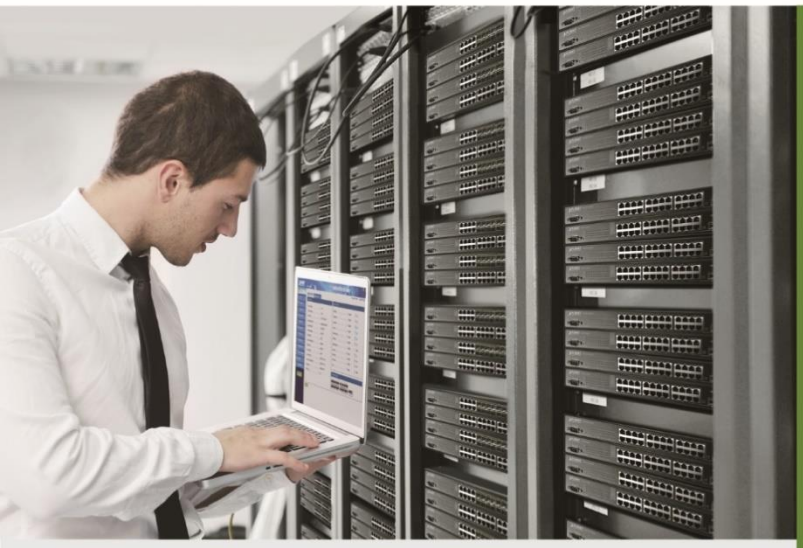
PLANET
Networking & Communication

User's Manual

Industrial 5G NR Cellular Gateway

► ICG-2515 Series



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FCC Compliance Statement

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE mark Warning

The is a class A device, In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

WEEE

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

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Revision

User's Manual of PLANET Industrial 5G NR Cellular Gateway
Model: ICG-2515-NR, ICG-2515W-NR, ICG-2515F-NR and ICG-2515FW-NR
Rev.: 1.0 (November, 2022)
Part No. EM-ICG-2515 series_v1.0

Table of Contents

Chapter 1. Product Introduction

Thank you for purchasing PLANET Industrial 5G NR Cellular Gateway, ICG-2515 Series. The descriptions of these models are as follows:

ICG-2515-NR	Industrial 5G NR Cellular Gateway with 5-Port 10/100/1000T
ICG-2515W-NR	Industrial 5G NR Cellular Wireless Gateway with 5-Port 10/100/1000T
ICG-2515F-NR	Industrial 5G NR Cellular SD-WAN Gateway + 1-Port 1000X SFP
ICG-2515FW-NR	Industrial 5G NR Cellular SD-WAN Gateway w/ Wi-Fi 6 AX1800 + 1-Port 1000X SFP

Module Name	RJ45	Fiber	Wi-Fi
ICG-2515-NR	5		
ICG-2515W-NR	5		11ax
ICG-2515F-NR	4	1	
ICG-2515FW-NR	4	1	11ax

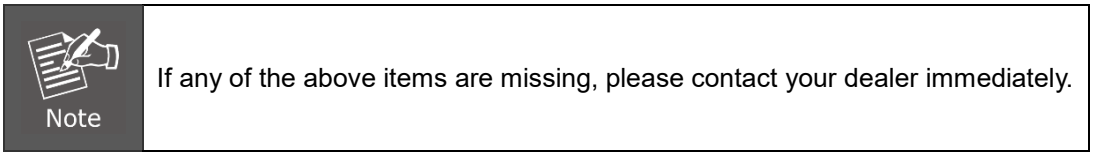
“Cellular Gateway” mentioned in the manual refers to the above models.

1.1 Package Contents

The package should contain the following:

- Industrial 5G NR Cellular Gateway x 1
- Quick installation guide (QR code) x 1
- PLANET CloudViewer QIG x 1
- Wall-mount plate w/screw x 1 set
- 5G NR antenna x 4
- 5G NR antenna extension with magnetic base x 4
- Other components as shown below:

Model Name	RJ45 dust cap	SFP dust cap	Dual band Wi-Fi antenna	Antenna dust cap
ICG-2515-NR	6		-	4
ICG-2515W-NR	6		2	6
ICG-2515F-NR	5	1	-	4
ICG-2515FW-NR	5	1	2	6



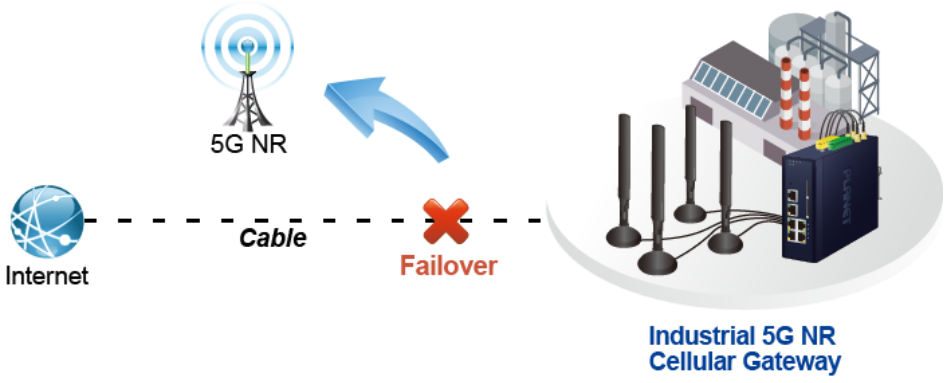
1.2 Overview

Powerful 5G NR and Wi-Fi 6 Industrial Networky Solution

PLANET ICG-2515 series is an industrial-grade wireless cellular gateway for demanding mobile applications, M2M (machine-to-machine) and IoT deployments. Upgraded to the latest cellular technology of **5G NR (new radio)**, the ICG-2515 series is able to provide ultra-fast broadband access with 5G cellular network. The ICG-2515 series also features five Ethernet ports (4 LANs and 1 WAN), **IEEE 11ax Wi-Fi** capability, serial port (RS485), DI and DO interfaces, and VPN technology bundled in a compact yet rugged metal case. It establishes a fast cellular connection between Ethernet and serial port equipped devices. The ICG-2515 series is an integrated 5G NR and Wi-Fi 6 solution for industrial automation, digital factory and other industrial applications.

Automatic Failover between 5G NR and Gigabit WAN

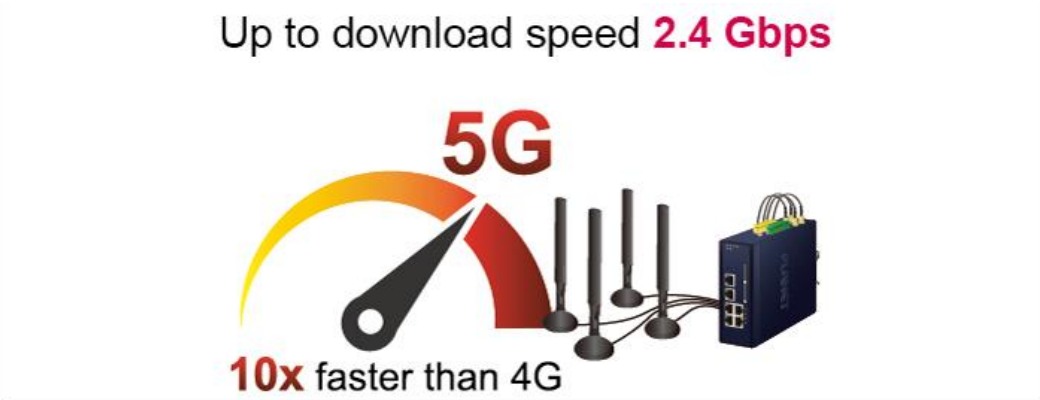
Designed with 5G NR and Gigabit Ethernet WAN interfaces, the ICG-2515 series ensures Internet connectivity by featuring failover functionality between 5G NR and GbE WAN. The ICG-2515 series provides flexibilty to set priority for 5G NR or GbE WAN connection. When the main WAN interface fails, the secondary WAN interface will automatically back up the connection to ensure always-on connectivity.



Ultra-Fast Speed 4G/5G Network*

The ICG-2515 series supports 5G NR DL speeds higher than 2.4 Gbps and 4G LTE DL speeds of up to 1 Gbps. The wide spectrum bandwidth accelerates internet speeds and reduces network latency for premium and time-sensitive connectivity services. The ICG-2515 series also supports multi-band connectivity including LTE FDD/TDD, WCDMA and GSM for a wide range of applications.

*The real 5G NR/4G LTE data rate is dependent on local service provider.



Dual SIM Design

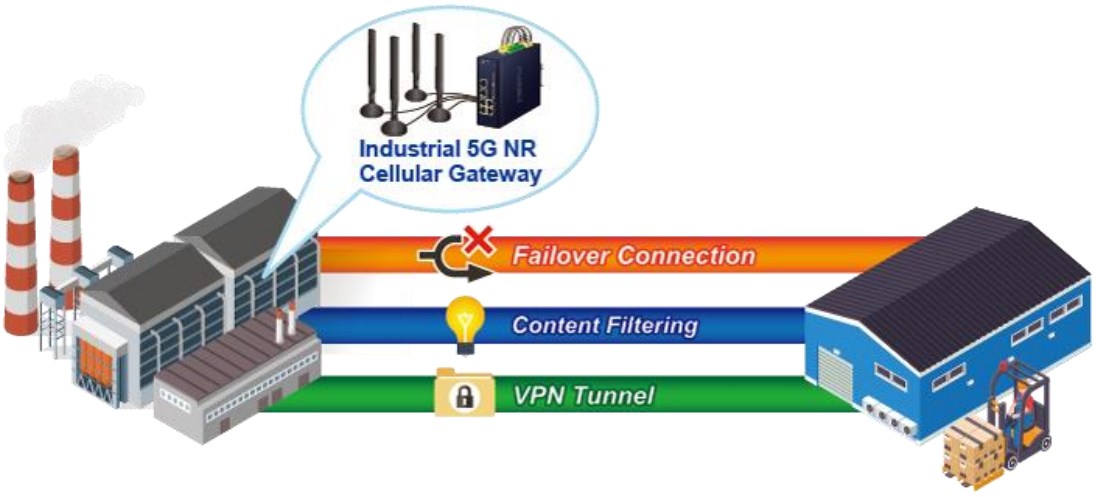
To enhance reliability, the ICG-2515 series is equipped with dual SIM slots that support failover and roaming over to ensure uninterrupted connectivity for mission-critical cellular communications. It provides a more flexible and easier way for users to create an instant network sharing service via 5G-NR in public places like transportations, outdoor events, etc.

GPS Included

The ICG-2515 series is equipped with (global positioning system) feature. It adopts the 5G-NR technology that includes multiple global navigation systems (GPS/GLONASS/BeiDou/Galileo/QZSS). It helps to position location of cellular gateway based on a network of satellites that continuously transmits necessary data. More signals transmitted from more satellites can triangulate its location on the ground, meaning any location can be easily tracked.

Ideal High-Availability VPN Security Cellular gateway Solution for Industrial Environment

The ICG-2515 series provides complete data security and privacy for accessing and exchanging the most sensitive data, built-in IPSec VPN function with DES/3DES/AES encryption and MD5/SHA-1/SHA-256/SHA-384/SHA-512 authentication, and GRE, SSL, PPTP and L2TP server mechanism. The full VPN capability in the ICG-2515 series makes the connection secure, more flexible, and more capable.

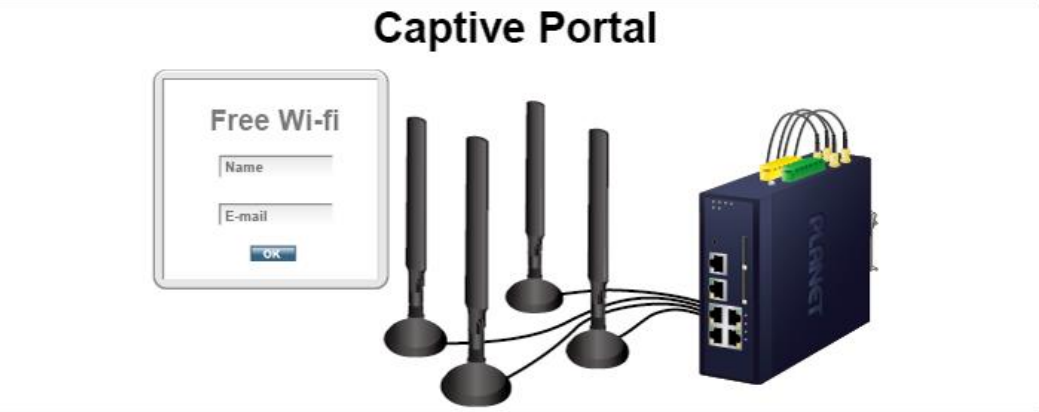


Wireless 11ax Brings Excellent Data Link Speed (Wi-Fi mode only)

The ICG-2515 series is designed with high power amplifier and 2 highly-sensitive antennas which provide stronger signal and excellent coverage even in the wide-ranging or bad environment. With adjustable transmit power option, the administrator can flexibly reduce or increase the output power for various environments, thus reducing interference to achieve maximum performance. Equipped with the next-generation Wi-Fi 6 (802.11ax) wireless network standard, the total bandwidth reaches **1800Mbps**, and the 2-stream transmission technology improves the transmission efficiency of multiple devices, making AR/VR/IoT applications smoother. The IEEE 802.11ax also optimizes MU-MIMO (Multi-User MIMO) mechanism to serve multiple devices simultaneously.

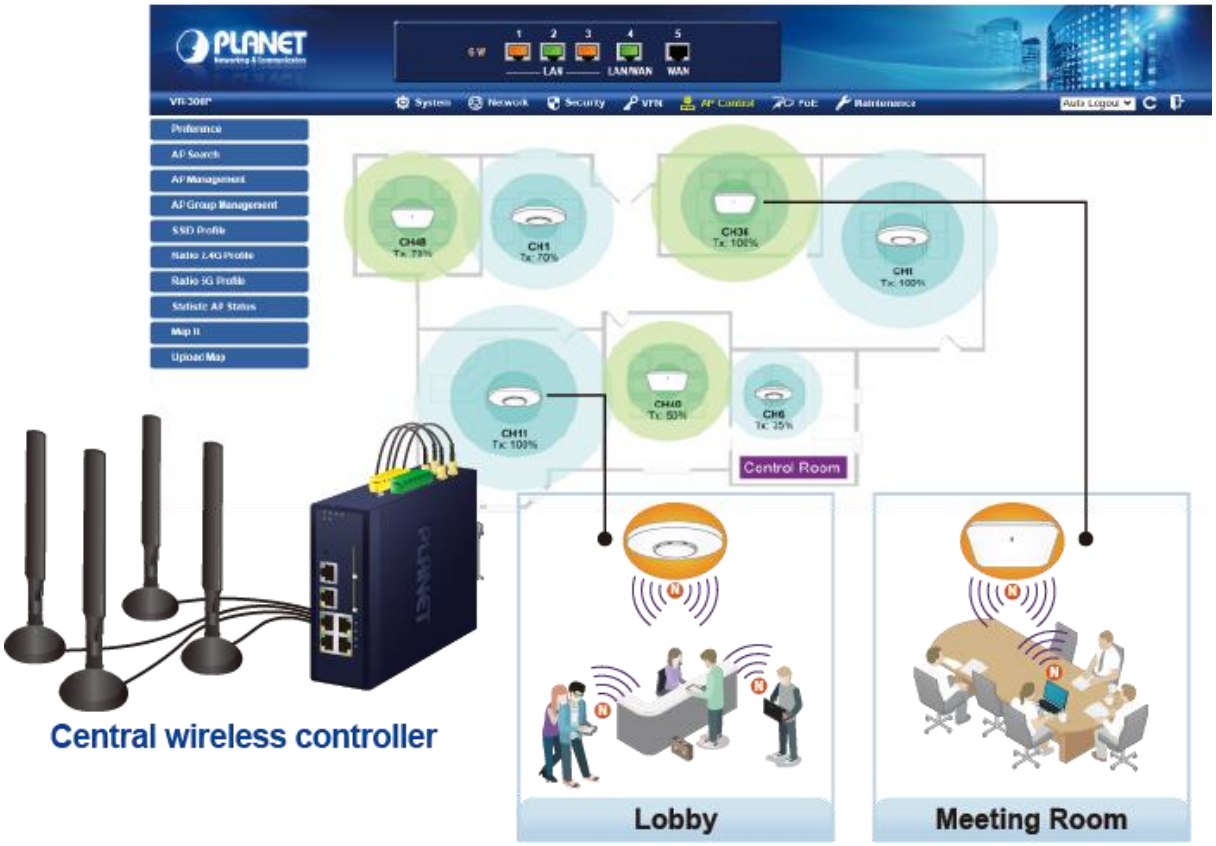
Wi-Fi Deployments and Authentication with Simplified Management

The ICG-2515 series also provides a built-in AP Controller, Captive Portal, RADIUS and a DHCP server to facilitate small and medium businesses to deploy secure employee and guest access services without any additional server. The ICG-2515 series can offer a secure Wi-Fi network with easy installation for your business.

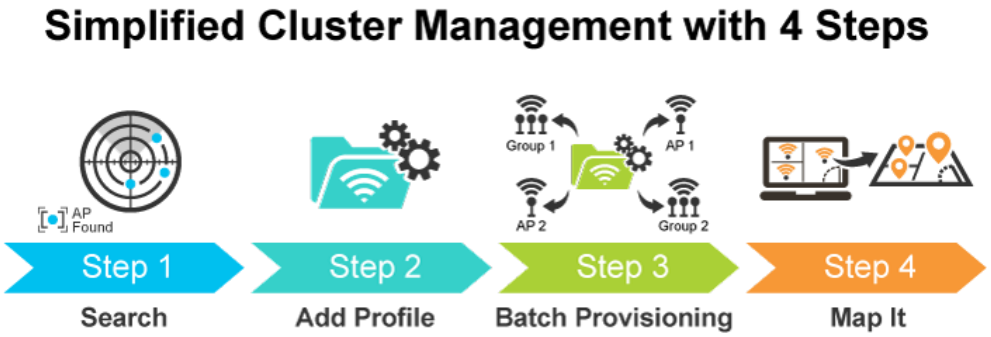


Centralized Remote Control of Managed APs

The ICG-2515 series provides centralized management of PLANET Smart AP series via a user-friendly Web GUI. It's easy to configure AP for the wireless SSID, radio band and security settings. With a four-step configuration process, wireless profiles for different purposes can be simultaneously delivered to multiple APs or AP groups to minimize deployment time, effort and cost.



For example, to configure multiple Smart APs of the same model, the ICG-2515 series allows clustering them to a managed group for unified management. According to requirements, wireless APs can be flexibly expanded or removed from a wireless AP group at any time. The AP cluster benefits bulk provision and bulk firmware upgrade through single entry point instead of having to configure settings in each of them separately.



Excellent Ability in Threat Defense

The ICG-2515 series has built-in SPI (stateful packet inspection) firewall and DoS/DDoS attack mitigation functions to provide high efficiency and extensive protection for your network. Thus, virtual server and DMZ functions can let you set up servers in the Intranet and still provide services to the Internet users.

Cybersecurity Network Solution to Minimize Security Risks

The cybersecurity feature included to protect the switch management in a mission-critical network virtually needs no effort and cost to install. For efficient management, the ICG-2515 series is equipped with HTTPS web and SNMP management interfaces. With the built-in web-based management interface, the ICG-2515 series offers an easy-to-use, platform independent management and configuration facility. The ICG-2515 series supports SNMP and it can be managed via any management software based on the standard SNMP protocol.

Maximizing Work Efficiency with PLANET SD-WAN Gateway

PLANET ICG-2515FW-NR incorporated in SD-WAN (software-defined wide area network) function can greatly increase WAN optimization for multiple WAN links to be managed. With SD-WAN, users can connect any application across all available network connections at every site. It improves application performance and provides a high-quality user experience for increasing business productivity and reducing IT costs.

1.3 Features

Key Features

- Global 5G NR (NSA/SA)/4G LTE network with dual SIM design for cellular network redundancy
- Automatic failover between 5G NR and Wired WAN (Ethernet port or SFP port)
- Complies with IEEE 802.11ax and IEEE 802.11a/b/g/n/ac standards (Wireless model only)
- One 1000BASE-X SFP slot (ICG-2515F-NR or ICG-2515FW-NR only)
- 2 x DI/DO and 1 serial port (RS485) for Modbus applications
- SSL VPN and robust hybrid VPN (IPSec/PPTP/L2TP over IPSec)
- Stateful packet inspection (SPI) firewall and content filtering
- Blocks DoS/DDOS attack, port range forwarding
- High Availability, AP Controller, Captive Portal and RADIUS
- Planet NMS controller system and CloudViewer app supported
- -45 to 75 degrees C operating temperature; DIN-rail and fanless designs

Hardware

ICG-2515-NR and ICG-2515W-NR:

- **3 x 10/100/1000BASE-T** RJ45 LAN ports, auto-negotiation, auto MDI/MDI-X
- **1 x 10/100/1000BASE-T** RJ45 LAN/WAN port, auto-negotiation, auto MDI/MDI-X
- **1 x 10/100/1000BASE-T** RJ45 WAN port, auto-negotiation, auto MDI/MDI-X

ICG-2515F-NR and ICG-2515FW-NR:

- **3 x 10/100/1000BASE-T** RJ45 LAN ports, auto-negotiation, auto MDI/MDI-X
- **1 x 10/100/1000BASE-T** RJ45 LAN/WAN port, auto-negotiation, auto MDI/MDI-X
- **1 x 1000BASE-X SFP** slot (WAN/LAN)

All models have

- **4 x** 5G NR antennas
- **2 x** SIM card slots
- **1 x** serial console port (RS485)
- **1 x** reset button

Cellular Interface

- Supports multi-band connectivity with 5G NR (NSA/SA), LTE-FDD, LTE-TDD, and WCDMA
- Built-in SIM and broadband backup for network redundancy
- Four detachable antennas for 5G NR connection
- LED indicators for signal strength and connection status

RF Interface Characteristics (Wireless model only)

- Features 2.4GHz (802.11b/g/n/ax) and 5GHz (802.11a/n/ac/ax) dual band for carrying high load traffic
- 2T2R MIMO technology for enhanced throughput and coverage
- Provides multiple adjustable transmit power control
- High speed up to 1.8Gbps (600Mbps for 2.4GHz or 1200Mbps for 5GHz) wireless data rate

IP Routing Feature

- Static Route
- Dynamic Route
- OSPF

Firewall Security

- Cybersecurity
- Stateful Packet Inspection (SPI) firewall
- Blocks DoS/DDoS attack
- Content Filtering
- MAC Filtering and IP Filtering
- NAT ALGs (Application Layer Gateway)
- Blocks SYN/ICMP Flooding

VPN Features

- IPSec/Remote Server (Net-to-Net, Host-to-Net), GRE, PPTP Server, L2TP Server, SSL Server/Client (Open VPN)
- Max. Connection Tunnel Entries: 60 VPN tunnels,
- Encryption methods: DES, 3DES, AES, AES-128/192/256
- Authentication methods: MD5, SHA-1, SHA-256, SHA-384, SHA-512

Networking

- Outbound load balancing for Ethernet WANs
- Auto-failover between Ethernet WANs and cellular network
- High Availability
- Captive Portal
- RADIUS Server/Client
- Static IP/PPPoE/DHCP client for WAN

- DHCP server/NTP client for LAN
- Protocols: TCP/IP, UDP, ARP, IPv4, IPv6
- Port forwarding, QoS, DMZ, IGMP, UPnP, SNMPv1,v2c, v3
- MAC address clone
- DDNS: PLANET DDNS, Easy DDNS, DynDNS and No-IP
- PLANET SD-WAN function

Others

- Setup wizard
- Dashboard for real-time system overview
- Supported access by HTTP or HTTPS
- Auto reboot
- PLANET NMS System and Smart Discovery Utility for deployment management
- Planet CloudViewer app for real-time monitoring

1.4 Product Specifications

Models	ICG-2515-NR	ICG-2515W-NR	ICG-2515F-NR	ICG-2515FW-NR
Hardware Specifications				
Copper Ports	5 10/100/1000BASE-T RJ45 Ethernet ports including 3 LAN ports (Ports 1 to 3) 1 LAN/WAN port (Port 4) 1 WAN port (Port 5)		4 10/100/1000BASE-T RJ45 Ethernet ports including 3 LAN ports (Ports 1 to 3) 1 LAN/WAN port (Port 4)	
Fiber Port	-		1 1000BASE-X SFP slot including 1 LAN/WAN port (Port 5)	
Serial Interface	RJ45 serial port			
SIM Interface	2 SIM card slots with mini-SIM card tray			
Cellular Antenna	5 dBi external antennas with SMA connectors for 5G-NR			
DI & DO Interfaces	2 Digital Input (DI): Level 0 : -24V~2.1V (±0.1V) Level 1 : 2.1V~24V (±0.1V) Input Load to 24V DC, 10mA max. 2 Digital Output (DO): Open collector to 24V DC, 100mA max.			
Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1, Pin 3/4 for fault alarm, Pin 5/6 for Power 2			
Reset Button	< 5 sec: System reboot > 5 sec: Factory default			
Enclosure	IP30 metal case			
Installation	DIN rail, desktop, wall-mounting			
Dimensions	50 x 135 x 135 mm (W x D x H)			
Weight	0.8 kg	0.9 kg	0.8 kg	0.9 kg
Power Requirements	9~54V DC, 1.5A			
Power Consumption	6.16 W/ 21.02 BTU	10 W / 34.12 BTU	5.94 W/ 20.27 BTU	11.34 W/ 38.69 BTU
LED Indicators – System	P1 (Green), P2 (Green), Alarm (Red), I/O (Red)			
LED Indicators – Ethernet	Ports 1-4 and WAN Port: 1000 LNK/ACT (Green) 10/100 LNK/ACT (Amber)		Ports 1-4: 1000 LNK/ACT (Green) 10/100 LNK/ACT (Amber)	
LED Indicators – Fiber			Port 5: 1000 LNK/ACT (Green)	

	Cellular SIM	SIM1 and SIM2 (Green)
	Cellular signal	4 levels (Green)
	Wi-Fi (Wi-Fi only)	2.4G (Green), 5G (Green)
Multi Band Supports		
5G NR		n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48/n66/n71/n77/n78/n79
LTE-FDD		B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B46/B66/B71
LTE-TDD		B34/B38/B39/B40/B41/B42/B43/B48
WCDMA		B1/B2/B3/B4/B5/B8
GNSS		GPS L1+L5 dual bands/GLONASS/BeiDou/Galileo/QZSS
Data Transmission Throughput		2.4Gbps (DL)/500Mbps (UL) for NR 1Gbps (DL)/200Mbps (UL) for LTE 42Mbps (DL)/5.76Mbps (UL) for HSPA+
Wireless (Wi-Fi model only)		
Standard		IEEE 802.11a/n/ac/ax 5GHz IEEE 802.11g/b/n/ax 2.4GHz
Band Mode		2.4G & 5G concurrent mode
Frequency Range	2.4GHz	America FCC: 2.412~2.462GHz Europe ETSI: 2.412GHz~2.472GHz
	5GHz	5.15GHz ~5.875GHz
Operating Channels	2.4GHz	America FCC: 1~11 Europe ETSI: 1~13
	5GHz	America FCC: Non-DFS: 36, 40, 44, 48, 149, 153, 157, 161, 165 DFS: 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140 Europe ETSI: Non-DFS: 36, 40, 44, 48, 149, 153, 157, 161, 165 DFS: 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 ***5GHz channel list will vary in different countries according to their regulations.**
Channel Width		20MHz, 40MHz, 80MHz
Data Transmission Rates		Transmit: 600 Mbps* for 2.4 GHz and 1200 Mbps* for 5 GHz Receive: 600 Mbps* for 2.4 GHz and 1200 Mbps* for 5 GHz ***The estimated transmission distance is based on the theory. The actual distance will vary in different environments.**

Transmission Power	11b: 23dbm+/- 1.5dbm @11Mbps 11g: 20dbm+/- 1.5dbm @54Mbps 11g/n: 20dBm +/- 1.5dbm @MCS7, HT20 17dBm@MCS7,HT40 11a: 19.5dBm +/- 1.5dbm @54Mbps 11a/n: 19.5dBm+/- 1.5dbm @MCS7, HT20 17dBm@MCS7, HT40 11ac HT20: 20+/-1.5dBm @MCS8 11ac HT40: 17+/-1.5dBm @MCS9 11ac HT80: 14.5+/-1.5dBm @MCS9 11ax HT20: 20+/-1.5dBm @MCS9 11ax HT40: 17 +/- 1.5dBm @MCS9 11ax HT80: 14.5 +/- 1.5dBm @MCS11
Encryption Security	WPA / WPA2 (TKIP/AES) WPA-PSK / WPA2-PSK (TKIP/AES) / WPA3-PSK (TKIP/AES) 802.1x Authenticator
Wireless Advanced	Wi-Fi Multimedia (WMM) Auto channel selection Wireless output power management MAC address filtering
Security Service	
Firewall Security	Cybersecurity Stateful Packet Inspection (SPI) Blocks DoS/DDoS attack
ALG (Application Layer Gateway)	SIP, RTSP, FTP, H.323, TFTP
NAT	Port forwarding DMZ Host UPnP
Content Filtering	MAC filtering IP filtering Web filtering
Bandwidth Management	Outbound load balancing Failover for dual-WAN QoS (Quality of Service)
Networking	
Operation Mode	Routing mode
Routing Protocol	Static Route, Dynamic Route (RIP), OSPF
VLAN	802.1q Tag-based, Port-based, Multi-VLAN
Multicast	IGMP Proxy
NAT Throughput	Max. 900Mbps
Outbound Load Balancing	Supported algorithms: Weight
Protocol	IPv4, IPv6, TCP/IP, UDP, ARP, HTTP, HTTPS, NTP, DNS, PLANET DDNS,

