User Manual

H8956 Cellular Wi-Fi Router

We Hongdian provide full support to customers, contact us freely if any questions.

Hongdian Corporation

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About This Document

Purpose

H8956 Cellular router is designed and manufactured by Hongdian, it based on Cellular cellular network technology, industrial class quality. With its embedded cellular module, it widely used in multiple case like ATM connection, remote office security connection, data collection. Etc. This document introduced how to use H8956 and its function features.

Related Versions

The following table lists the product versions related to this document.

Model	Version
H8956/H8956-CellularSPT/H8956-CellularVZW/H8956-CellularEU/H8956-NM	V31

Organization

Chapter	Description
1	Features of H8956 Cellular router and target market.
2	SW & HW structure of H8956 Cellular router .
3	How to installation of H8956 Cellular router .
4	Prepare to config H8956 Cellular router .
5	How to config H8956 Cellular router .
6	Typical application of H8956 Cellular router .
7	Frequently asked questions.

Conventions

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
	Indicates a tip that may help you address a problem or save your time.
	Provides additional information to emphasize or supplement important points of the main text.

Command Conventions

Convention	Description
Boldface	The keywords of a command line are in boldface.
Italic	Command arguments are in italics.
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x | y | ... }	Optional items are grouped in braces and separated by vertical ars. One item is selected.
[x | y | ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x | y | ... } *	Optional items are grouped in braces and separated by vertical ars. A minimum of one item or a maximum of all items can be selected.
[x | y | ...] *	Optional items are grouped in brackets and separated by vertical ars. Several items or no item can be selected.
&<1-n>	The parameter before the & sign can be repeated 1 to n times.
#	A line starting with the # sign is comments.

GUI Conventions

Convention	Description
Boldface	Buttons, menus, parameters, tabs, window, and dialog titles are in boldface. For example, click OK.
>	Multi-level menus are in boldface and separated by the ">" signs. For example, choose File > Create > Folder.

Keyboard Operations

Format	Description
Key	Press the key. For example, press Enter and press Tab.
Key 1+Key 2	Press the keys concurrently. For example, pressing Ctrl+Alt+A means the three keys should be pressed concurrently.
Key 1, Key 2	Press the keys in turn. For example, pressing Alt, A means the two keys should be pressed in turn.

Mouse Operation

Action	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

Content

Table Content

Figure Content

1 Product Introduce

About this chapter

Chapter	Content
1.1 Overview	Simple introduction of H8956 Cellular router
1.2 Product Positioning	Product Positioning of H8956 Cellular router
1.3 Function & features	Unique function & features
1.4 Specification	Detail specification of this router

1.1 Overview

H8956 Cellular router is based on Cellular technology with functions like VPN, firewall, NAT, SNMP, DHCP. H8956 supports Cellular as WAN interface, provide up to 100Mbps WAN bandwidth and up to 150Mbps Wi-Fi bandwidth. The unique feature of H8956 Cellular router is network online & backup among WAN, WLAN, Cellular network. This feature makes H8956 could maximum the network availability, reduce the possibility of network failure, to avoid the loss caused by network error. Also, definable route table makes customers could assign bandwidth by business type, full use the bandwidth and lower the net delay.

H8956 Cellular router support Hongdian M2M management platform. By the management platform, you can check running info of H8956 Cellular router and remote config or remote updates.

1.2 Product positioning

H8956 Cellular router widely used in Telecom, economic, advertisement, traffic, environment protection business area.

For example, in economic area, H8956 Cellular router connect server by IPSec & GRE to ensure data security, and module online or switch to wan online ensured network availability. All these technology ensured safe and reliable data transmission, and minimize the probability of network disconnection, and maximize the usability of economic business like ATM, POS .etc.

Figure 1-1 Network structure

1.3 Function & Features

Function

- Modem/WAN/Wi-Fi multiple network mode backup
- VPN support, GRE over IPSec, IPsec over PPTP/L2TP
- WAN port support PPPoE, static IP, DHCP client
- LCP/ICMP/flow/heartbeat check, ensure network usability
- SNMP network management, NTP support
- Local & remote firmware update
- Local & remote log check
- Supports DNS proxy and Dynamic DNS (DDNS)
- Supports timing operation
- Supports LED status indication

1.4 Specification

Interface

- 1×10/100Mb LAN interface
- 1×10/100Mb WAN/LAN interface
- 2× SMA-K antenna interface
- 1× Standard SIM/R-UIM interface
- 1× Standard DC power interface

Power supply

- Voltage: +12VDC
- Idle state: 200mA@12V DC
- Communication state: 300mA@12V DC

Others

- Dimension: 100mm x 98mm x 23mm (not including antenna)
- Weight: 300g
- Operation temperature: -20~+60℃
- Store temperature: -40~+80℃
- Related humidity: <95% (non-condensing)
- Guarantee: one year

2 Product structure

About this chapter

Chapter	Content
2.1 Hardware	H8956 Cellular router hardware.
2.2 Structure	Structure of H8956 Cellular router .

2.1 Hardware

2.1.1 Appearance & Size

Appearance

Figure 2-2 H8956 Cellular router Appearance

Size

Table 2-1 H8956 Cellular router size

Model	Dimension (mm)	Interface
H8956 Cellular router	100×98×23	1×10/100Mb LAN interface 1×10/100Mb WAN/LAN interface 1× RS-232 console port(RJ45) 2× SMA-K antenna interface 1× Standard SIM/R-UIM interface 1× Standard DC power interface

H8956 Cellular router appearance as Figure 2-2, Figure 2-3 shows

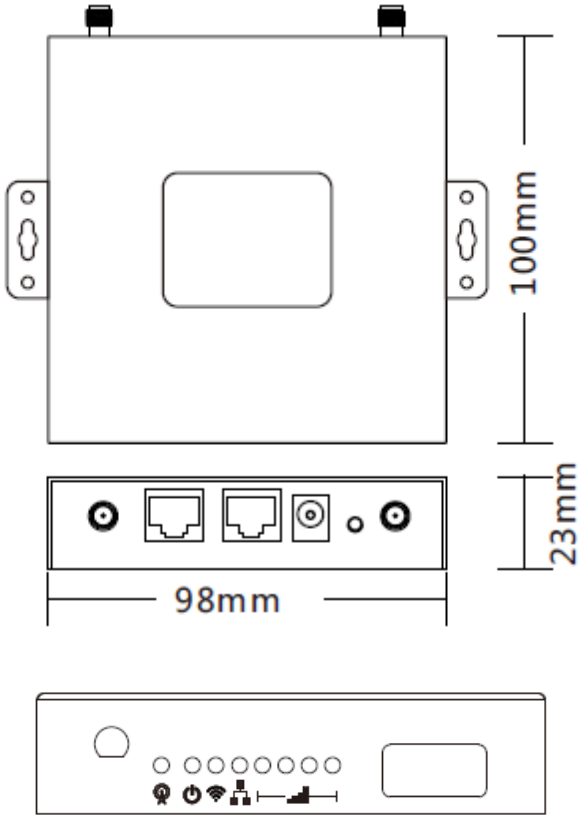


Figure 2-3 H8956 Cellular router Figure

2.1.2 Accessories

Table 2-2 H8956 Cellular router accessories

Accessories name	Number	Note
H8956 Cellular router	1 pcs	
CD-ROM	1 pcs	Optional
Cellular antenna	1 or 2 pcs	According to module number inside
RJ45 cable	1 pcs	
Mounting	1 pair	Optional
Certificate and warranty card	1 pcs	
+12V power adapter	1 pcs	

2.2 Structure

Figure 2-4 Front pannel

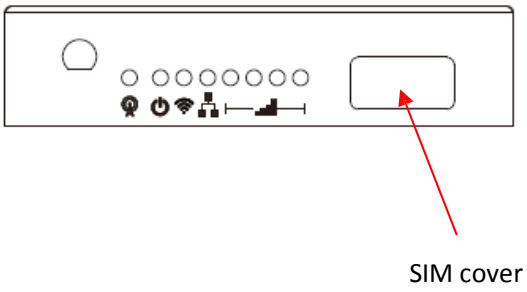
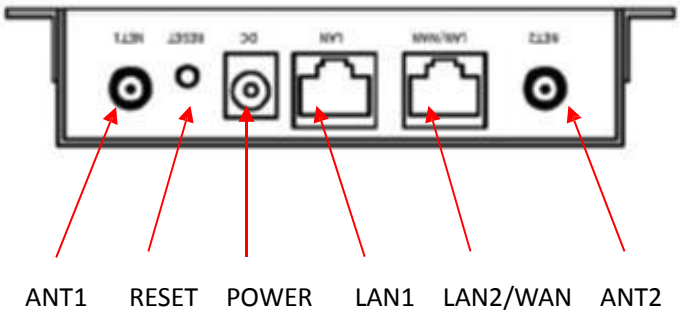


Figure 2-5 Back pannel



3 Installation of H8956 Cellular router

About this chapter

Chapter	Content
3.1 Unpacking	Unpack H8956 Cellular router box and the packing list.
3.2 How to install	How to install H8956 Cellular router with SIM/UIM card and Ethernet cable .etc.
3.3 Power supply	Power supply needs of H8956 Cellular router .
3.4 Review	Review.

3.1 Unpacking

After received the box of H8956, please unpack it and check if all accessories complete. Please check Table 2-2 as reference.

3.2 How to install

3.2.1 SIM/UIM card install

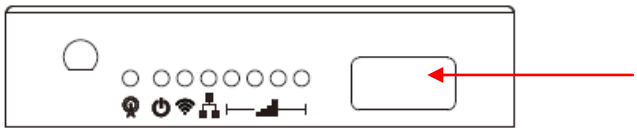
H8956 Cellular router support single SIM/UIM card, so you may need insert single SIM before config it.

CAUTION

Before install SIM/UIM card, disconnect any power resource of the router.

Open the SIM cover and insert the SIM into the router with chipset upwards

Figure 3-6 SIM slot



---END

3.2.2 Ethernet cable connection

Use Ethernet port directly connect H8956 Cellular router and computer, or transferred by a switch.

3.3 Power supply

In order to get high reliability, H8956 Cellular router adapt wide voltage input: +12VDC, support hot plug and complex application environment.

3.4 Review

After connect SIM/UIM card, Ethernet cable, necessary antenna, then connect power cable.

CAUTION

Please connect antenna before connect power cable, otherwise because of Impedance mismatching, signal maybe poor.

Notice

Step 1 Check antenna connection.

Step 2 Check SIM/UIM card installation to confirm SIM/UIM card is available.

Step 3 Power on H8956 Cellular router, the router will automatically connect to the network

4 Before config

About this chapter

Chapter	Content
4.1 LED Status	The meaning of LED status.
4.2 Local config	How to local config H8956 Cellular router .
4.3 Basic config	Basic config & function.

4.1 LED Status

There are LED on front panel of H8956 Cellular router , they show how H8956 Cellular router works.

Table 4-3 LED instruction

LED	Status
	green presents connected, red disconnected, green flash connecting
	Power on/off status
	On: WiFi connected Off: WiFi disconnected
	On: LAN, LAN/WAN is connected Off: LAN, LAN/WAN is disconnected
	Cellular signal bars

4.2 Local config

Precondition

- Already power on H8956 Cellular router
- Ethernet cable connect to H8956 Cellular router

You could specify a static IP or DHCP get IP for your computer.

Static IP

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 4-7 Local Area Connection

Step 2 Obtain a IP address automatically, or follow below instruction.

NOTE

H8956 Cellular router default enabled DHCP server. If it has been disabled, DHCP cannot be use.

Step 3 Change or add a IP 192.168.15.* on your computer.

Figure 4-8 Connection properties

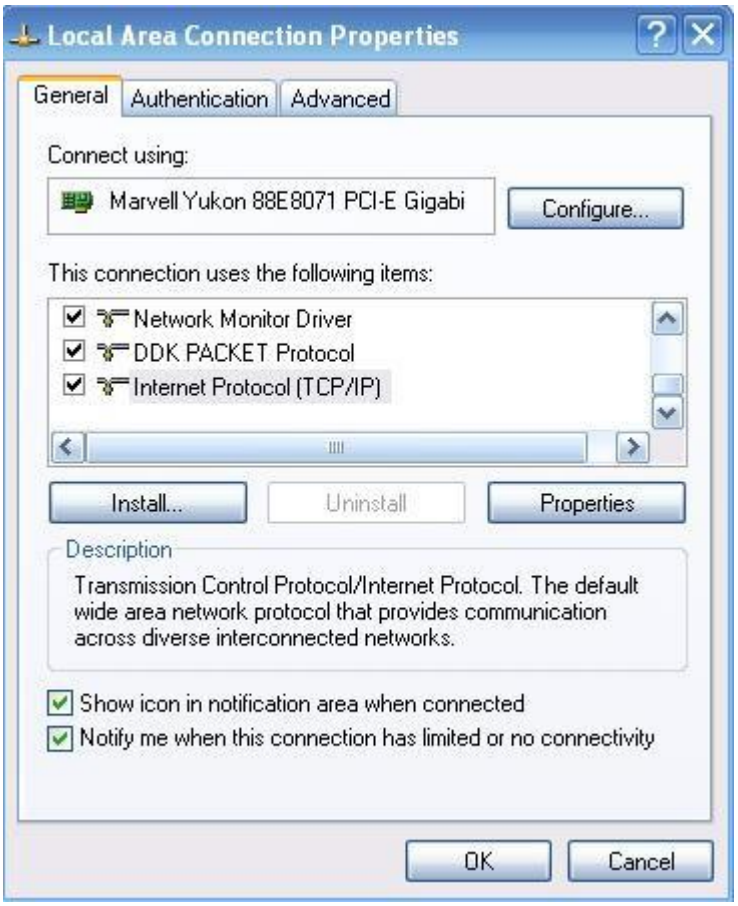
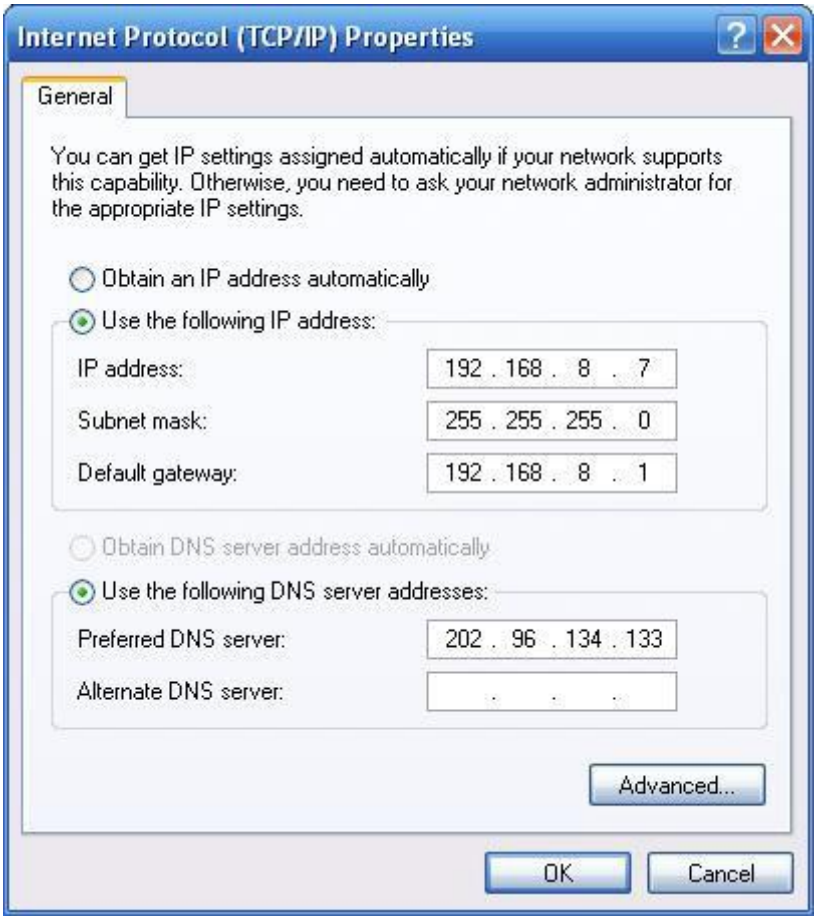


Figure 4-9 Internet protocol (TCP/IP)



You could change your IP address or add a IP address in Advanced setting.

- General configuration

This method will temporarily interrupts the communication between the computer under configuration and LAN, and the specific parameter configuration is shown as below:

IP address: 192.168.8.* (*indicates any integral between 2 to 254)

Subnet mask: 255.255.255.0

Default gateway: 192.168.8.1

Remember:

H8956 Cellular router LAN port factory default parameter:

IP address: 192.168.8.1

Subnet mask: 255.255.255.0

H8956 Cellular router factory default login parameter:

Management interface login IP address: 192.168.8.1

Login name: admin

Login password: admin

- Advanced configuration

If you don't want to interrupt local PC LAN communication and configure H8956 Cellular router when the former network configuration exists, it is required add route (IP).

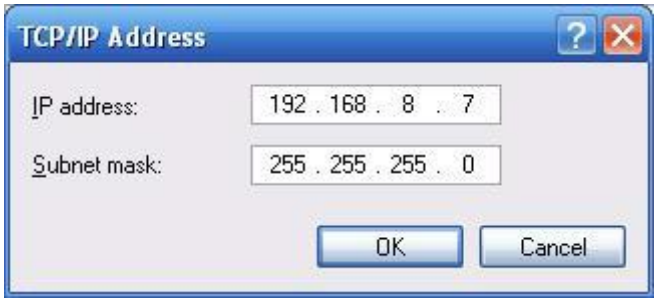
The configuration operation is shown as below:

Click the "Advanced…"button to enter the interface as below:

Figure 4-10 Advanced TCP/IP Settings

Click the "Add (A)"button under the "IP address (R)", and fill in the IP address that you want to add:

Figure 4-11 TCP/IP address



After the configuration is completed, click the "Add". By now the computer has a route to router H8956.

Note:

"Default gateway" depends on whether the configuration computer connects with Internet through original local network configuration. If Internet is accessed through original local network, the default gateway setting does not need to be modified; if H8956 Cellular router is used, you need to modify the default gateway and configure it as H8956 Cellular router 's default LAN IP address 192.168.8.1.

---END

Network Check

Step 4 IP configuration check

Use the command of ipconfig to check whether the IP address is correctly set or added. You can enter DOS mode and key-in command: ipconfig, for instance:

C:\>ipconfig

Windows IP Configuration

Ethernet adapter local connection:

Connection-specific DNS Suffix. :

Auto configuration IP Address . . .: 192.168.8.7

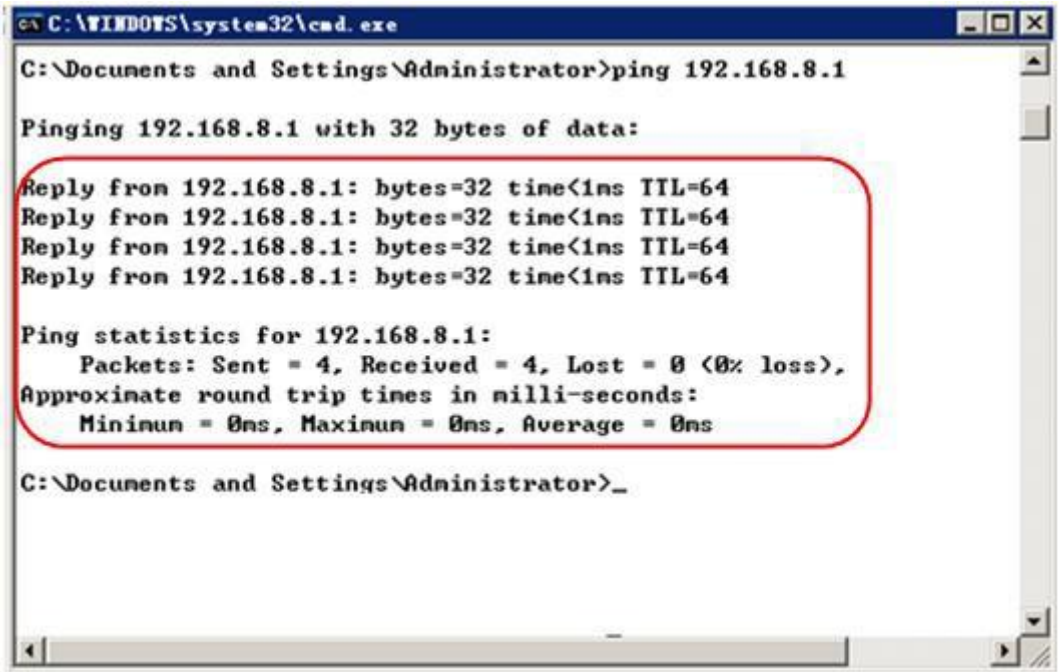
Subnet Mask . . . . . .: 255.255.255.0

Default Gateway . . . . . : 192.168.8.1

Step 5 Connectivity check

After the configuration is completed, you can check the connectivity between it and Galaxy H8956 Cellular router by ping command. Key-in ping command in system command line:

Figure 4-12 Connectivity check



By now, it means that the configuration computer has been connected to the router. You can carry out configuration operation on it.

---END

4.3 Basic config

Through this chapter, you could achieve basic function: visit internet.

4.3.1 Login WEB GUI

Step 1 Run a Internet Explorer and visit "http://192.168.8.1/", to enter identity page.

Figure 4-13 User identity page

Step 2 User should use default user name and password when log in for the first time:

User name: admin

Password: admin

---END

5 Router config

About this chapter

Chapter	Content
5.1 Overview	Enter H8956 Cellular router WEB GUI to config
5.2 Network config	Network config & function
5.3 Application	Advanced function of router like timing operation, link backup .etc.
5.4 Security	Security setting of H8956
5.5 Forward	NAT & DMZ setting
5.6 VPN	PPTP, L2TP, IPSec & GRE setting
5.7 System	Updating & maintain
5.8 Status	Router working status

5.1 Overview

H8956 Cellular router adopts WEB GUI to config, all parameter can be modified by this GUI, and it is easy to understand.

5.2 Network config

Network connection config, including LAN, WAN, cellular network, Wi-Fi(optional), link backup switch, DHCP setting and so on.

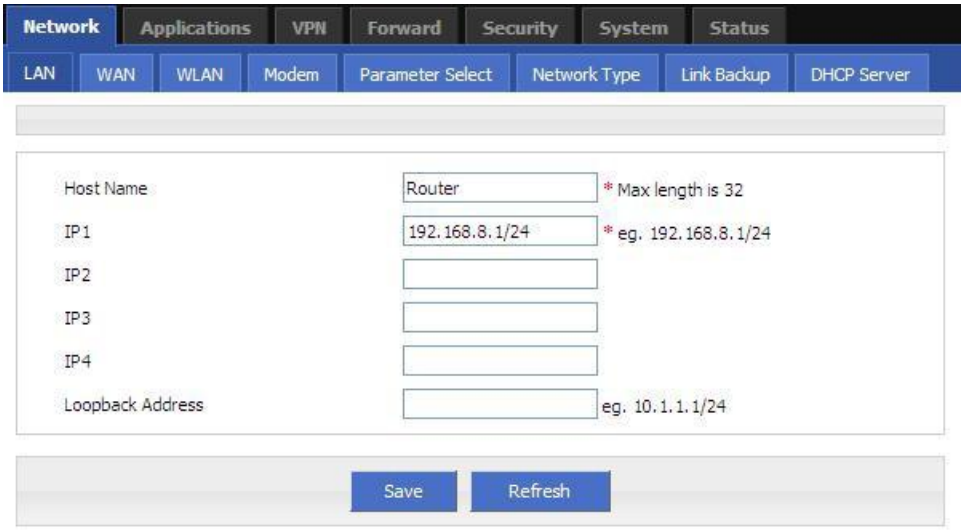
5.2.1 LAN

LAN setting used to manage local area network PC which connect to H8956, make them could visit internet and the network segment connectivity normal.

Step 1 Login H8956 WEB GUI.

Step 2 Single click “Network > LAN”.

Figure 5-14 LAN window



Step 3 LAN parameter.

Table 5-4 LAN Parameter instruction

Parameter	Details	Operation
Host name	router name	Manual input, Maximum length limited to 32 word type character
IP1～4	Divide sub-network, those sub-net could communicate	Manual input Format： A.B.C.D/Mask IP1 default：192.168.8.1/24
Loopback address	Use for network test, e.g tunnel test, it won’t shutdown with the LAN interface closed	Ping IP address from peer of tunnel

Step 4 Single click “save” icon, done.

NOTE

After change the LAN IP, if page has no response anymore, please make sure your PC address is in the same network segment, or set a new IP to your PC to insure that.

---END

5.2.2 WAN

Wired connect to Internet by static IP, DHCP or PPPoE.

Step 1 Login H8956 WEB GUI.

Step 2 Single click "network > WAN".

Figure 5-15 WAN window

Step 3 WAN connection type.

Table 5-5 WAN connection type parameter instruction

Parameter	Details	Operation
Connection Type	WAN Connection Type	Dropdown List Selection: • Static IP: Manual set WAN IP, if set static IP, need manual set gateway, DNS.etc. • DHCP: DHCP get IP address • PPPoE: PPPoE dial to get IP, usually you need connect to a ADSL modem
"Connection Type"select"Static IP"		
IP	Configure the static IP	Manual input Format: A.B.C.D/Mask IP1 default: 192.168.10.1/24
"Connection Type"select"DHCP"		

Parameter	Details	Operation
IP	get IP address from DHCP	Select DHCP
”Connection Type”select”PPPoE”		
Service Name	Configure PPPoE service name,which is usually used for identification and judgment between client and server, and is usually provided by the service side, while ADSL dial-up provided by your ISP	WORD type, up to 64 characters,not blank,please refer to parameters regulation format
Username/Password	PPPoE dial-up user name/password usually provided by the server	WORD type/CODE type, up to 64 characters,not blank,please refer to parameters regulation format
Advanced Settings	Advanced parameters used in special circumstances, usually don't recommend configurations, the parameters of the "advanced Settings" instructions, please refer to the related parameters in table 5-2	Single click ”Display” icon show advanced settings parameters
Authentication (need match server end, default auto-negotiation)		
CHAP	Challenge-Handshake Authentication Protocol, a way to send real password when build ppp link, improved security	• Disable • Negotiation CHAP is prior to PAP
PAP	Password Authentication Protocol	• Disable • Negotiation
MS-CHAP	MS-CHAP MicrosoftChallenge-Handshake Authentication Protocol	• Disable • Negotiation
MS2-CHAP	MS-CHAP second version	• Disable • Negotiation
EAP	PPP Extensible Authentication Protocol	• Disable • Negotiation
Compress (need match server end, default disable)		
Compression Control Protocol	Negotiate which compress control protocol used on PPP link	• Disable • Negotiation
Address/Control	Whether compress IP address	• Disable • Negotiation

Parameter	Details	Operation
Compression		
Protocol Field Compression	Whether compress Whether compress IP address	• Disable • Negotiation
VJ TCP/IP Header Compress	Whether allow TCP/IP to communicate by compressing VJ	• Disable • Negotiation
Connection-ID	Whether allow TCP/IP to communicate by compressing ID in the first	• Disable • Negotiation
More		
Debug	Enable PPP dialing log, default value is enable, in order to check more info about dialing, suggest no changing	• Disable • Negotiation
Peer's DNS	Auto get peer DNS when PPP dialing. DNS is necessary if want visit domain name. In order to forbid LAN pc visit domain name, you may disable it	• Disable • Negotiation
LCP interval/Retry	After PPP dialing succeed, LCP is needed to keep PPP link alive. Also it could used to quickly spot network interrupt and reconnect	Value area：1～512 Unit: second Default value: 30/5
MTU	the number of bytes of the maximum transfer unit by PPP interface, sometimes financial data has request on this	Value area：128～16364 byte
MRU	the number of bytes of the maximum receive unit by PPP interface, sometimes financial data has request on this	Value area：128～16364 byte
Local IP	Set the local IP address when PPP dialing, need ISP support	A.B.C.D, Example: 10.10.10.1
Remote IP	Set the remote IP address when PPP dialing, need ISP support	A.B.C.D, Example: 10.10.10.254
Professional	• nomppe • mppe required • mppe stateless • nodeflate • nobsdcomp • default-asyncmap	Do not suggest modify, please contact us for help if necessary

Step 4 Single click "save" icon.

---END

5.2.3 Modem

H8956 Cellular router core function, connect Internet by cellular modem, H8956 Cellular router support single modem single SIM, those three working type provide internet connection to customers. Usually Cellular network bandwidth is 1～5Mbps, 3.5G up to 20Mbps.

Step 1 Login H8956 WEB GUI.

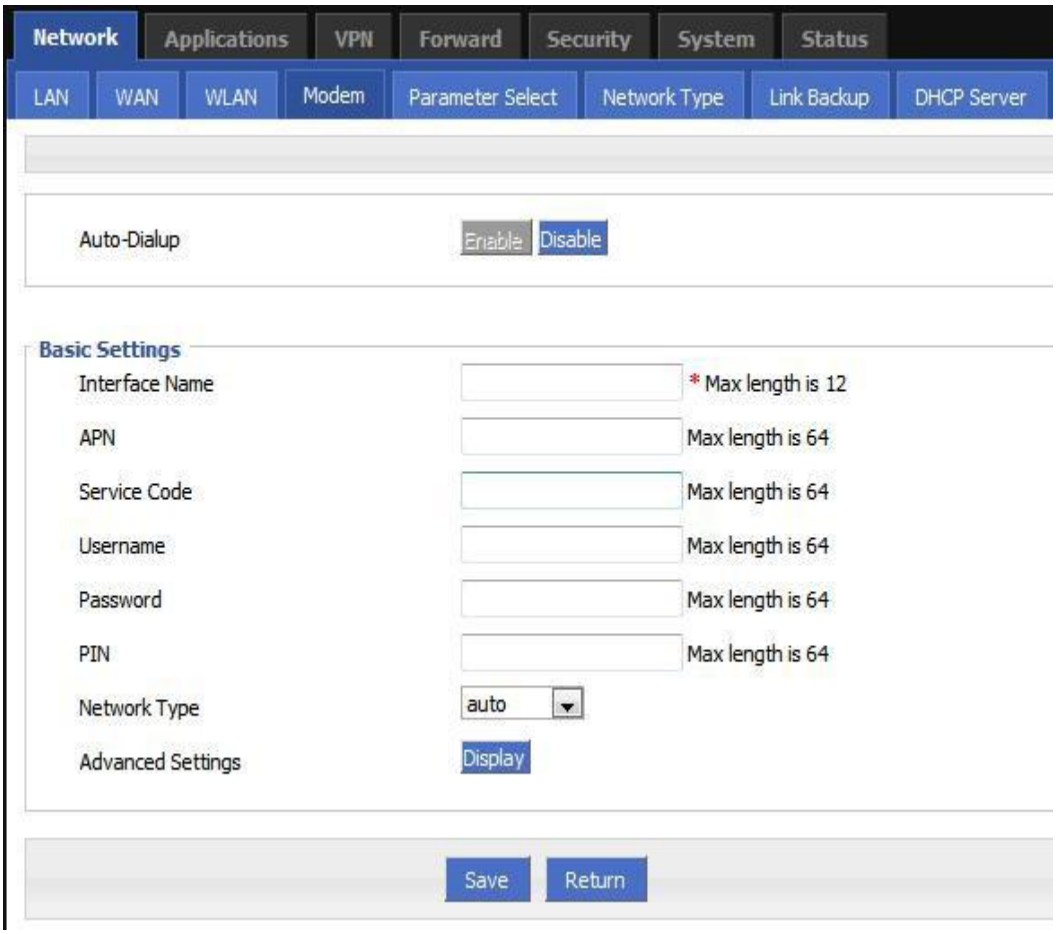
Step 2 Single click “network > Modem”.

