# User Manual

## H8922 3G/4G Router

宏电®
Hongdian

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

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| | |
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**Caution**

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# About This Document

## Purpose

H8922 3G/4G router is designed and manufactured by Hongdian, it based on 3G/4G cellular network technology, industrial class quality. With its embedded cellular module, it has been widely used in finance, transportation, telecom, electricity, security system and other industries. This document introduced how to use H8922 and its function features.

## Related Versions

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

| Model | Version |
|---|---|
| H8922 | V11/V12/V13 |

## Organization

| Chapter | Description |
|---|---|
| **1** | Features of H8922 3G/4G router and target market. |
| **2** | SW & HW structure of H8922 3G/4G router. |
| **3** | How to installation of H8922 3G/4G router. |
| **4** | Prepare to config H8922 3G/4G router. |
| **5** | How to config H8922 3G/4G router. |
| **6** | Typical application of H8922 3G/4G 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 H8922 3G/4G router |
| 1.2 Product Positioning | Product Positioning of H8922 3G/4G router |
| 1.3 Function & features | Unique function & features |
| 1.4 Specification | Detail specification of this router |

## 1.1 Overview

H8922 3G/4G router based on 3G/4G technology, except tradition router function like VPN, firewall, NAT, SNMP, DHCP. H8922 support 3G/4G as WAN interface, provide up to 100Mbps WAN bandwidth and up to 150Mbps Wi-Fi bandwidth. Plus, H8922 3G/4G router support three modes: single module single SIM, single module dual SIM, dual module dual SIM mode. The unique feature of H8922 3G/4G router is network online & backup among WAN, WLAN, 3G/4G network. This feature makes H8922 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.

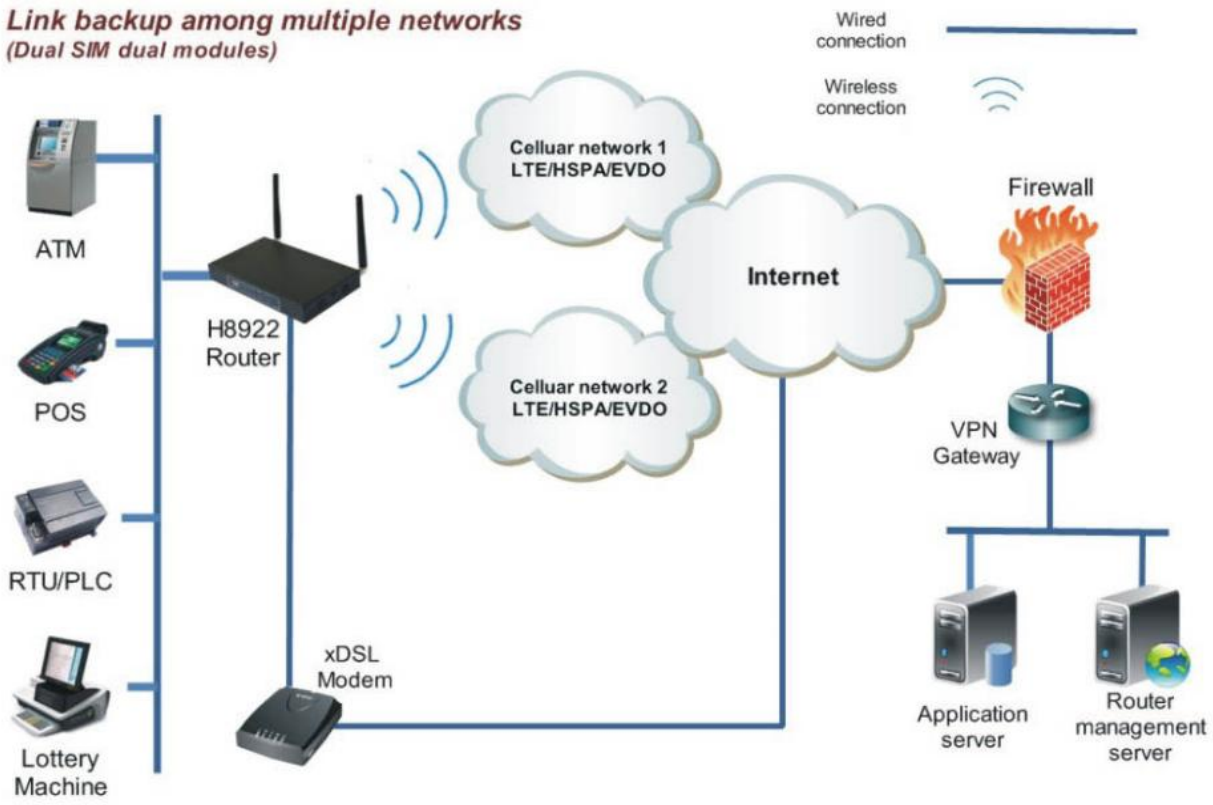
H8922 3G/4G router support Hongdian M2M management platform. By the management platform, you can check running info of H8922 3G/4G router and remote config or remote updates.

# 1.2 Product positioning

H8922 3G/4G router widely used in Telecom, economic, advertisement, traffic, environment protection business area.

For example, in economic area, H8922 3G/4G router connect server by IPSec & GRE to ensure data security, and dual module online or dual module switch 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

- Dual module/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

### Available cellular network

- LTE FDD: B1,B2,B4,B5,B7,B8,B12
  LTE TDD: B38
- LTE FDD: B1,B3,B7,B8,B20
  LTE TDD: B40
- LTE FDD: B1,B3,B7,B8,B20
- LTE FDD: B2,B4,B5,B13,B17,B25
- LTE TDD: B38,B39,B40
  LTE FDD: B7
- HSPA+/HSUPA/HSDPA/WCDMA/UMTS 2100/1900/900/850/800MHz
- EDGE/GPRS/GSM 1900/1800/900/850MHz
- CDMA 2000/EVDO Rev.A 800/1900MHz

## 1.4 Specification

### Interface

- 4×10/100Mb LAN interface
- 1×10/100Mb WAN interface
- 1× RS-232 console port(RJ45)
- 2× SMA-K antenna interface
- 2× SMA-K antenna interface (Wi-Fi, optional)
- 2× Standard SIM/R-UIM interface
- 1× Standard DC power interface

### Power supply

- Voltage: +5V ～+36VDC
- Dual module Idle: 204mA@12V DC
- Dual module communication: 330mA@12V DC

### Others

- Dimension: 194mm x 105mm x 25mm (not including antenna)
- Weight: 540g
- Operation temperature: -30~+70℃
- Store temperature: -40~+85℃
- Related humidity: <95% (non-condensing)
- Guarantee: one year

# 2 Product structure

## About this chapter

| Chapter | Content |
|---|---|
| 2.1 Hardware | H8922 3G/4G router hardware. |
| 2.2 Structure | Structure of H8922 3G/4G router. |

## 2.1 Hardware

### 2.1.1 Appearance & Size

#### Appearance

Figure 2-2 H8922 3G/4G router Appearance

## Size

Table 2-1 H8922 3G/4G router size

| Model | Dimension (mm) | Interface |
|---|---|---|
| H8922 3G/4G router | 194×105×25 | 4×10/100Mb LAN interface<br>1×10/100Mb WAN interface<br>1× RS-232 console port(RJ45)<br>2× SMA-K antenna interface<br>2× SMA-K antenna interface (Wi-Fi, optional)<br>2× Standard SIM/R-UIM interface<br>1× Standard DC power interface |

H8922 3G/4G router appearance as Figure 2-3, Figure 2-4 shows

Figure 2-3 H8922 3G/4G router Figure

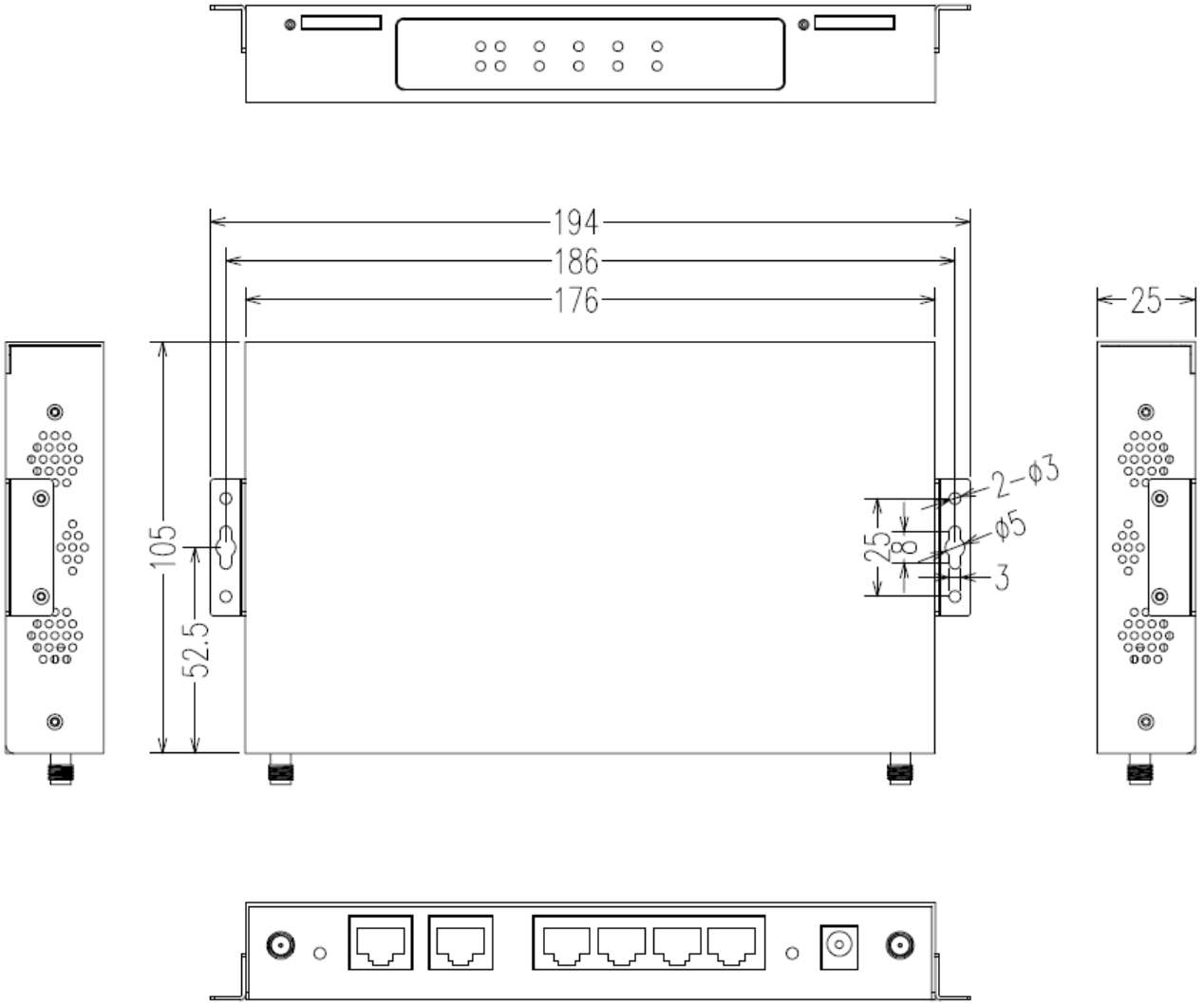
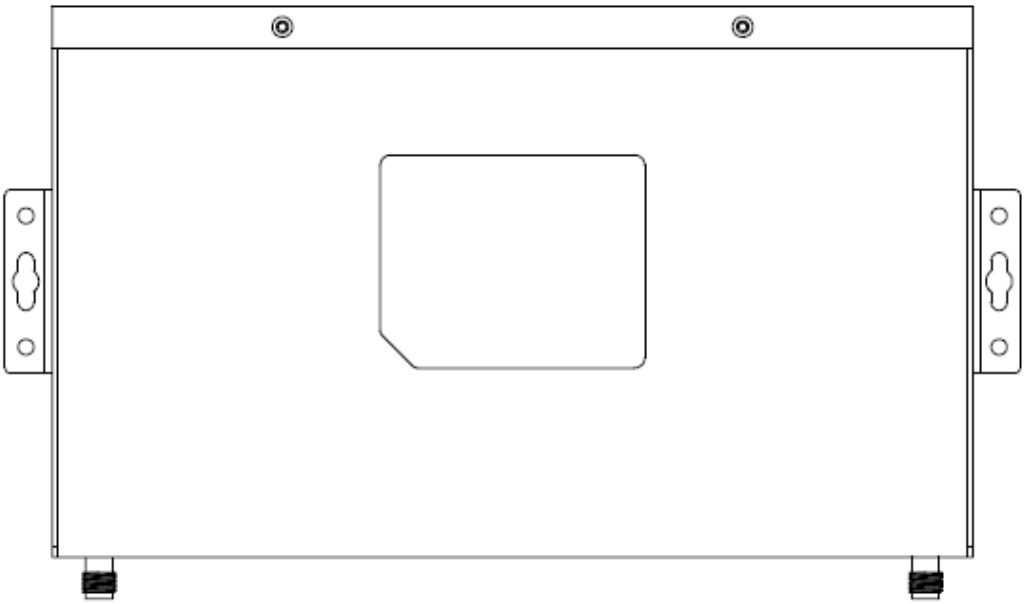


Figure 2-4 H8922 3G/4G router bottom view



## 2.1.2 Accessories

Table 2-2 H8922 3G/4G router accessories

| Accessories name | Number | Note |
|---|---|---|
| H8922 3G/4G router | 1 pcs | |
| CD-ROM | 1 pcs | Optional |
| 3G/4G antenna | 1 or 2 pcs | According to module number inside |
| Wi-Fi antenna | 1 pcs | Optional |
| GPS antenna | 1 pcs | Optional |
| RJ45 cable | 1 pcs | |
| Mounting | 1 pair | Optional |
| Certificate and warranty card | 1 pcs | |
| +12V power adapter | 1 pcs | |

# 2.2 Structure

Figure 2-5 Front pannel

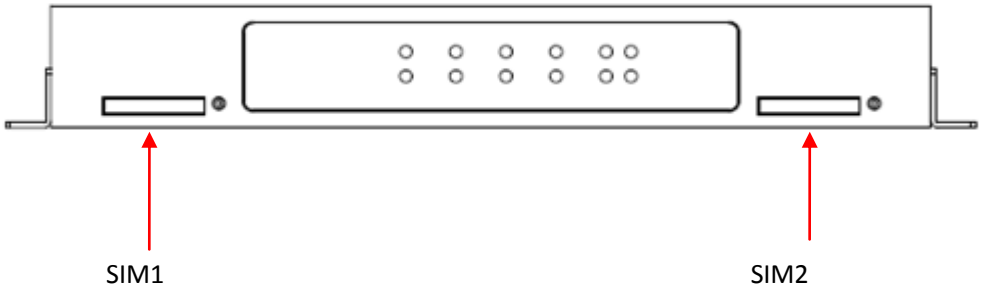
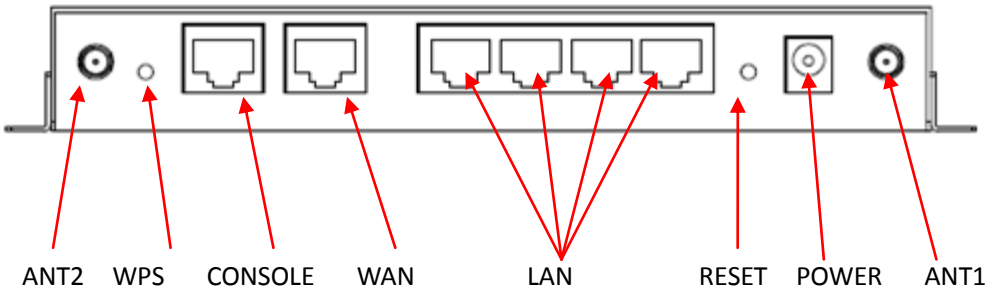



Figure 2-6 Back pannel



# 3 Installation of H8922 3G/4G router

## About this chapter

| Chapter | Content |
|---|---|
| 3.1 Unpacking | Unpack H8922 3G/4G router box and the packing list. |
| 3.2 How to install | How to install H8922 3G/4G router with SIM/UIM card and Ethernet cable .etc. |
| 3.3 Power supply | Power supply needs of H8922 3G/4G router. |
| 3.4 Review | Review. |

## 3.1 Unpacking

After received the box of H8922, 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

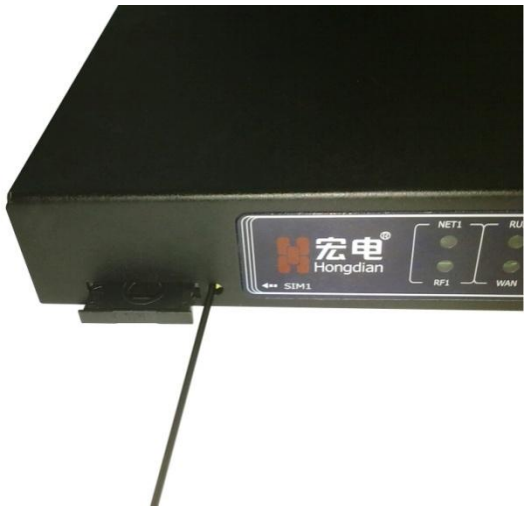
H8922 3G/4G router support dual SIM/UIM card, so you may need insert dual SIM before config it.

CAUTION

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

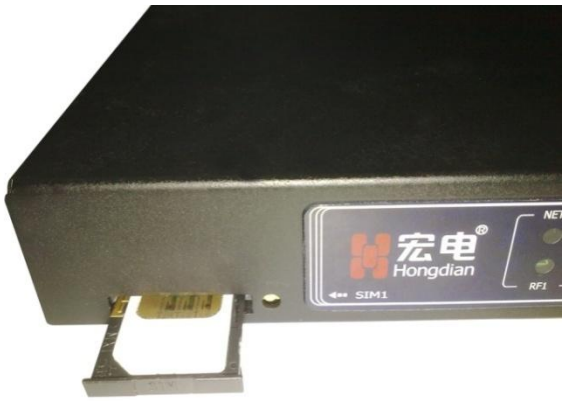
Step 1 Use a small stick push the yellow button on router, the SIM slot will pop out as Figure 3-7 shows.

Figure 3-7 Pop out SIM slot




Step 2 Put SIM card in slot at proper direction as Figure 3-8 shows.

Figure 3-8 SIM/UIM card install.




**---END**

## 3.2.2 Ethernet cable connection

Use Ethernet port directly connect H8922 3G/4G router and computer, or transferred by a switch.

## 3.2.3 Serial port connection

When you connect H8922 3G/4G router to serial port on laptop or their device, to do this, you need a serial port to RJ45 cable, this cable is optional. One end connect to computer serial port, the other end connect the console port on H8922.

Table 3-3 Serial port to RJ45 cable

| Item | RJ45(male) | TO | DB9(Female) |
|---|---|---|---|
| PIN | 2 | | 2(RxD) |
| PIN | 3 | | 3(TxD) |
| PIN | 5 | | 5(GND) |

CAUTION

When “DTU” function is not added to device, this port for debug only, not for other application. When “DTU” function is added to device, be shown under “Application” section on web GUI, this port is for DTU only, not for debug.
The cable for debug and DTU data transmission is with the same order.
Do not insert any other RJ45 cable into console port, otherwise router may work abnormal.

## 3.3 Power supply

In order to get high reliability, H8922 3G/4G router adapt wide voltage input: +5V～+36VDC, 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 H8922 3G/4G router, the LEFT SIM slot is SIM 1, take it as a example:

- After connect power 14s, router RUN solid light, means router system works ok.
- After connect power 25s, NET solid light, means router found the module.
- After connect power 25s, NET blinking quickly means router start to dial.
- After connect power 30s, RF shows the signal level.
- After connect power 45s, NET solid light means 3G/4G connected, if blinking slowly, means 2G/2.5G connected.

# 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 H8922 3G/4G router. |
| 4.3 Basic config | Basic config & function. |

## 4.1 LED Status

There are LED on front panel of H8922 3G/4G router, they show how H8922 3G/4G router works.

Table 4-4 LED instruction

| LED name | Status |
|---|---|
| RUN | • Solid light: system normal<br>• Dark: system abnormal or during booting |
| WAN | • Solid light: connect ok<br>• Blinking: data sending/receiving.<br>• Dark: no connection. |
| LAN1～4 | Same as WAN status. |
| RF1～2 | • Solid light: good signal, 21～31<br>• Blinking quickly (0.5s): normal signal, 11～20<br>• Blinking slowly(2s): bad signal, 1～10<br>• Dark: no signal |
| NET1～2 | • Solid light: connect 3G/4G ok<br>• Blinking slowly(0.5s): connect 2.5G network ok<br>• Blinking quickly(2s): dialing |

| LED name | Status |
|---|---|
| | • Dark： No module or no auto-dial |

# 4.2 Local config

## Precondition

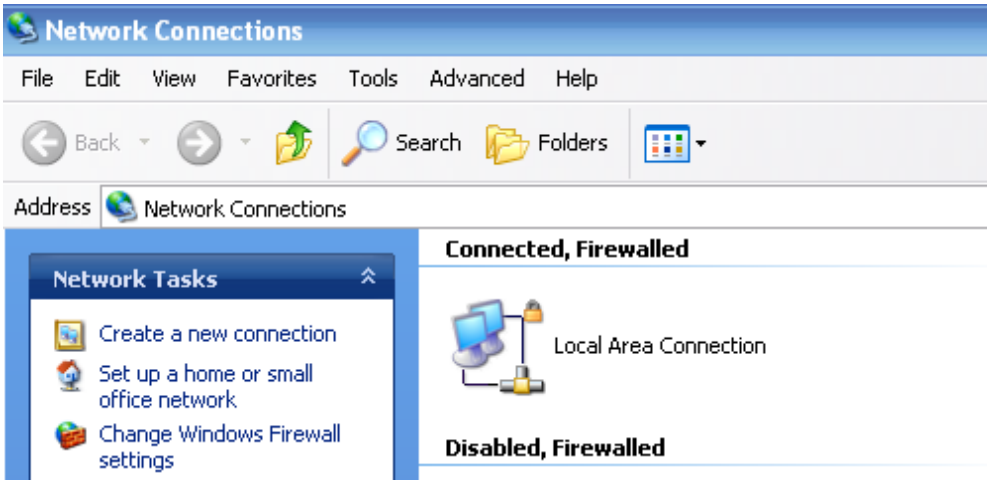
- Already power on H8922 3G/4G router
- Ethernet cable connect to H8922 3G/4G router

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 4-9 Local Area Connection




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

NOTE

H8922 3G/4G Router default enabled DHCP server. If it has been disabled, DHCP cannot be use.

Step 3 Change or add a IP 192.168.8.* on your computer.

Figure 4-10 Connection properties

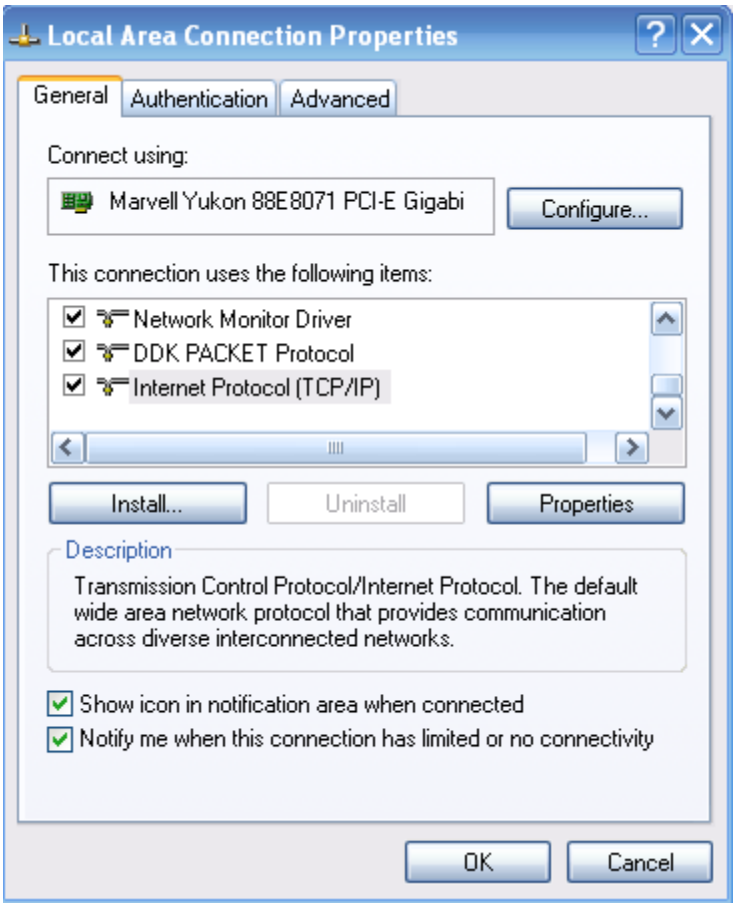
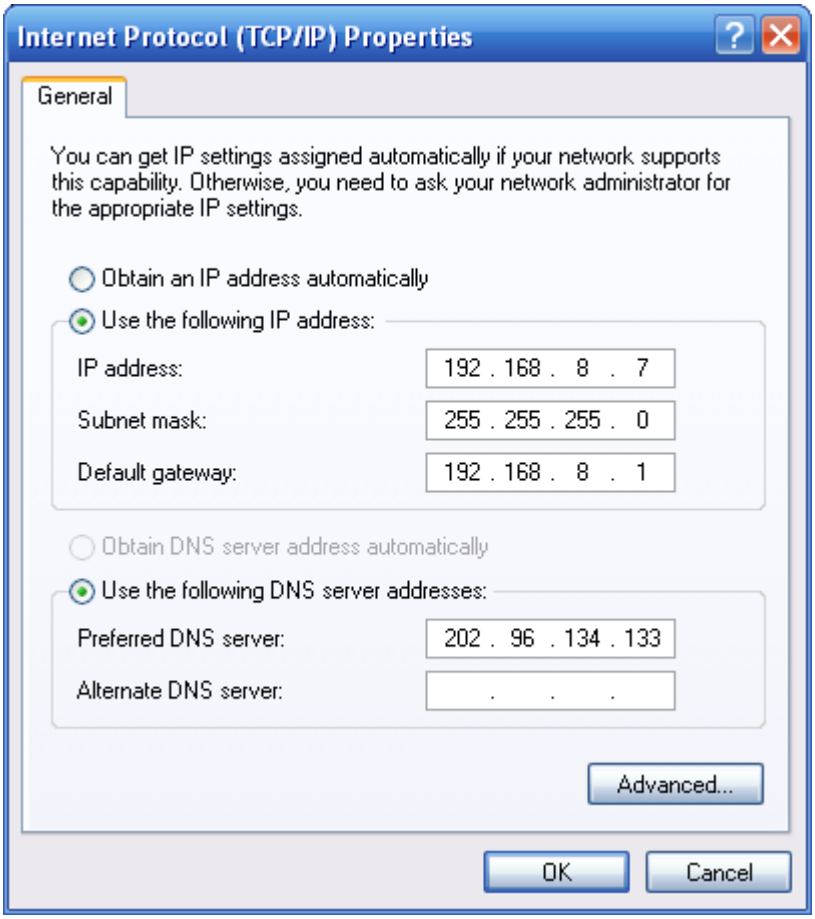



Figure 4-11 Internet protocol (TCP/IP)




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:

H8922 3G/4G Router LAN port factory default parameter:

IP address: 192.168.8.1

Subnet mask: 255.255.255.0

H8922 3G/4G Router factory default login parameter:

Management interface login IP address: 192.168.8.1

Login name: admin

Login password: admin

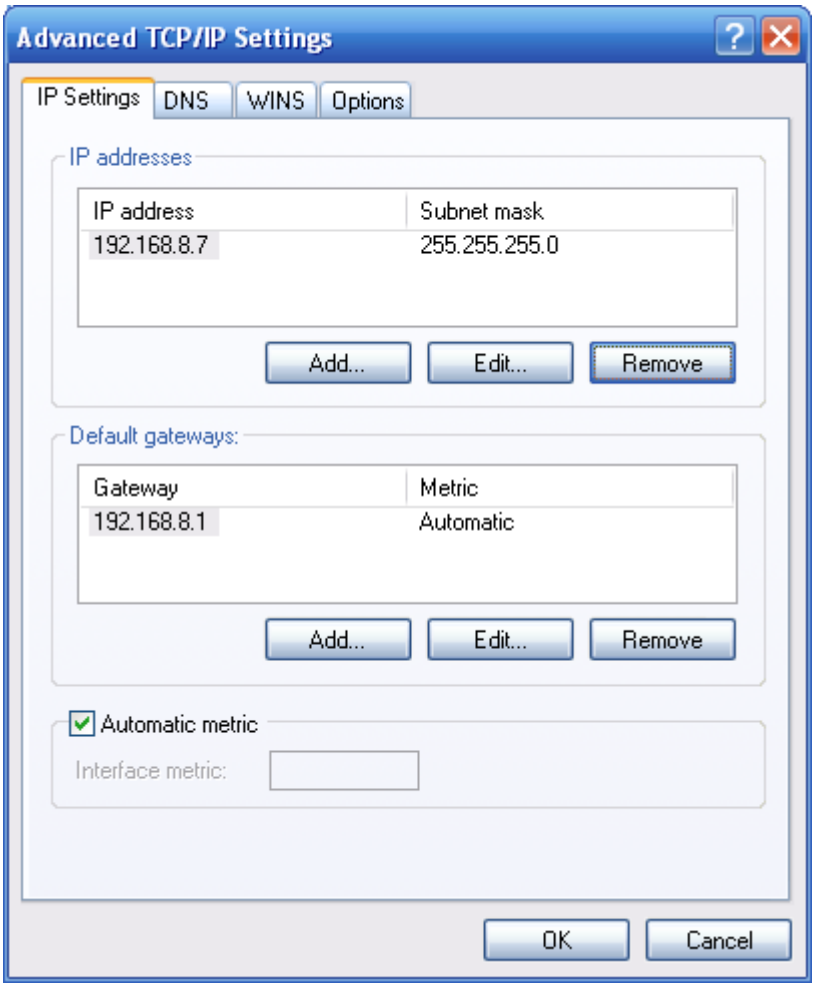
- Advanced configuration

If you don't want to interrupt local PC LAN communication and configure H8922 3G/4G Router when the former network configuration exists, it is required add route (IP).

The configuration operation is shown as below:

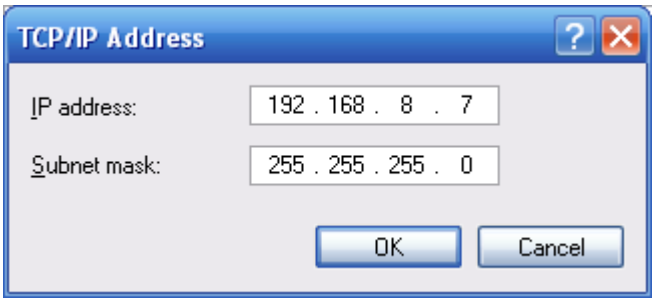
Click the "Advanced…"button to enter the interface as below:

Figure 4-12 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 4-13 TCP/IP address




After the configuration is completed, click the "Add". By now the computer has a route to router H8922.

