

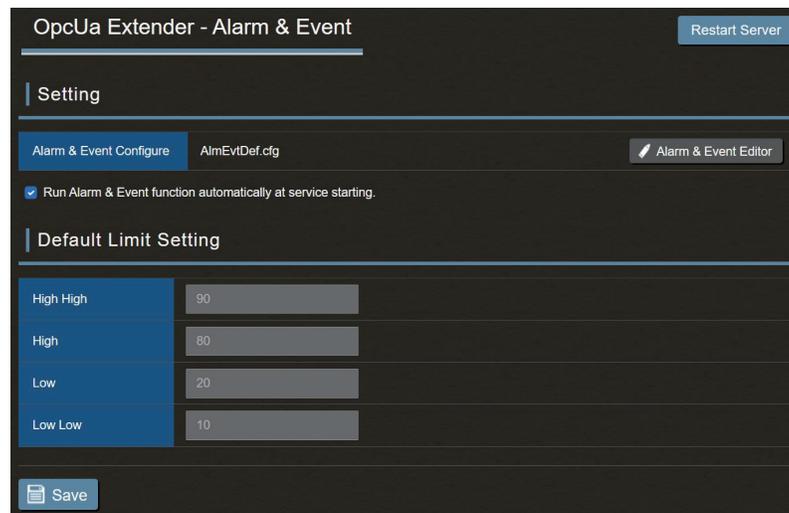
When you add/ delete/ modify Historical' info, please restart OpcUa Extender Server to activate the system and apply the changes.



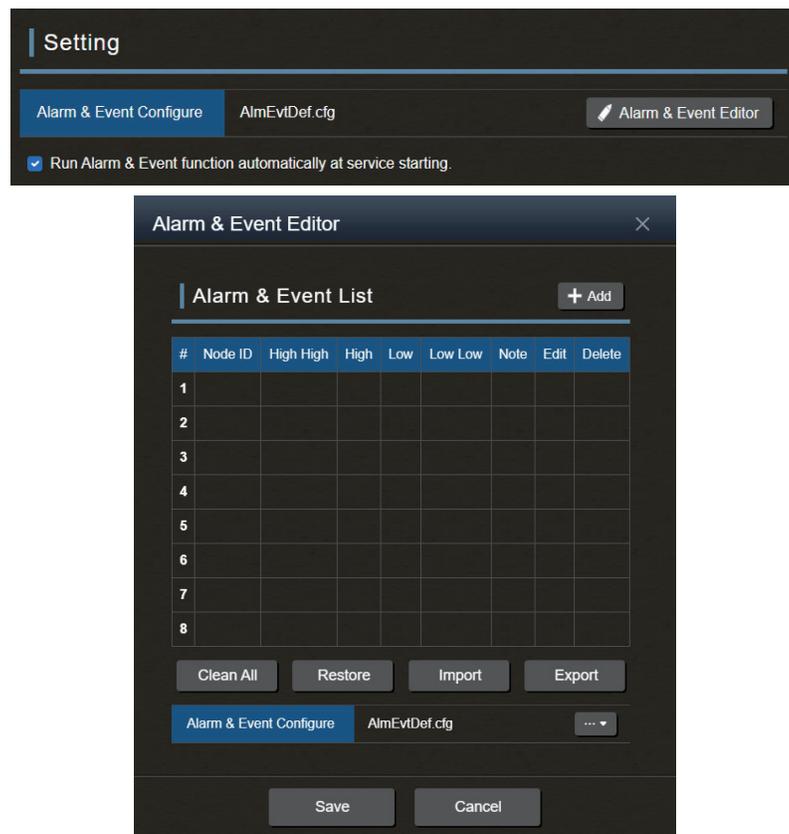
The 'Restart OpcUa Extender Server' dialog box has a title bar with a close button. It displays a question mark icon and the text 'Are you sure to restart OpcUa Extender server?'. At the bottom, there are two buttons: 'Yes' and 'No'.

