2010

RX Series User Manual

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Copyright Declaration

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Catalog

Chapter 1 Brief Introduction

This user guide describes the RX series router. The aim of the manual is to ease the test, install and disposition.

Note: Though all features are documented in this manual, new features may still be in beta stage at publication and therefore may not yet be validated. Please refer to the Customer Release Note for complete and detailed information regarding beta and validated features at time of release.

1.1 Document History

Version	Comments	Date	Writer
1.00	Standard	December 16 2009	Jordan

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Chapter 2 Installment

2.1 Hardware Installment

Before setting the router, please connect correctly according to the following steps.

- Please use the matched adapter to supply power for the router.(Using other adapter may cause damage to the router)
- Please use network cable to connect the router LAN and the computer network card.
- After electricity provided,Please check whether the light flickering is normal or not.

Chapter 3 How to log into the Router

This chapter is mainly about how to log into the router's interface.

3.1 network Configuration of the Computer.

The router default parameters as follow
IP: 10.10.10.254, 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.

```
C:\>ping 10.10.10.254

Pinging 10.10.10.254 with 32 bytes of data:

Reply from 10.10.10.254: bytes=32 time<1ms TTL=64
Reply from 10.10.10.254: bytes=32 time<1ms TTL=64
Reply from 10.10.10.254: bytes=32 time<1ms TTL=64
Reply from 10.10.10.254: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

This information means the connection is work.

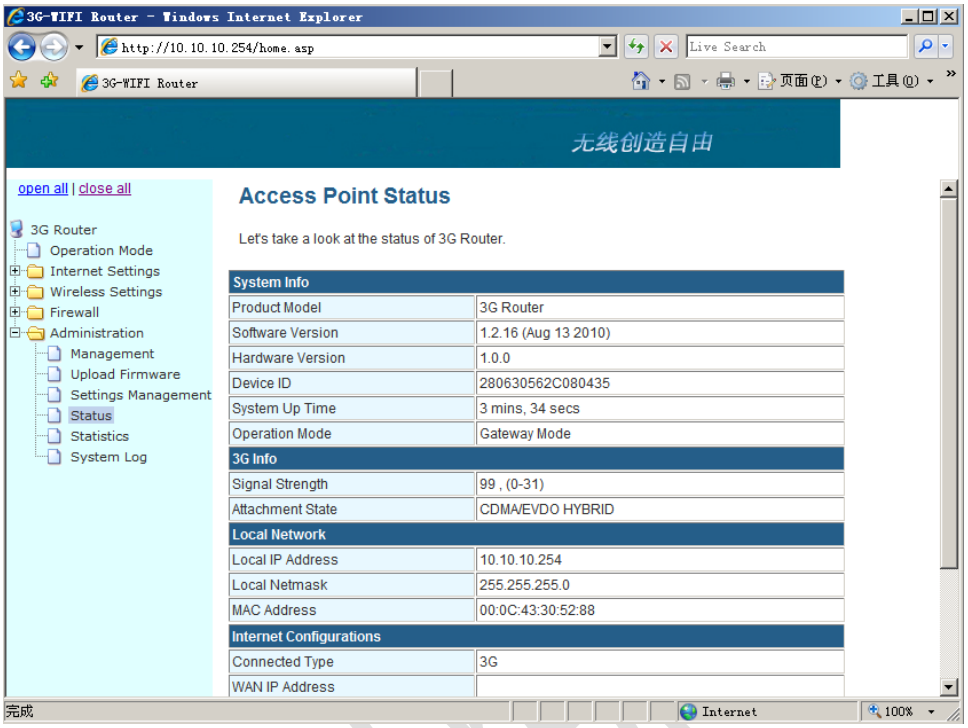
```
C:\>ping 10.10.10.254

Pinging 10.10.10.254 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.10.10.254:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

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

3.2 log into Router

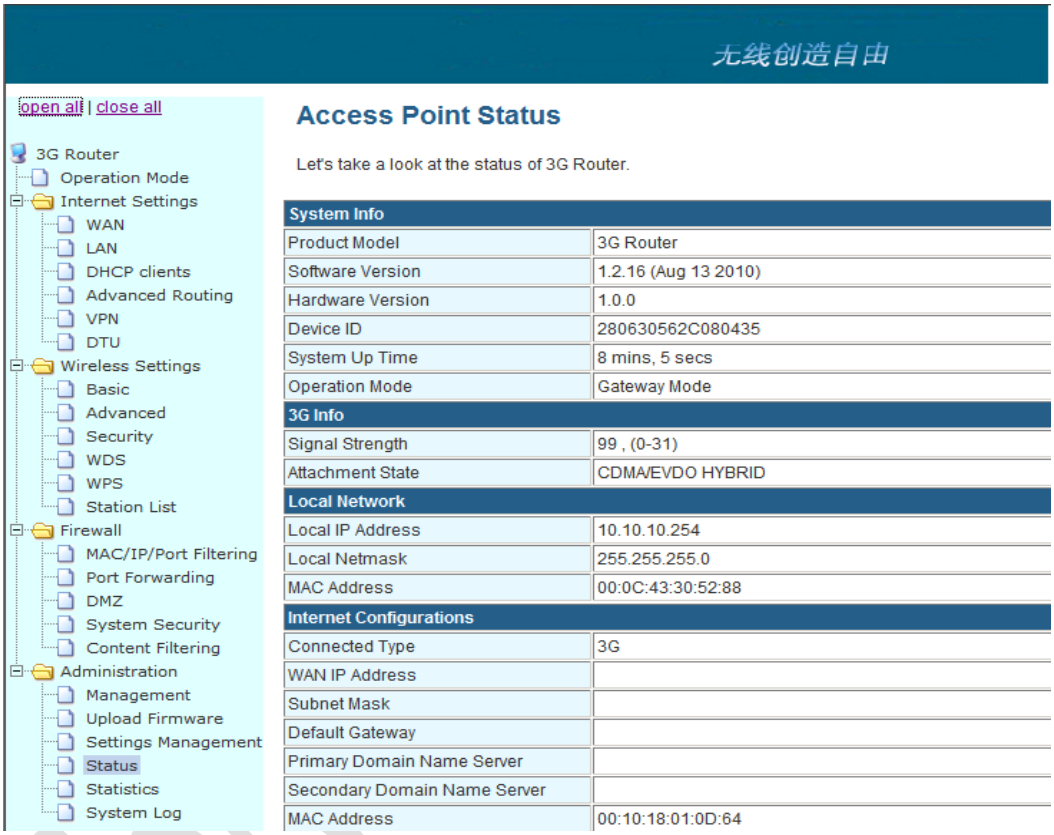
- Open the Web browser, and type http://10.10.10.254 into the address field and press Enter botton in your computer keyboard.
- Type User Name “admin” and Password “admin” in the pop-up Login Window, and then press the “Apply” button.

