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4G Industrial Router Pioneer

USR-G806p

Manual



Industrial IoT Gateways Ranked First in China by Online Sales for Seven Consecutive Years

**Data from China's Industrial IoT Gateways Market Research in 2023 by Frost & Sullivan

Your Trustworthy Smart Industrial IoT Partner

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1. Product introduction

The USR-G806p is a flagship industrial router with 5 network ports, built on the industry-leading Qualcomm CPU solution. It features multiple hardware interfaces, including 5 network ports (1WAN + 1 LAN + 3 LAN), dual serial ports (1 RS232 + 1 RS485), Qualcomm enhanced WIFI, and GNSS positioning. Additionally, it supports dual external expansion cards, providing advanced internet connectivity and high-speed data access for terminals. Users can quickly set up their own application networks with this device, which also offers robust software support.

Designed for harsh industrial environments, this device meets industrial-grade standards and is designed for a wide temperature range of-40℃ to 75℃. It operates on a wide voltage DC range of 9 to 48V, with hardware EMC protection up to Class 3B. The device has undergone rigorous professional environmental testing and features built-in dual watchdogs for software and hardware, as well as mechanisms for automatic fault recovery. These features ensure robust and reliable operation in various industrial settings, even in harsh and demanding environments.

The product is widely used in meteorological monitoring system, store cashier monitoring system, energy storage power station system, agricultural environment monitoring system, smart water system and other scenarios.

1.1. Product features

✧ Stable and reliable

- Industrial grade design: wide temperature-40℃~75℃, sheet metal shell, IP30 protection;
- Support horizontal desktop placement, wall hanging, rail installation;
- Wide voltage DC 9-48V input, with power reverse protection;
- Static electricity, surge, electric fast pulse group and other multiple hardware protection;
- Built-in hardware and software watchdogs, self-detection and self-repair of faults to ensure system stability.

✧ Flexible networking

- Provide 4G network system;
- Theoretical rate of cellular network: download: 150Mbps/uplink: 50Mbps
  (interference exists in the real environment, so the actual measurement is taken as the standard);
- Support automatic network inspection, 4G/3G/2G mode switching, support APN/VPDN private network card
- Supports dual SIM cards;
- Support 3LAN+1WAN/LAN+1WAN, 10/100Mbps rate;
- Support network cable /4G/WIFI online at the same time, intelligent switching and backup function;
- Supports 2.4GHz WiFi band and supports AP/STA/routing modes;
- Support 1*RS232+1*RS485;

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✧ Powerful

- Supports TCP/UDP/Modbus TCP to Modbus RTU/MQTT data acquisition capability;
- Support GPS positioning service;
- Support PUSR Cloud services to facilitate centralized management of device systems;
- Supports VPN (PPTP, L2TP, IPSec, OpenVPN, GRE) and supports VPN encryption function;
- Support dynamic domain name (DDNS), PPPoE, DHCP, static IP function;
- Supports firewall, NAT, black and white list access restrictions, and supports SNAT and DNAT functions;
- Support SNMP, VLAN division, SMS service and other diversified functions;
- Supports one-click restore factory Settings and hardware watchdog;

Tab 1 USR-G806p Specification parameters

Project		describe
Cellular	Band (-GL)	TDD-LTE:Band 34/38/39/40/41 FDD-LTE: Band 1/2/3/4/5/7/8/12/13/18/19/20/25/26/28/66 WCDMA:B1/2/4/5/6/8/19 GSM/GPRS/EDGE: B2/3/5/8
	Theoretical rate	The download speed of 150Mbps and the uplink speed of 50Mbps are affected by environmental interference, and the on-site measurement is taken as the standard
	Antenna interface	1* Standard SMA-K antenna interface (outer screw and inner hole)
	SIM	2*Nano-SIM
Ethernet	Number of network ports	1* WAN, 1* WAN/LAN , 3* LAN
	Network port specifications	RJ45 interface: IEEE 802.3 compliant
	Network port rate	10/100 Mbps adaptive, Auto MDI/MDIX
Wi-Fi	Wireless standards	IEEE 802.11b/g/n,2.4GHz, AP /STA/AP+STA/repeater
	Theoretical rate	300Mbps; Note: The wireless rate is affected by the environment. Please measure it as the standard.
	MIMO	2×2
	Antenna interface	2* Standard SMA-K interface
	Transmission distance	500 meters; Note: The actual transmission distance depends on the field environment. Please measure according to the actual measurement.
DTU	SOCKET	TCP/UDP/Modbus TCP to RTU/MQTT/HTTPD/AWS/ALI Pass-Through/Modbus RTU
	Heartbeat packet / registration packet	Support
	Serial port baud rate	1200/2400/4800/9600/19200/38400/57600/115200/230400
	data bit;	7, 8

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	stop bit	1，2
	check bit	NONE,ODD,EVEN
	Serial port type	1*RS232、1*RS485
pilot light；	PWR	The power indicator light is on after power on
	WIFI	WiFi light, which lights up when WiFi is turned on and working properly
	NET	Green-4G Orange-3G Red-2G
	SIG	Signal 25-31-Green Signal 15-25-Orange Signal 0-15-Red
Power supply specifications	adapter	DC 12V/1A
	Power	V+、V- 2p terminal，Anti-polarity protection is available
	Power supply range	DC 9-48V
	average current	＜500mA@12V
physical characteristics	hull	Sheet metal enclosure，IP30
	Size	110.0*85.0*30.0mm（L*W*H，）
	way to install	Hang ear installation, horizontal desk placement
	EMC	National standard 3B
	working temperature	-40℃~75℃
	Storage temperature	-40℃～85℃
	Working humidity	5%~95%（No condensation）
other	Reload	Support restore factory
	ground protection	Grounding screws

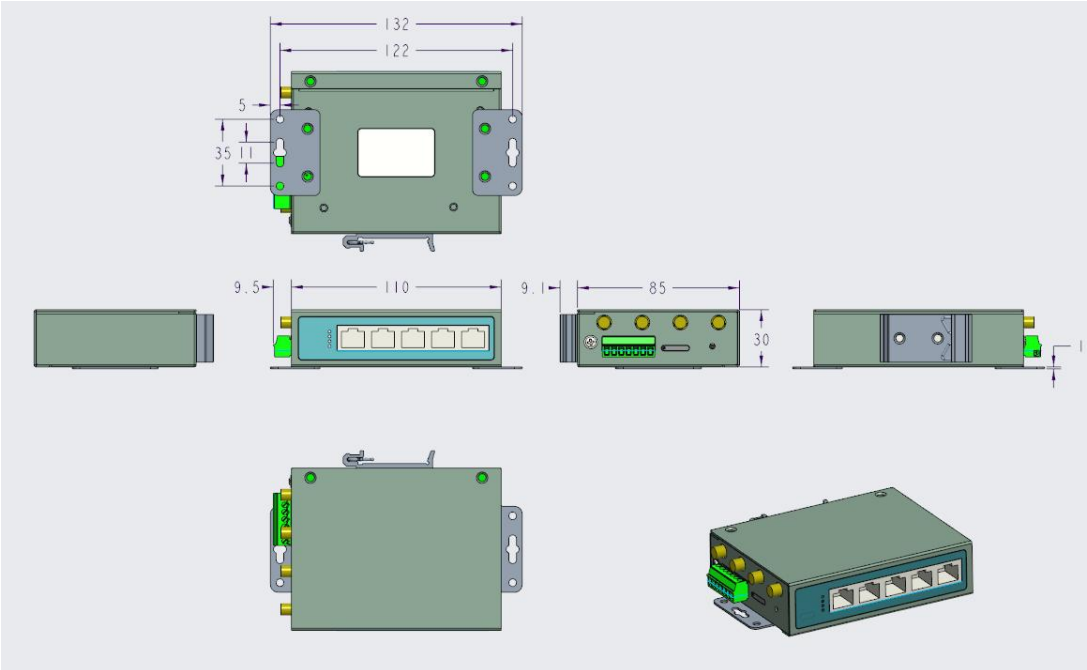
1.2. Hardware interface diagram

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Pic 1 USR-G806p Product interface diagram

1.3. Size description



Pic 2 USR-G806p View size diagram

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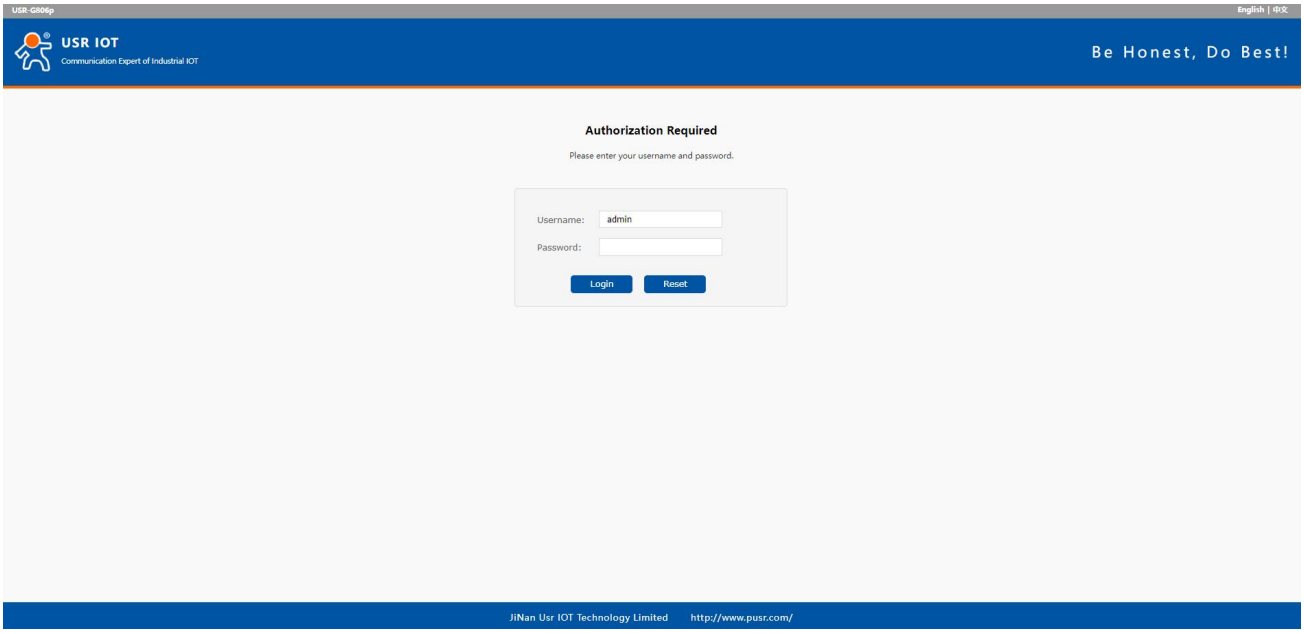
2. Operation Instruction

2.1. Test

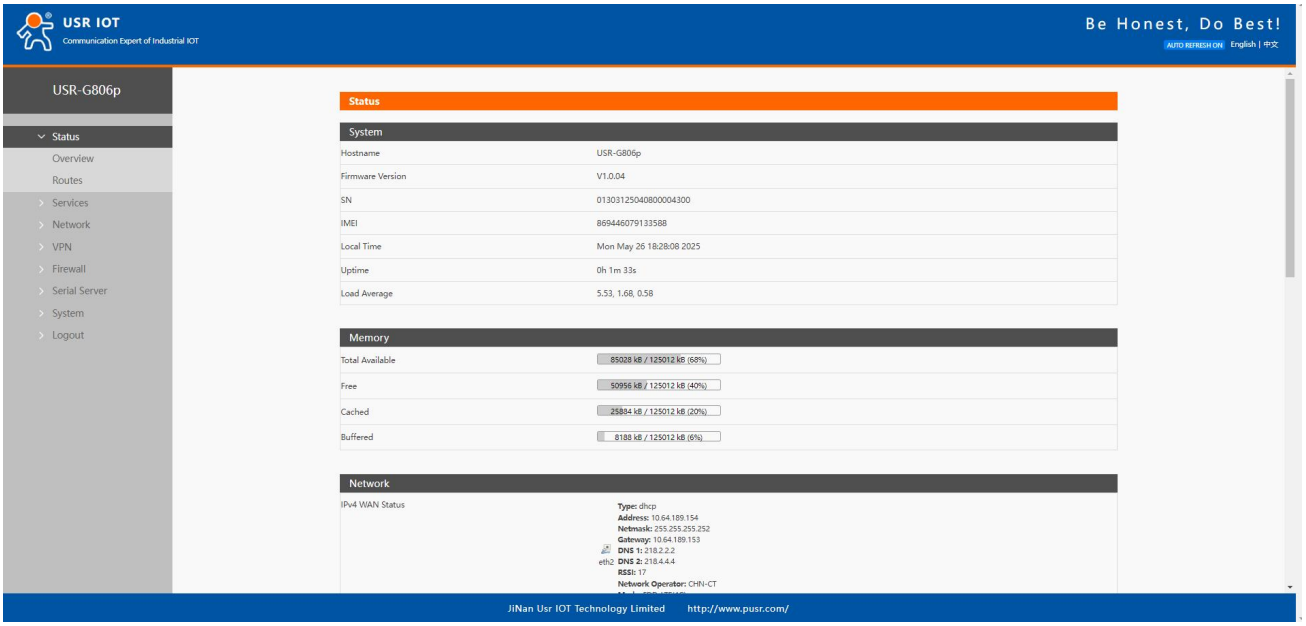
When the USR-G806p is used for the first time, you can connect the LAN port of the USR-G806p to the PC or connect to the WLAN wireless, and then configure it using the web management page.

Tab 2 Default parameter table for WEB pages

parameter	default setting
SSID	USR-G806p-XXXX
LAN IP	192.168.1.1
User name	admin
password	admin
Wireless password	www.usr.cn

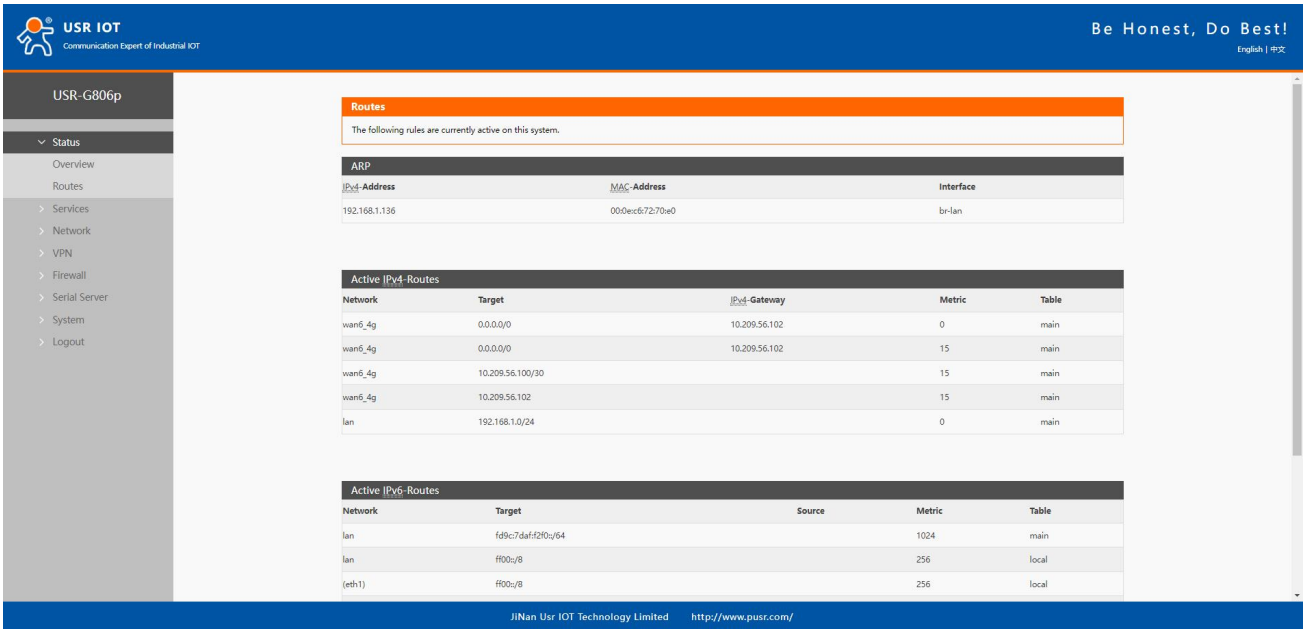


Pic 3 Login page



Pic 4 Status overview

You can query routing information and ARP tables from here.

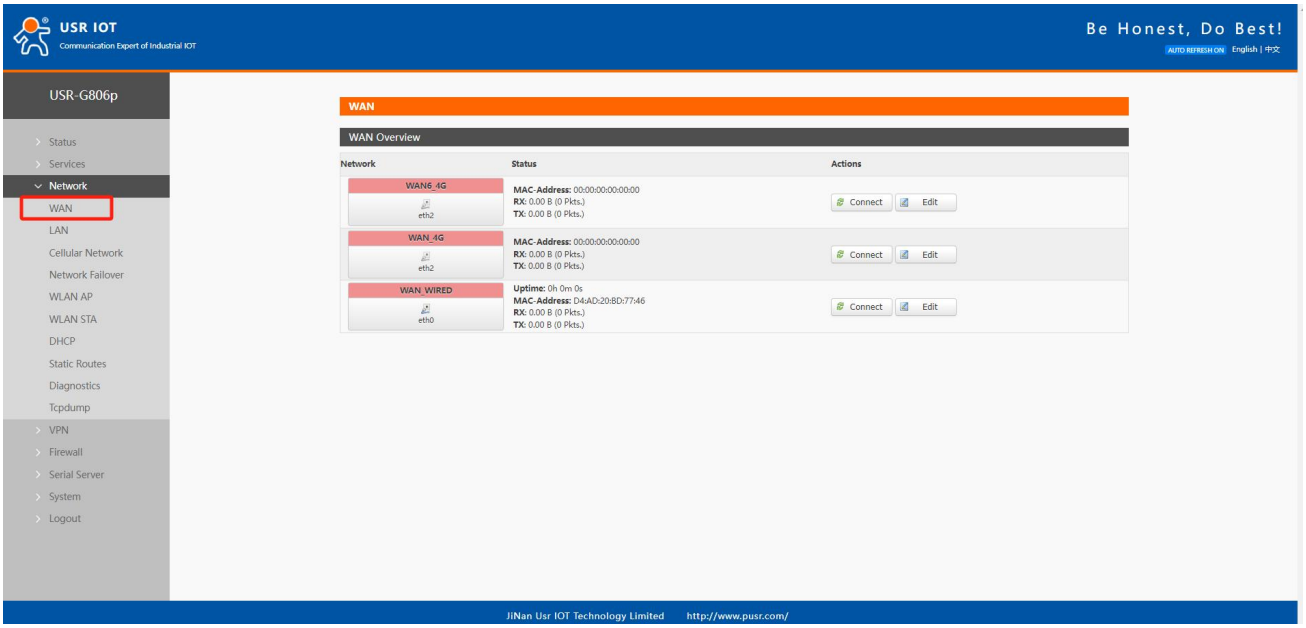


Pic 5 ARP

3. Network interface function

3.1. Cellular networks

The router supports WAN ports for access to external networks.



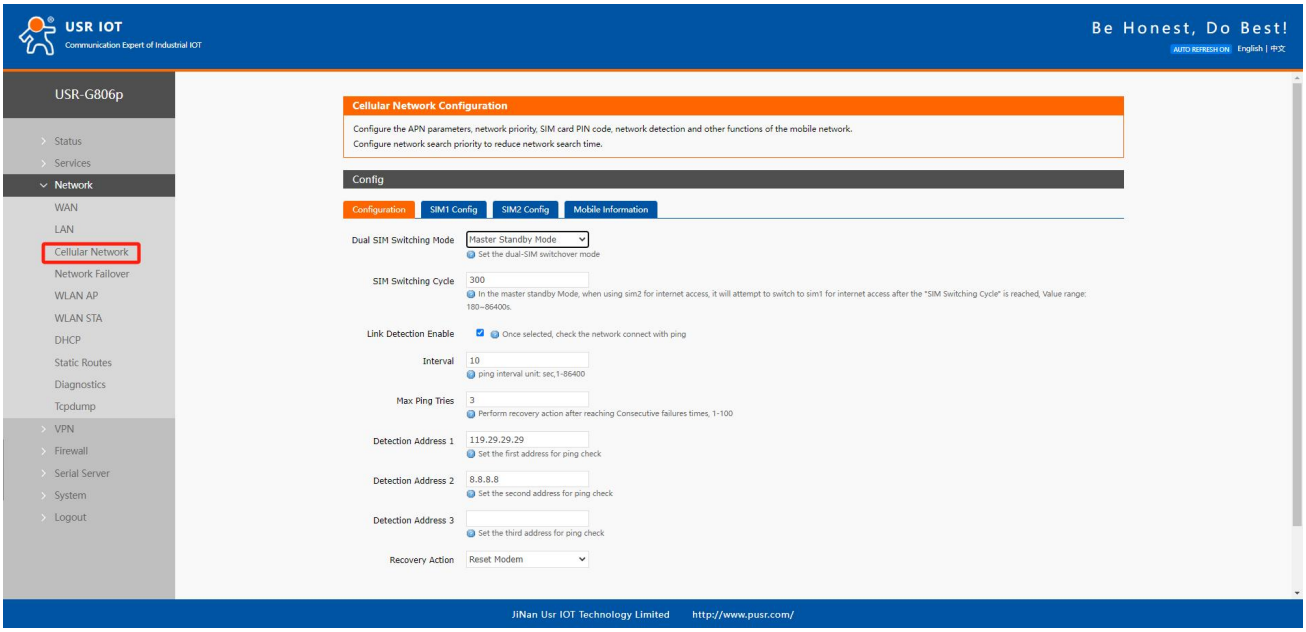
Pic 6 4G Set up the interface

Tab 3 state table

Num	Name	meaning
1	Running Time	The running time of the 4G network card started by this interface
2	MAC	The MAC address of the network card interface
3	Receive/send	Statistics on the total amount of data received and sent by this website

3.1.1. Cellular network configuration

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Pic 7 Cellular network configuration page

Tab 4 Cell network configuration parameter table

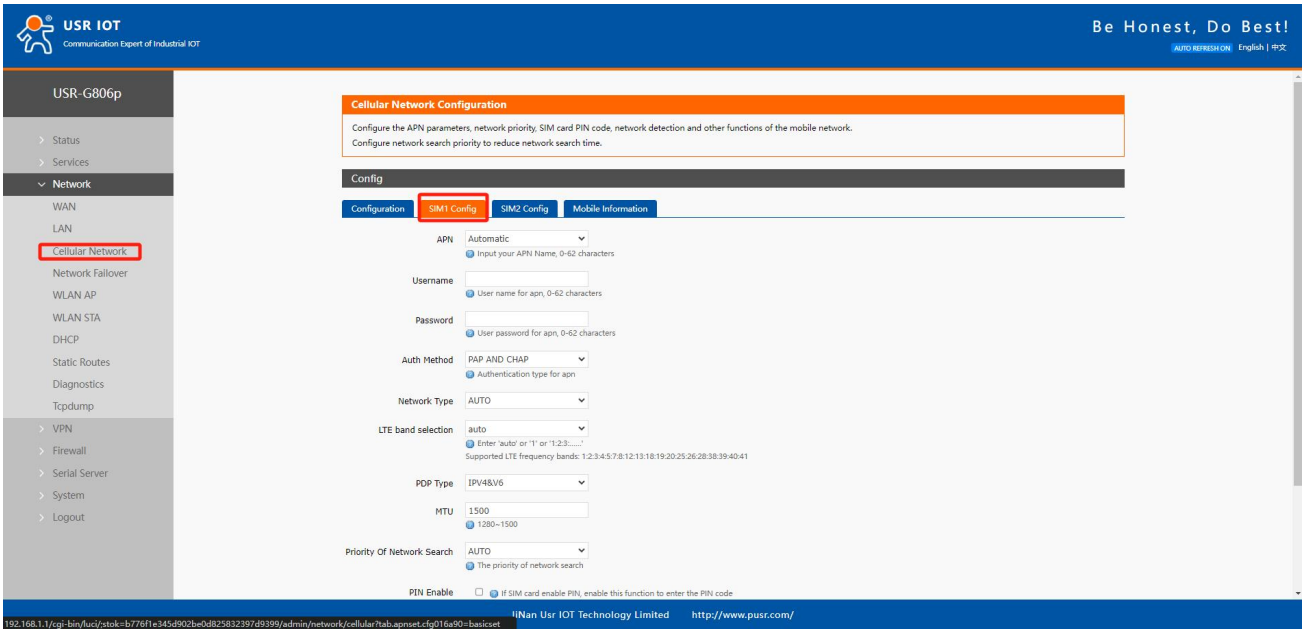
Item	function	default
Dual card switching mode	**Master-Backup Mode :** SIM1 is the primary. When SIM1 malfunctions, it automatically switches to SIM2 for internet access.Once SIM1 recovers, it will switch back to SIM1 automatically. **Mutual Backup Mode :** If the current SIM card can access the internet, no card switching will occur. **Manual Mode :** Lock onto SIM1 or SIM2, disabling automatic card switching.	Master-Backup Mode
Check the cycle	At present, when the card is connected to the network, the threshold time set here will detect whether SIM1 returns to normal (the cellular network will be disconnected each time). If SIM1 is restored, it will automatically switch to SIM1 access. Unit: seconds	300
Fixed SIM card	When the mode is switched to manual mode, select the SIM card to be locked	SIM1
Link probing enabled	Open: Enable the SIM card Ping detection function Close: Disable the SIM card Ping detection function	Close
Detection time interval	Ping detection interval, unit: seconds	10
Number of re-tries for detection	Number of ping probe failures	3
Probe address 1	A total of 3 Ping addresses are detected. If one of them is	8.8.8.8

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	pingable, the link is considered normal	
Probe address 2	A total of 3 Ping addresses are detected. If one of them is pingable, the link is considered normal	119.29.29.29
Probe address 3	A total of 3 Ping addresses are detected. If one of them is pingable, the link is considered normal	255.5.5.5
Resume the exercise	Optional: None / Re-dial / Restart module / Restart module / Restart device	Restart the module
Signal strength detection enabled	Checked: detect the interval time once, and switch the SIM card when the sub-signal is less than the set trigger threshold for multiple times	Unchecked
Detection time interval	Signal detection interval time, unit: second	10
Number of re-tries for detection	If the signal value is less than the threshold for several times, the card will be cut	3
Trigger threshold	Signal threshold, unit: dbm	-80
Ping delay detection is enabled	Checked : The interval time is detected once, and the delay of multiple probes is greater than the set trigger threshold to switch the SIM card	Unchecked
Detection time interval	Detection interval time, unit: seconds	10
Number of re-tries for detection	If the detection delay exceeds the threshold, the card will be cut	3
Trigger threshold	Delay threshold, unit: ms	80

3.1.2. SIM

Set the SIM1/2 card related parameters.



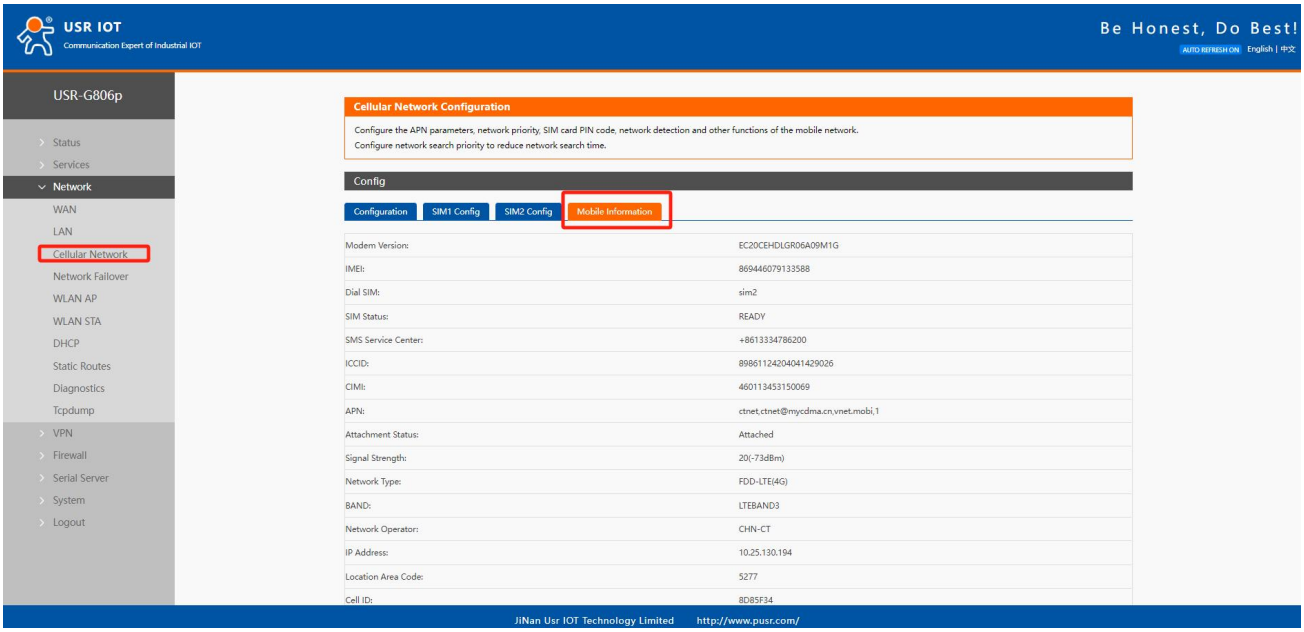
Pic 8 SIM

Tab 5 SIM

Item	Description	Default
APN	Please set the correct APN address	Auto
Username	APN username	empty
Password	APN Password	empty
Auth Method	APN authentication type: None/PAP/CHAP	empty
Network Type	Force 4G, 3G or 2G network	Auto
LTE band selection	Lock the frequency band	Auto
PDP Type	IPv4/IPv6/IPv4&v6 are optional	IPv4&v6
MTU	Set the cellular network card MTU	1500
Network search priority	Auto/2G/3G/4G	Auto
PIN enable	SIM PIN	Not enabled
PIN	Four to eight digits Note: The PIN code is invalid if the PIN enablement item is not enabled	1234
EHRPD	This option is generally not required when 5G network is started	Not enabled

3.1.3. SIM card information

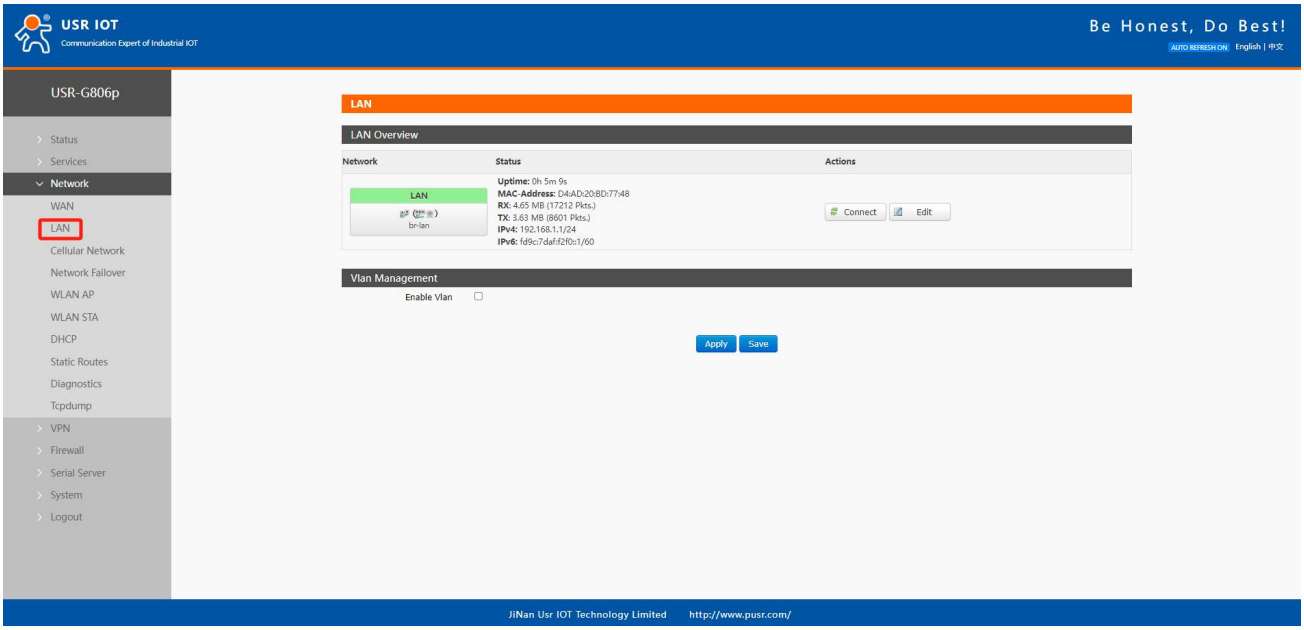
The SIM card information display shows the configuration information of the SIM card in detail. If there is a problem with the network connection, you can check the cause of the problem.



Pic 9 SIM Information

3.2. LAN

LAN port is a LAN with 4 wired LAN ports (LAN4 can be set to WAN2 for use).



Pic 10 LAN

Tab 6 LAN

Item	meaning	Windows default
IPv4	The IP address of the LAN card	192.168.1.1
subnet mask	The subnet mask of the network card	255.255.255.0
IPv4 Gateway	The gateway address of the LAN card is usually empty	empty
IPv4 broadcast	The broadcast address of the LAN card is usually empty	empty
Use a custom DNS server	The alternative DNS server is used to resolve the DNS server when the DNS server issued by the superior route cannot be resolved normally	empty
IPv6 allocation length	Assign a fixed portion of the specified length to each public IPv6 prefix, usually the default value	60
IPv6 allocation reminder	Use the hexadecimal subprefix ID of this interface to assign the prefix portion, which is usually the default value	empty

< Instruction>

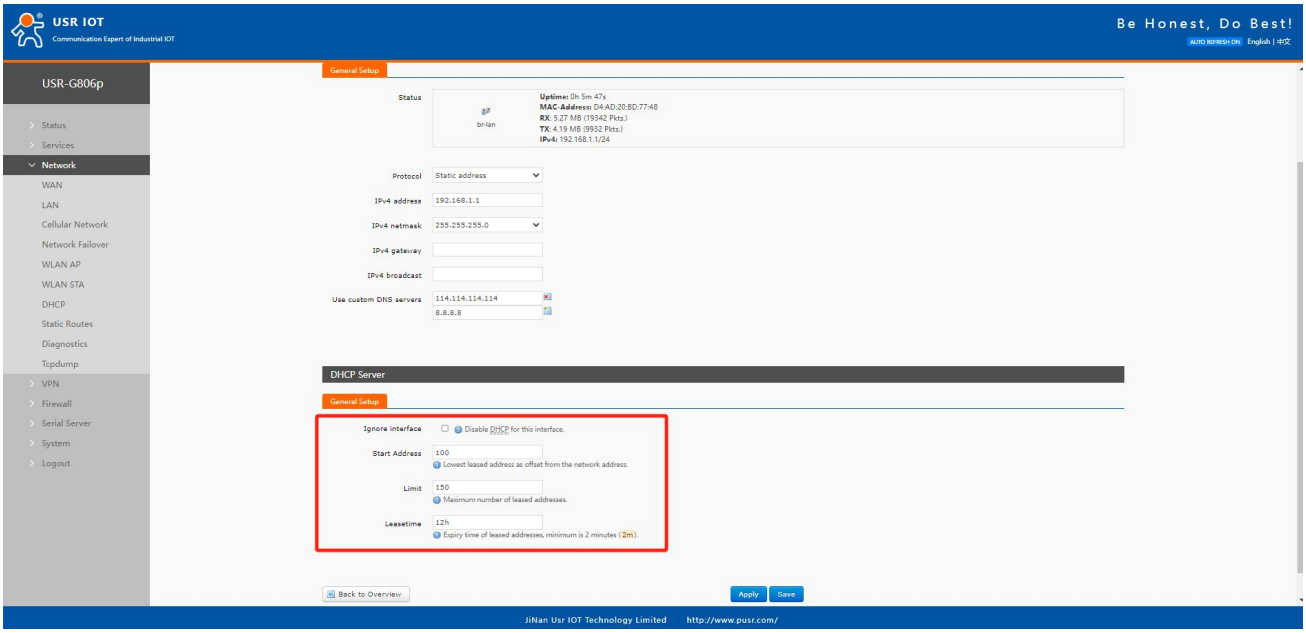
- The default static IP address is 192.168.1.1 and the subnet mask is 255.255.255.0. This parameter can be modified, for example, to change the static IP address to 192.168.2.1;
- The DHCP server function is enabled by default, and the devices connected to the LAN port of the router can automatically obtain IP addresses;

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- If VLAN division is used, the WIFI interface is bridged to the br-lan port, and the WIFI obtains IP and the same network segment as the br-lan network card.

3.2.1. DHCP

The LAN port DHCP Server function is enabled by default (you can choose to disable it).



Pic 11 DHCP

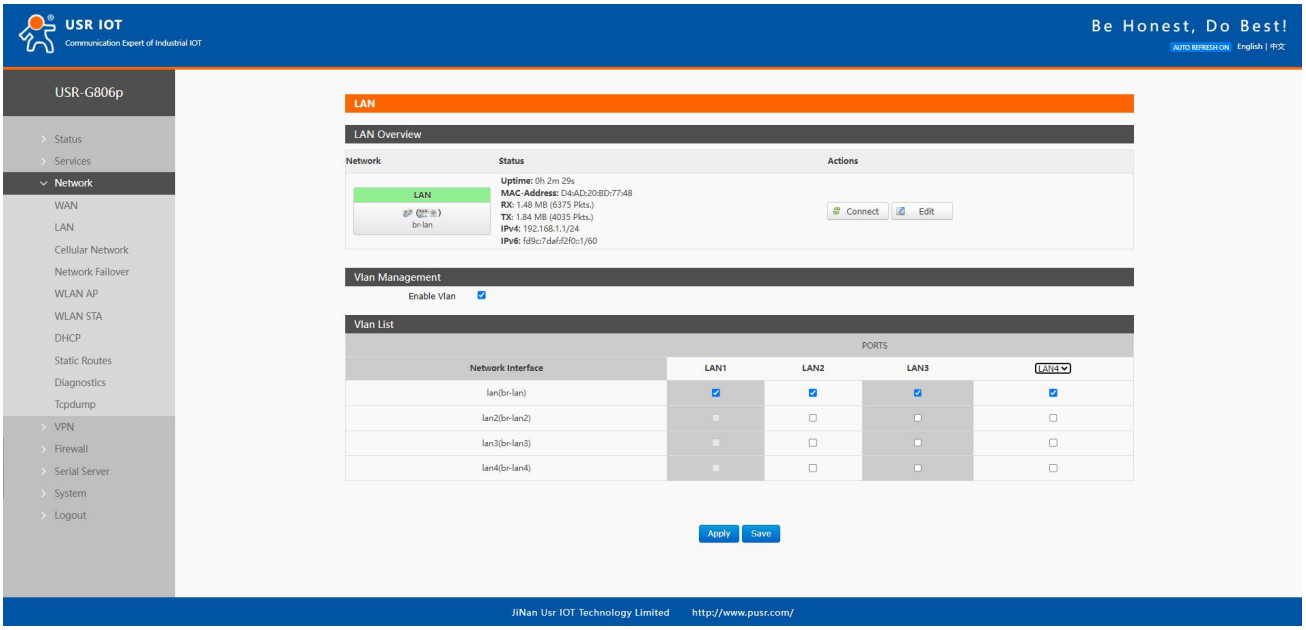
< instruction>

- The starting address of the DHCP pool and the address lease time can be adjusted;
- DHCP The default allocation range starts from 192.168.1.100;
- The default lease period is 12 hours, which can be set as "h" -hour or "m" -minute;
- If you disable DHCP, the subnet device needs to set the correct static IP and gateway to connect to 806w.

3.2.2. VLAN

This router supports VLAN division of network ports, which can divide multiple network ports into different network segments.

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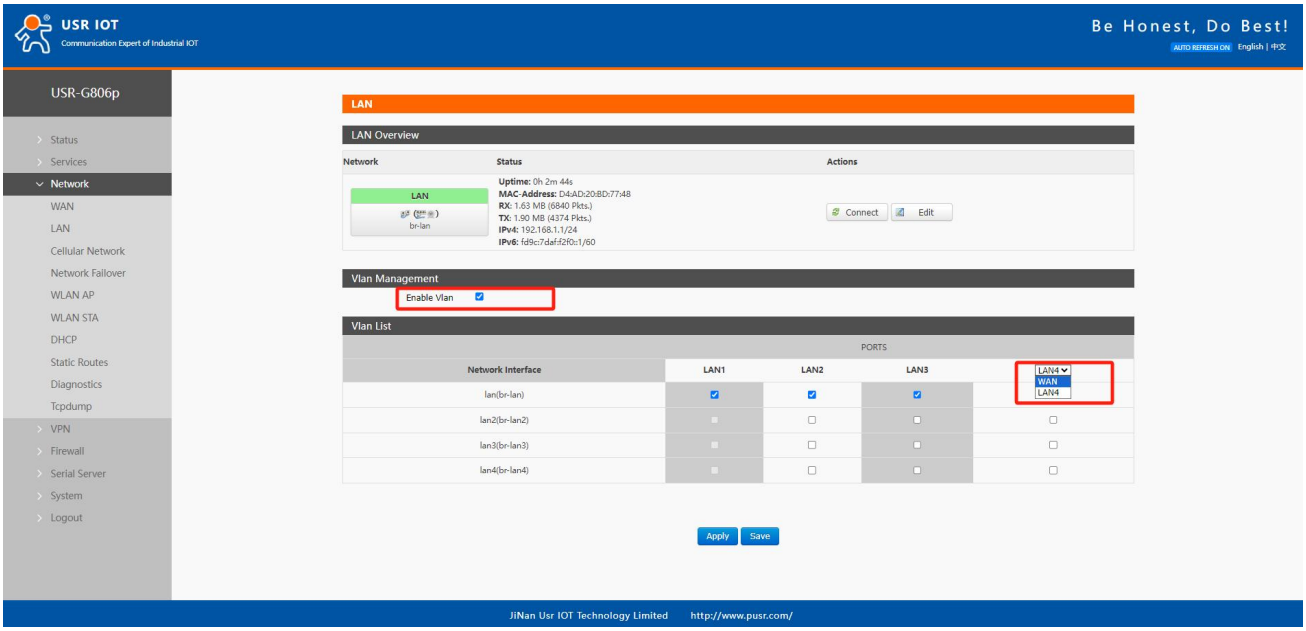
Pic 12 LAN

< explain>

- Disable VLAN division by default. If enabled, LAN port IP will be automatically changed to 192.168.1.1, LAN2 to 192.168.2.1 and so on;
- WIFI is bridged to LAN. When a device connects to the router's WIFI, the device obtains the IP network segment and LAN network interface in the same network segment;
- LAN2 and LAN3 can be bridged to lan~lan4 network interface at will.

3.2.3. WAN/LAN Select

After the VLAN switch is turned on, LAN4 can be set to WAN.



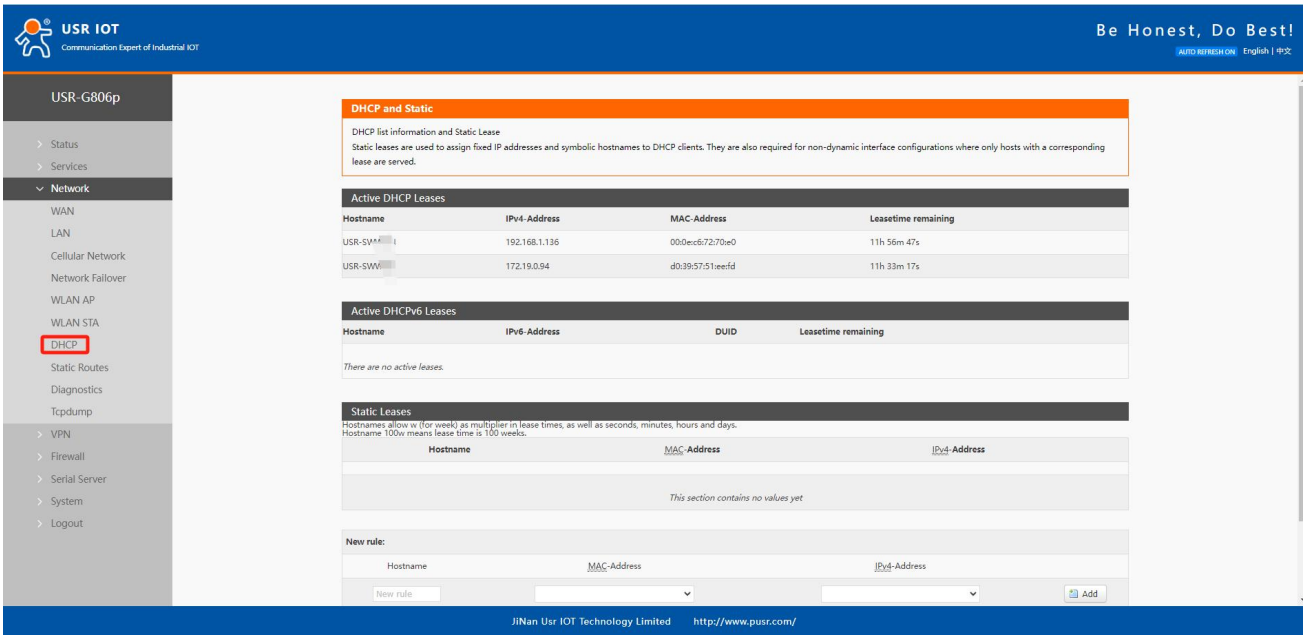
Pic 13 VLAN

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3.2.4. DHCP

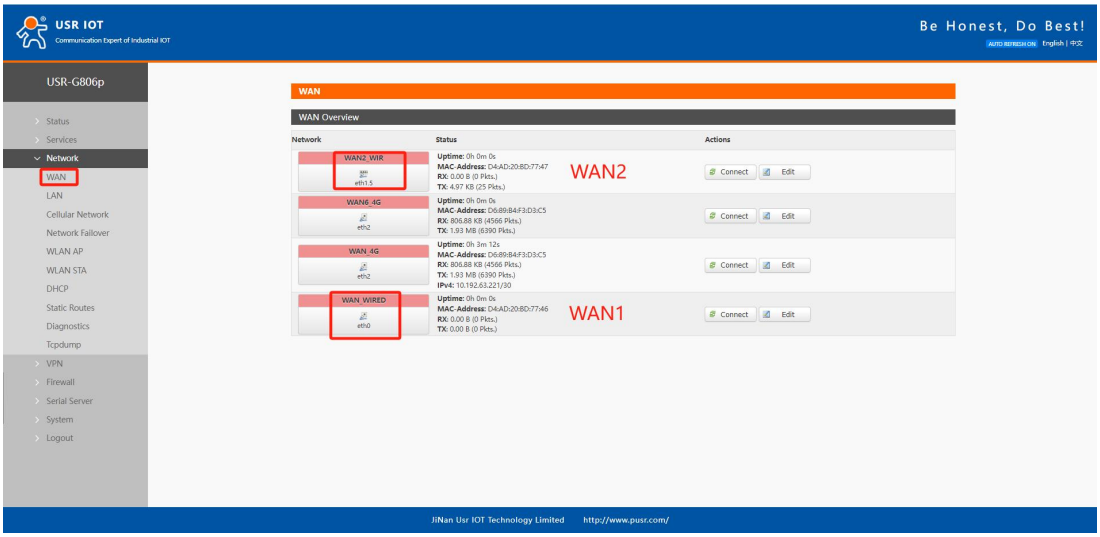
Static address allocation: Set at the interface-DHCP. This function extends the LAN interface DHCP Settings to assign a fixed IP address and host ID to the DHCP client. Only the specified host can be connected, and the interface must be configured dynamically.

