InGateway974 Quick Start Manual

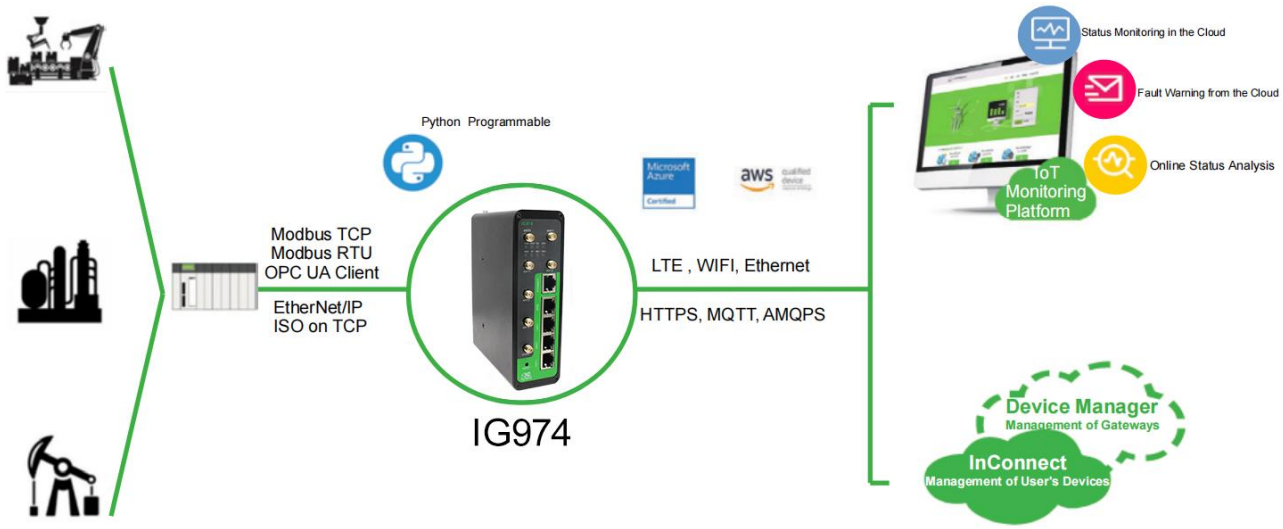
This document contains the introduction, installation, and basic configuration of InGateway974 (IG974) such as networking, software version update, etc., so that users can easily master the basic configuration of the IG974 and the use of common functions.

1. Introduction of IG974

1.1 Overview

The InGateway974 (IG974) series is the new generation industrial-grade 5G edge computing gateway launched by InHand for the industrial IoT. The product provides high-speed, uninterrupted Internet access base on 5G network and multiple broadband services. The IG974 supports a variety of mainstream industrial protocols including Modbus TCP/RTU and can be connected to mainstream IIoT cloud platforms including AWS and Azure, ensuring on-site devices can easily log into the cloud. With strong edge computing capabilities, the IG974 provides an open edge computing platform to support data optimization, real-time response, agile connection, and intelligent analysis at the edge nodes of the IoT. Therefore, the IG974 significantly reduces the data traffic on-site and at the center, minimizes operating expenses for users, and improves cloud performance.

The Common application scenarios of IG974：



1.2 Accessories List

Each IG974 product shipped from the factory includes common accessories for customer sites (e.g. standard accessories list), after you receive our products, please check them carefully, and if you find any missing or damaged, please contact INHANTONE sales staff in time.
In addition, we can provide customers with optional accessories according to different site characteristics, please refer to the optional accessories list for details.

- Standard Accessories

Item	Quality	Description
Gateway	**1**	**InGateway974**
Resources	**1**	**QR code quick installation manual, user manual**
Rail-mounted Installation Accessory	**1**	**Fixed gateway metal clips**
Terminal	**2**	**2-pin power terminal and 6-pin serial port terminal**
Network Cable	**1**	**1.5m**
Antenna	**4**	**5G Antenna**
Product Warranty Card	**1**	**The warranty period is 1 year**
Certificate of Conformity	**1**	**Edge Computing Gateway Certificate of Conformity**

- Optional Accessories

Item	Quality	Description
AC Power Cord	**1**	**AC Power Cord-China Standard**
Power adapter	**1**	**12VDC Power adapter**
Antenna	**1**	**Wi-Fi Antenna**
	1	**GNSS Antenna**
Serial Cable	**4**	**Gateway serial debug cable**

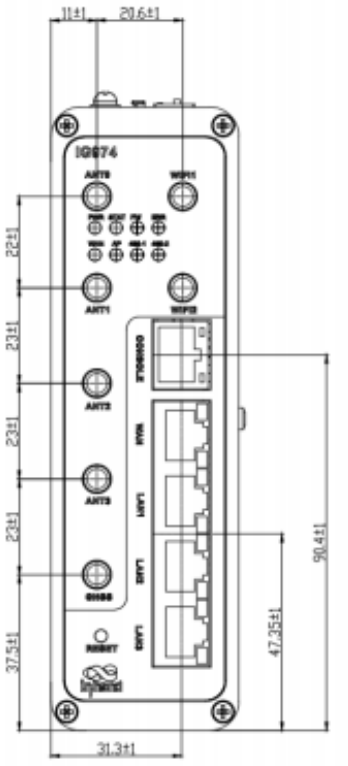
1.3 Panel & Dimensions

1.3.1 Panel Introduction

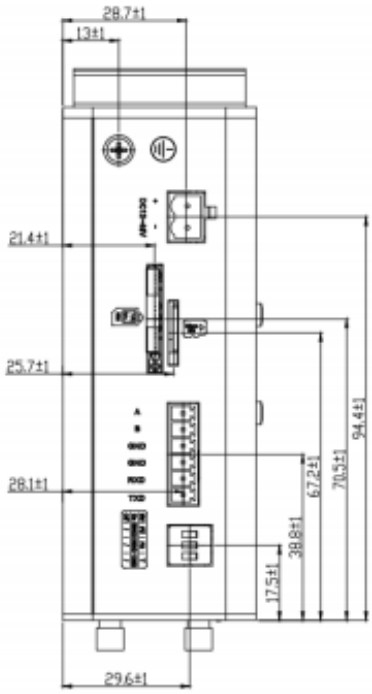
IG974 panel introduction is shown below (IG974 series products have a variety of panel appearance form, but the installation method is the same, the specific panel condition please subject to the physical).

1.3.2 Dimensions

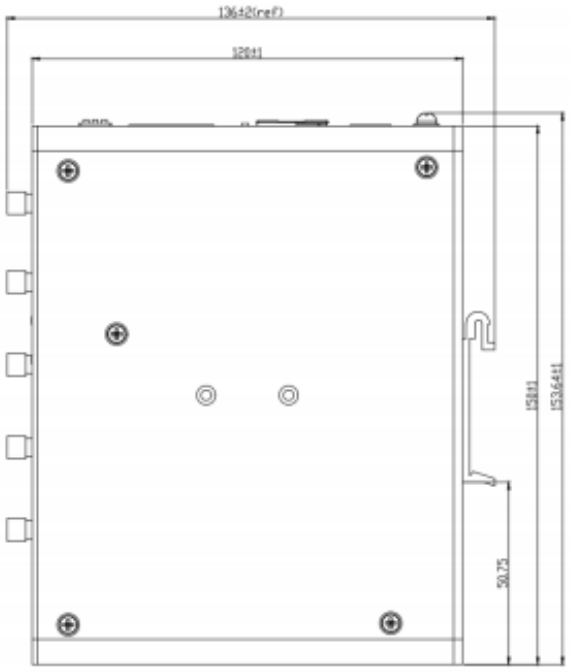
The dimensions of IG974:



Front view



Vertical view



Side view

1.4 Panel Indicators

1.4.1 LED Indicators

PWR (Power Indicator-Red)	SYS (Status Indicator-Green)	WARN (Warning Indicator-Yellow)	ERR (Error Indicator-Red)	NET (Network Indicator-Green)	Description
Light on	Light off	Light off	Light off	Light off	Start-up
Light on	Slow Blink	Light off	Light off	Light off	Start-up successful
Light on	Slow Blink	Light off	Light off	Quick Blink	Dialing
Light on	Slow Blink	Light off	Light off	Light on	Dialing successfully
Light on	Slow Blink	Slow Blink	Slow Blink	Light off	Reset successfully
Light on	Slow Blink	Quick Blink	Quick Blink	Light off	Upgrading

1.4.2 Signal Status Indicators

Signal: 1-9 (The signal condition is problematic, please check whether the antenna is well installed and whether the signal condition in the area is good)

Signal: 10-19 (The signal status is normal and the device can maintain normal operation)

Signal: 20-31 （The signal is very good）

2. Installation

2.1 Install Notice

- Power requirements: 24VDC (12 to 48VDC), please note the power supply voltage level; rated current is 0.6A (1.2 to 0.3A).
- Environmental requirements: working temperature -25℃～75℃, storage temperature -40℃～85℃, relative humidity 5%～95% (no condensation). The surface of the equipment may be high temperature,

the installation needs to consider the surrounding environment and should be installed in a restricted area.

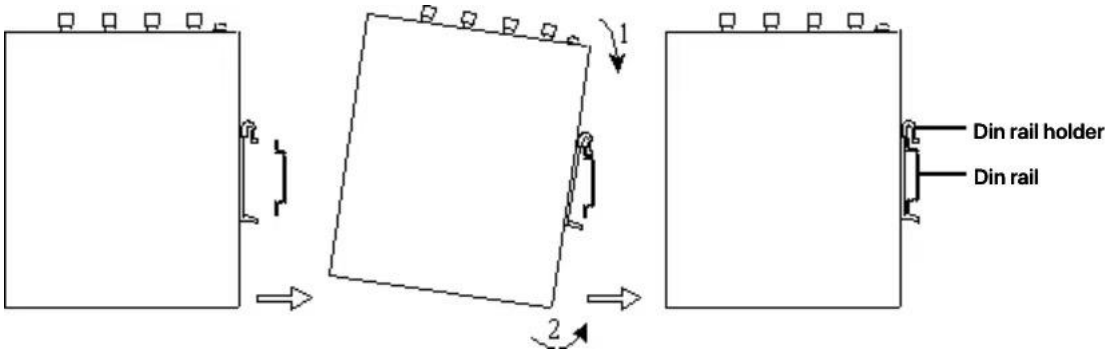
- Avoid direct sunlight and stay away from heat generating sources or areas with strong electromagnetic interference.
- Gateway products need to be mounted on industrial rails.
- Check the availability of cables and connectors required for installation.

2.2 **Rail Mounted and Dismounted**

2.2.1 Rail mounted equipment

The specific steps for installing the IG902 are as follows.

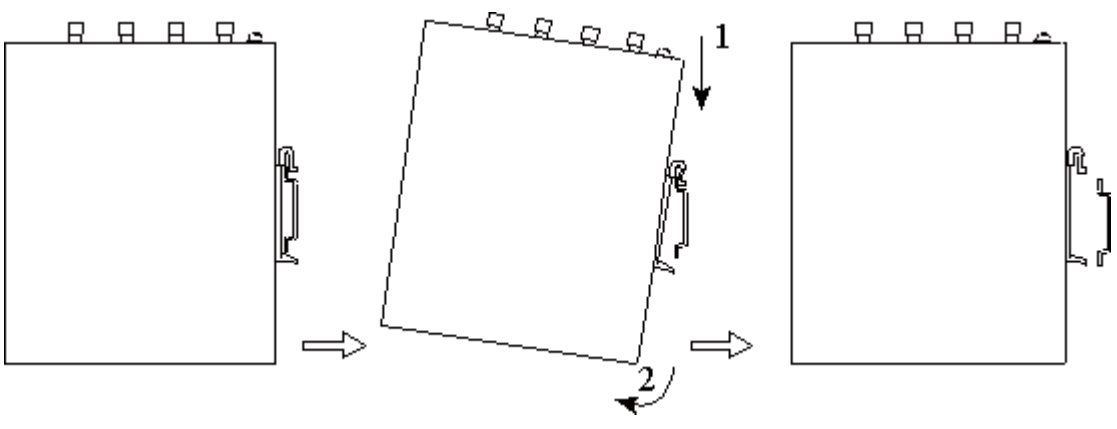
1. Select the installation position of the device, ensuring that there is sufficient space.
2. Snap the upper part of the DIN rail holder onto the DIN rail and rotate the device with slight force at the lower end of the device upwards as shown by arrow 2 to snap the DIN rail holder onto the DIN rail and confirm that the device is reliably mounted onto the DIN rail as shown in the right figure below.



2.2.2 Rail dismounted equipment

To diamount the IG902, do the following:

1. Press down the device as shown by arrow 1 in the figure below, so that the lower end of the device is free from the DIN rail.
2. Turn the device in the direction of arrow 2 and move the lower end of the device outward at the same time, then lift the device upward after the lower end is free from the DIN rail to remove the device from the DIN rail.



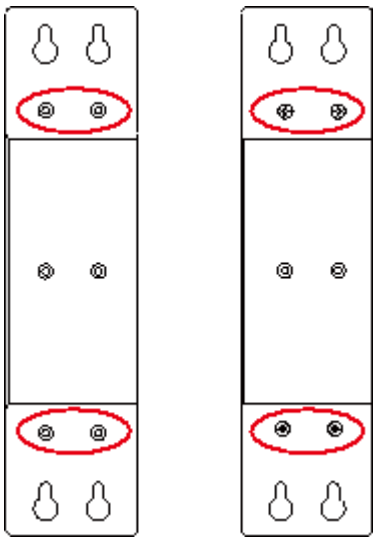
2.3 Wall Mounted and Dismounted

2.3.1 Wall mounted

The specific steps for installing the IG902 are as follows.

1. Select the installation location of the device and make sure there is enough space.

2. Mount the wall mounting plate on the back of the device with a screwdriver, as shown in the figure below:



3. Remove the screws (packaged with the wall mounting plate), fix the screws in the mounting position with a screwdriver, and then pull down the device to make the device in a stable state, as shown in the figure below.

4.

2.3.2 Wall dismounted

To dismount the IG902, hold the device with one hand and remove the screw at the top end of the device with the other hand to remove the device from the installation position.

2.4 SIM Card installation

IG902 supports dual SIM cards, use a screwdriver to twist off the fixing screw on the card holder cover and then install the SIM card, as shown below.

2.5 Antenna Installation

Gently turn the movable part of the metal SMAJ interface by hand until it can't be turned (at this time you can't see the external thread of the antenna connection), don't hold the black rubber sleeve and screw the antenna. As shown in the picture below.

Description:

IG902 supports dual antennas, which are ANT antenna and AUX antenna. The ANT antenna is the antenna for sending and receiving data, while the AUX antenna can only enhance the signal strength of the antenna, and cannot send and receive data independently, so it cannot be used alone.

In general, only the ANT antenna can be used, when the signal is not good enough to enhance the signal, only when using the ANT antenna at the same time use the AUX antenna.

2.6 Power Supply Installation

The specific steps for installing the IG902 power supply are as follows.

1. remove the terminal from the gateway.
2. loosen the locking screw on the terminal.
3. Insert the power cable into the terminal and lock the screw tightly.

2.7 Protective Ground Installation

The specific steps for installing the IG902 protective earth ground are as follows.

1. unscrew the grounding nut.

2. set the grounding ring of the cabinet ground into the grounding stud.

3. tighten the grounding nut.

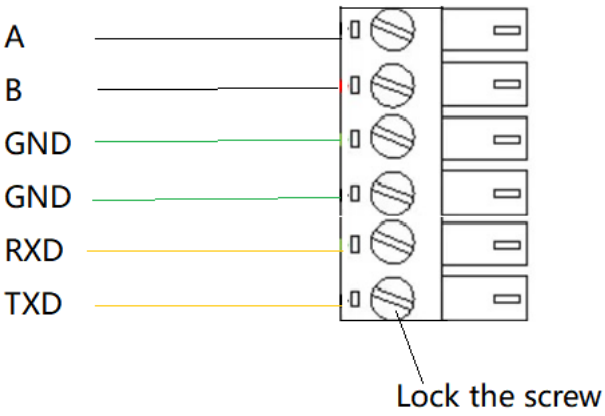
Note: To improve the overall anti-interference ability of the gateway, the gateway must be grounded when in use, according to the use of the environment will be grounded to the gateway grounding studs.

