SKW99 EVB User Manual

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1.Introduction

The SKW99 EVB offers a quick and easy way to evaluate the SKW99 module and the SKW99 module is a 2x2 MIMO WLAN WiFi Module.

The Evaluation Kit includes the following items:

1. One SKW99 module.
2. One SKW99 EVB.
3. One DC adapter with micro USB connector cable.
4. Two WiFi antenna.
5. One Cable.
6. This Manual.

2.EVB Detail

This section describes the various interfaces and switch settings for the SKW99-EVB board.

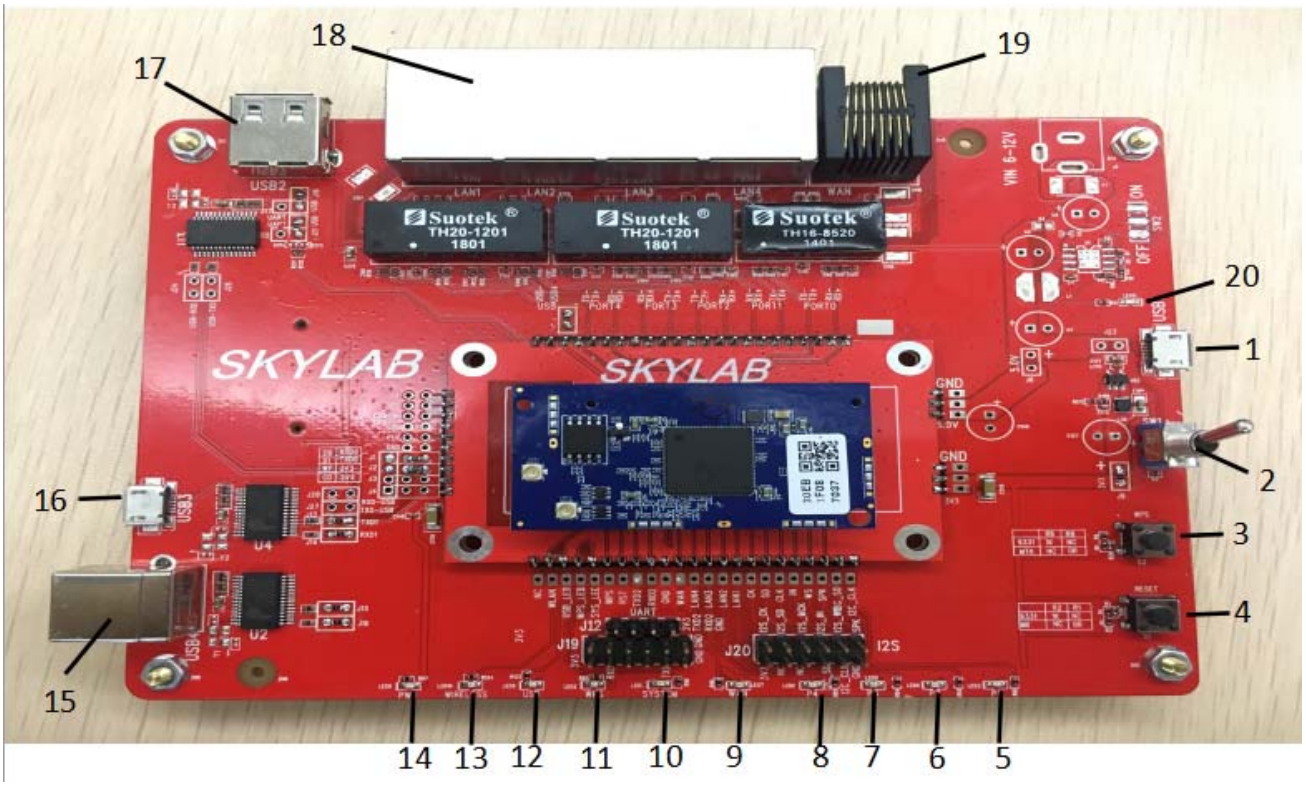


Table EVB Details:

No.	Name	Function Description
1	Micro USB Power Connector	USB DC 5V Input
2	Switch	3.3V Power Switch
3	Button	WPS Push Button
4	Button	Reset Push Button
5-8	LED	LAN LED
9	LED	WAN LED
10	LED	System LED
11	LED	WPS LED
12	LED	USB Device LED
13	LED	Wireless LED
14	LED	3.3V Power LED
15	USB Type-B Port	UART0:USB TO TTL
16	Micro USB Port	UART1:USB TO TTL
17	USB Type-A Port	USB Slave Device
18	RJ45 Port	LAN Port
19	RJ45 Port	WAN Port
20	LED	5V Power LED

EVB Hardware Installation

Step 1: Insert the module to the EVB board.

Step 2: Connect the another LAN port into PC`s RJ45 port.

Step 3: Connect the WiFi antenna.

Step 4: Insert the DC adapter into the power-supply connector.

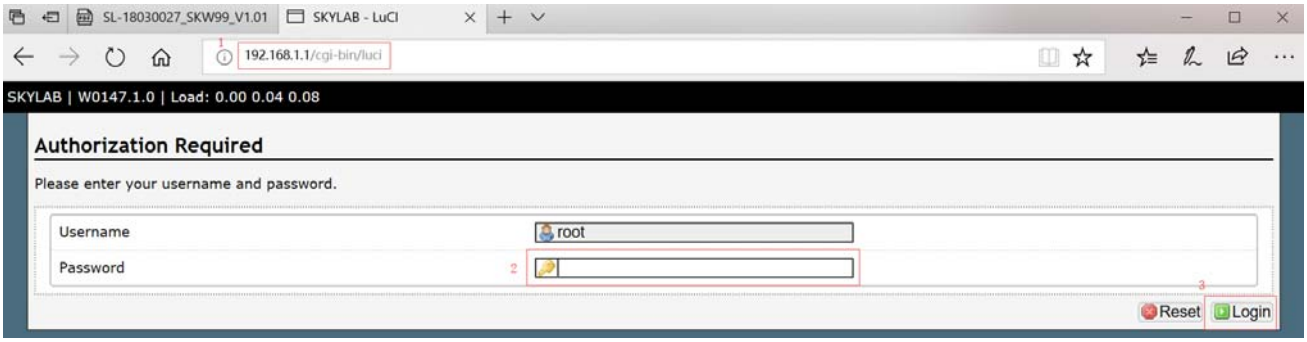
Note: The DC adapter output: 5V±10% /1A

3 System Management

3.1 Configure the administrator password

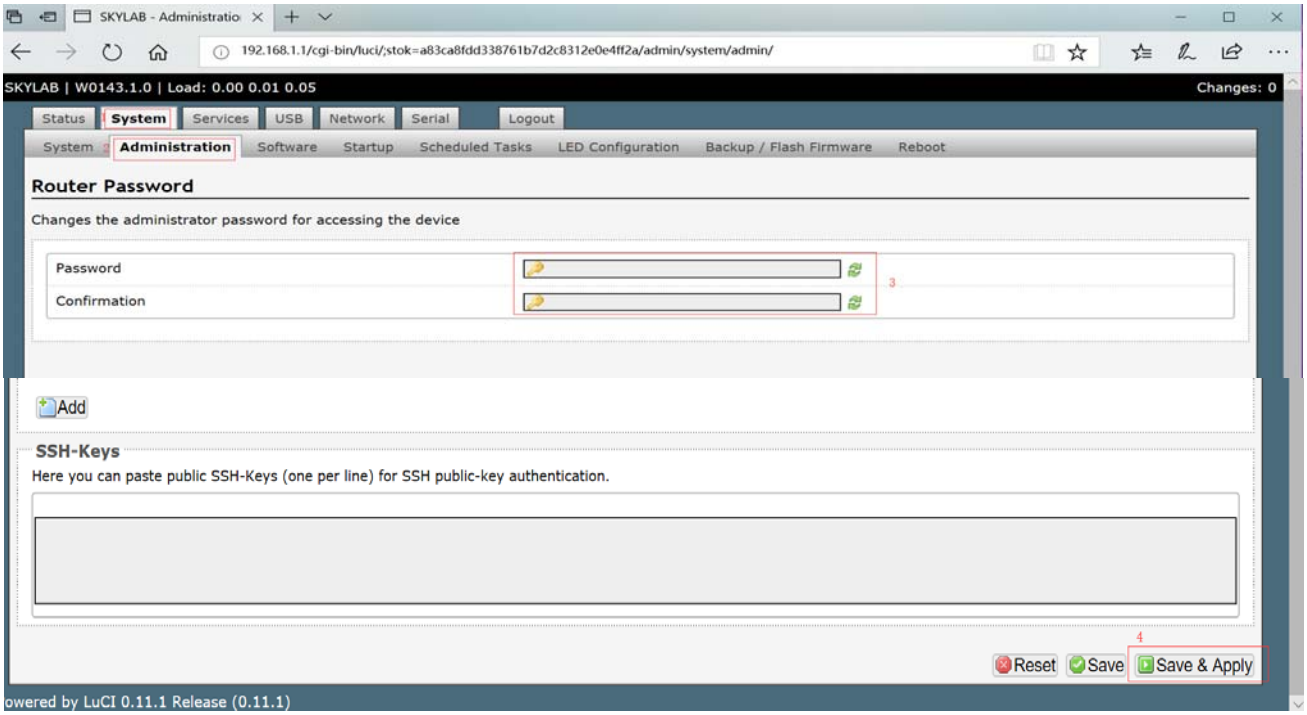
The password is the password of the login routing configuration interface, and also the password is to ensure the router's security. The default password of SKW99 is admin. The login password can be modified through the webpage, and the password can not be canceled, but can only be modified.

(1) Using the browser to login on the Webpage of the module. As shown in the following screenshot.



Enter the password, click "Login", you can enter the management interface.

(2) On the management interface，click “System”>>“Administration”. Enter the password and confirm the password. Click “Save&Apply”. Finished.



(3) Note: If you have forgotten the password, please long-press the reset button to revert to the factory settings.

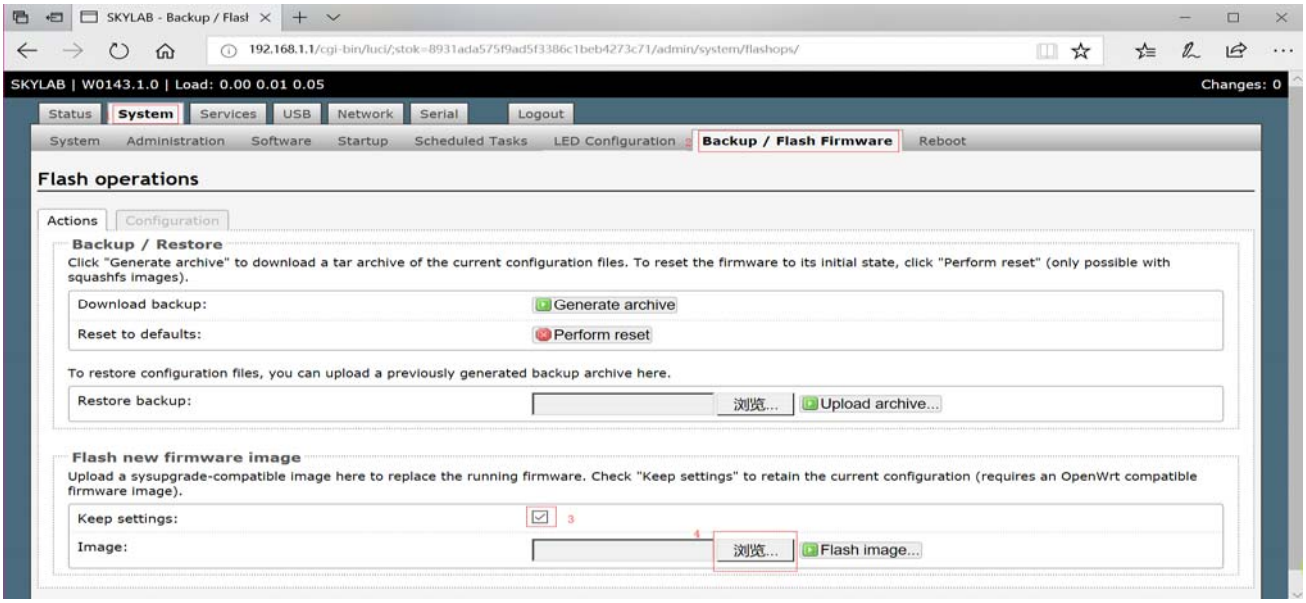
3.2 System Upgrade

After the system has been added some new functions or optimized some shortcomings, it needs to be upgraded. SWK99 provides the function of the system upgrade.

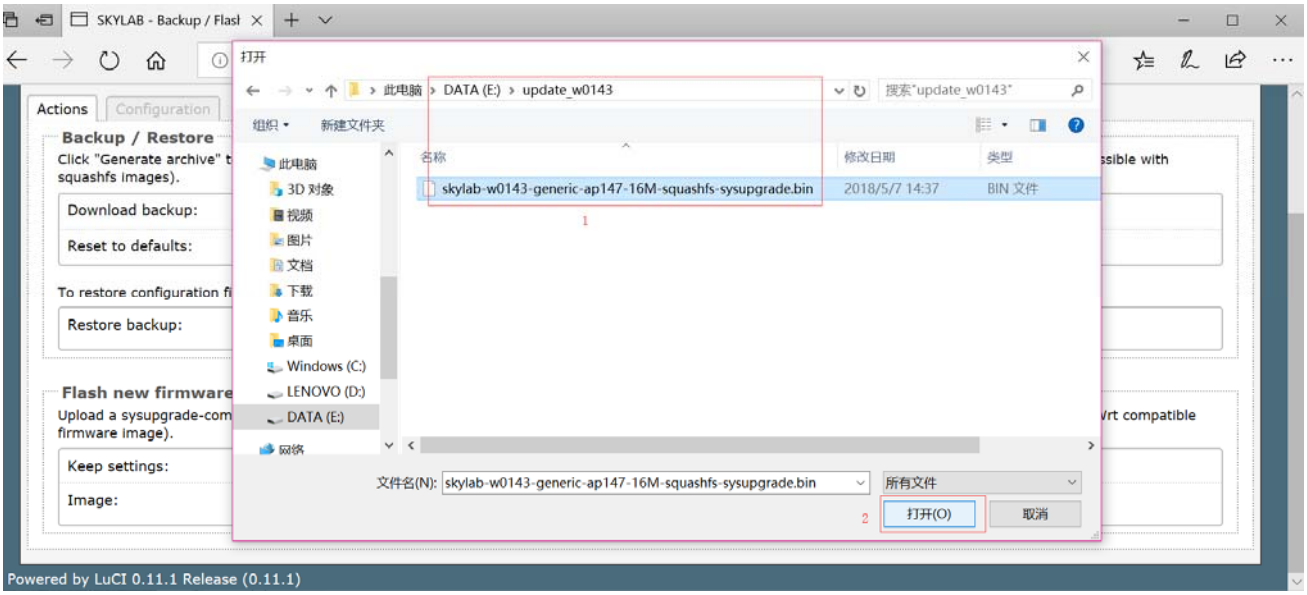
The following are the specific methods of operation:

(1) Access to the router's management interface through browsers.Click“System”>> “Backup / Flash Firmware”，then access to the system`s Flash operation interface. Click the “浏览” in “Flash new firmware” to choose the image.

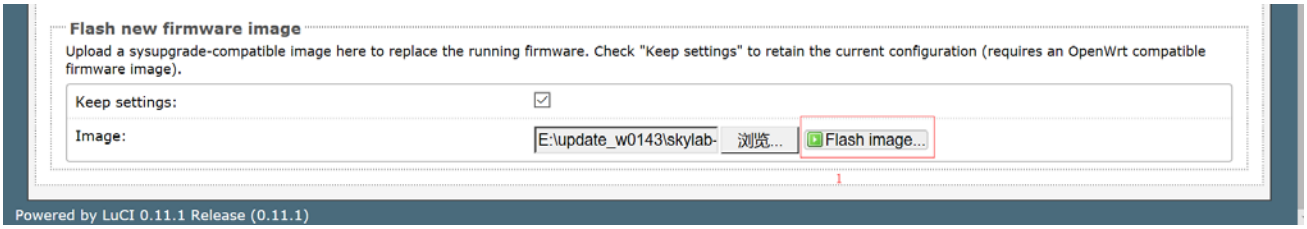
Select "keep settings" to save the configuration. If it is not selected, the system will be restored to the factory settings after updating the system.



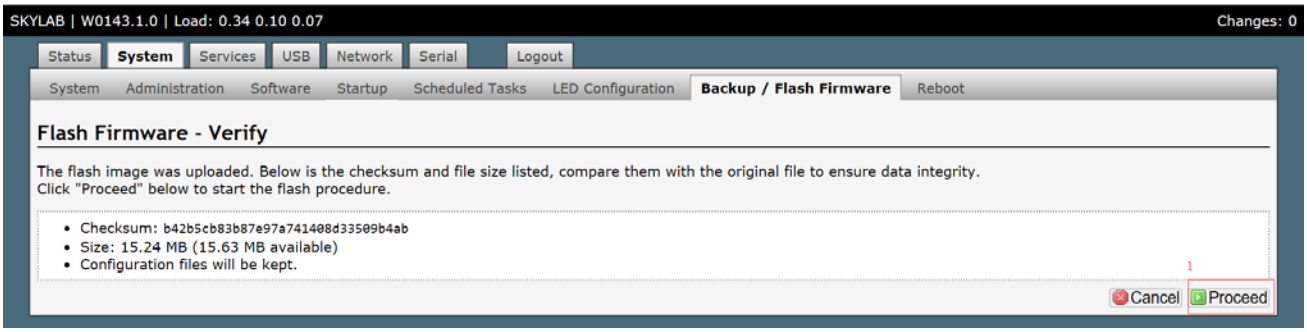
(2) Select firmware from local PC and click, finish open complete firmware selection.



(3) Click “Flash image…”. Start to download the local firmware to the router, and view the download progress at the lower left corner of the interface. After the download completed, enter the “flash firmware” interface.



(4) On the “flash firmware” interface, click the “Proceed”.Wait for the system to be upgraded.

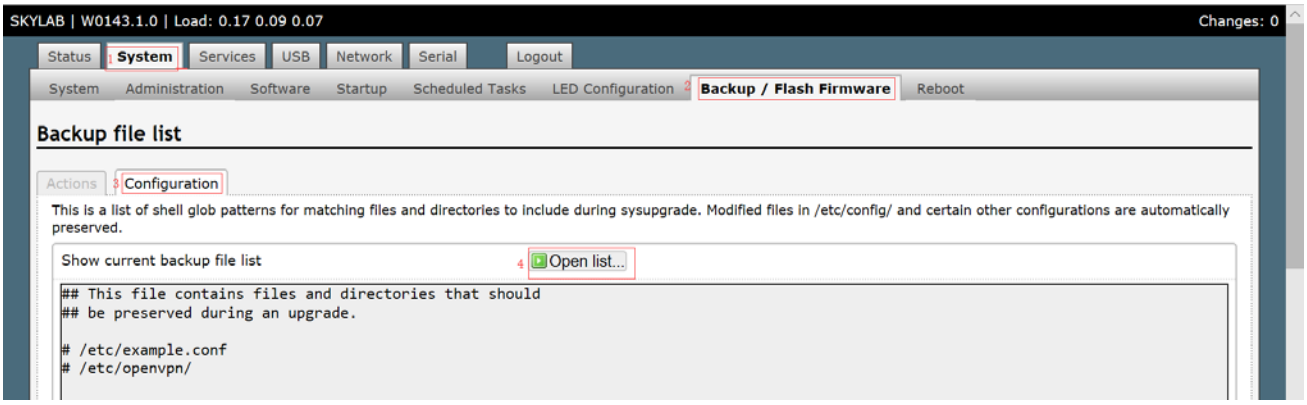


3.3 Backup / Restore System Configuration

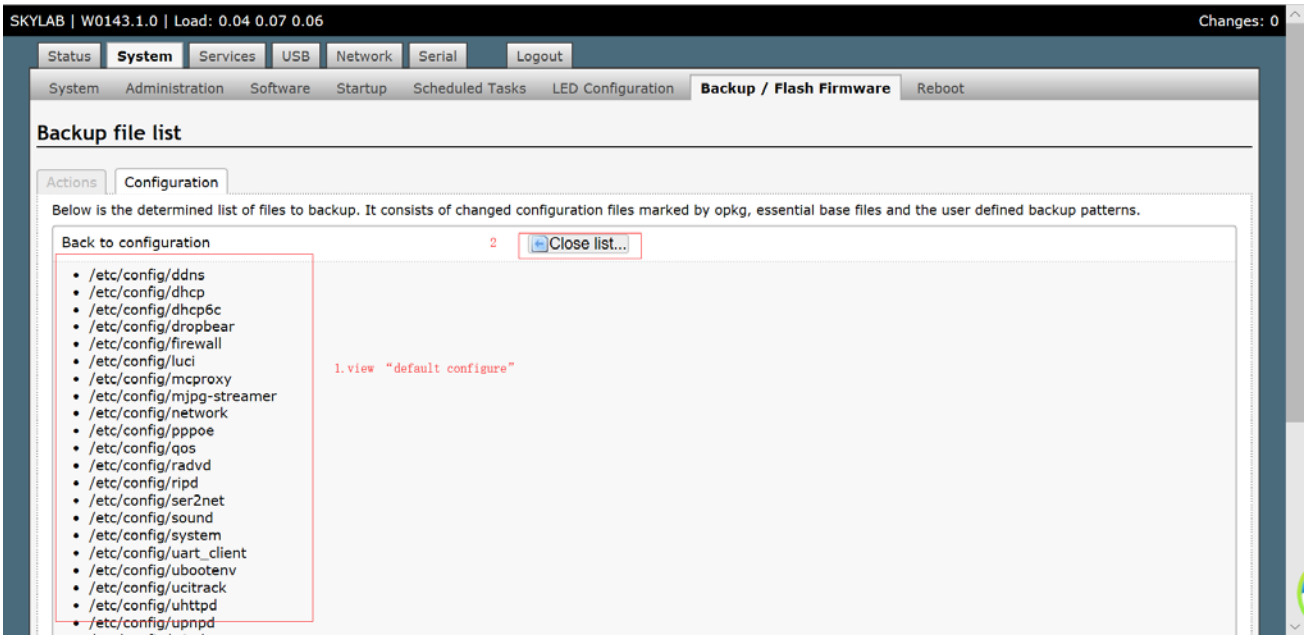
After the system configuration information modified, you can revert to the state of your backup through the backup configuration. The following are the ways to backup and restore the configuration:

3.3.1 Backup System Configuration

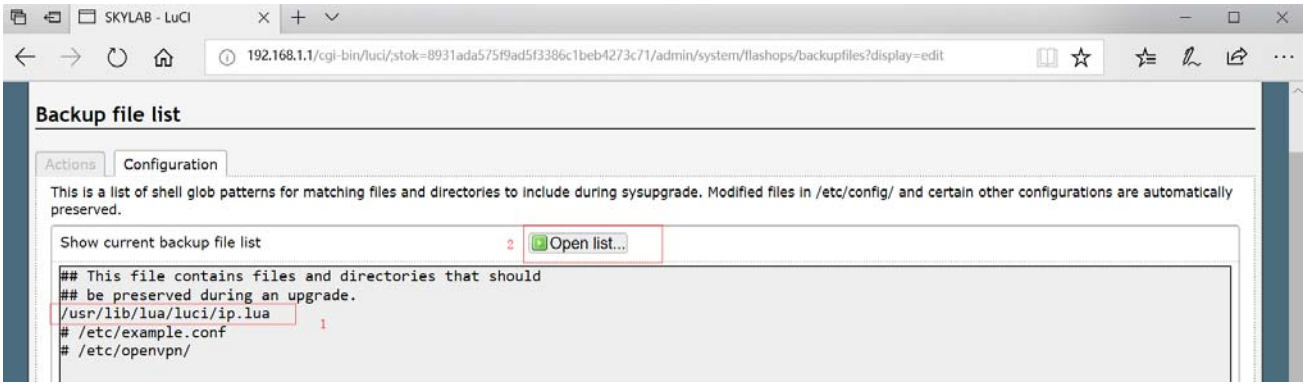
(1) Access to the router's management interface through browsers. Click “System”>> “Backup / Flash Firmware”, access to the system Flash operation interface. Click “Configuration”。

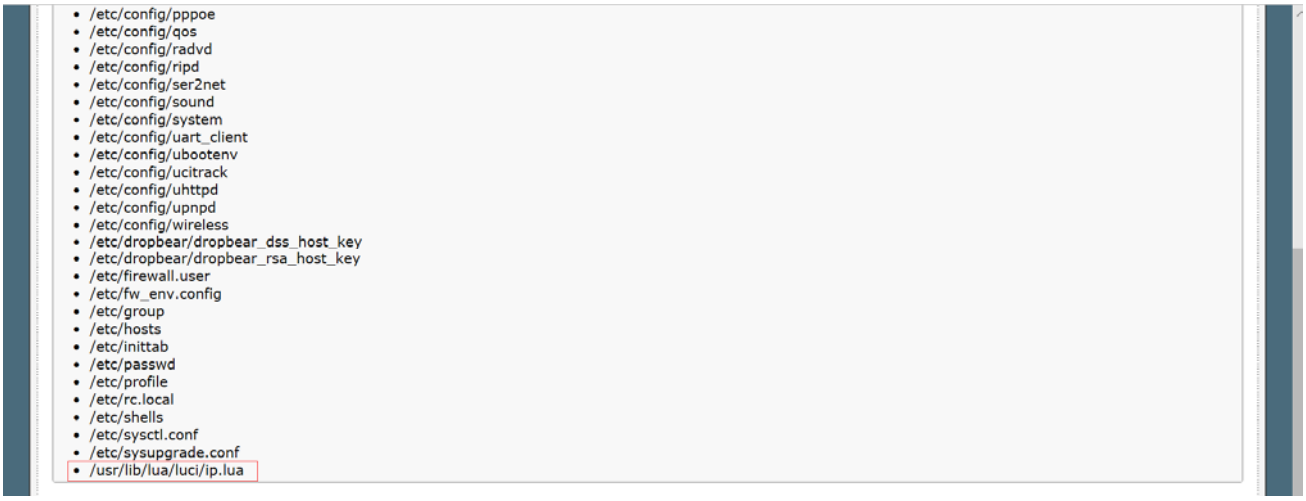


(2) On the system Flash operation interface. Click the “Open list…”. View the file of the default backup. Click the “Close list…” and back to configuration interface.

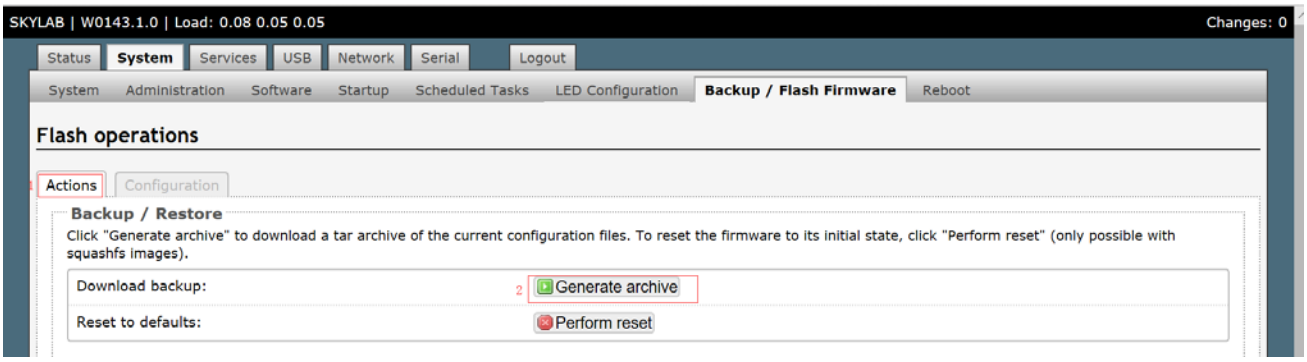


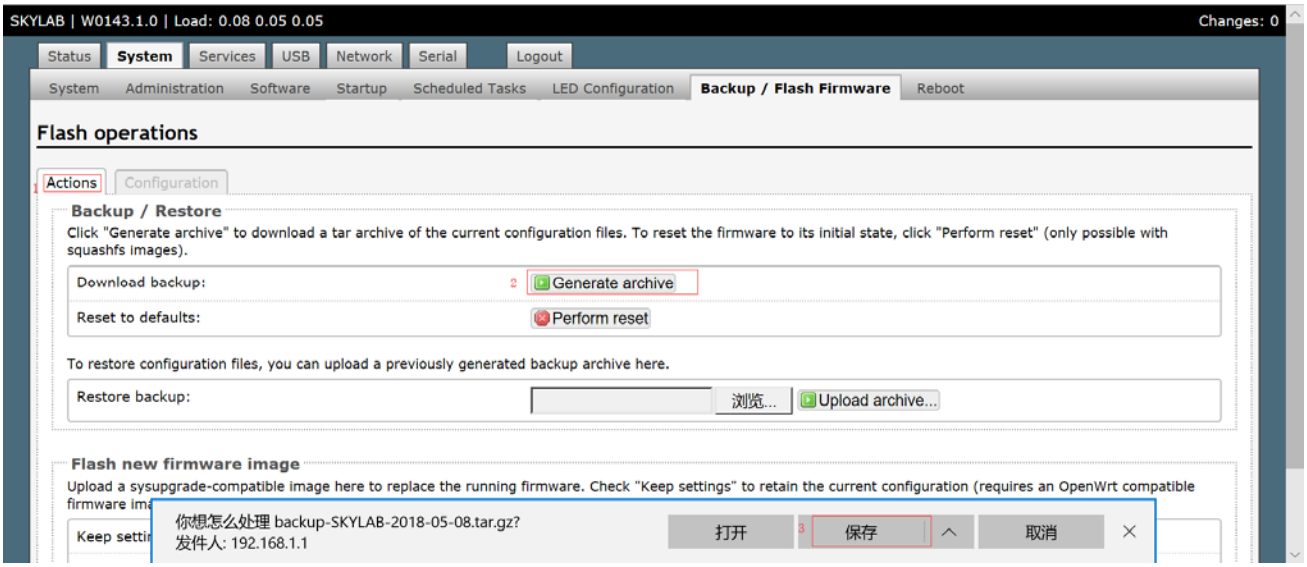
(3) In the configuration box, add the files that need to be configured, and click "Submit". After submission, click "Open list..." Check the files that are going to be backed-up.





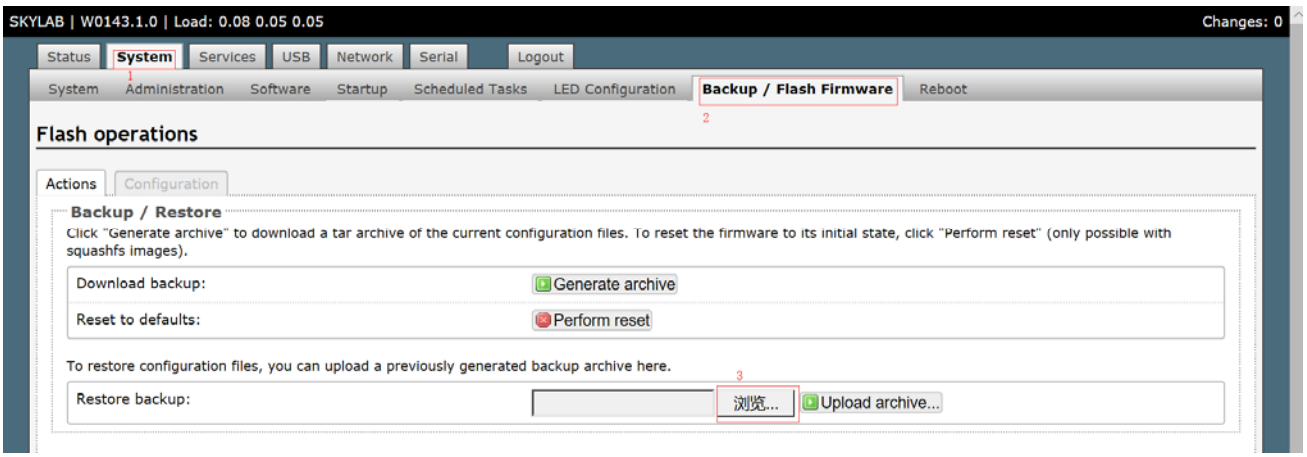
(4) In the interface of back-up list, click "Actions" and go back to the flash interface. Click on "Generate archive", appear the backup file's remaining bullet box, choose the save path in the box, click "save". The back-up files will be saved on the local PC.



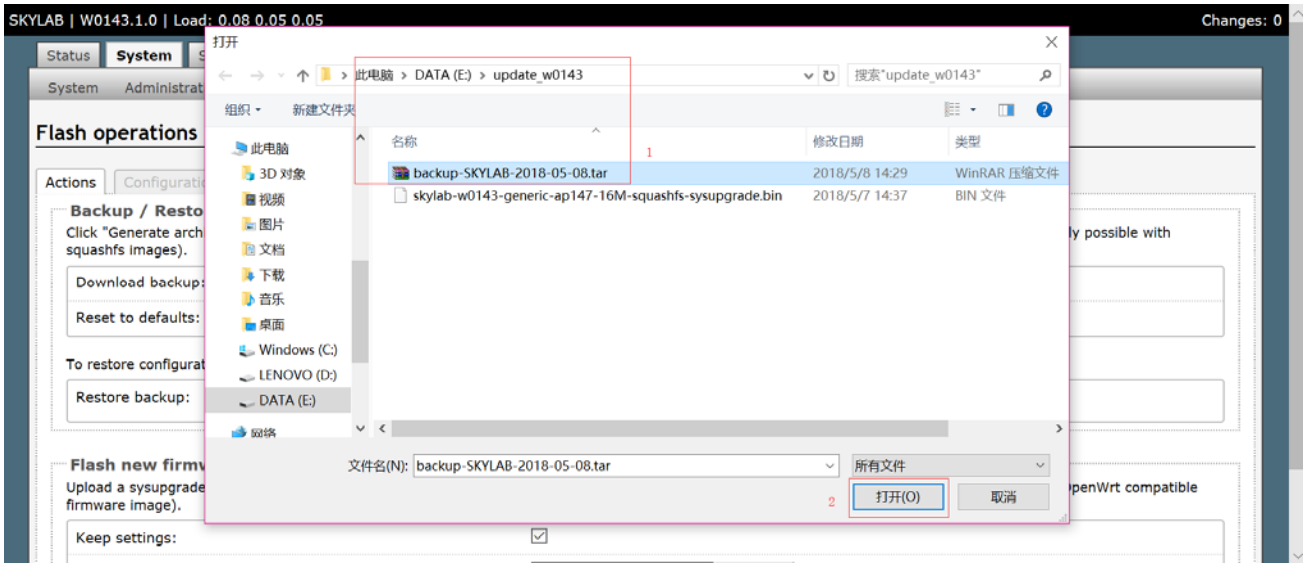


3.3.2 Restore System Configuration

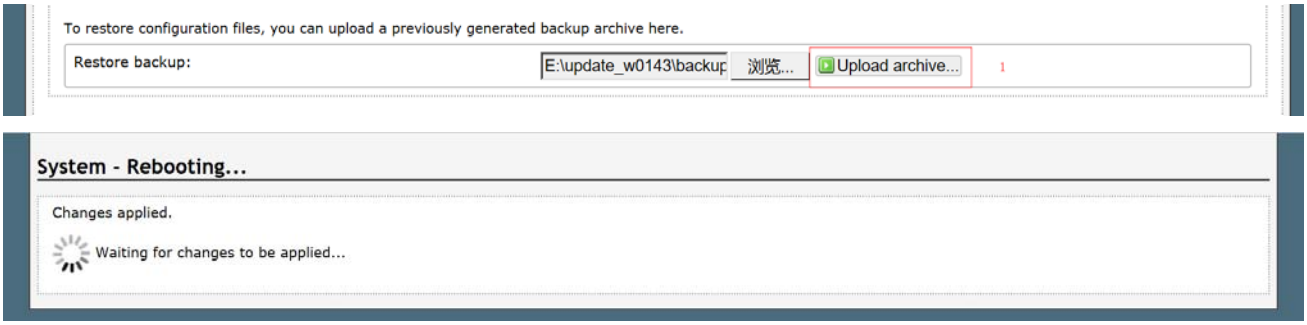
(1) Enter the router management interface through browser, click "System" >> "Backup / Flash Firmware". Enter the system Flash operation interface. Click the "select file" to pop up the local file selection box.