Use add to add new lease entries. Use the MAC address to identify the host, the IPv4 address to assign the address, and the hostname to assign the identifier.



Pic 14 DHCP

3.3. WAN

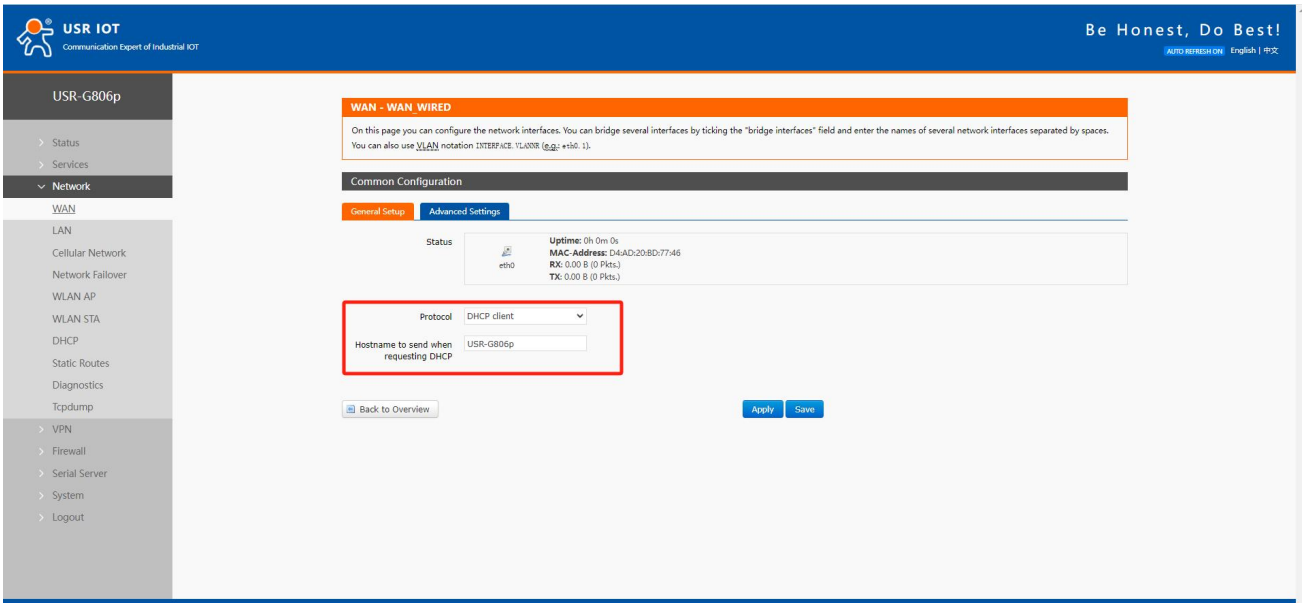


Pic 15 Interface configuration interface

< explain>

- By default, the 1WAN port is enabled, and the LAN port VLAN division is enabled for WAN2;
- WAN supports DHCP client, static IP and PPPoE mode;
- The default IP acquisition method is DHCP Client.

3.3.1. DHCP



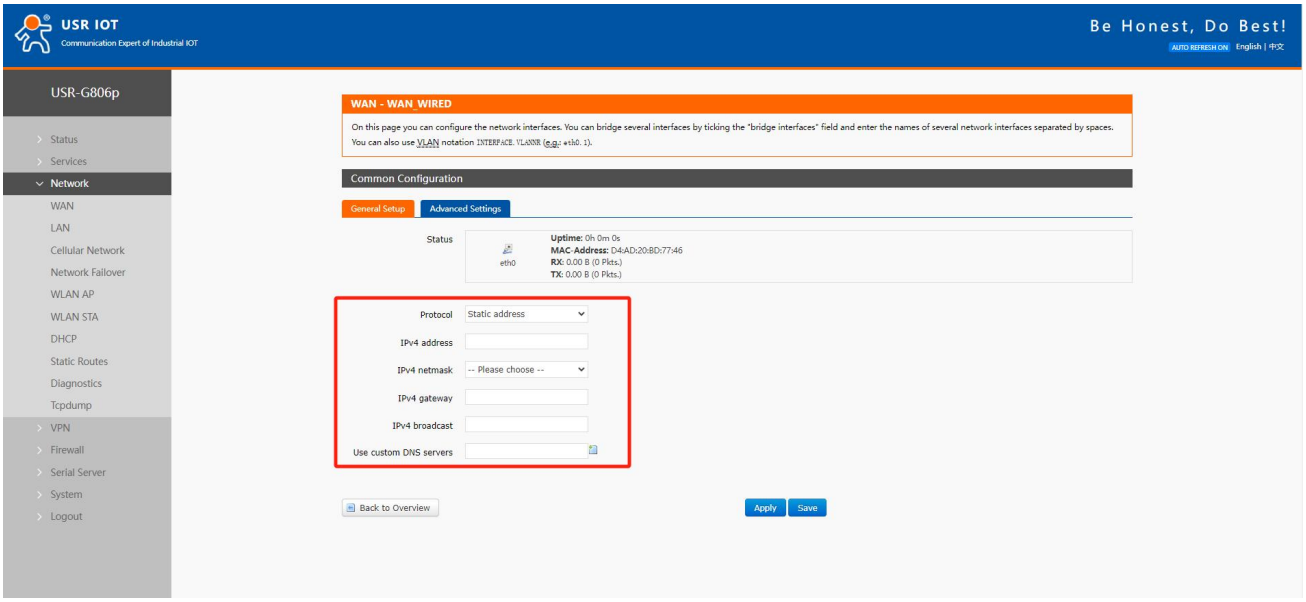
Pic 16 WAN

< explain>

- The default IP acquisition method is DHCP Client;

- Supports the hostname for a change request DHCP.

3.3.2. Static IP mode

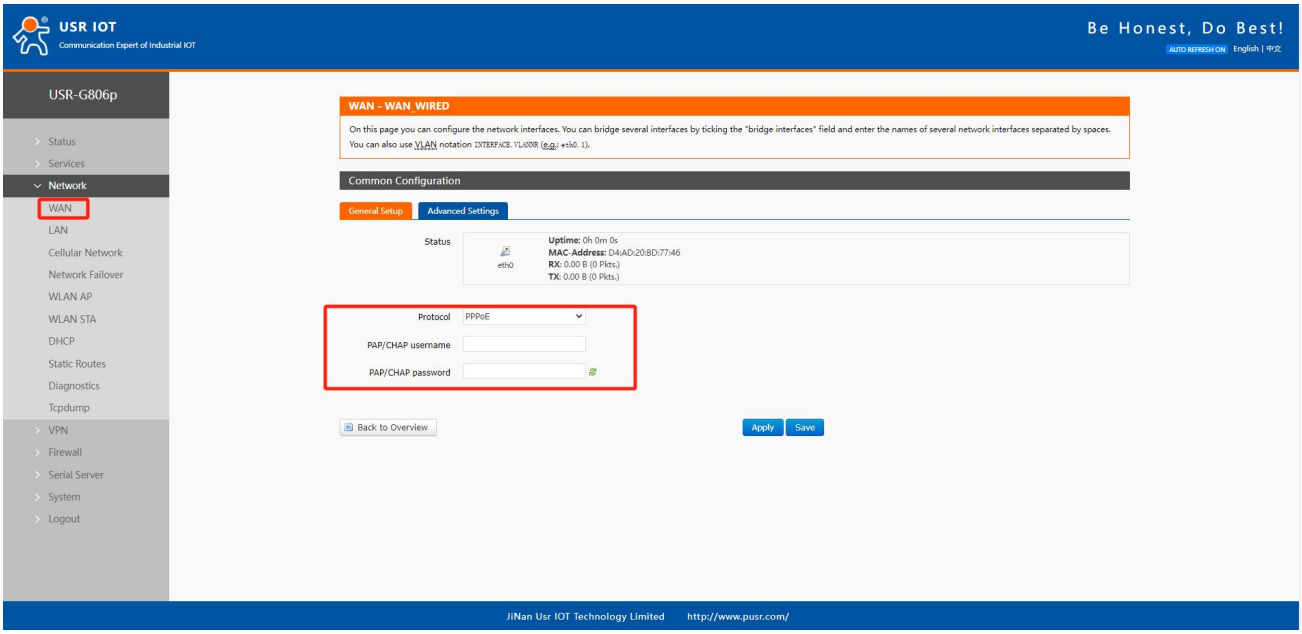


Pic 17 WAN

< explain>

- Static address mode requires manual input of IPv4 address, mask and IPv4 gateway address;
- The gateway address must be accessible, otherwise the network cannot be used normally;
- The general IP address should be in the same subnet as the gateway
- Note that the IP address should not be in the same subnet as the LAN port IP address, otherwise the network will be abnormal.

3.3.3. PPPoE



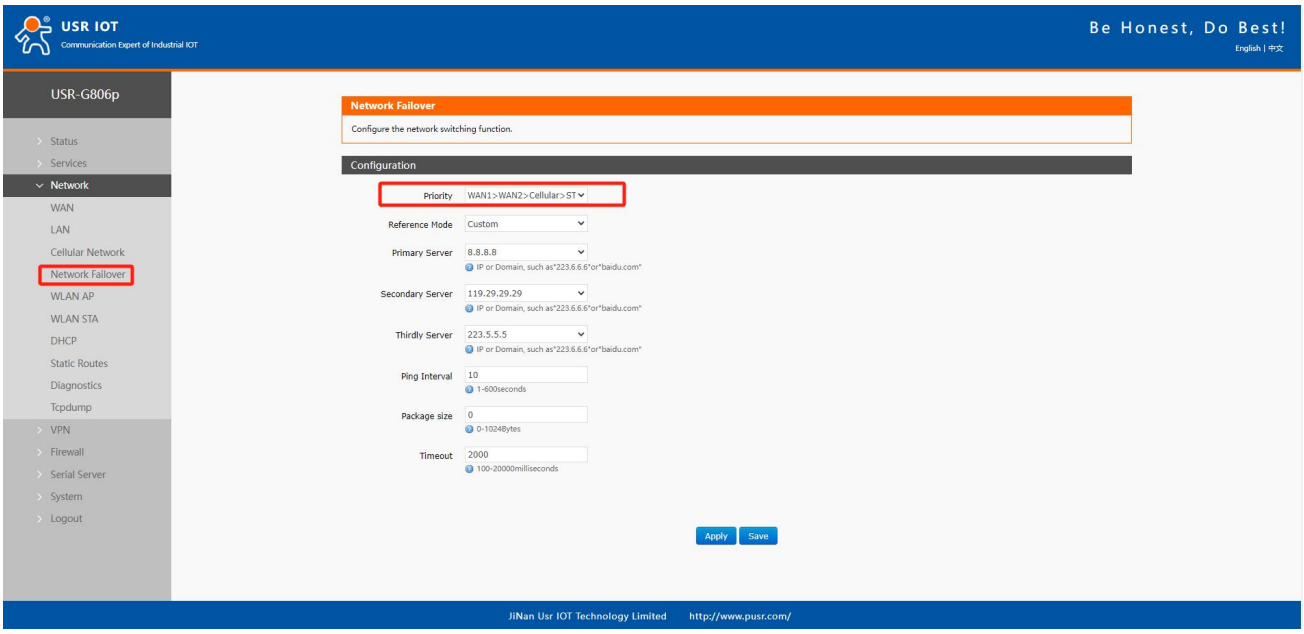
Pic 18 WAN

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< explain >

- The user name and password need to be obtained from the operator and filled in the corresponding position;
- Using this function is equivalent to using the router as a modem for dialing;
- Click save, and then click Apply to complete the configuration.

3.4. Network switching



Pic 19 Network switching configuration

Tab 7 Network switching configuration

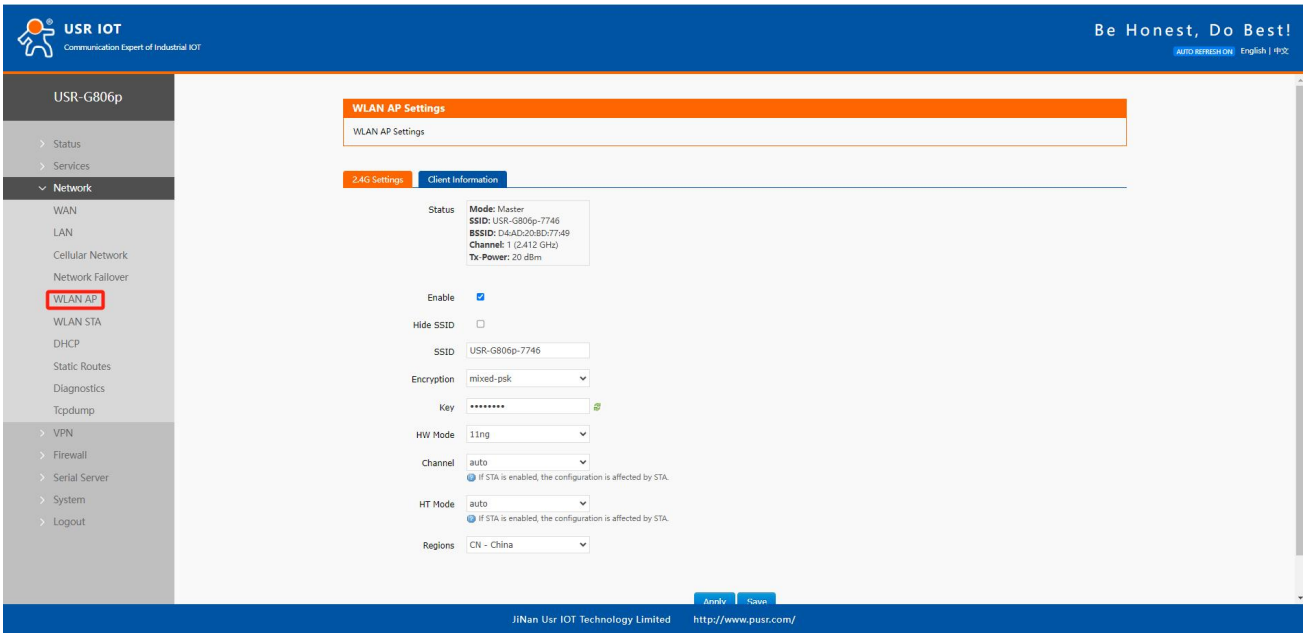
name	description	Default parameter
priority	Set the NIC priority policy here For example, select: WAN1> WAN2> Cellular> STA. When the WAN1 network card can detect the target address is open, the WAN1 network card will be used to access the Internet. When the WAN1 network card fails to detect the target address, the WAN2, Cellular, and STA network cards will be used in sequence to detect the target address. Disable: Use the last network	WAN1 takes precedence
reference pattern	Customization: Determine the network status based on the custom reference address Gateway: Probe the gateway address of each network card to determine the network status	user-defined
Reference 1	You can set IP/domain name	8.8.8.8
Reference 2	You can set IP/domain name	8.26.56.26
Reference 3	You can set IP/domain name	208.67.222.222

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Detection interval (unit: s)	Set the link detection interval: 1-600s can be set	10
Ping packet size (unit: bytes)	Packet size for link detection: 32-1024 bytes can be set	0
Ping timeout (unit: ms)	Set the ping timeout time: can set 100-20000ms	2000

3.5. Wireless configuration

2.4G wireless LAN (Wi-Fi) function.



Pic 20 Wi-Fi configuration intent

< explain >

- Wi-Fi and LAN can simultaneously support up to 30 clients, with a maximum of 20 being Wi-Fi clients. When Wi-Fi and LAN are not simultaneously loading clients, if there are no LAN port clients, Wi-Fi can support up to 20 wireless clients; if there are no Wi-Fi clients, only LAN port clients can support up to 50 clients. When the LAN port is configured with VLAN division, the AP segment and the LAN network share the same subnet;
- The maximum coverage of Wi-Fi is 500m in open areas, and the environment affected by obstacles such as offices can be covered within 50m;
- The actual connection distance of Wi-Fi is greatly affected by the environment. Please test it as the actual test.

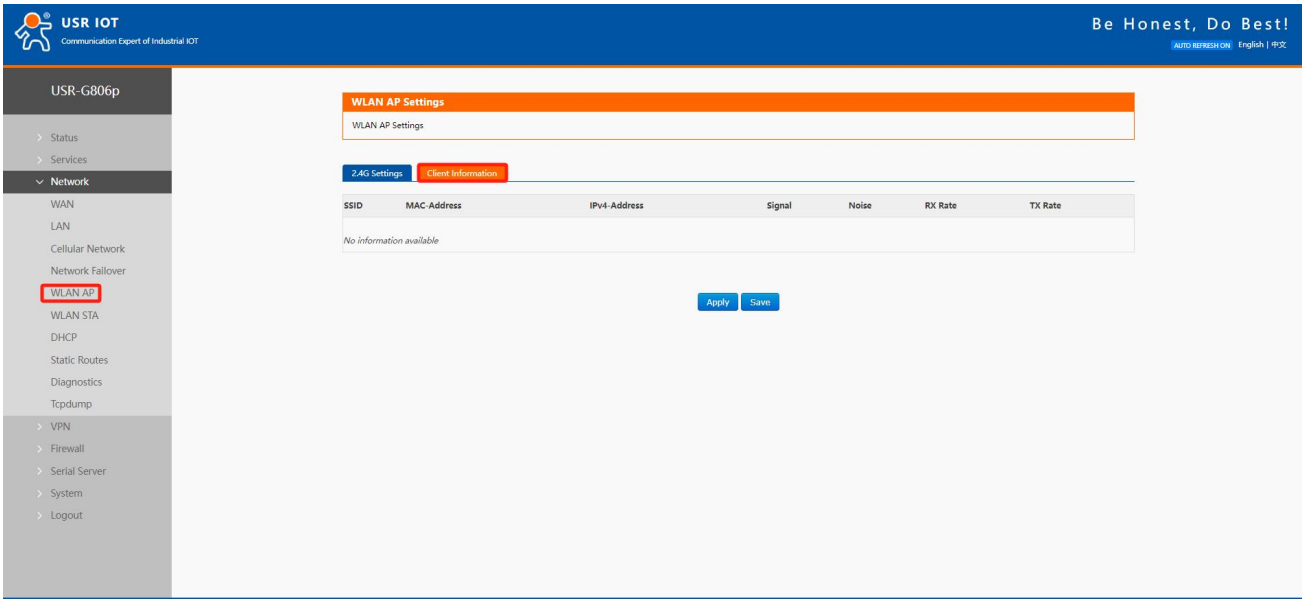
Tab 8 WiFi configuration parameter

name	description	Windows default
start using	Turn on the WIFI LAN function	check
hide SSID	To enable this function: The device will not be able to search for 806w WIFI, and you need to manually enter the correct WIFI name and password to connect, ensuring the WIFI security	Not selected
WIFI name	The router's WIFI name can be customized The default value of XXXX is the last four bits of the router MAC	USR-G806w-XXXX

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encryption	selectable ： No encryption/mixed-psk/psk+ccmp/psk2/psk2-tkip	mixed-psk
password	WIFI password, customizable	www.usr.cn
Network model	Options: 11ng/11n/11g/11bgn/11bg/11b	11ng
channel	Automatic, lockable channel	voluntarily
frequency bandwidth	Auto/40MHz/20MHz is optional	auto
Country or region	You can select a country or region	CN-China

The list of wifi clients can be viewed in the client information interface.

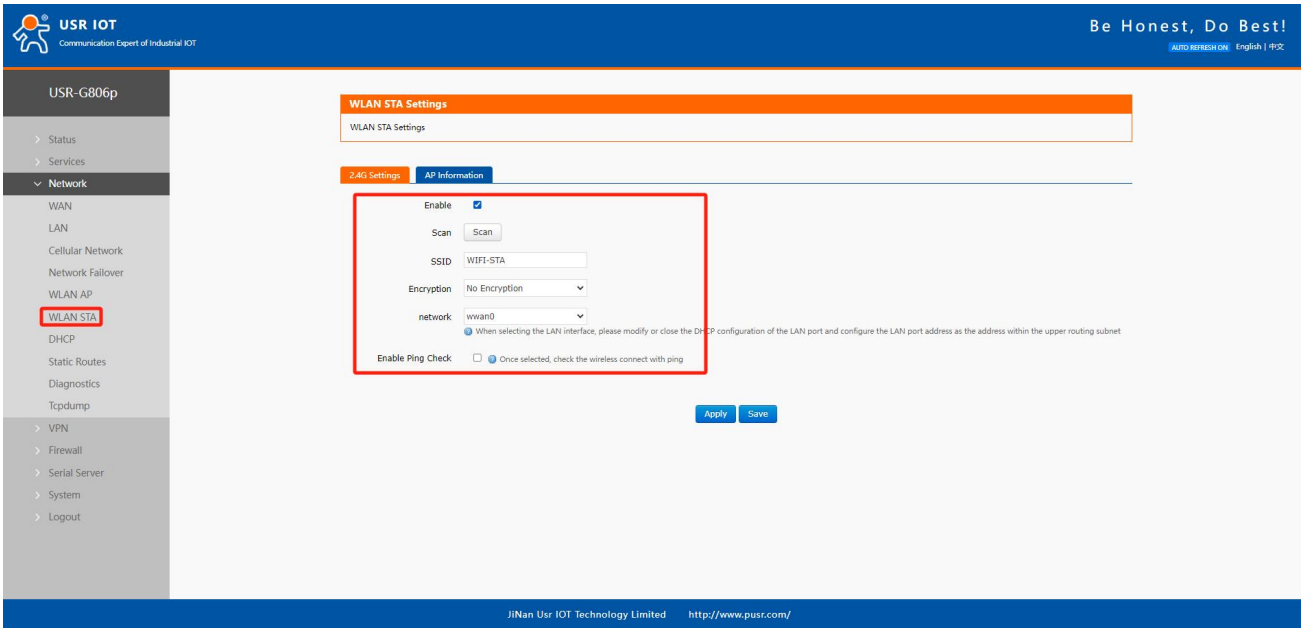


Pic 21 WiFi client list page

3.6. Wireless client

The router is turned off by default for WIFI (wireless) client, and the WIFI client can be enabled to connect to the hotspot coverage on site for Internet access.

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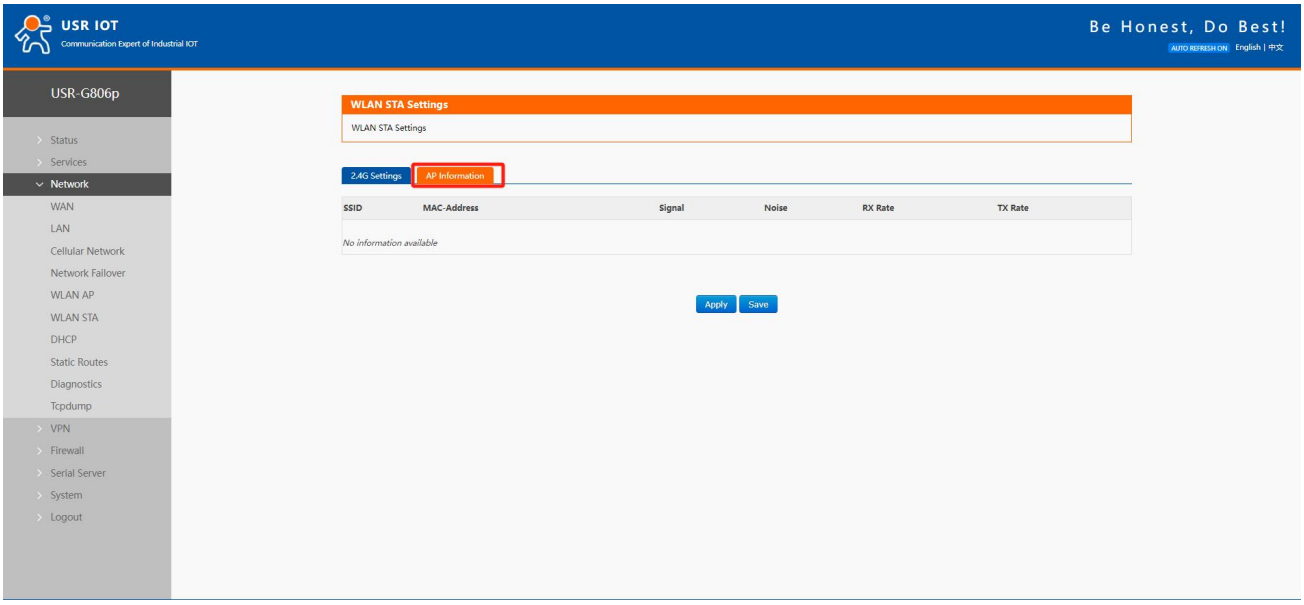
Pic 22 Wireless client configuration

Tab 9 WiFi configuration parameter

name	description	Windows default
start using	Turn on the WIFI client	Not selected
search	Click search to start searching for hot spots It takes about 30 seconds to 1 minute to search for hot spots, so be patient	not have
WIFI name	You can select hot spots by searching or manually	WIFI-STA
encryption	It can be set to: no encryption /mixed-psk	No encryption
network	Can be set to: wwan0/lan To use the STA function normally, select wwan0 If you need to use WIFI bridge mode, select lan	wwan0
Forcing the update of LAN IP addresses	When the network selects LAN (bridge mode), select this function to restart LAN	check
Enable Ping detection	After checking, the live detection function is enabled. If the detection address is not available, the connection to the wireless will be re-established	Not selected
reference address	Option: Gateway / specified address	gateway
Ping address	The address of the STA probe, note that you need to set the address that the STA can ping	empty

On the hot spot information interface, you can check whether the router is connected to the AP.

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Pic 23 Connect to the AP information page

< explain >

- When the network selects lan, it is set to bridge mode;
- To set the bridge mode, please pay attention to the need to turn off the dhcp of the LAN port;
- When LAN is enabled with DHCP, bridge mode bridges to the LAN network.

3.7. Static routing

Static routes have the following parameters. The default static route can be added up to 20.

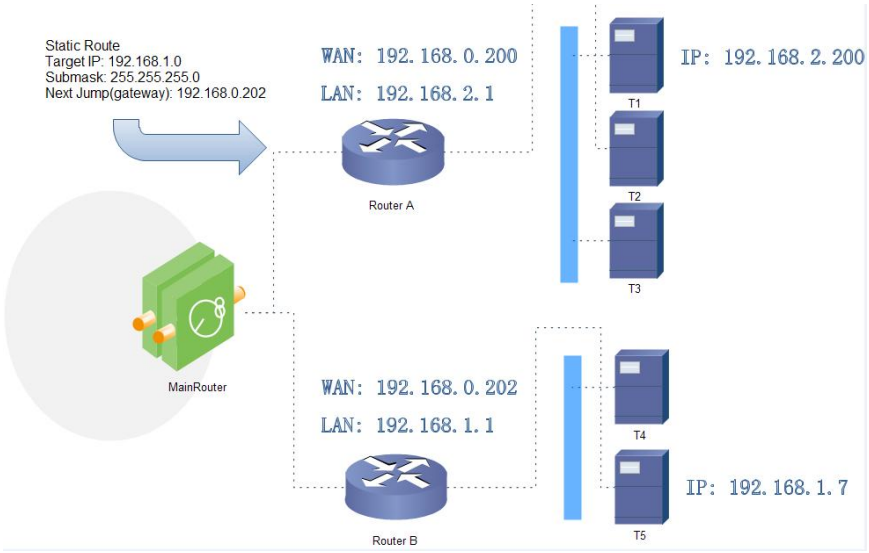
Tab 10 Static routing parameter table

name	description	Default parameter
joggle	LAN, wan_4G, wan_wired, and vpn interfaces	lan
Object (target address)	The address or address range of the object to be accessed	empty
subnet mask	The subnet mask of the network to which you want to access	empty
Gateway (next hop)	The address to which to forward	empty
Jump point (Metric)	Number of jumps in the package	empty

Static routing describes the routing rules for packets on an Ethernet.

Test example: Test environment, two peer routers A and B, as shown in the figure below.

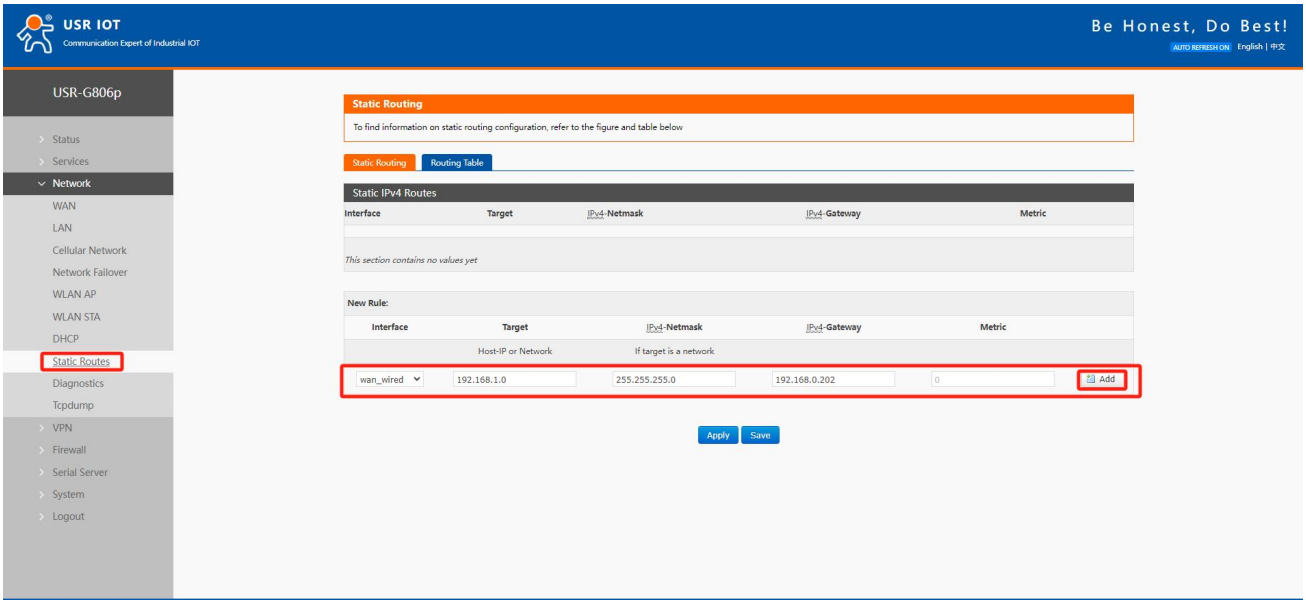
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Pic 24 An example of a static routing table

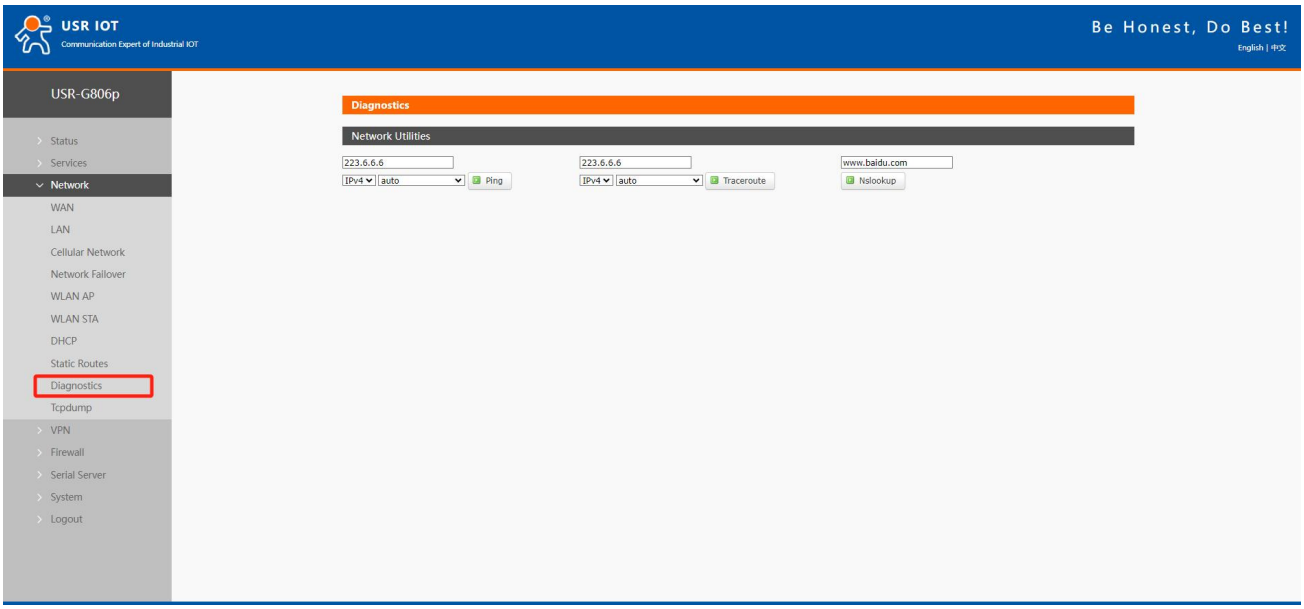
The WAN ports of routers A and B are connected to the network 192.168.0.0, the LAN port of router A is the subnet 192.168.2.0, and the LAN port of router B is the subnet 192.168.1.0.

Now, if we want to make a route on router A so that when we access the 192.168.1.x address, it automatically goes to router B.



Pic 25 Route table add page

3.8. Network diagnostic function



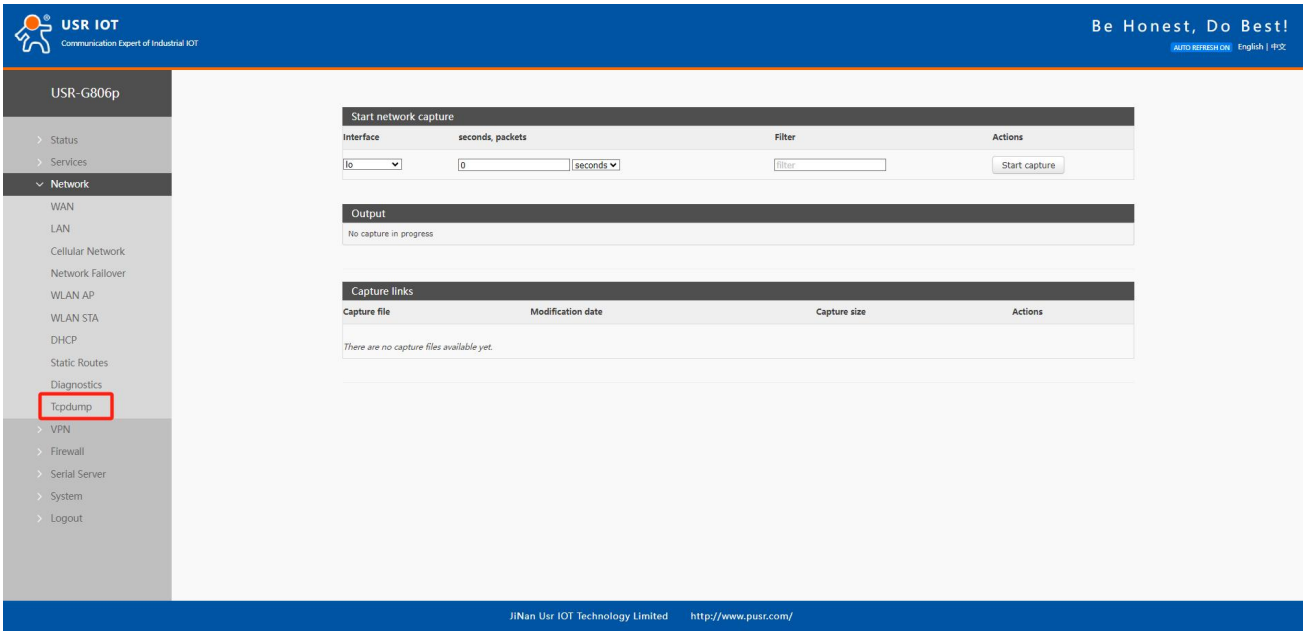
Pic 26 Network diagnostic interface

The router's online diagnostic functions include Ping tools, route resolution tools, and DNS viewing tools.

- Ping is a Ping tool that can directly ping a specific address on the router;
- Traceroute is a routing analysis tool that can obtain the route path when accessing an address;
- Nslookup is a DNS viewing tool that resolves domain names to IP addresses.

3.9. TCPDUMP traffic monitoring

Packet capture can be performed through the web interface.



Pic 27 TCPDUMP

Tab 11 WiFi configuration parameter

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name	description	Windows default
joggle	Select the capture interface Br-lan: LAN interface Wan_wired: WAN1 interface Wan2_wir: WAN2 interface Wan_4G: Cellular interface Ath1: WIFI STA interface	Lo
Capture restrictions	Capture duration or number of packets	0 seconds
filter	Fill in the filter conditions for the Tcpdump command, such as port 80	empty

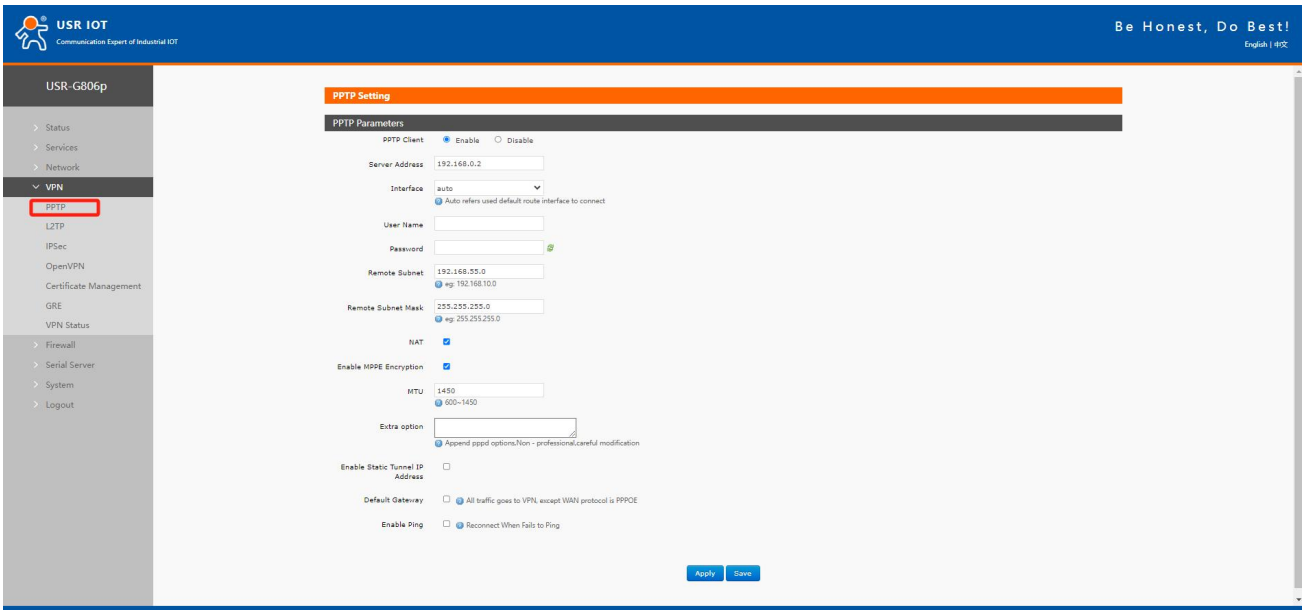
➢ The captured packets will be cleared after the router restarts.

4. VPN function

VPN (Virtual Private Network) is a virtual private network technology. In terms of protocol, this router supports: PPTP, L2TP, IPSec, OpenVPN, GRE, VXLAN.

4.1. PPTP Client

Before application, you need to build a VPN server first. Fill in the server address, account, password and encryption mode correctly to connect.



Pic 28 Router adds VPN operation diagram 1

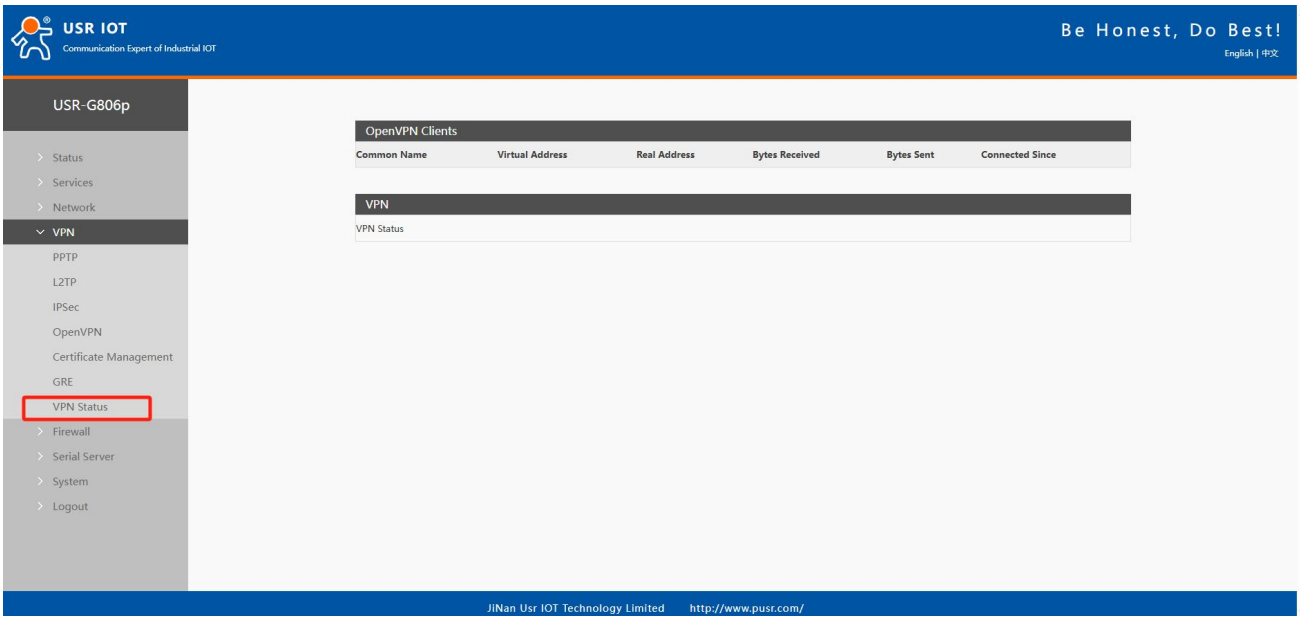
Tab 12 PPTP configure

name	description	Default parameter
PPT Enable the PPTP client	Enable: Start PPTP client Disable: Close the PPTP client	forbidden
Server address	Enter the IP address or domain name of the VPN server to connect to	192.168.0.2
joggle	Automatic: Connect to the VPN using the default routing interface Wan_wired: Use the WAN interface to connect to the VPN Sta_2g: Connect to the VPN using the 2.4G STA interface Cellular: Connect to a VPN using cellular 5G Note: If you select a non-automatic interface, such as the selected interface and server address are not accessible, but other interfaces and server addresses are accessible, you cannot connect to the VPN Select the automatic interface. If one interface is disconnected due to an exception, it can automatically switch to other interfaces to try to connect to the VPN	voluntarily
user name	Fill in the correct user name	empty
password	Enter the correct password	empty
To the subnet	Use a static route through the VPN to enable subnet communication between the client and the server. Enter the server subnet segment here	192.168.55.0
For the subnet mask	Use a static route through the VPN to enable subnet communication between the client and the server. Enter the subnet mask of the server subnet here	255.255.255.0
NAT	Check: Data passing through the VPN will be sent after NAT No line: Data passing through a VPN does not go through NAT	check
MPPE encryption	After checking, it is: mppe required, stateless Not checked: Do not start mppe encryption If the server uses require-mppe-128 encryption, you can uncheck this option and try the following additional configuration: mppe required,no40,no56,stateless refuse-eap refuse-chap refuse-pap refuse-mschap	check
MTU	Set PPTP MTU value to the default value	1450
Additional configuration	Special parameters are usually configured for the server. If the client interface does not have these parameters, configure them here. Do not operate by non-professionals	empty
Enable static tunnel IP addresses	Customize PPTP client IP. Note that if the IP server is assigned to other clients or the IP is not within the IP range	Not enabled

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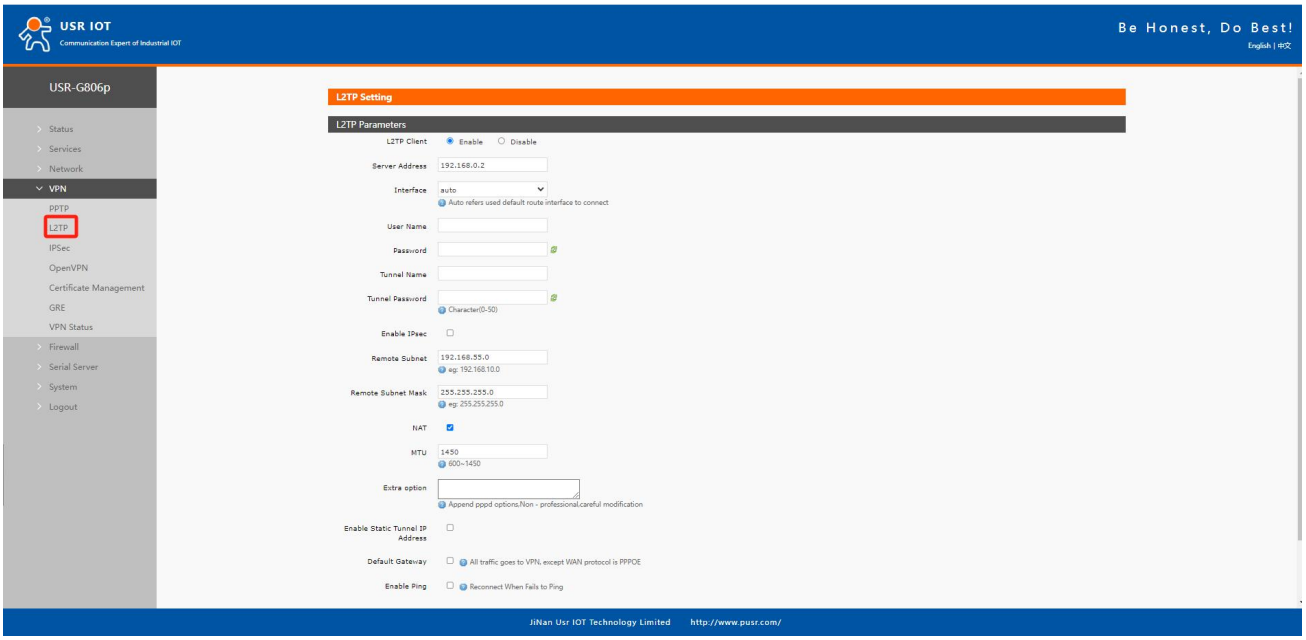
	defined by the server, the connection will not be made to the server	
Static tunnel IP address	Customize PPTP client IP. Note that if the IP server is assigned to other clients or the IP is not within the IP range defined by the server, the connection will not be made to the server	empty
default gateway	After checking: All data traffic will be transmitted through the VPN channel after the VPN is established Unchecked: Only the VPN channel is established. If you need subnet intercommunication, static routes should be established Note: If the WAN port is connected by PPPOE, this option is invalid	Not selected
enable ping	Check: Enable VPNping ping alive detection, and reconnect to the VPN if ping fails Unchecked: Do not enable ping to keep alive	Not selected
Ping address	PPT The address that the PPTP network card can ping is usually filled with the PTP address	empty
Ping period	Ping maintenance interval period, unit: seconds	10
Ping number of times	After the Ping failure upper threshold is exceeded, ping will not be sent to the set IP address, and the VPN will reconnect	3

PPTP connection success: After filling in the relevant parameters, save and apply, and enter the VPN--VPN state to check the connection status.