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 H8922 3G/4G Router is used, you need to modify the default gateway and configure it as H8922 3G/4G 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

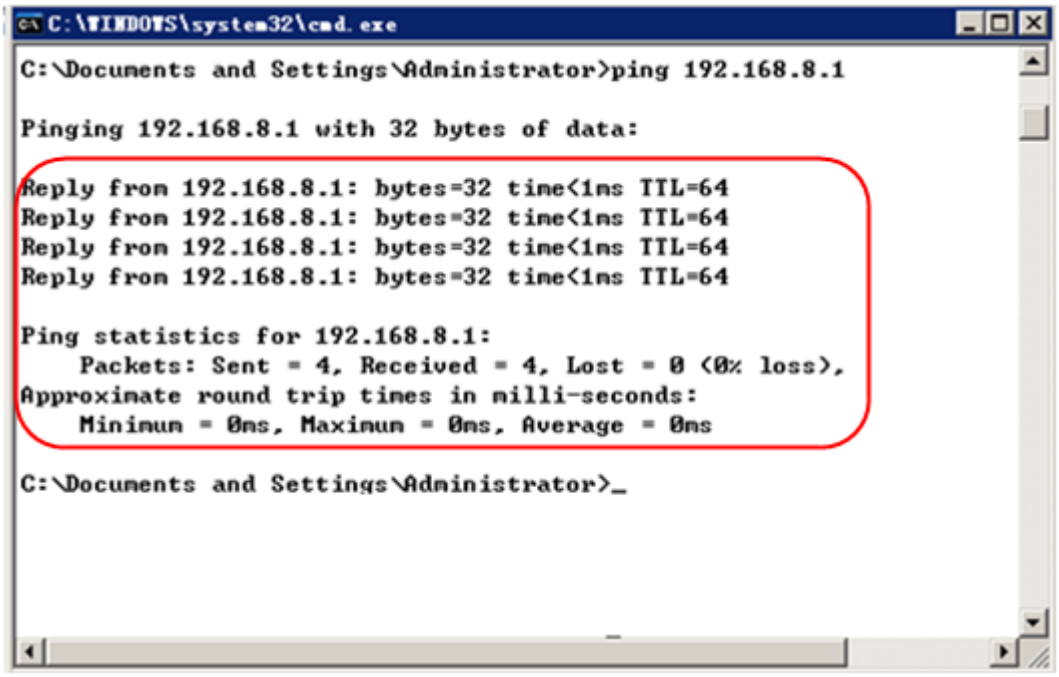
Subnet Mask . . . . . .: 255.255.255.0

Default Gateway . . . . . : 192.168.8.1

Step 5 Connectivity check

After the configuration is completed, you can check the connectivity between it and Galaxy H8922 3G/4G router by ping command. Key-in ping command in system command line:

Figure 4-14 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**

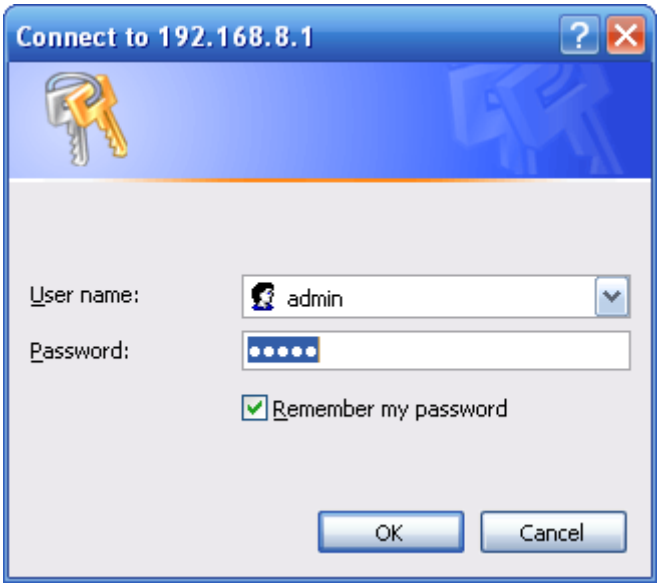
# 4.3 Basic config

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 4-15 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 H8922 3G/4G 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 H8922 |
| 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

H8922 3G/4G 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), parameter switch, DHCP setting and so on.

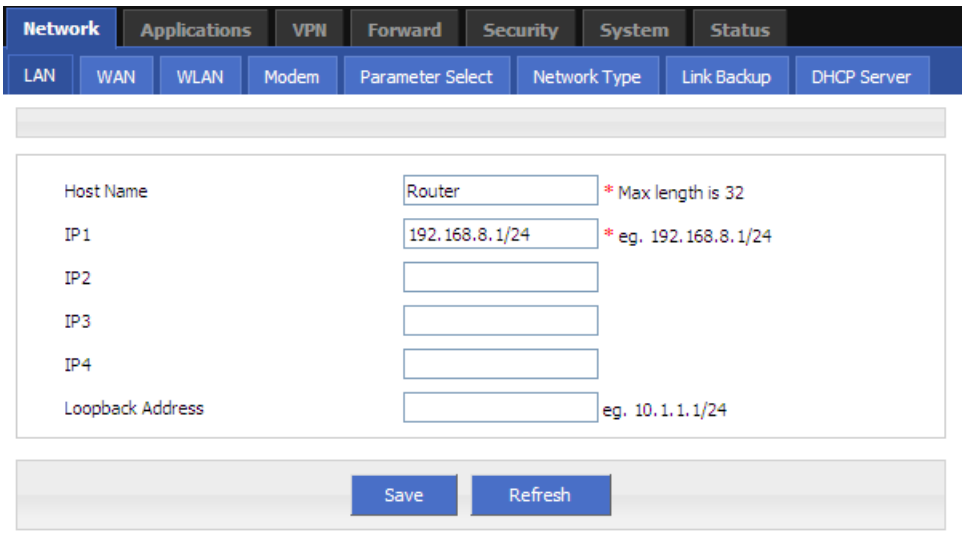
## 5.2.1 LAN

LAN setting used to manage local area network PC which connect to H8922, make them could visit internet and the network segment connectivity normal.

Step 1 Login H8922 WEB GUI.

Step 2 Single click “Network > LAN”.

Figure 5-16 LAN window




Step 3 LAN parameter.

Table 5-5 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<br>Format：A.B.C.D/Mask<br>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**

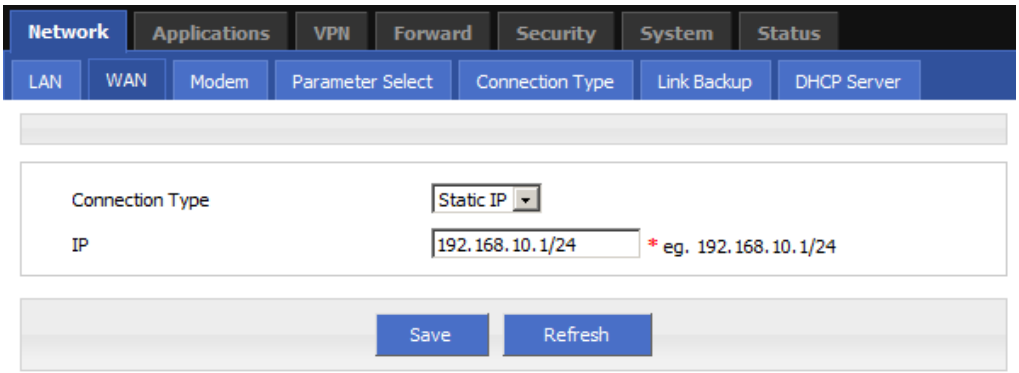
## 5.2.2 WAN

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

Step 1 Login H8922 WEB GUI.

Step 2 Single click “network > WAN”.

Figure 5-17 WAN window




Step 3 WAN connection type.

Table 5-6 WAN connection type parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Connection Type | WAN Connection Type | Dropdown List Selection:<br>• Static IP: Manual set WAN IP, if set static IP, need manual set gateway, DNS.etc.<br>• DHCP: DHCP get IP address<br>• 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<br>Format：A.B.C.D/Mask<br>IP1 default：192.168.10.1/24 |
| ”Connection Type”select”DHCP” | | |
| IP | get IP address from DHCP | Select DHCP |

| Parameter | Details | Operation |
|---|---|---|
| ”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<br>• Negotiation<br>CHAP is prior to PAP |
| PAP | Password Authentication Protocol | • Disable<br>• Negotiation |
| MS-CHAP | MS-CHAP<br>MicrosoftChallenge-Handshake Authentication Protocol<br>Based on MPPE | • Disable<br>• Negotiation |
| MS2-CHAP | MS-CHAP second version | • Disable<br>• Negotiation |
| EAP | PPP Extensible Authentication Protocol | • Disable<br>• Negotiation |
| **Compress (need match server end, default disable)** | | |
| Compression Control Protocol | Negotiate which compress control protocol used on PPP link | • Disable<br>• Negotiation |
| Address/Control Compression | Whether compress IP address | • Disable<br>• Negotiation |

| Parameter | Details | Operation |
|---|---|---|
| Protocol Field Compression | Whether compress Whether compress IP addres | • Disable<br>• Negotiation |
| VJ TCP/IP Header Compress | Whether allow TCP/IP to communicate by compressing VJ | • Disable<br>• Negotiation |
| Connection-ID Compression | Whether allow TCP/IP to communicate by compressing ID in the first | • Disable<br>• Negotiation |
| **More** | | |
| Debug | Enable PPP dialing log, default value is enable, in order to check more info about dialing, suggest no changing | • Disable<br>• 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<br>• 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<br>Unit: second<br>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,<br>Example: 10.10.10.1 |
| Remote IP | Set the remote IP address when PPP dialing, need ISP support | A.B.C.D,<br>Example: 10.10.10.254 |
| Professional | • nomppe<br>• mppe required<br>• mppe stateless<br>• nodeflate<br>• nobsdcomp<br>• default-asyncmap | Do not suggest modify, please contact us for help if necessary |

Step 4 Single click "save" icon.

**---END**

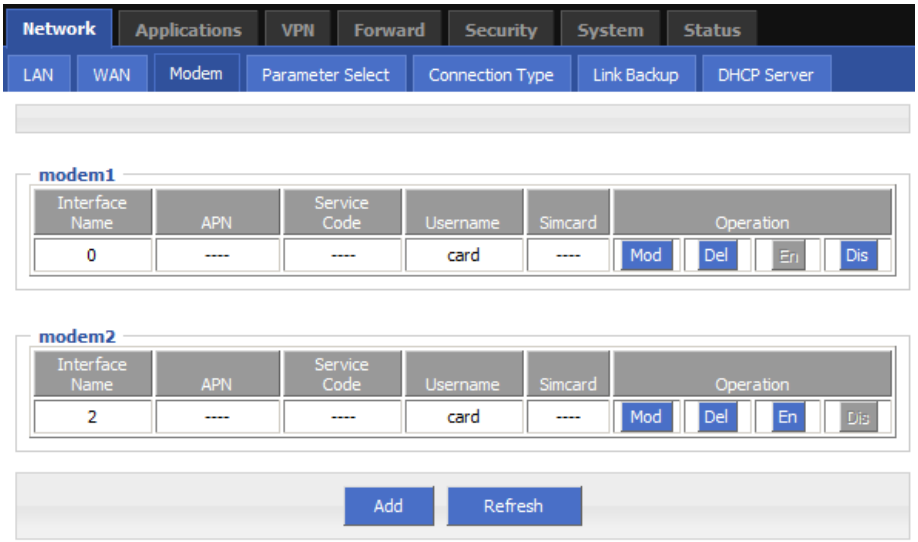
## 5.2.3 Modem

H8922 3G/4G Router core function, connect Internet by cellular modem, H8922 3G/4G Router support single modem single SIM, single modem dual SIM, dual modem dual SIM, those three working type provide internet connection to customers. Usually 3G network bandwidth is 1～5Mbps, 3.5G up to 20Mbps and LTE up to 100Mbps.

Step 1 Login H8922 WEB GUI.

Step 2 Single click “network > Modem”.

Figure 5-18 Modem window

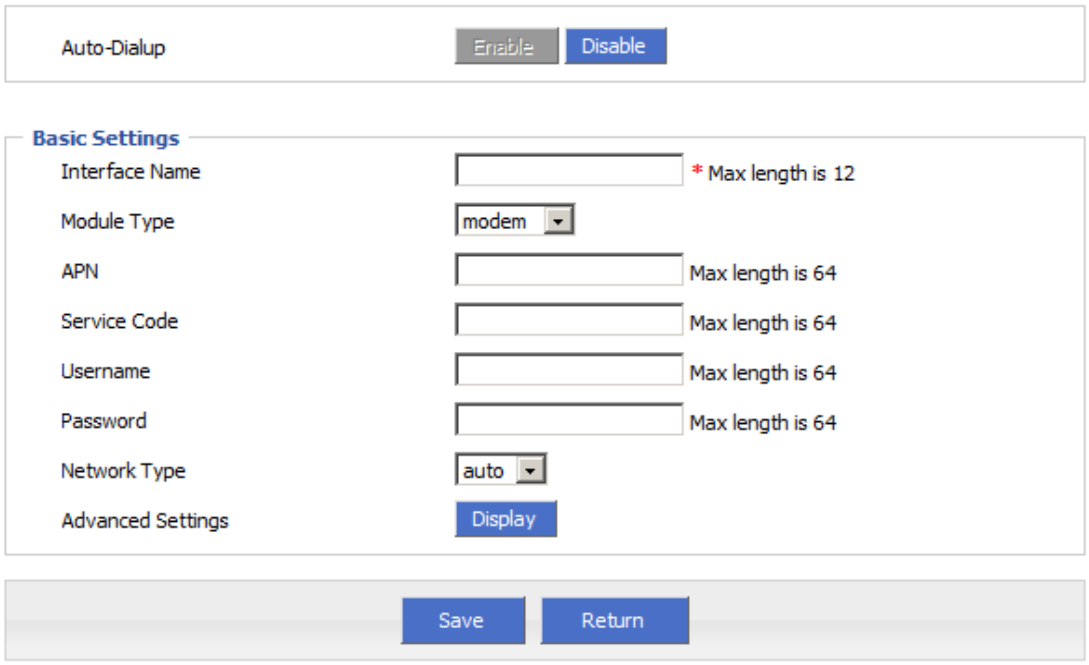



Step 3 Operation:

- add

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

Figure 5-19 Modem page




2. Input suitable parameter.

Table 5-7 "Modem" Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Auto-dialup | Auto-dialup current modem, if all modem auto-dialup disabled, router will not auto-dialup | • Enable<br>• Disable |
| Module type | If your router has dual cellular module inside, you could choose which module to use here. | Dropdown List<br>• modem<br>• modem2<br>• If your router has only one module, no such option. |
| 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#,<br>CDMA/EVDO: #777 | CODE type, up to 64 bytes |
| Username/Password | Provided by ISP | WORD type/CODE type, up to 64 bytes |
| SIM | Only Single module dual SIM router has | • SIM1<br>• SIM2 |

| Parameter | Details | Operation |
|---|---|---|
| | this option, used to select SIM card | |
| Network type | Network type force to 2.5G or 3G/4G | Dropdown List<br>WCDMA:<br>• auto<br>• wcdma<br>• edge<br>EVDO:<br>• auto<br>• evdo<br>• cdma<br>LTE, HSPA+ module force 3G means 3G/4G auto, AUTO means 2.5G/3G/4G 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<br>• Negotiation<br>CHAP is prior to PAP |
| PAP | Password Authentication Protocol | • Disable<br>• Negotiation |
| MS-CHAP | MS-CHAP<br>MicrosoftChallenge-Handshake Authentication Protocol<br>Based on MPPE | • Disable<br>• Negotiation |
| MS2-CHAP | MS-CHAP second version | • Disable<br>• Negotiation |
| EAP | PPP Extensible Authentication Protocol | • Disable<br>• Negotiation |
| **Compress (need match server end, default disable)** | | |
| Compression Control Protocol | Negotiate which compress control protocol used on PPP link | • Disable<br>• Negotiation |
| Address/Control Compression | Whether compress IP address | • Disable<br>• Negotiation |
| Protocol Field Compression | Whether compressWhether compress IP address | • Disable<br>• Negotiation |
| VJ TCP/IP Header Compress | Whether allow TCP/IP to communicate by compressing VJ | • Disable<br>• Negotiation |
| Connection-ID | Whether allow TCP/IP to communicate | • Disable<br>• Negotiation |

| Parameter | Details | Operation |
|---|---|---|
| Compression | by compressing ID in the first | |
| **More** | | |
| Debug | Enable PPP dialing log, default value is enable, in order to check more info about dialing, suggest no changing | • Disable<br>• 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<br>• 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<br>Unit: second<br>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,<br>Example: 10.10.10.1 |
| Remote IP | Set the remote IP address when PPP dialing, need ISP support | A.B.C.D,<br>Example: 10.10.10.254 |
| Professional | • nomppe<br>• mppe required<br>• mppe stateless<br>• nodeflate<br>• nobsdcomp<br>• default-asyncmap | Do not suggest modify, please contact us for help if necessary |

Figure 5-20 Single module single SIM/dual module dual SIM

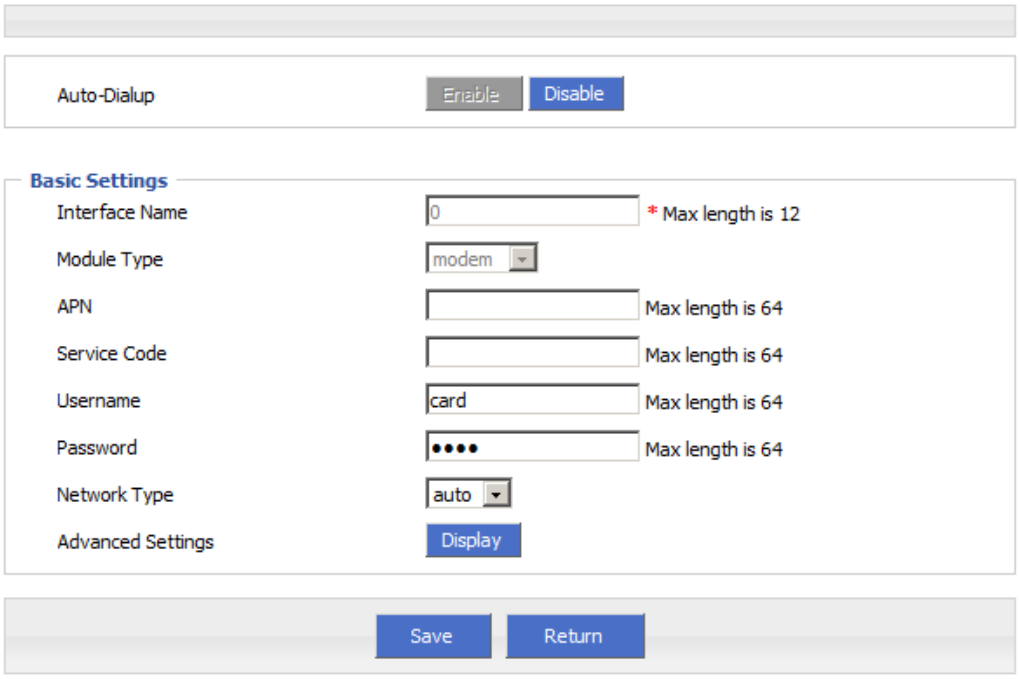



Figure 5-21 Single module dual SIM

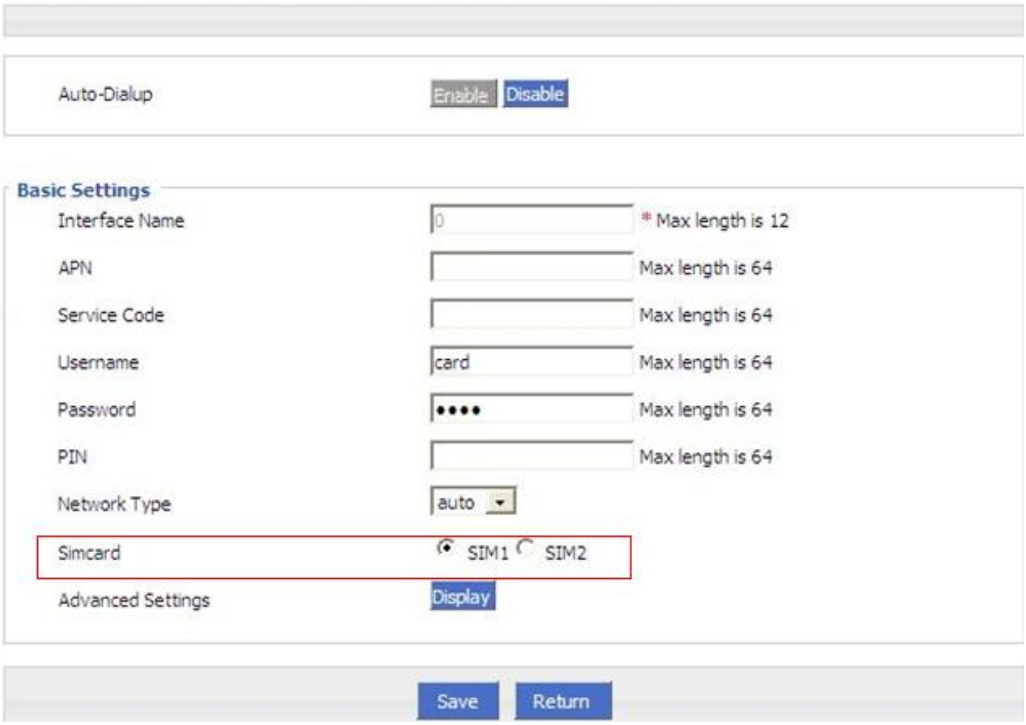
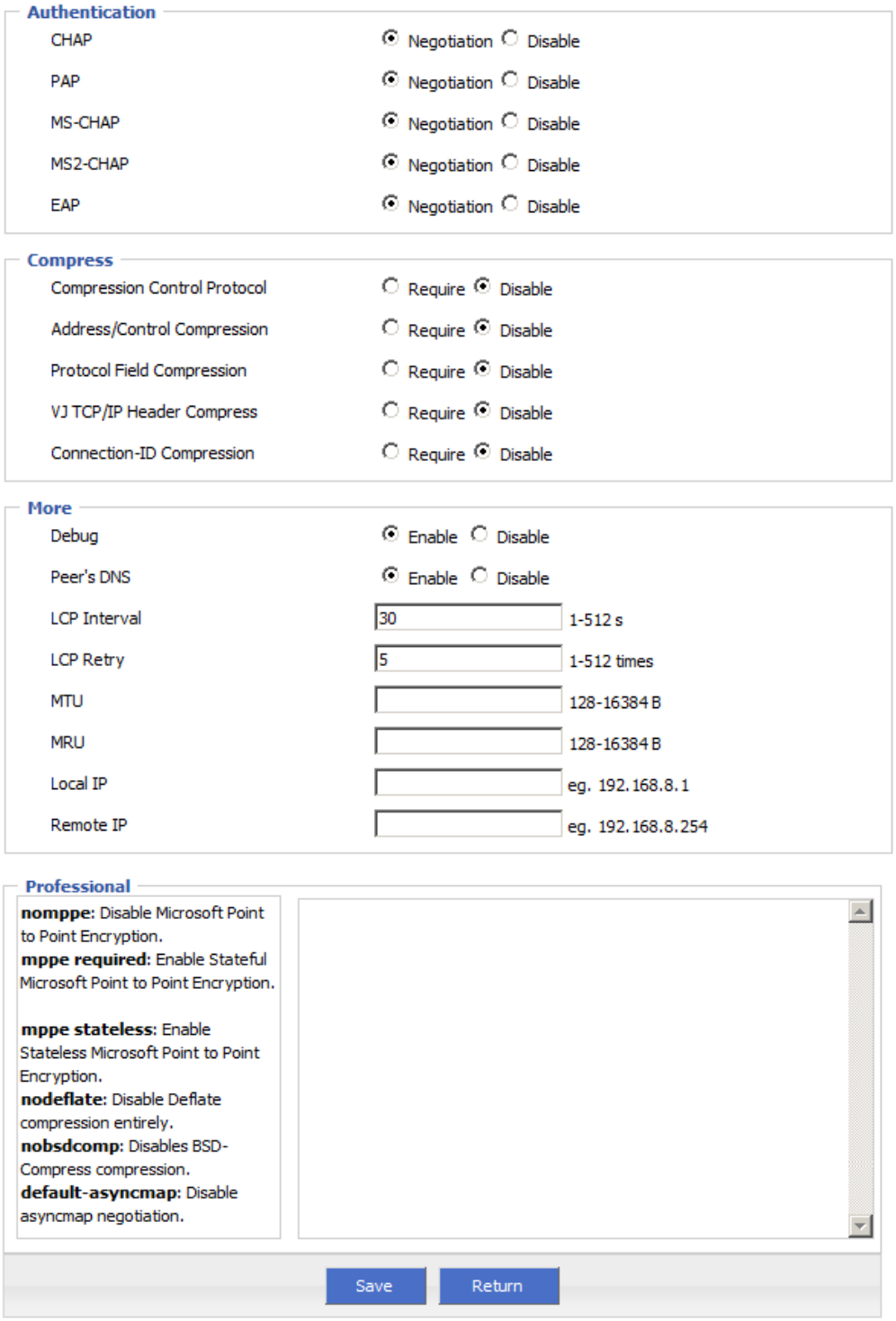


Figure 5-22 Advanced setting




3. Single click “save” icon to finish.

NOTE

Grey icon means enabled.

**---END**

## 5.2.4 WLAN

H8922 3G/4G Router provides WLAN AP, Station Client, Repeater three functions, through AP function, H8922 3G/4G Router can provide wireless LAN hotspots; through Station client function, it allows H8922 3G/4G Router access to other AP devices, such H8922 3G/4G 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 H8922 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 5-23 AP mode configure interface

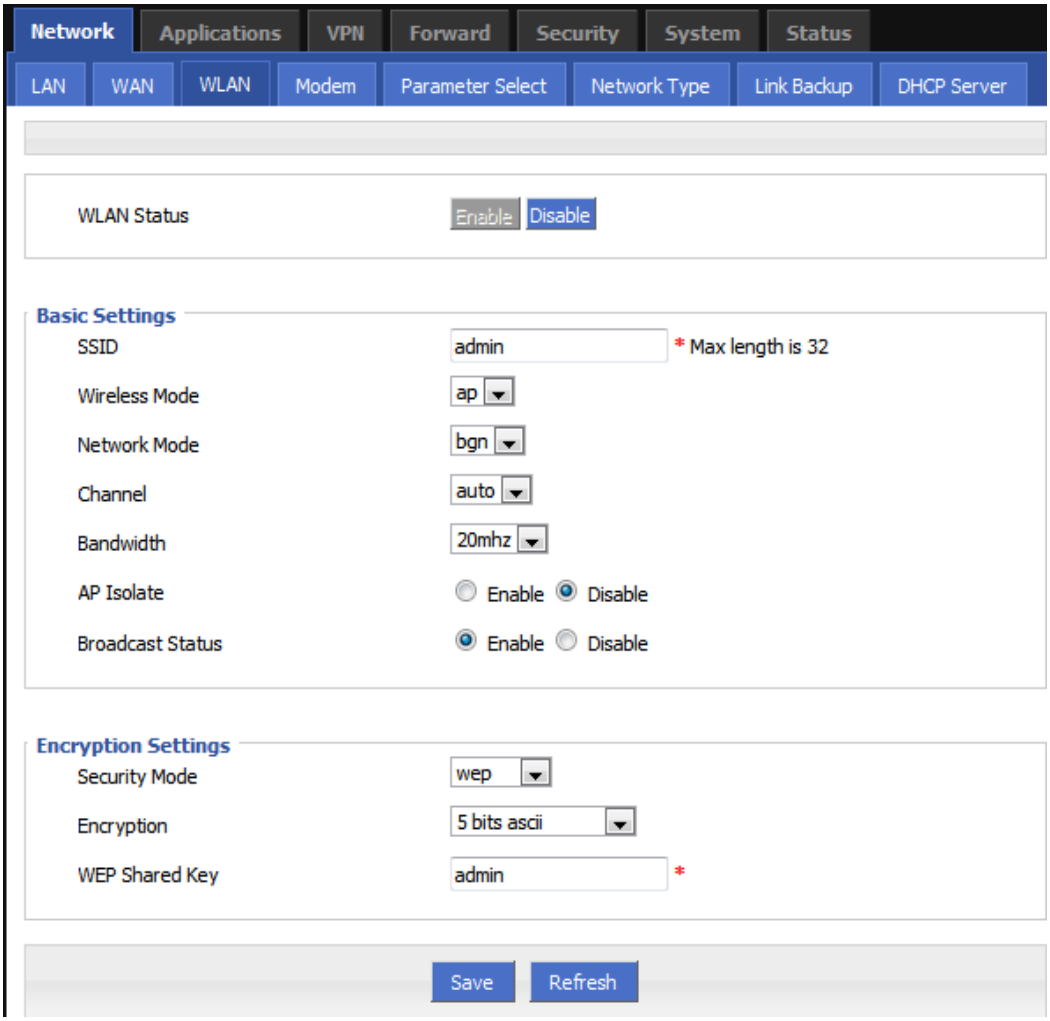


Figure 5-24 Station mode configure interface

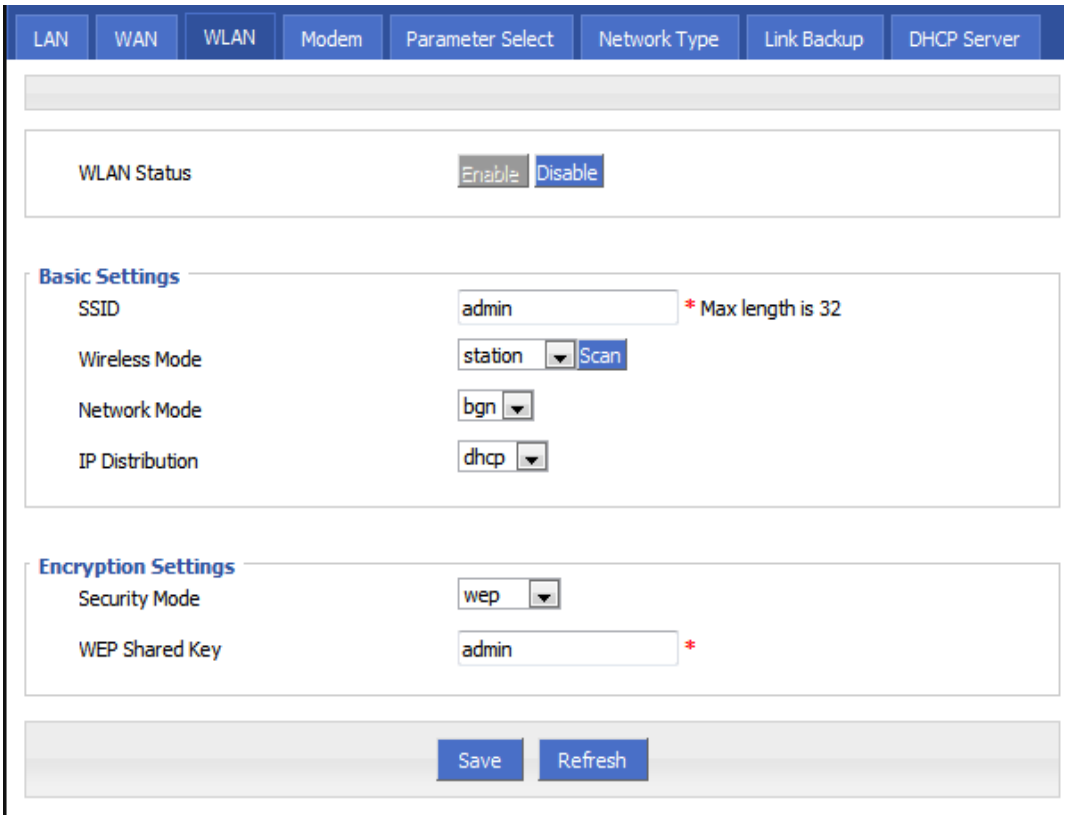



Figure 5-25 Repeater mode configure interface

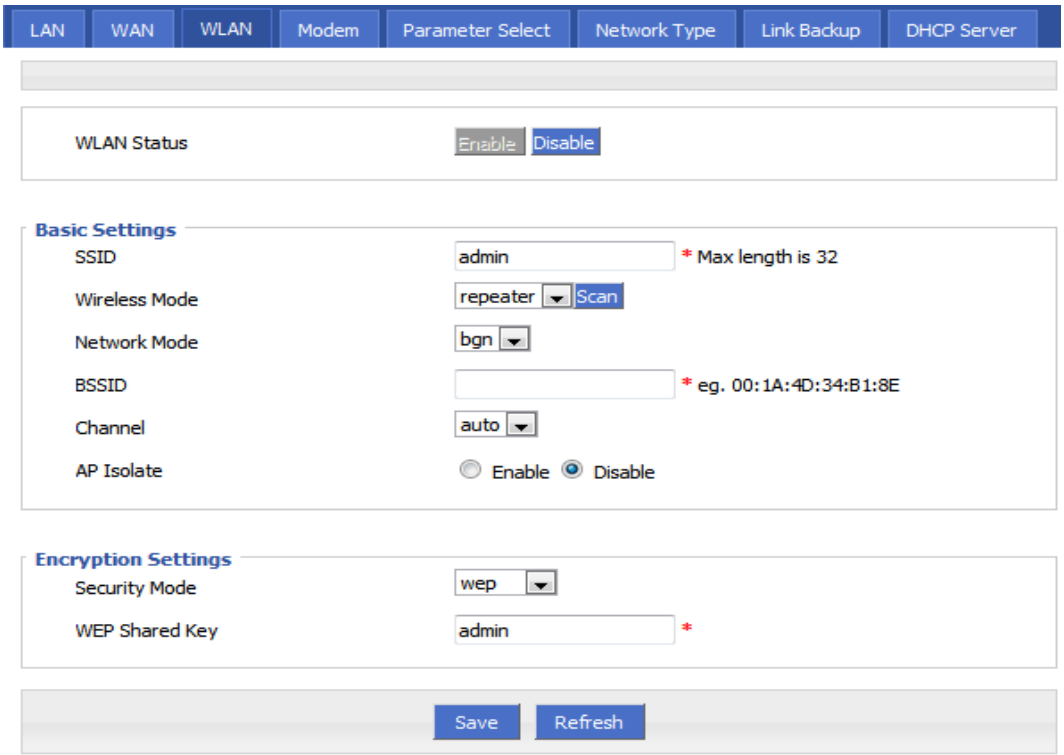
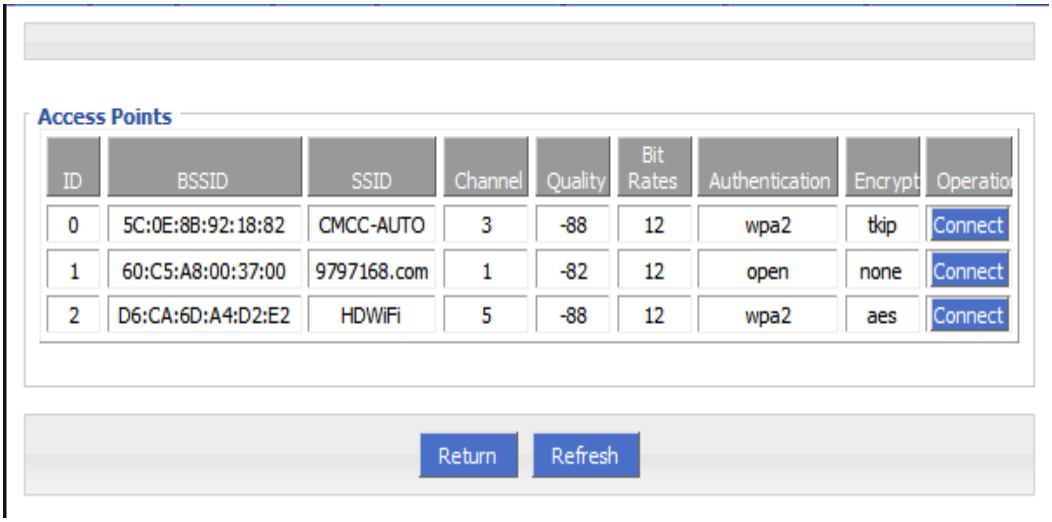


Figure 5-26 Station/Repeater scan signal interface




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

Table 5-8 WLAN parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| WLAN Status | Enable or disable WLAN feature | Dropdown List<br>• Enable<br>• Disable |
| **Basic Setting** | | |
| SSID | WLAN server identity | WORD type, max to 32Bytes |
| Wireless Mode | WLAN work mode, support ap/station/repeater | Dropdown List<br>• ap<br>• station<br>• 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<br>• n represents the network rate is 150Mbps<br>• bg represents the network rate is 11Mbps,54Mbp(Auto- Negotiation)<br>• 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<br>• auto<br>• 1～13<br>auto shows when there is no interference,the default channel is 6, when the same channel interference occur, it can |

| Parameter | Details | Operation |
|---|---|---|
| | | automatically jump out interfere to work with the smaller channel |
| Bandwith | Bandwith configure when WLAN work at 802.11n | Dropdown List<br>• 20MHz<br>• 40MHz<br>40MHz represents highspeed mode |
| AP Isolate | AP isolate the WLAN client, so the WLAN client can not access each other | Dropdown List<br>• Enable<br>• 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<br>• Enable<br>• 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<br>• dhcp：get IP address from DHCP<br>• 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<br>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<br>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<br>• wep<br>• disable<br>• wpa<br>• wpa2 |
| **WEP Encryption**<br>**（Wired Equivalent Privacy)** | | |
| Encryption | WLAN password format<br>• 5 bits ASCII<br>• 13 bits ASCII<br>• 10 bits hex digits<br>• 26 bits hex digits | Dropdown List |

| Parameter | Details | Operation |
|---|---|---|
| WEP shared key | Password connected to WLAN | Configure according to the previous "Encryption" result |
| **wpa/wpa2（WiFi Protected Access)** | | |
| Algorithms | Encryption algorithms<br>• tkip<br>• aes | Dropdown List |
| WPA Share Key | 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<br>Units：Seconds |

NOTE

When the working mode select station or repeater, H8922 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**

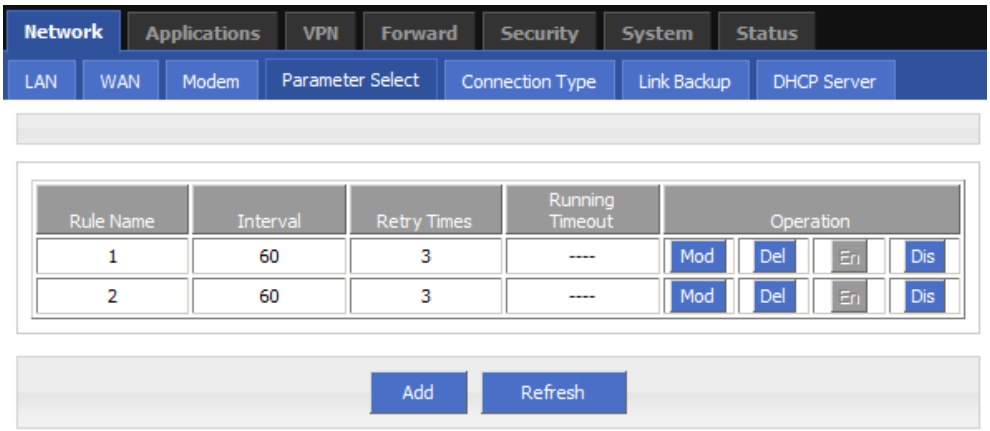
## 5.2.5 Parameter select (Recommend to Single module dual SIM version)

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 1 online it connect VPN 1, modem 2 online it connect VPN server, they cannot connect at same time because conflict, by this function you could easily switch when network failure.