(2) In the local file selection box, select the files to be recovered, click "open" to complete the selection of the recovery files.



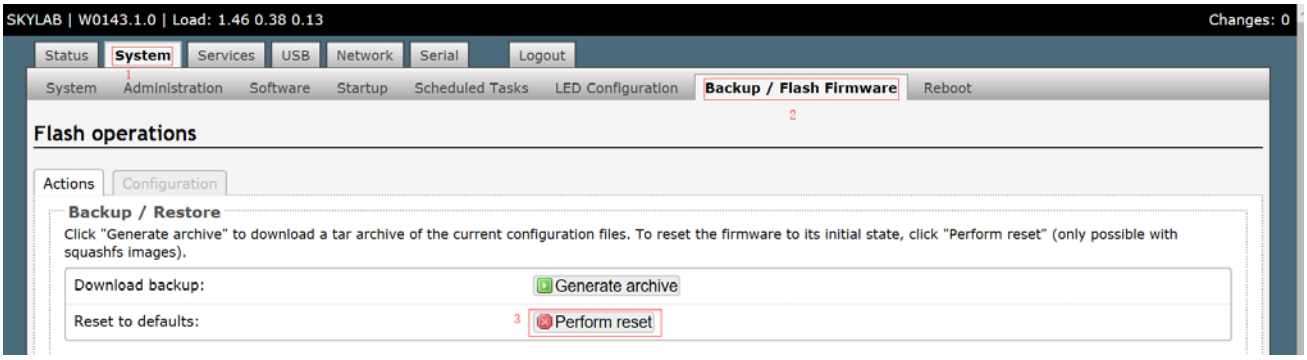
(3) Back to the Flash interface, click "Upload archive...". The system is restarted. Recovery completed.



3.4 Restore Factory Settings

For some special cases, such as forgetting the WiFi password, we can restore the system to the factory and re-configure it. The factory settings can also be achieved by long-pressing the reset button. The following is the method of using webpage to restore factory settings.

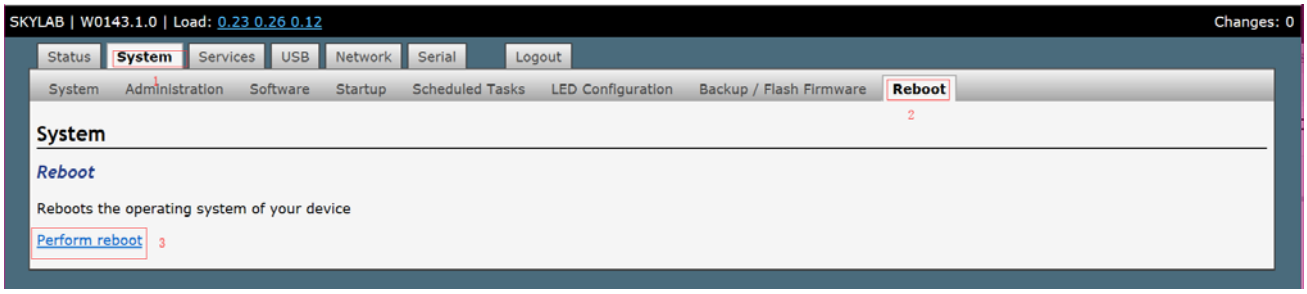
(1) Through browser, enter the router management interface, click “System”>> “Backup / Flash Firmware”, enter to the system Flash operation interface.Click on "Actions" >> "Backup / Restore" >> "Perform reset" to wait for the system to resume configuration and restart.



3.5 Reboot System

SKW99 provides the function of restarting the system through the web interface. The following are the specific methods of operation:

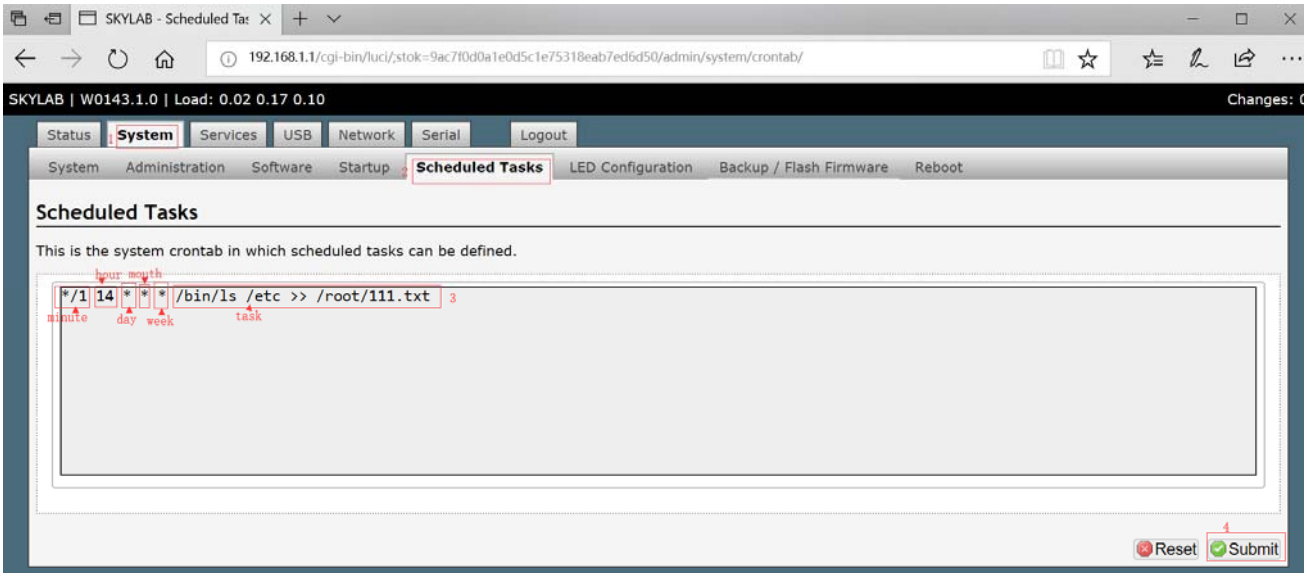
(1) Access to router management interface through browser, click “System”>> “Reboot”,enter the restart interface and click the "Perform reboot" .The system will be restarted.



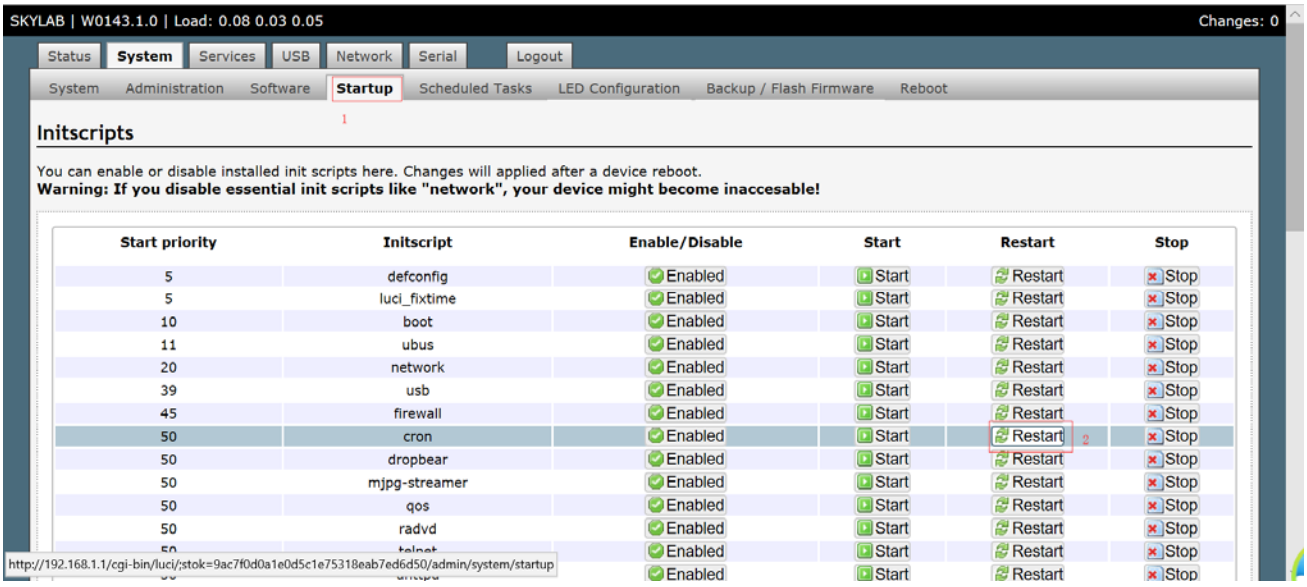
3.6 Scheduled Tasks

SKW99 integrates the functions of crontab, and crontab supports the execution of some commands at a certain interval time. The following is the specific use of this function:

(1) Access to router management interface through browser, click “System”>> “Scheduled Tasks”,and enter scheduled tasks interface.Add the task and execution time,and click “submit”.



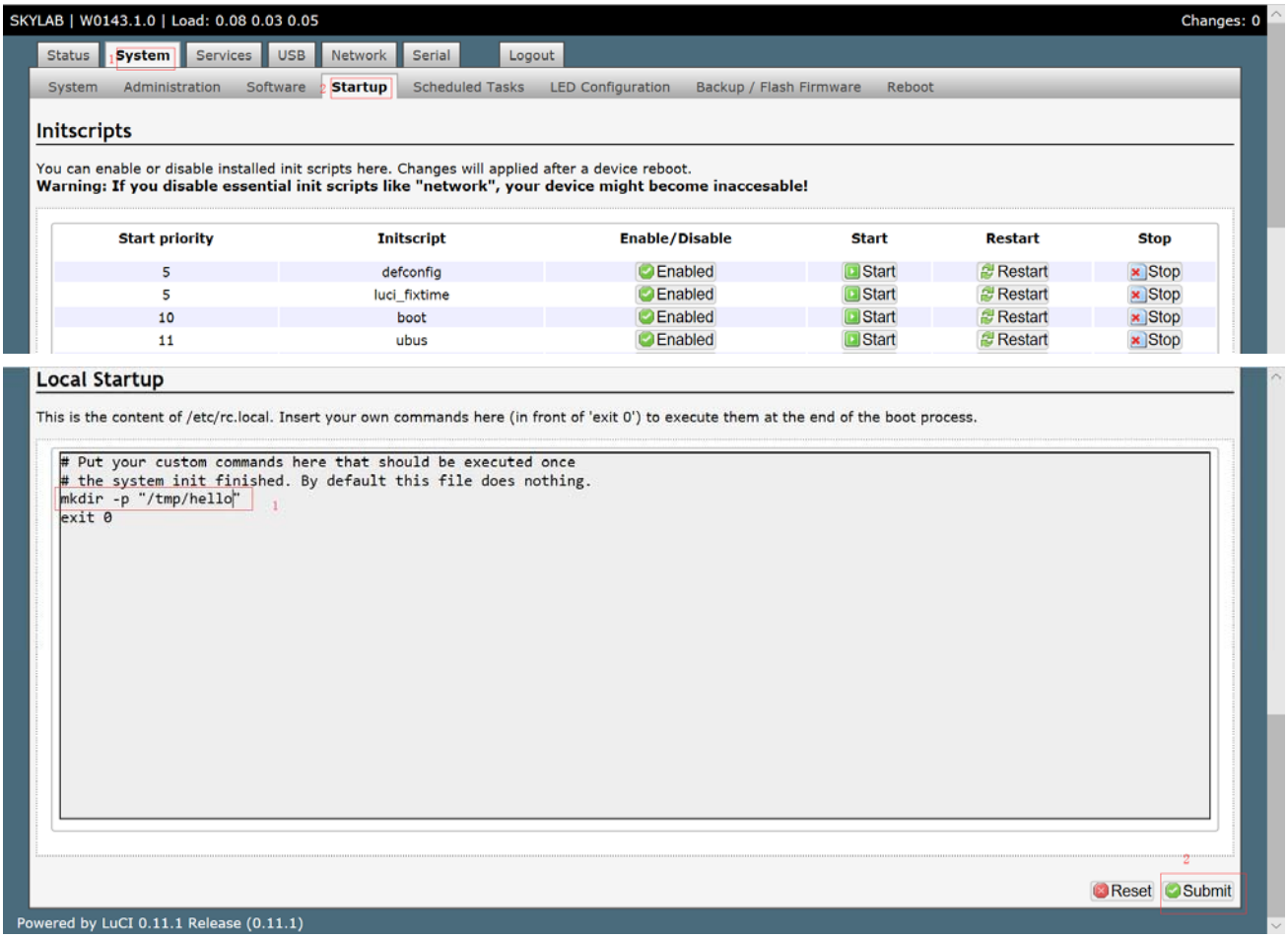
(2) Add a new task, then restart the crond. The following is the way to restart the crond process. Click "System" >>"Startup", then click the "Restart" corresponding to crond.



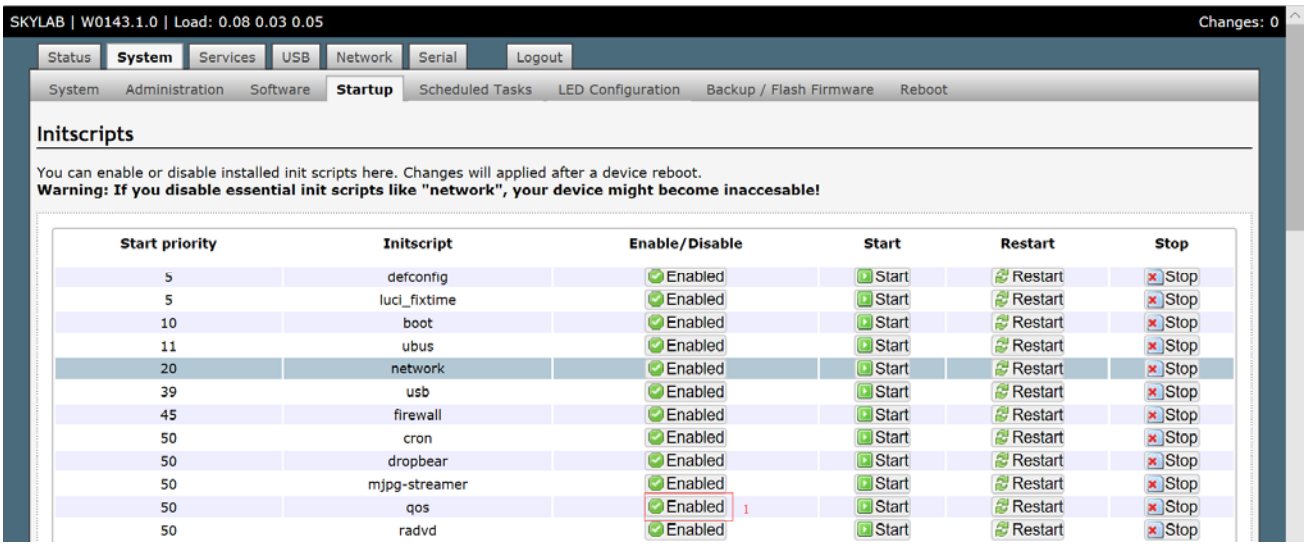
3.7 Set up Boot Startup Item

SKW99 supports users to set up boot itself starting items. The following is to set the operation:

(1) Access to router management interface through browser, click “System”>>“Startup”. In Local Startup box, add the script you need to execute when you boot up, and click "Submit".



(2) For the startup script listed in “Initscripts”, they will boot as default during startup. Click the corresponding "enable" to make it no longer boot.



3.8 Setting System Time

SKW99 default setting time zone is UTC, enabling NTP to automatically get time via networking.The following methods are introduced for the modification of the system time:

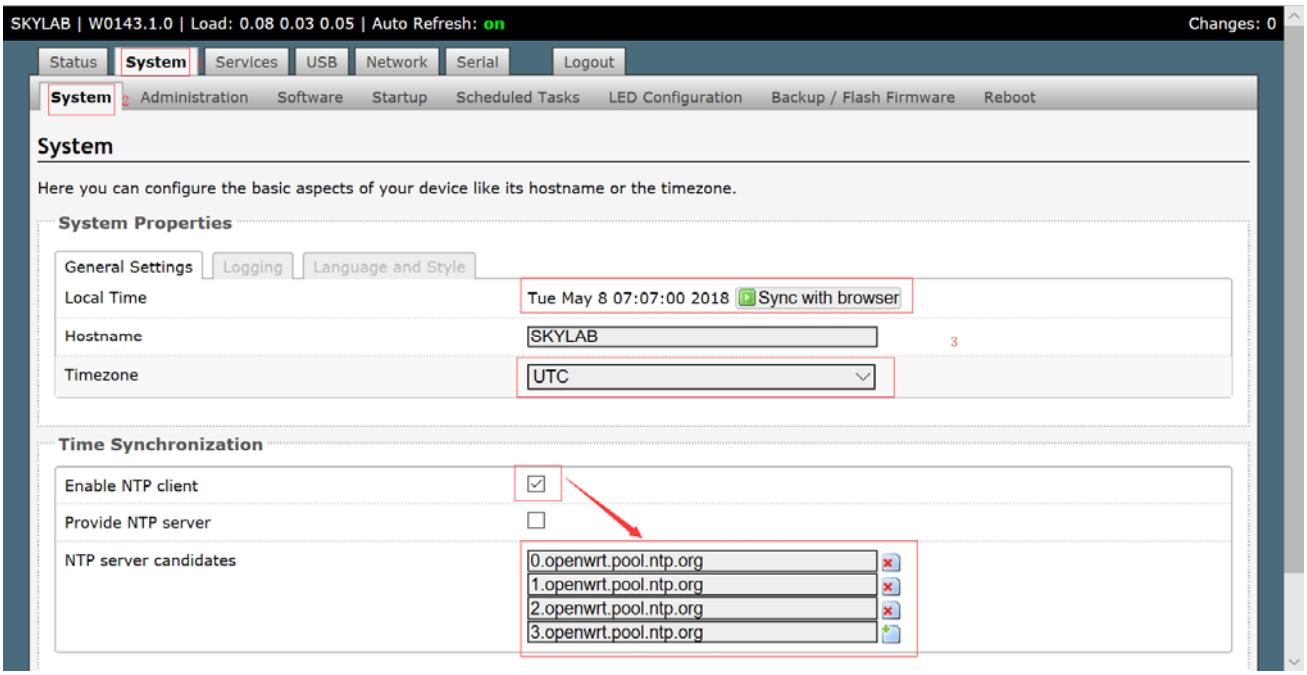
(1) Access to router management interface through browser, click “System”>>“System”.

①、If you click “Local Time”>>“Sync with browser”,the system will synchronize to local time.

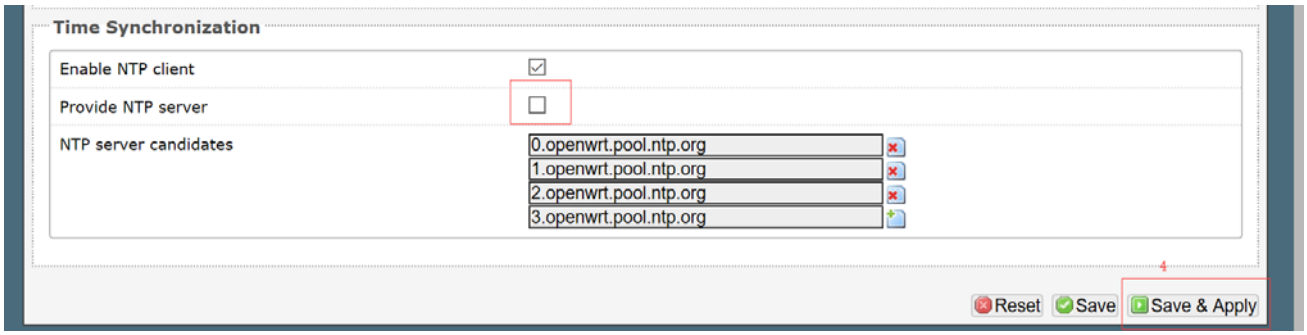
②、Click the box corresponding to "Timezone" to select the time zone you need.

③、 Select "Enable NTP client" to support the time corresponding to the "8888" synchronization system after networking.

④、Click “Save & Apply”to complete the system time modification.



(2) Add: select "Provide NTP server", click "Save & Apply", restart the system, SKW99 will turn on the NTP server.



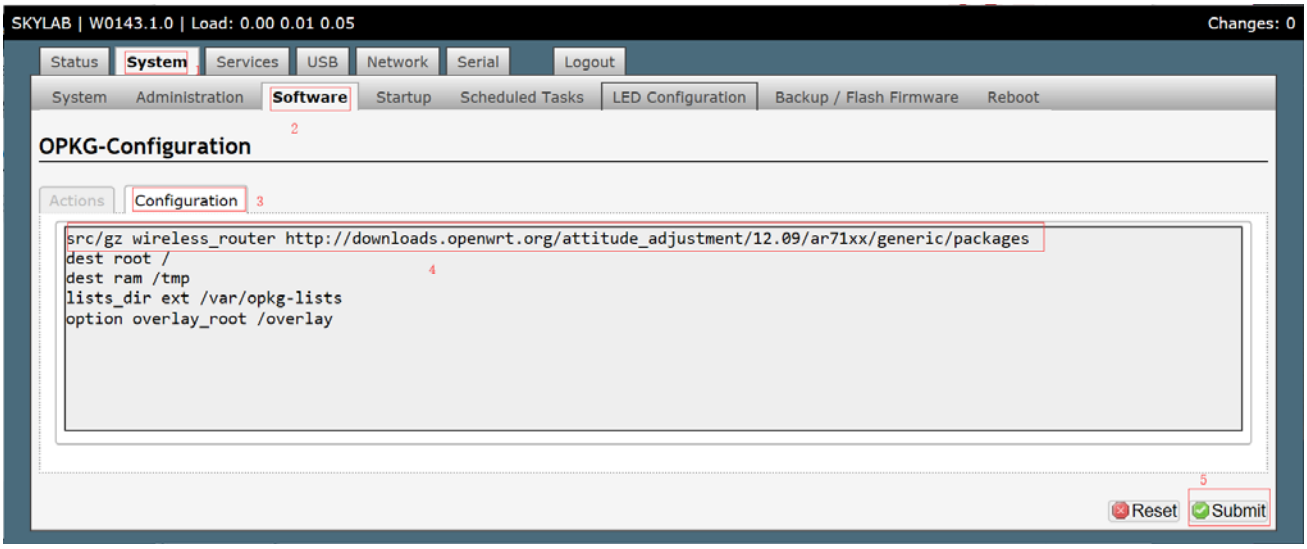
3.9 Management Software Package

SKW supports the extension of the software package, and also supports users to delete the software packages they do not need. But it is not recommended to delete, so as not to cause other problems.Here are some ways to add software packages and delete packages:

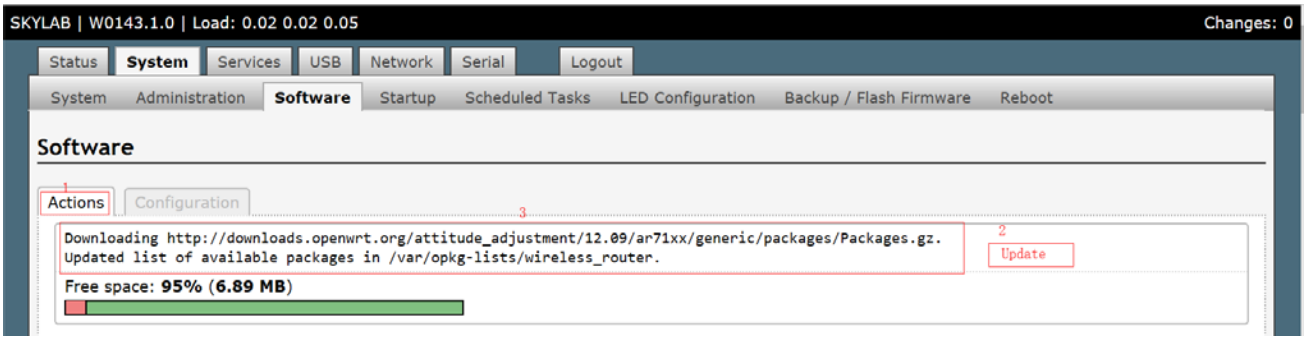
3.9.1 Add Software Package

Note: when adding software packages, ensure that modules are connected to network.

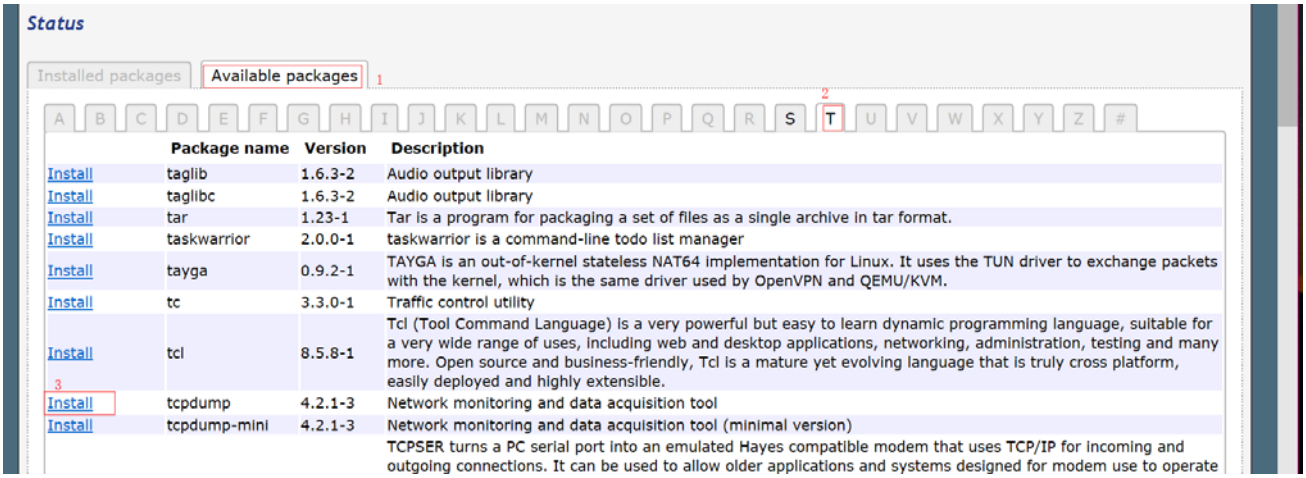
(1) Access to router management interface through browser, click “System”>> “Software” >> “Configuration”, and view the source address by the software package.



(3) Click "Actions" and go back to the software interface. Click "Update lists" and wait for a moment. The following two methods of software installation are introduced.



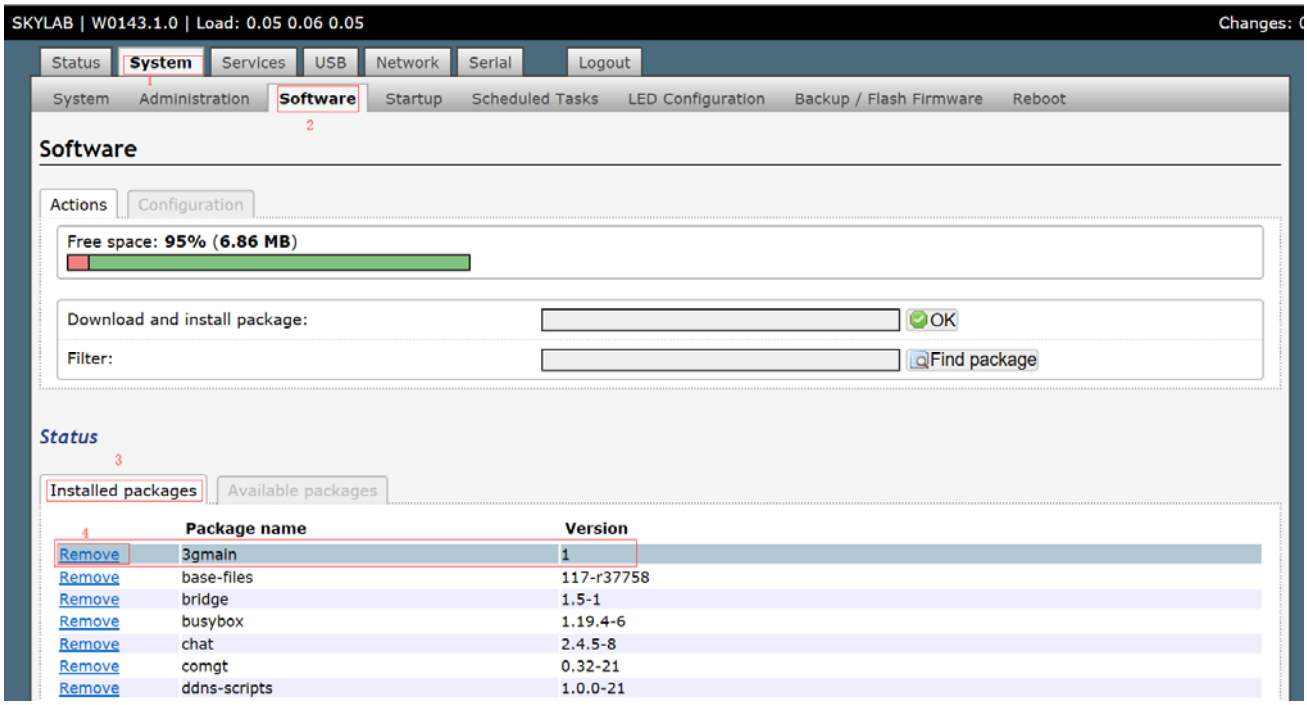
(4) Method 1: after the update finished, click "Available packages" to appear the package that can be added by A-Z. Select the package you want to add, click "Install" to complete the installation.



(4) Method 2: after the update completed, enter the name of the software package to be installed in the "Download and install package" input box, click "OK", and complete the installation.

3.9.2 Delete Software Packages

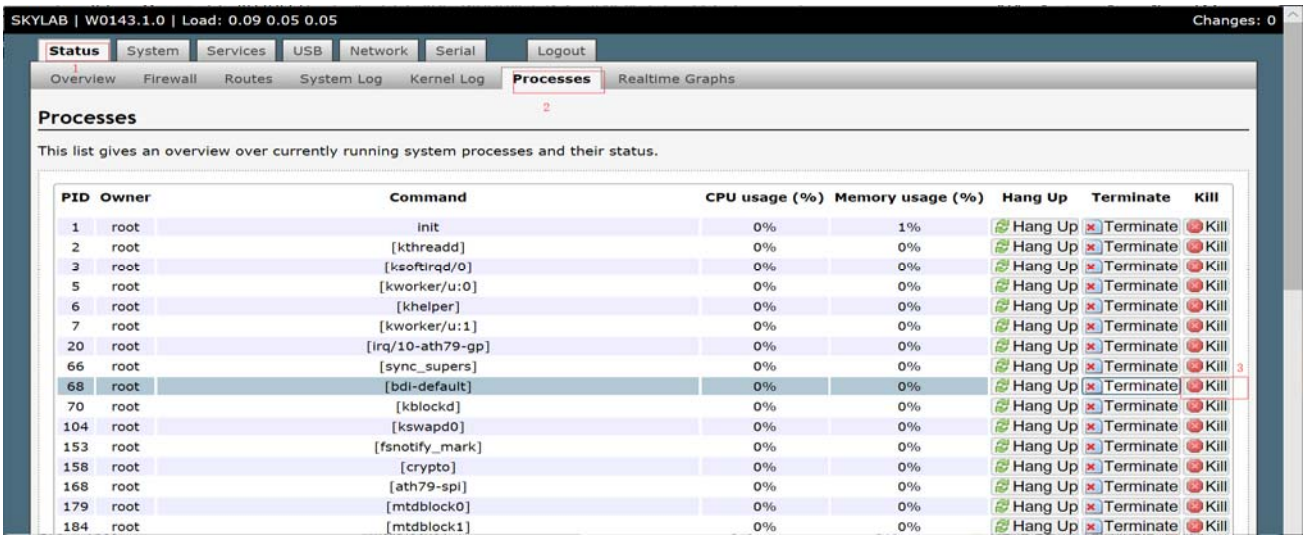
（1）As with the initial steps of increasing the software package, it comes to the software management interface. In the list of "Installed packages", select the packages you want to delete and click "Remove" to complete.



3.10 Close a Process

SKW99 supports users to close a process while the system is running. The following are the specific methods of operation:

(1) Enter the module management interface through the browser, click “Status”>>“Processes”, in the process list interface, select the process to close and click "Kill" to complete the shutdown.

