UCY-I2120

Industrial Grade 4G Wireless Router

User Manual

- High Performance 32bit Industrial Grade Processor
- Industrial Grade 4G LTE Cat4 Modem Performance
- 12VDC Power Input and Wide Power Input Range 6V~40V
- Automatic System Recovery From System Failures
- Industrial Grade Interfaces with full ESD protection
- Support VPN Client Functions
- Ruggedized Metal Casing and DIN-Rail Mountable
- Support 4G LTE FDD/TDD, 3G UMTS/HSPA, 2G GSM Bands

Table of Contents

Product Description

In a networked world where everything is connected, the demand for smart communication will become much and much stronger, especially in the field of smart industrial application and control. The UCY I2100 4G router is also a new generation 4G wireless VPN router launched by Shenzhen Jiawen Technology Co., Ltd. for indust rial level application. The device provides fast Internet access by virtue of the explosive growth of 4G cellula r data network and a variety of high-speed networked broadband access services. With its security, stabilit y and intelligence performance, thousands of devices can be easily networked, providing high-speed data transm ission and communication for the true meaning of Internet of Things.

The UCY I2100 also provides an Ethernet WAN/LAN multiplexing RJ45 network port, an Ethernet LAN RJ45 network port, a set of industrial Phoenix terminal blocks (serial function and power supply function), a drawer type SIM/UIM card slot, which can have the serial port, Ethernet port, and Wi-Fi connected at the same time for enabling pass-through transmission.

The UCY I2100 supports remote management via a cloud platform. The cloud platform has a simple graphical interface that can be quick to use. It can let you know the current status of the device anytime and anywhere. Such application is widely used in the M2M industry and the Internet of Things industry chain, such as smart grid, smart transportation, smart home, finance, Mobile POS terminals, supply chain automation, industrial automation, smart buildings, fire protection, public safety, environmental protection, meteorology, digital medical care, remote sensing surveys, military, area exploration, agriculture, forestry, water affairs, coal mines, petrochemicals and other industrial fields.

Features

Ruggedized Industrial Design

UCY I2100 is a performance industrial grade 4G wireless router based on a 32bit MIPS network processor with high speed cat4 4G LTE, 2 Ethernet port (1 WAN 1 LAN) and full speed 2.4GHz Wi-Fi that comply with IEEE 802.11n standard. The UCY I2100 is a product protected from a ruggedized metal casing to give an excellent isolation protection from interference in the surrounding environment. It is suitable to utilize in industrial control field applications. Besides it takes standard 12VDC power input, it has more capability and can have wider power input range from 9~36VDC as well as reverse-voltage protection.

Robustness and Stability

UCY I2100 has dual auto recovery mechanism from system failure. The hardware and software watchdog in the system ensure high system stability of the device in a long operation application. The device has a well-designed failsafe mechanism to take care of the WAN/Cellular connection, improving uplink time and

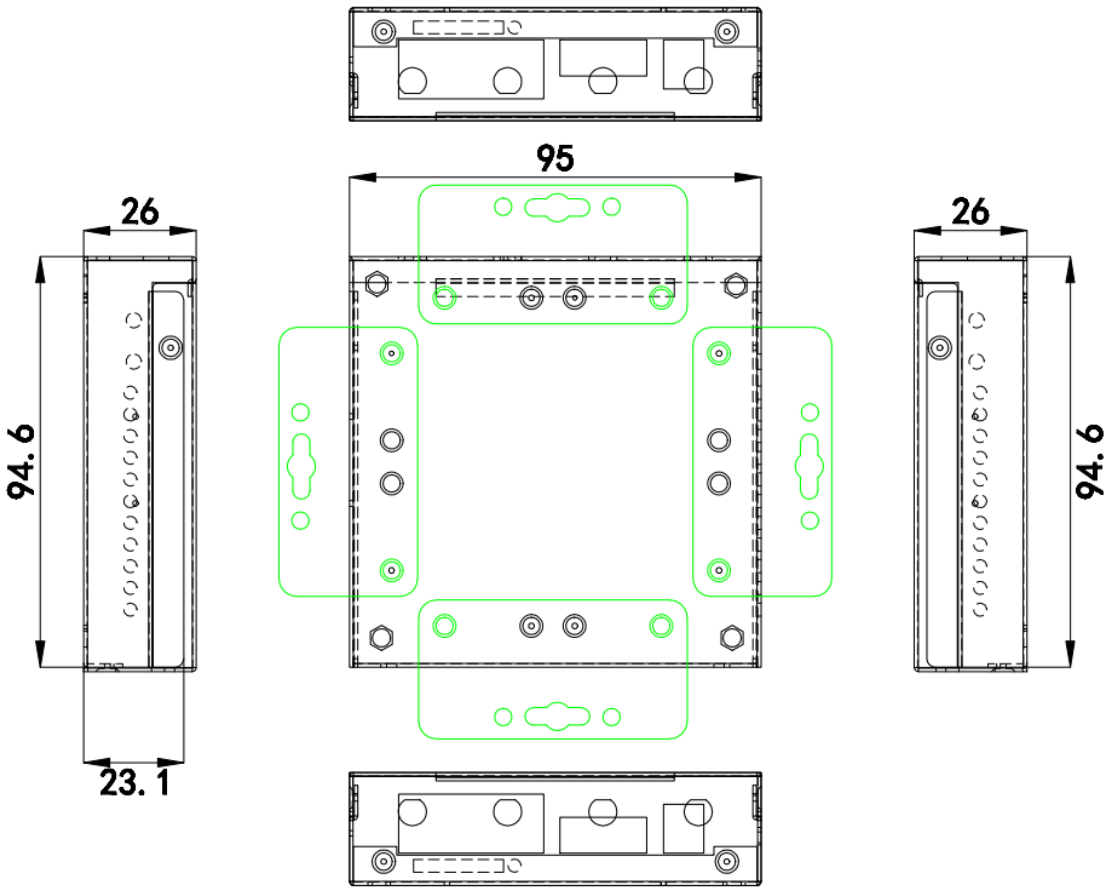
preventing lost in communication. All the Ethernet ports have built-in 1.5KV magnetic isolation protection and the SIM holder has built in 15KV ESD protection, the power Input has reverse-voltage and surge protection as well as lightning protection (optional) in the antenna connectors.

Easy to Use

UCY I2100 provides standard RS232/RS485, Ethernet, and Wi-Fi interfaces, which can make connections to a serial device, wired network device, and wireless devices via Wi-Fi. The wired WAN port supports standard PPPoE dialup protocol which can be directly connected to an ADSL modem or equipment. Furthermore, the UCY I2100 is a smart data terminal device that can enter the data transmission mode after power on. It also supports a powerful and comprehensive cloud management platform that make multi-device management easier and very convenient (optional feature). The UCY I2100 is easy to use, flexible, and support multiple working modes. It has convenient system configuration and system maintenance by local web access, remote access and cloud platform management.

Product Views

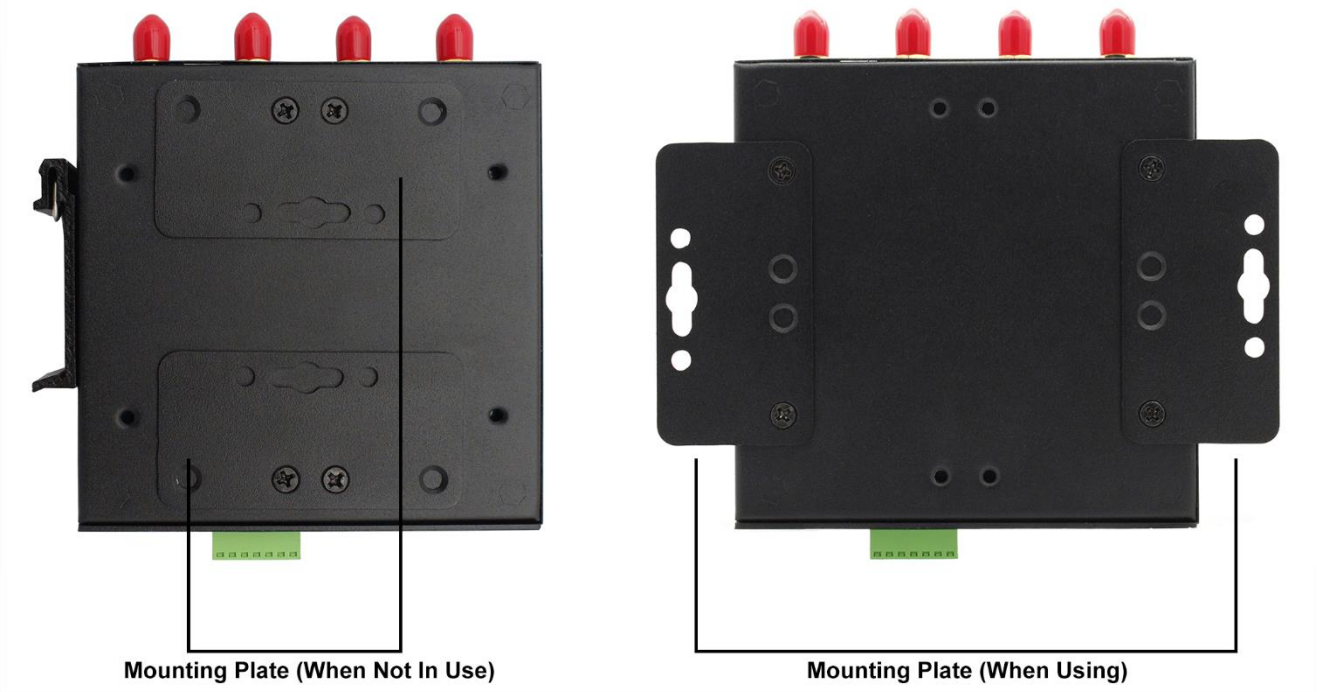
Product Size and Dimension



Interfaces and Indicators

1. 12V DC Power Input (Wide Voltage Input Range 6-36V)
2. Industrial Phoenix terminal (2.0mm Pitch)
3. RJ45 (LAN interface)
4. RJ45 (WAN interface)
5. Reset button (Press for 1 second to restart, long press for 5 seconds to restore factory settings)
6. WPS button
7. LED indicators
8. SIM card Slot (Drawer Type)
9. 4G antenna (Main)
10. 4G antenna (Auxiliary)
11. WIFI antenna

Mounting Options



LED Description

LED type	State	Description
PWR	Long bright	Normal power input
	No Light	Abnormal power input
SYS	Blinking Light	System startup
	Long bright	System exception
	No Light	System exception
WIFI	Long bright	WIFI On
	No Light	WIFI Off
	Blinking Light	Data In/Out
WAN	Long bright	Cable Connected
	No Light	Cable Not Connected
	Blinking Light	Data In/Out
LAN	Long bright	Cable Connected
	No Light	Cable Not Connected
	Blinking Light	Data In/Out
VPN	Long bright	VPN Connection Connected
	No Light	VPN Connection Disconnected
NET	Long bright	Internet Connected
	No Light	Internet Network Disconnected
SIM	Long bright	SIM Card Detected
	No Light	SIM Card Not Detected/Not Found
Signal	1 Bar	Signal Fair
	2 Bar	Signal Good
	3 Bar	Signal Excellent

Phoenix Terminal Block Pin Definition

Pin	Definition	Description
RXD/B-	Serial Port	RS232 or RS485 (Depend on Model)
TXD/A+	Serial Port	RS232 or RS485 (Depend on Model)
GND	Data Ground	RS232 has common ground, RS485 does not need to be connected
DO	GPIO	Output Only
DI	GPIO	Input Only
GND	Power Ground	Power Ground
VCC+	Power Supply	DC 6~36V Input

Quick Start

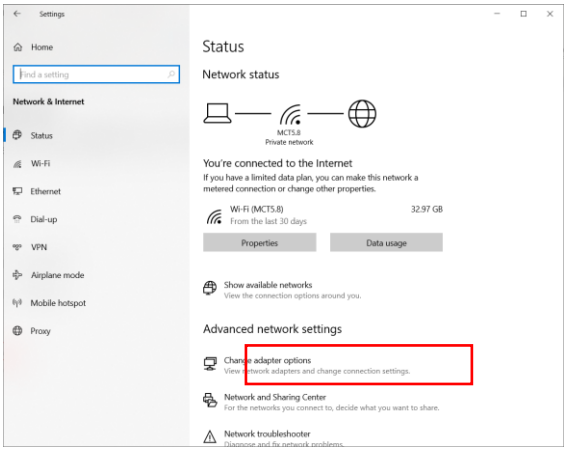
Mounting Accessories

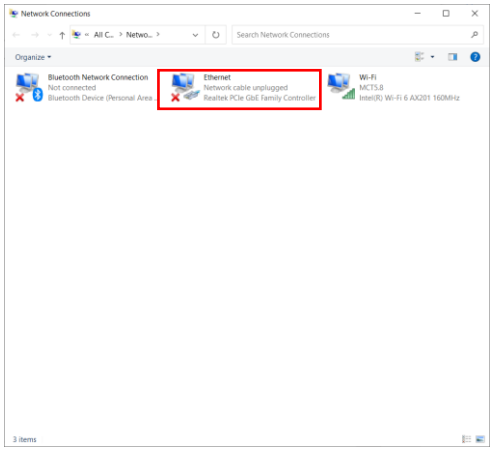
Put the WIFI antenna, 4G antenna, and SIM card into the designated position according to the interface, connect to the 6-36V DC power supply, observe the indicator light, after the sys light flashes, the router starts normally.

Note: Please do not remove or insert the SIM card with power on, otherwise the SIM card may be damaged.

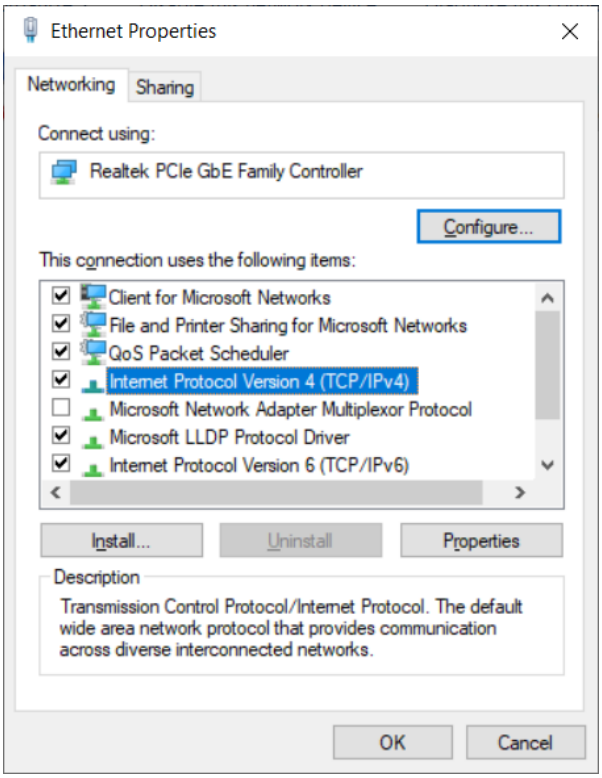
Connect to the Internet

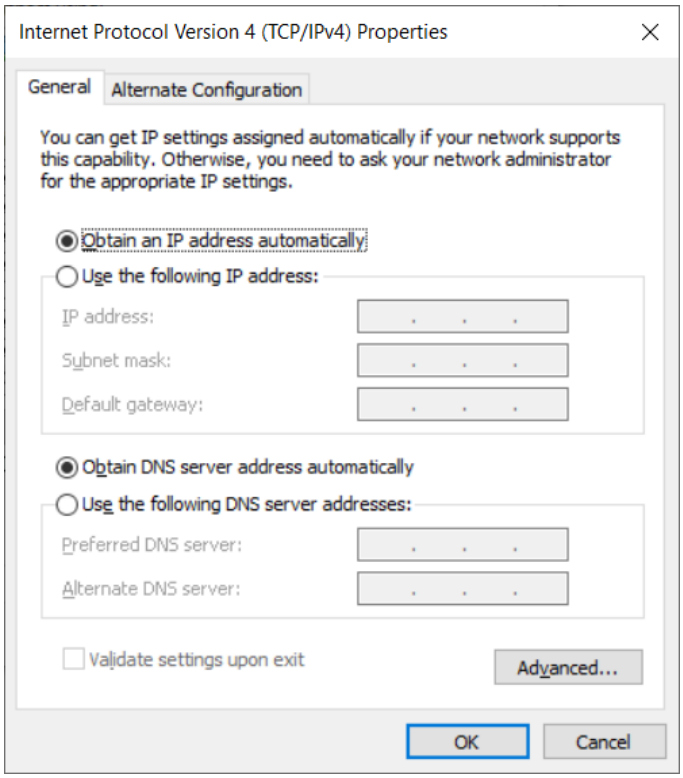
Correctly set your computer network configuration, now take win10 operating system as an example, use it to open "Settings\Network & Internet\Change Adapter Options" in Control Panel. Double-click the "Ethernet" connection icon.





In the pop-up dialog box, click "Properties", select "Internet Protocol Version 4 (TCP/IPv4)", and then click the "Properties" button; select “Obtain an IP address automatically”. After clicking OK to save, the computer will automatically obtain the IP address assigned by the router.


Ethernet Properties
Networking
Sharing
Connect using:
Realtek PCIe GbE Family Controller
Configure...
This connection uses the following items:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
QoS Packet Scheduler
Internet Protocol Version 4 (TCP/IPv4)
Microsoft Network Adapter Multiplexor Protocol
Microsoft LLDP Protocol Driver
Internet Protocol Version 6 (TCP/IPv6)
Install...
Uninstall
Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
OK
Cancel


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel


网络连接详细信息
网络连接详细信息(D):
属性
值
连接特定的 DNS 后缀
lan
描述
Realtek PCIe GbE Family Controller
物理地址
80-FA-5B-84-D4-FD
已启用 DHCP
是
IPv4 地址
192.168.99.245
Your computer IP Address
IPv4 子网掩码
255.255.255.0
获得租约的时间
2021年6月8日 16:08:15
租约过期的时间
2021年6月9日 4:08:15
IPv4 默认网关
192.168.99.1
The router IP Address
IPv4 DHCP 服务器
192.168.99.1
IPv4 DNS 服务器
192.168.99.1
IPv4 WINS 服务器
已启用 NetBIOS over Tc...
是
IPv6 地址
fd06:e67f:a6d0::894
获得租约的时间
2021年6月4日 15:43:26
租约过期的时间
2157年7月15日 22:41:39
fd3b:2f78:2053::894
获得租约的时间
2021年6月4日 15:52:41
关闭(C)

Login to the router

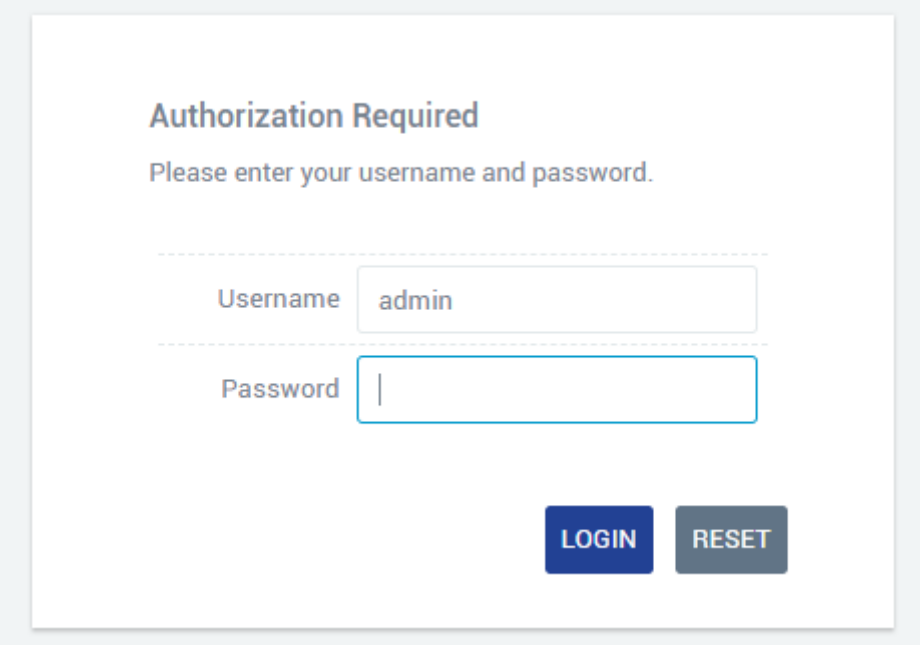
WebUI Login

Open a web browser, key in http://192.168.99.1 in the address bar and press Enter;

Default Username: admin

Default Password: admin

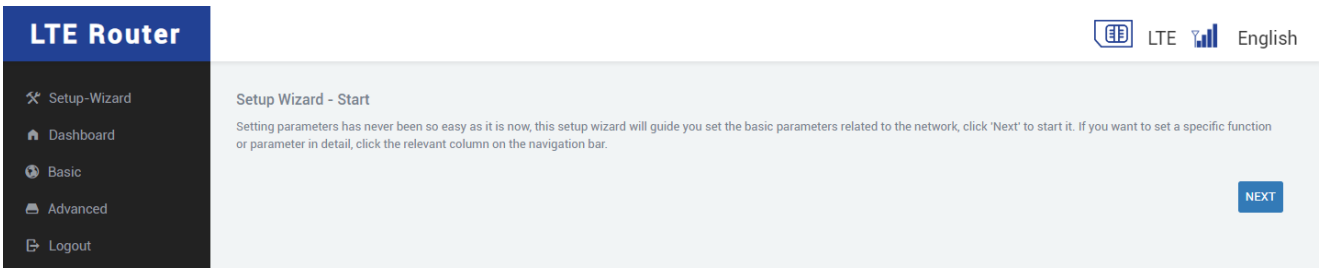
It is recommended to use Google Chrome or Mozilla Firefox browser.



