



# Industrial Router Lite Series

## UR32L

### User Guide



## Preface

Thanks for choosing Milesight UR32L industrial cellular router. The UR32L industrial cellular router delivers tenacious connection over network with full-featured design such as automated failover/failback, extended operating temperature, dual SIM cards, hardware watchdog, VPN, Fast Ethernet and beyond.

This guide describes how to configure and operate the UR32L industrial cellular router. You can refer to it for detailed functionality and router configuration.

## Readers

This guide is mainly intended for the following users:

- Network Planners
- On-site technical support and maintenance personnel
- Network administrators responsible for network configuration and maintenance

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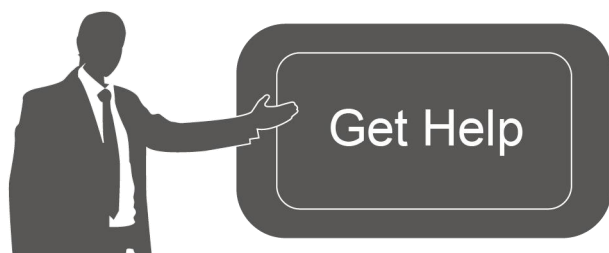
## Safety Precautions

Milesight will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

- ❖ The device must not be disassembled or remodeled in any way.
- ❖ To avoid risk of fire and electric shock, do keep the product away from rain and moisture before installation.
- ❖ Do not place the device where the temperature or humidity is below/above the operating range.
- ❖ The device must never be subjected to drops, shocks or impacts.
- ❖ Make sure the device is firmly fixed when installing.
- ❖ Make sure the plug is firmly inserted into the power socket.
- ❖ Do not pull the antenna or power supply cable, detach them by holding the connectors.

## Declaration of Conformity

UR32L is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.



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## Revision History

Date	Doc Version	Description
Mar. 23, 2021	V 1.0	Initial version
Sept. 17, 2021	V 1.1	<ol style="list-style-type: none"><li>1. Cellular and ping detection support IPv6</li><li>2. Add WAN connection type: DHCPv6 client, DS-Lite</li><li>3. Add DHCPv6 Server feature</li><li>4. Add IPv6 static routing feature</li><li>5. Add Expert Option box in IPsec settings</li><li>6. Support SMS inbox and outbox record clear</li></ol>
June 30, 2023	V 1.2	<ol style="list-style-type: none"><li>1. Add high priority link revert feature;</li><li>2. Add MQTT and TR069 feature;</li><li>3. Support customized cellular MTU and IMS;</li><li>4. Support to import openVPN file configurations, add tls-crypt mode and authentication mode;</li><li>5. Support to configure L2TP hostname.</li></ol>
July 5, 2024	V 1.3	<ol style="list-style-type: none"><li>1. Add WireGuard VPN feature;</li><li>2. Add cellular band selection and subnet mask customization;</li><li>3. Support to sync time with cellular operator;</li><li>4. Support to show Ethernet port connection status and configure PoE settings;</li><li>5. Update default secondary ICMP and DNS server address;</li><li>6. IPsec setting web GUI optimization.</li></ol>
April 11, 2025	V 1.4	<ol style="list-style-type: none"><li>1. Add ZeroTier VPN.</li><li>2. Compatible with DeviceHub 2.0 and Milesight Development Platform.</li><li>3. Support 802.1x protocol to connect to Radius servers.</li></ol>

		<ul style="list-style-type: none"><li>4. Add cellular custom DNS server option.</li><li>5. Optimize the configuration modes of Email groups and phone groups.</li><li>6. Support to configure username, test email address in SMTP client settings.</li></ul>
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# Chapter 1 Product Introduction

## 1.1 Overview

UR32L is an industrial cellular router with embedded intelligent software features that are designed for multifarious M2M/IoT applications. Supporting global WCDMA and 4G LTE, UR32L provides drop-in connectivity for operators and makes a giant leap in maximizing uptime.

Adopting high-performance and low-power consumption industrial grade CPU and wireless module, the UR32L is capable of providing wire-speed network with low power consumption and ultra-small package to ensure the extremely safe and reliable connection to the wireless network.

UR32L is particularly ideal for smart grid, digital media installations, industrial automation, telemetry equipment, medical device, digital factory, finance, payment device, environment protection, water conservancy and so on.

For details of hardware and installation, please check UR32L Quick Start Guide.

## 1.2 Advantages

### Benefits

- Built-in industrial strong NXP CPU, big memory
- Fast Ethernet for fast data transmission
- Rugged enclosure, optimized for DIN rail or shelf mounting
- 3-year warranty included

### Security & Reliability

- Automated failover/failback between Ethernet and Cellular
- Enable unit with security frameworks like  
IPsec/OpenVPN/GRE/L2TP/PPTP/DMVPN/WireGuard/ZeroTier VPN
- Embed hardware watchdog, automatically recovering from various failure, and ensuring highest level of availability
- Establish a secured mechanism on centralized authentication and authorization of device access by supporting AAA (TACACS+, Radius, LDAP, local authentication) and multiple levels of user authority

### Easy Maintenance

- Milesight DeviceHub/Development Platform provide easy setup, mass configuration, and centralized management of remote devices
- The user-friendly web interface design and more than one option of upgrade help administrator to manage the device as easy as pie



- Web GUI and CLI enable the admin to achieve simple management and quick configuration among a large quantity of devices
- Efficiently manage the remote routers on the existing platform through the industrial standard SNMP and TR069

**Capabilities**

- Link remote devices in an environment where communication technologies are constantly changing
- Industrial 32-bit ARM Cortex-A7 processor, high-performance operating up to 528MHz and 128 MB memory available to support more applications
- Support rich protocols like SNMP, TR069, MQTT, RIP, OSPF
- Support wide operating temperature ranging from -40°C to 70°C/-40°F to 158°F

## Chapter 2 Access to Web GUI

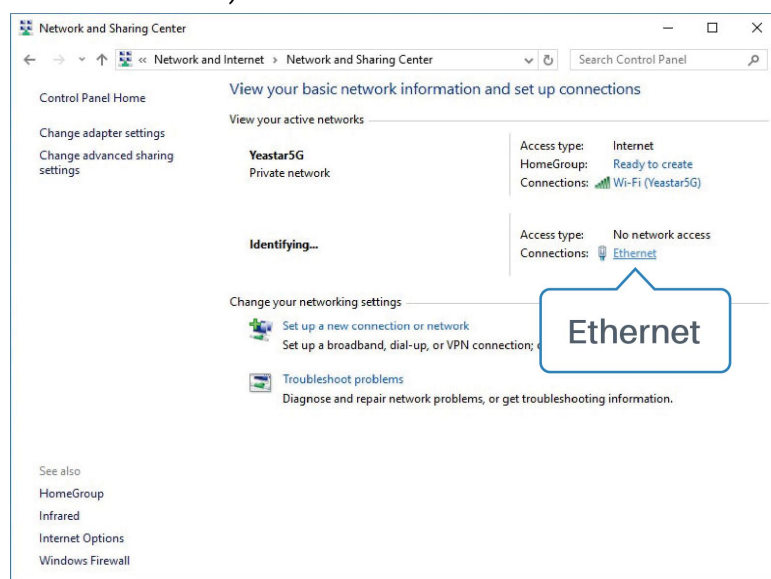
This chapter explains how to access to Web GUI of the UR32L router. Connect PC to LAN port of UR32L router directly. The following steps are based on Windows 10 operating system for your reference.

Username: **admin**

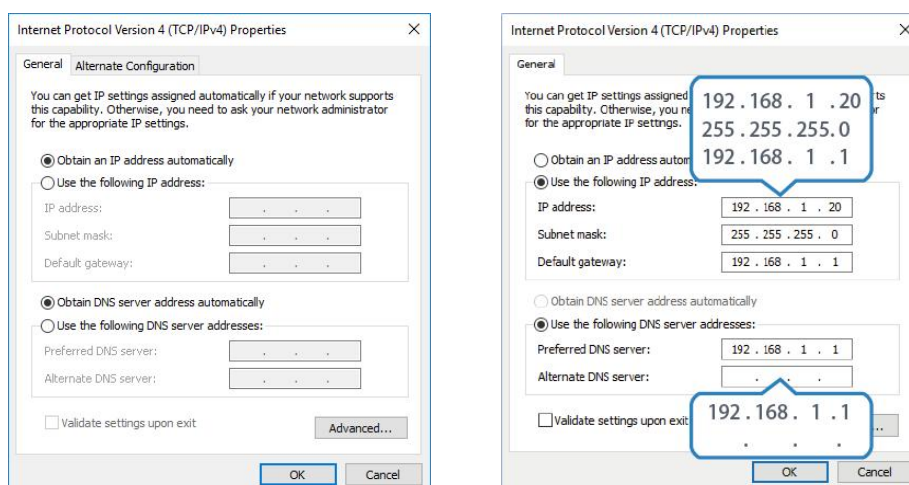
Password: **password**

IP Address: **192.168.1.1**

1. Go to “Control Panel” → “Network and Internet” → “Network and Sharing Center”, then click “Ethernet” (May have different names).

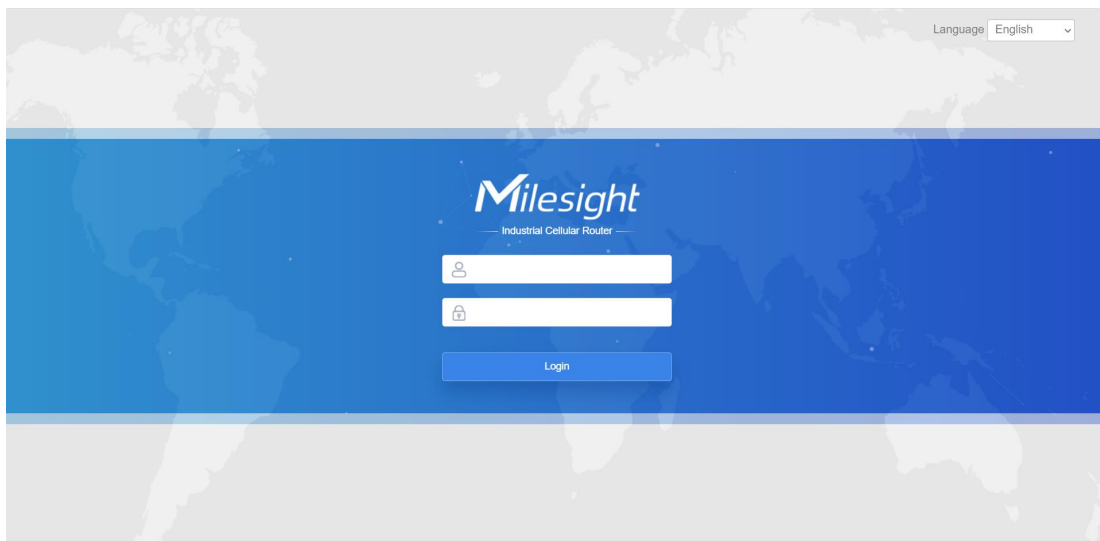


2. Go to “Properties” → “Internet Protocol Version 4(TCP/IPv4)”, select “Obtain an IP address automatically” or “Use the following IP address”, then assign a static IP manually within the same subnet of the device.



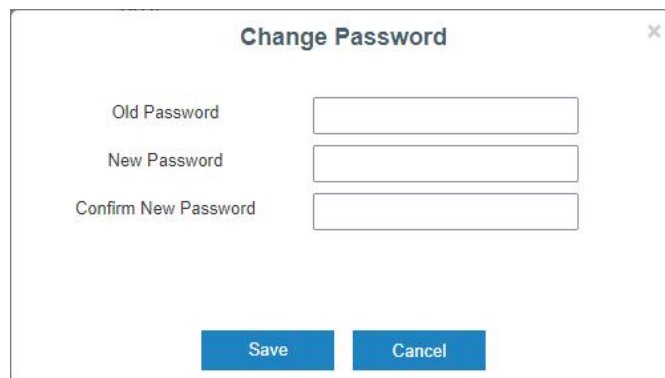
3. Open a Web browser on your PC (Chrome is recommended), type in the IP address 192.168.1.1, and press Enter on your keyboard.

4. Enter the username, password, and click "Login".



- !** If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

5. When you login with the default username and password, you will be asked to modify the password. It's suggested that you change the password for the sake of security. Click "Cancel" button if you want to modify it later.

The image shows a "Change Password" dialog box. It has a title bar with the text "Change Password" and a close button (X). Inside the dialog, there are three input fields: "Old Password", "New Password", and "Confirm New Password". Below the input fields, there are two buttons: "Save" and "Cancel".

6. After you login the Web GUI, you can view system information and perform configuration on the router.

## Chapter 3 Web Configuration

### 3.1 Status

#### 3.1.1 Overview

You can view the system information of the router on this page.

Overview

Cellular

Network

VPN

Routing

Host List

System Information


ModelUR32L-L04EUSerial Number6224B2227522Firmware Version32.3.0.2Hardware VersionV3.0

System Status

Local Time2021-09-17 08:27:58 FridayUptime00:01:38CPU Load17%RAM (Available/Capacity)48MB/128MB(37.5%)Flash (Available/Capacity)90MB/128MB(70.31%)

Cellular

Link in use

StatusReady, TDD LTE, 

IPv410.15.114.165/30IPv6fe80::c4c:e5ff:fe53:3776/64Connection Duration0 days, 00:00:16Data Usage Monthly0.2 MiB

WAN

StatusOfflineIPv4192.168.22.212IPv6fe80::26e1:24ff:fef1:f741/64MAC24:e1:24:f1:f7:43Connection Duration0 days, 00:00:00

LAN

IPv4192.168.1.1IPv67171::1/64Connected Devices1

Figure 3-1-1-1

System Information	
Item	Description
Model	Show the model name of router.
Serial Number	Show the serial number of router.
Firmware Version	Show the currently firmware version of router.
Hardware Version	Show the currently hardware version of router.

Table 3-1-1-1 System Information

System Status	
Item	Description
Local Time	Show the currently local time of system.
Uptime	Show the information on how long the router has been running.
CPU Load	Show the current CPU utilization of the router.
CPU Temperature	Show current CPU temperature.
RAM (Available/Capacity)	Show the RAM capacity and the available RAM memory.
Flash (Available/Capacity)	Show the Flash capacity and the available Flash memory.

Table 3-1-1-2 System Status

Cellular	
Item	Description
Status	Show the real-time status of the currently SIM card
Current SIM	Show the SIM card currently used for the data connection.
IPv4/IPv6	Show the IPv4/IPv6 address obtained from the mobile carrier.

Connection Duration	Show the connection duration of the currently SIM card.
Data Usage Monthly	Show the monthly data usage statistics of currently used SIM card.

Table 3-1-1-3 Cellular Status

WAN	
Item	Description
Status	Show the currently status of WAN port.
IPv4/IPv6	The IPv4/IPv6 address configured WAN port.
MAC	The MAC address of the Ethernet port.
Connection Duration	Show the connection duration of the WAN port.

Table 3-1-1-4 WAN Status

LAN	
Item	Description
IP4/IPv6	Show the IP4/IPv6 address of the LAN port.
Connected Devices	Number of devices that connected to the router's LAN.

Table 3-1-1-5 LAN Status

### 3.1.2 Cellular

You can view the cellular network status of router on this page.

Overview	Cellular	Network	VPN	Routing	Host List
Modem		Network			
Model	EC25	Status	Connected		
Version	EC25EUXGAR08A05M1G	IPv4 Address	10.142.57.34/30		
Signal Level	23asu (-67dBm)	IPv4 Gateway	10.142.57.33		
Register Status	Registered (Home network)	IPv4 DNS	211.136.17.107		
IMEI	862506043707416	IPv6 Address	fe80::cca3:25ff:fed2:908/64		
IMSI	460081370507437	IPv6 Gateway	::		
ICCID	89860493262190157437	IPv6 DNS	::		
ISP	CHINA MOBILE	Connection Duration	0 days, 00:00:04		
Network Type	TDD LTE	Data Usage Monthly			
PLMN ID	46000	RX	0.0 MiB		
LAC	592f	TX	0.0 MiB		
Cell ID	ceb972a	ALL	0.0 MiB		

Figure 3-1-2-1

Modem Information	
Item	Description
Status	Show corresponding detection status of module and SIM card.
Version	Show the cellular module firmware version.
Signal Level	Show the cellular signal level.
Register Status	Show the registration status of SIM card.

IMEI	Show the IMEI of the module.
IMSI	Show IMSI of the SIM card.
ICCID	Show ICCID of the SIM card.
ISP	Show the network provider which the SIM card registers on.
Network Type	Show the connected network type, such as LTE, 3G, etc.
PLMN ID	Show the current PLMN ID, including MCC, MNC, LAC and Cell ID.
LAC	Show the location area code of the SIM card.
Cell ID	Show the Cell ID of the SIM card location.

Table 3-1-2-1 Modem Information

Network	
Item	Description
Status	Show the connection status of cellular network.
IPv4/IPv6 Address	Show the IPv4/IPv6 address and netmask of cellular network.
IPv4/IPv6 Gateway	Show the IPv4/IPv6 gateway and netmask of cellular network.
IPv4/IPv6 DNS	Show the IPv4/IPv6 DNS of cellular network.
Connection Duration	Show information on how long the cellular network has been connected.

Table 3-1-2-2 Network Status

Data Usage Monthly	
Item	Description
RX	Show the monthly rx data usage statistics of SIM.
TX	Show the monthly tx data usage statistics of SIM.
ALL	Show the monthly all data usage statistics of SIM.

Table 3-1-2-3 Data Usage Information

### 3.1.3 Network

On this page you can check the WAN and LAN status of the router.

WAN-IPv4						
Port	Status	Type	IPv4	Gateway	DNS	Connection Duration
LAN1/WAN	up	Static	192.168.22.210/24	192.168.22.1	114.114.114.114	08h 32m 53s
WAN-IPv6						
Port	Status	Type	IPv6	Gateway	DNS	Connection Duration
LAN1/WAN	up	Static	fe80::26e1:24ff:fe11:2fea/64	-	-	08h 32m 53s

Figure 3-1-3-1

WAN Status	
Item	Description
Port	Show the name of WAN port.
Status	Show the status of WAN port. "up" refers to a status that WAN is enabled and Ethernet cable is connected. "down" means Ethernet cable is disconnected or WAN function is disabled.
Type	Show the dial-up connection type of WAN port.

IPv4/IPv6	Show the IPv4 address with netmask or IPv6 address with prefix-length of WAN port.
Gateway	Show the gateway of WAN port.
DNS	Show the DNS of WAN port.
Connection Duration	Show the information on how long the Ethernet cable has been connected on WAN port when WAN function is enabled. Once WAN function is disabled or Ethernet connection is disconnected, the duration will stop.

Table 3-1-3-1 WAN Status

Bridge				
Name	STP	IPv4	IPv6	Members
Bridge0	Disabled	192.168.219.1/24	7878::1/64	vlan 1,WLAN

Figure 3-1-3-2

Bridge	
Item	Description
Name	Show the name of the bridge interface.
STP	Show if STP is enabled.
IPv4/IPv6	Show the IPv4/IPv6 address and netmask of the bridge interface.
Netmask	Show the Netmask of the bridge interface.
Members	Show the members of the bridge interface.

Table 3-1-3-2 Bridge Status

### 3.1.4 VPN

You can check VPN status on this page, including PPTP, L2TP, IPsec, OpenVPN and DMVPN.

Clients

Name	Status	Local IP	Remote IP
------	--------	----------	-----------

Server

Name	Status
OpenVPN Server	Disabled
Ipsec Server	Disabled

Connected List

Server Type	Client IP	Duration
-------------	-----------	----------

Figure 3-1-4-1

VPN Status	
Item	Description
Clients	
Name	Show the name of the enabled VPN clients.

Status	Show the status of client. "Connected" refers to a status that client is connected to the server. "Disconnected" means client is disconnected to the server.
Local IP	Show the local IP address of the tunnel.
Remote IP	Show the real remote IP address of the tunnel.
<b>Server</b>	
Name	Show the name of the enabled VPN Server.
Status	Show the status of Server.
<b>Connected List</b>	
Server Type	Show the type of the server.
Client IP	Show the IP address of the client which connected to the server.
Duration	Show the information about how long the client has been connected to this server when the server is enabled. Once the server is disabled or connection is disconnected, the duration will stop counting.

Table 3-1-4-1 VPN Status

### 3.1.5 Routing

You can check routing status on this page, including the routing table and ARP cache.

Routing Table					
Destination	Netmask/Prefix Length	Gateway	Interface	Metric	
0.0.0.0	0.0.0.0	192.168.40.1	LAN1/WAN	1	
8.8.8.8	255.255.255.255	192.168.40.1	LAN1/WAN	1	
114.114.114.114	255.255.255.255	192.168.40.1	LAN1/WAN	1	
127.0.0.0	255.0.0.0	-	Loopback	-	
192.168.2.0	255.255.255.0	-	vlan2	-	
192.168.3.0	255.255.255.0	-	vlan3	-	
192.168.10.0	255.255.255.0	-	Bridge0	-	
192.168.40.0	255.255.255.0	-	LAN1/WAN	-	
::1	128	-	Loopback	-	
ARP Cache					
IP	MAC	Interface			
192.168.10.101	00:00:00:00:00:00	Bridge0			
192.168.40.201	24:e1:24:f6:64:2f	LAN1/WAN			
192.168.40.9	08:00:27:0a:1a:21	LAN1/WAN			
192.168.40.35	58:11:22:92:f8:c4	LAN1/WAN			
8.8.8.8	00:00:00:00:00:00	LAN1/WAN			
192.168.40.41	50:eb:f6:9f:aa:60	LAN1/WAN			Manual Refresh ▼

Figure 3-1-5-1

Item	Description
------	-------------



Routing Table	
Destination	Show the IP address of destination host or destination network.
Netmask/Prefix Length	Show the netmask or prefix length of destination host or destination network.
Gateway	Show the IP address of the gateway.
Interface	Show the outbound interface of the route.
Metric	Show the metric of the route.
ARP Cache	
IP	Show the IP address of ARP pool.
MAC	Show the IP address's corresponding MAC address.
Interface	Show the binding interface of ARP.

Table 3-1-5-1 Routing Information

### 3.1.6 Host List

You can view the host information on this page.

DHCP Leases		
IP	MAC/DUID	Lease Remaining Time
192.168.1.113	c8:5b:76:b2:56:1f	23h 07m 24s
2004::200	00:01:00:01:27:cc:cf:61:c8:5b:76:b2:56:1f	23h 09m 22s
MAC Binding		
IP	MAC/DUID	

Figure 3-1-6-1

Host List	
Item	Description
DHCP Leases	
IP Address	Show IP address of DHCP client
MAC/DUID	Show MAC address of DHCPv4 client or DUID of DHCPv6 client.
Lease Time Remaining	Show the remaining lease time of DHCP client.
MAC Binding	
IP & MAC	Show the IP address and MAC address set in the Static IP list of DHCP service.

Table 3-1-6-1 Host List Description

## 3.2 Network

### 3.2.1 Interface

#### 3.2.1.1 Link Failover

This section describes how to configure link failover strategies, their priority and the ping settings, each rule owns its own ping rules by default. Router will follow the priority to choose the next available interface to access the internet, make sure you have enable the full interface that you need to use here. If priority 1 can only use IPv4, UR32L will select a second link which IPv6 works as main IPv6 link and vice versa.

Link Failover

Cellular

Port

WAN

Bridge

Switch

Loopback

Link Priority

Priority	Enable Rule	Link in use	Interface	Connection Type	IP	Operation
1	<input checked="" type="checkbox"/>	<div></div>	WAN	Static	192.168.22.212	<div></div> <div></div> <div></div>
2	<input checked="" type="checkbox"/>	<div></div>	Cellular-SIM1	DHCP	-	<div></div> <div></div> <div></div>

Settings

Revert Interval

30

s

Emergency Reboot

☐

Save

Figure 3-2-1-1

Link Failover	
Item	Description
Link Priority	
Priority	Display the priority of each interface, you can modify it by the operation's up and down button.
Enable Rule	If enabled, the router will put this interface into its switching rule. For the Cellular interface, if it's not enabled here, the interface will be disabled as well.
Link In Use	Mark whether this interface is in use with Green color
Interface	Display the name of the interface.
Connection type	Display how to obtain the IP address in this interface, like static IP or DHCP.
IP	Display the IP address of the interface.
Operation	You can change the priority of the rules and configure the ping detection rules here.
Settings	
Revert to High Priority Link	When the connection of high priority link returns back, reverting back to high priority link.
Revert Interval	Specify the number of seconds to waiting for switching to the link with higher priority, 0 means disable the function.
Emergency Reboot	Enable to reboot the device if no link is available.

Table 3-2-1-1 Link Failover Parameters

**Ping Detection**

Enable ☒

IPv4 Primary Server

IPv4 Secondary Server

IPv6 Primary Server

IPv6 Secondary Server

Interval  s

Retry Interval  s

Timeout  s

Max Ping Retries

OK Cancel

Figure 3-2-1-2

Ping Detection	
Item	Description
Enable	If enabled, the router will periodically detect the connection status of the link.
IPv4/IPv6 Primary Server	The router will send ICMP packet to the IPv4/IPv6 address or hostname to determine whether the Internet connection is still available or not.
IPv4/IPv6 Secondary Server	The router will try to ping the secondary server name if primary server is not available.
Interval	Time interval (in seconds) between two Pings.
Retry Interval	Set the ping retry interval. When ping failed, the router will ping again in every retry interval.
Timeout	The maximum amount of time the router will wait for a response to a ping request. If it does not receive a response for the amount of time defined in this field, the ping request will be considered to have failed.
Max Ping Retries	The retry times of the router sending ping request until determining that the connection has failed.

Table 3-2-1-2 Ping Detection Parameters

### 3.2.1.2 Cellular

This section explains how to set the related parameters for the cellular network.

Protocol Type	IPv4
APN	
Username	
Password	
PIN Code	
Access Number	
Authentication Type	None
Network Type	Auto
Cellular Frequency Band	B1, B2, B3, B4, B5, B7, B8, B28, B40
PPP Preferred	<input type="checkbox"/>
IMS Enable	<input checked="" type="checkbox"/>
SMS Center	
Enable NAT	<input checked="" type="checkbox"/>
Roaming	<input checked="" type="checkbox"/>
IPv4 Subnet Mask	
IPv4 Primary DNS	
IPv4 Secondary DNS	
IPv6 Primary DNS	
IPv6 Secondary DNS	
Customize MTU	<input type="checkbox"/>
MTU	1500
Data Limit	0 MB
Billing Day	Day 1 of The Month

Figure 3-2-1-3

Cellular Settings	
Item	Description
Protocol Type	Select from "IPv4", "IPv6" and "IPv4/IPv6".
APN	Enter the Access Point Name for the cellular dial-up connection provided by the local ISP.
Username	Enter the username for the cellular dial-up connection provided by the local ISP.
Password	Enter the password for the cellular dial-up connection provided by the local ISP.
PIN Code	Enter a 4-8 characters PIN code to unlock the SIM.
Access Number	Enter the dial-up center NO. For cellular dial-up connection provided by local ISP.
Authentication Type	Select from "None", "PAP", or "CHAP".
Network Type	Select from "Auto", "4G Only", "3G Only", and "2G Only". Auto: connect to the network with the strongest signal automatically.

