Industrial Class H800 Cellular Router

User Manual

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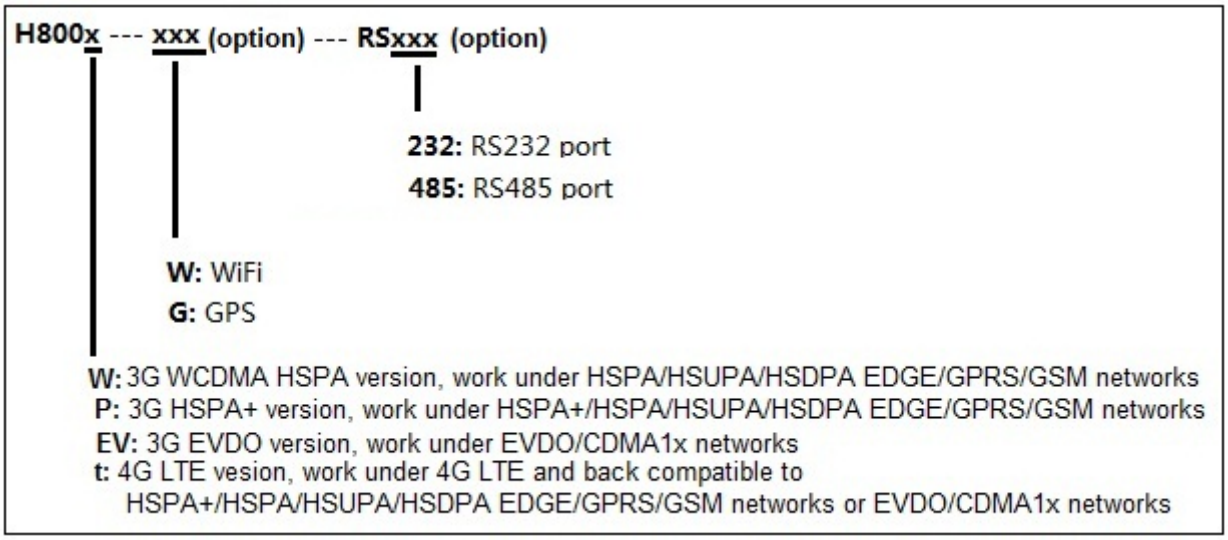
Content

Chapter 1

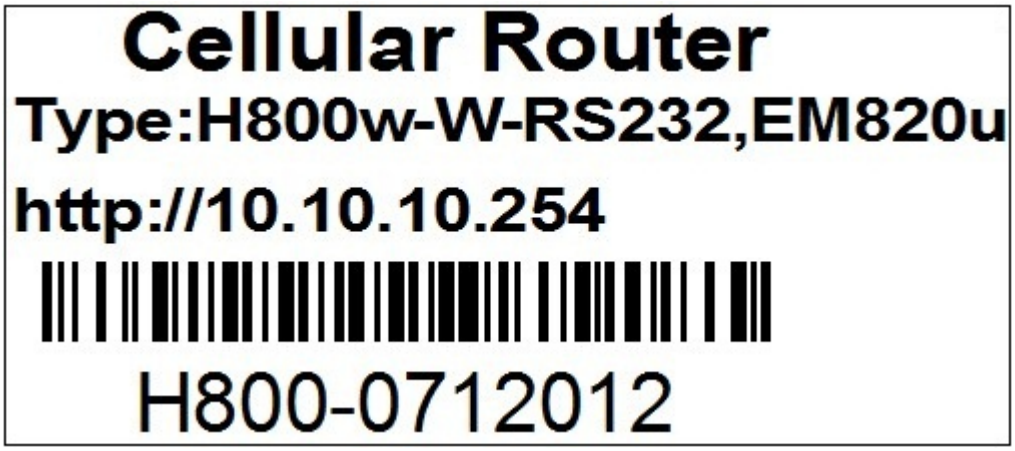
1 Preparation job before configuration

1.1 Learn your router version and feature

1) H800 series contains different version and option feature. Please learn it before using it.
H800 series defines the model as follows,



2) Find the modem type info at the back cover of the router. This will be used while do configuration.
For example: the following label indicates the version, type and inside module modem.
The module modem name is “EM820u”, remember this and will select this module name while do configuration.



1.2 Prepare SIM Card and working condition

1) For GSM/GPRS/EDGE/HSDPA/HSUPA/HSPA/HSPA+/4G LTE networks or TD-SCDMA networks, please get a SIM card with data business.
2) For CDMA2000 EVDO/CDMA1x networks, please get a UIM card with data business or inform us before order if the network uses non-ruim (nam-flashing).
3) Make sure the sim card or uim card is with enough data business and balance.
4) Make sure the signal is good enough where you test or install the router. Weak signal will make the router no work. If you find your signal strength is not good, please contact us for high gain antenna.

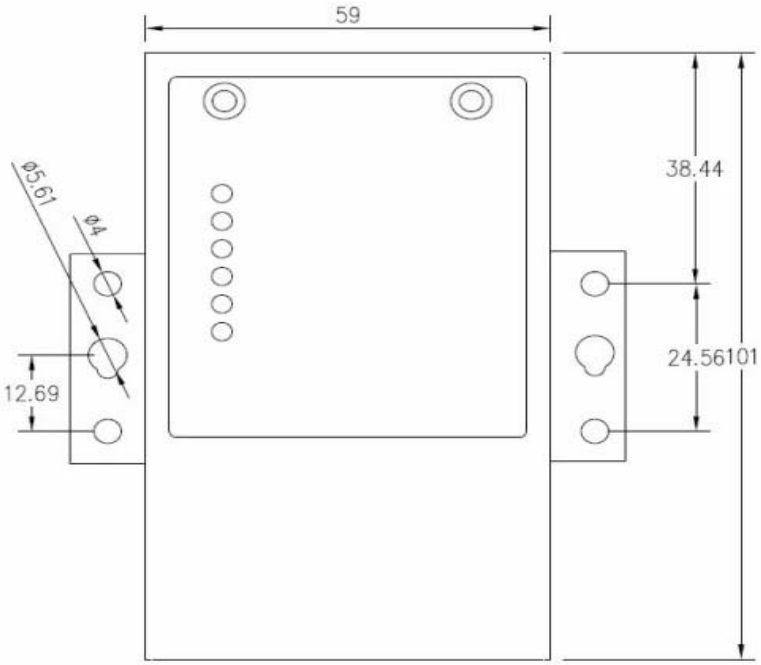
Chapter 2

2 Hardware Installation

This chapter mainly describes the appearance, model and function of H800 series and how to install and set the configurations.

1. *Overall Dimension*
2. *Accessories Description*
3. *Installment*

2.1 Overall Dimension



2.2 Installment

H800 series should be installed and configured properly before putting in service. The installation and configuration should be done or supervise by qualified engineer.

Attention:

Don't install H800 series or connect/disconnect its cable when it is power on.

2.3 SIM/UIM card installed

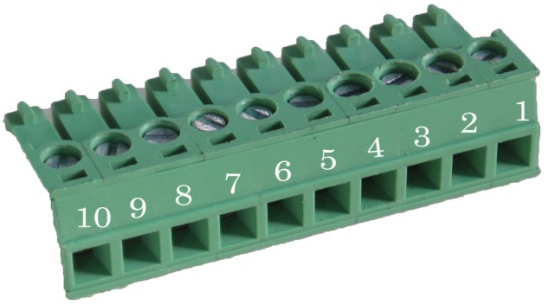
Load or remove SIM/UIM card, need to have equipment back cover turned, up gently, gap outwards, broke it gets stuck under load, toward the chip can buckle up. Remove UIM card, SIM/broke it gets stuck; thrust the card can slip out.

Attention: *SIM/UIM card does not reach the designated position, the equipment can not find a card, can't work normally, therefore inserted a try to check again for a SIM card is stuck fast.*

2.4 The installation of terminal blocks

H800 uses pluggable terminals to connect the user's data and the power supply. Spacing: 3.81mm， 10 Pin; User data and power supply suggestion: 14~24AWG. Please refer to the table 2-4 for the interface definition of the power cable and connection sequence. Specific interface definition of the power cable and connection sequence you can read on the labels of H800 products. Using 14~24AWG cable and referring to H800 products labels or the bellowed interface definition and connection sequence, you need to use the oblate screw driver to fix the cable to the connecting jacks of the pluggable terminal. After successfully connection, you need to insert the terminal into the corresponding position in the bottom of the H800 products.

Notes: Connection sequence should be accurate。Cable's insulating striping length is about 7mm. (For safety, insulating striping length should be too long). Please refer to the



picture.

Attention:

1. *The power cable should be connected correctly. We "suggestion double check before switch it on .Wrong connections may destroy the equipment.*
2. *Power terminals: Pin 1 and Pin 2;*
3. *Here： Pin 2 is "GND", PIN 1 is power input "Vin"(DC7~30V).*

2.5 Terminal signal definition

PIN	Signal	Description	Note
1	Vin	+7-30V DC Input	Current： 12V/1A
2	GND	Ground	
3	Tx	Transmit Date	
4	Rx	Receive Date	
5	PGND	Ground	
6	Reset	Reset	Reset Pin has the same function with reset button. In the usage, it needs to be short connected to the GND. After giving the device a 1 sec low level, it will reboot.3 seconds, the device will restore factory settings
7	SPI-I（IO0）	General Purpose I/O	
8	SPI-O (IO1）	General Purpose I/O	
9	SPI-CLK (IO2）	General Purpose I/O	
10	SPI-EN (IO3）	General Purpose I/O	

I/O Terminal on router	Serial port (RS485 or RS232)
Port 2	Port 5
Port 3	Port 3
Port 4	Port 2

2.6 Grounding

To ensure a safe, stable and reliable H800 series operation, Router cabinet should be grounded

properly.

2.7 Power Supply

H800 series can be applied to complicated external environment and usually the power range is very large. So in order to fit the complicated application environment and improve the stability of the system, H800 series is designed with advanced power management technology. The DC power supply electronic to the device via the pluggable terminal PIN 2(GND) and PIN 1(Vin). Please refer to the above table for the detail definition of the terminal.

Normally, H800 series input powers supply is +7～+30V. In most cases, the standard configuration is 12V/1A.

2.8 Check Network Status

Please connect the antenna after you successfully connect to the cable. And then insert the valid SIM/UIM card and provide the power to the H800 series via the cable. After provide the power to H800, if the RUN light start to blink in a few seconds, that means the system start-up is normal; if the Online light works, that means the network has been found; if the VPN light works, that means VPN tunnel has been set up. Please refer to the below table for the situation of the indication lights.

LED	Indication Light	Description
Power	On for 3 seconds	On for 3 seconds after power supply
	blink	System set-up normally
	Off or still on after 3 seconds	System set-up failure
Lan	blink	Data transmission in Ethernet
	Off	Ethernet connection abnormal
VPN	On	VPN tunnel set-up
	Off	VPN tunnel set-up failure
3G/Cell	On	Access to the Internet
WIFI	On	Enable
	Off	Disable
WAN	blink	Data transmission in

		Ethernet	
	Off	Ethernet connection abnormal	

Chapter 3

3 Software configuration

1. *Overview*
2. *How to log into the Router*
3. *How to config web*

3.1 Overview

H800 series routers with built-in WEB interface configuration, management and debugging tools, user should configuration the parameters first; and it could be altered the parameters flexibility and software upgrades and simple testing. User can set up and manage the parameters of the router on its interface, detail step are bellow:

3.2 How to log into the Router

3.2.1 Network Configuration of the Computer.

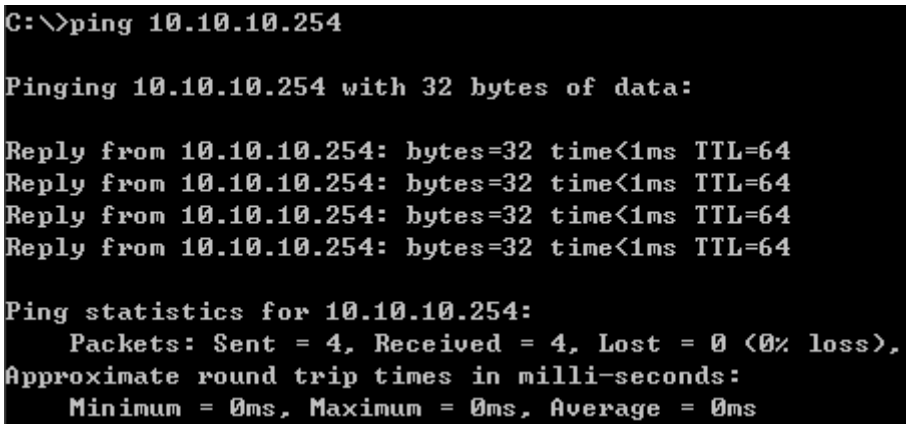
The router default parameters as follow

IP: 10.10.10.254 (or 10.10.10.254:10000), sub mask: 255.255.255.0.

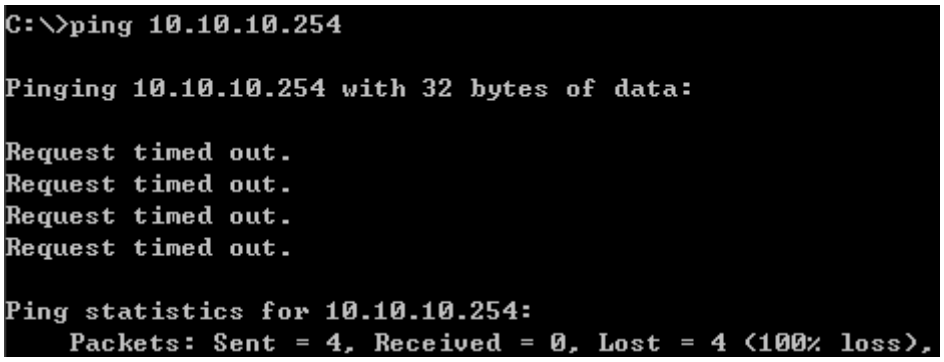
There are two ways to set the PC's IP address.

1. Manual setting
   Set the PC IP as 10.10.10.xxx (xxx = 1~253), subnet mask: 255.255.255.0, default gateway: 10.10.10.254, primary DNS: 10.10.10.254.
2. DHCP
   Choose "Obtain an IP address automatically" and "Obtain DNS server address automatically".

After IP setting, check it by ping. Click Windows start menu, run, execute "cmd" command. Input "ping 10.10.10.254" in the DOS window.



This information means the connection is work.

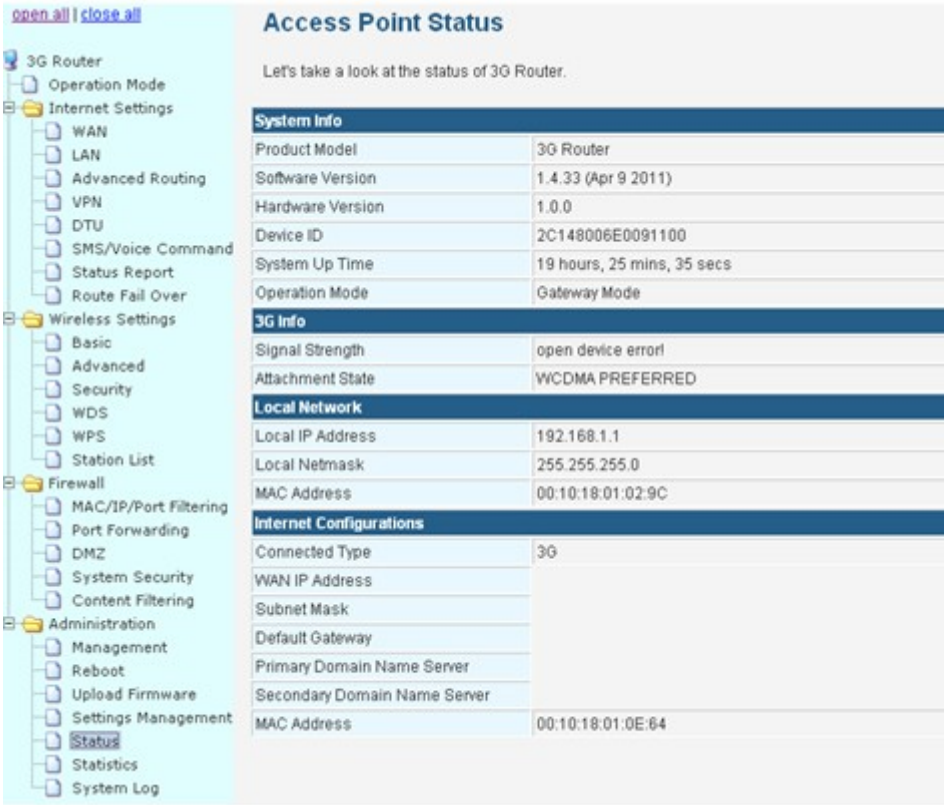


This information means the connection is failure. If so, please check the network cable connection and IP address setting.

3.2.2 Log into Router

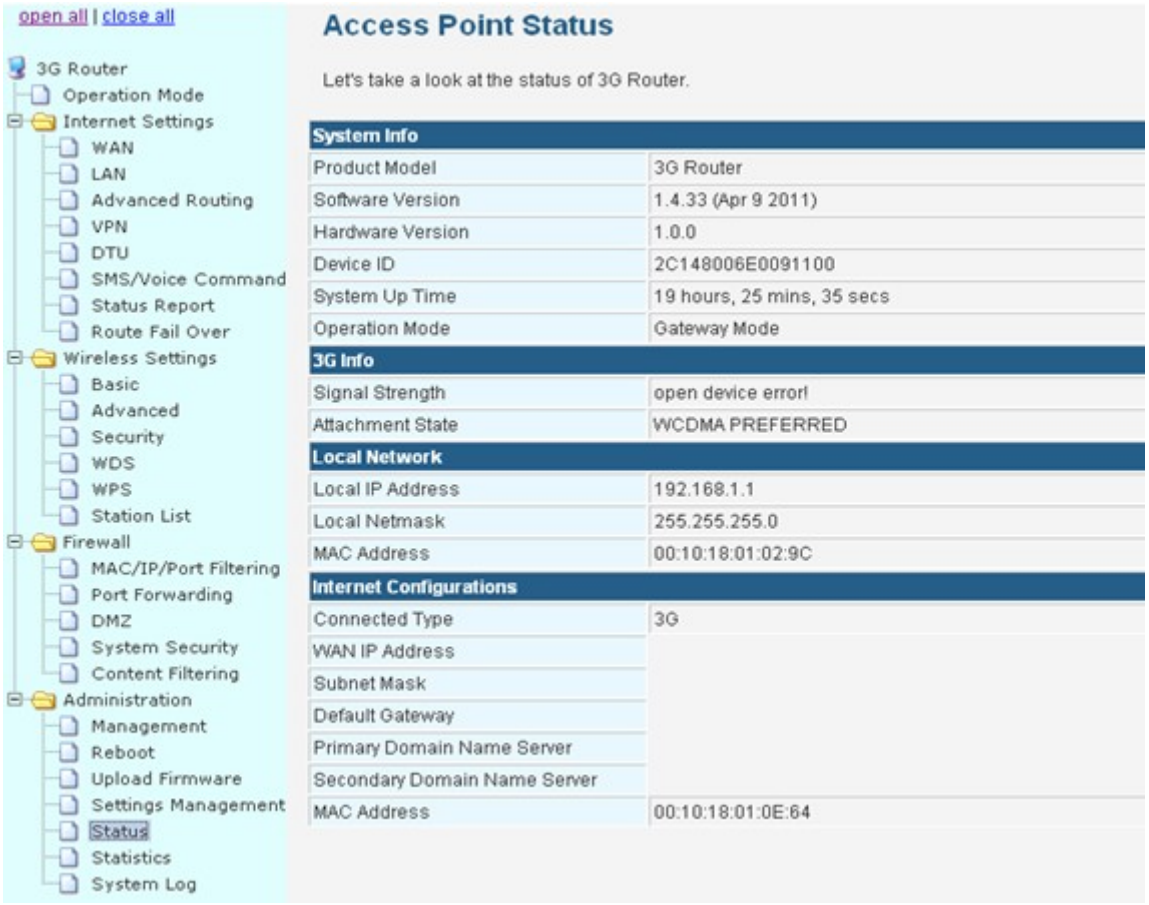
- Open the Web browser, and type http://10.10.10.254 (or http://10.10.10.254:10000) into the address field and press Enter bottom in your computer keyboard.
- Type User Name “admin” and Password “admin” in the pop-up Login Window, and then press the “Apply” button.

- If you type into the correct User Name and Password, you will get the access into the Router's Web Management Page.

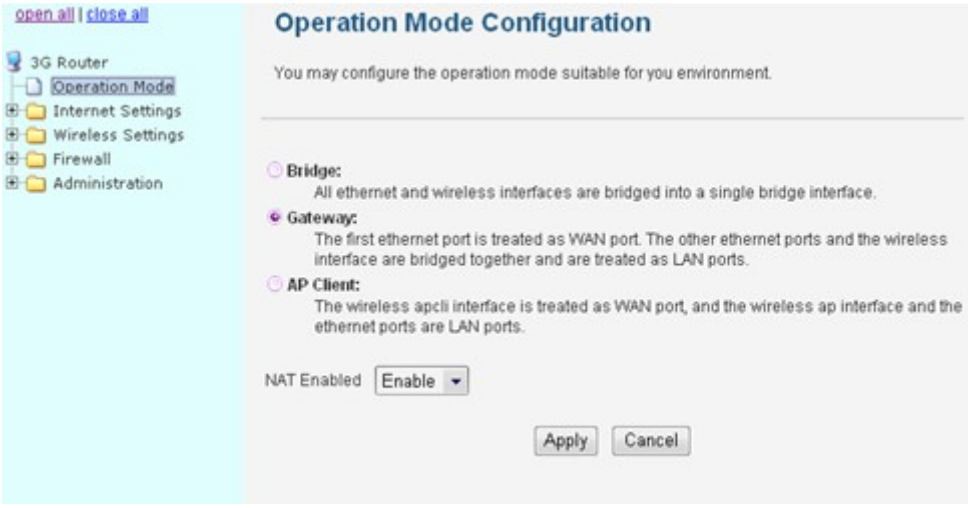


3.3 How to configure web

3.3.1 Main Menu as below Picture



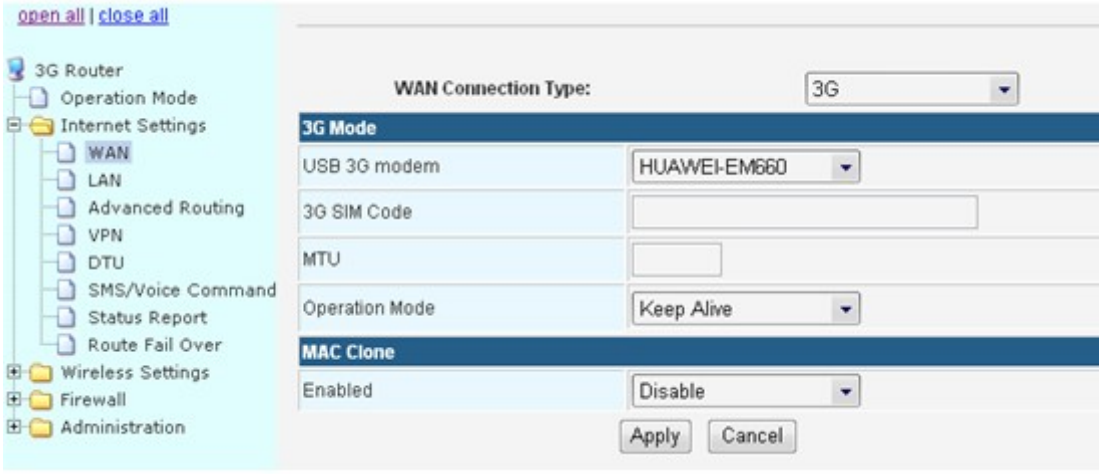
3.3.2 Operation Mode



- **Bridge:** All Ethernet and wireless interfaces are bridged into a single bridge interface.
- **Gateway:** The first Ethernet port is treated as WAN port. The other Ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
- **AP Client:** The wireless apcli interface is treated as WAN port and the wireless ap interface and the Ethernet ports are LAN ports.
- **NAT:** Network Address Translation

Normally and default we select “Gateway mode”.

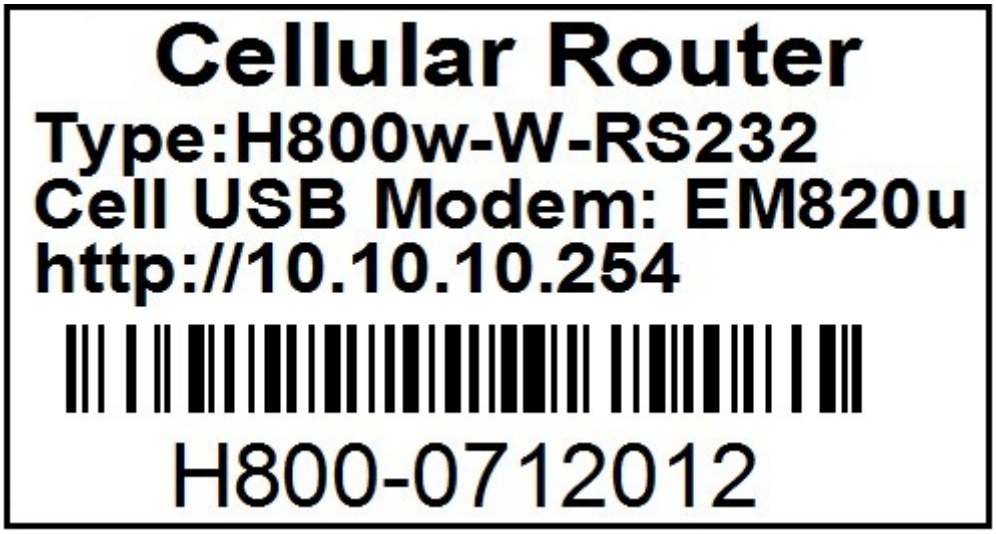
3.3.3 WAN Settings



- WAN Connection Type support: Static IP, DHCP, PPPoE, L2TP, PPTP, 3G(some version of software indicated “Cell” instead of 3G).
- USB Modem: System supports the follow module: HUAWEI EM560（for H800 TD-SCDMA）, HUAWEI EM660/THINKWILL MI600(for H800 EVDO), and HUAWEI EM770/LONGSUNG-U6300/U5300(for H800 HSPA). Please choose right USB modem.

Notes: the USB 3G Modem Type was marked on the back of the router.

For example, it shows the following. It means H800 is the router series name, H800w-W-RS232 is the part number name. And the EM820u Cell USB Modem is the 3G modem name. Then please select "HUAWEI-EM820" at "USB 3G modem"



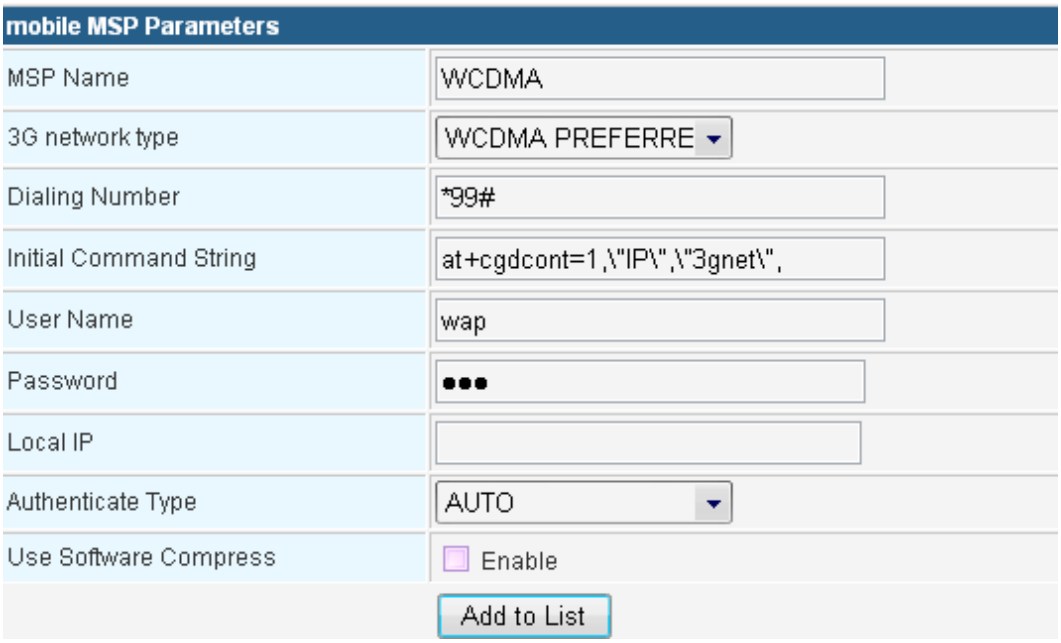
Notes: For module, please choose the correct modem name like in the following table.

Series Name at back cover of router	Choose modem name at WAN configuration
H800x-XXX-EM770	Huawei-EM770
H800x-XXX-EM770w	Huawei-EM770
H800x-XXX-EM770u	Huawei-EM770
H800x-XXX-EM660	Huawei-EM660
H800x-XXX-U6300	LONGSUNG-U6300/U5300
H800x-XXX-F3507	ERICSSON_WCDMA_SERIAL
H800x-XXX-F3307	ERICSSON_WCDMA_SERIAL
H800x-XXX-F5521gw	ERICSSON_WCDMA_SERIAL
H800x-XXX-MC8785	SIERRA_MC8785_MC8790
H800x-XXX-MC8790	SIERRA_MC8785_MC8790
H800x-XXX-MC8700	SIERRA_MC8700
H800x-XXX-GTM681w	GTM681w
H800x-XXX-EM820	Huawei-EM820
H800x-XXX-EM820u	Huawei-EM820
H800x-XXX-EM820w	Huawei-EM820
H800x-XXX-MC7710	SIERRA_MC7710
H800x-XXX-MF210	ZTE-MF210
H800x-XXX-MU301	ZTE-MU301
H800x-XXX-MC5728	SIERRA-MC5728
H800x-XXX-AD3812	ZTE-AD3812
H800x-XXX-F3607	ERICSSON_F3607gw

Notes: if the modem name is not in the list, please contact us for support.