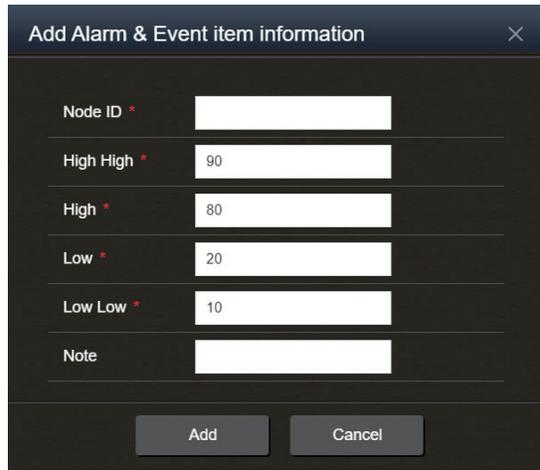
2.4.2.6 Alarm & Event

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.



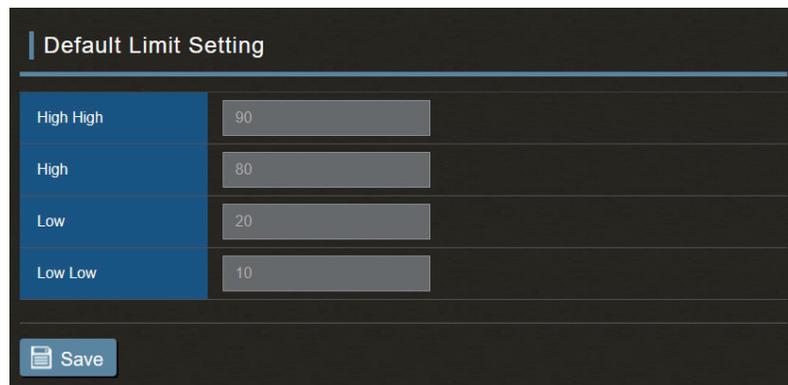


Dialog box titled "Add Alarm & Event item information" with a close button (X). It contains the following fields:

Node ID *	<input type="text"/>
High High *	<input type="text" value="90"/>
High *	<input type="text" value="80"/>
Low *	<input type="text" value="20"/>
Low Low *	<input type="text" value="10"/>
Note	<input type="text"/>

Buttons: Add, Cancel

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



Dialog box titled "Default Limit Setting" with a close button (X). It contains the following fields:

High High	<input type="text" value="90"/>
High	<input type="text" value="80"/>
Low	<input type="text" value="20"/>
Low Low	<input type="text" value="10"/>

Button: Save

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

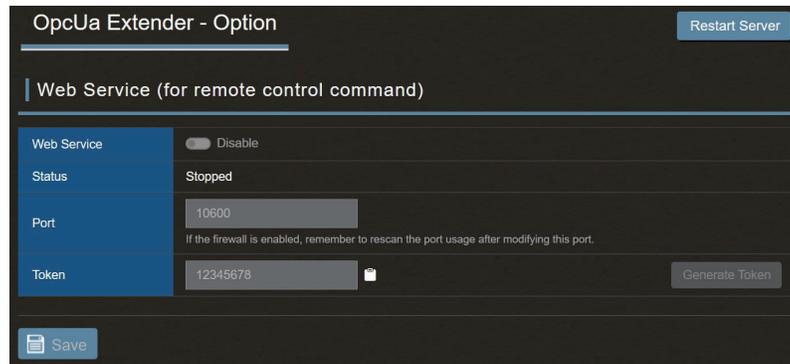


Dialog box titled "Restart OpcUa Extender Server" with a close button (X). It contains a question mark icon and the text "Are you sure to restart OpcUa Extender server?".

