User Manual

---Apply to WL-R100/R200/R210/R520 Series 4G/3G Router

V3.3

http://www.wlink-tech.com

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

Version History

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

Data	Document Version	Firmware Version	Description
2022-1-6	V3.3	Rx_4.3.4.5_22-01-06.trx	Improved Serial App, reset default, M2M connection. Added MTU Setting.
2021-4-2	V3.1	Rx_4.3.4.5_21-03-22.trx	Improved the scheduled reboot
2020-8-1	V3.0	Rx_4.3.4.5_20-07-29.trx	Upgrade UI from 2.0 to 3.0

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1 Hardware Introduction

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

1.1 WL-Rxx Family List

Model	Appearance	SIM Card	LAN	WAN	Wi-Fi	Serial Port	I/O	Dimension(mm)
WL-R100		1	1	N/A	N/A	1	N/A	78.5x59x23.5
WL-R200		1	2	Optional	Optional	N/A	N/A	103x73.5x25.5
WL-R210		2	2	1	Default	1	2*DI 1*DO	102x100x42
WL-R520		2	4	1	Default	1	N/A	176x105x25

1.2 LED Indicator

1) WL-R100/R200/R520 LED Status

silk-screen	color	status	Indication
NET	Red		Pool Signal
	Green		Strong Signal
		Solid light	4G Online
		Slow Blink (1.5s)	3G Online
		Quick Blink (0.5s)	Offline
LAN(WAN)	Green	Solid light	Plugged

	Green	Blinking	Data Sending
	Green	Dark	Unplugged
PWR	Green	Solid light	Router OS is running.

2) WL-R210 LED Status

silk-screen	status		Indication
Signal	Signal LED	Solid Light	LED1 indicates signal is Pool (CSQ0~10) LED2 indicates signal is good (CSQ11~19) LED3 indicates signal is strong (CSQ20~31)
	LED 1	Quick Blink	Offline
		Solid Light	4G Online
		Slow Blink	3G Online
PWR	Solid Light		System power operation.
WLAN	Solid light		WLAN enable, but no data communication.
	Quick Blinking		Data Send
	Dark		WLAN disable
ERR	Dark		System operation and LTE/3G online.
	Solid Light (Red)		System fail indicator such as SIM card/ module fail.
LAN(WAN)	Green	Solid light	Plugged
	Green	Blinking	Data in transmitting.
	Green	Dark	Unplugged

1.3 Serial Port Connection

The serial port supports alternative RS232/RS485 port, and RS232 port as default. It might be requested serial port for RS485 when place order. The serial port feature supports TCP/UDP client/server as optional, also supports Modbus protocol. You may check the feature in Serial App of Advanced Network UI.

CAUTION

WL-R200 series doesn't support serial port feature in hardware as default.

1.4 Power Supply

Voltage input range: +7.5~32VDC. (Extended models: 7.5~ 48VDC)

1.5 Review

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

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

Notice:

Step 1 Check the antenna connection.

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

Step 3 Power on the industrial Router

----END

2 Router Configuration

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

2.1 Local Configure

The router supports to be configured by local Ethernet port, you could specify a static IP or set as DHCP. The default IP address is 192.168.1.1, subnet mask is 255.255.255.0, please refer to following.

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

Figure 2-1 Network Connection

Step 2 Obtain a IP address automatically or set up IP address,192.168.1.xxx(XXX can be any number between 2～254)

Step 3 Run an Internet Explorer and visit “http://192.168.1.1/”, to enter identify page.

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

Figure 2-2 User Identify Interface

----END

2.2 Status

Check routers information such as status, traffic Stats and device list after login router. Especially, suggest change the password according to the prompts because of security requirement.

The UI will display" already changed login password successfully" after router reboot.

2.3 Overview

The overview GUI will be display router system information, Ethernet ports status, VPN connection status, LAN information, 4G connection information and WLAN information,

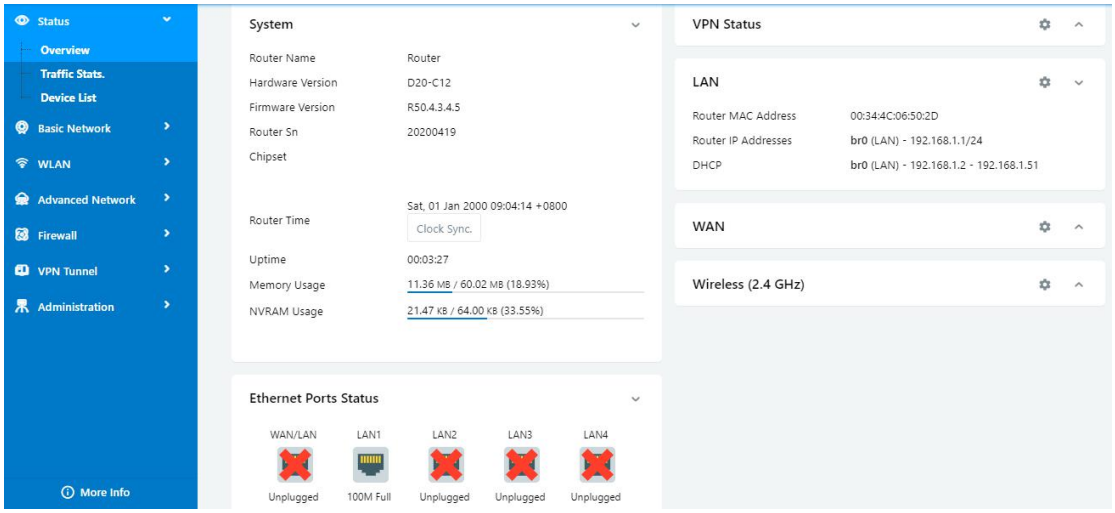


Figure 2-3 Router Status GUI

2.4 Traffic Stats.

Click Status->Traffic Stats. to enter the traffic stats.GUI.to check Cellular/WAN traffic in real-time.

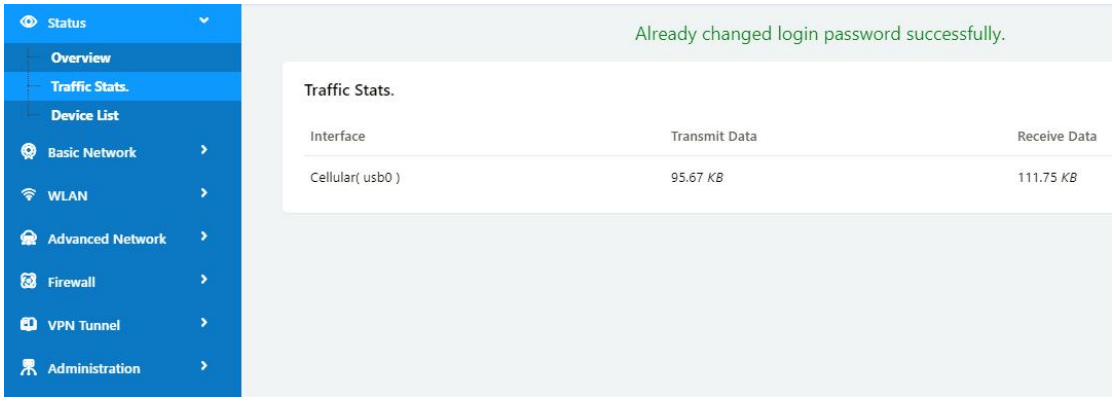


Figure 2-4 Traffic Stats. GUI

2.5 Device List

Click Status->Device List to enter the device list GUI.to check the connected devices information in the list.

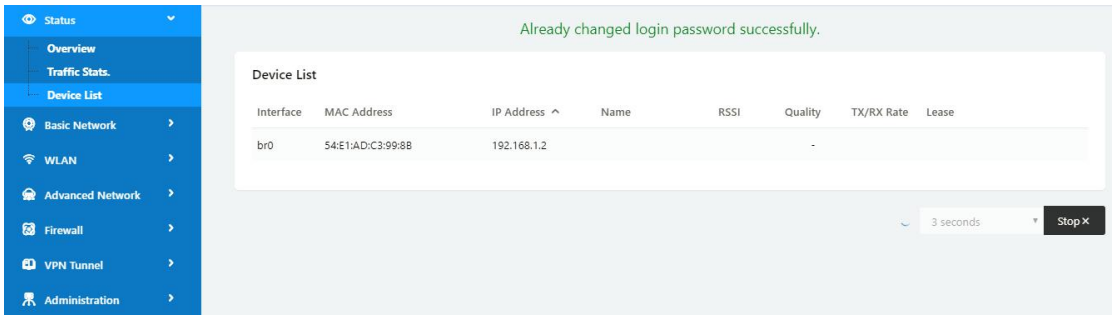


Figure 2-5 Device List GUI

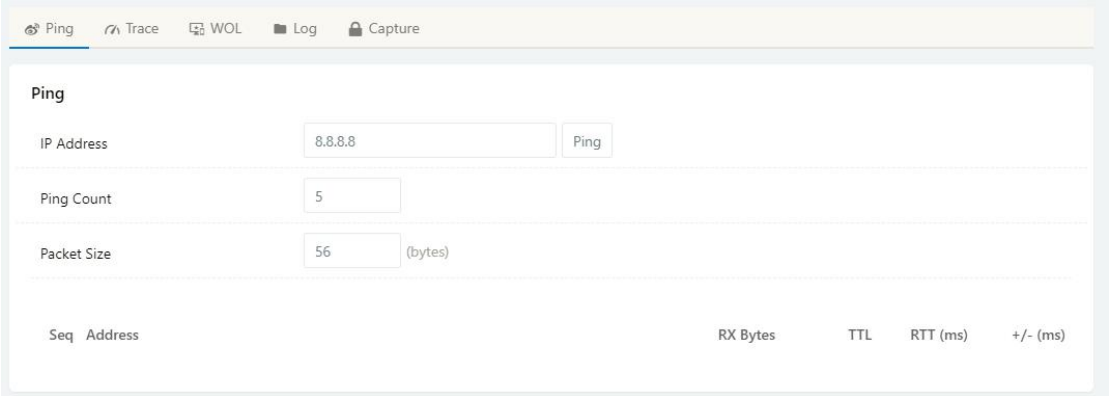
2.6 Tool Column

Figure 2-6 Tool Column GUI

2.6.1 Tools

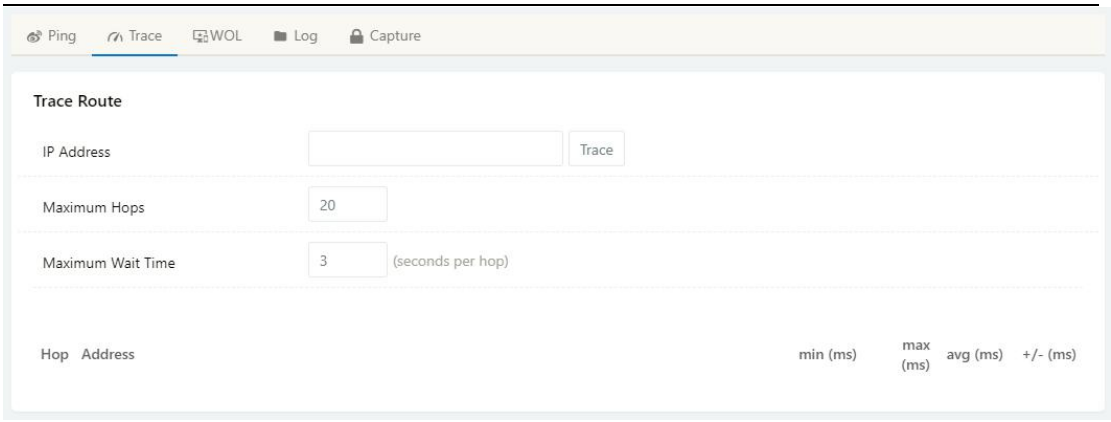
2.6.1.1 Ping

Click Tools->Ping to enter ping test GUI. Used to test the reachability of a host on an Internet IP network and to measure the round-trip time for messages sent from the originating host to a destination server.



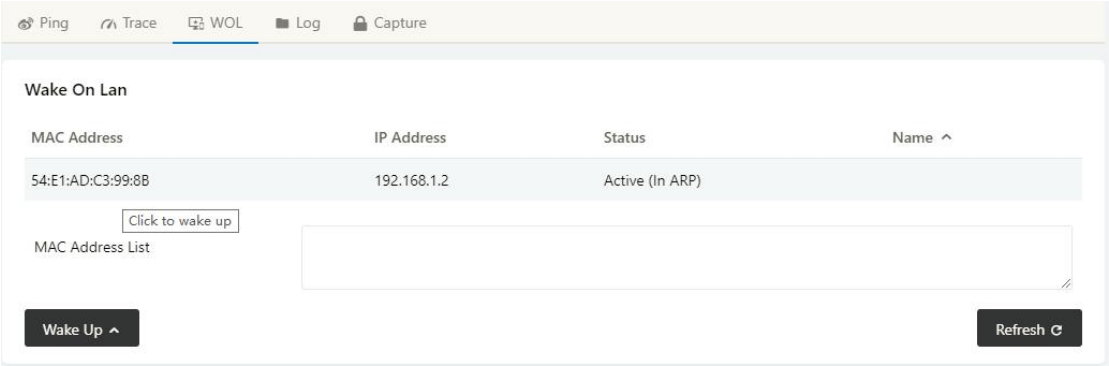
2.6.1.2 Trace

Click Tools->Trace to enter trace test GUI. diagnostic tool for displaying the routeand measuring transit delays of packets across an Internet IP network.



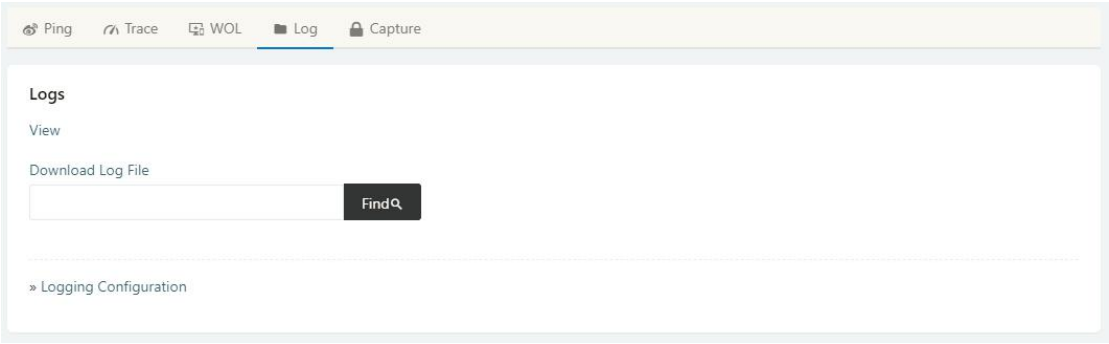
2.6.1.3 WOL

Click Tools-> WOL to enter WOL(Wake On Lan) GUI. Used to wake up those connected devices via WOL protocol. Clock left mouse button to wake up the device.



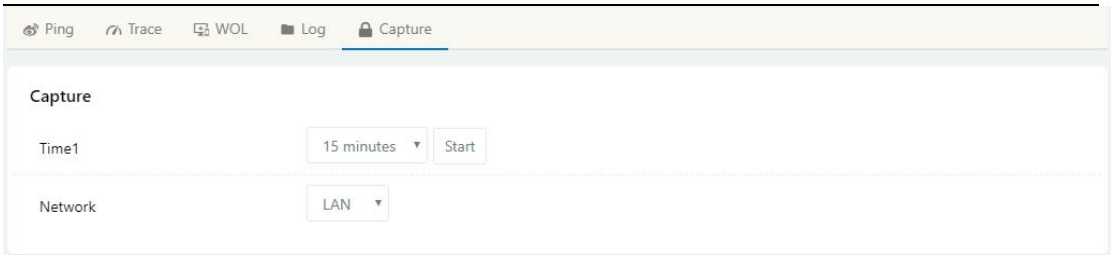
2.6.1.4 Log

Click Tools-> Log to enter Log GUI. Use to check logs in GUI, download GUI and send logs to server.



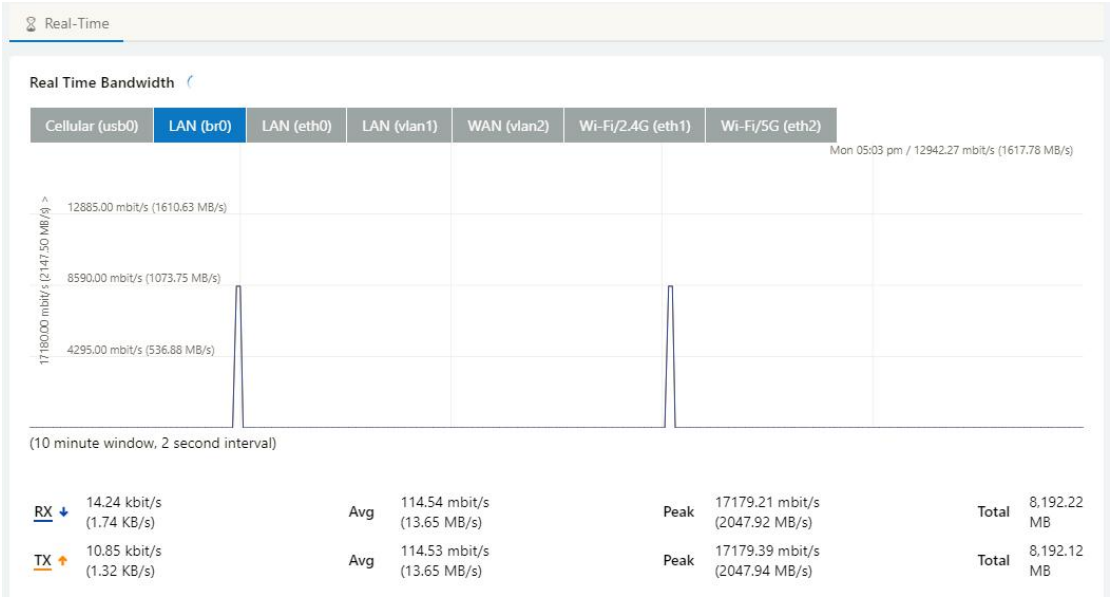
2.6.1.5 Capture

Click Tools-> Capture to enter capture data GUI. Use to capture LAN/WAN data packet to analyse what happen in the router.



2.6.2 Bandwidth

Click Bandwidth to enter bandwidth graphic GUI. Used to check cellular/LAN/Wi-Fi real-time bandwidth.



2.6.3 System

Click system to choose software reboot, hardware reboot and logout GUI.

2.7 Basic Network

2.7.1 WAN Setting

Step 1 Basic Network>WAN to enter below interface.

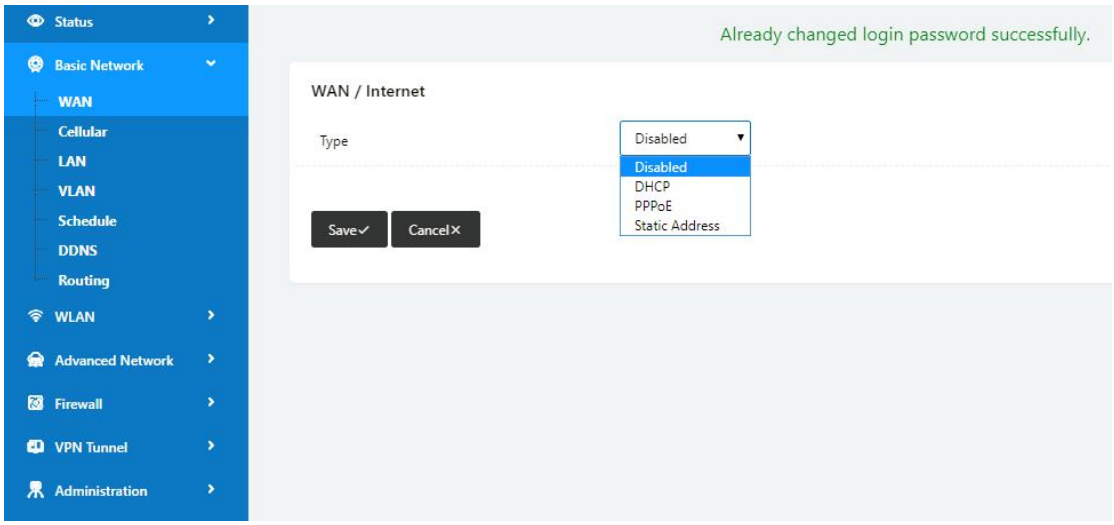


Table 2-1 WAN Setting Instruction

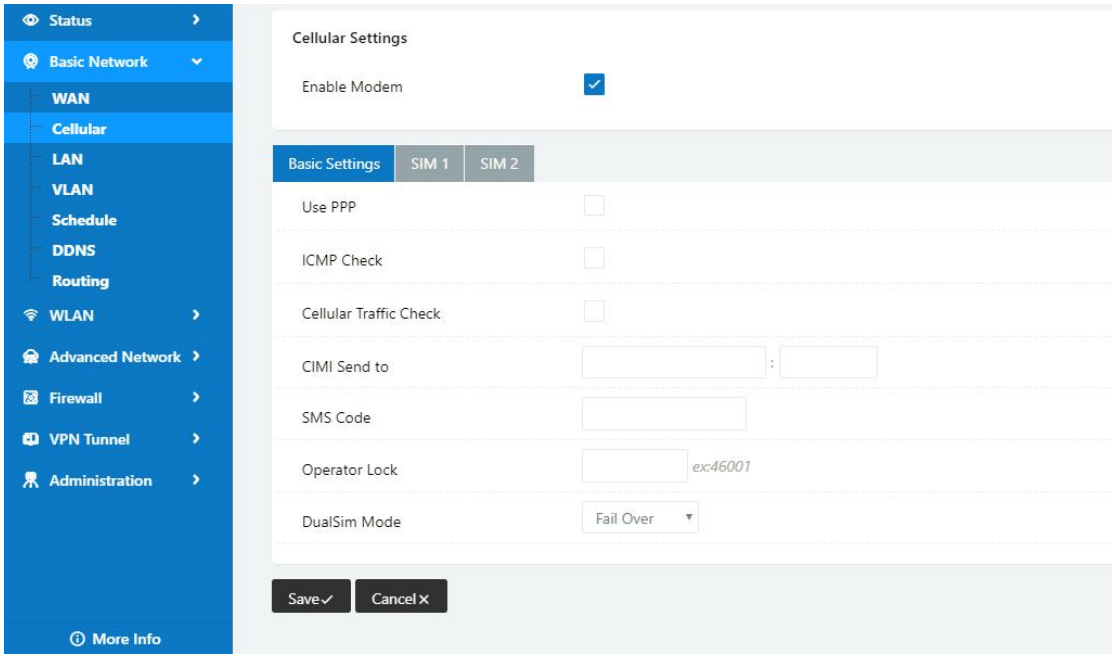
Parameter	Instruction
Type	Support DHCP, PPPoE, Static IP address

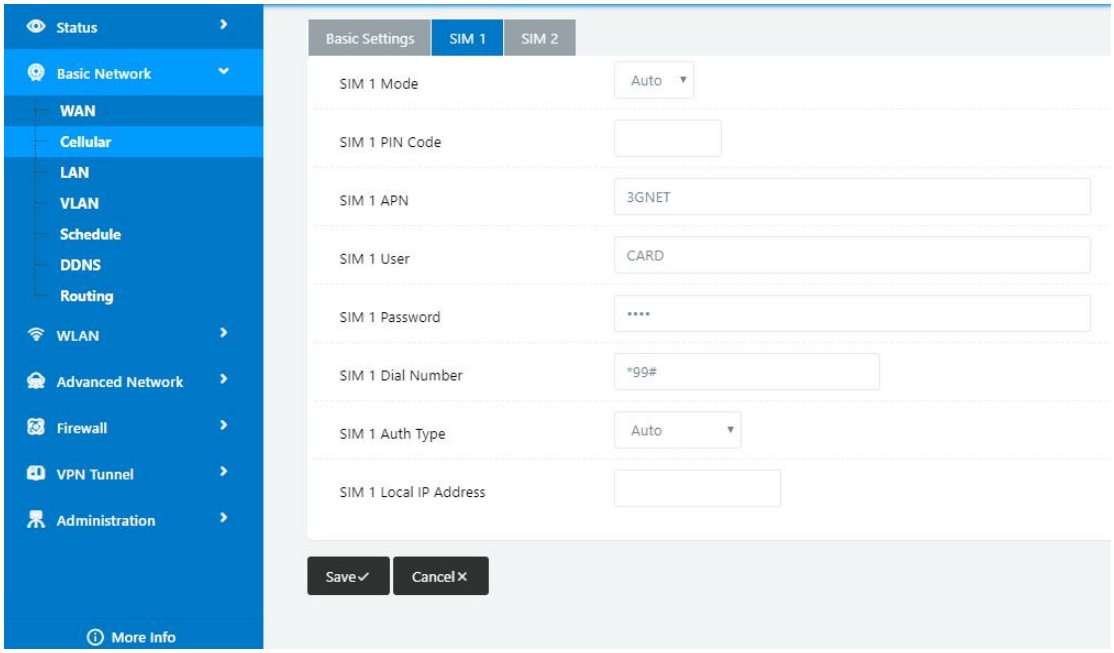
Step 2 After setting, please click “save” to finish, the device will reboot.

----End

2.7.2 Cellular Setting

Step 1 Basic Network-> Cellular, you can modify relevant parameter according to the application.





CAUTION

WL-R100/R200 supports single SIM.
WL-R520 supports dual-SIM as optional.
WL-R210 supports dual-SIM as default.

Table 2-2 Cellular Setting Instruction

Parameter	Instruction
Enable Modem	Enable/Disable 4G mode.
Use PPP	ECM dialup as default. PPP optional.
ICMP check	If enable ICMP check and setup a reachable IP address as destination IP, the router will reconnect/reboot once ICMP check failed.
Cellular Traffic Check	The router will reconnect/reboot once there's no Rx/Tx data.
CIMI Send to	Send CIMI to a defined IP and port by TCP protocol.
SMS Code	Remote control the router by SMS. Only the configured SMS code will work.
Operator Lock	Lock a specified operator for the router by MCC/MNC code.
Dual SIM Mode	【Fail Over】Two SIM cards mutual backup. Once SIM1 failed, it'll switch to SIM2 and work on SIM2, and vice versa.

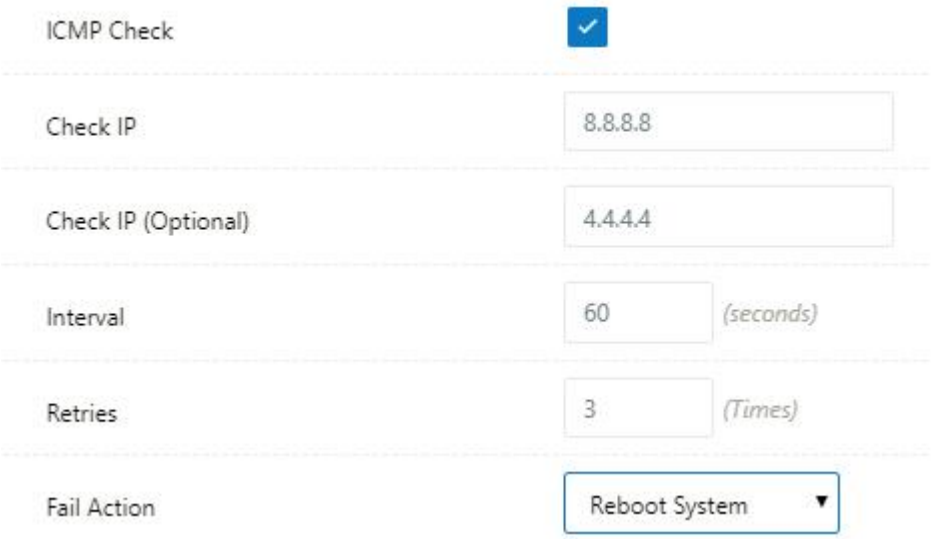
Parameter	Instruction
	【SIM1 Only】Only SIM1 works. 【SIM2 Only】Only SIM2 works. 【Backup】SIM1 is the primary SIM. Once SIM1 failed, it'll switch to SIM2 and work on SIM2 for a specified period of time, then it switches back to SIM1.
Connect Mode	【Auto】The router will automatically connect to 3G/4G networks and give priority to 4G. 【LTE】Router will connect to 4G only. 【3G】Router will connect to 3G only.
Pin Code	Some SIM cards are locked with a Personal Identification Number (PIN) code in case they are lost or stolen.
APN	APN is provided by local ISP, usually CDMA/EVDO networks do not need this parameter.
User	SIM card user name is provided by ISP
Password	SIM card password is provided by ISP
Auth. Type	Auto/PAP/Chap/MS-Chap/MS-Chapv2 authentication optional.
SIM Local IP Address	Fix SIM IP. The feature is available if carrier can provide this service.

NOTE ICMP Check and Cellular Traffic Check are alternative.

【ICMP Check】

Enable ICMP, Router will automatically check whether the defined IP address is reachable per 60s. If the IP address is unreachable and ICMP check is timeout at the first time, it will check 2 times every 3 seconds. If the third time is still failed, the router will redial.

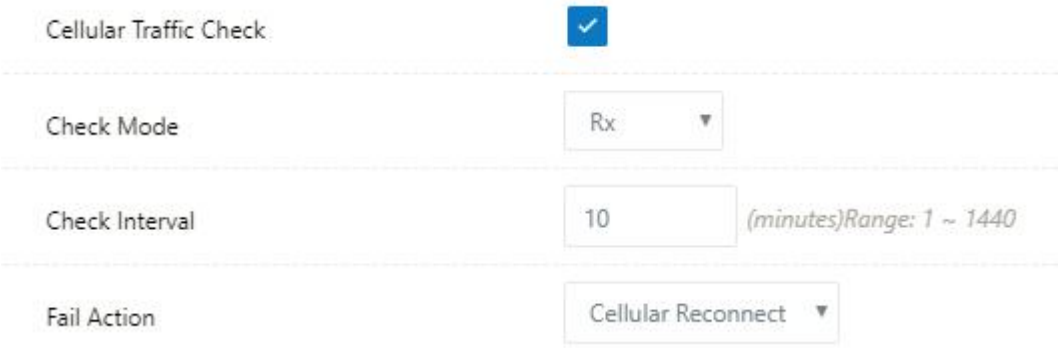
The ICMP Check IP is a public IP or company server IP address.



【Cellular Traffic Check】

【Check Mode】there are Rx(Receive), Tx(Transmission) and Rx/Tx check modes.

【Rx】Router will check the 3G/LTE cellular receiver traffic. If no receiver traffic within the defined check interval, the router will implement the specified action reconnect or reboot.



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

----End

2.7.3 LAN Setting

Step 1 Basic Network>LAN to enter below interface

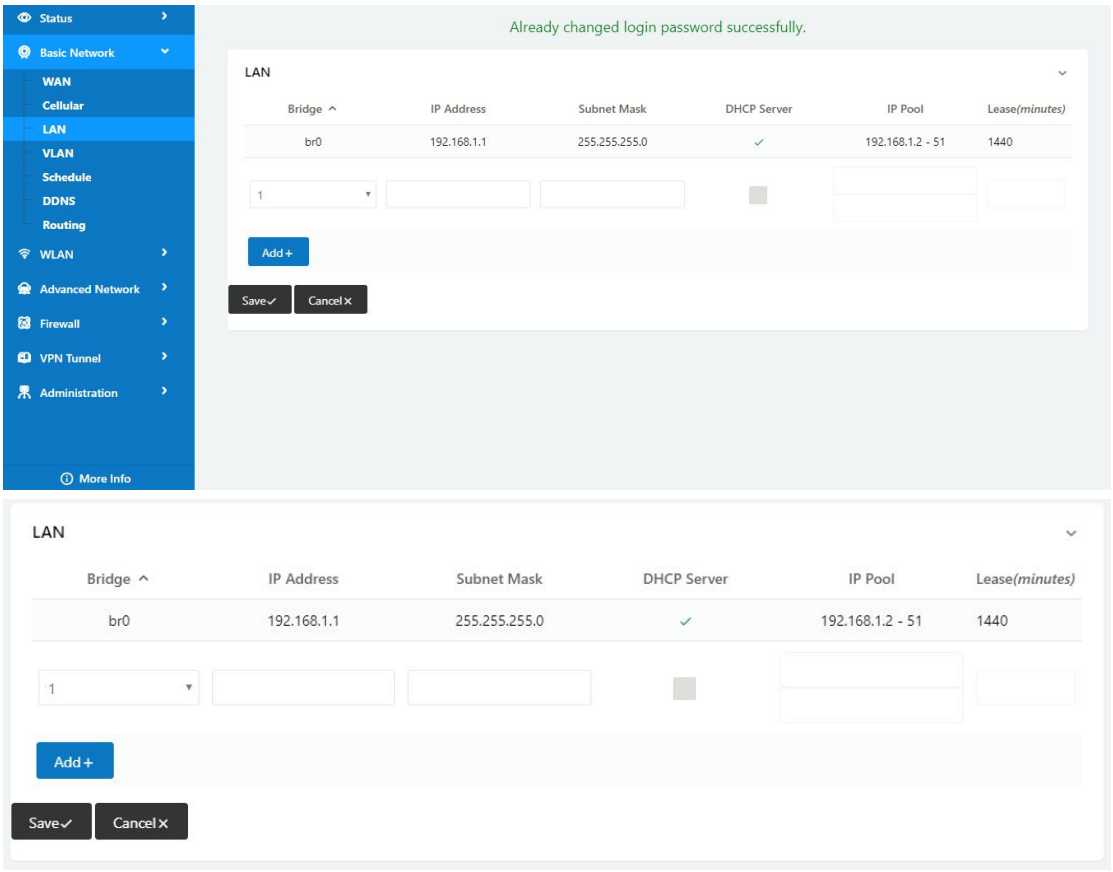


Table 2-3 LAN Setting Instruction

Parameter	Instruction
Bridge	Supports 4 LAN IP address for br0 to br3 interface. If need to support VLAN, please go to VLAN GUI.
Router IP Address	Router IP address, default IP is 192.168.1.1
Subnet Mask	Router subnet mask, default mask is 255.255.255.0
DHCP	Dynamic allocation IP service, after enable, it will show the IP address range and options of lease
IP Pool	IP address range within LAN
Lease	The valid time, unit as minute
Add	Add LAN IP address, supports 4 LAN IP addresses.

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

----End

2.7.4 **VLAN**

Step 1 Basic Network->VLAN to enter the VLAN setting page.

