SLK-E900-LTE Series

Industrial Grade 4G/3G Router Manual

Data: 2015-6-6

1 Introduction

1.1 Overview

SLK-E900 is an industrial-grade, high-performance, high-power WiFi plus 4G wireless router with WiFi gain of 27DB (500mw). The industrial GPRS/CDMA/WCDMA/EVDO/LTE 4G module is used to provide users with high-speed wireless access and stable wireless data transfer function. The routing chip is based on Qualcomm industrial 32-bit dedicated communication processor and supports LINUX embedded real-time operating system. It holds 1 SIM card interface, 4 LAN ports, 1 WAN port, and high-power WIFI interface. It also provides Internet access for both LAN port devices and WiFi port devices at the same time. With wide temperature, wide voltage input, and through static, surge and Electro Magnetic Compatibility (EMC) test, the device is very stable and reliable. The SLK-E900 router has been widely used in the M2M industry of Internet of things (IoT) industry chain, such as self-service terminals, smart grid, smart transportation, smart home, finance, mobile POS terminals, supply chain automation, industrial automation, intelligent buildings, fire control, public security, environmental protection, meteorology, digital medical treatment, telemetry, military affairs, space exploration, agriculture, forestry, water, coal, petrochemical and other fields.

1.2 Features:

- ✓ High-performance 4G module, full Netcom support; multiple global band versions available
- ✓ Qualcomm AR9341 plan with main frequency 550MHZ
- ✓ High Power WiFi, 2x2 MIMO 2.4G, MAX power 27DB (500mw)
- ✓ 4x LAN ports, 1X WAN port, power port with lightning protection
- ✓ WAN port: POE power supply supported 9-50VDC
- ✓ Wide temperature design: -40° C to 85° C working environment
- ✓ Built-in hardware watchdog to prevent system crash
- ✓ Support Watchcat function, reboot of disconnection system, and hardware reset and recovery of 4G network
- ✓ GPS, GNSS optional

1.3 Detailed Parameters

Cellular Interface：

Cellular Interface		
Band Supported	4G/3G/2G Version	•Supported TDD-LTE B38/B39/B40/B41 •Supported FDD-LTE B1/B3/B5/B8 •Supported TD-SCDMA B34/B39 •Supported WCDMA/HSDPA/HSPA+ B1/B8 •Supported CDMA 1X/EVDO BC0 •Supported GSM/GPRS/EDGE 900/1800 MHz
	EVDO 3G Version	Supported EVDO, CDMA2000 1X
	HSDPA 3G Version	Supported HSUPA/HSDPA/UMTS/EDGE/GPRS/GSM
Theory of Bandwidth	• LTE CAT4-DL：50Mbps, UL：150Mbps • TD-HSDPA/HSUPA-DL：2.2 Mbps, UL：2.8 Mbps • HSPA+-DL：5.76 Mbps, UL：42 Mbps • WCDMA – DL/UL：384Kbps • CDMA2000/EVDO DL：1.8 Mbps, UL：3.1 Mbps	

WIFI Performance：

WIFI supported	
Standards	Supported IEEE 802.11 b/g/n
Frequency	2.4GHz (ISM band supported)
Transmitting Power	MAX: 27DB(500mw) Antenna: >10DB
Antennas	2 x SMA female 2.4G WIFI Interfaces
WIFI Rate	2 x 2 MIMO 300Mbps
Modulation Technique	802.11n 2x2 MIMO, 802.11a: OPDM, 6Mbps: -95dmb 802.11n, MCS0: -88dbm, MCS7: -73dbm

Router characteristics	
Firewall	Network Address Translation (NAT)
	State full Packet Inspection (SPI)
	Port Forwarding
Media Access Control	CSMA/CA with ACK
VPN protocol	Supported PPTP, L2TP, Openvpn
DHCP	Built-in DHCP (Dynamic Host Configuration Protocol)
Hardware Watchdog	Built-in hardware watchdog to prevent system crash
Broken Network Detection	Support Watchcat function, reboot of disconnection system, and hardware reset and recovery network for 4G

Other protocols	Supported PPP, PPOE, DDNS, ICMP, VRRP etc

Hardware ：

Hardware	
CPU	Qualcomm AR9341/550MHZ
Flash/RAM	8MB/512Mbit
OS	LINUX, OpenWRT

Interface：

Interface	
LAN Port	4 x 10/100M ports with 8KV
LAN Port Protection Level	Surge: differential-mode 2KV/50A, common-mode 4KV/100A Static Electricity: contact discharge ±4KV, air discharge ±8KV
WAN Port	1x 10/100M WAN port
WAN Port Protection Level	Surge: differential-mode 2KV/50A, common-mode 4KV/100A Static Electricity: contact discharge ±4KV, air discharge ±8KV
Reset	1x Reset
Antennas	2 x 3G/4G Antennas (50Ω SMA interface)
	2 x 2.4G WiFi SMA female interfaces
LED	Power-WiFi-3G/4G LED
SIM slot	Supported 1.8/3.3V SIM card, built-in 1.5KV ESD protection We support SIM card converter to meet all size sim card

Power interface:

Power	
Default power	DC 12V/1A power adapter (US,EU etc)
Input VDC	9~50V
Protection Degree	Surge: common-mode 4KV/100A
Power Consumption	≦8W

Physical property：

Physical property：	
Operating Temperature	Operating Temperature: (-40°C to 85°C)
	Storage Temperature: (-40°C to 100°C)
Relative Humidity	95%
Size	L*S*H: 150mm x 92mm x 44.1 mm
Installation Mode	DIN rail mount/desktop placement (optional)
Weight	Net weight:600g
	Packing weight: 1.5kg

Others：

others	
Warranty	2 years
Package contains	SLK-E900-LTE Router, 1.5m long RJ45 Cable, 12V/1A Power Adapter,4G Antennas, WIFI Antennas, User manual(PDF optional)，

1.4 Order Information

Model	LAN	WAN	SIM	WIFI	4G
SLK-E900-LTE (GPS optional)	4	1	1	2	2
SLK-E900-HSDPA (GPS optional)	4	1	1	2	2
SLK-E900-EVDO (GPS optional)	4	1	1	2	2

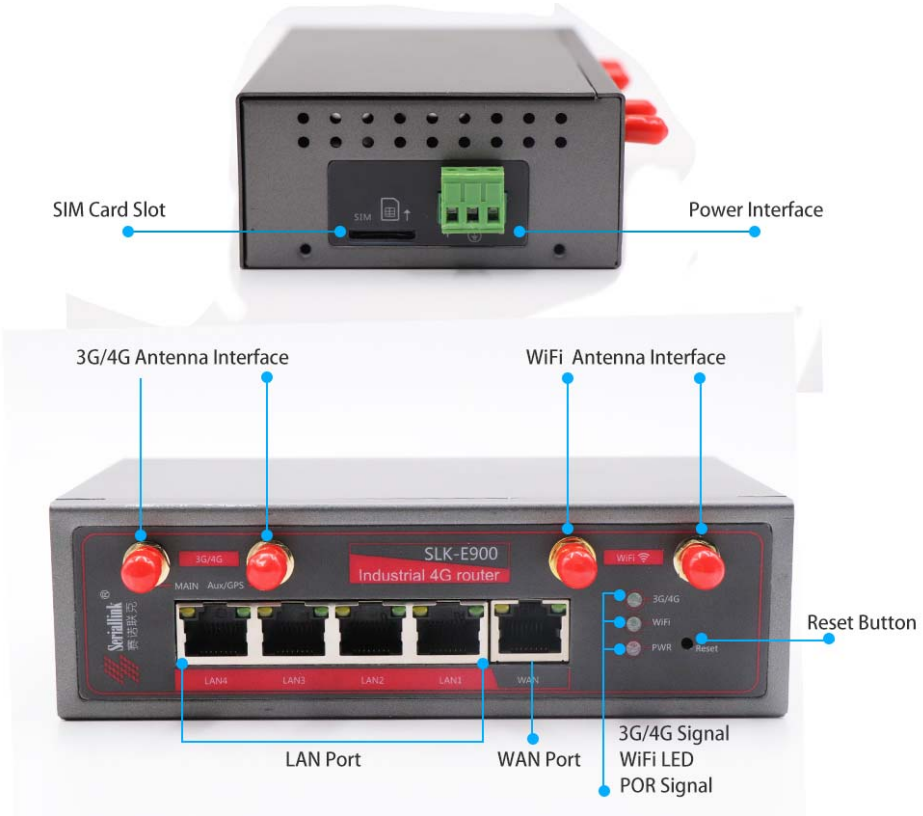
2 Hardware Installation

2.1 Packing list

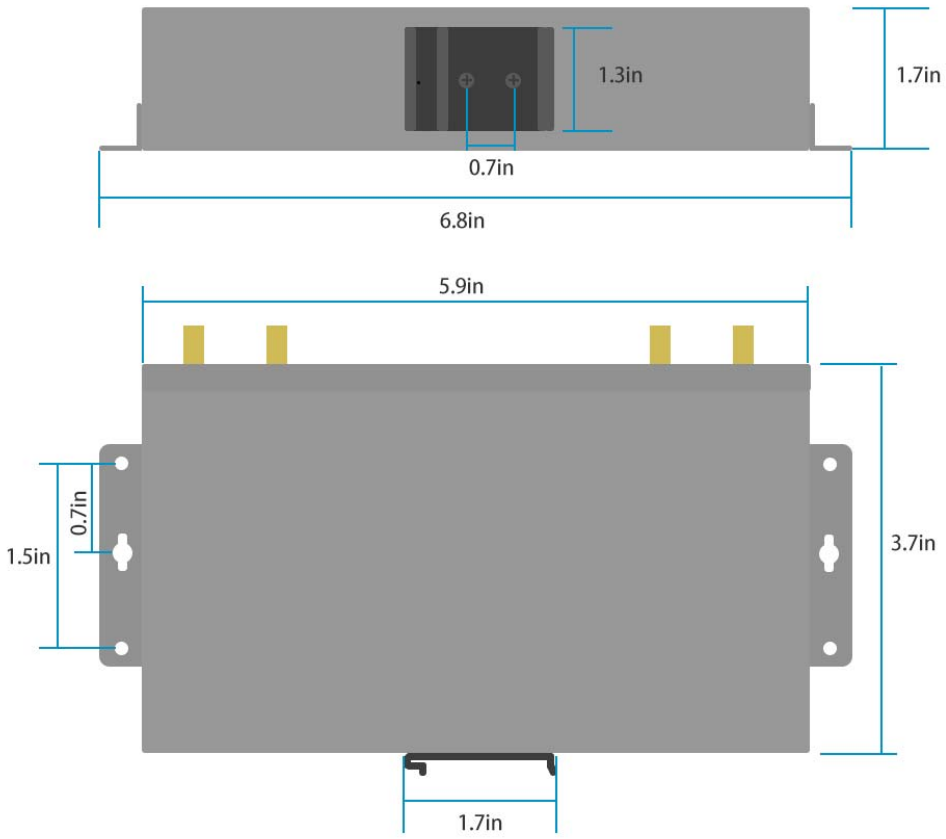
The packing list is as follows：

- ✓ 4G industrial router 1 pcs
- ✓ 4G sucker antenna 1pcs
- ✓ WIFI antennas 2pcs
- ✓ 12V/1A power adapter 1pcs
- ✓ 10/100M network cable 1 pcs
- ✓ instruction manual 1pcs

