User Manual

---Apply to WL-R320 Series 4G+/4G Router

V1.2

http://www.wlink-tech.com

Jan, 2023

Caution

Due to product updates or functional upgrading, we may renew the content of this file, and this file only for reference. All statement, information, suggestion etc. in this file does not compose any form of guarantee and we WLINK reserves the right of final explanation.

Version History

Updates between document versions are cumulative. The latest document version contains all updates made to previous version.

Data	Document Version	Software Version	Note
2023-1-17	V1.2	V7.2.1112	Improve GUI, Add link backup
2021-10-30	V1.1	V5.1.1030	Improve GUI
2021-5-30	V1.0	V4.1.0530	

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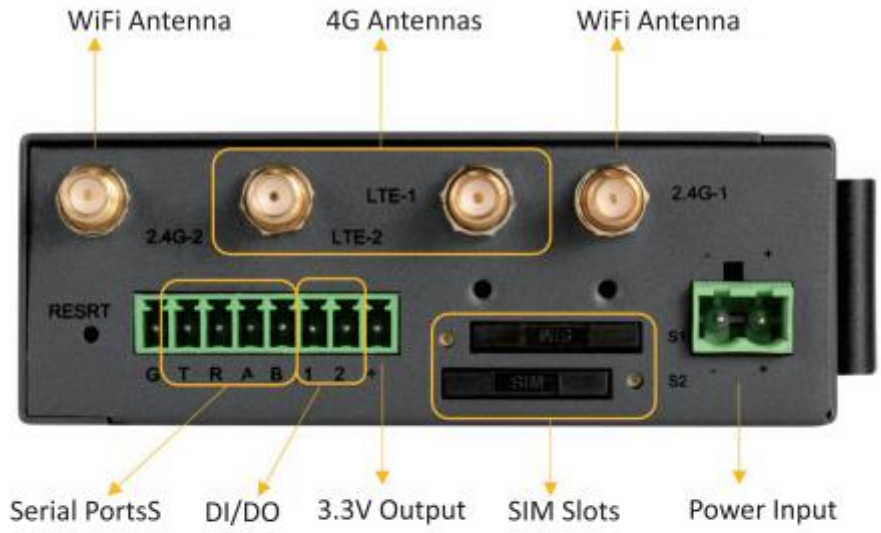
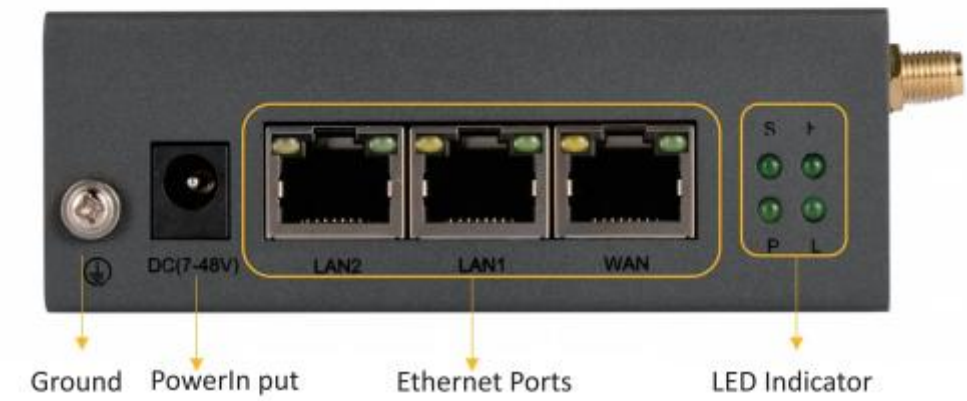
1 Contents

2 Hardware Introduction

This chapter is mainly for installation introduction, there would be some difference between the scheme and real object. But the difference won't have any influence to products performance.

2.1 Interface





NOTE

There are some difference on Antenna interface and indicator light for the device with extended Wi-Fi, GPS features.

Table 2-1 Router Interface

Port	Instruction	Remark
SIM	Support 1.8/3V automatic detection.	Two SIM as default
Antenna Connectors	SMA connector, 50Ω. LTE1 as Main, LTE2 as 4G Aux. Wi-Fi1, Wi-Fi2 and GNSS Optional.	
LAN1	10/100Base-TX，MDI/MDIX self-adaptio	
LAN2	10/100Base-TX，MDI/MDIX self-adaption	LAN as Default
WAN	10/100Base-TX，MDI/MDIX self-adaption	LAN as Default
TTL/RS232	Gnd, Tx, Rx	RS232 as default
RS485	A, B	
GPIO	2 GPIOs	
Reset	Reset button, (press on button at least 5 seconds)	
PWR	1xDC Power connector 1x Terminal Block(2 Pins)	7～48VDC

2.2 LED Status

Table 2-2 Router LED indicator Status

silk-screen	Indicator		Note
System(S)	Blue	Slow Blinking (1s)	System Auto-check
		Quick Blinking (0.5s)	Dialing
		Solid light	4G/3G online
Power(P)	Orange	Solid light	Power on
		light off	Power off or power fault
High(H)	Green	Solid light	Good Signal(CSQ≥-19)
Low(L)	Red	Solid light	Weak Signal(CSQ<-18)

2.3 Dimension

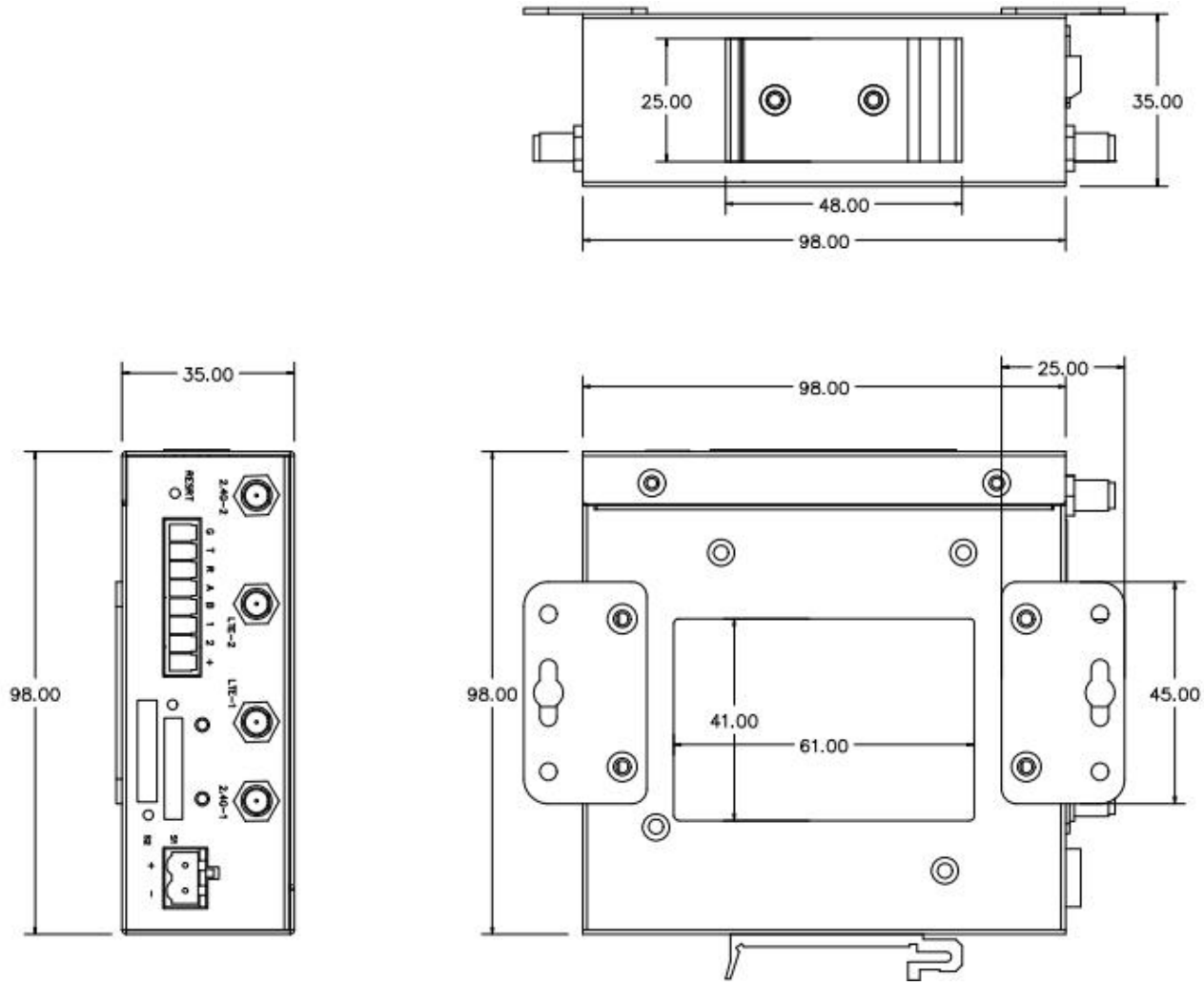
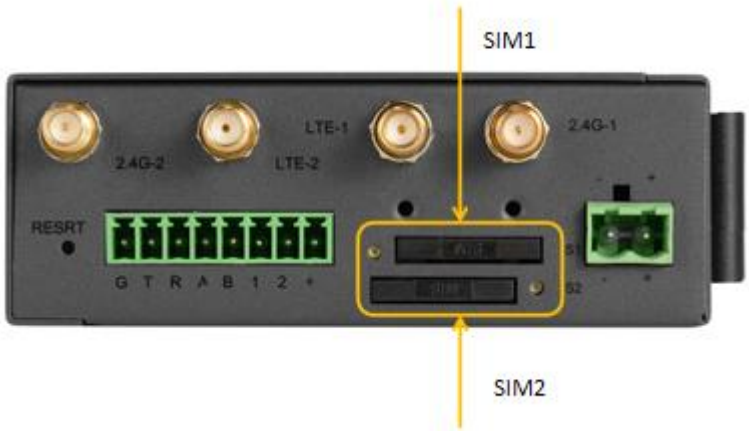


Figure 2-2 R320 Series Router Dimension

2.4 How to Install

1.4.1 SIM/UIM card install

Please insert the dual SIM cards before configure the router.



CAUTION

Before connecting, please disconnect any power resource of router

1.4.2 Ethernet Cable Connection

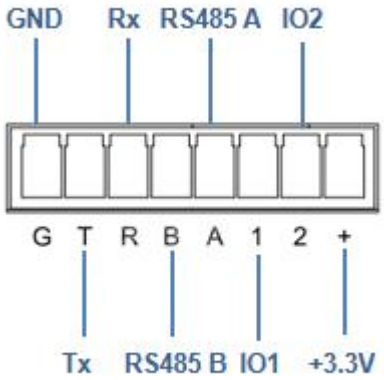
Connect the router with a computer by an Ethernet cable for GUI configuration, or transit by a switch.

1.4.3 Power Supply Connection

Voltage input range +9~48VDC, 5.5mm DC interface and 2Pins terminal block are alternative.

1.4.4 Serial Port and GPIO Connection

WL-R320 supports one RS232 and one RS485 ports as default. It might be requested serial port for TTL when placed order. The serial port feature supports TCP/UDP client/server as optional, also supports Modbus protocol.



1.4.6 Review

After insert the SIM/UIM card and connect Ethernet cable and antenna, connect power supply adaptor or power cable.

CAUTION

Please connect the antenna before power on, otherwise the signal maybe poor because of impedance mismatching.

Notice:

Step 1 Check the antenna connection.

Step 2 Check SIM/UIM card, confirm SIM/UIM card is available.

Step 3 Power on the industrial Router

----END

3 Router Configuration

WL-R320 Series routers support GUI. This chapter introduce GUI configuration via Ethernet port, if need CLI configuration guide, please contact our technical support department by email: support@wlink-tech.com.

3.1 Local Configure

The router supports to be configured by local Ethernet port, you could specify a static IP or set as DHCP. The default IP address is 192.168.8.1，subnet mask is 255.255.255.0, please refer to following.

Step 1 Click “start > control panel”, find “Network Connections” icon and double click it to enter, select “Local Area Connection” corresponding to the network card on this page. Refer to the figure below.

Figure 2-1 Network Connection

Step 2 Obtain a IP address automatically or set up IP address,192.168.8.xxx(XXX can be any number between 2～254)

Step 3 Run an Internet Explorer and visit “http://192.168.8.1/”, to enter identify page.

The default username is admin and password is admin168. User should modify the login password.

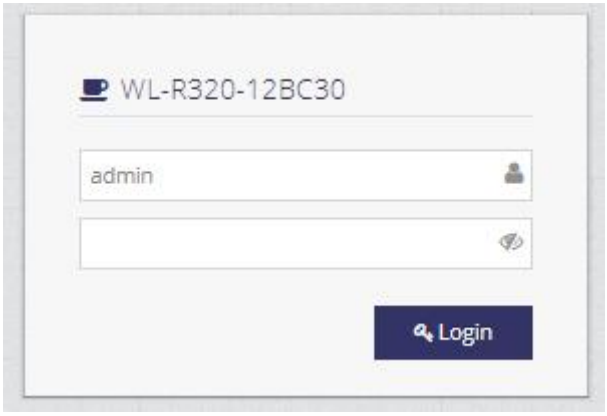
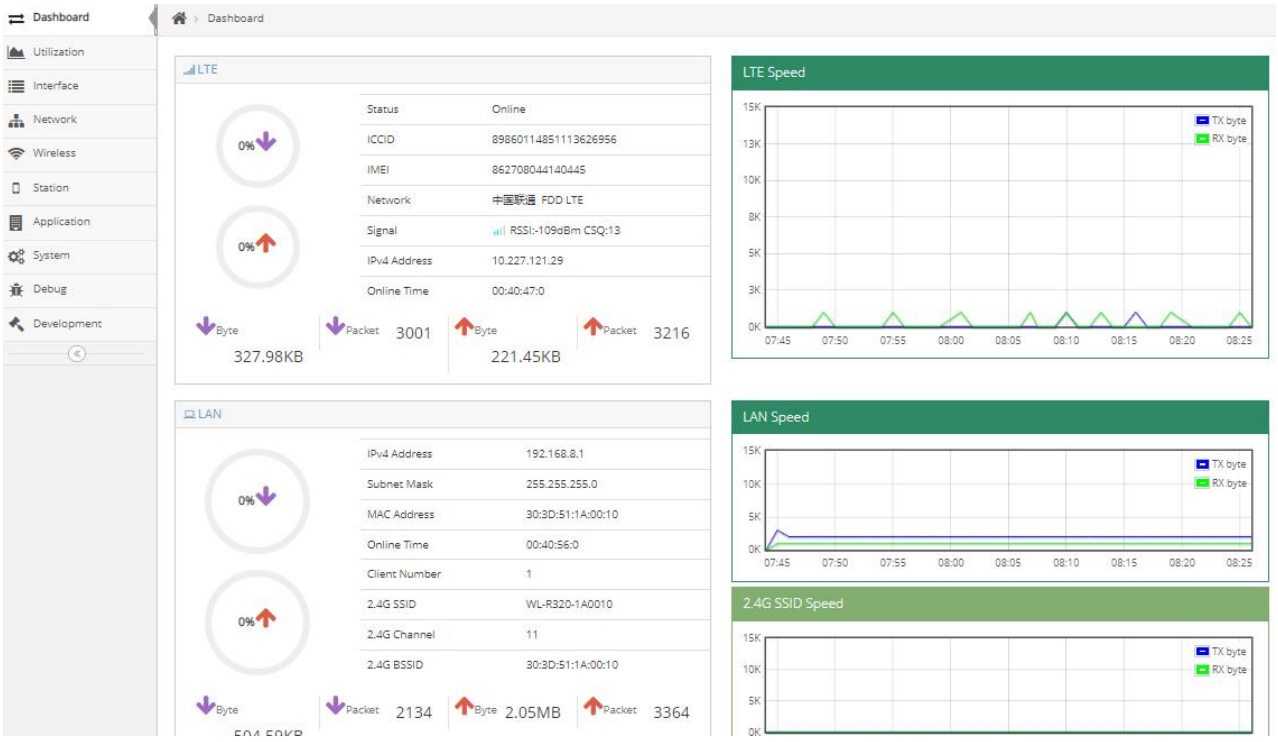


Figure 2-2 User Identify Interface

----END

2.2 Dashboard

Check routers information such as status, 4G/WAN speed, after login router. Especially, suggest change the password according to the prompts because of security requirement.



2.3 Utilization

The Utilization GUI will be display router system information such as CPU, Memory information

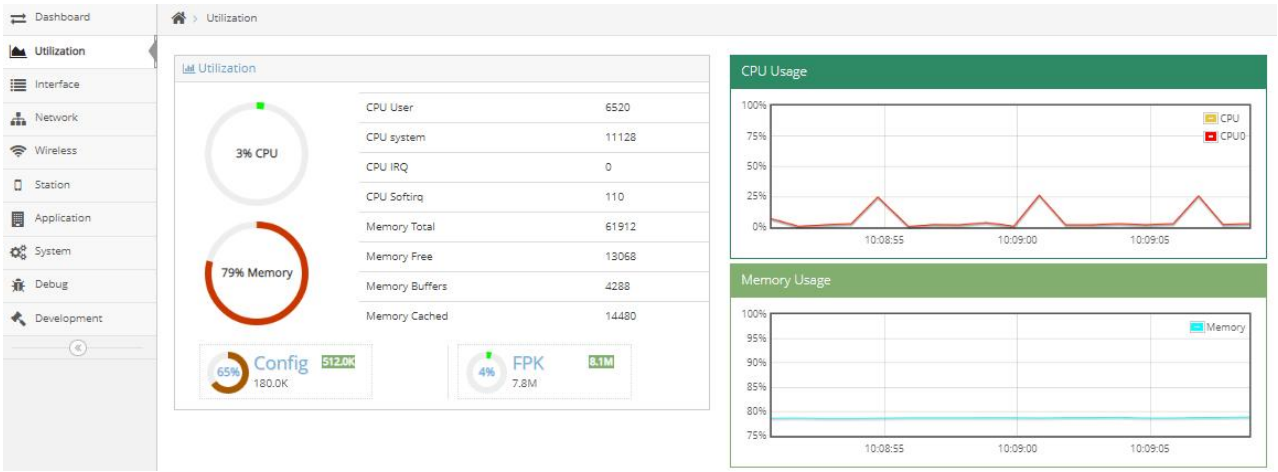


Figure 2-3 Resource GUI

2.4 Interface

The interface GUI will display network interface status such 4G information, LAN and Switch Status including ISP name, network type, signal, band, SIM IP address and 4G online time.

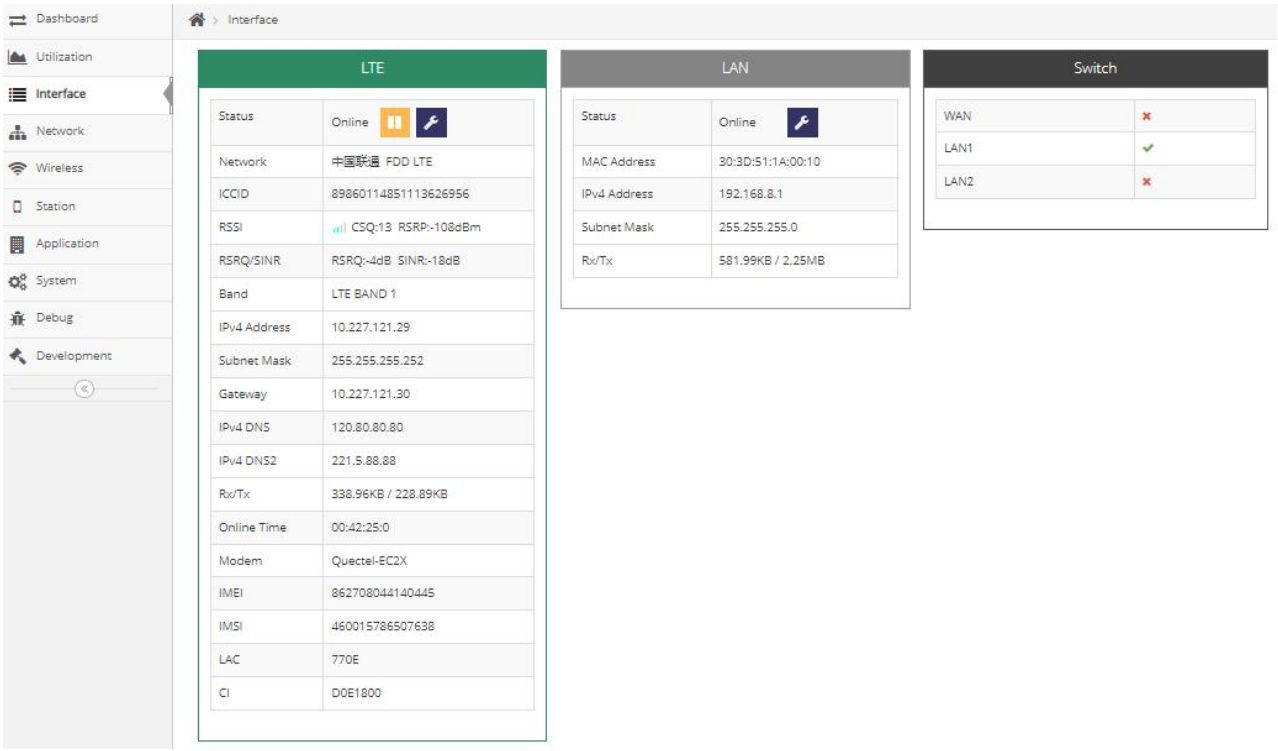


Figure 2-4 Interface. GUI

2.5 Network

2.5.1 LTE Setting

Step 1 Network>LTE to enter LTE Status GUI. It supports to disable 4G connection by Status button.

Step 2 Network>LTE to Network Mode setting GUI as following.

APN Setting

Parameter	Instruction	Default
APN Custom	Auto APN will be enable when APN Custom switch is Off. The router will recognize the access point name(APN)automatically. Regarding to private SIM card, please enable APN Custom button to configure SIM information such as APN, Username and Password.	Off
APN	APN is provided by local ISP	internet
Username	SIM card user name is provided by ISP	
Password	SIM card password is provided by ISP	
IP Type	IP/IPv4v6/IPv6 optional.	Null
Authentication	Select Auto/NONE/PAP/Chap/PAP/CHAP authentication as requested	
Dial Number	4G/3G connection service code	*99#
Dial CID	Connect to the specified cellular ID. CID number is provided by local carrier.	

Cellular Attach Setting

Parameter	Instruction	Default
Attach Mode	【Auto】The router will automatically connect to 4G/3G networks and give priority to 4G. 【LTE(4G)】Router will connect to 4G only. 【WCDMA/TDSCDMA/EVDO】Router will connect to 3G only. 【CDMA/GSM】Router will connect to 2G only.	Auto
GPS	The GPS is built-in 4G module.The GPS feature will be related to model and hardware.	Off
Modem Settings	Supports Lock IMEI, Lock IMSI, Lock PIN and Lock Band.	Null

Parameter	Instruction	Default
	Supports no SIM Card,PLMN and Signal for testing as requested.	Need

Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

Network Status Setting

Parameter	Instruction	Default
Dial Mode	【Advise】The router will automatically dial-up 4G/3G by ECM protocol. 【PPP】The router will automatically dial-up 4G/3G by PPP protocol. 【DHCP】The router will automatically dial-up 4G/3G by DHCP protocol. 【Static IP】The router will automatically dial-up 4G/3G and obtain SIM IP as ISP requested.	Advise
MTU	Maximum Transmission Unit on Cellular network.	1500
LCP Echo Interval	LCP(link control protocol) check interval	10
LCP Echo Times	LCP check Times. If no replace, the PPP will reconnect.	12
PPP Option	PPP debugging information	debug
Custom DNS	Configure DNS server IP address	Disable
IP Masquerade(NAT)	Replace internal ip address to SIM IP address when sent data.	Enable

Network Availability Check Setting

Parameter	Instruction	Default
Availability Check	Disable, ICMP Check and Receive Count Optional	Disable

Parameter	Instruction	Default
Availability Check	Disable, ICMP Check and Receive Count Optional	Disable
ICMP	Configure 3 destination IP address to check check the Cellular connection available.	
Test Address	Reachable destination IP address1	
Test Address2	Reachable destination IP address1	12
Test Address3	PPP debugging information	debug
Each Query Timeout(sec)	Configure DNS server IP address	10
Test Times	ICMP times	6
Test Interval(sec)	ICMP Interval	20

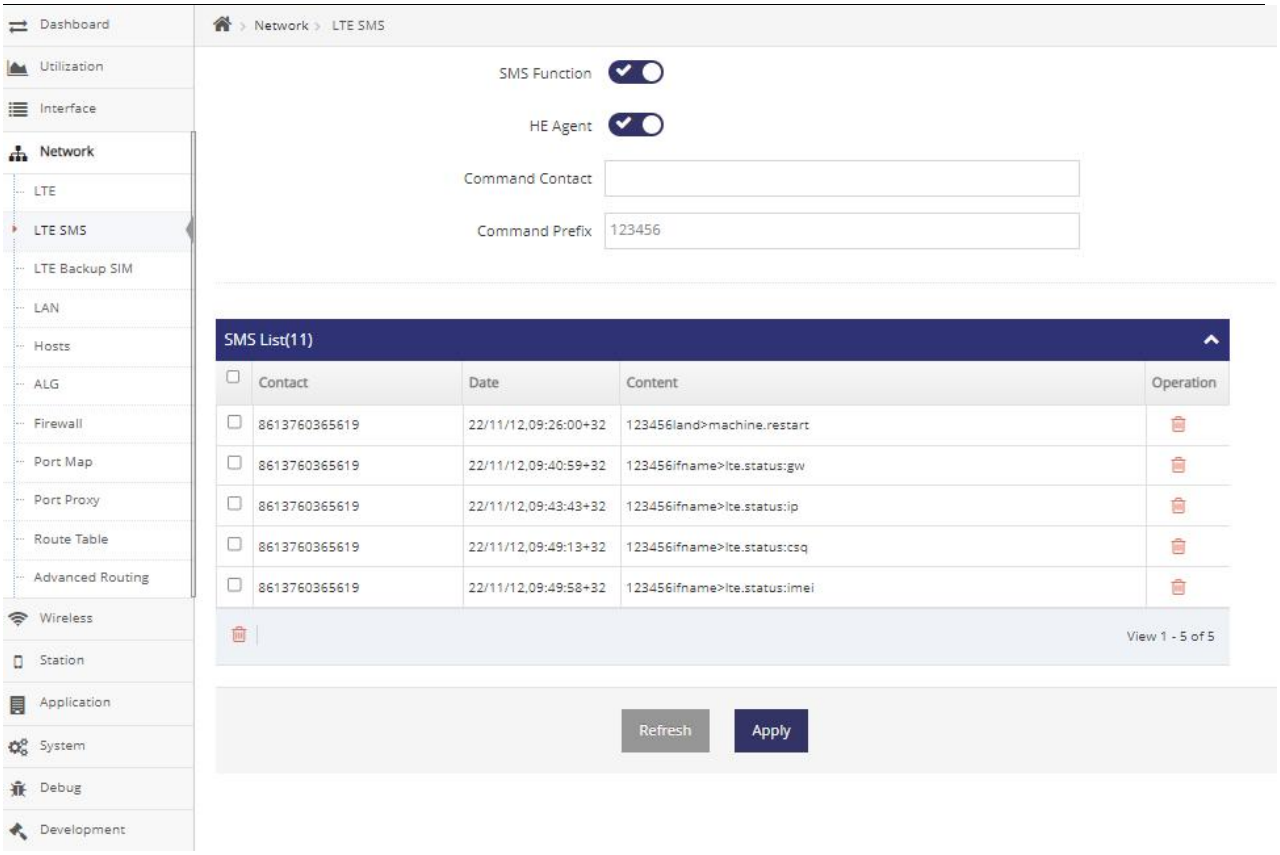
Parameter	Instruction	Default
Receive Count	Disable, ICMP Check and Receive Count Optional	Disable
Duration(sec)	Configure 3 destination IP address to check check the Cellular connection available.	20
Test Times	Reachable destination IP address1	30
Request packets	Reachable destination IP address1	1

Step 3 After Setting, please click “Apply” icon.

----End

2.5.2 LTE SMS Setting

Step 1 Network>LTE SMS to enter LTE SMS GUI.



Parameter	Instruction	Default
SMS Function	SMS Function Enable/Disable Optional.	Disable
HE Agent	Enable SMS command inquiry by HE command line mode.	Disable
Command Contact	Specify the acceptable phone number. If null, the router will accept anyone phone number without limitation.	Null
Command Prefix	SMS command identify. The router will implement message command with correct prefix.	Null

Step 2 After Setting, please click “Apply” icon.

Configuration Instance

Please check LTE SMS Configuration in the chapter 3 as reference.

----End

2.5.3 LTE Backup SIM

Step 1 Network>LTE Backup SIM to enter Setting GUI.

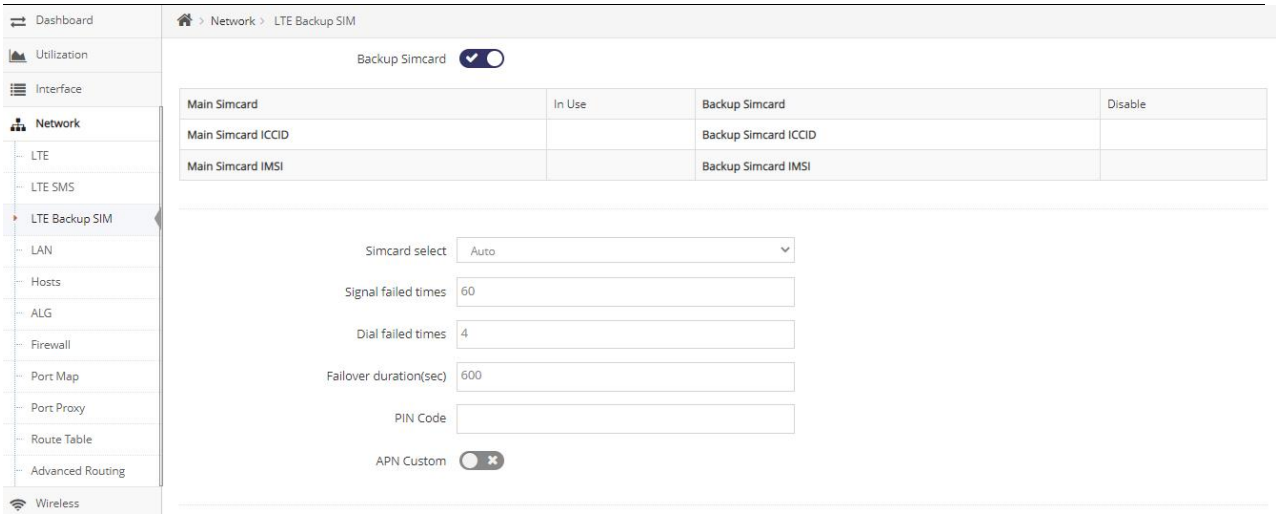


Table 2-1 LAN Setting Instruction

Parameter	Instruction	Default
Backup SIM	Enable Backup Simcard	Disable
Simcard Select	Auto, Main Simcard, Backup Simcard optional	Auto
Signal failed times	Router will switch to backup Sim card once detect signal failure times exceeds the defined times.	60times
Dial failed times	It will switch to backup Sim card once dail-up failure times exceeds the defined times.	4times
Failover duration(sec)	The router will work on the backup Sim card time(sec)	600s
PIN Code	Some SIM cards are locked with a Personal Identification Number (PIN) code in case they are lost or stolen.	86400
APN Custom	Auto APN will be enable when APN Custom switch is Off. The router will recognize the access point name(APN)automatically. Regarding to private SIM card, please enable APN Custom button to configure SIM information such as APN, Username and Password.	Off

Step 2 After setting, please click “Apply” to finish, the device will reboot.

----End

2.5.4 LAN Setting

Step 1 Network>LAN to enter below GUI.