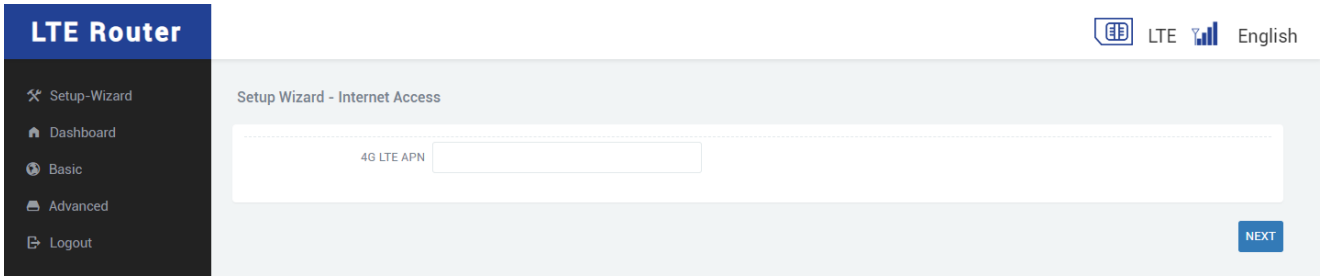
Note: For the first time, after the login page will see the setup wizard page. You can configure the router directly according to the setup wizard.

Setup Wizard

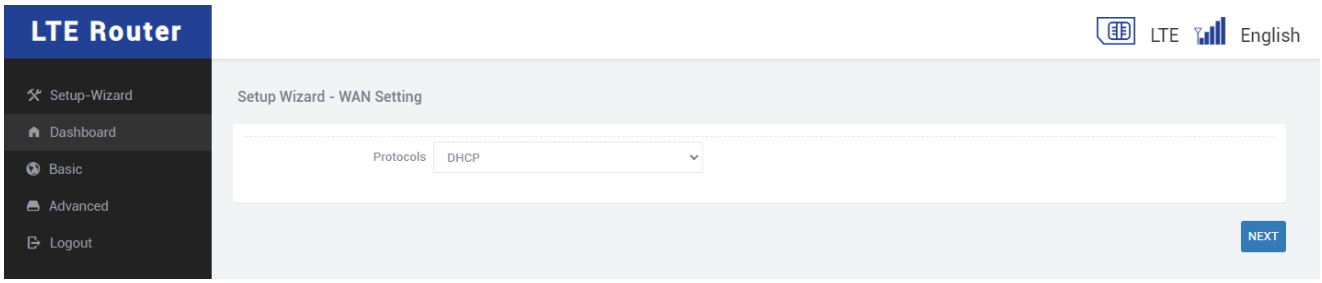
For the first time, after the login page will see the setup wizard page. You can configure the router directly according to the setup wizard.



Click Next to enter Quick Configuration - Mobile Network APN Settings, this page can set the APN.



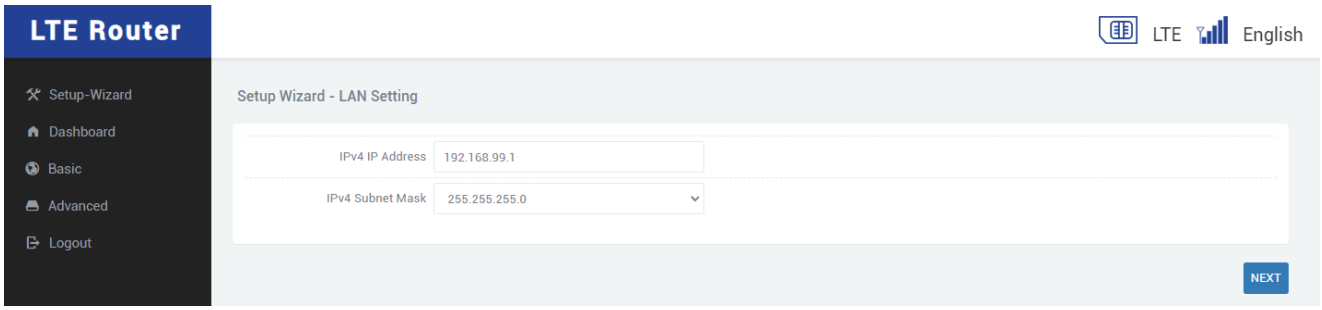
Click Next to enter the Quick Configuration - Wired WAN Configuration interface.



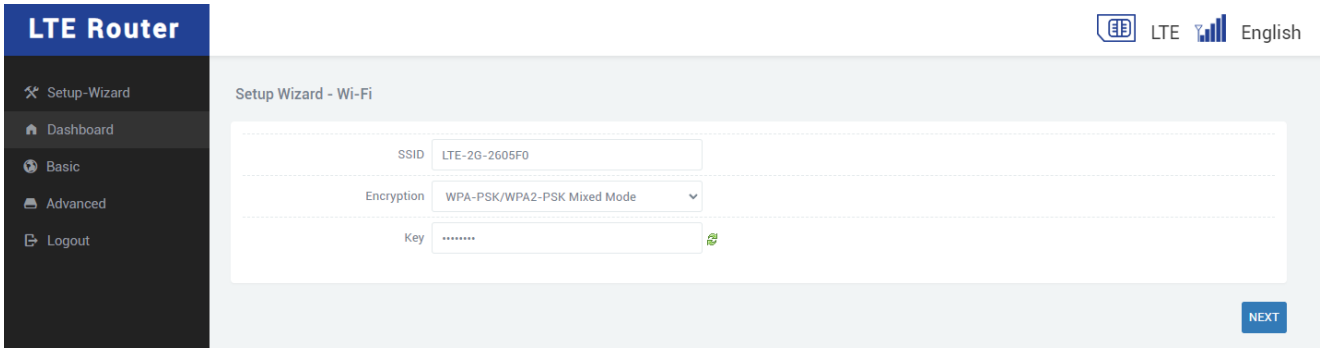
Configure WAN - description of the connection method:

WAN Setting	**Description**	**How to Set**
DHCP	When connected. Automatically obtain the IP address and subnet mask assigned by the server	No configuration
PPPoE	The router is connected to the optical fiber/Cable, and the account and password provided by the operator are used to dial up the Internet	Setup access username and password
STATIC	Manually assign IP address and subnet mask	Setup IP address, Subnet Mask, Gateway, and DNS.

Click Next to enter the Quick Configuration - Local Address Configuration interface, where you can modify the local IP address and subnet mask.

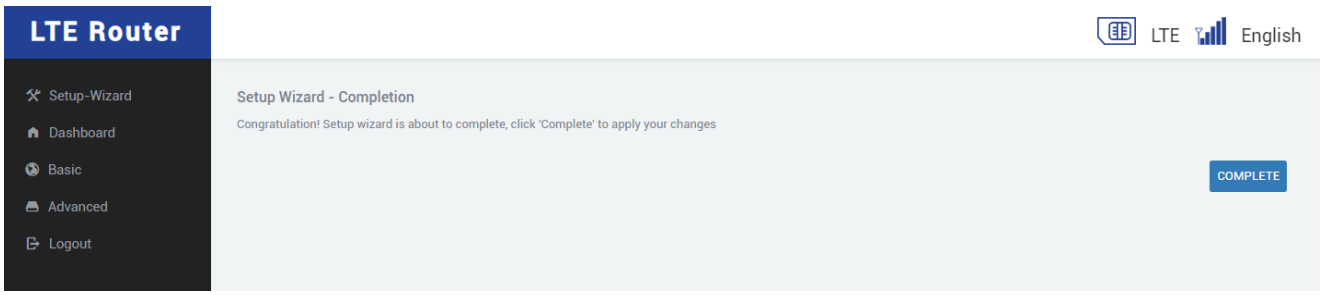


Click Next to enter the quick configuration-WI-FI configuration interface.



WIFI Setting	**Description**	**How to Set**
WIFI Name	WIFI SSID Name	You can fill in any name you like
Encryption	WIFI Encryption Method	Click the drop-down box, there are 4 encryption methods for you to choose, of which None means no encryption, any client can directly connect to the WIFI
Password	Other than None option, a password is required for WIFI encryption methods	You can fill in a password of 8~64 digits

Click Next to enter the Quick Configuration-Complete interface

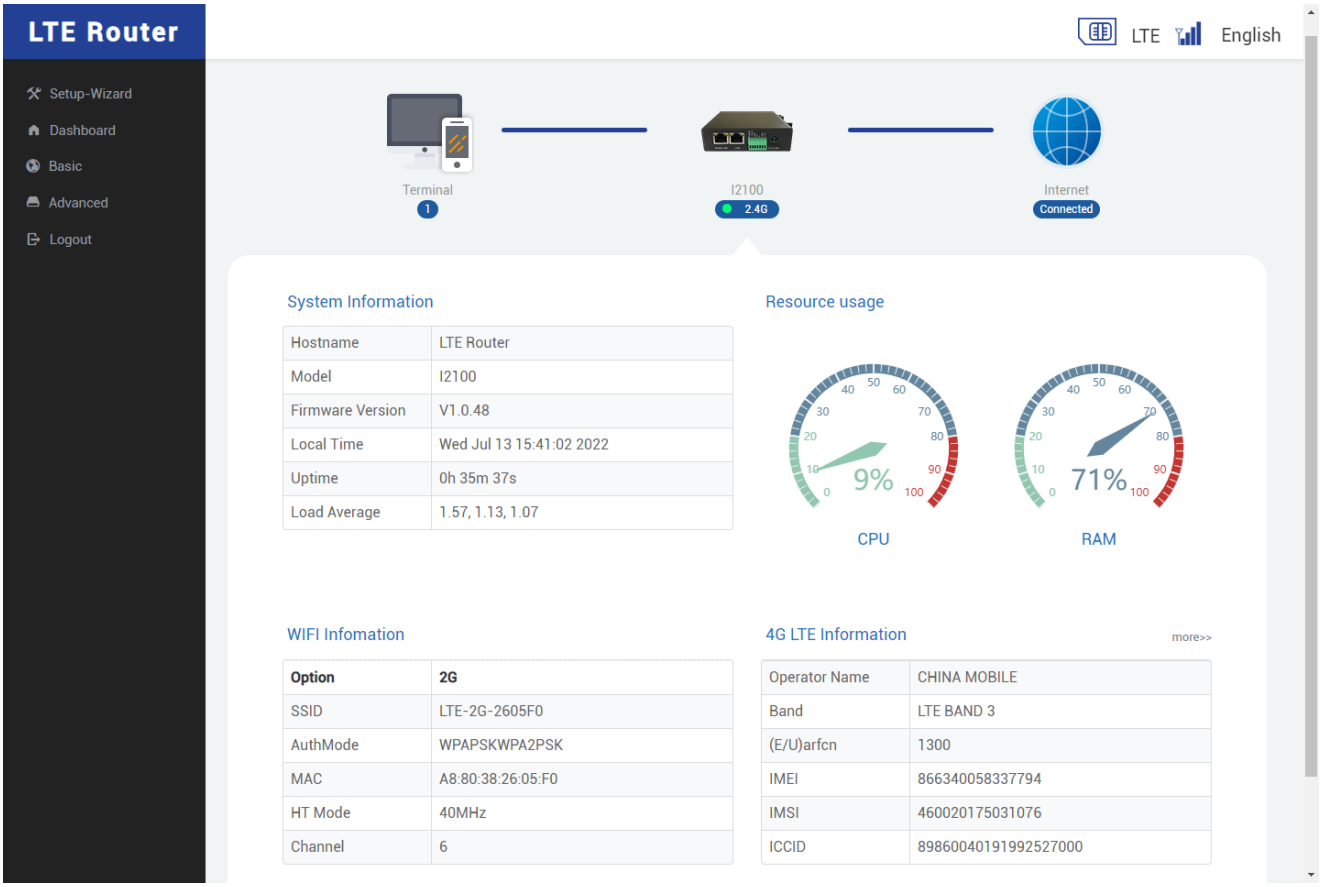


Click Finish and Configure to complete and apply.

Function introduction

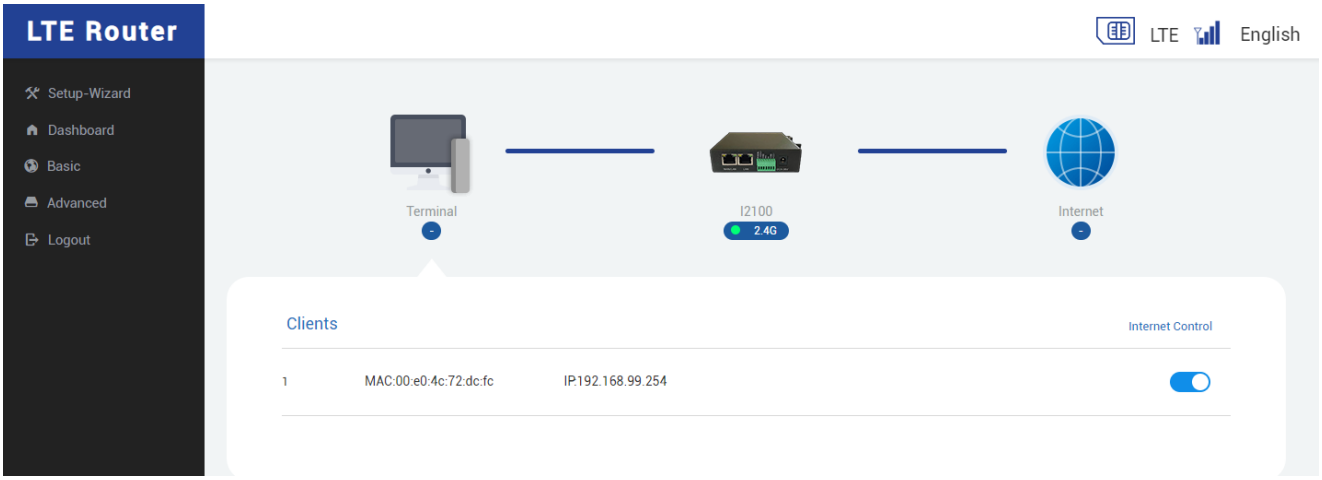
Device Status – Dashboard

Through the status page (Dashboard), you can see the router's version number, 4G information, Wi-Fi information, network connection and other basic information.



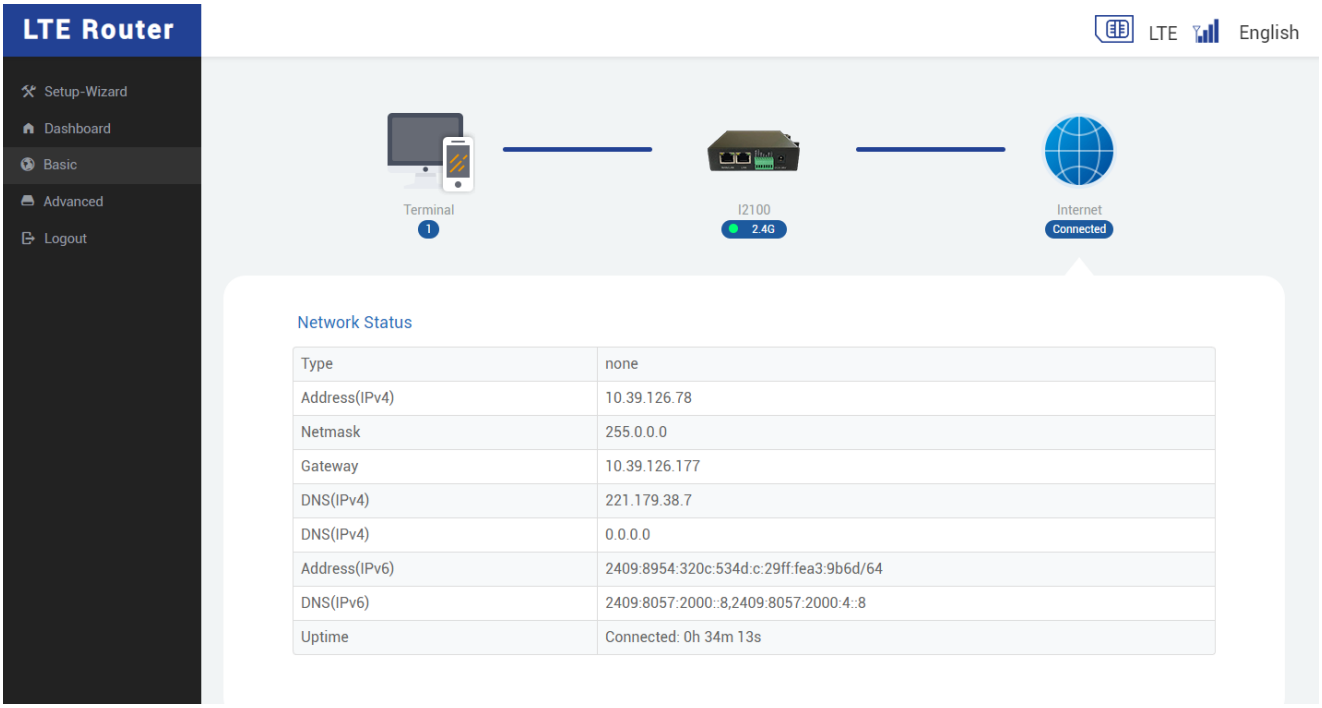
Device Status – User Connection

By clicking the computer icon on the upper left, you can enter the user management page, where you can view the user's connection status and manage the user's Internet access.



Device Status – Internet Connection

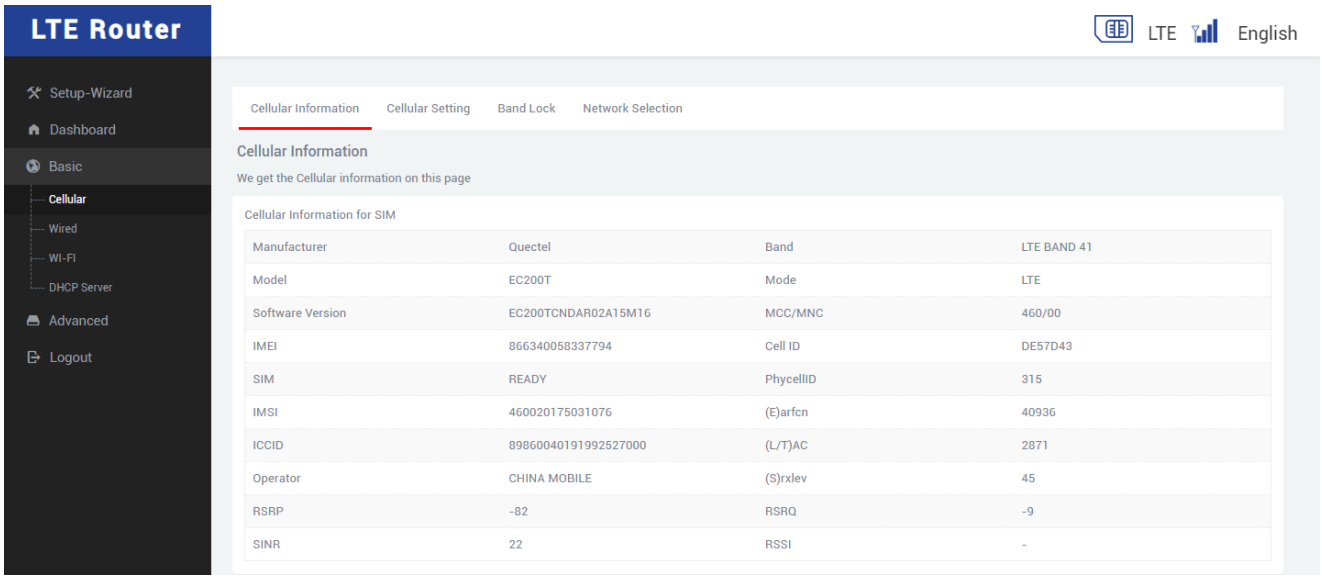
By clicking the globe icon on the upper right, you can enter the page to view the dial-up, relay, and network connections.