	4G Only: connect to 4G network only. And so on.
Cellular Frequency Band	Select the cellular bands used to register the cellular network. It can be used to optimize cellular speeds by selecting specific bands.
PPP Preferred	The PPP dial-up method is preferred.
IMS Enable	Enable or disable IMS function.
SMS Center	Enter the local SMS center number for storing, forwarding, converting and delivering SMS message.
Enable NAT	Enable or disable NAT function.
Roaming	Enable or disable roaming.
IPv4 Subnet Mask	Customize the cellular subnet mask. If blank, the device will use the subnet mask provided by the cellular base station.
IPv4 Primary DNS	IPv4 address of the preferred DNS server.
IPv4 Secondary DNS	IPv4 address of the secondary DNS server.
IPv6 Primary DNS	IPv6 address of the preferred DNS server.
IPv6 Secondary DNS	IPv6 address of the secondary DNS server.
Customize MTU	Enable or disable to customize the maximum transmission units. When disabled, the device will use the operator's MTU settings.
MTU	Customize the maximum transmission units.
Data Limit	When you reach the specified data usage limit, the data connection of the currently used SIM card will be disabled. 0 means disable the function.
Billing Day	Choose the billing day of the SIM card, the router will reset the data used to 0.

Table 3-2-1-3 Cellular Parameters

**Connection Setting**

Connection Mode Connect on Demand

Re-dial Interval(s) 5

Max Idle Time(s) 60

Triggered by Call ☒

Call Group

Triggered by SMS ☒

SMS Group

SMS Text

Figure 3-2-1-4

Connection Setting	
Item	Description
Connection Mode	Select "Always Online" and "Connect on Demand".

Re-dial Interval(s)	Set the interval to dial into ISP when it loses connection, the default value is 5s.
Max Idle Times	Set the maximum duration of the router when the current link is under idle status. Range: 10-3600
Triggered by Call	The router will switch from offline mode to cellular network mode automatically when it receives a call from a specific phone number.
Call Group	Select a call group for the call trigger. Go to <b>System &gt; Phone&amp;SMS &gt; Phone</b> to set up phone group.
Triggered by SMS	The router will switch from offline mode to cellular network mode automatically when it receives a specific SMS from the specific mobile phone.
SMS Group	Select an SMS group for the trigger. Go to <b>System &gt; Phone&amp;SMS &gt; SMS</b> to set up an SMS group.
SMS Text	Fill in the SMS content for triggering.

Table 3-2-1-4 Cellular Parameters

## Related Topics

[Cellular Network Connection](#)

[Phone Group](#)

### 3.2.1.3 Port

This section describes how to configure the Ethernet port parameters.

UR32L cellular router supports 2 Fast Ethernet ports.

Port Setting					
Port	Connection Status	Status	Property	Speed	Duplex
LAN1/WAN	Connected	up	wan	auto	auto
LAN2	Connected	up	lan	auto	auto

Figure 3-2-1-5

Port Setting	
Item	Description
Port	Users can define the Ethernet ports according to their needs.
Connection Status	Show the connection status of this Ethernet port.
Status	Set the status of the Ethernet port; select "up" to enable and "down" to disable.
Property	Show the Ethernet port's type, as a WAN port or a LAN port.
Speed	Set the Ethernet port's speed. The options are "auto", "100 Mbps", and "10 Mbps".
Duplex	Set the Ethernet port's mode. The options are "auto", "full", and "half".

Table 3-2-1-5 Port Parameters

**Note:**

- Only the PoE version (model name included “-P”) supports the below settings.
- These settings only work when this router is powered by 48V.
- Only the devices with hardware version 4.0 and later support these features.
- Only when the port property of LAN1/WAN is set to LAN port, the PoE setting will work.







PoE								
Port	PoE	Power Supply	Voltage (V)	Current (mA)	Power (W)	Describe	PING detection IP	Operation
LAN1	Enable	Power On	47	79	3.745		1.2.3.4	  
LAN2	Enable	Power On	47	120	5.688		1.2.3.4	  

Figure 3-2-1-6

PoE Setting	
Item	Description
Port	Users can define the Ethernet ports according to their needs.
PoE	Enable or disable this Ethernet port to supply power.
Power Supply	Show the power supply status of this Ethernet port.
Voltage	Show the current output voltage of this Ethernet port.
Current	Show the current output current of this Ethernet port.
Power	Show the current output power of this Ethernet port.
Describe	Add the description of this Ethernet port.
Ping Detection IP	Show the IP address to send ICMP packet to detect the connection status.
Operation	You can change the power supply priority of the ports and configure the ping detection rules here.

Table 3-2-1-6 PoE Parameters

PING detection reboot

Enable

☒

Destination IP

1.2.3.4

Ping Interval

5

mins

Ping Retry Interval

3

s

Overtime Period

5

s

Max Retry Times

3

Reboot Interval

5

s

Max Reboot Times

3

OK

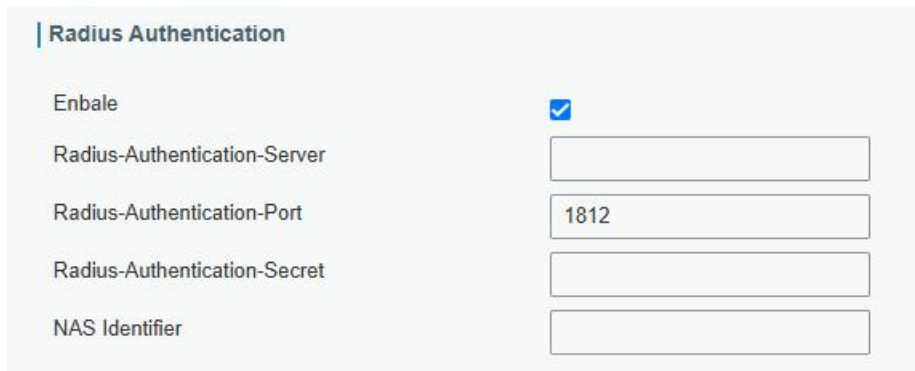
Cancel

Figure 3-2-1-7

Ping Detection reboot	
Item	Description

Enable	If enabled, the router will periodically detect the connection status of the port. If detection fails, the router will reboot this port.
Destination IP	The router will send an ICMP packet to the IPv4 address to determine whether the connection is still available or not.
Interval	Time interval (in seconds) between two Pings.
Ping Retry Interval	Set the ping retry interval. When ping fails, the router will ping again in every retry interval.
Overtime Period	The maximum amount of time the router will wait for a response to a ping request. If it does not receive a response for the amount of time defined in this field, the ping request will be considered to have failed.
Max Ping Retries	The retry times of the router sending ping request until determining that the connection has failed.
Reboot Interval	The power-off interval of this Ethernet port.
Max Reboot Times	The retry times of the router rebooting this port. 0 means no limits.

Table 3-2-1-7 Ping Detection Parameters



**Radius Authentication**

Enable ☒

Radius-Authentication-Server

Radius-Authentication-Port

Radius-Authentication-Secret

NAS Identifier

Figure 3-2-1-8

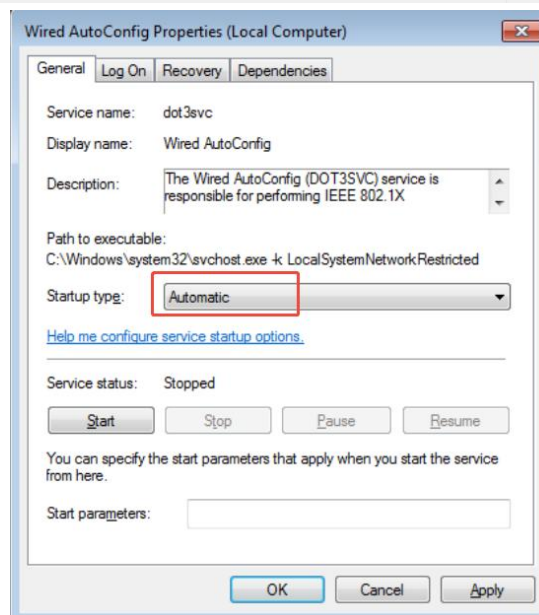
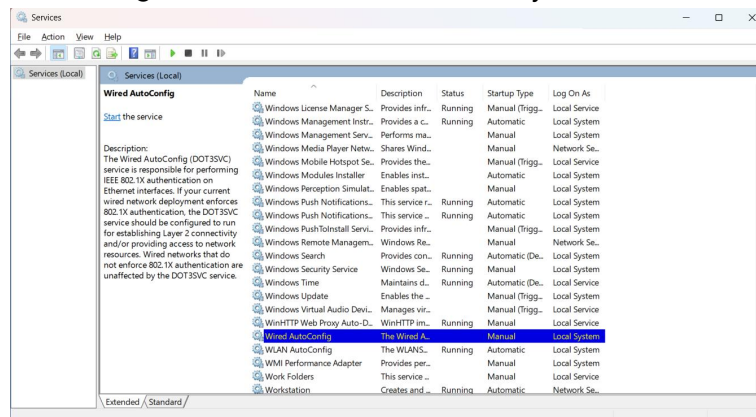
Radius Authentication	
Item	Description
Enable	Enable or disable Radius authentication for the wired portion of the LAN port.
Radius-Authentication-Server	Enter the IP address of the Radius authentication server.
Radius-Authentication-Port	Enter the port of the Radius authentication server. Default: 1812
Radius-Authentication-Secret	Enter the shared secret for the Radius authentication server.
NAS Identifier	Unique identifier, used to identify the access device, can help the RADIUS server distinguish authentication requests from different access devices.

Table 3-2-1-8

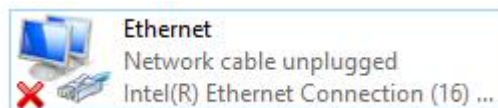


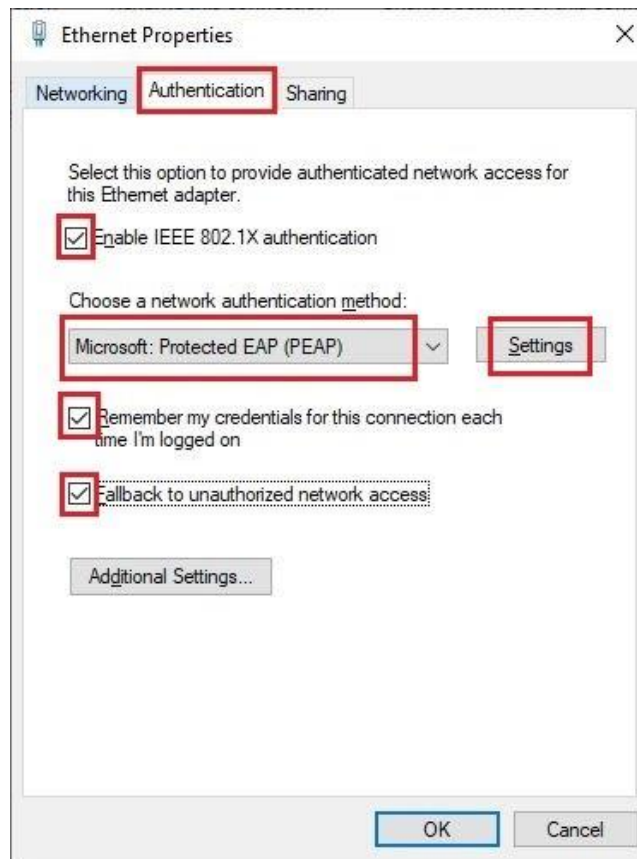
**Note:** Please refer to below steps to turn on the 802.1x authentication on a Windows computer:

1. Enable the **Wired Autoconfig** and set it to start automatically.



2. Go to **Control Panel > Network and Internet > Network and Sharing Center** to select **Ethernet** connection to enable 802.1x authentication, and configure according to the authentication method provided by the authentication server.





#### 3.2.1.4 WAN

The WAN port can be connected with an Ethernet cable to get Internet access.

**WAN Settings**

— WAN\_1

Enable	<input checked="" type="checkbox"/>
Port	LAN1/WAN
Connection Type	Static IP ▼
IPv4 Address	192.168.40.166
Netmask	255.255.255.0
IPv4 Gateway	192.168.40.1
IPv6 Address	fe80::26e1:24ff:fe0b:6443
Prefix Length	64
IPv6 Gateway	
MTU	1500
IPv4 Primary DNS	8.8.8.8
IPv4 Secondary DNS	
IPv6 Primary DNS	
IPv6 Secondary DNS	
Enable NAT	<input checked="" type="checkbox"/>

Figure 3-2-1-8

WAN Setting		
Item	Description	Default
Enable	Enable WAN function.	Enable
Port	The port that is currently set as WAN port.	WAN
Connection Type	<p>Select connection type as required.</p> <p><b>Static IP:</b> assign a static IP address, netmask and gateway for Ethernet WAN interface.</p> <p><b>DHCP Client:</b> configure Ethernet WAN interface as DHCP Client to obtain IP address automatically.</p> <p><b>PPPoE:</b> configure Ethernet WAN interface as PPPoE Client.</p> <p><b>-DHCPv6 Client:</b> configure Ethernet WAN interface as DHCP Client to obtain IPv6 address automatically.</p> <p><b>Dual-Stack Lite:</b> use IPv4-in-IPv6 tunneling to send terminal device's IPv4 packet through a tunnel on</p>	Static IP

	the IPv6 access network to the ISP.	
MTU	Set the maximum transmission unit.	1500
IPv4 Primary DNS	Set the primary IPv4 DNS server.	8.8.8.8
IPv4 Secondary DNS	Set the secondary IPv4 DNS server.	-- --
IPv6 Primary DNS	Set the primary IPv6 DNS server.	-- --
IPv6 Secondary DNS	Set the secondary IPv6 DNS server.	-- --
Enable NAT	Enable or disable NAT function. When enabled, a private IP can be translated to a public IP.	Enable

Table 3-2-1-8 WAN Parameters

## 1. Static IP Configuration

If the external network assigns a fixed IP for the WAN interface, select Static IP mode.

Enable ☒

Port

Connection Type

IPv4 Address

Netmask

IPv4 Gateway

IPv6 Address

Prefix Length

IPv6 Gateway

MTU

IPv4 Primary DNS

IPv4 Secondary DNS

IPv6 Primary DNS

IPv6 Secondary DNS

Enable NAT ☒

Multiple IP Address

IP Address	Netmask	Operation
+		

Figure 3-2-1-9

Static IP		
Item	Description	Default
IPv4 Address	Set the IPv4 address of the WAN port.	192.168.0.1
Netmask	Set the Netmask for WAN port.	255.255.255.0
IPv4	Set the gateway for WAN port's IPv4 address.	192.168.0.2

Gateway		
IPv6 Address	Set the IPv6 address which can access the Internet.	Generated from Mac address
Prefix-length	Set the IPv6 prefix length to identify how many bits of a Global Unicast IPv6 address are there in the network part. For example, in 2001:0DB8:0000:000b::/64, the number 64 is used to identify that the first 64 bits are in network part.	64
IPv6 Gateway	Set the gateway for WAN port's IPv6 address. E.g.2001:DB8:ACAD:4::2.	--
Multiple IP Address	Set the multiple IP addresses for WAN port.	Null

Table 3-2-1-9 Static Parameters

## 2. DHCP Client/DHCPv6 Client

If the external network has DHCP server enabled and has assigned IP addresses to the Ethernet WAN interface, select DHCP/DHCPv6 client mode to obtain IP address automatically.

Enable	<input checked="" type="checkbox"/>
Port	LAN1/WAN
Connection Type	DHCP Client
MTU	1500
Use Peer DNS	<input type="checkbox"/>
IPv4 Primary DNS	8.8.8.8
IPv4 Secondary DNS	223.5.5.5
Enable NAT	<input checked="" type="checkbox"/>

Figure 3-2-1-10

Enable	<input checked="" type="checkbox"/>
Port	LAN1/WAN
Connection Type	DHCPv6 Client
Request IPv6-address	None
Request IPv6-prefix of length	0-64
MTU	1500
IPv6 Primary DNS	
IPv6 Secondary DNS	
Enable NAT	<input checked="" type="checkbox"/>

Figure 3-2-1-11

Item	Description
Use Peer DNS	Obtain peer DNS automatically during PPP dialing. DNS is necessary when visiting domain name.
<b>DHCPv6 Client</b>	
Request IPv6-address	Choose the ways to obtain the IPv6 address from the DHCP Server. Select from try, force, none. Try: The DHCP Server will assign specific address in priority. Force: The DHCP Server assigns specific address only. None: The DHCP Server will randomly assign address. The specific address is relevant to the prefix length of IPv6 address you set.
Request prefix length of IPv6	Set the prefix length of IPv6 address which router is expected to obtain from DHCP Server.

Table 3-2-1-10 DHCP Client Parameters

### 3. PPPoE

PPPoE refers to a point to point protocol over Ethernet. User has to install a PPPoE client on the basis of the original connection way. With PPPoE, remote access devices can get control of each user.

Enable	<input checked="" type="checkbox"/>
Port	LAN1/WAN
Connection Type	PPPoE ▼
Username	<input type="text"/>
Password	<input type="password"/>
Link Detection Interval(s)	60
Max Retries	0
MTU	1500
Use Peer DNS	<input type="checkbox"/>
IPv4 Primary DNS	8.8.8.8
IPv4 Secondary DNS	223.5.5.5
Enable NAT	<input checked="" type="checkbox"/>

Figure 3-2-1-12

Item	Description
Username	Enter the username provided by your Internet Service Provider (ISP).
Password	Enter the password provided by your Internet Service Provider (ISP).
Link Detection Interval (s)	Set the heartbeat interval for link detection. Range: 1-600.
Max Retries	Set the maximum retry times after it fails to dial up. Range: 0-9.
Use Peer DNS	Obtain peer DNS automatically during PPP dialing. DNS is necessary when visiting domain name.

Table 3-2-1-11 PPPoE Parameters

#### 4. Dual-Stack Lite

Dual-Stack Lite (DS-Lite) uses IPv4-in-IPv6 tunneling to send a subscriber's IPv4 packet through a tunnel on the IPv6 access network to the ISP. The IPv6 packet is decapsulated to recover the subscriber's IPv4 packet and is then sent to the Internet after NAT address and port translation and other LSN related processing. The response packets traverse through the same path to the subscriber.

Enable	<input checked="" type="checkbox"/>
Port	LAN1/WAN
Connection Type	Dual-Stack Lite
IPv6 Gateway	
DS-Lite AFTR Address	
Local IPv6 Address	
MTU	1500
IPv4 Primary DNS	8.8.8.8
IPv4 Secondary DNS	223.5.5.5
IPv6 Primary DNS	
IPv6 Secondary DNS	
Enable NAT	<input checked="" type="checkbox"/>

Figure 3-2-1-13

Dual-Stack Lite	
Item	Description
IPv6 Gateway	Set the gateway for WAN port's IPv6 address.
DS-Lite AFTR Address	Set the DS-Lite AFTR server address.
Local IPv6 Address	Set the WAN port IPv6 address which use the same subnet as IPv6 gateway.

Table 3-2-1-12 Dual-Stack Lite Parameters

## Related Configuration Example

### [Ethernet WAN Connection](#)

#### 3.2.1.5 Bridge

Bridge setting is used for managing local area network devices which are connected to LAN ports of the UR32L, allowing each of them to access the Internet.

**Bridge Setting**

Name: Bridge0

STP: ☒

IP Address: 192.168.1.1

Netmask: 255.255.255.0

IPv6 Address: 2004::1/64

MTU: 1500

**Multiple IP Address**

IP Address	Netmask	Operation
+		

Figure 3-2-1-14

Bridge		
Item	Description	Default
Name	Show the name of bridge. "Bridge0" is set by default and cannot be changed.	Bridge0
STP	Enable/disable STP.	Disable
IP Address	Set the IP address for bridge.	192.168.1.1
Netmask	Set the Netmask for bridge.	255.255.255.0
IPv6 Address	Set the IPv6 address for bridge.	2004::1/64
MTU	Set the maximum transmission unit. Range: 68-1500.	1500
Multiple IP Address	Set the multiple IP addresses for bridge.	Null

Table 3-2-1-13 Bridge Settings

#### 3.2.1.6 Switch

VLAN is a kind of new data exchange technology that realizes virtual work groups by logically dividing the LAN device into network segments.



**LAN Settings**

Name	VLAN ID	IP Address	Netmask	MTU	Operation
+					

**VLAN Settings**

VLAN ID	LAN 1	LAN 2	LAN 3	LAN 4	CPU	Operation
1	Untagged	Untagged	Untagged	Untagged	Tagged	×
+						

Figure 3-2-1-15

Switch	
Item	Description
<b>LAN Settings</b>	
Name	Set interface name of VLAN.
VLAN ID	Select VLAN ID of the interface.
IP Address	Set IP address of LAN port.
Netmask	Set Netmask of LAN port.
MTU	Set the maximum transmission unit of LAN port. Range: 68-1500.
<b>VLAN Settings</b>	
VLAN ID	Set the label ID of the VLAN. Range: 1-4094.
LAN 1/2/3/4	Make the VLAN bind with the corresponding ports and select status from "Tagged", "Untagged" and "Close" for Ethernet frame on trunk link.
CPU	Control communication between VLAN and other networks.

Table 3-2-1-14 VLAN Trunk Parameters

### 3.2.1.7 Loopback

Loopback interface is used for replacing router's ID as long as it is activated. When the interface is DOWN, the ID of the router has to be selected again which leads to long convergence time of OSPF. Therefore, Loopback interface is generally recommended as the ID of the router.

Loopback interface is a logic and virtual interface on router. Under default conditions, there's no loopback interface on router, but it can be created as required.

**Loopback Address**

IP Address: 127.0.0.1

Netmask: 255.0.0.0

**Multiple IP Addresses**

IP Address	Netmask	Operation
+		

Save

Figure 3-2-1-16

Loopback		
Item	Description	Default
IP Address	Unalterable	127.0.0.1
Netmask	Unalterable	255.0.0.0
Multiple IP Addresses	Apart from the IP above, user can configure other IP addresses.	Null

Table 3-2-1-15 Loopback Parameters

### 3.2.2 DHCP

DHCP adopts Client/Server communication mode. The Client sends configuration request to the Server which feeds back corresponding configuration information and distributes IP address to the Client so as to achieve the dynamic configuration of IP address and other information.

#### 3.2.2.1 DHCP Server/DHCPv6 Server

UR32L can be set as a DHCP server or DHCPv6 server to distribute IP address when a host logs on and ensures each host is supplied with different IP addresses. DHCP Server has simplified some previous network management tasks requiring manual operations to the largest extent. UR32L only supports stateful DHCPv6 when working as DHCPv6 server.

DHCP Server

DHCPv6 Server

DHCP Relay

— DHCP Server\_1

Enable

☒

Interface

Bridge0

Start Address

192.168.1.113

End Address

192.168.1.126

Netmask

255.255.255.0

Lease Time(Min)

1440

Primary DNS Server

8.8.8.8

Secondary DNS Server

114.114.114.114

Windows Name Server

Static IP

MAC Address	IP Address	Operation
		<div>+</div>

Figure 3-2-2-1

[DHCP Server](#)
[DHCPv6 Server](#)
[DHCP Relay](#)

— DHCPv6 Server\_1

Enable ☒

Interface Bridge0

Start Address 2004:0:0:0:0:0:100

End Address 2004:0:0:0:0:0:200

Prefix Length 64

Lease Time(Min) 1440

Primary DNS Server 2001:DB0:3000:3001::1

Secondary DNS Server 2001:4860:4860:8888

Static IP

DUID	IPv6 Address	Operation

Figure 3-2-2-2

DHCP/DHCPv6 Server		
Item	Description	Default
Enable	Enable or disable DHCP server.	Enable
Interface	Select interface.	Bridge0
Start Address	Define the beginning of the pool of IP addresses which will be leased to DHCP clients.	192.168.1.0 0
End Address	Define the end of the pool of IP addresses which will be leased to DHCP clients.	192.168.1.9 9
Netmask	Define the subnet mask of IPv4 address obtained by DHCP clients from DHCP server.	255.255.255 .0
Prefix Length	Set the IPv6 prefix length of IPv6 address obtained by DHCP clients from DHCP server.	64
Lease Time (Min)	Set the lease time on which the client can use the IP address obtained from DHCP server. Range: 1-10080.	1440
Primary DNS Server	Set the primary DNS server.	192.168.1.1
Secondary DNS Server	Set the secondary DNS server.	Null
Windows Name Server	Define the Windows Internet Naming Service obtained by DHCP clients from DHCP sever. Generally you can leave it blank.	Null
Static IP		
MAC Address	Set a static and specific MAC address for the DHCP client (it should be different from other MACs so as to avoid conflict).	Null
DUID	Set a static and specific DUID for the DHCPv6 client (it should be different from other DUID so as to avoid conflict).	Null
IP Address	Set a static and specific IP address for the DHCP client (it	Null

	should be outside of the DHCP range).	
--	---------------------------------------	--

Table 3-2-2-1 DHCP Server Parameters

### 3.2.2.2 DHCP Relay

UR32L can be set as DHCP Relay to provide a relay tunnel to solve the problem that DHCP Client and DHCP Server are not in the same subnet.

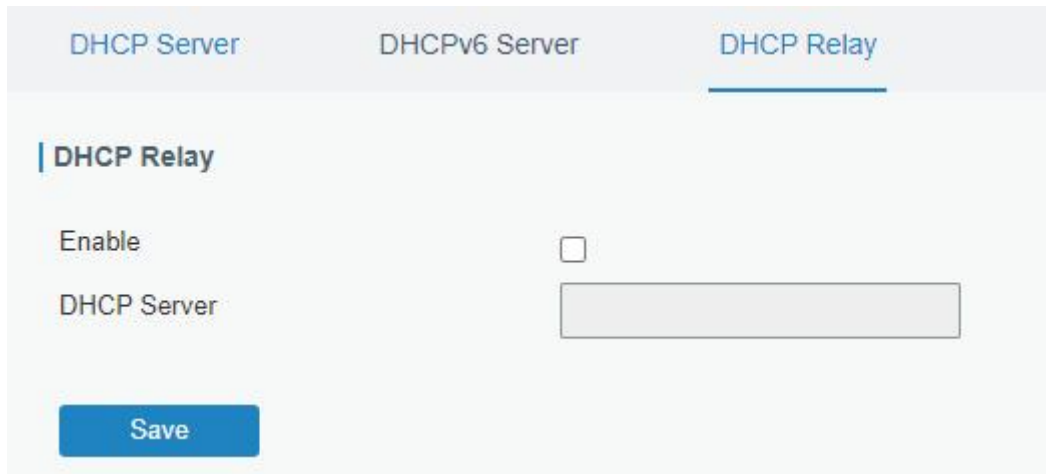


Figure 3-2-2-3

DHCP Relay	
Item	Description
Enable	Enable or disable DHCP relay.
DHCP Server	Set DHCP server, up to 10 servers can be configured; separate them by blank space or ",".

Table 3-2-2-2 DHCP Relay Parameters

### 3.2.3 Firewall

This section describes how to set the firewall parameters, including security, ACL, DMZ, Port Mapping, MAC Binding and SPI.

The firewall implements corresponding control of data flow at entry direction (from Internet to local area network) and exit direction (from local area network to Internet) according to the content features of packets, such as protocol style, source/destination IP address, etc. It ensures that the router operate in a safe environment and host in local area network.