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

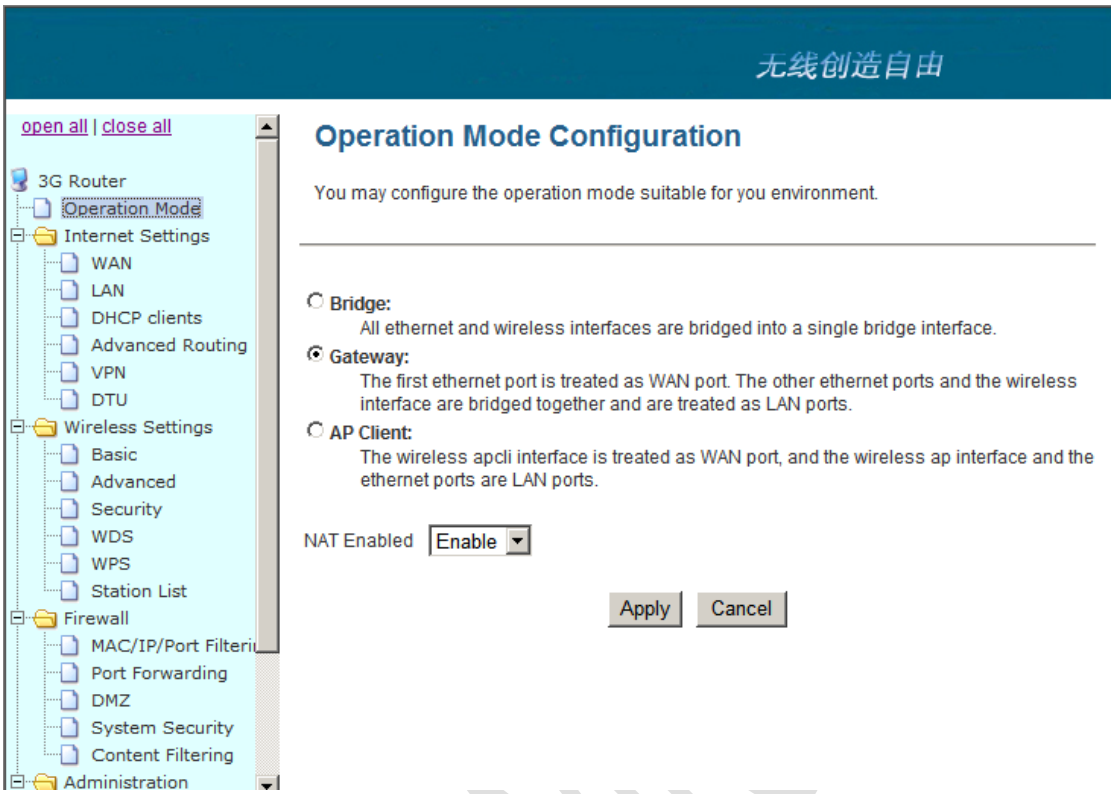


Chapter 4 Configuration Interface

4.1 Main Menu as below Picture

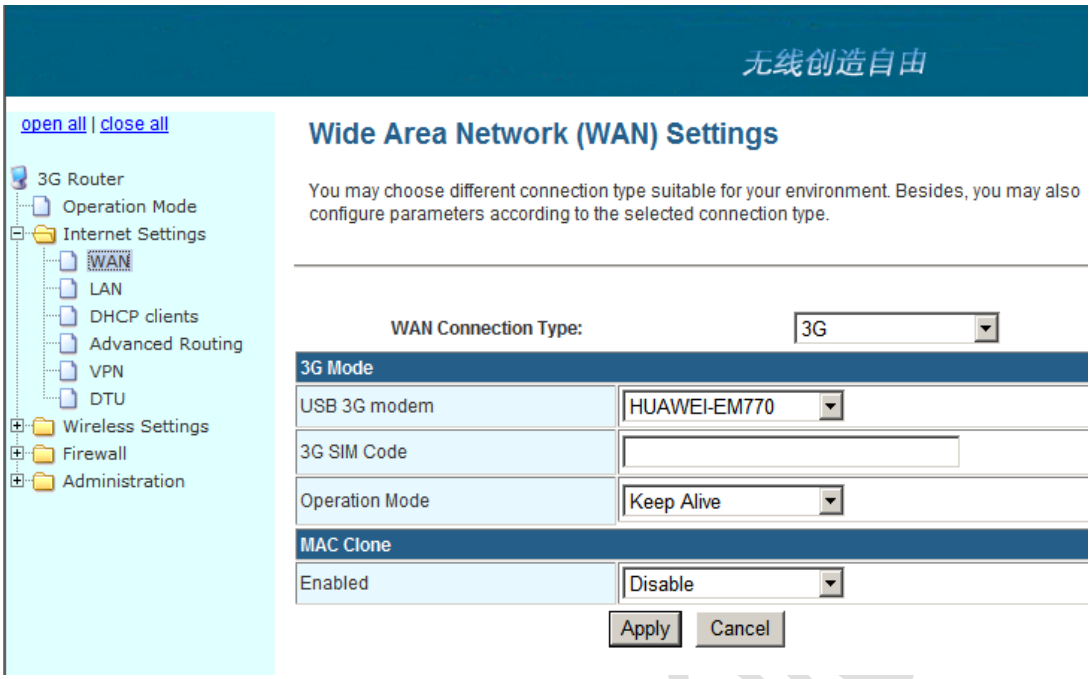


4.2 Operation Mode



- **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

4.3 WAN Settings



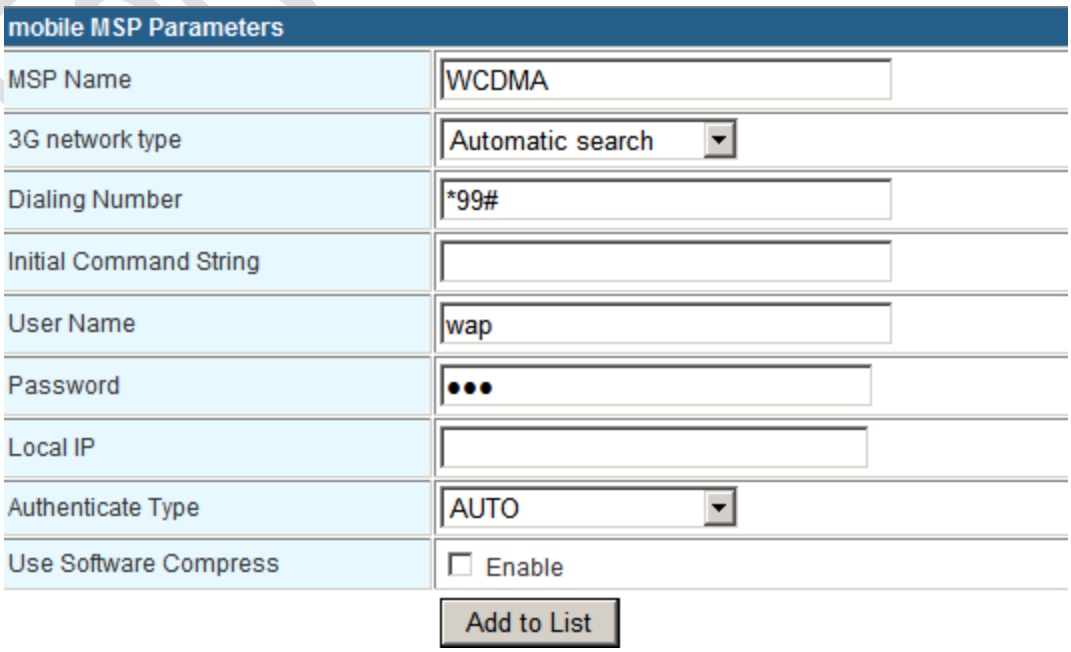
WAN Connection Type support: Static IP, DHCP, PPPoE, L2TP, PPTP, 3G.

USB Modem: System supports the follow module: HUAWEI EM560 (for R88 TD-SCDMA) , HUAWEI EM660/THINKWILL MI600(for R86 EVDO), and HUAWEI EM770/LONGSUNG-U6300/U5300(for R89 HSPA). Please choose right USB modem.

3G SIM PIN: enter PIN code if necessary.

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.



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

R86/R46 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)

R87/R89 HSPA: 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)

R42a GPRS: at+cgdcont=1,\"IP\",\"APN\", as a sample: we input this command at+cgdcont=1,\"IP\",\"cmnet\",

R43a CDMA: at+zpidpwd=username,password , as a sample:we input this command at+zpidpwd=card,card

Username and Password: input them.

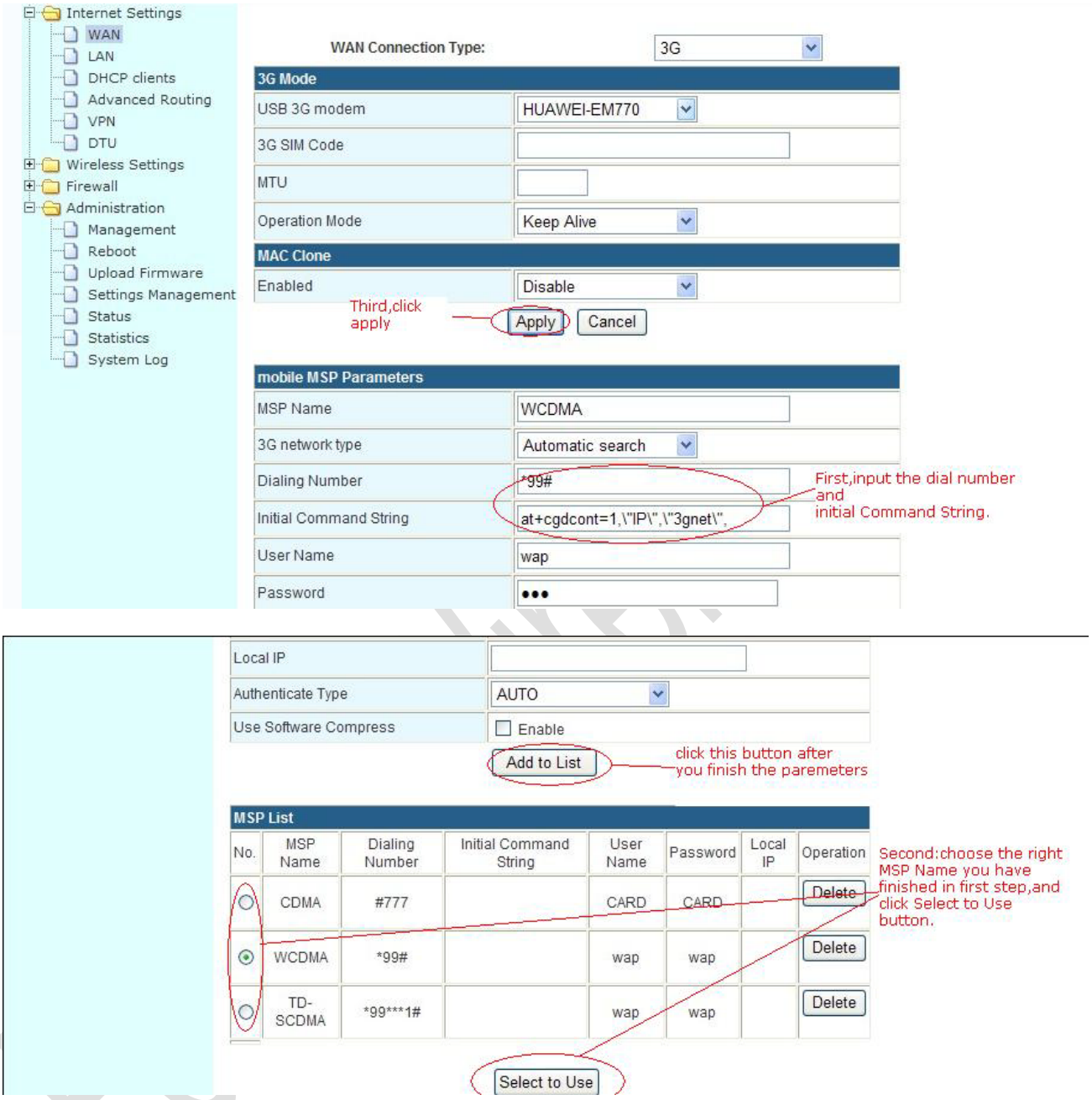
Authenticate Type: PAP/CHAP, the default setting is auto.