Figure 5-16 Modem window

Step 3 Operation:

- add
  1. Single click “add”, window shows like below.

Figure 5-17 Modem page



2. Input suitable parameter.

Table 5-6 Modem Parameter instruction

Parameter	Details	Operation
Auto-dialup	Auto-dialup current modem, if all modem auto-dialup disabled, router will not auto-dialup	• Enable • Disable
Interface Name	Interface name, to identify this interface	WORD type, up to 12 characters
APN	APN, provided by local ISP, usually CDMA/EVDO network do not need this parameter	WORD type, up to 64 bytes
Service code	Usually *99***1#, CDMA/EVDO: #777	CODE type, up to 64 bytes
Username/Password	Provided by ISP	WORD type/CODE type, up to 64 bytes

Parameter	Details	Operation
Network type	Network type force to 2.5G or Cellular	Dropdown List WCDMA: • auto • wcdma • edge EVDO: • auto • evdo • cdma HSPA+ module force Cellular means Cellular auto, AUTO means 2.5G/Cellular auto
Advance Setting	PPP process advanced parameter, do not suggest to modify the setting. If necessary, contact us for support	Single click to show advanced setting
Authentication (need match server end, default auto-negotiation)		
CHAP	Challenge-Handshake Authentication Protocol, a way to send real password when build ppp link, improved security	• Disable • Negotiation CHAP is prior to PAP
PAP	Password Authentication Protocol	• Disable • Negotiation
MS-CHAP	MS-CHAP MicrosoftChallenge-Handshake Authentication Protocol	• Disable • Negotiation
MS2-CHAP	MS-CHAP second version	• Disable • Negotiation
EAP	PPP Extensible Authentication Protocol	• Disable • Negotiation
Compress (need match server end, default disable)		
Compression Control Protocol	Negotiate which compress control protocol used on PPP link	• Disable • Negotiation
Address/Control Compression	Whether compress IP address	• Disable • Negotiation
Protocol Field Compression	Whether compress Whether compress IP address	• Disable • Negotiation
VJ TCP/IP Header Compress	Whether allow TCP/IP to communicate by compressing VJ	• Disable • Negotiation
Connection-ID	Whether allow TCP/IP to communicate by compressing ID in the first	• Disable • Negotiation

Parameter	Details	Operation
More		
Debug	Enable PPP dialing log, default value is enable, in order to check more info about dialing, suggest no changing	• Disable • Negotiation
Peer's DNS	Auto get peer DNS when PPP dialing. DNS is necessary if want visit domain name. In order to forbid LAN pc visit domain name, you may disable it	• Disable • Negotiation
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Professional	• nomppe • mppe required • mppe stateless • nodeflate • nobsdcomp • default-asyncmap	Do not suggest modify, please contact us for help if necessary

Figure 5-18 Modem Dialup

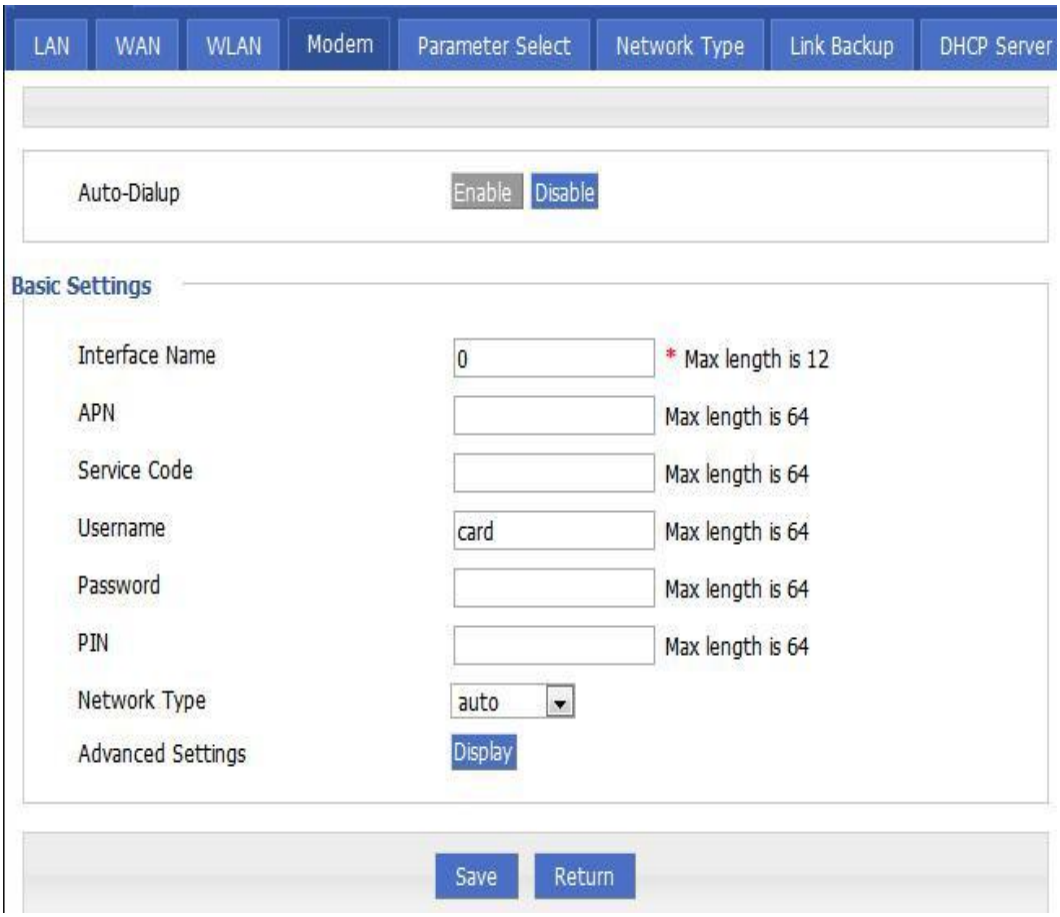
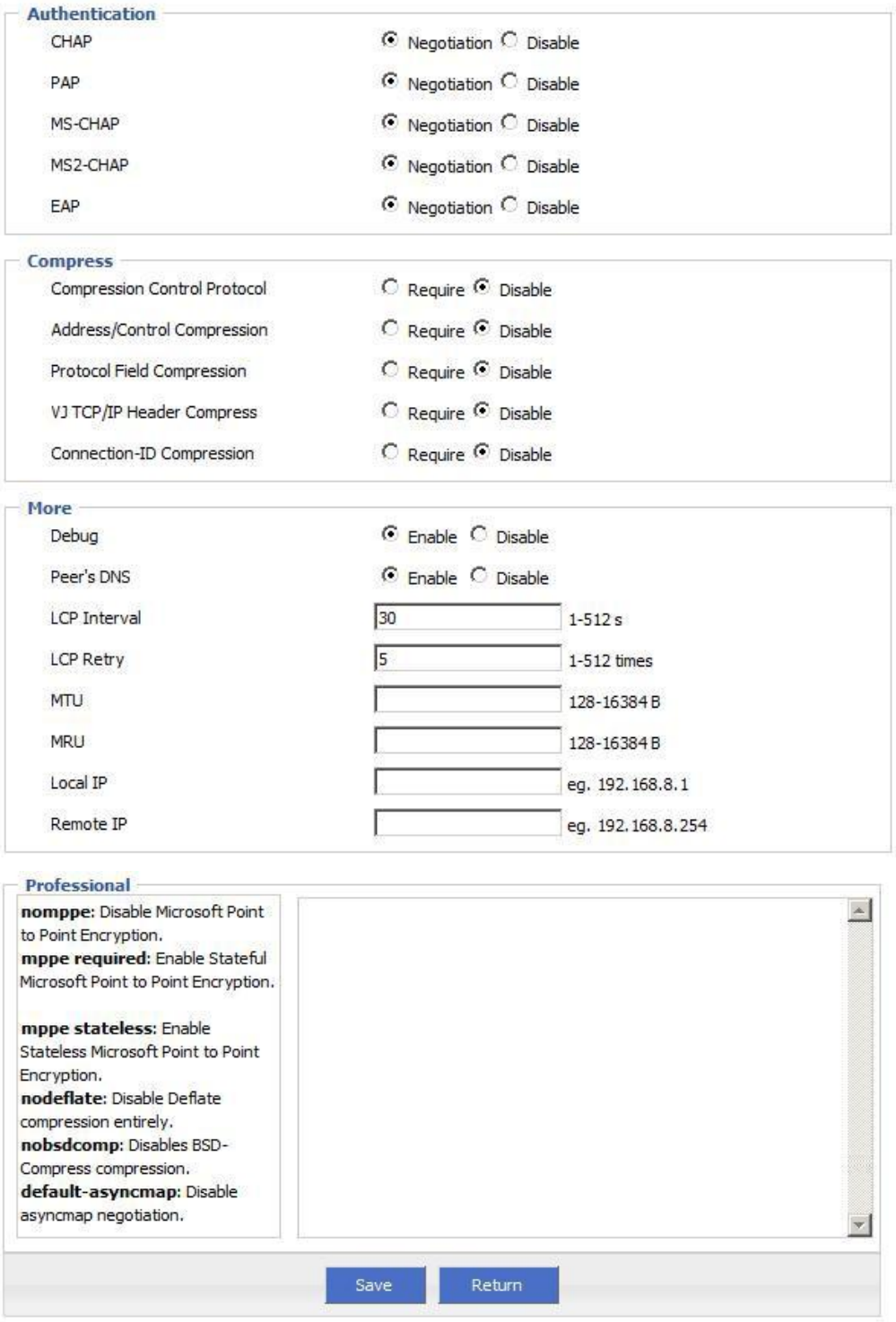


Figure 5-19 Advanced setting



3. Single click “save” icon to finish.

NOTE

Grey icon means enabled.

---END

5.2.4 WLAN

H8956 Cellular router provides WLAN AP, Station Client, Repeater three functions, through AP function, H8956 Cellular router can provide wireless LAN hotspots; through Station client function, it allows H8956 Cellular router access to other AP devices, such H8956 Cellular router downlink machine can access the Internet via the AP connection; Repeater functionality can be other AP WLAN signal amplification device, to achieve WLAN signal repeater, so the clients far away from the AP WLAN can access the AP.

Step 1 Login H8956 WEB GUI.

Step 2 Single click "Network > WLAN".

Step 3 Open"WLAN" tag, when you select a different VLAN mode (AP, Station, Repeater), respectively, display the page shown in Figure 5-19, Figure 5-20, Figure 5-21. When the WLAN mode select Station and Repeater, need to scan the surrounding AP, an AP access to select, shown in Figure 5-22.

Figure 5-20 AP mode configure interface

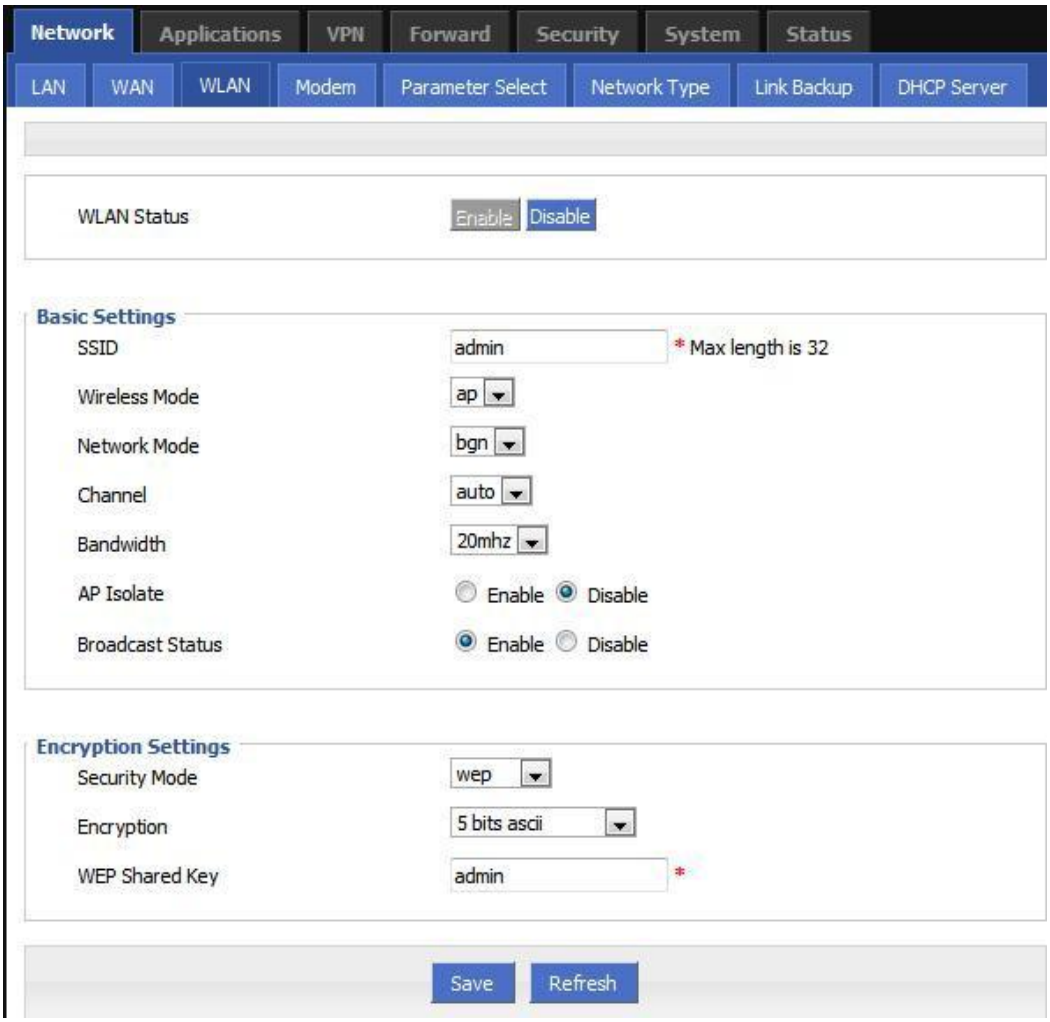


Figure 5-21 Station mode configure interface

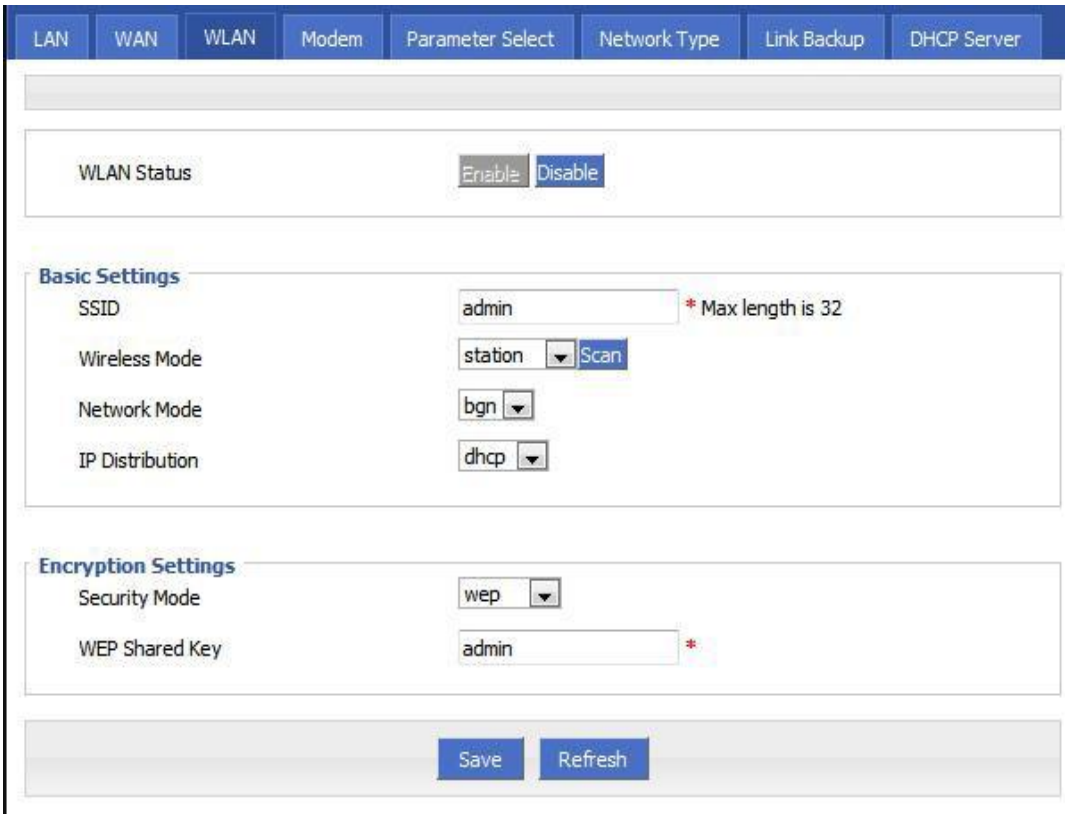


Figure 5-22 Repeater mode configure interface

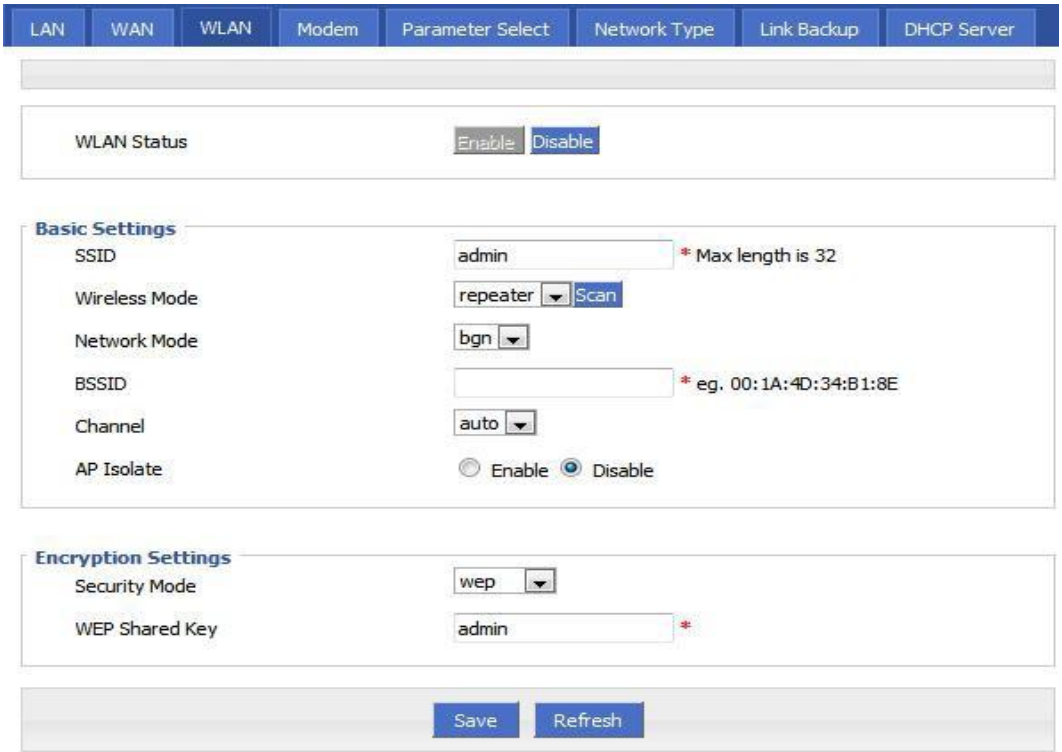
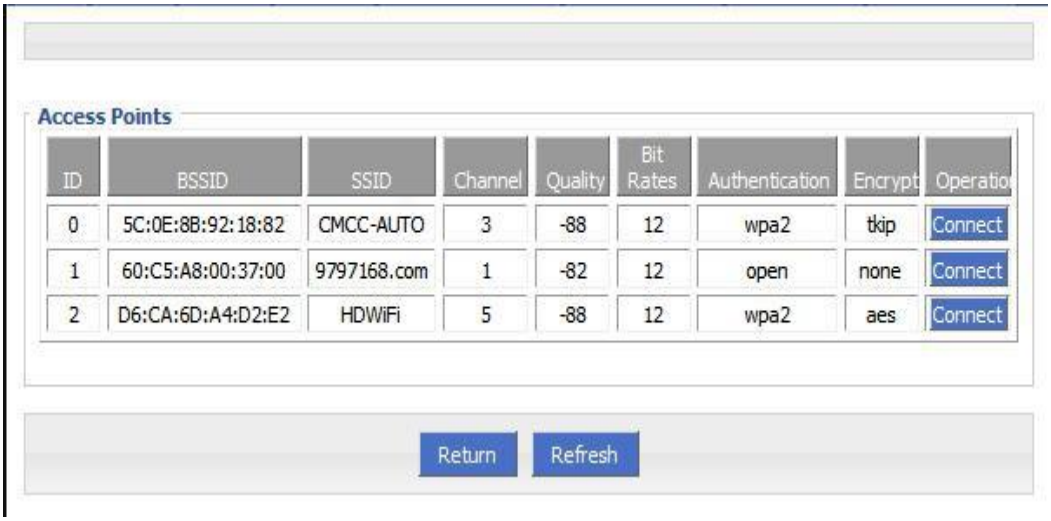


Figure 5-23 Station/Repeater scan signal interface



Step 4 "WLAN" configure parameter instruction, parameter instruction as Table 5-4.

Table 5-7 WLAN parameter instruction

Parameter	*Details*	*Operation*
WLAN Status	Enable or disable WLAN feature	Dropdown List • Enable • Disable
Basic Setting		
SSID	WLAN server identity	WORD type, max to 32Bytes
Wireless Mode	WLAN work mode, support ap/station/repeater	Dropdown List • ap • station • repeater
Network Mode	WLAN network mode, different network models are quite different transmission rates, default bgn mixed mode. When operating mode is selected AP, the AP needs to manually set the network mode; When working mode selection station or repeater, AP network mode for the selected network mode, can not be modified manually.	Dropdown List • n represents the network rate is 150Mbps • bg represents the network rate is 11Mbps,54Mbp(Auto-Negotiation) • bgn can support 11Mbps、54Mbps、150Mbps mixed mode, (auto adapt according to the client)
Channel	WLAN work channel, configure according to the specific needs of the network environment, the default value is auto.	Dropdown List • auto • 1～13 auto shows when there is no interference,the default channel is 6, when the same channel

Parameter	Details	Operation
		interference occur, it can automatically jump out interfere to work with the smaller channel
Bandwith	Bandwith configure when WLAN work at 802.11n	Dropdown List • 20MHz • 40MHz 40MHz represents highspeed mode
AP Isolate	AP isolate the WLAN client, so the WLAN client can not access each other	Dropdown List • Enable • Disable
Broadcast Status	Used to configure the WLAN SSID is broadcasted so that clients can search the SSID, usually do not want other people to search and disable WLAN function, disable it means hidden SSID function in a network environment, users want to connect, you need to manually add the SSID	Dropdown List • Enable • Disable
IP Distribution （when Wireless Mode is station)	The router is used as station, and the router can get the IP address when it is connected to AP	Dropdown List • dhcp：get IP address from DHCP • static：manually set IP address
IP（when Wireless Mode is station)	The router get an IP in correspondence with AP when it is station	Manual input Format： A.B.C.D/Mask
BSSID（when Wireless Mode is repeater)	MAC which the router select AP	WORD type MAC format: XX:XX:XX:XX:XX:XX You can manually set MAC depending on the selected AP
WLAN Encryption		
Security Mode	Configure the WLAN encryption, when encrypted authentication is not required, it can disable. WEP encryption is relatively easy to crack, we recommend using WPA encryption	Dropdown List • wep • disable • wpa • wpa2
WEP Encryption （Wired Equivalent Privacy)		
Encryption	WLAN password format	Dropdown List • 5 bits ASCII • 13 bits ASCII • 10 bits hex digits

Parameter	Details	Operation
		• 26 bits hex digits
WEP share	Password connected to WLAN	Configure according to the previous "Encryption" result
wpa/wpa2（WiFi Protected Access)		
Algorithms	Encryption algorithms	Dropdown List • tkip • aes
WPA Shar	WLAN encryption key, used to connect the specified SSID	WORD or Number type, refer to "Parameter Specification Table"
WPA Renewal Interval	WLAN client verification interval; If authentication passes, it continues to be a WLAN connection, if authentication fails, disconnect the WLAN connection	Value area：120-86400 Units：Seconds

NOTE

When the working mode select station or repeater, H8956 Router will automatically match according to the selected AP and the corresponding encryption algorithm (to keep consistent with AP encryption); shared key update interval is required to fill in the connections of AP key and interval.

---END

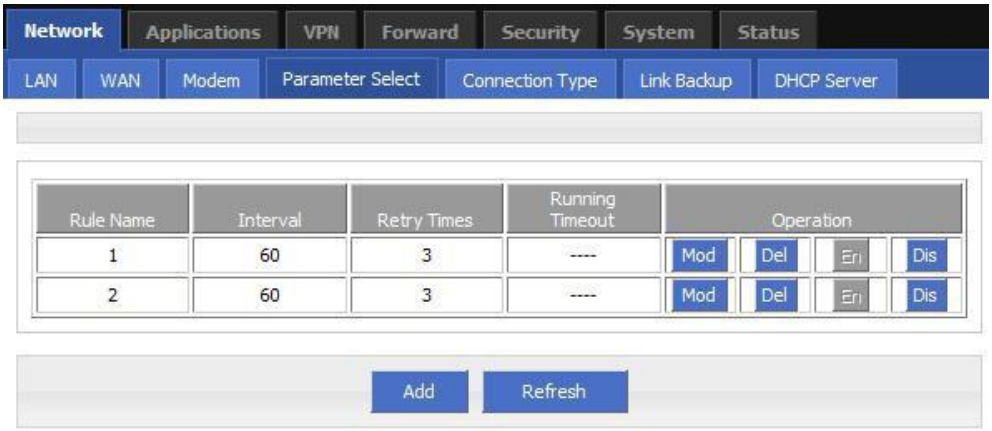
5.2.5 Parameter select

Router parameter select function is used for multi-function switch, like VPN parameter switch, SIM parameter switch, multi-sever switch .etc. You could pre-config several network parameter and switch between them, to achieve multiple Telecom operator backup. This function also could switch VPN setting, for example, when modem online it connect VPN 1, wan online it connect VPN2, they cannot connect at same time because conflict, by this function you could easily switch when network failure.

Step 1 Login H8956 WEB GUI.

Step 2 Single click “Network > parameter select”.

Figure 5-24 parameter select



Step 3 Add, modify, del, enable and disable the parameter select rule.

- add

Figure 5-25 add rule

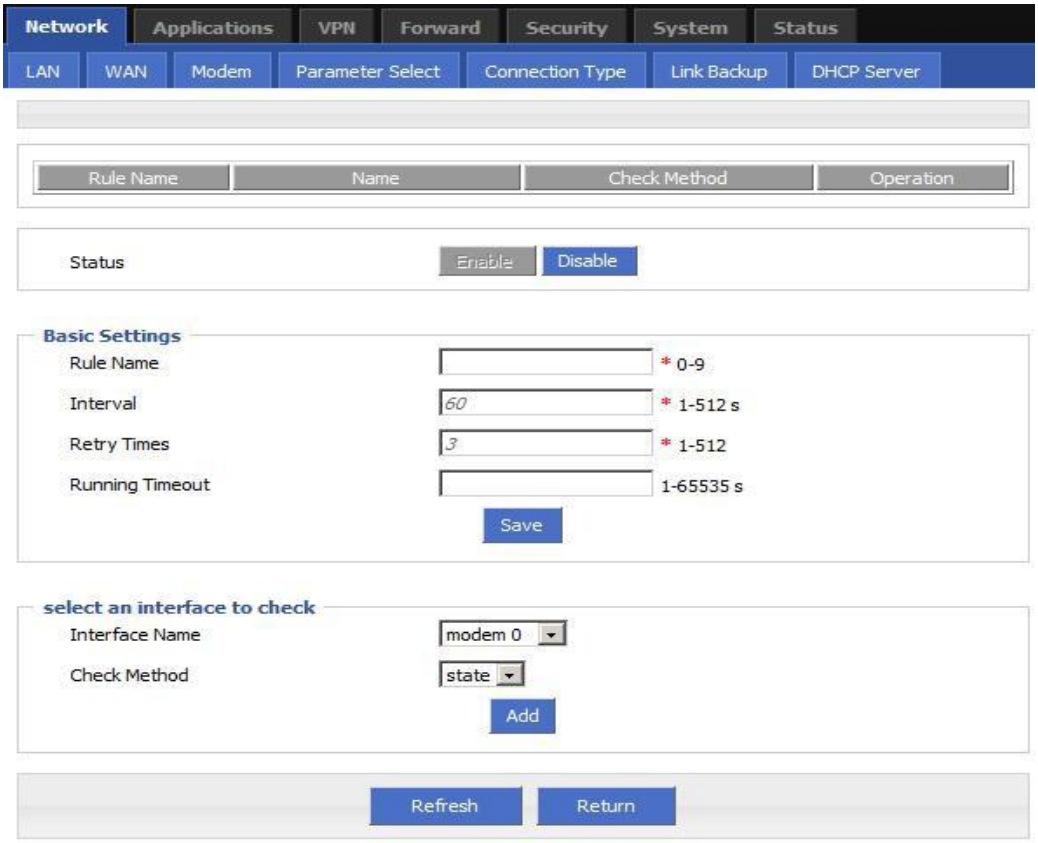


Table 5-8 Parameter instruction

Parameter	Details	Operation
Status	For enabled rule: Only one rule is running at one time, when it check	• Enable • Disable

Parameter	Details	Operation
	failed, next rule start running For disabled rule: all related interface also disabled	
Basic settings		
Rule name	Name value decided running order	Value area ： [0,9]
Interval/Retry Times	Check interval and retry time, if all check failed, switch to next rule	Value area ： 1～512 Units: seconds/time Default: 60/3
Running timeout	Not available for rule 0 This parameter restrict current rule running time, when timeout, switch to rule0, if do not set, switch to next rule	Value area ： 1～65535 Units: seconds
Select a interface to check		
Interface name	Set related modem interface	Dropdown List to choose, current available option will show below
Check method	If state, router will check link state If ICMP, router will ping the ICMP IP address to check	Dropdown List • state • icmp

CAUTION

This function is control how the router online & offline, and use which modem to online. Please notice timing task is execute a operation and keep the status, but parameter select only execute a operation. So they do not conflict.
But Link backup function may conflict with parameter select function , if you set both, final running result may not as you presume.

---END

5.2.6 Connection type

Step 1 Login H8956 WEB GUI.

Step 2 Single click “Network > Connection type”.