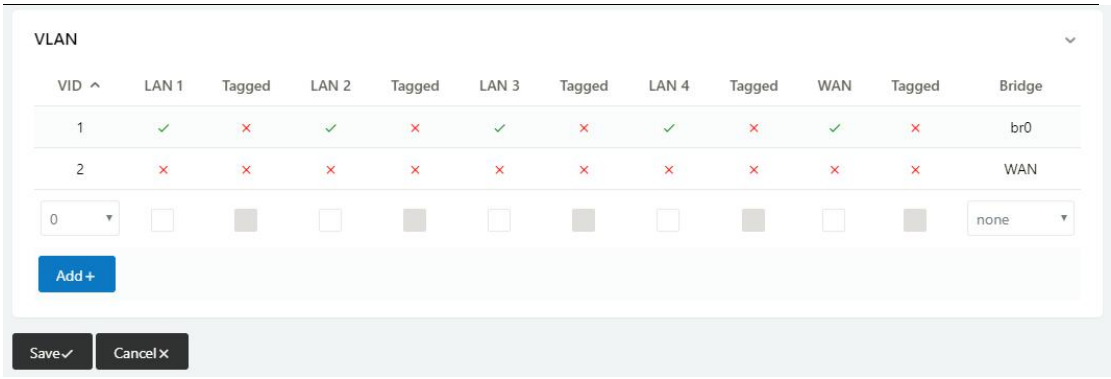


Table 2-4 LAN Setting Instruction

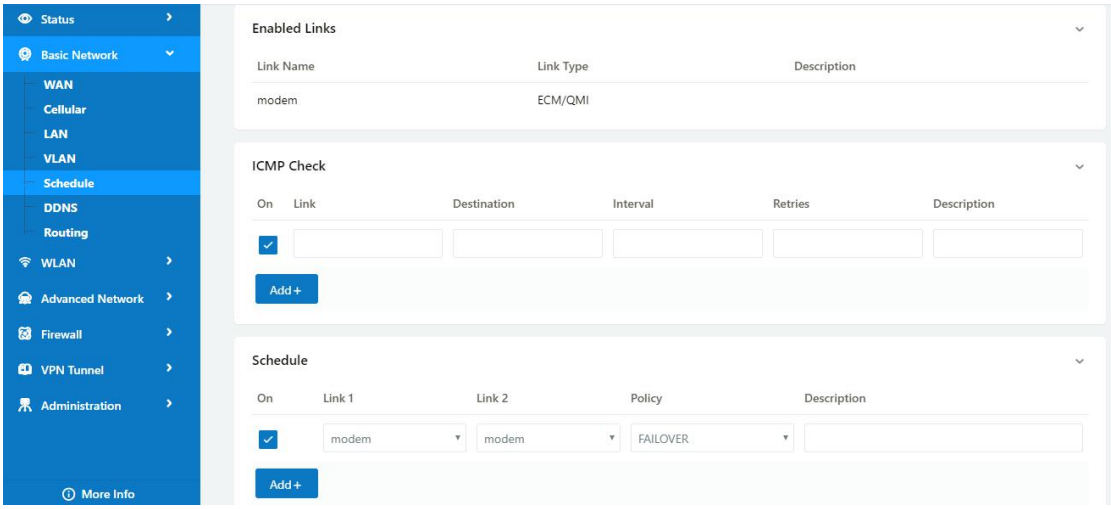
Parameter	Instruction
VID	VLAN ID number. The VID range is from 1 to 15.
LAN1~LAN4, WAN	LAN
Tagged	Enable to make router can encapsulate and de-encapsulate the VLAN tag.
Bridge	Routers interface br0, br1, br2, br3 and WAN

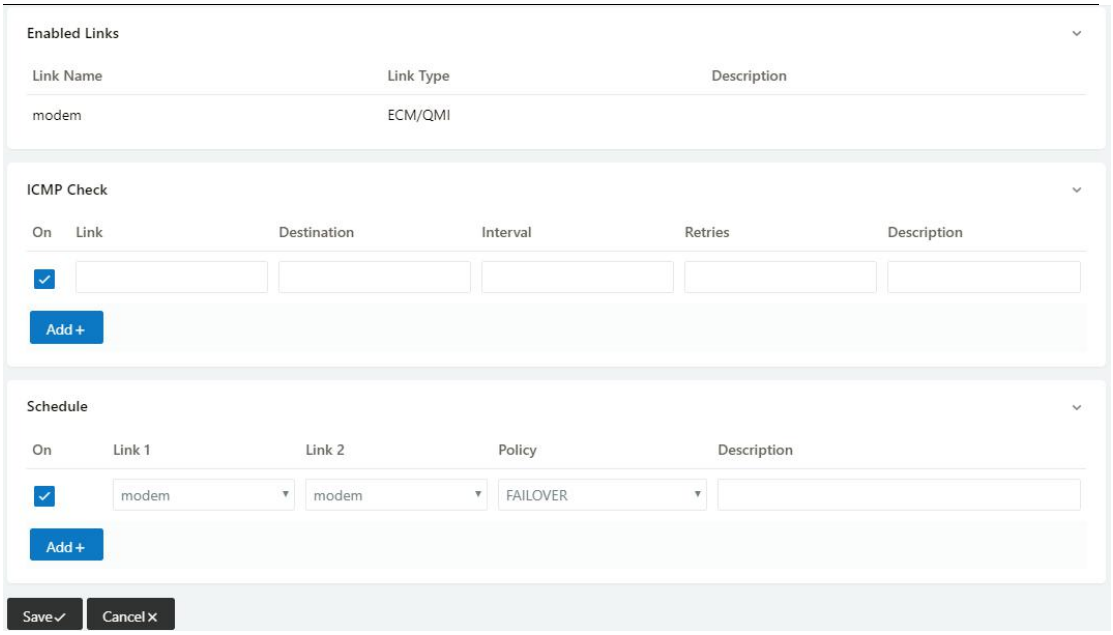
Step 2 Please Click “Save“ to finish.

----End

2.7.5 **Schedule**

Step 1 Basic Network->VLAN to enter the Schedule setting page.



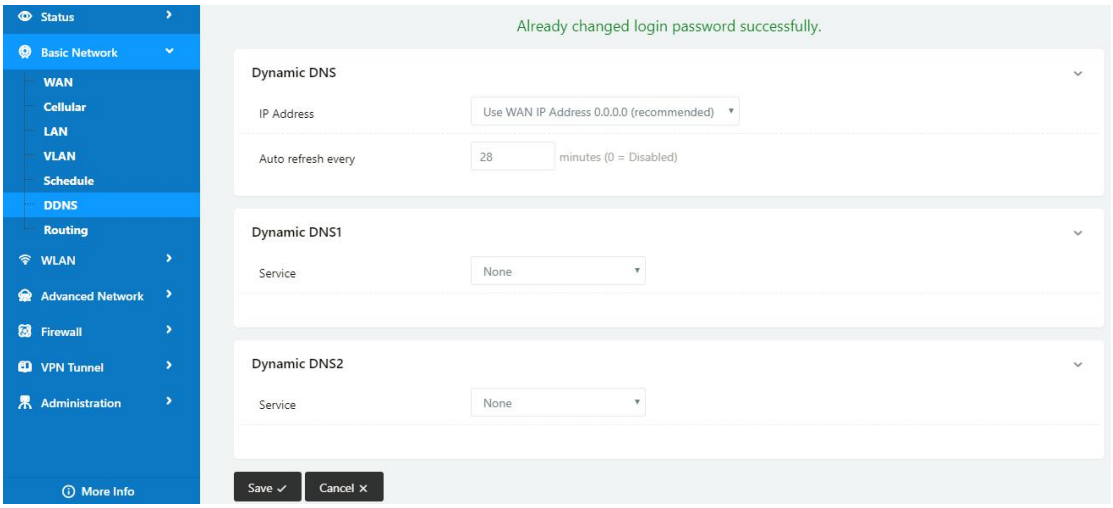


Step 2 Please Click “Save“ to finish.

----End

2.7.6 Dynamic DNS Setting

Step 1 Basic Network->DDNS to enter the DDNS setting page.



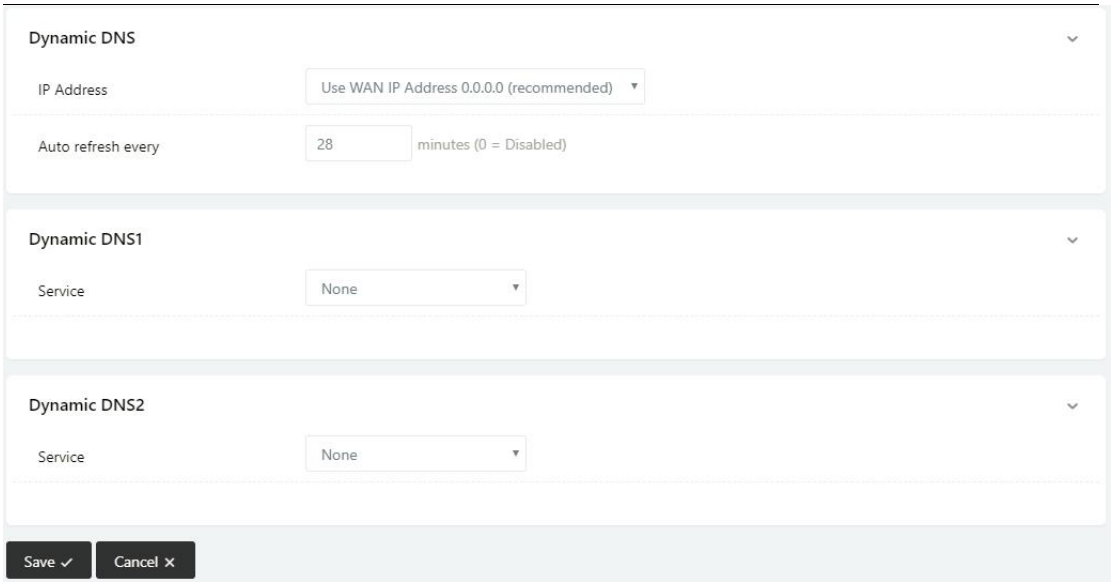


Table 2-5 DDNS Setting Instruction

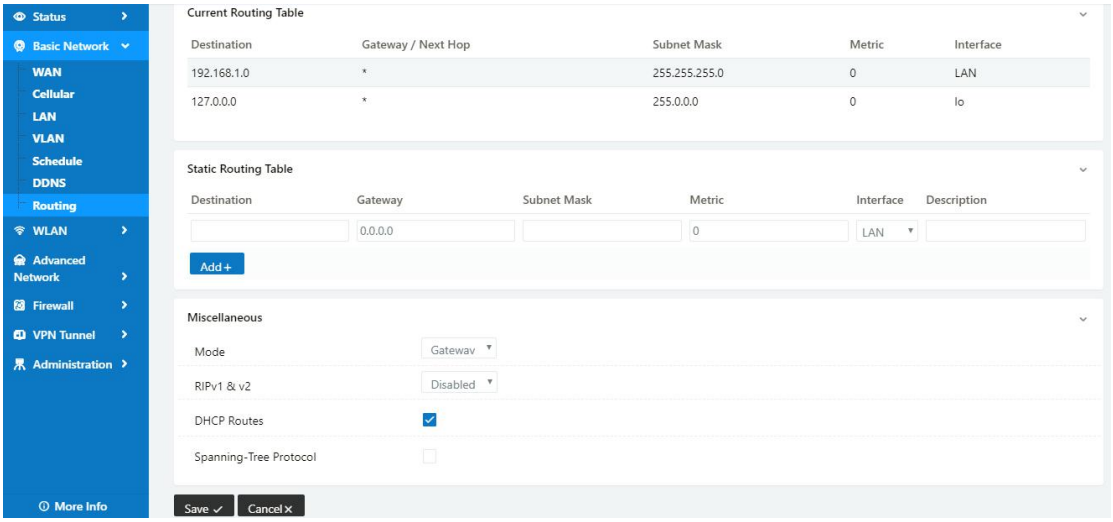
parameter	Instruction
IP address	Default is standard DDNS protocol, for customized protocol, please contact Wlink engineer. Usually, use default IP 0.0.0.0
Auto refresh time	Set the interval of the DDNS client obtains new IP, suggest 240s or above
Service provider	Select the DDNS service provider that listed.

Step 2 Please Click “Save“ to finish.

----End

2.7.7 **Routing Setting**

Step 1 Basic Network->Routing to enter the DDNS setting GUI.



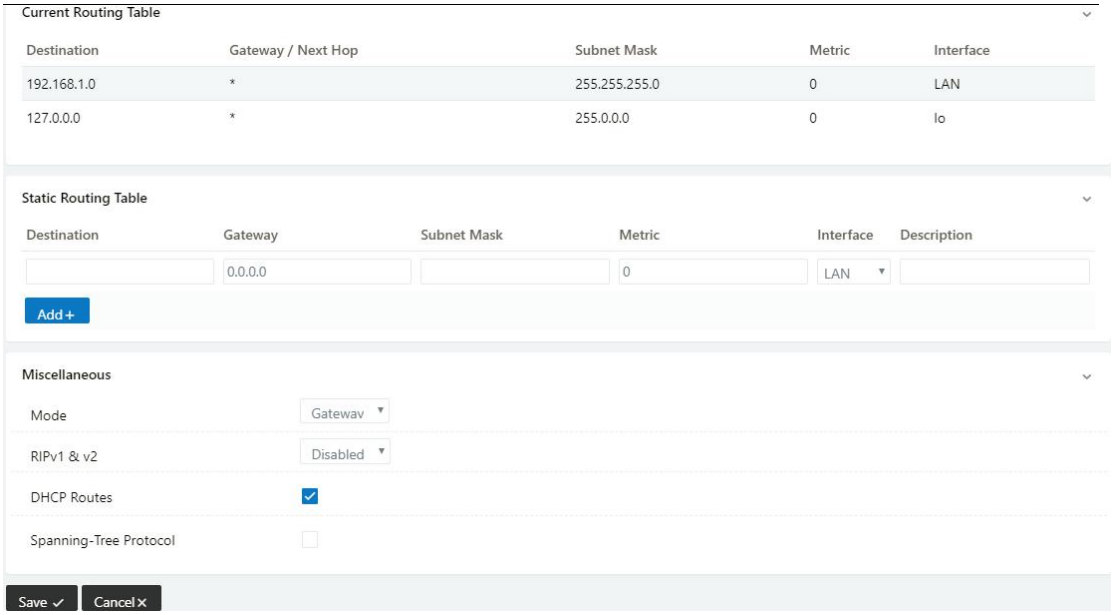


Table 2-6 Routing Setting Instruction

Parameter	Instruction
Destination	Router can reach the destination IP address.
Gateway	Next hop IP address which the router will reach
Subnet Mask	Subnet mask for destination IP address
Metric	Metrics are used to determine whether one particular route should be chosen over another.
Interface	Interface from router to gateway.
Description	Describe this routing name.

Step 2 Please Click " Save " to finish.

----End

2.8 WLAN Setting

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

CAUTION

WL-R100 doesn't support Wi-Fi feature.
WL-R200 Wi-Fi feature is optional.
WL-R210/WL-R520 supports Wi-Fi feature as default.

2.8.1 Basic Setting

Step 1 WLAN->Basic Setting to configure relative parameter

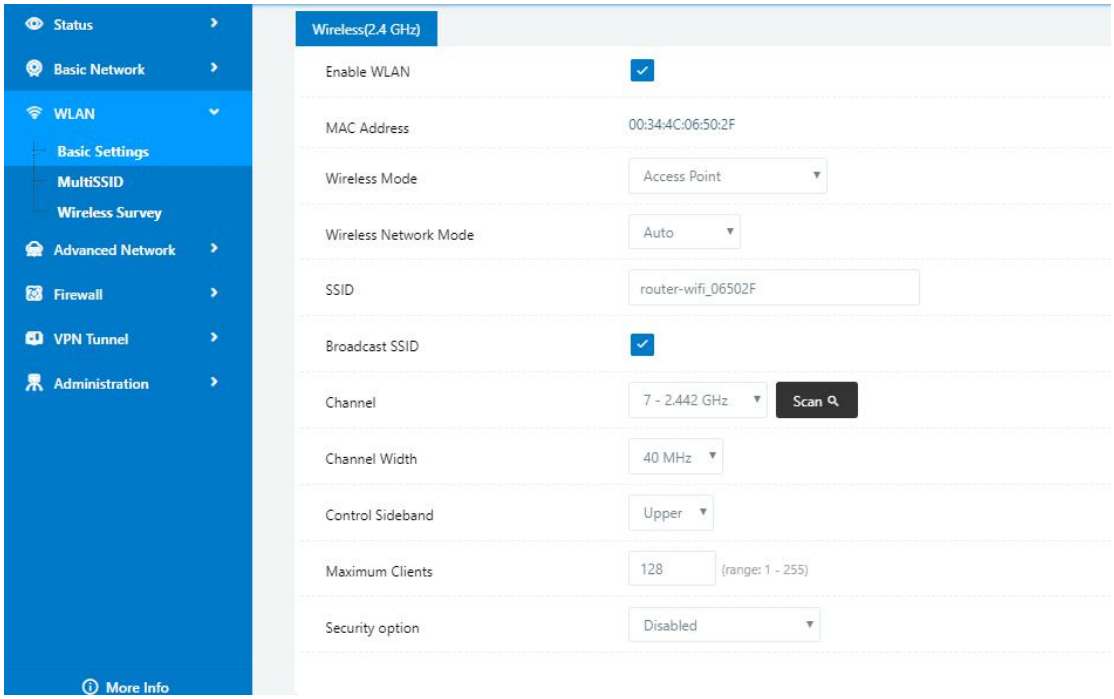


Table 2-7 Basic of WLAN Setting Instruction

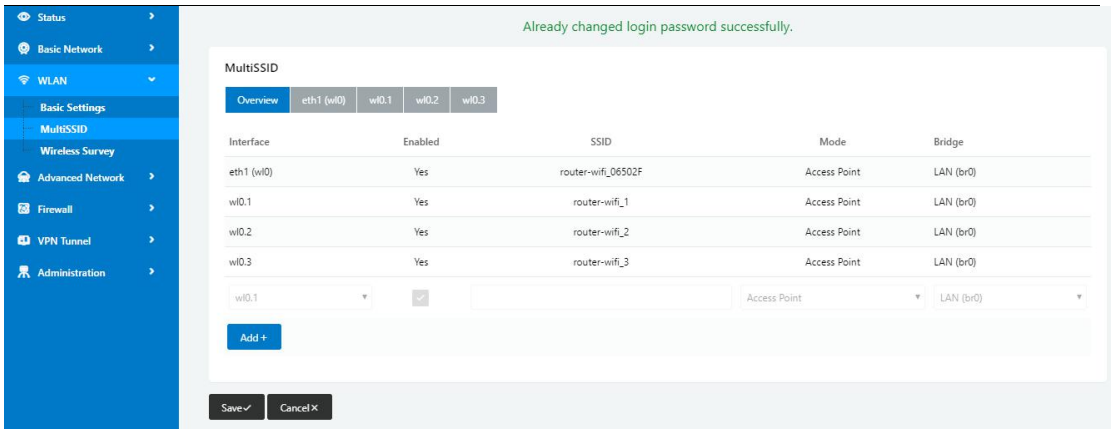
Parameter	Instruction
Radio Mode	2.4G model, Wi-Fi bandwidth for 1300Mbps
Enable wireless	Enable or Disable the Wireless
Wireless mode	Support AP mode.
Wireless Network protocol	Support Auto/b/g/n optional for 2.4G. Support Auto/A/N optional for 2.5G.
SSID	The default is router, can be modified as per application.
Channel	The channel of wireless network, suggest keep the default
Channel Width	20MHz and 40MHz alternative for 2.4G. 20MHz, 40MHz and 80MHzalternative for 2.4G.
Security	Support various encryption method as requested.

Step 2 Please click “Save” to finish.

----End

2.8.2 MultiSSID

Step 1 WLAN> MultiSSID.



Step 2 Please Click "Save " to finish.

NOTE

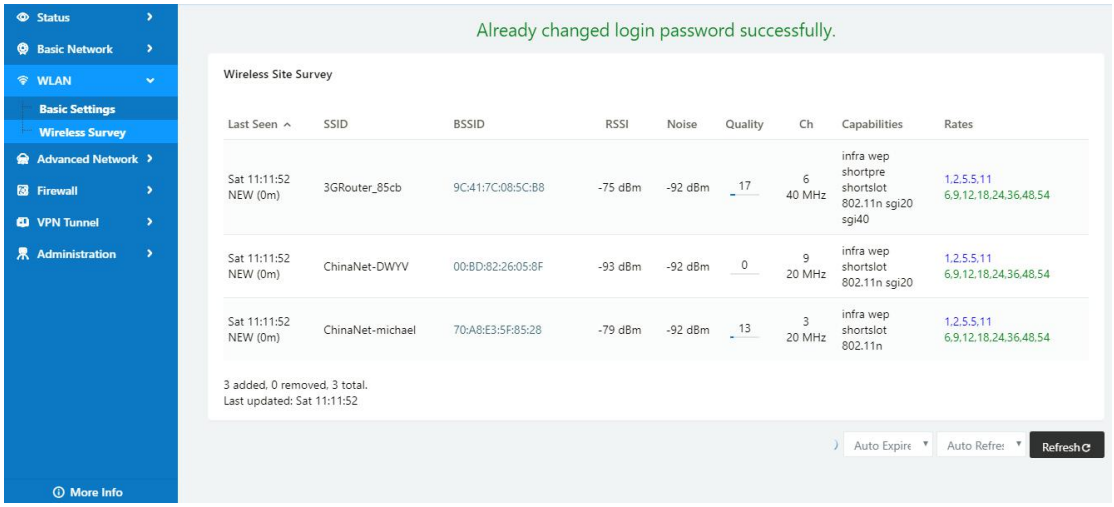
Support 4 SSIDs as Max

----End

2.8.3 Wireless Survey

Step 1 WLAN> Wireless Survey to check survey.

The Router will automatically scan neighbour SSIDs.



Step 2 Please Click "Stop" to change refresh by manual.

----End

2.9 Advanced Network Setting

2.9.1 Port Forwarding

Step 1 Advanced Network > Port Forwarding to enter the GUI, you may modify the router name, Host name and Domain name according to the application requirement.

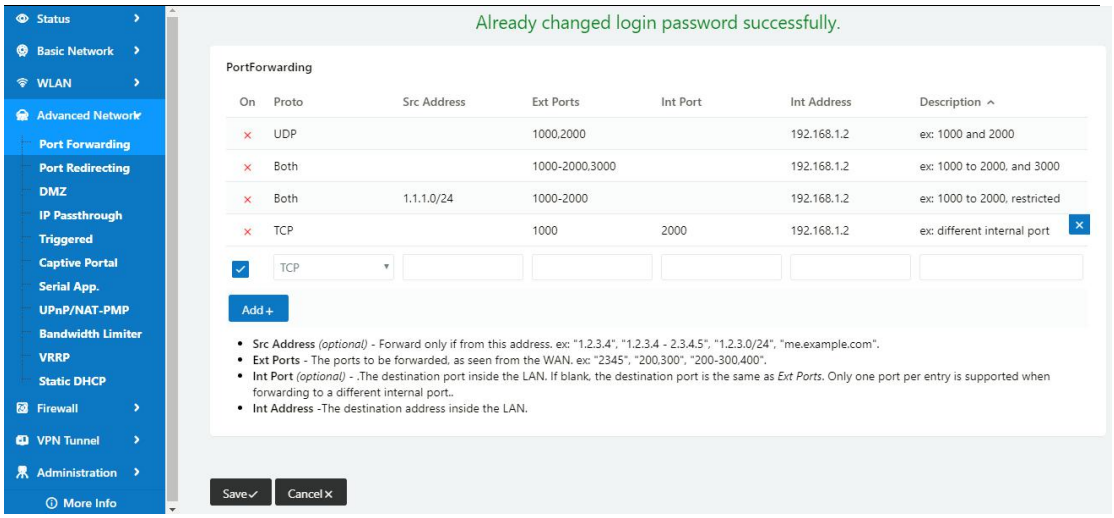


Table 2-8 Port Forwarding Instruction

Parameter	Instruction
Protocol	Support UDP, TCP, both UDP and TCP
Src. Address	Source IP address. Forward only if from this address.
Ext. Ports	External ports. The ports to be forwarded, as seen from the WAN.
Int. Port	Internal port. The destination port inside the LAN. If blank, the destination port is the same as Ext Ports. Only one port per entry is supported when forwarding to a different internal port.
Int. Address	Internal Address. The destination address inside the LAN.
Description	Remark the rule

Step 2 Please click ”save” to finish

----End

2.9.2 Port Redirecting

Step 1 Advanced Network > Port Redirecting to enter the GUI, you may modify the router name, Host name and Domain name according to the application requirement.

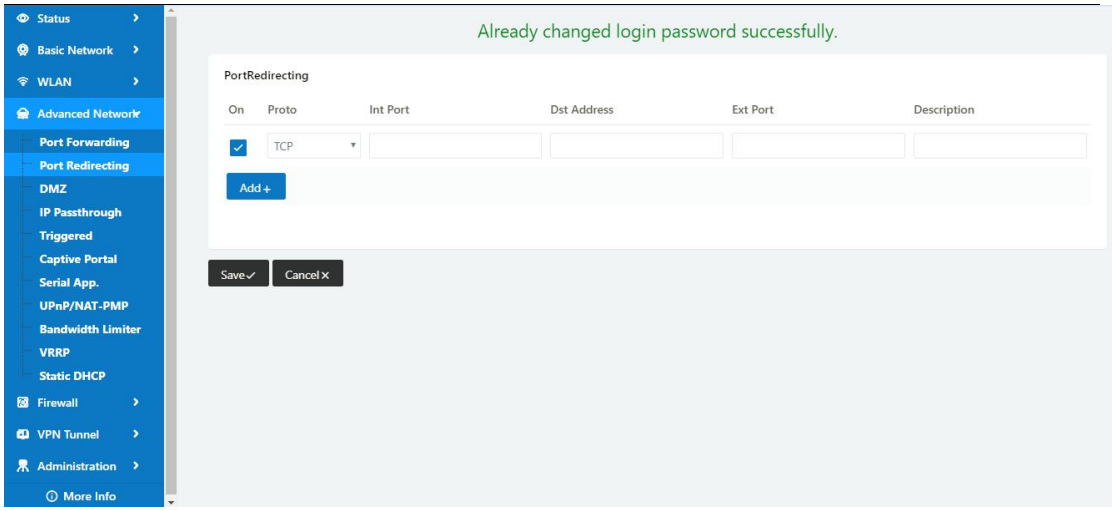


Table 2-9 Port Redirecting Instruction

Parameter	Instruction
Protocol	Support UDP, TCP, both UDP and TCP
Int Port	Internal port.
Dst. Address	The redirecting IP address.
Ext. Ports	External port for redirection.
Description	Remark the rule

Step 2 Please click ”save” to finish

----End

2.9.3 DMZ Setting

Step 1 Advanced Network> DMZ to check or modify the relevant parameter.

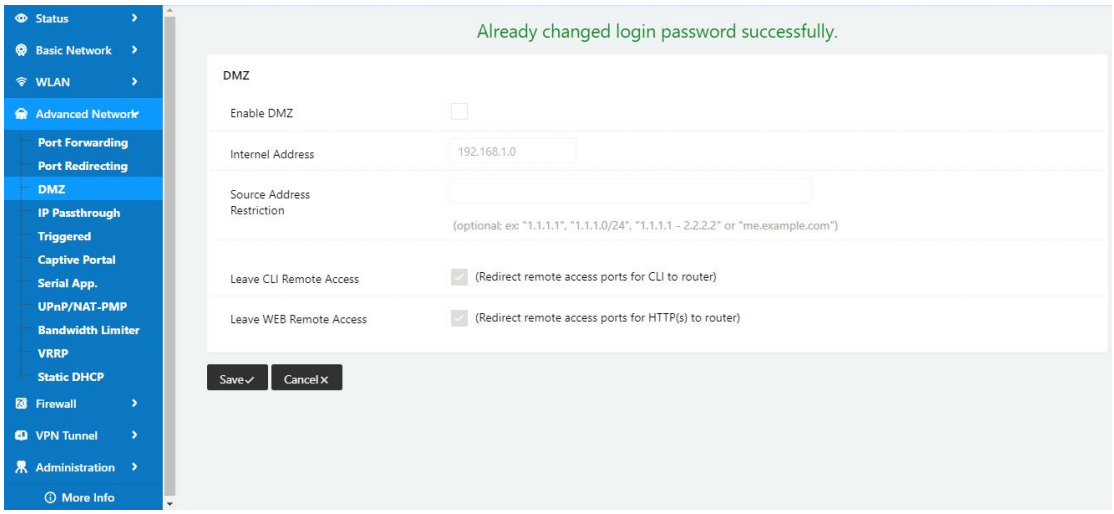


Table 2-10 DMZ Instruction

parameter	Instruction
Destination Address	The destination address inside the LAN.
Source Address Restriction	If no IP address inside, it will allow all IP address to access. If define IP address, it will just allow the defined IP address to access.
Leave Remote Access	

Step 2 Please click ”save” to finish

----End

2.9.4 IP Passthrough Setting

Step 1 Advanced Network> IP Passthrough to check or modify the relevant parameter.

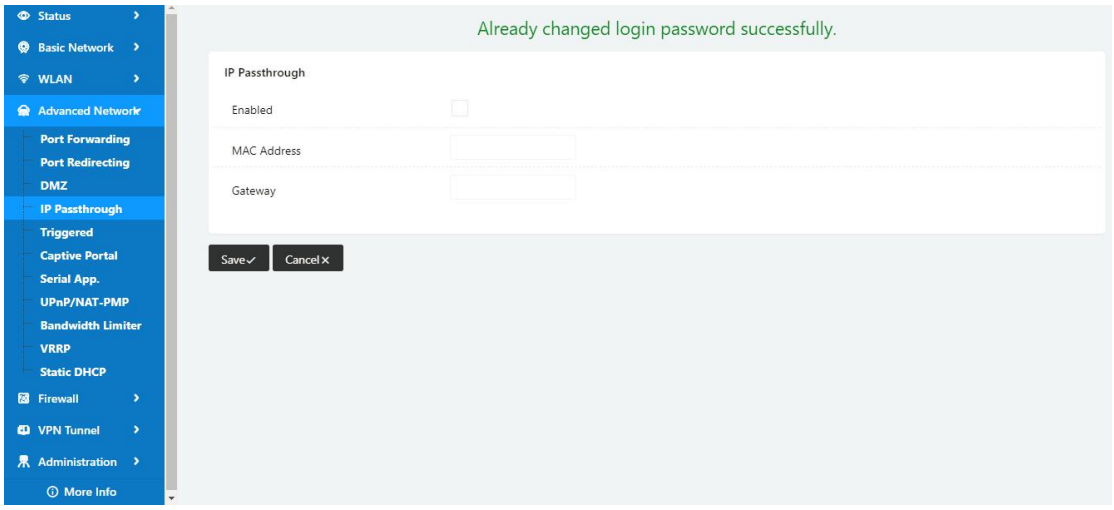


Table 2-11 IP Passthrough Instruction

parameter	Instruction
Enable	Enable IP Passthrough
MAC Address	Enable DHCP of device. Configure device Mac. Device will be assigned SIM IP.
Gateway	If WL-Rxx router connect to multiple device, input other device gateway. The device might access to router GUI.

Step 2 Please click ”save” to finish

----End

2.9.5 Triggered Setting

Step 1 Advanced Network> Triggered to check or modify the relevant parameter.

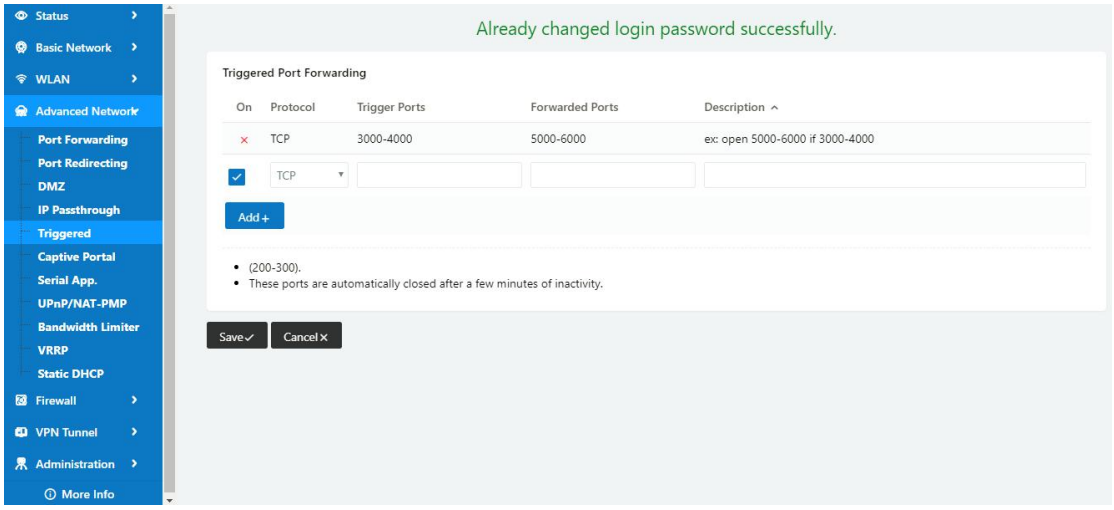


Table 2-12 Triggered Instruction

parameter	Instruction
Protocol	Support UDP, TCP, both UDP and TCP
Triggered Ports	Trigger Ports are the initial LAN to WAN "trigger".
Transferred Ports	Forwarded Ports are the WAN to LAN ports that are opened if the "trigger" is activated.
Note	Port triggering opens an incoming port when your computer is using a specified outgoing port for specific traffic.

Step 2 Please click ”save” to finish.

----End

2.9.6 Captive Portal

Step 1 Advanced Network> Triggered to check or modify the relevant parameter.