Step 1 Login H8922 WEB GUI.

Step 2 Single click “Network > parameter select”.

Figure 5-27 parameter select




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

- add

Figure 5-28 add rule

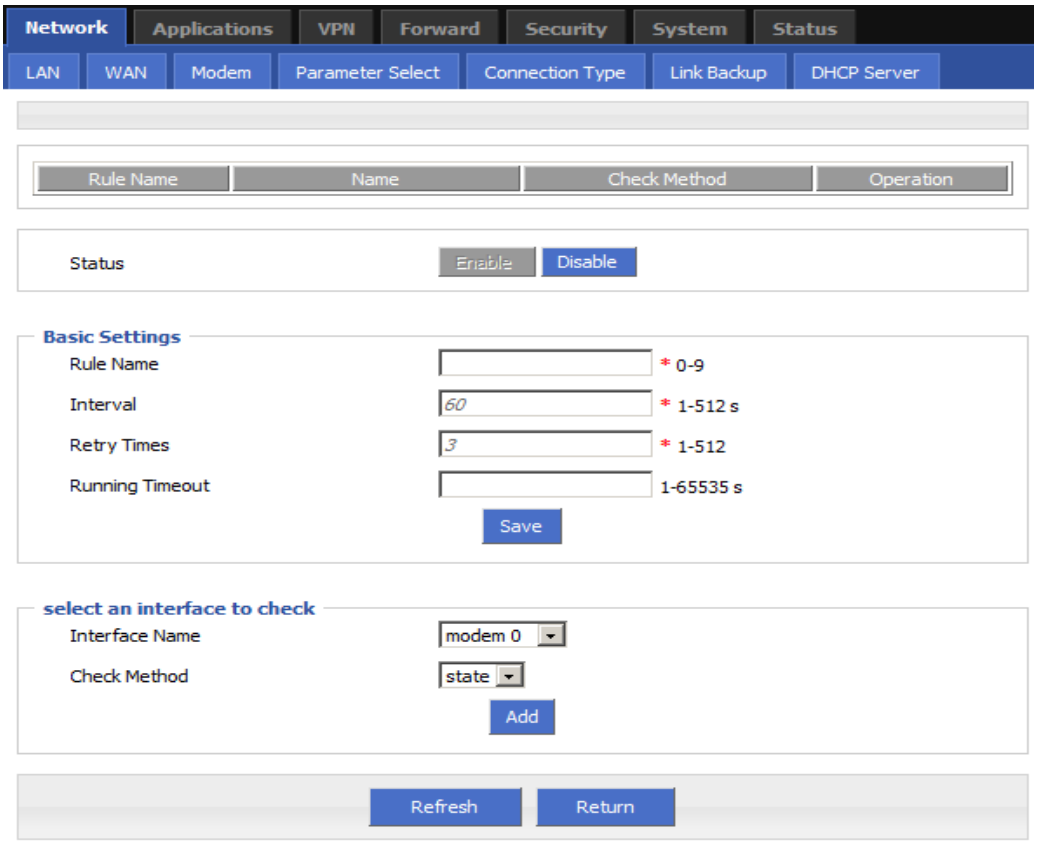



Table 5-9 Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| **Status** | For enabled rule: Only one rule is running at one time, when it check | • Enable<br>• Disable |

| Parameter | Details | Operation |
|---|---|---|
| | failed, next rule start running<br>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<br>Units: seconds/time<br>Default: 60/3 |
| Running timeout | Not available for rule 0<br>This parameter restrict current rule running time, when timeout, switch to rule0, if do not set, switch to next rule | Value area ： 1～65535<br>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<br>If ICMP, router will ping the ICMP IP address to check | Dropdown List<br>• state<br>• icmp |

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**

## Connection type

Step 1 Login H8922 WEB GUI.

Step 2 Single click “Network > Connection type”.

Figure 5-29 Connection type window

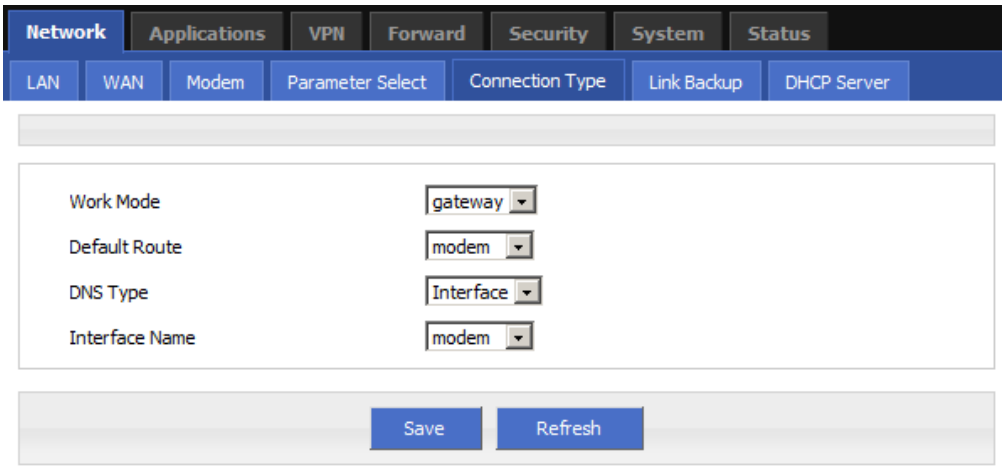



Table 5-10 Connection type Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Work mode | Gateway: IP data transfer with MASQ<br>Router: all IP data just transfer, no MASQ<br>Default Gateway, do not suggest to change | Dropdown List<br>• gateway<br>• 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<br>• interface<br>• custom |
| DNS1/DNS2 | Manual set DNS | Example: 8.8.8.8 |
| Interface name | Router will get DNS address from this interface | Dropdown List<br>• modem<br>• modem2<br>• eth0 |

Step 3 Single click “save” icon.

**---END**

## 5.2.6 Link Backup

This function used to set how to backup network among modem1, modem2, 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 H8922 WEB GUI.

Step 2 Single click “network > Link Backup”.

Figure 5-30 Link Backup

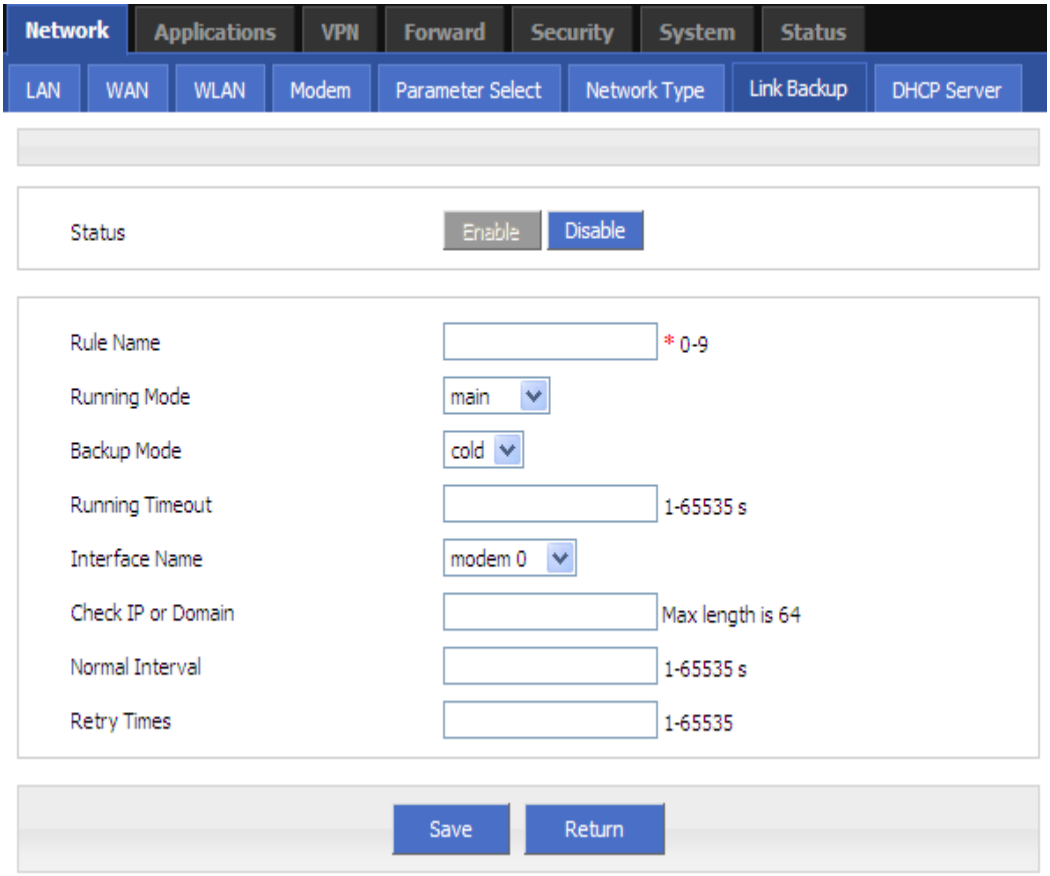



Table 5-11 Link Backup Parameter

| Parameter | Details | Operation |
|---|---|---|
| Status | Enable or Disable Link Backup feature | • Enable<br>• Disable |
| Rule Name | Link Backup rule name identification<br>Note:<br>0 can act as chain link or backup link, 1-9 only can act as backup link<br>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:<br>main：Link operate mode is main link<br>backup：Link operate mode is backup link | Dropdown List<br>• main<br>• backup |
| Backup Mode | Backup mode include: cold and hot<br>Hot refers to the corresponding link | Dropdown List<br>• cold<br>• hot |

| Parameter | Details | Operation |
|---|---|---|
| | 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 | |
| Running Timeout | If the current link is main link, shows the main link stability time<br>if the current link is backup link, shows the shortest working time<br>Note:<br>Running timeout is only suitable for switching between master and slave | Value area:1-65535<br>Units: seconds |
| Interface Name | Interface used for link switching | Dropdown List<br>• modem 0<br>• modem 1<br>• eth1<br>• 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,<br>up to 64 characters,<br>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<br>Units: seconds/times |

Step 3 Single click “save” icon.

**---END**

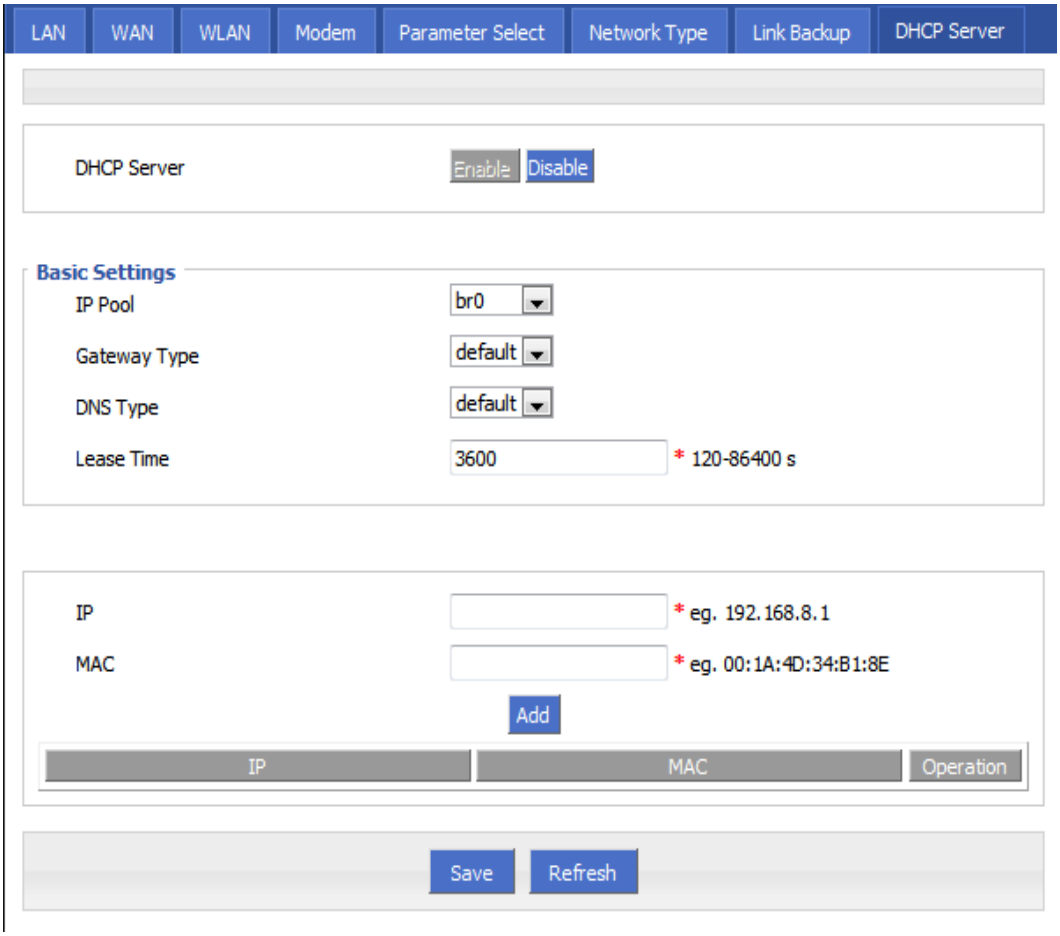
## 5.2.7 DHCP Service

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 H8922 WEB GUI.

Step 2 Single click “Network > DHCP Server”.

Figure 5-31 DHCP




Step 3 Configure DHCP parameter.

DHCP parameter instructions as Table 5-8.

Table 5-12 DHCP Parameter

| Parameter | Details | Operation |
|---|---|---|
| DHCP Server | Enable or Disable DHCP feature | • Enable<br>• 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<br>• br0<br>• 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<br>Example：192.168.8.2 |
| End IP | When IP pool select custom configuration, configure the DHCP pool end IP address | Manual input<br>Format：A.B.C.D/Mask<br>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<br>Default value：default |
| DNS Type | DHCP client access to the DNS IP source, has a default, modem, modem2, 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<br>• default<br>• modem<br>• mdoem2<br>• eth0<br>• br0<br>• custom<br>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<br>Units：seconds<br>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<br>Format：A.B.C.D/Mask<br>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<br>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, H8922 3G/4G 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

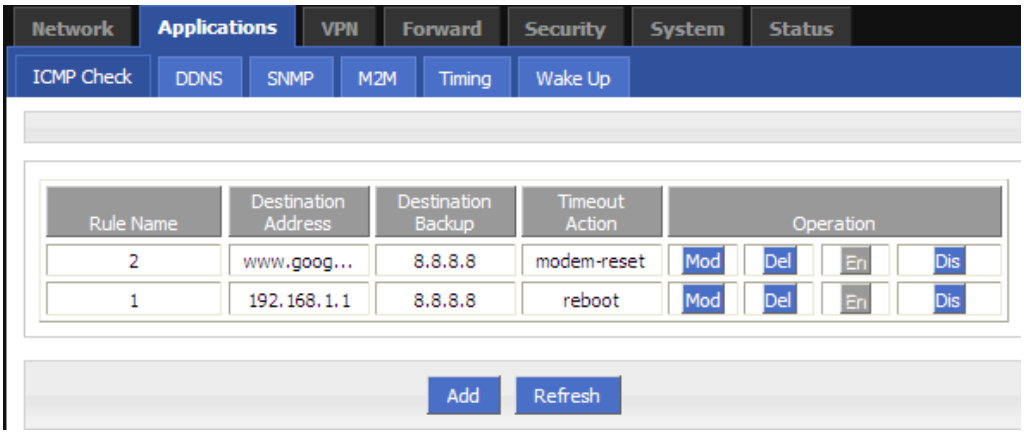
There is fake link (can get IP after dialing, but cannot link to destination address). Usually LCP is used to avoid this. Besides LCP, H8922 3G/4G router can use another more reliable checking way ICMP which check the link by PING. When abnormal link is checked, the preset action will be executed to 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 H8922 3G/4G router.

Step 2 Click “applications > ICMP Check”.

Open “ICMP Check” tab.

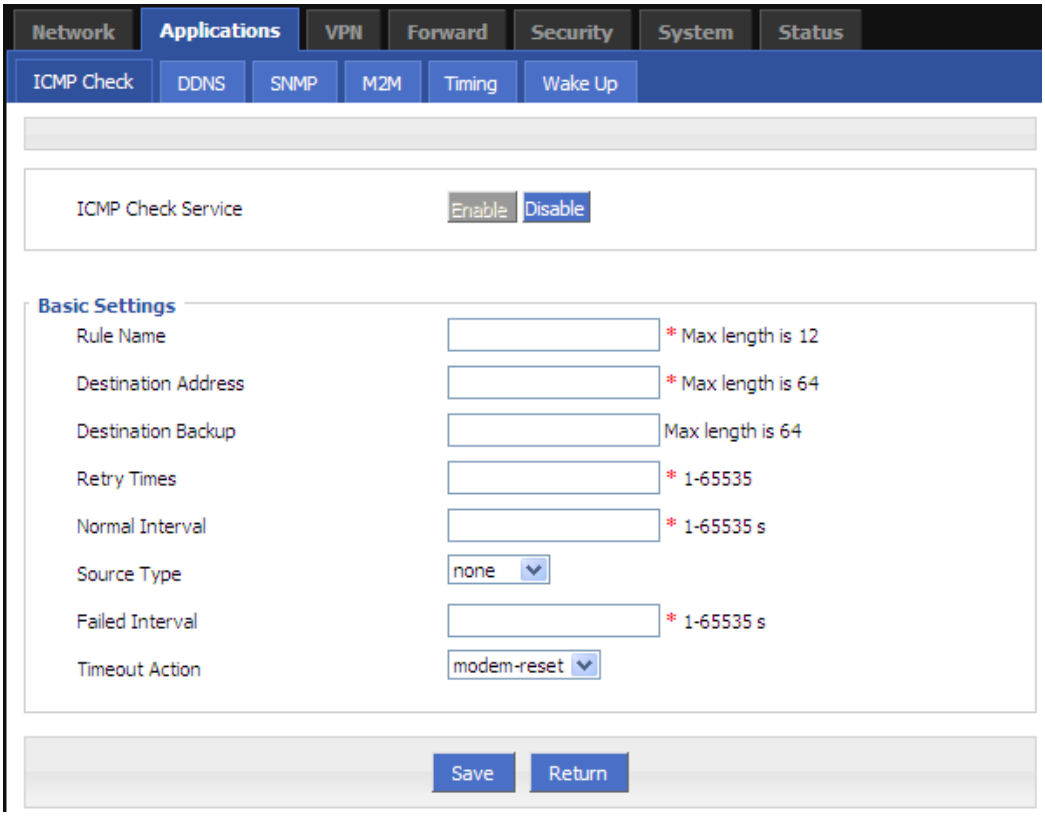
Figure 5-32 ICMP Check tab




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

- Add

Figure 5-33 ICMP adding page




2. Configure the ICMP check parameter.

Table 5-13 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<br>• Enable<br>• 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<br>Unit: second/time |
| Source Interface | Router sends an ICMP detected packet's source address | Dropdown List options<br>• br0<br>• modem<br>• modem2 |
| Timeout action | An action when check failure times reach max failure times. Can be modem-reset, reboot, custom | Dropdown List options<br>• modem-reset：modem redials<br>• modem2-reset：modem2 redials<br>• reboot：router reboots<br>• custom：customized action |
| Run commands | If “Timeout action” is “custom”, this shall be comfigured. Commands are BGO operation. It is not suggested to use, if need, pls contact our technical engineers | WORD type, max 64 bytes |

3. Single click “save” to finish a ICMP check rule.

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**

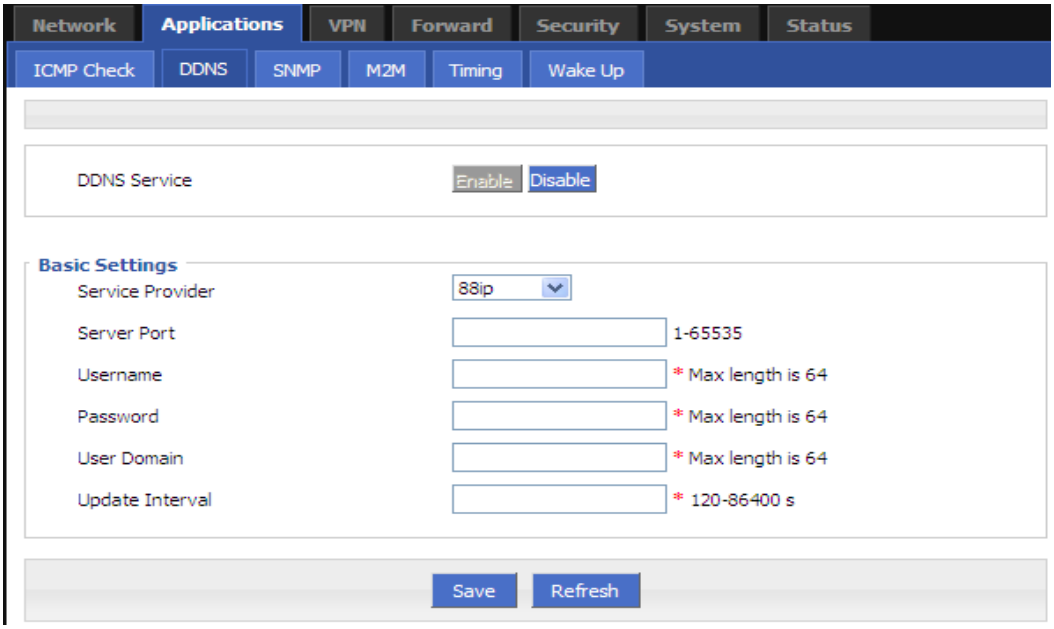
## 5.3.2 DDNS configuration

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 H8922 3G/4G router.

Step 2 Click “Applications” > “DDNS”.

Figure 5-34 DDNS configuration




Step 3 Configure DDNS parameter.

Table 5-14 DDNS Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| DDNS Service | Set whether enable DDNS service function | Button<br>• Enable<br>• Disable |
| **Basic Config** | | |
| Service Provider | Select the DDNS service provider that router currently supports, don’t support other providers | Dropdown List options<br>• 3322<br>• 88ip<br>• Dnsexit<br>• Dyndns<br>• Zoneedit<br>• changeip<br>• custom |
| Server IP or<br>Domain | When “custom” in “service provider” is selected, “Server IP or Domain” will be configured. Default is standard DDNS protocol. for | WORD type, max 64 bytes |

| Parameter | Details | Operation |
|---|---|---|
| | customized protocol, please contact our engineer | |
| 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<br>If empty, it means 80 port |
| 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<br>Unit: seconds |

Step 4 Click “save”to complete DDNS configuration

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**

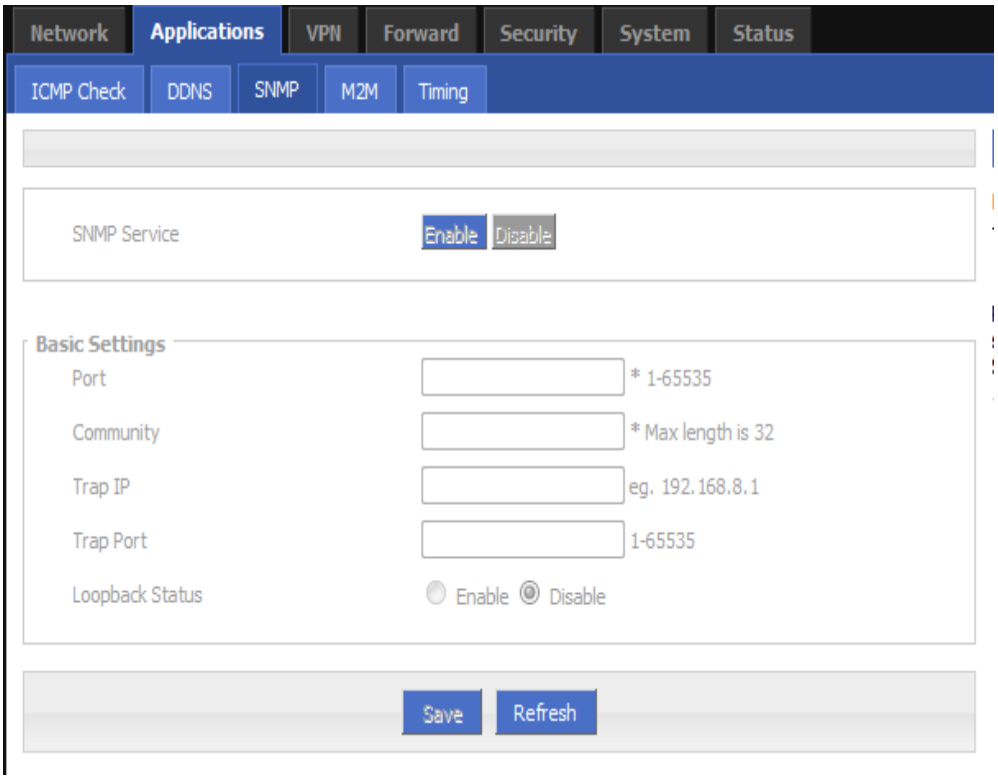
## 5.3.3 SNMP configuration

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 H8922 3G/4G router.

Step 2 Click “Applications > SNMP” to open the “SNMP” tab.

Figure 5-35 SNMP configuration




Step 3 Configure SNMP parameter.

Table 5-15 SNMP Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| SNMP service | To enable or disable SNMP service | Options:<br>• Enable<br>• Diable |
| **Basic Config** | | |
| Port | SNMP port, suggest to be default port161 | Value area: 1～65535<br>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<br>Format：A.B.C.D/Mask |
| Trap Port | Link-state router report server address's port | Value area：1～65535<br>Default：162 |
| Loopback Status | Match with "LAN" page loopback address, in the "Loopback Status" to "Enable", means loopback address | Options:<br>• Enable<br>• Diable |

| 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 | |

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

NOTE

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

**---END**

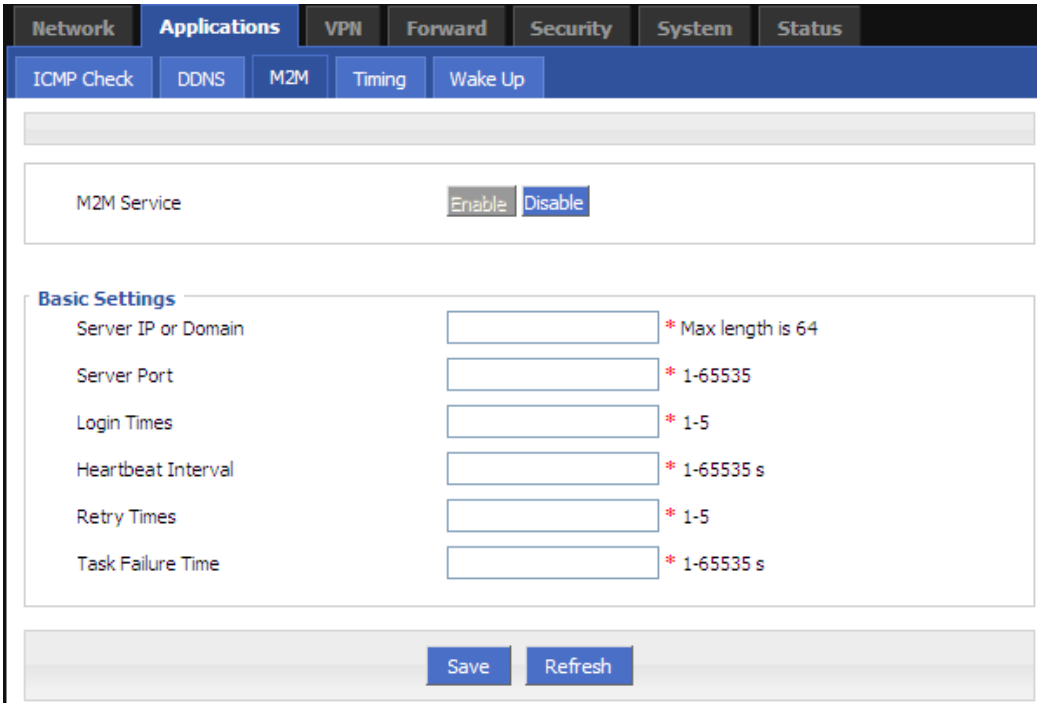
## 5.3.4 M2M configuration

H8922 3G/4G 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 H8922 3G/4G router.

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

Figure 5-36 M2M configuration




Step 3 Configure M2M parameter .

Parameter instruction is shown.