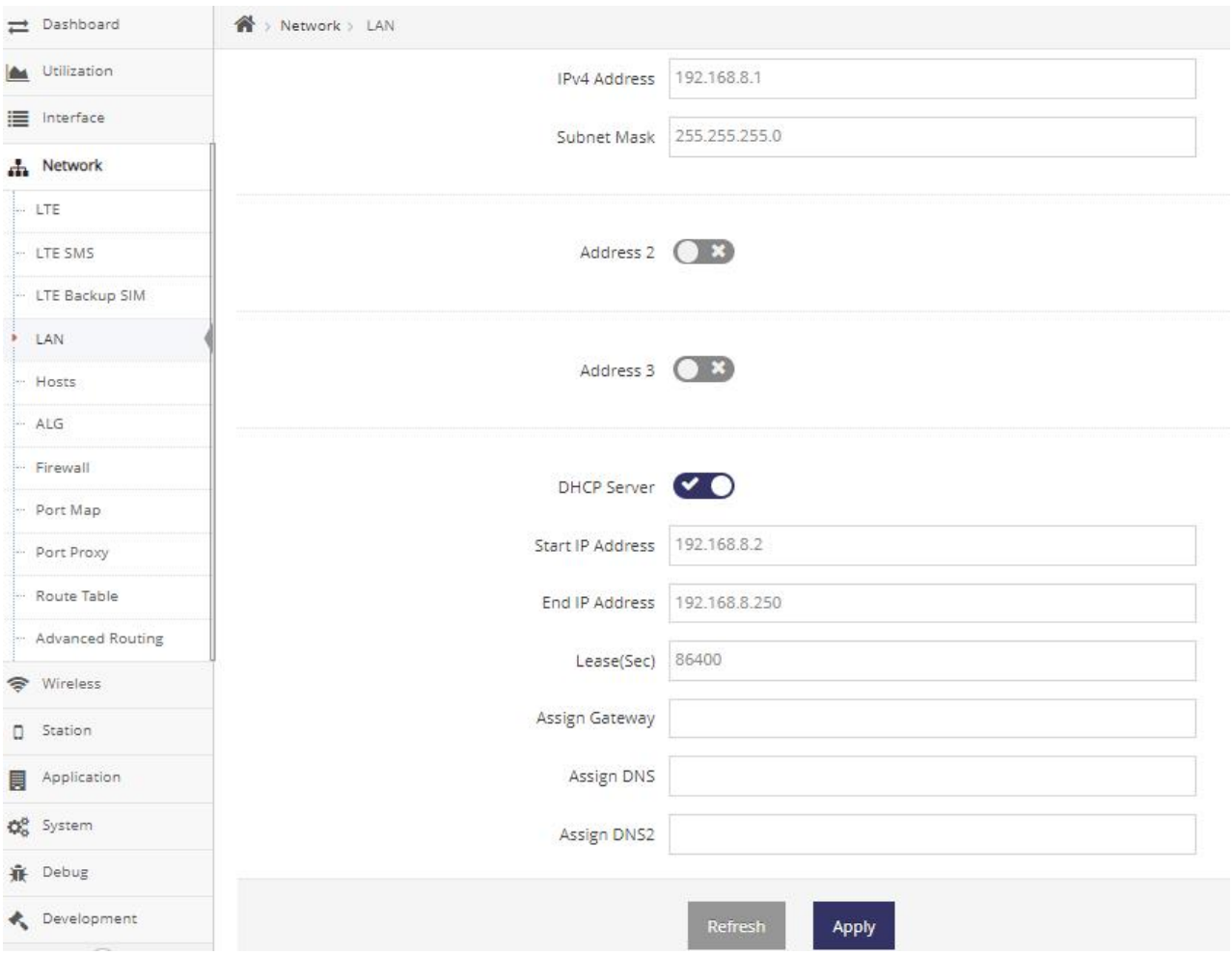


Table 2-2 LAN Setting Instruction

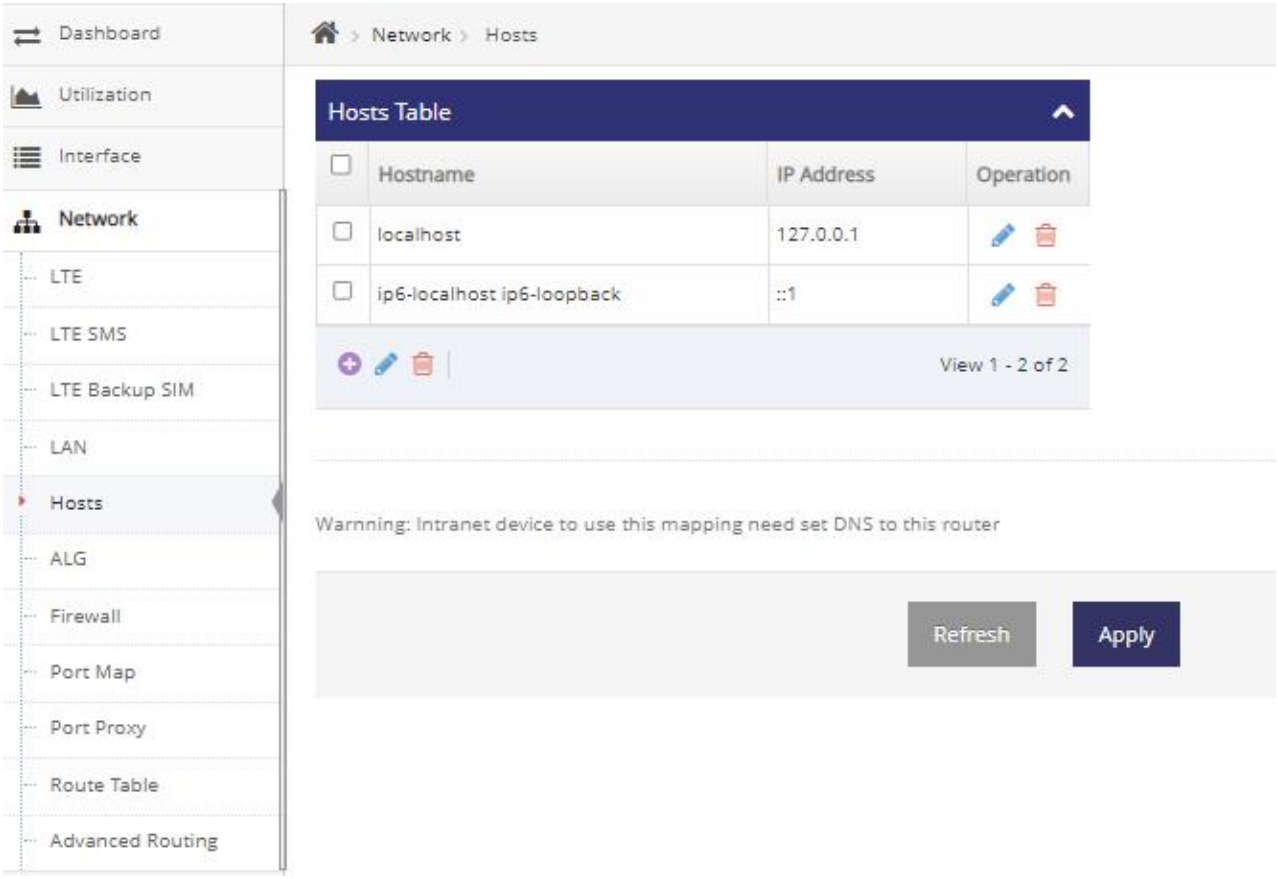
Parameter	Instruction	Default
IP Address	Router IP address, default IP is 192.168.8.1	192.168.8.1
Subnet Mask	Router subnet mask, default mask is 255.255.255.0	255.255.255.0
Address2	Add LAN address	Disable
Address3	Add LAN address	Disable
DHCP Server	Dynamic allocation IP service, after enable, it will show the IP address range and options of lease	Enable
Start IP Address	DHCP IP poor start IP address	192.168.8.2
End IP Address	DHCP IP poor end IP address	192.168.8.250
Lease	The valid time, unit as sec	86400
Assign Gateway	Specified the gateway IP address	Null
Assign DNS	Specified the DNS server IP address	Null
Assign DNS2	Specified the DNS server IP address	Null

Step 2 After setting, please click “Apply” to finish, the device will reboot.

----End

2.5.5 Hosts

Step 1 Network->Host to enter the Hosts setting GUI.

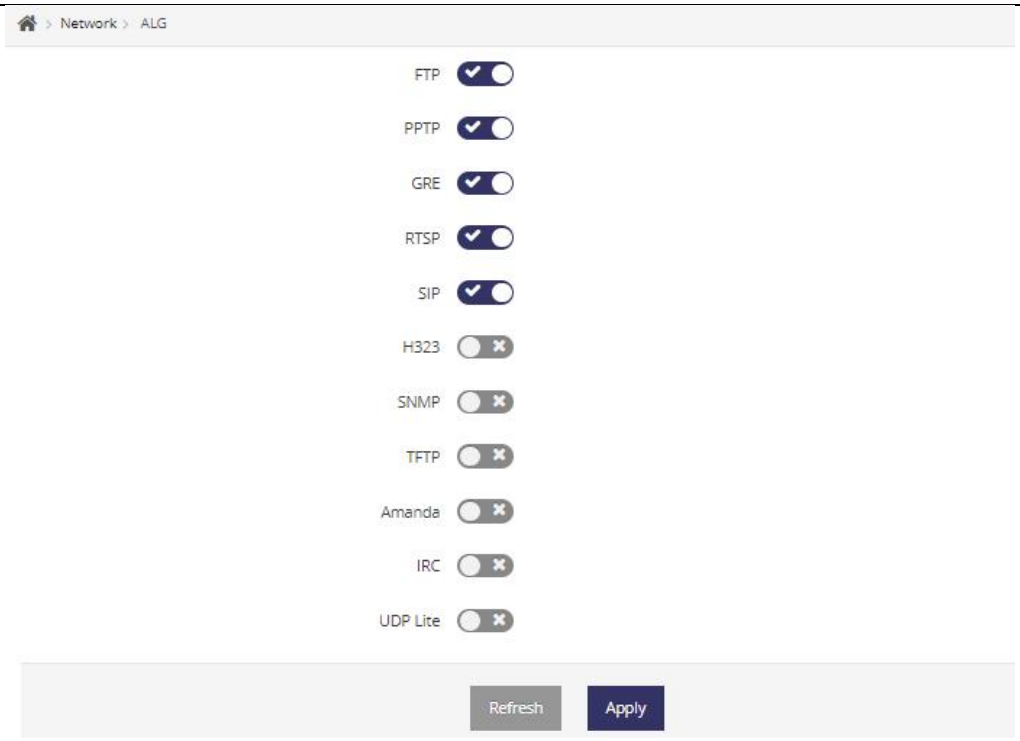


Step 2 Please Click " Apply " to finish.

----End

2.5.6 ALG

Step 1 Basic Network->ALG to enter the application layer gateway setting GUI.

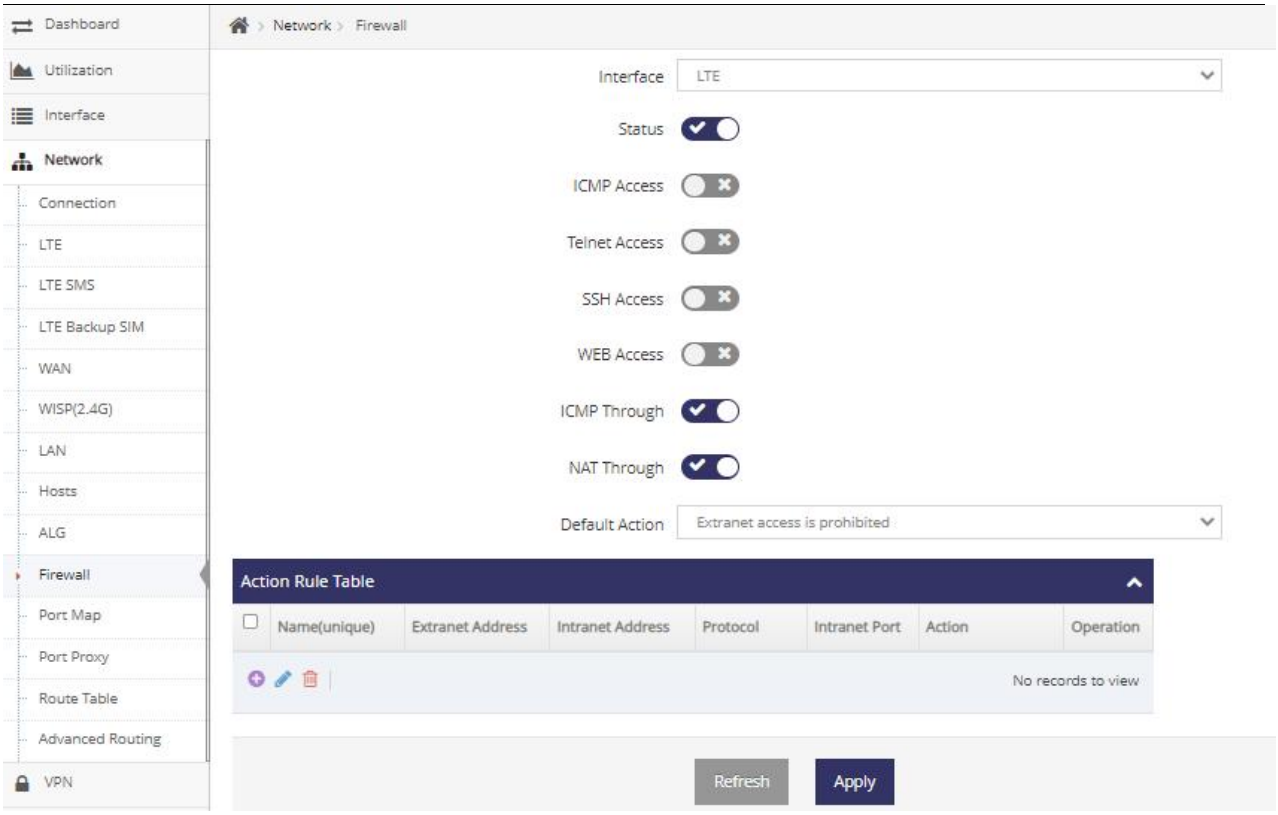


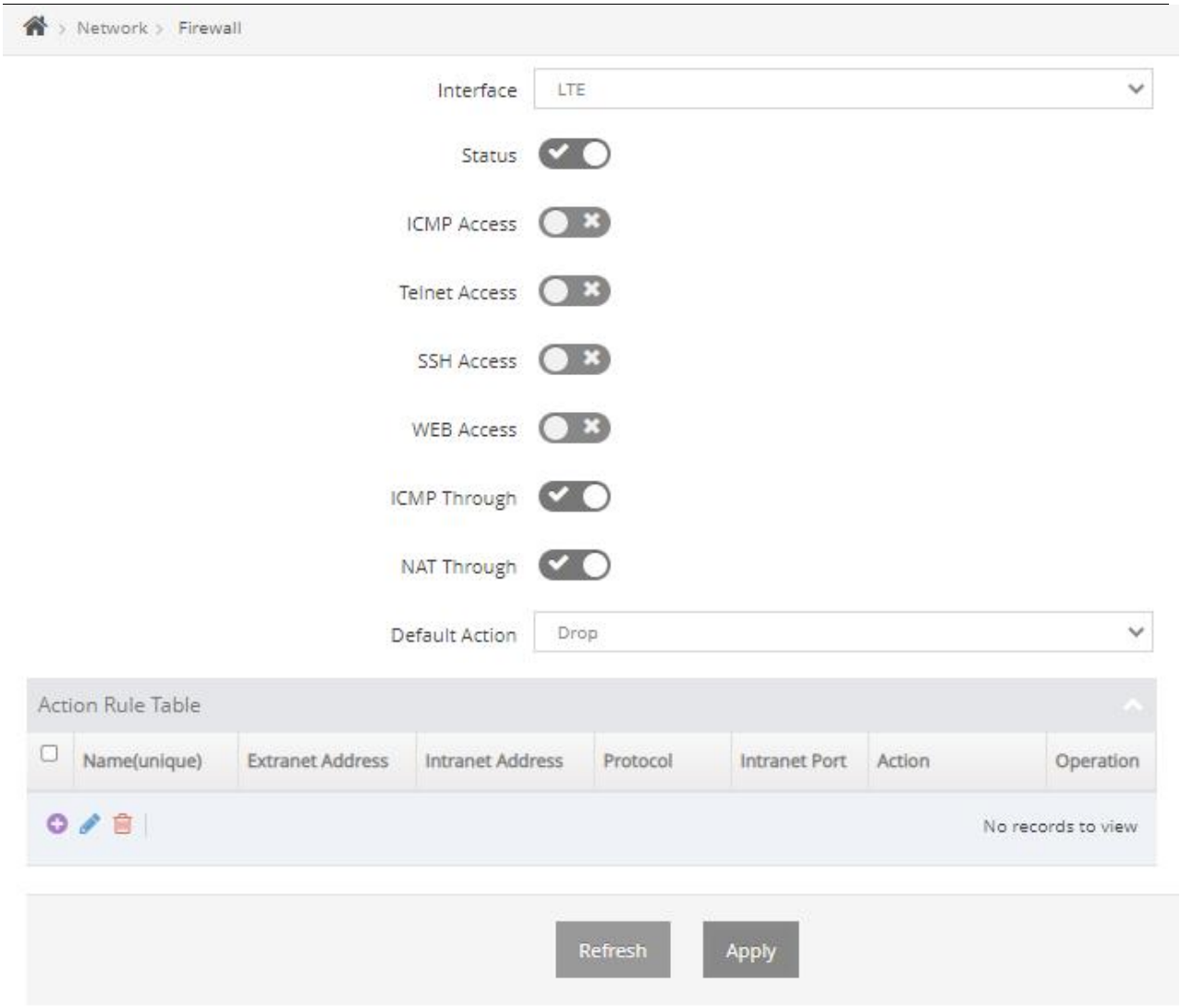
Step 2 Please Click “ Apply “ to finish.

----End

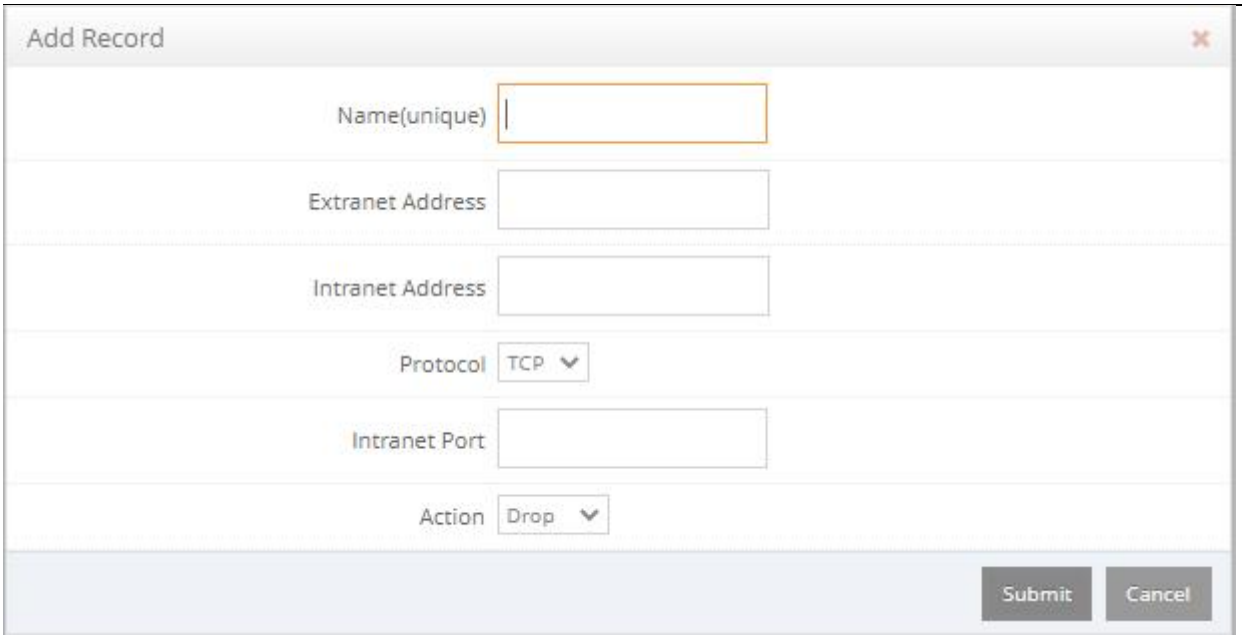
2.5.7 Firewall

Step 1 Network->Firewall to enter the Firewall setting page.


Dashboard
Utilization
Interface
Network
Connection
LTE
LTE SMS
LTE Backup SIM
WAN
WISP(2.4G)
LAN
Hosts
ALG
Firewall
Port Map
Port Proxy
Route Table
Advanced Routing
VPN
Network > Firewall
Interface
LTE
Status
ICMP Access
Telnet Access
SSH Access
WEB Access
ICMP Through
NAT Through
Default Action
Extranet access is prohibited
Action Rule Table
Name(unique)
Extranet Address
Intranet Address
Protocol
Intranet Port
Action
Operation
No records to view
Refresh
Apply



Click  to add firewall rules. The maximum rule count is 30.



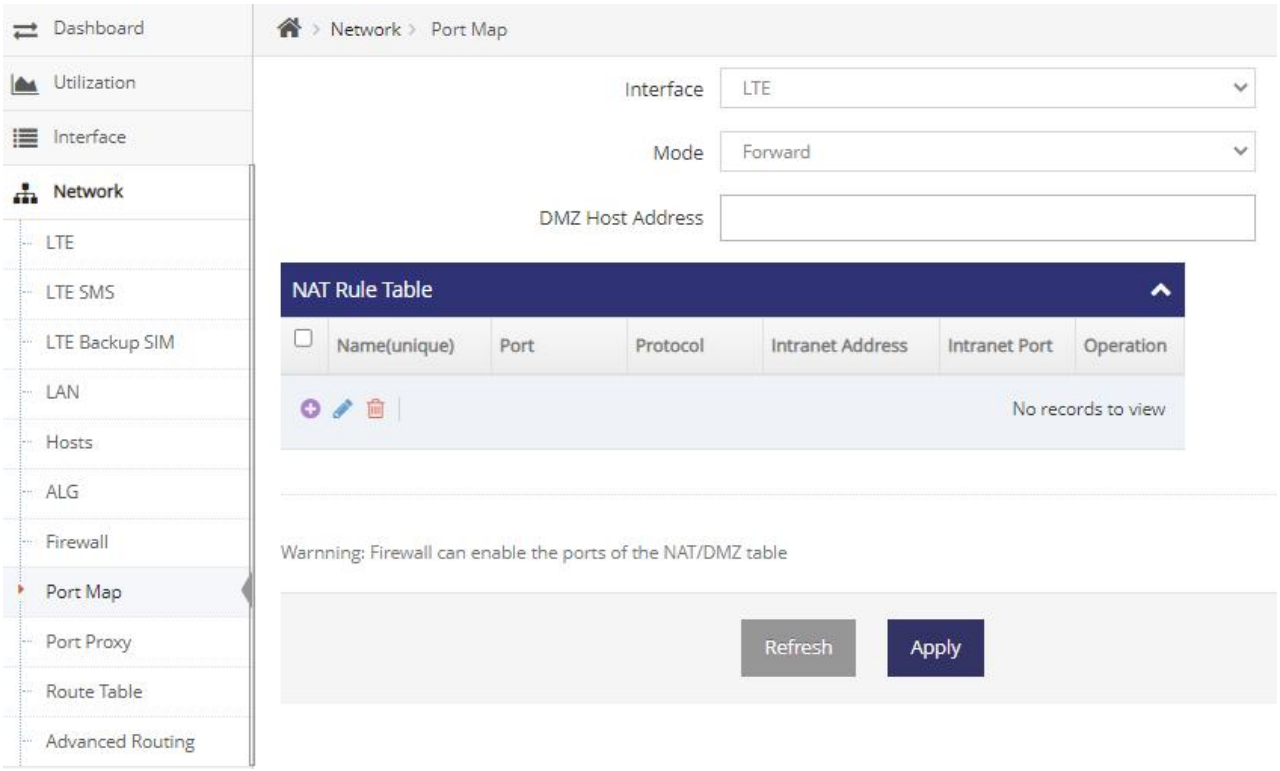
Parameter	Instruction	Default
Interface	WAN/LTE/VPN interface Options	WAN
Status	Enable/Disable Options	ON
ICMP Access	Indicate the ordinal of the list.	OFF
Telnet/SSH/WEB Access	Enable/Disable Telnet/SSH/WEB remote access	Disable
ICMP Through	Enable/Disable ICMP Through	Enable
NAT Through	Configure external port of router which can be accessed by other hosts from internet.	Enable
Default Action	Accept/Drop Options	Drop
Name(unique)	Indicate the ordinal of the list.	Null
Extranet Address	Defines if access is allowed from one or a range of IP addresses which are defined by Source IP Address, or every IP addresses.	Null
Intranet Address	The destination address inside the LAN.	Null
Protocol	TCP, UDP and ALL options	Null
Intranet Port	The destination port inside the LAN.	Null
Action	Accept and Drop	

Step 2 Please Click “Apply“ to finish.

----End

2.5.8 Port Map

Step 1 Basic Network->Port Map routing to enter setting page.



Click  to add port mapping rules. The maximum rule count is 30.

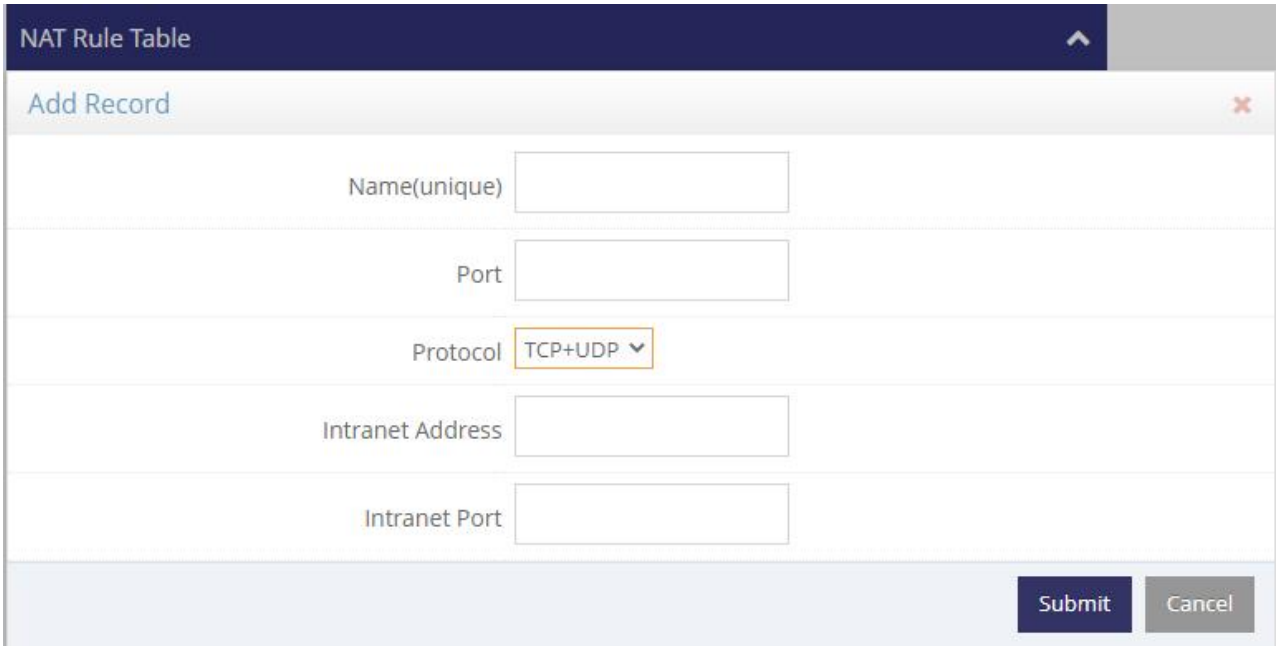


Table 2-3 Port Map Setting Instruction

Parameter	Instruction	Default
Interface	LTE/VPN interface Options	LTE

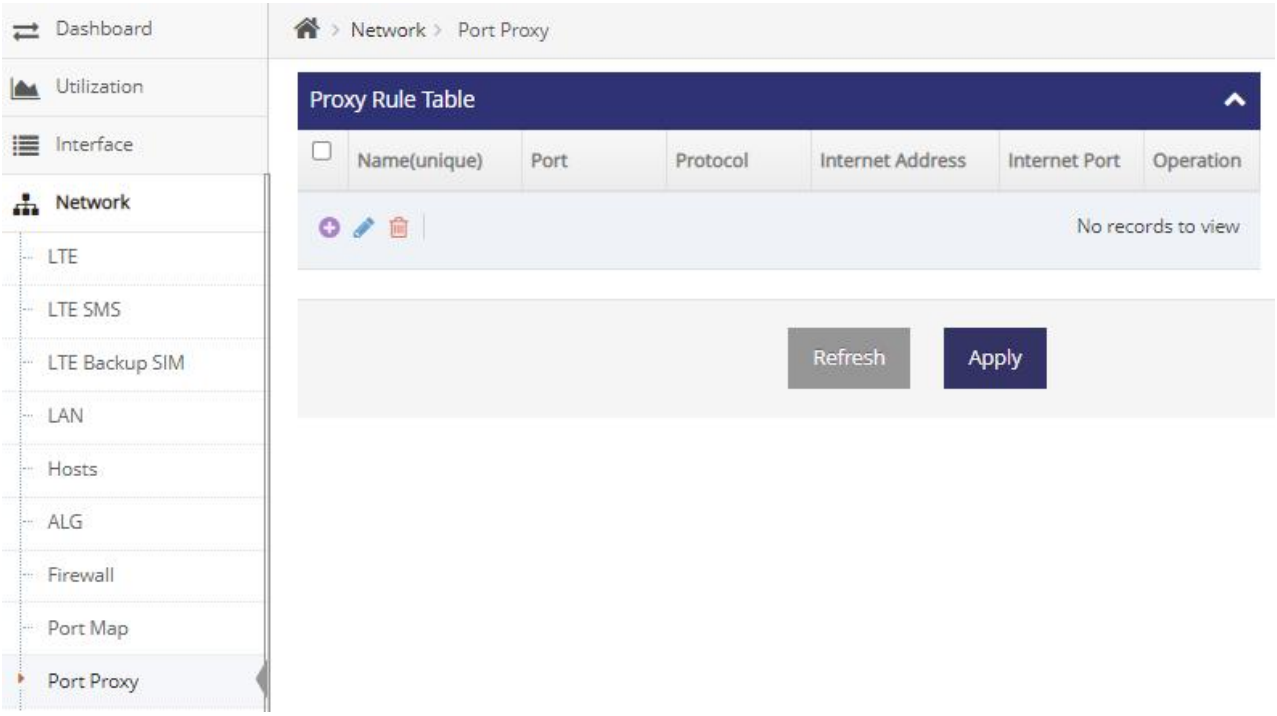
Parameter	Instruction	Default
Mode	Forward/DNAT Options	Forward
DMZ Host Address	The destination IP address inside the LAN. The DMZ will be available after configured host IP address.	Null
Name(unique)	Indicate the ordinal of the list.	Null
Port	Configure external port of router which can be accessed by other hosts from internet.	Null
Protocol	UDP,TCP, Both UDP/TCP Options	UDP+TCP
Intranet Address	The destination address inside the LAN.	Null
Intranet Port	The internal port of router's LAN	Null

Step 2 Please Click "Apply" to finish.

----End

2.5.9 Port Proxy

Step 1 Network->Port Proxy to enter the setting page.



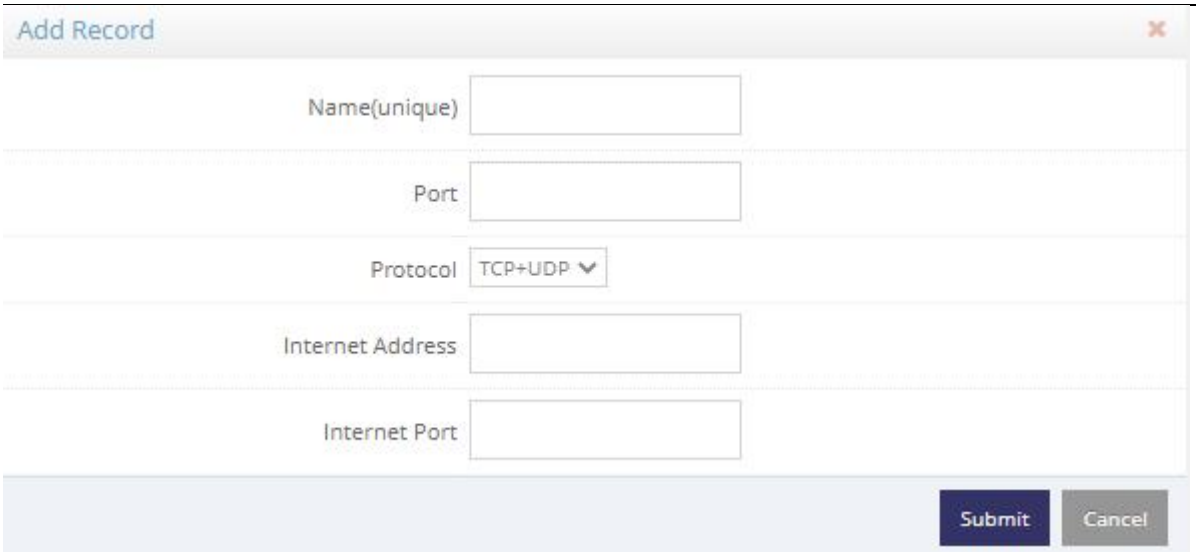


Table 2-4 Port Map Setting Instruction

Parameter	Instruction	Default
Name(unique)	Indicate the ordinal of the list.	Null
Port	Configure external port of router which can be accessed by other hosts from internet.	Null
Protocol	UDP,TCP, Both UDP/TCP Options	UDP+TCP
Intranet Address	The destination address inside the LAN.	Null
Intranet Port	The internal port of router's LAN	Null

NOTE

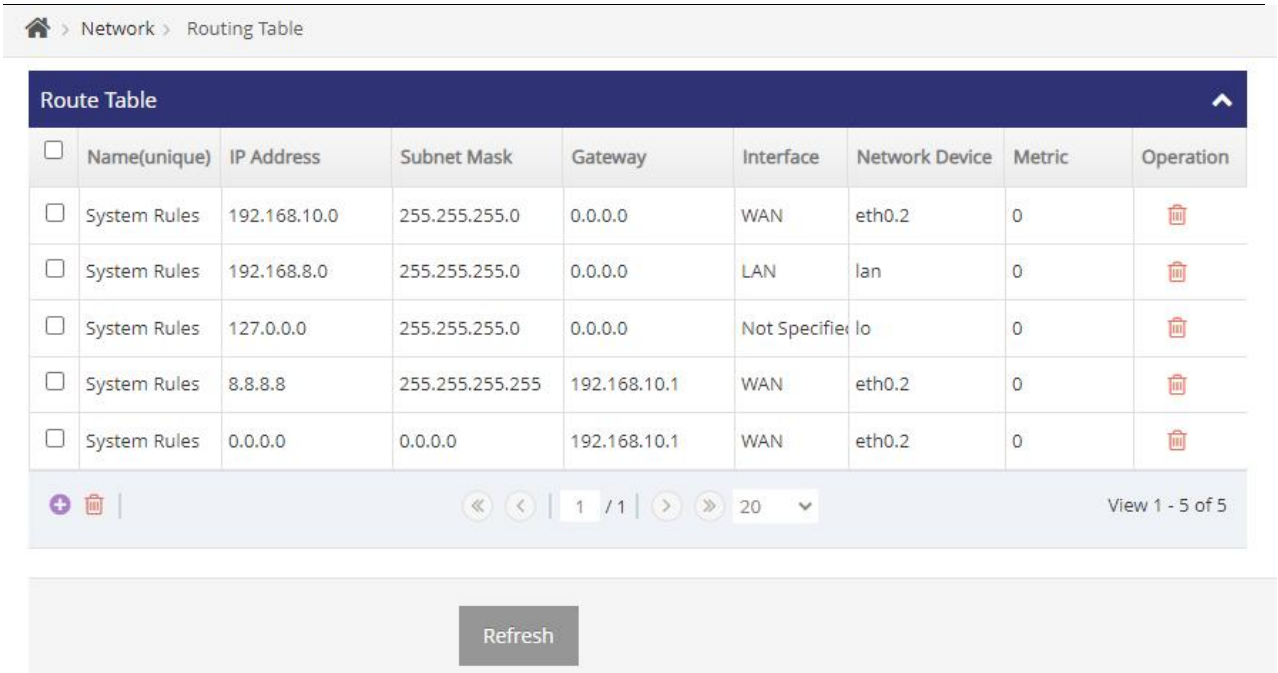
The feature is suitable for those device without gateway IP address. However, the device need to connect internet.The WL-R320 will provide port proxy for the device. Then WL-R320 will transfer device data to internet.