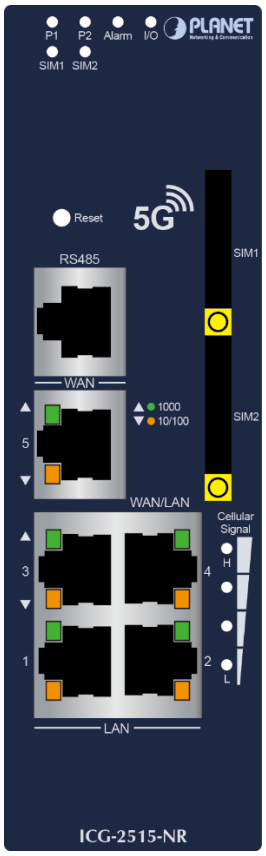
	PLANET Easy DDNS, DHCP, PPPoE, SNMPv1/v2c/v3,
Key Features	HA (High Availability)
Advanced Functions	
VPN	■ IPSec/Remote Server (Net-to-Net, Host-to-Net) ■ GRE ■ PPTP Server ■ L2TP Server ■ SSL Server/Client (Open VPN)
VPN Tunnels	Max. 60
VPN Throughput	Max. 108Mbps
Encryption Methods	DES, 3DES, AES or AES-128/192/256 encrypting
Authentication Methods	MD5/SHA-1/SHA-256/SHA-384/SHA-512 authentication algorithm
Management	
Basic Management Interfaces	Web browser SNMP v1, v2c PLANET Smart Discovery utility and NMS controller supported
Secure Management Interfaces	SSHv2, TLSv1.2, SNMP v3
System Log	System Event Log
Others	Setup wizard Dashboard System status/service Statistics Connection status Auto reboot Diagnostics
Standards Conformance	
Regulatory Compliance	CE, FCC
Environment	
Operating	Temperature: -40 ~ 75 degrees C Relative humidity: 5 ~ 90% (non-condensing)
Storage	Temperature: -40 ~ 85 degrees C Relative humidity: 5 ~ 90% (non-condensing)

Chapter 2. Hardware Introduction

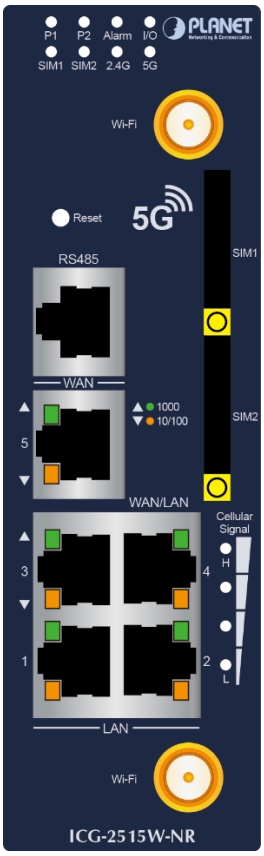
2.1 Physical Descriptions

Front View

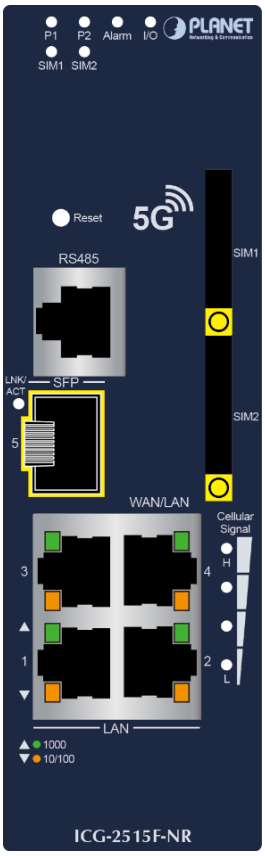
ICG-2515-NR



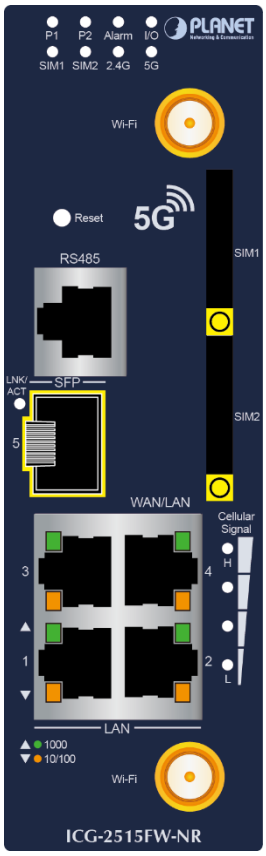
ICG-2515W-NR



ICG-2515F-NR



ICG-2515FW-NR



LED Definition:

■ **System**

LED	Color	Function
P1	**Green**	Lights to indicate DC power input 1 has power.
P2	**Green**	Lights to indicate DC power input 2 has power.
Alarm	**Red**	Lights to indicate that power or port has failed.
I/O	**Red**	Lights to indicate that power or port has failed or DI has event.
SIM1	**Green**	Lights to indicate the SIM1 is connecting successfully.
SIM2	**Green**	Lights to indicate the SIM2 is connecting successfully.
2.4G	**Green**	Lights up when 2.4G Wi-Fi service is enabled (Wireless model only)
5G	**Green**	Lights up when 5G Wi-Fi service is enabled (Wireless model only)

■ **LAN Per 10/100/1000Mbps Port (Ports 1 to 4)**

LED	Color	Function	
1000 LNK/ACT	**Green**	**Lights**:	To indicate that the port is operating at 1000Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
10/100 LNK/ACT	**Amber**	**Lights**:	To indicate that the port is operating at 10/100Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

■ **WAN Per 10/100/1000Mbps Port (Port 5) (**ICG-2515-NR and ICG-2515W-NR only)

LED	Color	Function	
1000 LNK/ACT	**Green**	**Lights**:	To indicate that the port is operating at 1000Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
10/100 LNK/ACT	**Amber**	**Lights**:	To indicate that the port is operating at 10/100Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

■ **1000BASE-X SFP Port (Port 5) (**ICG-2515F-NR and ICG-2515FW-NR only)

LED	Color	Function	
1000 LNK/ACT	**Green**	**Lights**:	To indicate that the port is operating at 1000Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

2.2 Hardware Installation

Refer to the illustration and follow the simple steps below to quickly install your **Cellular Gateway**.

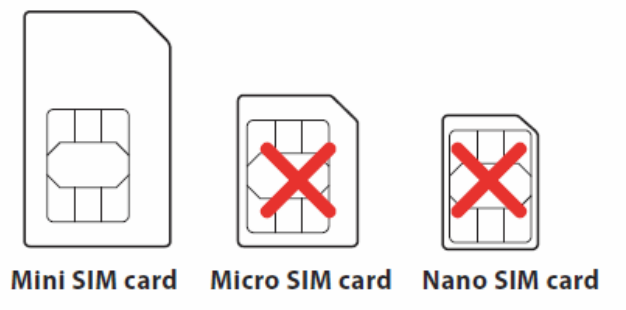
2.2.1 SIM Card Installation

A. Insert an ejector pin into the yellow button next to the tray to loosen the tray.

B. Pull out the tray gently from the tray slot. Place the SIM card on the tray with the gold-colored contacts facing upwards.

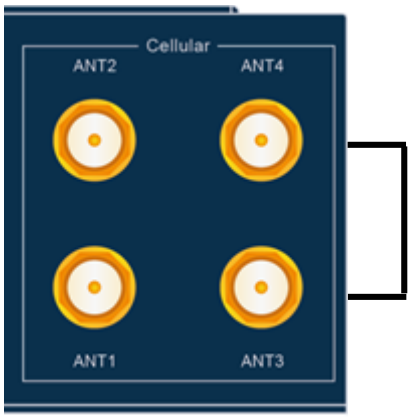
C. Insert the tray back into the tray slot.

- **A mini SIM card with 5G NR and 4G LTE subscription**



2.2.2 5G NR Antenna Installation

Step 1: Connect 5G NR antennas to the 5G NR antenna extension.



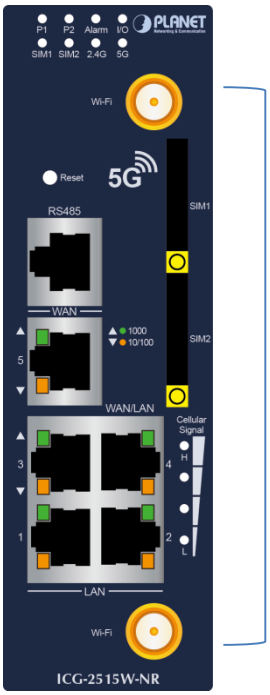
Four SMA female connectors

Step 2: Fasten the 5G NR antenna extensions to the connectors.

2.2.3 Wi-Fi Antenna Installation

Step 1: Fasten the two dual-band antennas to the antenna connectors on the front panel of the Cellular Gateway.

Step 2: You can bend the antennas to fit your actual needs.



Two Wi-Fi
RP-SMA Connectors

Note

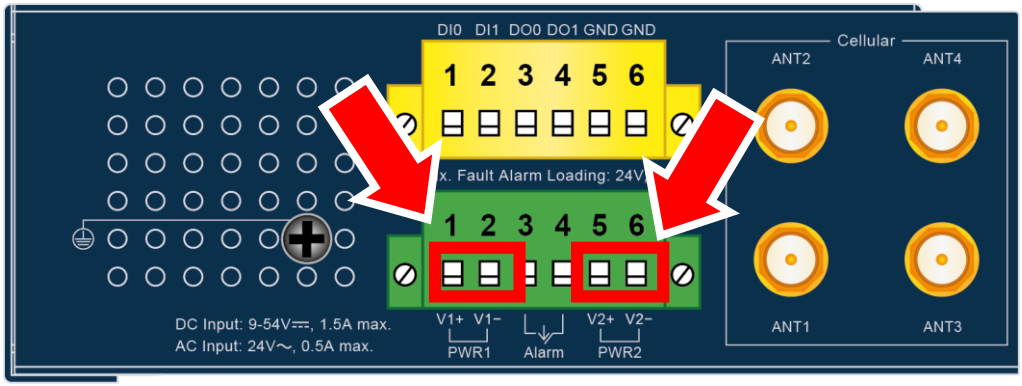
Please use PLANET dual-band Wi-Fi antenna for high efficiency to avoid low efficacy.

2.2.4 Wiring the Power Inputs

The 6-contact terminal block connector on the top panel of Cellular Gateway is used for two DC redundant power inputs. Please follow the steps below to insert the power wire.

When performing any of the procedures like inserting the wires or tightening the wire-clamp screws, make sure the power is OFF to prevent from getting an electric shock.

1. Insert positive and negative DC power wires into contacts 1 and 2 for POWER 1, or 5 and 6 for POWER 2.



Note

Please make sure the input voltage is under the specification of the Cellular Gateway.

2. Tighten the wire-clamp screws for preventing the wires from loosening.

1	2	3	4	5	6
Power 1		Fault		Power 2	
+	-			+	-

Note

The wire gauge for the terminal block should be in the range between 12 and 24 AWG.

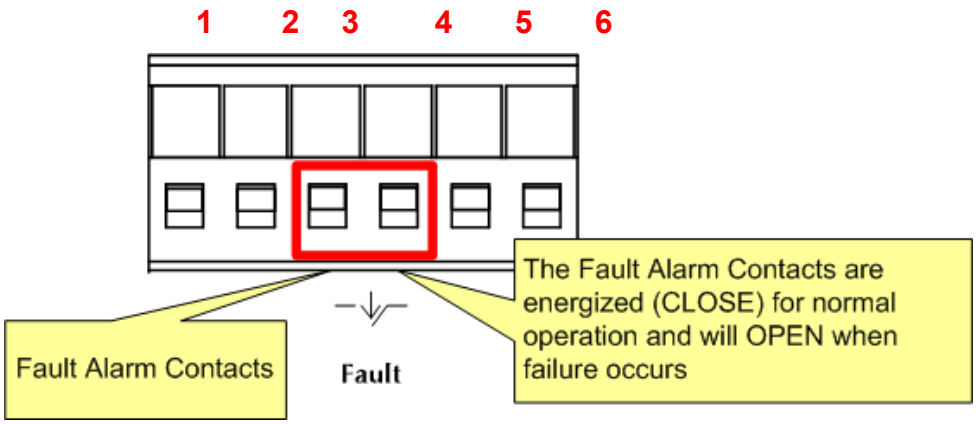
CAUTION PWR1 and PWR2 must provide the **same DC voltage** while operating with dual power input.

2.2.5 Grounding the Device

User MUST complete grounding wired with the device; otherwise, a sudden lightning could cause fatal damage to the device. EMD (Lightning) DAMAGE IS NOT CONVERED UNDER WARRANTY.

2.2.6 Wiring the Fault Alarm Contact

The fault alarm contacts are in the middle of the terminal block connector as the picture shows below. Inserting the wires, the Cellular Gateway will detect the fault status of the power failure or port failure, and then will form an open circuit. The following illustration shows an application example for wiring the fault alarm contacts



Insert the wires into the fault alarm contacts

Note

1. The wire gauge for the terminal block should be in the range between 12 and 24 AWG.
2. Alarm relay circuit accepts up to 24V (max.) and 1A current.

Chapter 3. Preparation

Before getting into the device's web UI, user has to check the network setting and configure PC's IP address.

3.1 Requirements

User is able to confirm the following items before configuration:

1. Please confirm the network is working properly; it is strongly suggested to test your network connection by connecting your computer directly to ISP.
2. Suggested operating systems: Windows 7 / 8 / 10.
3. Recommended web browsers: IE / Firefox / Chrome.

3.2 Setting TCP/IP on your PC

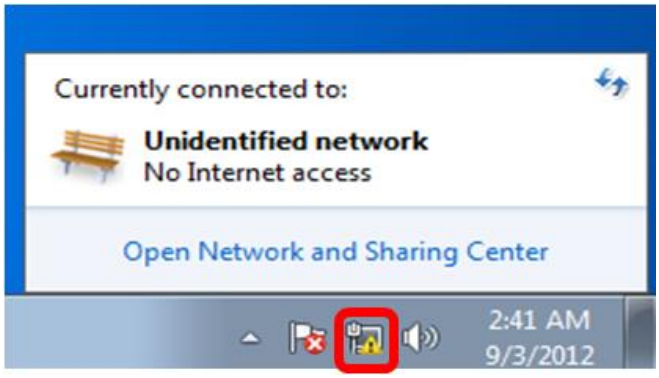
The default IP address of the cellular gateway is 192.168.1.1, and the DHCP Server is on. Please set the IP address of the connected PC as DHCP client, and the PC will get IP address automatically from the VPN cellular gateway

Please refer to the following to set the IP address of the connected PC.

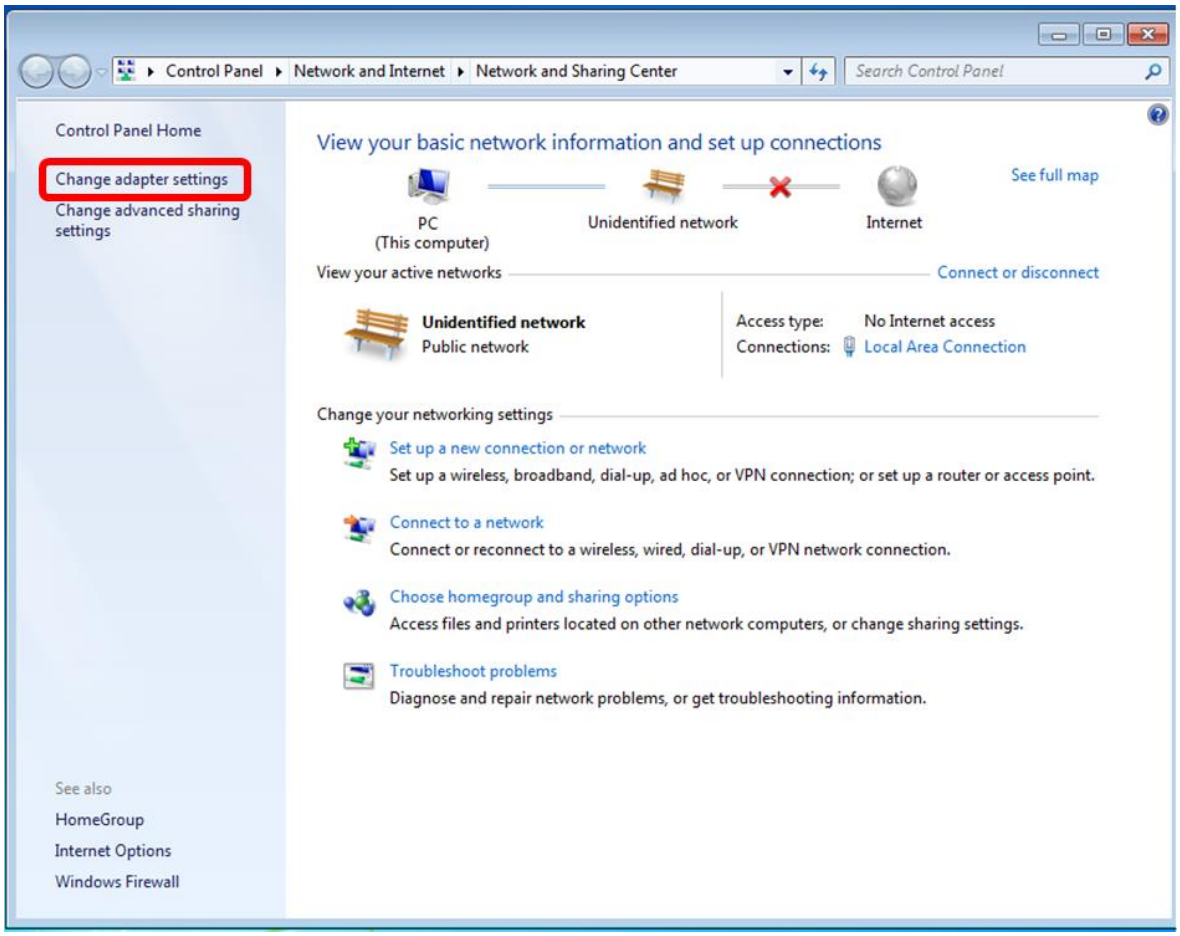
Windows 7/8

If you are using Windows 7/8, please refer to the following:

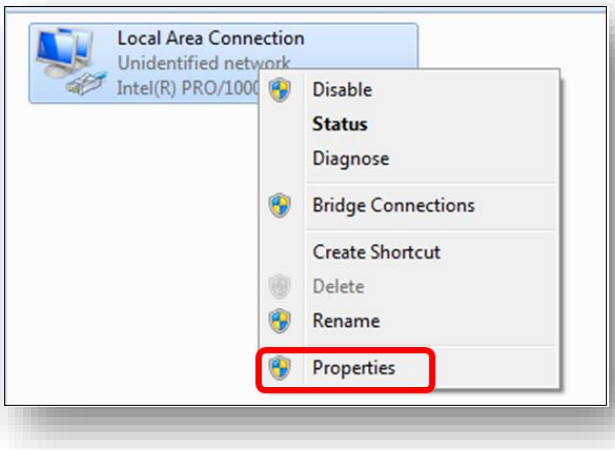
1. Click on the network icon from the right side of the taskbar and then click on "Open Network and Sharing Center".



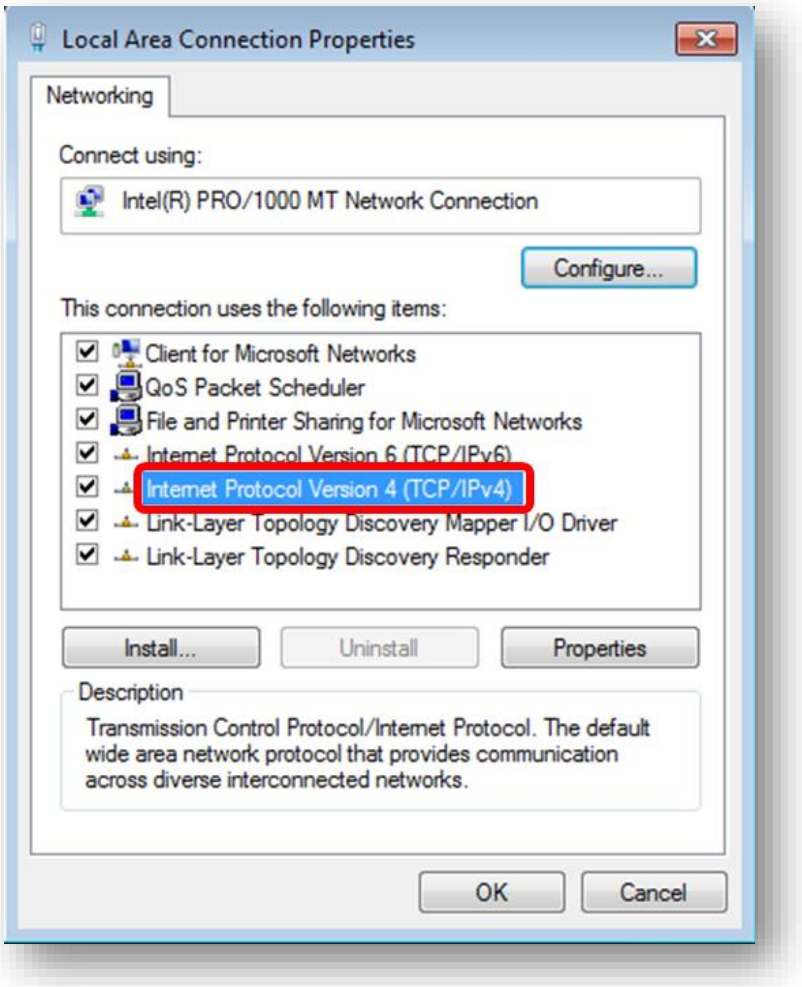
2. Click "**Change adapter settings**".



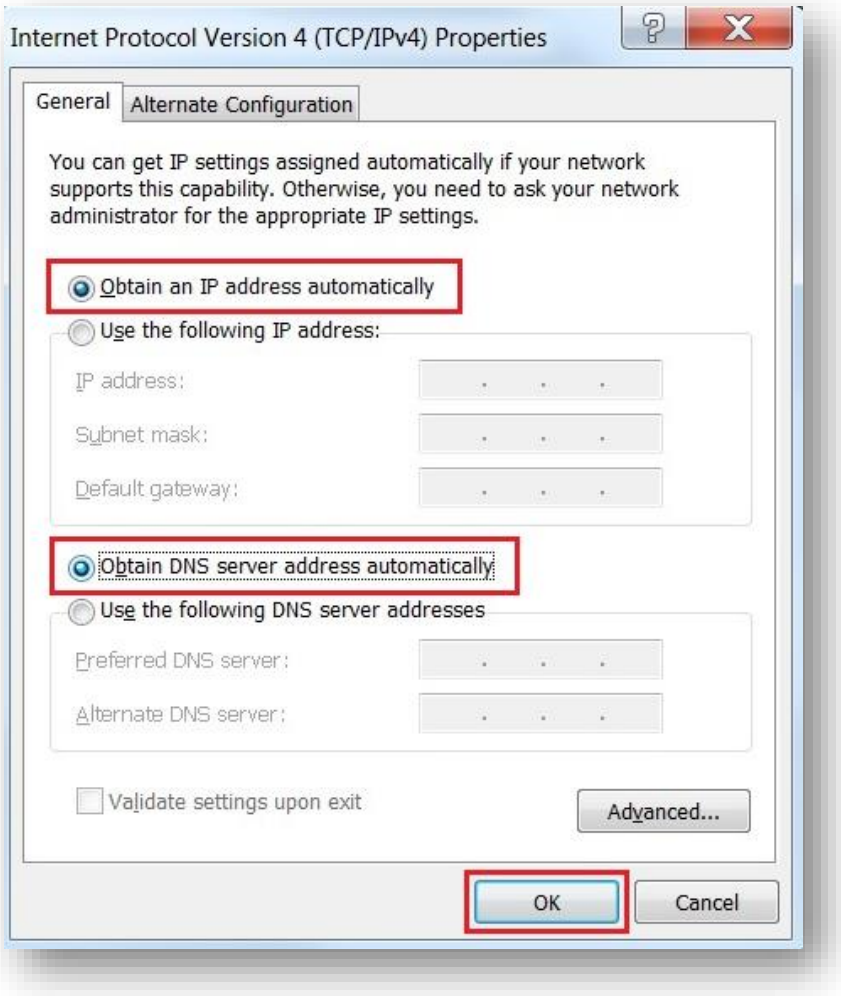
3. Right-click on the Local Area Connection and select Properties.



4. Select Internet Protocol Version 4 (TCP/IPv4) and click Properties or directly double-click on Internet Protocol Version 4 (TCP/IPv4).



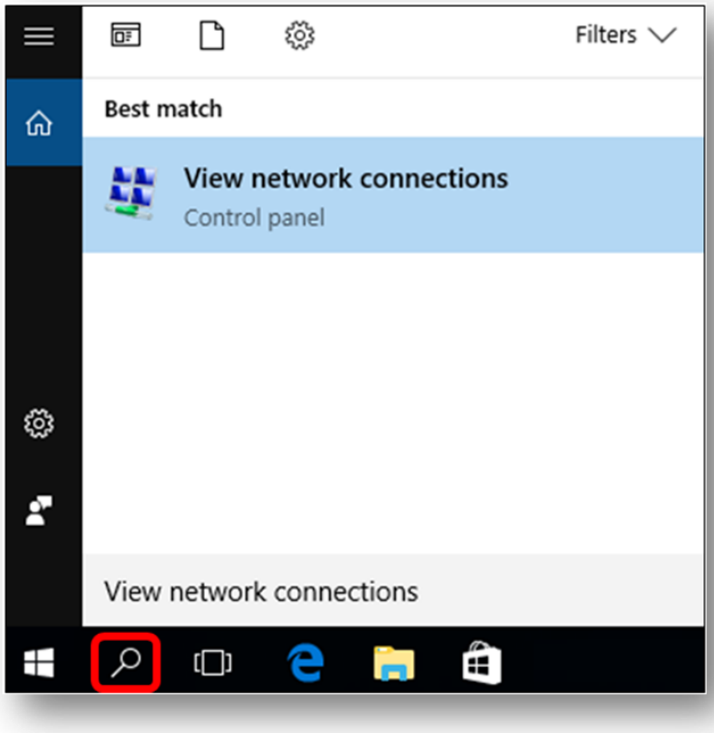
5. Select "**Use the following IP address**" and "**Obtain DNS server address automatically**", and then click the "**OK**" button.



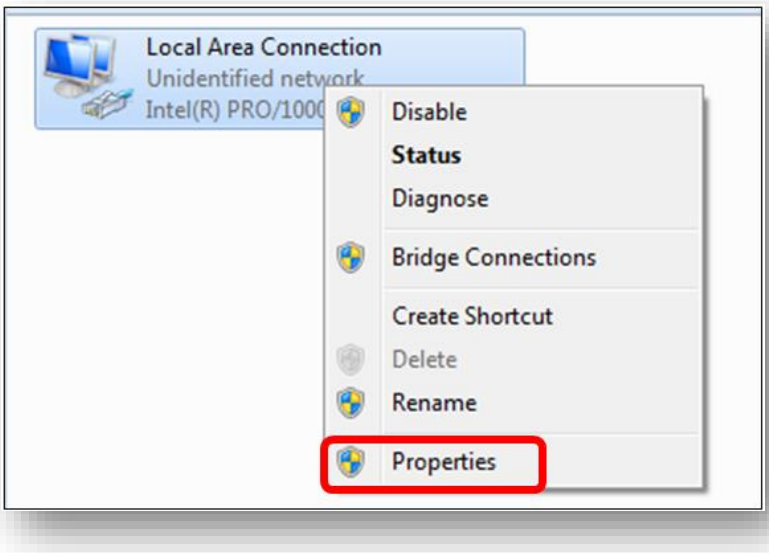
Windows 10

If you are using Windows 10, please refer to the following:

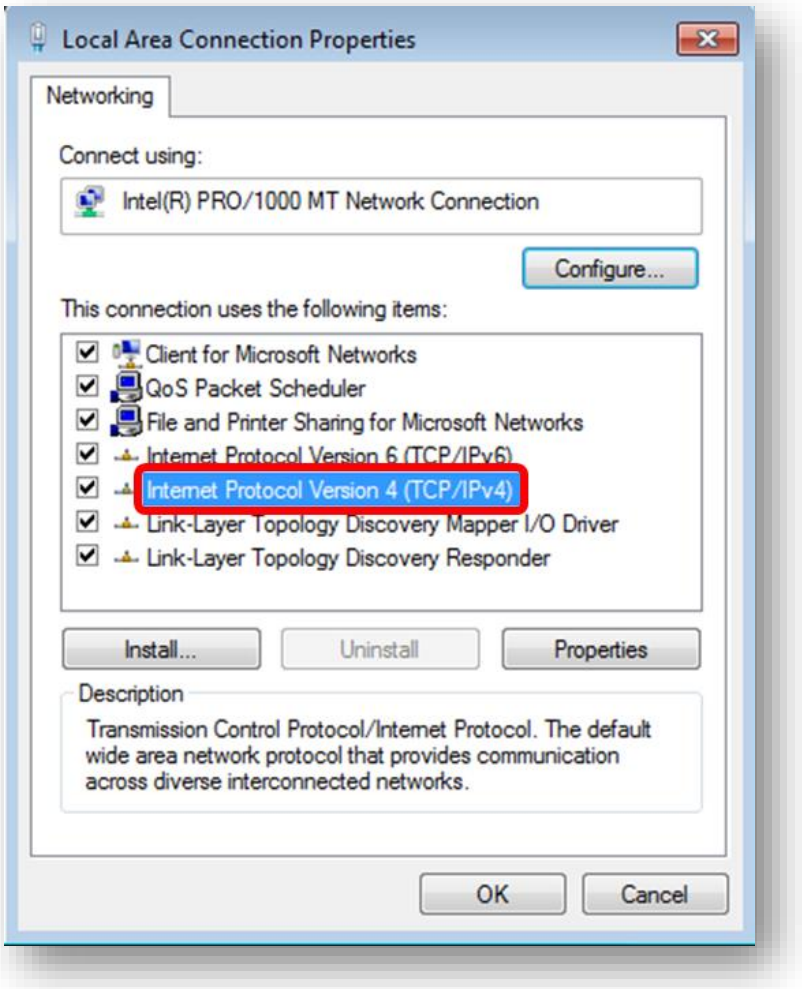
1. In the search box on the taskbar, type “View network connections”, and then select View network connections at the top of the list.