2.8 Network Cable Connection

Connect the gateway directly to the PC using a network cable as shown in the following figure.

2.9 Terminal Connection

The terminal provides RS232/RS485 two interface modes, you need to connect the corresponding cable to the terminal before use. When installing, remove the terminal from the device, loosen the locking screw on the terminal, insert the corresponding cable into the terminal and then lock the screw tightly. The individual line sequencing is shown in the following figure.



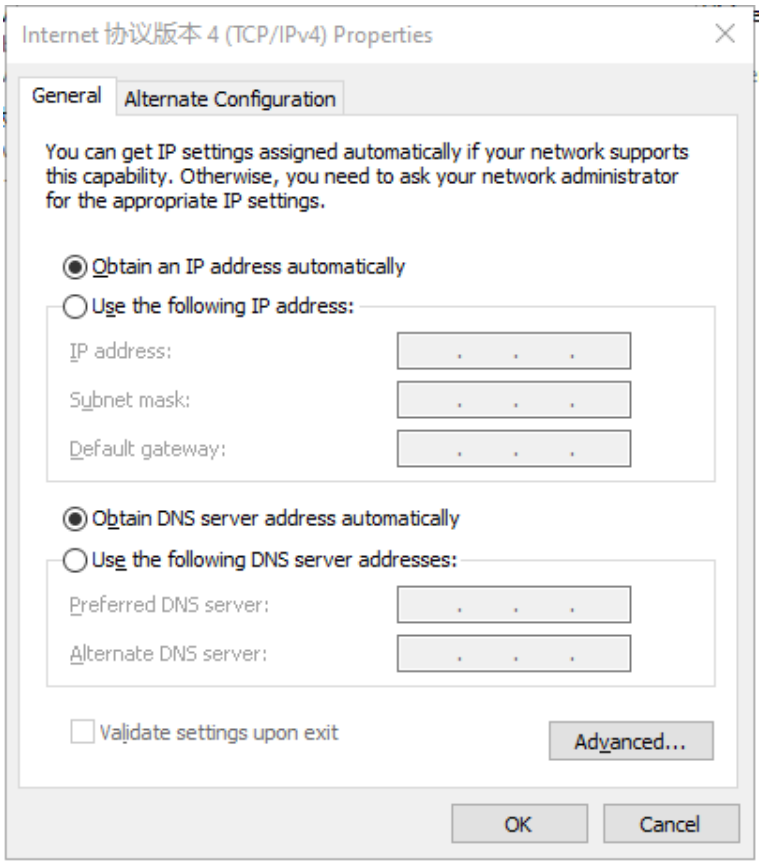
Note: This terminal description only applies to IG902 devices with industrial interfaces.

3. IG974 Network Parameters Configuration

3.1 Access IG974

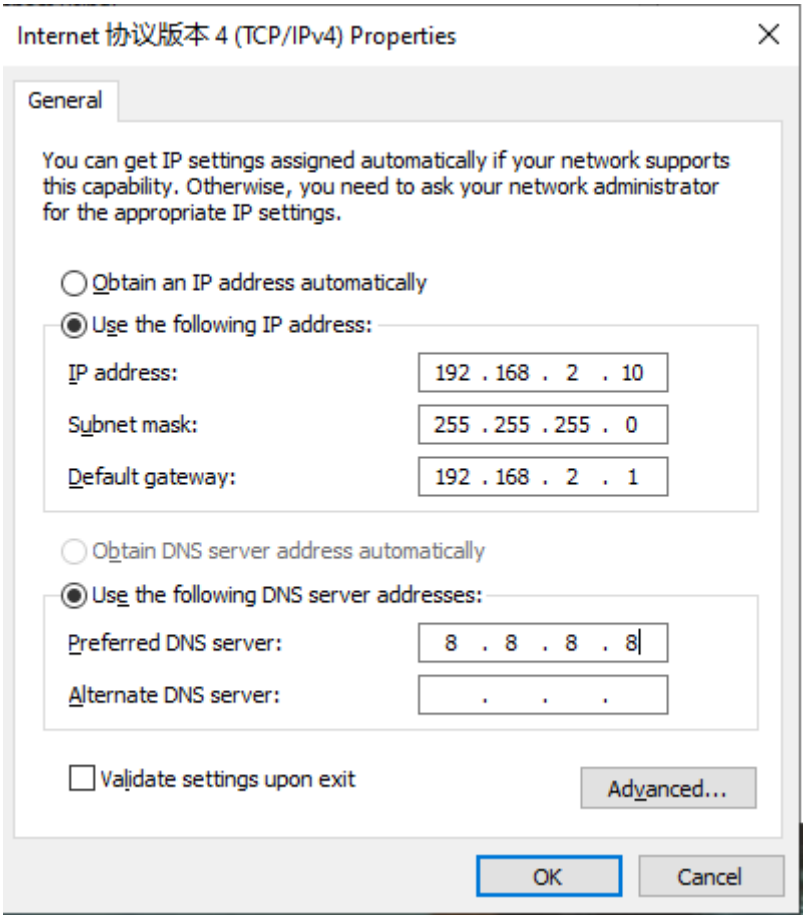
- Step 1: The default of IG974 WAN port is DHCP; the default IP address of LANX port is 192.168.2.1. This document takes accessing IG974 through LANX port as an example and sets the IP address of PC and LANX port in the same network segment.

  - Method 1: Obtain IP address automatically (recommended)

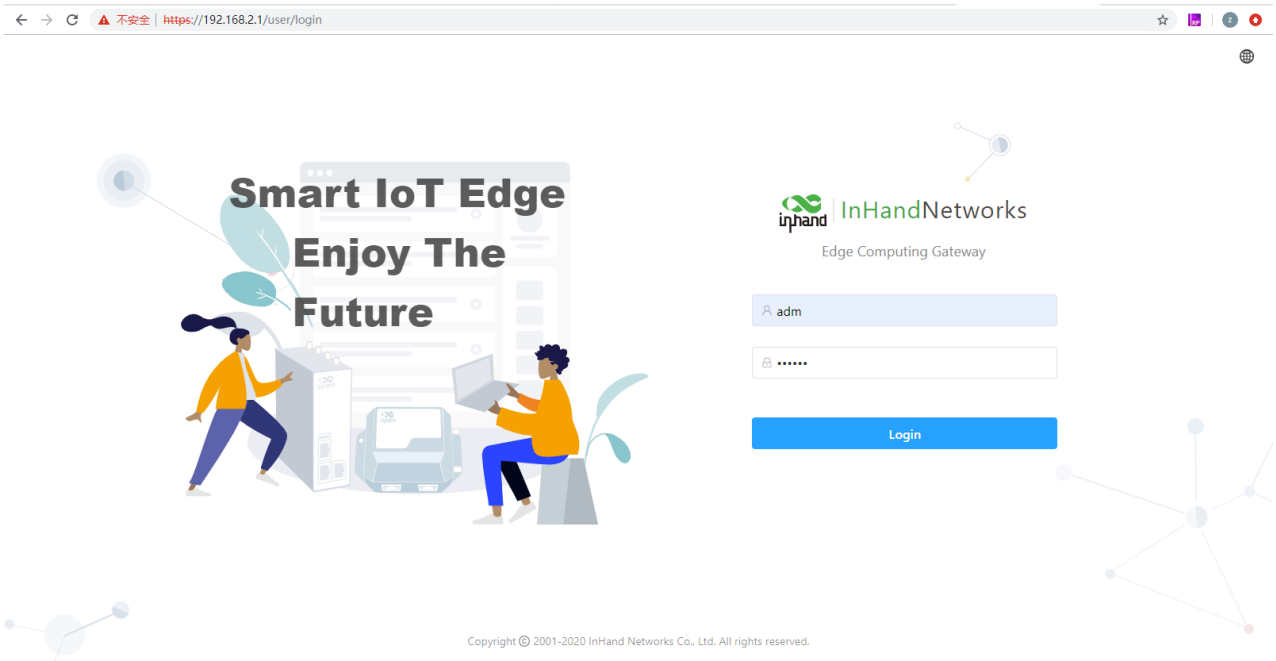


  - Method 2: Use a fixed IP address

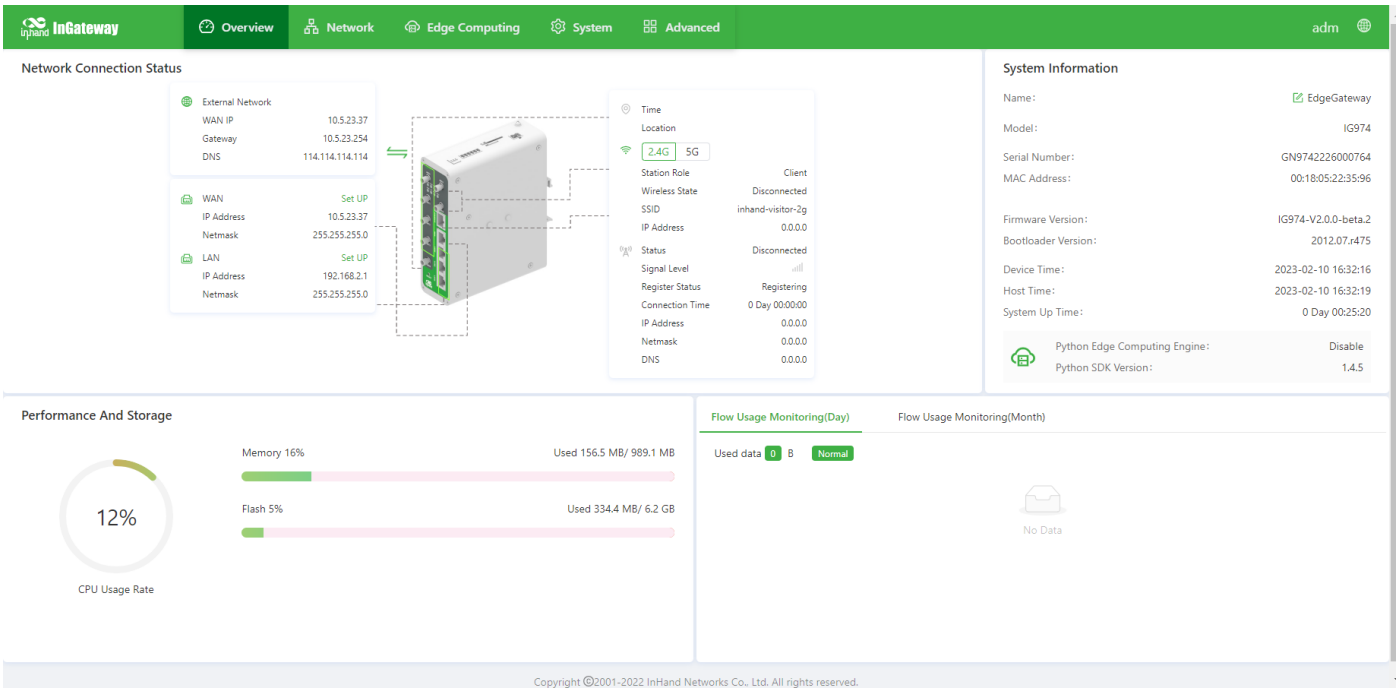
    Select "Use the following IP address", enter the IP address (default is 192.168.2.2~192.168.2.254); subnet mask (default 255.255.255.0); default gateway (default 192.168.2.1) and DNS server address, click OK.



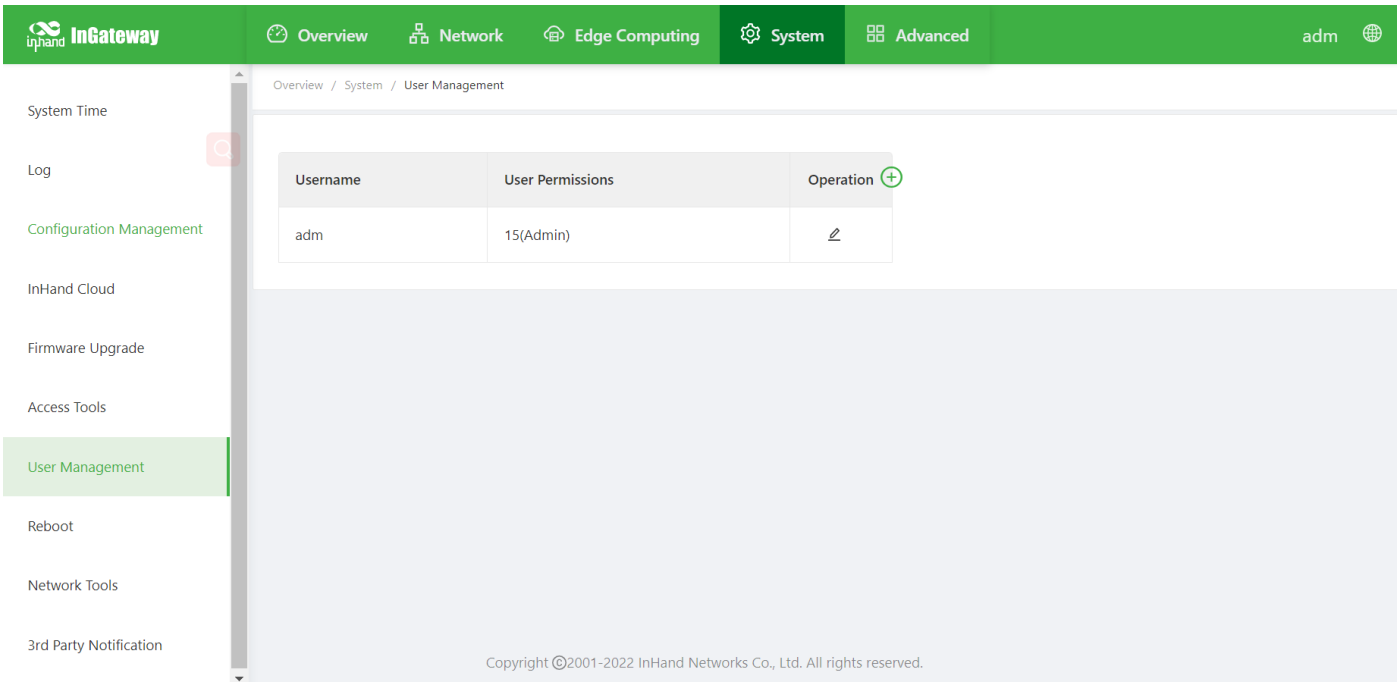
- Step 2: Open a browser and access the IG974's LAN port IP address and enter the login username and password. The default user name/password shipped with the device is adm/123456.