MSP List

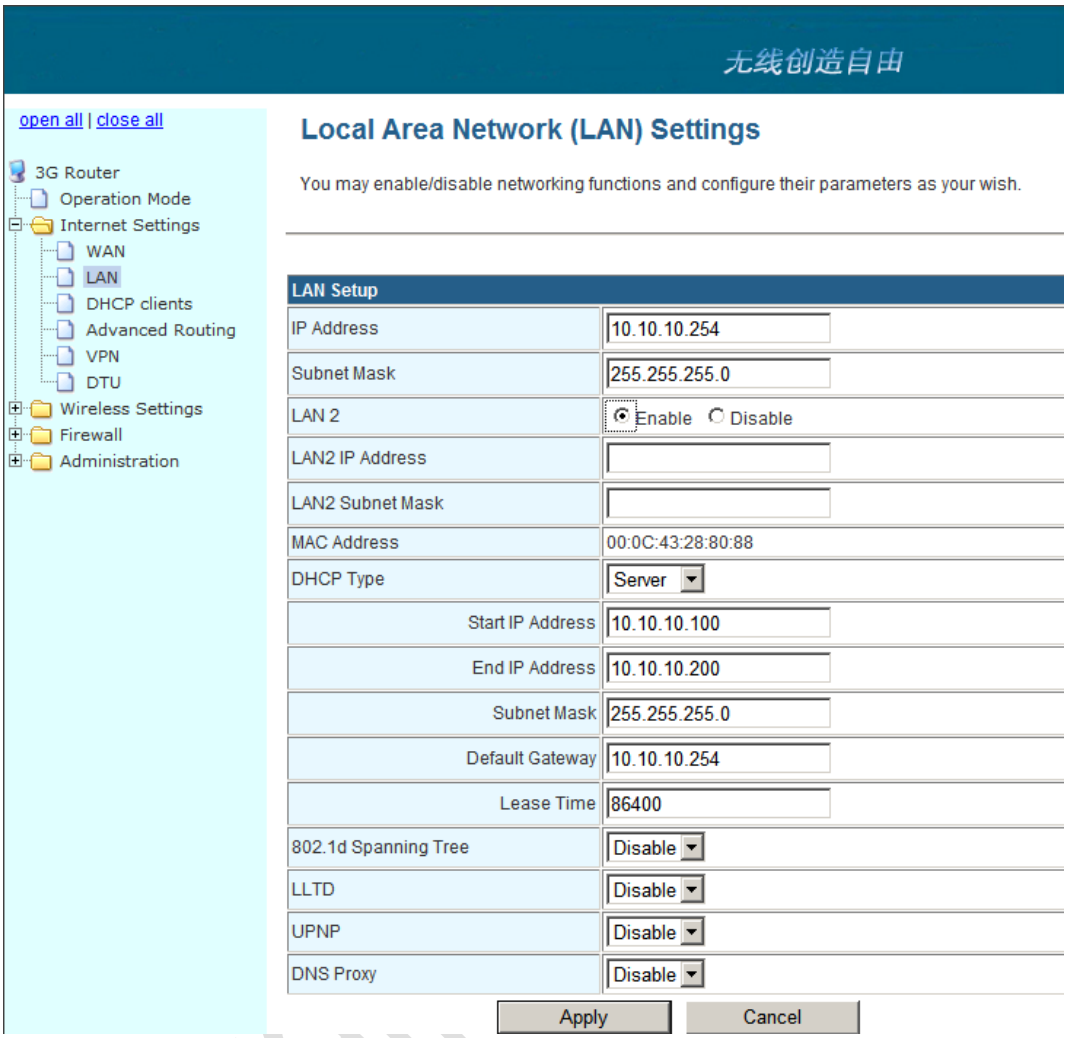
No.	MSP Name	Dialing Number	Initial Command String	User Name	Password	Local IP	Operation
○	CDMA	#777		CARD	CARD		Delete
○	WCDMA	*99#		wap	wap		Delete
○	TD-SCDMA	*99***1#		wap	wap		Delete
○	WCDMA1	*99#		wap	wap		Delete

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 R89 HSPA router to dial:

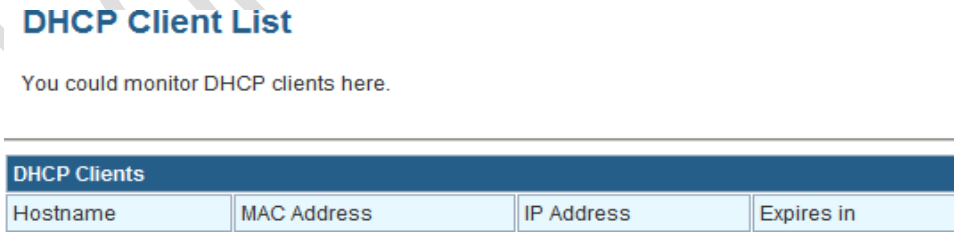


4.4 LAN Settings



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

4.5 DHCP Client



- List the Clients which gain IP address from DHCP .

4.6 Configure Static Routing

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

- Routing Table

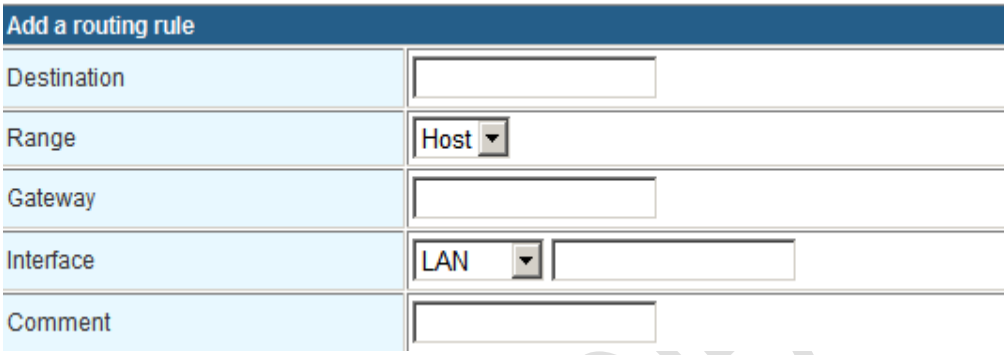
  This page shows the key routing table of this router.

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.



§ **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.

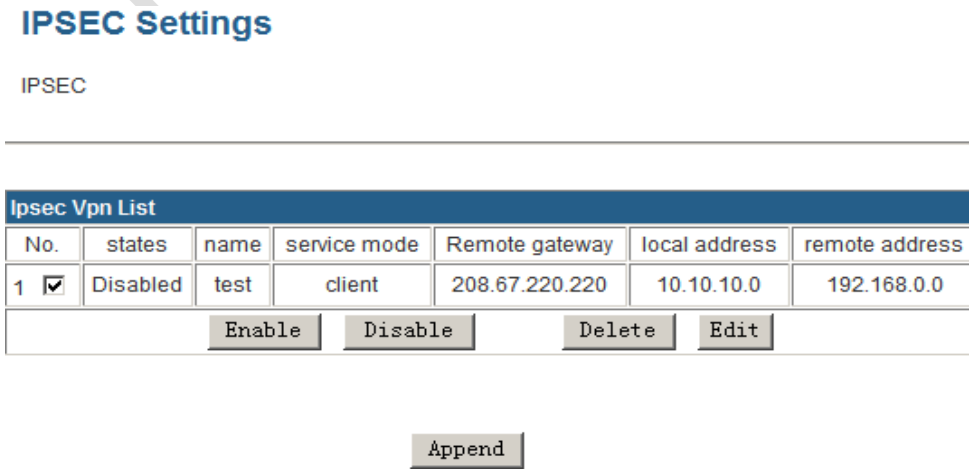
§ **Comment**: some notes

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.