Step 2 Please Click "Apply" to finish.

----End

2.5.10 Routing Table

Step 1 Network->Routing Table to enter the setting page.



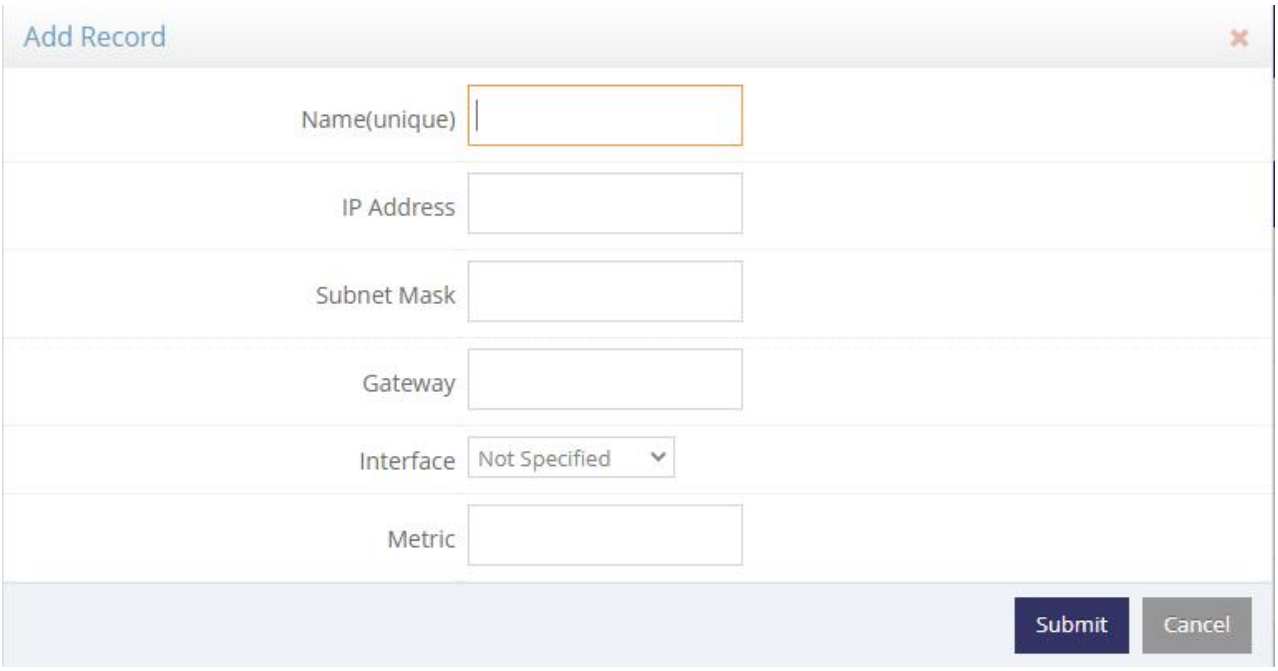


Table 2-5 Router Setting Instruction

Parameter	Instruction	Default
Name(unique)	Indicate the ordinal of the list.	Null
IP Address	Router can reach the destination IP address.	Null
Subnet Mask	Subnet mask for destination IP address	Null
Gateway	Next hop IP address which the router will reach.	Null
Interface	Interface from router to gateway.	Null

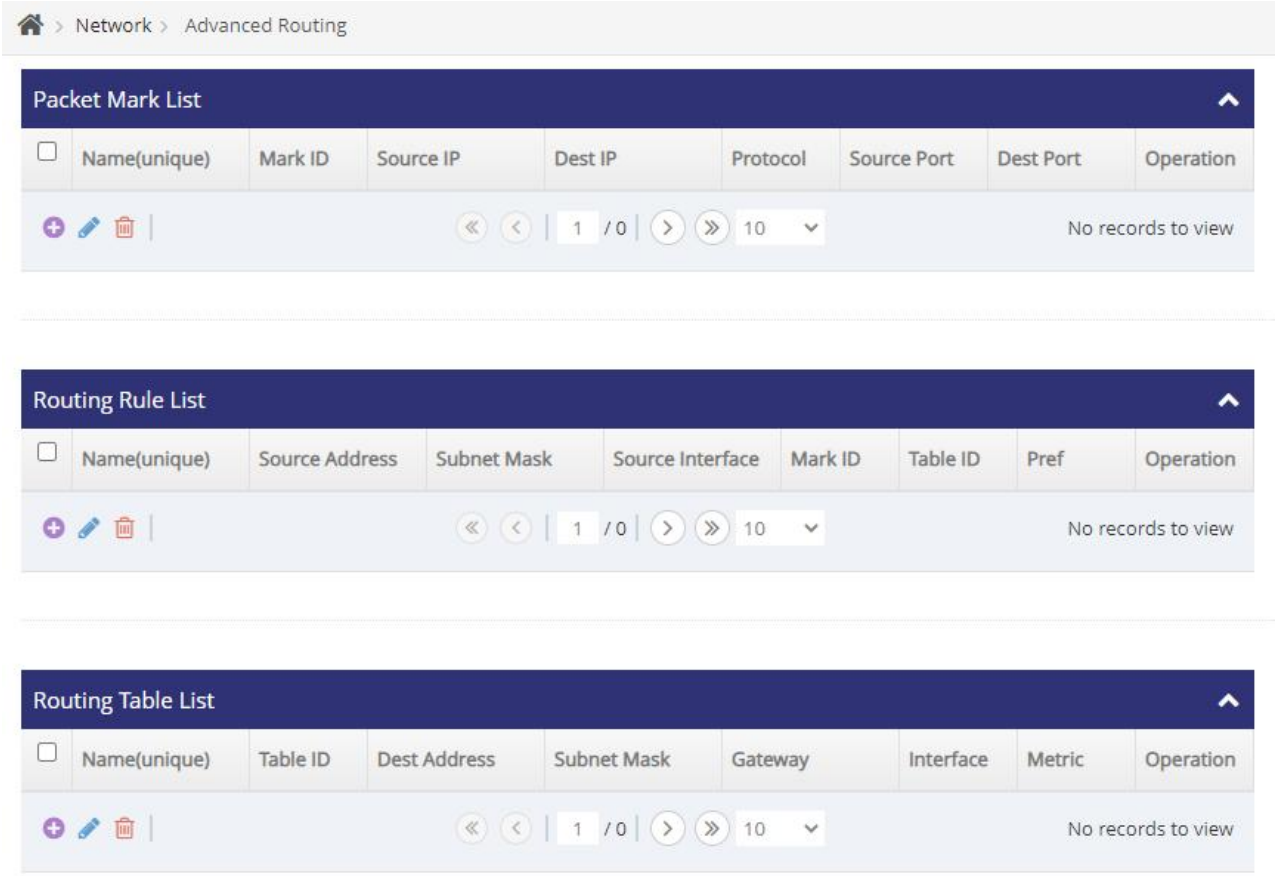
Parameter	Instruction	Default
Metric	The metric value acts as a measurement of priority. If a packet about to be routed matches two or more rules, the one with the lower metric is applied. Metric value range 0~255.	Null

Step 3 Please Click “Apply“ to finish.

----End

2.5.11 Advanced Routing

Step 1 Basic Network->Advanced routing to enter setting page.



NOTE

Advanced Routing Features used to configure routing based on packet Mark, source addresses or ports. It will include 3 steps configuration as following.

1) Packet Mark. Mark the packet in the Packet Mark list. It will provide Mark ID.
2) Routing rule. Specify source address or Mark ID. It will provide routing Table ID.
3) Add Routing. Add a routing rule to the routing table specified by the routing table id, requiring that data accessing the specified IP address or IP address segment is sent to the specified next hop address via the specified interface.

Commonly, the source address is widely used for applications. It just need to configure routing rule and

configure routing table.

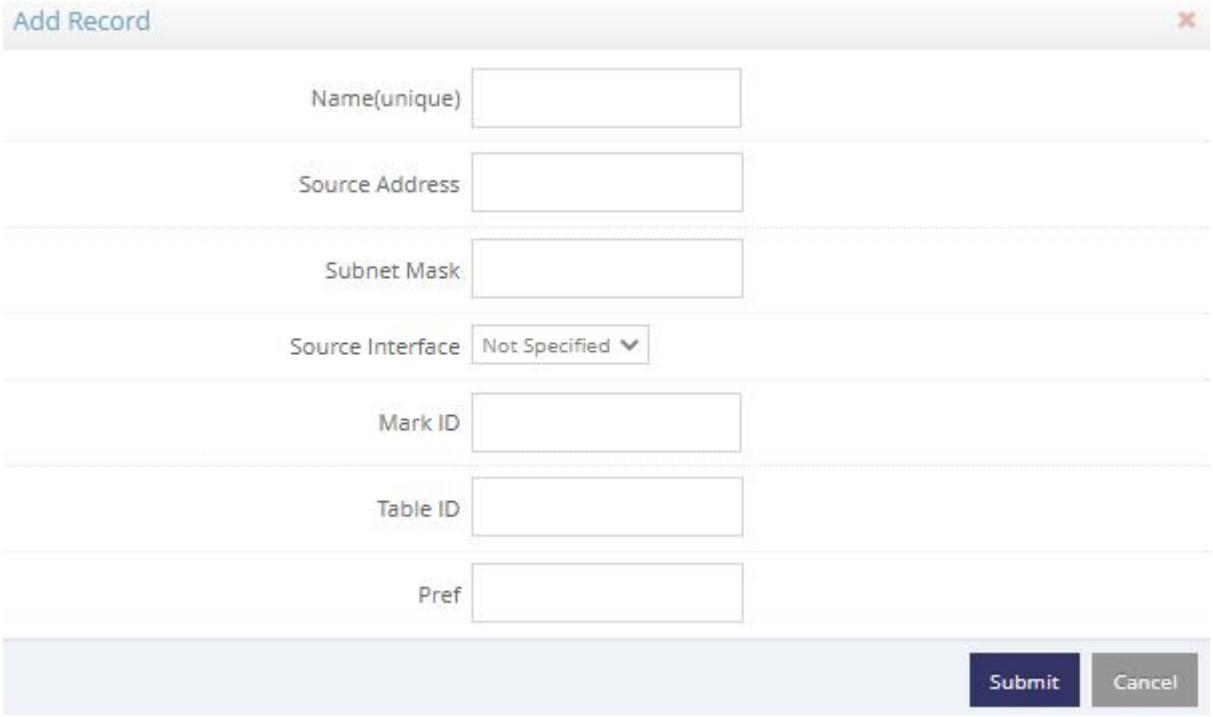


Table 2-6 Source Address Routing Setting Instruction

Parameter	Instruction	Default
Name(unique)	Indicate the ordinal of the list.	Null
Source Address	Allow the specified subnet IP address/IP segment data to specify the destination IP or interface.	Null
Subnet Mask	Subnet mask for destination IP address	Null
Source Interface	Specify source address interface.	Not specified
Mark ID	Mark ID is created in Mark ID list. Source address without the Mark ID.	Null
Table ID	Create routing table ID and Add the table ID in routing table list. Table ID value range 100~250.	Null
Pref	Controls the order of IP rules. Rules with a lower priority value will be checked first.	Null

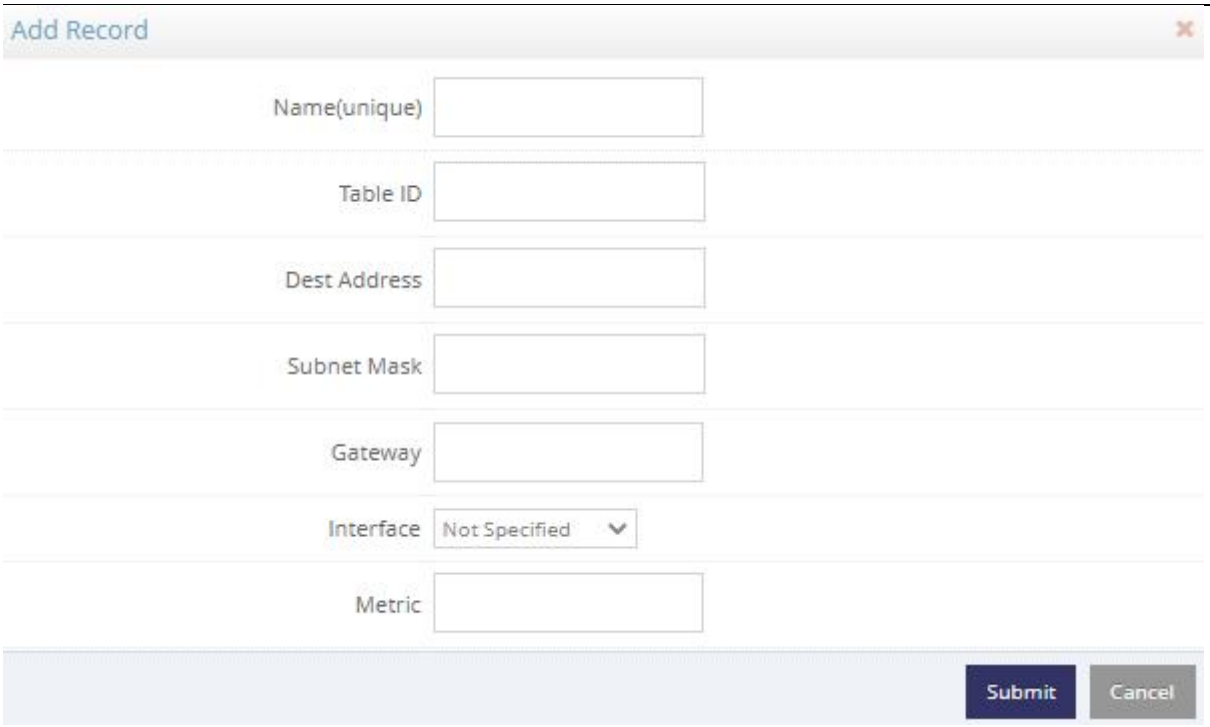


Table 2-7 Source Address Routing Setting Instruction

Parameter	Instruction	Default
Name(unique)	Indicate the ordinal of the list.	Null
Table ID	Input the Table ID as the same as in Routing Rule list	Null
Dest Address	Routing can reach the destination IP address.	Null
Subnet Mask	Subnet mask for destination IP address	Null
Gateway	Next hop IP address which the routing will reach.	Null
Interface	Interface from router to gateway.	Not specified
Metric	The metric value acts as a measurement of priority. If a packet about to be routed matches two or more rules, the one with the lower metric is applied. Metric value range 0~255.	Null

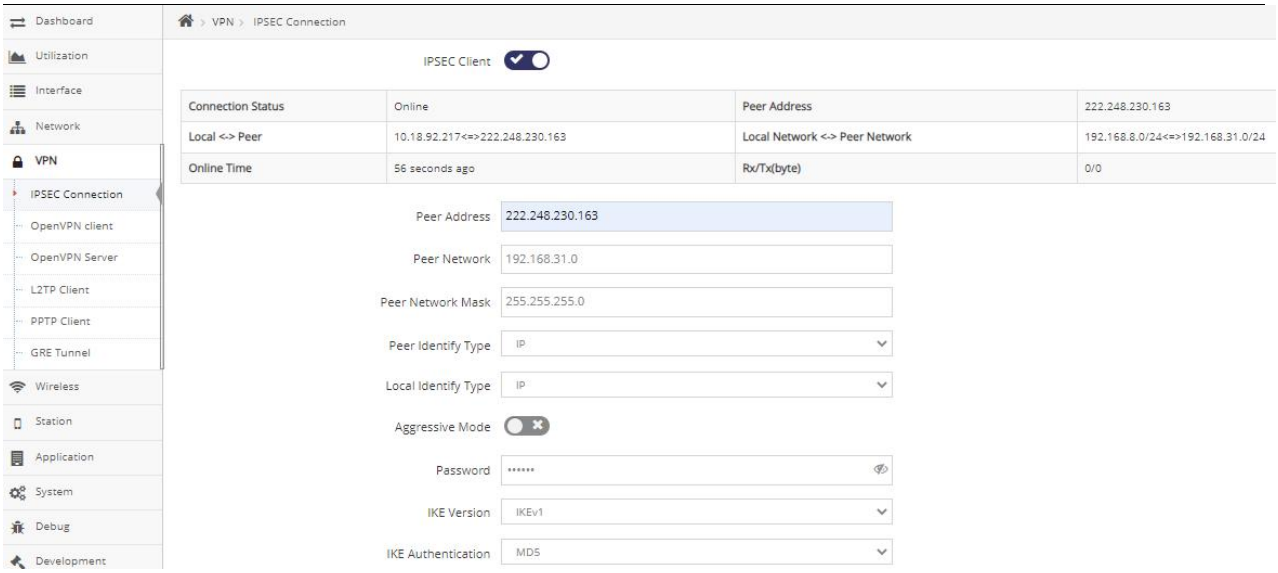
Step 2 Please Click “Apply“ to finish.

----End

2.6 VPN Setting

2.6.1 IPSec Setting

Step 1 VPN > IPSec to check or modify the relevant parameter.



Step 2 Please click ”Apply” to finish.

Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

----End

2.6.2 OpenVPN Client Setting

Step 1 VPN > Openvpn client to check or modify the relevant parameter.

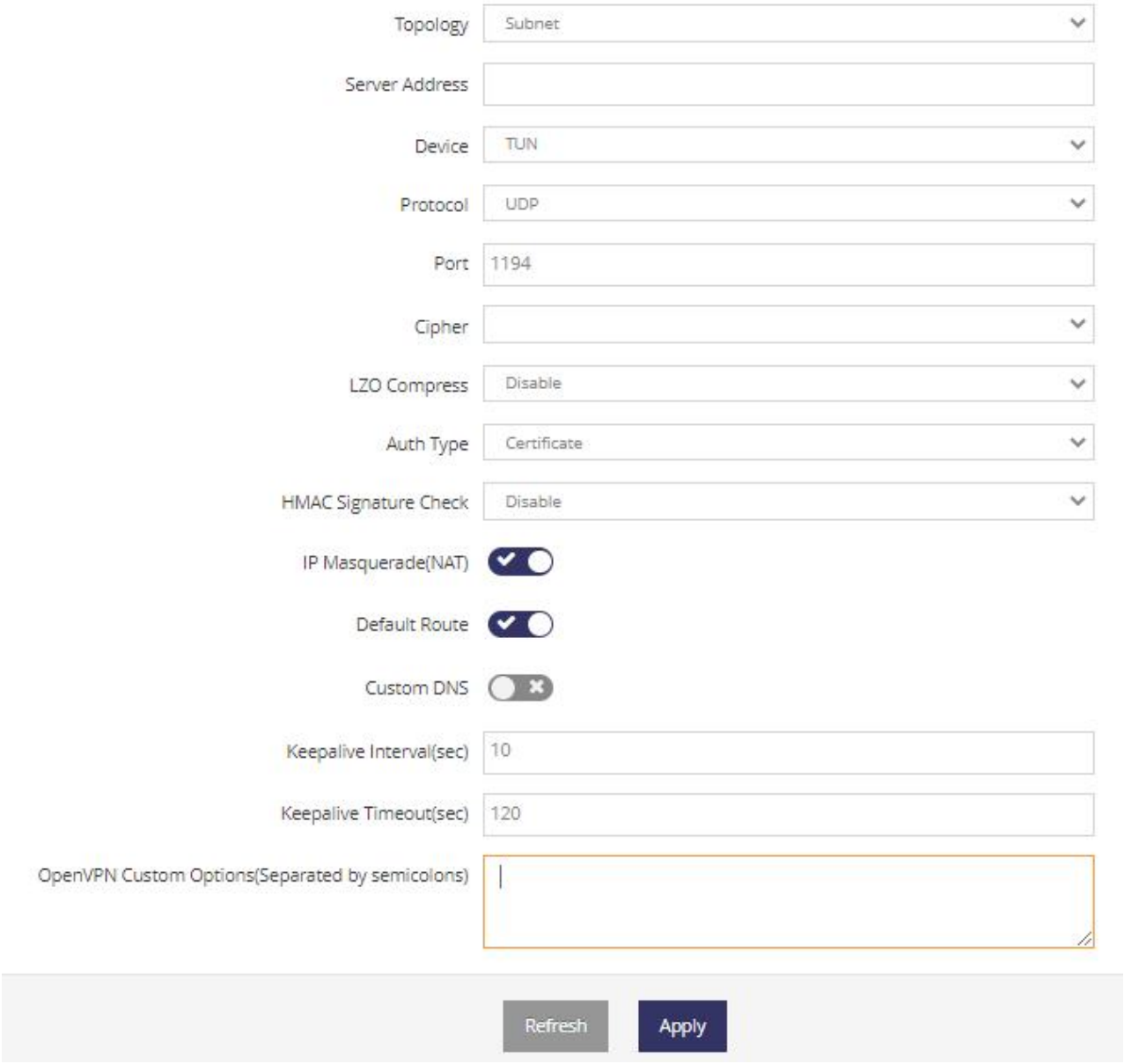


Table 2-8 OpenVPN Client Instruction

Parameter	Instruction	Default
Technology	Subnet/Point-to-point options	Subnet
Server Address	The Openvpn server public IP address and port.	Null
Device Type	Tap and Tun type are optional. Tap is for bridge mode and Tunnel is for routing mode.	TUN
Protocol	UDP and TCP optional.	
Port	The Openvpn server port.	
Cipher	Encryption Cipher as requested. Null as Auto	Null

Parameter	Instruction	Default
LZO Compress	Disable/Adaptive/Yes/No options	No
Auth. Type	Certificate and Username/password options	Certificate
HMAC Signature	Disable/TLS options	Disable

Step 2 Please click ”Apply” to finish.

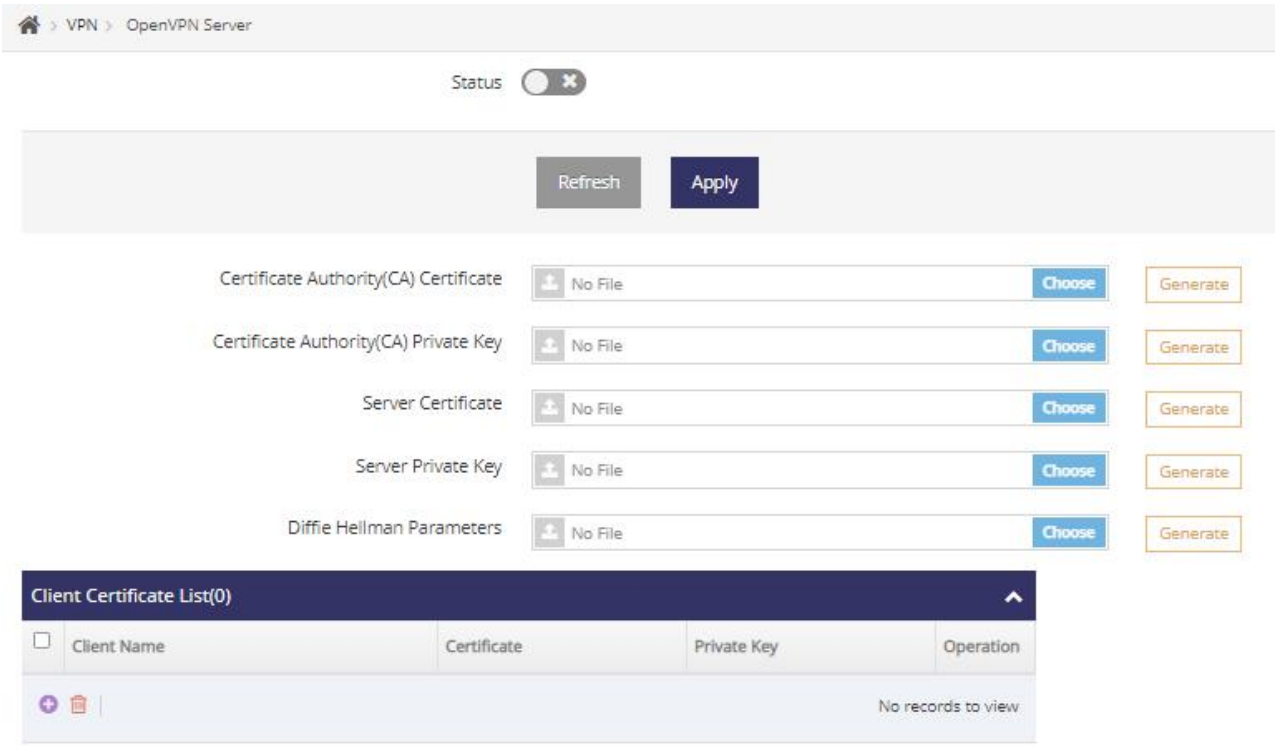
Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

----End

2.6.3 OpenVPN Server Setting

Step 1 VPN > Openvpn Server to check or modify the relevant parameter.



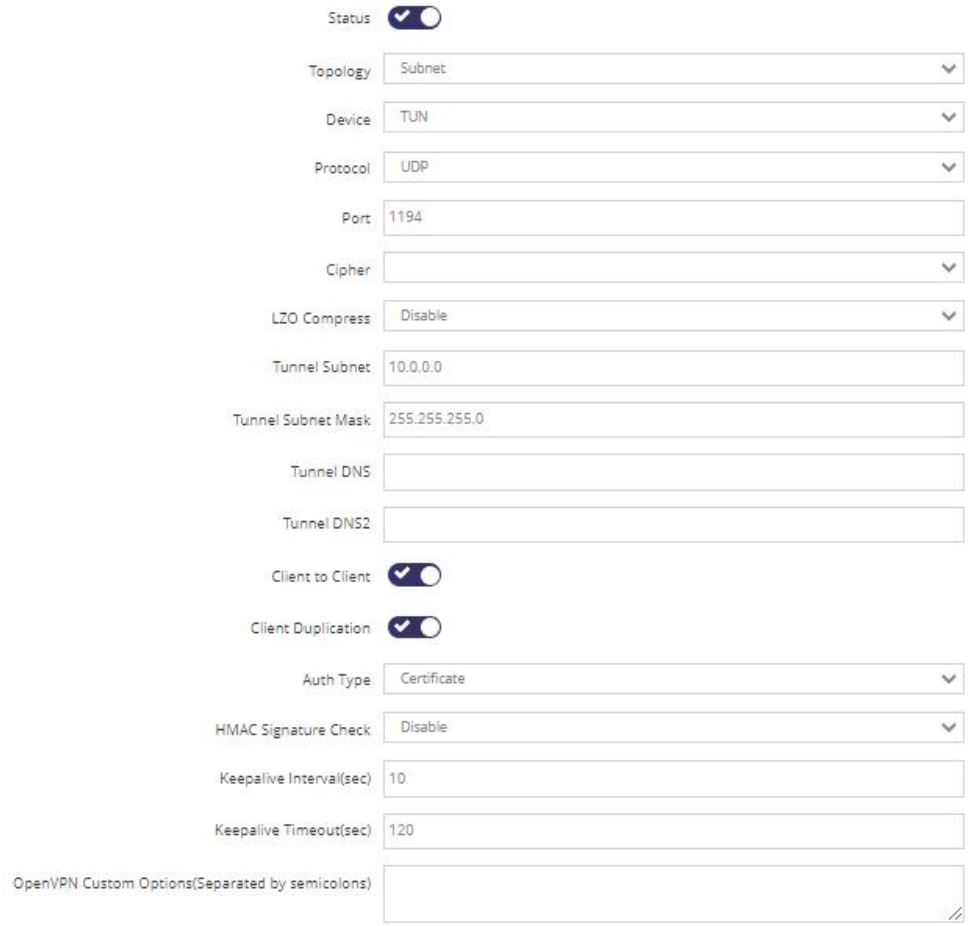


Table 2-9 OpenVPN Client Instruction

Parameter	Instruction	Default
Technology	Subnet/Point-to-point options	Subnet
Server Address	The Openvpn server public IP address and port.	Null
Device Type	Tap and Tun type are optional. Tap is for bridge mode and Tunnel is for routing mode.	TUN
Protocol	UDP and TCP optional.	
Port	The Openvpn server port.	
Cipher	Encryption Cipher as requested. Null as Auto	Null
LZO Compress	Disable/Adaptive/Yes/No options	No
Auth. Type	Certificate and Username/password options	Certificate
HMAC Signature	Disable/TLS options	Disable

Step 2 Please click ”Apply” to finish.

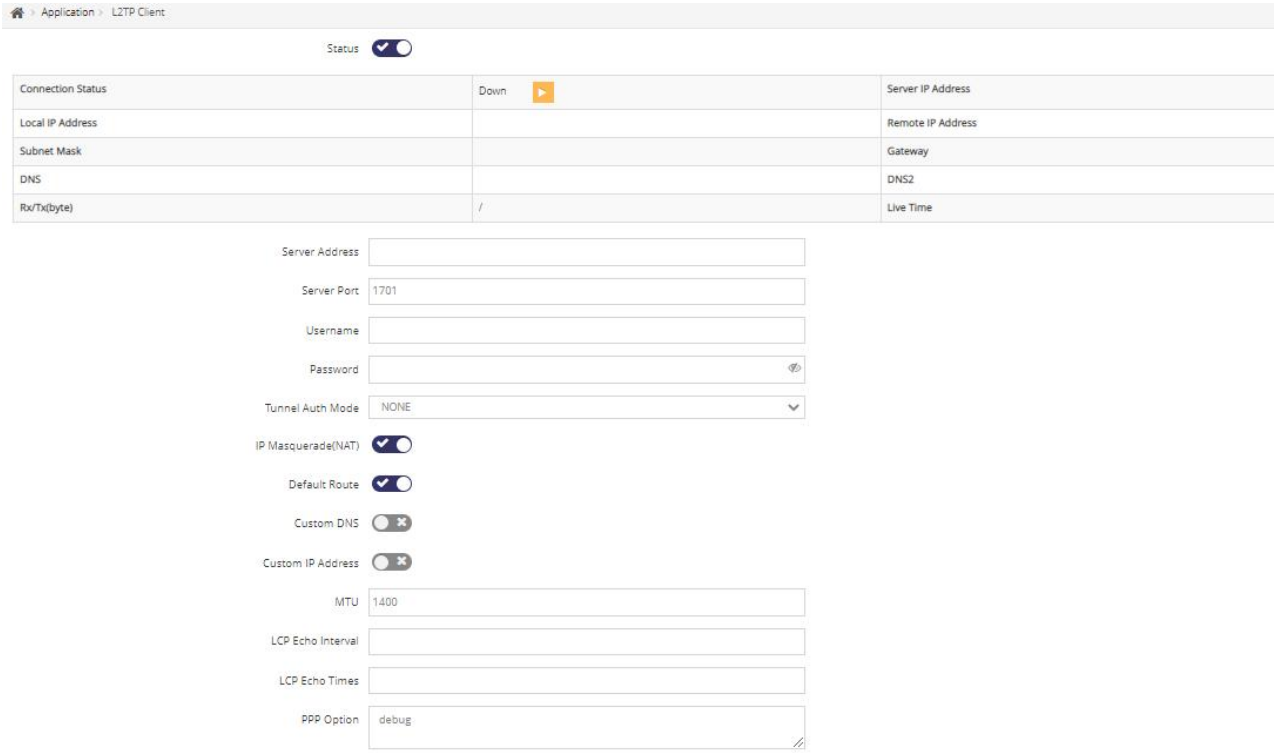
NOTE

The OpenVPN server supports to generate certificate for testing. We suggest generate certificate from third party server.

----End

2.6.4 L2TP Client Setting

Step 1 VPN > L2TP Client to check or modify the relevant parameter.