Pic 29 Router VPN connection status

4.2. L2TP Client



Pic 30 L2TP client Settings interface

Tab 13 L2TP configuration parameters

name	description	Default parameter
L2TP client enabled	Enable: Start the L2TP client Disable: Close the L2TP client	forbidden
Server address	Enter the IP address or domain name of the VPN server to connect to	192.168.0.2
joggle	Automatic: Connect to the VPN using the default routing interface Wan_wired: Use the WAN interface to connect to the VPN Sta_2g: Connect to the VPN using the 2.4G STA interface Cellular: Use cellular 5G to connect to a VPN Note: If you select a non-automatic interface, such as the selected interface and server address are not accessible, but other interfaces and server addresses are accessible, you cannot connect to the VPN Select the automatic interface. If one interface is disconnected due to an exception, it can automatically switch to other interfaces to try to connect to the VPN	voluntarily
user name	Fill in the correct user name	empty
password	Enter the correct password	empty
Name of tunnel	If the server specifies the tunnel name of the Client, it must be correct	empty
The Tunnel Code	Fill in the correct tunnel password	empty

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IPSec encryption	Check: Enable L2TP over IPSec function Not checked: Single L2TP function After IPSEC encryption is enabled IKE encryption: 3des-md5-modp1024,3des-sha1-modp1024 ESP encryption: des-md5, des-sha1, 3des-md5, 3des-sha1	Not selected
end on ID	The ID set on the server side	
To the subnet	Use a static route through the VPN to enable subnet communication between the client and the server. Enter the server subnet segment here	192.168.55.0
For the subnet mask	Use a static route through the VPN to enable subnet communication between the client and the server. Enter the subnet mask of the server subnet here	255.255.255.0
NAT	Check: Data passing through the VPN will be sent after NAT No line: Data passing through a VPN does not go through NAT	check
MTU	Set the PPTP MTU value to the default value	1450
Additional configuration	Special parameters are usually configured for the server. If the client interface does not have these parameters, configure them here. Do not operate by non-professionals	empty
Enable static tunnel IP addresses	Customize the L2TP client IP address. Note that if the IP server is assigned to other clients, or the IP is not within the IP range defined by the server, the connection will not be established to the server	Not enabled
Static tunnel IP address	Customize the L2TP client IP. Note that if the IP server is assigned to other clients, or the IP is not within the IP range defined by the server, the connection will not be established to the server	empty
default gateway	After checking: All data traffic will be transmitted through the VPN channel after the VPN is established Unchecked: Only the VPN channel is established. If you need subnet intercommunication, you need to establish a static route Note: If the WAN port is connected by PPPOE mode, the check here is invalid	Not selected
enable ping	Check: Enable VPNping ping alive detection, and reconnect to the VPN if ping fails Unchecked: Do not enable ping to keep alive function	Not selected
Ping address	The address that the L2TP network card can ping is usually filled in as the PTP address	empty
Ping period	Ping maintenance interval period, unit: seconds	10
Ping number of times	After the Ping failure upper threshold is exceeded, ping will	3

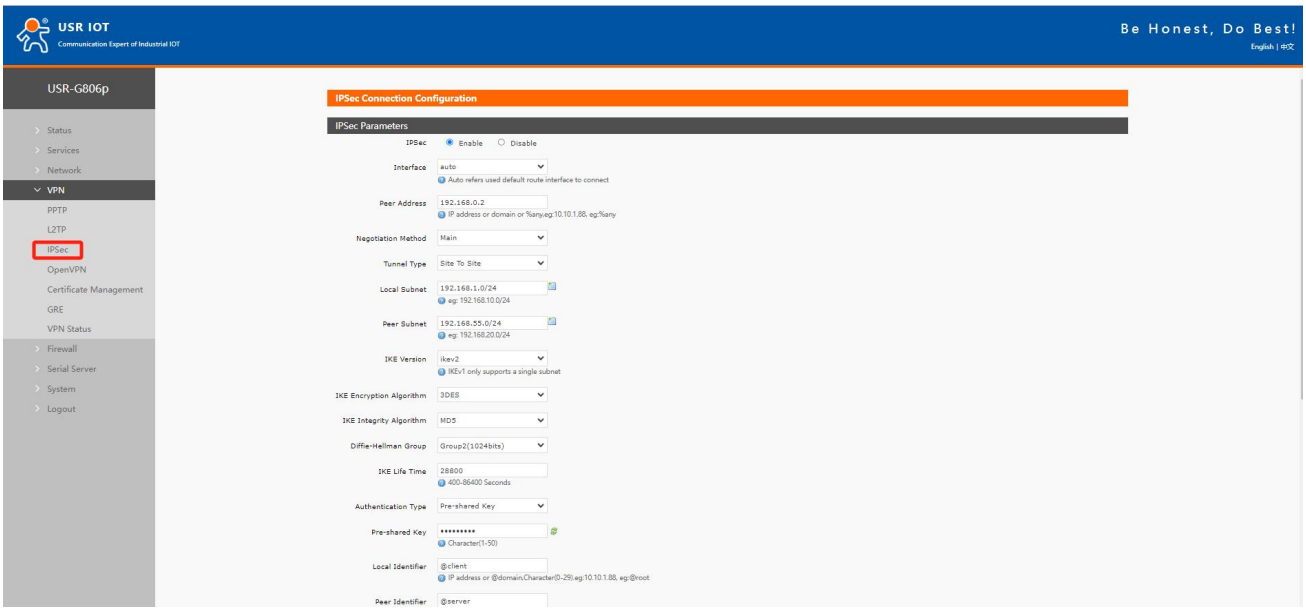
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	not be sent to the set IP address and the VPN will reconnect	

< explain >

- The mppe mode is: mppe required, stateless.

4.3. IPSec



Pic 31 IPSec Settings interface

Tab 14 IPSec configuration parameters

name	description	Default parameter
IPSec enable	Enable: Enable IPSec Disable: Disable IPSec	forbidden
joggle	Automatic: Use the default route to connect to the VPN Wan_wired: Use the WAN interface to connect to the VPN Wan_4g: Use cellular 4g to connect to the VPN Automatic example: When the wired connection is the default route, if you attempt to connect to the VPN via the wired connection, even if there is a 4G network available, it will still try to use the wired network card to connect to the VPN. If the wired connection is disconnected, it will automatically switch to the 4G network and attempt to connect to the VPN using the 4G method. If the VPN connects via 4G and the wired connection becomes available, the default route will switch to the wired network. However, since the 4G connection remains active, the VPN will still be connected. Only when the 4G connection is disconnected and the IPsec connection is broken once, the default route network card will attempt to reconnect to the VPN again.	voluntarily

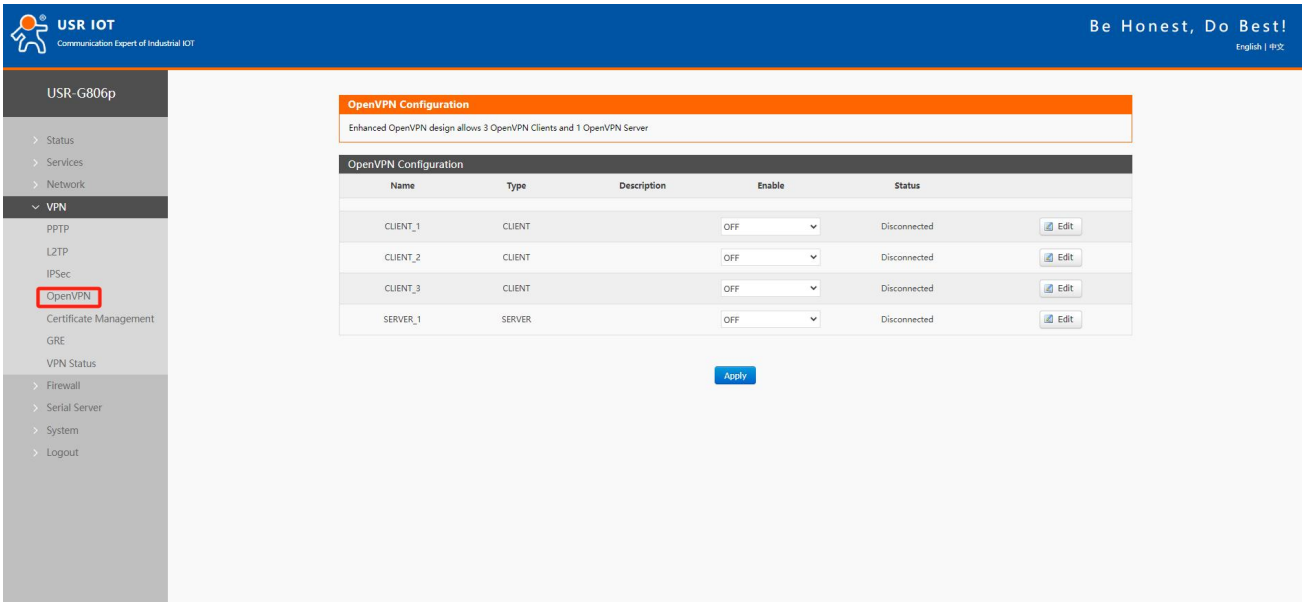
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	Wan_4G example: 4G has IP and tries to connect to VPN with 4G.4G has no IP and other network cards have IP but cannot connect to VPN.	
Destination address	Fill in the IP address or domain name of the other end Fill in:%any for passive server mode	192.168.0.2
machinery of consultation	Optional main mode / active mode (brutal mode)	holotype
This subnet	Fill in the subnet segment of this end, and keep it consistent with the subnet set at the other end You can fill in up to 10 segments	192.168.1.0/24
To the subnet	Fill in the destination subnet segment, and set the destination to be consistent with the destination subnet You can fill in up to 10 segments	192.168.55.0/24
IKE edition	ikev2/ikev1, and the configuration is consistent with that of the other end	ikev2
IKE encryption algorithm	Select the IKE encryption algorithm and configure it to be consistent with the other end	3DES
IKE verification algorithm	Select the IKE verification algorithm and configure it to be consistent with the other end	MD5
Diffie-Hellman group	Select the DH group and configure it to be consistent with the other end	Group2(1024bits)
IKE survival time	IKE survival time setting, unit: seconds	28800
Type of certification	Pre-shared key type	Pre-share keys
Pre-share keys	Consistent with the configuration on the other end	123456abc
Local identification	It can be FQDN or IP type, and must be consistent with the peer identifier set on the peer	@client
End identification	It can be FQDN or IP type, and should be consistent with the local identifier set on the other end	@server
ESP encryption algorithm	Select the ESP encryption algorithm and configure it to be consistent with the other end	AES-128
ESP verification algorithm	Select the ESP verification algorithm and configure it to be consistent with the other end	SHA-1
PFS	Select the PFS configuration and match it to the end configuration	DH2
ESP life cycle	ESP life cycle Settings, unit: seconds	3600
DPD overtime	Set the DPD timeout time in seconds	60
DPD detection cycle	DPD detection cycle setting, unit: second	60
DPD activity	Optional: None/removal/maintenance/reboot	restart

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4.4. OpenVPN

This router supports 1 OpenVPN Server and 3 OpenVPN Clients. Several VPNs do not interfere with each other, so it is recommended to use only one OpenVPN.



Pic 32 Open the OpenVPN page

Tab 15 OpenVPN Client parameter table

name	description	Default parameter
start using	Open: Open the openvpn client Close: Disable the openvpn client	close
description	You can customize the description of this OpenVPN path, but you don't have to fill it in	empty
Use the OpenVPN configuration file	Open: You can import the OpenVPN configuration parameters in the form of a file. If you are very familiar with the OpenVPN configuration file, you can use this method. It is recommended to use the router configuration box form Note: Use the router configuration box form	open
OpenVPN configuration file	The configuration file is passed to OpenVPN	not have
protocol	tcp/udp/tcp ipv4/udp ipv4	udp
Remote host IP address	Set the openvpn server address: domain name or IP	192.168.0.2
port	Set the openVPN server port number	1194
Type of certification	None, SSL/TLS, user name and password, pre-shared key, SSL/TLS+ user name and password	SSL/TLS
TUN/TAP	tun/tap	tun
topology	Net30/p2p/subnet	subnet
bridge pattern	Tap bridges LAN and implements layer 2 interaction point	not have

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	to point	
user name	When the authentication type is selected with a user name and password, you must enter the correct user name	empty
password	When the authentication type is selected with a user name and password, you must enter the correct password	empty
Local tunnel IP	When the authentication type is no/pre-shared password, fill in the TUN tunnel IP of this end	empty
Remote tunnel IP	When the authentication type is no/pre-shared password, fill in the end-to-end tunnel IP of this end	empty
Enter the IP address of the Tap network card	When the authentication type is no/pre-shared password, fill in the IP address of the TAP network card on this end	empty
Tap the subnet mask of the network card	If the authentication type is no/pre-shared password, fill in the TAP network card mask of this end	empty
joggle	Automatic: Connect to the VPN using the default routing interface Wan_wired: Use the WAN interface to connect to the VPN Sta_2g: Connect to the VPN using the 2.4G STA interface Cellular: Use cellular 4G to connect to the VPN Note: If you select a non-automatic interface, such as the selected interface and server address are not accessible, but other interfaces and server addresses are accessible, you cannot connect to the VPN Select the automatic interface. If one interface is disconnected due to an exception, it can automatically switch to other interfaces to try to connect to the VPN	voluntarily
Redirect gateway	Use openvpn as the default gateway It takes effect after you select "None" in "Network Switching" The WAN port cannot use the redirect gateway function in PPPoE mode You cannot enable the redirect gateway function for multiple VPNs	close
Nat	Whether the data on the VPN network card is NAT	open
Enable Keepalive	Enable the live detection mechanism	open
Connection detection time interval (seconds)	VPN live heartbeat detection interval	10
Connection detection timeout interval (seconds)	If the heartbeat exceeds the set time without response, reconnect to the VPN	120
enable LZO	Data compression method	No preference

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encryption algorithm	Data encryption algorithm	BF-CBC
Hash algorithm	The data's hash algorithm	SHA1
TLS way	Select the TLS authentication method	OFF
LINK-MTU/TUN-MTU/TCP MSS	Set the data pack length	Air / air / 1450
Maximum frame length	The maximum frame length of data is the default without special configuration	empty
Allows remote address changes	Whether to allow remote address change Settings	close
Log grade	Openvpn log level, the larger the number, the more detailed the log is. Generally, open a higher level to troubleshoot problems when the connection is abnormal	Warning (3)
Additional configuration	Non-professionals should not configure it. You need to input openvpn recognizable parameters	empty
Local route-destination	Set the static route target segment established by the openvpn network card on this end	empty
Local route-Network mask	Set the subnet mask of the static route target established by the openvpn network card on this end	empty
CA	Upload CA certificate	not have
CERT	Upload the client certificate	not have
KEY	Upload the client private key	not have
TLS	Upload the TLS certificate. If the TLS mode is selected OFF, you do not need to upload the certificate here	not have
Pre-shared key	Upload the pre-shared key. You can upload the certificate only when you select the authentication type as pre-shared key	not have

Tab 16 OpenVPN Server parameter table

name	description	Default parameter
start using	Open: Start the openVPN server Close: Disable the openvpn client	close
description	You can customize the description of this OpenVPN path, but you don't have to fill it	empty
protocol	tcp/udp/tcp ipv4/udp ipv4	udp
port	Set the openvpn server port number	1194
Type of certification	None, SSL/TLS, user name and password, pre-shared key, SSL/TLS+ user name and password	SSL/TLS
TUN/TAP	Select the network communication mode, tun/tap	tun
Bridge the network	The Tap mode can bridge LAN and realize two-layer interaction point to point	not have
Bridge network mode	TAP bridge network mode Settings	Use the device's own DHCP

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configuration	Use the device's own DHCP service: Use the router LAN port DHCP service Specify the gateway, mask, starting address and ending address: the device under the route must be connected to the same subnet as the gateway	service
topology	Net30/p2p/subnet, which is usually the default value	subnet
IPv4 tunnel network	Open the IP subnet assigned to the client for OpenVPN, such as 192.168.100.0	empty
IPv4 tunnel subnet mask	Enter the subnet mask assigned to the client by OpenVPN, for example: 255.255.255.0	empty
Local tunnel IP	When the authentication type is no/pre-shared password, fill in the local TUN tunnel IP	empty
Remote tunnel IP	When the authentication type is no/pre-shared password, fill in the end-to-end tunnel IP of this end	empty
begin IP	The TAP bridge mode specifies the starting IP address, such as 192.168.100.100 The LAN port of the router needs to be set to the same subnet as the network segment	empty
finish IP	The TAP bridge mode specifies the end IP address, such as 192.168.100.200	empty
Enter the IP address of the Tap network card	If the authentication type is no/pre-shared password, fill in the IP address of the TAP network card on this end	empty
Tap the subnet mask of the network card	If the authentication type is no/pre-shared password, fill in the TAP network card mask of this end	empty
The client renegotiates the time interval	When the client reaches the set value, it will renegotiate and reconnect. This is a security mechanism of openvpn Setting both the client and this end to 0 means that only one negotiation is performed when openvpn is established If the renegotiation time is set, a very short data delay will occur after this value is reached. Unit: seconds If the router client is set to 0, additional configuration is required: reneg-sec 0	3600
Maximum number of customers	Set the upper limit of the number of clients that can connect to the service	16
Allow client to client	Check to enable data exchange between OpenVPN clients Unchecked: Data is only exchanged between the client and the server, not between clients	check
Multiple clients use the same certificate	Check: Allow multiple clients to use the same client certificate to connect to the OpenVPN Server	Not selected
Redirect gateway	Use openvpn as the default gateway It takes effect after you select "None" in "Network Switching"	close

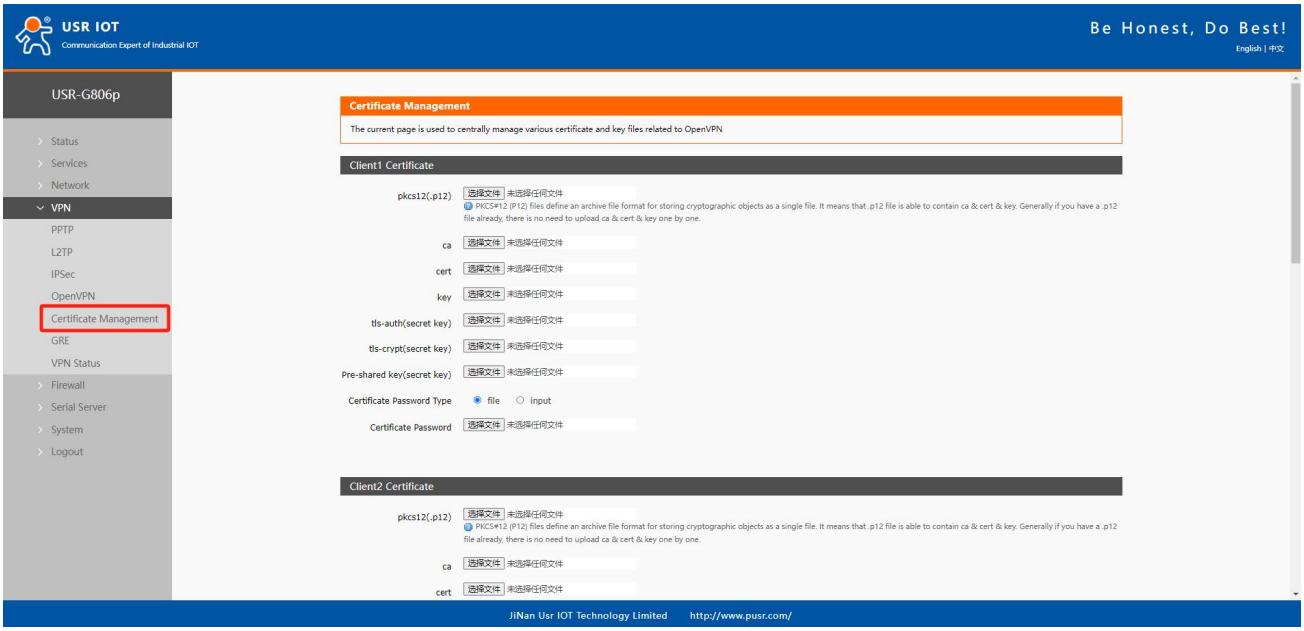
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	The WAN port cannot use the redirect gateway function in PPPoE mode You cannot enable the redirect gateway function for multiple VPNs	
Nat	Whether the data on the VPN network card is NAT	open
Enable Keepalive	Enable the live detection mechanism	open
Connection detection time interval (seconds)	VPN live heartbeat detection interval	10
Connection detection timeout interval (seconds)	If the heartbeat exceeds the set time without response, reconnect the VPN	120
Enable LZO	Data compression method	No preference
encryption algorithm	Data encryption algorithm	BF-CBC
Hash algorithm	The data's hash algorithm	SHA1
TLS way	Select the TLS authentication method	OFF
LINK-MTU/TUN-MTU/TCP MSS	Set the data pack length	Air / air / 1450
Maximum frame length	The maximum frame length of data is the default without special configuration	empty
Allows remote address changes	Whether to allow remote address change Settings	close
Log grade	Openvpn log level, the larger the number of log is more detailed, generally open a larger level to troubleshoot problems when the connection is abnormal	Warning (3)
Additional configuration	Non-professionals should not configure it. You need to input openvpn recognizable parameters	empty
user	Set the user name and password account for the client connection. Select the option with the user name and password to take effect. Set multiple accounts to set a user name and password for each client	
user name	Set the client connection user name, and you can set multiple user names and passwords	empty
password	Set the client connection password, and you can set multiple user name passwords	empty
The client is assigned a static IP address	Set the parameters for assigning fixed IP addresses to clients. You can set multiple fixed IP addresses for multiple clients, and each client's fixed IP address cannot be repeated	
user	Use the certificate form: This is set to the CN corresponding value of the client certificate, such as client1 If you use only the form of user name and password: Enter the user name value here	empty
Static IP address	Set the static IP address assigned to the client, such as	empty

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	192.168.100.2	
subnet mask	Set the subnet mask assigned to the client, for example: 255.255.255.0	empty
Customer subnet	To enable subnet interworking, you need to fill in the subnet segment of each client, and openvpn will automatically push the routing function	
name	Use the certificate form: This is set to the CN corresponding value of the client certificate, such as client1 If you use only the form of user name and password: Enter the user name value here	empty
subnet	The subnet segment corresponding to the client, such as 192.168.1.0	empty
subnet mask	The subnet mask corresponding to the client subnet segment, such as: 255.255.255.0	empty
Local routing	Set up a static route created by the openvpn network card	
target	Set the static route target segment established by the openvpn network card on this end	empty
Network mask	Set the subnet mask of the static route target established by the openvpn network card on this end	empty
Certificate management		
CA	Upload CA certificate	not have
CERT	Upload the client certificate	not have
KEY	Upload the client private key	not have
TLS	Upload the TLS certificate. If the TLS mode is selected OFF, you do not need to upload the certificate here	not have
Pre-shared key	Upload the pre-shared key. You can upload the certificate only when you select the authentication type as pre-shared key	not have

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Pic 33 OpenVPN certificate page

Tab 17 OpenVPN Server parameter table

name	description	Default parameter
Client certificate	Openvpn Settings with SSL/TLS or user name and password require the corresponding certificate to be passed If openvpn opens client 1, please upload the certificate to the client 1 certificate list, otherwise the openvpn will fail to establish	
Pkcs12(.p12)	This certificate type is a file archiving format. If the generated client certificate suffix is.p12, you can enter it here. Generally, if you enter X.p12 certificate, you do not need to enter ca&.cert&.key certificate one by one	empty
Ca	If you choose to authenticate with a user name and password or SSL, the CA certificate must be sent	empty
Cert	Enter the client certificate and select the SSL authentication type. This certificate must be sent	empty
Key	Enter the client key and select the SSL authentication type. This certificate must be sent	empty
Tls-auth (key)	If the openvpn TLS mode is set to tls-auth, you need to enter the TLS key here	empty
Tls-crypt (key)	If the openvpn TLS mode is set totls-crypt, the TLS key must be passed here	empty
Pre-share the key	When the authentication type is selected to pre-share the key, enter the pre-shared key certificate here	empty
Certificate password input type	If a certificate password is generated, it must be set according to the file or manually entered type	document
Certificate password	The password of the PEM certificate can be entered or uploaded (the password is in the file). If the certificate is	empty

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	generated without a password, do not fill in this field	
Server certificate	Openvpn server Settings with SSL/TLS or user name and password require the corresponding certificate to be passed	
Pkcs12(.p12)	This certificate type is a file archiving format. If the generated client certificate suffix is.p12, you can enter it here. Generally, if you enter an X.p12 certificate, you do not need to enter one by one certificates with the suffix.ca&.cert&.key	empty
Ca	If you choose to authenticate with a user name and password or SSL, the CA certificate must be sent	empty
Cert	Pass the client certificate, if you select authentication type with user name and password or SSL, this certificate must be passed	empty
Key	Pass the client secret key, if you select the authentication type with user name and password or ssl, this certificate must be passed	empty
DH	To transfer the DH certificate, if you select an authentication type with a user name and password or SSL, this certificate must be passed	
Tls-auth (key)	If the openvpn TLS mode is set to tls-auth, you need to enter the TLS key here	empty
Tls-crypt (key)	If the openvpn TLS mode is set to tls-crypt, you need to enter the TLS key here	empty
Pre-share the key	When the authentication type is selected to pre-share the key, enter the pre-shared key certificate here	empty
Certificate revocation list		
Certificate password input type	If a certificate password is generated, it must be set according to the file or manually entered type	document
Certificate password	The password of the PEM certificate can be entered or uploaded (the password is in the file). If the password is generated, do not fill in here	empty

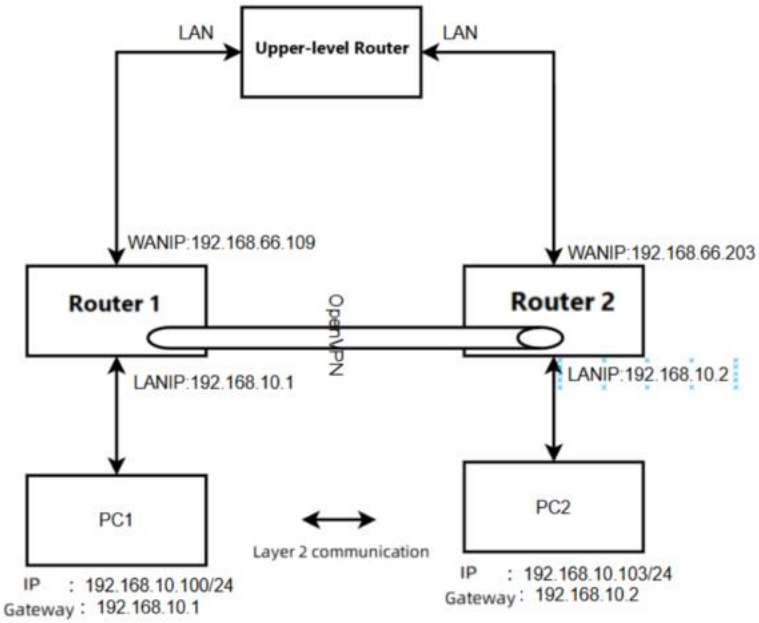
< explain >

- Tap bridge mode can realize the two-layer data interaction;
- When the router is used as a VPN server, it is recommended to access up to 2 VPN clients. If the transmission service is used, please use professional VPN server equipment to build a VPN Server;
- Some people do not provide the certificate required for OpenVPN, and customers need to generate it themselves.

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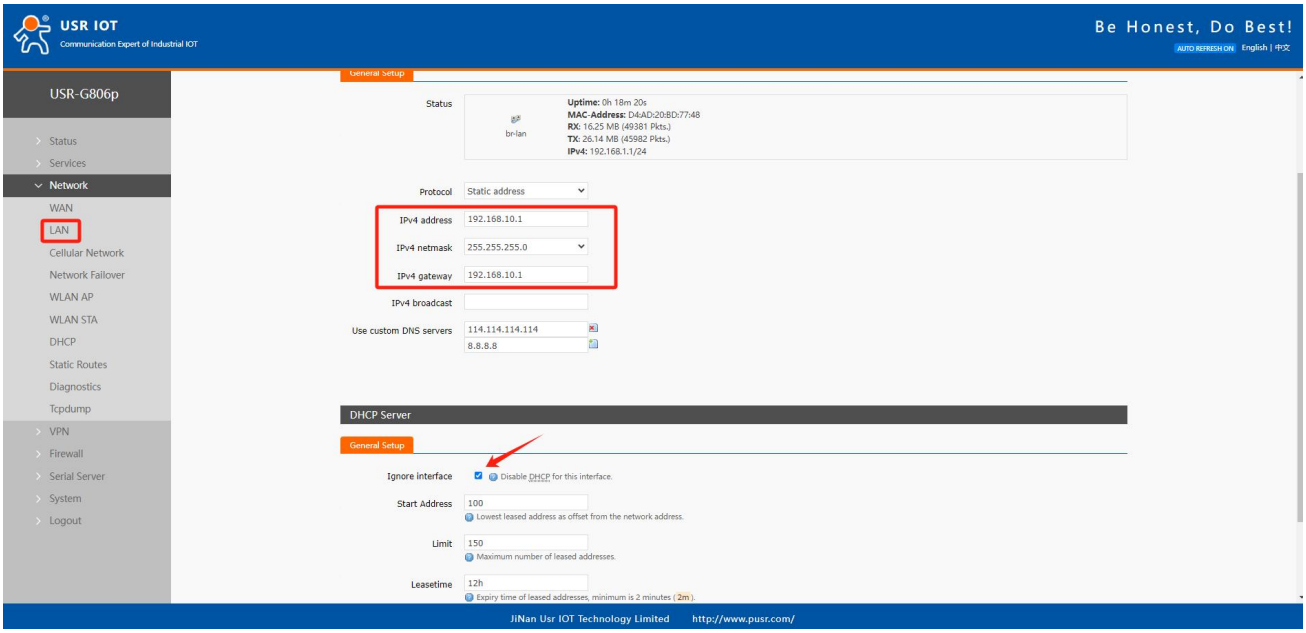
4.4.1. OpenVPN TAP bridge example

It is generally used for APN dedicated network card +OpenVPN to realize the function of LAN for multiple terminals. Note: In this scheme, LAN port DHCP should be turned off for each router, and the router configuration should be in the same network segment and the IP address should not conflict.



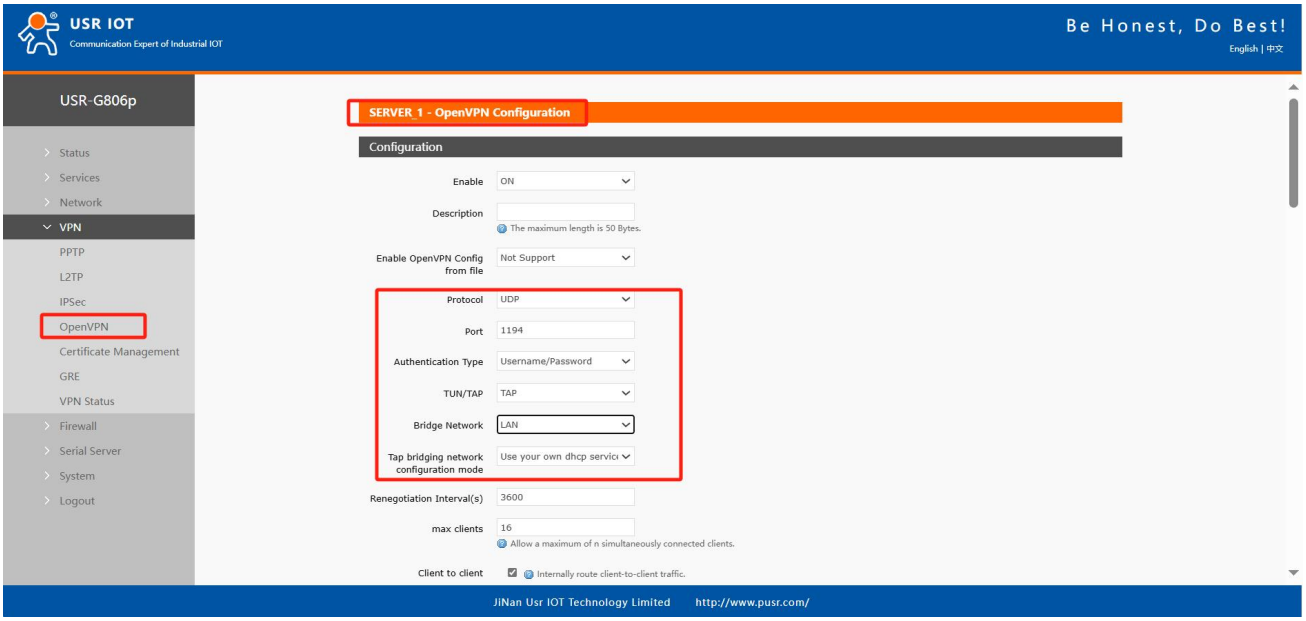
Pic 34 Connect the topology

The router 1 is configured as an openVPN server. The specific configuration is as follows: The LAN port is set to the network segment and DHCP allocation is turned off. At this time, PC1 needs to be set to a static IP address to log in to the router web for configuration.



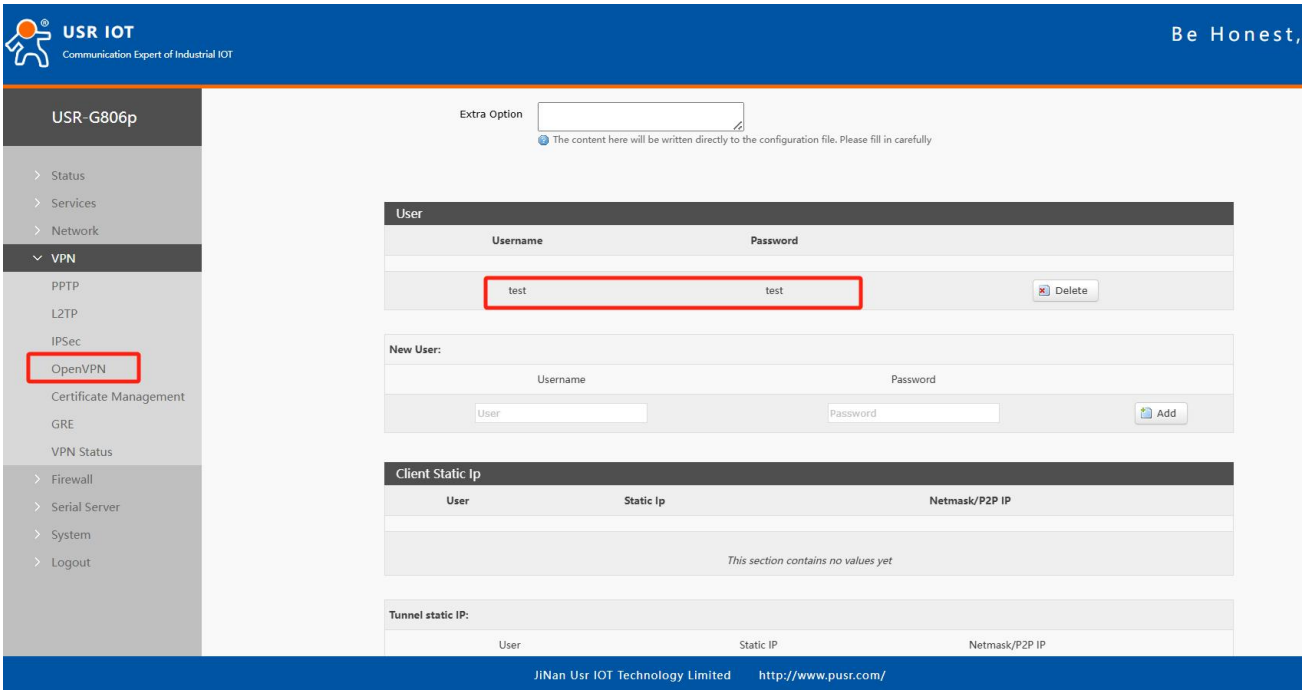
Pic 35 LAN port configuration

The following screenshot is configured, and the rest are default parameters.



Pic 36 OpenVPN configuration 1

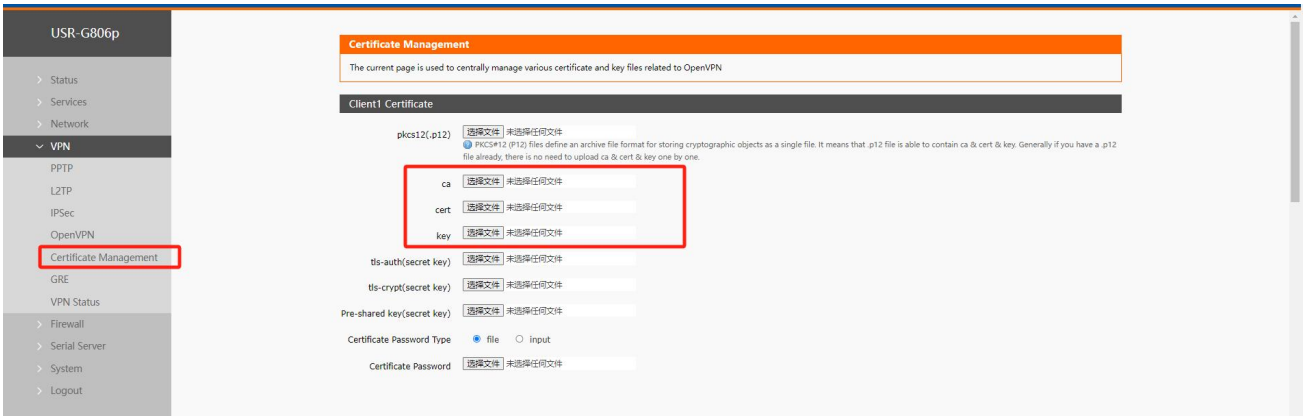
Set a set of user names and passwords.



Pic 37 OpenVPN configuration 2

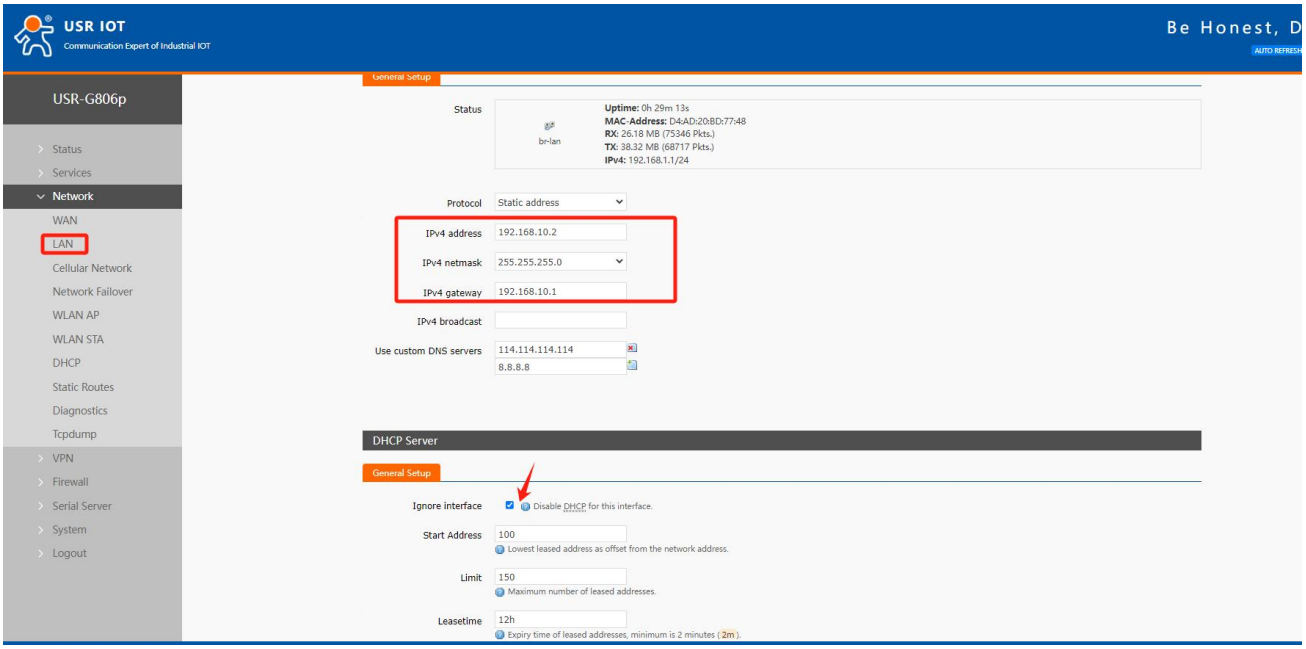
The server needs to pass the openvpn server certificate, including the CA certificate, server certificate, server key and DH certificate.

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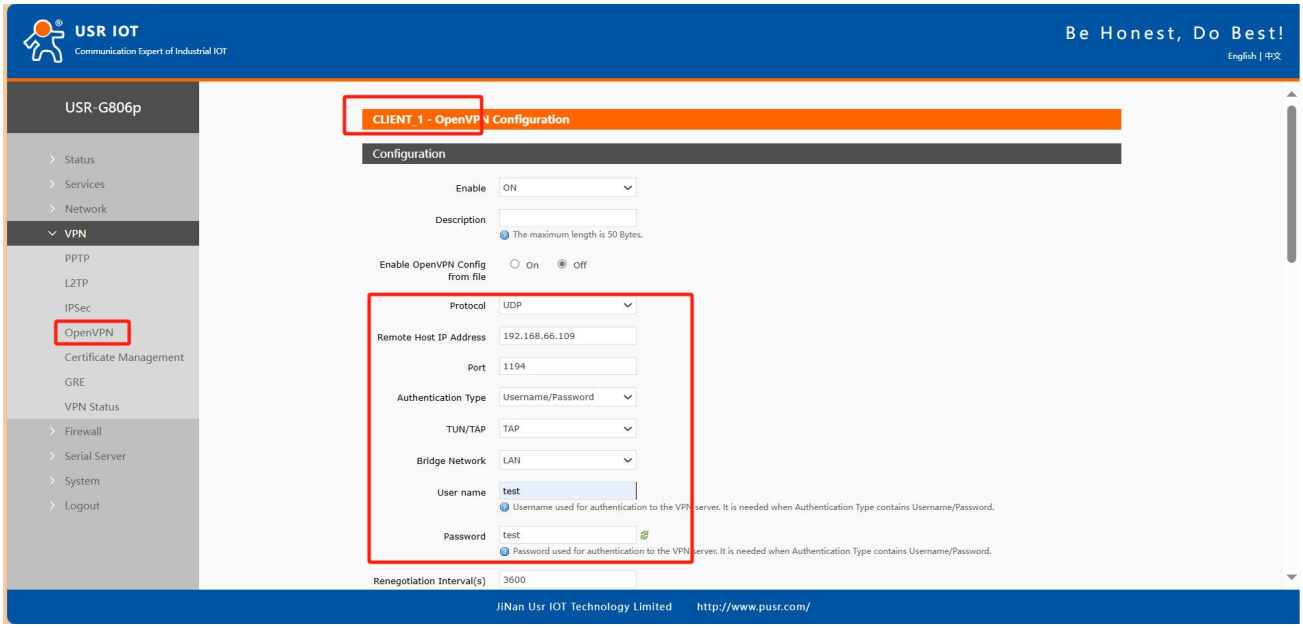
Pic 38 OpenVPN configuration 3

The router is configured as an openVPN client. The specific configuration is as follows: LAN port is set to the network segment and DHCP allocation is turned off. At this time, PC2 needs to be set to a static IP address to log in to the router web for configuration.