Buttons: Yes, No

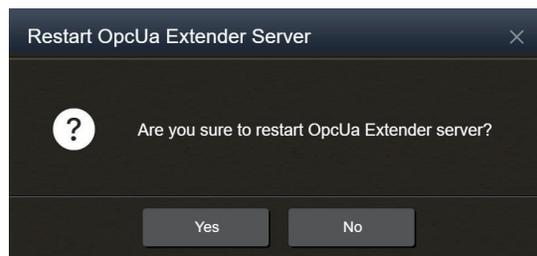
2.4.2.7 Option

The Option page displays Web Service for remote control command. Please refer to [2.4.1.3 Option](#).



The screenshot shows the 'OpcUa Extender - Option' configuration page. It features a 'Restart Server' button in the top right corner. Below the title bar, there is a section for 'Web Service (for remote control command)'. The configuration includes a 'Web Service' toggle set to 'Disable', a 'Status' field showing 'Stopped', a 'Port' field with the value '10800' and a note: 'If the firewall is enabled, remember to rescan the port usage after modifying this port.', and a 'Token' field with the value '12345678' and a 'Generate Token' button. A 'Save' button is located at the bottom left.

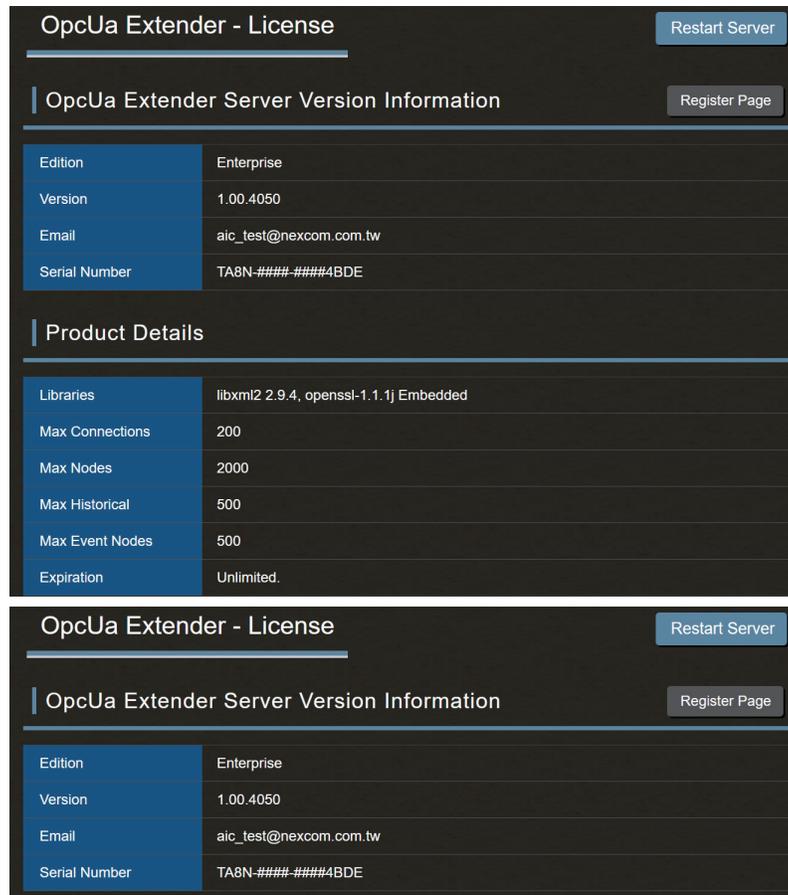
When you add/ delete/ modify Alarm & Event' info, please restart OpcUa Extender Server to activate the system and apply the changes.



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](#).



The screenshot displays the 'OpcUa Extender - License' interface, which is divided into two main sections: 'OpcUa Extender Server Version Information' and 'Product Details'. Each section includes a 'Restart Server' button and a 'Register Page' button.