Table 5-16 M2M Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| M2M service | To enable or disable M2M function. This function shall be used with our M2M platform | Button<br>• Enable<br>• 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<br>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<br>Unit: seconds |
| Retry Times | There is a retry mechanism for package | Value area: 1～5 |

| Parameter | Details | Operation |
|---|---|---|
| | 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 | 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<br>Unit: seconds |

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

**---END**

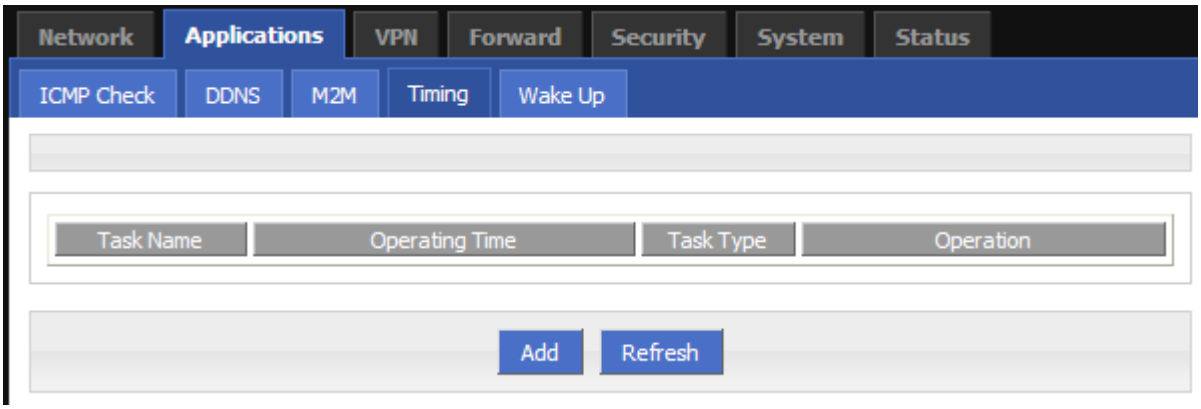
## 5.3.5 Timing configuration

This application is to control the online time of the router to better manage network and save 3G/4G flow. H8922 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 H8922 3G/4G router.

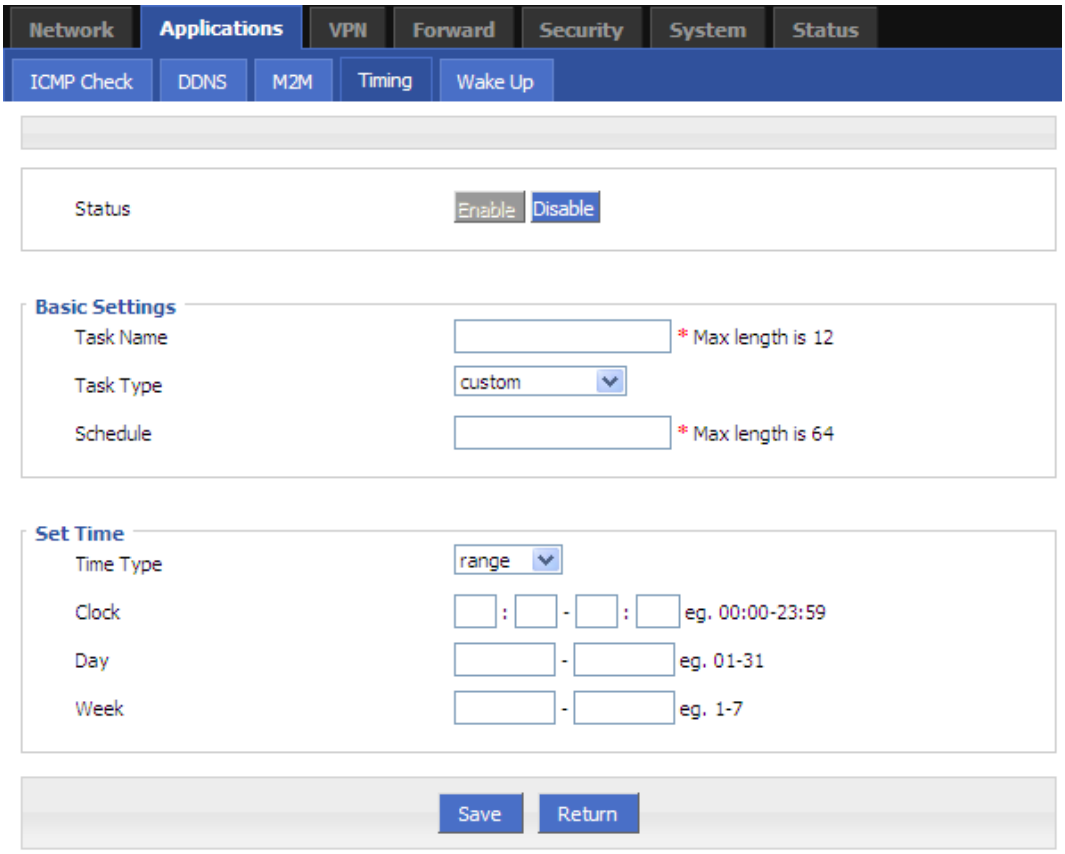
Step 2 Click "Applications > M2M" to open M2M configuration tab.

Figure 5-37 Timing configuration




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

Figure 5-38 To add timing task




Step 4 Configure timing task parameter.

Table 5-17 Timing task parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Status | To enable or disable a timing task. Some task shall be enabled together with NTP | options<br>• Enable<br>• 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” and “modem2-online”), which means that the modem will be online (if down, modem will automatically redial) during the configured time period. Modem will be offline (no | Drop DownList options:<br>• modem-online<br>• modem2-online<br>• reboot<br>• custom<br>if select “custom”, “schedule” will be shown to input command (can be dialup or other command). Max 64 bytes |

| Parameter | Details | Operation |
|---|---|---|
| | 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:<br>• range<br>• 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]<br>Format: HH:mm-HH:mm |
| Day | Days in a month for task | Value area: [01,31]<br>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]<br>Format: X-X<br>1 for Monday |
| **When "time type" select "Interval"** | | |
| Interval | Time interval for action task | Value area: 1～65535<br>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**

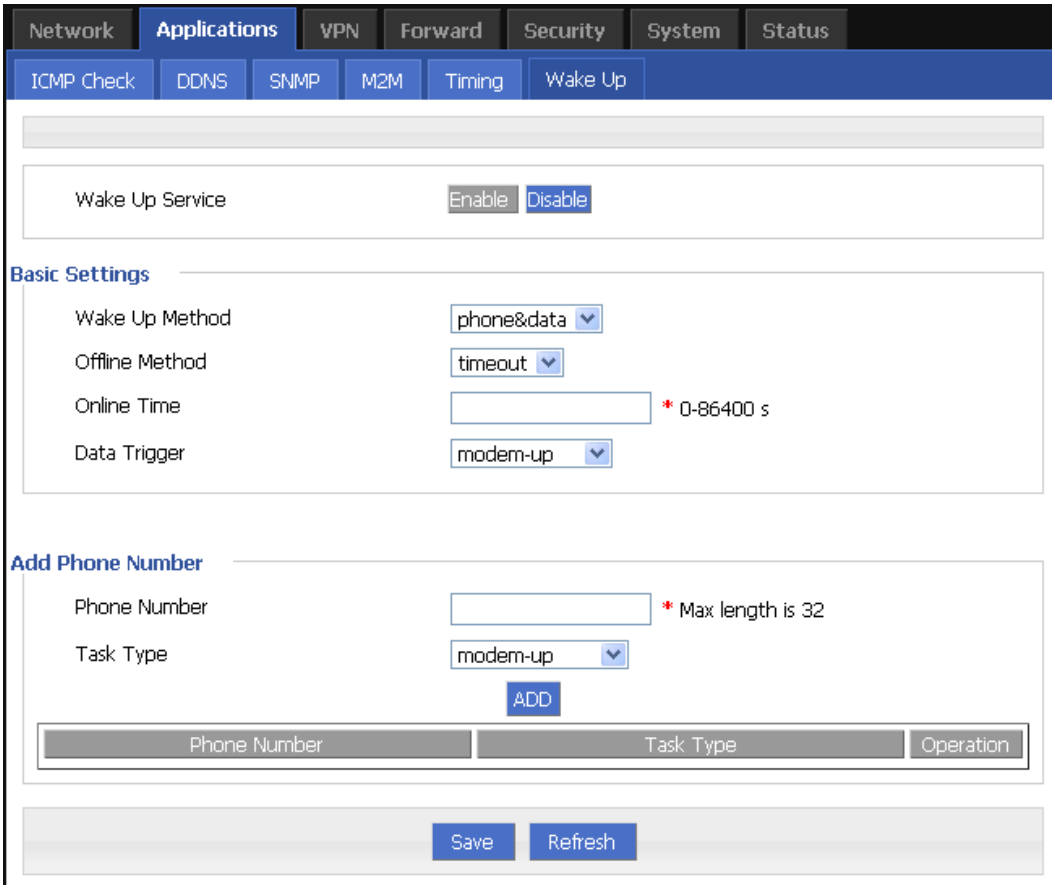
## 5.3.6 Wake up configuration

3G/4G fee is mostly based on flow. H8922 3G/4G 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 H8922 3G/4G router.

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

Figure 5-39 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 5-18 Wake up Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Wake up service | To enable or disable the service. | Options:<br>• Enable<br>• 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. |
| Task type | Triggered action includes modem-up, modem-down, reboot. | Dropdown List options<br>• modem-down |

| Parameter | Details | Operation |
|---|---|---|
| | | • modem-up<br>• modem2-down<br>• modem2-up<br>• 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<br>• phone/data<br>• 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<br>• timeout<br>• idle |
| Online time | Online time of router, for "idle", online time will recalculated if there is data transmission. | Value area ： 0～86400<br>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<br>• modem-up<br>• modem2-up<br>• modem-all-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 either SIM of the two SIMs of H8922 3G/4G router to open SMS or voice function, no matter which slot to be installed.
"Data" will trigger only actions: modem-up/modem2-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".

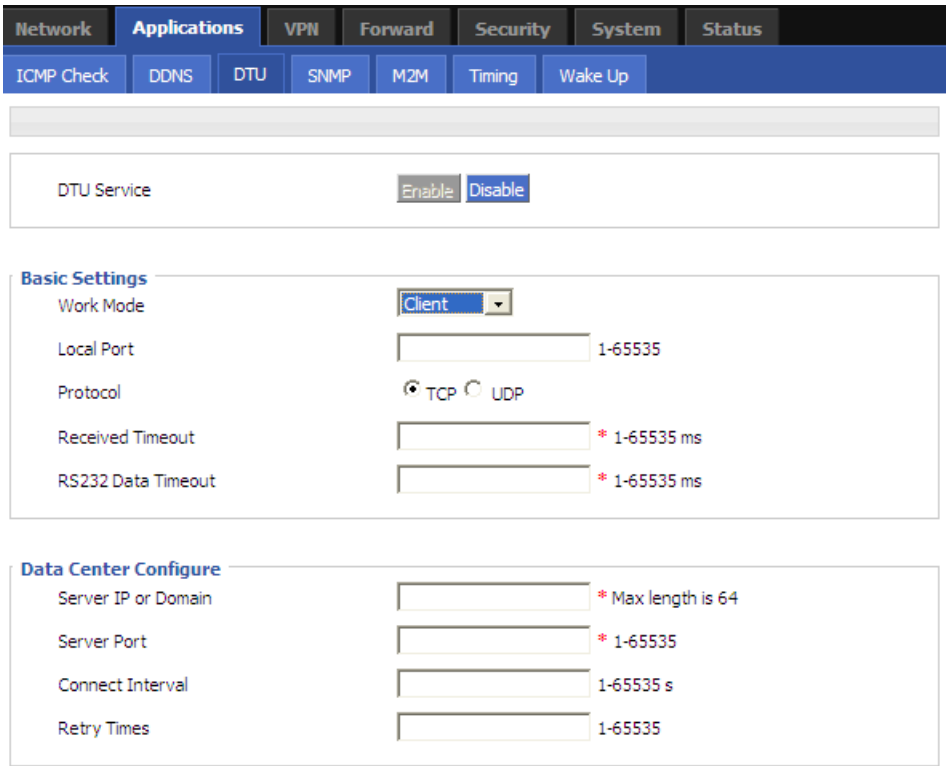
## 5.3.7 DTU configuration (Optional)

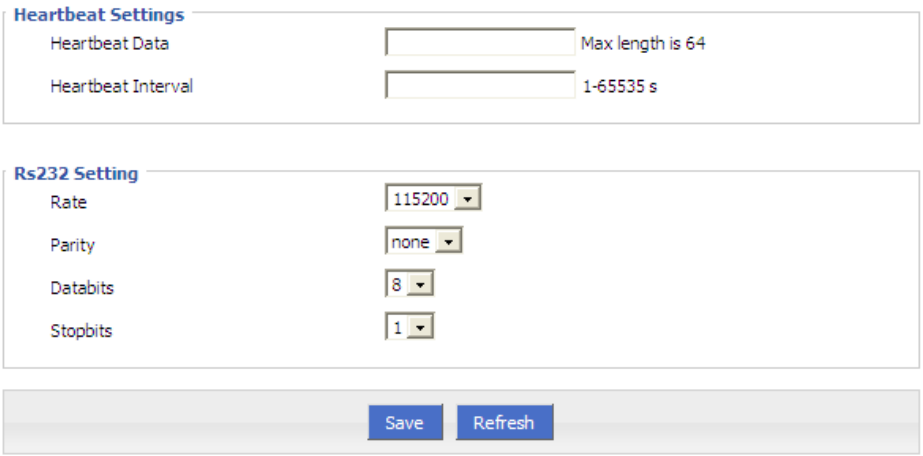
DTU（Data transfer Unit)is to transfer data for meters with RS232 interface from site to center through 3G/4G network. It support TCP/UDP Client/Server mode.

Step 1 Log-on WEB GUI of H8922 3G/4G routers.

Step 2 Click "Applications > DTU" to open "DTU" tab.

Figure 5-40 DTU configuration






Step 3 Configure “DTU” parameter.

Table 5-19 DTU Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| DTU Service | Enable or Disable DTU Service | DTU Service options<br>• Enable<br>• Disable |
| Basic Settings | | |
| Work Mode | Work mode:<br>• Server: 3G/4G router act as TCP/UDP server<br>• Client: 3G/4G router act as TCP/UDP client<br>• DDPClient: 3G/4G router act as UDP client with Hongdian protocol | Select from Dropdown List<br>• Server<br>• Client<br>• DDPClient |
| Local Port | DTU service port | Specify the port number:1-65535 |
| Protocol | Protocol of TCP/UDP connection<br>TCP protocol is a connection-oriented reliable transport protocol for high reliability requirements and for communication efficiency which is not high degree of sensitivity of the occasion<br>UDP protocol is a connectionless unreliable transport protocol, suitable for relatively high efficiency requirements, and the occasion | Select protocol:TCP or UDP<br>Note:<br>When the work mode is "DDP clients," only support "UDP protocols used in conjunction with the DDP protocol.” |

| Parameter | Details | Operation |
|---|---|---|
| | of relatively low reliability | |
| Received Timeout | DTU port timeout which receive from the data center, within the received packet does not exceed the maximum packet length range, the data is reading at this time, if the data is been reading, and will display all data during this time; If no data,when it is greater than the timeout, it will consider reading data completely, displays DTU serial terminal | Specify time according to your need<br>data:1-65535ms<br>Default value:500<br>Units:ms |
| RS232 Data Timeout | DTU waiting time to send the serial data to the data center side. Within waiting time, the data sent over UDP / TCP packets received maximum packet length, then sent immediately; if not more than UDP / TCP packets received maximum packet length, then wait for data until it reaches the last packet idle time , and then to send | Specify time according to your need<br>data:1-65535ms<br>Default value:500<br>Units:ms |
| Data Center Configure | | |
| Server IP or Domain | DataServerCenter(DSC) ip or domain | Format：A.B.C.D/Mask or Word Type |
| Server Port | DataServerCenter(DSC) port number | Port number:1-65535 |
| Connect Interval | The reconnect interval is DTU client fail to connect to DSC server | Manually input:1-65535<br>Units:second |
| Retry Times | The retry times is DTU client fail to connect to DSC server | Manually input:1-65535 |
| Heartbeat Settings | | |
| Heartbeat Data | customize heartbeat data content | Manually input,Max length is 64 |
| Heartbeat Interval | Set heartbeat interval(when there is no data transfer, the router send the heartbeat data content every heartbeat interval) | Manually input:1-65535<br>Units: second |
| RS232 settings | | |
| Rate | Set the serial port transfer rate | Select from the dropdown list, according to the practical settings |

| Parameter | Details | Operation |
|---|---|---|
| | | of DTU serial port<br>Default: 115200 |
| Parity | Set the data parity | Select from the dropdown list, according to the practical settings of DTU serial port<br>Value: None, Old ,Even<br>Default: None |
| Databit | Set the data transfer bit | Select from the dropdown list, according to the practical settings of DTU serial port<br>Value: 5,6,7,8<br>Default: 8 |
| Stopbit | Set the data stop bit | Select from the dropdown list, according to the practical settings of DTU serial port<br>Value: 1,2<br>Default: 1 |

Step 4 Single click “save” icon to finish “DTU” configuration,

DTU will start to work when modem is online if it is enabled.

**---END**

## 5.3.8 GPS configuration (Optional)

GPS is to transfer GPS data the device gets from satellite. It uses UDP protocol.

Step 1 Log-on WEB GUI of H8922 3G/4G routers.

Step 2 Click “Applications > GPS” to open “GPS” tab.

Figure 5-41 GPS configuration

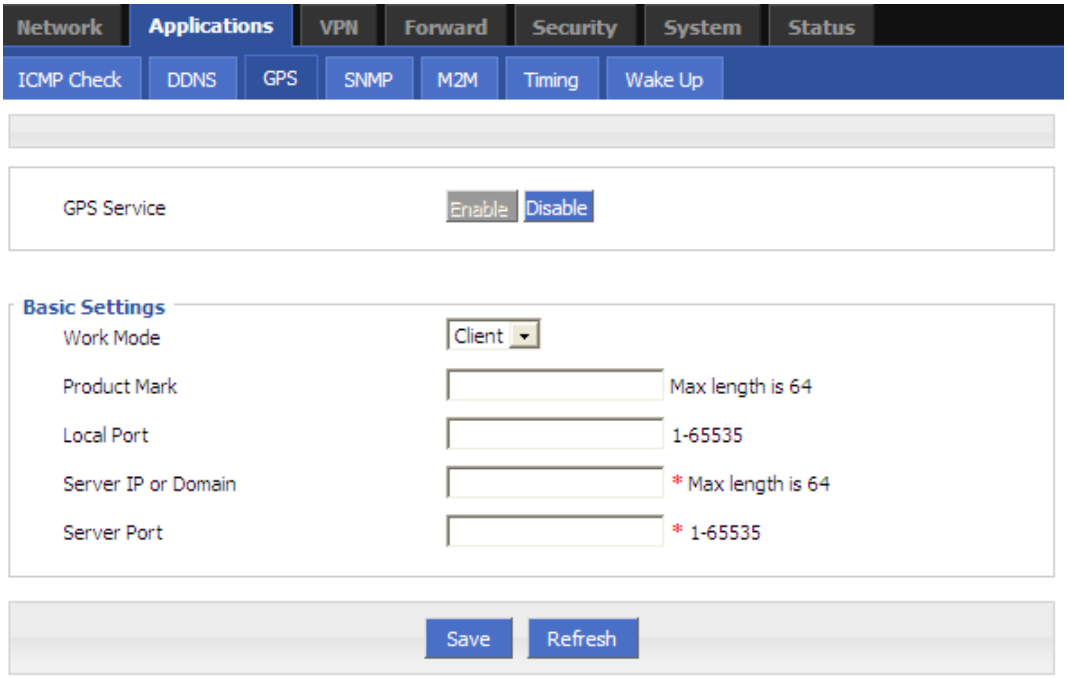



Table 5-20 GPS Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| GPS Service | Enable or Disable GPS Service | GPS Service options<br>• Enable<br>• Disable |
| Basic Settings | | |
| Work Mode | Set the work mode of the GPS | Select from the dropdown list,<br>Default: Client |
| Product Mark | The identification of the router GPS, used for identifying the device | Word Type, max length is 64 |
| Local Port | The router port for reporting the GPS data | Value: 1-65535 |
| Server IP or Domain | Server IP or domain for getting the GPS data | Format：A.B.C.D/Mask or Word Type |
| Server Port | Server port for getting the GPS data | Value:1-65535 |

Step 3 Single click “save” icon to finish “GPS” configuration

GPS will start to work when server IP or domain is reachable from router.

**---END**

# 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. H8922 3G/4G router supports IP filter, domain filter and MAC filter.

## 5.4.2 Configuration

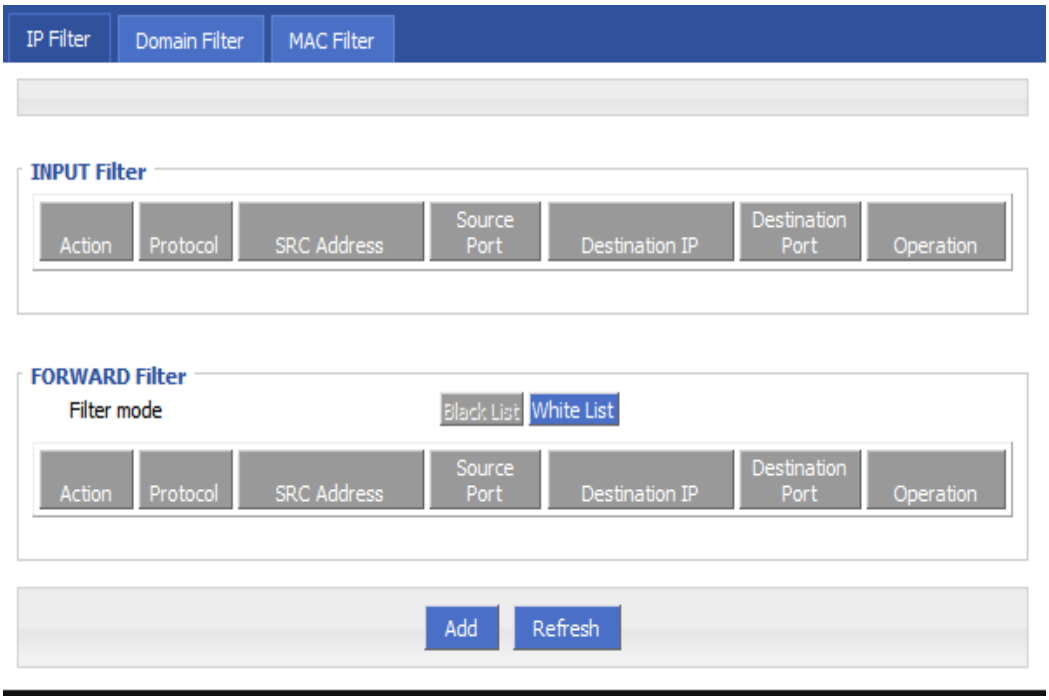
### IP Filter

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 H8922 3G/4G router.

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

Figure 5-42 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 cannot be forwarded through the router.
- White List: The default refuses packet forwarding, in line with the list of "accept" rules packet can go through 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 5-43 IP filter “Input” type

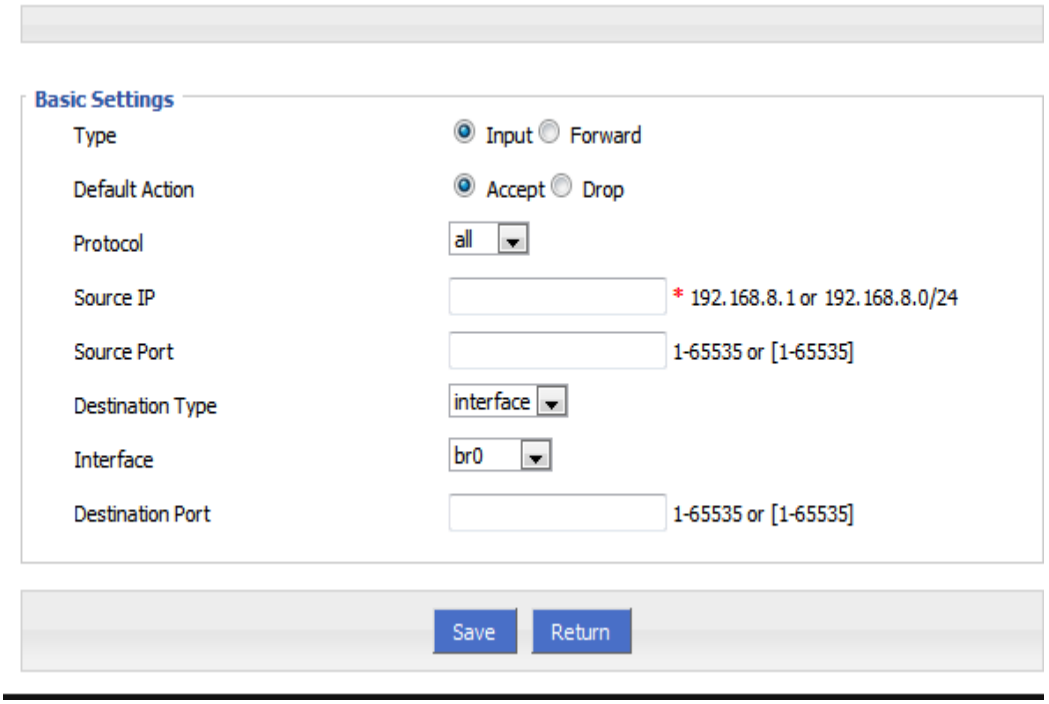



Figure 5-44 IP Filter “Forward” type

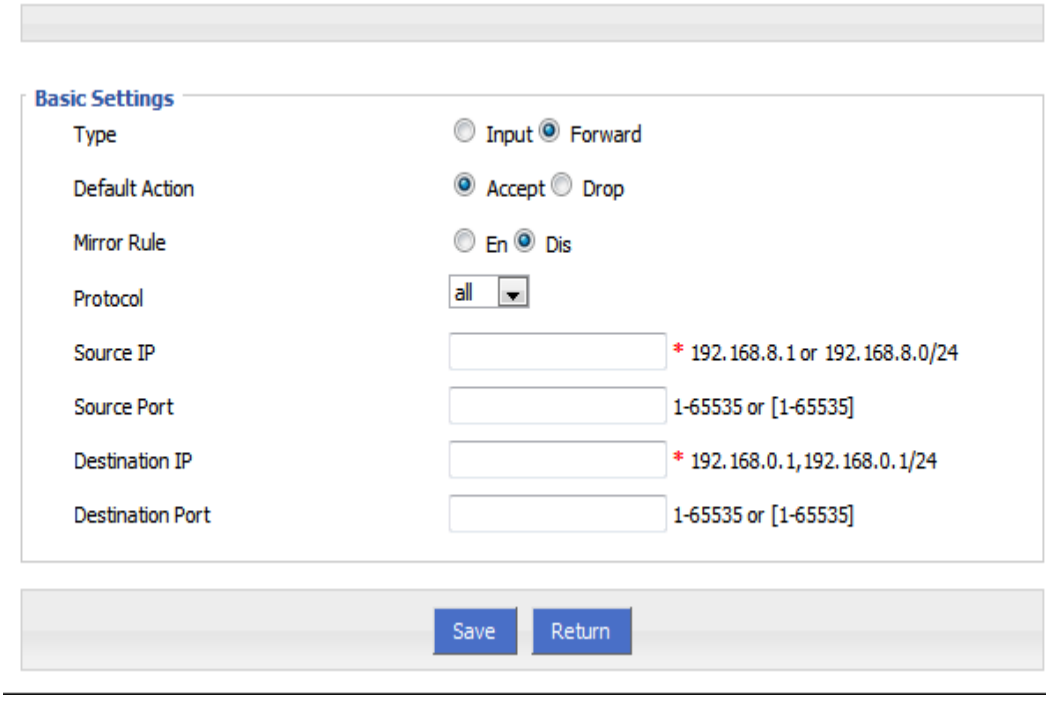


Table 5-21 IP filter parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Type | Select a filter type, you can choose according to their needs, "Input" or "Forward"<br>Input: whether to allow access to the router<br>Forward: whether to allow the router forwarding | Dropdown List options |
| Default Action | The default action rule. You can select "Accept" or "discard"<br>Accept: firewall to accept the package, which can be passed<br>Discard: firewall discards the packet directly | Dropdown List options |
| Mirror Rule | When the filter type select "Forward", it needs to be configured<br>Enable: On the basis of the configuration rules to add an extra source address/port and destination address/port reverse the rules<br>Disabled: no treatment | Dropdown List options |
| Protocol | Protocol used by IP packets | • Dropdown List options<br>• all<br>• tcp<br>• udp<br>• icmp |
| Source IP | The source IP address of the packet | Manual input<br>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<br>• interface<br>• any |
| Interface | Configure when Destination Type select "Interface", means the IP packet access the router interface | Dropdown List options<br>• br0<br>• modem<br>• modem2<br>• eth0<br>• 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<br>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**

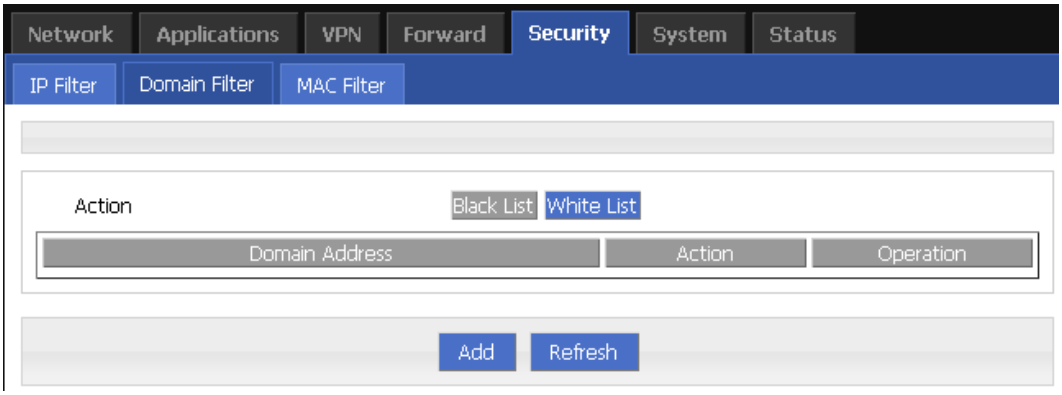
## Domain Filter

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 H8922 3G/4G router.

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

Figure 5-45 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 5-46 Domain filter tab

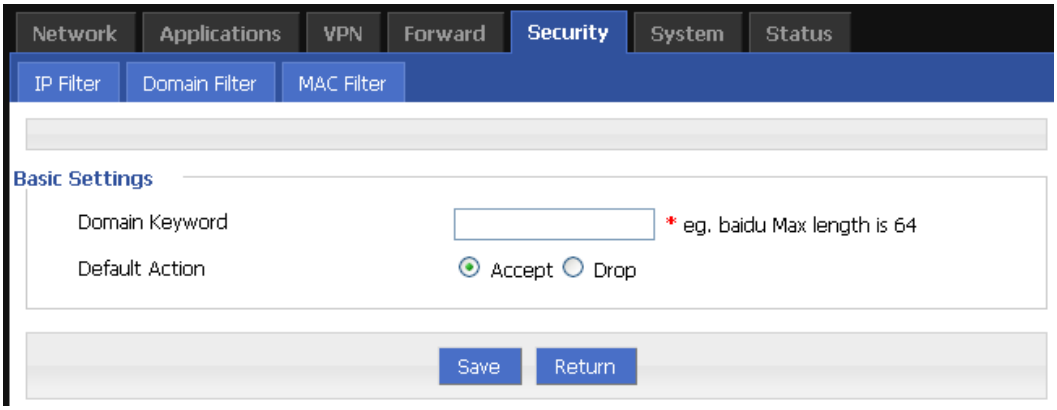



Table 5-22 Domain Filter parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Domain keyword | Keyword of domain for filter | WORD type, max 64 digits.<br>E.g. www.google.com, the keyword is “google”. |
| Default action | Actions to filter the keyword | • Accept.<br>• Drop |

Step 4 Single click “Save” to finish configuring a rule.

**---END**

## MAC Filter

Step 1 Log-on WEB GUI of H8922 3G/4G router.

Step 2 Click “Security > MAC Filter” to open “MAC Filter” tab.