#### 3.2.3.1 Security

**Prevent Attack**

DoS/DDoS Protection ☐

**Access Service Control**

Service	Port	Local	Remote
HTTP	<input type="text" value="80"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HTTPS	<input type="text" value="443"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TELNET	<input type="text" value="23"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SSH	<input type="text" value="22"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FTP	<input type="text" value="21"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Website Blocking**

URL Blocking

Keyword Blocking

Figure 3-2-3-1

Item	Description	Default
<b>Prevent Attack</b>		
DoS/DDoS Protection	Enable/disable Prevent DoS/DDoS Attack.	Disable
<b>Access Service Control</b>		
Port	Set port number of the services. Range: 1-65535.	--
Local	Access the router locally.	Enable
Remote	Access the router remotely.	Disable
HTTP	Users can log in the device locally via HTTP to access and control it through Web after the option is checked.	80
HTTPS	Users can log in the device locally and remotely via HTTPS to access and control it through Web after option is checked.	443
TELNET	Users can log in the device locally and remotely via Telnet after the option is checked.	23
SSH	Users can log in the device locally and remotely via SSH after the option is checked.	22
FTP	Users can log in the device locally and remotely via FTP after the option is checked.	21

Website Blocking	
URL Blocking	Enter the HTTP address which you want to block.
Keyword Blocking	You can block specific website by entering keyword. The maximum number of character allowed is 64.

Table 3-2-3-1 Security Parameters

### 3.2.3.2 ACL

Access control list, also called ACL, implements permission or prohibition of access for specified network traffic (such as the source IP address) by configuring a series of matching rules so as to filter the network interface traffic. When router receives packet, the field will be analyzed according to the ACL rule applied to the current interface. After the special packet is identified, the permission or prohibition of corresponding packet will be implemented according to preset strategy.

The data package matching rules defined by ACL can also be used by other functions requiring flow distinction.

Security **ACL** Port Mapping DMZ MAC Binding Custom Rules SPI

**ACL Setting**

Default Filter Policy: Accept

**Access Control List**

ID	Action	Protocol	Source IP	Destination IP	More Detail	Description	Operation
							+

**Interface List**

Interface	In ACL	Out ACL	Operation
			+

Save

Figure 3-2-3-2

Type: extended

ID:

Action: permit

Protocol: tcp

Source IP:

Source Wildcard Mask: 0.0.0.0

Source Port Type: any

Destination IP:

Destination Wildcard Mask: 0.0.0.0

Destination Port Type: any

Description:

Save Cancel

Figure 3-2-3-3

Item	Description
<b>ACL Setting</b>	
Default Filter Policy	Select from "Accept" and "Deny". The packets which are not included in the access control list will be processed by the default filter policy.
<b>Access Control List</b>	
Type	Select type from "Extended" and "Standard".
ID	User-defined ACL number. Range: 1-199.
Action	Select from "Permit" and "Deny".
Protocol	Select protocol from "ip", "icmp", "tcp", "udp", and "1-255".
Source IP	Source network address (leaving it blank means all).
Source Wildcard Mask	Wildcard mask of the source network address.
Destination IP	Destination network address (0.0.0.0 means all).
Destination Wildcard Mask	Wildcard mask of destination address.
Description	Fill in a description for the groups with the same ID.
ICMP Type	Enter the type of ICMP packet. Range: 0-255.
ICMP Code	Enter the code of ICMP packet. Range: 0-255.
Source Port Type	Select source port type, such as specified port, port range, etc.
Source Port	Set source port number. Range: 1-65535.
Start Source Port	Set start source port number. Range: 1-65535.
End Source Port	Set end source port number. Range: 1-65535.
Destination Port Type	Select destination port type, such as specified port, port range, etc.
Destination Port	Set destination port number. Range: 1-65535.
Start Destination Port	Set start destination port number. Range: 1-65535.
End Destination Port	Set end destination port number. Range: 1-65535.
More Details	Show information of the port.
<b>Interface List</b>	
Interface	Select network interface for access control.
In ACL	Select a rule for incoming traffic from ACL ID.
Out ACL	Select a rule for outgoing traffic from ACL ID.

Table 3-2-3-2 ACL Parameters

### 3.2.3.3 Port Mapping (DNAT)

When external services are needed internally (for example, when a website is published externally), the external address initiates an active connection. And, the router or the gateway on the firewall receives the connection. Then it will convert the connection into an internal connection. This conversion is called DNAT, which is mainly used for external and internal services.

Source IP	Source Port	Destination IP	Destination Port	Protocol	Description	Operation
0.0.0.0/0				TCP		X +

Figure 3-2-3-3

Port Mapping	
Item	Description
Source IP	Specify the host or network which can access local IP address. 0.0.0.0/0 means all.
Source Port	Enter the TCP or UDP port from which incoming packets are forwarded. Range: 1-65535.
Destination IP	Enter the IP address that packets are forwarded to after being received on the incoming interface.
Destination Port	Enter the TCP or UDP port that packets are forwarded to after being received on the incoming port(s). Range: 1-65535.
Protocol	Select from "TCP" and "UDP" as your application required.
Description	The description of this rule.

Table 3-2-3-3 Port Mapping Parameters

## Related Configuration Example

### [NAT Application Example](#)

#### 3.2.3.4 DMZ

DMZ is a host within the internal network that has all ports exposed, except those forwarded ports in port mapping.

**DMZ**

Enable ☐

DMZ Host

Source Address

**Save**

Figure 3-2-3-4

DMZ	
Item	Description
Enable	Enable or disable DMZ.
DMZ Host	Enter the IP address of the DMZ host on the internal network.
Source Address	Set the source IP address which can access to DMZ host. "0.0.0.0/0" means any address.

Table 3-2-3-4 DMZ Parameters



### 3.2.3.5 MAC Binding

MAC Binding is used for specifying hosts by matching MAC addresses and IP addresses that are in the list of allowed outer network access.

MAC Binding List

MAC	IP	Description	Operation
			+

Save

Figure 3-2-3-5

MAC Binding List	
Item	Description
MAC Address	Set the binding MAC address.
IP Address	Set the binding IP address.
Description	Fill in a description for convenience of recording the meaning of the binding rule for each piece of MAC-IP.

Table 3-2-3-5 MAC Binding Parameters

### 3.2.3.6 Custom Rules

In this page, you can configure your own custom firewall iptables rules.

Custom Rules

Rule	Description	Operation
Eg: -t filter -I INPUT -s 192.168.3.240 -j DROP		×
		+

Save

Figure 3-2-3-6

Custom Rules	
Item	Description
Rule	Specify an iptables rule like the example shows. Tips: You must reboot the device to take effect after modifying or deleting the iptables rules.
Description	Enter the description of the rule.

Table 3-2-3-6 Custom Rules Parameters

### 3.2.3.7 SPI

**SPI Firewall**

- ☐ Enable
- ☐ Filter Proxy
- ☐ Filter Cookies
- ☐ Filter ActiveX
- ☐ Filter Java Applets
- ☒ Filter Multicast
- ☐ Filter IDENT(port 113)
- ☒ Block Wan SNMP access
- ☒ Filter WAN NAT Redirection
- ☒ Block Anonymous Wan Request

**Save**

Figure 3-2-3-7

SPI Firewall	
Item	Description
Enable	Enable/disable SPI firewall.
Filter Proxy	Blocks HTTP requests containing the "Host": string.
Filter Cookies	Identifies HTTP requests that contain "Cookie": String and mangle the cookie. Attempts to stop cookies from being used.
Filter ActiveX	Blocks HTTP requests of the URL that ends in ".ocx" or ".cab".
Filter Java Applets	Blocks HTTP requests of the URL that ends in ".js" or ".class".
Filter Multicast	Prevent multicast packets from reaching the LAN.
Filter IDENT(port 113)	Prevent WAN access to Port 113.
Block WAN SNMP access	Block SNMP requests from the WAN.
Filter WAN NAT Redirection	Prevent hosts on LAN from using WAN address of router to connect servers on the LAN (which have been configured using port redirection).
Block Anonymous WAN Requests	Stop the router from responding to "pings" from the WAN.

Table 3-2-3-7 SPI Parameters

### 3.2.4 QoS

Quality of service (QoS) refers to traffic prioritization and resource reservation control mechanisms rather than the achieved service quality. QoS is engineered to provide different priority for different applications, users, data flows, or to guarantee a certain level of performance to a data flow.

QoS(Download) QoS(Upload)

**Download Bandwidth**

Enable ☐

Default Category

Download Bandwidth  kbits/s

Capacity

**Service Category**

Name	Percent(%)	Max BW(kbps)	Min BW(kbps)	Operation
				<a href="#">+</a>

**Service Category Rules**

Name	Source IP	Source Port	Destination IP	Destination Port	Protocol	Service Category	Operation
							<a href="#">+</a>

[Save](#)

Figure 3-2-4-1

QoS	
Item	Description
<b>Download/Upload</b>	
Enable	Enable or disable QoS.
Default Category	Select the default category from Service Category list.
Download/Upload Bandwidth Capacity	The download/upload bandwidth capacity of the network that the router is connected with, in kbps. Range: 1-8000000.
<b>Service Category</b>	
Name	You can use characters such digits, letters and "-".
Percent (%)	Set percent for the service category. Range: 0-100.
Max BW(kbps)	The maximum bandwidth that this category is allowed to consume, in kbps. The value should be less than the "Download/Upload Bandwidth Capacity" when the traffic is blocked.
Min BW(kbps)	The minimum bandwidth that can be guaranteed for the category, in kbps. The value should be less than the "MAX BW" value.
<b>Service Category Rules</b>	
Item	Description
Name	Give the rule a descriptive name.
Source IP	Source address of flow control (leaving it blank means any).
Source Port	Source port of flow control. Range: 0-65535 (leaving it blank means any).
Destination IP	Destination address of flow control (leaving it blank means any).
Destination Port	Destination port of flow control. Range: 0-65535 (leaving it blank means any).
Protocol	Select protocol from "ANY", "TCP", "UDP", "ICMP", and "GRE".

Service Category	Set service category for the rule.
------------------	------------------------------------

Table 3-2-4-1 QoS (Download/Upload) Parameters

## Related Configuration Example

### [QoS Application Example](#)

## 3.2.5 VPN

Virtual Private Networks, also called VPNs, are used to securely connect two private networks together so that devices can connect from one network to the other network via secure channels. The UR32L supports DMVPN, IPsec, GRE, L2TP, PPTP, OpenVPN, as well as GRE over IPsec and L2TP over IPsec.

### 3.2.5.1 DMVPN

A dynamic multi-point virtual private network (DMVPN), combining mGRE and IPsec, is a secure network that exchanges data between sites without passing traffic through an organization's headquarter VPN server or router.

Figure 3-2-5-1

DMVPN	
Item	Description
Enable	Enable or disable DMVPN.
Hub Address	The IP address or domain name of DMVPN Hub.
Local IP address	DMVPN local tunnel IP address.
GRE Hub IP Address	GRE Hub tunnel IP address.
GRE Local IP Address	GRE local tunnel IP address.
GRE Netmask	GRE local tunnel netmask.

GRE Key	GRE tunnel key.
Negotiation Mode	Select from "Main" and "Aggressive".
Authentication Algorithm	Select from "DES", "3DES", "AES128", "AES192" and "AES256".
Encryption Algorithm	Select from "MD5" and "SHA1".
DH Group	Select from "MODP768_1", "MODP1024_2" and "MODP1536_5".
Key	Enter the preshared key.
Local ID Type	Select from "Default", "ID", "FQDN", and "User FQDN"
IKE Life Time (s)	Set the lifetime in IKE negotiation. Range: 60-86400.
SA Algorithm	Select from "DES_MD5", "DES_SHA1", "3DES_MD5", "3DES_SHA1", "AES128_MD5", "AES128_SHA1", "AES192_MD5", "AES192_SHA1", "AES256_MD5" and "AES256_SHA1".
PFS Group	Select from "NULL", "MODP768_1", "MODP1024_2" and "MODP1536-5".
Life Time (s)	Set the lifetime of IPsec SA. Range: 60-86400.
DPD Interval Time (s)	Set DPD interval time
DPD Timeout (s)	Set DPD timeout.
Cisco Secret	Cisco Nhrp key.
NHRP Holdtime (s)	The holdtime of NHRP protocol.

Table 3-2-5-1 DMVPN Parameters

### 3.2.5.2 IPSec Server

IPsec is especially useful for implementing virtual private networks and for remote user access through dial-up connection to private networks. A big advantage of IPsec is that security arrangements can be handled without requiring changes to individual user computers.

IPsec provides three choices of security service: Authentication Header (AH), Encapsulating Security Payload (ESP), and Internet Key Exchange (IKE). AH essentially allows authentication of the senders' data. ESP supports both authentication of the sender and data encryption. IKE is used for cipher code exchange. All of them can protect one and more data flows between hosts, between host and gateway, and between gateways.

IPsec Server

Enable

☐

IPsec Mode

Tunnel

IPsec Protocol

ESP

Local Subnet

Local Subnet Mask

Local ID Type

Default

Remote Subnet

Remote Subnet Mask

Remote ID Type

Default

Figure 3-2-5-2

IPsec Server	
Item	Description
Enable	Enable or disable IPsec server mode.
IPsec Mode	Select Tunnel or Transport.
IPsec Protocol	Select from ESP or AH.
Local Subnet	Enter the local LAN subnet IP address on the IPsec tunnel.
Local Subnet Netmask	Enter the local LAN netmask on the IPsec tunnel.
Local ID Type	Select the identifier type, and send it to remote peer. <b>Default:</b> None <b>ID:</b> use local subnet IP address as ID <b>FQDN:</b> fully qualified domain name, example: test.user.com <b>User FQDN:</b> fully qualified username string with email address format, example: test@user.com
Remote Subnet	Set the remote LAN subnet on the IPsec tunnel.
Remote Subnet Mask	Enter the remote LAN netmask on the IPsec tunnel.
Remote ID type	Select the identifier type that is the same as remote peer local ID. <b>Default:</b> None <b>ID:</b> use remote subnet IP address as ID <b>FQDN:</b> fully qualified domain name, example: test.user.com <b>User FQDN:</b> fully qualified username string with email address format, example: test@user.com

Table 3-2-5-2 IPsec Server Parameters

**IKE Parameter** [Collapse](#)

IKE Version: IKEv1

Negotiation Mode: Main

Encryption Algorithm: DES

Authentication Algorithm: MD5

DH Group: MODP768-1

Local Authentication: PSK

XAUTH: ☐

Lifetime(s): 12000

**PSK List**

Selector	PSK	Operation
		<a href="#">+</a>

Figure 3-2-5-3

**SA Parameter** [Collapse](#)

SA Encryption Algorithm: DES

SA Authentication Algorithm: MD5

PFS Group: NULL

Lifetime(s): 3600

DPD Time Interval(s): 30

DPD Timeout(s): 150

**IPsec Advanced** [Collapse](#)

Enable Compression: ☐

Margintime(s): 100

VPN Over IPsec Type: NONE

Expert Options:

Figure 3-2-5-4

IKE Parameter	
Item	Description
IKE Version	Select the method of key exchange from IKEv1 and IKEv2.
Negotiation Mode	When using IKEv1, select Main or Aggressive.
Encryption Algorithm	Select DES, 3DES, AES128, AES192 or AES256.
Authentication Algorithm	Select MD5, SHA1 or SHA2-256.
DH Group	Select MODP768-1, MODP1024-2, MODP1536-5, MODP2048-14 or MODP3072-15.
Local Authentication	Select PSK or CA.

	<b>PSK:</b> use pre-shared key to complete the authentication. <b>CA:</b> use certificate to complete the authentication. After selecting, go to <b>Network &gt; VPN &gt; &gt; Certifications</b> page to import CA certificate, local certificate and private key to corresponding fields.
Remote Authentication	When using IKEv2, select PSK or CA. <b>PSK:</b> use pre-shared key to complete the authentication. <b>CA:</b> use certificate to complete the authentication. After selecting, go to <b>Network &gt; VPN &gt; &gt; Certifications</b> page to import remote certificate to corresponding fields.
XAUTH	When using IKEv1, define XAUTH username and password after XAUTH is enabled.
Lifetime (s)	Set the lifetime in IKE negotiation. Range: 60-86400.
<b>XAUTH List</b>	
Username	Enter the username used for the xauth authentication.
Password	Enter the password used for the xauth authentication.
<b>PSK List</b>	
Selector	Enter the corresponding identification number for PSK authentication.
PSK	Enter the pre-shared key.
<b>SA Parameter</b>	
SA Encryption Algorithm	Select DES, 3DES, AES128, AES192 or AES256.
SA Authentication Algorithm	Select MD5, SHA1 or SHA2-256.
PFS Group	Select NULL, MODP768-1 , MODP1024-2 or MODP1536-5.
Lifetime (s)	Set the lifetime of IPsec SA. Range: 60-86400 s.
DPD Time Interval(s)	Set DPD retry interval to send DPD requests. Range: 1-86400 s
DPD Timeout(s)	Set DPD timeout to detect the remote side fails. Range: 10-86400 s.
<b>IPsec Advanced</b>	
Enable Compression	The head of IP packet will be compressed after it's enabled.
Margintime	Set advanced time before the lifetime expires to begin the re-negotiation.
VPN Over IPsec Type	Select from NONE, GRE and L2TP.
Expert Options	User can enter some other initialization strings in this field and separate the strings with semicolon.

Table 3-2-5-3 IPsec Server Parameters

### 3.2.5.3 IPsec

UR32L supports running at most 3 IPsec clients at the same time.



IPsec\_1

Enable

☐

IPsec Gateway Address

IPsec Mode

Tunnel

IPsec Protocol

ESP

Local Subnet

Local Subnet Mask

Local ID Type

Default

Remote Subnet

Remote Subnet Mask

Remote ID Type

Default

IKE Parameter

>> Expand

SA Parameter

>> Expand

IPsec Advanced

>> Expand

Expert Options

Figure 3-2-5-5

IPsec	
Item	Description
Enable	Enable or disable IPsec client mode. A maximum of 3 tunnels is allowed.
IP Gateway Address	Enter the remote IPsec server address.
IPsec Mode	Select Tunnel or Transport.
IPsec Protocol	Select from ESP or AH.
Local Subnet	Enter the local LAN subnet IP address on the IPsec tunnel.
Local Subnet Netmask	Enter the local LAN netmask on the IPsec tunnel.
Local ID Type	Select the identifier type, and send it to remote peer. <b>Default:</b> None <b>ID:</b> use local subnet IP address as ID <b>FQDN:</b> fully qualified domain name, example: test.user.com <b>User FQDN:</b> fully qualified username string with email address format, example: test@user.com
Remote Subnet	Set the remote LAN subnet on the IPsec tunnel.
Remote Subnet Mask	Enter the remote LAN netmask on the IPsec tunnel.
Remote ID type	Select the identifier type that is the same as remote peer local ID. <b>Default:</b> None <b>ID:</b> use remote subnet IP address as ID

**FQDN:** fully qualified domain name, example: test.user.com  
**User FQDN:** fully qualified username string with email address format, example: test@user.com

Table 3-2-5-4 IPsec Parameters

IKE Parameter	<a href="#">Collapse</a>
IKE Version	IKEv1
Negotiation Mode	Main
Encryption Algorithm	DES
Authentication Algorithm	MD5
DH Group	MODP768-1
Local Authentication	PSK
Local Secrets	
XAUTH	<input type="checkbox"/>
Lifetime(s)	10800
SA Parameter	<a href="#">Collapse</a>
SA Encryption Algorithm	DES
SA Authentication Algorithm	MD5
PFS Group	NULL
Lifetime(s)	3600
DPD Time Interval(s)	30
DPD Timeout(s)	150
IPsec Advanced	<a href="#">Collapse</a>
Enable Compression	<input type="checkbox"/>
Margintime(s)	100
VPN Over IPsec Type	NONE
Expert Options	

Figure 3-2-5-6

IKE Parameter	
Item	Description
IKE Version	Select the method of key exchange from IKEv1 and IKEv2.
Negotiation Mode	When using IKEv1, select Main or Aggressive.
Encryption Algorithm	Select DES, 3DES, AES128, AES192 or AES256.
Authentication Algorithm	Select MD5, SHA1 or SHA2-256.
DH Group	Select MODP768-1, MODP1024-2, MODP1536-5, MODP2048-14 or MODP3072-15.
Local Authentication	Select PSK or CA. <b>PSK:</b> use pre-shared key to complete the authentication.

	<b>CA:</b> use certificate to complete the authentication. After selecting, go to <b>Network &gt; VPN &gt; &gt; Certifications</b> page to import CA certificate, local certificate and private key to corresponding fields.
Local Secrets	Enter the pre-shared key which is defined on server side.
Remote Authentication	When using IKEv2, select PSK or CA. <b>PSK:</b> use pre-shared key to complete the authentication. <b>CA:</b> use certificate to complete the authentication. After selecting, go to <b>Network &gt; VPN &gt; &gt; Certifications</b> page to import remote certificate to corresponding fields.
Remote Secrets	Enter the pre-shared key which is defined on server side.
XAUTH	Enter XAUTH username and password which is defined on server side.
Lifetime (s)	Set the lifetime in IKE negotiation. Range: 60-86400.
<b>SA Parameter</b>	
SA Encryption Algorithm	Select DES, 3DES, AES128, AES192 or AES256.
SA Authentication Algorithm	Select MD5, SHA1 or SHA2-256.
PFS Group	Select NULL, MODP768-1 , MODP1024-2 or MODP1536-5.
Lifetime (s)	Set the lifetime of IPsec SA. Range: 60-86400 s.
DPD Time Interval(s)	Set DPD retry interval to send DPD requests. Range: 1-86400 s
DPD Timeout(s)	Set DPD timeout to detect the remote side fails. Range: 10-86400 s.
<b>IPsec Advanced</b>	
Enable Compression	The head of IP packet will be compressed after it's enabled.
Margintime	Set advanced time before the lifetime expires to begin the re-negotiation.
VPN Over IPsec Type	Select from NONE, GRE and L2TP.
Expert Options	User can enter some other initialization strings in this field and separate the strings with semicolon.

Table 3-2-5-5 IPsec Parameters

### 3.2.5.4 GRE

Generic Routing Encapsulation (GRE) is a protocol that encapsulates packets in order to route other protocols over IP networks. It's a tunneling technology that provides a channel through which encapsulated data message could be transmitted and encapsulation and decapsulation could be realized at both ends.

In the following circumstances the GRE tunnel transmission can be applied:

- GRE tunnel could transmit multicast data packets as if it were a true network interface. Single use of IPsec cannot achieve the encryption of multicast.
- A certain protocol adopted cannot be routed.
- A network of different IP addresses shall be required to connect other two similar networks.

The screenshot shows the 'GRE Settings' configuration page. It features a list of settings for three GRE tunnels: GRE\_1, GRE\_2, and GRE\_3. GRE\_1 is currently selected and expanded, showing the following options:

- Enable:** A checkbox that is currently unchecked.
- Remote IP Address:** An empty text input field.
- Local IP Address:** An empty text input field.
- Local Virtual IP Address:** An empty text input field.
- Netmask:** A text input field containing the value '255.255.255.0'.
- Peer Virtual IP Address:** An empty text input field.
- Global Traffic Forwarding:** A checkbox that is currently unchecked.
- Remote Subnet:** An empty text input field.
- Remote Netmask:** An empty text input field.
- MTU:** A text input field containing the value '1500'.
- Key:** An empty text input field.
- Enable NAT:** A checkbox that is currently checked.

Below the GRE\_1 settings, there are expandable sections for GRE\_2 and GRE\_3, each indicated by a plus sign (+).

Figure 3-2-5-7

GRE	
Item	Description
Enable	Check to enable GRE function.
Remote IP Address	Enter the real remote IP address of GRE tunnel.
Local IP Address	Set the local IP address.
Local Virtual IP Address	Set the local tunnel IP address of GRE tunnel.
Netmask	Set the local netmask.
Peer Virtual IP Address	Enter remote tunnel IP address of GRE tunnel.
Global Traffic Forwarding	All the data traffic will be sent out via GRE tunnel when this function is enabled.
Remote Subnet	Enter the remote subnet IP address of GRE tunnel.
Remote Netmask	Enter the remote netmask of GRE tunnel.
MTU	Enter the maximum transmission unit. Range: 64-1500.
Key	Set GRE tunnel key.
Enable NAT	Enable NAT traversal function.

Table 3-2-5-6 GRE Parameters

### 3.2.5.5 L2TP

Layer Two Tunneling Protocol (L2TP) is an extension of the Point-to-Point Tunneling Protocol (PPTP) used by an Internet service provider (ISP) to enable the operation of a virtual private network (VPN) over the Internet.

**L2TP Settings**

— L2TP\_1

Enable	<input checked="" type="checkbox"/>
Remote IP Address	<input type="text"/>
Hostname	<input type="text"/>
Username	<input type="text"/>
Password	<input type="text"/>
Authentication	Auto ▼
Global Traffic Forwarding	<input type="checkbox"/>
Remote Subnet	<input type="text"/>
Remote Subnet Mask	<input type="text"/>
Key	<input type="text"/>
Advanced Settings	<input type="button" value="⌵"/>

+ L2TP\_2

+ L2TP\_3

Figure 3-2-5-8

L2TP	
Item	Description
Enable	Check to enable L2TP function.
Remote IP Address	Enter the public IP address or domain name of L2TP server.
Hostname	Enter the hostname to verify with L2TP server.
Username	Enter the username that L2TP server provides.
Password	Enter the password that L2TP server provides.
Authentication	Select from "Auto", "PAP", "CHAP", "MS-CHAPv1" and "MS-CHAPv2".
Global Traffic Forwarding	All of the data traffic will be sent out via L2TP tunnel after this function is enabled.
Remote Subnet	Enter the remote IP address that L2TP protects.
Remote Subnet Mask	Enter the remote netmask that L2TP protects.
Key	Enter the password of L2TP tunnel.

Table 3-2-5-7 L2TP Parameters

Advanced Settings	<input checked="" type="checkbox"/>
Local IP Address	<input type="text"/>
Peer IP Address	<input type="text"/>
Enable NAT	<input checked="" type="checkbox"/>
Enable MPPE	<input checked="" type="checkbox"/>
Address/Control Compression	<input type="checkbox"/>
Protocol Field Compression	<input type="checkbox"/>
Asyncmap Value	<input type="text" value="ffffff"/>
MRU	<input type="text" value="1500"/>
MTU	<input type="text" value="1500"/>
Link Detection Interval(s)	<input type="text" value="60"/>
Max Retries	<input type="text" value="0"/>
Expert Options	<input type="text"/>

Figure 3-2-5-9

Advanced Settings	
Item	Description
Local IP Address	Set tunnel IP address of L2TP client. Client will obtain tunnel IP address automatically from the server when it's null.
Peer IP Address	Enter tunnel IP address of L2TP server.
Enable NAT	Enable NAT traversal function.
Enable MPPE	Enable MPPE encryption.
Address/Control Compression	For PPP initialization. User can keep the default option.
Protocol Field Compression	For PPP initialization. User can keep the default option.
Asyncmap Value	One of the PPP protocol initialization strings. User can keep the default value. Range: 0-ffffff.
MRU	Set the maximum receive unit. Range: 64-1500.
MTU	Set the maximum transmission unit. Range: 64-1500
Link Detection Interval (s)	Set the link detection interval time to ensure tunnel connection. Range: 0-600.
Max Retries	Set the maximum times of retry to detect the L2TP connection failure. Range: 0-10.
Expert Options	User can enter some other PPP initialization strings in this field and separate the strings with blank space.

Table 3-2-5-8 L2TP Parameters

### 3.2.5.6 PPTP

Point-to-Point Tunneling Protocol (PPTP) is a protocol that allows corporations to extend their own corporate network through private "tunnels" over the public Internet. Effectively, a corporation uses a wide-area network as a single large local area network.