OpcUa Extender - License (Restart Server)

OpcUa Extender Server Version Information (Register Page)

Edition	Enterprise
Version	1.00.4050
Email	aic_test@nexcom.com.tw
Serial Number	TA8N-####-####4BDE

Product Details

Libraries	libxml2 2.9.4, openssl-1.1.1j Embedded
Max Connections	200
Max Nodes	2000
Max Historical	500
Max Event Nodes	500
Expiration	Unlimited.

OpcUa Extender - License (Restart Server)

OpcUa Extender Server Version Information (Register Page)

Edition	Enterprise
Version	1.00.4050
Email	aic_test@nexcom.com.tw
Serial Number	TA8N-####-####4BDE

License	
License Info	
App Name	OT-X Register
Edition	Community (< 10 days)
Version	1.02.4104
Email	
Serial Number	
App Name	IoT Studio Release License
Edition	Standard
Version	1.00.4060
Email	aic_test@nexcom.com.tw
Serial Number	D6Y8-####-####3JPD
App Name	OpCua Extender Release License
Edition	Enterprise
Version	1.00.4050
Email	aic_test@nexcom.com.tw
Serial Number	TA8N-####-####4BDE

Register

App: OT-X

Email *

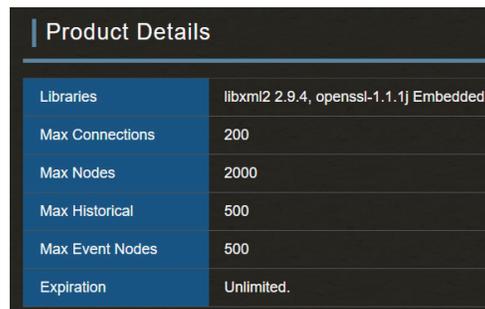
Serial Number * - -

Save Cancel

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

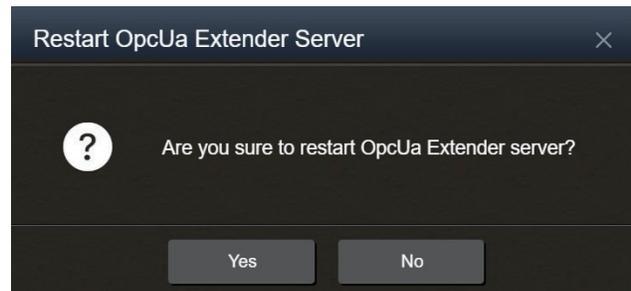
Regarding Max Connections/ Nodes/ Historical/ Event Nodes, these four settings may have numerical differences based on the edition.

For detailed information, please refer to the "Ver. Info" section on the [AIC Official Website](#).



Product Details	
Libraries	libxml2 2.9.4, openssl-1.1.1j Embedded
Max Connections	200
Max Nodes	2000
Max Historical	500
Max Event Nodes	500
Expiration	Unlimited.

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



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.

About

OT-X Info

Frontend Version	1.02.4104 (edge)
Backend Version	1.03.4111 (87f6298)

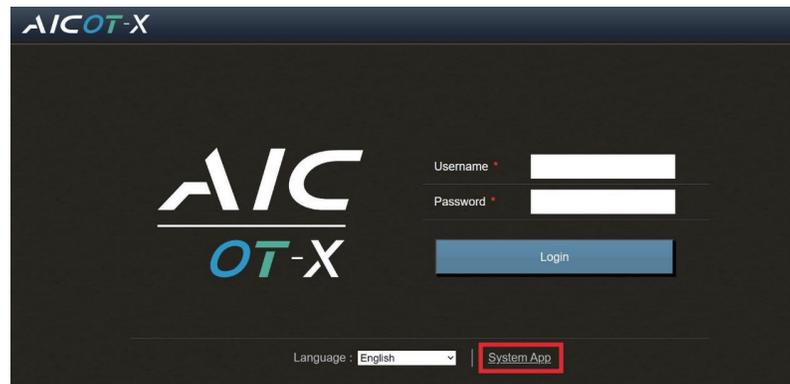
The License List of Third-Party Open Source/Library