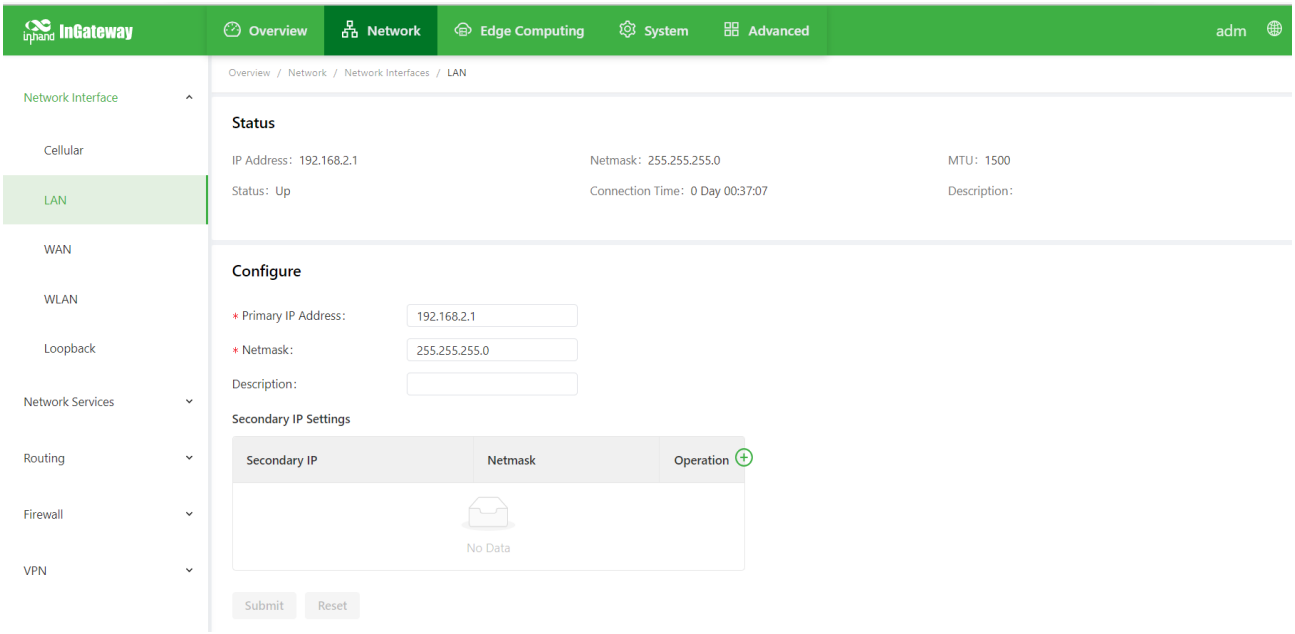
- Step 3: After successful login, you can see the webpage as shown below.



- Step 4: To change the user name and password of WEB management interface, please visit "System>>User Management" page to set a new user name and password.



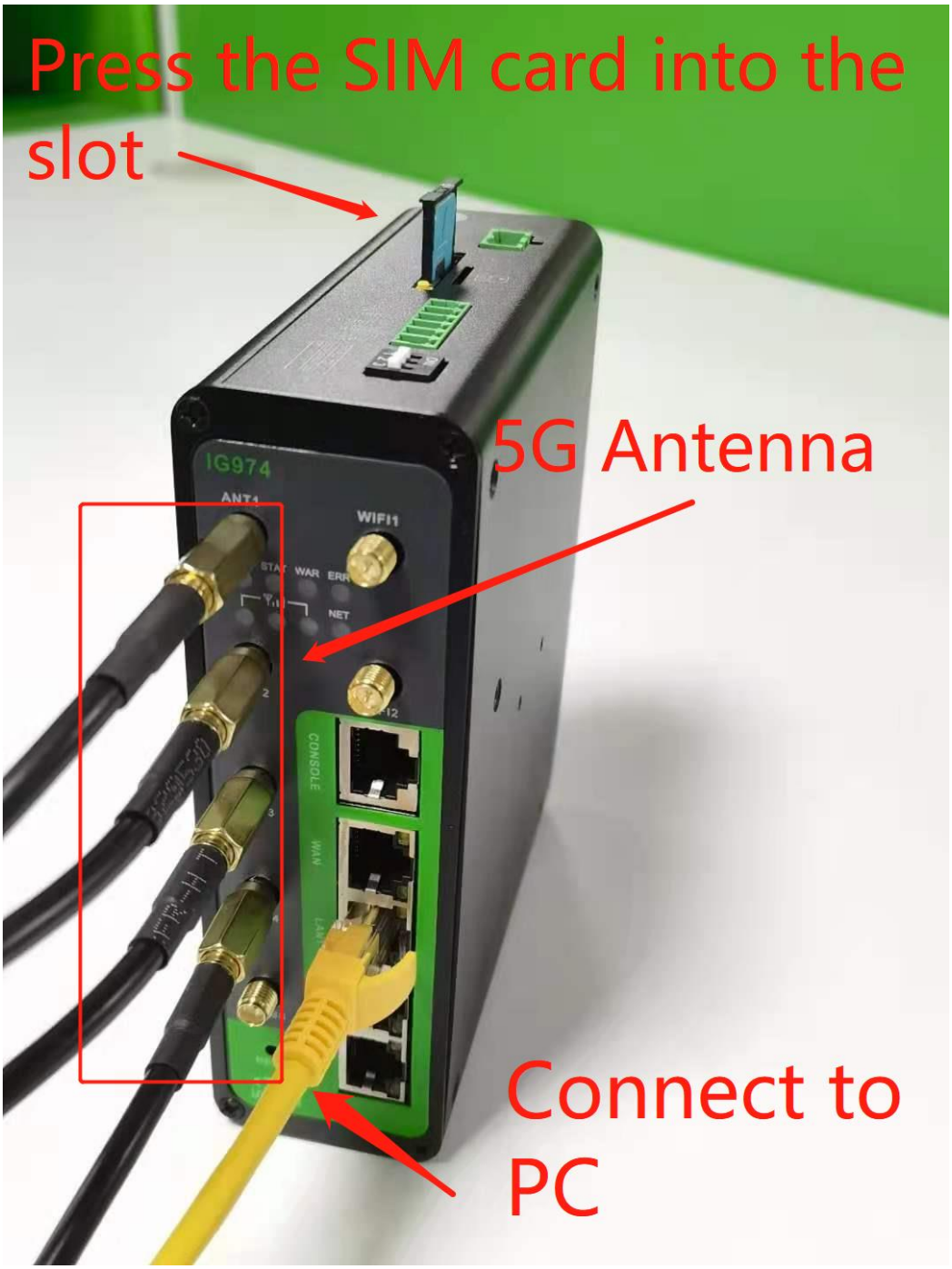
- Step 5: To modify the IP address of the LANX port, please visit the "Network>>Network Interface>>LAN" page.



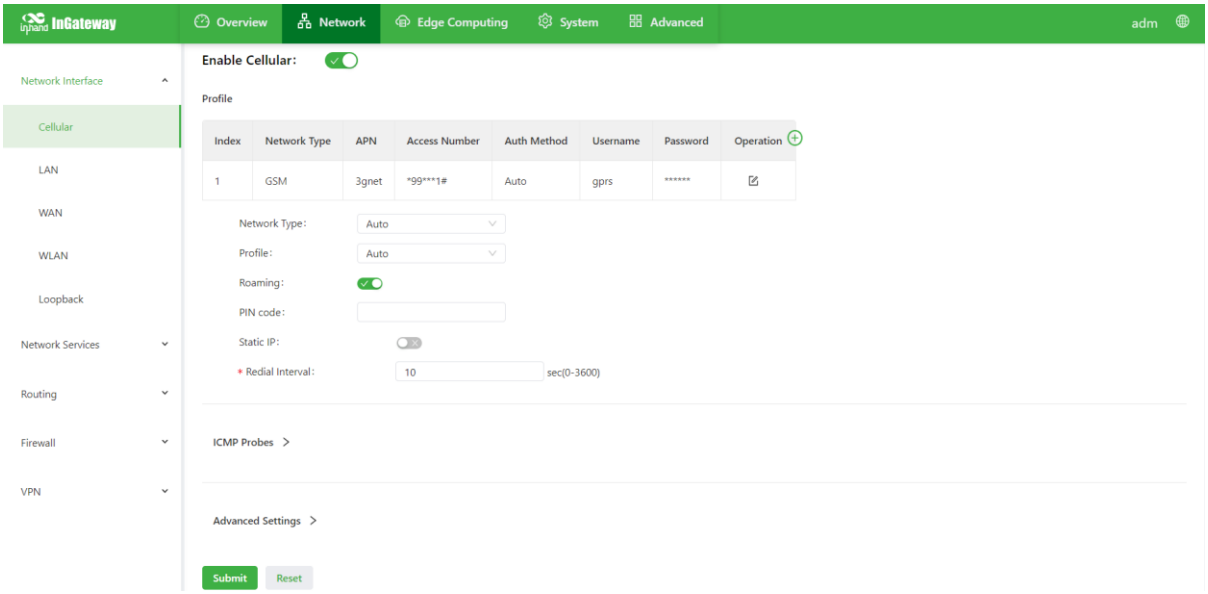
3.2 Connect to the Internet

- Method 1：Internet connection using SIM card dial-up (to be changed)

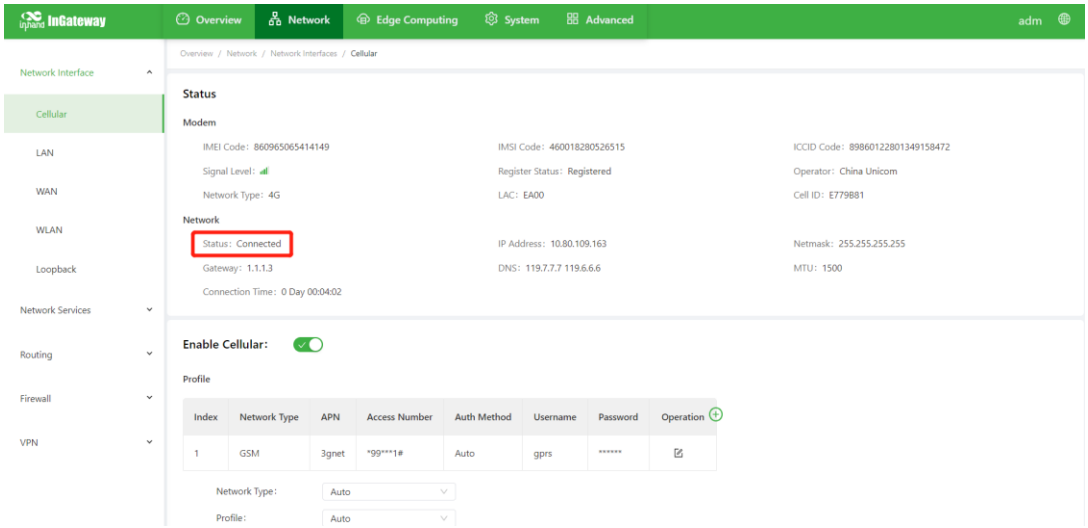
  ■Step 2：Insert the SIM card into the card slot (Note: When inserting or removing the SIM card operation, the power must be unplugged to avoid data loss or device damage). Insert the SIM card and connect the 5G antenna to the ANTX port and power on the IG974.



■Step 2: Go to "Network>>Network Interface>>Cellular" page of IG974, check "Enable Cellular Network" and click Submit.

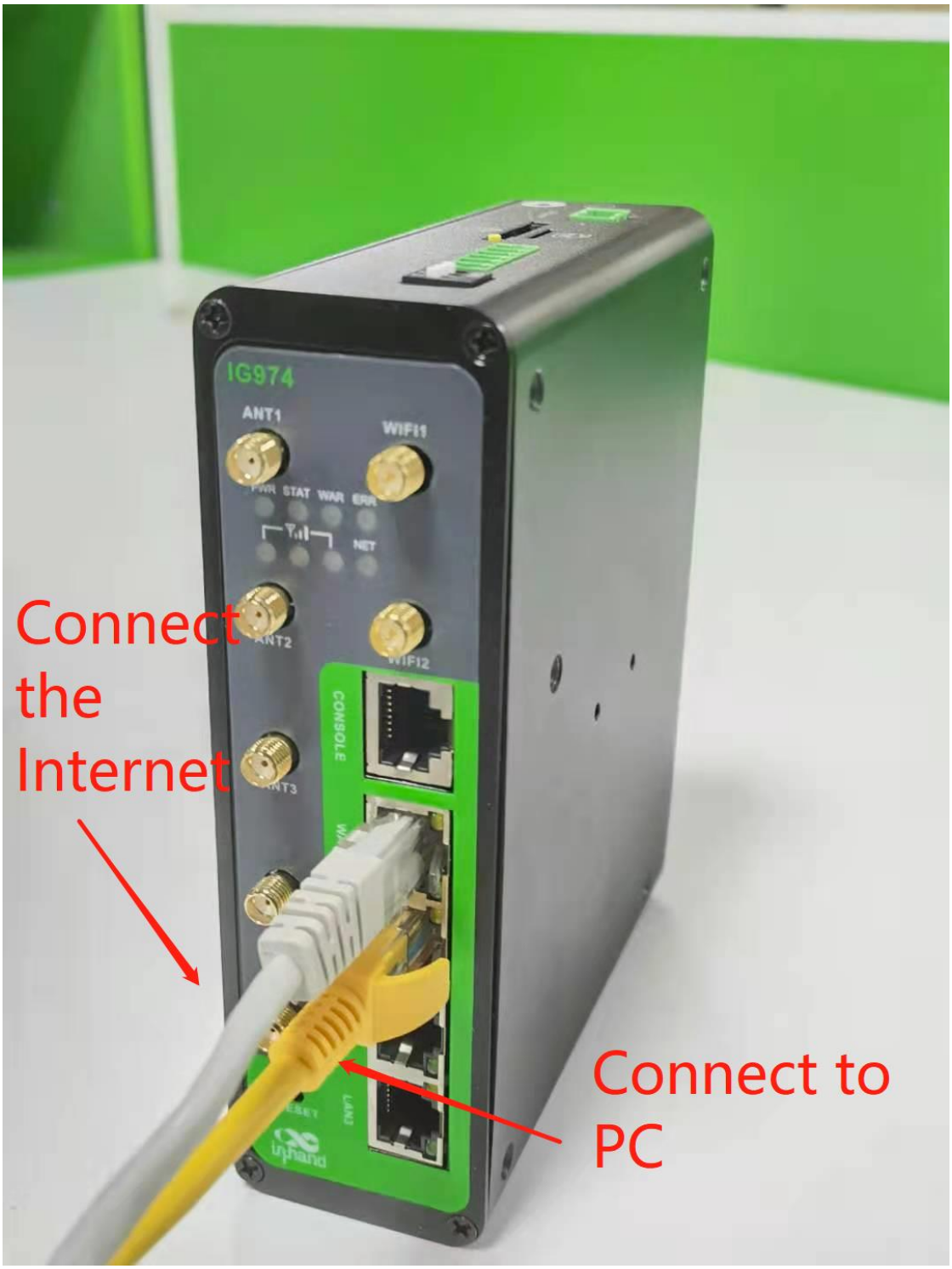


When the network connection status shows "Connected" and the corresponding IP address is assigned, the IG974 is connected to the network via SIM card.

