Grandstream Networks, Inc.

GWN7062 & GWN7052/F

User Manual

GWN7062 & GWN7052/F – User Manual

Grandstream GWN70x2 offers secure routers ideal for small offices, home offices, and remote workers, the GWN7052/GWN7052F are dual-band Wi-Fi 5 (802.11ac) routers providing Wi-Fi speeds of up to 1.266 Gbps and up to 100 wireless devices, while the GWN7062 is a dual-band Wi-Fi 6 (802.11ax) router with DL/UL OFDMA technology. It features a powerful 64-bit 1.2GHz quad-core processor to provide blazing fast Wi-Fi speeds up to 1.77 Gbps with 4 times increased data capacity to 256 wireless devices. The GWN70x2 routers can power smart offices, and allow smooth 4K Ultra HD streaming, web meetings, video conferences, and more. They support enterprise-grade security features to ensure secure Wi-Fi and VPN access, they also include a built-in controller embedded within the product's web user interface. By combining accelerated Wi-Fi speeds, mesh networking, and wired AP connections with advanced features including VPN and advanced QoS, Grandstream GWN70x2 are the ideal routers for a growing home and business network.

> Changes or modifications to these products not expressly approved by Grandstream, or operation of these products in any way other than as detailed by this User Manual, could void your manufacturer warranty.

> Please do not use a different power adaptor with the GWN70xx routers as it may cause damage to the products and void the manufacturer warranty.

PRODUCT OVERVIEW

Technical Specifications

○ GWN7052/GWN7052F

	GWN7052	GWN7052F
Memory and NAT Sessions	● 128MB RAM ● 30K NAT sessions	● 256MB RAM ● 60K NAT sessions
NAT Routing & IPSec VPN Performance	● 1Gbps NAT routing ● 300Mbps IPSec VPN performance	
Wi-Fi Standards	IEEE 802.11 a/b/g/n/ac	
Antennas	4 individual external antennas, 2 per band ● 2.4GHz, gain 5.0dBi ● 5 GHz, gain 5.0dBi	
Wi-Fi Data Rates	**5G:** IEEE 802.11ac: 6.5 Mbps to 867 Mbps IEEE 802.11n: 6.5 Mbps to 300 Mbps IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps **2.4G:** IEEE 802.11n: 6.5 Mbps to 300 Mbps IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps **Actual throughput may vary depending on many factors including environmental conditions, distance between devices, radio interference in the operating environment and mix of devices in the network*	
Frequency Bands	● **2.4GHz radio:** 2400 – 2483.5MHz ● **5GHz radio:** 5150 - 5850MHz **Not all frequency bands can be used in all regions*	

Channel Bandwidth	● **2.4G:** 20 and 40 MHz ● **5G:** 20, 40 and 80 MHz	
Wi-Fi and System Security	WPA/WPA2-PSK, WPA/WPA2 Enterprise (TKIP/AES); WPA3, anti-hacking secure boot and critical data/control lockdown via digital signatures, unique security certificate and random default password per device	
MIMO	● 2×2:2 **2.4GHz** ● 2×2:2 **5GHz**	
Maximum TX Power	● **2.4G**: 23dBm ● **5G**: 24dBm **Maximum power varies by country, frequency band and MCS rate*	
Receiver Sensitivity	**2.4G** ● **802.11b:** -96dBm@1Mbps, -88dBm@11Mbps; ● **802.11g:** -93dBm @6Mbps, -75dBm@54Mbps; ● **802.11n 20MHz:** -73dBm @MCS7; **802.11n 40MHz:** -70dBm @MCS7; **5G** ● **802.11a:** -92dBm @6Mbps, -74dBm @54Mbps; ● **802.11n 20MHz**: -73dBm @MCS7; **802.11n 40MHz:** -70dBm @MCS7 ● **802.11ac 20MHz:** -67dBm@MCS8; **802.11ac HT40**: -63dBm @MCS9; **802.11ac 80MHz:** -59dBm @MCS9;	
SSIDs	16 SSIDs total **8 per radio (**2.4ghz** and **5ghz**)*	
Concurrent Clients	Up to 100 concurrent clients	
Network Interfaces	● 1x Gigabit Ethernet WAN port ● 4x Gigabit Ethernet LAN ports	● 1x Gigabit SFP WAN port ● 1x Gigabit Ethernet port (WAN/LAN configurable) ● 3x Gigabit Ethernet LAN ports
Number of VLANs Supported	Create up to 8 VLANs	
Auxiliary Ports	● 1x USB 2.0 port ● 1x Reset Pinhole	
Mounting	● Desktop ● Wall mounting	
LEDs	● 1 tri-color LED ● 7x single-color LEDs for device tracking and status indication	
Network Protocols	IPv4, IPv6, 802.1Q, 802.1p, 802.1x, 802.11e/WMM	
QoS	802.11e/WMM, VLAN, TOS	
Firewall	DDNS, Port Forwarding, DMZ, UPnP, Anti-DoS, traffic rules, NAT, ALG	
VPN	● **Client:** L2TP, PPTP, IPSec, ● **OpenVPN Server:** IPSec, OpenVPN	

Network Management	GWN7052 embedded controller can manage itself and **up to 30 GWN APs**; GWN.Cloud offers a free cloud management platform for unlimited GWN7052 routers and GWN APs	GWN7052F embedded controller can manage itself and **up to 50 GWN APs**; GWN.Cloud offers a free cloud management platform for unlimited GWN7052F routers and GWN APs
Power & Green Energy Efficiency	Universal power adaptor included: Input 100-240VAC 50-60Hz Output: 12VDC 1A (12W);	
Environmental	Operation: 0°Cto 50°C Storage: -10°C to 60°C Humidity: 10% to 90% Non-condensing	
Physical	- **Unit Dimension without antennas:** 205mm(L)x130mm(W)x35.5mm(H) - **Unit Dimension with antennas of 90°:** 235.5mm(L)x145mm(W)x192mm(H); Unit Weight: 375g - **Entire Package Dimension:** 250mm(L)x251.5mm(W)x56mm(H); Entire Package Weight: 740g	
Package Content	- GWN7052/GWN7052F Router - Universal Power Supply - Network Cable - Quick Installation Guide	

GWN7052/GWN7052F Technical Specifications

- **GWN7062**

Wi-Fi Standards	IEEE 802.11 a/b/g/n/ac/ax
Antennas	4 individual internal antennas, 2 per band - **2.4GHz:** maximum gain 4.5dBi - **5 GHz:** maximum gain 5dBi
Wi-Fi Data Rates	**5G:** - **IEEE 802.11ax:** 7.3 Mbps to 1201 Mbps - **IEEE 802.11ac:** 6.5 Mbps to 867 Mbps - **IEEE 802.11n:** 6.5 Mbps to 300 Mbps - **IEEE 802.11a:** 6, 9, 12, 18, 24, 36, 48, 54 Mbps **2.4G:** - **IEEE 802.11ax:** 7.3 Mbps to 573.5 Mbps - **IEEE 802.11n**: 6.5 Mbps to 300 Mbps - **IEEE 802.11b:** 1, 2, 5.5, 11 Mbps - **IEEE 802.11g:** 6, 9, 12, 18, 24, 36, 48, 54 Mbps **Actual throughput may vary depending on many factors including environmental conditions, distance between devices, radio interference in the operating environment and mix of devices in the network*
Frequency Bands	- **2.4GHz radio:** 2400 – 2483.5 MHz *(2412-2472MHz are channel central frequency range; 2400-2483.5MHz is Frequency band)* - **5GHz radio:** 5150 - 5850 MHz **Not all frequency bands can be used in all regions*
Channel Bandwidth	- **2.4G:** 20 and 40 MHz - **5G:** 20, 40 and 80 MHz

Wi-Fi and System Security	WPA/WPA2-PSK, WPA/WPA2 Enterprise (TKIP/AES); WPA3, anti-hacking secure boot and critical data/control lockdown via digital signatures, unique security certificate and random default password per device
MIMO	● 2×2:2 **2.4GHz** ● 2×2:2 **5GHz**
Coverage Range	Up to 175 meters **coverage range can vary based on environment*
Maximum TX Power	● **5G:** 26dBm ● **2.4G:** 27dBm **Maximum power varies by country, frequency band and MCS rate*
Receiver Sensitivity	**2.4G** ● **802.11b:** -96dBm@1Mbps, -88dBm@11Mbps; ● **802.11g:** -93dBm @6Mbps, -75dBm@54Mbps; ● **802.11n 20MHz:** -73dBm @MCS7; **802.11n 40MHz:** -70dBm @MCS7; ● **802.11ax 20MHz:** -64dBm @ MCS11; **802.11ax 40MHz:** -63dBm @MCS11 **5G** ● **802.11a:** -93dBm @6Mbps, -75dBm @54Mbps; ● **802.11n 20MHz:** -73dBm @MCS7; **802.11n 40MHz:** -70dBm @MCS7 ● **802.11ac 20MHz:** -70dBm @MCS8; **802.11ac HT40:**- 66dBm @MCS9; **802.11ac 80MHz:** -62dBm @MCS9; ● **802.11ax 20MHz:** -64dBm @ MCS11; **802.11ax 40MHz**: -61dBm @MCS11; **802.11ax 80MHz:** -58dBm @MCS11
SSIDs	32 SSIDs total **16 per radio (**2.4GHz** & **5GHz**)*
Concurrent Wireless Clients	Up to 256 wireless clients
Network Interfaces	● 1x Gigabit Ethernet WAN port ● 1x Gigabit Ethernet port (WAN/LAN configurable) ● 3x Gigabit Ethernet LAN ports
Number of VLANs Supported	Create up to 16 VLANs
Auxiliary Ports	● 1x USB 3.0 port ● 1x Reset button ● 1x SYNC button
Mounting	Desktop
LEDs	● 1 tri-color LED ● 7 single-color LEDs for device tracking and status indication
Network Protocols	IPv4, IPv6, 802.1Q, 802.1p, 802.1x, 802.11e/WMM

QoS	802.11e/WMM, VLAN, TOS
Firewall	DDNS, Port Forwarding, DMZ, UPnP, Anti-DoS, traffic rules, NAT, ALG
VPN	● **Client:** L2TP, PPTP, IPSec, OpenVPN ● **Server:** IPSec, OpenVPN
Network Management	GWN7062 embedded controller can manage it self and up to 50 GWN Aps GWN.Cloud offers a free cloud management platform for unlimited GWN7062 routers and GWN APs
Power and Green Energy Efficiency	Universal power adaptor included: Input 100-240VAC 50-60Hz Output: 12VDC 1.5A (18W);
Environmental	Operation: 0°Cto 50°C Storage: -30°C to 60°C Humidity: 10% to 90% Non-condensing
Physical	● **Unit Dimension:** 95mm(L)x95mm(W)x193mm(H) ● **Unit Weight:** 690g ● **Entire Package Dimension:** 286mm(L)x126.5mm(W)x105mm(H) ● **Entire Package Weight:** 960g
Package Content	● GWN7062 Router ● Universal Power Supply ● Network Cable ● Quick Installation Guide
Compliance	FCC, CE, RCM, IC, UKCA

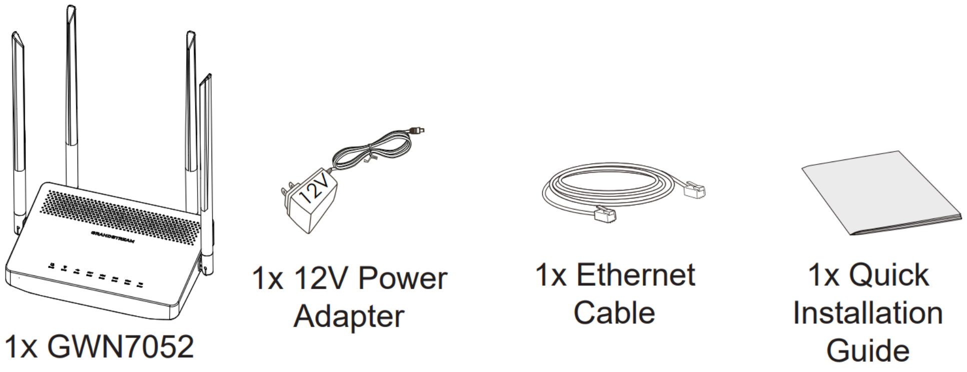
GWN7062 Technical Specifications

INSTALLATION

Before deploying and configuring the GWN70x2 router, the device needs to be properly powered up and connected to the network. This section describes detailed information on the installation, connection, and warranty policy of the GWN70x2 router.

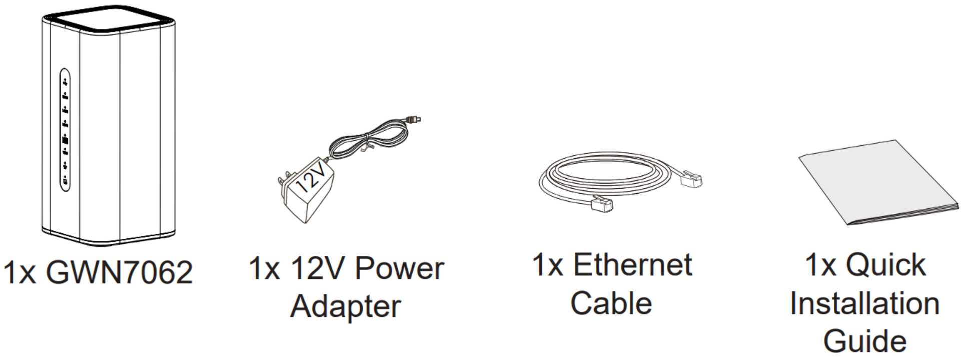
Package Contents

○ **GWN7052/GWN7052F**



GWN7052/GWN7052F Package Contents

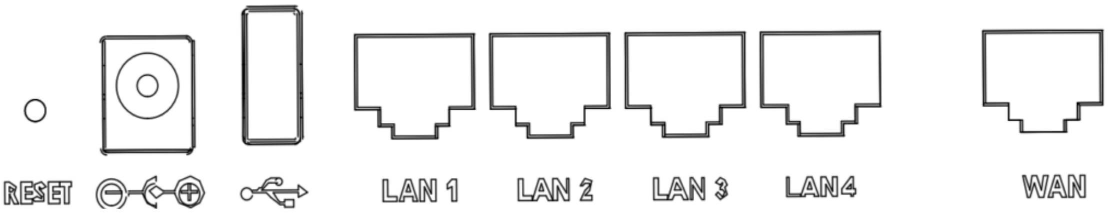
○ **GWN7062**



GWN7062 Package Contents

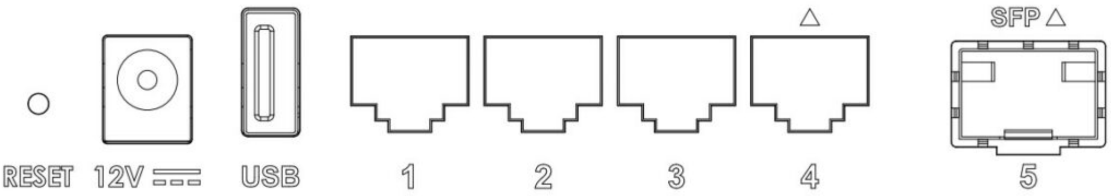
GWN70x2 Ports

○ **GWN7052**



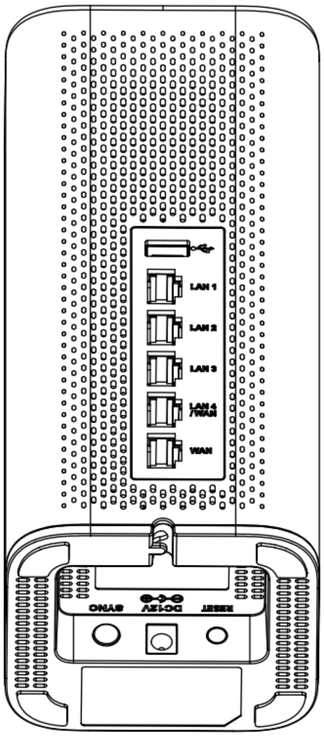
GWN7052 Ports

○ **GWN7052F**



GWN7052F Ports

○ **GWN7062**



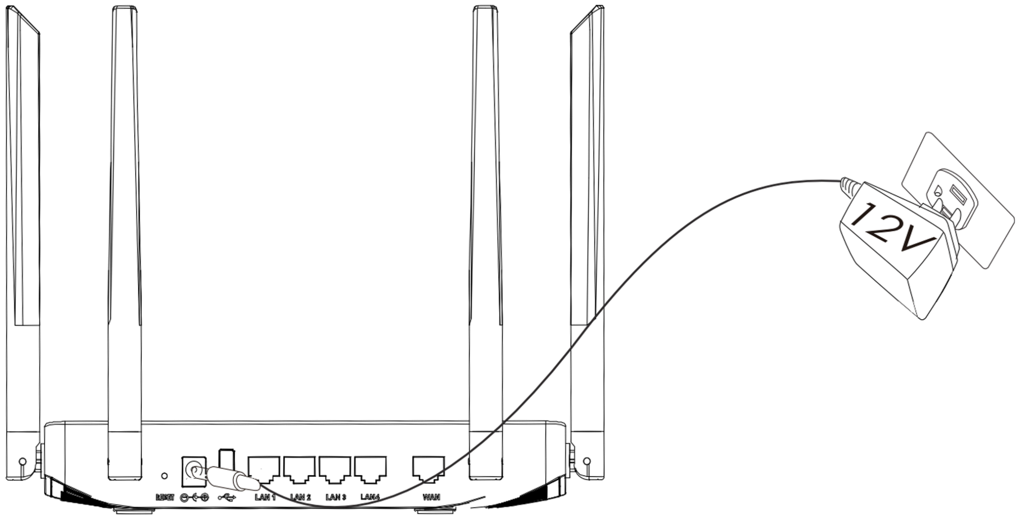
GWN7062 Ports

Powering and Connecting GWN70x2

○ **GWN7052/GWN7052F**

1. Power the GWN7052/GWN7052F

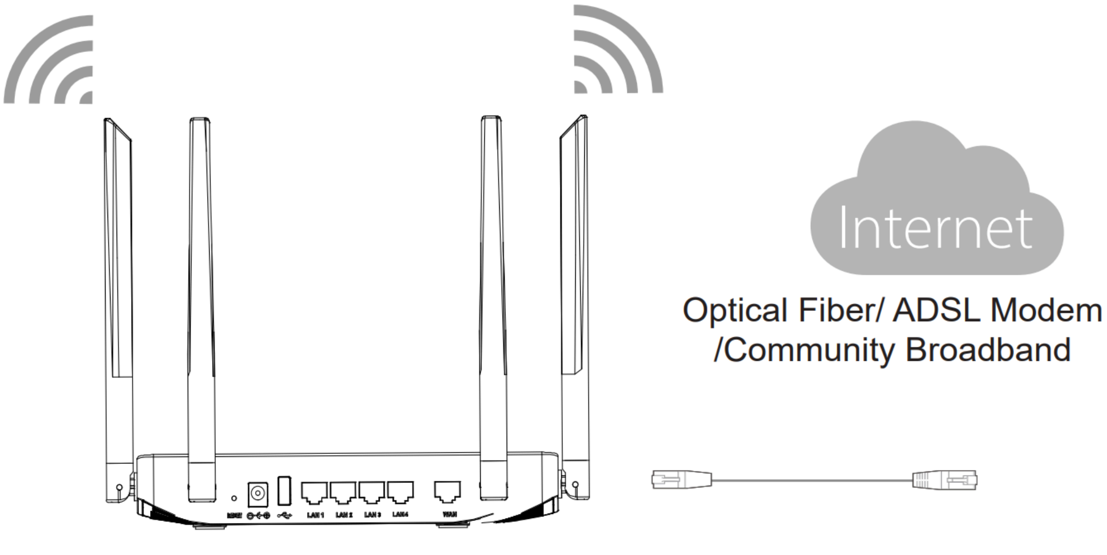
GWN7052/GWN7052F can be powered on using the right PSU (DC 12V, 1A).



The back of GWN7052

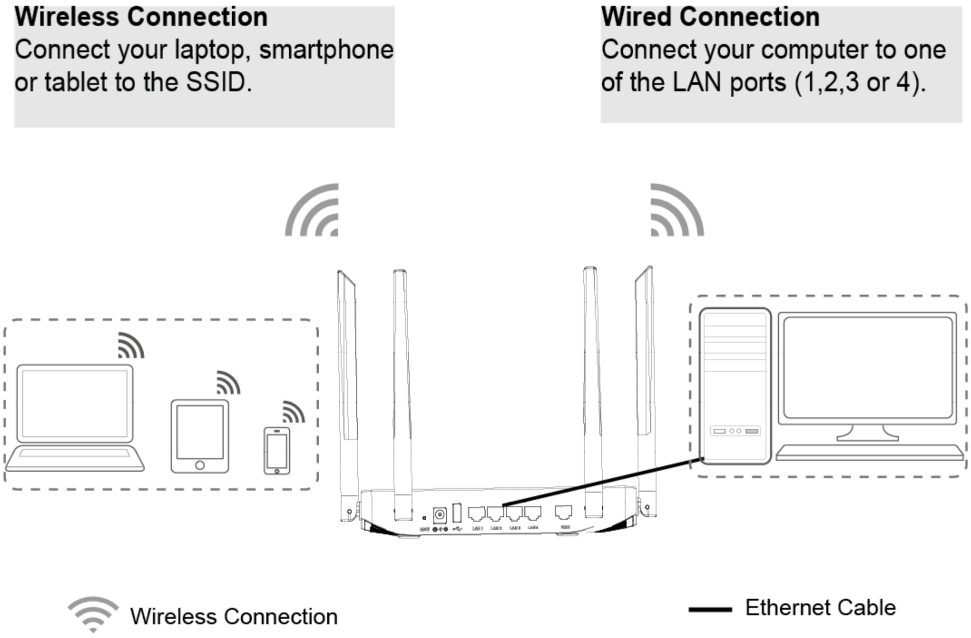
2. Connect to the Internet

Connect the WAN port to an optical fiber broadband modem (or connect using SFP module for GWN7052F), ADSL broadband modem, or community broadband interface.



GWN7052 connect

3. Connect to the Default Network

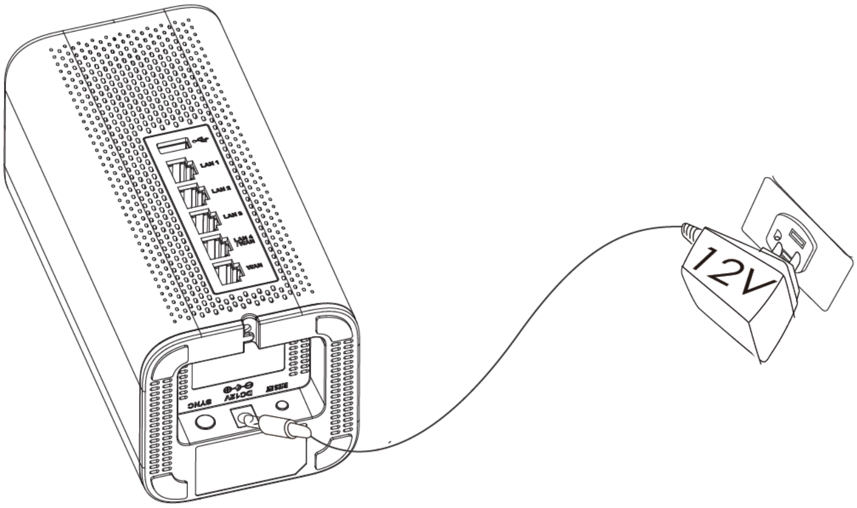

Wireless Connection
Connect your laptop, smartphone or tablet to the SSID.
Wired Connection
Connect your computer to one of the LAN ports (1,2,3 or 4).
Wireless Connection
Ethernet Cable

GWN7052 default network

○ **GWN7062**

1. Power the GWN7062

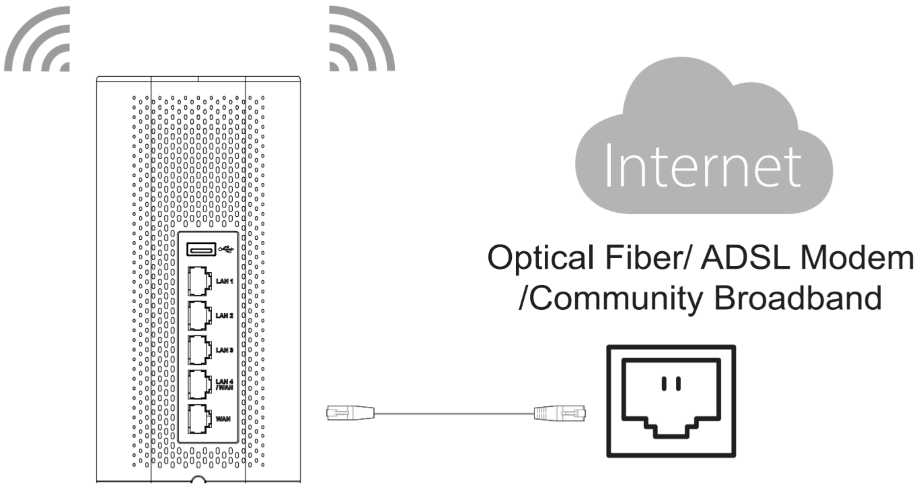
GWN7062 can be powered on using the right PSU (DC 12V, 1.5A).



The back of GWN7062

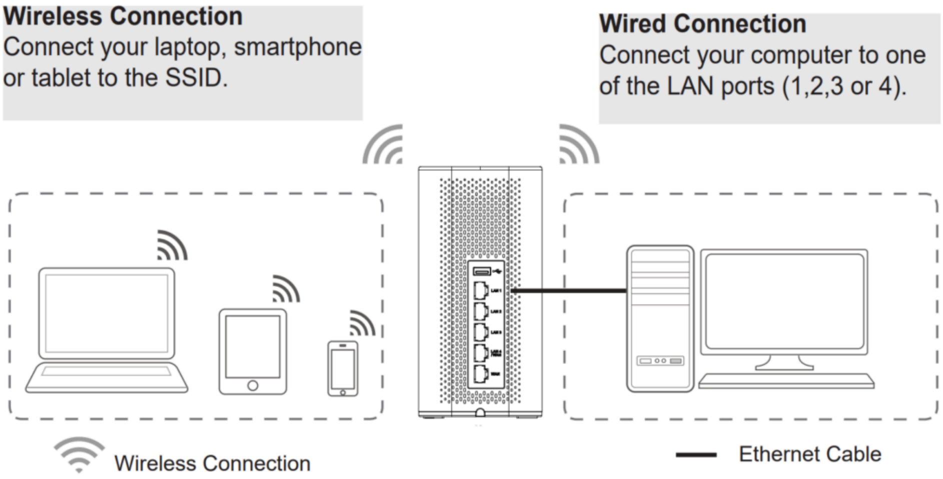
2. Connect to the Internet

Connect the WAN port to an optical fiber broadband modem, ADSL broadband modem, or community broadband interface.



GWN7062 connect

3. Connect to GWN7062 Default Network


Wireless Connection
Connect your laptop, smartphone or tablet to the SSID.
Wired Connection
Connect your computer to one of the LAN ports (1,2,3 or 4).
Wireless Connection
Ethernet Cable

GWN7062 default network

SSID's default password information is printed on the MAC tag of the unit.

Safety Compliances

The GWN70x2 Dual-Band Wi-Fi Router complies with FCC/CE and various safety standards. The GWN70x2 power adapter is compliant with the UL standard. Use the universal power adapter provided with the GWN70x2 package only. The manufacturer's warranty does not cover damages to the device caused by unsupported power adapters.

Warranty

If the GWN70x2 Dual-Band Wi-Fi Router was purchased from a reseller, please contact the company where the device was purchased for replacement, repair or refund. If the device was purchased directly from Grandstream, contact our Technical Support Team for an RMA (Return Materials Authorization) number before the product is returned. Grandstream reserves the right to remedy the warranty policy without prior notification.

GETTING STARTED

The GWN70x2 Dual-Band Wi-Fi Routers provide an intuitive web GUI configuration interface for easy management to give users access to all the configurations and options for the GWN70x2's setup.

This section provides step-by-step instructions on how to read LED indicators and use the Web GUI interface of the GWN70x2.

LED Indicators

The front panel of the GWN70x2 has LED indicators for power and interface activities, the table below describes the LED indicators' status.

LED	Status	Indication
Power/Provision	Flashing Red	Resetting
	Solid Red	Upgrade failed
	Pink	No Web login after reset
	Green	Powering

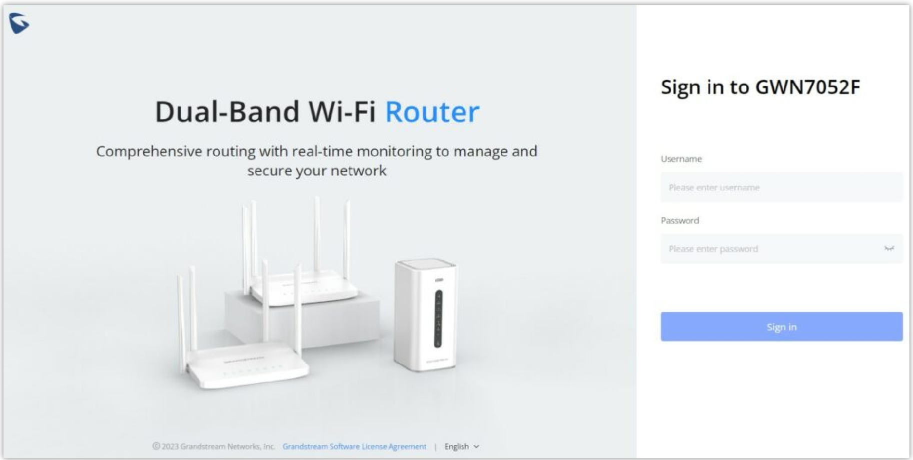
	Blue	Normal use
Wi-Fi	Solid Blue	Wi-Fi enabled
	Off	Wi-Fi disabled
WAN	Flashing Blue	Connected as a client to another network and data is transferring
	Off	No network, cable is disconnected
LAN	Flashing Blue	Connected to the corresponding LAN port and data is transferring
	Off	No network, cable is disconnected
USB	Solid Blue	Connected to USB device
	Off	No USB device is connected

LED Indicators

Use the WEB GUI

Access WEB GUI

The GWN70x2 embedded Web server responds to HTTPS GET/POST requests. Embedded HTML pages allow users to configure the device through a Web browser such as Microsoft IE, Mozilla Firefox, or Google Chrome.


Dual-Band Wi-Fi Router
Comprehensive routing with real-time monitoring to manage and secure your network
Sign in to GWN7052F
Username
Please enter username
Password
Please enter password
Sign in
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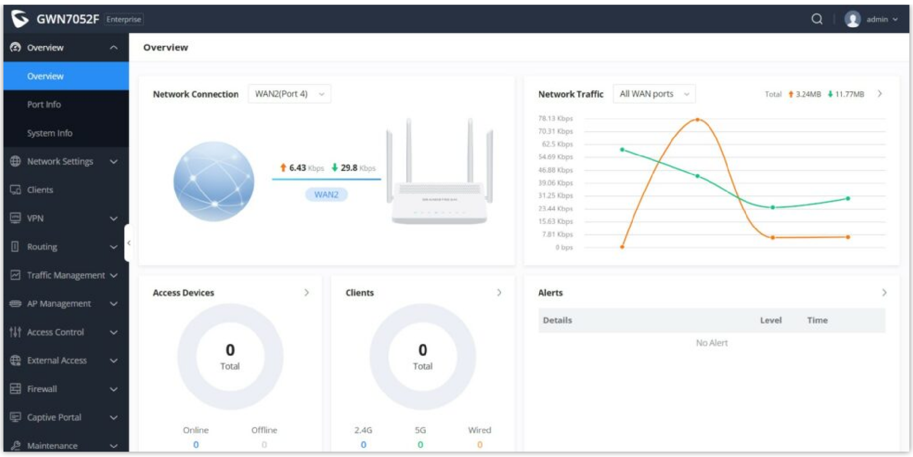
GWN70x2 Web GUI Login Page

To access the Web GUI:

1. Connect a computer to a LAN port of the GWN70x2.
2. Ensure the device is properly powered up, and the Power and LAN port LEDs light up in green.
3. Open a Web browser on the computer and enter the web GUI URL in the following format: https://192.168.80.1 (Default IP address).
4. Enter the administrator's login and password to access the Web Configuration Menu. The default administrator's username is "admin" and the default password is printed on the MAC tag of the unit.

At first boot or after factory reset, users will be asked to change the default administrator and user passwords before accessing the GWN70x2 web interface. The password field is case-sensitive with a maximum length of 32 characters. Using strong passwords including letters, digits, and special characters is recommended for security purposes.

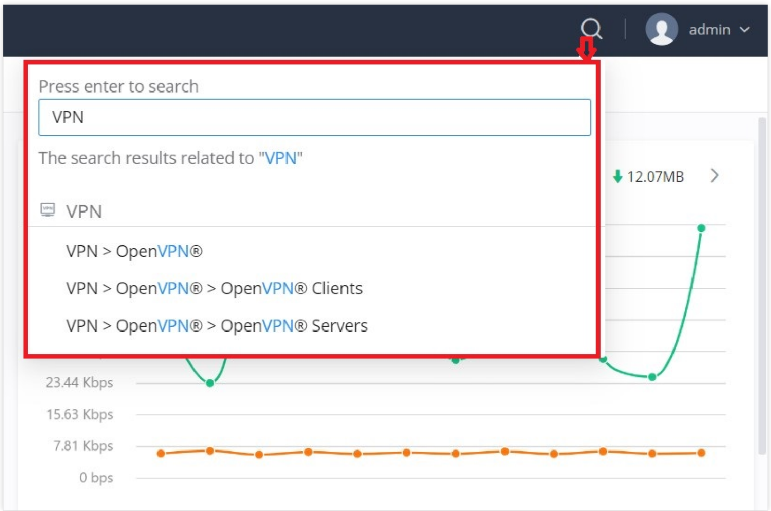
Once the user enters the password, this is the initial page that will be shown. This page contains general information and the status of the router.



WEB GUI Configuration

Search

To make it easier for the user to find a particular option quickly, the GWN70x2 web UI has a search feature that can be accessed by clicking on the magnifier icon on the top right corner of the screen and typing the option name.

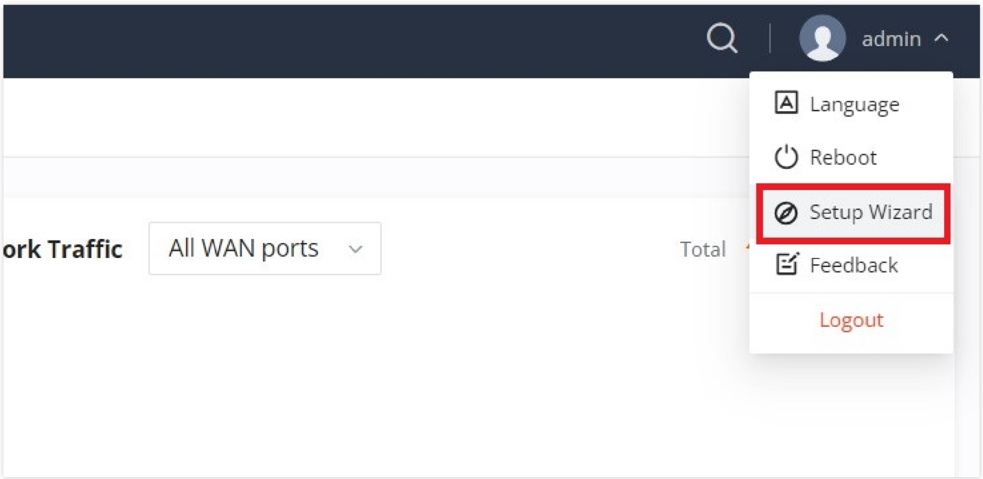

admin
Press enter to search
VPN
The search results related to "VPN"
VPN
VPN > OpenVPN®
VPN > OpenVPN® > OpenVPN® Clients
VPN > OpenVPN® > OpenVPN® Servers
12.07MB
23.44 Kbps
15.63 Kbps
7.81 Kbps
0 bps

Search

Setup Wizard and Feedback

Setup Wizard

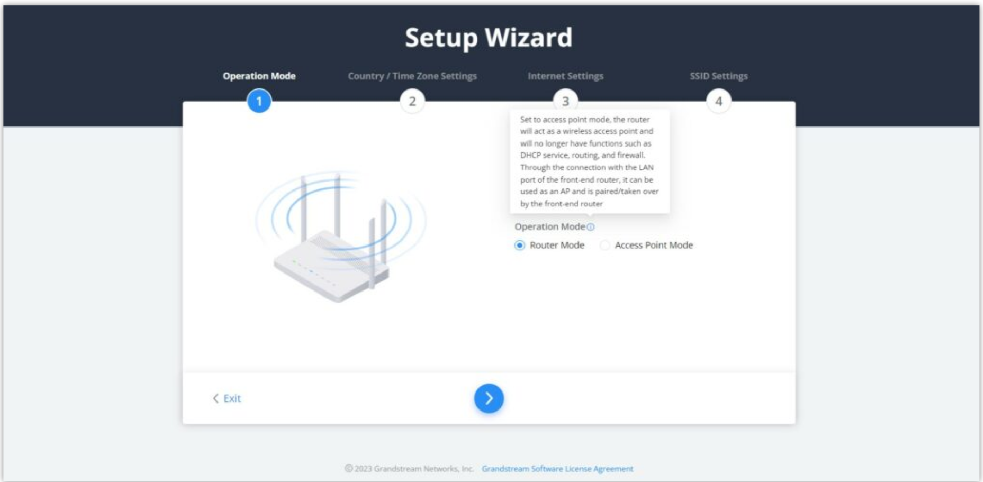
If the user missed the Setup Wizard at the first boot of GWN70x2. It's accessible all the time at the top of the page and it contains the necessary settings that the user must configure in 4 steps, first Operation Mode, Country/Time zone settings, Internet settings, and finally SSID settings.



Setup Wizard

1. **Operation Mode**

In the first step, the user has the option to either select the Router or Access Point Mode, if the Access Point mode is selected the router will act as a wireless access point and will no longer have functions such as DHCP service, routing, and firewall. Through the connection with the LAN port of the front-end router, it can be used as an AP and is paired/taken over by the front-end router, and this mode also supports wireless mesh networking with the uplink device.



Set to access point mode, the router will act as a wireless access point and will no longer have functions such as DHCP service, routing, and firewall. Through the connection with the LAN port of the front-end router, it can be used as an AP and is paired/taken over by the front-end router

Operation Mode

● Router Mode ○ Access Point Mode

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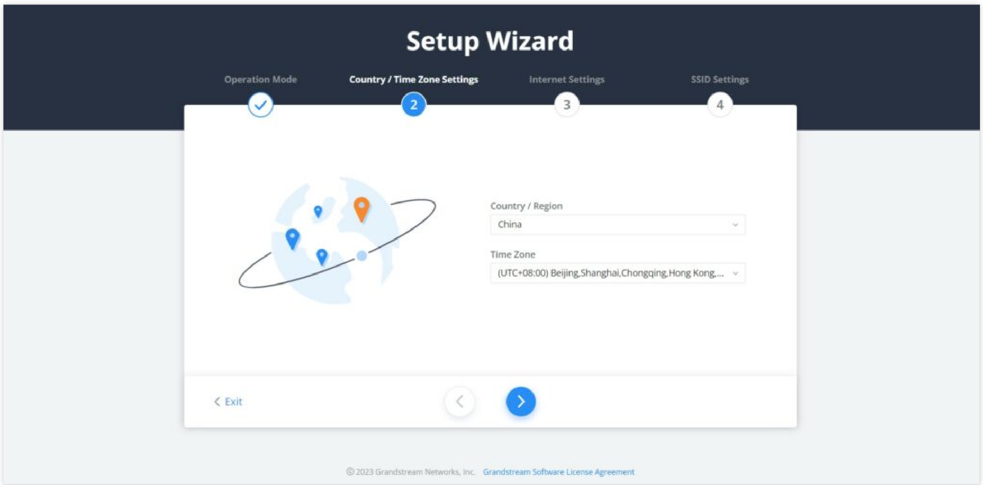
Setup Wizard – Operation Mode

If the Router Mode is selected, click on › button to continue the setup wizard. If the Access Point mode is selected the router will restart and function as an access point.

2. **Country/Time Zone Settings**

In the second step, the user can specify the country/Region and Time Zone.



Country / Region: China

Time Zone: (UTC+08:00) Beijing,Shanghai,Chongqing,Hong Kong,...

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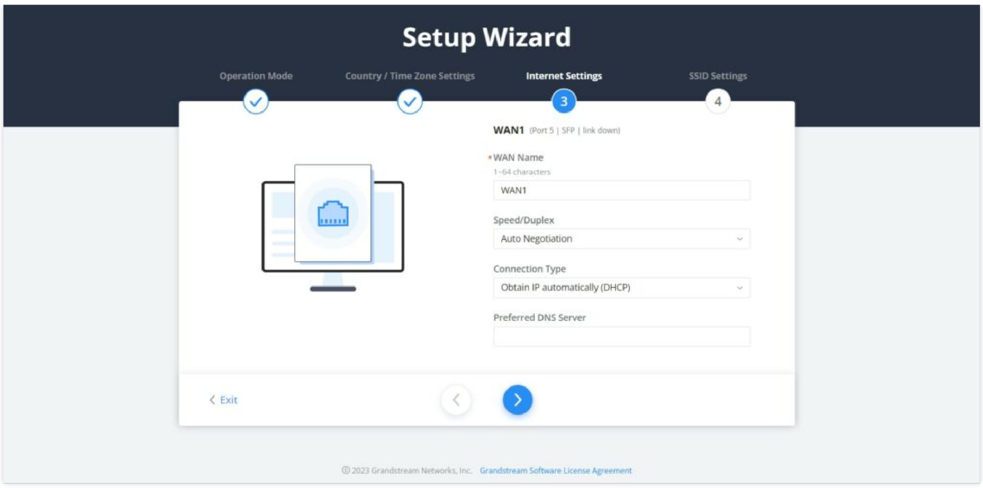
Setup Wizard – Country/Time Zone Settings

3. **Internet Settings**

The third step is about configuring the WAN ports' basic settings by specifying the WAN name, Speed/Duplex, Connection (DHCP, static IP, etc), and the preferred DNS Server.



Setup Wizard
Operation Mode
Country / Time Zone Settings
Internet Settings
SSID Settings
3
4
Exit
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WAN1 (Port 5 | SFP | link down)

*WAN Name
1~64 characters
WAN1

Speed/Duplex
Auto Negotiation

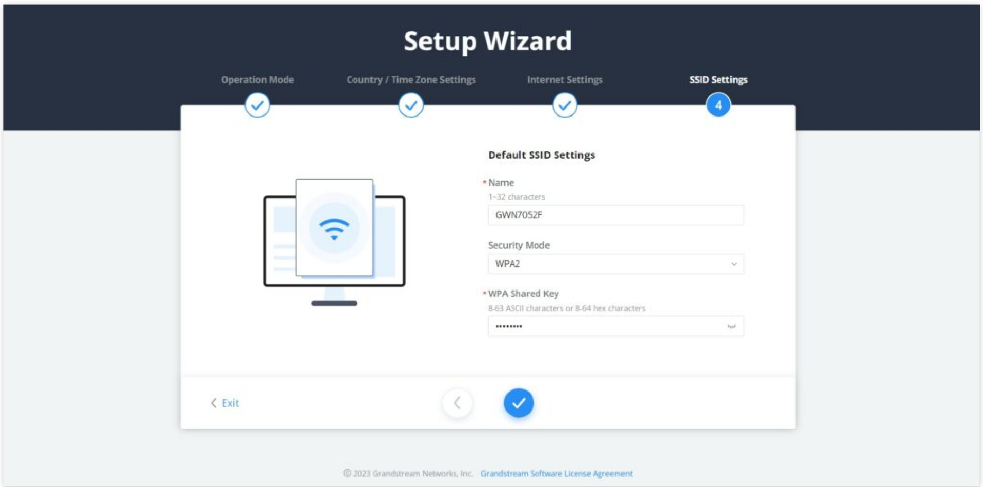
Connection Type
Obtain IP automatically (DHCP)

Preferred DNS Server

Setup Wizard – Internet Settings

4. **SSID Settings**

The last step is where the user can configure the initial SSID by specifying a name and the security mode.



Setup Wizard
Operation Mode
Country / Time Zone Settings
Internet Settings
SSID Settings
4
Exit
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Default SSID Settings

*Name
1~32 characters
GWN7052F

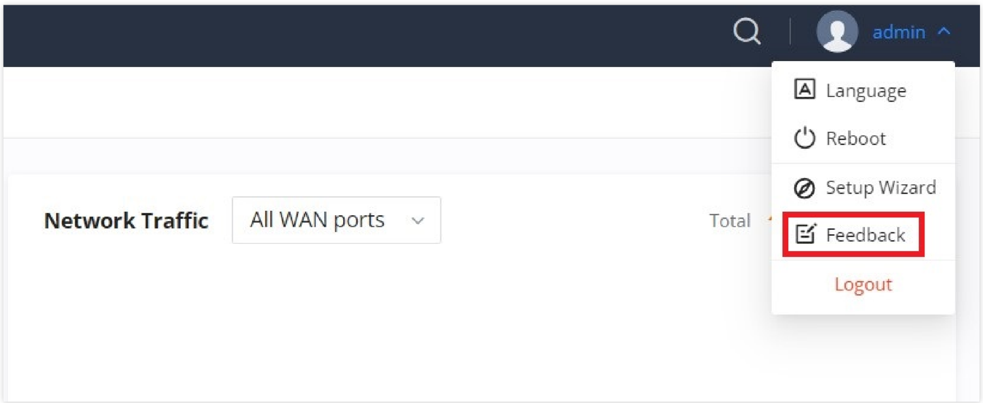
Security Mode
WPA2

*WPA Shared Key
8-63 ASCII characters or 8-64 hex characters
•••••••••

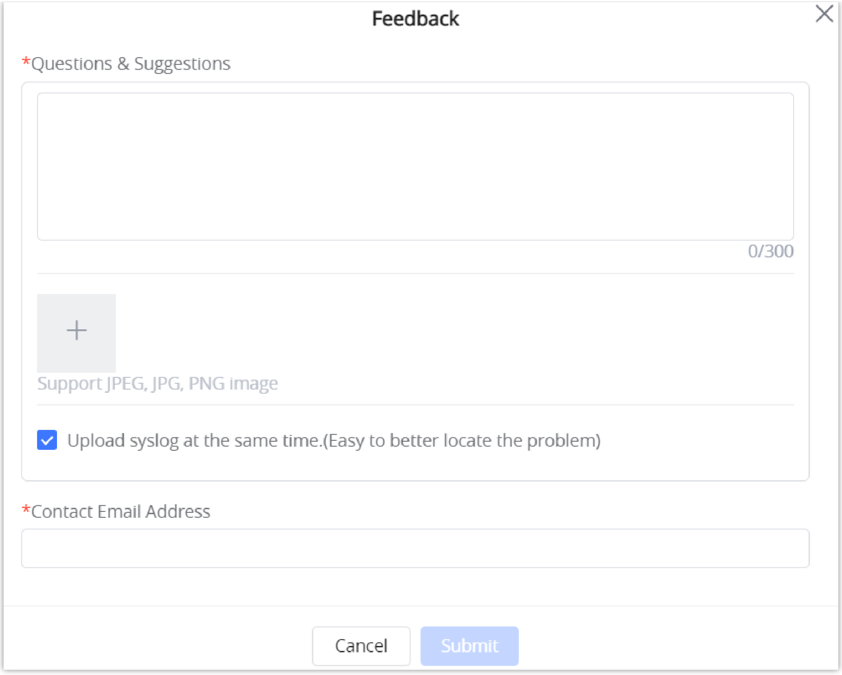
Setup Wizard – SSID Settings

Feedback

If the user has a question or a suggestion to make the GWN70x2 product even better or has an issue, he can always send feedback, in case of a problem it's better to include Syslog as it may help solve the problem faster.