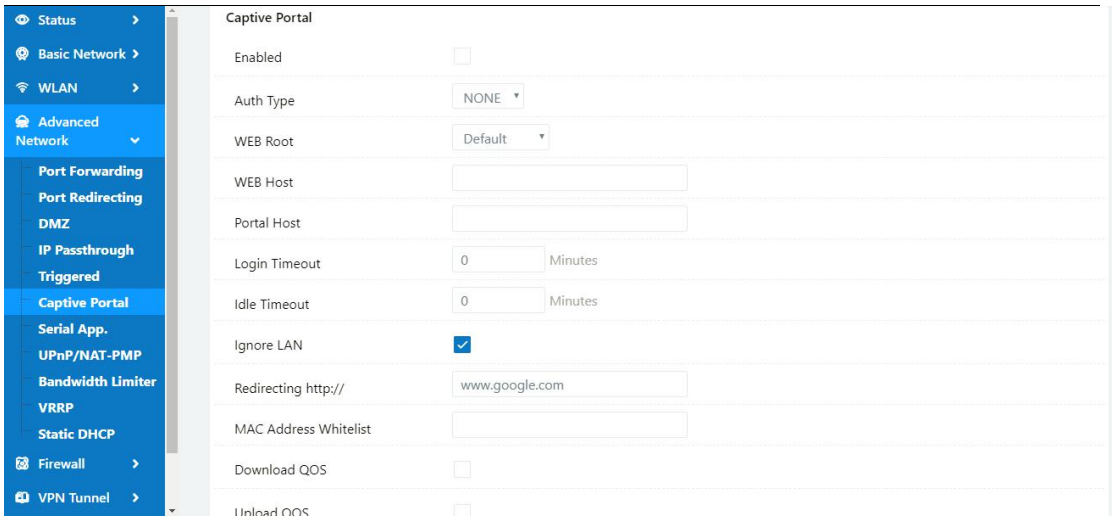


Table 2-13 Captive Portal Instruction

Parameter	Instruction
Enable	Enable Captive portal feature.
Auth Type	Reserved.
Web Root	Choose captive portal file storage path. Default: Captive portal file is in the firmware as default. In-storage: Captive portal file is in router's Flash. Ex-storage: Captive portal file is in extended storage such as SD card.
Web Host	Configure domain name for the captive portal access. For example, Configure as wlink.tech.com, we might directly access to captive portal page in the website as wlink.tech.com
Portal Host	Reserved.
Logged Timeout	Maximum time user has connectivity. User need to re-login Captive Portal page after defined time.
Idle Timeout	Maximum time user has connectivity if no network activity from Wi-Fi User.If User need to re-login Captive page to surf internet.
Ignore LAN	If enabled, LAN devices will bypass the Captive Portal page.
Redirecting	Router will redirect to the defined link after accepting the terms and conditions on the Captive Portal page.
MAC Whitelist	No captive portal page for Wi-Fi device.
Download QoS	Enable to apply the Download and Upload per user limits.
Upload Qos	Maximum download speed available to each user.

Step 2 Please click "save" to finish.

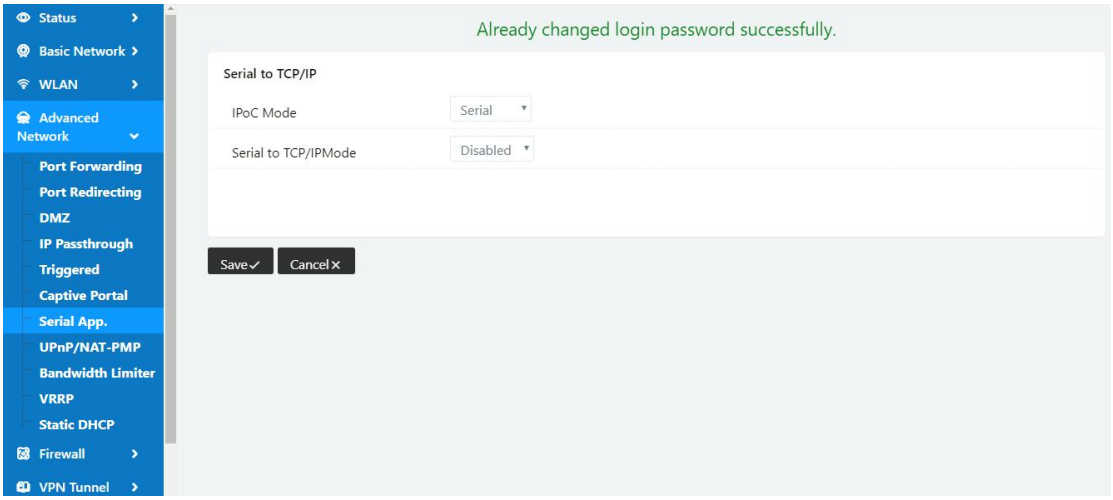
CAUTION

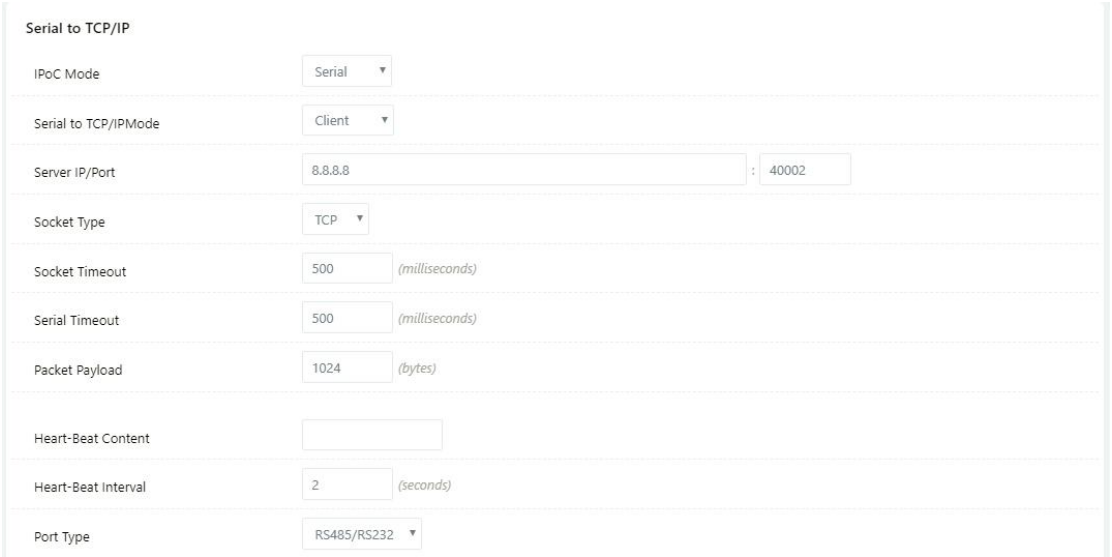
WL-R100 doesn't support Captive Portal feature.

----End

2.9.7 Serial App. Setting

Step 1 Advanced Network> Serial App to check or modify the relevant parameter.





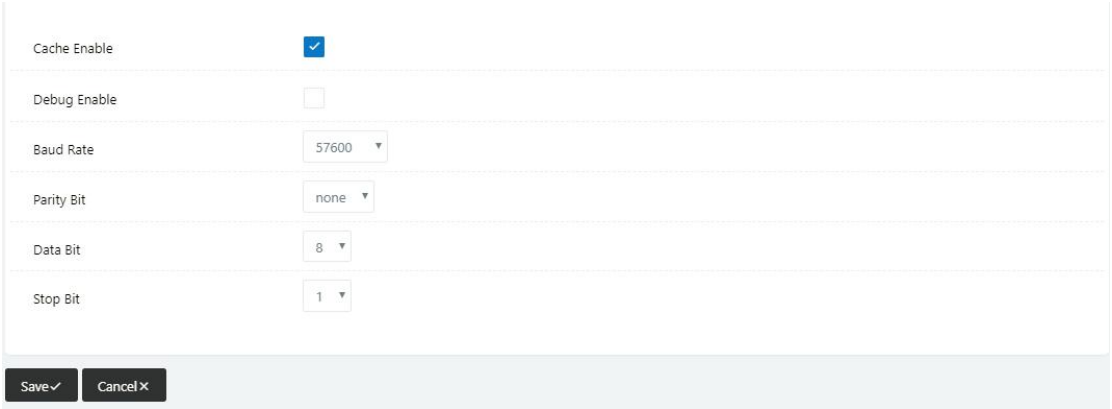


Table 2-14 Serial App Instruction

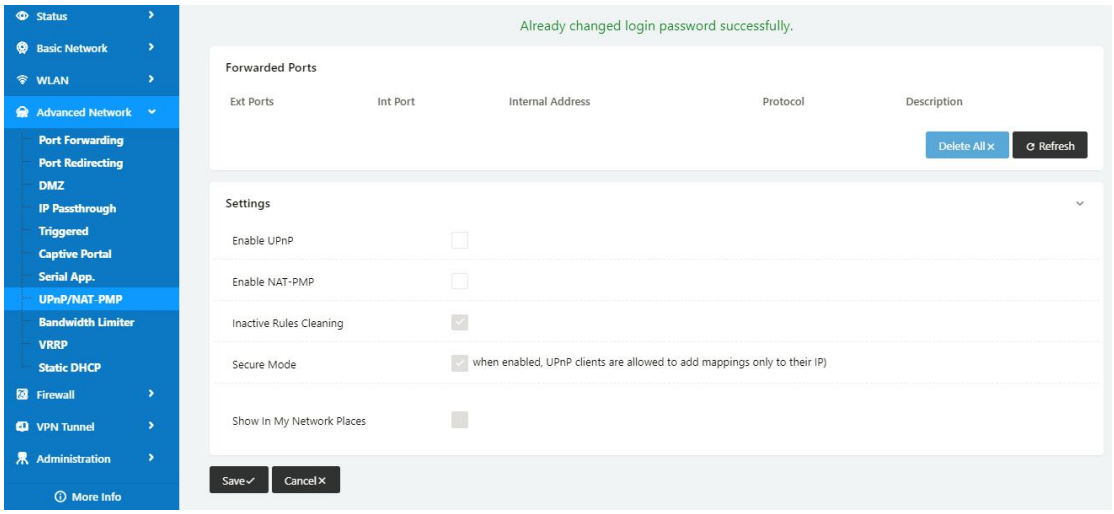
Parameter	Instruction
Serial to TC/IP mode	Support Disable, Server and Client mode. Such as Client.
Server IP/Port	IP address and domain name are acceptable for Server IP
Socket Type	Support TCP/UDP protocol
Socket Timeout	Router will wait the setting time to transmit data to serial port.
Serial Timeout	Serial Timeout is the waiting time for transmitting the data package that is less the Packet payload. If the last package equals to the Packet payload, Serial port will transmit it immediately. The default setting is 500ms.
Packet payload	Packet payload is the maximum transmission length for serial port data packet. The default setting is 1024bytes.
Heart-beat Content	Send heart beat to the defined server to keep router online. Meantime, it's convenient to monitor router from server.
Heart beat Interval	Heart beat interval time
Baud Rate	115200 as default
Parity Bit	None as default
Data Bit	8bit as default
Stop Bit	1bit as default

Step 2 Please click "save" to finish.

----End

2.9.8 UPnp/NAT-PMP Setting

Step 1 Advanced Network> Upnp/NAT-PMP to check or modify the relevant parameter.



Step 2 Please click ”save” to finish.

----End

2.9.9 Bandwidth Control Setting

Step 1 Advanced Network> Bandwidth Control to check or modify the relevant parameter.

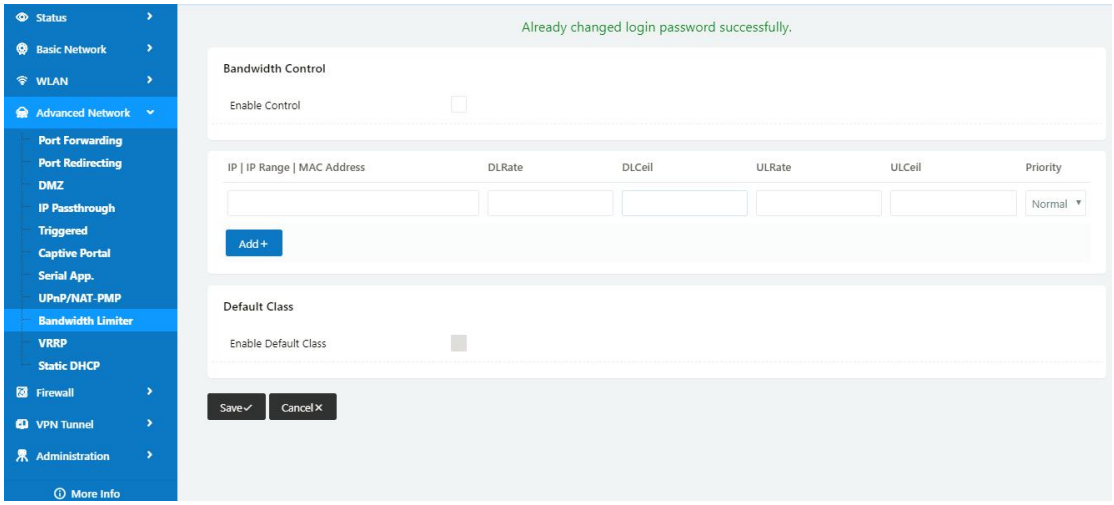


Table 2-15 Bandwidth Control Instruction

Max Available Download	Speed limit for router.
Max Available Upload	Speed limit for router.
IP/ IP Range/ MAC Address	Limit devices speed for specified IP/IP Range/ MAC Address.
DL Rate	Mix Download rate
DL ceil	Max download rate
UL Rate	Mix Upload rate
UL ceil	Max upload rate
Priority	The priority of a specific user.

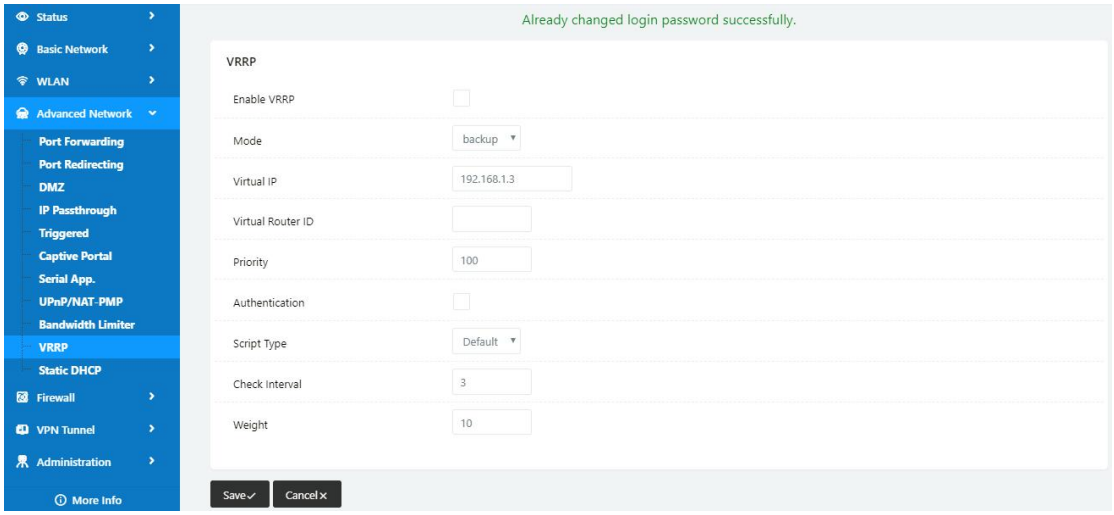
Default Class	If no specified IP/MAC, the download and upload limit for total speed for all of device.

Step 2 Please click ”save” to finish.

----End

2.9.10 VRRP Setting

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

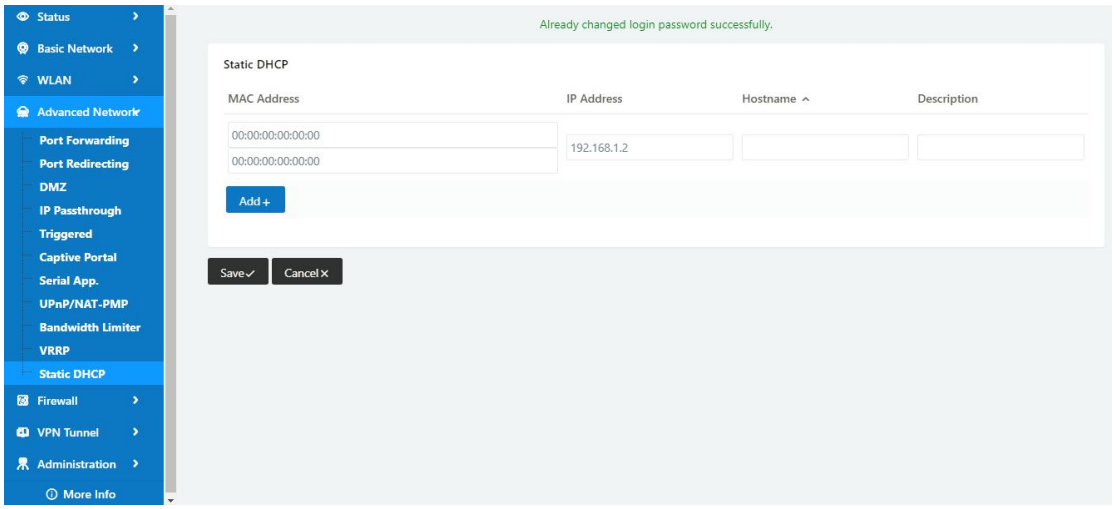


Step 2 Please click ”save” to finish.

----End

2.9.11 Static DHCP Setting

Step 1 Advanced Network> Static DHCP to check or modify the relevant parameter.



Step 2 Please click ”save” to finish.

----End

2.10 Firewall

2.10.1 IP/URL Filtering

Step 1 Firewall> IP/URL Filtering to check or modify the relevant parameter.

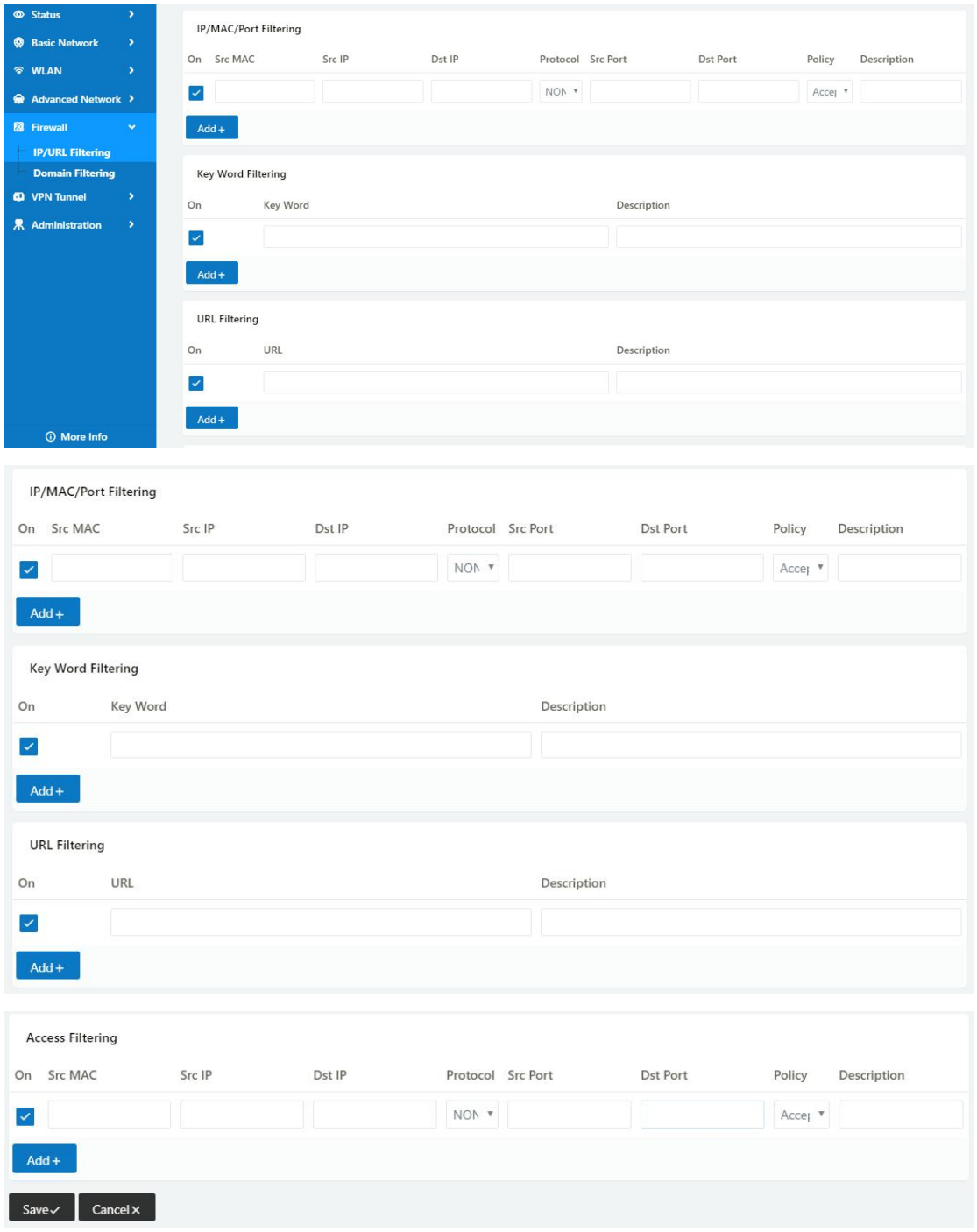


Table 2-16 IP/URL Filtering Instruction

Parameter	Instruction
IP/MAC/Port Filtering	Support IP address, MAC address and port filter. Accept/Drop options for filter policy.
Key Word Filtering	Support key word filter.
URL Filtering	Support URL filter.
Access Filtering	Support Access Filter.

NOTE

Please check Firewall rule in Configuration instance.

Step 2 Please click ”save” to finish.

---End

2.10.2 Domain Filtering

Step 1 Firewall> Domain Filtering to check or modify the relevant parameter.

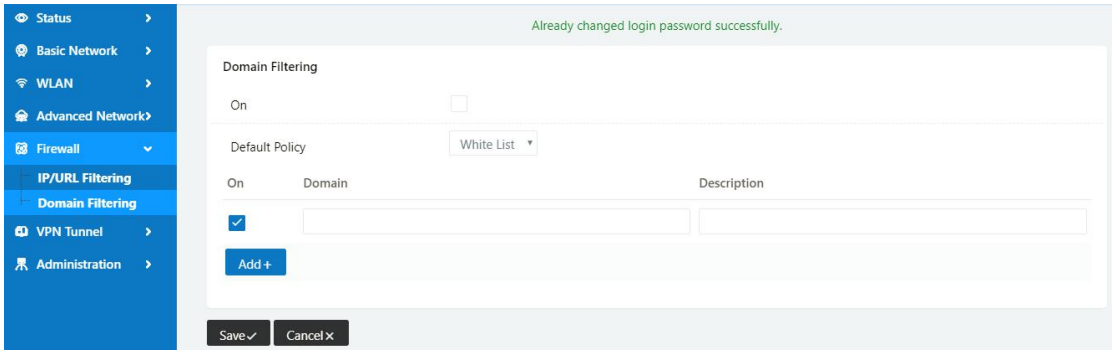


Table 2-17 Domain Filtering Instruction

Parameter	Instruction
Default Policy	Support black list and white list
Local IP Address	Local IP address for LAN.
Domain	Support Domain filter.

Step 2 Please click ”save” to finish.

----End

2.11 VPN Tunnel

2.11.1 GRE Setting

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

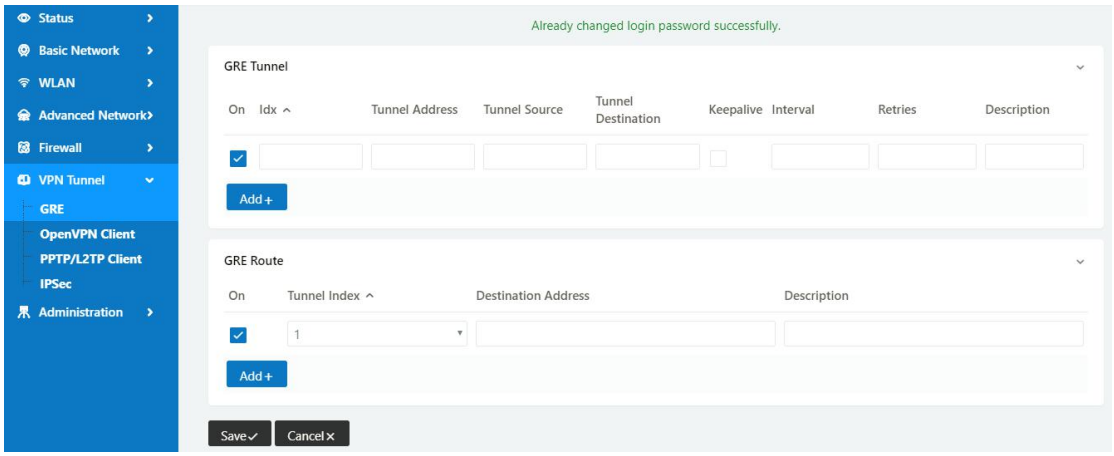


Table 2-18 GRE Instruction

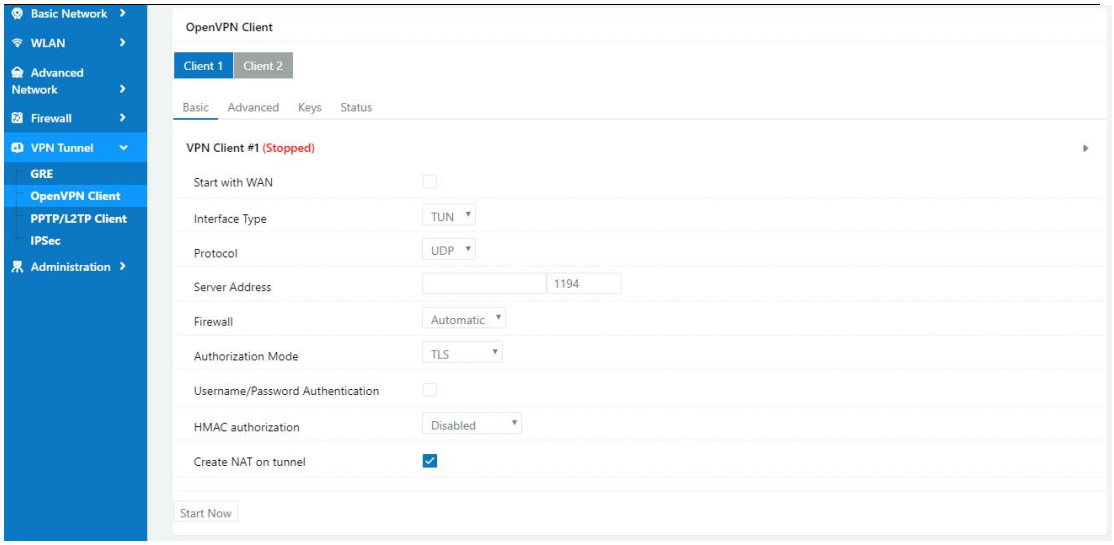
Parameter	Instruction
IDx	GRE tunnel number
Tunnel Address	GRE Tunnel local IP address which is a virtual IP address.
Tunnel Source	Router's 3G/WAN IP address.
Tunnel Destination	GRE Remote IP address. Usually a public IP address
Keep alive	GRE tunnel keep alive to keep GRE tunnel connection.
Interval	Keep alive interval time.
Retries	Keep alive retry times. After retry times, GRE tunnel will be re-established.
Description	

Step 2 Please click "save" to finish.

----End

2.11.2 OpenVPN Client Setting

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


Basic Network
WLAN
Advanced Network
Firewall
VPN Tunnel
GRE
OpenVPN Client
PPTP/L2TP Client
IPSec
Administration
OpenVPN Client
Client 1
Client 2
Basic
Advanced
Keys
Status
VPN Client #1 (Stopped)
Start with WAN
Interface Type
TUN
Protocol
UDP
Server Address
1194
Firewall
Automatic
Authorization Mode
TLS
Username/Password Authentication
HMAC authorization
Disabled
Create NAT on tunnel
Start Now

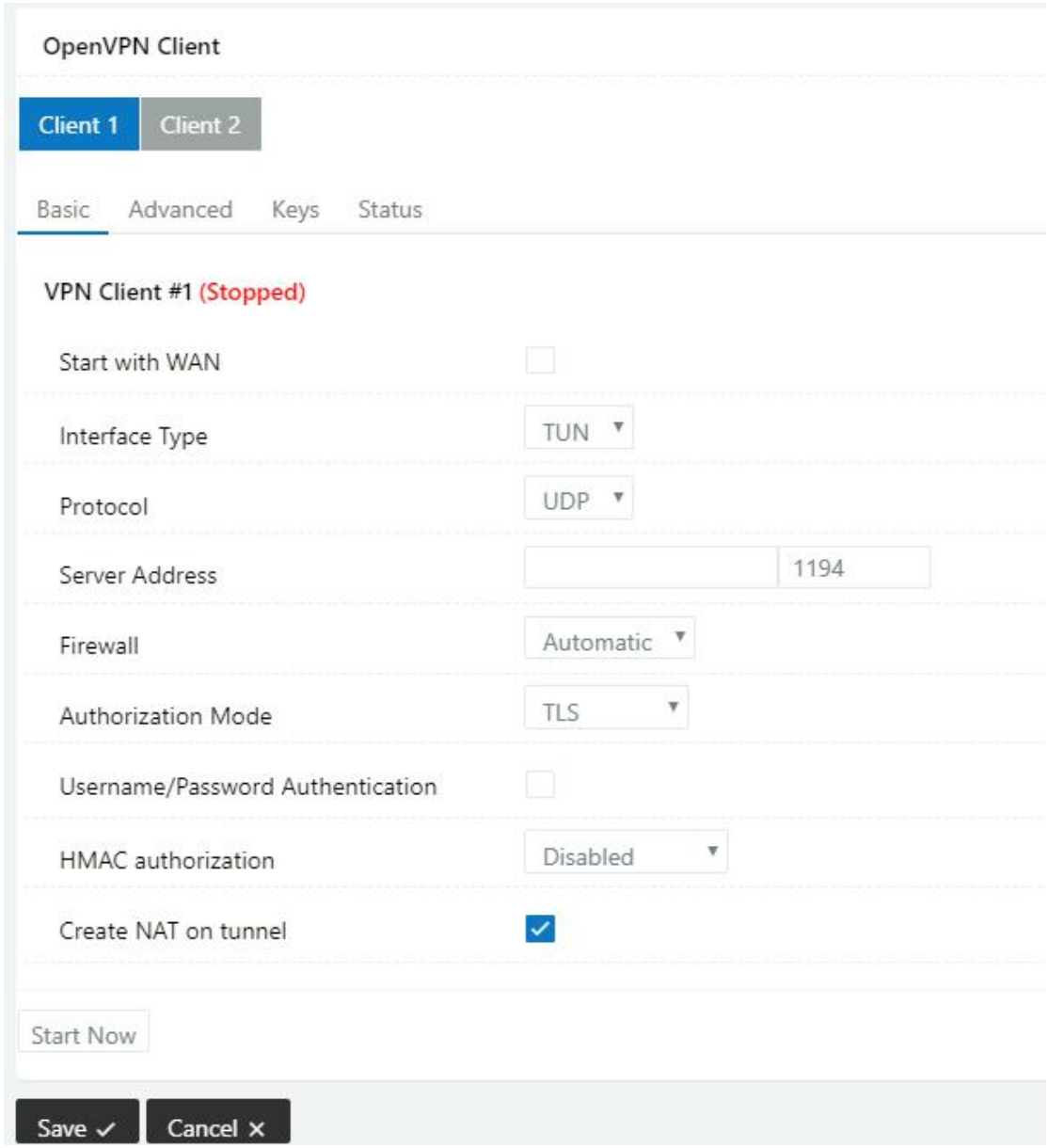

OpenVPN Client
Client 1
Client 2
Basic
Advanced
Keys
Status
VPN Client #1 (Stopped)
Start with WAN
Interface Type
TUN
Protocol
UDP
Server Address
1194
Firewall
Automatic
Authorization Mode
TLS
Username/Password Authentication
HMAC authorization
Disabled
Create NAT on tunnel
Start Now
Save
Cancel

Table 2-19 Basic of OpenVPN Instruction

Parameter	Instruction
Start with WAN	Enable the Openvpn feature for 4G/3G/WAN port.
Interface Type	Tap and Tun type are optional. Tap is for bridge mode and Tunnel is for routing mode.
Protocol	UDP and TCP optional.
Server Address	The Openvpn server public IP address and port.
Firewall	Auto, External only and Custom are optional
Authorization Mode	TLS, Static key and Custom are optional.
User name/Password Authentication	As the configuration requested.
HMAC authorization	As the configuration requested.
Create NAT on tunnel	Configure NAT in Openvpn tunnel.

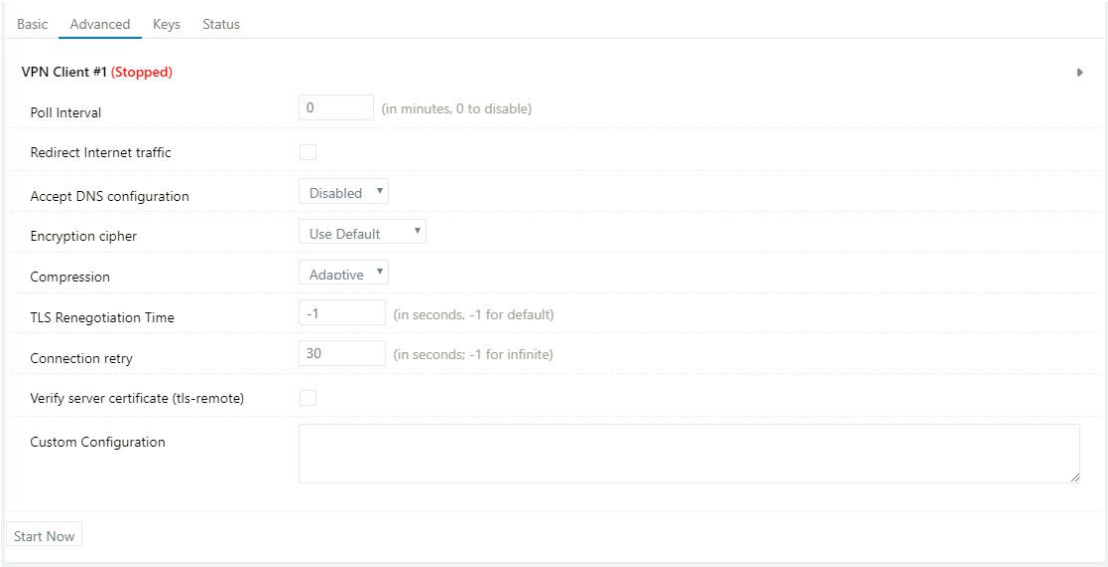


Table 2-20 Advanced of OpenVPN Instruction

Parameter	Instruction
Poll Interval	Openvpn client check router's status as interval time.
Redirect Internet Traffic	Configure Openvpn as default routing.
Access DNS	As the configuration requested.