2.2 Interface Definition



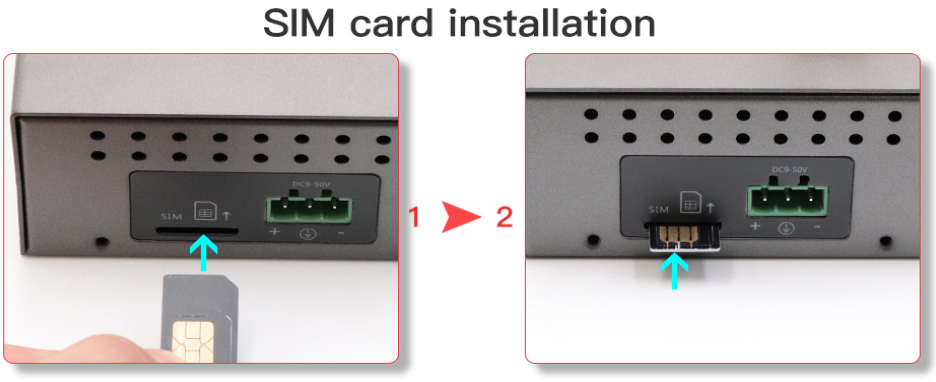
2.3 Installation Size：



2.4 Hardware connection

Step1:Put the sim card into the router. As is shown:

Note: There is no support for hot-plugging SIM card. After you plug in the SIM card, you have to power it up again.



Step2: Connect 1x 4G sucker antennas and 2x WiFi antennas to the identified interface.

Note: you can just connect 1x 4G sucker antenna to Main 4G interface, AUX interface is a auxiliary interface can be disconnected under normal circumstances without affecting the reception and transmission of 4G signals.

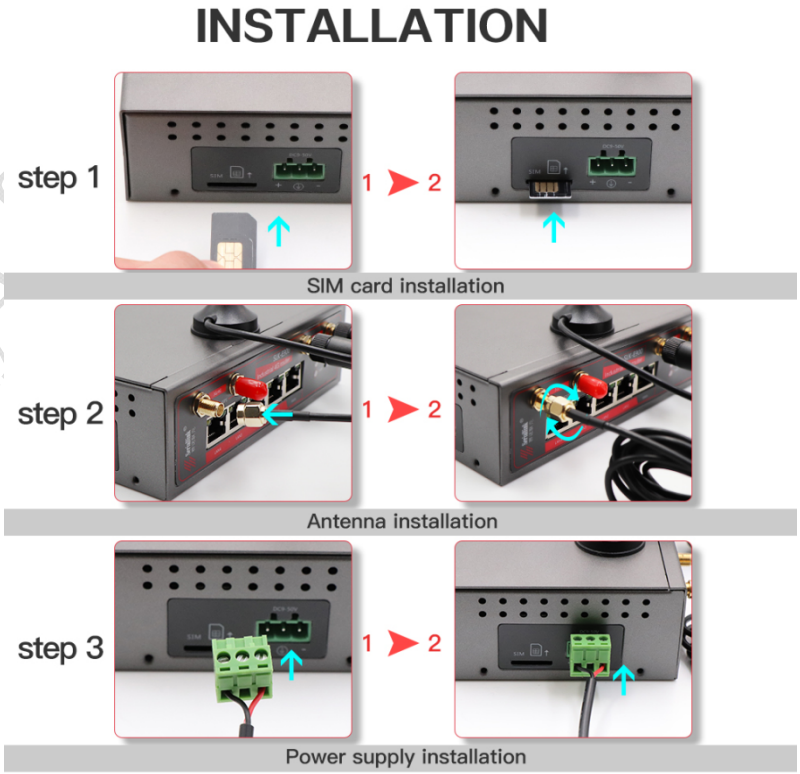
Step3:Conncect to Power adapter into the router.

Power LED ON

WIIFI LED ON When the router os start finished

3G/4G LED fast blink means have register mobile network

Note: Usually, you don't need any Settings to get online. However, if you are a special SIM card, you need to set it according to the APN provided by the supplier.



2.6 Indicator light description

This 4 g router is provided with the following signal indicator lights, according to "PWR", "3 g / 4 g", "WIFI", "WAN", "LAN1 - LAN4"

Signal strength display:

Defines as follows：

LED	Status	Definition
PWR	OFF	No power is plugged in, or the machine is damaged
	Normally on	The power input is correct and the machine is energized
3G/4G	Normally on	Not registered to 3G/4G networks
	Quick flash	Registered to 3G/4G networks
	Slow flash	Not registered to 3G/4G networks
WIFI	Normally on	SYS have ok, wifi have working
	Normally flash	The WiFi client connects successfully and has data interaction
WAN	OFF	WAN port cable not inserted (generally used for broadband line access)
	Normally flash	WAN port cable insertion with data interaction
LAN1-LAN4	OFF	No cable is inserted at the corresponding LAN port
	Normally flash	The corresponding LAN port has cable insertion and data interaction
RESET		Press up 5s then release to go to factory settings, you will see “wifi” led will off then ON. Mean to its successful

Note: How do I know if my router is working? Since the router works on the LINUX operating system, the PWR indicator will be on at first after the power is turned on, then the router system starts to start and the 4G network starts to work. After the startup is completed, the WiFi light will always be on (it will flash when there is data to send or receive), and the 4G/3G indicator light will flash, which means that the 4G router works normally and you can surf the Internet without any Settings.

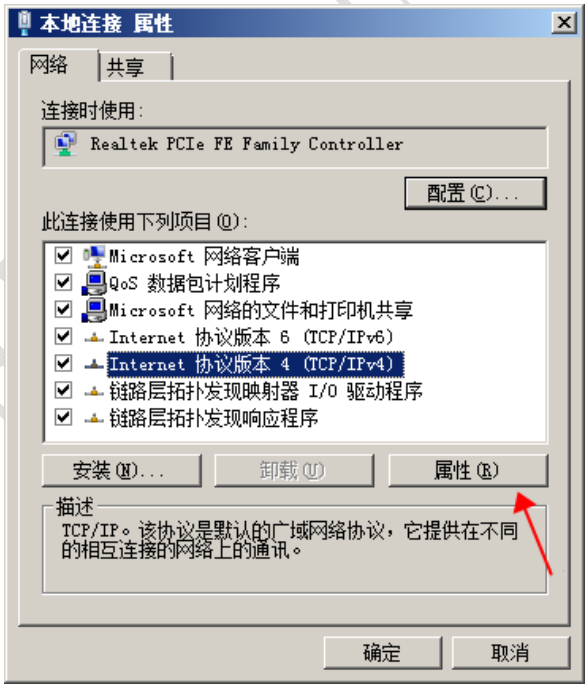
3 Configuration Parameters

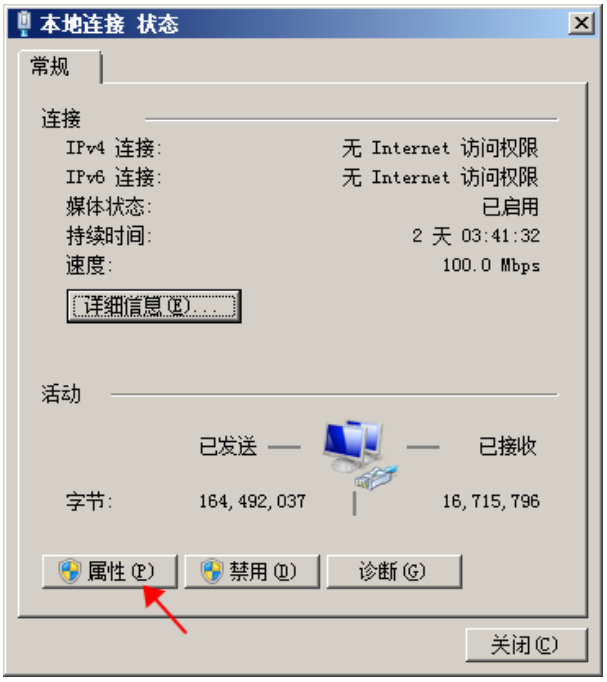
3.1 Prepare for router configuration

After the hardware installation is complete, you need to make sure that the management computer has a network card or WiFi network card installed in front of the Web Settings page of the login router.