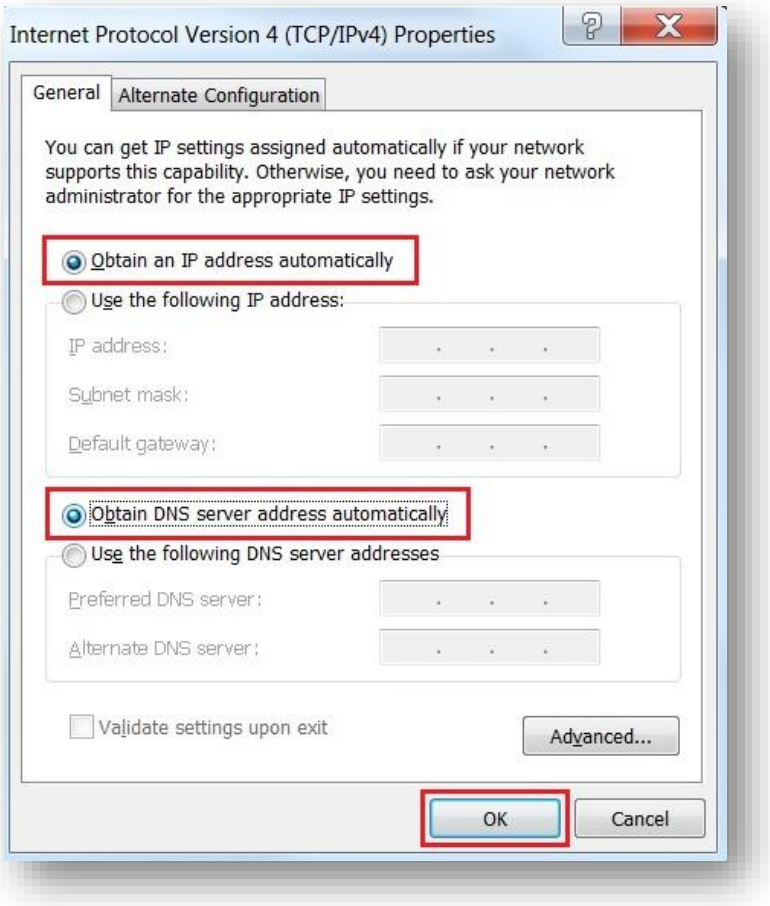
2. Right-click on the Local Area Connection and select Properties.



3. Select Internet Protocol Version 4 (TCP/IPv4) and click Properties or directly double-click on Internet Protocol Version 4 (TCP/IPv4).



4. Select "**Use the following IP address**" and "**Obtain DNS server address automatically**", and then click the "**OK**" button.



3.3 Planet Smart Discovery Utility

For easily listing the cellular gateway in your Ethernet environment, the search tool -- Planet Smart Discovery Utility -- is an ideal solution.

The following installation instructions are to guide you to running the Planet Smart Discovery Utility.

1. Download the Planet Smart Discovery Utility in administrator PC.
2. Run this utility as the following screen appears.

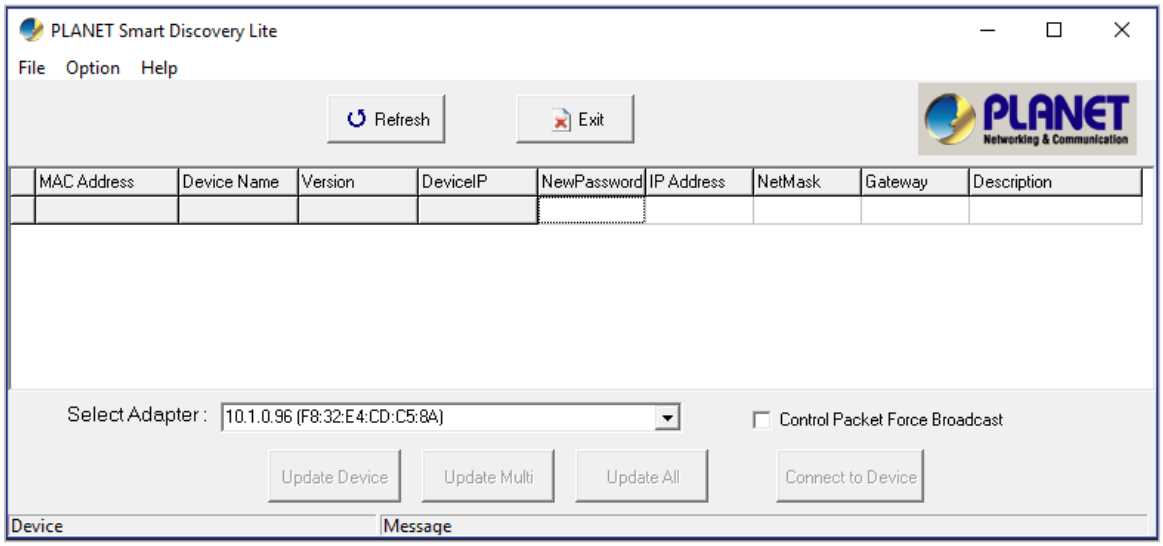


Figure 3-1-6: Planet Smart Discovery Utility Screen

Note

If there are two LAN cards or above in the same administrator PC, choose a different LAN card by using the **"Select Adapter"** tool.

3. Press the **"Refresh"** button for the currently connected devices in the discovery list as the screen shows below:

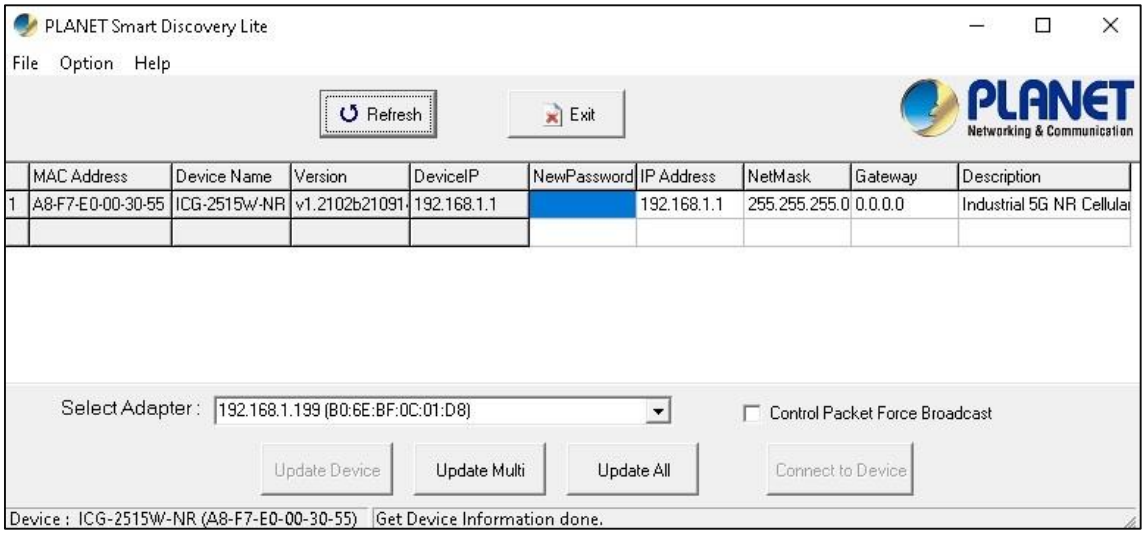


Figure 3-1-7: Planet Smart Discovery Utility Screen

1. This utility shows all necessary information from the devices, such as MAC address, device name, firmware version, and device IP subnet address. It can also assign new password, IP subnet address and description to the devices.

2. After setup is completed, press the "**Update Device**", "**Update Multi**" or "**Update All**" button to take effect. The functions of the 3 buttons above are shown below:
   - **Update Device**: use current setting on one single device.
   - **Update Multi:** use current setting on choose multi-devices.
   - **Update All:** use current setting on whole devices in the list.

   The same functions mentioned above also can be found in "**Option**" tools bar.

3. To click the "**Control Packet Force Broadcast**" function, it allows you to assign a new setting value to the device under a different IP subnet address.

4. Press the "**Connect to Device**" button and the Web login screen appears.

Press the "**Exit**" button to shut down the Planet Smart Discovery Utility.

Chapter 4. Web-based Management

This chapter provides setup details of the device's Web-based Interface.

4.1 Introduction

The device can be configured with your Web browser. Before configuring, please make sure your PC is under the same IP segment with the device.

4.2 Logging in to the Cellular Gateway

Refer to the steps below to configure the cellular gateway:

Step 1. Connect the IT administrator's PC and cellular gateway's LAN port (port 1) to the same hub / switch, and then launch a browser to link the management interface address which is set to **http://192.168.1.1** by default.

The DHCP server of the cellular gateway is enabled. Therefore, the LAN PC will get IP from the VPN cellular gateway. If user needs to set IP address of LAN PC manually, please set the IP address within the range between 192.168.1.2 and 192.168.1.254 inclusively, and assigned the subnet mask of 255.255.255.0.

Step 2. The browser prompts you for the login credentials. (Both are **"admin**" by default.)

Default IP address: **192.168.1.1**
Default user name: **admin**
Default password: **admin**
Default SSID (2.4G): **PLANET_2.4G (Wireless model only)**
Default SSID (5G): **PLANET_5G (Wireless model only)**

Administrators are strongly suggested to change the default admin and password to ensure system security.

4.3 Main Web Page

After a successful login, the main web page appears. The web main page displays the web panel, main menu, function menu, and the main information in the center.

Figure 4-3-1: Main Web Page

■ Web Panel

The web panel displays an image of the device's ports as shown in Figure 4-3-2.

Figure 4-2: Web Panel

Object	Icon	Function
RJ45		To indicate the port comes with the RJ45 plug-in.
		To indicate network data is sending or receiving
Fiber		To indicate the port comes with the fiber plug-in.
		To indicate network data is sending or receiving

■ Main Menu

The main menu displays the product name, function menu, and main information in the center. Via the Web management, the administrator can set up the device by selecting the functions those listed in the function menu and button as shown in Figures 4-3-2 and 4-3-3.

Figure 4-3-2: Function Menu

Object	Description
System	Provides System information of the cellular gateway
Network	Provides WAN, LAN and network configuration of the cellular gateway
Cellular	Provides Cellular configuration of the cellular gateway
Security	Provides Firewall and security configuration of the cellular gateway
VPN	Provides VPN configuration of the cellular gateway
AP Control	Provides AP Control configuration of the cellular gateway
Wireless	Provides wireless configuration of the cellular gateway (Wireless model only)
Maintenance	Provides firmware upgrade and setting file restore/backup configuration of the cellular gateway

Figure 4-3-3: Function Button

Object	Description
	Click the "**Refresh button**" to refresh the current web page.
	Click the "**Logout button**" to log out the web UI of the cellular gateway.

4.4 System

Use the System menu items to display and configure basic administrative details of the cellular gateway. The System menu shown in Figure 4-4-1 provides the following features to configure and monitor system.

Figure 4-4-1: System Menu

Object	Description
Wizard	The Wizard will guide the user to configuring the cellular gateway easily and quickly.
Dashboard	The overview of system information includes connection, port, and system status.
System Status	Display the status of the system, Device Information, LAN and WAN.
System Service	Display the status of the system, Secured Service and Server Service
Statistics	Display statistics information of network traffic of LAN and WAN.
Connection Status	Display the DHCP client table and the ARP table
SFP Module Information (SFP model only)	Display the physical or operational status of an SFP module via the SFP Module Information page (ICG-2515F-NR and ICG-2515FW-NR only)
High Availability	Enable/Disable High Availability on cellular gateway
RADIUS	Enable/Disable RADIUS on cellular gateway
Captive Portal	Enable/Disable Captive Portal on cellular gateway
SNMP	Display SNMP system information
NMS	Enable/Disable NMS on cellular gateway
Fault Alarm	One relay output for power failure. Alarm relay current carry ability
Digital Input/Output	Digital Input/Output Control Configuration page
Modbus	Configure the Modbus TCP Mode on this page
Remote Syslog	Enable Captive Portal on cellular gateway
Event Log	Display Event Log information

4.4.1 Setup Wizard

The Wizard will guide the user to configuring the cellular gateway easily and quickly. There are different procedures in different operation modes. According to the operation mode you switch to, please follow the instructions below to configure the cellular gateway via **Setup Wizard** as shown in Figure 4-4-2.

Figure 4-4-2: Setup Wizard

Step 1: Account Modification

Set up the Username and Password for the Account Modification as shown in Figure 4-4-3.

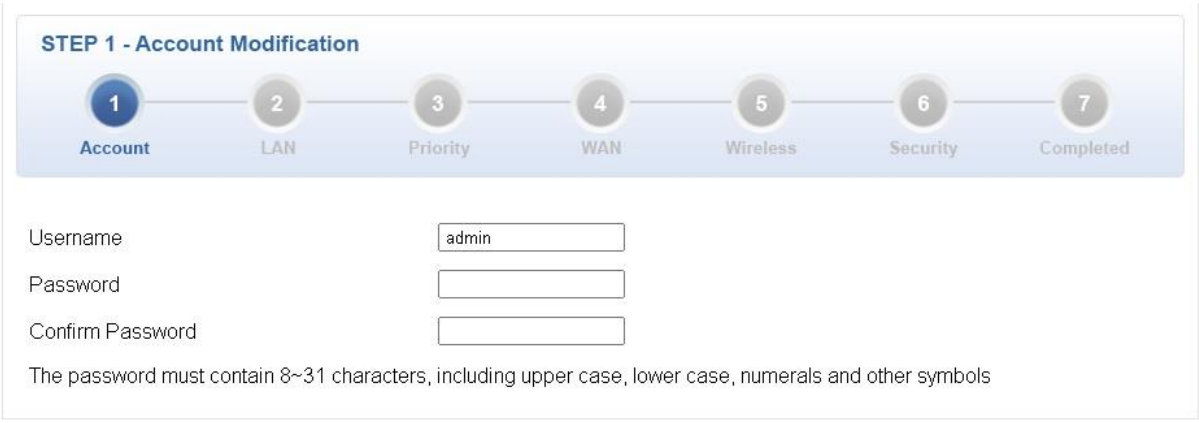


Figure 4-4-3: Account Modification

Step 2: LAN Interface

Set up the IP Address and Subnet Mask for the LAN interface as shown in Figure 4-4-4.

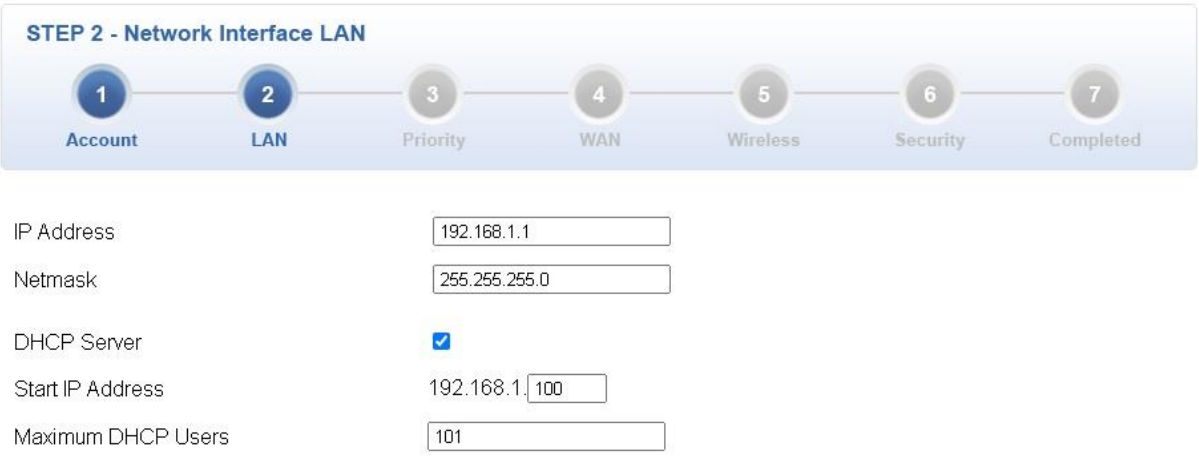


Figure 4-4-4: Setup Wizard – LAN Configuration

Object	Description
IP Address	Enter the IP address of your cellular gateway The default is 192.168.1.1.
Subnet Mask	An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.
DHCP Server	By default, the DHCP Server is enabled. If user needs to disable the function, please uncheck the box.
Start IP Address	By default, the start IP address is 192.168.1.100. Please do not set it to the same IP address of the cellular gateway
Maximum DHCP Users	By default, the maximum DHCP users are 101, which means the cellular gateway will provide DHCP client with IP address from 192.168.1.100 to 192.168.1.200 when the start IP address is 192.168.1.100.
Next	Press this button to the next step.
Cancel	Press this button to undo any changes made locally and revert to previously saved values.

Step 3: Priority Interface

The cellular gateway supports two access modes on the WAN side shown in Figure 4-4-5

Figure 4-4-5: Setup Wizard – WAN 1 Configuration

Object	Description
WAN Priority	■ Auto: WAN Ethernet is first priority and second priority is NR/LTE. The default is Auto. ■ LTE/NR Only: The priority is only LTE/NR ■ ETH Only: The priority is only Ethernet. ■ LTE/NR First: LTE/NR is first priority and second priority is Ethernet

Step 4: WAN Interface

The cellular gateway supports two access modes on the WAN side shown in Figure 4-4-6

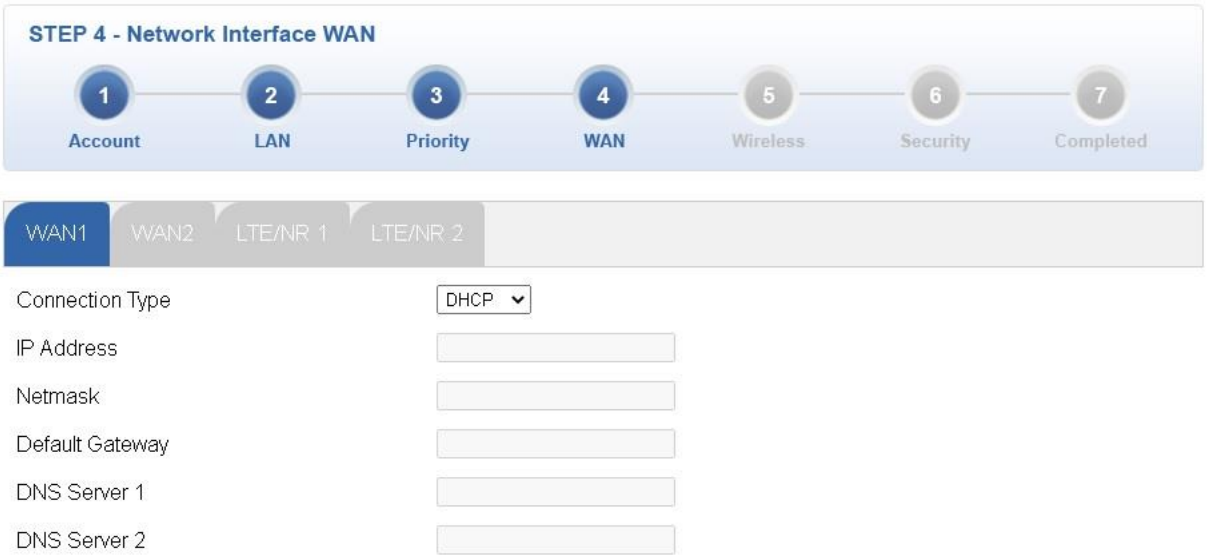


Figure 4-4-6: Setup Wizard – WAN Configuration

Mode 1 -- Static IP

Select **Static IP Address** if all the Internet port's IP information is provided to you by your ISP. You will need to enter the **IP Address**, **Netmask**, **Default Gateway** and **DNS Server** provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which are four octets separated by a dot (x.x.x.x). The cellular gateway will not accept the IP address if it is not in this format. The setup is shown in Figure 4-4-7.

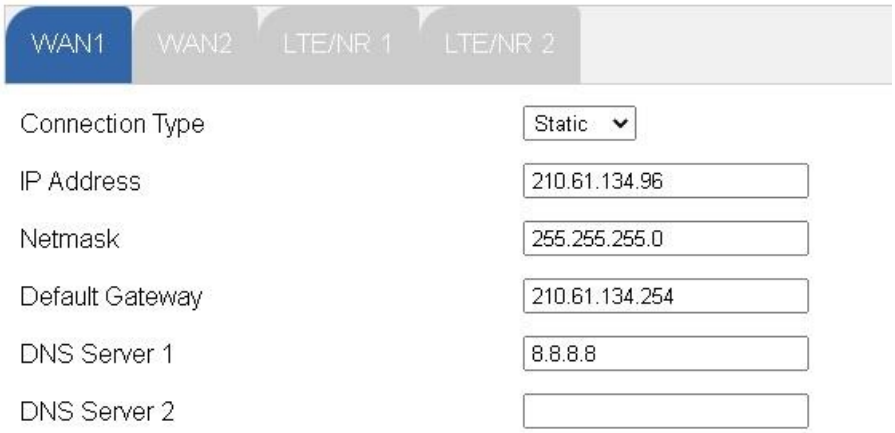


Figure 4-4-7: WAN Interface Setup – Static IP Setup

Object	Description
IP Address	Enter the IP address assigned by your ISP.
Netmask	Enter the Netmask assigned by your ISP.
Default Gateway	Enter the Gateway assigned by your ISP.
DNS Server	The DNS server information will be supplied by your ISP.
Next	Press this button for the next step.
Previous	Press this button for the previous step.
Cancel	Press this button to undo any changes made locally and revert to previously saved values.

Mode 2 -- DHCP Client

Select DHCP Client to obtain IP Address information automatically from your ISP. The setup is shown in Figure 4-4-8.

Figure 4-4-8: WAN Interface Setup – DHCP Setup

Step 4: WAN Interface (for ICG-2515F-NR & ICG-2515FW-NR)

The cellular gateway supports WAN 1 interface to be set to port 5 (SFP) or port 4 (RJ45) by user-defined method on the WAN side shown in Figure 4-4-9

Figure 4-4-9: Setup Wizard – WAN Configuration

Mode 1 -- Static IP

Select **Static IP Address** if all the Internet port's IP information is provided to you by your ISP. You will need to enter the **IP Address**, **Netmask**, **Default Gateway** and **DNS Server** provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which are four octets separated by a dot (x.x.x.x). The cellular gateway will not accept the IP address if it is not in this format.

Object	Description
IP Address	Enter the IP address assigned by your ISP.
Netmask	Enter the Netmask assigned by your ISP.
Default Gateway	Enter the Gateway assigned by your ISP.
DNS Server	The DNS server information will be supplied by your ISP.
Next	Press this button for the next step.
Previous	Press this button for the previous step.
Cancel	Press this button to undo any changes made locally and revert to previously saved values.

Mode 2 -- DHCP Client

Select DHCP Client to obtain IP Address information automatically from your ISP.

Step 5: Wireless Setting

Set up the Wireless Settings as shown in Figure 4-4-9.

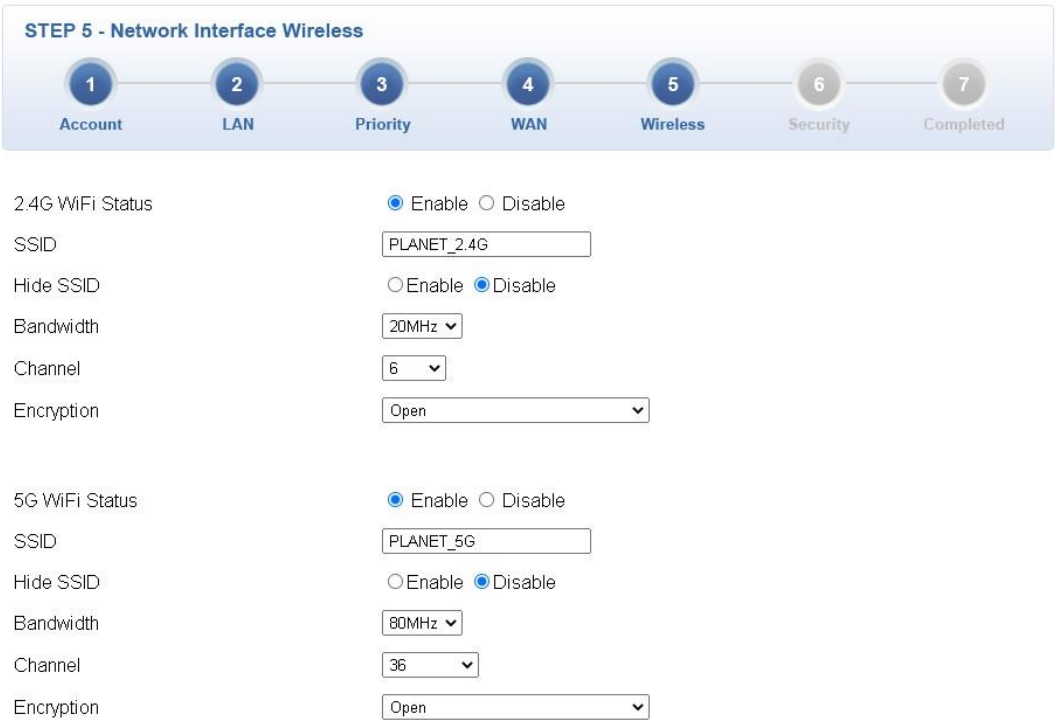


Figure 4-4-9: Setup Wizard –Security Setting

Object	Description
2.4G Wireless Status	Allows user to enable or disable 2.4G Wi-Fi
Wireless Name (SSID)	It is the wireless network name. The default 2.4G SSID is "PLANET_2.4G"
Hide SSID	Allows user to enable or disable SSID
Bandwidth	Select the operating channel width, "**20MHz**" or "**40MHz**"
Channel	It shows the channel of the CPE. Default 2.4GHz is channel 6.
Encryption	Select the wireless encryption. The default is "**Open**"
Wi-Fi Multimedia	Enable/Disable WMM (Wi-Fi Multimedia) function

Object	Description
5G Wireless Status	Allows user to enable or disable 5G Wi-Fi
Wireless Name (SSID)	It is the wireless network name. The default 5G SSID is "PLANET_5G"
Hide SSID	Allows user to enable or disable SSID
Bandwidth	Select the operating channel width, "**20MHz**", "**40MHz**" or "**80MHz**"
Channel	It shows the channel of the CPE. Default 5GHz is channel 36.
Encryption	Select the wireless encryption. The default is "**Open**"
Wi-Fi Multimedia	Enable/Disable WMM (Wi-Fi Multimedia) function

Step 6: Security Setting

Set up the Security Settings as shown in Figure 4-4-10.

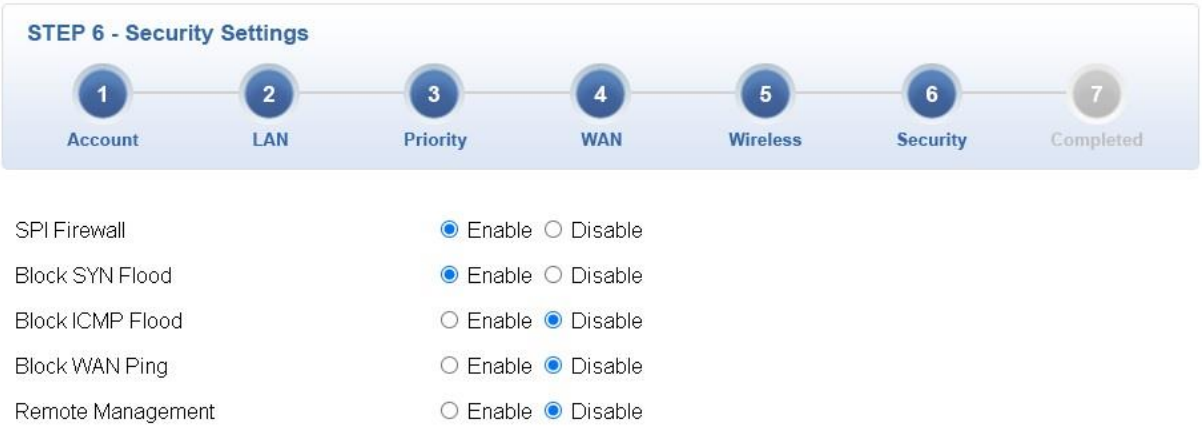


Figure 4-4-10: Setup Wizard –Security Setting

Object	Description
SPI Firewall	The SPI Firewall prevents attack and improper access to network resources. The default configuration is enabled.
Block SYN Flood	SYN Flood is a popular attack way. DoS and DDoS are TCP protocols. Hackers like using this method to make a fake connection that involves the CPU, memory, and so on. The default configuration is enabled.
Block ICMP Flood	ICMP is kind of a pack of TCP/IP; its important function is to transfer simple signal on the Internet. There are two normal attack ways which hackers like to use, Ping of Death and Smurf attack. The default configuration is disabled.
Block WAN Ping	Enable the function to allow the Ping access from the Internet network. The default configuration is disabled.
Remote Management	Enable the function to allow the web server access of the cellular gateway from the Internet network. The default configuration is disabled.