#	Source Name	Type	License
1	backscanner	Apache 2.0	
2	color	MIT License	
3	cors	MIT License	
4	docker	Apache 2.0	
5	gin	MIT License	
6	gin-limit	MIT License	
7	go-connections	Apache 2.0	
8	go-pkcs12	BSD-3-Clause	
9	inlv1	Apache 2.0	
10	kingpin/v2	MIT License	
11	logrus	MIT License	
12	vipex	MIT License	

CHAPTER 3: ADVANCED FUNCTIONS

3.1 System App

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

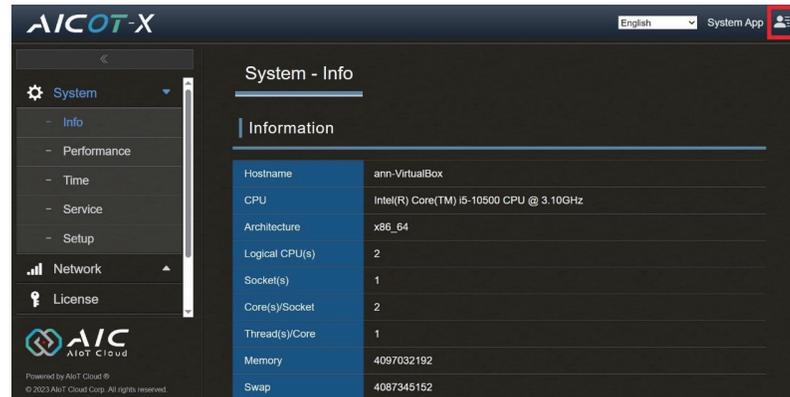


Additional System App list

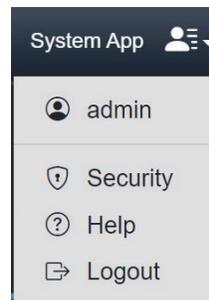
App	URL
Eclipse Mosquitto	https://mosquitto.org/
Grafana	https://grafana.com/
MS SQL	https://www.microsoft.com/zh-tw/sql-server/sql-server-2022
MySQL	https://www.mysql.com/
Portainer	https://www.portainer.io/

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.



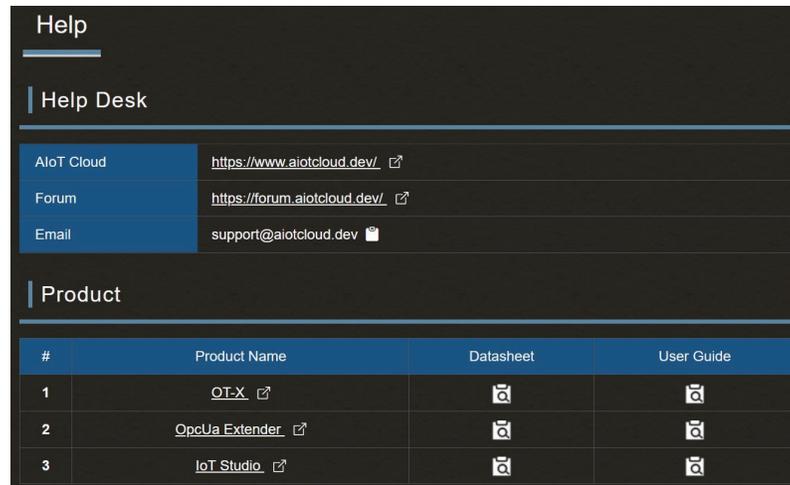
Security, in this page, you can modify/ edit admin' password.



Security - Modify User	
Edit Password	
UserName	admin
Current Password *	<input type="password" value="Input current password"/>
New Password *	<input type="password" value="Input new password"/>
Comfirm Password *	<input type="password" value="Input confirm password"/>
<input type="button" value="Save"/>	

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.



