USR-N5X0 Connects to USR Cloud

1. How to Read Serial Modbus Data in USR Cloud

1.1. Preparation

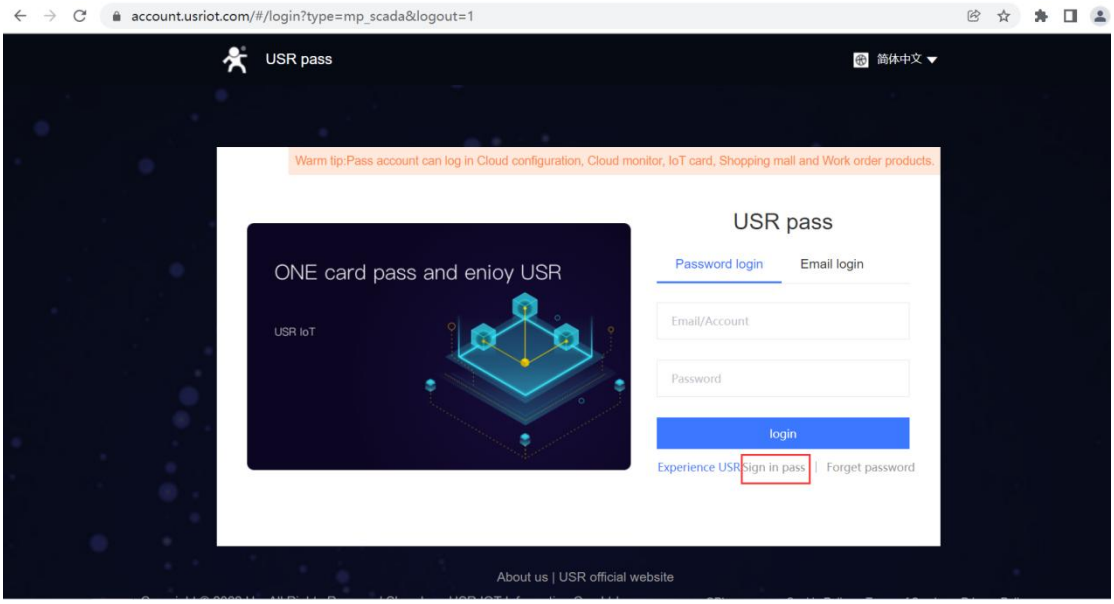
(1) USR-N520 *1
(2) RS485 serial to USB cable *1
(3) Ethernet cable *1
(4) 12V/1A power adaptor *1
(5) Modbus simulation software: Modbus Slave & Modbus Poll
(6) Serial tool, you can also download our company's USR-TCP232-Test software from this link: https://www.pusr.com/Support/download_hits.html?id=304

1.2. Add a New Device in USR Cloud

In this chapter, we will introduce how to add a new device in PUSR Cloud and make it online.

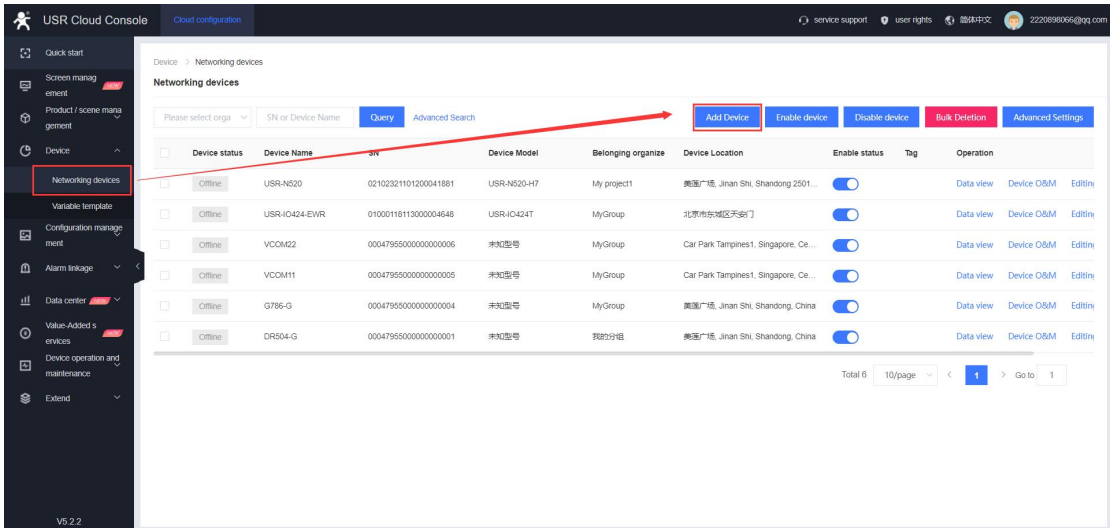
1.2.1. Register an Account

Register an account in USR Cloud firstly: https://mp.usriot.com/

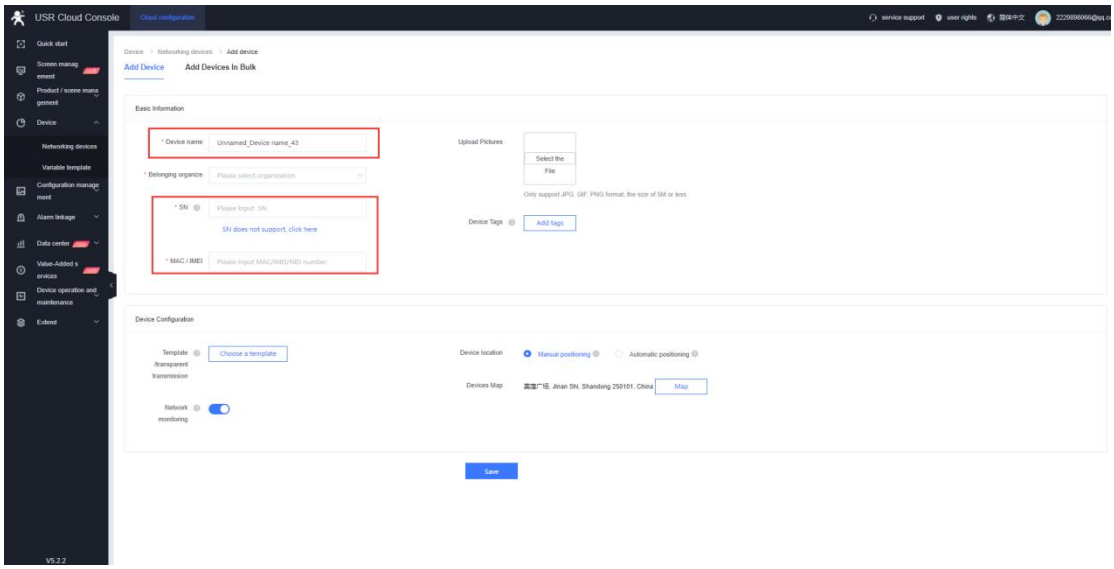


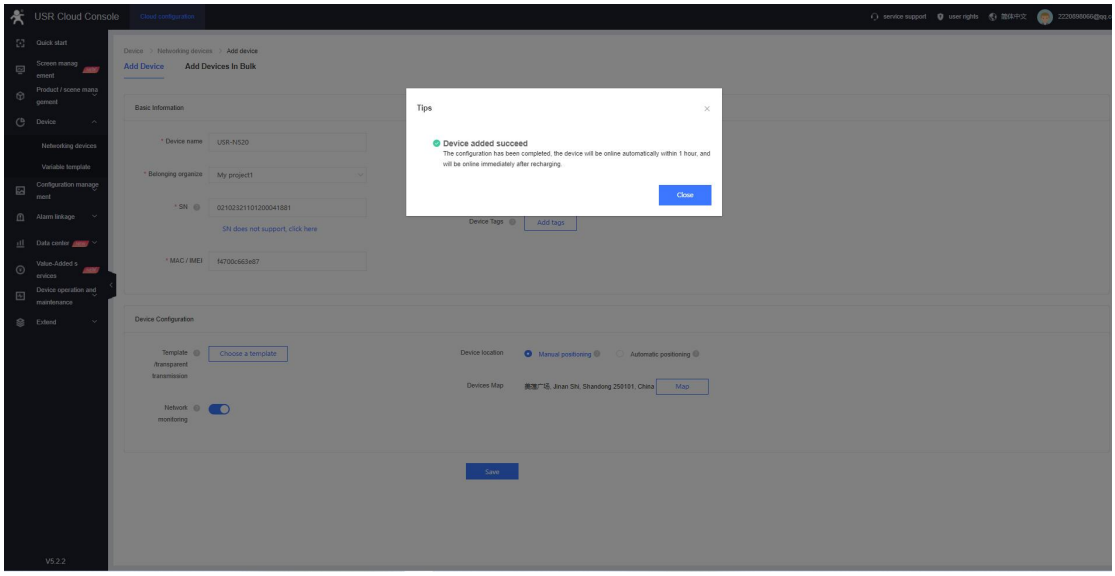
1.2.2. Add Device

1. In **Device--Network devices**, click “**Add Device**”.



2. Change the device name, fill in the SN and MAC of the device, other parameters can be changed according to your requirements, then click **Save**. You can check the SN and MAC in the back label of the device.

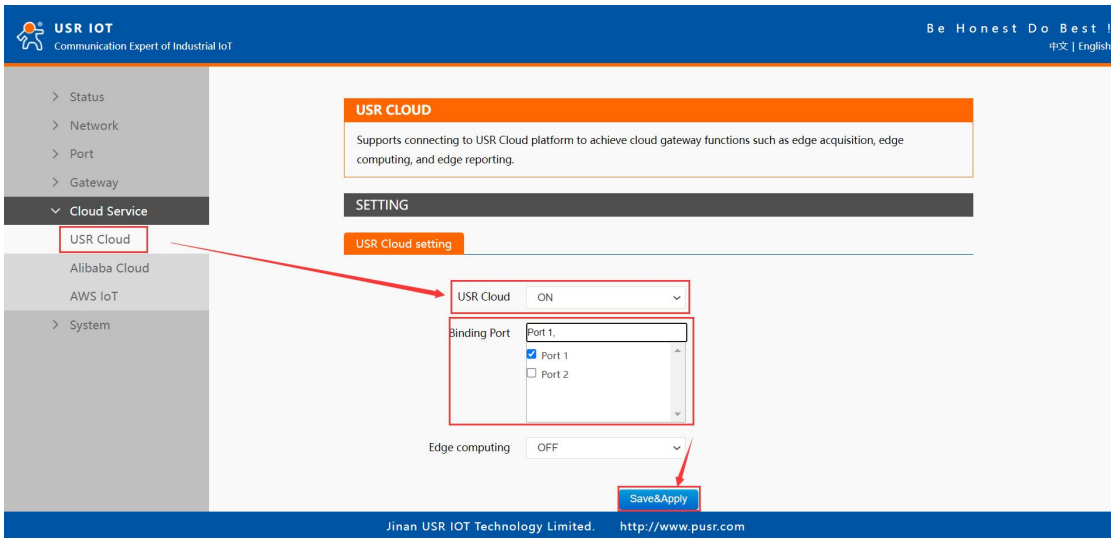


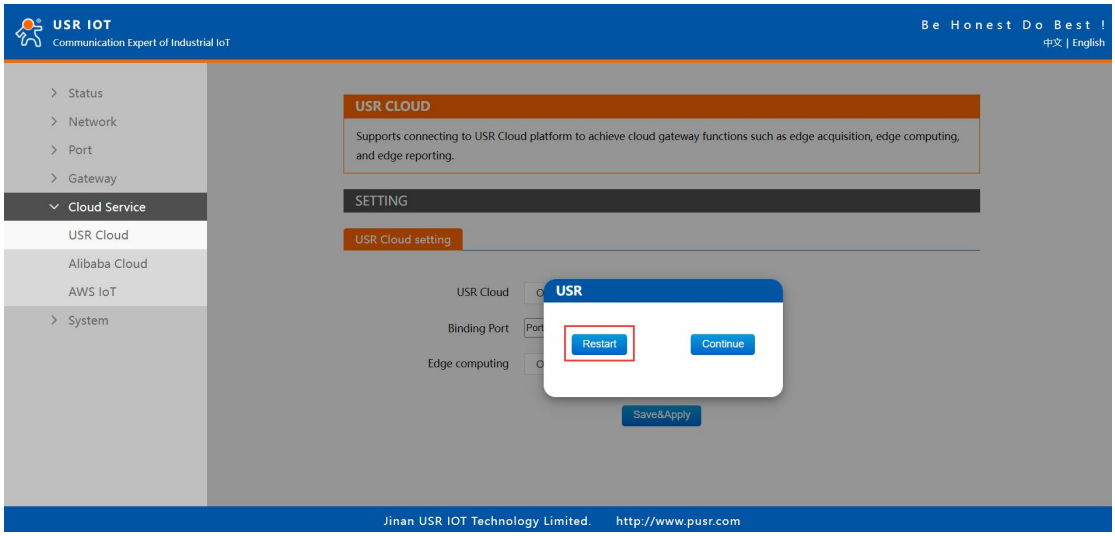


1.2.3. Enable USR Cloud Function

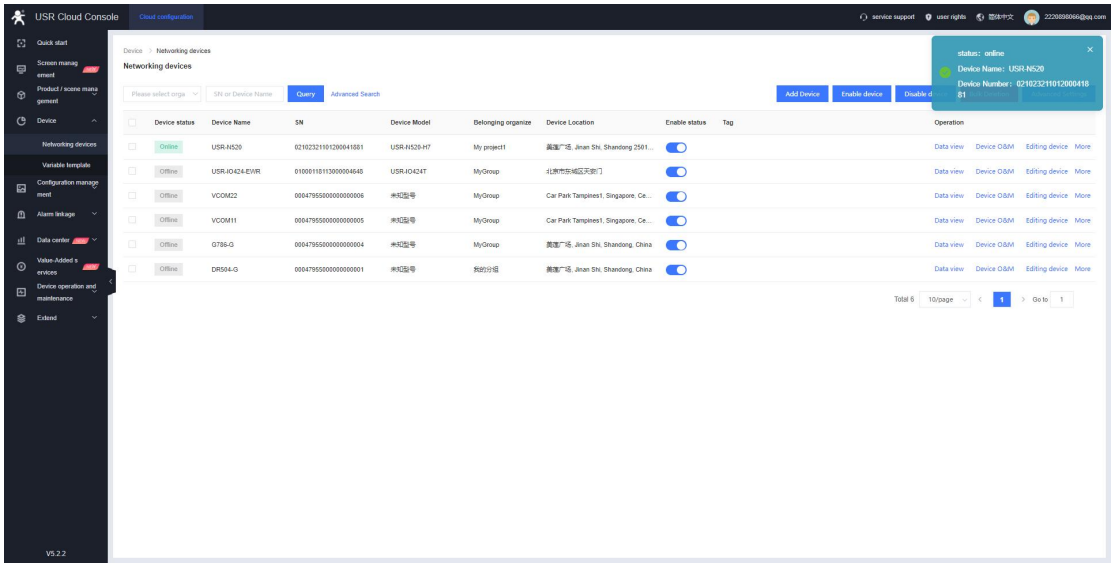
In **Cloud Service--USR Cloud**, enable USR Cloud function, choose the serial port, click "**Save&Apply**", then restart the device to take the parameters effect.