Feedback – part 1



*Questions & Suggestions

0/300

Support JPEG, JPG, PNG image

☑ Upload syslog at the same time.(Easy to better locate the problem)

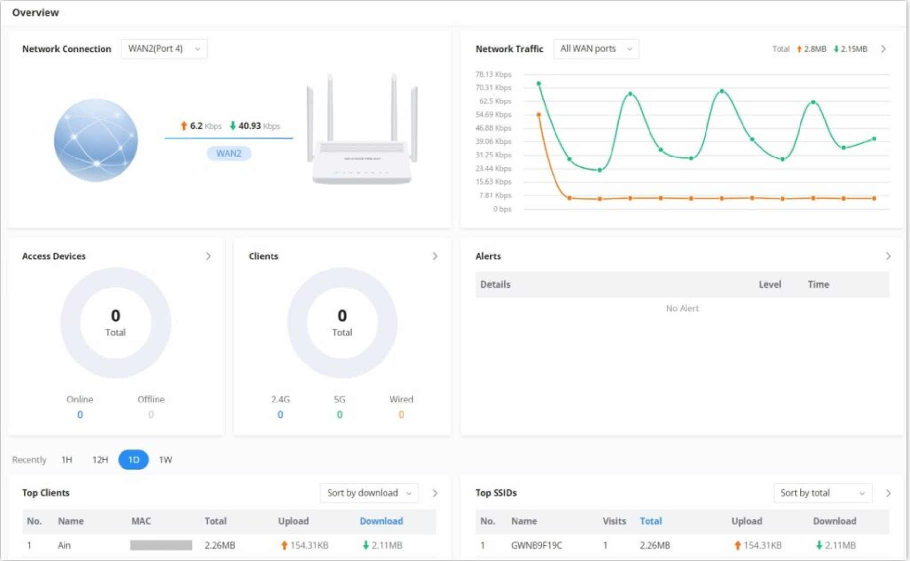
*Contact Email Address

Feedback – part 2

OVERVIEW

Overview Page

Overview is the first page shown after successful login to the GWN70x2's Web Interface. It provides an overall view of the GWN70x2's information presented in a Dashboard style for easy monitoring. Please refer to the figure and table below:



Alerts

Details	Level	Time
No Alert		

Top Clients

No.	Name	MAC	Total	Upload	Download
1	Ain		2.26MB	154.31KB	2.11MB

Top SSIDs

No.	Name	Visits	Total	Upload	Download
1	GWN89F19C	1	2.26MB	154.31KB	2.11MB

Overview Page

Network Connection	Displays the current state of the network connection for the selected WAN port and shows the current upload and download speed. ***Note:*** *the user can select the WAN port from the drop-down list.*
Network Traffic	Shows network traffic in real time. ***Note:*** *the user can select the WAN port from the drop-down list or select All WAN ports.*
Access Devices	shows the total number of Access Devices online and offline.
Clients	Shows the total number of clients connected either wirelessly (2.4G and 5G) and also wired connections.

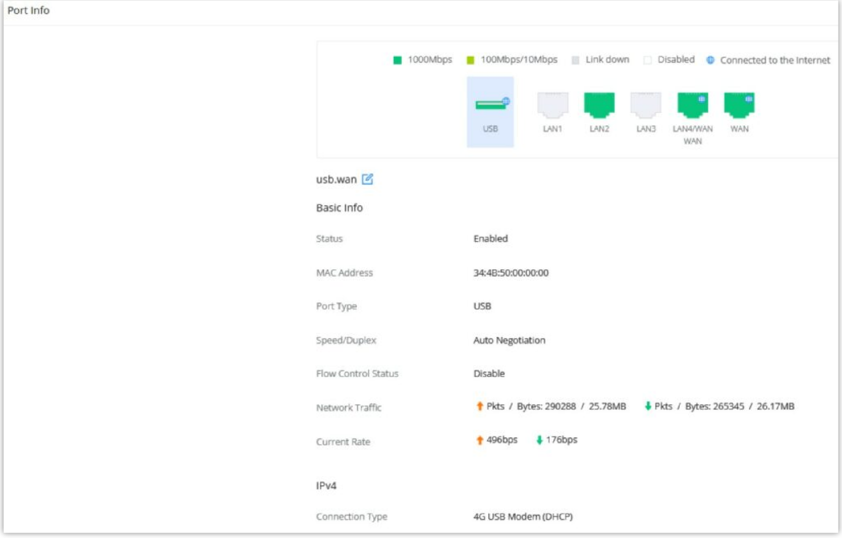
Alerts	Shows Alerts General, Important or Emergency with details and time.
Clients Speed	Displays Clients speed based on time (1H, 12H, 1D or 1W)
Top Clients	Shows the Top Clients list, users may assort the list of clients by their upload or download. Users may click on to go to Clients page for more options.
Top SSIDs	Shows the Top SSIDs list, users may assort the list by number of clients connected to each SSID or data usage combining upload and download. Users may click on to go to SSID page for more options.
Top Access Devices	Shows the Top Access Devices list, assort the list by the number of clients connected to each access device or data usage combining upload and download. Click on the arrow to go to the access point page for basic and advanced configuration options.

Overview page

Port Info

The Port Info page displays an overview of all ports' status including the USB Port, Gigabits ports, and SFP ports, indicating the links up with green color and links down with grey color, furthermore, the user can click on the port icon to get more info about the select link, refer to the figure below:

Navigate to **Web UI → Overview → Port Info**:



usb.wan

Basic Info

Status Enabled

MAC Address 34:4B:50:00:00:00

Port Type USB

Speed/Duplex Auto Negotiation

Flow Control Status Disable

Network Traffic ↑ Pkts / Bytes: 290288 / 25.78MB ↓ Pkts / Bytes: 265345 / 26.17MB

Current Rate ↑ 496bps ↓ 176bps

IPv4

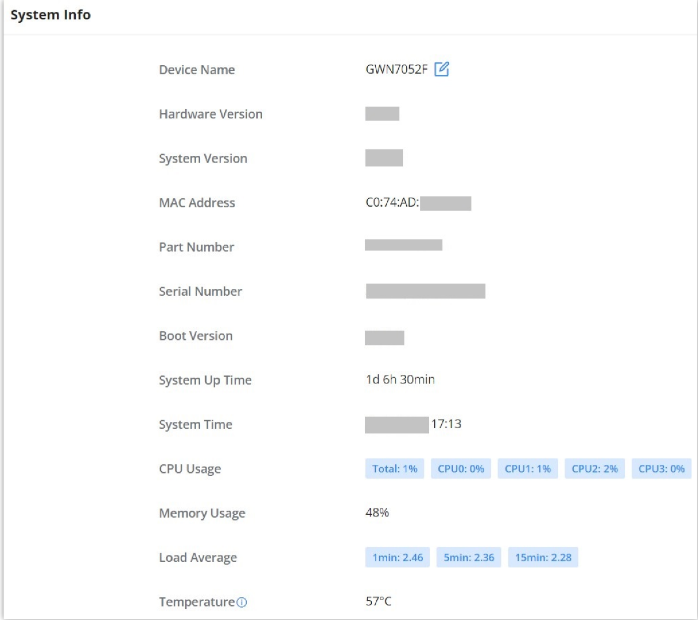
Connection Type 4G USB Modem (DHCP)

Port Info

System Info

The System Info page shows much info related to GWN70x2 routers like device name, system version, MAC address, system uptime, CPU and memory usage, temperature, etc.

The router's System Info can be accessed from the **Web GUI → Overview → System Info Tab.**



System Info

Device Name	GWN7052F
Hardware Version	[redacted]
System Version	[redacted]
MAC Address	C0:74:AD:[redacted]
Part Number	[redacted]
Serial Number	[redacted]
Boot Version	[redacted]
System Up Time	1d 6h 30min
System Time	[redacted] 17:13
CPU Usage	Total: 1% CPU0: 0% CPU1: 1% CPU2: 2% CPU3: 0%
Memory Usage	48%
Load Average	1min: 2.46 5min: 2.36 15min: 2.28
Temperature	57°C

System Info

NETWORK SETTINGS

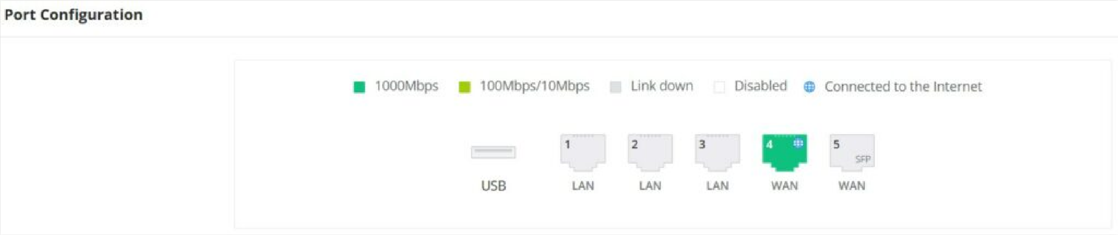
Port Configuration

To access port configuration, please access the user interface of the GWN70x2 router and then navigate to **Network Settings → Port Configuration**.

- **Port Status**

On the top, you can find the status of all the ports of the router.

- **Green color:** port speed is 1Gbps.
- **Light green color:** port speed is 100Mbps/10Mbps.
- **Grey color:** link down.
- **White color:** port disabled.
- **Internet icon:** port connected to the internet (for WAN ports).



Port Configuration

🟩 1000Mbps 🟩 100Mbps/10Mbps ▨ Link down □ Disabled 🌐 Connected to the Internet

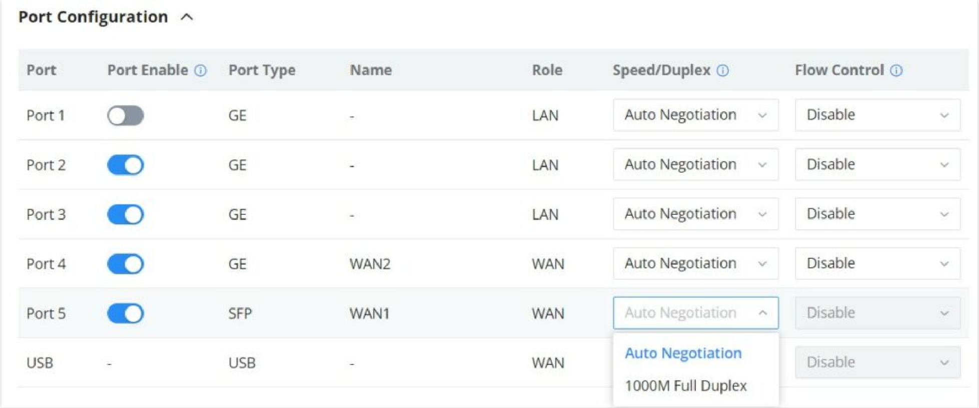
Port configuration – part 1

- **Port Configuration**

The Port configuration page allows the user to configure the settings related to all the ports of the router; this includes the gigabit Ethernet ports as well as the SFP ports. The settings that can be edited include flow control, speed, and duplex mode.

Note:

SFP ports do not support 2.5G auto-negotiation.



Port Configuration

Port	Port Enable	Port Type	Name	Role	Speed/Duplex	Flow Control
Port 1	○	GE	-	LAN	Auto Negotiation	Disable
Port 2	●	GE	-	LAN	Auto Negotiation	Disable
Port 3	●	GE	-	LAN	Auto Negotiation	Disable
Port 4	●	GE	WAN2	WAN	Auto Negotiation	Disable
Port 5	●	SFP	WAN1	WAN	Auto Negotiation	Disable
USB	-	USB	-	WAN		Disable

Port configuration – part 2

Port	This field indicates the port number.
Port enabled	Toggle ON or OFF the port. ***Note:*** *When set to disabled, this physical port is disabled and all port-based configurations do not take effect.*
Port Type	This field indicates the port type. ● **GE:** Stands for Gigabit Ethernet ● **SFP:** Small form-factor Pluggable
Name	This indicates the port name.
Role	This indicates the port role. ● **LAN** ● **WAN**
Speed/Duplex	In this setting, the user can configure the duplex mode as well as the speed of the port. The speed of the port can be set to: 10M, 100M, and 1000M. The duplex setting of the port can be set to: *Half Duplex* and *Full Duplex*. When the mode is set to **Auto Negotiation,** the router will determine based on the settings negotiated with the device connected.
Flow Control	The user can enable or disable flow control using this option. ***Note:*** *When the setting is set to Auto Negotiation, the router will determine based on the settings negotiated with the device connected.*

Port configuration – part 2

WAN

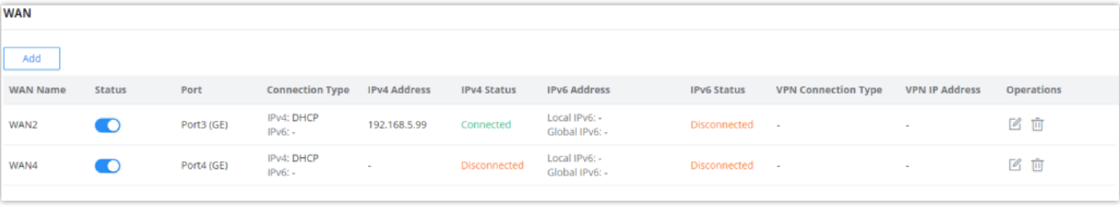
The WAN ports can be connected to a DSL modem or a router. WAN port support also sets up static IPv4/IPv6 addresses and configures PPPoE. It’s also possible to use the USB port with a USB 4G dongle, by default the port policy route will be in load balance mode, it also can be configured to run in Backup (Failover) mode under Routing → Policy Routes → Load Balance Pool. With a USB 4G dongle (GWN7062 only), the user can adapt to many scenarios like remote places with no wired WAN or constantly moving or as a failover (Backup) WAN to ensure redundancy, also it can adapt to various modems.

Note:

USB 4G Dongle is only supported on GWN7062.

On this page, the user can modify the setting for each WAN port and also can delete or even add another WAN, Adding a WAN port will reduce the LAN port number. In the case where there is more than one WAN port, load balancing or backup (Failover) can be configured.

If a GWN router is added to either GWN.Cloud or GWN Manager, the **WAN Speed Test** feature will be available to users. Please for more details check GWN Management Platforms – User Guide (WAN Speed Test).



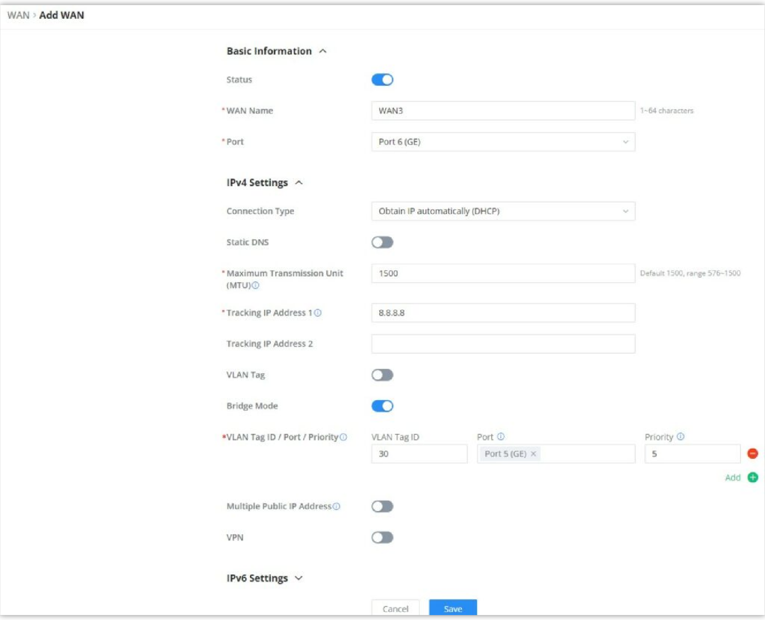
WAN

Add

WAN Name	Status	Port	Connection Type	IPv4 Address	IPv4 Status	IPv6 Address	IPv6 Status	VPN Connection Type	VPN IP Address	Operations
WAN2	●	Port3 (GE)	IPv4: DHCP IPv6: -	192.168.5.99	Connected	Local IPv6: - Global IPv6: -	Disconnected	-	-	
WAN4	●	Port4 (GE)	IPv4: DHCP IPv6: -	-	Disconnected	Local IPv6: - Global IPv6: -	Disconnected	-	-	

WAN page

Click on Add to add another WAN port or click on the "**edit icon**" to edit the previously created ones.



WAN > Add WAN

Basic Information

Status: ●

*WAN Name: WAN3 (1~64 characters)

*Port: Port 6 (GE)

IPv4 Settings

Connection Type: Obtain IP automatically (DHCP)

Static DNS: ○

*Maximum Transmission Unit (MTU): 1500 (Default 1500, range 576~1500)

*Tracking IP Address 1: 8.8.8.8

Tracking IP Address 2:

VLAN Tag: ○

Bridge Mode: ●

*VLAN Tag ID / Port / Priority: VLAN Tag ID 30; Port: Port 5 (GE); Priority: 5

Add

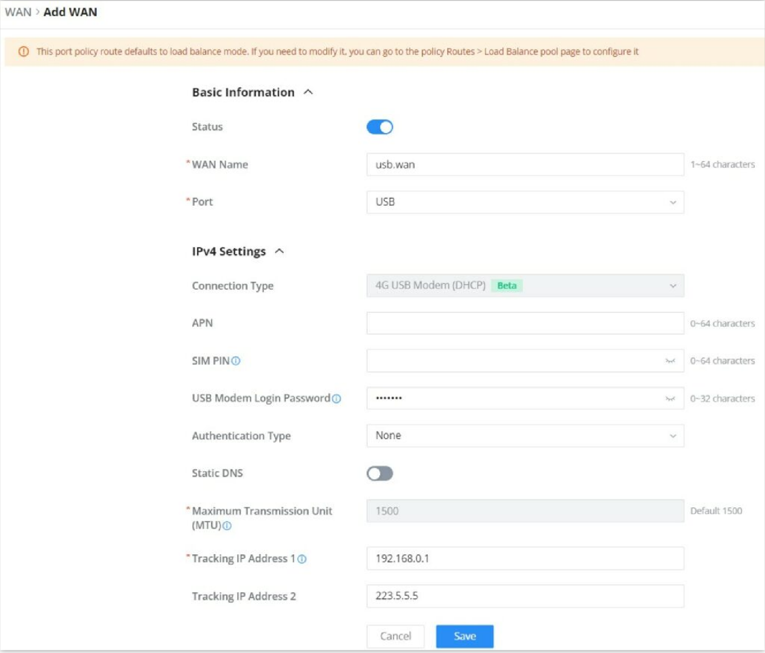
Multiple Public IP Address: ○

VPN: ○

IPv6 Settings

Cancel Save

Add or Edit WAN – Ethernet Port



WAN > Add WAN

This port policy route defaults to load balance mode. If you need to modify it, you can go to the policy Routes > Load Balance pool page to configure it

Basic Information

Status: ●

*WAN Name: usb.wan (1~64 characters)

*Port: USB

IPv4 Settings

Connection Type: 4G USB Modem (DHCP) Beta

APN: (0~64 characters)

SIM PIN: (0~64 characters)

USB Modem Login Password: ••••••• (0~32 characters)

Authentication Type: None

Static DNS: ○

*Maximum Transmission Unit (MTU): 1500 (Default 1500)

*Tracking IP Address 1: 192.168.0.1

Tracking IP Address 2: 223.5.5.5

Cancel Save

Add or Edit WAN – USB port

Please refer to the following table for network configuration parameters on the WAN port.

Basic Information

Status	Click to enable or disable the WAN
WAN Name	Enter a name for the WAN port
Port	Select from the drop-down list the port to be used as a WAN
IPv4 Settings	
Connection Type	● **Obtain IP automatically (DHCP):** When selected, it will act as a DHCP client and acquire an IPv4 address automatically from the DHCP server. ● **Enter IP Manually (Static IP):** When selected, the user should set a static IPv4 address, IPv4 Subnet Mask, IPv4 Gateway and adding Additional IPv4 Addresses as well to communicate with the web interface, SSH, or other services running on the device. ● **Internet Access with PPPoE account (PPPoE):** When selected, the user should set the PPPoE account and password, PPPoE Keep alive interval, and Inter-Key Timeout (in seconds). *The default setting is "**Obtain IP automatically (DHCP)**".*
Static DNS	Toggle **ON** or **OFF** to enable or disable static DNS
Preferred DNS Server	Enter the preferred DNS Server, ex: 8.8.8.8
Alternative DNS Server	Enter the altenative DNS Server, ex: 1.1.1.1
Maximum Transmission Unit (MTU)	Configures the maximum transmission unit allowed on the wan port. ● When using Ethernet, the valid range that can be set by the user is 576-1500 bytes. The default value is 1500. Please do not change the default value unless you have to. ● When using PPPoE, the valid range that can be set by the user is 576-1492 bytes. The default value is 1492. Please do not change the default value unless you have to.
Tracking IP Address 1	Configures tracking IP address of WAN port to determine whether the WAN port network is normal.
Tracking IP Address 2	Add another alternative address for Tracking IP Address
VLAN Tag	Toggle **ON** or **OFF** to enable or disable VLAN Tag ***Note:*** *to lock WAN VLAN tag, please refer to* ISP Locking.
VLAN Tag ID	Enter the VLAN Tag ID with the priority ***Note****: priority is 0~7 with 7 being the highest priority. Default is 0.*
Multiple Public IP Address	Toggle **ON** or **OFF** to enable or disable Multiple Public IP Address ***Note:*** *Please use with Port Forward function, so that you can access to router via public IP address.*
Public IP Address	Enter a public IP address ***Note:*** *Click on "Plus" or "minus" icons to add or delete public IP addresses.*
VPN	Toggle **ON** or **OFF** to enable or disable VPN
VPN Connection Type	● **L2TP:** Layer Two Tunneling Protocol (L2TP) is an extension of the Point-to-Point Tunneling Protocol (PPTP) used by internet service providers (ISPs) to enable virtual private networks (VPNs). ● **PPTP:** Point-to-Point Tunneling Protocol (PPTP) is a network protocol that enables the secure transfer of data from a remote client to a private enterprise server by creating a virtual private network (VPN)

	across TCP/IP-based data networks.
Username	Enter the username to authenticate into the VPN server.
Password	Enter the password to authenticate into the VPN server.
Server Address	Enter the IP address or the FQDN of the VPN server.
MPEE Encryption (if PPTP is selected)	When PPTP is chosen as the **VPN Connection Type**, the user can choose to toggle on or off the MPEE Encryption.
IP Type	● **Dynamic IP:** The IP will be assigned statically using DHCP. ● **Static IP:** The IP will be assigned statically.
VPN Static DNS	Enable this option to use the statically assigned DNS server addresses.
Maximum Transmission Unit (MTU)	This configures the value of the maximum transmit unit. The valid range for this value is 576 - 1460. The default value is 1430. ***Note:*** *Please do not change this value unless it's necessary.*
	IPv6 Settings
IPv6	Enable this option to use IPv6 on this specific WAN port.
Connection Type	● Obtain IP automatically (DHCPv6) ● Enter the IP manually (static IPv6) ● Internet Access with PPPoE account (PPPoE): must enabled and configured on IPv4.
IPv6 Address	When the **Connection Type** is set to *Static IP,* the user can can enter the static IP address in this field. **Note:** This option appears only when the **Connection Type** is set to *Static IPv6*.
Prefix Length	Enter the prefix length. **Note:** This option appears only when the **Connection Type** is set to *Static IPv6*.
Default Gateway	Enter the IP address of the default gateway **Note:** This option appears only when the **Connection Type** is set to *Static IPv6*.
Preferred DNS Server	Enter the IP address of the preferred DNS server. **Note:** This option appears only when the **Connection Type** is set to *Static IPv6*.
Alternative DNS Server	Enter the IP address of the alternative DNS server **Note:** This option appears only when the **Connection Type** is set to *Static IPv6*.
Static DNS	Enable this option to enter statically assigned DNS. **Note:** This option appears only when the **Connection Type** is set to DHCPv6.
IPv6 Relay to VLAN	Once enabled, relay IPv6 addresses to clients on the LAN side. Note: This function will take effect only "IPv6 Relay from WAN" is enabled on VLAN.

WAN Settings

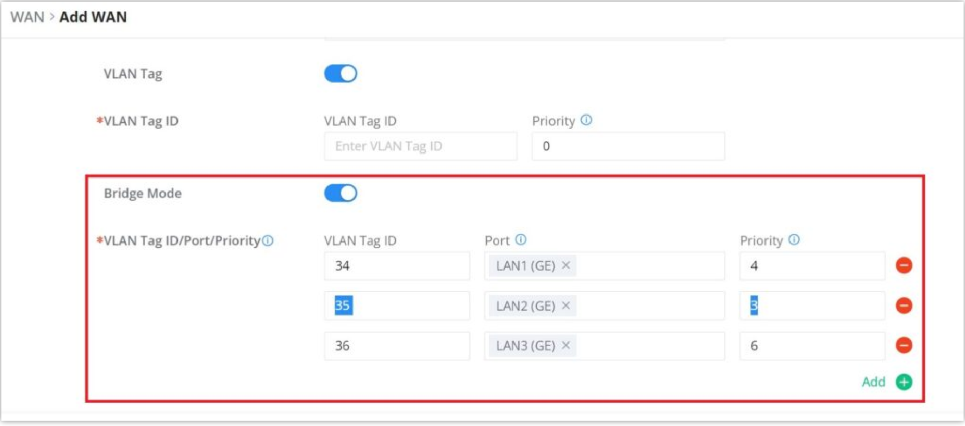
Note:

If the USB port is selected: this port policy route defaults to load balance mode. If you need to modify it, you can go to the policy Routes/Load Balance pool page to configure it.

Triple Play

Triple Play allows the user to benefit from a multi-service plan (depending on ISP provider), and with a single WAN connection each service e.g: Internet, Voice (VoIP), and IPTV can be separated using VLANs and a specific port.

Navigate to **Network Settings → WAN → Edit/Add WAN**, then scroll down and search for Bridge Mode, please refer to the figure below:



WAN > **Add WAN**

VLAN Tag: on

*VLAN Tag ID: VLAN Tag ID: Enter VLAN Tag ID; Priority: 0

Bridge Mode: on

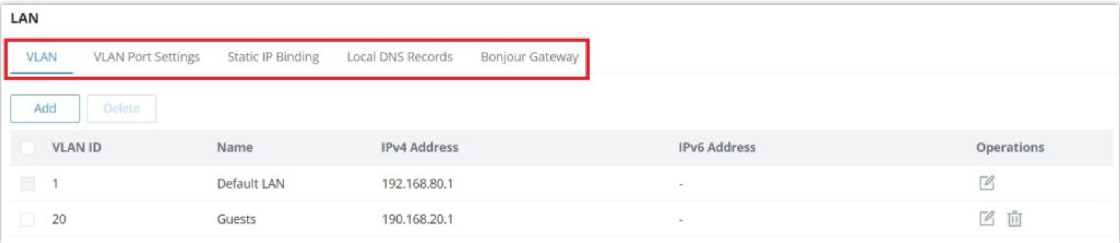
*VLAN Tag ID/Port/Priority

VLAN Tag ID	Port	Priority
34	LAN1 (GE)	4
35	LAN2 (GE)	3
36	LAN3 (GE)	6

Triple Play

LAN

To access the LAN configuration page, log in to the GWN70x2 WebGUI and go to **Network Settings → LAN**. VLAN configuration such as adding VLANs or setting up a VLAN port can be found here on this page, as well as the ability to add Static IP Bindings, local DNS Records, and Bonjour Gateway.



LAN

VLAN ID	Name	IPv4 Address	IPv6 Address	Operations
1	Default LAN	192.168.80.1	-	
20	Guests	190.168.20.1	-	

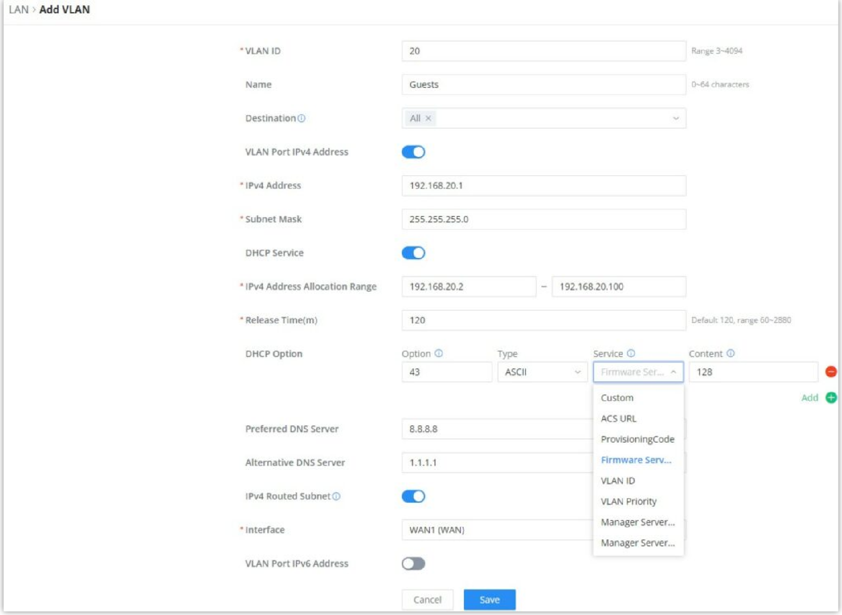
LAN configuration

VLAN

GWN70x2 router integrates VLAN to enhance security and add more functionalities and features. VLAN tags can be used with SSIDs to separate them from the rest, also the user can allow these VLANs only on specific LANs for more control and isolation and they can be used as well with policy routing.

- **Add or Edit VLAN**

To Add or Edit a VLAN, Navigate to **Router Interface → Network Settings → LAN**. Click on + Add button or click on ✎ Edit button.



LAN > **Add VLAN**

* VLAN ID	20	Range 3~4094
Name	Guests	0~64 characters
Destination ⓘ	All ×	
VLAN Port IPv4 Address	● On	
* IPv4 Address	192.168.20.1	
* Subnet Mask	255.255.255.0	
DHCP Service	● On	
* IPv4 Address Allocation Range	192.168.20.2 – 192.168.20.100	
* Release Time(m)	120	Default: 120, range 60~2880
DHCP Option	Option ⓘ 43 / Type ASCII / Service ⓘ Firmware Ser... / Content ⓘ 128	
Preferred DNS Server	8.8.8.8	
Alternative DNS Server	1.1.1.1	
IPv4 Routed Subnet ⓘ	● On	
* Interface	WAN1 (WAN)	
VLAN Port IPv6 Address	○ Off	

Add or Edit VLAN

VLAN ID	Enter a VLAN ID ***Note**: VLAN ID range is from 3 to 4094.*
Name	Enter the VLAN name
Destination	To fast configure the VLAN's single-way data communication with WANs, other VLANs and VPNs. The option selected by default will be based on "Policy Routing" option to keep the default route accessible.
VLAN Port IPv4 Address	
IPv4 address	Enter IPv4 Address
Subnet Mask	Enter Subnet Mask
DHCP Server	By default it's "**Off**", choose "**On**" to specifiy the IPv4 address Allocation Range
IPv4 Address Allocation Range	Enter the start and the end of the IPv4 address Allocation Range.
Release Time(m)	The default value is 120, and the valid range is 60~2880.
DHCP Option	Select the option, type, service and content for each DHCP option. Click on "**Plus**" or "**Minus**" icons to add or delete an entry. • **Option:** The range is 2-254, exclude 6, 50-54, 56, 58, 59, 61, 82 • **Type:** three options are possible: ASCII, HEX and IP address • **Service:** When the option is 43 and the type is an ASCII string, the service can be selected. • **Content:** "Hexadecimal String", please enter XX:XX:XX format or a valid even-bit hexadecimal string. "ASCII string" or "Decimal" , the content limit is 1-255 characters.
Preferred DNS Server	Enter the Preferred DNS Server
Alternative DNS Server	Enter the Alternative DNS Server
IPv4 Routed Subnet	Once enabled, clients under the VLAN will be allowed to access the Internet using their real IP addresses.

Interface	Select the WAN interface from the drop-down list
VLAN Port IPv6 Address	
IPv6 Address Source	Select from the drop-down list the WAN port
Interface ID	Toggle **ON** or **OFF** the interface ID
Customize Interface ID	Enter the interface ID
IPv6 Preferred DNS Server	Enter the IPv6 Preferred DNS Server
IPv6 Alternative DNS Server	Enter the IPv6 Alternative DNS Server
IPv6 Relay form WAN	Once enabled, clients will get IPv6 addresses directly from the WAN side. ***Note:*** *This function will take effect only "IPv6 Relay to VLAN" is enabled on the WAN side.*
IPv6 Address Assignment	Select from the drop-down list the IPv6 address assignment ● Disable ● SLAAC ● Statelss DHCPv6 ● Stateful DHCPv6

Add/edit VLAN

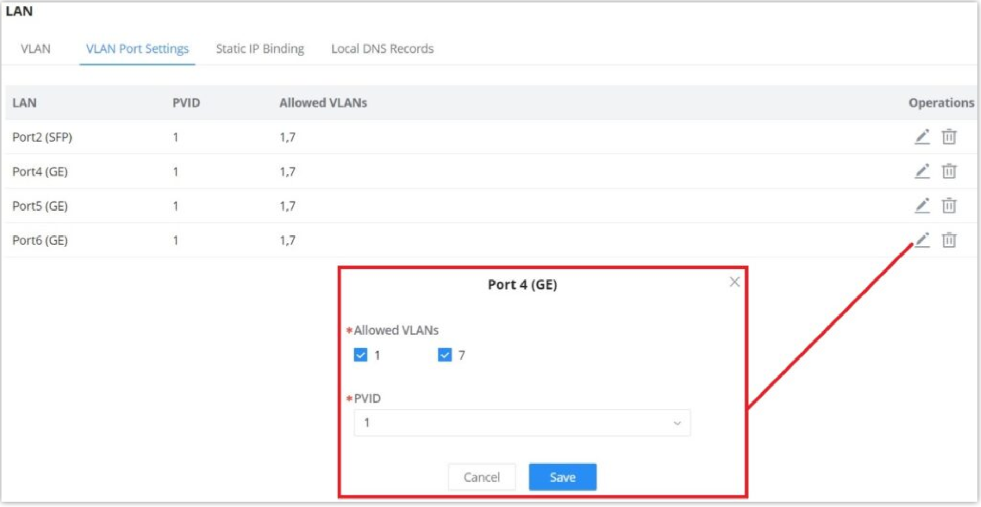
Note

Find below the number of VLANs which can be created in each model:

- **GWN7052(F):** 8 VLANs
- **GWN7062:** 16 VLANs

VLAN Port Settings

The user can use LAN ports to allow only specific VLANs on each LAN port and in case there are more than one VLAN then there is an option to choose one VLAN as the default VLAN ID (PVID or Port VLAN Identifier). Click on ✎ to edit the VLAN Port Settings or click on 🗑 to delete that configuration and bring back the default settings which is by default VLAN 1.



LAN	PVID	Allowed VLANs	Operations
Port2 (SFP)	1	1,7	✎ 🗑
Port4 (GE)	1	1,7	✎ 🗑
Port5 (GE)	1	1,7	✎ 🗑
Port6 (GE)	1	1,7	✎ 🗑

Port 4 (GE)

*Allowed VLANs: ☑ 1 ☑ 7

*PVID: 1

VLAN Ports

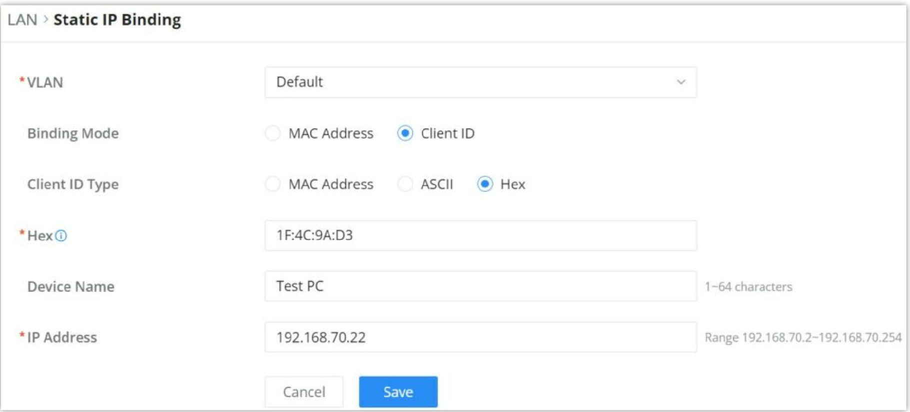
Allowed VLANs	Choose the VLANS to be allowed on this port.
PVID	Select the Port VLAN Identifier or the default VLAN ID

VLAN Port Settings

Static IP Binding

The user can set IP static binding to devices in which the IP address will be bound to the MAC address. Any traffic that is received by the router that does not have the corresponding IP address and MAC address combination will not be forwarded.

To configure Static IP Binding, please navigate to **Network Settings** → **LAN** → **Static IP Binding**, refer to the figure and table below:



LAN › Static IP Binding

*VLAN	Default
Binding Mode	○ MAC Address ● Client ID
Client ID Type	○ MAC Address ○ ASCII ● Hex
*Hex	1F:4C:9A:D3
Device Name	Test PC (1~64 characters)
*IP Address	192.168.70.22 (Range 192.168.70.2~192.168.70.254)

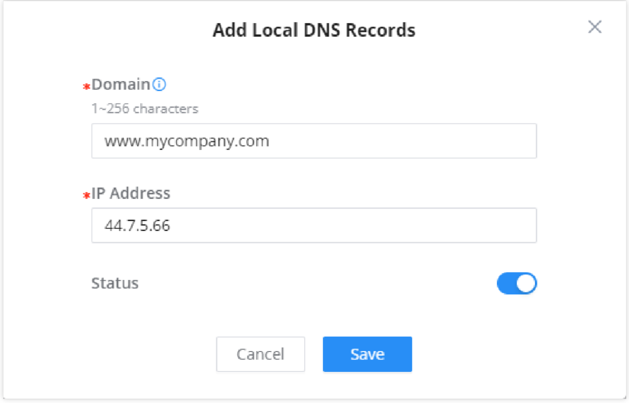
Static IP Binding

VLAN	Select the VLAN from the drop-down list.
Binding Mode	select the binding mode, either using the client MAC address or Client ID.
Binding Devices	Select the device MAC address from connected devices list. ***Note:*** *only available bindind mode is set to MAC Address.*
Client ID Type	Select the client ID type, either based on: ● MAC Address ● ASCII ● Hex ***Note:*** *only available bindind mode is set to Client ID.*
MAC Address	Enter the MAC Address ***Note:*** *only available bindind mode or Client ID Type is set to MAC Address*
ASCII	Enter the ASCII ***Note:*** *only available Client ID Type is set to ASCII*
Hex	Please enter XX:XX:XX:XX format or a valid even-digit hexadecimal number string, the first two digits need to enter the type value. ***Note:*** *only available Client ID Type is set to Hex*
Device Name	Enter a name for the device
IP Address	Enter the static IP address based on the VLAN selected previously.

Static IP Binding

Local DNS Records

Local DNS Records is a feature that allows the user to a DNS records into the router which can be used to map the domain name to an IP address. This feature can be used when the user needs to access a specific server using a domain name instead of an IP address when they do not want to include the entry in public DNS servers. To add a local DNS record, please navigate to **Network Settings** → **LAN** → **Local DNS Records**, then click "Add"



Add Local DNS Records

*Domain
1~256 characters
www.mycompany.com

*IP Address
44.7.5.66

Status

Add Local DNS Records

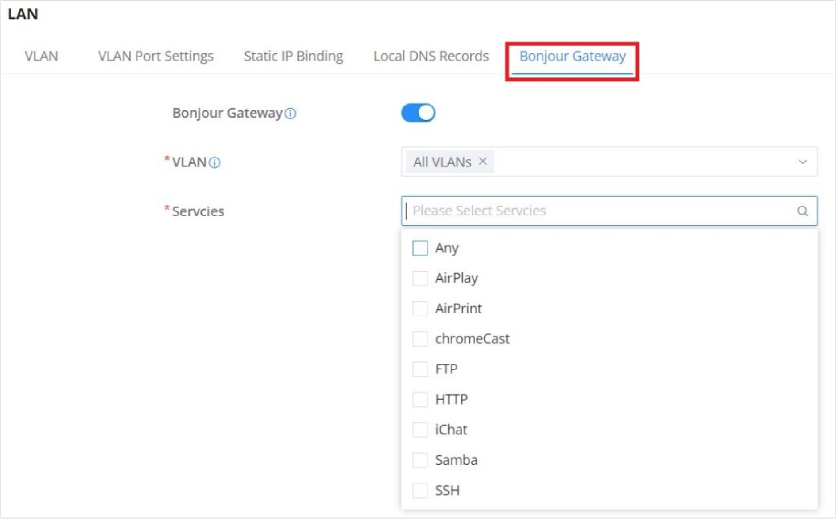
- Enter the domain name in "**Domain**"
- Then, enter the IP address to which the domain name will be mapped.
- Toggle on the "**Status**" for the mapping to take effect.

Bonjour Gateway

The Bonjour service is a zero-configuration network that enables the automatic discovery of devices and services on a local network. For example: it can be used on a local network to share printers with Windows® and Apple® devices.

Once enabled, Bonjour services (such as Samba) can be provided to Bonjour supporting clients under multiple VLANs. Once enabled, configure the services of the VLANs and proxies that need to intercommunicate.

To start using Bonjour Gateway, Toggle ON or OFF the service first, then select the VLAN and the services as shown below:



Bonjour Gateway

*VLAN
All VLANs ×

*Servcies
Please Select Servcies

□ Any
□ AirPlay
□ AirPrint
□ chromeCast
□ FTP
□ HTTP
□ iChat
□ Samba
□ SSH

Bonjour Gateway

IGMP

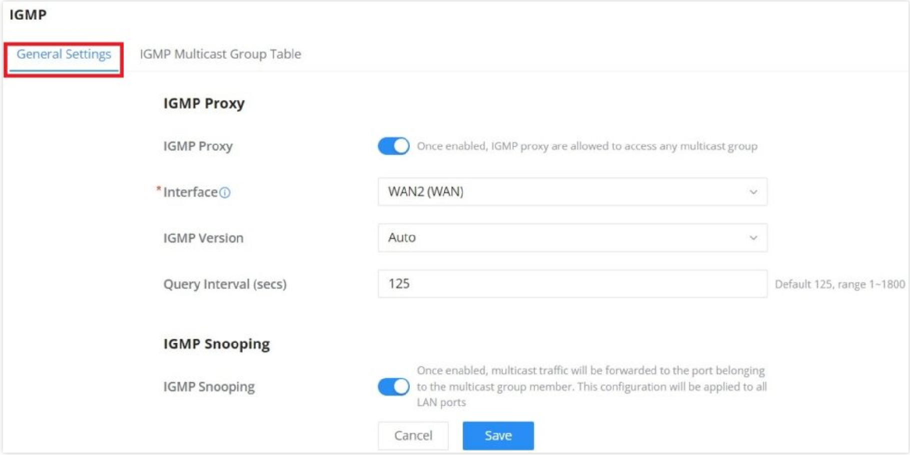
When IGMP Proxy is enabled, the GWN router can issue IGMP messages on behalf of the clients behind it, then the GWN router will be able to access any multicast group.

To start using IGMP Proxy:

1. Toggle ON IGMP Proxy first.

2. Select the WAN interface to be used from the drop-down list (***Note:** IGMP proxy cannot be enabled on a WAN port with bridge mode enabled*)
3. Select the version, be default is Auto.

The user can also enable IGMP Snooping. Once enabled, multicast traffic will be forwarded to the port belonging to the multicast group member. This configuration will be applied to all LAN ports.


IGMP

General Settings | IGMP Multicast Group Table

IGMP Proxy

IGMP Proxy: On — Once enabled, IGMP proxy are allowed to access any multicast group

*Interface: WAN2 (WAN)

IGMP Version: Auto

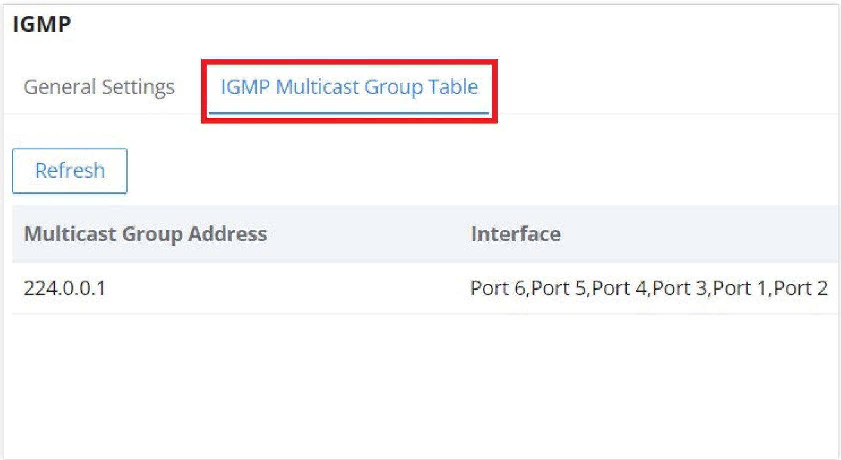
Query Interval (secs): 125 — Default 125, range 1~1800

IGMP Snooping

IGMP Snooping: On — Once enabled, multicast traffic will be forwarded to the port belonging to the multicast group member. This configuration will be applied to all LAN ports

IGMP – General Settings

On the IGMP Multicast Group Table, all the active multicast groups will be displayed here.