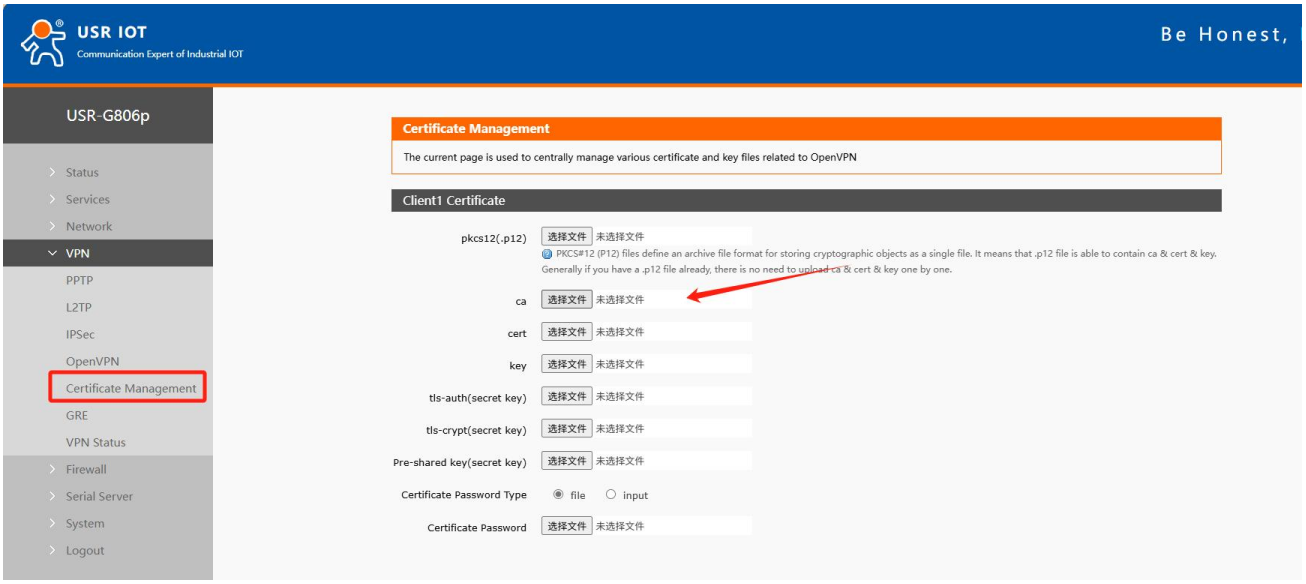


Pic 39 LAN port configuration

The following screenshot is configured. All other parameters are default parameters.



Pic 40 OpenVPN configuration 1



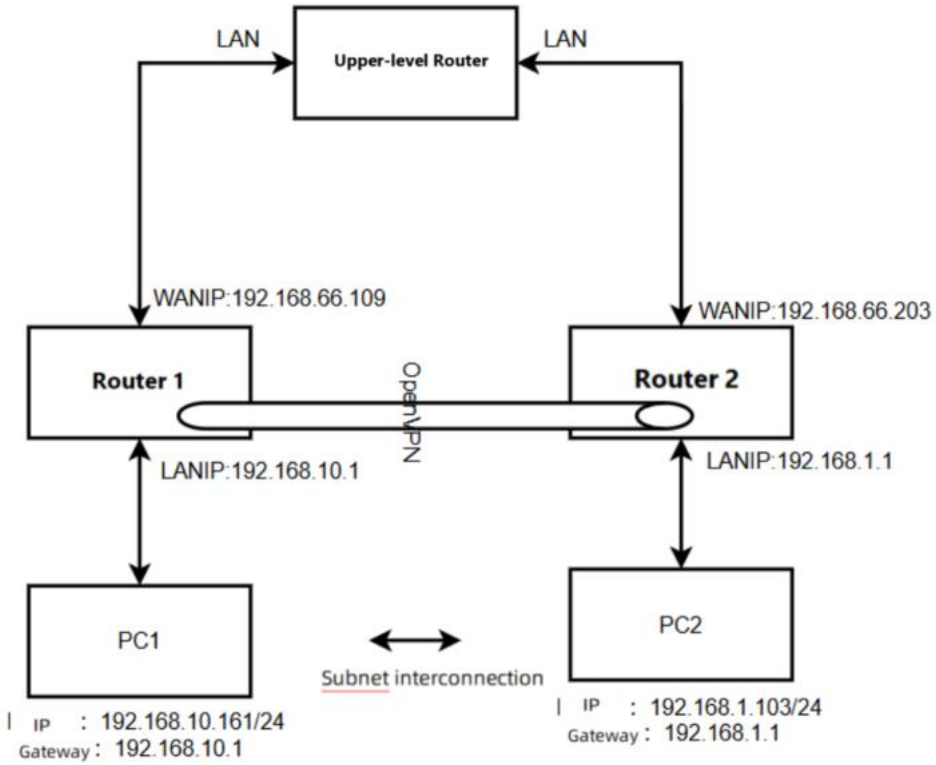
Pic 41 OpenVPN configuration 2

Test that PC1 and PC2 can communicate with each other:

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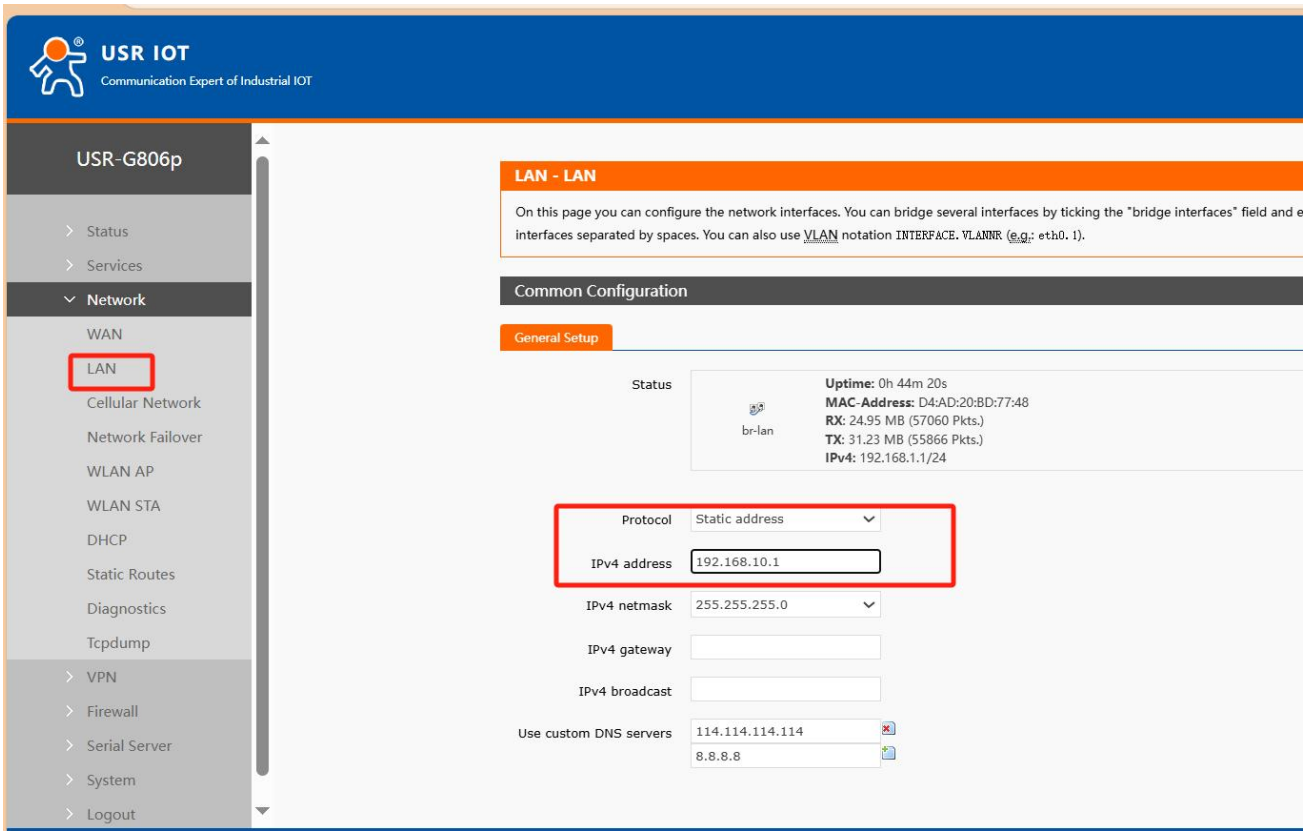


4.4.2. An example of subnet interworking in OpenVPN TUN mode



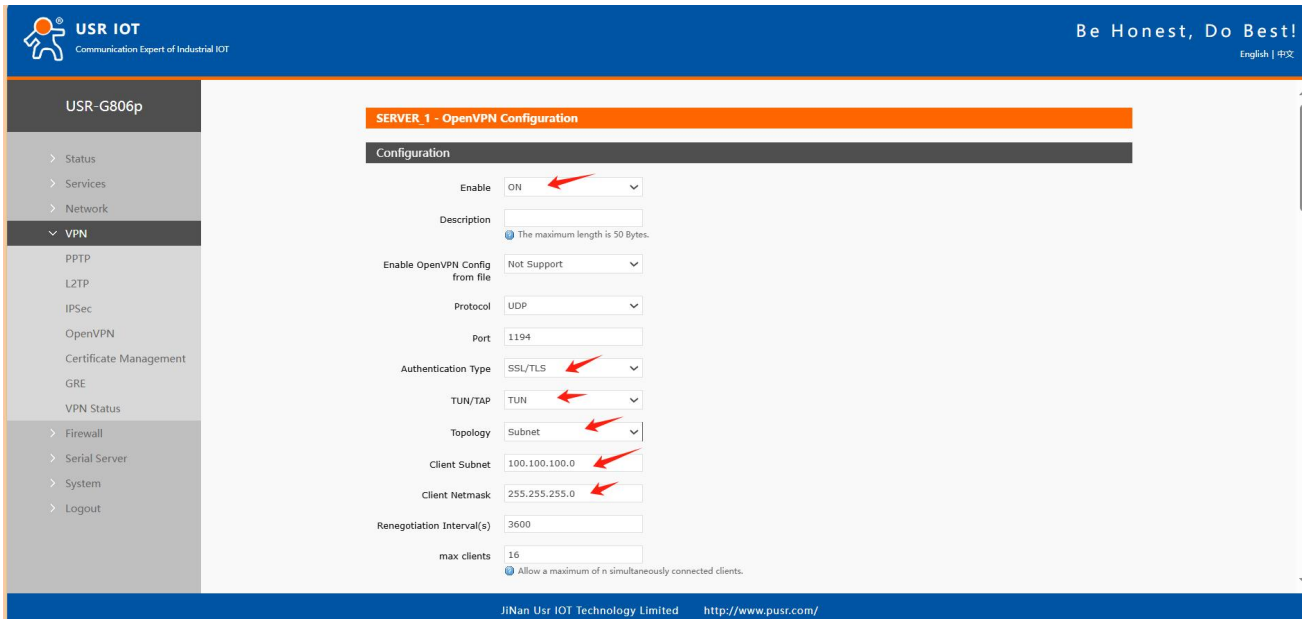
Pic 42 Connect the topology

Router 1 configuration, LAN port setting



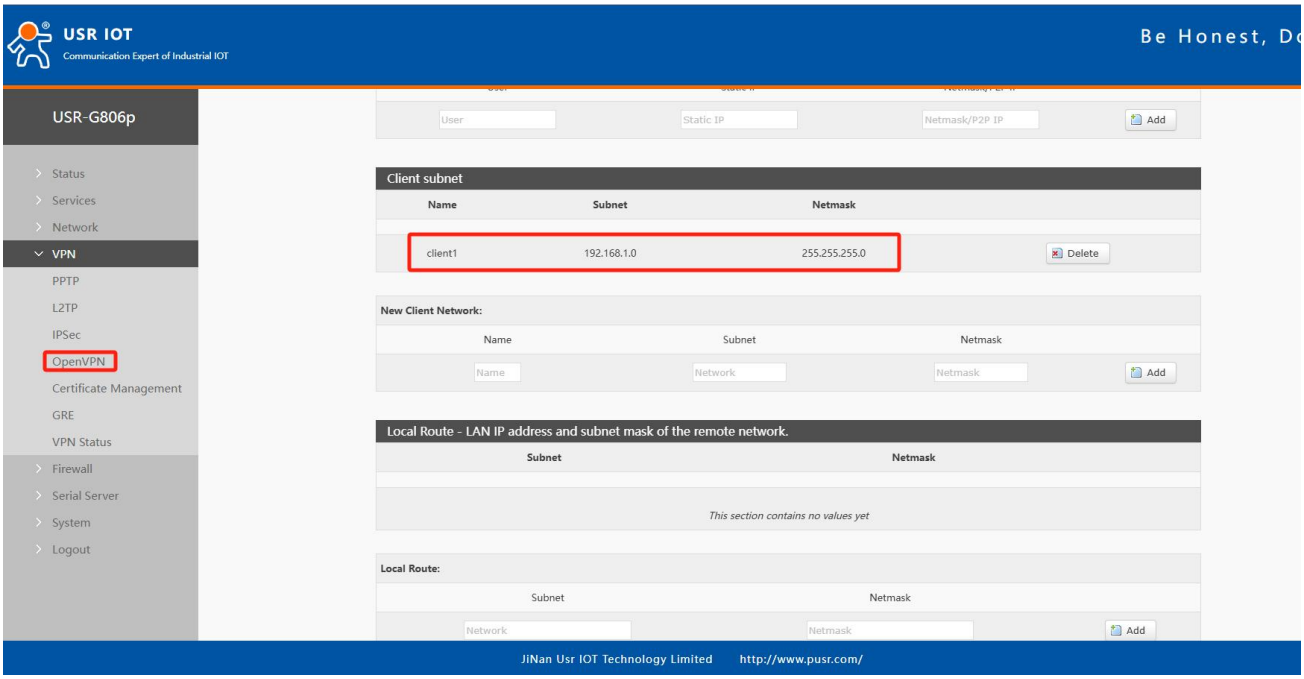
Pic 43 Router 1 is configured 1

The OpenVPN Server parameters are configured as follows, and all other parameters remain the default.



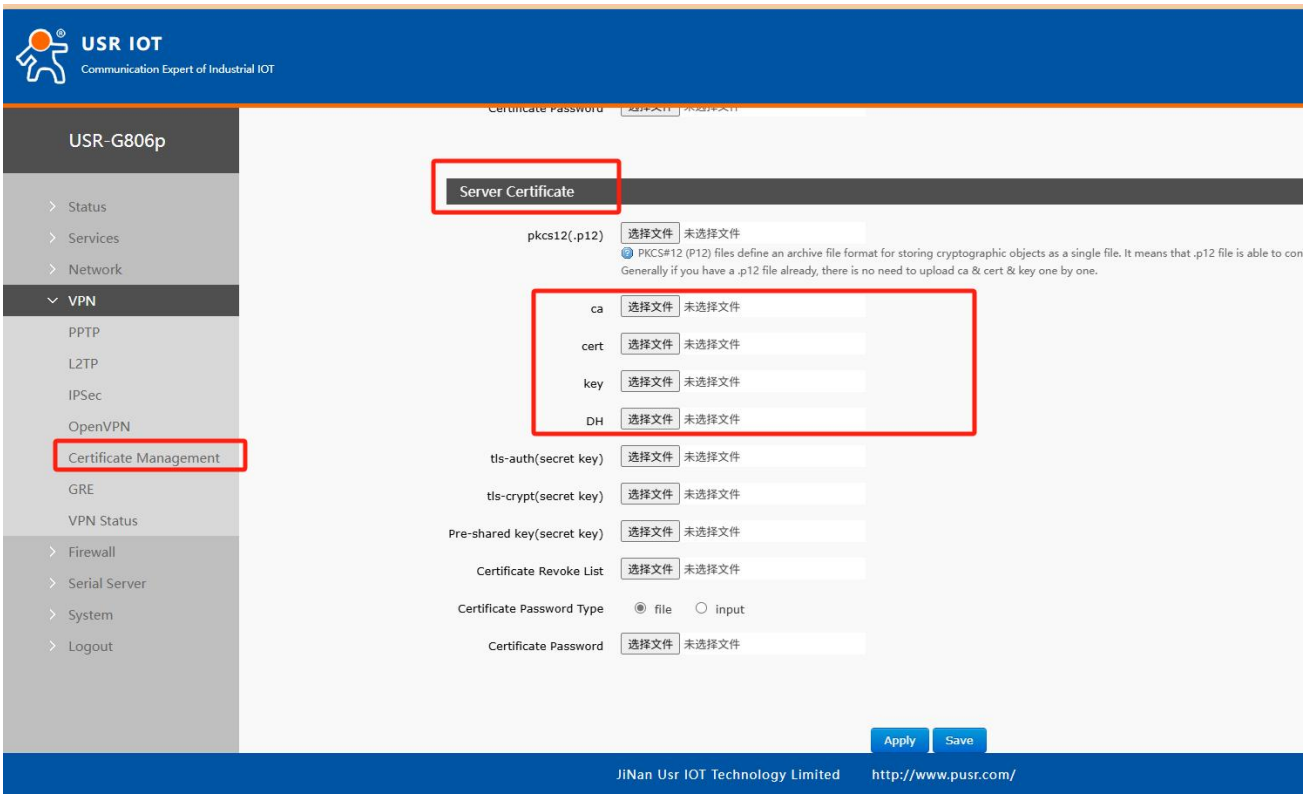
Pic 44 Router 1 is configured 2

Enter the client subnet information and click "Save"



Pic 45 Router 1 is configured 3

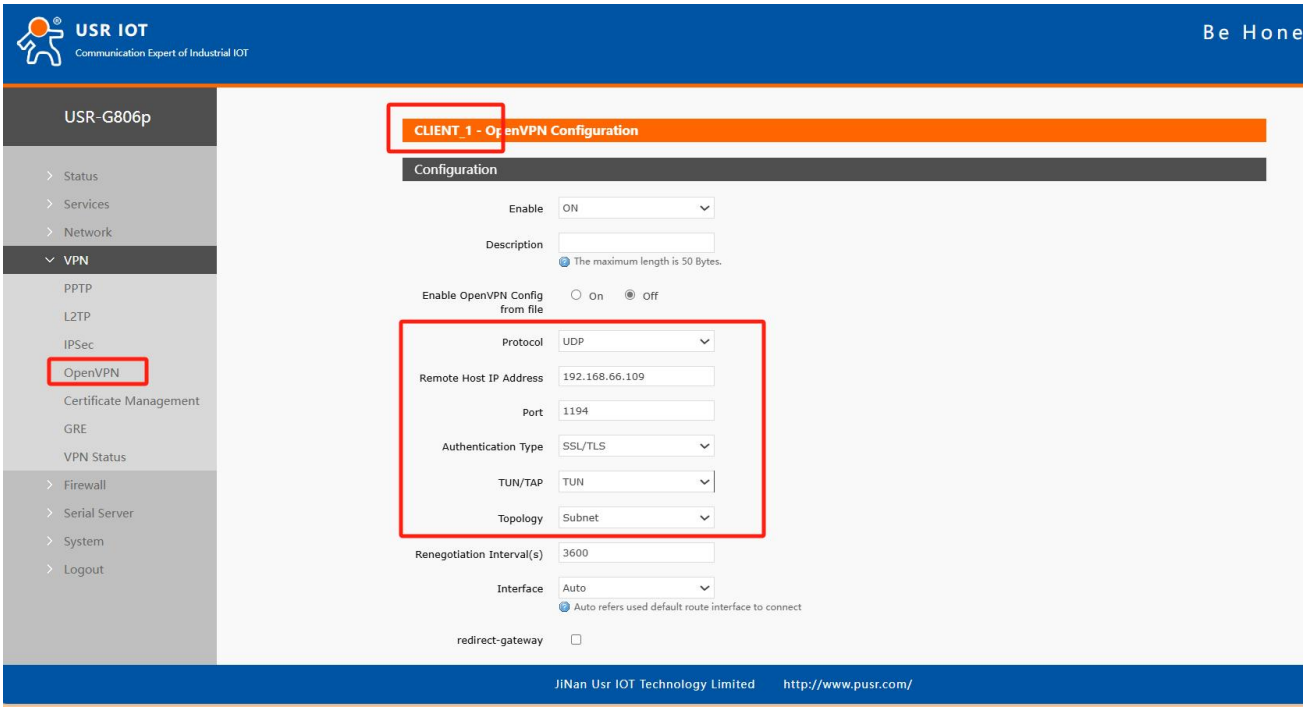
Enter the OpenVPN server certificate and click "Apply".



Pic 46 Router 1 is configured for 4

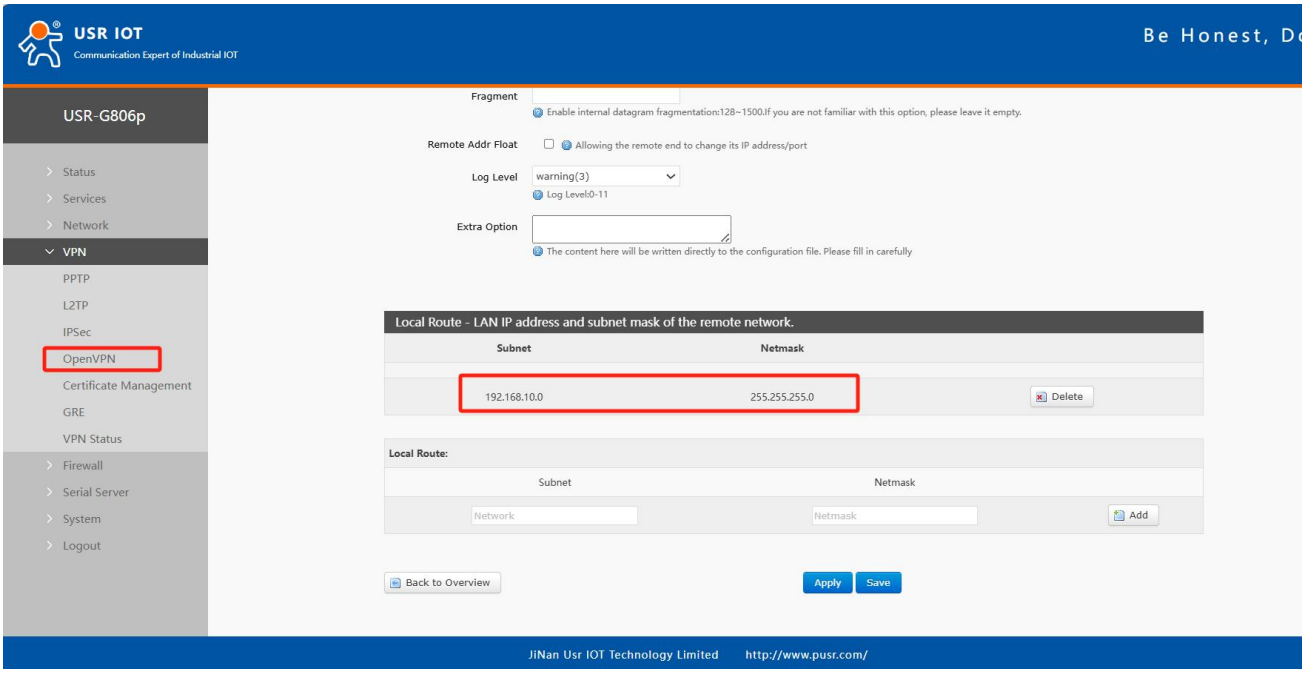
The router is configured as OpenVPN client. The configuration is as follows, and other parameters are kept as default (the parameters and the server are consistent).

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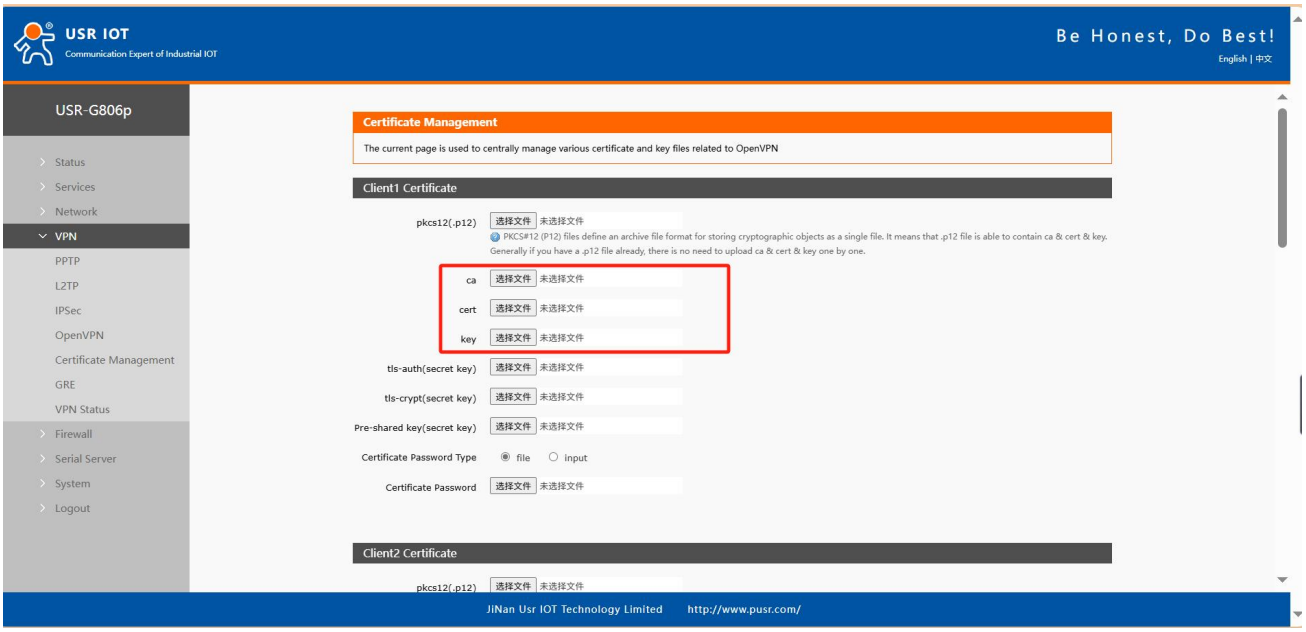
Pic 47 Router 2 is configured 1

Client adds information to the server subnet.



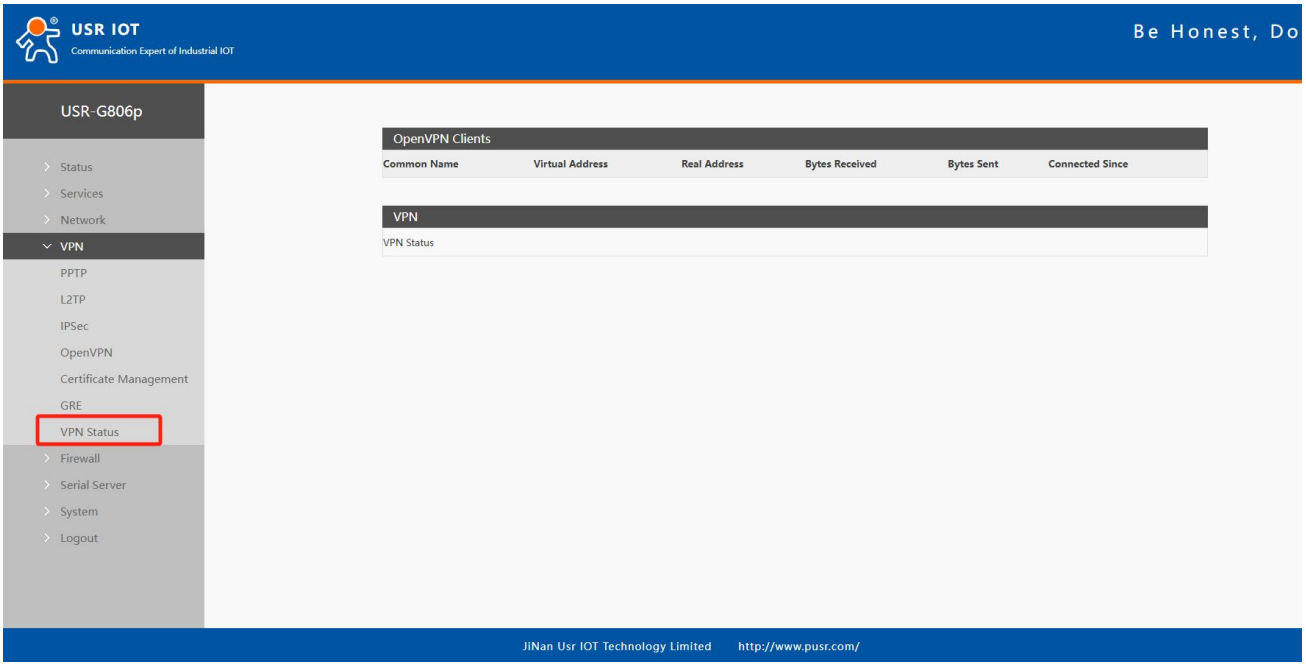
Pic 48 Router 2 is configured 2

Enter the OpenVPN client certificate and click "Apply".

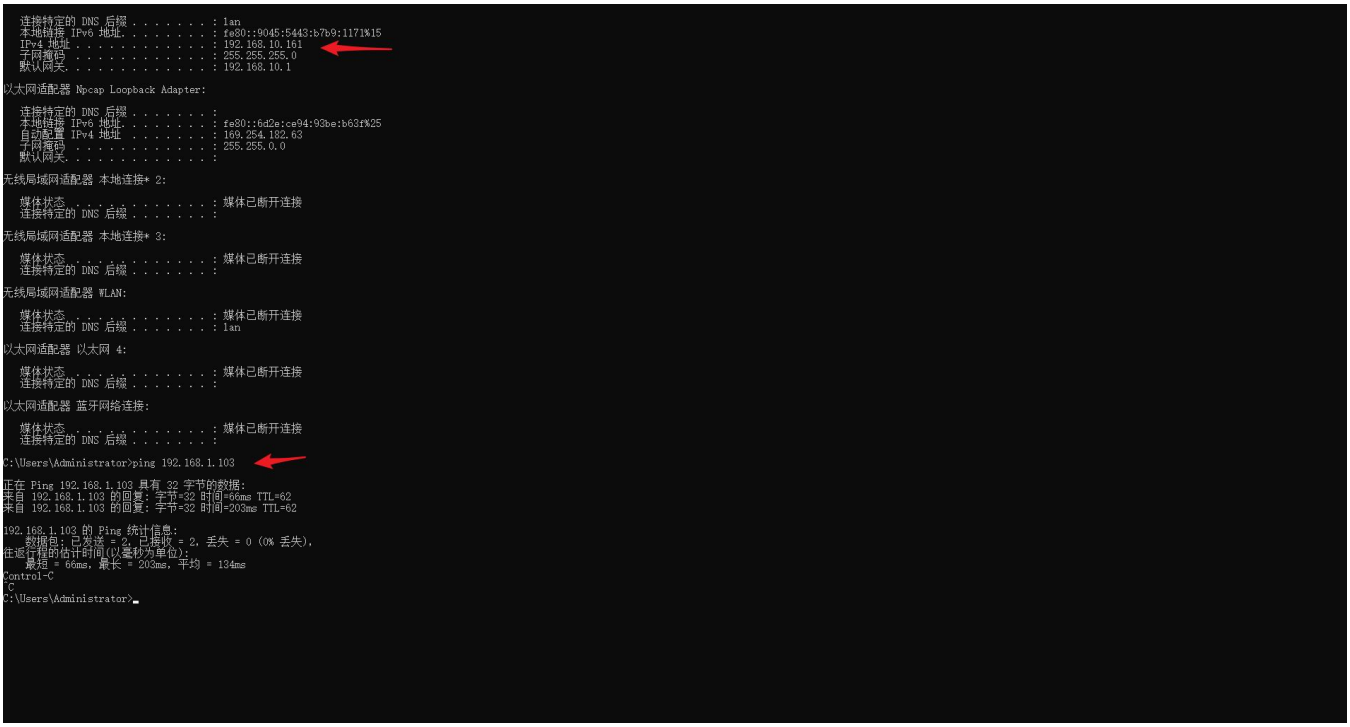


Pic 49 Router 2 is configured 3

Check the OpenVPN connection status. There is a client1 connected to the service.

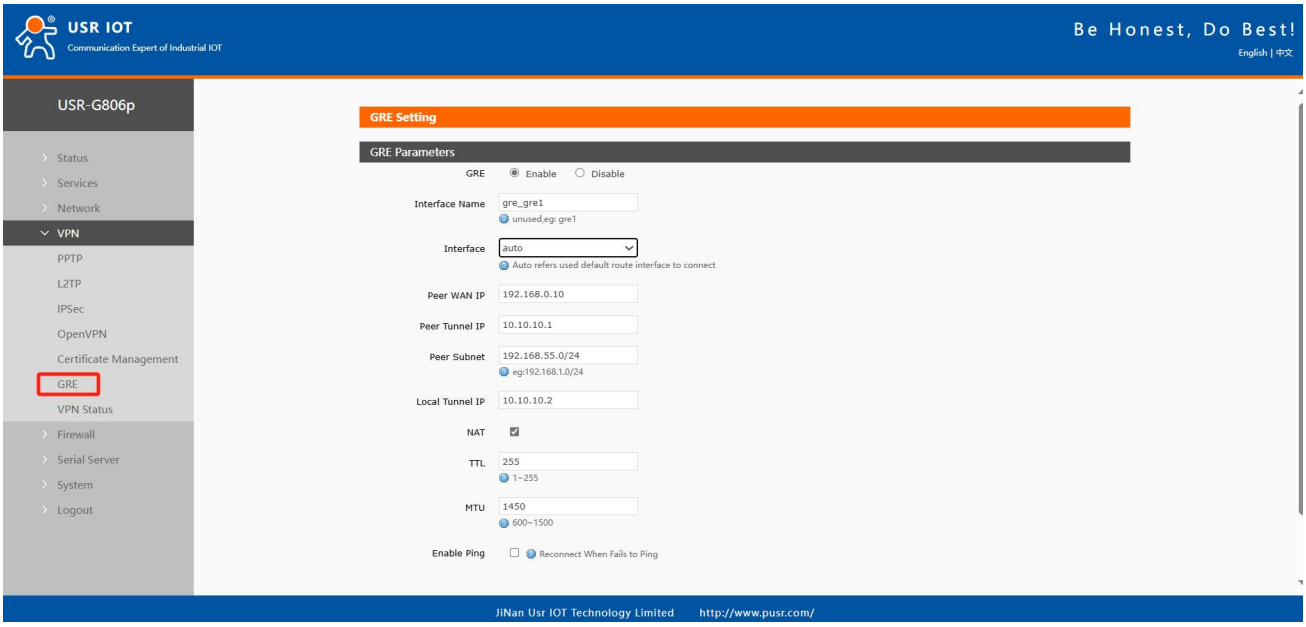


PC1 and PC2 are interconnected



Pic 50 PC1 and PC2 are interconnected

4.5. GRE



Pic 51 GRE basic configuration

< explain >

- Remote address: WAN port IP address of the remote GRE;
- Local address: The local wan_wired and wan_4g addresses are input according to different networking modes;
- Remote tunnel address: GRE tunnel IP of the other end;
- For the subnet: For setting the subnet mask, it can be expressed as follows: 255.255.255.0 can be written as

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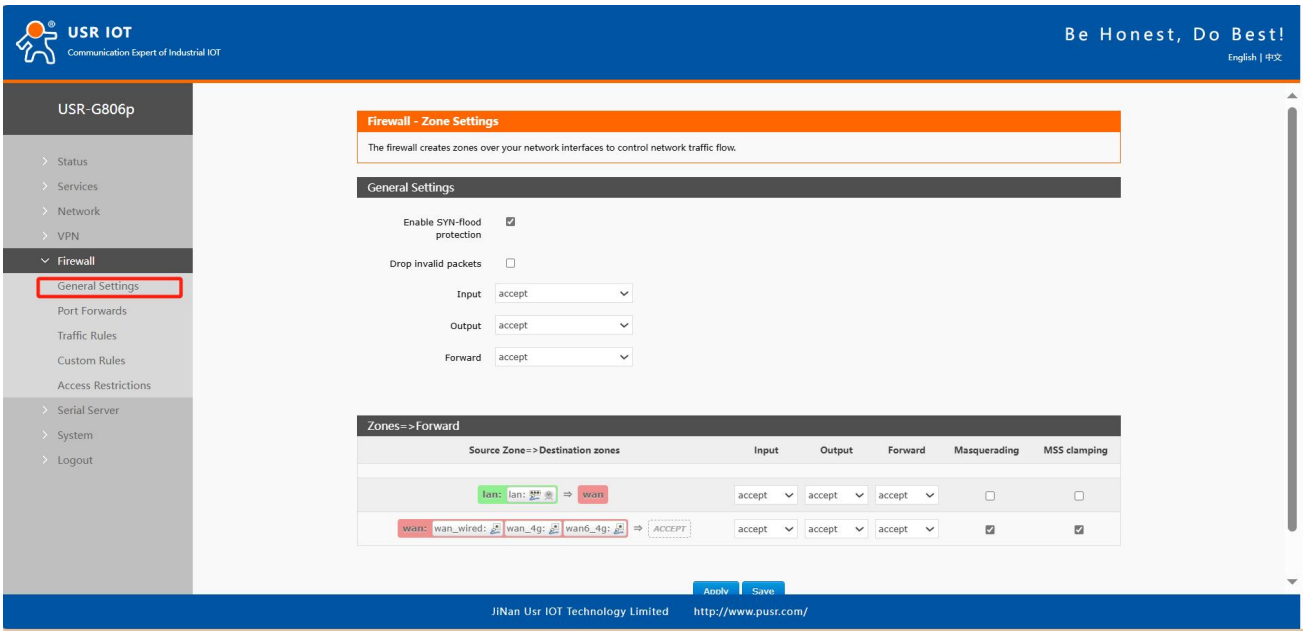
IP/24, and 255.255.255.255 can be written as IP/32. For example: 172.16.10.1/24 corresponds to IP 172.16.10.1, and the subnet mask is 255.255.255.0;

- Local tunnel IP: Local GRE tunnel IP address;
- NAT: Whether the data passing through the GRE interface needs NAT;
- TTL setting: Set the TTL of GRE channel, default 255;
- Set MTU: Set the MTU of the GRE channel. The default is 1450.

5. Firewall

5.1. Basic Settings

The default is to enable two firewall rules.



Pic 52 Firewall Settings page

[Term Introduction]

- Inbound: packets that access the router IP;
- Outgoing: The packet that the router IP is sending;
- Forwarding: Data forwarding between interfaces does not go through the routing itself;
- IP dynamic disguise: only meaningful for WAN port and 4G port, IP address disguise when accessing the Internet;
- MSS clamping: limit the MSS size of the message, usually 1460.

[Rule 1]

- Inbound LAN port to wired WAN port, and forwarding, are all received;
- If a packet comes from the LAN port and wants to access the WAN port, this rule allows the packet to be forwarded from the LAN port to the WAN port, which is forwarding;
- You can also open the router's web page under the LAN port, which is "inbound";
- The router itself connects to the Internet, such as synchronizing time, which is "outgoing".

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[Rule 2]

- The wired WAN port and 4G port accept "incoming", "outgoing" and allow "forwarding";
- If there is an "incoming" packet, such as someone trying to log in to the router's web page from a WAN port, it will be allowed;
- If there is an "outgoing" packet, such as a router accessing the Internet through a WAN port or 4G port, this action is allowed;
- If there is a "forwarding" packet, such as a packet coming from the WAN port that wants to be forwarded to the LAN port, this action is allowed.

5.2. Communication rules

Communication rules can selectively filter specific Internet data types and block Internet access requests to enhance network security. Firewalls are widely used, and the following is a brief introduction to some common applications.

Tab 18 Communication rule parameter table

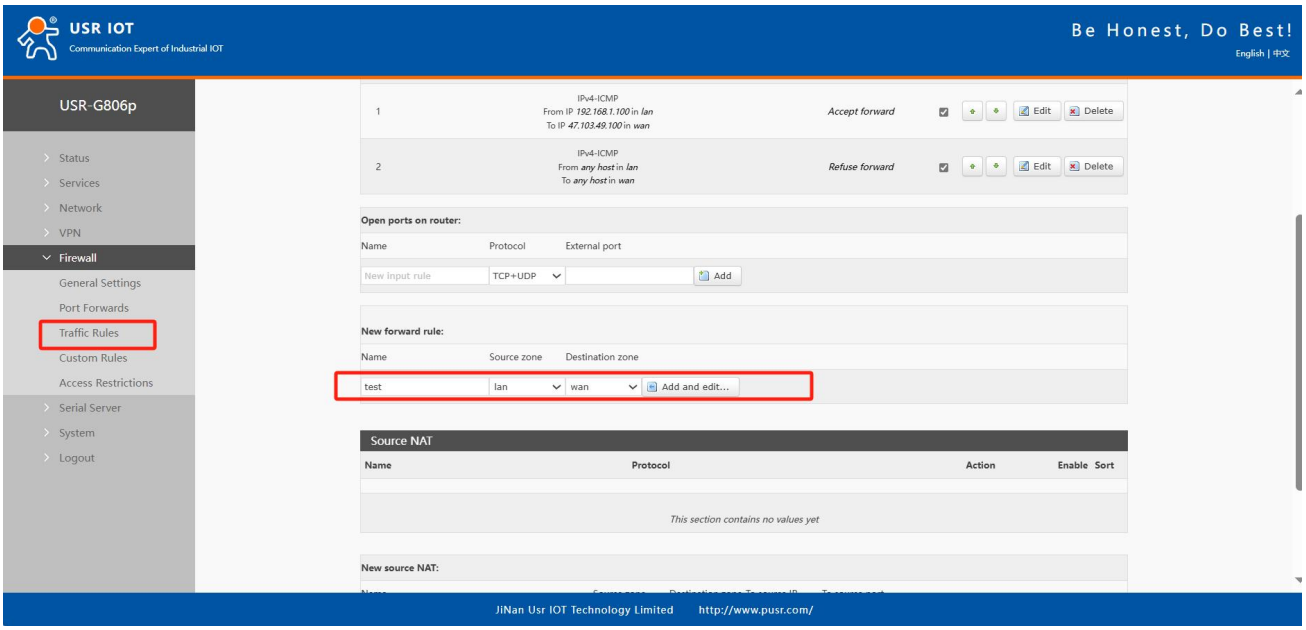
name	description	Default parameter
start using	The display indicates the enabled state The display indicates the disabled state	start using
name	Name of this rule, character type	-
Limit addresses	Restrict IPv4 addresses	Only IPv4 addresses
protocol	The types of protocols that can be restricted by rules are selected from: TCP+UDP/TCP/UDP/ICMP	TCP+UDP
Match ICMP type	For the matching ICMP rule, select any	Any
Source area	Data stream source area, can be selected: any area, WAN, LAN LAN: Indicates the rules for subnet access to the Internet WAN: Indicates the rules for accessing the Intranet from the Internet	LAN
Source MAC address	The source MAC that needs to match the rule Empty: Represents a match for all MACs Note: When matching the source MAC address, set the source IP address to empty	empty
Source IP address	The source IP to match the rule with Empty: Matches all IP addresses Note: When matching the source IP address, set the source MAC address to null	empty
Source port	The source port that needs to match the rule Empty: Represents matching all ports	empty
target area	Data flow target area, can be selected: any area, WAN, LAN	WAN

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	LAN: Indicates the rules for subnet access to the Internet WAN: Indicates the rules for accessing the Intranet from the Internet	
destination address	The target IP address to visit Empty: Represents all addresses	empty
Target port	The target port number to visit Air: represents all	empty
movement	Receive such packets with options: discard, accept, reject, or no action Discard: This rule packet will be discarded upon receipt Accept: The packet will be accepted if it is received Reject: This rule packet will be rejected upon receipt No action: No action is taken when this rule packet is received	accept

5.2.1. IP address blacklist

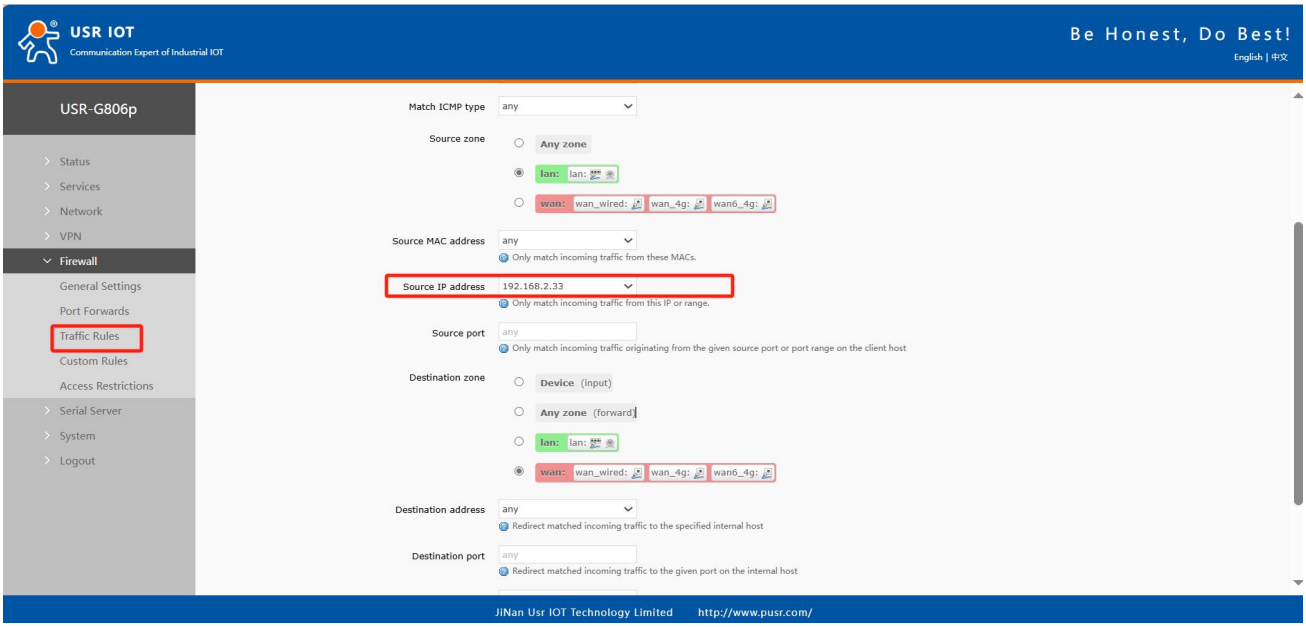
First, enter the name of the new forwarding rule, and then click the "Add and Edit" button



Pic 53 Figure 1 of the firewall blacklist

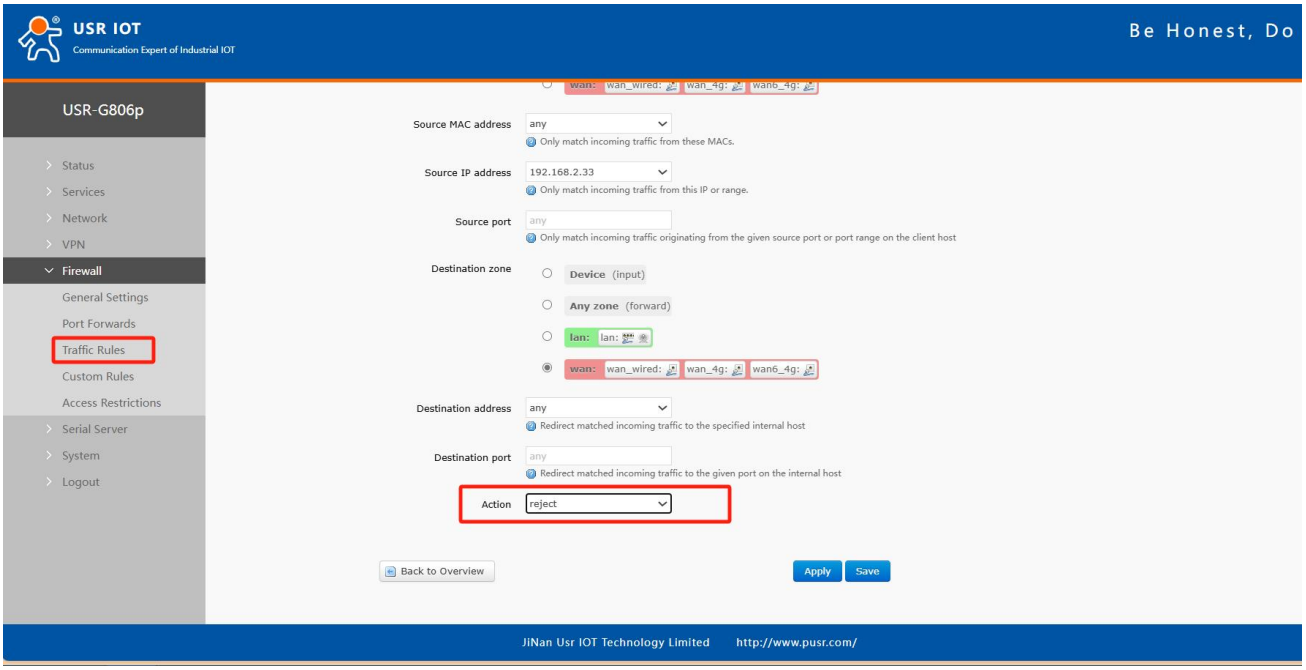
In the redirected page, select LAN for the source area, and select all for the source MAC address and source address (if you only restrict a specific IP address within the LAN to access a specific IP address outside the LAN, you need to fill in the IP address or MAC address), as shown in the following figure:

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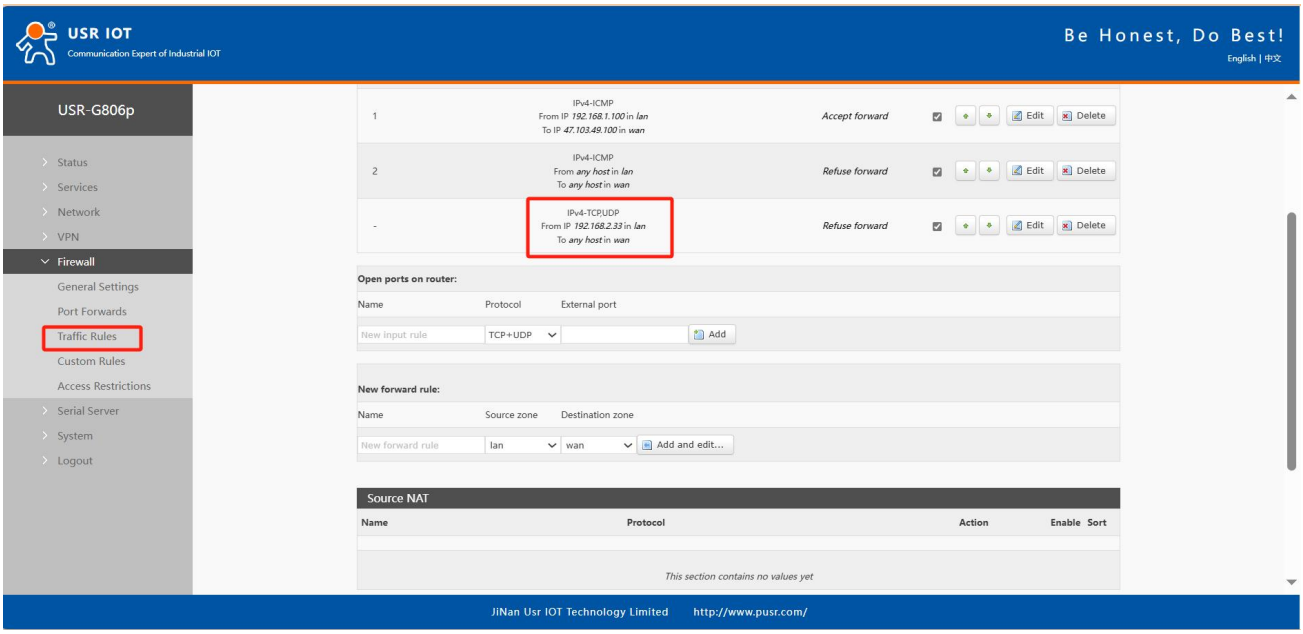


Pic 54 Figure 2 of the firewall blacklist

Select WAN in the target area, fill in the IP address that is prohibited from access in the target address, select "Deny" for the action, and click "Apply". As shown in the following figure.