Step 7: Setup Completed

The page will show the summary of LAN, WAN and Security settings as shown in Figure 4-4-11.

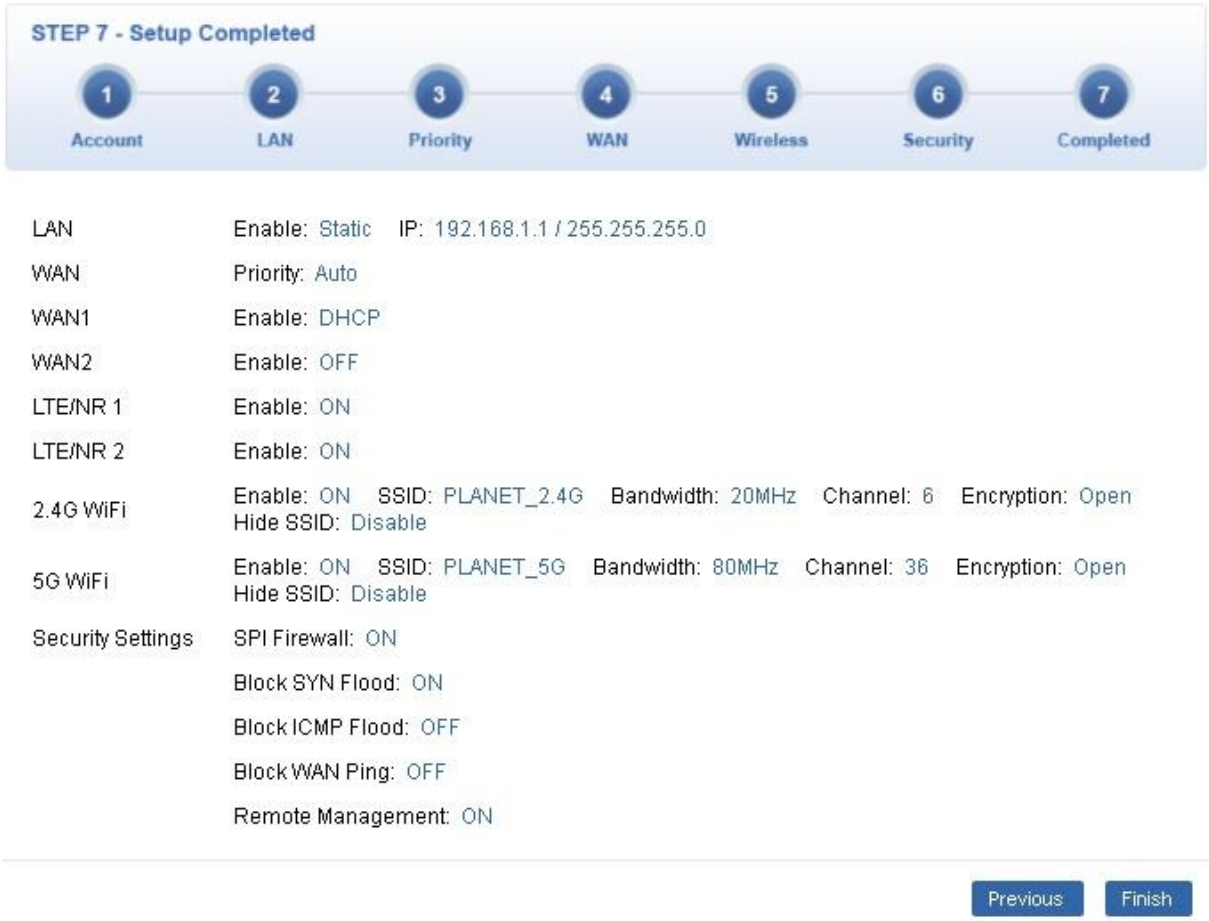


Figure 4-4-11: Setup Wizard – Setup Completed

Object	Description
Finish	Press this button to save and apply changes.
Previous	Press this button for the previous step.

4.4.2 Dashboard

The dashboard provides an overview of system information including connection, port, and system status as shown in Figure 4-4-12.

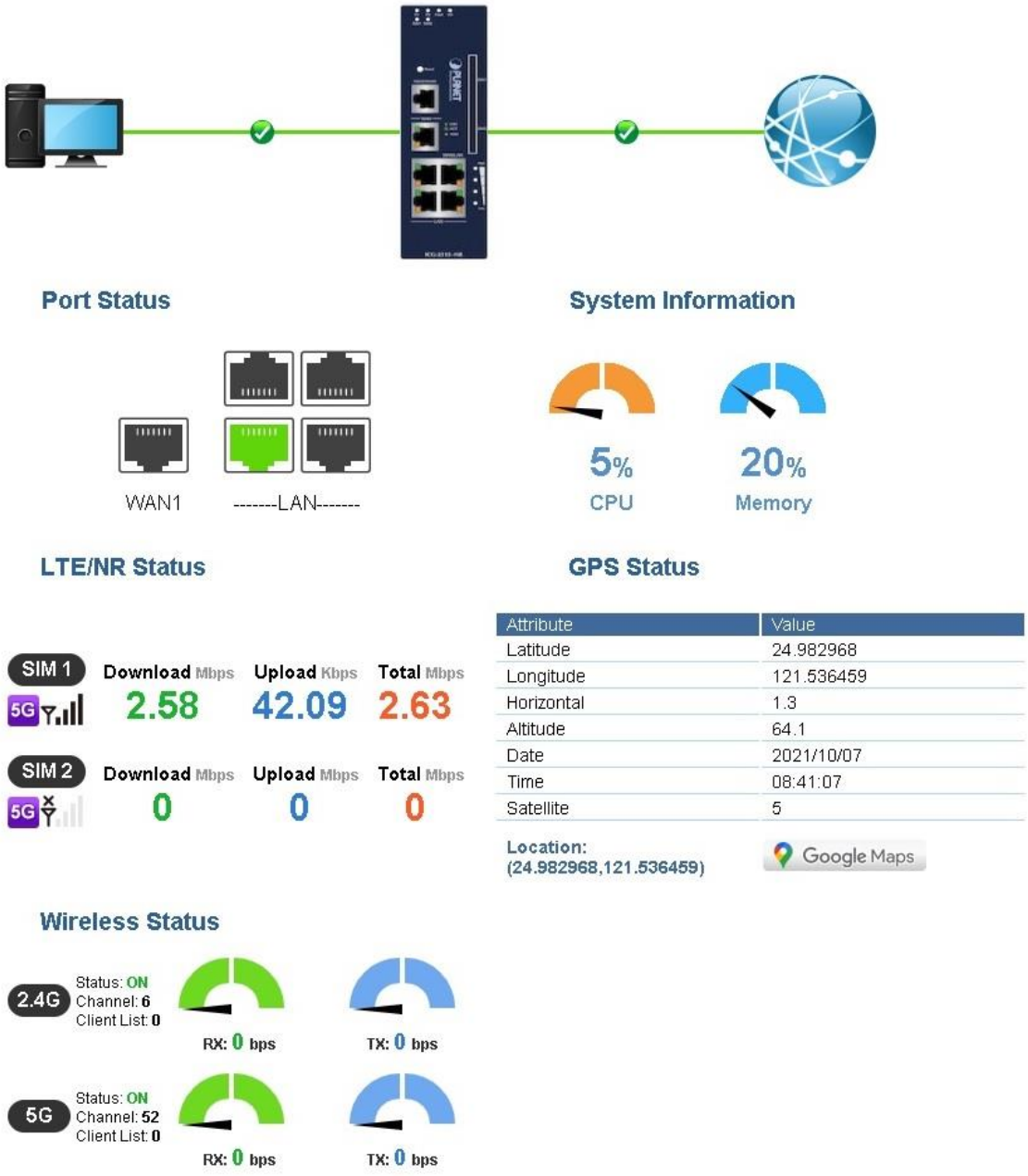


Figure 4-4-12: Dashboard

WAN/LAN Connection Status

Object	Description
	The status means WAN is connected to Internet and LAN is connected.
	The status means WAN is disconnected to Internet and LAN is connected.
	The status means WAN is connected to Internet and LAN is disconnected.

Port Status

Object	Description
	Ethernet port is in use.
	Ethernet port is not in use.
	Fiber port is in use.
	Fiber port is not in use.

System Information

Object	Description
CPU	Display the CPU loading
Memory	Display the memory usage

LTE/NR Status

Object	Description
SIM	SIM signal ■ 5G signal ■ 4G signal ■ 3G signal
Download	Download data rate of SIM
Upload	Upload data rate of SIM
Total	Total data rate of SIM

Wireless Status

Object	Description
	Wireless is in use.
	Wireless is not in use.

4.4.3 System Status

This page displays system status information as shown in Figure 4-4-13.

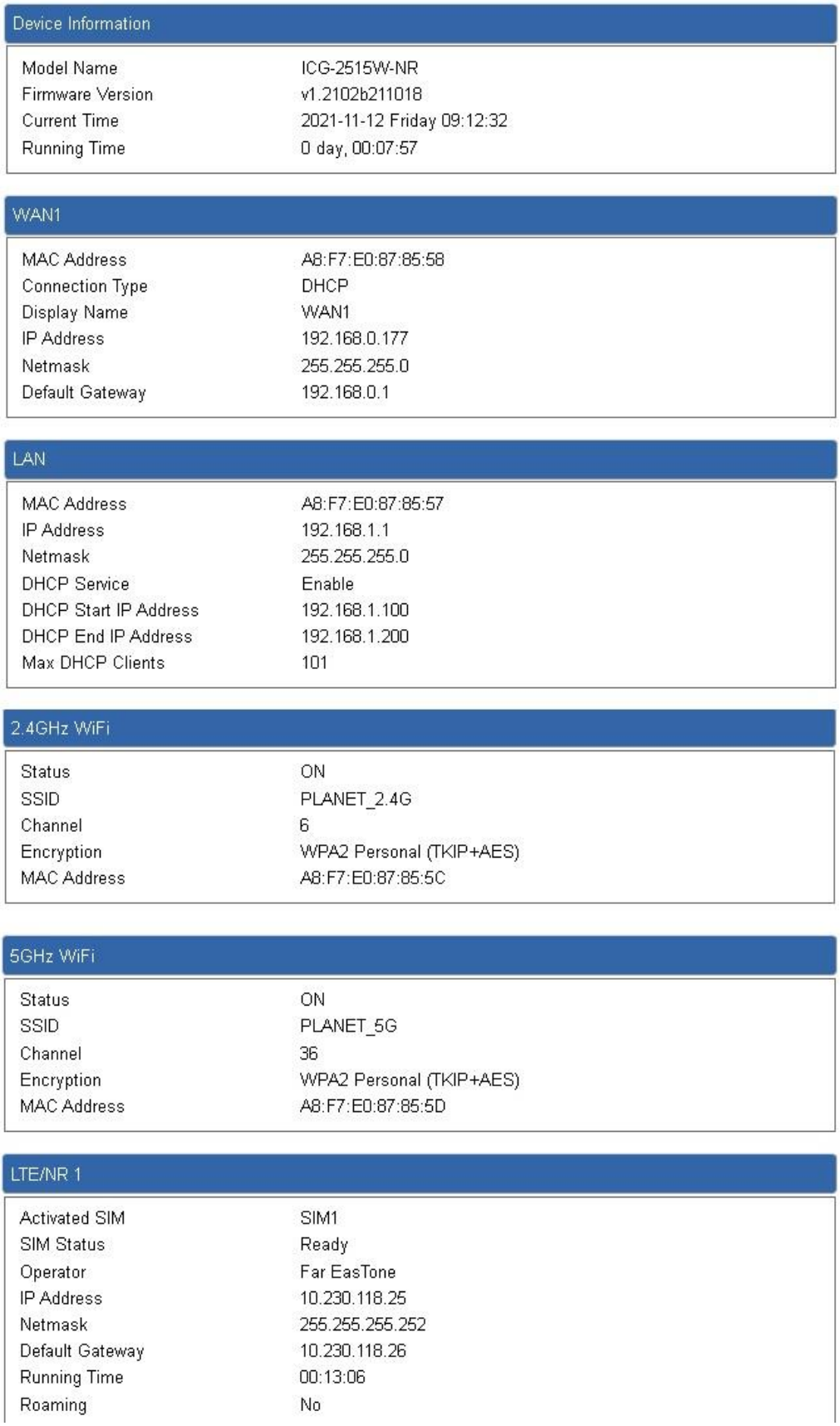


Figure 4-4-13: System Status

4.4.4 System Service

This page displays system service information as shown in Figure 4-4-14.

Server Service

#	Action	Service	Status
1	Enabled	DHCP Service	DHCP Table: 1
2	Disabled	DDNS Service	Not enabled
3	Enabled	WAN Priority	Auto
4	Enabled	SIM Priority	Auto SIM1
5	Disabled	LTE/NR Roaming	--
6	Disabled	Quality of Service	
7	Disabled	High Availability	
8	Disabled	RADIUS Service	
9	Disabled	Captive Portal	
10	Enabled	2.4GHz WiFi	SSID: PLANET_2.4G
11	Enabled	5GHz WiFi	SSID: PLANET_5G

Secured Server Service

#	Action	Service	Status
1	Enabled	Cyberseurity	TLS 1.1, TLS 1.2, TLS 1.3
2	Enabled	SPI Firewall	
3	Disabled	MAC Filtering	(Active / Maximum Entries) 0 / 32
4	Disabled	IP Filtering	(Active / Maximum Entries) 0 / 32
5	Disabled	Web Filtering	(Active / Maximum Entries) 0 / 32
6	Disabled	IPSec VPN Server	(Active / Maximum Tunnels) 0 / 32
7	Disabled	GRE	(Active / Maximum Tunnels) 0 / 5
8	Disabled	PPTP	(Active / Maximum Tunnels) 0 / 91
9	Disabled	SSL VPN	(Active / Maximum Tunnels) 0 / 100
10	Disabled	L2TP	(Active Tunnels) 0

Figure 4-4-14: System Service

4.4.5 Statistics

This page displays the number of packets that pass through the cellular gateway on the WAN and LAN. The statistics are shown in Figure 4-4-15.

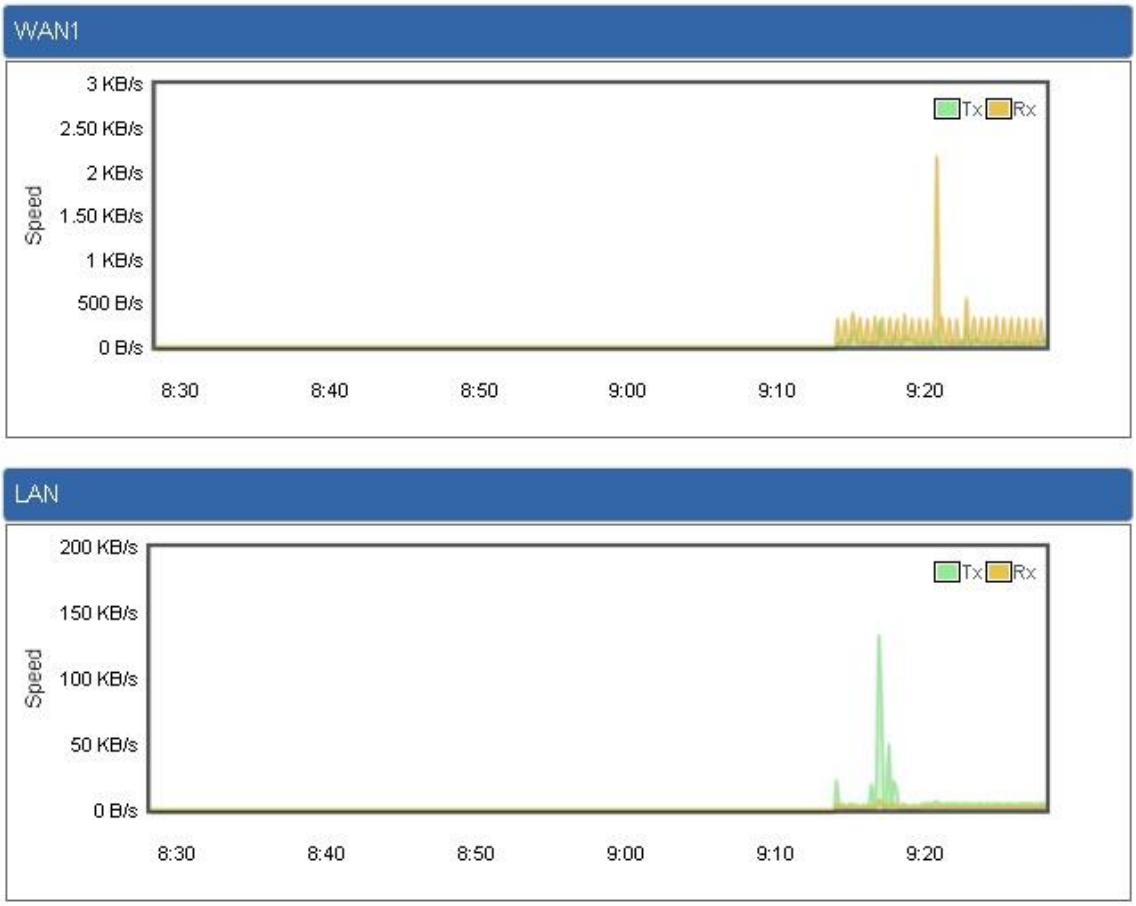


Figure 4-4-15: Statistics

4.4.6 Connection Status

The page shows the DHCP Table and ARP Table. The status is shown in Figure 4-4-16.

DHCP Table

Name	IP Address	MAC Address	Expiration Time

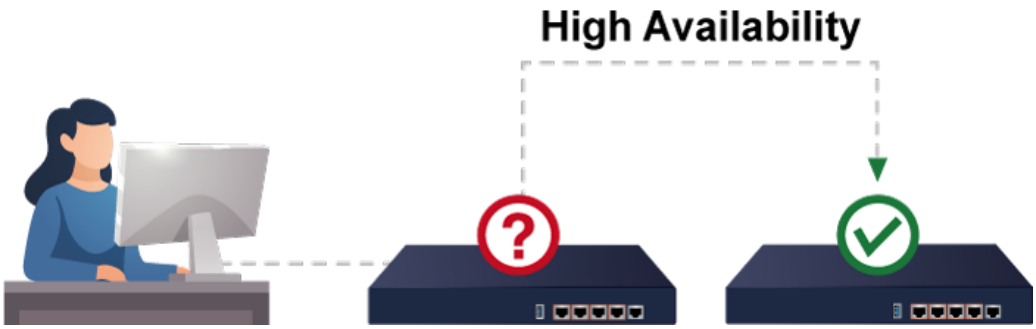
ARP Table

IP Address	MAC Address	ARP Type
8.8.8.8	00:00:00:00:00:00	unknow
208.67.222.222	00:00:00:00:00:00	unknow
8.8.8.8	00:00:00:00:00:00	unknow
208.67.222.222	00:00:00:00:00:00	unknow
192.168.1.18	00:00:00:00:00:00	unknow
192.168.1.69	00:30:11:11:11:12	dynamic
192.168.1.69	00:30:11:11:11:12	dynamic

Figure 4-4-16: Connection Status

4.4.7 High Availability

High Availability (HA) is a system redundant that two cellular gateway of ICG-2515 series can be set up in a master/slave configuration. The master cellular gateway provides the Internet connection but, in the case of hardware or WAN connectivity failure, the slave (backup) cellular gateway automatically takes over Internet connection. It provides redundant hardware and software that make the system available despite failures.



The page shows the High Availability configuration. The High Availability page is shown in Figure 4-4-17.

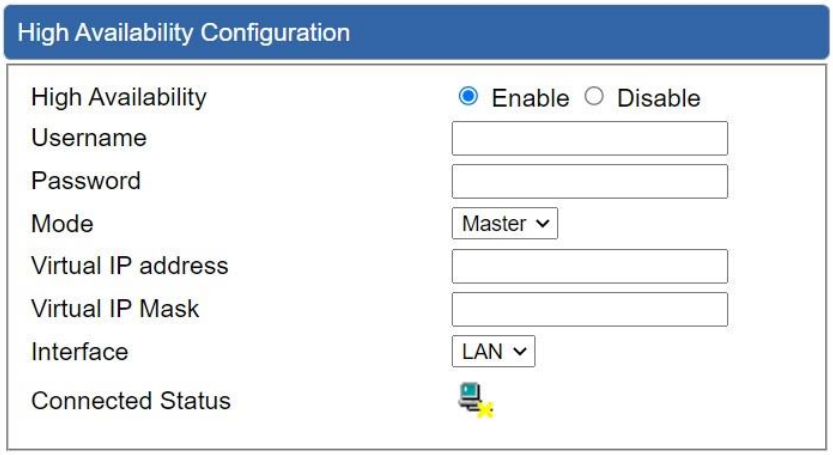


Figure 4-4-17: High Availability

Object	Description
High Availability	Disable or enable the High Availability function. The default configuration is disabled.
Username	Create the username for the HA.
Password	Create the password for the HA .
Mode	Choose Master or Slave role
Virtual IP address	Assign an IP address as a virtual IP.
Virtual mask	Assign a mask address as a virtual mask.
Interface	Use interface
Connection Status	Display the HA status

4.4.8 RADIUS

Remote Authentication Dial-In User Service (RADIUS) is a security authentication client/server protocol that supports authentication, authorization and accounting. The RADIUS Server page is shown in Figure 4-4-18.

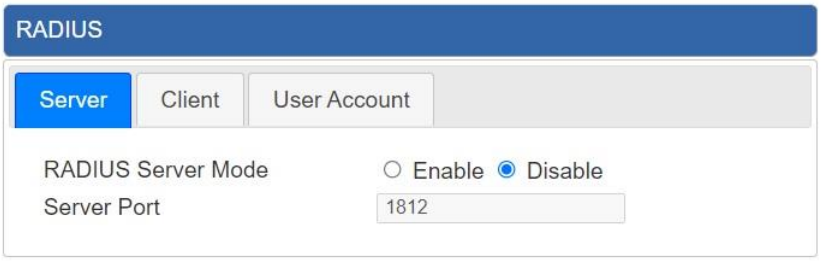


Figure 4-4-18: RADIUS Server

Object	Description
RADIUS	Disable or enable the RADIUS function. The default configuration is disabled.
Server Port	UDP port number for authentication

The RADIUS client page is shown in Figure 4-4-19.

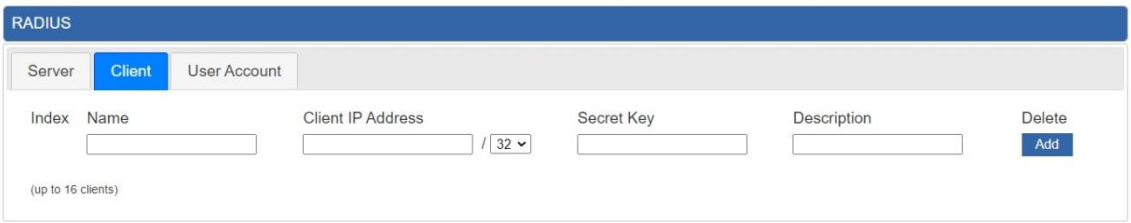


Figure 4-4-19: RADIUS Client

Object	Description
Name	Describe client's name
Client IP address	Describe client's IP address
Secret Key	The RADIUS server and client share a secret key that is used to authenticate the messages sent between server and client.
Description	Describe client's information

4.4.9 Captive Portal

Captive portal service gives the ability to organize a public (or guest) Wi-Fi zone with user authorization. A captive portal is the authorization page that forcibly redirects users who connect to the public network before accessing the Internet.

The Captive portal page is shown in Figure 4-4-20.

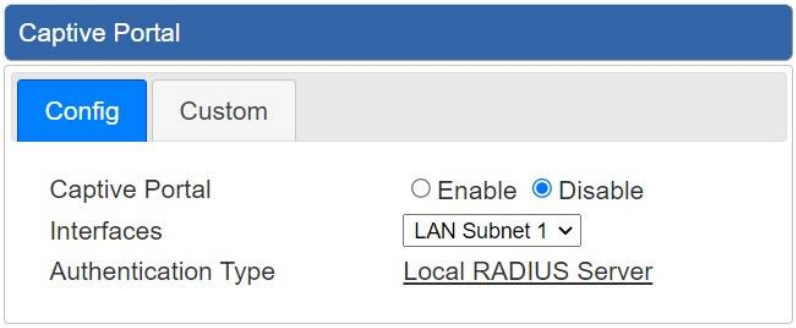
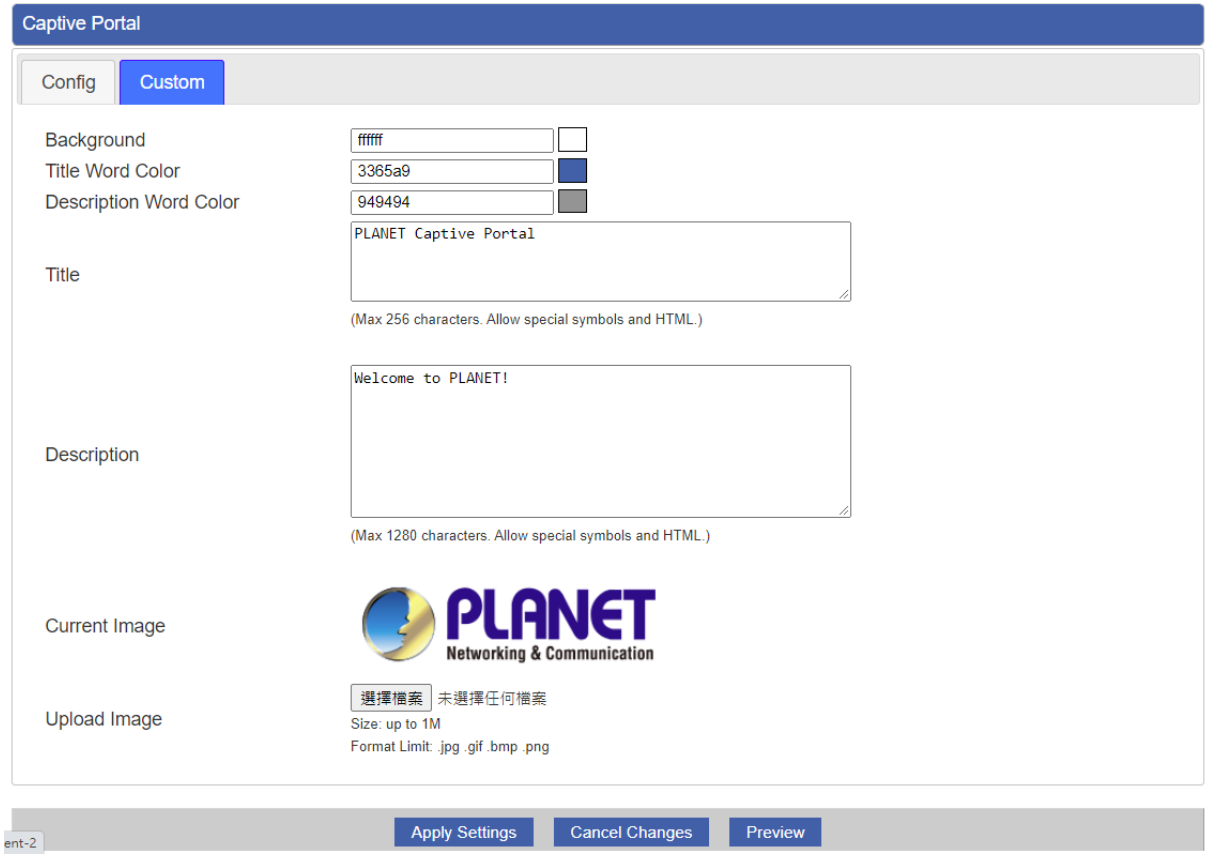


Figure 4-4-20: Captive portal

Object	Description
Captive portal	Disable or enable the Captive portal function. The default configuration is disabled.
Interface	Choose subnet interface ■ LAN Subnet 1 ■ LAN Subnet 2 ■ LAN Subnet 3 ■ LAN Subnet 4
Authentication Type	Support local RADIUS server


Captive Portal
Config
Custom
Background
ffffff
Title Word Color
3365a9
Description Word Color
949494
Title
PLANET Captive Portal
(Max 256 characters. Allow special symbols and HTML.)
Description
Welcome to PLANET!
(Max 1280 characters. Allow special symbols and HTML.)
Current Image
PLANET
Networking & Communication
Upload Image
選擇檔案
未選擇任何檔案
Size: up to 1M
Format Limit: .jpg .gif .bmp .png
Apply Settings
Cancel Changes
Preview

4.4.10 SNMP

This page provides SNMP setting as shown in Figure 4-4-21.