IGMP

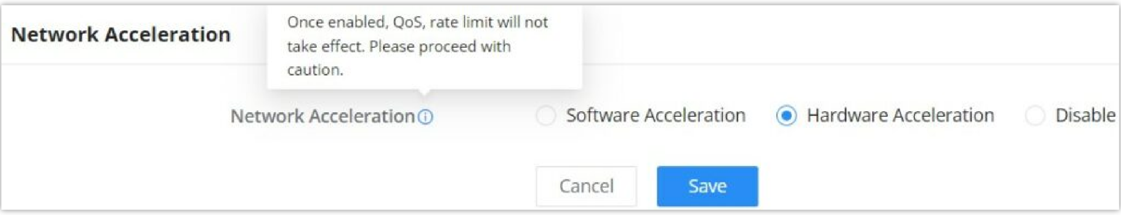
General Settings | IGMP Multicast Group Table

Multicast Group Address	Interface
224.0.0.1	Port 6,Port 5,Port 4,Port 3,Port 1,Port 2

IGMP – IGMP Multicast Group Table

Network Acceleration

Network acceleration allows the router to transfer data at a higher rate when Hardware acceleration is enabled. This ensures a high performance.


Network Acceleration

Once enabled, QoS, rate limit will not take effect. Please proceed with caution.

Network Acceleration: ○ Software Acceleration ● Hardware Acceleration ○ Disable

Network Acceleration

> Once enabled, QoS, rate limit will not take effect. Please proceed with caution.

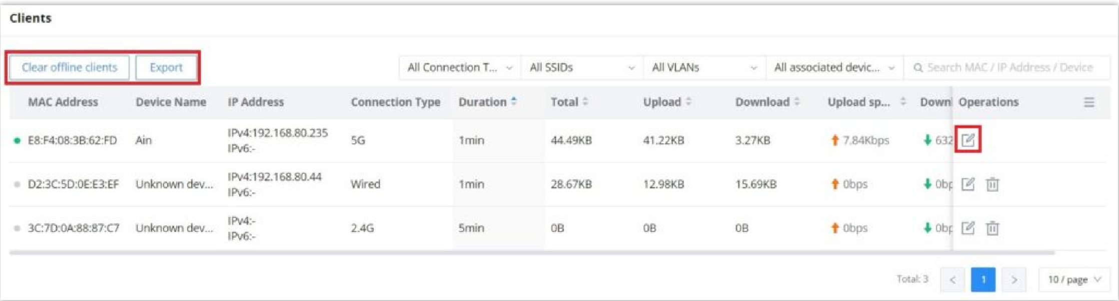
CLIENTS

The Clients page keeps a list of all the devices and users connected currently or previously to different LAN subnets with details such as the MAC Address, the IP Address, the duration time, and the upload and download information, etc.

The clients' list can be accessed from GWN70x2's **Web GUI** → **Clients** to perform different actions for wired and wireless clients.

- Click on "**Clear offline clients**" to remove clients that are not connected from the list.
- Click on the "**Export**" button to export the client list to a local device in an EXCEL format.

Please refer to the figure and table below:



MAC Address	Device Name	IP Address	Connection Type	Duration	Total	Upload	Download	Upload sp...	Down	Operations
E8:F4:08:3B:62:FD	Ain	IPv4:192.168.80.235 IPv6:-	5G	1min	44.49KB	41.22KB	3.27KB	7.84Kbps	632	
D2:3C:5D:0E:E3:EF	Unknown dev...	IPv4:192.168.80.44 IPv6:-	Wired	1min	28.67KB	12.98KB	15.69KB	0bps	0bp	
3C:7D:0A:88:87:C7	Unknown dev...	IPv4:- IPv6:-	2.4G	5min	0B	0B	0B	0bps	0bp	

Clients Page

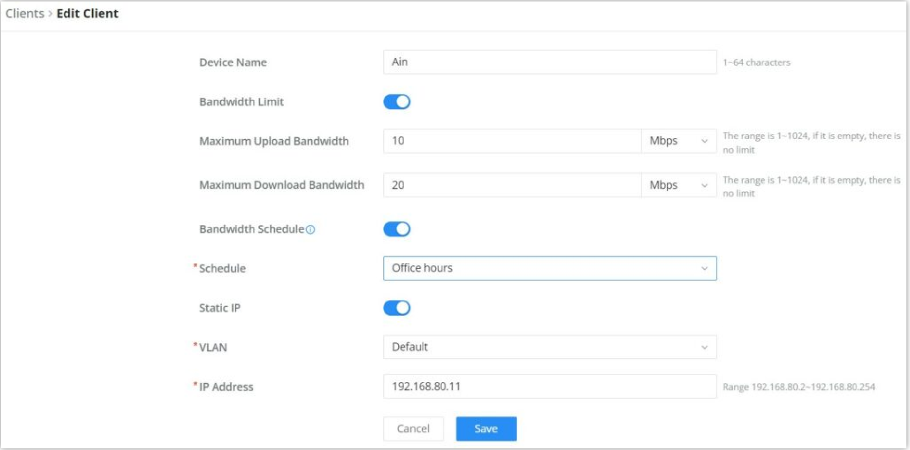
MAC Address	This section shows the MAC addresses of all the devices connected to the router.
Device Name	This section shows the names of all the devices connected to the router.
VLAN	Displays the VLAN the client connected to.
IP Address	This section shows the IP addresses of all the devices connected to the router.
Connection Type	This section shows the medium of connection that the device is using. There are two mediums which can be used to connect: ● **Wireless:** Using an access point with the router. ● **Wired:** Using an ethernet wired, either connected directly to one of the router's LAN ports, or through a switch.
Channel	If device is connected through an access point, the router will retrieve the information of which channel the device is connected to.
SSID Name	If device is connected through an access point, the router will retrieve the information of which SSID the device is connected to.
Associated Device	In case of an access point or an access point with the router, this section will show the MAC address of the device used
Duration	This indicates how long a device has been connected to the router.
RSSI	RSSI stands for *Received Signal Strength Indicator.* It indicates the wireless signal strength of the device connected to the AP paired with the router.
Station Mode	This field indicates the station mode of the access point.
Total	Total data exchanged between the device and the router.
Upload	Total uploaded data by the device.
Download	Total downloaded data by the device.
Current Rate	The real time WAN bandwidth used by the device.

Link Rate	This field indicates the total speed that the link can transfer.
Manufacturer	This field indicates the manufacturer of the device.
OS	This field indicates the operating system installed on the device.

Clients Page

- **Edit Device**

under the operations column click on the "**Edit**" icon to set the name of the device, and assign a VLAN ID and static address to the device. It's also possible to limit bandwidth for this exact device and even assign a schedule to it from the list. Refer to the figure below:



Clients > **Edit Client**

Device Name: Ain (1~64 characters)

Bandwidth Limit: ●

Maximum Upload Bandwidth: 10 Mbps (The range is 1~1024, if it is empty, there is no limit)

Maximum Download Bandwidth: 20 Mbps (The range is 1~1024, if it is empty, there is no limit)

Bandwidth Schedule: ●

*Schedule: Office hours

Static IP: ●

*VLAN: Default

*IP Address: 192.168.80.11 (Range 192.168.80.2~192.168.80.254)

Edit Device

- **Delete Device**

To delete a device, go to the **Operations** column and click the button 🗑 then click "**Delete**". Please note that you can only delete the offline devices, the devices online cannot be deleted.

VPN

VPN stands for "Virtual Private Network" and it encrypts data in real-time to establish a protected network connection when using public networks.

VPN allows the GWN70x2 routers to be connected to a remote VPN server using PPTP, IPSec, L2TP, OpenVPN®, and WireGuard® protocols, or configure an OpenVPN® server and generate certificates and keys for clients.

GWN70x2 routers support the following VPN functions:

- **PPTP:** Client and server
- **IPSec:** Site-to-site and client-to-site
- **OpenVPN®**: Client and server
- **L2TP:** Client
- **WireGuard®**: Server

VPN page can be accessed from the GWN70x2 **Web GUI → VPN**.

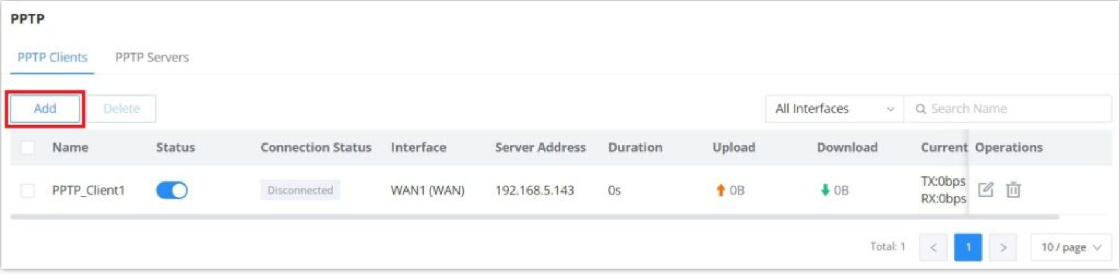
PPTP

A data-link layer protocol for wide area networks (WANs) based on the Point-to-Point Protocol (PPP) and developed by Microsoft enables network traffic to be encapsulated and routed over an unsecured public network such as the Internet. Point-to-Point Tunneling Protocol (PPTP) allows the creation of virtual private networks (VPNs), which tunnel TCP/IP traffic through the Internet.

PPTP Clients

To configure the PPTP client on the GWN70x2, navigate under **VPN → PPTP → PPTP Clients** and set the following:

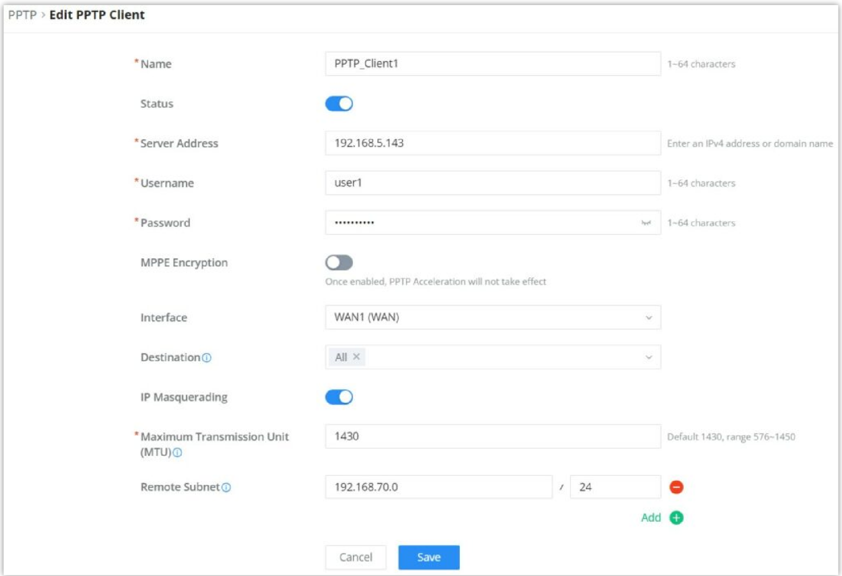
1. Click on the “**Add**” button.



Name	Status	Connection Status	Interface	Server Address	Duration	Upload	Download	Current	Operations
PPTP_Client1		Disconnected	WAN1 (WAN)	192.168.5.143	0s	0B	0B	TX:0bps RX:0bps	

PPTP page

The following window will pop up.



*Name: PPTP_Client1 (1~64 characters)

Status

*Server Address: 192.168.5.143 (Enter an IPv4 address or domain name)

*Username: user1 (1~64 characters)

*Password: •••••••••• (1~64 characters)

MPPE Encryption
Once enabled, PPTP Acceleration will not take effect

Interface: WAN1 (WAN)

Destination: All

IP Masquerading

*Maximum Transmission Unit (MTU): 1430 (Default 1430, range 576~1450)

Remote Subnet: 192.168.70.0 / 24

PPTP Client Configuration

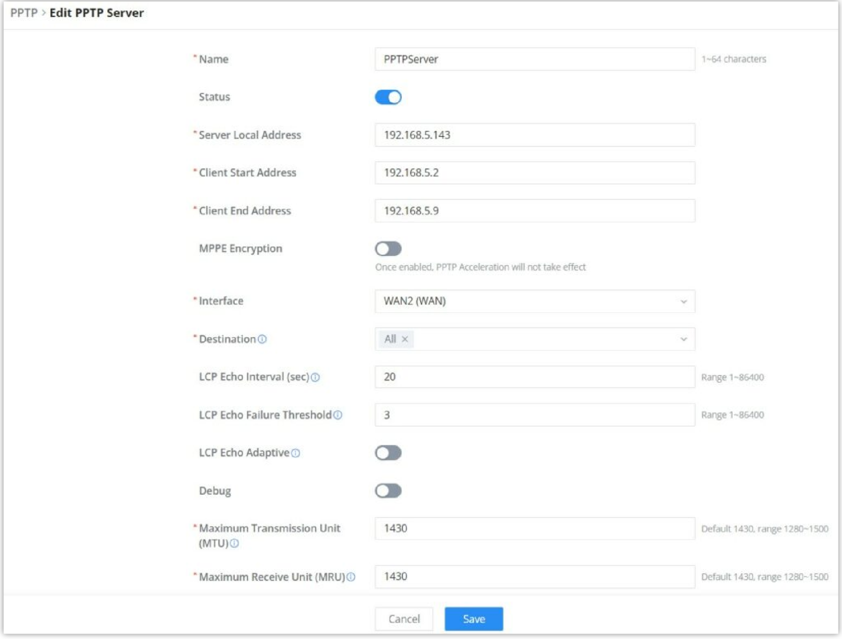
Name	Enter a name for the PPTP client.
Status	Toggle on/off the VPN client account.
Server Address	Enter the IP/Domain of the remote PPTP Server.
Username	Enter the Username for authentication with the VPN Server.
Password	Enter the Password for authentication with the VPN Server.
MPPE Encryption	Enable / disable the MPPE for data encryption. *By default, it’s disabled.*
Interface	Choose the interfaces. ***Note:*** *Set forwarding rules in firewall automatically to allow traffic forwarded from VPN to the selected WAN port. If remote device is allowed to access, please set the corresponding forwarding rules in firewall.*
Destination	Choose to which destination group or WAN to allow traffic from the VPN, this will generate automatically a forwarding rule under the menu **Firewall → Traffic Rules → Forward.**

IP Masquerading	This feature is a form of network address translation (NAT) which allows internal computers with no known address outside their network, to communicate to the outside. It allows one machine to act on behalf of other machines.
Maximum Transmission Unit (MTU)	This indicates the size of the packets sent by the router. Please do not change this value unless necessary.
Remote Subnet	Configures the remote subnet for the VPN. The format should be “IP/Mask” where IP could be either IPv4 or IPv6 and mask is a number between 1 and 32. ***example:*** *192.168.5.0/24*

PPTP Client Configuration

PPTP Servers

To add a PPTP Server, please navigate to **Web UI → VPN → PPTP page → PPTP Servers tab**, then click on the “**Add**” button.



PPTP > **Edit PPTP Server**

*Name: PPTPServer (1~64 characters)

Status: ON

*Server Local Address: 192.168.5.143

*Client Start Address: 192.168.5.2

*Client End Address: 192.168.5.9

MPPE Encryption: OFF (Once enabled, PPTP Acceleration will not take effect)

*Interface: WAN2 (WAN)

*Destination: All ×

LCP Echo Interval (sec): 20 (Range 1~86400)

LCP Echo Failure Threshold: 3 (Range 1~86400)

LCP Echo Adaptive: OFF

Debug: OFF

*Maximum Transmission Unit (MTU): 1430 (Default 1430, range 1280~1500)

*Maximum Receive Unit (MRU): 1430 (Default 1430, range 1280~1500)

PPTP Server

Name	Enter a name for the PPTP Server.
Status	Toggle ON or OFF to enable or disable the PPTP Server VPN.
Server Local Address	Specify the server local address
Client Start Address	specify client start IP address
Client End Address	specify client end IP address
MPPE Encryption	Enable / disable the MPPE for data encryption. *By default, it’s disabled.*
Interface	Select from the drop-down list the exact interface (WAN port).
Destination	Select the Destination from the drop-down list (WAN or VLAN). ***Note:*** *When selecting "All", subsequent new interfaces will be automatically included.*

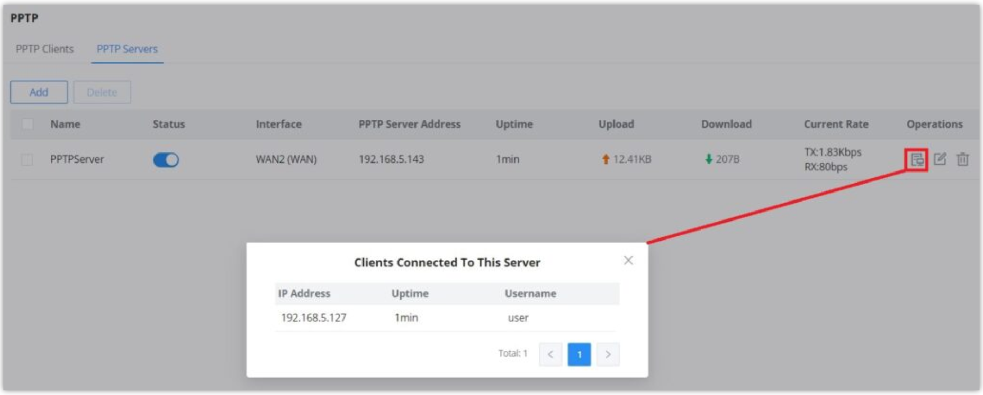
LCP Echo Interval (sec)	Configures the LCP echo send interval.
LCP Echo Failure Threshold	Set the maximum number of Echo transfers. If it is not answered within the set request frames, the PPTP server will consider that the peer is disconnected and the connection will be terminated.
LCP Echo Adaptive	● **Once enabled:** LCP Echo request frames will only be sent if no traffic has been received since the last LCP Echo request. ● **Once disabled:** the traffic will not be checked, and LCP Echoes are sent based on the value of the LCP echo interval
Debug	Toggle On/Off to enable or disable debug.
Maximum Transmission Unit (MTU)	This indicates the size of the packets sent by the router. Please do not change this value unless necessary. By default is 1450.
Maximum Receive Unit (MRU)	MRU indicates the size of the received packets. By default is 1450.
Preferred DNS Server	specify the preferred DNS server. *Ex: 8.8.8.8*
Alternative DNS Server	specify the alternative DNS server. *Ex: 1.1.1.1*

PPTP Server

- **Create the remote user credentials:**

To create the remote user account which will be required to be entered on the client side and and authenticated on the server side, please refer to the **Remote Users** section.

To view the clients connected to this server, click on the "**Client List**" icon as shown below:



Name	Status	Interface	PPTP Server Address	Uptime	Upload	Download	Current Rate	Operations
PPTPServer	●	WAN2 (WAN)	192.168.5.143	1min	12.41KB	207B	TX:1.83Kbps RX:80bps	

Clients Connected To This Server

IP Address	Uptime	Username
192.168.5.127	1min	user

Total: 1 < 1 >

Clients connected to this server

IPSec

IPSec or Internet Protocol Security is mainly used to authenticate and encrypt packets of data sent over the network layer. To accomplish this, they use two security protocols – ESP (Encapsulation Security Payload) and AH (Authentication Header), the former provides both authentications as well as encryption whereas the latter provides only authentication for the data packets. Since both authentication and encryption are equally desirable, most of the implementations use ESP.

IPSec supports two different encryption modes, they are Tunnel (default) and Transport mode. Tunnel mode is used to encrypt both payloads as well as the header of an IP packet, which is considered to be more secure. Transport mode is used to encrypt only the payload of an IP packet, which is generally used in gateway or host implementations.

IPSec also involves IKE (Internet Key Exchange) protocol which is used to set up the Security Associations (SA). A Security Association establishes a set of shared security parameters between two network entities to provide secure network layer communication. These security parameters may include the cryptographic algorithm and mode, traffic encryption key, and parameters for the network data to be sent over the connection. Currently, there are two IKE versions available – IKEv1 and IKEv2. IKE works in two phases:

Phase 1: ISAKMP operations will be performed after a secure channel is established between two network entities.

Phase 2: Security Associations will be negotiated between two network entities.

IKE operates in three modes for exchanging key information and establishing security associations – Main, Aggressive, and Quick mode.

- **Main mode:** is used to establish phase 1 during the key exchange. It uses three two-way exchanges between the initiator and the receiver. In the first exchange, algorithms and hashes are exchanged. In the second exchange, shared keys are generated using the Diffie-Hellman exchange. In the last exchange, verification of each other's identities takes place.

- **Aggressive mode**: provides the same service as the main mode, but it uses two exchanges instead of three. It does not provide identity protection, which makes it vulnerable to hackers. The main mode is more secure than this.

- **Quick mode**: After establishing a secure channel using either the main mode or aggressive mode, the quick mode can be used to negotiate general IPsec security services and generate newly keyed material. They are always encrypted under the secure channel and use the hash payload that is used to authenticate the rest of the packet.

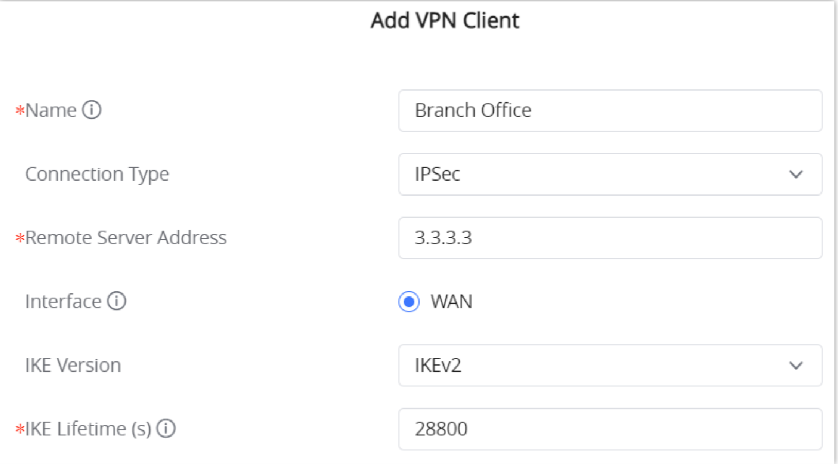
IPSec Site-to-Site

To build an IPSec secure tunnel between two sites located in two distant geographical locations, we can use the sample scenario below:

The branch office router needs to connect to the Headquarters office via an IPSec tunnel, on each side we have a GWN70x2 router. Users can configure the two devices as follows:

The branch office router runs a LAN subnet 192.168.1.0/24 and the HQ router runs a LAN subnet 192.168.3.0, the public IP of the branch office router is 1.1.1.1 and the IP of the HQ router is 2.2.2.2.

Go under **VPN** → **IPSec** → **Site-to-Site** then click on + Add to add a VPN Client.

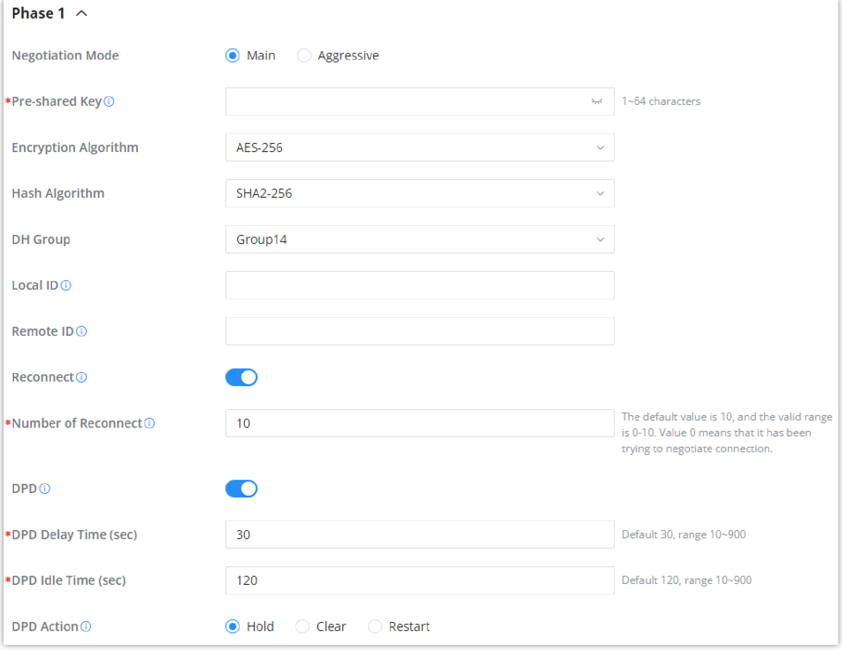


Add VPN Client

*Name ⓘ	Branch Office
Connection Type	IPSec
*Remote Server Address	3.3.3.3
Interface ⓘ	● WAN
IKE Version	IKEv2
*IKE Lifetime (s) ⓘ	28800

Add VPN Client – IPSec

○ **Phase 1**

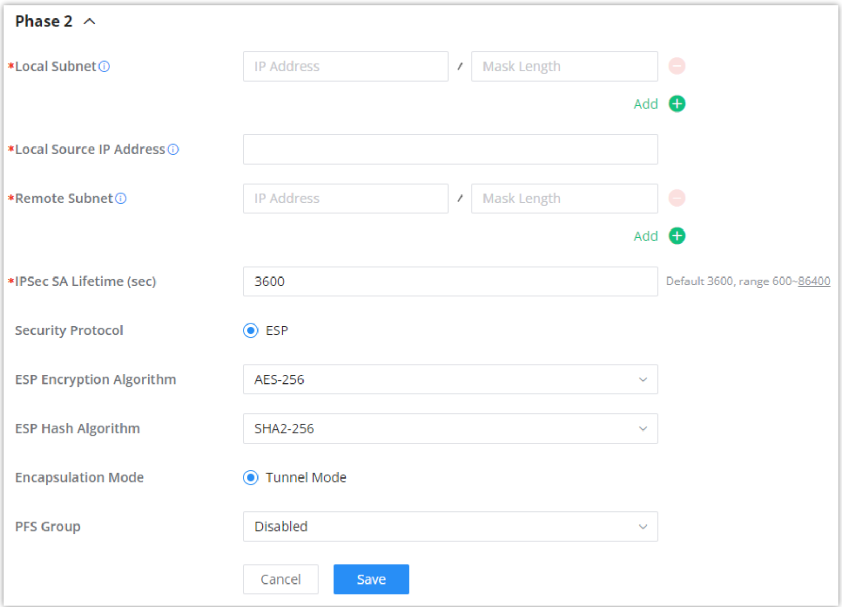


Phase 1 ^

Negotiation Mode	● Main ○ Aggressive	
*Pre-shared Key ⓘ		1~64 characters
Encryption Algorithm	AES-256	
Hash Algorithm	SHA2-256	
DH Group	Group14	
Local ID ⓘ		
Remote ID ⓘ		
Reconnect ⓘ	●	
*Number of Reconnect ⓘ	10	The default value is 10, and the valid range is 0-10. Value 0 means that it has been trying to negotiate connection.
DPD ⓘ	●	
*DPD Delay Time (sec)	30	Default 30, range 10~900
*DPD Idle Time (sec)	120	Default 120, range 10~900
DPD Action ⓘ	● Hold ○ Clear ○ Restart	

Add VPN Client – Phase 1

○ **Phase 2**



Phase 2 ^

*Local Subnet ⓘ	IP Address / Mask Length	
	Add ⊕	
*Local Source IP Address ⓘ		
*Remote Subnet ⓘ	IP Address / Mask Length	
	Add ⊕	
*IPSec SA Lifetime (sec)	3600	Default 3600, range 600~86400
Security Protocol	● ESP	
ESP Encryption Algorithm	AES-256	
ESP Hash Algorithm	SHA2-256	
Encapsulation Mode	● Tunnel Mode	
PFS Group	Disabled	

Cancel Save

Add VPN Client – Phase 2

After this is done, press “Save” and do the same for the HQ Router. The two routers will build the tunnel and the necessary routing information to route traffic through the tunnel back and from the branch office to the HQ network.

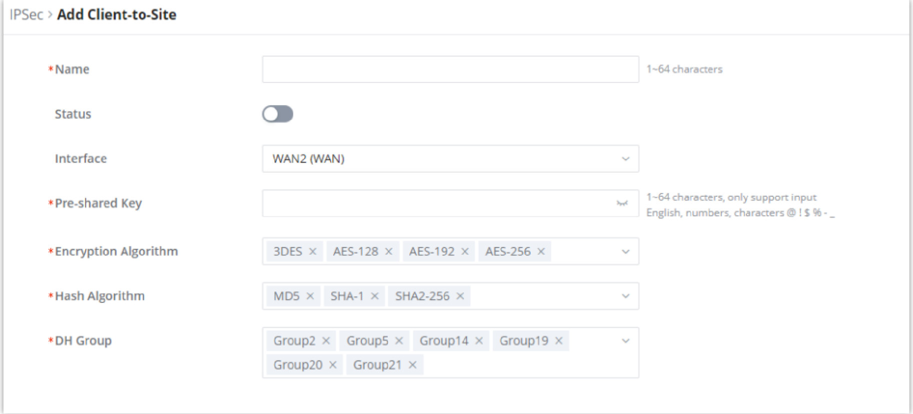
> **Note:**
>
> After the connection is established, the incoming packets from the remote subnet are automatically released, and it is not necessary to manually configure the firewall forwarding rules from WAN to LAN to release traffic.

- **Create the remote user credentials:**

To create the remote user account which will be required to be entered on the client side and and authenticated on the server side, please refer to the **Remote Users** section.

IPSec Client-to-Site

Go under **VPN** → **IPSec** → **Client-to-Site** then fill in the following information:



IPSec › **Add Client-to-Site**

*Name		1~64 characters
Status	○	
Interface	WAN2 (WAN)	
*Pre-shared Key		1~64 characters, only support input English, numbers, characters @ ! $ % - _
*Encryption Algorithm	3DES × AES-128 × AES-192 × AES-256 ×	
*Hash Algorithm	MD5 × SHA-1 × SHA2-256 ×	
*DH Group	Group2 × Group5 × Group14 × Group19 × Group20 × Group21 ×	

Branch Office IPSec Configuration

OpenVPN®

OpenVPN® Client

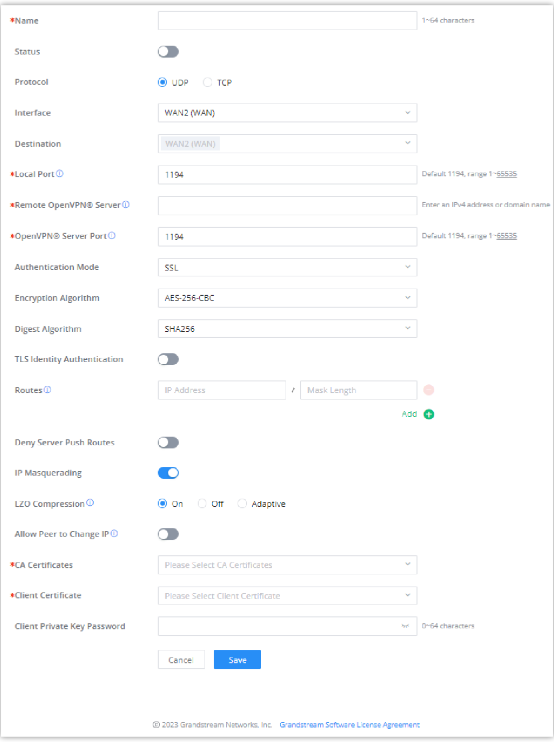
There are two ways to use the GWN70x2 as an OpenVPN® client:

1. Upload client certificate created from an OpenVPN® server to GWN70x2.

2. Create client/server certificates on GWN70x2 and upload the server certificate to the OpenVPN® server.

Go to Go to **VPN → OpenVPN® → OpenVPN® Clients** and follow the steps below:

Click on + Add button. The following window will pop up.



*Name		1~64 characters
Status	○	
Protocol	● UDP ○ TCP	
Interface	WAN2 (WAN)	
Destination	WAN2 (WAN)	
*Local Port ⓘ	1194	Default 1194, range 1~65535
*Remote OpenVPN® Server ⓘ		Enter an IPv4 address or domain name
*OpenVPN® Server Port ⓘ	1194	Default 1194, range 1~65535
Authentication Mode	SSL	
Encryption Algorithm	AES-256-CBC	
Digest Algorithm	SHA256	
TLS Identity Authentication	○	
Routes ⓘ	IP Address / Mask Length	
Deny Server Push Routes	○	
IP Masquerading	●	
LZO Compression ⓘ	● On ○ Off ○ Adaptive	
Allow Peer to Change IP ⓘ	○	
*CA Certificates	Please Select CA Certificates	
*Client Certificate	Please Select Client Certificate	
Client Private Key Password		0~64 characters

OpenVPN® Client

Click Save after completing all the fields.

Name	Enter a name for the OpenVPN® Client.
Status	Toggle on/off the client account.
Protocol	Specify the transport protocol used.

	• **UDP** • **TCP** **Note:** The default protocol is UDP.
Interface	Select the WAN port to be used by the OpenVPN® client.
Destination	Select the WANs, VLANs and VPNs (clients) destinations that will be used by this OpenVPN® client.
Local Port	Configures the client port for OpenVPN®.The port between the OpenVPN® client and the client or between the client and the server should not be the same.
Remote OpenVPN® Server	Configures the remote OpenVPN® server. Both IP address and domain name are supported.
OpenVPN® Server Port	Configures the remote OpenVPN® server port
Authentication Mode	Choose the authentication mode. • SSL • User Authentication • SSL + User Authentication • PSK
Encryption Algorithm	Choose the encryption algorithm. The encryption algorithms supported are: • **DES** • **RC2-CBC** • **DES-EDE-CBC** • **DES-EDE3-CBC** • **DESX-CBC** • **BF-CBC** • **RC2-40-CBC** • **CAST5-CBC** • **RC2-64-CBC** • **AES-128-CBC** • **AES-192-CBC** • **AES-256-CBC** • **SEED-CBC**
Digest Algorithm	Select the digest algorithm. The digest algorithms supported are: • **MD5** • **RSA-MD5** • **SHA1** • **RSA-SHA1** • **DSA-SHA1-old** • **DSA-SHA1** • **RSA-SHA1-2** • **DSA** • **RIPEMD160** • **RSA-RIPEMD160** • **MD4** • **RSA-MD4** • **ecdsa-with-SHA1** • **RSA-SHA256** • **RSA-SHA384** • **RSA-SHA512** • **RSA-SHA224** • **SHA256** • **SHA384** • **SHA512** • **SHA224**

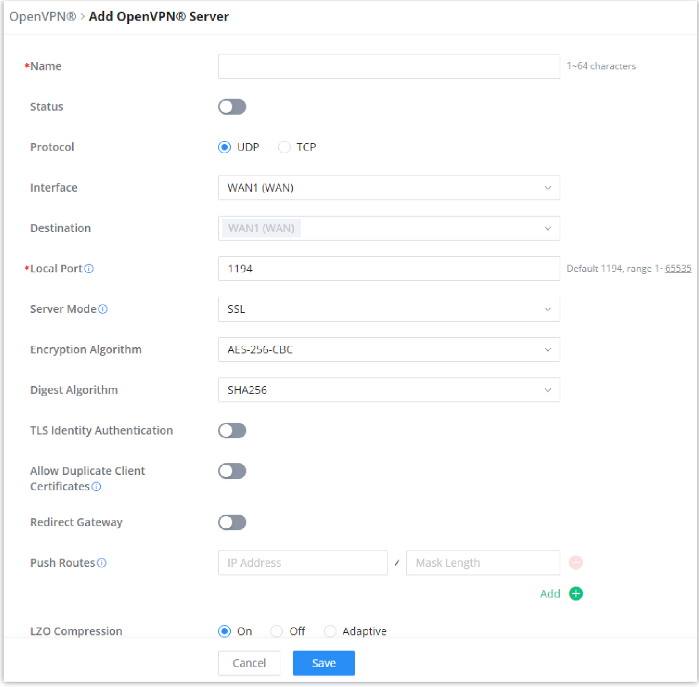
	- **whirlpool**
TLS Identity Authentication	Enable TLS identity authentication direction.
TLS Identity Authentication Direction	Select the indentity authentication direction. ● Server: Indentity authentication is performed on the server side. ● Client: Identity authentication is performed on the client side. ● Both: Identity authentication is performed on both sides.
TLS Pre-Shared Key	Enter the TLS pre-shared key.
Routes	Configures IP address and subnet mask of routes, e.g., 10.10.1.0/24.
Deny Server Push Routes	If enabled, client will ignore routes pushed by the server.
IP Masquerading	This feature is a form of network address translation (NAT) which allows internal computers with no known address outside their network, to communicate to the outside. It allows one machine to act on behalf of other machines.
LZO Compression	Select whether to activate LZO compression or no, if set to "Adaptive", the server will make the decision whether this option will be enabled or no. LZO encoding provides a very high compression ratio with good performance. LZO encoding works especially well for CHAR and VARCHAR columns that store very long character strings.
Allow Peer to Change IP	Allow remote change the IP and/or Port, often applicable to the situation when the remote IP address changes frequently.
CA Certificates	Click on "Upload" and select the CA certificate Note: This can be generated in System Settings → Certificates → CA Certificate
Client Certificate	Click on "Upload" and select the Client Certificate. Note: This can be generated in System Settings → Certificates → Certificate
Client Private Key Password	Enter the client private key password. Note: This can be configured in VPN → Remote User

OpenVPN® Client

OpenVPN® Server

To use the GWN70x2 as an OpenVPN® server, you will need to start creating OpenVPN® certificates and remote users.

To create a new VPN server, navigate under **Web UI → VPN → OpenVPN® page → OpenVPN® Servers tab.**



OpenVPN® > Add OpenVPN® Server

*Name		1~64 characters
Status		
Protocol	● UDP ○ TCP	
Interface	WAN1 (WAN)	
Destination	WAN1 (WAN)	
*Local Port	1194	Default 1194, range 1~65535
Server Mode	SSL	
Encryption Algorithm	AES-256-CBC	
Digest Algorithm	SHA256	
TLS Identity Authentication		
Allow Duplicate Client Certificates		
Redirect Gateway		
Push Routes	IP Address / Mask Length	
	Add	
LZO Compression	● On ○ Off ○ Adaptive	

Cancel Save

Create OpenVPN® Server

Click Save after completing all the fields.

Refer to the table below:

Name	Enter a name for the OpenVPN® server.
Status	Toggle ON or OFF to enable or disable the OpenVPN® Server.
Protocol	Choose the Transport protocol from the dropdown list, either TCP or UDP. *The default protocol is **UDP**.*
Interface	Select from the drop-down list the exact interface (WAN).
Destination	Select from the drop-down list the destination (WAN or VLAN).
Local Port	Configure the listening port for OpenVPN® server. *The default value is **1194**.*
Server Mode	Choose the server mode the OpenVPN® server will operate with. 4 modes are available: ● **SSL:** Authentication is made using certificates only (no user/pass authentication). Each user has a unique client configuration that includes their personal certificate and key. This is useful if clients should not be prompted to enter a username and password, but it is less secure as it relies only on something the user has (TLS key and certificate). ● **User Authentication:** Authentication is made using only CA, user and password, no certificates. Useful if the clients should not have individual certificates. Less secure as it relies on a shared TLS key plus only something the user knows (Username/password). ● **SSL + User Authentication:** Requires both certificate and username / password. Each user has a unique client configuration that includes their personal certificate and key. ● **PSK:** Used to establish a point-to-point OpenVPN® configuration. A VPN tunnel will be created with a server endpoint of a specified IP and a client endpoint of specified IP. Encrypted communication between client and server will occur over UDP port 1194, the default OpenVPN® port. Most secure as there are multiple factors of authentication (TLS Key and Certificate that the user has, and the username/password they know).
Encryption Algorithm	Choose the encryption algorithm from the dropdown list to encrypt data so that the receiver can decrypt it using same algorithm.

Digest Algorithm	Choose digest algorithm from the dropdown list, which will uniquely identify the data to provide data integrity and ensure that the receiver has an unmodified data from the one sent by the original host.
TLS Identicy Authentication	This option uses a static **Pre-Shared Key** (**PSK**) that must be generated in advance and shared among all peers. This feature adds extra protection to the **TLS** channel by requiring that incoming packets have a valid signature generated using the PSK key.
TLS Identity Authentication Direction	Select from the drop-down list the direction of TLS Identity Authentication, three options are available **(Server, Client or Both)**.
TLS Pre-Shared Key	If TLS Identicy Authentication is enabled, enter the TLS Pre-Shared Key.
Allow Duplicate Client Certificates	Click on "**ON**" to allow duplicate Client Certificates
Redirect Gateway	When redirect-gateway is used, OpenVPN® clients will route DNS queries through the VPN, and the VPN server will need to handle them.
Push Routes	Specify route(s) to be pushed to all clients. *Example: 10.0.0.1/8*
LZO Compression Algorithm	Select whether to activate LZO compression or no, if set to “Adaptive”, the server will make the decision whether this option will be enabled or no.
Allow Peer to Change IP	Allow remote change the IP and/or Port, often applicable to the situation when the remote IP address changes frequently.
CA Certificate	Select a generated CA from the dropdown list or add one.
Server Certificate	Select a generated Server Certificate from the dropdown list or add one.
IPv4 Tunnel Network/Mask Length	Enter the network range that the GWN70xx will be serving from to the OpenVPN® client. ***Note:*** *The network format should be the following 10.0.10.0/16.* *The mask should be at least 16 bits.*

Create OpenVPN® Server

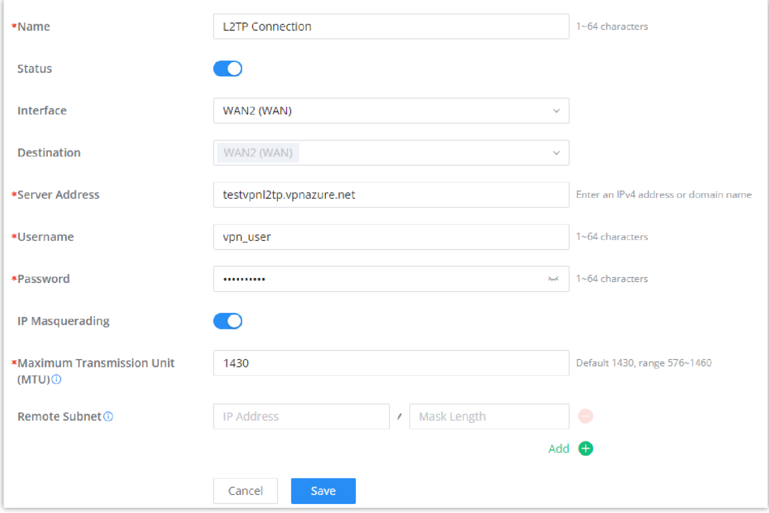
- **Create the remote user credentials:**

To create the remote user account which will be required to be entered on the client side and and authenticated on the server side, please refer to the **Remote Users** section.

L2TP

To configure the L2TP client on the GWN70x2 router, navigate under **“VPN → VPN Clients”** and set the following:

1. Click on + Add button and the following window will pop up.



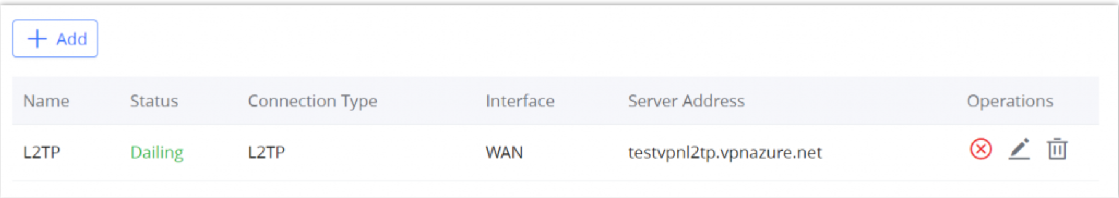
*Name	L2TP Connection	1~64 characters
Status	●	
Interface	WAN2 (WAN)	
Destination	WAN2 (WAN)	
*Server Address	testvpnl2tp.vpnazure.net	Enter an IPv4 address or domain name
*Username	vpn_user	1~64 characters
*Password	••••••••••	1~64 characters
IP Masquerading	●	
*Maximum Transmission Unit (MTU)ⓘ	1430	Default 1430, range 576~1460
Remote Subnetⓘ	IP Address / Mask Length	

L2TP Client Configuration

Name	Set a name for this VPN tunnel.
Status	Toggle on/off this L2TP account.
Interface	Select the WAN port to be used by VPN.
Destination	Select the WANs, VLANs destinations that will be using this VPN.
Server Address	Enter the VPN IP address or FQDN.
Username	Enter VPN username that has been configured on the server side.
Password	Enter VPN password that has been configured on the server side.
IP Masquerading	This feature is a form of network address translation (NAT) which allows internal computers with no known address outside their network, to communicate to the outside. It allows one machine to act on behalf of other machines.
Maximum Transmission Unit (MTU)	This indicates the size of the packets sent by the router. Please do not change this value unless necessary.
Remote Subnet	Enter the remote Subnet that has been configured on the server side.

L2TP Client Configuration

Click Save after completing all the fields.



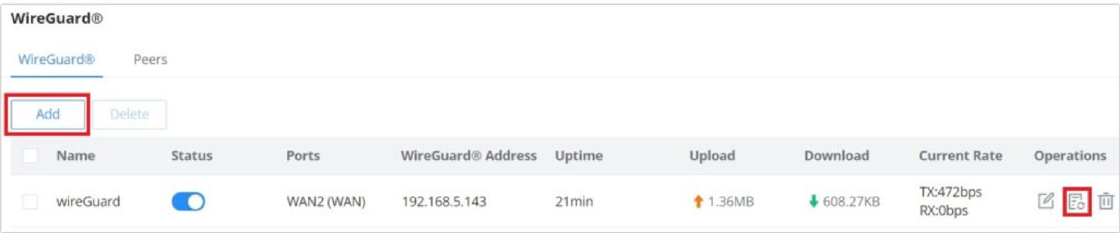
Name	Status	Connection Type	Interface	Server Address	Operations
L2TP	Dailing	L2TP	WAN	testvpnl2tp.vpnazure.net	⊗ ✎ 🗑

L2TP Client

WireGuard®

WireGuard® is a free and open-source VPN solution that encrypts virtual private networks, easy to use, high performance, and secure. GWN70x2 routers series support WireGuard® VPN with automatic peer generation and QR code scanning for mobile phones and devices with camera support.