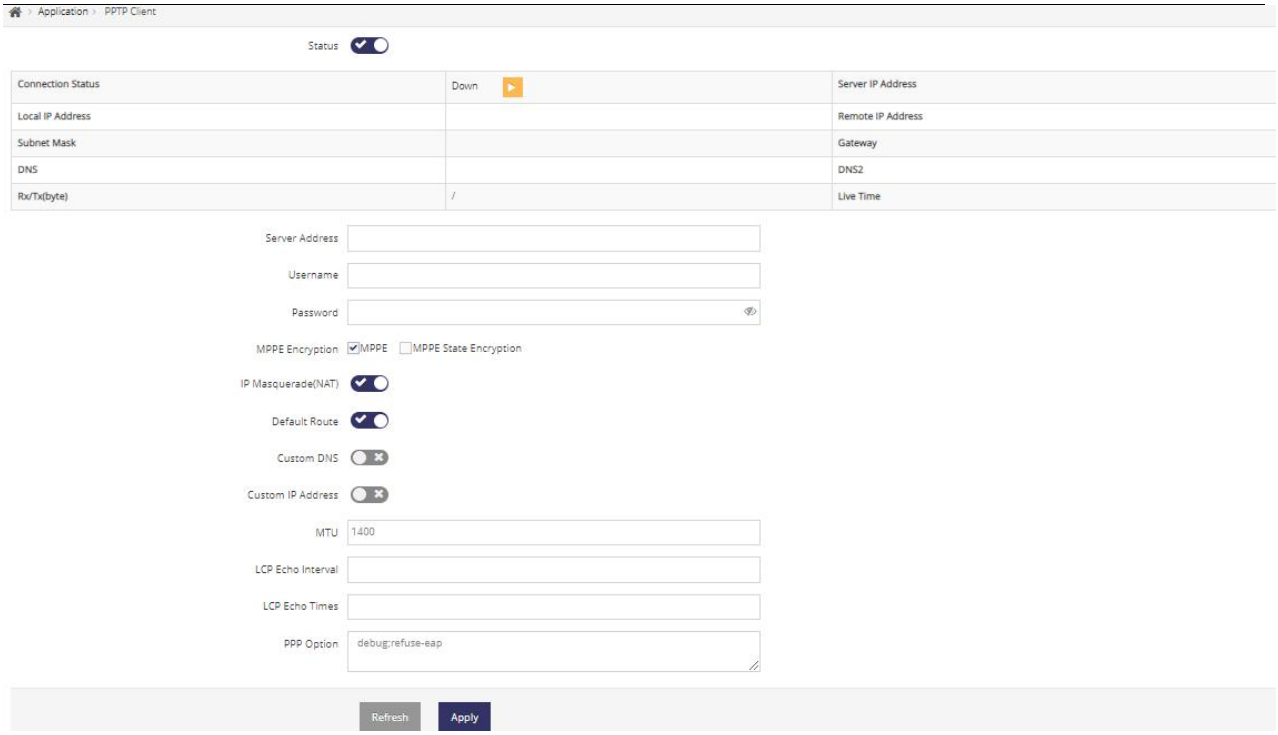


Step 1 Please click ”Apply” to finish.

----End

2.6.5 PPTP Client Setting

Step 1 VPN > PPTP client to check or modify the relevant parameter.

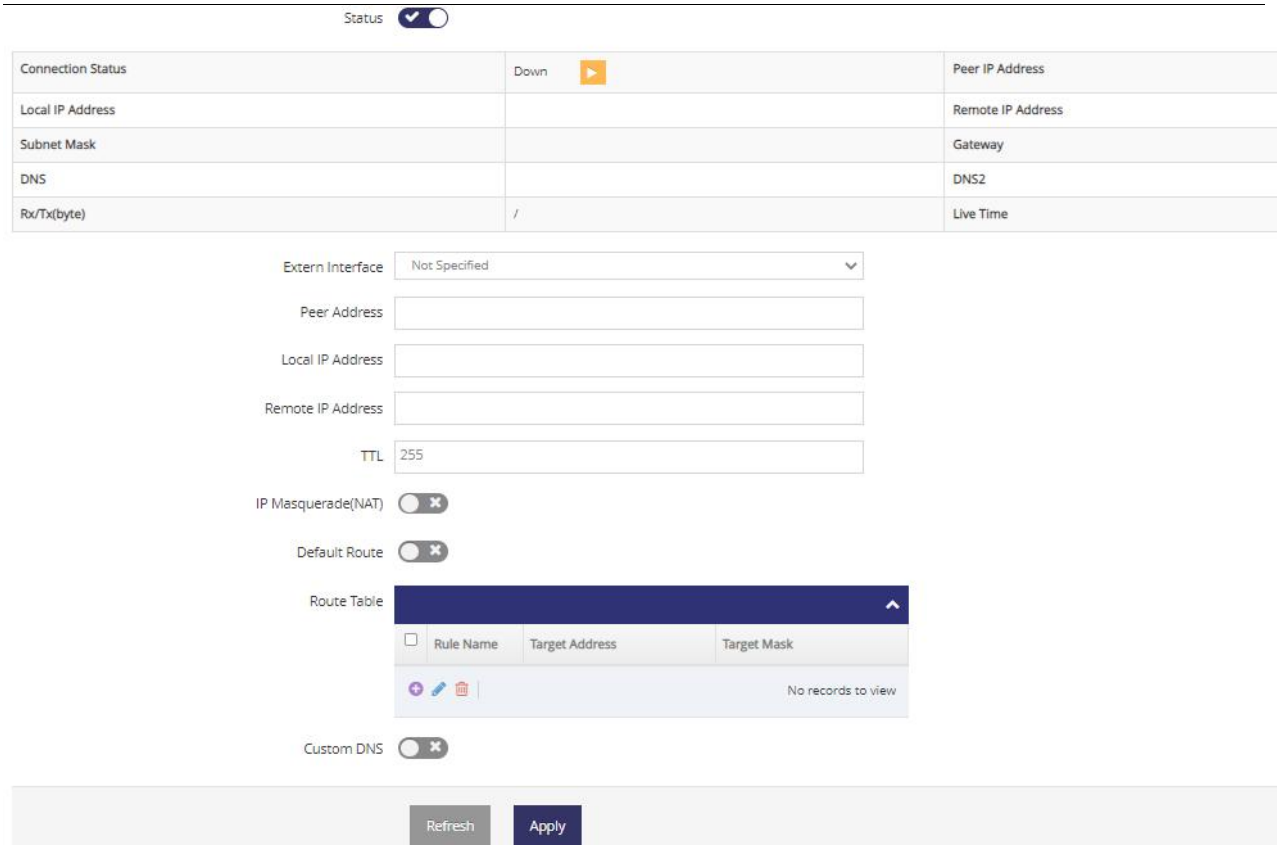


Step 2 Please click ”Apply” to finish.

----End

2.6.6 GRE

Step 1 Application > GRE client to check or modify the relevant parameter.



Step 2 Please click ”Apply” to finish.

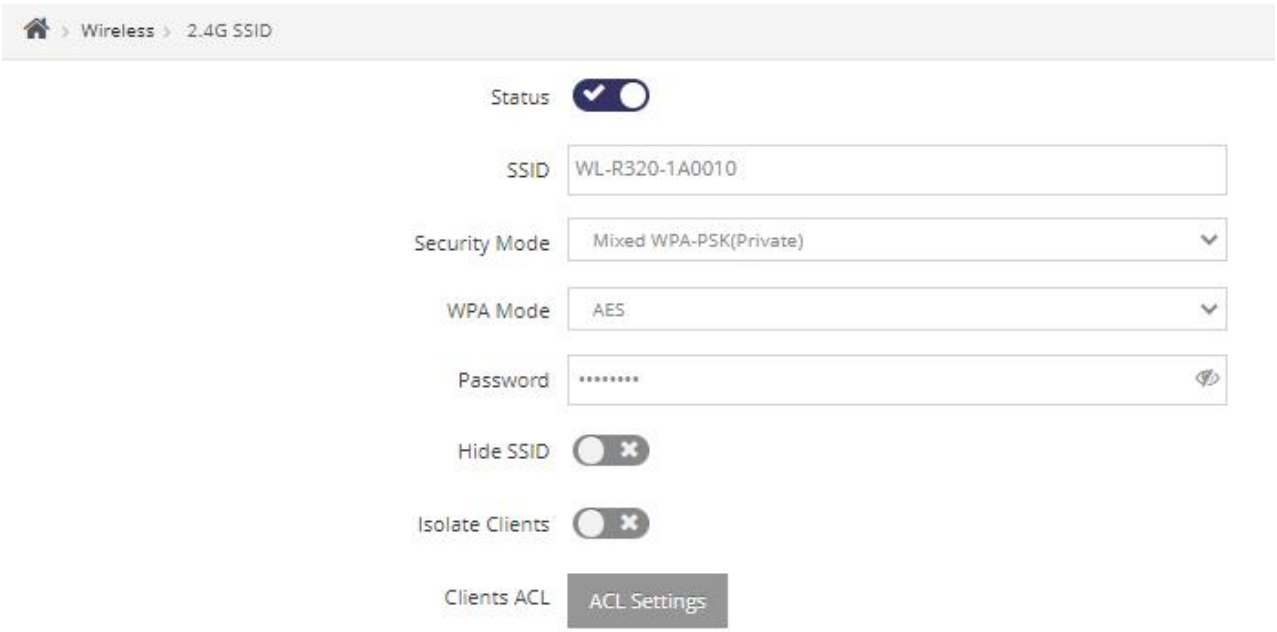
----End

2.7 Wireless Setting

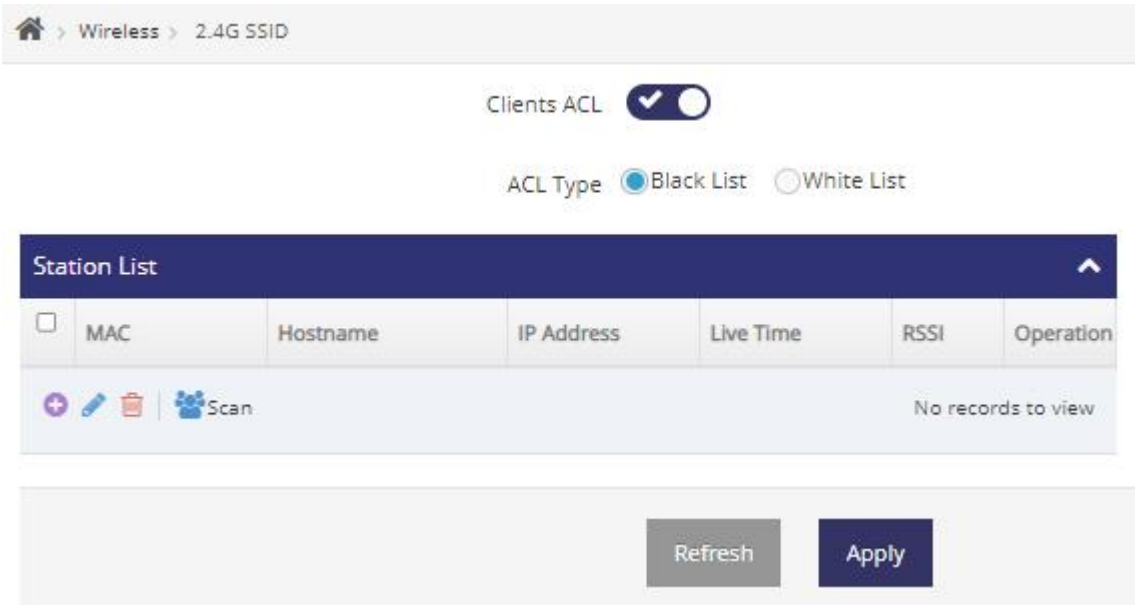
It’s mainly for router which support Wi-Fi, you can modify and configure Wireless parameter through Web GUI, below is the common setting.

2.7.1 SSID Setting

Step 1 Wireless->SSID Setting to configure relative parameter.



Step 2 Wireless->SSID Setting to ACL relative parameter.



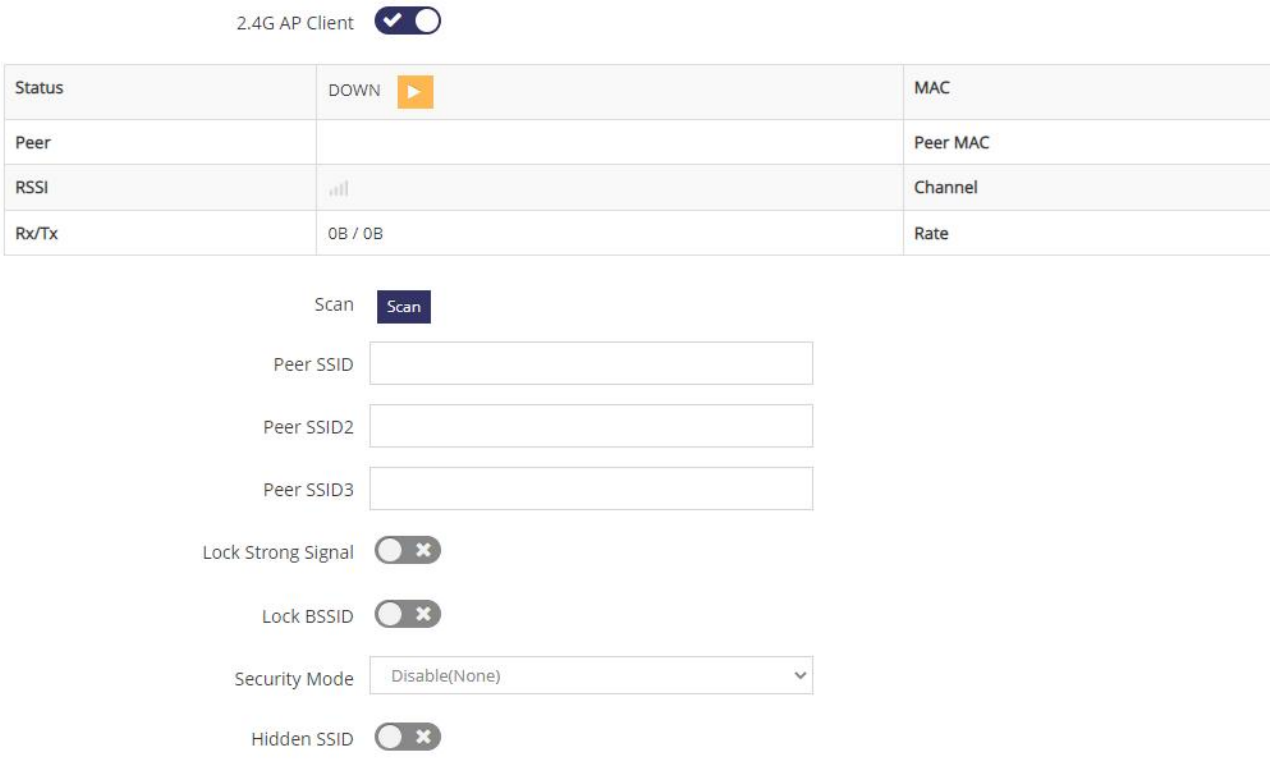
Step 3 Wireless->SSID Setting to Channel relative parameter.

Step 4 Please click “Apply” to finish.

----End

2.7.2 AP Client

Step 1 Wireless->AP Client to enter the setting page.



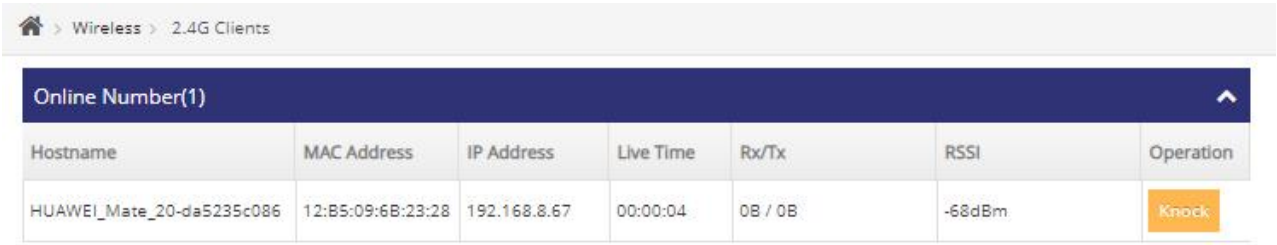
Parameter	Instruction	Default
2.4G AP Client	Wi-Fi Client ON/OFF	OFF
Peer SSID	Defined the available SSID to connect. Supports 3 SSIDs as Options.	Null
Lock Strong Signal	The Wi-Fi client will always connect the strongest signal SSID.	Null
Lock BSSID	The Wi-Fi client will always connect the Basic Service Set Identifier(BSSID)	Null
Hidden SSID	Supprts to connect hidden SSID. It's necessary to define the channel of hidded SSID.	Null

Step 2 Please click "Apply" to finish.

----End

2.7.3 Clients

Step 1 Wireless->Clients to enter the client list page.



----End

2.8 Station

2.8.1 Access Control

Step 1 Station Control > Access Control to check or modify the relevant parameter.

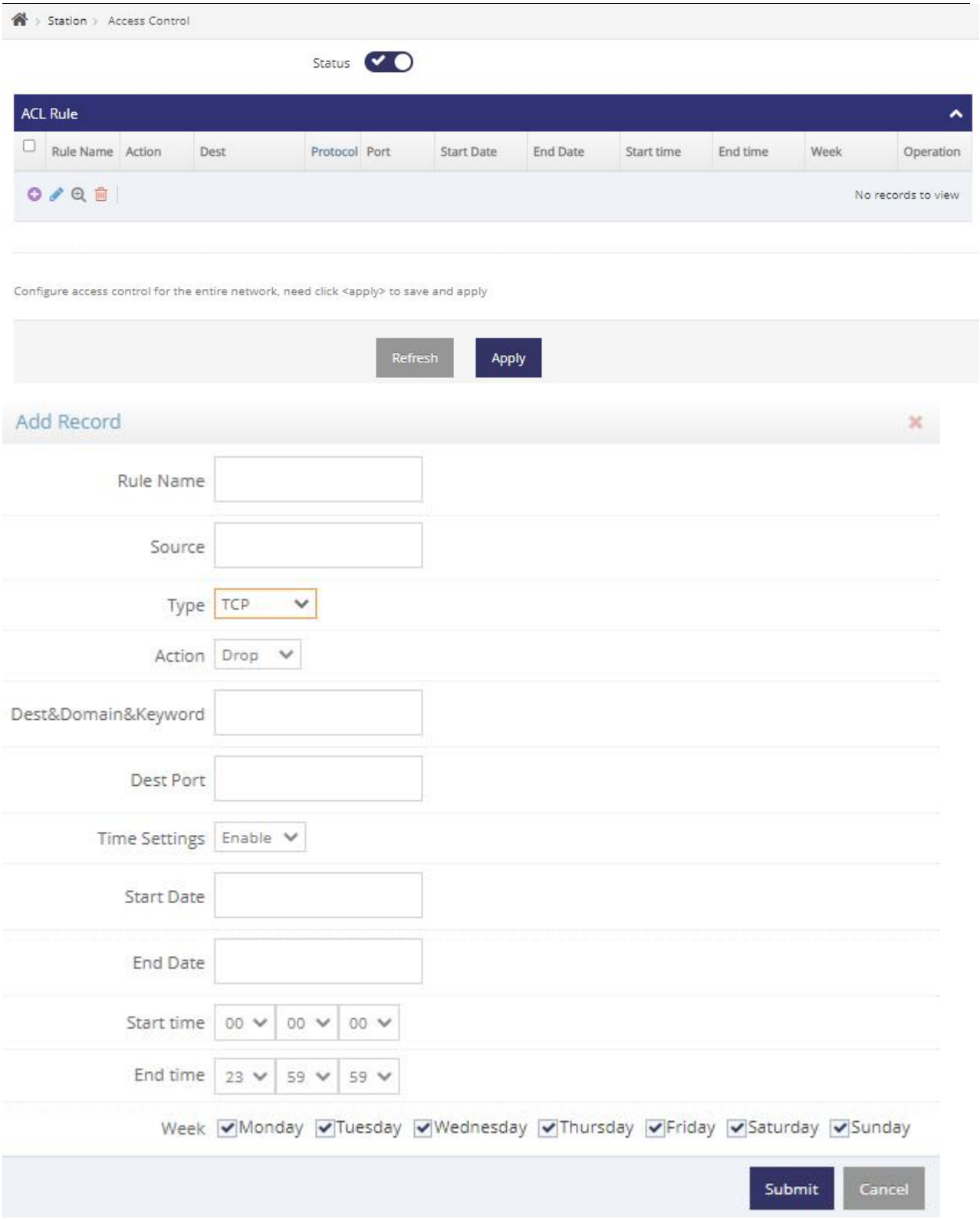


Table 2-10 Access Control Instruction

Parameter	Instruction	Default
Rule Name	Indicate the ordinal of the list.	Null
Source Address	Specify the station device IP, MAC and IP segment.	Null

Parameter	Instruction	Default
	If configure multiple IP addresses with comma(,) as separator.	
Type	Support UDP/TCP/Domain/keyword filter	TCP
Action	Drop, Accept and Return options	Drop
Destination Address	Indicate the ordinal of the list.	Null
Protocol	All, UDP, TCP options	All
Time Setting	Define access control available time.	Disable

Step 2 Please click ”Apply” to finish

NOTE

1) It will accept/drop the destination address and content(keyword/domain name) from router.
2) It will accept/drop the whitelist/blacklist.

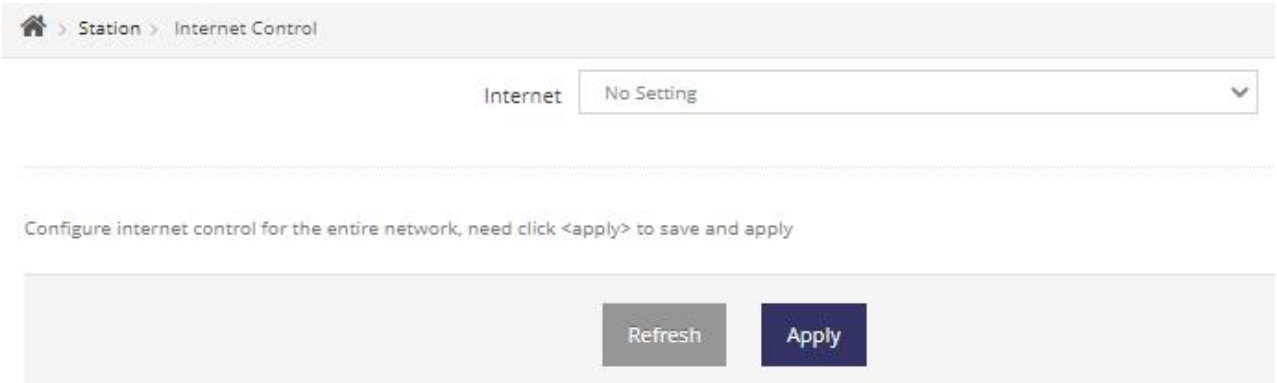
Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

----End

2.8.2 Internet Control

Step 1 Station Control > Internet Control enter the setting GUI.



Step 2 Please click ”Apply” to finish

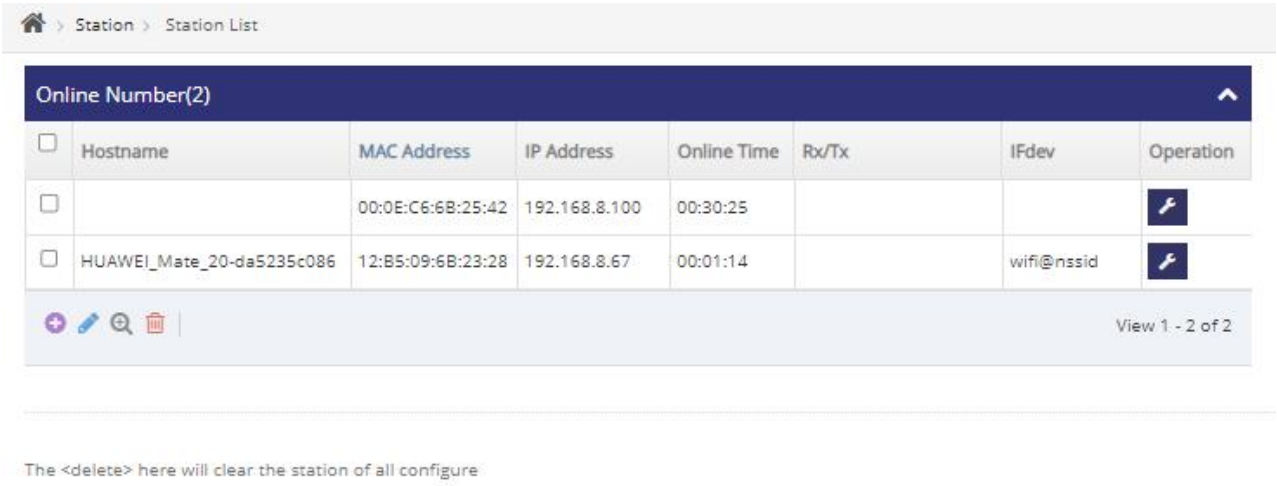
NOTE

It will support to control internet access authority and time management

----End

2.8.3 Station List

Step 1 Station Control > Station List to enter the GUI to check station list. We may check the device list in the station.



Step 2 Please click ”Apply” to finish.

NOTE

1) It will support to control and manage the specified devices to access to internet.

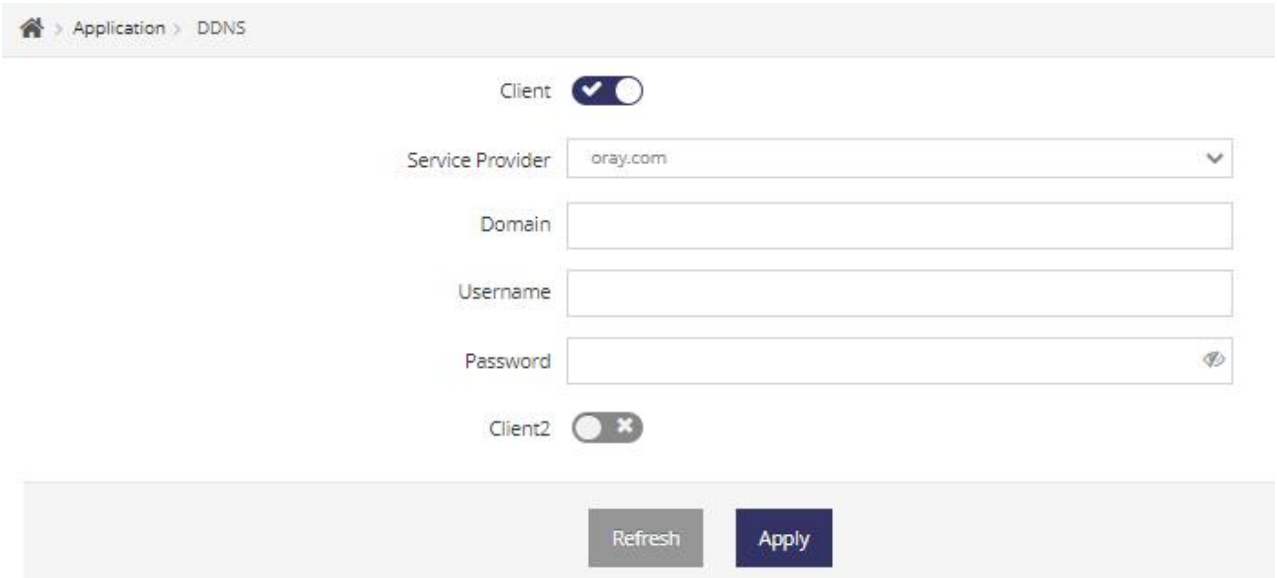
2) It will support accept/drop the specified devices destination address and content(keyword/domain name).

----End

2.9 Application

2.9.1 DDNS

Step 1 Application > DDNS to check or modify the relevant parameter.



Step 2 Please click ”Apply” to finish.

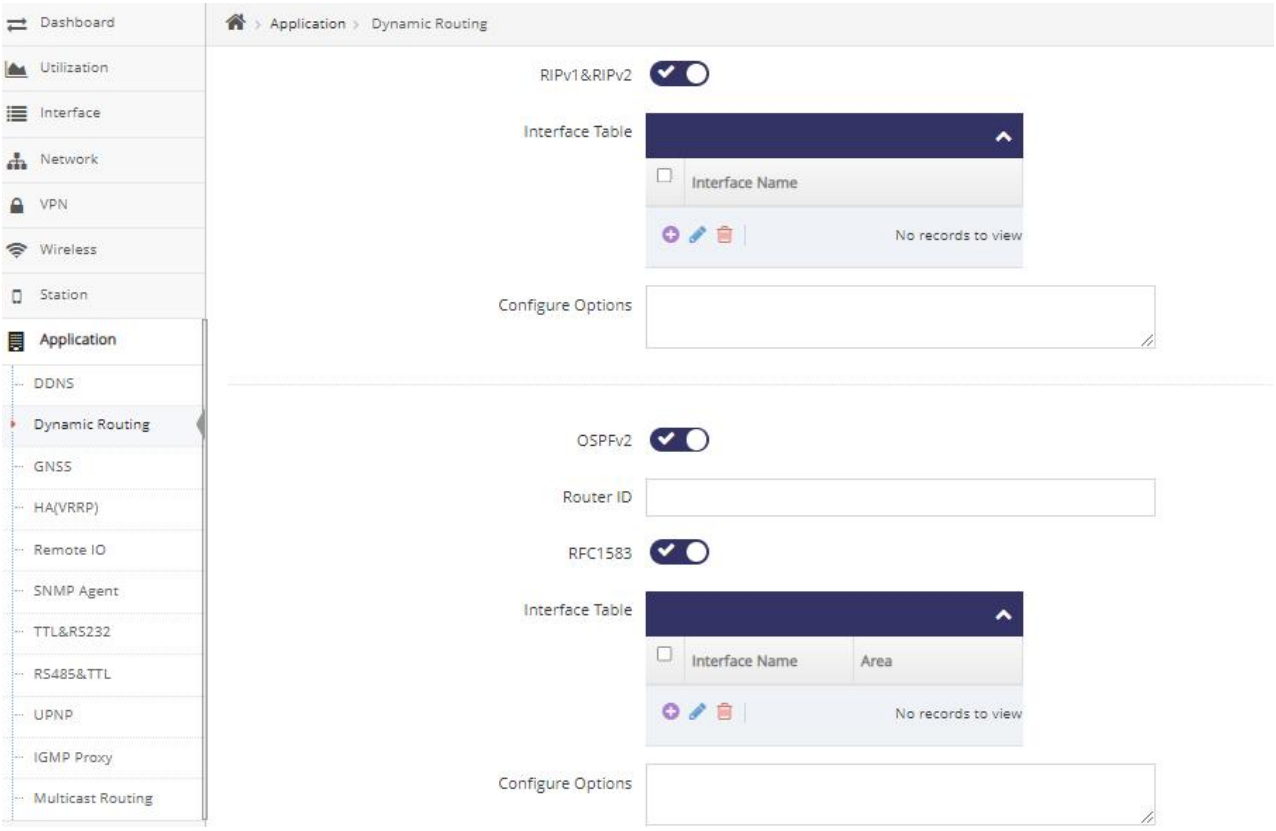
Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

----End

2.9.2 Dynamic Routing

Step 1 Application > Dynamic Routing to check or modify the relevant parameter.

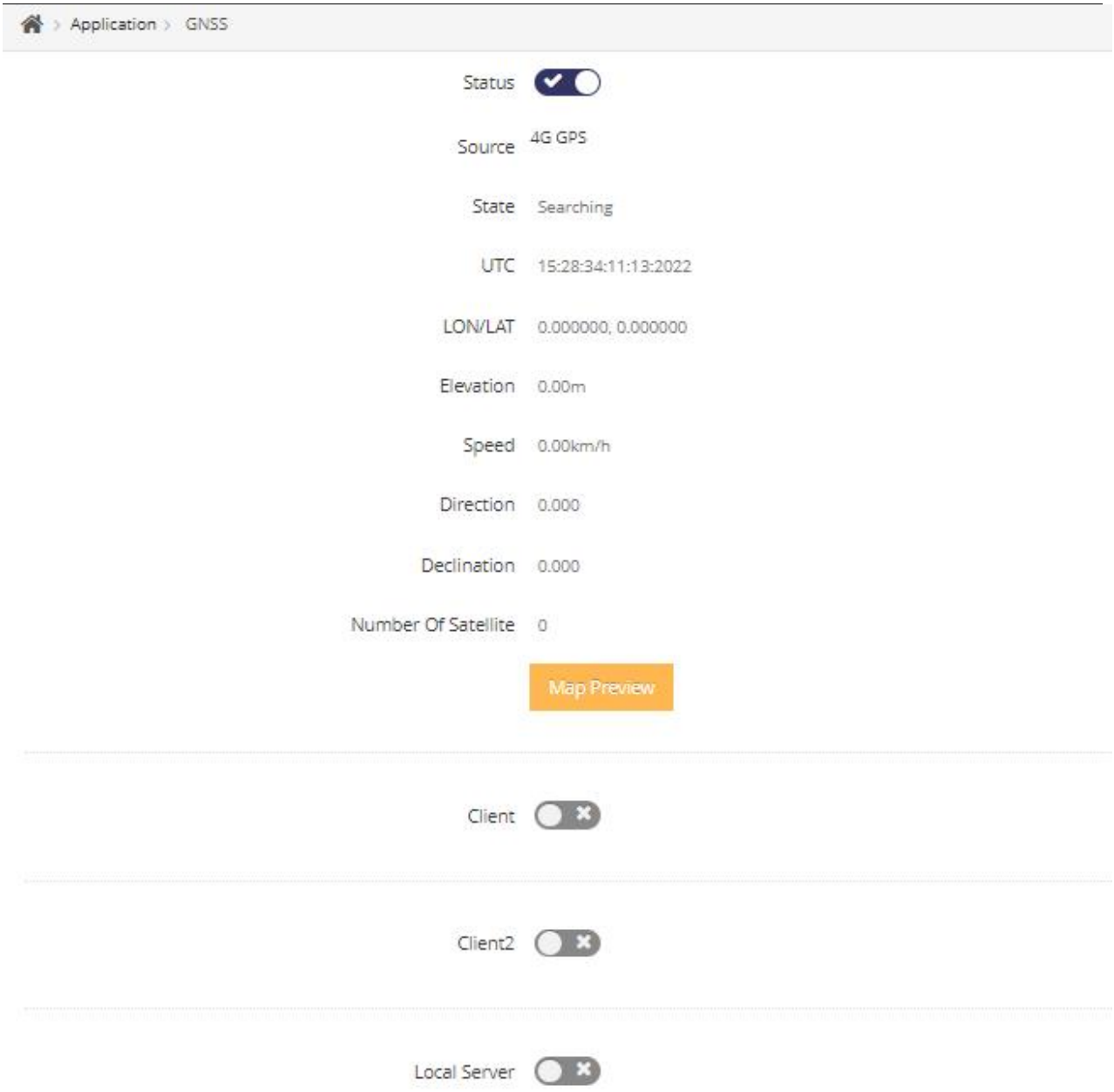


Step 2 Please click ”Apply” to finish.