Parameter	Instruction
Encryption	As the configuration requested.
Compression	As the configuration requested.
TLS Renegotiation Time	TLS negotiation time. -1 as default for 60s.
Connection Retry Time	Openvpn retry to connection interval.
Verify server certificate	As the configuration requested.
Custom Configuration	As the configuration requested.

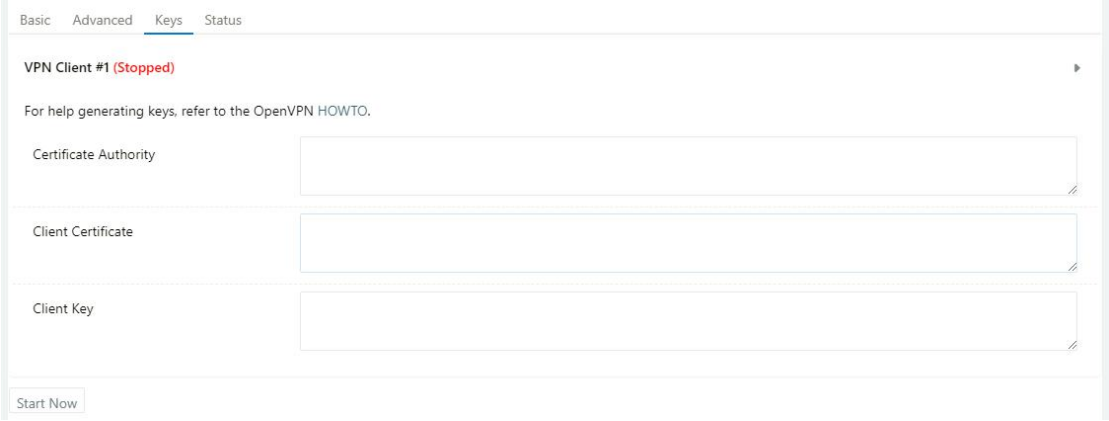


Table 2-21 Keys of OpenVPN Instruction

Parameter	Instruction
Certificate Authority	Keep certificate as the same as server
Client Certificate	Keep client certificate as the same as server
Client Key	Keep client key as the same as server

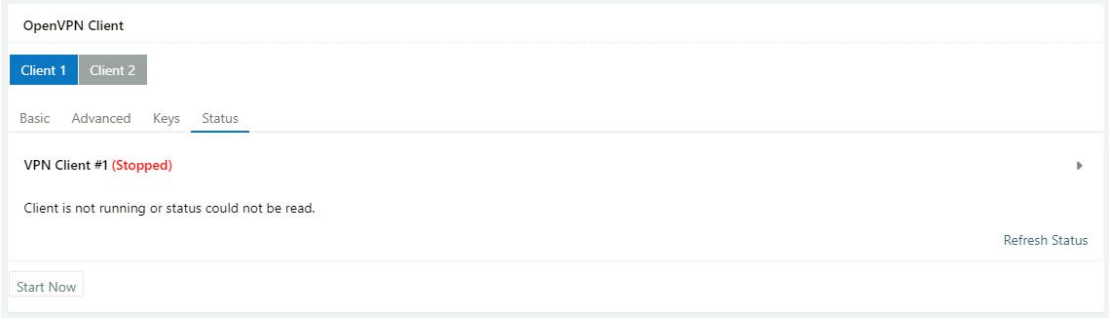


Table 2-22 Status of OpenVPN Instruction

Parameter	Instruction
Status	Check Openvpn status and data statistics.

Step 2 Please click ”save” to finish.

----End

2.11.3 PPTP/L2TP Client Setting

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

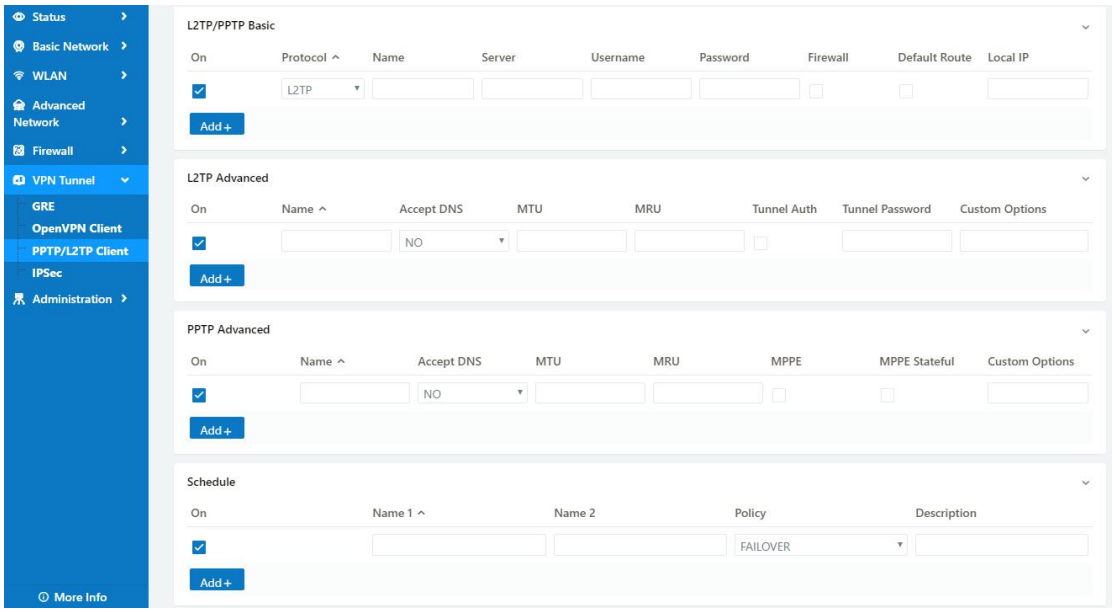


Table 2-23 PPTP/L2TP Basic Instruction

parameter	Instruction
On	VPN enable
Protocol	VPN Mode for PPTP and L2TP
Name	VPN Tunnel name
Server Address	VPN Server IP address.
User name	As the configuration requested.
Password	As the configuration requested.
Firewall	Firewall For VPN Tunnel
Local IP	Defined Local IP address for tunnel

Table 2-24 L2TP Advanced Instruction

On	L2TP Advanced enable
Name	L2TP Tunnel name
Accept DNS	As the configuration requested.
MTU	MTU is 1450bytes as default
MRU	MRU is 1450bytes as default
Tunnel Auth.	L2TP authentication Optional as the configuration requested.
Tunnel Password	As the configuration requested.
Custom Options	As the configuration requested.

Table 2-25 PPTP Advanced Instruction

On	PPTP Advanced enable
Name	PPTP Tunnel name
Accept DNS	As the configuration requested.
MTU	MTU is 1450bytes as default
MRU	MRU is 1450bytes as default
MPPE	As the configuration requested
MPPE Stateful	As the configuration requested
Customs	As the configuration requested

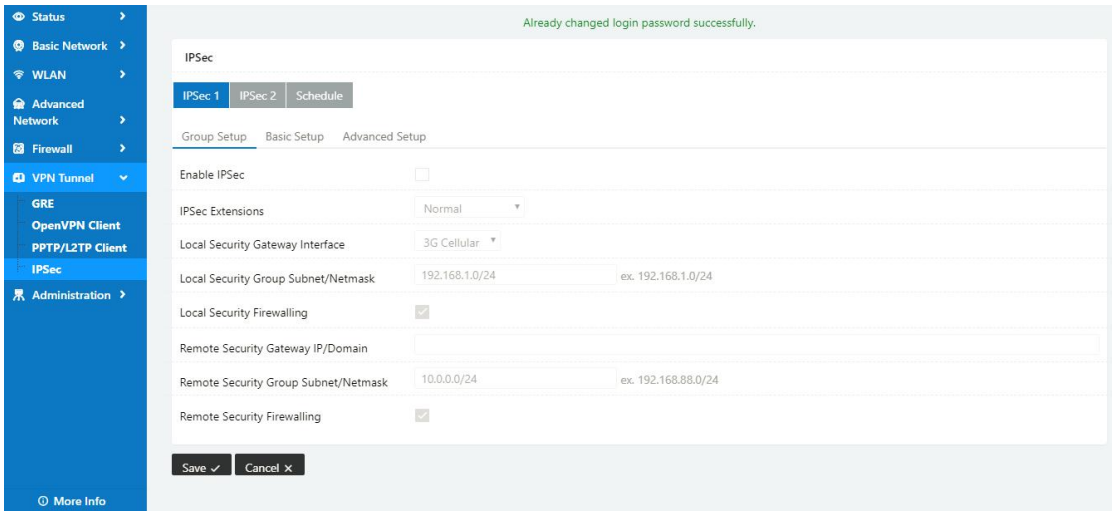
Table 2-26 SCHEDULE Instruction

On	VPN SCHEDULE feature enable
Name1	VPN tunnel name
Name2	VPN tunnel name
Policy	Support VPN tunnel backup and failover modes optional
Description	As the configuration requested

Step 2 Please click ”save” to finish.

---End

2.11.4 IPSec Setting



2.11.4.1 IPSec Group Setup

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

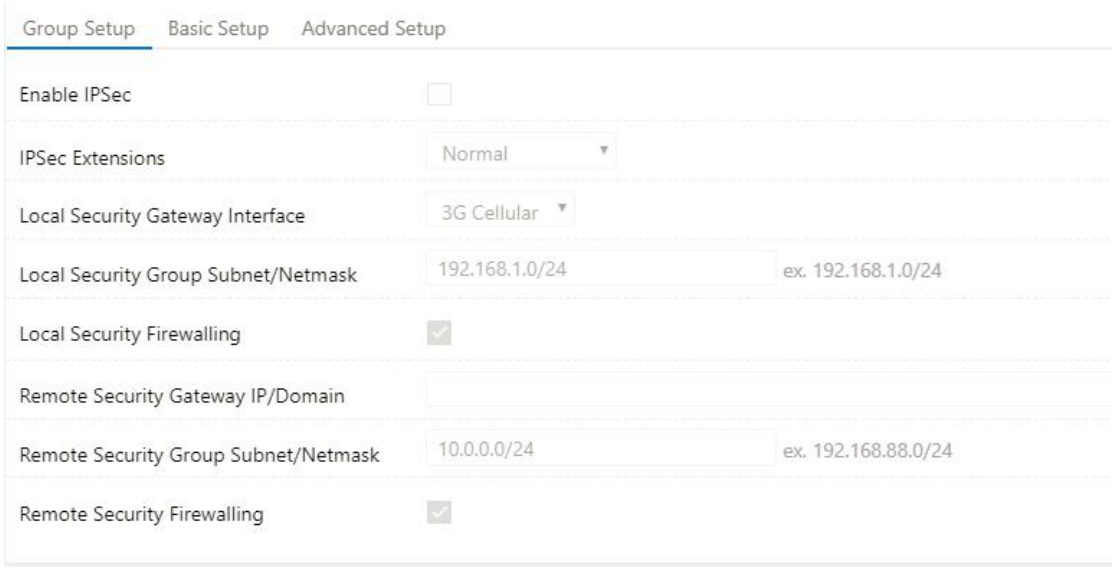


Table 2-27 IPSec Group Setup Instruction

parameter	Instruction
IPSec Extensions	Support Standard IPSec, GRE over IPSec, L2TP over IPSec
Local Security Interface	Defined the IPSec security interface
Local Subnet/Mask	IPSec local subnet and mask.
Local Firewall	Forwarding-firewalling for Local subnet

parameter	Instruction
Remote IP/Domain	IPsec peer IP address/domain name.
Remote Subnet/Mask	IPSec remote subnet and mask.
Remote Firewall	Forwarding-firewalling for Remote subnet

Step 2 Please click ”save” to finish.

---End

2.11.4.2 IPSec Basic Setup

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

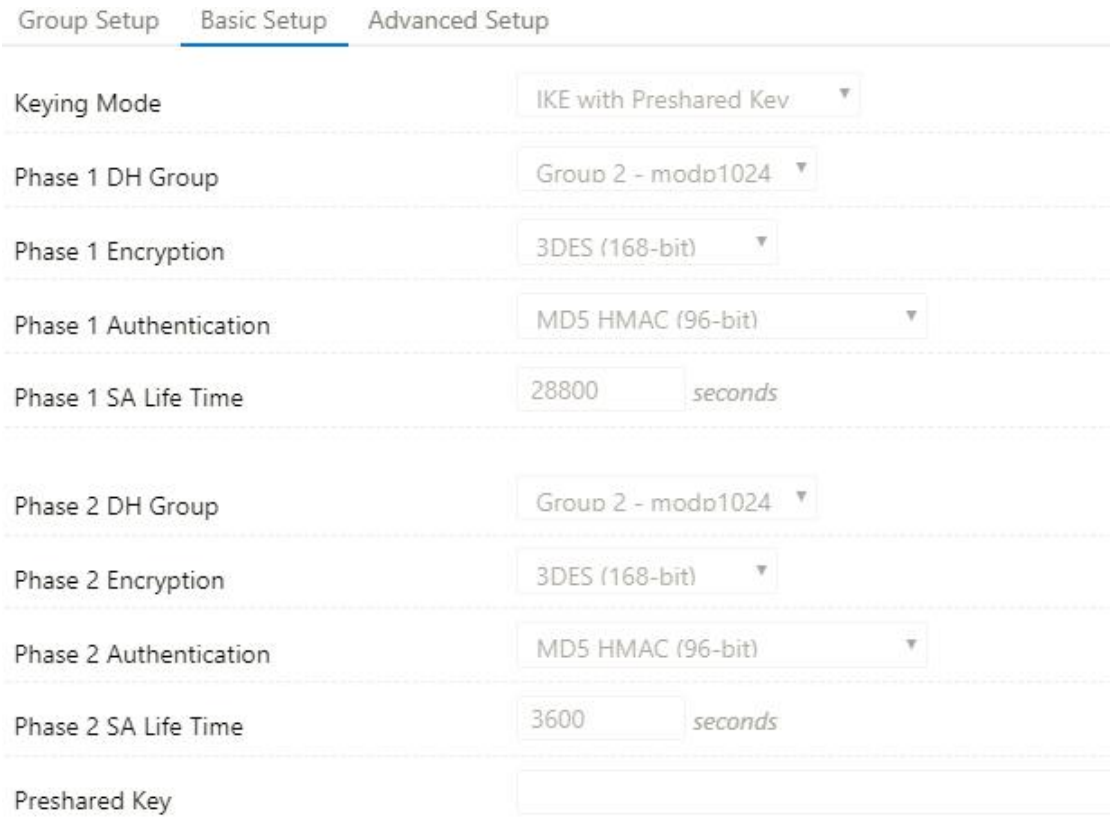


Table 2-28 IPSec Basic Setup Instruction

parameter	Instruction
Keying Mode	IKE preshared key
Phase 1 DH Group	Select Group1, Group2, Group5 from list. It must be matched to remote IPSec setting.
Phase 1 Encryption	Support 3DES, AES-128, AES-192, AES-256

parameter	Instruction
Phase 1 Authentication	Support HASH MD5 and SHA
Phase 1 SA Life Time	IPSec Phase 1 SA lifetime
Phase 2 DH Group	Select Group1, Group2, Group5 from list. It must be matched to remote IPSec setting.
Phase 2 Encryption	Support 3DES, AES-128, AES-192, AES-256
Phase 2 Authentication	Support HASH MD5 and SHA
Phase 2 SA Life Time	IPSec Phase 2 SA lifetime
Preshared Key	Preshared Key

Step 2 Please click ”save” to finish.

---End

2.11.4.3 IPSec Advanced Setup

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

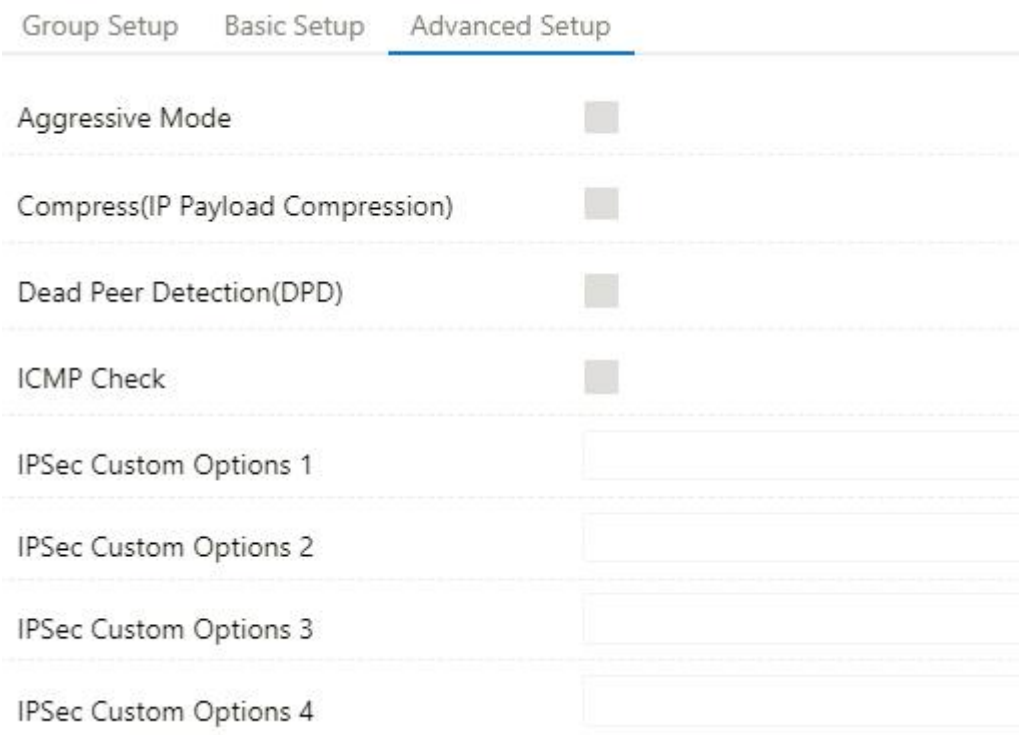


Table 2-29 IPSec Advanced Setup Instruction

parameter	Instruction
Aggressive Mode	Default for main mode
ID Payload Compress	Enable ID Payload compress
DPD	To enable DPD service
ICMP	ICMP Check for IPSec tunnel
IPSec Custom Options	IPSec advanced setting such as left/right ID.

Step 2 Please click ”save” to finish.

----End

2.12 Administration

2.12.1 Identification Setting

Step 1 Please click ”Administrator> Identification” to enter the GUI, you may modify the router name, Host name and Domain name according to self-requirement.

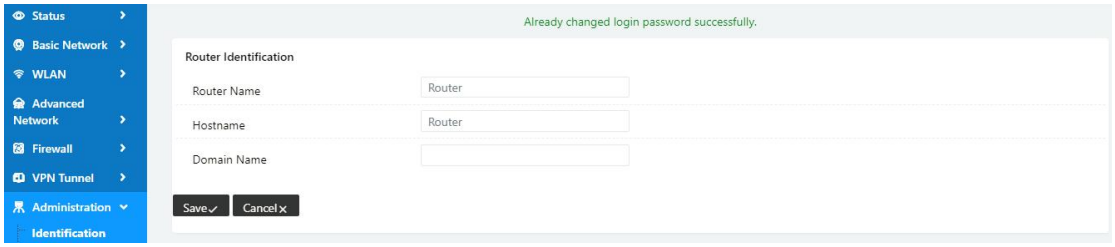


Table 2-30 Router Identification Instruction

Parameter	Instruction
Router name	Default is router, can be set maximum 32 character
Host name	Default is router, can be set maximum 32 character

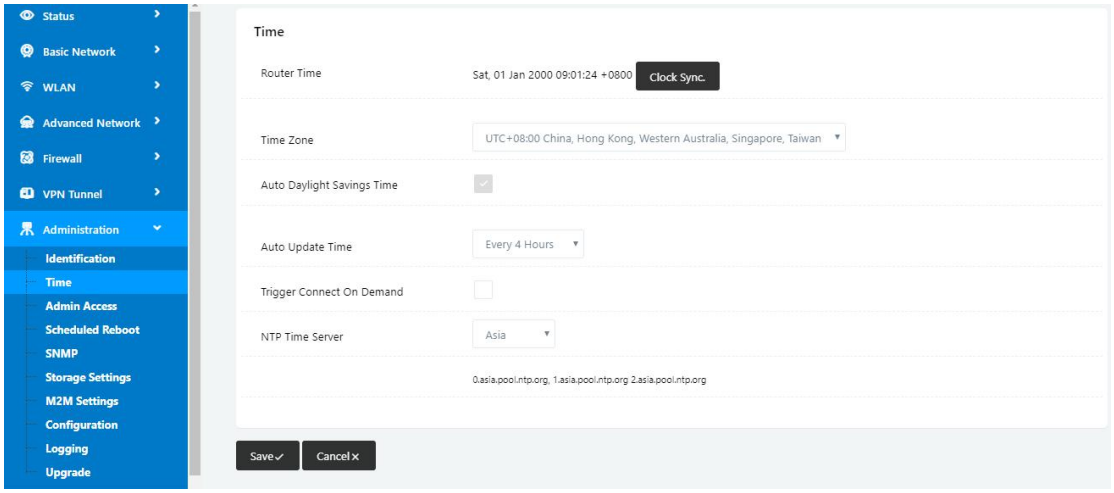
Parameter	Instruction
Domain name	Default is empty, support maximum up to 32 character, it is the domain of WAN, no need to configure for most application.

Step 2 Please click ”save” to finish

----End

2.12.2 Time Setting

Step 1 Please click “Administrator> time” to check or modify the relevant parameter.



CAUTION

If the device is online but time update is fail, please try other NTP Time Server.

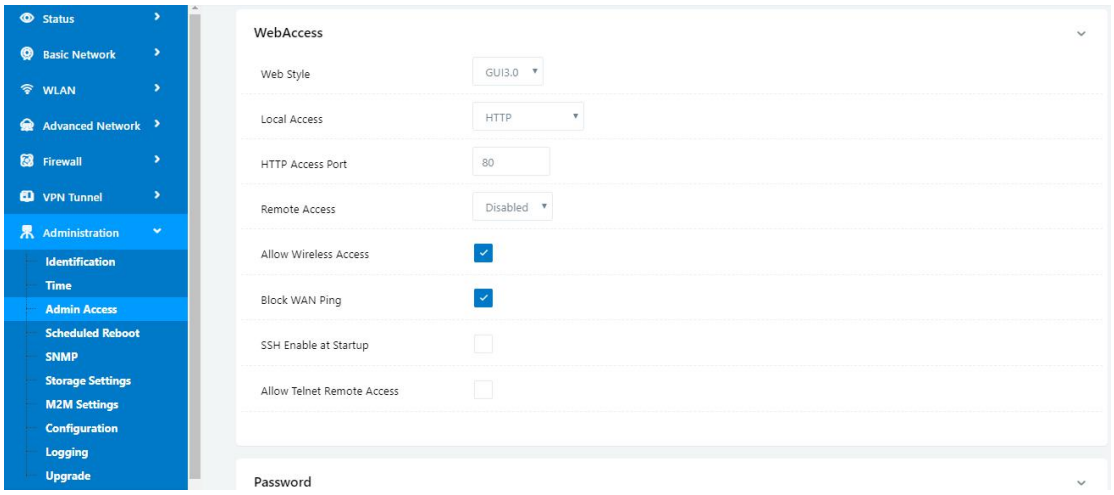
Step 2 Please click “save to finish.

----End

2.12.3 Admin Access Setting

Step 1 Please click “Administrator>Admin” to check and modify relevant parameter.

In this page, you can configure the basic web parameter, make it more convenient for usage. Please note the “password” is the router system account password.

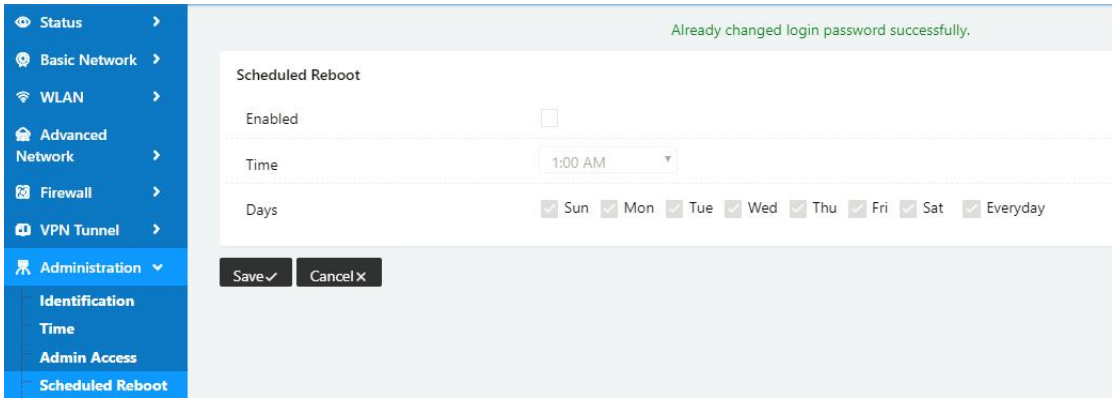


Step 2 Please click save iron to finish the setting

----End

2.12.4 Schedule Reboot Setting

Step 1 Please click “Administrator>Schedule Reboot” to check and modify relevant parameter.

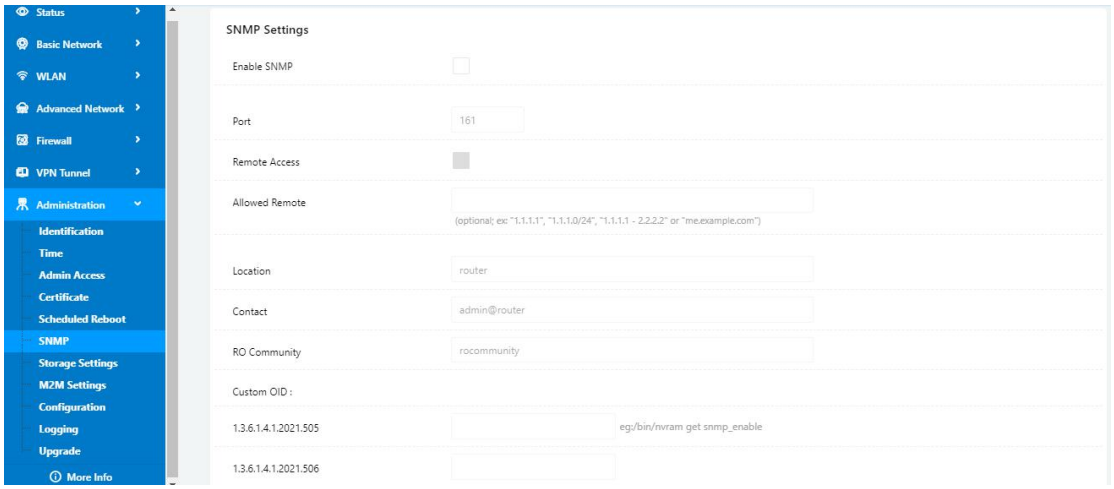


Step 2 Please click save iron to finish the setting

----End

2.12.5 SNMP Setting

Step 1 Please click “Administrator>SNMP” to check and modify relevant parameter.

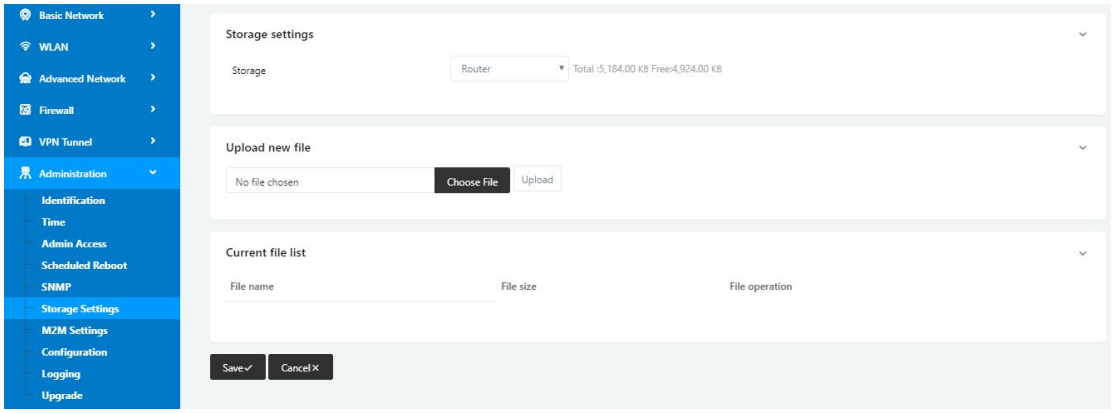


Step 2 Please click save iron to finish the setting

----End

2.12.6 Storage Setting

Step 1 Please click “Administrator>Storage Setting” to check and modify relevant parameter.



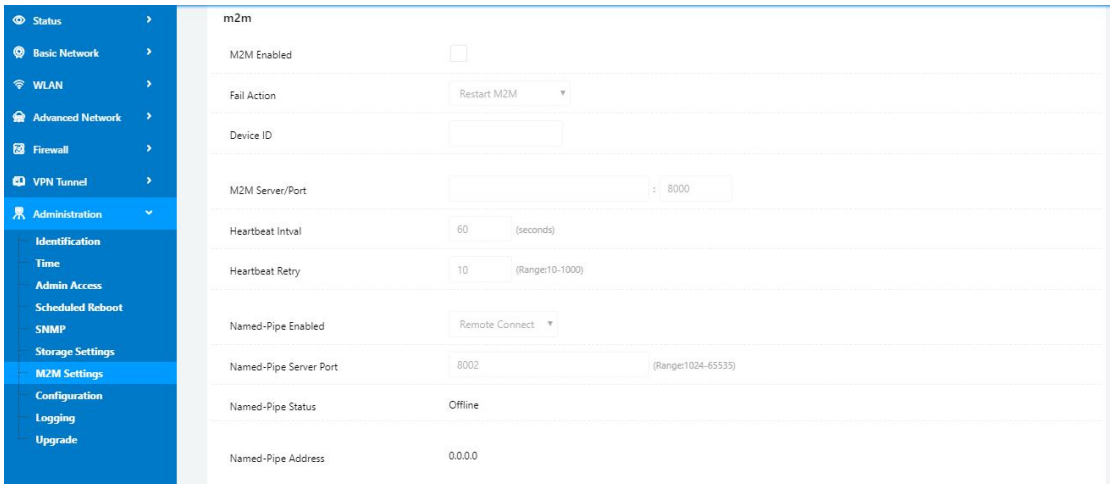
Step 2 Please click save iron to finish the setting

NOTE WL-R100/R200 series router doesn’t support extra storage. The storage path is Router as default.

----End

2.12.7 M2M Access Setting (Apply to M2M Management Platform installation application only)

Step 1 Please click “Administrator>M2M Access” to check and modify relevant parameter.

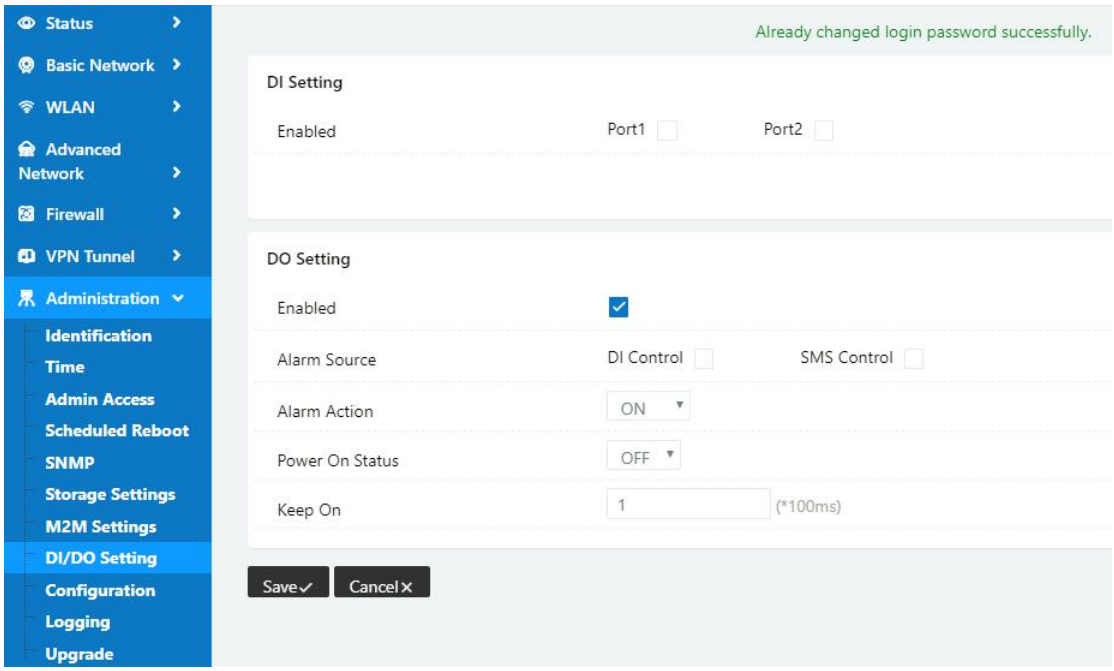


Step 2 Please click save iron to finish the setting

----End

2.12.8 DI/DO Setting(Apply to WL-R210 only)

Step 1 Please click “Administrator>DI/DO Setting” to check and modify relevant parameter.