Figure 5-47 MAC Filter tab

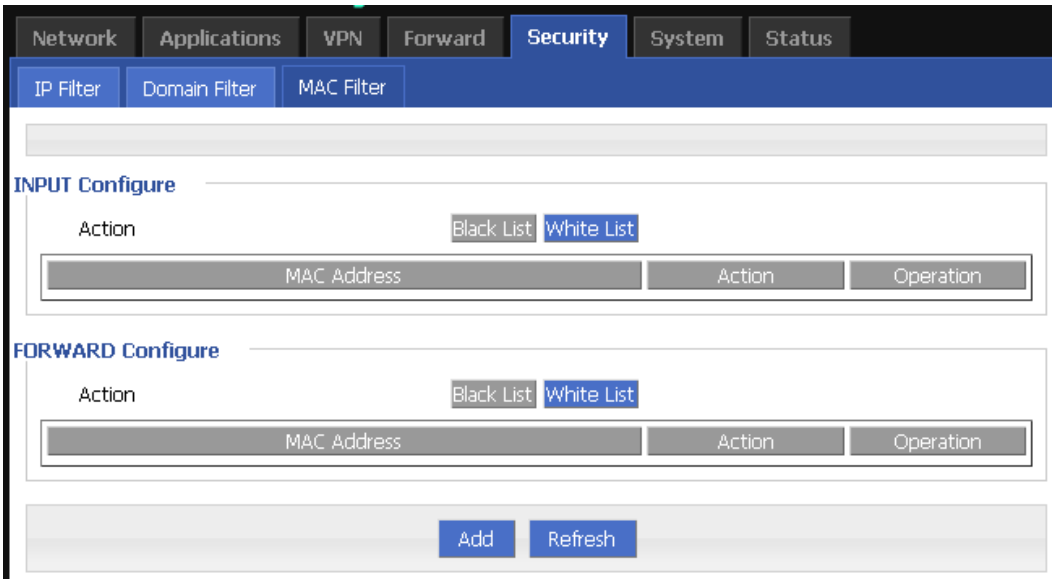


Table 5-23 MAC Filter explanation

| 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.<br>• White list: rules in white list 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.<br>• White list: rules in white list 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 5-48 MAC Filter configuration

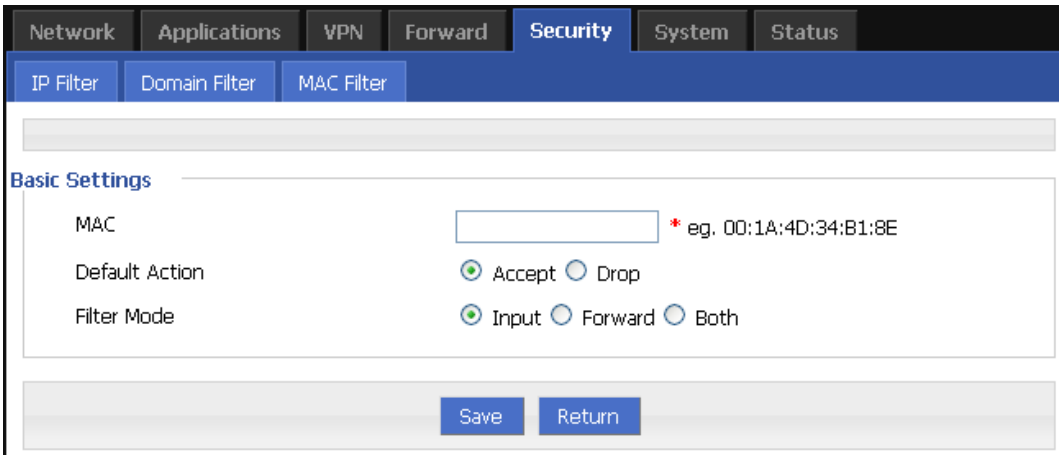



Table 5-24 MAC Filter Parameter instruction

| 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”:<br>• Accept: to accept all packages from this MAC.<br>• Drop: to drop all packages from this MAC. | To choose “accept” or “Drop” |

| Parameter | Details | Operation |
|---|---|---|
| Filter mode | To choose “Input”, “Forward” or “Both”.<br>• Input: all packages visiting router.<br>• Forward: all packages forwarded by router.<br>• 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 H8922 3G/4G router includes NAT, Routing, dynamic routing (RIP, OSPF) (optional) and QoS (optional).

## 5.5.2 NAT

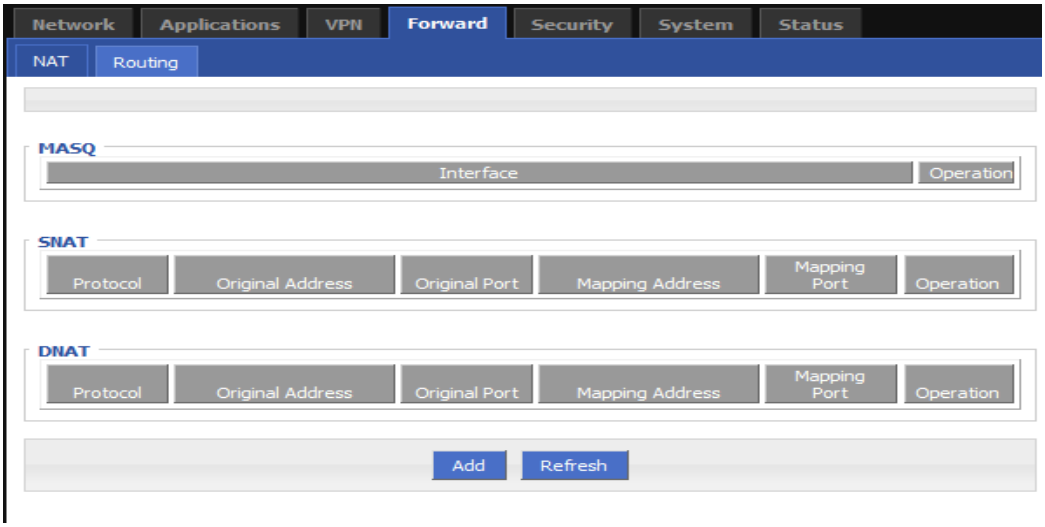
### DNAT configuration rule

DNAT is 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 H8922 3G/4G router.

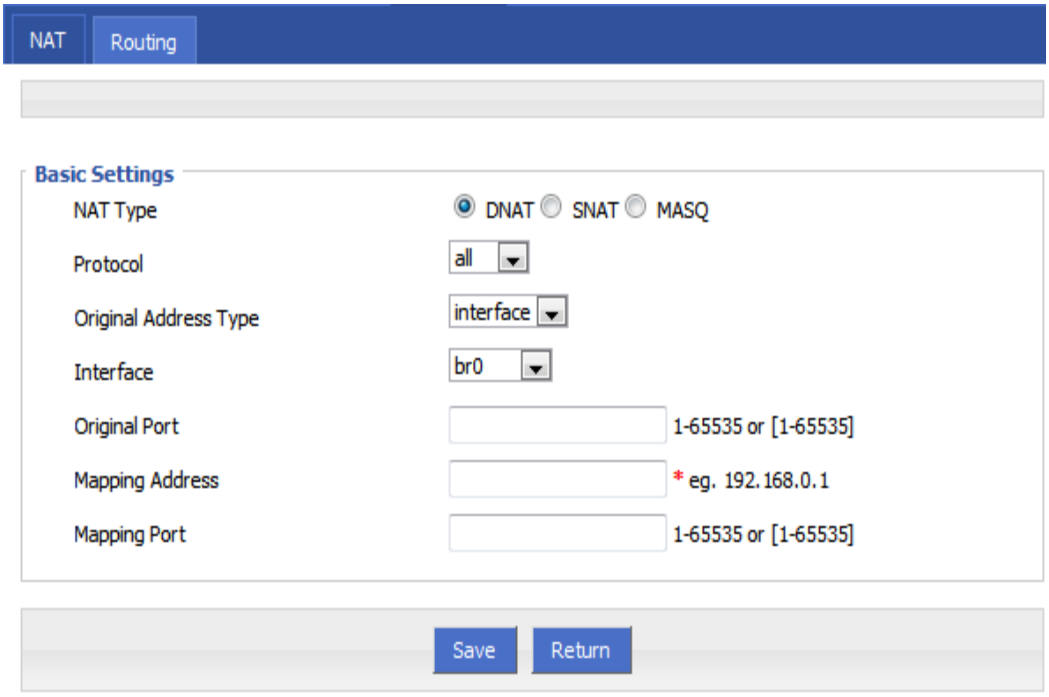
Step 2 Click “Forward > NAT” to open “NAT” tab.

Figure 5-49 NAT tab



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

Figure 5-50 DNAT rule configuration




Step 4 NAT Type select “DNAT”, Configure DNAT rule parameter.

Table 5-25 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<br>• interface<br>• 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<br>• br0<br>• modem<br>• modem2<br>• eth0<br>• 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<br>Format1： A.B.C.D<br>Format2: A.B.C.D/Mask |

| Parameter | Details | Operation |
|---|---|---|
| Original port | The port of destination address need to be replaced | Value area: 1～65535 |
| 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

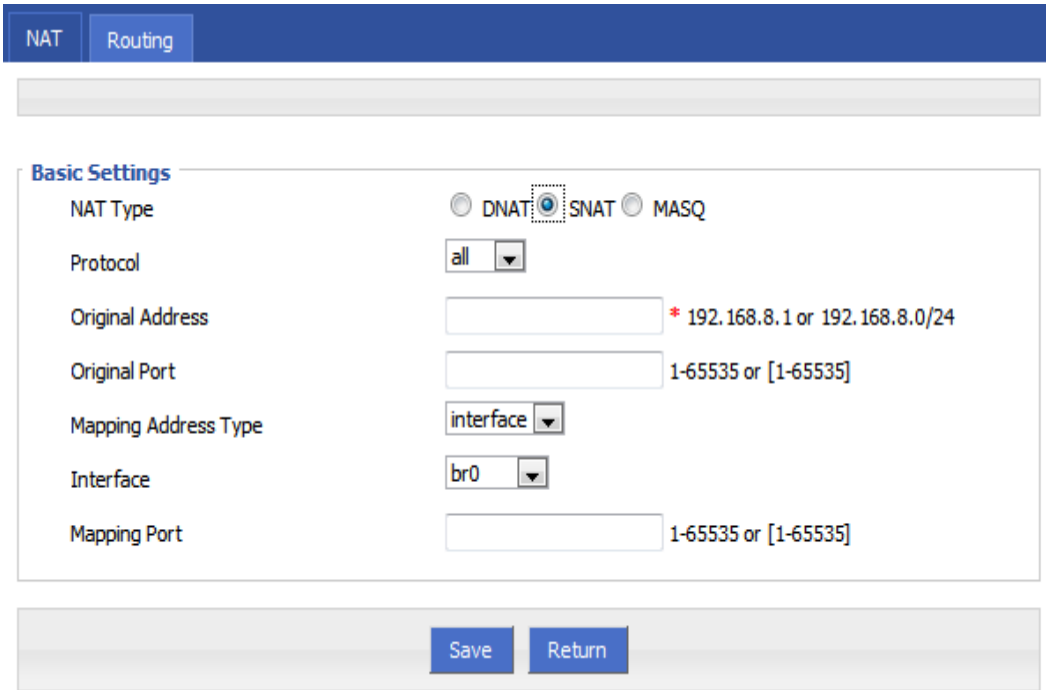
SNAT is the source address translation, and its role is to translate source address of IP packets into another address.

Step 1 Log-on WEB GUI of H8922 3G/4G 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 5-51 SNAT rule configuration




Step 4 Configure SNAT rule parameter,.

Parameter instruction as Table 5-22

Table 5-26 SNAT rule instruction

| Parameter | Details | Operation |
|---|---|---|
| Protocol | Convert some kind of protocol packets into address | Dropdown List<br>• all<br>• tcp<br>• udp<br>• icmp |
| Original Address | The source address need to be replaced | Manual input<br>Format1：A.B.C.D<br>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<br>• interface<br>• static |
| Interface | Select the interface of the router as source address after replacement | Dropdown List<br>• br0<br>• modem<br>• modem2<br>• eth0<br>• 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

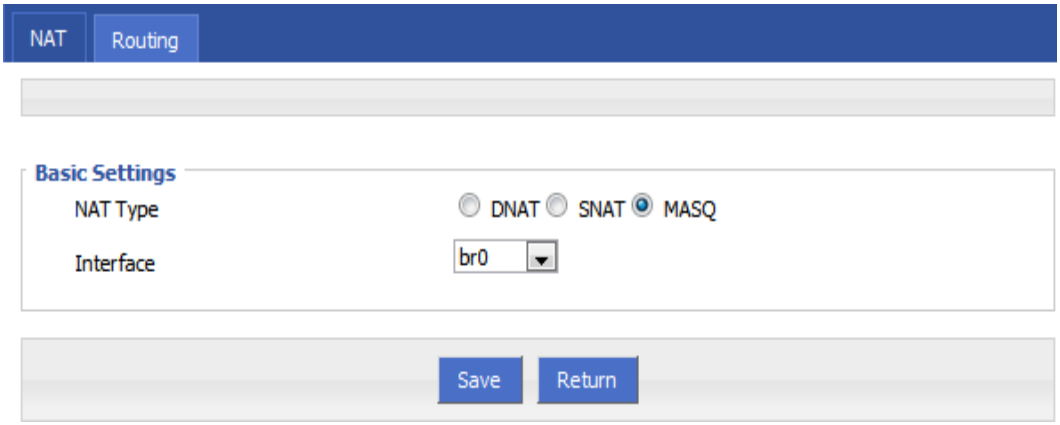
MASQ is MASQUREADE.

Step 1 Log-on WEB GUI of H8922 3G/4G 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 5-52 MASQ configuration




Step 4 Configure MASQ rule parameter.

Table 5-27 MASQ rule Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| NAT Type | To select “MASQ” | Select “MASQ” |
| Interface | Interface includes:<br>• br0: use br0 interface as commutation address between router & LAN and external network<br>• Modem: use modem interface as commutation address between router & LAN and external network<br>• modem2: use modem2 interface as commutation address between router & LAN and external network<br>• eth0: use eth0 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 cannot communicate with external network.

**---END**

## 5.5.3 Static Routing

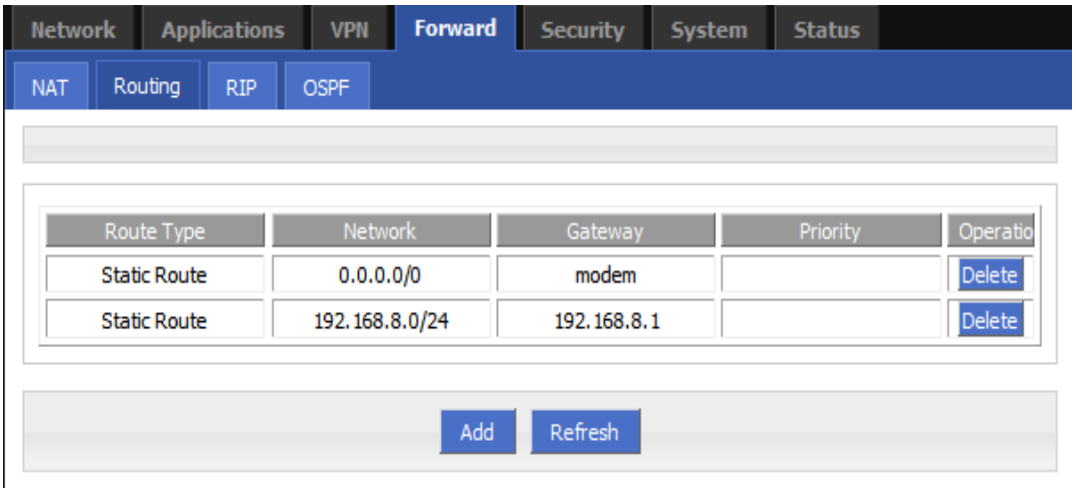
Static routing can forward packets according that the user configure specific forwarding path manually. Static Routing form is divided into static routing and policy routing, static routing is based on the destination address as an alternative route; while policy route is based on the source address 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 H8922 3G/4G router.

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

Figure 5-53 Static Routing Interface




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

Figure 5-54 Static Routing Interface

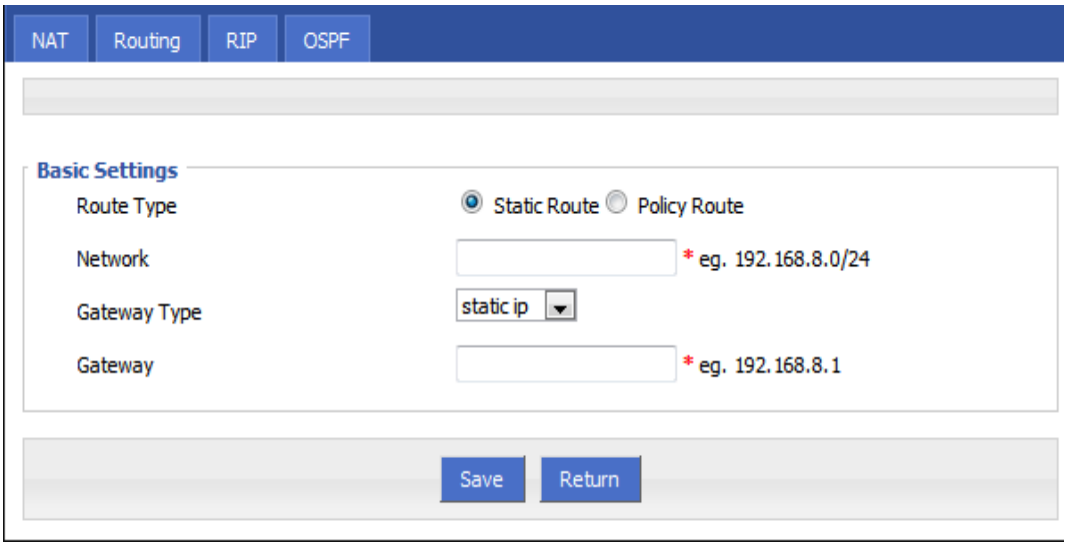
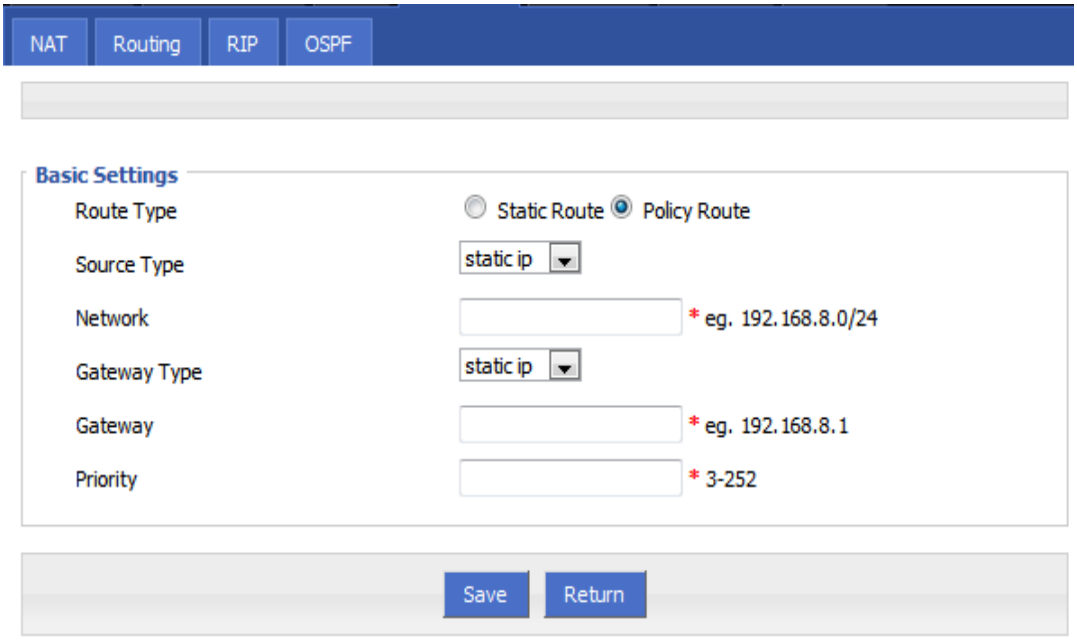


Figure 5-55 Policy Routing Interface




Parameter Instruction as Table 5-24.

Table 5-28 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<br>Format1: A.B.C.D/Mask |
| Gateway Type | Specify gateway type of static routing, includes:<br>• interface<br>• static ip | Dropdown List |
| Gateway | Set a next hop IP address of static route, IP address of the adjacent router interface | Dropdown List<br>• If the gateway type select static IP, gateway need to manually input, format: A.B.C.D<br>• 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<br>• Static IP<br>• Interface | Dropdown List |

| Parameter | Details | Operation |
|---|---|---|
| Network | When source type is static route, need to manually set network address | Manual input<br>Format1: A.B.C.D/Mask |
| Source Interface | When source type is policy route, need to manually set source network address of policy router<br>• modem<br>• modem2 | Dropdown List |
| Gateway Type | Set the next hop IP of policy route<br>• static ip<br>• interface | Dropdown List |
| Gateway | When the gateway type select "Static IP" to fill in the IP address, when gateway type is "interface", it will use the selected interfaces as gateway | Manual input<br>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 (e.g. 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 meets 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 (e.g. 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 has higher priority than static routing, policy-based routing priority regardless of how much.

**---END**

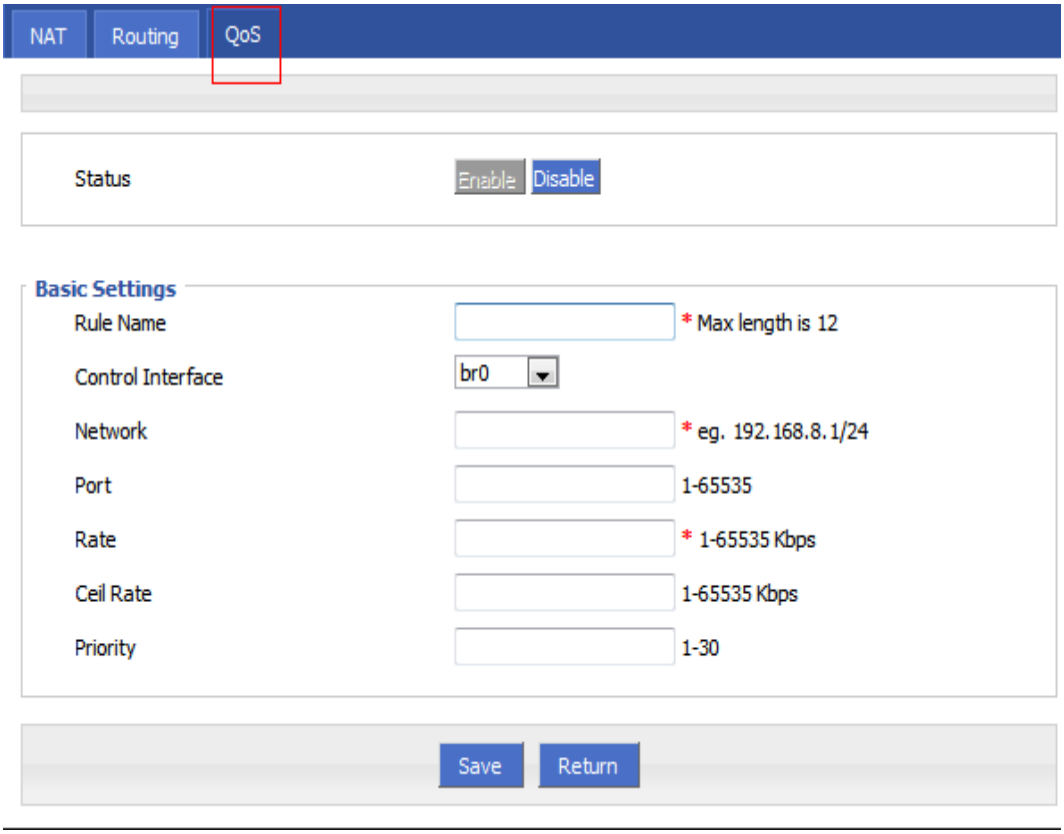
## 5.5.4 QoS (Optional)

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 H8922 3G/4G Router supports custom QoS services.

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-56 QoS interface




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

Table 5-29 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<br>Only set when adds a new rule and the follow-up can not be modified<br>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:<br>• br0：QOS interface is LAN<br>• modem：QOS interface is modem<br>• modem2：QOS interface is modem2 | Dropdown List |

| Parameter | Details | Option |
|---|---|---|
| Network | The network address that flow into or out QOS, the limited speed of object | Full in destination address and subnet mask<br>Manual input<br>Format1: A.B.C.D/Mask |
| Port | The network interface of QOS | Value area: 1-65535<br>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<br>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<br>Units：Kbps |
| Priority | Set the precedence of the rules | Value area：[1,30] |

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

NOTE

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)

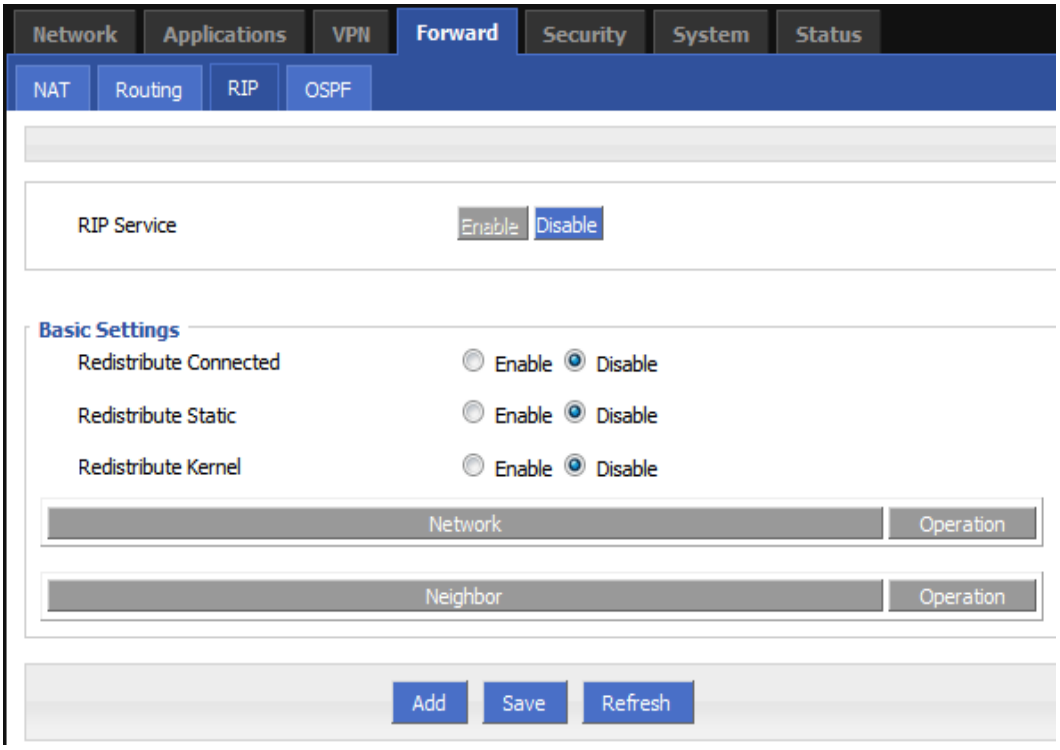
## RIP configuration

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, H8922 3G/4G Router supports RIP v2 protocol. For more complex environments, generally do not use the RIP protocol.

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-57 RIP interface



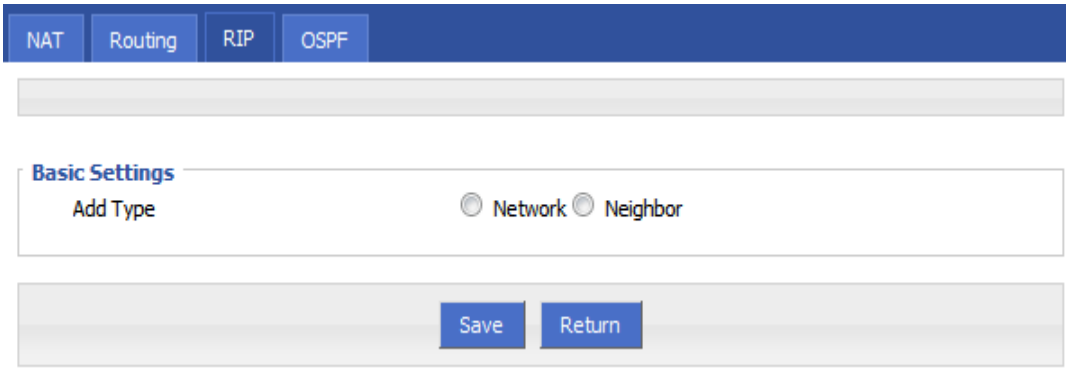

Parameter Instruction as Table 5-26.

Table 5-30 RIP Parameter Instruction

| Parameter | Details | Operation |
|---|---|---|
| RIP Service | Enable or disable RIP Service | Click the button to select.<br>• Enable<br>• Disable |
| Redistribute Connected | Enable or disable Redistribute Connected | Click the button to select.<br>• Enable<br>• Disable |
| Redistribute Static | Enable or disable Redistribute Static | Click the button to select.<br>• Enable<br>• Disable |
| Redistribute Kernel | Enable or disable Redistribute Kernel | Click the button to select.<br>• Enable<br>• Disable |

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

Figure 5-58 RIP route configuration interface




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

Table 5-31 RIP parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| **Basic Setting** | | |
| Add Type | Add the type of RIP route | Click the button to select Add Type<br>• When it is “Network”, need to configure destination network address.<br>• 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<br>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<br>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**

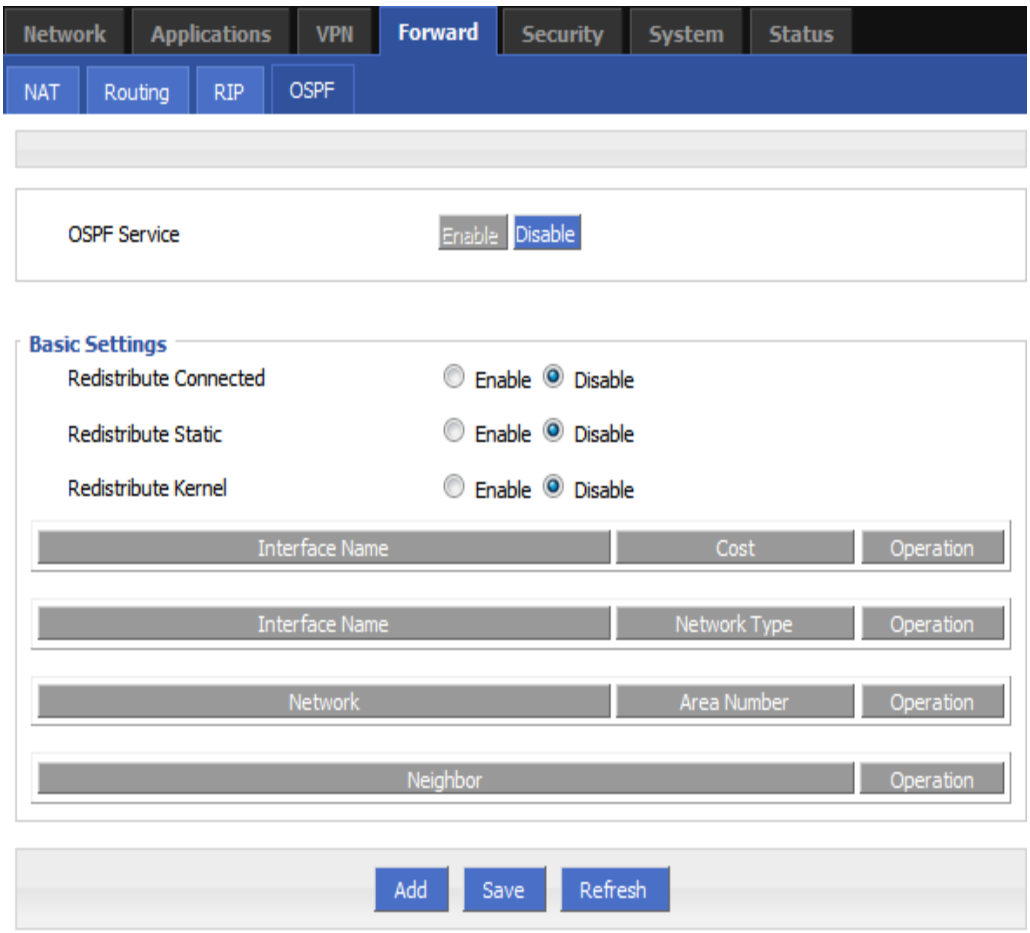
# OSPF configuration

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 H8922 3G/4G Router.