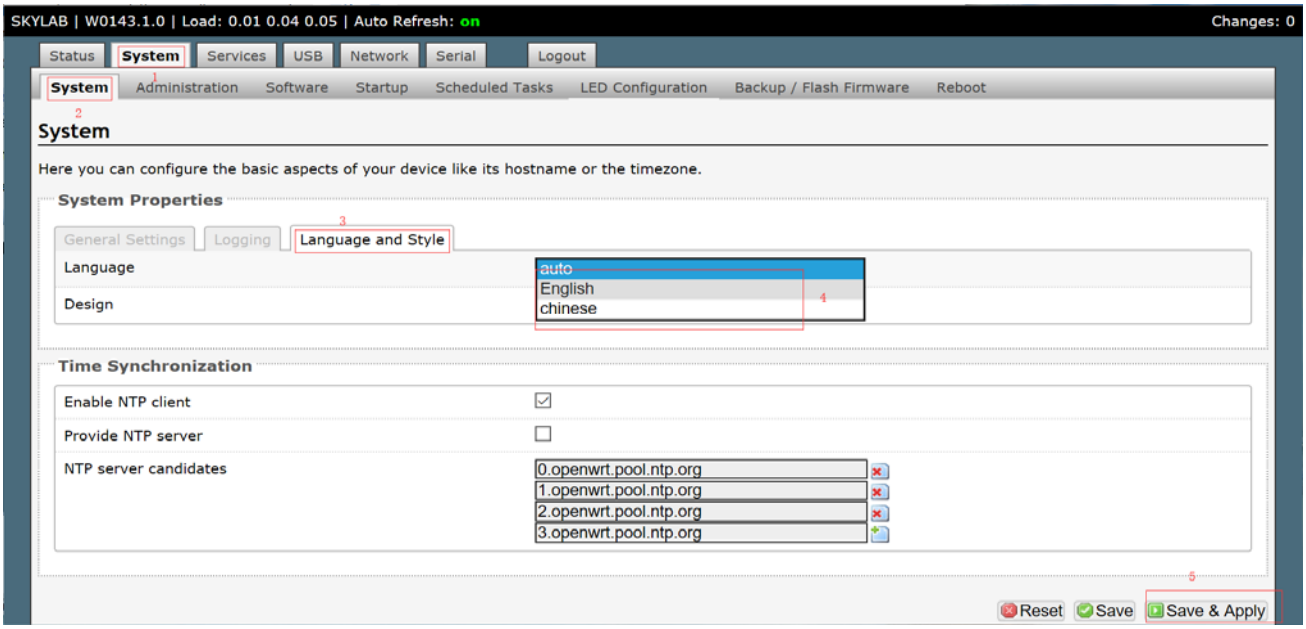


3.11 Interface between Chinese and English

The default Web interface of SKW99 is in English, but it supports switching between Chinese and English. The following is the method of switching:

(1) Access to router management interface through browser, click “System”>>“System”.Click “Language and Style”，In the corresponding box of "Language", select the language you want. Click "Save & Apply" to complete the switch.

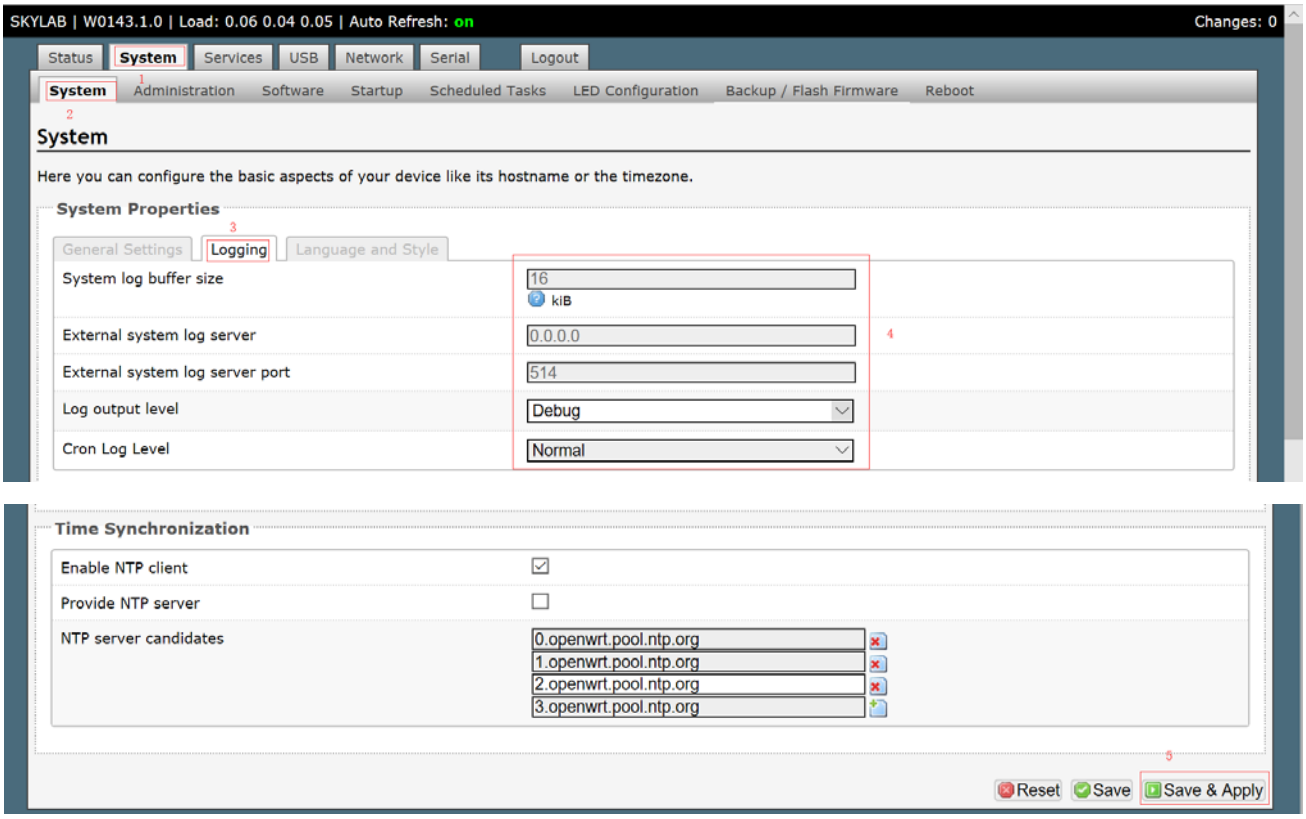
Note: if there is no Chinese option in the interface, please refer to the "add and drop software package" and the Chinese language package is luci-i18n-chinese.



3.12 Management System Log

SKW99 provides system log management, the default log cache size is 16kb, the default output level is Debug (detailed information for recording development information), and the default scheduling task log level is 8 (detailed output log information).The following is the way to modify the system log configuration:

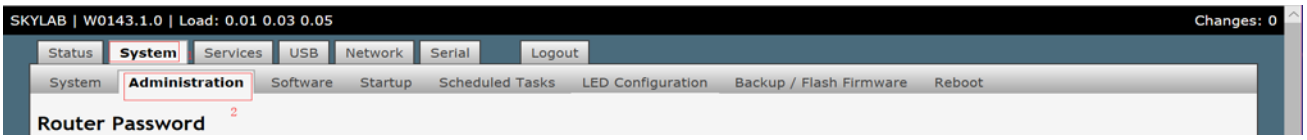
(1) Access to router management interface through browser, click “System” >> “System” >> “Logging”，and modify the corresponding configuration parameters. Click on "Save & Apply" and the system will take effect after reboot.

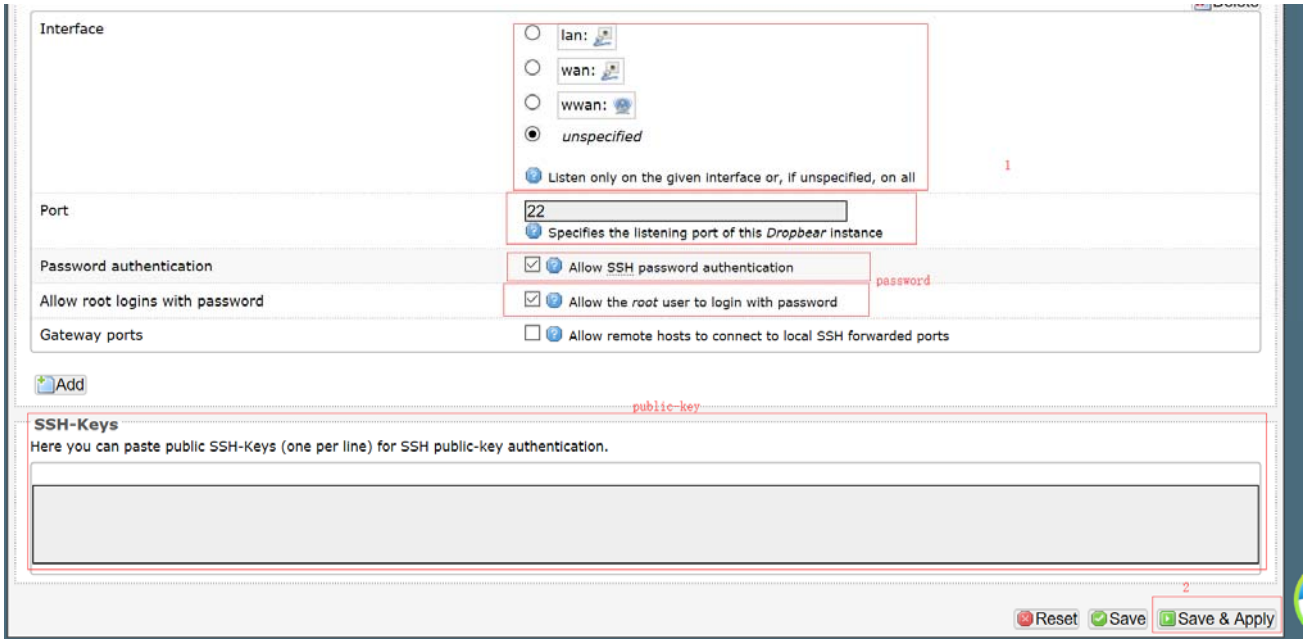


3.13 Managing Remote Access

SKW99 provides an integrated SCP server and SSH based shell access. The default open port is 22, and users can log in with the system password by using root account. The following will introduce the management methods of SSH:

(1) Access to router management interface through browser, click “System” >> “Administration”.In the "SSH Access" , set the login parameters. After configuring, click "Save & Apply" to complete configuration management.





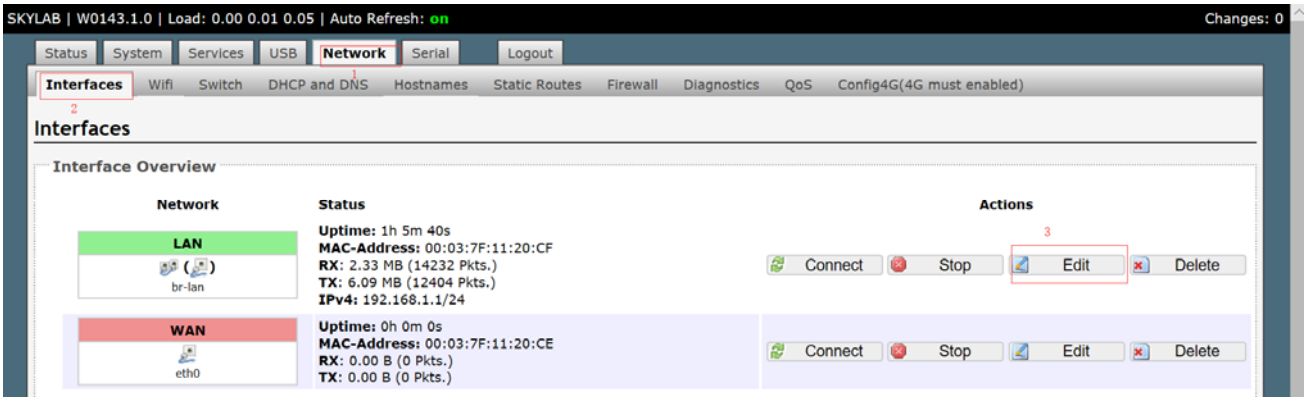
4 Network Configuration

4.1 Modify the LAN IP Address

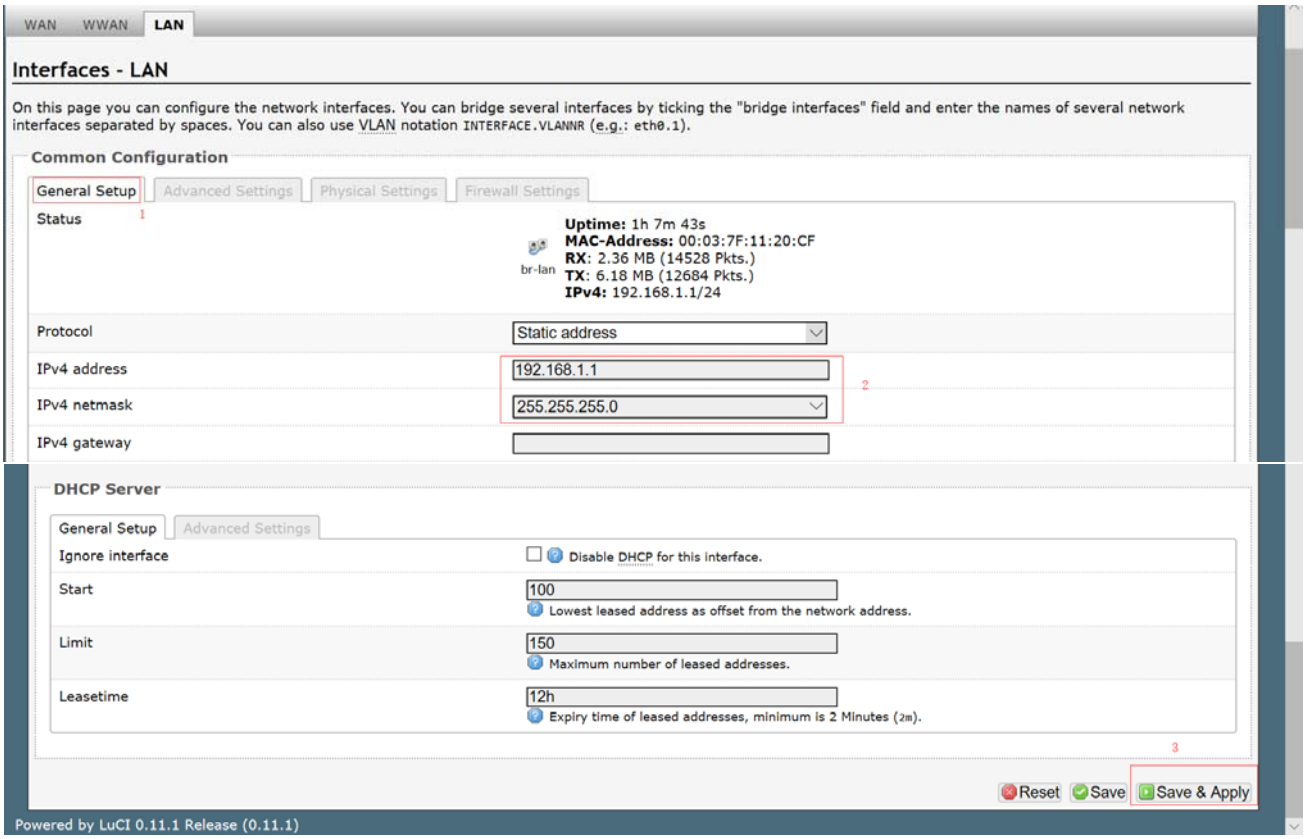
The default IP address of SKW99 is 192.168.1.1, but it may conflict with other router IP in the process of use. At this point, we need to modify the IP address on the module.

Note: after modifying the LAN address IP, you need to use the modified IP address when you login again.

(1) Access to router management interface through browser, click “Network” > “Interface”.On the Network Interface,Click the "Edit" for the LAN port. Enter the LAN configuration interface.



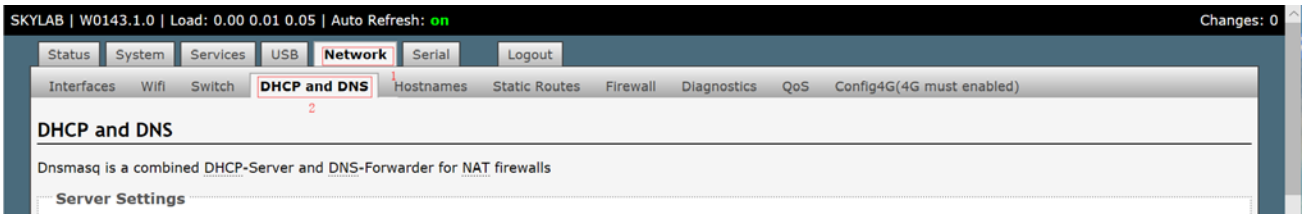
（2）Click “General Setup”(by default, has entered the corresponding interface),Modify the IP address and click "Save & Apply".When the network is stable, login with the modified IP address.



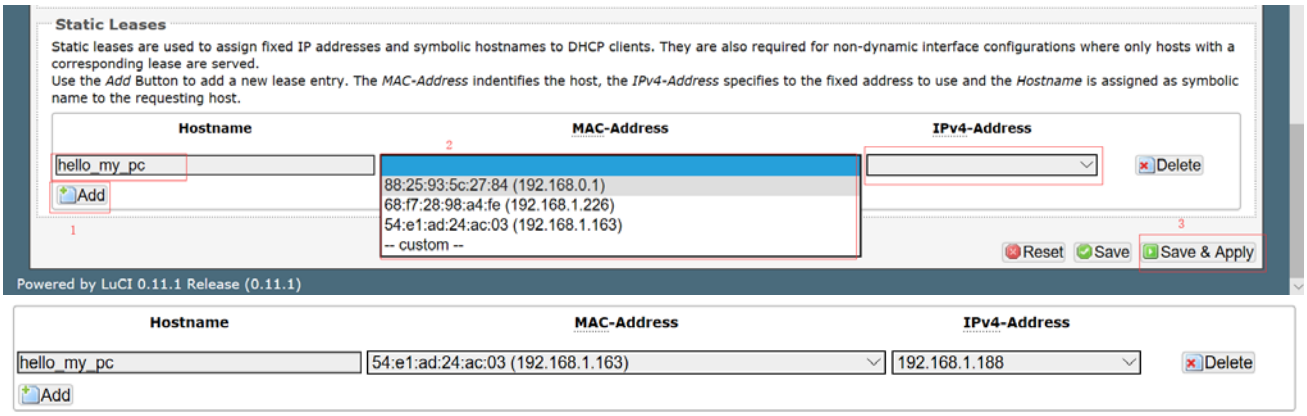
4.2 Static IP

SKW99 supports to bind the MAC address and IP, so that the IP address of the device is fixed. The following are the specific methods of operation:

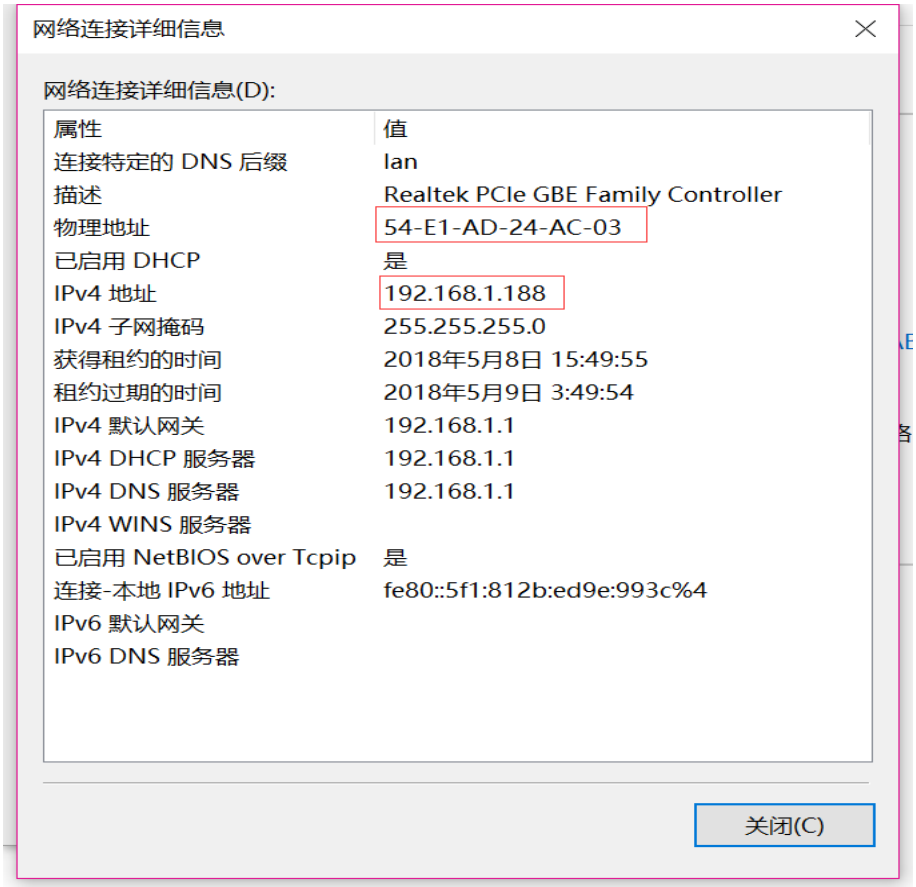
(1) Access to router management interface through browser, click “Network”>>“DHCP and DNS”. Configure at the bottom of the page at Static Leases.



(2) At the static IP, click "Add", appear the configuration input box, fill in the host name, select or enter the MAC address, select or enter the IP address.



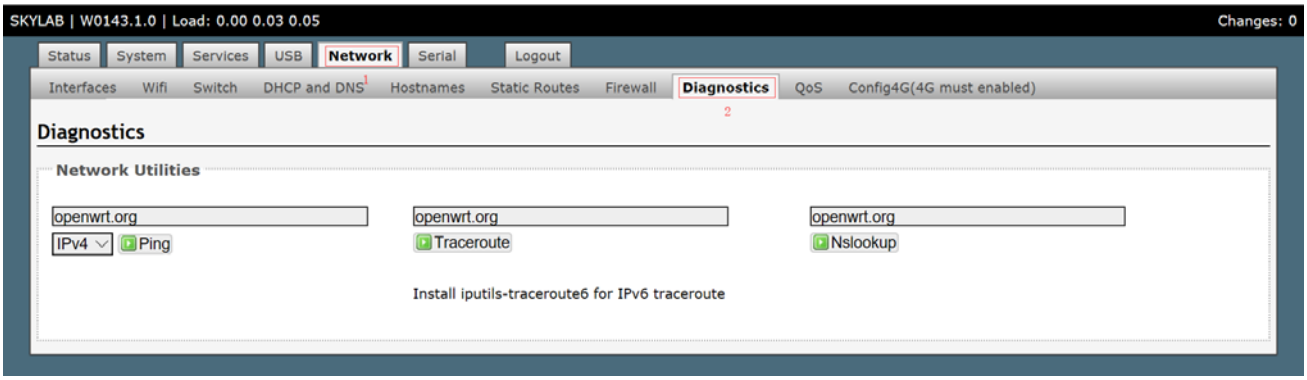
(3) For the above figure, the corresponding network address assignment for host “hello_my_pc” is as follows:



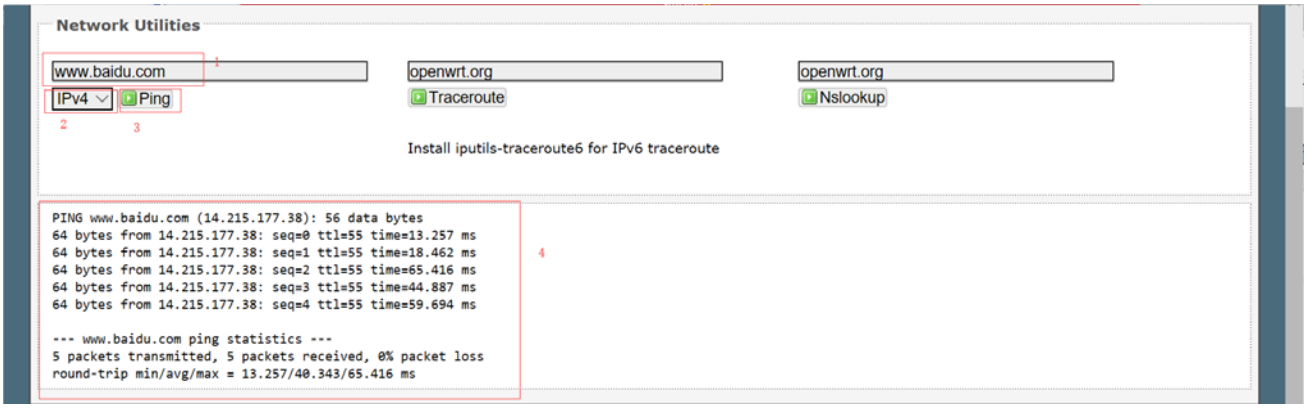
4.3 Network Diagnostic Tool

SKW99 provides 3 network diagnostic tools, namely Ping , Traceroute and Nslookup. The following are the use of these three tools:

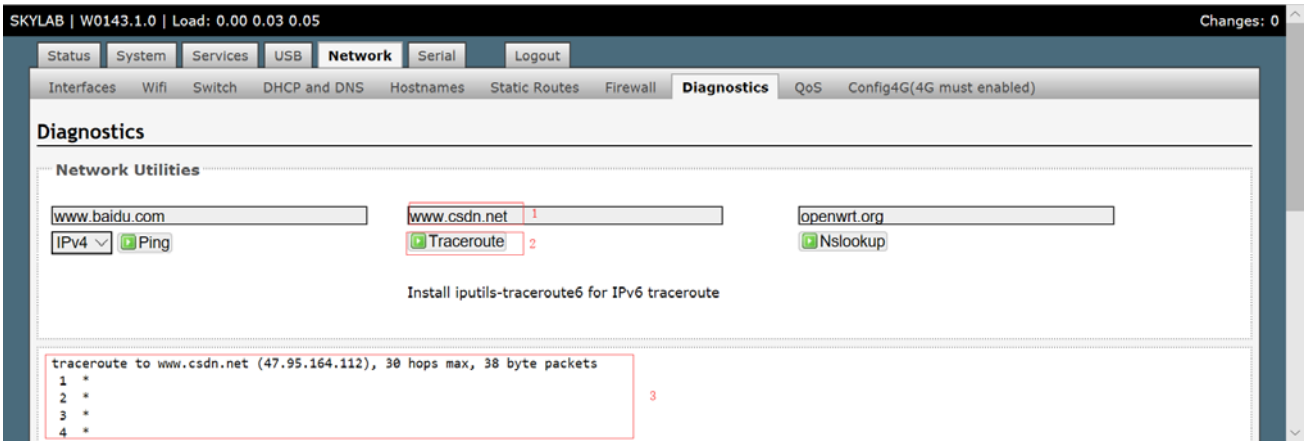
(1) Access to router management interface through browser, click “Network” >> “Diagnosis”, enter the network diagnosis interface.



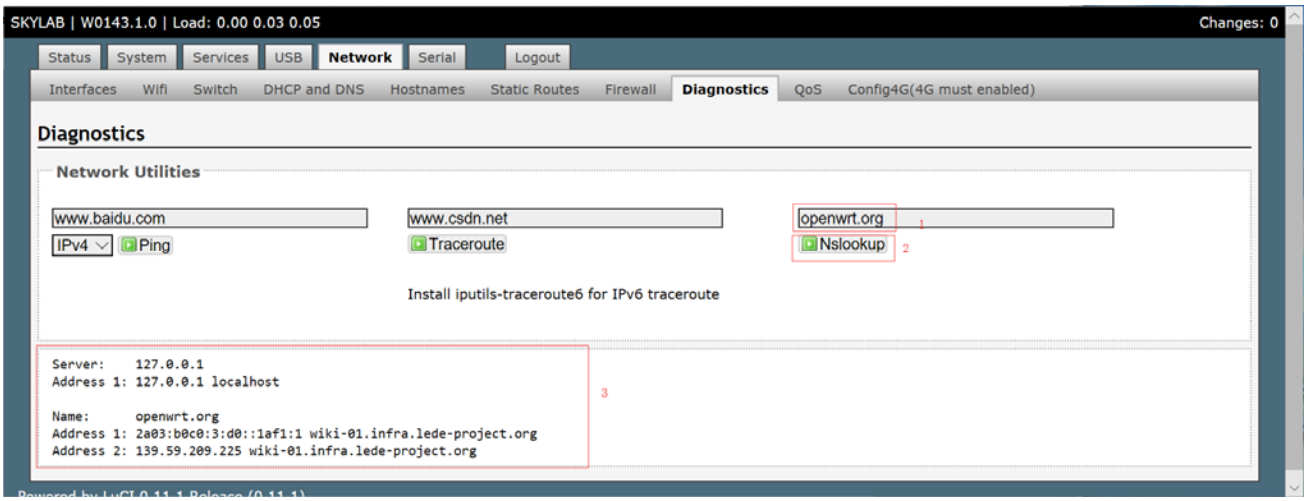
(2) In the Ping corresponding input box, enter the IP or domain name to be detected. If IPv4 address is detected, select IPv4; if IPv6 is detected, select IPv6. Click on "Ping" and wait for a moment. The result will be displayed in the following box.



(3) In the Traceroute corresponding input box, enter the IP or domain name to query, click "Traceroute", and wait for the result.



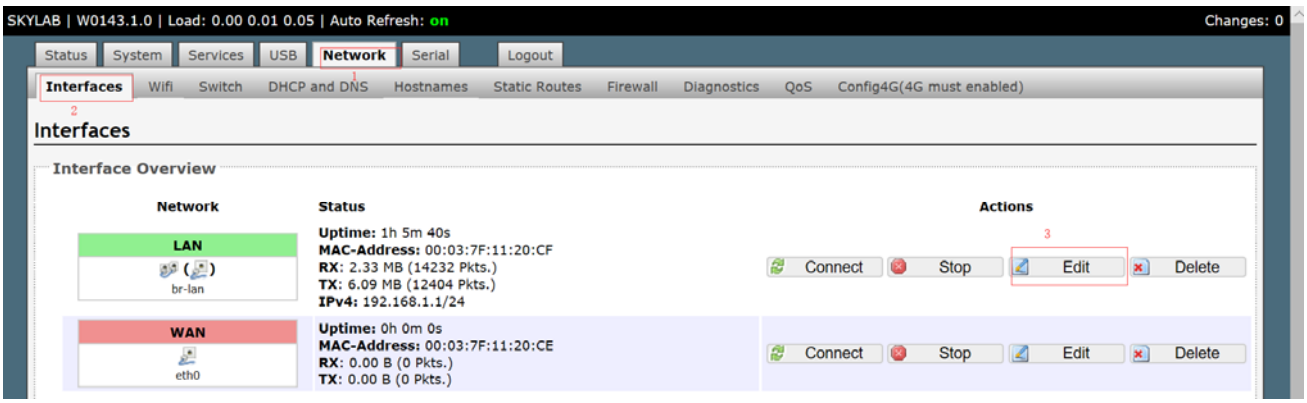
(4) In the Nslookup input box, enter the domain name and click "Nslookup". Find the IP address corresponding to the domain name.



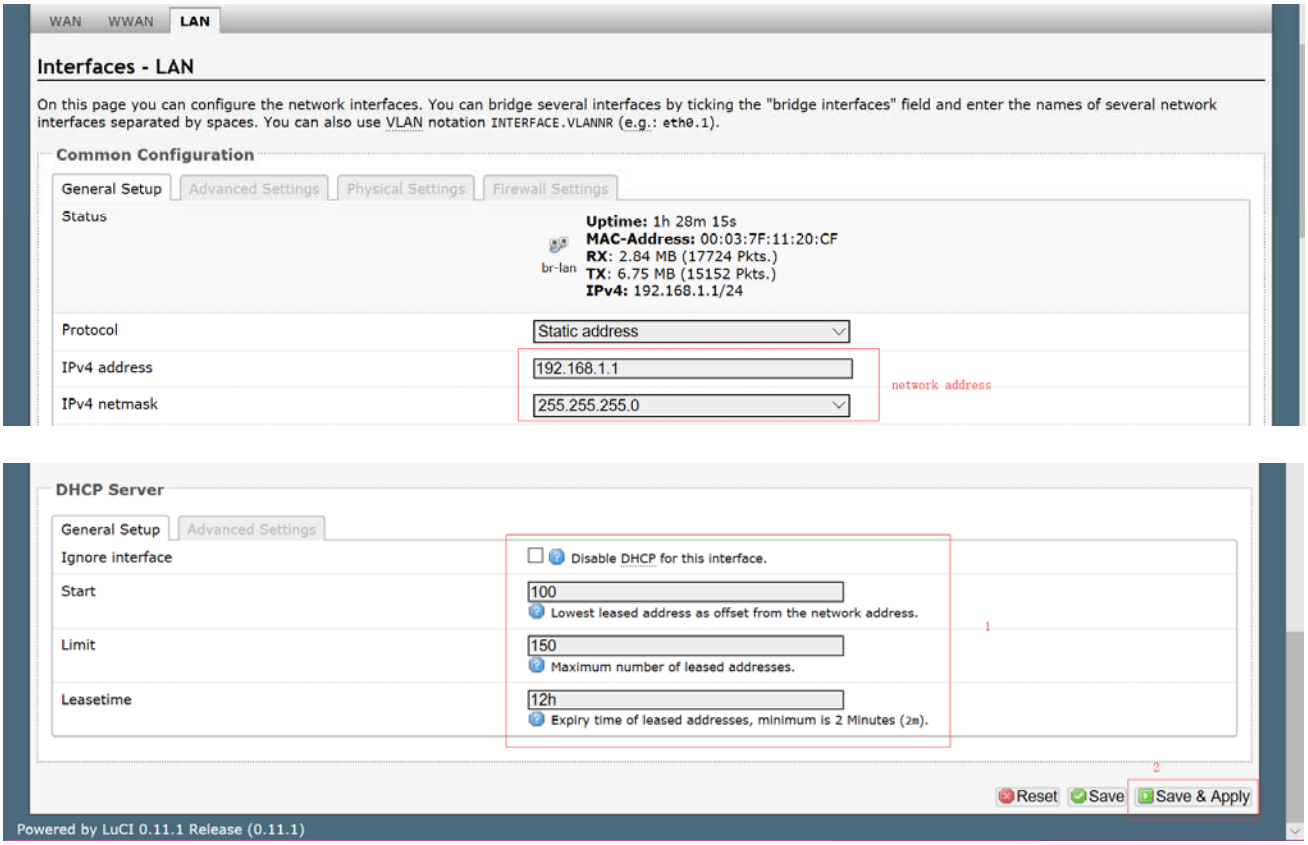
4.4 Configuring DHCP

SKW99 supports user configuration parameters of DHCP server, such as: IP address range, lease time, etc.The following are the specific methods of operation:

(1) After entering the management interface through the browser, click “Network” >> “Interface”. In the network interface status interface, click LAN corresponding "Edit" to enter the LAN management interface.



（2）On the LAN management interface, the address and netmask of IPv4 determine the network number of LAN.In DHCP Server, configure the initial IP address, the number of IP addresses allocated, and the rental time.After the configuration completed, click "Save & Apply" to make the configuration effective.