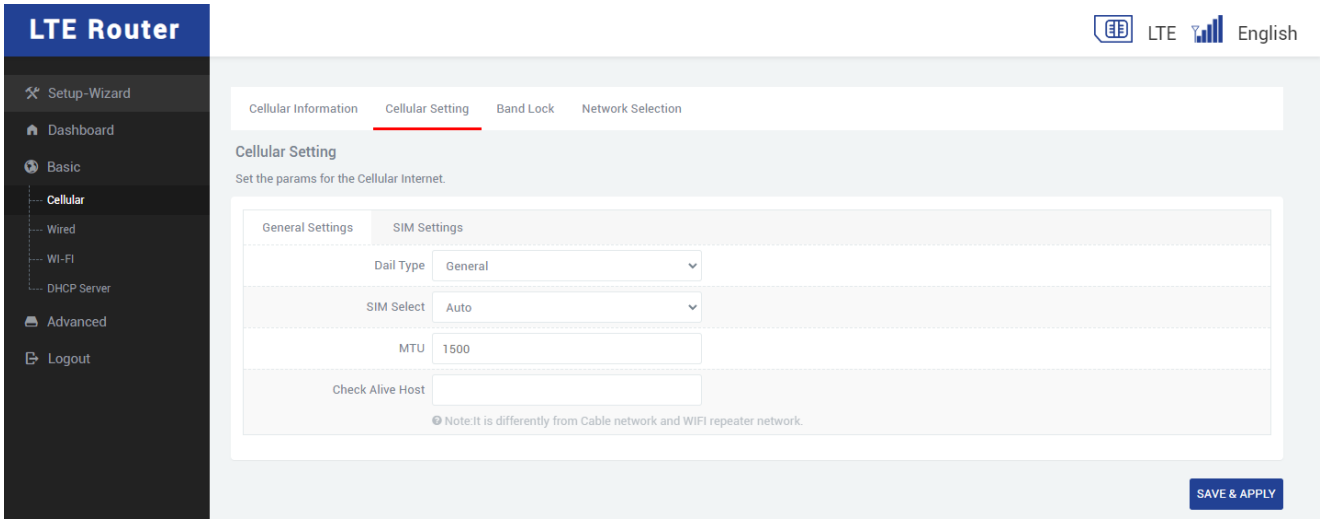
Common Settings - Cellular Network

Cellular network contains information about mobile network and settings of mobile network.

Cellular – Cellular Information



Cellular – Cellular Setting

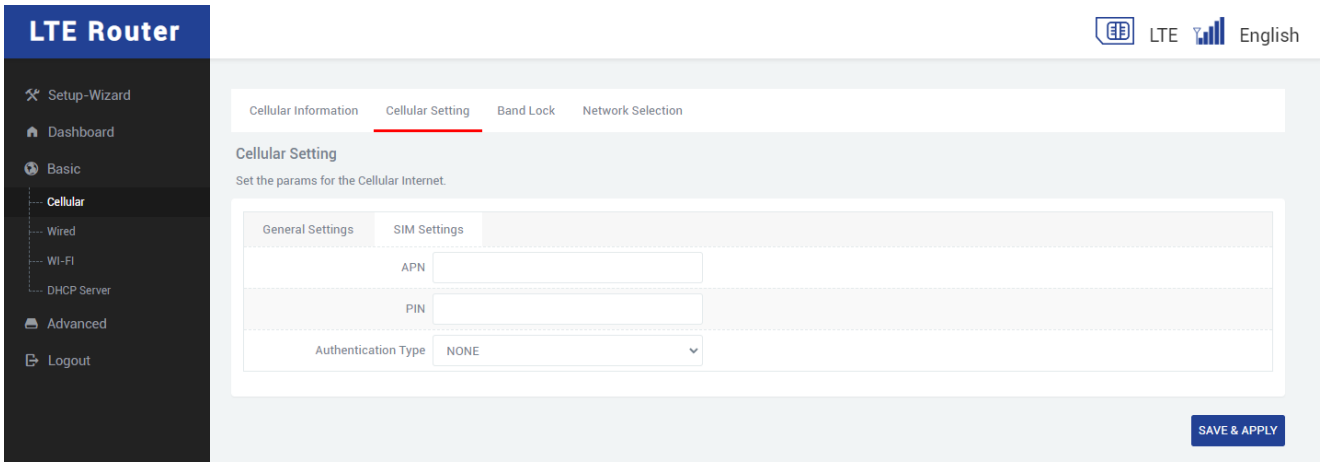


Configure mobile network - basic settings parameter description:

Cellular Setting	Description	How to Set
Dial Type	You can choose different dial-up methods to access the Internet	Click the drop-down box to select

SIM Select	Dual-card routers can choose which card to use for dial-up Internet access	I2100 Does not support Dual SIM Card, so only option is Auto
MTU	The maximum transmission unit is used to notify the other party of the maximum size of the data service unit that can be accepted.	
Check Alive Host	Fill in the destination address of the Ping packet to keep the cellular network online	Fill in the IP that can be pinged

Cellular – SIM Setting

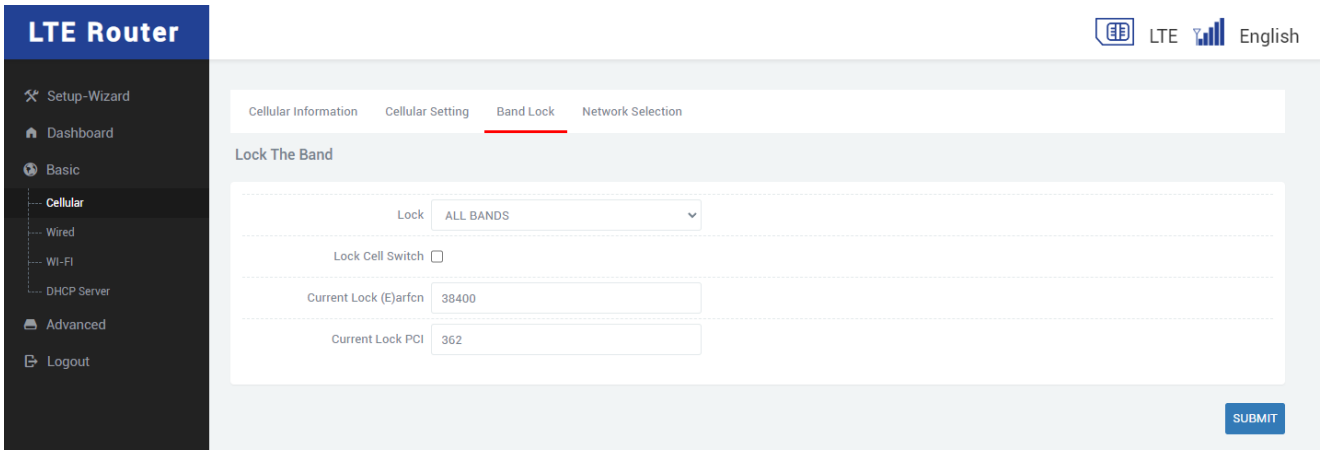


Configure APN settings for the SIM card and the Cellular Network.

Cellular Setting	**Description**	**How to Set**
APN	Set APN (Access Point Name) of the gateway operator.	Fill in APN of the SIM card's service name.
PIN	Fill in SIM pin if any. Leave blank for no SIM pin.	Fill in SIM Pin if required
Authentication Type	Authentication method for the APN Configuration. None, PAP, CHAP. Default is None.	Click the drop-down box to select

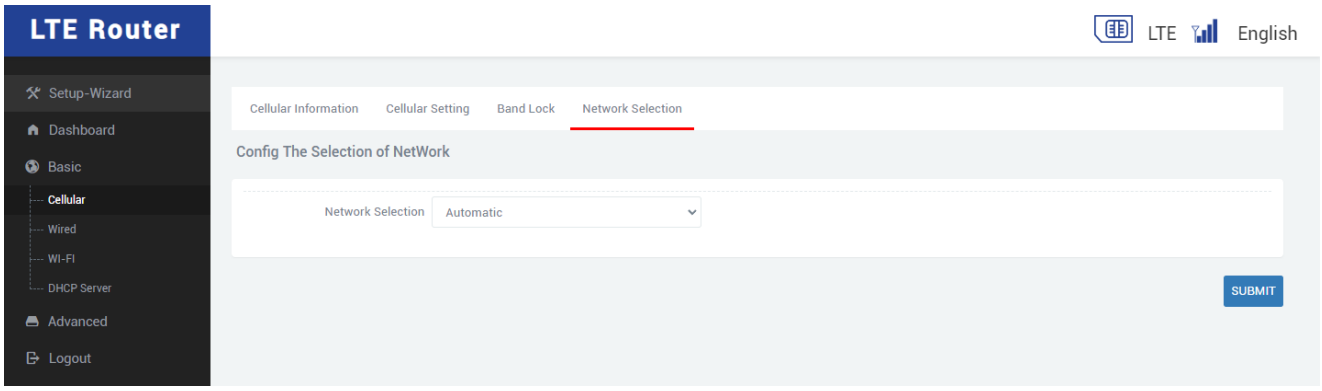
Cellular – Band Lock

In this section, you can lock the cellular network module frequency band. After locking the frequency band, restart the router is required. The router will automatically dial and connect to the network of the selected frequency band.



Cellular – Network Selection

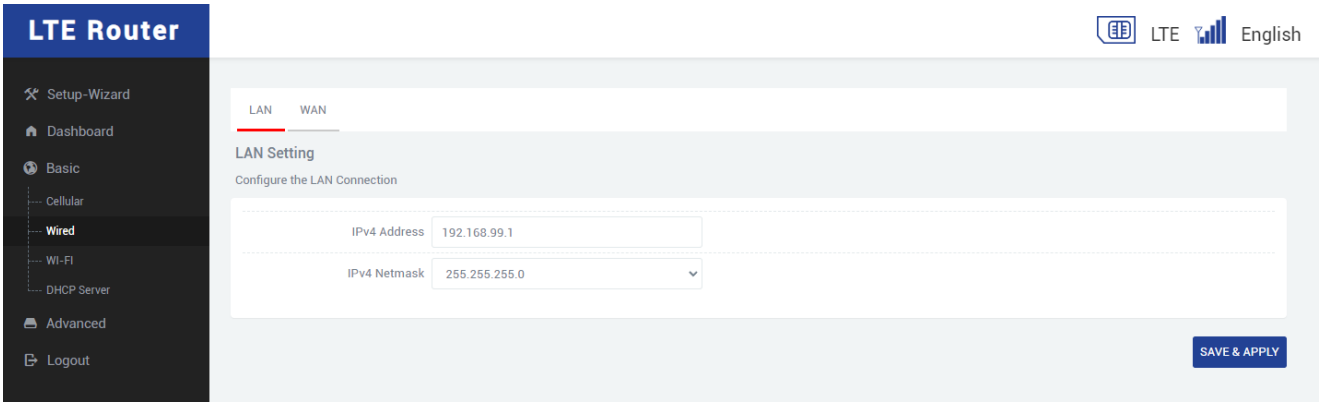
In this section, you can select the dialing method, such as Auto, GSM, WCDMA, LTE, etc.



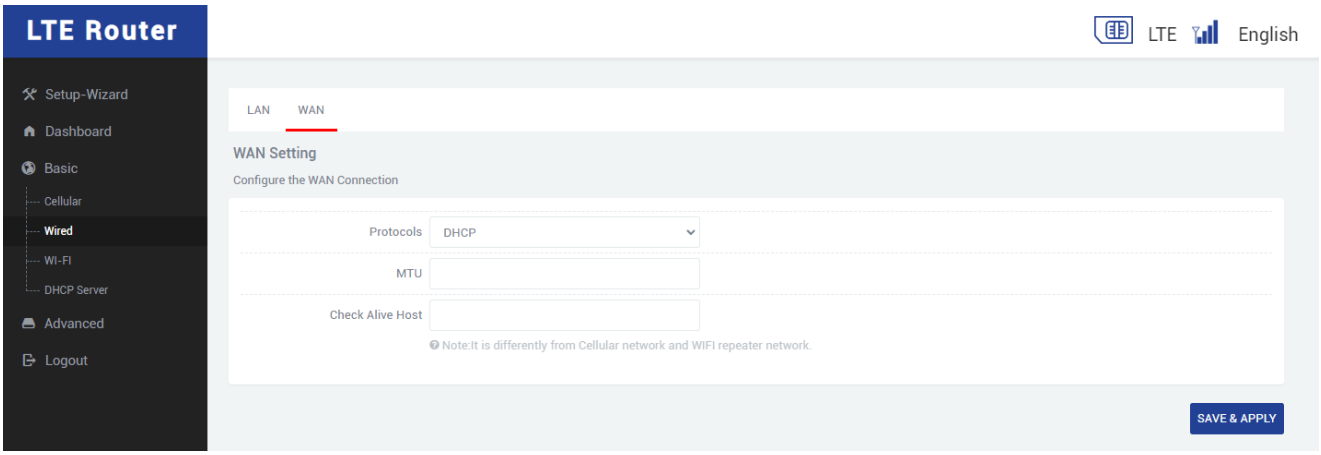
Common Settings - Wired Network

The wired network can set the WAN port and LAN port of the router.

LAN



WAN



Configure wired WAN network - basic settings parameter description:

WAN Setting	Description	How to Set
Protocols	You can choose different dial-up methods to access the Internet	Click the drop-down box to select
MTU	The maximum transmission unit is used to notify the other party of the maximum size of the data service unit that can be accepted.	Leave Blank by Default

Check Alive Host	Fill in the destination address of the Ping packet to keep the cellular network online	Fill in the IP that can be pinged

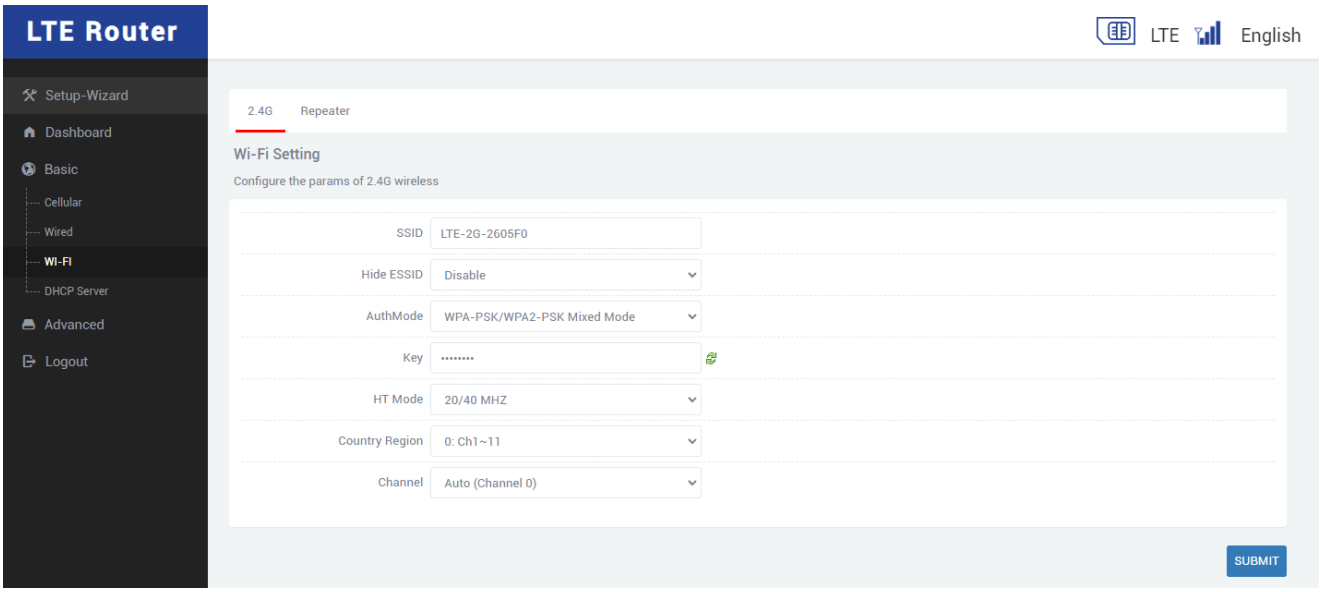
Configure wired WAN network - description of the connection methods (Protocols):

WAN Protocol Option	**Description**	**How to Set**
DHCP	When connected. Automatically obtain the IP address and subnet mask assigned by the server	No configuration
PPPoE	The router is connected to the optical fiber/Cable, and the account and password provided by the operator are used to dial up the Internet	Setup access username and password
STATIC	Manually assign IP address and subnet mask	Setup IP address, Subnet Mask, Gateway, and DNS.

Common Settings – Wireless

Wireless network can set WIFI name, encryption, channel and other common parameters. Also, WIFI can be setup as a WIFI relay for the router.