Note: USR Cloud is a public server, so USR-N5X0 device needs to connect to the public network firstly.





After configuring the device, it will be online in USR Cloud. If it is still offline, please check if the network of N5X0 device is normal.



1.3. Display Data in USR Cloud

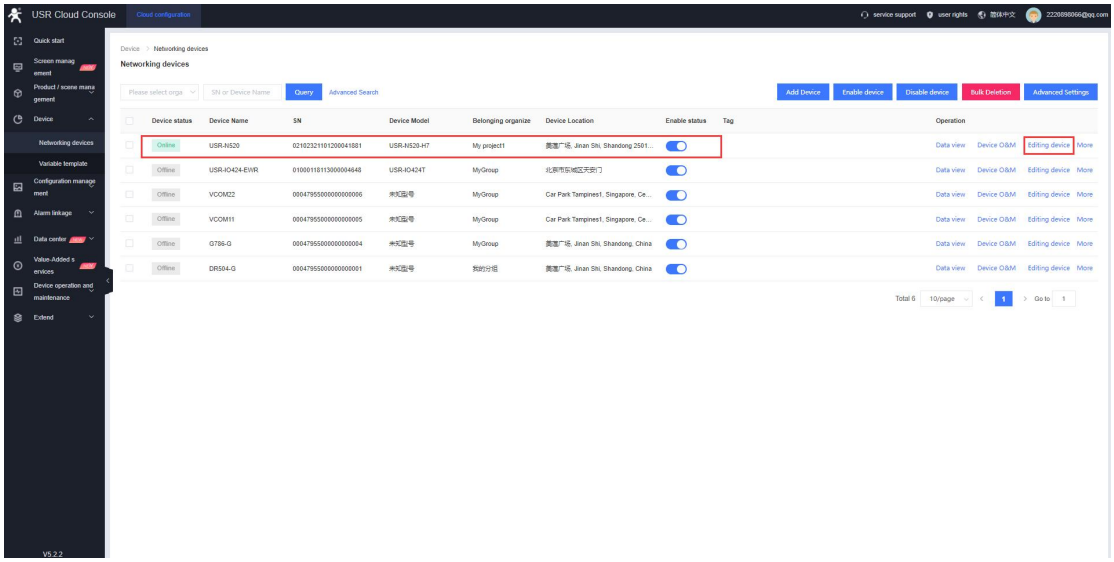
In this chapter, we will introduce how to achieve remote data communication via transparent transmission group, cloud polling and edge computing.

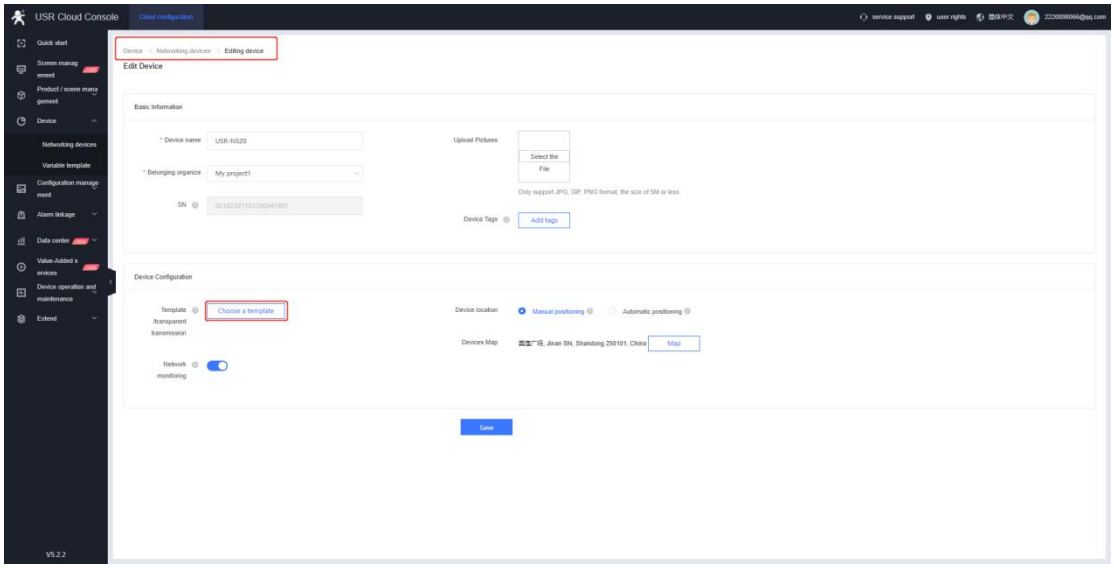
1.3.1. Cloud Polling

USR Cloud can read serial Modbus data via Cloud polling mode, in this test, we use Modbus slave software to simulate the terminal Modbus RTU device.

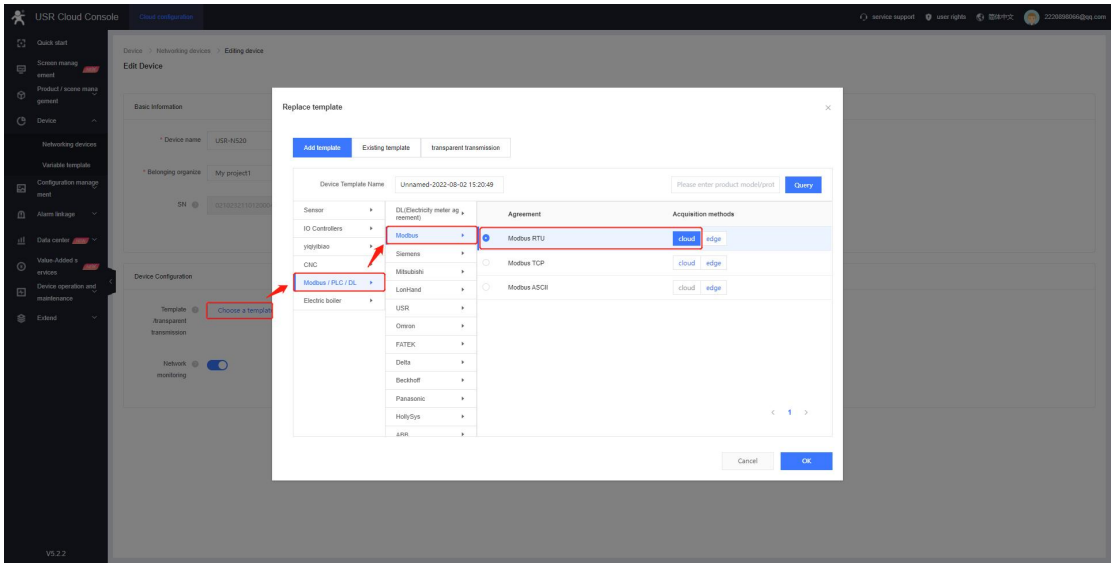
1.3.1.1. Variable Template

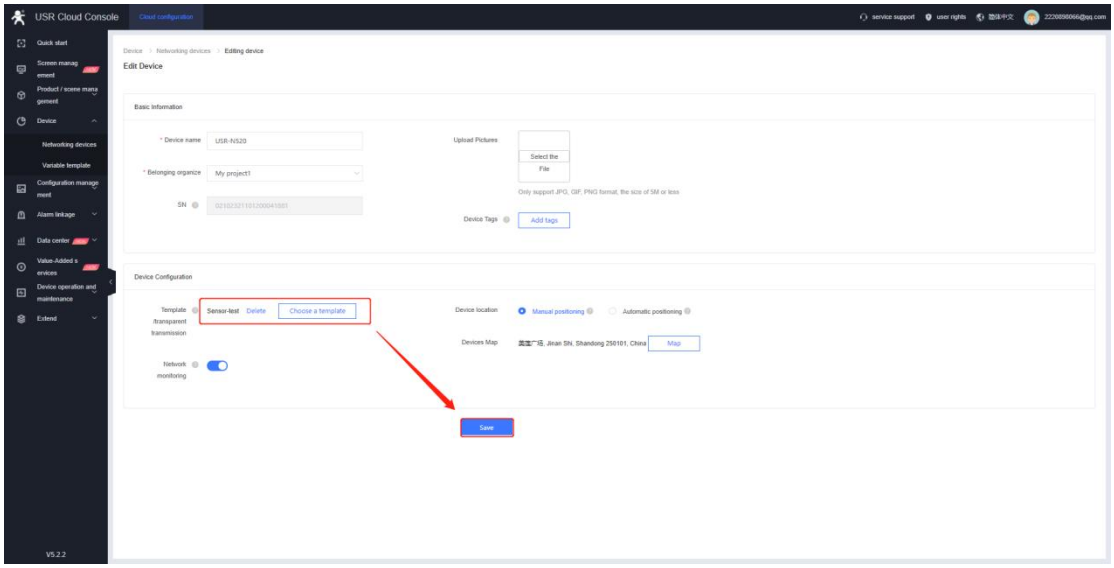
1. In USR Cloud, click **Editing Device** to add the device template.



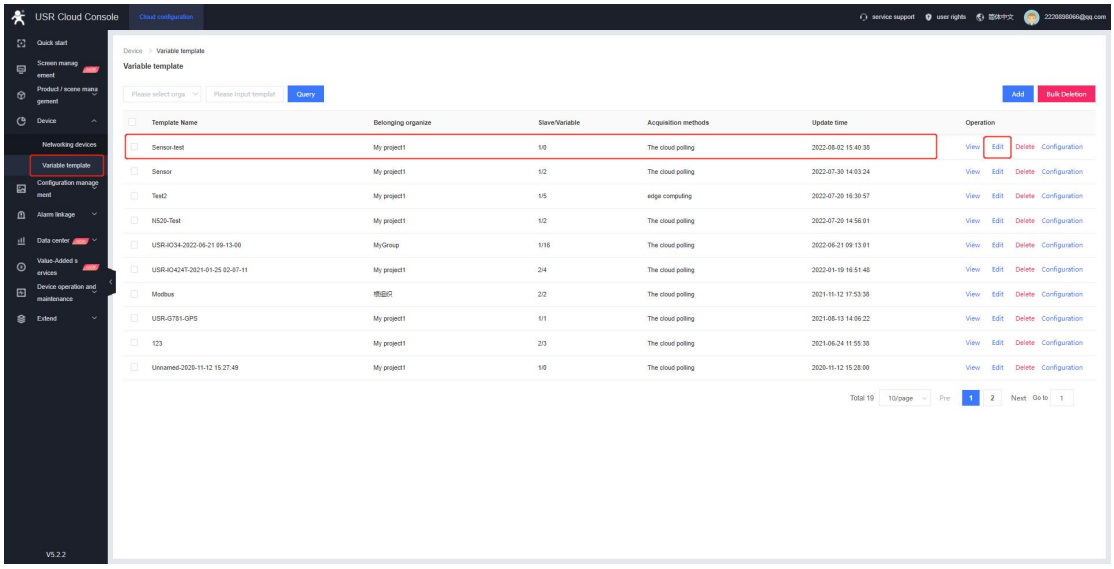


2. Choose **Modbus/PLC/DL--Modbus--Modbus RTU Cloud**, you can also change the template name. Then click **Save**.

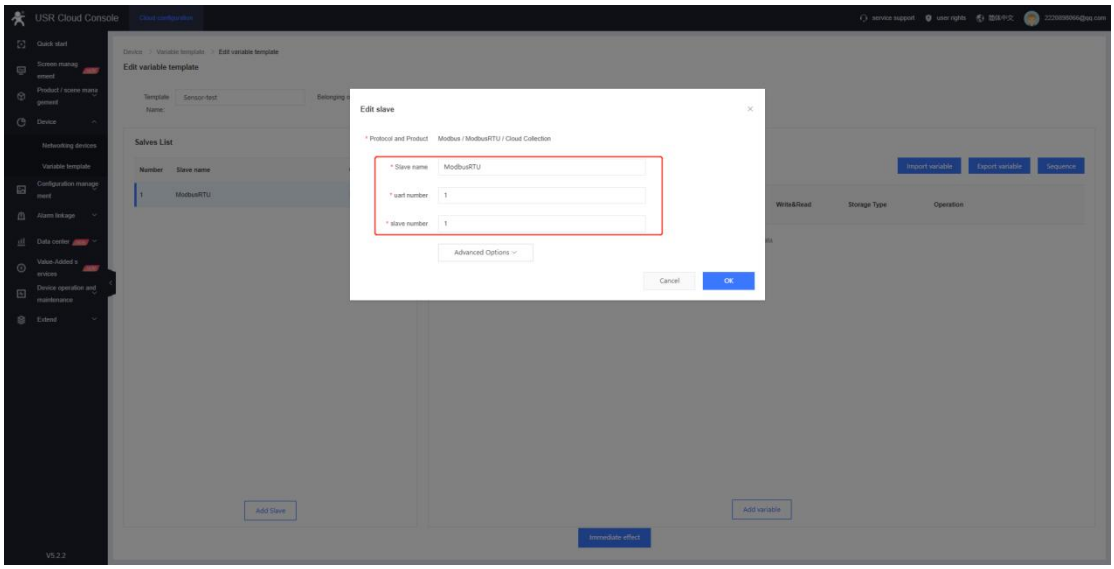




3. In **Variable template**, find the created device template, click **Edit** to change it.



4. When adding slaves, the slave number should be the slave address of your serial Modbus device, the uart number is the serial number of the connected serial device server. Uart number 1 means port 1, uart number 2 means port 2.