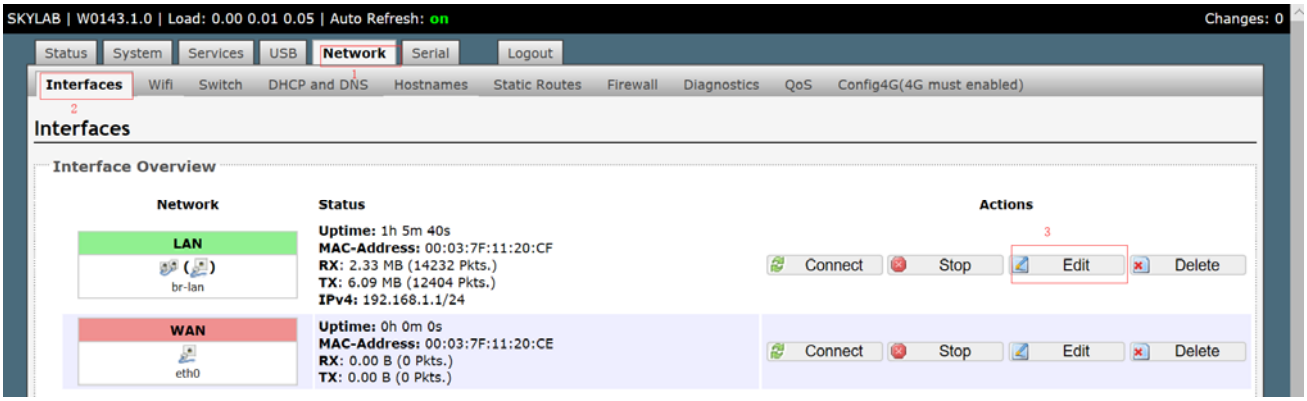


4.5 Disable / Enable Dynamic DHCP Dynamic

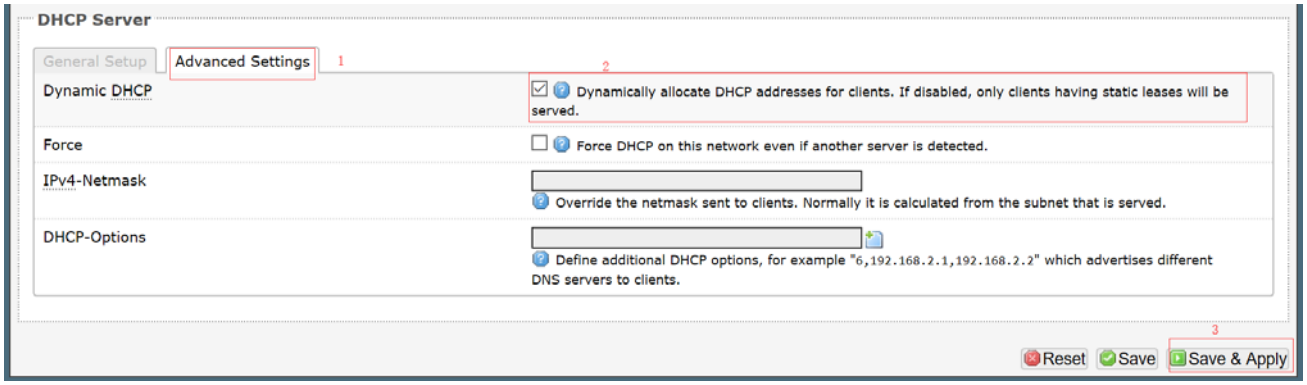
In small network environment, in order to manage and monitor the communication of devices, the dynamic DHCP will be turned off and the static IP will be used. The following is an introduction to the operation of closing the dynamic DHCP.

Note: after closing the dynamic DHCP, the device can only get the IP address through the static IP.

(1) After entering the management interface through the browser, click “Network” >> “Interface”. In the network interface status interface, click LAN corresponding "Edit" to enter the LAN management interface.



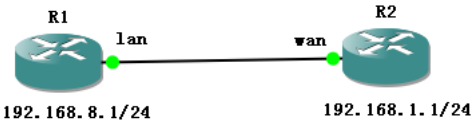
(2) In the DHCP Server configuration at the bottom of the LAN configuration page, Click “Advanced Settings”, The "Dynamic DHCP" is not selected, which means that the dynamic DHCP is disabled. Select it to indicate the start of dynamic DHCP. Click "Save & Apply" to complete the configuration.



4.6 Configuring IPv4 Static Routing

Static routing refers to the routing configured by users or network administrators. It is generally applicable to a relatively simple network environment. In such an environment, network administrators are easy to understand the topology of the network clearly and facilitate the setting of correct routing information.

In the following network topology, R2 is the next level routing of R1, when the routing tables of R1 and R2 are shown as below, and R2 has a route to R1, while R1 has no routing to R2 (the visual representation is that R1ping is not through R2, as shown in Figure 3). We need to configure the static routing of R2 on R1 so that hosts R1 and R2 can communicate with each other.



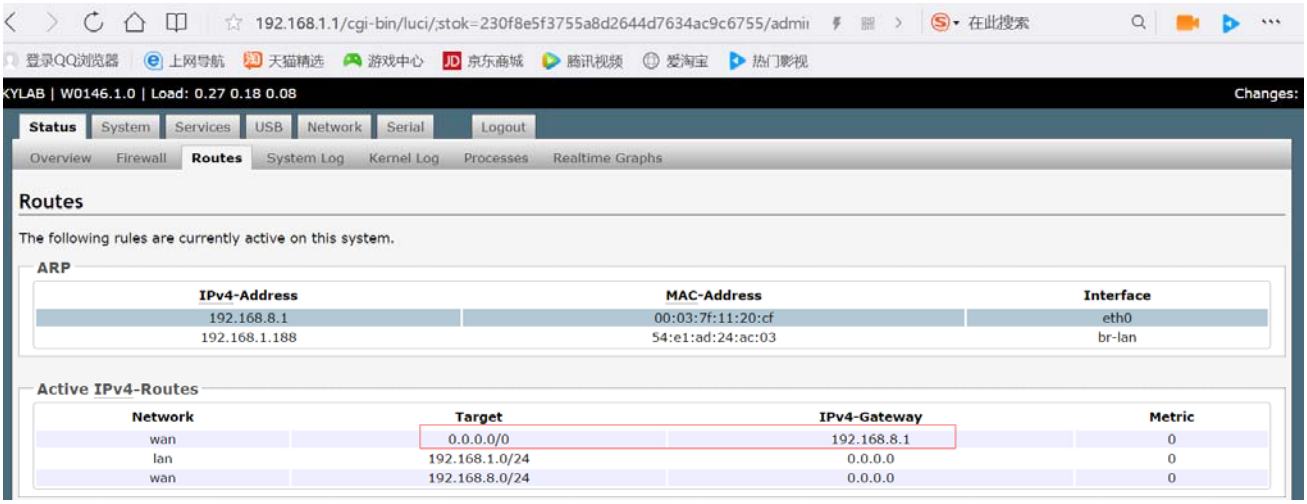


Figure1：Routing table of R2

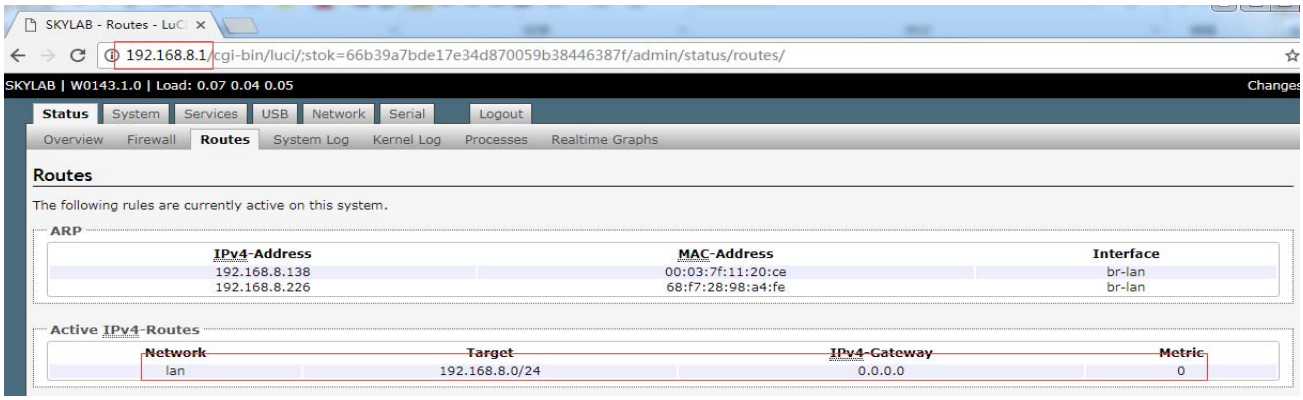


Figure2：Routing table of R1

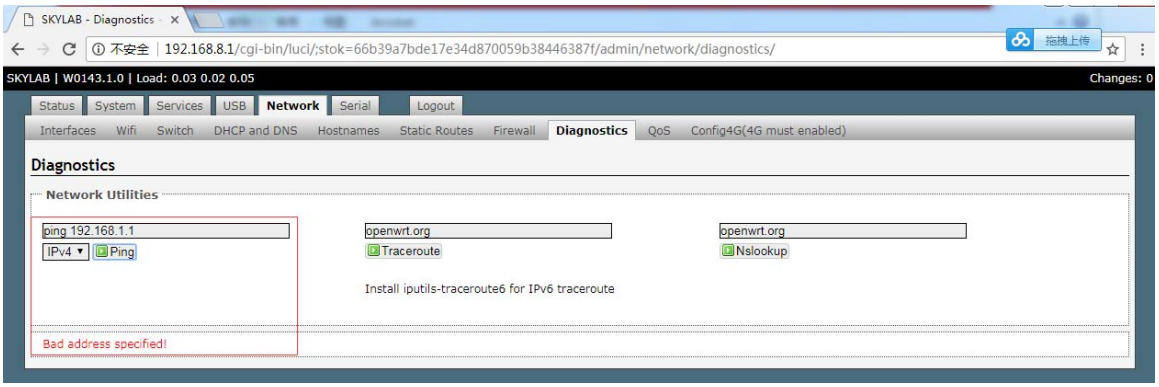
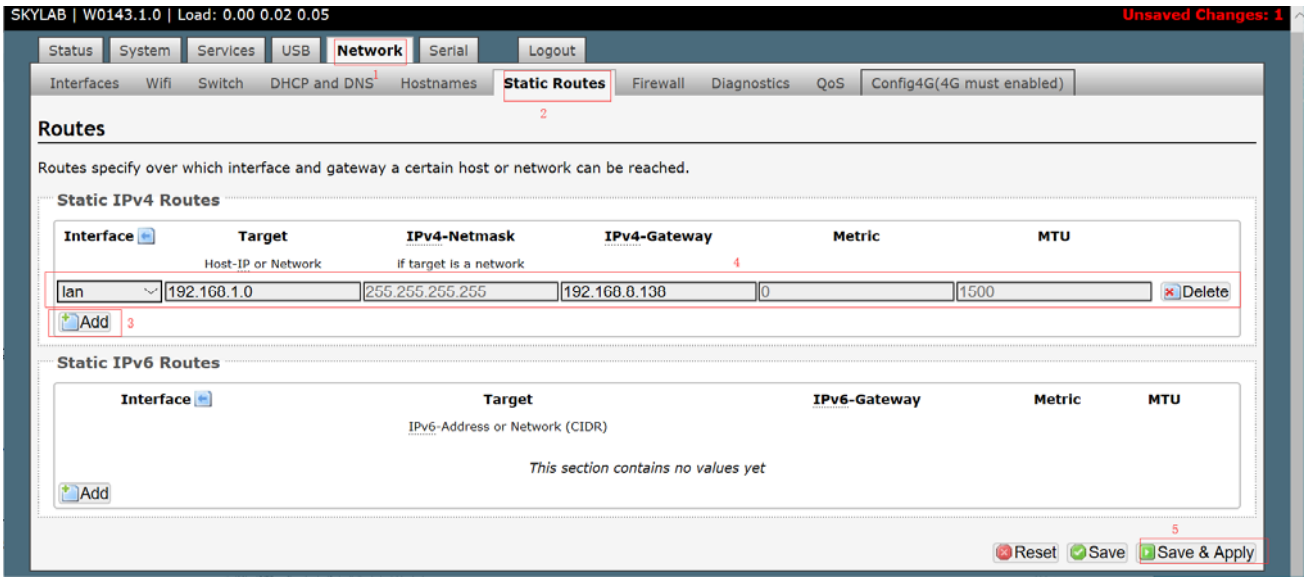


Figure3：On the router R1, ping the gateway of the router R2

The following is the configuration of static routing on R1:

(1) Click “Network” >> “Static Routes”，Come to the configuration interface of the static routing. In the "Static IPv4 Routes" configuration box, click ”Add”.A static configuration box appears and input configuration information. In the example, the interface to the 192.168.1.0/24 segment is LAN, and the corresponding IP address is 192.168.8.138. after completion, then click "Save & Apply".



(3) Look at the routing configuration on R1 at this time, as below:

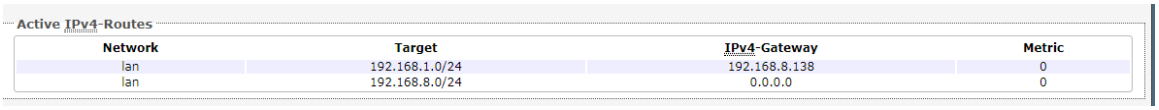


Figure 1: routing table of R1 after configuring static routing

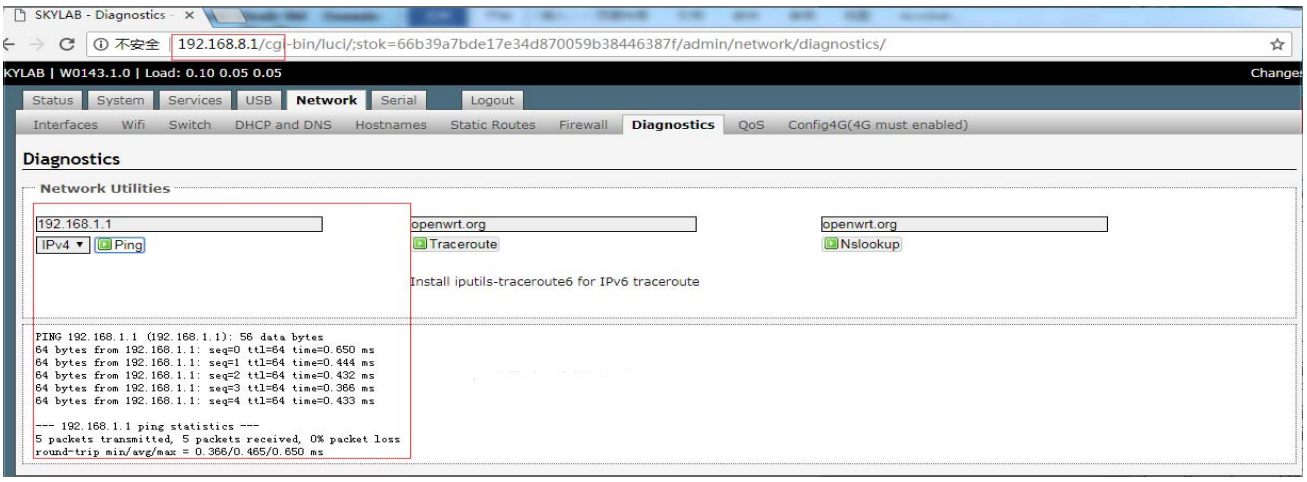


Figure 2: Ping detection information on R1 after configuring static routing

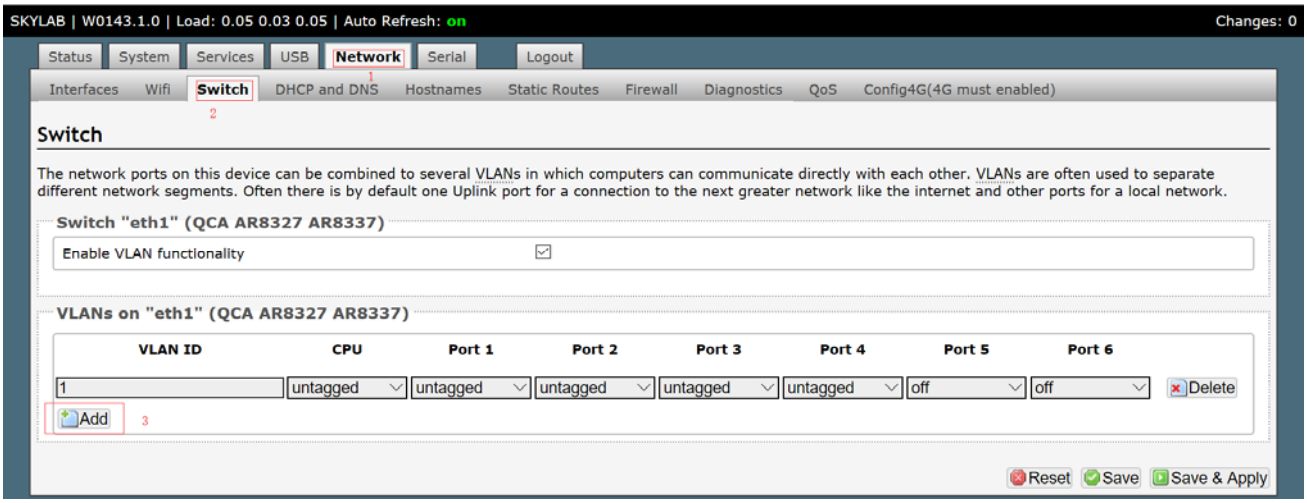
4.7 Configuring VLAN

VLAN is a relatively new technology, working on the second and third layers of the ISO reference model. A VLAN is a broadcast domain, and the communication between VLAN is done through third layers of routers. Compared with the traditional LAN technology, VLAN technology is more flexible. It has the following advantages: the management cost of mobile devices, mobile devices, and modifications is reduced, and broadcast activities can be controlled.

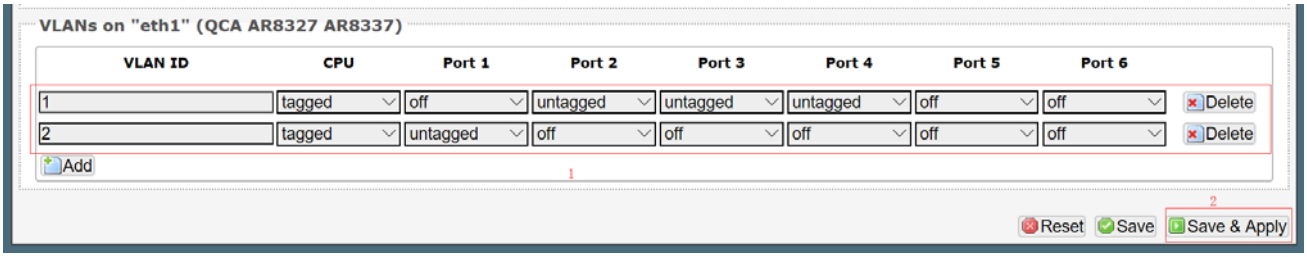
SKW99 supports VLAN configuration. The following example will be taken as an example 1 to introduce specific operation methods.

Example 1: a LAN port is configured as a WAN port.

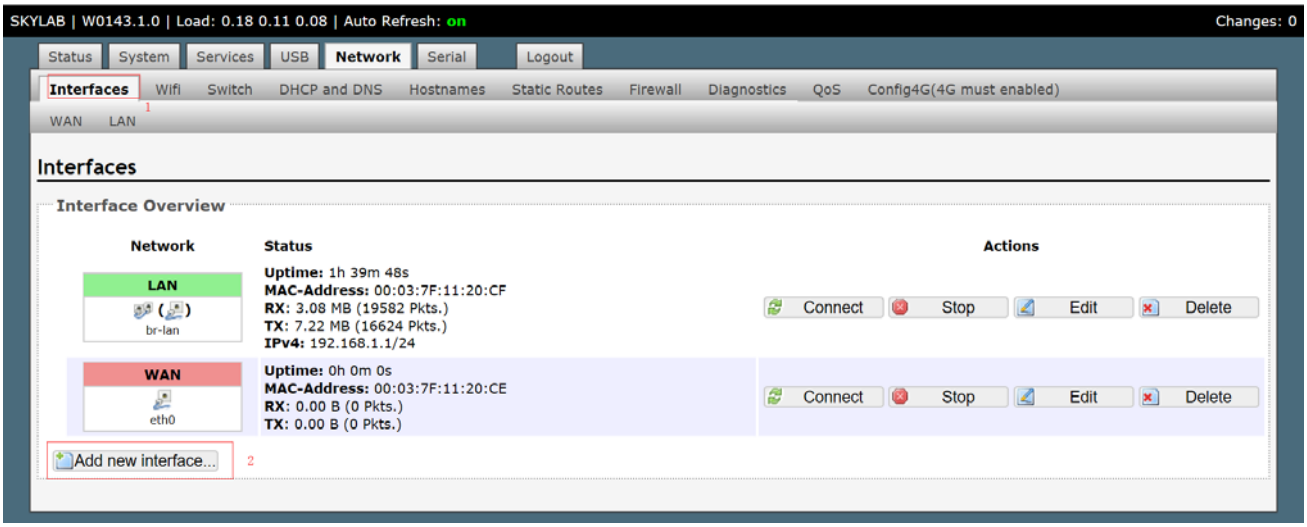
(1) After entering the management interface through the browser, click “Network” >> “Switch” and come to the VLAN configuration interface. have only vlan1 as default, including the port1 to the port4 interface, these four interfaces are 4 LAN ports. Click "Add" to add a new VLAN packet.



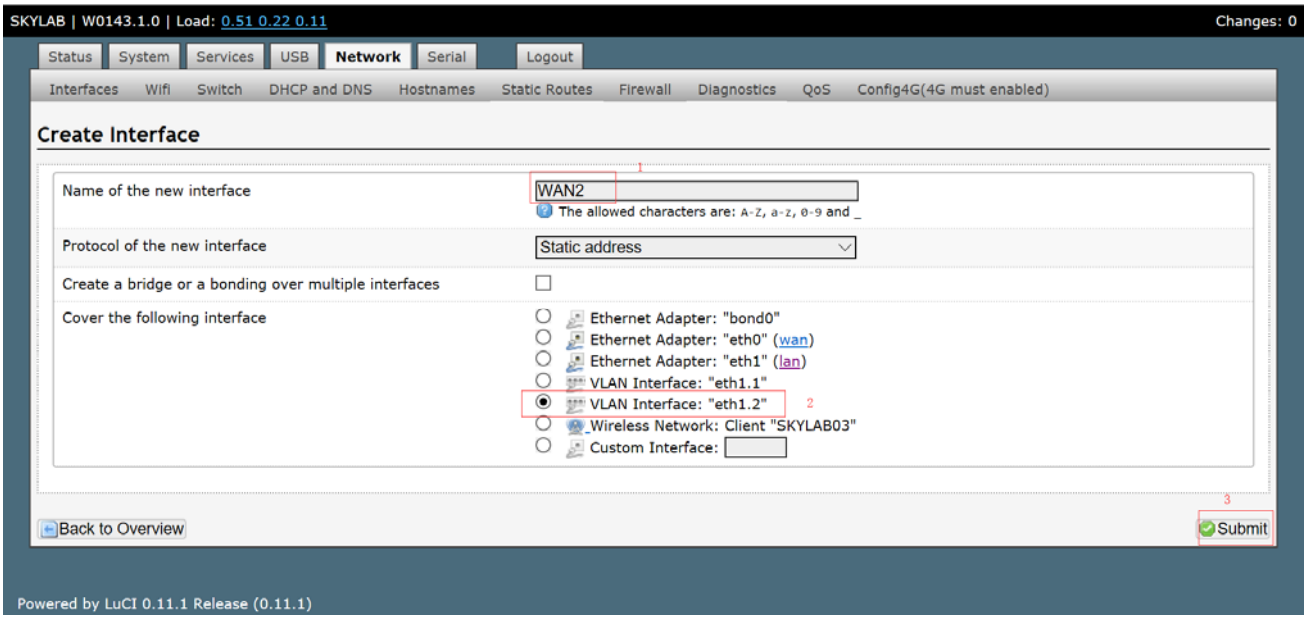
（2）In the new VLAN packet, the following configuration is implemented, where off indicates that port is not in VLAN, untagged indicates that the VLAN package does not make a mark, and tagged represents VLAN packet marking. In the example, we divide port1 into vlan2, and the packages of two VLAN in CPU are marked. When the configuration is finished, click "Save & Apply".



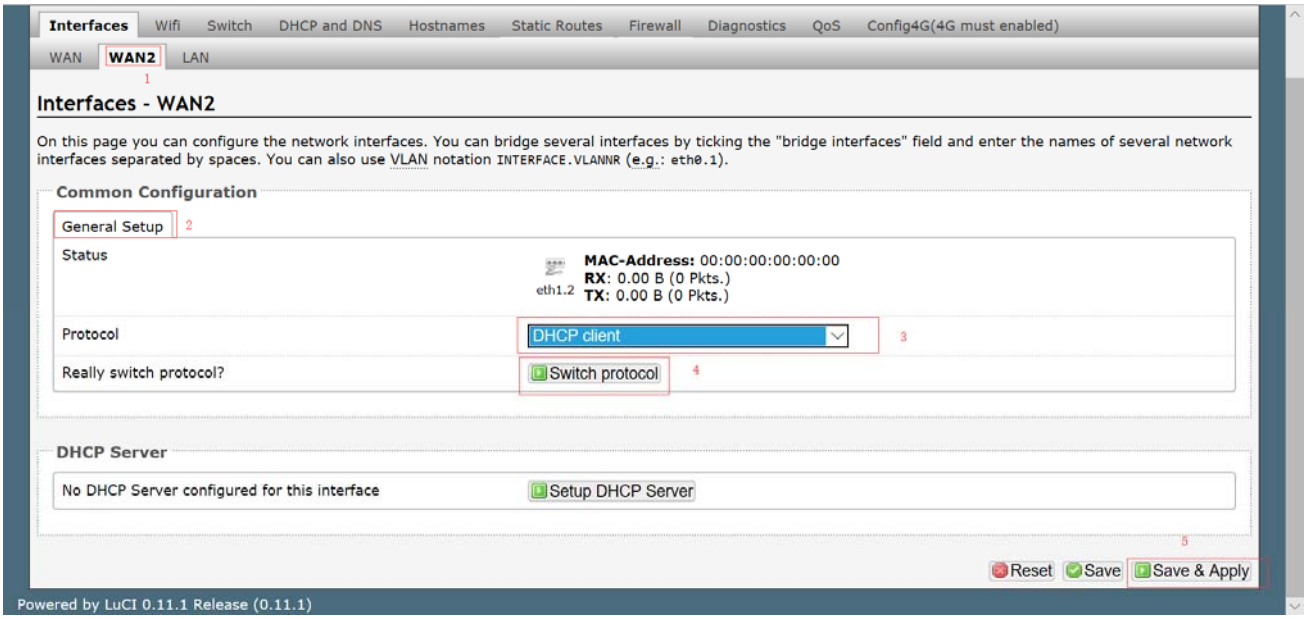
（3）Click "Interface" to the network status interface and click "Add new interface...".



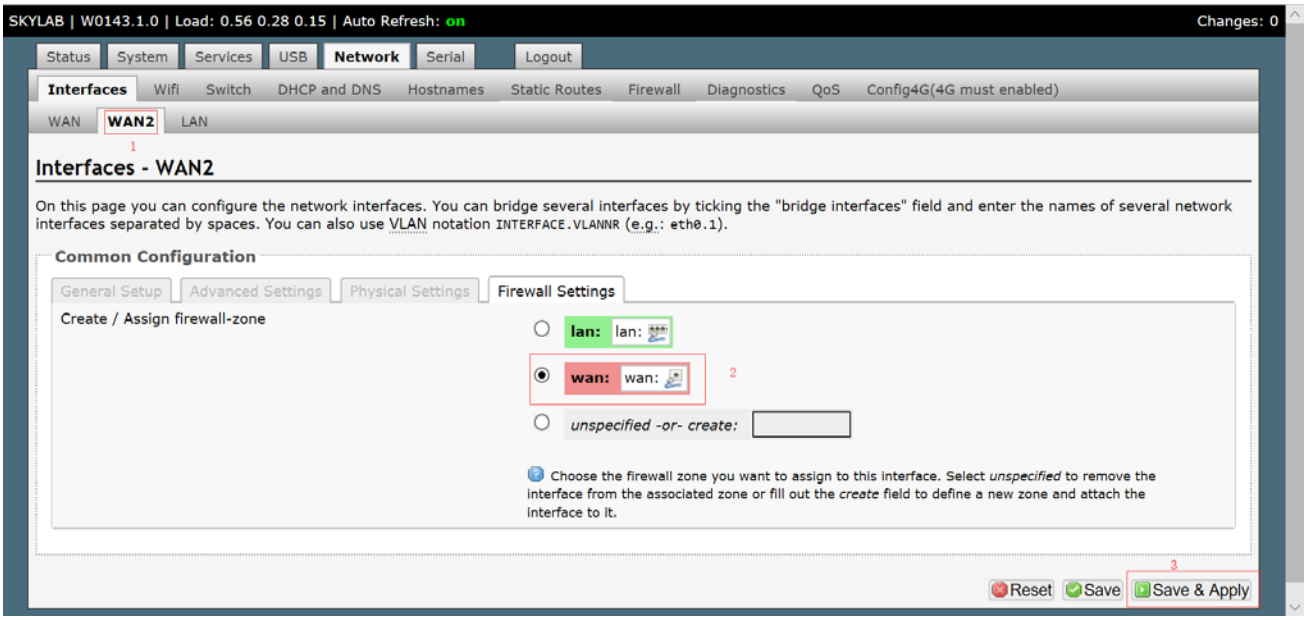
（4）In the new network interface configuration interface, the "Name of the new interface" input interface name WAN2, "Cover the following interface" select "VLAN Interface:eth1.2", click “Submit”；



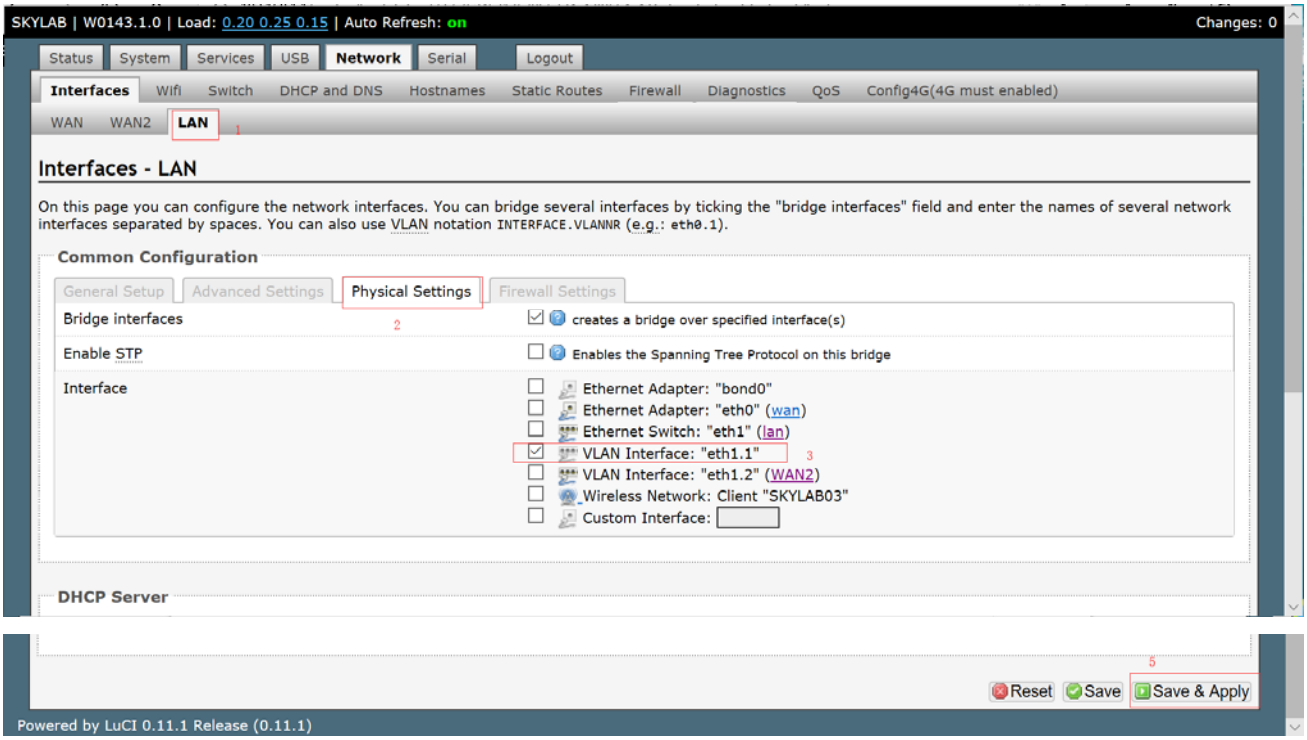
（5）After submission, the page will jump to the network configuration interface of WAN2, in "General Setup", select "DHCP Client", click "Switch Protocol", and click "Save & Apply".



（6）After the submission, the following image interface will appear. If not, then click "WAN2" to refresh and go to the WAN2 configuration interface. Click "Firewall Settings", select "Wan" and click "Save & Apply".

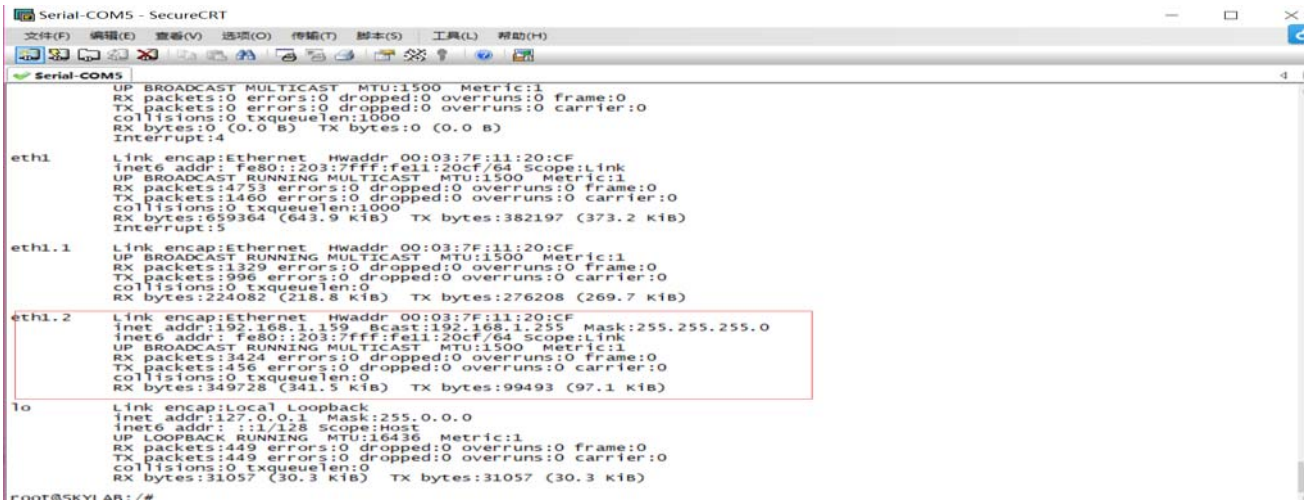


（7）The physical interface of the LAN port is eth1 by default, and we need to reconfigure it here.Click "LAN", enter the LAN interface configuration interface, click "Physical Settings", select "VLAN Interface:eth1.1". Click "Save & Apply".



Restart the system, see the "Reboot system".

（8）Test: The following is the printing information that I use the ifconfig command after I connect to the serial port.



4.8 Firewalls Configuration

Firewall, known as the protection wall as well, is a network security system between the internal network and the external network. SKW99 supports users to configure firewall rules according to their needs.

Note: Non-professionals, please do not casually modify the firewall rules.