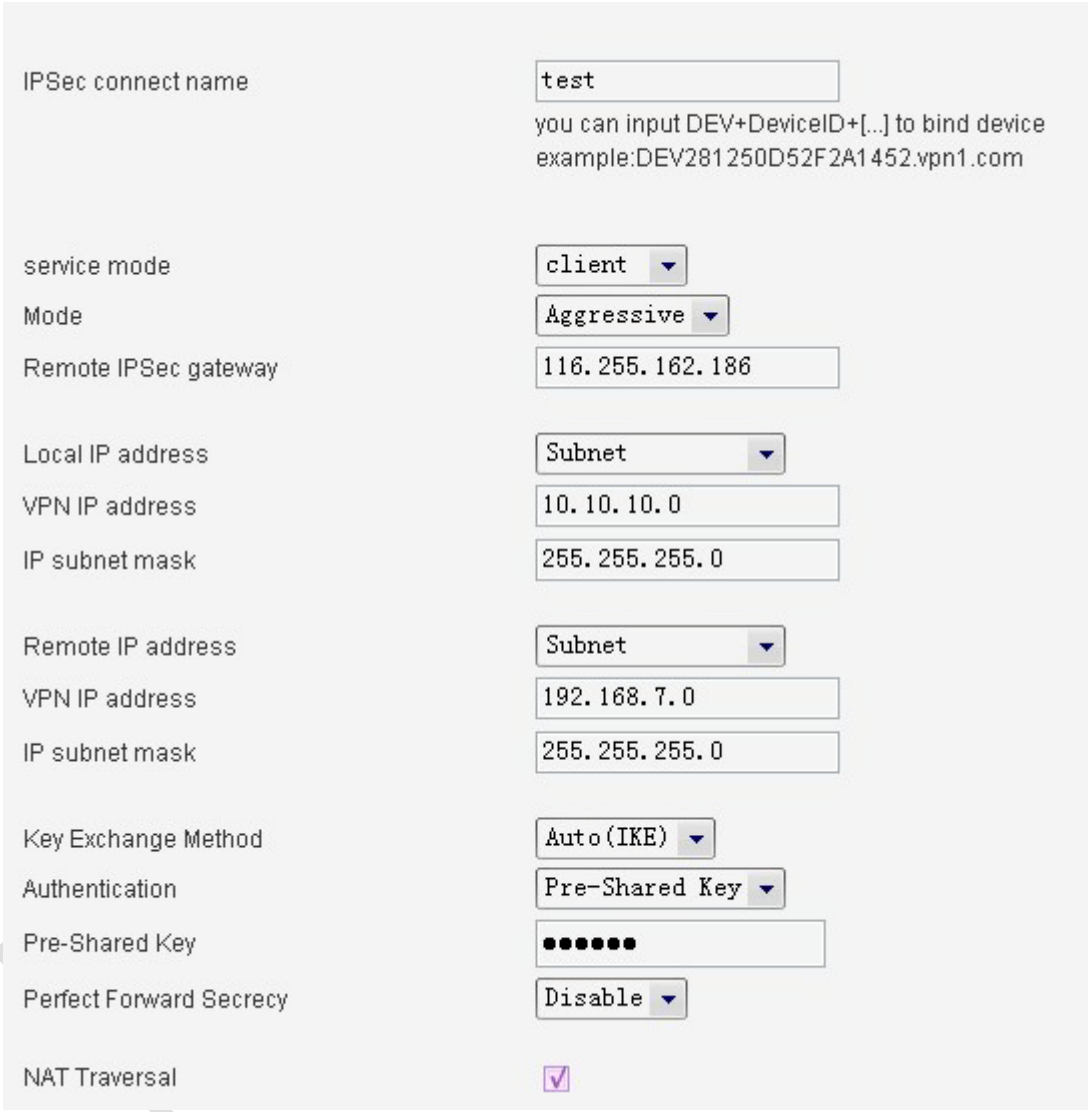
4.7 VPN

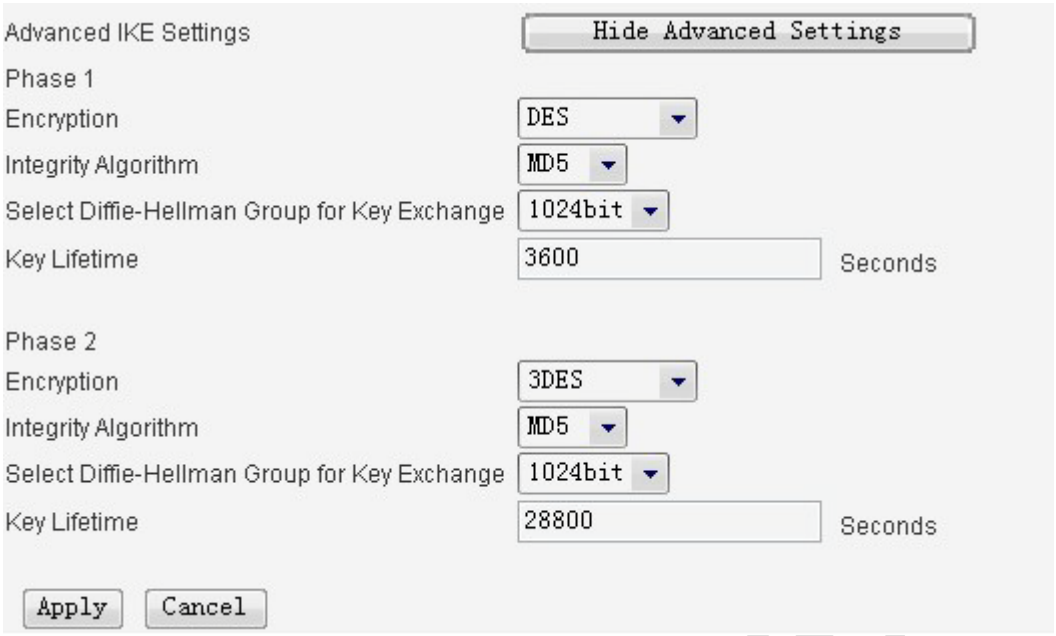
VPN means two or more routers are connected via VPN protocol. Make sure the routers are in different LAN network segment.