Pic 55 Figure 3 of the firewall blacklist

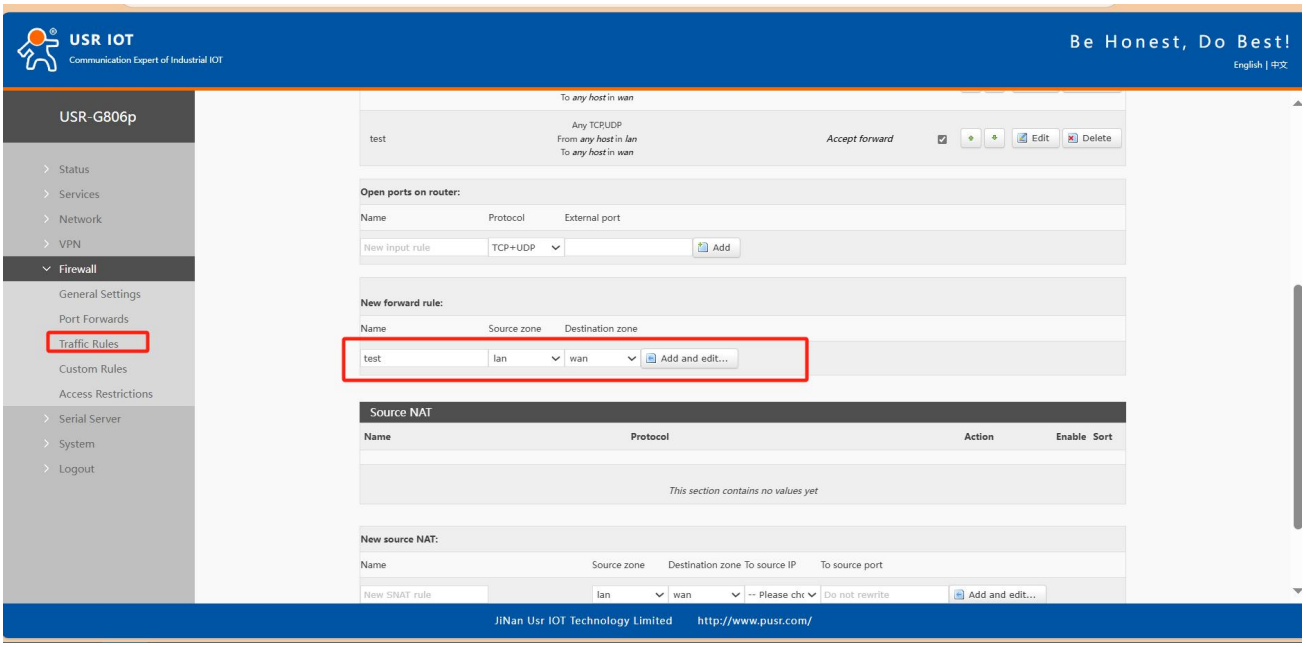


Pic 56 Figure 4 of the firewall blacklist

After this setting is completed, the blacklist function is implemented. That is, the IP address of the subnet device 192.168.2.133 is prohibited from accessing all external networks.

5.2.2. IP address whitelist

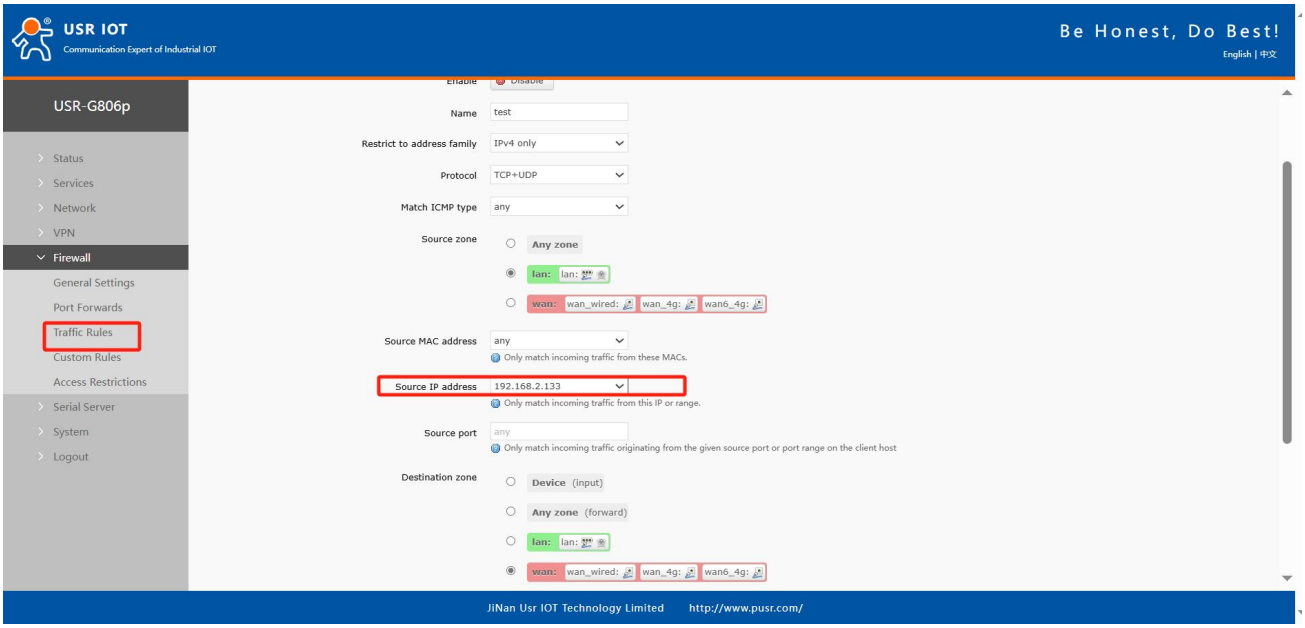
First, add the communication rules for the IP or MAC address to be added to the whitelist. Enter the name of the rule in the new forwarding rule, and then click the "Add and Edit" button.



Pic 57 Firewall whitelist Figure 1

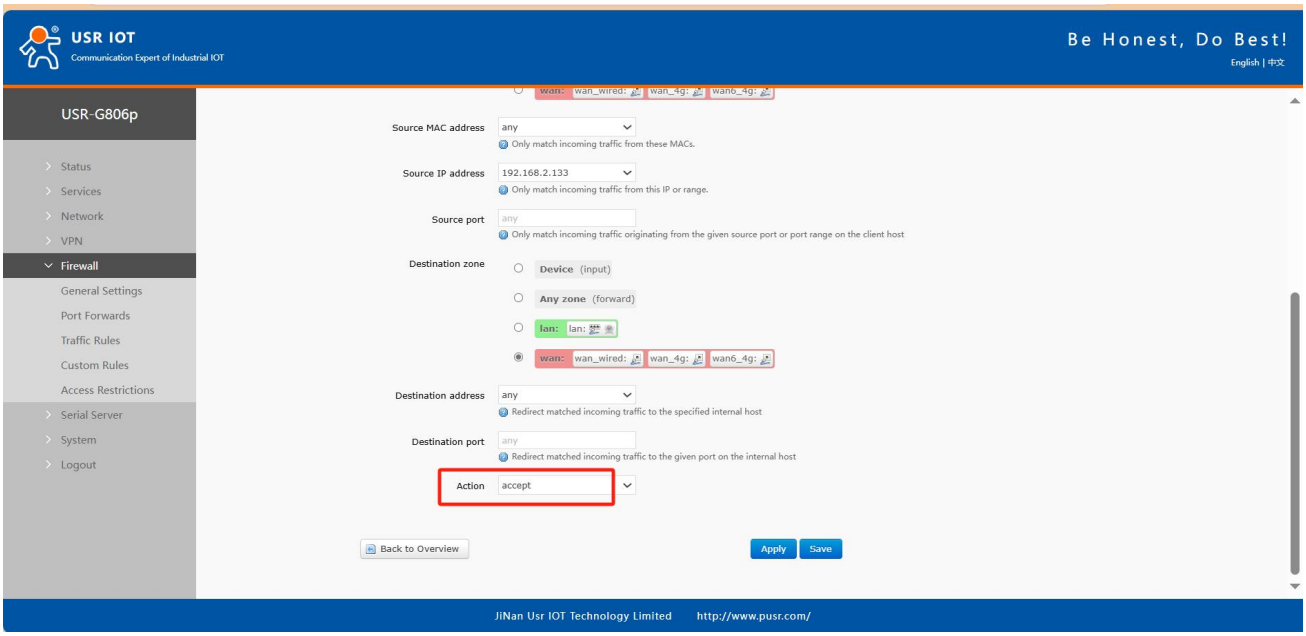
In the redirected page, select LAN for the source area, and select All for the source MAC address and source address (if you want to allow a specific IP address within the LAN to access a specific IP address outside the LAN, enter the IP address or MAC address here, as shown in the figure below

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Pic 58 Figure 2 of the firewall whitelist

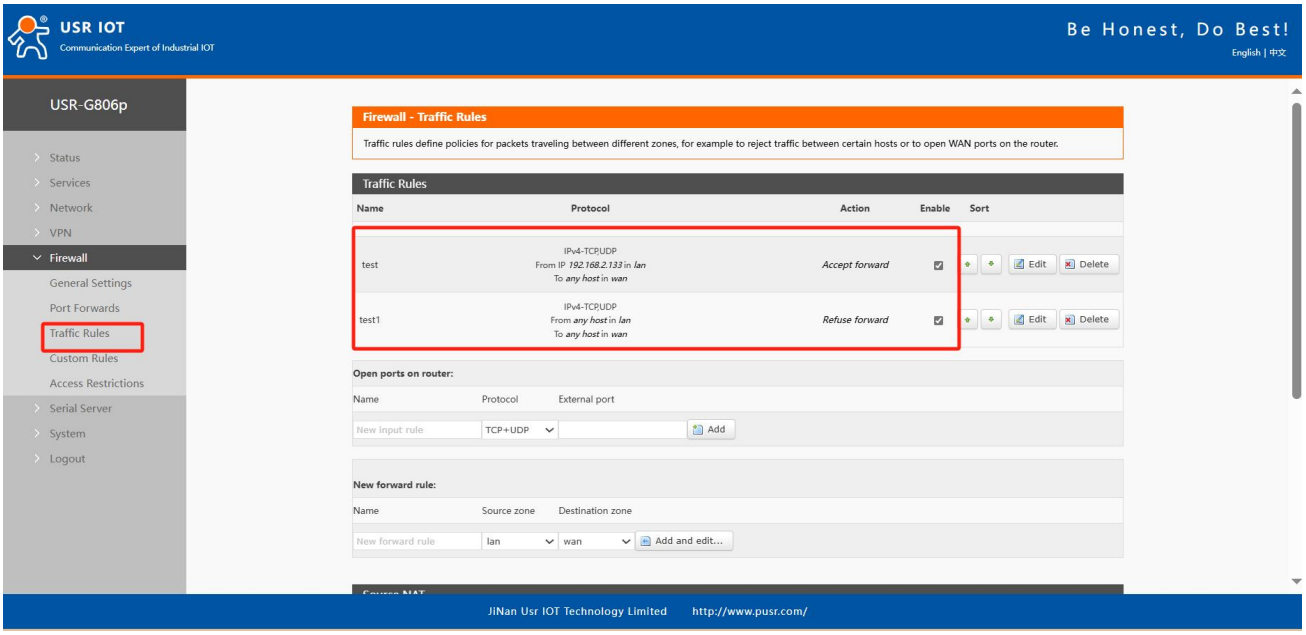
Select WAN in the target area, fill in the IP address that is allowed to access the target address, select "Accept" for the action, and click "Save and apply" after the setting is completed. As shown in the figure below.



Pic 59 Figure 3: Firewall whitelist

Next, set a rule that all communications are rejected. Set the source address to "all", the target address to "all", and the action to "reject". Note that the order of the two rules must be allowed first and rejected later. The overall setting is as follows

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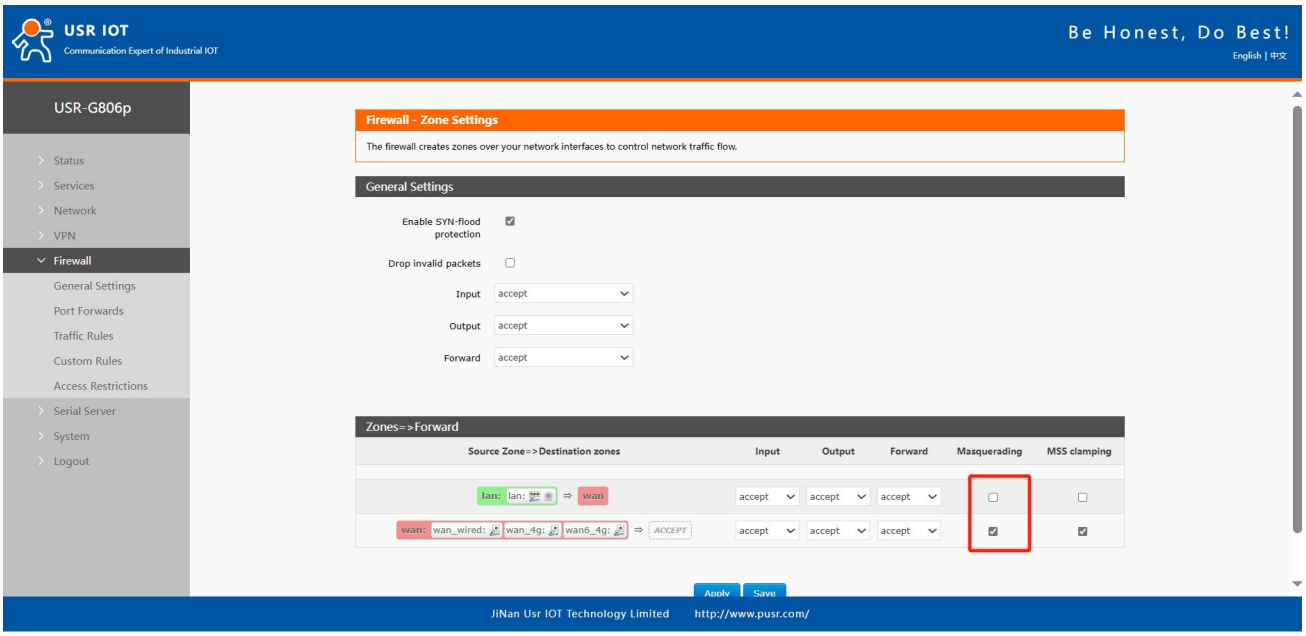
Pic 60 Figure 3 of the firewall whitelist

5.3. NAT function

5.3.1. IP address spoofing

IP address disguise converts the source IP of a departing packet to the IP address of a router interface. If you select IP dynamic disguise in the figure, the system changes the source IP address of a packet flowing out of the router to the WAN port IP address.

Note: WAN interface must enable IP dynamic disguise and MSS clamp, LAN interface is prohibited to enable IP dynamic disguise and MSS clamp.



Pic 61 IP address disguise Settings

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5.3.2. SNAT

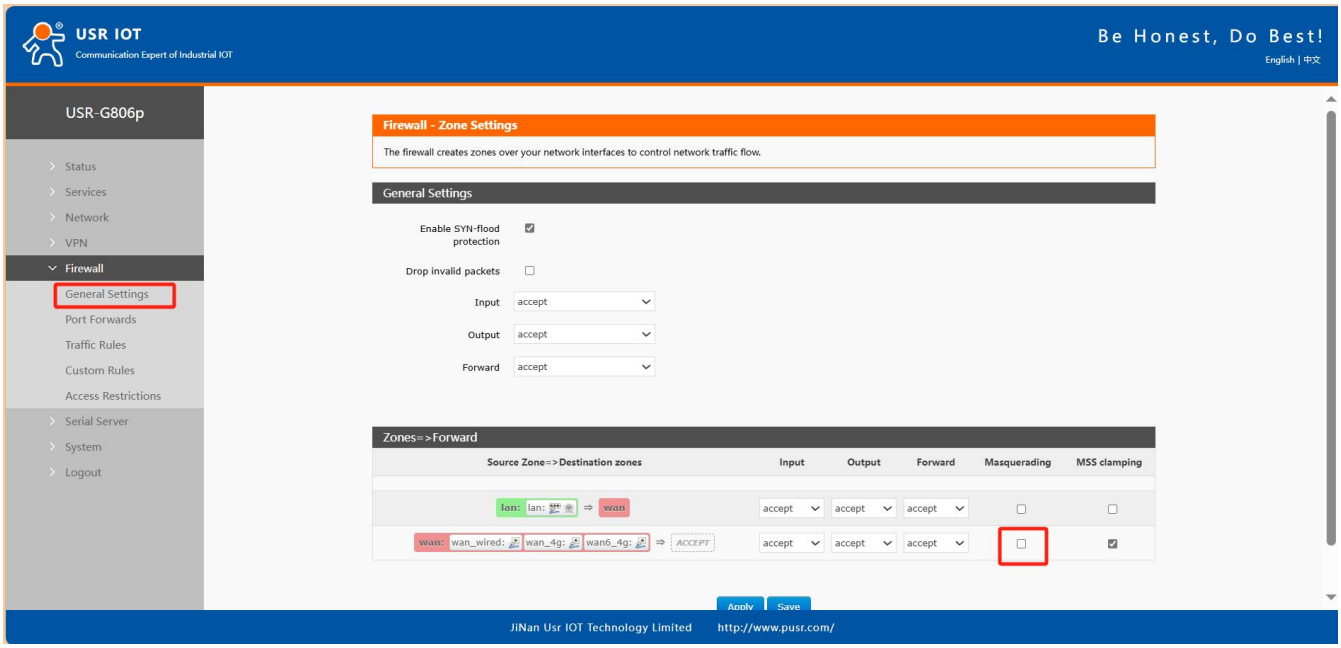
Source IP conversion function.

Tab 19 SNAT parameter list

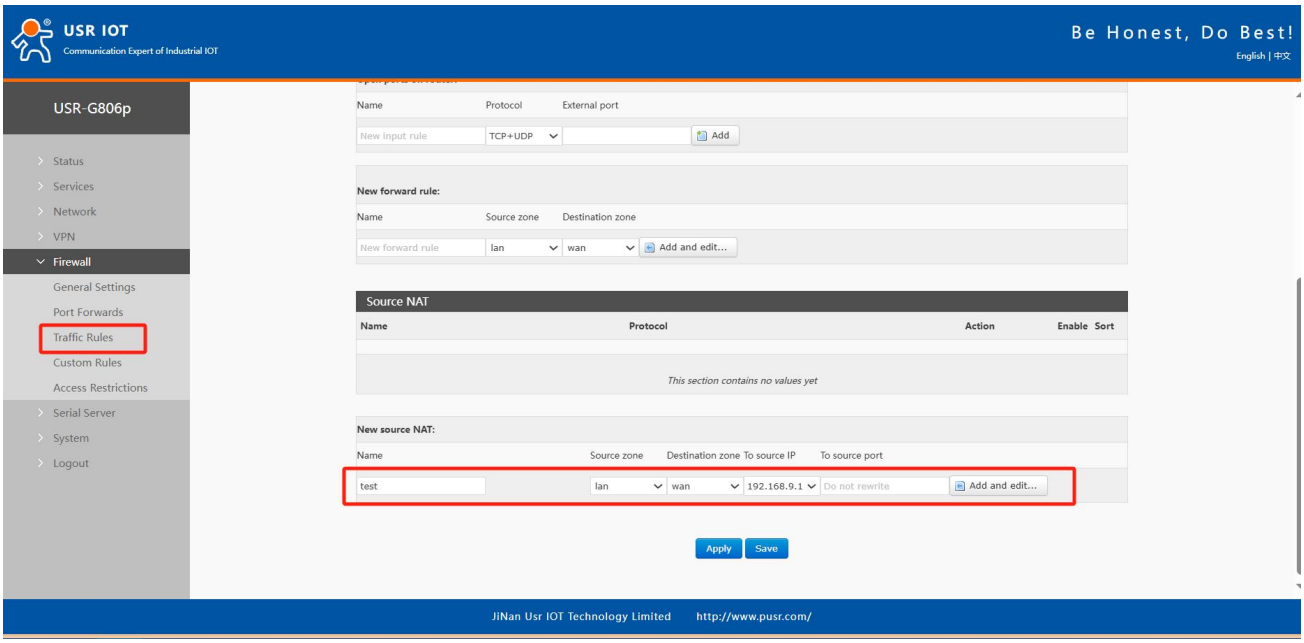
name	description	Default parameter
Enable the button	The display indicates the enabled state The display indicates the disabled state	start using
name	The name of this firewall rule	-
protocol	Settings can be set: TCP+UDP/TCP/UDP/ICMP	TCP+UDP
Source IP address	The source IP that matches the incoming traffic needs to be matched Empty means that all source IP addresses are matched	empty
Source port	The source port that matches the incoming traffic needs to be matched Empty means that all source ports are matched	empty
objective IP	The target IP to match incoming traffic to Empty means that all target IP addresses are matched	empty
Target port	The target port or must be matched to inbound traffic Empty indicates that the target port is matched	empty
SNAT IP address	Change the source address of the matching traffic to this address	Add a custom IP address
SNAT port	Change the source port that matches the traffic to this port Empty indicates that the source port is used	empty

Source NAT is a special form of packet disguise that changes the source address of packets leaving the router. When using it, the IP dynamic disguise on the wan port is first turned off

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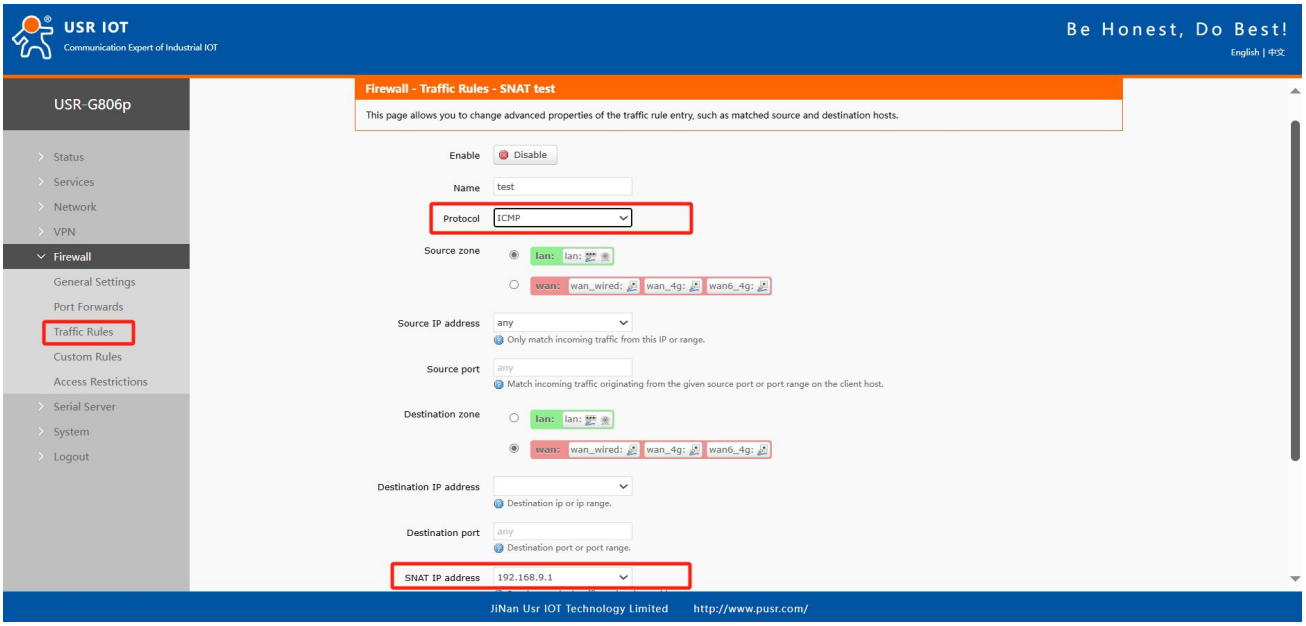


Then set up the Source NAT



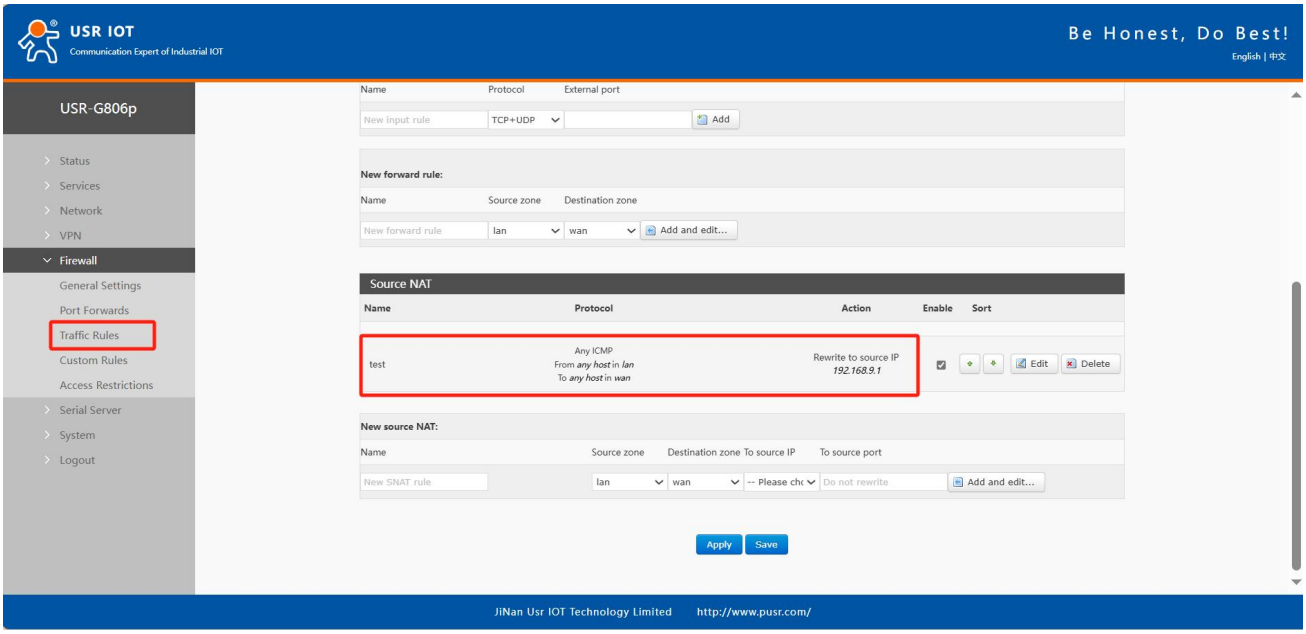
Pic 62 NAT Settings 1

Click Add and Edit



Pic 63 NAT Settings 2

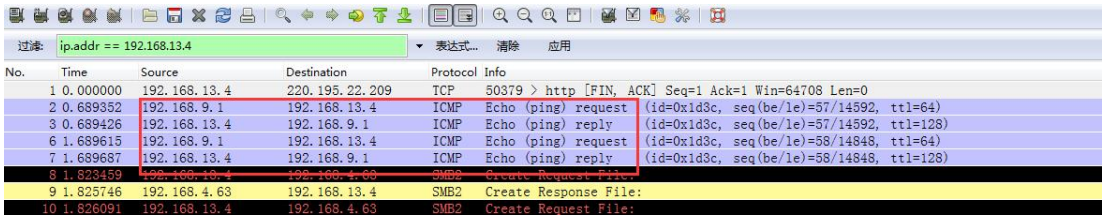
If the source IP, source port and destination IP, destination port are not filled in, all ip and ports are assumed by default. Save after setting.



Pic 64 NAT Settings 3

As shown in the figure, the source IP address of the packet leaving the router is changed to 192.168.9.1. As can be seen in the figure, the source address of the ICMP packet to 192.168.13.4 is 192.168.9.1, instead of 192.168.1.114. Verify that the device under the router (IP: 192.168.1.114) pings the PC (IP: 192.168.13.4) under the same switch as the router, and the data of packet capture on the PC is as follows:

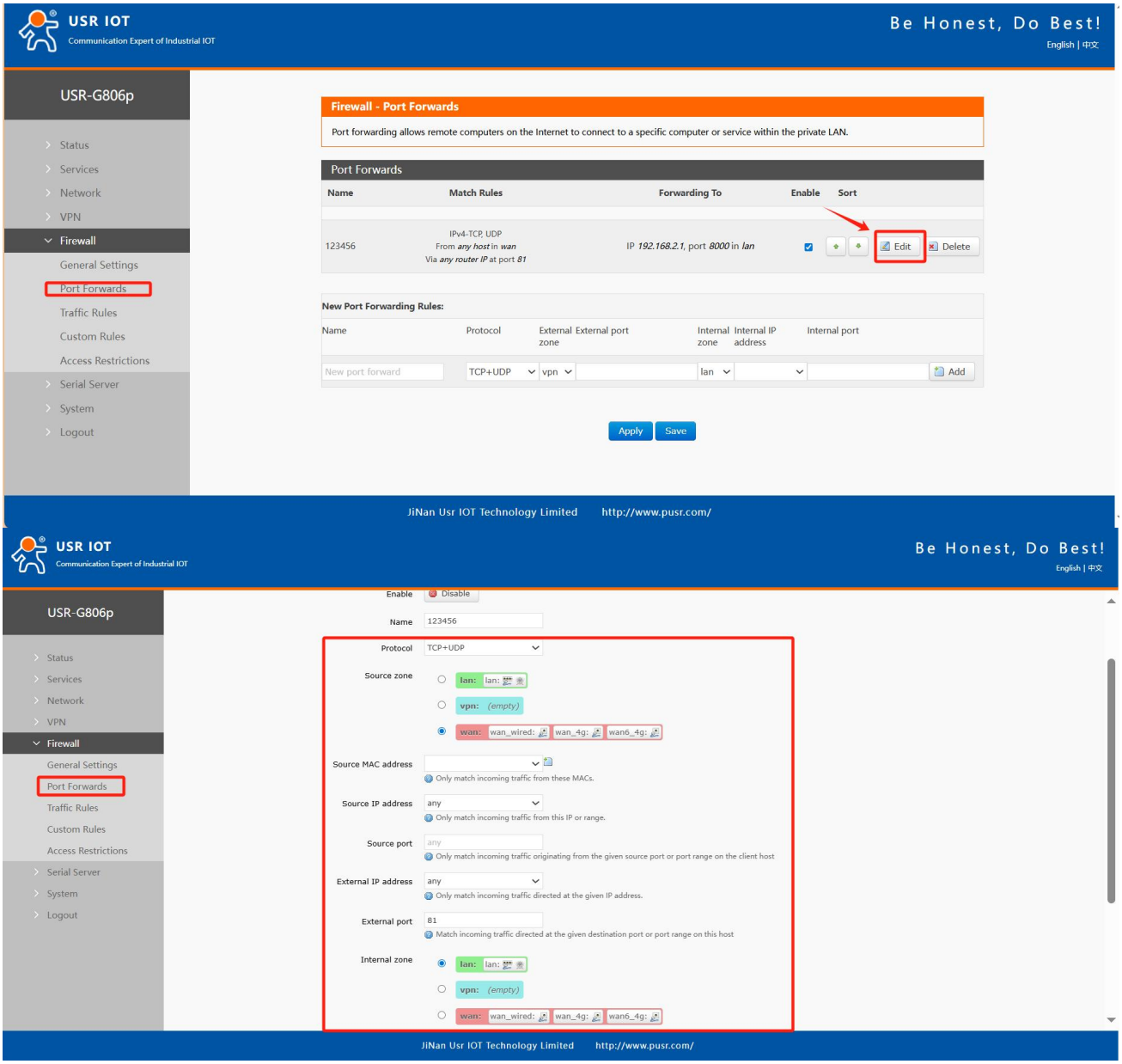
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Pic 65 NAT test and verify

5.3.3. DNAT

Exit target address translation.

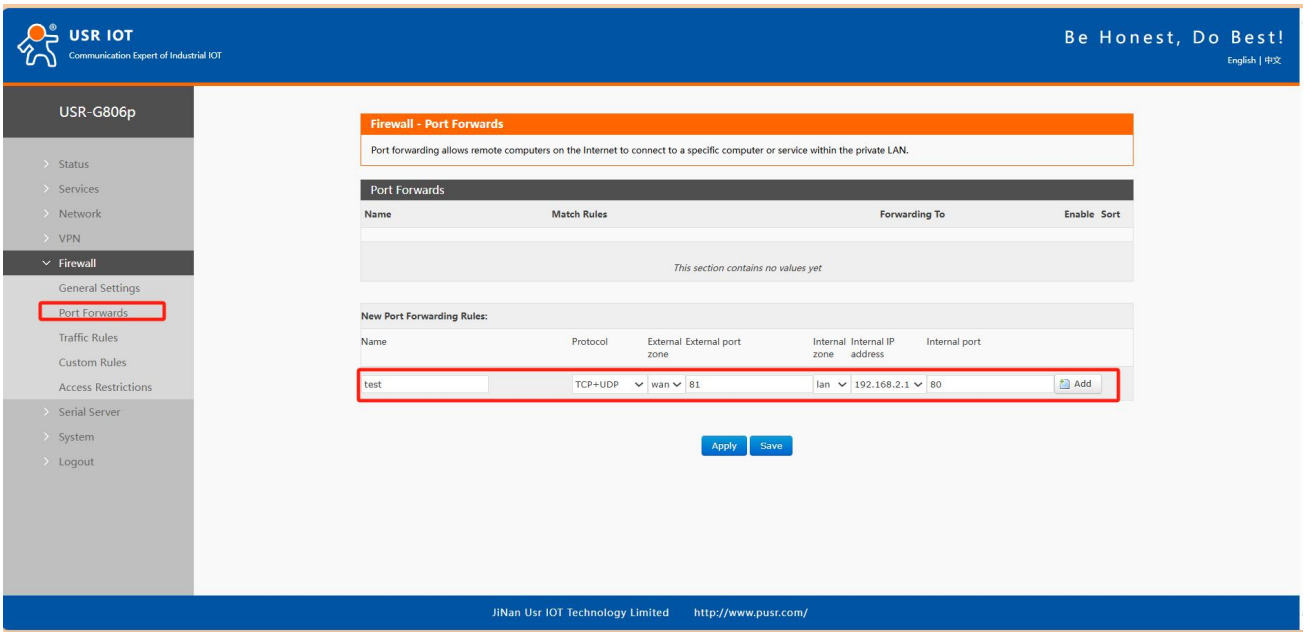


DNAT parameter list

Name	describe	Default Parameters
Enable	Enable  Disable: 	Enable Disable
Name	Customize the name of this rule	Empty
Source area	Data entry area selection	WAN
Source MAC address	Source MAC address filtering at entry	All
Source IP address	Source IP address screening at entry	All
Source port	Source port filtering at entry	All
External IP address	Target IP address at the time of entry	All
External port	Target port at entry	Empty
Interior zone	Redirection to the outbound area	LAN
An internal IP address	Target address when redirecting out of the station	Empty
Internal ports	Redirect the outgoing port to the target port	Empty
Enable NAT loopback	Check to enable NAT loopback	Check

5.3.4. Port forwarding

Port forwarding allows a computer from the Internet to access a computer or service within a private LAN by mapping a specified port on a WAN port address to a host on the Intranet.



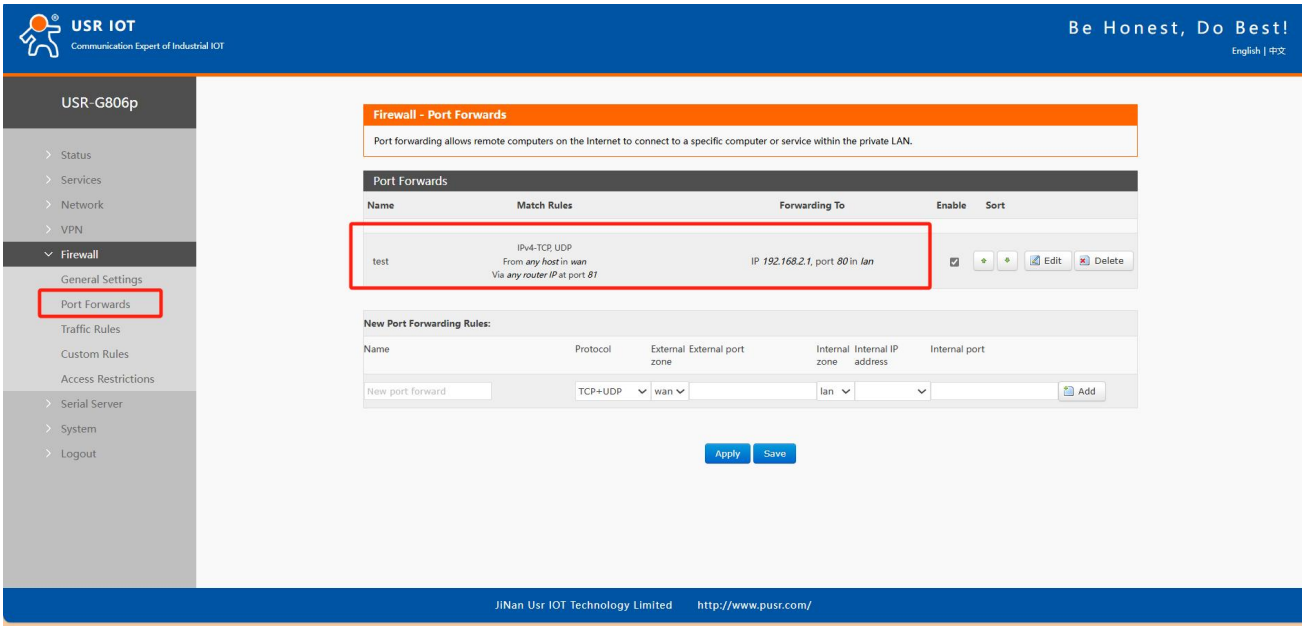
Pic 66 Port Settings page 1

- After setting the forwarding rule, you need to click the add button on the right, and then this rule will be displayed in the rule column;
- Then click the "Apply" button in the lower right corner to make the Settings effective;
- The following Settings: 192.168.2.1:80 is the router's own web server. If we want to access a device in the LAN from the Internet, we need to set up the mapping from the Internet to the LAN, such as setting the

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Internet port to 81, the internal IP address to 192.168.2.1, and the internal port to 80;

➢ When we access port 81 from the WAN port, the access request will be redirected to 192.168.2.1:80.



Pic 67 Port Settings page 2

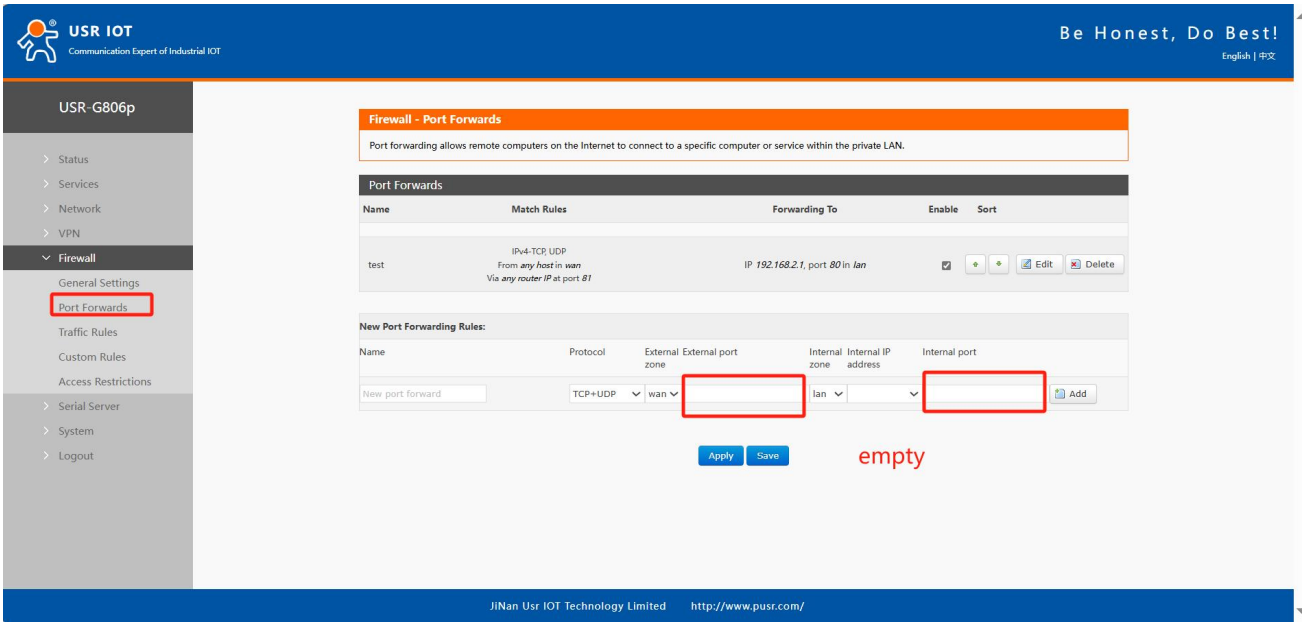
Tab 20 Port forwarding parameter table

name	description	Default parameter
name	The name of this port forwarding rule, character type	empty
protocol	Protocol type can be set: TCP+UDP/TCP/UDP	TCP+UDP
exterior zone	Including wired wan, 4G, VPN	wan
External port	You can set a single port or a range of ports, such as 8000-9000 Note: When the external port and internal port are empty, it is a DMZ function	empty
interior zone	Router subnet area	lan
interior IP	The LAN area IP address of the router	empty
Internal port	You can set a single port or a range of ports, such as 8000-9000 Note: When the external port and internal port are empty, it is a DMZ function	empty

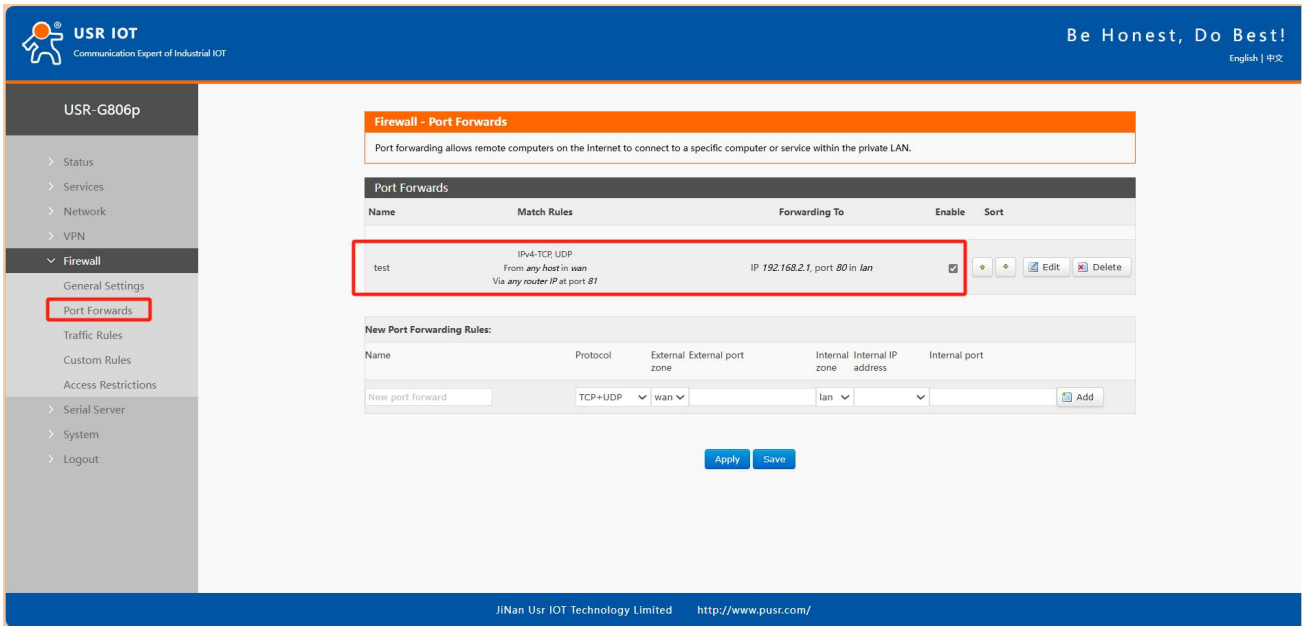
5.3.5. NAT DMZ

Port mapping is to map a specified port of WAN port address to a host in the Intranet. DMZ function is to map all ports of WAN port address to a host. Setting interface and port forwarding are in the same interface. When setting, do not fill in the external port, and click "Add".