To start using WireGuard® VPN, please navigate to the **Web UI → VPN → WireGuard® page**. Click on the "**Add**" button to add a WireGuard® server as shown below:



WireGuard®

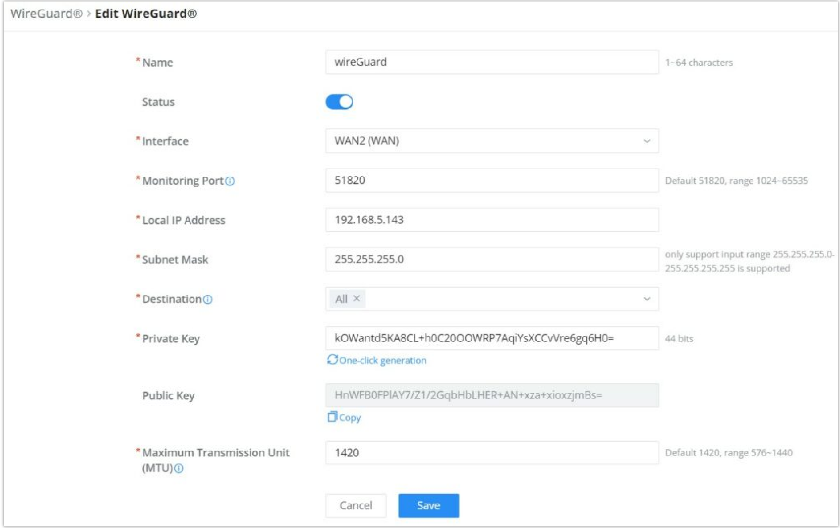
WireGuard® Peers

Add Delete

	Name	Status	Ports	WireGuard® Address	Uptime	Upload	Download	Current Rate	Operations
□	wireGuard	●	WAN2 (WAN)	192.168.5.143	21min	↑ 1.36MB	↓ 608.27KB	TX:472bps RX:0bps	

WireGuard® tab

Please refer to the figure and table below when filling up the fields.



WireGuard® > **Edit WireGuard®**

*Name	wireGuard	1~64 characters
Status	●	
*Interface	WAN2 (WAN)	
*Monitoring Port	51820	Default 51820, range 1024~65535
*Local IP Address	192.168.5.143	
*Subnet Mask	255.255.255.0	only support input range 255.255.255.0-255.255.255.255 is supported
*Destination	All ×	
*Private Key	kOWantd5KA8CL+h0C20OOWRP7AqiYsXCCvWre6gq6H0= One-click generation	44 bits
Public Key	HnWFB0FPlAY7/Z1/2GqbHbLHER+AN+xza+xioxzjmBs= Copy	
*Maximum Transmission Unit (MTU)	1420	Default 1420, range 576~1440

Cancel Save

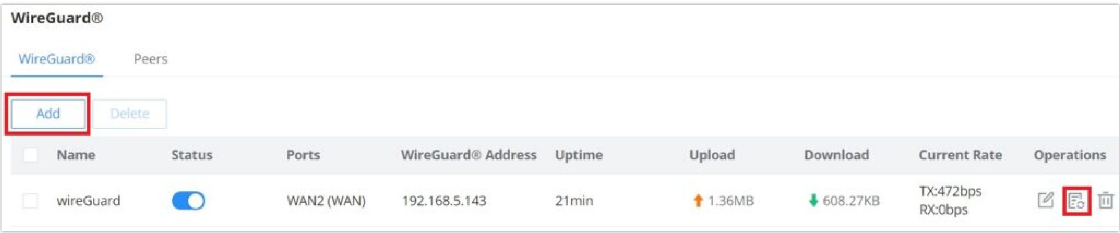
Add/Edit WireGuard®

Name	Specify a name for Wireguard® VPN.
Status	Toggle **ON** or **OFF** to enable or disable the Wireguard® VPN.
Interface	Select from the drop-down list the WAN port.
Monitoring Port	Set the local listening port when establishing a WireGaurd® tunnel. ***Default:*** *51820*
Local IP Address	Specify the network that WireGuard® clients (Peers) will get IP address from.
Subnet Mask	Configures the IP address range available to the Peers.
Destination	Select the Destination(s) from the drop-down list. ***Note:*** *When selecting "All", subsequent new interfaces will be automatically included.*
Private Key	Click on "**One-Click Generation**" text to generate a private key.
Public Key	The public key will be generated according to the private key. Click on "**Copy**" text to copy the public key.

Maximum Transmission Unit (MTU)	This indicates the size of the packets sent by the router. Please do not change this value unless necessary. By default is 1450.

Add/Edit WireGuard®

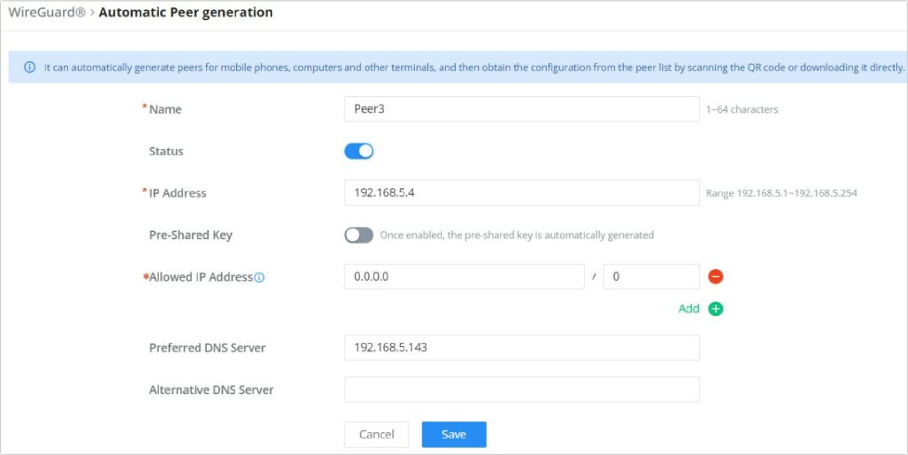
Once finished configuring WireGuard®, click on the "**Automatic peer generation**" icon to generate peers very quickly and easily as shown in the figures below:



Name	Status	Ports	WireGuard® Address	Uptime	Upload	Download	Current Rate	Operations
wireGuard	●	WAN2 (WAN)	192.168.5.143	21min	1.36MB	608.27KB	TX:472bps RX:0bps	

WireGuard® tab

Enter a name and toggle status **ON** then click on the "**Save**" button.

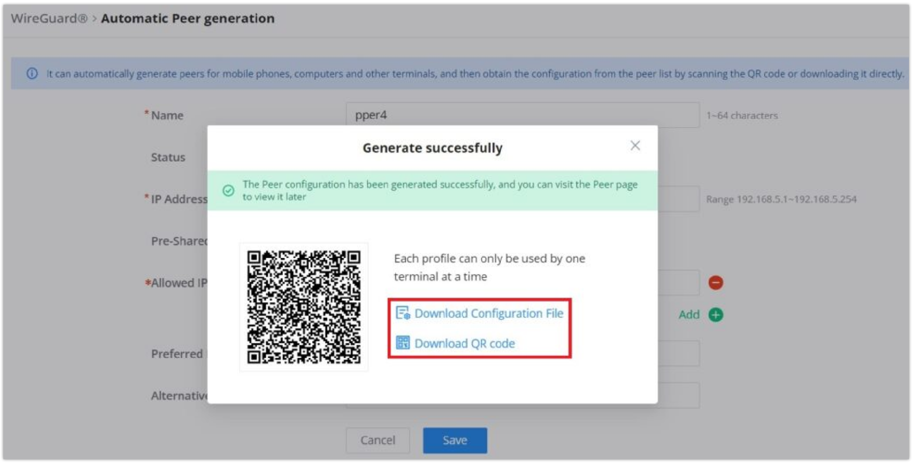


ⓘ It can automatically generate peers for mobile phones, computers and other terminals, and then obtain the configuration from the peer list by scanning the QR code or downloading it directly.

*Name	Peer3	1~64 characters
Status	●	
*IP Address	192.168.5.4	Range 192.168.5.1~192.168.5.254
Pre-Shared Key	○ Once enabled, the pre-shared key is automatically generated	
*Allowed IP Address ⓘ	0.0.0.0 / 0	
Preferred DNS Server	192.168.5.143	
Alternative DNS Server		

WireGuard® Automatic Peer generation – part 1

Now, the user can either download the configuration file and share it, or download a QR code for devices like mobile phones to scan.


WireGuard® > Automatic Peer generation
Generate successfully
Download Configuration File
Download QR code
Cancel
Save

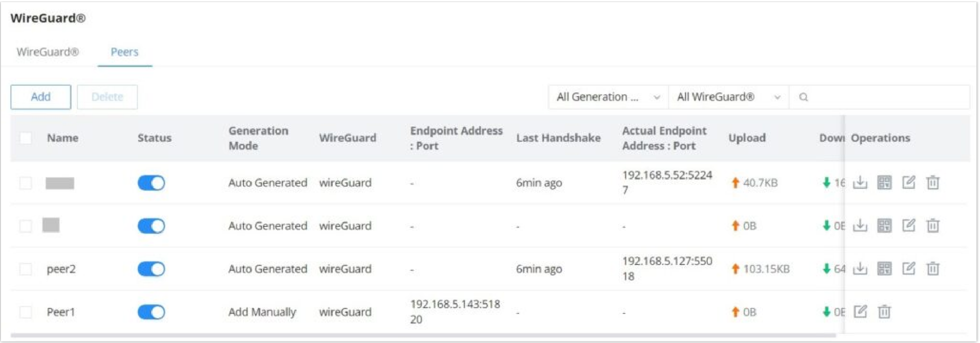
The Peer configuration has been generated successfully, and you can visit the Peer page to view it later

Each profile can only be used by one terminal at a time

WireGuard® Automatic Peer generation – part 2

Peers

On the peers' tab, the user can create peers manually by clicking on the "**Add**" button.



WireGuard®

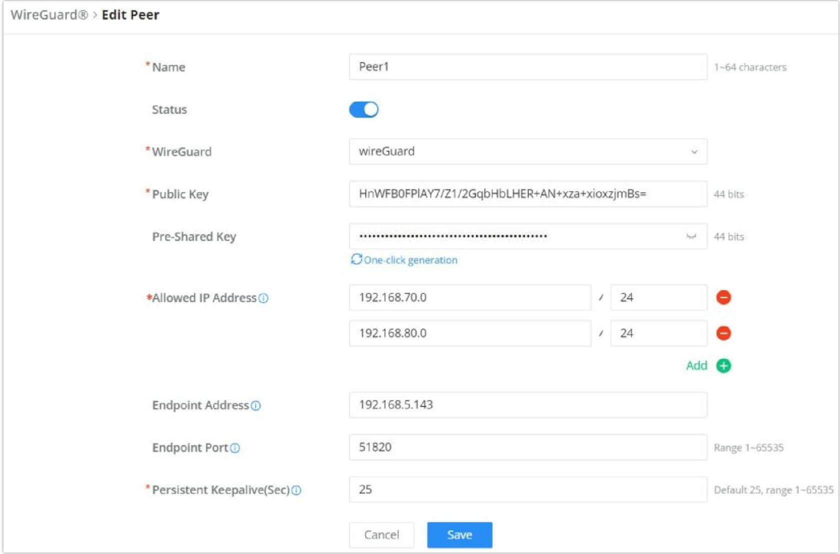
WireGuard® | Peers

Add | Delete | All Generation ... | All WireGuard®

Name	Status	Generation Mode	WireGuard	Endpoint Address : Port	Last Handshake	Actual Endpoint Address : Port	Upload	Dowı	Operations
[redacted]	●	Auto Generated	wireGuard	-	6min ago	192.168.5.52:52247	40.7KB	16	
[redacted]	●	Auto Generated	wireGuard	-	-	-	0B	0E	
peer2	●	Auto Generated	wireGuard	-	6min ago	192.168.5.127:55018	103.15KB	64	
Peer1	●	Add Manually	wireGuard	192.168.5.143:51820	-	-	0B	0E	

WireGuard® – Peers tab

Please refer to the figure below when filling up the fields.



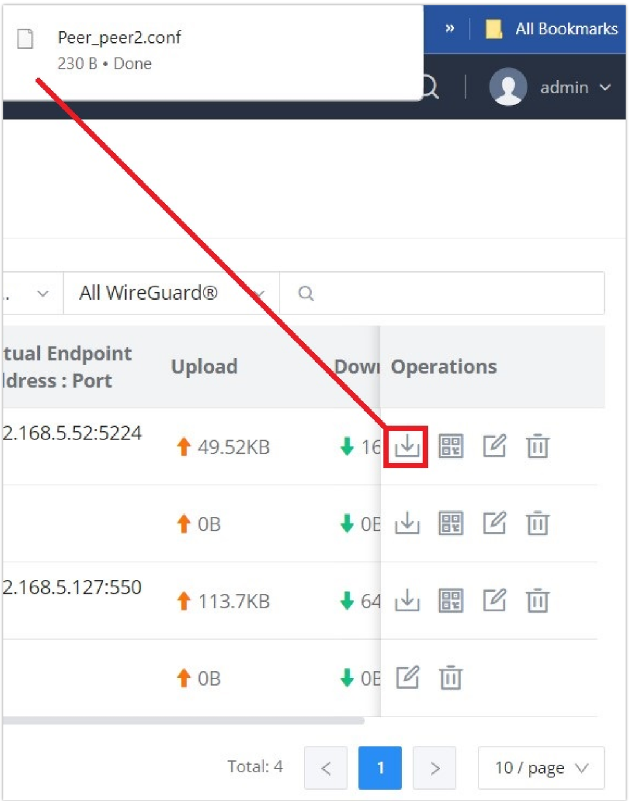
WireGuard® › **Edit Peer**

*Name	Peer1	1~64 characters
Status	●	
*WireGuard	wireGuard	
*Public Key	HnWFB0FPlAY7/Z1/2GqbHbLHER+AN+xza+xioxzjmBs=	44 bits
Pre-Shared Key	•• One-click generation	44 bits
*Allowed IP Address	192.168.70.0 / 24 192.168.80.0 / 24 Add	
Endpoint Address	192.168.5.143	
Endpoint Port	51820	Range 1~65535
*Persistent Keepalive(Sec)	25	Default 25, range 1~65535

Cancel | Save

WireGuard® – add/edit peer

The user can download the config file after adding the peer.



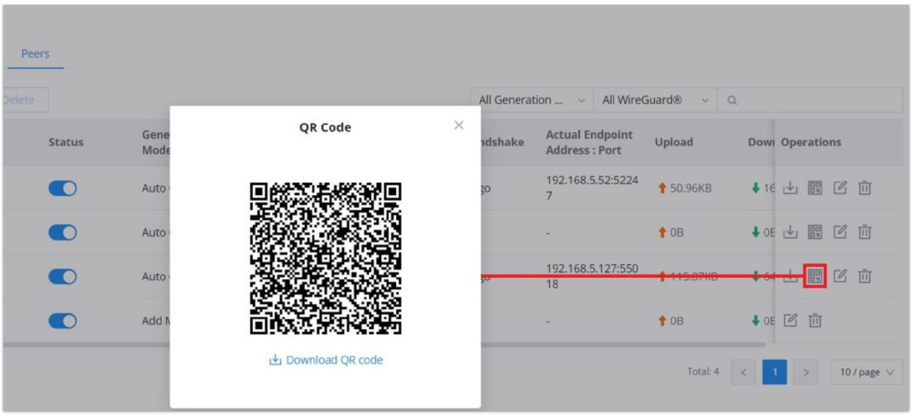
Peer_peer2.conf
230 B • Done

tual Endpoint ldress : Port	Upload	Dowı	Operations
2.168.5.52:5224	49.52KB	16	
	0B	0E	
2.168.5.127:550	113.7KB	64	
	0B	0E	

Total: 4 | < | 1 | > | 10 / page

WireGuard® – download peer config

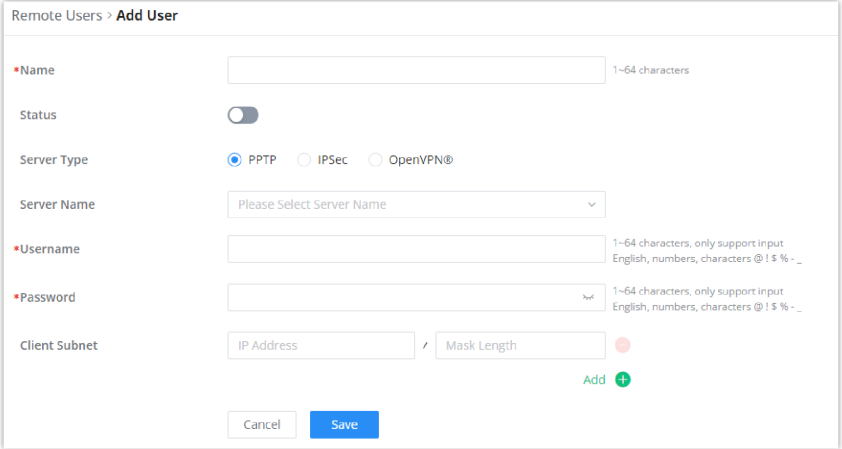
Or scanning the QR code for devices with camera support.



WireGuard® – scan peer config

Remote Users

To create the VPN user accounts, please navigate to **VPN → Remote Users** then click “Add”. The account configured will be used for the client to authenticate into the VPN server. The remote client user that can be created in this section is for PPTP, IPSec, and OpenVPN.



Remote Users › **Add User**

*Name		1~64 characters
Status		
Server Type	● PPTP ○ IPSec ○ OpenVPN®	
Server Name	Please Select Server Name	
*Username		1~64 characters, only support input English, numbers, characters @ ! $ % - _
*Password		1~64 characters, only support input English, numbers, characters @ ! $ % - _
Client Subnet	IP Address / Mask Length	

Add VPN Remote Users

Name	Enter a name for the user. This name will not be used to log in.
Status	Enable or disable this account.
Server Type	Choose the type of the server. ● **PPTP** ● **IPSec** ● **OpenVPN**
Server Name	Enter the server's name.
Username	Enter the username. This username will be used to log in.
Password	Enter the password.
Client Subnet	Specify the client subnet.

Add VPN Remote Users

To authenticate a remote user into the VPN server successfully, the username and password are used alongside the client certificate. To create a client certificate please refer to the Certificates section.

To configure the VPN clients for each VPN server type, please refer to the respective VPN client configuration above.

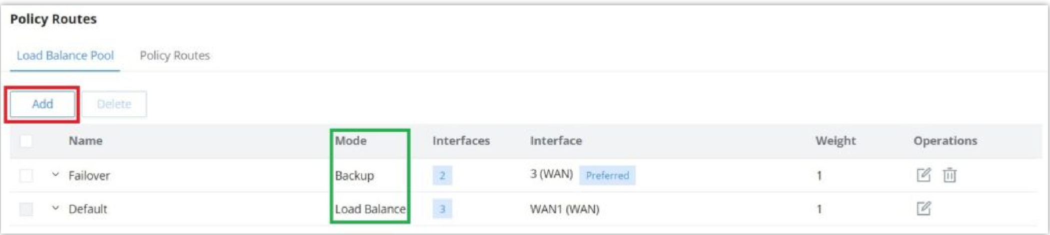
ROUTING

Policy Routes

In this section, the user can create a policy route to either load balance or backup (Failover) between 2 or more WAN ports or VPNs. This feature allows a network administrator to make advanced routing decisions for traffic passing through the router and for high granularity control over policies that dictate what WAN port and even VLAN, traffic should use. Traffic controlled this way can be balanced across multiple VLANs.

Load Balance Pool

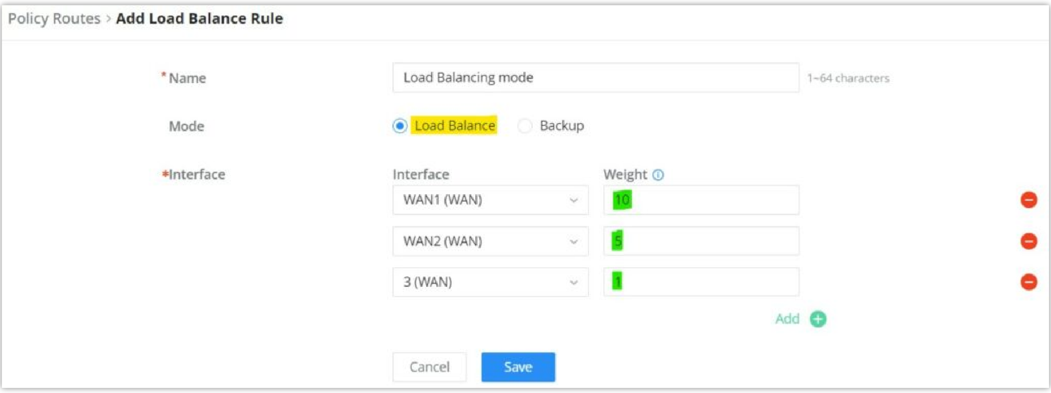
To create a load balance rule, navigate to the **Routing → Policy Routes page → Load Balance Pool tab**, click on the "**Add**" button, then select the mode (Load Balance or Backup), after selecting the WAN port or VPN from the drop-down list and specify the Weight for each WAN or VPN added. Please refer to the figures below:



Policy Routes

	Name	Mode	Interfaces	Interface	Weight	Operations
□	˅ Failover	Backup	2	3 (WAN) Preferred	1	
□	˅ Default	Load Balance	3	WAN1 (WAN)	1	

Load Balance Pool



Policy Routes > Add Load Balance Rule

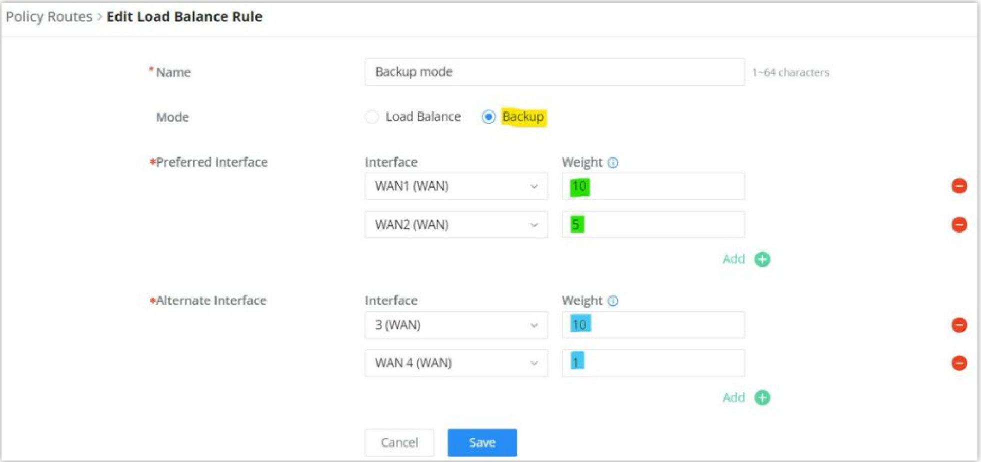
*Name: Load Balancing mode (1~64 characters)

Mode: ● Load Balance ○ Backup

*Interface:

Interface	Weight
WAN1 (WAN)	10
WAN2 (WAN)	5
3 (WAN)	1

Load Balance Pool – Load Balance mode



Policy Routes > Edit Load Balance Rule

*Name: Backup mode (1~64 characters)

Mode: ○ Load Balance ● Backup

*Preferred Interface:

Interface	Weight
WAN1 (WAN)	10
WAN2 (WAN)	5

*Alternate Interface:

Interface	Weight
3 (WAN)	10
WAN 4 (WAN)	1

Load Balance Pool – Backup mode

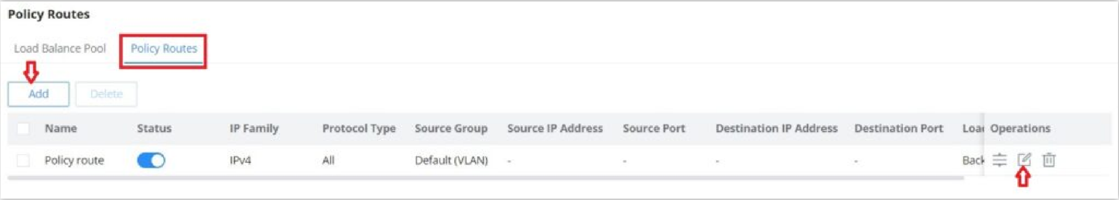
Note:

- For the Weight: The default is 1 and the value can be from 1~10 with 10 being the highest weight.
- The number of WAN ports depends on the GWN router model.

Policy Route

On the second tab (Policy Routes), the user can specify which Networks (VLAN) can use which Load Balance rule (must be created first), also the user can specify the protocol type, source, and destination IP and even assign a schedule for it.

To create a Policy Route, please navigate to **Routing** → **Policy Routes page** → **Policy Routes tab**, then click on the "**Add**" button as shown below:



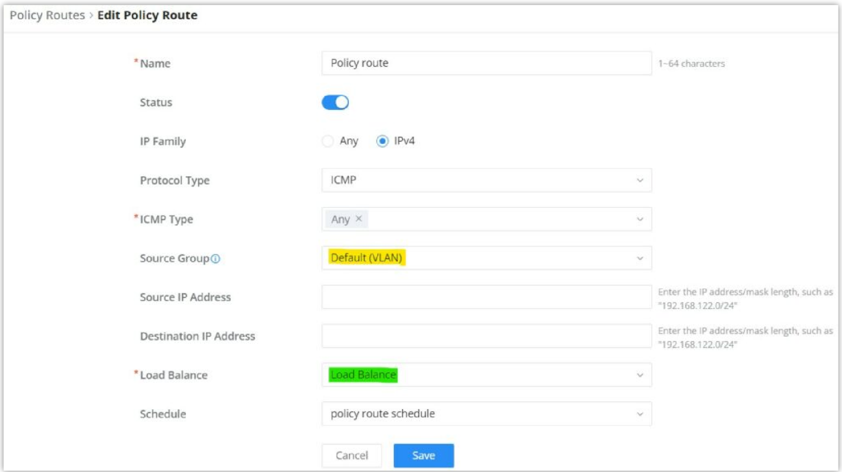
Policy Routes

Load Balance Pool | Policy Routes

Add | Delete

	Name	Status	IP Family	Protocol Type	Source Group	Source IP Address	Source Port	Destination IP Address	Destination Port	Loa	Operations
□	Policy route	●	IPv4	All	Default (VLAN)	-	-	-	-	Back	

Policy Routes page



Policy Routes › **Edit Policy Route**

*Name	Policy route	1~64 characters
Status	●	
IP Family	○ Any ● IPv4	
Protocol Type	ICMP	
*ICMP Type	Any ×	
Source Group ⓘ	Default (VLAN)	
Source IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
Destination IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
*Load Balance	Load Balance	
Schedule	policy route schedule	

Cancel | Save

Add Policy Route

Note:

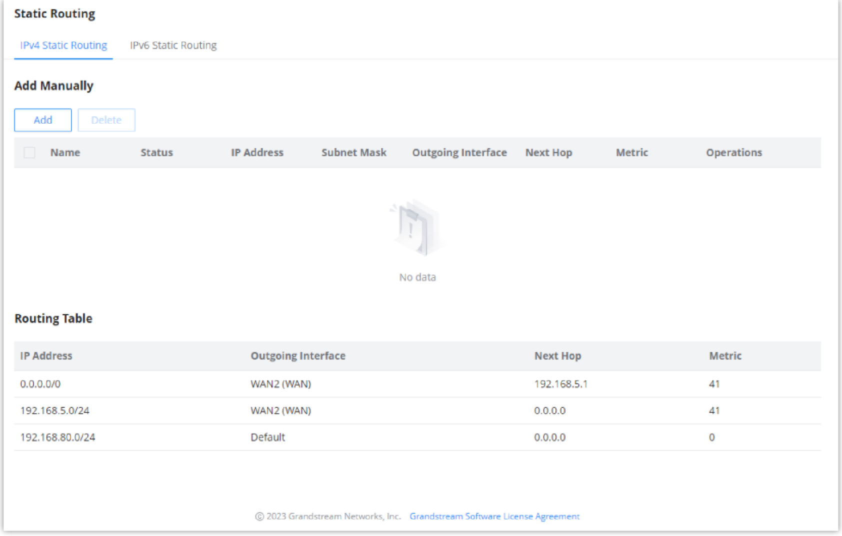
If the Source and Destination IP address field is left empty, the policy route will take any IP address.

Static Routes

Static routing is a form of routing by manually configuring the routing entries, rather than using a dynamic routing traffic for any service that requires a static address that never changes.

GWN70x2 supports setting manually **IPv4 or IPv6 Static Routes** which can be accessed from GWN70x2 WebGUI **Routing** → **Static Routing**.

To add a new Static Route, the user needs to click on + Add



Static Routing

IPv4 Static Routing | IPv6 Static Routing

Add Manually

Add | Delete

□	Name	Status	IP Address	Subnet Mask	Outgoing Interface	Next Hop	Metric	Operations

No data

Routing Table

IP Address	Outgoing Interface	Next Hop	Metric
0.0.0.0/0	WAN2 (WAN)	192.168.5.1	41
192.168.5.0/24	WAN2 (WAN)	0.0.0.0	41
192.168.80.0/24	Default	0.0.0.0	0

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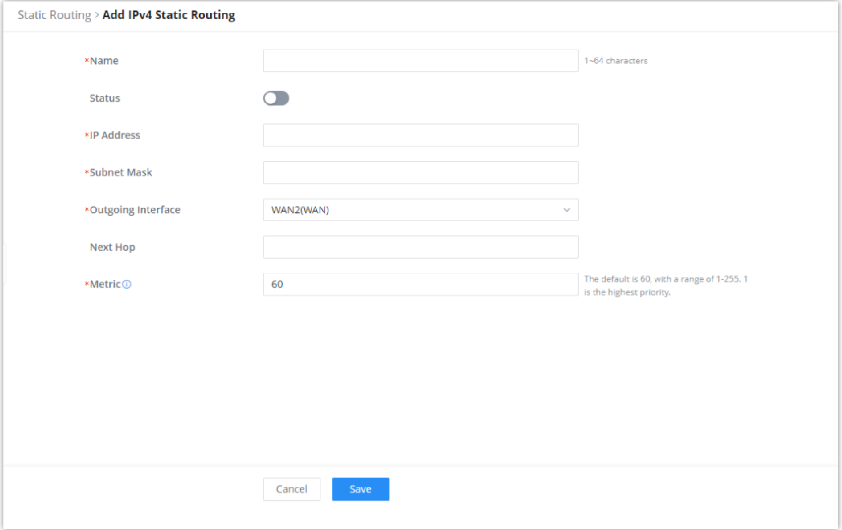
Static Routing Page



Static Routing > Add IPv4 Static Routing

*Name		1~64 characters
Status	○	
*IP Address		
*Subnet Mask		
*Outgoing Interface	WAN2(WAN)	
Next Hop		
*Metric ⓘ	60	The default is 60, with a range of 1-255. 1 is the highest priority.

Cancel | Save

Add IPv4 Static Routing

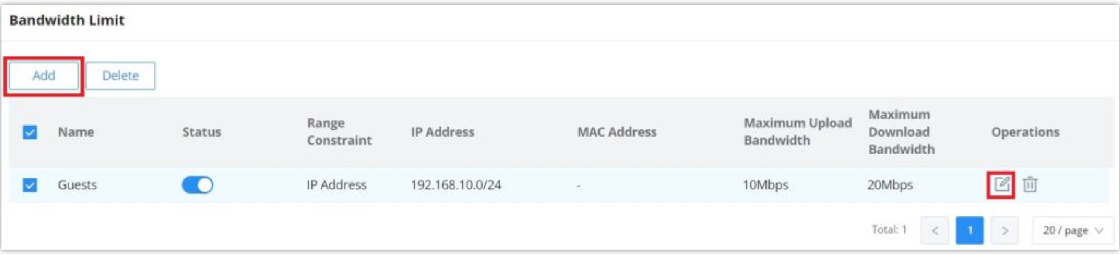
Name	Specify a name for the Static Routing
Status	enable or disable the Static Routing
IP Address	Specify the IP address
Subnet Mask	Enter the Subnet Mask
Outgoing Interface	Select the interface
Next Hop	Specify the next Hop
Metric	When there are multiple routings in the network that can reach the same destination, the priority of routing rules can be adjusted by setting metric, and the packets will be forwarded according to the path with the smallest metric.

Add IPv4 Static Routing

TRAFFIC MANAGEMENT

Bandwidth Limit

The Bandwidth limit feature helps to limit bandwidth by specifying the maximum upload and download limit, then this limit can be applied to each IP/MAC address or applied to all IP addresses in the IP address range. Navigate to **Web UI → Traffic Management → Bandwidth Limit**.



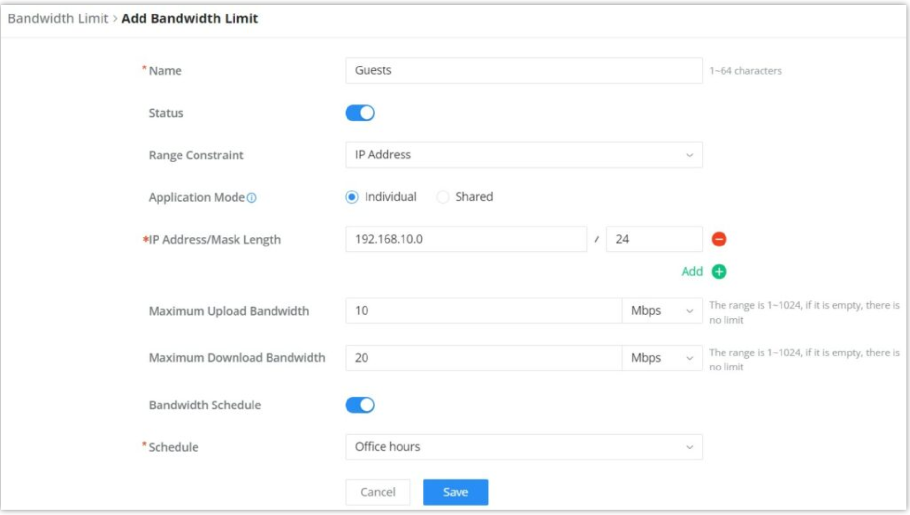
Bandwidth Limit

☑	Name	Status	Range Constraint	IP Address	MAC Address	Maximum Upload Bandwidth	Maximum Download Bandwidth	Operations
☑	Guests	●	IP Address	192.168.10.0/24	-	10Mbps	20Mbps	

Bandwidth Limit page

To add a bandwidth rule, please click on the "**Add**" button or click on the "**Edit**" icon as shown above.

Please refer to the figure below:



Bandwidth Limit › Add Bandwidth Limit

*Name: Guests (1~64 characters)

Status: ●

Range Constraint: IP Address

Application Mode: ● Individual ○ Shared

*IP Address/Mask Length: 192.168.10.0 / 24

Maximum Upload Bandwidth: 10 Mbps (The range is 1~1024, if it is empty, there is no limit)

Maximum Download Bandwidth: 20 Mbps (The range is 1~1024, if it is empty, there is no limit)

Bandwidth Schedule: ●

*Schedule: Office hours

Add/edit Bandwidth rule

Note:

Application Mode: Select "Individual" to set the maximum upload bandwidth and maximum download bandwidth that can be used by each IP address, and "shared" to set the sum of the maximum upload bandwidth and maximum download bandwidth that can be used by all IP addresses in the IP address range.

AP MANAGEMENT

GWN70x2 routers come with an embedded controller for the GWN access points. The user can configure all the Wi-Fi-related settings through the controller. When the APs are connected to the router and are paired with it, they will automatically inherit the configuration that has been set on the router's AP Management section.

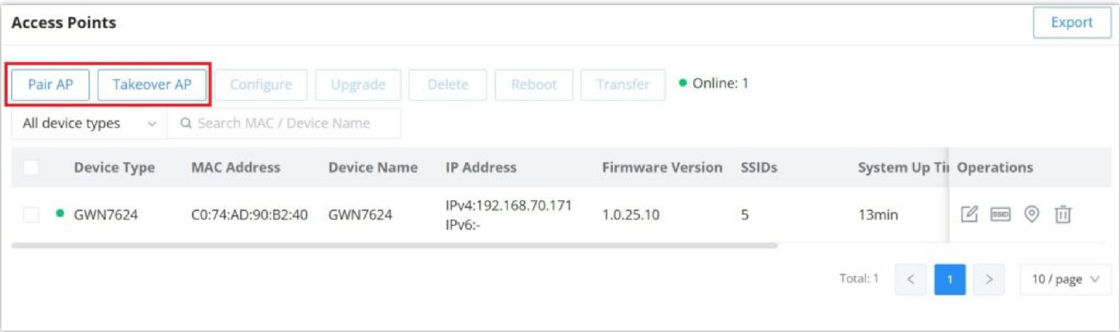
Access Points

In this section, the user can add the access point which can be controlled using the embedded controller within the router. The user can either pair or takeover an access point to be able to configure it. The configuration performed on the router AP embedded controller will be pushed to the access points; thus, offering a centralized management of the GWN access points.

Note

GWN70x2 routers support discovering GWN APs across VLANs.

To add a GWN access point to the GWN router, please navigate to **Web UI → AP Management → Access Points**.



Access Points

Export

	Device Type	MAC Address	Device Name	IP Address	Firmware Version	SSIDs	System Up Ti	Operations
□	● GWN7624	C0:74:AD:90:B2:40	GWN7624	IPv4:192.168.70.171 IPv6:-	1.0.25.10	5	13min	

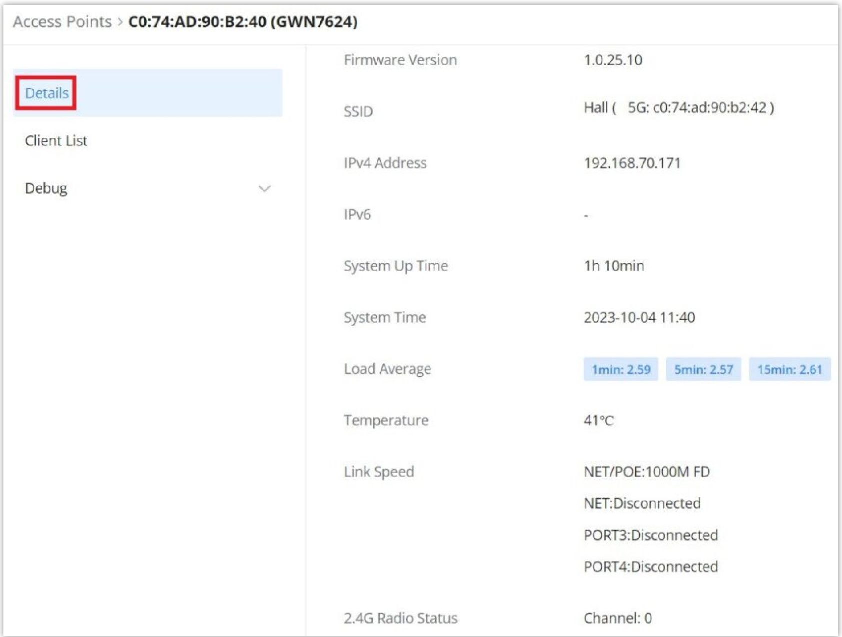
Total: 1 < 1 > 10 / page

Access Points List

Pair AP: Use this button when pairing an AP that has not been set as a master.
Takeover AP: Use this button to take over an access point that has formerly been set as a slave to a different master device. To pair the devices successfully, the network administrator must enter the password of the master device.

Click on a paired GWN AP to view Details, Client list, and debug tools. Please refer to the figures below:

The **Details** section contains details about the paired AP like firmware version, SSID, IP address, Temperature, etc.

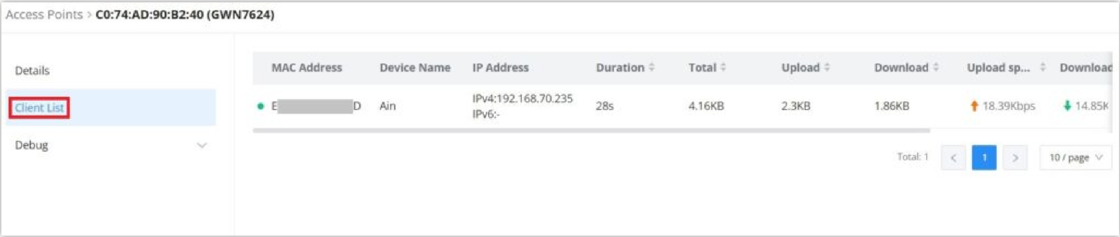


Access Points > **C0:74:AD:90:B2:40 (GWN7624)**

Firmware Version	1.0.25.10
SSID	Hall (5G: c0:74:ad:90:b2:42)
IPv4 Address	192.168.70.171
IPv6	-
System Up Time	1h 10min
System Time	2023-10-04 11:40
Load Average	1min: 2.59 5min: 2.57 15min: 2.61
Temperature	41℃
Link Speed	NET/POE:1000M FD NET:Disconnected PORT3:Disconnected PORT4:Disconnected
2.4G Radio Status	Channel: 0

Paired APs – Details

The **Client List** section lists all the connected clients through this AP with much info like MAC Address, Device name, IP Address, bandwidth, etc.



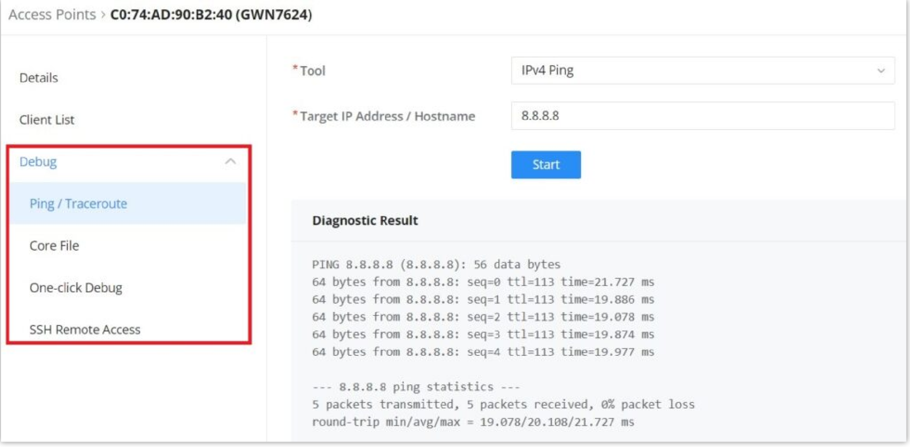
Access Points > **C0:74:AD:90:B2:40 (GWN7624)**

MAC Address	Device Name	IP Address	Duration	Total	Upload	Download	Upload sp...	Download
● E[redacted]D	Ain	IPv4:192.168.70.235 IPv6:-	28s	4.16KB	2.3KB	1.86KB	18.39Kbps	14.85K

Total: 1 < 1 > 10 / page

Paired APs – Client list

The **Debug** section provides the users with many debug tools to help diagnose any issue like Ping/Traceroute, One-click Debug, and SSH Remote Access.



*Tool: IPv4 Ping

*Target IP Address / Hostname: 8.8.8.8

Diagnostic Result

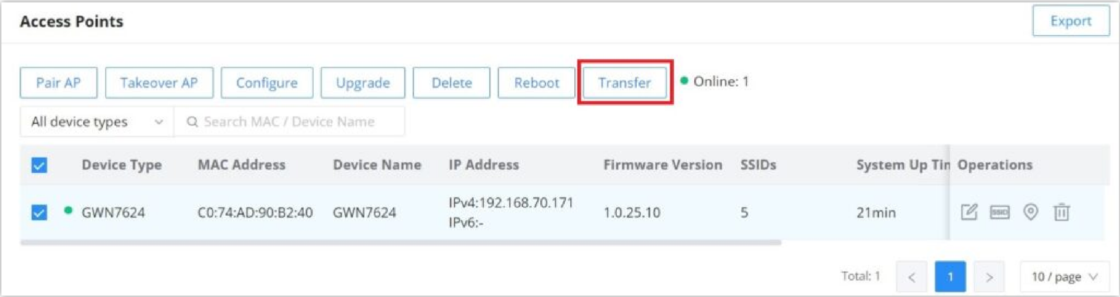
```
PING 8.8.8.8 (8.8.8.8): 56 data bytes
64 bytes from 8.8.8.8: seq=0 ttl=113 time=21.727 ms
64 bytes from 8.8.8.8: seq=1 ttl=113 time=19.886 ms
64 bytes from 8.8.8.8: seq=2 ttl=113 time=19.078 ms
64 bytes from 8.8.8.8: seq=3 ttl=113 time=19.874 ms
64 bytes from 8.8.8.8: seq=4 ttl=113 time=19.977 ms

--- 8.8.8.8 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 19.078/20.108/21.727 ms
```

Paired APs – Debug

Transfer APs to GWN.Cloud/GWN Manager

GWN routers also enable users to transfer their paired GWN APs to GWN.Cloud/GWN Manager.