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-59 OSPF Interface




OSPF parameter instruction as Table 5-28

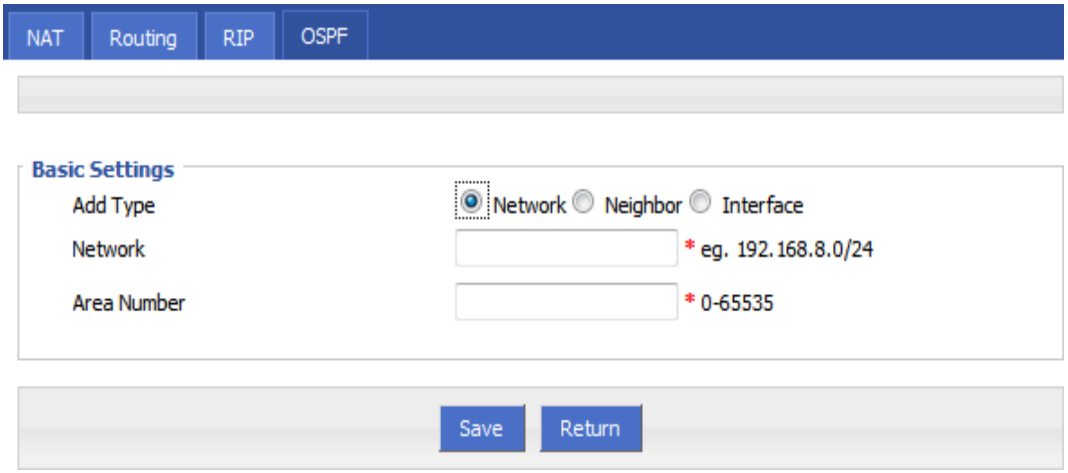
Table 5-32 OSPF parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| OSPF Service | Enable or disable OSPF Service | Click the button to select<br>• Enable<br>• Disable |
| Redistribute Connected | Enable or disable Redistribute Connected | Click the button to select<br>• Enable<br>• Disable |

| Parameter | Details | Operation |
|---|---|---|
| Redistribute Static | Enable or disable Redistribute Static | Click the button to select<br>• Enable<br>• Disable |
| Redistribute Kernel | Enable or disable Redistribute Kernel | Click the button to select<br>• Enable<br>• Disable |

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

Figure 5-60 OSPF route configuration interface




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

Table 5-33 OSPF route parameter instruction

| Parameter | Details | Option |
|---|---|---|
| Add Type | Add the type of OSPF route | Click the button to select Add Type<br>• Network<br>• Neighbor<br>• Interface |
| • When Add Type is “Network”, | | |
| Network | Set the network address as ospf sending address | Manual input<br>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<br>Value area:[0,65535] |
| When Add Type is “Neighbor”, | | |

| | | |
|---|---|---|
| Neighbor | The router can reach in the next hop | Manual input<br>Format1: A.B.C.D/Mask |
| When Add Type is “Interface”, | | |
| Interface Name | The interface of the router | Dropdown List<br>• br0<br>• modem<br>• modem2<br>• eth1<br>• eth0 |
| Interface Attribute | Configure the router interface attribute, include cost and network | Click the button to select<br>• cost<br>• network |
| Cost | Configure the cost of the router interface, used to learn routing table | Manual input<br>Value area:1-65535 |
| Network Type（when the interface attribute is network) | Configure the network type of the router interface | Dropdown List<br>• broadcast<br>• non-broad<br>• point-to-multipoint<br>• 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 routing information of the routing table to the adjacent routers.

**---END**

# 5.6 VPN configuration

## 5.6.1 Overview

H8922 3G/4G 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

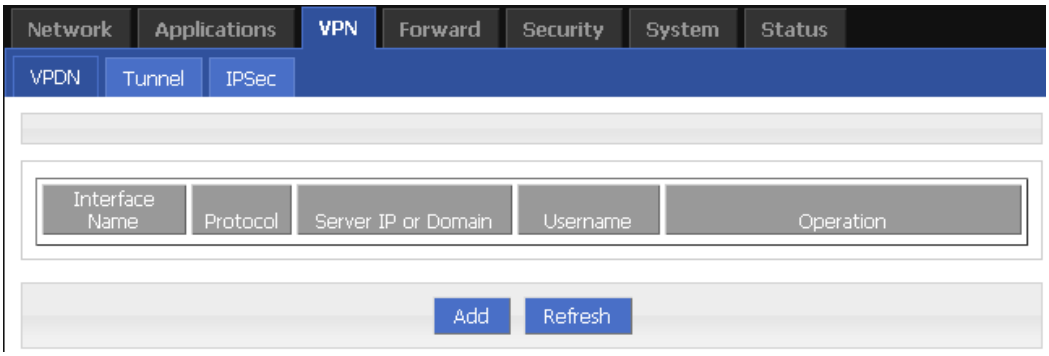
VPDN stands for Virtual Private Dial-up Networks. Now VPDN supports L2TP and PPTP

Step 1 Log-on WEB GUI of H8922 3G/4G router.

See “4.3.1 Login WEB GUI

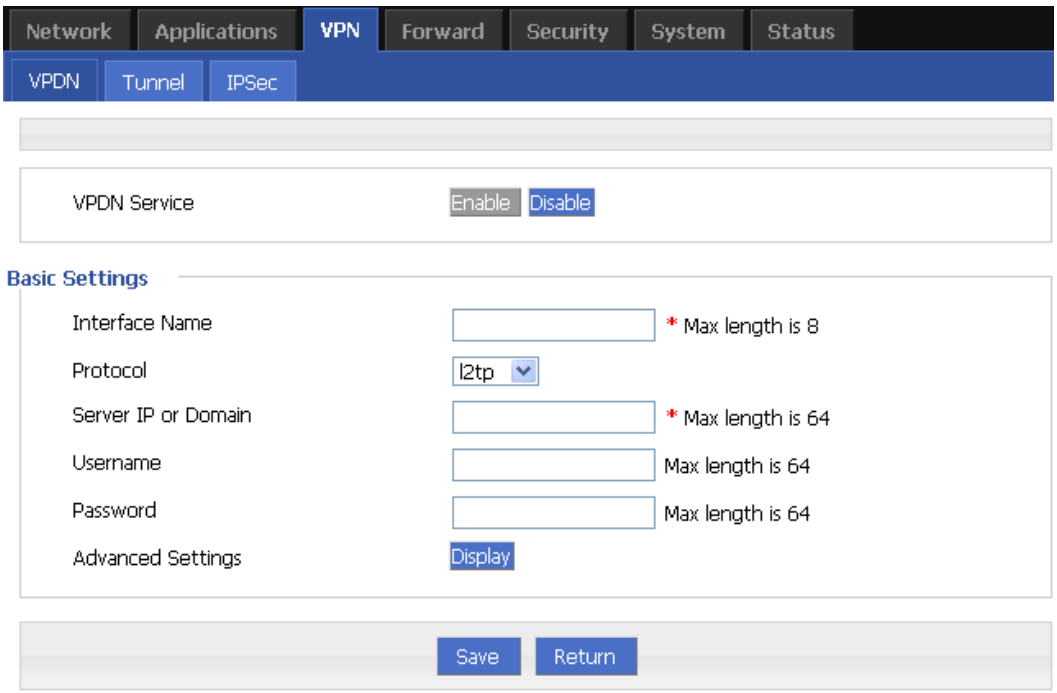
Step 2 Click “VPN > VPDN” to open “VPDN” tab.

Figure 5-61 VPDN configuration




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

Figure 5-62 VPDN rule configuration




Step 4 Configure VPDN rule parameter.

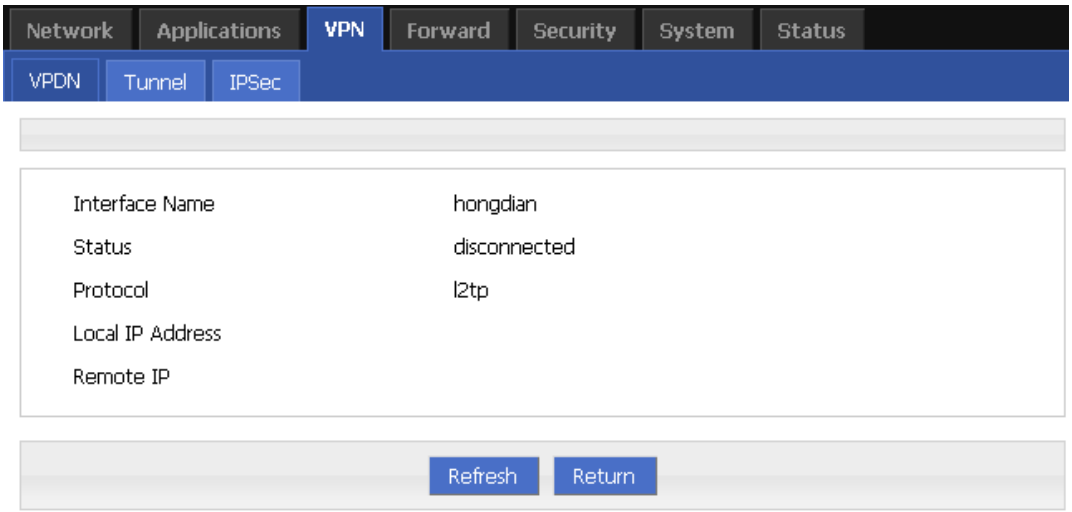
Table 5-34 VPDN rule parameter instruction

| 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<br>• L2TP<br>• 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 5-63 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.

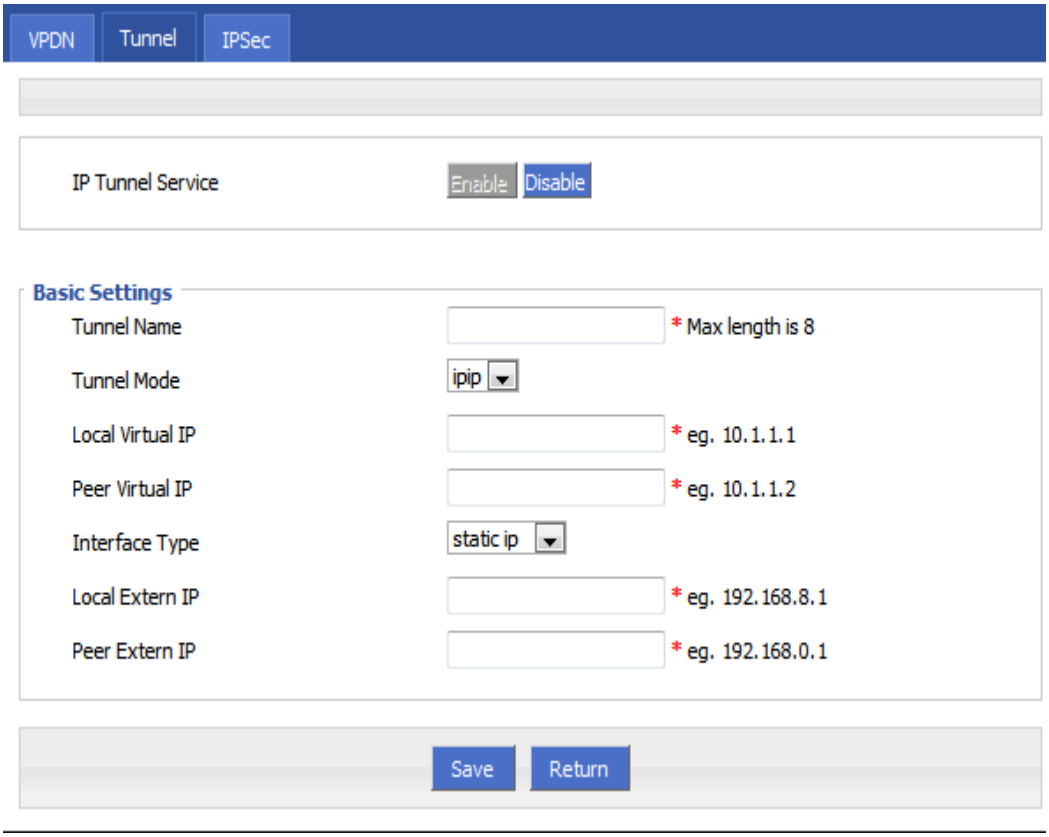
IPIP tunnel is a simple agreement between two routers for IP packet encapsulation, IPIP tunnel interface will be like a physical interface in the interface list, many routers including Cisco, basically support the agreement. This agreement enables multiple network distribution possible.

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

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

Figure 5-64 Tunnel configuration




Step 4 Configure Tunnel rule parameter

Table 5-35 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:<br>• gre<br>• 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. |
| 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.

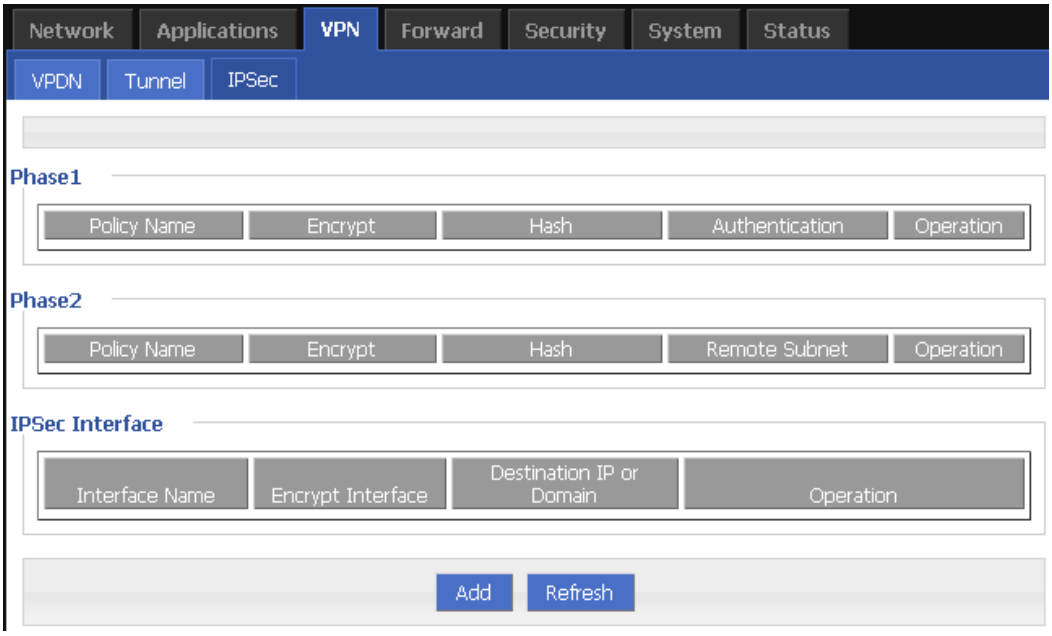
**---END**

## 5.6.4 IPSec configuration

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-65 IPSec tab




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

There are 3 phases for IPSec configuration:

1. Phase 1 parameter

Figure 5-66 IPSec phase 1 configuration

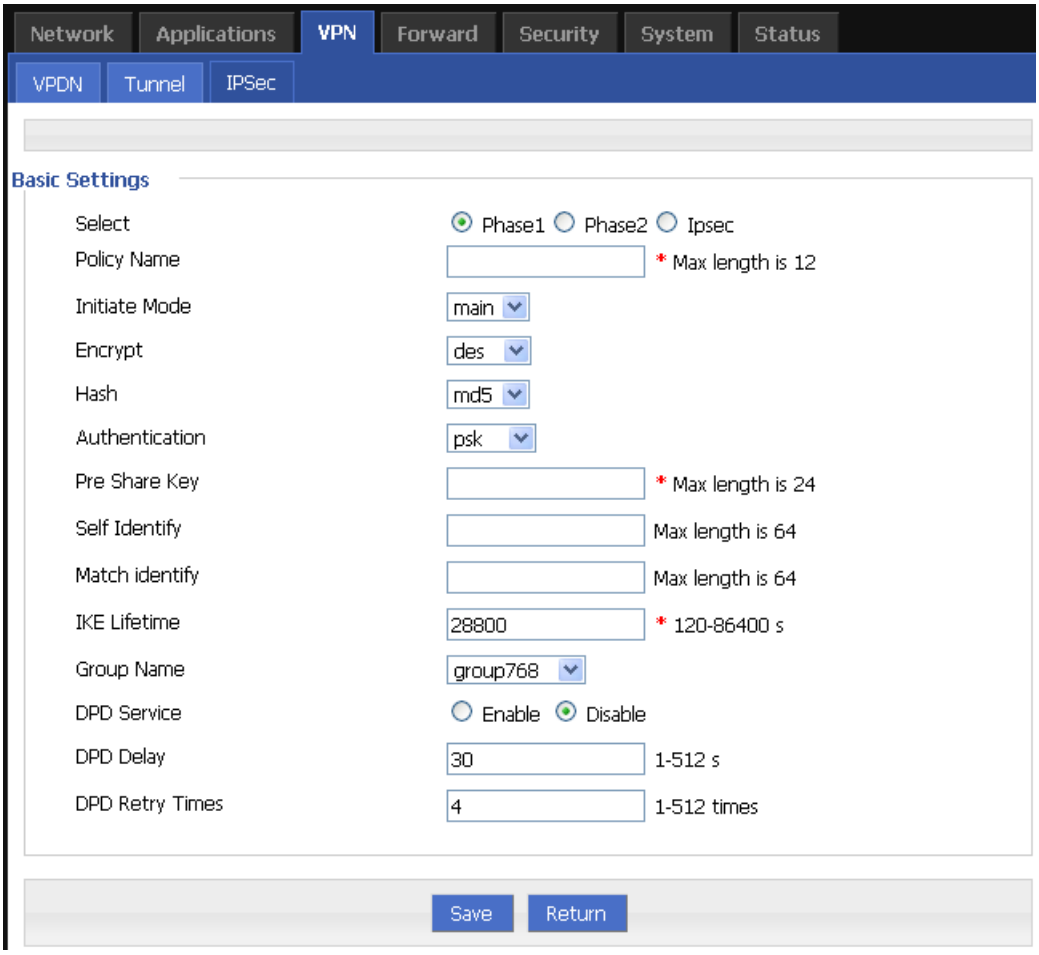



Table 5-36 IPSec Phase 1 Parameter instruction

| 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 |
| Hash | Supports md5 and sha1 | Select from Dropdown List |

| Parameter | Details | Operation |
|---|---|---|
| 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<br>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<br>Value area : 1～512<br>Unit: second |
| DPD Retry Times | Max times to continuous DPD check failure. | Manual input<br>Value area: 1～512 |

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

2. Phase 2 parameter.

CAUTION

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 5-67 IPSec phase 2 configuration

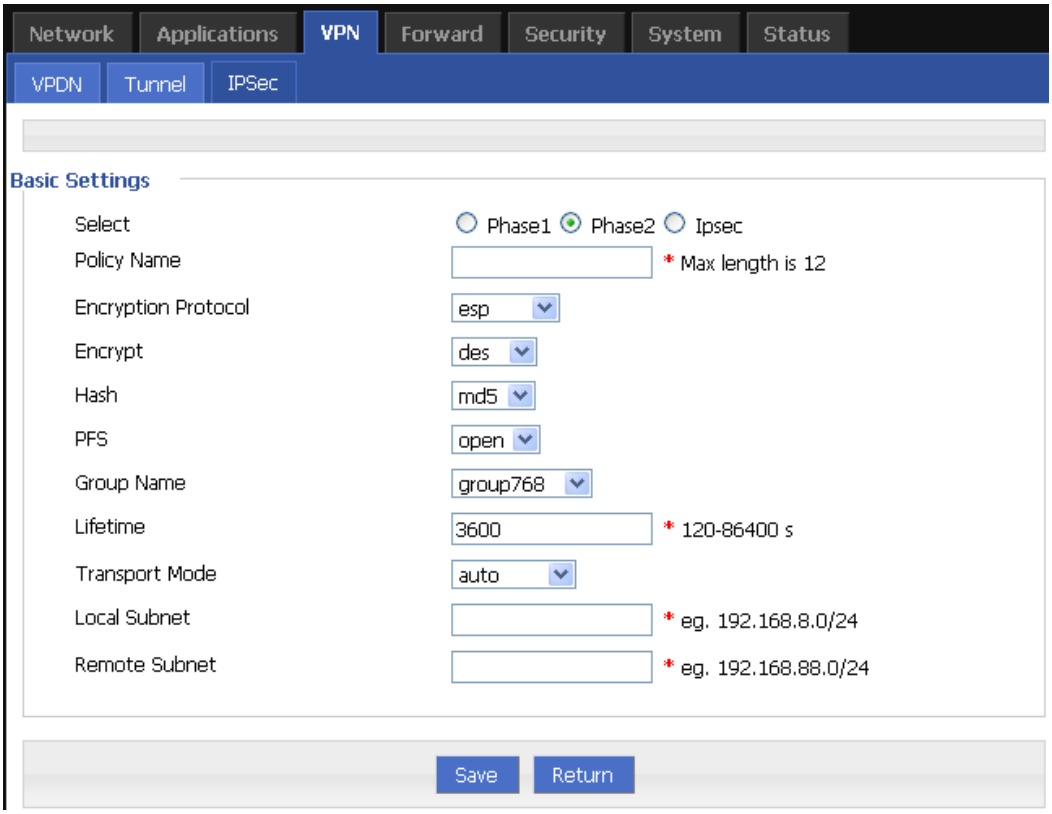



Table 5-37 IPSec Parameter instruction

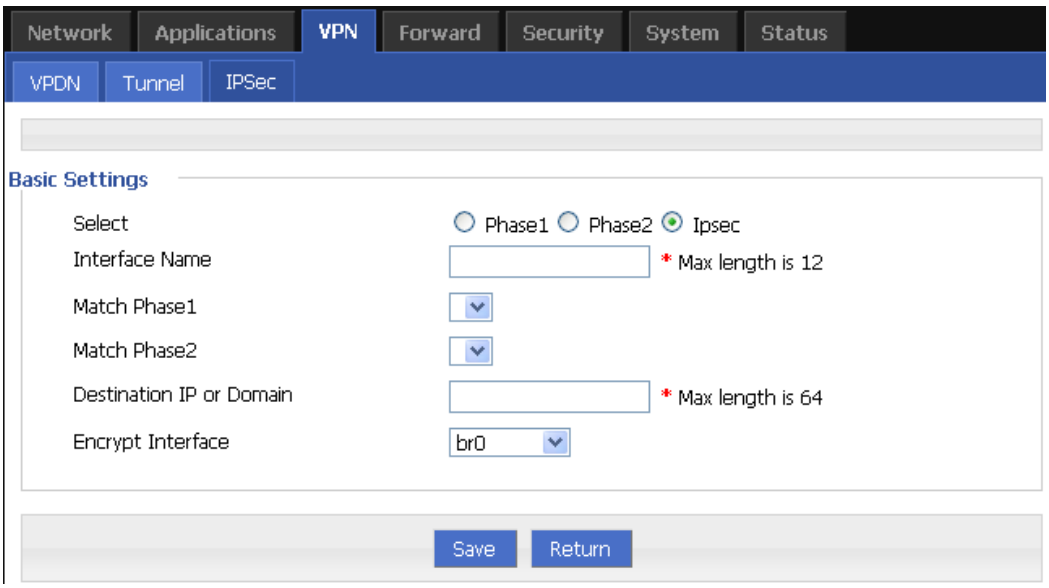
| Parameter | Details | Operation |
|---|---|---|
| **Basic Settings** | | |
| Select | To select which phase of IPSec, phase 1, phase 1 or phase IPSec | Select “Phase 2” |
| Policy Name | Name of phase 2, mainly to match phase “IPSec” | To input the name of phase 2. Cannot be changed after save |
| 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<br>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 5-68 IPSec configuration tab




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

Table 5-38 IPSec Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| **Basic Settings** | | |
| Select | To select which phase of IPSec, | Select “IPSec” |

| Parameter | Details | Operation |
|---|---|---|
| | phase 1, phase 1 or phase 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

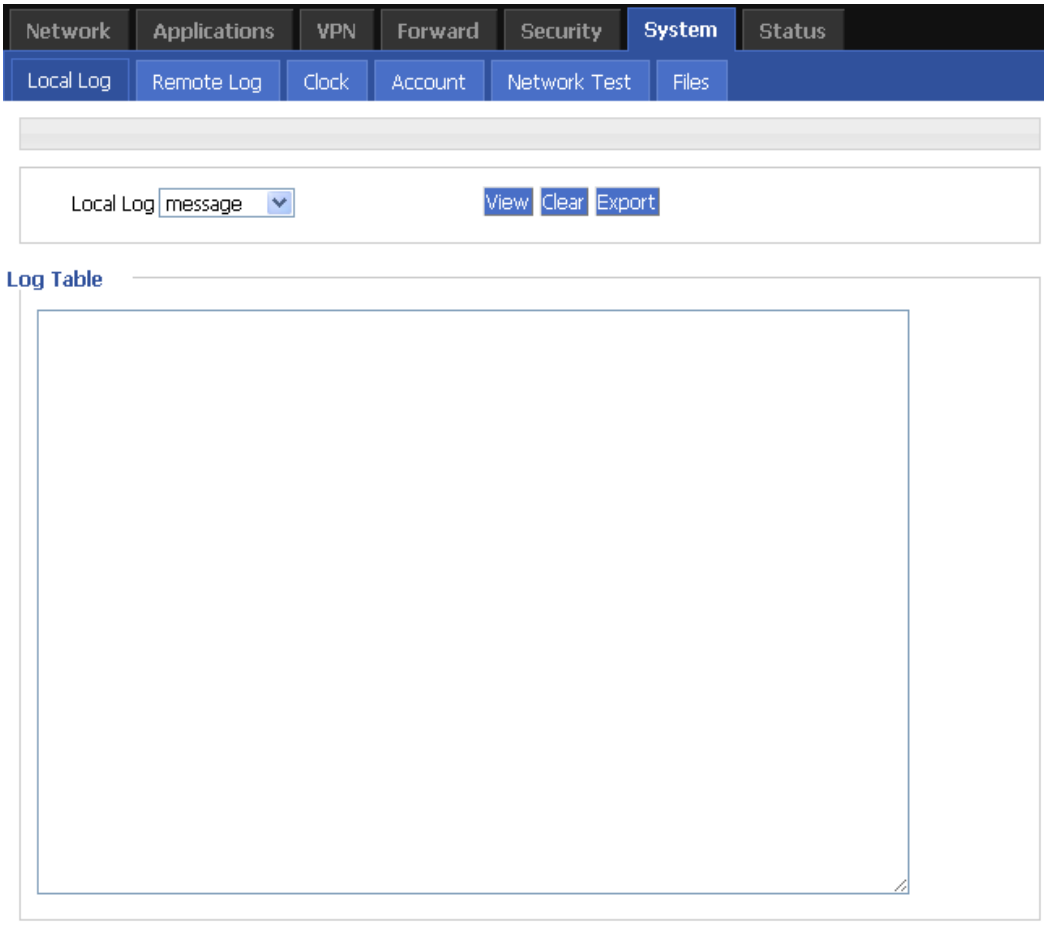
"System" can let you know the status of router, firmware upgrading and other maintenance.

## 5.7.2 Local Log

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-69 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.

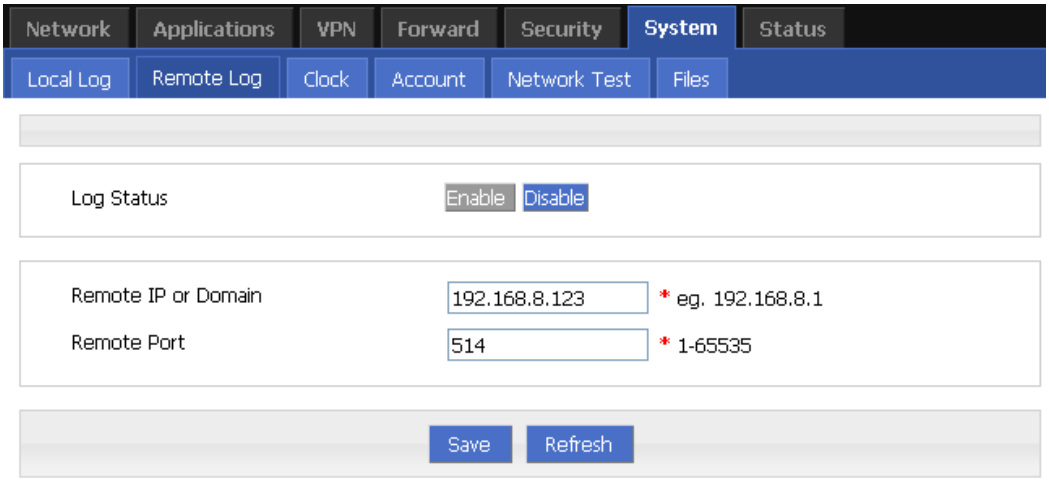
**---END**

## 5.7.3 Remote Log

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-70 Remote Log tab




Step 3 Configure “Remote Log” parameter.

Table 5-39 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 H8922 3G/4G router.

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

Figure 5-71 "NTP" Time Synch.

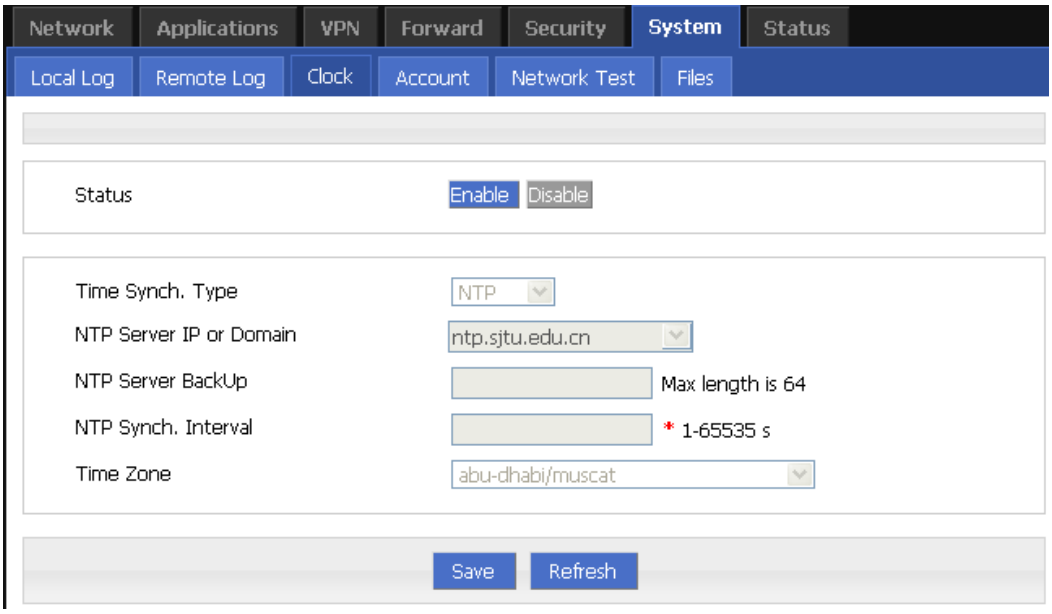
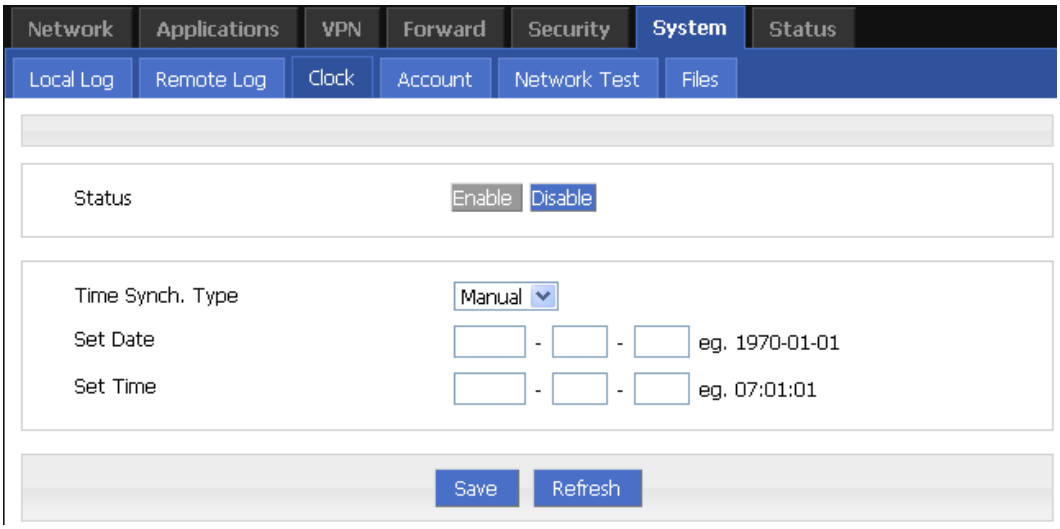



Figure 5-72 Manual Time Synch. Type




Step 3 Set "clock" parameter .

Table 5-40 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<br>Unit: second<br>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<br>e.g 1970-01-01 |
| Set Time | To set time | HH:MM:mm<br>Eg. 07:01:01 |

Step 4 Single click “save” icon to finish.

**---END**

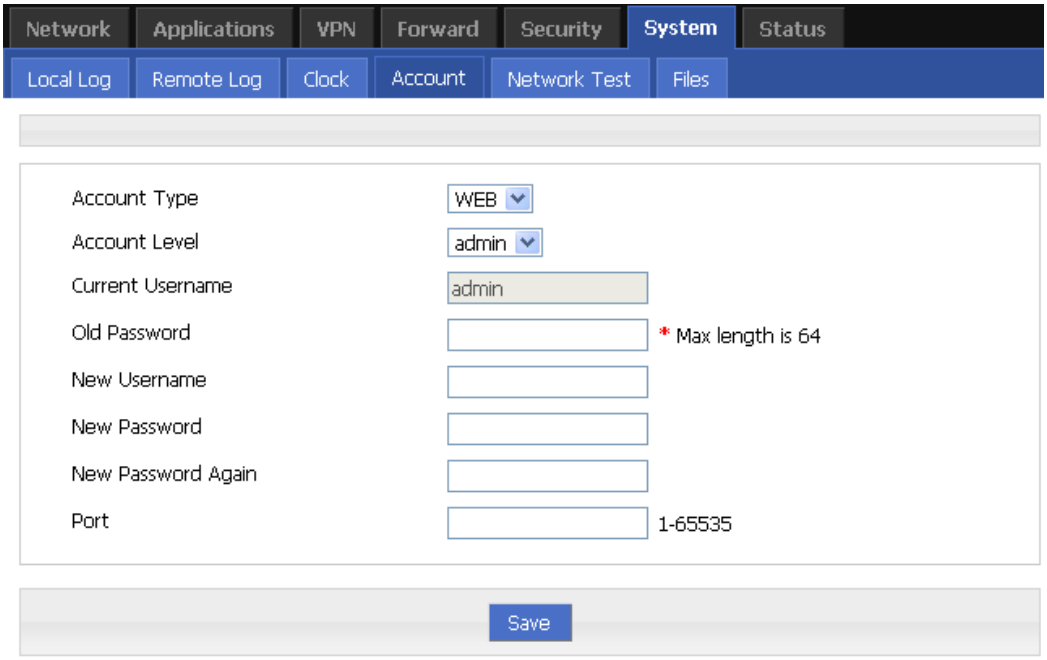
## 5.7.5 Account

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

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-73 Account tab




Step 3 Set account parameter .