2.4GHz WIFI Setting



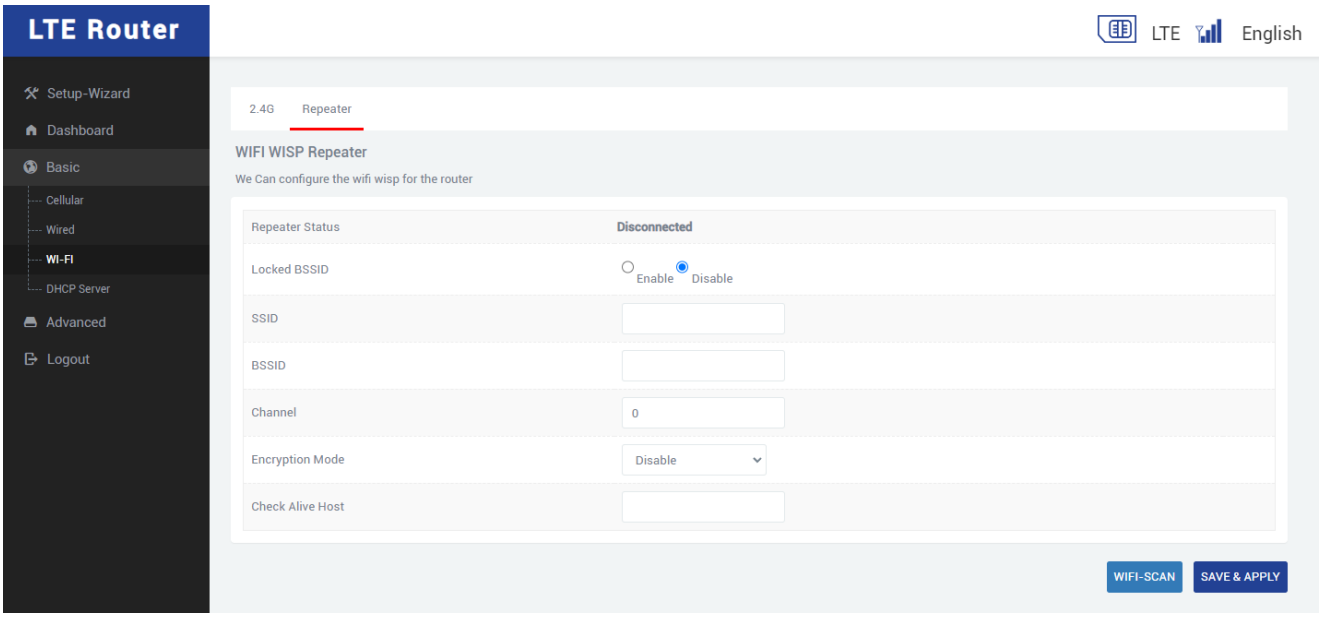
Configure Wireless network (WIFI) - basic settings parameter description:

WIFI Setting	**Description**	**How to Set**
SSID	WIFI Name, WIFI SSID	You can fill in any name you like
Hide Name	Make SSID invisible to users	Click the drop-down box to select Disable or Enable. Disable by Default
AuthMode	WIFI Encryption Method	Click the drop-down box, there are 4 encryption methods for you to choose, of which None means no encryption, any client can directly connect to the WIFI
Key	Other than None encryption, a password is required to connect to this WIFI	You can fill in a password of 8~64 digits
HT Mode	The amount of data that can be transferred at a fixed time	Click the drop-down box to select
Country Region	Compliant with a country's Wi-Fi regulations	Click the drop-down box to select

Channel	Data signal transmission channel from 1 to 13	Click the drop-down box to select

Repeater Setting

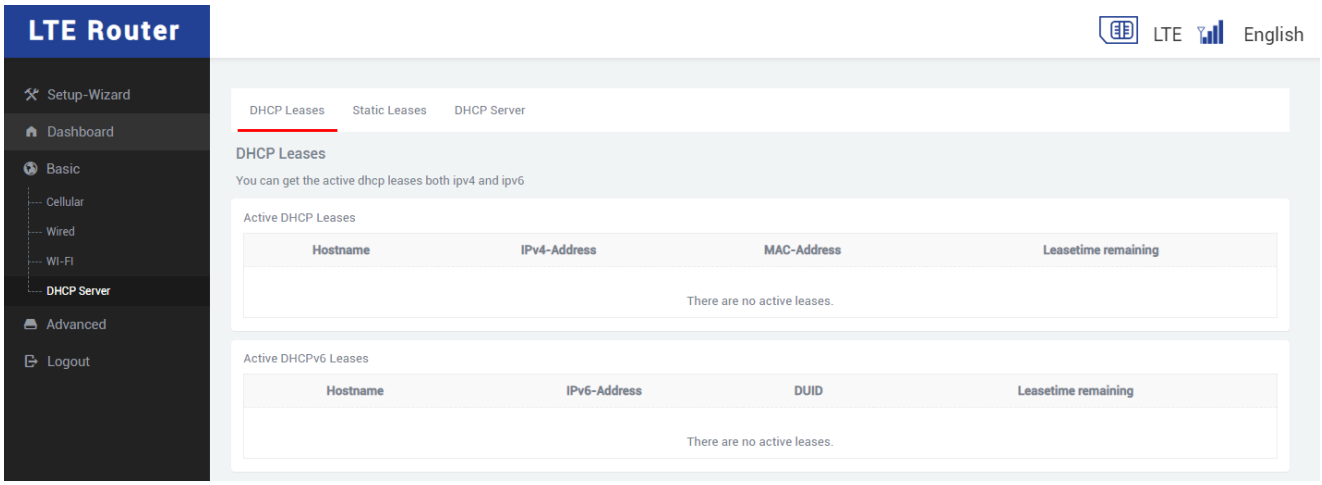
Wireless Setting has the Repeater setting option to setup the device to work as WIFI relay that extend WIFI Radio and WIFI coverage.



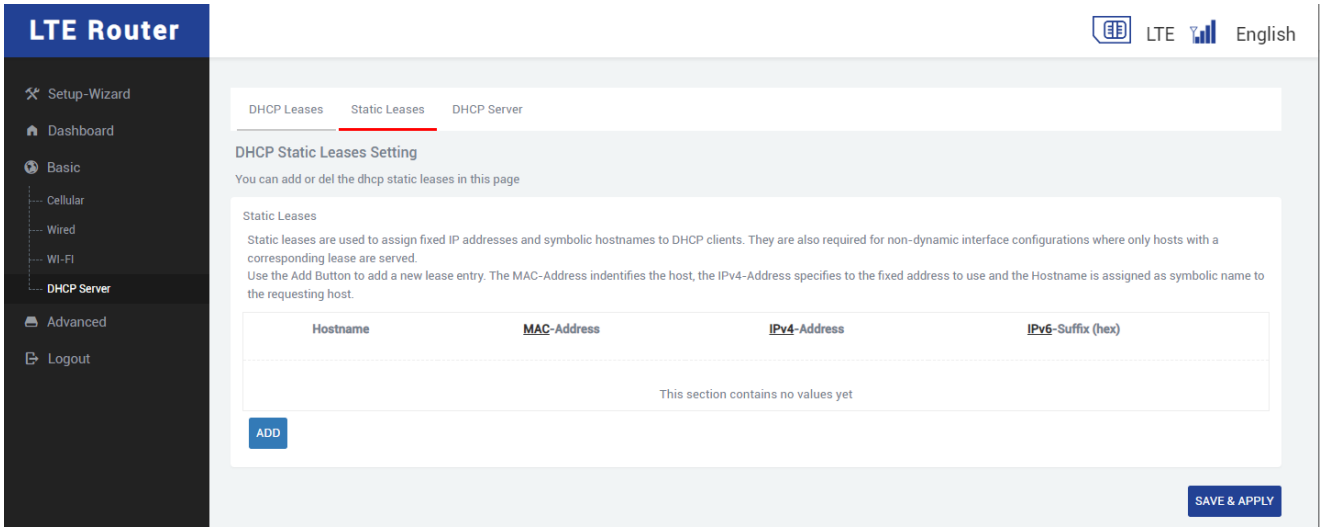
Common Settings – DHCP Server

In the DHCP server configuration, you can do the IP address and MAC address binding. You can also set the DHCP allocation method. Since the settings on this page may affect the Internet access, it is recommended that to get someone with computer network knowledge to do the setup.

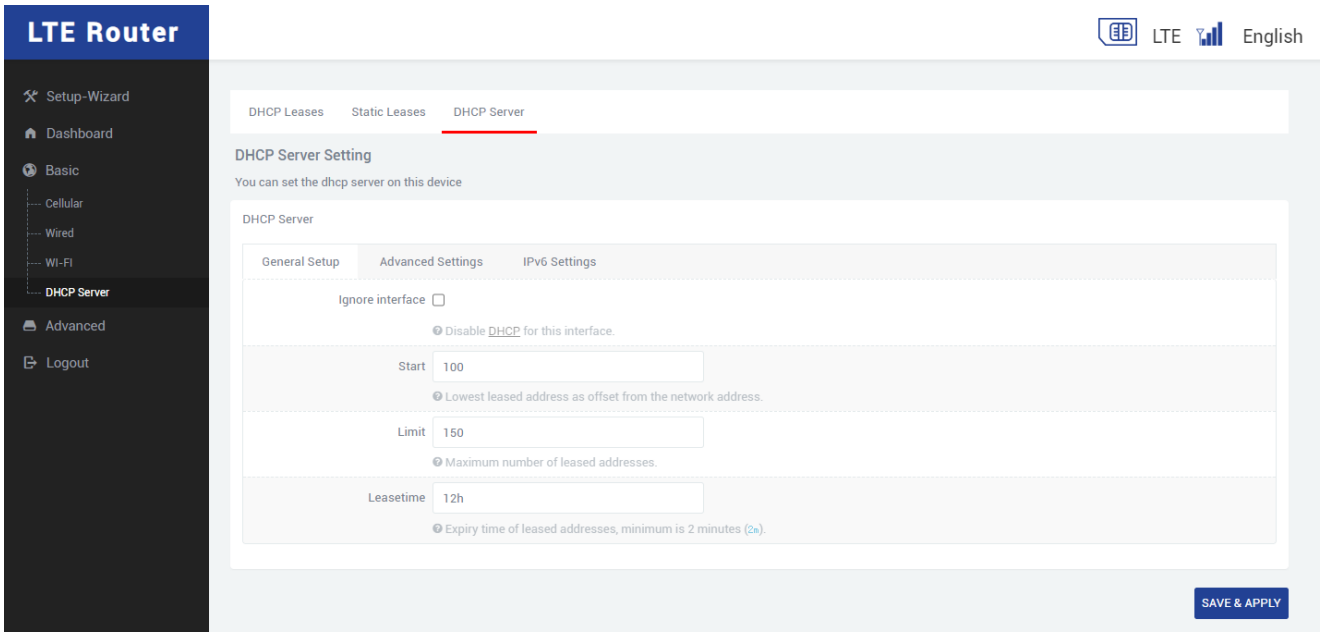
DHCP Leases



Static Leases

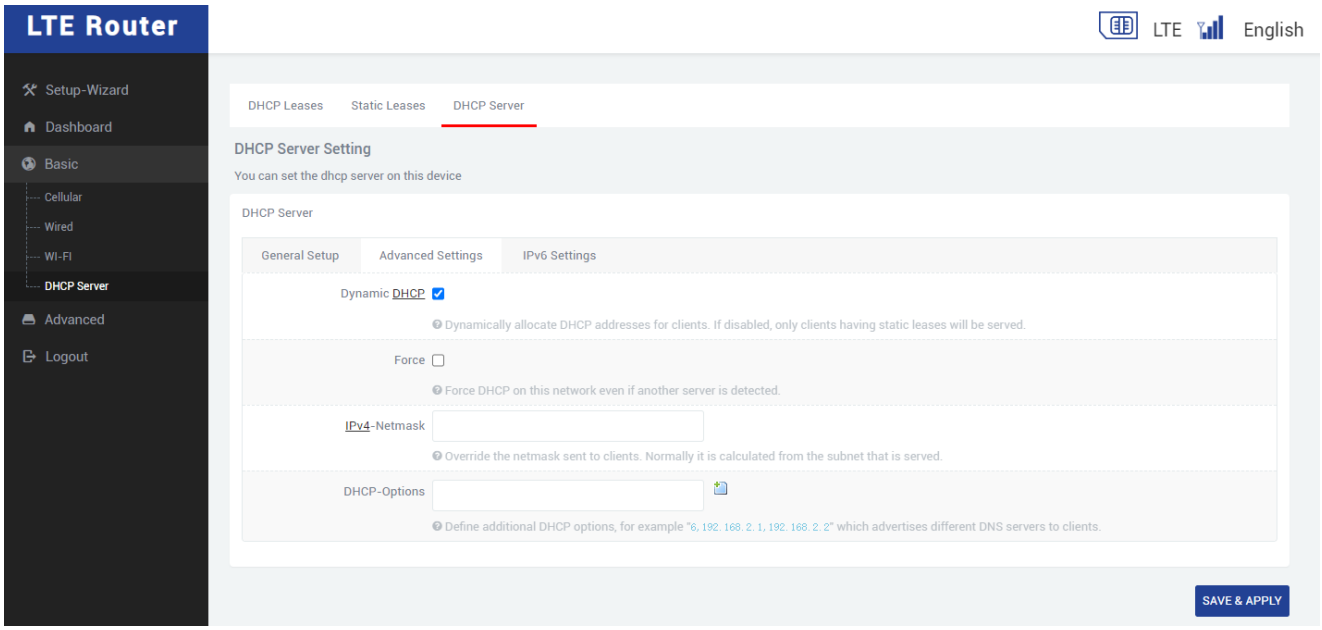


DHCP Server – General Setup



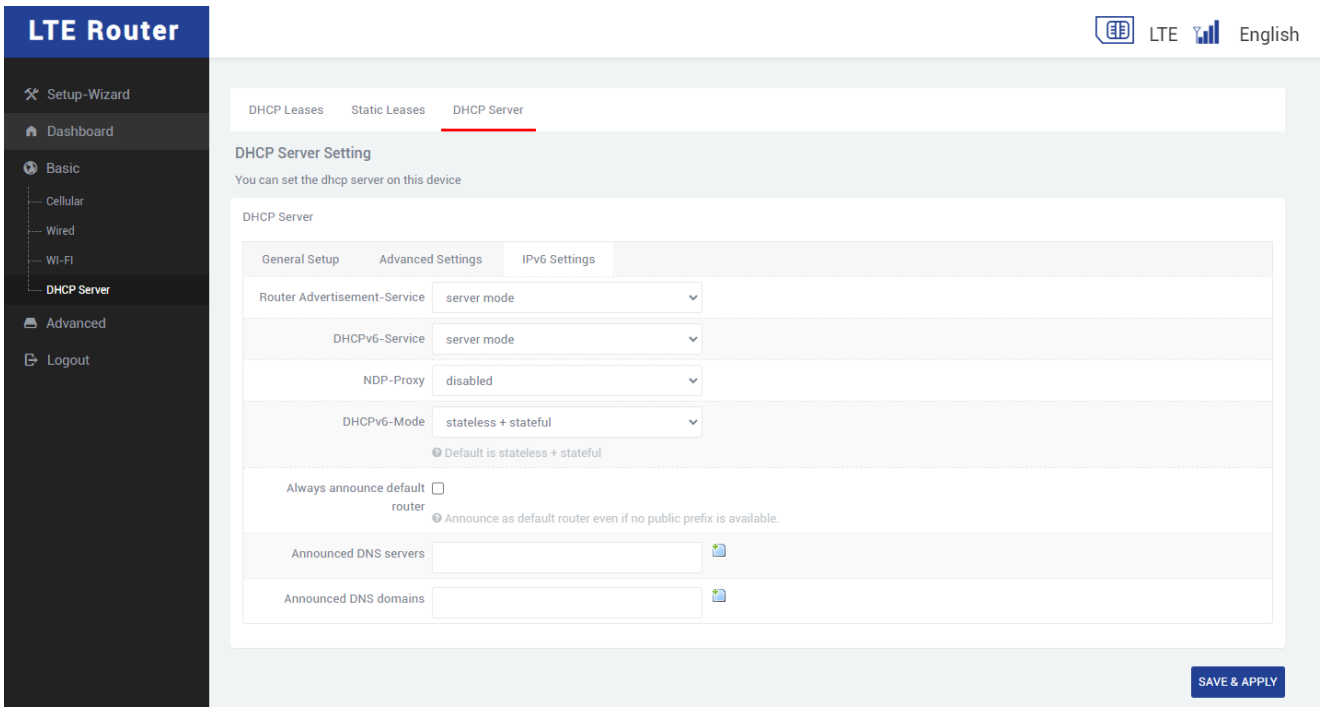
DHCP Server Setting	Description	How to Set
Ignore Interface	Enable or Disable DHCP for this Interface	Enable or Disable the Tick box option
Start	Lowest leased address as offset from the network address	Set according to the specific application
Limit	Maximum number of leased addresses	Set according to the specific application
Leasetime	Expiry time of leased addresses, minimum is 2 minutes	Set according to the specific application

DHCP Server – Advanced Settings



Advanced Setting	Description	How to Set
Dynamic DHCP	Dynamically allocate DHCP addresses for clients. If disabled, only clients having static leases will be served.	Enable or Disable the Tick box option
Force	Force DHCP on this network event if another server is detected.	Enable or Disable the Tick box option
IPv4 Netmask	Override the netmask sent to clients. Normally it is calculated from the subnet that is served.	Set according to the specific application
DHCP Options	Define additional DHCP options, For example “6, 192.168.2.1, 192.168.2.2” which advertises different DNS servers to clients	Set according to the specific application

DHCP Server – IPv6 Settings



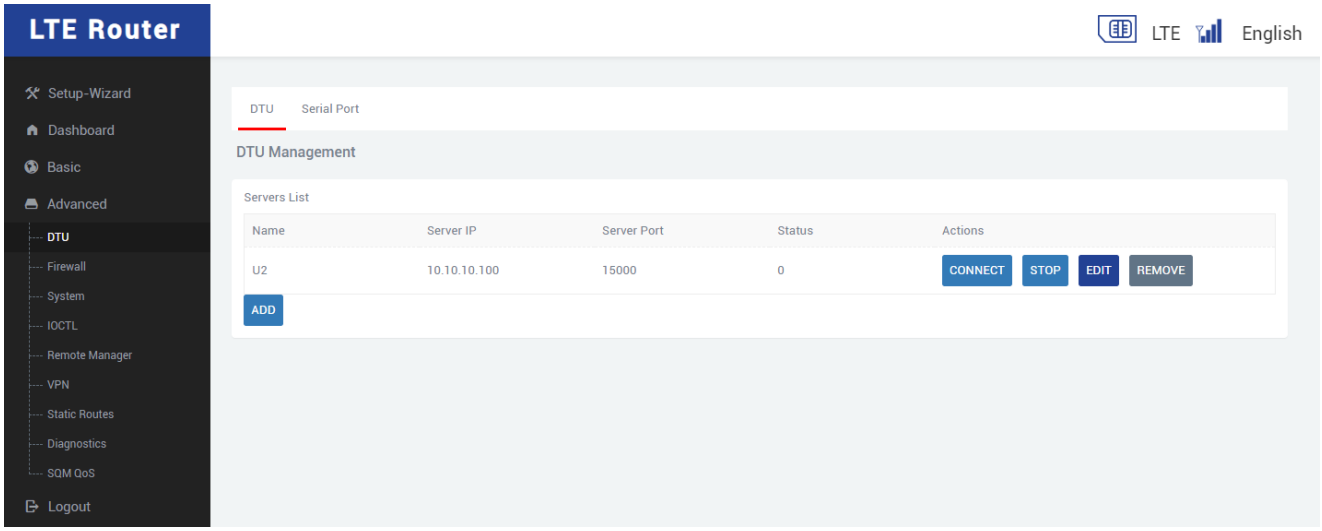
IPv6 Setting	**Description**	**How to Set**
Router Advertisement Service	Default Server Mode	Click the drop-down box to select
DHCPv6 Service	Default Server Mode	Click the drop-down box to select
NDP-Proxy	Default Disabled	Click the drop-down box to select
DHCPv6 Mode	Default is Stateless + Stateful	Click the drop-down box to select
Always Announce Default Router	Announce as default router even if no public prefix is available	Enable or Disable the Tick box option
Announced DNS Servers		If any
Announced DNS Domains		If any

Advanced Settings

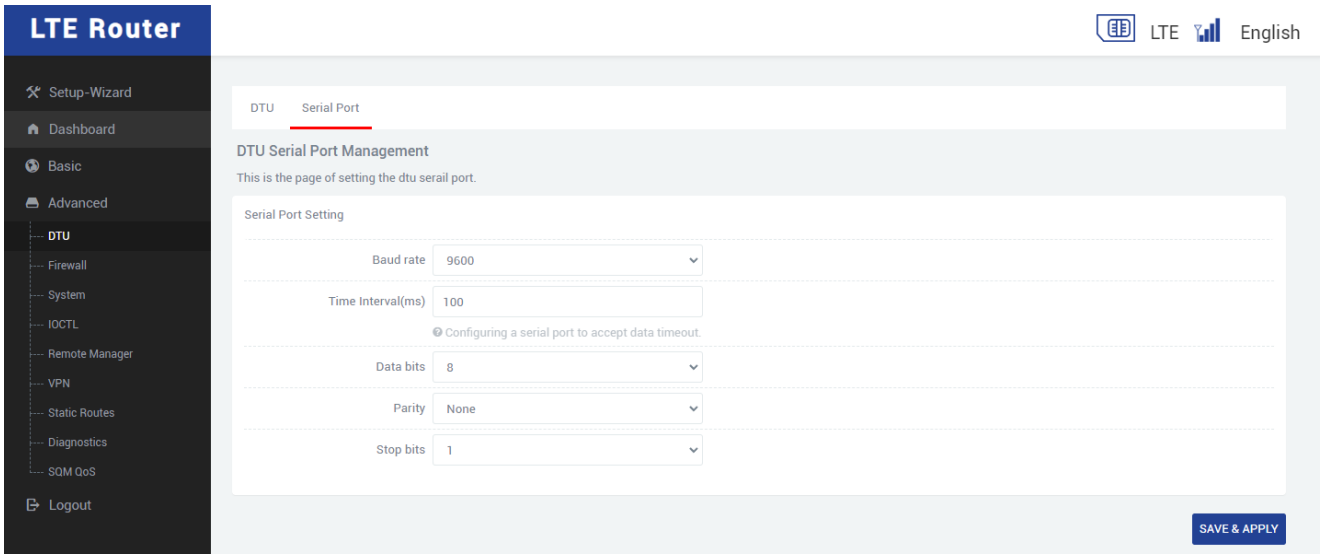
In the advanced settings, you can perform various advanced configurations to the router, such as firewall, port mapping, language setting, time zone, TR069, firmware upgrade, etc.