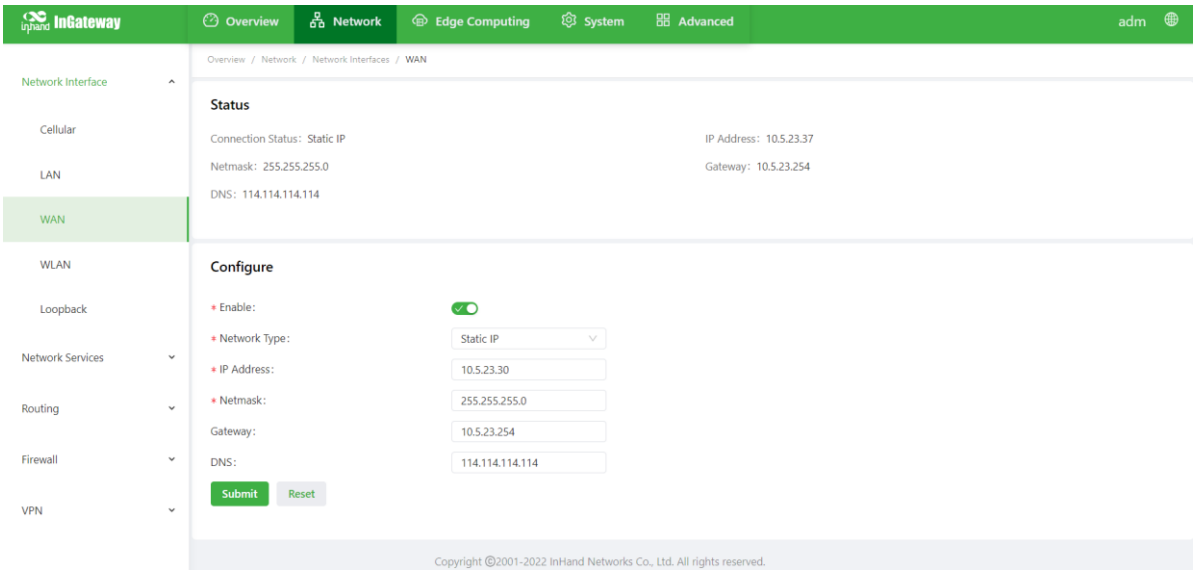


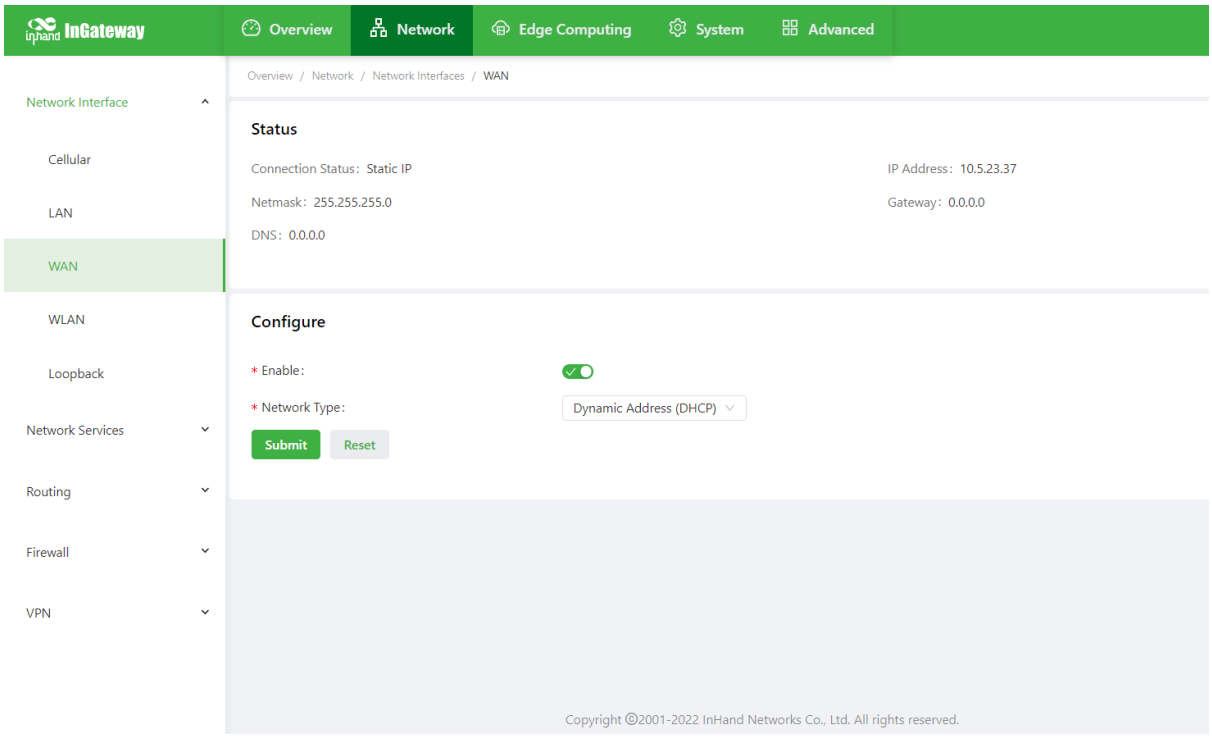
- Method 2: Connect to the Internet via Ethernet

■Step 1: Connect the WAN and LAN ports of the IG974 using an Ethernet cable, as follows.

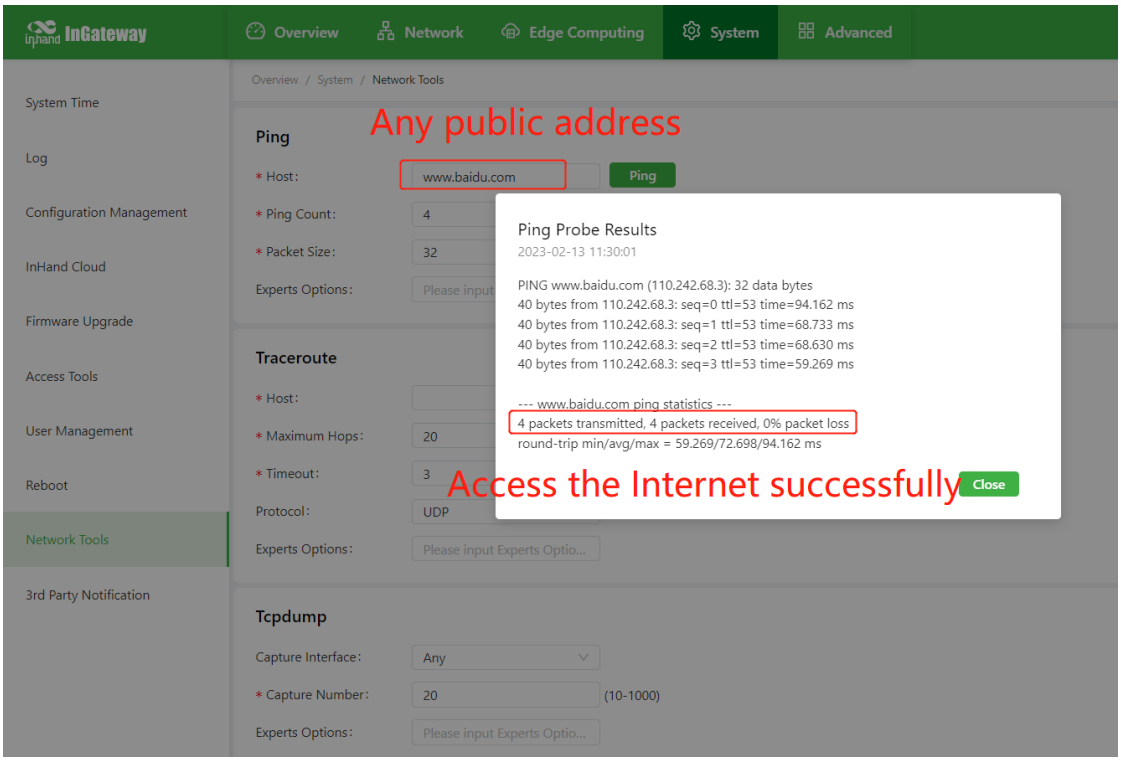


■Step 2: Enter the "Network>>Network Interface>>WAN" page, configure the IP address of WAN port (if the network type is static IP address, you need to configure the IP, subnet mask and other information according to the site network condition) and click Submit.





■Step 3: Go to the "System >>Network Tools" page of the IG974 and use the Ping command to check whether the IG974 is successfully connected to the Internet.

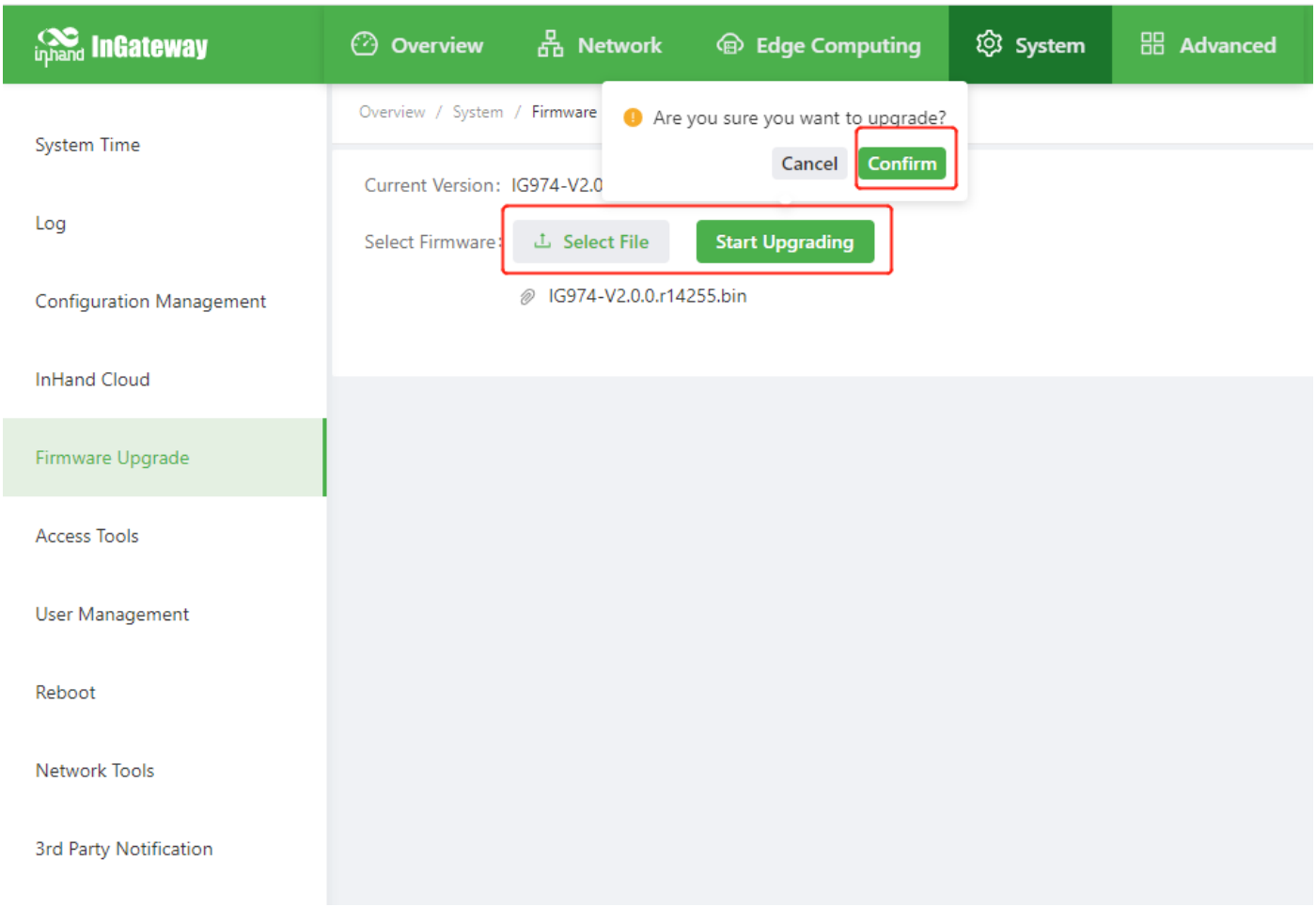


4. Software Version Upgrade

For the latest software version of the IG974 product and information on its functional features, please visit the Resource Center. To update the software version of IG974, please refer to the following method.

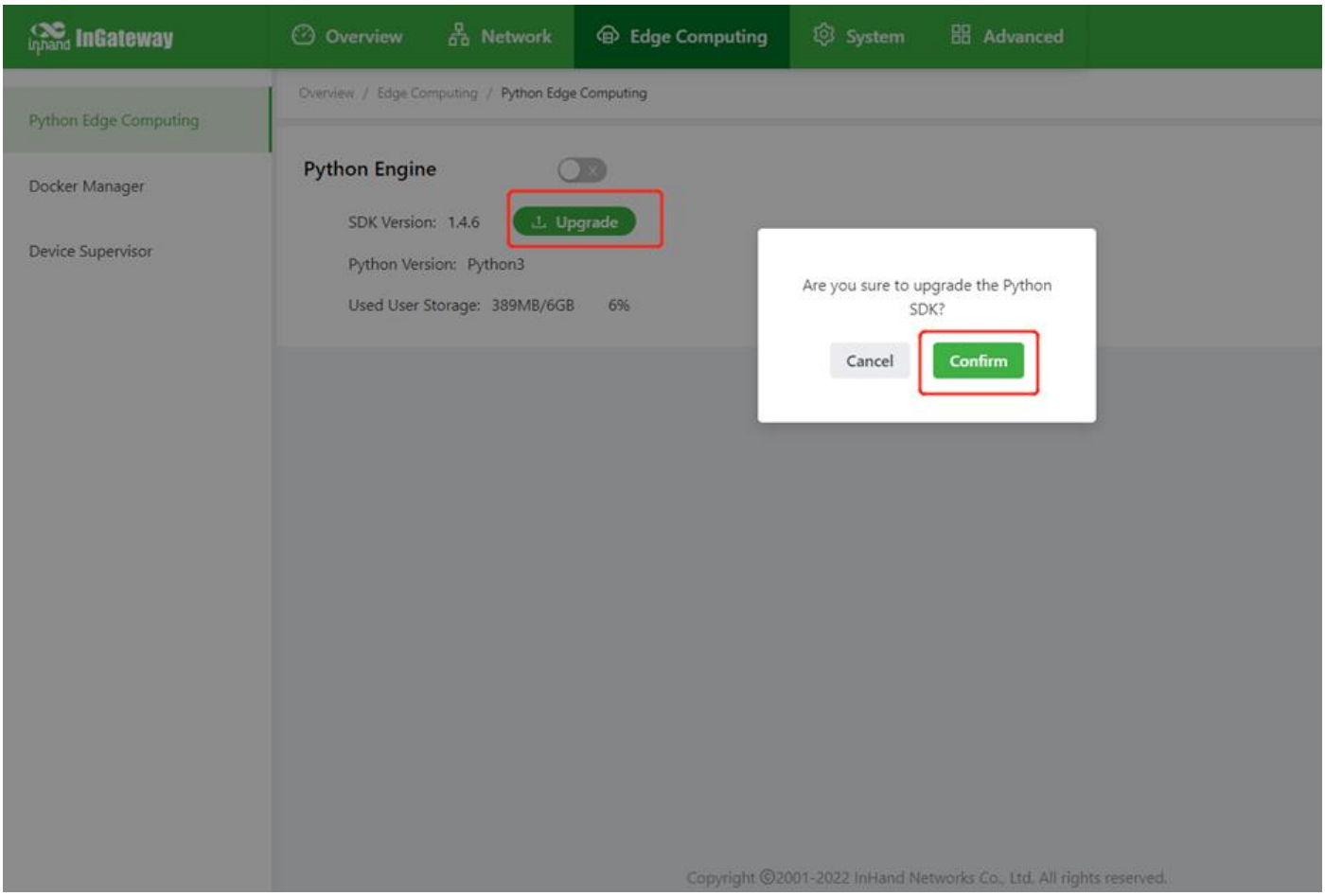
4.1 IG974 Firmware Version Upgrade

Click "System >>Firmware Upgrade", select the appropriate firmware file and click "Start Upgrade" and "Confirm". Apply the new firmware.