2.12.8.1 DI Configure

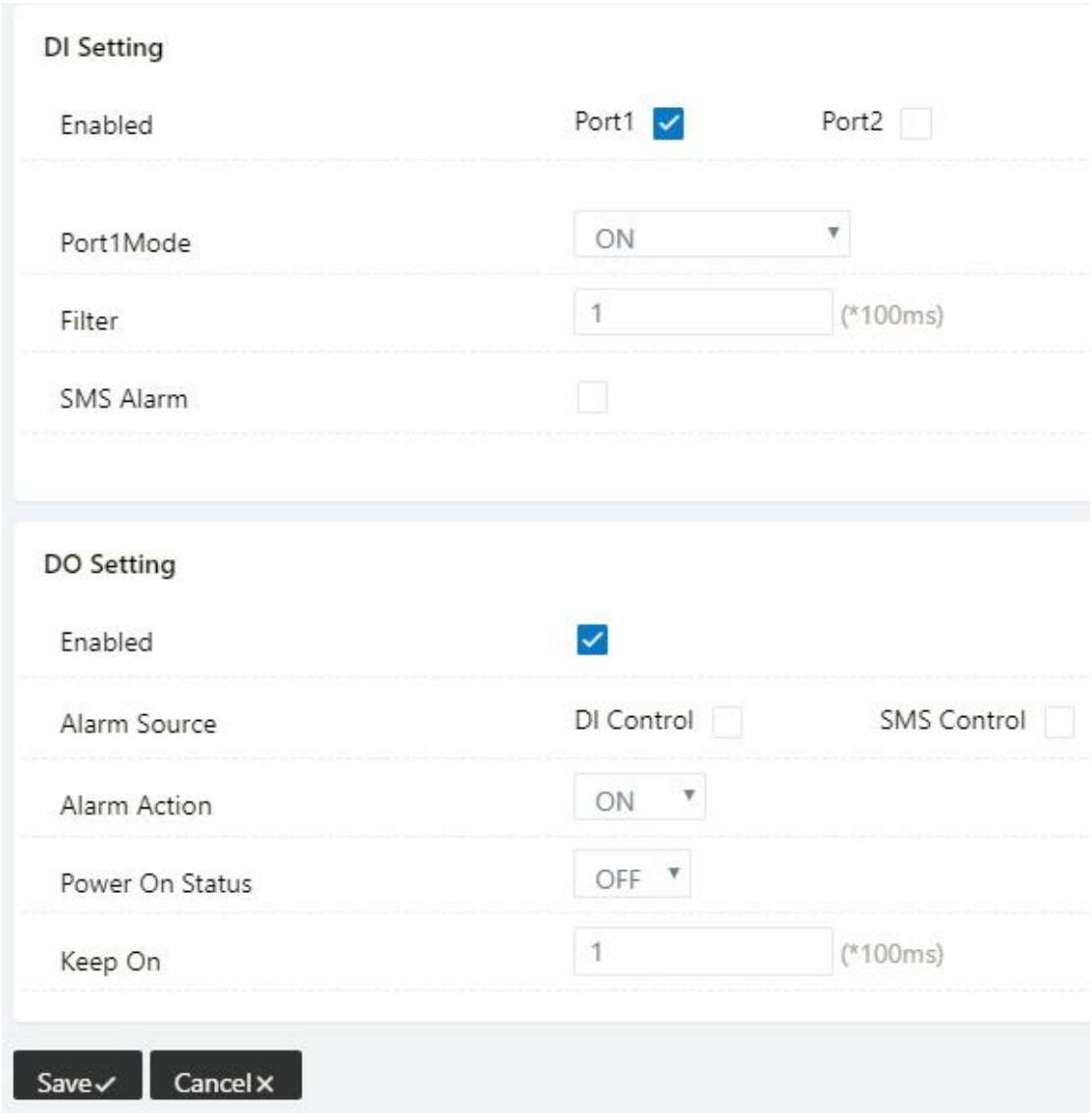


Table 2-31 DI Instruction

Parameter	Instruction
Enable	Enable DI. Port1 is for I/O1 and Port2 is I/O2. Both I/O1 and I/O2 are DI ports
Mode	Selected from OFF, ON and EVENT_COUNTER modes. OFF Mode: DI from high level(3.3v~5V) to low level(0V), it will trigger alarm. ON Mode: DI from low level(0V) to high level(3.3v~5V), it will trigger alarm. EVENT_COUNTER Model: Enter EVENT_COUNTER mode.
Filter	Software filtering is used to control switch bounces. Input (1~100)*100ms. Under OFF and ON modes, WL-G510 detects pulse signal and compares with first pulse shape and last pulse shape. If both are the same level, WL-G510 will trigger alarm.

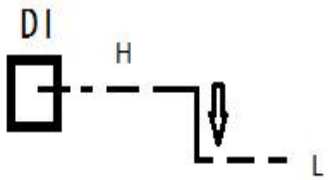
Parameter	Instruction
	Under EVENT_COUNTER mode, if first pulse shape and last pulse shape are not the same level, WL-G510 will trigger alarm according to Counter Action setting.
Counter Trigger	Available when DI under Event Counter mode Input from 0 to 100. (0=will not trigger alarm) It will trigger alarm when counter reaches this value. After triggering alarm, DI will keep counting but no trigger alarm again.
Counter Period	It's a reachable IP address. Once the ICMP check is failed, GRE will be established again.
Counter Recover	it will re-count after counter trigger alarm. The value is 0~30000(*100ms). 0 means no counter.
Counter Action	HI_TO_LO and LO_TO_HI is available when DI under Event Counter mode. In Event Counter mode, the channel accepts limit or proximity switches and counts events according to the ON/OFF status. When LO_TO_HI is selected, the counter value increase when the attached switch is pushed. When HI_TO_LO is selected, the counter value increases when the switch is pushed and released.
Counter Start	Available when DI under EVENT_COUNTER mode. Start counting when enable this feature.
SMS Alarm	The alarm SMS will send to specified phone group. Each phone group include up to 2 phone numbers.
SMS Content	70 ASCII Char Max
Number 1	SMS receiver phone number.
Number 2	SMS receiver phone number.

Step 2 Please click "save" to finish.

NOTE

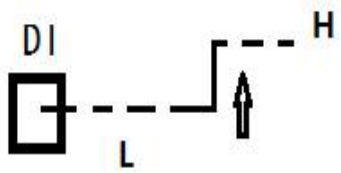
OFF Mode

DI from high level 3.3~5V to low level 0V will be triggered.



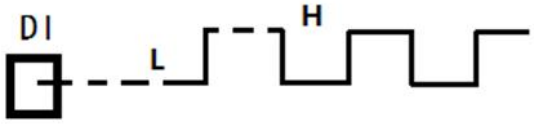
ON Mode

Data input from low level 0V to high level 3.3~5V will be triggered.



EVENT_COUNTER Model

The counted number of pulses will be triggered.



2.12.8.2 DO Configure

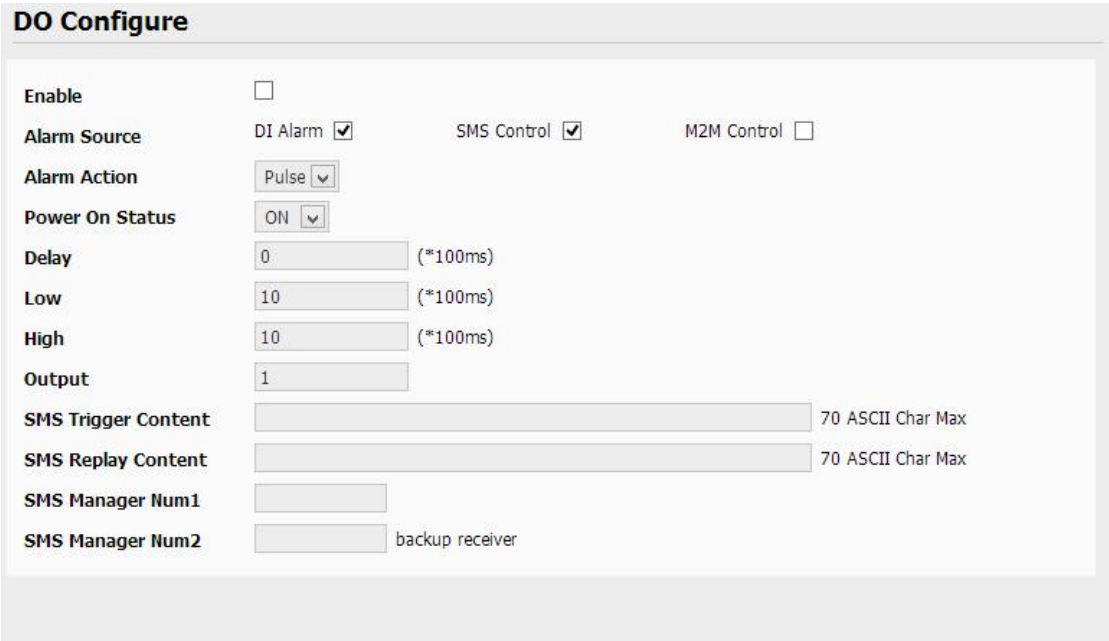


Table 2-32 DO Instruction

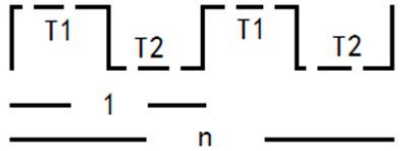
Parameter	Instruction
Enable	1 DO as selected
Alarm Source	Digital output initiates according to different alarm source. Select from DI Alarm, SMS Control and M2M Control. Selections can be one or more. DI Alarm: Digital Output triggers the related action when there is alarm from Digital Input.

Parameter	Instruction
	SMS Control: Digital Output triggers the related action when receiving SMS from the number in phone book. M2M Control: it's not ready.
Alarm Action	Digital Output initiates when there is an alarm. Selected from "OFF", "ON", "Pulse". OFF: Open from GND when triggered. ON: Short contact with GND when triggered. Pulse: Generates a square wave as specified in the pulse mode parameters when triggered.
Power on Status	Specify the digital Output status when power on. Selected from OFF and ON. OFF: how high(0V). ON: high lever(4.8-5.0V)
Keep On	Available when digital output Alarm On Action/Alarm Off Action status is ON, input the Digital Output keep on status time. Input from 0 to 255 seconds. (0=keep on until the next action)
Delay	Available when enable Pulse in Alarm On Action/Alarm Off Action. The first pulse will be generated after a "Delay". Input from 0 to 30000ms. (0=generate pulse without delay)
Low	Available when enable Pulse in Alarm On Action/Alarm Off Action. In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The low level widths are specified here. Input from 1 to 30000 ms.
High	Available when enable Pulse in Alarm On Action/Alarm Off Action. In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The high level widths are specified here. Input from 1 to 30000 ms.
Output	Available when enable Pulse in Alarm On Action/Alarm Off Action. The number of pulses, input from 0 to 30000. (0 for continuous pulse output)
SMS Trigger Content	Available when enable SMS Control in Alarm Source. Input the SMS content to enable "Alarm On Action" by SMS (70 ASIC II char max).
SMS Reply Content	Input the SMS content, which will be sent after DO was triggered. (70 ASIC II char max).
Number 1	SMS receiver phone number.
Number 2	SMS receiver phone number.

Step 3 Please click "save" to finish.

NOTE

DO might be customized pulse width ratio: T1, T2 duration and n value.



---End

2.12.9 Configuration Setting

Step 4 Please click “ Administrator> Configuration ” to do the backup setting

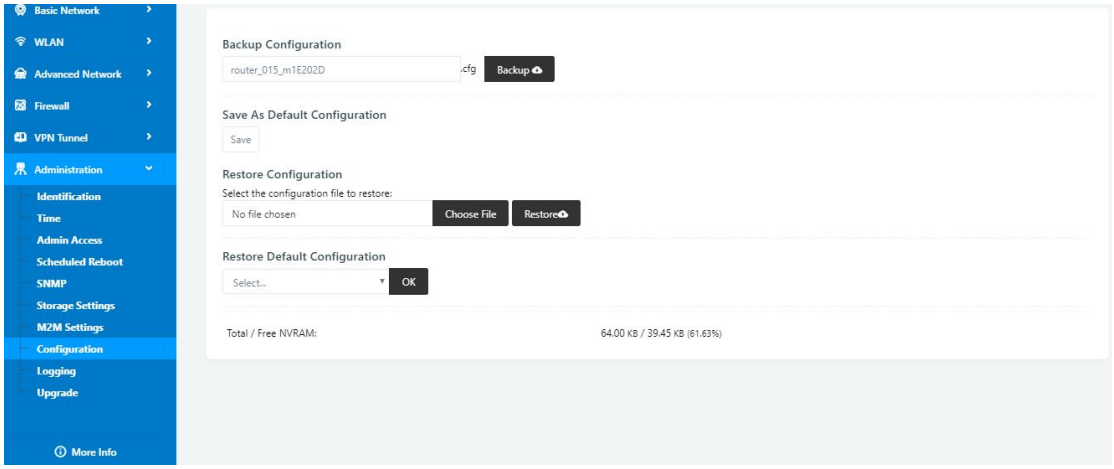


Figure 3-1 Backup and Restore Configuration GUI

CAUTION

Restore Default would lose all configuration information, please be careful.

Step 5 After setting the backup and restore configuration. The system will reboot automatically.

----End

2.12.10 System Log Setting

Step 6 Please click “Administrator> Logging” to start the configuration, you can set the file path to save the log (Local or remote sever).

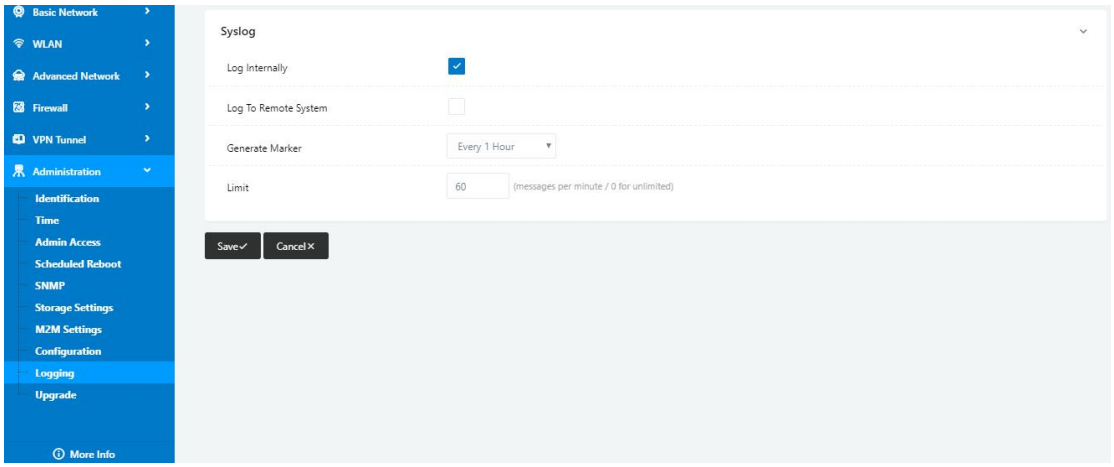


Figure 3-2 System log Setting GUI

Step 7 After configure, please click “Save” to finish.

----End

2.12.11 Firmware upgrade

Step 8 Please click “Administrator>firmware upgrade” to open upgrade firmware tab.

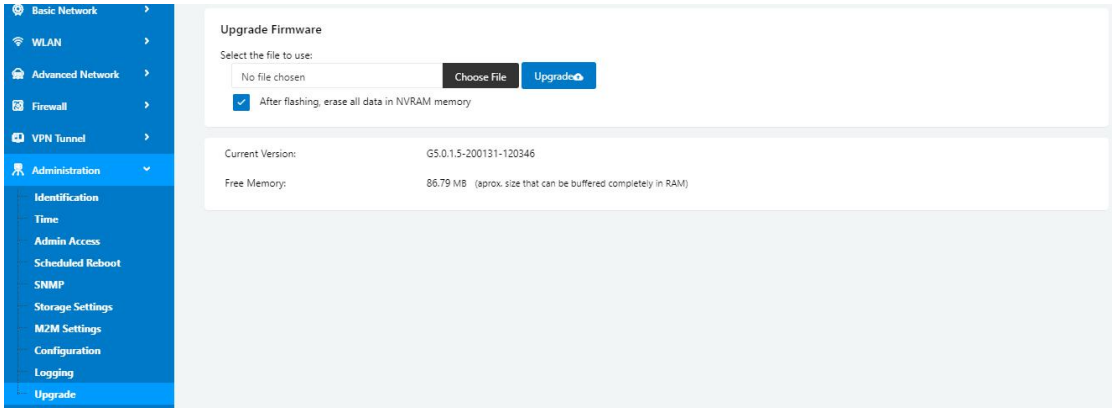


Figure 3-3 Firmware Upgrade GUI

NOTE

Please don’t cut off the power during upgrading. The upgrade period is about 4mins.

2.12.12 “Reset” Button for Restore Factory Setting

If you couldn’t enter web interface for other reasons, you can also use this way. “Reset” button is near to Console port in WL-Rxx panel, This button can be used when the router is in use or when the router is turned on.

Press the “RST” button and keep more than 8 seconds till the NET light stopping blink. The system will be reverted to factory.

Table 2-33 System Default Instruction

Parameter	Default setting
LAN IP	192.168.1.1
LAN Subnet Mask	255.255.255.0
DHCP server	Enable
User Name	admin
Password	admin

NOTE

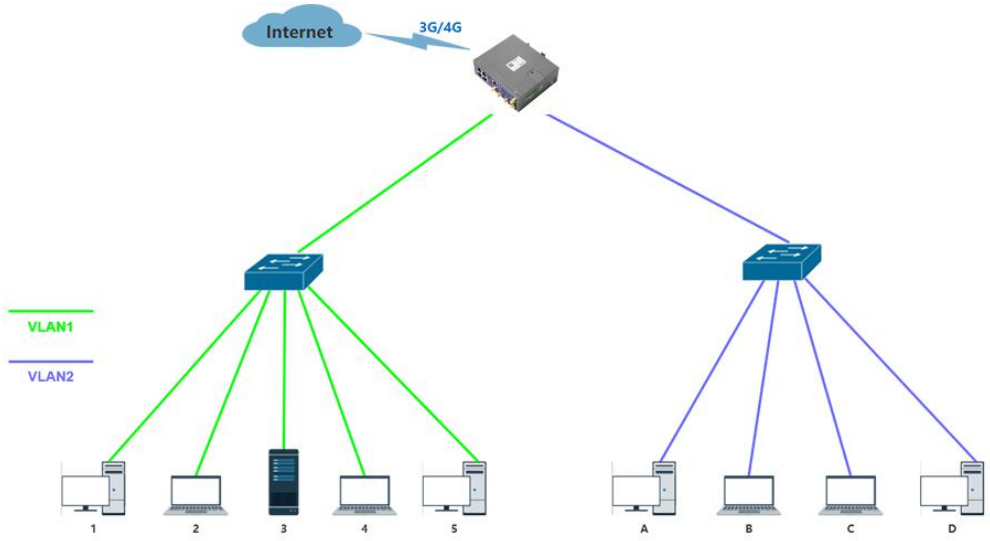
After reboot, the previous configuration would be deleted and restore to factory settings.

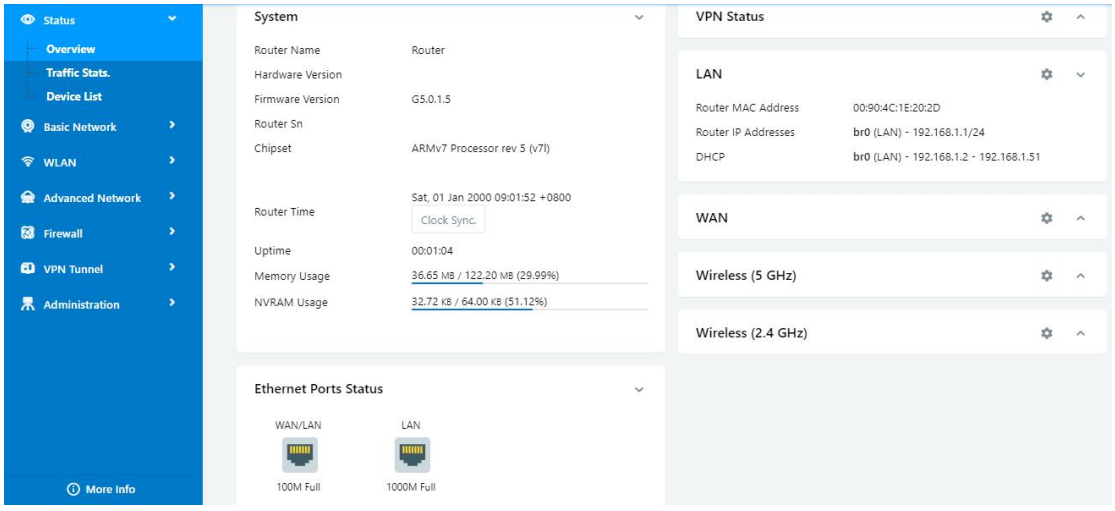
3 Configuration Instance

This chapter is mainly for configured test case, there would be some difference between the scheme and real object. But the difference doesn't have any influence to products performance.

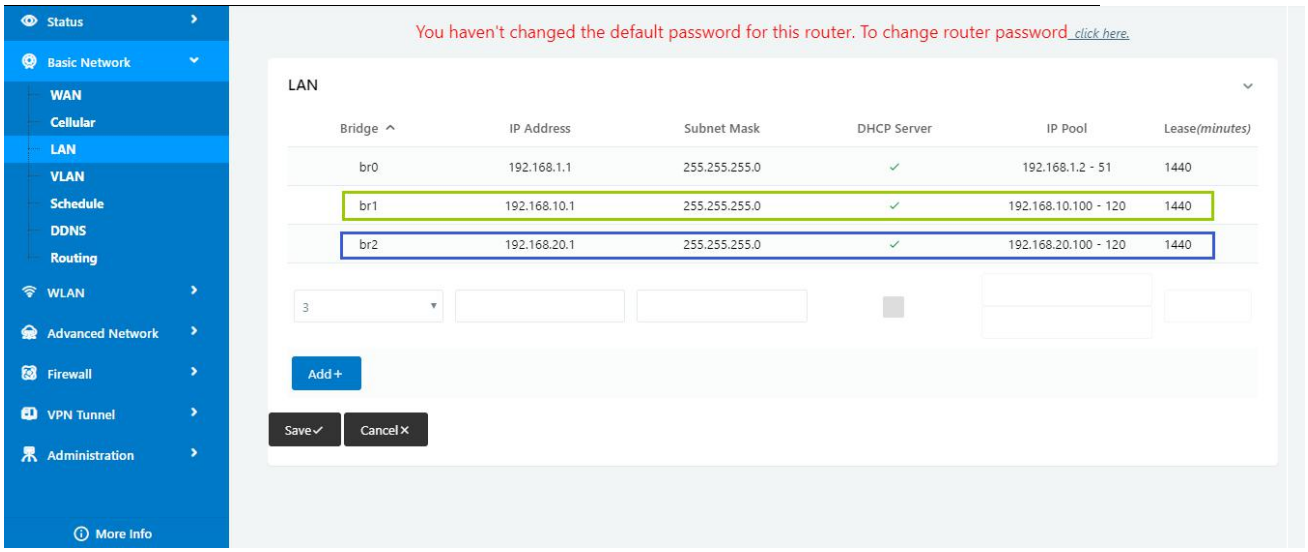
3.1 VLAN

WL-R200/R210/R520 supports VLAN partition based on Ethernet port (LAN1~LAN5)

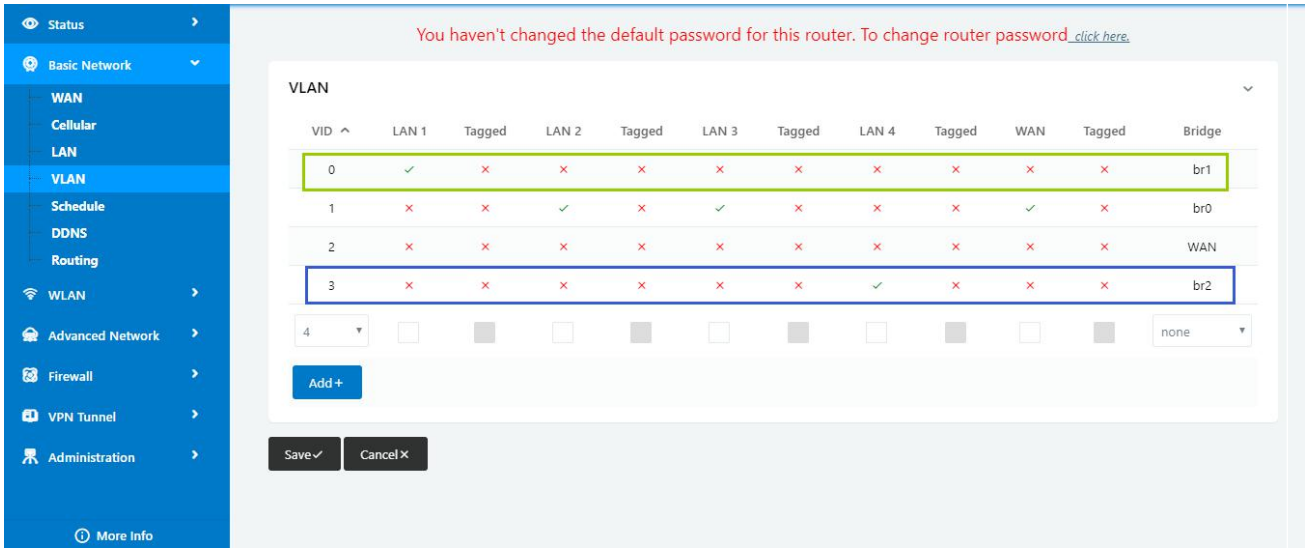




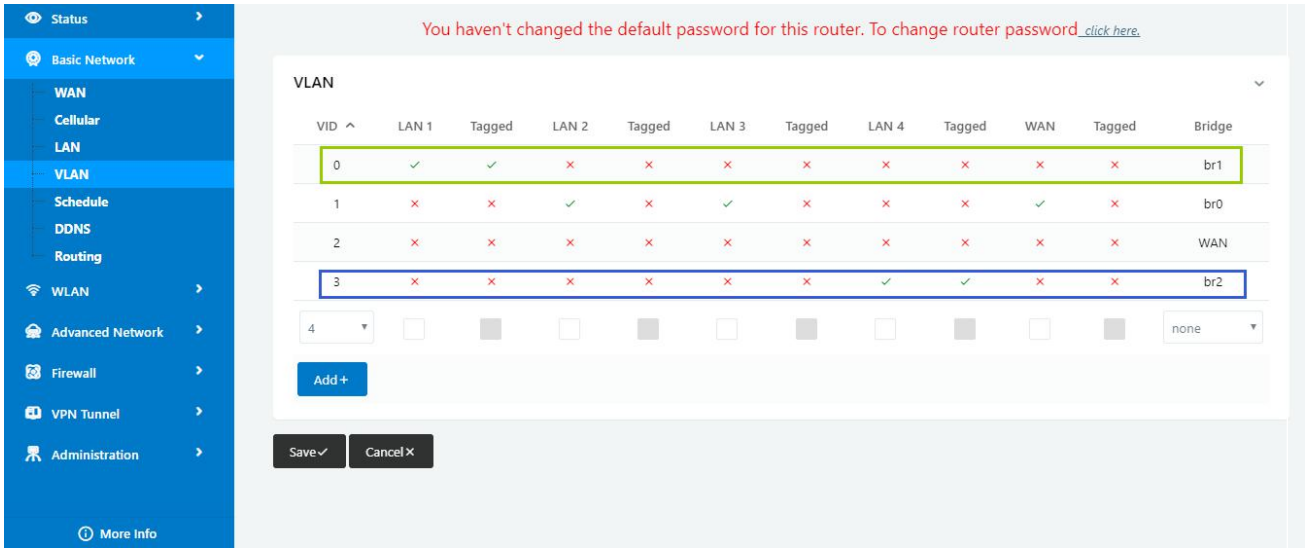
1) Configure LAN with Basic Network.



2) If untag for br1 ad br2, it won't be accessed between SW1 and SW2.



3) If tag for br1 and br2, it will be accessed between sw1 and sw2.

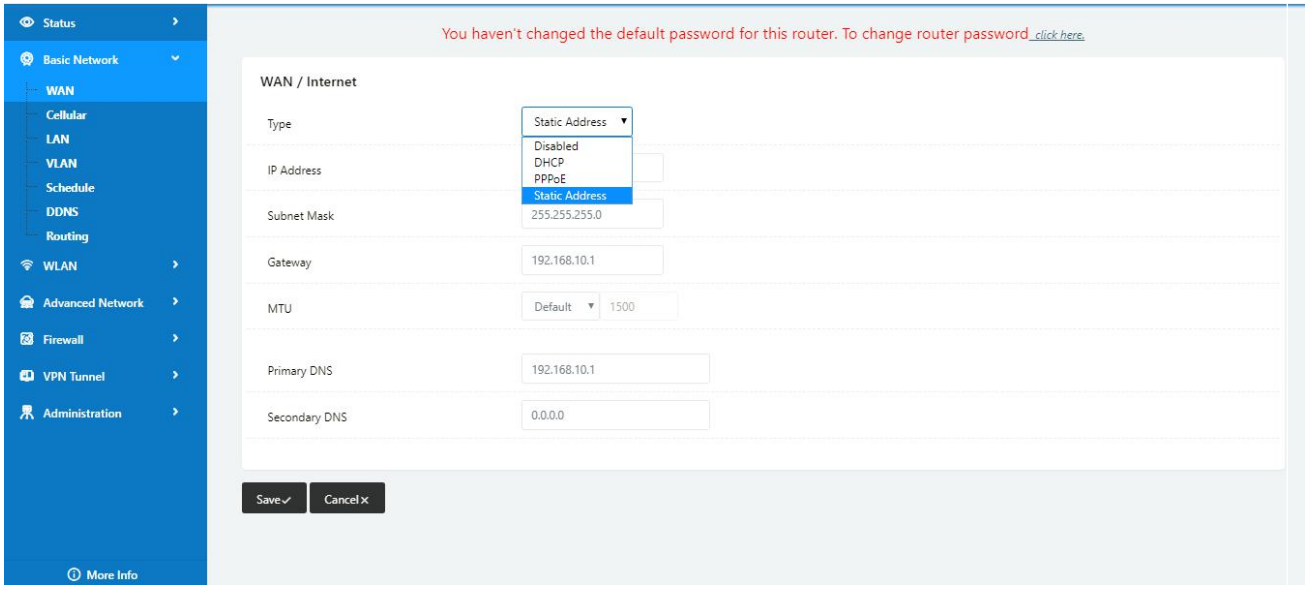


---End

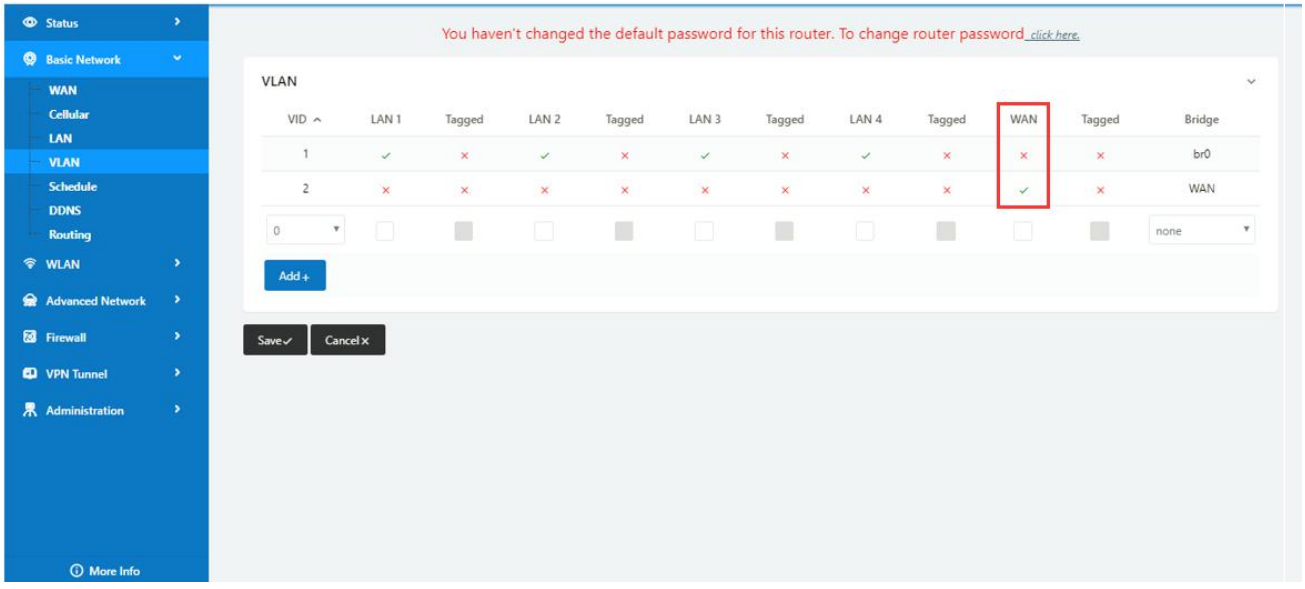
3.2 WAN Backup (WAN as Main, Cellular Backup)

The WAN and Cellular backup feature can quickly switch traffic to Cellular (link2) when WAN (link1) fails, and WL-Rxx brings you a stable network experience.