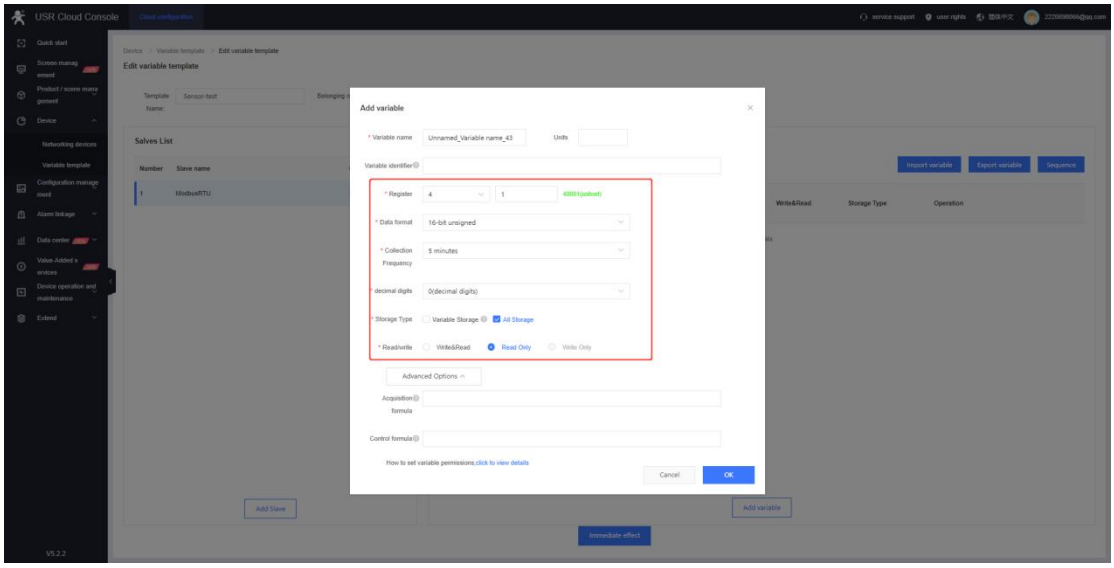
5. When adding the variables(register address), the format is:

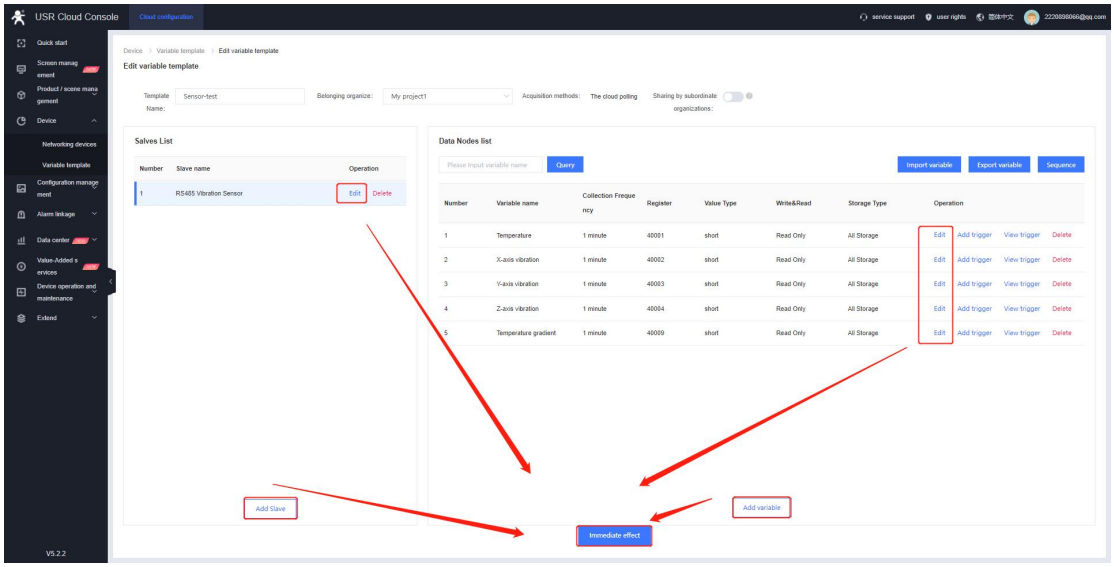
Function code+register address(hexadecimal address needs to be converted to decimal)+1

Same with the configuration software, we need to fill in the decimal register address, which should be the start address+1.

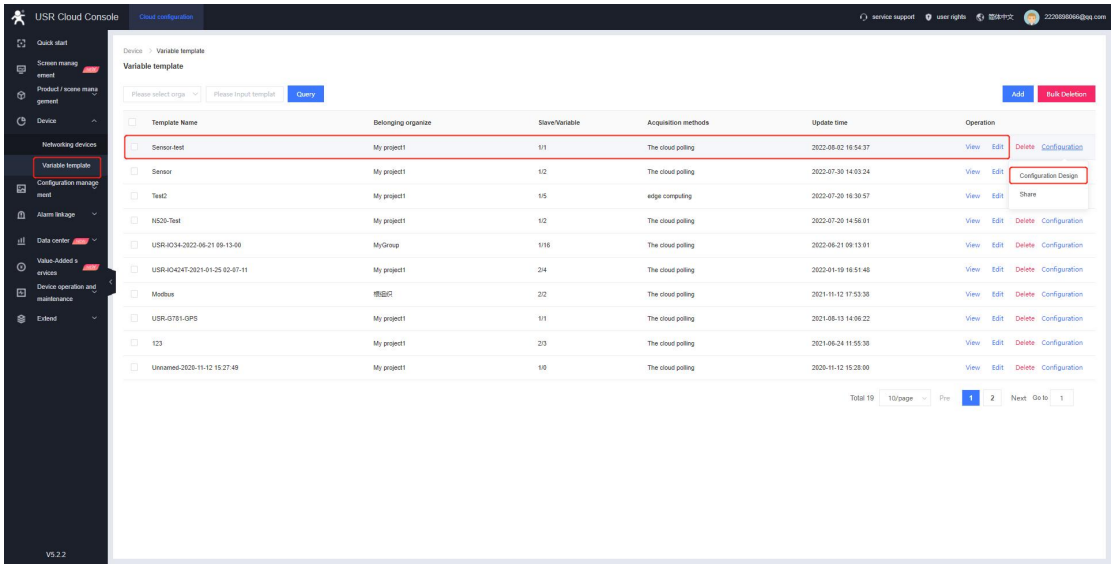
For example:

Function code is 03H or 06H, the start address is 0000H, then we need to fill in 40001.

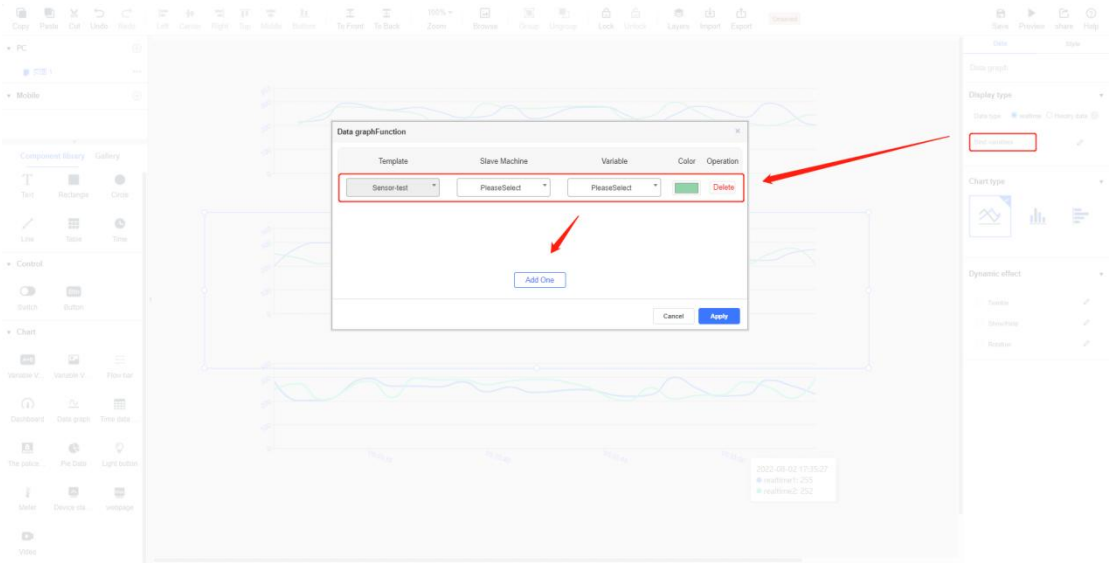




6. In **Device--Variable template**, you can configure the configuration diagram for your template.



7. Binding the variables to the appropriate component.

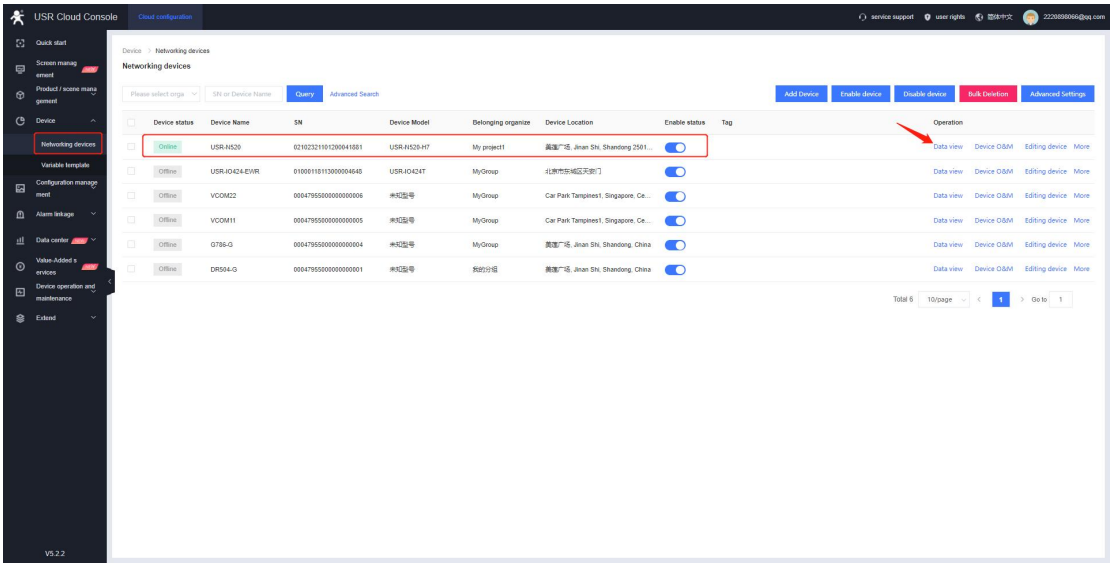


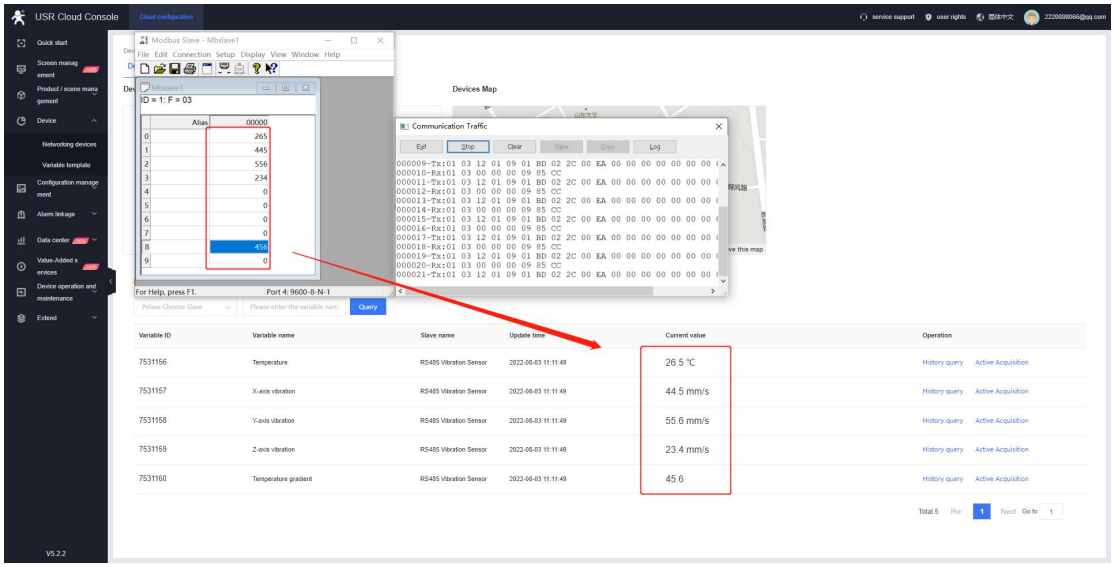
8. After the configuration diagram is completed, it will be displayed in **Monitor screen**.

1.3.1.2. Data Monitoring

In this test, we connect the serial port of the device to the PC via RS485 to USB cable, open this serial port in Modbus salve software. Configure the slave ID and register parameters, when receiving the polling commands from USR Cloud and reply via Modbus slave, we can see the Modbus data is displayed in Cloud.

We can directly click the device name or click **Data View** to check the serial Modbus data.