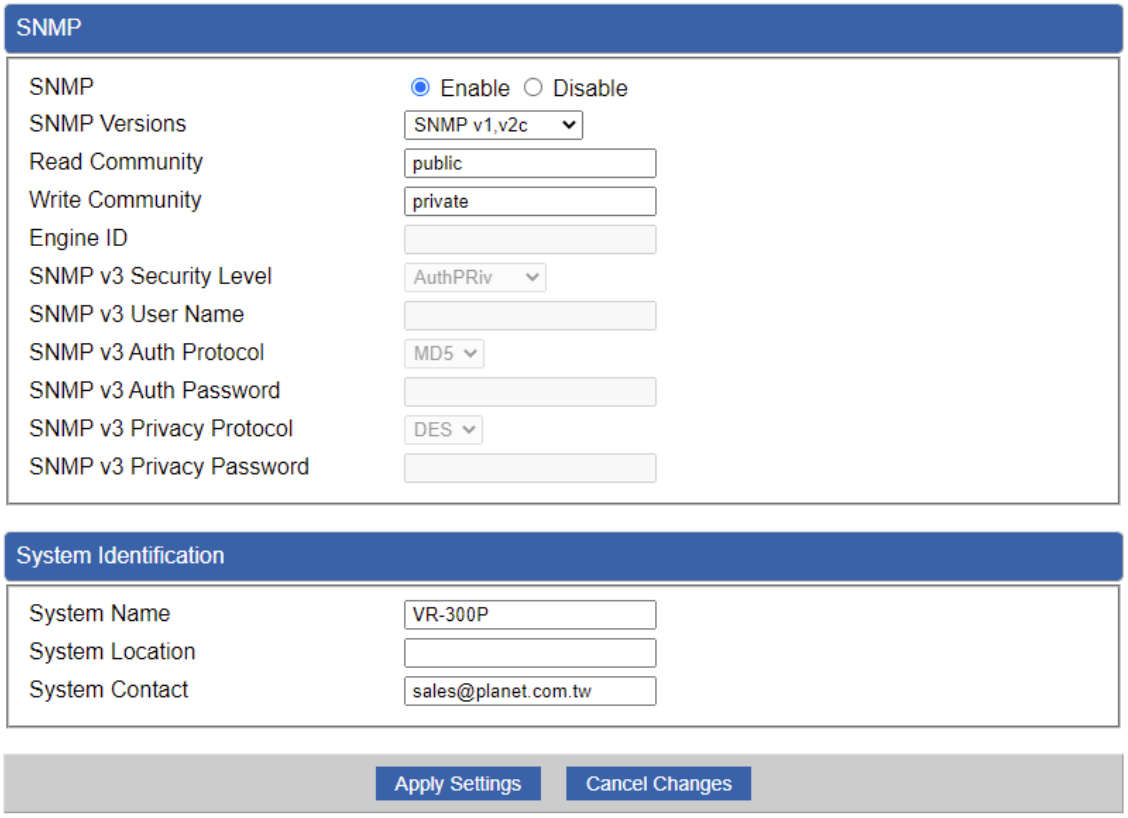


Figure 4-4-21: SNMP

Object	Description
Enable SNMP	Disable or enable the SNMP function. The default configuration is enabled.
Read/Write Community	Allows entering characters for SNMP Read/Write Community of the cellular gateway
System Name	Allows entering characters for system name of the cellular gateway
System Location	Allows entering characters for system location of the cellular gateway
System Contact	Allows entering characters for system contact of the cellular gateway
Apply Settings	Press this button to save and apply changes.
Cancel Changes	Press this button to undo any changes made locally and revert to previously saved values.

4.4.11 NMS

The ICG-2515 series can support both NMS controller and CloudViewer Sever for remote management. PLANET's NMS Controller is a Network Management System that can monitor all kinds of deployed network devices, such as managed switches, media converters, routers, smart APs, VoIP phones, IP cameras, etc., compliant with the SNMP Protocol, ONVIF Protocol and PLANET Smart Discovery utility. The CloudViewer is a free networking service designed for PLANET Products. This service provides simplified network monitoring and real-time network status. Working with PLANET CloudViewer app, user can easily check network status, device information, Port and PoE status from Internet. Any other services are not included.

NMS Configuration screens in Figure 4-4-22 appear.

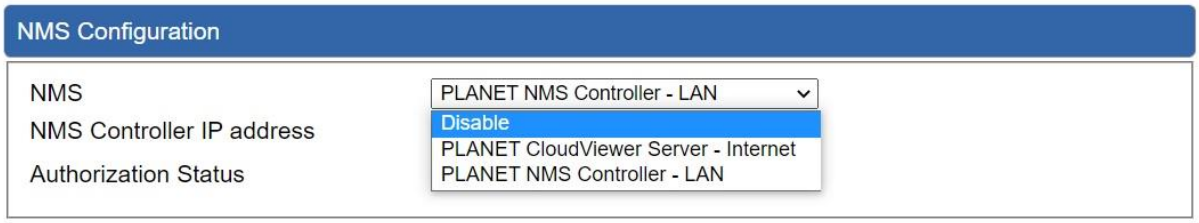


Figure 4-4-22 NMS Configuration Page

The NMS Controller – LAN Configuration screens in Figure 4-4-23 appear.

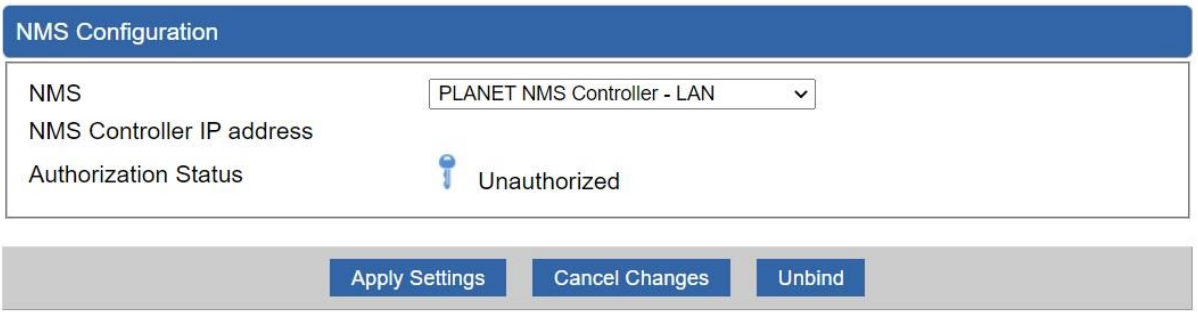


Figure 4-4-23 NMS Controller – LAN Configuration Page

Object	Description
• **NMS Controller IP address**	The IP address of NMS Controller
• **Authorization Status**	Indicates the authorization status of the switch to NMS Controller

The CloudViewer Server – Internet screens in Figure 4-4-24 appear.

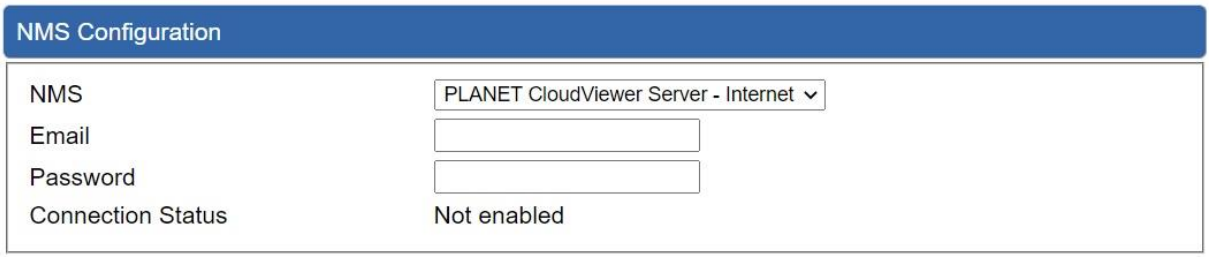


Figure 4-4-24 CloudViewer Server – Internet Configuration Page

Object	Description
• **Email**	The email registered on CloudViewer Server
• **Password**	The password of your CloudViewer account
• **Connection Status**	Indicates the status of connecting CloudViewer Server

4.4.12 Fault Alarm

This page provides fault alarm setting as shown in Figure 4-4-25.

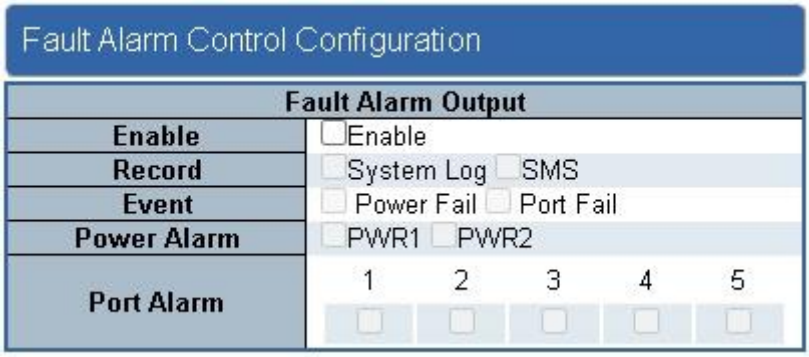


Figure 4-4-25: Fault Alarm

Object	Description
• **Enable**	Controls whether Fault Alarm is enabled
• **Record**	Controls whether Record is sending System log or SMS
• **Event**	Controls whether Port or Power is not working.
• **Power Alarm**	Controls whether PWR1 or PWR2 or both are not working.
• **Port Alarm**	Controls whether a port or ports is/ are not working.

4.4.13 Digital Input / Output

This page provides Digital Input / Output setting as shown in Figure 4-4-26.

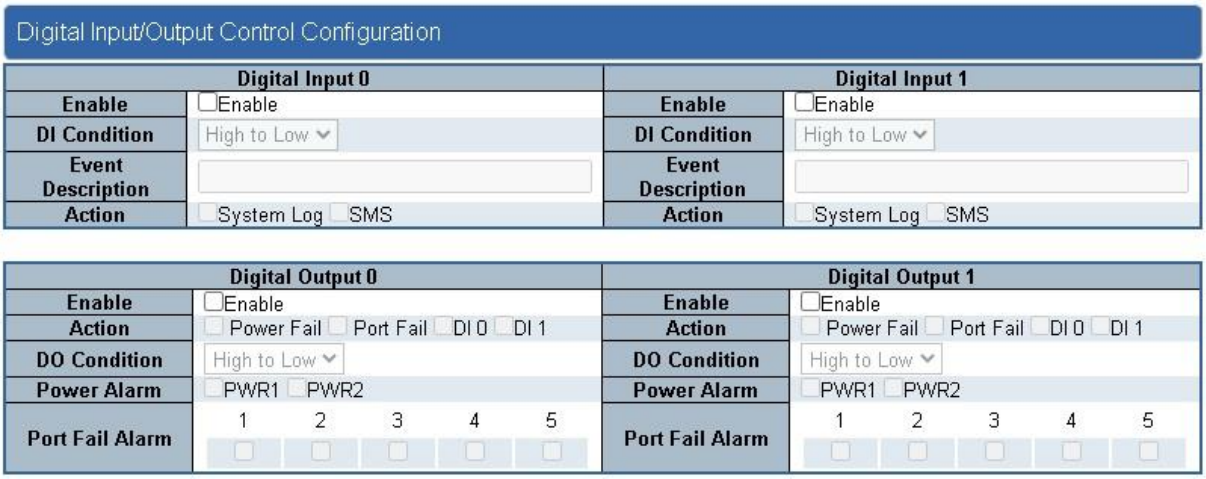


Figure 4-4-26: Digital Input / Output

Object	Description
• **Enable**	Check the Enable checkbox to enable Digital Input / output function. Uncheck the Enable checkbox to disable Digital input / output function.
• **Condition**	**As Digital Input:** Allows user to select High to Low or Low to High. This means a signal received by system is from High to Low or From Low to High. It will trigger an action that logs a customize message or issue the message from the switch. **As Digital Output:** Allows user to select High to Low or Low to High. This means that when the switch is power-failed or port-failed, then system will issue a High or Low signal to an external device such as an alarm.
• **Event Description**	Allows user to set a customized message for Digital Input function alarming.
• **Action**	**As Digital Input:** Allows user to record alarm message to System log, syslog or issues out via SNMP Trap or SMTP. As default SNMP Trap and SMTP are disabled, please enable them first if you want to issue alarm message via them.

	As Digital Output: Allows user to monitor an alarm from port failure, power failure, Digital Input 0 (DI 0) and Digital Input 1(DI 1) which means if Digital Output has detected these events, then Digitial Output would be triggered according to the setting of Condition.
• **Power Alarm**	Allows user to choose which power module that needs to be monitored.
• **Port Alarm**	Allows user to choose which port that needs to be monitored.

4.4.14 Remote Syslog

This page provides remote syslog setting as shown in Figure 4-4-27.

Figure 4-4-27: Connection Status

Object	Description
• **Enable**	Controls whether remote syslog is enabled
• **Syslog Server IP**	Indicates the IPv4 host address of syslog server
• **Port Destination**	Configure port for remote syslog

4.5 Network

The Network function provides WAN, LAN and network configuration of the cellular gateway as shown in Figure 4-5-1.

Figure 4-5-1: Network Menu

Object	Description
Priority	Allows setting priority of WAN interface.
WAN	Allows setting WAN interface.
WAN Advanced	Allows setting WAN Advanced settings.
LAN	Allows setting LAN interface.
Multi-Subnet	Allows setting Multi-Subnet1 ~ Subnet4 interface.
VLAN	Disable or enable the VLAN function. The default configuration is disabled.

UPnP	Disable or enable the UPnP function. The default configuration is disabled.
Routing	Allows setting Route.
RIP	Disable or enable the RIP function. The default configuration is disabled.
OSPF	Disable or enable the OSPF function. The default configuration is disabled.
IGMP	Disable or enable the IGMP function. The default configuration is disabled.
IPv6	Allows setting IPv6 WAN interface.
DHCP	Allows setting DHCP Server.
DDNS	Allows setting DDNS and PLANET DDNS.
MAC Address Clone	Allows setting WAN MAC Address Clone.

4.5.1 Priority

This page provides WAN priority setting as shown in Figure 4-5-2.

Figure 4-5-2: Priority

Object	Description
WAN Priority	■ Auto: WAN Ethernet is first priority and second priority is NR/LTE. The default is auto. ■ LTE/NR Only: The priority is only LTE/NR ■ ETH Only: The priority is only Ethernet. ■ LTE/NR First: LTE/NR is first priority and second priority is Ethernet

4.5.2 WAN

This page is used to configure the parameters for Internet network which connects to the WAN port of the cellular gateway as shown in Figure 4-5-3. Here you may select the access method by clicking the item value of WAN access type.

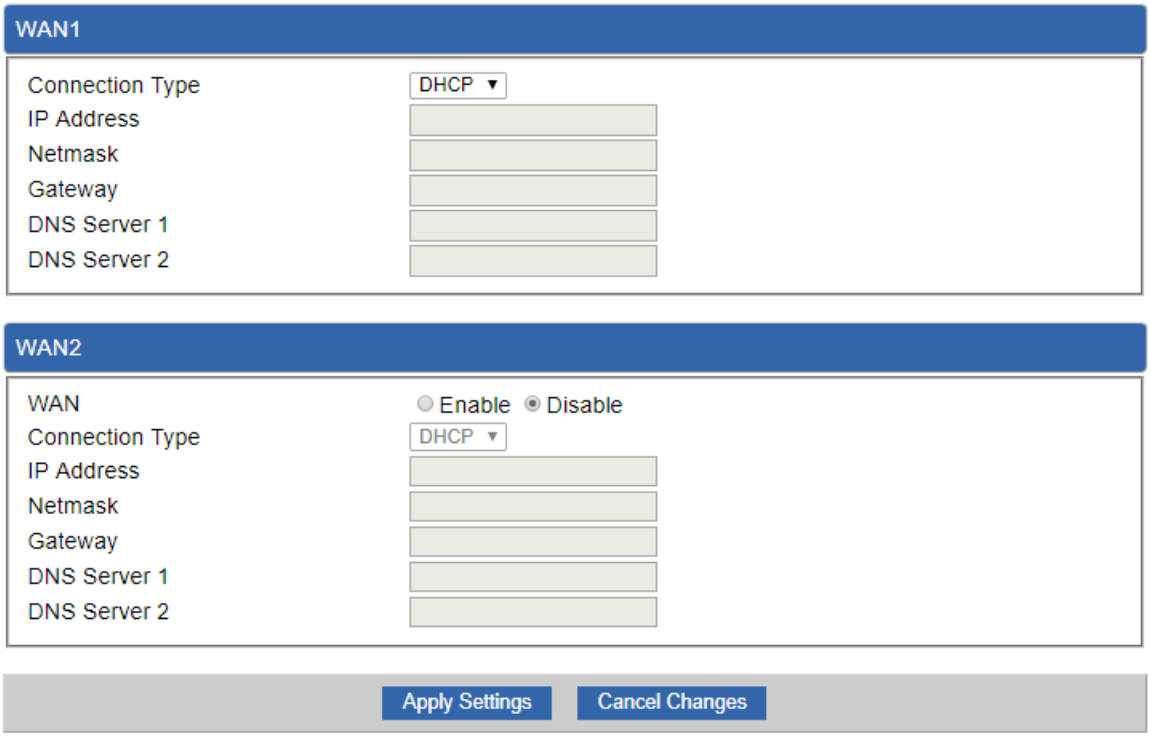


Figure 4-5-3: WAN

Object	Description	
WAN Access Type	Please select the corresponding WAN Access Type for the Internet, and fill out the correct parameters from your local ISP in the fields which appear below.	
	Static	Select Static IP Address if all the Internet ports' IP information is provided to you by your ISP (Internet Service Provider). You will need to enter the IP address, Netmask, Gateway, and DNS Server provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which are four octets separated by a dot (x.x.x.x). The cellular gateway will not accept the IP address if it is not in this format. **IP Address** Enter the IP address assigned by your ISP. **Netmask**

Object	Description	
		Enter the Subnet Mask assigned by your ISP. **Gateway** Enter the Gateway assigned by your ISP. **DNS Server** The DNS server information will be supplied by your ISP.
	DHCP	Select DHCP Client to obtain IP Address information automatically from your ISP.

Note	WAN IP, whether obtained automatically or specified manually, should NOT be on the same IP net segment as the LAN IP; otherwise, the cellular gateway will not work properly. In case of emergency, press the hardware-based "Reset" button.

4.5.3 WAN Advanced

This page is used to configure the advanced parameters for Internet area network which connects to the WAN port of your cellular gateway as shown in Figure 4-5-4. Here you may change the setting for Load Balance Weight, Detect Interval, Detect Link Up Threshold, etc...

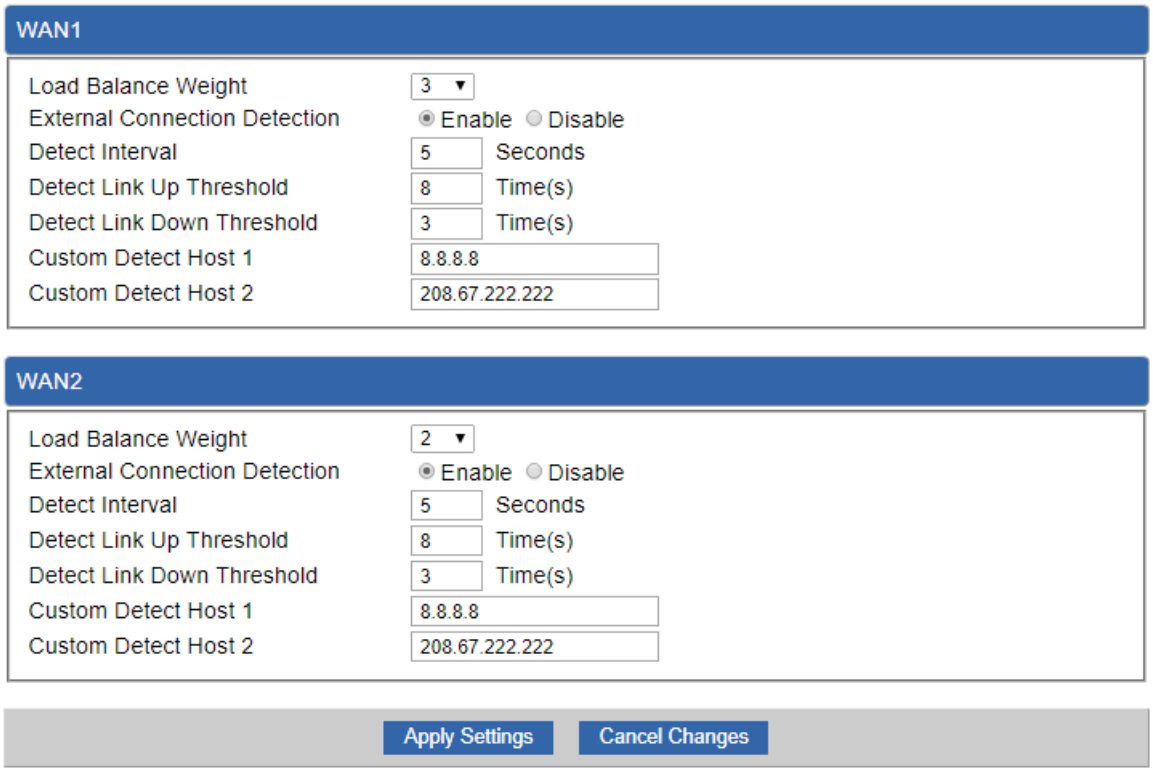


Figure 4-5-4: LAN Setup

Object	Description
Load Balance Weight	Load Balance Weight allows you to set a relative weight (from 1 - 10) for each WAN port.
External Connection Detection	Enable to detect the status of WAN connection.
Detect Interval	Set the detect interval as you need. The recommended value is 5 (default).
Detect Link Up Threshold	Set the times for detecting link up. The recommended value is 8 (default).
Detect Link Down Threshold	Set the times for detecting link down. The recommended value is 3 (default).
Custom Detect Host	The host is used to check whether the internet connection is alive or not.

4.5.4 LAN Setup

This page is used to configure the parameters for local area network which connects to the LAN port of your cellular gateway as shown in Figure 4-5-5. Here you may change the settings for IP address, subnet mask, DHCP, etc.

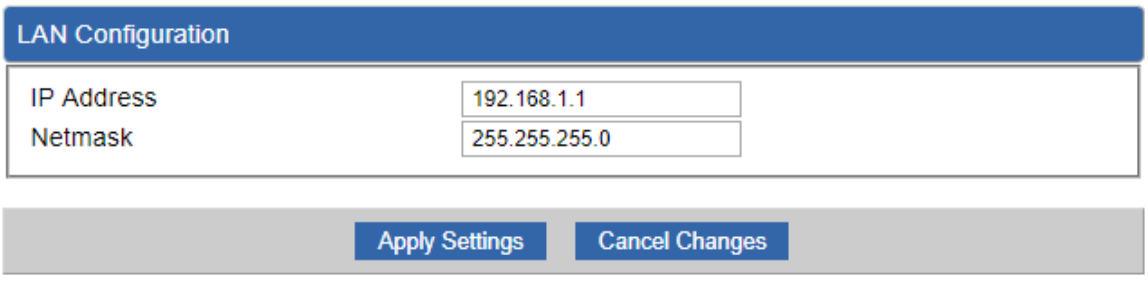


Figure 4-5-5: LAN Setup

Object	Description
IP Address	The LAN IP address of the cellular gateway and default is **192.168.1.1**.
Net Mask	Default is **255.255.255.0**.

4.5.5 Multi-Subnet

This page provides multi-subnet setting as shown in Figure 4-5-6.

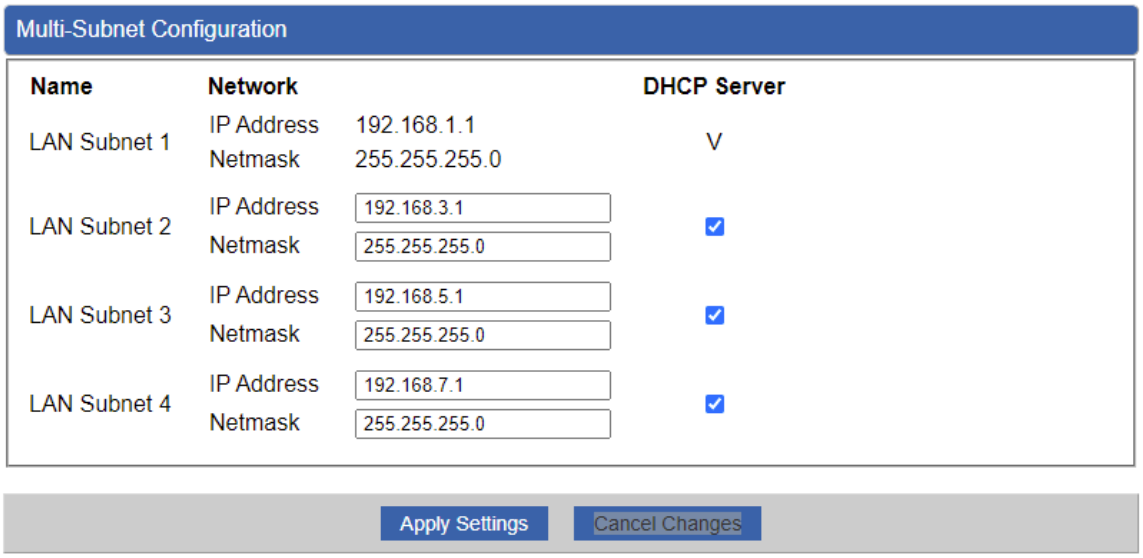


Figure 4-5-6: Multi-Subnet

4.5.6 Routing

Please refer to the following sections for the details as shown in Figures 4-5-7 and 4-5-8.

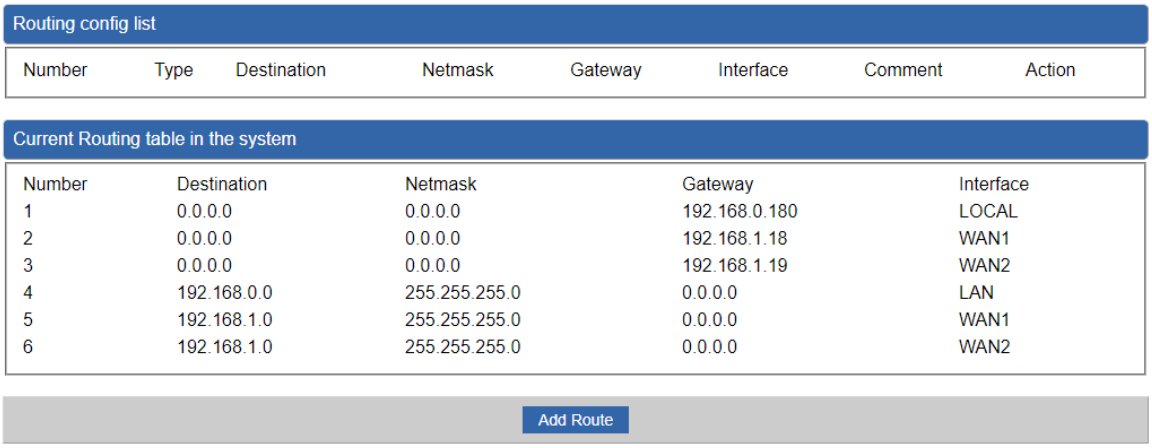


Figure 4-5-7: Routing table

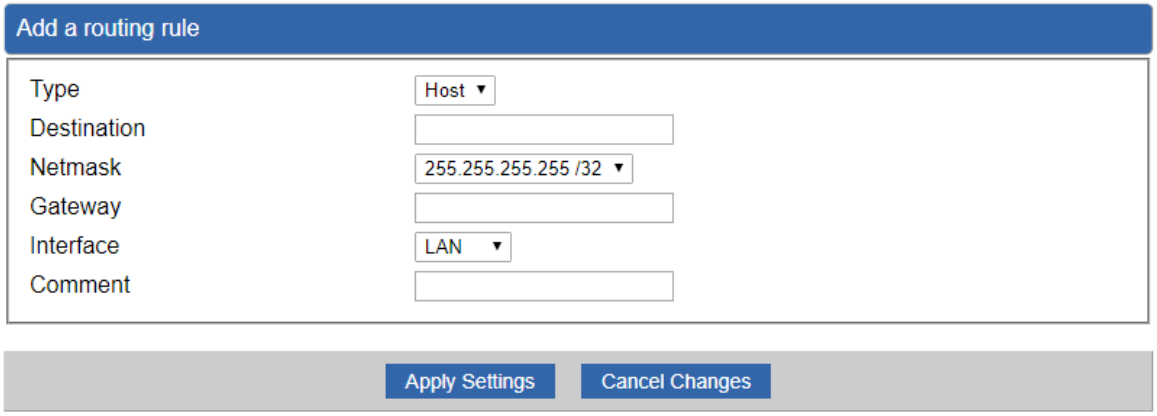


Figure 4-5-8: Routing setup

Routing tables contain a list of IP addresses. Each IP address identifies a remote cellular gateway (or other network gateway) that the local cellular gateway is configured to recognize. For each IP address, the routing table additionally stores a network mask and other data that specifies the destination IP address ranges that remote device will accept.

Object	Description
Type	There are two types: Host and Net. When the Net type is selected, user does not need to input the Gateway.
Destination	The network or host IP address desired to access.
Net Mask	The subnet mask of destination IP.
Gateway	The gateway is the router or host's IP address to which packet was sent. It must be the same network segment with the WAN or LAN port.
Interface	Select the interface that the IP packet must use to transmit out of the router when this route is used.
Comment	Enter any words for recognition.

4.5.7 WAN IPv6 Setting

This page is used to configure parameter for IPv6 internet network which connects to WAN port of the cellular gateway as shown in Figure 4-5-9. It allows you to enable IPv6 function and set up the parameters of the cellular gateway's WAN. In this setting you may change WAN connection type and other settings.