- 3G SIM PIN: enter PIN code if necessary. Most of sim card has no PIN code, then keep it as blank.
- Operation Mode: always online, connect on demand, connect on time. The default mode is always on line.
- MAC Clone: enable and disable the MAC clone function.

3.3.3.1 WAN type --3G



- **Mobile MSP parameters:** edit the MSP parameters.
- **MSP Name**: any name is ok
- **3G network type**: you can choose right network here.
- **Dialing Number**: Input the Dialing Number you get from ISP. For example, China Telecom (#777)
- **Initial Command String:** you need to input the username and password or APN offered by ISP with our Initial command

  H800 EVDO: pleaseinput: at\^pppcfg=\"username\",\"password\" Take China Telecom (both username and password are "CARD")as a sample: we input this command at\^pppcfg=\"CARD\",\"CARD\"
  (HUAWEI_EM660/Thinkwill MI600)

  H800 HSPA: pleaseinput: at+cgdcont=1,\"IP\",\"APN\", Take China Mobile(Their APN is 3gnet) as a sample: we input this command at+cgdcont=1,\"IP\",\"3gnet\",
  (HUAWEI_EM770/U5300/U6300/GaoRan280)

  H800 GPRS: pleaseinput: at+cgdcont=1,\"IP\",\"APN\", as a sample: we input this command at+cgdcont=1,\"IP\",\"cmnet\",

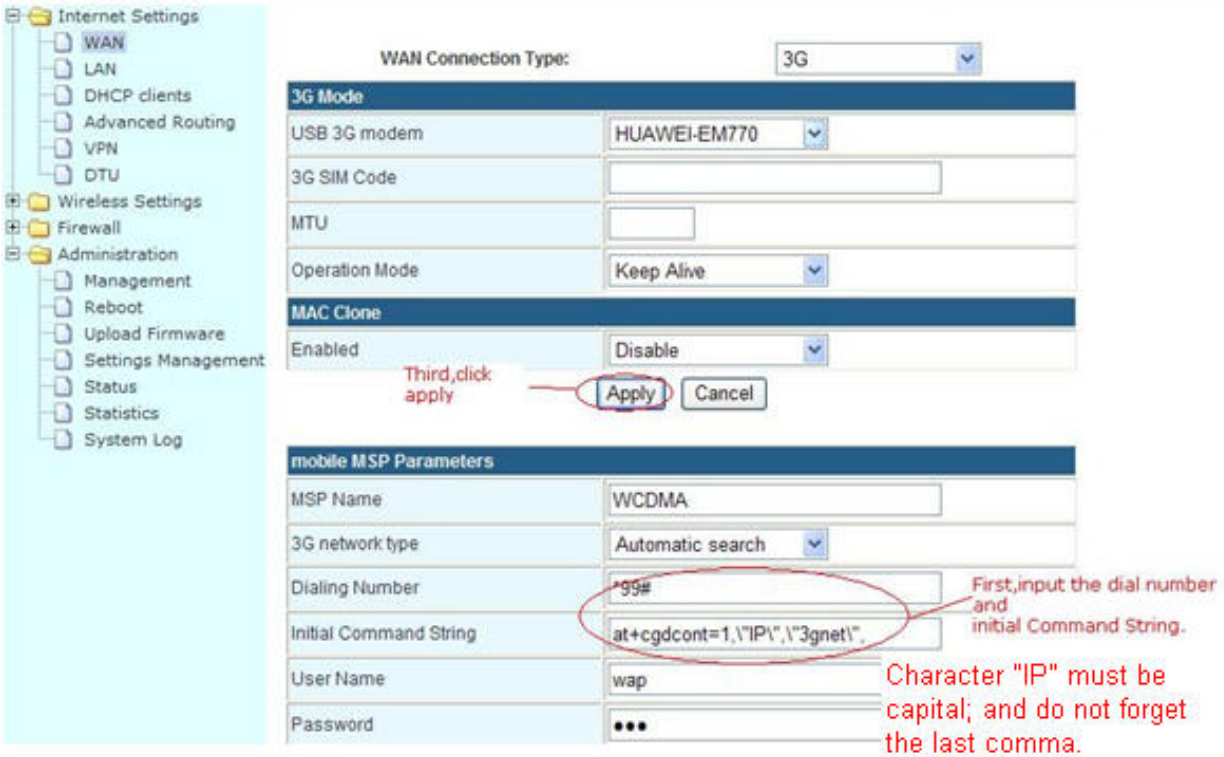
  H800 CDMA: at+zpidpwd=username,password , as a sample:we input this command

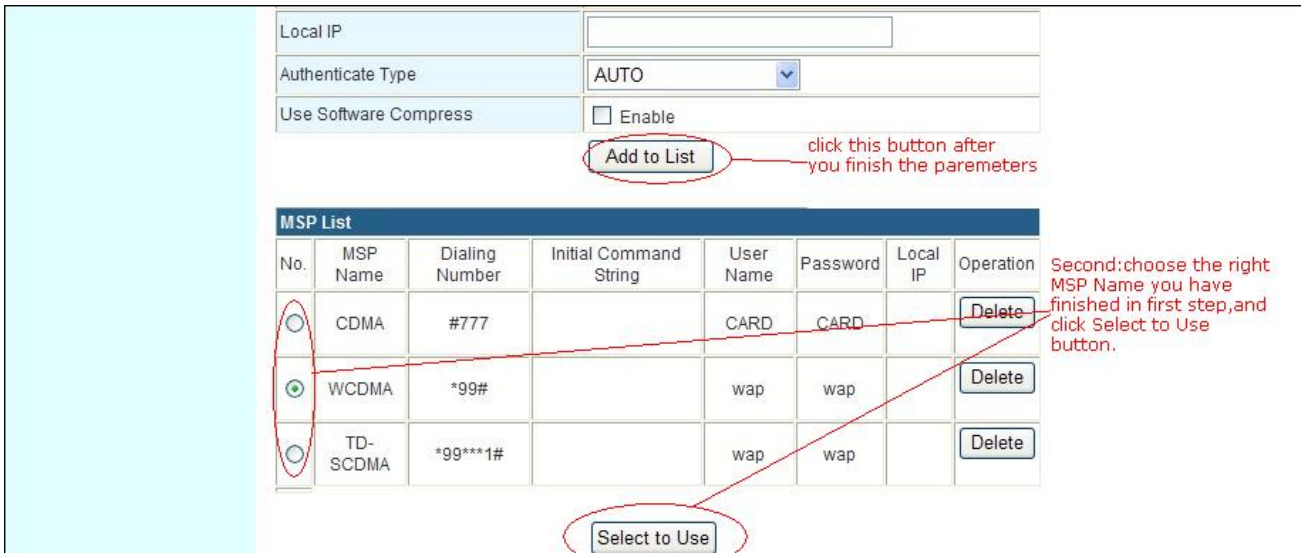
at+zpidpwd=card,card

- **Username and Password:** input them if there is. If none, just keep blank
- **Authenticate Type:** PAP/CHAP, the default setting is auto.

MSP list: This list is produced automatically once you finish the above mobile MSP parameters. Just choose the right MSP parameters and corresponding module (3G USB modem), and click Apply, then it will dial.

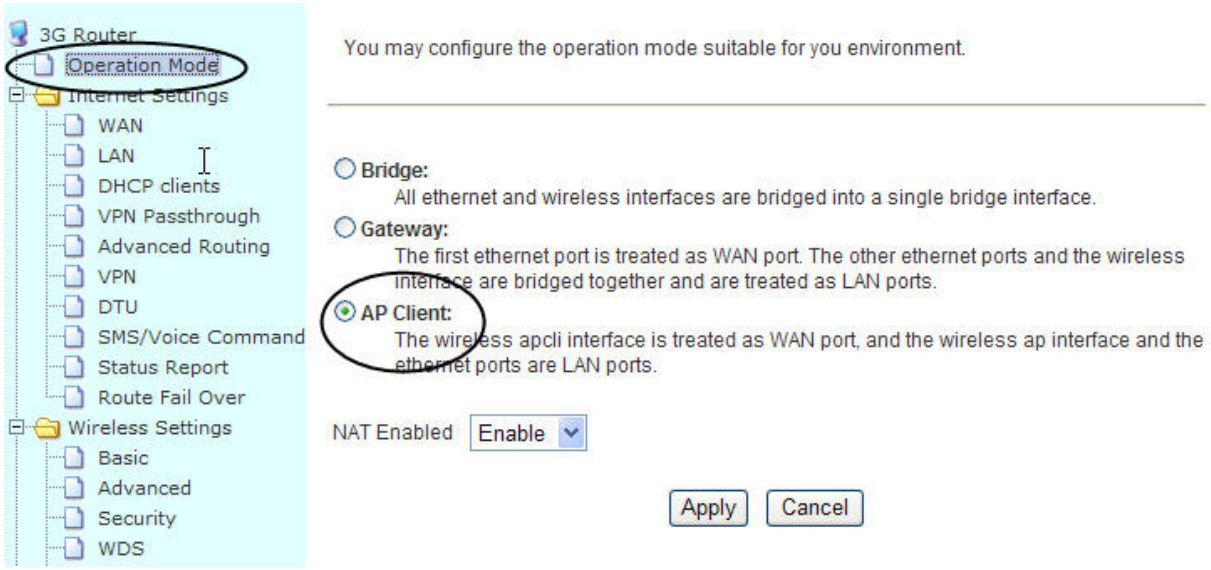
For example, we use H800 HSPA router to dial:



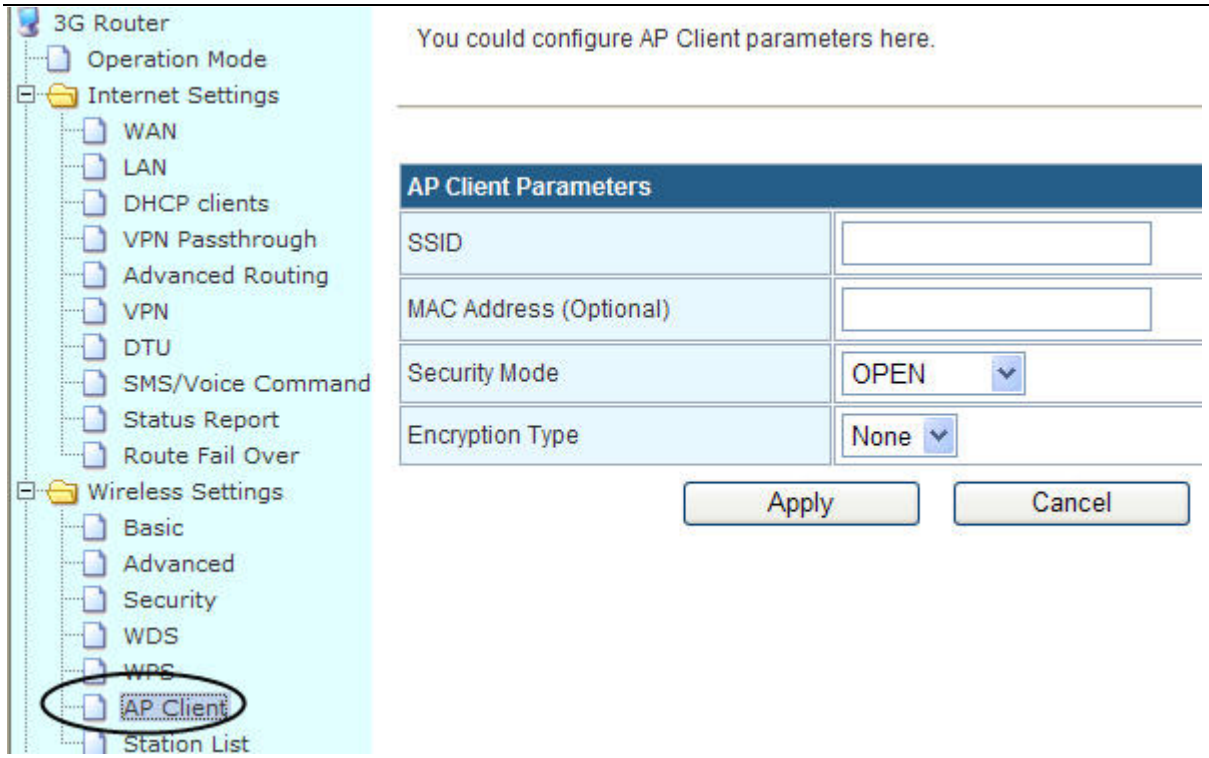


3.3.3.2 AP Client mode

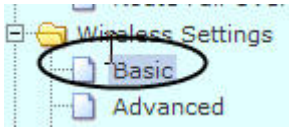
Set H800 as a AP client, H800 will connect the upper WiFi router.
Step1: H800 web -- Operation Mode – Choose “AP client”, and click apply button. Wait some time until the H800 make the setting works.



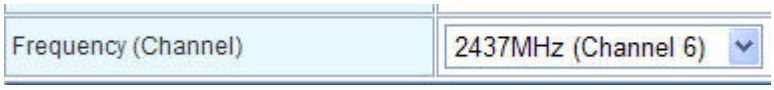
Steps: Wireless Settings – AP Client
Here fill in the parameters.
SSID: input the WiFi router’s SSID
Security Mode: choose correct one from the WiFi router you want to connect.



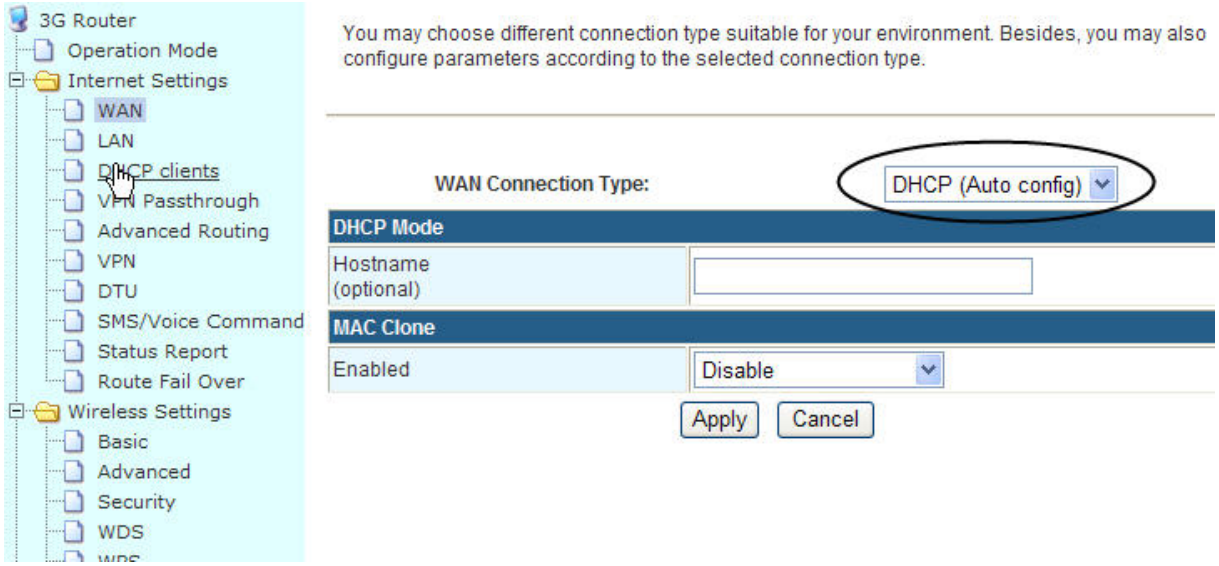
Step3: Wireless Settins -- Basic



Here please select the right channel the same with the wifi router you want to connect.



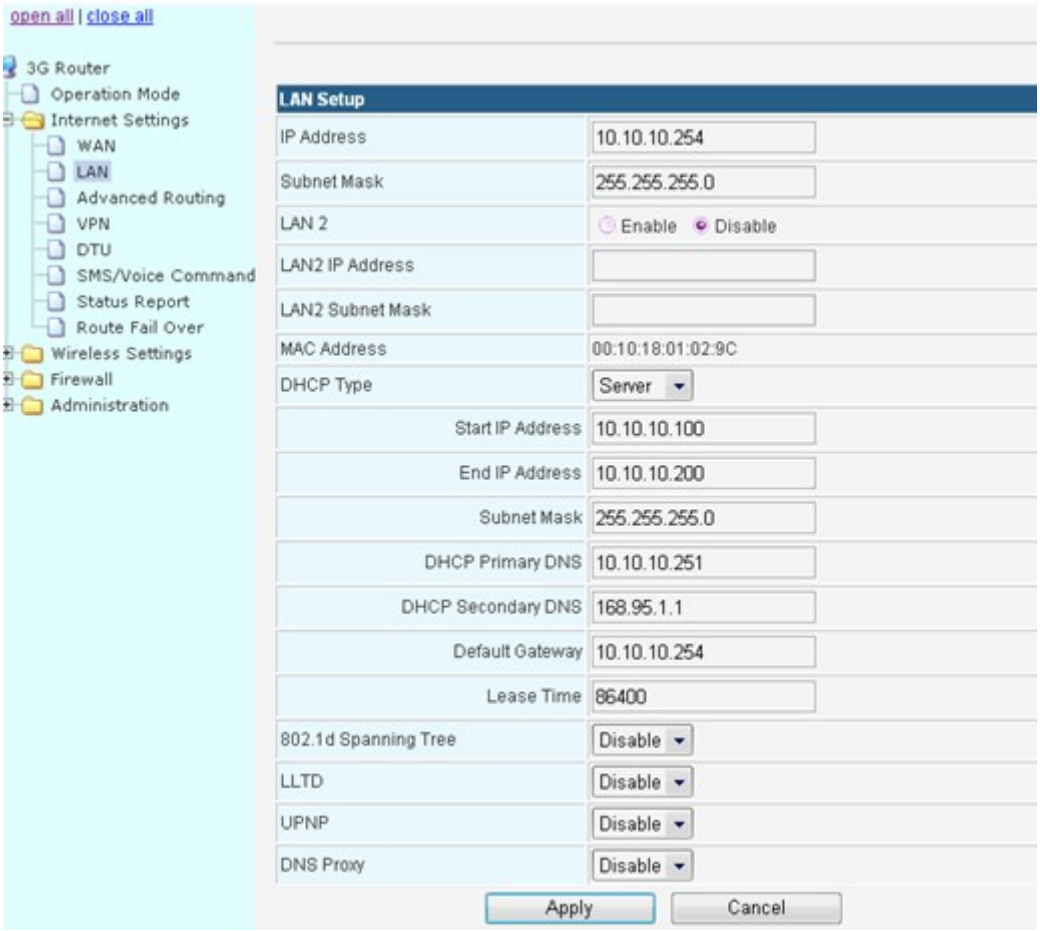
Step4: Internet Settings -- WAN



At “WAN Connection Type”, choose “DHCP (Auto Config)”, and click “Apply” button. The H800 router will

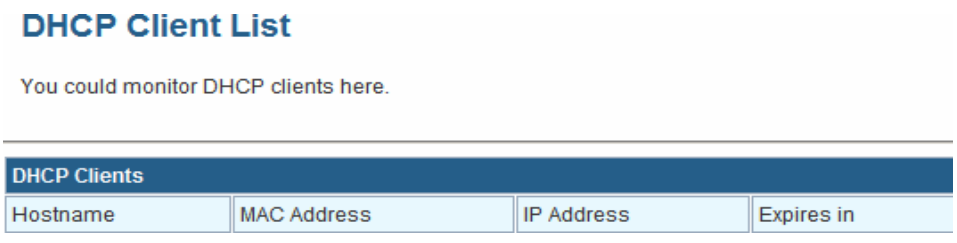
automatically connect the WiFi Router and get local IP from the wifi router. You can check at status info page.

3.3.4 LAN Settings



Setting the LAN parameters, include IP address, sub mask, VLAN, DHCP, etc.

3.3.5 DHCP Client



List the Clients which gain IP address from DHCP.

3.3.6 Configure Static Routing

This section mainly introduces what is Routing Table and how to configure static router.

- Routing Table

  This page shows the key routing table of this router.

Current Routing table in the system:									
No.	Destination	Netmask	Gateway	Flags	Metric	Ref	Use	Interface	Comment
1	255.255.255.255	255.255.255.255	0.0.0.0	5	0	0	0	LAN(br0)	
2	10.10.10.0	255.255.255.0	0.0.0.0	1	0	0	0	LAN(br0)	

- New Static Router

  This page is about how to set static routing function of the router.

Add a routing rule	
Destination	
Range	Host
Gateway	
Interface	LAN
Comment	

§ **Destination**: please enter Target Host or IP network segment

§ **Range**: Host or Network can be chosen

§ **Gateway**: IP address of the next router.

§ **Interface**: You can choose the corresponding interface type.

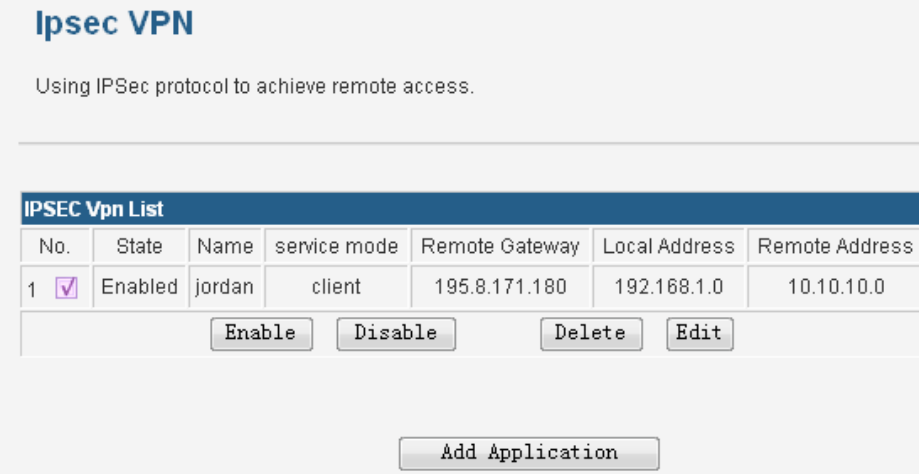
§ **Comment**: some notes

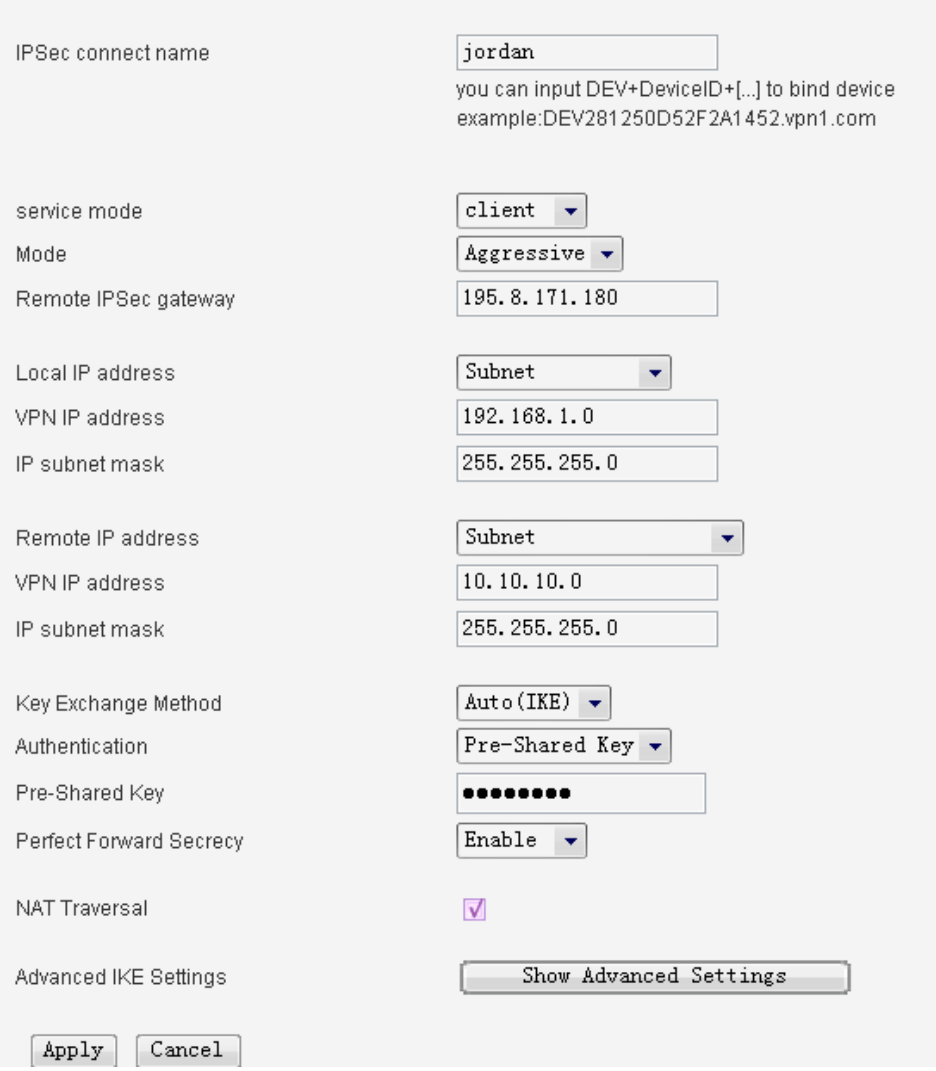
Notice:

- Gateway and LAN IP of this router must belong to the same network segment.
- If the destination IP address is the one of a host, and then the Subnet Mask must be 255.255.255.255.
- If the destination IP address is IP network segment, it must match with the Subnet Mask. For example, if the destination IP is 10.0.0.0, and the Subnet Mask is 255.0.0.0.

3.3.7 VPN

3.3.7.1 IPSEC





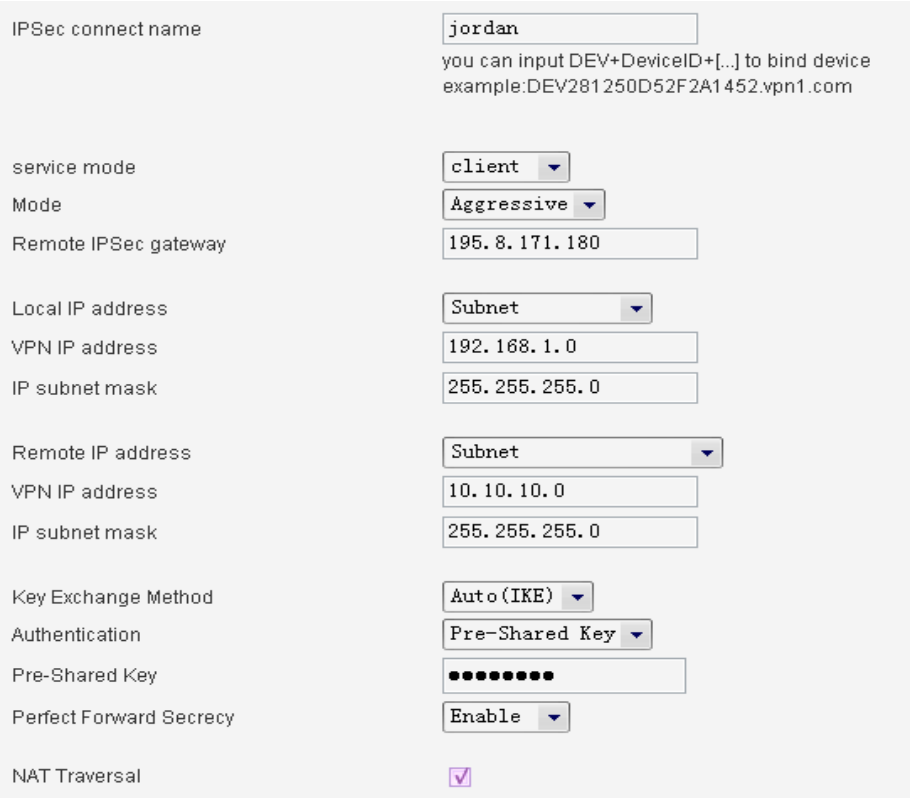
- **IPsec connect name**: make sure the name in client and server are same, we suggest to use domain name (111.vpn1.com). if you want to build a point-to-point channel, the IPsec name

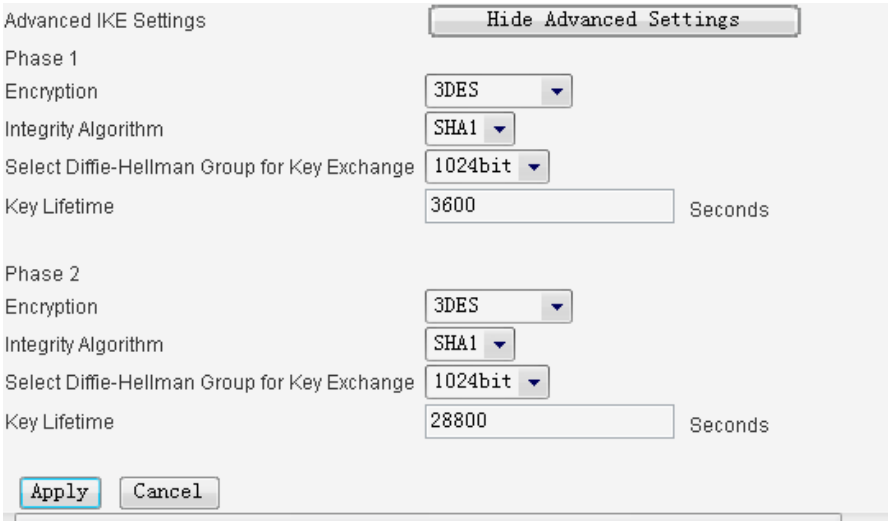
have to be written as DEV+equipment ID+name (DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H800's ID in the Status interface.