Figure 5-26 Connection type window

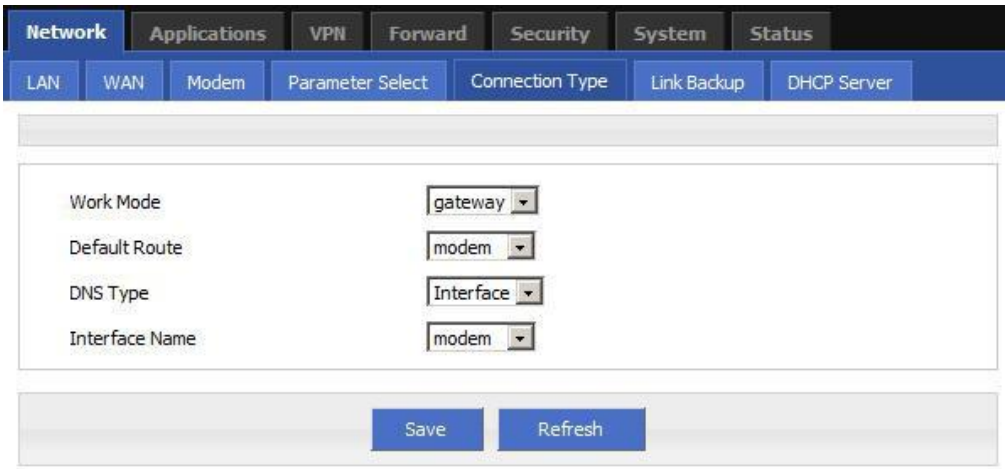


Table 5-9 Connection type Parameter instruction

Parameter	Details	Operation
Work mode	Gateway: IP data transfer with MASQ Router: all IP data just transfer, no MASQ Default Gateway, do not suggest to change	Dropdown List • gateway • route
Default route	Default route	Dropdown List
Gateway	If default route is wan static IP, need specify gateway and DNS	Example: 192.168.10.254
DNS type	If Interface, will get DNS automatically	Dropdown List • interface • custom
DNS1/DNS2	Manual set DNS	Example: 8.8.8.8
Interface name	Router will get DNS address from this interface	Dropdown List • modem • eth0

Step 3 Single click "save" icon.

---END

5.2.7 Link Backup

This function used to set how to backup network among modem1 and WAN port, to secure network availability.

There are hot backup and cold backup, hot backup means the backup link will always connected, so switch time is less, but cost extra flow fee.

Step 1 Login H8956 WEB GUI.

Step 2 Single click “network > Link Backup”.

Figure 5-27 Link Backup

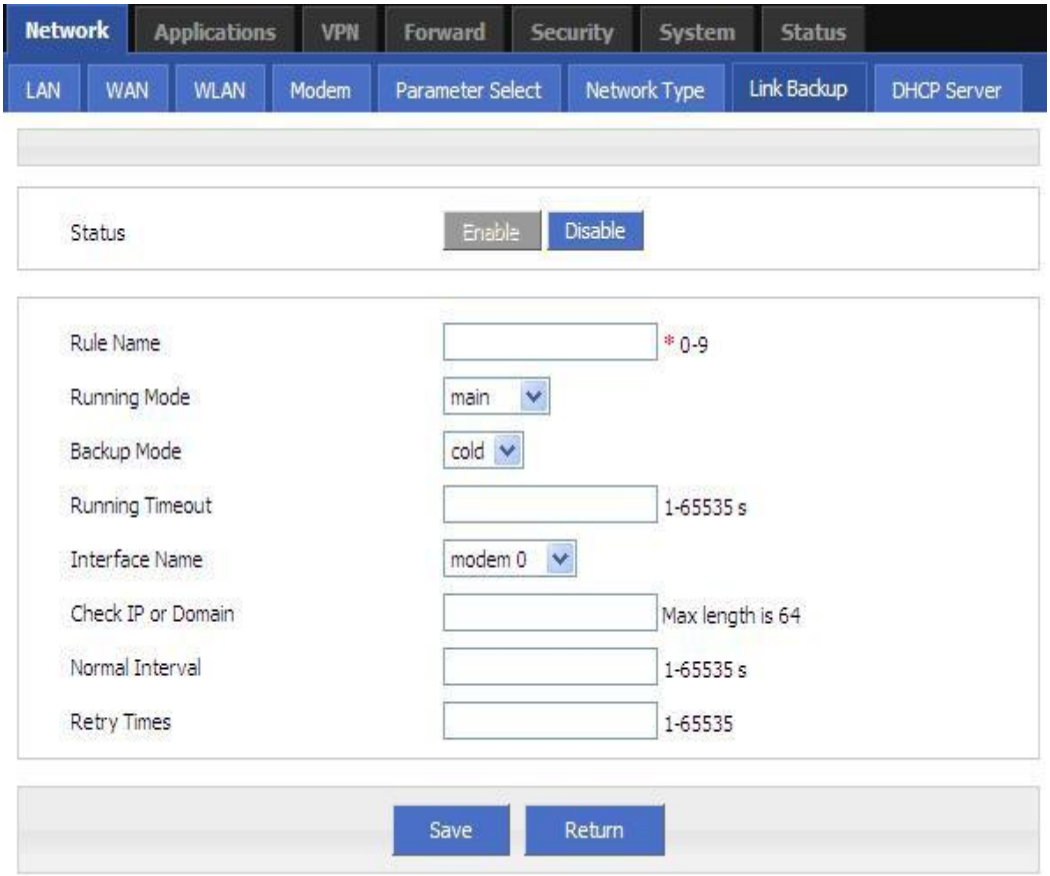


Table 5-10 Link Backup Parameter

Parameter	Details	Operation
Status	Enable or Disable Link Backup feature	• Enable • Disable
Rule Name	Link Backup rule name identification Note: 0 can act as chain link or backup link, 1-9 only can act as backup link 1-9 can take the priority according to the number, the smaller the number the greater the priority	Value area: 0-9
Running Mode	Link operate mode include: main： Link operate mode is main link backup： Link operate mode is backup link	Dropdown List • main • backup
Backup Mode	Backup mode include: cold and hot	Dropdown List • cold

Parameter	Details	Operation
	Hot refers to the corresponding link treatment enabled, the advantage of hot backup is switching fast, deficiency is when the link online will increase the cost of network overhead and charges. Cold refers to only the current working link interface is enabled. In other non-work link interface in the offline state	• hot
Running Timeout	If the current link is main link, shows the main link stability time if the current link is backup link, shows the shortest working time Note: Running timeout is only suitable fo	Value area:1-65535 Units: seconds
Interface Name	Interface used for link switching	Dropdown List • modem 0 • eth1 • eth0
Check IP or Domain	Detection by ping packets IP address or domain name, if not the general principles means the failed test	WORD type, up to 64 characters, please refer to parameters regulation format
Normal Interval/Retry Times	Normal interval link test and the maximum number failed link test, the largest number of failure to retry the link	Value area:1-65535 Units: seconds/times

Step 3 Single click "save" icon.

---END

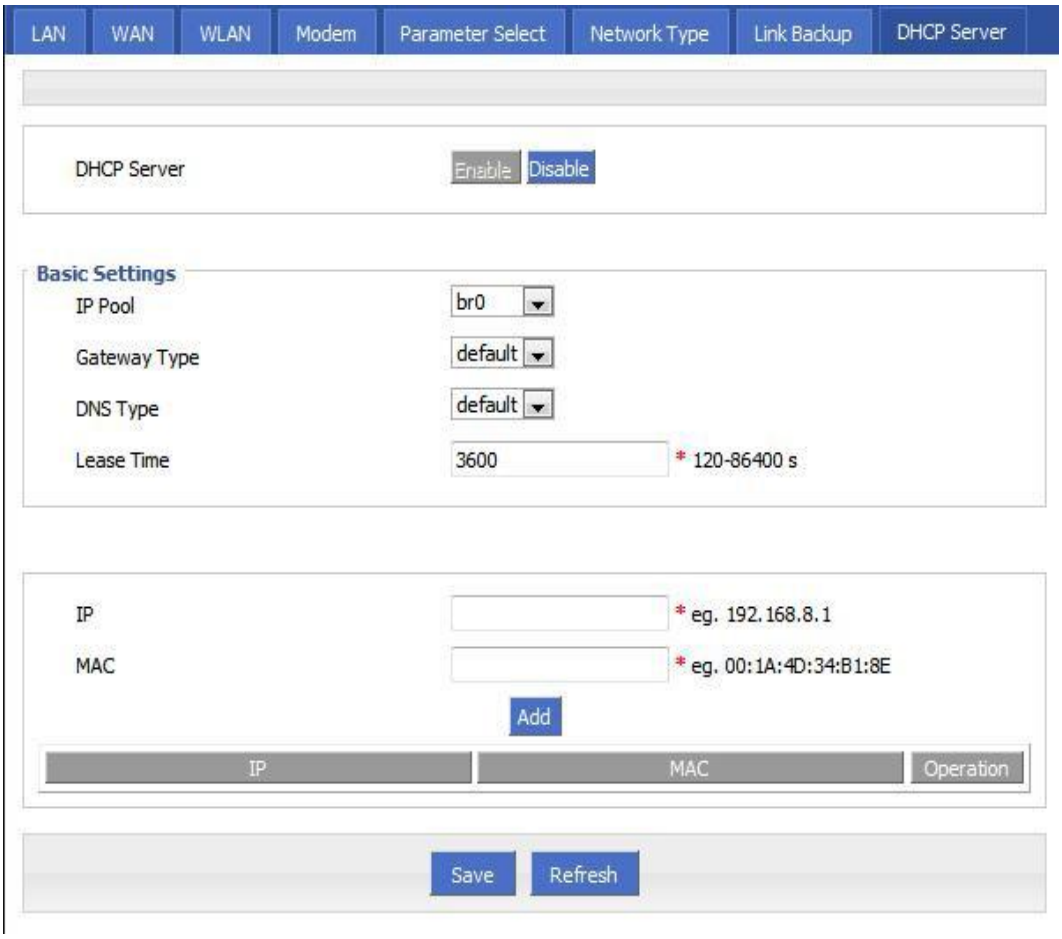
5.2.8 DHCP Service

DHCP(Dynamic Host Configuration Protocol) is a LAN network protocol, enable the DHCP function, a function automatically can obtain the dynamic IP.

Step 1 Login H8956 WEB GUI.

Step 2 Single click "Network > DHCP Server".

Figure 5-28 DHCP



Step 3 Configure DHCP parameter.

DHCP parameter instructions as Table 5-8.

Table 5-11 DHCP Parameter

Parameter	Details	Operation
DHCP Server	Enable or Disable DHCP feature	• Enable • Disable
Basic Settings（DHCP is not recommended configure in the case of no special network requirement)		
IP Pool	The DHCP client can get the scope of IP address. When selecting interface represents the interface of network segment. This option is usually the need to specify a machine configuration can be assigned address range, for example: only hope at most four machine can automatically obtain the IP	Dropdown List • br0 • custom
Start IP	When IP pool select custom configuration, configure the DHCP pool	Manual input

Parameter	Details	Operation
	start IP address	Format：A.B.C.D/Mask Example：192.168.8.2
End IP	When IP pool select custom configuration, configure the DHCP pool end IP address	Manual input Format：A.B.C.D/Mask Example：192.168.8.254
Gateway Type	DHCP client access gateway IP source, divided into default, br0, eth0, custom four categories, associated interface, the interface IP assigned to the DHCP client as a gateway	Dropdown List Default value：default
DNS Type	DHCP client access to the DNS IP source, has a default, modem, eth0, br0, custom and so on, generally do not recommend to modify the configuration, especially under the dual mode application scenario configuration is not recommended	Dropdown List • default • modem • eth0 • br0 • custom Configuring for the default is based on DNS address which is allocated by the router itself
Lease Time	After the DHCP client obtain an IP on IP lease time, the client usually renegotiate obtain an IP address lease time in more than half the time. IP lease time is mainly used to release idle IP to avoid that IP address resources are also occupied after the DHCP client shutdown	Value area：120-86400 Units：seconds Default value：3600
IP, MAC binding is used to assign a fixed MAC within the specified range of IP addresses		
IP	Paired with the specified MAC, when a DHCP client which MAC is bound send a DHCP request, the IP address associated with the MAC address binding assigned to it. The IP address assigned even if it has not been occupied and not assigned to other MAC addresses	Manual input Format：A.B.C.D/Mask Example：192.168.8.2
MAC	Configure DHCP to obtain an IP need to specify the DHCP client's MAC address	WORD Type MAC Format Example: 00:1A:4D:34:B1:8E

---END

5.3 Application program configuration

Based on years of customers experience for different applications, besides SNMP, DDNS, H8956 Cellular router has developed many functions for wireless network equipment, such as ICMP check, interface flow check function, M2M terminal management function, task management function and waking on demand function.

5.3.1 ICMP check

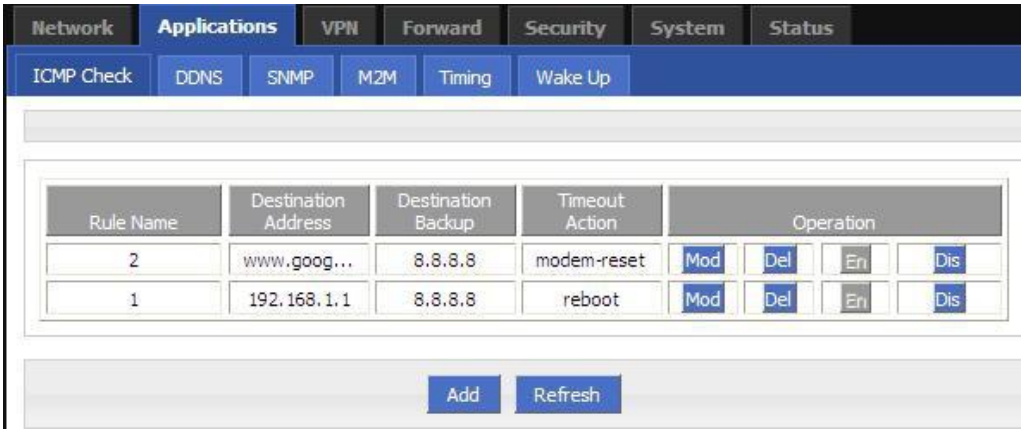
There is fake link (can get IP after dialing, but cannot link to destination address). Usually LCP is used to avoid this. Besides LCP, H8956 Cellular router can use another more reliable checking way ICMP which check the link by PING. When abnormal link is checked, the preset action will be executed to recover the link and systems quickly. Initially ICMP is to check wireless link, and now it can be used to check VPN link and supports simultaneous check in different rules. It supports maximum 10 ICMP check rules.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "applications > ICMP Check".

Open "ICMP Check" tab.

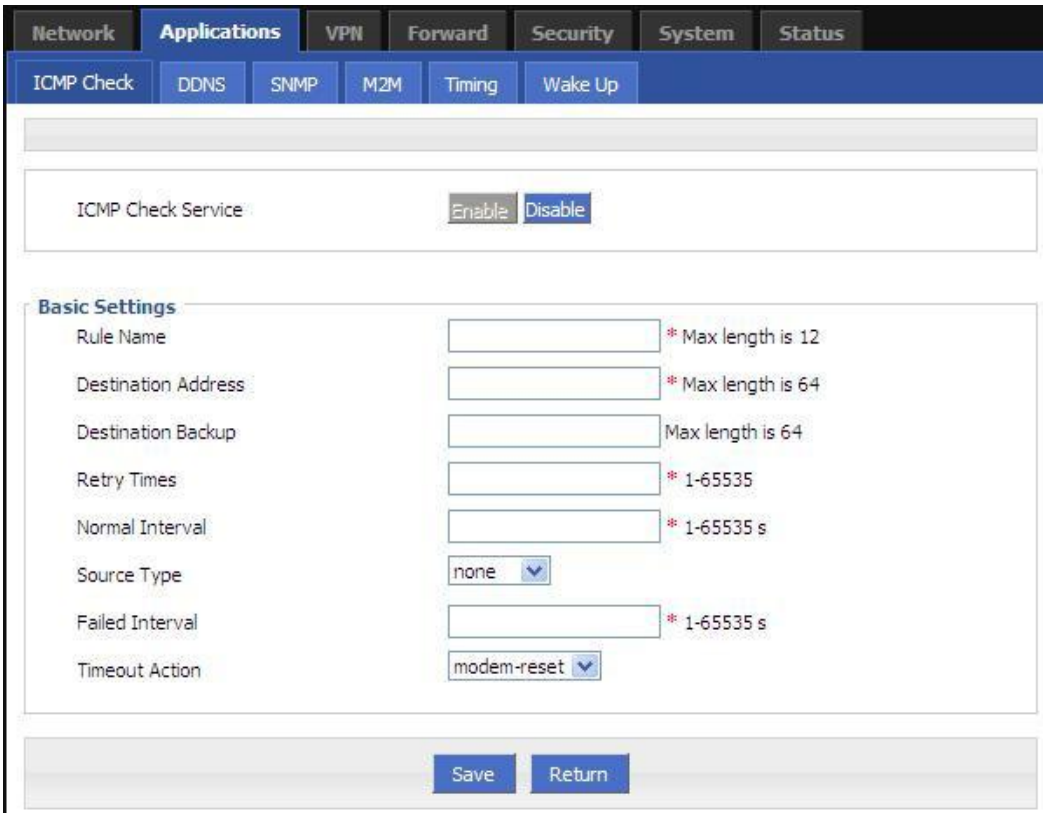
Figure 5-29 ICMP Check tab



Step 3 "Add", "Modify", "Delete", "Enable" "Disable" the function of "ICMP Check".

- Add

Figure 5-30 ICMP adding page



2. Configure the ICMP check parameter.

Table 5-12 ICMP check rules Parameter instruction

Parameter	Details	Operation
ICMP check service	To enable or disable ICMP check rules, multiple rules can be used simultaneously, and one specific rule can be disabled	Button • Enable • Disable
Basic Config		
Rule Name	ICMP Check rule name, just to distinguish different rules	WORD type, max 12 bytes
Destination address	Destination address of ICMP check, can be domain name and also can be IP address. If domaine name, DNS of the router shall be configured correctly	WORD type, max 64 bytes
Destination backup	A backup destination address of ICMP check, if “destination address” cannot be linked by ICMP check, the “destination backup” address will be checked, if still cannot linked, the router will recognize ICMP check fails	WORD type, max 64 bytes

Parameter	Details	Operation
Retry times/Normal interval	Check time interval and max check failure times when link is OK, if check failure times reaches the max times, then "timeout action " will be executed, e.g "modem reset"	Value area ： 1～65535 Unit: second/time
Source Interface	Router sends an ICMP detected packet's source address	Dropdown List options • br0 • modem
Timeout action	An action when check failure times reach max failure times. Can be modem-reset, reboot, custom	Dropdown List options • modem-reset：modem redials • reboot：router reboots • custom：customized action
Run commands	If "Timeout action" is "custom", this shall be configured. Commands are BGO operation. It is not suggested to use, if need, please contact our technical engineers	WORD type, max 64 bytes

3. Single click "save" to finish a ICMP check rule.

NOTE

If ICMP is normal, ICMP packet is sent at "normal interval". When abnormal, packet will be sent continuously at "failed interval". If "destination address" cannot be linked and checking times reach "retry times", "destination backup" will be checked. if "destination address" can be linked in checking "destination backup", "destination address" will be checked again. If "destination backup" cannot be linked and checking times reach "retry times", "Timeout action" will be executed.

- Modify
- Delete
- Enable

  If already enabled, the button "EN" is gray.
- Disable

  If already disabled, the button "DIS" is gray
- Refresh

  Click "refresh" to refresh the page.

---END

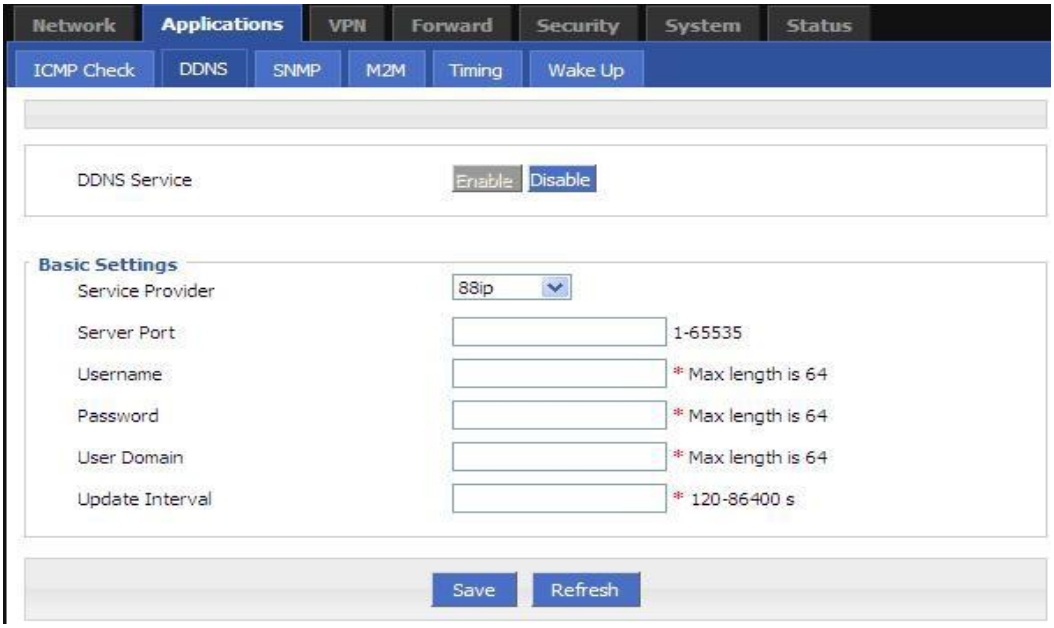
5.3.2 DDNS configuration

Network of SIM/UIM shall be a public address so that router can be visited for a DDNS.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Applications" > "DDNS".

Figure 5-31 DDNS configuration



Step 3 Configure DDNS parameter.

Table 5-13 DDNS Parameter instruction

Parameter	*Details*	*Operation*
DDNS Service	Set whether enable DDNS service function	Button • Enable • Disable
Basic Config		
Service Provider	Select the DDNS service provider that router currently supports, don't support other providers	Dropdown List options • 3322 • 88ip • Dnsexit • Dyndns • Zoneedit • changeip • custom
Server IP or Domain	When "custom" in "service provider" is selected, "Server IP or Domain" will be configured. Default is standard DDNS protocol. for customized protocol, please contact our engineer	WORD type, max 64 bytes
Server Port	Set the port number of the DDNS server provided by the service provider. The default port number is 80	Value area: 1～65535 If empty, it means 80 port

Parameter	Details	Operation
User name/Password	Set user name/password of the DDNS service registered in the service provider	Normal WORD type/CODE type, max 64 bytes
User Domain	Set the domain of the DDNS service provided by the service provider	Normal WORD type, max 64 bytes
Update Interval	Set the interval of the DDNS client obtains new IP, suggest 240s or above	Value area: 120～86400 Unit: seconds

Step 4 Click "save"to complete DDNS configuration

NOTE

- DDNS in China: 88IP (www.88ip.net), 3322 (www.3322.org)
- DDNS outside of China: DNSEXIT (www.dnsexit.com), ZONEEDIT(www.zoneedti.com), CHANGEIP(www.changeip.com), DYNDNS(www.members.dyndns.org)
- Afer router reboots, IP address which SIM/UIM gets from ISPs will change. If user uses DDNS in remote login, no matter the IP address changes, he can Log-on the router.

---END

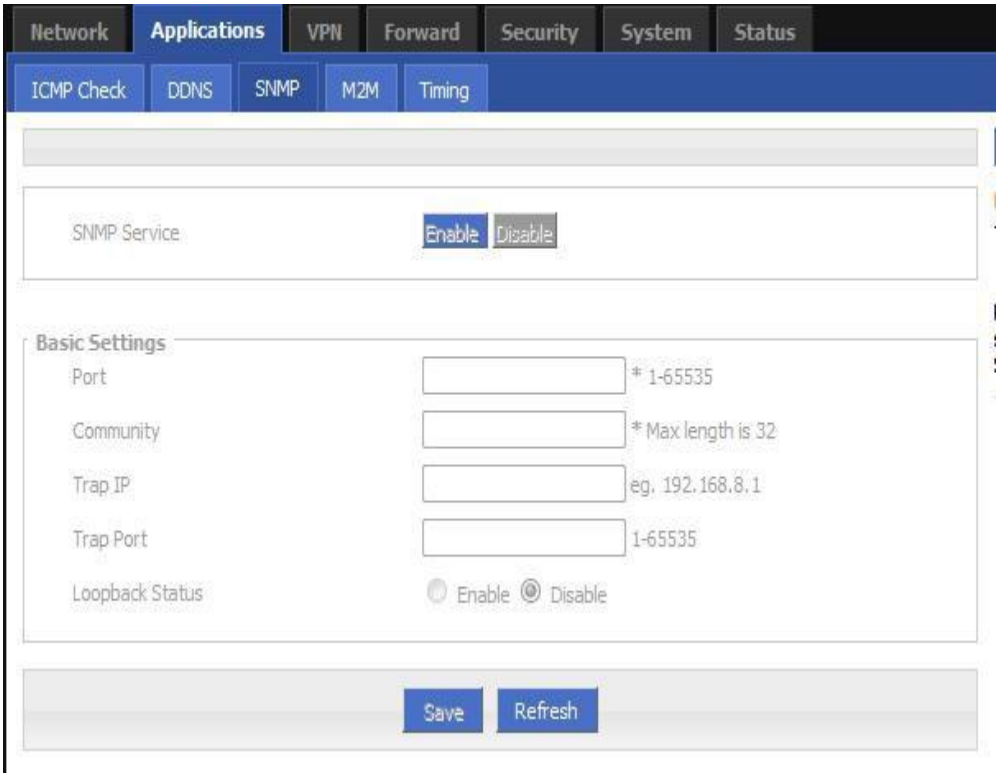
5.3.3 SNMP configuration

SNMP（Simple Network Management Protocol)can monitor routers remotely and get to know the status of routers (Support interface status check, like VPN, modem etc. MIB of our company shall be used).

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Applications > SNMP" to open the "SNMP" tab.

Figure 5-32 SNMP configuration



Step 3 Configure SNMP parameter.

Table 5-14 SNMP Parameter instruction

Parameter	Details	Operation
SNMP service	To enable or disable SNMP service	Options: • Enable • Diable
Basic Config		
Port	SNMP port, suggest to be default port161	Value area: 1～65535 Default: 161
Community	Community Password of SNMP client to router SNMP, Used for identification	WORD type, max 16 bytes
Trap IP	Link-state router report server address	Manual input Format：A.B.C.D/Mask
Trap Port	Link-state router report server address's port	Value area：1～65535 Default：162
Loopback Status	Match with "LAN" page loopback address, in the "Loopback Status" to "Enable", means loopback address	Options: • Enable

Parameter	Details	Operation
	configuration successfully, the router reported Trap IP packet source address is the loopback address, If the "Loopback Status" to "Disabled" means router IP packet source address for the LAN port address	• Diable

Step 4 Single click “save” icon to finish SNMP configuration.

MIB for SNMP can be downloaded from our website, if necessary, please contact our technical engineers.

---END

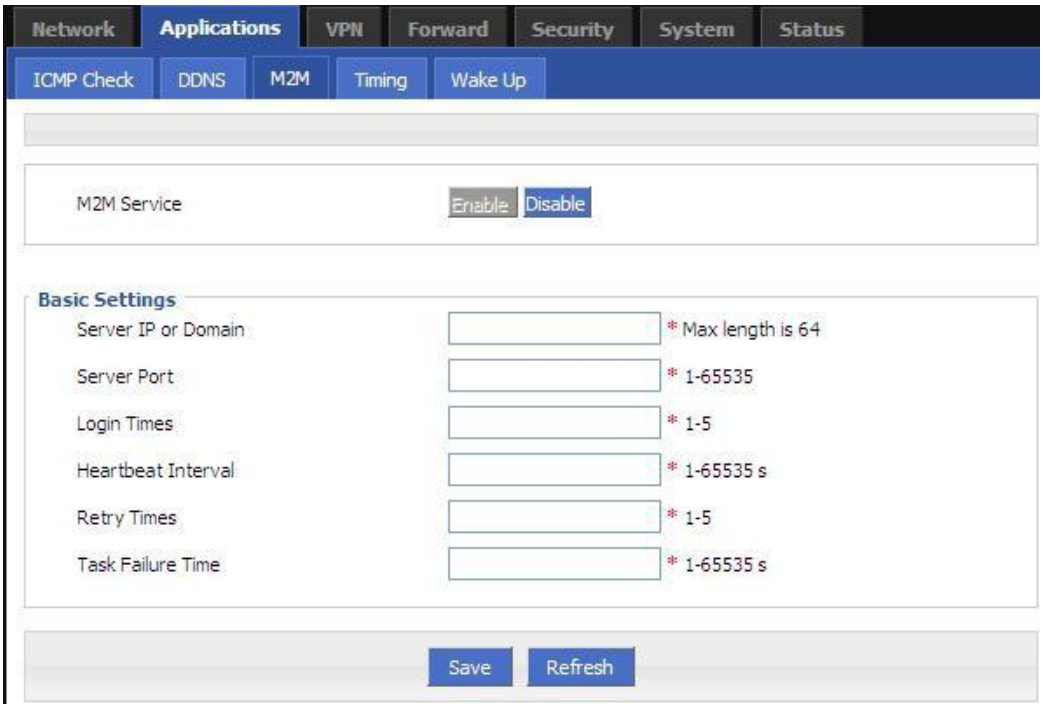
5.3.4 M2M configuration

H8956 Cellular router has embedded a WMMP (Wireless Machine-to-Machine Protocol) protocol to realize communication with M2M (Machine-to-Machine) platform which can remotely monitor and manage the routers and its network, e.g. visit the router, patch upgrading, firmware upgrading, parameter configuration, monitor the network strength, time delay, flow. Its configuration is as follows:

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Applications > M2M” to open M2M configuration tab.

Figure 5-33 M2M configuration



Step 3 Configure M2M parameter .

Parameter instruction is shown.

Table 5-15 M2M Parameter instruction

Parameter	*Details*	*Operation*
M2M service	To enable or disable M2M function. This function shall be used with our M2M platform	Button • Enable • Disable
Basic Config		
Server IP or Domain	Set the server IP or domain of M2M platform	Normal WORD type, max 64 bytes
Server Port	WMMP port No, shall be the same with Port No of M2M platform server	Value area: 1～65535
Login Times	Max retry times of router to login M2M platform. If login times reach max times, the router will reboot, M2M will initialize and login again	Value area: 1～5 Unit: times
Heartbeat Interval	Time interval to send heartbeat which maintain the like with M2M platform server. The heartbeat includes the network status info which will update the network info of the M2M platform	Value area: 1～65535 Unit: seconds

Parameter	Details	Operation
Retry Times	There is a retry mechanism for package exchange between router and M2M platform. When exchange times reach retry times, router will judge the exchange fails and usually no operation will be made	Value area: 1～5 Unit: seconds
Task Failure Time	The time to judge an exchange fails, if an exchange uses time which exceeds the "task failure time", router will judge the exchange fails and will retry to send the exchange	Value area: 1～65535 Unit: seconds

Step 4 Single click "save" icon to finish the configuration.