The screenshot displays the 'PPTP Settings' configuration page. At the top, there's a tab labeled 'PPTP Settings'. Below it, three expandable sections are visible: 'PPTP\_1' (expanded), 'PPTP\_2', and 'PPTP\_3'. The 'PPTP\_1' section contains the following settings:

- Enable:** A checkbox that is currently unchecked.
- Remote IP Address:** A text input field.
- Username:** A text input field.
- Password:** A text input field.
- Authentication:** A dropdown menu with 'Auto' selected.
- Global Traffic Forwarding:** A checkbox that is currently unchecked.
- Remote Subnet:** A text input field.
- Remote Subnet Mask:** A text input field.
- Advanced Settings:** A link icon (represented by a square with an 'x') to expand further options.

At the bottom of the settings area, there is a blue 'Save' button.

Figure 3-2-5-10

PPTP	
Item	Description
Enable	Enable PPTP client. A maximum of 3 tunnels is allowed.
Remote IP Address	Enter the public IP address or domain name of PPTP server.
Username	Enter the username that PPTP server provides.
Password	Enter the password that PPTP server provides.
Authentication	Select from "Auto", "PAP", "CHAP", "MS-CHAPv1", and "MS-CHAPv2".
Global Traffic Forwarding	All of the data traffic will be sent out via PPTP tunnel once enable this function.
Remote Subnet	Set the peer subnet of PPTP.
Remote Subnet Mask	Set the netmask of peer PPTP server.

Table 3-2-5-9 PPTP Parameters

Advanced Settings	<input checked="" type="checkbox"/>
Local IP Address	<input type="text"/>
Peer IP Address	<input type="text"/>
Enable NAT	<input checked="" type="checkbox"/>
Enable MPPE	<input checked="" type="checkbox"/>
Address/Control Compression	<input type="checkbox"/>
Protocol Field Compression	<input type="checkbox"/>
Asyncmap Value	<input type="text" value="ffffff"/>
MRU	<input type="text" value="1500"/>
MTU	<input type="text" value="1500"/>
Link Detection Interval(s)	<input type="text" value="60"/>
Max Retries	<input type="text" value="0"/>
Expert Options	<input type="text"/>

Figure 3-2-5-11

PPTP Advanced Settings	
Item	Description
Local IP Address	Set IP address of PPTP client.
Peer IP Address	Enter tunnel IP address of PPTP server.
Enable NAT	Enable the NAT faction of PPTP.
Enable MPPE	Enable MPPE encryption.
Address/Control Compression	For PPP initialization. User can keep the default option.
Protocol Field Compression	For PPP initialization. User can keep the default option.
Asyncmap Value	One of the PPP protocol initialization strings. User can keep the default value. Range: 0-ffffff.
MRU	Enter the maximum receive unit. Range: 0-1500.
MTU	Enter the maximum transmission unit. Range: 0-1500.
Link Detection Interval (s)	Set the link detection interval time to ensure tunnel connection. Range: 0-600.
Max Retries	Set the maximum times of retrying to detect the PPTP connection failure. Range: 0-10.
Expert Options	User can enter some other PPP initialization strings in this field and separate the strings with blank space.

Table 3-2-5-10 PPTP Parameters

### 3.2.5.7 OpenVPN Client

OpenVPN is an open source virtual private network (VPN) product that offers a simplified security



framework, modular network design, and cross-platform portability. The default OpenVPN version of UR32L is 2.4.9.

UR32L supports running at most 3 OpenVPN clients at the same time. You can import the ovpn file directly or configure the parameters on this page to set clients.

OpenVPN Client Settings

OpenVPN Client\_1

Enable ☒

Configuration Method File Configuration

Configuration File openvpn\_1-custom.conf Browse Import Export Delete

+ OpenVPN Client\_2

+ OpenVPN Client\_3

Figure 3-2-5-12

OpenVPN Client - File Configuration	
Item	Description
Browse	Click to browse the client configuration ovpn format file including the settings and certificate contents. Please refer to the client configuration file according to sample: <a href="#">client.conf</a>
Edit	Click to edit the imported file.
Export	Export the server configuration file.
Delete	Click to delete the configuration file.

Table 3-2-5-11 OpenVPN Client Parameters

Enable ☒

Configuration Method Page Configuration

Protocol UDP

Remote IP Address

Port 1194

Interface tun

Authentication None

Local Tunnel IP

Remote Tunnel IP

Enable NAT ☒

Compression LZO

Link Detection Interval(s) 60

Link Detection Timeout(s) 300

Cipher None

Authentication Mode None

MTU 1500

Max Frame Size 1500

Verbose Level ERROR

Expert Options

Local Route

Subnet	Subnet Mask	Operation
		<span>+</span>

Figure 3-2-5-13

OpenVPN Client - Page Configuration	
Item	Description
Protocol	Select a transport protocol used by connecting UDP and TCP.
Remote IP Address	Enter remote OpenVPN server's IP address or domain name.
Port	Enter the TCP/UCP service number of remote OpenVPN server. Range: 1-65535.
Interface	Select virtual VPN network interface type from TUN and TAP. TUN devices encapsulate IPv4 or IPv6 (OSI Layer 3) while TAP devices encapsulate Ethernet 802.3 (OSI Layer 2).
Authentication Type	<p>Select authentication type used to secure data sessions.</p> <p><b>Pre-shared:</b> use the same secret key as server to complete the authentication. After selecting, go to <b>Network &gt; VPN &gt; Certifications</b> page to import a static.key to <b>PSK</b> field.</p> <p><b>Username/Password:</b> use username/password which is preset in server side to complete the authentication.</p> <p><b>X.509 cert:</b> use X.509 type certificate to complete the authentication. After selecting, go to <b>Network &gt; VPN &gt; Certifications</b> page to import CA certificate, client certificate and client private key to corresponding fields.</p> <p><b>X.509 cert + user:</b> use both username/password and X.509 cert authentication type.</p>
Local Virtual IP	Set local tunnel address when authentication type is <b>None</b> or <b>Pre-shared</b> .
Remote Virtual IP	Set remote tunnel address when authentication type is <b>None</b> or <b>Pre-shared</b> .
Global Traffic Forwarding	All the data traffic will be sent out via OpenVPN tunnel when this function is enabled.
Enable TLS Authentication	Select from None, TLS Auth and TLS Crypt. When selecting TLS Auth or TLS Crypt, go to <b>Network &gt; VPN &gt; Certifications</b> page to import a ta.key.
Compression	Select to enable or disable LZO to compress data.
Link Detection Interval (s)	Set link detection interval time to ensure tunnel connection. If this is set on both server and client, the value pushed from server will override the client local values. Range: 10-1800 s.
Link Detection Timeout (s)	OpenVPN will be reestablished after timeout. If this is set on both server and client, the value pushed from server will override the client local values. Range: 60-3600 s.
Cipher	Select from NONE, BF-CBC, DES-CBC, DES-EDE3-CBC, AES-128-CBC, AES-192-CBC and AES-256-CBC.
Authentication Mode	Select from NONE, MD5, SHA1, SHA256, and SHA512.
MTU	Enter the maximum transmission unit. Range: 128-1500.
Max Frame Size	Set the maximum frame size. Range: 128-1500.
Verbose Level	Select from ERROR, WARING, NOTICE and DEBUG.
Expert Options	<p>User can enter some initialization strings in this field and separate the strings with semicolon.</p> <p><b>Example:</b> ncp-ciphers AES-128-GCM; key direction 1</p>
Local Route	

Subnet	Set the local route's IP address.
Subnet Mask	Set the local route's netmask.

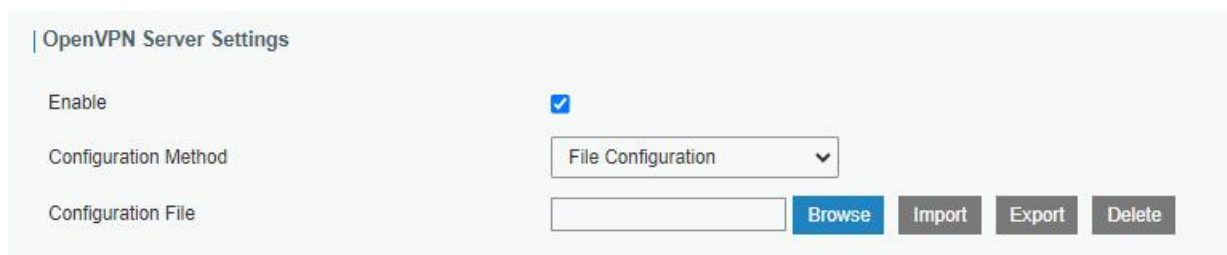
Table 3-2-5-12 OpenVPN Client Parameters

## Related Topic

[OpenVPN Client Application Example](#)

### 3.2.5.8 OpenVPN Server

The UR32L supports OpenVPN server to create secure point-to-point or site-to-site connections in routed or bridged configurations and remote access facilities. You can import the ovpn file directly or configure the parameters on this page to set this server. UR32L supports at most 20 openVPN clients connections.



OpenVPN Server Settings

Enable ☒

Configuration Method File Configuration

Configuration File  Browse Import Export Delete

Figure 3-2-5-14

OpenVPN Server - File Configuration	
Item	Description
Browse	Click to browse the server configuration ovpn format file including the settings and certificate contents. Please refer to the server configuration file according to sample: <a href="#">server.conf</a>
Edit	Click to edit the imported file.
Export	Export the server configuration file.
Delete	Click to delete the configuration file.

Table 3-2-5-13 OpenVPN Server Parameters

Enable	<input checked="" type="checkbox"/>
Configuration Method	Page Configuration ▼
Protocol	UDP ▼
Port	1194
Listening IP	
Interface	tun ▼
Authentication	None ▼
Local Virtual IP	
Remote Virtual IP	
Enable NAT	<input checked="" type="checkbox"/>
Compression	LZO ▼
Link Detection Interval	60
Link Detection Timeout	150
Cipher	None ▼
Authentication Mode	None ▼
MTU	1500
Max Frame Size	1500
Verbose Level	ERROR ▼
Expert Options	

Figure 3-2-5-15

Account			
	Username	Password	Operation
			<a href="#">+</a>
Local Route			
	Subnet	Netmask	Operation
			<a href="#">+</a>
Client Subnet			
	Name	Subnet	Netmask
			Operation
			<a href="#">+</a>

Figure 3-2-5-16

OpenVPN Server - Page Configuration	
Item	Description
Protocol	Select a transport protocol used by connection from UDP and TCP.
Listening IP	Enter the local hostname or IP address for bind. If left blank, OpenVPN server will bind to all interfaces.
Port	Enter the TCP/UCP service number for OpenVPN client connection. Range: 1-65535.

Interface	Select virtual VPN network interface type from TUN and TAP. TUN devices encapsulate IPv4 or IPv6 (OSI Layer 3) while TAP devices encapsulate Ethernet 802.3 (OSI Layer 2).
Authentication Type	<p>Select authentication type used to secure data sessions.</p> <p><b>Pre-shared:</b> use the same secret key as server to complete the authentication. After select, go to <b>Network &gt; VPN &gt; Certifications</b> page to import a static.key to <b>PSK</b> field.</p> <p><b>Username/Password:</b> use username/password which is preset in server side to complete the authentication.</p> <p><b>X.509 cert:</b> use X.509 type certificate to complete the authentication. After select, go to <b>Network &gt; VPN &gt; Certifications</b> page to import CA certificate, client certificate and client private key to corresponding fields.</p> <p><b>X.509 cert + user:</b> use both username/password and X.509 cert authentication type.</p>
Local Virtual IP	Set local tunnel address when authentication type is <b>None</b> or <b>Pre-shared</b> .
Remote Virtual IP	Set remote tunnel address when authentication type is <b>None</b> or <b>Pre-shared</b> .
Client Subnet	Define an IP address pool for openVPN client.
Client Netmask	Set the client subnet netmask to limit the IP address range.
Renegotiation Interval	Renegotiate data channel key after this interval. 0 means disable.
Max Clients	<p>Limit server to a maximum of concurrent clients, range: 1-20.</p> <p><b>Note:</b> please adjust log severity to Info if you need to connect many clients.</p>
Enable CRL	Enable or disable CRL verify.
Enable Client to Client	When enabled, openVPN clients can communicate with each other.
Enable Dup Client	Allow multiple clients to connect with the same common name or certification.
Enable TLS Authentication	Select from None, TLS Auth and TLS Crypt. When selecting TLS Auth or TLS Crypt, go to <b>Network &gt; VPN &gt; Certifications</b> page to import a ta.key.
Compression	Select to enable or disable LZO to compress data.
Link Detection Interval (s)	Set link detection interval time to ensure tunnel connection. If this is set on both server and client, the value pushed from server will override the client local values. Range: 10-1800 s.
Link Detection Timeout (s)	OpenVPN will be reestablished after timeout. If this is set on both server and client, the value pushed from server will override the client local values. Range: 60-3600 s.
Cipher	Select from NONE, BF-CBC, DES-CBC, DES-EDE3-CBC, AES-128-CBC, AES-192-CBC and AES-256-CBC.
Authentication Mode	Select from NONE, MD5, SHA1, SHA256, and SHA512.
MTU	Enter the maximum transmission unit. Range: 64-1500.
Max Frame Size	Set the maximum frame size. Range: 64-1500.
Verbose Level	Select from ERROR, WARING, NOTICE and DEBUG.
Expert Options	User can enter some initialization strings in this field and separate the strings with semicolon.

	<b>Example:</b> ncp-ciphers AES-128-GCM; key direction 1
<b>Account</b>	
Username & Password	Set username and password for OpenVPN client when authentication type is username/password.
<b>Local Route</b>	
Subnet	Set the local route's IP address.
Subnet Mask	Set the local route's netmask.
<b>Client Subnet</b>	
Name	Set the name as OpenVPN client certificate common name.
Subnet	Set the subnet of OpenVPN client.
Subnet Mask	Set the subnet netmask of OpenVPN client.

Table 3-2-5-14 OpenVPN Server Parameters

### 3.2.5.9 Certifications

User can import/export certificate and key files for OpenVPN and IPsec on this page.

OpenVPN Client

OpenVPN Client\_1

CA	<input type="text"/>	Browse	Import	Export	Delete
Public Certificate	<input type="text"/>	Browse	Import	Export	Delete
Private Key	<input type="text"/>	Browse	Import	Export	Delete
TA	<input type="text"/>	Browse	Import	Export	Delete
TLS Crypt	<input type="text"/>	Browse	Import	Export	Delete
Preshared Key	<input type="text"/>	Browse	Import	Export	Delete
PKCS12	<input type="text"/>	Browse	Import	Export	Delete

+ OpenVPN Client\_2

+ OpenVPN Client\_3

Figure 3-2-5-17

— OpenVPN Server

CA	<input type="text"/>	Browse	Import	Export	Delete
Public Certificate	<input type="text"/>	Browse	Import	Export	Delete
Private Key	<input type="text"/>	Browse	Import	Export	Delete
DH	<input type="text"/>	Browse	Import	Export	Delete
TA	<input type="text"/>	Browse	Import	Export	Delete
TLS Crypt	<input type="text"/>	Browse	Import	Export	Delete
CRL	<input type="text"/>	Browse	Import	Export	Delete
Preshared Key	<input type="text"/>	Browse	Import	Export	Delete

Figure 3-2-5-18

IPsec

— IPsec\_1

CA	<input type="text"/>	Browse	Import	Export	Delete
Local Certificate	<input type="text"/>	Browse	Import	Export	Delete
Remote Certificate	<input type="text"/>	Browse	Import	Export	Delete
Private Key	<input type="text"/>	Browse	Import	Export	Delete
CRL	<input type="text"/>	Browse	Import	Export	Delete

+ IPsec\_2

+ IPsec\_3

Figure 3-2-5-19

IPsec Server

— IPsec Server

CA	<input type="text"/>	Browse	Import	Export	Delete
Local Certificate	<input type="text"/>	Browse	Import	Export	Delete
Private Key	<input type="text"/>	Browse	Import	Export	Delete
CRL	<input type="text"/>	Browse	Import	Export	Delete

Figure 3-2-5-20

### 3.2.5.10 WireGuard

WireGuard is an extremely simple yet fast and modern VPN that utilizes state-of-the-art cryptography.

WireGuard passes traffic over UDP protocol.

WireGuard\_1

Enable ☒

Interface wg0

Customized Private Key ☒

Private Key

Public Key F8xRHUqMQ0fgJTW4V4M7gvr

IP Address

Listening Port

DNS

MTU

Peer	Public Key	Allowed IP	Endpoint Address	Operation
+				

Figure 3-2-5-21

WireGuard	
Item	Description
Enable	Enable WireGuard interface. A maximum of 3 WireGaurd interfaces is allowed.
Interface	Show the WireGuard interface name.
Customized Private Key	Enable or disable to customize the private key of this WireGuard interface. If disabled, the client will use the private key generated by this router.
Public Key	Show the public key generated by the private key.
IP Address	Set the local virtual IP address and netmask. Example: 10.8.0.2/24
Listening Port	Set the port to send or receive WireGuard packets. The port numbers of different WireGuard interfaces should be different.
DNS	Set the DNS server address of this WireGuard interface. If left blank, the router will use DNS server address of common network interfaces (WAN, cellular, etc.).
MTU	Set the maximum transmission unit of this WireGuard interface. If left blank, the router will use MTU of common network interfaces (WAN, cellular, etc.).
Peer Table	Click "+" to add WireGuard peers of this WireGuard interface. One WireGuard interface can add 20 peers at most.



Table 3-2-5-15 WireGuard Parameters




**Edit**

Peer

Public Key

Allowed IP   

Route Allowed IP ☒

Preshared Key  

Endpoint Address

Endpoint Port

Keepalive Interval

**Save**

Figure 3-2-5-22

WireGuard-Peer	
Item	Description
Peer	Set a WireGuard peer name. This name should be unique in this WireGuard client.
Public Key	Set the public key of WireGuard peer server/client.
Allowed IP	Set the real IP address and netmask of WireGuard peer's LAN network. Example: 192.168.1.0/24 One WireGuard peer supports to add 8 allowed IP addresses.
Route Allowed IP	Enable or disable to add static routings of allowed IP addresses.
Preshared Key	Set the presahred key and both this interface and peer interface should set the same key value.
Endpoint Address	Set IP address or domain name of WireGuard peer server/client.
Endpoint Port	Set the destination port of WireGuard peer server/client.
Keepalive Interval	After the connection is established, this WireGuard interface will send heartbeat packet regularly to keep alive. 0 means disabled.

Table 3-2-5-16 WireGuard-Peer Parameters

### 3.2.5.11 ZeroTier

ZeroTier is a way to connect devices over your own private network anywhere in the world. You do this by creating a network and then joining two or more devices to that network.

**ZeroTier Client**

NodeID  **Refresh**

**ZeroTier Connection**


Name	NetworkID	Status	Interface Name	Enable	Operation
					

Figure 3-2-5-23

ZeroTier	
Item	Description
<b>ZeroTier Client</b>	
NodeID	The router's own automatically generated ID.
Refresh	Click to regenerate a new Node ID.
<b>ZeroTier Connection</b>	
Name	Customize the name of the connection.
NetworkID	The ZeroTier virtual Ethernet network that the router will join.
Status	Display the status of the connection between the router and the ZeroTier virtual Ethernet network.
Interface Name	Display the name of the virtualized network interface to which the router is added.
Enable	Check to enable this function.

Table 3-2-5-17

**Add ZeroTier Connection**

Name

Enable ☐

NetworkID

Interface Name

Allow Managed Addresses ☒

Allow Assignment of Global IPs ☐

Allow Default Route Override ☐

**Save** **Cancel**

Figure 3-2-5-24

Add ZeroTier Connection	
Item	Description
Name	Customize the name of the connection.
Enable	Check to enable this function
NetworkID	The ZeroTier virtual Ethernet network that the device will join.
Interface Name	Displays the name of the virtualized network interface to which the router is added.
Allow Managed Addresses	Allow or disable the ZeroTier controller to dynamically assign IP addresses and configure routing information when the router joins the network.
Allow Assignment of	Allow or disallow ZeroTier network controllers to assign worldwide

Global IPs	IPv6 addresses.
Allow Default Route Override	Allow or disallow the router to override the default route settings when connecting to the ZeroTier network.

Table 3-2-5-18

### 3.2.6 IP Passthrough

IP Passthrough mode shares or "passes" the Internet providers assigned IP address to a single LAN client device connected to the router.

Figure 3-2-6-1

IP Passthrough	
Item	Description
Enable	Enable or disable IP Passthrough.
Passthrough Mode	Select passthrough mode from DHCP-Fixed and DHCP-Dynamic.
MAC	Set MAC address when mode is DHCP-Fixed.

Table 3-2-6-1 IP Passthrough Parameters

### 3.2.7 Routing

#### 3.2.7.1 Static Routing

A static routing is a manually configured routing entry. Information about the routing is manually entered rather than obtained from dynamic routing traffic. After setting static routing, the package for the specified destination will be forwarded to the path designated by user.

Figure 3-2-7-1

Static Routing	
Item	Description
Destination	Enter the destination IP address.
Netmask/Prefix Length	Enter the subnet mask or prefix length of destination address.
Interface	The interface through which the data can reach the destination address.
Gateway	IP address of the next router that will be passed by before the input data reaches the destination address.
Distance	Priority, smaller value refers to higher priority. Range: 1-255.

Table 3-2-7-1 Static Routing Parameters

### 3.2.7.2 RIP

RIP is mainly designed for small networks. RIP uses Hop Count to measure the distance to the destination address, which is called Metric. In RIP, the hop count from the router to its directly connected network is 0 and the hop count of network to be reached through a router is 1 and so on. In order to limit the convergence time, the specified metric of RIP is an integer in the range of 0 - 15 and the hop count larger than or equal to 16 is defined as infinity, which means that the destination network or host is unreachable. Because of this limitation, the RIP is not suitable for large-scale networks. To improve performance and prevent routing loops, RIP supports split horizon function. RIP also introduces routing obtained by other routing protocols.

Each router that runs RIP manages a routing database, which contains routing entries to reach all reachable destinations.

Static Routing	RIP	OSPF	Routing Filtering
<b>RIP Settings</b>			
Enable	<input checked="" type="checkbox"/>		
Update Timer	<input type="text" value="30"/>		s
Timeout Timer	<input type="text" value="180"/>		s
Garbage Collection Timer	<input type="text" value="120"/>		s
Version	<input type="text" value="v2"/>		
Show Advanced Options	<input checked="" type="checkbox"/>		
Default Information Originate	<input type="checkbox"/>		
Default Metric	<input type="text" value="1"/>		
Redistribute Connected	<input type="checkbox"/>		
Redistribute Static	<input type="checkbox"/>		
Redistribute OSPF	<input type="checkbox"/>		

Figure 3-2-7-2

RIP	
Item	Description
Enable	Enable or disable RIP.
Update Timer	It defines the interval to send routing updates. Range: 5-2147483647, in seconds.
Timeout Timer	It defines the routing aging time. If no update package on a routing is received within the aging time, the routing's Routing Cost in the routing table will be set to 16. Range: 5-2147483647, in seconds.
Garbage Collection Timer	It defines the period from the routing cost of a routing becomes 16 to it is deleted from the routing table. In the time of Garbage-Collection, RIP uses 16 as the routing cost for sending routing updates. If Garbage Collection times out and the routing still has not been updated, the routing will be completely removed from the routing table. Range: 5-2147483647, in seconds.
Version	RIP version. The options are v1 and v2.
Advanced Settings	
Default Information Originate	Default information will be released when this function is enabled.
Default Metric	The default cost for the router to reach destination. Range: 0-16
Redistribute Connected	Check to enable.

Metric	Set metric after "Redistribute Connected" is enabled. Range: 0-16.
Redistribute Static	Check to enable.
Metric	Set metric after "Redistribute Static" is enabled. Range: 0-16.
Redistribute OSPF	Check to enable.
Metric	Set metric after "Redistribute OSPF" is enabled. Range: 0-16.

Table 3-2-7-2 RIP Parameters

Distance/Metric Management

Distance	IP Address	Netmask	ACL Name	Operation

Metric	Policy In/Out	Interface	ACL Name	Operation

Filter Policy

Policy Type	Policy Name	Policy In/Out	Interface	Operation

Passive Interface

Passive Interface	Operation

Interface

Interface	Send Version	Receive Version	Split-Horizon	Authentication Mode	Authentication String	Authentication Key-chain	Operation

Neighbor

IP Address	Operation

Network

IP Address	Netmask	Operation

Figure 3-2-7-3

Item	Description
<b>Distance/Metric Management</b>	
Distance	Set the administrative distance that a RIP route learns. Range: 1-255.

IP Address	Set the IP address of RIP route.
Netmask	Set the netmask of RIP route.
ACL Name	Set ACL name of RIP route.
Metric	The metric of received route or sent route from the interface. Range: 0-16.
Policy in/out	Select from "in" and "out".
Interface	Select interface of the route.
ACL Name	Access control list name of the route strategy.
<b>Filter Policy</b>	
Policy Type	Select from "access-list" and "prefix-list".
Policy Name	User-defined prefix-list name.
Policy in/out	Select from "in" and "out".
Interface	Select interface from "cellular0", "LAN1/WAN" and "Bridge0".
<b>Passive Interface</b>	
Passive Interface	Select interface from "cellular0" and "LAN1/WAN", "Bridge0".
<b>Interface</b>	
Interface	Select interface from "cellular0", "LAN1/WAN" and "Bridge0".
Send Version	Select from "default", "v1" and "v2".
Receive Version	Select from "default", "v1" and "v2".
Split-Horizon	Select from "enable" and "disable".
Authentication Mode	Select from "text" and "md5".
Authentication String	The authentication key for package interaction in RIPV2.
Authentication Key-chain	The authentication key-chain for package interaction in RIPV2.
<b>Neighbor</b>	
IP Address	Set RIP neighbor's IP address manually.
<b>Network</b>	
IP Address	The IP address of interface for RIP publishing.
Netmask	The netmask of interface for RIP publishing.

Table 3-2-7-3

### 3.2.7.3 OSPF

OSPF, short for Open Shortest Path First, is a link status based on interior gateway protocol developed by IETF.

If a router wants to run the OSPF protocol, there should be a Router ID that can be manually configured. If no Router ID configured, the system will automatically select an IP address of interface as the Router ID. The selection order is as follows:

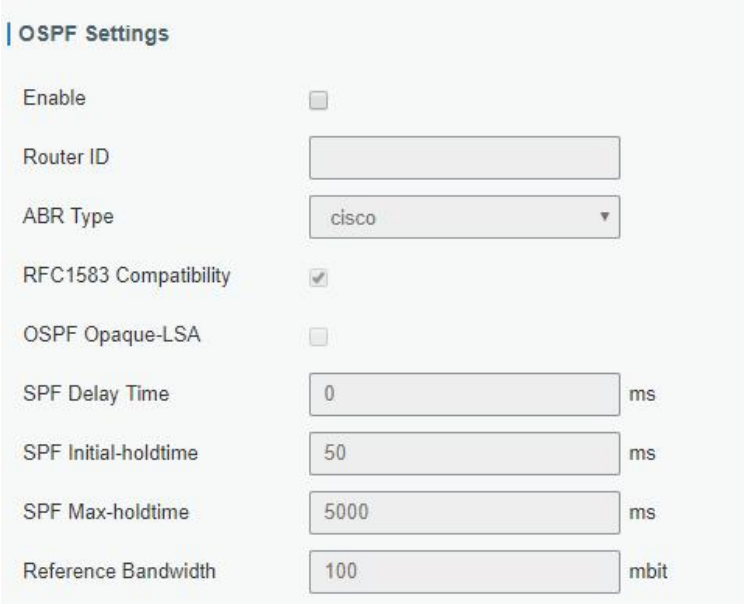
- If a Loopback interface address is configured, then the last configured IP address of Loopback interface will be used as the Router ID;
- If no Loopback interface address is configured, the system will choose the interface with the biggest IP address as the Router ID.