Advanced Settings – DTU

DTU Management



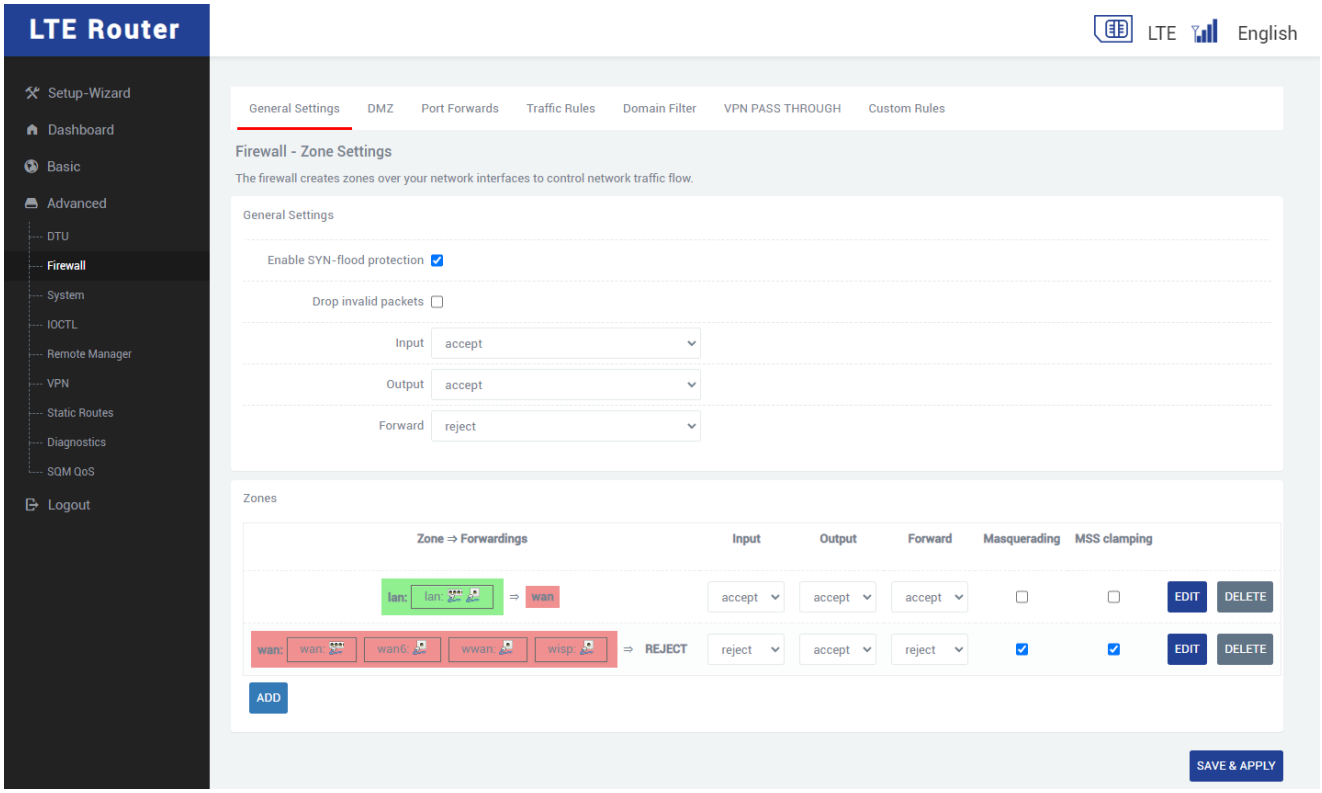
Serial Port



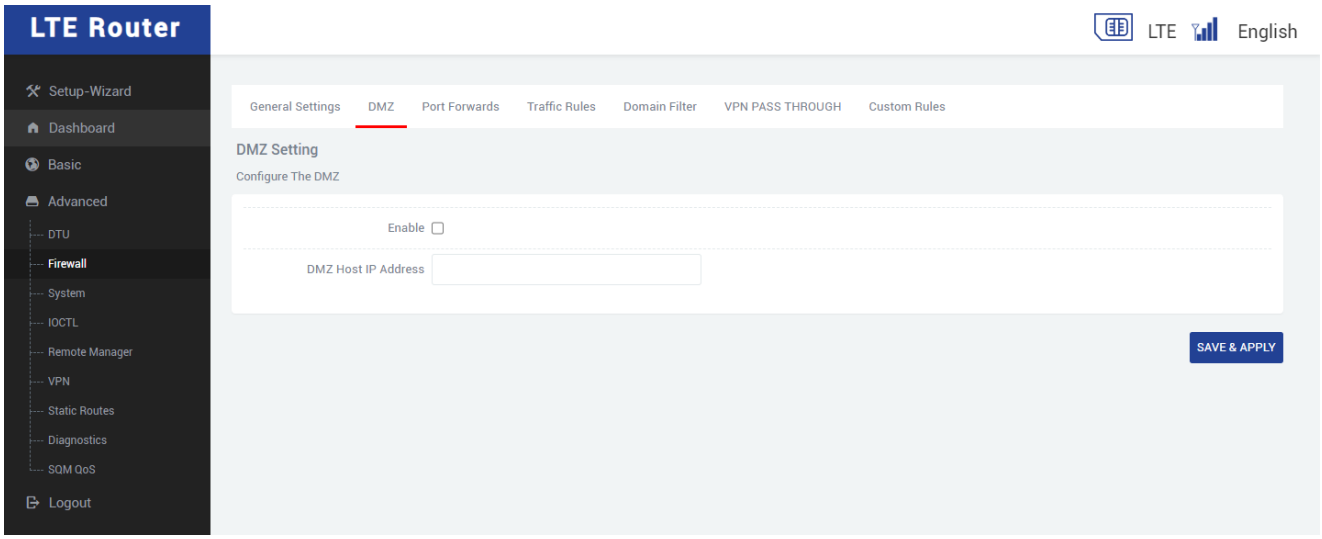
Advanced Settings – Firewall

You can set the firewall rules of the router. Since the settings on this page may affect the Internet access, it is recommended that to get someone with computer network knowledge to do the setup.

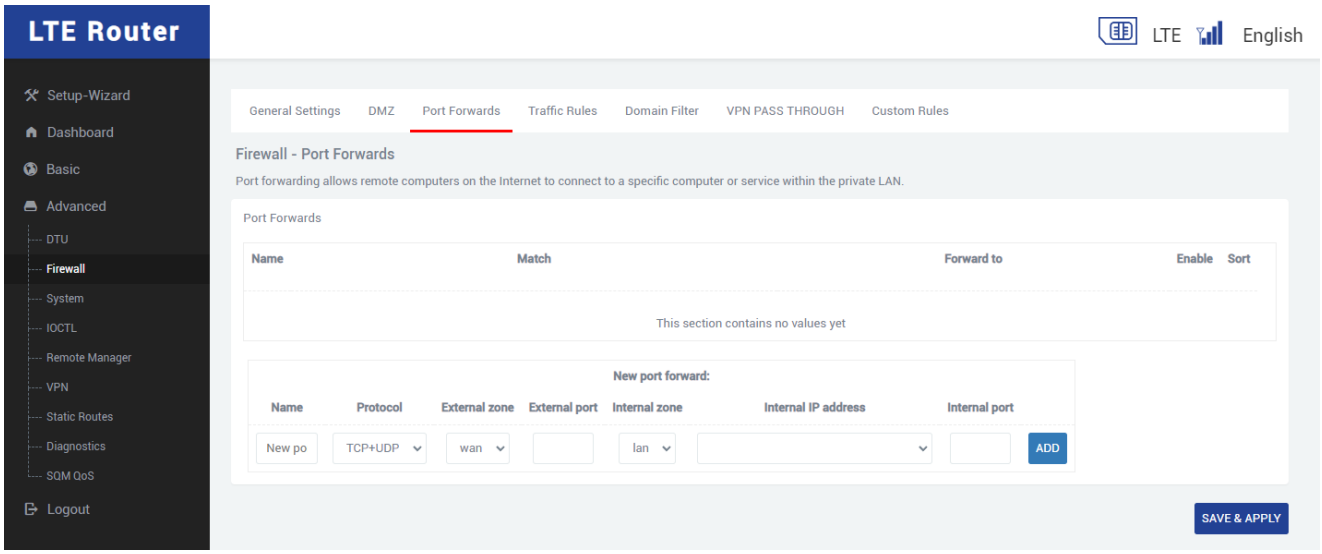
General Settings



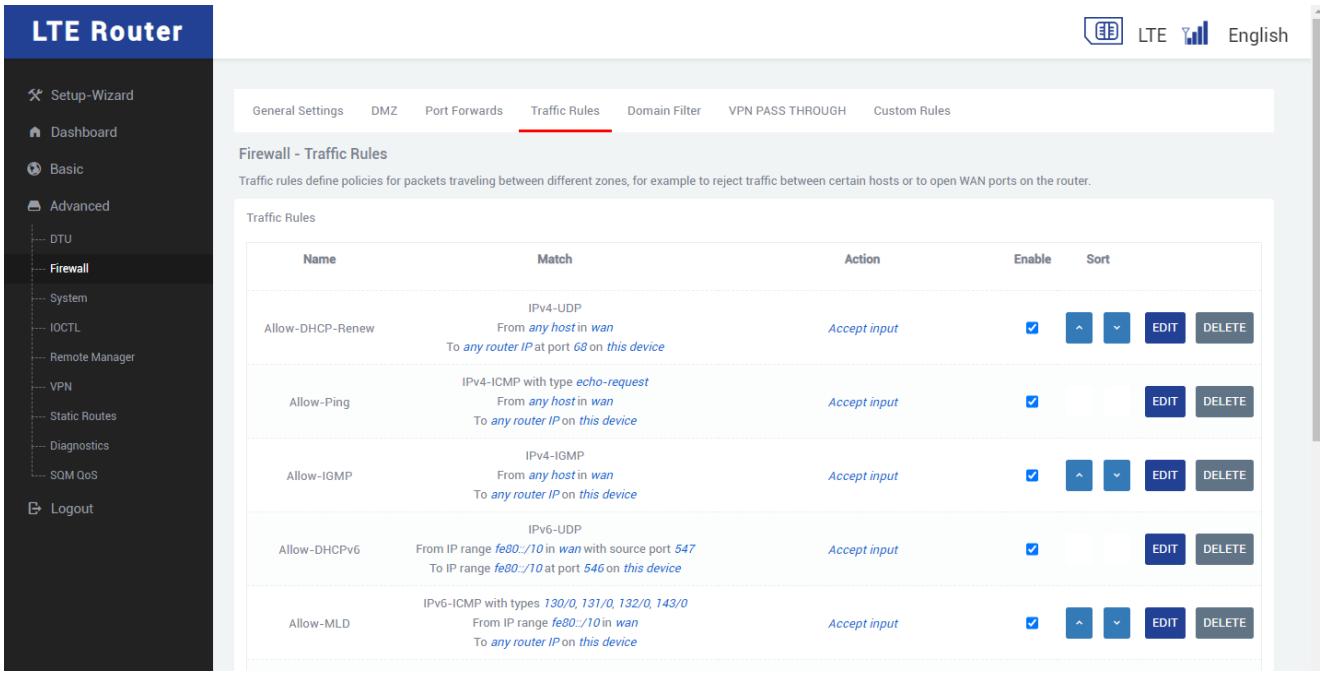
DMZ



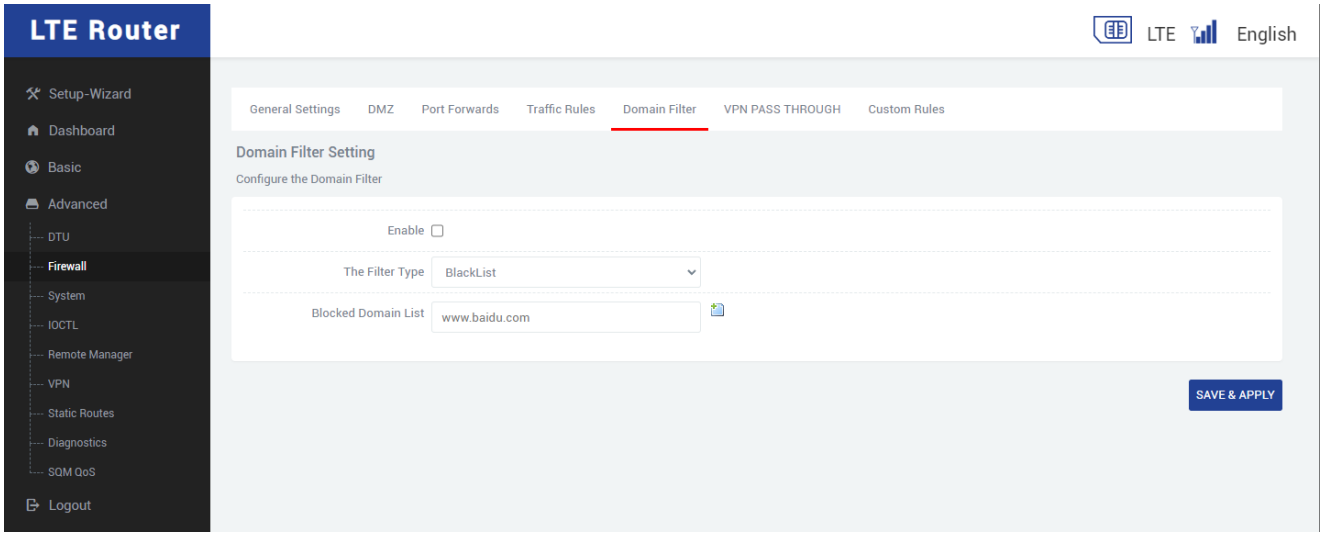
Port Forwarding



Traffic Rules

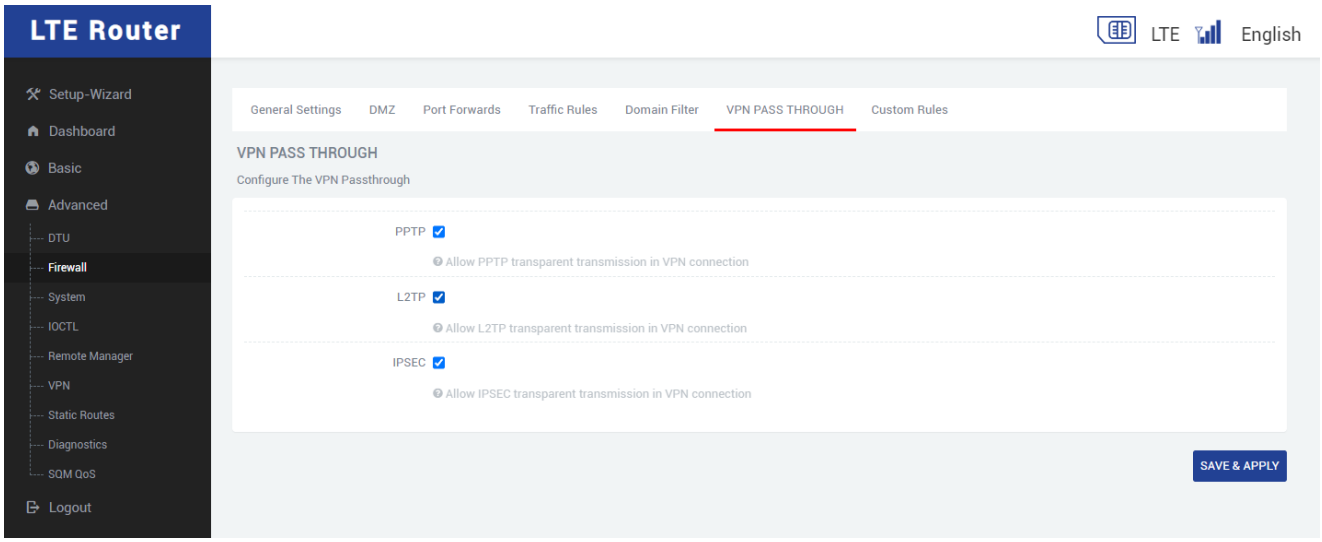


Domain Filter

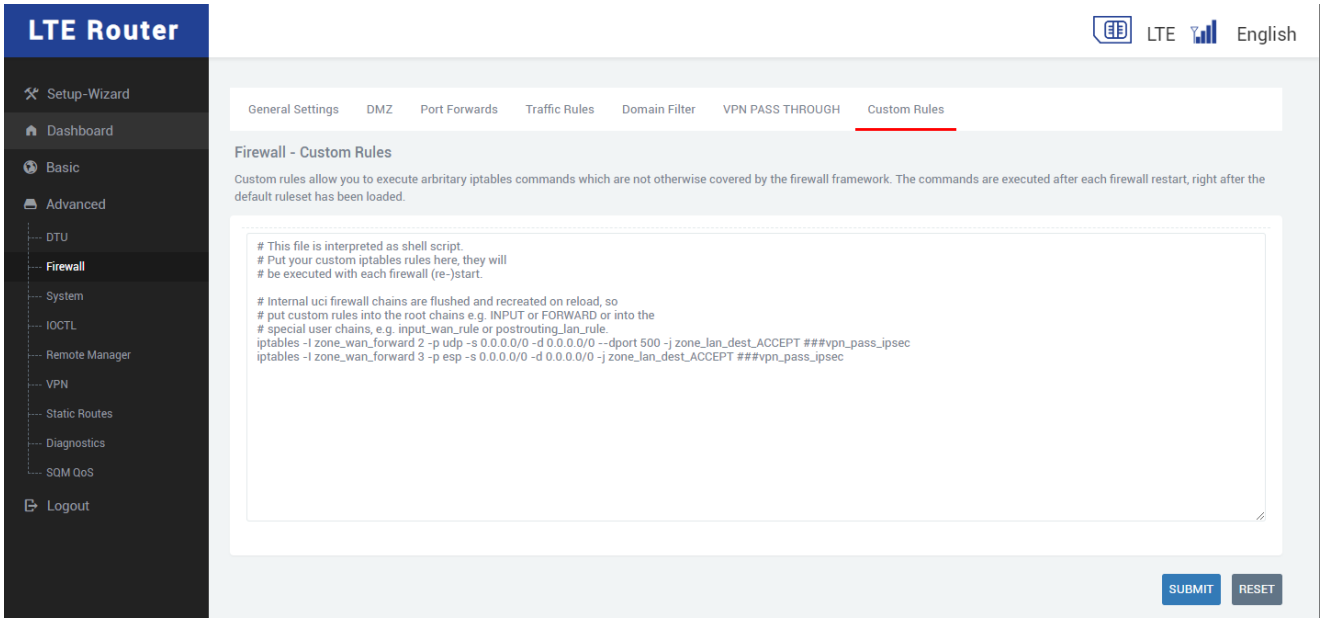


Domain Filter Setting	Description	How to Set
Enable	Disable or Enable the Domain Filter Function	Enable or Disable the Tick box option
The Filter Type	Blacklist: No access to the Domain in the List Whitelist: Only can access to the Domain in the List	Pick the option in the dropdown lost
Blocked Domain List	Fill in the address you need to prohibit or only access	Set according to the specific application

VPN Passthrough



Custom Rules

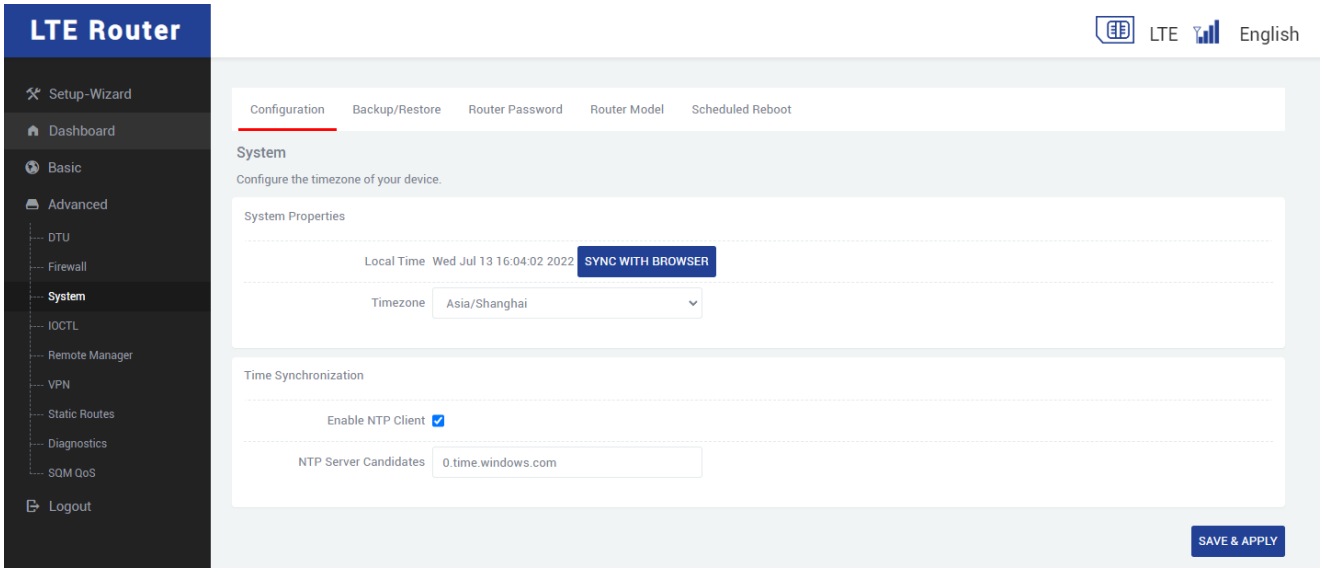


Advanced Settings – System

You can configure the router's time zone, import and export configuration, firmware upgrade, change system language, etc.