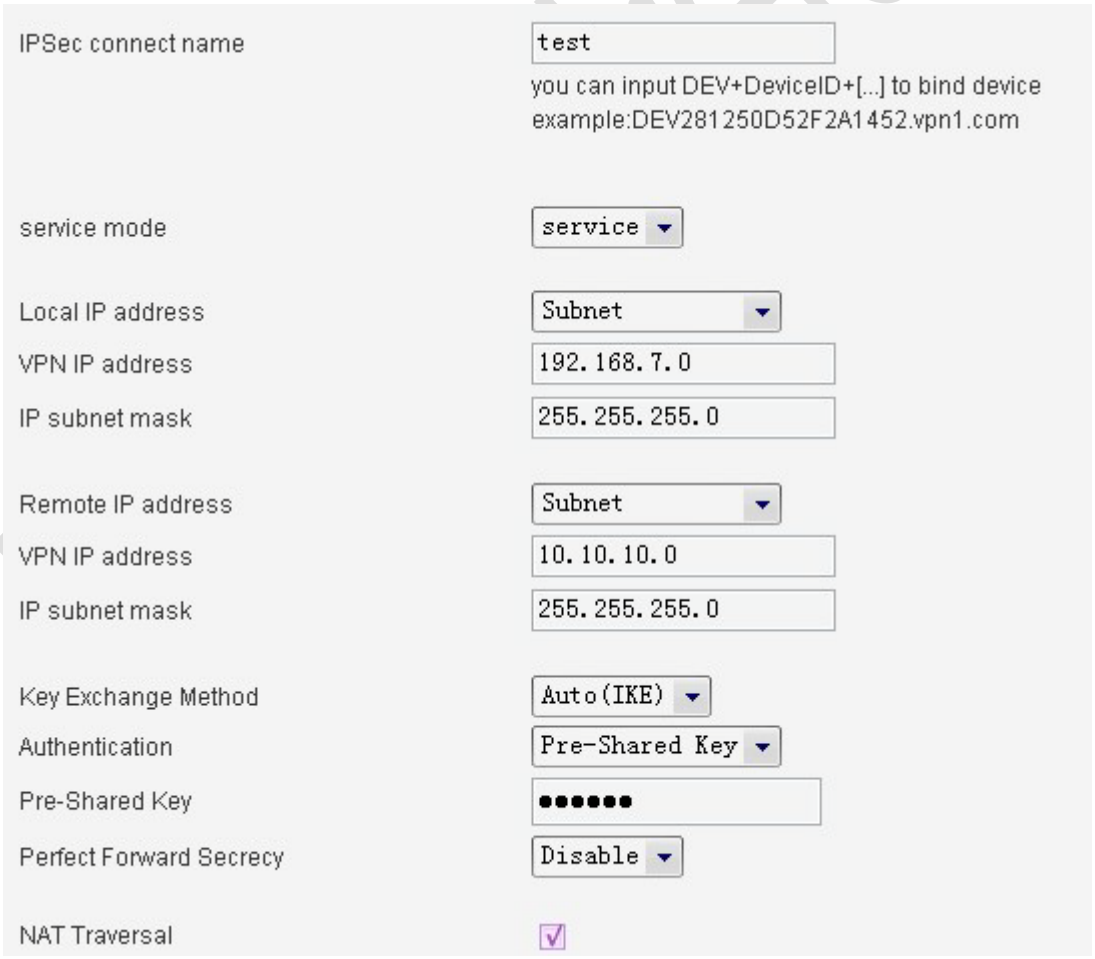
- How to config R8 as VPN client

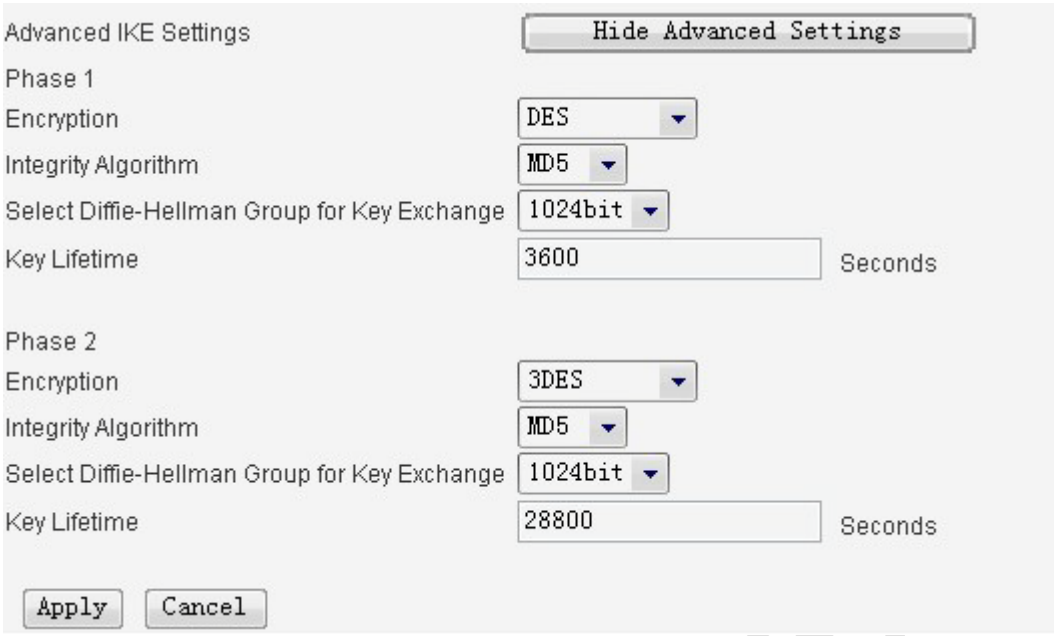
IPsec Name:make sure the name in client and server are same, we suggest to use domain name(111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name(DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find R8's ID in the Status interface.





- How to config R8 as VPN server





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 R8'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.

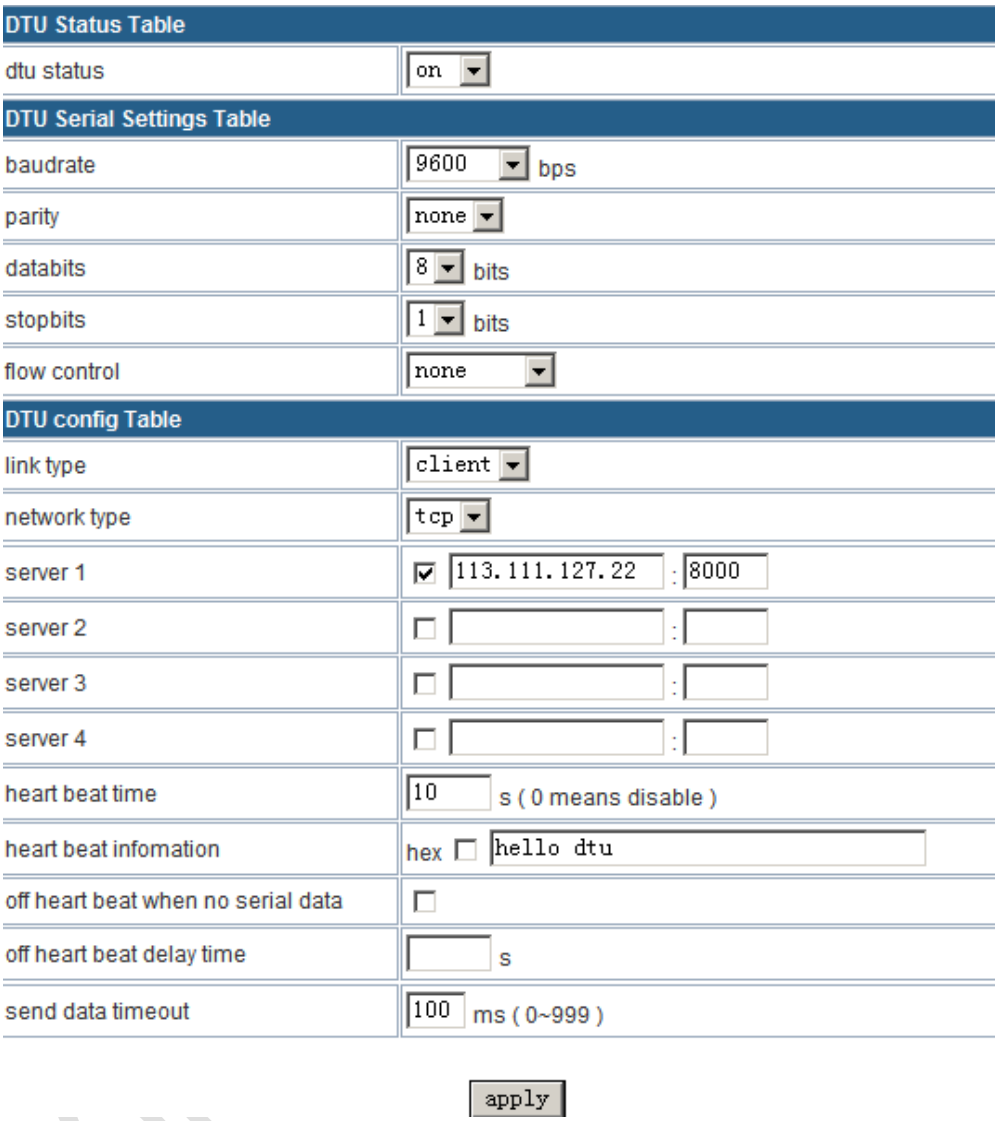
Local IP address: Fill LAN IP of this device. You can fill an IP or a network segment.

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 R8 and other brand VPN server.

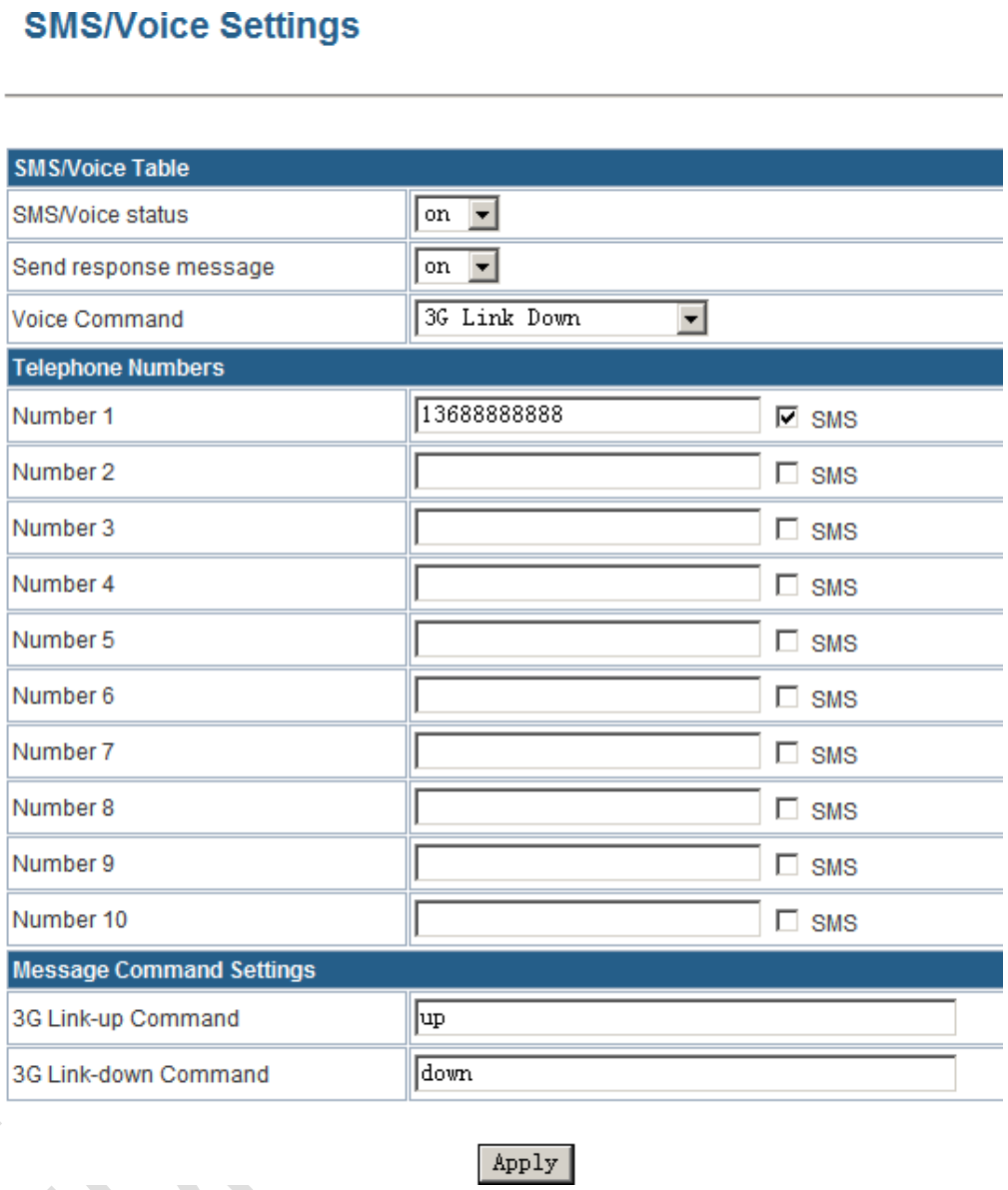
4.8 DTU Setings



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”.