3.2 Via LAN port login the router for setup or internet

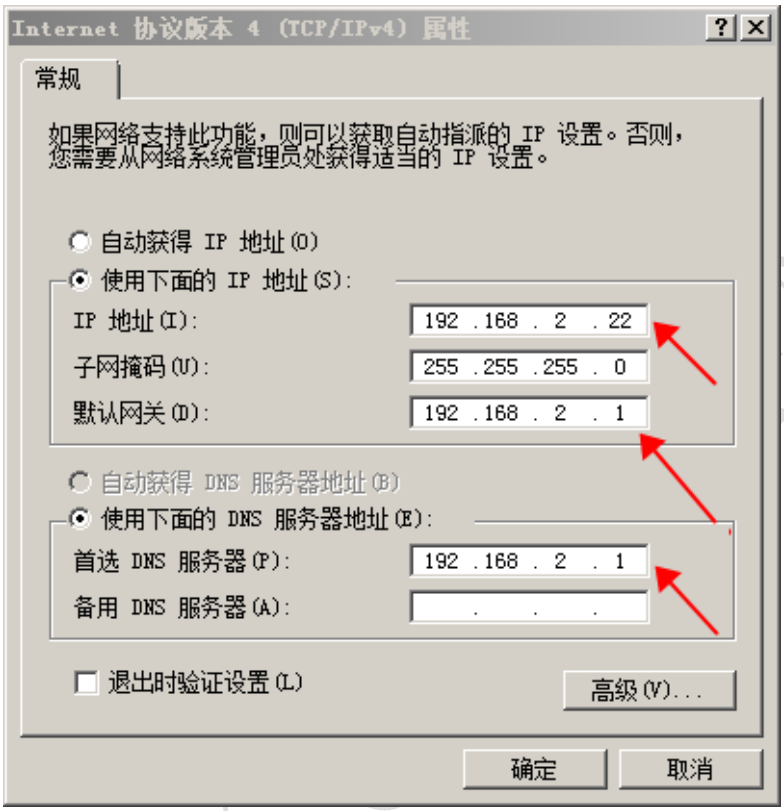
Connect the yellow network cable to the router's LAN and the computer's Ethernet interface, then find the network and sharing center in the computer-control panel, click the local network connection and click properties:
SLK-E900-LTE default IP: 192.168.2.1, setup the computer of local ip as 192.168.2.x(x is 2—255)





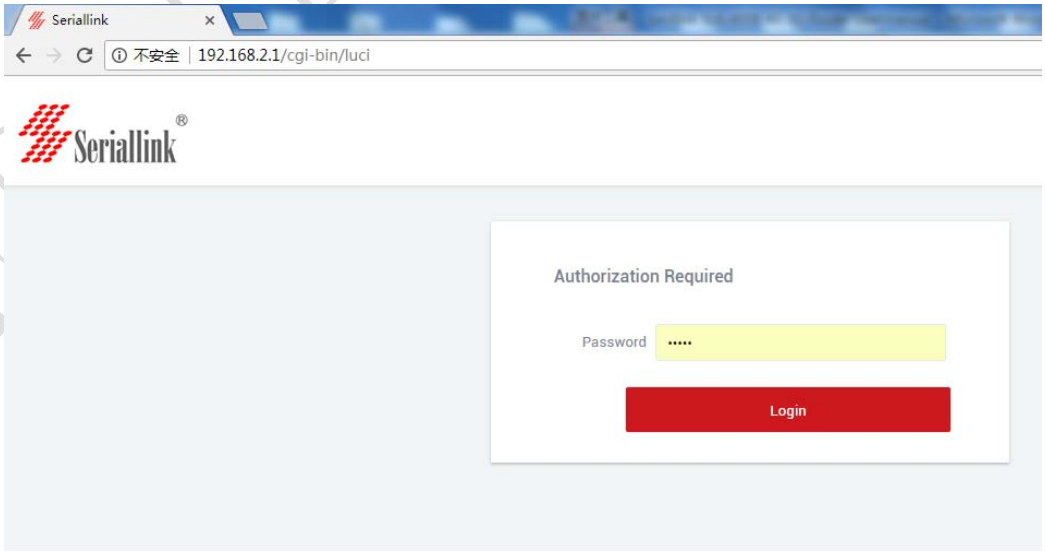
Manually modify the IP address as shown in the figure below, or click to automatically get the IP address automatically allocated by router DHCP.

Note: if want to through our 4 g router to the Internet, the default Gateway and DNS need to change to 192.168.2.1 as below:



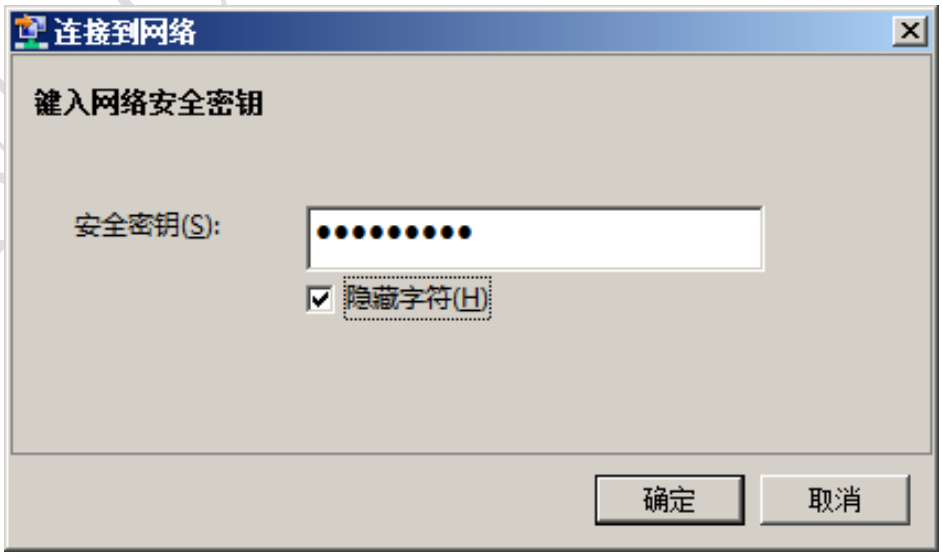
3.3 Log in to the configuration page of the router

Note: using Google browser or A browser with A kernel over IE10.
Default password: admin, no name required.



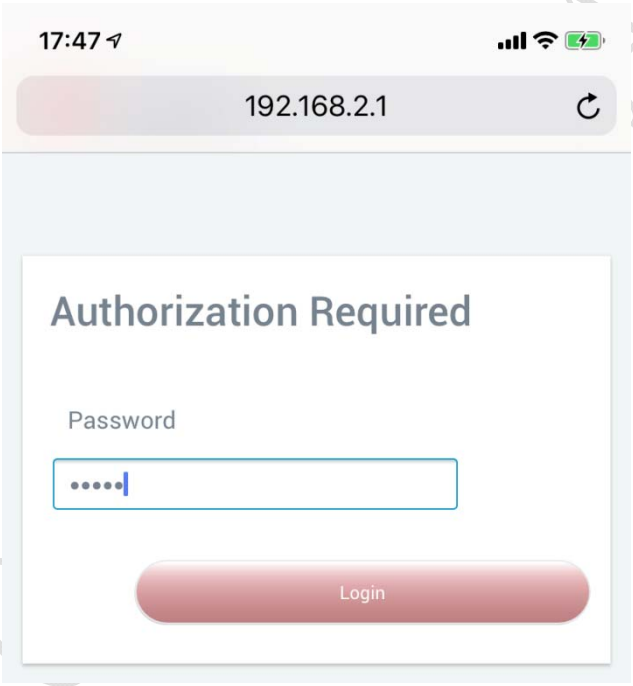
3.4 Via WIFI to configure the router or get internet

As shown in the figure, open the Control Panel - network and internet-network connection, select the wireless network connection, and click connect to. Find the router's SSID and enter the default password to connect to it. The default WiFi password is on the back of the router. The connection is successful, You can then configure this by entering the router's IP address in the browser. For SIM CARDS that do not require configuration, you can access the Internet as long as the WIFI connection is successful.

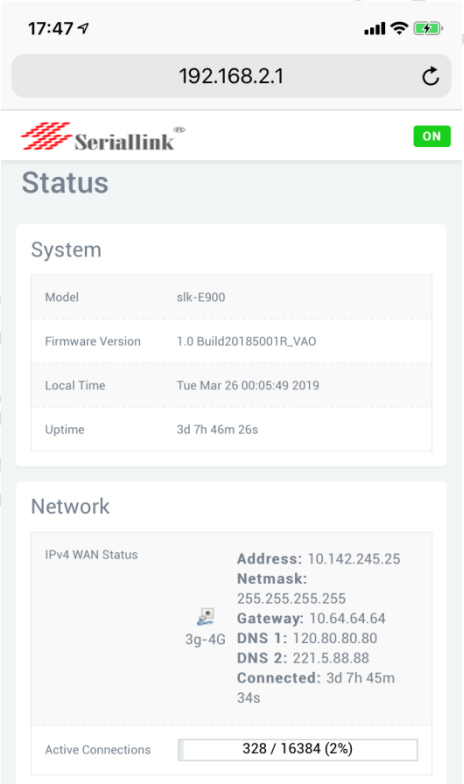


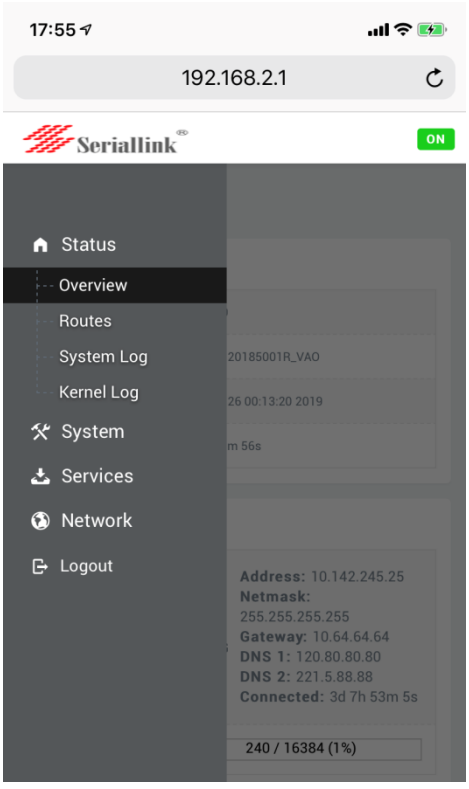
3.5 Via Mobile Phone to configure the router or get internet

Open the wireless local area network (WLAN) search to the router's SSID, begin with SLK - Routers, by default the WIFI password on the back of the router. After entering the password, you can access the Internet or enter the router IP address in the browser for configuration.