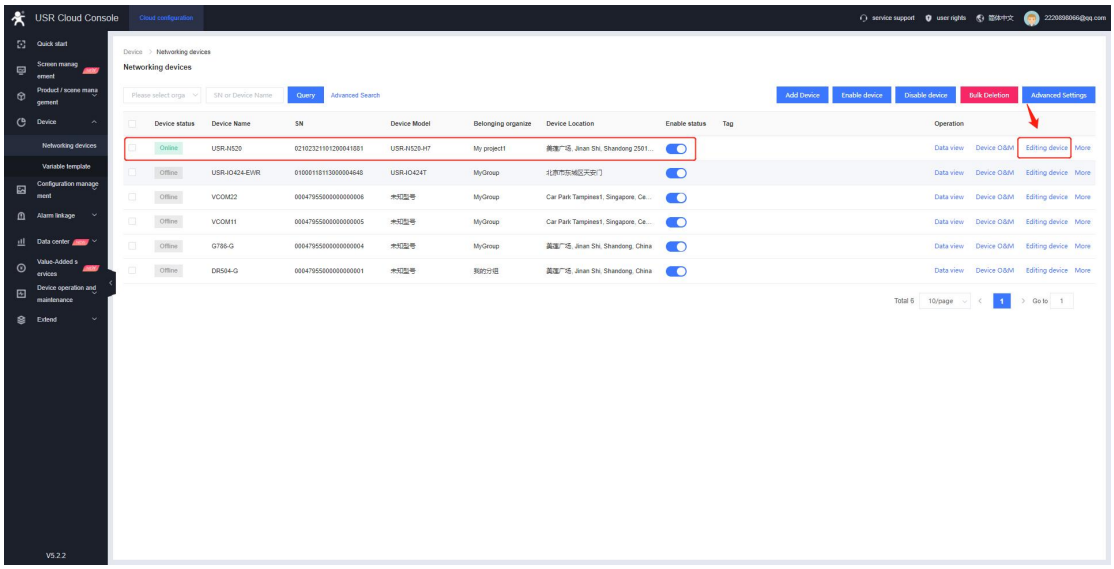


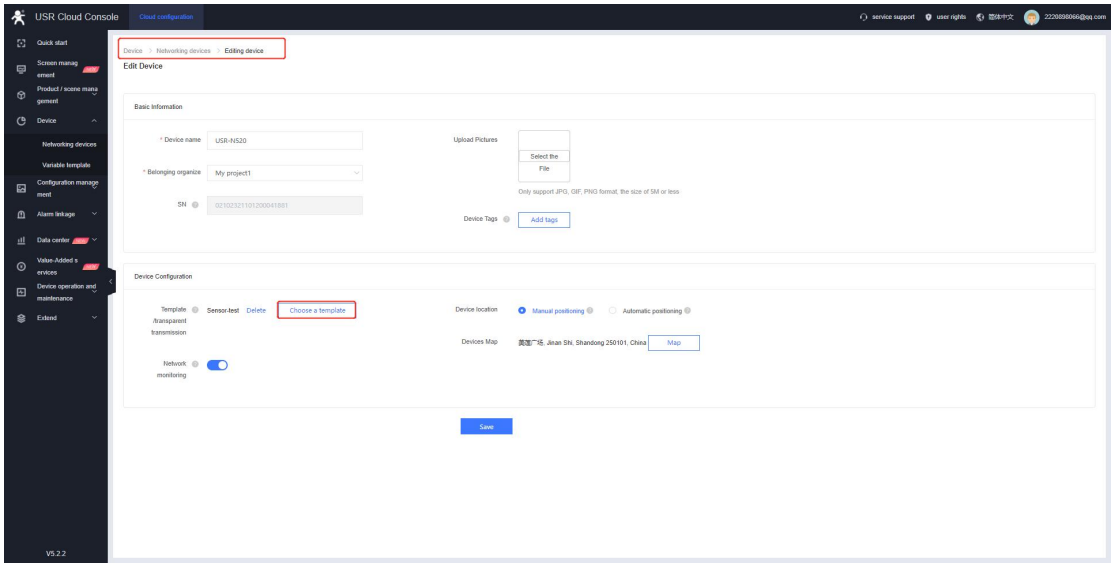


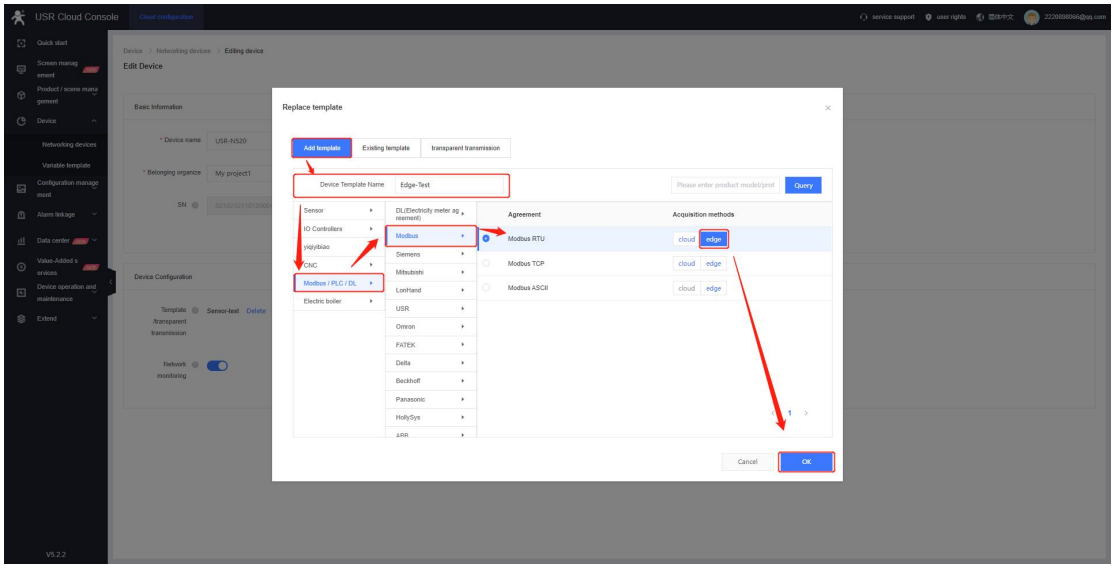
1.3.2. Edge Computing

1.3.2.1. Variable Template

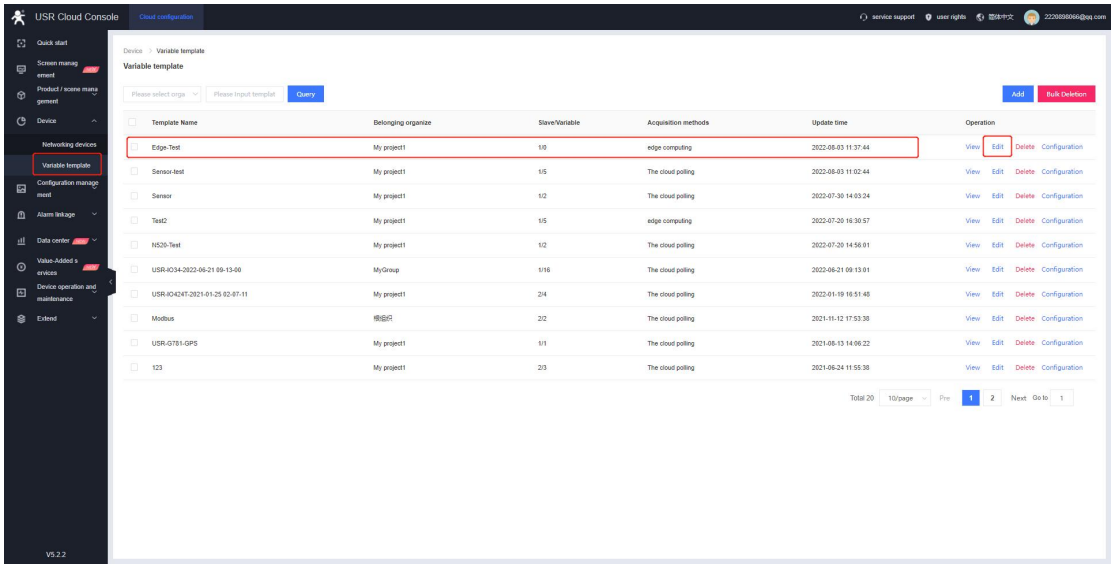
1. In **Network Devices**, click **Editing device**, change the template to **Modbus/PLC/DL--Modbus--Modbus RTU edge**.



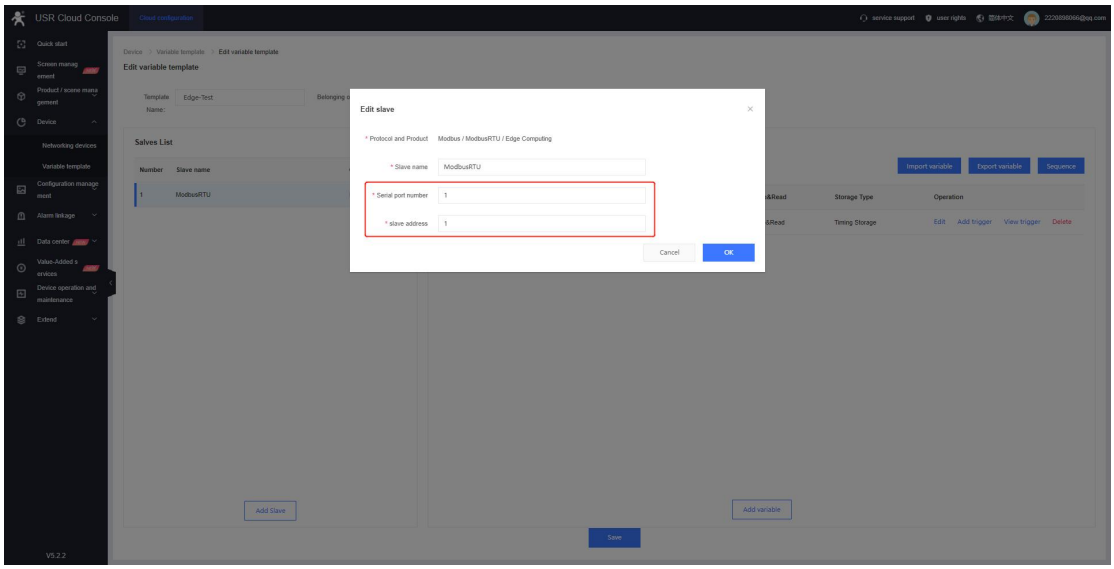




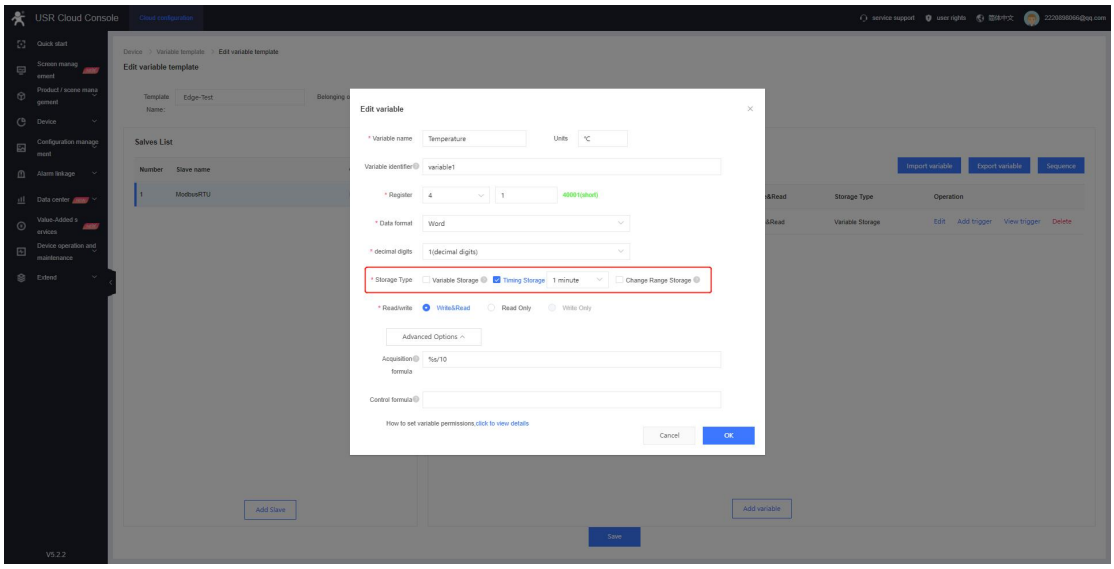
2. In **Variable template**, click **Edit** to change the register type.



3. The **Slave address** needs to be consistent with the serial Modbus device, and the **Serial port number** should be same with the serial number of the serial device server. 1 means Port 1 and 2 means Port 2.

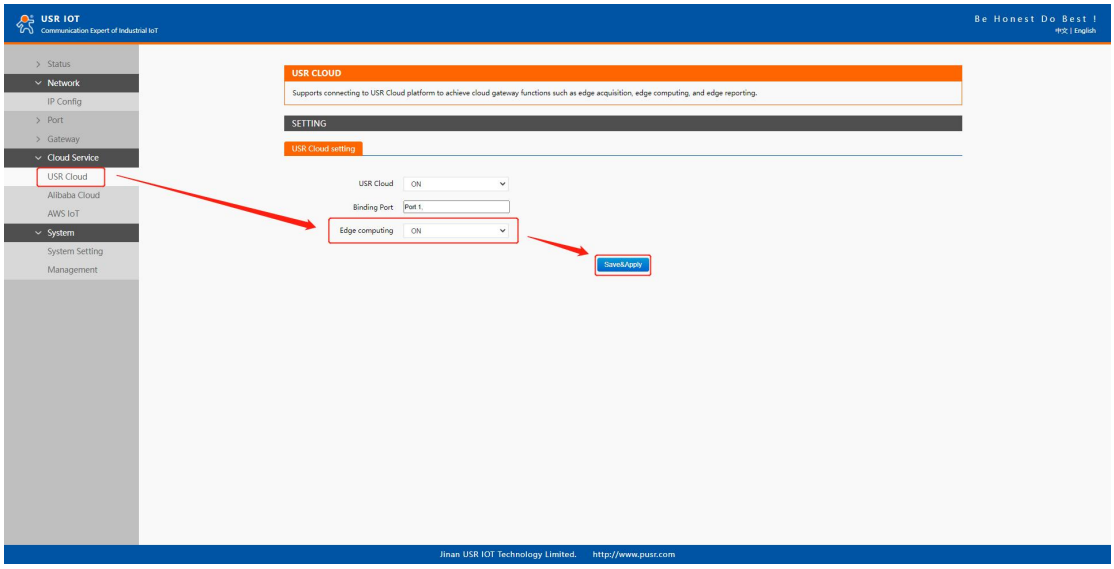


4. The **Storage Type** can be set to **Variable Storage** and **Timing Storage**, in **Timing Storage,** we can configure the storage time interval.
   Note: Currently, it supports up to 64 data points.



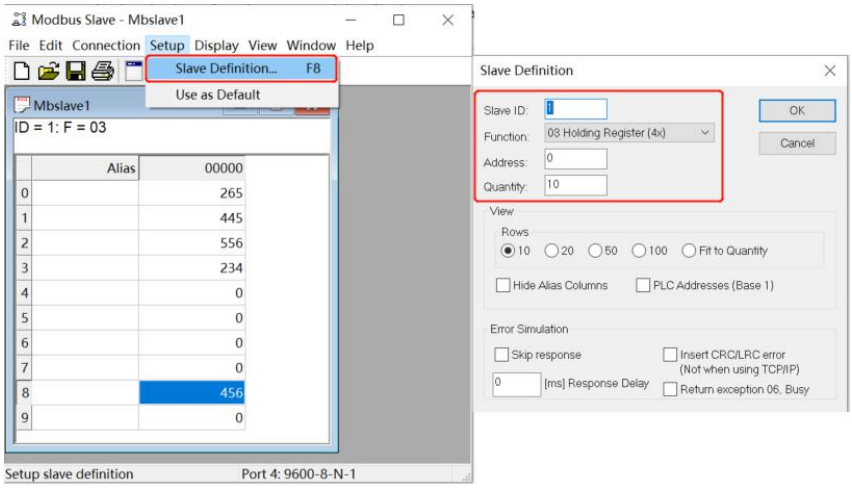
1.3.2.2. Device Configuration

In **Cloud Service--USR Cloud**, enable **Edge computing** function, click **Save&Apply,** then restart the device.