4.8.1 Firewall Basic Configuration

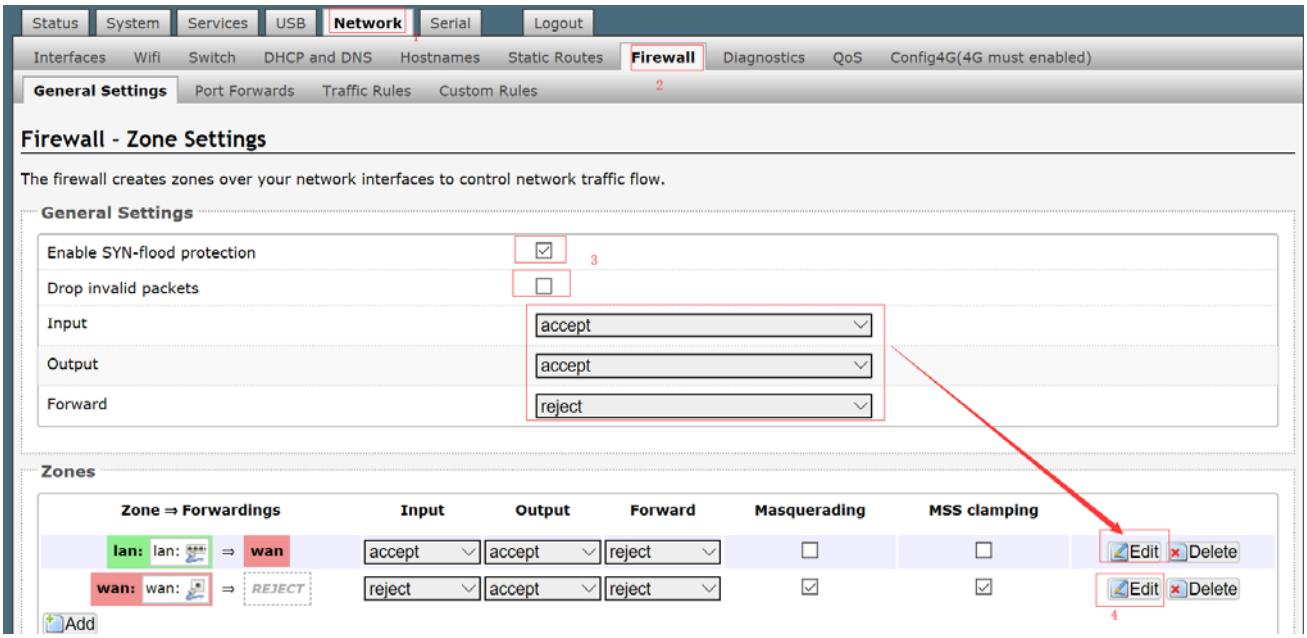
The basic configuration capabilities include:

① Whether or not to open the SYN-Flood defense, open by default;

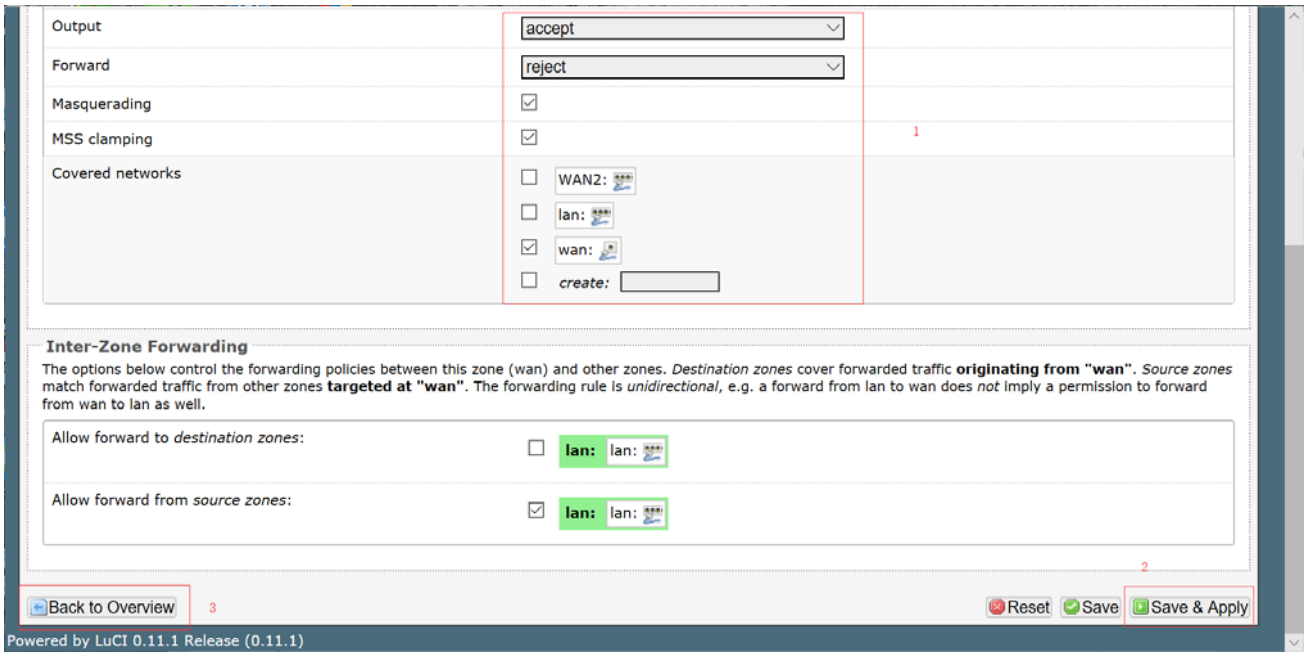
② Whether to discard useless bags and not discarded by default;

③ Lan/Wan port Input chain, Output chain, Forward chain processing and so on.

（1）After entering the management interface through the browser, click “Network” >> “Firewall”. By default, it has entered "General Setting". You can also click on "General Setting" to enter.In this interface, do the basic configuration of the firewall.



（2）In the "General Setting" configuration interface, click the "Lan" (or WAN) port corresponding to "Edit" and enter the corresponding interface configuration interface. As follows, take the WAN port configuration as an example.

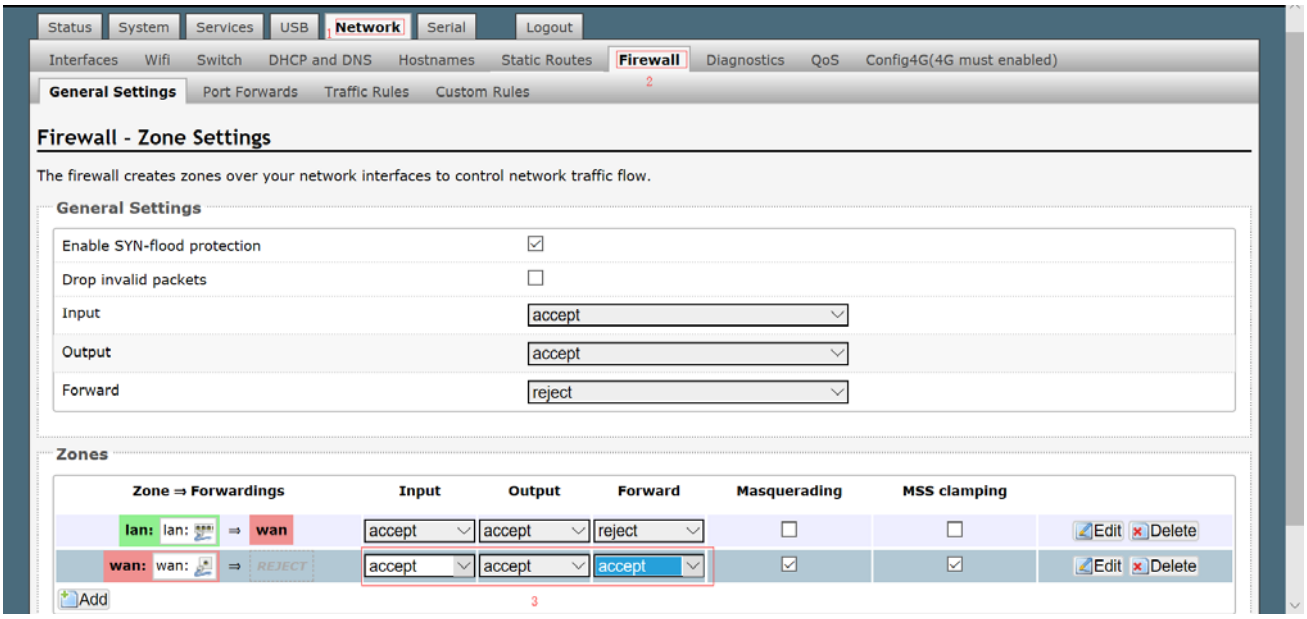


4.8.2 Port Mapping

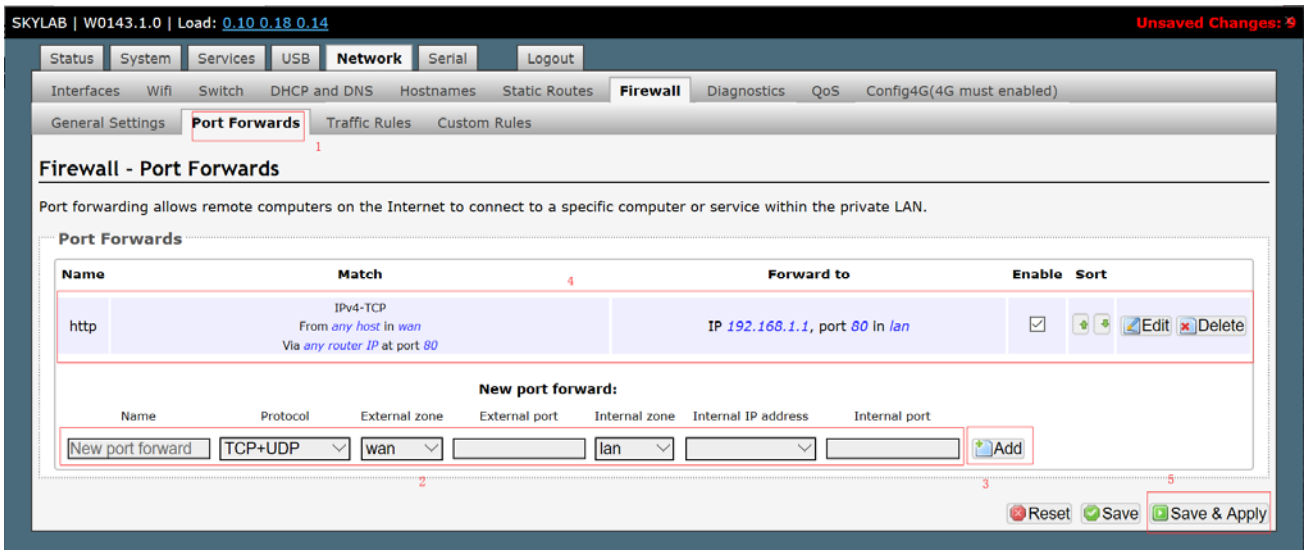
Port mapping is mapping a port of the IP address of the external network host to a machine in the intranet, providing the corresponding services. When the user accesses the port of the IP, the server automatically maps the request to the machine corresponding to the LAN. SKW99 supports port mapping function, and users can set corresponding port mapping according to their own needs.

The following is a case study of mapping webpage to external network as an example.

（1）Enter the router configuration interface through browser, click “Network” >> “Firewall”. At the default "General Settings" interface, the WAN port inbound data and Forward data are allowed to pass.



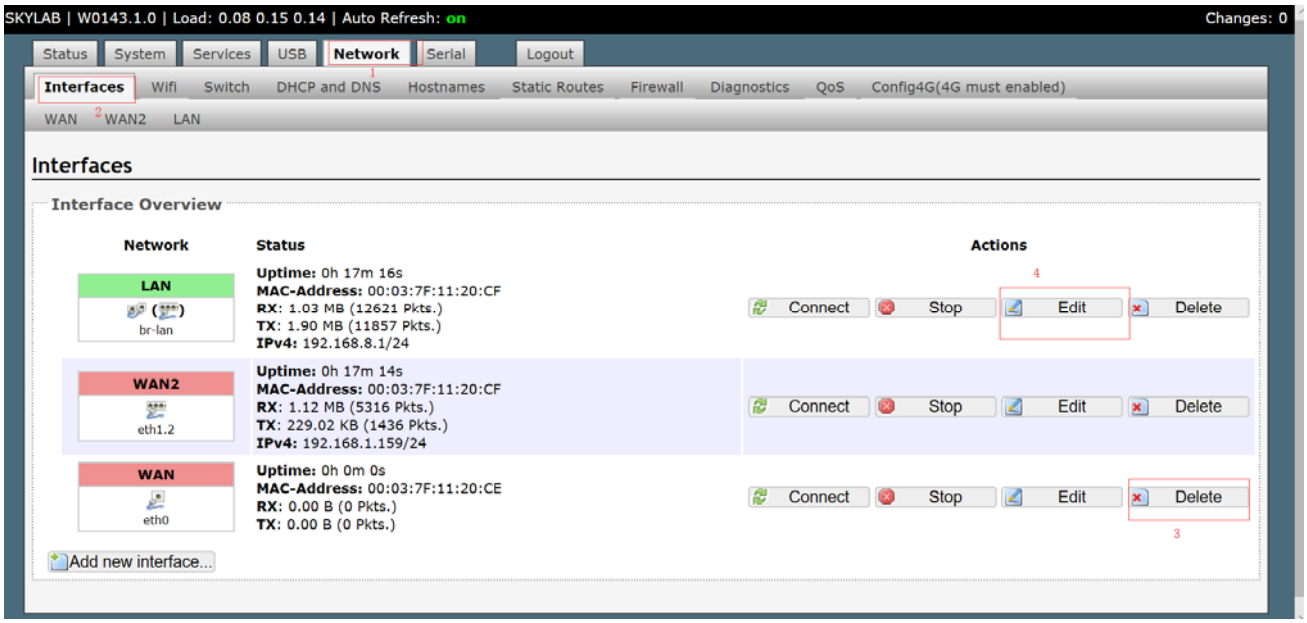
（2）On the firewall page, click “Port Forward”, come to the port mapping interface. Edit the mapping information in the edit box, click "Add", and appear the mapping information table item above. Click "Save & Apply" to complete the configuration of the port mapping.



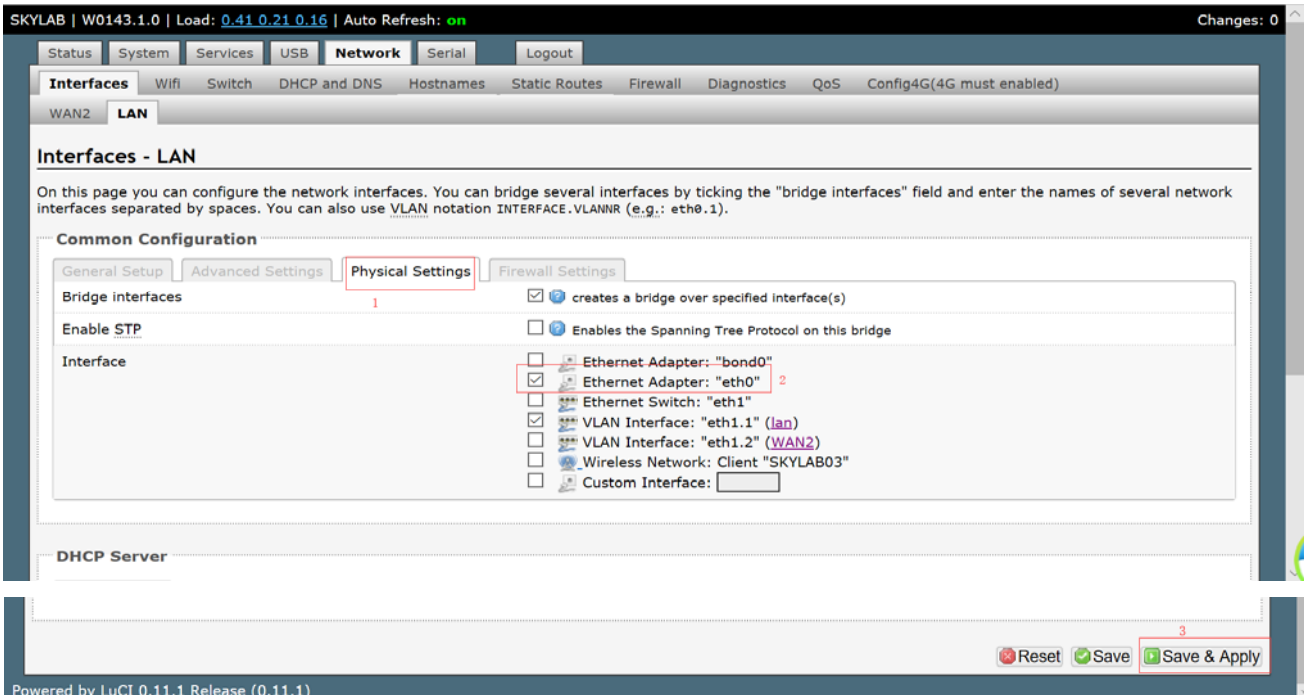
4.9 Flipping Wan/Lan

SKW99 supports WAN/LAN to flip and set the network port to the required state. The LAN port is converted to WAN, which has been explained in detail in the previous chapter "VLAN configuration". The following is to flip the WAN port to LAN. The following steps are as follows:

（1）After entering the management interface through the browser, click “Network” >> “Interfaces”. In the network status interface, click the "delete" in the WAN port corresponding option, delete Wan.



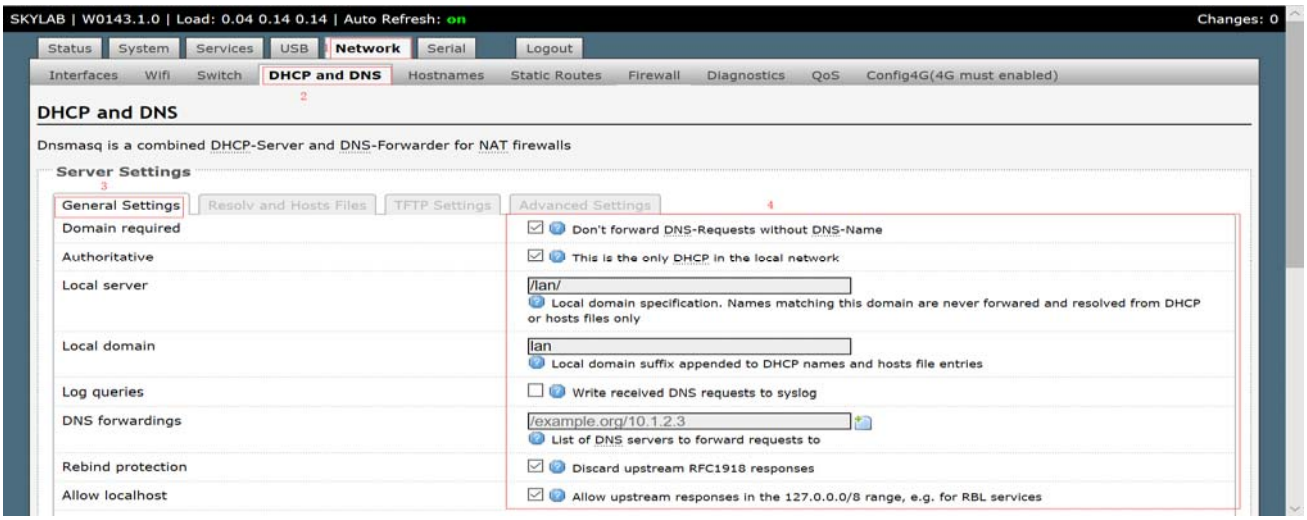
（2）In the LAN corresponding operation options, click "Edit" to the LAN configuration interface. Click "Physical Settings", in the Interface Options box, select "eth0". Click "Save & Apply" to complete the configuration.



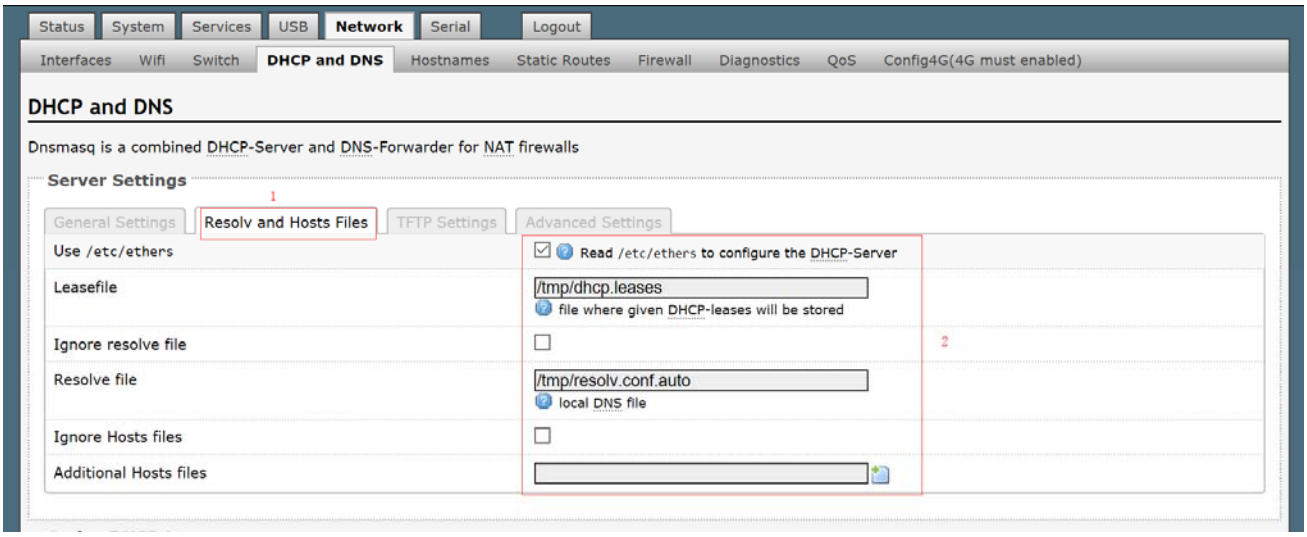
4.10 Configuring DHCP and DNS

SKW99 supports the user to configure advanced configuration of DHCP and DNS, but requires the operator to have the corresponding capability, otherwise it is not recommended to modify the configuration. The following are the specific methods of operation:

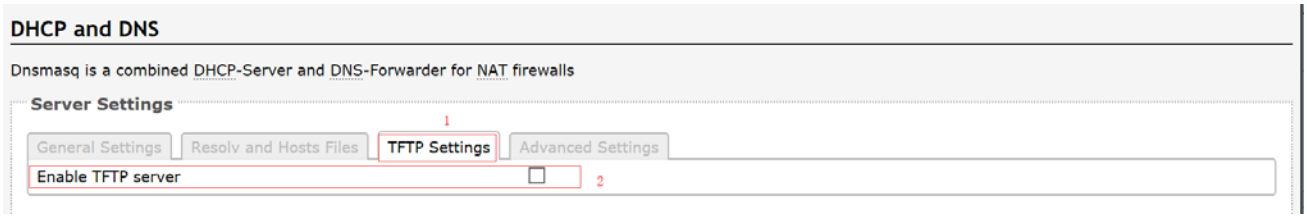
（1）After entering the management interface through the browser, click “Network” >> “DHCP and DNS”,In the "General Setting" interface, the basic configuration of DHCP server and DNS transponder is made.



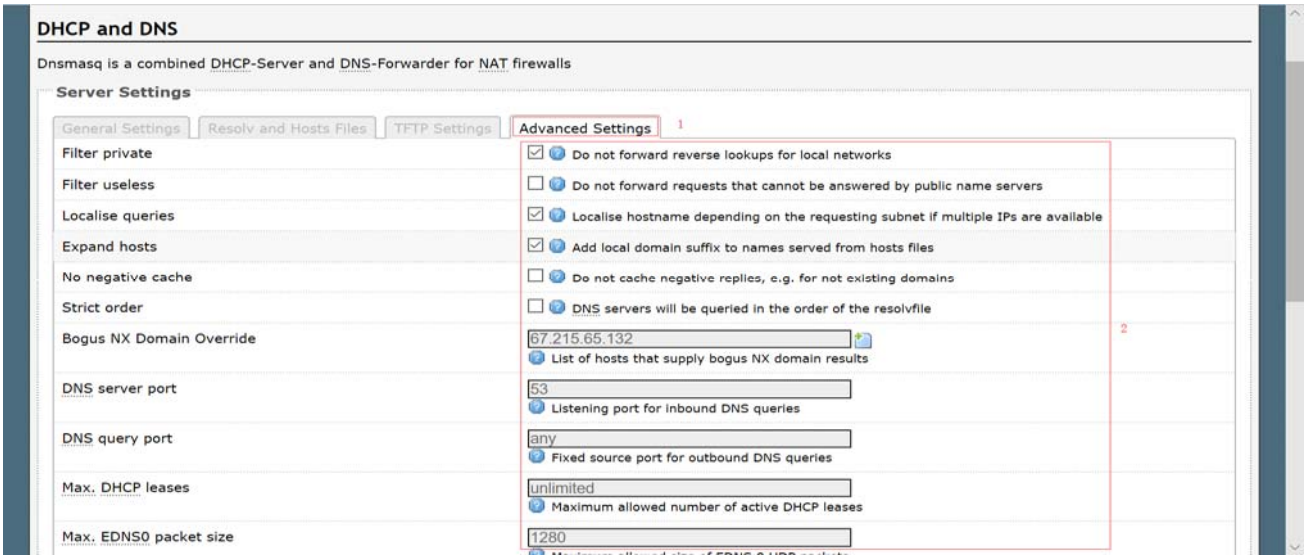
（2）Click "Resolv and Hosts Files". In the "Resolv and Hosts Files" interface, configure the host and parsing files;



（3）Click "TFTP Settings" and configure the TFTP server.



（4）Click on "Advanced Settings" to configure advanced functions of DHCP and DNS.



（5）After the configuration is completed, click "Save & Apply" to make the configuration effective.

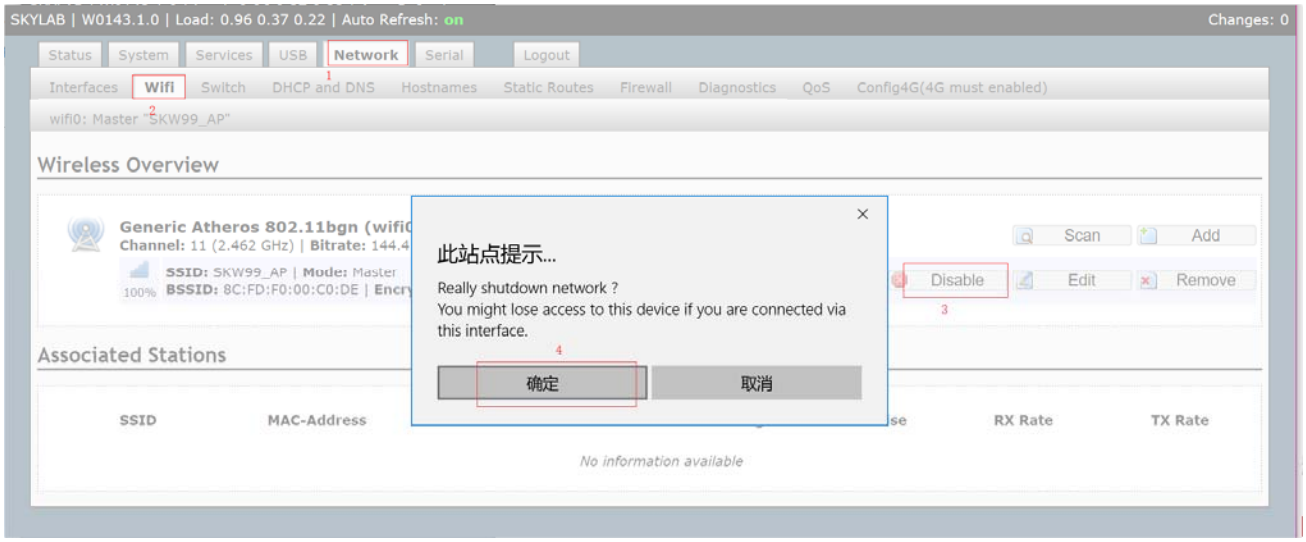
5 Configuration Wireless

5.1 Disable/Enable WiFi

The initialized SKW99 is the start of the WiFi. About the closing or reopening of WiFi, the following steps will be introduced.

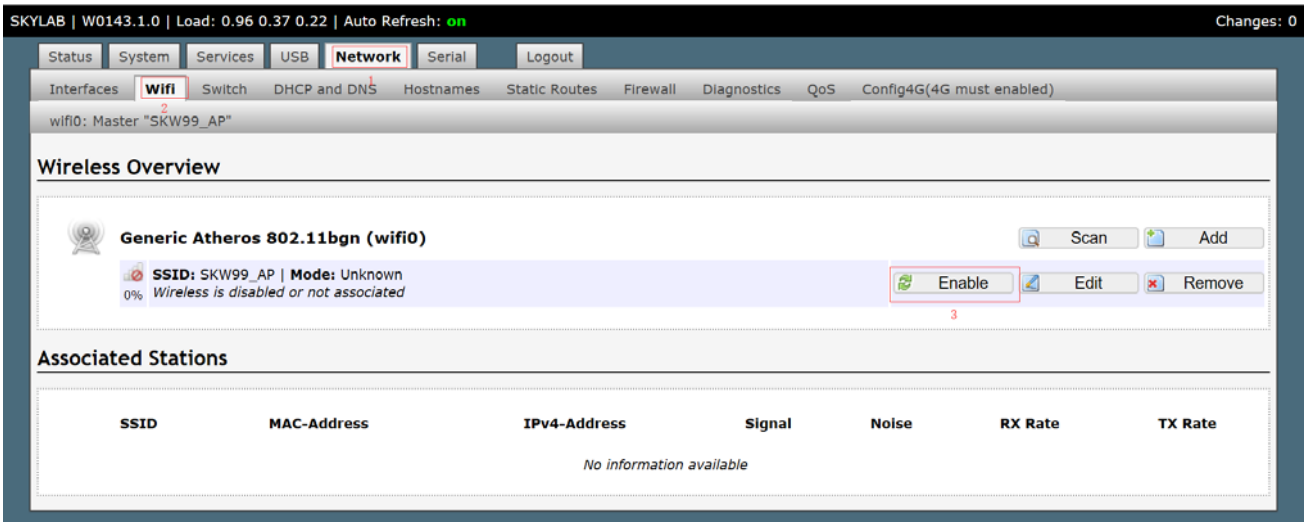
5.1.1 Disable WiFi

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Disable”, appear prompt box, click "OK", close WiFi.



5.1.2 Enable WiFi

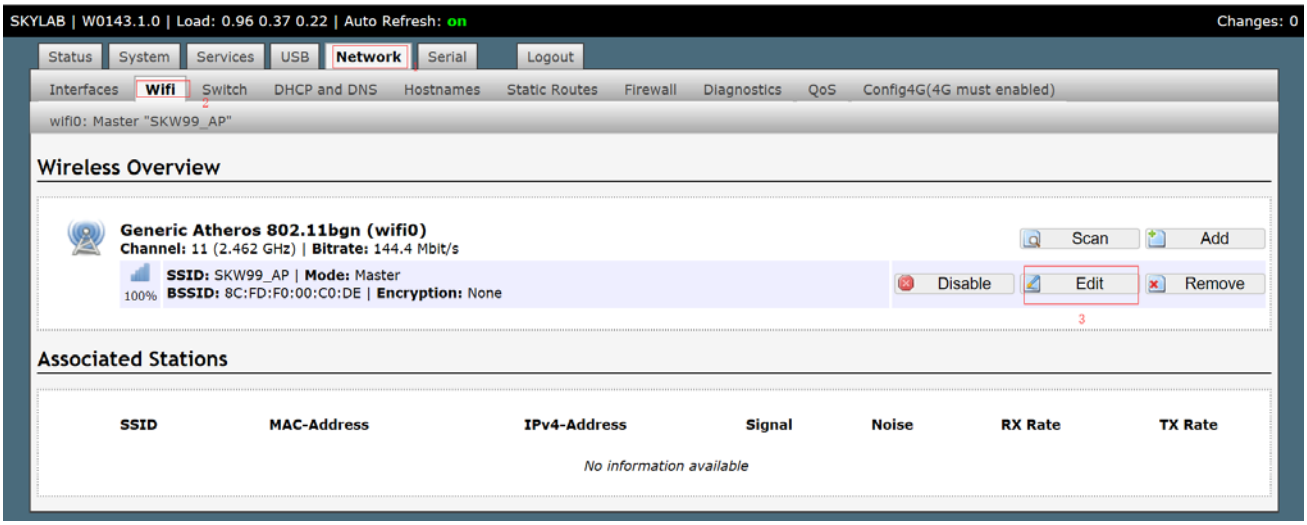
（1）After entering the management interface through the browser, click “Network”>>“WiFi” >> “Enable”，enable WiFi.