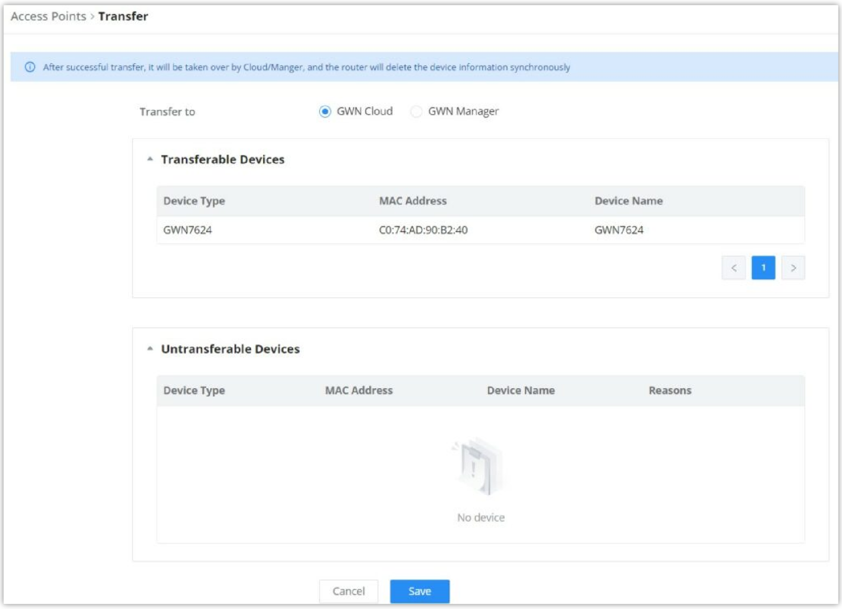
On the **AP Management → Access Points** page, select the AP or APs then click on the "**Transfer**" button as shown below:



☑	Device Type	MAC Address	Device Name	IP Address	Firmware Version	SSIDs	System Up Tin	Operations
☑	● GWN7624	C0:74:AD:90:B2:40	GWN7624	IPv4:192.168.70.171 IPv6:-	1.0.25.10	5	21min	

Access Points List

On the next page, select either GWN Cloud or GWN Manager then click the "**Save**" button. the user will be forwarded automatically to either GWN Cloud or GWN Manager to log in.



After successful transfer, it will be taken over by Cloud/Manger, and the router will delete the device information synchronously

Transfer to ● GWN Cloud ○ GWN Manager

Transferable Devices

Device Type	MAC Address	Device Name
GWN7624	C0:74:AD:90:B2:40	GWN7624

Untransferable Devices

Device Type	MAC Address	Device Name	Reasons

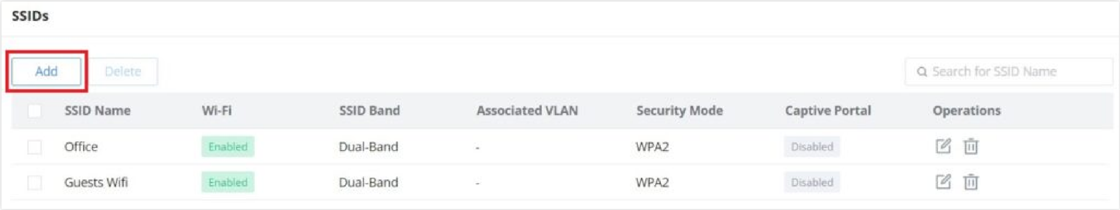
Transfer AP to GWN.Cloud or GWN Manager

Note:

After successful transfer, it will be taken over by Cloud/Manger, and the router will delete the device information synchronously.

SSIDs

On this page, the user can configure SSID settings. The Wi-Fi SSID will be broadcast by the paired access points. This offers centralized control over the SSIDs created which makes managing many GWN access points easier and more convenient.



SSIDs

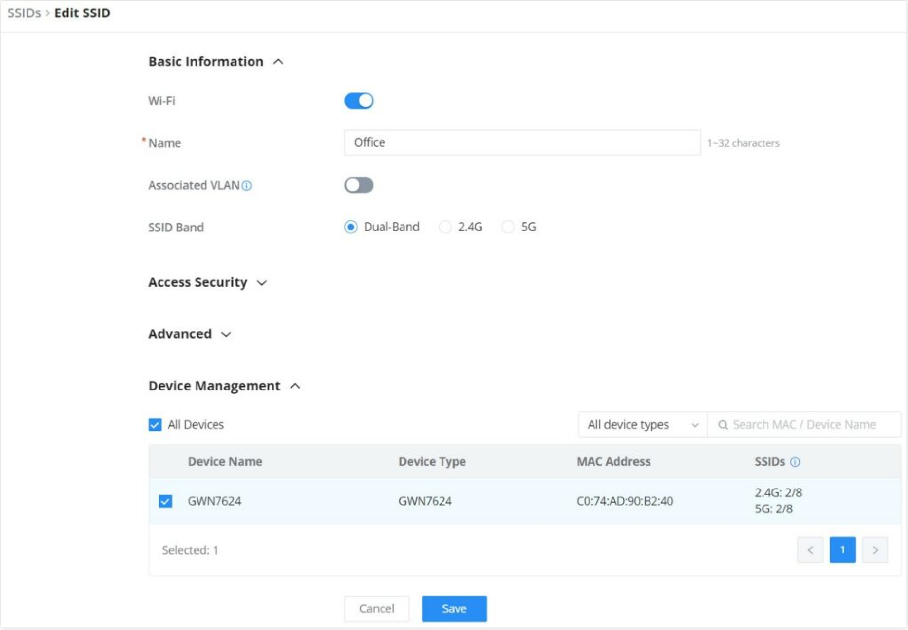
Add Delete

Search for SSID Name

	SSID Name	Wi-Fi	SSID Band	Associated VLAN	Security Mode	Captive Portal	Operations
□	Office	Enabled	Dual-Band	-	WPA2	Disabled	
□	Guests Wifi	Enabled	Dual-Band	-	WPA2	Disabled	

SSID page

To add an SSID, the user should click on the “**Add**” button, then the following page will appear:



SSIDs › Edit SSID

Basic Information

Wi-Fi: on

*Name: Office (1~32 characters)

Associated VLAN: off

SSID Band: ● Dual-Band ○ 2.4G ○ 5G

Access Security

Advanced

Device Management

☑ All Devices

All device types

Search MAC / Device Name

	Device Name	Device Type	MAC Address	SSIDs
☑	GWN7624	GWN7624	C0:74:AD:90:B2:40	2.4G: 2/8 5G: 2/8

Selected: 1

Cancel Save

Add SSID

Basic Information	
Wi-Fi	Toggle on/off the Wi-Fi SSID.
Name	Enter the name of the SSID.
Associated VLAN	Toggle "**ON**" to enable VLAN, then specify the VLAN from the list or click on "**Add VLAN**" to add one.
SSID Band	Choose the Wi-Fi SSID band. ● **Dual-Band:** Both bands will be enabled. ● **2.4G:** Only 2.4G band is enabled. ● **5G:** Only 5G band is enabled.
Access Security	

Security Mode	Choose the security mode for the Wi-Fi SSID. ● **Open** ● **WPA/WPA2** ● **WPA2** ● **WPA2/WPA3** ● **WPA3** ● **WPA3-192**
WPA Key Mode	Choose the WPA key mode: ● **PSK** ● **802.1x** ● **PPSK without RADIUS** ● **PPSK with RADIUS**
WPA Encryption Type	Choose the encryption type: ● **AES** ● **AES/TKIP**
WPA Shared Key	Enter the shared key phrase. This key phrase will be required to enter when connecting to the Wi-Fi SSID.
Enable Captive Portal	Toggle Captive Portal on/off. ● **Captive Portal Policy:** Choose the created captive portal policy.
Blocklist Filtering	Choose a blocklist for the Wi-Fi SSID.
Client Isolation	● **Closed:** Allow access between wireless clients. ● **Radio:** All wireless clients will be isolated from each other. ● **Internet:** Access to any private IP address will be blocked. ● **Gateway MAC:** Private IP addresses except for the configured gateway will be blocked.
802.11w	● **Disabled** ● **Optional:** either 802.11w supported or unsupported clients can access the network. ● **Required:** only the clients that support 802.11w can access the network.
Advanced	
SSID Hidden	After enabled, wireless devices will not be able to scan this Wi-Fi, and can only connect by manually adding network.
DTIM Period	Configure the delivery traffic indication message (DTIM) period in beacons. Clients will check the device for buffered data at every configured DTIM Period. You may set a high value for power saving consideration. Please input an integer between 1 to 10.
Wireless Client Limit	Configure the limit for wireless client, valid from 1 to 256. If every Radio has an independent SSID, each SSID will have the same limit. Therefore, setting a limit of 256 will limit each SSID to 256 clients independently.
Client Inactivity Timeout (sec)	Router/AP will remove the client's entry if the client generates no traffic at all for the specified time period. The client inactivity timeout is set to 300 seconds by default.
Multicast Broadcast Suppression	● **Disabled:** all of the broadcast and multicast packages will be forwarded to the wireless interface.

	● **Enabled:** all of the broadcast and multicast packages will be discarded except DHCP/ARP/IGMP/ND. ● **Enabled with ARP Proxy**: enable the optimization with ARP Proxy enabled in the meantime.
Convert IP Multicast to Unicast	● **Disabled:** No IP multicast packets will be converted to unicast packets. ● **Passive:** The device will not actively send IGMP queries, and the IGMP snooping entries may be aged after 300s and cannot be forwarded as multicast data. ● **Active:** The device will actively send IGMP queries and keep IGMP snooping entries updated.
Schedule	Enable then select from the drop-down list or create a time schedule when this SSID can be used.
Voice Enterprise	Enable voice enterprise.
802.11r	Enable 802.11r.
802.11k	Enable 802.11k.
802.11v	Enable 802.11v.
ARP Proxy	Once enabled, devices will avoid transferring the ARP messages to stations, while initiatively answer the ARP requests in the LAN.
U-APSD	Configures whether to enable U-APSD (Unscheduled Automatic Power Save Delivery).
Bandwidth Limit	Toggle ON/OFF Bandwidth limit ***Note:*** *If Hardware acceleration is enabled, Bandwidth Limit does not take effect. Please go to Network Settings/Network Acceleration to disable*
Maximum Upload Bandwidth	Limit the upload bandwidth used by this SSID. The range is 1~1024, if it is empty, there is no limit. The values can be set as Kbps or Mbps.
Maximum Download Bandwidth	Limit the download bandwidth used by this SSID. The range is 1~1024, if it is empty, there is no limit The values can be set as Kbps or Mbps.
Bandwidth Schedule	Toggle ON/OFF Bandwidth Schedule; if it's ON, then select a schedule from the drop-down list or click on "**Create Schedule**".
Device Management	
In this section, the user is able to add and remove the GWN access points that can broadcast the Wi-Fi SSID. There is also the option to search the device by MAC address or name.	

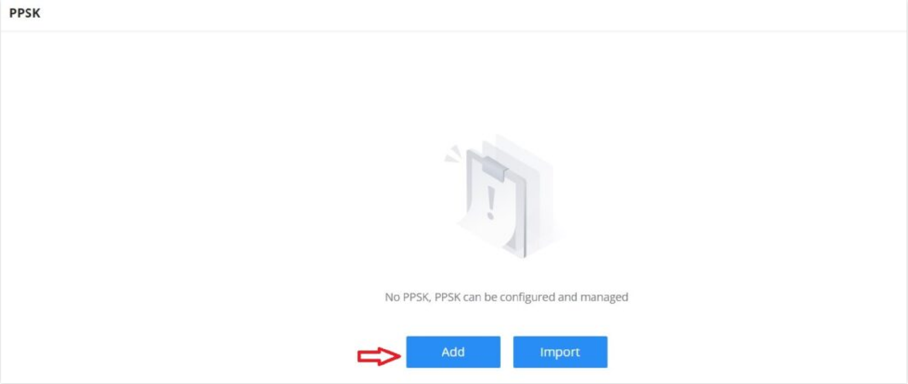
Add SSID

Private Pre-Shared Key (PPSK)

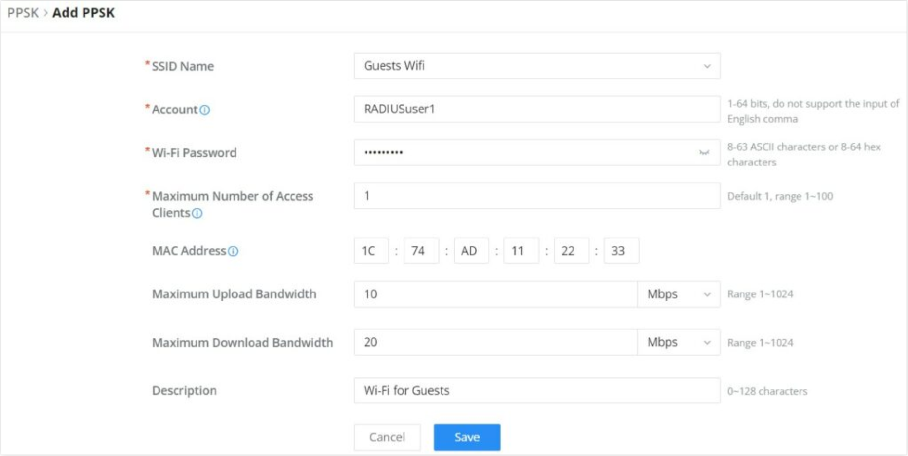
PPSK (Private Pre-Shared Key) is a way of creating Wi-Fi passwords per group of clients instead of using one single password for all clients. When configuring PPSK, the user can specify the Wi-Fi password, maximum number of access clients, and maximum upload and download bandwidth.

To start using PPSK, please follow the steps below:

1. First, create an SSID with WPA key mode set to either PPSK without RADIUS or PPSK with RADIUS.
2. Navigate to **Web UI** → **AP Management** → **PPSK** page, then click on the "**Add**" button then fill in the fields as shown below:



PPSK page



*SSID Name	Guests Wifi
*Account	RADIUSuser1 — 1-64 bits, do not support the input of English comma
*Wi-Fi Password	•••••••••• — 8-63 ASCII characters or 8-64 hex characters
*Maximum Number of Access Clients	1 — Default 1, range 1~100
MAC Address	1C : 74 : AD : 11 : 22 : 33
Maximum Upload Bandwidth	10 Mbps — Range 1~1024
Maximum Download Bandwidth	20 Mbps — Range 1~1024
Description	Wi-Fi for Guests — 0~128 characters

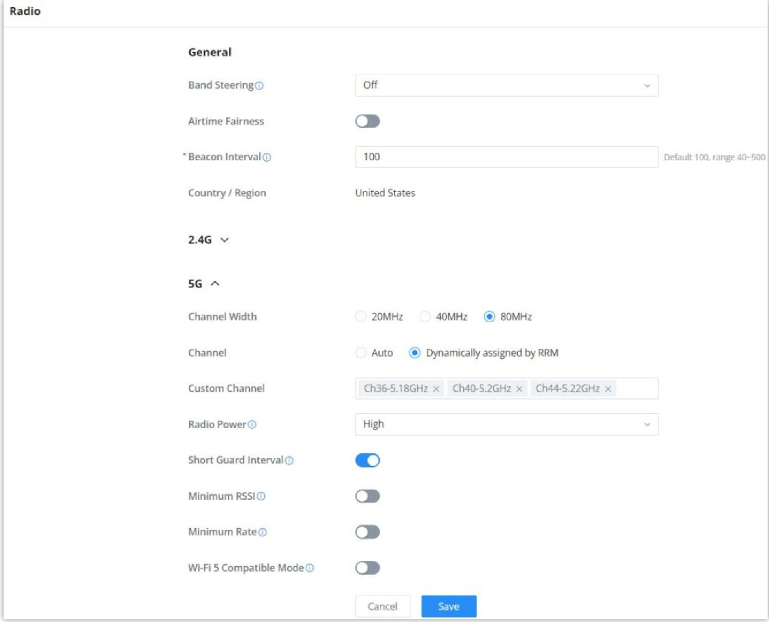
Add PPSK

SSID Name	Select from the drop-down list the SSID that has been previously configured with WPA Key mode set to PPSK without RADIUS or PPSK with RADIUS.
Account	If the WPA key mode in the selected SSID is "PPSK with RADIUS", the account is the user account of the RADIUS server.
Wi-Fi Password	Specify a Wi-Fi password
Maximum Number of Access Clients	Confgures the maximum number of devices allowed to be online for the same PPSK account.
MAC Address	Enter a MAC Address ***Note:*** *this field is only available if the Maximum Number of Access Clients is set to 1.*
Maximum Upload Bandwidth	Specify the maximum upload bandwidth in Mbps or Kbps.
Maximum Download Bandwidth	Specify the maximum downlolad bandwidth in Mbps or Kbps.
Description	Specify a description for the PPSK

Add PPSK

Radio

Under **AP Managements → Radio,** the user will be able to set the general wireless settings for all the Wi-Fi SSIDs created by the router. These settings will take effect on the level of the access points which are paired with the router.



Radio

General

Band Steering ⓘ: Off

Airtime Fairness: ○ (off)

* Beacon Interval ⓘ: 100 — Default 100, range 40~500

Country / Region: United States

2.4G ∨

5G ∧

Channel Width: ○ 20MHz ○ 40MHz ● 80MHz

Channel: ○ Auto ● Dynamically assigned by RRM

Custom Channel: Ch36-5.18GHz × Ch40-5.2GHz × Ch44-5.22GHz ×

Radio Power ⓘ: High

Short Guard Interval ⓘ: on

Minimum RSSI ⓘ: off

Minimum Rate ⓘ: off

Wi-Fi 5 Compatible Mode ⓘ: off

Radio

General	
Band Steering	Band steering functions are divided into four items: 1) 2.4G in priority, lead the dual client to the 2.4G band; 2) 5G in priority, the dual client will be led to the 5G band with more abundant spectrum resources as far as possible; 3) Balance,access to the balance between these 2 bands according to the spectrum utilization rate of 2.4G and 5G. In order to better use this function, proposed to enable voice enterprise via SSIDs → Advanced → Enable Voice Enterprise.
Airtime Fairness	Enabling Airtime Fairness will make the transmission between the access point and the clients more efficient. This is achieved by offering equal airtime to all the devices connected to the access point.
Beacon Interval	Configures the beacon period, which decides the frequency the 802.11 beacon management frames router transmits. Please input an integer, from 40 to 500.1. When router enables several SSIDs with different interval values, the max value will take effect;2. When router enables less than 3 SSIDs, the interval value will be effective are the values from 40 to 500;3. When router enables more than 2 but less than 9 SSIDs, the interval value will be effective are the values from 100 to 500;4. When router enables more than 8 SSIDs, the interval value will be effective are the values from 200 to 500.Note: mesh feature will take up a share when it is enabled.
Country / Region	This option shows the country/region which has been selected. To edit the region, please navigate to **System Settings** → **Basic Settings.**
2.4G & 5G	
Channel Width	Select the channel width. ● **2.4G**: 20Mhz, 20&40Mhz, 40Mhz ● **5G**: 20Mhz, 40Mhz, 80Mhz
Channel	Pick how the access points will be able to choose a specific channel. ● **Auto:** ● **Dynamically assigned by RRM:**
Custom Channel	Select a custom channel(s) from the drop-down list, there are two categories: ● General Channel ● DFS Chanenl

Radio Power	Please select the radio power according to the actual situation, too high radio power will increase the disturbance between devices. ● **Low** ● **Medium** ● **High** ● **Custom** ● **Dynamically Assigned by RRM** ● **Auto**
Short Guard Interval	This can improve the wireless connection rate if enabled under non multipath environment.
Allow Legacy Devices (802.11b) (2.4Ghz Only)	When the signal strength is lower than the minimum RSSI, the client will be disconnected (unless it's an Apple device).
Minimum RSSI	When the signal strength is lower than the minimum RSSI, the client will be disconnected (unless it's an Apple device).
Minimum Rate	Specify whether to limit the minimum access rate for clients. This function may guarantee the connection quality.
Wi-Fi 5 Compatible Mode	Some old devices do not support Wi-Fi6 well, and may not be able to scan the signal or connect poorly. After enabled, it will switch to Wi-Fi5 mode to solve the compatibility problem. At the same time, it will turn off Wi-Fi6 related functions.

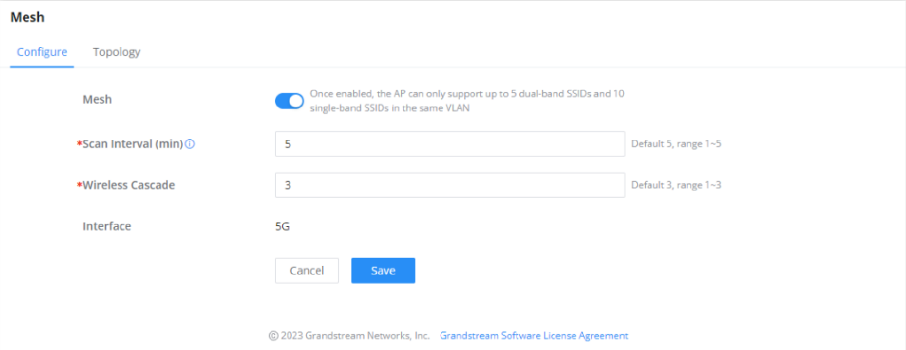
Radio

Mesh

Through the controller embedded in the GWN70x2 routers, the user can configure a Wi-Fi Mesh using the GWN access points. The configuration is centralized and the user can view the topology of the Mesh.

- **Configuration:**

To configure GWN access points in a Mesh network successfully, the user must pair the access points first with the GWN router, then configure the same SSID on the access points. Once that’s done, the user should navigate to **AP Management** → **Mesh** → **Configure**, then enable Mesh and configure the related information as shown in the figure below.



Mesh: Once enabled, the AP can only support up to 5 dual-band SSIDs and 10 single-band SSIDs in the same VLAN

*Scan Interval (min): 5 Default 5, range 1~5

*Wireless Cascade: 3 Default 3, range 1~3

Interface: 5G

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Mesh Configuration

For more information about the parameters that need to be configured, please refer to the table below.

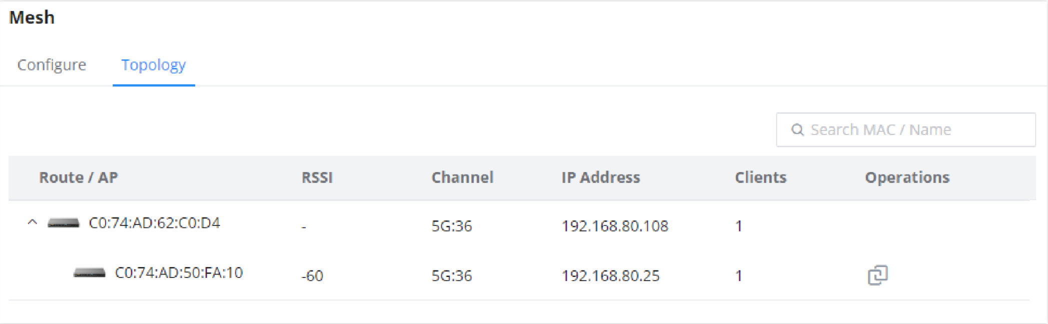
Mesh	Enable Mesh. Once enabled, the AP can only support up to 5 dual-band SSIDs and 10 single-band SSIDs in the same VLAN.
Scan Interval (min)	Configures the interval for the APs to scan the mesh. The valid range is 1-5. The default value is 5.
Wireless Cascade	Define the wireless cascade number. The valid range is 1-3. The default value is 3.

Interface	Displays which interface is going to be used for mesh.

Mesh Configuration

- **Topology:**

On this page, the user will be able to see the topology of the GWN access points when they are configured in a Mesh network. The page will display information related to the APs like the MAC address, RSSI, Channel, IP Address, and Clients. It will show as well the cascades in the Mesh.



Mesh

Configure | Topology

Search MAC / Name

Route / AP	RSSI	Channel	IP Address	Clients	Operations
C0:74:AD:62:C0:D4	-	5G:36	192.168.80.108	1	
C0:74:AD:50:FA:10	-60	5G:36	192.168.80.25	1	⧉

Mesh Topology

ACCESS CONTROL

GWN70x2 has features that can enable the user to block clients and sites as well and also limit the bandwidth per client or SSID.

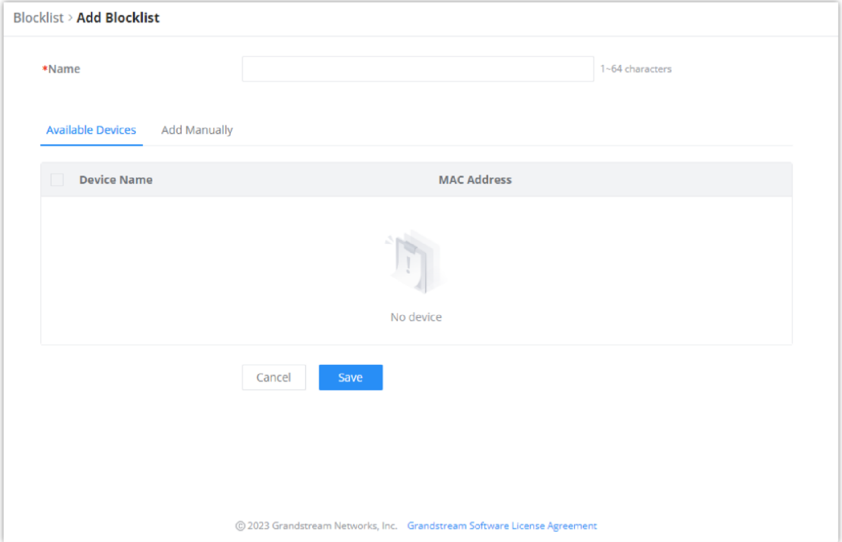
Blocklist

The Blocklist is a feature in GWN70x2 that enables the user to block wireless clients from the available ones or manually add the MAC Address.

To create a new Blocklist, Navigate under: "**Web UI → Access Control → Blocklist**".

- **Add devices from the list:**

Enter the name of the blocklist, then add the devices from the list.



Blocklist › **Add Blocklist**

*Name: 1~64 characters

Available Devices | Add Manually

Device Name	MAC Address

No device

Cancel | Save

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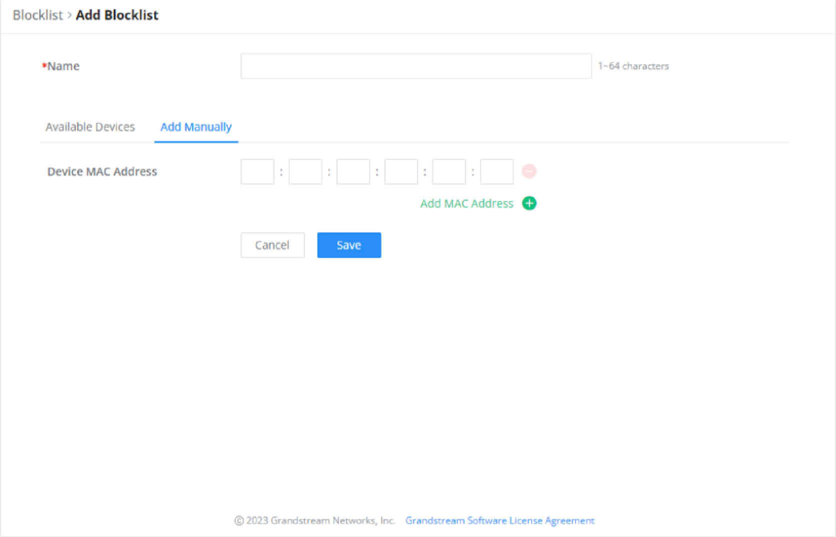
Blocklist Page

- **Add Devices Manually:**

Enter the name of the blocklist, then add the devices' MAC addresses.



Blocklist > Add Blocklist

*Name: 1~64 characters

Available Devices | Add Manually

Device MAC Address: __ : __ : __ : __ : __ : __

Add MAC Address

Cancel | Save

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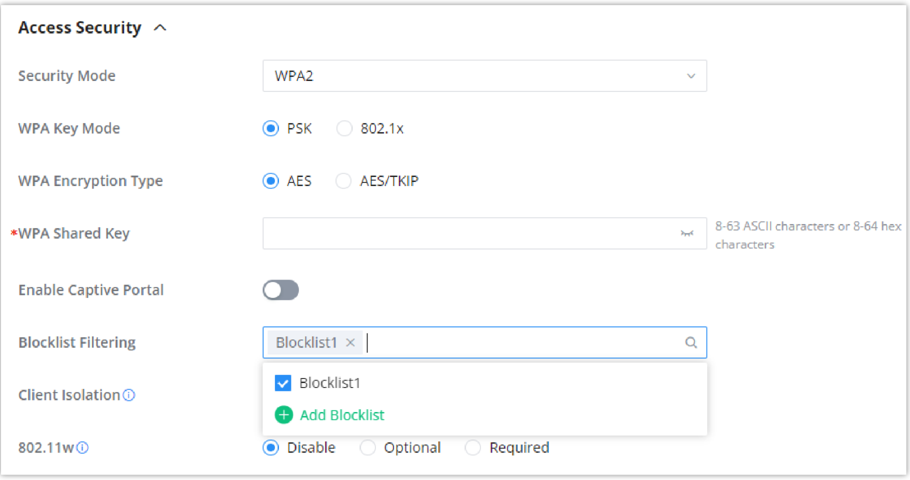
Add Blocklist

After the blocklist is created, to take effect the user needs to apply it on the desired SSID.

Navigate to " **Web UI → AP Management → SSIDs**", either click on the "**Add**" button to create a new SSID or click on th**e "Edit"** icon to edit a previously created SSID, scroll down to "**Access Security**" section then look for "**Blocklist Filtering**" option and finally select from the list the previously created blocklists, the user can select one or more, or click on "**Create Blocklist**" at the bottom of the list to create new one.

Please refer to the figure below:



Access Security

Security Mode: WPA2

WPA Key Mode: ● PSK ○ 802.1x

WPA Encryption Type: ● AES ○ AES/TKIP

*WPA Shared Key: 8-63 ASCII characters or 8-64 hex characters

Enable Captive Portal

Blocklist Filtering: Blocklist1 ×

☑ Blocklist1

Add Blocklist

Client Isolation

802.11w: ● Disable ○ Optional ○ Required

SSID Configuration

Site Control

Site Control is a feature that allows the system administrator to block DNS queries to some domains. This feature can be used to block adware sites and malware sites, and can be used to block popular social media websites (Facebook, YouTube…etc).

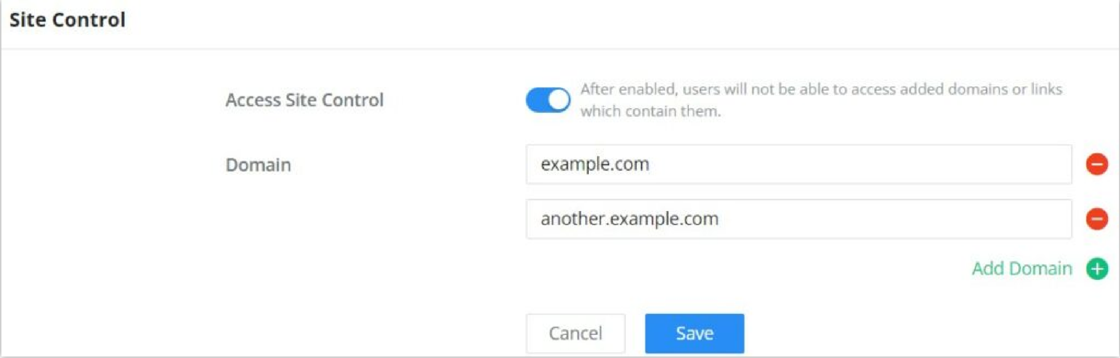
To configure the website blocking policy:

Navigate under: "**Web UI → Access Control → Site Control**".

Click on the "**Plus**" or "**Minus**" icons to add or delete a domain.

Note:

After enabled, users will not be able to access added domains or links which contain them.



Site Control

Access Site Control: ● After enabled, users will not be able to access added domains or links which contain them.

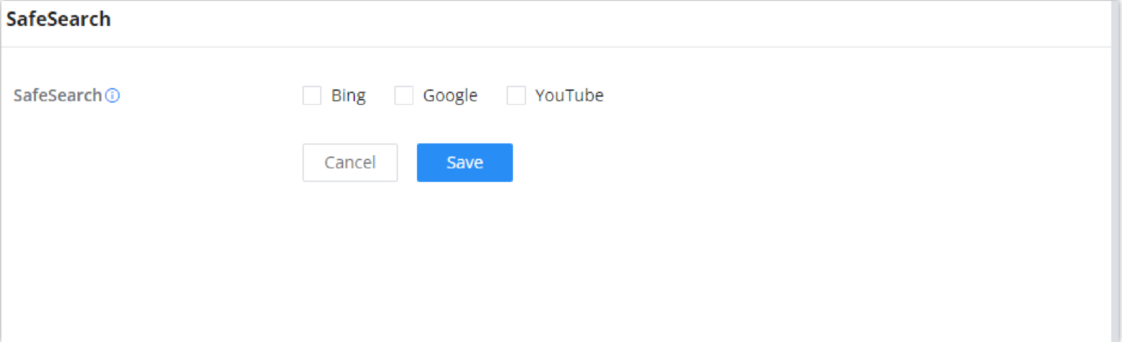
Domain: example.com

another.example.com

Site Control page

SafeSearch

The GWN70x2 routers offer SafeSearch features on Bing, Google, and YouTube. Enabling this option will hide any inappropriate or explicit search results from being displayed.



SafeSearch

SafeSearch ⓘ: □ Bing □ Google □ YouTube

Site Control page

EXTERNAL ACCESS

By default, all the requests initiated from the WAN side are rejected by the router GWN70x2 external access features allow hosts located on the WAN side to access the services hosted on the LAN side of the GWN router.

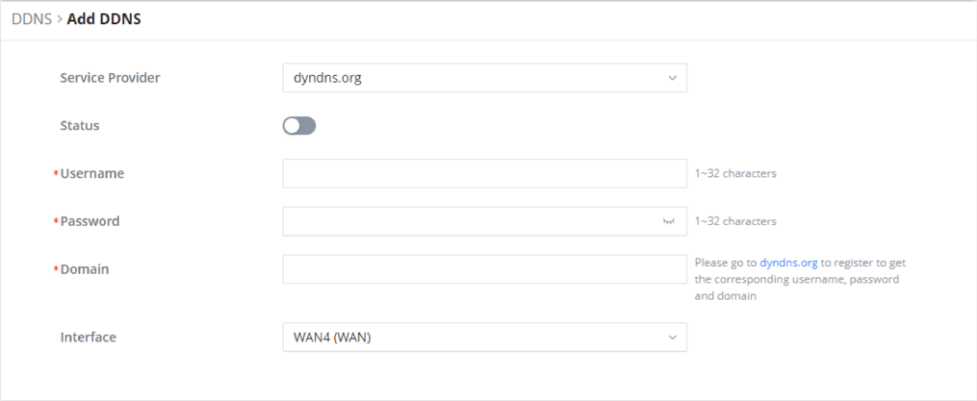
DDNS

1. Access to GWN70x2 web GUI, navigate to **External Access** → **DDNS**, and click + Add to Add Service.

2. Fill in the domain name created with the DDNS provider under the Service Provider field.

3. Enter your account username and password under the User Name and Password fields.

4. Specify the Domain to which the DDNS Account is applied under Domain.



DDNS › Add DDNS

Service Provider: dyndns.org

Status: ○

*Username: 1~32 characters

*Password: 1~32 characters

*Domain: Please go to dyndns.org to register to get the corresponding username, password and domain

Interface: WAN4 (WAN)

DDNS Page

Service Provider	Select the DDNS provider from the list
Username	Enter the Username
Password	Enter the Password
Domain	Enter the Domain
Interface	Select the Interface

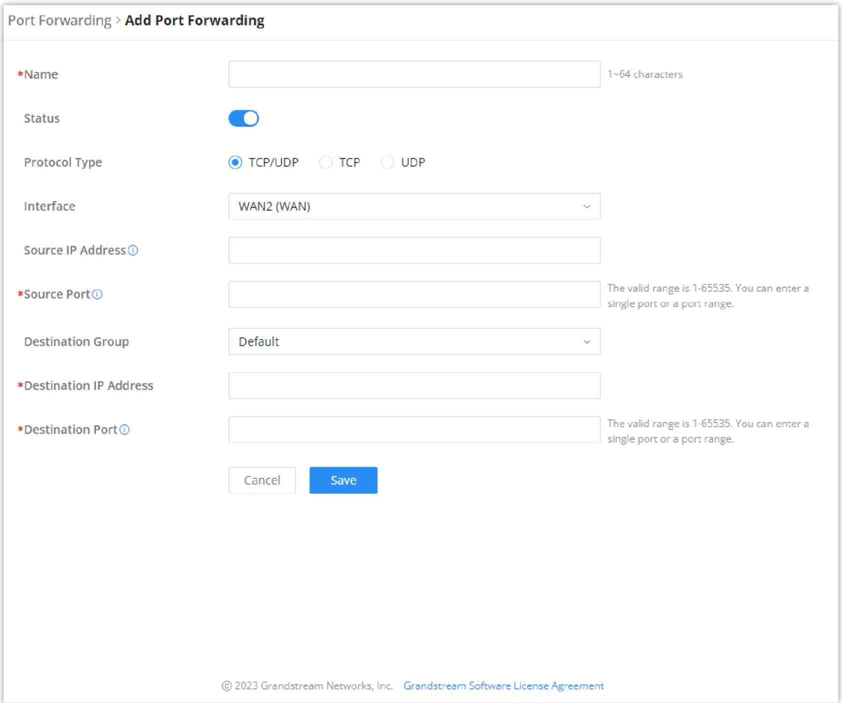
DDNS Page

Port Forward

Port forwarding allows forwarding requests initiated from the WAN side of the router to a LAN host. This is done by configuring either the port only or the port and the IP address in case we want to restrict access over that specific port to one IP address. Once the router receives the requested IP address, the router will verify the port on which the request has been initiated and will forward the request to the host IP address and the port of the host which is configured as the destination.

Port forwarding can be used in the case when a host on the WAN side wants to access a server on the LAN side.

Navigate to **GWN70x2 WEB UI → External Access → Port Forward**:



Port Forwarding > **Add Port Forwarding**

*Name		1~64 characters
Status	on	
Protocol Type	● TCP/UDP ○ TCP ○ UDP	
Interface	WAN2 (WAN)	
Source IP Address		
*Source Port		The valid range is 1-65535. You can enter a single port or a port range.
Destination Group	Default	
*Destination IP Address		
*Destination Port		The valid range is 1-65535. You can enter a single port or a port range.

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Port Forwarding page

Refer to the following table for the Port Forwarding option when editing or creating a port forwarding rule:

Name	Enter a name for the port forwarding rule.
Status	Toggle on/off the rule status.
Protocol Type	Select a protocol, users can select TCP, UDP or TCP/UDP.
Interface	Select the WAN port

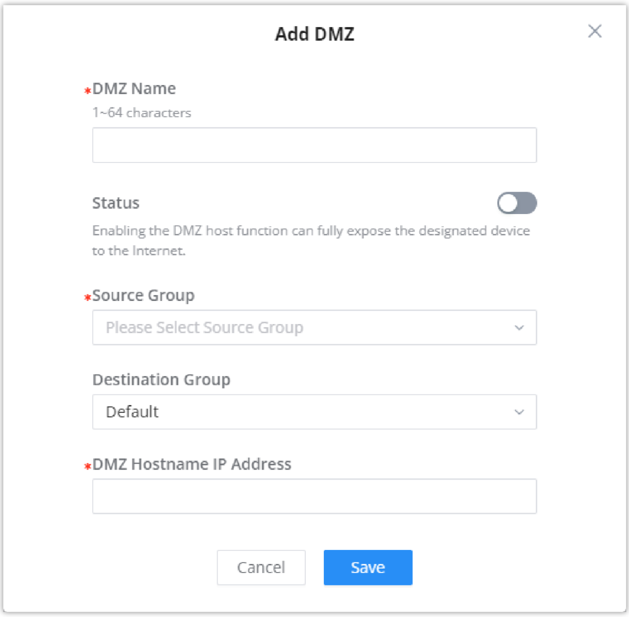
Source IP Address	Sets the IP address that external users access to this device. If not set, any IP address on the corresponding WAN port can be used
Source Port	Set a single or a range of Ports.
Destination Group	Select VLAN group.
Destination IP Address	Set the destination IP address.
Destination Port	Set a single or a range of Ports.

Port Forwarding page

DMZ

Configuring the DMZ, the router will allow all external access requests to the DMZ host. This is

This section can be accessed from **GWN70x2 Web GUI → External Access → DMZ**.
GWN70x2 supports **DMZ**, where it is possible to specify a Hostname IP Address to be put on the **DMZ**.



Add DMZ

*DMZ Name
1~64 characters

Status
Enabling the DMZ host function can fully expose the designated device to the Internet.

*Source Group
Please Select Source Group

Destination Group
Default

*DMZ Hostname IP Address

DMZ Page

Enabling the DMZ host function, the computer set as the DMZ host can be completely exposed to the Internet, realizing two-way unrestricted communication.

Refer to the below table for DMZ fields:

DMZ Name	Enter a name for the DMZ rule.
Status	Toggle on/off the status of the DMZ rule.
Source Group	Select the interface to allow access to the DMZ host.
Destination Group	Select the VLAN on which the DMZ host belong.
DMZ Hostname IP Address	Enter the DMZ host IP address.

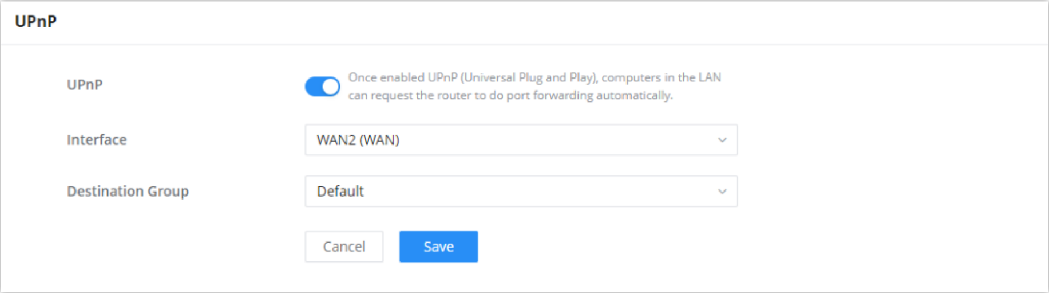
DMZ Page

UPnP

GWN70x2 supports UPnP that enables programs running on a host to configure automatically port forwarding.

UPnP allows a program to make the GWN70x2 open necessary ports, without any intervention from the user, without making any check.

UPnP settings can be accessed from GWN70x2 **Web GUI** → **External Access** → **UPnP.**



UPnP

UPnP: ON — Once enabled UPnP (Universal Plug and Play), computers in the LAN can request the router to do port forwarding automatically.

Interface: WAN2 (WAN)

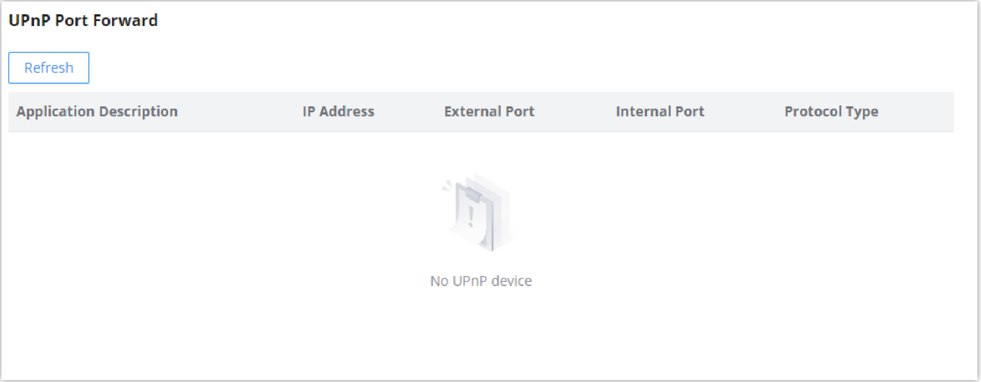
Destination Group: Default

UPnP Settings

UPnP	Click on "**ON**" to enable UPnP. **Note**: Once enabled UPnP (Universal Plug and Play), computers in the LAN can request the router to do port forwarding automatically
Interface	Select the interface (WAN)
Destination Group	Select the LAN Group

UPnP Settings

When UPnP is enabled, the ports will be shown in the section below. The information shown includes the application name, the IP address of the LAN host that has requested the opening of the port, the external port number, the internet port number, and the transport protocol used (UDP or TCP).



UPnP Port Forward

Application Description	IP Address	External Port	Internal Port	Protocol Type

No UPnP device

UPnP – Open Ports

FIREWALL

The Firewall in GWN routers enables the user to secure the network by blocking the most common attacks and allowing for more control over the traffic.

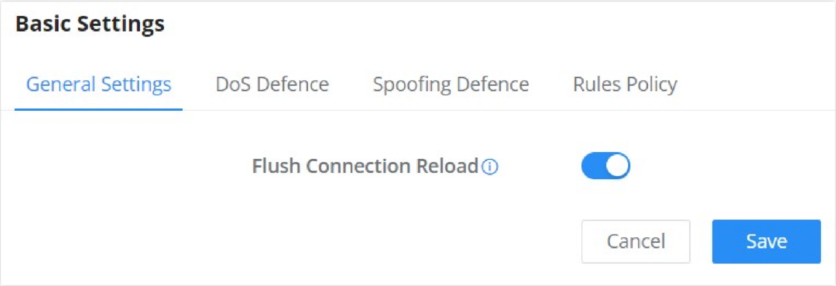
The Firewall section provides the ability to set up input/output policies for each WAN interface and LAN group as well as setting configuration for Static and Dynamic NAT and ALG.

Firewall – Basic Settings

General Settings

- **Flush Connection Reload**

When this option is enabled and the firewall configuration changes are made, existing connections that had been permitted by the previous firewall rules will be terminated.
If the new firewall rules do not permit a previously established connection, it will be terminated and will not be able to reconnect. With this option disabled, existing connections are allowed to continue until they timeout, even if the new rules would not allow this connection to be established.



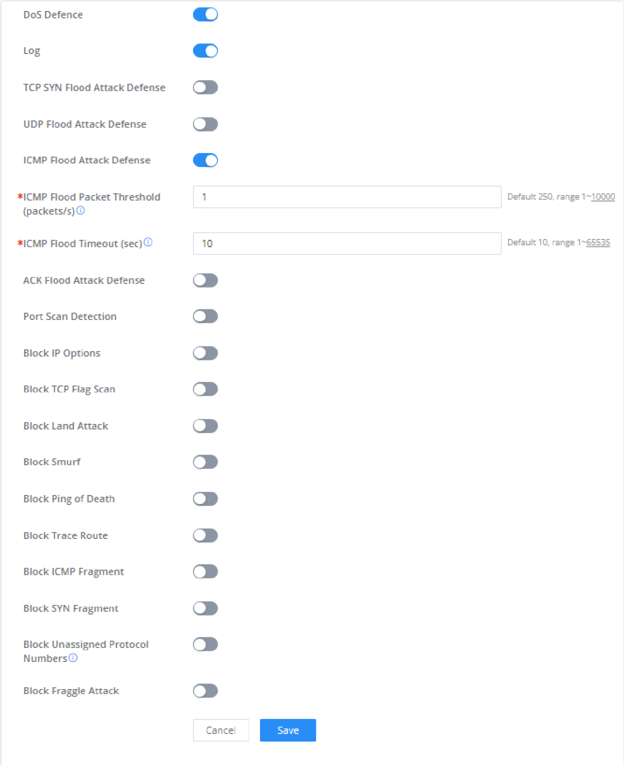
Basic Settings

Flush Connection Reload ●

Firewall Basic Settings – Flush Connection reload

DoS Defense

Denial-of-Service Attack is an attack aimed to make the network resources unavailable to legitimate users by flooding the target machine with so many requests causing the system to overload or even crash or shut down.