- **Service Mode**: Server/Client
- **Mode**: Main/Aggressive. The Aggressive mode is commonly used.
- **Remote Gateway**: This choice just appears in the Client mode and it is used to fill the IP address in the Server.
- **Local IP address**: Fill LAN IP of this device. You can fill an IP or a network segment.
- **Remote IP address**: Fill the IP of the other router.
- **Authentication**: Commonly, Pre-Shared Key is chosen. And the Client and Server must choose the same key.
- **Advanced AKE settings:** There are some encryption methods in this field. You must use the settings in this field when VPN tunnel needs to be built between H800 and other brand VPN server.
- **Example: Connected cisco 7200 and H800**

  How to config H800 as VPN clinet

  IPsec Name: make sure the name in client and server are same, we suggest to use domain name(111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name(DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H800's ID in the Status interface.

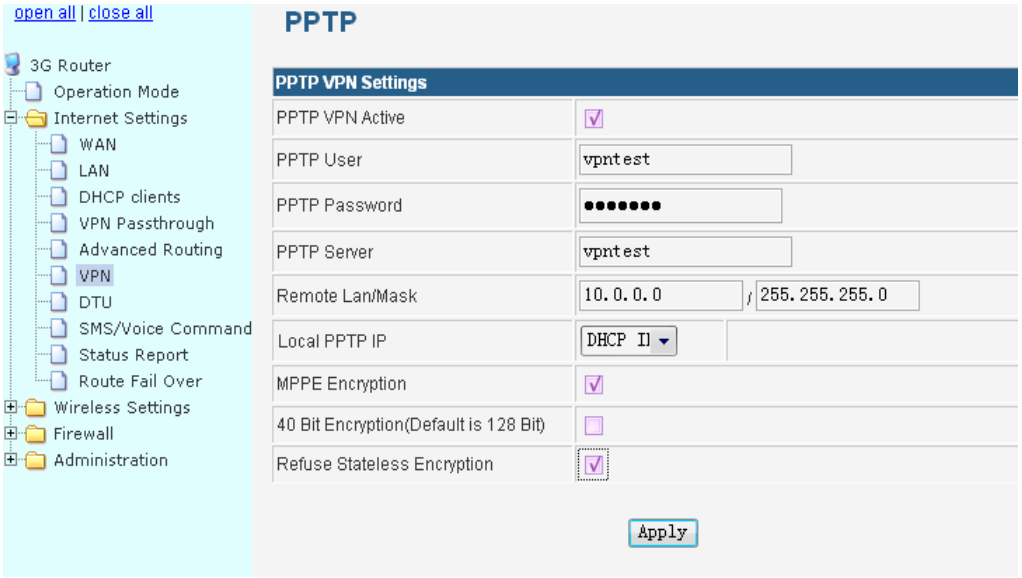




How to config cisco 7200 as VPN Server

```
crypto keyring jordan
 pre-shared-key hostname jordan key test

 crypto isakmp profile jordan
  description china SZ shenzhen
  keyring jordan
  match identity host jordan
  keepalive 60 retry 10

 crypto ipsec transform-set vpnset esp-des esp-sha-hmac

 crypto ipsec profile jordan
set transform-set vpnset
set isakmp-profile jordan

 crypto dynamic-map jordan 1
  set security-association lifetime kilobytes 536870912
  set security-association lifetime seconds 43200
  set transform-set vpnset
  set isakmp-profile jordan
  reverse-route
   crypto map COREVPN 26 ipsec-isakmp dynamic jordan
```

3.3.7.2 PPTP



this function in the device just works as Client.

3.3.8 DTU Settings (Serial to Cellular Gateway Feature)(for with DTU feature version only)

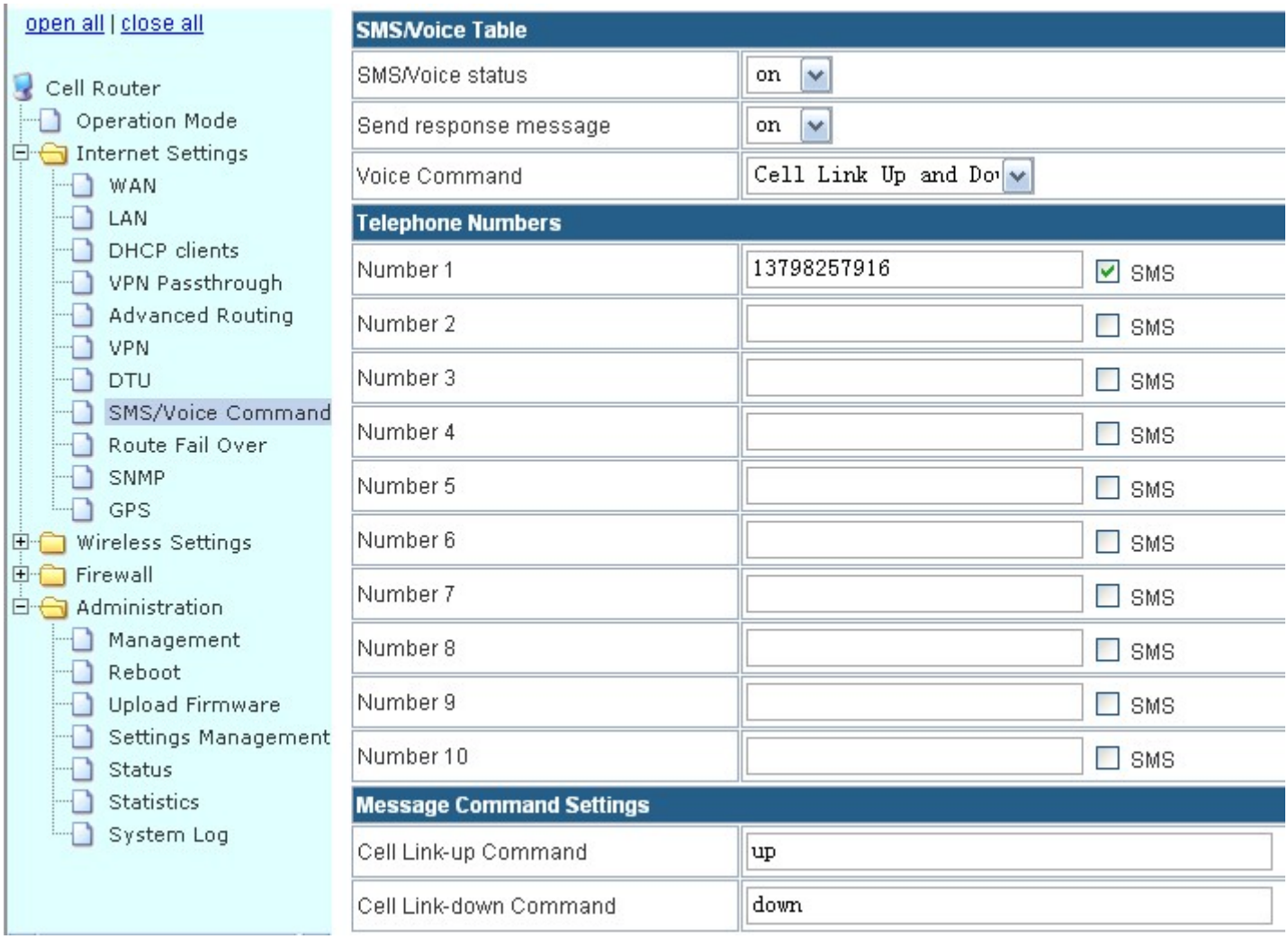
DTU Status Table	
dtu status	on
DTU Serial Settings Table	
baudrate	9600 bps
parity	none
databits	8 bits
stopbits	1 bits
flow control	none
DTU config Table	
link type	client
network type	tcp
server 1	☑ 113.111.127.22 : 8000
server 2	☐ :
server 3	☐ :
server 4	☐ :
heart beat time	10 s (0 means disable)
heart beat infomation	hex ☐ hello dtu
off heart beat when no serial data	☐
off heart beat delay time	s
send data timeout	100 ms (0~999)

apply

This section is mainly about DTU settings.

- **DTU status:** open and close DTU
- **Baudrate:** support 4800/9600/19200/38400/57600/115200bps
- **Link Type:** Server link or Client link can be chosen in the DTU config table. If use it as Server, we suggest you to use fixed IP of the SIM card.
- **Multiple-path Backup**: the router can support 4 Server IP at most to meet the need for multiple-path data backup.
- **Heart Beat function**: You can define heart beat time and heat beat information. So that Server can use the heart beat information to identify DTU.
- **Data content:** the largest package contents are 3KB. The interval between packets can be adjusted through change “send data timeout”.

3.3.9 SMS/Voice Control (for version support SMS/Voice control feature only)



This section is to introduce how to wake up the router from SMS or Voice.

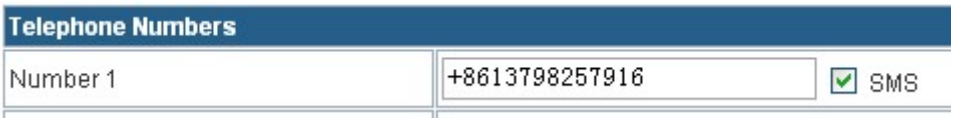
- **SMS/Voice status:** open(on) or close(off) this function.
- **Send respond SMS:** When the router receive a message, it will reply one piece if you choose"on"..
- **Voice Command:** 4 choices(close, 3G link up, 3G link down, 3G link up or down); perform the corresponding action according to what you have chosen. (Note:at present, Voice function do not support phone number filtering.)
- **Telephone Number Settings:** 10 numbers can be set at most, which you can send SMS from these phone numbers.
- **Command Settings:** Sending order by mobile phone can open "3G link up" and "3G link down".

Note:

1) SIM Card inserted in the router must support SMS or Voice.

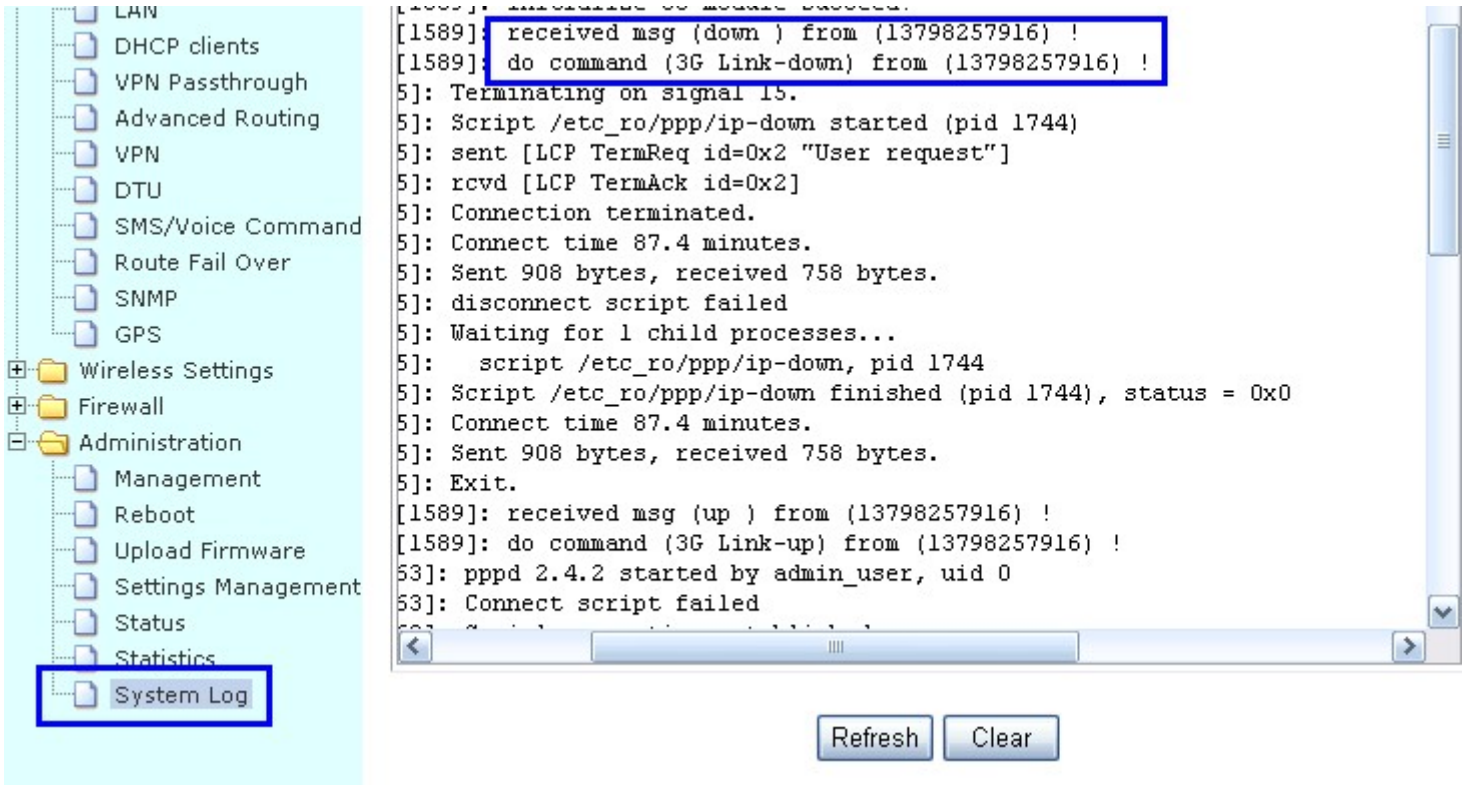
2) Try to add zone code or country code if the command cannot get working.

For example, we set the number 13798257916, and if the command cannot work, please try to put the country code 86 as followed picture.

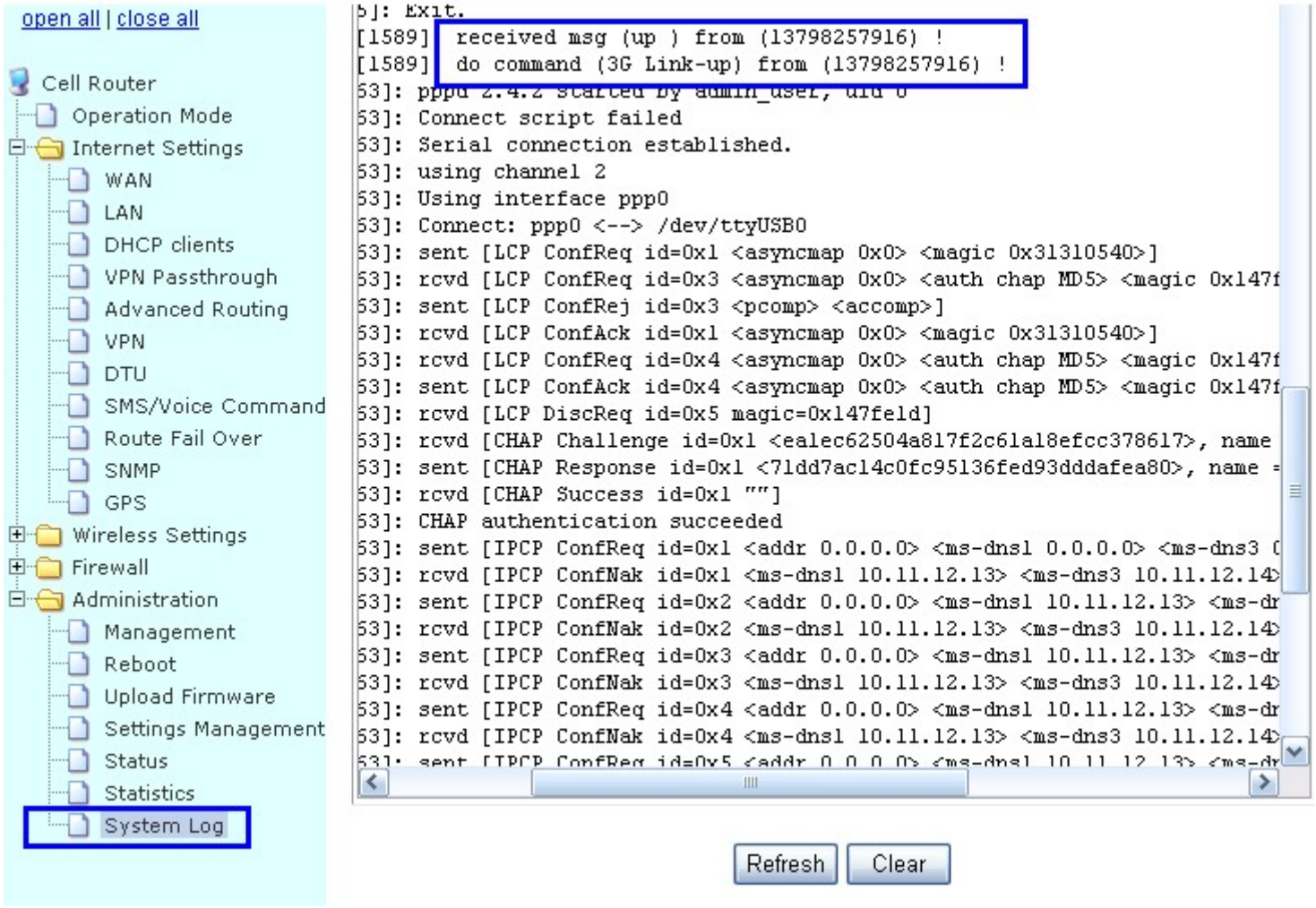


Here set an example, we set the parameters for SMS/Voice as above.

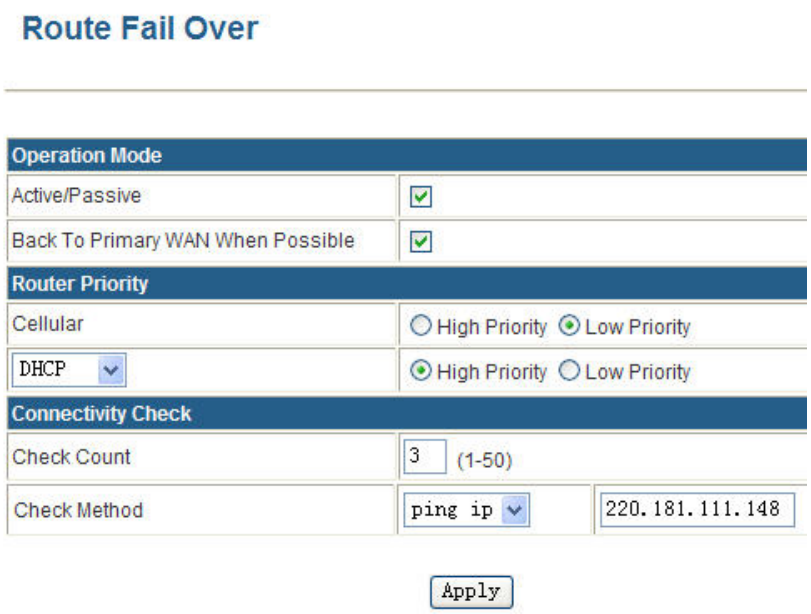
1) Use the cell phone 13798257916 to send “down” to the router’s SIM Card Number, the router will receive the “down” command, and it will be off-line. And in the System Log, we shall find a info as following marks.



2) Use the cell phone 13798257916 to send “up” to the router’s SIM Card Number, the router will receive the “up” command, and it will be online. And in the System Log, we shall find a info as following marks.


open all | close all
Cell Router
Operation Mode
Internet Settings
WAN
LAN
DHCP clients
VPN Passthrough
Advanced Routing
VPN
DTU
SMS/Voice Command
Route Fail Over
SNMP
GPS
Wireless Settings
Firewall
Administration
Management
Reboot
Upload Firmware
Settings Management
Status
Statistics
System Log
5]: Exit.
[1589] received msg (up) from (13798257916) !
[1589] do command (3G Link-up) from (13798257916) !
53]: pppd 2.4.2 started by admin_user, uid 0
53]: Connect script failed
53]: Serial connection established.
53]: using channel 2
53]: Using interface ppp0
53]: Connect: ppp0 <--> /dev/ttyUSB0
53]: sent [LCP ConfReq id=0x1 <asyncmap 0x0> <magic 0x31310540>]
53]: rcvd [LCP ConfReq id=0x3 <asyncmap 0x0> <auth chap MD5> <magic 0x147f
53]: sent [LCP ConfRej id=0x3 <pcomp> <accomp>]
53]: rcvd [LCP ConfAck id=0x1 <asyncmap 0x0> <magic 0x31310540>]
53]: rcvd [LCP ConfReq id=0x4 <asyncmap 0x0> <auth chap MD5> <magic 0x147f
53]: sent [LCP ConfAck id=0x4 <asyncmap 0x0> <auth chap MD5> <magic 0x147f
53]: rcvd [LCP DiscReq id=0x5 magic=0x147feld]
53]: rcvd [CHAP Challenge id=0x1 <ealec62504a817f2c61al8efcc378617>, name
53]: sent [CHAP Response id=0x1 <71dd7ac14c0fc95136fed93dddafea80>, name =
53]: rcvd [CHAP Success id=0x1 ""]
53]: CHAP authentication succeeded
53]: sent [IPCP ConfReq id=0x1 <addr 0.0.0.0> <ms-dns1 0.0.0.0> <ms-dns3 0
53]: rcvd [IPCP ConfNak id=0x1 <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14>
53]: sent [IPCP ConfReq id=0x2 <addr 0.0.0.0> <ms-dns1 10.11.12.13> <ms-dr
53]: rcvd [IPCP ConfNak id=0x2 <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14>
53]: sent [IPCP ConfReq id=0x3 <addr 0.0.0.0> <ms-dns1 10.11.12.13> <ms-dr
53]: rcvd [IPCP ConfNak id=0x3 <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14>
53]: sent [IPCP ConfReq id=0x4 <addr 0.0.0.0> <ms-dns1 10.11.12.13> <ms-dr
53]: rcvd [IPCP ConfNak id=0x4 <ms-dns1 10.11.12.13> <ms-dns3 10.11.12.14>
Refresh
Clear

3.3.10 Route Fail Over



How to use *Route Fail Over* feature?

Confirm the upper side router connects to internet, and its DHCP is working.

First, Set H800 work mode as default “Gateway mode”.

Step1: activate it. Click at “Active/Passive”

Step2: click at “Back To Primary WAN When Possible”

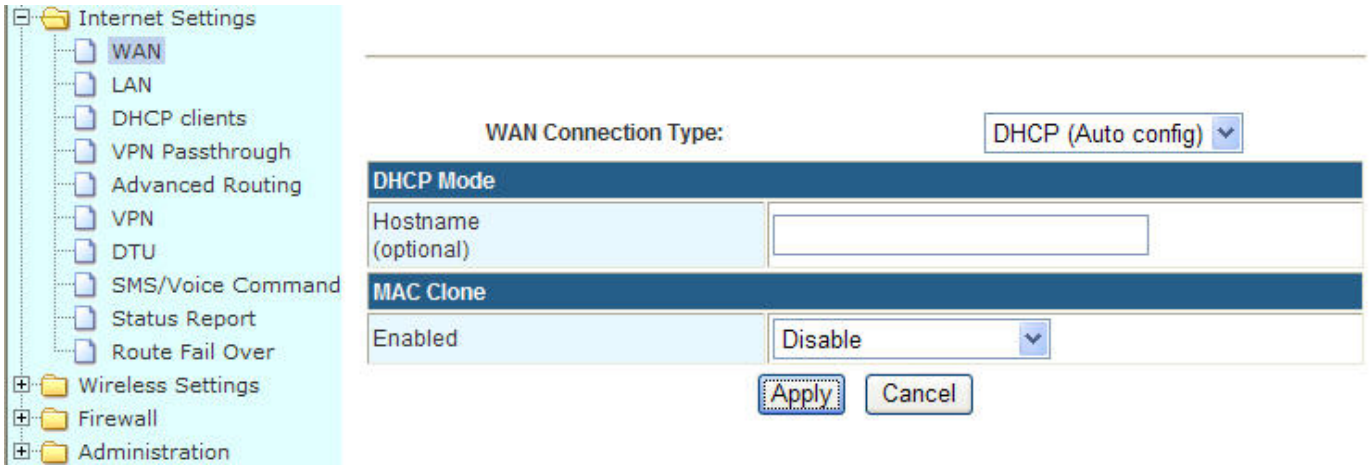
Step3: Choose the network priority.

A. Cellular as Low Priority, DHCP as High Priority
   With this configuration, the router will work at DHCP mainly, and if DHCP is failed, it switches to cellular automatically after some time. And it will automatically switch to DHCP when DHCP is fixed.

B. Cellular as High Priority, DHCP as Low Priority
   With this configuration, the router will work at cellular mainly, and if cellular is failed, it switches to DHCP automatically after some time. And it will automatically switch to cellular when cellular is fixed.

DHCP: here can be DHCP WiFi Client.

Step4: if step 3 choose A, please follow chapter 3.3.3.4 to make WiFi client DHCP work first, then set WAN as DHCP and click “Apply”



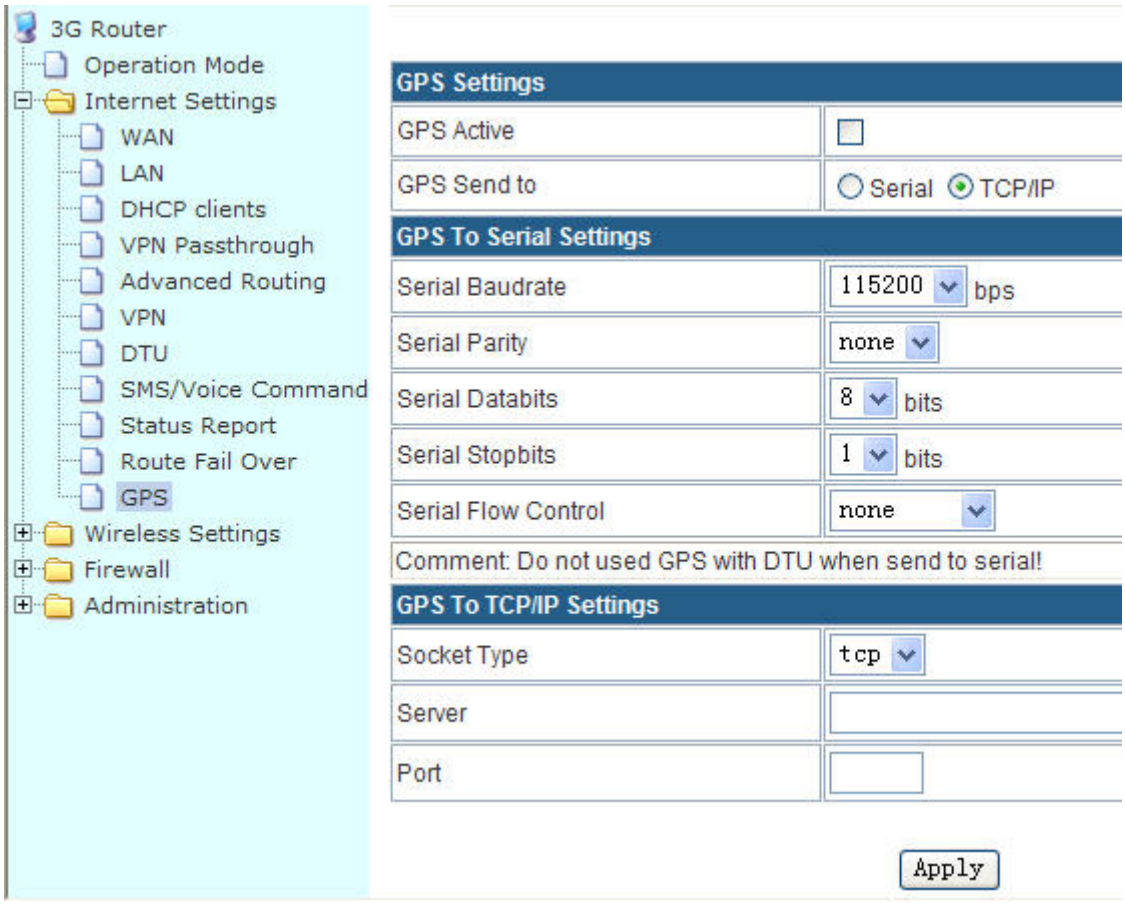
The H800 gets WAN IP and default gateway from the up-side router.

Product Model	3G Router
Software Version	2.4.6 (Aug 5 2011)
Hardware Version	1.0.0
Device ID	280230312C080435
System Up Time	36 mins, 15 secs
Operation Mode	Gateway Mode
3G Info	
Signal Strength	27 , (0-31)
Attachment State	CDMA/EVDO HYBRID
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:77
Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.0.104
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary Domain Name Server	192.168.0.1
Secondary Domain Name Server	
MAC Address	00:0C:43:30:32:12

If step 3 choose B, set WAN as 3G and click “Apply”, it will work on 3G first, and switch to LAN RJ45 cable WAN or WiFi client mode if 3G network is failed.

Notes: for route fail over feature, please first make the main network and backup network both work before activate the fail over feature.

3.3.11 GPS (for version with GPS only)



GPS Active: please click it once you need use GPS feature.

GPS Send to: Choose “Serial” or “TCP/IP” method. The router only receives the GPS signal, will not process it. It will just send the received GPS signal to your GPS processor.