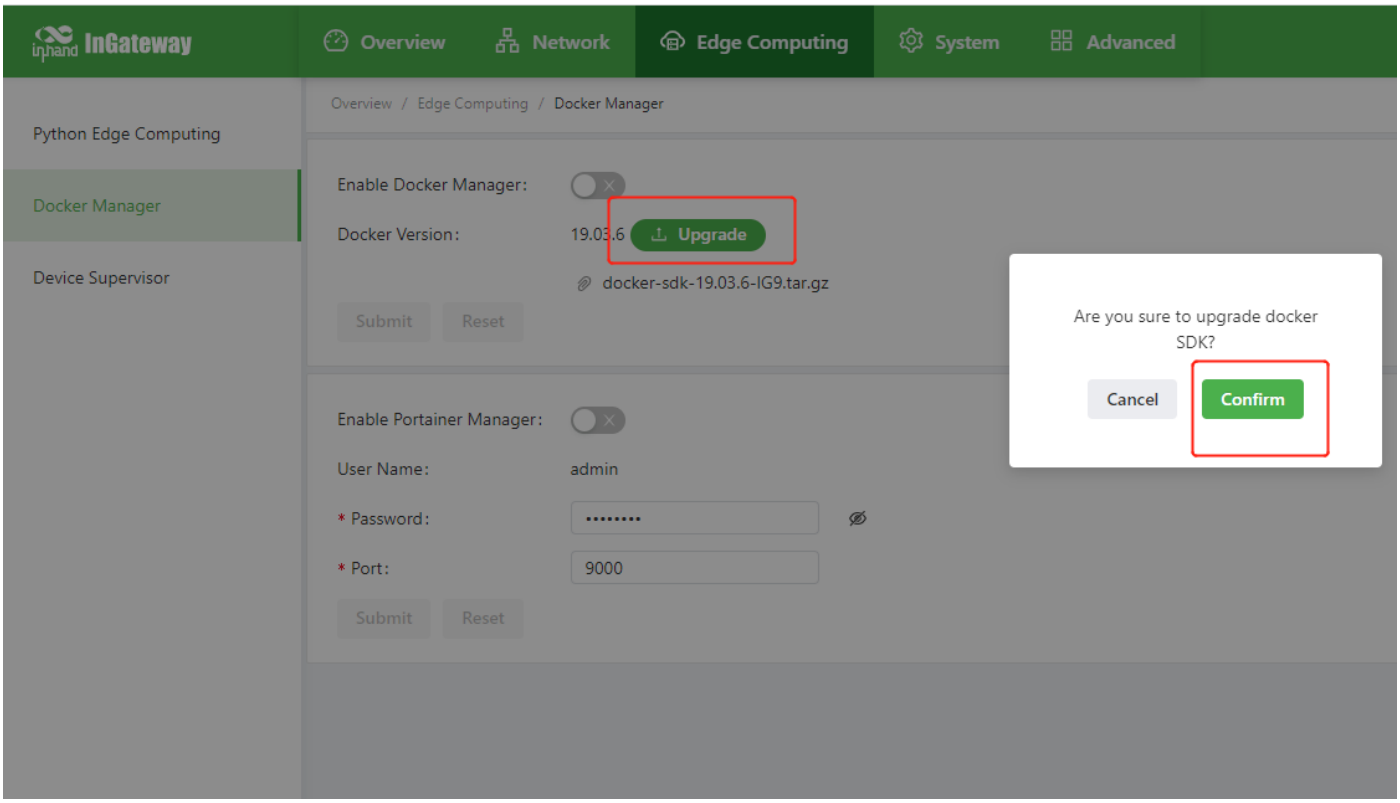
4.2 IG974 Python SDK Version Upgrade

Enter the "Edge Computing>>Python Edge Computing" page, click "Upgrade" and select the corresponding Python SDK file; click "Confirm" when the upgrade confirmation window pops up. ", IG974 will automatically complete the upgrade operation.

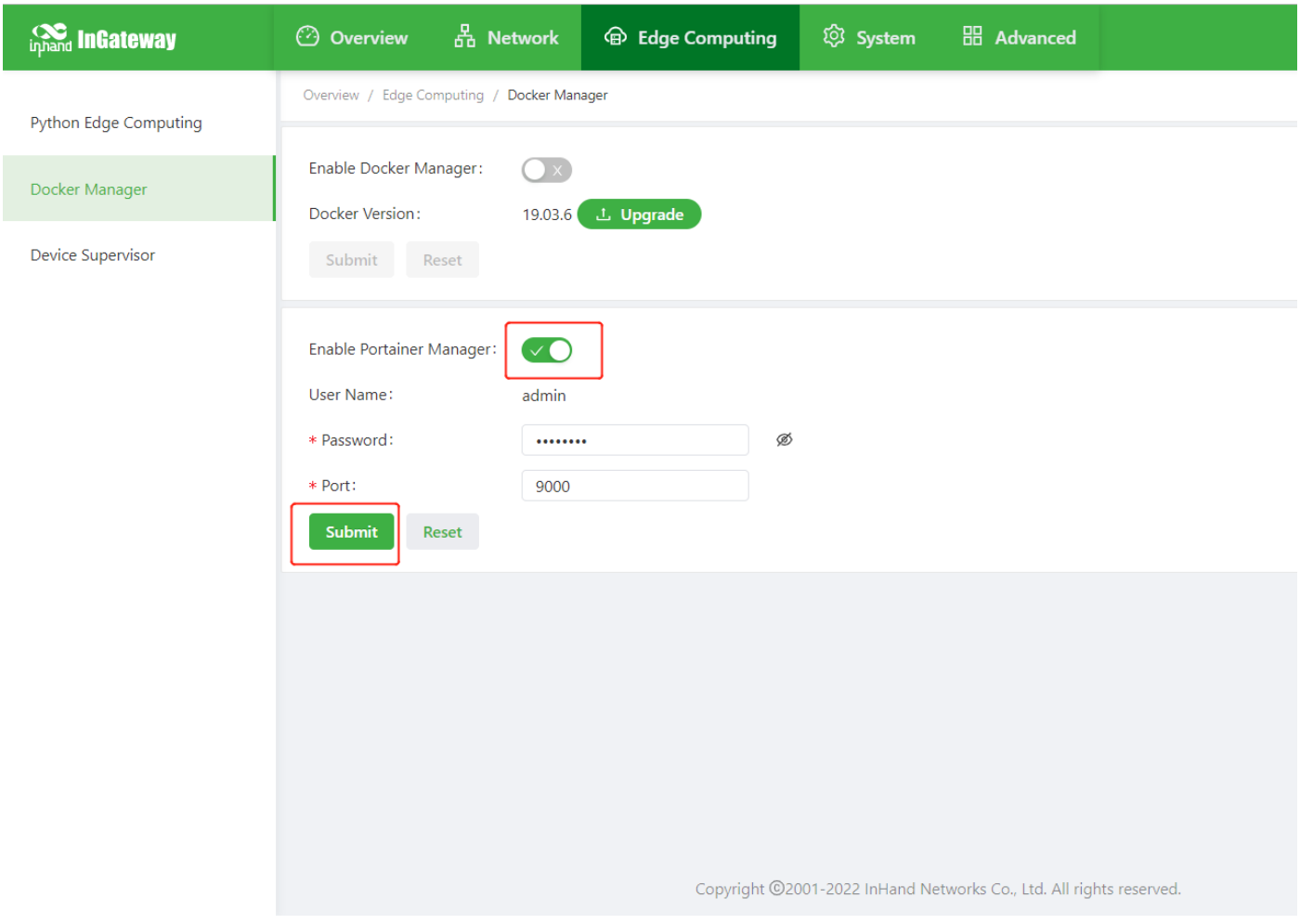


4.3 IG974 Docker SDK Version Upgrade

Go to the "Edge Computing>>Docker Management" page, click Upgrade and select the corresponding Docker SDK file.

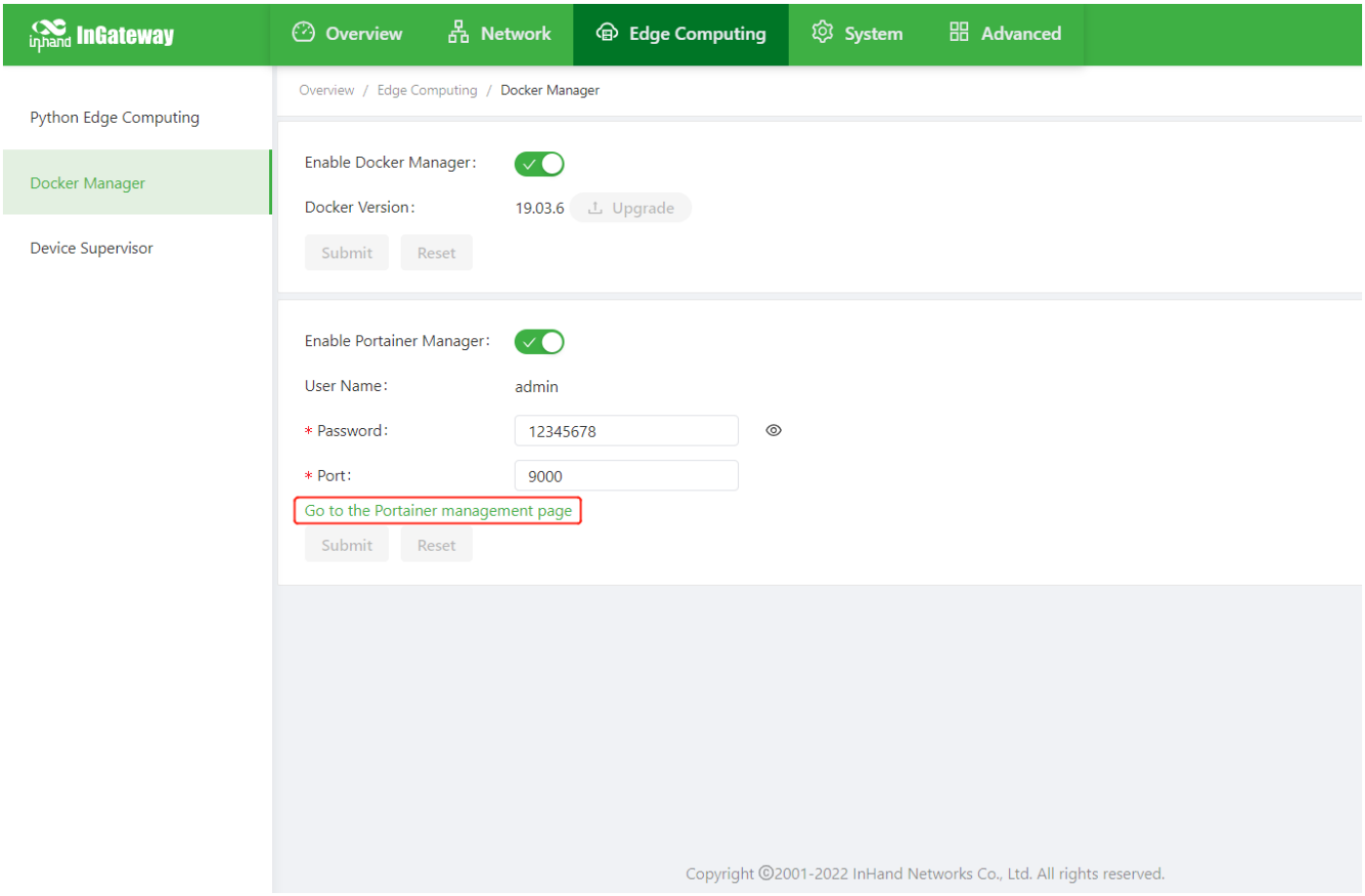


After successful installation, check the box "Enable Portainer Manager" and click "Submit".



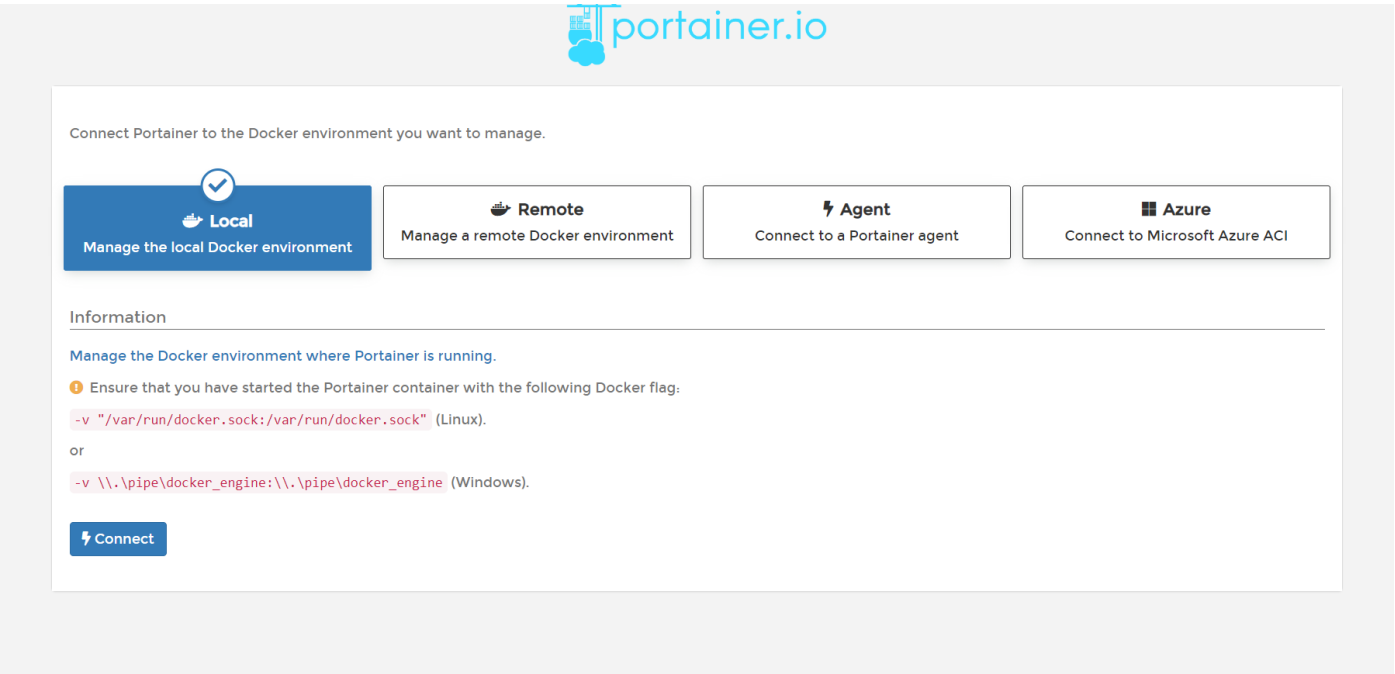
After enabling Portainer, you can access the administration page by clicking "Go to Portainer

management page".



Enter the account password set in the image above to log in to the administration page.

After successful login, select "Local" and click "Connect".