DoS Defence	●	
Log	●	
TCP SYN Flood Attack Defense	○	
UDP Flood Attack Defense	○	
ICMP Flood Attack Defense	●	
*ICMP Flood Packet Threshold (packets/s)	1	Default 250, range 1~10000
*ICMP Flood Timeout (sec)	10	Default 10, range 1~65535
ACK Flood Attack Defense	○	
Port Scan Detection	○	
Block IP Options	○	
Block TCP Flag Scan	○	
Block Land Attack	○	
Block Smurf	○	
Block Ping of Death	○	
Block Trace Route	○	
Block ICMP Fragment	○	
Block SYN Fragment	○	
Block Unassigned Protocol Numbers	○	
Block Fraggle Attack	○	

DoS Defense

DoS Defence	Toggle on/off DoS Defence
Log	When this option is enabled, all the attempts of the attacks below will be recorded in a log.
TCP SYN Flood Attack Defense	When this option is enabled, the router will take counter measures to SYN Flood Attack.

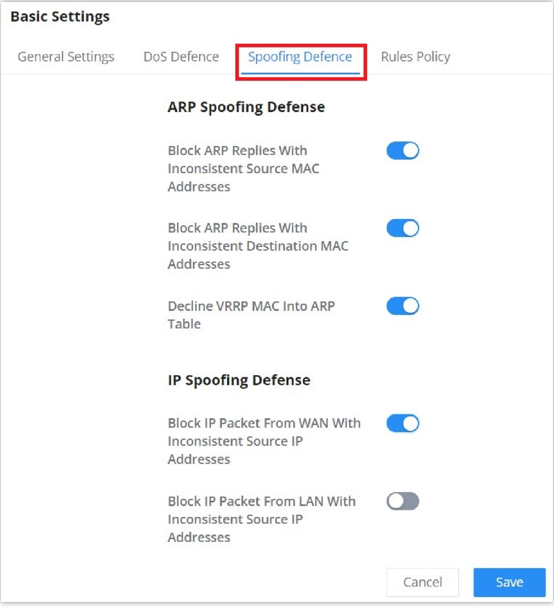
	• **TCP SYN Flood Packet Threshold (packets/s):** If the threshold of the TCP SYN packets from the Internet has exceeded the defined value, subsequent TCP SYN packets will be discarded within the specified timeout period. • **TCP SYN Flood Timeout (sec):** If the number of TCP SYN packets received per second exceeds the threshold within the specified timeout period, attack defense will start immediately.
UDP Flood Attack Defense	When this option is enabled, the router will take counter measures to the UDP Flood Attack. • **UDP Flood Packet Threshold (packets/s):** If the threshold of the UDP packets from the Internet has exceeded the defined value, subsequent UDP packets will be discarded within the specified timeout period. • **UTCP SYN Flood Timeout (sec):** If the average number of received UDP packets per second reaches the threshold within the timeout period, attack defense will start immediately.
ICMP Flood Attack Defense	When this option is enabled, the router will take counter measures to the ICMP Flood Attack. • **ICMP Flood Packet Threshold (packets/s):** If the threshold of the ICMP packets from the Internet has exceeded the defined value, subsequent ICMP packets will be discarded within the specified timeout period. • **ICMP Flood Timeout (sec):** If the average number of received ICMP packets per second reaches the threshold within the timeout period, attack defense will start immediately.
ACK Flood Attack Defense	When this option is enabled the router will take counter measures to ACK Flood Attack. • **ACK Flood Packet Threshold (packets/s):** If the threshold if the ACK packets from the Internet has exceeded the defined value, subsequent ACK packets will be discarded within the specified timeout period. • **ACK Flood Timeout (sec):** If the average number of received ACK packets per second reaches the threshold within the timeout period, attack defense will start immediately.
Port Scan Detection	When this option is enabled, the router will take counter measure to the port scanning attempts • **Port Scan Packet Threshold (packets/s):** If the port packets reach the threshold, port scanning detection will start immediately.
Block IP Options	When this option is enabled, the router will ignore any IP packets with Options field.
Block TCP Flag Scan	When this option is enabled, the router will ignore any packets with unexpected information in the TCP flags.
Block Land Attack	When this option is enabled, the router will block any SYN packets which may have been spoofed and modified to set the source and the destination address to the address of the router. If this option is disabled, it might cause the router to be stuck in a loop of responding to itself.
Block Smurf	When this option is enabled, the router will drop any ICMP echo requests.
Block Ping of Death	When this option is enabled, the router will drop any abnormal or corrupted ping packets.
Block Traceroute	When this option is enabled, the router will not allow the traceroute requests initiated from the WAN side.

Block ICMP Fragment	When this option is enabled, the router will drop the ICMP packets which are fragmented.
Block SYN Fragment	When this option is enabled, the router will drop the SYN packets which are fragmented.
Block Unassigned Protocol Numbers	If enabled, the device will reject IP packets receiving IP protocol number greater than 133.
Block Fraggle Attack	If enabled, the router will drop any UDP broadcast packets initiate from the WAN side.

DoS Defense

Spoofing Defense

The Spoofing defense section offers several counter-measures to the various spoofing techniques. To protect your network against spoofing, please enable the following measures to eliminate the risk of having your traffic intercepted and spoofed. GWN routers offer measures to counter spoofing on ARP information, as well as on IP information.



ARP Spoofing Defense

Block ARP Replies With Inconsistent Source MAC Addresses: On

Block ARP Replies With Inconsistent Destination MAC Addresses: On

Decline VRRP MAC Into ARP Table: On

IP Spoofing Defense

Block IP Packet From WAN With Inconsistent Source IP Addresses: On

Block IP Packet From LAN With Inconsistent Source IP Addresses: Off

Spoofing Defense

ARP Spoofing Defense

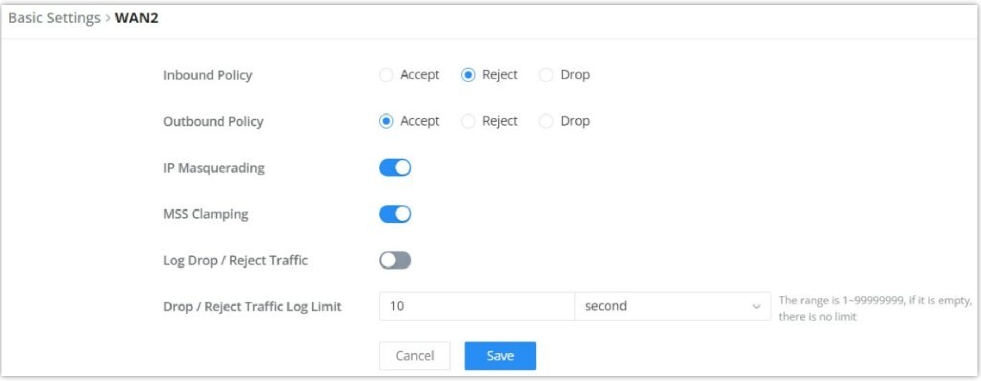
- **Block ARP Replies with Inconsistent Source MAC Addresses:** The router will verify the destination MAC address of a specific packet, and when the response is received by the router, it will verify the source MAC address and it will make sure that they match. Otherwise, the router will not forward the packet.
- **Block ARP Replies with Inconsistent Destination MAC Addresses:** The router will verify the source MAC address when the response is received. The router will verify the destination MAC address and it will make sure that they match. Otherwise, the router will not forward the packet.
- **Decline VRRP MAC Into ARP Table:** The router will decline including any generated virtual MAC address in the ARP table.

IP Spoofing Defense

- Block IP Packet From WAN with Inconsistent Source IP Addresses: The router will verify the IP address of the inbound packets, the source IP address has to match the destination IP address to which the request was initially sent. If there is a mismatch between these two IP addresses, the router will drop the packet.
- Block IP Packet from LAN with Inconsistent Source IP Address: The router will verify the IP address of the packets forwarded. If the router discovers that there is a mismatch in the packet source IP address, the packet will not be forwarded.

Rules Policy

Rules policy allows to define how the router is going to handle the traffic based on whether it is inbound traffic or outbound traffic. This is done per the WAN port as well as the LAN ports of the router.



Basic Settings > **WAN2**

Inbound Policy ○ Accept ● Reject ○ Drop

Outbound Policy ● Accept ○ Reject ○ Drop

IP Masquerading ●

MSS Clamping ●

Log Drop / Reject Traffic ○

Drop / Reject Traffic Log Limit 10 second The range is 1~99999999, if it is empty, there is no limit

Rules Policy

- **Inbound Policy:** Define the decision that the router will take for the traffic initiated from the WAN. The options available are Accept, Reject, and Drop.
- **Outbound Traffic**: Define the decision that the router will take for the traffic initiated from the LAN side. The options available are Accept, Reject, and Drop.
- **IP Masquerading:** Enable IP masquerading. This will masquerade the IP address of the internal hosts.
- **MSS Clamping**: Enabling this option will allow the MSS (Maximum Segment Size) to be negotiated during the TCP session negotiation
- **Log Drop / Reject Traffic**: Enabling this option will generate a log of all the traffic that has been dropped or rejected.

Traffic Rules

GWN70x2 offers the possibility to fully control incoming/outgoing traffic for different protocols in customized scheduled times and take actions for specified rules such as Accept, Reject, and Drop.

Traffic Rules settings can be accessed from **GWN70**x2 **Web GUI → Firewall → Traffic Rules.**

The following actions are available to configure Input, output, and forward rules for configured protocols

- To add new rule, Click on + Add
- To edit a rule, click on ✎
- To delete a rule, click on 🗑

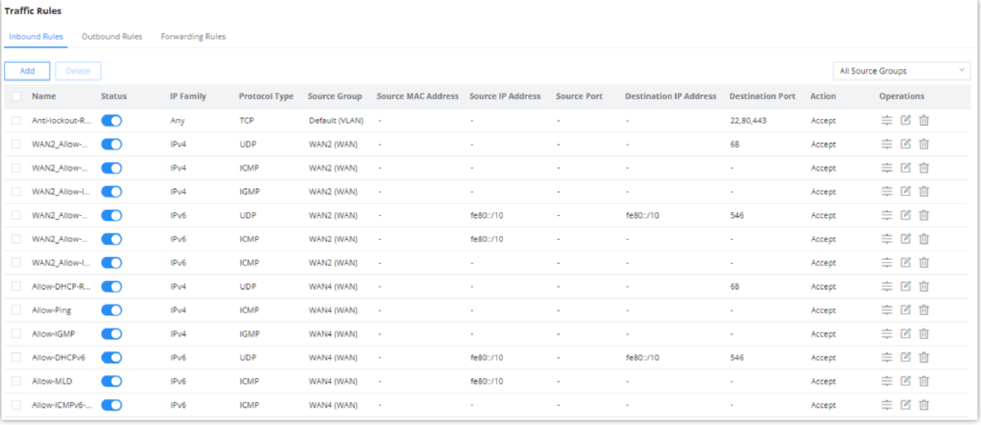
Inbound Rules

The GWN70x2 allows to filtering incoming traffic to networks group or port WAN and applies rules such as:

• **Accept:** To allow the traffic to go through.

• **Deny:** A reply will be sent to the remote side stating that the packet is rejected.

• **Drop:** The packet will be dropped without any notice to the remote side.



Traffic Rules

☐	Name	Status	IP Family	Protocol Type	Source Group	Source MAC Address	Source IP Address	Source Port	Destination IP Address	Destination Port	Action	Operations
☐	Anti-lockout-R...	●	Any	TCP	Default (VLAN)	-	-	-	-	22,80,443	Accept	☰ ✎ 🗑
☐	WAN2_Allow-...	●	IPv4	UDP	WAN2 (WAN)	-	-	-	-	68	Accept	☰ ✎ 🗑
☐	WAN2_Allow-...	●	IPv4	ICMP	WAN2 (WAN)	-	-	-	-	-	Accept	☰ ✎ 🗑
☐	WAN2_Allow-I...	●	IPv4	IGMP	WAN2 (WAN)	-	-	-	-	-	Accept	☰ ✎ 🗑
☐	WAN2_Allow-...	●	IPv6	UDP	WAN2 (WAN)	-	fe80::/10	-	fe80::/10	546	Accept	☰ ✎ 🗑
☐	WAN2_Allow-...	●	IPv6	ICMP	WAN2 (WAN)	-	fe80::/10	-	-	-	Accept	☰ ✎ 🗑
☐	WAN2_Allow-I...	●	IPv6	ICMP	WAN2 (WAN)	-	-	-	-	-	Accept	☰ ✎ 🗑
☐	Allow-DHCP-R...	●	IPv4	UDP	WAN4 (WAN)	-	-	-	-	68	Accept	☰ ✎ 🗑
☐	Allow-Ping	●	IPv4	ICMP	WAN4 (WAN)	-	-	-	-	-	Accept	☰ ✎ 🗑
☐	Allow-IGMP	●	IPv4	IGMP	WAN4 (WAN)	-	-	-	-	-	Accept	☰ ✎ 🗑
☐	Allow-DHCPv6	●	IPv6	UDP	WAN4 (WAN)	-	fe80::/10	-	fe80::/10	546	Accept	☰ ✎ 🗑
☐	Allow-MLD	●	IPv6	ICMP	WAN4 (WAN)	-	fe80::/10	-	-	-	Accept	☰ ✎ 🗑
☐	Allow-ICMPv6-...	●	IPv6	ICMP	WAN4 (WAN)	-	-	-	-	-	Accept	☰ ✎ 🗑

Traffic Rules – Inbound Rules

Name	Enter the name of the inbound rule.
Status	Toggle on/off the status of the inbound rule.
IP Family	Pick the IP family. ● **Any** ● **IPv4** ● **IPv6**
Protocol Type	Choose the protocol type. ● **UDP** ● **TCP** ● **UDP/TCP** ● **ICMP** ● **IGMP** ● **All**
Source Group	If set to "All", rules will be matched in preference to other specific ones.
Source MAC Address	Specify the source MAC address.
Source IP Address	Specify the source IP address.
Source Port	To enter multiple port/port ranges, separate them using commas (,), for example:4,5-10.
Destination IP Address	Specify the destination IP address.
Destination Port	To enter multiple port/port ranges, separate them using commas (,), for example:4,5-10.
Action	If set to "Accept", the external devices are allowed to access the router; if set to "Deny", the access of the external devices is denied and the result is returned; if set to "Drop", the access request of the external device will be directly droped.

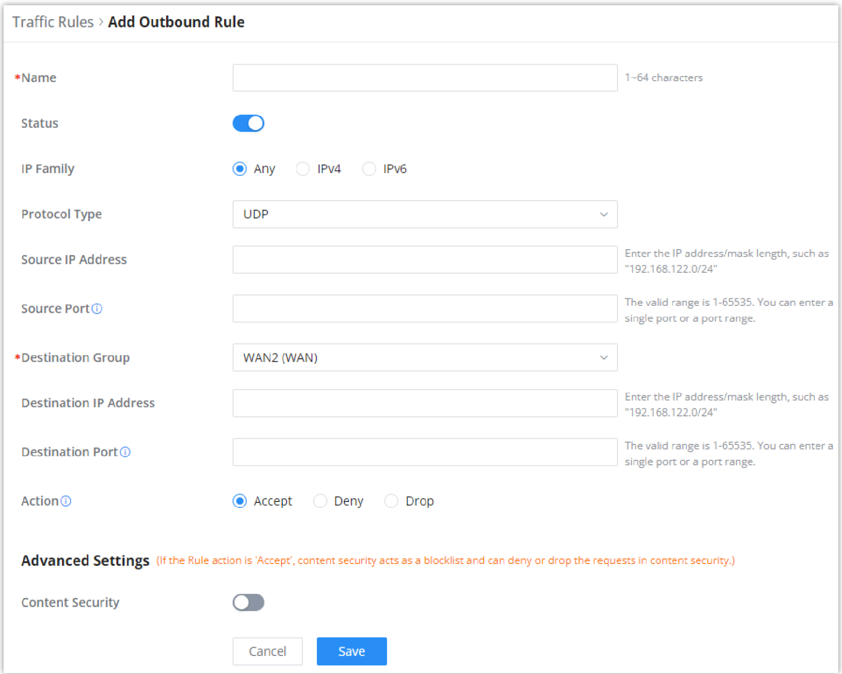
Traffic Rules – Inbound Rules

Outbound Rules

The GWN70x2 allows to filtering of outgoing traffic from the local LAN networks to outside networks and applies rules such as:

• **Accept:** To allow the traffic to go through.

- **Deny:** A reply will be sent to the remote side stating that the packet is rejected.
- **Drop:** The packet will be dropped without any notice to the remote side.



Traffic Rules › **Add Outbound Rule**

*Name: 1~64 characters

Status: on

IP Family: ● Any ○ IPv4 ○ IPv6

Protocol Type: UDP

Source IP Address: Enter the IP address/mask length, such as "192.168.122.0/24"

Source Port: The valid range is 1-65535. You can enter a single port or a port range.

*Destination Group: WAN2 (WAN)

Destination IP Address: Enter the IP address/mask length, such as "192.168.122.0/24"

Destination Port: The valid range is 1-65535. You can enter a single port or a port range.

Action: ● Accept ○ Deny ○ Drop

Advanced Settings (If the Rule action is 'Accept', content security acts as a blocklist and can deny or drop the requests in content security.)

Content Security: off

Traffic Rules – Outbound Rules

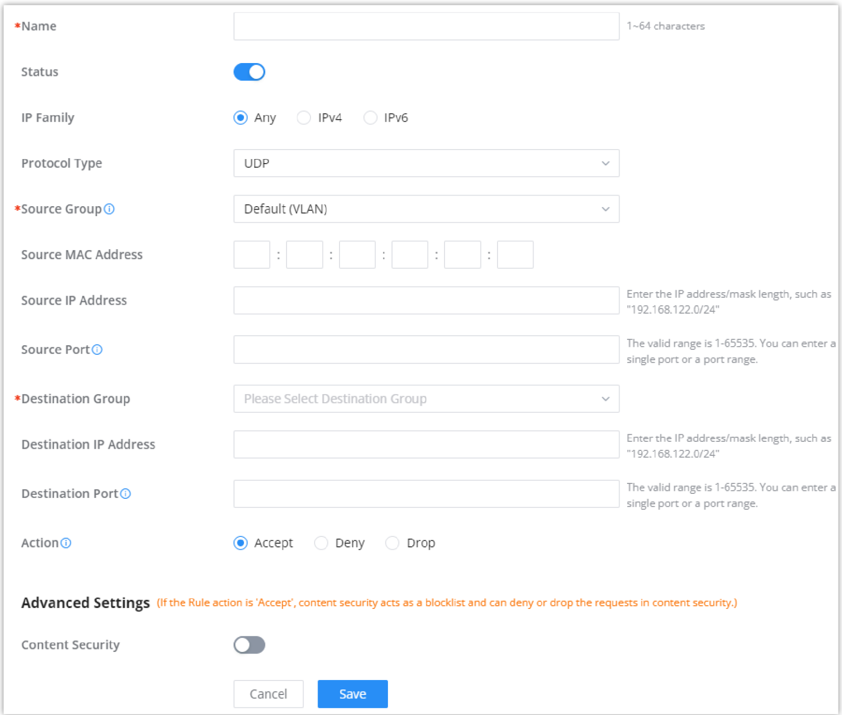
Name	Enter the name of the outbound rule.
Status	Toggle on/off the status of the outbound rule.
IP Family	Pick the IP family. ● **Any** ● **IPv4** ● **IPv6**
Protocol Type	Choose the protocol type. ● **UDP** ● **TCP** ● **UDP/TCP** ● **ICMP** ● **IGMP** ● **All**
Source IP Address	Specify the source IP address.
Source Port	To enter multiple port/port ranges, separate them using commas (,), for example:4,5-10.
Destination IP Address	Specify the destination IP address.
Destination Port	To enter multiple port/port ranges, separate them using commas (,), for example:4,5-10.
Action	If set to "Accept", the external devices are allowed to access the router; if set to "Deny", the access of the external devices is denied and the result is returned; if set to "Drop", the access request of the external device will be directly droped.
Advanced Settings	

Content Security	Enable content security, once enabled the user can customize security features which are described below.
Content Security Action	If set to "Accept", the router is allowed to access the external network. If set to "Deny", the access to external network is denied and the result is returned. If set to "Drop", the request of access to external network will be directly droped.
DNS Filtering	Specify the DNS filtering rule.
APP Filtering	Specify the app filtering rule.
URL Filtering	Specify the URL filtering rule.

Traffic Rules – Outbound Rules

Forwarding Rules

GWN70x2 offers the possibility to allow traffic between different groups and interfaces.



*Name		1~64 characters
Status	● on	
IP Family	● Any ○ IPv4 ○ IPv6	
Protocol Type	UDP	
*Source Group ⓘ	Default (VLAN)	
Source MAC Address	: : : : :	
Source IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
Source Port ⓘ		The valid range is 1-65535. You can enter a single port or a port range.
*Destination Group	Please Select Destination Group	
Destination IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
Destination Port ⓘ		The valid range is 1-65535. You can enter a single port or a port range.
Action ⓘ	● Accept ○ Deny ○ Drop	

Advanced Settings (If the Rule action is 'Accept', content security acts as a blocklist and can deny or drop the requests in content security.)

Content Security	○ off

Traffic Rules – Forward Rules

Advanced NAT

NAT or Network address translation as the name suggests it's a translation or mapping private or internal addresses to public IP addresses or vice versa, and the GWN routers support both.

- **SNAT:** Source NAT refers to the mapping of clients' IP addresses (Private or Internal Addresses) to a public one.
- **DNAT:** Destination NAT is the reverse process of SNAT where packets will be redirected to a specific internal address.

The Firewall Advanced NAT page provides the ability to set up the configuration for Static and Dynamic NAT.

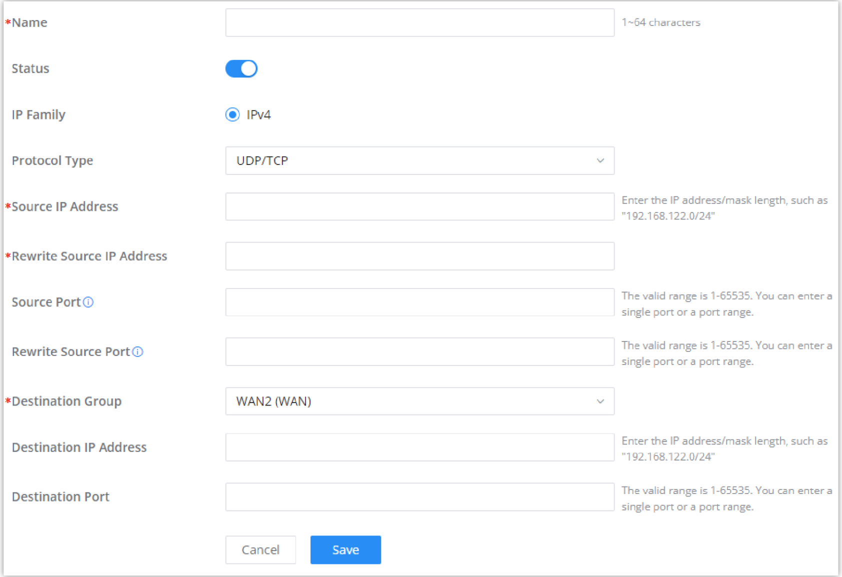
SNAT

The following actions are available for SNAT.

Click on [+ Add] to add the Port Forward rule.

Click on to ✎ edit a Port Forward rule.

Click on to 🗑 delete a Port Forward rule.



*Name		1~64 characters
Status	●	
IP Family	● IPv4	
Protocol Type	UDP/TCP	
*Source IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
*Rewrite Source IP Address		
Source Port ⓘ		The valid range is 1-65535. You can enter a single port or a port range.
Rewrite Source Port ⓘ		The valid range is 1-65535. You can enter a single port or a port range.
*Destination Group	WAN2 (WAN)	
Destination IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
Destination Port		The valid range is 1-65535. You can enter a single port or a port range.

SNAT page

Refer to the below table when creating or editing an SNAT entry:

Name	Specify a name for the SNAT entry
IP Family	Select the IP version, two options are available: IPv4 or Any.
Protocol Type	Select one of the protocols from dropdown list or All, available options are: UDP/TCP, UDP, TCP and All.
Source IP Address	Set the Source IP address.
Rewrite Source IP Address	Set the Rewrite IP. The source IP address of the data package from the source group will be updated to this configured IP.
Source Port	Set the Source Port
Rewrite Source Port	Set the Rewrite source port.
Destination Group	Select a WAN interface or a VLAN for Destination Group.
Destination IP Address	Set the Destination IP address.
Destination Port	Set the Destination Port

SNAT page

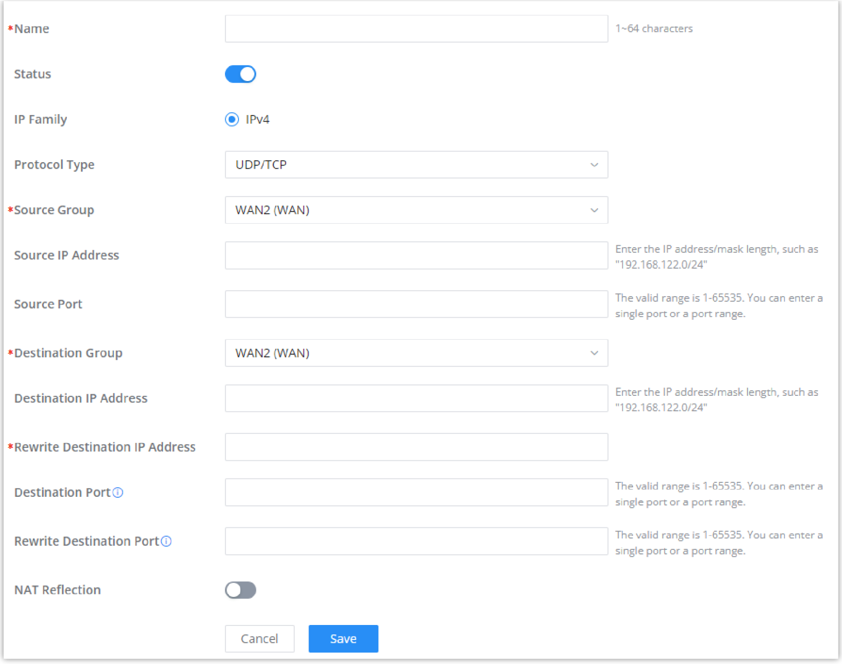
DNAT

The following actions are available for DNAT:

Click on + Add to add the Port Forward rule.

Click on to ✎ edit a Port Forward rule.

Click on to 🗑delete a Port Forward rule.



*Name		1~64 characters
Status	●	
IP Family	● IPv4	
Protocol Type	UDP/TCP	
*Source Group	WAN2 (WAN)	
Source IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
Source Port		The valid range is 1-65535. You can enter a single port or a port range.
*Destination Group	WAN2 (WAN)	
Destination IP Address		Enter the IP address/mask length, such as "192.168.122.0/24"
*Rewrite Destination IP Address		
Destination Port ⓘ		The valid range is 1-65535. You can enter a single port or a port range.
Rewrite Destination Port ⓘ		The valid range is 1-65535. You can enter a single port or a port range.
NAT Reflection	○	
	Cancel Save	

Advanced NAT – DNAT

Refer to the below table when creating or editing a DNAT entry:

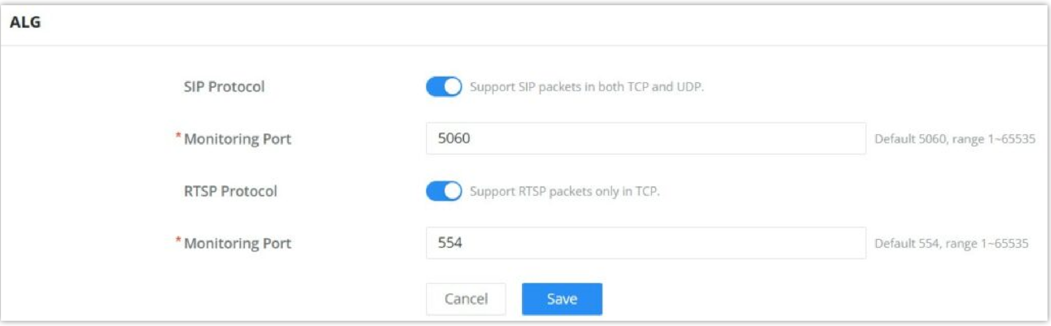
Name	Specify a name for the DNAT entry
IP Family	Select the IP version, three options are available: IPv4, IPv6 or Any.
Protocol Type	Select one of the protocols from dropdown list or All, available options are: UDP, TCP, TCP/UCP and All.
Source Group	Select a WAN interface or a LAN group for Source Group, or select All.
Source IP Address	Set the Source IP address.
Source Port	Set the Source Port.
Destination Group	Select a WAN interface or a LAN group for Destination Group, or select All. Make sure that destination and source groups are different to avoid conflict.
Destination IP Address	Set the Destination IP address.
Rewrite Destination IP Address	Set the Rewrite Destination IP Address.
Destination Port	Set the Destination Port.
Rewrite Destination Port	Set the Rewrite Destination Port
NAT Reflection	Click on "**ON**" to enable NAT Reflection
NAT Reflection Source	Select NAT Reflection either Internal or External.

Advanced NAT – DNAT

ALG

ALG stands for **Application Layer Gateway**. Its purpose is to prevent some of the problems caused by router firewalls by inspecting VoIP traffic (packets) and if necessary modifying it.

Navigate to **Web GUI** → **Firewall** → **ALG** to activate ALG.



ALG

SIP Protocol	Support SIP packets in both TCP and UDP.	
* Monitoring Port	5060	Default 5060, range 1~65535
RTSP Protocol	Support RTSP packets only in TCP.	
* Monitoring Port	554	Default 554, range 1~65535

ALG

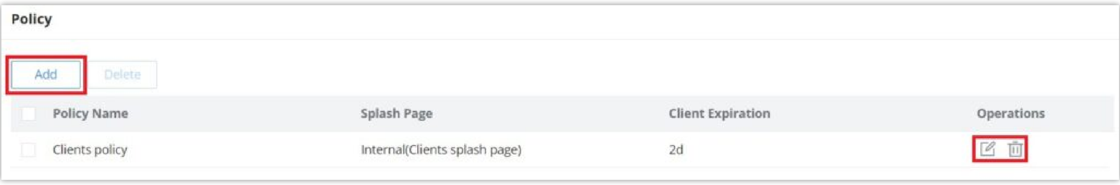
CAPTIVE PORTAL

Captive Portal feature on GWN70x2 helps to define a Landing Page (Web page) that will be displayed on Wi-Fi clients' browsers when attempting to access the Internet. Once connected Wi-Fi clients will be forced to view and interact with that landing page before Internet access is granted.

The Captive Portal feature can be configured from the GWN70x2 Web page under "**Captive Portal**".

Policy

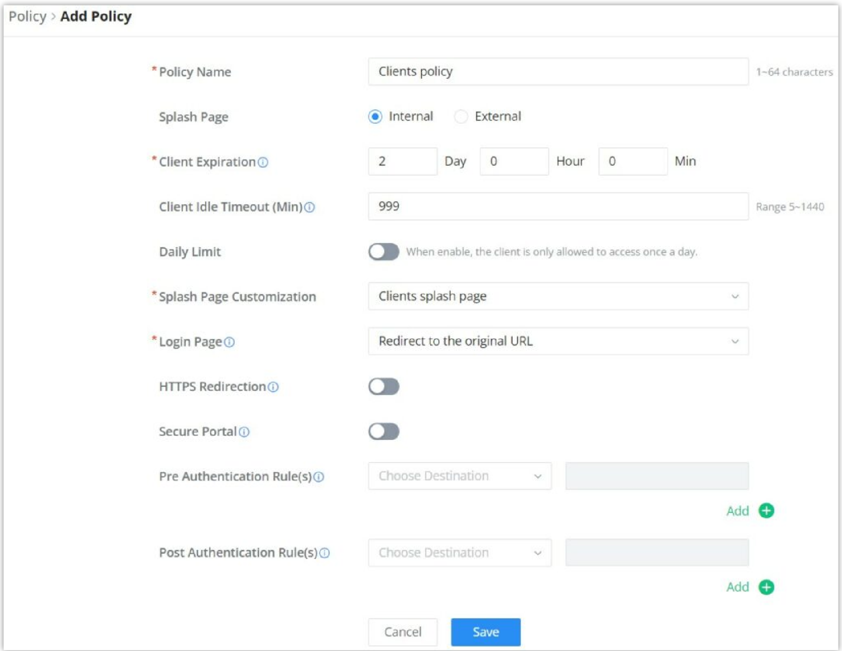
Users can customize a portal policy on this page. Click on the "**Add**" button to add a new policy or click on "Edit" to edit a previously added one.



Policy

Policy Name	Splash Page	Client Expiration	Operations
Clients policy	Internal(Clients splash page)	2d	

Policy page



Policy › Add Policy

* Policy Name	Clients policy	1~64 characters
Splash Page	● Internal ○ External	
* Client Expiration	2 Day 0 Hour 0 Min	
Client Idle Timeout (Min)	999	Range 5~1440
Daily Limit	When enable, the client is only allowed to access once a day.	
* Splash Page Customization	Clients splash page	
* Login Page	Redirect to the original URL	
HTTPS Redirection		
Secure Portal		
Pre Authentication Rule(s)	Choose Destination	
Post Authentication Rule(s)	Choose Destination	

Policy page

The policy configuration page allows for adding multiple captive portal policies which will be applied to SSIDs and contain options for different authentication types.

Policy Name	Enter a policy name.
Splash Page	● **Internal** ● **External**
Client Expiration	Specify the expiration time for client network connection. Once timed out, client should re-authenticate for further network use.
Client Idle Timeout (min)	Specify the idle timeout value for guest network connection. Once timed out, guest should re-authenticate for further network use.
Daily Limit	When enable, the client is only allowed to access once a day.
Splash Page Customization	Select the customized splash page.
Login Page	Set portal authentication through the page to automatically jump to the target page.
HTTPS Redirection	If enabled, both HTTP and HTTPS requests sent from stations will be redirected by using HTTPS protocol. And station may receive an invalid certification error while doing HTTPS browsing before authentication. If disabled, only the http request will be redirected.
Secure Portal	If enabled, HTTPS protocol will be used in the communication between STA and router. Otherwise, the HTTP protocol will be used.
Pre Authentication Rule (sec)	Set pre authentication rules, allowing clients access some URLs before authenticated successfully.
Post Authentication Rule (sec)	Set post authentications to restrict users from accessing the following addresses after authenticating successfully.

Policy page

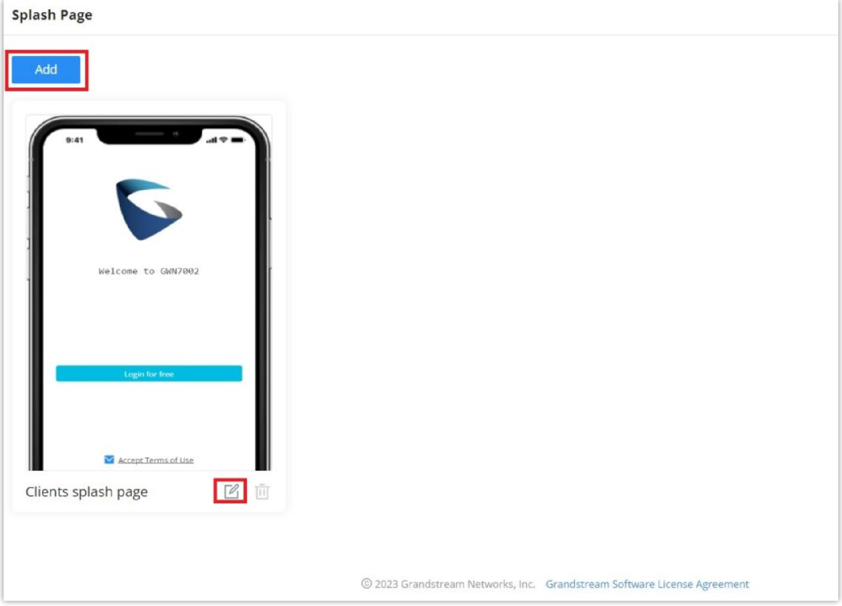
Splash Page

The splash page allows users with an easy-to-configure menu to generate a customized splash page that will be displayed to the users when trying to connect to the Wi-Fi.

On this menu, users can create multiple splash pages and assign each one of them to a separate captive portal policy to enforce the select authentication type.

The generation tool provides an intuitive "WYSIWYG" method to customize a captive portal with a very rich manipulation tool.

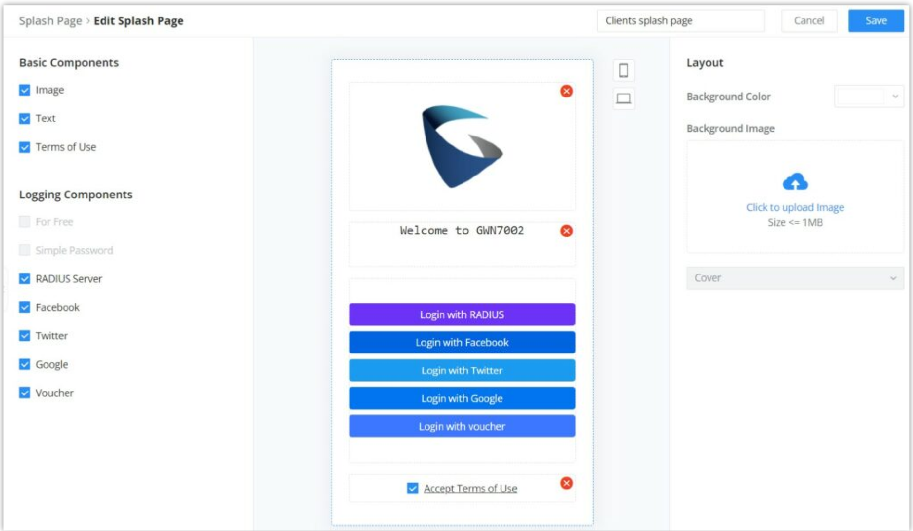
To add a splash page, click on the "**Add**" button or click on the "**Edit**" icon to edit a previously added one.



Splash Page

Users can set the following:

- **Authentication type**: Add one or more ways from the supported authentication methods (Simple Password, Radius Server, For Free, Facebook, Twitter, Google, and Voucher).
- **Set up a picture (company logo**) to be displayed on the splash page.
- **Customize** the layout of the page and background colors.
- **Customize the Terms of Use text.**
- **Visualize a preview** for both mobile devices and laptops.

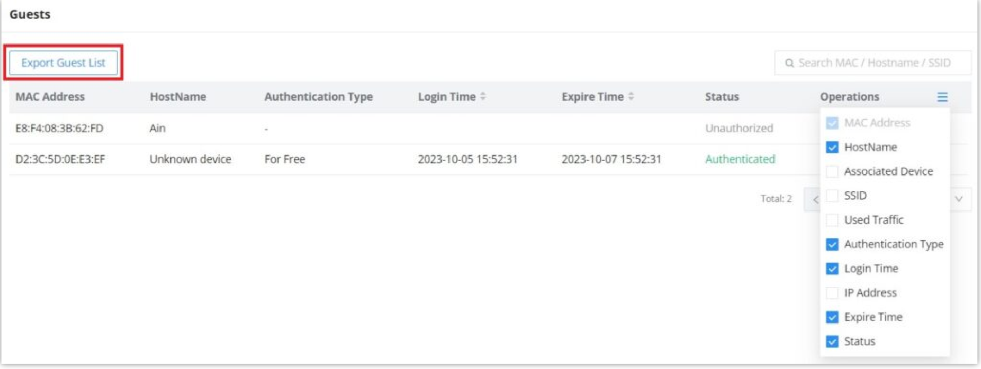


Add/edit a Splash page

Guests

This page displays information about the clients connected via the Captive portal including the MAC address, Hostname, Authentication Type, etc.

To export the list of all guests, please click on the “Export Guest List” button, and then an EXCEL file will be downloaded.



Guests

Export Guest List

Search MAC / Hostname / SSID

MAC Address	HostName	Authentication Type	Login Time	Expire Time	Status	Operations
E8:F4:08:3B:62:FD	Ain	-			Unauthorized	
D2:3C:5D:0E:E3:EF	Unknown device	For Free	2023-10-05 15:52:31	2023-10-07 15:52:31	Authenticated	

Total: 2

- ☑ MAC Address
- ☑ HostName
- □ Associated Device
- □ SSID
- □ Used Traffic
- ☑ Authentication Type
- ☑ Login Time
- □ IP Address
- ☑ Expire Time
- ☑ Status

Guest Page

Vouchers

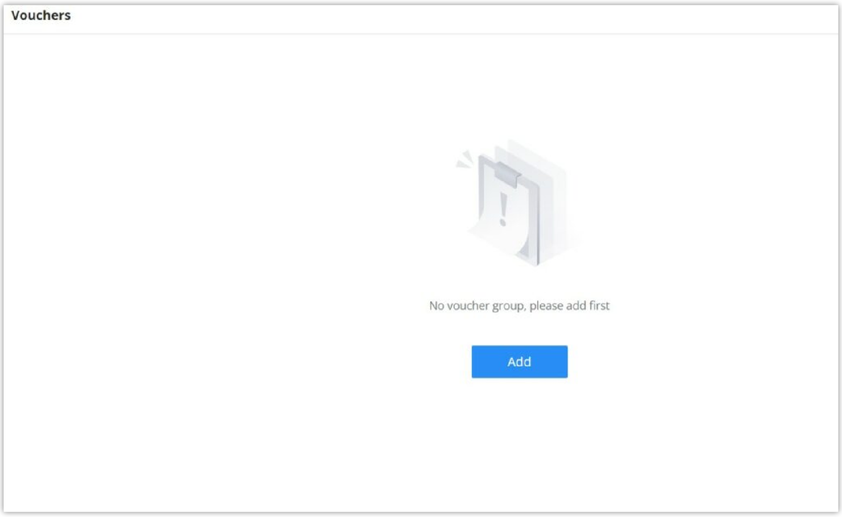
The Voucher feature will allow clients to have internet access for a limited duration using a code that is randomly generated from the platform controller.

As an example, a coffee shop could offer internet access to customers via Wi-Fi using voucher codes that can be delivered on each command. Once the voucher expires the client can no longer connect to the internet.

Note that multiple users can use a single voucher for connection with the expiration duration of the voucher that starts counting after the first successful connection from one of the users that are allowed.

Another interesting feature is that the admin can set data bandwidth limitations on each created voucher depending on the current load on the network, users' profile (VIP customers get more speed than regular ones, etc.…), and the internet connection available (fiber, DSL or cable, etc.…) to avoid connection congestion and slowness of the service.

Click on the "**Add**" button to create a voucher group.



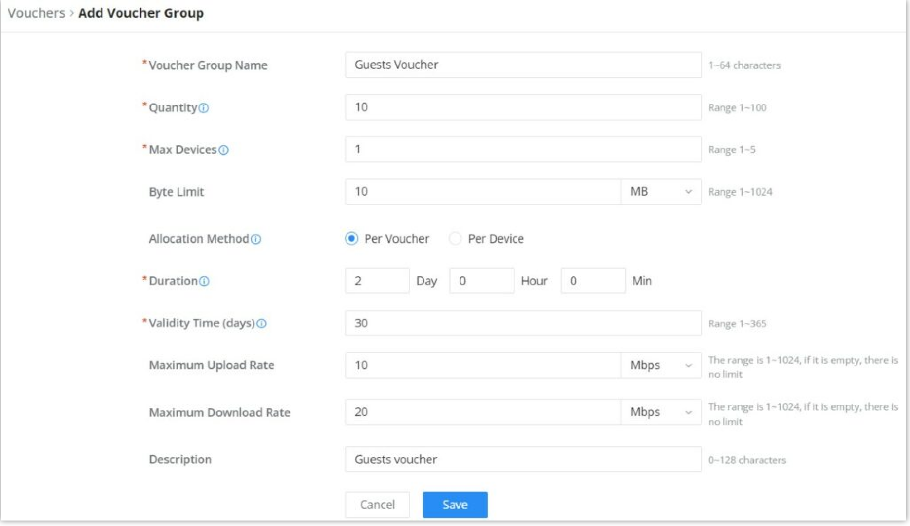
Vouchers

No voucher group, please add first

Add

Voucher page

Please refer to the figure below when filling up the fields.



Vouchers > **Add Voucher Group**

*Voucher Group Name	Guests Voucher		1~64 characters
*Quantity	10		Range 1~100
*Max Devices	1		Range 1~5
Byte Limit	10	MB	Range 1~1024
Allocation Method	● Per Voucher	○ Per Device	
*Duration	2 Day 0 Hour 0 Min		
*Validity Time (days)	30		Range 1~365
Maximum Upload Rate	10	Mbps	The range is 1~1024, if it is empty, there is no limit
Maximum Download Rate	20	Mbps	The range is 1~1024, if it is empty, there is no limit
Description	Guests voucher		0~128 characters

Add/Edit Voucher

Note:

Clients connected through captive portals including vouchers will be listed on the Guests page under **Captive Portal → Guests**.

MAINTENANCE

GWN70x2 offers multiple tools and options for maintenance and debugging to help further troubleshoot and monitor the GWN70x2 resources.

TR-069

It is a protocol for communication between CPE (Customer Premise Equipment) and an ACS (Auto Configuration Server) that provides secure auto-configuration as well as other CPE management functions within a common framework.