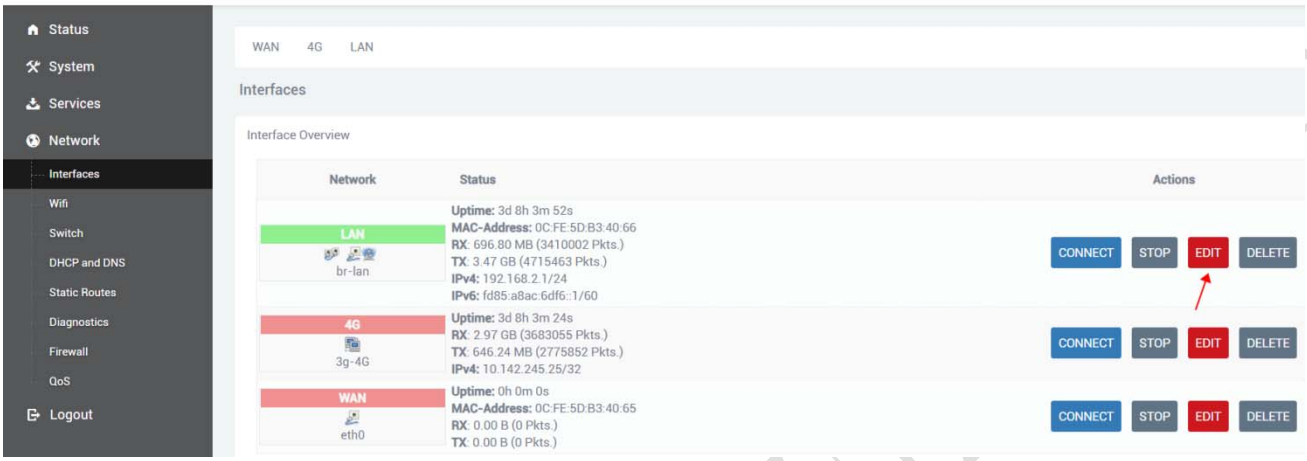
Click the position of the logo once and the configuration interface will pop up from the left side:

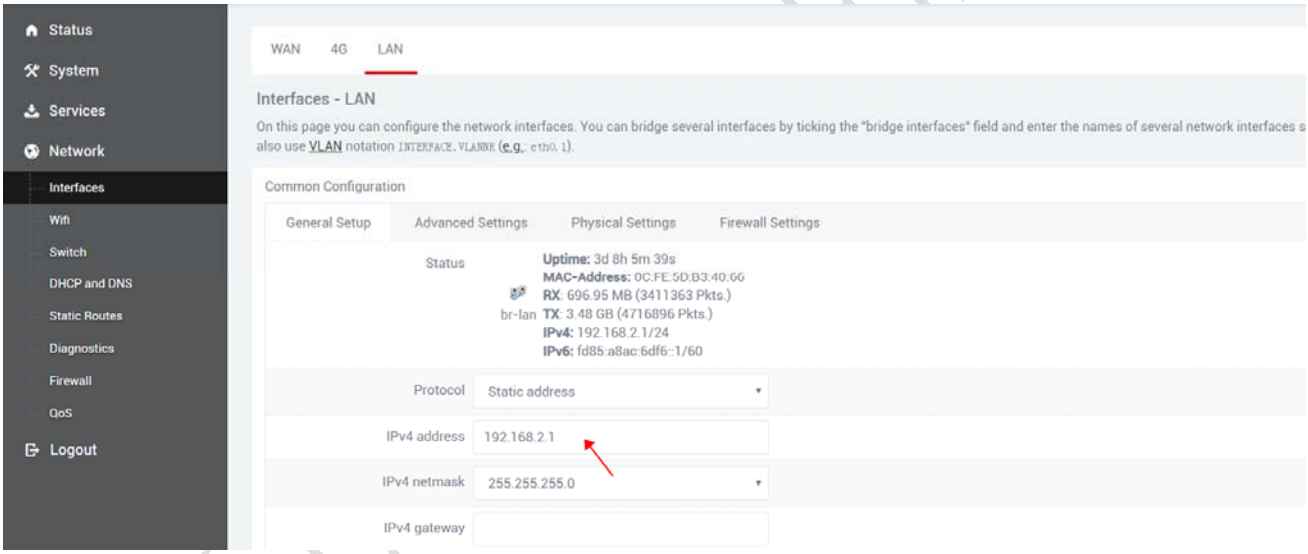




3.5 Modify router default IP

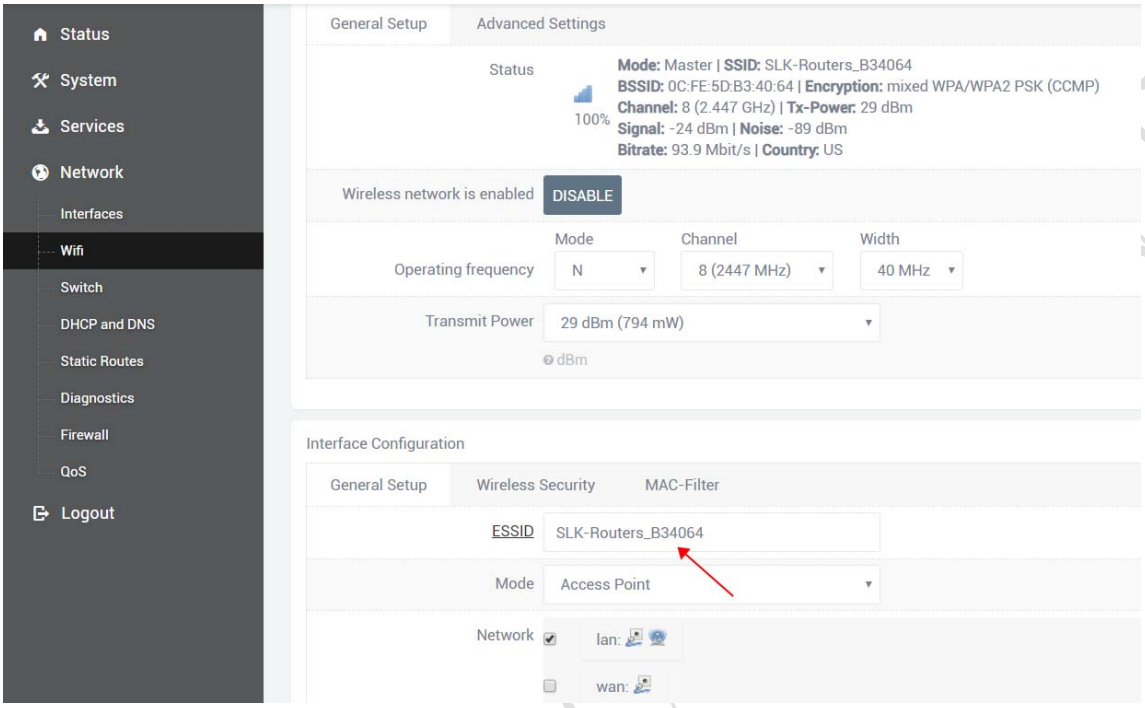
Login the router - network - interfaces – LAN -EDIT - IPV4 addresses, change the ip to you want.

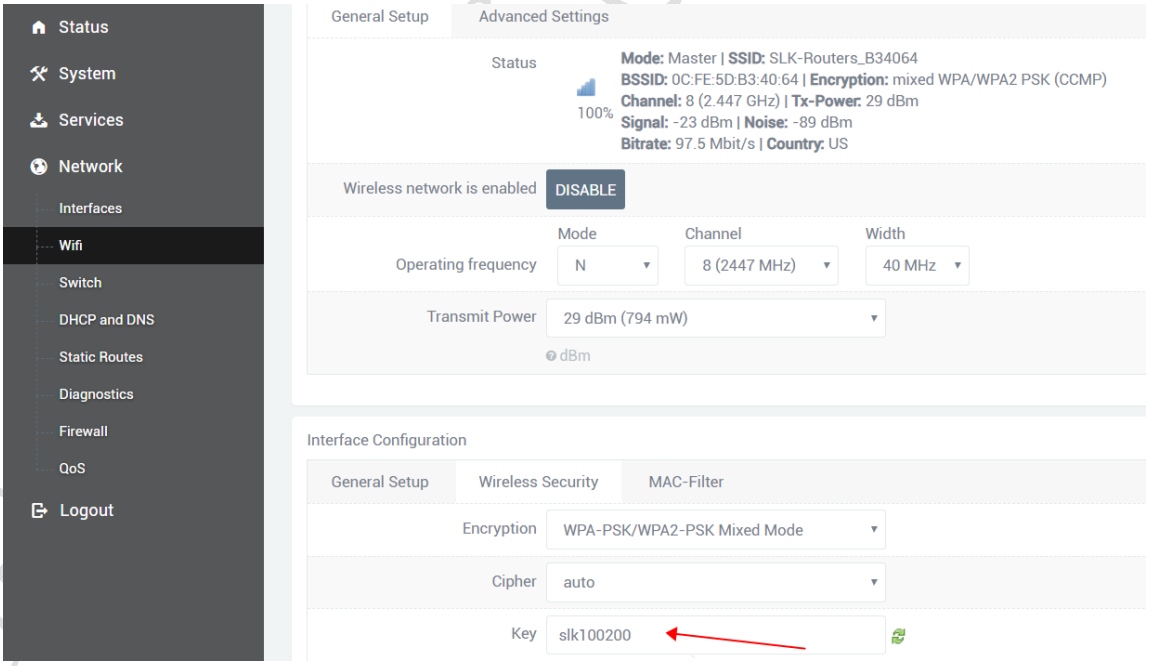




3.6 Change the WiFi password and ESSID

Login the router: Network- WiFi - EDIT - wireless security, changes the WIFI password
Login the router: Network- WiFi - EDIT - ESSID, change the WIFI SSID