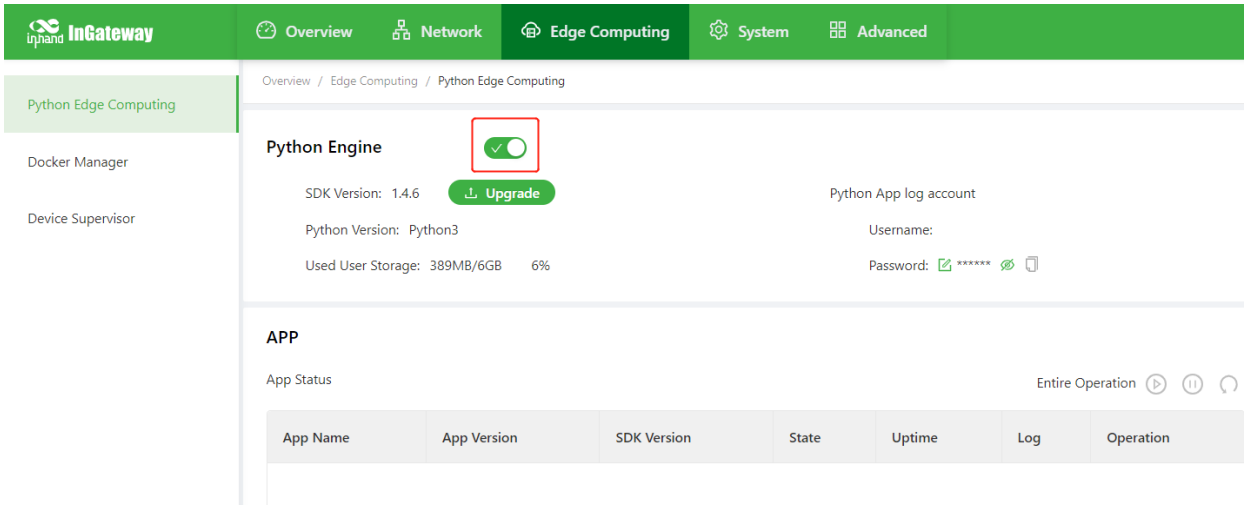
5. Python Edge Computing

5.1 Install and operate Python App

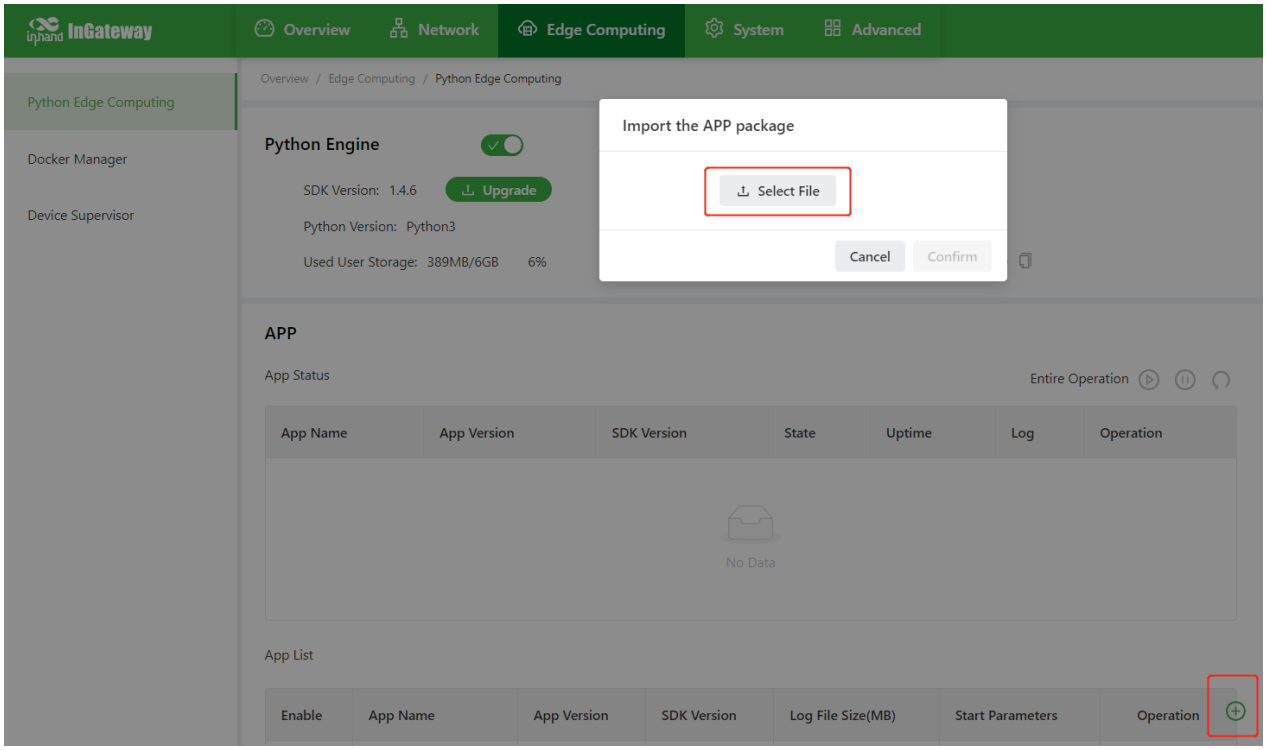
To install and run the Python App (App) in IG974, please refer to the following procedure.

- Step 1: Install the App

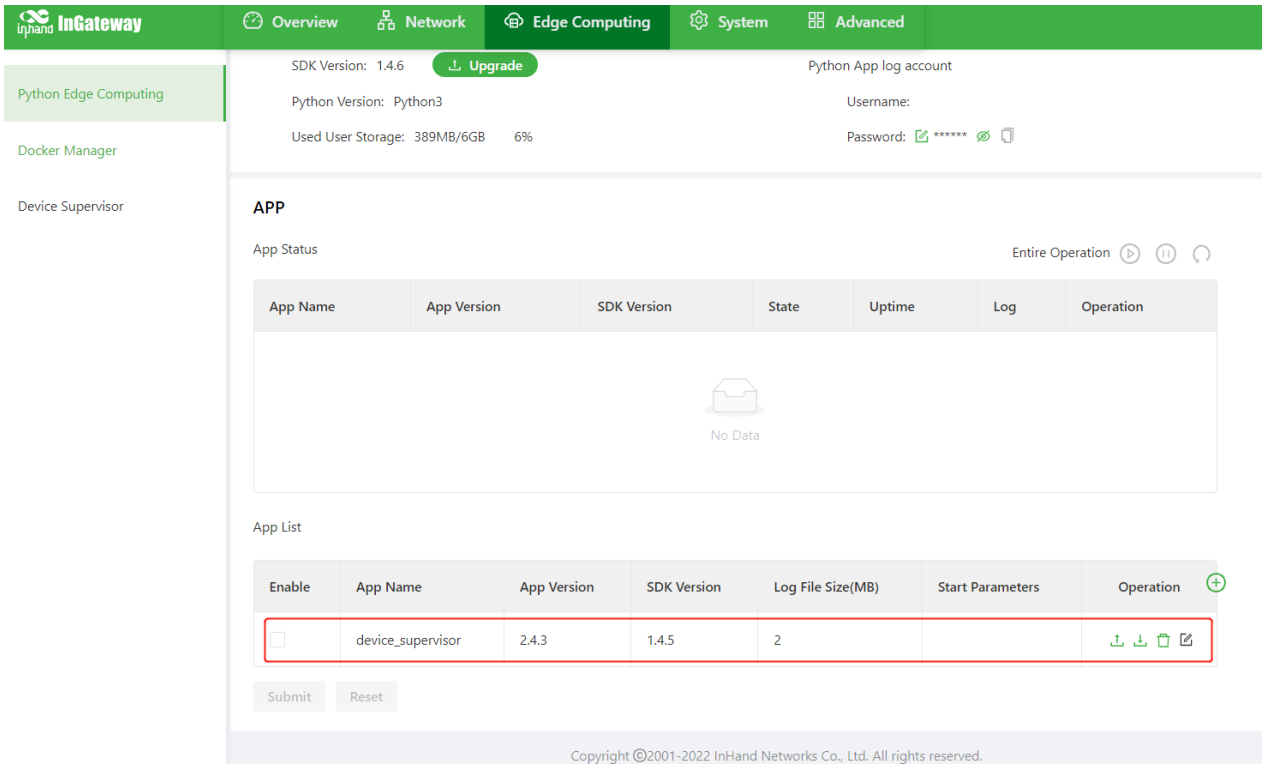
  Before installing the App, you need to ensure that the Python SDK is installed and the Python Edge Computing Engine is enabled, as shown in the following figure.



Enter the "Edge Computing>>Python Edge Computing" page, click the Add button and select the app package file to be installed, then click OK.

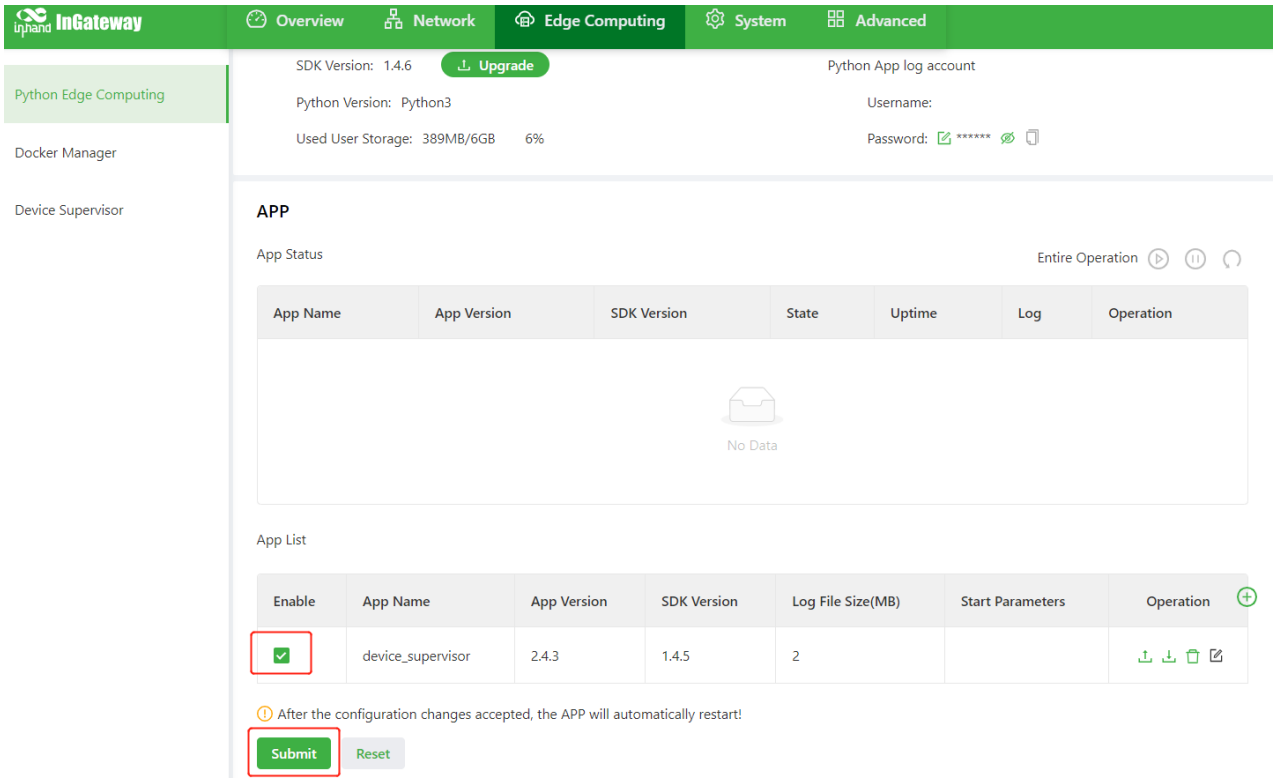


You can view the imported app after successful import, as shown in the following figure.

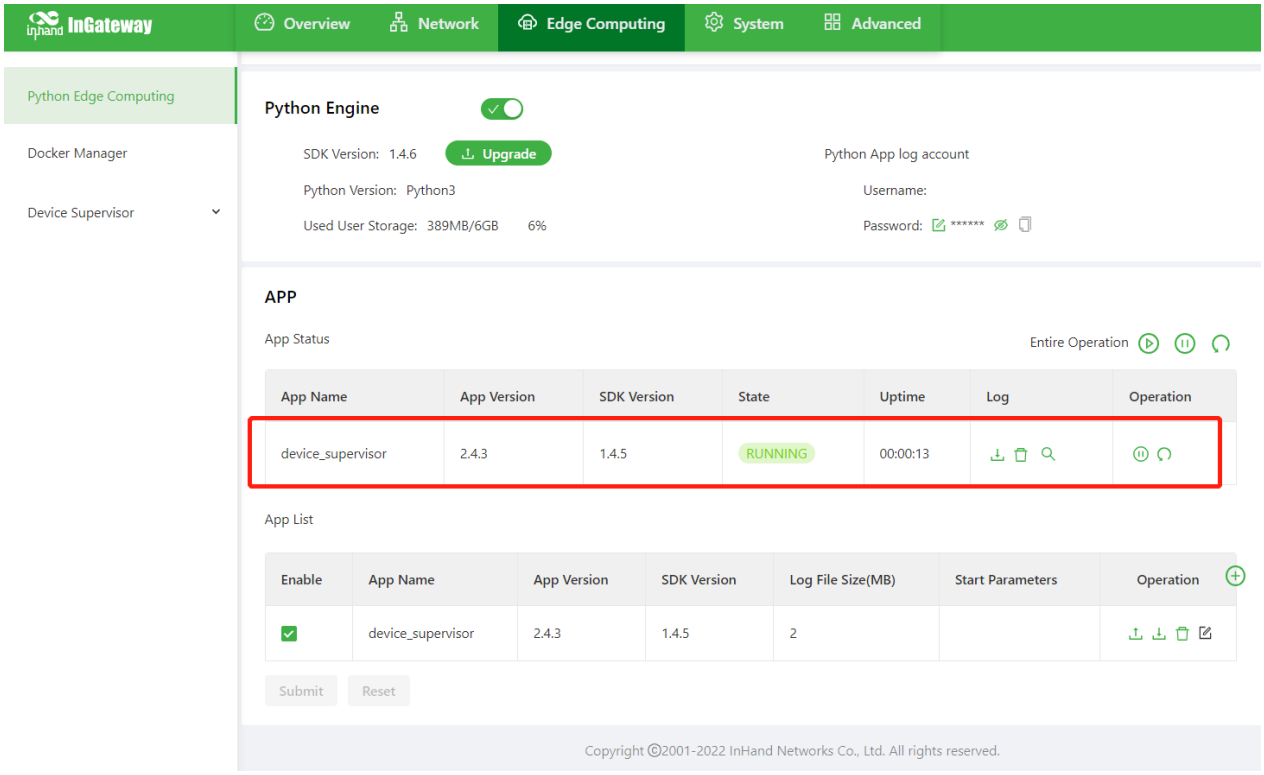


- Step 2: Operate App

  Check the box to enable the app and click Submit.



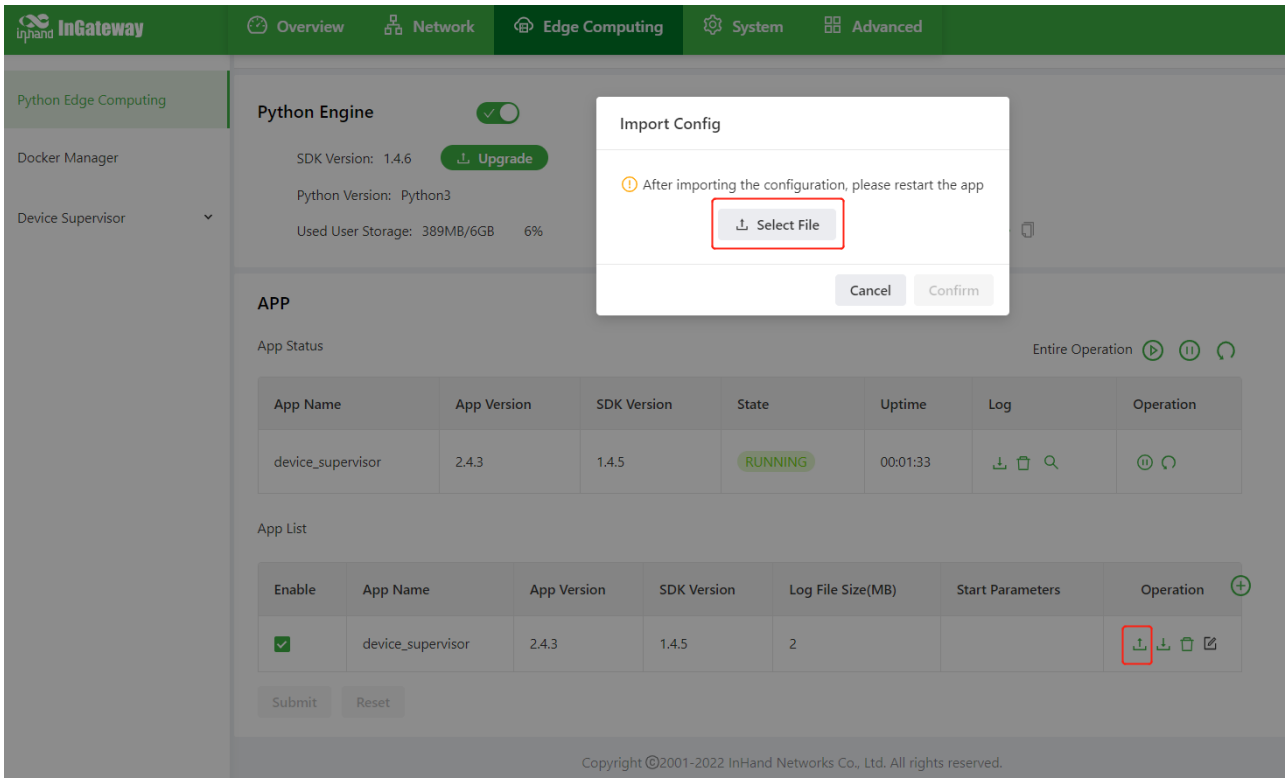
When enabled, the app will run in IG974 and automatically after every power on.