Table 5-41 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<br>• Admin: can view and change the parameter.<br>• 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<br>Value area 1～65535<br>Default: 80 |

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

**---END**

## 5.7.6 Network Test

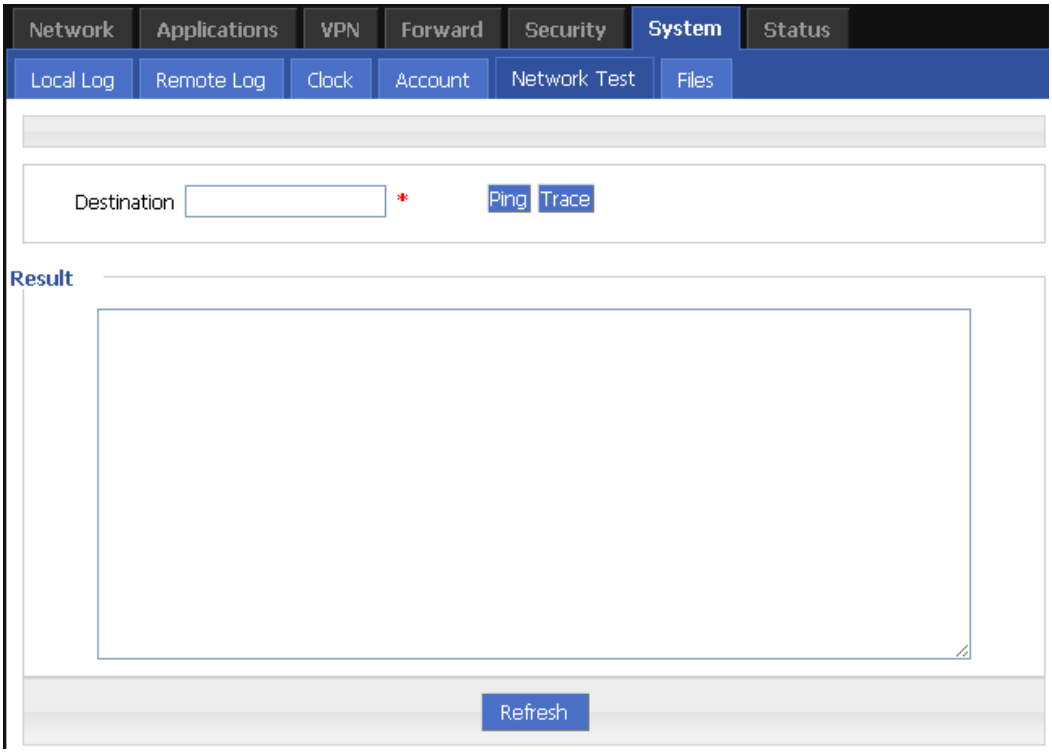
### Network Test

This function includes Ping function and Trace router function.

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-74 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 5-42 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 from the router to destination | Click “Trace” |

| Parameter | Details | Operation |
|---|---|---|
| Result | Test result | |

**---END**

## 5.7.7 Files

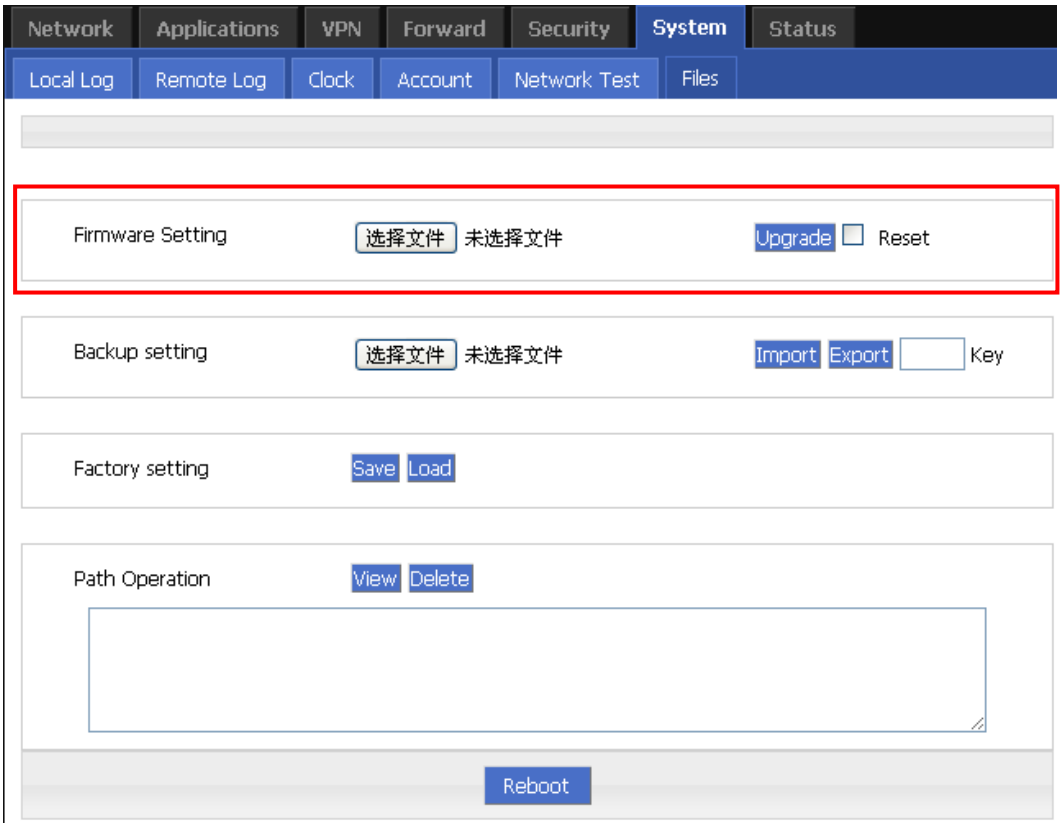
### Firmware Setting

H8922 3G/4G router supports upgrade firmware locally.

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-75 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”.

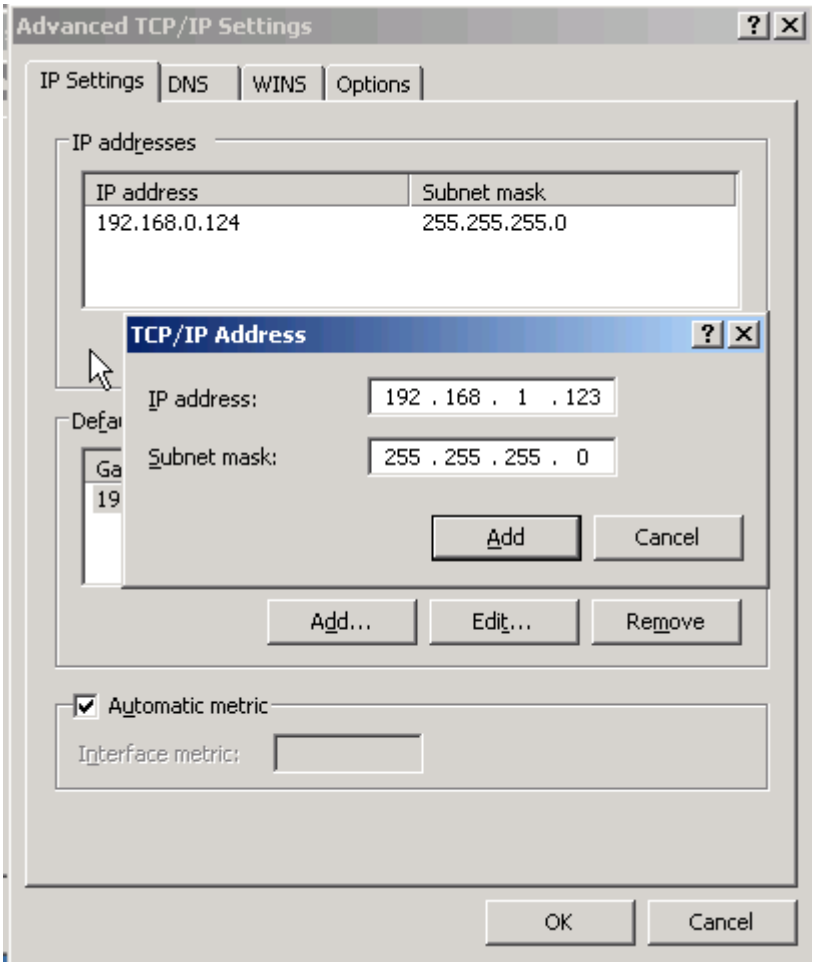
**---END**

## 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.

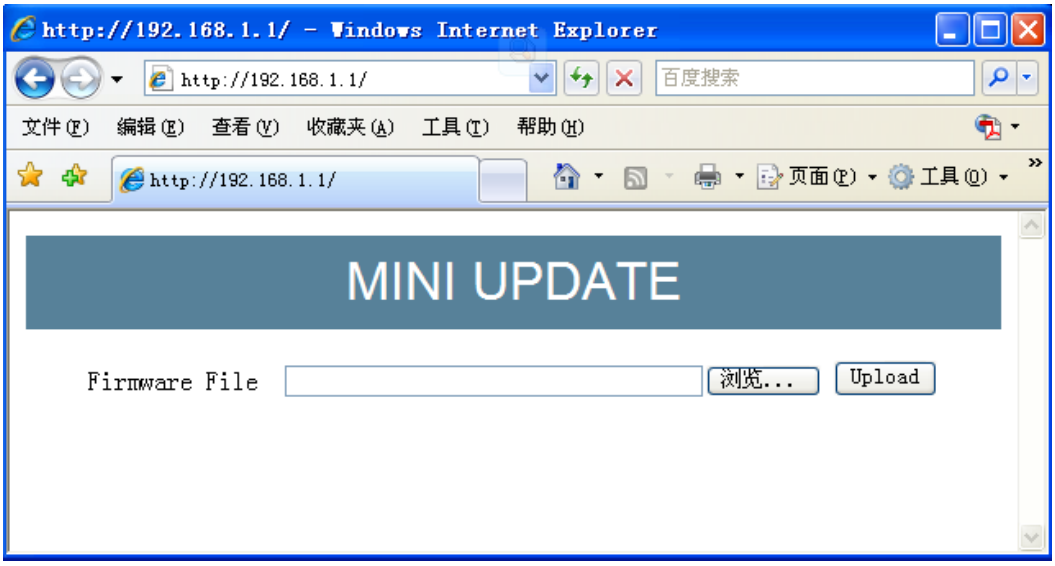
Figure 5-76 Add an IP address




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.

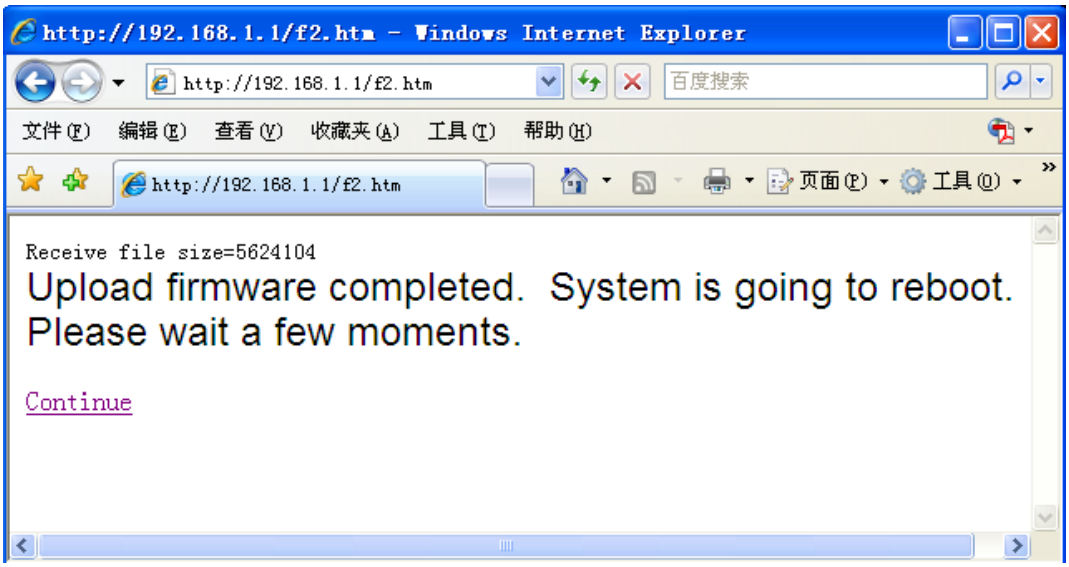
Step 3 Input 192.168.1.1 in your browser, click “enter” you will see following page. If not, start over again from step 1.

Figure 5-77 CFE mode upgrading




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

Figure 5-78 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** *192.168.8.1 –t*). if Ping ok, upgrading is OK.

**---END**

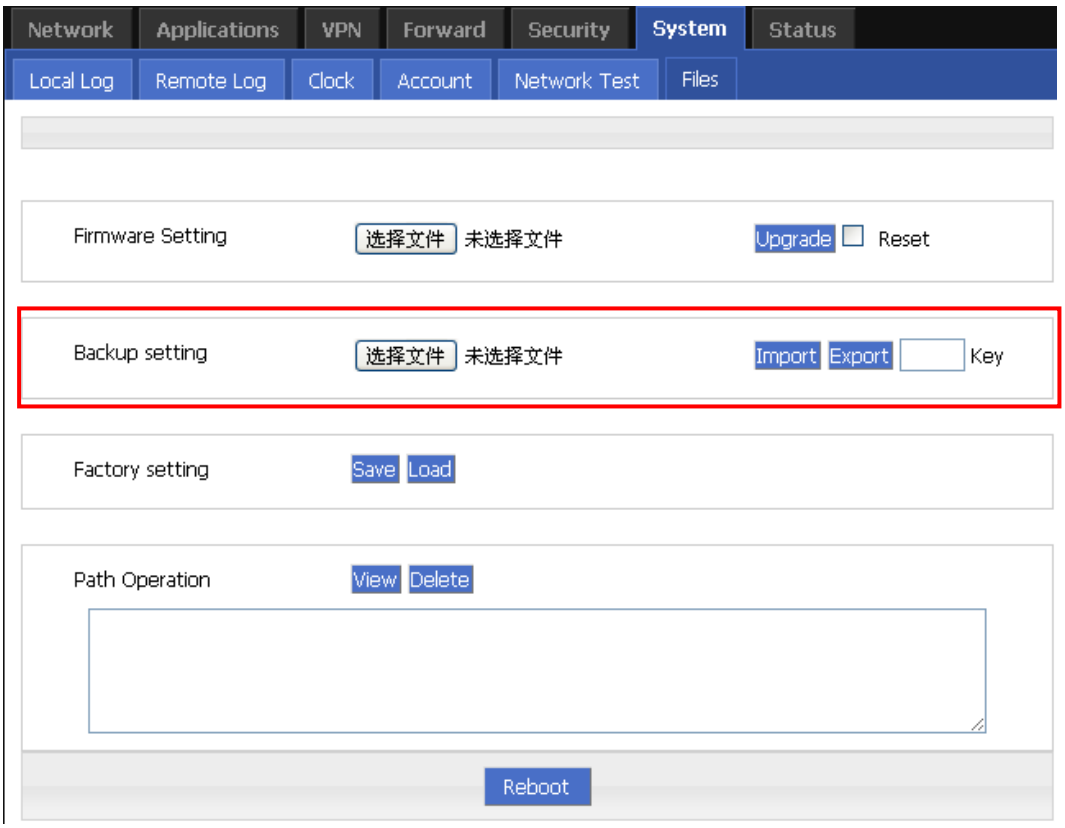
## Backup setting

H8922 3G/4G 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 5-79 Backup setting page



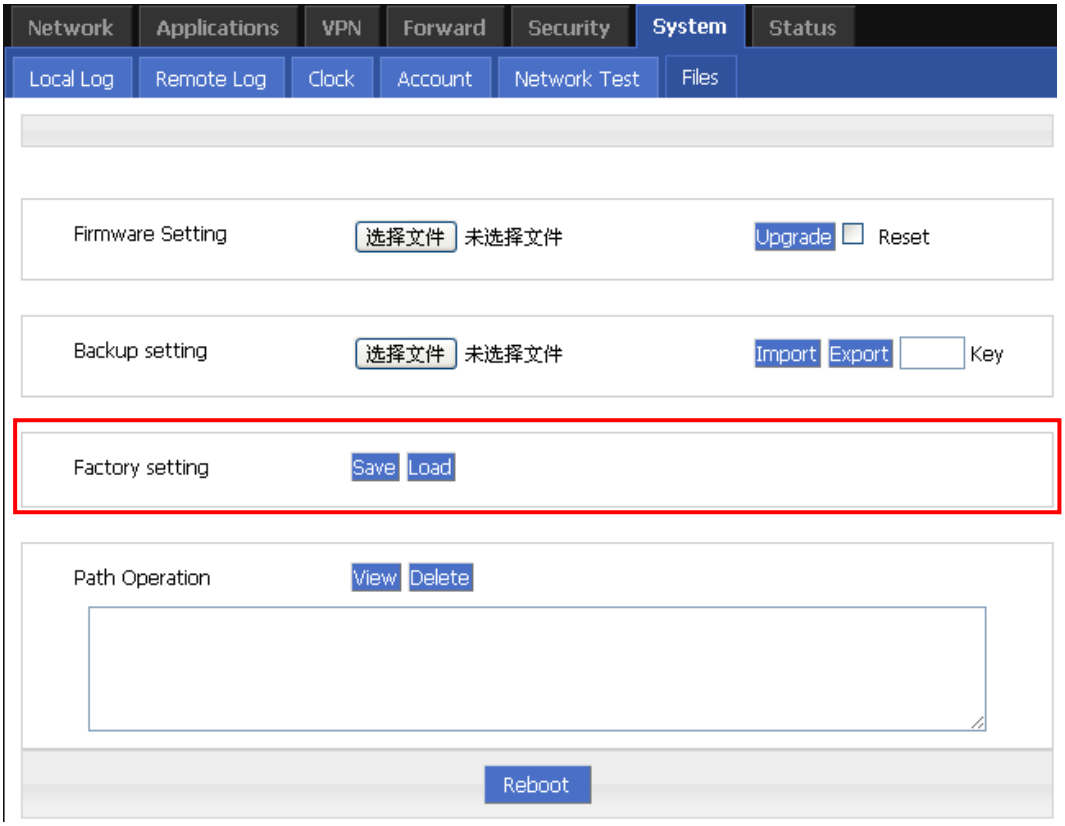

NOTE

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

H8922 3G/4G 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 5-80 Factory setting page

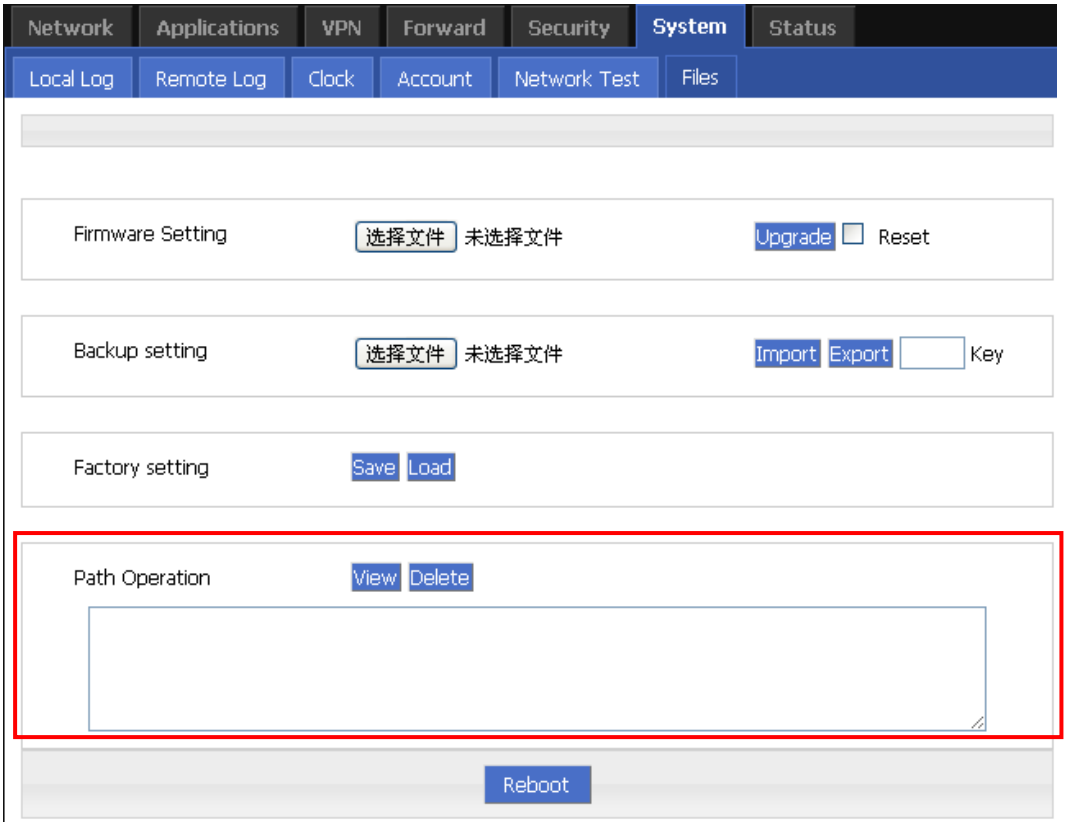



- Save: to save the current setting as default factory configuration setting.
- Load: to resume default factory setting.

## Patch operation function

H8922 3G/4G router support to view and delete patch.

Figure 5-81 Patch operation

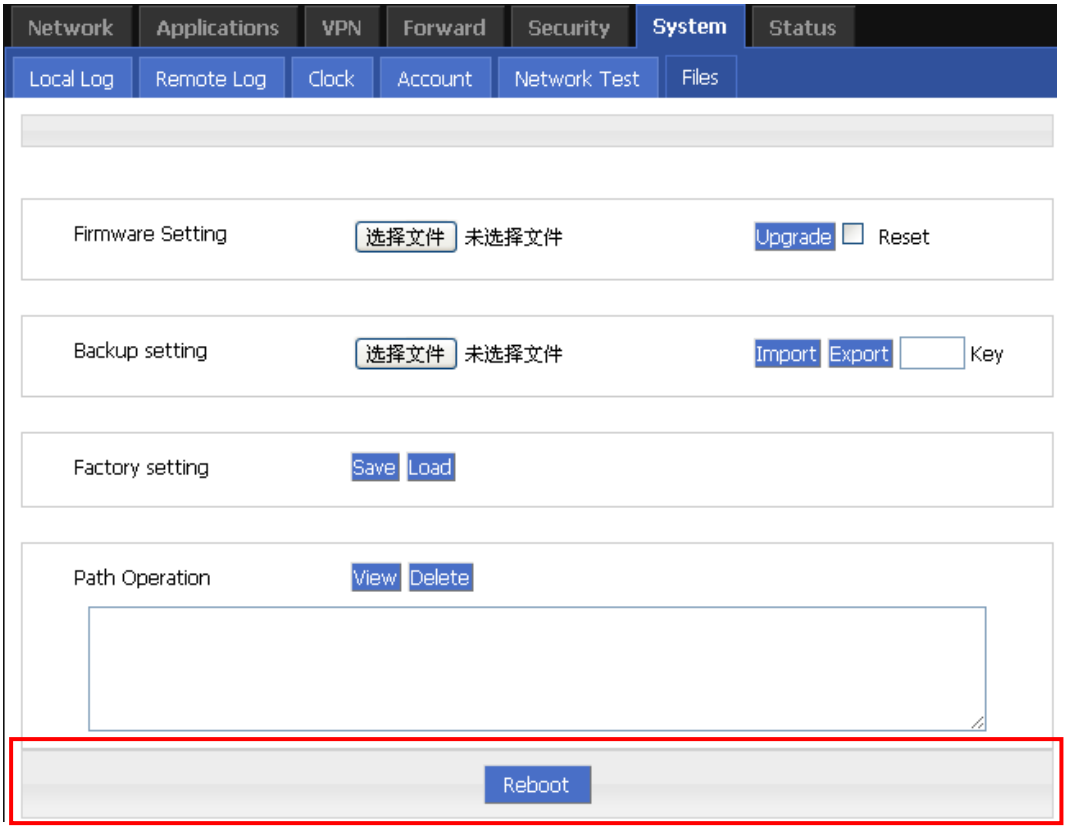



- View: to view current patches.
- Delete: to delete patch.

## reboot

click “reboot” to restart the router.

Figure 5-82 reboot




# 5.8 Status

## 5.8.1 Overview

Status provides the basic info, network status info, router info of H8922 3G/4G Router.

## 5.8.2 Base Information

Step 1 Log-on WEB GUI of H8922 3G/4G router.

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

Figure 5-83 Base Information tab

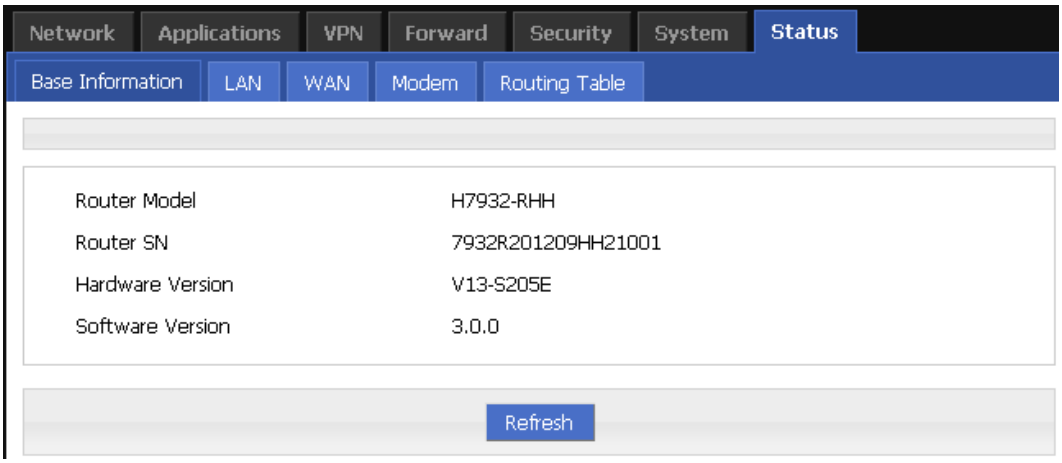



Table 5-43 Base information Parameter instruction

| 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 H8922 3G/4G router.

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

Figure 5-84 “LAN” info

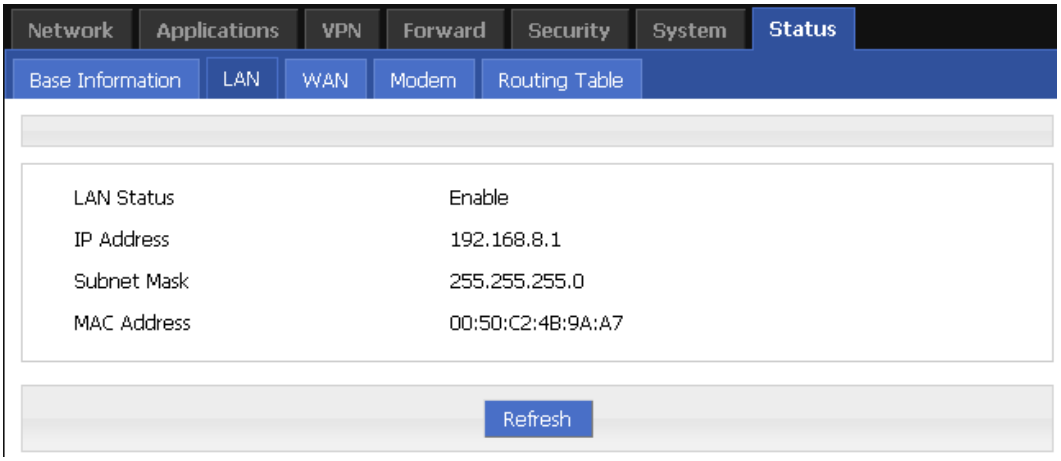


Table 5-44 LAN Parameter instruction

| 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 H8922 3G/4G router.

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

Figure 5-85 Static IP WAN status

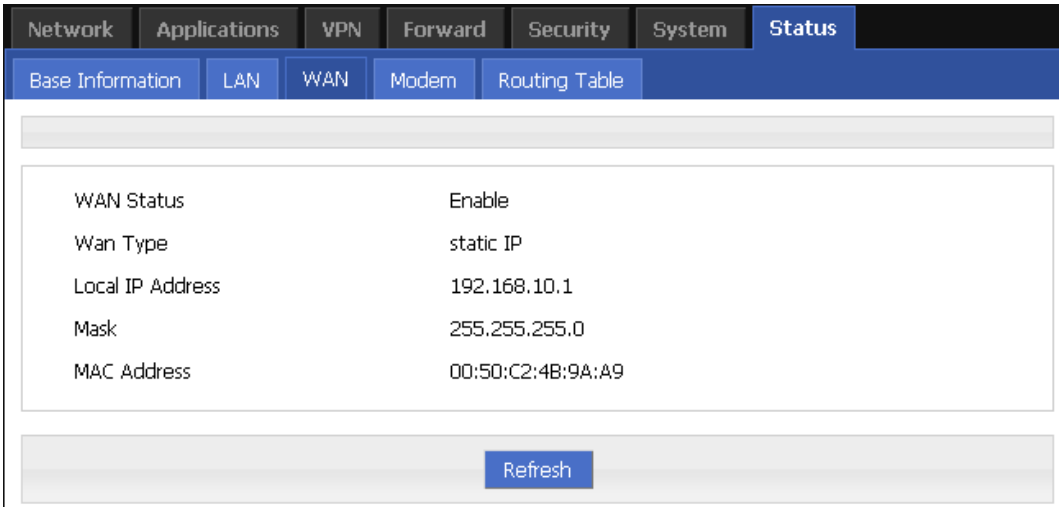


Figure 5-86 DHCP WAN status

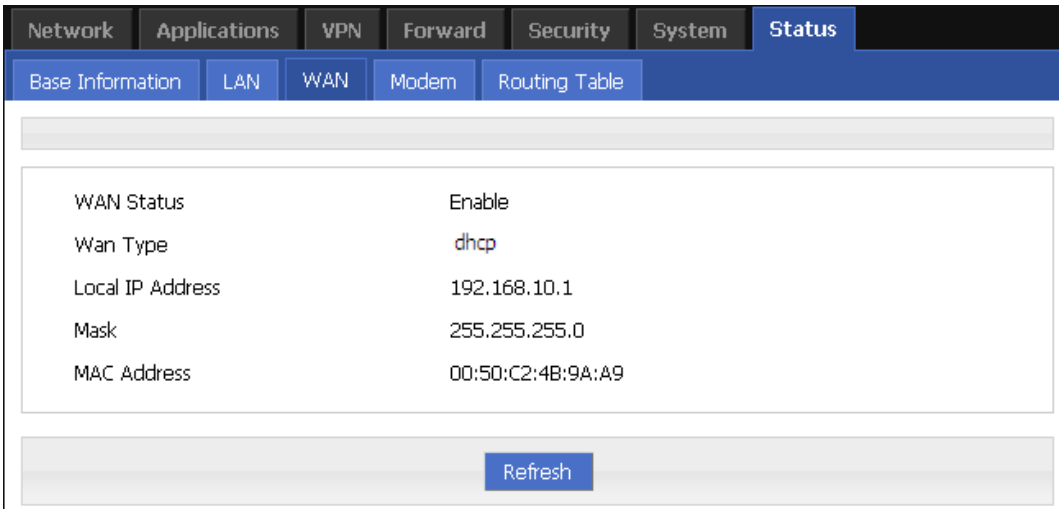



Figure 5-87 PPPoE WAN status

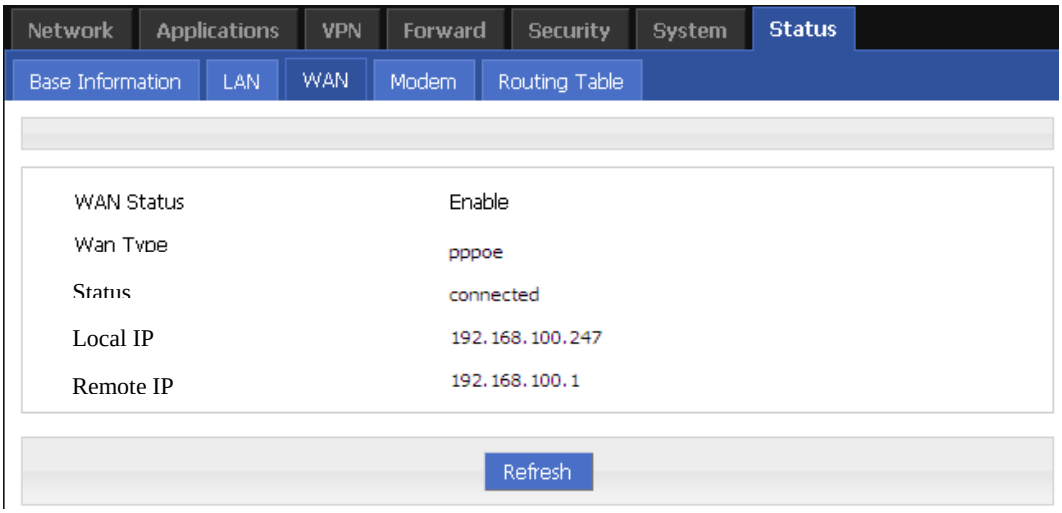



Table 5-45 WAN Parameter instruction

| 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 | |
| PPPoE for WAN type | | |
| Status | To show the link status of WAN interface PPPoE | |

| Parameter | Details | Operation |
|---|---|---|
| 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 H8922 3G/4G router.