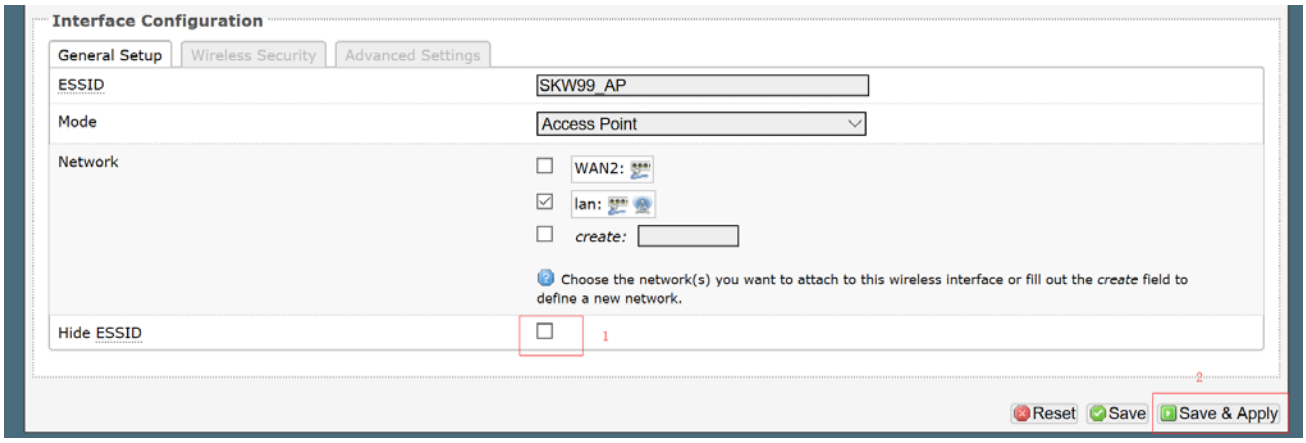
5.2 Hide WiFi

For most users, the purpose of "hidden WiFi" is to let others search their own WiFi, thereby reducing the risk of being lobed. However, hiding WiFi makes it difficult to use the wireless network. For example, it is not convenient for new terminals or visitors to connect to WiFi.The initialized SKW99 does not hide the SSID.The following is an introduction to the operation of hidden WiFi:

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



（2）On the WiFi configuration interface, select the "Hide ESSID" box



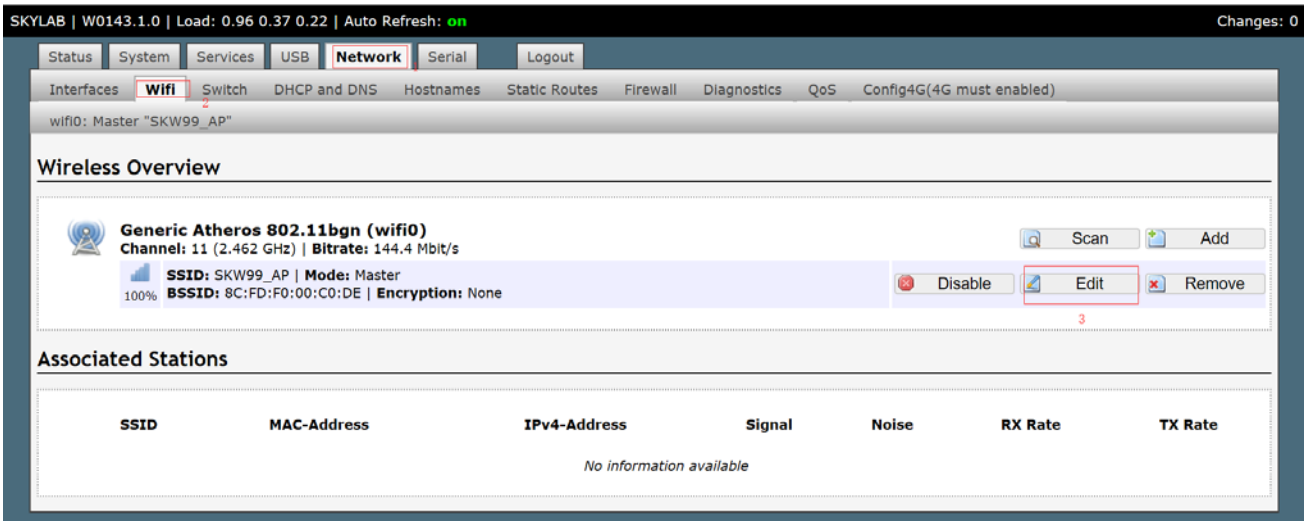
（3）Click "Save&Apply" to complete the configuration.

（4）**Note:** If you want to open SSID, you do not select the "Hide ESSID" box.

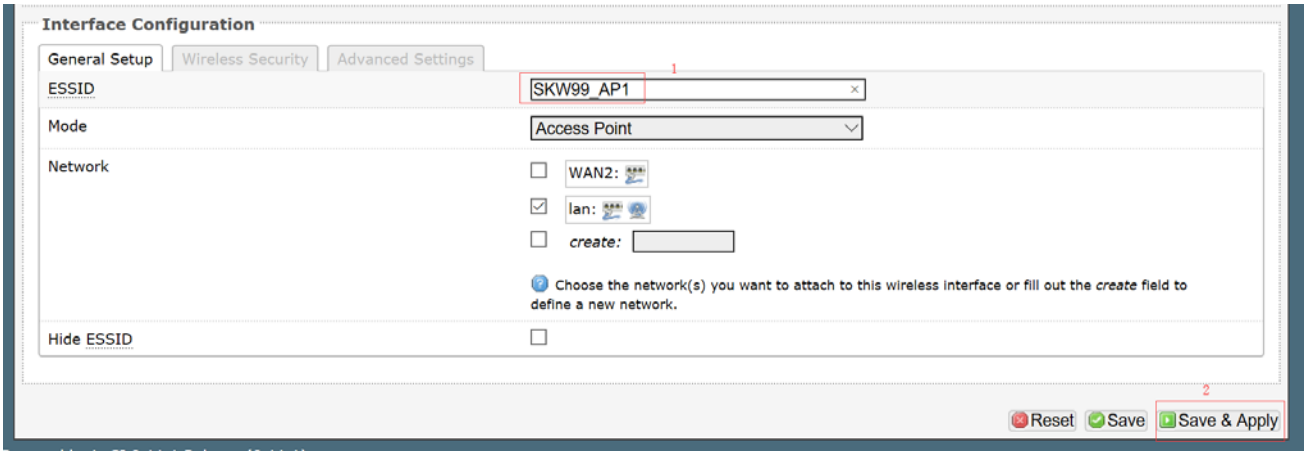
5.3 Modify SSID

SSID is the name of a local area network. Different SSID can be set up by different wireless network cards. SSID is usually broadcast by AP, and STA can scan SSID in the current area.The initialized SKW99's wireless name is SKW99_AP. The following are the methods to modify SSID:

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



（2）On the WiFi configuration interface. Modify the name of "ESSID" and click "Save&Apply" to complete the configuration.

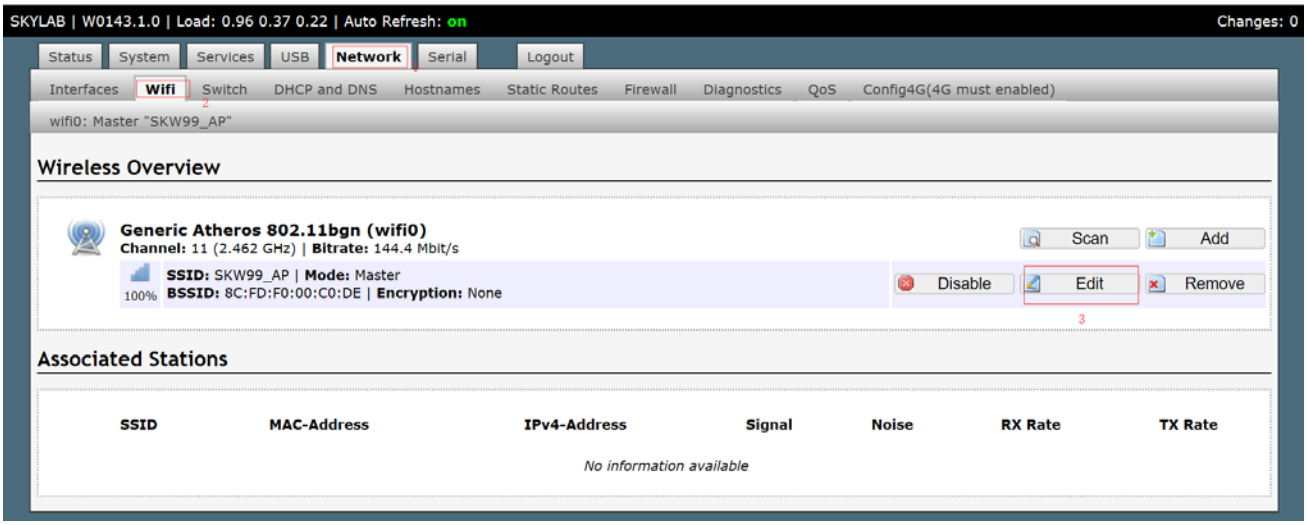


（3）When you open the WLAN list in STA, you will see the modified SSID.

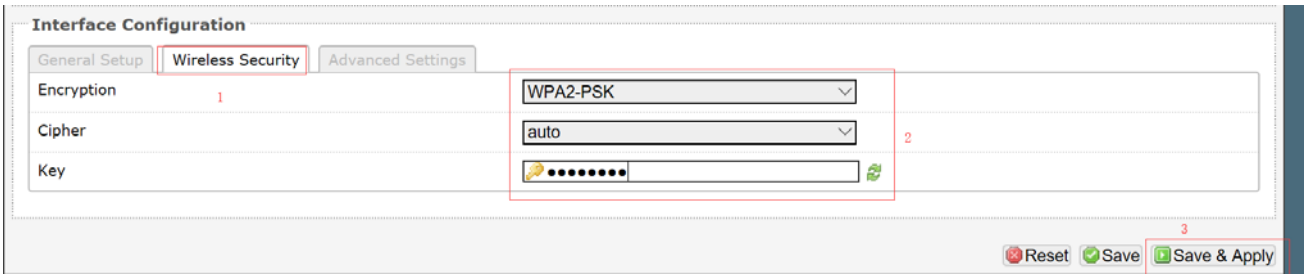
5.4 Modifying the Wireless Password

Wireless cipher is a password that needs to be input when wireless terminals such as mobile phones and notebooks connect to wireless signals. The initialized SKW99 does not configure the wireless password.The following is a method of configuring (modifying) wireless ciphers.

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



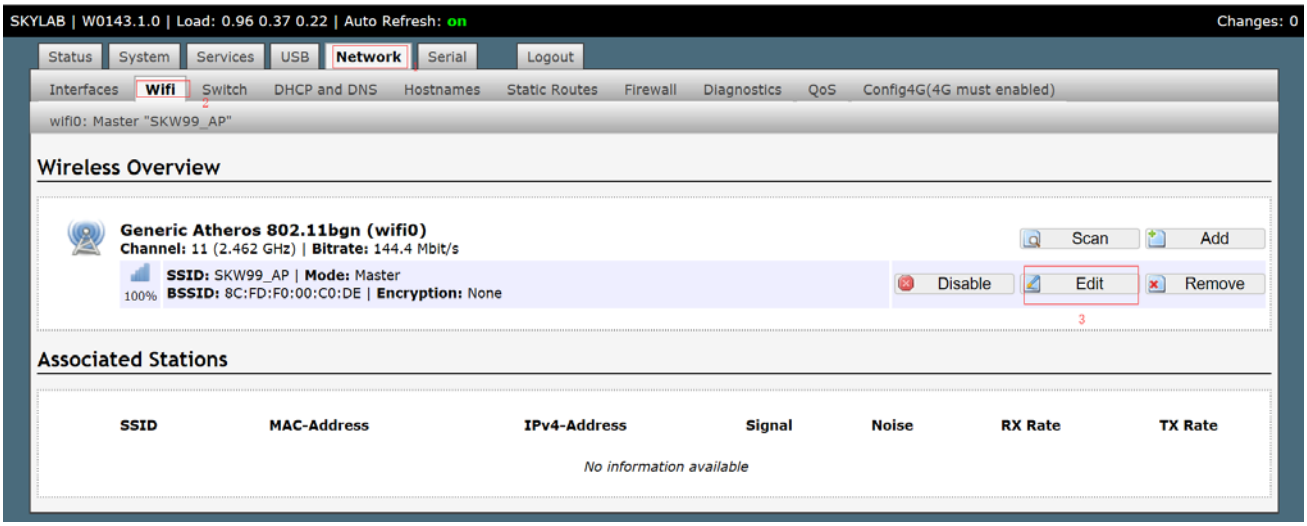
（2）In the WiFi configuration interface, click "Wireless Security" to enter the WiFi password management interface.In the WiFi password management interface, select the encryption mode, enter the password, click "Save&Apply" to complete.



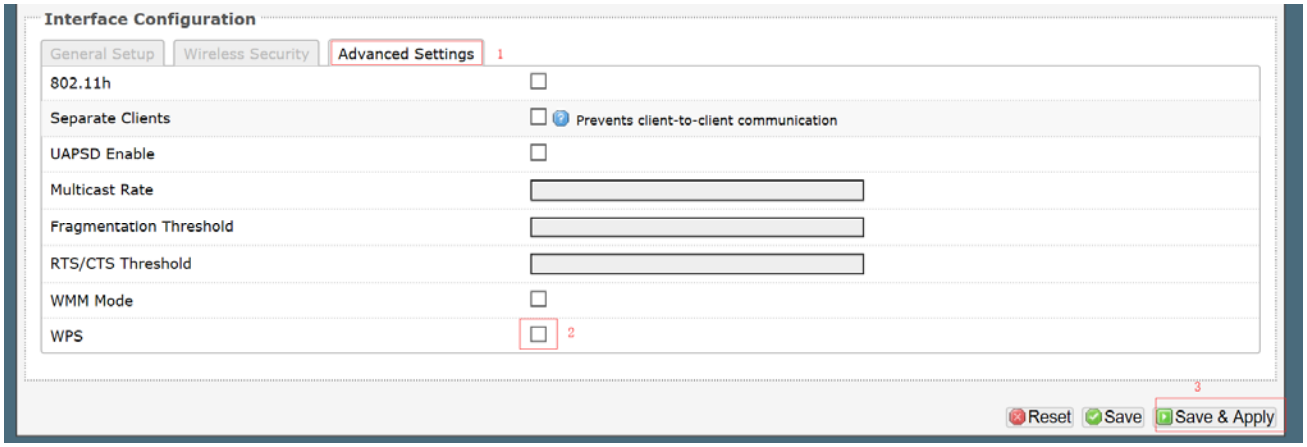
5.5 Disable/Enable WPS

The initialized SKW99 opens the WPS function. The following is the operation to disable / enable WPS.

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



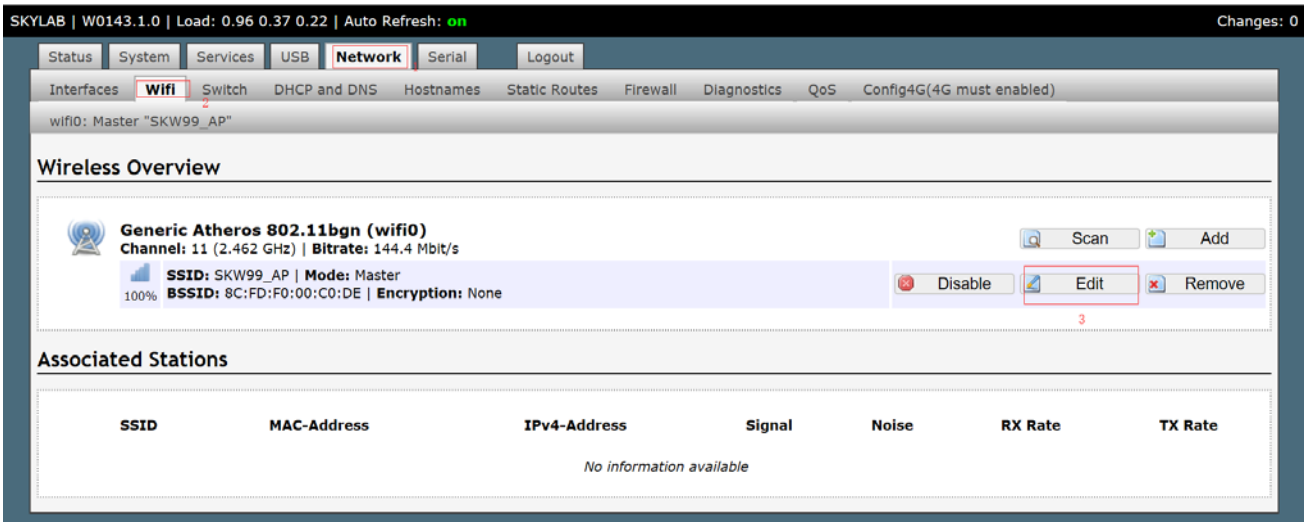
（2）In the WiFi configuration interface, click "Advanced Settings".Select the WPS check box to turn on the WPS function; if you want to close the WPS function, do not select it. click "Save & Apply" to complete the configuration.



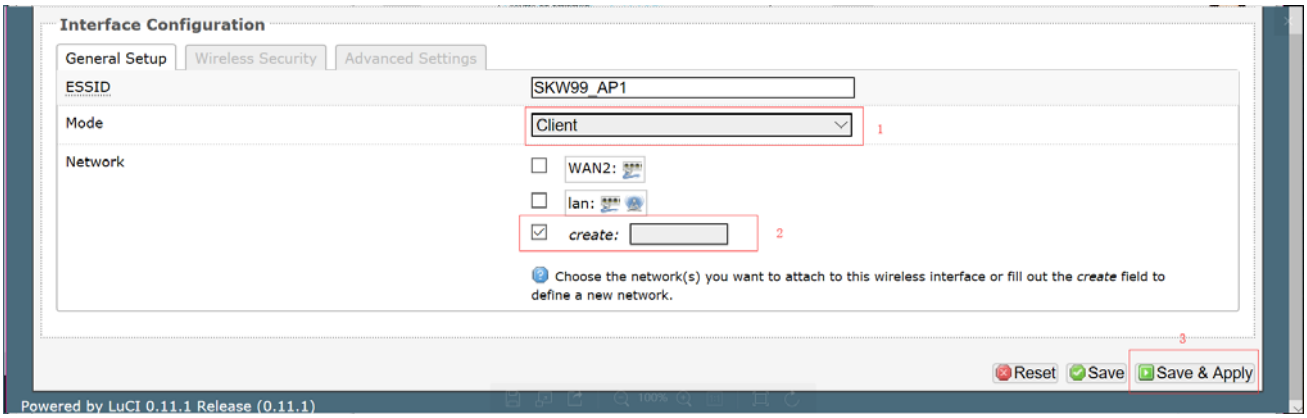
5.6 STA Mode

SKW99 support to be configured as STA/Client mode, to connect to other Wi-Fi signals. The following are the specific methods of operation:

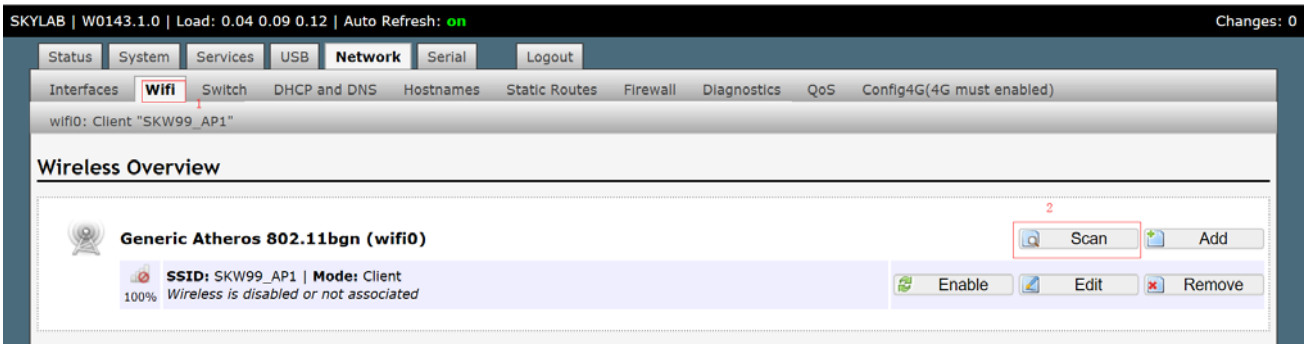
（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



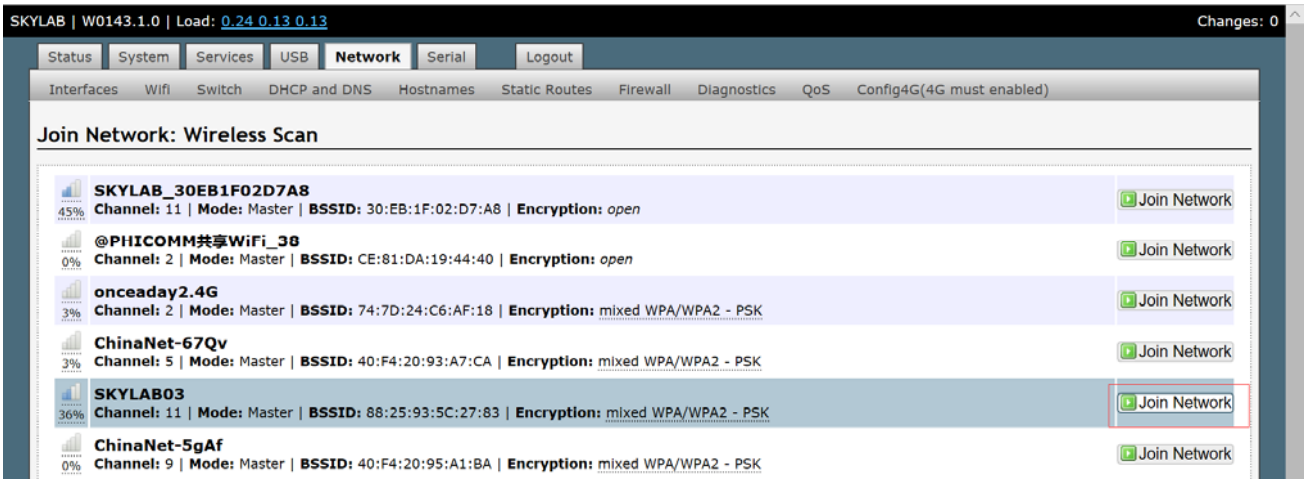
（2）In the WiFi configuration interface, "Mode" is selected as "Client", Network is selected as "Create" and click "Save&Apply".



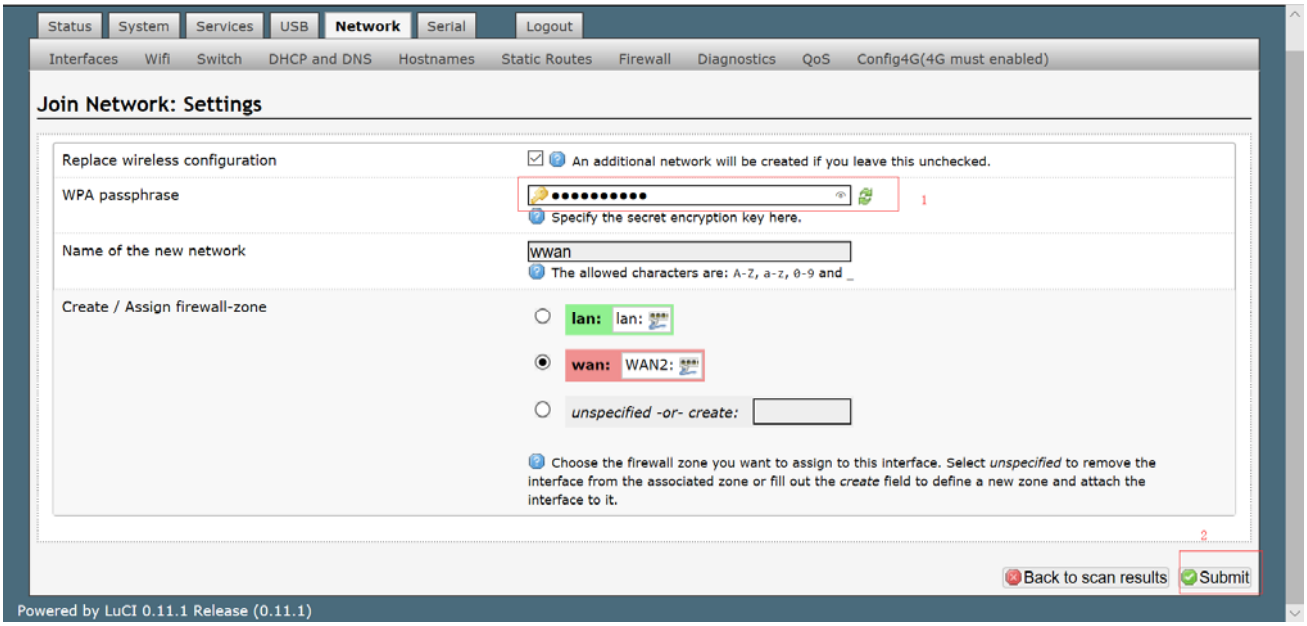
（3）Click on "WiFi" to enter the wireless state interface again. Click "Scan" to scan the SSID in the area.



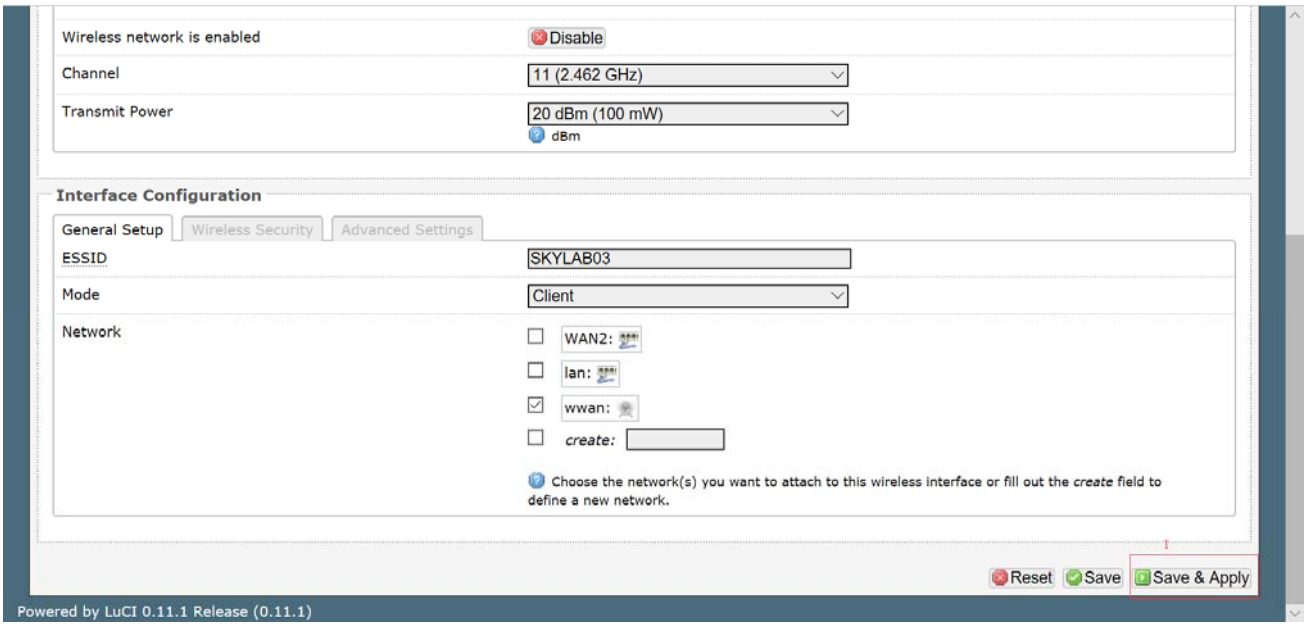
（4）Wait for a moment. In the WLAN list, select the SSID that you want to connect to, and click “Join Network”.



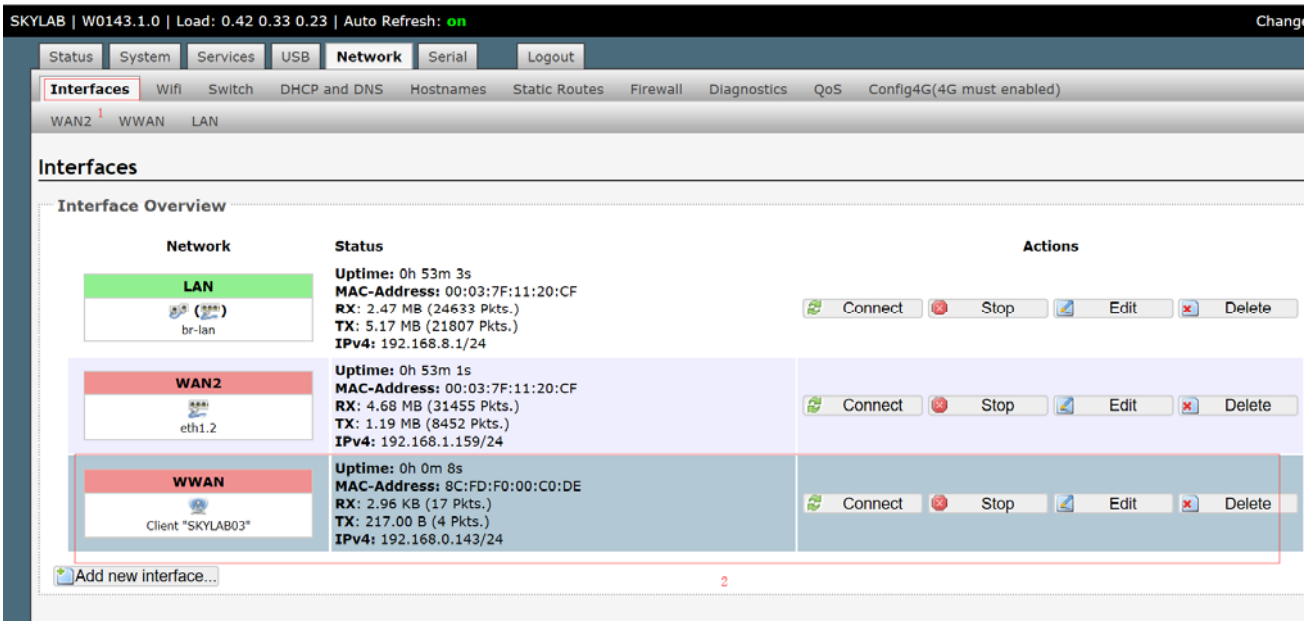
（5）In the "Join Network:Settings" interface, enter the WiFi password in the input box of "WPA passphrase", and then click "Submit".



（6）Back to the WiFi configuration interface, click “Save & Apply”.



（7）If Status is the interface shown as below, it indicates that the connection is successful.

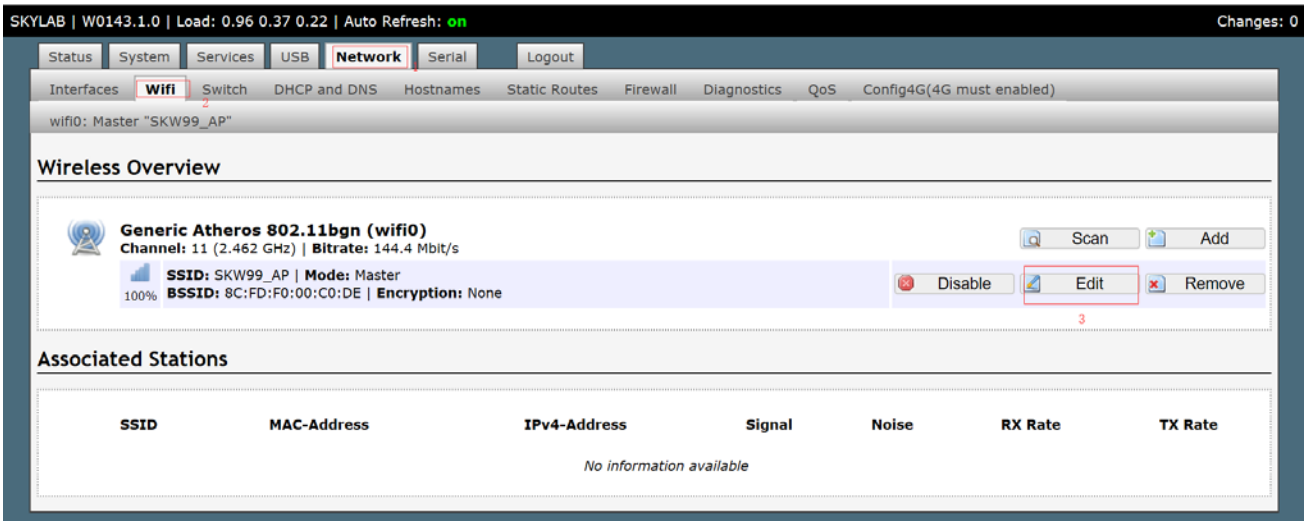


5.7 AP-Client Mode

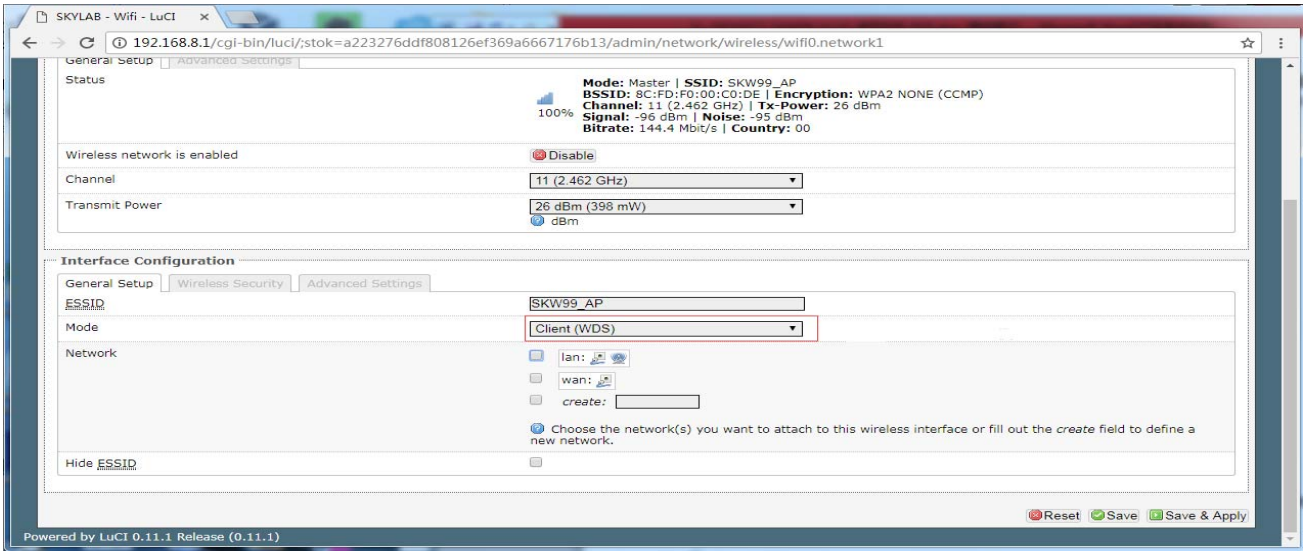
SKW99 support module work in relay/AP-Client mode. The following is the application of a AP-Client mode. The Router A sends out the Wi-Fi signal AP1, but the mobile phone which is far away from 100m wants to connect to the network and finds that the Wi-Fi signal is not found. Then we can put a module

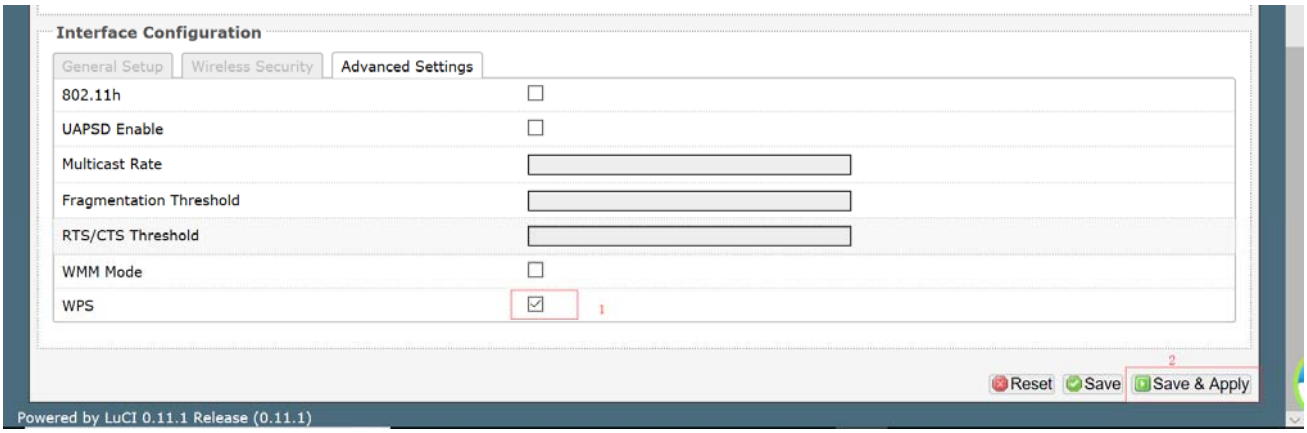
between Router A and mobile phone as Wi-Fi AP-Client. Firstly, the module connects Router A to send out Wi-Fi signal. Secondly, the module sends out a Wi-Fi signal for mobile phone connection. So the phone is indirectly connected to the router A in corresponding network.The following are the configuration methods of the AP-Client mode:

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.