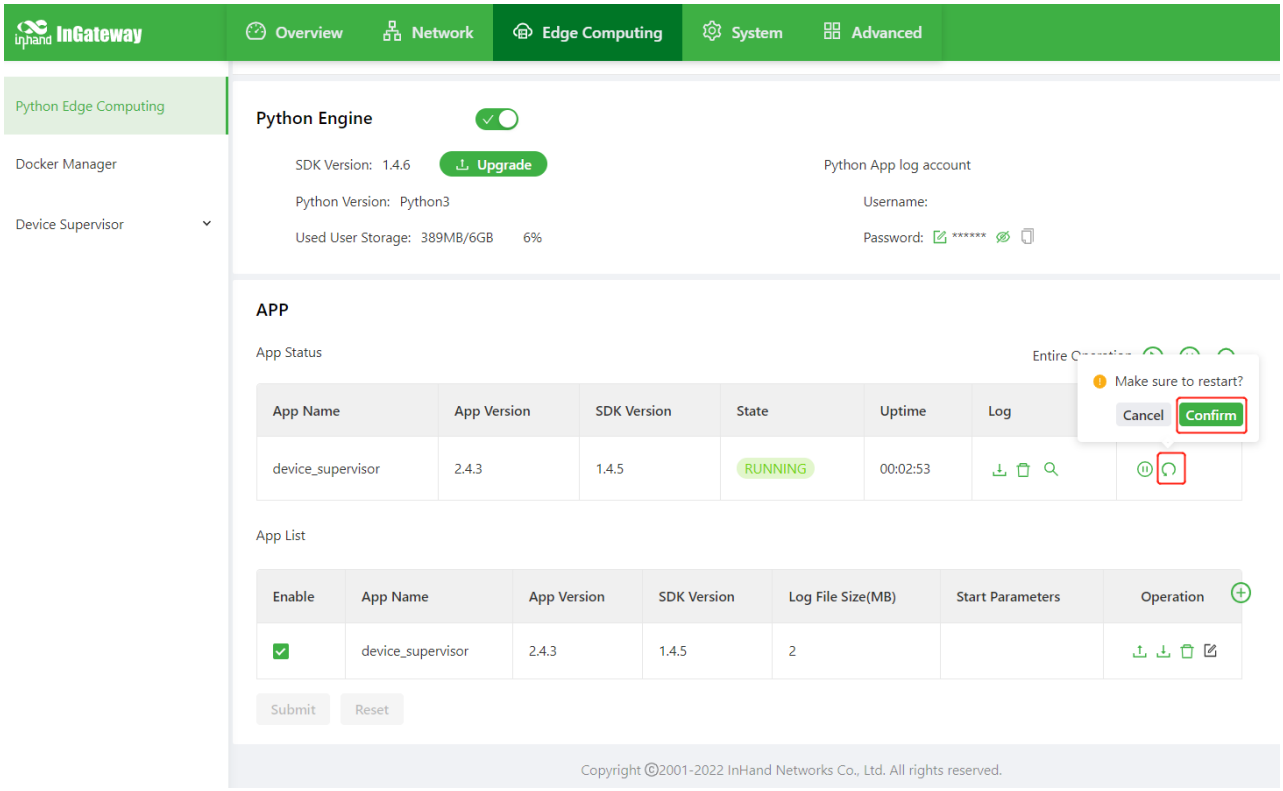
5.2 Python App Running Configuration Upgrade

If the installed app supports importing configuration files to modify the operation mode, you can refer to the following procedure to update the running configuration of the app.

- Step 1: Enter the "Edge Computing>>Python Edge Computing" page, click the Import Config button and select the configuration file you want to import, and then click Confirm.

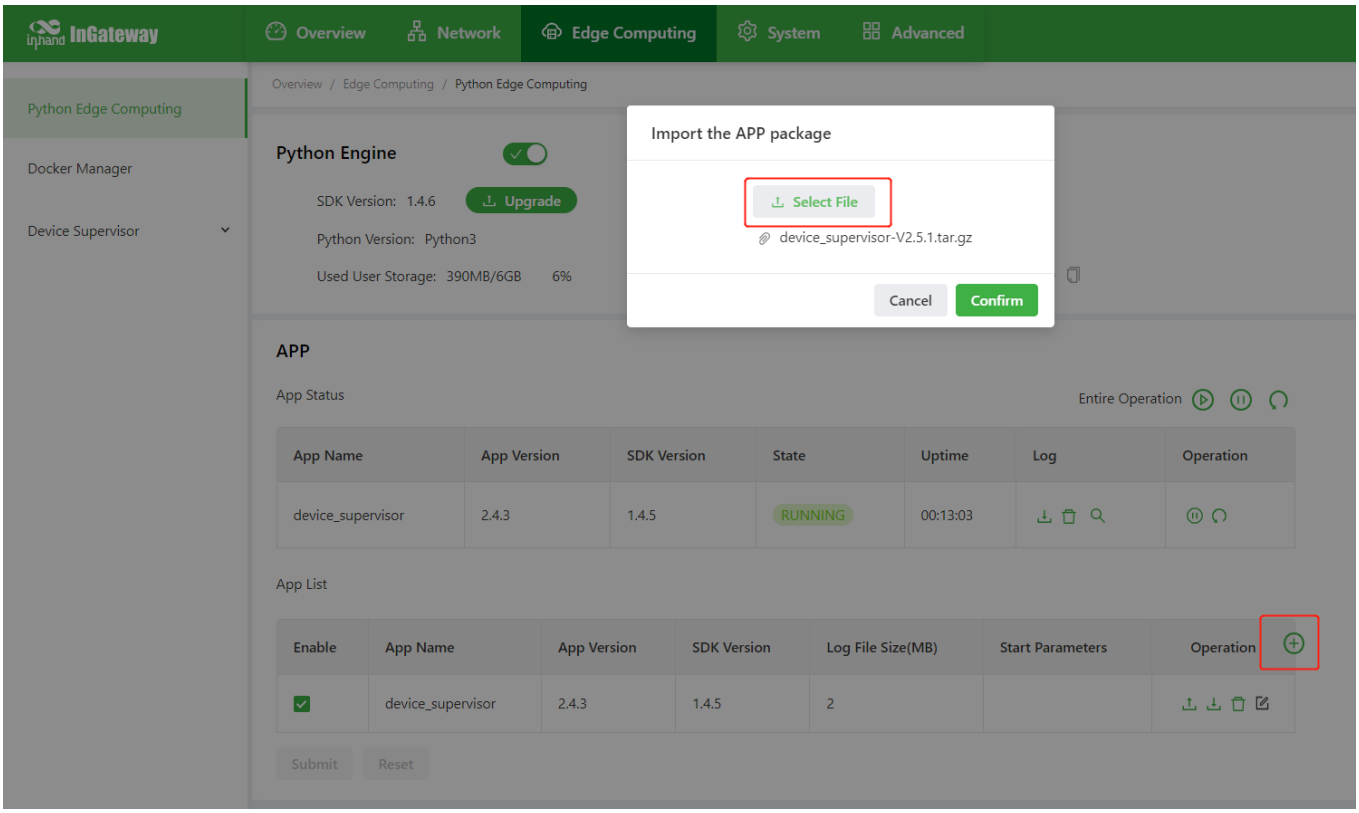


- Step 2: Restart the App after successful import, and the App will run according to the imported configuration file after the restart is completed.

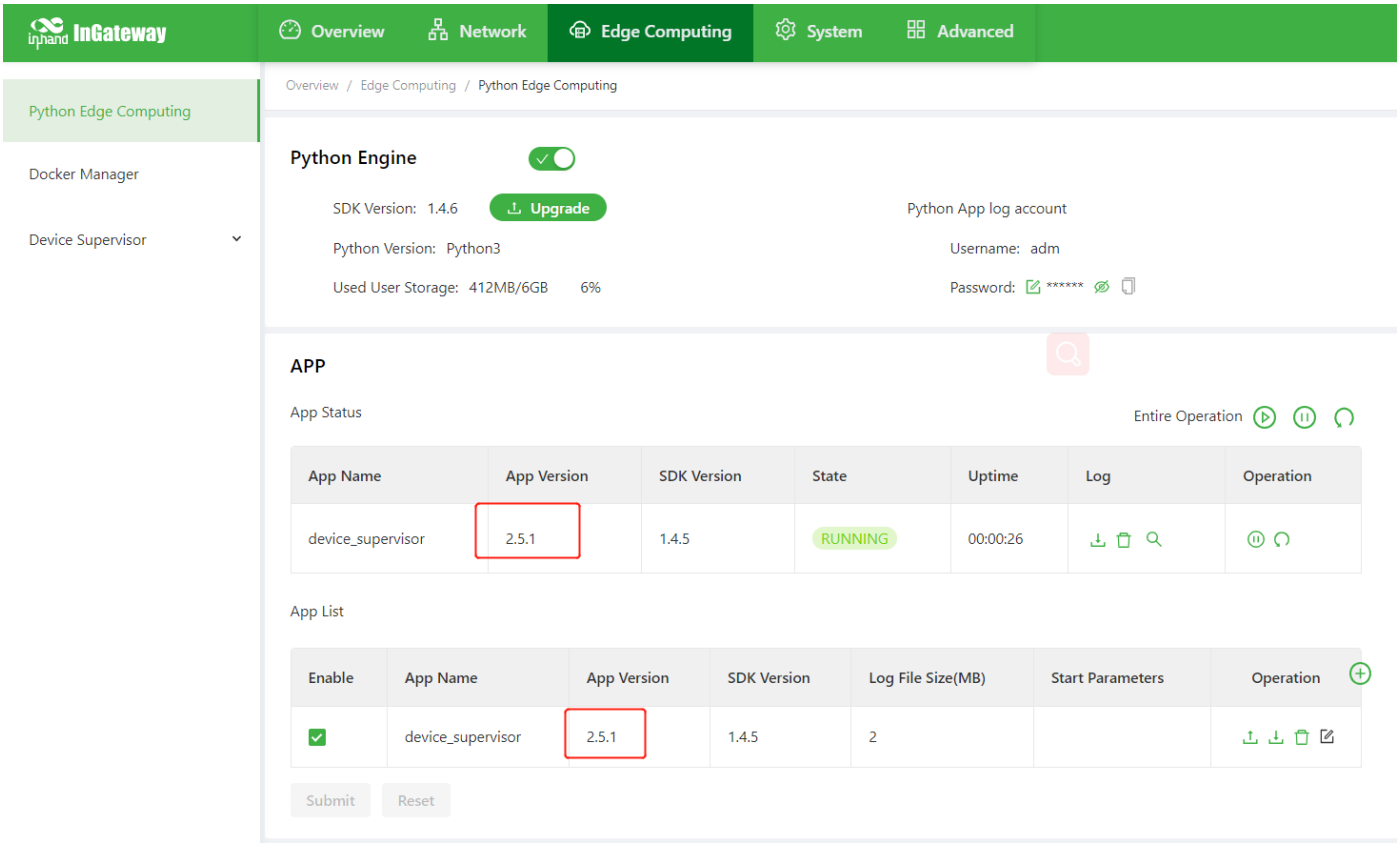


5.3 Python App Version Upgrade

To update the Python App version, please import the new version of the App from the "Edge Computing >> Python Edge Computing" page.

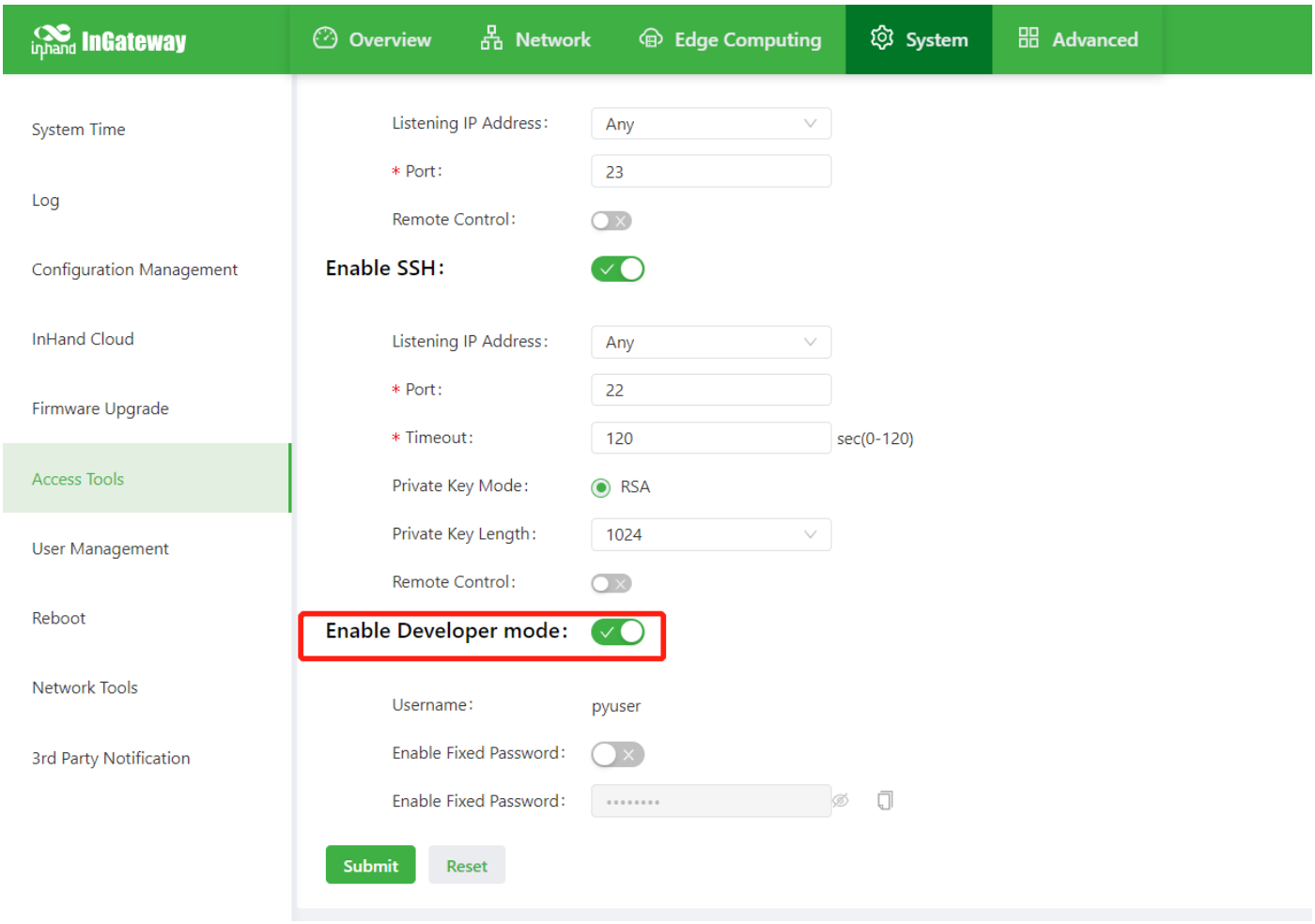

InGateway
Overview
Network
Edge Computing
System
Advanced
Python Edge Computing
Docker Manager
Device Supervisor
Overview / Edge Computing / Python Edge Computing
Python Engine
SDK Version: 1.4.6
Upgrade
Python Version: Python3
Used User Storage: 390MB/6GB 6%
Import the APP package
Select File
device_supervisor-V2.5.1.tar.gz
Cancel
Confirm
APP
App Status
Entire Operation
App Name
App Version
SDK Version
State
Uptime
Log
Operation
device_supervisor
2.4.3
1.4.5
RUNNING
00:13:03
App List
Enable
App Name
App Version
SDK Version
Log File Size(MB)
Start Parameters
Operation
device_supervisor
2.4.3
1.4.5
2
Submit
Reset

After the update is completed, the following figure shows.