----End

2.9.3 GNSS(Optional)

Step 1 Application > GNSS to check or modify the relevant parameter.



Step 2 Please click ”Apply” to finish.

NOTE

GNSS feature is optional according to customer requirements. It supports two clients mode and one server mode. When the GNSS located successfully, the GNSS information will be display in the GUI. WL-R320 supports UDP/TCP/MQTT protocol to send GNSS data in the client mode and supports UDP/TCP protocol to send GNSS data in the server mode.

Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

---End

2.9.4 VRRP

Step 1 Application > VRRP to check or modify the relevant parameter.

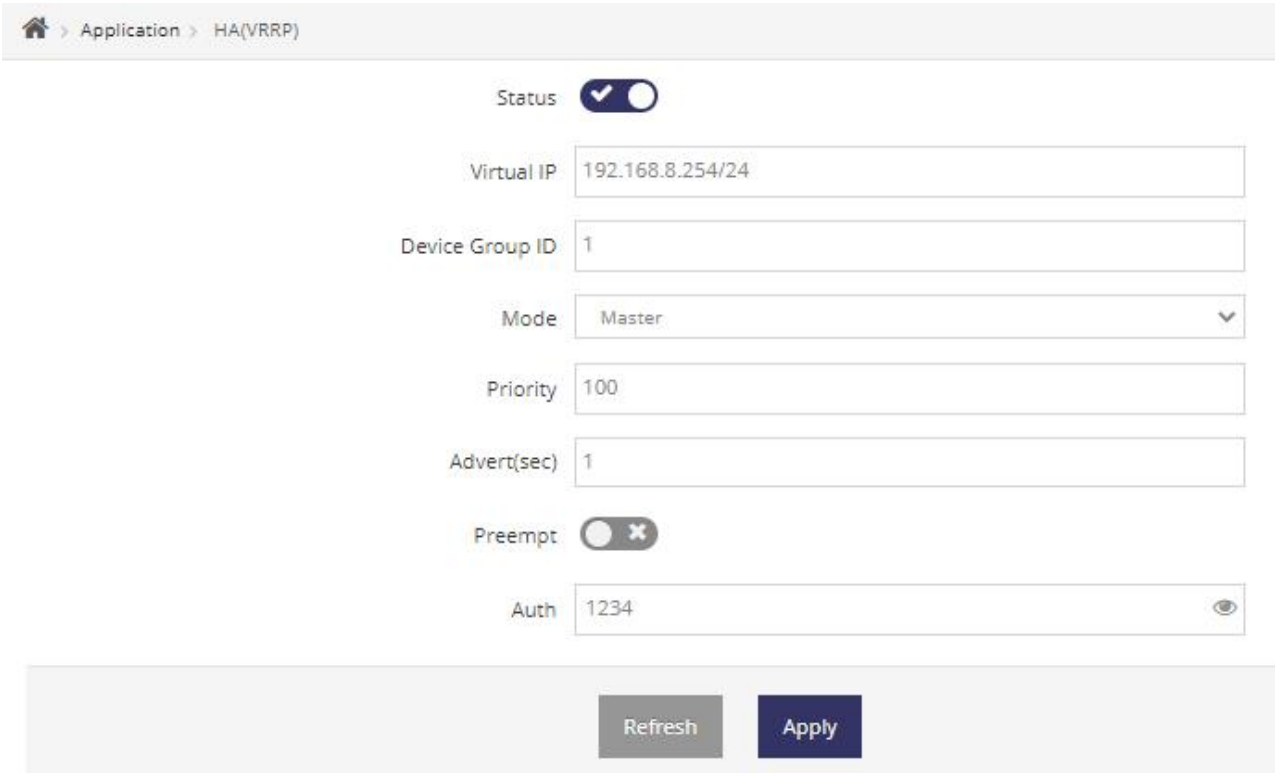


Table 2-11 VRRP Filtering Instruction

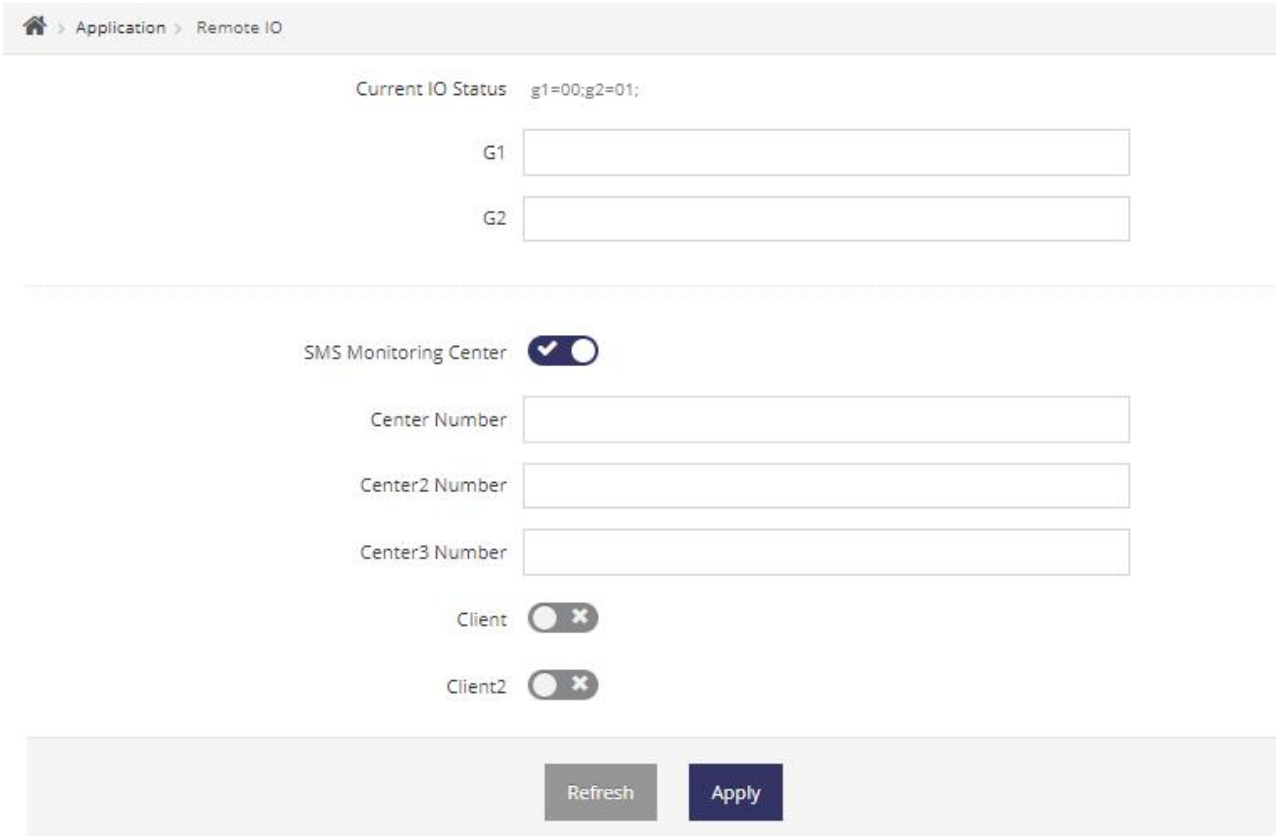
Parameter	Instruction	Default
Status	Enable/Disable options	OFF
Virtual IP	Drop, Accept and Return options	Drop
Device Group ID	Specify which VRRP group of this router belong to.	Null
Mode	Master/backup option	Master
Priority	Enter the priority value from 1 to 255. The larger value has higher priority.	100
Advert(Sec)	Advertisement interval, unit as sec	1
Preempt	Enable preemption on the router and configure its preemption delay in a specific VRRP group.	OFF
Auth.	Master and backup mode router authentication key	1234

Step 2 Please click ”Apply” to finish.

----End

2.9.5 Remote IO

Step 1 Application > Remote IO to check or modify the relevant parameter.



GPIO Value Format

Item	Value	Indication
GPIO number	g1	g1 for GPIO1(G1) port g2 for GPIO2(G2) port g3 for G3 port(Reserved)
First Digit	1	Output(DO)
	0	Input(DI)
Second Digit	1	High Level(3.3v)
	1	Low Level(0v)
Separator sign	;	

Step 2 Please click ”Apply” to finish.

NOTE

The remote IO feature support to remotely control IO by SMS and TCP protocol, and support IO status to report server by SMS and TCP protocol.

Configuration Instance

Please check lock bank configuration in the chapter 3 as reference.

----End

2.9.6 TTL/RS232

Step 1 Application > TTL/R232 to check or modify the relevant parameter. Serial #1 for RS232 port and Serial #2 for RS485 port as default.

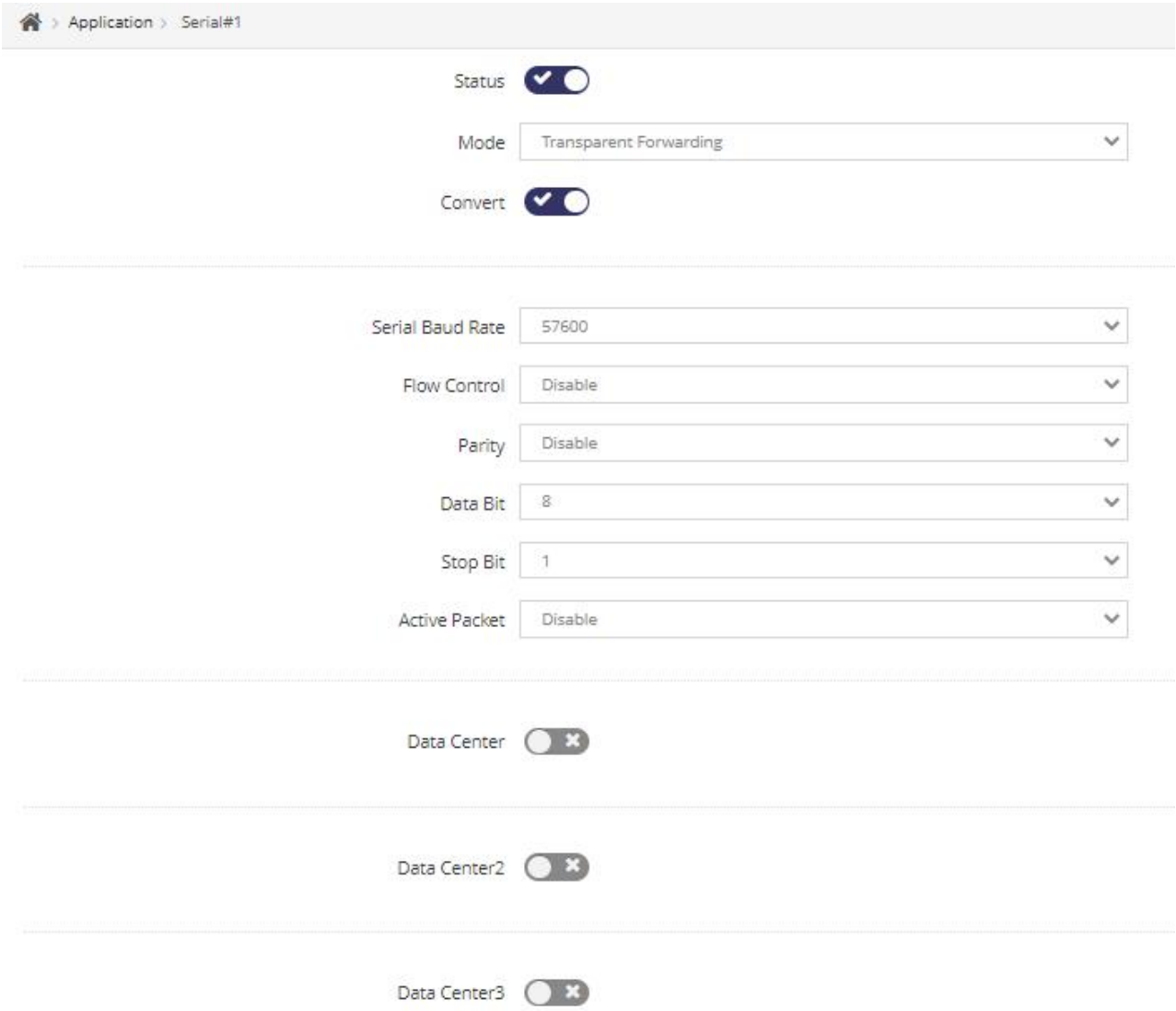


Table 2-12 Serial Port Instruction

Parameter	Instruction	Default
Status	ON/OFF Options	ON
Mode	GNSS, Command Line, Modbus, MQTT, Transport Forwarding Options. Transport Forwarding for example as below.	Command Line
Convert	ON/OFF Options. RS232/RS485 for ON status. Two	ON

Parameter	Instruction	Default
	serial port for TTL/TTL, please choose OFF status.	
Server Address	The Openvpn server public IP address and port.	
Baud rate	1200~230400 Options	57600
Flow Control	Disable/Hard/Soft options	Disable
Parity	Disable/Odd/Even	Disable
Data Bit	Data bit 5,6,7,8 options	8
Stop Bit	Stop bit 1,2 options	1
Active Packet	Disable/Idle/Time options	Disable
Center Address	Supports 3 data server synchronously. IP address and domain name are acceptable for Server IP	OFF
Protocol	Data server port	Null
Port	TCP/UDP options	TCP

NOTE Customize Register Packet

Step 2 Please click ”Apply” to finish.

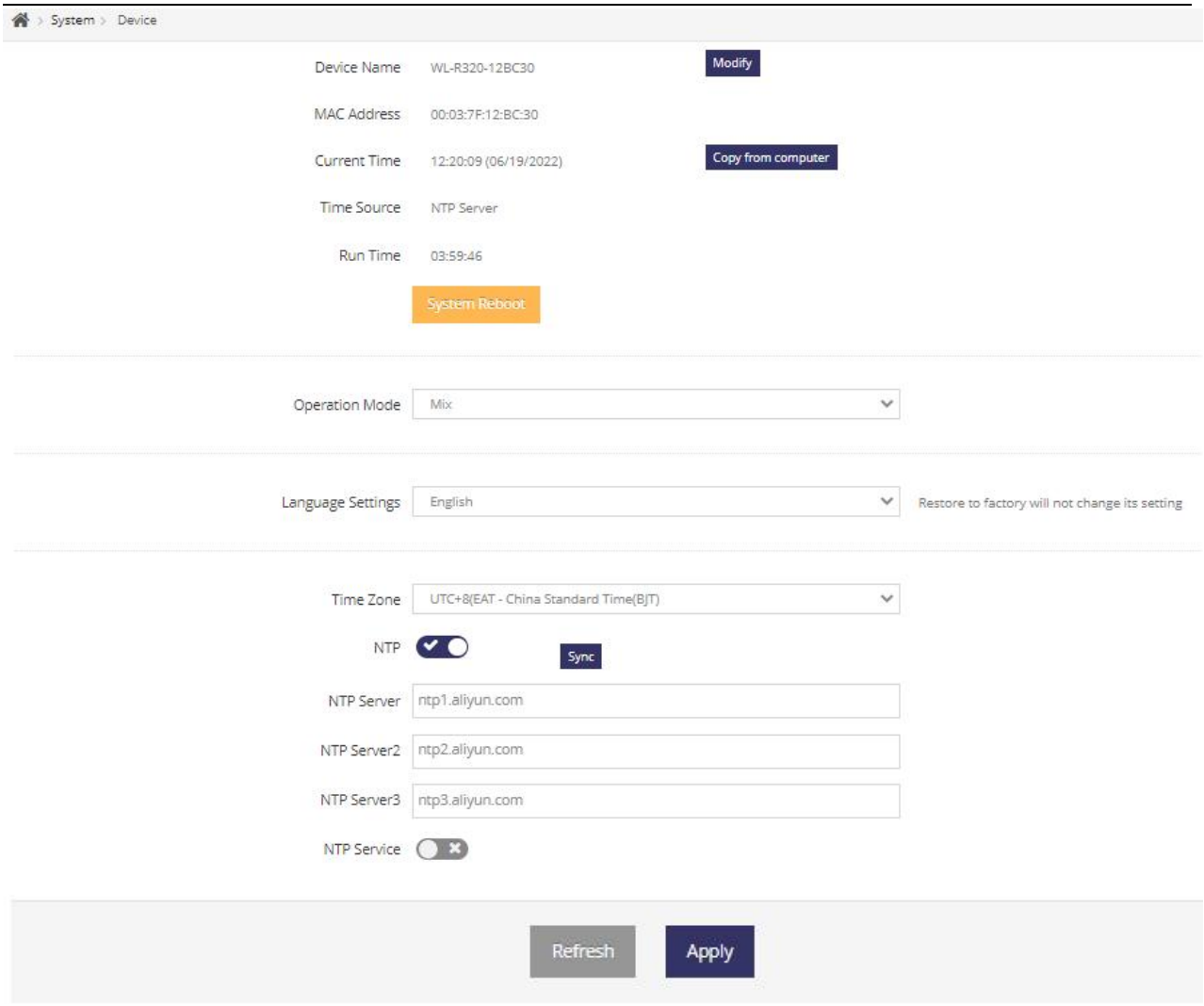
----End

2.9.7 L2TP Client

2.10 System

2.10.1 Device

Step 1 System > Device to check or modify the relevant parameter.

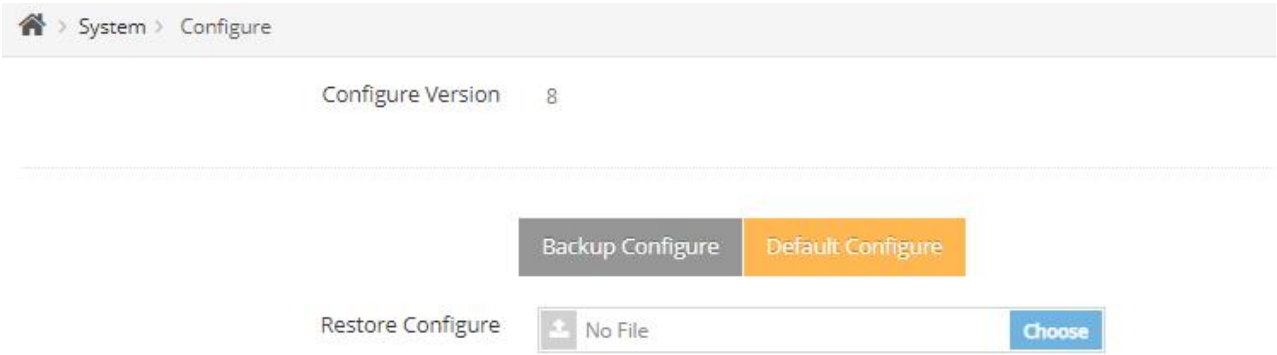


Step 2 Please click ”Apply” to finish.

----End

2.10.2 Configure

Step 1 System > Configure to check or modify the relevant parameter.

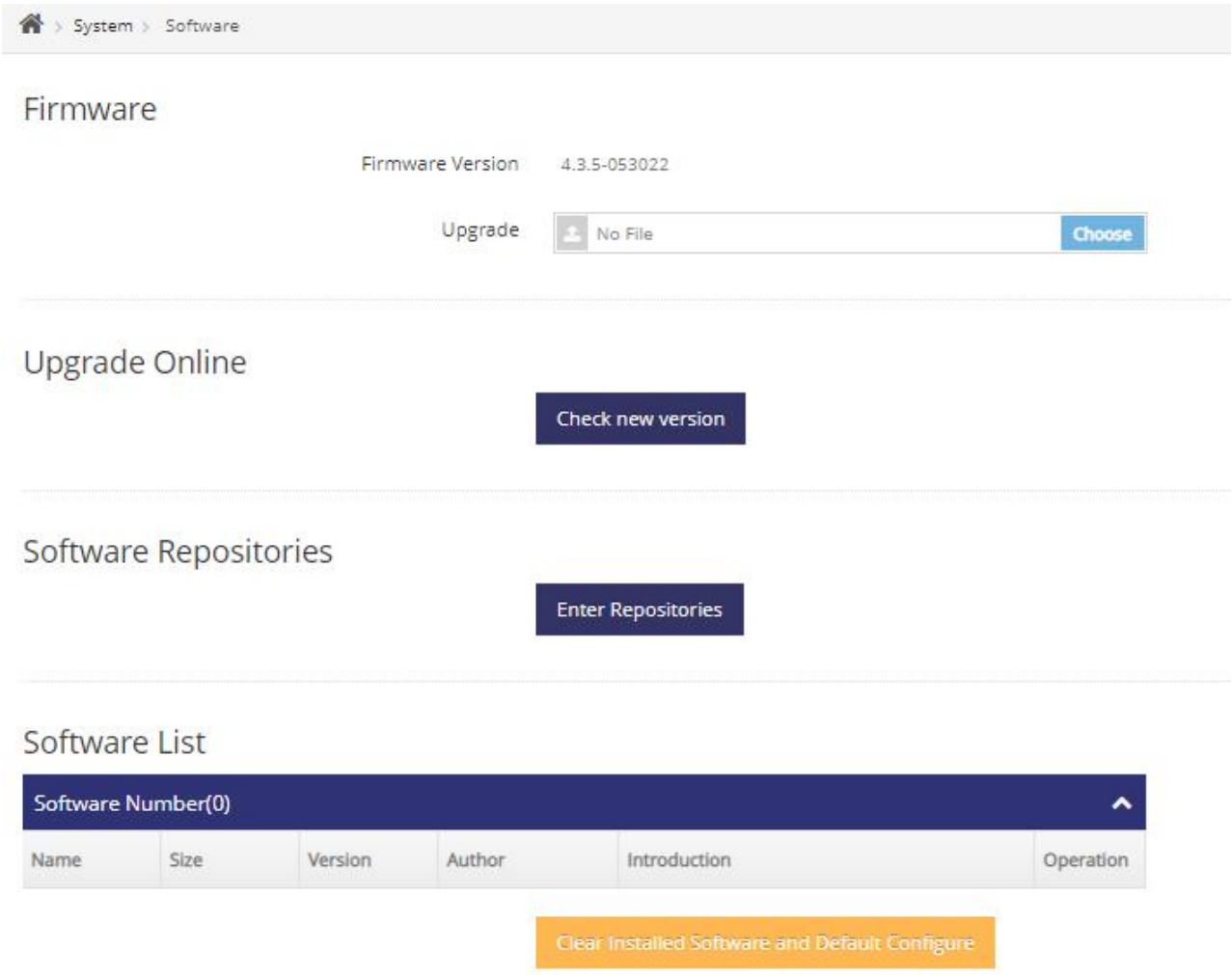


Step 2 Please click ”Apply” to finish.

----End

2.10.3 Software

Step 1 System > Software to check or modify the relevant parameter.

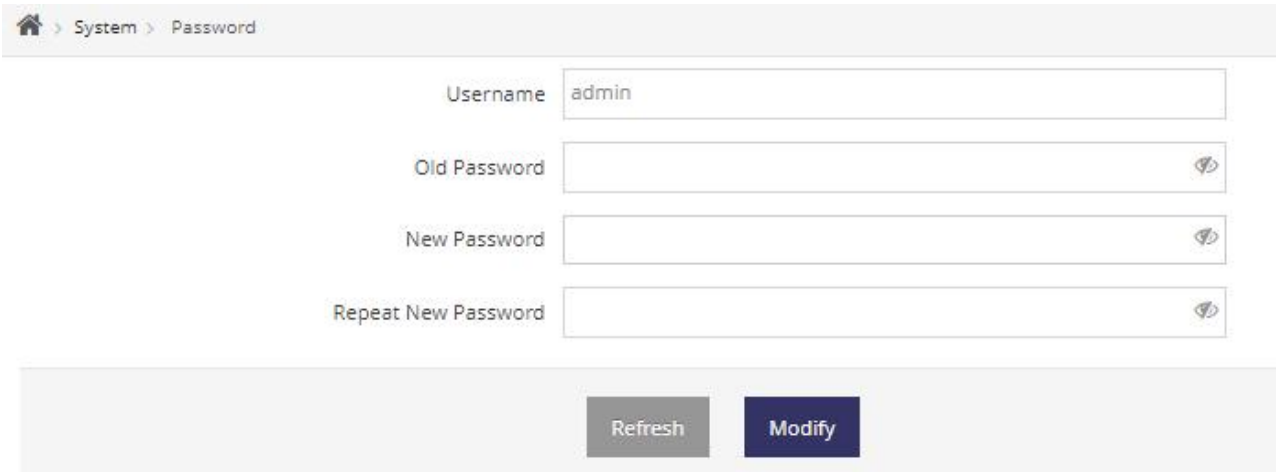


Step 2 Please click ”Apply” to finish.

---End

2.10.4 Password

Step 1 System > Password to check or modify the relevant parameter.

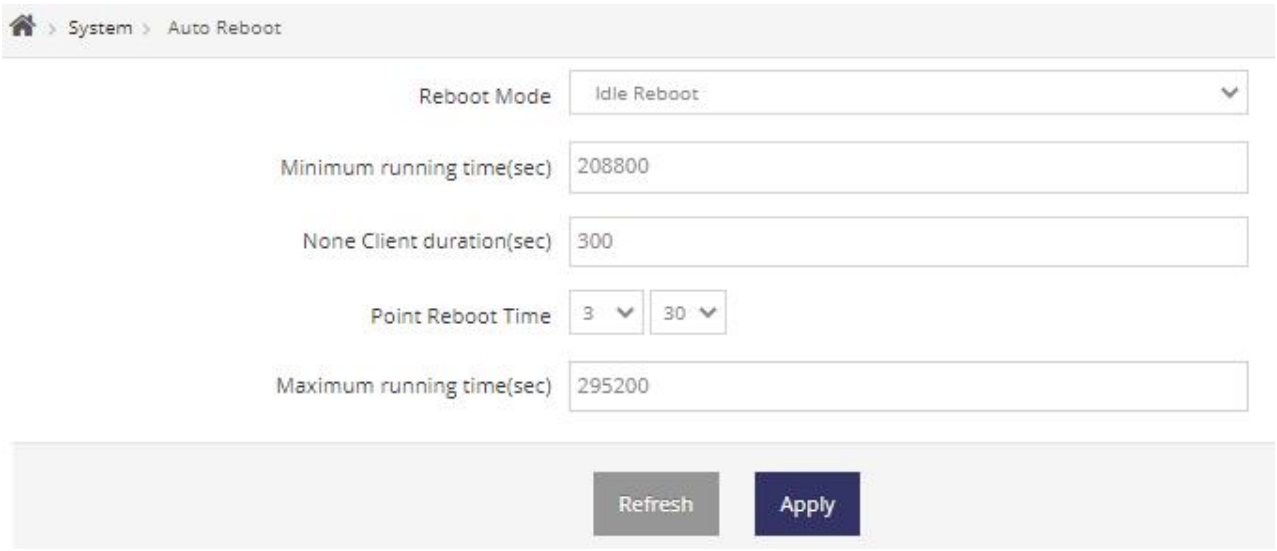


Step 2 Please click ”Apply” to finish.

---End

2.10.5 Auto Reboot

Step 1 System > Auto Reboot to check or modify the relevant parameter.

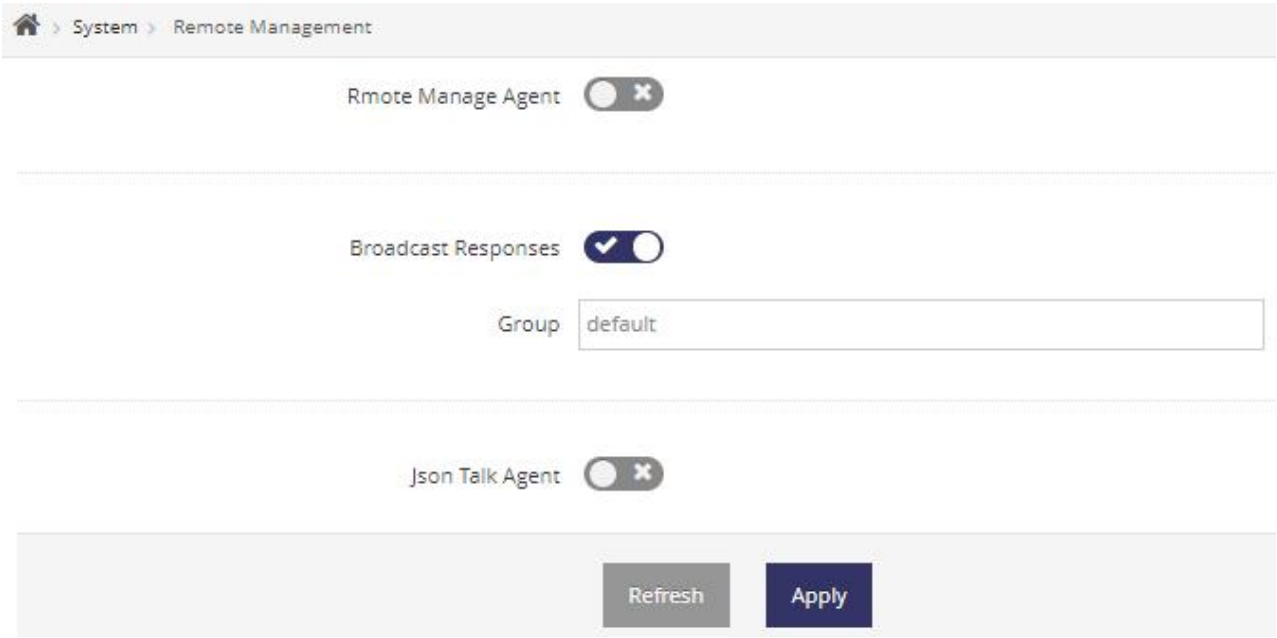


Step 2 Please click ”Apply” to finish.

---End

2.10.6 Manage Server

Step 1 System > Manage Server to check or modify the relevant parameter.

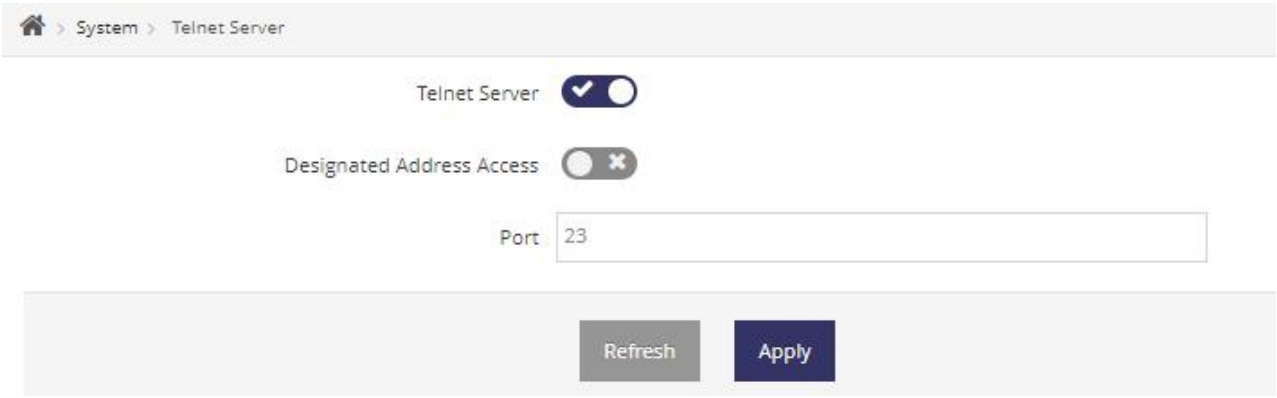


Step 2 Please click ”Apply” to finish.

---End

2.10.7 Telent Server

Step 1 System > Telnet Server to check or modify the relevant parameter.

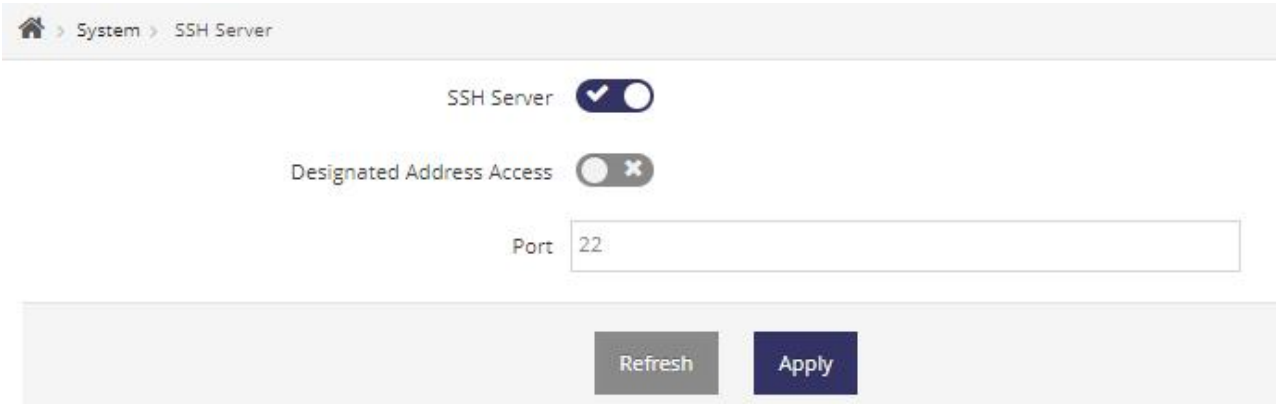


Step 2 Please click ”Apply” to finish.

---End

2.10.8 SSH Server

Step 1 System > SSH Server to check or modify the relevant parameter.