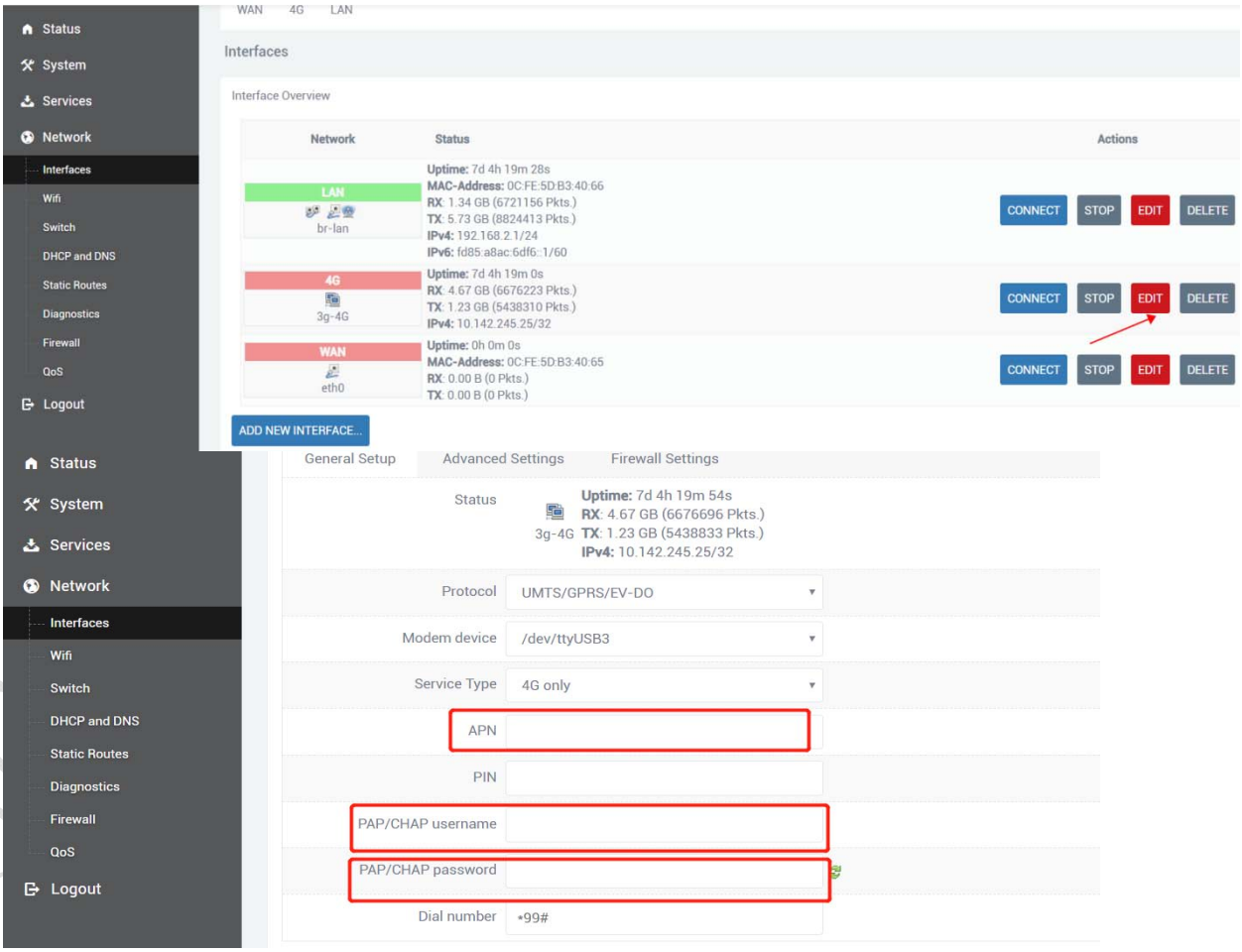


3.7 APN settings

Note: Most of the world's operators allow access to the Internet without any APN, but some special SIM CARDS require special APN Settings to access the Internet. The following is an example of M2M card of Chinese operators.What is the specific APN, you can consult your mobile operator.

Operator	APN	user	password	Dial Number
China Telecom IOT card	ctm2m	*.m 2m or m2m)	vnet.mobi vnet.mobi	*99# *99#
China Unicom IOT Card	unim2m.njm2mapn			*99#

The default APN Settings are as follows: you can see that no APN, no username, no password. 3G/4G uptime means that internet keep online time ,and tx, rx data .All that showing you can access internet.



Parameter interpretation

Protocol :Do not need setup, keep default please .UMTS/GPRS/EVDO This is Dial-up Protocols,4G is same as 3G.

Modem device: do not need setup, keep default please.

Service Type: others do not need setup.

4G Only means :work as 4G mode, no 4G signal will auto fallback to 3G.

VPDN if you have VPDN card ,you can setting as that ,input APN ,Username, password.

APN: Access Point Name, supplied from mobile sim card operator

PAP/CHAP username: supplied from mobile sim card operator

PAP/CHAP password: supplied from mobile sim card operator

Dial number: keep default :*99#

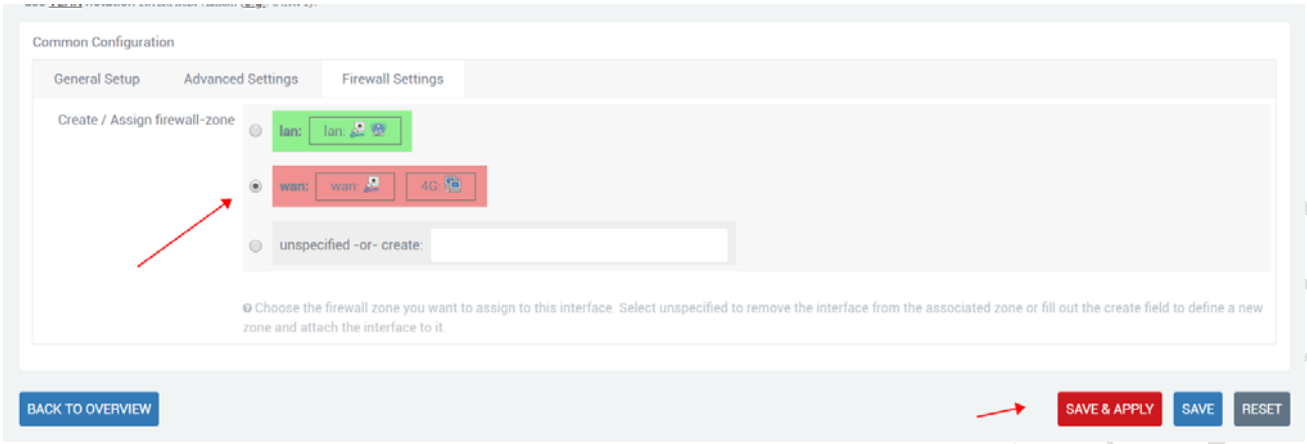
Advanced settings and firewall settings keep default please.

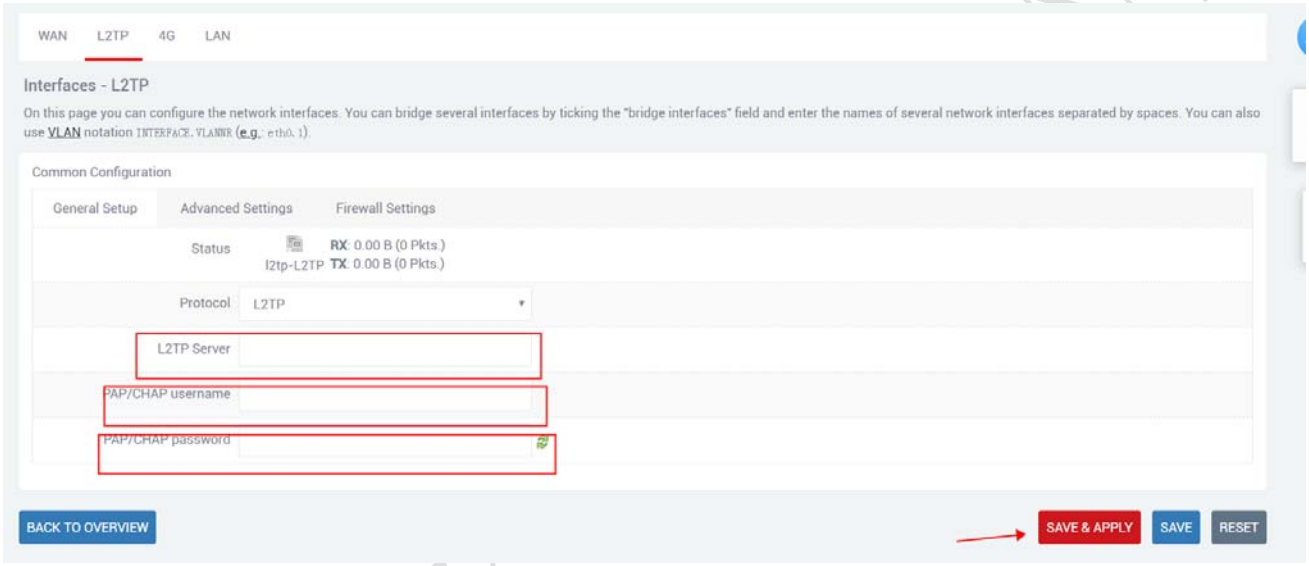
3.8 L2TP,PPTP settings

The SLK-E900-LTE just supported l2tp,pptp client that supported work as running L2TP,PPTP Router, can not supported Windows l2tp,PPTP. Because it has poor compatibility.