The screenshot shows a 'Help' page with two main sections: 'Help Desk' and 'Product'.

Help Desk

AIoT Cloud	https://www.aiotcloud.dev/
Forum	https://forum.aiotcloud.dev/
Email	support@aiotcloud.dev

Product

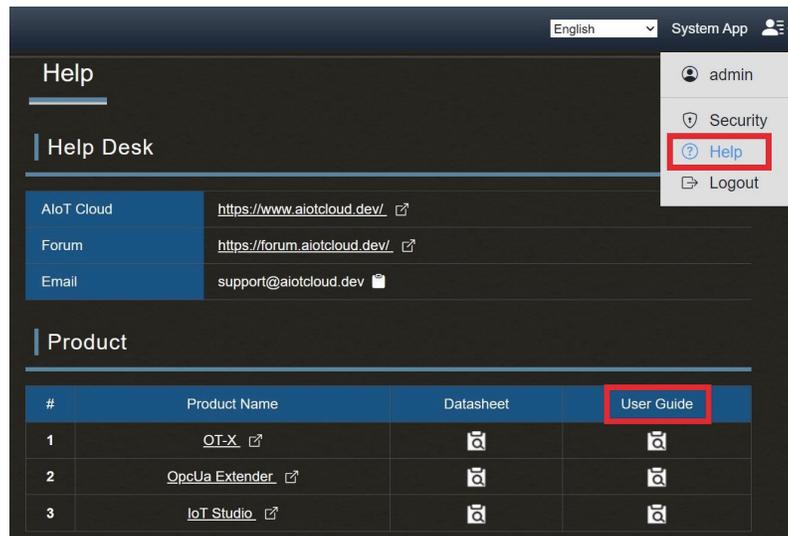
#	Product Name	Datasheet	User Guide
1	OT-X		
2	OpcUa Extender		
3	IoT Studio		

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

READ ME: HOW TO GET IP ADDRESS

AIC OT-X

- How to launch AIC OT-X?
[https://\[machine IP address\]:30100/](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/](https://[machine IP address]:30100/)

- 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.

- 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.

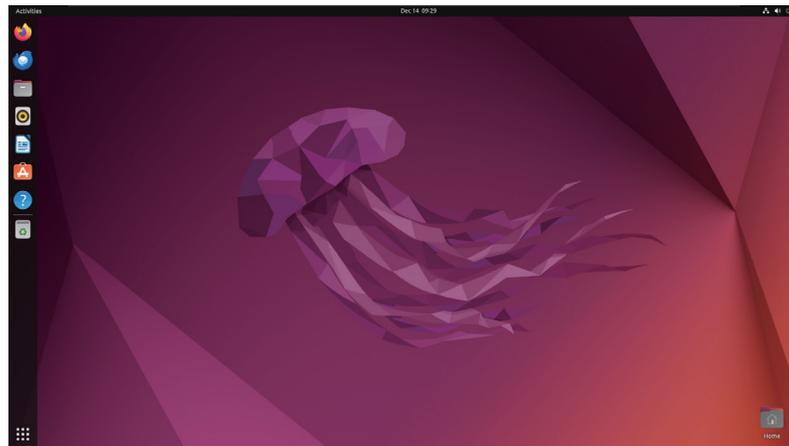
Setup the machine with a keyboard, mouse, screen, and plugin network. When machine power on. The Ubuntu will auto login by default account/password (OT-X/0000) and got a DHCP IP address.