4.9 SMS/Voice Control（it is only used for R4_3G/R8）



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

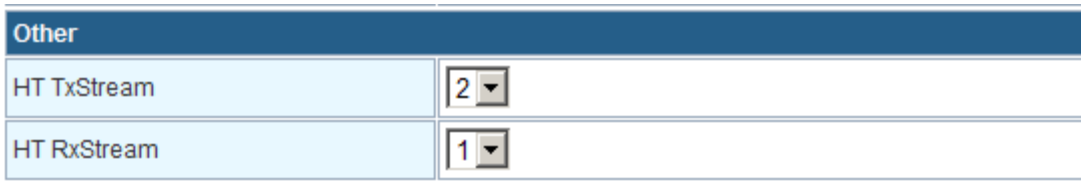
- **SMS/Voice status:** open(on) or close(off) this function.
- **Send respond SMS:** When the router receive a message, it will reply one piece if you choose"on"..
- **Voice Command:** 4 choices(close, 3G link up, 3G link down, 3G link up or down); perform the corresponding action according to what 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: SIM Card inserted in the router must support SMS or Voice.

4.10 Wireless settings(it is only used for R8)

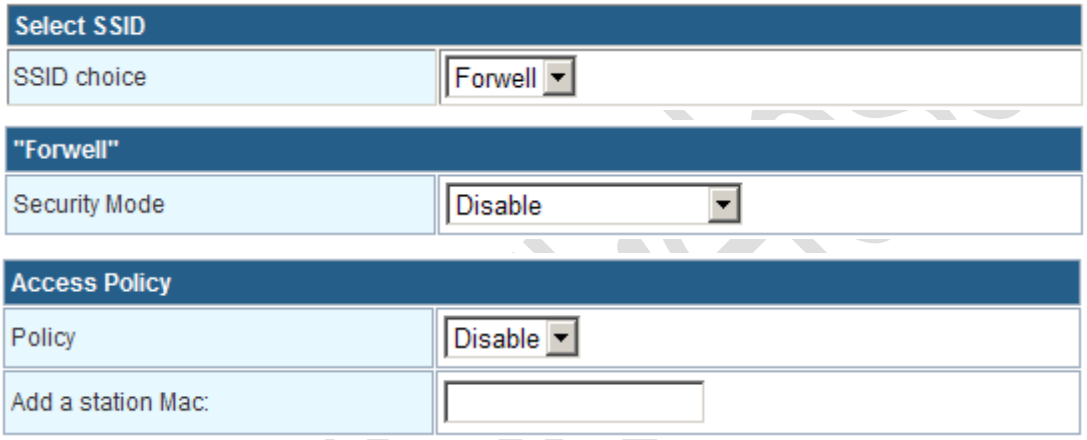
4.10.1 Basic Wireless Settings

Wireless Network	
Radio On/Off	RADIO OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	Forwell 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	00:10:18:01:05:34
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



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.

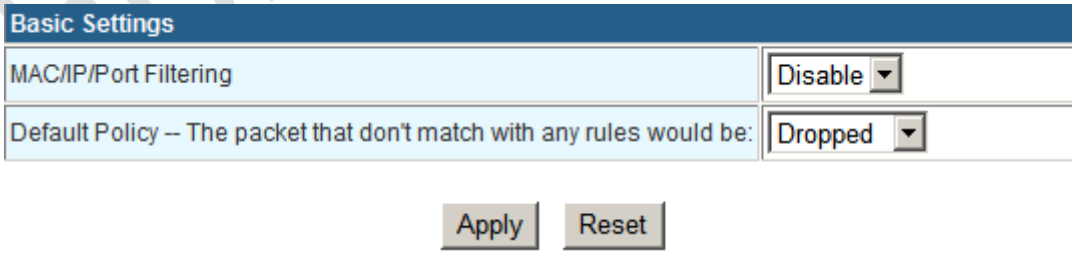
4.10.2 Wireless Security/Encryption Settings

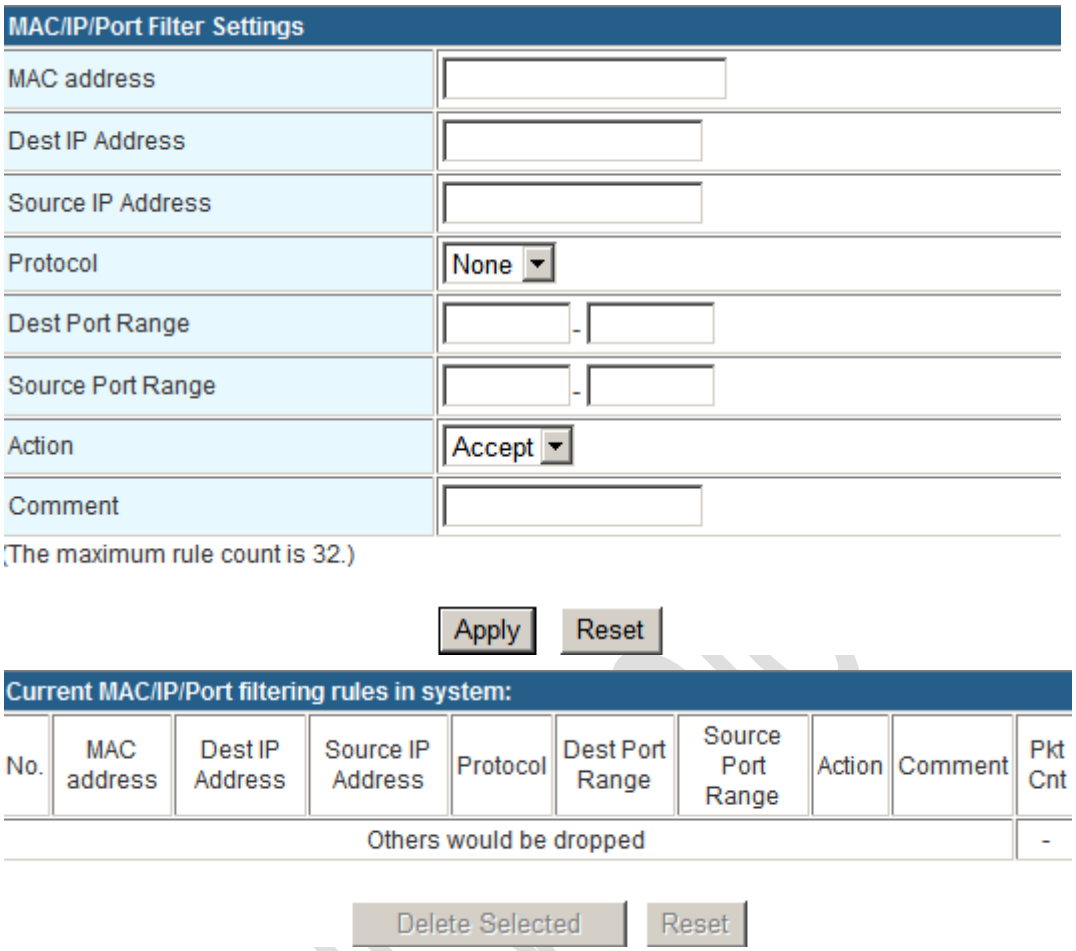


The SSID select from multi-SSID setting.
Security mode include: disable, open, share, wep auto, WPA, wpa-psk, wpa2, wpa2-psk, wpa-psk/wpa2-psk, wpa/wpa2, 802.1X.
Access policy: setting the MAC list for access or deny.