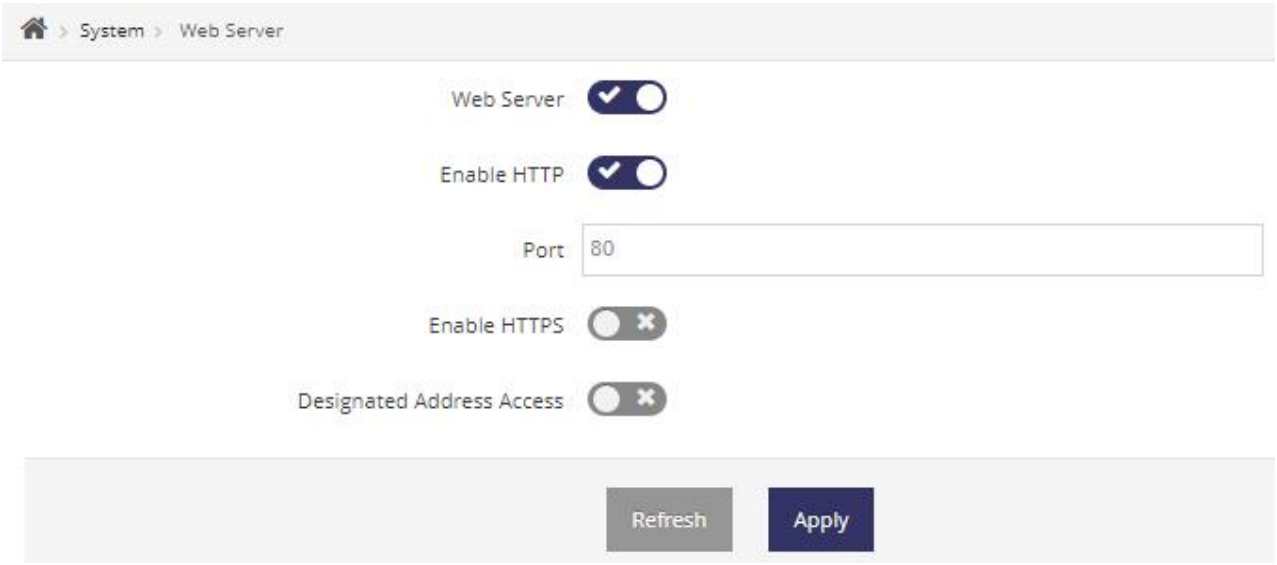


Step 2 Please click ”Apply” to finish.

---End

2.10.9 Web Server

Step 1 System > Web Server to check or modify the relevant parameter.



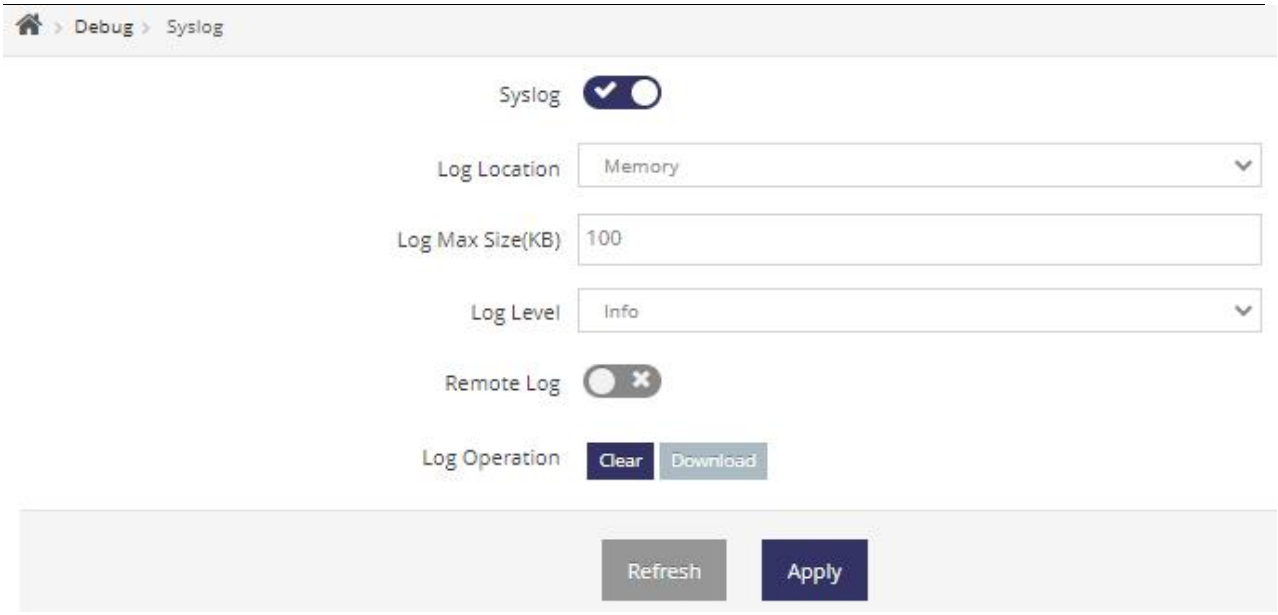
Step 2 Please click ”Apply” to finish.

---End

2.11 Debug

2.11.1 Syslog

Step 1 Please click ”Debug> Syslog” to enter the GUI to download logs and capture logs by local or remote.

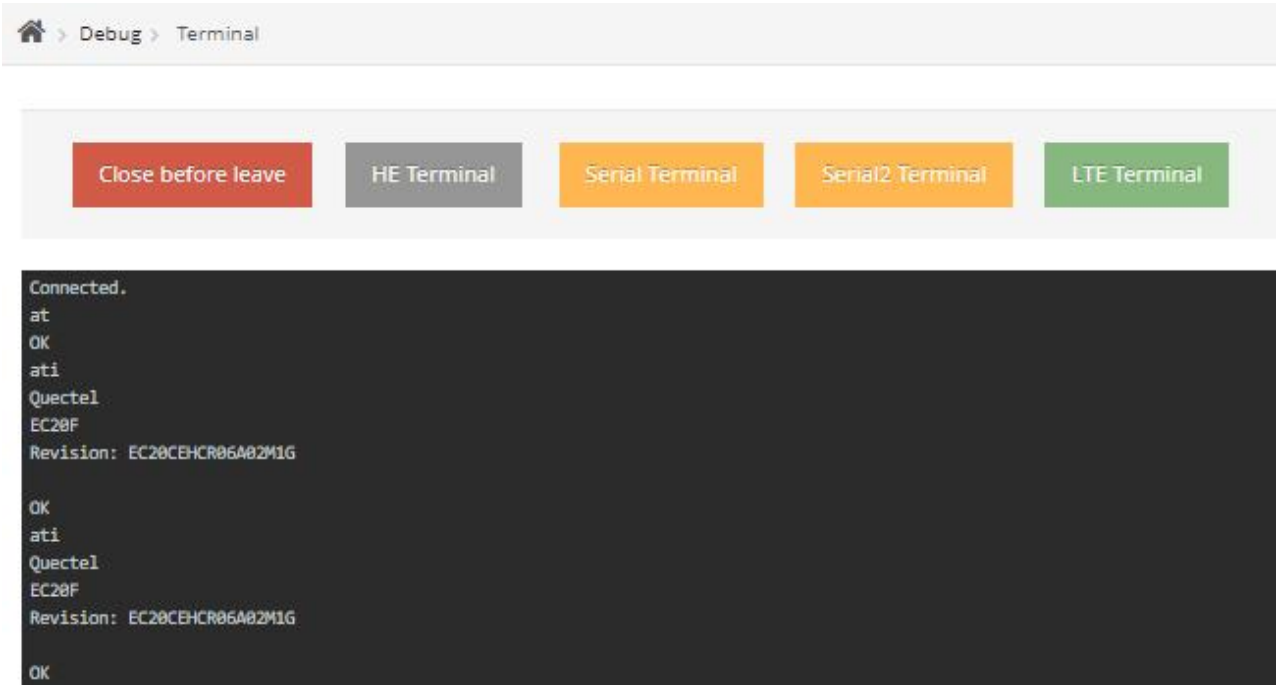


Step 2 Please click ”Apply” to finish

----End

2.11.2 Terminal

Step 1 Debug > Terminal to check or modify the relevant parameter.

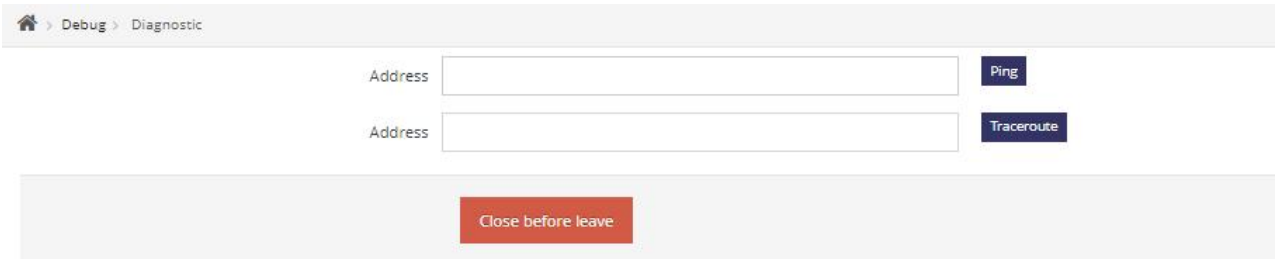


Step 2 Please click ”Apply” to finish.

---End

2.11.3 Diagnostic

Step 1 Please click ”Debug> Diagnostic” to enter the GUI for Ping and Traceroute.

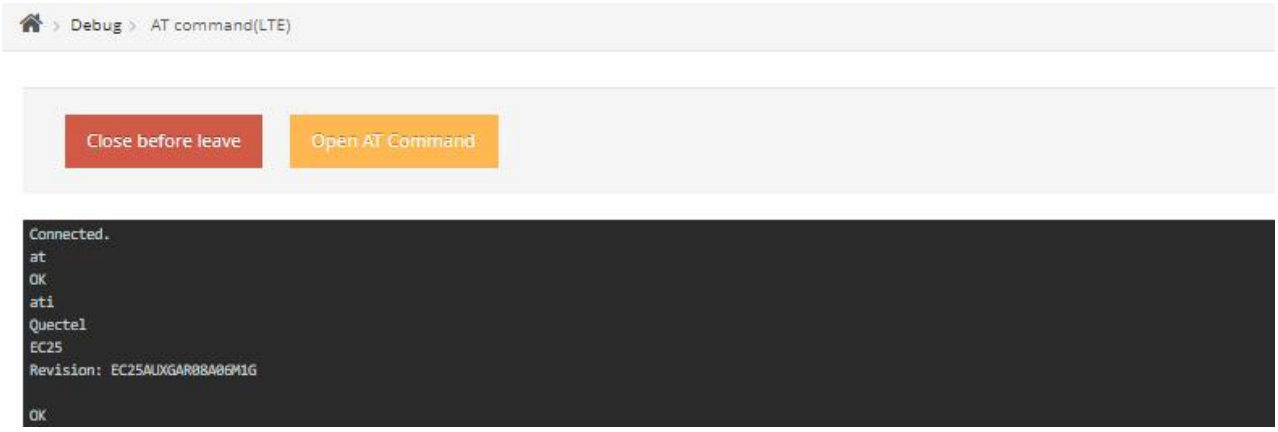


Step 2 Please click ”Apply” to finish.

---End

2.11.4 AT Command(LTE)

Step 1 Please click ”Debug> Diagnostic” to enter the GUI for Ping and Traceroute.



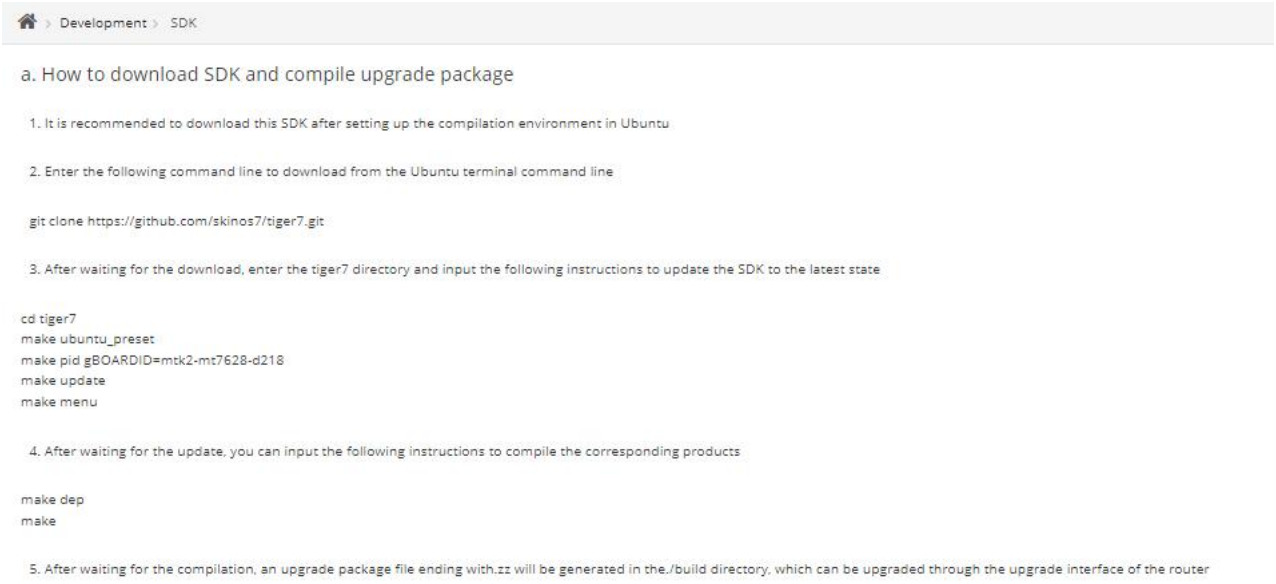
Step 2 Please click ”Apply” to finish.

NOTE

The 4G connection will be closed once opened AT command.

---End

2.12 Development(SDK)

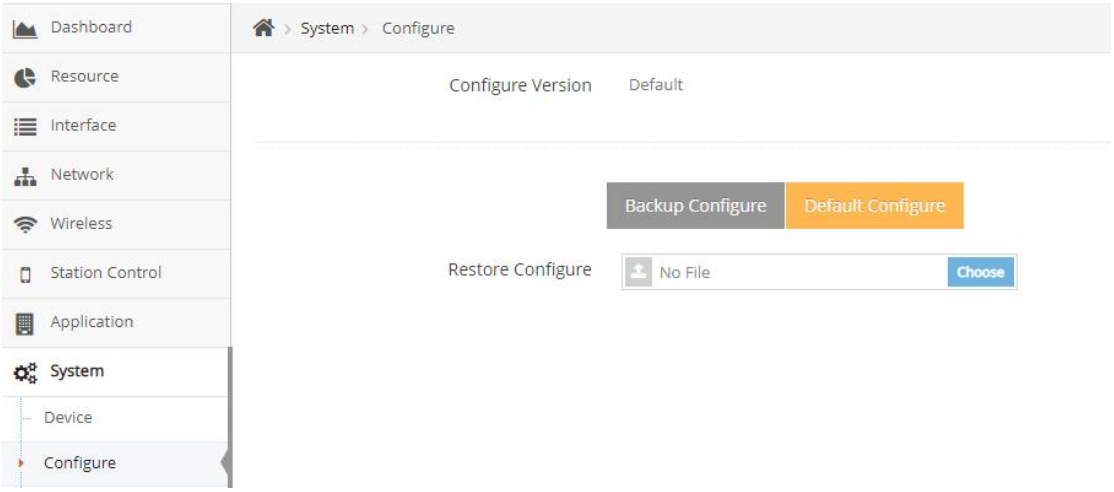


2.13 Default Factory Configuration

Three methods to default factory configuration

2.13.1 Reset in GUI

Click System--->Configure to enter Configure UI, Click Default Configure to reset router to default factory configuration.



2.13.2 Reset in SSH/Telnet

Login router via SSH/Telnet, then implement machine.default command to reset the router.

```
admin120-D17F38 login:
Password:

             EEEEEEEEE   LL          FFFFFFFFF
             EE          LL          FF
             EE          LL          FF
             EEEEEEEEE   LL          FFFFFFFFF
             EE          LL          FF
             EE          LL          FF
       Ashy  EEEEEEEEE   LLLLLLLLL   FF

 ------------------------------------------------------------
 Command Help
 ------------------------------------------------------------
 @ ---------------------- List all the project
 @? --------------------- List all the static component
 @@ --------------------- List all the dynamic component
 <com> ------------------- Show component configure
 <com>. ------------------ List all component interface
 <com>:<config> ---------- Get component configure attribute
 <com>:<config>=<value> -- Set component configure attribute
 ------------------------------------------------------------
# machine.default
```

2.13.3 Reset via RST button

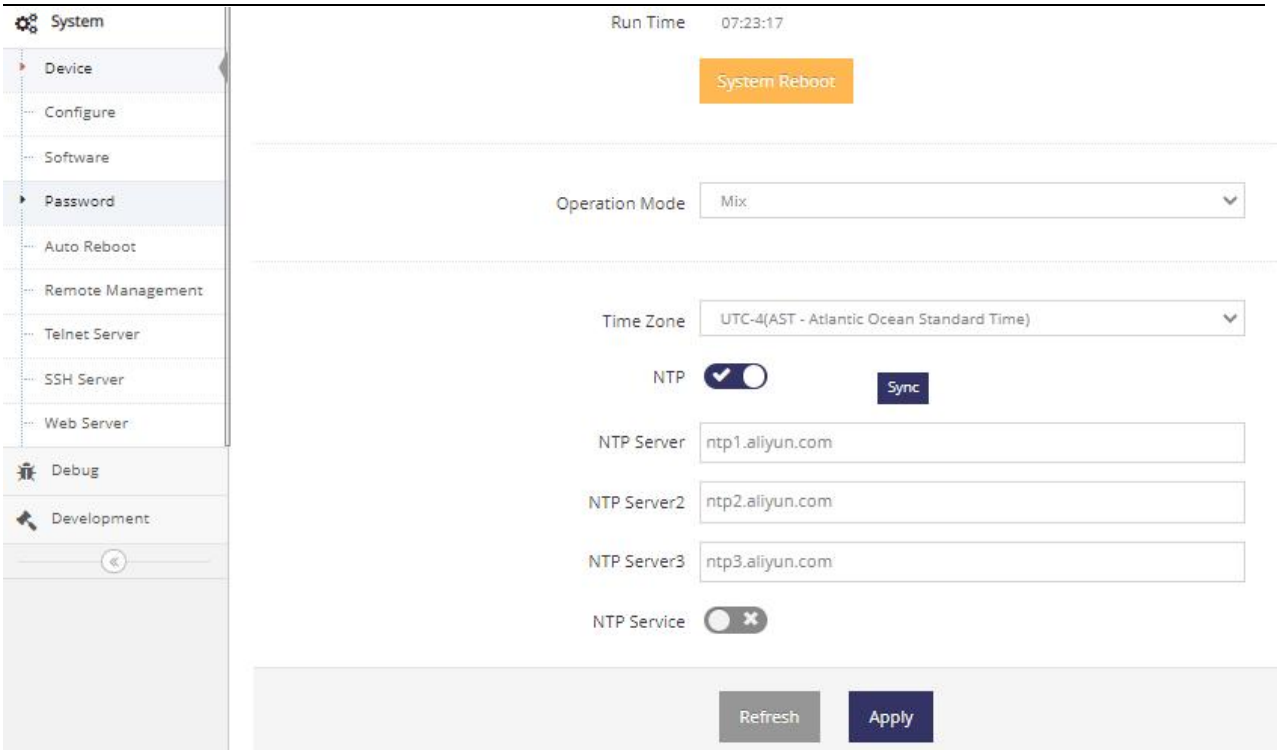
Press the RESET button for 5~8sec after the router startup and run, the router will auto reset to default factory configuration.

4 Configuration Instance

4.1 Link Backup

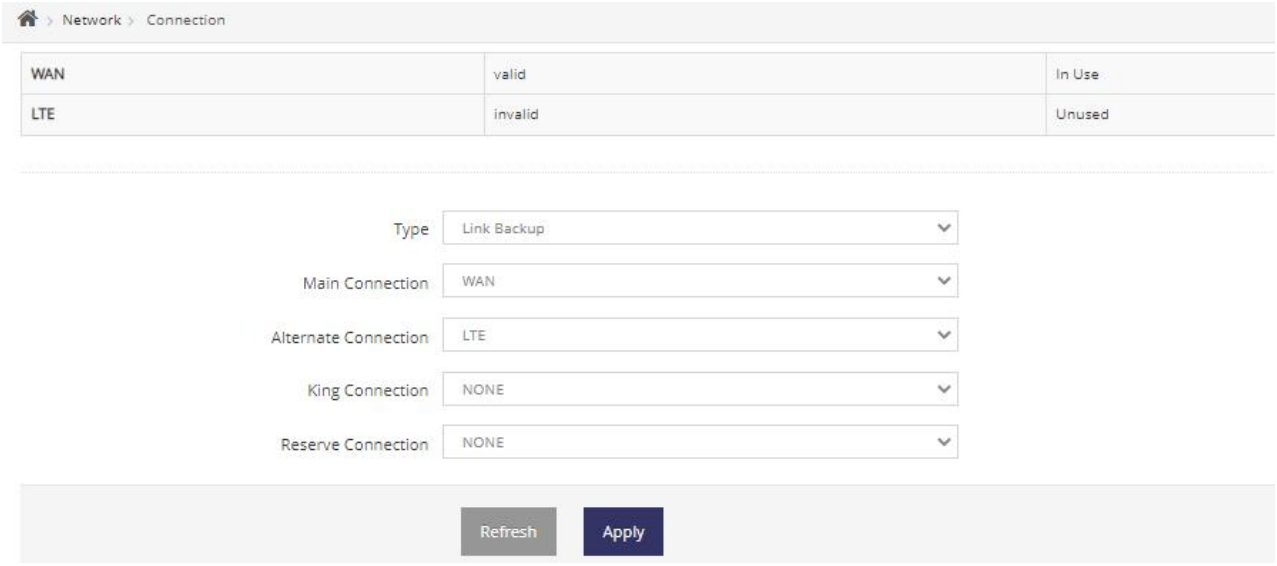
1) Operation mode

Click System--->Device GUI, Choose Mix in Operation mode.



2) Link Backup

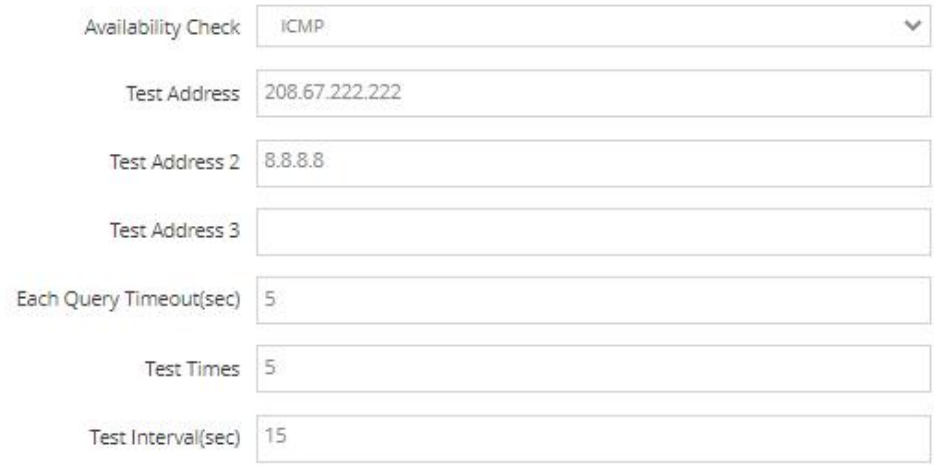
Click Network--->Connection GUI, choose link backup mode.



The King Connection with the highest priority. The router link will switch to King Connection once the defined King Connection available.
The Reserved Connection just keep the Connection reachable.

3) Link Backup

Click Network--->WAN GUI, configure WAN and add Availability Check rule.
ICMP failure as configured, the router link will switch to 4G link.

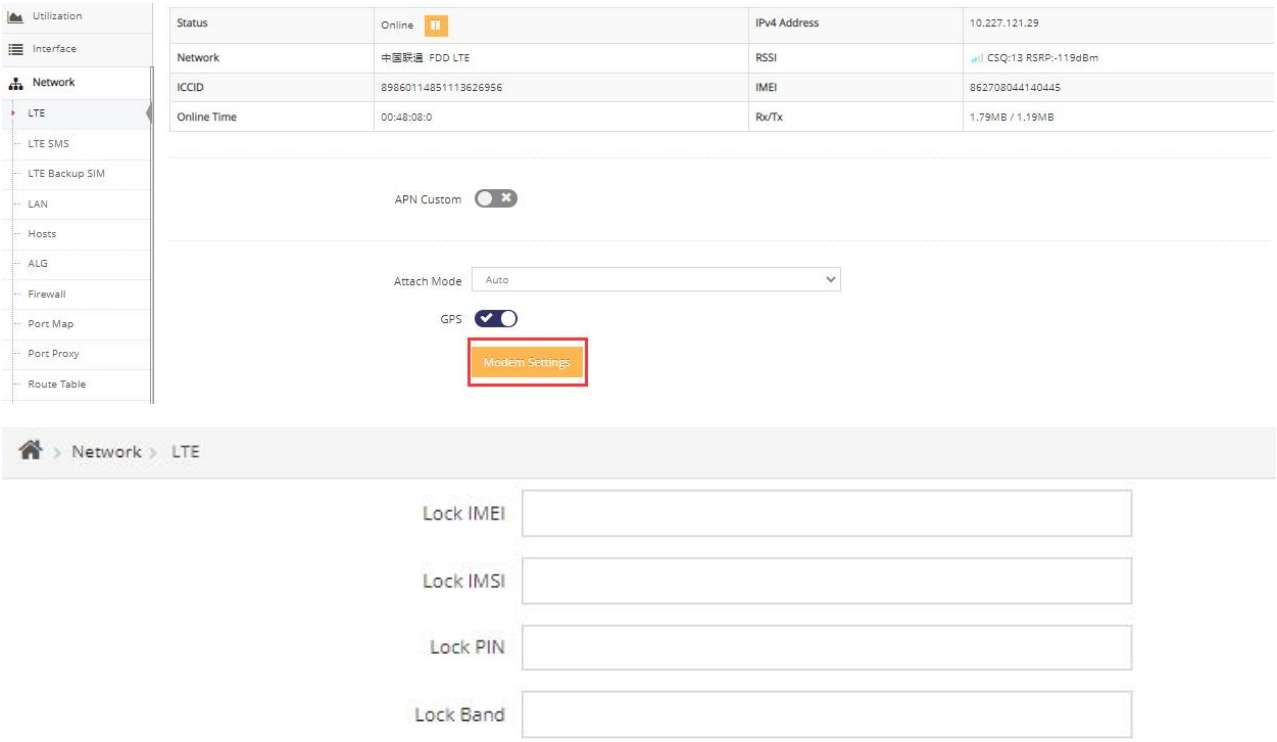


The router support to check 3 test addresses max one time.
If ICMP is failed, the router will send ICMP as Each Query Timeout.
If ICMP is reachable, the router will send ICMP as Test Interval.

For example.
If both 208.67.222.222 and 8.8.8.8 are unreachable, the router will check the test address 5 times as interval 5s. It will switch to 4G link. When one of 208.67.222.222 and 8.8.8.8 is reachable, it will switch back to WAN link.

4.2 Lock Band

Click Network--->LTE GUI, Modem Setting to enter Lock Band GUI.



Input command to lock the corresponding band as below list.

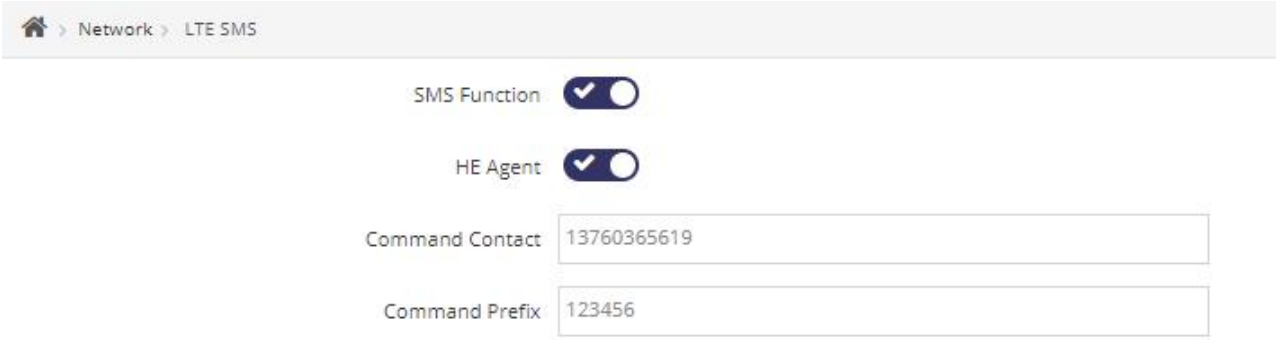
Items	Band	Commands
1	Band1	0,1,0,1
2	Band3	0,4,0,1
3	Band5	0,10,0,1
4	Band7	0,40,0,1
5	Band8	0,80,0,1
6	Band20	0,80000,0,1

For example.

Lock band3 as below.

4.3 LTE SMS

Click Network --->LTE SMS Setting GUI.



The router will just accept the message command as the specified Command phone number and Prefix.

The Contact phone number 13760365619 and Prefix 123456 as example. The prefix doesn't support special characters such as @#>&^*[].

The SMS command lists as following.

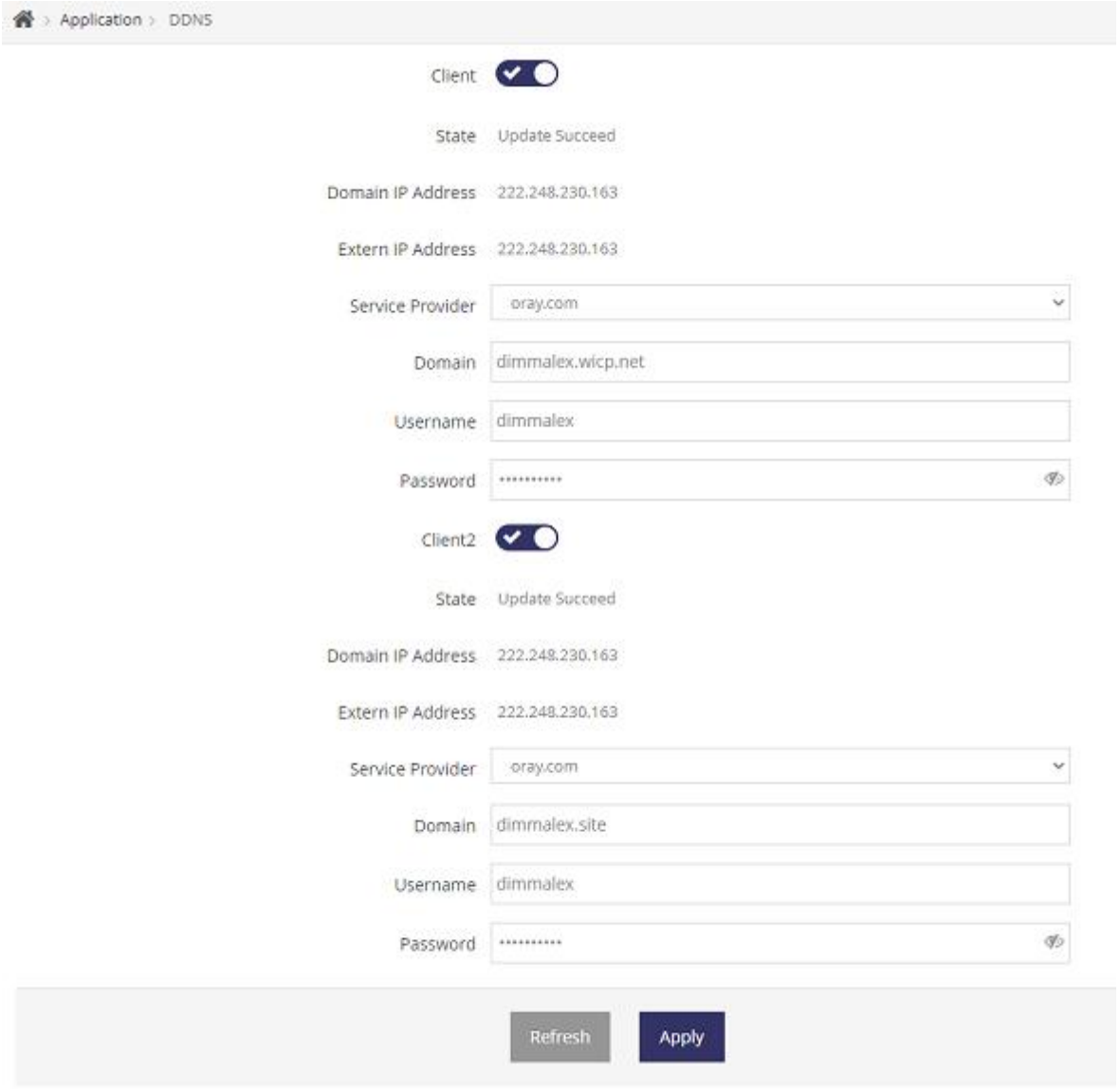
Inquiry Items	SMS Command	SMS ACK	Note
4G Status	123456ifname>lte.status:status	Up/Down	
RSRP	123456ifname>lte.status:rsrp	RSRP Value	
CSQ	123456ifname>lte.status:csq	0~31	
IMEI	123456ifname>lte.status:imei	IMEI Value	
ICCID	123456ifname>lte.status:iccid	ICCDI Value	
IMSI	123456ifname>lte.status:imsi	IMSI Value	
Network Type	123456ifname>lte.status:nettype	Network Type	
Operator	123456ifname>lte.status:operator	Operator Name	
MCC/MNC	123456ifname>lte.status:plmn	MCC/MNC	
Online Time	123456ifname>lte.status:livetime	Online Time	hh:mm:ss

SIM IP	123456ifname>lte.status:ip	SIM IP Address	
Restart	123456land>machine.restart(5)	ttrue	Restart after 5sec.