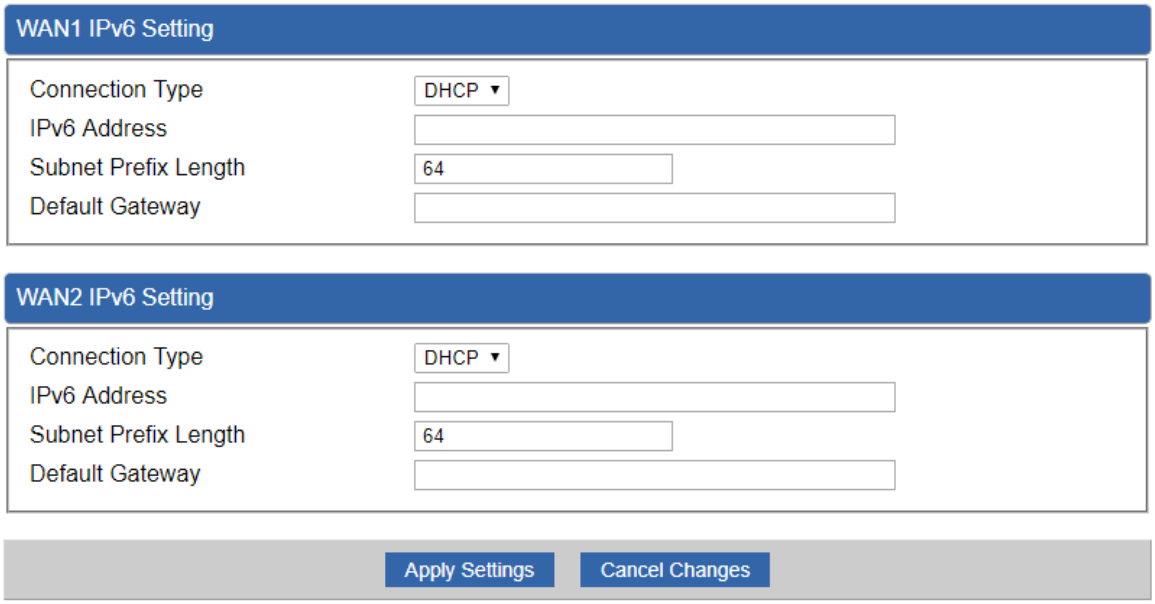


Figure 4-5-9: IPv6 WAN setup

Object	Description
Connection Type	Select IPv6 WAN type either by using DHCP or Static.
IPv6 Address	Enter the WAN IPv6 address.
Subnet Prefix Length	Enter the subnet prefix length.
Default Gateway	Enter the default gateway of the WAN port.

4.5.8 DHCP

The DHCP service allows you to control the IP address configuration of all your network devices. When a client (host or other device such as networked printer, etc.) joins your network it will automatically get a valid IP address from a range of addresses and other settings from the DHCP service. The client must be configured to use DHCP; this is something called "automatic network configuration" and is often the default setting. The setup is shown in Figure 4-5-10.

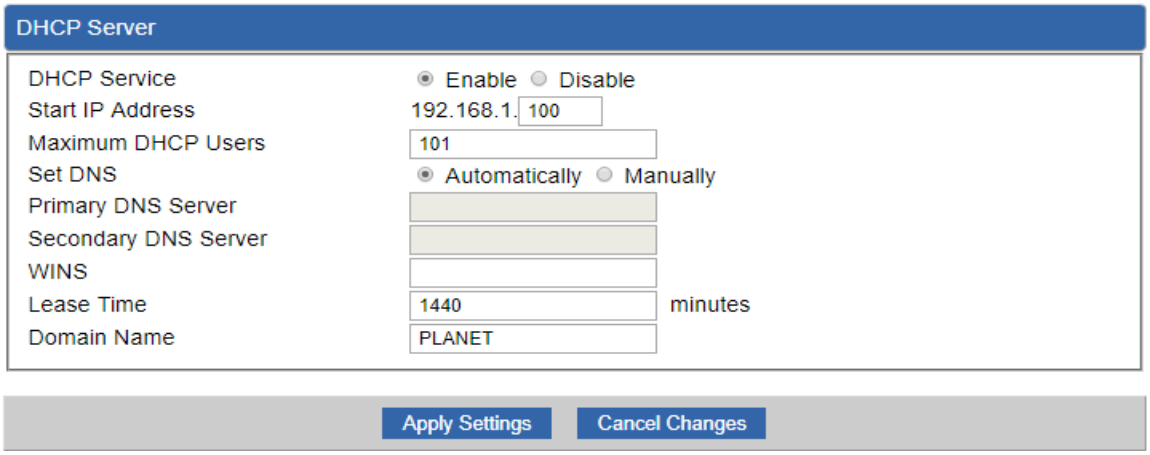


Figure 4-5-10: DHCP

Object	Description
DHCP Service	By default, the DHCP Server is enabled, meaning the cellular gateway will assign IP addresses to the DHCP clients automatically. If user needs to disable the function, please set it as disable.
Start IP Address	By default, the start IP address is 192.168.1.100. Please do not set it to the same IP address of the cellular gateway
Maximum DHCP Users	By default, the maximum DHCP users are 101, meaning the cellular gateway will provide DHCP client with IP address from 192.168.1.100 to 192.168.1.200 when the start IP address is 192.168.1.100.
Set DNS	By default, it is set as Automatically, and the DNS server is the cellular gateway's LAN IP address. If user needs to use specific DNS server, please set it as Manually, and then input a specific DNS server.
Primary/Secondary DNS Server	Input a specific DNS server.
WINS	Input a WINS server if needed.
Lease Time	Set the time for using one assigned IP. After the lease time, the DHCP client will need to get new IP addresses from the cellular gateway Default is 1440 minutes.
Domain Name	Input a domain name for the cellular gateway Default is Planet.

4.5.9 DDNS

The cellular gateway offers the DDNS (Dynamic Domain Name System) feature, which allows the hosting of a website, FTP server, or e-mail server with a fixed domain name (named by yourself) and a dynamic IP address, and then your friends can connect to your server by entering your domain name no matter what your IP address is. Before using this feature, you need to sign up for DDNS service providers such as **PLANET DDNS (**http://www.planetddns.com**)** and set up the domain name of your choice.

PLANET DDNS website provides a free DDNS (Dynamic Domain Name Server) service for PLANET devices. Whether the IP address used on your PLANET device supporting DDNS service is fixed or dynamic, you can easily connect the devices anywhere on the Internet with a meaningful or easy-to-remember name you gave. PLANET DDNS provides two types of DDNS services. One is **PLANET DDNS** and the other is **PLANET Easy DDNS** as shown in Figure 4-5-11.

PLANET DDNS

For example, you've just installed a PLANET IP camera with dynamic IP like 210.66.155.93 in the network. You can name this device as “Mycam1” and register a domain as Mycam1.planetddns.com at PLANET DDNS (http://www.planetddns.com). Thus, you don't need to memorize the exact IP address but just the URL link: Mycam1.planetddns.com.

PLANET Easy DDNS

PLANET Easy DDNS is an easy way to help user to get your Domain Name with just one click. You can just log in to the Web Management Interface of your devices, say, your cellular gateway, and check the DDNS menu and just enable it. You don’t need to go to http://www.planetddns.com to apply for a new account. Once you enabled the Easy DDNS, your PLANET Network Device will use the format PLxxxxxx where xxxxxx is the last 6 characters of your MAC address that can be found on the Web page or bottom label of the device. (For example, if the cellular gateway’s MAC address is A8-F7-E0-81-96-C9, it will be converted into pt8196c9.planetddns.com)

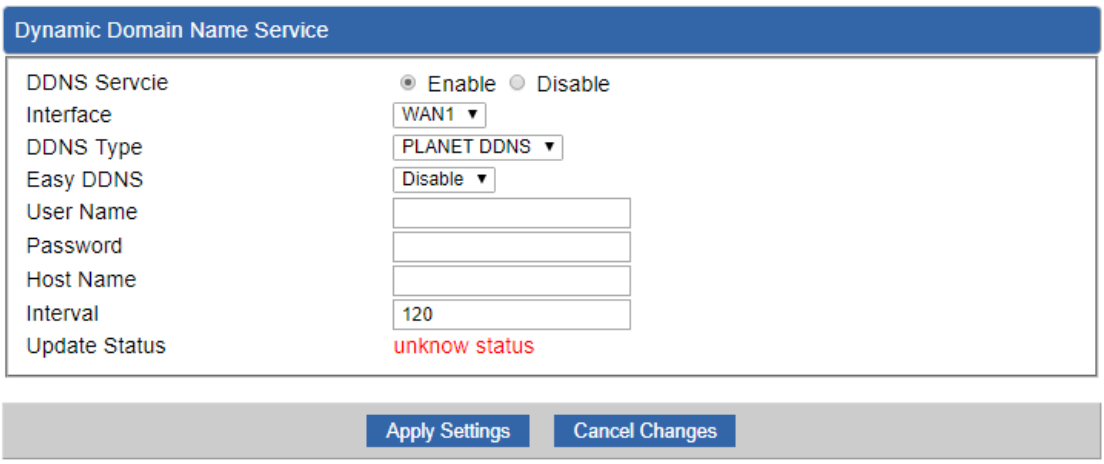


Figure 4-5-11: PLANET DDNS

Object	Description
DDNS Service	By default, the DDNS service is disabled. If user needs to enable the function, please set it as enable.
Interface	User is able to select the interface for DDNS service. By default, the interface is WAN 1.
DDNS Type	There are three options: 1. PLANET DDNS: Activate PLANET DDNS service. 2. DynDNS: Activate DynDNS service. 3. NOIP: Activate NOIP service. Note that please first register with the DDNS service and set up the domain name of your choice to begin using it.
Easy DDNS	When the PLANET DDNS service is activated, user is able to select to enable or disable Easy DDNS. When this function is enabled, DDNS hostname will appear automatically. User doesn't go to http://www.planetddns.com to apply for a new account.
User Name	The user name is used to log into DDNS service.
Password	The password is used to log into DDNS service.
Host Name	The host name as registered with your DDNS provider.
Interval	Set the update interval of the DDNS function.
Update Status	Show the connection status of the DDNS function.

4.5.10 MAC Address Clone

Clone or change the MAC address of the WAN interface. The setup is shown in Figure 4-5-12.

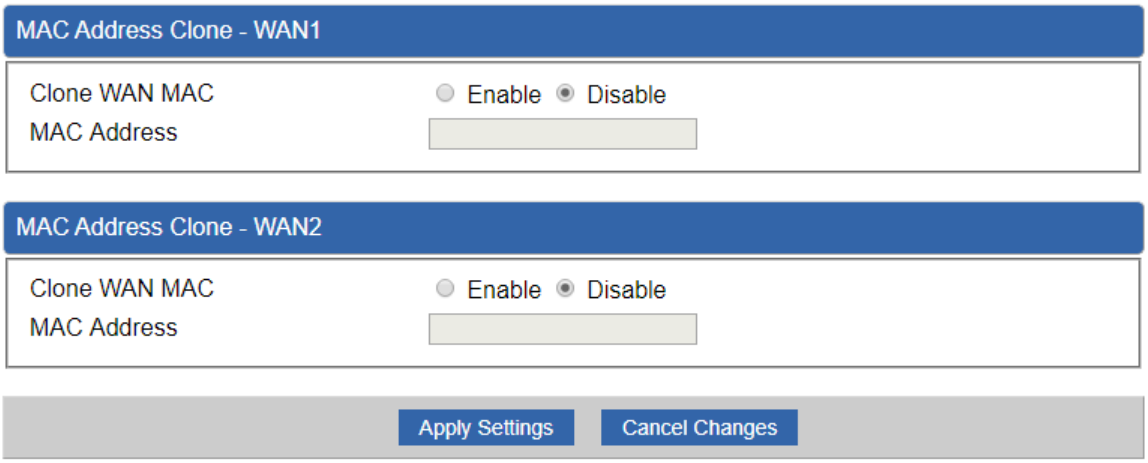


Figure 4-5-12: MAC Address Clone

Object	Description
Clone WAN MAC	Set the function as enable or disable.
MAC Address	Input a MAC Address, such as A8:F7:E0:00:06:62.

4.6 Cellular

The Cellular menu provides LTE/NR related functions as shown in Figure 4-6-1. Please refer to the following sections for the details.

Figure 4-6-1: Cellular menu

Object	Description
LTE/NR Configuration	Allows setting LTE/NR configuration.
LTE/NR Advanced	Allows setting SIM configuration.
LTE/NR Status	Display the status of cellular.
LTE/NR Statistics	Display the statistics of cellular.
GPS	Display the location of cellular gateway.
SMS	Allows setting SMS configuration for alarm notification.

4.6.1 LTE/NR Configuration

This page provides LTE/NR configuration as shown in Figure 4-6-2.

Figure 4-6-2: LTE/NR configuration

Object	Description
LTE/NR Config	Indicates what kind of LTE will be used. Possible modes are: ■ **Auto**: Automatically connect the possible band. ■ **4G&5G Only**: Connect to 4G or 5G network only. ■ **5G Only**: Connect to 5G network only. ■ **4G Only**: Connect to 4G network only. ■ **3G Only**: Connect to 3G network only. ■ **2G Only**: Connect to 2G network only.
MTU	Maximum transfer unit, Default is **1500**.

4.6.2 LTE/NR Advanced

This page provides LTE/NR advanced configuration as shown in Figure 4-6-3.

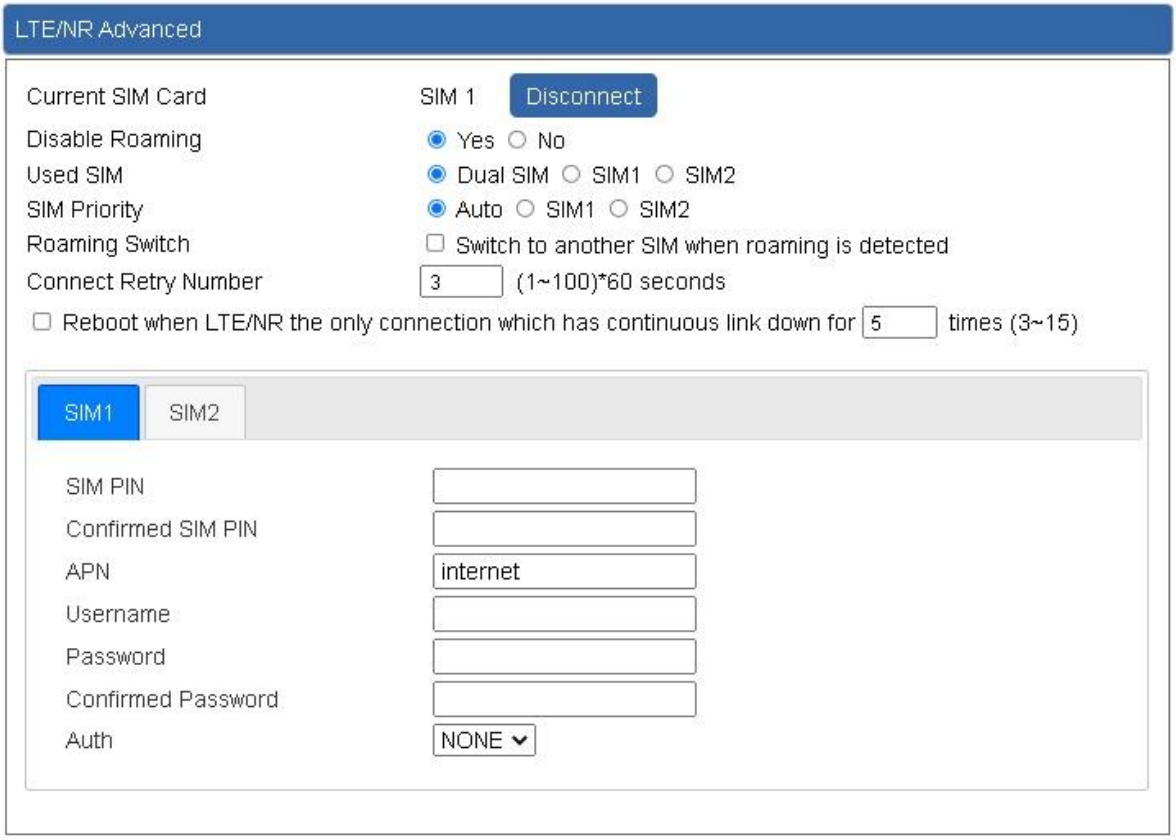


Figure 4-6-3: LTE/NR advanced

Object	Description
Current SIM Card	Display which SIM slot is using.
Disable Roaming	■ **Disable:** SIM gets connection even it is in roaming state. ■ **Enable:** SIM would not get connection when in roaming state.
Used SIM	Configure which SIM card is used or dual SIM cards.
SIM Priority	Configure priority of SIM card
Roaming Switch	Switch to another SIM when roaming is detected. System will switch to SIM slot when current SIM is in roaming state and another SIM slot is in READY state.

Object	Description
SIM PIN	Configure PIN code to unlock SIM PIN.
Confirmed SIM PIN	Confirm PIN code.
APN	APN can be input by user or the system..
Username	The username can be input by user or the system.
Password	The password can be input by user or the system.
Confirm Password	Fill in your changed password.
Auth	Configure authentication ■ **None** ■ **PAP** ■ **CHAP**

4.6.3 LTE/NR Status

This page displays LTE/NR status as shown in Figure 4-6-4.

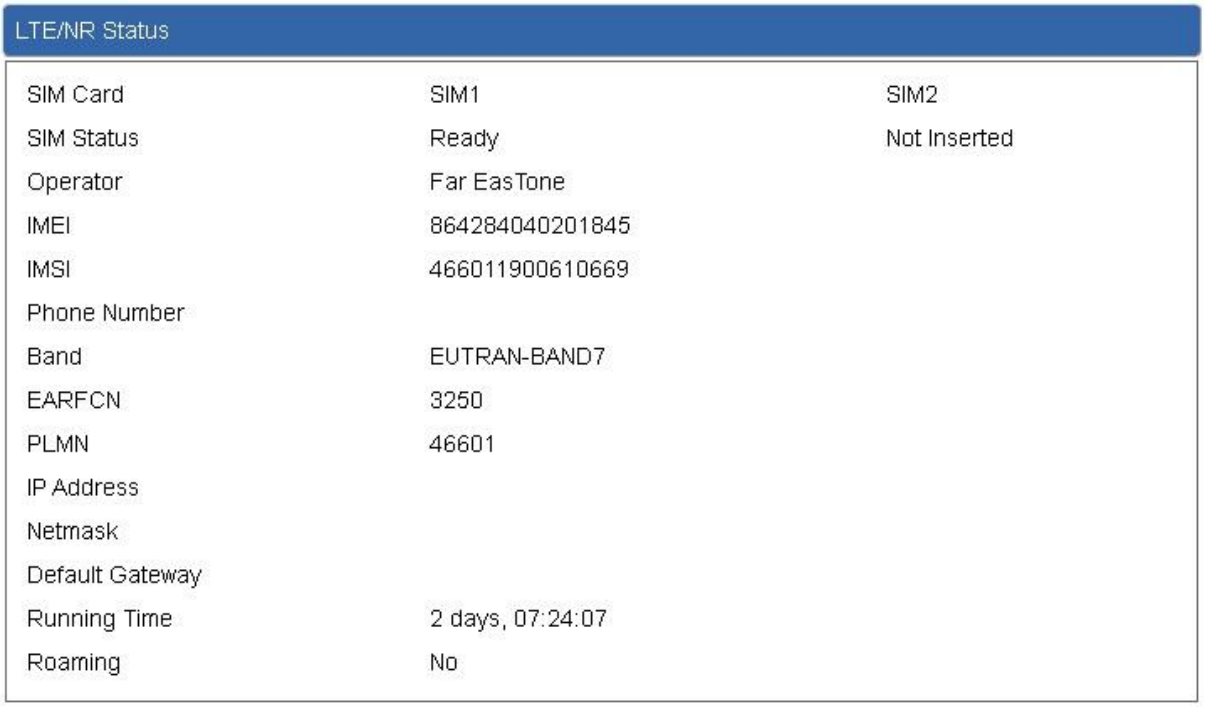


Figure 4-6-4: LTE/NR status

4.6.4 LTE/NR Statistics

This page displays LTE/NR status as shown in Figure 4-6-5.

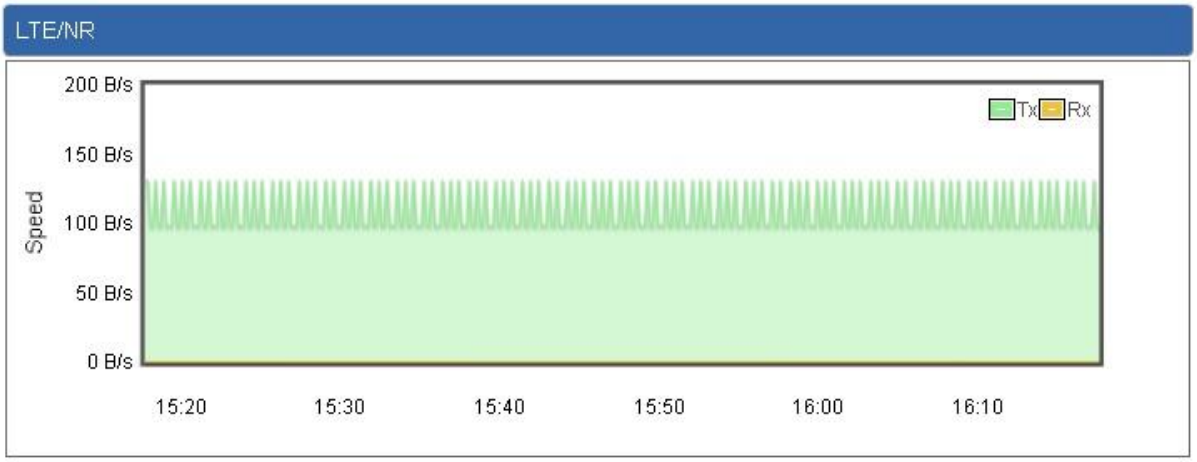


Figure 4-6-5: LTE/NR statistics

4.6.5 GPS

This page displays GPS status as shown in Figure 4-6-6.

Figure 4-6-6: GPS

4.6.6 SMS

This page provides SMS configuration as shown in Figure 4-6-7.

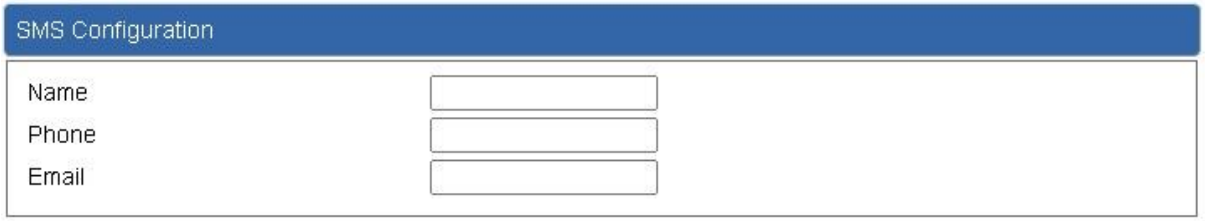


Figure 4-6-7: SMS

Object	Description
Name	Configure user's name
Phone	Configure user's phone number
Email	Configure user's email

4.7 Security

The Security menu provides Firewall, Access Filtering and other functions as shown in Figure 4-7-1. Please refer to the following sections for the details.

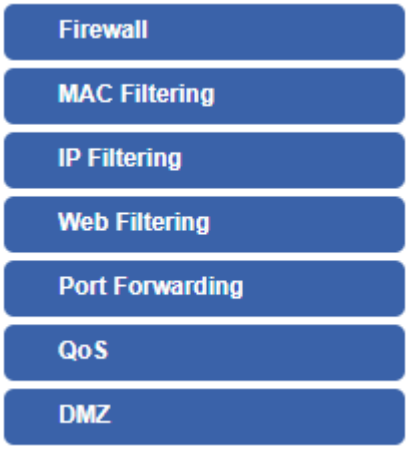


Figure 4-7-1: Security menu

Object	Description
Firewall	Allows setting DoS (Denial of Service) protection as enable.
MAC Filtering	Allows setting MAC Filtering.
IP Filtering	Allows setting IP Filtering.
Web Filtering	Allows setting Web Filtering.
Port Range Forwarding	Allows setting Port Forwarding.
QoS	Allows setting Qos.
DMZ	Allows setting DMZ.

4.7.1 Firewall

A "Denial-of-Service" (DoS) attack is characterized by an explicit attempt by hackers to prevent legitimate users of a service from using that service. The cellular gateway can prevent specific DoS attacks as shown in Figure 4-7-2.

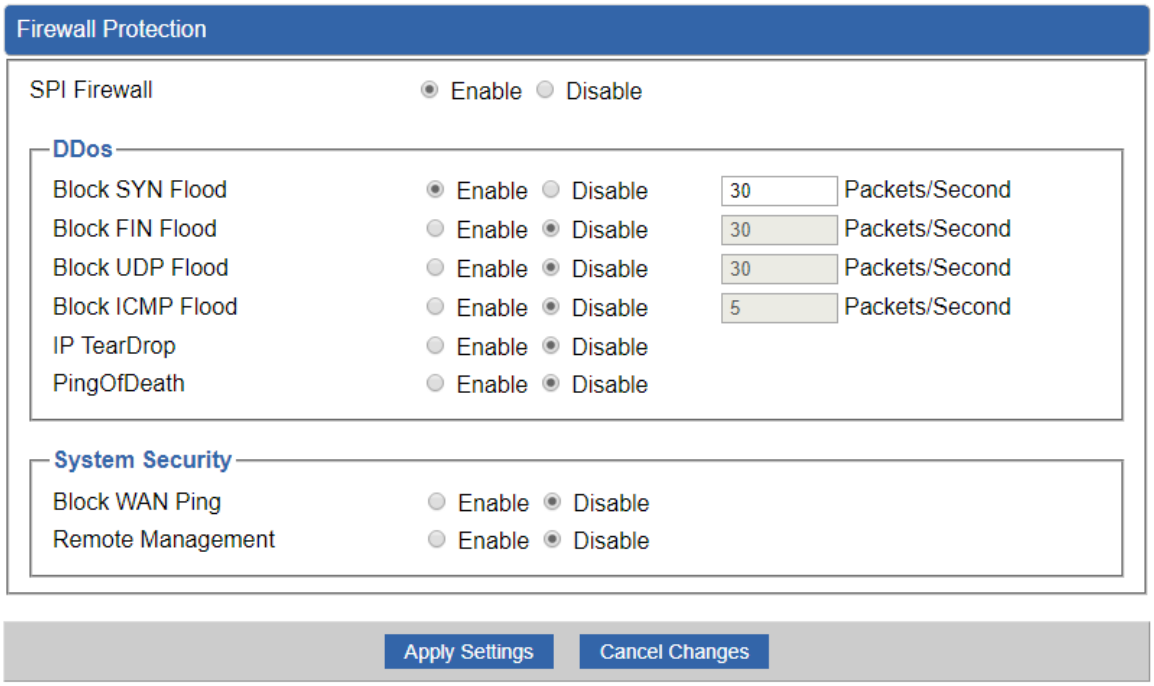


Figure 4-7-2: Firewall

Object	Description
SPI Firewall	The SPI Firewall prevents attack and improper access to network resources. The default configuration is enabled.
Block SYN Flood	SYN Flood is a popular attack way. DoS and DDoS are TCP protocols. Hackers like using this method to make a fake connection that involves the CPU, memory, and so on. The default configuration is enabled.
Block FIN Flood	If the function is enabled, when the number of the current FIN packets is beyond the set value, the cellular gateway will start the blocking function immediately. The default configuration is disabled.
Block UDP Flood	If the function is enabled, when the number of the current UPD-FLOOD packets is beyond the set value, the cellular gateway will start the blocking function immediately. The default configuration is disabled.

Block ICMP Flood	ICMP is kind of a pack of TCP/IP; its important function is to transfer simple signal on the Internet. There are two normal attack ways which hackers like to use, Ping of Death and Smurf attack. The default configuration is disabled.
IP TearDrop	If the function is enabled, the cellular gateway will block Teardrop attack that is targeting on TCP/IP fragmentation reassembly codes.
Ping Of Death	If the function is enabled, the cellular gateway will block Ping of Death attack that aims to disrupt a targeted machine by sending a packet larger than the maximum allowable size causing the target machine to freeze or crash.
Block WAN Ping	Enable the function to allow the Ping access from the Internet network. The default configuration is disabled.
Remote Management	Enable the function to allow the web server access of the cellular gateway from the Internet network. The default configuration is disabled.

4.7.2 MAC Filtering

Entries in this table are used to restrict certain types of data packets from your local network or Internet through the cellular gateway Use of such filters can be helpful in securing or restricting your local network as shown in Figure 4-7-3.