4.11 Firewall

4.11.1 MAC/IP/Port Filter Settings

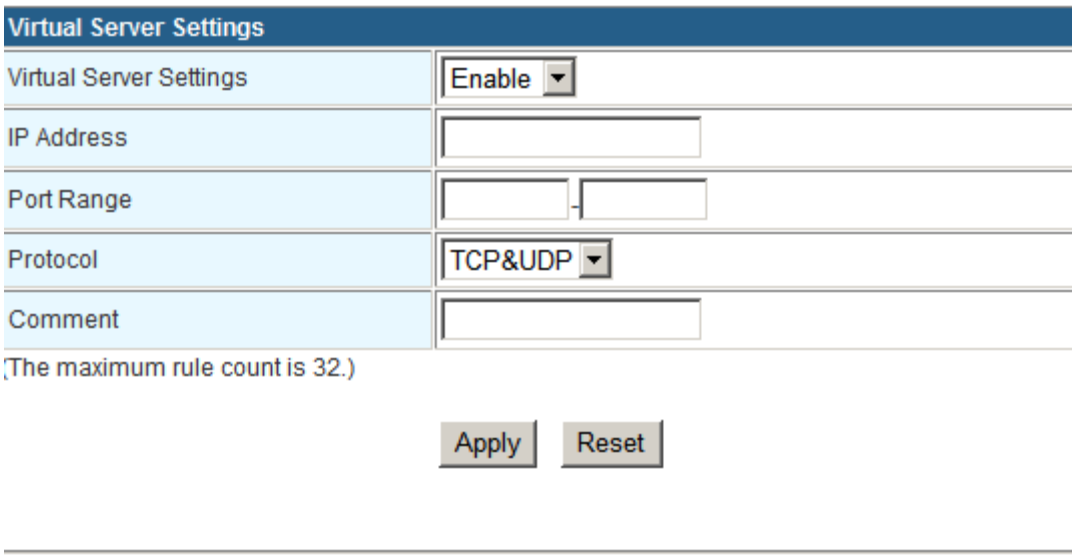


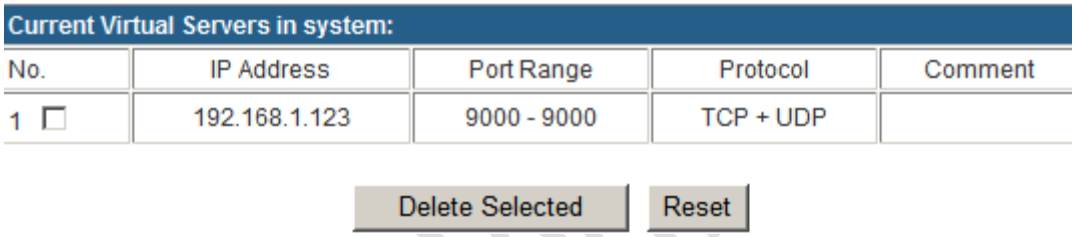


This section is mainly about MAC/IP/Port filter settings

- **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

4.11.2 Port Forwarding





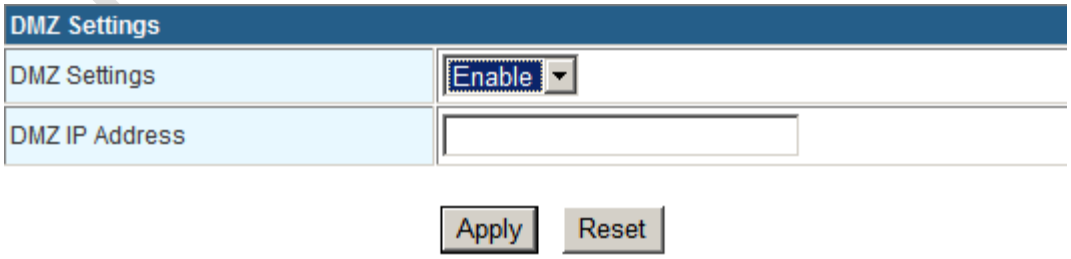
Port forwarding is the process that your router or firewall uses to sort the right kind of network data to the right port. Computers and routers use ports as a way to organize network data. Different types of data, such as web sites, file downloads, and online games, are each assigned a port number.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

PortRange: fill the Port of forwarding.

4.11.3 DMZ Host



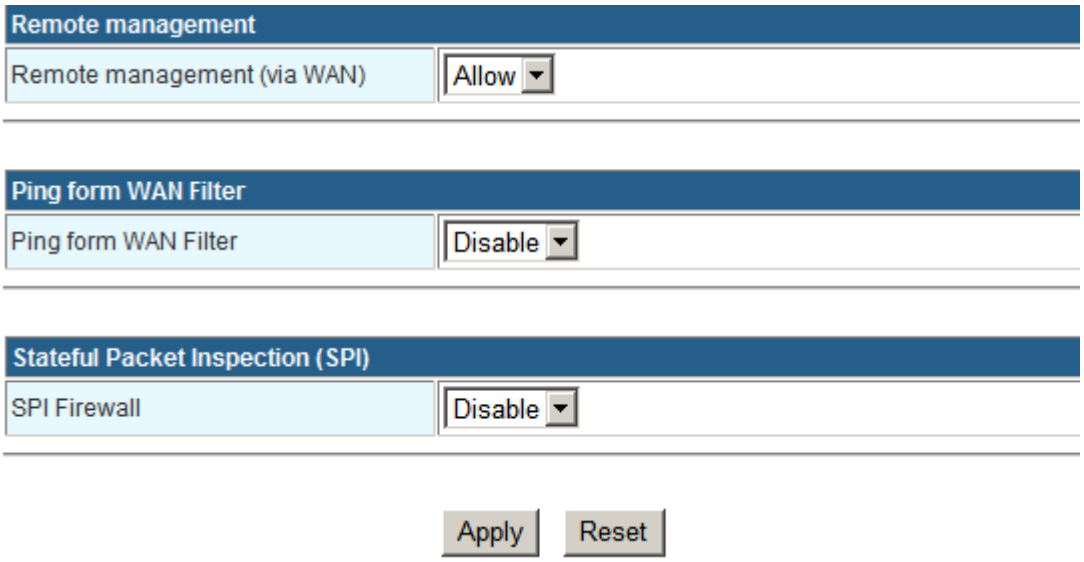
In computer networking, DMZ is a firewall configuration for securing local area networks (LANs).

- **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

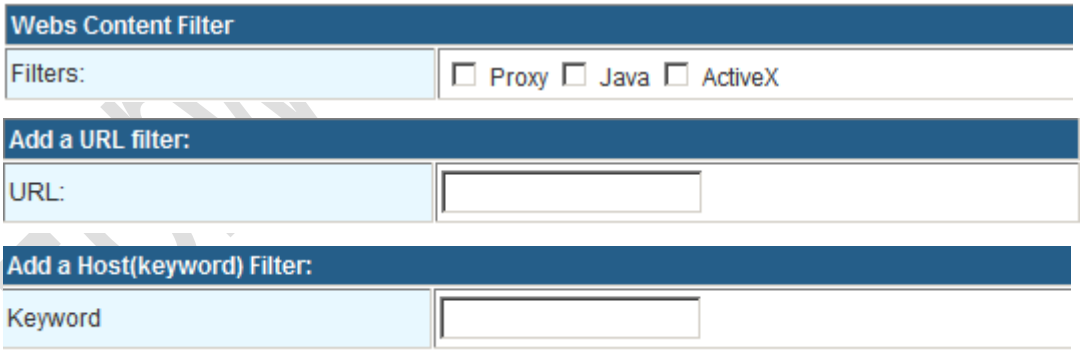
Note: When DMZ host is setted, the computer is completely exposed to the external network, the firewall will not influence this host.

4.11.4 System Security



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

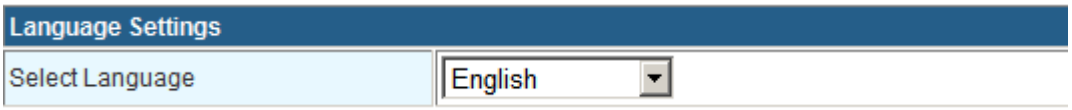
4.11.5 Content Filter Settings

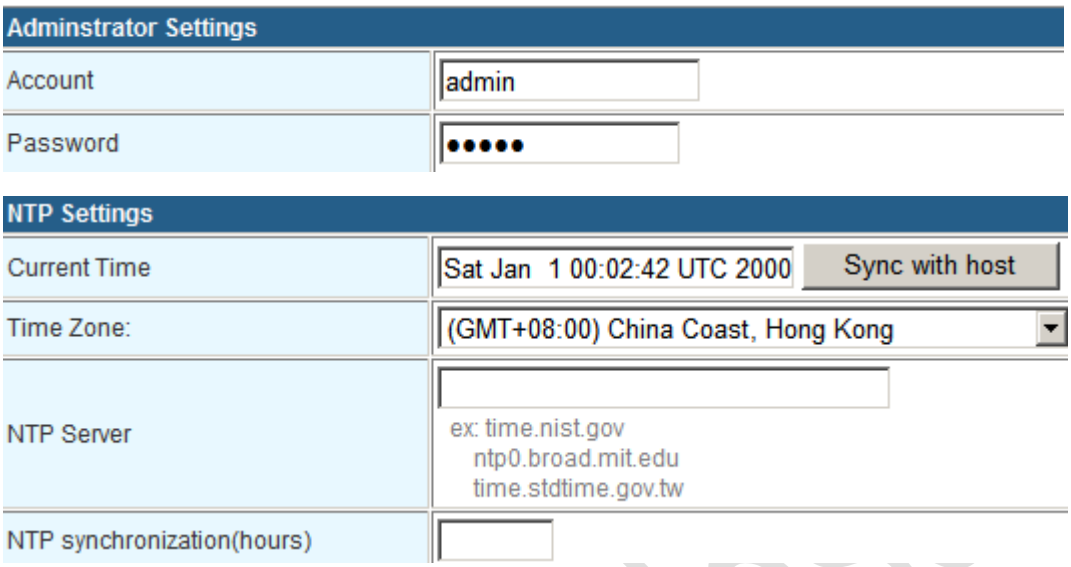


- You can setup Content Fillter to restrict the improper content access,including Webs Content Settings,URL filter and Host Filter.