---END

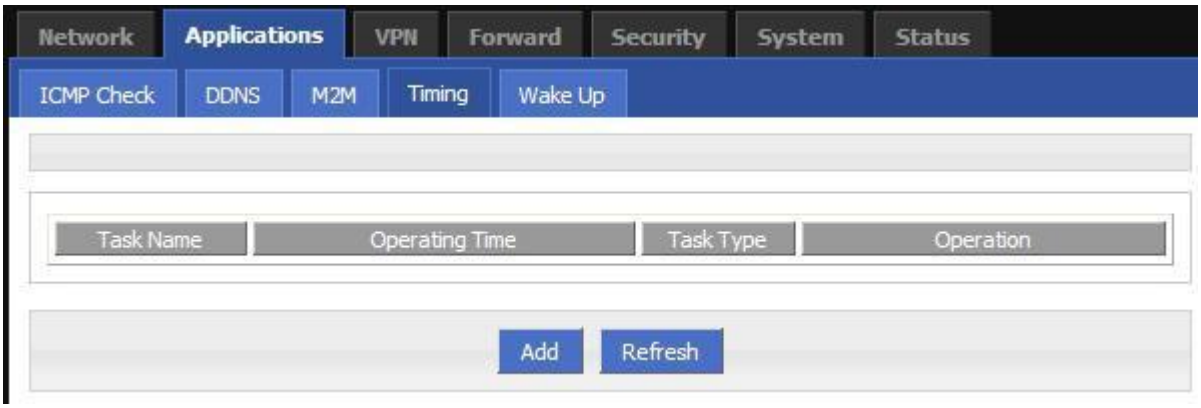
5.3.5 Timing configuration

This application is to control the online time of the router to better manage network and save Cellular flow. H8956 can add several online period as per the user's requirement (e.g. hours of some day). in addition, this application can support to begin some tasks at a time point (e.g redial or reboot at 00:00). Max 10 tasks.

Step 1 Log-on WEB GUI of H8956 Cellular router .

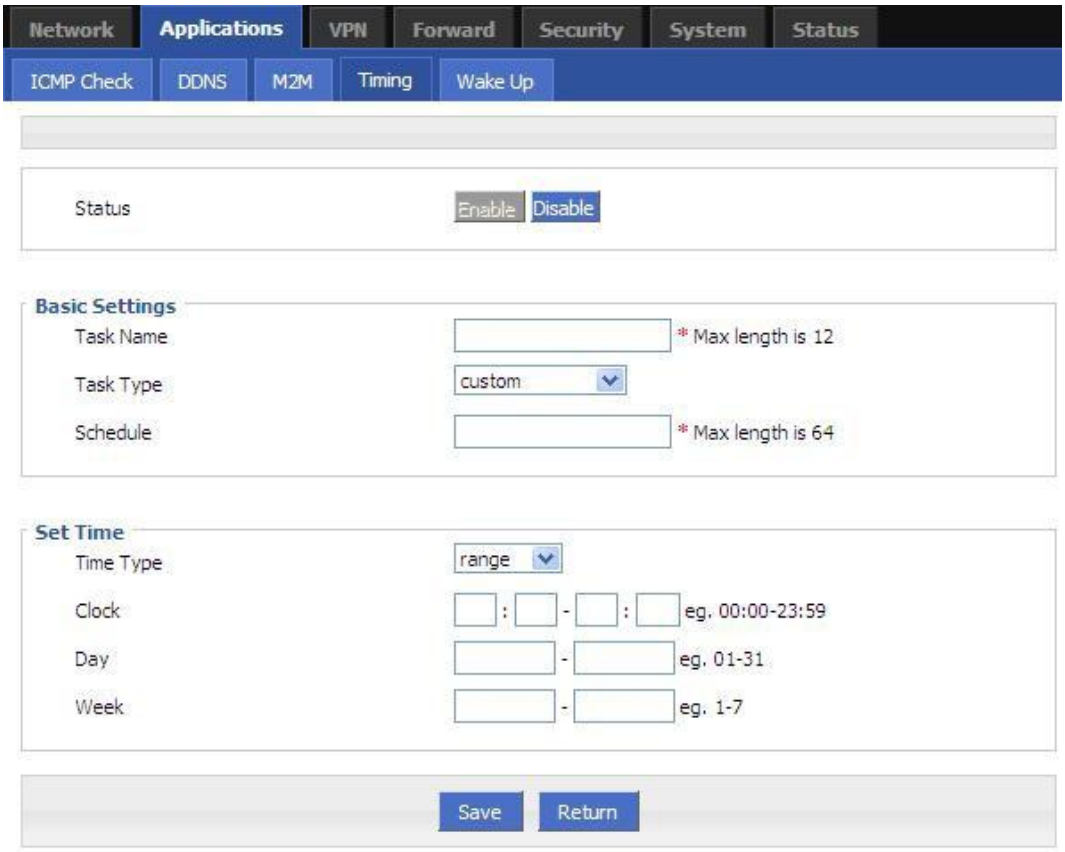
Step 2 Click "Applications > M2M" to open M2M configuration tab.

Figure 5-34 Timing configuration



Step 3 To add a timing task, please click "Add".

Figure 5-35 To add timing task



Step 4 Configure timing task parameter.

Table 5-16 Timing task parameter instruction

Parameter	*Details*	*Operation*
Status	To enable or disable a timing task. Some task shall be enabled together with NTP	options • Enable • Disable
Basic Config		
Task name	Name of a timing task	Max 12 digits
Task type	Task type has action task and status task. Action task is for time point or time interval, while status task is for time period (for "modem-online"), which means that the modem will be online (if down, modem will automatically redial) during the configured time period. Modem will be	Drop DownList options: • modem-online • reboot • custom if select "custom", "schedule" will be shown to input command (can be dialup or other command). Max 64 bytes

Parameter	Details	Operation
	offline (no dialing) for other time	
Schedule	This is linux shell command. Usually suggested not to use it. In case of need, please contact our technical engineers	WORD type. Max 64 digits
Set time		
Time type	Range or interval for status task or action task	Dropdown List options: • range • interval
When "time type" select "range"		
Clock	To input hour and minute. When beginning and end hour and minute are the same, it means a time point for action task	Value area: [00:00,23:59] Format: HH:mm-HH:mm
Day	Days in a month for task	Value area: [01,31] Format: XX-XX
Week	Days in a week for task. When "day" and "week" are both input, it means only if both conditions meet, the task will begin	Value area: [1,7] Format: X-X 1 for Monday
When "time type" select "Interval"		
Interval	Time interval for action task	Value area: 1～65535 Unit: minutes

Step 5 Single click "save" icon to finish "Timing" configuration

When "range" is selected, NTP shall be enabled . when "interval" is selected, no such requirement. For "NTP" configuration

---END

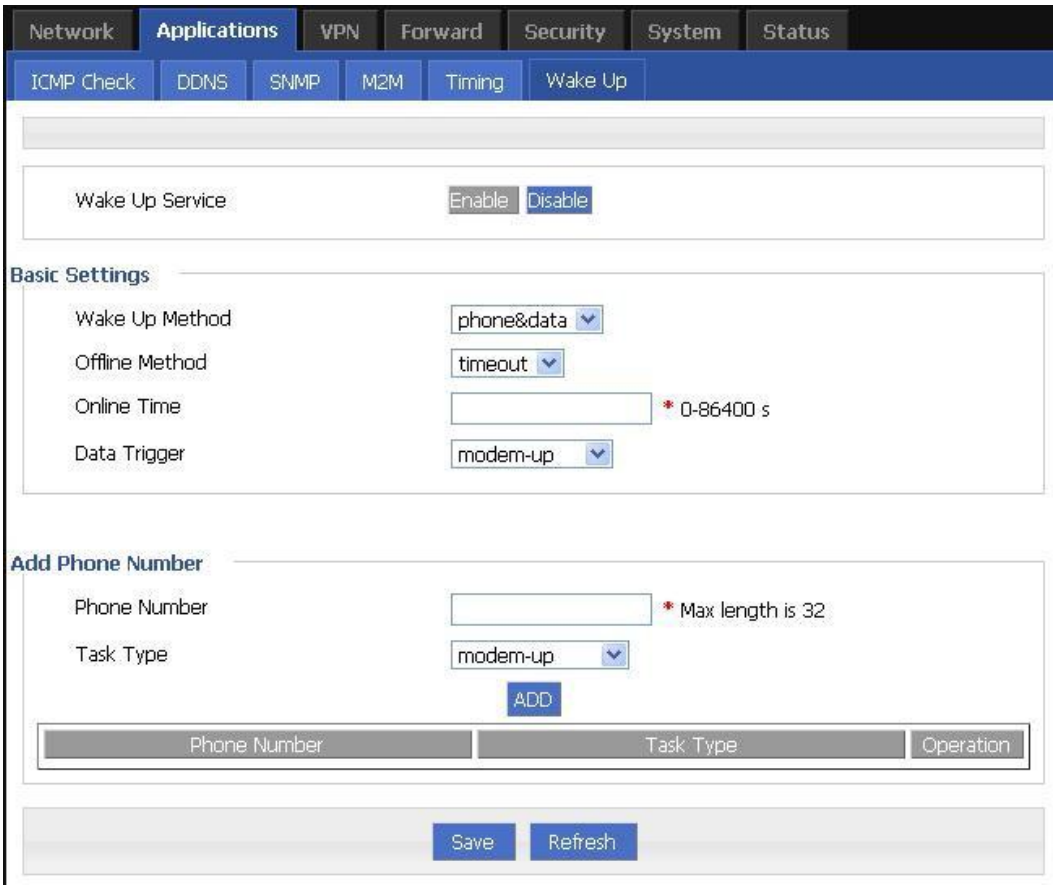
5.3.6 Wake up configuration(Optional)

Cellular fee is mostly based on flow. H8956 Cellular router can get on/off line on demand. It supports on/offline or reboot triggered by voice, SMS or data. It supports max 10 cellphone Nos.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Applications > Wake up" to open "Wake up" tab.

Figure 5-36 Wake up configuration



Step 3 Configure "wake up" parameter.

CAUTION

After finish "basic setting" parameter, click "save" to save it in the flash memory.

Table 5-17 Wake up Parameter instruction

Parameter	*Details*	*Operation*
Wake up service	To enable or disable the service.	Options: • Enable • Disable
Add phone Number		
Phone Number	Phone No to trigger the router action. One phone No for one action of one modem.	WORD type. Max 32 digits.

Parameter	Details	Operation
Task type	Triggered action includes modem-up, modem-down, reboot.	Dropdown List options • modem-down • modem-up • reboot
Basic setting		
Wake up method	To configure actions triggered, it supports phone and data. If choose phone, please be sure that the SIM card has opened voice or SMS service. Usually recommend voice wakeup with high efficiency and don't need SMS charge.	Dropdown List options • phone/data • phone
Offline method	Support "timeout" and "idle". "timeout" means router will get offline once time reaches the configured time commencing from online time. "idle" means if idle (no data transmission) time is as long as the configured time, the router will get offline.	Dropdown List options • timeout • idle
Online time	Online time of router, for "idle", online time will recalculated if there is data transmission.	Value area ： 0～86400 Unit: second
Data trigger	Configured as wakeup by data. When router receives data from external network, the modem will be triggered to be online, LAN data and broadcast data will not trigger actions. If configured as "phone&data", either phone or data can trigger actions	Dropdown List options • modem-up

Step 4 click "ADD" to add a new wake up rule.

After add a new rule, the rule will be shown on the bottom. To click "Del" to delete the rule.

NOTE

- One phone number be set for actions of different modems, but cannot be set as different actions of one modem.
- It's OK for SIM of H8956 Cellular router to open SMS or voice function, no matter which slot to be installed.
- "Data" will trigger only actions: modem-up/modem-all-up
- If "online time" is set as 0, it means router will be always online. To get the router offline, pls choose actions to trigger offline.
- "Online time" in "wake up" will affect other functions like SIM switch, network backup, task management. So when users set wakeup parameter, please note whether there is conflict with other factions.
- Voice trigger: router will begin the action after 5 seconds of the sound "du".

5.4 Security

5.4.1 Overview

"Security" will control where the data can pass through by analyzing IP address and port of ICMP, TCP/IP package from the destination end or source end. H8956 Cellular router supports IP filter, domain filter and MAC filter.

5.4.2 Configuration

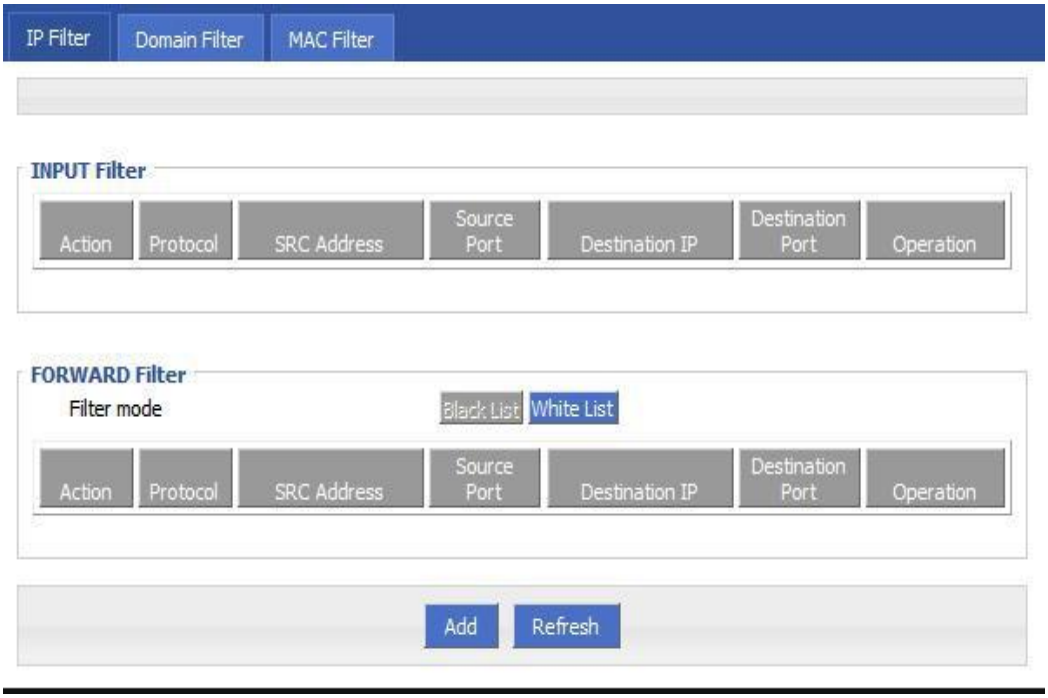
IP Filter

IP filter refers to judgment whether to allow router to forward the data according to filter rules, thus to manage internet surfing of PC in LAN. IP filter is used to allow part of PCs in LAN to visit external WAN network or forbidden some PCs from visiting specific website.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Security > IP Filter" to open "IP Filter" tab.

Figure 5-37 IP Filter tab



Step 3 In the forwarding filtering rules.

- Black List：The default allows packet forwarding, in line with the list of "discarded" rules packet can not be forwarded through the router.
- White List：The default refuses packet forwarding, in line with the list of "accept" rules packet can go through a router forwarding.

Step 4 Click “Add” to add a new IP filter rule and configure IP filter parameter. There are two types of IP filter: “Input” and “Forward”. To add a rule.

Figure 5-38 IP filter “Input” type

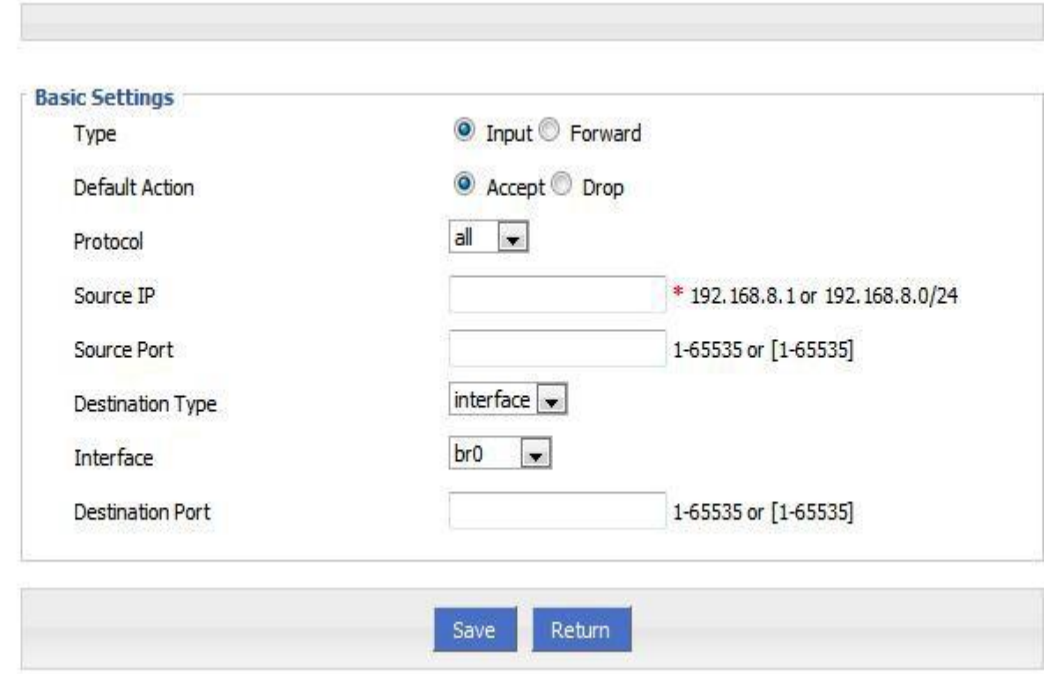


Figure 5-39 IP Filter “Forward” type

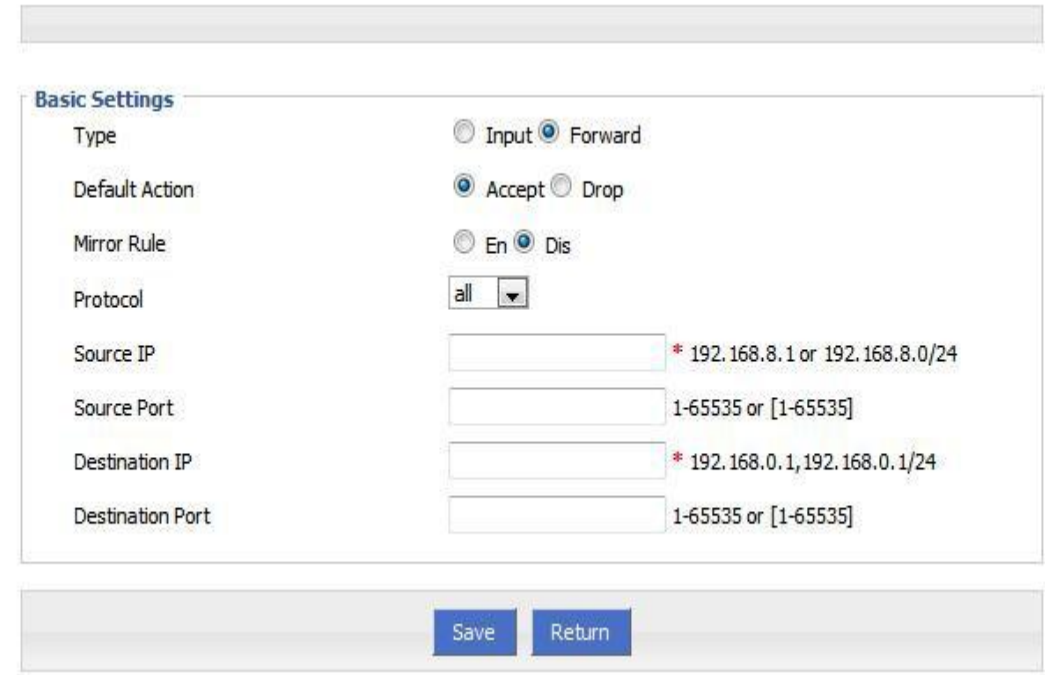


Table 5-18 IP filter parameter instruction

Parameter	Details	Operation
Type	Select a filter type, you can choose according to their needs, "Input" or "Forward" Input: whether to allow access to the router Forward: whether to allow the router forwarding	Dropdown List options
Default Action	The default action rule. You can select "Accept" or "discard" Accept: firewall to accept the package, which can be passed Discard: firewall discards the packet directly	Dropdown List options
Mirror Rule	When the filter type select "Forward", it needs to be configured Enable: On the basis of the configuration rules to add an extra source address/port and destination address/port reverse the rules Disabled: no treatment	Dropdown List options
Protocol	Protocol used by IP packets	• Dropdown List options • all • tcp • udp • icmp
Source IP	The source IP address of the packet	Manual input Format：A.B.C.D/Mask
Source Port	The source Port of the packet, when the protocol choose "icmp", it don't need to configure	Value area: 1-65535 or [1-65535], it can be a range, or a single port
When the IP Filter type select "Input"		
Destination Type	Design an IP packet access router interface	Dropdown List options • interface • any
Interface	Configure when Destination Type select "Interface", means the IP packet access the router interface	Dropdown List options • br0 • modem • eth0 • eth1

Parameter	Details	Operation
Destination Port	IP packet access router ports (when the protocol select "icmp", requires no configuration)	Value area: 1-65535 or [1-65535], it can be a range, or a single port
When the IP Filter type select "Forward"		
Destination IP	IP packet destination IP	Manual input Format: A.B.C.D/Mask
Destination Port	IP packet destination port	Value area: 1-65535 or [1-65535], it can be a range, or a single port

Step 5 Single click "save" to finish.

--END

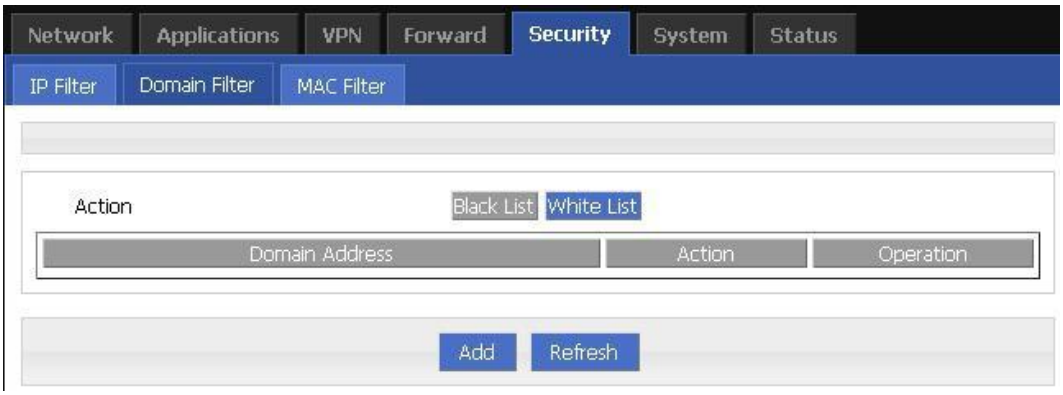
Domain Filter

Domain filter support black list and white list. It is used to forbid PCs in LAN from visit some websites or allows them to visit specific websites.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Security > Domain Filter" to open "Domain Filter" tab.

Figure 5-40 Domain filter tab



- Black list: websites in the blacklist cannot be visited. Click "black list" to forbid visiting the websites in the list.
- White lis: only the websites in the white list can be visited, while other websites cannot be visited. Click "White list" to activate it.

Step 3 Click "ADD" to add a new domain filter rule and configure domain filtering parameter.

Figure 5-41 Domain filter tab

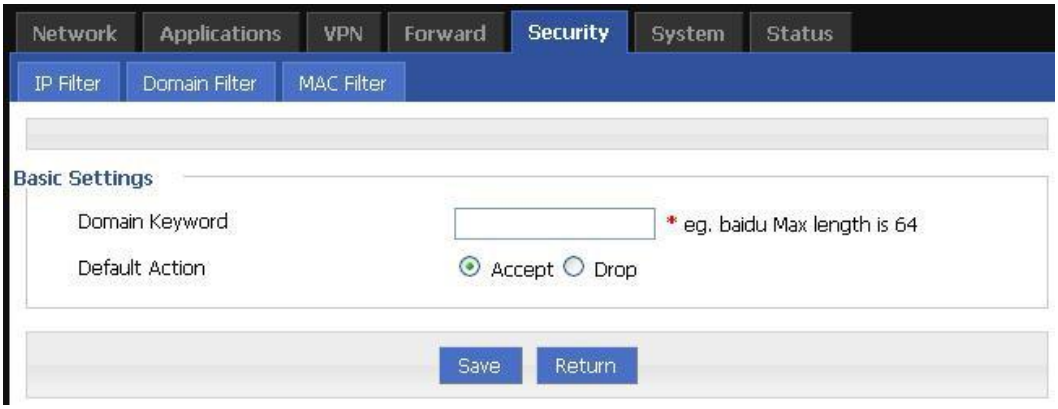


Table 5-19 Domain Filter parameter instruction

Parameter	*Details*	*Operation*
Domain keyword	Keyword of domain for filter	WORD type, max 64 digits. E.g. www.google.com, the keyword is "google".
Default action	Actions to filter the keyword	• Accept. • Drop

Step 4 Single click "Save" to finish configuring a rule.

---END

MAC Filter

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Security > MAC Filter" to open "MAC Filter" tab.

Figure 5-42 MAC Filter tab

Table 5-20 MAC Filter explanation

Parameter	Details	Operation
Input configuration		
Action	To activate MAC input filtering black list / white list.	• Blacklist: rules in blacklist cannot visit router, other MACs can visit router. • Whitelist: rules in whitelist can visit router, other MACs cannot visit router.
Forward configuration		
Action	To activate MAC forward filtering black list / white list.	• Blacklist: rules in blacklist cannot visit external network, other MACs can visit external network through router. • Whitelist: rules in whitelist can visit external network, other MACs cannot visit external network through router.

Step 3 Click "Add" to add a new MAC filter rule and configure MAC filtering parameter.

Figure 5-43 MAC Filter configuration

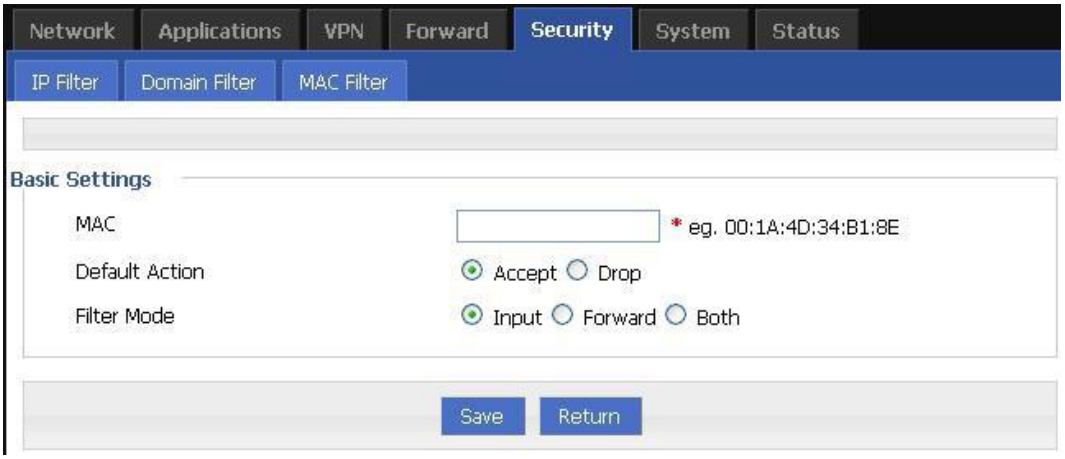


Table 5-21 MAC Filter Parameter instruction

Parameter	Details	Operation
Basic Settings		
MAC	MAC to be filtered	WORD type MAC format: XX:XX:XX:XX:XX:XX
Default Action	Default actions of the rule. Can be "accept" or "Drop": • Accept: to accept all packages from this MAC. • Drop: to drop all packages from this MAC.	To choose "accept" or "Drop"
Filter mode	To choose "Input", "Forward" or "Both". • Input: all packages visiting router. • Forward: all packages forwarded by router. • Both: both Input and forward.	To choose "Input", "Forward" or "Both".

Step 4 Single click "save" icon to finish.

---END

5.5 Forward configuration

5.5.1 Overview

Forward function of H8956 Cellular router includes NAT, Routing, dynamic routing (RIP, OSPF) (optional) and QoS (optional).

5.5.2 NAT

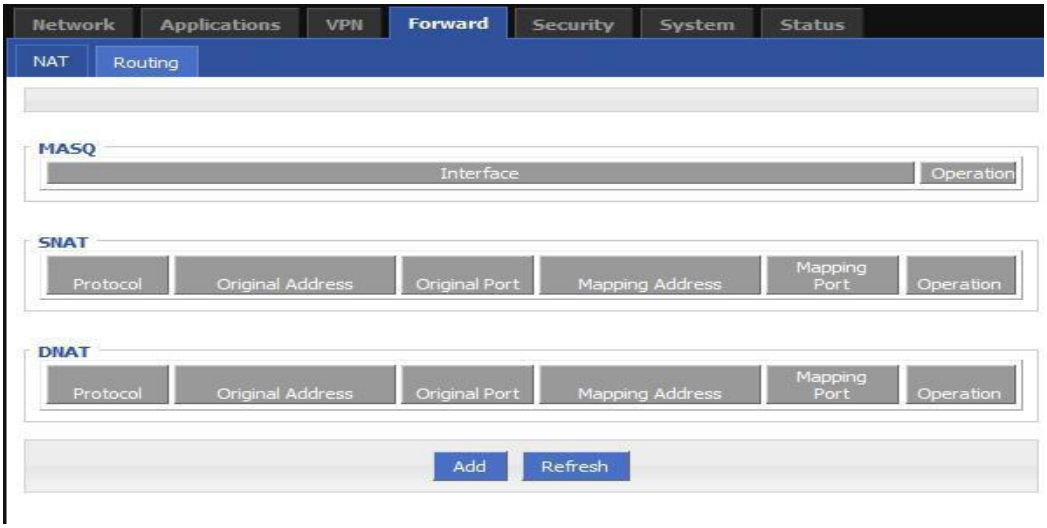
DNAT configuration rule

DNAT used to replace the destination address of packets accessing external network, router will replace the destination address of packet accessing external network into the user custom settings.

Step 1 Log-on WEB GUI of H8956 Cellular router .

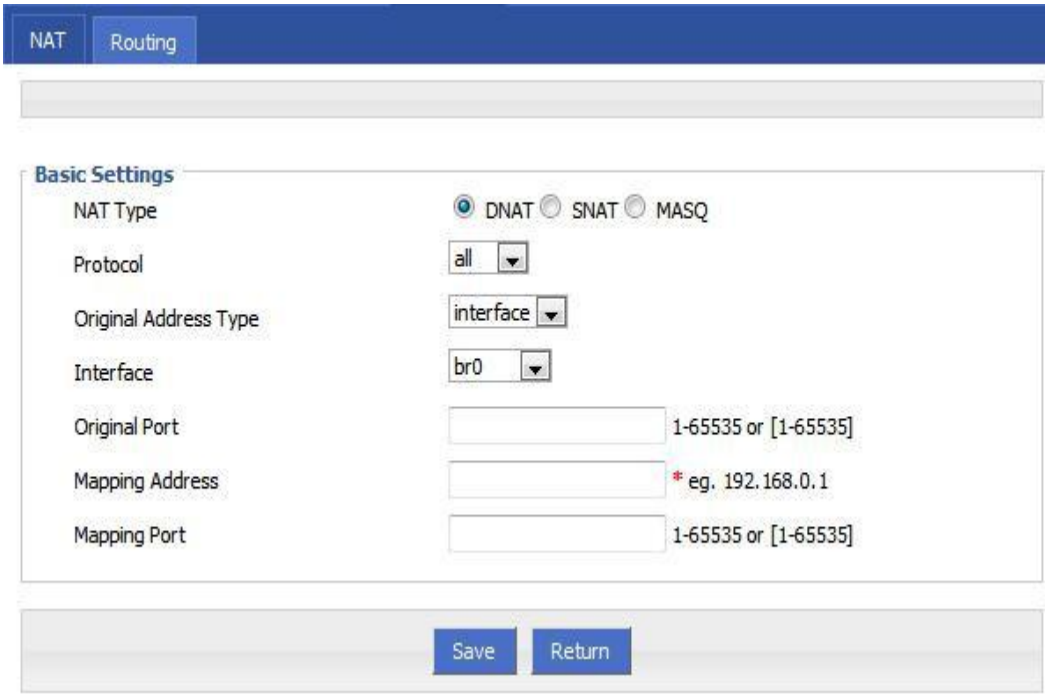
Step 2 Click “Forward > NAT” to open “NAT” tab.