If the GPS processor is connected to the 3G Router via Serial Port, then please choose “Serial”.

If choose “TCP/IP” method, please fill in the “GPS to TCP/IP Settings”.

3.3.12 Wireless Settings (For version with WiFi only)

3.3.12.1 Basic Wireless Settings

Wireless Network	
Radio On/Off	RADIO OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	3G Router Hidden ☐ Isolated ☐
Multiple SSID1	Hidden ☐ Isolated ☐
Multiple SSID2	Hidden ☐ Isolated ☐
Multiple SSID3	Hidden ☐ Isolated ☐
Multiple SSID4	Hidden ☐ Isolated ☐
Multiple SSID5	Hidden ☐ Isolated ☐
Multiple SSID6	Hidden ☐ Isolated ☐
Multiple SSID7	Hidden ☐ Isolated ☐
Broadcast Network Name (SSID)	◉ Enable ○ Disable
AP Isolation	○ Enable ◉ Disable
MBSSID AP Isolation	○ Enable ◉ Disable
BSSID	00:10:18:01:06:D8
Frequency (Channel)	2437MHz (Channel 6)

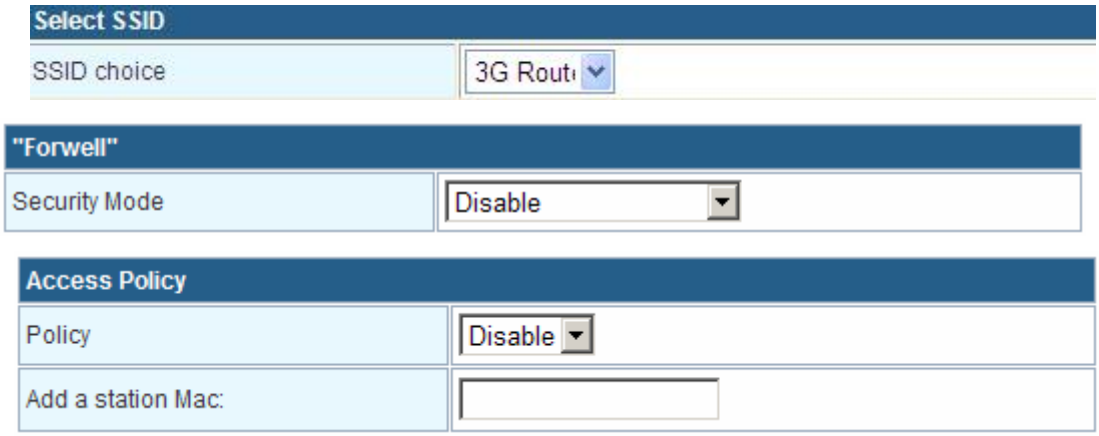
HT Physical Mode	
Operating Mode	◉ Mixed Mode ○ Green Field
Channel BandWidth	○ 20 ◉ 20/40
Guard Interval	○ Long ◉ Auto
MCS	Auto
Reverse Direction Grant(RDG)	○ Disable ◉ Enable
Extension Channel	2457MHz (Channel 10)
Aggregation MSDU(A-MSDU)	◉ Disable ○ Enable
Auto Block ACK	○ Disable ◉ Enable
Decline BA Request	◉ Disable ○ Enable

Other	
HT TxStream	2
HT RxStream	1

The basic parameters of Wi-Fi setting.

The Radio function enable and disable.
The network mode supports 802.11 b/g/n (draft).
Support multi-SSID up to 8.

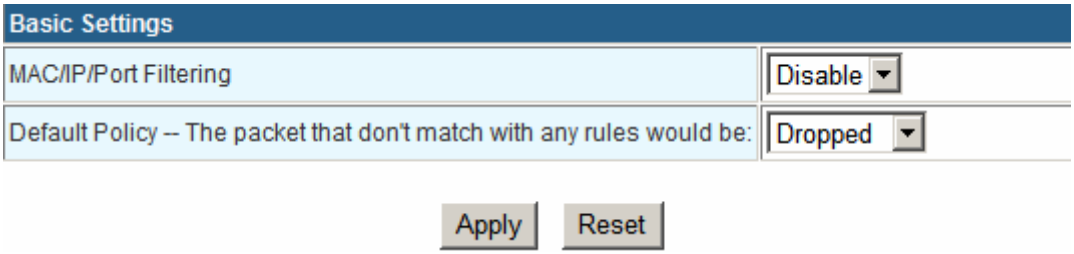
3.3.12.2 Wireless Security/Encryption Settings

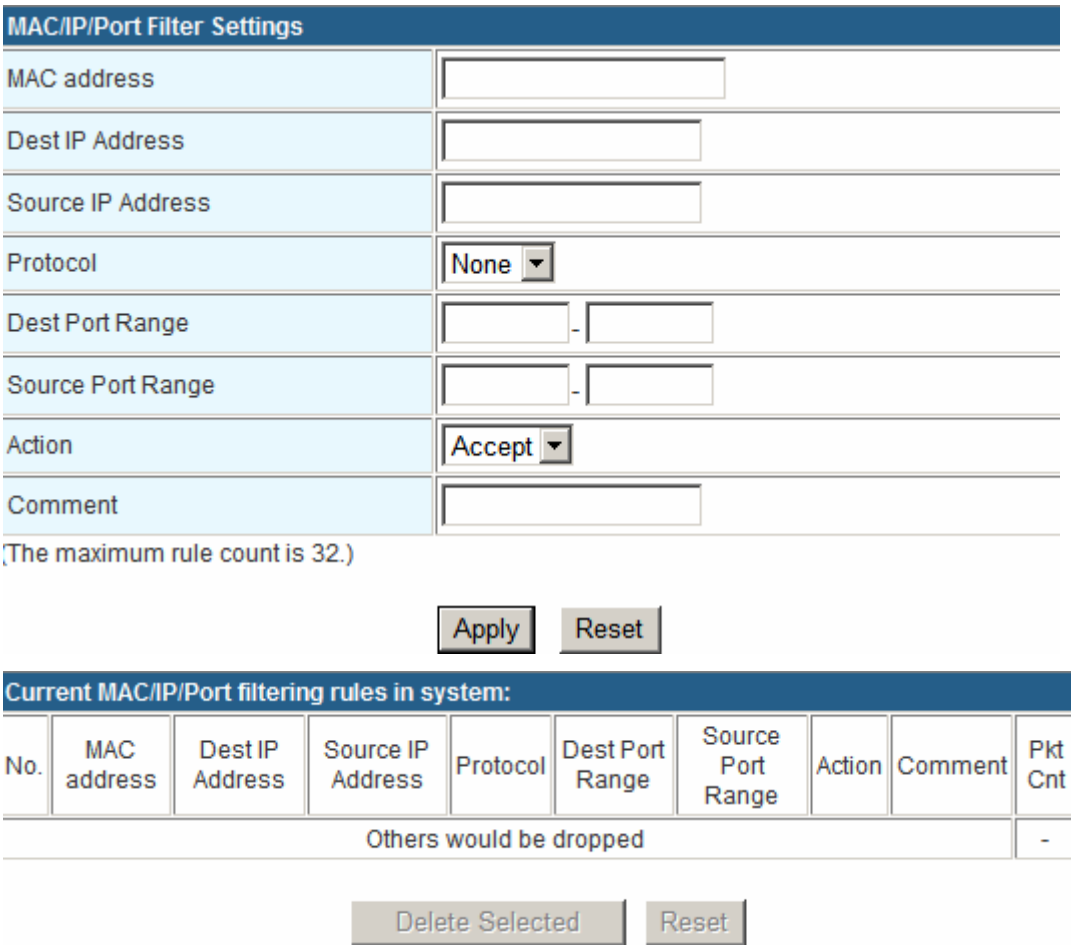


The SSID select from multi-SSID setting.
Security mode include: disable, open, share, wep auto, WPA, wpa-psk, wpa2, wpa2-psk, wpa-psk/wpa2-psk, wpa/wpa2, 802.1X.
Access policy: setting the MAC list for access or deny.

3.3.13 Firewall

3.3.13.1 MAC/IP/Port Filter Settings

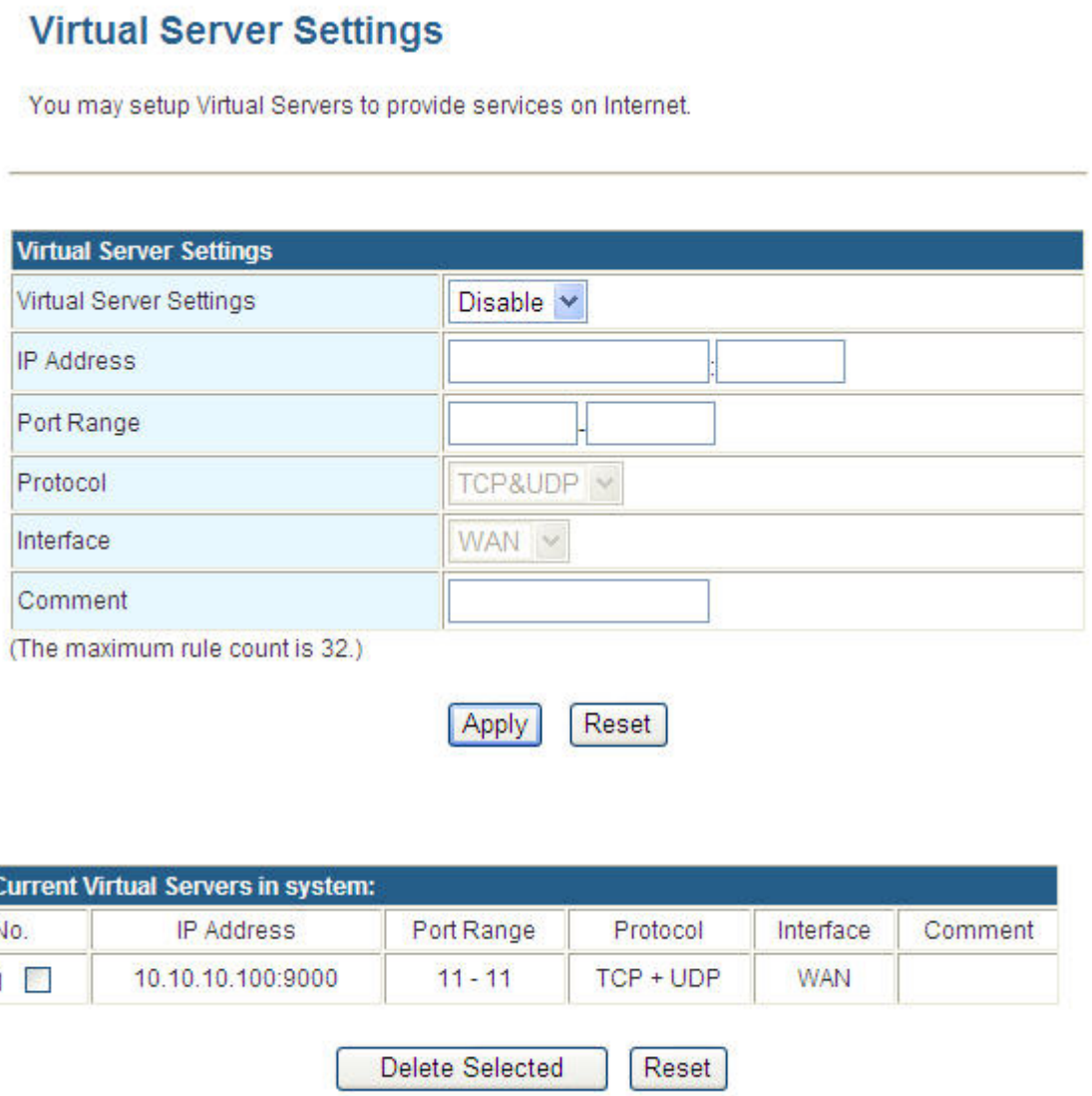




This section is mainly about MAC/IP/Port filter settings

- **Basic Settings:** Open the filter setting and set the filtering principle.
- **MAC address:** Fill the MAC address which needs to filter.
- **Destination IP:** IP of the target computer(the computer which the data packet will be sent to)
- **Destination Port Range:** port range of target computer
- **Source Port Range:** port range of the computer which sends data

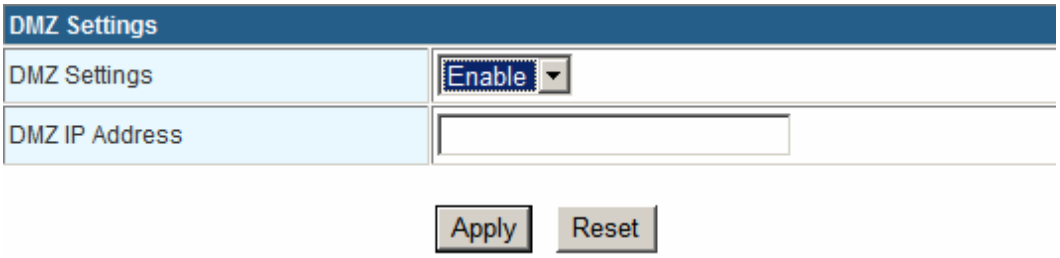
3.3.13.2 Port Forwarding



Port forwarding is the process that your router or firewall uses to sort the right kind of network data to the right port. Computers and routers use ports as a way to organize network data. Different types of data, such as web sites, file downloads, and online games, are each assigned a port number. By using port forwarding, the router or firewall sends the correct data to the correct place.

- Virtual Server Settings: open and close Settings.
- IP address: fill the IP address of forwarding. The first blank is for local IP address, the second blank is for port.
- Port Range: fill the Port of forwarding.

3.3.13.3 DMZ Host

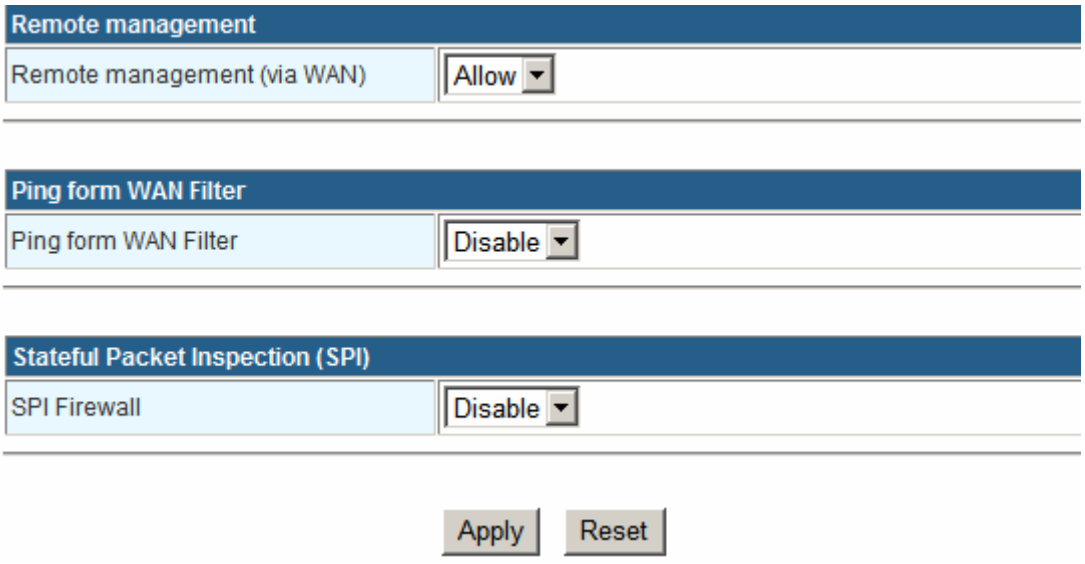


In computer networking, DMZ is a firewall configuration for securing local area networks (LANs).

- DMZ Settings: open and close Settings.
- DMZ host IP Address: Please Enter the IP address of the computer which you want to set as DMZ host

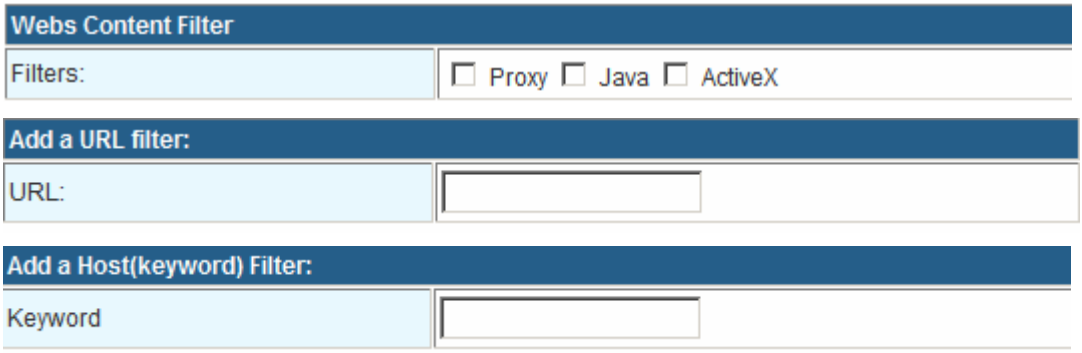
Note: When DMZ host is settled, the computer is completely exposed to the external network; the firewall will not influence this host.

3.3.13.4 System Security



Include Remote management, Ping from WAN Filter and SPI(Stateful Packet Inspection).

3.3.13.5 Content Filter Settings

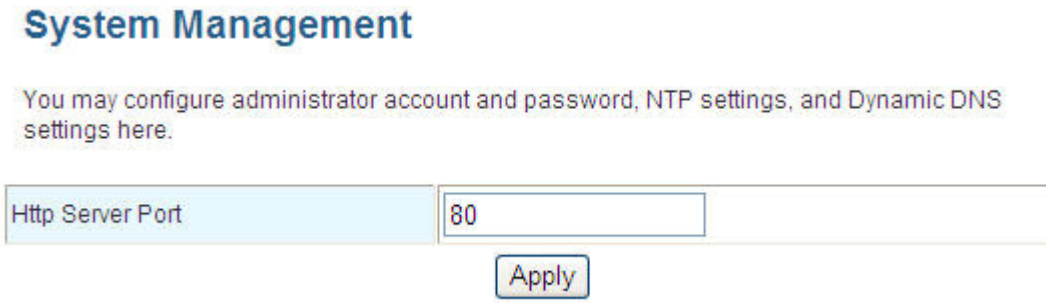


You can setup Content Fillter to restrict the improper content access, including Webs Content Settings, URL filter and Host Filter.

3.3.14 Administration

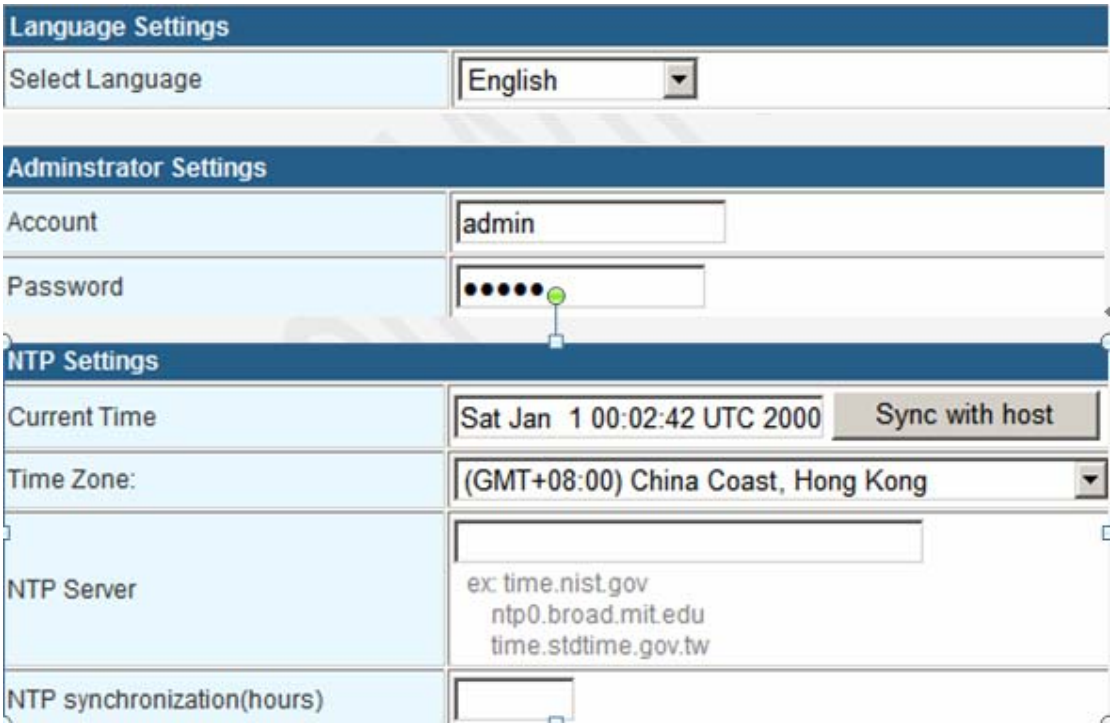
3.3.14.1 Management

3.3.14.1.1 Router web port



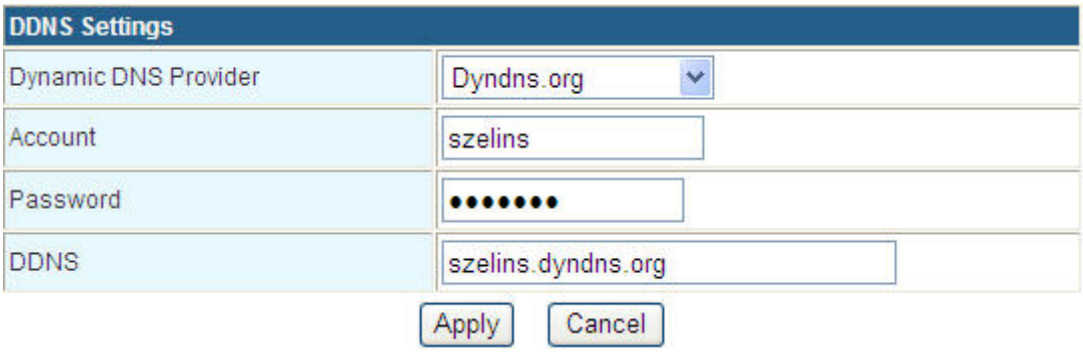
Please input the web port of the router. Normally we use 80 or 10000.
Please re-power the router after changing the port number.

3.3.14.1.2 Language, password and NTP settings



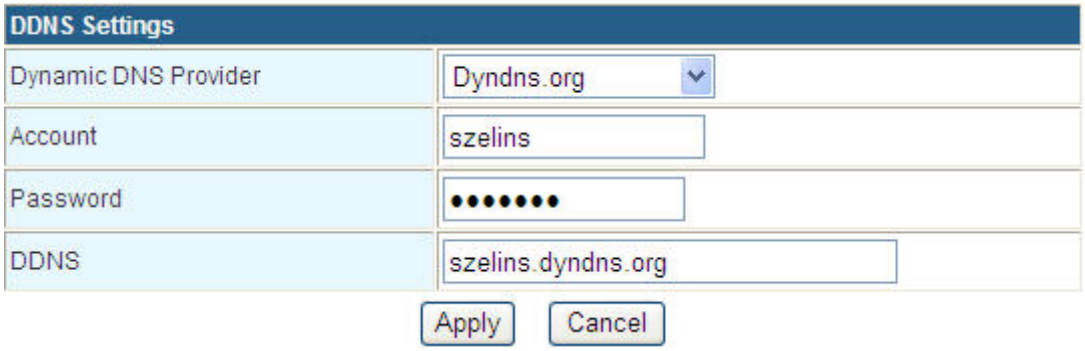
- Select Language
- Adminstrator Settings. The default both are admin.
- NTP Settings

3.3.14.1.3 DDNS settings



DDNS: support
Dyndns.org
freedns.afraid.org
www.zoneedit.com
www.no-ip.com

For example,



Dynamic DNS Provider: select the DNS server

Account, Password: input info

DDNS: fill in DDNS

Click “Apply” to activate the DDNS.

3.3.14.2 Reboot Settings

This function will detect the status of 3G by ping and complete the corresponding actions according to the ping result。

- Check the box, start the net detection restart function.
- Detection method (PING): fill the server domain name or IP, and then click the detection button, and detect if the fill-in is right.
- Detection interval time (second): the interval time between the first detection and the second detection is 60-86400 seconds.
- Detection counter: if you can’t get the right result by ping when the detection frequency is the same as the fill-in times, the device will restart.
- Restart the counter before the detection function get into dormant state & detection function dormant time: this will protect the device against the damage caused by the continuous restarts, which are caused by the ping failure by the result of the fault in filling

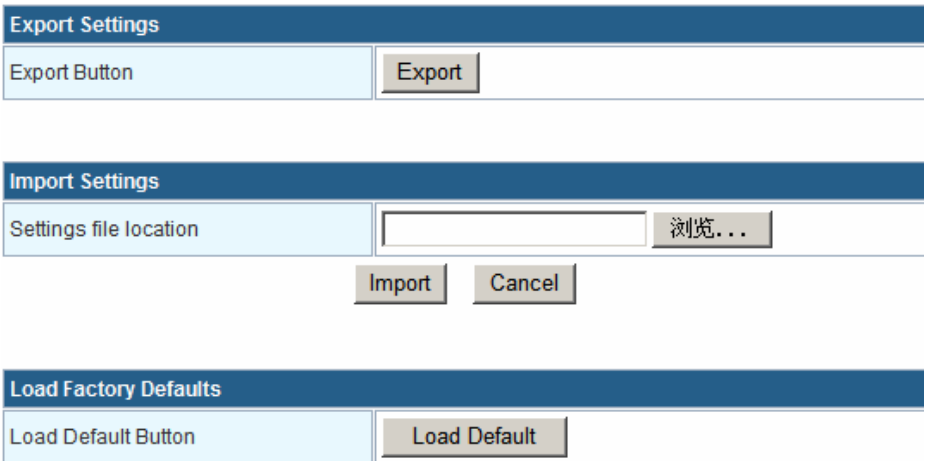
the server domain name. After several times of restarts, the device will get into the dormant state. After that the detection will continue, and now the counter in flash will become zero and recount.

Note: This function will be only valid only in 3G permanent on-line and dialing according to the setting time, other states not. In setting, firstly you must detect if the filled-in server domain name or IP is valid.

3.3.14.3 Upgrade Firmware

Upgrade the firmware to obtain new functionality. It takes about 2 minutes.

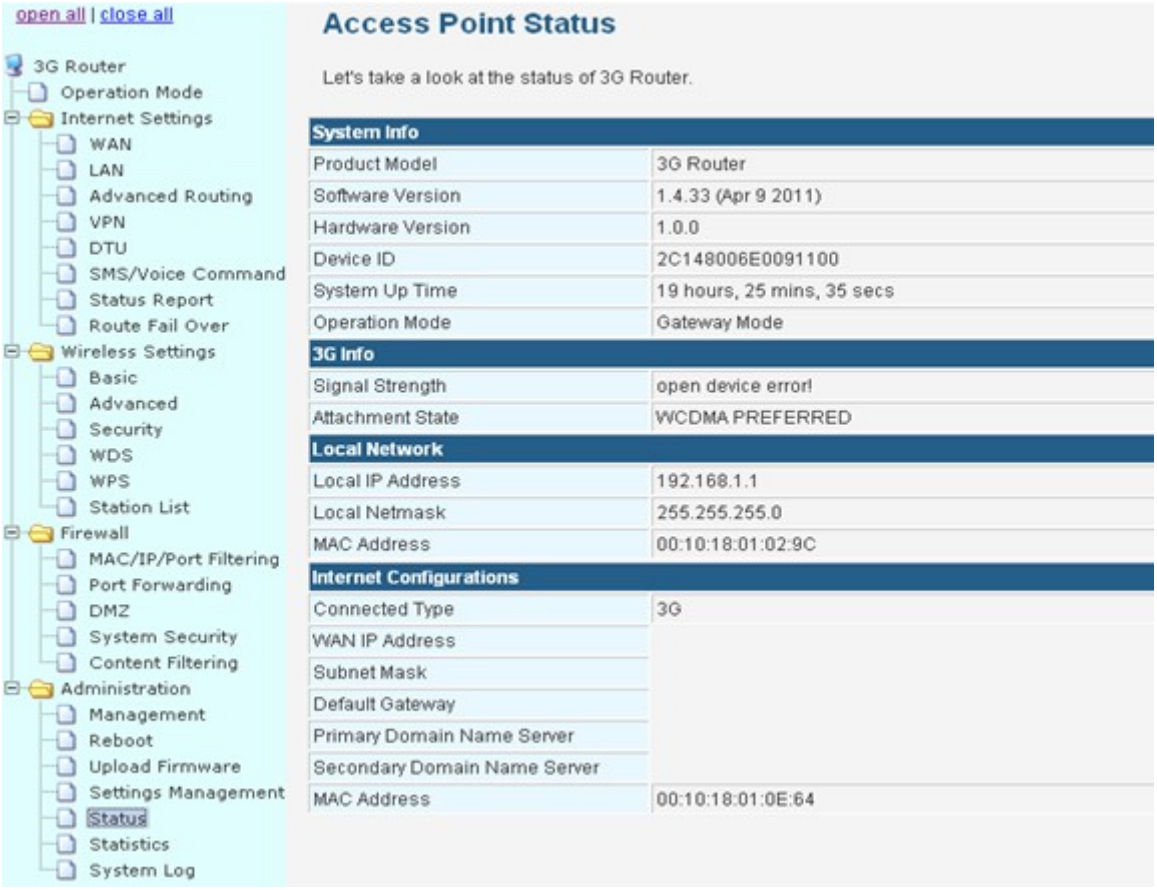
3.3.14.4 Parameter Management



Here you can make a backup of current settings or restore previous settings of the router .