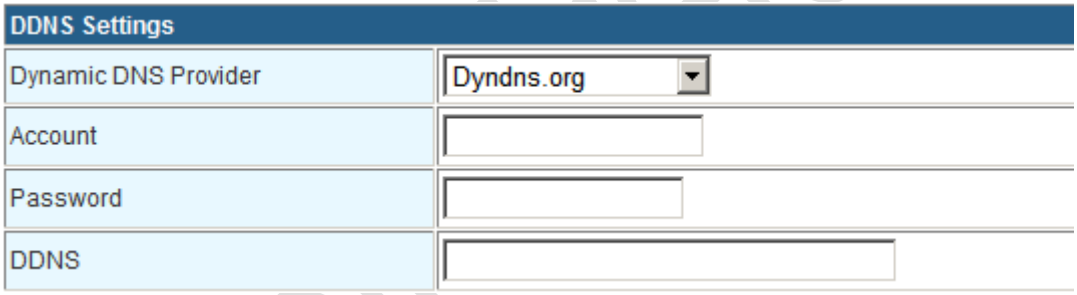
4.12 Administration

4.12.1 Management



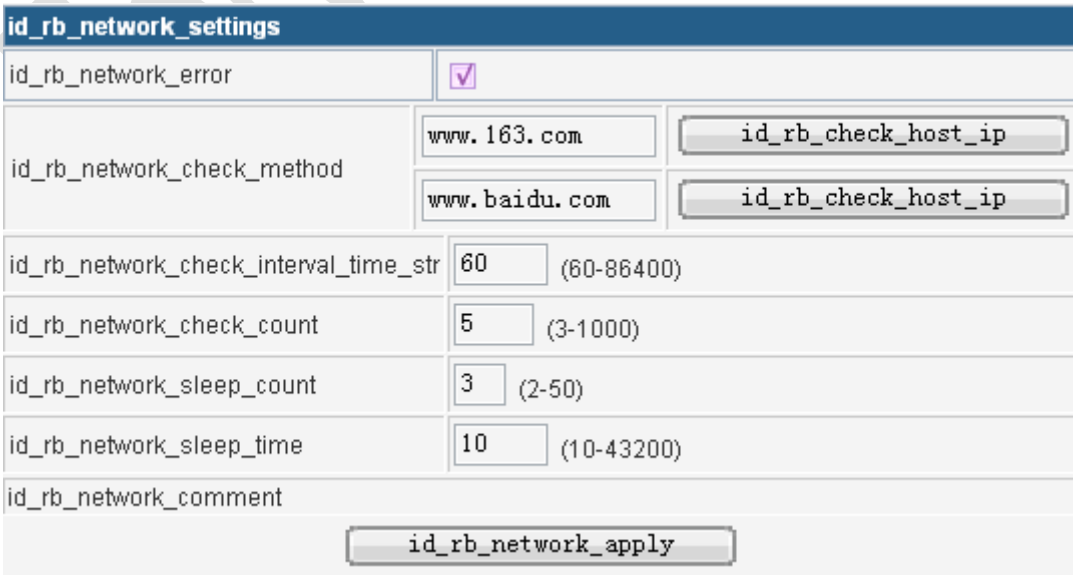


- Select Language
- Adminstrator Settings. The default both are admin.
- NTP Settings



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

4.12.2 Reboot

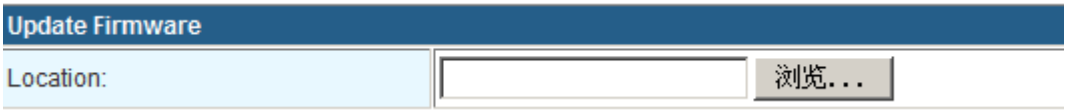


This function will detect the status of 3G by ping and complete the corresponding actions according to the ping result。

- 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.

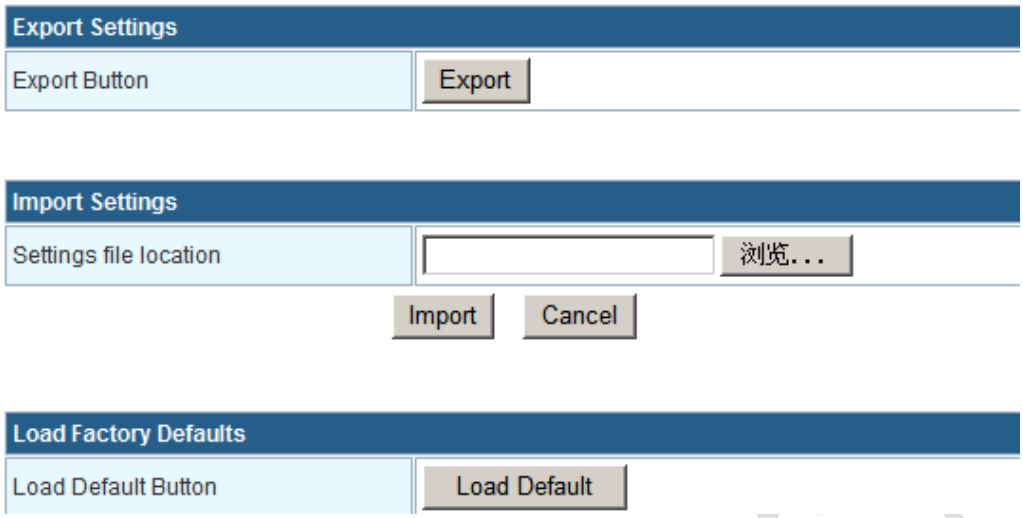
Note: This function will be only valid only in 3G permanent on-line and dialing according to the setting time,other states not.In setting ,firstly you must detect if the filled-in server domain name or IP is valid.

4.12.2 Upgrade Firmware



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

4.12.3 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

4.12.4 System state information

System Info	
Product Model	3G Router
Software Version	1.0.16 (Aug 3 2010)
Hardware Version	1.0.0
Device ID	280630562C080435
System Up Time	16 mins, 8 secs
Operation Mode	AP Client Mode
3G Info	
Signal Strength	open device error!
Attachment State	Automatic search
Local Network	
Local IP Address	10.10.10.254
Local Netmask	255.255.255.0
MAC Address	00:0C:43:28:80:6F
Internet Configurations	
Connected Type	DHCP
WAN IP Address	
Subnet Mask	
Default Gateway	
Primary Domain Name Server	
Secondary Domain Name Server	
MAC Address	00:0C:43:30:52:89

From the 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.

4.12.5 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.

4.12.6 System log

System Log

```
Jan  1 00:00:22 kernel: dwc_otg lm0: DWC OTG Controller
Jan  1 00:00:22 kernel: drivers/usb/core/inode.c: creating file 'devices'
Jan  1 00:00:22 kernel: drivers/usb/core/inode.c: creating file '001'
Jan  1 00:00:22 kernel: dwc_otg lm0: new USB bus registered, assigned bus
Jan  1 00:00:22 kernel: dwc_otg lm0: irq 18, io mem 0x00000000
Jan  1 00:00:22 kernel: DWC_otg: Init: Port Power? op_state=1
Jan  1 00:00:22 kernel: DWC_otg: Init: Power Port (0)
Jan  1 00:00:22 kernel: usb usb1: default language 0x0409
Jan  1 00:00:22 kernel: usb usb1: new device strings: Mfr=3, Product=2, S
Jan  1 00:00:22 kernel: usb usb1: Product: DWC OTG Controller
Jan  1 00:00:22 kernel: usb usb1: Manufacturer: Linux 2.6.21 dwc_otg_hcd
Jan  1 00:00:22 kernel: usb usb1: SerialNumber: lm0
Jan  1 00:00:22 kernel: usb usb1: usb_probe_device
Jan  1 00:00:22 kernel: usb usb1: configuration #1 chosen from 1 choice
Jan  1 00:00:22 kernel: usb usb1: adding 1-0:1.0 (config #1, interface 0)
Jan  1 00:00:22 kernel: hub 1-0:1.0: usb_probe_interface
Jan  1 00:00:22 kernel: hub 1-0:1.0: usb_probe_interface - got id
Jan  1 00:00:22 kernel: hub 1-0:1.0: USB hub found
Jan  1 00:00:22 kernel: hub 1-0:1.0: 1 port detected
Jan  1 00:00:22 kernel: hub 1-0:1.0: standalone hub
Jan  1 00:00:22 kernel: hub 1-0:1.0: ganged power switching
Jan  1 00:00:22 kernel: hub 1-0:1.0: individual port over-current protect
Jan  1 00:00:22 kernel: hub 1-0:1.0: Single TT
Jan  1 00:00:22 kernel: hub 1-0:1.0: TT requires at most 8 FS bit times (
Jan  1 00:00:22 kernel: hub 1-0:1.0: power on to power good time: 2ms
Jan  1 00:00:22 kernel: hub 1-0:1.0: local power source is good
Jan  1 00:00:22 kernel: hub 1-0:1.0: enabling power on all ports
Jan  1 00:00:22 kernel: drivers/usb/core/inode.c: creating file '001'
Jan  1 00:00:22 kernel: nf_conntrack version 0.5.0 (256 buckets, 2048 max
Jan  1 00:00:22 kernel: IPv4 over IPv4 tunneling driver
```

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