#### Five types of packets of OSPF:

- **Hello packet**
- **DD packet** (Database Description Packet)
- **LSR packet** (Link-State Request Packet)
- **LSU packet** (Link-State Update Packet)
- **LSAck packet** (Link-Sate Acknowledgment Packet)

#### Neighbor and Neighboring

After OSPF router starts up, it will send out Hello Packets through the OSPF interface. Upon receipt of Hello packet, OSPF router will check the parameters defined in the packet. If it's consistent, a neighbor relationship will be formed. Not all matched sides in neighbor relationship can form the adjacency relationship. It is determined by the network type. Only when both sides successfully exchange DD packets and LSDB synchronization is achieved, the adjacency in the true sense can be formed. LSA describes the network topology around a router, LSDB describes entire network topology.



OSPF Settings	
Enable	<input type="checkbox"/>
Router ID	<input type="text"/>
ABR Type	cisco
RFC1583 Compatibility	<input checked="" type="checkbox"/>
OSPF Opaque-LSA	<input type="checkbox"/>
SPF Delay Time	0 ms
SPF Initial-holdtime	50 ms
SPF Max-holdtime	5000 ms
Reference Bandwidth	100 mbit

Figure 3-2-7-4



OSPF	
Item	Description
Enable	Enable or disable OSPF.
Router ID	Router ID (IP address) of the originating LSA.
ABR Type	Select from cisco, ibm, standard and shortcut.



RFC1583 Compatibility	Enable/Disable.
OSPF Opaque-LSA	Enable/Disable LSA: a basic communication means of the OSPF routing protocol for the Internet Protocol (IP).
SPF Delay Time	Set the delay time for OSPF SPF calculations. Range: 0-6000000, in milliseconds.
SPF Initial-holdtime	Set the initialization time of OSPF SPF. Range: 0-6000000, in milliseconds.
SPF Max-holdtime	Set the maximum time of OSPF SPF. Range: 0-6000000, in milliseconds.
Reference Bandwidth	Range: 1-4294967, in Mbit.

Table 3-2-7-4 OSPF Parameters

Interface

Interface	Hello Interval(s)	Dead Interval(s)	Retransmit Interval(s)	Transmit Delay(s)	Operation
Bridge0	10	40	5	1	 

Interface Advanced Options ☒



Interface	Network	Cost	Priority	Authenticat ion	Key ID	Key	Operation
Bridge	broad	10	1				 

Figure 3-2-7-5

Item	Description
<b>Interface</b>	
Interface	Select interface from "cellular0", "WAN" and "Bridge0".
Hello Interval (s)	Send interval of Hello packet. If the Hello time between two adjacent routers is different, the neighbour relationship cannot be established. Range: 1-65535.
Dead Interval (s)	Dead Time. If no Hello packet is received from the neighbours within the dead time, then the neighbour is considered failed. If dead times of two adjacent routers are different, the neighbour relationship cannot be established.
Retransmit Interval (s)	When the router notifies an LSA to its neighbour, it is required to make acknowledgement. If no acknowledgement packet is received within the retransmission interval, this LSA will be retransmitted to the neighbour. Range: 3-65535.
Transmit Delay (s)	It will take time to transmit OSPF packets on the link. So a certain delay time should be increased before transmission the aging time of LSA. This configuration needs to be further considered on the low-speed link. Range: 1-65535.

Interface Advanced Options	
Interface	Select interface.
Network	Select OSPF network type.
Cost	Set the cost of running OSPF on an interface. Range: 1-65535.
Priority	Set the OSPF priority of interface. Range: 0-255.
Authentication	Set the authentication mode that will be used by the OSPF area. Simple: a simple authentication password should be configured and confirmed again. MD5: MD5 key & password should be configured and confirmed again.
Key ID	It only takes effect when MD5 is selected. Range 1-255.
Key	The authentication key for OSPF packet interaction.

Table 3-2-7-5 OSPF Parameters

The screenshot shows a web-based configuration interface for OSPF. It contains four main sections, each with a table of fields and an 'Add' button (represented by a blue square with a white '+').

- Passive Interface:** A single table with one column labeled 'Passive Interface' and one column labeled 'Operation'.
- Network:** A table with four columns: 'IP Address', 'Netmask', 'Area ID', and 'Operation'.
- Neighbor:** A table with four columns: 'IP Address', 'Priority', 'Poll', and 'Operation'.
- Area:** A table with five columns: 'Area ID', 'Area', 'No Summary', 'Authentication', and 'Operation'.

Figure 3-2-7-6

Item	Description
<b>Passive Interface</b>	
Passive Interface	Select interface from "cellular0", "LAN1/WAN" and "Bridge0".
<b>Network</b>	
IP Address	The IP address of local network.
Netmask	The netmask of local network.
Area ID	The area ID of original LSA's router.
<b>Area</b>	
Area ID	Set the ID of the OSPF area (IP address).
Area	Select from "Stub" and "NSSA". The backbone area (area ID 0.0.0.0) cannot be set as "Stub" or "NSSA".
No Summary	Forbid route summarization.
Authentication	Select authentication from "simple" and "md5".

Table 3-2--7-6 OSPF Parameters

Area Advanced Options ☒

Area Range

Area ID	IP Address	Netmask	No Advertise	Cost	Operation
					+

Area Filter

Area ID	Filter Type	ACL Name	Operation
			+

Area Virtual Link



Area ID	ABR Address	Authentication	Key ID	Key	Hello Interval	Dead Interval	Retransmit Interval	Transmit Delay	Operation
									+

Figure 3-2-7-7

Area Advanced Options	
Item	Description
<b>Area Range</b>	
Area ID	The area ID of the interface when it runs OSPF (IP address).
IP Address	Set the IP address.
Netmask	Set the netmask.
No Advertise	Forbid the route information to be advertised among different areas.
Cost	Range: 0-16777215
<b>Area Filter</b>	
Area ID	Select an Area ID for Area Filter.
Filter Type	Select from "import", "export", "filter-in", and "filter-out".
ACL Name	Enter an ACL name which is set on "Routing > Routing Filtering" webpage.
<b>Area Virtual Link</b>	
Area ID	Set the ID number of OSPF area.
ABR Address	ABR is the router connected to multiple outer areas.
Authentication	Select from "simple" and "md5".
Key ID	It only takes effect when MD5 is selected. Range 1-15.
Key	The authentication key for OSPF packet interaction.
Hello Interval	Set the interval time for sending Hello packets through the interface. Range: 1-65535.
Dead Interval	The dead interval time for sending Hello packets through the interface. Range: 1-65535.
Retransmit Interval	The retransmission interval time for re-sending LSA. Range: 1-65535.
Transmit Delay	The delay time for LSA transmission. Range: 1-65535.

Table 3-2-7-7 OSPF Parameters

**Redistribution**

Redistribution Type	Metric	Metric Type	Route Map	Operation
connected ▼		1 ▼		
				

Redistribution Advanced Options ☒

Always Redistribute Default Route ☐

Redistribute Default Route Metric

Redistribute Default Route Metric Type

**Distance Management**


Area Type	Distance	Operation
		

Figure 3-2-7-8

Item	Description
<b>Redistribution</b>	
Redistribution Type	Select from "connected", "static" and "rip".
Metric	The metric of redistribution router. Range: 0-16777214.
Metric Type	Select Metric type from "1" and "2".
Route Map	Mainly used to manage route for redistribution.
<b>Redistribution Advanced Options</b>	
Always Redistribute Default Route	Send redistribution default route after starting up.
Redistribute Default Route Metric	Send redistribution default route metric. Range: 0-16777214.
Redistribute Default Route Metric Type	Select from "0", "1" and "2".
<b>Distance Management</b>	
Area Type	Select from "intra-area", "inter-area" and "external".
Distance	Set the OSPF routing distance for area learning. Range: 1-255.

Table 3-2-7-8 OSPF Parameters

### 3.2.7.4 Routing Filtering

The screenshot displays two configuration sections: 'Access Control List' and 'IP Prefix-List'.

**Access Control List:** This section has a table with columns: Name, Action, Match Any, IP Address, Netmask, and Operation. A single rule is shown with 'deny' as the Action, an empty IP Address field, and an empty Netmask field. There are 'X' and '+' buttons at the end of the row.

**IP Prefix-List:** This section has a table with columns: Name, Sequence Number, Action, Match Any, IP Address, Netmask, GE Length, LE Length, and Operation. A single rule is shown with 'deny' as the Action, empty fields for IP Address, Netmask, GE Length, and LE Length. There are 'X' and '+' buttons at the end of the row.

Figure 3-2-7-9

Routing Filtering	
Item	Description
<b>Access Control List</b>	
Name	User-defined name, need to start with a letter. Only letters, digits and underline (_) are allowed.
Action	Select from "permit" and "deny".
Match Any	No need to set IP address and subnet mask.
IP Address	User-defined.
Netmask	User-defined.
<b>IP Prefix-List</b>	
Name	User-defined name, need to start with a letter. Only letters, digits and underline (_) are allowed.
Sequence Number	A prefix name list can be matched with multiple rules. One rule is matched with one sequence number. Range: 1-4294967295.
Action	Select from "permit" and "deny".
Match Any	No need to set IP address, subnet mask, FE Length, and LE Length.
IP Address	User-defined.
Netmask	User-defined.
FE Length	Specify the minimum number of mask bits that must be matched. Range: 0-32.
LE Length	Specify the maximum number of mask bits that must be matched. Range: 0-32.

Table 3-2-7-9 Routing Filtering Parameters

### 3.2.8 VRRP

The Virtual Router Redundancy Protocol (VRRP) is a computer networking protocol that provides automatic assignment of available Internet Protocol (IP) routers for participating hosts. This increases the availability and reliability of routing paths via automatic default gateway selections in an IP sub-network.

Increasing the number of exit gateway is a common method for improving system reliability. VRRP

adds a group of routers that undertake gateway function into a backup group so as to form a virtual router. The election mechanism of VRRP will decide which router undertakes the forwarding task, and the host in LAN is only required to configure the default gateway for the virtual router.

In VRRP, routers need to be aware of failures in the virtual master router. To achieve this, the virtual master router sends out multicast “alive” announcements to the virtual backup routers in the same VRRP group.

The VRRP router who has the highest number will become the virtual master router. The VRRP router number ranges from 1 to 255 and usually we use 255 for the highest priority and 100 for backup.

If the current virtual master router receives an announcement from a group member (Router ID) with a higher priority, then the latter will pre-empt and become the virtual master router.

VRRP has the following characteristics:

- The virtual router with an IP address is known as the Virtual IP address. For the host in LAN, it is only required to know the IP address of virtual router, and set it as the address of the next hop of the default route.
- The network Host communicates with the external network through this virtual router.
- A router will be selected from the set of routers based on its priority to undertake the gateway function. Other routers will be used as backup routers to perform the duties of gateway for the gateway router in the case of any malfunction, so as to guarantee uninterrupted communication between the host and external network.

When interface connected with the uplink is at the state of Down or Removed, the router actively lowers its priority so that priority of other routers in the backup group will be higher. Thus the router with the highest priority becomes the gateway for the transmission task.

The screenshot displays the VRRP configuration page. At the top, the 'VRRP Status' section shows the status as 'DISABLE'. Below this, the 'VRRP Settings' section contains various configuration fields. The 'Enable' checkbox is unchecked. The 'Interface' is set to 'Bridge0'. The 'Virtual Router ID' is set to '1'. The 'Virtual IP' field is empty. The 'Priority' is set to '100'. The 'Advertisement Interval (s)' is set to '1'. The 'Preemption Mode' checkbox is unchecked. The 'IPv4 Primary Server' is set to '8.8.8.8'. The 'IPv4 Secondary Server' is set to '114.114.114.114'. The 'Interval' is set to '300' s. The 'Retry Interval' is set to '5' s. The 'Timeout' is set to '3' s. The 'Max Ping Retries' is set to '3'. A 'Save' button is located at the bottom of the settings section.

VRRP	
Status	DISABLE
VRRP Settings	
Enable	<input type="checkbox"/>
Interface	Bridge0
Virtual Router ID	1
Virtual IP	
Priority	100
Advertisement Interval (s)	1
Preemption Mode	<input type="checkbox"/>
IPv4 Primary Server	8.8.8.8
IPv4 Secondary Server	114.114.114.114
Interval	300 s
Retry Interval	5 s
Timeout	3 s
Max Ping Retries	3
Save	

Figure 3-2-8-1

VRRP		
Item	Description	Default

Enable	Enable or disable VRRP.	Disable
Interface	Select the interface of Virtual Router.	None
Virtual Router ID	User-defined Virtual Router ID. Range: 1-255.	None
Virtual IP	Set the IP address of Virtual Router.	None
Priority	The VRRP priority range is 1-254 (a bigger number indicates a higher priority). The router with higher priority will be more likely to become the gateway router.	100
Advertisement Interval (s)	Heartbeat package transmission time interval between routers in the virtual ip group. Range: 1-255.	1
Preemption Mode	If the router works in the preemption mode, once it finds that its own priority is higher than that of the current gateway router, it will send VRRP notification package, resulting in re-election of gateway router and eventually replacing the original gateway router. Accordingly, the original gateway router will become a Backup router.	Disable
IPV4 Primary Server	The router will send ICMP packet to the IP address or host name to determine whether the Internet connection is still available or not.	8.8.8.8
IPV4 Secondary Server	The router will try to ping the secondary server name if primary server is not available.	223.5.5.5
Interval	Time interval (in seconds) between two Pings.	300
Retry Interval	Set the ping retry interval. When ping failed, the router will ping again every retry interval.	5
Timeout	The maximum amount of time the router will wait for a response to a ping request. If it does not receive a response for the amount of time defined in this field, the ping request will be considered as failure.	3
Max Ping Retries	The retry times of the router sending ping request until determining that the connection has failed.	3

Table 3-2-8-1 VRRP Parameters

## Related Configuration Example

### [VRRP Application Example](#)

### 3.2.9 DDNS

Dynamic DNS (DDNS) is a method that automatically updates a name server in the Domain Name System, which allows user to alias a dynamic IP address to a static domain name.

DDNS serves as a client tool and needs to coordinate with DDNS server. Before starting configuration, user shall register on a website of proper domain name provider and apply for a domain name.

DDNS

DDNS Status

Status

DDNS Method List

Enable

☐

Name

Service Type

DynDNS ▾

Username

User ID

Password

Server

Server Path

Hostname

Append IP

☐

Use HTTPS

☐

Save

Figure 3-2-9-1

DDNS	
Item	Description
Enable	Enable/disable DDNS.
Name	Give the DDNS a descriptive name.
Interface	Set interface bundled with the DDNS.
Service Type	Select the DDNS service provider.
Username	Enter the username for DDNS register.
User ID	Enter User ID of the custom DDNS server.
Password	Enter the password for DDNS register.
Server	Enter the name of DDNS server.
Server Path	By default the hostname is appended to the path.
Hostname	Enter the hostname for DDNS.
Append IP	Append your current IP to the DDNS server update path.
Use HTTPS	Enable HTTPS for some DDNS providers.

Table 3-2-9-1 DDNS Parameters



### 3.3 System

#### 3.3.1 General Settings

##### 3.3.1.1 General

General settings include system info and HTTPS certificates.

The screenshot shows the 'System' configuration page. Under the 'System' tab, there are three settings: 'Hostname' set to 'ROUTER', 'Web Login Timeout(s)' set to '1800', and 'Encrypting Cleartext Passwords' which is checked. Below this is the 'HTTPS Certificates' section. It has two rows: 'Certificate' and 'Key'. Each row has a text input field (containing 'https.crt' and 'https.key' respectively), followed by four buttons: 'Browse' (blue), 'Import' (grey), 'Export' (blue), and 'Delete' (blue). At the bottom of the form is a large blue 'Save' button.

Figure 3-3-1-1

General		
Item	Description	Default
<b>System</b>		
Hostname	User-defined router name, needs to start with a letter.	ROUTER
Web Login Timeout (s)	You need to log in again if it times out. Range: 100-3600.	1800
Encrypting Cleartext Passwords	This function will encrypt all of cleartext passwords into ciphertext passwords.	Enable
<b>HTTPS Certificates</b>		
Certificate	Click "Browse" button, choose certificate file on the PC, and then click "Import" button to upload the file into router. Click "Export" button will export the file to the PC. Click "Delete" button will delete the file.	--
Key	Click "Browse" button, choose key file on the PC, and then click "Import" button to upload the file into router. Click "Export" button will export file to the PC. Click "Delete" button will delete the file.	--

Table 3-3-1-1 General Setting Parameters

##### 3.3.1.2 System Time

This section explains how to set the system time including time zone and time synchronization type.

**Note:** to ensure that the router runs with the correct time, it's recommended that you set the system

time when configuring the router.

**System Time Settings**

Current Time: 2020-04-30 17:58:27 Thur

Time Zone: 8 China (Beijing) ▼

Sync Type: Sync with NTP Server ▼

Primary NTP Server: 1.cn.pool.ntp.org ▼

Secondary NTP Server: ▼

**NTP Server**

Enable NTP Server: ☐

Save

Figure 3-3-1-2

System Time	
Item	Description
Current Time	Show the current system time.
Time Zone	Click the drop down list to select the time zone you are in.
Sync Type	Click the drop down list to select the time synchronization type. <b>Sync with Browser:</b> Synchronize time with browser. <b>Sync with NTP Server:</b> Synchronize time with NTP Server. <b>Set up Manually:</b> configure the time manually. <b>Sync with Cellular Operator:</b> Synchronize time with cellular operator. This only works when the device has registered to cellular network.
Sync with Browser	Synchronize time with browser.
Browser Time	Show the current time of browser.
Set up Manually	Manually configure the system time.
Primary NTP Server	Enter primary NTP Server's IP address or domain name.
Secondary NTP Server	Enter secondary NTP Server's IP address or domain name.
NTP Server	
Enable NTP Server	NTP client on the network can achieve time synchronization with router after this option is checked.

Table 3-3-1-2 System Time Parameters

### 3.3.1.3 Email

SMTP, short for Simple Mail Transfer Protocol, is a TCP/IP protocol used in sending and receiving e-mail. This section describes how to configure email settings and add email groups for alarms and events.

SMTP Client Settings

Enable

☒

Sender's Email Address

SMTP Server Address

Username

Password

Port

25

Encryption

STARTTLS

Test Email Setting

Recipient's Email address

deng@milesight.com

Test

Figure 3-3-1-3

SMTP Client Settings	
Item	Description
Enable	Enable or disable SMTP client function.
Sender's Email Address	Enter the sender's email account.
SMTP Server Address	Enter SMTP server's domain name.
Username	Enter the sender's email username.
Password	Enter the sender's email password.
Port	Enter SMTP server port. Range: 1-65535.
Encryption	<p>Select from: None, TLS/SSL, STARTTLS.</p> <p><b>None:</b> No encryption. The default port is 25.</p> <p><b>STARTTLS:</b> STARTTLS is a way to take an existing insecure connection and upgrade it to a secure connection by using SSL/TLS. The default port is 587.</p> <p><b>TLS/SSL:</b> SSL and TLS both provide a way to encrypt a communication channel between two computers (e.g. your computer and our server). TLS is the successor to SSL and the terms SSL and TLS are used interchangeably unless you're referring to a specific version of the protocol. The default port is 465.</p>
Test Email Setting	
Recipient's Email address	Enter the recipient's email account. Click <b>Test</b> , the test email will be sent to this address.

Table 3-3-1-3 SMTP Setting

The screenshot shows two configuration sections. The 'Email List' section has a table with columns: 'Recipient's Email address' (input field with 'puxx@123.com'), 'Description' (input field with 'test'), and 'Operation' (delete and add icons). The 'Email Group List' section has a table with columns: 'Group ID' (input field with '12'), 'Description' (input field with 'test'), 'Recipient's Email address' (dropdown menu with 'puxx@123.com'), and 'Operation' (delete and add icons).

Figure 3-3-1-4

Item	Description
<b>Email List</b>	
Recipient's Email Address	Enter the recipient's Email address.
Description	The description of the Email address.
<b>Email Group List</b>	
Group ID	Set number for email group. Range: 1-100.
Description	The description of the Email group.
Recipient's Email address	Select the Email addresses.

Table 3-3-1-4 Email Settings

## Related Topics

[Events Setting](#)

## 3.3.2 Phone&SMS

### 3.3.2.1 Phone

Phone settings involve in call/SMS trigger, SMS control and SMS alarm for events.

The screenshot shows two configuration sections. The 'Phone Number List' section has a table with columns: 'Number' (input field with '1908888888'), 'Description' (input field with 'test'), and 'Operation' (delete and add icons). The 'Phone Group List' section has a table with columns: 'Group ID' (input field with '1'), 'Description' (input field with 'test'), 'Number' (dropdown menu with '1908888888,8866222222'), and 'Operation' (delete and add icons).

Figure 3-3-2-1

Phone

Item	Description
<b>Phone Number List</b>	
Number	Enter the telephone number. Digits, "+" and "-" are allowed.
Description	The description of the telephone number.
<b>Phone Group List</b>	
Group ID	Set number for phone group. Range: 1-100.
Description	The description of the phone group.
Number	Select the phone numbers.

Table 3-3-2-1 Phone Settings

**Related Topic**[Connect on Demand](#)**3.3.2.2 SMS**

SMS settings involve in remote SMS control, sending SMS and SMS receiving and sending status. Ensure the SMS center number is typed on **Network > Interface > Cellular** page before using SMS features.

Figure 3-3-2-2

<b>SMS Settings</b>	
Item	Description
SMS Mode	<p>Select SMS mode:</p> <p><b>Text:</b> Pure text mode, mainly used in Europe and America. Technically, it can also be used to send Short Messages in Chinese. When CLI commands will be sent to control the router, Text mode is recommended to choose.</p> <p><b>PDU:</b> It's the default encoding Mode for mobile phones, which conform to all mobile phones SMS format and can use any character.</p>
SMS Remote Control	Enable/disable SMS Remote Control to send SMS to control the router.

Authentication Type	You can choose "phone number" or "password + phone number". Phone number: only the phone numbers on phone groups support remote control. Password + phone number: only the phone numbers on phone groups support remote control; besides, control SMS should be sent as format password+";"+command content.
Password	Set password for authentication.
Phone Group	Select the Phone group which used for remote control. User can click the Phone Group and set phone number.

Table 3-3-2-2 SMS Remote Control Parameters

The screenshot displays the Milesight web interface for SMS management. It is divided into three main sections: 'Send SMS', 'Inbox', and 'Outbox'.  
 - **Send SMS:** Includes input fields for 'Phone Number' and 'Content', and a 'Send' button.  
 - **Inbox:** Features search filters for 'From', 'To', and 'Sender', along with 'Search' and 'Clear All' buttons. Below is a table with columns 'Sender', 'Time', and 'Content'. A pagination control shows page 1 of 10.  
 - **Outbox:** Features search filters for 'From', 'To', and 'Recipient', along with 'Search' and 'Clear All' buttons. Below is a table with columns 'Recipient', 'Time', 'Content', and 'Status'. A pagination control shows page 1 of 10.

Figure 3-3-2-3

SMS	
Item	Description
<b>Send SMS</b>	
Phone Number	Enter the number to receive the SMS.
Content	SMS content.
<b>Inbox/Outbox</b>	
Sender	SMS sender from outside.
Recipient	SMS recipient which UR32L send to.
From	Select the start date.
To	Select the end date.
Search	Search for SMS record.
Clear All	Clear all SMS records in web GUI.

Table 3-3-2-3 SMS Settings

### 3.3.3 User Management

### 3.3.3.1 Account

Here you can change the login username and password of the administrator.

**Note: it is strongly recommended that you modify them for the sake of security.**

Figure 3-3-3-1

Account	
Item	Description
Username	Enter a new username. You can use characters such as a-z, 0-9, "_", "-". The first character can't be a digit.
Old Password	Enter the old password.
New Password	Enter a new password. You can use any ASCII characters except blank.
Confirm New Password	Enter the new password again.

Table 3-3-3-1 Account Settings

### 3.3.3.2 User Management

This section describes how to create common user accounts. The common user permission includes Read-Only and Read-Write.

Figure 3-3-3-2

User Management	
Item	Description
Username	Enter a new username. You can use characters such as a-z, 0-9, "_", "-". The first character can't be a digit.
Password	Set password. You can use any ASCII characters except blank.
Permission	Select user permission from "Read-Only" and "Read-Write". <b>Read-Only:</b> users can only view the configuration of router in this level.

<b>Read-Write:</b> users can view and set the configuration of router in this level.
--------------------------------------------------------------------------------------

Table 3-3-3-2 User Management

### 3.3.4 AAA

AAA access control is used for visitors control and the available corresponding services once access is allowed. It adopts the same method to configure three independent safety functions. It provides modularization methods for following services:

- Authentication: verify if the user is qualified to access to the network.
- Authorization: authorize related services available for the user.
- Charging: record the utilization of network resources.

#### 3.3.4.1 Radius

Using UDP for its transport, Radius is generally applied in various network environments with higher requirements of security and permission of remote user access.

Figure 3-3-4-1

Radius	
Item	Description
Enable	Enable or disable Radius.
Server IP Address	Fill in the Radius server IP address/domain name.
Server Port	Fill in the Radius server port. Range: 1-65535.
Key	Fill in the key consistent with that of Radius server in order to get connected with Radius server.

Table 3-3-4-1 Radius Parameters

#### 3.3.4.2 TACACS+

Using TCP for its transport, TACACS+ is mainly used for authentication, authorization and charging of the access users and terminal users by adopting PPP and VPDN.



The screenshot shows the 'TACACS+' tab selected in the configuration menu. The 'TACACS+ Settings' section contains the following fields:

- Enable:** A checkbox that is currently checked.
- Server IP Address:** An empty text input field.
- Server Port:** A text input field containing the value '49'.
- Shared Secret:** An empty text input field.

A blue 'Save' button is located at the bottom left of the settings area.

Figure 3-3-4-2

TACACS+	
Item	Description
Enable	Enable or disable TACACS+.
Server IP Address	Fill in the TACACS+ server IP address/domain name.
Server Port	Fill in the TACACS+ server port. Range: 1-65535.
Key	Fill in the key consistent with that of TACACS+ server in order to get connected with TACACS+ server.

Table 3-3-4-2 TACACS+ Parameters

### 3.3.4.3 LDAP

A common usage of LDAP is to provide a central place to store usernames and passwords. This allows many different applications and services to connect the LDAP server to validate users.

LDAP is based on a simpler subset of the standards contained within the [X.500](#) standard. Because of this relationship, LDAP is sometimes called X.500-lite as well.

Figure 3-3-4-3

LDAP	
Item	Description
Enable	Enable or Disable LDAP.
Server IP Address	Fill in the LDAP server's IP address/domain name. The maximum count is 10.
Server Port	Fill in the LDAP server's port. Range: 1-65535
Base DN	The top of LDAP directory tree.
Security	Select secure method from "None", "StartTLS" and "SSL".
Username	Enter the username to access the server.
Password	Enter the password to access the server.