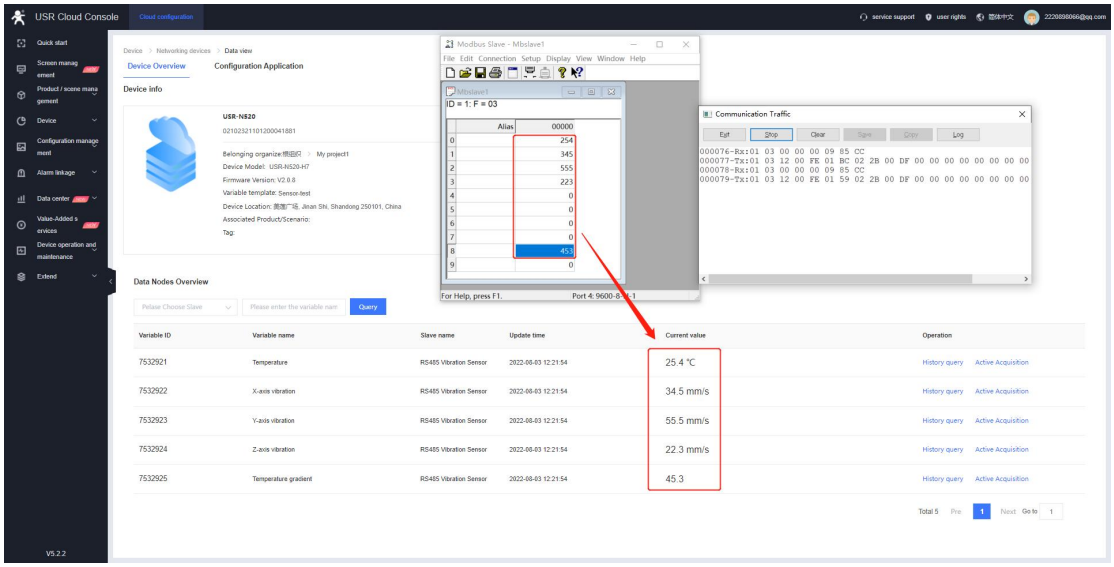


1.3.2.3. Data Display

1. Connect the serial port of the device to Modbus salve simulate software, configure the slave ID and register address.



2. Click the device name to check the serial Modbus data.

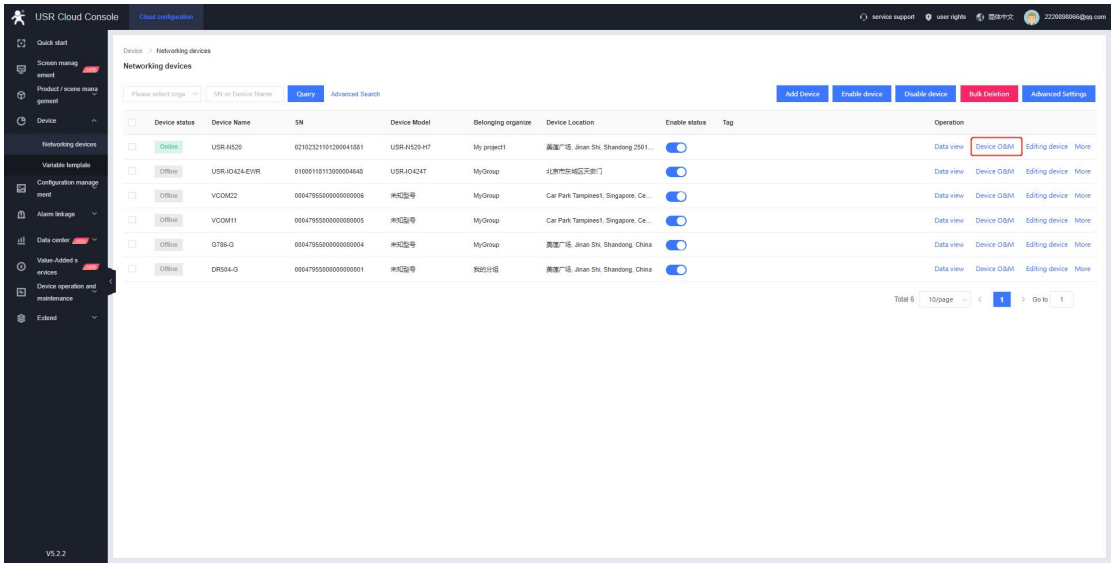


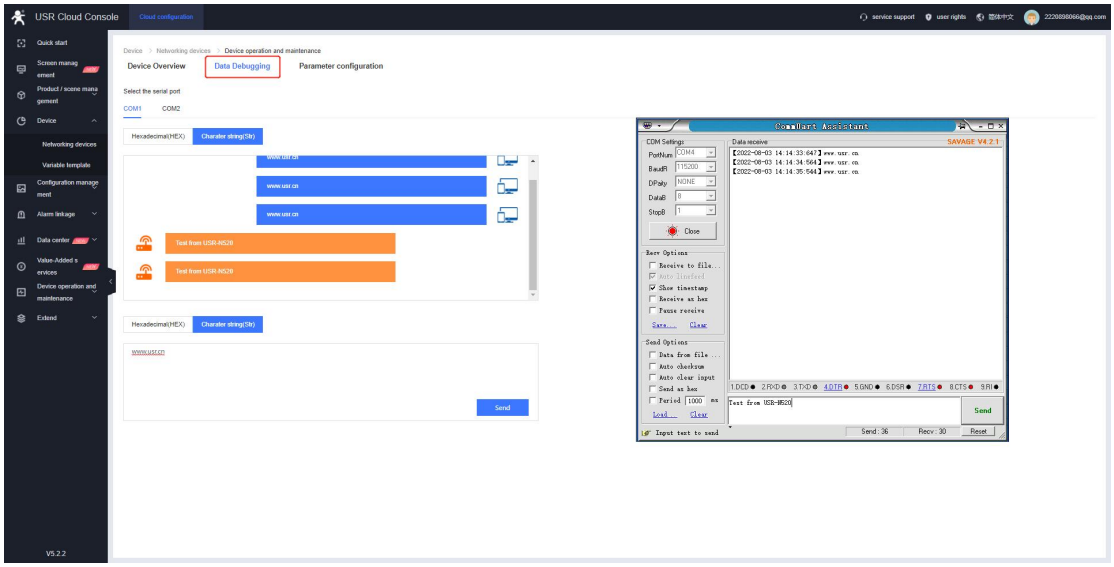
1.3.3. Transparent Data Transmission

1.3.3.1. Data Debugging

This function is used to test the serial data reporting and cloud data sending.

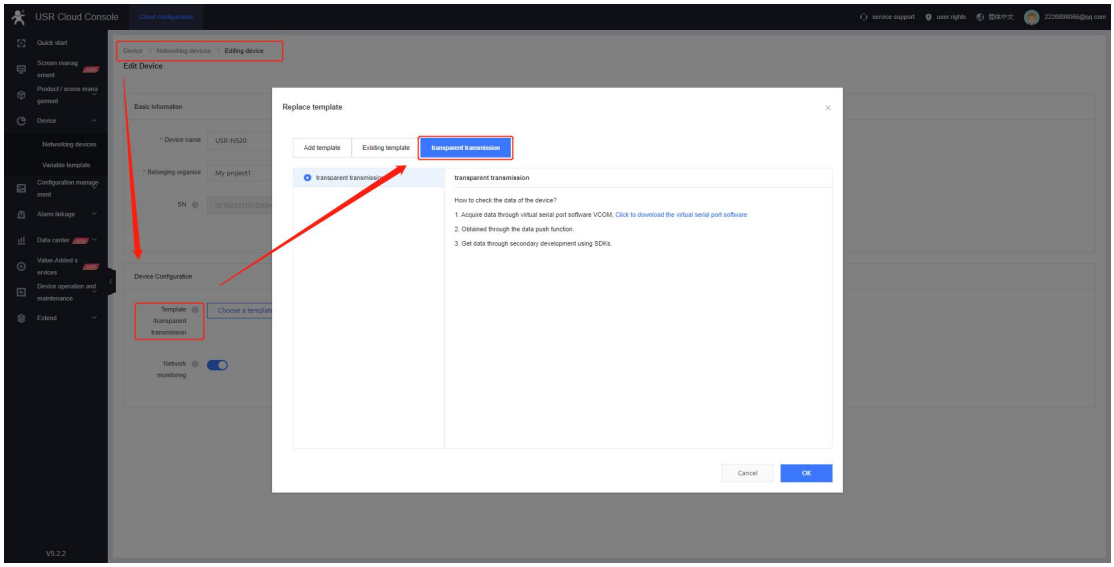
Click **Networking devices--Device O&M**, choose the corresponding com port, we can achieve the data communication between device serial port and USR Cloud.





1.3.3.2. Transparent Transmission Template

We can also change the device template to **Transparent transmission**. After binding the device to transparent template, it can be configured in **Transparent manage** to achieve the data transmission between device and device or device and virtual com port.



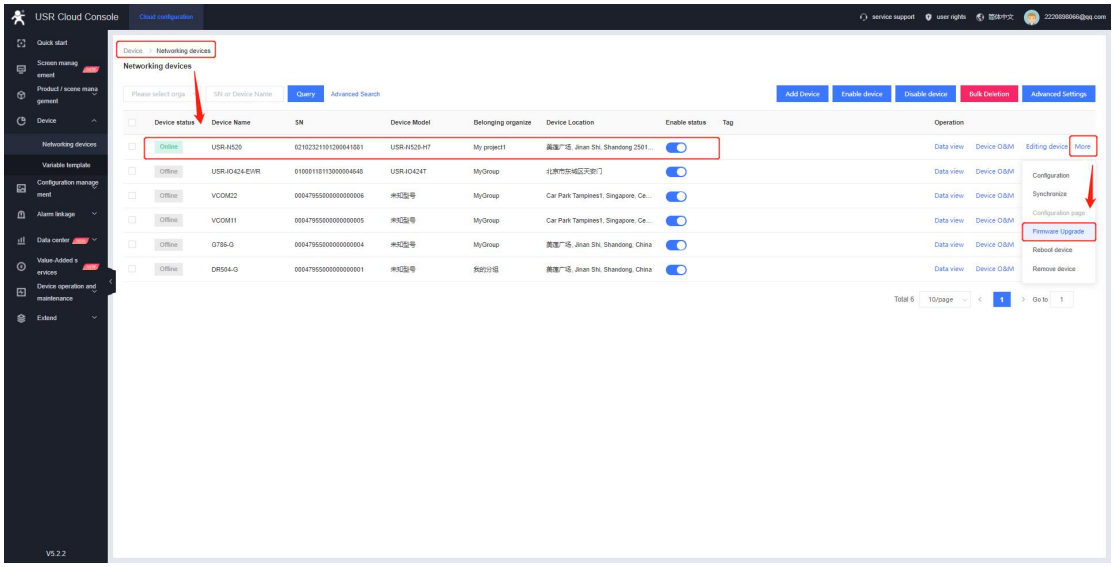
About how to achieve the data transparent transmission between real device and virtual com port, please refer to Map the Remote Port to Local Virtual Port.

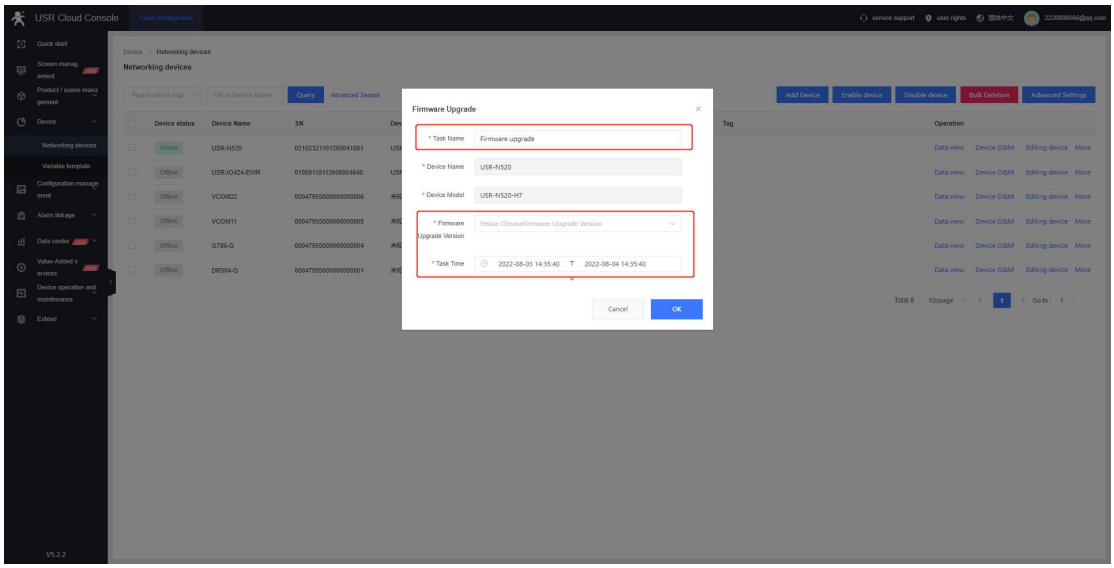
2. Remote Firmware Upgrade via Cloud

Remote firmware upgrade function is for our USR-N5X0 serial device server.

2.1. Select a Device to Upgrade

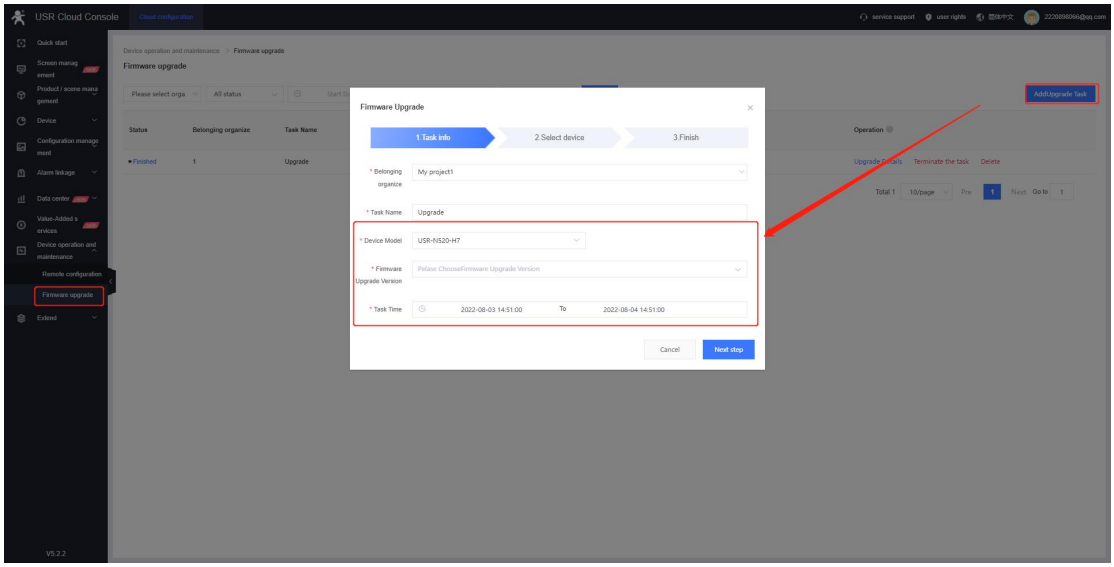
In **Device--Networking devices**, select the corresponding device, click **More--Firmware Upgrade**, configure the **Task name**, **Firmware upgrade version** and **Task name**, the device will be upgraded at the set time.





2.2. Remote Upgrade Tasks

You can also add the upgrade tasks in **Device operation and maintenance--Firmware upgrade**.