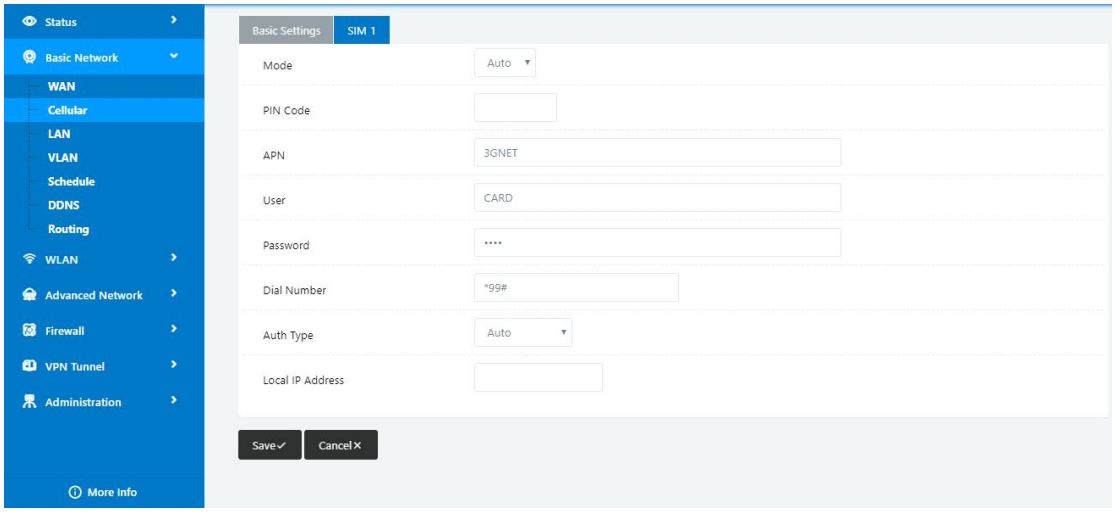
1) Navigate to Basic **Network > WAN**, you may configure the WAN parameters with your situation



2) Navigate to **Basic Network > VLAN**, enable the LAN1 as WAN Ethernet



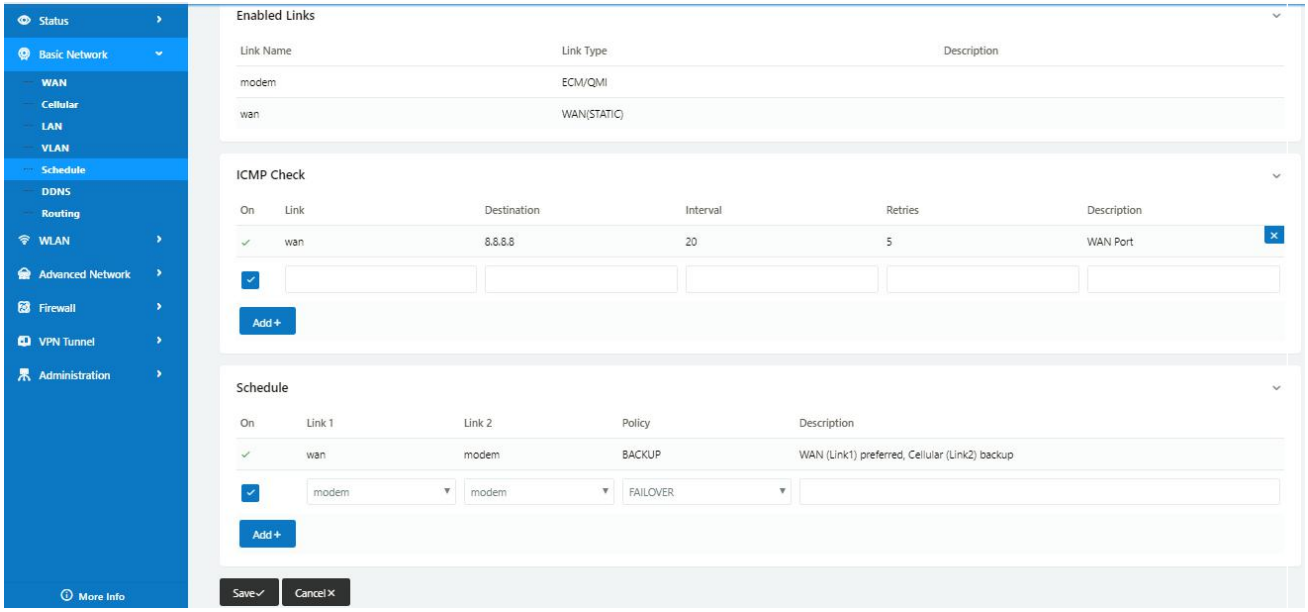
3) Navigate to **Basic network > Cellular**, configure the APN as your SIM



4) Navigate to **Basic Network > Schedule**, configure WAN (Link1) preferred, Cellular backup (Link2)

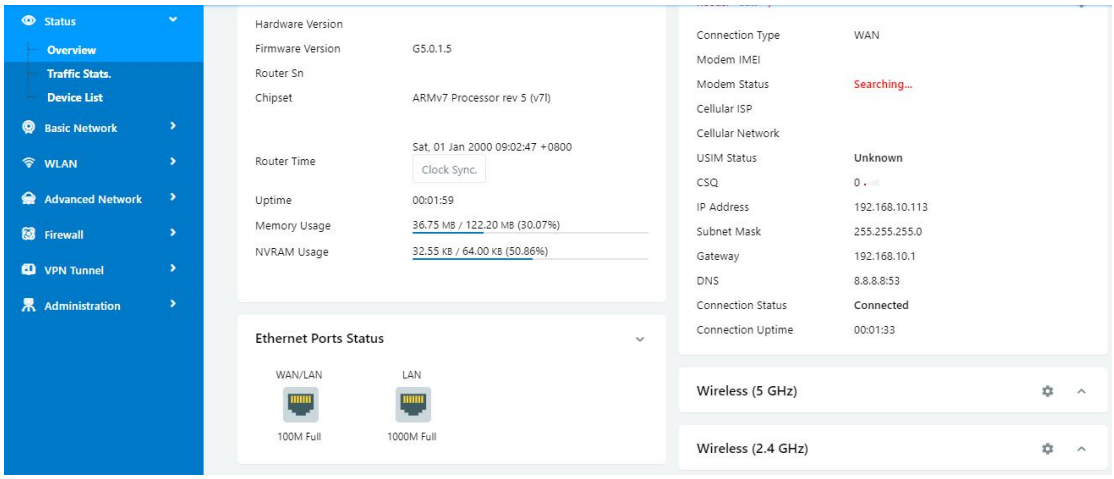
Add ICMP Check to WAN

Set the working mode (Schedule)



Parameters	Instruction
modem	The router dial-up to network via modem
wan	The router dial-up to network via WAN (DHCP, PPPOE, Static IP) Ethernet
ICMP Check	When the ICMP Check fails, the switching action between Link1 and Link2 will be triggered
Link1	The preferred link
Link2	The alternate link
BACKUP	Backup mode, Link1 and Link2 will remain online at the same time
FAILOVER	Failover mode, Link2 will dial-up to network when link1 fails

5) Status: WAN working



6) The system quickly switches traffic to Cellular when the WAN fails

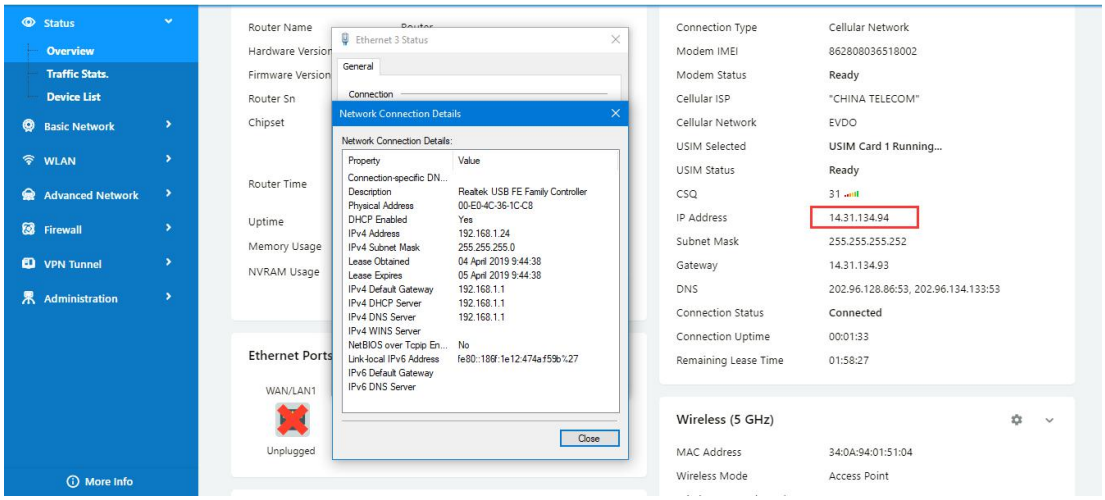
---End

3.3 Port Forwarding

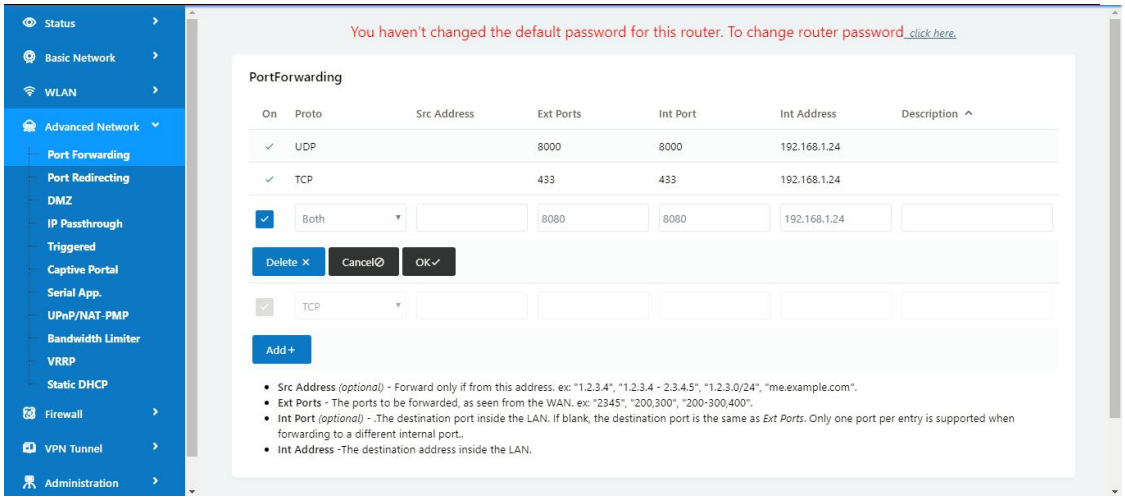
1) The router online and got a public IP address 14.31.134.94

Note: It's based on SIM card carrier

2) The PC is connected to router and got IP address 192.168.1.24



3) Configuration

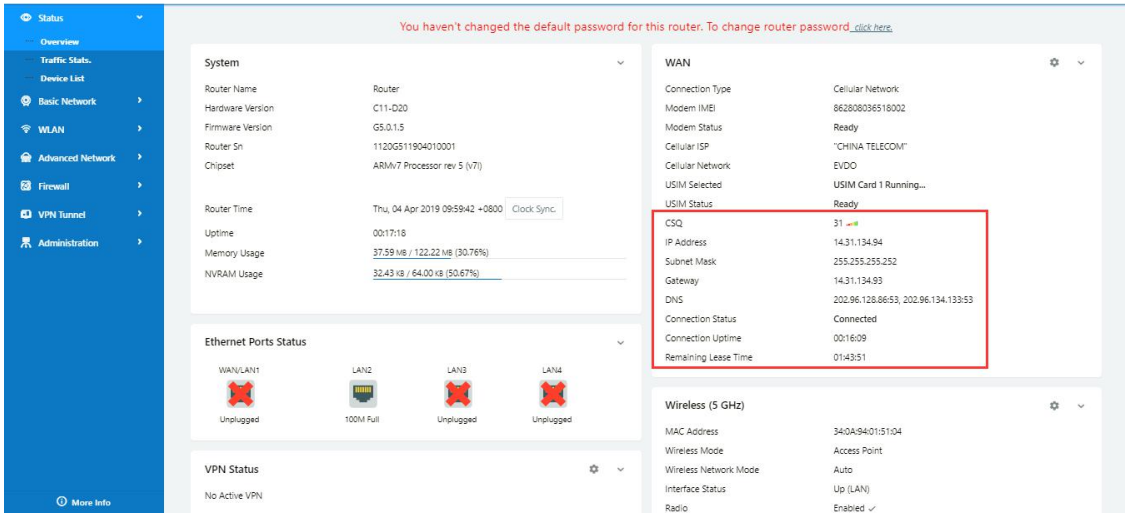


4) The PC can be accessed via 14.31.134.94:443 over Internet

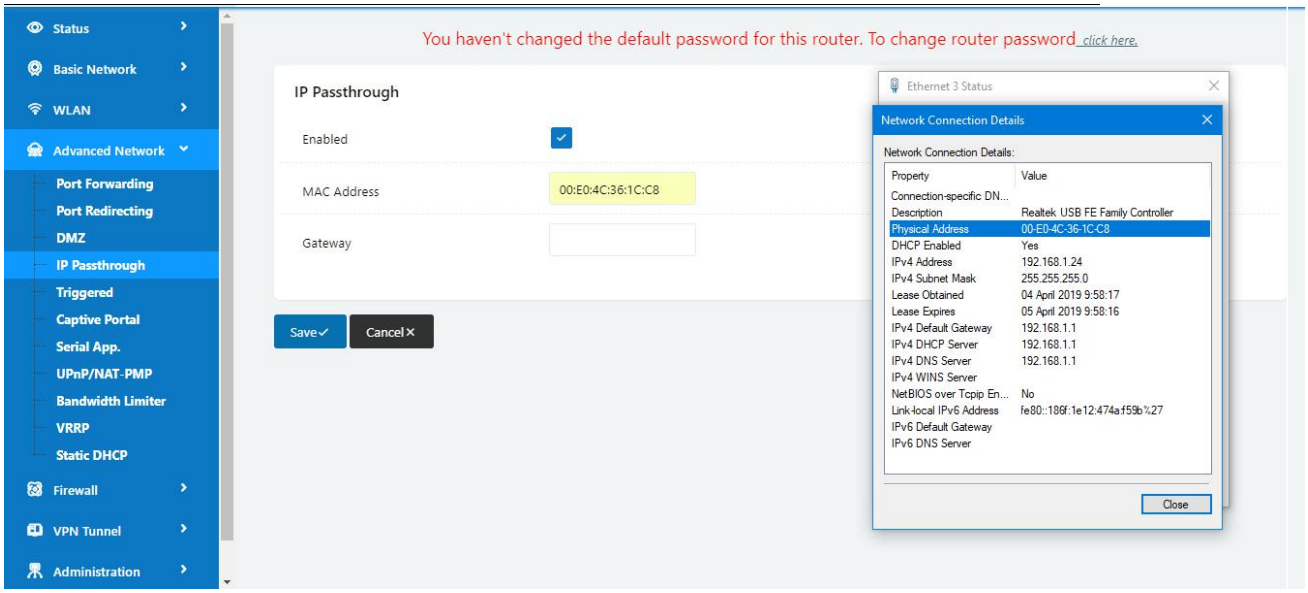
---End

3.4 IP Passthrough

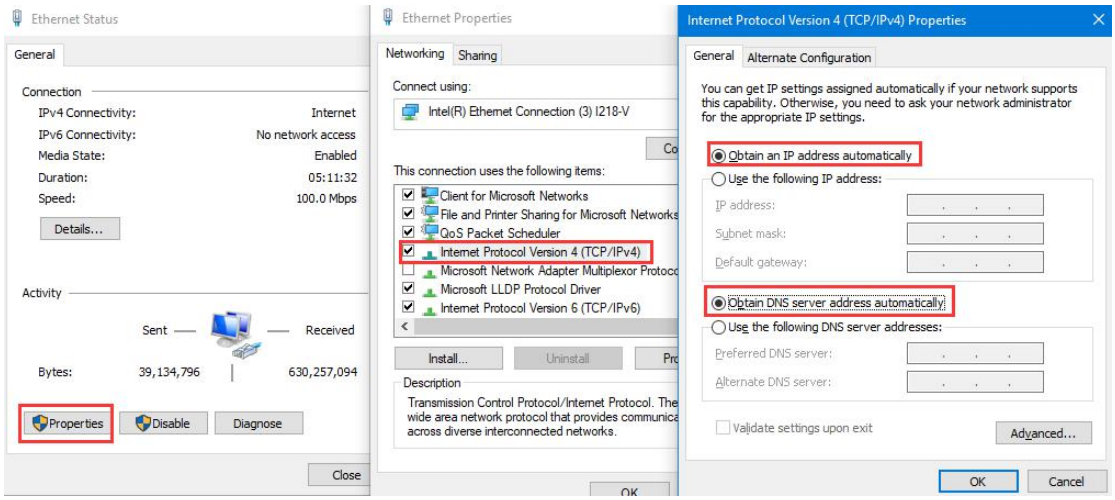
1) The router online



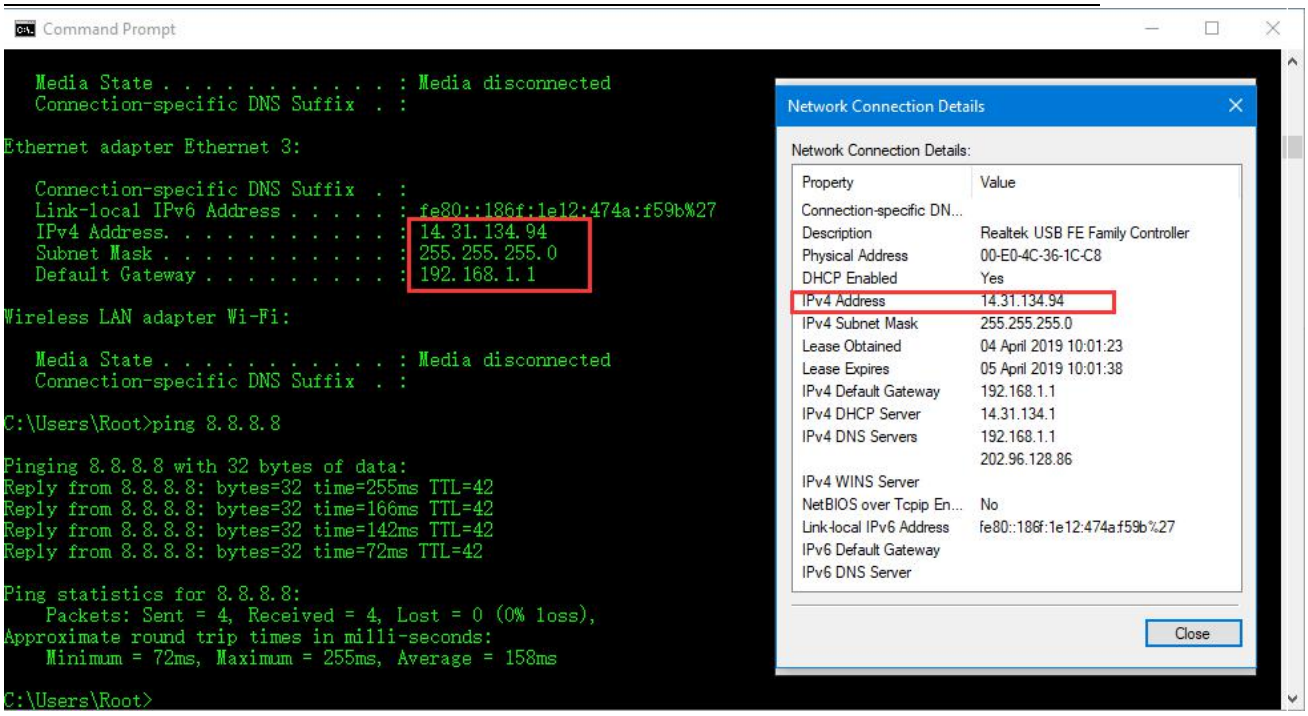
2) Configure IP passthrough destination MAC address (PC Ethernet MAC)



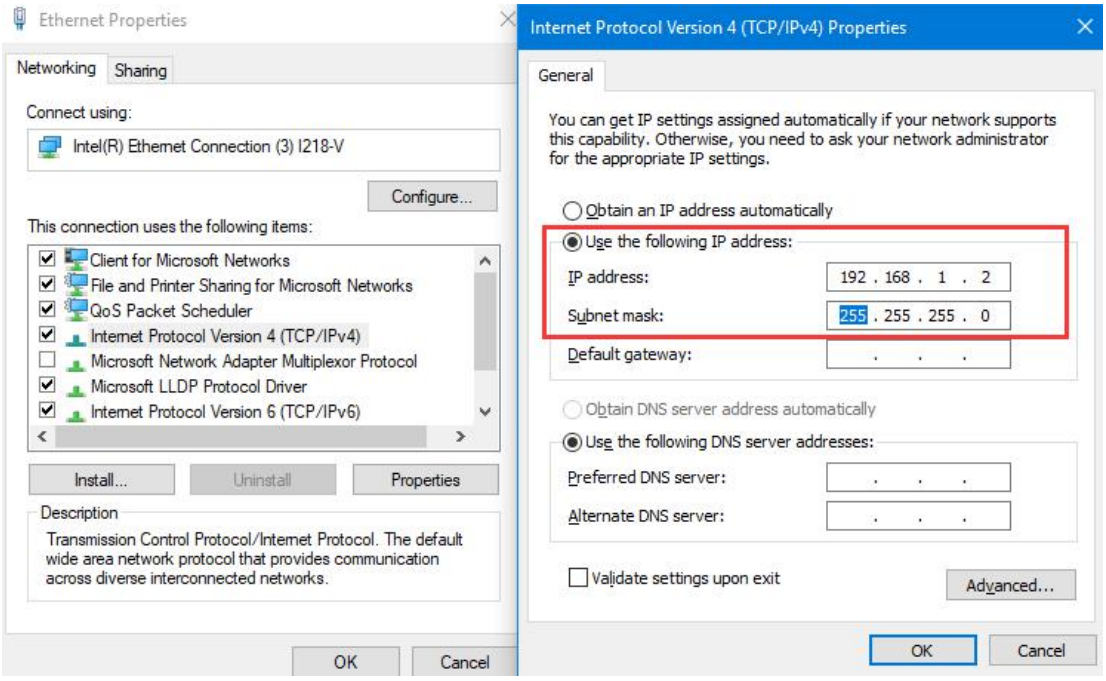
3) Set the PC to DHCP



4) Check the Ethernet status and ping test



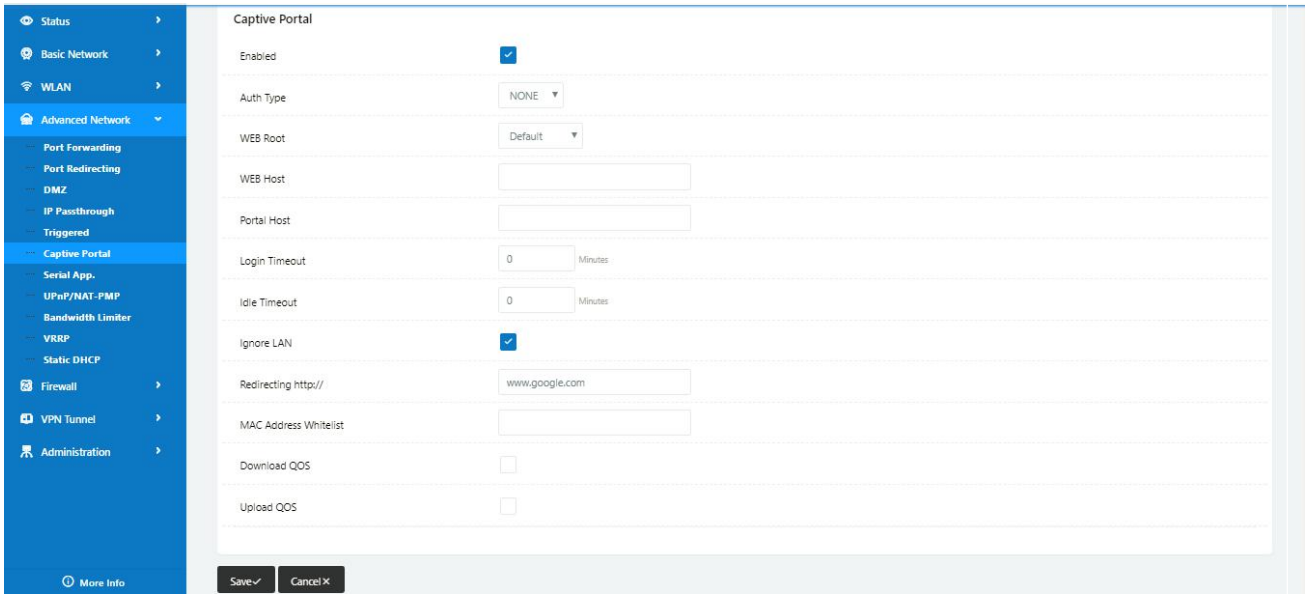
5) Set the PC Ethernet as DHCP to release the IP and access to router GUI again



---End

3.5 Captive Portal

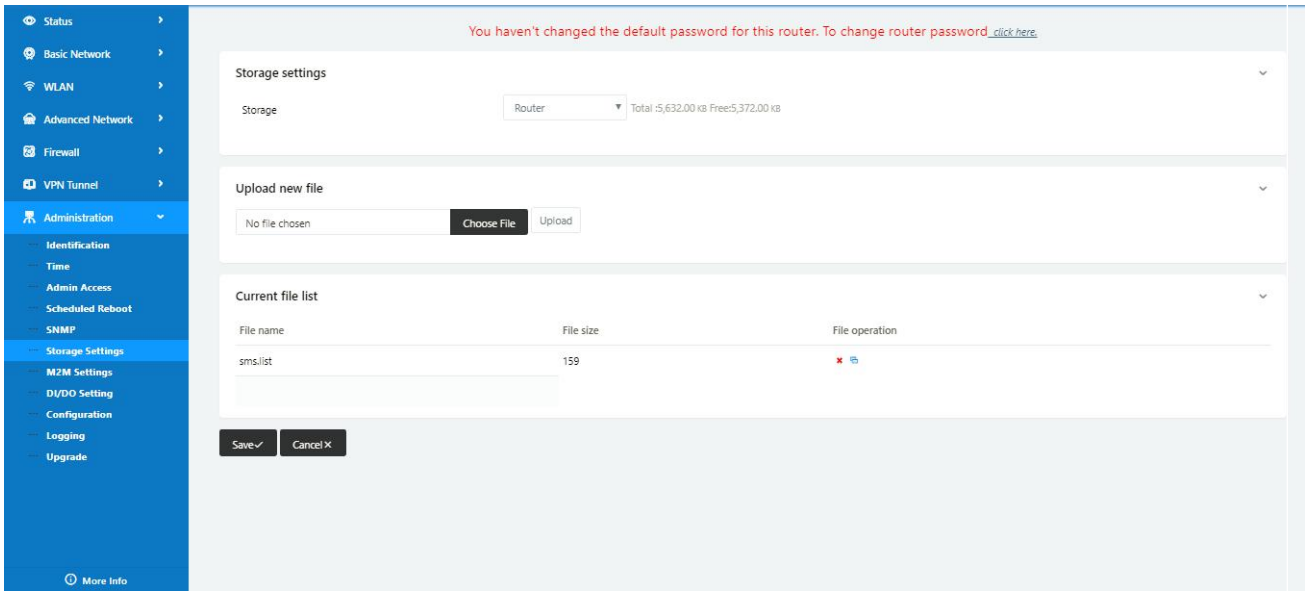
Please click “Advanced Network> Captive Portal” to check or modify the relevant parameter.



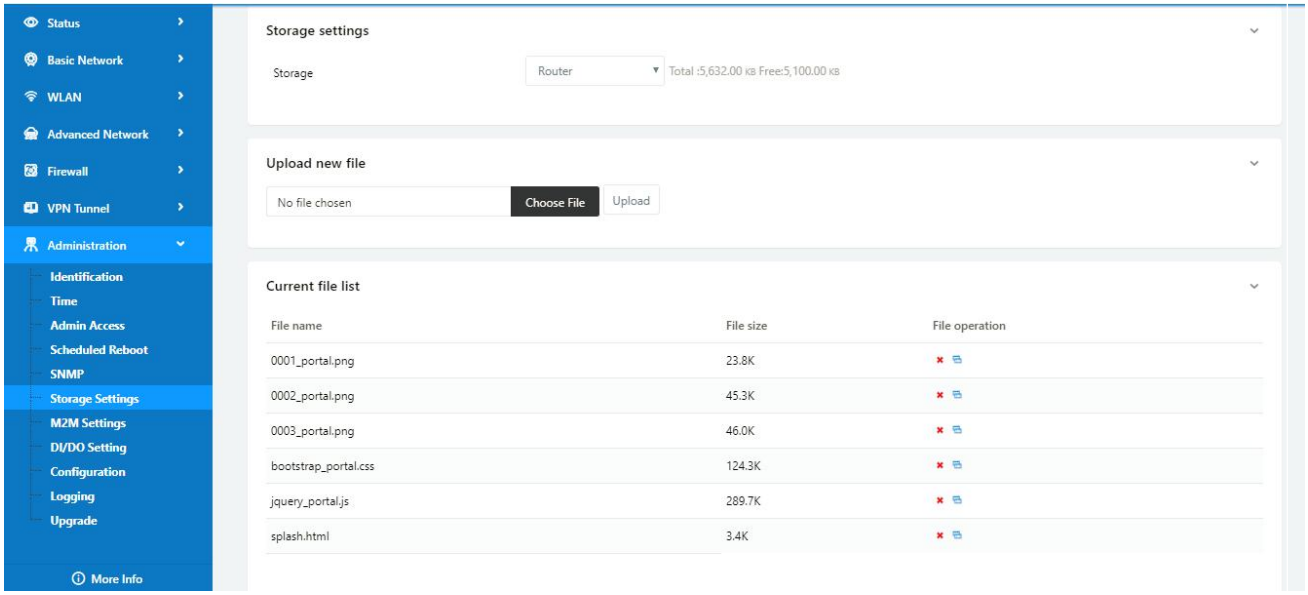
1) Upload Portal file and Splash.html by local

Upload portal images and splash.html in router for the Slider (0001_portal.png, 0002_portal.png, and 0003_portal.png) to the Router under the “Administration / Storage Settings” menu.

Furthermore, also might upload splash with images together.

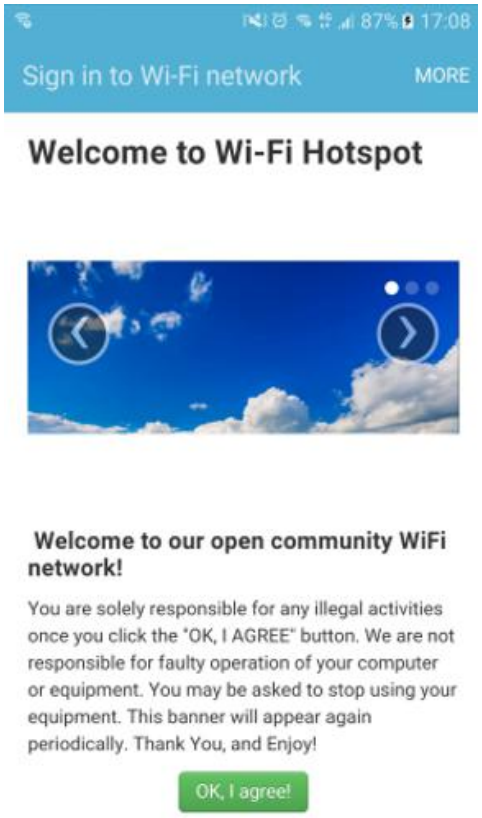


Each Ad file just supports 3 Ad portal images. Picture format is acceptable for png/jpg and image size is less than 100Kbytes and resolution is 800*600. Picture name is 0001_portal.png, 0002_portal.png and 0003_portal.png. Furthermore, please keep image names the same between portal file and splash.html.



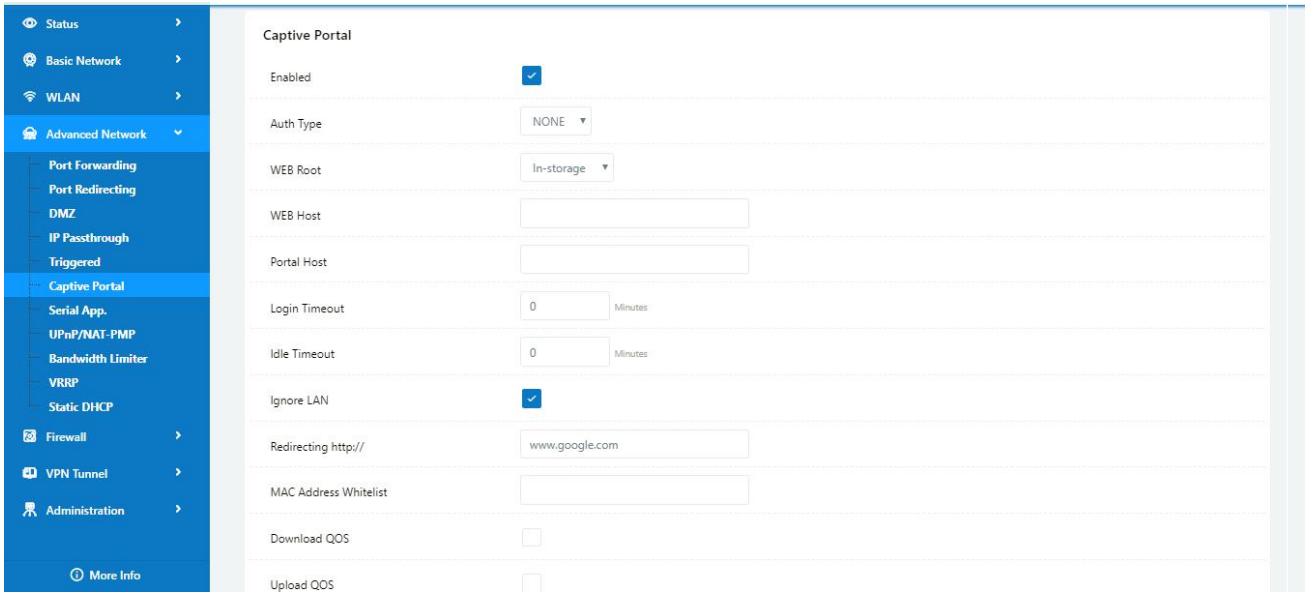

```
<!-- <hr> -->

<div id="myCarousel" class="carousel slide marketing">
    <ol class="carousel-indicators">
        <li data-target="#myCarousel" data-slide-to="0" class="active"></li>
        <li data-target="#myCarousel" data-slide-to="1"></li>
        <li data-target="#myCarousel" data-slide-to="2"></li>
    </ol>

    <div class="carousel-inner">
        <div class="item active">
            <img src="0001_portal.png" alt="">
        </div>
        <div class="item">
            <img src="0002_portal.png" alt="">
        </div>
        <div class="item">
            <img src="0003_portal.png" alt="">
        </div>
    </div>
    <a class="left carousel-control" href="#myCarousel" data-slide="prev">&lsaquo;</a>
    <a class="right carousel-control" href="#myCarousel" data-slide="next">&rsaquo;</a>
</div>

<!-- <hr> -->
```

Finally, we can see the results by connect to router WIFI



2) Modify portal file storage path

Modify portal file storage for In-storage as below.



---End

3.6 GPS Settings

Please click “Advanced Network> GPS” to view or modify the relevant parameter.