Table 3-3-5-3 LDAP Parameters

### 3.3.4.4 Authentication

AAA supports the following authentication ways:

- None: uses no authentication, generally not recommended.
- Local: uses the local username database for authentication.
  - Advantages: rapidness, cost reduction.
  - Disadvantages: storage capacity limited by hardware.
- Remote: has user's information stored on authentication server. Radius, TACACS+ and LDAP supported for remote authentication.

When radius, TACACS+, and local are configured at the same time, the priority level is: 1 > 2 > 3.

Service	1	2	3
Console	None ▼	None ▼	None ▼
Web	None ▼	None ▼	None ▼
Telnet	None ▼	None ▼	None ▼
SSH	None ▼	None ▼	None ▼

Save

Figure 3-3-4-4

Authentication	
Item	Description
Console	Select authentication for Console access.
Web	Select authentication for Web access.
Telnet	Select authentication for Telnet access.
SSH	Select authentication for SSH access.

Table 3-3-4-4 Authentication Parameters

### 3.3.5 Device Management

#### 3.3.5.1 Auto Provision

When Auto Provision is enabled and the device is connected to Internet, the device will receive the configuration profile to achieve initial configuration by Milesight Development Platform. This feature will work even the device does not configure to connect Milesight Development Platform.

Auto Provision

Enable ☒

Status ☐

Figure 3-3-5-1

#### 3.3.5.2 Device Management

You can choose which platform you want to connect on this page so as to manage the router centrally and remotely: Milesight DeviceHub, Milesight DeviceHub 2.0, and Milesight Development Platform. For more details please refer to corresponding platform manuals.

**Device Management**

Enable ☒

Platform Type DeviceHub ▼

Server Address

Activation Method By Authentication Code ▼

Authentication Code

Status Not enabled

Figure 3-3-5-2

Device Management	
Item	Description
Enable	Enable or disable to connect router to management platform.
Platform Type	DeviceHub, DeviceHub 2.0, and Milesight Development Platform are optional.
Status	Show the connection status between the router and the platform.
DeviceHub	
Server Address	IP address or domain of the device management server.
Activation Method	Select activation method to connect the router to the DeviceHub server, options are "By Authentication Code" and "By Account name".
Authentication Code	Fill in the authentication code generated from the DeviceHub.
Account name	Fill in the registered DeviceHub account (email) and password.
Password	
DeviceHub 2.0	
Server Address	IP address or domain of the device management server.

Table 3-3-5-1

### 3.3.5.3 Milesight VPN

You can connect the device to the Milesight VPN on this page so as to manage the router and connected devices centrally and remotely. For more details please refer to ***MilesightVPN User Guide***.

Device Management
Milesight VPN

**Milesight VPN Setting**

Server

Port

18443

Authorization Code

Device Name

Connect

**Milesight VPN Status**

Status

Disconnected

Local IP

--

Remote IP

--

Duration

-

Figure 3-3-5-3

Milesight VPN	
Item	Description
Milesight VPN Settings	
Server	Enter the IP address or domain name of Milesight VPN.
Port	Enter the HTTPS port number.
Authorization code	Enter the authorization code which generated by Milesight VPN.
Device Name	Enter the name of the device.
Milesight VPN Status	
Status	Show the connection information about whether the router is connected to the Milesight VPN.
Local IP	Show the virtual IP of the router.
Remote IP	Show the virtual IP of the Milesight VPN.
Duration	Show the information on how long the router has been connected to the Milesight VPN.

Table 3-3-5-2

### 3.3.6 Events

Event feature is capable of sending alerts by Email when certain system events occur.

### 3.3.6.1 Events

You can view alarm messages on this page.

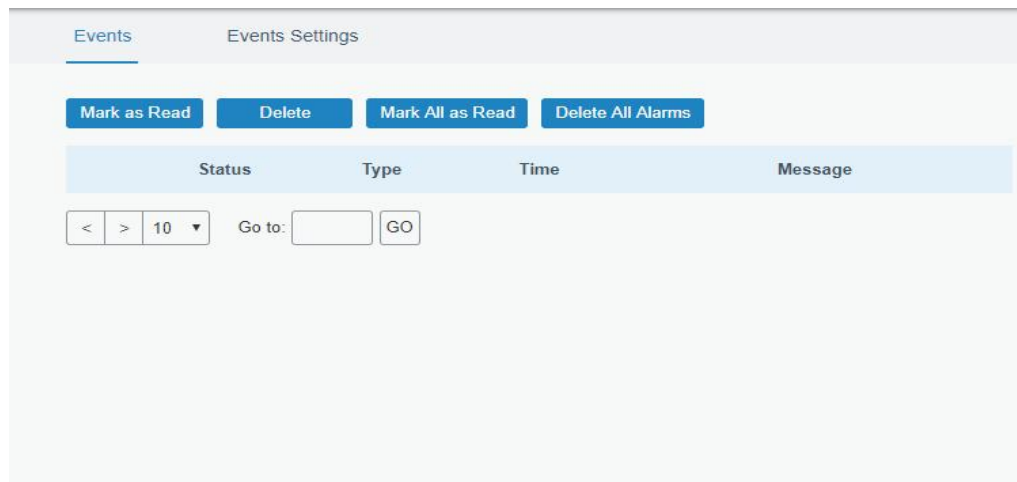


Figure 3-3-6-1

Events	
Item	Description
Mark as Read	Mark the selected event alarm as read.
Delete	Delete the selected event alarm.
Mark All as Read	Mark all event alarms as read.
Delete All Alarms	Delete all event alarms.
Status	Show the reading status of the event alarms, such as "Read" and "Unread".
Type	Show the event type that should be alarmed.
Time	Show the alarm time.
Message	Show the alarm content.

Table 3-3-6-1 Events Parameters

### 3.3.6.2 Events Settings

In this section, you can decide what events to record and whether you want to receive email and SMS notifications when any change occurs.

Events
Events Settings

**Events Settings**

Enable ☒

Phone Group List

Email Group List

Events	Record <input type="checkbox"/>	Email <input type="checkbox"/> Email Group List	SMS <input type="checkbox"/> Phone Group List	SNMP <input type="checkbox"/>
System Startup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System Reboot	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
System Time Update	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
VPN Up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VPN Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WAN Up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WAN Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link switch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weak Signal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cellular Up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3-3-6-2

Cellular Down	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cellular Data Stats Clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cellular Data Traffic is running out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cellular Data Traffic Overflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3-3-6-3

Event Settings	
Item	Description
Enable	Check to enable "Events Settings".
Phone Group List	Select phone group to receive SMS alarm.
Email Group List	Select email group to receive alarm.
Record	The relevant content of event alarm will be recorded on "Event" page if this option is checked.
Email	The relevant content of event alarm will be sent out via email if this option is checked.
Email Setting	Click and you will be redirected to the page "Email" to configure email group list.
SMS	The relevant content of event alarm will be sent out via SMS if this option is checked.
SMS Setting	Click and you will be redirected to the page of "Phone" to

	configure phone group list.
VPN Up	VPN is connected.
VPN Down	VPN is disconnected.
WAN Up	Ethernet cable is connected to WAN port.
WAN Down	Ethernet cable is disconnected to WAN port.
Link Switch	Switch to use other interface for Internet access.
Weak Signal	The signal level of cellular is low (RSSI < 11 or ≥ 99).
Cellular Up	Cellular network is connected.
Cellular Down	Cellular network is disconnected.
Cellular Data Stats Clear	Zero out the data usage of the main SIM card.
Cellular Data Traffic is running out	The main SIM card is reaching the data usage limit.
Cellular Data Traffic Over Flow	The main SIM card has exceeded the data usage plan.

Table 3-3-6-2 Events Parameters

## Related Topics

[Email Setting](#)

Figure 3-3-6-4

MQTT	
Item	Description
Enable	If enabled, MQTT forwarding is performed when an event is triggered.
Events	Select the type of event that needs to be MQTT forwarded.
MQTT	Select the MQTT connection used for forwarding the current event type.
Topic	Define the topic name of the forwarding event, which is used by the router to forward data when the event is triggered.
Retain Flag	Enable to set the latest message of this topic as retain message.
QoS	<p><b>QoS 0</b> – Only Once This is the fastest method and requires only 1 message. It is also the most unreliable transfer mode.</p> <p><b>QoS 1</b> – At Least Once This level guarantees that the message will be delivered at least once, but may be delivered more than once.</p> <p><b>QoS 2</b> – Exactly Once QoS 2 is the highest level of service in MQTT. This level guarantees that each message is received only once by the intended recipients. QoS 2 is the safest</p>



	and slowest quality of service level.
--	---------------------------------------

Table 3-3-6-3

3.4 Service

3.4.1 MQTT

UR32L supports to work as MQTT client to forward data and router information to MQTT broker in two ways:

- 1. Users send requests to the router to enquire the router information;
- 2. The router publishes the data automatically.

MQTT				
Connections				
ID	Name	Address	Status	Operation
1	mqtttest1	192.168.44.54:1883	Connected	 
2	555	666:1883	Disconnected	 
				

Figure 3-4-1-1

MQTT

Status

Disable

General

Name

Enable

☒

Broker Address

Broker Port

1883

Client ID

24:e1:24:f2:63:10\_linyptjr

Connection Timeout(s)

30

Keep Alive Interval(s)

60

Auto Reconnect

☒

Reconnect Period

4

Clean Session

☐

User Credentials

Enable

☒

Username

Password

TLS

Enable

☒

Mode

CA signed server certificate ▼

Figure 3-4-1-2

Last Will and Testament

Enable

☒

Last-Will Topic

Last-Will QoS

Last-Will Retain

☐

Last-Will Payload

```
{
  "will": "offline test"
}
```

Request and Response Topic

Data Type	Topic	Retain	QoS
Status Request	<input type="text" value="/status/request"/>	<input type="checkbox"/>	<input type="text" value="QoS 0"/>
Status Response	<input type="text" value="/status/response"/>	<input type="checkbox"/>	<input type="text" value="QoS 0"/>

System Status Publish Topic

Data Type	Topic	Publish Interval(s)	Retain	QoS
System Info	<input type="text" value="/systeminfo"/>	<input type="text" value="60"/>	<input checked="" type="checkbox"/>	<input type="text" value="QoS 0"/>
System Status	<input type="text" value="/systemstatus"/>	<input type="text" value="60"/>	<input checked="" type="checkbox"/>	<input type="text" value="QoS 0"/>
Cellular	<input type="text" value="/cellular"/>	<input type="text" value="60"/>	<input checked="" type="checkbox"/>	<input type="text" value="QoS 0"/>
Ethernet	<input type="text" value="/ethernet"/>	<input type="text" value="60"/>	<input checked="" type="checkbox"/>	<input type="text" value="QoS 0"/>

Figure 3-4-1-3

MQTT Settings	
Item	Description
Status	Show connection status between router and MQTT broker.
General	
Name	Customize a unique connection name. It is not allowed to change after save.
Enable	Enable or disable this MQTT connection.
Broker Address	MQTT broker address to receive data.
Broker Port	MQTT broker port to receive data.
Client ID	Client ID is the unique identity of the client to the server. It must be unique when all clients are connected to the same server, and it is the key to handle messages at QoS 1 and 2.
Connection Timeout/s	If the client does not get a response after the connection timeout, the connection will be considered as broken. The Range: 1-65535.
Keep Alive Interval/s	After the client is connected to the server, the client will send heartbeat packet to the server regularly to keep alive. Range: 1-65535.
Auto Reconnect	When connection is broken, try to reconnect the server automatically.

Reconnect Period	When connection is broken, the period to reconnect the server periodically.
Clean Session	When enabled, the connection will create a temporary session and all information will lose when the client is disconnected from broker; when disabled, the connection will create a persistent session that will remain and save offline messages until the session logs out overtime.
<b>User Credentials</b>	
Enable	Enable user credentials.
Username	The username used for connecting to the MQTT broker.
Password	The password used for connecting to the MQTT broker.
<b>TLS</b>	
Enable	Enable the TLS encryption in MQTT communication.
Mode	Select from Self signed certificates, CA signed server certificate. <b>CA signed server certificate:</b> verify with the certificate issued by Certificate Authority (CA) that pre-loaded on the device. <b>Self signed certificates:</b> upload the custom CA certificates, client certificates and secret key for verification.
<b>Last Will and Testament</b>	
Enable	Last will message is automatically sent when the MQTT client is abnormally disconnected. It is usually used to send device status information or inform other devices or proxy servers of the device's offline status.
Last-Will Topic	Customize the topic to receive last will messages.
Last-Will QoS	QoS0, QoS1 or QoS2 are optional.
Last-Will Retain	Enable to set last will message as retain message.
Last-Will Payload	Customize the last will message contents.
<b>Request and Response Topic</b>	
Topic	The router supports to send requests to enquire router information. <b>Status Request:</b> users is able to send requests to this topic to enquire router information. Request format: <pre>{   "id": "1",   "status": "systeminfo",   "sn": "64E1213132456",   "need_response": 1    //1 means need response }</pre> The id is a random value, and the status can be set as 4 types: systeminfo, systemstatus, cellular, ethernet. <b>Status Response:</b> users is able to subscribe this topic to get the replies.
Retain	Enable to set the latest message of this topic as retain message.
QoS	QoS0, QoS1 or QoS2 are optional.
<b>System Status Publish Topic</b>	
Data Type	Data type sent to MQTT broker automatically.

Topic	Topic name of the data type used for publishing.
Publish Interval (s)	The interval to publish data to MQTT broker automatically.
Retain	Enable to set the latest message of this topic as retain message.
QoS	QoS0, QoS1 or QoS2 are optional.

Table 3-4-1-1 MQTT Parameters

### 3.4.2 SNMP

SNMP is widely used in network management for network monitoring. SNMP exposes management data with variables form in managed system. The system is organized in a management information base (MIB) which describes the system status and configuration. These variables can be remotely queried by managing applications.

Configuring SNMP in networking, NMS, and a management program of SNMP should be set up at the Manager.

Configuration steps are listed as below for achieving query from NMS:

1. Enable SNMP setting.
2. Download MIB file and load it into NMS.
3. Configure MIB View.
4. Configure VCAM.

#### Related Configuration Example

[SNMP Application Example](#)

#### 3.4.2.1 SNMP

UR32L supports SNMPv1, SNMPv2c and SNMPv3 version. SNMPv1 and SNMPv2c employ community name authentication. SNMPv3 employs authentication encryption by username and password.

The screenshot shows a web-based configuration interface for a device. At the top, there are five tabs: 'SNMP', 'MIB View', 'VACM', 'Trap', and 'MIB'. The 'SNMP' tab is selected and highlighted with a blue underline. Below the tabs, the section is titled 'SNMP Settings'. It contains several configuration items:

- Enable:** A checkbox that is checked, indicating SNMP is enabled.
- Port:** A text input field containing the value '161'.
- SNMP Version:** A dropdown menu currently showing 'SNMPv2'.
- Location Information:** A text input field containing '225\_location'.
- Contact Information:** A text input field containing '225\_Contact'.

At the bottom of the configuration area, there is a blue button labeled 'Save'.

Figure 3-4-2-1

SNMP Settings	
Item	Description
Enable	Enable or disable SNMP function.
Port	Set SNMP listened port. Range: 1-65535. The default port is 161.
SNMP Version	Select SNMP version; support SNMP v1/v2c/v3.
Location Information	Fill in the location information.
Contact Information	Fill in the contact information.

Table 3-4-2-1 SNMP Parameters

### 3.4.2.2 MIB View

This section explains how to configure MIB view for the objects.

SNMP	MIB View	VACM	Trap	MIB
View List				
View Name	View Filter	View OID	Operation	
All	Included	1	✕	
system	Included	1.3.6.1.2.1.1	✕	
			+	

Figure 3-4-2-2

MIB View	
Item	Description
View Name	Set MIB view's name.
View Filter	Select from "Included" and "Excluded".
View OID	Enter the OID number.
Included	You can query all nodes within the specified MIB node.
Excluded	You can query all nodes except for the specified MIB node.

Table 3-4-2-2 MIB View Parameters

### 3.4.2.3 VACM

This section describes how to configure VCAM parameters.

The screenshot shows the 'VACM' configuration page with tabs for SNMP, MIB View, VACM (selected), Trap, and MIB. Below the tabs is the 'SNMP v1 & v2 User List' section. It contains a table with columns: Community, Permission, MIB View, Network, and Operation. There are two rows: one for 'private' and one for 'public', both with 'Read-Write' permission, 'All' MIB View, and '0.0.0.0/0' Network. Each row has a delete icon (X) and a plus icon (+) at the end.

Community	Permission	MIB View	Network	Operation
private	Read-Write	All	0.0.0.0/0	X
public	Read-Write	All	0.0.0.0/0	X

Figure 3-4-2-3

VACM	
Item	Description
<b>SNMP v1 &amp; v2 User List</b>	
Community	Set the community name.
Permission	Select from "Read-Only" and "Read-Write".
MIB View	Select an MIB view to set permissions from the MIB view list.
Network	The IP address and bits of the external network accessing the MIB view.
Read-Write	The permission of the specified MIB node is read and write.
Read-Only	The permission of the specified MIB node is read only.
<b>SNMP v3 User Group</b>	
Group Name	Set the name of SNMPv3 group.
Security Level	Select from "NoAuth/NoPriv", "Auth/NoPriv", and "Auth/Priv".
Read-Only View	Select an MIB view to set permission as "Read-only" from the MIB view list.
Read-Write View	Select an MIB view to set permission as "Read-write" from the MIB view list.
Inform View	Select an MIB view to set permission as "Inform" from the MIB view list.
<b>SNMP v3 User List</b>	
Username	Set the name of SNMPv3 user.
Group Name	Select a user group to be configured from the user group.
Authentication	Select from "MD5", "SHA", and "None".
Authentication Password	The password should be filled in if authentication is "MD5" and "SHA".
Encryption	Select from "AES", "DES", and "None".
Encryption Password	The password should be filled in if encryption is "AES" and "DES".

Table 3-4-2-3 VACM Parameters

### 3.4.2.4 Trap

This section explains how to enable network monitoring by SNMP trap.

The screenshot shows the 'Trap' configuration page. It includes a header with tabs: SNMP, MIB View, VACM, Trap (active), and MIB. Below the tabs is a section titled 'SNMP Trap'. This section contains the following configuration options:

- Enable:** A checkbox that is checked.
- SNMP Version:** A dropdown menu currently set to 'SNMPv2'.
- Server Address:** An empty text input field.
- Port:** An empty text input field.
- Name:** An empty text input field.

Figure 3-4-2-4

SNMP Trap	
Item	Description
Enable	Enable or disable SNMP Trap function.
SNMP Version	Select SNMP version; support SNMP v1/v2c/v3.
Server Address	Fill in NMS's IP address or domain name.
Port	Fill in UDP port. Port range is 1-65535. The default port is 162.
Name	Fill in the group name when using SNMP v1/v2c; fill in the username when using SNMP v3.
Auth/Priv Mode	Select from "NoAuth & No Priv", "Auth & NoPriv", and "Auth & Priv".

Table 3-4-2-4 Trap Parameters

### 3.4.2.5 MIB

This section describes how to download MIB files. The last MIB file "LTE-ROUTER-MIB.txt" is for the UR32L router.

The screenshot shows the 'MIB Download' page. It includes a header with tabs: SNMP, MIB View, VACM, Trap, and MIB (active). Below the tabs is a section titled 'MIB Download'. This section contains the following configuration options:

- MIB File:** A dropdown menu currently set to 'LTE-ROUTER-MIB.b'.
- Download:** A blue button to download the selected MIB file.

Figure 3-4-2-5

MIB	
Item	Description
MIB File	Select the MIB file you need.
Download	Click "Download" button to download the MIB file to PC.

Table 3-4-2-5 MIB Download

### 3.4.3 TR069



Technical Report 069 (TR-069) is a technical specification of Broadband Forum that defines an application layer protocol for remote management and provisioning of customer-premises equipment (CPE) connected to an Internet Protocol (IP) network.

Figure 3-4-3-1

TR-069	
Item	Description
Enable	Enable or disable TR069 feature.
Last Inform	The last time the router informed to TR069 ACS.
ACS Setting	
URL	The URL of TR069 auto configuration server (ACS).
ACS Username	The username used by ACS to authenticate the CPE when it initiates a connection request.
ACS Password	The password used by ACS to authenticate the CPE when it initiates a connection request.
CPE Setting	
Enable Period Inform	Enable or disable inform periodically.
Period Inform Interval (s)	The interval to report information to ACS, this should be less than the timeout of peer ACS.
CPE Username	The username used by CPE to authenticate the ACS when it initiates a

	connection request.
CPE Password	The password used by CPE to authenticate the ACS when it initiates a connection request.

Table 3-4-3-1 TR069 Parameters

### 3.5 Maintenance

This section describes system maintenance tools and management.

#### 3.5.1 Tools

Troubleshooting tools includes ping, traceroute, packet analyzer and qxdmlog.

##### 3.5.1.1 Ping

Ping tool is engineered to ping outer network.

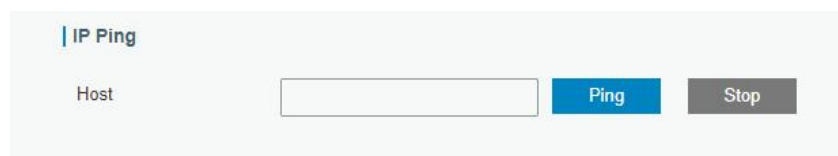


Figure 3-5-1-1

PING	
Item	Description
Host	Ping outer network from the router.

Table 3-5-1-1 IP Ping Parameters

##### 3.5.1.2 Traceroute

Traceroute tool is used for troubleshooting network routing failures.



Figure 3-5-1-2

Traceroute	
Item	Description
Host	Address of the destination host to be detected.

Table 3-5-1-2 Traceroute Parameters

##### 3.5.1.3 Packet Analyzer

Packet Analyzer is used for capturing the packet of different interfaces.



**Packet Analyzer**

Ethernet Interface: Any

IP Address:

Port:

Advanced: ☐

Start Stop Download

Figure 3-5-1-3

Packet Analyzer	
Item	Description
Ethernet Interface	Select the interface to capture packages.
IP Address	Set the IP address that the router will capture.
Port	Set the port that the router will capture.
Advanced	Set the rules for sniffer. The format is tcpdump.

Table 3-5-1-3 Packet Analyzer Parameters

#### 3.5.1.4 Qxdmlog

This section allow collecting diagnostic logs via QXDM tool.



Start Stop Download

Figure 3-5-1-4

### 3.5.2 Debugger

#### 3.5.2.1 Cellular Debugger

This section explains how to send AT commands to router and check cellular debug information.

Cellular Debugger

Firewall Debugger

Cellular Debugger

Command

Eg: AT+CGREG?

Send

View Recent Logs (lines)

20

Result

2020-05-08 19:23:38: [SEQ2,ID2]<<< OK  
2020-05-08 19:23:38: [SEQ3,ID3]>>> ATE0  
2020-05-08 19:23:38: [SEQ3,ID3]<<< ATE0  
2020-05-08 19:23:38: [SEQ3,ID3]<<< OK  
2020-05-08 19:23:39: [SEQ4,ID8]>>> AT+CMEE=2  
2020-05-08 19:23:39: [SEQ4,ID8]<<< OK  
2020-05-08 19:23:43: [SEQ39,ID1]>>> AT+QGPS=1  
2020-05-08 19:23:43: [SEQ39,ID1]<<< OK  
2020-05-08 19:23:43: [SEQ40,ID63]>>> AT+QMBNCFG="Autosel",1  
2020-05-08 19:23:43: [SEQ40,ID63]<<< OK  
2020-05-08 19:23:43: [SEQ42,ID13]>>> AT+CPIN?  
2020-05-08 19:23:43: [SEQ42,ID13]<<< +CME ERROR: SIM not inserted  
2020-05-08 19:23:51: [SEQ1,ID48]>>> AT+CFUN=0  
2020-05-08 19:23:51: [SEQ1,ID48]<<< OK  
2020-05-08 19:23:51: [SEQ1,ID48]<<< +QIND: "csq",99,99  
2020-05-08 19:23:56: [SEQ2,ID47]>>> AT+CFUN=1  
2020-05-08 19:23:59: [SEQ2,ID47]<<< OK  
2020-05-08 19:23:59: [SEQ2,ID47]<<< +QIND: "csq",18,99  
2020-05-08 19

Clear Log

Download

Manual Refresh

Refresh

Figure 3-5-2-1

Cellular Debugger	
Item	Description
Command	Enter the AT command that you want to send to cellular modem.
View Recent Logs (lines)	View the specified lines of the result.
Result	Show the response result from cellular modem.

Table 3-5-2-1 Cellular Debugger Parameters

### 3.5.2.2 Firewall Debugger

This section explains how to send commands to router and check firewall information.

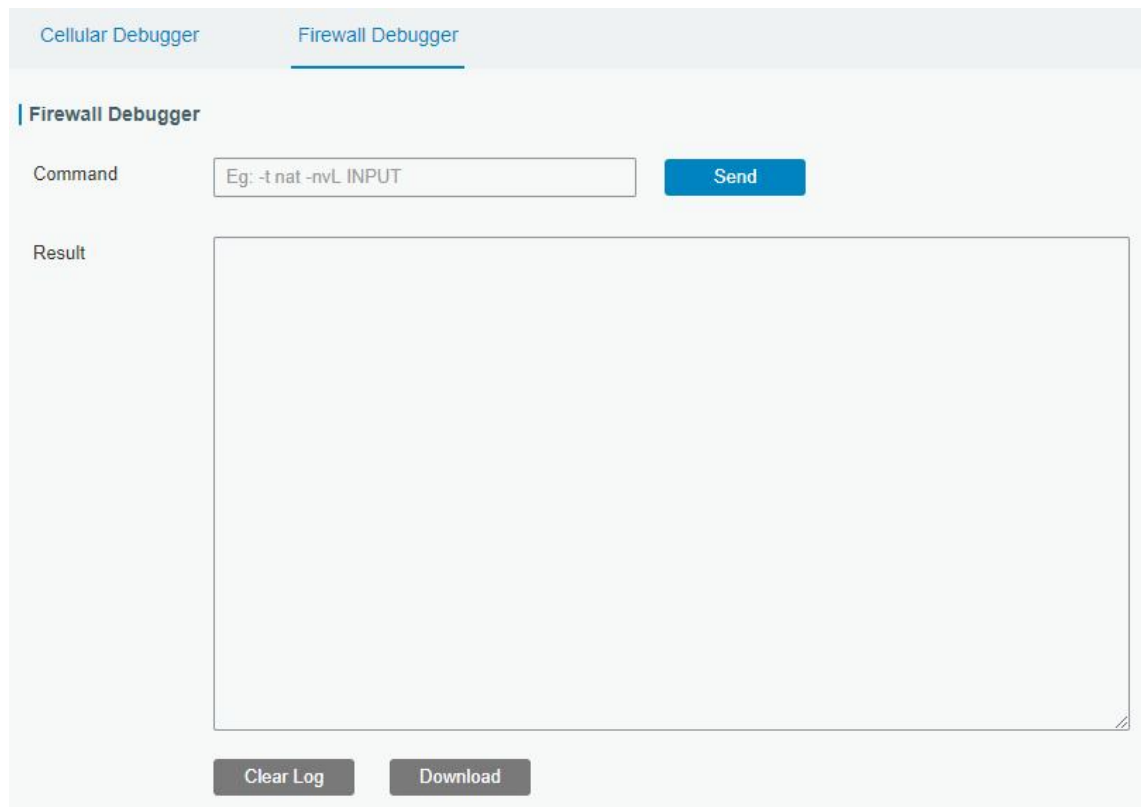


Figure 3-5-2-2

Firewall Debugger	
Item	Description
Command	Enter the AT command that you want to send to firewall module.
Result	Show the response result from firewall module.