Mobile Phone Inquiry and ACK.

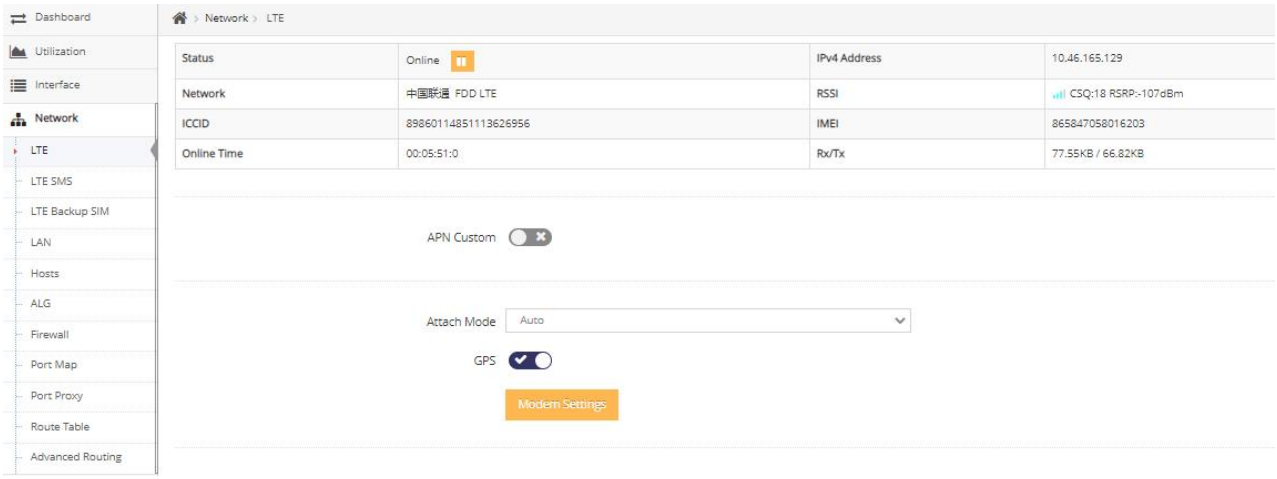
4.4 DDNS

Click Application-->DDNS GUI to configure DDNS.
The default update time is 600sec for domain name sevice.

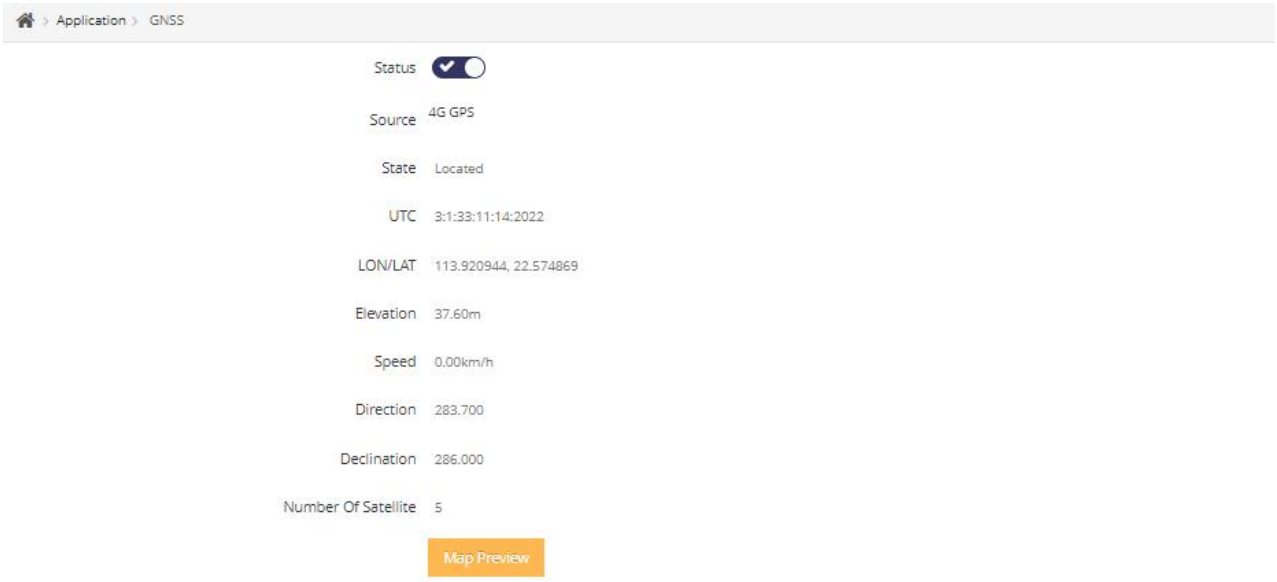


4.5 GNSS

Click Network--->LTE GUI, Modem Setting to enable GPS feature GUI.

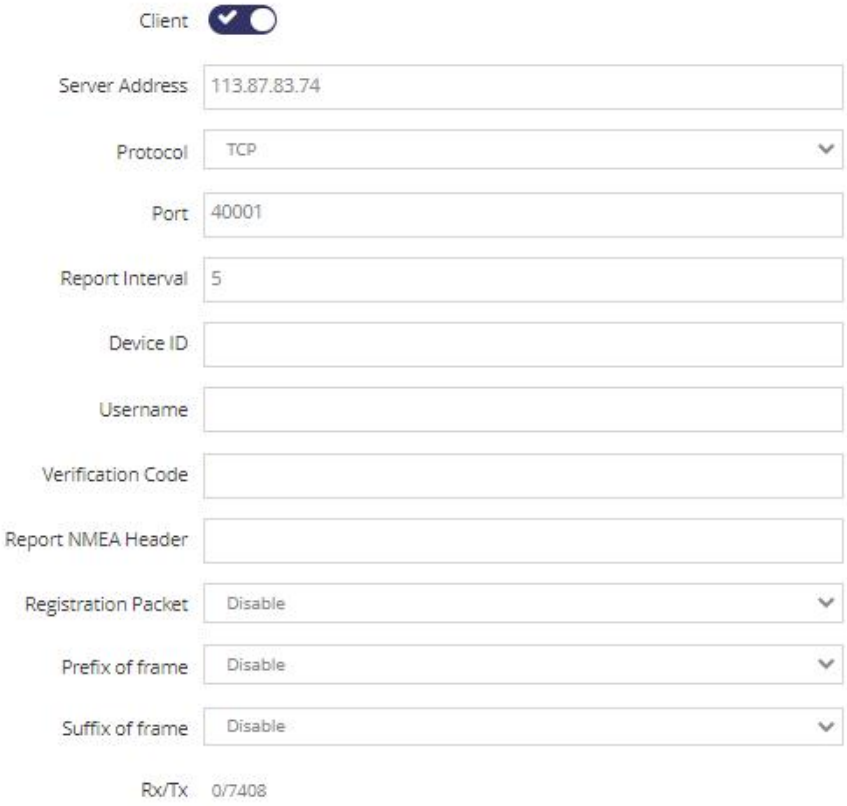


Click Application-->GNSS GUI to check GPS status GUI.

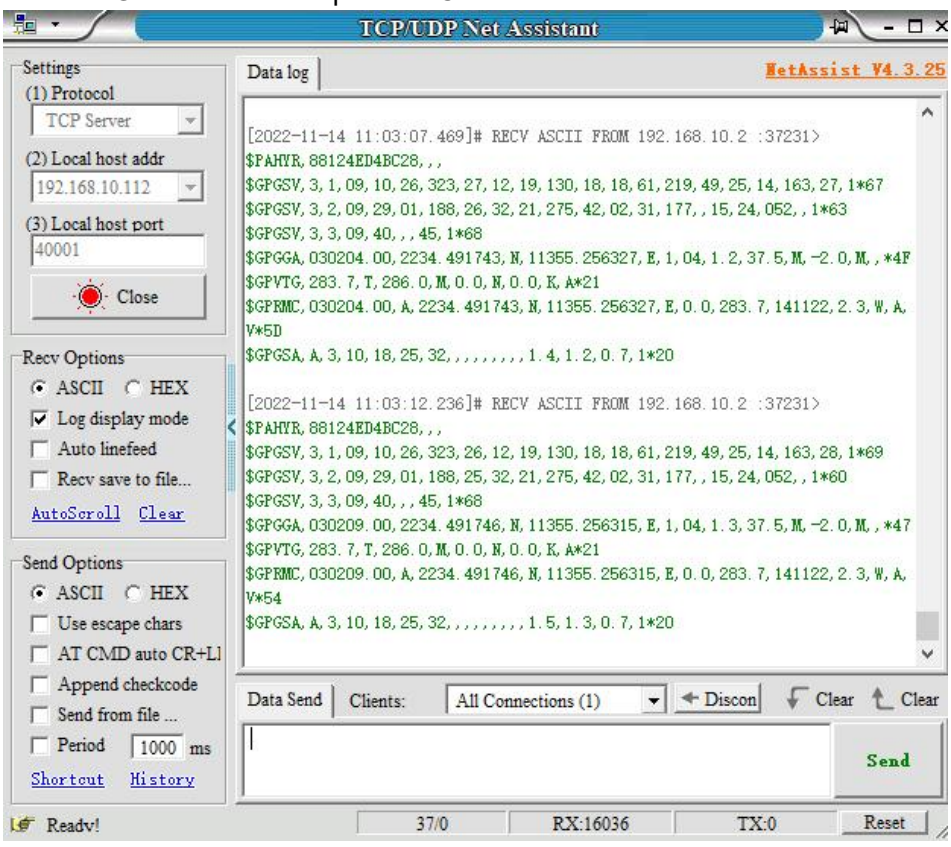


GPS client mode

Configure TCP server IP, port and GPS data interval. You may custom GPS data as requested such router's ID, GPS data prefix and so on.

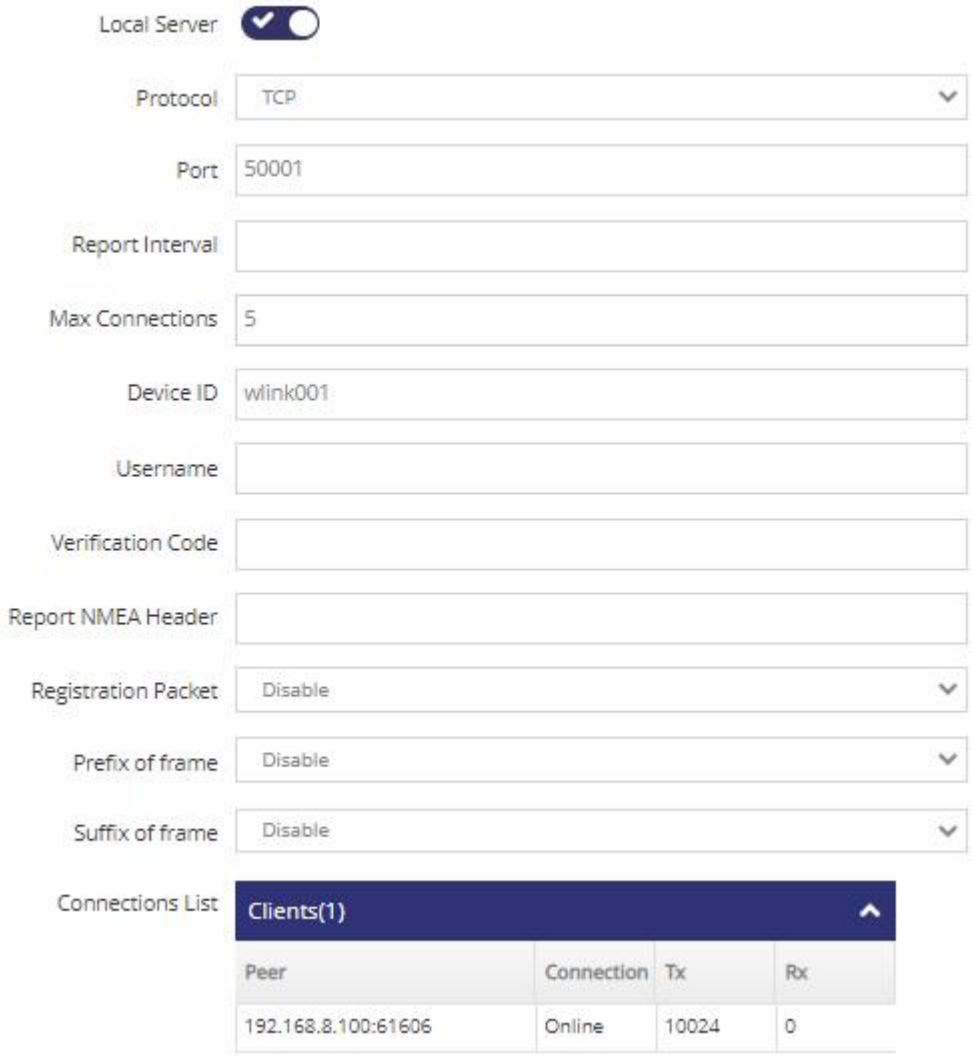


Receive GPS data in transparent TCP server.

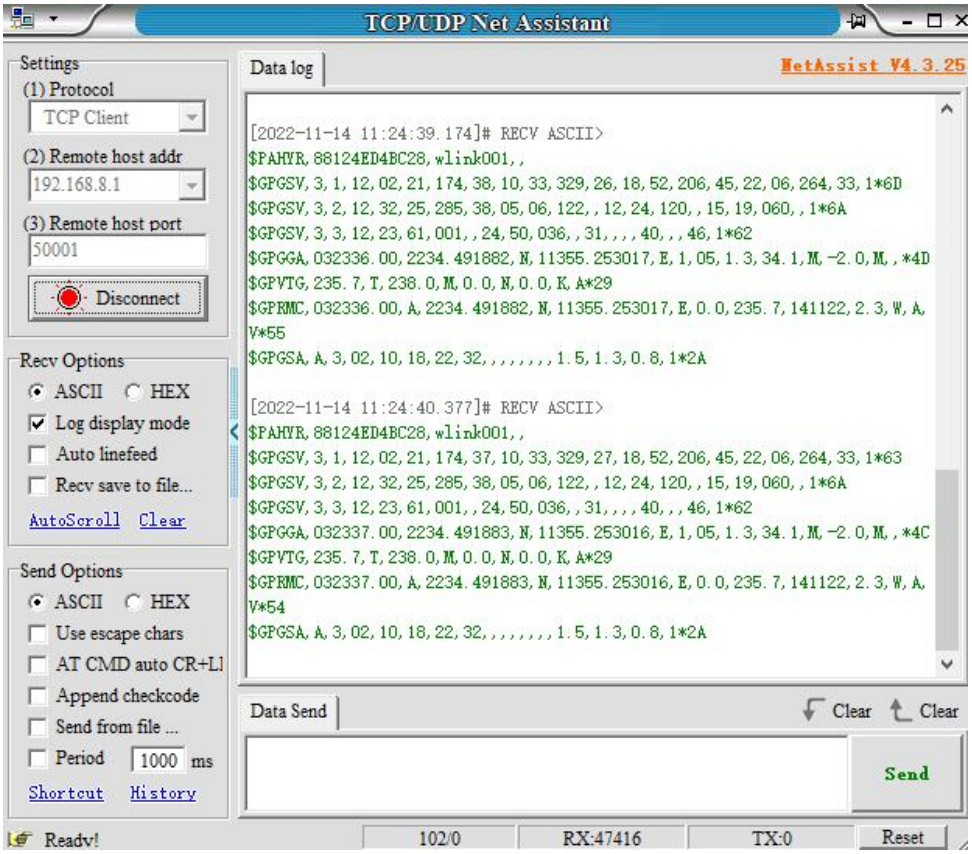


GPS Server mode

Configure TCP server local port and GPS data interval. You may custom GPS data as requested such router's ID, GPS data prefix and so on.

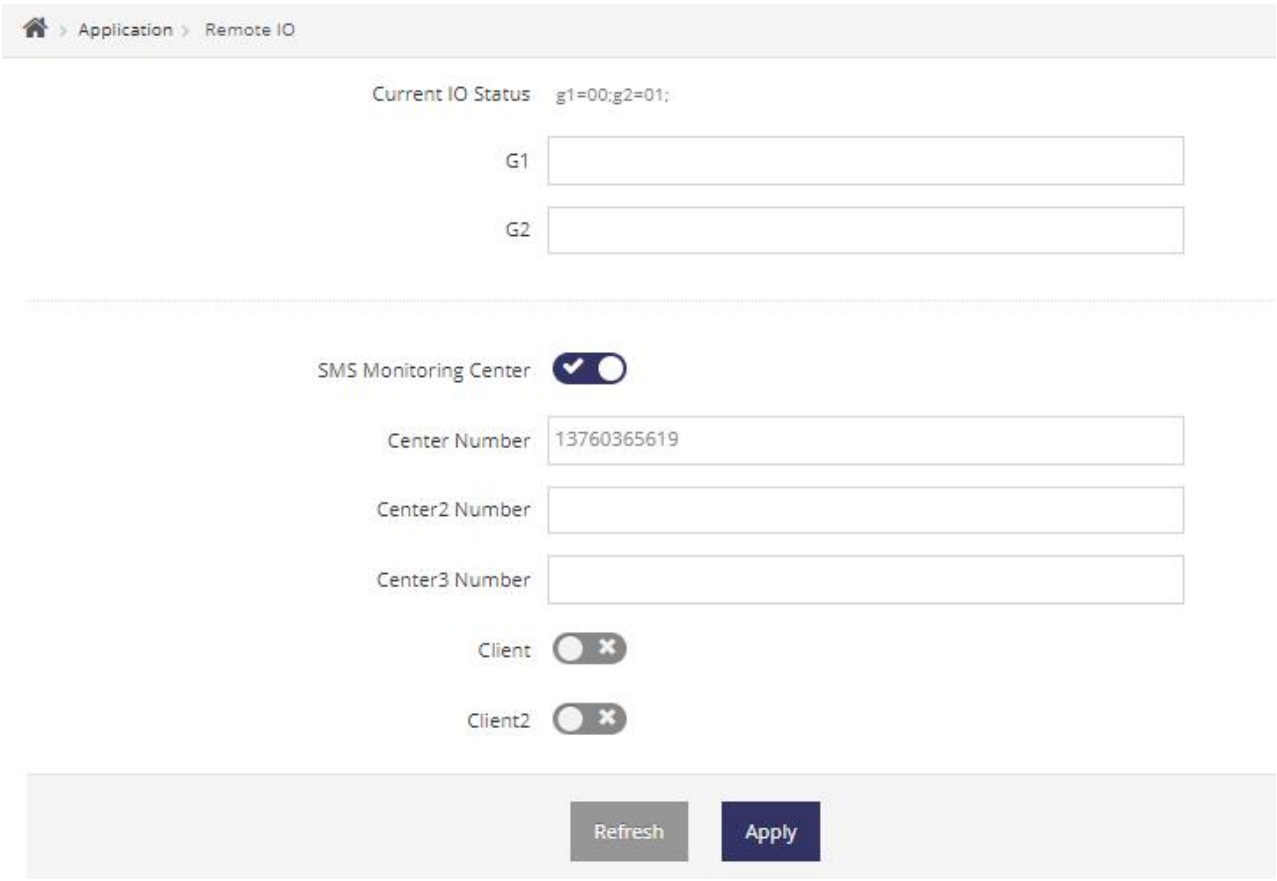


Receive GPS data in transparent TCP Client.



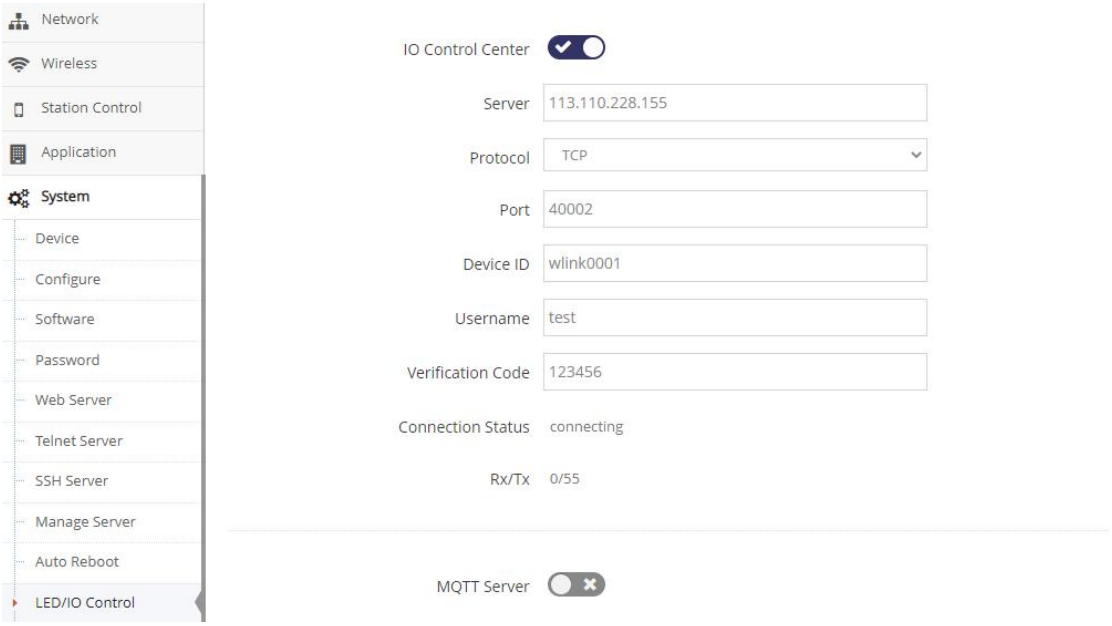
4.6 Remote IO

Click Application-->Remote IO GUI.



1) TCP Login Data format

macid=88124ED18010;id=wlink0001;user=test;vcode=123456;



2) GPIO Value Format

g1=11;g2=10

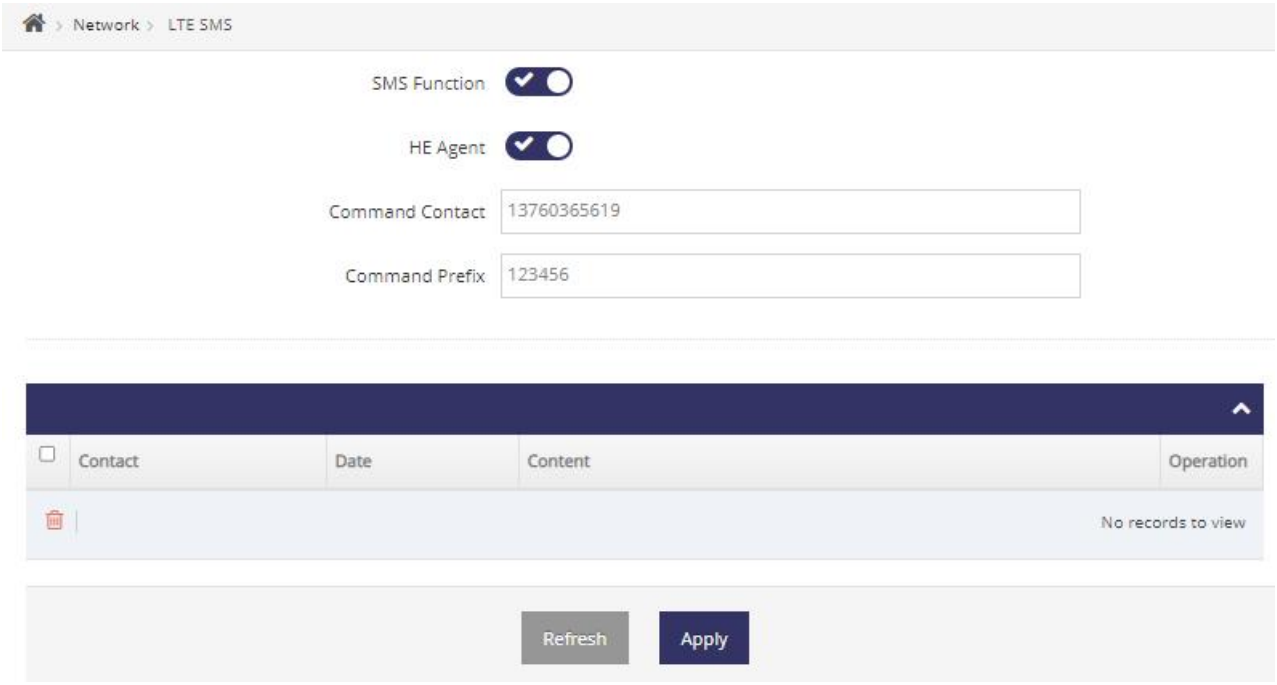
Item	Value	Indication

GPIO number	g1	g1 for GPIO1 port g2 for GPIO2 port g3 for G3 port(Reserved)
First Digit	1	Output(DO)
	0	Input(DI)
Second Digit	1	High Level(3.3v)
	1	Low Level(0v)
Separator sign	;	

3) SMS Control and Report

➢ SMS Control

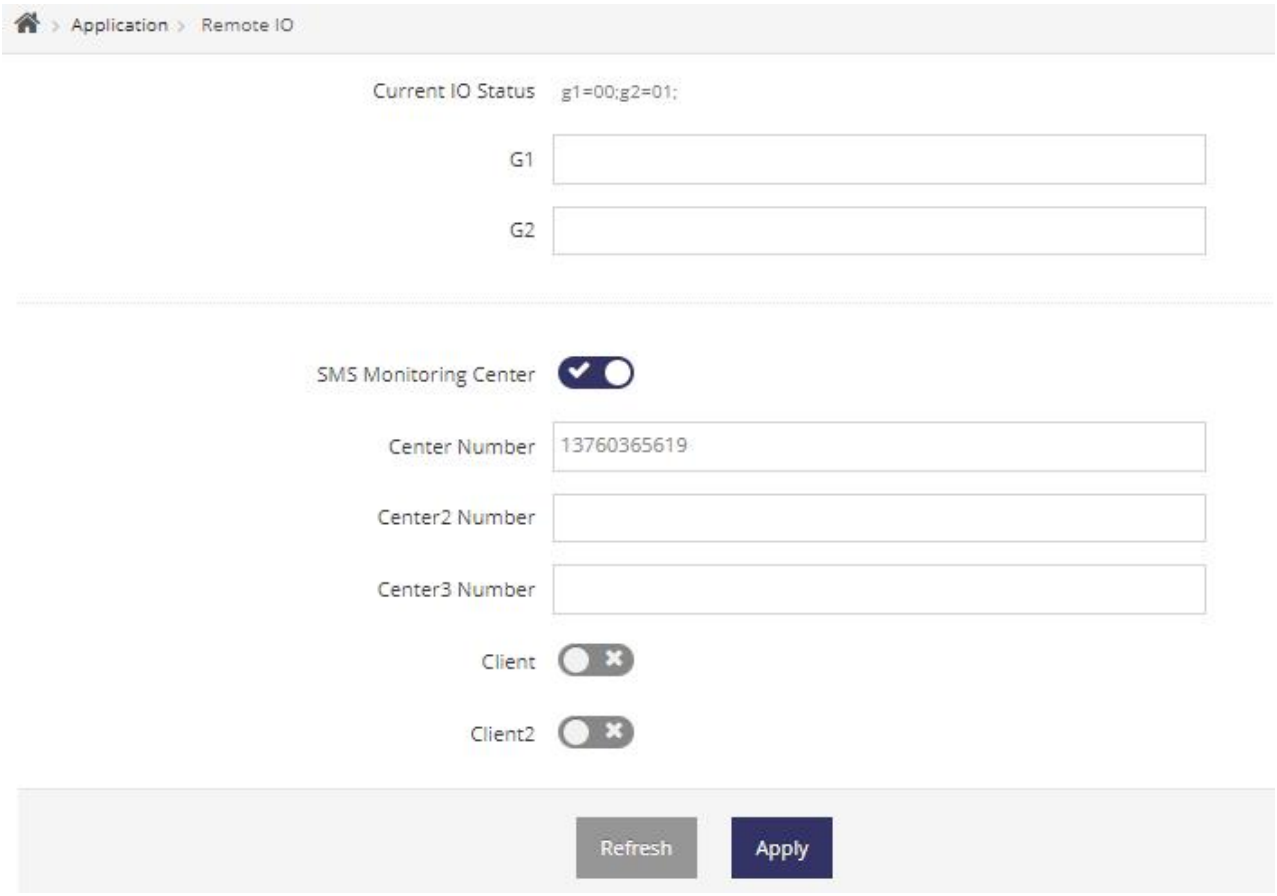
Network---> LTE SMS to enable SMS function and configure the Contact phone number and command prefix code. The router will implement the command from the configured contact phone number and ignore other phone number command.



The SMS command lists as following.