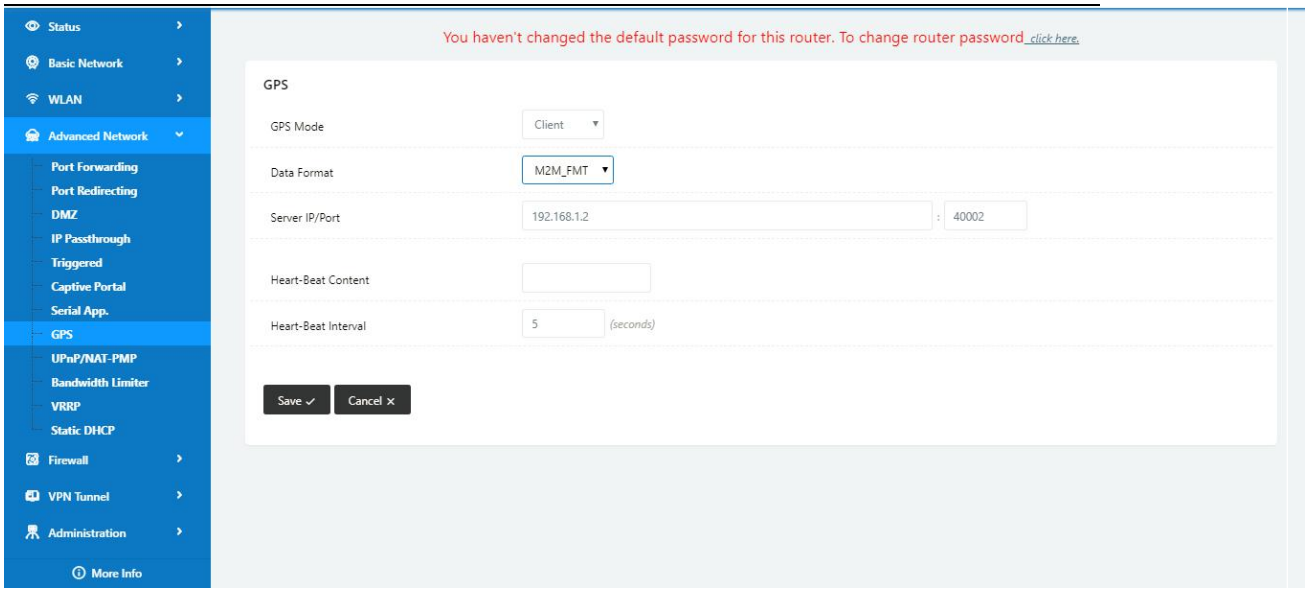


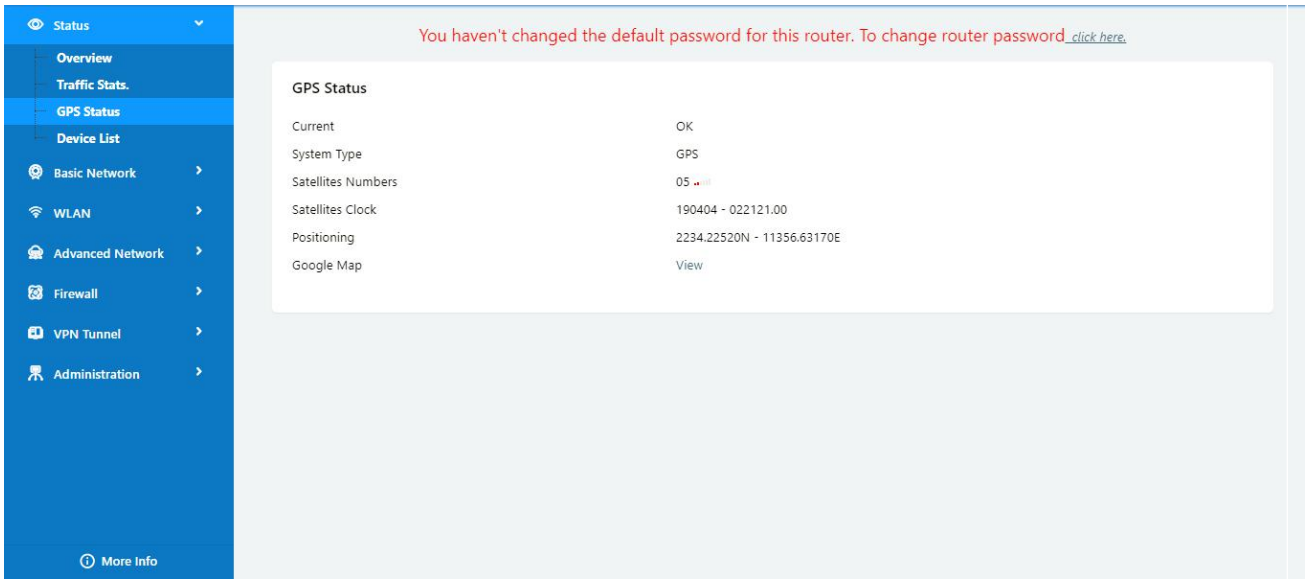
Table 4-6 “GPS” Instruction

parameter	Instruction
GPS Mode	Enable/Disable
GPS Format	NMEA and M2M_FMT(WLINK)
Server IP/Port	GPS server IP and port
Heart-Beat	If choose M2M_FMT format, heart-beat ID will be packed into GPS data.
Interval	GPS data transmit as the interval time.

Step 1 Please click “save” to finis

Step 2 Connect the GPS antenna to router GPS interface

Step 3 Check GPS Status



NOTE

M2M_FMT Format as below.

1. GPS data structure.

Router ID, gps_date, gps_time, gps_use, gps_latitude, gps_NS, gps_longitude, gps_EW, gps_speed, gps_degrees, gps_FS, gps_HDOP, gps_MSL

2. Example

0001_R081850ac,150904,043215.0,06,2234.248130,N,11356.626179,E,0.0,91.5,1,1.2,97.5

3. GPS data description

Field No.	Name	Format	Example	Description
1	Router ID	String	0001_R081850ac	0001 customizable product ID. _R router indicator. 081850ac Last 8digits of routers MAC address.
2	gps_date	yymmdd	150904	Date in year,month,day
3	gps_time	hhmmss.sss	043215.0	UTC Time, Time of position fix.
4	gps_use	numeric	06	Satellites Used, Range 0 to 12.
5	gps_latitude	ddmm.mmmm	2234.248130	Latitude, Degrees + minutes.
6	gps_NS	character	N	N/S Indicator,N=north or S=south.
7	gps_longitude	ddmm.mmmm	11356.626179	Longitude, Degrees + minutes.
8	gps_EW	character	E	E/W indicator, E=east or W=west.
9	gps_speed	numeric	0.0	Speed(Knots) over ground, units is kn/h.
10	gps_degrees	numeric	91.5	Course over ground, unit is degree.
11	gps_FS	digit	1	Position Fix Status Indicator,
12	gps_HDOP	numeric	1.2	HDOP, Horizontal Dilution of Precision
13	gps_MSL	numeric	97.5	MSL Altitude, units is meter.

---End

3.7 Firewall

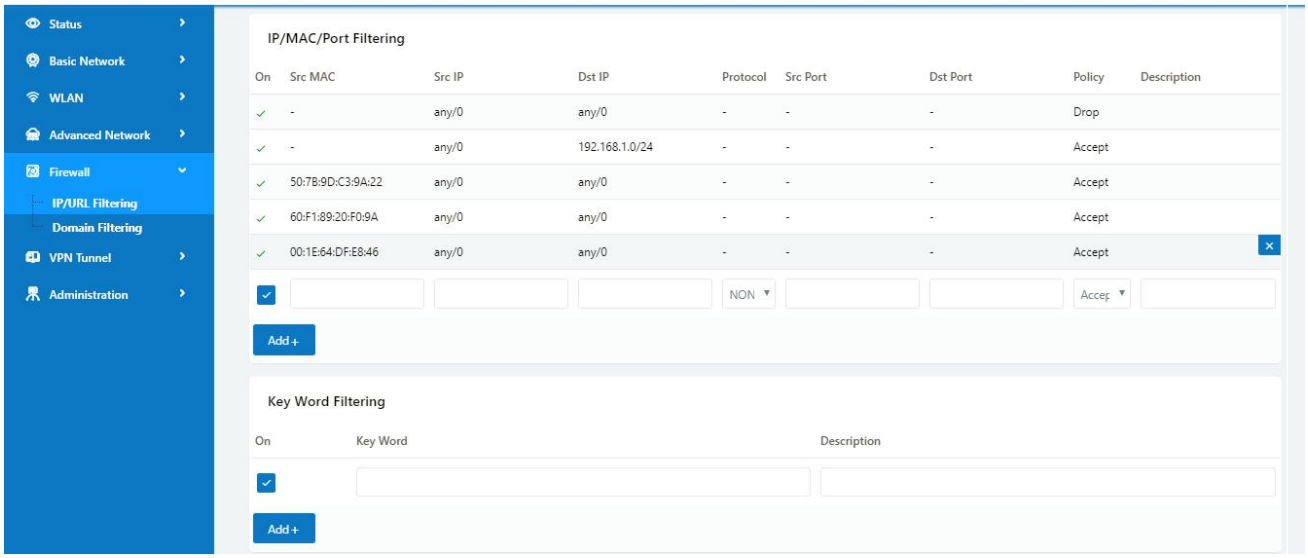
1) IP/MAC/Port Filtering

This part used to intercept packages from router's WAN/Celluar interface to Internet.

Test case:

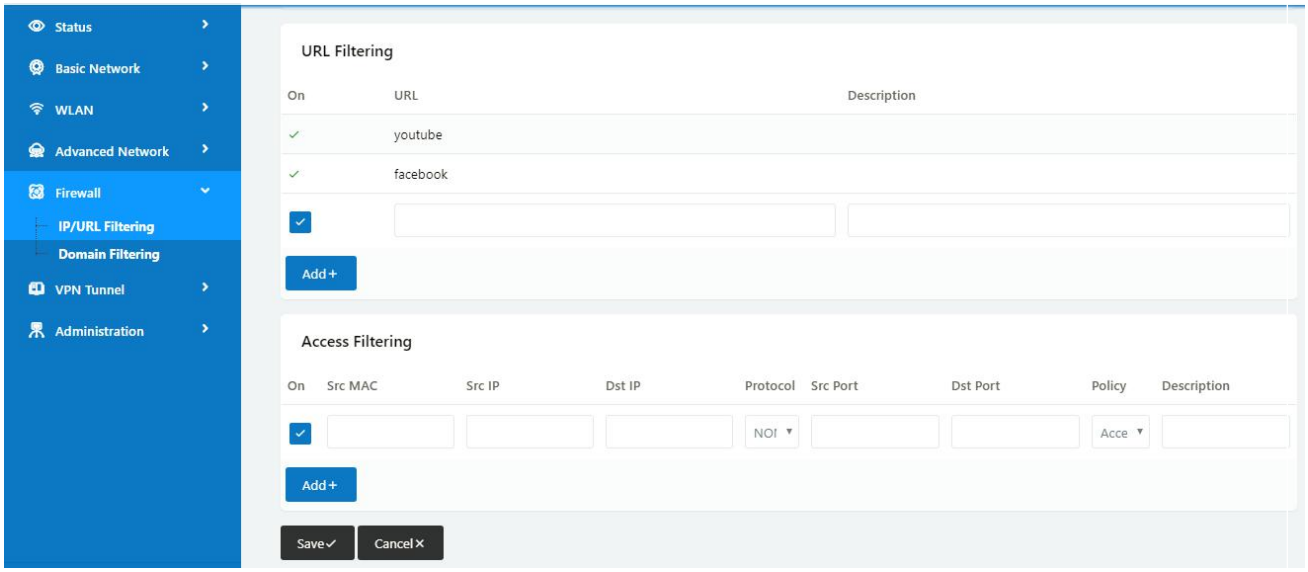
1.1 Only allow three devices (MAC/LAN/WLAN) can access to Internet via WAN: 110.110.10.10

1.2 Only allow three devices (MAC/LAN/WLAN) can access to the router page (192.168.1.1)



2) Key Word Filtering

This part used to filter key word packages from router's WAN/Cellular interface to Internet.



3) URL Filtering

This part used to filter URL from router's WAN/Cellular interface to Internet.

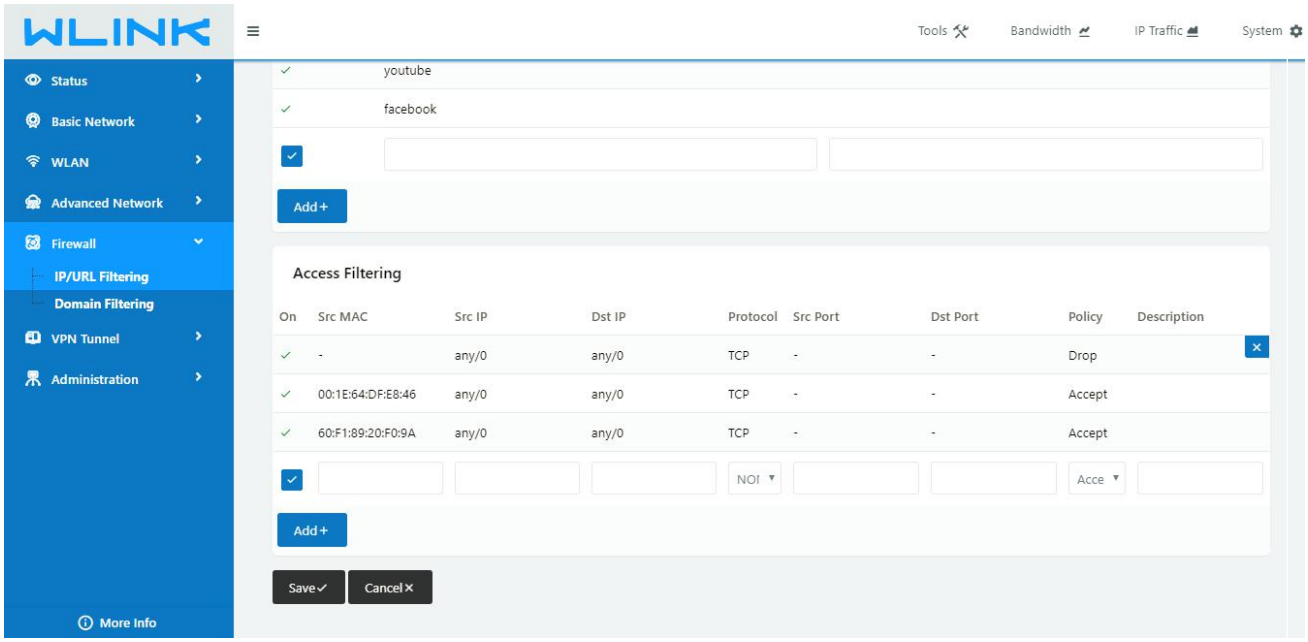
4) Access Filtering

This part used to filter packages from Internet to router's WAN/Celluar interface.

Test case:

4.1) Intercept all TCP packets accessing the router's WAN/Celluar(110.110.10.10).

4.2) Only two devices (MAC/LAN/WLAN) are allowed to be accessed from Internet packets.

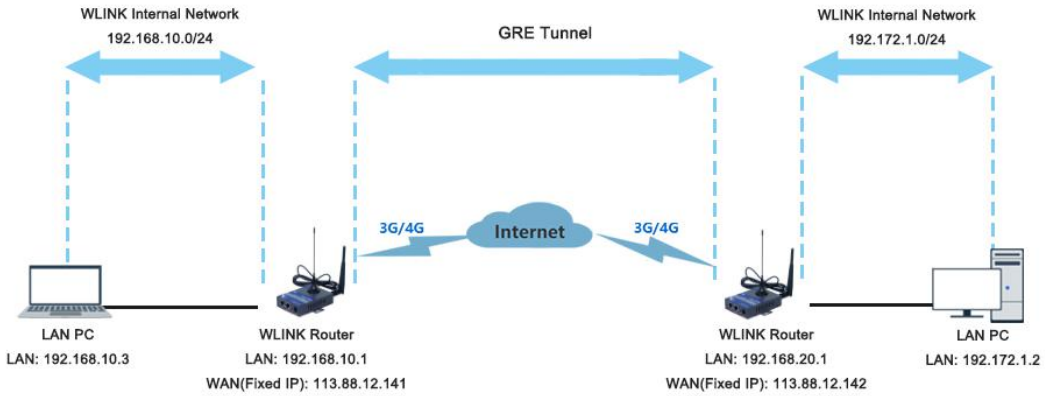


---End

3.8 VPN Tunnel

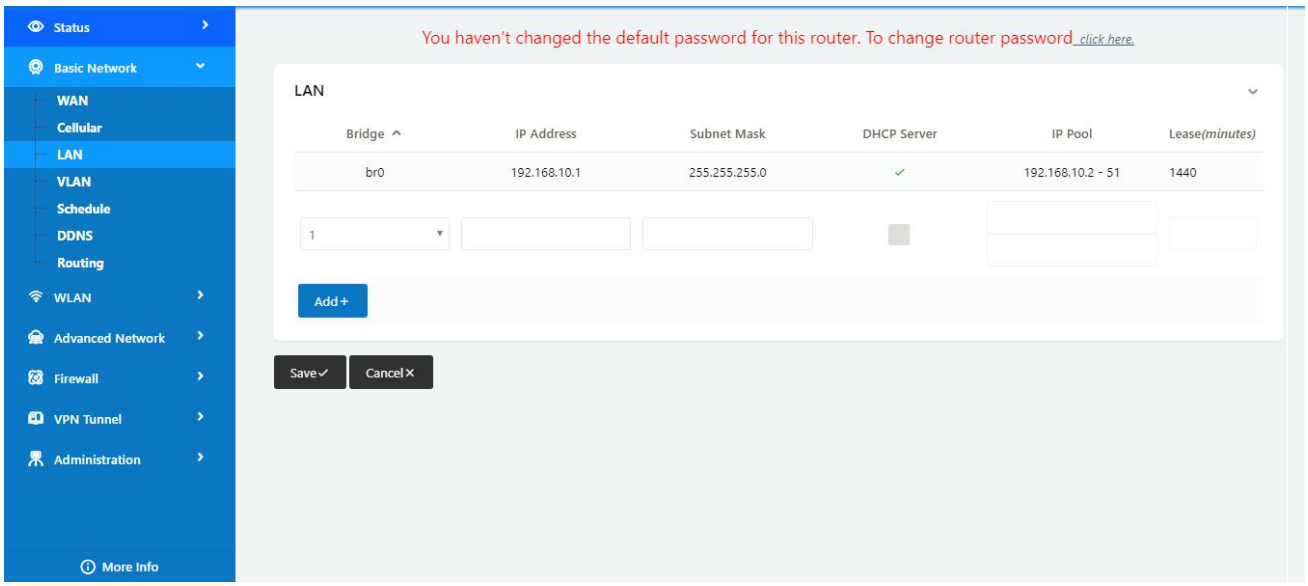
3.8.1 GRE

GRE Tunnel between two WL-Rxx Routers

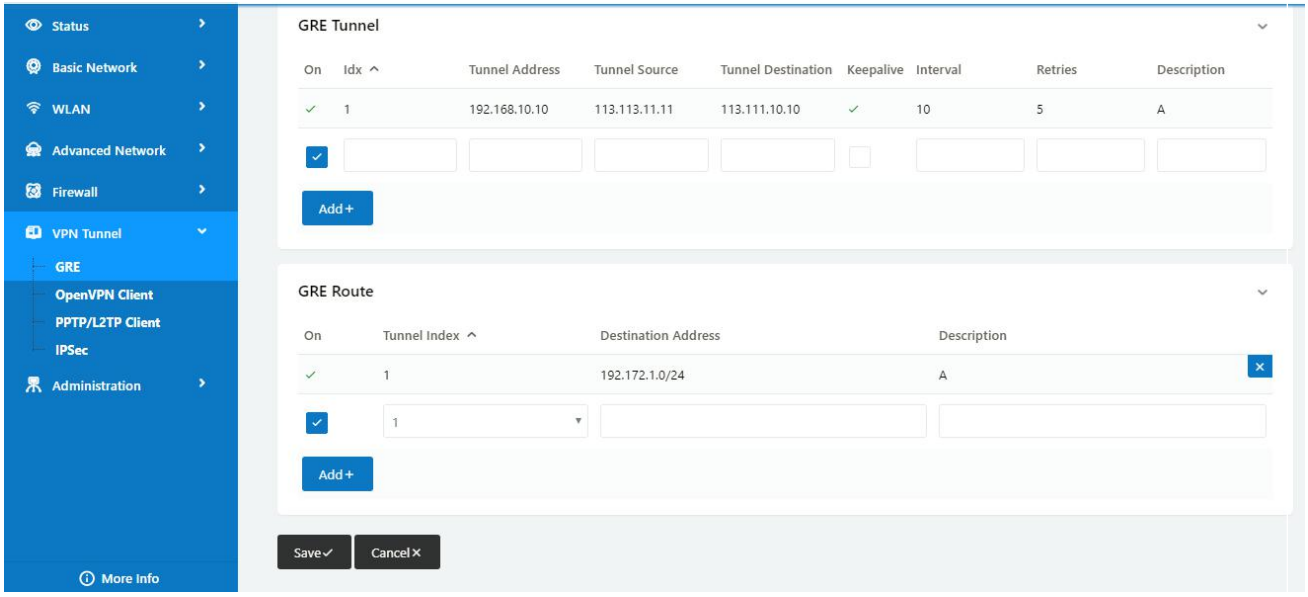


1) WL-R200(A) Config

Navigate to **Basic Network > LAN**

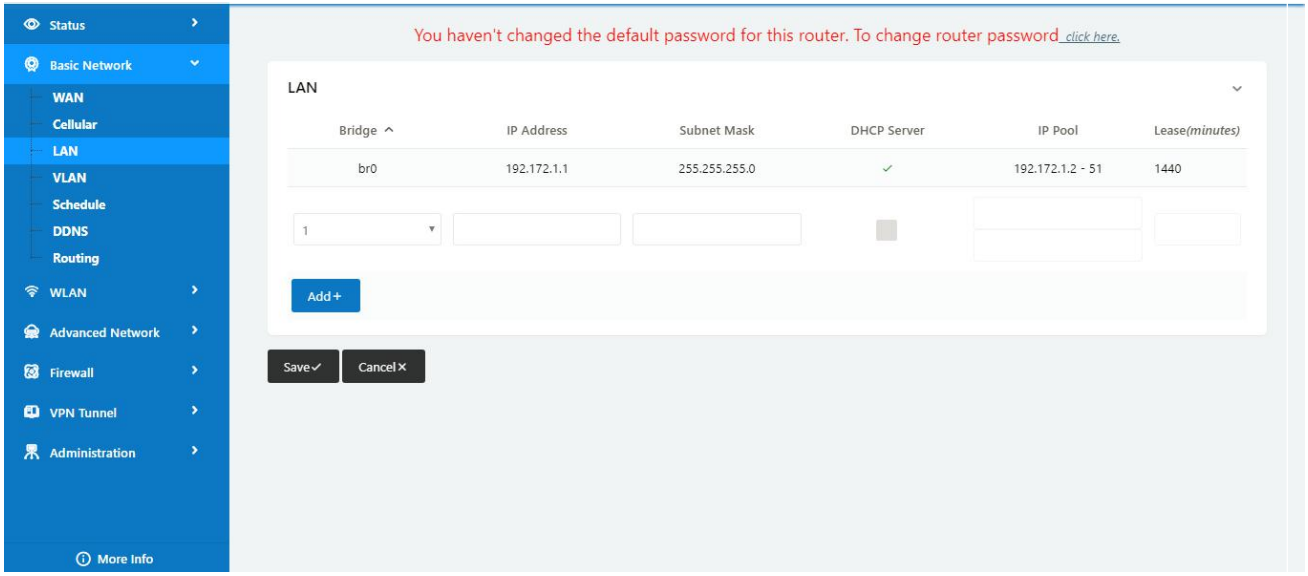


Navigate to **VPN Tunnel > GRE**

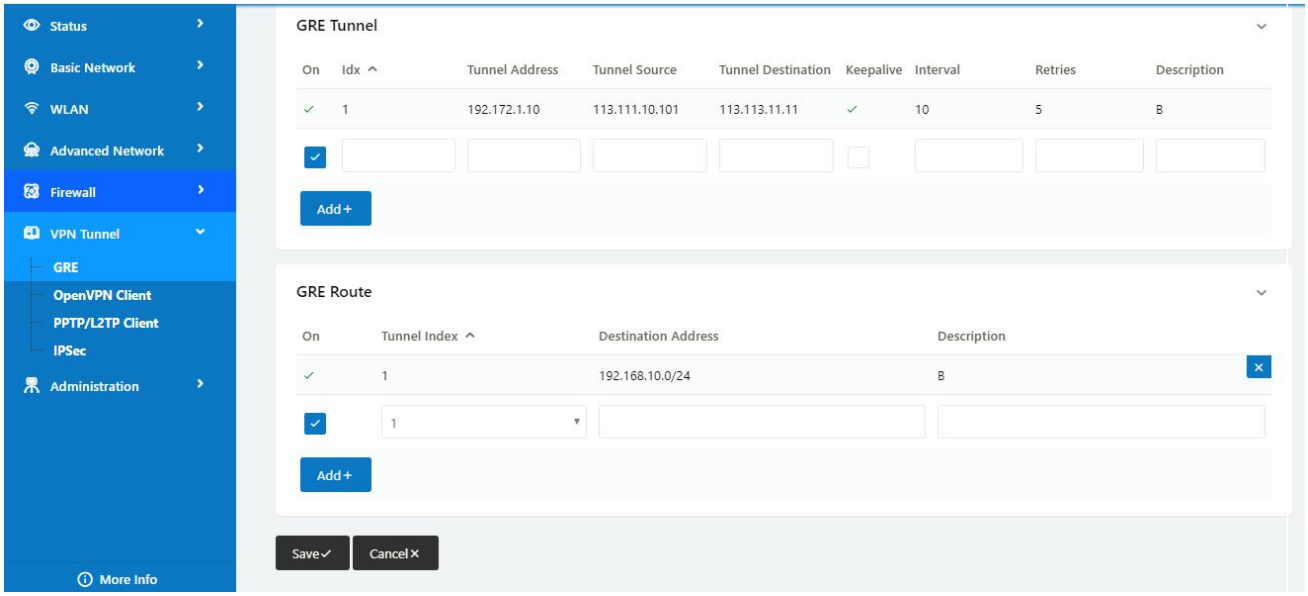


2) WL-R200(B) Config

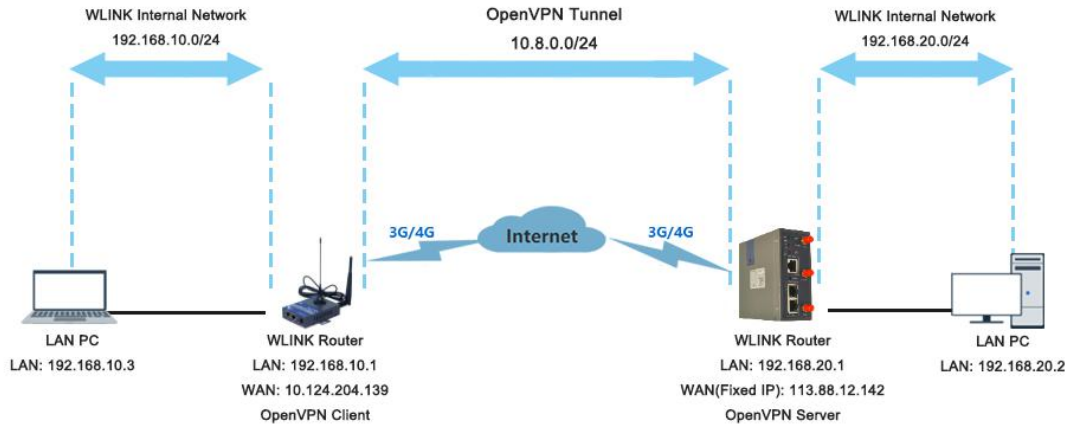
Navigate to **Basic Network > LAN**



Navigate to **VPN Tunnel > GRE**

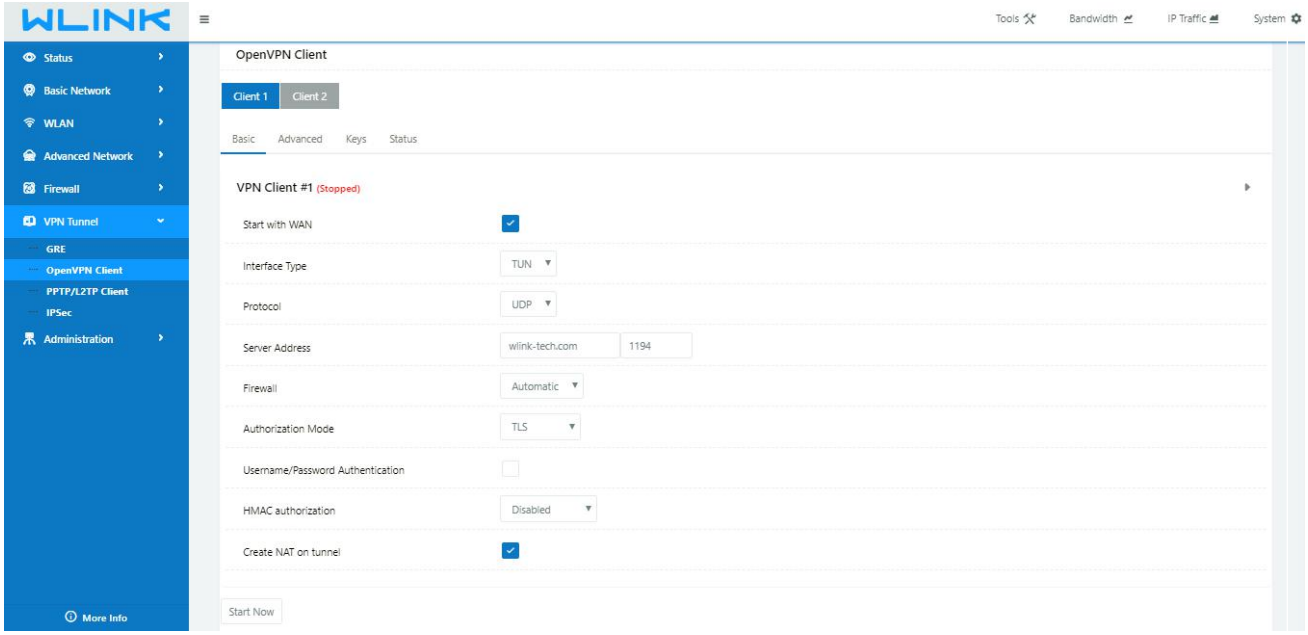


3.8.2 OpenVPN



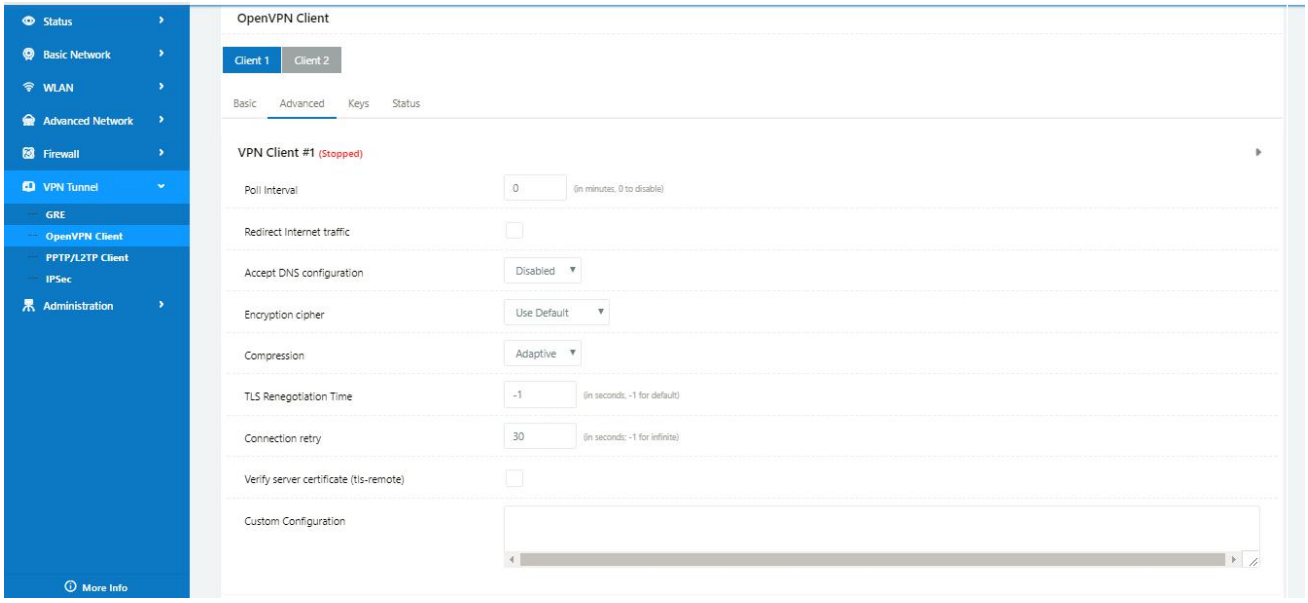
OpenVPN between WL-Rxx client and Server

Please click “VPN Tunnel> OpenVPN Client” to check or modify the relevant parameter.

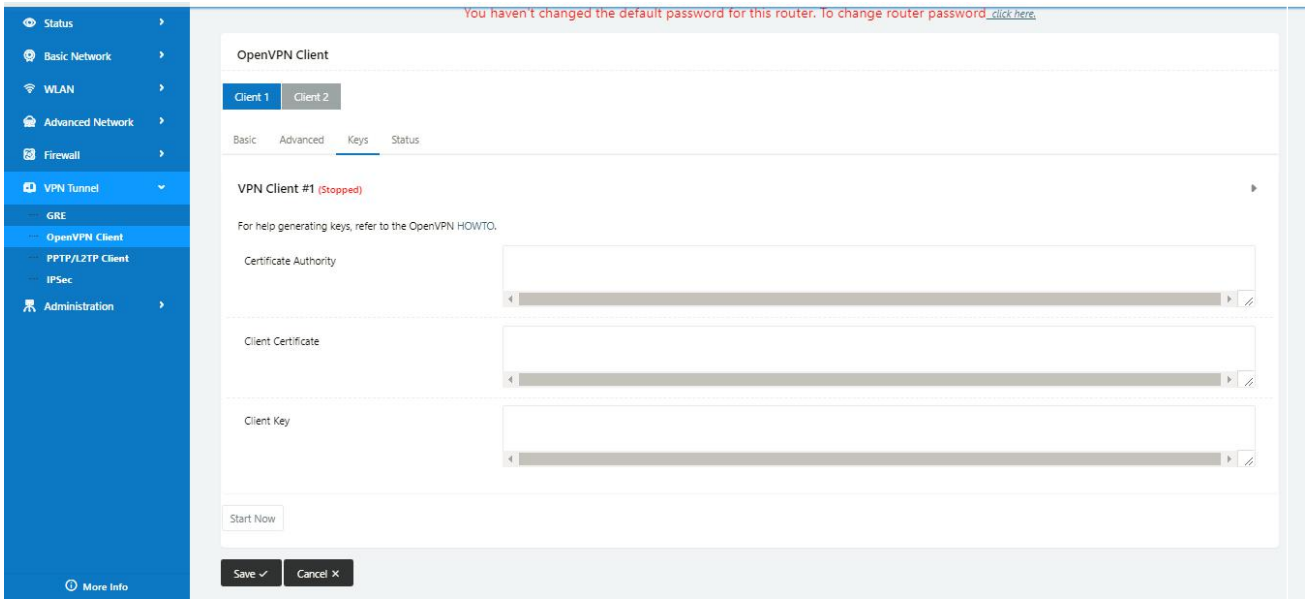


Parameter	Instruction
Start with WAN	Enable the Openvpn feature for 4G/3G/WAN port.
Interface Type	Tap and Tun type are optional. Tap is for bridge mode and Tunnel is for routing mode.
Protocol	UDP and TCP optional.
Server Address	The Openvpn server public IP address and port.
Firewall	Auto, External only and Custom are optional
Authorization Mode	TLS, Static key and Custom are optional.
User name/Password Authentication	As the configuration requested.