Configuration

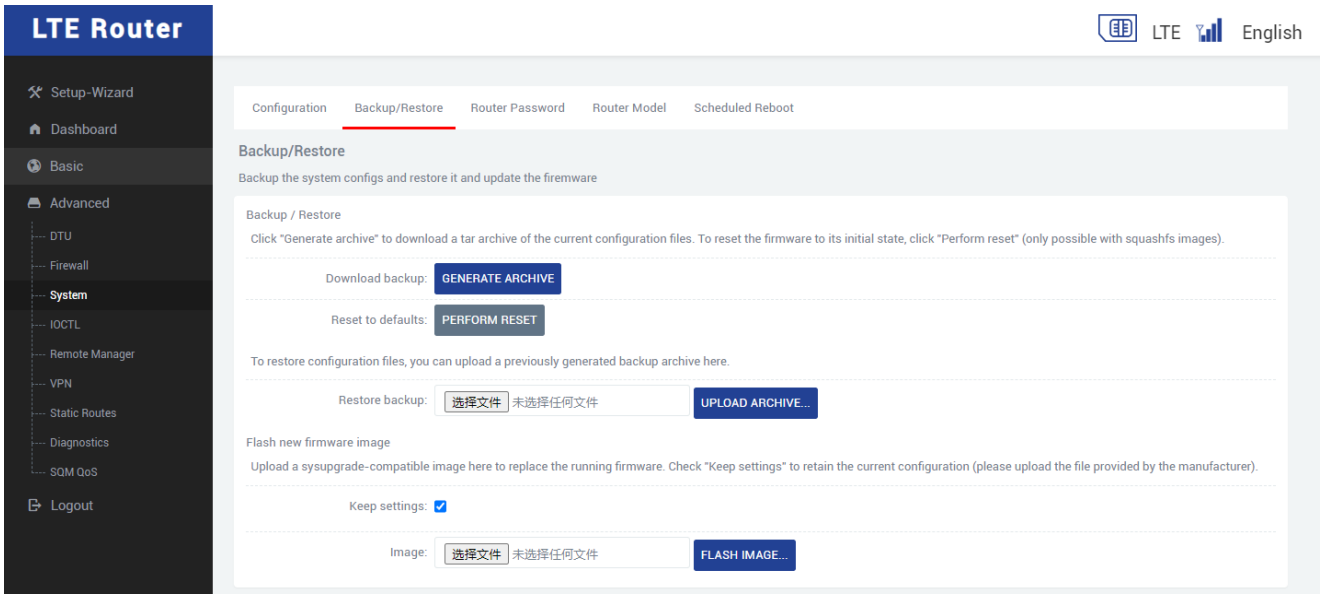
After modification, click Apply to configure the application.



Configuration Setting	Description	How to Set

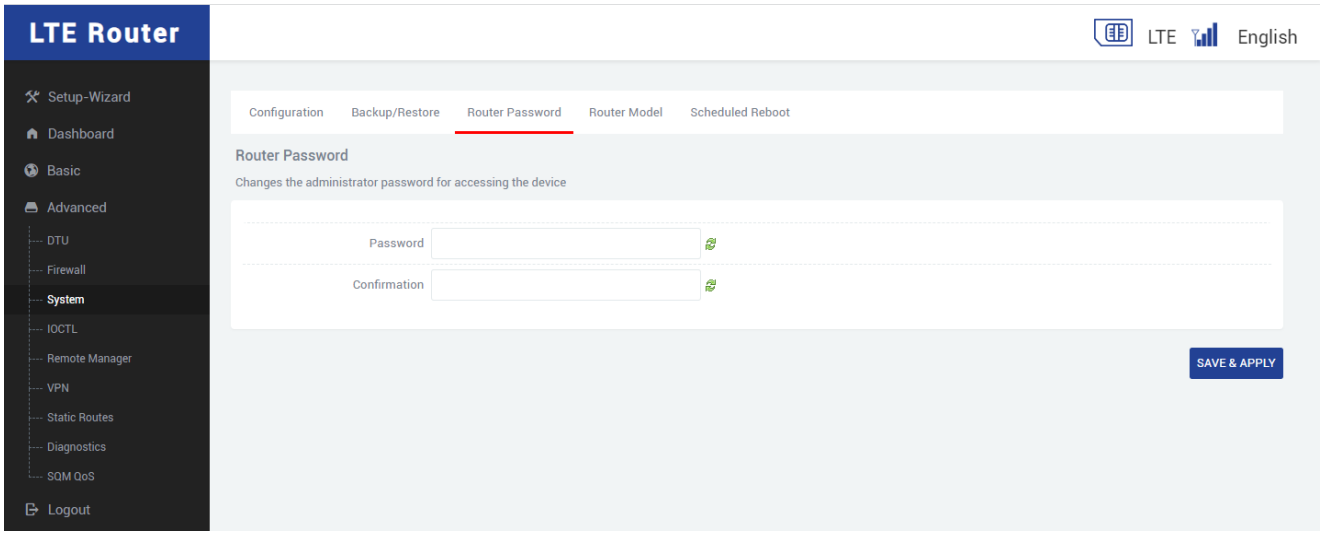
Time Zone	Time zones can be modified. Such as: Asia/Shanghai (Asia/Shanghai)	Pull down menu and select
Sync With Browser	Synchronize the time of the browser with the selected time zone	Click on Save and Apply to configure the application

Upgrade (Backup/Restore)



Setting	**Description**	**How to Set**
Download Backup	Download a tarball of the current configuration	Auto download the backup after clicking GENERATE ARCHIVE
Reset to Defaults	Reset to Factory Configuration	Restore Factory Configuration after clicking PERFORM RESET
Restore Backup	Upload a tarball of the saved configuration and to configure the router parameters to be the same as the saved configuration.	Select a saved configuration file and click UPLOAD ARCHIVE
Keep Settings	This option makes the firmware upgrade will not reset the router parameters, but will keep it instead	Tick or untick
Image (Flash Image)	Upgrade the router firmware	Select the firmware upgrade provided by the manufacturer

Router Password

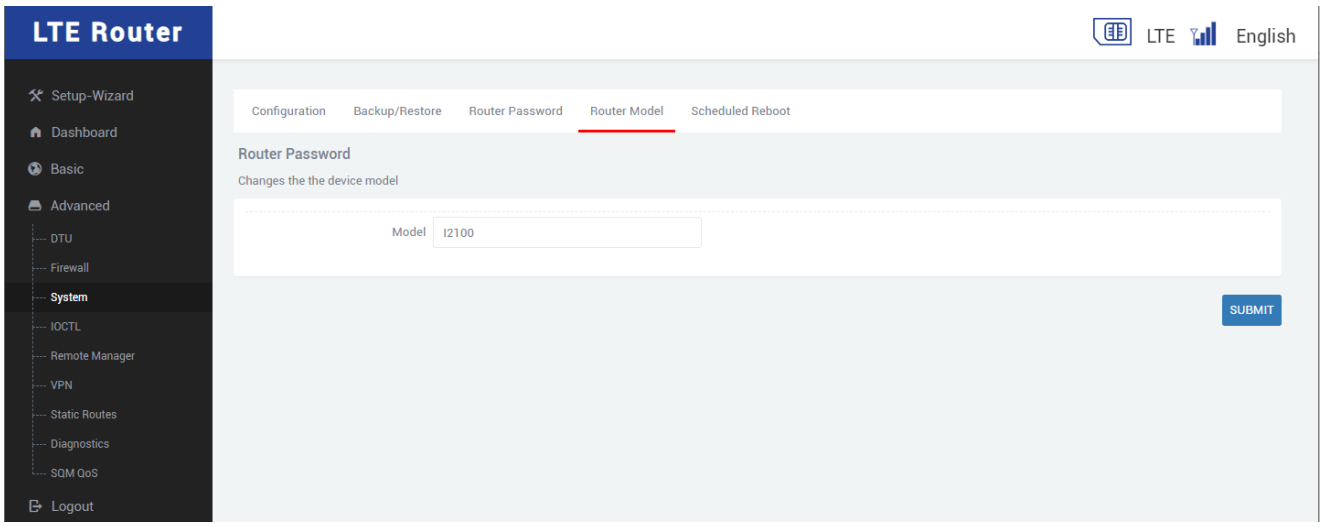


The router password setting description:

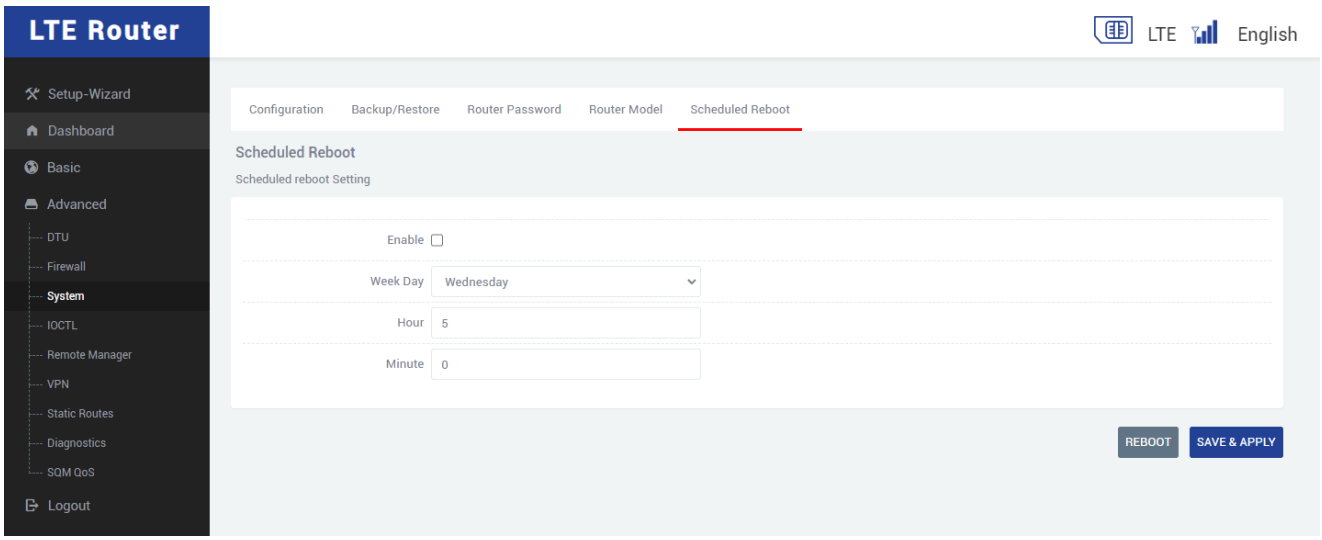
Setting	Description	How to Set
Password	After the modification is completed, the password of the current login account is changed to this password	Fill in the same password in both fields and then apply to make the password change.
Confirmation	Repeat the new password to ensure password you enter correctly	Fill in the same password in both fields and then apply to make the password change.

Router Model

You can view the model number of the router



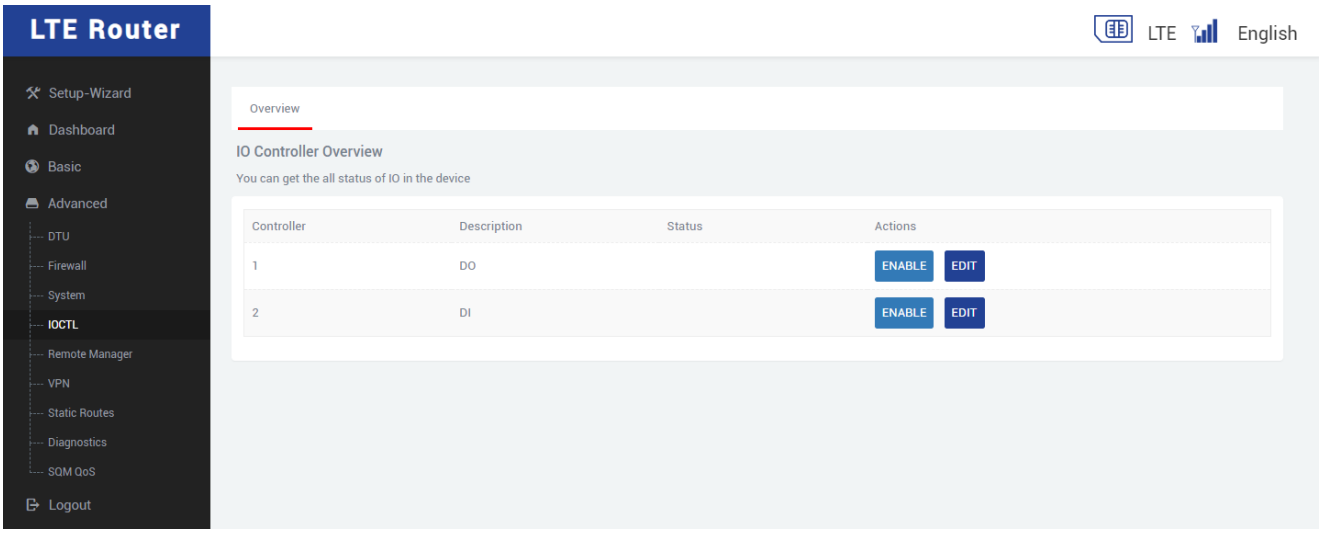
Schedule Reboot



Setting	Description	How to Set
Enable	Check and apply to complete the configuration	Tick or untick
Week Day	Choose the day of the week or restart every day	Pull down menu and select
Hour	Restart at what time	Set according to the specific application
Minute	Restart at what minute of the day	Set according to the specific application

Advanced Settings – IO Controller (IOCTL)

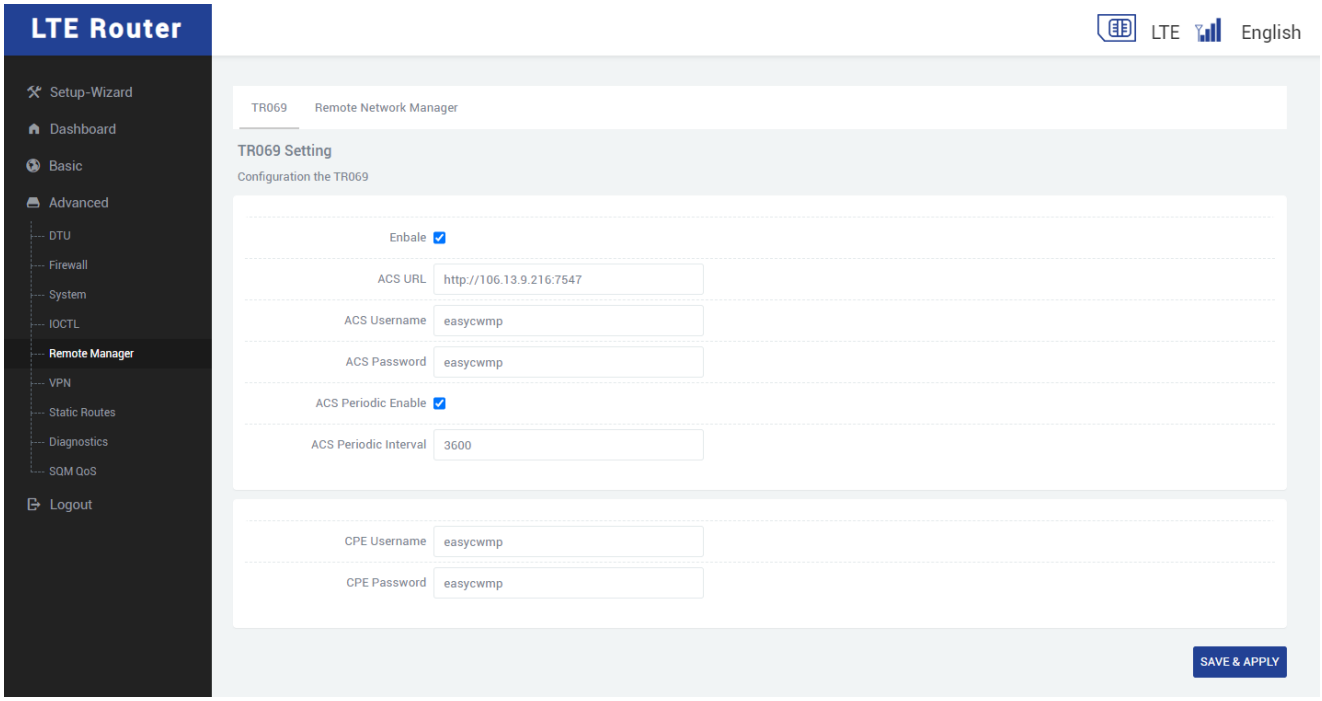
You can set the IO controller of the router



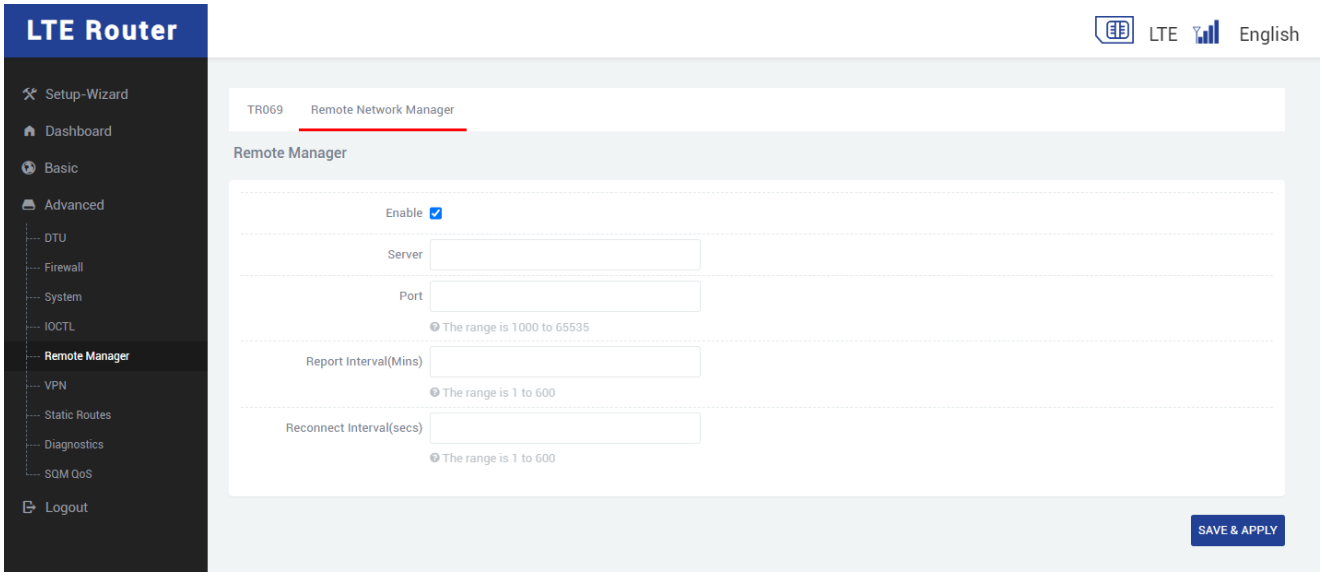
Advanced Settings – Remote Manager

TR069 and cloud platform configuration can be set.