Now let's take the configuration of L2TP as an example, and set up PPTP in the same way:

Log in Router, Network—Interface—ADD NEW INTERFACE





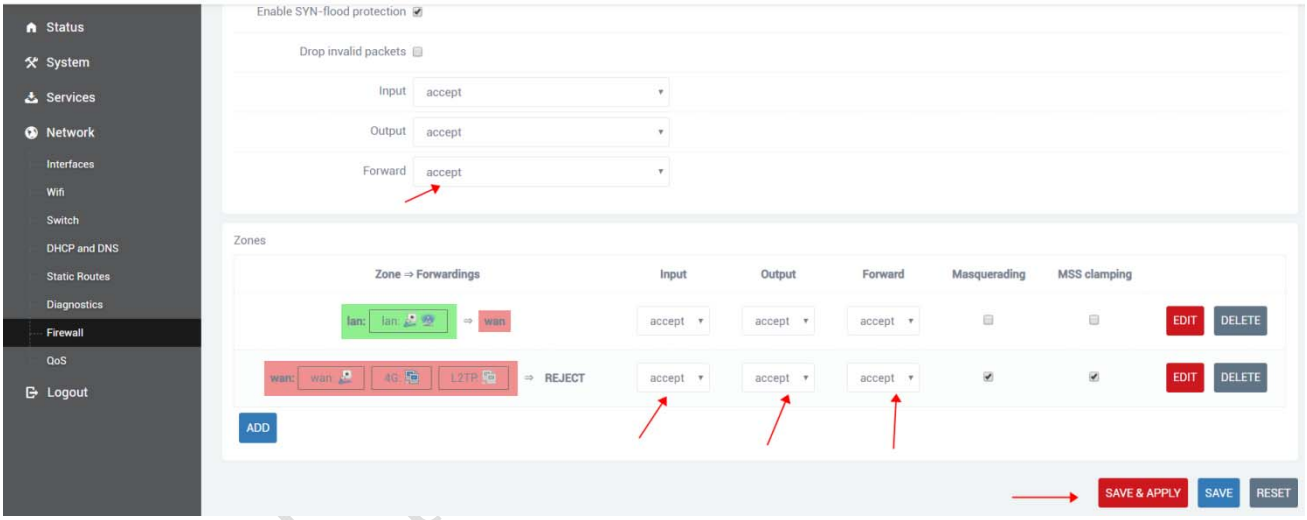
VPN server and username password can be set at the location shown in the figure, and the WAN&4G TAB can be selected at the firewall location. VPN outlet is WAN or 4G network. This completes the VPN setup.

When the VPN-L2TP connected ,you will see the tx ,rx data.

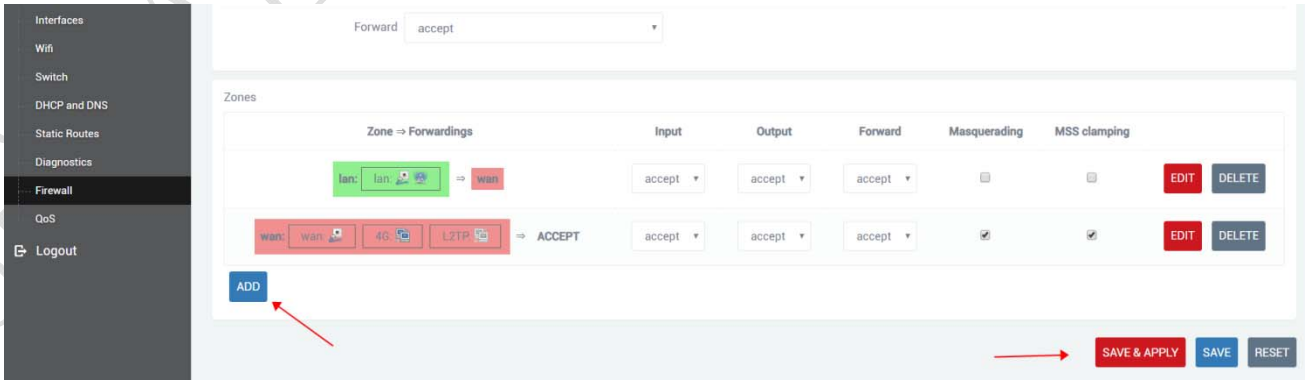
3.9 Port forwarding and DMZ Settings

Note: If the 4G IP that the operator gives you is a public network IP or L2TP IP that can be pings, you can forward the port. Take forwarding port 80 as an example

Step 1: all change as accept.



Step 2: add you want to forwarding port



Step3 : Port name 80 ,or others you want to as name.

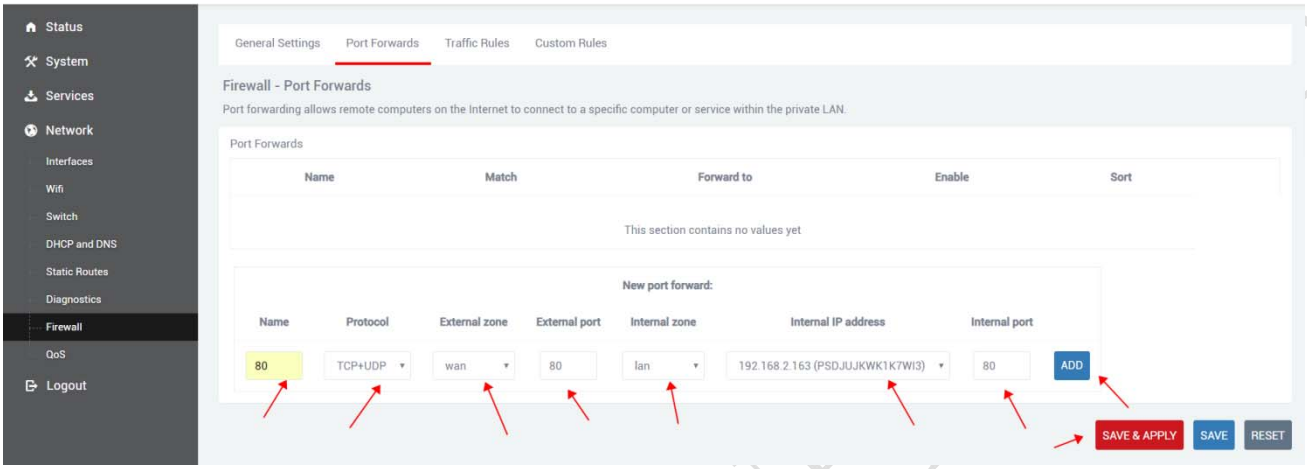
Protocol :TCP+UDP or ,TCP,UDP.