- **Export settings:** click 'export' to export configuration files and then select save path.
- **Import settings:** click 'browse', select previous backup configuration files and then click 'Import'. Then all the previous settings will be recovered.
- **Load Factory Defaults:** click 'Load Default' then all settings will be restored to factory settings. This is not recommended in order to avoid the loss of important parameter

3.3.14.5 System state information



From this page you can see the Router's basic running state.

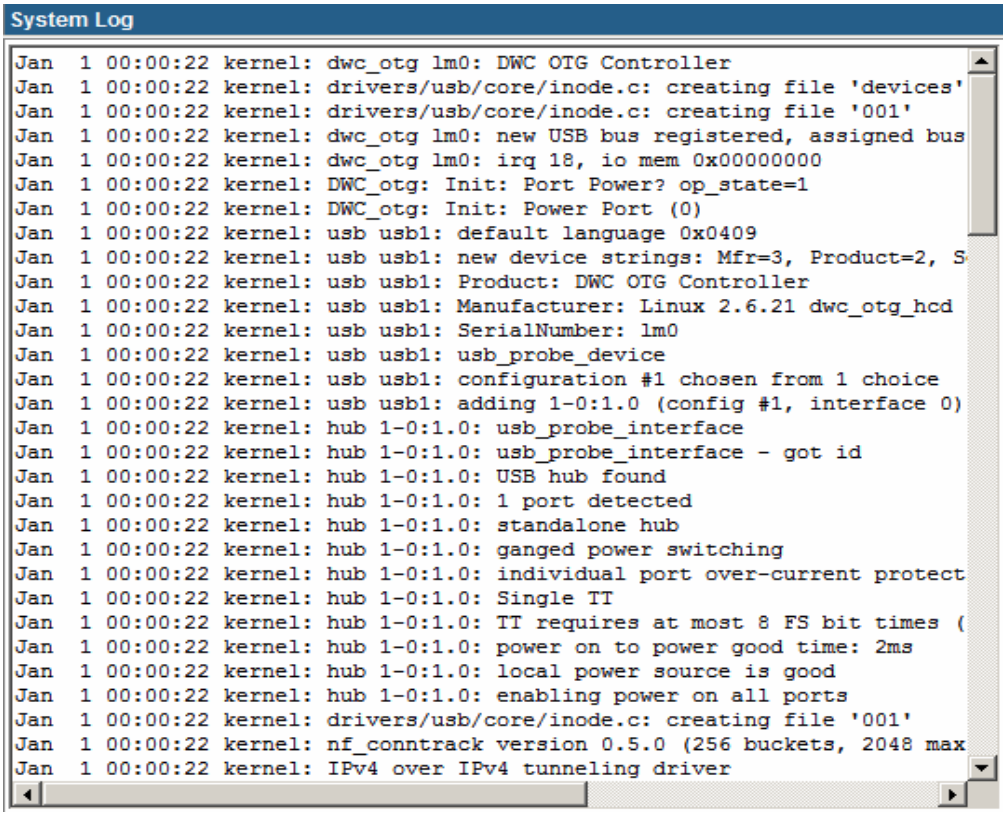
- Product Model
- **Software Version**: software version reveals the status of software update.
- **Hardware Version**: 1.0.0
- **Device ID**: every device has a unique ID, which has two functions: 1, it is manageable; 2, it allows to use point to point in VPN.
- **System Uptime:** this time directly reveals router working hours.
- **Signal Strength:** reveals the current network state of 2G/3G. 0 and 99 mean no signal.
- **Attachment state:** displays the current network attachment state, which can be set by users.
- **WPN IP address:** the IP expose when the router gets on internet.

3.3.14.6 Flow Statistics

WAN/LAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	18
WAN Tx bytes:	1476
LAN Rx packets:	1063
LAN Rx bytes:	100996
LAN Tx packets:	572
LAN Tx bytes:	440808

Display the statistics information of system flow.

3.3.14.7 System log

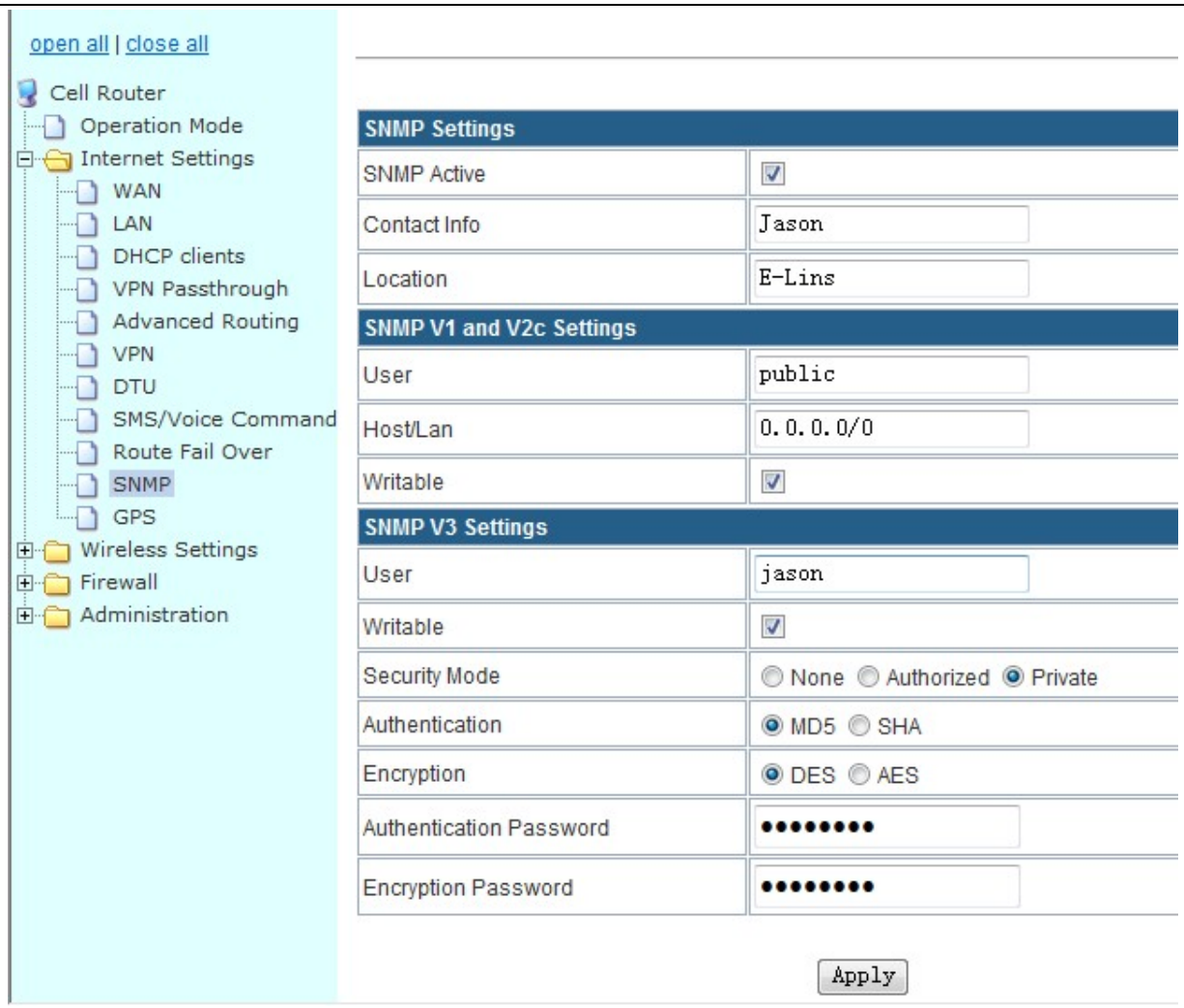


From the system log you can read the various situations after the system starts.

3.3.15 SNMP (For version with SNMP only)

H800 router web page – Internet Settings – SNMP

Fill in related parameters in the screen like follows,



SNMP Active: tick it to active SNMP feature.

Contact Info: set the contact info here

Location: set router's installation address.

User: set public name

Host/Lan: set the network range to visit the router via SNMP, default we set all as 0.0.0.0/0

Writable: tick it to enable it.

Security Mode: choose the correct one, only for SNMP V3 version.

Authentication: choose the correct one, only for SNMP V3 version.

Encryption: choose the correct one, only for SNMP V3 version.

Authentication Password: fill in the right one.

Encryption Password: fill in the right one.

Click "Apply" button and reboot the router.

Here list the most important OID:

1.3.6.1.4.1.2021.255.4.1.2.9.103.101.116.95.109.111.100.101.109.1

(read module modem model)

1.3.6.1.4.1.2021.255.4.1.2.10.103.101.116.95.117.112.116.105.109.101.1

(system running time)

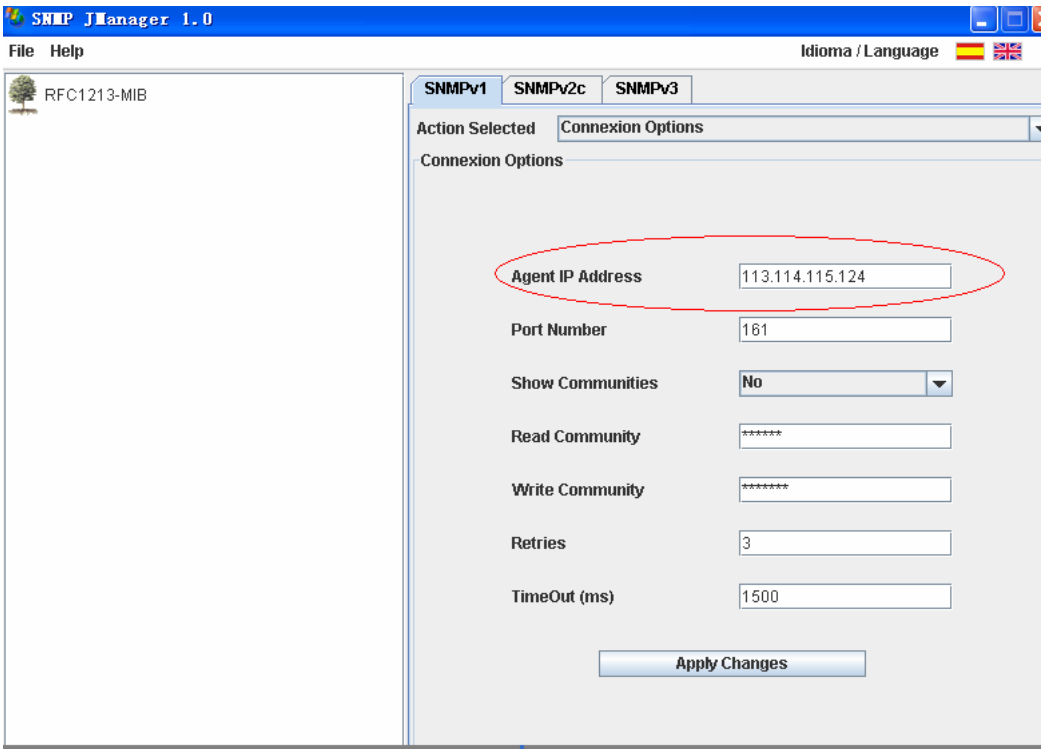
1.3.6.1.4.1.2021.255.4.1.2.12.103.101.116.95.109.101.109.95.102.114.101.101.1 (memory capacity)

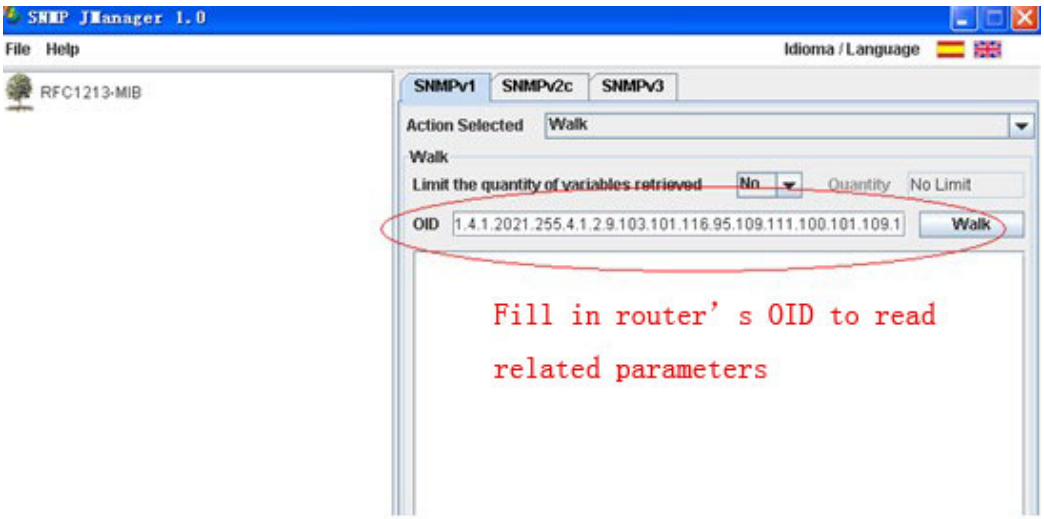
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.99.101.108.108.95.115.116.97.116.117.115.1 (3G network status)

1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.108.50.116.112.95.115.116.97.116.117.115.1 (pptp status)

1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.112.112.116.112.95.115.116.97.116.117.115.1 (l2tp status)

List client side's picture as follows,





Notes: if you need SNMP-JManager software, please can download it at our website, or contact us to get it.

Chapter 4

4 FAQ

4.1 Open Device Error

3G Info	
Signal Strength	open device error!

With this error, most of time the module inside the router is loosen. Please try to fasten it.

4.2 Read Error

3G Info	
Signal Strength	read error!
Attachment State	Automatic search

With this error, it indicates the sim card is not well touched with sim card slot. Try to check the sim card is right put. Try to scrap the sim card slot and make it clean.

4. 3 Signal Strength has right number, but cannot dialup

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Try to check the WAN port setting is correct.

4.4 Signal Strength shows 99

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Here it shows 16, it means signal is okay. If shows 99, try to check the sim card is has enough balance. Or if the data business is supported.

4.5 The router cannot be remote web visited

1) Default the router's web port is 80. Some network ISP block the 80 of incoming. So confirm with your ISP which port can be visited. Or you can change other port to try, such as port 10000. Refer to *chapter 3.3.14.1.1* Router web port to operate.

2) Check if the router's WAN IP can be ping through via the PC.

4.6 Signal shows 99 but still can connect to internet and get WAN IP

Our router built-in different types of modem inside, some modem cost this. But will not affect the use.

4.7 Router shows sim card and network info, but cannot connect to internet

Check the sim card is with balance or limited service by the ISP.

4.8 DDNS not working

1) Please confirm the DDNS configuration is correct.
2) Check if the router is online and get IP, and can visit internet.
3) Check if the WAN IP from sim card (shows in the status page once the router is online) is a public IP or privacy IP, privacy IP will make DDNS no work.

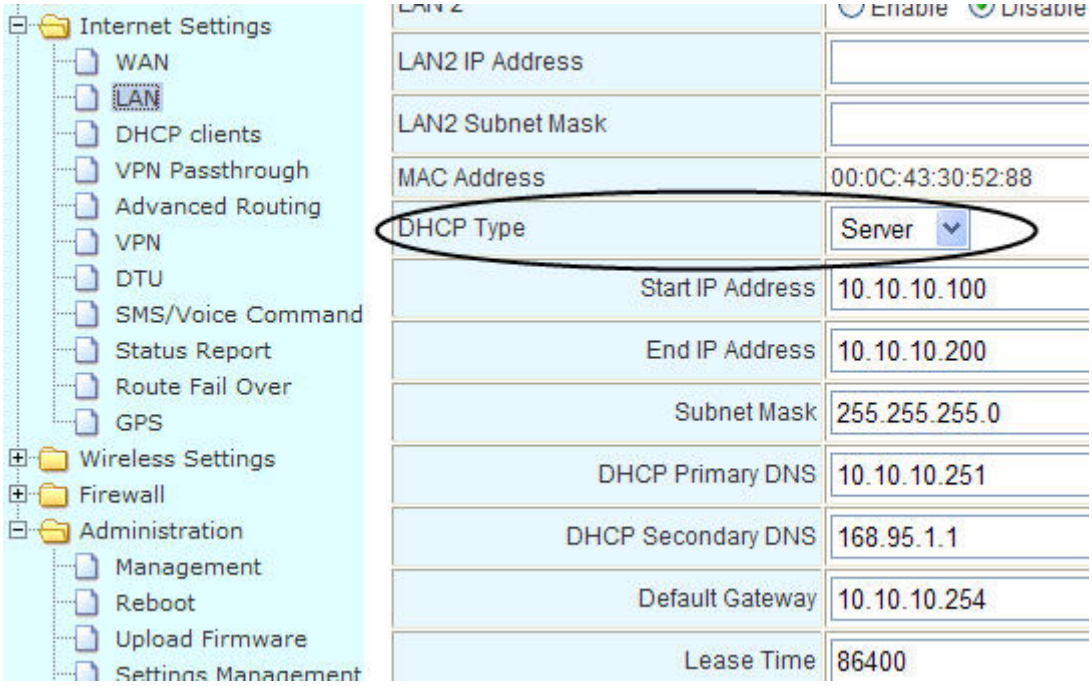
Chapter 5

5 Test Samples

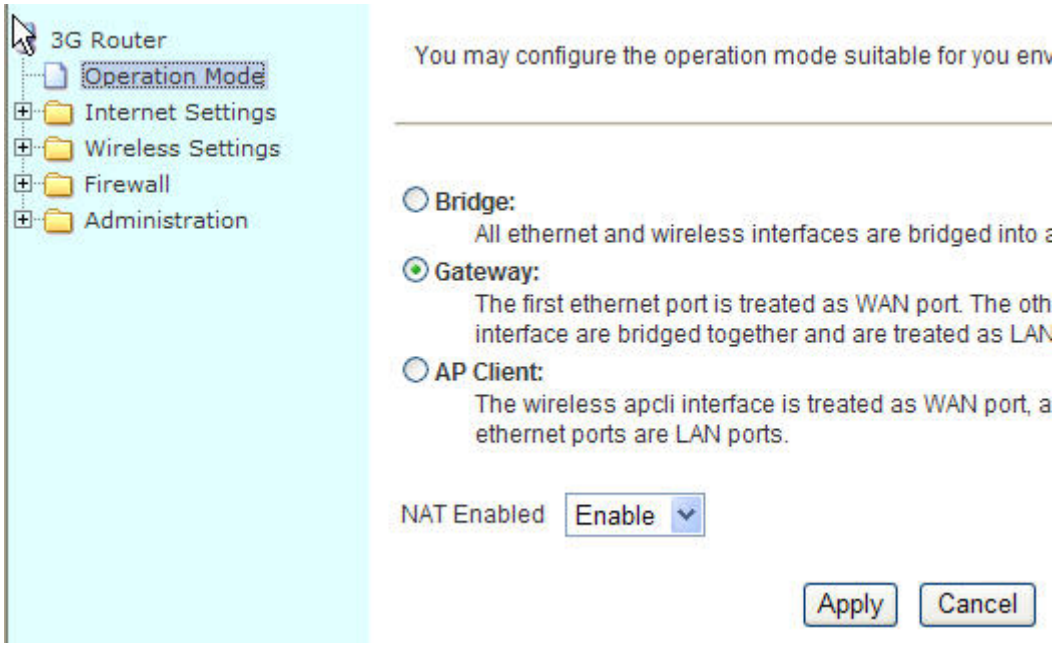
5.1 Two H800 make WiFi hotspot and WiFi client

Here we take H800 router for example. H685 setting method is the same with H800.

1. Take two H800 router. One will be WiFi server, the other will be WiFi Client. We name H800-s and H800-c
2. Connect PC with H800-s with RJ45 cable.
3. At H800-s and H800-c, make sure the DHCP service from both routers are working.

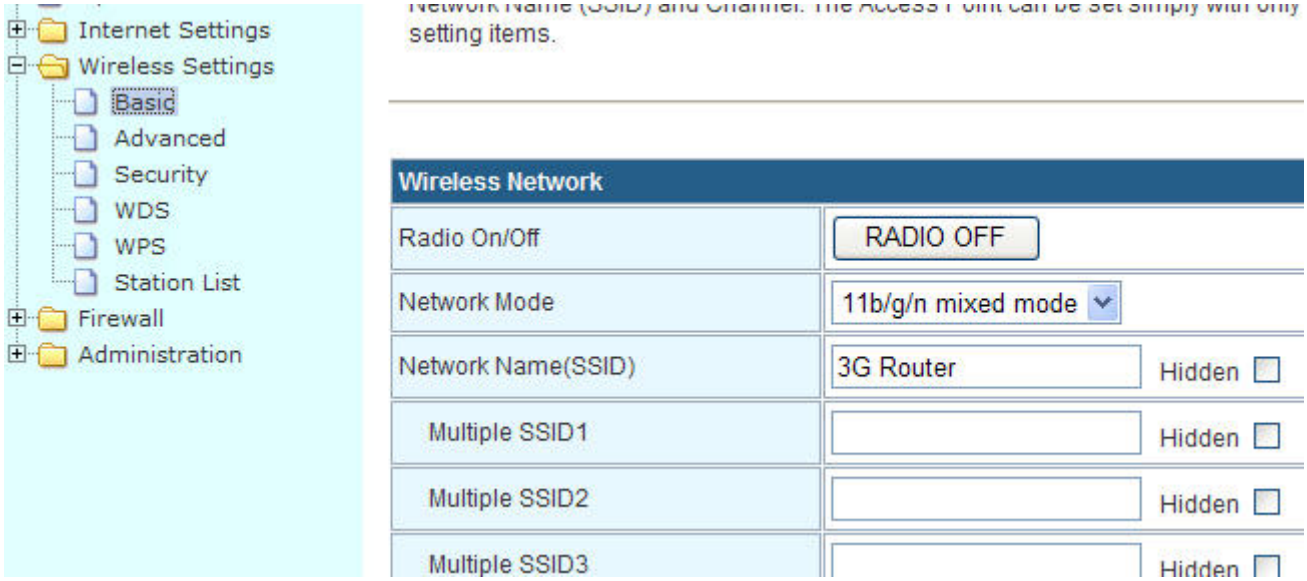


At H800-s,

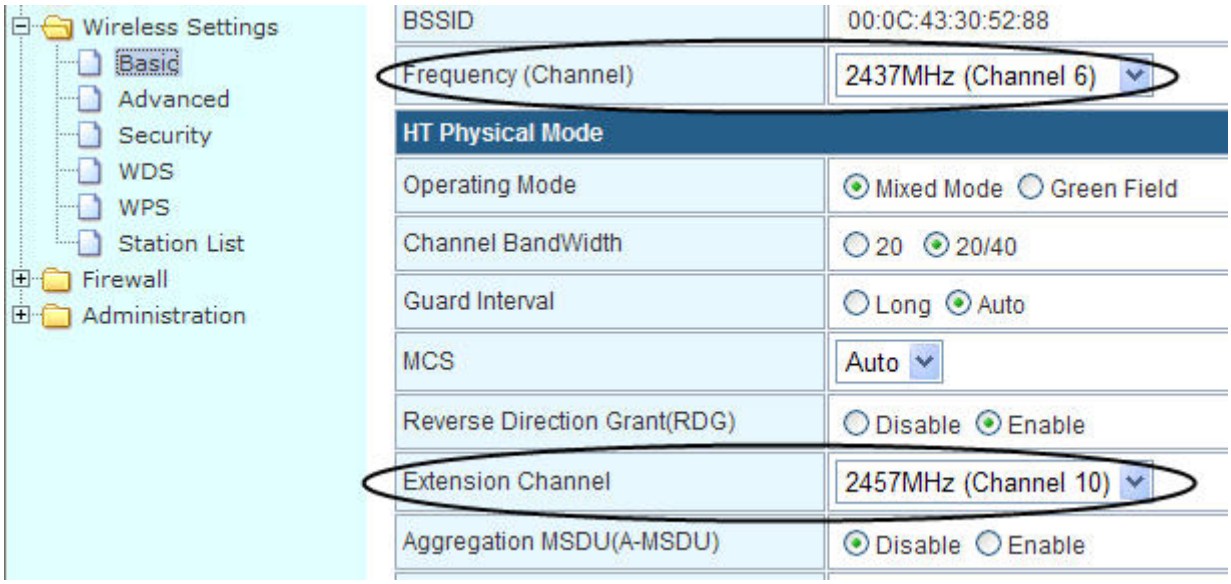


Select “Gateway”, and click “Apply”.

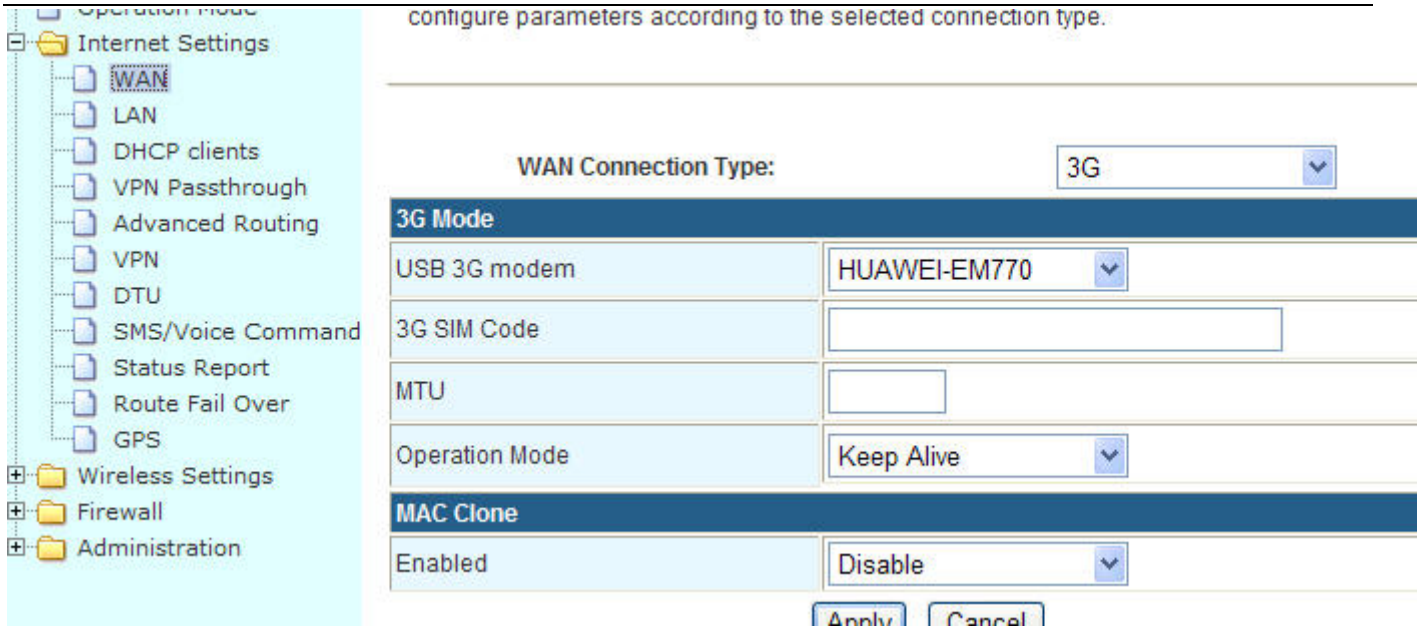
4. At H800-s, “Wireless Settings--Basic”, set Network Name (SSID) as “3G Router” (Here we recommend you use “3G Router” to test first)



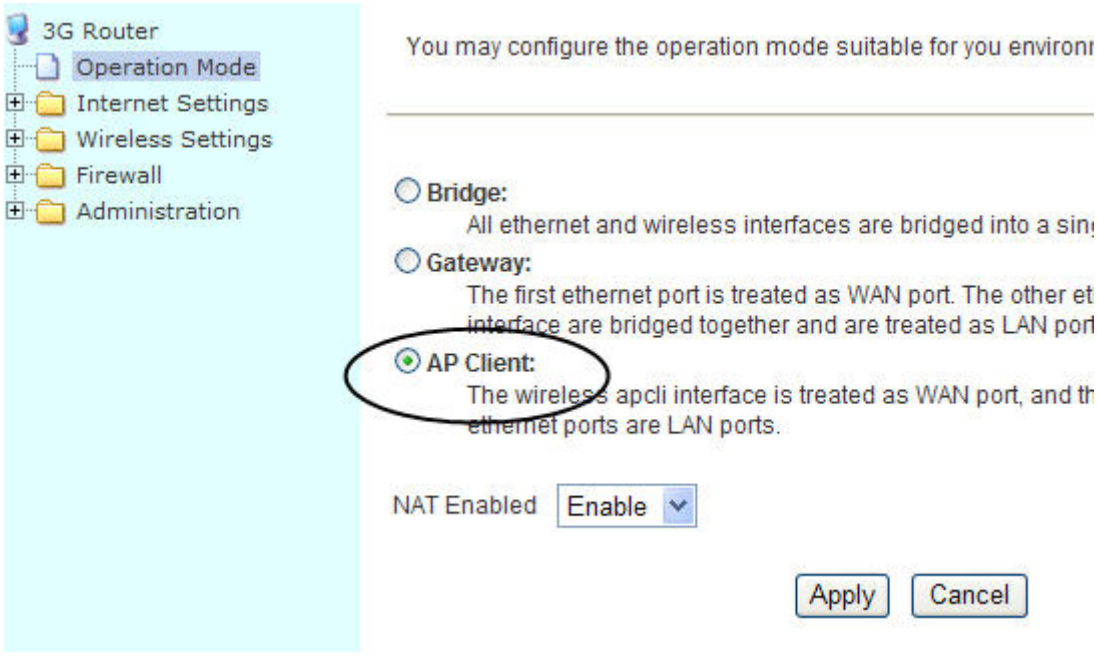
And write down the “Frequency (Channel)” and “Extension Channel”. Remember it and we shall use this value at H800-c.