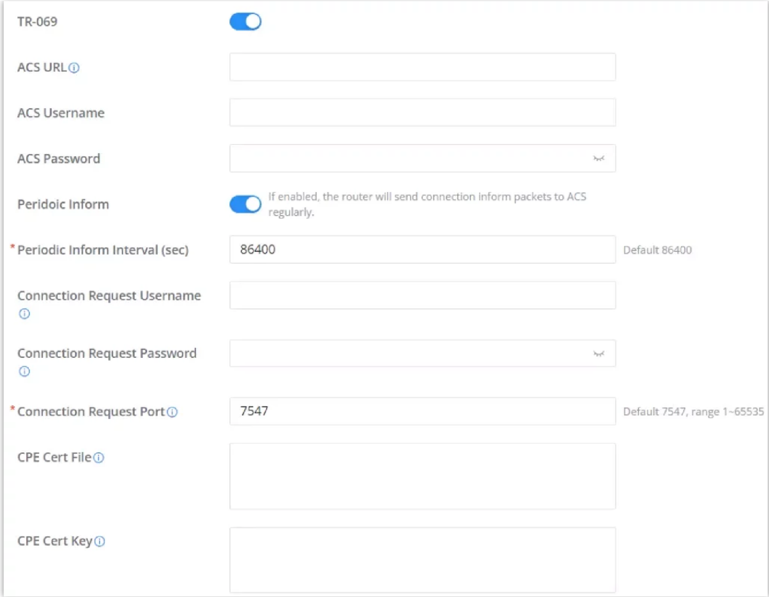
TR-069 stands for a “Technical Report” defined by the Broadband Forum that specifies the CWMP “CPE WAN Management Protocol”. It commonly uses HTTP or HTTPS as transport for communication between CPE and the ACS. The message exchange uses SOAP (XML_RPC) for the configuration and management of the device.

Important Note

If TR-069 is configured, GWN70x2 router cannot be managed by GWN.Cloud, and cannot continue to manage GWN76xx access points.

Note:

Supports WAN VLAN tag lockout under **Network Settings → WAN → Edit WAN → VLAN Tag option**.



TR-069

ACS URL

ACS Username

ACS Password

Peridoic Inform — If enabled, the router will send connection inform packets to ACS regularly.

*Periodic Inform Interval (sec): 86400 — Default 86400

Connection Request Username

Connection Request Password

*Connection Request Port: 7547 — Default 7547, range 1~65535

CPE Cert File

CPE Cert Key

TR-069 page

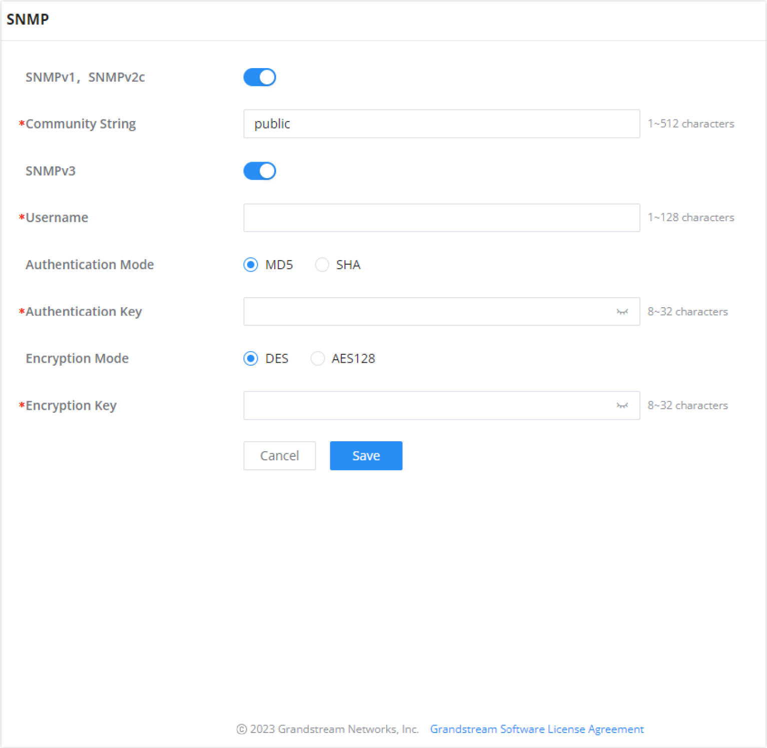
TR-069	Enable/disable TR-069 *TR-069 is enabled by default.*
ACS URL	Enter the FQDN or the IP address of the ACS server. ***Note:*** *If it is empty, the ACS source address in DHCP Option 43 is preferred.*
ACS Username	Enter the username.
ACS Password	Enter the password.
Periodic Inform	If enabled, the router will send connection inform packets to ACS regularly.
Periodic Inform Interval (sec)	This configures the time duration between each inform sent by the device to the ACS server. *Default is 86400.*
Connection Request Username	When ACS server sends a connection request to the router, the username that the router authenticates ACS must be consistent with the configuration of ACS side.
Connection Request Password	The password that the router authenticates ACS must be consistent with the configuration of ACS server.
Connection Request Port	The port for ACS to send connection request to the router. This port cannot be occupied by other device features. *Default is 7547.*
CPE Cert File	Enter the certificate that the router needs to use when connecting to ACS through SSL.
CPE Cert Key	Enter the certificate key that the router needs to use when connecting to ACS through SSL.

TR-069 page

SNMP

GWN70x2 routers support SNMP (Simple Network Management Protocol) which is widely used in network management for network monitoring for collecting information about monitored devices.

To configure SNMP settings, go to **GWN70**x2 **Web GUI → Maintenance → SNMP**, in this page the user can either enable SNMPv1, SNMPv2c, or enable SNMPv3, and enter all the necessary parameters.



SNMP

SNMPv1，SNMPv2c

*Community String: public — 1~512 characters

SNMPv3

*Username — 1~128 characters

Authentication Mode: ● MD5 ○ SHA

*Authentication Key — 8~32 characters

Encryption Mode: ● DES ○ AES128

*Encryption Key — 8~32 characters

SNMP

To configure SNMPv1 or SNMPv2, please refer to the table below:

SNMPv1, SNMPv2	Enable/disable SNMPv1 and SNMPv2
Community String	Enter the shared password of the community. **Note:**

SNMP – SNMPv1 or SNMPv2

To configure SNMPv3, please refer to the table below:

SNMPv3	Enable/disable SNMPv3.
Username	Enter a username.
Authentication Mode	Select the algorithm used for the authentication.
Authentication Key	Select the authentication password.
Encryption Mode	Select the encryption protocol used for the encryption of the data.
Encryption Key	Enter the encryption key.

SNMP – SNMPv3

Backup and Restore

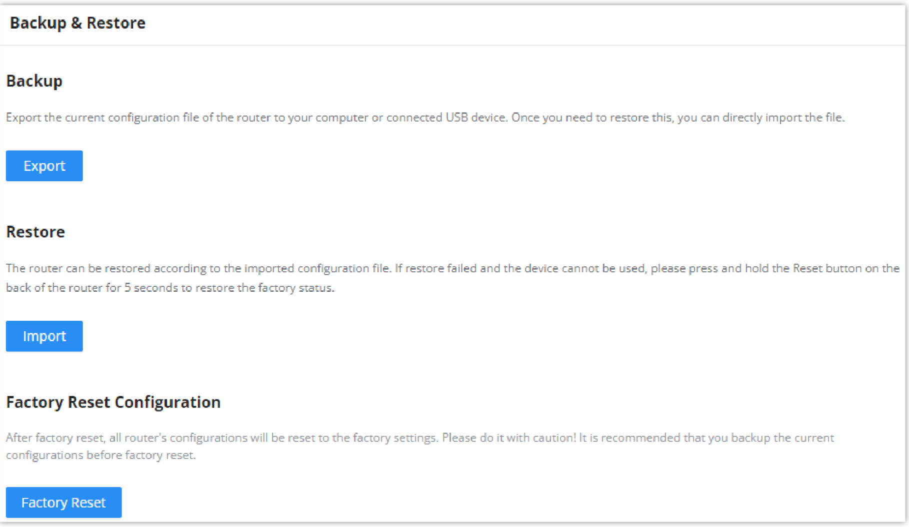
The GWN70x2 configuration can be backed up (e.g. when performing a firmware update), and the configuration can be uploaded to the router by clicking on “Import” and selecting the backup file. This will load the backed-up configuration back into the router quickly.

If the user wish to modify the configuration file before importing, then a **GWN Router Configuration Tool** can be used to make the necessary modifications to the configuration file. The tool is supported on Windows® and Linux environments. To download the tool: GWN Router Configuration Tool, then download the Windows® or Linux version accordingly.

Please, visit this guide on how to use the GWN Router Configuration Tool User Guide.

If the user wants to reset the device to its initial configuration, he/she can click “Factory Reset”.

> **Warning**
>
> Resetting the device to its factory settings will wipe all the configuration in the router and it cannot be restored unless the user has previously backed up the configuration. Please back up the configuration before performing a factory reset if you wish to keep a copy of your configuration.



Backup & Restore

Backup

Export the current configuration file of the router to your computer or connected USB device. Once you need to restore this, you can directly import the file.

Export

Restore

The router can be restored according to the imported configuration file. If restore failed and the device cannot be used, please press and hold the Reset button on the back of the router for 5 seconds to restore the factory status.

Import

Factory Reset Configuration

After factory reset, all router's configurations will be reset to the factory settings. Please do it with caution! It is recommended that you backup the current configurations before factory reset.

Factory Reset

Backup and Restore

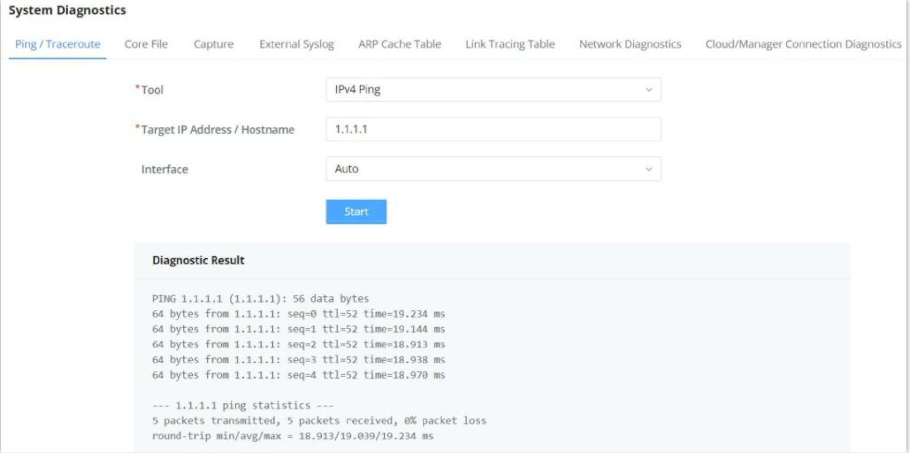
System Diagnostics

Many debugging tools are available on GWN70x2’s Web GUI to check the status and troubleshoot GWN70x2’s services and networks.

To access these tools navigate to **“Web UI → System Settings → System Diagnosis“**

Ping/Traceroute

Ping and Traceroute are useful debugging tools to verify reachability with other clients across the network (WAN or LAN). The GWN70x2 offers both Ping and Traceroute tools for IPv4 and IPv6 protocols.



*Tool: IPv4 Ping

*Target IP Address / Hostname: 1.1.1.1

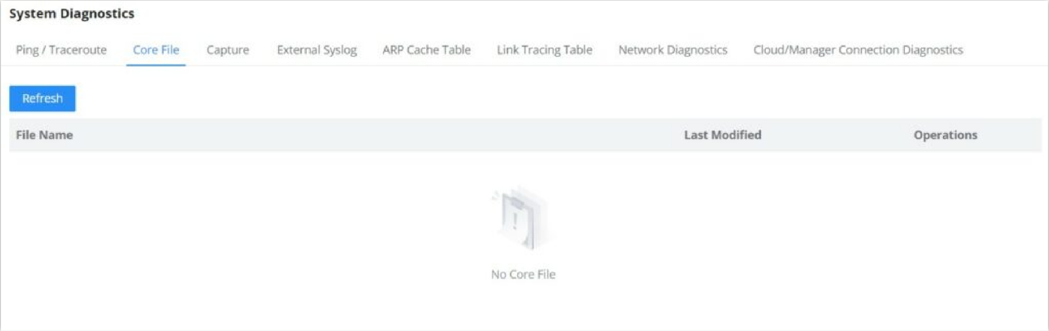
Interface: Auto

```
PING 1.1.1.1 (1.1.1.1): 56 data bytes
64 bytes from 1.1.1.1: seq=0 ttl=52 time=19.234 ms
64 bytes from 1.1.1.1: seq=1 ttl=52 time=19.144 ms
64 bytes from 1.1.1.1: seq=2 ttl=52 time=18.913 ms
64 bytes from 1.1.1.1: seq=3 ttl=52 time=18.938 ms
64 bytes from 1.1.1.1: seq=4 ttl=52 time=18.970 ms

--- 1.1.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 18.913/19.039/19.234 ms
```

Ping/Traceroute

Core File

When a crash event happens on the unit, it will automatically generate a core dump file that can be used by the engineering team for debugging purposes.



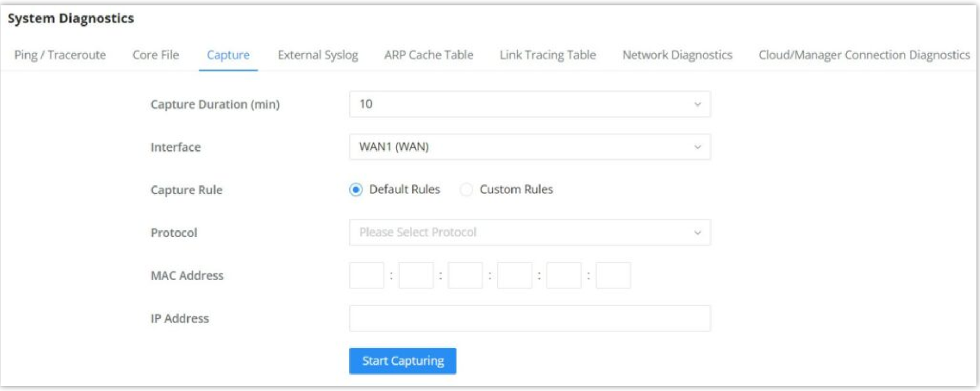
File Name	Last Modified	Operations

No Core File

Core File

Capture

This section is used to capture packet traces from the GWN70x2 interfaces (WAN ports and network groups) for troubleshooting purposes or monitoring. It's even possible to capture based on MAC address or IP Address, once done the user can click on Start Capturing and the file (CAP) will start downloading right away.



Capture Duration (min): 10

Interface: WAN1 (WAN)

Capture Rule: ● Default Rules ○ Custom Rules

Protocol: Please Select Protocol

MAC Address: __ : __ : __ : __ : __ : __

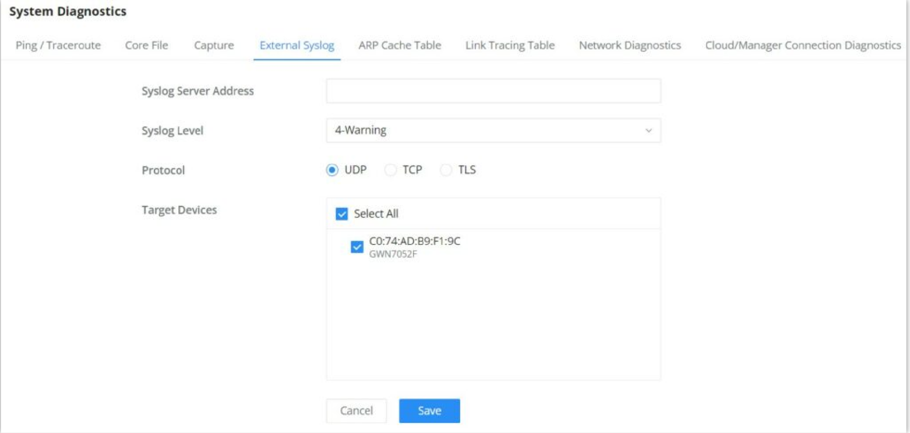
IP Address:

System Diagnostics – Capture

External Syslog

GWN70x2 routers support dumping the Syslog information to a remote server under **Web GUI → System Settings → System Diagnosis → External Syslog Tab**

Enter the Syslog server Hostname or IP address and select the level for the Syslog information. Nine levels of Syslog are available: None, Emergency, Alert, Critical, Error, Warning, Notice, Information, and Debug.



Syslog Server Address:

Syslog Level: 4-Warning

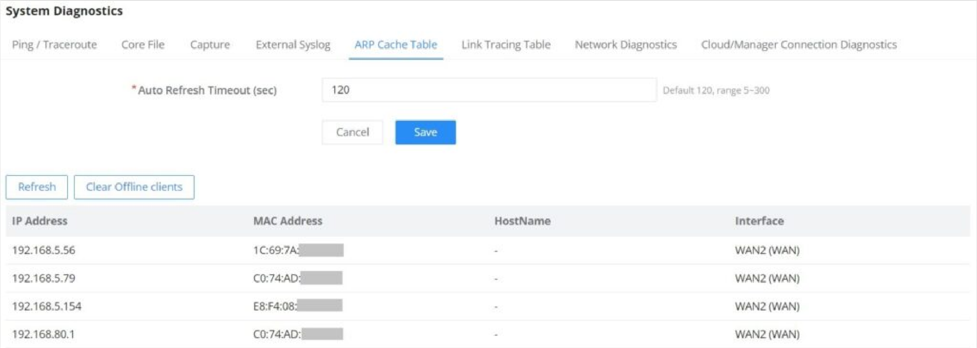
Protocol: ● UDP ○ TCP ○ TLS

Target Devices:
☑ Select All
☑ C0:74:AD:B9:F1:9C GWN7052F

System Diagnostics – External Syslog

ARP Cache Table

GWN70x2 router keeps an ARP table record of all the devices that have been assigned an IP address from the router. The record will keep the device's information when the device is offline. To access the ARP Cache Table, please navigate to **System Diagnostics → ARP Cache Table**



*Auto Refresh Timeout (sec): 120 Default 120, range 5~300

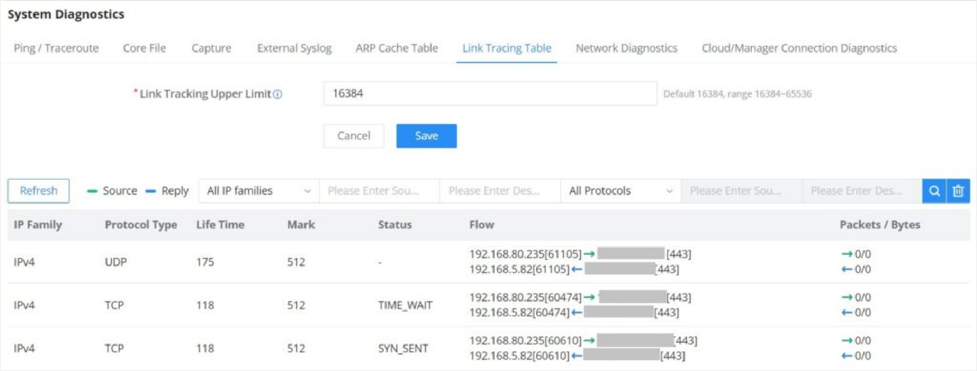
IP Address	MAC Address	HostName	Interface
192.168.5.56	1C:69:7A:[redacted]	-	WAN2 (WAN)
192.168.5.79	C0:74:AD:[redacted]	-	WAN2 (WAN)
192.168.5.154	E8:F4:08:[redacted]	-	WAN2 (WAN)
192.168.80.1	C0:74:AD:[redacted]	-	WAN2 (WAN)

ARP Cache Table

Link Tracing Table

The Link Tracing Table shows the flow of traffic by displaying the source IP address/Port (the green color) and the reply IP address/port (the blue color), also other information can be displayed like IP Family, Protocol Type, Life Time, Status, Packets/Bytes, etc.

Users/Administrators can also delete the flow of certain IP addresses/Ports (Source and Destination) or then click on the "**Delete**" button to clear the link tracing statistic.



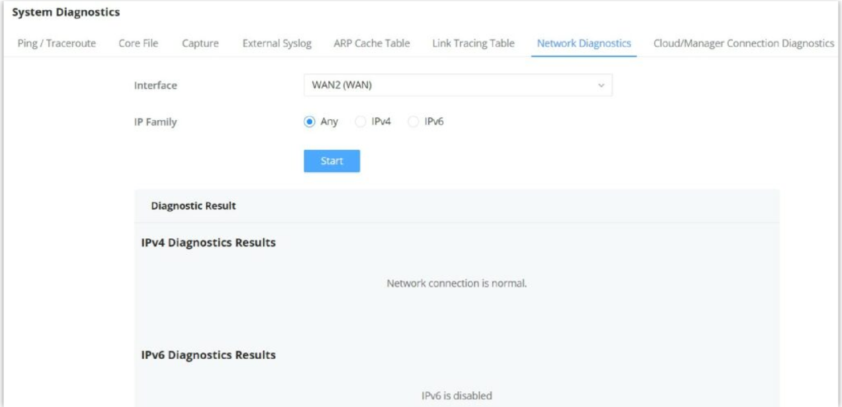
*Link Tracking Upper Limit: 16384 Default 16384, range 16384~65536

IP Family	Protocol Type	Life Time	Mark	Status	Flow	Packets / Bytes
IPv4	UDP	175	512	-	192.168.80.235[61105]→[redacted][443] 192.168.5.82[61105]←[redacted][443]	→0/0 ←0/0
IPv4	TCP	118	512	TIME_WAIT	192.168.80.235[60474]→[redacted][443] 192.168.5.82[60474]←[redacted][443]	→0/0 ←0/0
IPv4	TCP	118	512	SYN_SENT	192.168.80.235[60610]→[redacted][443] 192.168.5.82[60610]←[redacted][443]	→0/0 ←0/0

Link Tracing Table

Network Diagnostics

The network diagnostics feature allows the user to quickly diagnose the connection link on a specific WAN interface.



Interface: WAN2 (WAN)

IP Family: ● Any ○ IPv4 ○ IPv6

Diagnostic Result

IPv4 Diagnostics Results

Network connection is normal.

IPv6 Diagnostics Results

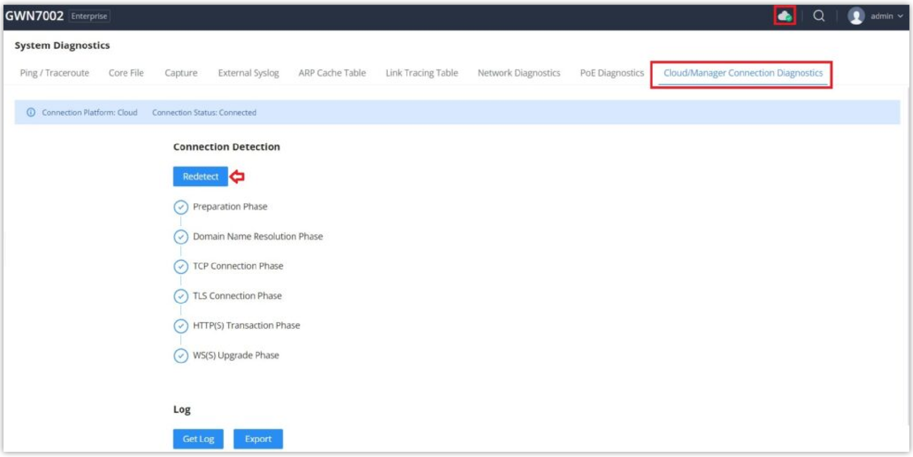
IPv6 is disabled

Network Diagnostics

Cloud/Manager Connection Diagnostics

If the GWN70x2 router is added to the GWN.Cloud or GWN Manager will display a Cloud icon with a green check mark (as shown in the figure below) indicating it's added to either GWN.Cloud or GWN Manager.

In case there is an issue with the connection, then the user can navigate to **Maintenance** → **System Diagnosis** → **Cloud/Manager Connection Diagnostics** and then click on "**Detection**" or "**Redetect**" button to see in what stage/step the connection has failed.



Connection Platform: Cloud   Connection Status: Connected

Connection Detection

✓ Preparation Phase

✓ Domain Name Resolution Phase

✓ TCP Connection Phase

✓ TLS Connection Phase

✓ HTTP(S) Transaction Phase

✓ WS(S) Upgrade Phase

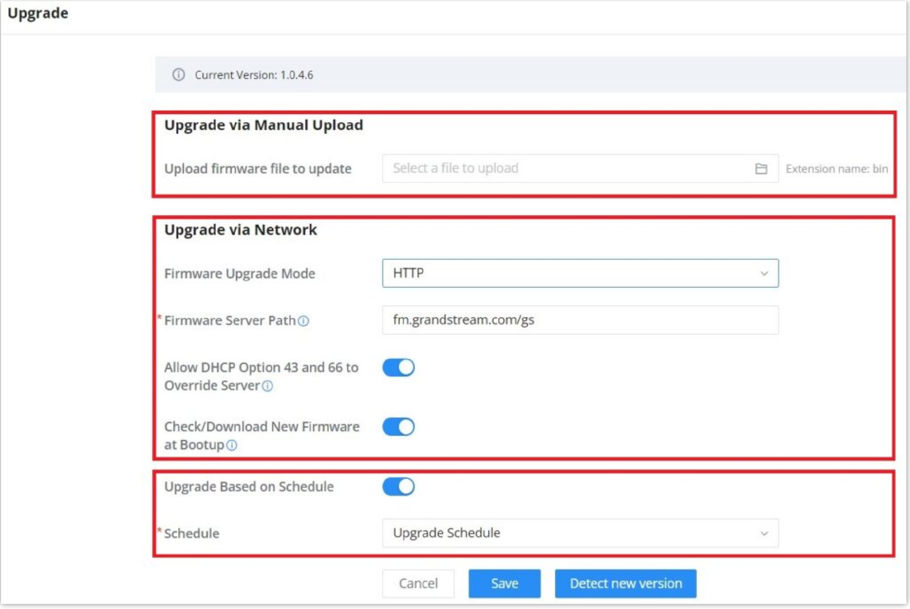
Log

Cloud/Manager Connection Diagnostics

Upgrade

Under **Maintenance** → **Upgrade.** The user has the option to upgrade the GWN router via manual upload (a bin file) or network either HTTP/HTTPS or TFTP or even schedule to upgrade at a specific time.

Please refer to the figure below:



Upgrade

Current Version: 1.0.4.6

Upgrade via Manual Upload

Upload firmware file to update: Select a file to upload — Extension name: bin

Upgrade via Network

Firmware Upgrade Mode: HTTP

*Firmware Server Path: fm.grandstream.com/gs

Allow DHCP Option 43 and 66 to Override Server: On

Check/Download New Firmware at Bootup: On

Upgrade Based on Schedule: On

*Schedule: Upgrade Schedule

Upgrade page

Alerts & Notifications

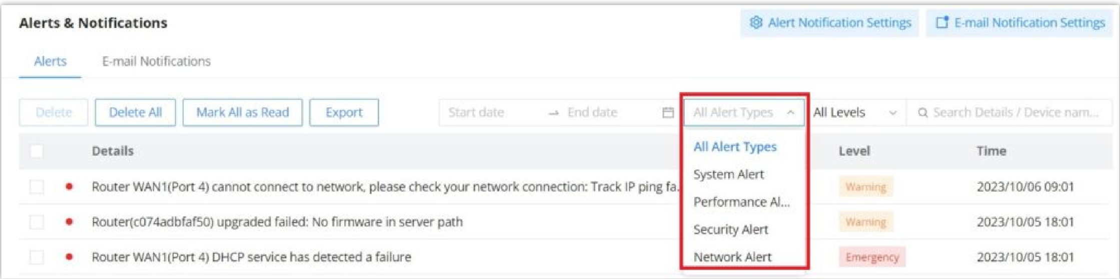
Alerts

The Alerts page displays alerts about the network, the user can specify to display only certain types like (**System, Performance, Security**, **or Network**) or the levels. To check the alerts that have been generated, please navigate to the **Maintenance → Alerts & Notifications page → Alerts tab.**

The alerts can be displayed either by type or level. However, that is not the only way to display them. The user can filter through the alert log using a date interval or search by MAC address or device name.

Alerts Types

The available types are **System, Performance, Security, and Network**, or the user can choose to display all the types.



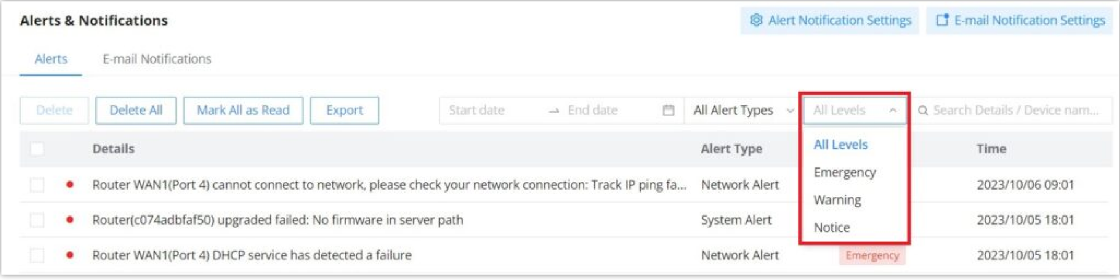
Alerts & Notifications

Details	Level	Time
Router WAN1(Port 4) cannot connect to network, please check your network connection: Track IP ping fa...	Warning	2023/10/06 09:01
Router(c074adbfaf50) upgraded failed: No firmware in server path	Warning	2023/10/05 18:01
Router WAN1(Port 4) DHCP service has detected a failure	Emergency	2023/10/05 18:01

Alerts Types

Alerts Levels

The user can filter the alert level by the following levels: **All Levels, Emergency, Warning or Notice**.



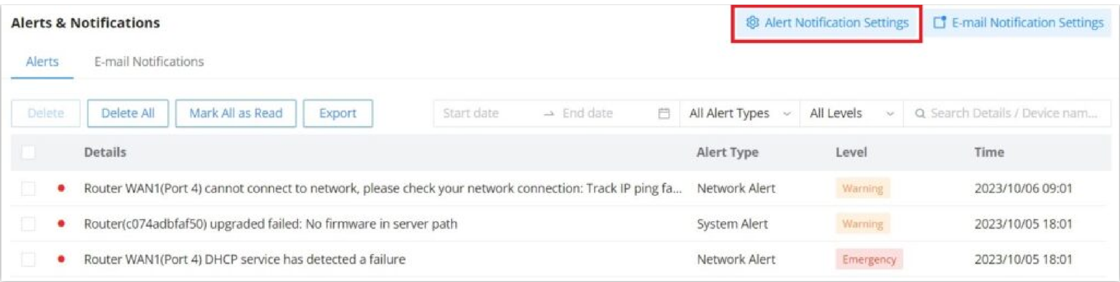
Alerts & Notifications

Details	Alert Type		Time
Router WAN1(Port 4) cannot connect to network, please check your network connection: Track IP ping fa...	Network Alert		2023/10/06 09:01
Router(c074adbfaf50) upgraded failed: No firmware in server path	System Alert		2023/10/05 18:01
Router WAN1(Port 4) DHCP service has detected a failure	Network Alert	Emergency	2023/10/05 18:01

Alerts Levels

Alert Notification Settings

To enable the notifications on the Alerts tab, please click on the "**Alert Notification Settings**" button as shown below:

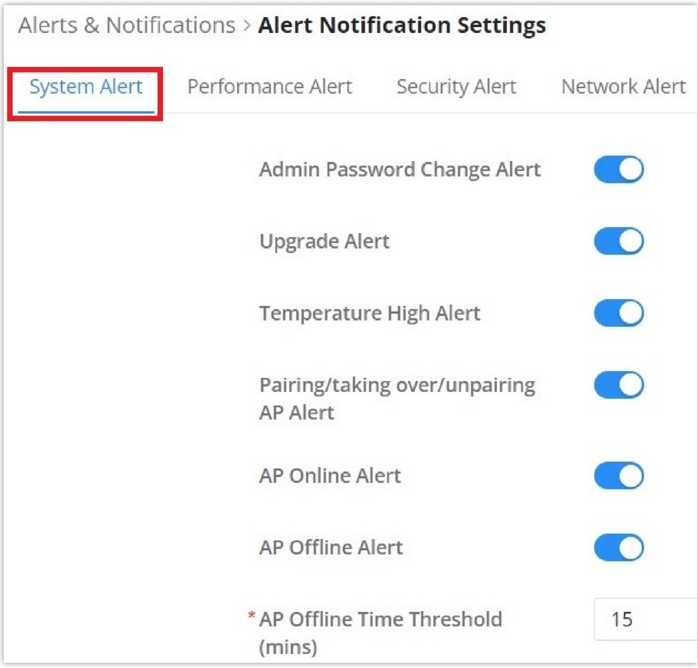


	Details	Alert Type	Level	Time
□ ●	Router WAN1(Port 4) cannot connect to network, please check your network connection: Track IP ping fa...	Network Alert	Warning	2023/10/06 09:01
□ ●	Router(c074adbfaf50) upgraded failed: No firmware in server path	System Alert	Warning	2023/10/05 18:01
□ ●	Router WAN1(Port 4) DHCP service has detected a failure	Network Alert	Emergency	2023/10/05 18:01

Alert Notification Settings

The figures below show all the possible alert notifications that the user can enable on the Alerts tab, organized into 4 categories: System Alert, Performance Alert, Security Alert, and **Network** Alert.

Please refer to the figures below:



Admin Password Change Alert ●

Upgrade Alert ●

Temperature High Alert ●

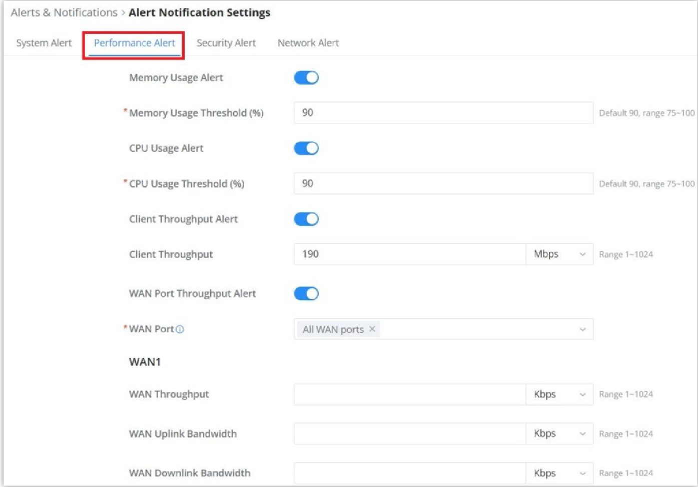
Pairing/taking over/unpairing AP Alert ●

AP Online Alert ●

AP Offline Alert ●

*AP Offline Time Threshold (mins) 15

Alert Notification Settings – part 1



Memory Usage Alert ●

*Memory Usage Threshold (%) 90 Default 90, range 75~100

CPU Usage Alert ●

*CPU Usage Threshold (%) 90 Default 90, range 75~100

Client Throughput Alert ●

Client Throughput 190 Mbps Range 1~1024

WAN Port Throughput Alert ●

*WAN Port All WAN ports ×

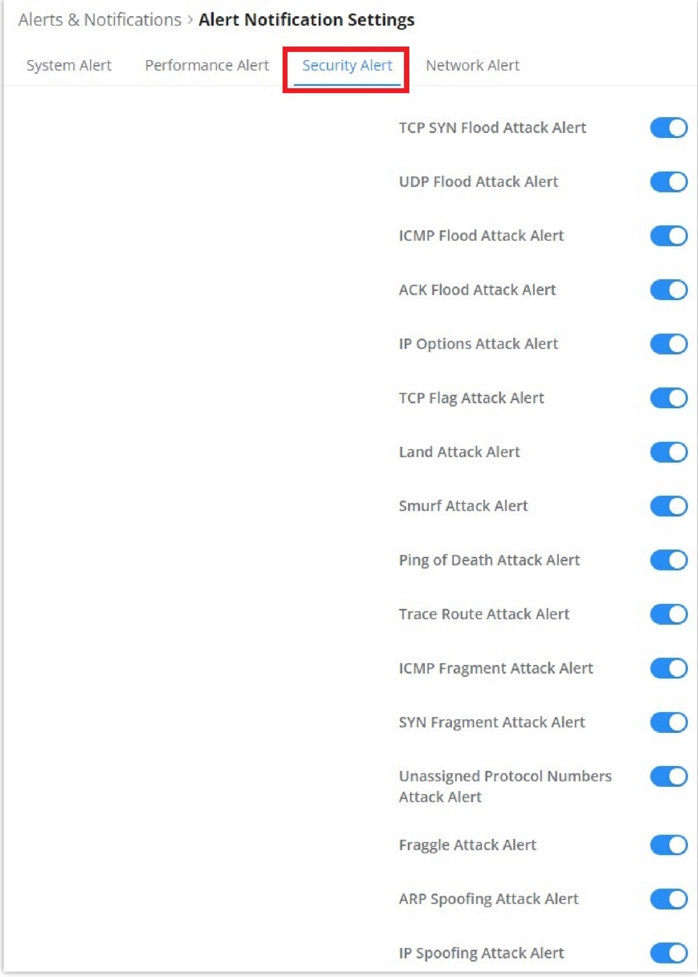
WAN1

WAN Throughput Kbps Range 1~1024

WAN Uplink Bandwidth Kbps Range 1~1024

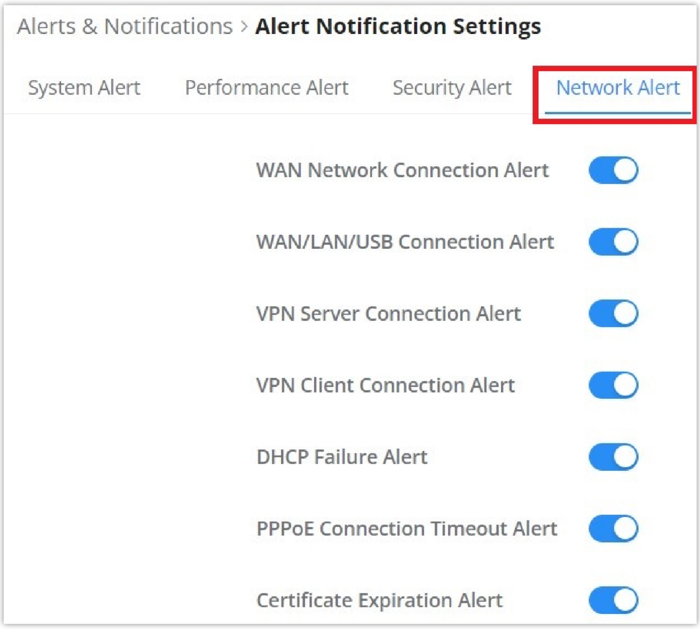
WAN Downlink Bandwidth Kbps Range 1~1024

Alert Notification Settings – part 2


Alerts & Notifications > **Alert Notification Settings**

TCP SYN Flood Attack Alert
UDP Flood Attack Alert
ICMP Flood Attack Alert
ACK Flood Attack Alert
IP Options Attack Alert
TCP Flag Attack Alert
Land Attack Alert
Smurf Attack Alert
Ping of Death Attack Alert
Trace Route Attack Alert
ICMP Fragment Attack Alert
SYN Fragment Attack Alert
Unassigned Protocol Numbers Attack Alert
Fraggle Attack Alert
ARP Spoofing Attack Alert
IP Spoofing Attack Alert

Alert Notification Settings – part 3

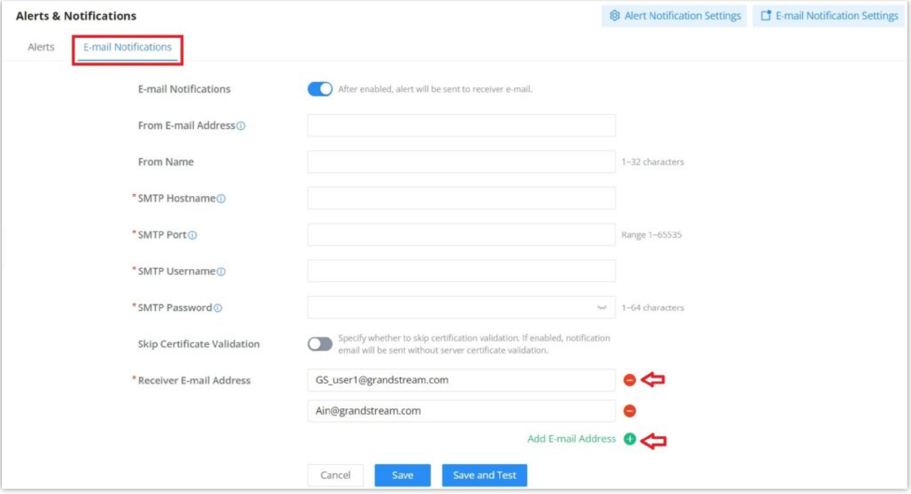

Alerts & Notifications > **Alert Notification Settings**

WAN Network Connection Alert
WAN/LAN/USB Connection Alert
VPN Server Connection Alert
VPN Client Connection Alert
DHCP Failure Alert
PPPoE Connection Timeout Alert
Certificate Expiration Alert

Alert Notification Settings – part 4

E-mail Notifications

On this tab, the user can set up the E-mails that will receive the notifications, once the feature is enabled, then the user can fill up the fields according to SMTP parameters. Refer to the figure below:



Alerts & Notifications

Alert Notification Settings | E-mail Notification Settings

Alerts | E-mail Notifications

E-mail Notifications: After enabled, alert will be sent to receiver e-mail.

From E-mail Address

From Name: 1~32 characters

*SMTP Hostname

*SMTP Port: Range 1~65535

*SMTP Username

*SMTP Password: 1~64 characters

Skip Certificate Validation: Specify whether to skip certification validation. If enabled, notification email will be sent without server certificate validation.

*Receiver E-mail Address: GS_user1@grandstream.com

Ain@grandstream.com

Add E-mail Address

Cancel | Save | Save and Test

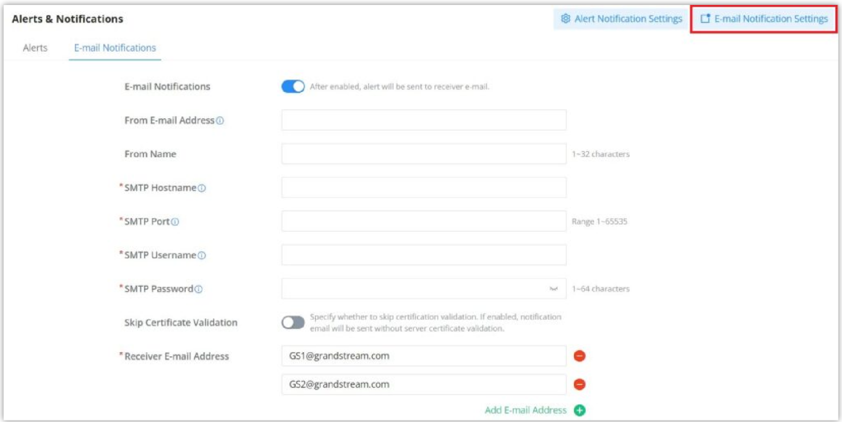
Alerts – E-mail Notifications

It's possible to add more than one receiver E-mail address as shown in the figure above.

- Click on the "**Minus**" icon to delete the receiver's E-mail address.
- Click on the "**Plus**" icon to add the receiver's E-mail address.

E-mail Notification Settings

To select what notifications will be sent to the receiver's E-mail addresses, please click on the "**E-mail Notification Settings**" button as shown below:



Alerts & Notifications

Alert Notification Settings | E-mail Notification Settings

Alerts | E-mail Notifications

E-mail Notifications: After enabled, alert will be sent to receiver e-mail.

From E-mail Address

From Name: 1~32 characters

*SMTP Hostname

*SMTP Port: Range 1~65535

*SMTP Username

*SMTP Password: 1~64 characters

Skip Certificate Validation: Specify whether to skip certification validation. If enabled, notification email will be sent without server certificate validation.

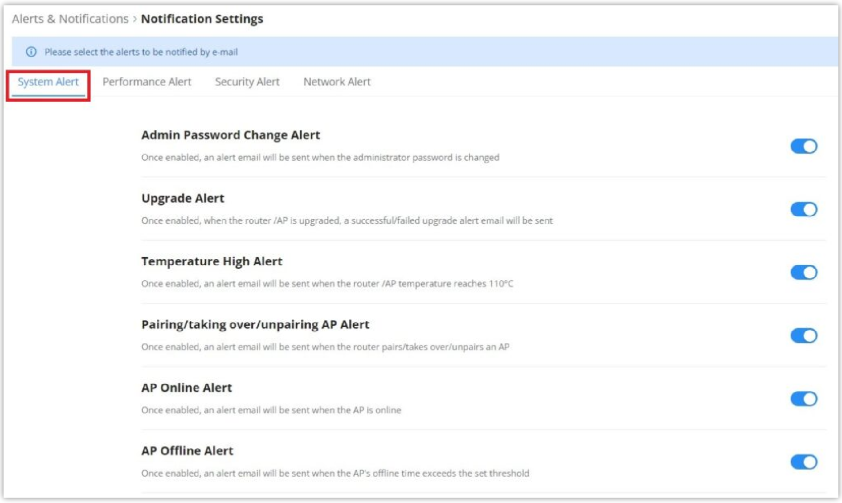
*Receiver E-mail Address: GS1@grandstream.com

GS2@grandstream.com

Add E-mail Address

E-mail Notification Settings

The figures below show all the possible E-mail notifications that the user can send to the pre-configured receiver E-mail Addresses, organized into 4 categories: **System** Alert, **Performance** Alert, **Security** Alert, and **Network** Alert.