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

On Ubuntu Desktop:

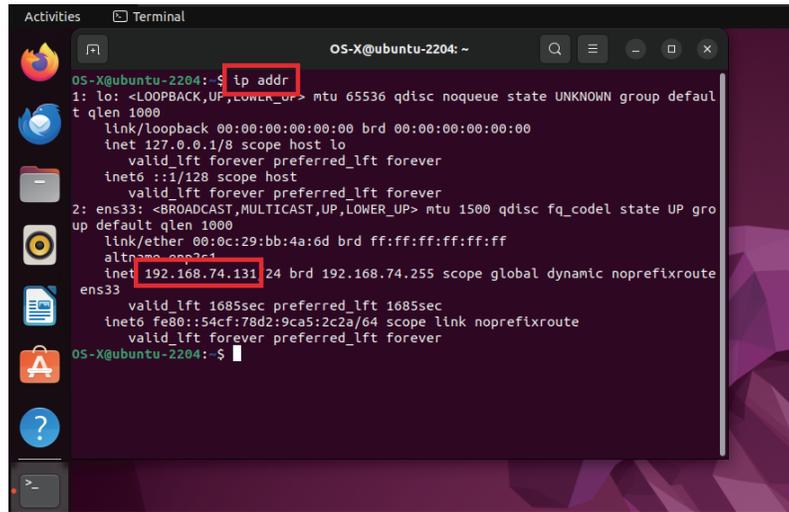
Get IP address from terminal

1. Go to Ubuntu Desktop



2. Press "Ctrl+Alt+T" to open terminal

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

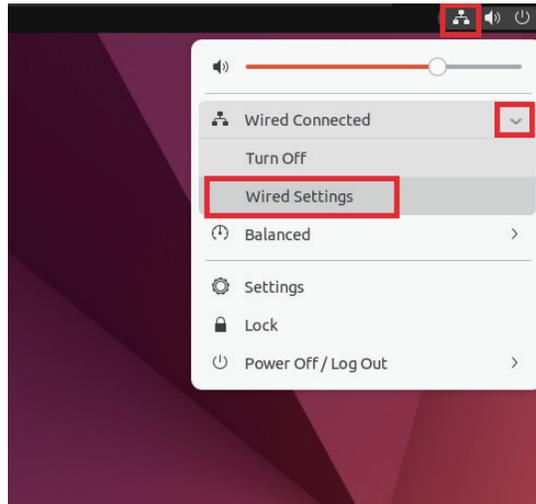


```
OS-X@ubuntu-2204: ~  
OS-X@ubuntu-2204:~$ ip addr  
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default  
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00  
    inet 127.0.0.1/8 scope host lo  
        valid_lft forever preferred_lft forever  
    inet6 ::1/128 scope host  
        valid_lft forever preferred_lft forever  
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP gro  
up default qlen 1000  
    link/ether 00:0c:29:bb:4a:6d brd ff:ff:ff:ff:ff:ff  
    altname ens33  
    inet 192.168.74.131/24 brd 192.168.74.255 scope global dynamic noprefixroute  
ens33  
        valid_lft 1685sec preferred_lft 1685sec  
    inet6 fe80::54cf:78d2:9ca5:2c2a/64 scope link noprefixroute  
        valid_lft forever preferred_lft forever  
OS-X@ubuntu-2204:~$
```

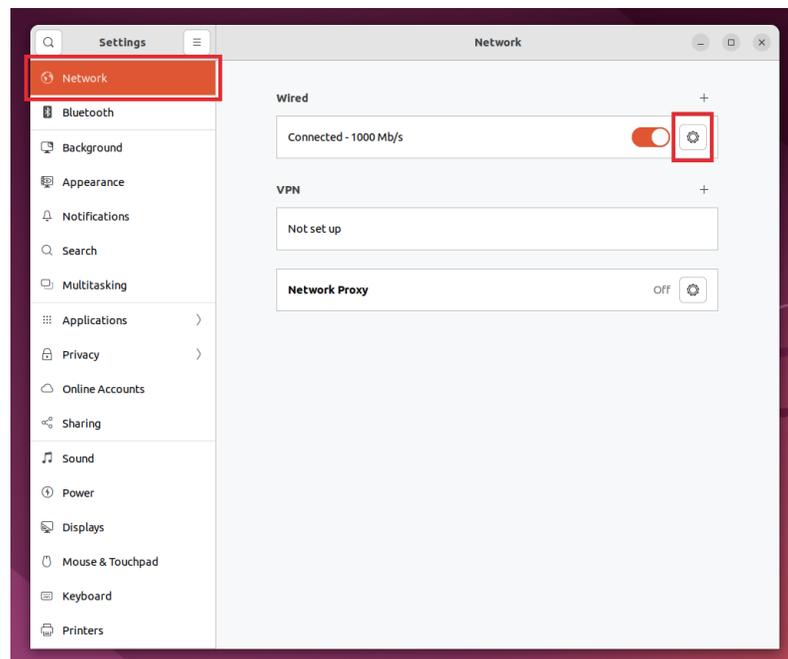
4. The IP address is 192.168.74.131 in image