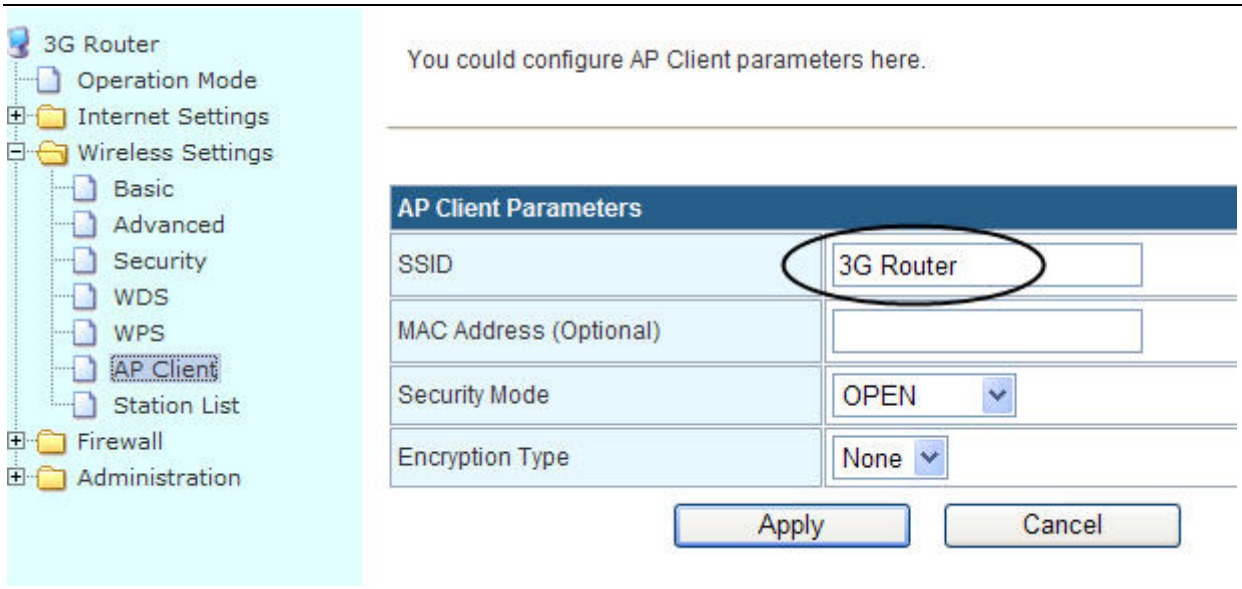
5. At H800-s, “Internet Settings—WAN—WAN Connection Type:”, choose as “3G”, and click “Apply”.



6. Try to connect the H800-s WiFi via your Laptop/PC. If can work, then go to step 7.
7. Connect PC with H800-c with RJ45 cable.
8. at H800-c, “Operation Mode”, choose “AP client”, and click “Apply”

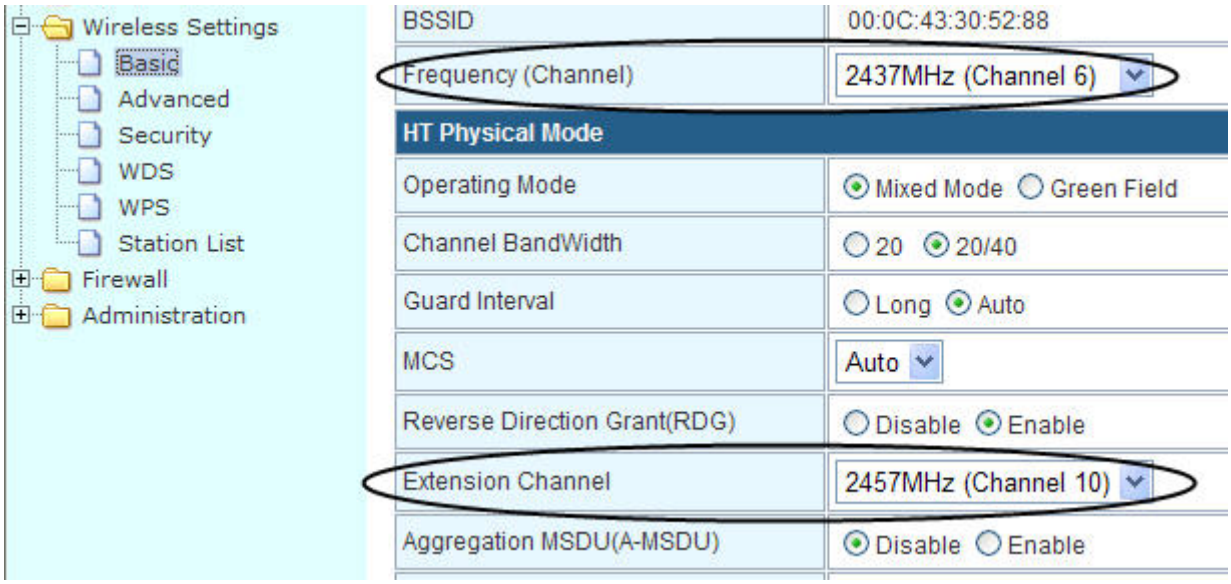


9. at H800-c, “Wireless Settings—AP Client—SSID”, here input the correct one. Here the value is from the H800-s.

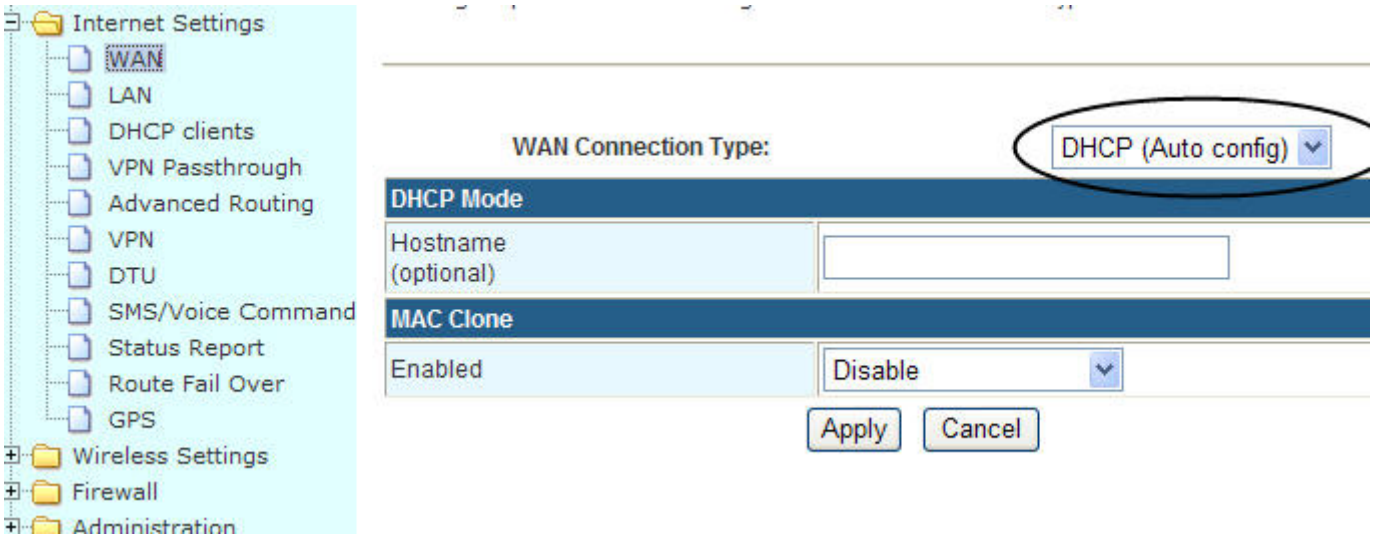


10. at H800-c,

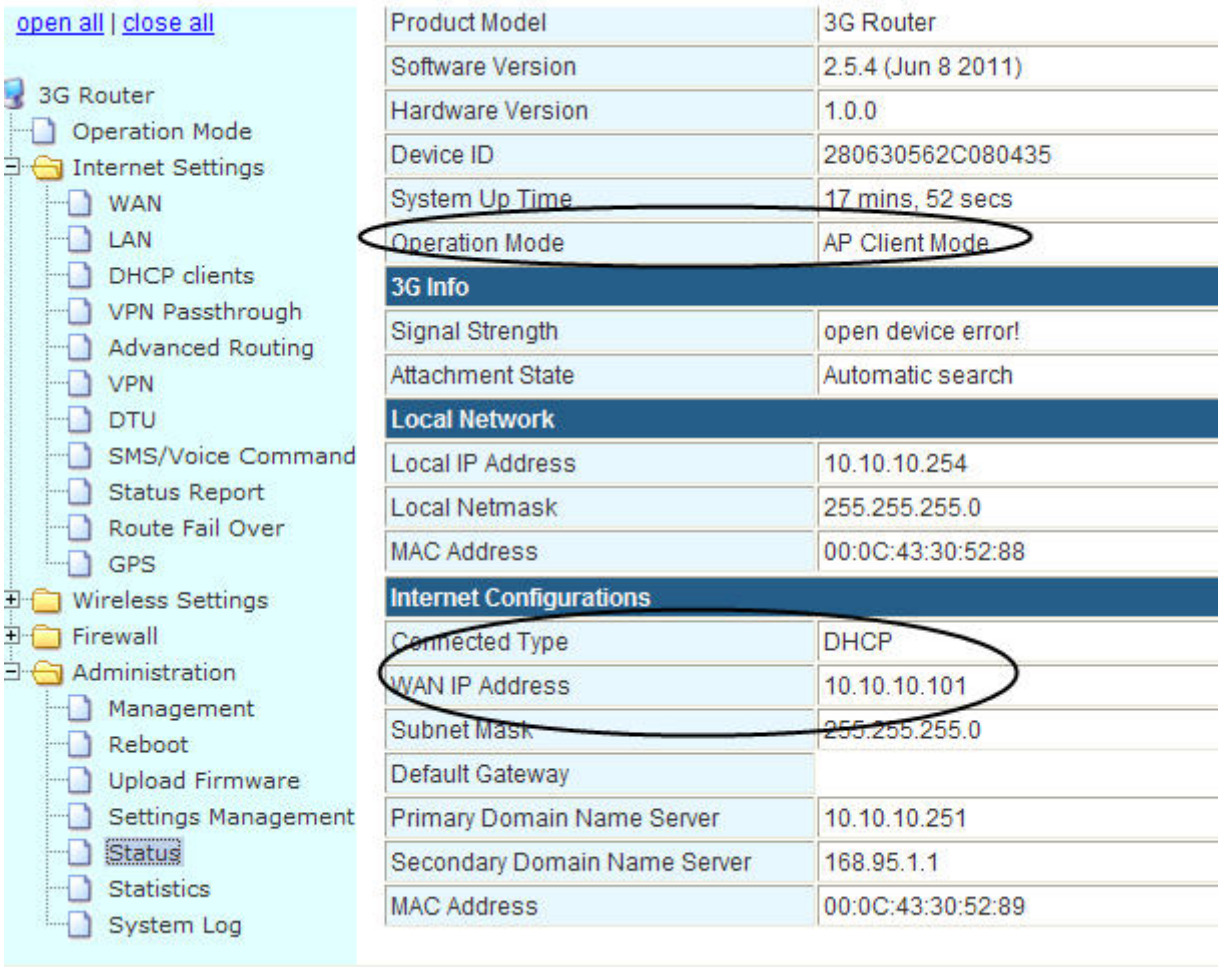
"Frequency (Channel)" and "Extension Channel" should be the same as H800-s



11. at H800-c, "Internet Settings--WAN", set the WAN connection type as "DHCP (Auto config)", and click "Apply" button.



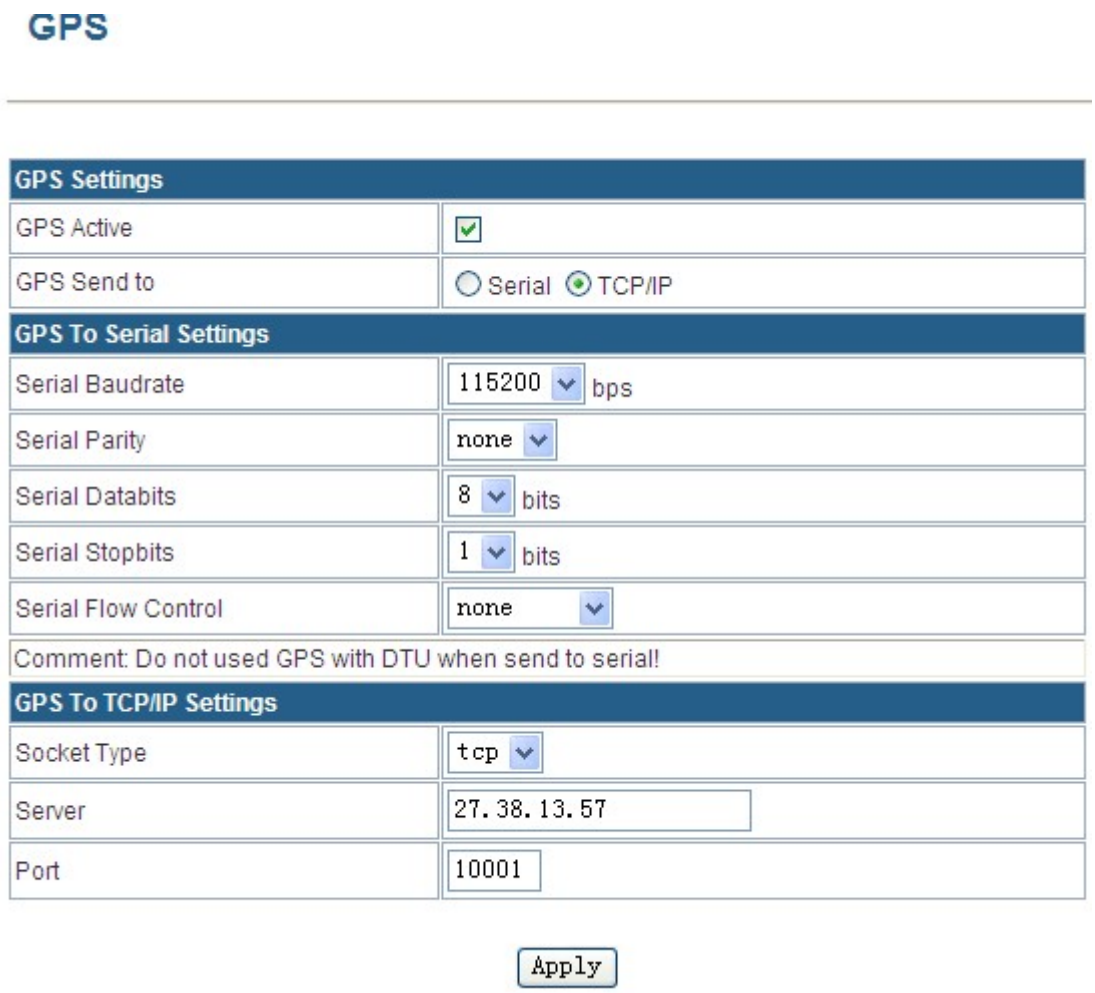
12. Then check H800-c, “Administration--Status”, if it shows “Operation Mode” as “AP client Mode” and get “WAN IP Address”, that means the test is working.



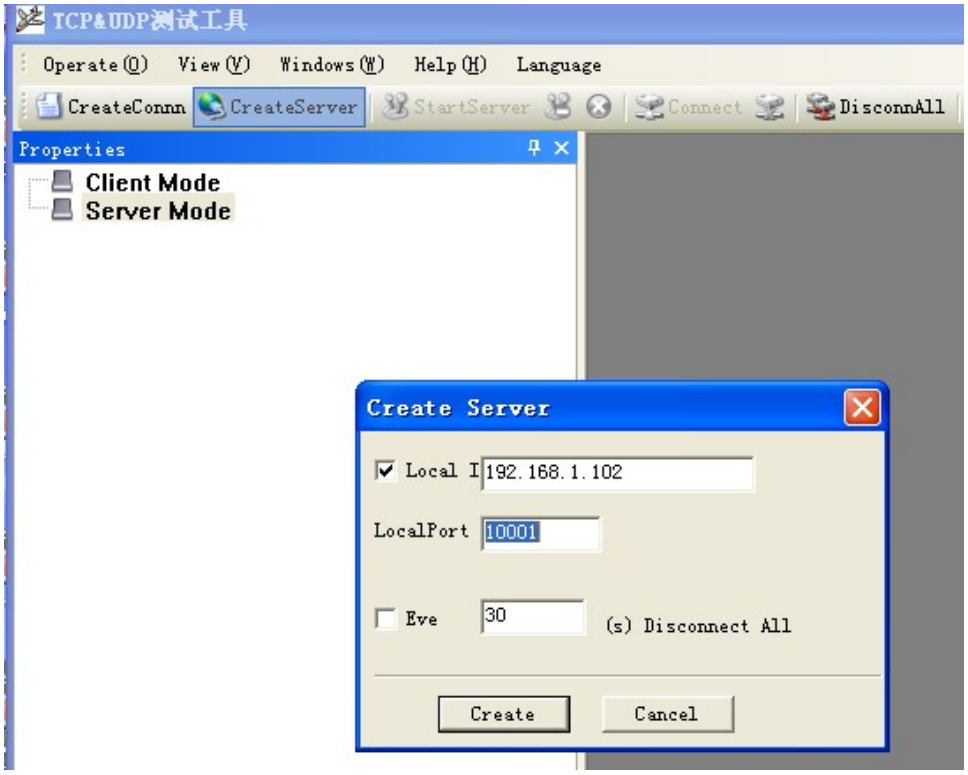
5.2 GPS feature (For version with GPS feature only)

Note: the test is simulation test to approve and show the feature. Please make it work in your real application. Here we run a TCP server tool as the GPS TCP server.

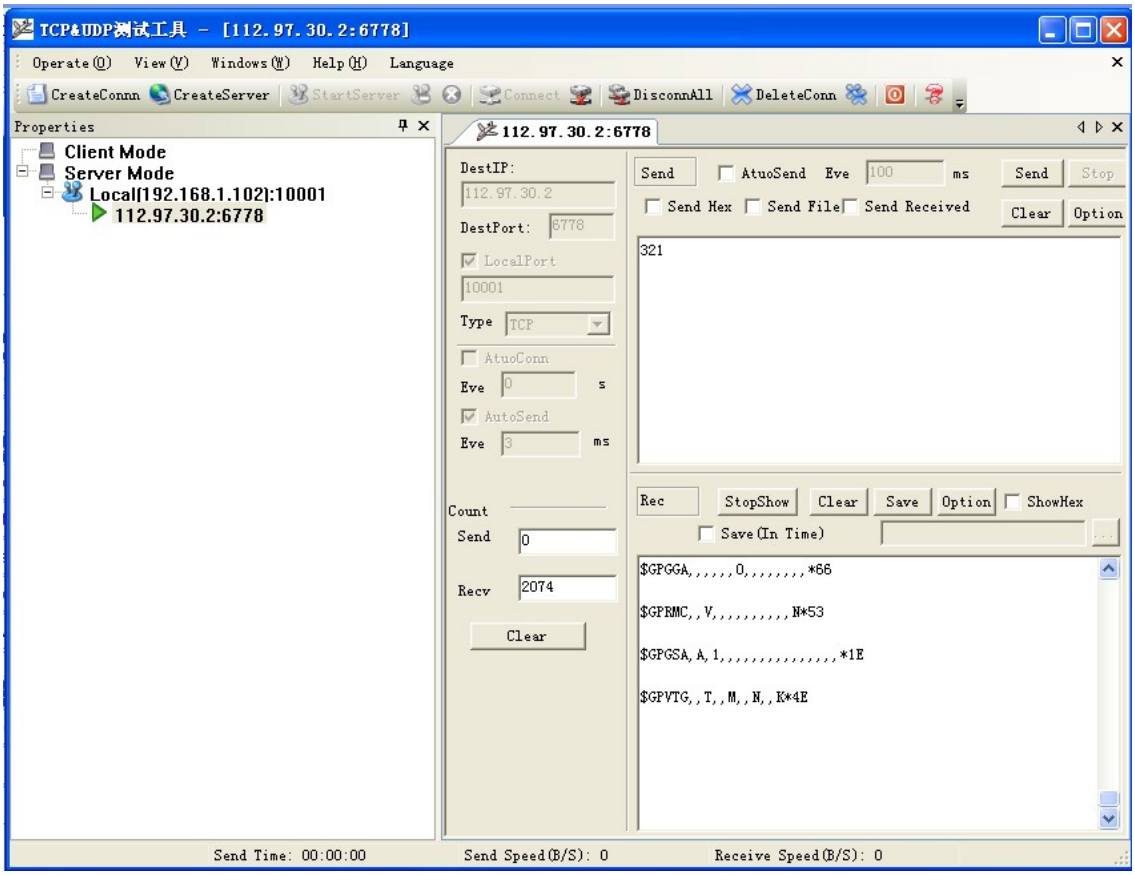
Step1: configure the GPS feature of the router.



Step 2: run the TCP server tool. You can ask us to get this tool if you need.
Create server, here our server is a local network PC with IP 192.168.1.102 and port 10001.
And we make a DMZ or NAT for this IP and port from the local router connected to internet with IP 27.38.13.57.
And in the router GPS configuration, we fill in “27.38.13.57” and port “10001”.



Once the link is okay, it will show the following similar screen. If the route doesn't get the satellite, it appears and updates the GPS module info from the router to the TCP GPS server.



```
,*79

$GPGSV,3,3,09,15,12,087,*48

$GPGGA,,,,,,0,,,,,,,,*66

$GPRMC,,V,,,,,,,,,,N*53

$GPGSA,A,1,,,,,,,,,,,,,,,*1E

$GPVTG,,T,,M,,N,,K*4E
```

Picture: Feedback string if not get the satellite.

If the route gets the satellite, it appears and updates the GPS module info from the router to the TCP GPS server with the following similar string.

```
$GPGSV,3,3,10,12,54,144,16,18,52,144,28*79

$GPGGA,142038.0,2237.083418,N,11402.206048,E,1,04,8.9,-
107.0,M,,,,*21

$GPRMC,142038.0,A,2237.083418,N,11402.206048,E,,,091211,
,,A*64

$GPGSA,A,3,18,21,22,31,,,,,,,,,13.5,8.9,10.1*3C

$GPVTG,,T,,M,0.0,N,0.0,K*4E
```

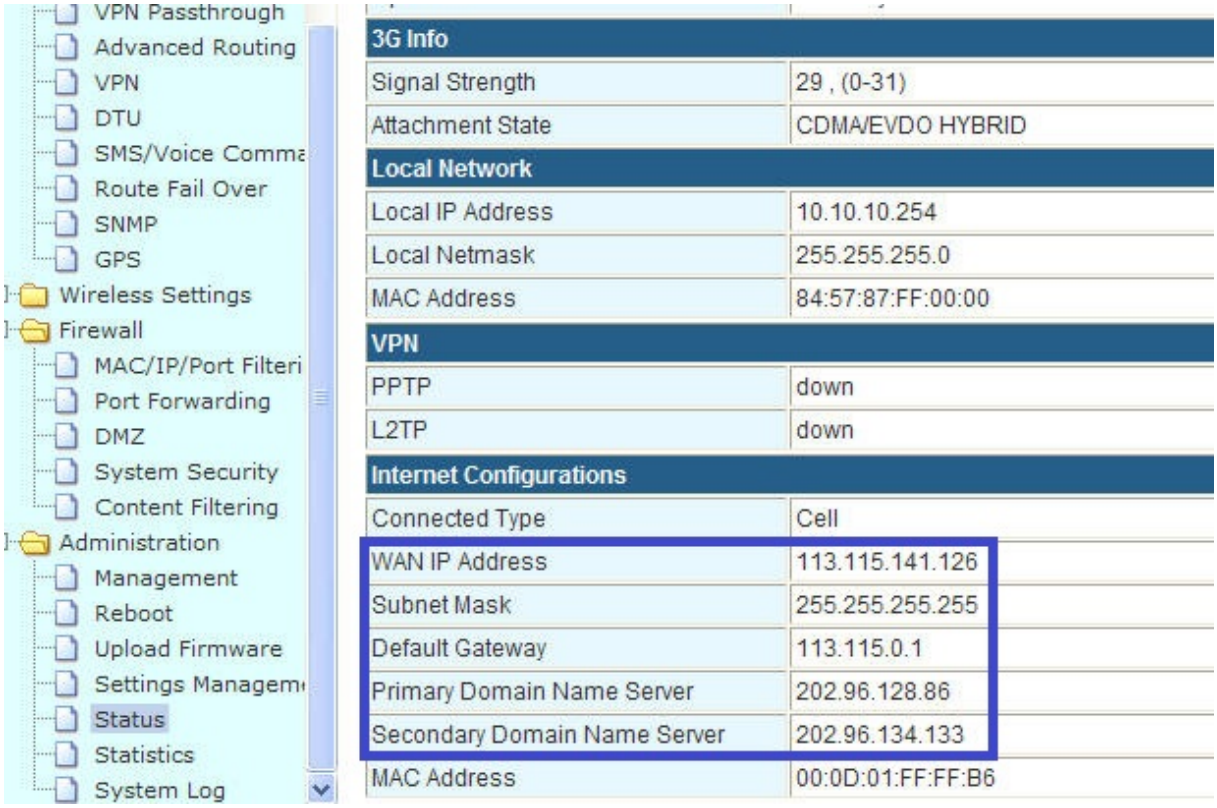
Picture: Feedback string if gets the satellite.

5.3 Port Forwarding (NAT, NAPT) test

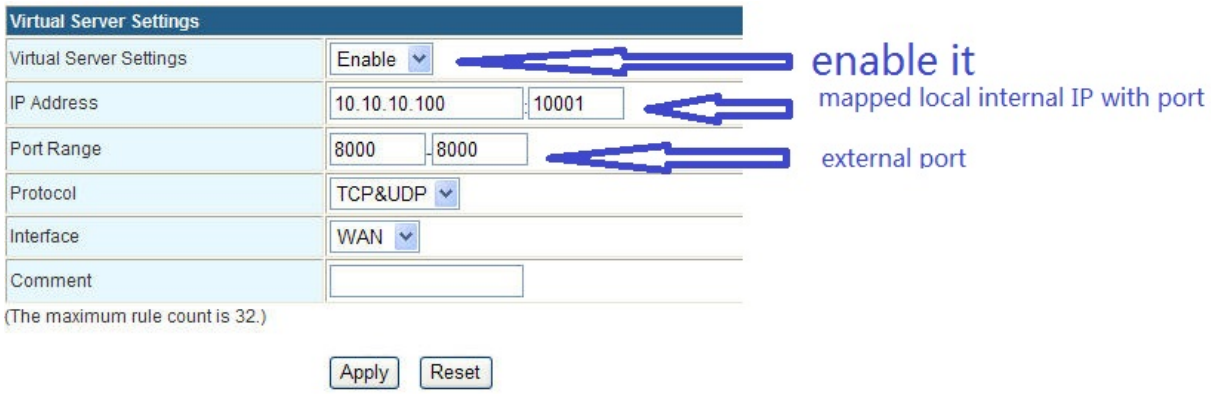
Note: the test is simulation test to approve and show the feature. Please make it work in your real application.

Warmly reminding:
Question: I configure the port forwarding feature correctly, but still no work.
Answer: first, please check the port if block by your ISP, because some ISP block some ports for security reason.
For example, the H800 gets WAN IP 27.38.14.223. And the H800's default web port is 80. So from the other network, try to visit http:// 27.38.14.223:80 if can be okay. If no okay, it means the ISP blocks the 80 port. Then check with your ISP which ports are open for use. Then re-try the port forwarding feature.

Step 1) make H800 router to be online.



Step 2) configure the *port forwarding* feature for H800 router

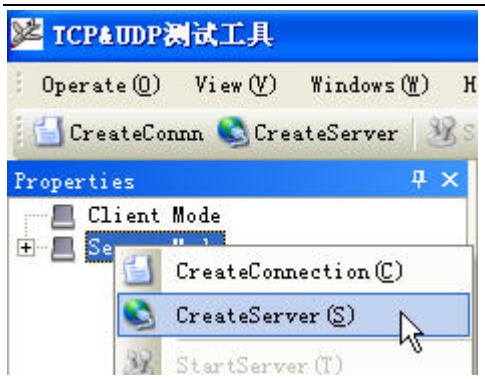


Click *Apply Button* to finish the setting. It will show the result in the following picture.

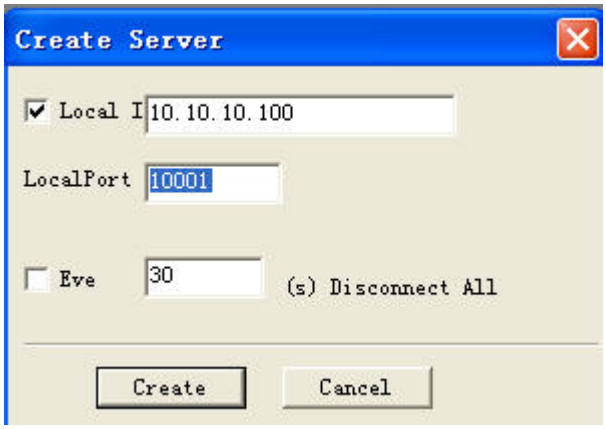
Step 3) here we take a PC to be as a TCP server/Remote Device.