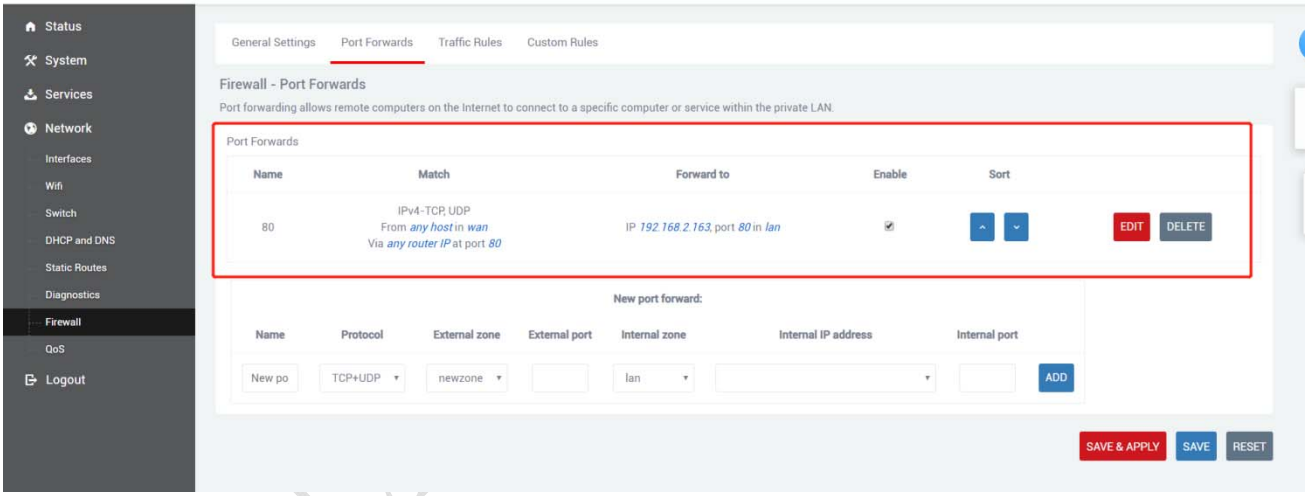
External zone :WAN

External port:80 or others you want to setup port number

Internal IP Address: you want to forwarding port

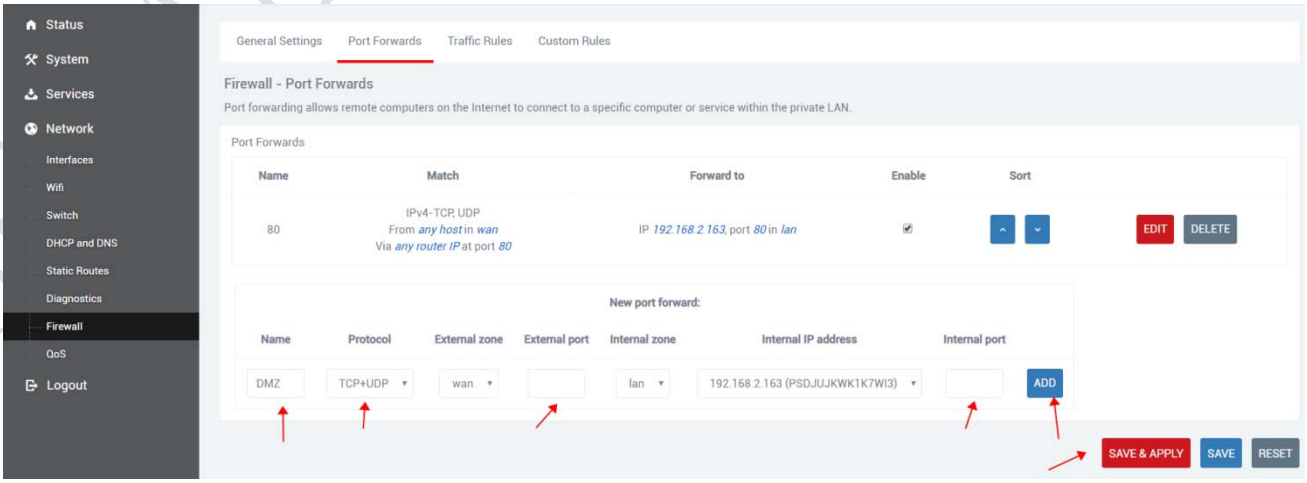
All finished ,click ADD and SAVE&APPLY

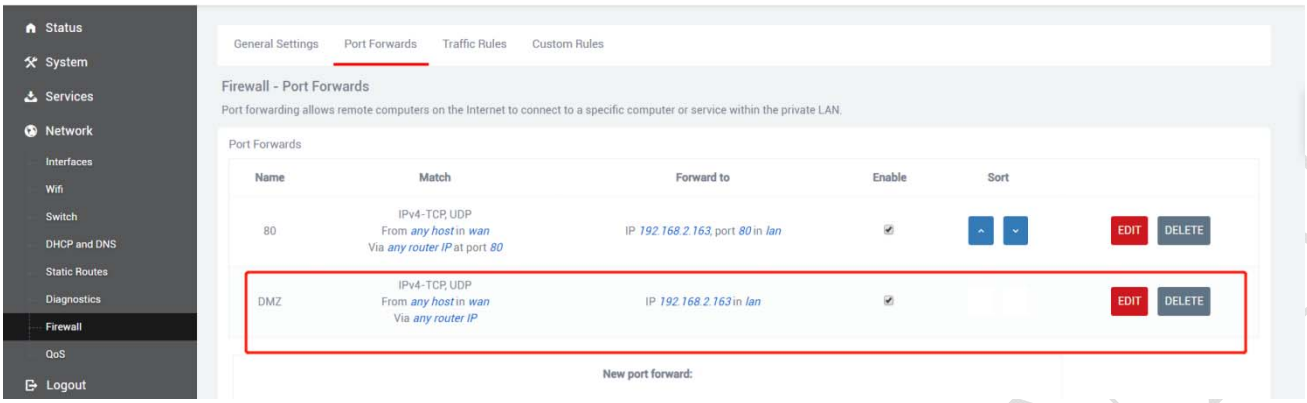




Forwarding all the ports means DMZ:

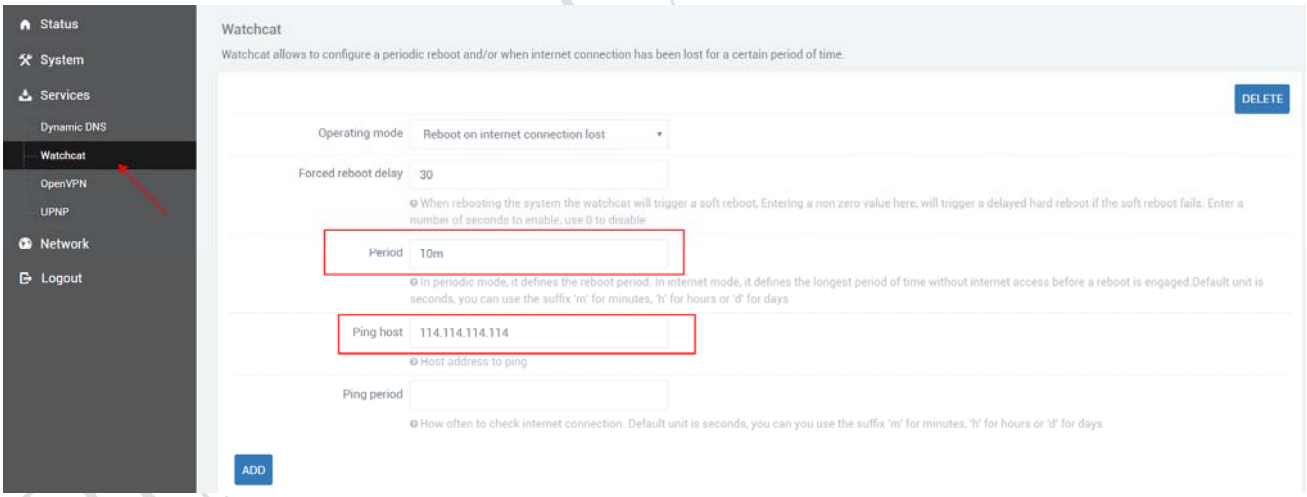
Not entering any internal and external ports means forwarding all ports.





3.10 Setup the Watchcat

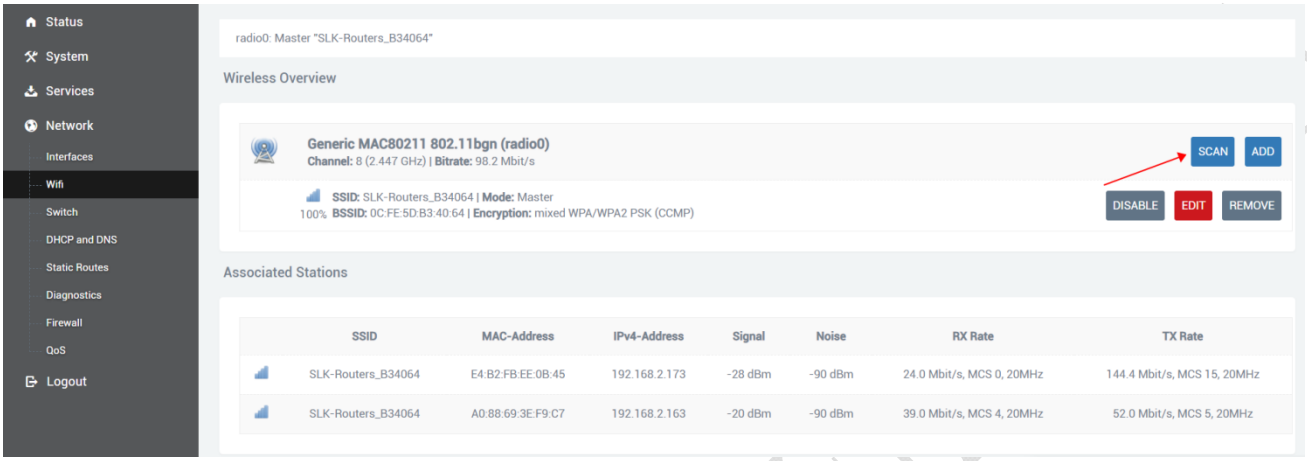
First you must keep the Ping host can be Ping successful, if not ,the Router will be reboot and the 4G will be reboot for reconnect internet .
You just need setup
Period: default:10m , you can setup as 3m,4m etc.
Ping host: default ,114.114.114.114, here you can setup your host ip ,if can not ping ,router will be root and reboot .

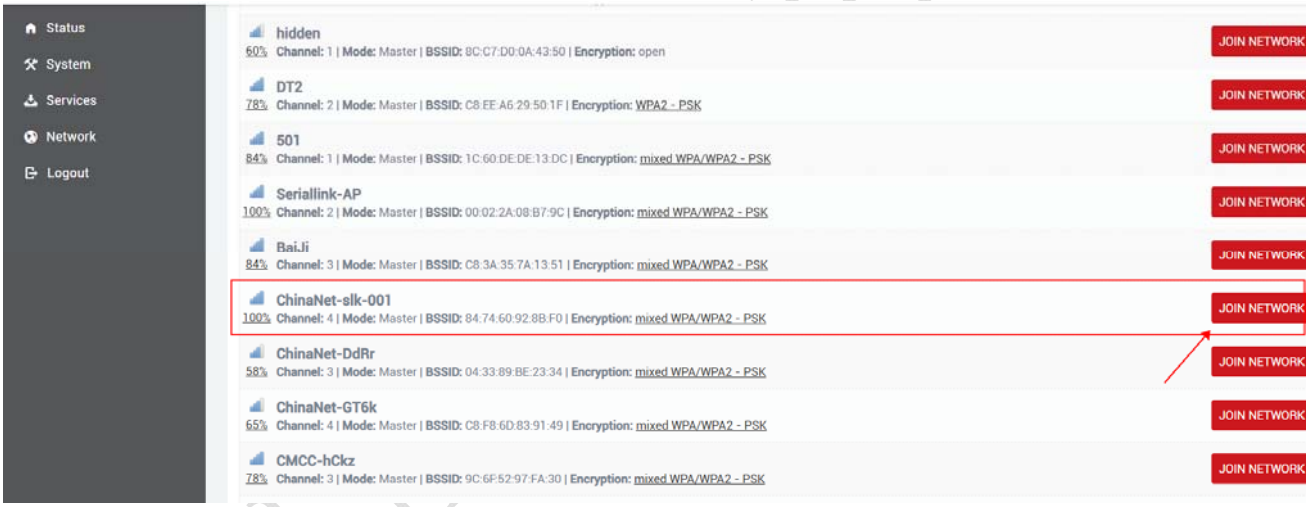


Note: if you do not put in sim card into the router ,waiting 10m the router will be reboot ,or you can not access internet the router will be reboot .if you do not need this function please click DELETE