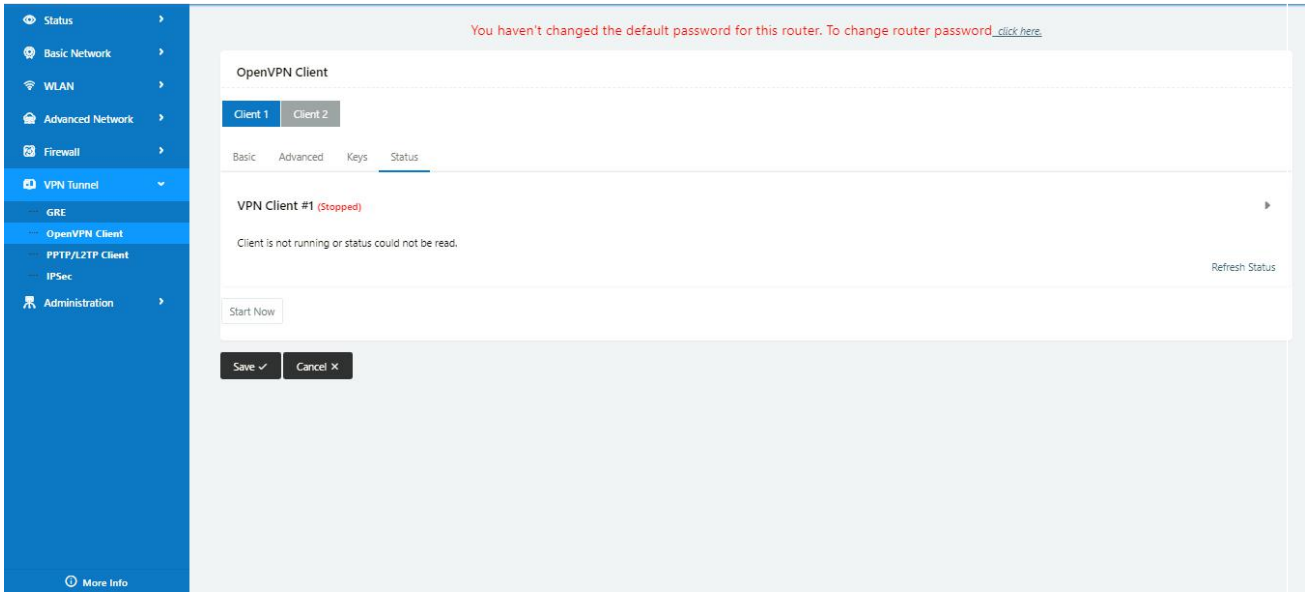
HMAC authorization	As the configuration requested.
Create NAT on tunnel	Configure NAT in Openvpn tunnel.



Parameter	Instruction
Poll Interval	Openvpn client check router's status as interval time.
Redirect Internet Traffic	Configure Openvpn as default routing.
Access DNS	As the configuration requested.
Encryption	As the configuration requested.
Compression	As the configuration requested.
TLS Renegotiation Time	TLS negotiation time. -1 as default for 60s.
Connection Retry Time	Openvpn retry to connection interval.
Verify server certificate	As the configuration requested.
Custom Configuration	As the configuration requested.



Parameter	Instruction
Certificate Authority	Keep certificate same as the server
Client Certificate	Keep client certificate same as the server
Client Key	Keep client key same as the server



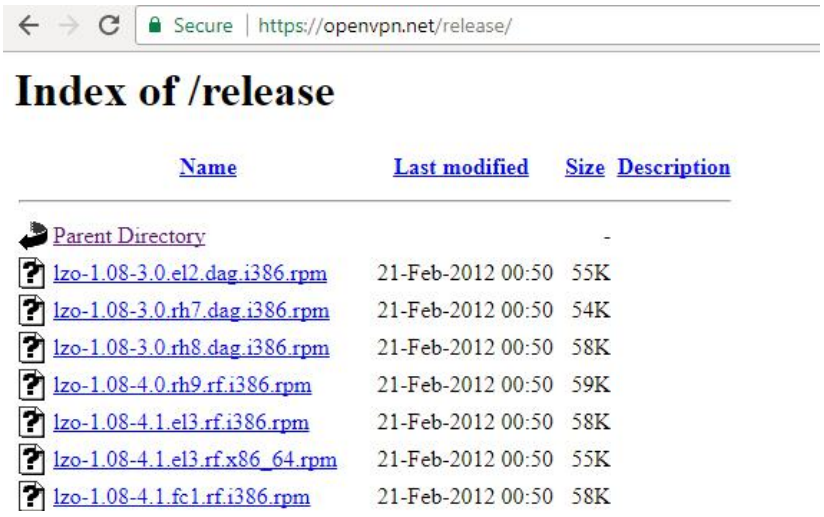
Parameter	Instruction
Status	Check OpenVPN status and data statistics.

Click “save” and “start now” to enable OpenVPN when you have done all the client config.

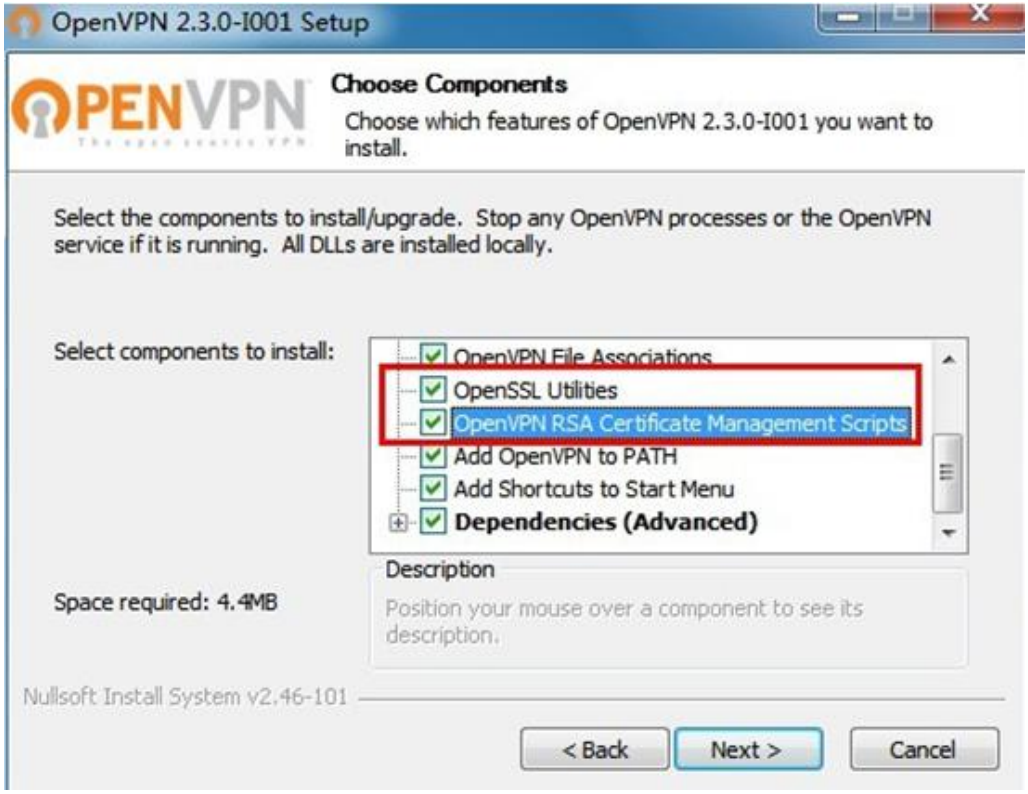
OpenVPN Keys Guide

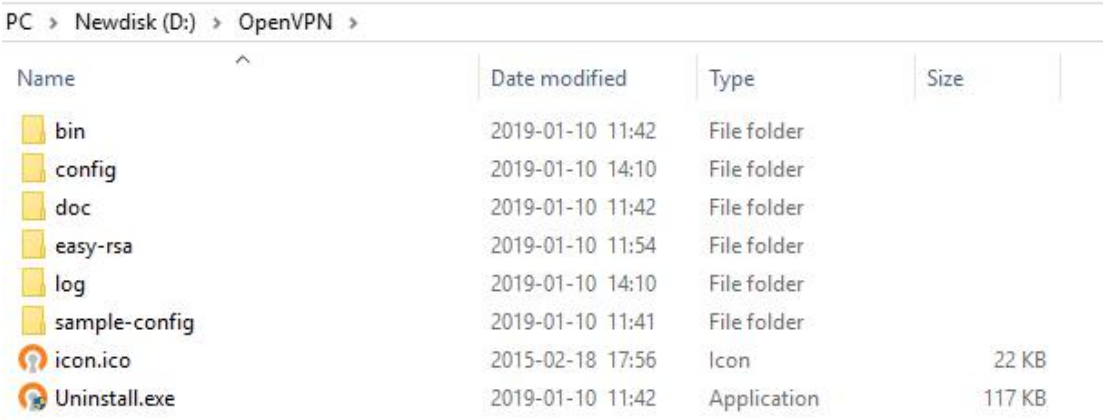
The fllowing steps are for server running on Windows 7/8/10

Access to (http://openvpn.net/release/) and download the file "openvpn-2.3.0-install.exe" (or higher)

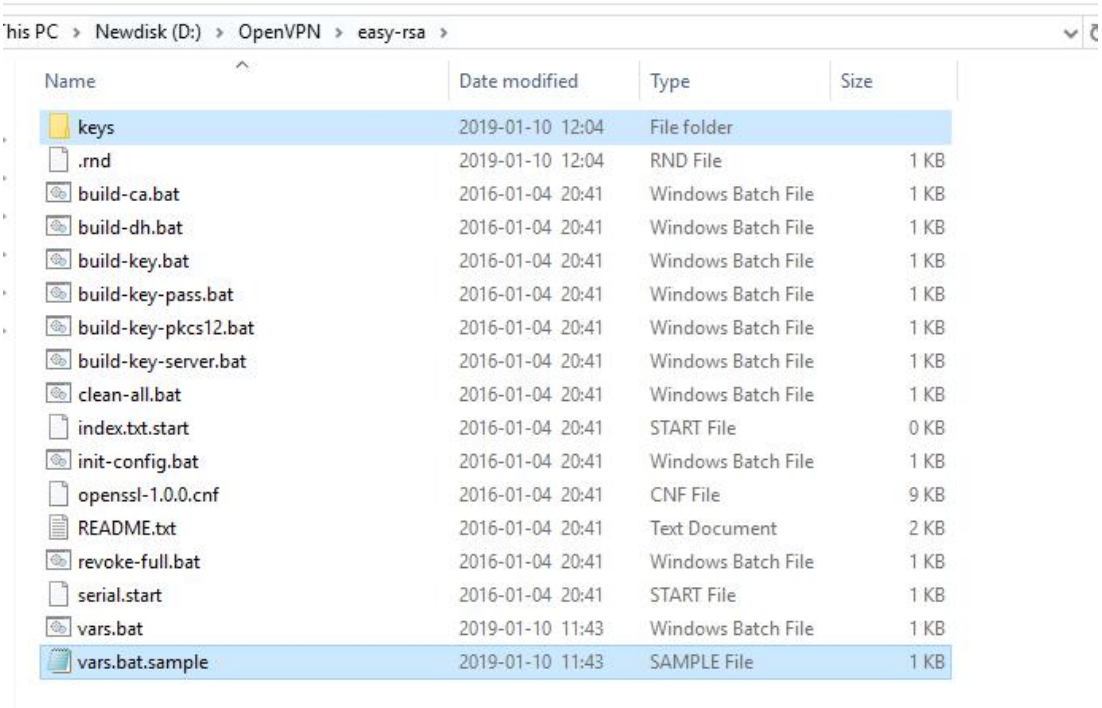


After installing OpenVPN, please find the OpenVPN folder to generate the certificate of server and client. (Access to http://openvpn.net for more information)



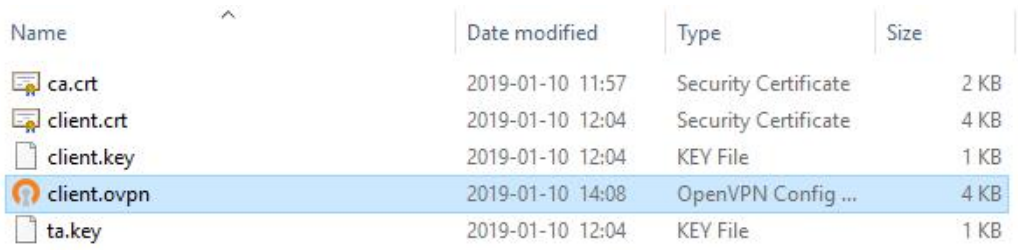


Configure “vas.bat.sample” to complete the initialization step and keys

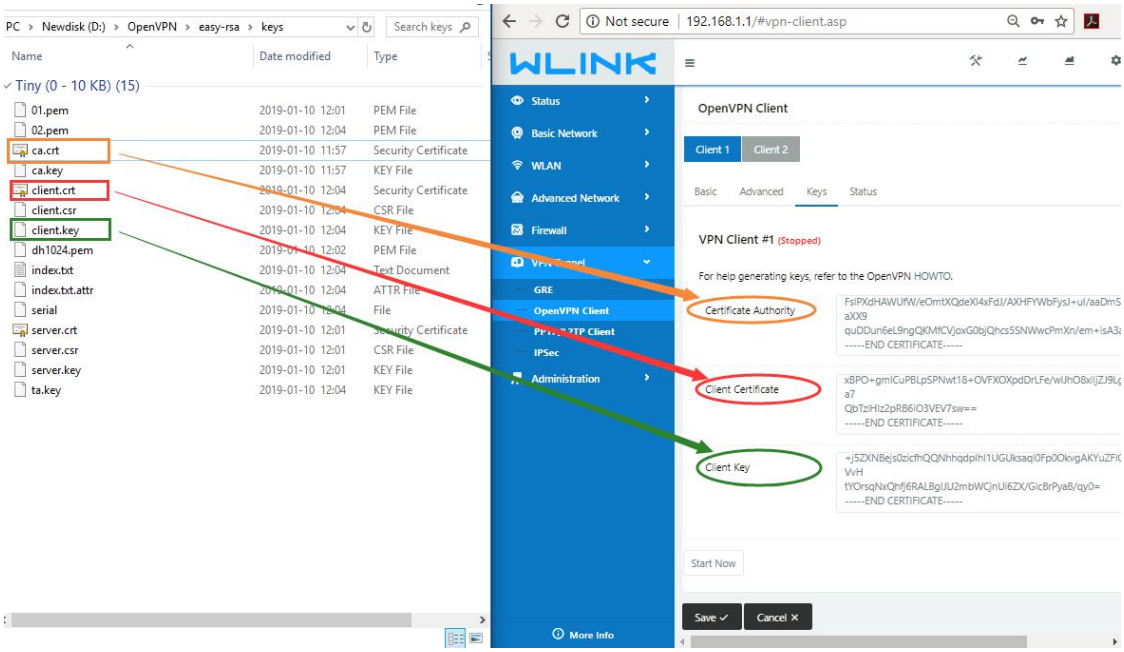


Configure the client keys to WLINK OpenVPN client GUI when you create the server and client certificate in the path OpenVPN/easy-rsa/keys

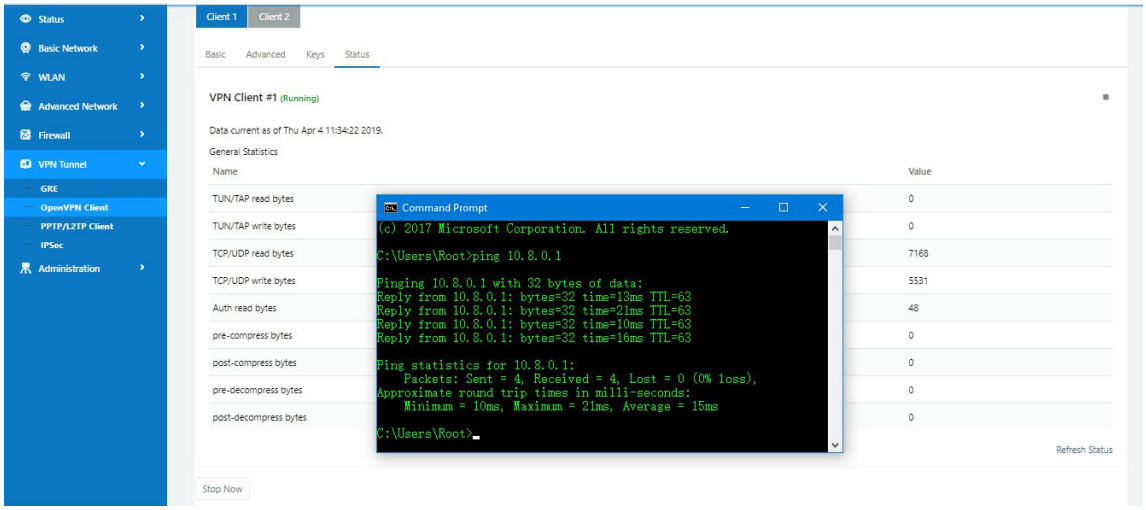
Client certificate (Generated on the server)



OpenVPN>easy-rsa>keys



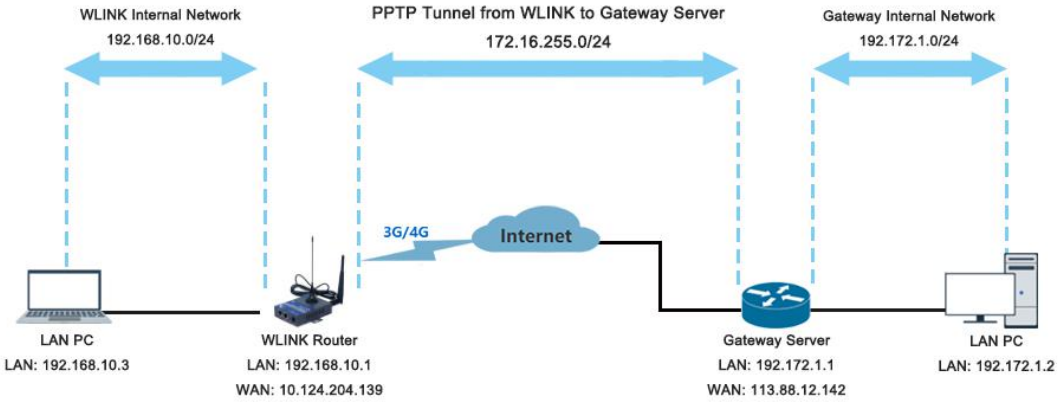
Ping test to your server when the tunnel is established



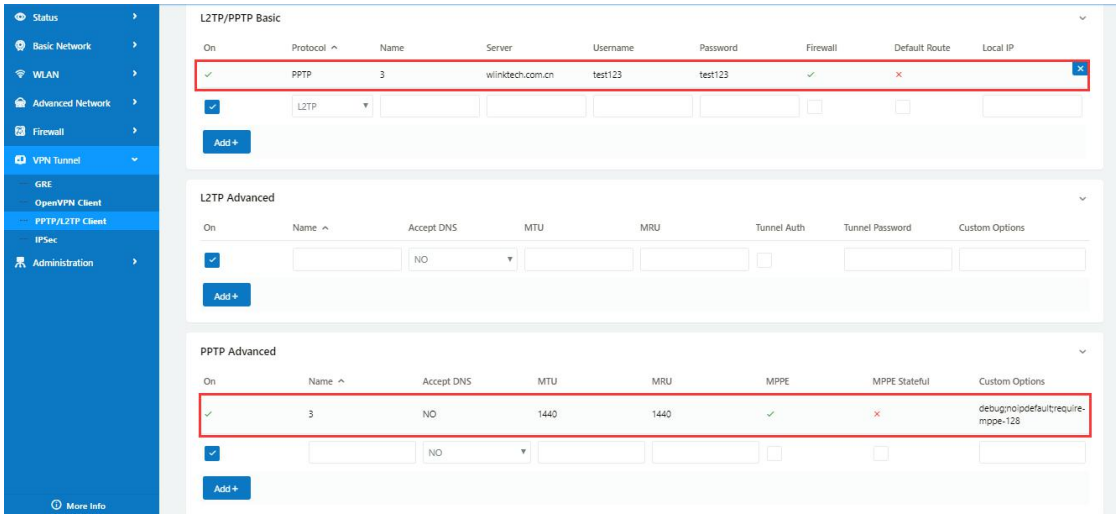
---End

3.8.3 L2TP/PPTP

Please click “VPN Tunnel>PPTP/L2TP Client” to view or modify the relevant parameter.



Configured as PPTP

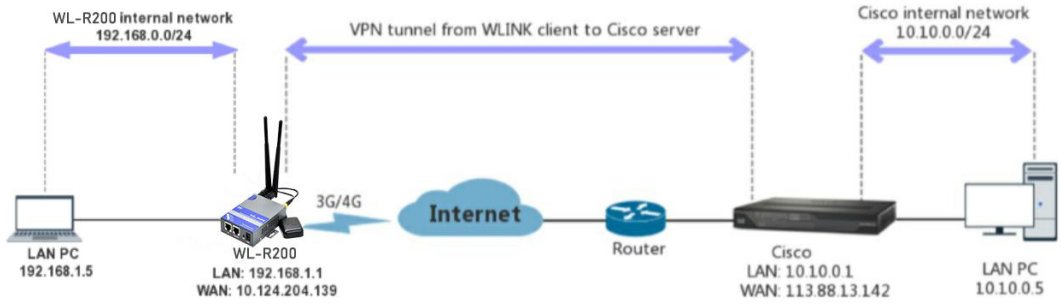


Note: The Custom Options are based on your server

---End

3.8.4 IPSec

IPSec between WL-R200 and Cisco Router



1) Cisco Config (main mode)

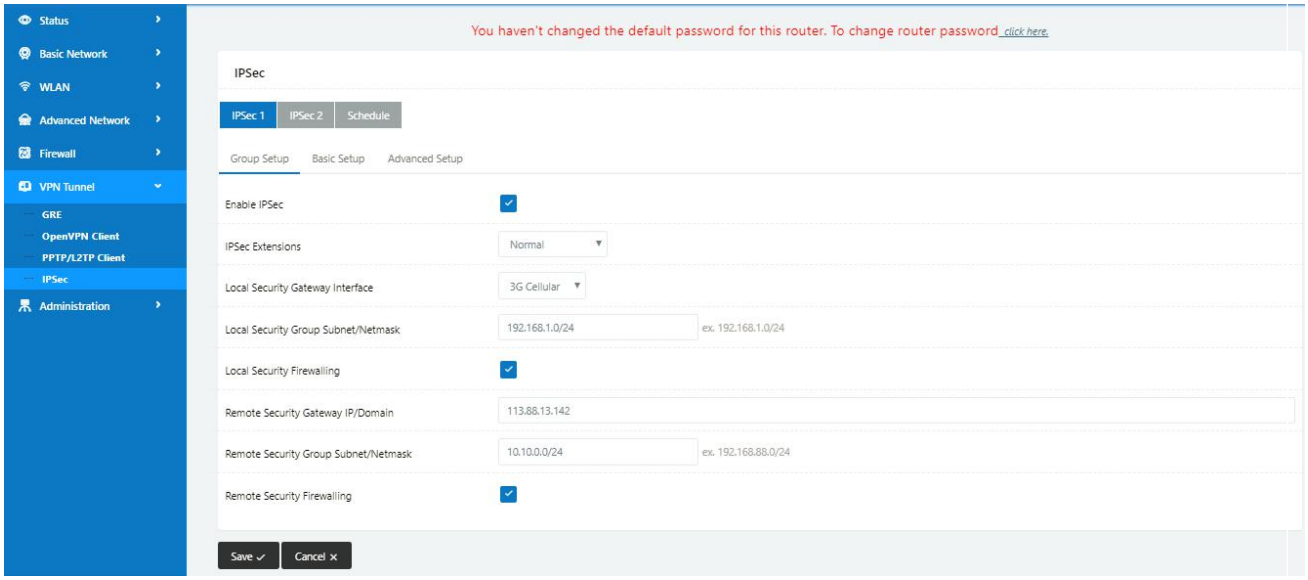
!

crypto isakmp policy 10

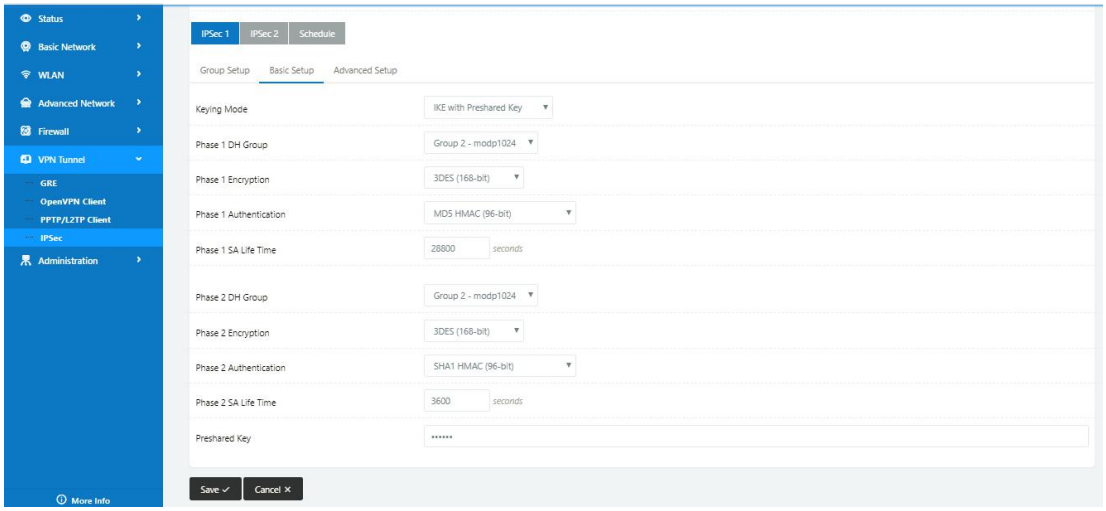
```
 encr 3des
 hash md5
 authentication pre-share
 group 2
crypto isakmp key test1234 address 0.0.0.0    0.0.0.0
!
!
crypto ipsec transform-set Tran-set esp-3des esp-sha-hmac
crypto ipsec nat-transparency spi-matching
!
```

2) WLINK Config

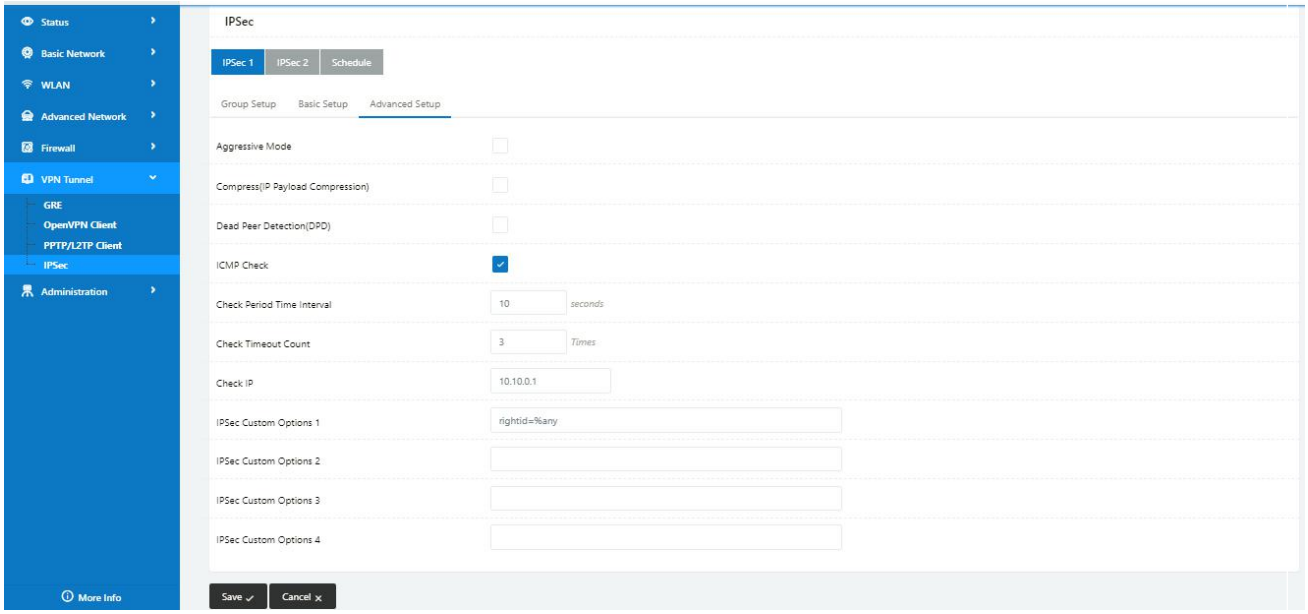
Navigate to **VPN Tunnel > IPSec > Group Setup**

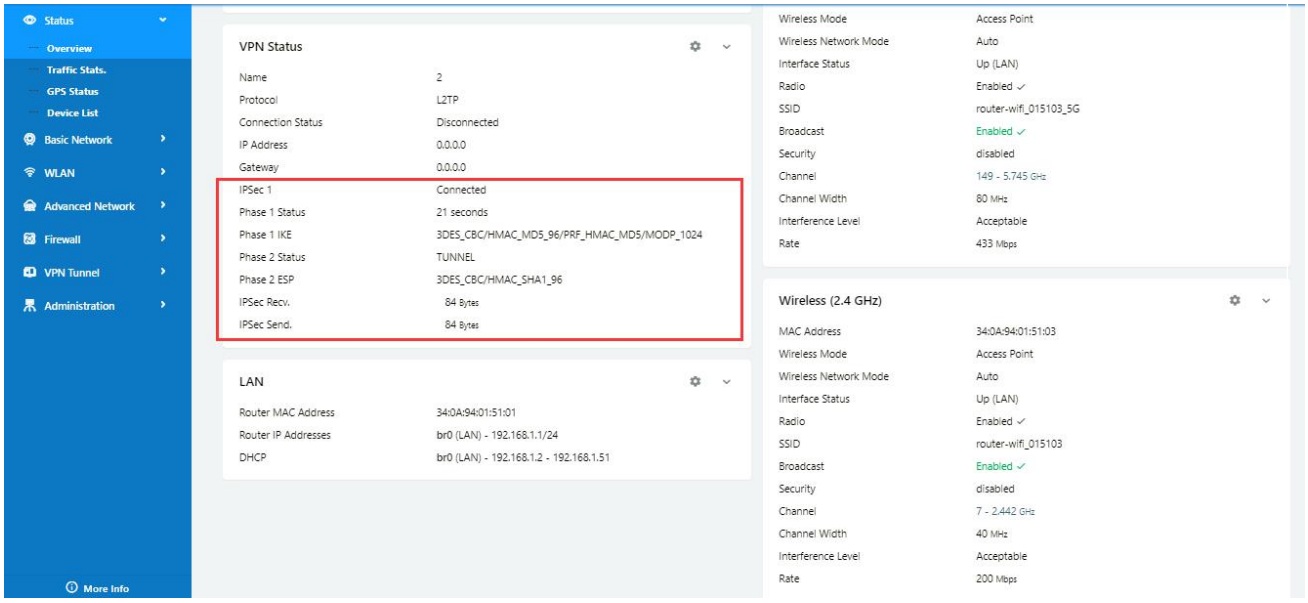


Navigate to **VPN Tunnel > IPSec > Basic Setup**



Navigate to **VPN Tunnel > IPSec > Advanced Setup**


Status
Basic Network
WLAN
Advanced Network
Firewall
VPN Tunnel
GRE
OpenVPN Client
PPTP/L2TP Client
IPSec
Administration
More Info
IPSec
IPSec 1
IPSec 2
Schedule
Group Setup
Basic Setup
Advanced Setup
Aggressive Mode
Compress(IP Payload Compression)
Dead Peer Detection(DPD)
ICMP Check
Check Period Time Interval
10
seconds
Check Timeout Count
3
Times
Check IP
10.10.0.1
IPSec Custom Options 1
rightid=%any
IPSec Custom Options 2
IPSec Custom Options 3
IPSec Custom Options 4
Save
Cancel


Status
Overview
Traffic Stats.
GPS Status
Device List
Basic Network
WLAN
Advanced Network
Firewall
VPN Tunnel
Administration
More Info
VPN Status
Name 2
Protocol L2TP
Connection Status Disconnected
IP Address 0.0.0.0
Gateway 0.0.0.0
IPSec 1 Connected
Phase 1 Status 21 seconds
Phase 1 IKE 3DES_CBC/HMAC_MD5_96/PRF_HMAC_MD5/MODP_1024
Phase 2 Status TUNNEL
Phase 2 ESP 3DES_CBC/HMAC_SHA1_96
IPSec Recv. 84 Bytes
IPSec Send. 84 Bytes
LAN
Router MAC Address 34:0A:94:01:51:01
Router IP Addresses br0 (LAN) - 192.168.1.1/24
DHCP br0 (LAN) - 192.168.1.2 - 192.168.1.51
Wireless Mode Access Point
Wireless Network Mode Auto
Interface Status Up (LAN)
Radio Enabled
SSID router-wifi_015103_5G
Broadcast Enabled
Security disabled
Channel 149 - 5.745 GHz
Channel Width 80 MHz
Interference Level Acceptable
Rate 433 Mbps
Wireless (2.4 GHz)
MAC Address 34:0A:94:01:51:03
Wireless Mode Access Point
Wireless Network Mode Auto
Interface Status Up (LAN)
Radio Enabled
SSID router-wifi_015103
Broadcast Enabled
Security disabled
Channel 7 - 2.442 GHz
Channel Width 40 MHz
Interference Level Acceptable
Rate 200 Mbps

---End