Connect the PC to H800 router LAN port via RJ45 cable. And it gets an IP 10.10.10.100.

At the PC, run *TCP&UDP_debug* software (If you have no such software, require to get from us).



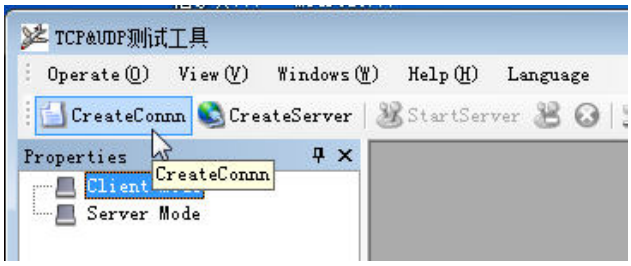
Firstly, click *Server Mode*, and *CreateServer,*



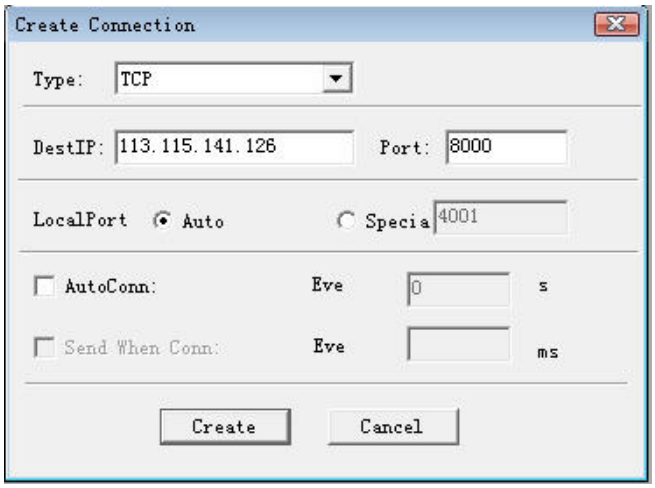
Secondly, fill in the parameters like this. The *Local IP* is the PC's IP from H800 router. The *LocalPort* is the port of the PC which will be mapped. Click *Create Button* to finish.

Choose the created server, and click *StartServer*. It will show the following windows.

Step 4) here we take another PC to be as a TCP client.
This PC is with internet in another network. Run *TCPUDP_debug* software tool, choose *Client Mode*,

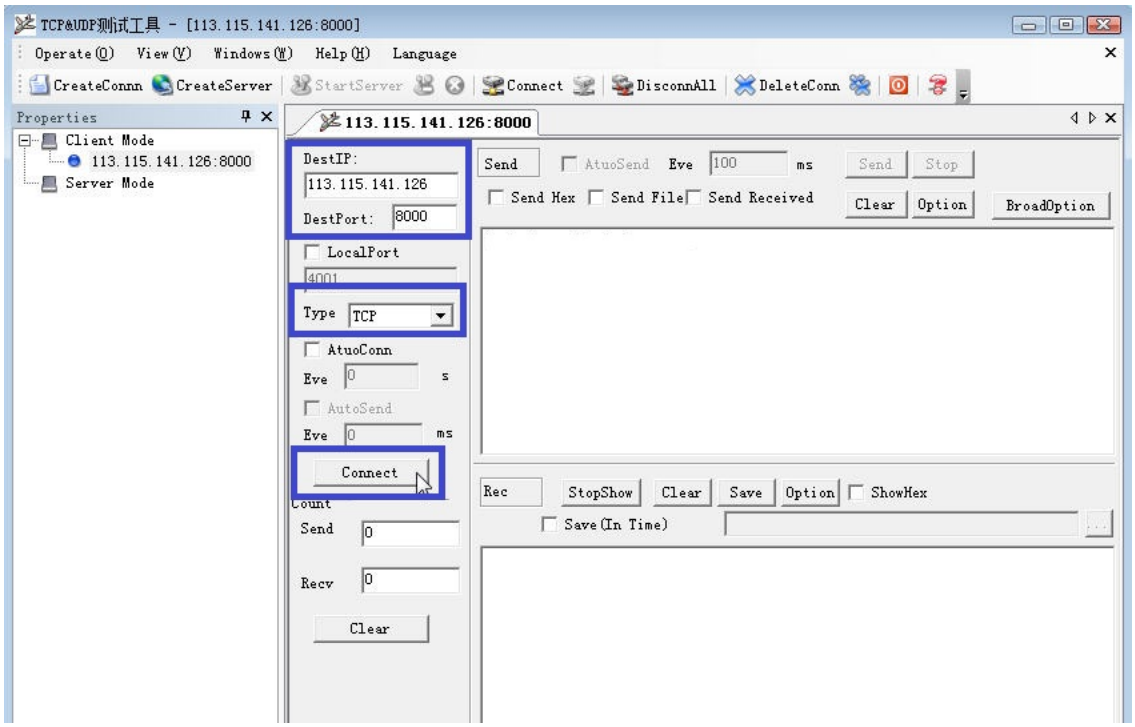


and click *CreateConn*,

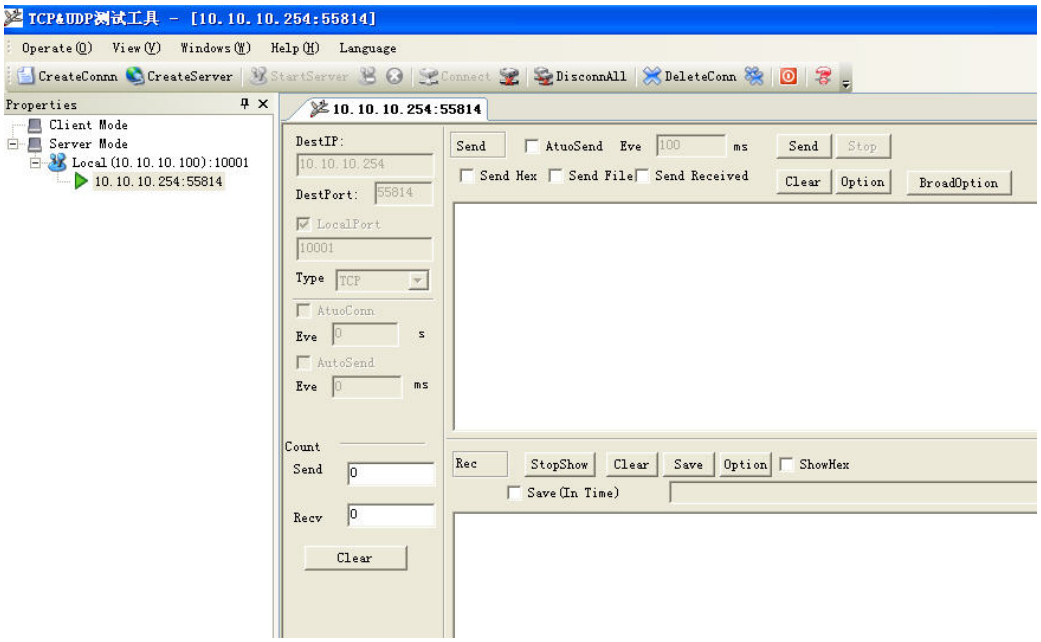


Type: choose TCP, DestIP: fill in the H800 router's WAN IP (here is 113.115.141.126), Port: 8000 (This port is external port for mapped port 10001). Click *Create* button to finish.

Then check the DestIP, DestPort and Type, and click *Connect* button to link.

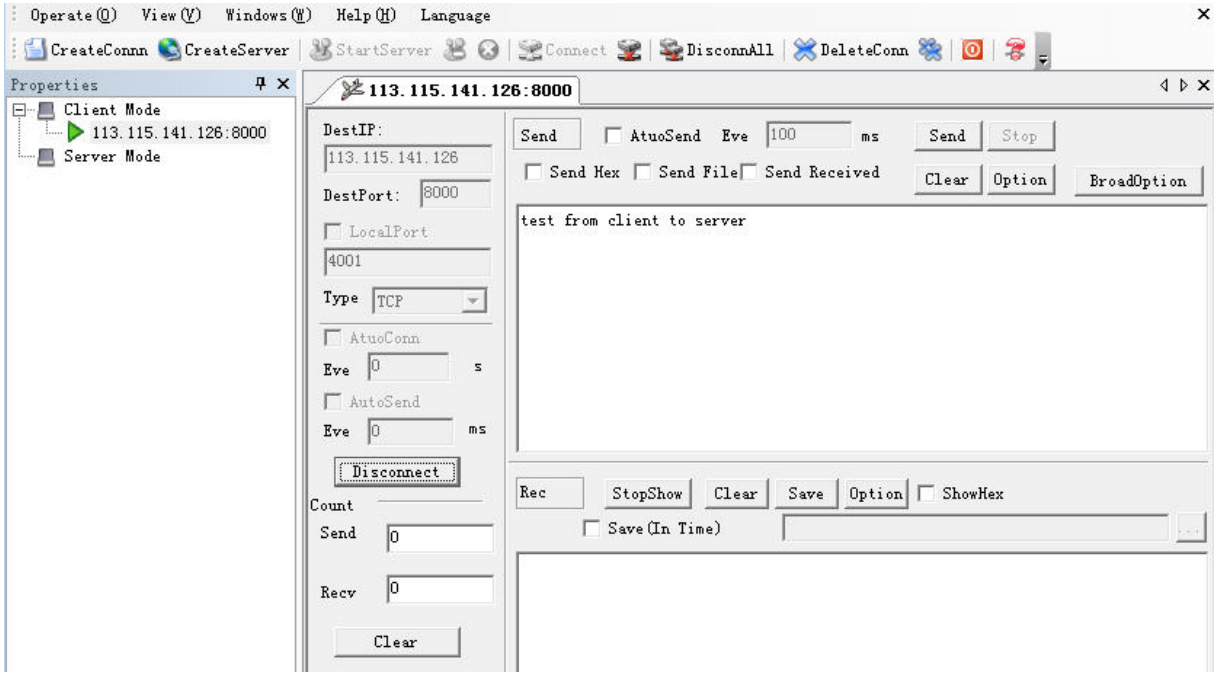


Once the link is done, at the Server PC's side, it shows the following picture, which indicates the link is created.

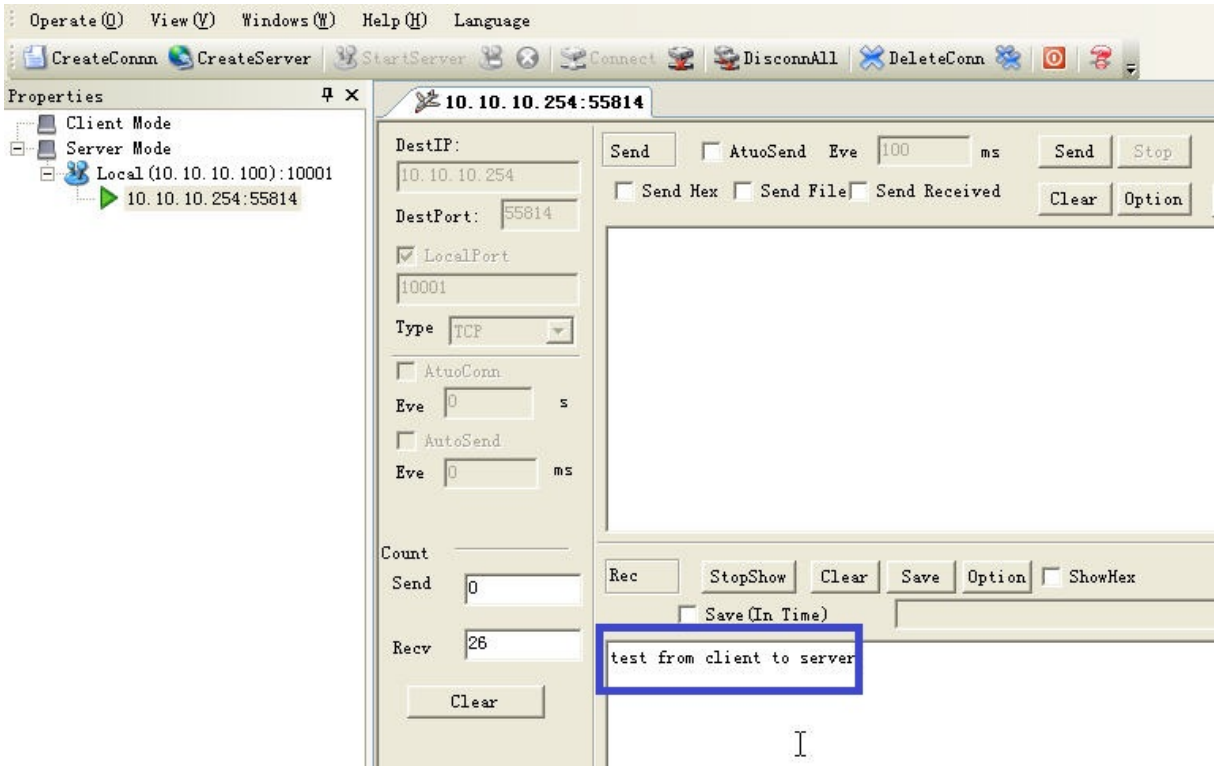


Step 5) Test the link for sending and receiving

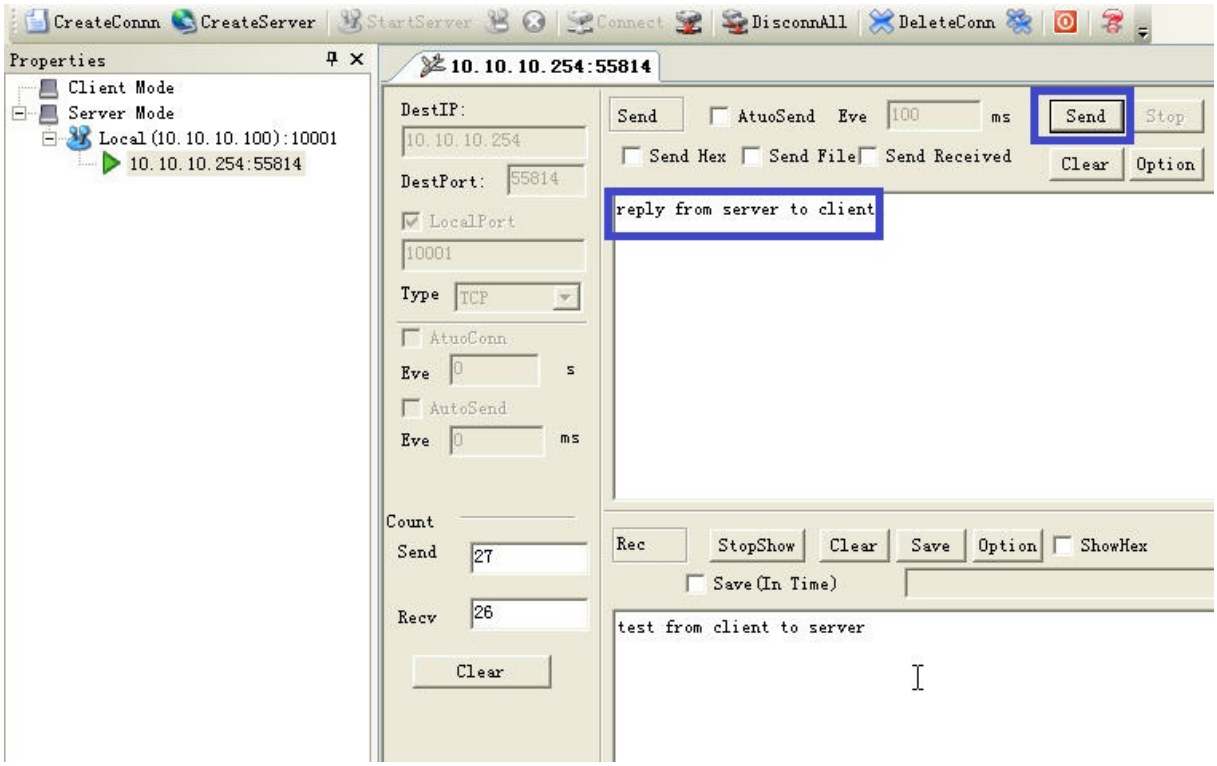
At client PC, type "test from client to server", and click *Send* button.



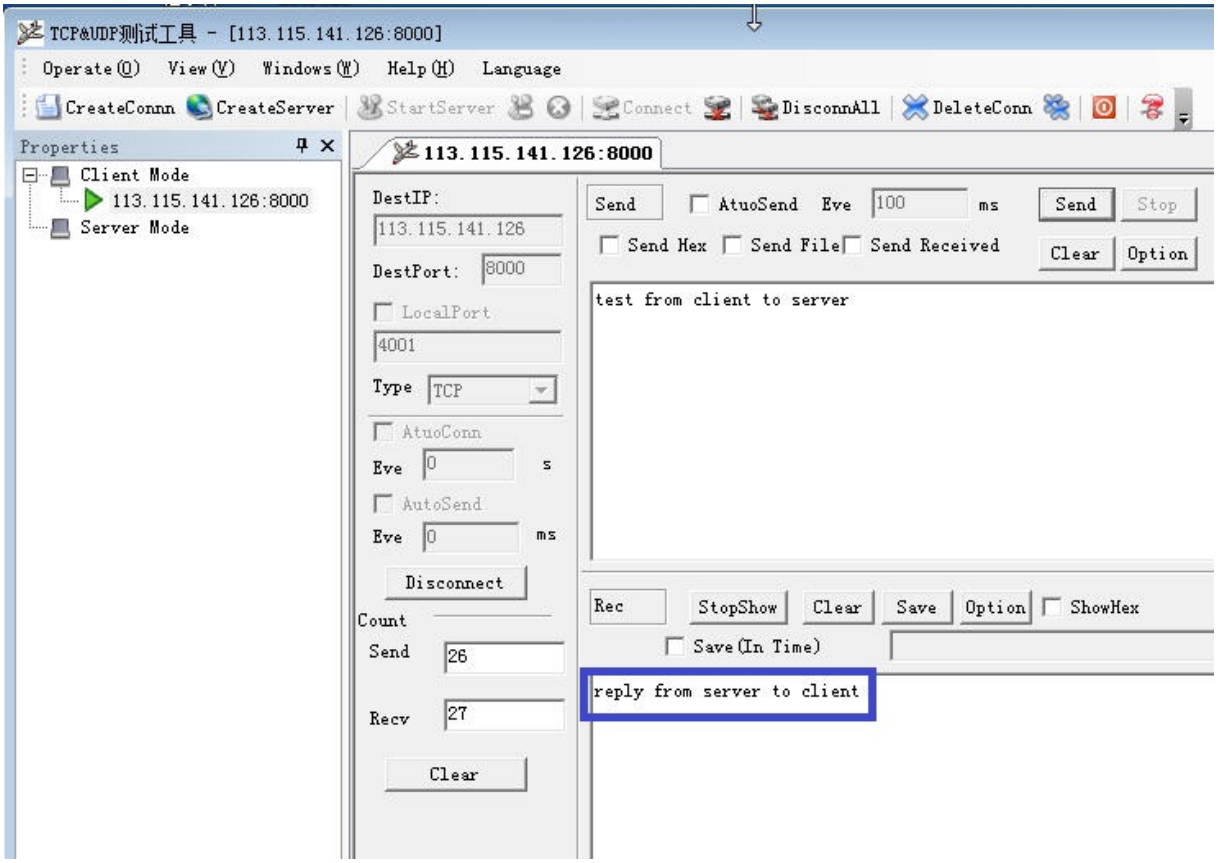
At the server PC, it will receive the info the client PC.



At Server PC, type “reply from server to client”, and click *Send* button.



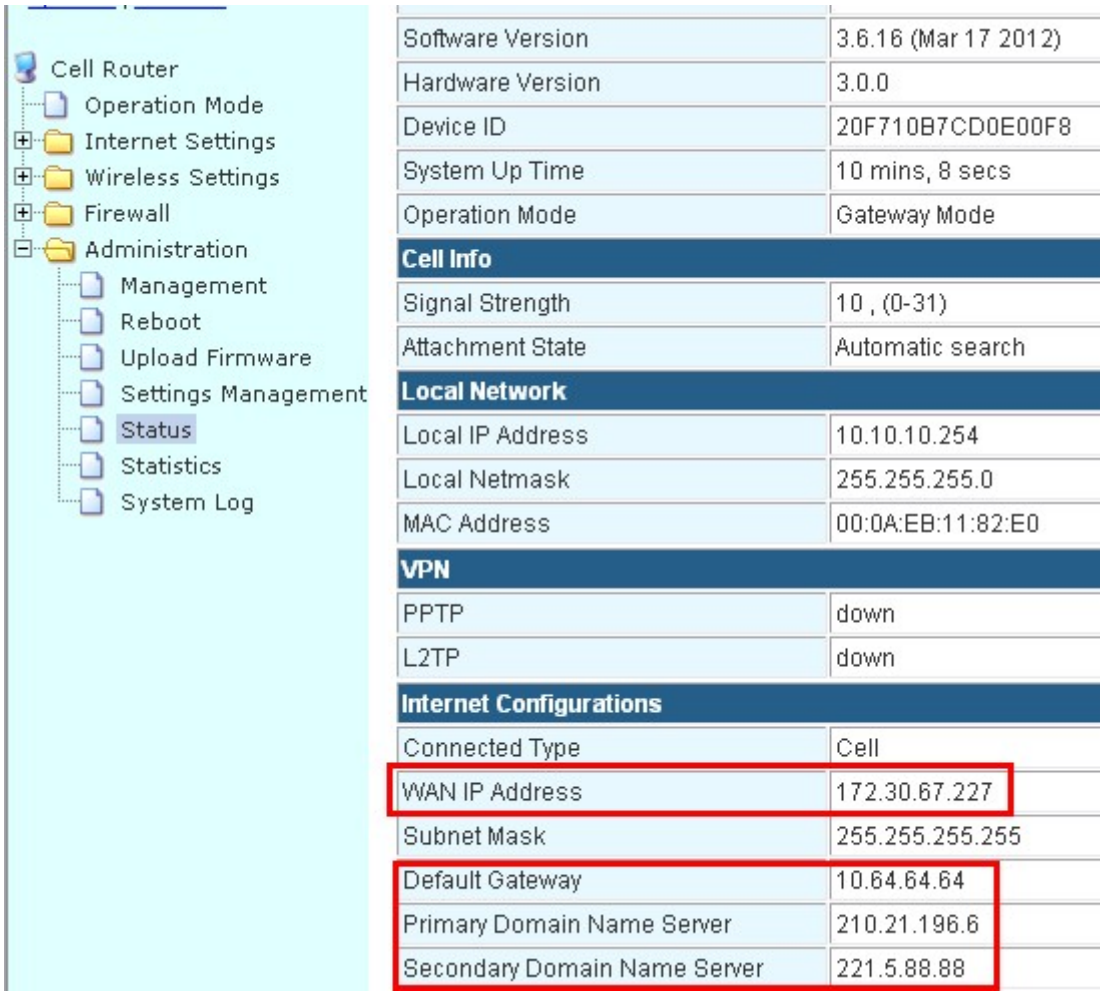
At the client PC side, it will receive the related info from server PC side.



With this result, it indicates the port forwarding is working.

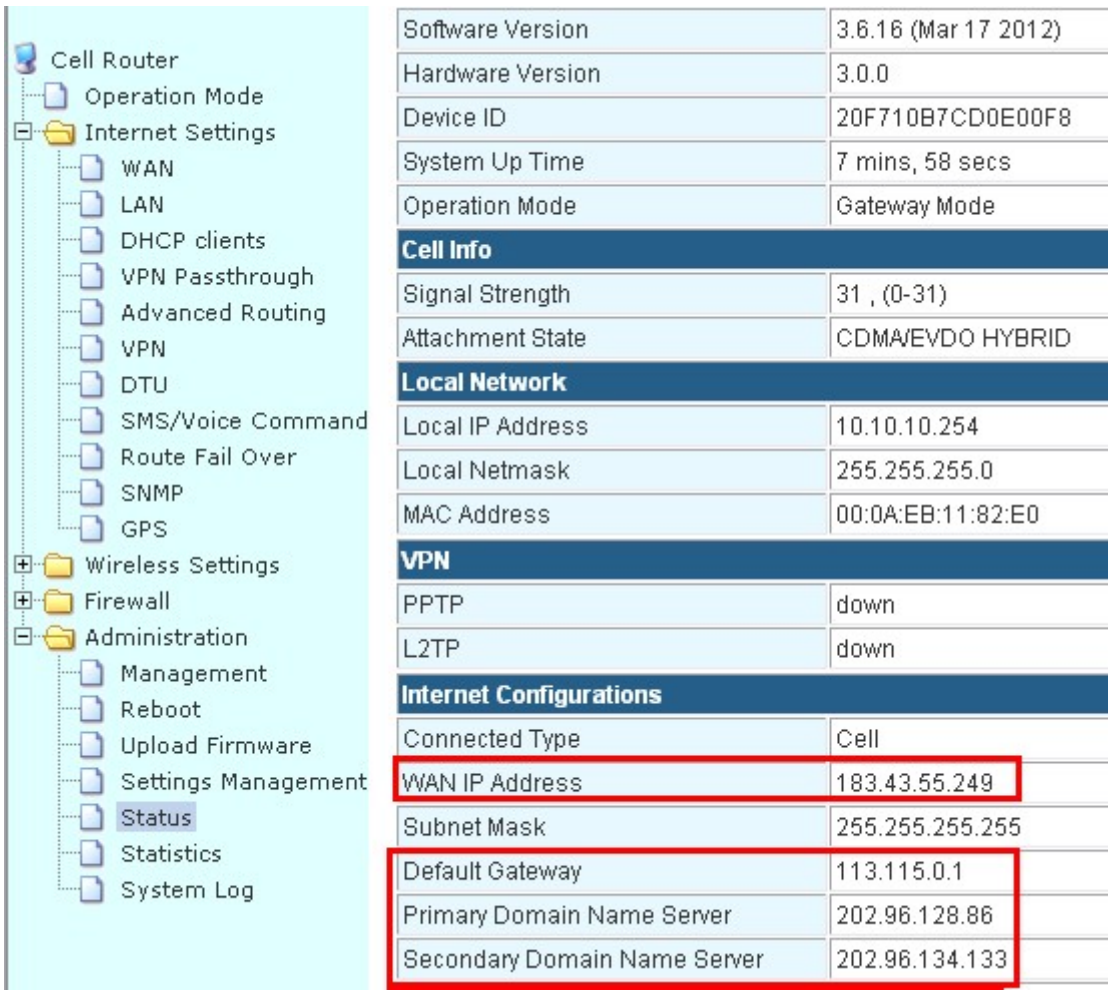
5.4 Remote Web Login

Step 1) make H800 router to be online and get a public WAN IP.



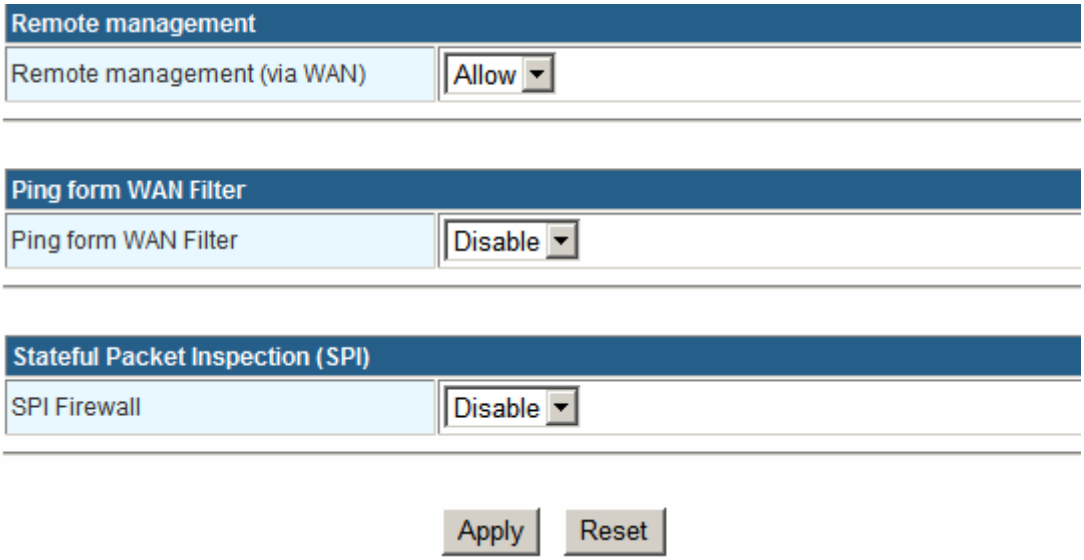
Here the H800 router gets WAN IP of 172.30.67.227, which is not a public IP, and cannot be ping through via the test PC. So we cannot make the remote visit of the H800 router web.

Let's get a public IP for H800 router first. Here we change another sim card to test.



H800 router gets a WAN IP 183.43.55.249, which is a public IP, and can ping though.

Step 2) Make sure the “Remote Management” feature is activated.



Step 3) at the test PC, open the IE, and input http://183.43.55.249:80 to enter the H800 router's web.

Notes:

1) The H800 router's web port default is 80. Some ISP block the port 80 because of some security. Then please confirm the ISP the opened port, and change the web port for H800 router before remote visiting.

Please refer to *Chapter 3.3.14.1.1 Router web port* to change the web port.

2) If you cannot get a fixed public WAN IP, you can use H800 router's DDNS feature. Refer to *chapter 3.3.14.1.3 DDNS settings* to configure.