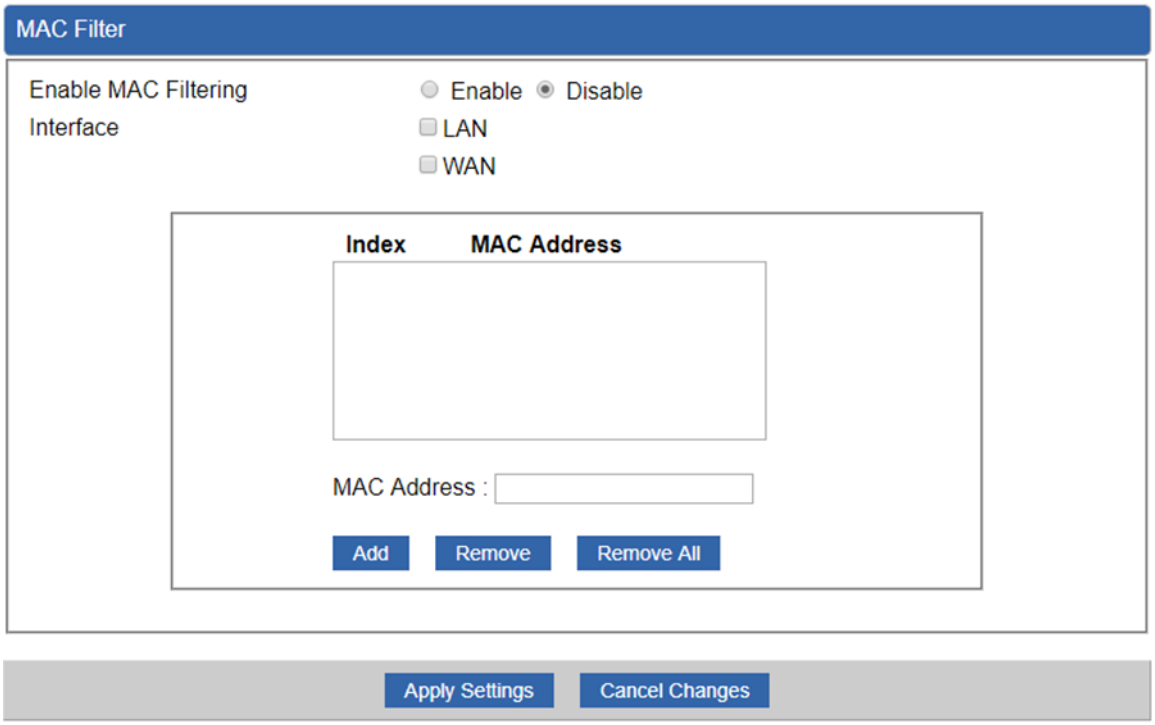


Figure 4-7-3: MAC Filtering

Object	Description
Enable MAC Filtering	Set the function as enable or disable. When the function is enabled, the cellular gateway will block traffic of the MAC address on the list.
Interface	Select the function works on LAN, WAN or both. If you want to block a LAN device's MAC address, please select LAN, vice versa.
MAC Address	Input a MAC address you want to control, such as A8:F7:E0:00:06:62.
Add	When you input a MAC address, please click the "Add" button to add it into the list.
Remove	If you want to remove a MAC address from the list, please click on the MAC address, and then click the "Remove" button to remove it.
Remove All	If you want to remove all MAC addresses from the list, please click the "Remove All" button to remove all.

4.7.3 IP Filtering

IP Filtering is used to deny LAN users from accessing the public IP address on internet as shown in Figure 4-7-4. To begin blocking access to an IP address, enable IP Filtering and enter the IP address of the web site you wish to block.

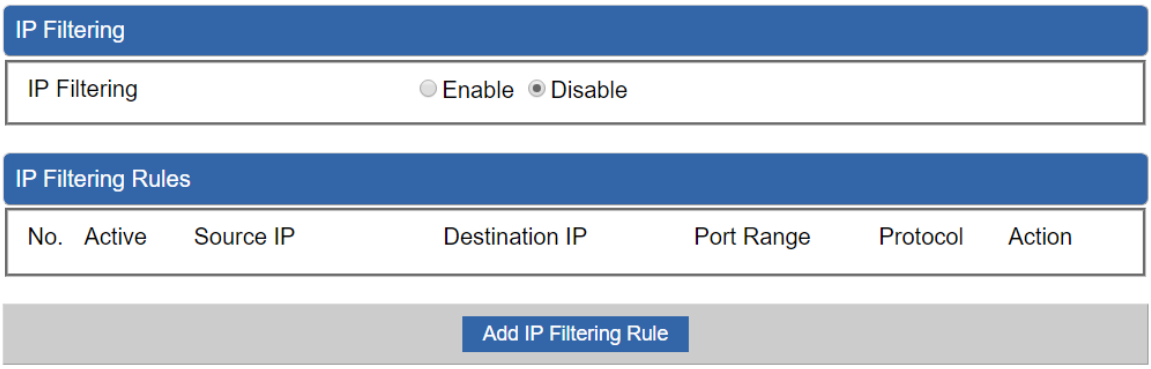


Figure 4-7-4: IP Filtering

Object	Description
IP Filtering	Set the function as enable or disable.
Add IP Filtering Rule	Go to the Add Filtering Rule page to add a new rule.

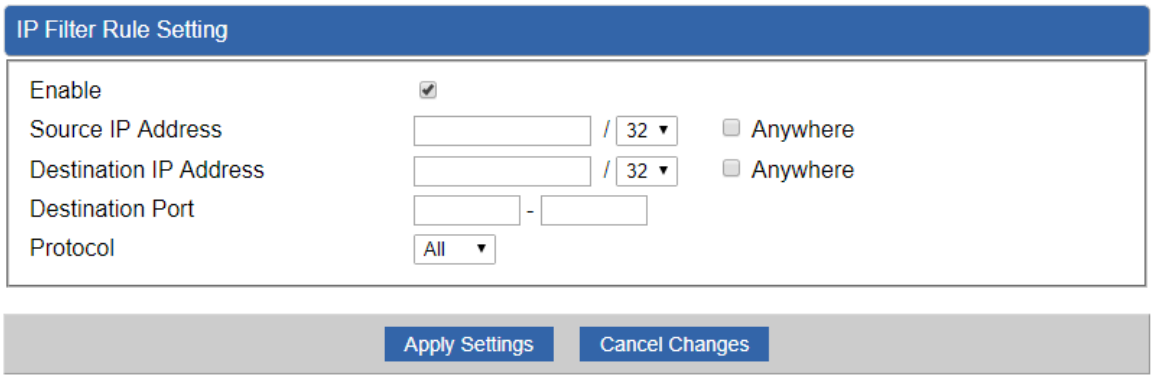


Figure 4-7-5: IP Filter Rule Setting

Object	Description
Enable	Set the rule as enable or disable.
Source IP Address	Input the IP address of LAN user (such as PC or laptop) which you want to control.
Anywhere (of source IP Address)	Check the box if you want to control all LAN users.
Destination IP Address	Input the IP address of web site which you want to block.
Anywhere (of destination IP Address)	Check the box if you want to control all web sites, meaning the LAN user can't visit any web site.
Destination Port	Input the port of destination IP Address which you want to block. Leave it as blank if you want to block all ports of the web site.
Protocol	Select the protocol type (TCP, UDP or all). If you are unsure, please leave it to the default all protocol.

4.7.4 Web Filtering

Web filtering is used to deny LAN users from accessing the internet as shown in Figure 4-7-6. Block those URLs which contain keywords listed below.

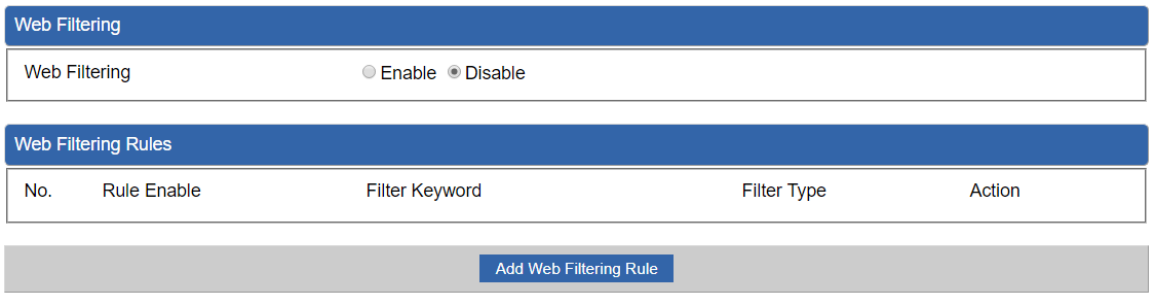


Figure 4-7-6: Web Filtering

Object	Description
Web Filtering	Set the function as enable or disable.
Add Web Filtering Rule	Go to the Add Web Filtering Rule page to add a new rule.

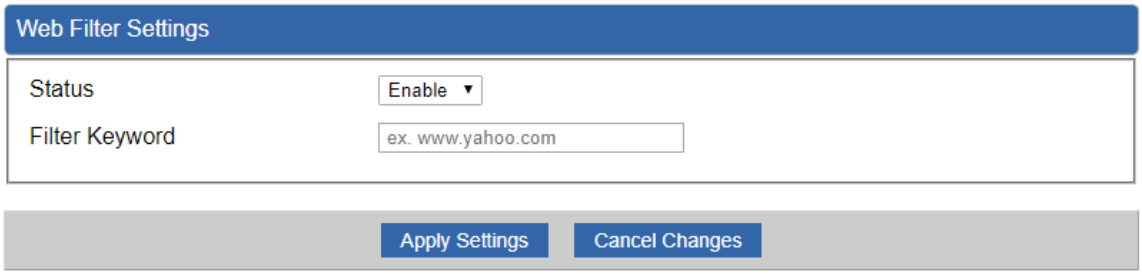


Figure 4-7-7 Web Filtering Rule Setting

Object	Description
Status	Set the rule as enable or disable.
Filter Keyword	Input the URL address that you want to filter, such as www.yahoo.com.

4.7.5 Port Forwarding

Entries in this table allow you to automatically redirect common network services to a specific machine behind the NAT firewall as shown in Figure 4-7-8. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind your Cellular gateway's NAT firewall.

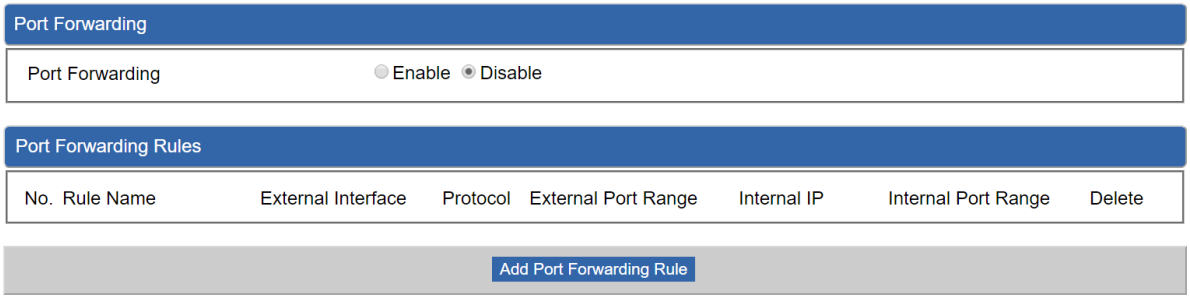


Figure 4-7-8: Port Forwarding

Object	Description
Port Forwarding	Set the function as enable or disable.
Add Port Forwarding Rule	Go to the Add Port Forwarding Rule page to add a new rule.

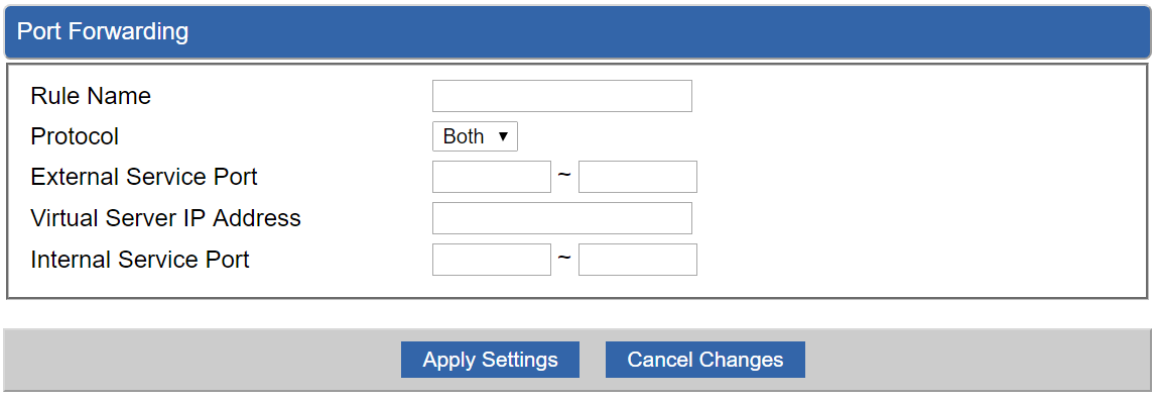


Figure 4-7-9: Port Forwarding Rule Setting

Object	Description
Rule Name	Enter any words for recognition.
Protocol	Select the protocol type (TCP, UDP or both). If you are unsure, please leave it to the default both protocols.
External Service Port	Enter the external ports you want to control. For TCP and UDP services, enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.

Object	Description
Virtual Server IP Address	Enter the local IP address.
Internal Service Port	Enter local ports you want to control. For TCP and UDP Services, enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.

4.7.6 DMZ

A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network as shown in Figure 4-7-9. Typically the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

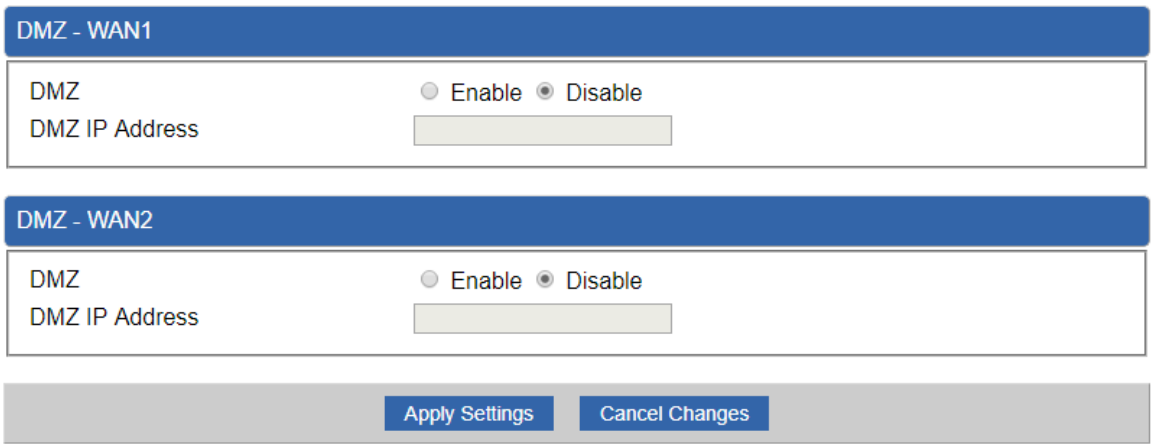


Figure 4-7-9: DMZ

Object	Description
DMZ	Set the function as enable or disable. If the DMZ function is enabled, it means that you set up DMZ at a particular computer to be exposed to the Internet so that some applications/software, especially Internet/online game can have two way connections.
DMZ IP Address	Enter the IP address of a particular host in your LAN which will receive all the packets originally going to the WAN port/Public IP address above.

4.8 Virtual Private Network

To obtain a private and secure network link, the cellular gateway is capable of establishing VPN connections. When used in combination with remote client authentication, it links the business' remote sites and users, conveniently providing the enterprise with an encrypted network communication method. By allowing the enterprise to utilize the Internet as a means of transferring data across the network, it forms one of the most effective and secure options for enterprises to adopt in comparison to other methods.

The VPN menu provides the following features as shown in Figure 4-8-1

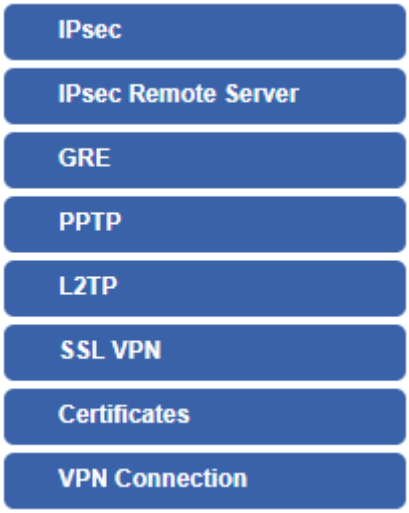


Figure 4-8-1: VPN Menu

Object	Description
IPsec	Allows setting IPsec function.
IPsec Remote Server	Disable or enable the IPsec Remote Server function. The default configuration is disabled.
GRE	Allows setting GRE function.
PPTP	Allows setting PPTP function.
L2TP	Allows setting L2TP function.
SSL VPN	Allows setting SSL VPN function.
Certificates	Download System CA Certificate
VPN Connection	Allows checking VPN Connection Status.

4.8.1 IPSec

IPSec (IP Security) is a generic standardized VPN solution. IPSec must be implemented in the IP stack which is part of the kernel. Since IPSec is a standardized protocol it is compatible to most vendors that implement IPSec. It allows users to have an encrypted network session by standard **IKE** (Internet Key Exchange). We strongly encourage you to use IPSec only if you need to because of interoperability purposes. When IPSec lifetime is specified, the device can randomly refresh and identify forged IKE's during the IPSec lifetime.

This page will allow you to modify the user name and passwords as shown in Figure 4-8-2.

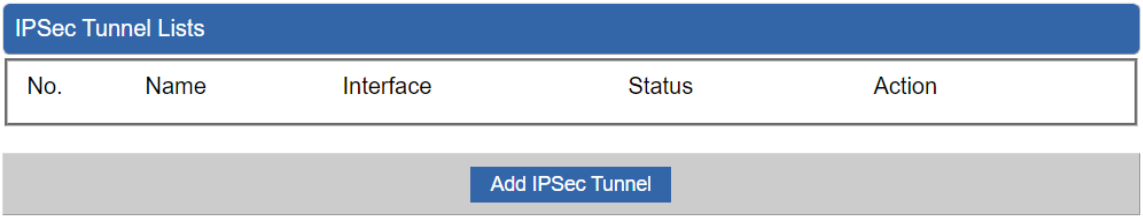


Figure 4-8-2: IPSec

Object	Description
Add IPSec Tunnel	Go to the Add IPSec Tunnel page to add a new tunnel.

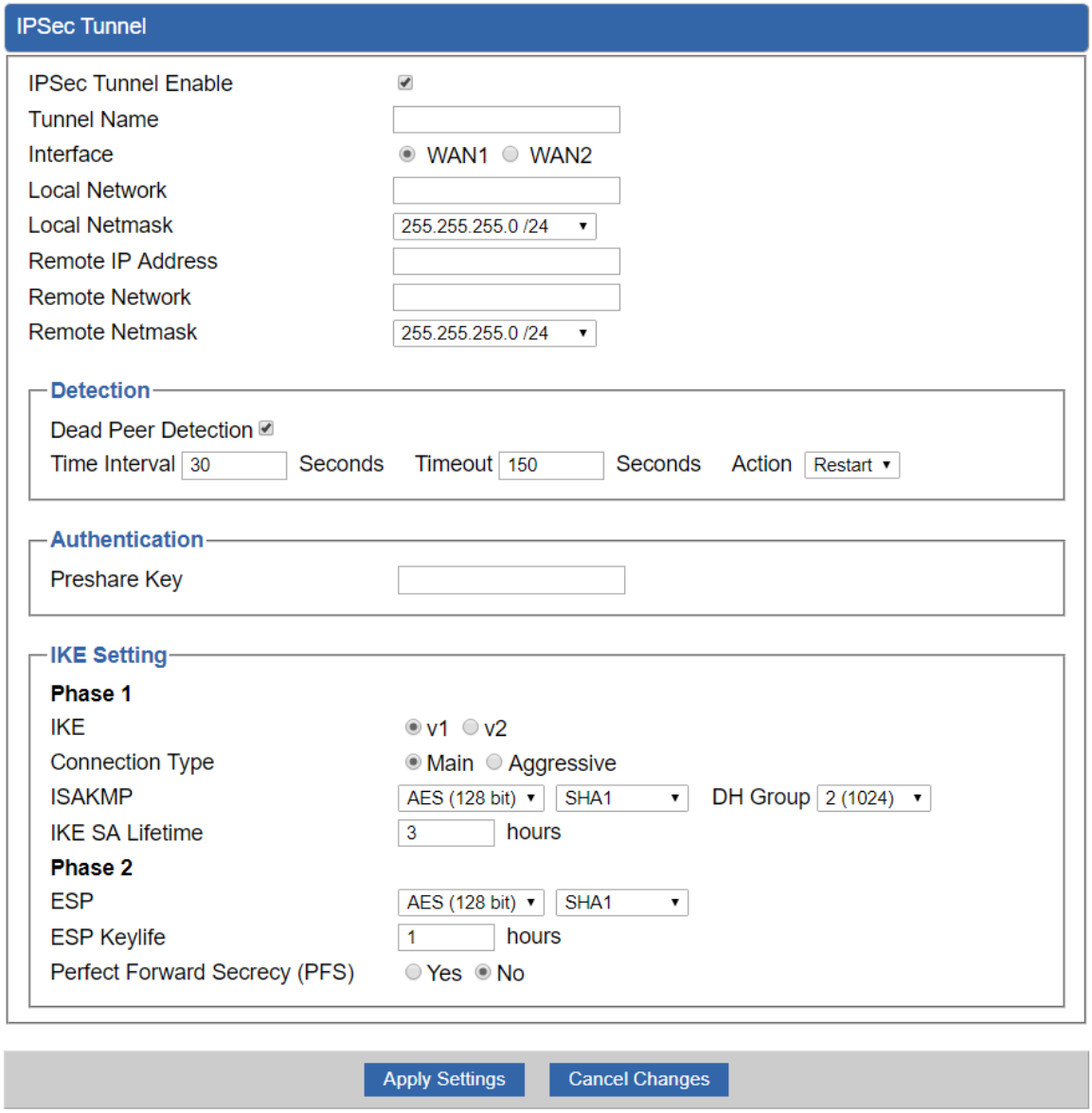


Figure 4-8-3: IPSec Tunnel

Object	Description
IPSec Tunnel Enable	Check the box to enable the function.
Tunnel Name	Enter any words for recognition.
Interface	This is only available for host-to-host connections and specifies to which interface the host is connecting. 1. WAN 1. 2. WAN 2.
Local Network	The local subnet in CIDR notation. For instance, "192.168.1.0".
Local Netmask	The netmask of this cellular gateway

Remote IP Address	Input the IP address of the remote host. For instance, "210.66.1.10”.
Remote Network	The remote subnet in CIDR notation. For instance, "210.66.1.0”.
Remote Netmask	The netmask of the remote host.
Dead Peer Detection	Set up the detection time of **DPD** (Dead Peer Detection). By default, the DPD detection’s gap is 30 seconds, over 150 seconds to think that is the broken line. When VPN detects opposite party reaction time, the function will take one of the actions: “Hold” stand for the system will retain IPSec SA, "Clear" stand for the tunnel will clean away and waits for the new sessions, "Restart" will delete the IPSec SA and reset VPN tunnel.
Preshare Key	Enter a pass phrase to be used to authenticate the other side of the tunnel. Should be the same as the remote host.
IKE	Select the IKE (Internet Key Exchange) version.
Connection Type	1. Main. 2. Aggressive.
ISAKMP	It provides the way to create the SA between two PCs. The SA can access the encoding between two PCs, and the IT administrator can assign to which key size or Preshare Key and algorithm to use. The SA comes in many connection ways. 1. **AES**: All using a 128-bit, 192-bit and 256-bit key. AES is a commonly seen and adopted nowadays. 2. **3DES**: Triple DES is a block cipher formed from the DES cipher by using it three times. It can achieve an algorithm up to 168 bits. 3. **SHA1**: The SHA1 is a revision of SHA. It has improved the shortcomings of SHA. By producing summary hash values, it can achieve an algorithm up to 160 bits. 4. **SHA2**: Either 256, 384 or 512 can be chosen 5. **MD5 Algorithm**: MD5 processes a variably long message into a fixed-length output of 128 bits. 6. **DH Group**: Either 1, 2, 5, 14, 15, 16, 17, or 18 can be chosen.
IKE SA Lifetime	You can specify how long IKE packets are valid.
ESP	It offers AES, 3 DES, SHA 1, SHA2, and MD5. 1. **AES**: All using a 128-bit, 192-bit and 256-bit key. AES is a commonly seen and adopted nowadays. 2. **3DES**: Triple DES is a block cipher formed from the DES cipher

	by using it three times. It can achieve an algorithm up to 168 bits. 3. **SHA1:** The SHA1 is a revision of SHA. It has improved the shortcomings of SHA. By producing summary hash values, it can achieve an algorithm up to 160 bits. 4. **SHA2**: Either 256, 384 or 512 can be chosen. 5. **MD5 Algorithm**: MD5 processes a variably long message into a fixed-length output of 128 bits.
ESP Keylife	You can specify how long ESP packets are valid.
Perfect Forward Secrecy (PFS)	Set the function as enable or disable.

4.8.2 GRE

This section assists you in setting the GRE Tunnel as shown in Figure 4-8-4.

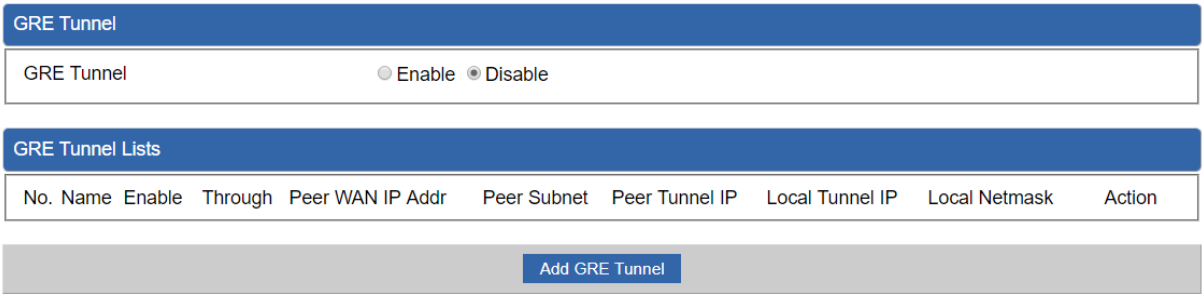


Figure 4-8-4: GRE

Object	Description
GRE Tunnel	Set the function as enable or disable.
Add GRE Tunnel	Go to the Add GRE Tunnel page to add a new tunnel.

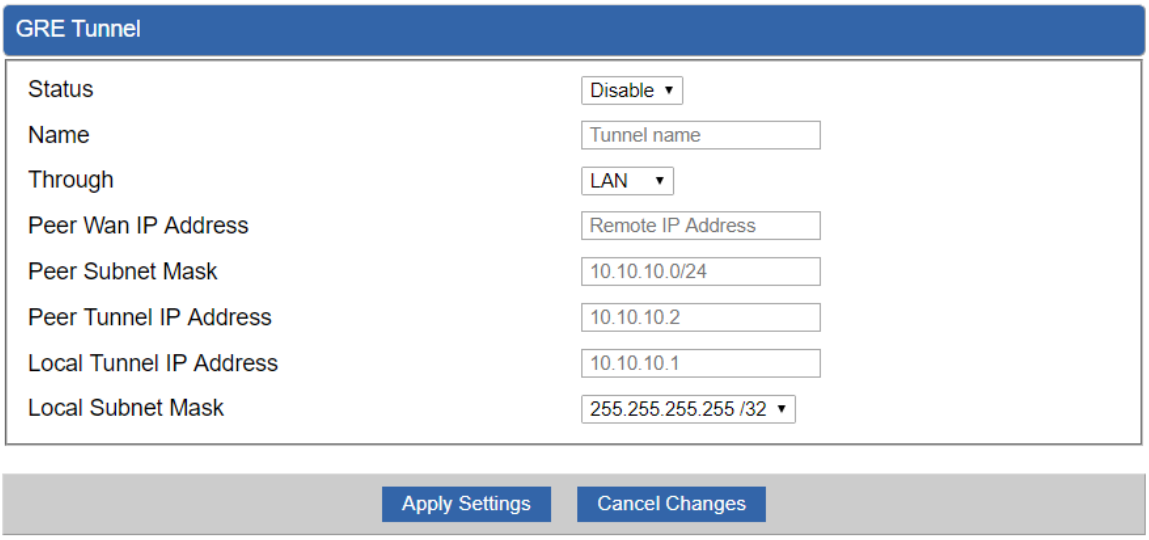


Figure 4-8-5: GRE Tunnel

Object	Description
Active	Check the box to enable the function.
Tunnel Name	Enter any words for recognition.
Through	This is only available for host-to-host connections and specifies to which interface the host is connecting. 1. LAN. 2. WAN 1. 3. WAN 2.
Peer WAN IP Address	Input the IP address of the remote host. For instance, "210.66.1.10".
Peer Netmask	The remote subnet in CIDR notation. For instance, "210.66.1.0/24".
Peer Tunnel IP Address	Input the Tunnel IP address of remote host.
Local Tunnel IP Address	Input the Tunnel IP address of remote host.
Local Netmask	Input the Tunnel IP address of the cellular gateway

4.8.3 PPTP Server

Use the IP address and the scope option needs to match the far end of the PPTP server; its goal is to use the PPTP channel technology, and establish Site-to-Site VPN where the channel can have equally good results from different methods with IPSec. The PPTP server is shown in Figure 4-8-6.