Figure 5-44 NAT tab



Step 3 Click “Add” to add a new NAT rule.

Figure 5-45 DNAT rule configuration



Step 4 NAT Type select "DNAT", Configure DNAT rule parameter.

Table 5-22 DNAT Parameter instruction

Parameter	*Details*	*Operation*
Basic Settings		
Protocol	Supports "TCP", "UDP", "ICMP" or "ALL"	Select from Dropdown List
Original Address Type	The destination address of the IP packet needs to be converted	Dropdown List • interface • static
Interface (when the initial address type select "interface" , needs to be configured)	Indicates the destination address of IP packets to an interface of the router	Dropdown List • br0 • modem • eth0 • eth1
Original Address (when the initial address type select "static", needs to be configured)	The source address of IP packet, the source address needs to be converted	Manual input Format1： A.B.C.D Format2: A.B.C.D/Mask
Original port	The port of destination address need to be replaced	Value area: 1～65535

Parameter	Details	Operation
Mapping address	The new source address after destination address is replaced	e.g. 192.168.8.1
Mapping port	The port of destination address after is replaced	Value area :1～65535

Step 5 Single click “save” icon to finish.

---END

SNAT configuration rule

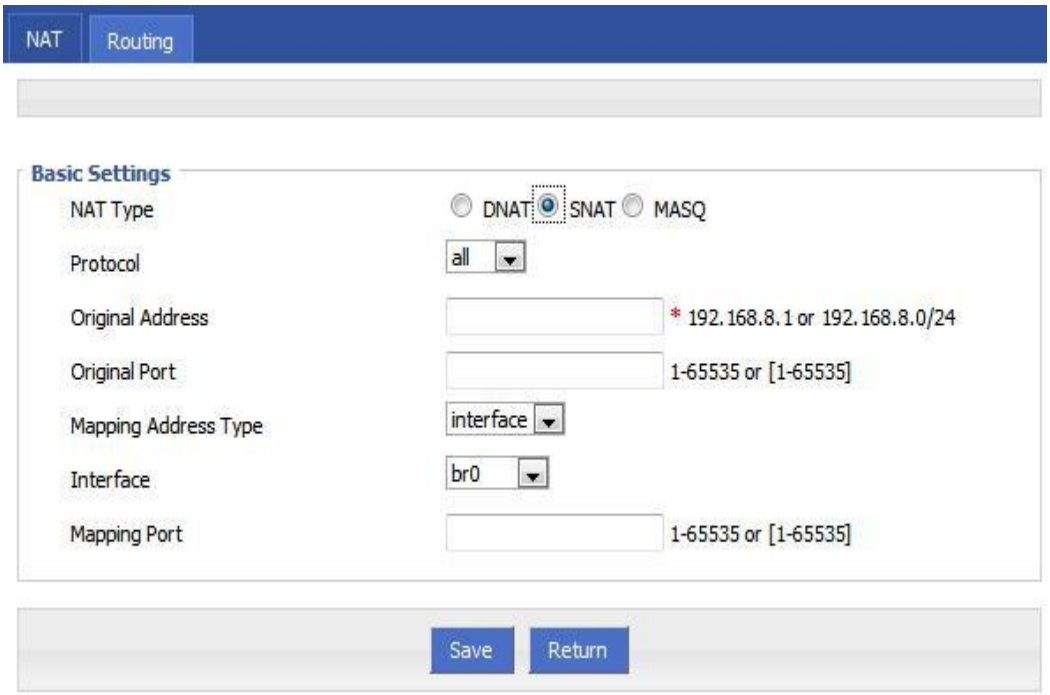
SNAT is the source address translation, and its role is to translate source address of IP packets into another address.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Forward > NAT” to open “NAT” tab.

Step 3 NAT Type select “SNAT”, Configuration interface as shown in Figure 5-47.

Figure 5-46 SNAT rule configuration



Step 4 Configure SNAT rule parameter,.

Parameter instruction as Table 5-22

Table 5-23 SNAT rule instruction

Parameter	Details	Operation
Protocol	Convert some kind of protocol packets into address	Dropdown List • all • tcp • udp • icmp
Original Address	The source address need to be replaced	Manual input Format1：A.B.C.D Format2: A.B.C.D/Mask
Original Port	The port of source address need to be replaced	Value area: 1-65535 or [1-65535], it can be a range, or a single port
Mapping Address Type	The new source address type after source address is replaced	Dropdown List • interface • static
Interface	Select the interface of the router as source address after replacement	Dropdown List • br0 • modem • eth0 • eth1
Mapping Port	The port of source address after is replaced	Value area: 1-65535 or [1-65535], it can be a range, or a single port

Step 5 Single click “save” icon to finish.

NOTE

When SNAT rule is configured port, protocol select "all", said select "tcp", "udp" two protocols; when SNAT rule is not configured port, protocol select "all", said select "tcp", "udp","icmp" three protocols.

---END

MASQ rule configuration

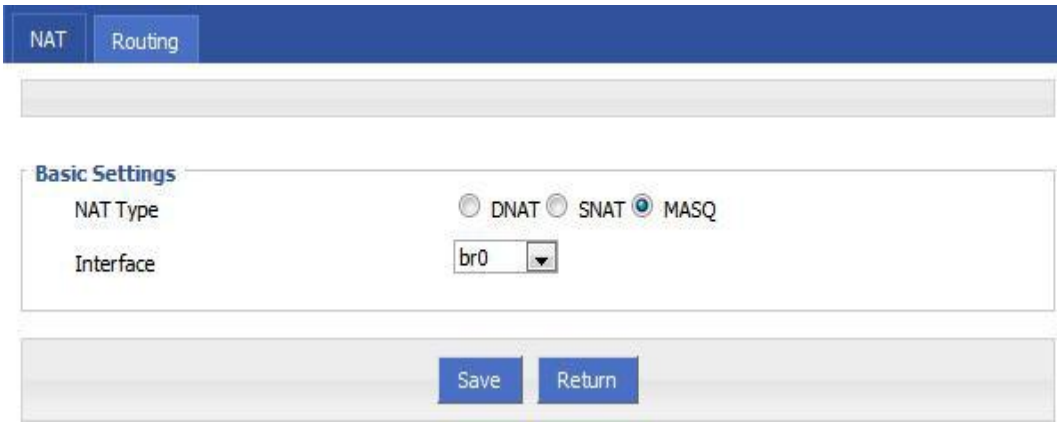
MASQ is MASQUREADE.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Forward > NAT” to open “NAT” tab.

Step 3 NAT Type select “MASQ”, Configuration interface as shown in Figure 5-48.

Figure 5-47 MASQ configuration



Step 4 Configure MASQ rule parameter.

Table 5-24 MASQ rule Parameter instruction

Parameter	*Details*	*Operation*
NAT Type	To select "MASQ"	Select "MASQ"
Interface	Interface includes: • br0: use br0 interface as commutation address between router & LAN and external network • Modem: use modem interface as commutation address between router & LAN and external network • eth0: use eth0 interface as commutation address between router & LAN and external network • eth1: use eth1 interface as commutation address between router & LAN and external network	Select from Dropdown List

Step 5 Single click "save" icon to finish.

NOTE

MASQ rule: the source address of all packets in the LAN need to be transferred into the specific ip address of the router, so the PC from the LAN can send packets out; If MASQ rule in the router will be deleted, the router LAN of the PC can not communicate with the outside.

---END

5.5.3 Static Routing

Static routing can forward packets according that the user configure specific forwarding path manually. Static Routing form is divided into static routing and policy routing, static routing

is based on the destination address as an alternative route; while policy route is based on the source address that match with the policy to forward the packets (forwarding router detects the received packet's source address, and then according to the source that match the appropriate address of policy route to forward) and policy routing priority, use numbers 3 to 252 to differentiate, the smaller number with higher priority. And there are priorities between static routing and policy routing: policy routing higher priority than static routing.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Forward > Routing” to open “NAT” tab, as Figure 5-49.

Figure 5-48 Static Routing Interface

Step 3 Click “Add” to add a new static route, configure interface as Figure 5-50 and Figure 5-51.

Figure 5-49 Static Routing Interface

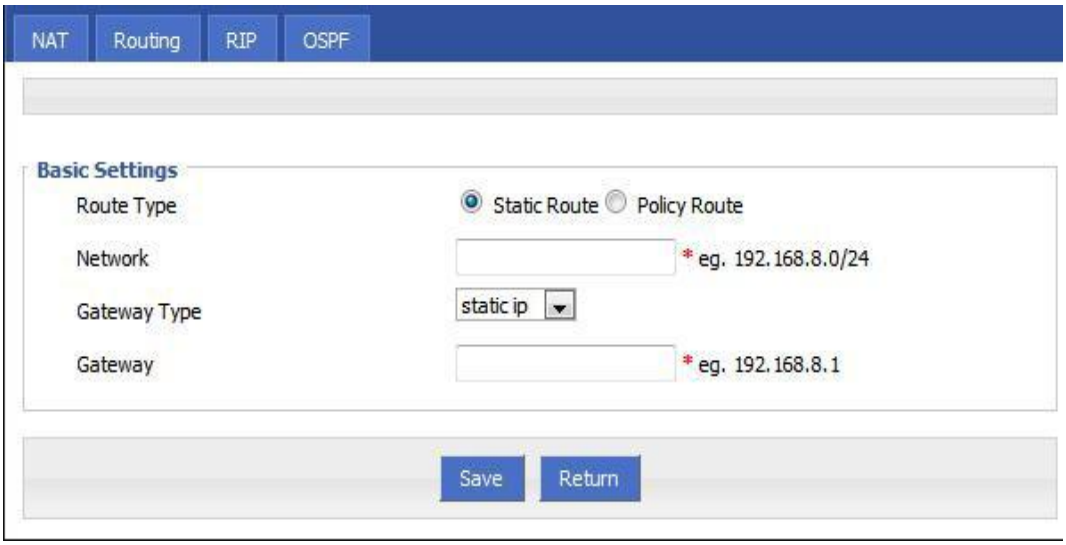
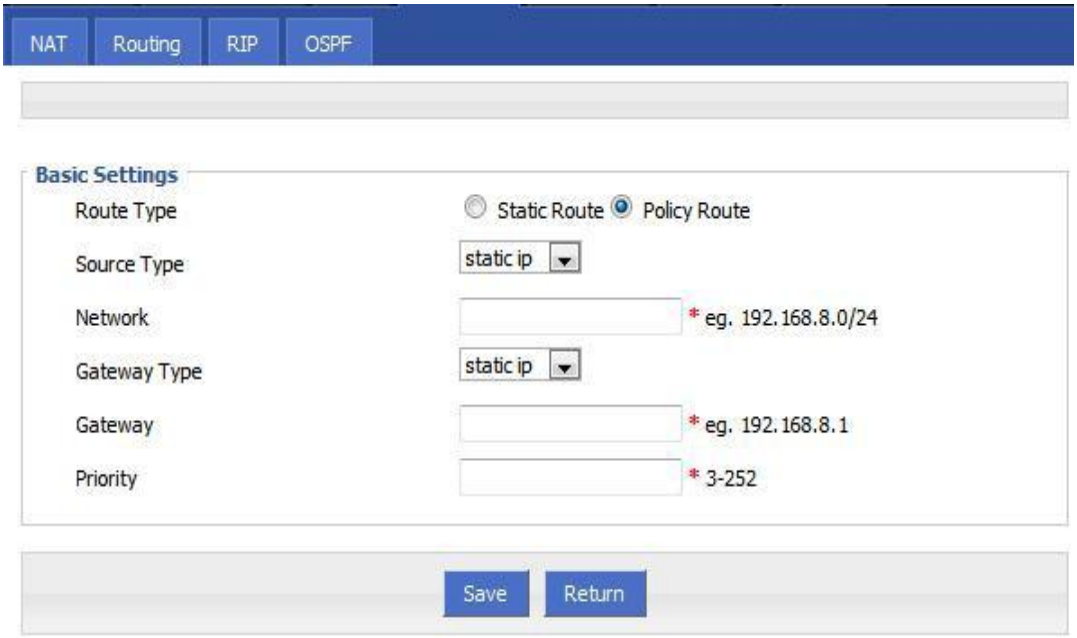


Figure 5-50 Policy Routing Interface



Parameter Instruction as Table 5-24.

Table 5-25 Static Routing Parameter Instruction

Parameter	*Details*	*Operation*
Basic Setting		
Routing Type	To select "Static Route"or"Policy Route"	Dropdown List
When Routing Type is "Static Route"		
Network	Set the destination IP address and subnet mask of static route	Manual input Format1: A.B.C.D/Mask
Gateway Type	Specify gateway type of static routing, includes: • interface • static ip	Dropdown List
Gateway	Set a next hop IP address of static route, IP address of the adjacent router interface	Dropdown List • If the gateway type select static IP, gateway need to manually input, format: A.B.C.D • If the gateway type select interface, the gateway needs to select from dropdown list
When Routing Type is "Policy Route"		
Source Type	Set source type of policy route	Dropdown List • Static IP

Parameter	Details	Operation
		• Interface
Network	When source type is static route, need to manually set network address	Manual input Format1: A.B.C.D/Mask
Source Interface	When source type is policy route, need to manually set source network address of policy router	Dropdown List • modem • eth0 • eth1
Gateway Type	Set the next hop IP of policy route	Dropdown List • static ip • interface
Gateway	When the gateway type select "Static IP" to fill in the IP address, when gateway type select the "interface", it will select the interfaces as gateway	Manual input Format1: A.B.C.D/Mask
Prority	Set policy routing priority, the priority lower the number, the higher the priority	Value area：[3,252]

Step 4 Single click “save” icon to finish the static routing setting.

NOTE

Static routing will select the route to forward according to the destination address of the packet receive from the router, if the router received the packet(source address is 1.1.1.1 destination address is 2.2.2.2), It will forward the packet to next hop according to the route which meet with the destination address(2.2.2.2).
Policy routing will forward according to the source address of the packet, if the router received the packet(source address is 1.1.1.1 destination address is 2.2.2.2), it will forward the packet to next hop according to the route which meet with the source address(1.1.1.1).
Policy routing higher priority than static routing, policy-based routing priority regardless of how much.

---END

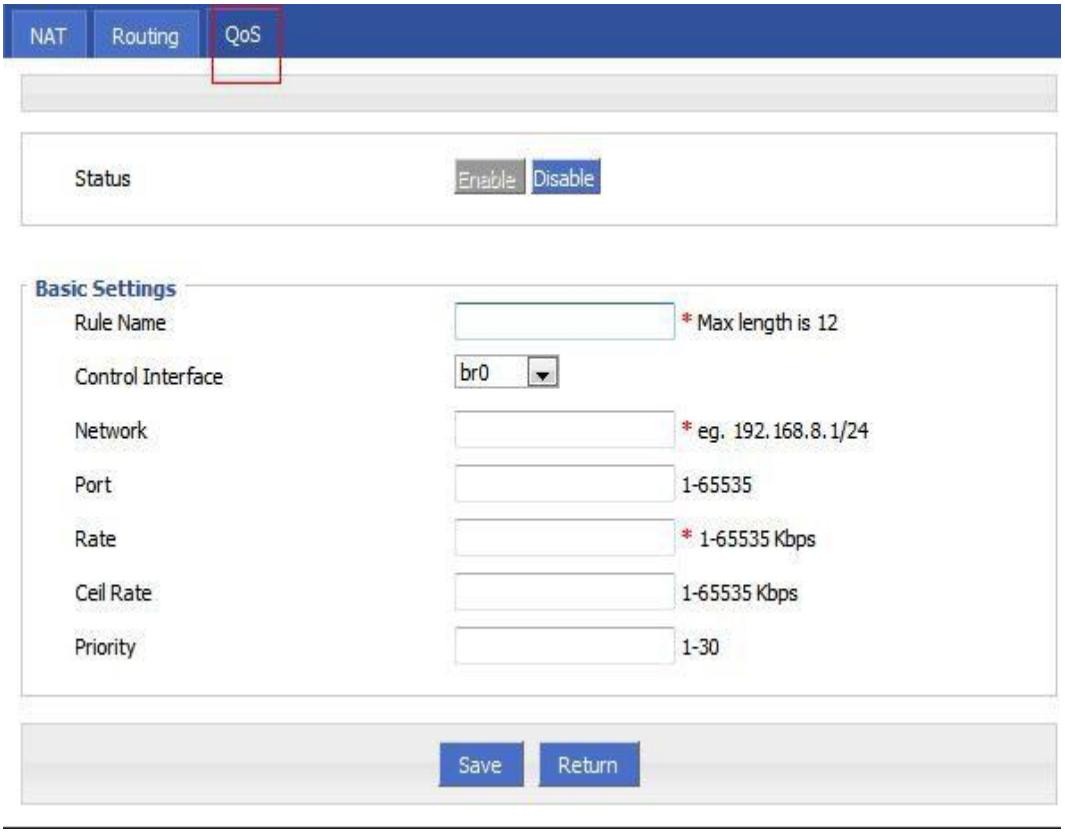
5.5.4 QoS (Optional)

QoS (Quality of Service) quality of service, is a security mechanism for the network, is a technique to solve the network bandwidth allocation and network priority and other issues. When the network is overloaded or congested, QoS to ensure that critical traffic is not delayed or dropped, while ensuring the efficient operation of the network, our H8956 Cellular Router supports custom QoS services.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Forward > QoS” to open “QoS” tab, as Figure 5-52.

Figure 5-51 QoS interface



Step 3 QOS configuration parameter, configuration parameter instruction as Table 5-25.

Table 5-26 QoS parameter instruction

Parameter	Details	Option
Status	Enable or disable QoS feature	Click the button to select
Basic Setting		
Rule Name	QoS rule name	The max to 12 characters Only set when adds a new rule and the follow-up can not be modified The rule name can not be repeated, otherwise the rule will be covered after the rule is added in front of the cover
Control Interface	The interface type of QOS, include: • br0：QOS interface is LAN • modem：QOS interface is modem	Dropdown List
Network	The network address that flow into or out QOS, the limited speed of object	Full in destination address and subnet mask Manual input

Parameter	Details	Option
		Format1: A.B.C.D/Mask
Port	The network interface of QOS	Value area: 1-65535 You can not configure the port, if not the configuration represents all ports
Rate	Transmission rate of the network address settings	Value area：1～65535 Units：Kbps
Ceil Rate	In ensuring the basic rate and the spare bandwidth, the maximum bandwidth of the network address of the communication can be obtained with higher priority will be given priority redundant bandwidth	Value area：1～65535 Units：Kbps
Priority	Set the precedence of the rules	Value area：[1,30]

Step 4 Single click “save” icon to QOS setting.

QOS is mainly for the average of user priority assigned route or a bandwidth of Internet users. If the router is connected with two subnets: 192.168.8.1/24 and 192.168.9.1/24, the router QOS can control the rate of these two subnets; If the router's bandwidth is relatively well-off, the router can be based on two subnets redundant bandwidth is first priority and high priority redundancy to meet the bandwidth, then meet low priority subnet redundancy bandwidth.

---END

5.5.5 Dynamic Routing(Optional)

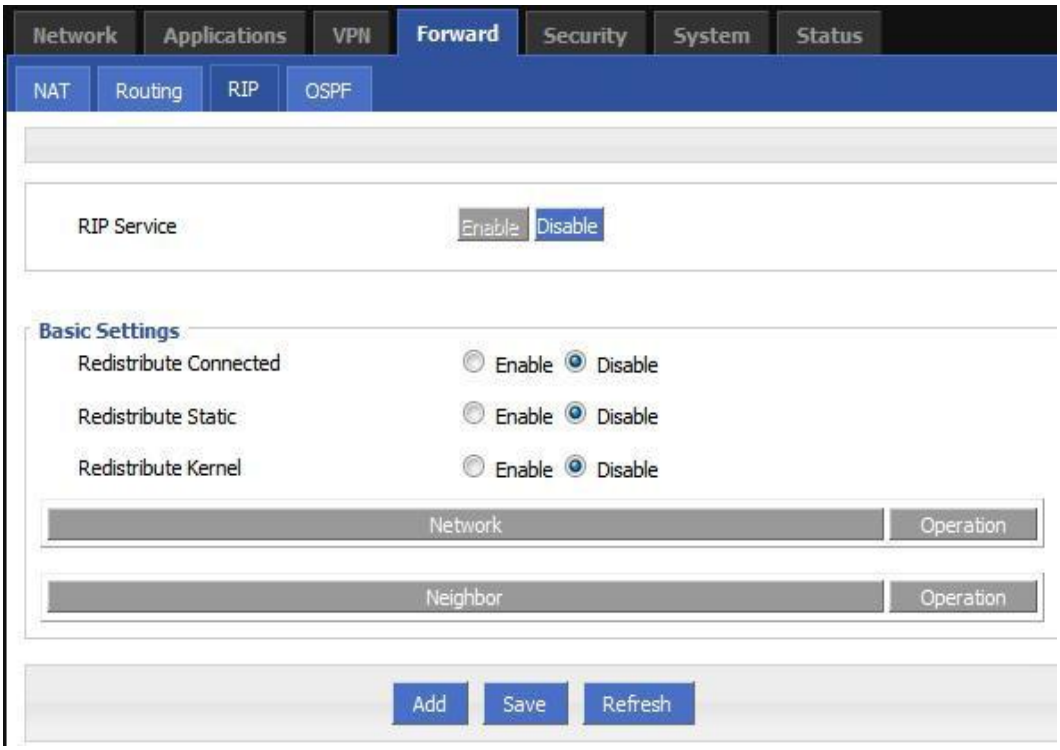
RIP configuration

RIP protocol (Routing Information Protocol) is the most widely IGP (Interior Gateway Protocol) , it was designed for the same technology used in small networks, and therefore adapt to most of the campus network and used in a continuous regional networks that the rate change is not big, H8956 Cellular router supports RIP v2 protocol. For more complex environments, generally do not use the RIP protocol. RIP business is based on whether the user needs the RIP at the factory H8956 Cellular router .

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Forward > RIP” to open “RIP” tab, as Figure 5-53.

Figure 5-52 RIP interface



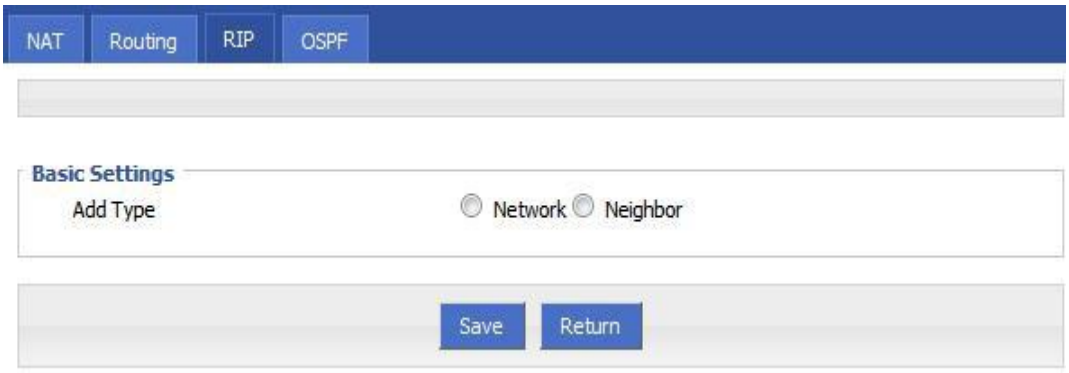
Parameter Instruction as Table 5-26.

Table 5-27 RIP Parameter Instruction

Parameter	*Details*	*Operation*
RIP Service	Enable or disable RIP Service	Click the button to select. • Enable • Disable
Redistribute Connected	Enable or disable Redistribute Connected	Click the button to select. • Enable • Disable
Redistribute Static	Enable or disable Redistribute Static	Click the button to select. • Enable • Disable
Redistribute Kernel	Enable or disable Redistribute Kernel	Click the button to select. • Enable • Disable

Step 3 Click "Add" to add a new RIP route, configuration interface as Figure 5-54.

Figure 5-53 RIP route configuration interface



Step 4 Configure RIP route parameter instruction,as Table 5-27.

Table 5-28 RIP parameter instruction

Parameter	*Details*	*Operation*
Basic Setting		
Add Type	Add the type of RIP route	Click the button to select Add Type • When it is "Network",need to configure destination network address. • When it is "Neighbor",need to configure neighbor's IP address
Network(directly connect to the router)	Add the destination network of RIP route	Add the destination network of RIP route Format: A.B.C.D/Mask
Neighbor(directly connect to the router)	Add the neighbor's IP address of RIP route	Add the neighbor's IP address of RIP route Format: A.B.C.D

Step 5 Single click "save" icon to RIP route setting.

NOTE

RIP is an interior gateway protocol. In the national networks (such as the current Internet) , has a lot for the entire network routing protocols. Only adjacent routers exchange information. If the communication between the two routers do not go through another router , the two routers are adjacent. RIP agreement, without the exchange of information between non-adjacent routers.

Routers exchanging information is all the information currently known to the router . That is its own routing table. At a fixed time to exchange routing information (such as every 30 seconds) , then the router receives the routing information to update the routing table.

RIP protocol "distance" also known as " hops " (hop count), because each through a router hop count is incremented . RIP is considered a good route it through a small number of routers , namely, " a short distance ." RIP allows a path can contain up to 15 routers. Therefore, the "distance" equal to 16 hop which is equivalent unreachable. RIP visible only for small Internet.

---END

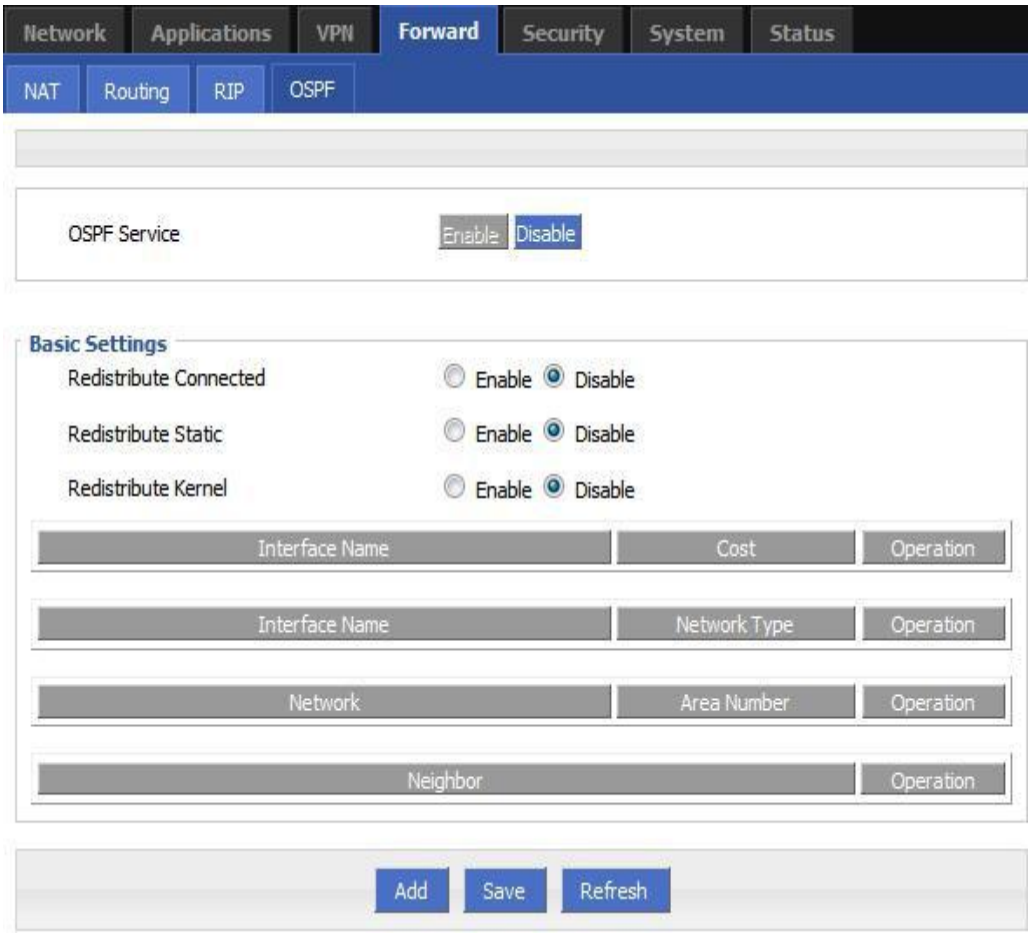
OSPF configuration

OSPF (Open Shortest Path First) protocol is one of the (Interior Gateway Protocol), the most widely used IGP, for a single AS (autonomous system) in the routing decisions for large networks. OSPF business can be based whether the user needs to be configured at the factory H8956 Cellular router .

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Forward > OSPF" to open "OSPF" tab, as Figure 5-55.

Figure 5-54 OSPF Interface



OSPF parameter instruction as Table 5-28

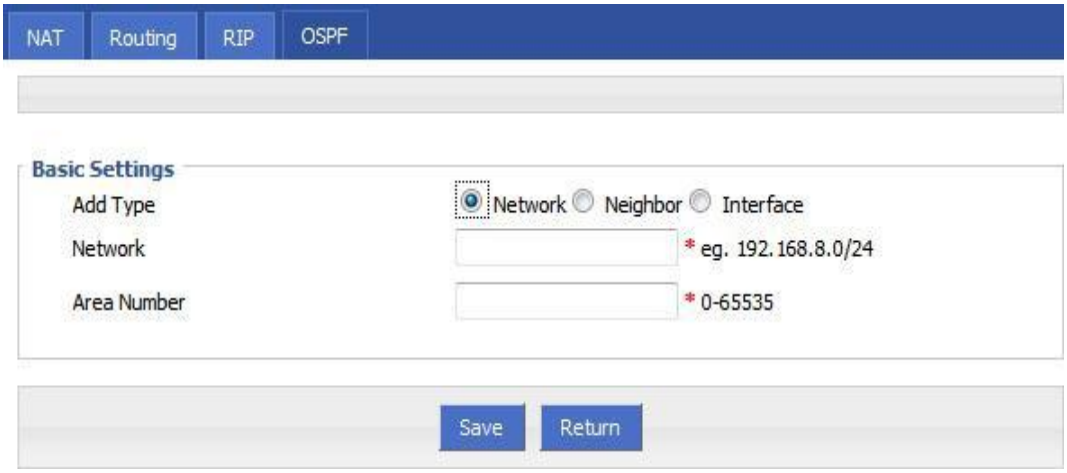
Table 5-29 OSPF parameter instruction

Parameter	*Details*	*Operation*
OSPF Service	Enable or disable OSPF Service	Click the button to select • Enable • Disable

Parameter	Details	Operation
Redistribute Connected	Enable or disable Redistribute Connected	Click the button to select • Enable • Disable
Redistribute Static	Enable or disable Redistribute Static	Click the button to select • Enable • Disable
Redistribute Kernel	Enable or disable Redistribute Kernel	Click the button to select • Enable • Disable

Step 3 Click "Add" to add a new OSPF route, configuration interface as Figure 5-56.

Figure 5-55 OSPF route configuration interface



Step 4 Configure RIP route parameter instruction, as Table 5-29.