Alerts & Notifications › Notification Settings

Please select the alerts to be notified by e-mail

System Alert | Performance Alert | Security Alert | Network Alert

Admin Password Change Alert
Once enabled, an alert email will be sent when the administrator password is changed

Upgrade Alert
Once enabled, when the router /AP is upgraded, a successful/failed upgrade alert email will be sent

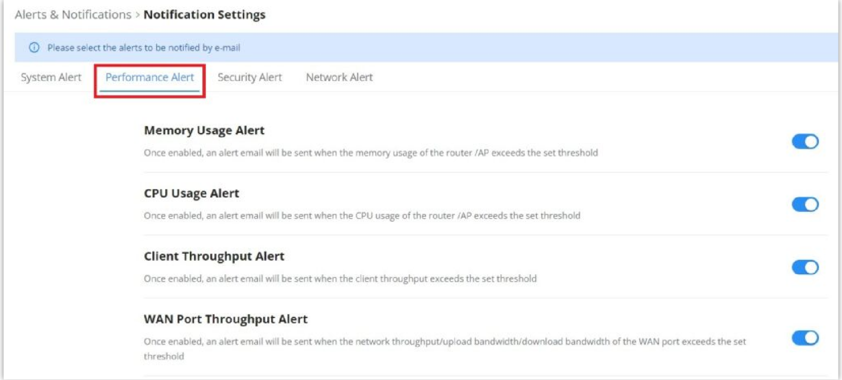
Temperature High Alert
Once enabled, an alert email will be sent when the router /AP temperature reaches 110°C

Pairing/taking over/unpairing AP Alert
Once enabled, an alert email will be sent when the router pairs/takes over/unpairs an AP

AP Online Alert
Once enabled, an alert email will be sent when the AP is online

AP Offline Alert
Once enabled, an alert email will be sent when the AP's offline time exceeds the set threshold

E-mail Notification Settings – part 1


Alerts & Notifications > Notification Settings
Please select the alerts to be notified by e-mail
System Alert
Performance Alert
Security Alert
Network Alert

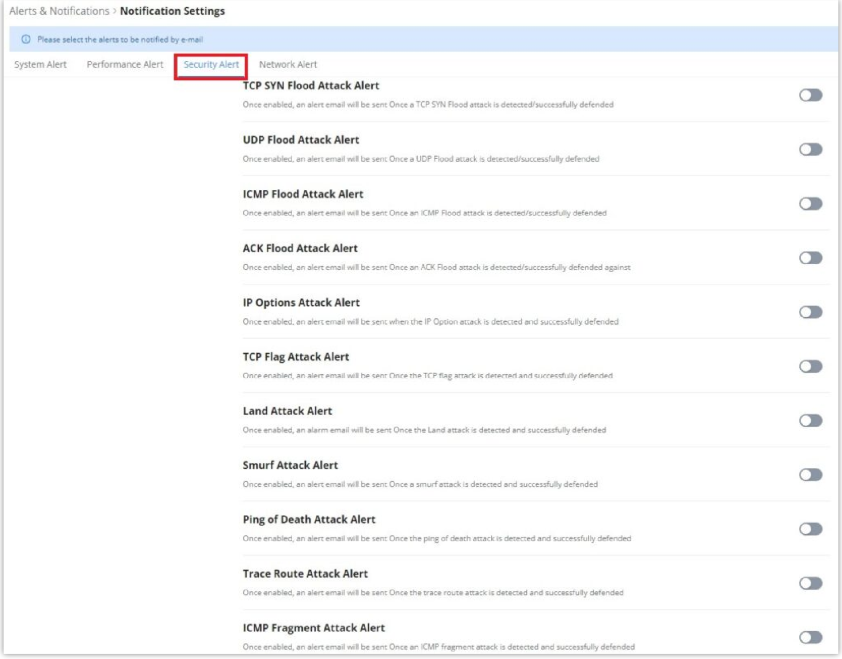
Memory Usage Alert
Once enabled, an alert email will be sent when the memory usage of the router /AP exceeds the set threshold

CPU Usage Alert
Once enabled, an alert email will be sent when the CPU usage of the router /AP exceeds the set threshold

Client Throughput Alert
Once enabled, an alert email will be sent when the client throughput exceeds the set threshold

WAN Port Throughput Alert
Once enabled, an alert email will be sent when the network throughput/upload bandwidth/download bandwidth of the WAN port exceeds the set threshold

E-mail Notification Settings – part 2


Alerts & Notifications > Notification Settings
Please select the alerts to be notified by e-mail
System Alert
Performance Alert
Security Alert
Network Alert

TCP SYN Flood Attack Alert
Once enabled, an alert email will be sent Once a TCP SYN Flood attack is detected/successfully defended

UDP Flood Attack Alert
Once enabled, an alert email will be sent Once a UDP Flood attack is detected/successfully defended

ICMP Flood Attack Alert
Once enabled, an alert email will be sent Once an ICMP Flood attack is detected/successfully defended

ACK Flood Attack Alert
Once enabled, an alert email will be sent Once an ACK Flood attack is detected/successfully defended against

IP Options Attack Alert
Once enabled, an alert email will be sent when the IP Option attack is detected and successfully defended

TCP Flag Attack Alert
Once enabled, an alert email will be sent Once the TCP flag attack is detected and successfully defended

Land Attack Alert
Once enabled, an alarm email will be sent Once the Land attack is detected and successfully defended

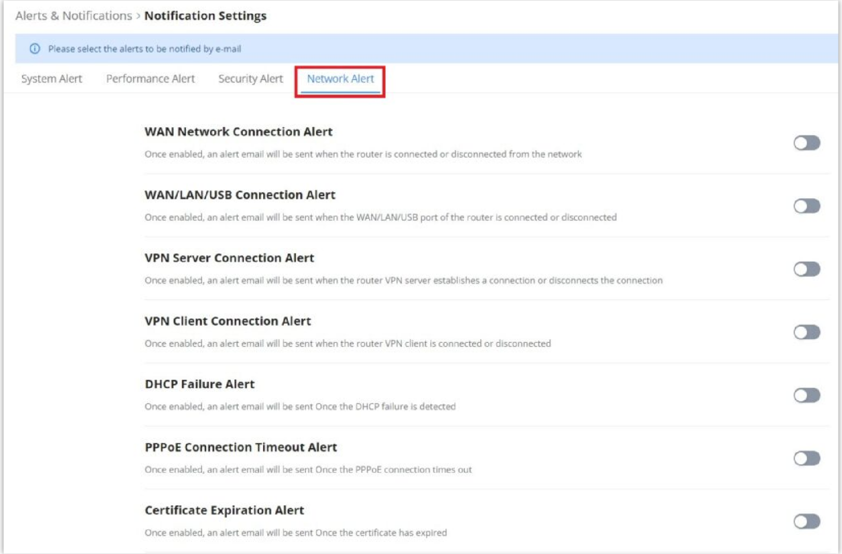
Smurf Attack Alert
Once enabled, an alert email will be sent Once a smurf attack is detected and successfully defended

Ping of Death Attack Alert
Once enabled, an alert email will be sent Once the ping of death attack is detected and successfully defended

Trace Route Attack Alert
Once enabled, an alert email will be sent Once the trace route attack is detected and successfully defended

ICMP Fragment Attack Alert
Once enabled, an alert email will be sent Once an ICMP fragment attack is detected and successfully defended

E-mail Notification Settings – part 3


Alerts & Notifications > Notification Settings
Please select the alerts to be notified by e-mail
System Alert
Performance Alert
Security Alert
Network Alert

WAN Network Connection Alert
Once enabled, an alert email will be sent when the router is connected or disconnected from the network

WAN/LAN/USB Connection Alert
Once enabled, an alert email will be sent when the WAN/LAN/USB port of the router is connected or disconnected

VPN Server Connection Alert
Once enabled, an alert email will be sent when the router VPN server establishes a connection or disconnects the connection

VPN Client Connection Alert
Once enabled, an alert email will be sent when the router VPN client is connected or disconnected

DHCP Failure Alert
Once enabled, an alert email will be sent Once the DHCP failure is detected

PPPoE Connection Timeout Alert
Once enabled, an alert email will be sent Once the PPPoE connection times out

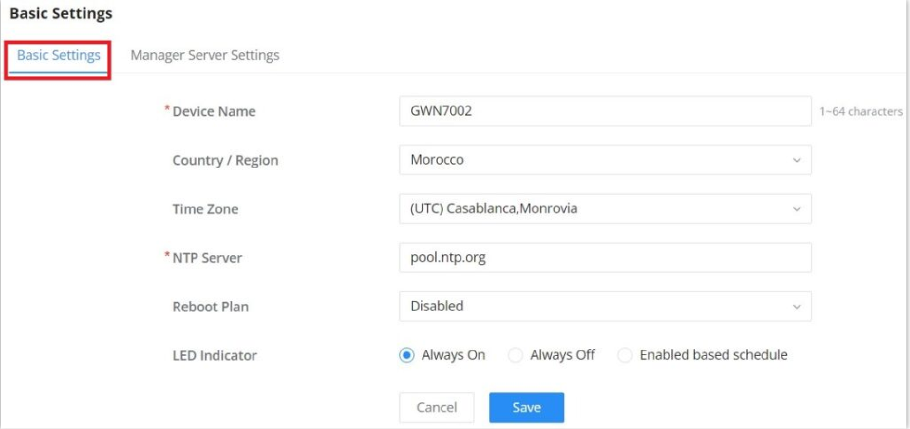
Certificate Expiration Alert
Once enabled, an alert email will be sent Once the certificate has expired

E-mail Notification Settings – part 4

SYSTEM SETTINGS

Basic Settings

On this page, the user can specify a name for the GWN70x2 router, and configure basic settings: country/region, time zone, NTP server, Reboot plan, and LED Indicator either Always On, Always Off, or even based on a schedule.



Basic Settings

Basic Settings | Manager Server Settings

* Device Name	GWN7002	1~64 characters
Country / Region	Morocco	
Time Zone	(UTC) Casablanca,Monrovia	
* NTP Server	pool.ntp.org	
Reboot Plan	Disabled	
LED Indicator	● Always On ○ Always Off ○ Enabled based schedule	

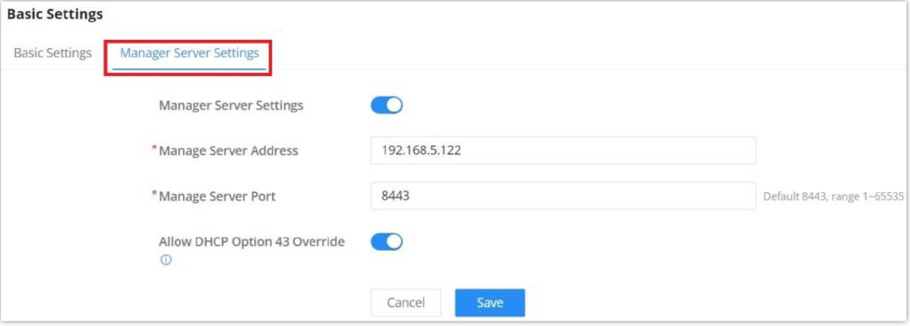
Basic Settings

Manager Server Settings

In the case of GWN manager (on-premise GWN management solution), the user can specify the manager server address and port, there is also the option to allow DHCP option 43 override.

Note:

When adding GWN routers to the GWN Manager (on-premise manager), password authorization is required. Use the password that has been set for the GWN router. If no password has been set, use the default password provided on the router's sticker. For detailed instructions, refer to GWN Management Platforms guide.



Basic Settings

Basic Settings | Manager Server Settings

Manager Server Settings	● (enabled)	
* Manage Server Address	192.168.5.122	
* Manage Server Port	8443	Default 8443, range 1~65535
Allow DHCP Option 43 Override ⓘ	● (enabled)	

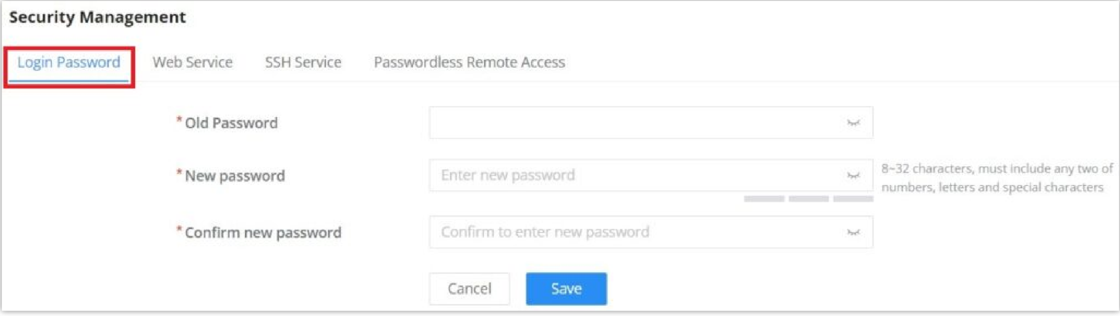
Manager Server Settings

Security Management

Under **"Web UI → System Settings → Security Management"** the user can change the login password and activate the web service for example web WAN port access for HTTPS port 443 as well as enabling SSH remote access.

Login Password

On this page, the user can change the password by entering the old password and then confirming the new password.



Security Management

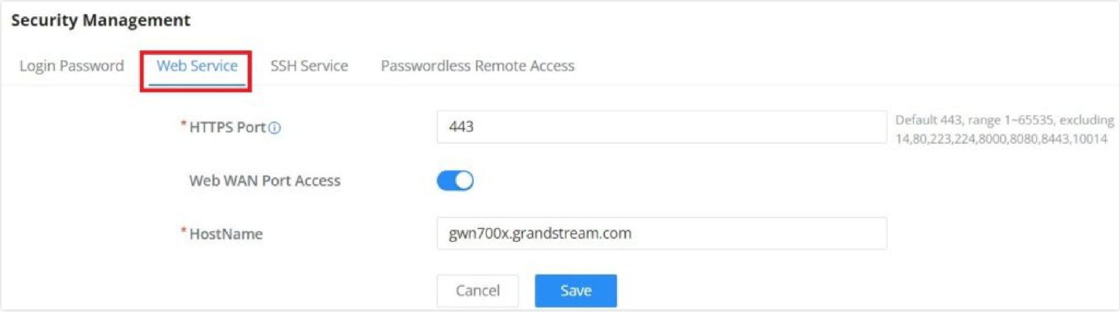
Login Password | Web Service | SSH Service | Passwordless Remote Access

* Old Password		
* New password	Enter new password	8~32 characters, must include any two of numbers, letters and special characters
* Confirm new password	Confirm to enter new password	

Security Management – Login Password

Web Service

Web Service feature allows the user to access the router's web GUI from the WAN side. The connection is established over HTTPS for enhanced security. It's also possible to specify a hostname for the GWN70x2 router as shown in the figure below:



*HTTPS Port: 443 (Default 443, range 1~65535, excluding 14,80,223,224,8000,8080,8443,10014)

Web WAN Port Access: enabled

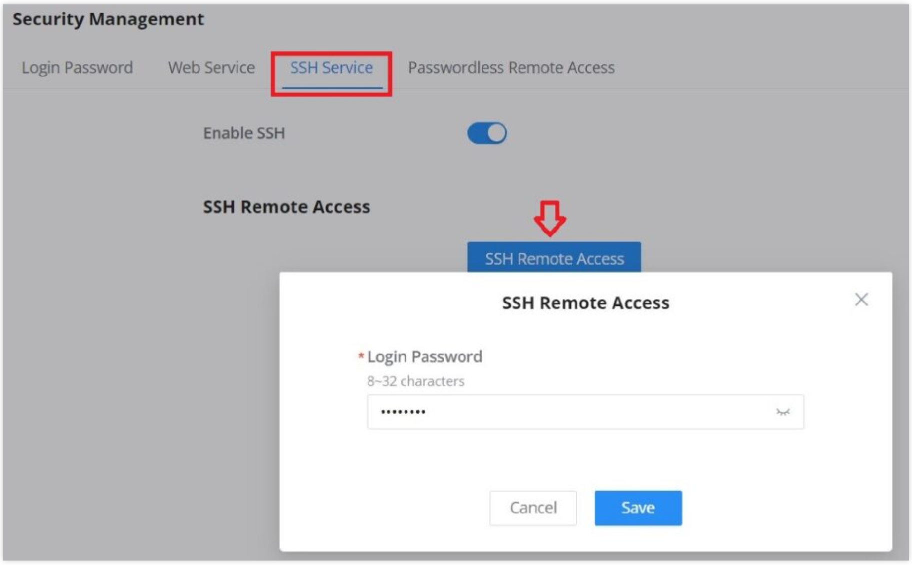
*HostName: gwn700x.grandstream.com

Security Management – Web Service

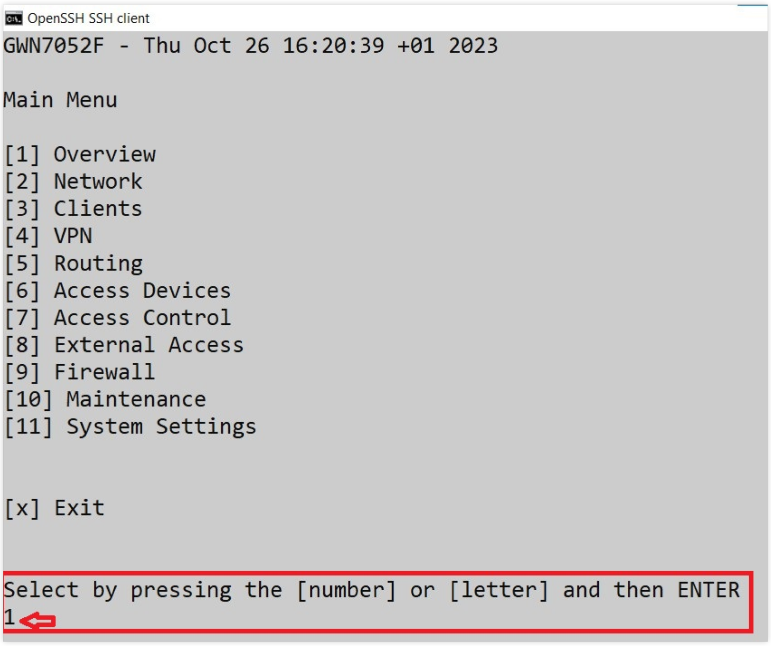
SSH Service

This feature allows the user to access the device using SSH remotely. Enable this option by clicking on the "**SSH Remote Access**" button and then entering the SSH remote access password (login password). Once that's done, SSH access will be provided to remote users when they enter the correct password.

Please, refer to the figures below:

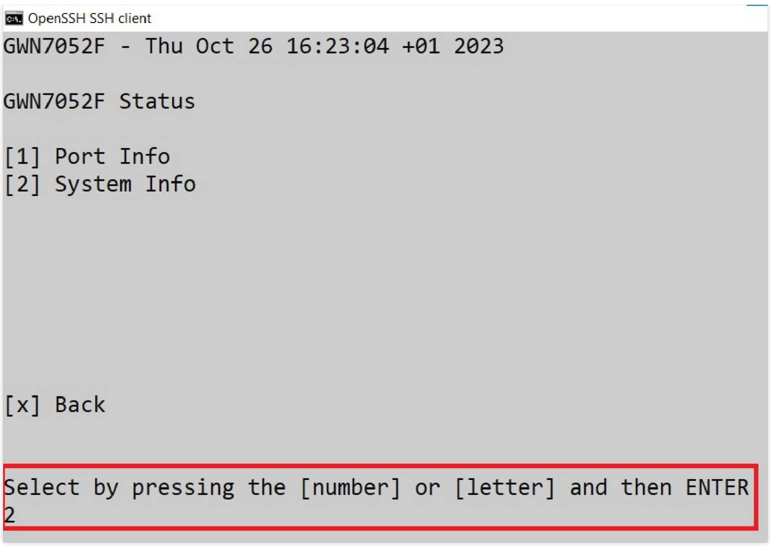


Security Management – SSH Service



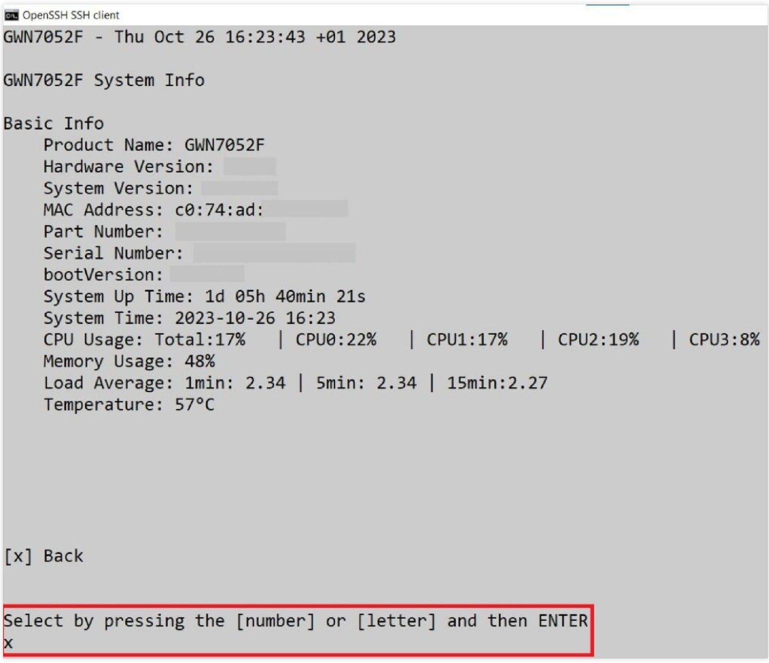
```
GWN7052F - Thu Oct 26 16:20:39 +01 2023

Main Menu

[1] Overview
[2] Network
[3] Clients
[4] VPN
[5] Routing
[6] Access Devices
[7] Access Control
[8] External Access
[9] Firewall
[10] Maintenance
[11] System Settings


[x] Exit


Select by pressing the [number] or [letter] and then ENTER
1
```

SSH Service – GWN Menu – part 1



```
GWN7052F - Thu Oct 26 16:23:04 +01 2023

GWN7052F Status

[1] Port Info
[2] System Info







[x] Back


Select by pressing the [number] or [letter] and then ENTER
2
```

SSH Service – GWN Menu – part 2



```
GWN7052F - Thu Oct 26 16:23:43 +01 2023

GWN7052F System Info

Basic Info
    Product Name: GWN7052F
    Hardware Version: [redacted]
    System Version: [redacted]
    MAC Address: c0:74:ad:[redacted]
    Part Number: [redacted]
    Serial Number: [redacted]
    bootVersion: [redacted]
    System Up Time: 1d 05h 40min 21s
    System Time: 2023-10-26 16:23
    CPU Usage: Total:17%   | CPU0:22%   | CPU1:17%   | CPU2:19%   | CPU3:8%
    Memory Usage: 48%
    Load Average: 1min: 2.34 | 5min: 2.34 | 15min:2.27
    Temperature: 57°C






[x] Back

Select by pressing the [number] or [letter] and then ENTER
x
```

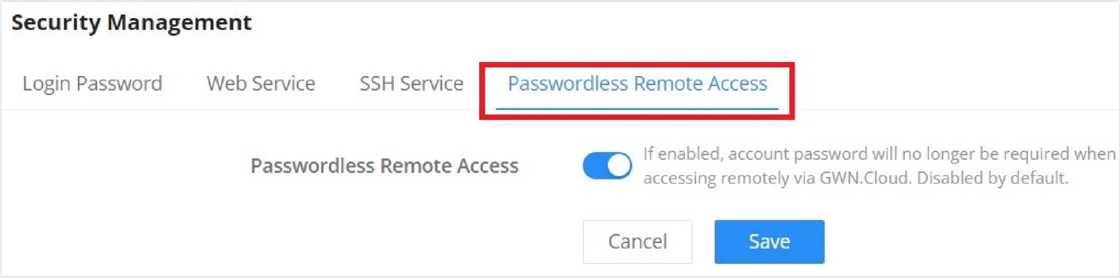
SSH Service – GWN Menu – part 3

Passwordless Remote Access

Enabling the Passwordless Remote Access feature, accessing the device using GWN.Cloud will not require entering the password to be able to access the web GUI of the router.

Note

By default is disabled.



Passwordless Remote Access ● If enabled, account password will no longer be required when accessing remotely via GWN.Cloud. Disabled by default.

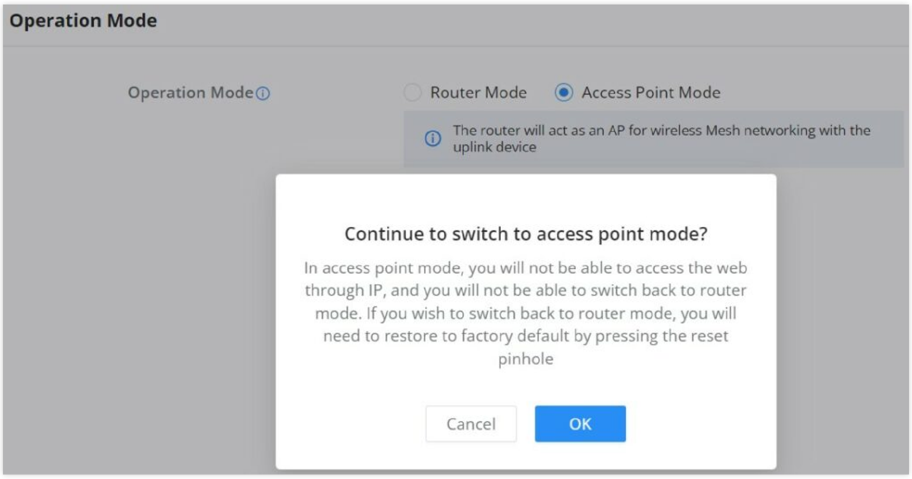
Security Management – Passwordless Remote Access

Operation Mode (Beta)

The operation mode feature allows the user to turn GWN70x2 wireless routers into an access point, and when paired with GWN routers/access points as a slave, the router will act as an AP for wireless Mesh networking with the uplink device.

Note:

In Access Point Mode, the router will act as a wireless access point and will no longer have functions such as DHCP service, routing, and firewall. The router can be used as an AP through the connection with the LAN port of the front-end router and paired/taken over by it.



Operation Mode

Operation Mode ⓘ ○ Router Mode ● Access Point Mode

The router will act as an AP for wireless Mesh networking with the uplink device

Continue to switch to access point mode?

In access point mode, you will not be able to access the web through IP, and you will not be able to switch back to router mode. If you wish to switch back to router mode, you will need to restore to factory default by pressing the reset pinhole

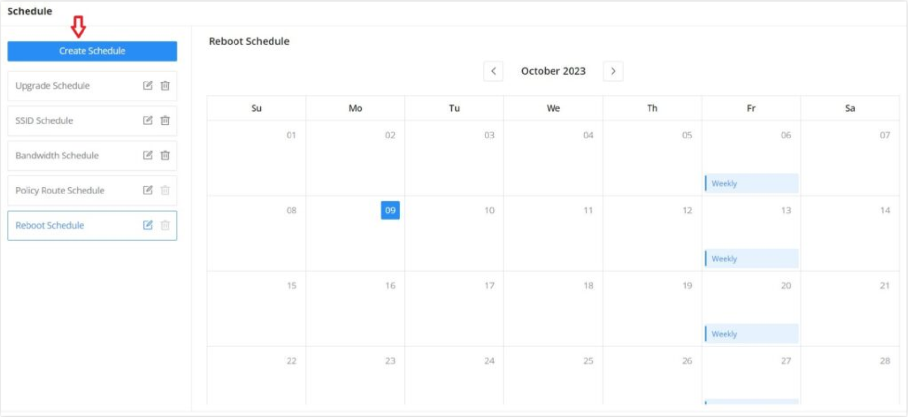
Operation Mode

In access point mode, you will not be able to access the web through IP, and you will not be able to switch back to router mode. If you wish to switch back to router mode, you will need to restore to factory default by pressing the reset pinhole

Schedule

GWN routers allow the user to create a schedule, either weekly based or an absolute date/time (specific date and an interval), then these schedules can be assigned to various services on GWN routers: Upgrade, SSID, Bandwidth limit, Policy route, and reboot.

To create a schedule, navigate to **System Settings → Schedule**, then click on the "**Create Schedule**" button as shown below:

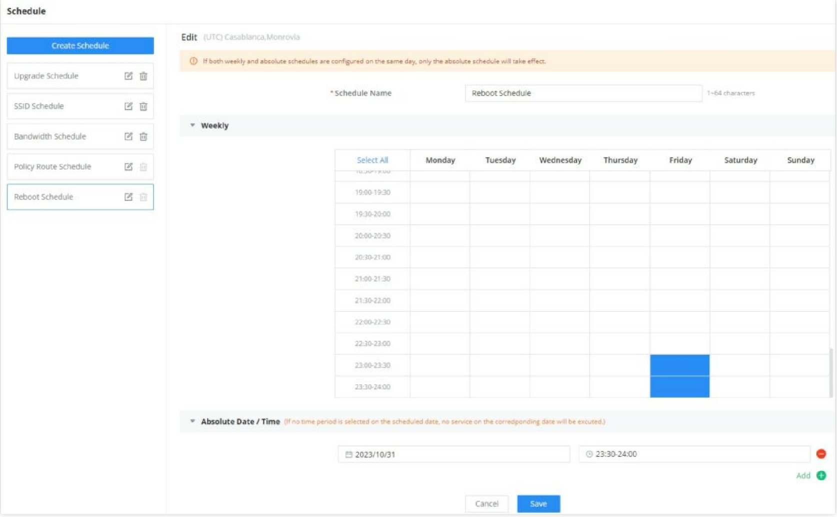


Su	Mo	Tu	We	Th	Fr	Sa
01	02	03	04	05	06 Weekly	07
08	09	10	11	12	13 Weekly	14
15	16	17	18	19	20 Weekly	21
22	23	24	25	26	27	28

Schedule page

Note:

- If both weekly and absolute schedules are configured on the same day, only the absolute schedule will take effect.
- (If no time is selected on the scheduled date, no service on the corresponding date will be executed).



Schedule

Create Schedule

- Upgrade Schedule
- SSID Schedule
- Bandwidth Schedule
- Policy Route Schedule
- Reboot Schedule

Edit (UTC) Casablanca,Monrovia

If both weekly and absolute schedules are configured on the same day, only the absolute schedule will take effect.

*Schedule Name: Reboot Schedule (1~64 characters)

▾ Weekly

Select All	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
19:00-19:30							
19:30-20:00							
20:00-20:30							
20:30-21:00							
21:00-21:30							
21:30-22:00							
22:00-22:30							
22:30-23:00							
23:00-23:30					■		
23:30-24:00					■		

▾ Absolute Date / Time (If no time period is selected on the scheduled date, no service on the corredponding date will be excuted.)

2023/10/31 | 23:30-24:00

Add

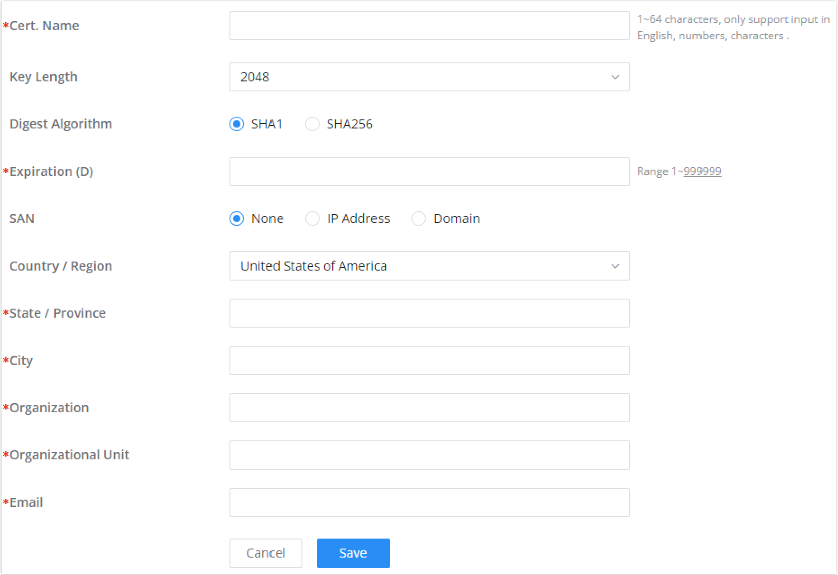
Cancel | Save

Add a schedule

Certificates

CA Certificates

In this section, the user can create a CA certificate. This certificate will authenticate the user when connected to the VPN server created on the router. This authentication will ensure that no identity is being usurped and that the data exchanged remains confidential. To create a certificate, please access the web GUI of the router and access **System Settings → Certificates → CA Certificates** then click "Add" and fill in the necessary information.



*Cert. Name		1~64 characters, only support input in English, numbers, characters .
Key Length	2048	
Digest Algorithm	● SHA1 ○ SHA256	
*Expiration (D)		Range 1~999999
SAN	● None ○ IP Address ○ Domain	
Country / Region	United States of America	
*State / Province		
*City		
*Organization		
*Organizational Unit		
*Email		

Cancel | Save

Add CA Certificate

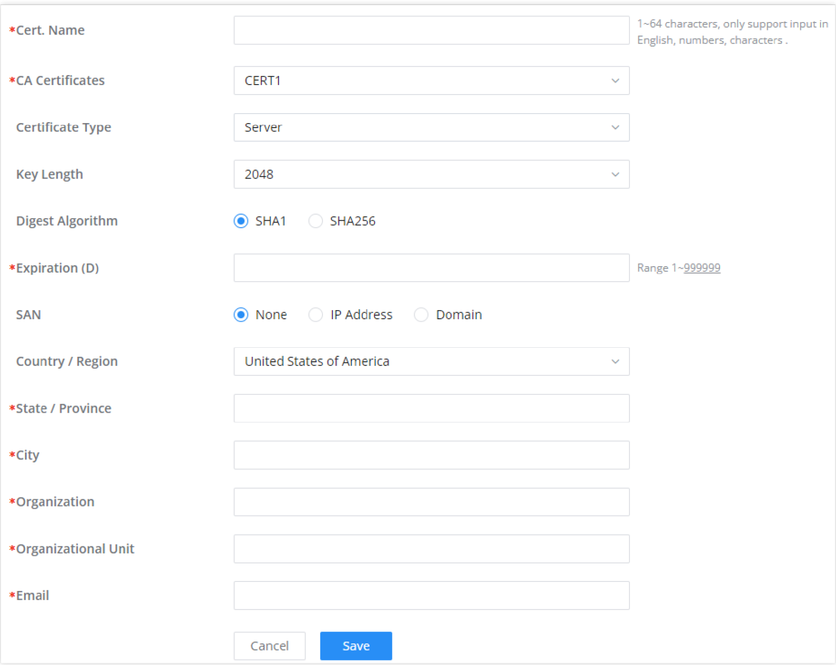
Cert. Name	Enter the Certificate name for the CA. ***Note:*** *It could be any name to identify this certificate. Example: "CATest".*
Key Length	Choose the key length for generating the CA certificate. The following values are available: ● **512:** 512-bit keys are not secure and it's better to avoid this option. ● **1024**: 1024-bit keys are no longer sufficient to protect against attacks. ● **2048:** 2048-bit keys are a good minimum. (Recommended). ● **4096:** 4096-bit keys are accepted by nearly all RSA systems. Using 4096-bit keys will dramatically increase generation time, TLS handshake delays, and CPU usage for TLS operations.
Digest Algorithm	Choose the digest algorithm: ● **SHA1:** This digest algorithm provides a 160-bit fingerprint output based on arbitrary-length input.

	● **SHA256:** This digest algorithm generates an almost unique, fixed-size 256 bit hash. ***Note:*** *Hash is a one-way function, it cannot be decrypted back.*
Expiration (D)	Enter the validity date for the CA certificate in days. *The valid range is 1~999999..*
Country / Region	Select a country code from the dropdown list. *Example: "United Stated of America".*
State / Province	Enter a state name or province. *Example: "Casablanca".*
City	Enter a city name. *Example: "SanBern".*
Organization	Enter the organization's name. *Example: "GS".*
Organizational Unit	This field is the name of the department or organization unit making the request. *Example: "GS Sales".*
Email	Enter an email address. *Example: "EMEAregion@grandstream.com"*

Add CA Certificate

Certificate

In this section, the user can create a server or a client certificate. To create a certificate please access the web UI of the router, then navigate to **System Settings → Certificates → Add Certificate**, click "Add", then enter the necessary information regarding the certificate.



*Cert. Name		1~64 characters, only support input in English, numbers, characters .
*CA Certificates	CERT1	
Certificate Type	Server	
Key Length	2048	
Digest Algorithm	● SHA1 ○ SHA256	
*Expiration (D)		Range 1~999999
SAN	● None ○ IP Address ○ Domain	
Country / Region	United States of America	
*State / Province		
*City		
*Organization		
*Organizational Unit		
*Email		

Cancel Save

Add Certificate

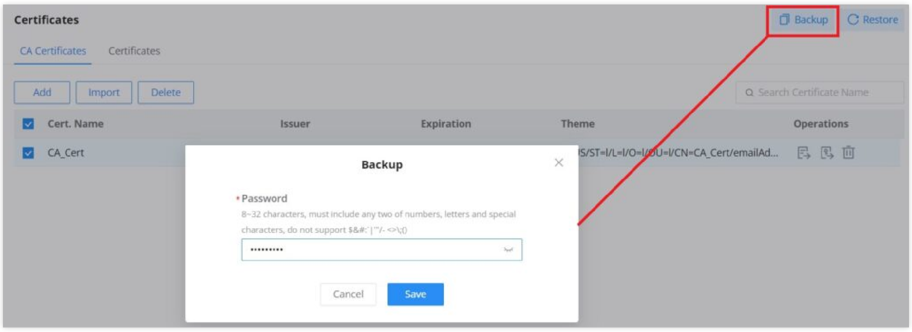
Cert. Name	Enter the certificate's name.
Key Length	Choose the key length for generating the CA certificate.The following values are available: ● **512:** 512-bit keys are not secure and it's better to avoid this option. ● **1024:** 1024-bit keys are no longer sufficient to protect against attacks.

	● **2048:** 2048-bit keys are a good minimum. (Recommended). ● **4096:** 4096-bit keys are accepted by nearly all RSA systems. Using 4096-bit keys will dramatically increase generation time, TLS handshake delays, and CPU usage for TLS operations.
Digest Algorithm	Select the digest algorithm. ● **SHA1:** This digest algorithm provides a 160-bit fingerprint output based on arbitrary-length input. ● **SHA256:** This digest algorithm generates an almost unique, fixed-size 256 bit hash. **Note:** Hash is a one-way function, it cannot be decrypted back.
Expiration (D)	Select the duration of validity of the certificate. The number entered represents the days that have to elapse before the certificate is considered as expired. The valid range is 1 - 999999.
SAN	Enter the address IP or the domain name of the SAN (Subject Alternate Name).
Country / Region	Select a country from the dropdown list of countries. Example: "United States of America".
State / Province	Enter a state name or a province. Example: California
City	Enter a city name. Example: "San Diego"
Organization	Enter the organization's name. Example: "GS".
Organization Unit	This field is the name of the department or organization unit making the request. Example: "GS Sales".
Email	Enter an email address. Example: "EMEAregion@grandstream.com"

Add Certificate

Certificates Backup and Restore

To back up the created certificates, first select all the desired certificates, then click on the "**Backup**" button and enter a password to protect it as shown below:



Certificates

Backup | Restore

CA Certificates | Certificates

Add | Import | Delete

Search Certificate Name

☑ Cert. Name	Issuer	Expiration	Theme	Operations
☑ CA_Cert			/S/ST=l/L=l/O=l/OU=l/CN=CA_Cert/emailAd...	

Backup

* Password

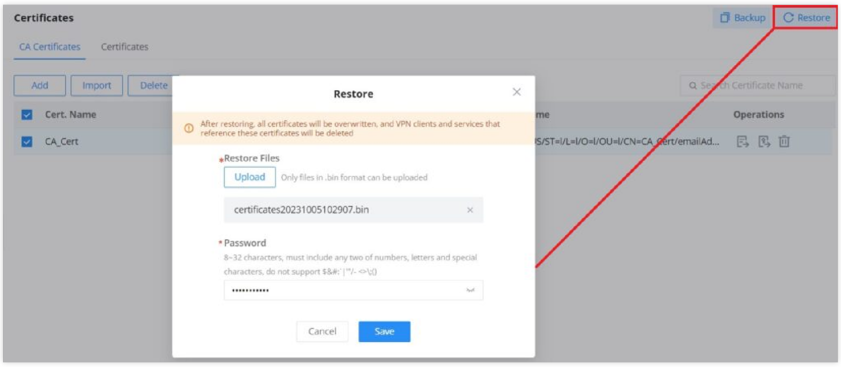
8~32 characters, must include any two of numbers, letters and special characters, do not support $&#:`|"'/- <>\;()

••••••••••

Cancel | Save

Certificate Backup

To restore a certificate, click on the "**Restore**" button, then upload the file and enter the password.



Certificates

Backup | Restore

CA Certificates | Certificates

Add | Import | Delete

Search Certificate Name

☑ Cert. Name	me	Operations
☑ CA_Cert	/S/ST=l/L=l/O=l/OU=l/CN=CA_Cert/emailAd...	

Restore

After restoring, all certificates will be overwritten, and VPN clients and services that reference these certificates will be deleted

* Restore Files

Upload | Only files in .bin format can be uploaded

certificates20231005102907.bin

* Password

8~32 characters, must include any two of numbers, letters and special characters, do not support $&#:`|"'/- <>\;()

••••••••••••

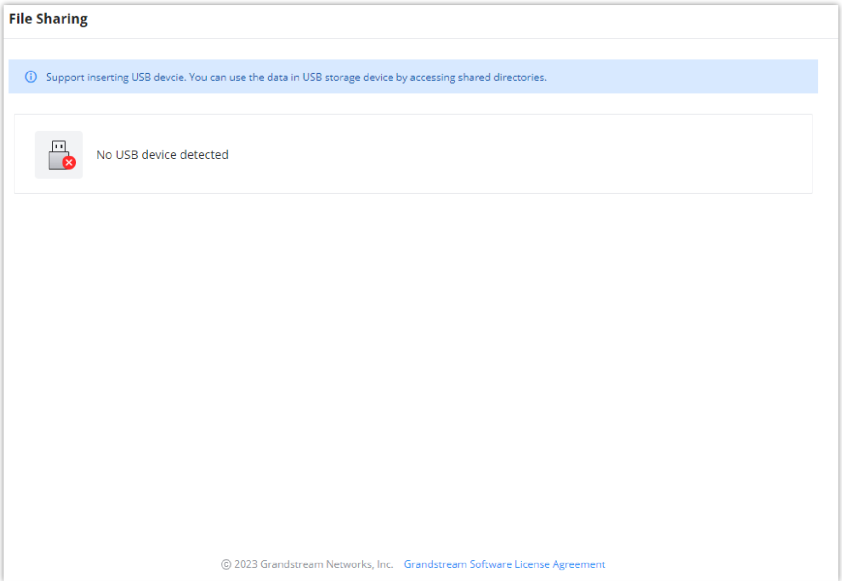
Cancel | Save

Certificate Restore

File Sharing

The GWN routers have a USB port that can be used for file sharing, either using a USB flash drive or a Hard Drive, enabling clients with Windows, Mac, or Linux to access files easily on the local network. There is also an option to enable a password for security reasons.

Navigate to **System Settings → File Sharing.**



File Sharing

ⓘ Support inserting USB devcie. You can use the data in USB storage device by accessing shared directories.

No USB device detected

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File Sharing

CHANGE LOG

This section documents significant changes from previous versions of the GWN70xx routers' user manuals. Only major new features or major document updates are listed here. Minor updates for corrections or editing are not documented here.

Firmware Version 1.0.9.51

- No major changes.

Firmware Version 1.0.9.50

- Optimized Manager Layer 2 discovery that new access devices require password authorization. [Manager Server Settings]
- Enabled TR-069 by default. [TR-069]
- Added support for the ISP Locking feature, including WAN VLAN tag lockout. [WAN]

Firmware Version 1.0.9.42

- No major changes.

Firmware Version 1.0.9.37

- No major changes

Firmware Version 1.0.9.34

- Added the new feature of Speed test [WAN].

Firmware Version 1.0.9.15

- No major changes

Firmware Version 1.0.9.10 (1.0.9.9)

- Changed to new GWN router UI [Web UI]

- Added support for USB 4G Dongle (GWN7062 only) [WAN]
- Added new feature of Triple Play (Bridge Mode) [WAN]
- Added new feature of disabling the router ports [Port Configuration]
- Added new feature of DHCP Option Optimization & Option 43 Service List [LAN]
- Added IGMP proxy and IGMP snooping [IGMP]
- Added new feature of IP Routed Subnet [LAN]
- Added Bonjour Gateway [Bonjour Gateway]
- Added Binding Mode and Device Name under Static IP Binding [Static IP Binding]
- Added new feature of transferring GWN APs taken over by GWN router to GWN Cloud/Manager [AP Management]
- Added Client list under Access Point for clients connected currently to the AP [Access Points]
- Added SSID Bandwidth limit feature with schedule support [SSIDs]
- Added WireGuard® VPN [WireGuard®]
- Added new feature of exporting clients list [Clients]
- Added clients bandwidth limit feature with schedule support [Clients]
- Added Bandwidth limit feature for both wireless and wired clients [Bandwidth Limit]
- Added more social authentication (Facebook, Twitter, and Google) under the Captive portal [Splash Page]
- Added Vouchers feature under Captive Portal [Vouchers]
- Added new feature of exporting Guestlist [Guests]
- Added support for more alerts [Alerts]
- Added new feature of naming the GWN router [Basic Settings]
- Added new feature of customizing the Hostname [Web Service]
- Added GWN.Cloud/Manager connection status detection [System Diagnostics]
- Added new feature of AP Mode [Operation Mode]
- Added new feature of DoS Defense [DoS Defense]
- Added new feature of Spoofing Defense [Spoofing Defense]
- Added new feature of Policy Routing: ICMP and Schedule [Policy Route]
- Added new feature of TR069 [TR-069]
- Added new feature of PPSK [PPSK]
- Added support of 2.4G & 5G custom channel [Radio]
- Added support for discovering APs across VLANs [Access Points]
- Added support of GWN Menu when using SSH [SSH Service]
- Added support of more GWN Cloud/Manager Features: Portal, VPN, Policy Routing, Modifying web Password, Certification management, WAN Health, WAN VLAN Priority, Event: Client Authentication Information, Global Blacklist

Firmware Version 1.0.7.2

- No major changes

Firmware Version 1.0.7.1

- Added a new feature of importing configuration files across different devices of the same model [Backup and Restore]
- Added support of Cloud/Manager connection detection [Cloud/Manager Connection Diagnostics]

Firmware Version 1.0.5.44

- Added support of Mesh as a CAP feature when managed by GWN.Cloud/GWN.Manager [Mesh Network]

Firmware Version 1.0.5.34

- Added support for the GWN Cloud 1.1.23.28 and GWN Manager 1.1.23.28

- Added support third layer discovery for GWN Manager [Manager Server Settings]
- Optimized the alert system [Alerts & Notifications]

Firmware Version 1.0.5.12

Product Name: GWN7052 / GWN7062

- No major changes

Firmware Version 1.0.5.9

Product Name: GWN7052 / GWN7062

- No major changes

Firmware Version 1.0.5.6

Product Name: GWN7062

- This is the initial version

Firmware Version 1.0.5.5

Product Name: GWN7052

- This is the initial version