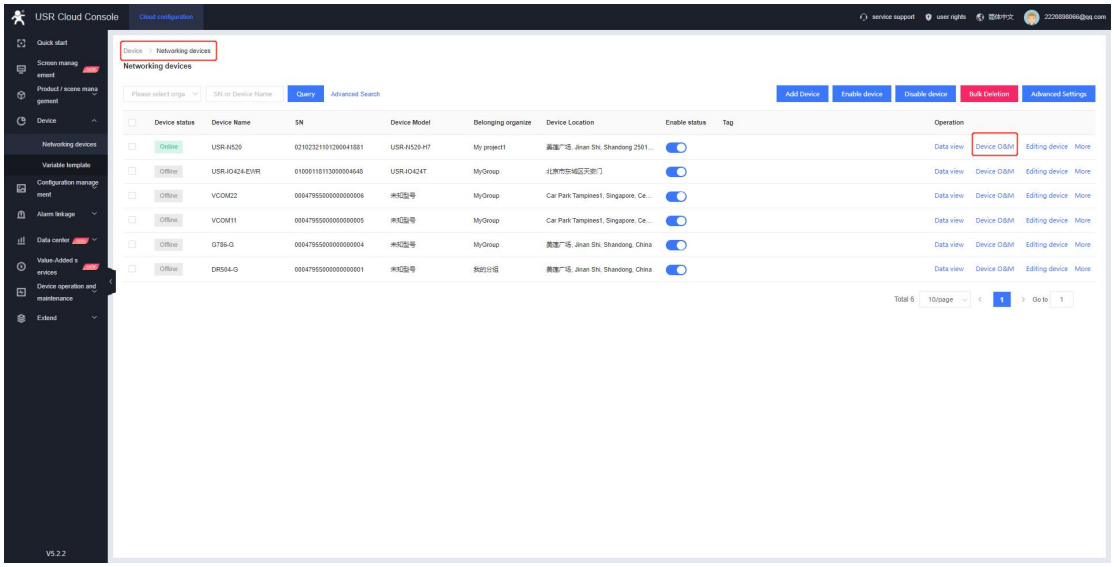


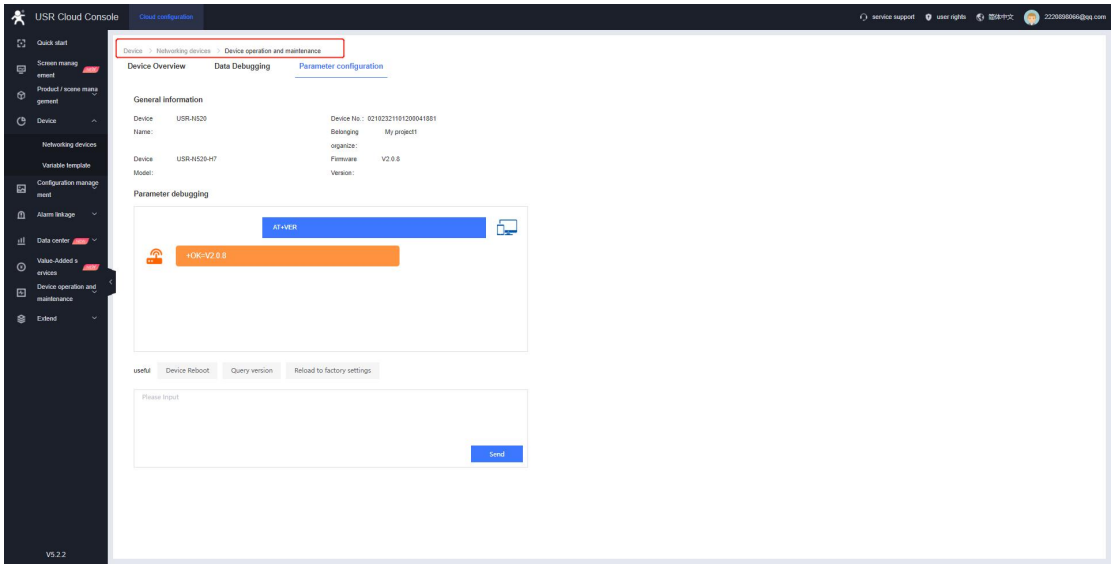
3. Device Remote Configuration via Cloud

Remote configuration function is for our USR-N5X0 serial device server.

3.1. AT Commands Configuration

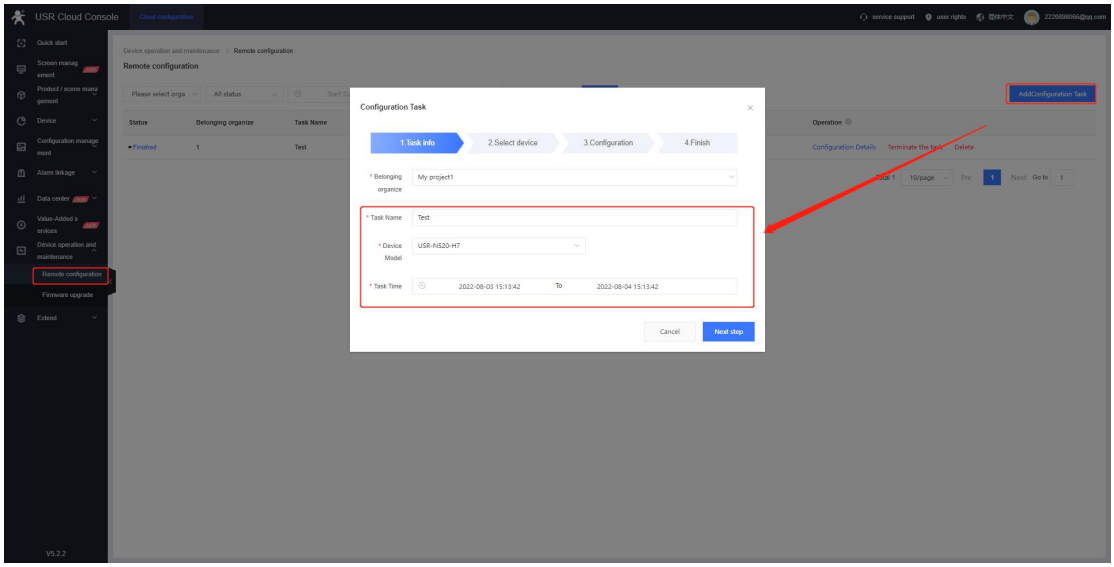
In **Device--Network devices**, click **Device O&M--Parameter Configuration**. In this interface, we can directly send AT commands to the serial device server to query or configure parameters. Do not need to add “Enter” after the commands, but only one command can be sent once.

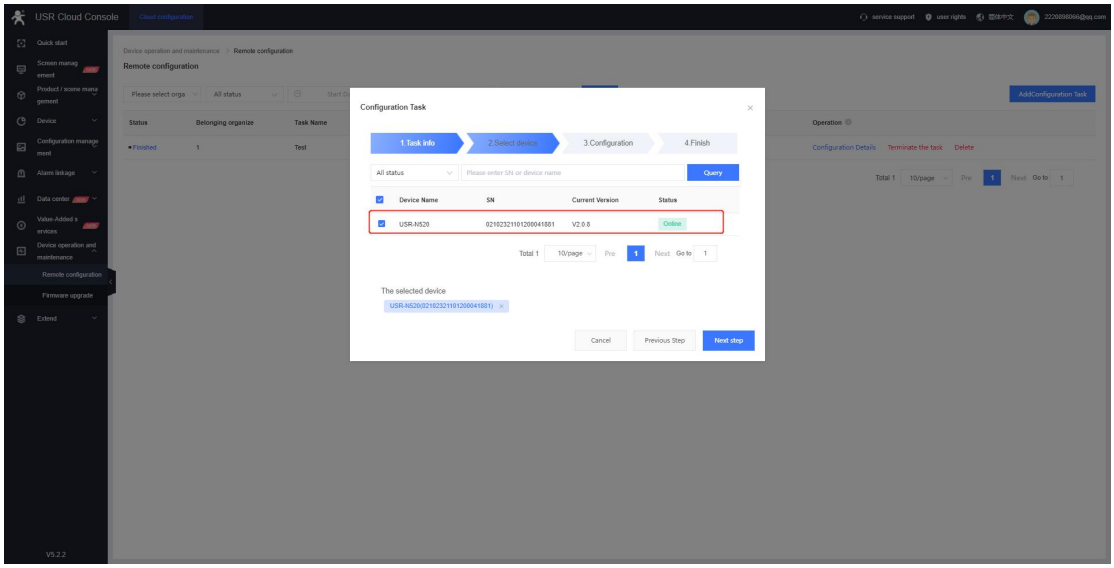


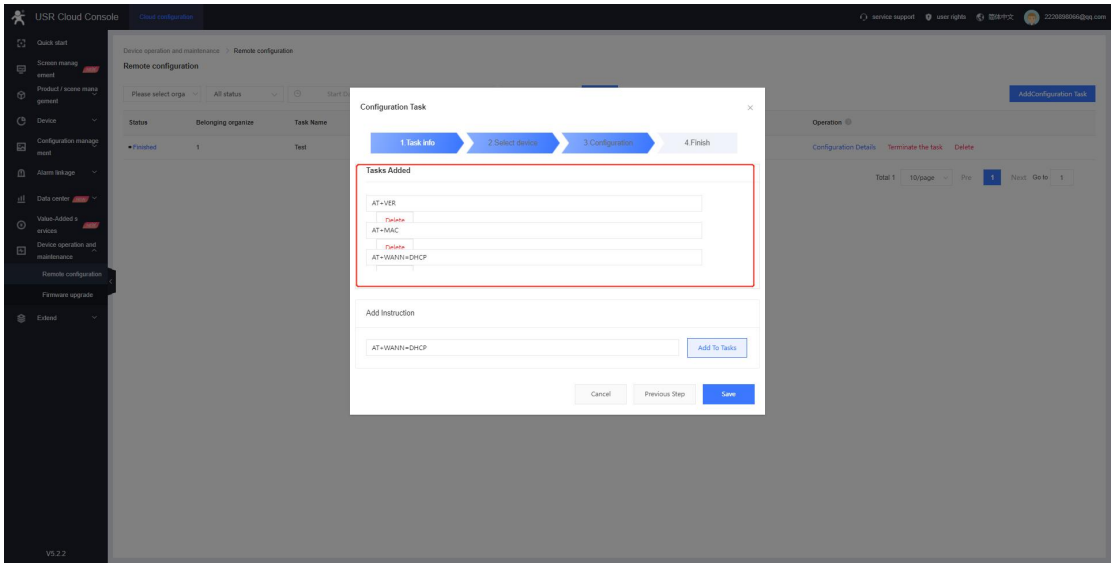


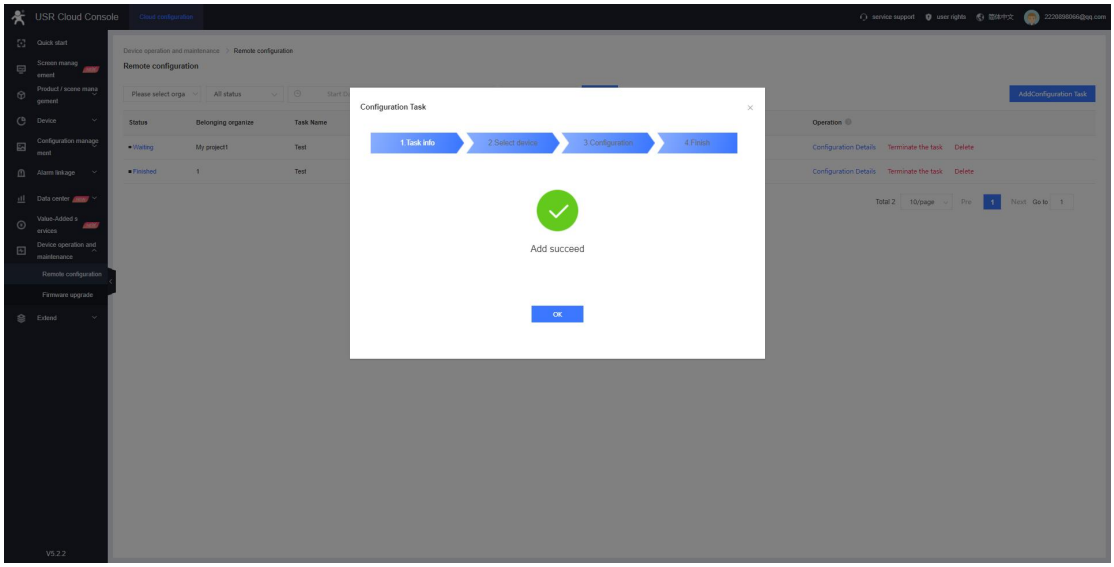
3.2. Remote Configuration Tasks

In **Device operation and maintenance--Remote configuratio**n, click to add the new configuration task, configure the **Task name, Device model and Task time**, the device will be configured at the set time.


USR Cloud Console
Remote configuration
Configuration Task
1.Task info
2.Select device
3.Configuration
4.Finish
Task Name
Test
Device Model
USR-N520-H7
Task Time
Cancel
Next step


USR Cloud Console
Remote configuration
Configuration Task
1.Task info
2.Select device
3.Configuration
4.Finish
Device Name
SN
Current Version
Status
USR-N520
Cancel
Previous Step
Next step


USR Cloud Console
Remote configuration
Configuration Task
1.Task info
2.Select device
3.Configuration
4.Finish
Tasks Added
AT+VER
AT+MAC
AT+WANN=DHCP
Add Instruction
Add To Tasks
Cancel
Previous Step
Save



4. Map the Remote Port to Local Virtual Port

4.1. Preparation

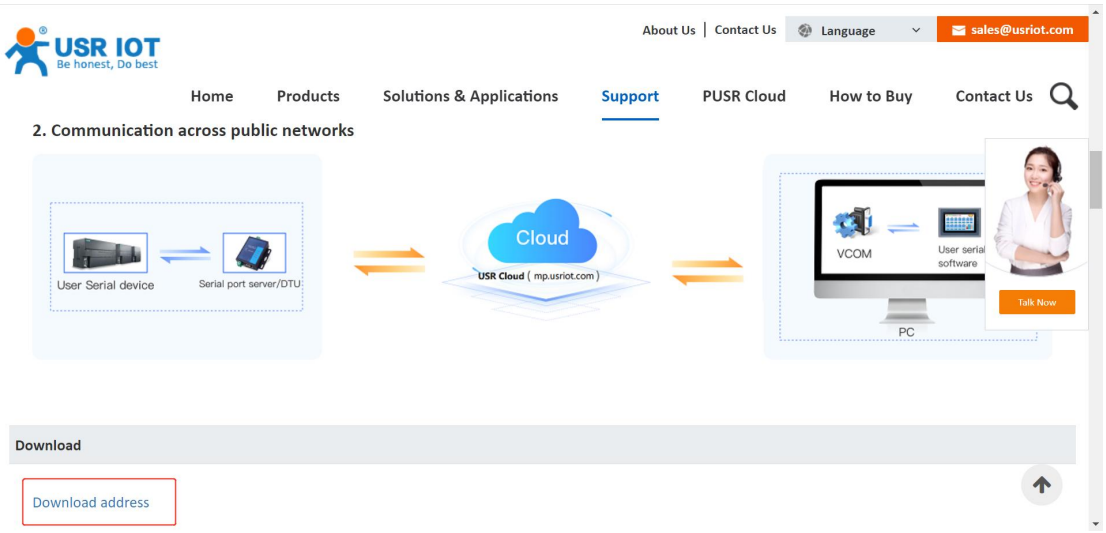
(1) USR-N520 *1
(2) RS485 serial to USB cable *1
(3) Ethernet cable *1
(4) 12V/1A power adaptor *1
(5) Serial tool, you can also download our company's USR-TCP232-Test software from this link: https://www.pusr.com/Support/download_hits.html?id=304

Note: Currently our VCOM software only supports single port data transmission (default to port 1), multiple ports VCOM software will be released in the future.