Table 5-30 OSPF route parameter instruction

Parameter	Details	Option
Add Type	Add the type of OSPF route	Click the button to select Add Type • Network • Neighbor • Interface
• When Add Type is "Network",		
Network	Set the network address as ospf sending address	Manual input Format1: A.B.C.D/Mask

AS Number	Used to identify the network (only the routers with the same domain address can exchange routing information)	Manual input Value area:[0,65535]
When Add Type is “Neighbor”,		
Neighbor	The router can reach in the next hop	Manual input Format1: A.B.C.D/Mask
When Add Type is “Interface”,		
Interface Name	The interface of the router	Dropdown List • br0 • modem • eth1 • eth0
Interface Attribute	Configure the router interface attribute, include cost and network	Click the button to select • cost • network
Cost	Configure the cost of the router interface, used to learn routing table	Manual input Value area:1-65535
Network Type （when the interface attribute is network)	Configure the network type of the router interface	Dropdown List • broadcast • non-broad • point-to-multipoint • point-to-point

Step 5 Single click “save” icon to OSPF route setting.

Step 6 Single click “save” icon to finish.

NOTE

OSPF is a link-state (Link-state) routing protocol, commonly used for the same routing domain. Here, the routing domain is an autonomous system, which refers to the routers can switch routing information through a unified network switching or routing protocol routing policy in the AS, all OSPF routers maintains an identical description of the database structure AS, which is stored in the database link status information corresponding routing domain, OSPF router is through this database to calculate its OSPF routing table.

As a link-state routing protocol, OSPF link state broadcast data LSA (Link State Advertisement) sent to all routers in an area, which is different from the distance vector routing protocols. Distance vector routing protocol passed some or all rouing information of the routing table to the adjacent routers.

---END

5.6 VPN configuration

5.6.1 Overview

H8956 Cellular router supports VPN (Virtual Private Network) including L2TP/PPTP/GRE/IPIP/IPSEC. What's more, it supports VPN OVER VPN, e.g. GRE over IPSec, IPSec over PPTP/L2TP/GRE/IPIP.

5.6.2 VPDN configuration

VPDN stands for Virtual Private Dial-up Networks. Now VPDN supports L2TP and PPTP

Step 1 Log-on WEB GUI of H8956 Cellular router .

See "5.2.1 Login WEB GUI

Step 2 Click "VPN > VPDN" to open "VPDN" tab.

Figure 5-56 VPDN configuration

Step 3 Click "Add" to add a new VPDN rule.

Figure 5-57 VPDN rule configuration

Step 4 Configure VPDN rule parameter.

Table 5-31 VPDN rule parameter instruction

Parameter	*Details*	*Operation*
VPDN service	To enable or disable the VPDN rule	Click "Enable"
Basic Settings		
Interface name	Name of this VPDN rule	Cannot be modified after save.
protocol	VPDN protocol includes • L2TP • PPTP	Select from Dropdown List, cannot be modified after save.
Service IP or Domain	IP or domain of server to be visited	To input the IP or domain of server to be visited.
Username	Username of server to be visited	To input the username.
Password	Password of server to be visited	To input password.
Advanced settings	Advanced parameter of PPP link	Click "Display"

Step 5 Single click "save" icon to finish.

After a VPDN rule is added, router will build VPN communication with service address automatically. To see the tunnel status, click “View” in “Tunnel” tab.

Figure 5-58 L2TP tunnel status

---END

5.6.3 Tunnel configuration

Tunneling through a network infrastructure to transfer data between the network mode. The entire transfer process, the logic path encapsulated packet delivery over the public Internet through which called tunnel.

GRE and IPIP Tunnel configuration supports two modes.

GRE (Generic Routing Encapsulation, Generic Routing protocol encapsulation) specifies how to use a network protocol to another network protocol encapsulation method. The main purpose of the GRE protocol, there are two: internal protocol encapsulation and private address encapsulation.

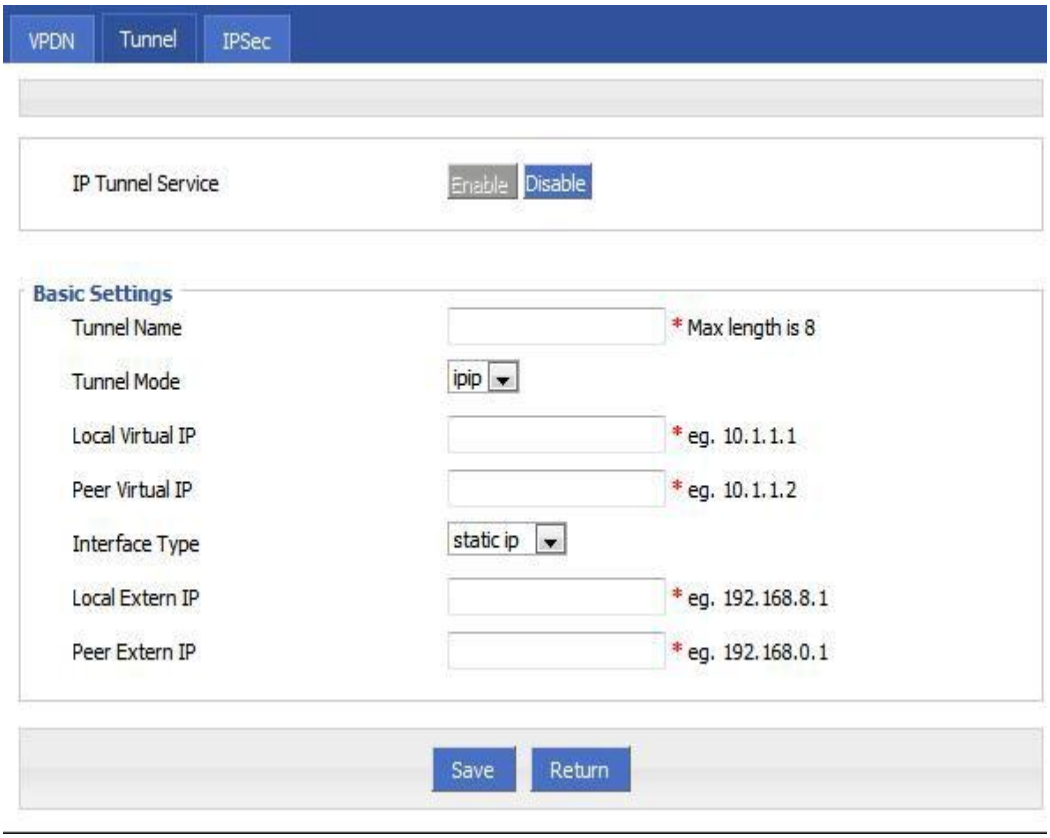
IPIP tunnel is a simple agreement between two routers for IP packet encapsulation, IPIP tunnel interface will be like a physical interface in the interface list, many routers including Cisco, basically support the agreement. This agreement enables multiple network distribution possible.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “VPN > Tunnel” to open “Tunnel” tab.

Step 3 Click “Add” to add a new tunnel.

Figure 5-59 Tunnel configuration



Step 4 Configure Tunnel rule parameter

Table 5-32 Tunnel rule parameter instruction

Parameter	*Details*	*Operation*
IP Tunnel Service	To enable or disable IP tunnel service	Click "Enable"
Basic Settings		
Tunnel name	Name of the tunnel, cannot be modified after save	Input the name of tunnel
Tunnel Mode	Tunnel mode: • gre • ipip	Select from Dropdown List
Local virtual IP	Virtual IP address of local tunnel	Format: interface type A.B.C.D/M.
Peer virtual IP	Virtual IP address of peer tunnel	Format: interface type A.B.C.D/M.
Interface type	To choose "interface" or "static IP"	Select from Dropdown List.

Parameter	Details	Operation
Local Extern interface	This parameter will need to be set if “interface” is selected in “interface type”. Choose any connected interface as external interface	Select from Dropdown List.
Local extern IP	This parameter need to be set if “static IP” is selected for “interface type”. It is to set IP address to external network	Format: interface type A.B.C.D/M.
Peer extern IP	External interface IP of counterpart network tunnel. Usually a public IP address, also can be a LAN IP	Format: interface type A.B.C.D/M.

Step 5 Single click “save” icon to finish.

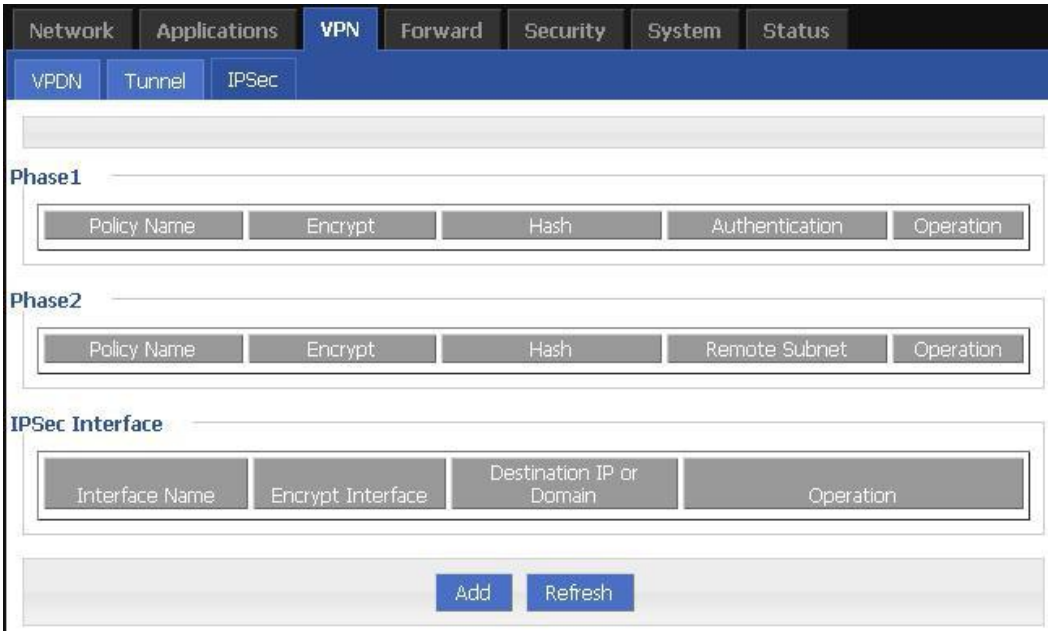
---END

5.6.4 IPSec configuration

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “VPN > IPSec” to open “IPSec” tab.

Figure 5-60 IPSec tab



Step 3 Click “Add” to add a new IPSec rule.

There are 3 phases for IPSec configuration:

1. Phase 1 parameter

Figure 5-61 IPSec phase 1 configuration

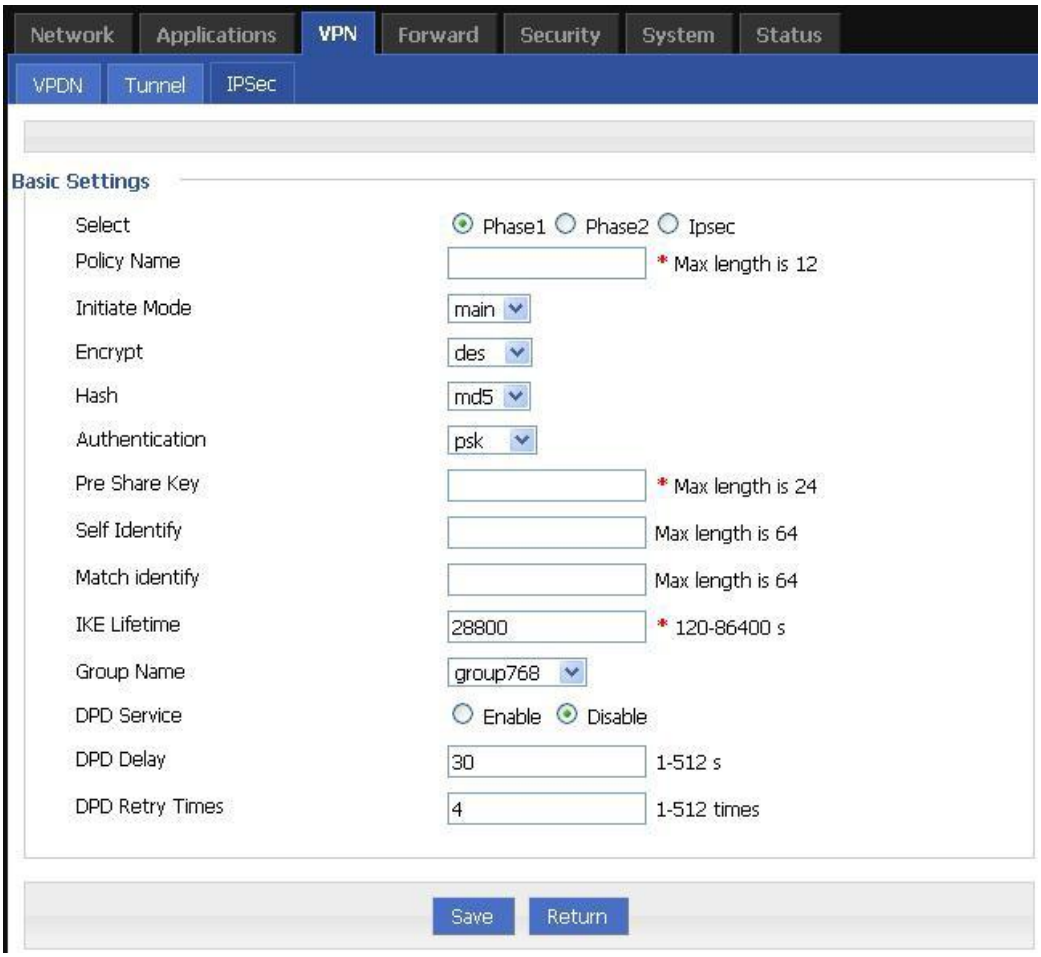


Table 5-33 IPSec Phase 1 Parameter instruction

Parameter	Details	Operation
Basic Settings		
Select	To select which phase of IPSec, phase 1, phase 1 or phase IPSec	Select “Phase 1”
Policy Name	Name of phase 1, mainly to match phase “IPSec”	To input the name of phase 1. Cannot be changed after save.
Initial Mode	To choose “main” or “aggr”	Select from Dropdown List, “aggr” is recommended
Encrypt	Supports 3des and aes	Select from Dropdown List

Parameter	Details	Operation
Hash	Supports md5 and sha1	Select from Dropdown List
Authentication	To select authentication	Select from Dropdown List, presently only “PSK” supported
Pre Share Key	To set pre share key	Max 24 letters
Self Identify	To set the self ID of IPSec	To input the ID, need to match the ID of other side
Match Identify	To input the match ID of IPSec	To input match ID, need to match ID of other side
IKE Lifetime	Life time of IKE key	Value area: 120～86400 Unit: second
Group Name	Select group	Select from Dropdown List
DPD Service	To enable DPD service	To click “Enable”
DPD Delay	To set DPD check interval time	Manual input Value area : 1～512 Unit: second
DPD Retry Times	Max times to continuous DPD check failure.	Manual input Value area: 1～512

Single click “save” icon to finish phase 1 configuration.

2. Phase 2 parameter.

In above parameters, “Initial Mode”, “Encrypt”, “Hash”, “Authentication” “Pre Share Key”, “IKE Lifetime”, “Group Name” need to match parameter of IPSec server. “Self Identify” and “Match Identify” needs to match “match Identify” and “Self Identify” of IPSec sever respectively.

Figure 5-62 IPSec phase 2 configuration

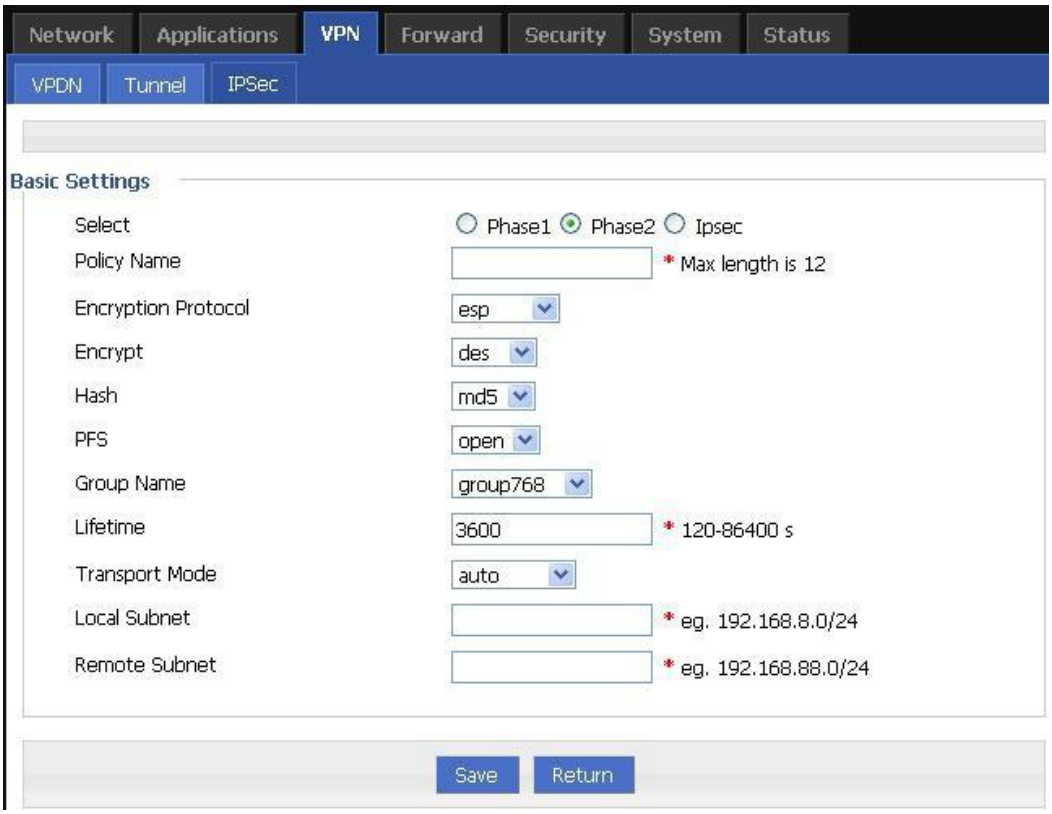


Table 5-34 IPSec Parameter instruction

Parameter	Details	Operation
Basic Settings		
Select	To select which phase of IPSec, phase 1, phase 1 or phase IPSec	Select "Phase 2"
Policy Name	Name of phase 2, mainly to match phase "IPSec"	To input the name of phase 2. Cannot be changed after save
Encryption Protocol	Supports esp, ah, ah+esp	Select from Dropdown List
Encryption	Supports des, 3des, aes	Select from Dropdown List
Hash	Supports md5 and sha1	Select from Dropdown List
Group Name	Need to configured when PFS is "open", to set the key length of SA initial of phase 2	Select from Dropdown List

Parameter	Details	Operation
PFS	To open or close PFS	Select from Dropdown List
Lifetime	IPSec SA key life time	Value area: 120～86400 Unit: second
Transport Mode	Supports tunnel, transport and auto.	Select from Dropdown List
Local Subnet	Set local subnet	No need to set for “transport” mode,only for “auto” and “tunnel”. Format: A.B.C.D/M
Remote Subnet	To set local subnet	No need to set for “transport” mode,only for “auto” and “tunnel”. Format: A.B.C.D/M

Single click “save” icon to finish phase 2 setting.

3. “IPSec” parameter configuration

Figure 5-63 IPSec configuration tab

To configure “IPSec” parameter, and then click “Save”.

Table 5-35 IPSec Parameter instruction

Parameter	Details	Operation
Basic Settings		
Select	To select which phase of IPSec, phase 1, phase 1 or phase IPSec	Select "IPSec"
Interface Name	Name of this phase	Input name
Match Phase1	To select a matching name of "phase1"	Select from Dropdown List.
Match Phase2	To select a matching name of "phase2"	Select from Dropdown List
Destination IP or Domain	counterpart IPSec server IP or domain	Input counterpart IPSec server IP or domain
Encryption Interface	To select binding interface of IPSec. to bind VPDN/modem/br0 as local interface of IPSec initial can support IPSec OVER VPDN. In addition, after binding, IPSec rule will change as per the charge of binded interface. Thus can resume link of IPSec dialing interface and keep IPSec linked as soon as possible	Select from Dropdown List

---END

5.7 System configuration

5.7.1 Overview

"System" can let you know the status of router, firmware upgrading and other maintenance.

5.7.2 Local Log

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "System > Local Log" to open "Local Log" tab.

Figure 5-64 Local Log tab

Step 3 Select type of "Local Log" and then click "View" to see log.

Click "Clear" to clear the log info in the "Log Table", and click "Export" to export log in your local PC.

There are 3 types log:

- Message: system log, to record the running log of router, usually for most of users.
- Application: application program log, to record the Open or close of some application programs.
- Kernel: kernel log of router, usually for R&D engineers.

NOTE

To see "local log", "remote log" must be enabled.

---END

5.7.3 Remote Log

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "System > Remote Log" to open "Local Log" tab.

Figure 5-65 Remote Log tab

Step 3 Configure "Remote Log" parameter.

Table 5-36 Remote log parameter instruction

Parameter	*Details*	*Operation*
Log Status	To enable or disable remote log	Click "Enable"
Remote IP or Domain	IP address or Domain of remote log server	To input the IP address or domain to receive log
Remote Port	Port of remote log serve	Default port: 514

Step 4 Single click "save" icon to finish "Remote Log" parameter configuration.

NOTE

A software tool Syslog is use to receive remote log in server. Syslog can be downloaded at website of Hongdian www.hongdian.com.

---END

5.7.4 Clock

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "System > Clock" to open "Clock" tab.

Figure 5-66 “NTP” Time Synch.

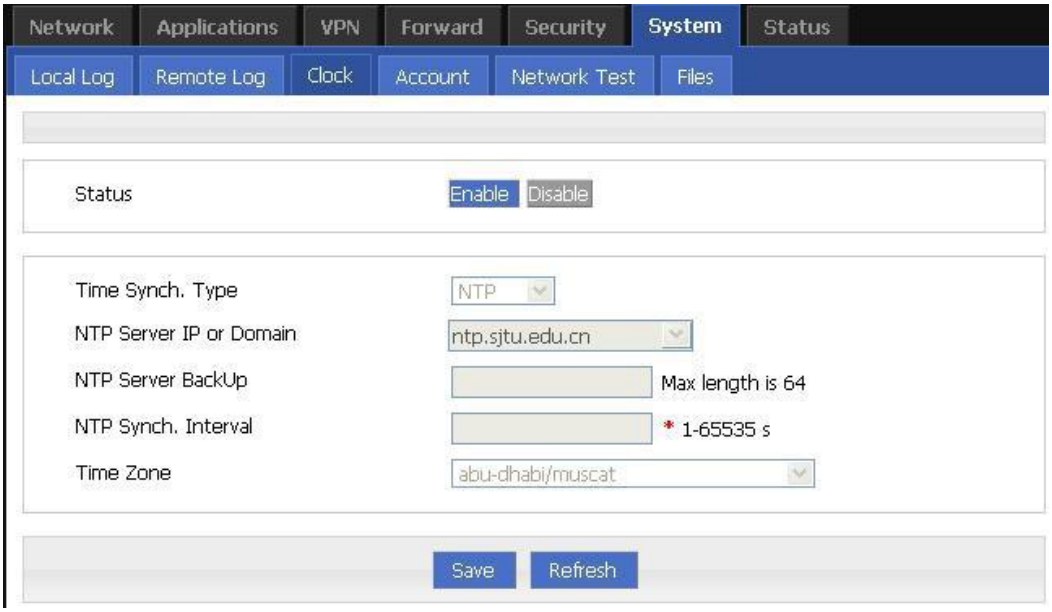
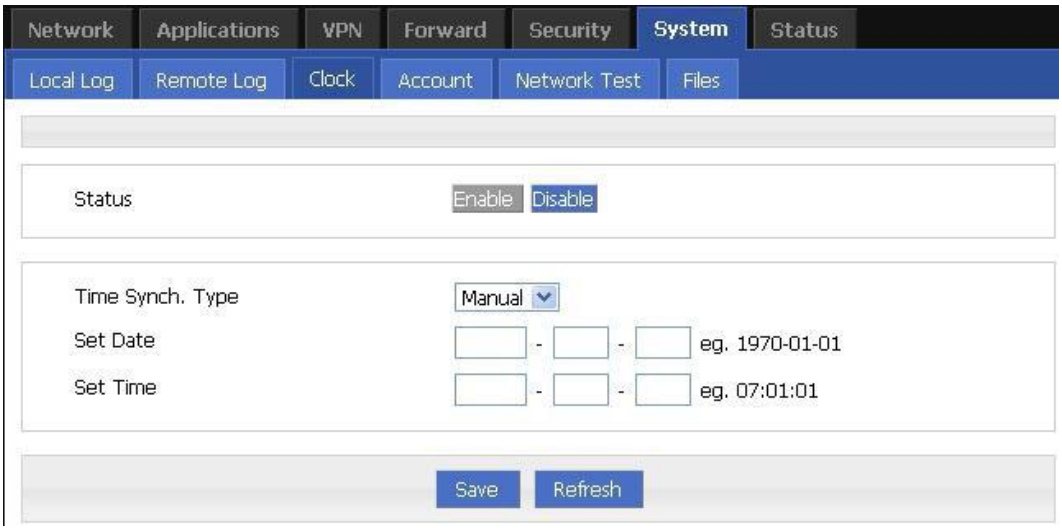


Figure 5-67 Manual Time Synch. Type



Step 3 Set “clock” parameter .

Table 5-37 Clock Parameter instruction

Parameter	*Details*	*Operation*
Status	To enable to disable Time Synchronization service	To click “Enable” or “Disable”
Time Synch. Type	Type to synchronize system time	Select “NTP” or “Manual”

When select "NTP" in "Time Synch. Type"		
NTP Server IP or Domain	IP or domain of NTP server	Select from Dropdown List
NTP Server Backup	Backup NTP server	Manual input server domain or IP address
NTP Synch. Interval	Interval of NTP to check time with Server. E.g every 10 minutes	Value area: 1～65535 Unit: second Default: 600 s
Time Zone	Time Zone	Select from Dropdown List
Time Zone Number	For "Custom" option in "Time Zone". E.g +8 or -4	WORD type
When select "Manual" in "Time Synch. Type"		
Set Date	To set date	YYYY-MM-DD e.g 1970-01-01
Set Time	To set time	HH:MM:mm Eg. 07:01:01

Step 4 Single click "save" icon to finish.

---END

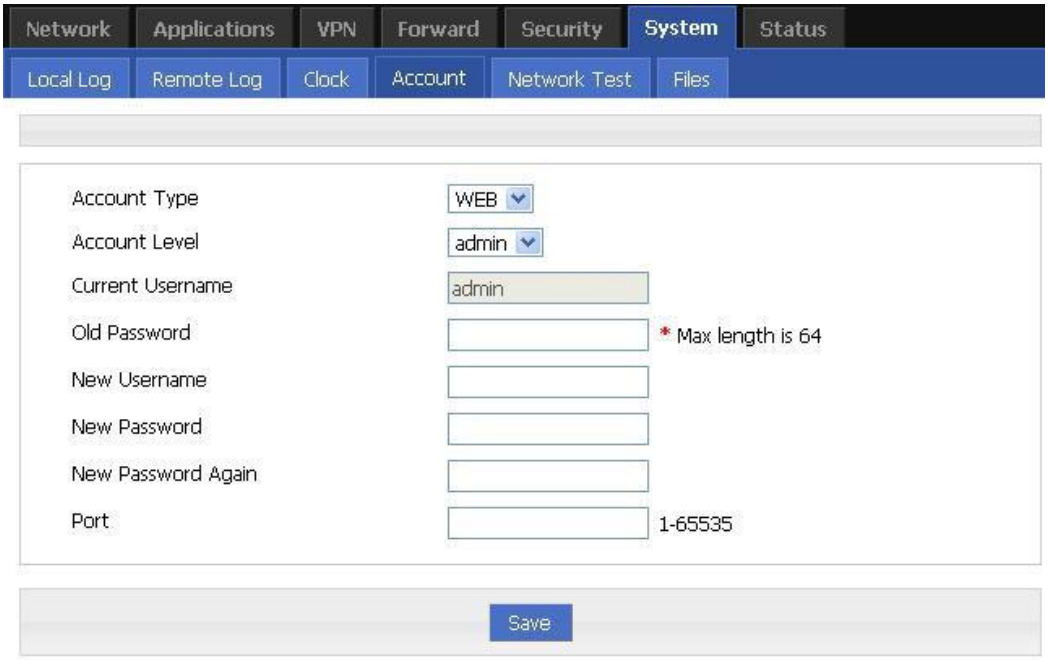
5.7.5 Account

"Account" is to change username/password, change web port and forbid other users to visiting the router.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "System > Account" to open "Account" tab.

Figure 5-68 Account tab



Step 3 Set account parameter .

Table 5-38 Account parameter instruction

Parameter	*Details*	*Operation*
Account Type	Visit the router on web	Select from Dropdown List
Account Level	Level of account to login router	Select from Dropdown List • Admin: can view and change the parameter. • Guest: can view parameter and export log and use "Network Test".
Current Username	Current username	Showing user name
Old password	Current password	To input current PW
New Username	New username	Manual input, max 64 word type.
New Password	New password	Manual input, max 64 word type.
New password again	To confirm the new password	Manual input, max 64 word type.
Port	Web port to login router	Manual input Value area 1～65535 Default: 80

Step 4 Click “Save” to finish configuration. After saving, user needs to login again.

---END

5.7.6 Network Test

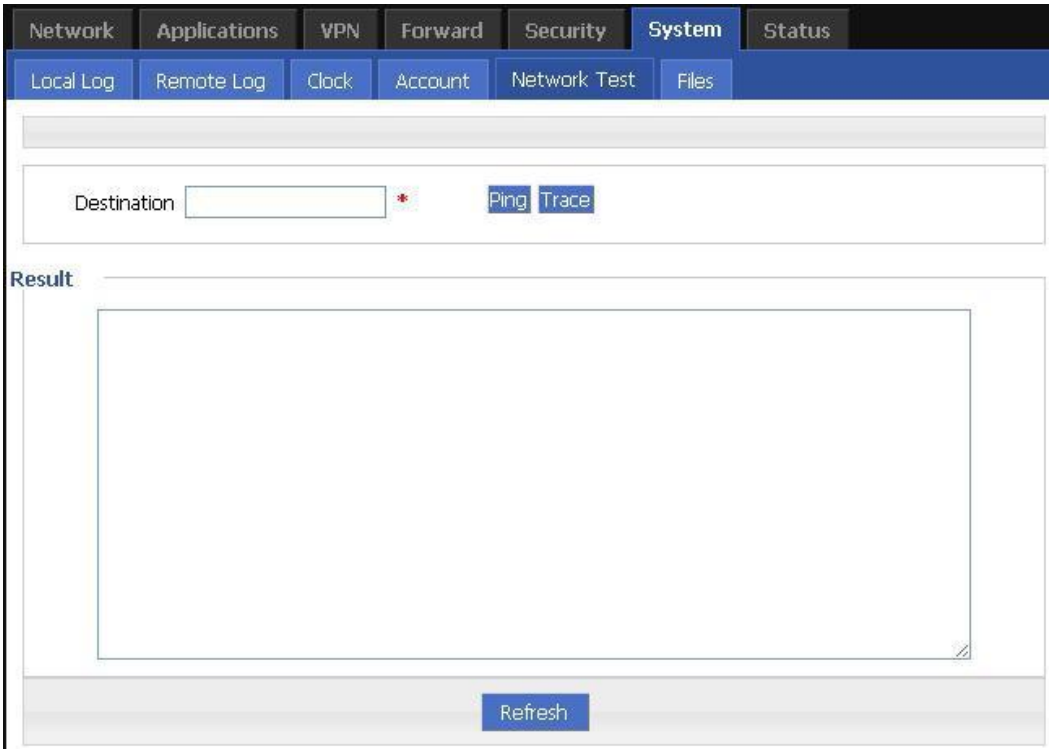
Network Test

This function includes Ping function and Trace router function.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “System > Network Test” to open “Network Test” tab.