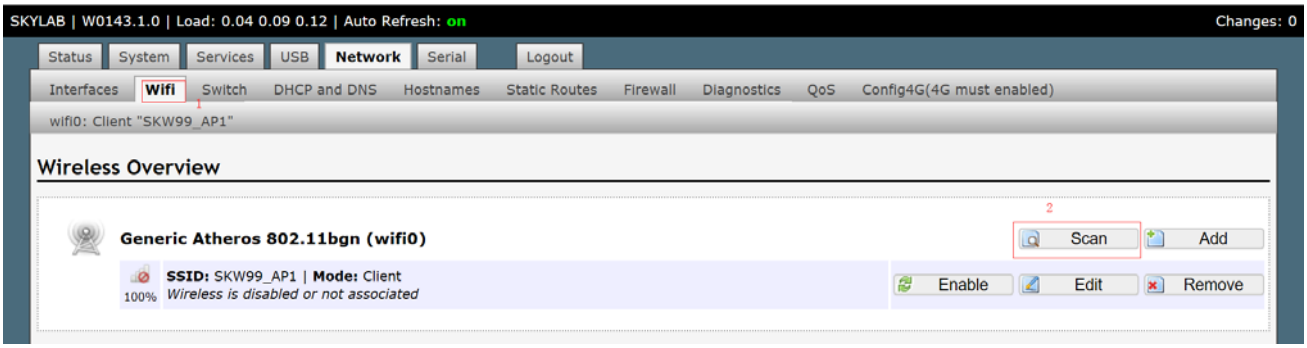


（2）In the WiFi configuration interface, firstly, select "Mode" as the Client (WDS) mode. Next, click "Advances Settings" and select "WMM Mode". Finally, click "Save&Apply".

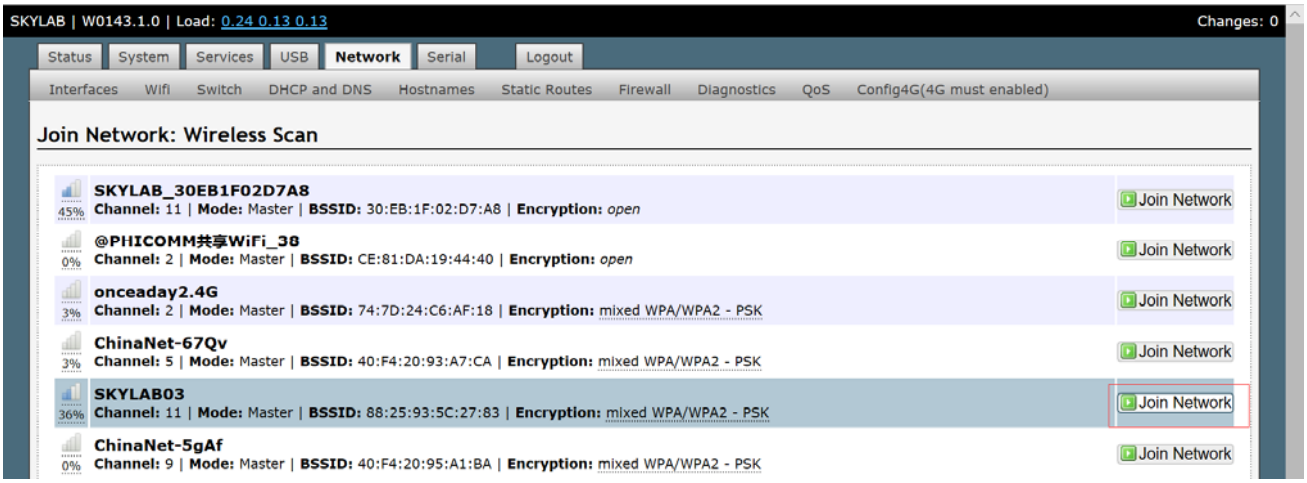




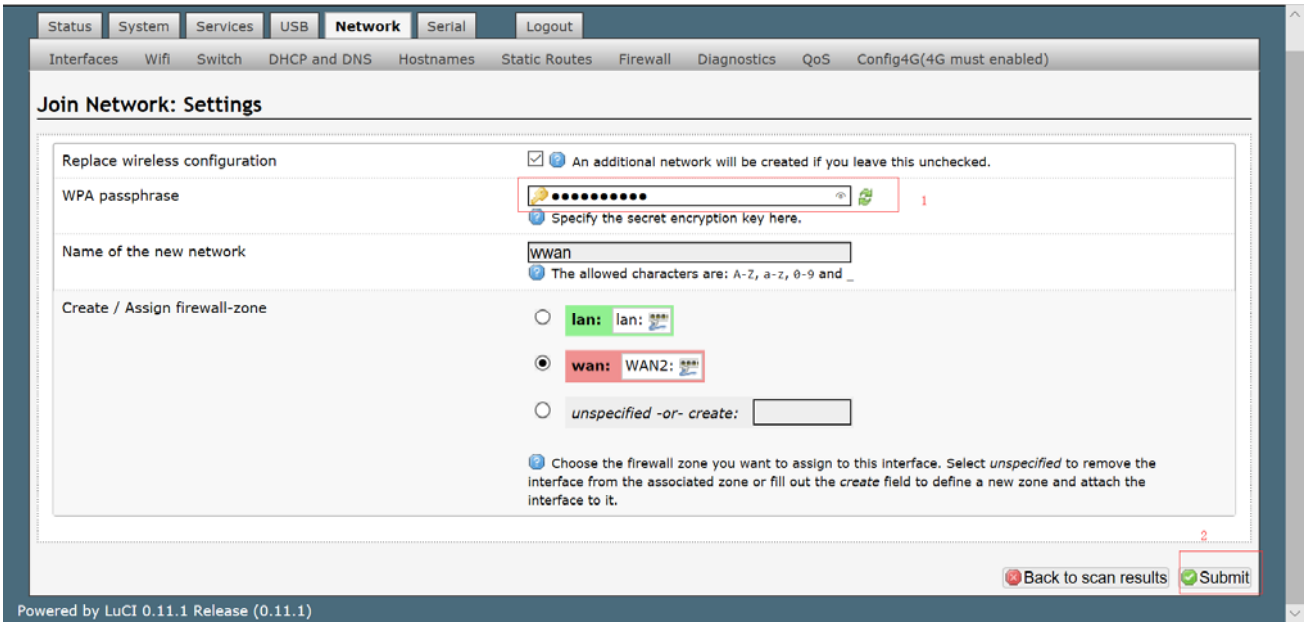
（3）Click on "WiFi" to enter the wireless state interface again. Click "Scan" to scan the SSID in the area.

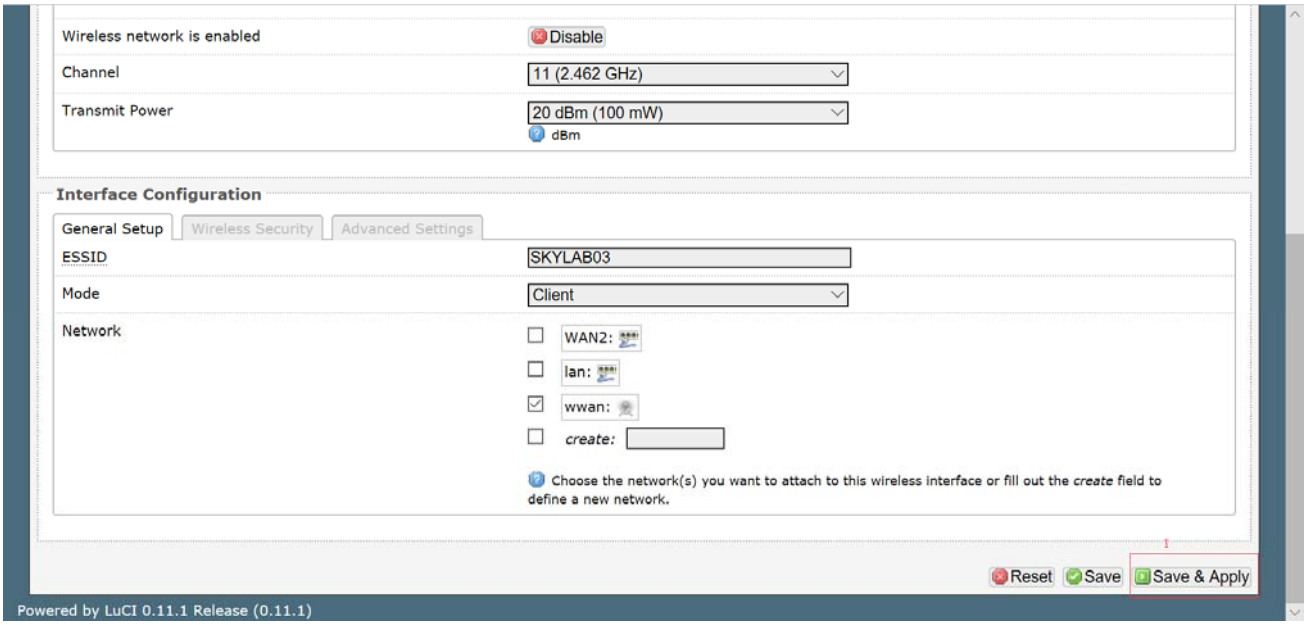


（4）Wait for a moment. In the WLAN list, select the SSID that you want to connect to, and click “Join Network”.

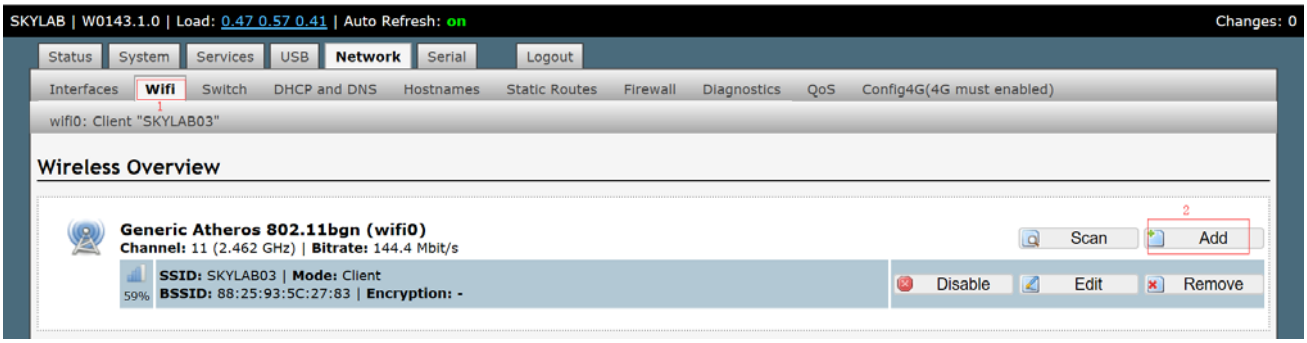


（5）In the "Join Network:Settings" interface, enter the WiFi password in the input box of "WPA passphrase", and then click "Submit".

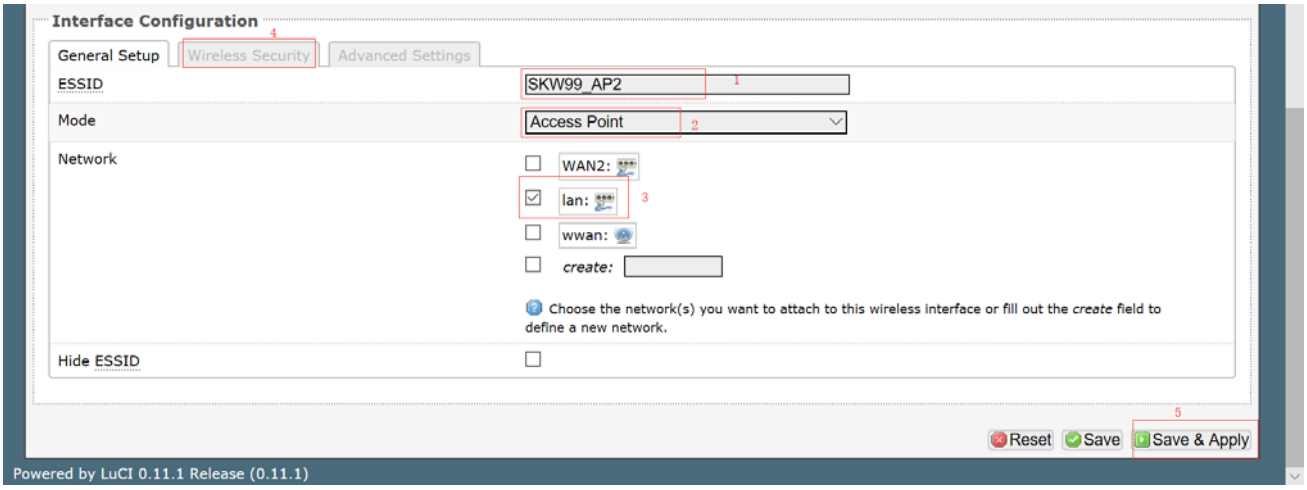




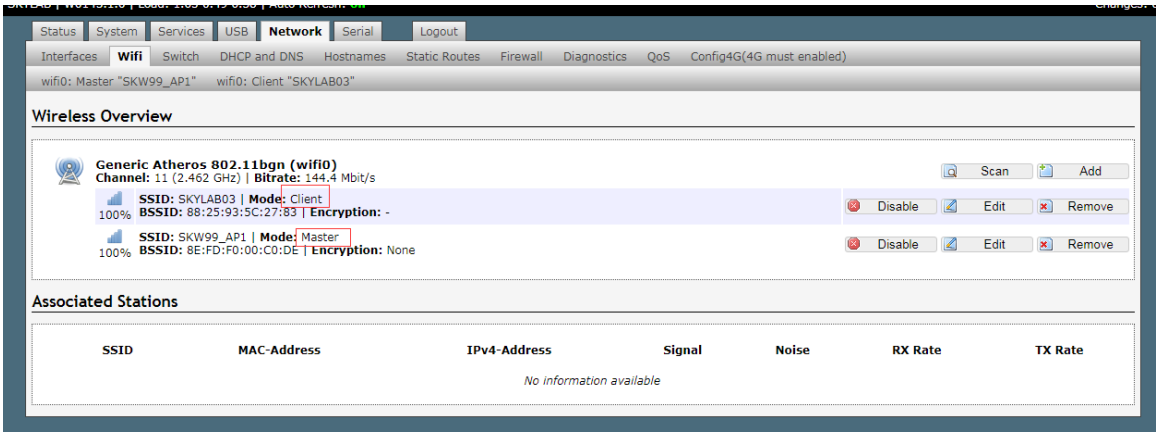
（6）Click on "WiFi" to enter the wireless state interface again.Click "Add" to enter the configuration interface of the new WiFi interface.



（7）In the WiFi configuration interface, firstly, select "Mode" as "Access Point", select "Network" to "Lan", and to enter "SKW99_AP1" into ESSID input box. Secondly, if you plan to configure the password, click "Wireless Security" to do so, see "Modifying the wireless password" section. Finally, click "Save&Apply".



（8）Click on "WiFi" to enter the wireless state interface again.We can see two SSID, one of which works is in client mode, is used to connect to WiFi, and the other is in master mode, which is used to issue WiFi.

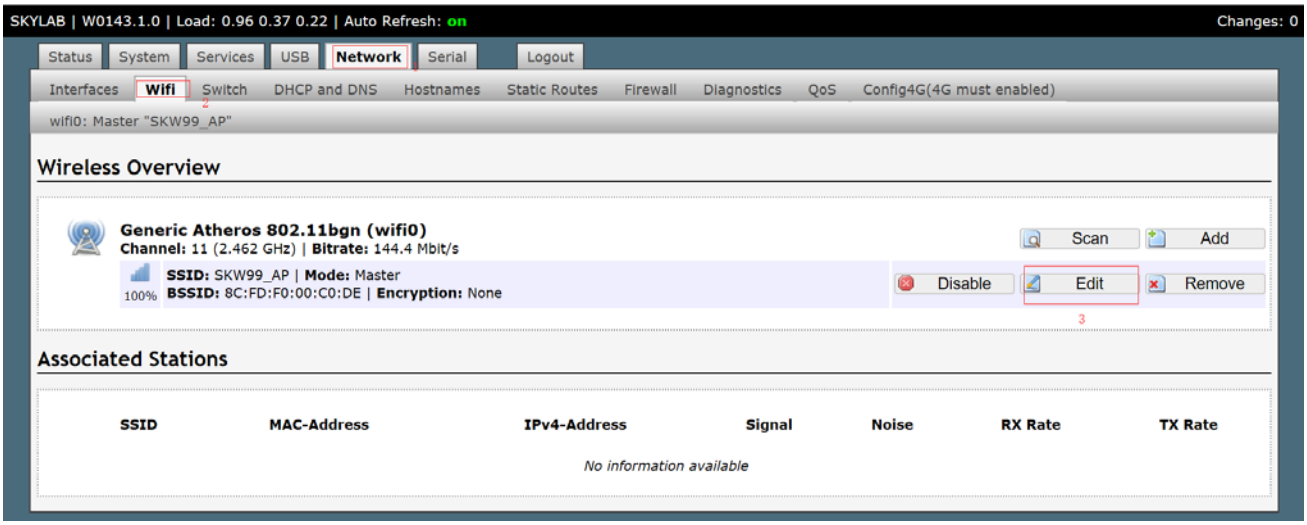


After the previous work, we completed the function of Wi-Fi relay. At this point, we can use the computer and cell phone to receive the "SKW99_AP1" Wi-Fi signal from the module. If we connect it, we can use the router's network to surf the Internet.

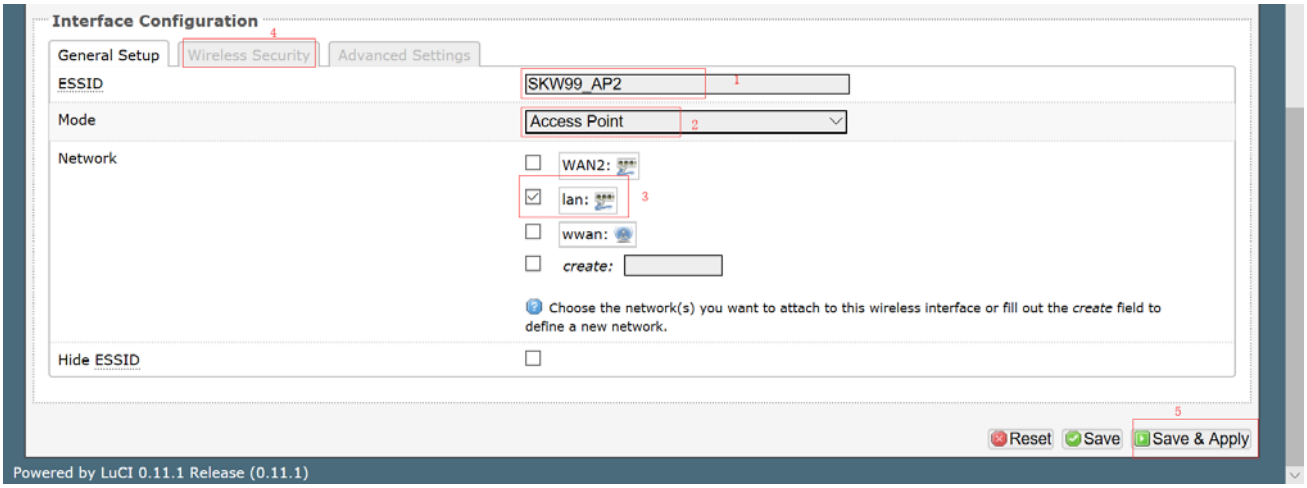
5.8 AP Mode

The initialized SKW99 works in the AP mode. In order to make user switching mode convenient, the following is a description of how to configure AP mode.

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



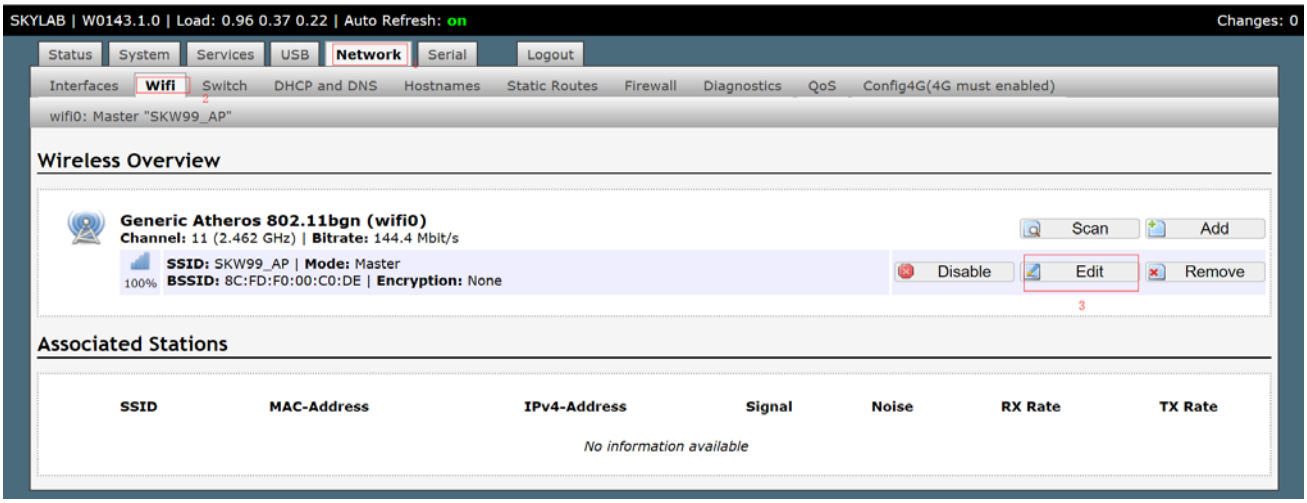
（2）In the WiFi configuration interface, first, select "Mode" as "Access Point",select "Network" to "Lan", and ESSID input box to enter "SKW99_AP1". Secondly, if you plan to configure the password, click "Wireless Security" to do so, see "Modifying the wireless password" section. Finally, click "Save&Apply".



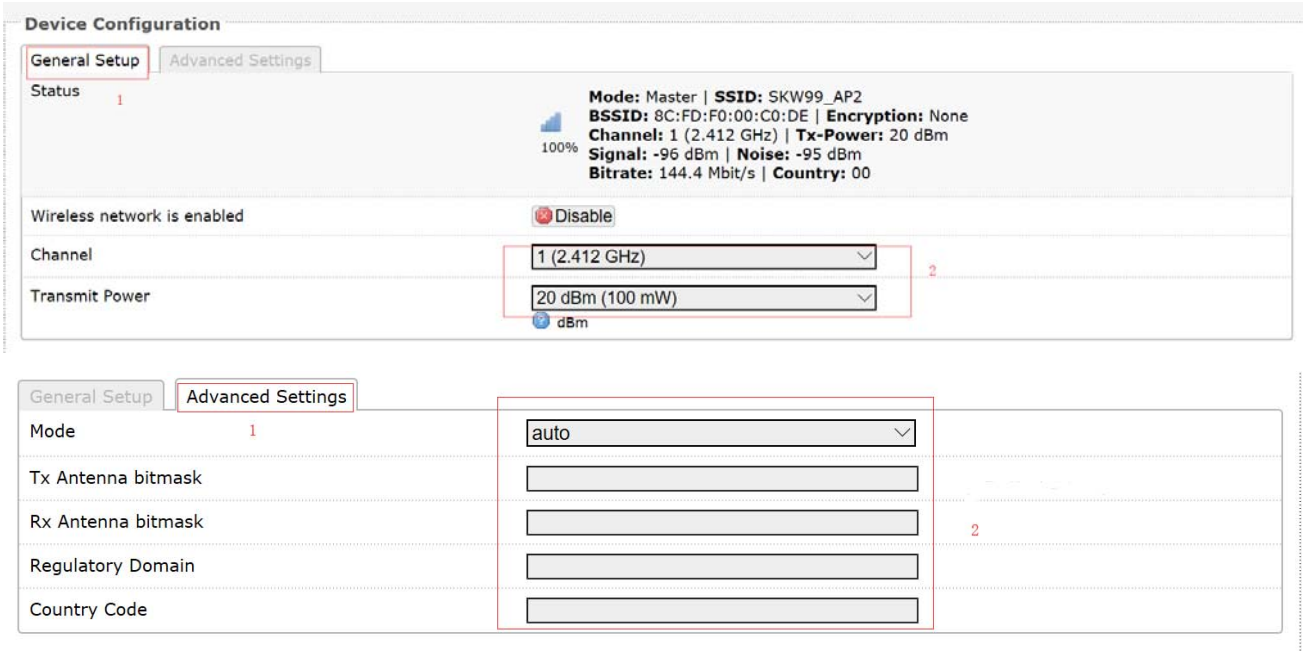
5.9 Configuring the Parameters of the Wireless Device

SKW99 provides the functions of modifying the parameters of wireless devices, such as wireless channel type, radio power, wireless Tx/Rx Antenna, wireless HT mode, country code and so on. The following will be detailed operation steps.

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



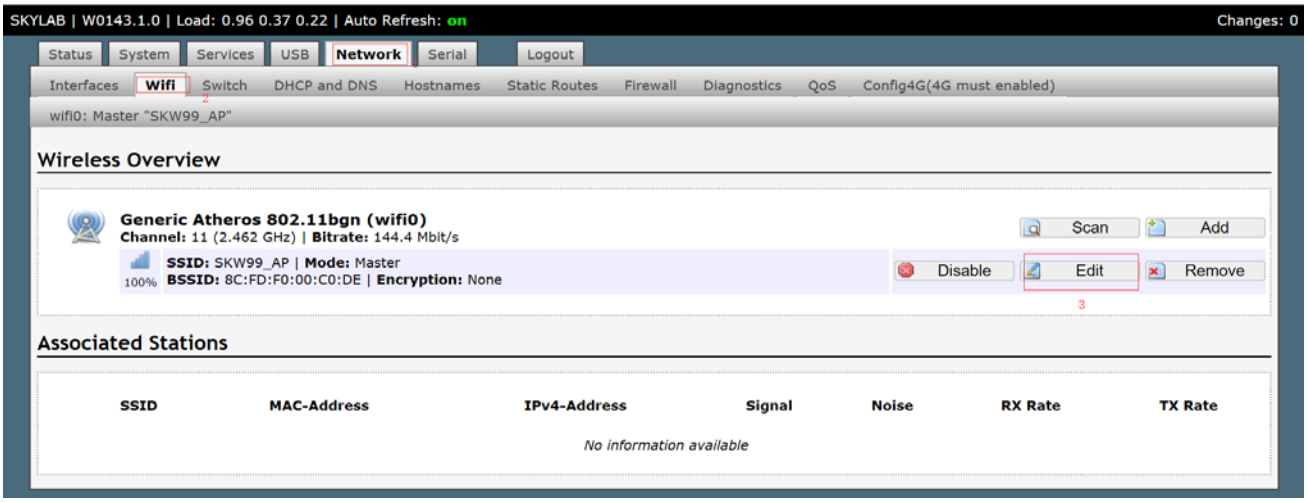
（2）In the wireless configuration interface, first, in the "General Setup" configuration, Channel is selected according to needs; secondly, click "Advanced Settings" into the wireless advanced option configuration, and finally, after the configuration is completed, click "Save & Apply" to complete the configuration.



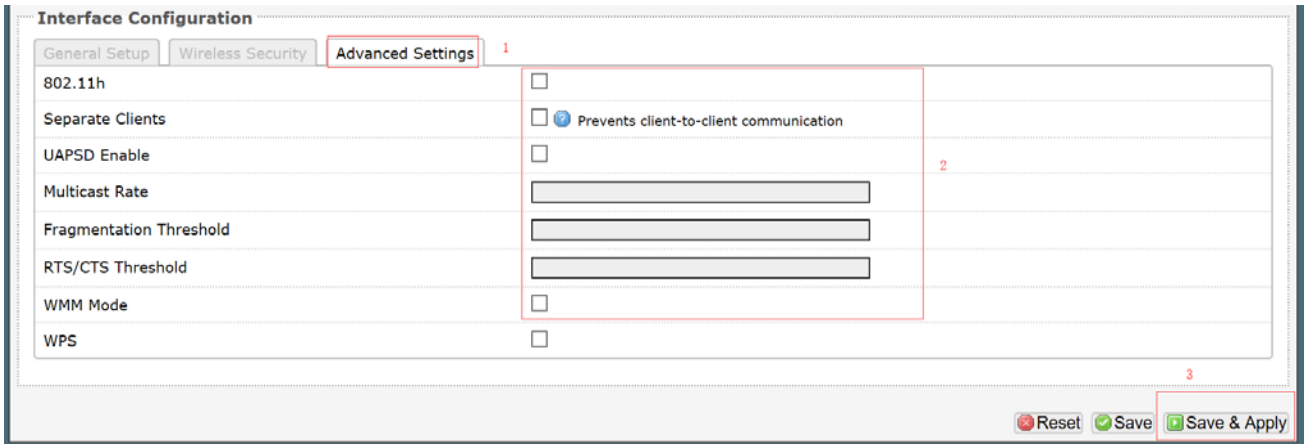
5.10 Wireless Interface Advanced Settings

SKW99 provides the functions of modifying the parameters of the wireless interface, such as disabling / enabling 802.11h, disabling / enabling isolating clients, disabling / enabling UAPSD, configuring multicast rates, and so on. The following are the specific methods of operation:

（1）After entering the management interface through the browser. click “Network”>>“WiFi” >> “Edit”, enter the WiFi configuration interface.



（2）On the interface configuration item of the wireless configuration interface, click "Advanced Settings", enter the advanced settings interface.After the configuration is completed, click "Save & Apply" to make the configuration effective.



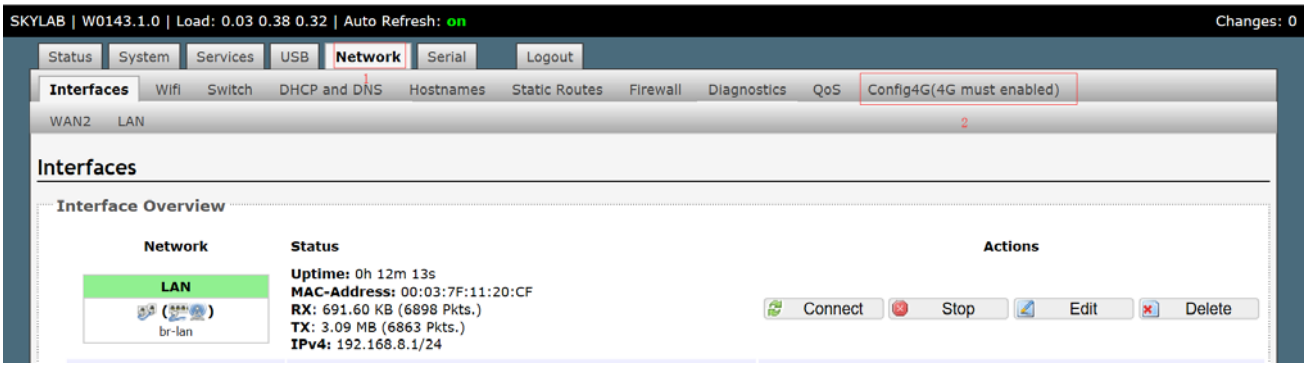
6 Expansion Function

6.1 Mount 4G Module

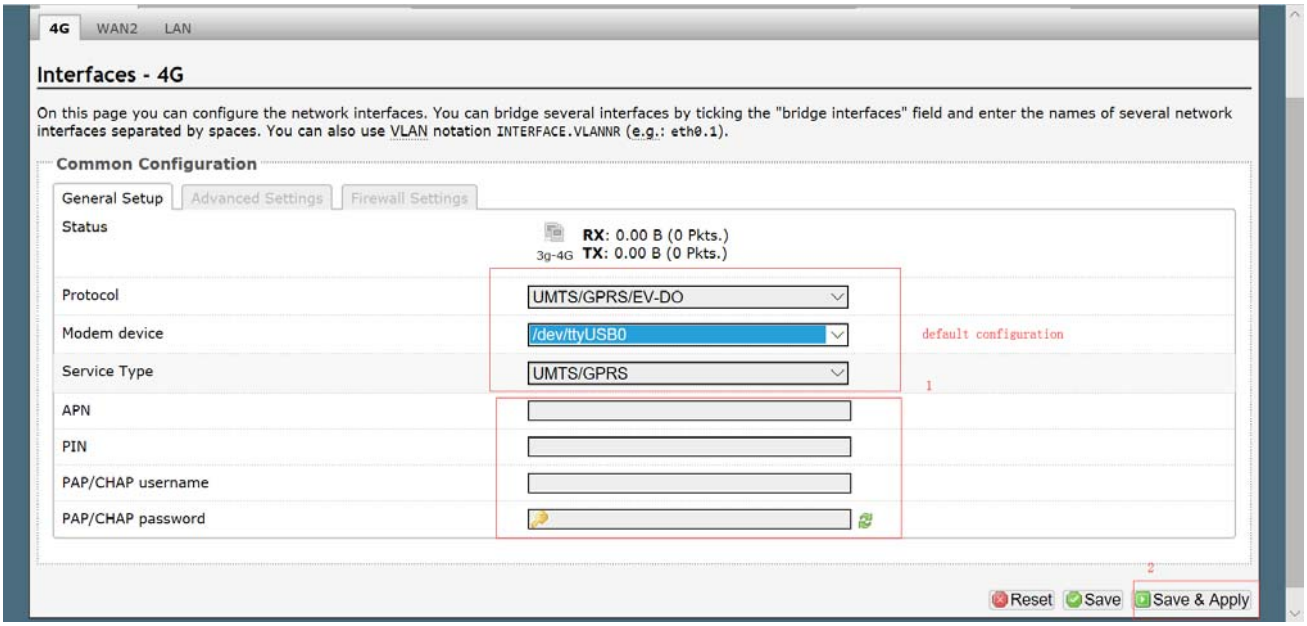
SKW99 supports the use of USB to mount the 4G module. The following is a case study of HUAWEI ME909s-802.

（1）The module enters the running state and connects HUAWEI ME909S-802 to the USB interface. After the blue light is displayed, the module is successfully accessed.