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

Figure 5-88 Modem Status page

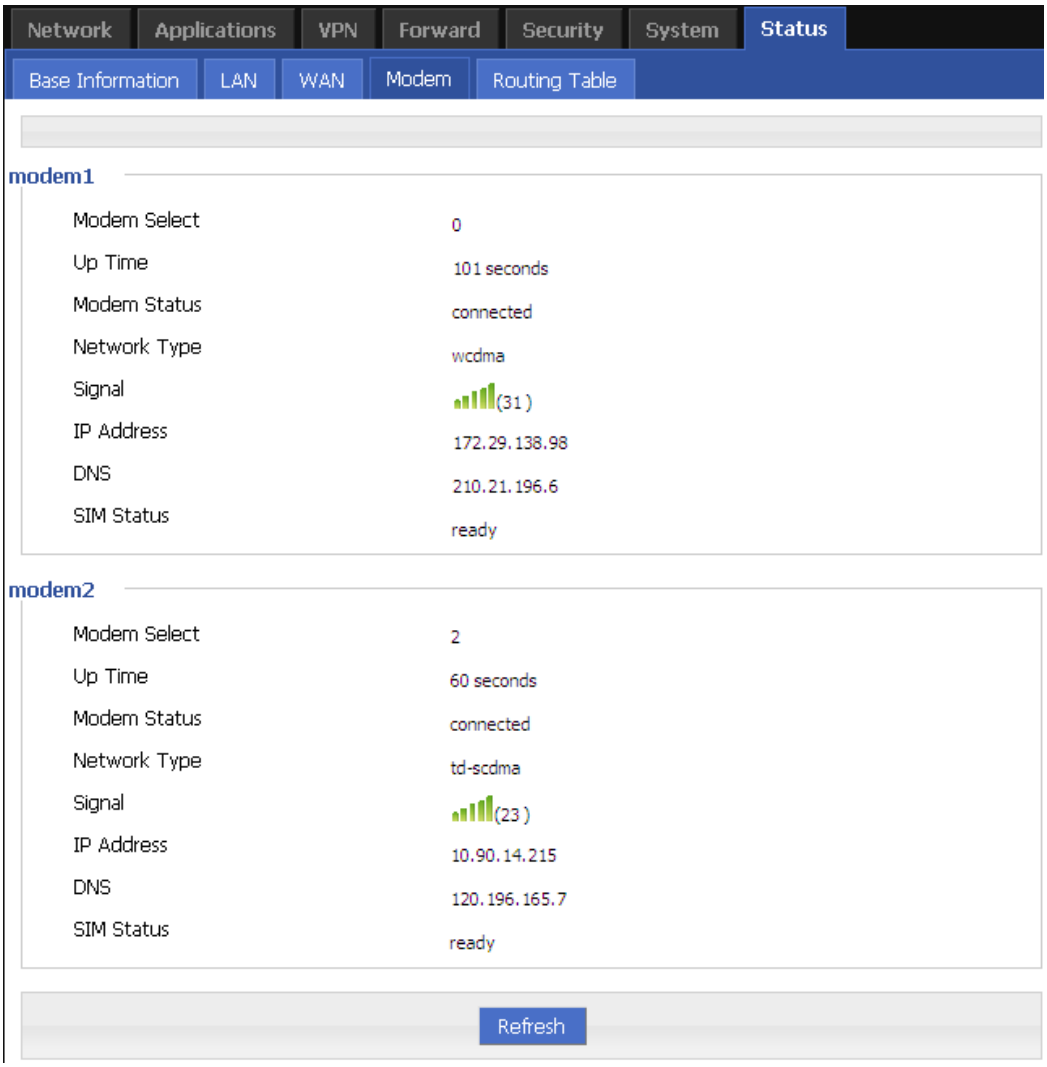


Table 5-46 Modem Parameter instruction

| Parameter | Details | Operation |
|---|---|---|
| Modem Select | To show the current modem name | |
| Up tome | To show the current on line time of the modem<br>Unit: second | |
| 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<br>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 H8922 3G/4G router.

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

Figure 5-89 Routing table page

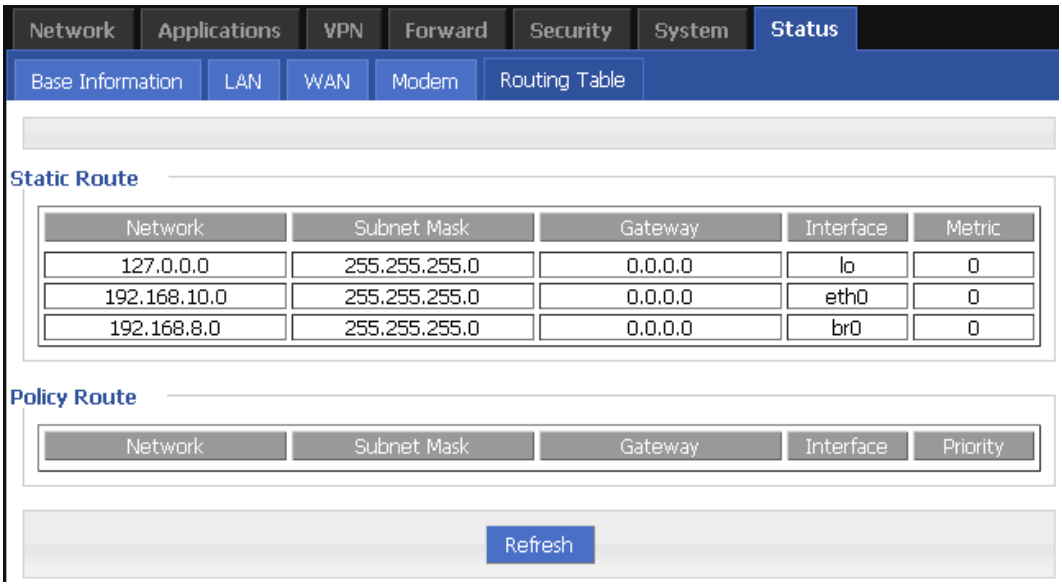


Table 5-47 Routing table Parameter instruction

| 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 H8922 3G/4G router |
| 6.2 Awake function | How to awake H8922 3G/4G Router if not auto-dial |
| 6.3 Parameter select | Parameter switch to achieve SIM backup function |
| 6.4 VPN | H8922 3G/4G Router VPN setting |
| 6.5 Timing Task | Set Timing task on H8922 3G/4G Router |

## 6.1 Overview

H8922 3G/4G Router commonly used function includes wake up, parameter switch, VPN. Etc.

## 6.2 Awake function

### Typical case

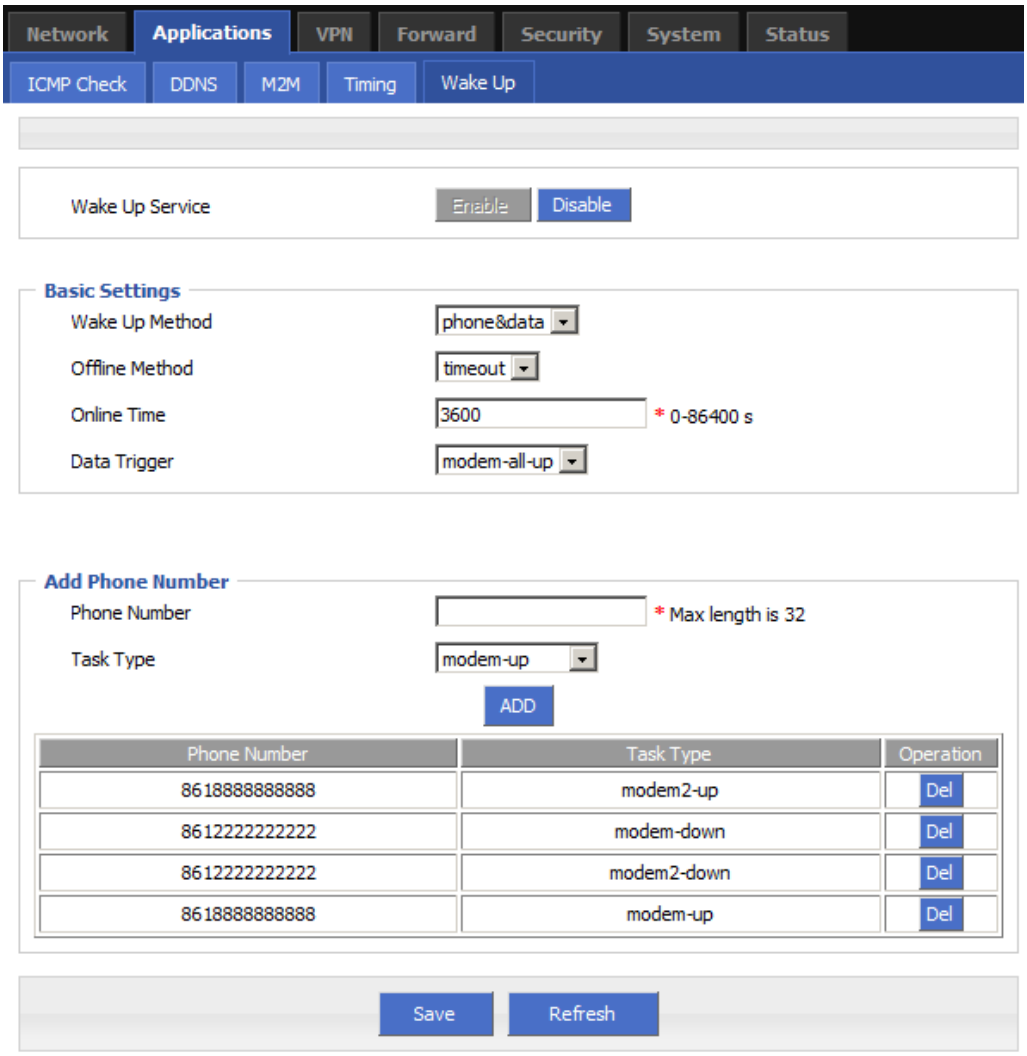
H8922 3G/4G router support wake up function, means router will not auto-dial after power on, but dial triggered by data or call or SMS. Then router auto offline by idle or timeout. This function could save your data traffic fee.

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 both modem & modem2.

### parameter setting

Let us check a example:

Figure 6-90 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

H8922 3G/4G Router provide parameter select function, when working modem disconnect or works abnormal, router will switch to another SIM swiftly according to the rule you set. And ensure the network availability.

## Parameter Select

Let us check an example:

CAUTION

Please set the “Parameter select” of modem and modem2 separately

Set rules as below

Figure 6-91 Rules setting

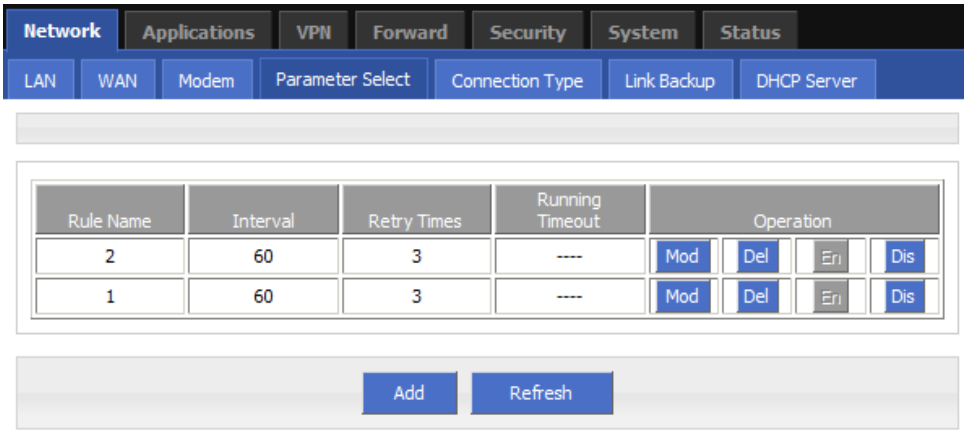


Figure 6-92 parameter select setting 1

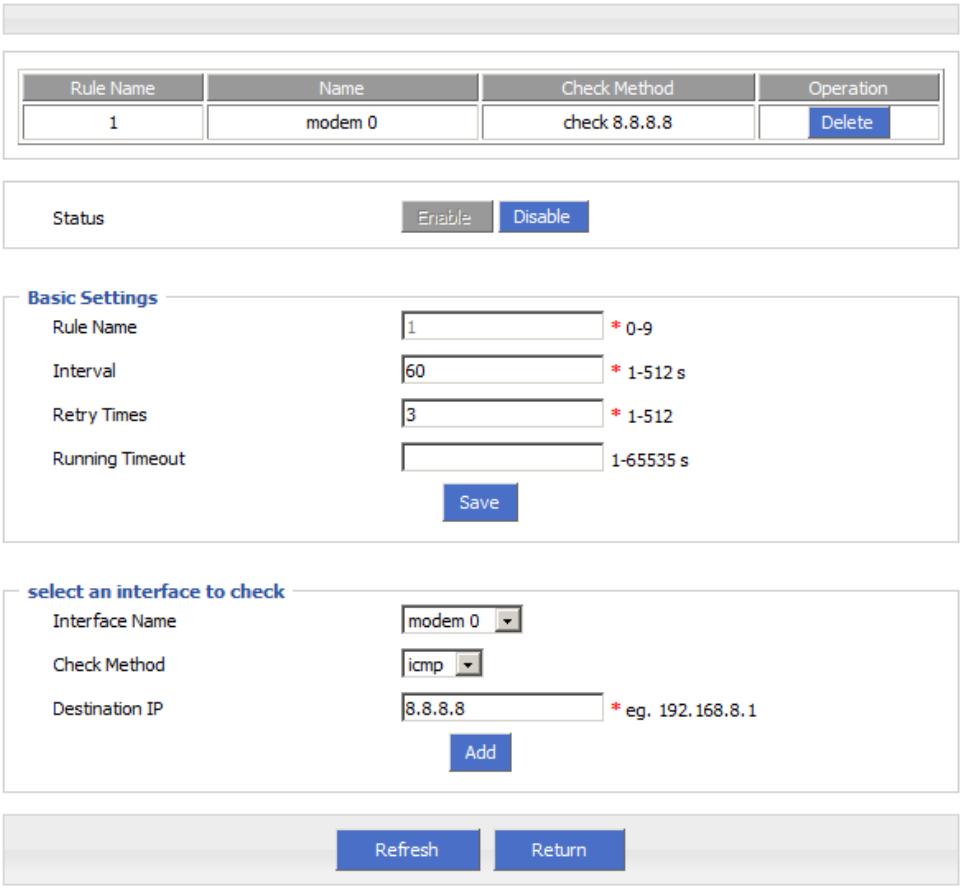
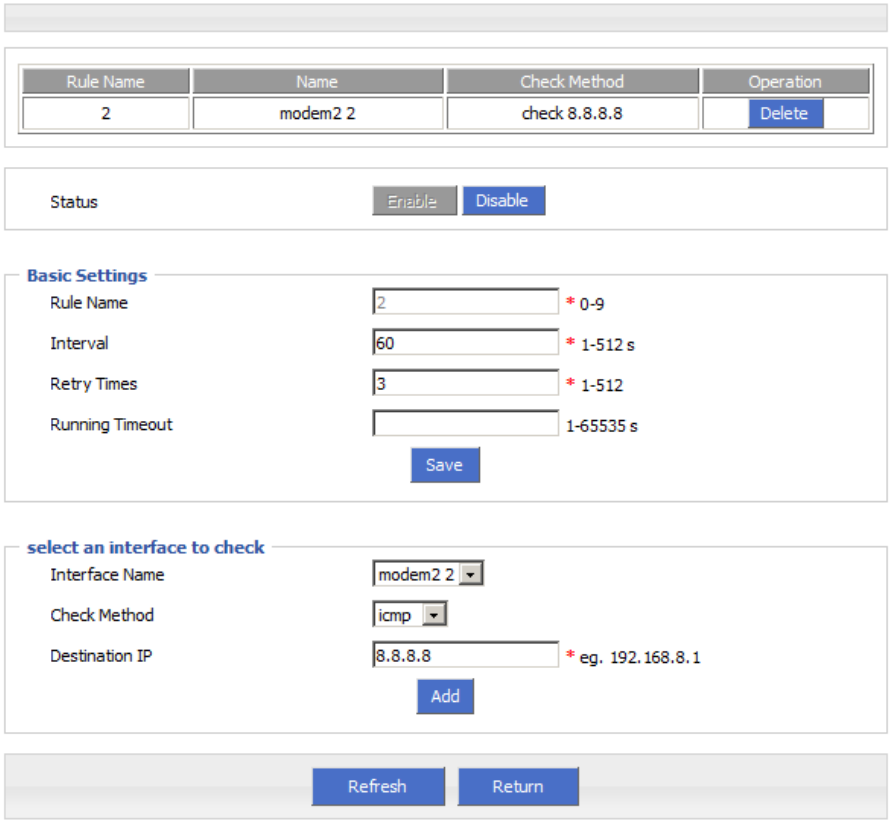


Figure 6-93 parameter select setting 2




When a working modem offline, router will run parameter select rule: “check icmp”, check the IP you set by ping, in this case, 8.8.8.8. after 3 times failure, router will switch to modem2, and dial online works again.

# 6.4 VPN

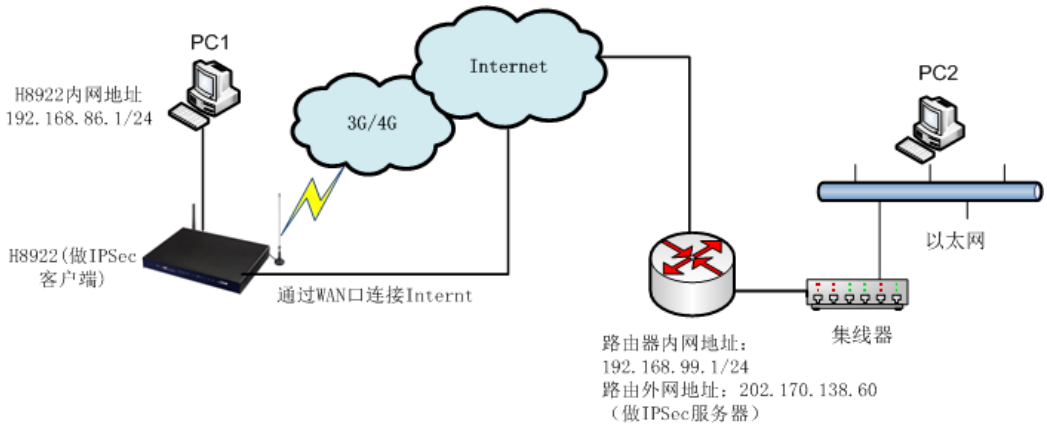
## Introduction

VPN, virtual private network, a technology based on Internet, now H8922 3G/4G router supports L2TP/PPTP/GRE/IPIP/IPSec of VPN.

L2TP used to build a virtual private network, after H8922 3G/4G Router connect to company NAS server, PC under H8922 could visit company network like visiting the local area network.

Let us check a setting example:

Figure 6-94 Build IPSec




PC1 connect H8922 then build IPSEC link by VPN function of H8922 with company router. I assume using IPSec tunnel mode, H8922 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 6-95 IPSec Phase 1

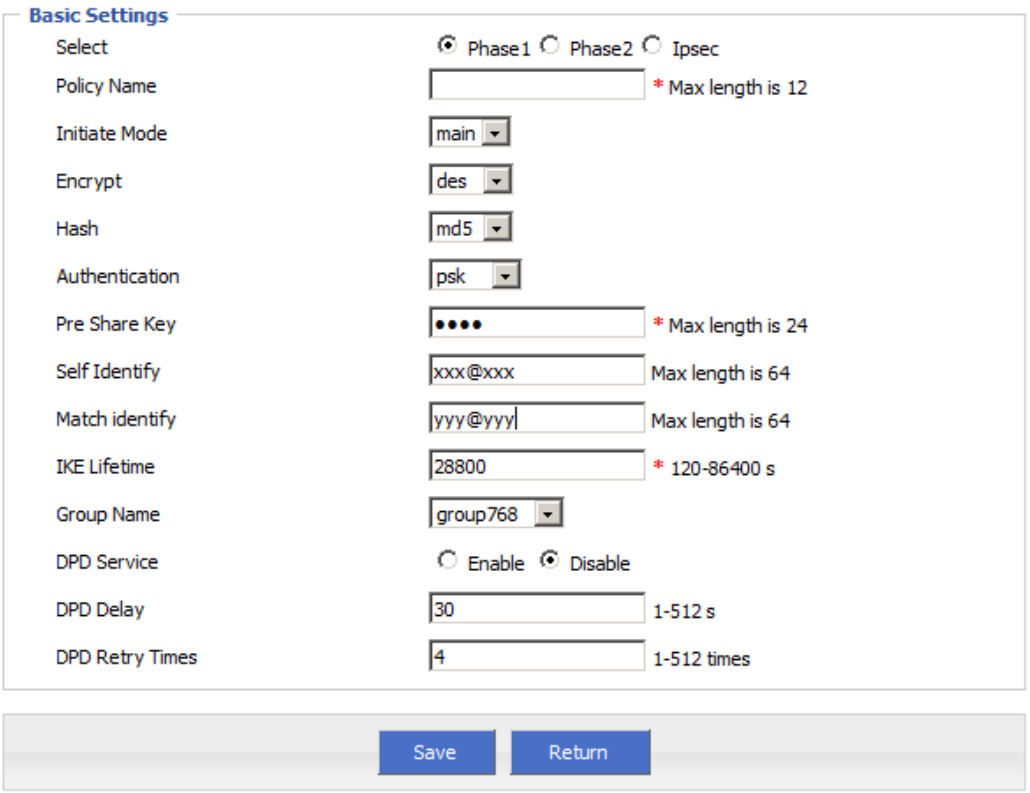


Figure 6-96 IPSec Phase 2

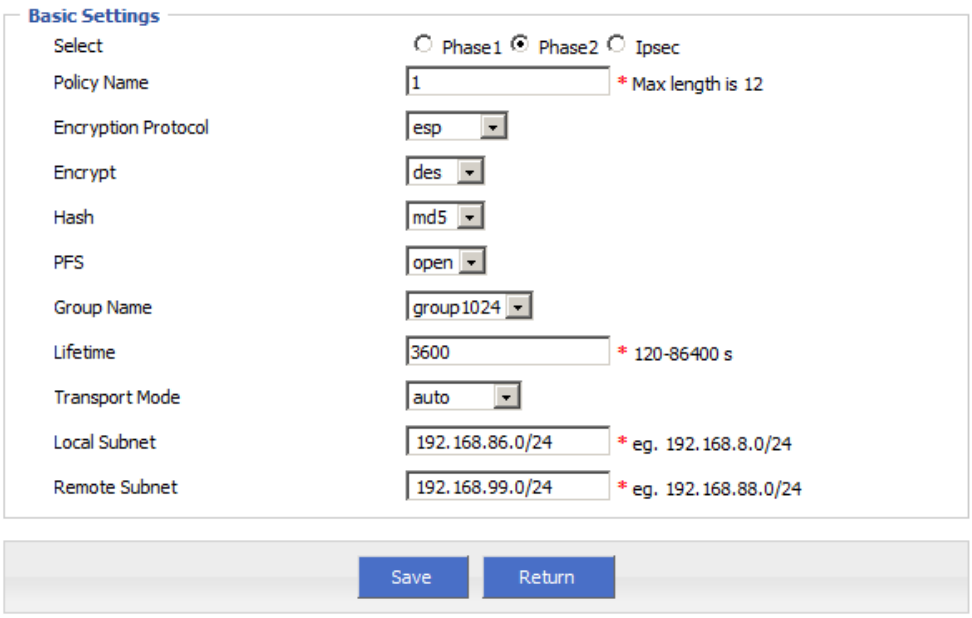
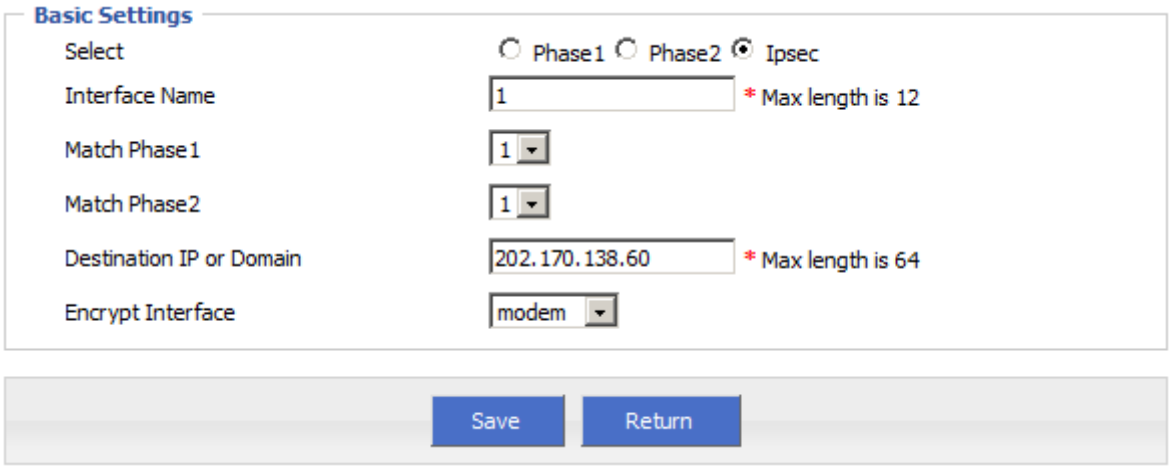



Figure 6-97 IPSec

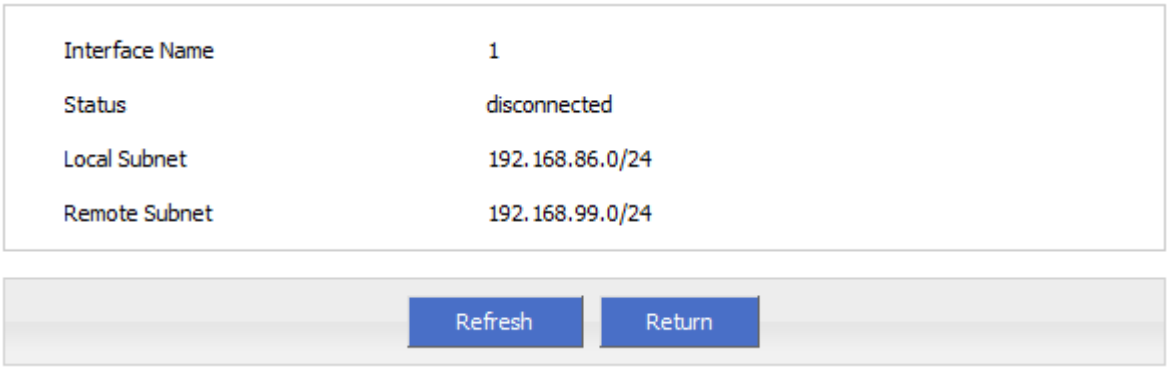



Company router server should have same setting but with a reverse identity and subnet setting of H8922 3G/4G Router.

## Result

After setting H8922 3G/4G 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 6-98 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

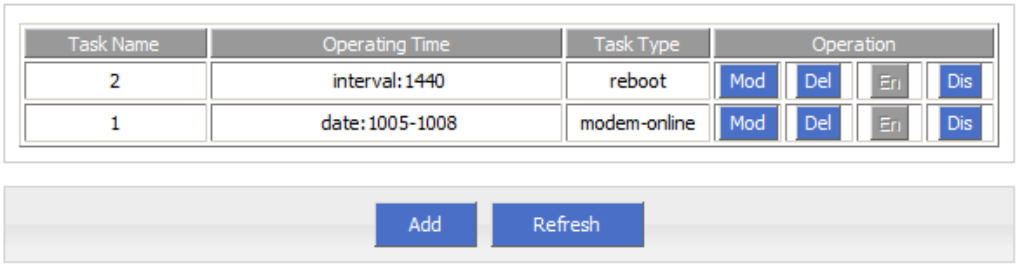
--- 192.168.99.1 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 769.937/1169.648/1569.360 ms

# 6.5 Timing Task

## Typical Application

H8922 3G/4G 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 6-99 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 6-100 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 6-101 router off line

```
10:09:02 pppd[1067]: Terminating on signal 15
10:09:02 pppd[1067]: Connect time 3.0 minutes.
10:09:02 pppd[1067]: Sent 445 bytes, received 2660 bytes.
10:09:03 netdown[1336]: ppp interface modem down{netdown.c->37}
10:09:03 netdown[1336]: killall -SIGUSR2 modem{netdown.c->47}
10:09:03 pppd[1067]: Script /usr/sbin/pppdown-run started (pid 1335
10:09:03 pppd[1067]: sent [LCP TermReq id=0x2 "User request"]
10:09:03 pppd[1067]: rcvd [LCP TermAck id=0x2]
10:09:03 pppd[1067]: Connection terminated.
```

Figure 6-102 router reboot

```
10:12:01 timing[1484]: timing: Reboot the system{hp_misc.c->984}
```

# 7 FAQ

## About this chapter

| Chapter | Content |
|---|---|
| 7.1 Hardware failure | Possible hardware failure during using H8922 3G/4G 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 5-36VDC
- No power supply

### Solution

- Make sure the power supply is 5～36VDC
- 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 3G/4G and WIFI, GPS antenna, do not mix them

# 7.2 Dial Online Problem

## 7.2.1 Dial discontinue

### Phenomenon

H8922 3G/4G 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

H8922 3G/4G 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

H8922 3G/4G 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

H8922 3G/4G 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

H8922 3G/4G 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 H8922 3G/4G 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

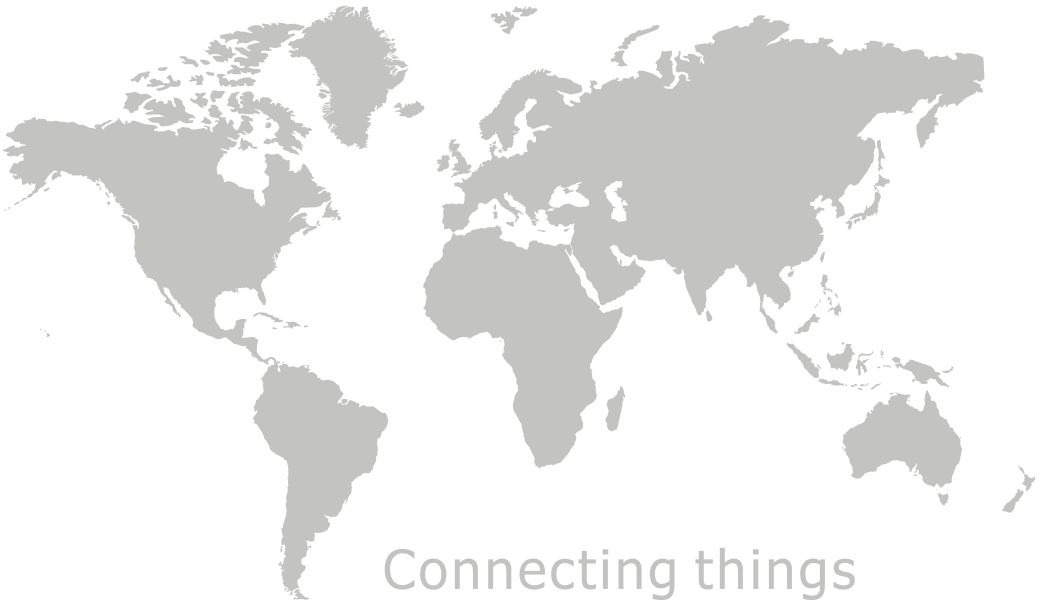
### Possible Reason

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.



Connecting things

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