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Pic 68 DMZ Settings 1



Pic 69 DMZ Settings 2

As shown in the figure, all ports of the WAN port address are mapped to the host 192.168.2.133 on the Intranet.

< pay attention to >

- Port mapping and DMZ functions cannot be used simultaneously.

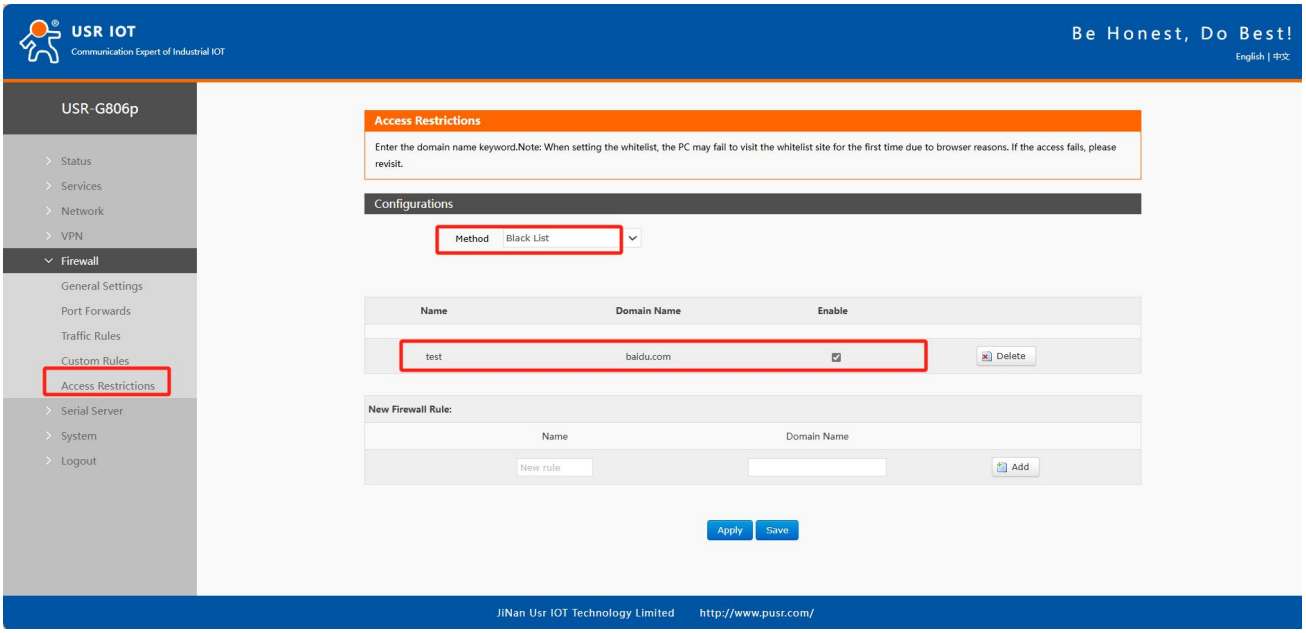
5.4. Access restrictions

Access restrictions enable the control of access to specific domain names. It supports setting blacklists and whitelists for domain addresses. When a blacklist is selected, devices connected to the router cannot access the domains on the blacklist, while other domain addresses remain accessible. When a whitelist is selected, devices can only access the domain addresses listed in the whitelist, and all other domain addresses are inaccessible. Both blacklists and whitelists can be configured with multiple entries, and this feature is disabled by default.

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5.4.1. Domain blacklists

First, in the method options, select the blacklist. Click add to enter the name of the rule and the correct domain name, then click save. The rule will take effect immediately, preventing devices connected to the router from accessing the specified domain. If you choose the blacklist but do not add any rules, the default blacklist is empty, allowing all domains to be accessed. As shown in the figure, except for Baidu, all other domains can be accessed normally.

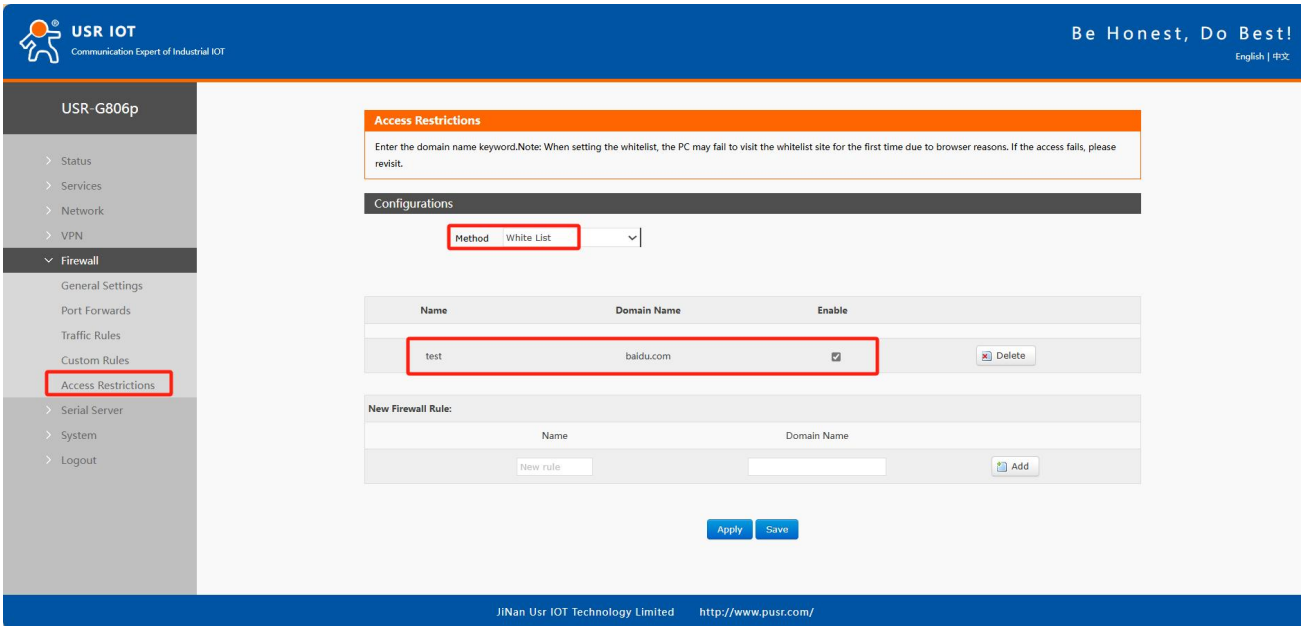


Pic 70 Domain blacklists

5.4.2. Domain name whitelist

First, in the method options, select the whitelist. Click add to enter the name of the rule and the correct domain name, then click save. The rule takes effect immediately, allowing devices connected to the router to access only the domain name specified in the rule; all other domains are blocked. If you choose the whitelist but do not add any rules, the default whitelist is empty, meaning no domain can be accessed. As shown in the figure, the device can access Baidu.

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Pic 71 Domain name whitelist

6. Service function

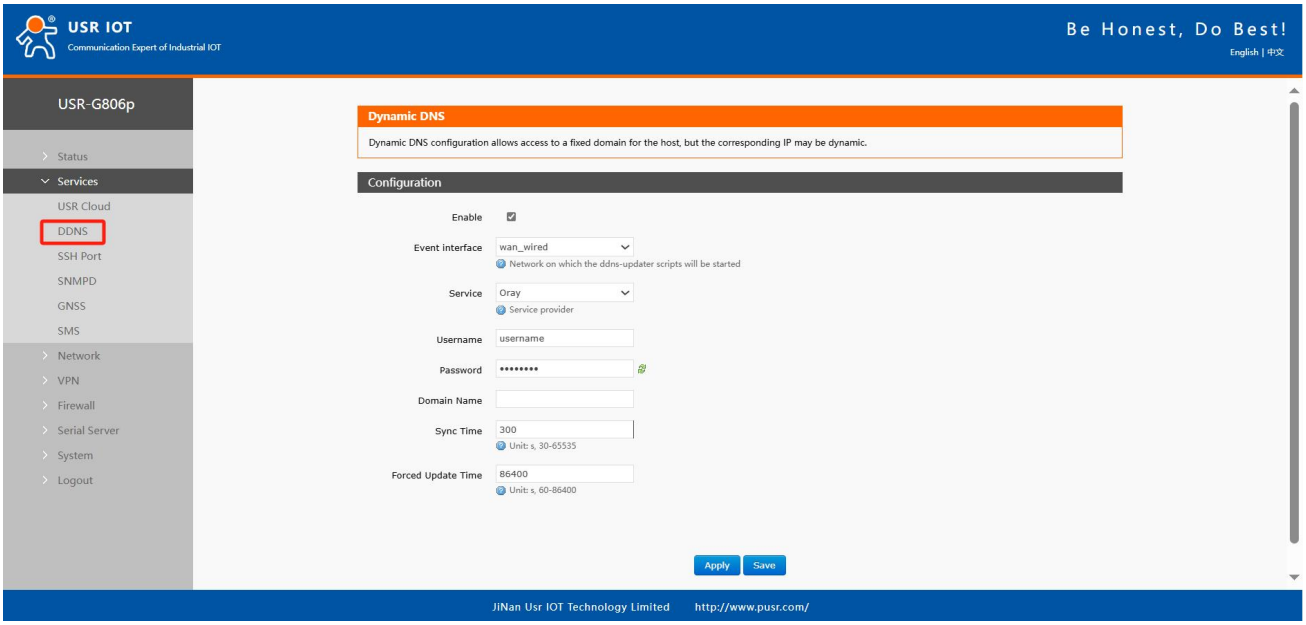
6.1. Dynamic domain name resolution (DDNS)

DDNS (Dynamic Domain Name Server) is a service that maps a user's dynamic IP address to a fixed domain name resolution server. Each time a user connects to the network, the client program sends the host's dynamic IP address to the server program on the service provider's host via information transmission. The server program provides DNS services and performs dynamic domain name resolution.

6.1.1. Supported services

The use of dynamic domain names is divided into two cases. The first case is that the router itself supports this service (view the "Service" drop-down box and select the corresponding DDNS service provider, here using Peanut Shell). The setting method is as follows:

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Pic 72 DDNS Settings page

Parameter filling requirements are as follows:

Tab 21 DDNS parameter list

function	content	Windows default
open	Check to enable DDNS function	Not selected
Valid interface	Select WAN port according to requirements	wan_wired
ISP internet	Please fill in the service address of DDNS	dyndns.org
DDNS facilitator	Please fill in the DDNS service address	dyndns.org
DDNS updates the URL path	Set the IP source URL address	http://checkip.dyndns.com/
user name	Peanut shell account name	username
password	The peanut shell code	password
realm name	The domain name for which the DDNS application is made	empty
lock-in time （s）	The time interval for detecting IP address changes	300
Mandatory update time	Enforce a mandatory update interval	86400

6.1.2. DDNS come into force

To confirm that the DDNS Settings are in effect, first look at your network's public IP address.

Then, we ping the domain name fe26203015.zicp.vip on the PC, which can be pinged, indicating that DDNS has taken effect.

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Pic 73 DDNS test Figure 3

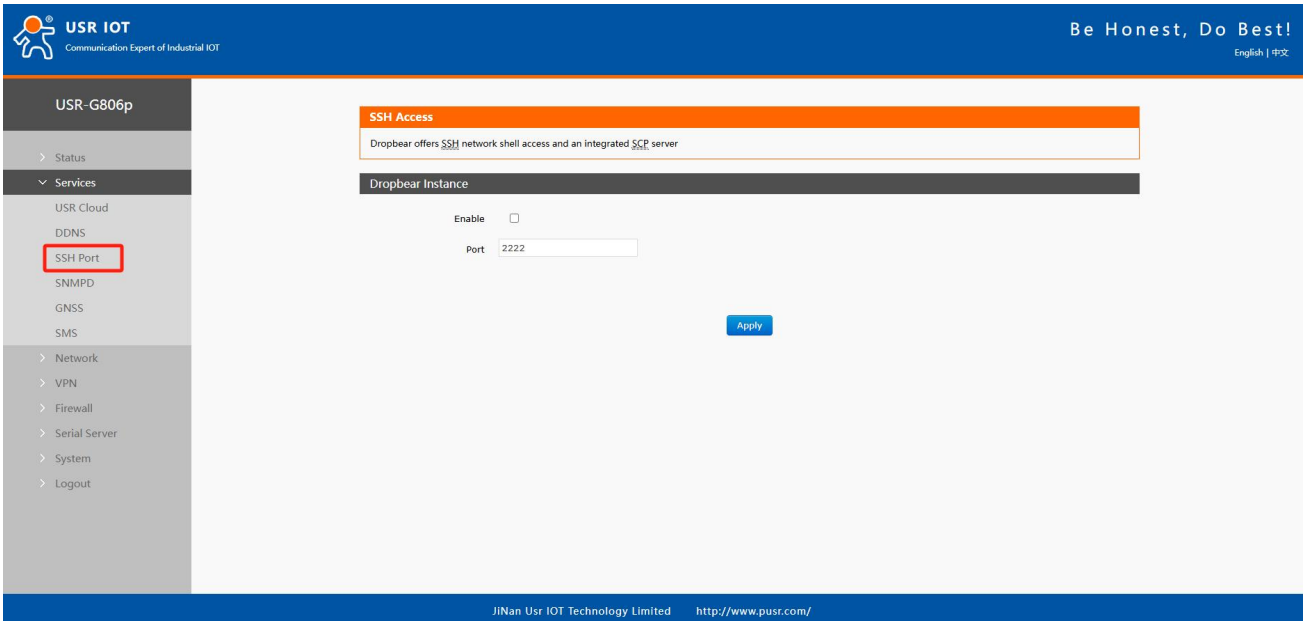
6.1.3. functional characteristics

- Please fill in the parameters, service/URL, domain name, user name and password, interface and other parameters strictly according to the form description to ensure correctness;
- Even as a router under the subnet, this function can also make dynamic domain name effective;
- DDNS + port mapping can realize remote access to the internal network of this router;
- If the network where the router is located does not have an independent public IP address, this function cannot be used.

6.2. SSH Port

Enable or disable SSH to manage the router.

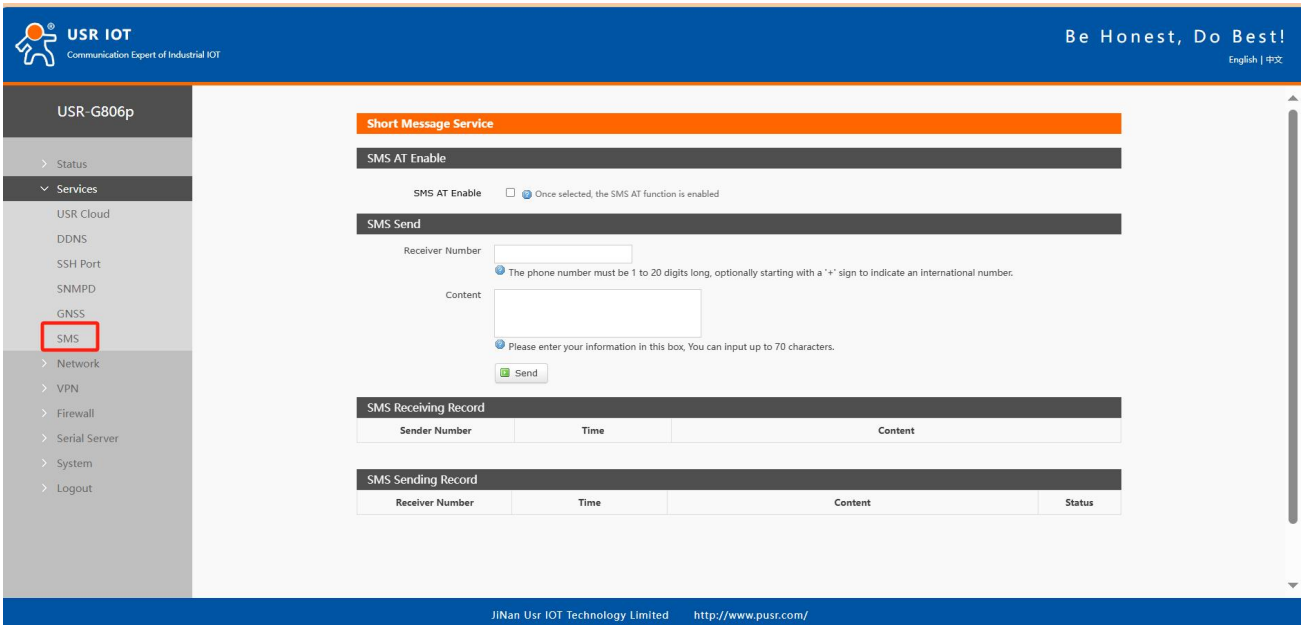
Note: This function is for PUSR technician to check technical problems. The user name and password is not available to general users.



Pic 74 SSH

6.3. SMS

To enable the SMS function, you can view the router parameters by sending SMS AT. You need a SIM card that can send SMS to the router.



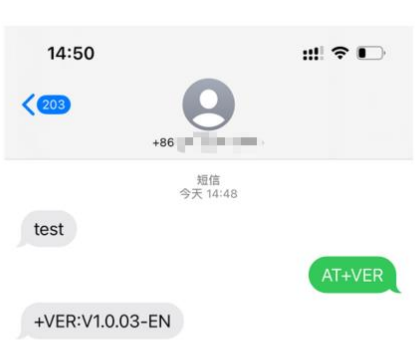
Pic 75 SMS

Tab 22 configuration parameter

name	description	Default parameter
SMS AT enabled	Enable: Enable SMS AT Disable: Turn off SMS AT	forbidden
SMS authorization method	All: Accept SMS AT from all mobile phone numbers and respond Specify: Accept the SMS AT of the specified mobile phone number and respond	whole
Authorized phone number	Set the SMS AT authorization phone number, up to 5 numbers	empty
Destination number	The router sends a text message to the specified number	empty
content	The content of a text message sent to a specified number	empty

The following screenshot shows the AT sent to the end to obtain router information. For details of SMS AT supported by the router, see the AT instruction table.

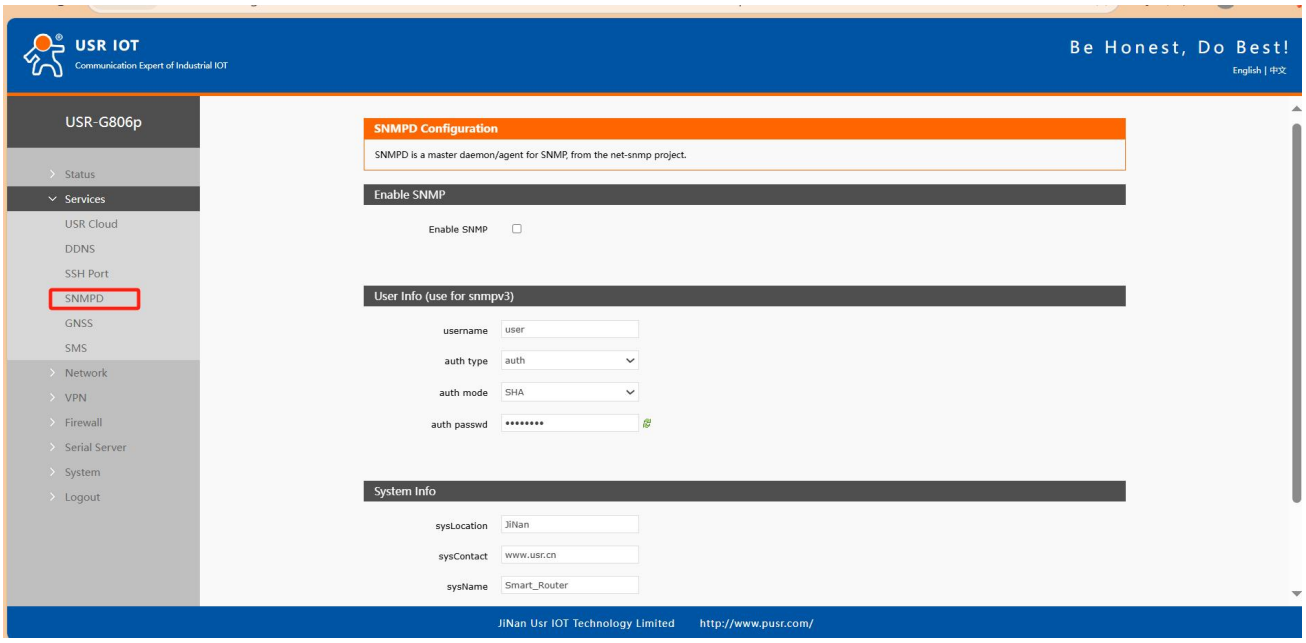
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Pic 76 SMS AT

6.4. SNMPD

The G806p has SNMP (Simple Network Management Protocol) service. You can remotely view device information, modify device parameters, monitor device status and other functions of your device through SNMP protocol without going to the site for monitoring and configuring the device one by one. The SNMP version supported by this device is V2C and V3.



Pic 77 SNMP service Settings interface

Tab 23 SNMP parameter list

function	content	Windows default
SNMP switch configuration	Check to enable SNMP services	Not selected
user name	The name assigned to SNMP users	user

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Type of certification	Certification or certification and encryption	attestation
Authentication mode	The authentication protocol used by the user and host to receive the trap. MD5 or SHA	SHA
Authentication password	User authorization password	authpass
Encryption type	Encryption protocol type, DES or AES	DES
Encrypt the password	The encryption password used as the private key	privpass
alliance	Location of the equipment	JiNan
System contact	Contact person for this equipment	www.usr.cn
systematic name	The system name of this device	Smart_Router

Supports obtaining basic router information through SNMP. OID is as follows.

Tab 24 SNMP OID list

OID	description	Request method
.1.3.6.1.4.1.2021.8.2.101.1	Get CPU information	GET
.1.3.6.1.4.1.2021.8.2.101.2	Obtain the device IMEI	GET
.1.3.6.1.4.1.2021.8.2.101.3	Get the firmware version number	GET
.1.3.6.1.4.1.2021.8.2.101.4	Get the registration status of the cellular network	GET
.1.3.6.1.4.1.2021.8.2.101.5	Obtain the SIM card ICCID	GET
.1.3.6.1.4.1.2021.8.2.101.6	Get the registered network type	GET
.1.3.6.1.4.1.2021.8.2.101.7	gain imsi	GET
.1.3.6.1.4.1.2021.8.2.101.8	Get carrier information	GET
.1.3.6.1.4.1.2021.8.2.101.9	Obtain cellular network IP address (IPv4)	GET
.1.3.6.1.4.1.2021.8.2.101.10	Get the signal strength	GET
.1.3.6.1.4.1.2021.8.2.101.11	gain tac	GET
.1.3.6.1.4.1.2021.8.2.101.12	gain cid	GET

6.5. GNSS

Supports GPS positioning data reporting to private platforms.

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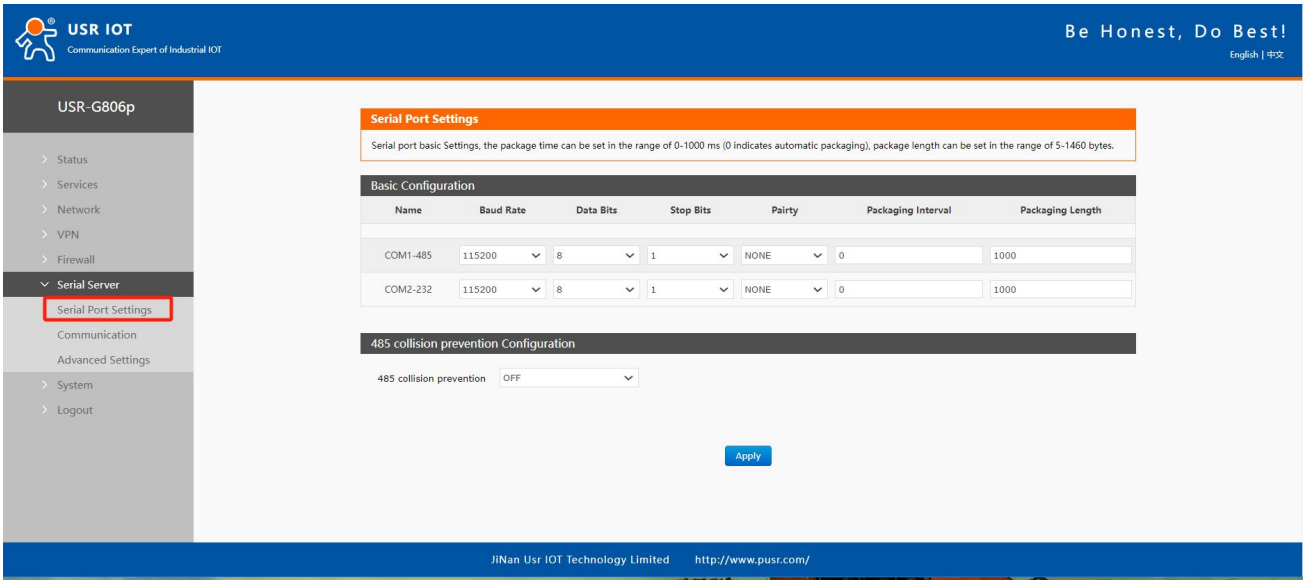
7. Serial port server function

G806p has RS232/RS485, supports TCP, UDP, MODBUS, MQTT, HTTPD and other network protocols, and supports heartbeat packets, registration packets and AT features.

name	functional description	Windows default
Baud rate	Set the baud rate of RS232 or RS485. You can set: 1200/2400/4800/9600/19200/38400/57600/115200/230400 Note: Only RS485 supports 230400	115200
data bit	Set the data bit of RS232 or RS485. You can set it to 7/8	8
stop bit	The stop bit of RS232 or RS485 can be set to 1/2	1
check bit	The parity bit of RS232 or RS485 can be set to NONE/ODD/EVEN	NONE
Packaging time	Set the data packing time for RS232 or RS485 Unit: ms (range: 10-60000ms)	50
Pack length	Set the data packing length of RS232 or RS485 Unit: bytes (range: 5-1500 bytes)	1000

7.1. Serial port Settings

In this interface, you can set the baud rate, data bits and other parameters of the serial port.



Pic 78 Serial port setting interface

Tab 25 Serial port setting parameter table

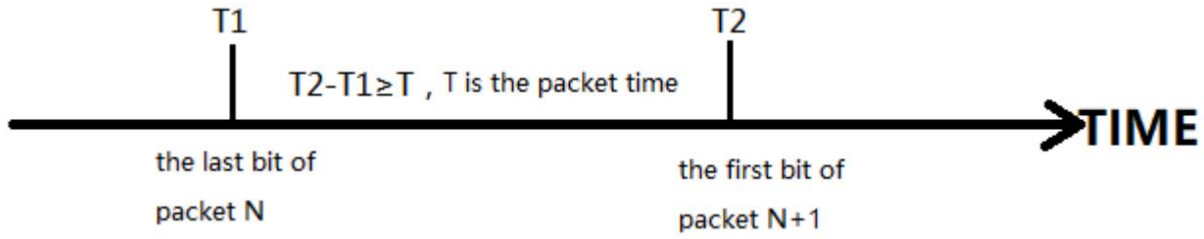
name	functional description	Windows default
Baud rate	Set the baud rate of RS232 or RS485. You can set: 1200/2400/4800/9600/19200/38400/57600/115200/230400	115200
data bit	Set the data bit of RS232 or RS485 to 7/8	8

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stop bit	The stop bit of RS232 or RS485 can be set to 1/2	1
check bit	The parity bit of RS232 or RS485 can be set to NONE/ODD/EVEN	NONE
Packaging time	Set the data packing time for RS232 or RS485 Unit: ms (range: 10-60000ms)	50
Pack length	Set the data packing length of RS232 or RS485 Unit: bytes (range: 5-1500 bytes)	1000

7.1.1. Time-triggered mode

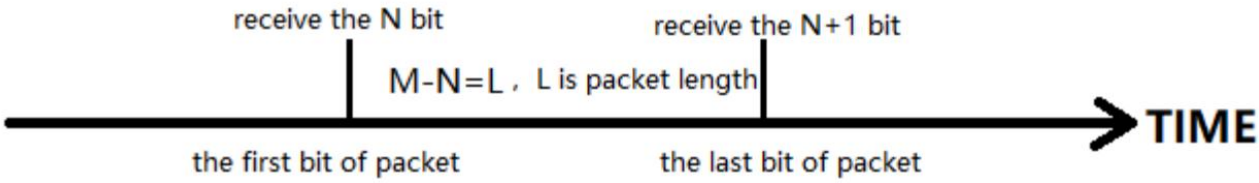
When the G806p receives data from the UART, it continuously checks the interval between adjacent bytes. If the interval is greater than or equal to a specific 'time threshold,' the frame is considered complete. Otherwise, it continues to receive data until the total length reaches or exceeds the packet size (default is 1000 bytes). The frame is then sent to the network as a single packet. The 'time threshold' is the interval between packets, which can be set from 10ms to 60000ms. The default setting is 50ms.



Pic 79 Time-triggered mode

7.1.2. Length-triggered mode

When the 806p receives data from the UART, it continuously checks the number of bytes received. If the number of received bytes reaches a certain 'length threshold,' the frame is considered to have ended. The frame data is then sent as a TCP or UDP packet to the network. The 'length threshold' refers to the packet size, which can be set between 5 and 1500 bytes. The default setting is 1000 bytes.

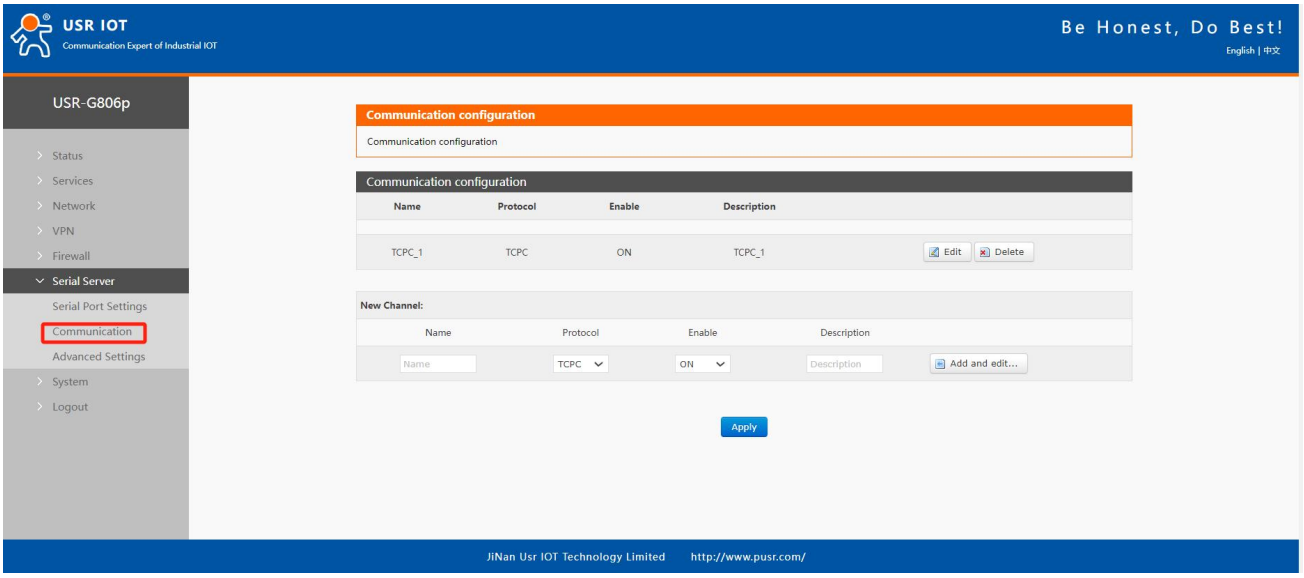


Pic 80 Length-triggered mode

7.2. Communication configuration

In this interface, you can set the network configuration of DTU function.

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Pic 81 Communication configuration

Tab 26 Communication configuration parameter table

name	functional description	Windows default
name	Set the name of this link	empty
protocol	You can select the following network protocol: TCPC/TCPS/UDPC/UDPS/HTTPD/MQTT/AWS/ALI	TCPC
start using	Whether this link is enabled, ON (enabled)/OFF (disabled)	start using
description	Set the remarks for this link	empty

explain ：

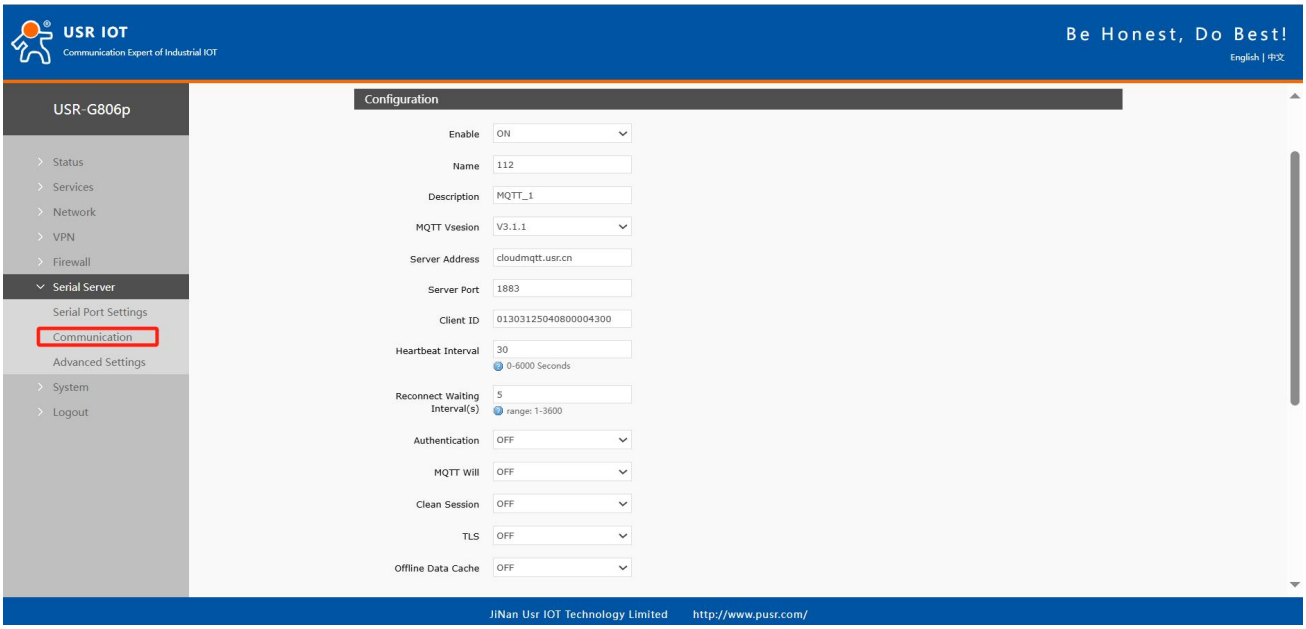
- Follow up with different protocol choices, and the "add and edit" interface will vary accordingly;
- Up to six links can be set.

7.2.1. MQTT pattern

The device supports the MQTT Client function, allowing users to easily connect to their own private MQTT server through simple configuration. Both data publishing and subscription support multi-topic configurations, enabling users to send serial port data to a specific topic or direct the server's pushed data to a bound serial port, thus achieving seamless data transmission between the serial port and the server.

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7.2.1.1. MQTT basic configuration



Pic 82 MQTT configuration interface

Tab 27 MQTT parameter list

name	functional description	Windows default
start using	Whether this link is enabled, ON (enabled) / OFF (disabled)	ON
name	The name of the link	MQTT_X
description	This link notes information	MQTT_X
MQTT edition	You can choose: MQTTV3.1.1/V3.1 version	V3.1.1
Server address	MQTT server address: IP or domain name	cloudmqtt.usr.cn
Server port	MQTT server port	1883
client ID	MQTT client identifier	123456
The heartbeat packet time	MQTT protocol heartbeat time, unit: seconds	30
Redundancy detection interval	The interval between the next reconnection after MQTT disconnection. Unit: seconds	5
attestation	If the server needs user name and password authentication, it needs to be enabled ON: Enable MQTT user name and password authentication OFF: Disable MQTT user name and password authentication	OFF
words of the deceased	MQTT connection flag, when the network is abnormal and disconnected, the server will publish this will message to other clients who subscribe to this will topic. ON: Enable subscription to the will topic OFF: Turn off the subscription to the will topic	OFF
theme	Testament topic	empty
The contents of	Set the contents of your will	empty

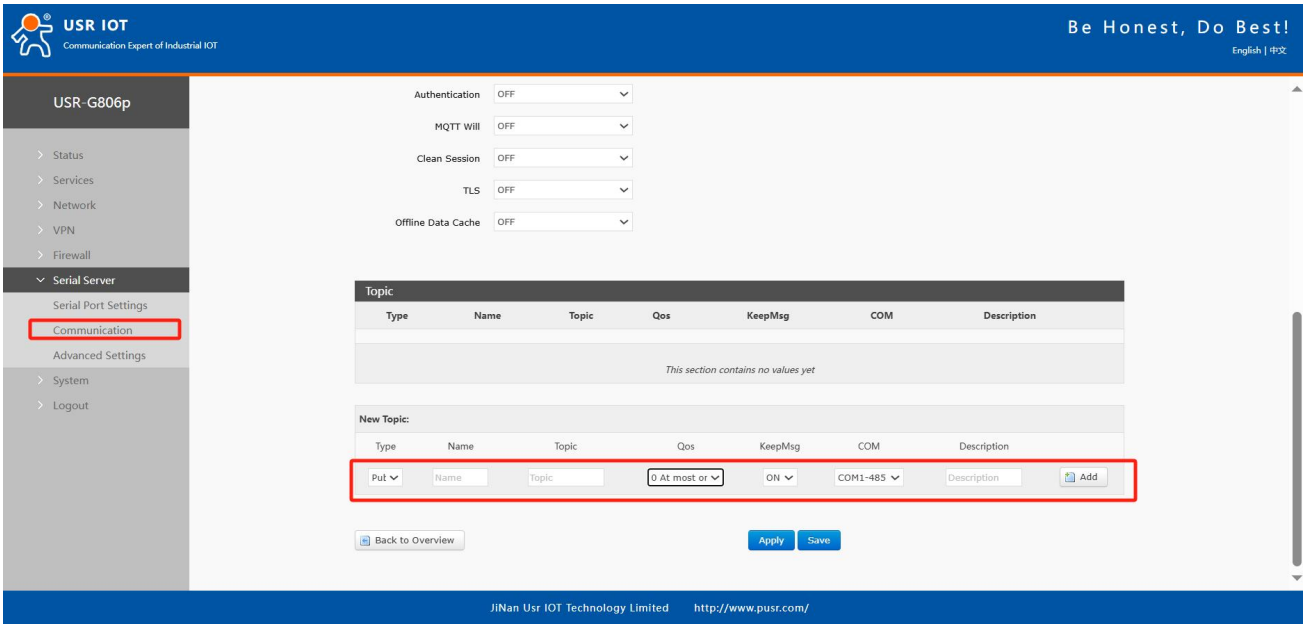
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the will		
QOS	QOS Settings can be set for: 0 at most 1 At least once 2. Get it right the first time	0
Keep the message	Whether to enable the legacy message retention function ON: open OFF: close	OFF
Clean up the conversation	MQTT protocol connection flag, used to control the session state lifetime, OFF is off, ON is on	OFF
TLS	The version number can be selected as TLS1.0 or TLS1.2 You can choose to verify the certificate, verify the server certificate, and verify the certificate in both directions	OFF
TLS authentication method	No certificate verification: that is, only the data layer transmission decryption is implemented, and the identity of the other party is not checked during the handshake process Verify server certificate: that is, the client verifies the server certificate during the handshake. The client needs to preset the root certificate of the server Two-way authentication: that is, the client and server check each other's identity, which requires the pre-set server root certificate, client certificate and client private key	Do not verify the certificate
Offline data cache	Data overflow processing mode selection, cache mode, cache length setting, etc	OFF

7.2.1.2. Theme subscription/publish

The topic addition feature is primarily used to add topics for publication or subscription. Configuration parameters include the topic name, TOPIC, QOS, and whether to retain messages. The serial port association function links a topic to a specific serial port. When publishing, the original data from the serial port serves as the Payload of the topic. When receiving subscription messages, the Payload of the subscribed topic is sent to the serial port as the original data.

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Pic 83 MQTT topic configuration interface

Tab 28 MQTT topic parameter table

name	functional description	Windows default
type	Theme type: Publish/subscribe is optional	publish
name	The name of the topic	empty
theme	Theme: Theme content	empty
Qos	The quality of the topic message can be set: 0 At most once 1 At least once 2. Get it right the first time	0
Keep the message	Set whether to retain messages, ON (retain) / OFF (do not retain)	ON
channel	COM1-485: Use the 485 channel for data communication COM2-232: Use channel 232 for data communication COM1+COM2: Use RS232 or RS485 channels to transmit data	COM1-485
description	Set the remarks information for this topic rule	empty

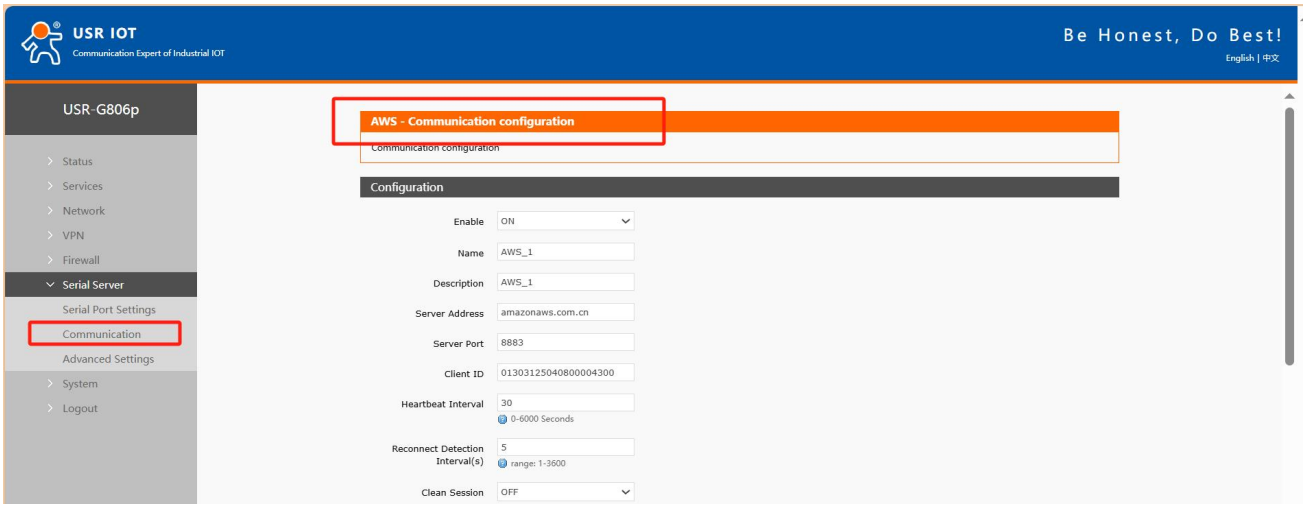
explain ：

- You can set up a maximum of 16 theme rules.

7.2.2. Connect to the Amazon platform

In this mode, the user terminal can send request data to the AWS platform via this device. Data publishing and subscription to the AWS platform can be configured for multiple topics. Users can configure the serial port data to be sent to a specific topic or direct the server-pushed data to the bound serial port, enabling seamless data transmission between the serial port and the server.