Inquiry Items	SMS Command	SMS ACK	Note
G1 output high level	12345io>agent.modify[g1=11]	g1=11;g2=01;	
G1 input high level	12345io>agent.modify[g1=01]	g1=01;g2=01;	
G1 output low level	12345io>agent.modify[g1=10]	g1=10;g2=01;	
G1 input low level	12345io>agent.modify[g1=00]	g1=00;g2=01;	
G2 output high level	12345io>agent.modify[g2=11]	g1=00;g2=11;	
G2 output low level	12345io>agent.modify[g2=10]	g1=00;g2=10;	

➢ SMS Report



G1 and G2 as DI mode

G1 port from low level to high level, it will trigger report as g1=01;g2=01;

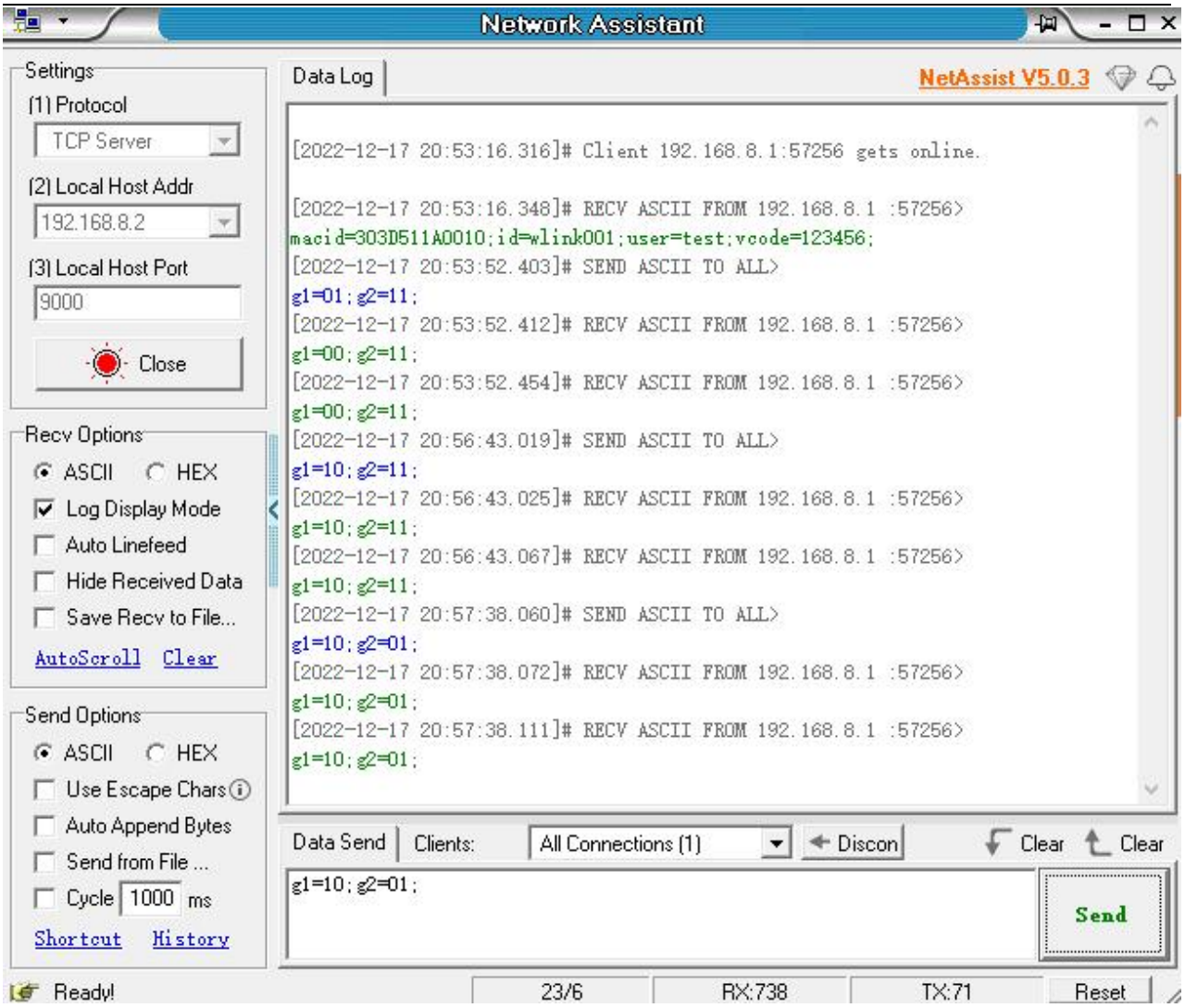
G1 port from high level to low level, it will trigger report as g1=00;g2=01;

G2 port from low level to high level, it will trigger report as g1=00;g2=01;

G2 port from high level to low level, it will trigger report as g1=00;g2=00;

4) TCP Server Demo

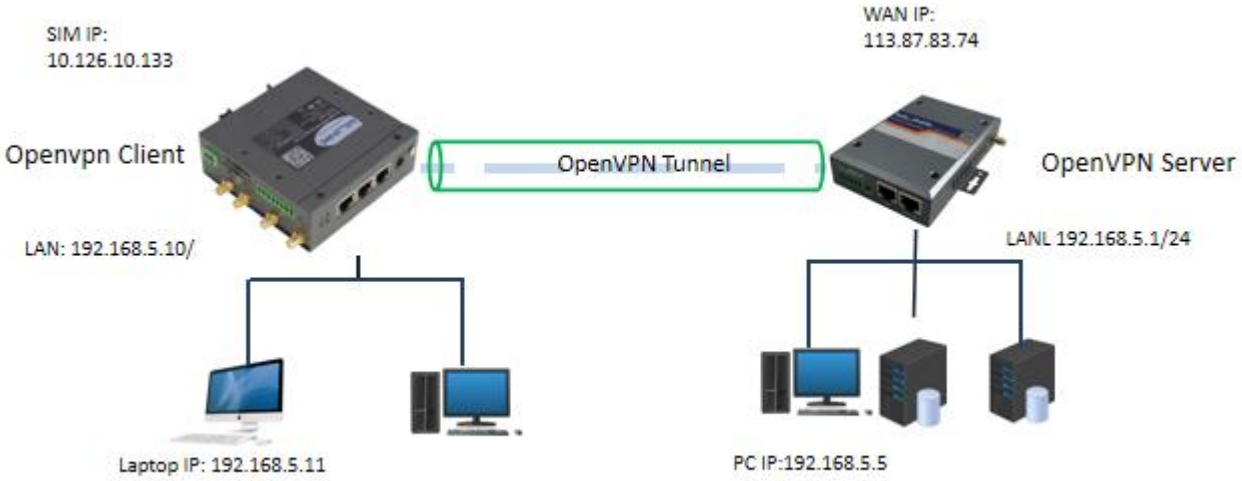
g1=10;g2=01;



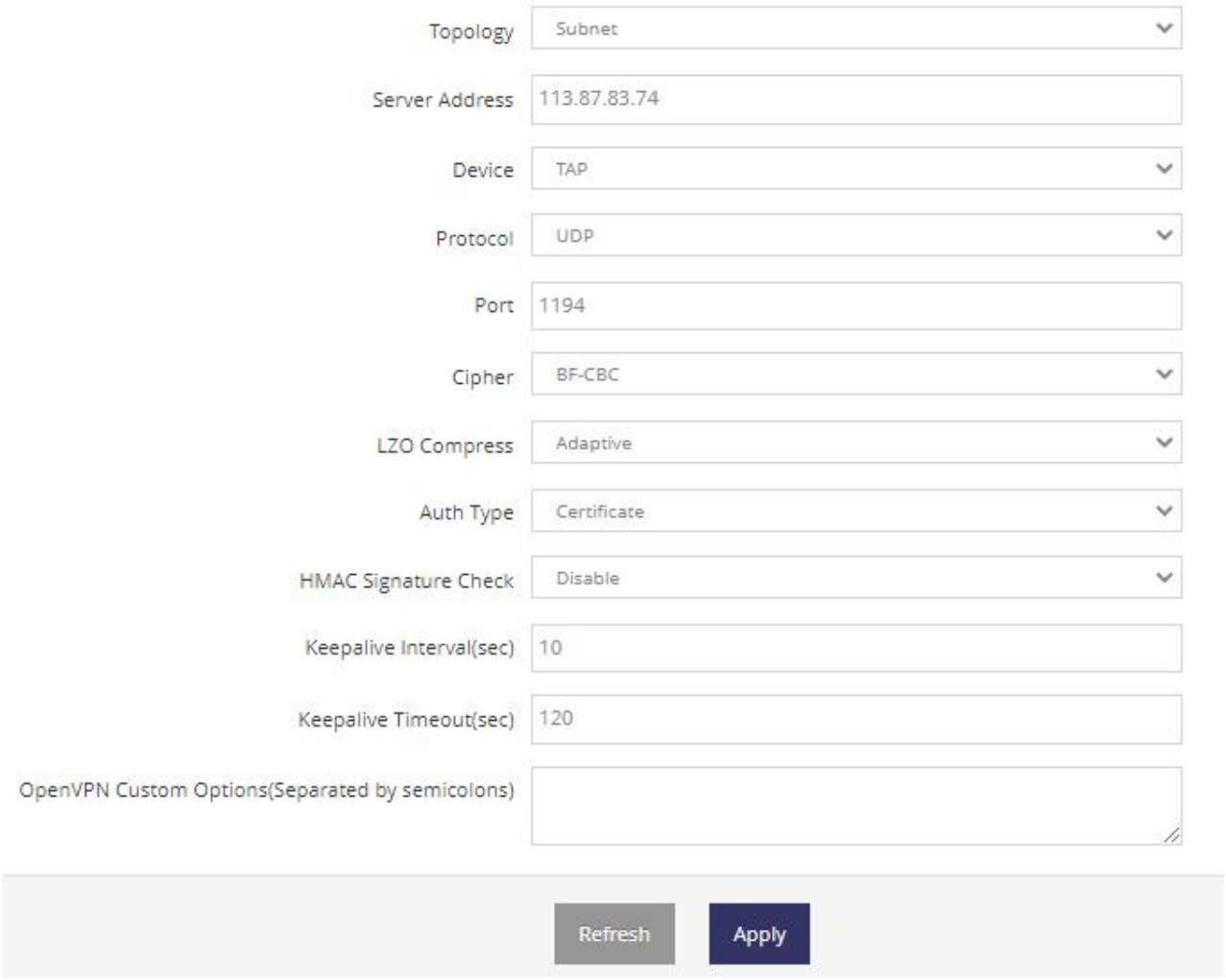
Current IO Status g1=10;g2=01;

4.7 OpenVPN(TAP Mode)

OpenVPN two peers subnet IP addressed are in the same IP segment.


SIM IP:
10.126.10.133
WAN IP:
113.87.83.74
Openvpn Client
OpenVPN Tunnel
OpenVPN Server
LAN: 192.168.5.10/
LANL 192.168.5.1/24
Laptop IP: 192.168.5.11
PC IP:192.168.5.5

Configure Openvpn client according to OpenVPN server.



Upload OpenVPN certificate key as OpenVPN server provided.

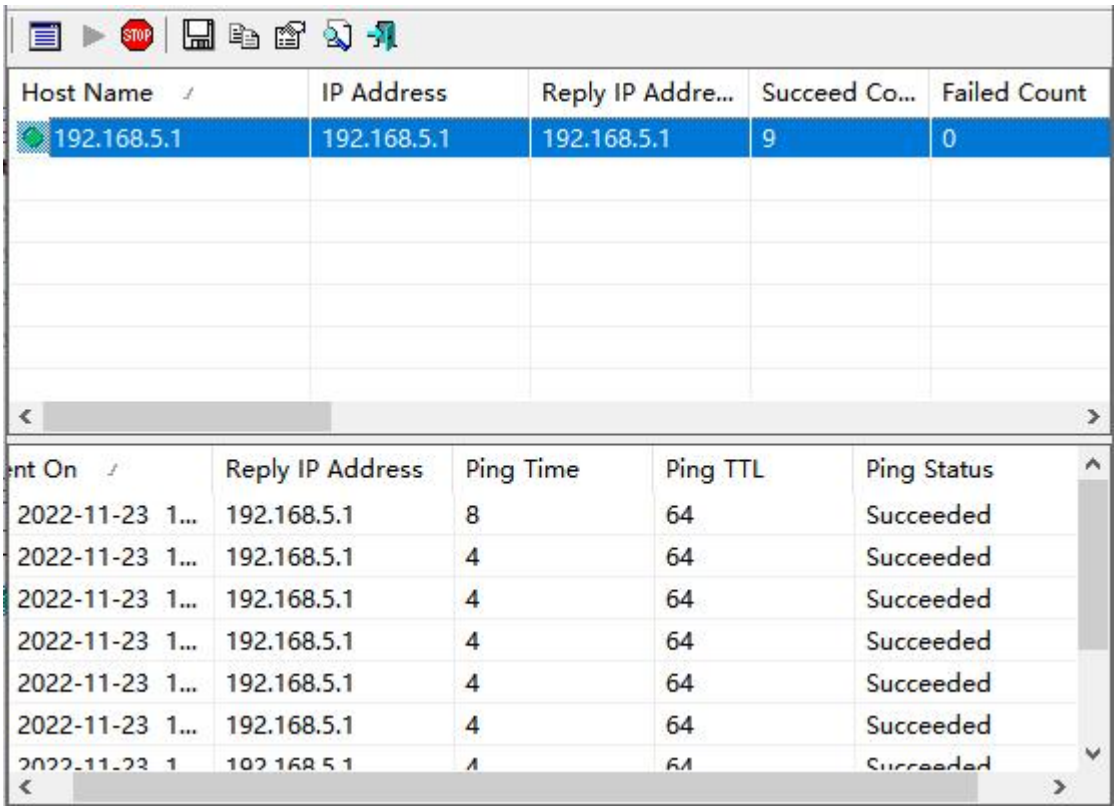
OpenVPN Status

OpenVPN client will be assigned the same segment IP address from OpenVPN server.

Status

Connection Status	Online	Server IP Address	113.87.83.74
Local IP Address	192.168.5.3	Remote IP Address	192.168.5.3
Subnet Mask	255.255.255.0	Gateway	192.168.5.1
DNS		DNS2	
Rx/Tx(byte)	474291/13493727	Live Time	13:52:09:0

Ping Testing from laptop 192.168.5.11 to OpenVPN server 192.168.5.1



Host Name	IP Address	Reply IP Addre...	Succeed Co...	Failed Count
192.168.5.1	192.168.5.1	192.168.5.1	9	0

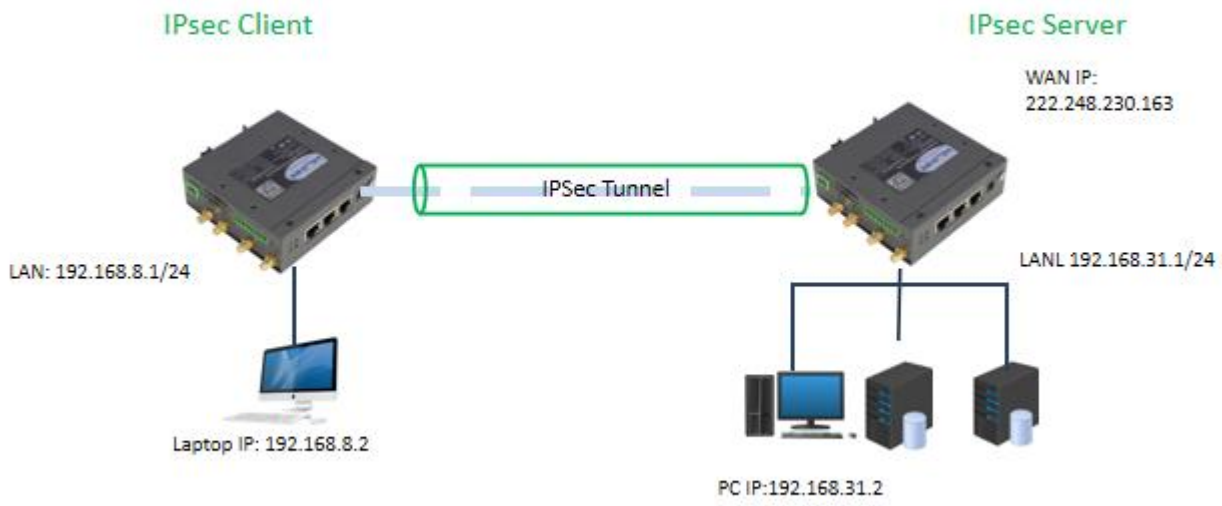
nt On	Reply IP Address	Ping Time	Ping TTL	Ping Status
2022-11-23 1...	192.168.5.1	8	64	Succeeded
2022-11-23 1...	192.168.5.1	4	64	Succeeded
2022-11-23 1...	192.168.5.1	4	64	Succeeded
2022-11-23 1...	192.168.5.1	4	64	Succeeded
2022-11-23 1...	192.168.5.1	4	64	Succeeded
2022-11-23 1...	192.168.5.1	4	64	Succeeded
2022-11-23 1	192.168.5.1	4	64	Succeeded

Ping Testing from laptop 192.168.5.11 to OpenVPN subnet PC 192.168.5.5

Host Name	IP Address	Reply IP Addre...	Succeed Co...	Failed Count
DESKTOP-2B1QVF7	192.168.5.5	192.168.5.5	8	0

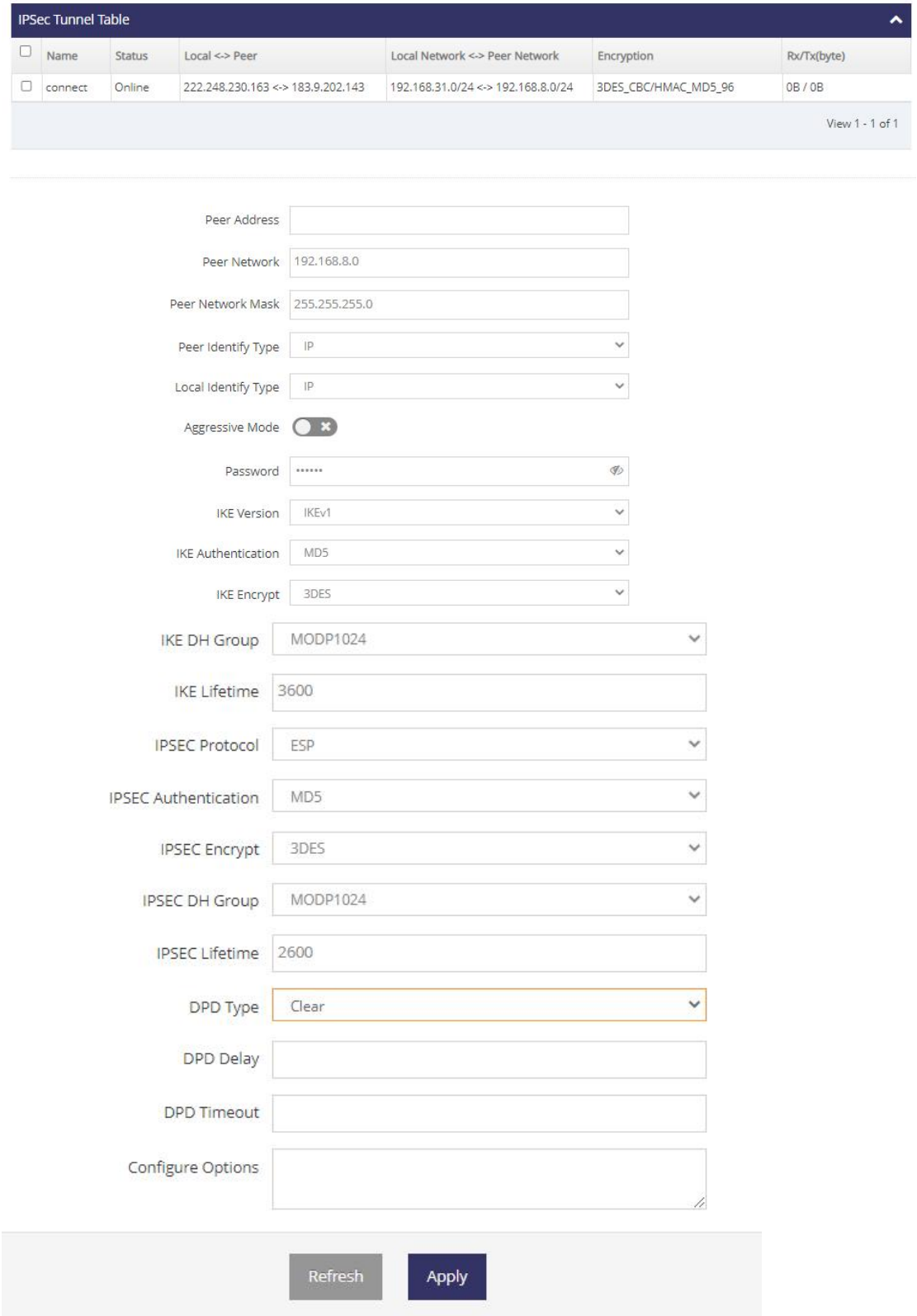
Sent On	Reply IP Address	Ping Time	Ping TTL	Ping Status
2022-11-23 1...	192.168.5.5	51	128	Succeeded
2022-11-23 1...	192.168.5.5	5	128	Succeeded
2022-11-23 1...	192.168.5.5	4	128	Succeeded
2022-11-23 1...	192.168.5.5	4	128	Succeeded
2022-11-23 1...	192.168.5.5	4	128	Succeeded
2022-11-23 1...	192.168.5.5	5	128	Succeeded
2022-11-23 1	192.168.5.5	4	128	Succeeded

4.8 IPSec Setting



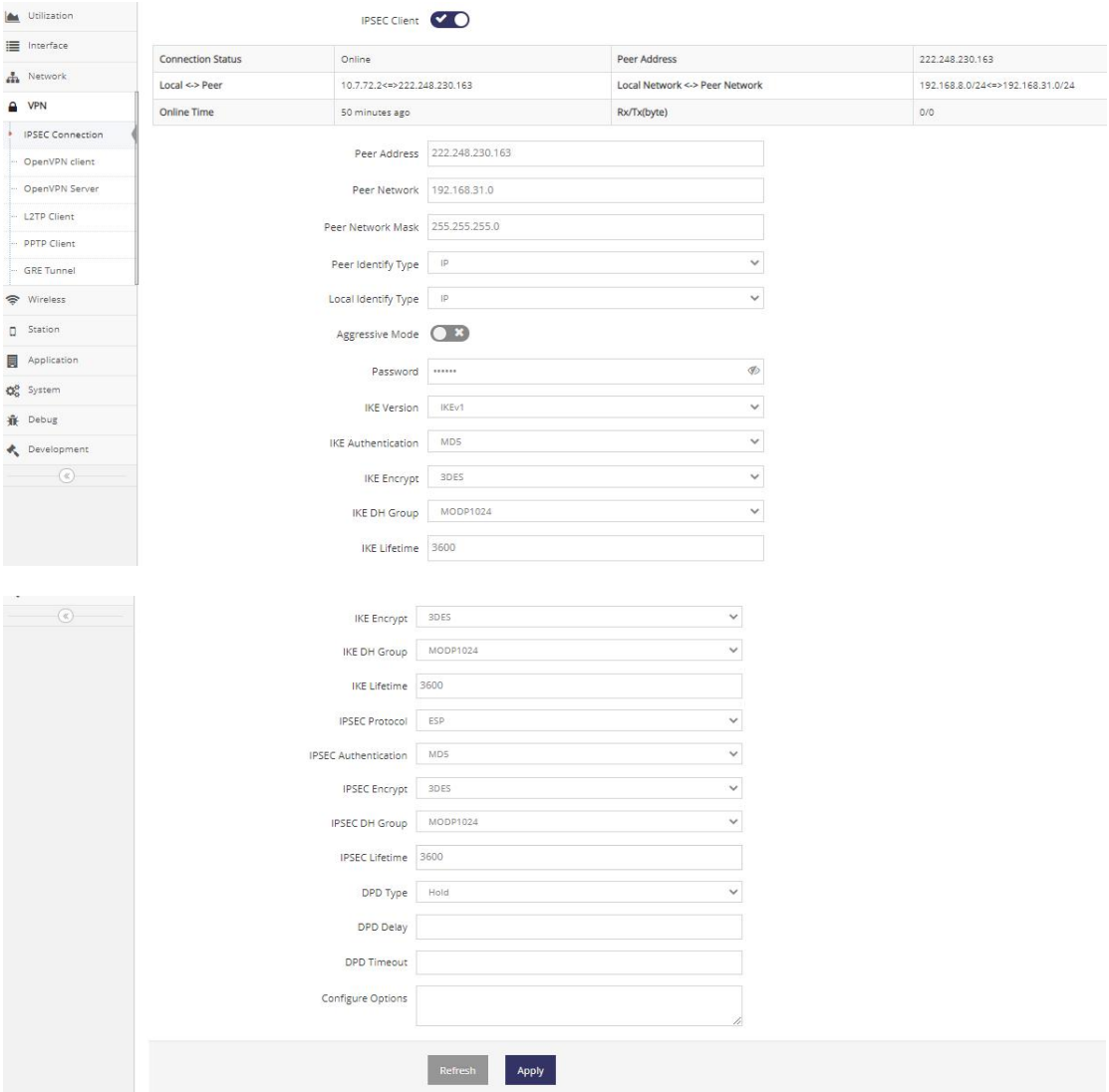
4.8.1 IPSec Server Mode

The router will run IPsec as server mode when didn’t configure peer address.

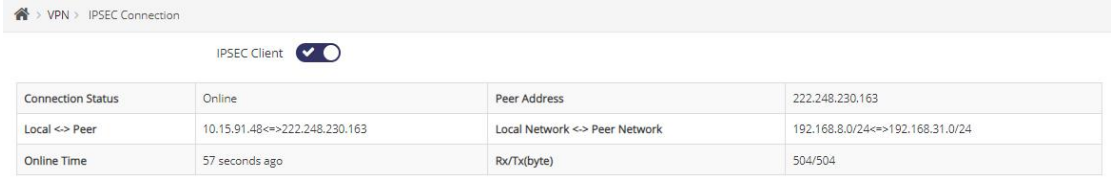


We can check IPsec Tunnel list in the table.

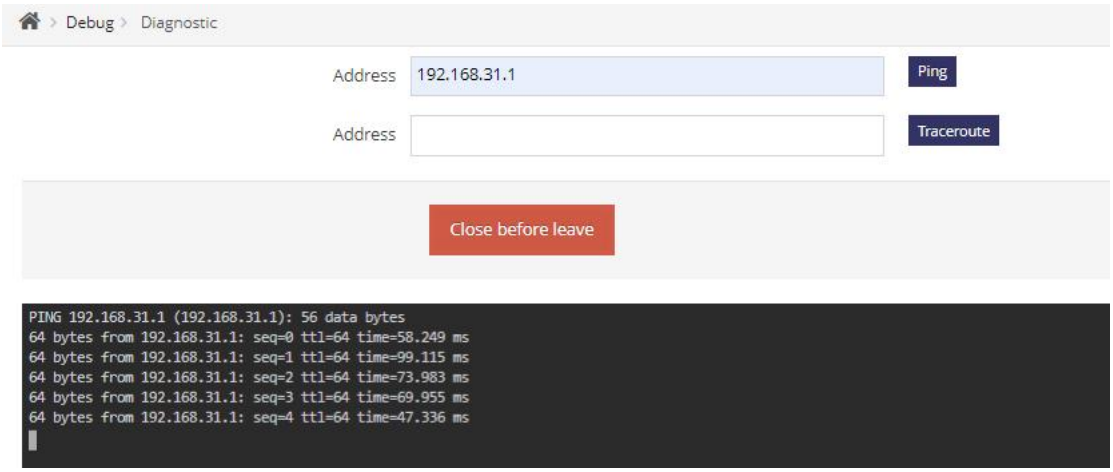
4.8.2 **IPSec Client Mode**



IPsec Status

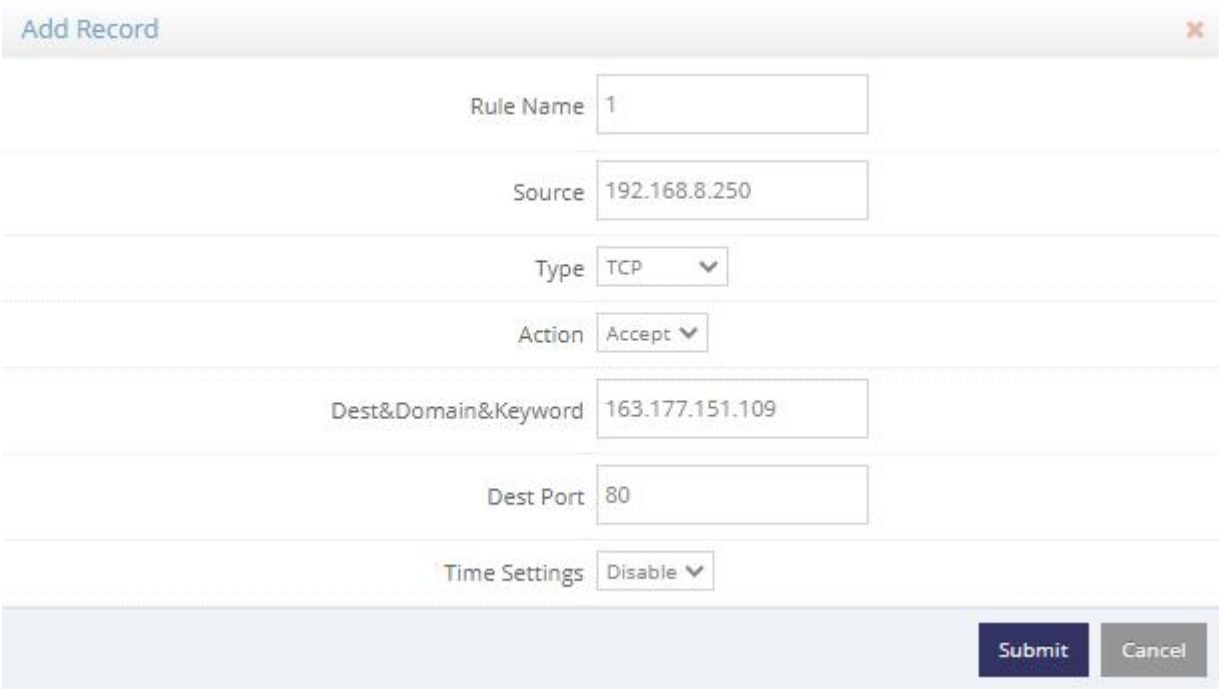


Ping Server Subnet Testing

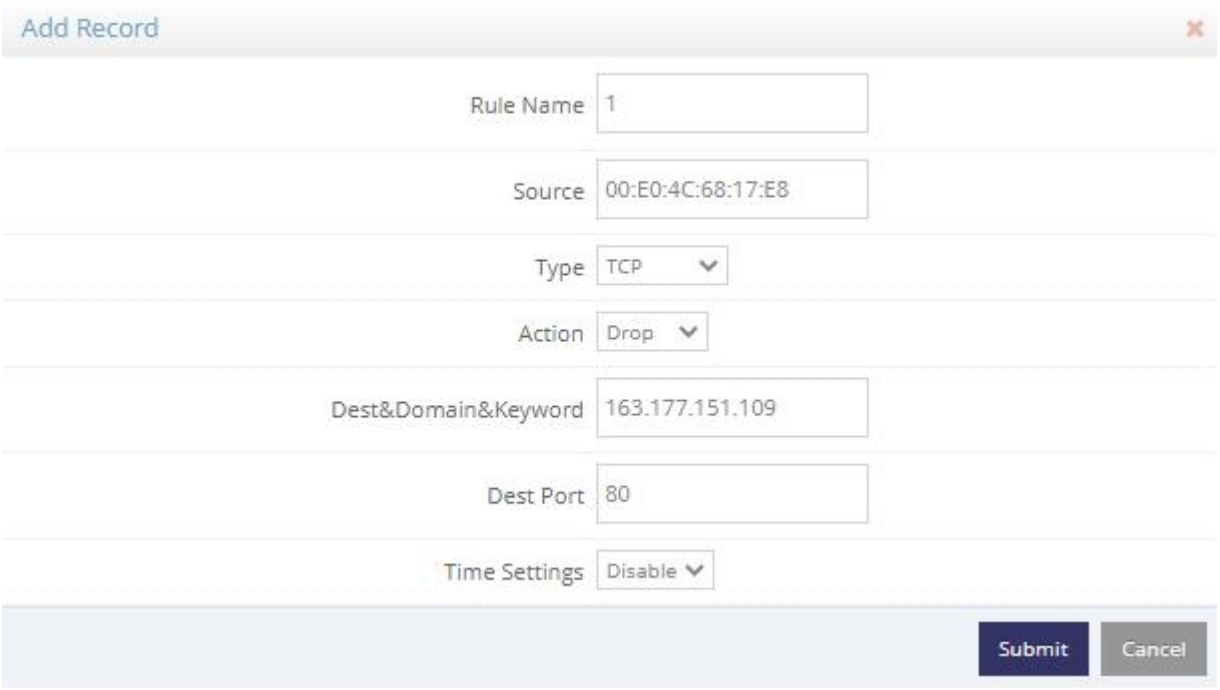


4.9 Station Setting

1) Allow one Station device IP address 192.168.8.250 to access to destination IP 163.177.151.109, TCP protocol and port 80.



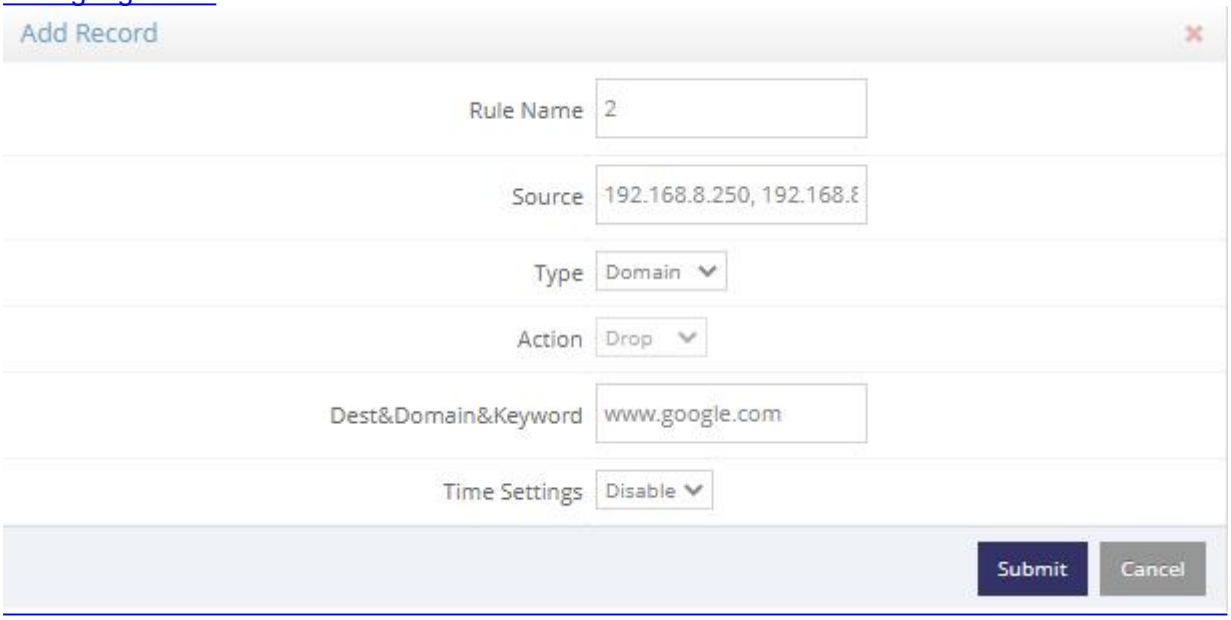
2) Refuse one Station device MAC address 00:E0:4C:68:17:E8 to access to destination IP 163.177.151.109, TCP protocol and port 80.



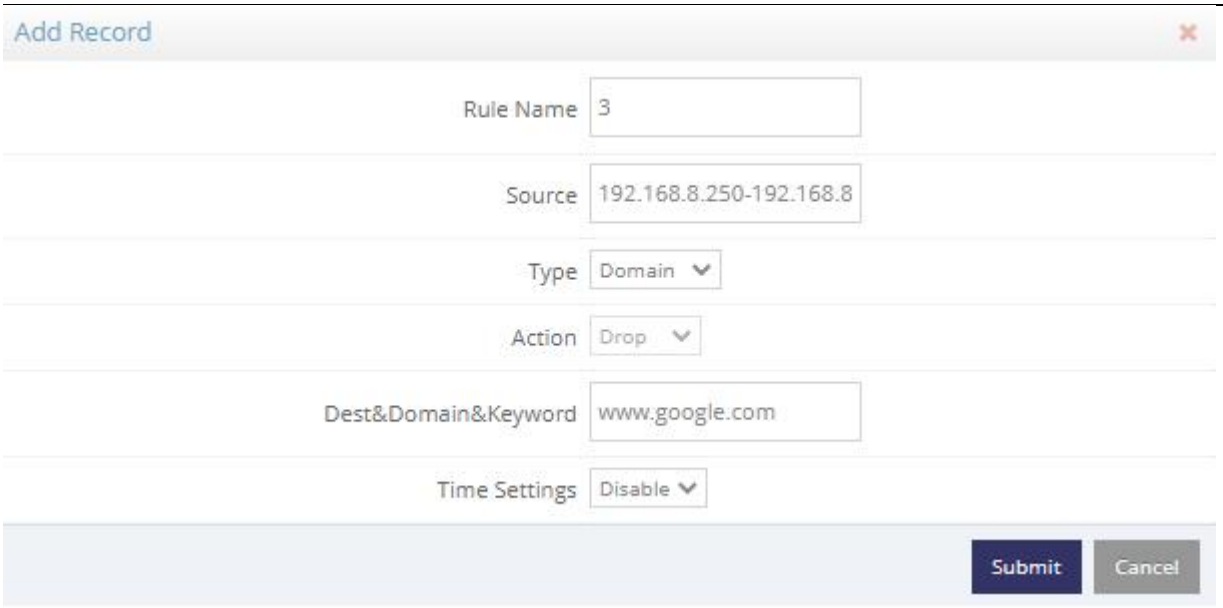
NOTE

- Configure device MAC if need to limit only one device in the LAN.
- Configure device IP address if need to limit only one device in the LAN.
- Configure multiple devices IP addresses with comma(,) as separator if need to limit multiple devices in the LAN.
- Configure IP segment from start address to end address if limit devices with successive IP addresses.

3) Refuse 192.168.8.250, 192.168.8.224, 192.168.8.100 to access to www.google.com



4) Refuse those IP address from 192.168.8.250 to 192.168.8.254 to access to www.google.com



5) It will accept/drop the whitelist/blacklist.

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