Figure 5-69 Network Test Tab



Step 3 Input IP address or domain to be tested in “Destination”, click “Ping, to check whether the router can be linked with destination.

Table 5-39 Network Test Parameter instruction

Parameter	*Details*	*Operation*
Destination	To input IP address or domain to be tested	Input IP address or domain to be tested
Ping	To use Ping to test link	Click “Ping”
Trace	To use Trace command to test hops	Click “Trace”

Parameter	Details	Operation
	from the router to destination	
Result	Test result	

---END

5.7.7 Files

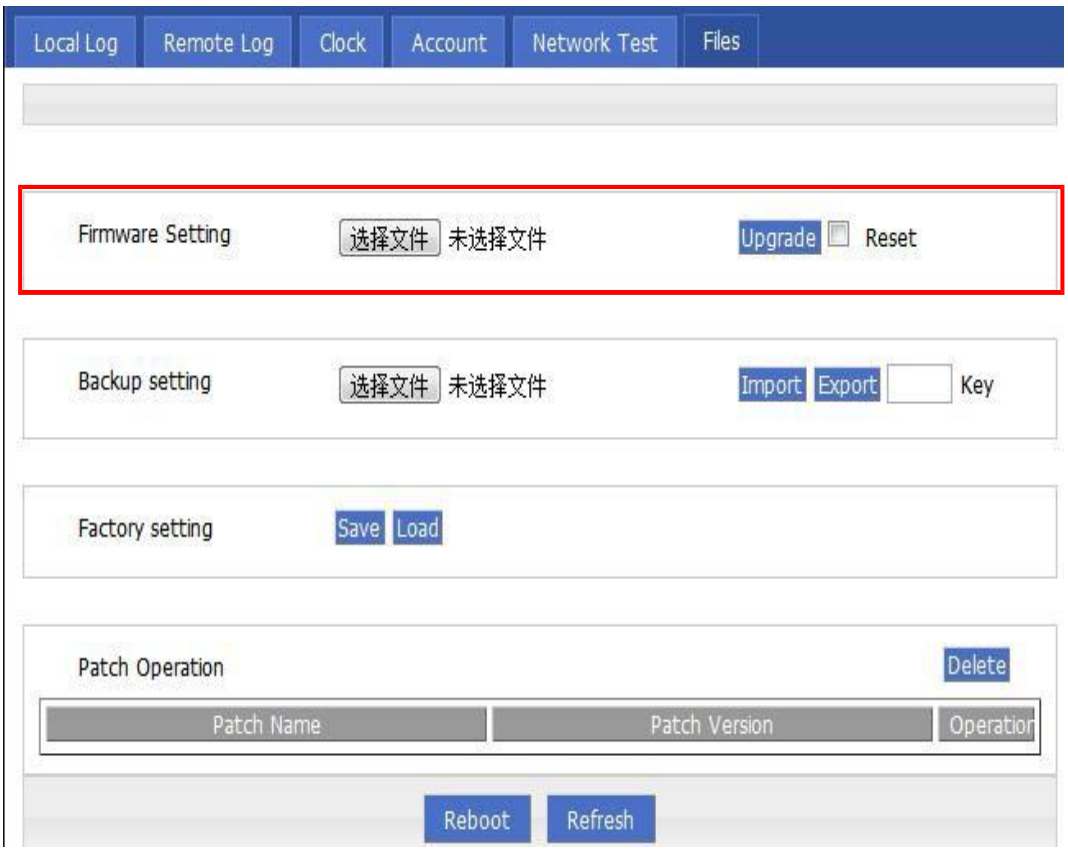
Firmware Setting

H8956 Cellular router supports upgrade firmware locally.

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “System > Files” to open “Files” tab.

Figure 5-70 Files tab



NOTE

If “reset” is selected, all parameters will be reset to factory setting.
In upgrading, don’t close the page.
Upgrading files is suggested not to exceed 6MB. If larger than 6MB please use “CFE MINI WEB update”.

Step 3 Click “Browse” to select upgrading file and then click “Upgrade”.

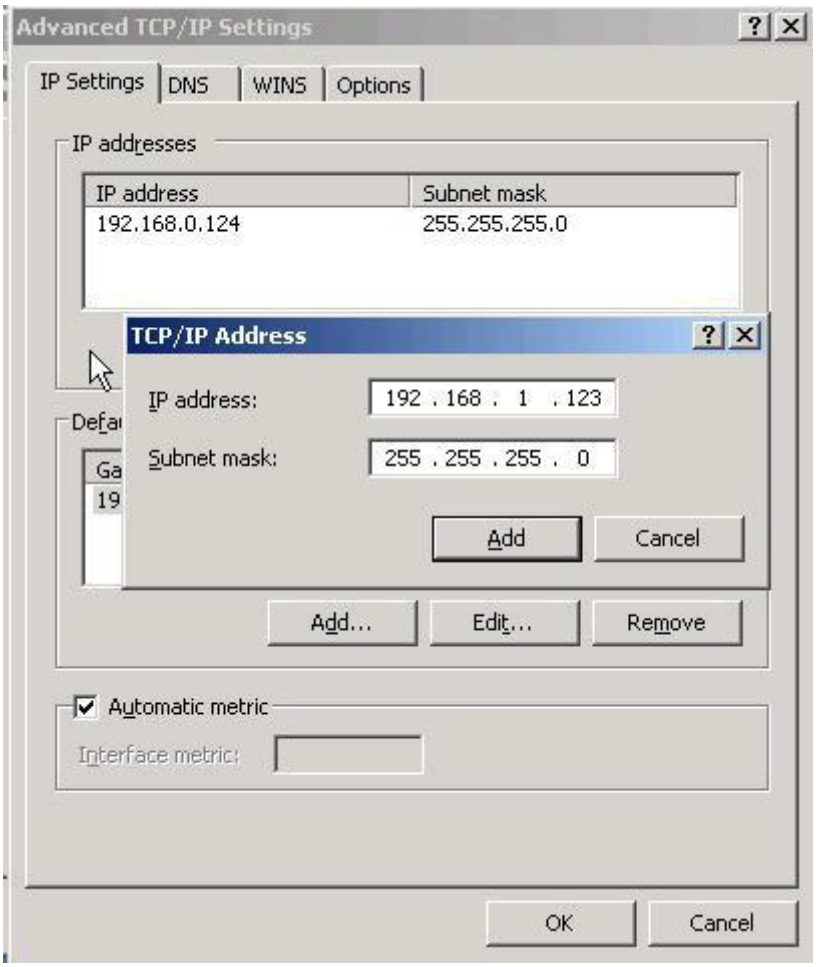
---END

CFE mode upgrading

If upgrading file is larger than 6MB, CFE mode upgrading shall be used to upgrade.

Step 1 Add an IP address 192.168.1.

Figure 5-71 Add an IP address



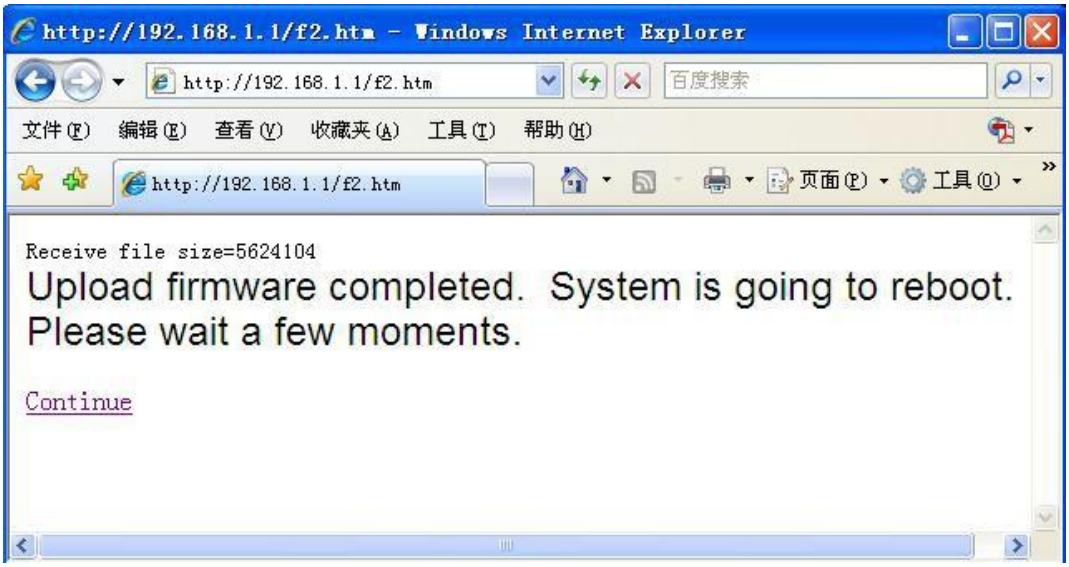
Step 2 Press the RESET/DEF interface. Do not release it. Hold it, meanwhile power on router, till 30 seconds,and connection to PC is built properly. Then release RESET/DEF interface.

Step 3 Input 192.168.1.1 in your browser, click “enter” you will see following page. If not, start over again from step 1.

Figure 5-72 CFE mode upgrading

Step 4 Click "Browse" to select upgrading file, and then click "Upload" to begin upgrading.

Figure 5-73 CFE upgrading page



Upgrading will need 4-6 minutes, if RUN light is on, upgrading is OK.

TIP

*You can also PING br0 address on your PC (eg. **ping 192.168.1.1 -t**). if Ping ok, upgrading is OK.*

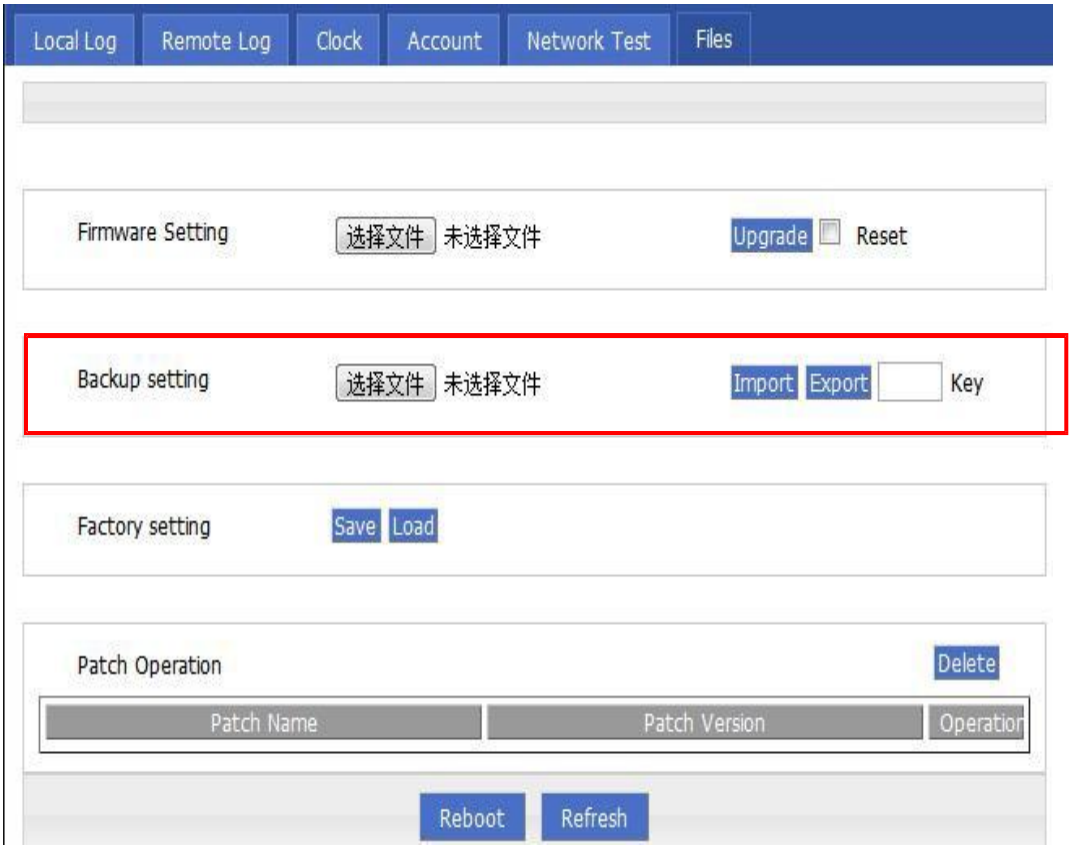
---END

Backup setting

H8956 Cellular router supports to backup and recover configuration file.

- Click “Browse” to select a configuration file to be imported. And then click “Import” to resume the configuration as the configuration file.
- Click “Export” to export configuration file and save it in local PC.

Figure 5-74 Backup setting page



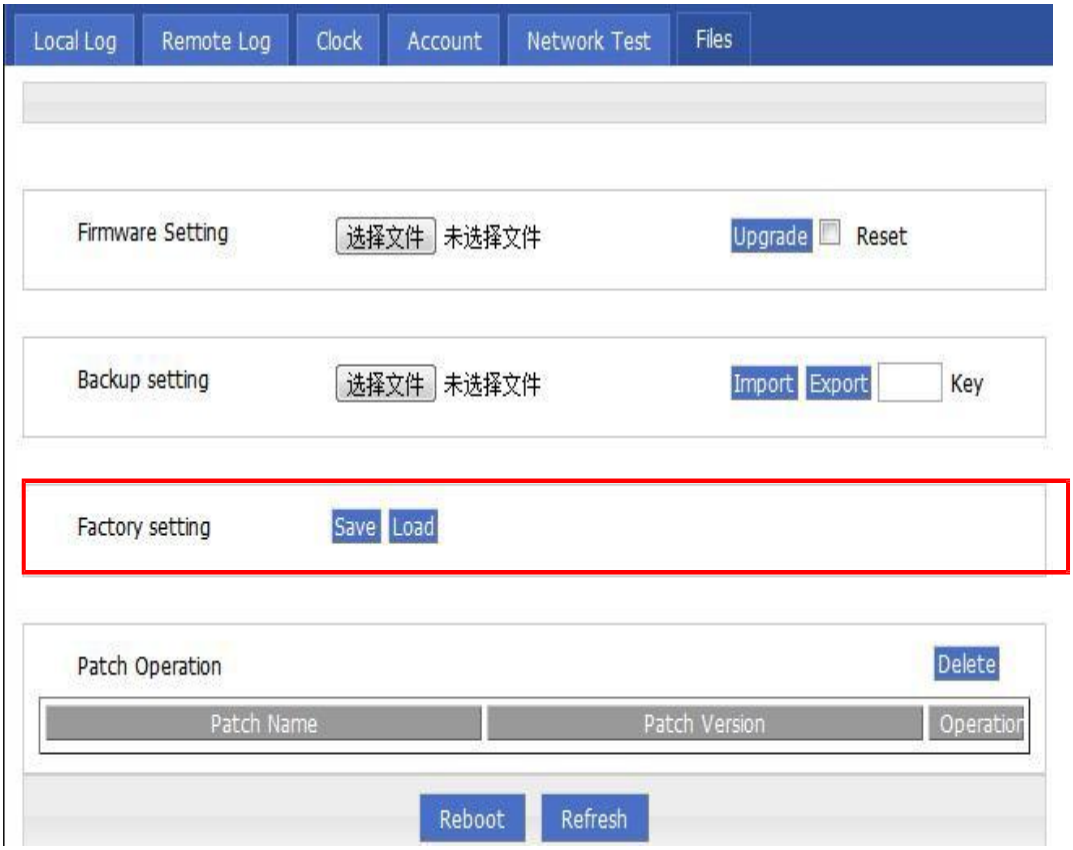
NOTE

After import, router will reboot automatically.
“Key”: if key is input when export configuration file, this key need to be input in import. Not more than 8 digits for key.

Factory setting

H8956 Cellular router has function to resume factory configuration. Users can set the configuration to factory mode, and also can set the current configuration into default configuration and generate a default factory configuration file in router. To resume this default factory setting, users can click “Load” in “factory setting”. If the default factory configuration file is deleted, the router will be resumed back to initial factory setting.

Figure 5-75 Factory setting page

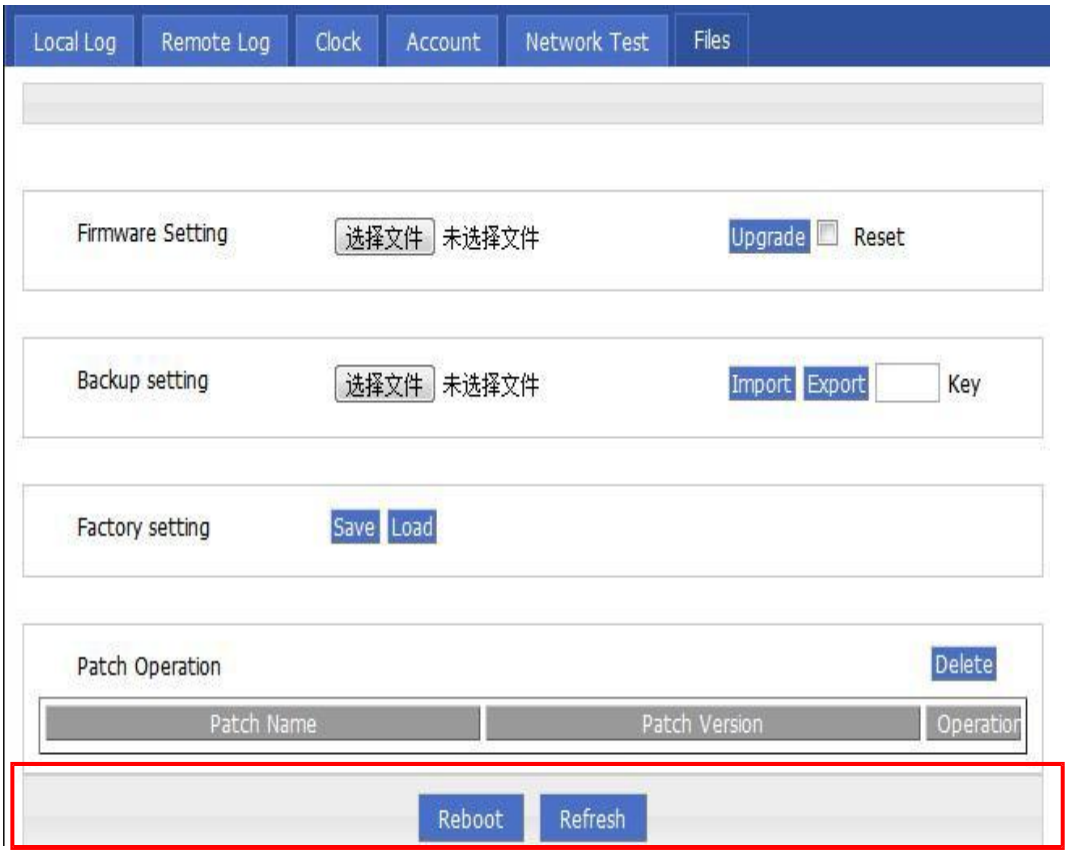


- Save: to save the current setting as default factory configuration setting.
- Load: to resume default factory setting.

reboot

click “reboot” to restart the router.

Figure 5-76 reboot



5.8 Status

5.8.1 Overview

Status provides the basic info, network status info, router info of H8956 Cellular router .

5.8.2 Base Information

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Status > Base information” to open “Base Information” tab.

Figure 5-77 Base Information tab

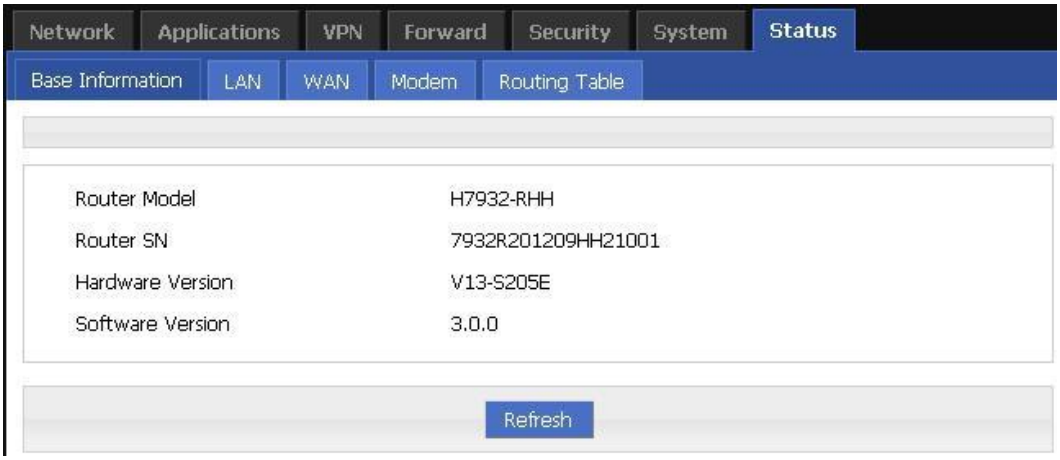


Table 5-40 Base information Parameter instruction

Parameter	Details	Operation
Router Model	Router model info	
Router SN	Router Serial No info	
Hardware version	Router hardware version info	
Software version	OS and application software info.	

5.8.3 LAN

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Status > LAN" to open "LAN" tab.

Figure 5-78 "LAN" info

Table 5-41 LAN Parameter instruction

Parameter	Details	Operation
LAN status	To shown current LAN interfaces status.	
IP address	To show the LAN IP address.	
Subnet Mask	Subnet mask of LAN interface.	
MAC address	To shown the MAC address of the router.	

5.8.4 WAN

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Status > WAN” to open “WAN” tab. There are three types of WAN status: static IP/DHCP/PPPOE.

Figure 5-79 Static IP WAN status

Figure 5-80 DHCP WAN status

Figure 5-81 PPPoE WAN status

Table 5-42 WAN Parameter instruction

Parameter	Details	Operation
WAN status	To show the current WAN is used or not	
WAN Type	To show the current WAN type	
Local IP	To show the local IP of WAN interface	
Subnet mask	To show the subnet mask	
MAC address	To show the MAC address of the router	

Parameter	Details	Operation
PPPoE for WAN type		
Status	To show the link status of WAN interface PPPoE	
Loca IP	To show the router IP distributed by PPPoE	
Remote IP	To show IP of PPPoE server	

5.8.5 Modem

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click “Status > Modem” to open “Modem” tab.

Figure 5-82 Modem Status page

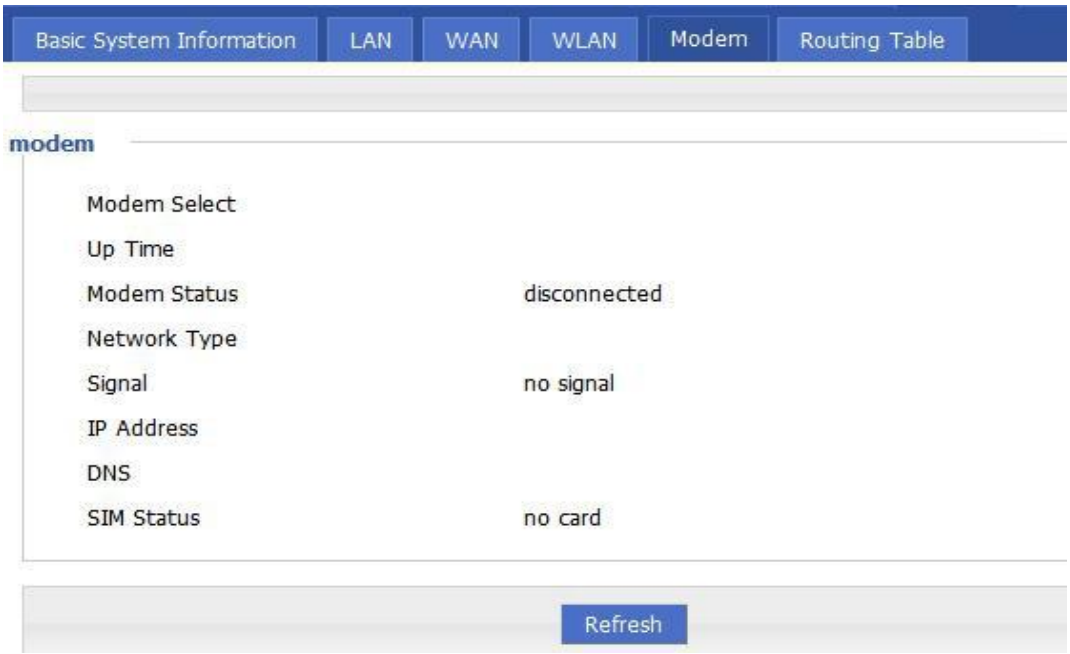


Table 5-43 Modem Parameter instruction

Parameter	Details	Operation
Modem Select	To show the current modem name	
Up tome	To show the current on line time of the modem Unit: second	

Parameter	Details	Operation
Modem Status	To show the Router's status to link to the mobile network	
Network type	Current network type of the SIM in use	
signal	Signal of mobile network Value area: 1-31	
IP Address	To show the external network IP address which the router links	
DNS	To show which DNS router is using	
SIM Status	Status of current SIM	

5.8.6 Routing Table

Step 1 Log-on WEB GUI of H8956 Cellular router .

Step 2 Click "Status > Routing Table" to open "Routing Table" tab.

Figure 5-83 Routing table page

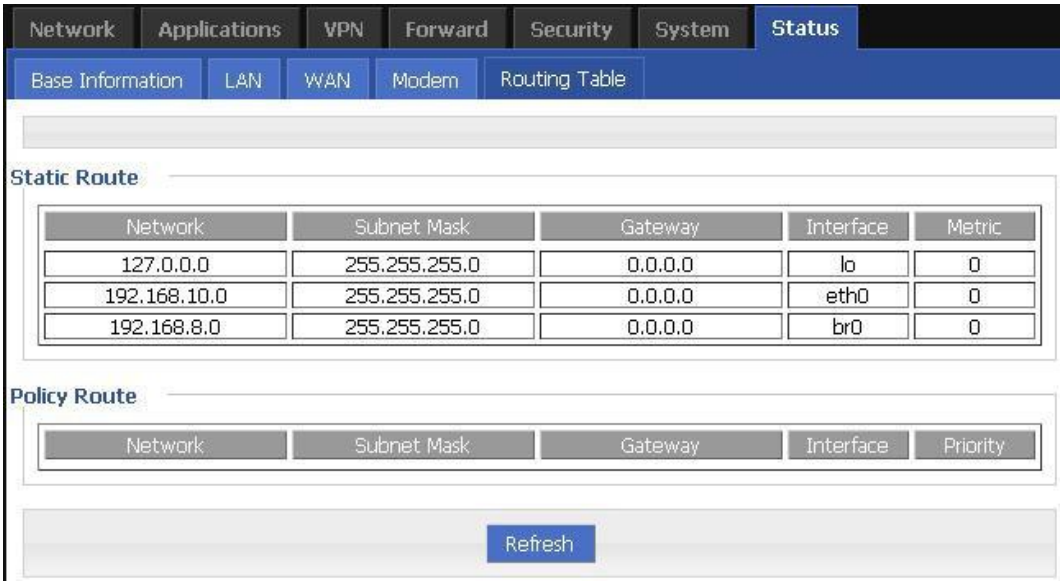


Table 5-44 Routing table Parameter instruction

Parameter	Details	Operation
Static route		

Parameter	Details	Operation
Static route		
Network	IP address the router can reach	
Subnet Mask	IP network the router can reach. It is used together with "Network"	
Gateway	Next hop IP address which the router will reach	
interface	Interface from router to gateway	
metric	Route No which the router reaches destination IP	
Policy route		
Priority	Priority the router select route	

---END

5.9 RESET button function

"RESET" button is on the rear panel and next to power interface. This button can be used when the router is in use or when the router is turned on. Three are 3 functions to press "RESET" button when the router is in use:

- Press "RESET" for about 2 seconds, router will reboot.
- Press "RESET" 5-10 seconds, the router will reboot, meanwhile, the router will be resumed to default factory setting configuration.
- Press "RESET" over 20 seconds, the router will reboot, and get into CFE upgrading. The router is resumed to default factory setting configuration.

Press button when the router is turned on:

- Press "RESET" button and turn on the router, and keep pressing "RESET" for 2 seconds. The router will get into CFE upgrading mode.

---END

6 Typical application

About this chapter

Chapter	Content
6.1 Overview	Summary some typical application of H8956 Cellular router
6.2 Awake function	How to awake H8956 Cellular router if not auto-dial
6.3 Parameter select	Parameter switch to achieve SIM backup function
6.4 VPN	H8956 Cellular router VPN setting
6.5 Timing Task	Set Timing task on H8956 Cellular router

6.1 Summary

H8956 Cellular router commonly used function includes wake up, parameter switch, VPN. Etc.

6.2 Awake function(Option)

Typical case

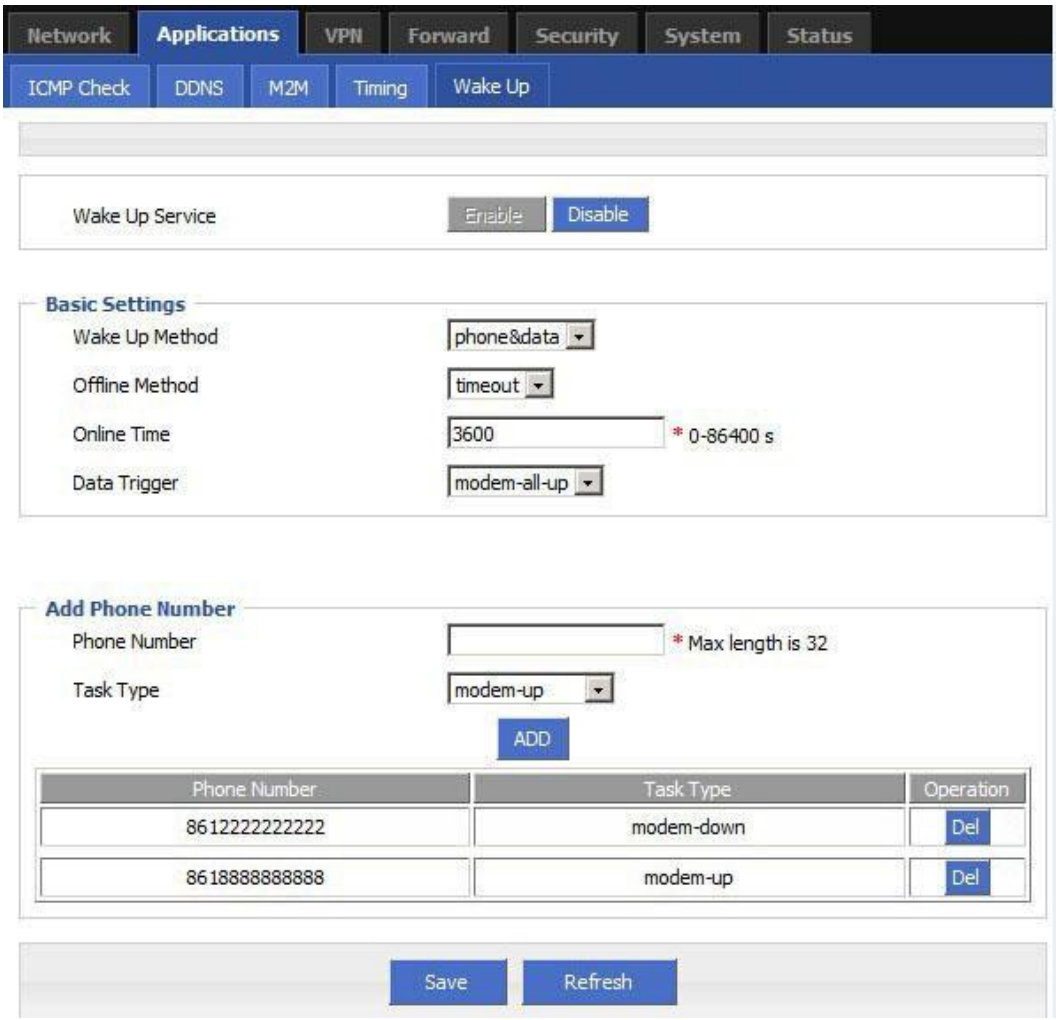
H8956 Cellular router support wake up function, means router will not auto-dial after power on, but dial triggered by data or call or SMS. Then router auto offline by idle or timeout. This function could save your data traffic fee.