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Pic 84 AWS configuration interface

Tab 29 AWS parameter list

name	functional description	Windows default
start using	Whether the link is enabled, ON (enabled) / OFF (disabled)	ON
name	The name of the AWS platform link	AWS_2
description	AWS platform link remarks	AWS_2
Server address	AWS platform MQTT service server connection address: IP or domain name	amazonaws.com.cn
Server port	AWS platform MQTT server port	1883
client ID	The AWS platform MQTT client identifier	123456
The heartbeat packet time	MQTT protocol heartbeat time, unit: seconds	30
Redundancy detection interval	The interval between the next reconnection after MQTT disconnection. Unit: seconds	5
Clean up the conversation	MQTT protocol connection flag, used to control the session state lifetime, OFF is off, ON is on	OFF
Server root certificate	Select the corresponding file	not have
Device signature certificate	Select the corresponding file	not have
Device private key	Select the corresponding file	not have
Offline data cache	Data overflow processing mode selection, cache mode, cache length setting, etc	OFF

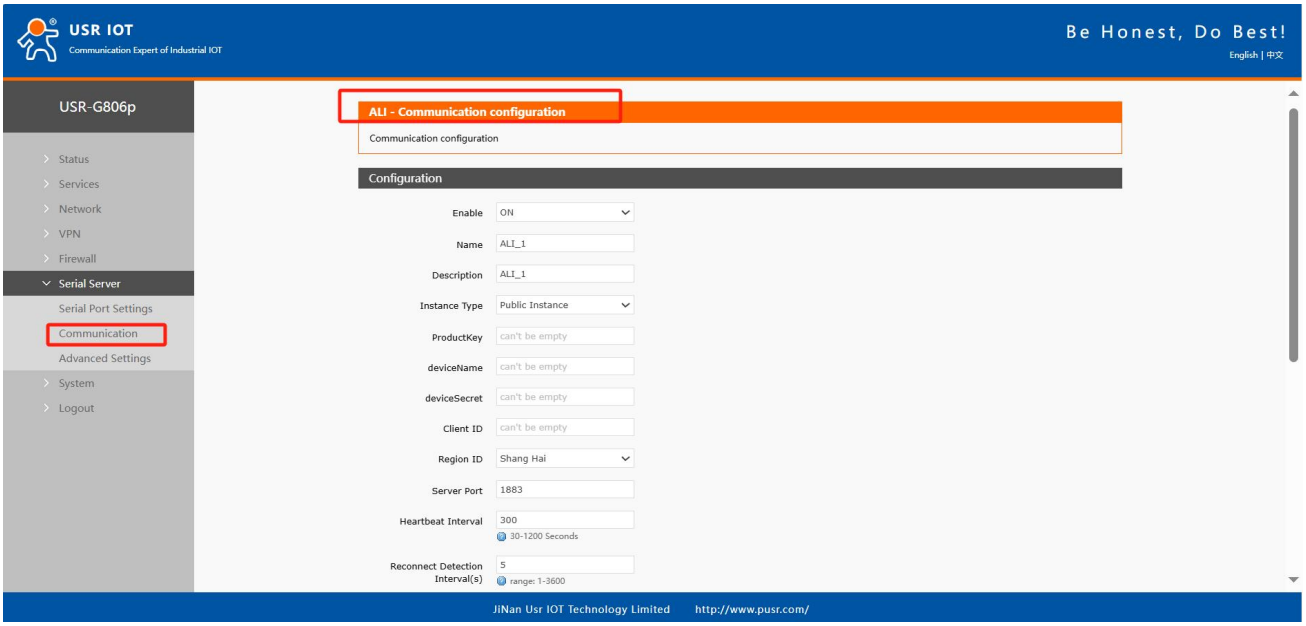
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7.2.2.1. Theme subscription/publish

The topic add function is mainly used to add the topic for publishing or subscribing. The configuration parameters include basic parameters such as name, TOPIC, QOS, and whether to retain messages. The serial port association is used to associate a topic with a serial port. Up to 16 topic rules can be set.

7.2.3. Connect to Ali Cloud platform

The Alibaba Cloud IoT Platform is a highly popular public cloud platform. It supports the MQTT protocol for device access, offering both industrial and enterprise instances. The platform supports SSL functions, enabling unencrypted, one-way, and two-way authentication connections to Alibaba Cloud. In this mode, data can be published and subscribed to terminal devices through the Alibaba Cloud platform, supporting multi-topic configuration. Users can configure serial port data to be sent to specific topics or direct server-pushed data to the bound serial ports, facilitating seamless data transmission between the serial port and the server.



Pic 85 ALI configuration interface

Tab 30 ALI parameter list

name	functional description	Windows default
start using	Whether the link is enabled, ON (enabled) / OFF (disabled)	ON
name	The name of the ALI platform link	ALI_2
description	ALI platform link remarks	ALI_2
Instance type	Supports Ali Cloud public instances and enterprise instances	Public instance
ProductKey	Device attributes, the triplet ProductKey is added to the device in Ali Cloud	not have
deviceName	Device name, the DeviceName in the triplet added to Aliyun devices	not have
deviceSecret	Device key, the triplet DeviceSecre added to the device in Ali Cloud	not have

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client ID	Supports custom customer ID for MQTT client concatenation	not have
region	The regional code of Ali Cloud, such as East China 2 (Shanghai), is filled in: cn-shanghai	East China 2-Shanghai
Server port	ALI platform MQTT server port	1883
The heartbeat packet time	MQTT protocol heartbeat time, unit: seconds	300
Redundancy detection interval	The interval between the next reconnection after MQTT is disconnected, unit: seconds	5
Clean up the conversation	MQTT protocol connection flag, used to control the session state lifetime, OFF is off, ON is on	OFF
TLS	The version number can be selected as TLS1.0 or TLS1.2 You can choose to verify the certificate, verify the server certificate, and verify the certificate in both directions	OFF
TLS authentication method	No certificate verification: that is, only the data layer transmission decryption is implemented, and the identity of the other party is not checked during the handshake process Verify server certificate: that is, the client verifies the server certificate during the handshake. The client needs to preset the root certificate of the server Two-way authentication: that is, the client and server check each other's identity. It requires the pre-set server root certificate, client certificate and client private key	Do not verify the certificate
Offline data cache	Data overflow processing mode selection, cache mode, cache length setting, etc	OFF

7.2.3.1. Theme subscription/publish

The topic add function is mainly used to add the topic for publishing or subscribing. The configuration parameters include basic parameters such as name, TOPIC, QOS, and whether to retain messages. The serial port association is used to associate the topic with a certain serial port. A maximum of 16 topic rules can be set.

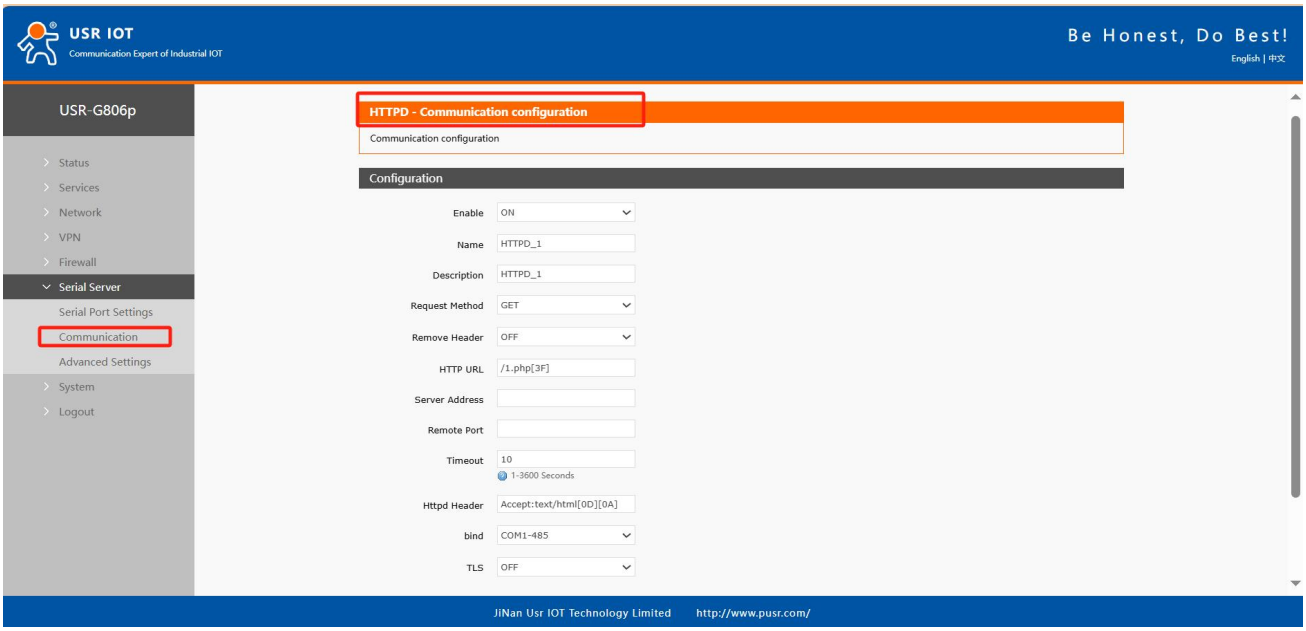
7.2.4. HTTPD mode (HTTP Client mode)

In this mode, the user's terminal device can send request data to the specified HTTP server through this device, and then the device receives the data from the HTTP server, parses the data and sends the result to the serial port device.

Users do not need to pay attention to the data conversion process between serial port data and network packets. They can realize the data request from serial port device to HTTP server through simple parameter setting.

The device filters the received data by default and only outputs the user data to the serial port. The customer can use the AT command to select whether to filter the HTTPD data.

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Pic 86 HTTPD configuration interface

Tab 31 HTTPD parameter list

name	functional description	Windows default
start using	Whether this link channel is enabled: ON (enabled) / OFF (disabled)	ON
name	The name of the link	HTTPD_X
description	Add remarks to this link	HTTPD_X
Request method	The way to request data from an HTTP server GET/POST	GET
Clean the filter head	Set whether to filter HTTP header ON (filter) / OFF (no filter)	ON
HTTP URL	Add the URL you want to access	/1.php[3F]
Server address	HTTP server address, which can be filled with IP or domain name	empty
Remote port	HTTP server port number	empty
overtime	If the server does not actively disconnect the connection within the timeout time, this end needs to wait for the disconnection time, unit: seconds	10
Request header information	HTTP header information	Accept:text/html[0D][0A]
Channel binding	COM1-485: Use the 485 channel for data communication COM2-232: Use channel 232 for data communication COM1+COM2: Use RS232 or RS485 channels to transmit data	COM1-485
TLS encryption	Supports TLS1.0\TLS1.2\OFF	OFF

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7.2.5. Registration packet/handshake packet function

7.2.5.1. Registration package description

Registration packet: This is used to enable the server to identify the data source device or as a password for obtaining server function authorization. The registration packet can be sent when the device connects to the server, or it can be appended to the beginning of each data packet as part of the data packet. The data in the registration packet can be either a MAC address or custom registration data.

explain ：

- If MAC is selected, the WAN port MAC is used as the content of the registration packet;
- This function is available only when the link is set to tcpc or udpc mode.

7.2.5.2. Network heartbeat packet description

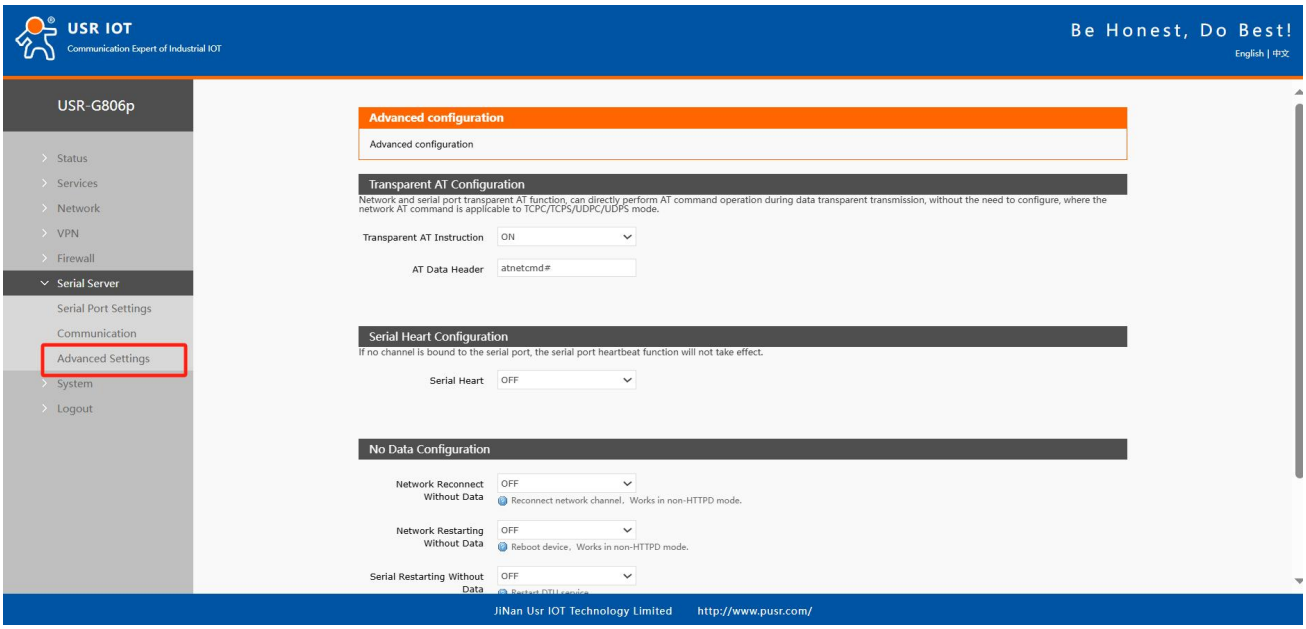
Network heartbeat packet: sent to the network end, the main purpose is to let the server know that the terminal W630S is online, so as to maintain a long connection with the server.

explain ：

- This function is available only when the link is set to tcpc or udpc mode.

7.3. advanced setup

You can configure network AT, serial port heartbeat packets, and no data action conditions.



Pic 87 Advanced configuration interface

Tab 32 Advanced configuration interface parameter table

name	functional description	Windows default
Network AT command	ON (enable)/OFF (disable)	ON
Network AT password	The password for the network AT	atnetcmd#

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word		
Serial port heartbeat	ON: Enable the function of sending heartbeat packets to serial port OFF: Disable the function of sending heartbeat packets to serial port	OFF
Pacemaker types	HEX: 16-bit type ASCII: Character type The explanation of the heartbeat packet is shown in Chapter 8.2.7.2	HEX
Pacemaker data	Heartbeat packet data content	empty
The heartbeat packet time	The time interval at which the heartbeat packet is sent, in seconds	60
Serial port binding	COM1-485: Use the 485 channel for data communication COM2-232: Use channel 232 for data communication COM1+COM2: Use RS232 or RS485 channels to transmit data	COM1+COM2
The network channel does not enable data reconnection	If no data is received from the network end within the setting time, the channel triggers reconnection It is applicable to non-HTTP protocols. See the following description for details	OFF
Redundancy detection interval	Set the time interval, unit (seconds)	3600
The network channel is not enabled for data restart	If no data is received from the network end within the setting time, all channels will trigger the device to restart It is applicable to non-HTTP protocols. See the following description for details	OFF
Restart the detection interval	Set the time interval, unit (seconds)	36000
Serial port data restart enabled	The configuration serial port channel does not receive the serial port data, and triggers the DTU to restart If two serial ports are configured, the DTU will be restarted if no serial port data is received within the time of one channel	OFF
Enable serial port	COM1-485/COM2-232/COM1+COM2	COM1-485

explain :

- Serial heartbeat packet: This function is only available if there is a link channel (at least one communication configuration);
- No data reconnection of the network channel: TCPC/UDPC/MQTT. If no time is received from the network end

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within the set time, the link will be reconnected;

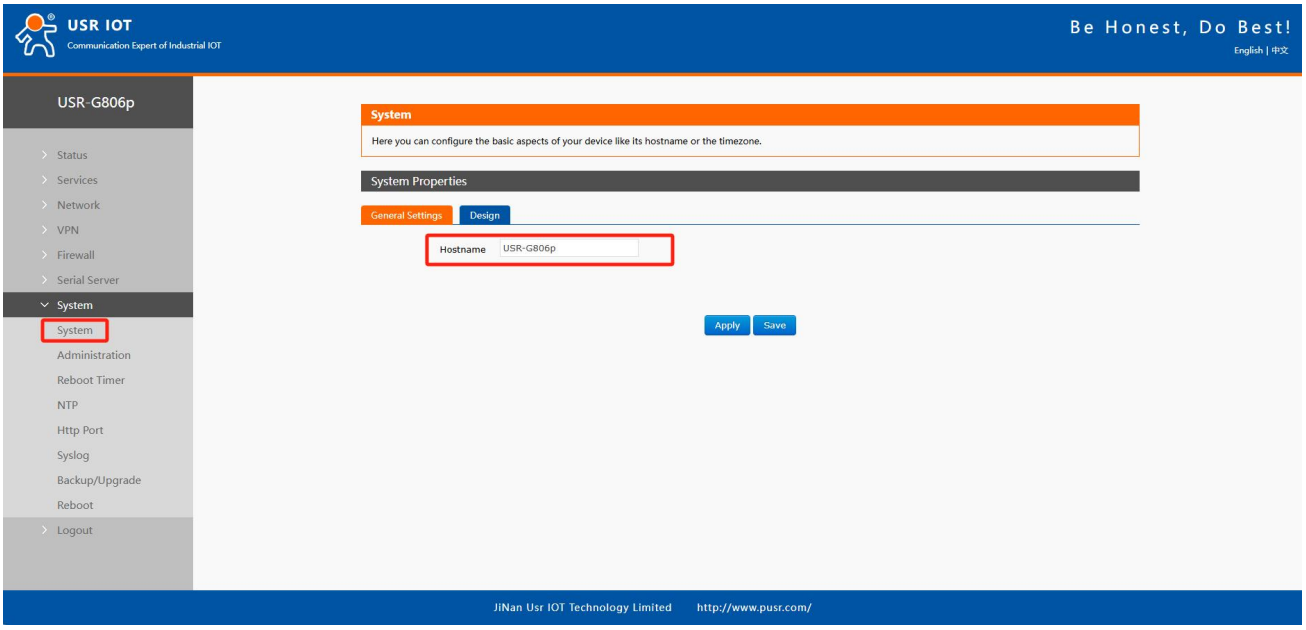
- No data reconnection of network channel: TCPS, if the client does not receive data within the set time, it will kick out the corresponding client;
- No data reconnection of the network channel: UDPS, if the client data is not received at the set time, the serial port data will not be sent to UDPC;
- Network channel no data restart: all link channels will restart when the set time is reached and no network data is received;
- Network channel restart without data: if the TCPC connection success data is received within the set time, the count is reset;
- Serial port channel restart without data: if the serial port data is not received at the set time, DTU restarts;

Restart of serial port channel without data: If COM1+COM2 dual channels are set, the DTU will restart when one of the channels does not receive serial port data after the set time.

8. system function

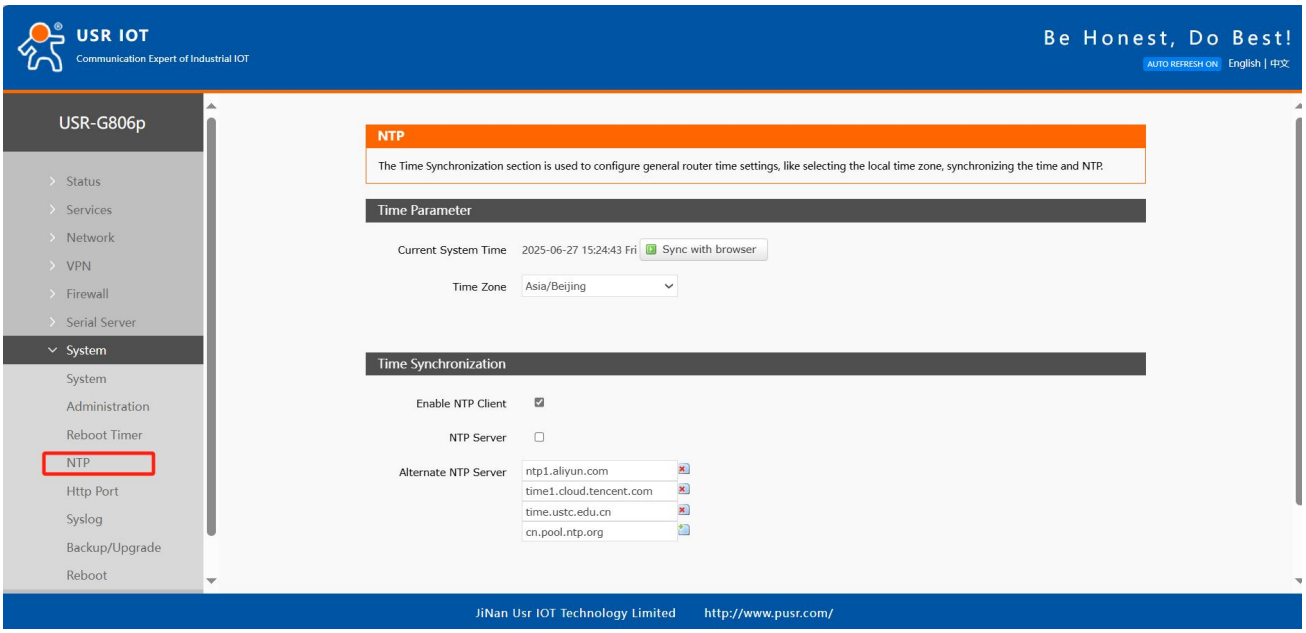
8.1. host name

The default hostname is USR-G806p.



Pic 88 host name

8.2. Time Settings

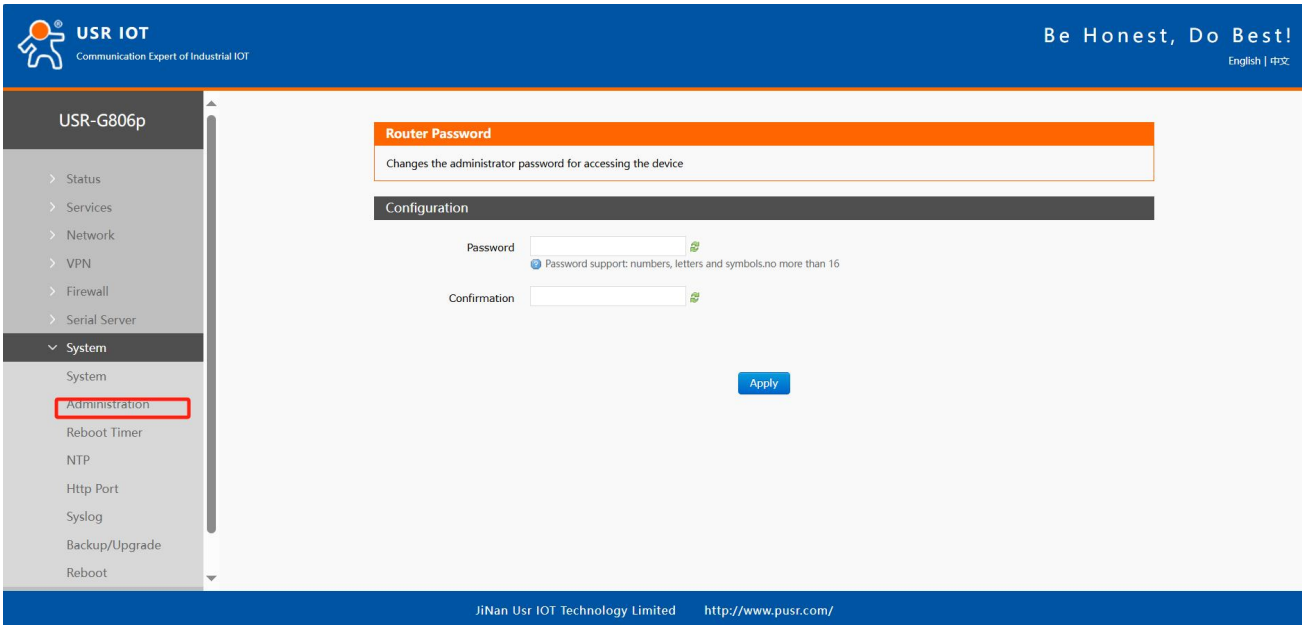


Pic 89 NTP page

< pay attention to >

- The router can perform network time synchronization and starts the NTP client function by default. The NTP server address is set.

8.3. Username and password Settings



Pic 90 Username and password setup page

< pay attention to >

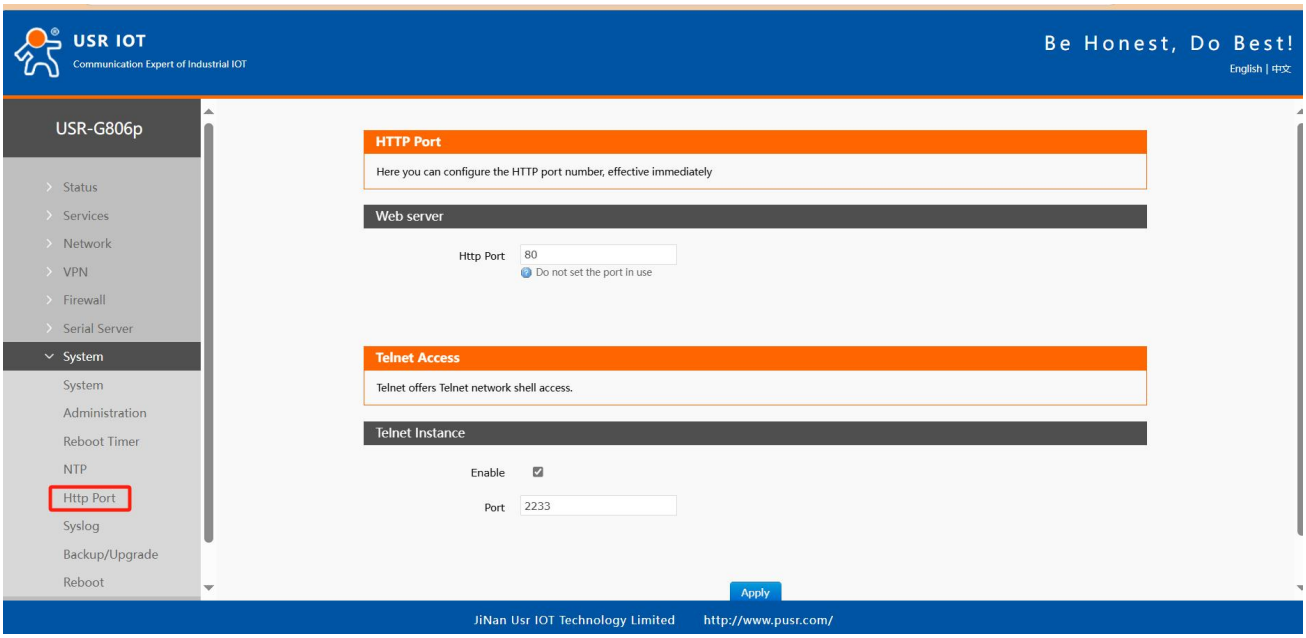
- The default password can be set. The default password is admin, and the user name cannot be set. This password is the management password (web login password).

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8.4. HTTP port

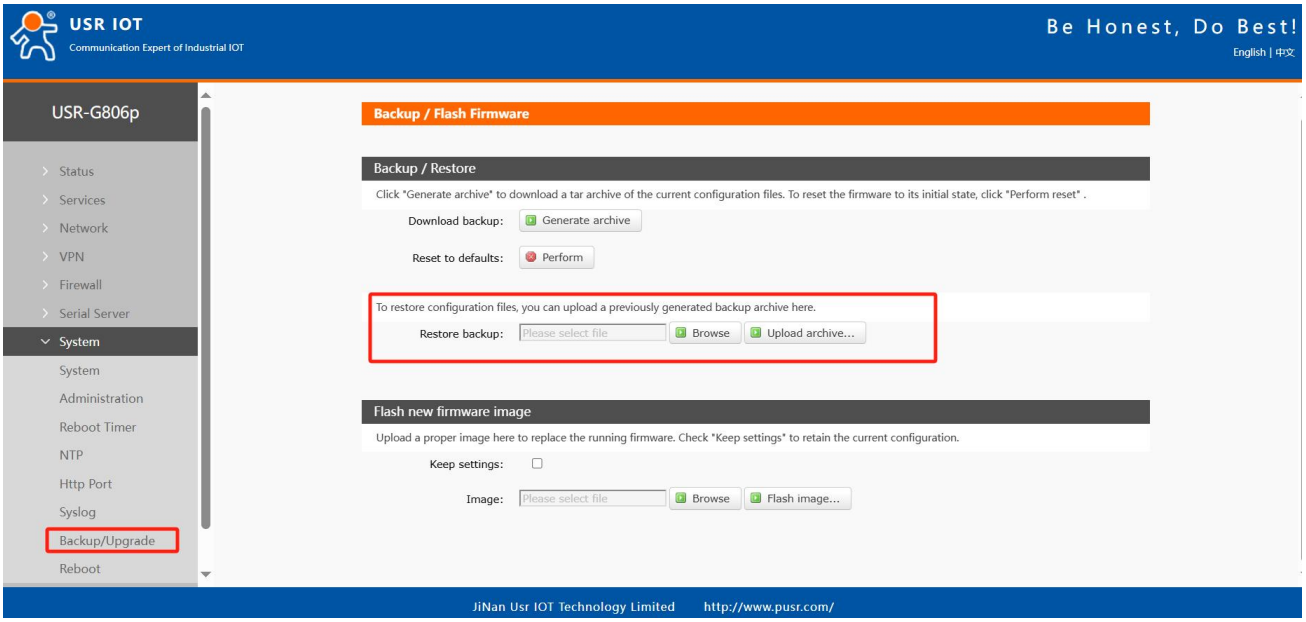
Set the port number of the web login page, and enable or disable the TELNET function.

Note: The telnet function is for PUSR technician to check technical problems. The user name and password is not available to general users.



Pic 91 HTTP port

8.5. Parameter backup and upload



Pic 92 Parameter backup upload page

Parameter upload: Upload the parameter file (xxx.tar.gz) to the router, then the parameter file will be saved and

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effective.

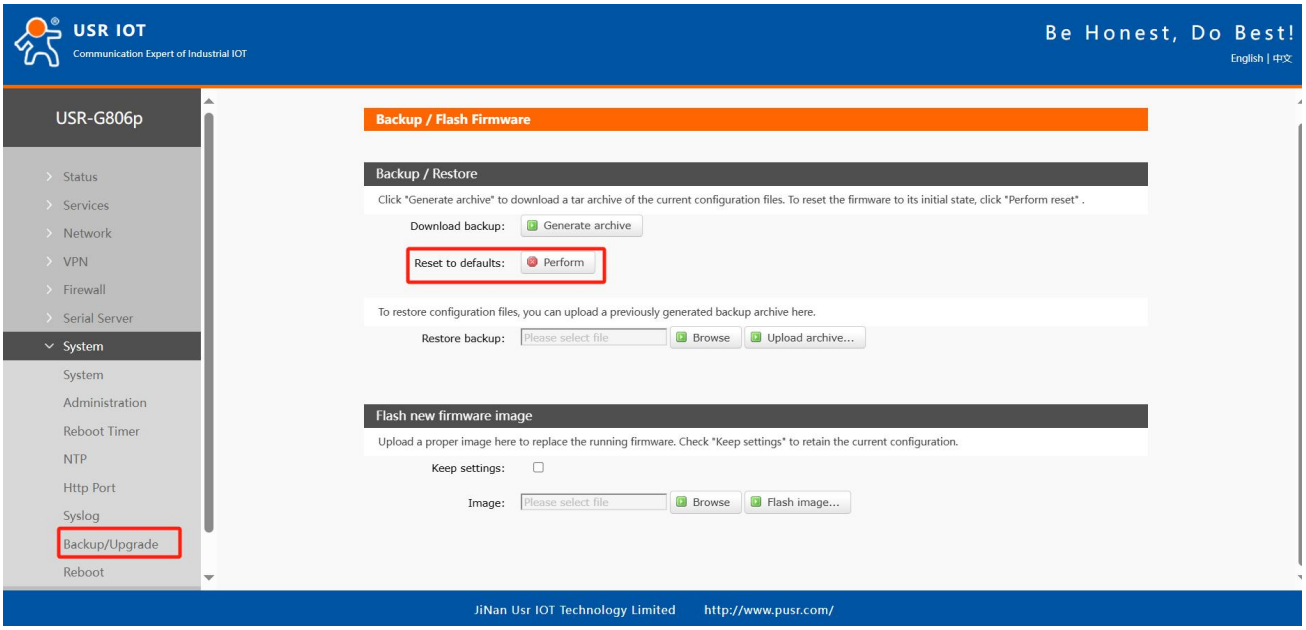
Note: Firmware recovery configuration is limited to the same version of firmware. Problems may occur due to different parameters in different versions. Users are advised to perform recovery configuration in the same version.

Parameter backup: Click the "Download Backup" button to backup the current parameter file as a compressed package file, such as backup-USR-G806ps-2019-09-16.tar.gz, and save it to the local.

8.6. factory data reset

You can restore factory parameters through the web page.

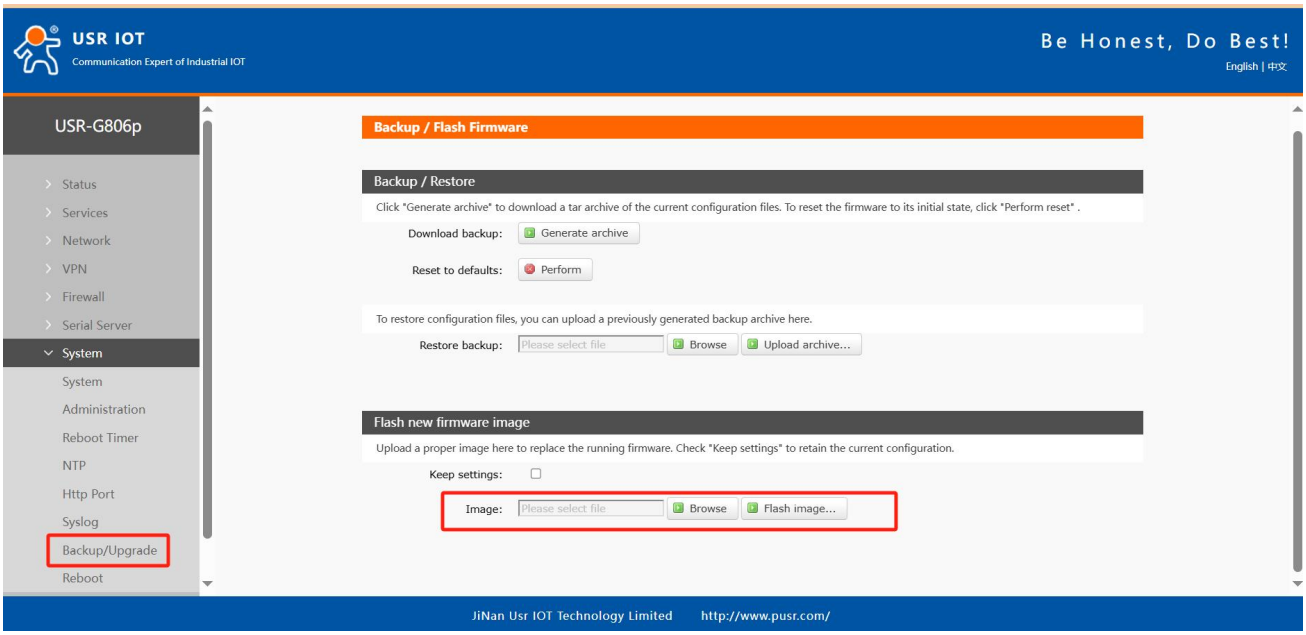
- By long pressing and releasing the Reload button (factory reset button) for 5~15 seconds, the USR-G806p router can be restored to the factory parameters;
- Do not disconnect power to the device during recovery. The factory recovery process lasts about 3 minutes;
- You can restore factory Settings via the web with the same functionality as follows.



Pic 93 Restore the factory page

8.7. firmware upgrade

The USR-G806p module supports online firmware upgrade in web mode.

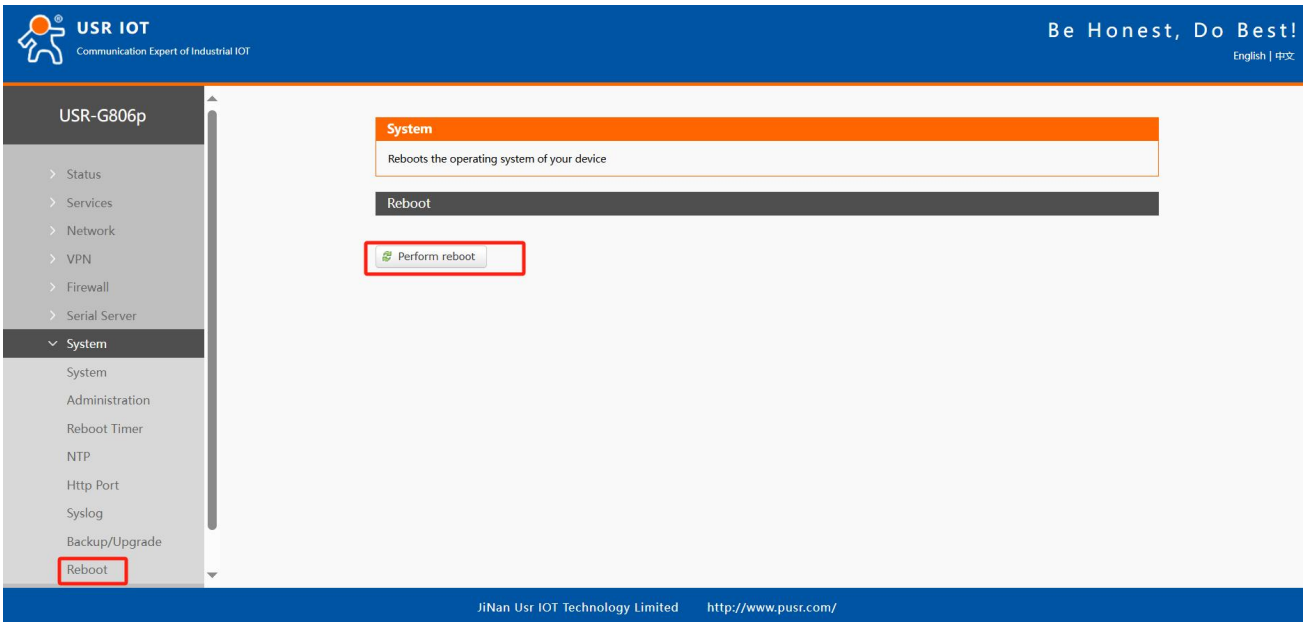


Pic 94 Restore the factory page

< explain >

- The firmware upgrade process will take 3 minutes, please try to log in the web page again after 3 minutes;
- You can choose whether to retain the configuration. By default, parameter upgrade is not retained (it is recommended not to retain parameter upgrade when upgrading to different versions);
- Do not disconnect power or unplug the network cable during firmware upgrade, otherwise the device may crash.

8.8. restart



Pic 95 Restart the page

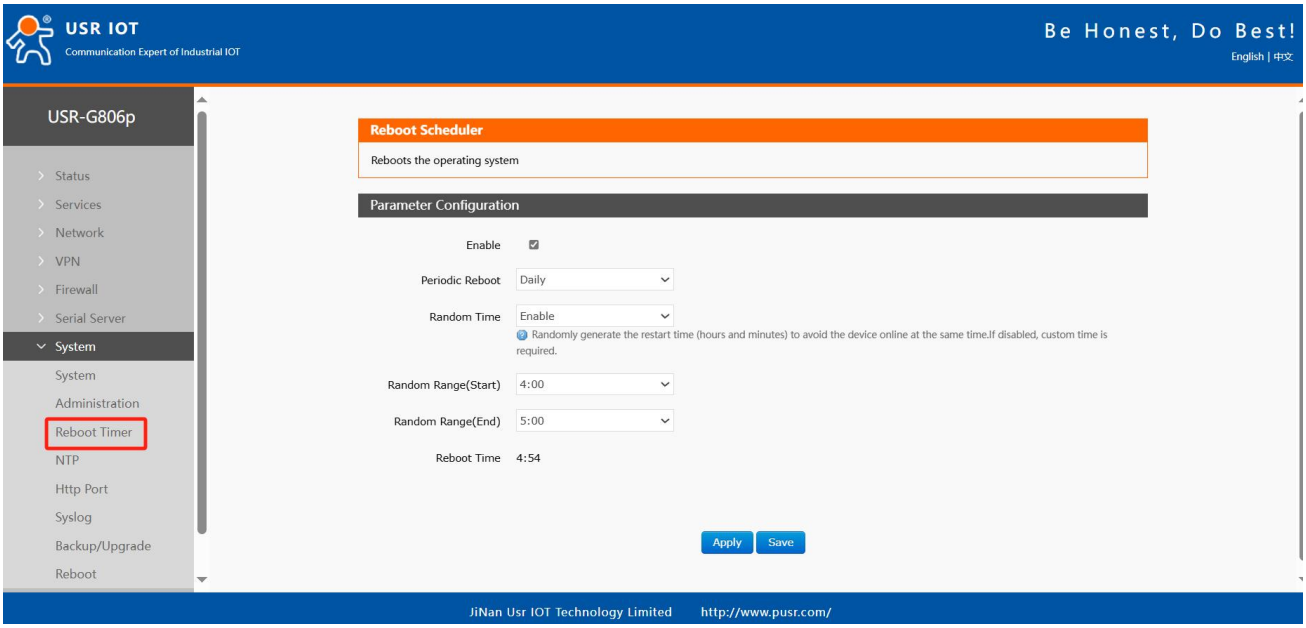
Click the button to restart the router. The restart time is the same as the power-on start time of the router, which

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takes about 50 seconds to complete successfully.

8.9. Restart at regular intervals

To ensure the stability of router operation, it is recommended to enable the timed restart function. This function can facilitate users to manage the router in a timely manner.



Pic 96 Restart the Settings page

< explain >

- The timer restart function is enabled by default. The restart plan will be completed at a random time between 4:00 and 5:00 every day. If you do not need this function, you can cancel it;
- According to the actual application, the scheduled restart plan that meets the conditions can be set, such as the fixed restart date every month or the fixed restart day every week;
- For example, if you select Monday at "Week", the scheduled restart task is executed randomly at 4-5 o'clock every Monday by default.

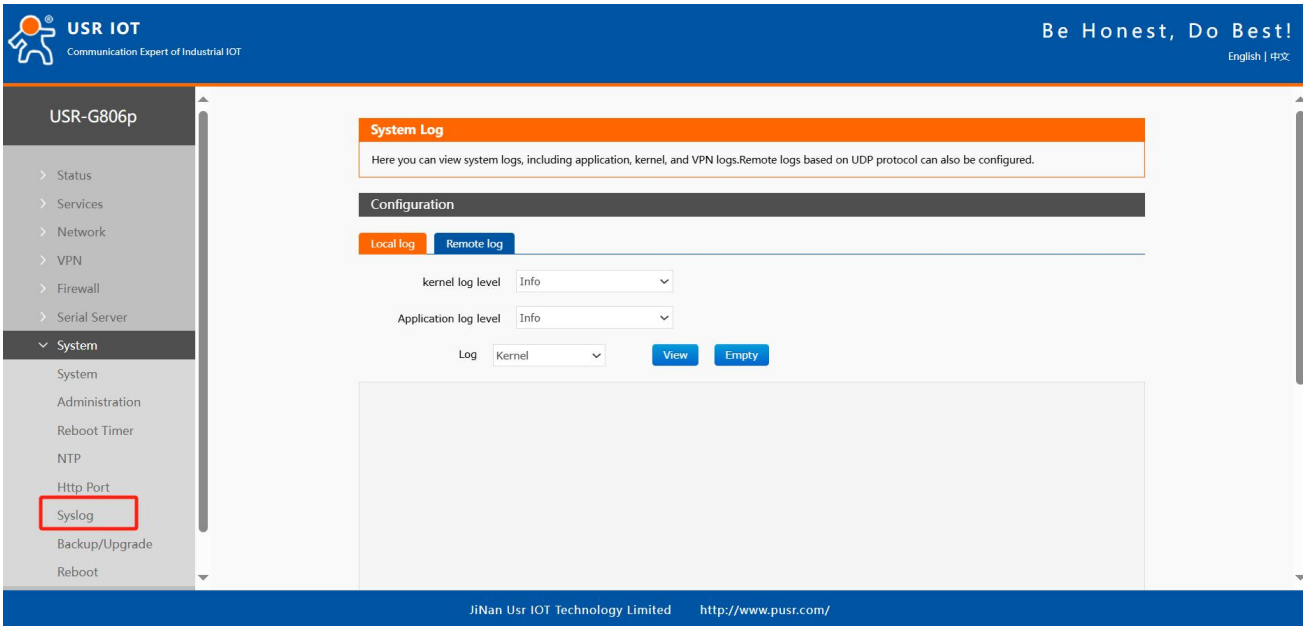
8.10. Daily record

Log is divided into remote log and local log, which are located in the system-system function menu.

long-range Log

- Remote log server: IP of the remote UDP server. Remote logging is not enabled when the IP is 0.0.0.0;
- Remote log server port: Remote UDP server port.

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Pic 97 log page

Local logs

- Core log level: support debugging, information, attention, warning, error, key, alarm, emergency, a total of 8 levels; in order debugging is the lowest, emergency is the highest;
- Application log level: same as above;
- Logs (kernel, application, VPN) support instant view, clear, and log file export.