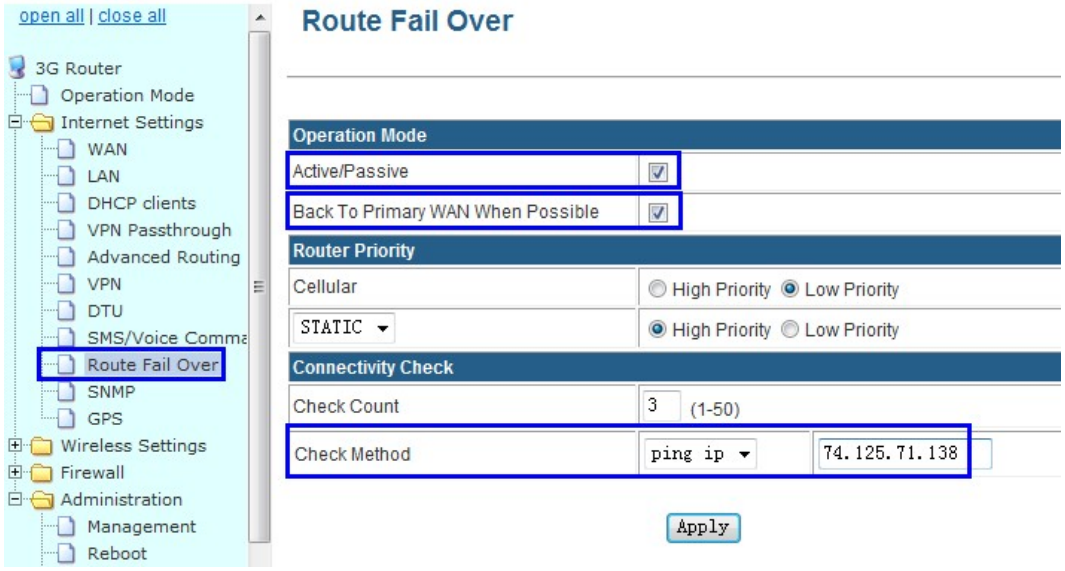
Then you can input http://ddns:port to visit the H800 router's web port.

5.4 WAN RJ45 Static (fixed IP) and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via RJ45 cable. The H800 WAN LED should be on.

Step 1) log into the H800 router web.

Step 2) Internet Settings – Route Fail Over



Active/Pasive: tick it

Back To Primary WAN When Possible: tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 STATIC as main line. Then choose as the picture above.

Check Count: fill in the number you want to check the line available detection.

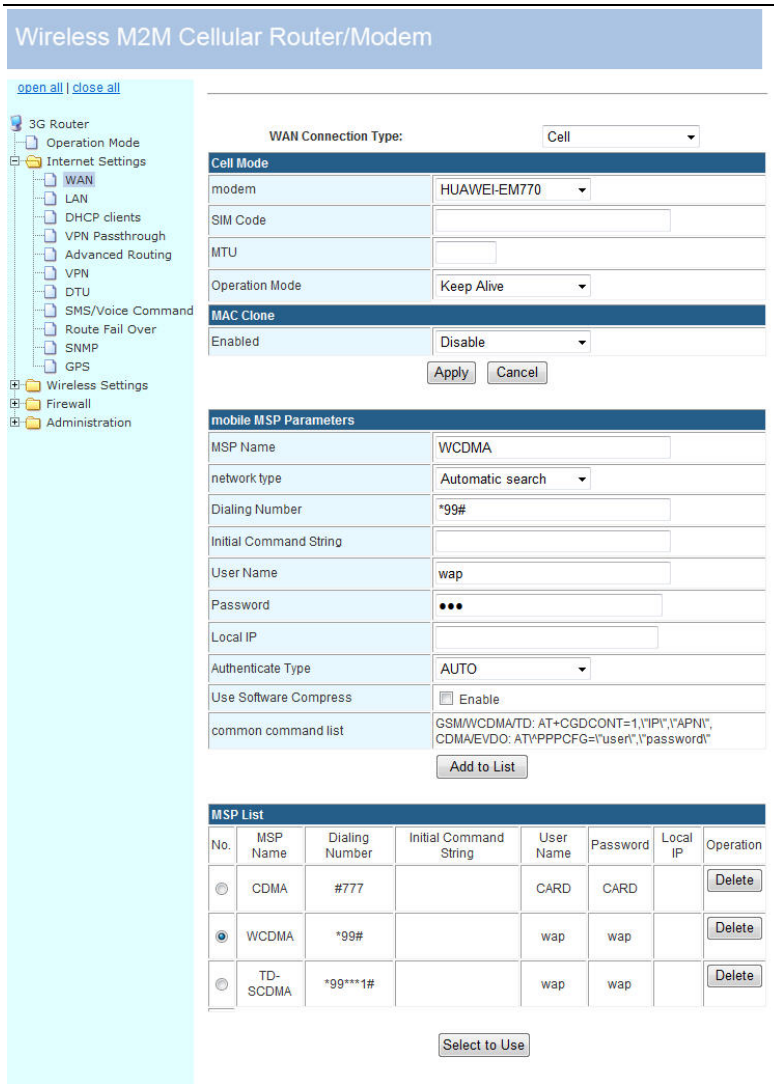
Checking Method: fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

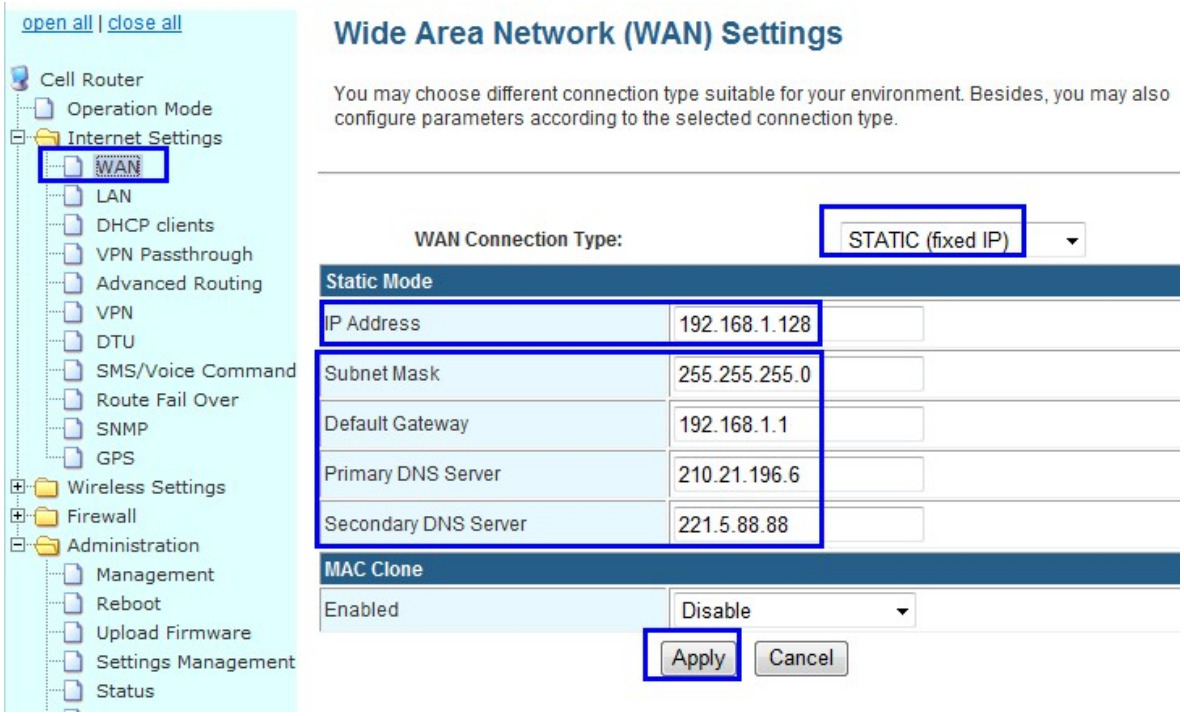
Configure the Cell WAN parameters.

Please make sure H800 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy



Step 4) Internet Settings – WAN – WAN Connection Type – STATIC (fixed IP)

Configure the STATIC (fixed IP),



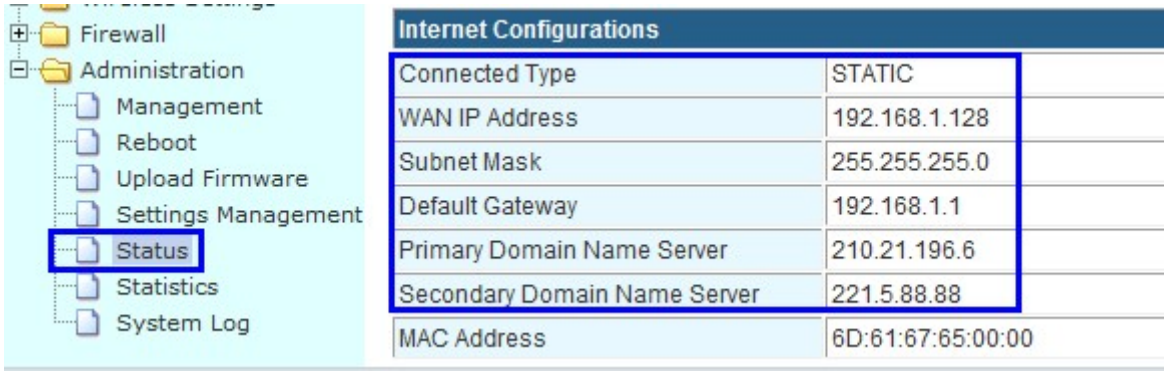
IP Address: fill in the assigned fixed LAN IP address from the upper router for H800. Here our upper router can assign a fixed LAN IP 192.168.1.128 for H800.

Subnet Mask: the upper router's subnet mask.
Default Gateway: fill in the default gateway. Here the default gateway is 192.168.1.1 of upper router.
Primary DNS Server: fill in a right DNS server
Secondary DNS Server: fill in a right DNS server.

Notes: Do not forget to click "Apply" button.

Step 5) The H800 router will automatically reboot and try to connect the STATIC WAN RJ45 as main line. If main line failed, it will switch to Cell as secondary line. And if STATIC WAN RJ45 resume to work, it will switch from Cell line to STATIC WAN RJ45 line.

The following page indicated the Static fixed IP is working.



Once the Static (fixed IP) is failed, H800 will switch to cellular automatically as follows,

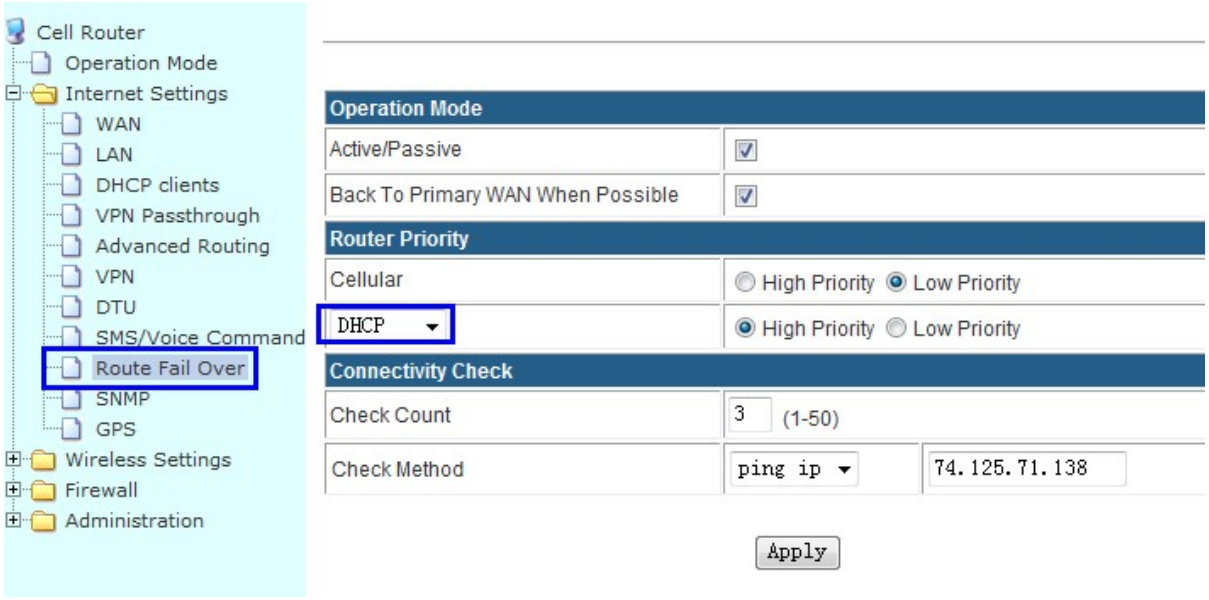
Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

5.5 WAN RJ45 DHCP and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via RJ45 cable. The H800 WAN LED should be on.

Step 1) log into the H800 router web.

Step 2) Internet Settings – Route Fail Over



Active/Pasive: tick it

Back To Primary WAN When Possible: tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 DHCP as main line. Then choose as the picture above.

Check Count: fill in the number you want to check the line available detection.

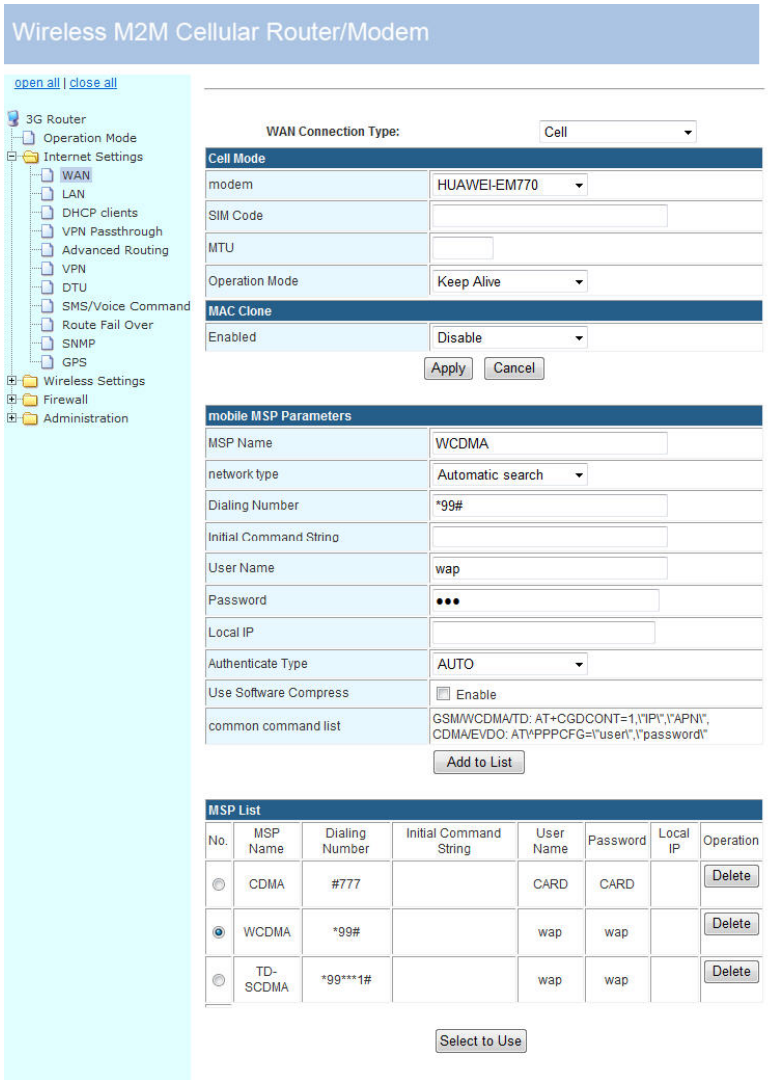
Checking Method: fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

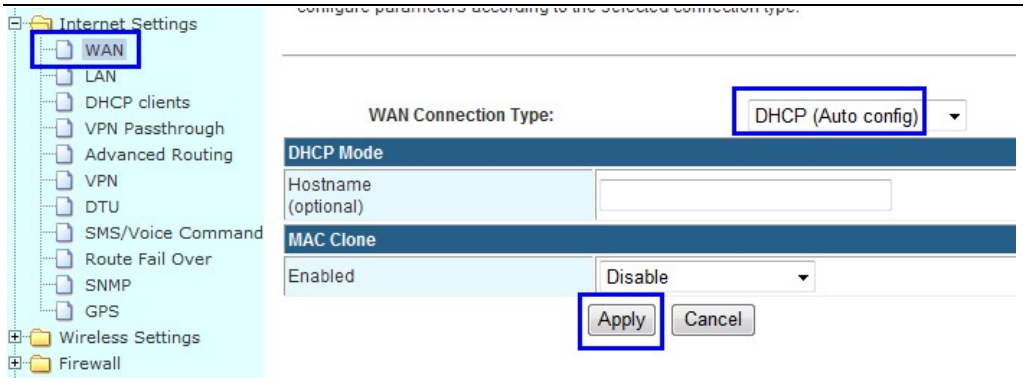
Configure the Cell WAN parameters.

Please make sure H800 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy



Step 4) Internet Settings – WAN – WAN Connection Type – DHCP (Auto config)

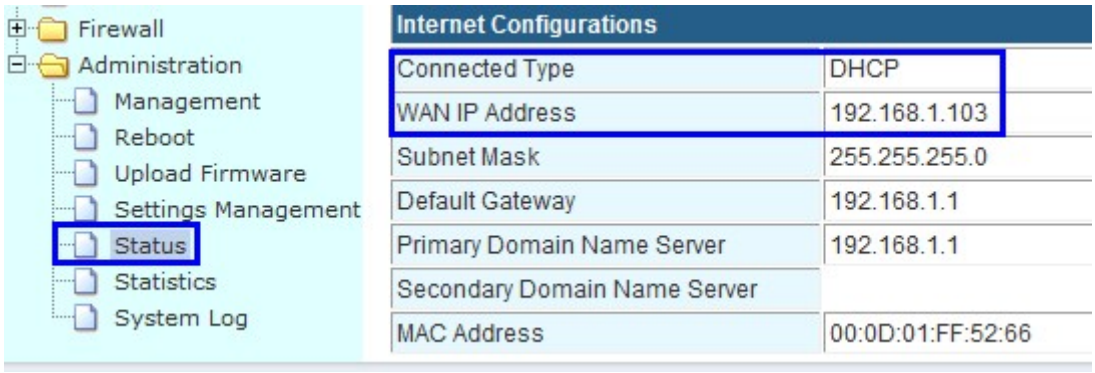
Choose “DHCP (Auto config)” at WAN Connection Type, and click “Apply” button



Notes: Do not forget to click “Apply” button.

Step 5) The H800 router will automatically reboot and try to connect the DHCP WAN RJ45 as main line. If main line failed, it will switch to Cell as secondary line. And if DHCP WAN RJ45 resume to work, it will switch from Cell line to DHCP WAN RJ45 line.

The following page indicated the DHCP is working.



Once the DHCP (Auto config) is failed, H800 will switch to cellular automatically as follows,

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

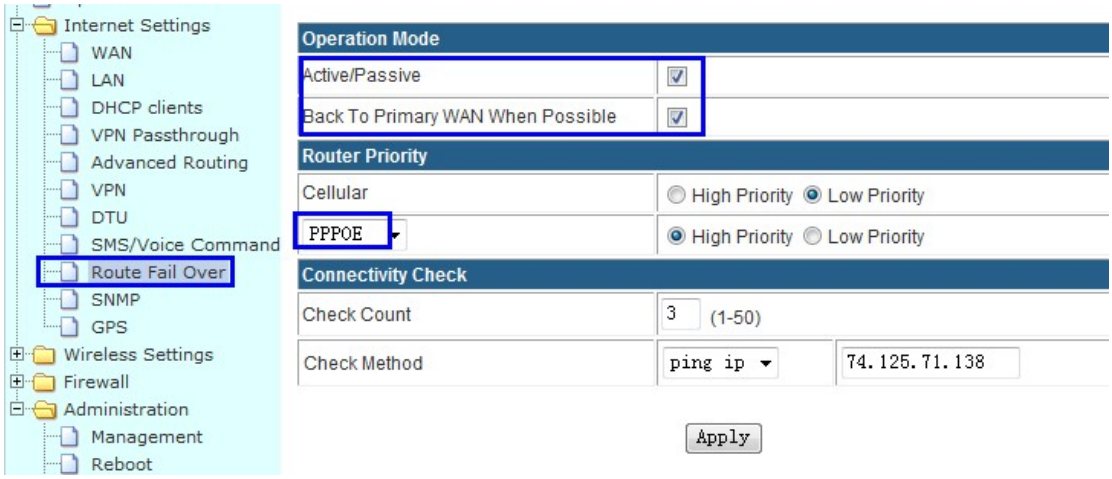
Notes: if the DHCP cannot get WAN IP Address, please “Load Default” for H800 router to retry.

5.6 WAN RJ45 PPPoE and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the ADSL modem RJ45 port via RJ45 cable. The H800 WAN LED should be on.

Step 1) log into the H800 router web.

Step 2) Internet Settings – Route Fail Over



Active/Pasive: tick it

Back To Primary WAN When Possible: tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 PPPOE as main line. Then choose as the picture above.

Check Count: fill in the number you want to check the line available detection.

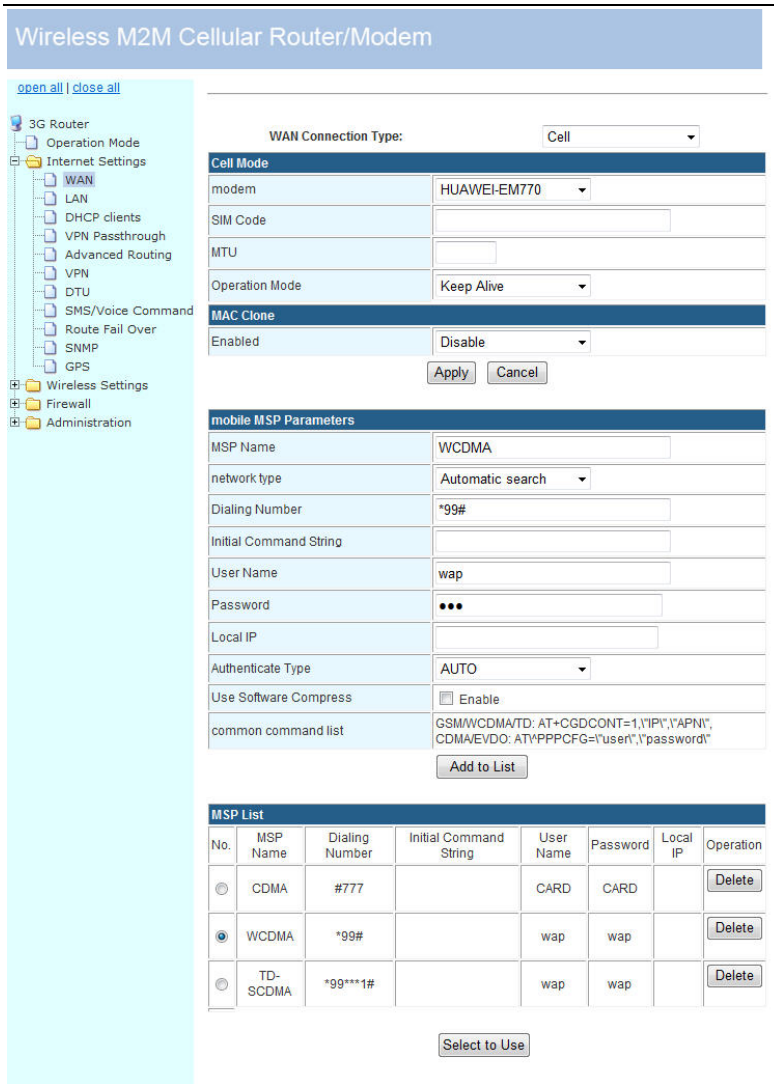
Checking Method: fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

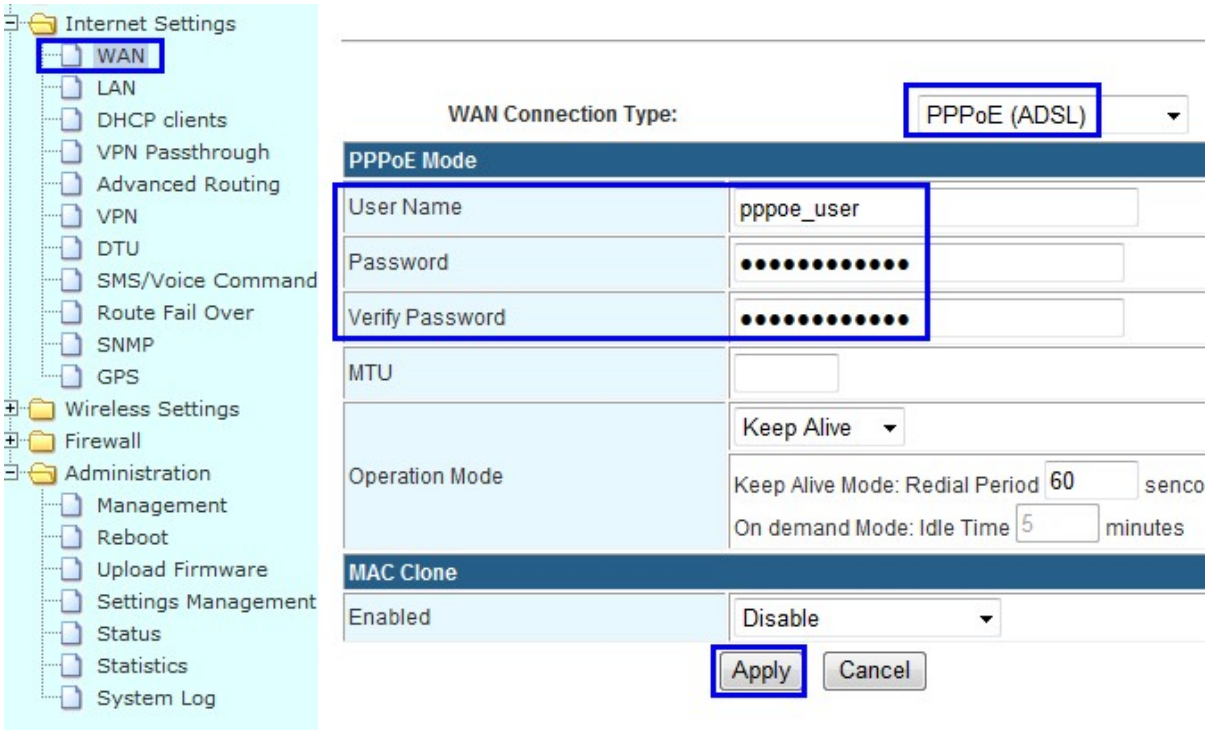
Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure H800 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy

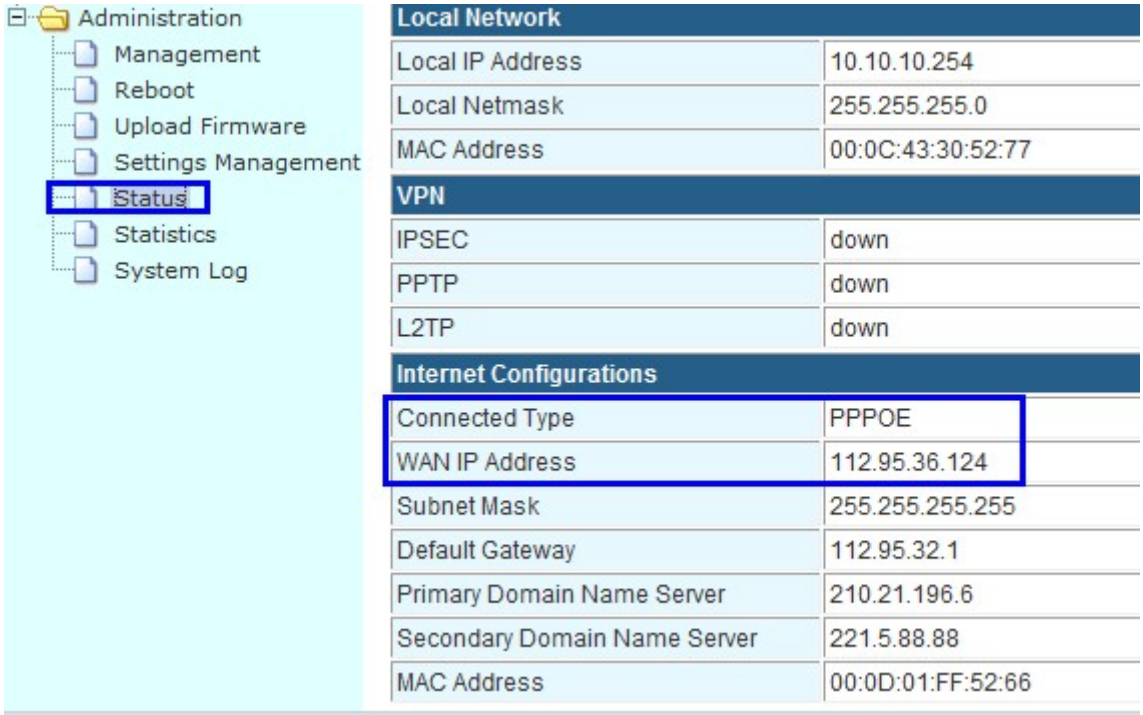


Step 4) Internet Settings – WAN – WAN Connection Type – PPPoE (ADSL)



Fill in the correct parameters for xDSL.
Notes: Do not forget to click “Apply” button.

Step 5) The H800 router will automatically reboot and try to connect the WAN RJ45 PPPoE as main line. If main line failed, it will switch to Cell as secondary line. And if WAN RJ45 PPPoE resume to work, it will switch from Cell line to WAN RJ45 PPPoE line.
The following page indicated the PPPoE is working.



Once the PPPoE (ADSL) is failed, H800 will switch to cellular automatically as follows,

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00