Table 3-5-2-2 Firewall Debugger Parameters

### 3.5.3 Log

The system log contains a record of informational, error and warning events that indicates how the system processes. By reviewing the data contained in the log, an administrator or user troubleshooting the system can identify the cause of a problem or whether the system processes are loading successfully. Remote log server is feasible, and router will upload all system logs to remote log server such as Syslog Watcher.

#### 3.5.3.1 System Log

This section describes how to view the recent log on web.

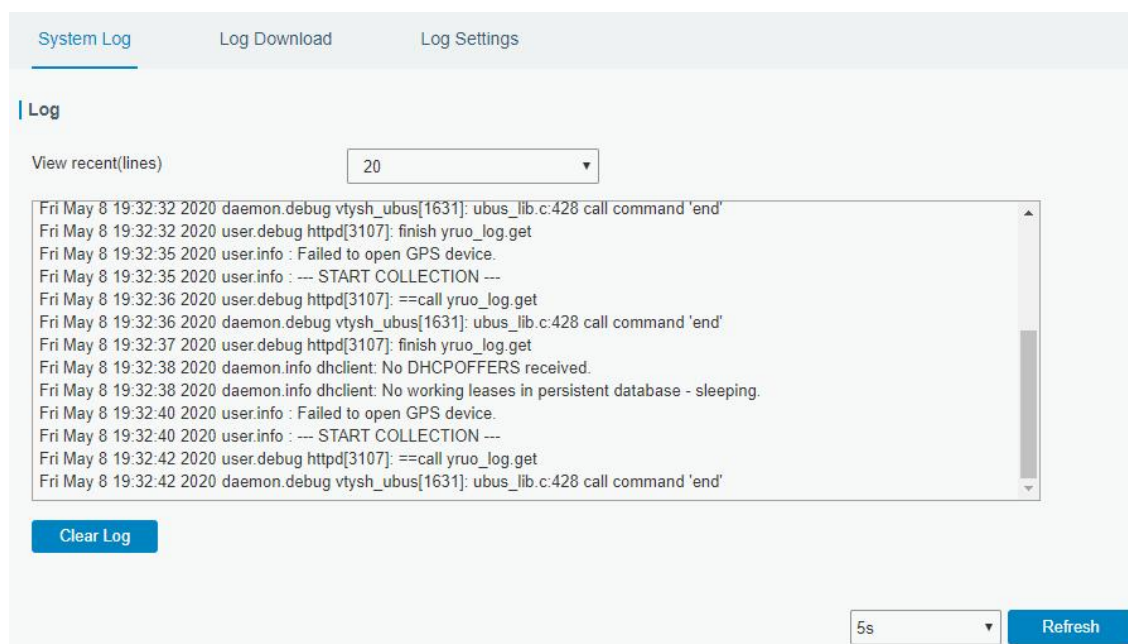


Figure 3-5-3-1

System Log	
Item	Description
View recent (lines)	View the specified lines of system log.
Clear Log	Clear the current system log.

Table 3-5-3-1 System Log Parameter

### 3.5.3.2 Log Download

This section describes how to download log files.

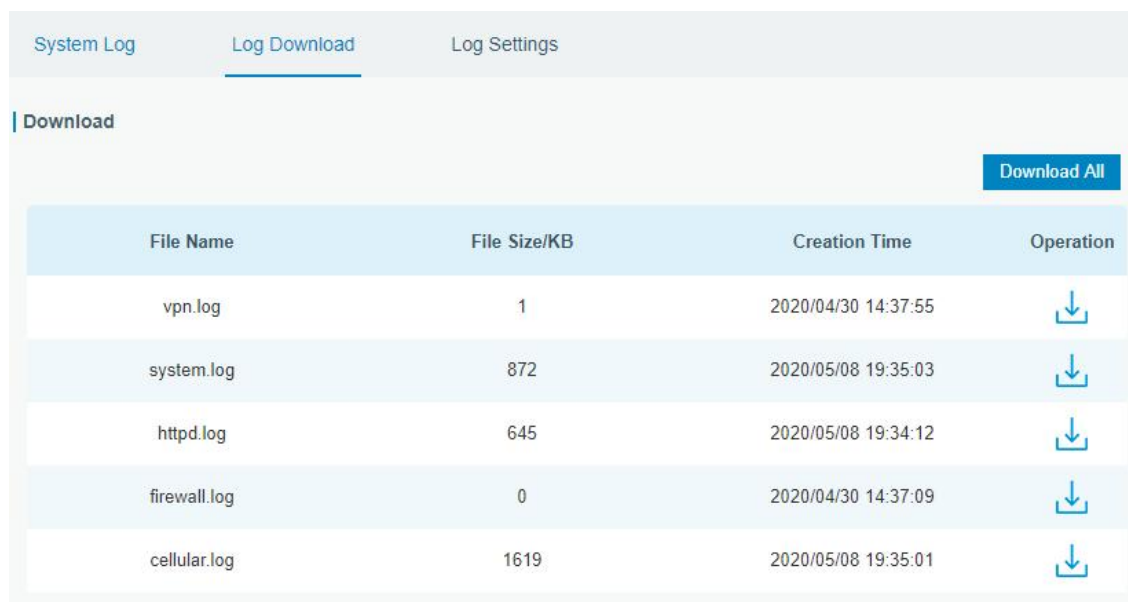


Figure 3-5-3-2

Log Download	
Item	Description
Download All	Download all log files.

File Name	Show the name of log files.
File Size/KB	Show the size of log files.
Creation Time	Show the creation time of log files.
Operation	Click to download every log file.

Table 3-5-3-2 System Log Parameter

### 3.5.3.3 Log Settings

This section explains how to enable remote log server and local log setting.

Figure 3-5-3-3

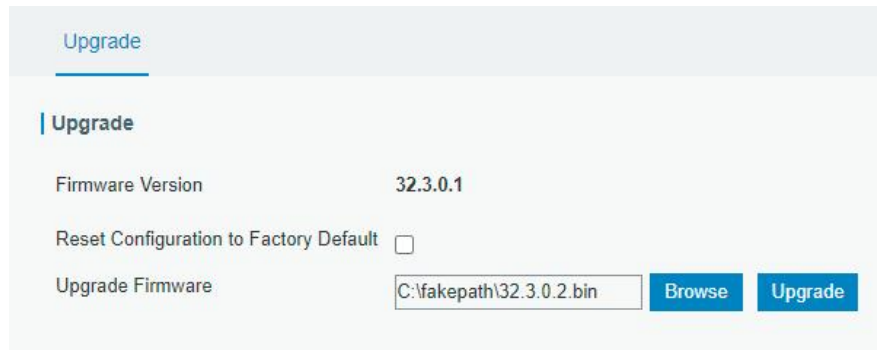
Log Settings	
Item	Description
<b>Remote Log Server</b>	
Enable	With “Remote Log Server” enabled, router will send all system logs to the remote server.
Syslog Server Address	Fill in the remote system log server address (IP/domain name).
Port	Fill in the remote system log server port.
<b>Local Log File</b>	
Storage	User can store the log file in memory.
Size	Set the size of the log file to be stored.
Log Severity	The list of severities follows the syslog protocol.

Table 3-5-3-3 Log Settings Parameters

### 3.5.4 Upgrade

This section describes how to upgrade the router firmware via web. Generally you don't need to do the firmware upgrade.

**Note:** any operation on web page is not allowed during firmware upgrade, otherwise the upgrade will be interrupted, or even the device will break down.



Upgrade

Upgrade

Firmware Version 32.3.0.1

Reset Configuration to Factory Default ☐

Upgrade Firmware C:\fakepath\32.3.0.2.bin

Figure 3-5-4-1

Upgrade	
Item	Description
Firmware Version	Show the current firmware version.
Reset Configuration to Factory Default	When this option is checked, the router will be reset to factory defaults after upgrade.
Upgrade Firmware	Click "Browse" button to select the new firmware file, and click "Upgrade" to upgrade firmware.

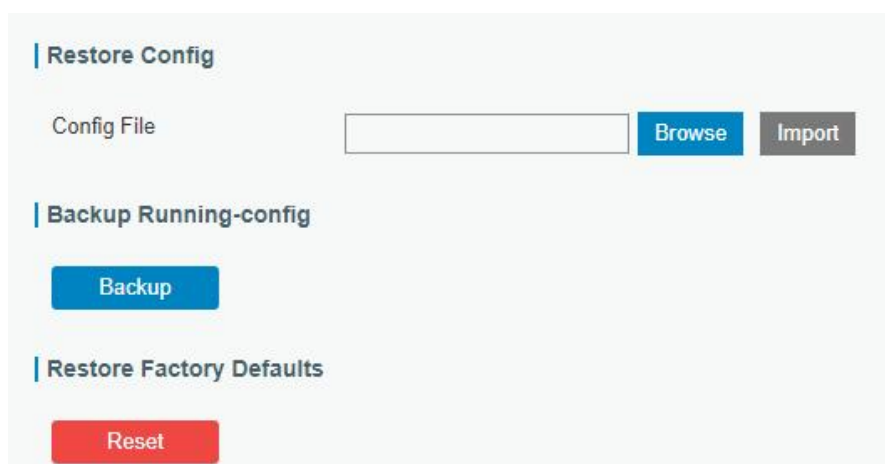
Table 3-5-4-1 Upgrade Parameters

### Related Configuration Example

[Firmware Upgrade](#)

### 3.5.5 Backup and Restore

This section explains how to create a complete backup of the system configurations to a file, restore the config file to the router and reset to factory defaults.



Restore Config

Config File

Backup Running-config

Restore Factory Defaults

Figure 3-5-5-1



Backup and Restore	
Item	Description
Config File	Click "Browse" button to select configuration file, and then click "Import" button to upload the configuration file to the router.
Backup	Click "Backup" to export the current configuration file to the PC.
Reset	Click "Reset" button to reset factory default settings. Router will restart after reset process is done.

Table 3-5-5-1 Backup and Restore Parameters

## Related Configuration Example

### [Restore Factory Defaults](#)

#### 3.5.6 Reboot

On this page you can reboot the router immediately or regularly. We strongly recommend clicking "Save" and "Apply" button before rebooting the router so as to avoid losing the new configuration.

The screenshot shows a web interface for configuring a router's reboot settings. At the top, there's a 'Reboot' tab. Below it, the 'Reboot Device' section contains a prominent 'Reboot Now' button. The 'Schedule' section allows for periodic reboots, with an 'Enable' checkbox checked. The 'Cycles' dropdown is open, showing options: 'Every Day' (selected), 'Every Week', and 'Every Month'. Time inputs for hours and minutes are set to 0. A 'Save' button is located at the bottom of the schedule section.

Figure 3-5-6-1

Reboot	
Item	Description
Reboot Now	Reboot the router immediately.
Schedule	
Enable	Reboot the router at a scheduled frequency.
Cycles	Select the date and time to execute the schedule.

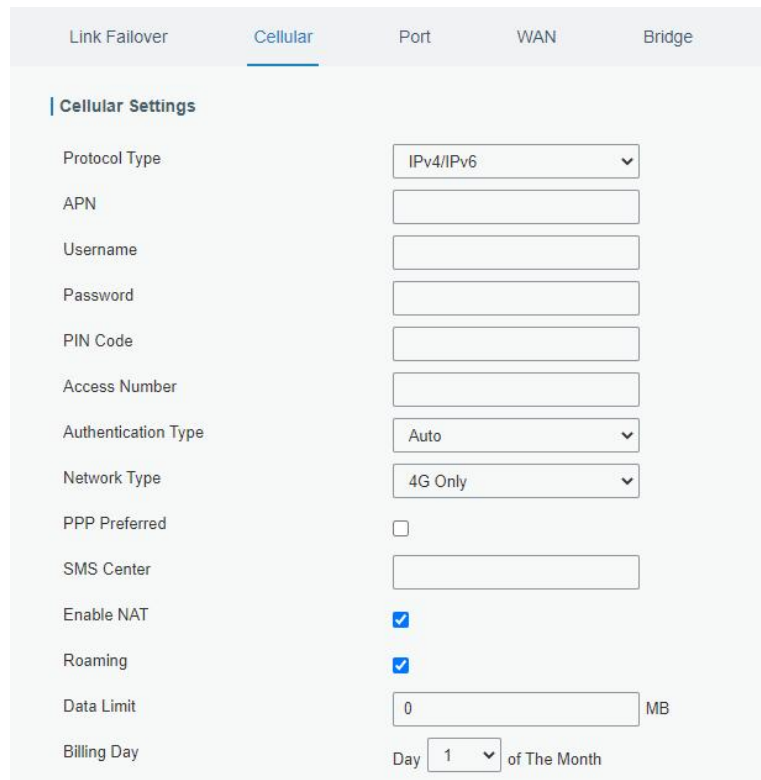
Table 3-5-2-1 Schedule Parameters

## Chapter 4 Application Examples

### 4.1 Network Connection

#### 4.1.1 Cellular Connection

1. Ensure the SIM card is inserted well before powering on and all cellular antennas are connected to the correct connectors.
2. Go to **Network > Interface > Cellular > Cellular Setting** to configure the cellular info, then click **Save and Apply**.



Link Failover Cellular Port WAN Bridge

**Cellular Settings**

Protocol Type: IPv4/IPv6

APN:

Username:

Password:

PIN Code:

Access Number:

Authentication Type: Auto

Network Type: 4G Only

PPP Preferred: ☐

SMS Center:

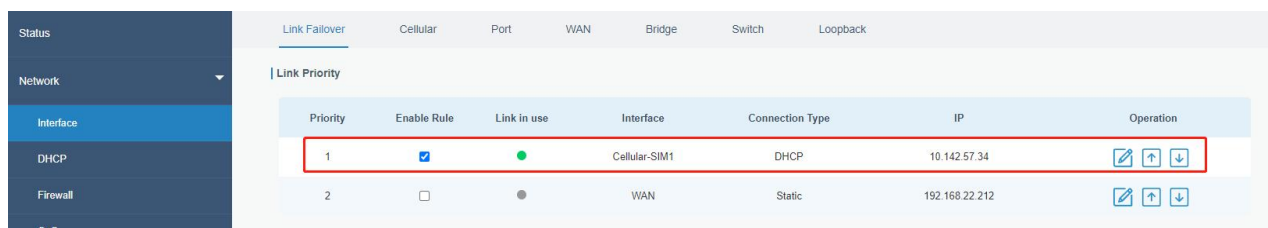
Enable NAT: ☒

Roaming: ☒

Data Limit: 0 MB

Billing Day: Day 1 of The Month


3. Go to **Network > Interface > Link Failover** to enable correspond SIM and drag buttons to change link priority.



Link Failover Cellular Port WAN Bridge Switch Loopback

**Link Priority**

Priority	Enable Rule	Link in use	Interface	Connection Type	IP	Operation
1	<input checked="" type="checkbox"/>	<span style="color: green;">●</span>	Cellular-SIM1	DHCP	10.142.57.34	
2	<input type="checkbox"/>	<span style="color: gray;">●</span>	WAN	Static	192.168.22.212	

4. Click  to configure ICMP ping detection information. When ping probe is enabled, the router will send ICMP packets to detection server to check if this link is valid. If no response and exceeding max retries, it will switch to the lower priority link.

**Note:** if you use private SIM card, please change a private server address or disable the ping probe.

**Ping Detection**

Enable	<input checked="" type="checkbox"/>
IPv4 Primary Server	<input type="text" value="8.8.8.8"/>
IPv4 Secondary Server	<input type="text" value="223.5.5.5"/>
IPv6 Primary Server	<input type="text" value="2001:4860:4860::8888"/>
IPv6 Secondary Server	<input type="text" value="2400:3200::1"/>
Interval	<input type="text" value="300"/> s
Retry Interval	<input type="text" value="5"/> s
Timeout	<input type="text" value="3"/> s
Max Ping Retries	<input type="text" value="3"/>

OK Cancel

- Go to **Status > Cellular** to view the status of the cellular connection. If it shows Connected, the SIM has dialed up successfully.

Overview	Cellular	Network	VPN	Routing	Host List
Modem			Network		
Model	EC25	Status	Connected		
Version	EC25EUXGAR08A05M1G	IPv4 Address	10.142.57.34/30		
Signal Level	23asu (-67dBm)	IPv4 Gateway	10.142.57.33		
Register Status	Registered (Home network)	IPv4 DNS	211.136.17.107		
IMEI	862506043707416	IPv6 Address	fe80::cca3:25ff:fed2:908/64		
IMSI	460081370507437	IPv6 Gateway	::		
ICCID	89860493262190157437	IPv6 DNS	::		
ISP	CHINA MOBILE	Connection Duration	0 days, 00:23:21		
Network Type	TDD LTE	Data Usage Monthly			
PLMN ID	46000	RX	4.0 MiB		
LAC	592f	TX	2.8 MiB		
Cell ID	ceb972a	ALL	6.8 MiB		

## Related Topic

[Cellular Setting](#)

[Cellular Status](#)

### 4.1.2 Ethernet WAN Connection

UR32L supports to get Internet access via WAN port.

#### Configuration Steps

- Go to **Network > Interface > WAN** to select connection type and configure WAN parameters, then save all settings. The following examples of static IP type, DHCP Client type, and PPPoE type are

listed for your reference.

2. Go to **Network > Interface > Link Failover** to enable WAN and drag buttons to change link priority.

Priority	Enable Rule	Link in use	Interface	Connection Type	IP	Operation
1	<input checked="" type="checkbox"/>	●	WAN	Static	192.168.22.212	
2	<input checked="" type="checkbox"/>	●	Cellular-SIM1	DHCP	10.142.57.34	

## Related Topic

[WAN Setting](#)

[WAN Status](#)

## 4.2 OpenVPN Client Application Example



UR32L routers can work as OpenVPN clients or OpenVPN servers. We are about to take an example of configuring an OpenVPN client to connect to OpenVPN CloudConnexa.


### Configuration Steps


1. Ensure the UR32L has gotten access to the Internet.
2. Log in the CloudConnexa account, select the Network section and select the service depending on your requirement and follow the wizard to continue the settings.

### Select Network Scenarios

Please select all applicable scenarios for the network you are going to create.

**Remote Access**    
Connect your private resources to CloudConnexa. Provide remote access to your resources, which are hosted on IaaS Cloud, and on premises resources.  
[Read more](#)

**Site-to-site**   
Connect multiple private networks to CloudConnexa (site-to-site connectivity). This wizard will assist you in adding a single network. You can use this wizard to connect all of your networks.  
[Read more](#)

**Secure Internet Access**   
Provide secure access to public resources. Use this network as an Internet Gateway for all internet traffic or only for selected public resources. You can then apply whitelisting rules to your public resources.  
[Read more](#)

If you would like to connect a single server you can create a [host](#) and connect your server directly to CloudConnexa


[Skip Wizard](#)[Continue](#)

### 3. Select the provider type as OpenWrt and download the OVPN file.

#### Deploy Network Connector (connector01)

##### Connector Details

**Name**  
connector01

**Region**  
 Singapore

Each Connector must be installed and connected to CloudConnexa. Select where you would like to deploy Network Connector.

OpenVPN Compatible Router : OpenWrt

#### 1 Download .ovpn Profile

[Download OVPN Profile](#)

#### 2 Use .ovpn Profile

Use .ovpn Profile on your router and connect it to CloudConnexa

[Read how to use .ovpn Profile and connect OpenWrt router to CloudConnexa](#)

### 4. If you need to access the terminal devices under subnet, it's necessary to add the route and IP service as LAN subnet of the router.

**Network Configuration**  
Selected Scenarios: Remote Access

**Add route**  
Routes define public and private subnets that will be routed to this Network. Routes are pushed to the routing table of User Devices and Connectors, so that they can access IP Services.  


No Route defined yet.



Add Route


**Add IP Service**  
IP Services are defined as access to specific IP address ranges and protocols.  


No IP Service defined yet.


Add IP Service

 Define Network

 Deploy Network Connector  
connector01 

 Add Application

 4 Add Routes and IP Services

 5 Configure Access Group (Optional)

### 5. Go to **Network > VPN > OpenVPN Client**, select configuration method as File Configuration, then

import the OVPN file.

**OpenVPN Client Settings**

OpenVPN Client\_1

Enable ☒

Configuration Method File Configuration

Configuration File openvpn\_1-custom.conf Browse Import Export Delete

6. Go to **Status > VPN** page to check if the client is connected.

Overview

Cellular

Network

WLAN

VPN

Routing

Host List

GPS

Clients

Name	Status	Local IP	Remote IP
openvpn_1	Connected	100.96.1.18	100.96.1.17
ipsec_1	Disconnected	-	-

You can also check the connection status on CloudConnexa.

## Connectors +

Search Q

Connector is an unattended device, which provides constant connectivity to OpenVPN Cloud.

<input type="checkbox"/> Connection Status	Name	Region	Tunnel IP Address	
<input checked="" type="checkbox"/> Online	connector01	London	100.96.1.18 fd:0:0:8101::2	Deploy <span>▼</span> <span>✎</span> <span>⋮</span>

## Related Topic

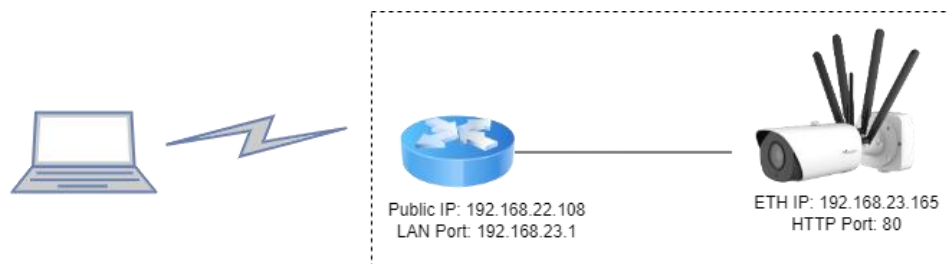
[OpenVPN Client](#)

[VPN Status](#)

## 4.3 NAT Application Example

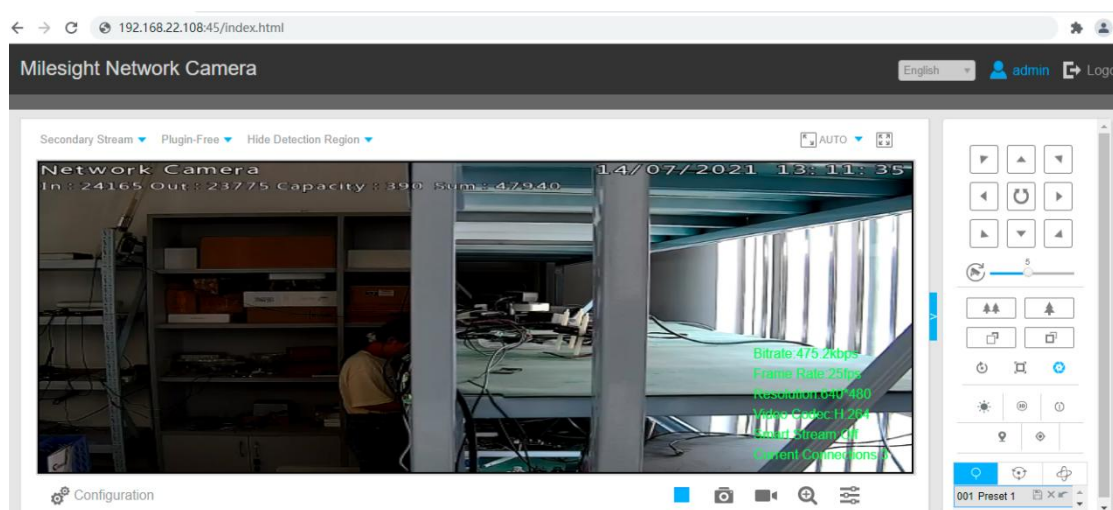
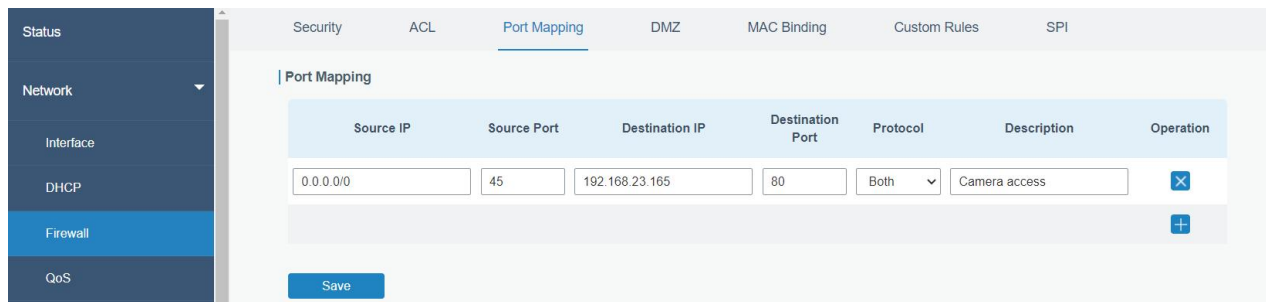
### Example

An UR32L router can access to the Internet via cellular and get a public IP address. LAN port is connected with an IP camera whose IP address is 192.168.23.165 and HTTP port is 80. This IP camera can be accessed by public IP address via the below port mapping settings.



## Configuration Steps

Go to **Firewall > Port Mapping** and configure port mapping parameters as below. Source IP address 0.0.0.0/0 means all external addresses are allowed to access. After that, users can use public IP: external port to access the IP camera.