TR069

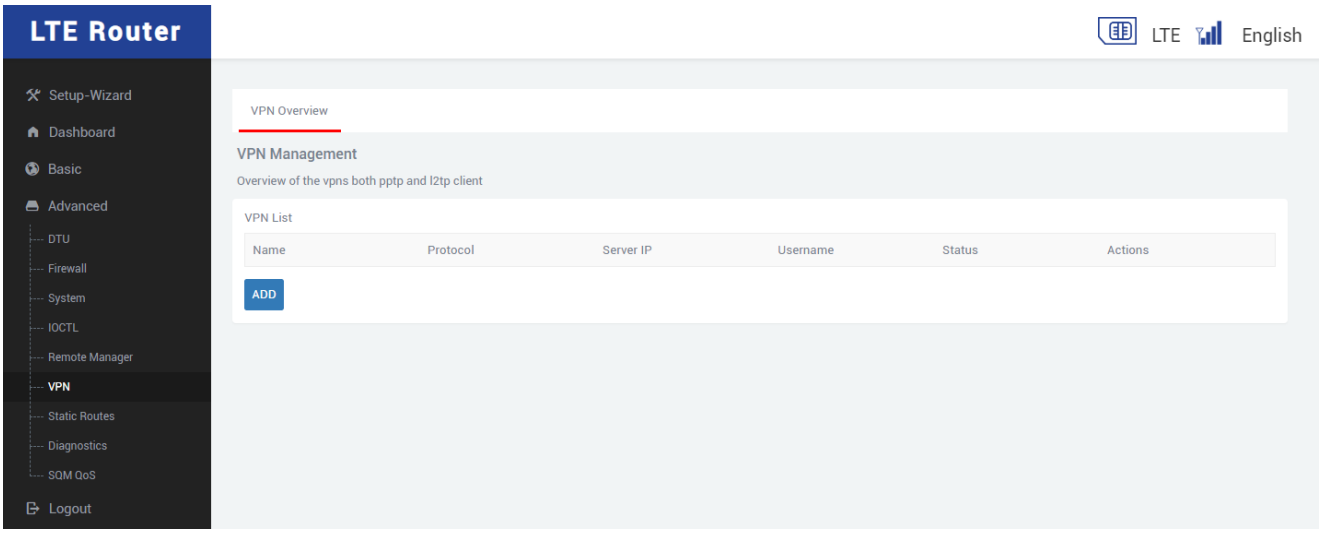


Remote Network Manager (Cloud Platform)



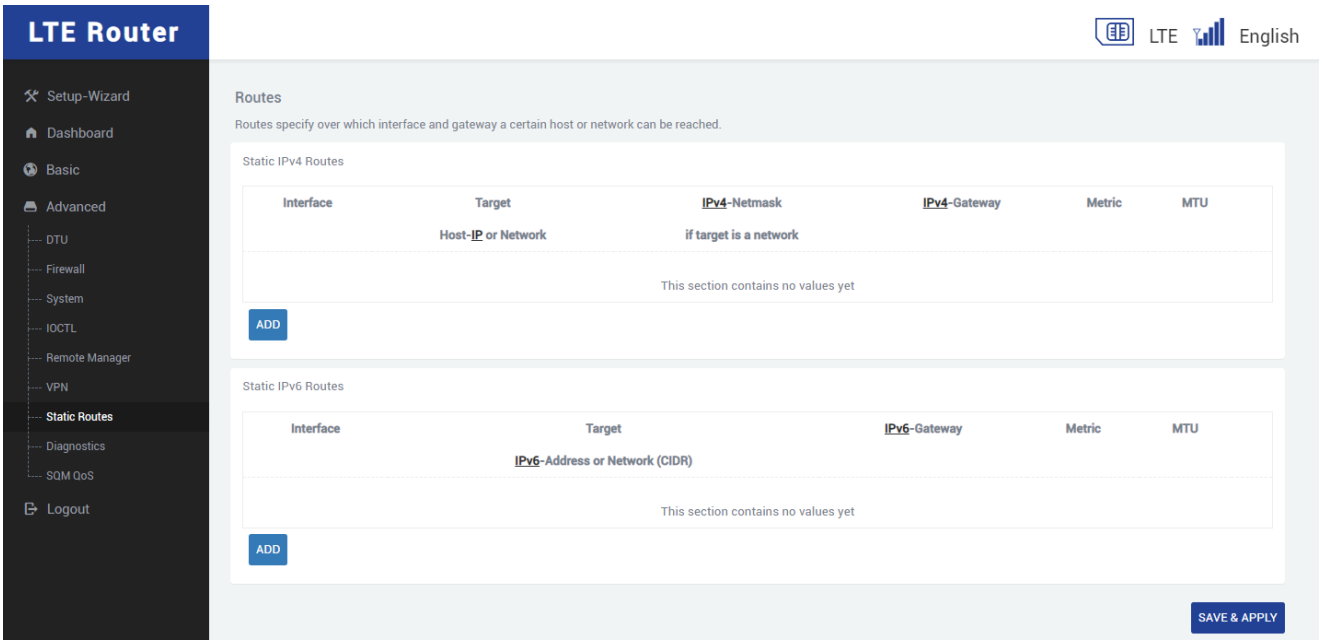
Advanced Settings – VPN

You can setup the PPTP and L2TP client for a VPN connection.



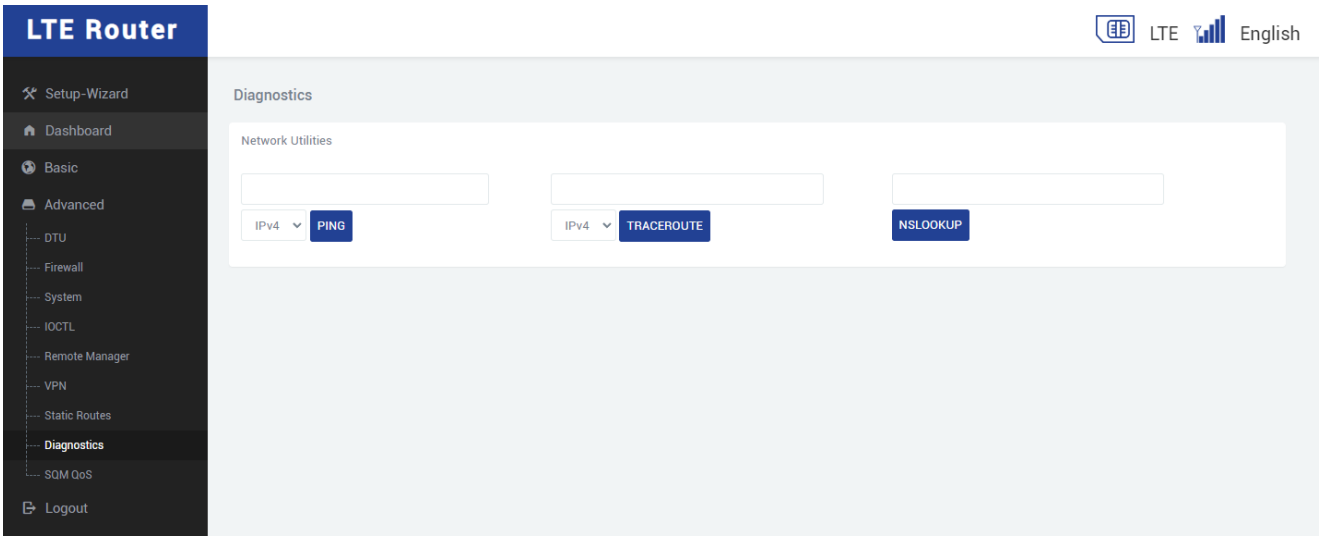
Advanced Settings – Static Route

Set up static routing rules in the router. Since the settings on this page may affect the Internet access, it is recommended that to get someone with computer network knowledge to do the setup.



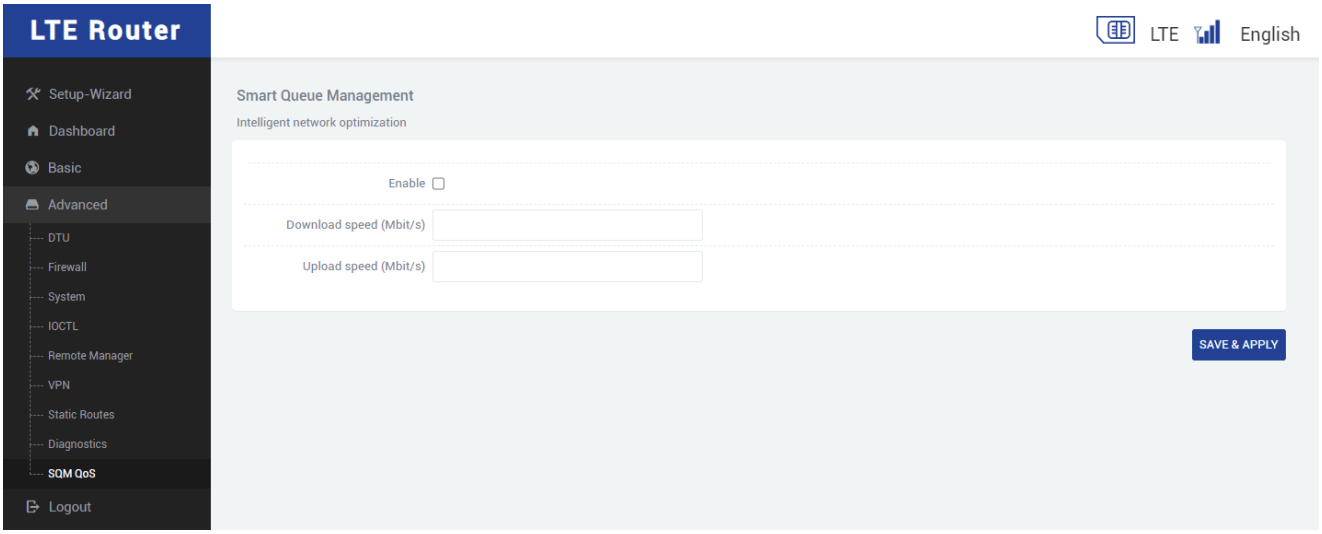
Advanced Settings – Network Diagnostics

You can use the functions to check the network status of the router



Advanced Settings – SQM-QoS

Setting QoS can optimize the network quality of the router. Since the settings on this page may affect the Internet access, it is recommended that to get someone with computer network knowledge to do the setup.

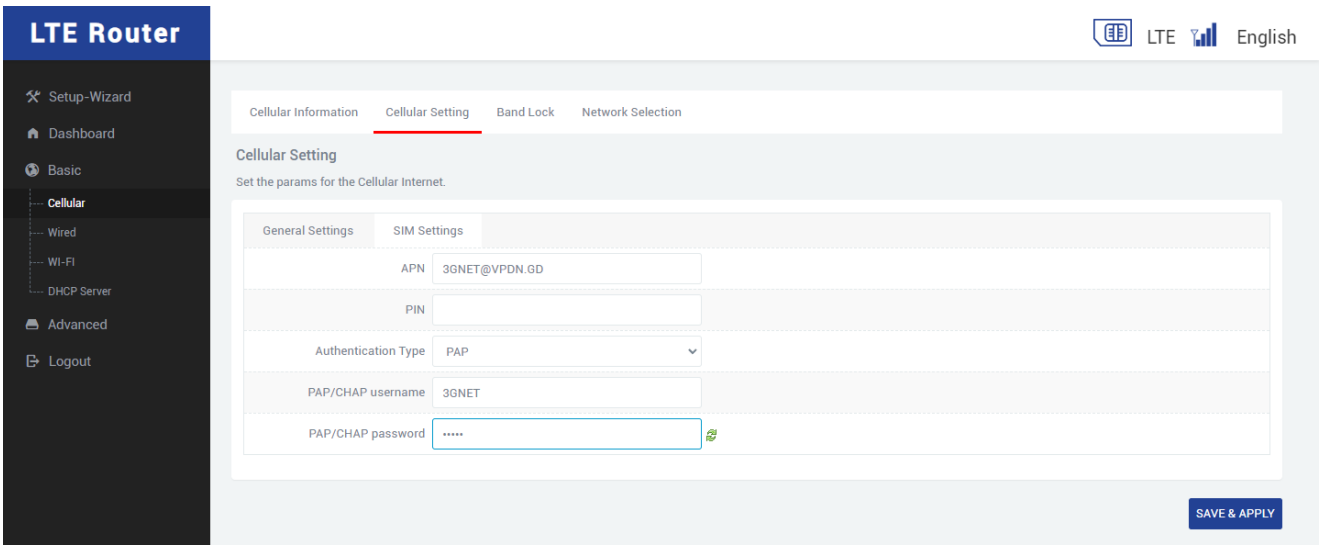

LTE Router
LTE
English
Setup-Wizard
Dashboard
Basic
Advanced
DTU
Firewall
System
IOCTL
Remote Manager
VPN
Static Routes
Diagnostics
SQM QoS
Logout
Smart Queue Management
Intelligent network optimization
Enable
Download speed (Mbit/s)
Upload speed (Mbit/s)
SAVE & APPLY

Typical Application

Typical Application – APN/VPDN Dedicated Network Card

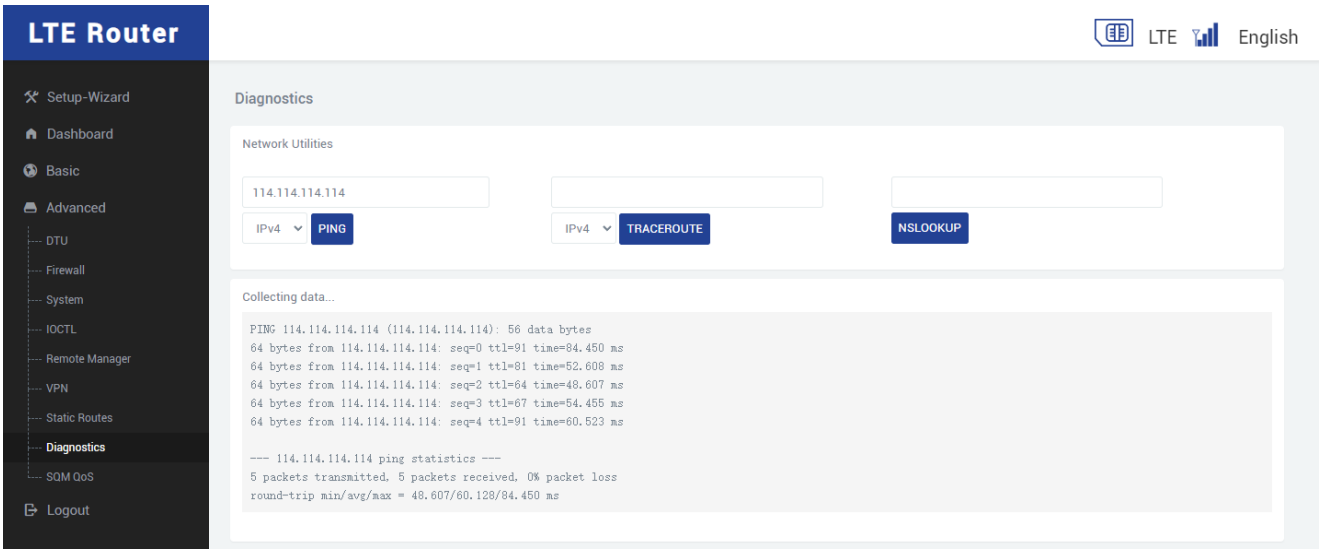
When the user's card uses a private network card with APN function, the router can be modified according to the following configuration, so that the router can connect to the private network normally.

1. Find the Cellular Network in the basic settings, click "Cellular Setting" tab, fill in the APN or VPDN parameters provided by the operator in the corresponding position, and click "Submit".



Note: The link detection address must be filled with a server address that can be pinged, otherwise the router cannot judge whether the network dialing is normal or not, which will cause the network to be unstable.

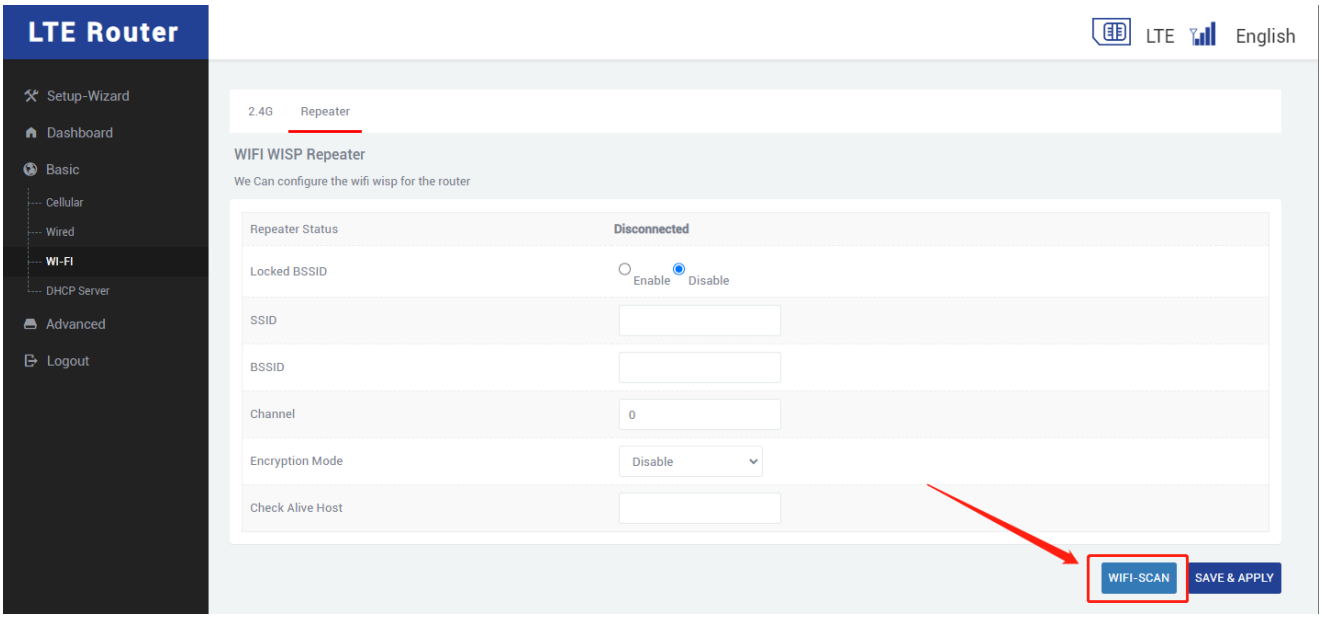
2. Check the network by ping to a server address via the network diagnosis page to determine whether the connection is normal and working.