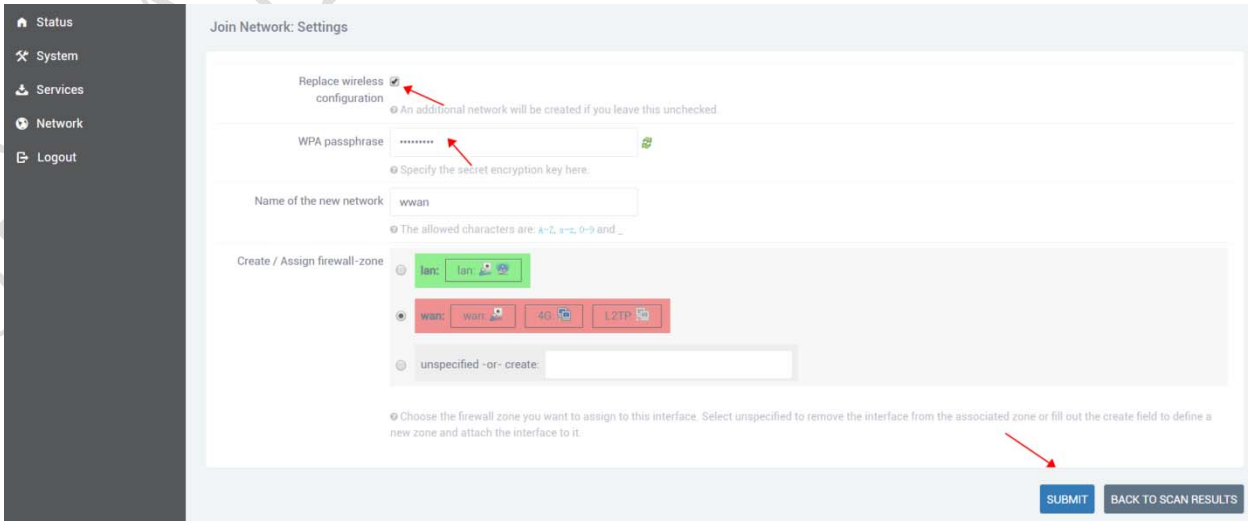
3.11 SLK-E900-LTE via any others wifi router access internet

Step 1:SCAN WIFI





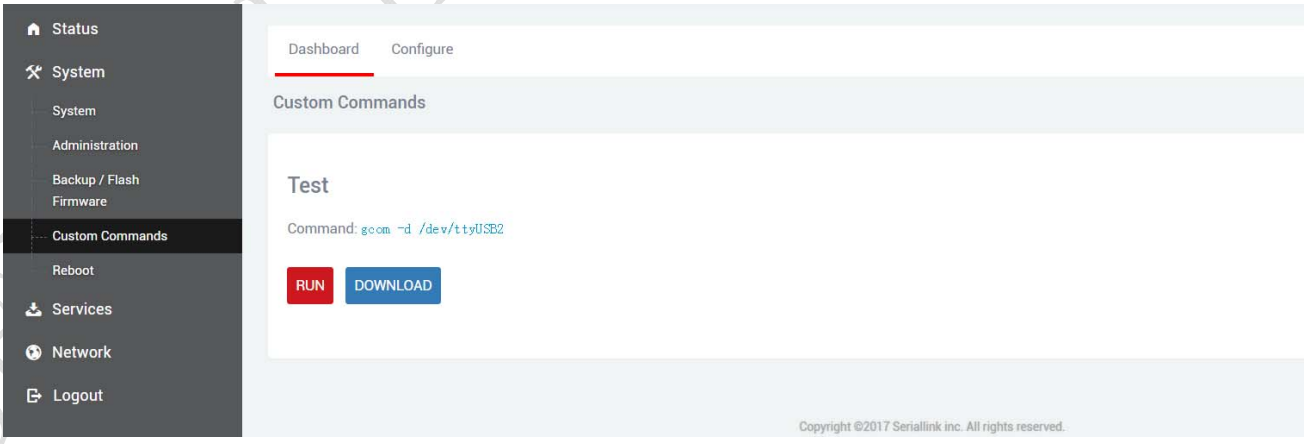
Step 2:Input WIFI password then SUBIT.

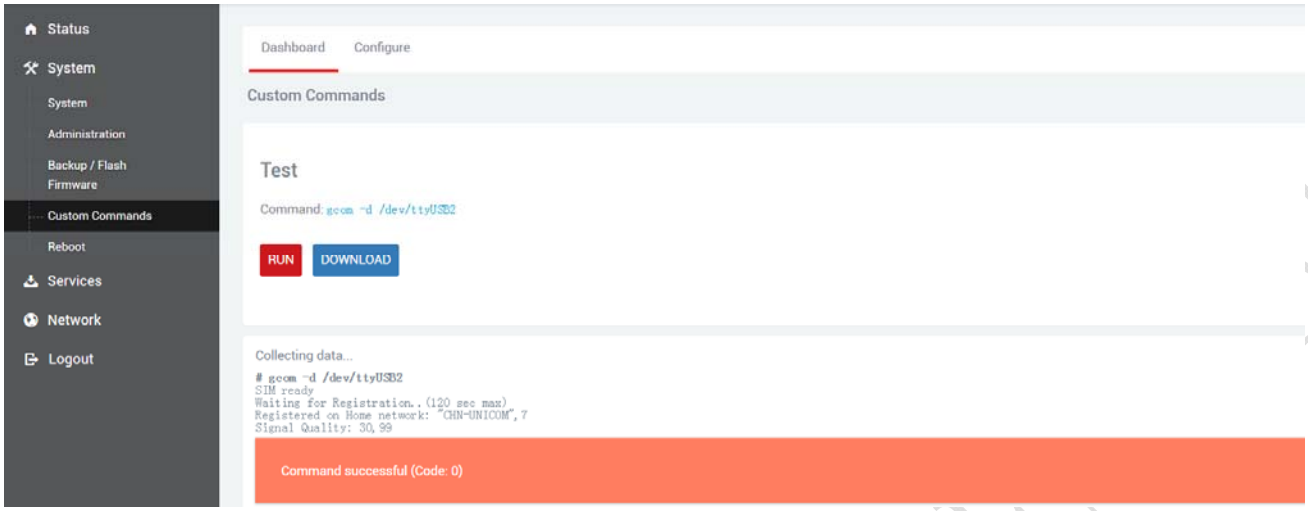


3.12 Custom Commands for test 4G status

The meaning is explained as follows:

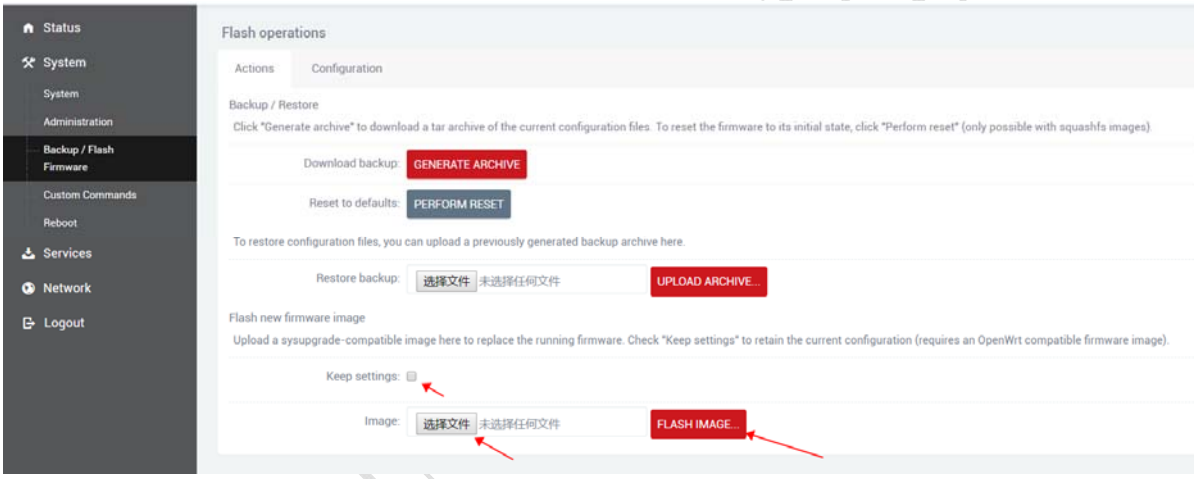
- SIM ready to represent the router has read the SIM card, if it is SIM ERRO rep didn't read the SIM card, or a SIM card is not good.
- Chn-ct represents the registered operator of China telecom. Different operator CARDS have different names.
- “Signal Quality:29,99” Represents the signal value of 29, generally more than 20 signal is normal.
- Returns the following information to indicate that 4G is able to access the Internet normally, if there is any error message on behalf of the registered network exception.

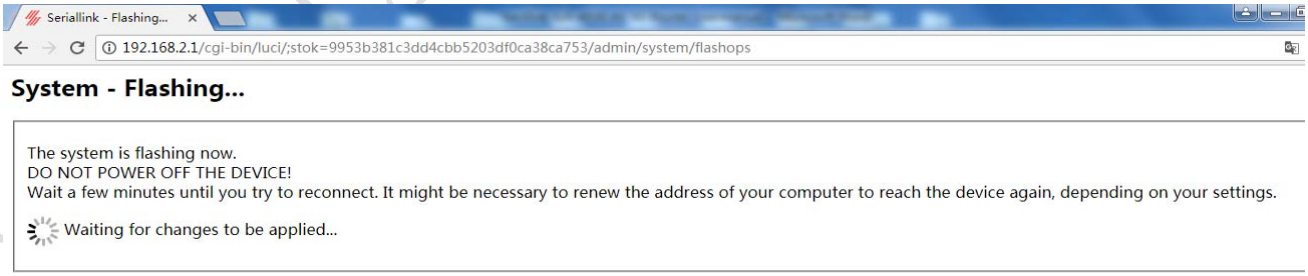




3.13. Flash firmware.

Do not keep settings , choose you want to update Image and click FLASH IMAGE.





3.14 Contact us

Web：www.seriallink.net
e-Mail：info@seriallink.net
Shenzhen Shi Fang Communication Technology Co.,Ltd
Address：A6301, Bldg A ,ShenMa Industrial district , Nanwan Street, Longgang District
Shenzhen Guangdong China (Mainland)