5.4 Enable Developer Mode

To run and debug Python code on IG974, you need to enable the developer mode of IG974. In "System>>Access Tools" page, check "Enable Developer Mode", and then you can develop on IG974 via VS Code. How to use VS Code to develop IG974 in Python, please refer to this link: http://sdk.ig.inhand.com.cn/zh_CN/latest/MobiusPi-Python-QuickStart-CN.html. (MobiusPi Python Development Quick Start)


InGateway
Overview
Network
Edge Computing
System
Advanced
System Time
Log
Configuration Management
InHand Cloud
Firmware Upgrade
Access Tools
User Management
Reboot
Network Tools
3rd Party Notification
Listening IP Address: Any
* Port: 23
Remote Control:
Enable SSH:
Listening IP Address: Any
* Port: 22
* Timeout: 120 sec(0-120)
Private Key Mode: RSA
Private Key Length: 1024
Remote Control:
Enable Developer mode:
Username: pyuser
Enable Fixed Password:
Enable Fixed Password:
Submit
Reset

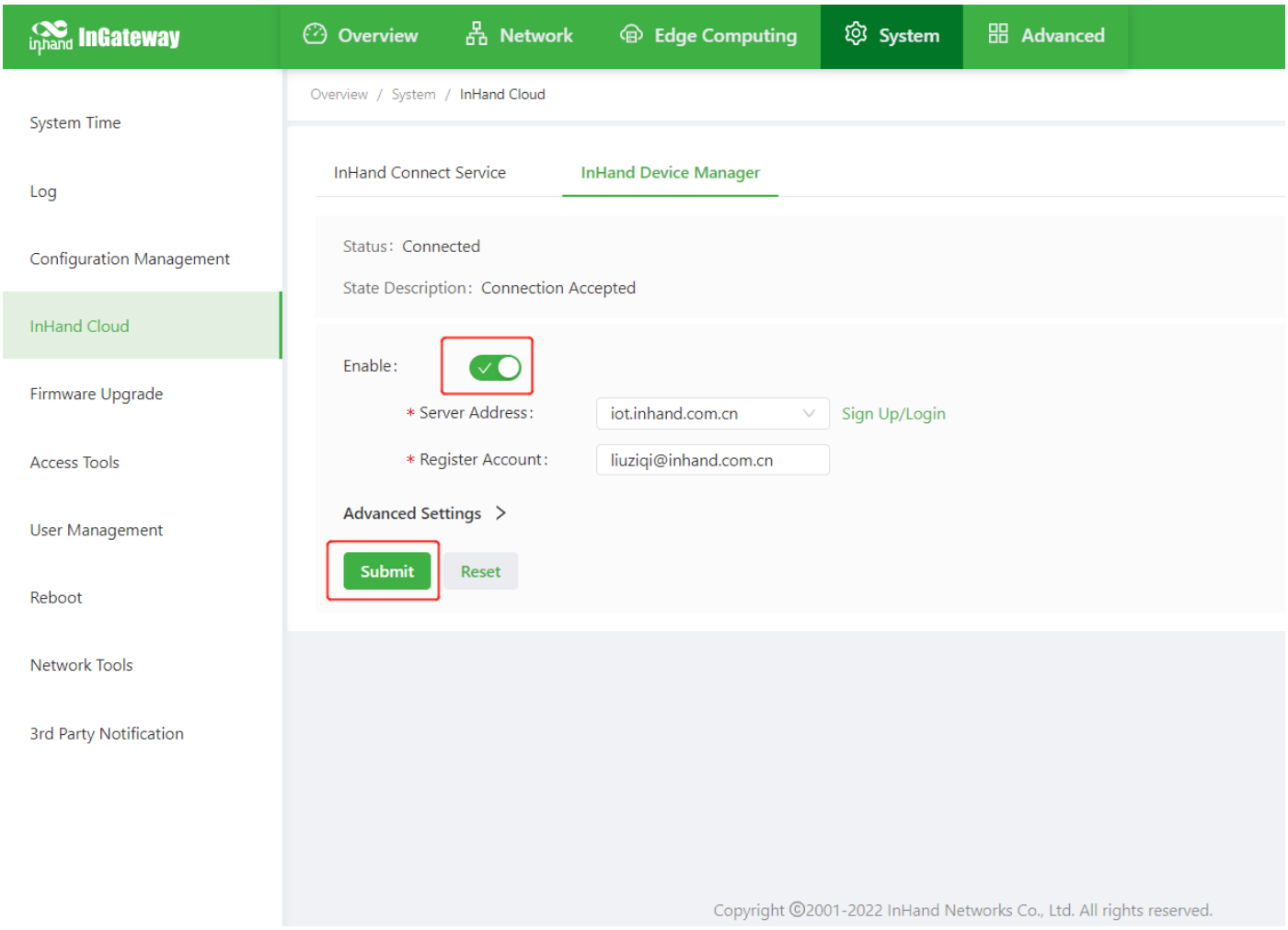
When developer mode is enabled, the IG974 starts an SSH Server that listens to port 222 of the LAN (default IP address 192.168.2.1.). The SSH Server username and password will be displayed in the above web page. For better security, a new password will be regenerated randomly each time the developer mode is turned on or the device is rebooted.

6. Remote Monitoring Platform

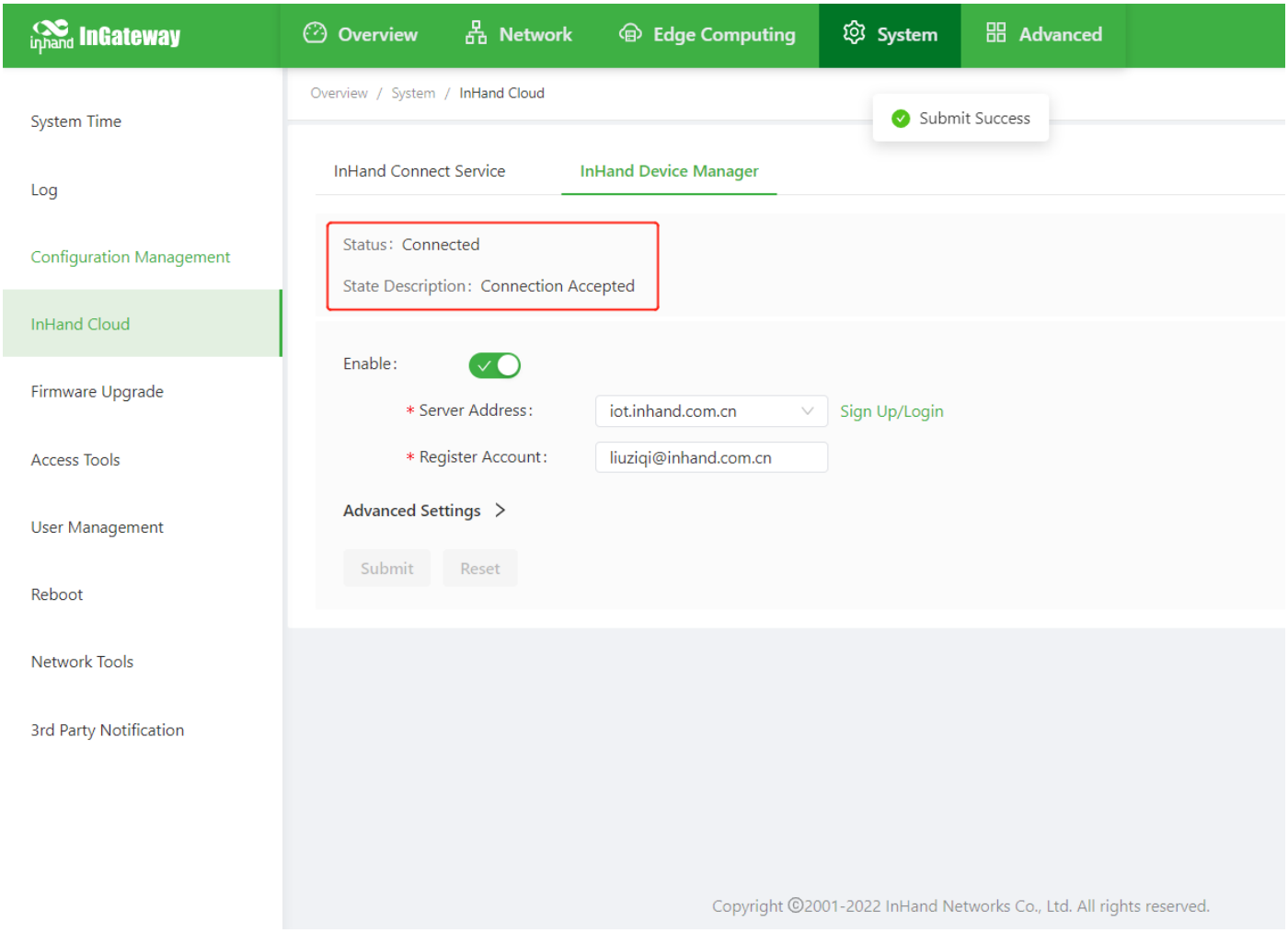
The Device Cloud Platform developed by InHand supports monitoring the status of IG974, remote maintenance of devices, remote batch distribution of IG974 configurations and IG974 batch upgrades to help users manage IG974 and field devices conveniently and efficiently. In order to enable the device cloud platform to manage IG974 and field devices remotely, you need to connect IG974 to the cloud platform, and the connection method is as follows.

Enter the "System >>InHand Cloud" page, check Enable Device Cloud Platform and configure the corresponding server address and registration account, click Submit after the configuration is completed. **InHand Connect Service** platform mainly provides remote maintenance channel for users, and **InHand Device Manager** platform mainly provides gateway management services (e.g. Batch remote upgrade, etc.) for users.

- Server Address: The address of the device cloud platform
- Registered Account: The IG974 associated with the device cloud platform account (if you have not registered, please register an account first.)
- Advanced Settings: Including heartbeat interval and other configurations, generally use the default configuration.



The status of IG974 is described as “Connected” after successful connection to the device cloud platform.

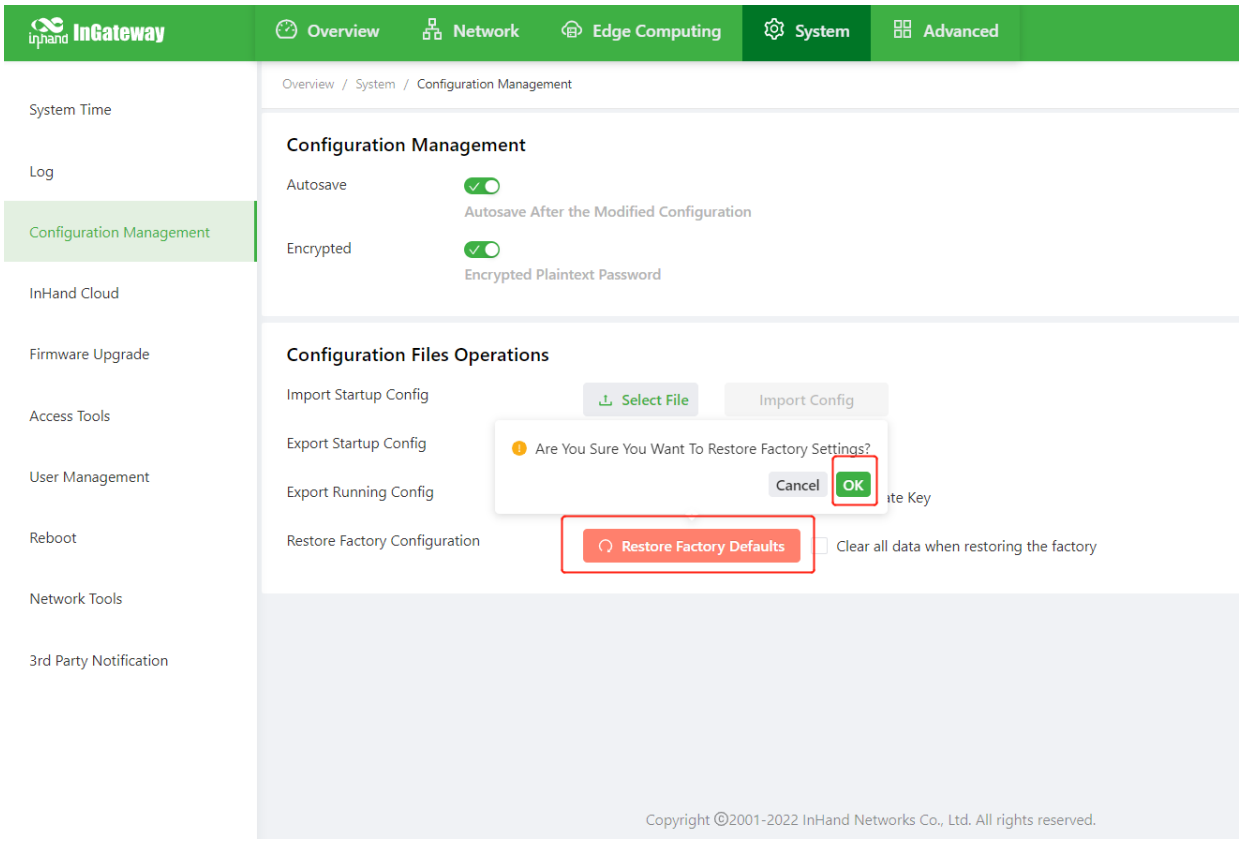


7. Appendix

7.1 **Restore Factory Settings**

There are two ways to restore the factory settings of IG974: hardware restore factory settings and software restore factory settings.

- Hardware restore factory settings
  - Step 1: Press and hold the RESET key within 10 minutes after the device is powered on.
  - Step 2: Release the RESET key when the ERR lamp is always on.
  - Step 3: After the ERR light goes off, press and hold the RESET key again, and release the RESET key when the ERR light flashes; wait for the ERR light to go off, indicating that the factory settings are restored successfully.
- Software restore factory settings
  - Enter the "System >>Configuration Management" page, click the reset button and select OK. the IG974 will complete the operation of restoring the factory settings.


InGateway
Overview
Network
Edge Computing
System
Advanced
System Time
Log
Configuration Management
InHand Cloud
Firmware Upgrade
Access Tools
User Management
Reboot
Network Tools
3rd Party Notification
Overview / System / Configuration Management
Configuration Management
Autosave
Autosave After the Modified Configuration
Encrypted
Encrypted Plaintext Password
Configuration Files Operations
Import Startup Config
Select File
Import Config
Export Startup Config
Are You Sure You Want To Restore Factory Settings?
Cancel
OK
Export Running Config
Restore Factory Configuration
Restore Factory Defaults
Clear all data when restoring the factory
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FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device , pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.
NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
RF Exposure
The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The availability of some specific channels and/or operational frequency bands is country dependent and firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.
The EUT only works at 5150~5250MHz frequencyand 5725~5850MHz frequency.

IC STATEMENT

This device complies with Industry Canada license-exempt RSS standard(s): Operation is subject to the following Two conditions:
(1) this device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation
of the device.
Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareildoit accepter tout brouillage radioélectrique subi, même si le brouillage est
susceptible d'en compromettre le fonctionnement.
CAN ICES-3 (B)
Avis d'Industrie Canada
Le présent appareil est conforme aux CNR d'industrie Canada applicables aux appareils radio exem pts de licence L'exploitation est autorisée aux deux conditions suivantes:
1) I'appareil ne doit pas produire de brouillage; et
2) I'utillsateur de I'appareil doit accepterbrouillage radioélectrique subi meme si le brouillage est susceptible d'encompromettre le fonctionnement. mauvais fonctionnement de I'appareil.
Cet appareil numériquie de la classe B est conforme à la norme NMB-003 du Canada.
CAN NMB-3 (B)
Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
Déclaration d'exposition aux radiations:
Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps.
Frequency band 5150-5250 MHz in Canada for indoor use only.
This radio transmitter IC:11594A-IG974 has been approved by Innovation, Science and Economic Development Canada to operate with the suction cup antenna , with The maximum 2.72dBi at 2412-2462MHz and 0.21dBi at 5150~5850MHz is indicated. If the gain is greater than the maximum gain, it is strictly prohibited to use the device together.