4.2. Download VCOM Software

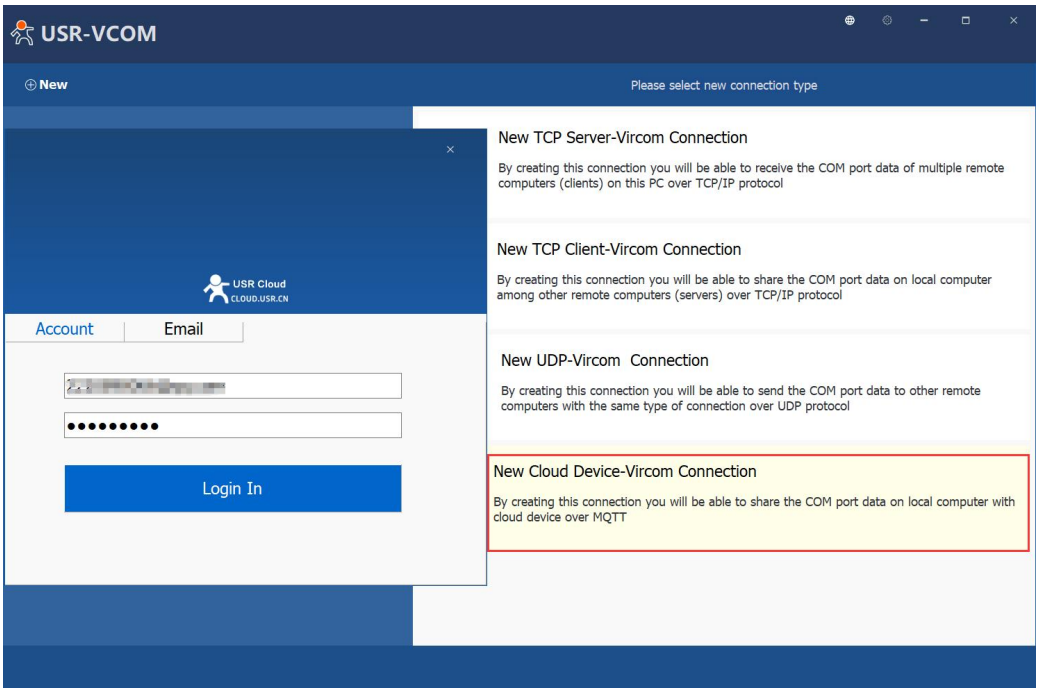
Please download our latest version VCOM software from this link:
https://www.pusr.com/Support/download_hits.html?id=291

Note: Please disable the firewall and anti-virus software before installing.



4.3. New Cloud Device-VCOM Connection

Click **New Cloud Device-Vircom Connection**, fill in the username and password of your USR Cloud account to login.

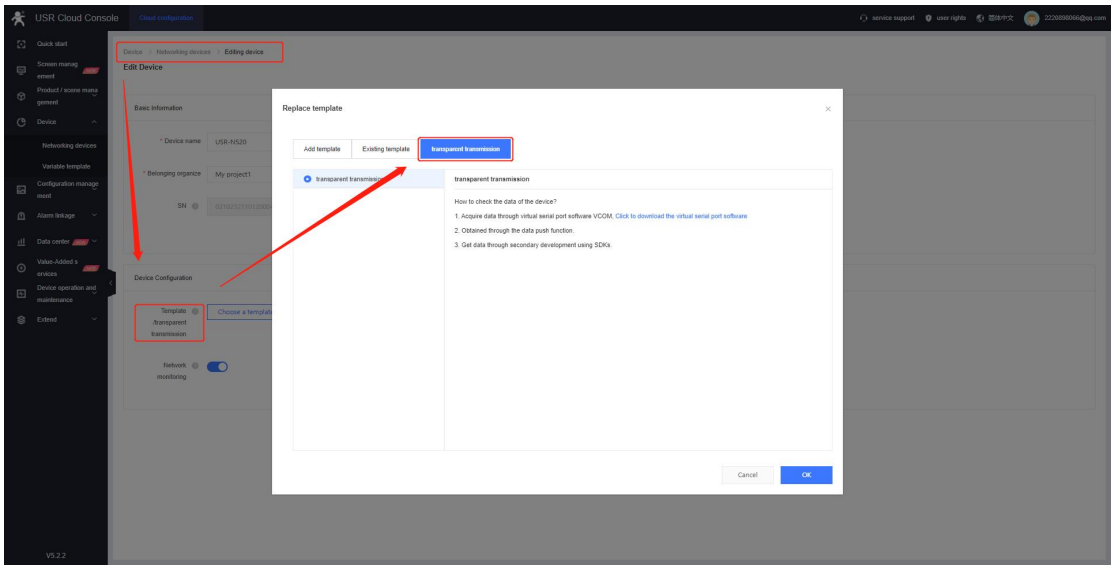


4.4. UDP Transparent Transmission

Data coming from network can be transparently transmitted to the serial port of the device(default to port 1).

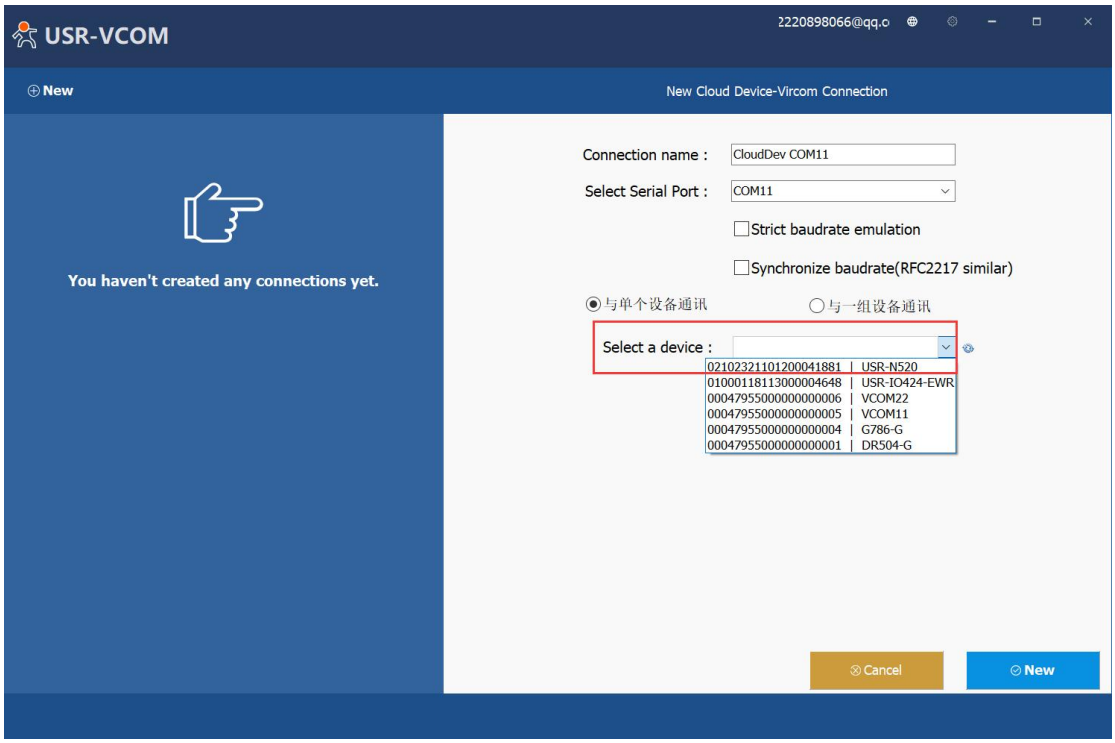
4.4.1. Variable Template

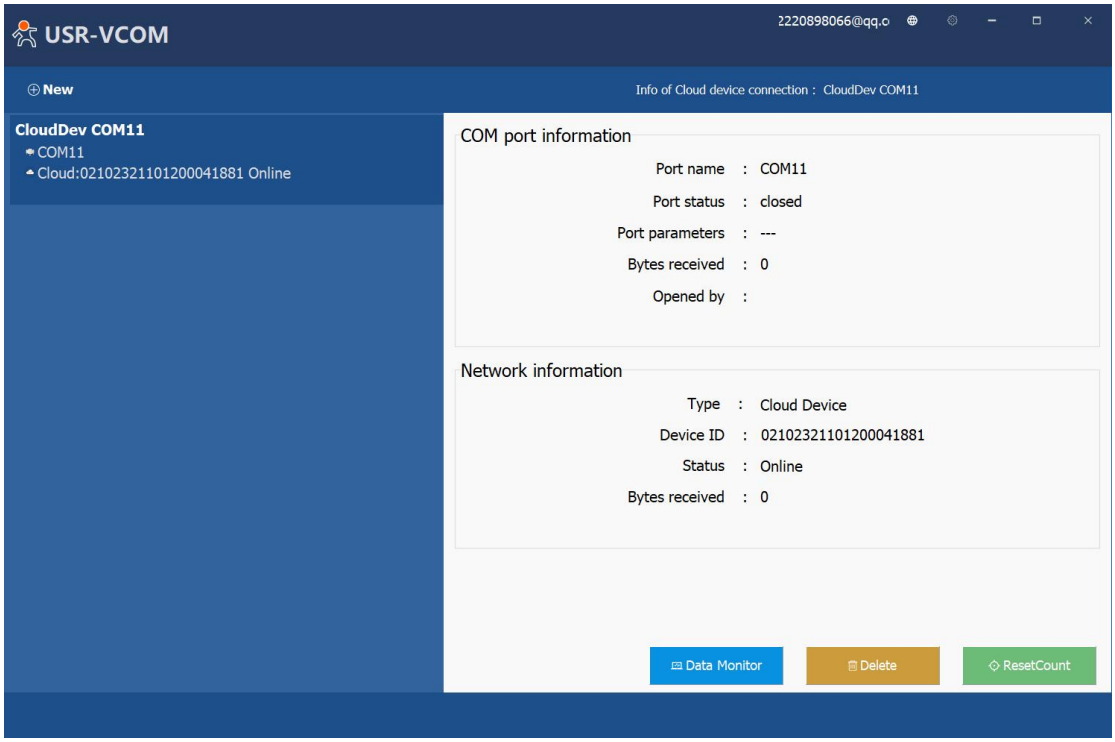
In **Device--Network devices**, click to edit the device, change the device template to **Transparent transmission**.



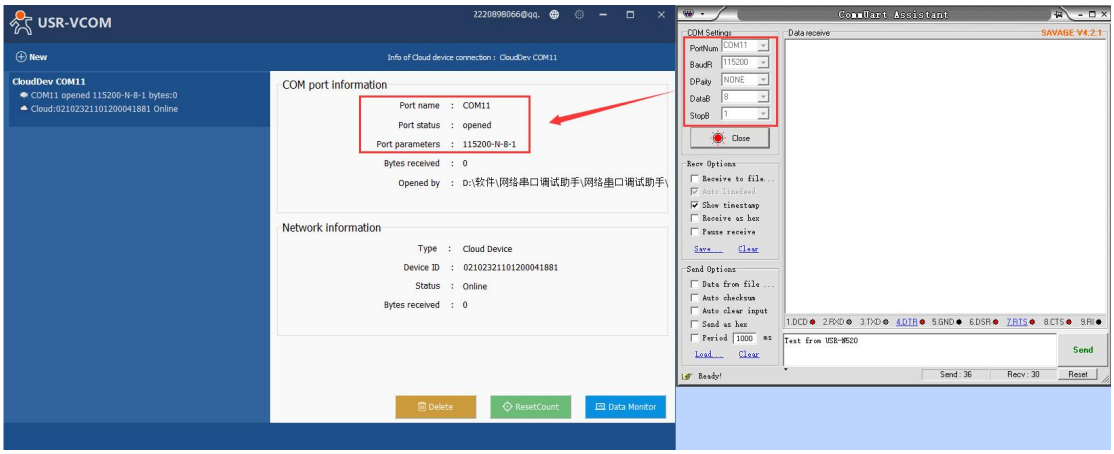
4.4.2. VCOM Software Configuration

1. Click to add a new virtual com port, choose a com port number, select the device that needs to be communicated with.



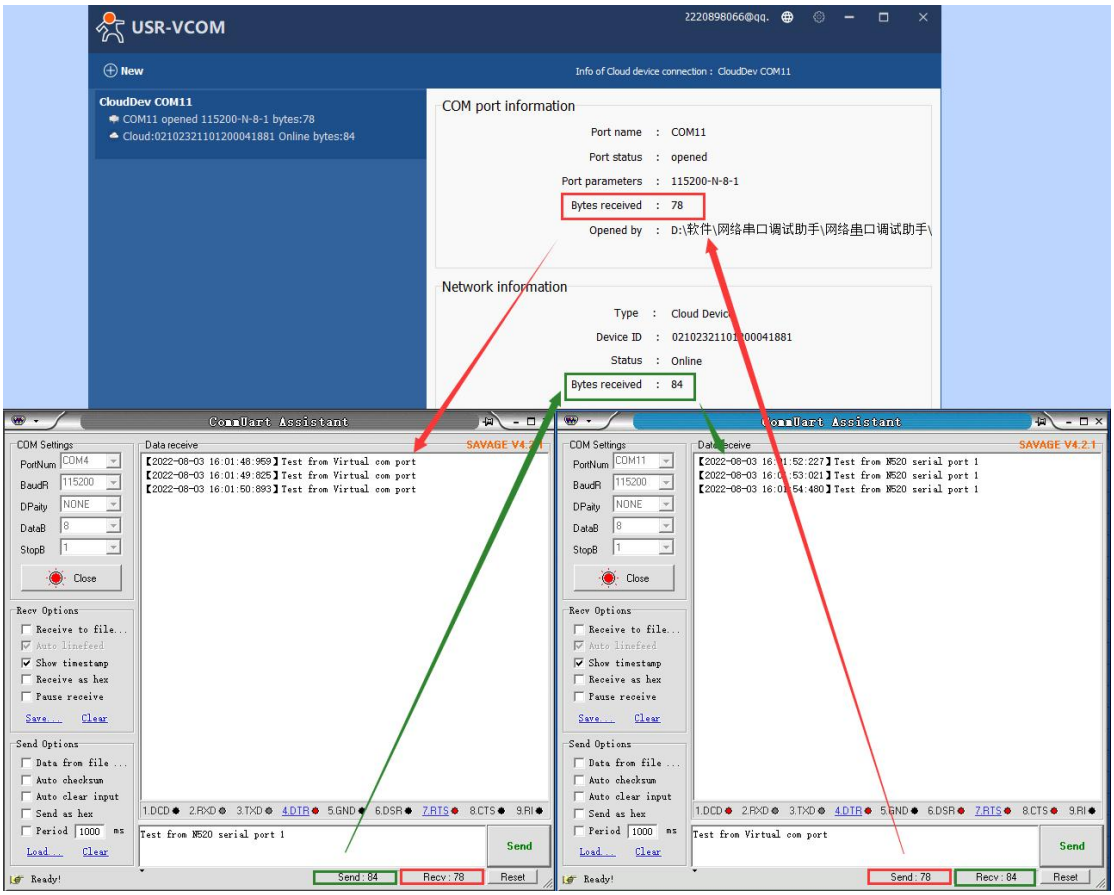


2. Open this virtual com port in a serial tool.



4.4.3. Data Transmission Test

Connect the serial port of USR-N520 to the computer via RS485 to USB cable, open this serial port in the second serial tool. They can communicate with each other like below:

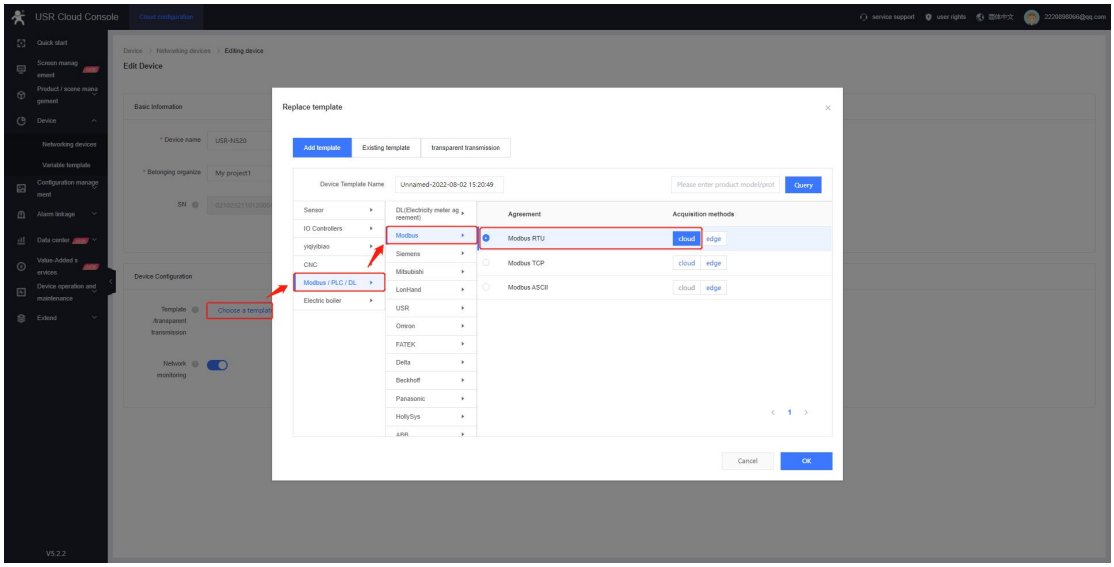


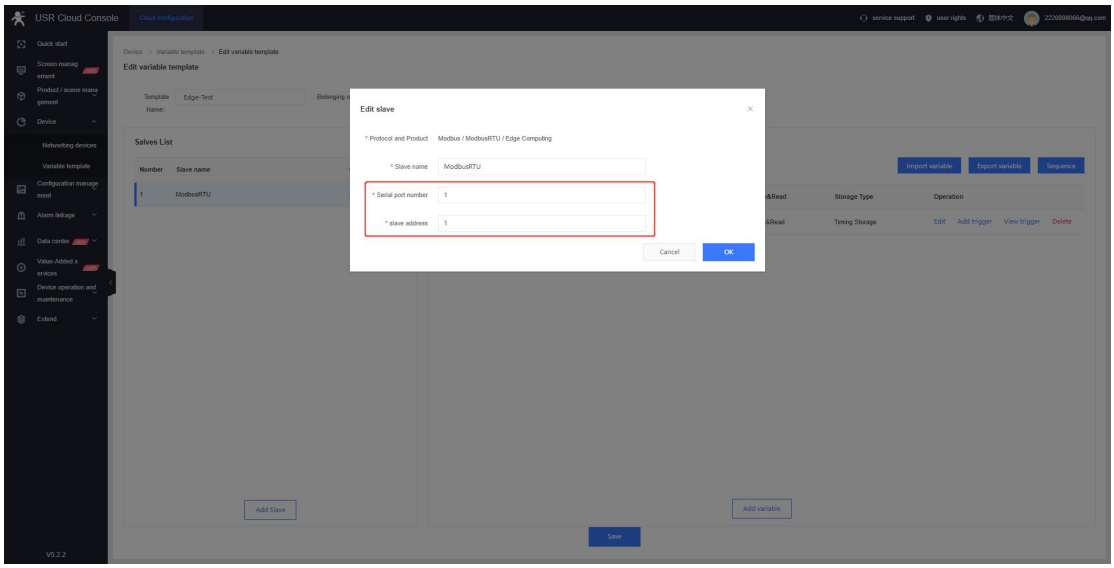
4.5. Exclusive Transparent Transmission

When the networking devices bound to serial variable template, we can set the VCOM software to exclusive mode. In this mode, the cloud polling and edge computing data transmission all will be stopped and so that users can upgrade firmware for their serial devices and so on.

4.5.1. Variable Template

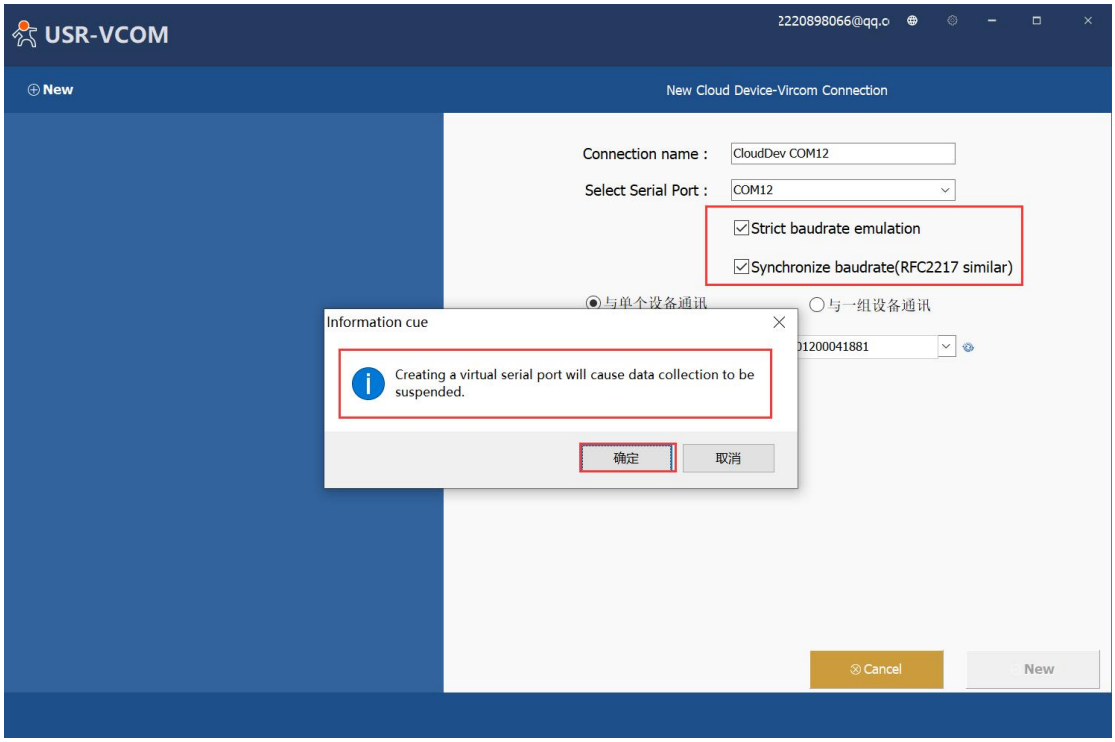
Variable template needs to be changed to Modbus RTU cloud or Modbus RTU edge. The slave in variable template needs to be bound to the serial port number.





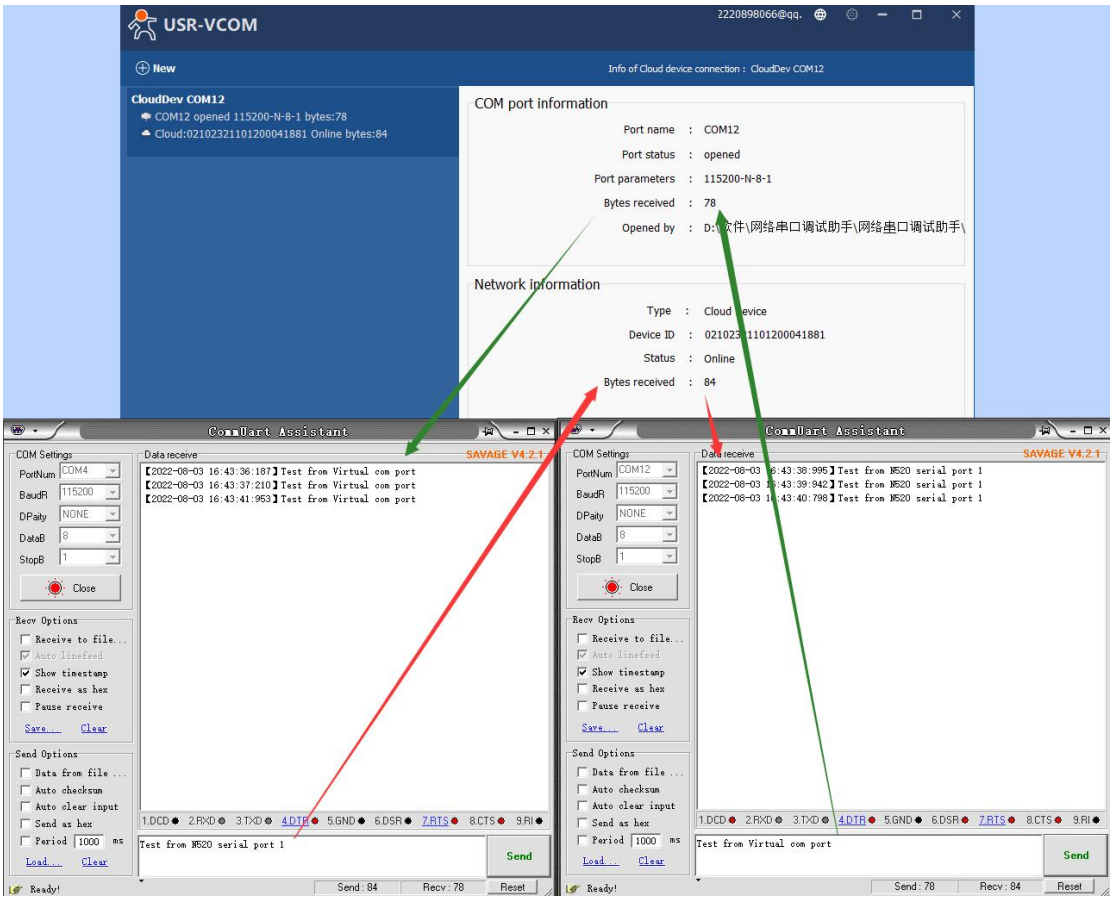
4.5.2. VCOM Software Configuration

Enter exclusive mode: Create a new virtual com port, choose the device that need to communicate with.



4.5.3. Data Transmission Test

In exclusive mode, the cloud polling and edge computing Modbus data cannot be sent to the serial port of USR-N520 device. It can only achieve the data transmission between the VCOM and serial port 1 of N520 device. Delete this VCOM will recover the previous Modbus communication.


USR-VCOM
2220898066@qq.
New
Info of Cloud device connection : CloudDev COM12
CloudDev COM12
COM12 opened 115200-N-8-1 bytes:78
Cloud:02102321101200041881 Online bytes:84
COM port information
Port name : COM12
Port status : opened
Port parameters : 115200-N-8-1
Bytes received : 78
Opened by : D:\软件\网络串口调试助手\网络串口调试助手\
Network information
Type : Cloud Device
Device ID : 02102321101200041881
Status : Online
Bytes received : 84
ComUart Assistant
COM Settings
PortNum COM4
BaudR 115200
DPaity NONE
DataB 8
StopB 1
Close
Recv Options
Receive to file...
Auto linefeed
Show timestamp
Receive as hex
Pause receive
Save.... Clear
Send Options
Data from file ...
Auto checksum
Auto clear input
Send as hex
Period 1000 ms
Load... Clear
Data receive
SAVAGE V4.2.1
【2022-08-03 16:43:36:187】Test from Virtual com port
【2022-08-03 16:43:37:210】Test from Virtual com port
【2022-08-03 16:43:41:953】Test from Virtual com port
1.DCD 2.RXD 3.TXD 4.DTR 5.GND 6.DSR 7.RTS 8.CTS 9.RI
Test from N520 serial port 1
Send
Ready!
Send : 84
Recv : 78
Reset
ComUart Assistant
COM Settings
PortNum COM12
BaudR 115200
DPaity NONE
DataB 8
StopB 1
Close
Recv Options
Receive to file...
Auto linefeed
Show timestamp
Receive as hex
Pause receive
Save.... Clear
Send Options
Data from file ...
Auto checksum
Auto clear input
Send as hex
Period 1000 ms
Load... Clear
Data receive
SAVAGE V4.2.1
【2022-08-03 16:43:38:995】Test from N520 serial port 1
【2022-08-03 16:43:39:942】Test from N520 serial port 1
【2022-08-03 16:43:40:798】Test from N520 serial port 1
1.DCD 2.RXD 3.TXD 4.DTR 5.GND 6.DSR 7.RTS 8.CTS 9.RI
Test from Virtual com port
Send
Ready!
Send : 78
Recv : 84
Reset