9. AT order set

The router's AT instruction set is suitable for SMS;

9.1. AT code repertory

Tab 33 Summary of AT instructions

order number	name	function
1	AT	The Test AT command is available
2	AT+R	Restart the device
3	AT+H	Help document and list all instructions
4	AT+CLEAR	Restore factory
5	AT+VER	Query the firmware version
6	AT+CMDPW	Query/set SMS password
7	AT+MAC	query LANMAC
8	AT+APN	Query/set APN parameters
9	AT+SN	query SN

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10	AT+CSQ	Query the current signal strength
11	AT+CPIN	Query SIM card status
12	AT+IMEI	query IMEI
13	AT+ICCID	query ICCID
14	AT+MCCMNC	query CIMI
15	AT+CNUM	query CUNM
16	AT+SYSINFO	Query network operators and formats
17	AT+CELLULAR	Query network mode
18	AT+WEBU	Query the web user name and password
19	AT+PLANG	query language
20	AT+UPTIME	Query the device running time
21	AT+WANINFO	Query wan information
22	AT+4GINFO	Query 4G information
23	AT+LANINFO	Query LAN information
24	AT+WANN	Query wan configuration
25	AT+LAN	Query the LAN configuration
26	AT+PING	Ping check
27	AT+TRAFFIC	Cellular traffic statistics
28	AT+WIREDTRAFFIC	Wired traffic statistics
29	AT+NETSTATUS	Get the default routing interface
30	AT+ALYSIMSWITCH	Query/set the SIM card operator
31	AT+DUALSIMMODE	Set dual SIM card switching mode
Serial port Settings		
32	AT+S	Restart the DTU program
33	AT+UART1	Query/Configure serial port 1 parameters
34	AT+UART2	Query/Configure port 2 parameters
35	AT+UART1FT	Query/Configure the serial port 1 packing time
36	AT+UART1FL	Query/Configure the serial port 1 packet length
37	AT+UART2FT	Query/Configure the serial port 2 packing time
38	AT+UART2FL	Query/Configure the serial port 2 packet length
DTU set up		
39	AT+CHLIST	Query all communication configurations of DTU
40	AT+CHSET	Set the DTU channel configuration
41	AT+CHDEL	Verify that the DTU channel configuration exists
42	AT+CHCLR	Remove all channel configurations of the DTU

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43	AT+CHCFG	Query the DTU specified channel configuration
44	AT+CHCACHE	Query the cache configuration of the specified channel
45	AT+CHREG	Query the registration packet attributes of the specified channel
46	AT+CHHEART	Query the heartbeat packet attributes of the specified channel
47	AT+CHTLS	Query/set the TLS configuration for a specified channel
48	AT+CHMODBUS	Query/set the MODBUS configuration of a specified channel
MQTT		
49	AT+MQTTFAMILYVER	Query/set the MQTT version of the specified channel
50	AT+MQTTFAMILYAUTH	Query/set MQTT authentication information for a specified channel
51	AT+MQTTFAMILYWILL	Query/set the MQTT legacy information for a specified channel
52	AT+MQTTFAMILYCLEAN	Query/set the MQTT clean session for a specified channel
53	AT+MQTTFAMILYRCTM	Query/set the MQTT reconnection interval for a specified channel
54	AT+MQTTFAMILYHEART	Query/set the MQTT heartbeat time for a specified channel
Theme Settings		
55	AT+TOPICPUBLIST	Query the list of published topics for the specified channel
56	AT+TOPICPUBADD	Add a publishing topic
57	AT+TOPICPUBDEL	Delete the topic of the release
58	AT+TOPICPUBCLR	Clear the release topic
59	AT+TOPICSUBLIST	Query the list of subscription topics
60	AT+TOPICSUBADD	Add subscription topics
61	AT+TOPICSUBDEL	Delete the subscription topic
62	AT+TOPICSUBCLR	Clear the subscription topic
63	AT+NETAT	Query/set network AT configuration
Serial port heartbeat		
64	AT+HEARTEN	Query/set serial port heartbeat enable
65	AT+HEARTBIND	Query/set serial heartbeat binding
66	AT+HEARTTM	Query/set serial port heartbeat time
67	AT+HEARTDT	Query/set serial heartbeat data
68	AT+HEARTDTHEX	Query/set serial heartbeat data

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69	AT+NETRSTIM	Query/set network timeout reconnection
70	AT+NETRCTIM	Query/set the network timeout restart time
71	AT+COMRSTIM	Query/set the serial port timeout restart time
GNSS		
72	AT+GNSSFUNEN	Query/Configure GNSS enabled information
73	AT+GNSSMOD	Query/Configure location type
74	AT+SOCKGLK	Query GNSS status
75	AT+QHEARTTM	Query/Configure heartbeat packet time
76	AT+QHWVER	Query GNSS hardware version
77	AT+QLOGOUT	Send a logout session signal
78	AT+QONLINE	Send an online session signal
79	AT+SOCKG	Query/set the working mode
80	AT+GHEARTEN	Query/set heartbeat packet enablement
81	AT+GHEARTTM	Query/set the heartbeat packet interval
82	AT+GHEARTCON	Query/set heartbeat packet data
83	AT+GPOSTP	Query/set the location package type
84	AT+GREGEN	Query/set the registration package enablement
85	AT+GREGTP	Query/set the registration package type
86	AT+GREGDT	Query/set the registration package data
87	AT+GCLOUD	Query/set the cloud ID and password
88	AT+GMDBS	Query/set the modbus device ID
89	AT+GPOSUPTM	Query/set the modbus reporting interval
90	AT+GREGSND	Query/set the registration package sending method
91	AT+GPGGA	Query gps gngga data
92	AT+GPRMC	Query gps gnrmc data
93	AT+CELLOCATION	Query the lac and CID information of the base station
94	AT+GNSSINFO	Query the GPS status

9.1.1. AT order set

9.1.1.1. AT

name	AT
function	Test the AT command
query	order ： AT return ： OK

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set up	not have
parameter	return ： OK
explain	The instruction takes effect immediately, and the return OK represents that the AT instruction is in use

9.1.1.2. AT+R

name	AT+IMEI
function	Query the IMEI code of the device
query	AT+IMEI +IMEI:code
parameter	Code: IMEI code.
give an example	Send: AT+IMEI Return: +IMEI: 868323023238378

9.1.1.3. AT+H

name	AT+H
function	AT instruction set of the query module
query	order ： AT+H return ： OK AT AT+H ...
set up	not have
parameter	Return: AT instruction set Both are in English string format, without Chinese.
explain	not have

9.1.1.4. AT+CLEAR

name	AT+CLEAR
function	factory data reset
query	not have
set up	Command: AT+CLEAR
parameter	not have
explain	The command is executed correctly, and the device is restored to factory without a reply.

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9.1.1.5. AT+VER

name	AT+VER
function	Query the device software version number
query	Command: AT+VER Return: +VER: ver
set up	not have
parameter	Ver: Current software version number, such as V1.0.03
explain	The command is executed correctly and returns the current software version number

9.1.1.6. AT+CMDPW

name	AT+CMDPW
function	Query/set SMS AT command password
query	AT+CMDPW +CMDPW:<cmdpw>
set up	AT+CMDPW=<cmdpw> OK
parameter	cmdpw: The password set, such as test.cn#, can be set to 1-20Byte
explain	The command returns OK if it is executed correctly, and the device is restarted with this setting in effect

9.1.1.7. AT+MAC

name	AT+MAC
function	Query WAN port MAC
query	Command: AT+MAC Return: +MAC: mac
set up	not have
parameter	Mac: WAN port MAC, for example: 9CA525AA8B99
explain	not have

9.1.1.8. AT+APN

name	AT+APN
function	Query or set APN information
query	Command: AT+APN

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	Return: +APN: apn_name, user, pw, type
set up	Command: AT+APN=apn_name, user, pw, type return : OK
parameter	Apn_name: APN address, which can be empty [0-62] bytes, supports the character range [a-zA-Z0-9-.#@] User: user name, which can be empty [0-62] bytes, [33-126] ASCII characters PW: Password, which can be empty [0-62] bytes, [33-126] ASCII characters Type: authentication mode, none/pap/chap
give an example	Command: AT+APN=autocheck,.,.,none return : OK
explain	The command is executed correctly and the configuration takes effect after restarting the device

9.1.1.9. AT+SN

name	AT+SN
function	Query device SN information
query	order : AT+SN Return: +SN: sn
set up	not have
parameter	Sn: 20-bit sn code
explain	not have

9.1.1.10.AT+CSQ

name	AT+CSQ
function	Query the current signal strength information of the device
query	AT+CSQ +CSQ: rssi
parameter	Rssi: Received signal strength indicator
give an example	Send: AT+CSQ Return: +CSQ: 31

< explain >

- Signal strength is commonly expressed in two units: dBm and asu.
- The US-G806p version uses asu value to indicate; the larger the value, the better the signal strength;

standard	aus short-cut process	Signal strength (dBm)
GSM/CDMA/WCDMA/EVDO/EHRPD/LTE	0-31	dBm= -113dBm + signal strength *2

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	Nine of the nine had no signal	
TDSCDMA	100-191 Nine of the nine had no signal	dBm= -116dBm + (signal strength-100)

- When registered to different network modes, the signal strength can not be directly compared whether it is expressed as dBm or asu.
- In general, dBm≥-90dBm and asu≥12. The signal strength meets the coverage requirements, which can be used to measure whether the current signal meets the standards.

9.1.1.11.AT+CPIN

name	AT+CPIN
function	Check the status of the device SIM card
query	Command: AT+CPIN Return: +CPIN: cpin
set up	not have
parameter	Cpin: SIM card status value NOTREADY: Card status is not recognized READY: Identify card status SIM PIN: Lock the PIN status SIM PUK: Lock the PUK state
explain	not have

9.1.1.12.AT+IMEI

name	AT+IMEI
function	query facility IMEI
query	Command: AT+IMEI Return: +IMEI: imei
set up	not have
parameter	IMEI: IMEI number of the device
explain	not have

9.1.1.13.AT+ICCID

name	AT+ICCID
function	Query SIM card ICCID
query	Command: AT+ICCID Return: +ICCID: iccid
set up	not have

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parameter	ICcid: SIM card ICCID number
explain	not have

9.1.1.14.AT+MCCMNC

name	AT+MCCMNC
function	Query SIM card CIMI
query	Command: AT+MCCMNC Return: +MCCMNC: cimi
set up	not have
parameter	Cimi: SIM card Cimi number
explain	not have

9.1.1.15.AT+CNUM

name	AT+CNUM
function	Query the SIM card phone number
query	AT+CNUM +CNUM:<cnum>
set up	not have
parameter	CNUM: SIM card phone number
explain	

9.1.1.16.AT+SYSINFO

name	AT+SYSINFO
function	Query SYSINFO information
query	Command: AT+SYSINFO Return: +SYSINFO: ops_operate, ops_net_type
set up	not have
parameter	ops Operate: Operator information ops_net_type: Network mode
give an example	Command: AT+SYSINFO Return: +SYSINFO: CHN-CT, LTE
explain	not have

9.1.1.17.AT+CELLULAR

name	AT+CELLULAR

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function	Query the network mode of the network
query	Command: AT+CELLULAR Return: +CELLULAR: ops_net_type
set up	not have
parameter	ops_net_type: Network mode
give an example	Command: AT+CELLULAR Return: +CELLULAR: LTE
explain	not have

9.1.1.18.AT+WEBU

name	AT+WEBU
function	Query the web login user name and password
query	AT+WEBU +WEBU:<user>,<pw>
set up	not have
parameter	User: Web login user name PW: Web login password
explain	

9.1.1.19.AT+PLANG

name	AT+PLANG
function	Query the web login language
query	AT+PLANG +PLANG:<plang>
set up	AT+PLANG=<plang> OK
parameter	plang:zh_cn/en zn_cn： the Chinese language en： English
explain	

9.1.1.20.AT+UPTIME

name	AT+UPTIME
function	Query system running time
query	AT+UPTIME +UPTIME:<time>
set up	not have
parameter	time
explain	

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9.1.1.21.AT+WANINFO

name	AT+WANINFO
function	Query WAN network card information
query	AT+WANINFO +WANINFO:<mac>|<ip>|<mask>|<rx_packets>|<tr_packets><rx_bytes>|<tx_bytes>
set up	not have
parameter	Mac: WAN card MAC IP: WAN card IP Mask: Subnet mask of the WAN card rx_packets: Number of received packets Tr_packets: Number of packets sent rx_bytes: Receive traffic tx_bytes: Send traffic
explain	

9.1.1.22.AT+4GINFO

name	AT+4GINFO
function	Query cellular network card information
query	AT+4GINFO +4GINFO:<mac>|<ip>|<mask>|<rx_packets>|<tr_packets><rx_bytes>|<tx_bytes>
set up	not have
parameter	Mac: 4G network card mac IP: IP of 4G network card Mask: Subnet mask of 4G network card rx_packets: Number of received packets Tr_packets: Number of packets sent rx_bytes: Receive traffic tx_bytes: Send traffic
explain	

9.1.1.23.AT+LANINFO

name	AT+LANINFO
function	Query LAN network card information
query	AT+LANINFO +LANINFO:<mac>|<ip>|<mask>|<rx_packets>|<tr_packets><rx_bytes>|<tx_bytes>
set up	not have

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parameter	Mac: LAN network card mac IP: LAN network card IP Mask: Subnet mask of LAN network card rx_packets: Number of received packets Tr_packets: Number of packets sent rx_bytes: Receive traffic tx_bytes: Send traffic pour : If VLAN is configured, this command returns the LAN information
explain	

9.1.1.24.AT+WANN

name	AT+WANN
function	Query WAN port configuration
query	AT+WANN +WANN:<type>,<ip>,<mask>,<gateway>
set up	not have
parameter	Type: WAN port protocol type ip:WAN IP Mask: WAN subnet mask Gateway: WAN gateway
explain	

9.1.1.25.AT+LAN

name	AT+LAN
function	Query/set LAN port configuration
query	AT+LAN +LAN:<ip>,<mask>
set up	AT+LAN=<ip>,<mask>
parameter	IP: LAN IP standard IP address format x.x.x. x x: [0-255] Mask: LAN subnet mask x.x.x. x x: [0-255] conforms to the standard format of subnet mask pour : If VLAN is configured, this command returns the LAN information
explain	

9.1.1.26.AT+PING

name	AT+PING
function	Run the ping command
query	not have
set up	AT+PING=<ip> PING IP(IP): 56 data bytes
parameter	IP: IP or domain name, which cannot be empty. Ping is carried, and the parameter is invalid For example, c1 is invalid limit [1-200) Note: Parameters can only be IP or domain names. Other parameters will be judged according to the address and return results
explain	

9.1.1.27.AT+TRAFFIC

name	AT+TRAFFIC
function	Query 4G traffic for the time period
query	AT+TRAFFIC +TRAFFIC:<rx>,<tx>,<pro_time>,<at_time>
set up	not have
parameter	rx: The number of bytes received in the time period between the last query and this query Tx: Number of bytes sent between the last query and this query Protime: The last time this instruction was used at_time: The time stamp of this instruction is used
explain	

9.1.1.28.AT+WIREDTRAFFIC

name	AT+WIREDTRAFFIC
function	Query the wan traffic period
query	AT+WIREDTRAFFIC +WIREDTRAFFIC:<rx>,<tx>,<pro_time>,<at_time>
set up	not have
parameter	rx: The number of bytes received in the time period between the last query and this query

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	Tx: Number of bytes sent between the last query and this query Pro_time: The last time this instruction was used at_time: The time stamp of this instruction is used
explain	

9.1.1.29.AT+NETSTATUS

name	AT+NETSTATUS
function	Query the default route usage of the network card
query	AT+NETSTATUS +NETSTATUS:<net>
set up	not have
parameter	Net: The status of the network card at this time
explain	

9.1.1.30.AT+ALYSIMSWITCH

name	AT+ALYSIMSWITCH
function	Query the SIM card operator
query	AT+ALYSIMSWITCH +NETSTATUS:<net>
set up	not have
parameter	net: CHN-CT Telecom CMCC shift CUCC log-in
explain	

9.1.1.31.AT+DUALSIMMODE

name	AT+DUALSIMMODE
function	Query/set dual SIM card switching mode
query	AT+DUALSIMMODE +DUALSIMMODE:<mode>
set up	AT+DUALSIMMODE=<mode> OK
parameter	mode: Master is the master Mutual backup Manual
explain	Restart the dtu service to make the configuration effective

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9.1.1.32.AT+S

name	AT+S
function	Restart the dtu service to make the configuration effective
query	not have
set up	AT+SOK
parameter	not have
explain	Restart the dtu service to make the configuration effective

9.1.1.33.AT+UART1

name	AT+UART1
function	Set/Query the parameters of the 485 interface
query	AT+UART1 +UART1:<baudrate>,<data_bit>,<stop_bit>,<parity>
set up	AT+UART1=<baudrate>,<data_bit>,<stop_bit>,<parity> OK
parameter	<Baudrate>: baud rate, 230400/115200 (default) /57600/38400/19200/9600/4800/2400/1200. <data_bit>: data bit, 7/8 <stop_bit>: Stop bit, 1/2 <parity>: Check bit, NONE/EVEN/ODD.
explain	

9.1.1.34.AT+UART2

name	AT+UART2
function	Set/Query the 232 interface parameters
query	AT+UART2 +UART2:<baudrate>,<data_bit>,<stop_bit>,<parity>
set up	AT+UART2=<baudrate>,<data_bit>,<stop_bit>,<parity> OK
parameter	<Baudrate>: baud rate, 115200 (default) /57600/38400/19200/9600/4800/2400/1200. <data_bit>: data bit, 7/8 <stop_bit>: Stop bit, 1/2 <parity>: Check bit, NONE/EVEN/ODD.
explain	

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9.1.1.35.AT+UART1FT

name	AT+UART1FT
function	Set/Query the 485 packaging time interval
query	AT+UART1FT? +UART1FT:<time>
set up	AT+UART1FT=<time> OK
parameter	<time>: Packing time Range [0,1000] 0 (default)
explain	

9.1.1.36.AT+UART1FL

name	AT+UART1FL
function	Set/Query the 485 package length
query	AT+UART1FL +UART1FL:<length>
set up	AT+UART1FL=<length> OK
parameter	<length>: Packing length Range [5,1460] 1000 (default)
explain	

9.1.1.37.AT+UART2FT

name	AT+UART2FT
function	Set/Query 232 Pack length
query	AT+UART2FT +UART2FT:<time>
set up	AT+UART2FT=<time> OK
parameter	<time>: Packing time Range [0,1000] 0 (default)
explain	

9.1.1.38.AT+UART2FL

name	AT+UART2FL
function	Set/Query 232 Pack length

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query	AT+UART2FL +UART2FL:<length>
set up	AT+UART2FL=<length> OK
parameter	<length>: Packing length Range [5,1460] 1000 (default)
explain	

9.1.1.39.AT+CHLIST

name	AT+CHLIST
function	Query the list of communication channels
query	AT+CHLIST +AT+CHLIST:<CH>,<Protocol>,<Enable>,<Description>
set up	not have
parameter	<CH>: Channel name <Protocol>: Channel protocol TCPC/TCPS/UDPC/UDPS/MQTT/HTTPD/AWS/ALI <Enable>: Channel enable ON (default)/ OFF <Description>: Channel description
explain	

9.1.1.40.AT+CHSET

name	AT+CHSET
function	Query the communication channel list
query	not have
set up	AT+CHSET=<CH>,<Protocol>,<Enable>,<Description> OK
parameter	<CH>: Channel name <Protocol>: Channel protocol TCPC/TCPS/UDPC/UDPS/MQTT/HTTPD/AWS/ALI <Enable>: Channel enable ON (default)/ OFF <Description>: Channel description, range [1,32] bytes
explain	

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9.1.1.41.AT+CHDEL

name	AT+CHDEL
function	Delete the communication channel
query	not have
set up	AT+CHDEL=<CH> OK
parameter	<CH>: Channel name range [1,32] bytes
explain	

9.1.1.42.AT+CHCLR

name	AT+CHCLR
function	Clear the communication channel
query	not have
set up	AT+CHCLR OK
parameter	not have
explain	Delete all added channels

9.1.1.43.AT+CHCFG

name	AT+CHCFG
function	Modify or query channel parameters
query	AT+CHCFG=<CH>? +OK=<CH>, <Protocol>, <Variable parameters based on 'Protocol'>
set up	AT+CHCFG=<CH>, <Protocol>, <Variable parameters based on 'Protocol'...>

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parameter	<CH>: Channel name <Protocol>: Protocol TCPC/TCPS/UDPC/UDPS/HTTPD/MQTT/Ali/AWS <Variable parameter section> TCPC：<Server>,<Re-Port>,<Lo-Port>,<Trans>,<BindCOM> <Server>: Remote server address range [0-63] bytes <Re-Port>: Server port range [1-65535] <Lo-Port>: Local port range [0-65535].0 is random <Trans>: Transmission mode TRANS-Transparent transmission (default) MODBUS-ModBUSRTU <BindCOM> Channel binding (ALL is not supported in MODBUS) 485-COM1-485 (default) COM1-485 (default) 232 - COM2-232 ALL - COM1&COM2 UDPC：<Server>,<Re-Port>,<Lo-Port>,<checkPort>,<BindCOM> <Server>: Remote server address range [0-63] test.cn (default) <Re-Port>: Server port range [1-65535] <Lo-Port>: Local port range [0-65535] 0 (default) -0 indicates random <checkPort>: Port check ON (default) / OFF <BindCOM> Channel binding 485-COM1-485 (default) 232 - COM2-232 ALL - COM1&COM2 UDPS：<Lo-Port>,<BindCOM> <Lo-Port>: Local port range [0-65535]. <BindCOM>: Channel binding 485-COM1-485 (default) 232 - COM2-232 ALL - COM1&COM2 MQTT：<Server>,<Re-Port>,<ID> <Server>: Remote server address range [1-128] character cloudmqtt.usr.cn (default) <Re-Port>: Server port range [1-65535] 1883 (default) <ID>: Client ID range [1-128] characters 123456 (default) AWS：<Server>,<Re-Port>,<ID> <Server>: Remote server address Range [1-128] character amazonaws.com.cn (default) <Re-Port>: Server port range [1-65535] 8883 (default) <ID>: Client ID range [1-128] characters 123456 (default) ALI： <Re-Port>,<Type>,<Key>,<name>,<Secret>,<Cli_ID>,<ID>,[<server>]

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	<Re-Port>: Server port range [1-65535] 1883 (default) <Type>: Instance type PUBLIC-Public instance (default) ENTERPRISE-Enterprise instance <Key>: ProductKeye Range [1-128] characters <name>: devicename, range [1-128] character <Secret>: deviceSecret range [1-128] character <Cli_ID>: client ID range [1-128] character 123456 (default) <ID>: A geographical ID cn-hangzhou/cn-shanghai/cn-qingdao/cn-beijing/cn-zhangjiakou/cn-huhehaote/cn-shenzhen/cn-chengdu/cn-hongkong/ap-southeast-1/ap-southeast-3/ap-southeast-5/eu-central-1 When the instance type is an enterprise instance <server>: The server address range [1-128] characters HTTPD: <Server>,<Port>,<TP>,<chD>,<URL>,<TO>,<HD>,<BindCOM> <Server>: Remote server address range [0-63] characters <Port>: Server port range [1-65535] characters <TP>: Request method GET (default)/POST <chD>: Enable filtering packet header ON (default) / OFF <URL>: HTTP URL range [1-128] bytes "/1.php[3F]" (default) <TO>: Time-out range [1-3600 seconds] 10 (default) <HD>: Request header information range [1-128] bytes "Accept: text/html[0D][0A]" (default) <BindCOM> Channel binding 485-COM1-485 (default) 232 - COM2-232 ALL - COM1&COM2
explain	The protocol is inconsistent with the existing channel protocol and an error is returned When polling MODBUS, the serial port binding parameter is not allowed to be ALL

9.1.1.44.AT+CHCACHE

name	AT+CHCACHE
function	Query/set channel data cache function
query	AT+CHCACHE +CHCACHE:<CH>,<Enable>,<Cure>,<Mode>
set up	AT+CHCACHE OK

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parameter	<CH>: Channel name <Enable>: Enable authentication when connecting to the server ON / OFF (default) <Cure>: Measures to deal with data overflow DISOLD-Discard old data DISNEW-Discard new data <Mode>: Cache mode PCKLEN-Cache length limit PCKCNT-Cache packet limit
explain	You do not need to enter other parameters after closing Supported channel protocols: TCPC/TCPS/MQTT/AWS/ Ali Cloud

9.1.1.45.AT+CHREG

name	AT+CHREG
function	Query/set channel data cache function
query	AT+CHREG=<CH> +CHREG:<CH>,<Mode>,<Type>[,<DataType>][,<Data>] OK
set up	AT+CHREG=<CH>,<Mode>,<Type>[,<DataType>][,<Data>] OK
parameter	<CH>: Channel name (HTTPD and MQTT are not supported) <Mode>: Registration package mode NONE-Close USER-Custom SN MAC <Type>: Sending method First-Send a packet when connecting to the server EVERY-Add the registration packet to the front of each packet sent When the registration package mode is customized [<DataType>] Custom registration package data type (only when the custom mode is selected) HEX-Custom registration packet data type is hexadecimal string range [2-64] ACSII-Custom registration packet data type is ascii string range [1-32] ["<Data>"]: Custom registration packet data content
explain	Supported channel protocol: TCPC/UDPC You do not need to enter any other parameters when you close the registration package

9.1.1.46.AT+CHHEART

name	AT+CHHEART
function	Query/set heartbeat packet function
query	AT+CHHEART=<CH> +CHHEART:<CH>,<Mode>,<Type>[,<DataType>][,<Data>] OK
set up	AT+CHHEART=<CH>,<Mode>,<Type>[,<DataType>][,<Data>] OK

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parameter	<CH>: Channel name (HTTPD and MQTT are not supported) <Mode>: Registration package mode NONE-Close USER-Custom SN MAC <Type>: Sending method First-Send a packet when connecting to the server EVERY-Add the registration packet to the front of each packet sent when the registration packet mode is custom [DataType] Custom registration package data type (only when the custom mode is selected) HEX-Custom registration package data type is a hexadecimal string Range [2-64] ASCII-Custom registration package data type is an ascii string range [1-32] [<Data>]: Custom registration package data content
explain	Supported channel protocol: TCPC/UDPC You do not need to enter any other parameters when you close the registration package

9.1.1.47.AT+CHTLS

name	AT+CHTLS
function	Query/set heartbeat packet function
query	AT+CHTLS=<CH> +CHTLS:<CH>,<Enable>,<Method> OK
set up	AT+CHTLS=<CH>,<Enable>,<Method> OK
parameter	<CH>: Channel name <Enable>: Authentication enabled when connecting to the server is OFF-Off (default) TLS10 - TLS1.0 TLS12 - TLS1.2 <Method>: Certificate authentication mode NONE-Do not verify the certificate (default) SERVER-Verify the server certificate BOTH-Two-way authentication
explain	You do not need to enter other parameters after closing Supported channel protocols:MQTT,All,TCPC,HTTPD [Note: AWS supports TLS by default and does not support AT command query configuration]

9.1.1.48.AT+CHMODBUS

name	AT+CHMODBUS
function	Query/set heartbeat packet function

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query	AT+CHMODBUS=<CH>,<Enable>,<Ack>,<Time> +CHMODBUS:<CH>,<Enable>,<Ack>,<Time> OK
set up	AT+CHMODBUS=<CH>,<Enable>,<Ack>,<Time> OK
parameter	<CH>: Channel name <Enable>: Host polling enables the status OFF-off (default) ON- open Ack: Overdue response OFF-Off (default) ON- open <TIME>: Time out range [10-6000] milliseconds 200 (default)
explain	No other parameters need to be input when closing. Channel protocols supported: TCPC, TCPS If the protocol transmission mode is not MODBUS, an error is returned

9.1.1.49.AT+MQTTFAMILYVER

name	AT+MQTTFAMILYVER
function	Query/set MQTT, version information
query	AT+MQTTFAMILYVER=<CH> +MQTTFAMILYVER:<CH>,<Ver> OK
set up	AT+ MQTTFAMILYVER =<CH>,<Ver> OK
parameter	<CH>: Channel name <Ver>: MQTT version V3.1-V3.1 V3.1.1-V3.1.1 (default)
explain	Supported channel protocol: MQTT

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9.1.1.50.AT+MQTTFAMILYAUTH

name	AT+MQTTFAMILYAUTH
function	Query/set MQTT, version information
query	AT+ MQTTFAMILYAUTH=<CH> +MQTTFAMILYAUTH:<CH>,<Enable>,<Usrname>,<Password> OK
set up	AT+MQTTFAMILYAUTH=<CH>,<Enable>,<Usrname>,<Password> OK
parameter	<CH>: Channel name <Enable>: Enable the authentication status ON (default) / OFF when connecting to the server <Usrname>: The user name required for authentication when connecting to the server [1-128 bytes] <Password>: The password required for authentication when connecting to the server [1-128 bytes]
explain	No other parameters need to be entered when closing. Channel protocol is supported:MQTT

9.1.1.51.AT+MQTTFAMILYWILL

name	AT+ MQTTFAMILYWILL
function	Query/set MQTT, last message
query	AT+ MQTTFAMILYWILL=<CH> +MQTTFAMILYWILL:<CH>,<Enable>,<Topic>,<Qos>,<Payload> OK
set up	AT+MQTTFAMILYWILL =<CH>,<Enable>,<Topic>,<Qos>,<Payload> OK
parameter	<CH>: Channel name <Enable>: Switch status ON / OFF (default) <Topic>: The name of the legacy topic. Scope [1-128 bytes] <Qos>: The quality of service guarantee level for the legacy 0-At most once 1-At least once 2-Get it right the first time <Payload>: Content of the will [1-128 bytes]
explain	No other parameters need to be entered when closing. Channel protocol is supported:MQTT

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9.1.1.52.AT+MQTTFAMILYCLEAN

name	AT+MQTTFAMILYCLEAN
function	Query/set MQTT clean session function
query	AT+ MQTTFAMILYCLEAN=<CH> +MQTTFAMILYCLEAN:<CH>,<Enable> OK
set up	AT+ MQTTFAMILYCLEAN =<CH>,<Enable> OK
parameter	<CH>: Channel name <Enable>: Switch status ON / OFF (default)
explain	Supported channel protocols: MQTT/Alı/AWS

9.1.1.53.AT+MQTTFAMILYRCTM

name	AT+ MQTTFAMILYRCTM
function	Query/set MQTT reconnection detection interval
query	AT+ MQTTFAMILYRCTM=<CH> +MQTTFAMILYRCTM:<CH>,<CTim> OK
set up	AT+ MQTTFAMILYRCTM =<CH>,<CTim> OK
parameter	<CH>: Channel name <RCTim>: Reconnection detection interval range [1-3600] 5 (default)
explain	Supported channel protocols: MQTT/Alı/AWS

9.1.1.54.AT+MQTTFAMILYHEART

name	AT+MQTTFAMILYHEART
function	Query/set MQTT, heartbeat time
query	AT+MQTTFAMILYHEART =<CH>,<CTim> +MQTTFAMILYHEART =<CH>,<CTim> OK
set up	AT+ MQTTFAMILYHEART =<CH>,<CTim> OK
parameter	<CH>: Channel name <Heart>: Heartbeat packet time MQTT/AWS: 30 (default) (0-6000 seconds) ALI: 300 (default) (30-1200 seconds
explain	Supported channel protocols: MQTT/Alı/AWS

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9.1.1.55.AT+TOPICPUBLIST

name	AT+TOPICPUBLIST
function	Query the MQTT pre-release topic list
query	AT+ TOPICPUBLIST=<CH> +TOPICPUBLIST:<CH>,<name>,<Topic>,<Qos>,<Retained>,<BindCOM>,<description> OK
set up	not have
parameter	<CH>: Channel name <name>: Name <Topic>: Publish the topic name <Qos>: Service quality assurance level 0-up to one time 1-At least once 2-Get it right the first time <Retained>: Whether to retain the message ON (default) / OFF <BindCOM>: Bind channel 485 - COM1-485 232 - COM2-232 ALL-COM1&COM2 <description>: Description
explain	Supported channel protocols: MQTT/All/AWS

9.1.1.56.AT+TOPICPUBADD

name	AT+TOPICPUBADD
function	Add new topics to the preset release topic
query	not have
set up	AT+TOPICPUBADD =<CH>,<name>,<Topic>,<Qos>,<Retained>,<BindCOM>,<description> OK
parameter	<CH>: Channel name <name>: Name <Topic>: Publish the topic name <Qos>: Service quality assurance level 0-up to once 1-At least once 2-Get it right the first time <Retained>: Whether to retain the message ON (default) / OFF <BindCOM>: Bind channel 485 - COM1-485 232 - COM2-232 ALL-COM1&COM2 <description>: Description
explain	Supported channel protocols: MQTT/All/AWS

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9.1.1.57.AT+TOPICPUBDEL

name	AT+TOPICPUBDEL
function	Delete the topic with this name from the preset release topics in the specified channel
query	not have
set up	AT+ TOPICPUBDEL =<CH>,<name> OK
parameter	<CH>: Channel name <name>: Publish the name of the topic [1-128 bytes]
explain	Supported channel protocols: MQTT/Alı/AWS

9.1.1.58.AT+TOPICPUBCLR

name	AT+TOPICPUBCLR
function	Clear the preset release topic for the specified channel
query	not have
set up	AT+TOPICPUBCLR=<CH> OK
parameter	<CH>: Channel name
explain	Supported channel protocols: MQTT/Alı/AWS

9.1.1.59.AT+TOPICSUBLIST

name	AT+TOPICSUBLIST
function	Query the MQTT pre-subscribed topic list
query	AT+TOPICSUBLIST=<CH> +TOPICSUBLIST:<CH>,<name>,<Topic>,<Qos>,<BindCOM>,<description> OK
set up	not have
parameter	<CH>: Channel name <name>: Name <Topic>: Publish the topic name <Qos>: Service quality assurance level 0-up to once 1-At least once 2-Get it right the first time <Retained>: Whether to retain the message ON (default) / OFF <BindCOM>: Bind channel

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	485 - COM1-485 232 - COM2-232 ALL-COM1&COM2 <description>: Description
explain	Supported channel protocols: MQTT/All/AWS

9.1.1.60.AT+TOPICSUBADD

name	AT+TOPICSUBADD
function	Add a new topic to the preset subscription topic
query	not have
set up	AT+TOPICSUBADD =<CH>,<name>,<Topic>,<Qos>,<BindCOM>,<description> OK
parameter	<CH>: Channel name <name>: Name <Topic>: Publish the topic name <Qos>: Service quality assurance level 0-up to once 1-At least once 2-Get it right the first time <Retained>: Whether to retain the message ON (default) / OFF <BindCOM>: Bind channel 485 - COM1-485 232 - COM2-232 ALL-COM1&COM2 <description>: Description
explain	Supported channel protocols: MQTT/All/AWS

9.1.1.61.AT+TOPICSUBDEL

name	AT+TOPICSUBDEL
function	Delete the topic in the preset subscription topic that specifies the channel
query	not have
set up	AT+TOPICSUBDEL=<CH>,<name> OK
parameter	<CH>: Channel name <name>: The name of the topic to be deleted
explain	Supported channel protocols: MQTT/All/AWS

9.1.1.62.AT+TOPICSUBCLR

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name	AT+TOPICSUBCLR
function	Clear the preset subscription topic for the specified channel
query	not have

set up	AT+TOPICSUBCLR=<CH> OK
parameter	<CH>: Channel name
explain	Supported channel protocols: MQTT/Ali/AWS

9.1.1.63.AT+HEARTEN

name	AT+HEARTEN
function	Enable or disable the heartbeat packet function
query	AT+HEARTEN +HEARTEN:<heart_enable>
set up	AT+HEARTEN=<heart_enable> OK
parameter	heart_enable：ON/OFF
explain	The command is executed correctly and the configuration takes effect after restarting the DTU

9.1.1.64.AT+HEARTBIND

name	AT+HEARTBIND
function	Query/set the serial heartbeat packet binding port
query	AT+HEARTBIND? +HEARTBIND:<BindCOM> OK
set up	AT+ HEARTBIND=<BindCOM> OK
parameter	<BindCOM>: Bind the serial port 485 - COM1-485 232 - COM2-232 ALL - COM1&COM2
explain	

9.1.1.65.AT+HEARTTM

name	AT+HEARTTM
function	Set/Query heartbeat time
query	AT+HEARTTM? +HEARTTM:<heart_times> OK
set up	AT+HEARTTM=<heart_times> OK
parameter	<heart_times>: Heartbeat time, range [1,6000] seconds
explain	

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9.1.1.66.AT+HEARTDT

name	AT+HEARTDT
function	Query or set heartbeat packet data
query	AT+HEARTDT +HEARTDT:<data>
set up	AT+HEARTDT=<data> OK
parameter	Data: [2-512] hexadecimal number: 0-9, a-f, A-F, even bits
explain	The command is executed correctly and the configuration takes effect after restarting the DTU

9.1.1.67.AT+HEARTDTHEX

name	AT+HEARTDTHEX
function	Query/set the serial heartbeat packet content
query	AT+HEARTDTHEX? +HEARTDTHEX:<heartbeat> OK
set up	AT+ HEARTDTHEX =<heartbeat> OK
parameter	<heartbeat>: Custom heartbeat packet content (HEX)
explain	

9.1.1.68.AT+NETRSTIM

name	AT+NETRSTIM
function	Set/Query the restart time without data
query	AT+NETRSTIM? +NETRSTIM:<Enable>,<timeout_restart> OK
set up	AT+NETRSTIM=<Enable>[,<timeout_restart>] OK
parameter	<Enable>: Enable ON/OFF (default) <timeout_restart>: Restart time without data, range [60-36000] seconds 36000 (default) (60-36000 seconds)
explain	You do not need to enter any other parameters after closing this function

9.1.1.69.AT+NETRCTIM

name	AT+NETRCTIM
function	Set/Query no data reconnection time
query	AT+NETRCTIM? +NETRCTIM:<Enable>,<timeout_restart> OK
set up	AT+NETRCTIM=<Enable>[,<timeout_restart>] OK

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parameter	<Enable>: Enable ON/OFF (default) <timeout_restart>: No data restart time, range [60-3600] seconds 3600 (default) (60-3600 seconds)
explain	You do not need to enter any other parameters after closing this function

9.1.1.70.AT+COMRSTIM

name	AT+COMRSTIM
function	Set/reset the serial port restart time without data
query	AT+COMRSTIM? +COMRSTIM:<Enable>,<BindCOM>,<timeout_restart> OK
set up	AT+COMRSTIM=<Enable>[,<BindCOM>,<timeout_restart>] OK
parameter	<Enable>: Enable ON (default)/ OFF <BindCOM>: Bind the serial port 485 - COM1-485 232 - COM2-232 ALL - COM1&COM2 <timeout_restart>: No data restart time, range [60-3600] seconds 3600 (default) (60-3600 seconds)
explain	You do not need to enter any other parameters to close this function

9.1.1.71.AT+GNSSFUNEN

name	AT+GNSSFUNEN
function	Turn on/off GNSS function
query	Q: AT+GNSSFUNEN? Answer: +GNSSFUNEN: <enable>
set up	Q: AT+GNSSFUNEN=<enable> answer ： OK
parameter	Enable: 1 means open, 0 means close, default is off
explain	

9.1.1.72.AT+GNSSMOD

name	AT+GNSSMOD
function	Select GNSS working mode
query	Q: AT+GNSSMOD? Answer: +GNSSMOD: <mode>
set up	Q: AT+GNSSMOD=<mode> answer ： OK

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parameter	mode: NET: Private cloud mode CLOUD: Someone's cloud model Default working mode: NET
explain	

9.1.1.73.AT+SOCKGLK

name	AT+SOCKGLK
function	Query the status of the location server connection
query	Q: AT+SOCKGLK? Answer: +SOCKGLK: <state>
set up	
parameter	<state>: OFF: ununited ON: Connected
explain	

9.1.1.74.AT+QHEARTTM

name	AT+QHEARTTM
function	Query/set the heartbeat sending interval
query	Q: AT+QHEARTTM? A: +QHEARTTM <time>
set up	Q: AT+QHEARTTM=<time> answer : OK
parameter	<time>: Send interval, [1-6000]s The default is 30s
explain	

9.1.1.75.AT+QHWVER

name	AT+QHWVER
function	Query/set hardware version number
query	Q: AT+QHWVER? Answer: +QHWVER: <ver>
set up	Q: AT+QHWVER=<ver> answer : OK
parameter	<ver>: Hardware version number, string type, up to 20 bytes supported by default: GNSS-v1.0
explain	

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9.1.1.76.AT+QLOGOUT

name	AT+QLOGOUT
function	Log out of the terminal in Qianxun mode
query	Q: AT+QLOGOUT answer ： OK
set up	
parameter	
explain	Qianxun platform does not support this instruction, and it is mainly adapted to JT808 standard protocol for reservation

9.1.1.77.AT+QONLINE

name	AT+QONLINE
function	The terminal is logged off and online in the Qianxun mode
query	Q: AT+QONLINE answer ： OK
set up	
parameter	
explain	Qianxun platform does not support this instruction, and it is mainly adapted to JT808 standard protocol for reservation

9.1.1.78.AT+SOCKG

name	AT+SOCKG
function	Third-party cloud server related parameters
query	Q: AT+SOCKG? Answer: +SOCKG: <protocol>, <address>, <port>
set up	Q: AT+SOCKG=<protocol>, <address>, <port> answer ： OK
parameter	<protocol>: Communication protocol, TCPC or TCPS <address>: Server address, domain name or IP. The default is test.usr.cn. In TCPS, this field can be empty <port>: Server port, range [1~65535], default: 2317
explain	

9.1.1.79.AT+GHEARTEN

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name	AT+GHEARTEN
function	Heartbeat packet enablement control is enabled in the third-party cloud mode

query	Q: AT+GHEARTEN? A: +GHEARTEN: <enable>
set up	Q: AT+GHEARTEN=<enable> answer ： OK
parameter	<enable>: Enable control, ON means on, OFF means off, default is off
explain	

9.1.1.80.AT+GHEARTCON

name	AT+GHEARTCON
function	Heartbeat packet content in the third-party cloud mode
query	Q: AT+GHEARTCON? A: +GHEARTCON: <content>
set up	Q: AT+GHEARTCON=<content> answer ： OK
parameter	<content>: Heartbeat packet content, character type, length [1-512], default is 123456
explain	

9.1.1.81.AT+GHEARTTM

name	AT+GHEARTTM
function	Query/set the heartbeat sending interval in third-party cloud mode
query	Q: AT+GHEARTTM? A: +GHEARTTM <time>
set up	Q: AT+GHEARTTM=<time> answer ： OK
parameter	<time>: Sending interval, [1~6000]s, default is 30s
explain	

9.1.1.82.AT+GPOSTP

name	AT+GPOSTP
function	Query/set the heartbeat sending type in third-party cloud mode
query	Q: AT+GPOSTP? Answer: +GPOSTP <type>
set up	Q: AT+GPOSTP=<type> answer ： OK
parameter	<type>:
	RMC: The original field of RMC in the GNSS information report

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	GGA: The original GGA field in the GNSS information reported MDBS: The MODBUS46 function code is reported. Default: MDBS
explain	

9.1.1.83.AT+GREGEN

name	AT+GREGEN
function	Query/set the heartbeat sending type in third-party cloud mode
query	Q: AT+GREGEN? A: +GREGEN: <enable>
set up	Q: AT+GREGEN=<enable> answer : OK
parameter	<enable>: Enable control, ON means open, OFF means close, default is off
explain	

9.1.1.84.AT+GREGTP

name	AT+GREGTP
function	Query/set the package type registered under third-party cloud mode
query	Q: AT+GREGTP? Answer: +GREGTP: <type>
set up	Q: AT+GREGTP=<type> answer : OK
parameter	<type>: [ICCID, IMEI, USER, IMSI, SN], default value: USER
explain	

9.1.1.85.AT+GREGDT

name	AT+GREGDT
function	Query/set the package type registered under third-party cloud mode
query	Q: AT+GREGDT? A: +GREGDT: <data>
set up	Q: AT+GREGDT=<data> answer : OK
parameter	<data>: User-defined registration packet data in hexadecimal string format with a maximum length of 256 bytes (after conversion), 2 to 512 even bytes, and a default of 7777772E7573722E636E

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explain	

9.1.1.86.AT+GCLOUD

name	AT+GCLOUD
function	Query/set the content of human cloud parameters in third-party cloud mode
query	Q: AT+GCLOUD? Answer: +GCLOUD: <id>, <password>
set up	Q: AT+GCLOUD=<id>, <password> answer : OK
parameter	<id>: The registered ID of the cloud function is passed by someone. It is 20 bytes long and defaults to empty <password>: The communication password of the cloud function is passed by someone. The length is 8 bytes and the default is empty
explain	

9.1.1.87.AT+GMDBS

name	AT+GMDBS
function	Query/set MODBUS parameters in third-party cloud mode
query	Q: AT+GMDBS? Answer: +GMDBS: <id>, <address>
set up	Q: AT+GMDBS=<id>,<address> answer : OK
parameter	<id>: From the machine number, [0-255], default value: 1 <address>: Register address, [0-65535]. Default value: 0
explain	

9.1.1.88.AT+GPOSUPTM

name	AT+GPOSUPTM
function	Query/set the interval of sending location information
query	Q: AT+GPOSUPTM? A: +GPOSUPTM: <time>
set up	Q: AT+GPOSUPTM=<time> answer : OK
parameter	<time>: Sending interval, [1~6000]s, default is 30s
explain	

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9.1.1.89.AT+GREGSND

name	AT+GREGSND
function	Query/set the sending method of registration package under third-party cloud mode
query	Q: AT+GREGSND? Answer: +GREGSND <type>
set up	Q: AT+GREGSND=<type> answer ： OK
parameter	<type>: <LINK/DATA>, default value: LINK
explain	

9.1.1.90.AT+GPOSSND

name	AT+GPOSSND
function	Query/set the heartbeat sending direction in private cloud mode
query	Q: AT+GREGSND? Answer: +GREGSND <type>
set up	Q: AT+GREGSND=<type> answer ： OK
parameter	<type>: NET: Position the heartbeat packet to the network [default] COM: Position the heartbeat packet to the serial port DOUBLE: It is sent to both the network and the serial port
explain	

9.1.1.91.AT+GPGGA

name	AT+GPGGA
function	Query the original GPGGA information
query	Q: AT+GPGGA? Answer: +GPGGA: <gpgga>
set up	
parameter	Gpgga>: GPGGA raw information
explain	

9.1.1.92.AT+GPRMC

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name	AT+GPRMC
function	Query the original GPRMC information
query	Q: AT+GPRMC?

	Answer: +GPRMC: <gprmc>
set up	
parameter	GPRMC: Original GPRMC information
explain	

9.1.1.93.AT+CELLOCATION

name	AT+CELLOCATION
function	Query base station information
query	Q: AT+CELLOCATION? Answer: + CELLOCATION <lac>, <cid>
set up	
parameter	LAC: Location code <cid>: Cell ID
explain	

9.1.1.94.AT+GNSSINFO

name	AT+GNSSINFO
function	Query GNSS information
query	Q: AT+GNSSINFO? Answer: +GNSSINFO: <status>, <longitude_hem>, <longitude>, <latitude_hem>, <latitude>
set up	
parameter	<state>: Positioning status: A: valid positioning, V: invalid positioning <longitude_hem>: Longitude hemisphere: E and W <longitude>: Longitude (in degrees) <latitude_hem>: Latitude hemisphere: N and S <latitude>: Latitude (in degrees)
explain	

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11. Update log

Version	Update content	Refresh time
V1.0.1	Create documents and complete relevant function descriptions	2025-07-01

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