For example, after setting phone trigger number, a call to router by that number could trigger the router dial online, one phone number could control one modem.

parameter setting

Let us check a example:

Figure 6-84 Wake up/trigger setting example



Effect

By this setting, after router power on, if there are data trigger or you could call/SMS SIM1 or SIM2 number from 8618888888888 to trigger corresponding SIM online.ed modem will dial online, After 3600s, router will offline. Or you could use 8612222222222 to call SIM, make the router offline. Please notice, to enable this function, the SIM must support phone and/or SMS function.

6.3 Parameter select

Typical case

H8956 Cellular router provides the parameter switching function, or temporarily stop working links can be replaced. For example: When L2TP link is working for some reason does not work, you can switch to an alternate PPTP or IPSec link. H8956 Cellular router configured

parameters based on switching rules, multi-link switching and good communication ensures the reliability of the network.

Parameter Select

Let us check an example:

CAUTION

Please set the “Parameter select” of modem separately

Set rules as below

Figure 6-85 Rules setting

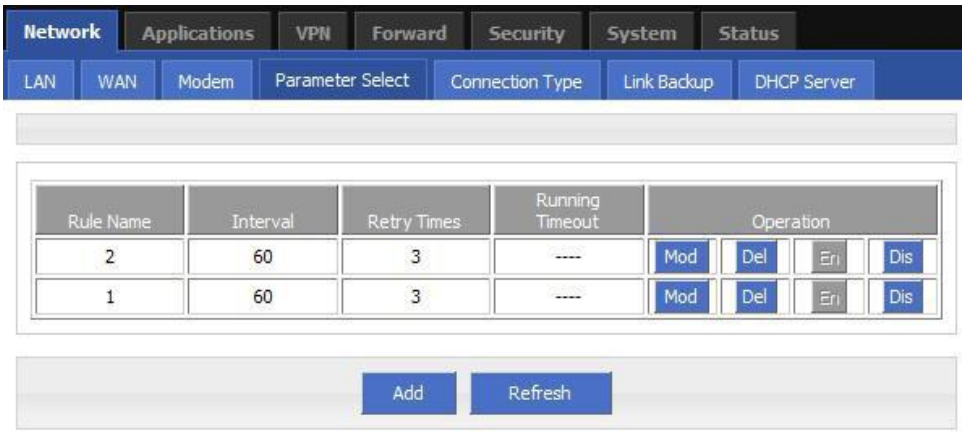


Figure 6-86 parameter select setting 1

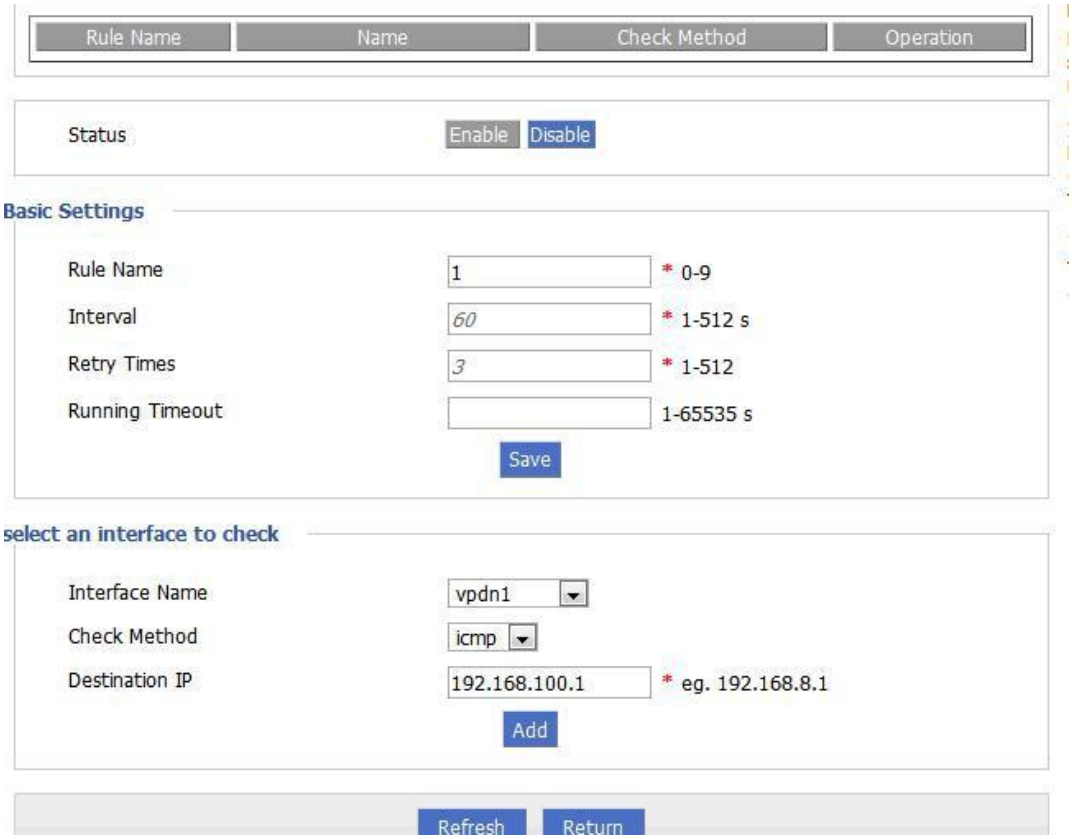
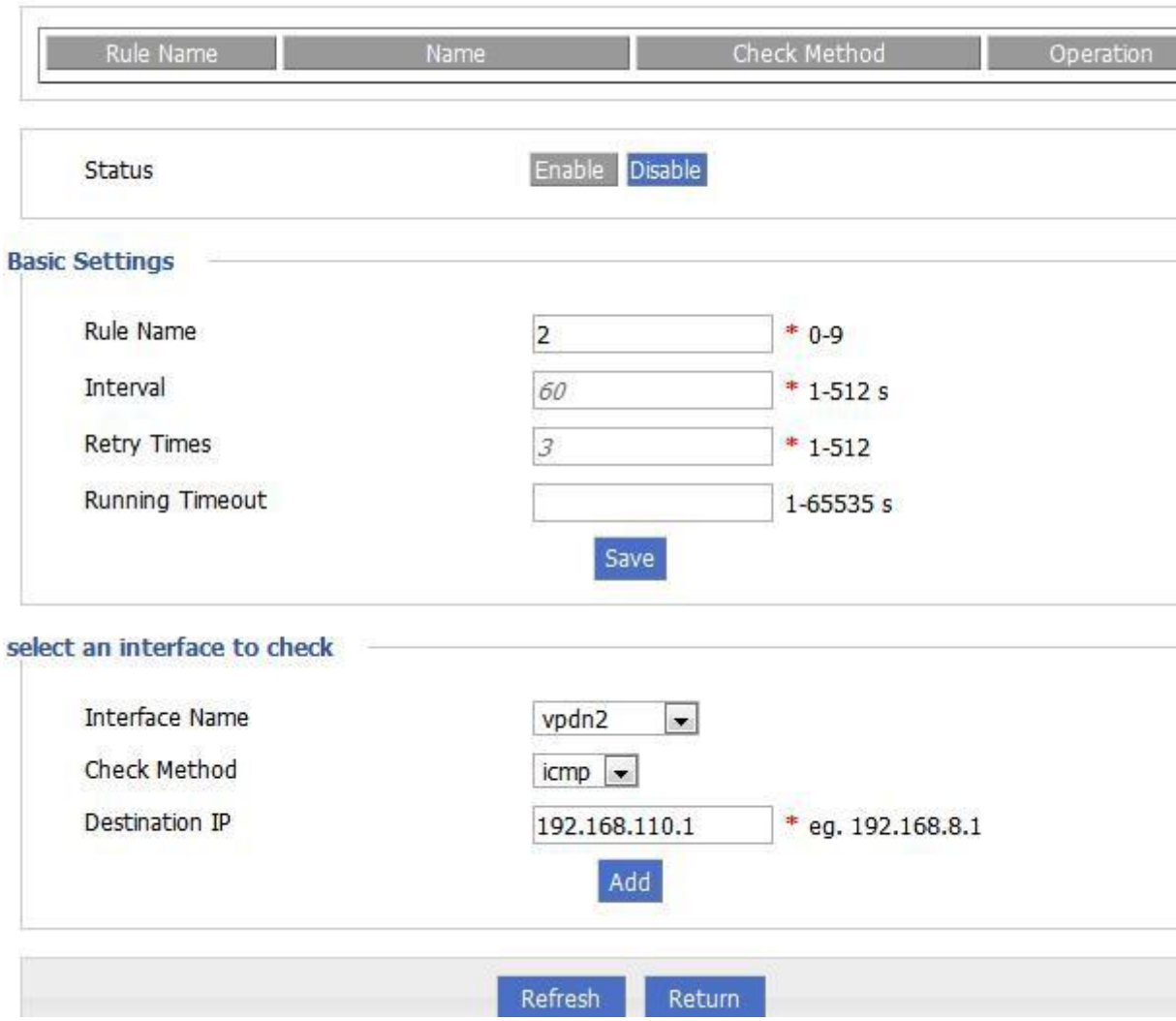


Figure 6-87 parameter select setting 2



When L2TP link is working for some reason disconnected from the server, the router will perform parameter switching in Command "check icmp", through IP ping to detect whether router interrupt with network operators; after 3 IP ping fails, the router will switch to the PPTP link, connecting to maintain the server, continue to work.

Effect

Initially using L2TP link, then set L2TP connection is disconnected manually, the router after 3 ping 192.168.100.1, after the link failed, the link will switch to the L2TP and maintaining connection to the server.

6.4 VPN

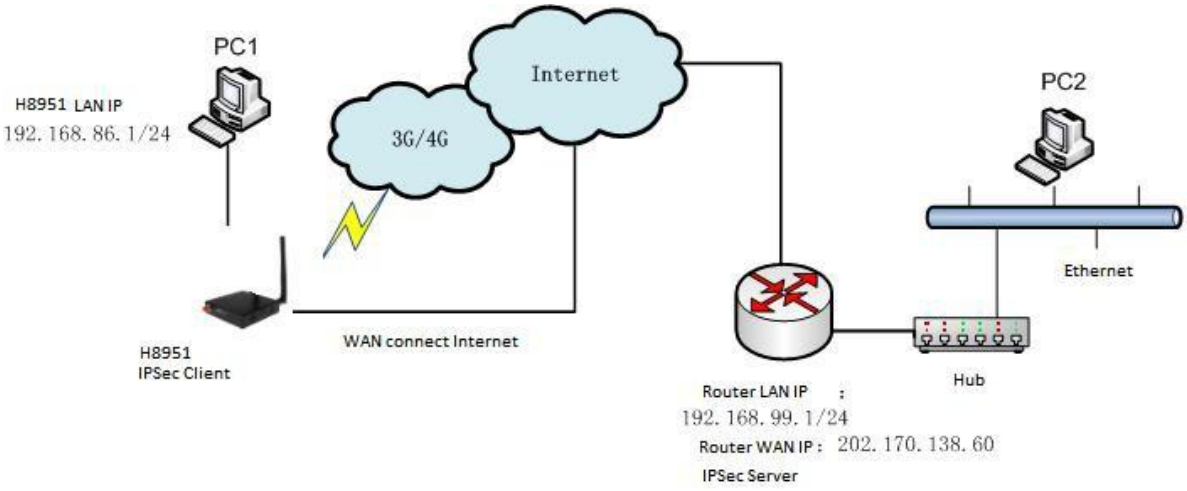
Introduction

VPN, virtual private network, a technology based on Internet, now H8956 Cellular router supports L2TP/PPTP/GRE/IPIP/IPSec of VPN.

L2TP used to build a virtual private network, after H8956 Cellular router connect to company NAS server, PC under H8956 could visit company network like visiting the local area network.

Let us check a setting example:

Figure 6-88 Build IPSec



PC1 connect H8956 then build IPSEC link by VPN function of H8956 with company router. I assume using IPSec tunnel mode, H8956 end local network 192.168.86.1/24, company server end 192.168.99.1/24, by IPSEC, two LAN could communicate.

Parameter Setting

Figure 6-89 IPSec Phase 1

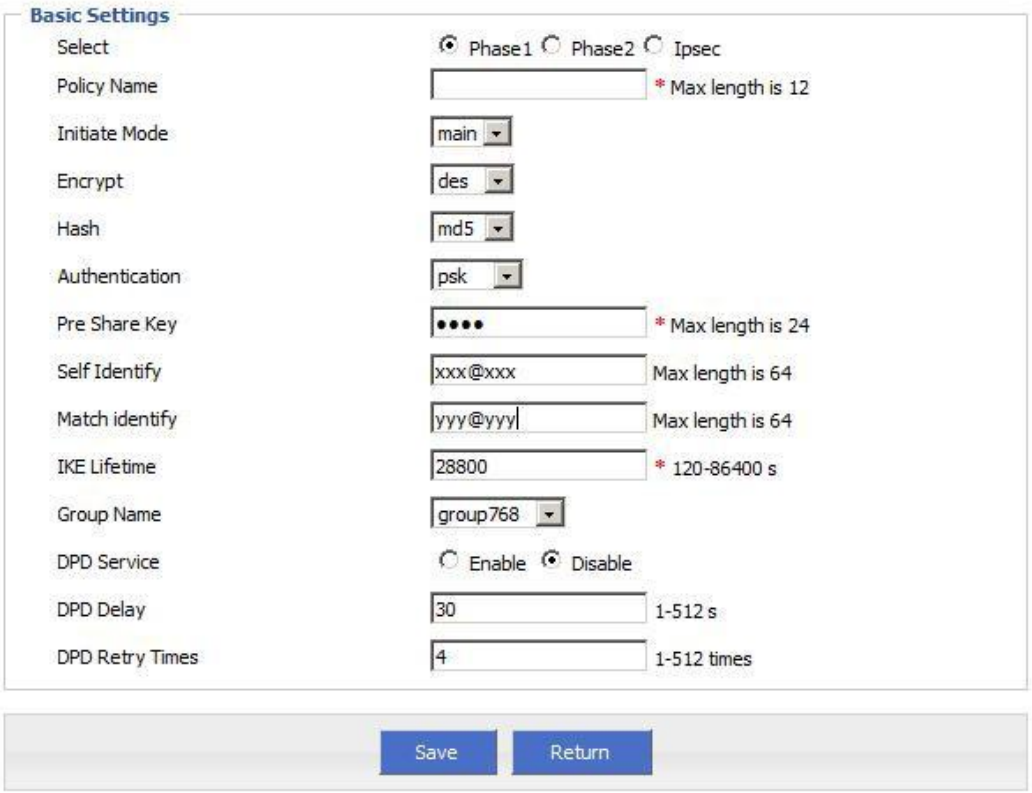


Figure 6-90 IPSec Phase 2

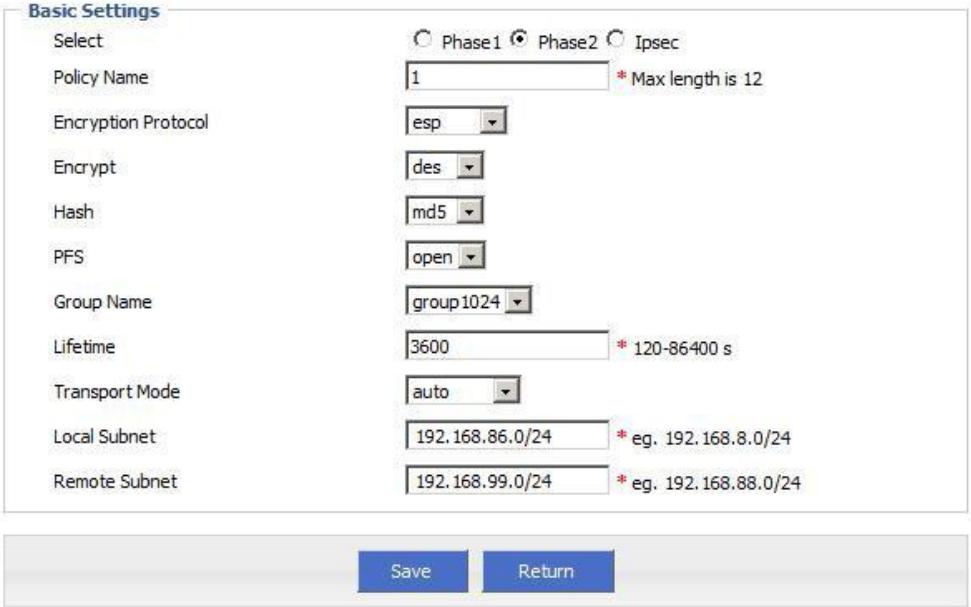
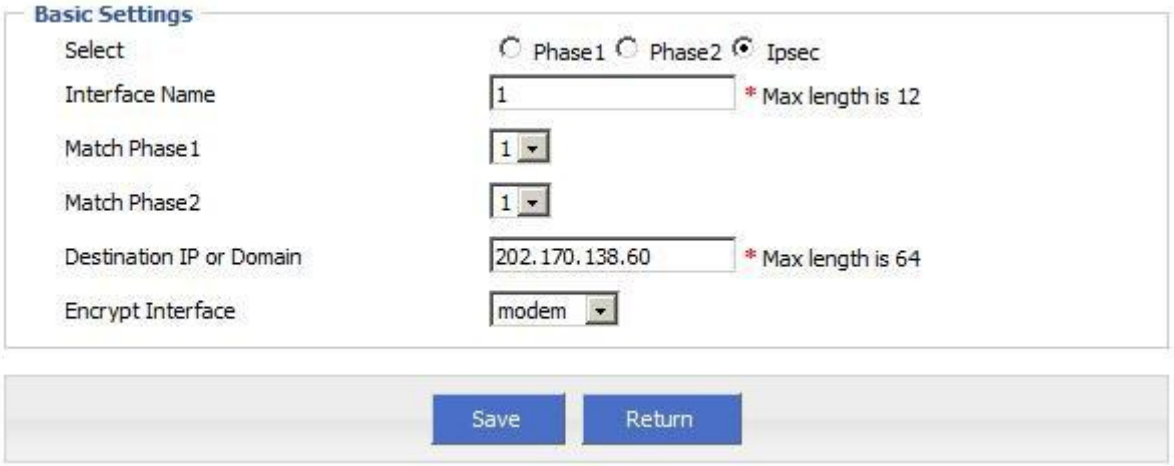


Figure 6-91 IPSec

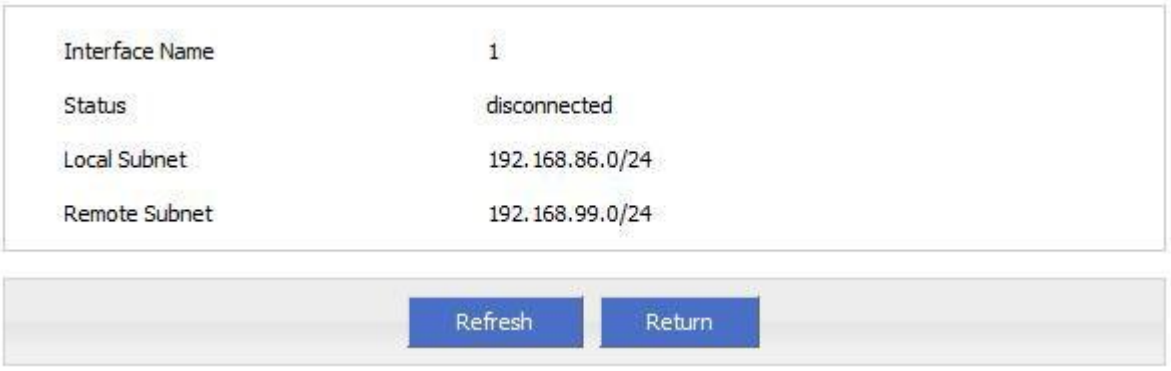


Company router server should have same setting but with a reverse identity and subnet setting of H8956 Cellular router .

Result

After setting H8956 Cellular router and company router parameter, they can connect each other by IPSEC, and ping peer subnet, you could check status by click “view” button.

Figure 6-92 IPSec status



~ # ping 192.168.99.1 -I 192.168.86.1
PING 192.168.99.1 (192.168.99.1) from 192.168.86.1: 56 data bytes
64 bytes from 192.168.99.1: seq=0 ttl=255 time=1569.360 ms
64 bytes from 192.168.99.1: seq=1 ttl=255 time=769.937 ms

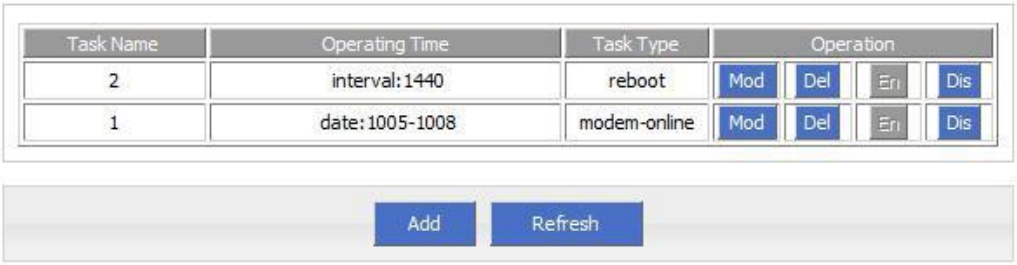
--- 192.168.99.1 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 769.937/1169.648/1569.360 ms

6.5 Timing Task

Typical Application

H8956 Cellular router support timing task, by setting timming task, at cretain time, router will operate reboot, online command. Etc. Easier the customer operation. I assume set the router online at certain time and keep a moment, then reboot every 24 hours. You could set like below.

Figure 6-93 Timing



Result

Router will online at 10:05 AM and keep online until 10:08, then offline at 10:09.

And router will reboot every 24 hours count began last reboot.

Figure 6-94 router online

```
10:04:57 time[912]: ntpclient -h clock.via.net -s return 1{time.c->109}
10:04:57 time[912]: open the file(/tmp/ntp_first.mark) success!{time.c->254}
10:04:57 time[912]: NTP failed!{time.c->274}
10:04:59 pppd[345]: sent [LCP EchoReq id=0xf magic=0x5511fa91]
10:05:00 pppd[345]: rcvd [LCP EchoRep id=0xf magic=0xc1caf26e]
10:05:05 modem[969]: got SIG_TERM signal{modem.c->605}
10:05:05 modem[969]: argument error{hp_chat.c->533}
10:05:05 modem[1019]: modem_parameter_init :: boot!{modem.c->702}
10:05:05 modem[1019]: modem name is (0, 0){modem.c->294}
10:05:05 modem[1020]: find the modem(ZTE-AD3812:10){modemcheck.c->185}
10:05:06 modem_mg[229]: search usb device{modem_mg.c->1489}
10:05:06 modem[1020]: open the device(/dev/ttyUSB2) succeed{hp_chat.c->326}
```

Figure 6-95 router off line

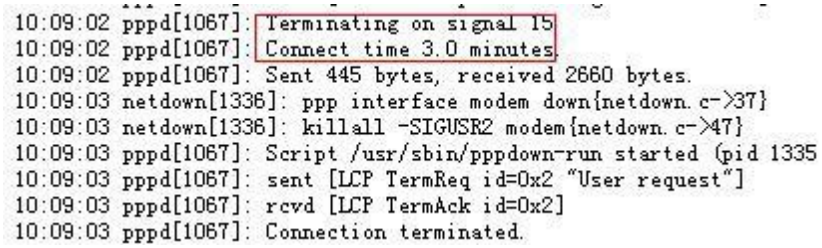
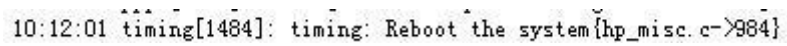


Figure 6-96 router reboot



7 FAQ

About this chapter

Chapter	Content
7.1 Hardware failure	Possible hardware failure during using H8956 Cellular router and how to handle them
7.2 Dial online problem	Possible problem during dialing and how to handle them
7.3 VPN	Possible problem when connecting VPN
7.4 WEB config problem config problem	Possible WEB config problem and how to handle them

7.1 Hardware Failure

7.1.1 All LED dark

Phenomenon

Router LED all dark

Possible Reason

- Power supply does not match, it should be 12-36VDC
- No power supply

Solution

- Make sure the power supply is 12～36VDC
- Check the power adapter and cable connection

7.1.2 SIM Slot

Phenomenon

Cannot insert SIM card

Possible Reason

- SIM slot damaged
- SIM card wrong direction

Solution

- SIM slot damaged, please contact us to repair
- Check the SIM card direction, please make sure the SIM goldfinger is up

7.1.3 Ethernet Connection

Phenomenon

LAN LED dark, cannot visit router WEB GUI

Possible Reason

- Ethernet cable connection problem
- Ethernet cable damage
- PC end network card abnormal

Solution

- Re-connect Ethernet cable
- Change a Ethernet cable
- Check network card setting on PC end

7.1.4 Antenna Connection

Phenomenon

Cannot connect antenna

Possible Reason

- Antenna type do not match
- Wrong connection

Solution

- Please check antenna interface, should be SMA-J
- Please check antenna type, there are Cellular and WIFI, do not mix them

7.2 Dial Online Problem

7.2.1 Dial discontinue

Phenomenon

H8956 Cellular router discontinue during dialing, dial failure

Possible Reason

- SIM card network type do not match
- SIM charges owed
- Power supply do not match
- Modem setting wrong

Solution

- Change to a suitable SIM card
- Recharge SIM card
- Change to suitable power supply
- Change Modem setting, please check related chapter

7.2.2 No Signal

Phenomenon

H8956 Cellular router modem status show no signal

Possible Reason

- Antenna connect wrong
- Modem cannot online
- Modem offline

Solution

- Connect suitable antenna
- Modem cannot online, check SIM and modem setting
- Modem offline, check router setting, like wake up setting, ICMP setting, check if there are any setting make router offline

7.2.3 Cannot find SIM/UIM card

Phenomenon

H8956 Cellular router cannot find SIM/UIM card

Possible Reason

- SIM card damage
- SIM bad contact

Solution

- Replace SIM card
- Re-install SIM card

7.2.4 Poor Signal

Phenomenon

H8956 Cellular router no signal or poor signal

Possible Reason

- Antenna connect wrong
- Area signal weak

Solution

- Check the antenna and re-connect it.
- Contact Telecom Operator to confirm signal problem
- Change to high-gain antenna

7.2.5 Compress Protocol not match

Phenomenon

H8956 Cellular router dial failure, log shows compress protocol not match

Possible Reason

Modem compress protocol do not match with server end

Solution

Change compress protocol setting

7.3 VPN Problem

7.3.1 VPDN cannot connect

Phenomenon

VPDN cannot connect

Possible Reason

- VPDN port work abnormal
- VPDN parameter wrong
- VPDN peer server abnormal

Solution

- Make sure Modem is online
- Set the correct port to VPDN
- VPDN parameter wrong
- Check VPDN peer server

7.3.2 VPN cannot communicate

Phenomenon

VPN already connect, but cannot communicate

Possible Reason

- Router table config wrong
- VPN peer server config wrong

Solution

- Add related Router table
- Check VPN peer server setting

7.3.3 Router can communicate but subnet cannot

Phenomenon

Router can communicate but subnet cannot

Possible Reason

- VPN peer server config wrong
- Local Router has no MASQ
- Wrong local route table

Solution

- Check VPN peer server setting
- Local Router has no MASQ, please manual add VPN port MASQ
- Wrong local route table, set right route table

7.4 WEB config problem

7.4.1 Updating firmware failure

Phenomenon

Updating firmware failure

Possible Reason

- Auto reboot during updating H8956 Cellular router
- Power supply problem
- Wrong firmware
- Power off during updating router

Solution

- Check setting, disable the function which may cause reboot
- Change to a suitable power supply
- Ask technical support for suitable firmware
- Power off during updating router, please make sure power supply normal

7.4.2 Backup setting problem

Phenomenon

Router import backup setting failure

Possible Reason

- Backup setting file format wrong
- No reboot after backup setting

Solution

- Choose a right file to import
- Must reboot after import setting, then parameters available

7.4.3 Updating patch failure

Phenomenon

Updating fix patch failure, after updating, view fix patch and found no fix patch

Possible Reason

- Patch format wrong
- Patch name too complicated

Solution

- Check patch format, change to a right one
- Change the patch name to a simple one

7.4.4 CFE Updating failure

Phenomenon

CFE updating failure, firmware edition no change

Possible Reason

- Power supply do not match
- Firmware version or format do not match
- Power off during updating process

Solution

- If power supply do not match, please change then update again
- If firmware version, format do not match, please change then update again
- If power off during updating, please update again

7.4.5 Update failure in WEB GUI

Phenomenon

Updating by WEB GUI, failed and cannot visit WEB GUI again

Possible Reason

Firmware oversize cause updating failure

Solution

Using CFE mode to update again, and router will restore to factory mode. If after CFE updating, still cannot visit WEB GUI, please contact us for repairing

7.4.6 Forget Router Password

Phenomenon

Forget router login password

Possible Reason

User has changed the password

Solution

After router power on, push and hold RESET button over 10 seconds then release, then re-power on router, router will back to factory mode (Username/Password both admin), but patch will reserve

When router is power on, press and hold RESET button around 1s, router will reboot and kept all setting.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

ISED Statement

- English: This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This d evice must accept any interference, including interference that may cause undesired operation of the device. The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

- French: Le présentappareilestconforme aux CNR d'Industrie Canada applicables aux appareils

radio exempts de licence. L'exploitationestautorisée aux deux conditions suivantes: (1) l'appareil ne doit pas p roduire de brouillage, et (2) l'utilisateur de l'appareildoit accepter tout brouillageradioélectriquesubi, mêmesi le brouillageest susceptible d'encompromettre le fonctionnement.

This radio transmitter (ISED certification number: 21030-H8951LQA) has been approved by Industry Canada to operate with the antenna types listed with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (ISED certification number: 21030-H8951LQA) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Model	Type	Connector	Peak Gain (dBi)	
			2400-2483.5 MHz	600-3500 MHz
2.4GHz Wi-Fi Antenna	Dipole	RP-SMA	3dBi	-/-
UMTS/LTE Antenna	Dipole	RP-SMA	-/-	3dBi

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.