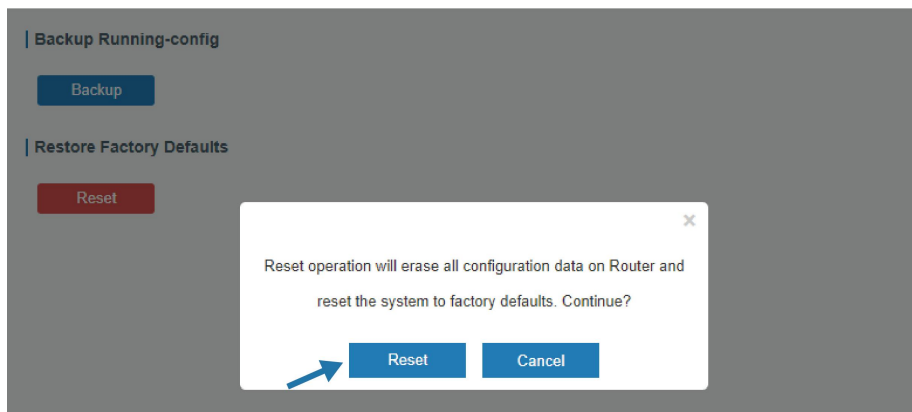
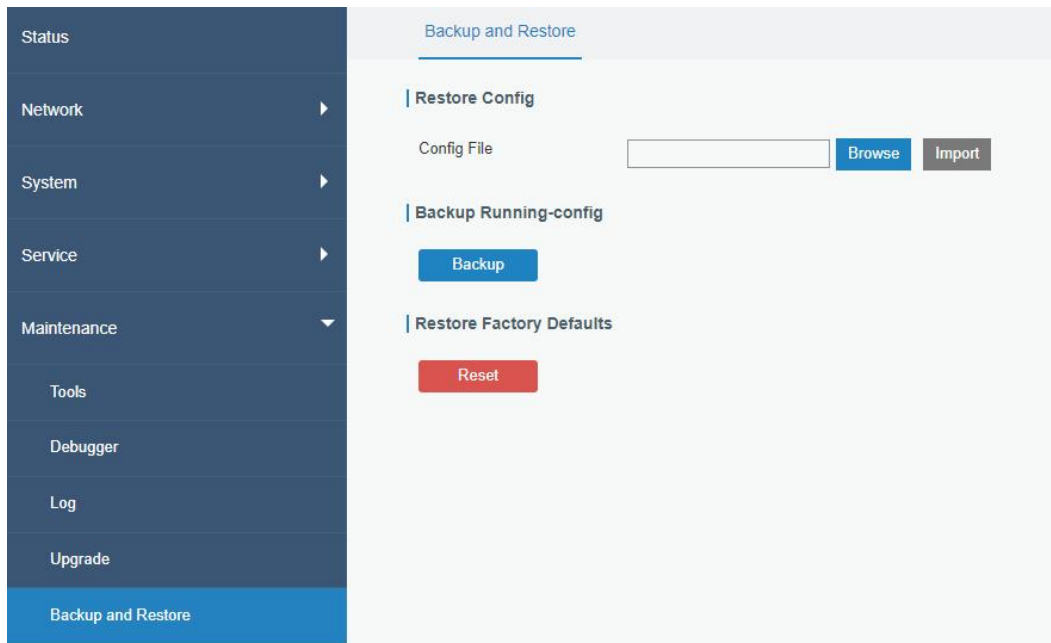
## Related Topic

[Port Mapping](#)

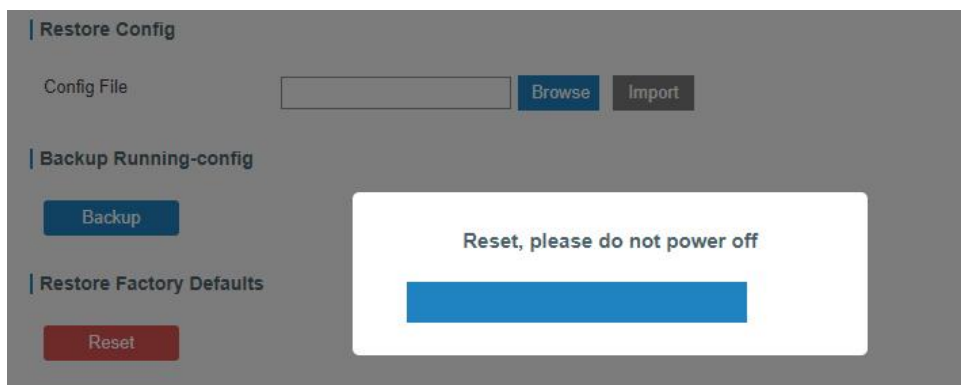
## 4.4 Restore Factory Defaults

### Method 1:

Log in web interface, and go to **Maintenance > Backup and Restore**, click **Reset** button. You will be asked to confirm if you'd like to reset it to factory defaults. Then click **Reset** button.



Then the router will reboot and restore to factory settings immediately.



Please wait till the SYSTEM LED blinks slowly and login page pops up again, which means the router has already been reset to factory defaults successfully.

## Related Topic

[Restore Factory Defaults](#)



## Method 2:

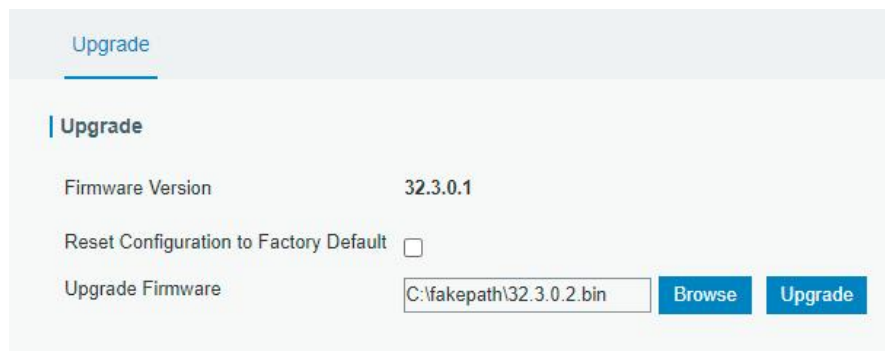
Locate the reset button on the router, press and hold the reset button for more than 5s until the LED blinks.

## 4.5 Firmware Upgrade

It is suggested that you contact Milesight technical support first before you upgrade router firmware. After getting firmware file please refer to the following steps to complete the upgrade.

1. Go to **Maintenance > Upgrade**, click **Browse** and select the correct firmware file from the PC.
2. Click **Upgrade** and the router will check if the firmware file is correct. If it's correct, the firmware will be imported to the router, and then the router will start to upgrade.

**Note:** It is recommended to check the box of **Reset Configuration to Factory Default** before upgrade.



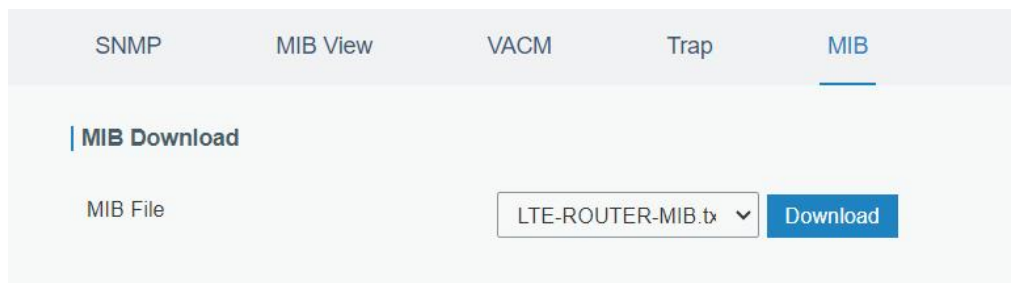
## Related Topic

[Upgrade](#)

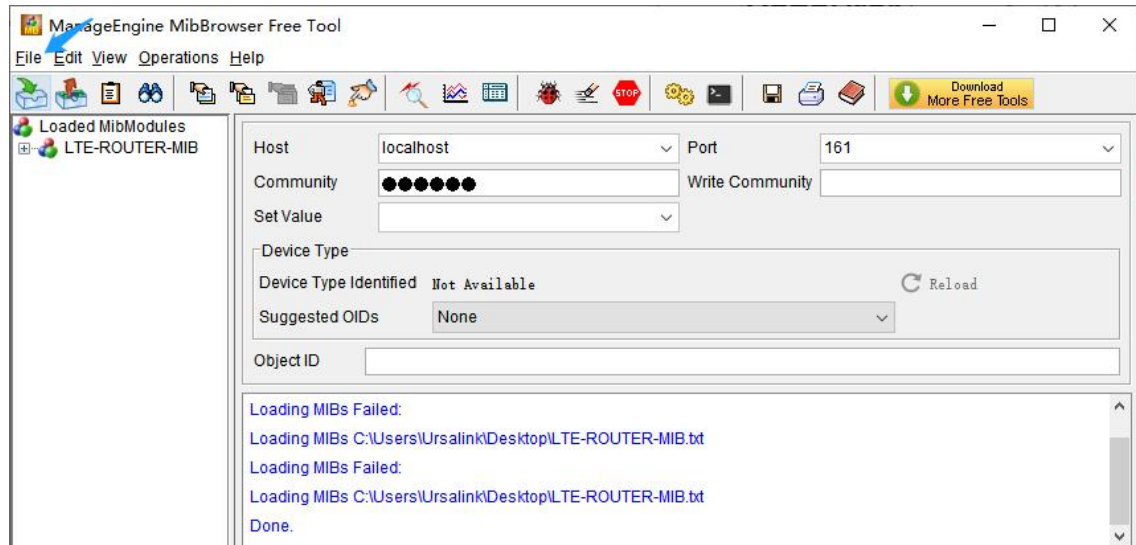
## 4.6 SNMP Application Example

Before you configure SNMP parameters, please download the relevant MIB file from the UR32L's WEB GUI first, and then upload it to any software or tool which supports standard SNMP protocol. Here we take ManageEngine MibBrowser Free Tool as an example to access the router to query cellular information.

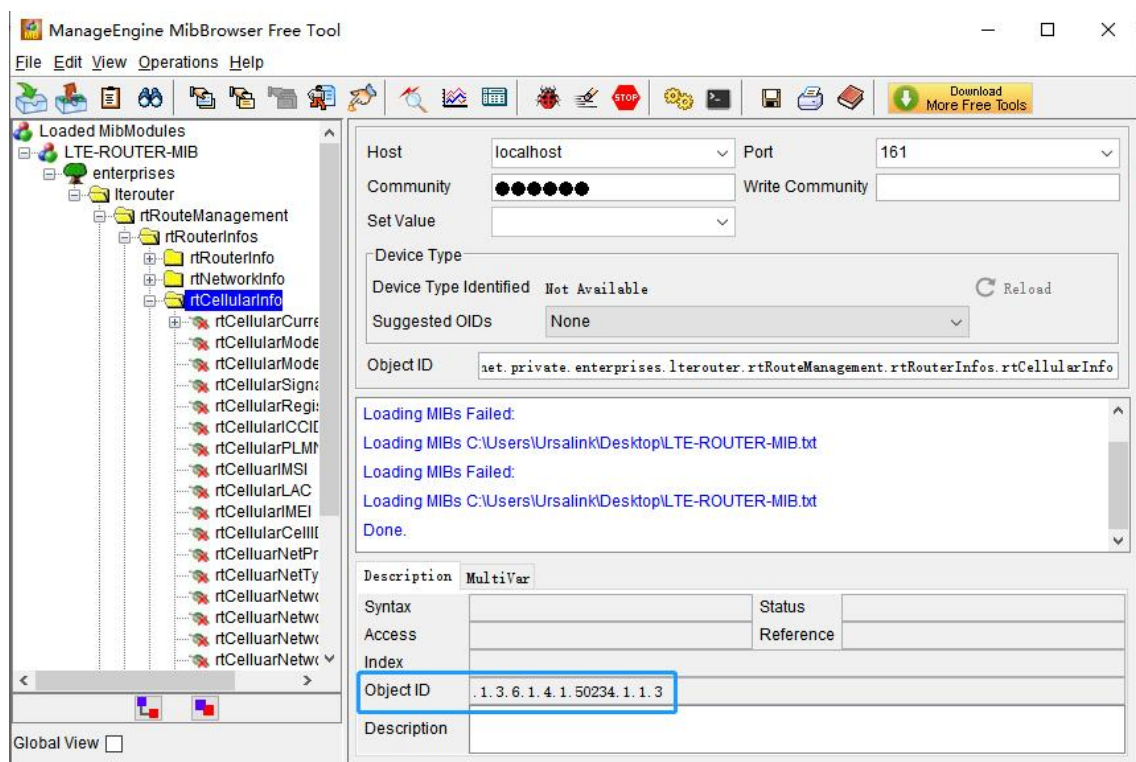
1. Go to **Service > SNMP > MIB** and download the MIB file **LTE-ROUTER-MIB.txt** to PC.



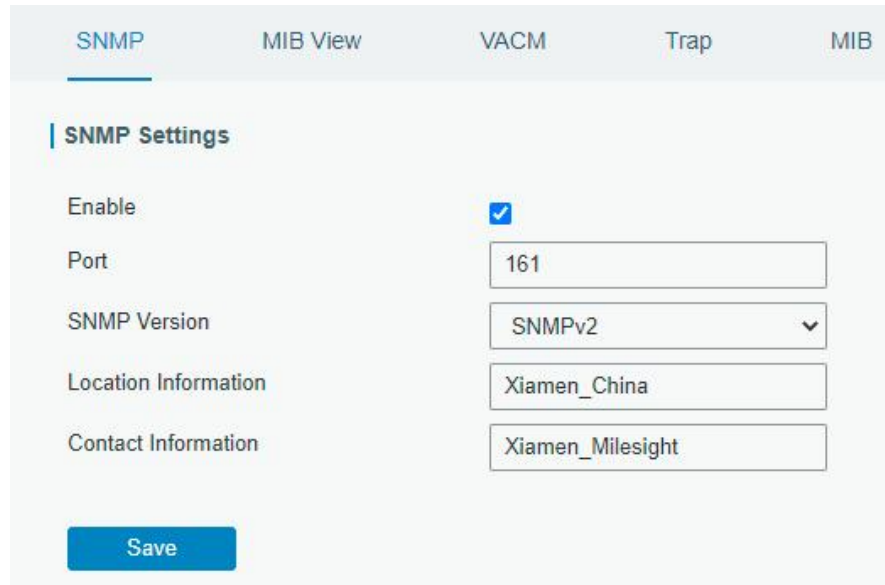
2. Start ManageEngine MibBrowser Free Tool on the PC. Click **File > Load MIB** on the menu bar. Then select **LTE-ROUTER-MIB.txt** file from PC and upload it to the software.



Click the “+” button beside LTE-ROUTER-MIB, which is under the **Loaded MibModules** menu, and find **usCellularinfo**. And then you will see the OID of cellular info is “.1.3.6.1.4.1.50234”, which will be filled in the MIB View settings.




3. Go to **Service > SNMP > SNMP** to enable SNMP feature.

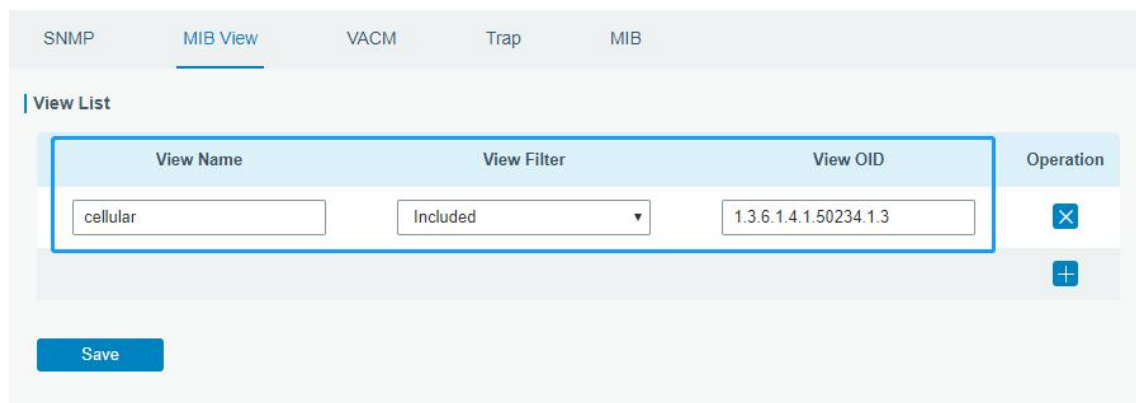


The image shows the 'SNMP Settings' configuration page. At the top, there are tabs for 'SNMP', 'MIB View', 'VACM', 'Trap', and 'MIB'. The 'SNMP' tab is selected. Below the tabs, the 'SNMP Settings' section contains the following fields:



- Enable:** A checkbox that is checked.
- Port:** A text input field containing '161'.
- SNMP Version:** A dropdown menu showing 'SNMPv2'.
- Location Information:** A text input field containing 'Xiamen\_China'.
- Contact Information:** A text input field containing 'Xiamen\_Milesight'.

At the bottom of the settings section is a blue 'Save' button.


4. Click  to add a new MIB view and define the view to be accessed from the outside network. Then click "Save" button.

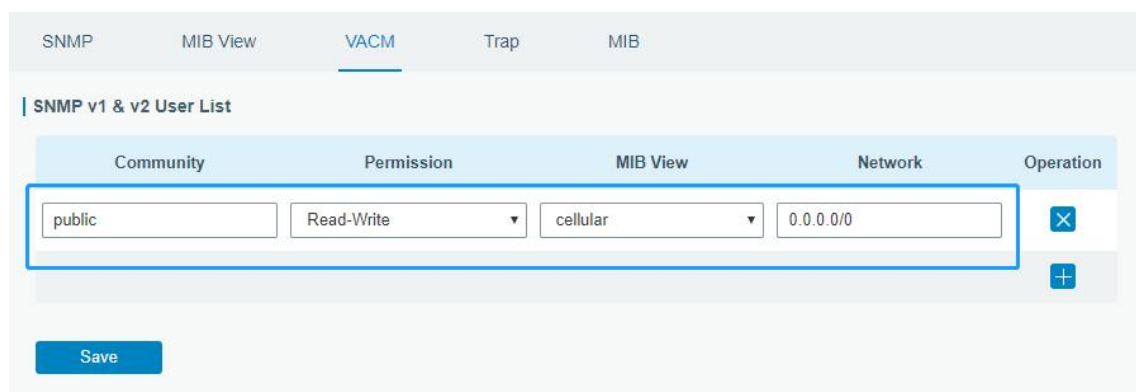


The image shows the 'MIB View' configuration page. At the top, there are tabs for 'SNMP', 'MIB View', 'VACM', 'Trap', and 'MIB'. The 'MIB View' tab is selected. Below the tabs, the 'View List' section contains a table with the following columns: 'View Name', 'View Filter', 'View OID', and 'Operation'.



View Name	View Filter	View OID	Operation
cellular	Included	1.3.6.1.4.1.50234.1.3	 

At the bottom of the table is a blue 'Save' button.

5. Click  to add a new VACM setting to define the access authority for the specified view from the specified outside network, then save all settings.



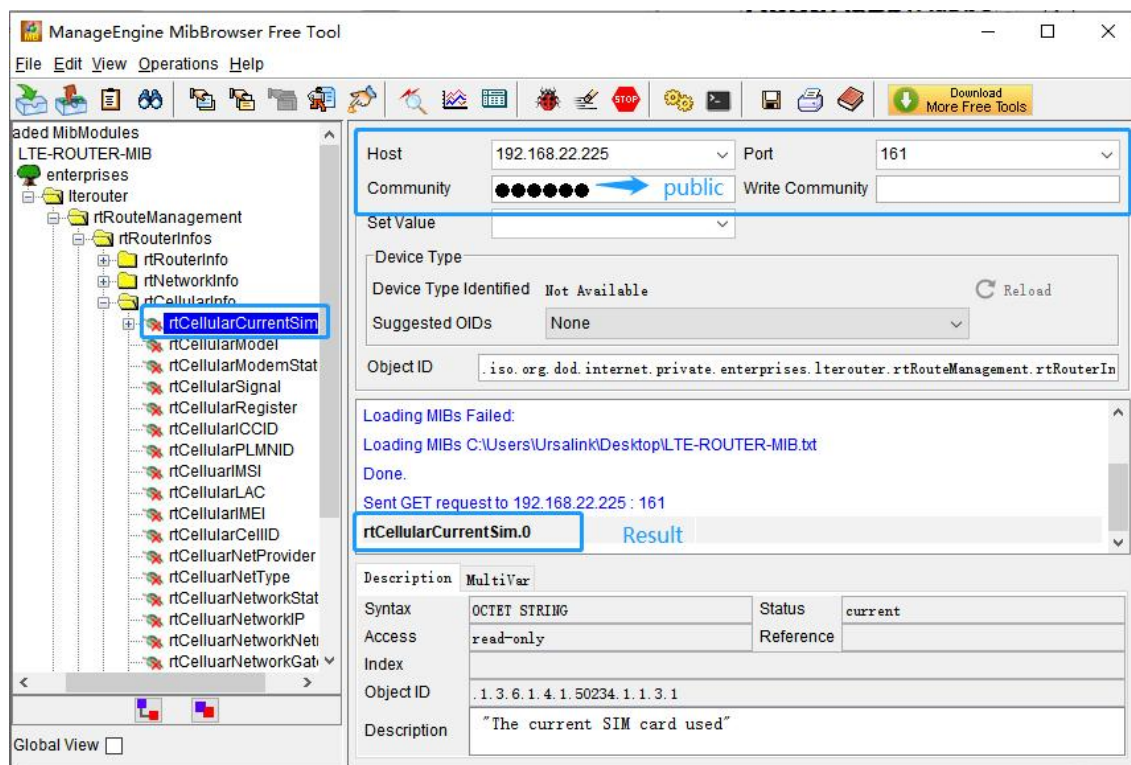
The image shows the 'VACM' configuration page. At the top, there are tabs for 'SNMP', 'MIB View', 'VACM', 'Trap', and 'MIB'. The 'VACM' tab is selected. Below the tabs, the 'SNMP v1 & v2 User List' section contains a table with the following columns: 'Community', 'Permission', 'MIB View', 'Network', and 'Operation'.

Community	Permission	MIB View	Network	Operation
public	Read-Write	cellular	0.0.0.0/0	 

At the bottom of the table is a blue 'Save' button.

6. Go to MibBrowser, enter host IP address, port and community. Right click **usCellular CurrentSim** and then click **FET**. Then you will get the current SIM info on the result box. You can get other

cellular info in the same way.



## Related Topic

[SNMP](#)

## 4.7 VRRP Application Example

### Application Example

A Web server requires Internet access through the UR32L router. To avoid data loss caused by router breakdown, two UR32L routers can be deployed as VRRP backup group, so as to improve network reliability.

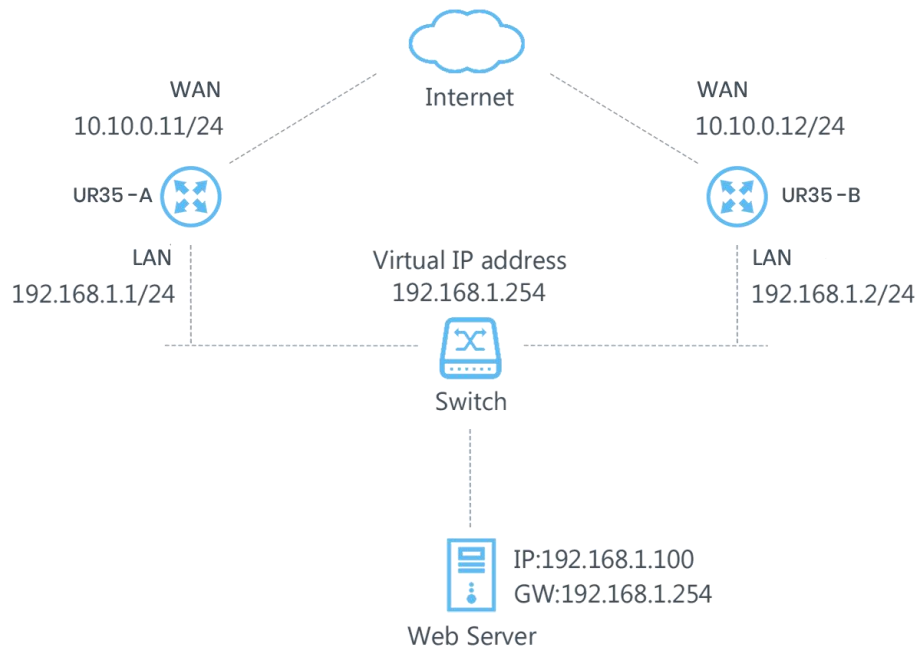
VRRP group:

WAN ports of the UR32L Router A and Router B are connected to the Internet via wired network. And LAN ports of them are connected to a switch.

Virtual IP is 192.168.1.254/24.

Router	Virtual Router ID (Same for A and B)	Port connected with switch	LAN IP Address	Priority	Preemption Mode
A	1	LAN2	192.168.1.1	110	Enable
B	1	LAN2	192.168.1.2	100	Disable

Refer to the topological below.



## Configuration Steps

### Router A Configuration

- Go to **Network > Interface > WAN** and configure wired WAN connection as below.

Link Failover	Cellular	Port	WAN	Bridge
<b>WAN Settings</b>				
<b>WAN_1</b>				
Enable	<input checked="" type="checkbox"/>			
Port	LAN1/WAN			
Connection Type	Static IP			
IPv4 Address	10.10.0.11			
Netmask	255.255.255.0			
IPv4 Gateway	10.10.0.1			
IPv6 Address	fe80::26e1:24ff:fe0:3192			
Prefix-length	64			
IPv6 Gateway				
MTU	1500			
Primary DNS	8.8.8.8			
Secondary DNS				
Enable NAT	<input checked="" type="checkbox"/>			

- Go to **Network > VRRP > VRRP** and configure VRRP parameters as below.

**VRRP**

**VRRP Status**

Status DISABLE

**VRRP Settings**

Enable ☒

Interface Bridge0

Virtual Router ID 1

Virtual IP 192.168.1.254

Priority 110

Advertisement Interval (s) 1

Preemption Mode ☐

IPv4 Primary Server 8.8.8.8

IPv4 Secondary Server 114.114.114.114

Interval 300 s

Retry Interval 5 s

Timeout 3 s

Max Ping Retries 3

## Router B Configuration

1. Go to **Network > Interface > WAN** and configure wired WAN connection as below.

**Link Follower** **Cellular** **Port** **WAN** **Bridge**

**WAN Settings**

**WAN\_1**

Enable ☒

Port LAN1/WAN

Connection Type Static IP

IPv4 Address 10.10.0.12

Netmask 255.255.255.0

IPv4 Gateway 10.10.0.1

IPv6 Address fe80::26e1:24ff:fe0:3192

Prefix-length 64

IPv6 Gateway

MTU 1500

Primary DNS 8.8.8.8

Secondary DNS

Enable NAT ☒

2. Go to **Network > VRRP > VRRP** and configure VRRP parameters as below.

VRRP

**Status**
DISABLE

**VRRP Settings**

Enable

Interface

Virtual Router ID

Virtual IP

Priority

Advertisement Interval (s)

Preemption Mode

IPv4 Primary Server

IPv4 Secondary Server

Interval

Retry Interval

Timeout

Max Ping Retries

☒

Bridge0

1

192.168.1.254

100

1

☐

8.8.8.8

114.114.114.114

300

 s

5

 s

3

 s

3

Once you complete all configurations, click **Apply** button on the top-right corner to make changes take effect.

**Result:** normally, A is the master router, used as the default gateway. When the power of Router A is down or Router A suffers from failure, Router B will become the master router, used as the default gateway. With Preemption Mode enabled, Router A will be master and Router B will demote back to be the backup once Router A can access the Internet again.

## Related Topics

[VRRP Setting](#)

## 4.8 QoS Application Example

### Example

Configure the UR32L router to distribute local preference to different FTP download channels. The total download bandwidth is 75000 kbps.

**Note:** the “Total Download Bandwidth” should be less than the real maximum bandwidth of WAN or cellular interface.

FTP Server IP & Port	Percent	Max Bandwidth(kbps)	Min Bandwidth(kbps)
110.21.24.98:21	40%	30000	25000
110.32.91.44:21	60%	45000	40000



## Configuration Steps

1. Go to **Network > QoS > QoS(Download)** to enable QoS and set the total download bandwidth.

**Download Bandwidth**

Enable

☒

Default Category

Download Bandwidth

75000

kbits/s

Capacity

2. Click “**+**” to set up service classes.

**Note: the percents must add up to 100%.**

**Service Category**

Name	Percent(%)	Max BW(kbps)	Min BW(kbps)	Operation
1	40	30000	25000	<input checked="" type="button" value="X"/>
2	60	45000	40000	<input checked="" type="button" value="X"/>
				<input type="button" value="+"/>

3. Click “**+**” to set up service category rules.

**Service Category Rules**

Name	Source IP	Source Port	Destination IP	Destination Port	Protocol	Service Category	Operation
ftp1	110.21.24.98	21			ANY	1	<input checked="" type="button" value="X"/>
ftp2	110.32.91.44	21			ANY	2	<input checked="" type="button" value="X"/>
							<input type="button" value="+"/>

**Note:**

**IP/Port: null refers to any IP address/port.**

Click **Save** and **Apply** button.

## Related Topic

[QoS Setting](#)

**[END]**