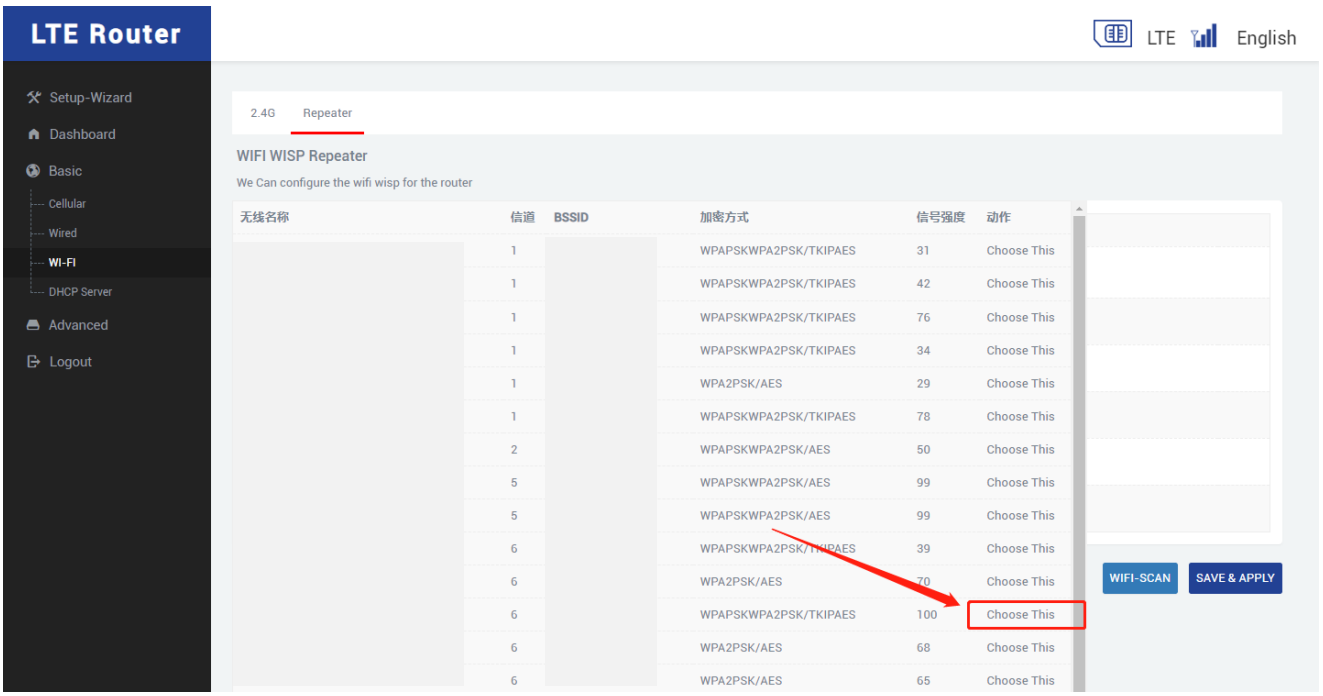
Typical Application – WIFI Relay / Repeater

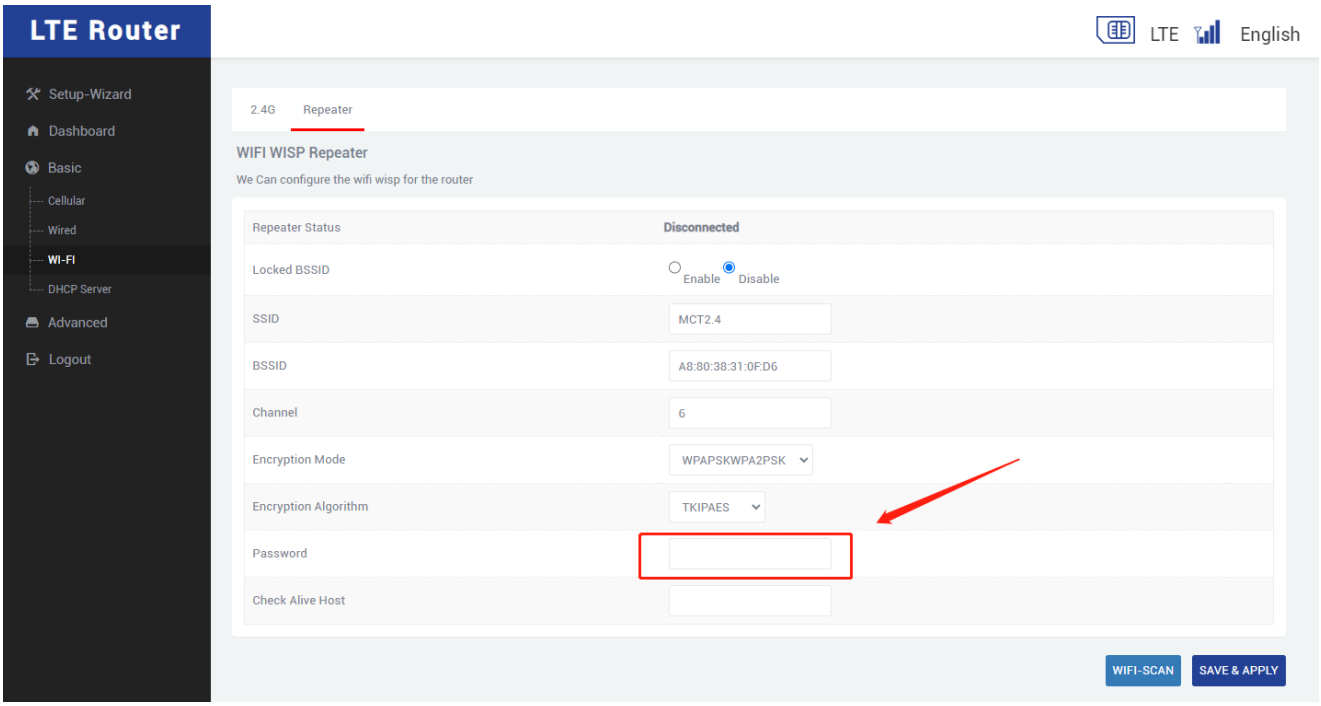
The wireless repeater function is to use the router's WIFI as the wireless client terminal to connect to another existing WIFI hotspot. This solution can use the network of the other router or hotspot to reduce the use of cellular traffic. The specific configuration is as follows:

1. Open the configuration page of "Common Settings" --> "Wireless". Click "Relay Settings", click "Connect" to search for surrounding networks.

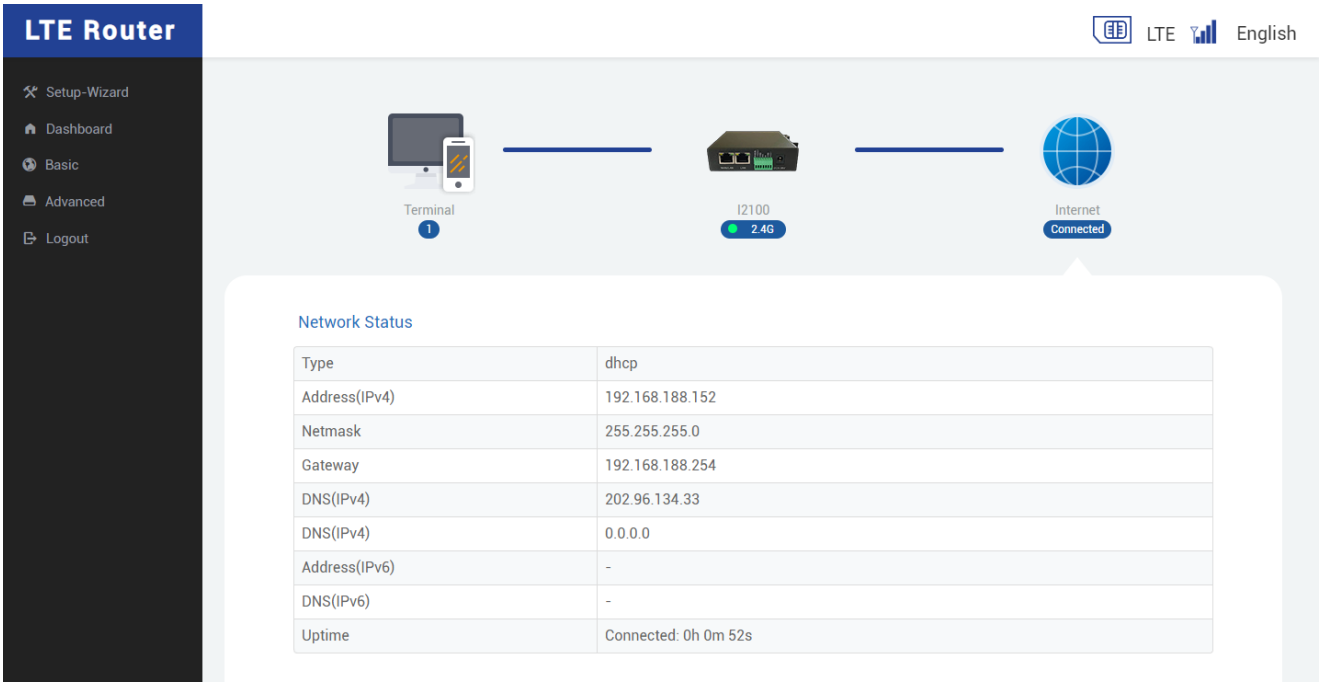


2. Select the hotspot you want to connect to, and click "Connect". The router will automatically fill in the parameters of the hotspot into the column field according. If the hotspot has a password, you need to manually fill in the password and click "Apply".

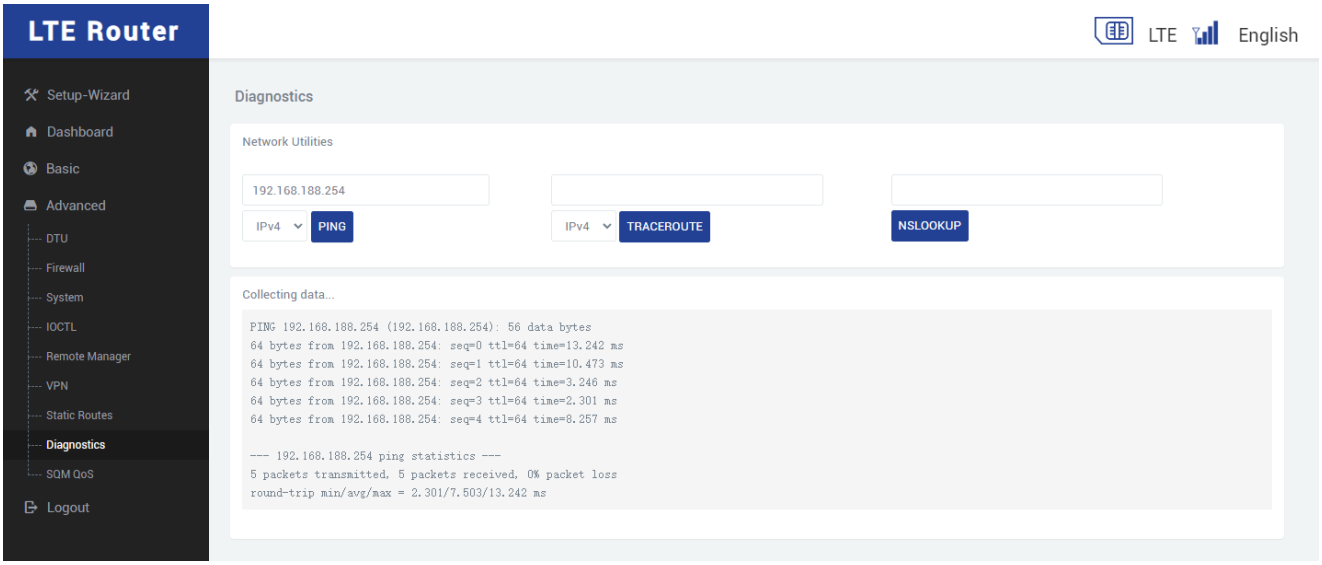




3. Click the icon  on the status page. When the router has obtained the IP address from the uplink (WIFI hotspot or Router), the relay of the router is connected normally.

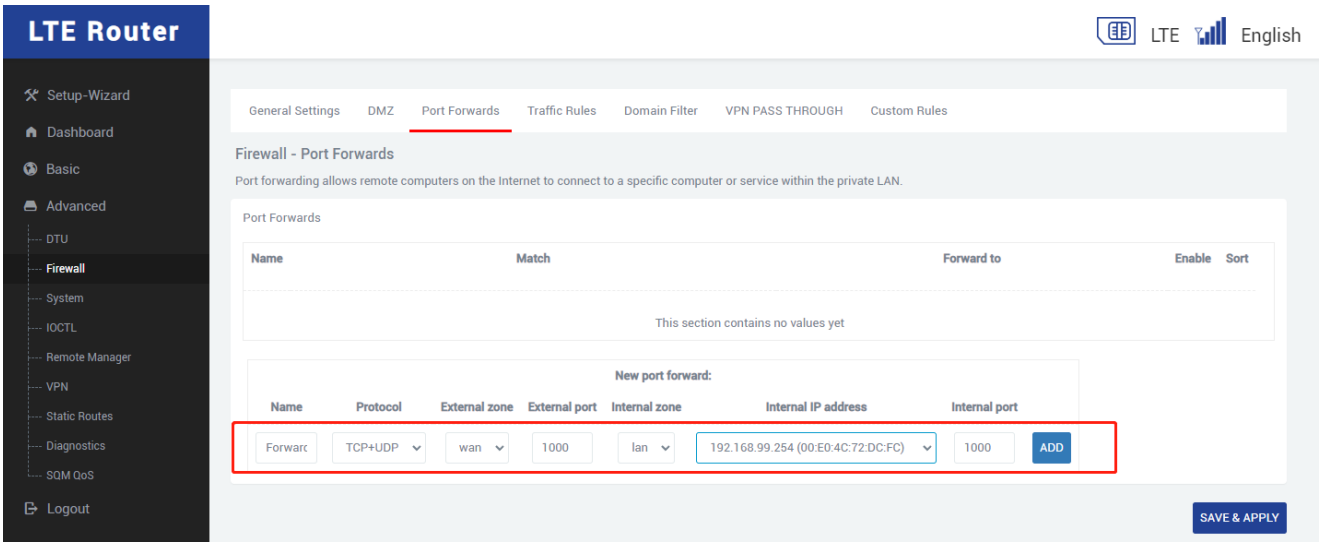


4. Perform packet ping to the gateway address of the uplink network via the network diagnostics page to determine whether or not the connection is normal



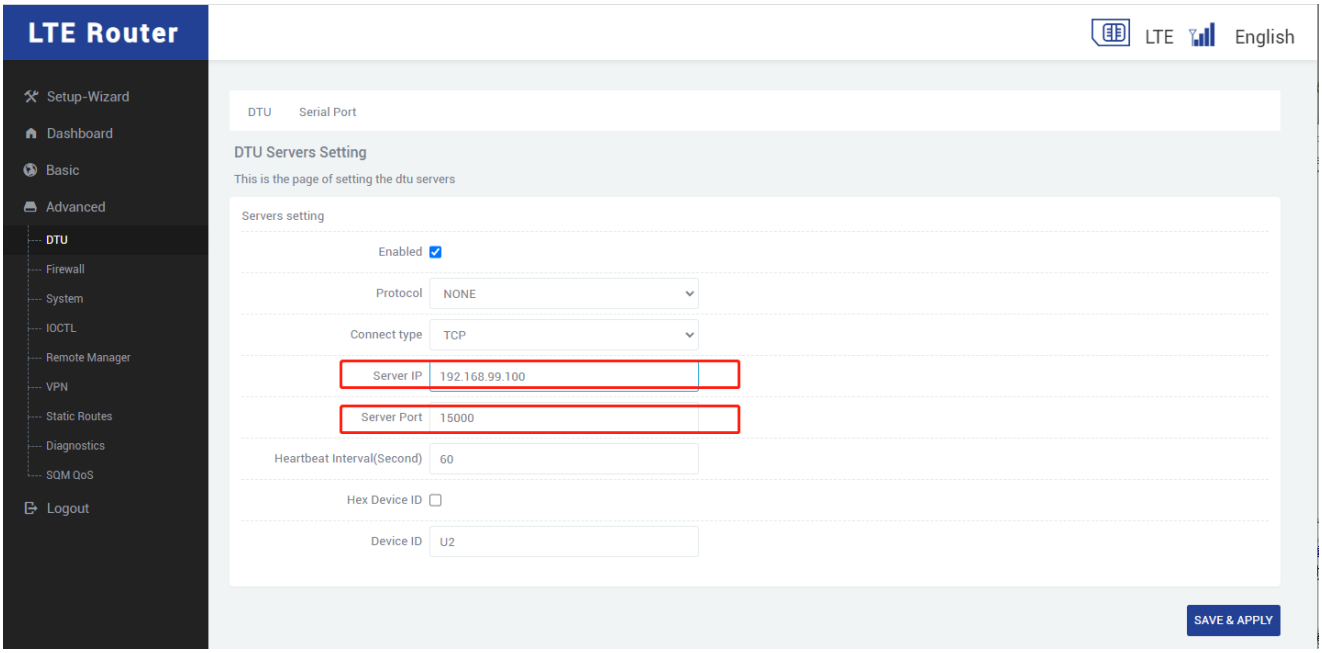
Typical Application – Port Mapping

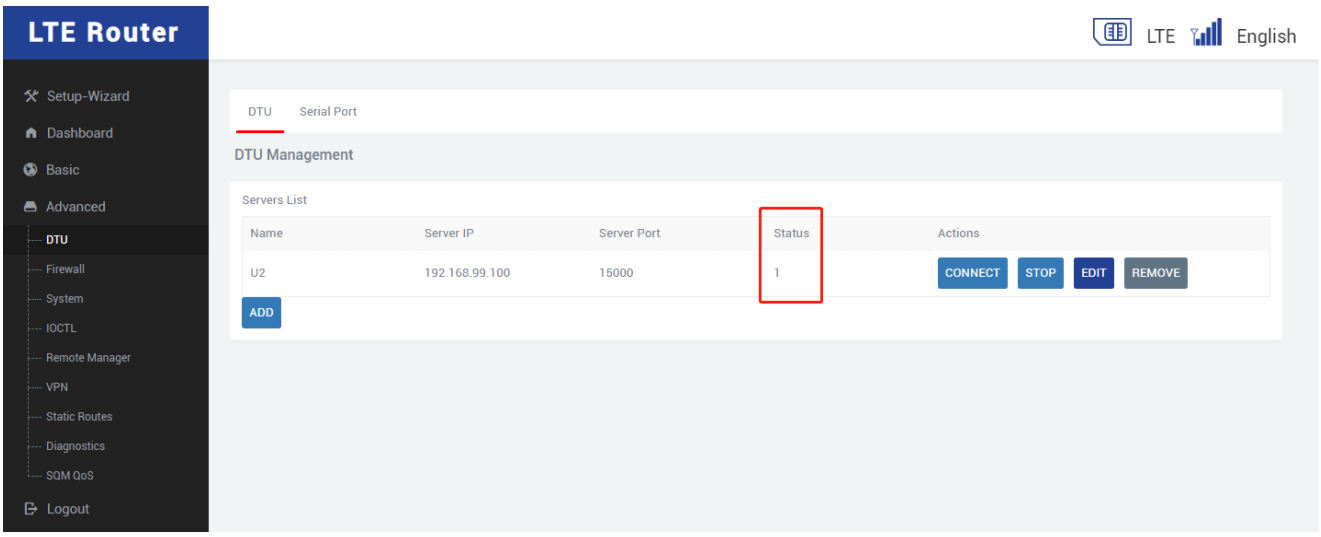
"Port Forwarding" can be found in the firewall page. You can map the port that needs to be translated and forwarded to the corresponding intranet IP, and click "Apply" to apply the configuration.



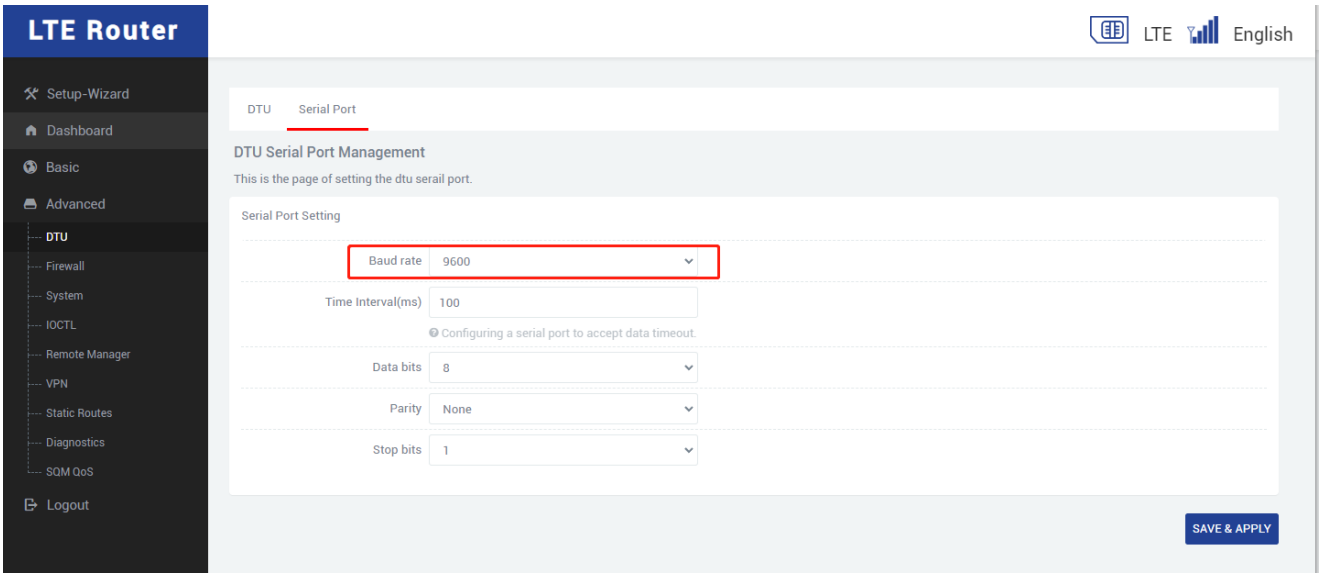
Typical Application – Serial Passthrough

1. First setup the TCP server, note down the address and port number of the server.
2. Configure the DTU server settings located in the DTU menu of the router. Set the server address and port number to the IP address and port number of the TCP server, and then click Connect, the status is 1 means the connection is successful.





3. According to the baud rate of the serial port to set the baud rate information. Connect the RS485 connection to the RS485 serial port.



4. After that, you can send data to each other between the server and the serial port.