Get IP address by UI

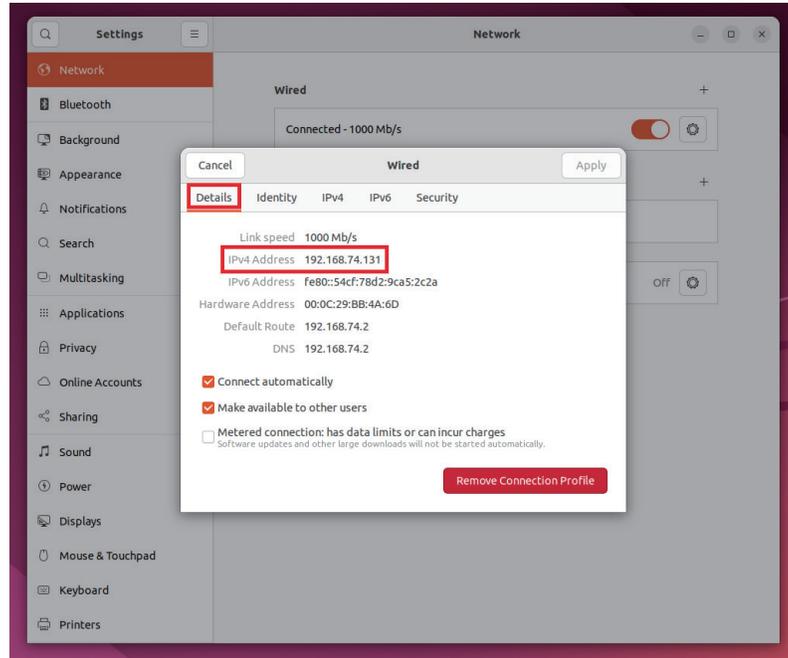
1. Click the network icon in the upper right corner
2. Then expand the Wired Connected dropdown
3. Click on **“Wired Setting”** as shown below image



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



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

On Ubuntu Server:

1. Go to Ubuntu Server Terminal in below image

```
Password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-91-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Thu Dec 14 01:21:02 AM UTC 2023

System load:  0.67626953125   Processes:           246
Usage of /:   32.6% of 28.37GB Users logged in:     0
Memory usage: 14%           IPv4 address for docker0: 172.17.0.1
Swap usage:  0%             IPv4 address for ens33:  192.168.74.140

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

39 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

OS-X@ubuntuserver:~$ _
```

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

```
Memory usage: 14%          IPv4 address for docker0: 172.17.0.1
Swap usage:   0%          IPv4 address for ens33:   192.168.74.140

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
  Just raised the bar for easy, resilient and secure K8s cluster deployment.

  https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

39 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Thu Dec 14 01:21:03 UTC 2023 on tty1
OS-X@ubuntuserver:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:b6:b7:8a brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.74.140/24 metric 100 brd 192.168.74.255 scope global dynamic ens33
        valid_lft 1771sec preferred_lft 1771sec
    inet6 fe80::20c:29ff:feb6:b7ba/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:b4:e5:e0:be brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
OS-X@ubuntuserver:~$
```

3. The IP address is 192.168.74.140 in image