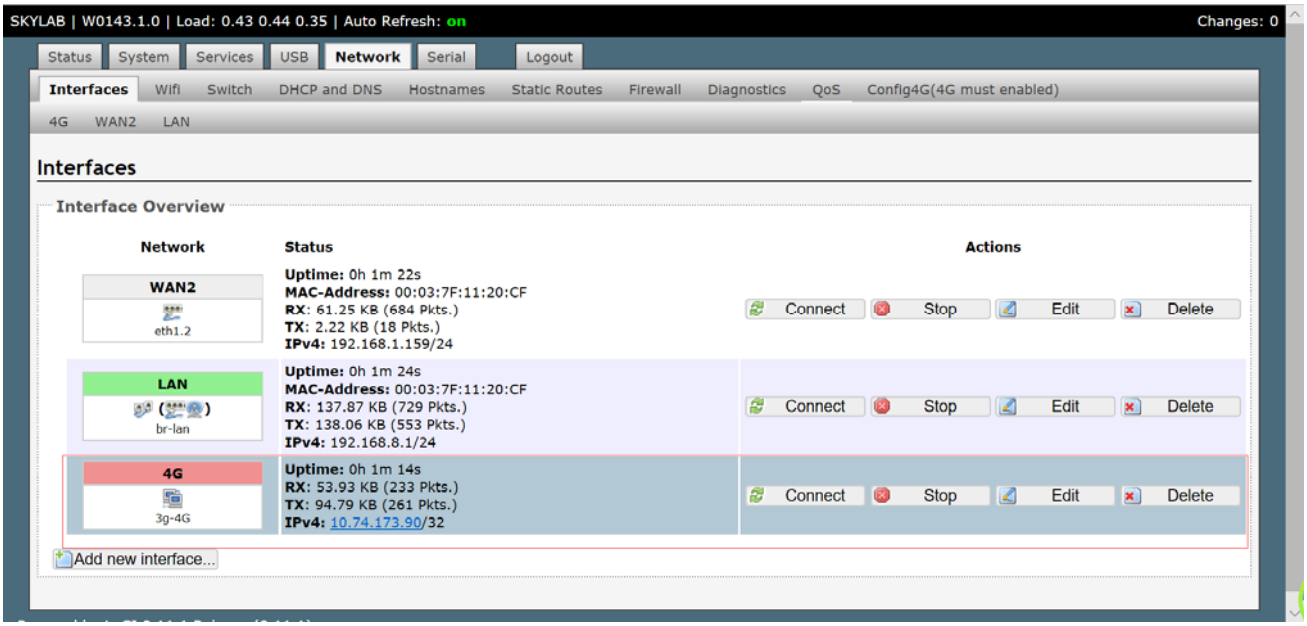
（2）After entering the management interface through the browser. click “Network”>> “Config4G(4G must enabled)”.



（3）Wait a moment, go to the following interface and click "Save & Apply". If the 4G module does not succeed, it does not change.



（4）Click on "Interface" and the 4G interface state is as follows.

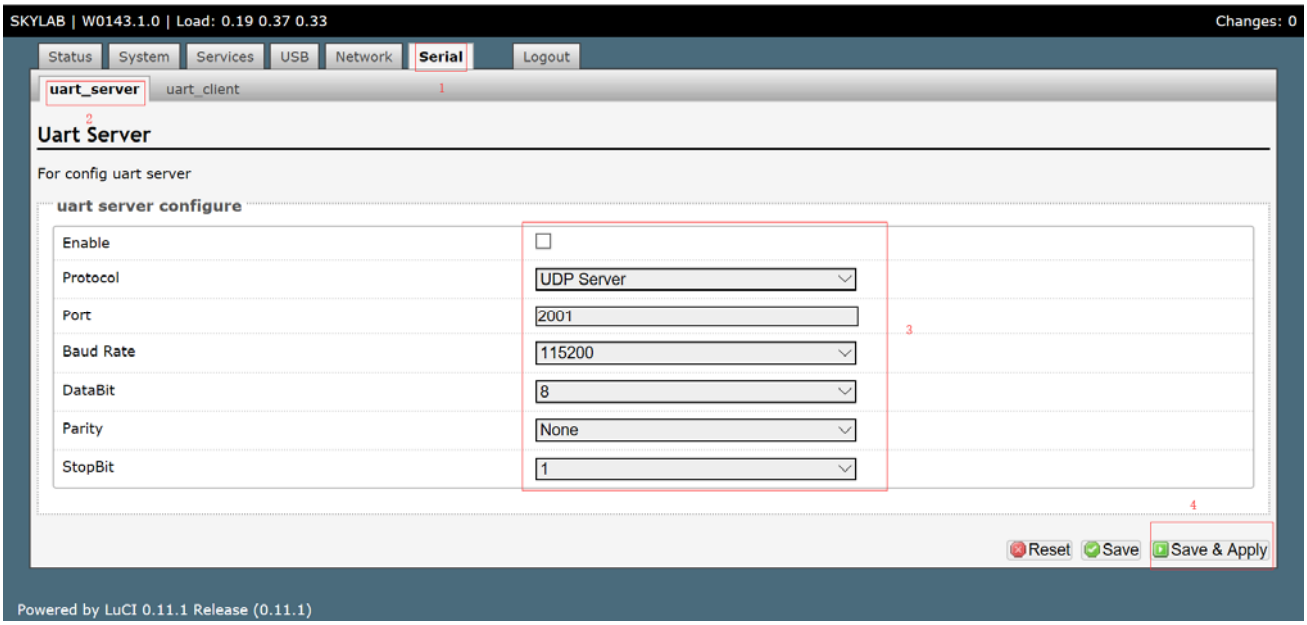


6.2 Uart Passthrough

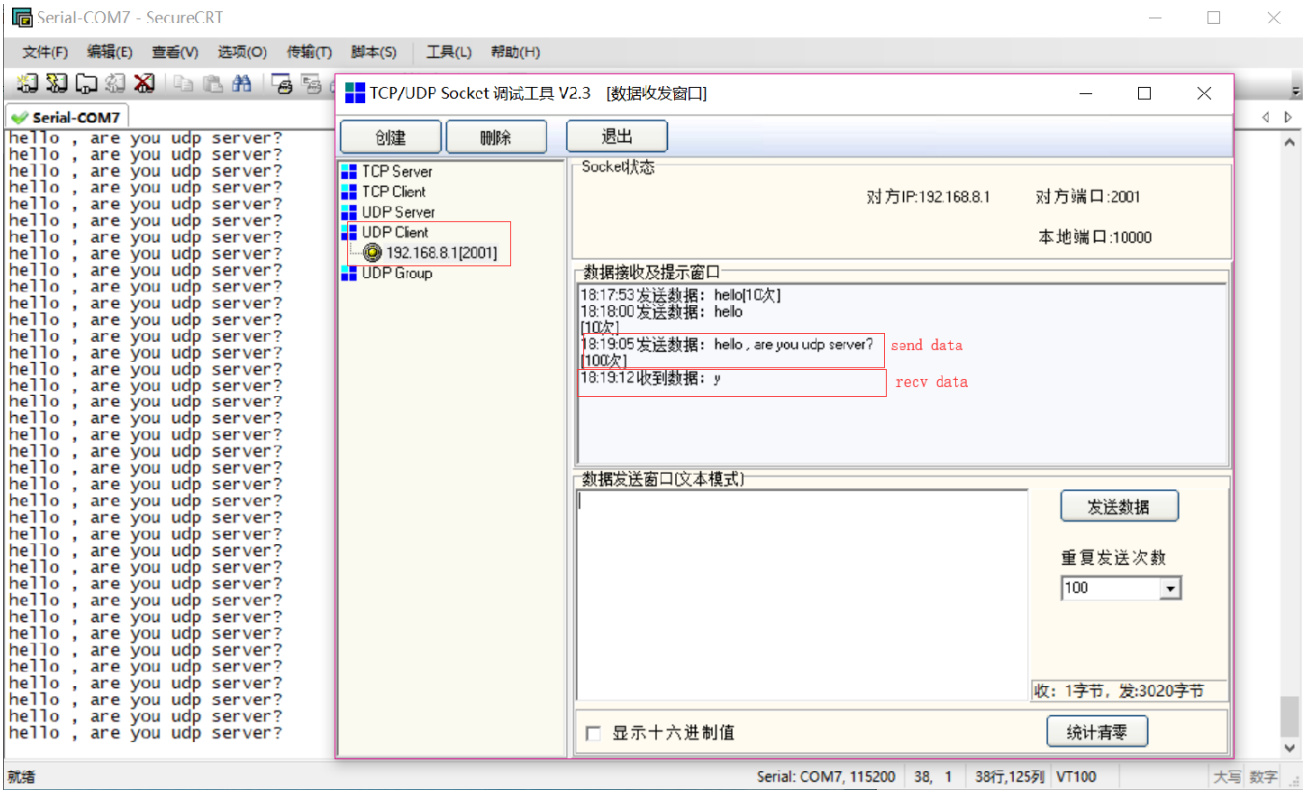
SKW99 supports uart passthrough. Next, we will introduce the configuration method of serial port as server and client.

6.2.1 Uart as a Server

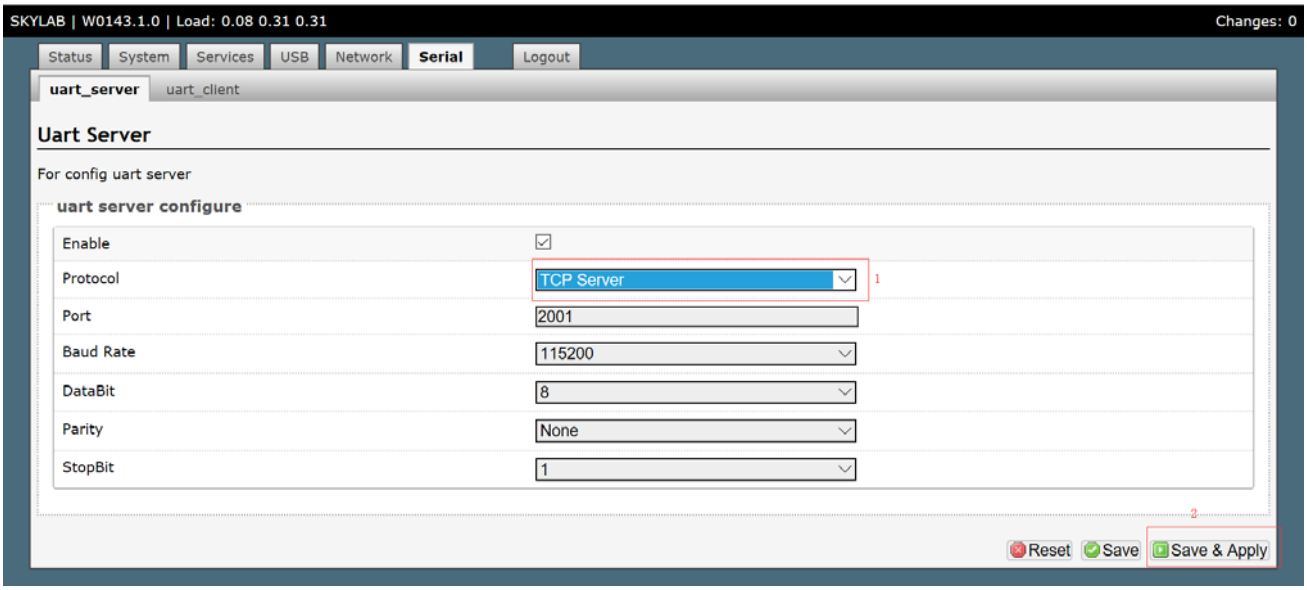
（1）Through browser to enter the router's management interface, click "Serial" >> "uart_server" to the serial interface configuration interface. In the serial interface configuration, configure the parameters of the serial port, click "Save & Apply" to complete the configuration.

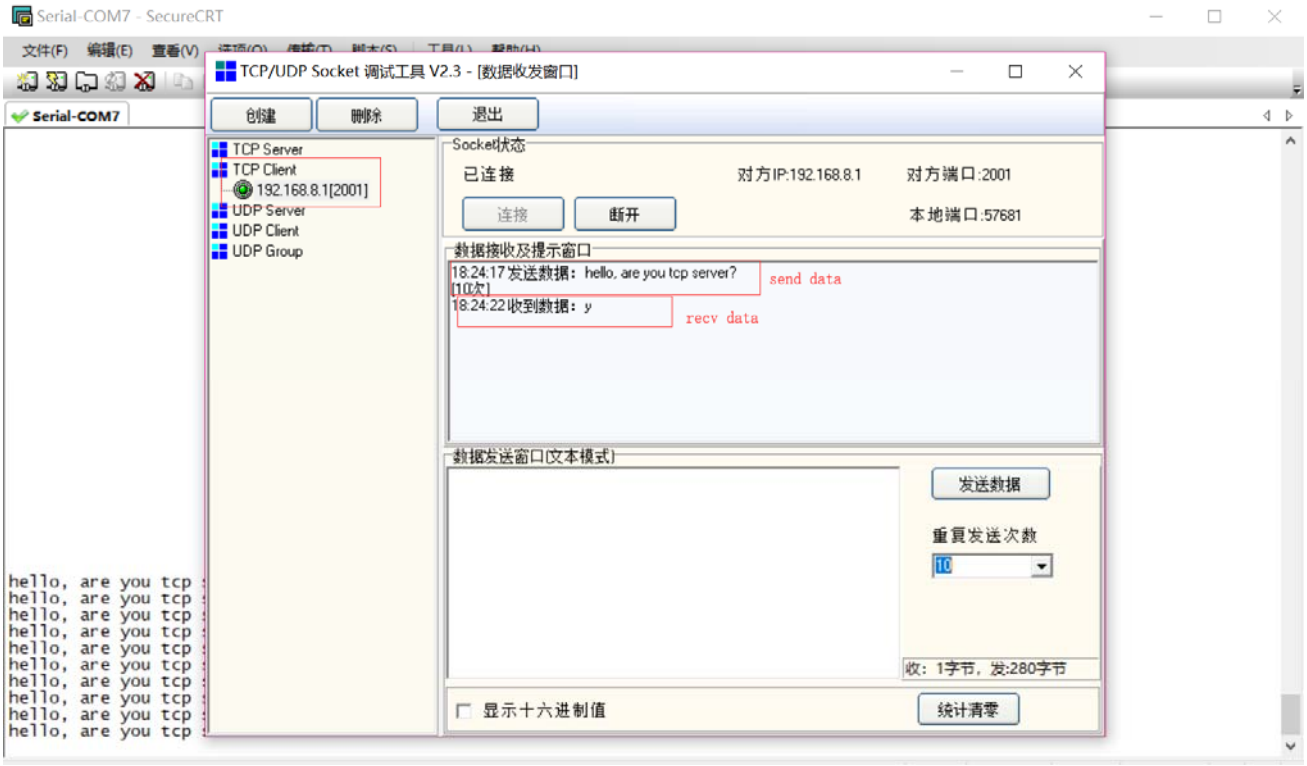


（2）Open the serial port. According to the above configuration, the remote terminal is connected to the router's UDP 2001 port to receive / send data.



（2）If the protocol chosen in step 1 is TCP, then the remote terminal is connected to the router's 2001 using TCP client.

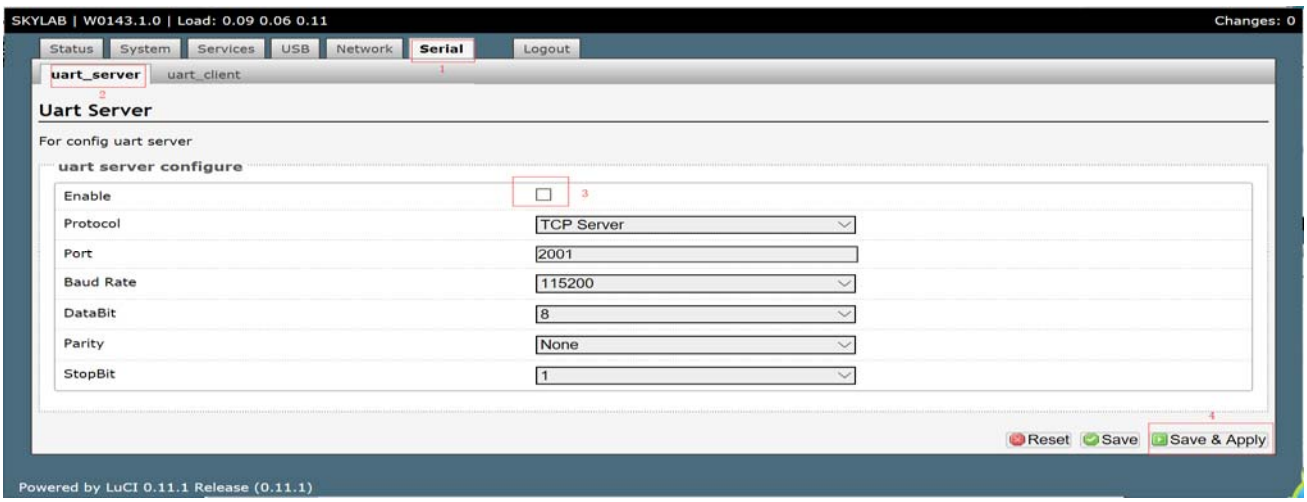


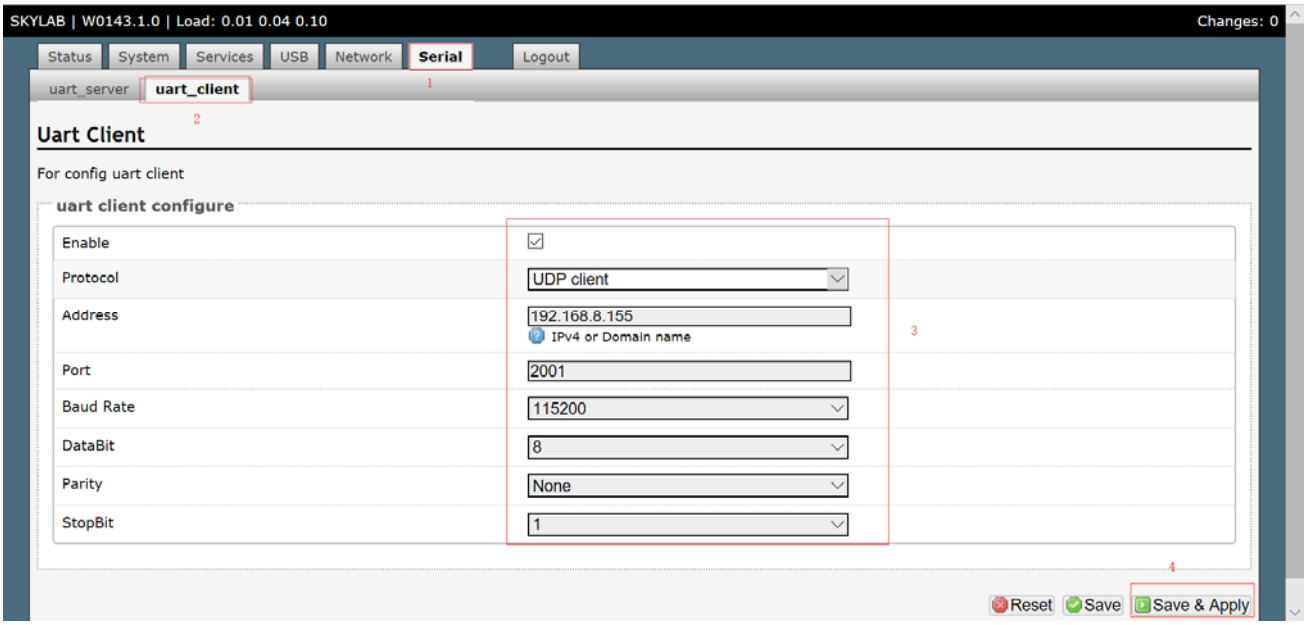


6.2.2 Uart as a Client

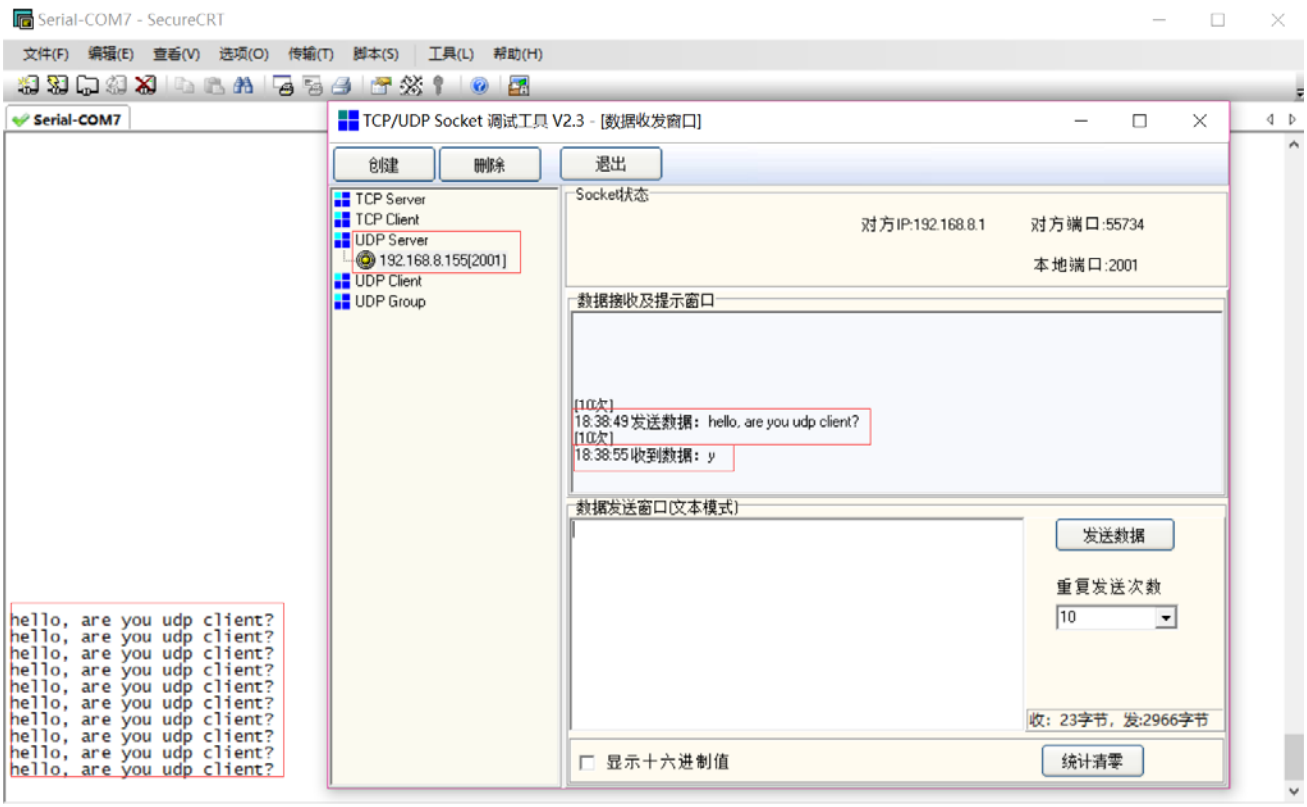
（1）Through browser to enter the router's management interface, click "Serial" >> "uart_client" to the serial interface configuration interface. In the serial interface configuration, configure the parameters of the serial port, click "Save & Apply" to complete the configuration.

Note: you need to make sure that the connected server is in a listening state. If not, the client will try to connect to 1s. In addition, Address supports domain names.

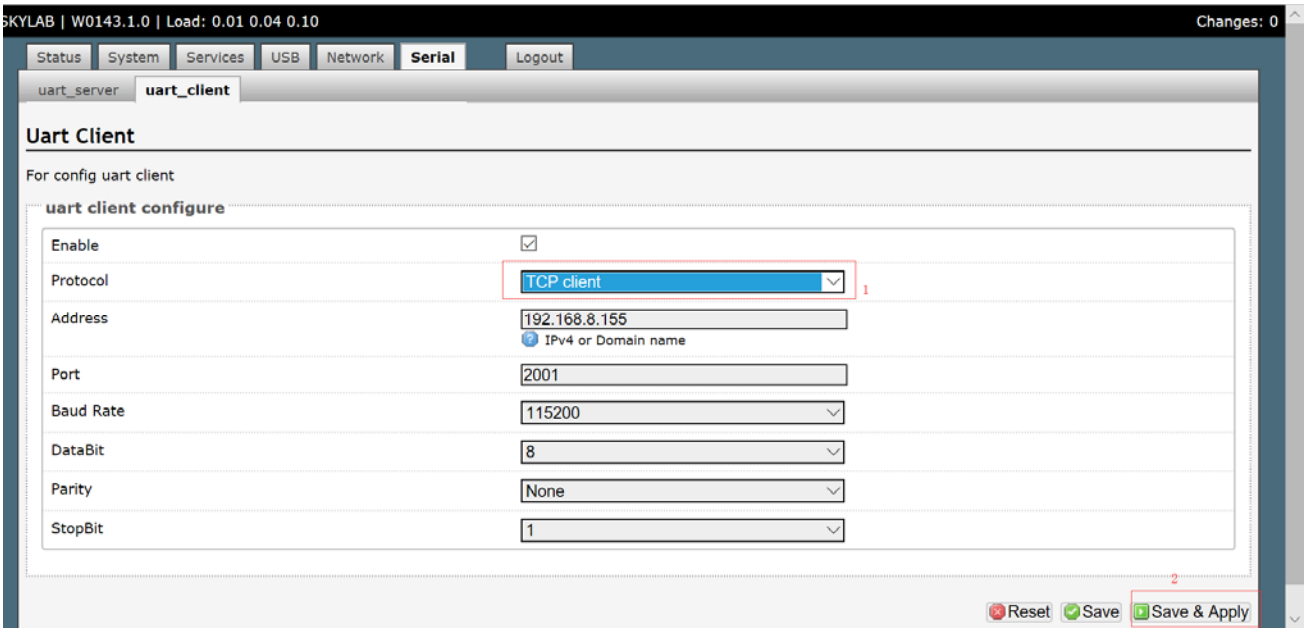


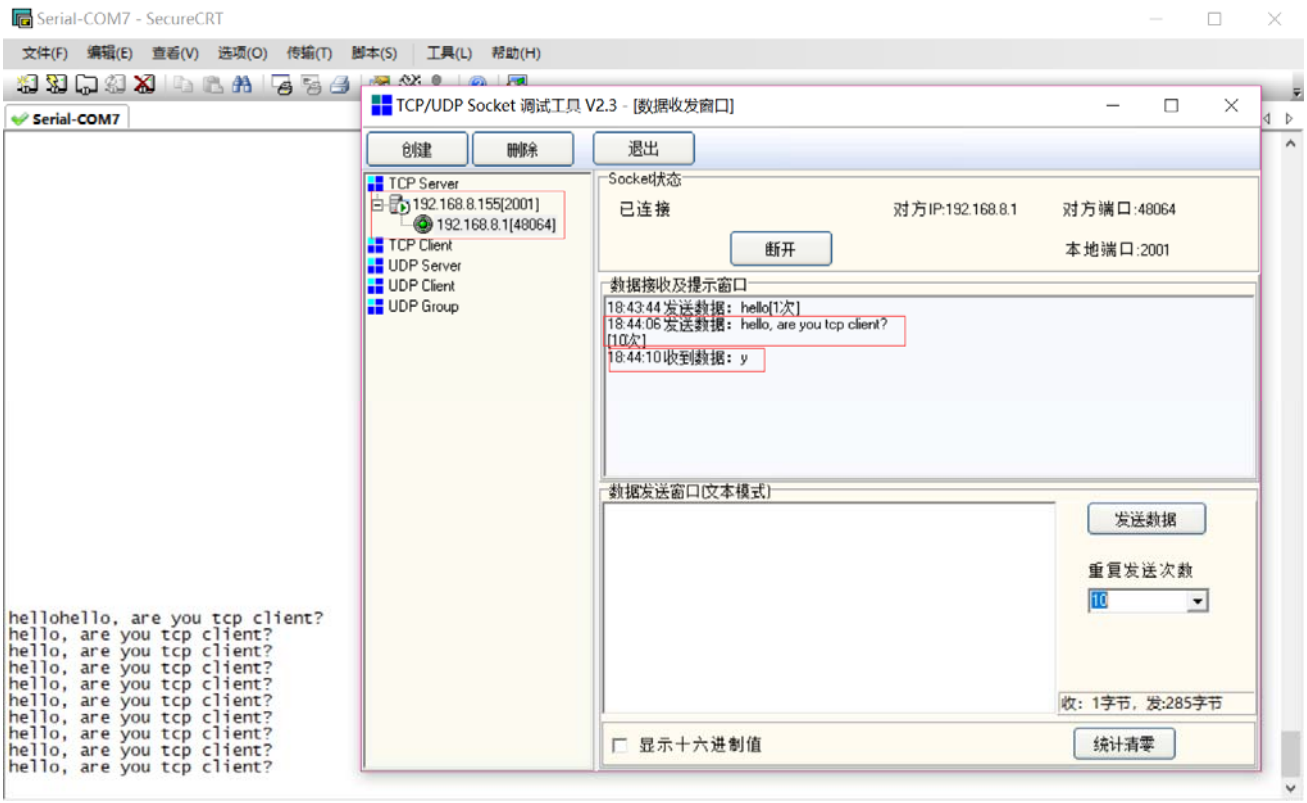


（2）According to the above configuration, the remote port (192.168.8.155) has an open 2001 port UDP server in the listening state.



（3）If the remote server (192.168.8.155) is open to the 2001 port of TCP, the protocol is selected as TCP.



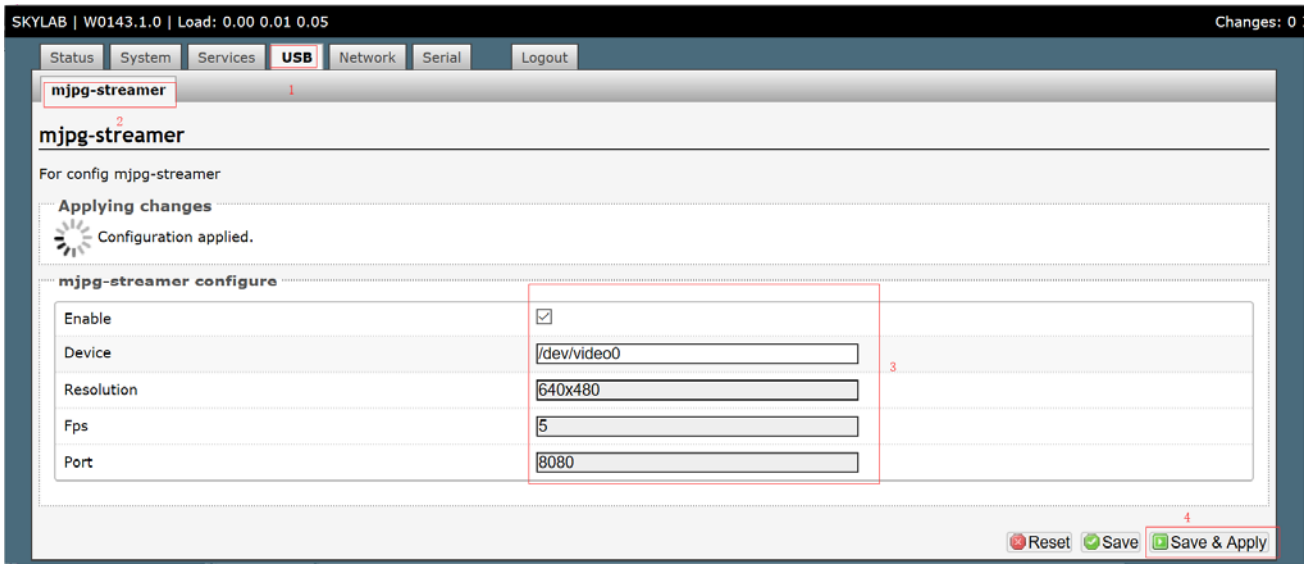


6.3 Mount USB camera

SKW99 supports USB free drive camera mount, which is not enabled by default.The following is the introduction: after the module is connected to the USB camera, the relevant configuration is made on the web interface to enable the camera to start working.

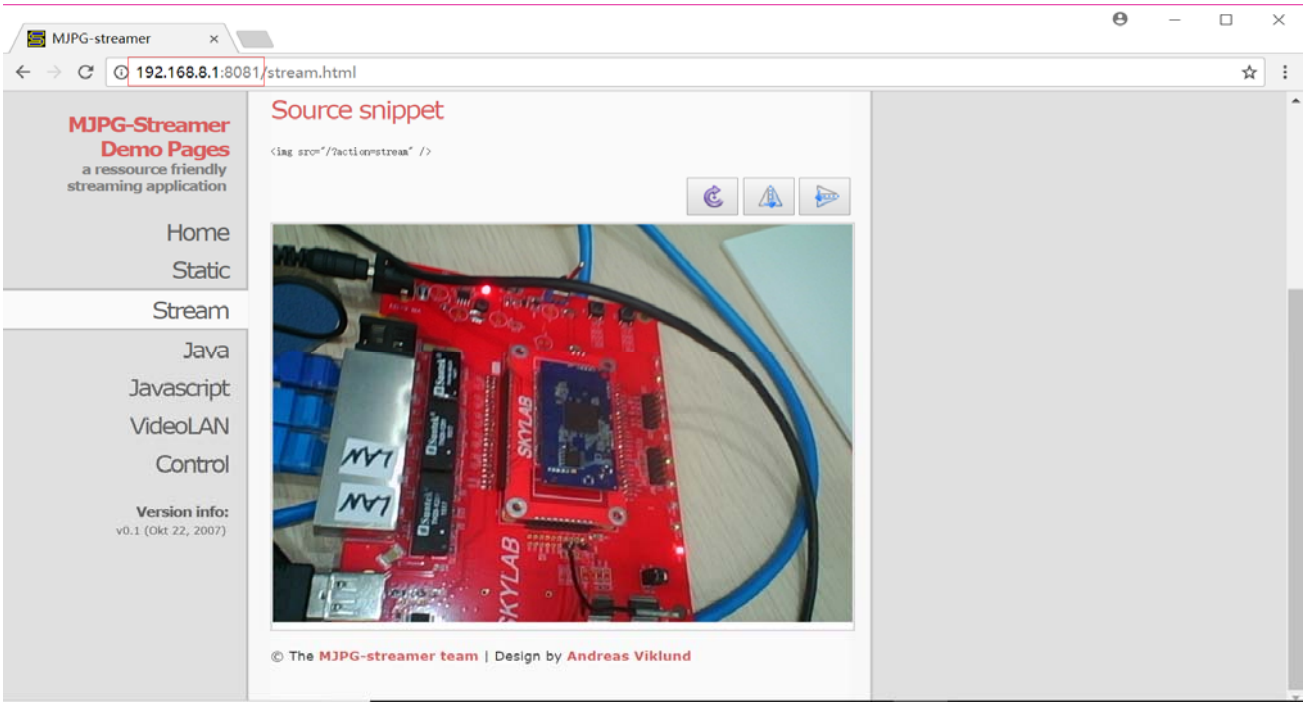
（1）The module is connected to the USB camera;

（2）Firstly, access to the management interface of the router through the browser; secondly, click "USB" "mjpg_streamer" to enter the recording configuration interface; Next, configure the various parameters of the recording; finally, click "Save & Appy" to complete the configuration;



（3）According to the above configuration, enter the “router ip:8080” on the browser, and you will see the recording.

Note: Not all browsers support playback, and Google browser is recommended.



7 Revision History

Revision	Description	Approved	Date
V1.01	Initial Release	Sofia	20180517

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