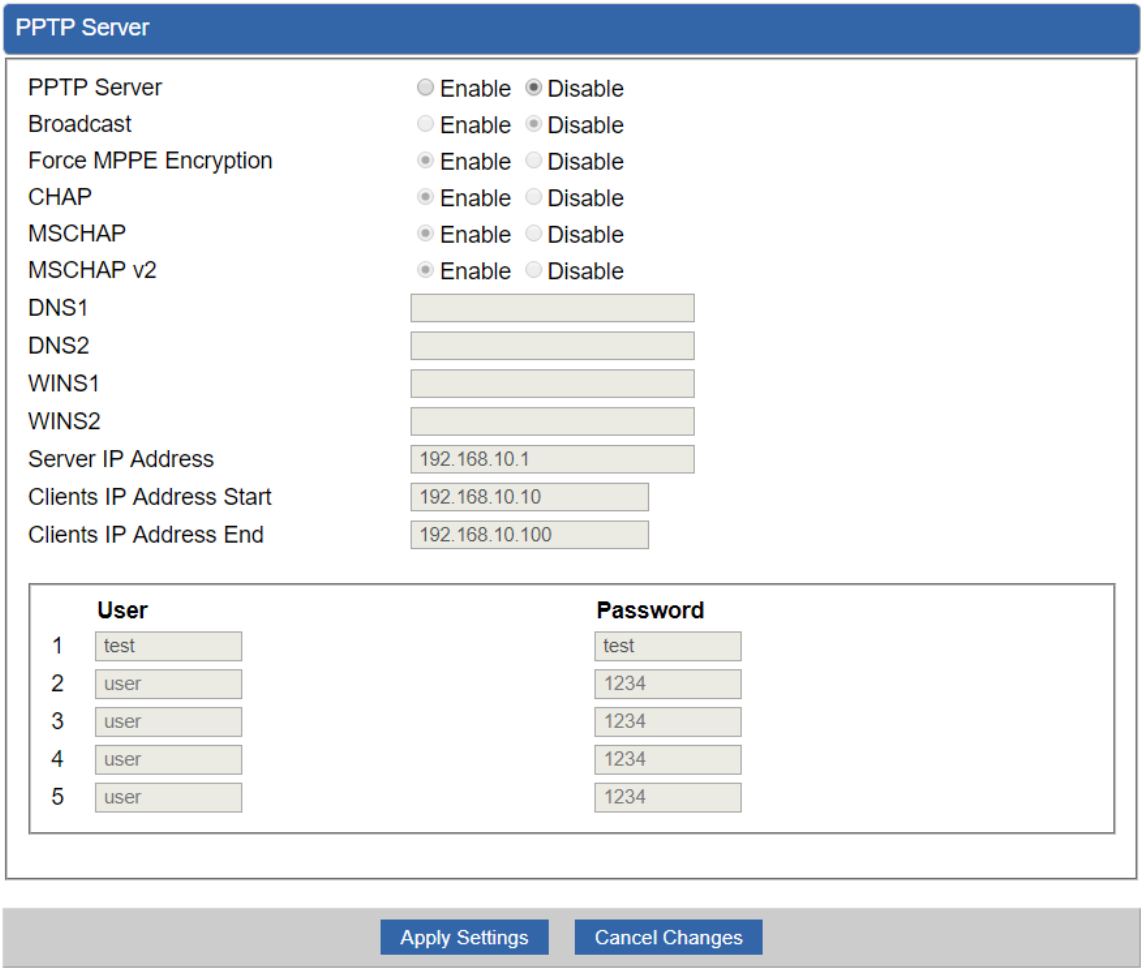


Figure 4-8-6: PPTP server

Object	Description
PPTP Server	Set the function as enable or disable.
Broadcast	Enter any words for recognition.
Force MPPE Encryption	Set the encryption as enable or disable.
CHAP	Set the authentication as enable or disable.
MSCHAP	Set the authentication as enable or disable.
MSCHAP v2	Set the authentication as enable or disable.

DNS	When the PPTP client connects to the PPTP server, it will assign the DNS server IP address to client.
WINS	When the PPTP client connects to the PPTP server, it will assign the WINS server IP address to client.
Server IP Address	Input the IP address of the PPTP Server. For instance, "192.168.10.1”.
Clients IP Address (Start/End)	When the VPN connection is established, the VPN client will get IP address from the VPN Server. Please set the range of IP Address. For instance, the start IP address is "192.168.10.10”, the end IP address is "192.168.10.100”.
User and Password	Create the username and password for the VPN client.

4.8.4 L2TP Server

This section assists you in setting the L2TP Server as shown in Figure 4-8-7.

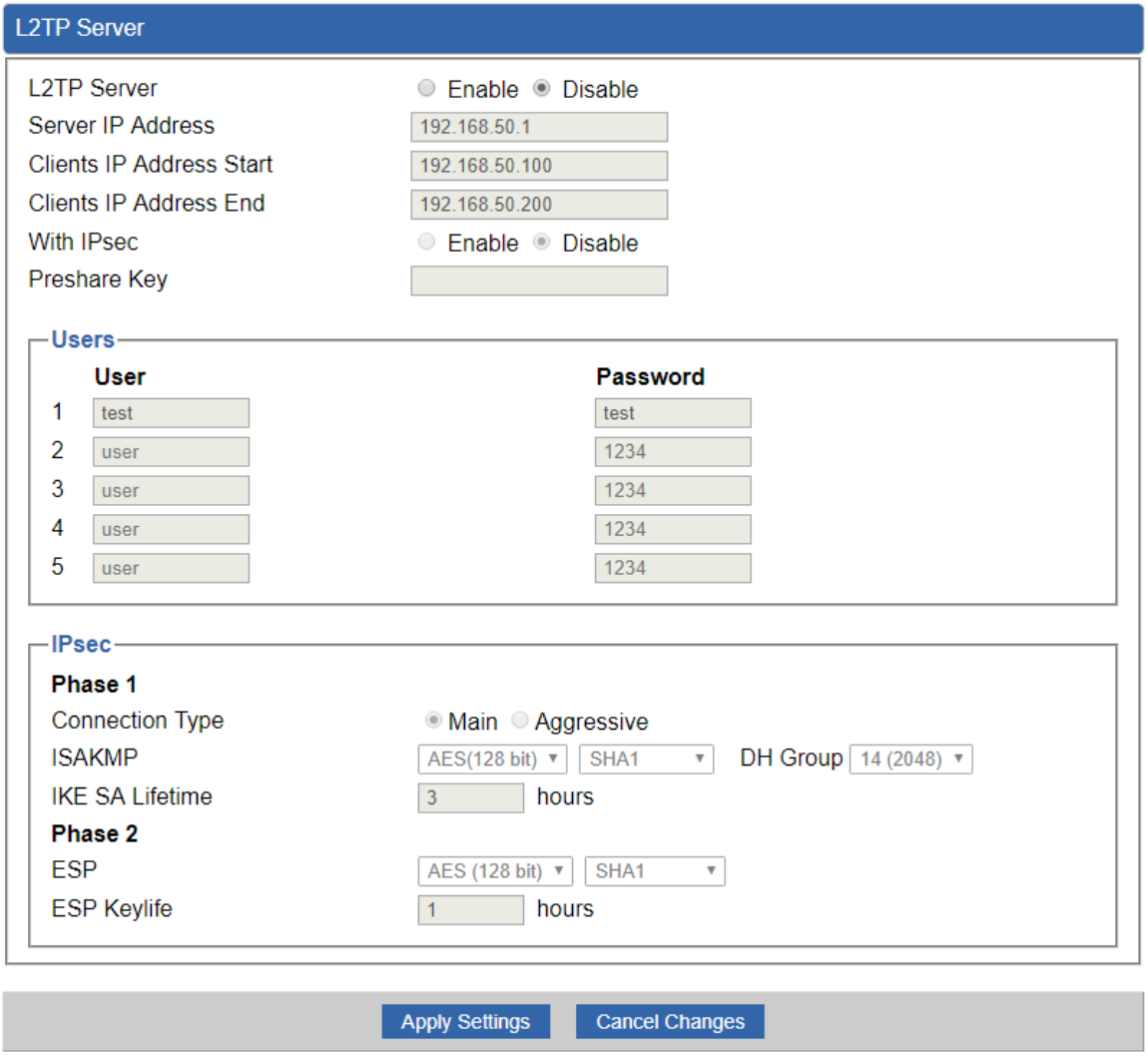


Figure 4-8-7: L2TP Server

Object	Description
L2TP Server	Set the function as enable or disable.
Server IP Address	Input the IP address of the L2TP Server. For instance, "192.168.50.1”.
Clients IP Address (Start/End)	When the VPN connection is established, the VPN client will get IP address from the VPN Server. Please set the range of IP Address. For instance, the start IP address is "192.168.50.100”, the end IP address is "192.168.50.200”.
With IPsec	Set the function as enable to make the L2TP work with IPsec encryption.

Object	Description
Preshare Key	Enter a pass phrase.
User and Password	Create the username and password for the VPN client.
Connection Type	1. Main. 2. Aggressive.
ISAKMP	It provides the way to create the SA between two PCs. The SA can access the encoding between two PCs, and the IT administrator can assign to which key size or Preshare Key and algorithm to use. The SA comes in many connection ways. 1. AES: All using a 128-bit, 192-bit and 256-bit key. AES is a commonly seen and adopted nowadays. 2. 3DES: Triple DES is a block cipher formed from the DES cipher by using it three times. It can achieve an algorithm up to 168 bits. 3. SHA1: The SHA1 is a revision of SHA. It has improved the shortcomings of SHA. By producing summary hash values, it can achieve an algorithm up to 160 bits. 4. SHA2: Either 256, 384 or 512 can be chosen. 5. MD5 Algorithm: MD5 processes a variably long message into a fixed-length output of 128 bits. 6. DH Group: Either 1, 2, 5, 14, 15, 16, 17, or 18 can be chosen.
IKE SA Lifetime	You can specify how long IKE packets are valid.
ESP	It offers AES, 3 DES, SHA 1, SHA2, and MD5. 1. AES: All using a 128-bit, 192-bit and 256-bit key. AES is a commonly seen and adopted nowadays. 2. 3DES: Triple DES is a block cipher formed from the DES cipher by using it three times. It can achieve an algorithm up to 168 bits. 3. SHA1: The SHA1 is a revision of SHA. It has improved the shortcomings of SHA. By producing summary hash values, it can achieve an algorithm up to 160 bits. 4. SHA2: Either 256, 384 or 512 can be chosen. 5. MD5 Algorithm: MD5 processes a variably long message into a fixed-length output of 128 bits.
ESP Keylife	You can specify how long ESP packets are valid.

4.8.5 SSL VPN

This section assists you in setting the SSL Server as shown in Figure 4-8-8.

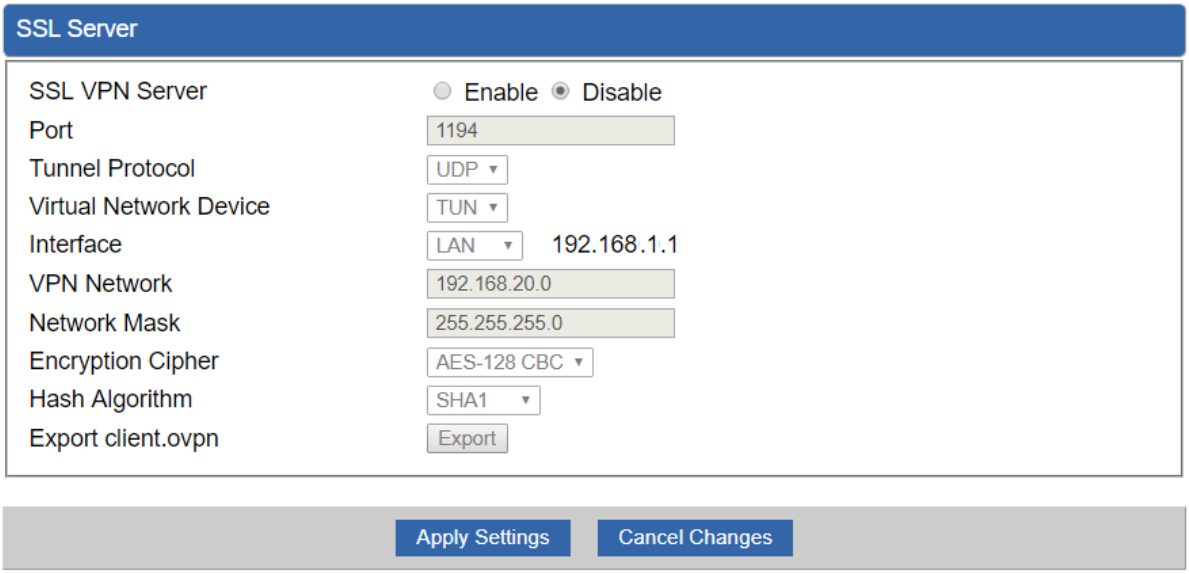


Figure 4-8-8: SSL Server

Object	Description
SSL VPN Server	Set the function as enable or disable.
Port	Set a port for the SSL Service. Default port is 1194.
Tunnel Protocol	Set the protocol as TCP or UDP.
Virtual Network Device	Set the Virtual Network Device as TUN or TAP.
Interface	User is able to select the interface for SSL service using.
VPN Network	The VPN subnet in CIDR notation. For instance, "192.168.20.0".
Network Mask	The netmask of the VPN.
Encryption Cipher	There are four encryption types: None, AES-128 CBC, AES-192 CBC or AES-256 CBC.
Hash Algorithm	There are five types of Hash Algorithm: None, SHA1, SHA1, SHA512 or MD5.
Export client.ovpn	Export a configuration for the SSL client. User is able to upload it to VPN client (such as Open VPN software).

4.8.6 VPN Connection

This page shows the VPN connection status as shown in Figure 4-8-9.

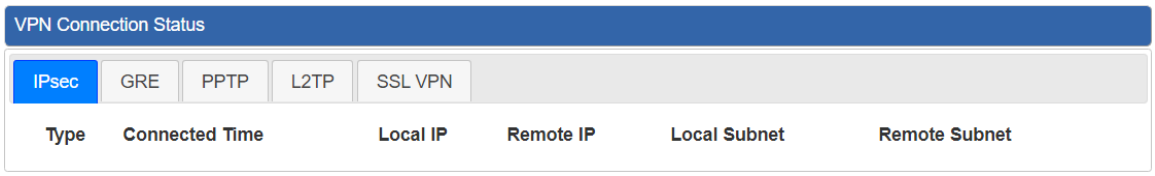


Figure 4-8-9: VPN Connection Status

Object	Description
VPN Connection Status	Click the IPSec/GRE/…/SSL VPN bookmark to check the current connection status.

4.9 AP Control

The AP Control menu provides the following features for managing the system as Figure 4-9-1 is shown below:

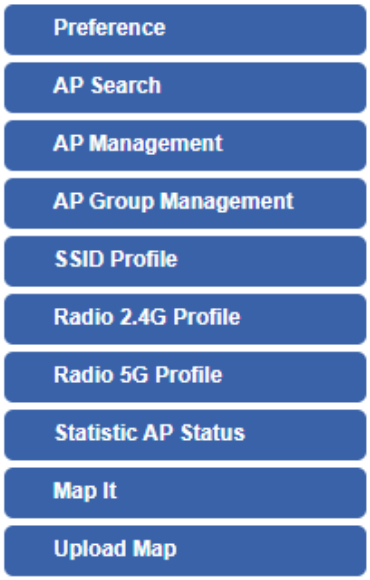


Figure 4-9-1: AP Control Menu

Object	Description
Preference	Edit region, RO community, RW community
AP Search	Search APs in the same domain
AP Management	Config APs IP Address, Subnet Mask, SSID and Radio Profiles
AP Group Management	Grouping same model AP
SSID Profile	Setup SSID Profile
Radio 2.4G Profile	Setup Radio 2.4G Profiles
Radio 5G Profile	Setup Radio 5G Profiles
Statistics AP Status	Show the status of managed APs
Statistics Active Clients	Show the status of active clients
Map It	Edit the map of AP location and coverage
Upload Map	Search APs in the same domain

4.9.1 Preference

On this page, you can choose the device region of FCC or ETSI. Then edit RO community and RW community for public or private use. Select Apply or Reset. This screenshot is shown in Figure 4-9-2.

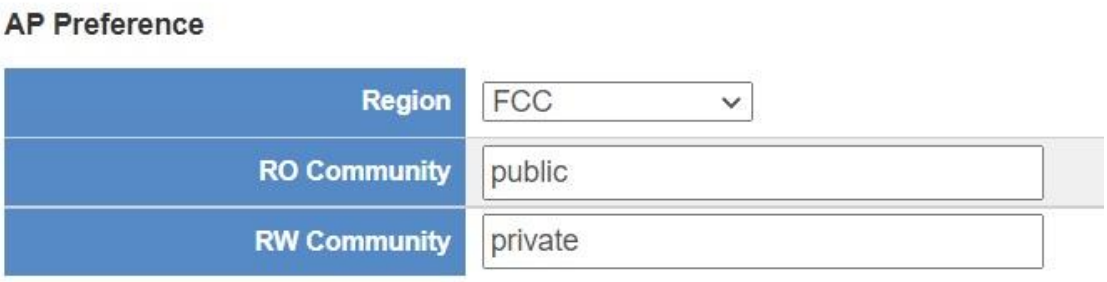


Figure 4-9-2: AP Control Menu

Note: Device of FCC and device of ETIS cannot be shown at the same time.

4.9.2 AP Search

On this page, you can add new APs in your AP Control System.

Follow the steps below :

Step 1. Press the Search button to discover PLANET devices.

Step 2. Choose which AP you want to add.

Step 3. Press the Apply button to finish addition.

Note: When using AP Search, the AP's IP Address must be the same as WS-Series Switch IP domain.

4.9.3 AP Management

On this page, you can manage your APs, including checking AP online status, configuring AP (IP address, Mask, SSID and Radio profile), rebooting AP, firmware update, and deleting AP in the AP Control system.

Status

Object	Description
	Connection status: online, offline, Wi-Fi disabled
	In progress: action in progress
	Finished/Successful: action finished and successful.
	Failed: action failed.

Action

Object	Description
	Setting: edit setting and allocate profile to AP
	Link: link to the AP's web page
	Firmware Update: Upgrade AP's firmware
	Reboot: Reboot the AP
	Delete: Delete the AP from the LED Control control list: Control the AP's LED.
	Mouse-click in a sequential order: LED blink-> LED off-> LED on

Notes:

1. To configure multiple APs at one time, select multiple APs and then choose one of the action icons on the top of the page. The "Link" action is not allowed for multiple APs.

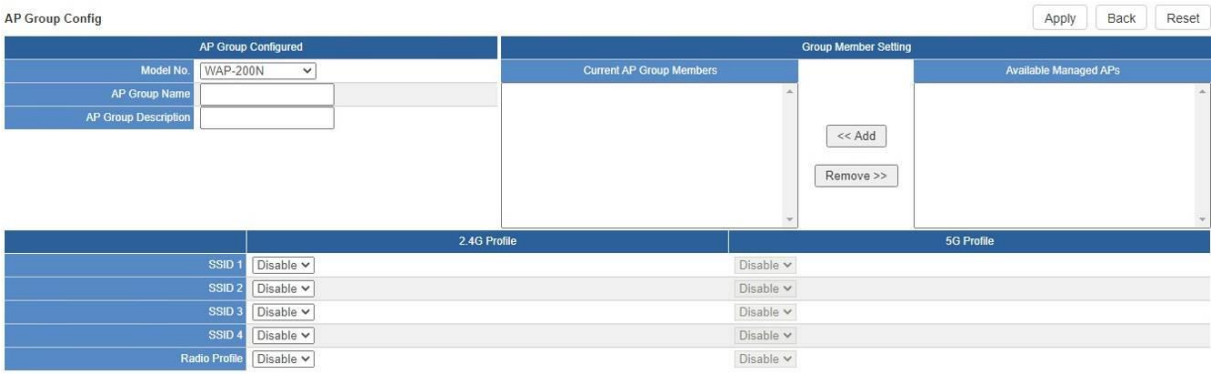
2. Press the Apply button to complete the setup of AP.

4.9.4 AP Group Management

On the AP Group Management page, you can create AP group and control one or more AP groups.

Action:

Object	Description
	Add new group: Click it to add an AP group
	Delete selected item: Click it to delete the selected AP group



Create Group:

1. Select AP Model No. you want to Add
2. Type AP Group Name and AP Group Description.
3. Select AP you want to add in the group member setting area and press the Add button.
4. Select AP Group SSID profile and Radio Profile.
5. Press the Apply button to finish the creation of AP group.

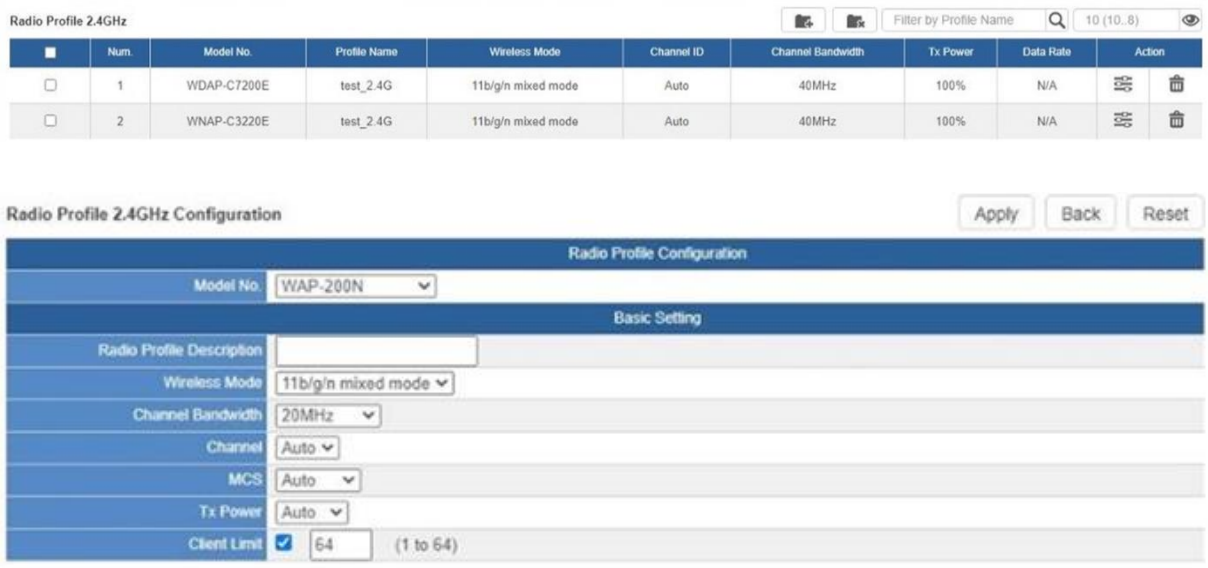
Note:

To do profile provisioning to multiple AP groups at one time, select multiple AP groups, and then click the “Apply” button.

The "Link" action is not allowed for multiple APs or AP group.

4.9.5 SSID Profile

On the SSID profile configuration page, enter the value that you preferred and then click “Apply” to save the profile



Action:

Object	Description
	Add new profile: Click it to add a new profile.
	Delete selected item: Click it to delete the selected profile.
	Edit: Click it to edit the profile.
	Delete: Click it to delete the single profile.

4.9.6 Radio 2.4G Profile

On the Radio profile configuration page, enter the value that you preferred and then click “Apply” to save the profile.

Action:

Object	Description
	Add new profile: Click it to add a new profile.
	Delete selected item: Click it to delete the selected profile.
	Edit: Click it to edit the profile.
	Delete: Click it to delete the single profile.

Note:

1. Strongly suggest you keep the values as default except the fields like Channel, Network Mode, Channel Bandwidth, Tx Power, IAPP, and Tx/Rx to prevent any unexpected error or impact on the performance.
2. WMM Capable is not allowed to be disabled.

4.9.7 Radio 5G Profile

On the Radio profile configuration page, enter the value that you preferred and then click “Apply” to save the profile.

Action:

Object	Description
	Add new profile: Click it to add a new profile.
	Delete selected item: Click it to delete the selected profile.
	Edit: Click it to edit the profile.
	Delete: Click it to delete the single profile.

Note:

1. Strongly suggest you keep the values as default except the fields like Channel, Network Mode, Channel Bandwidth, Tx Power, IAPP, and Tx/Rx to prevent any unexpected error or impact on the performance.
2. WMM Capable is not allowed to be disabled.

4.9.8 Statistics AP Status

On this page, you can observe the current configuration of all managed APs.

Filter: You can filter the AP list by entering the keyword in the field next to the magnifier icon. The keyword should be in any context that belongs to the fields of this page.

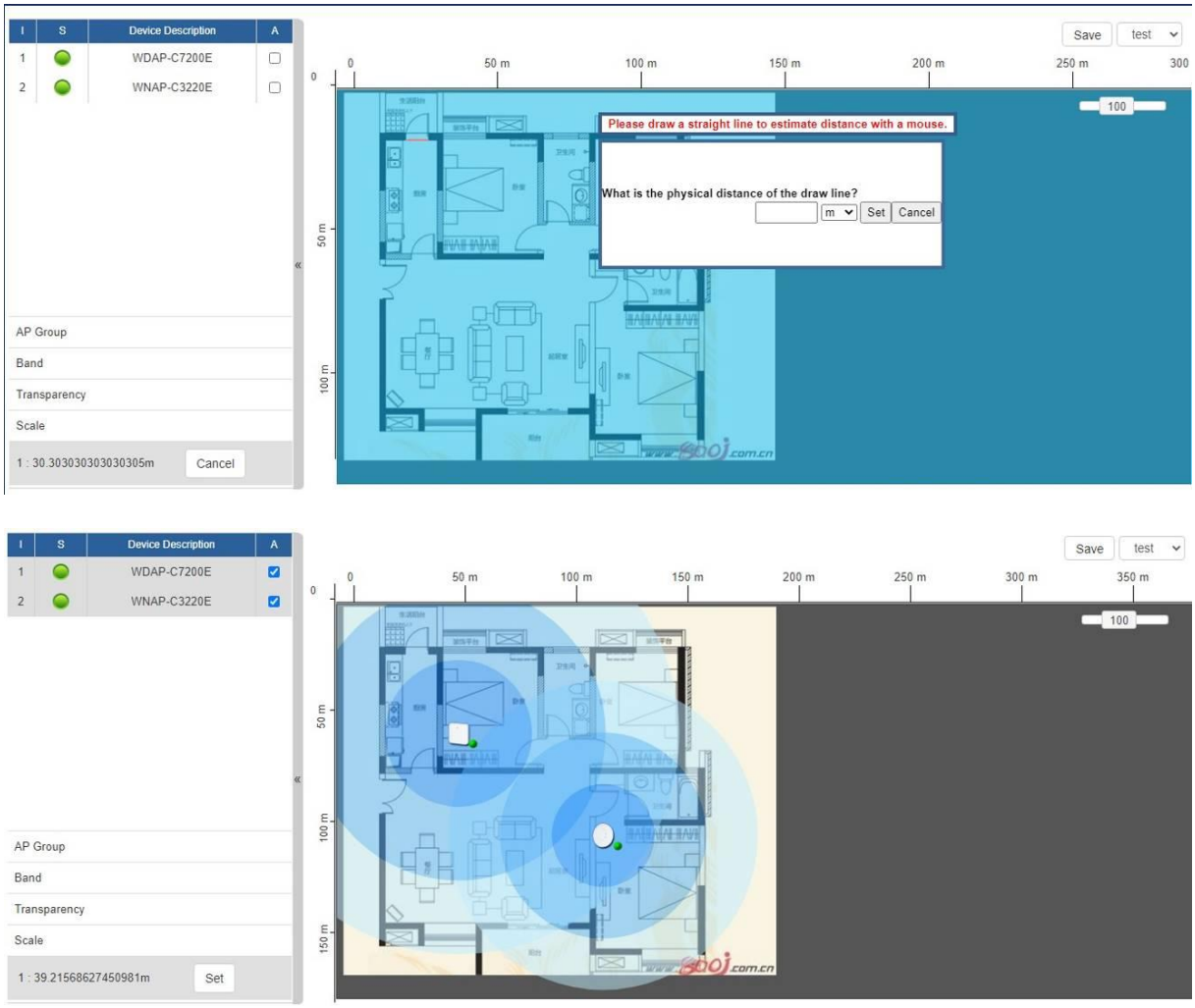
4.9.9 Statistics Active Clients

On this page, you can observe the statuses of all associated clients including traffic statistics, transmission speed and RSSI signal strength.

Filter: You can filter the search result by entering the keywords in the field next to the magnifier icon. The keywords include MAC Address, IP Address, SSID and Band.

4.9.10 Map It

On this page you can add managed APs to the actual position against the floor map. This is convenient to user to view and adjust the actual deployment by referring to its real transmission power and channel allocation.



1. Click “Scale” to start to reset the map scale.
2. Press the set button to draw a line on the map. Fill its physical distance in the blank and press Set or Cancel. For example, in the graph below, set the door width to 0.8 m

Note: You need to upload map image first before mapping managed APs to the actual position.

4.9.11 Upload Map

On this page, the system allows you to upload your floor map to the system.

Note: The system allows user to upload up to 10 floor maps.

4.10 Wireless

The Wireless menu provides the following features as shown in Figure 4-10-1

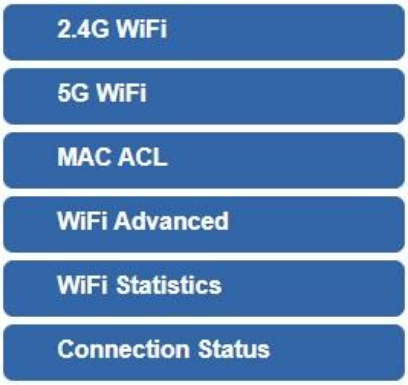


Figure 4-9-1: Wireless Menu

Object	Description
2.4G Wi-Fi	Allows to configure 2.4G Wi-Fi.
5G Wi-Fi	Allows to configure 5G Wi-Fi.
MAC ACL	Allows to configure MAC ACL.
Wi-Fi Advanced	Allows to configure advanced setting of Wi-Fi.
Wi-Fi Statistics	Displays the statistics of Wi-Fi traffic.
Connection Status	Displays the connection status.

4.10.1 2.4G Wi-Fi

This page allows the user to define 2.4G Wi-Fi as shown in Figure 4-10-2.

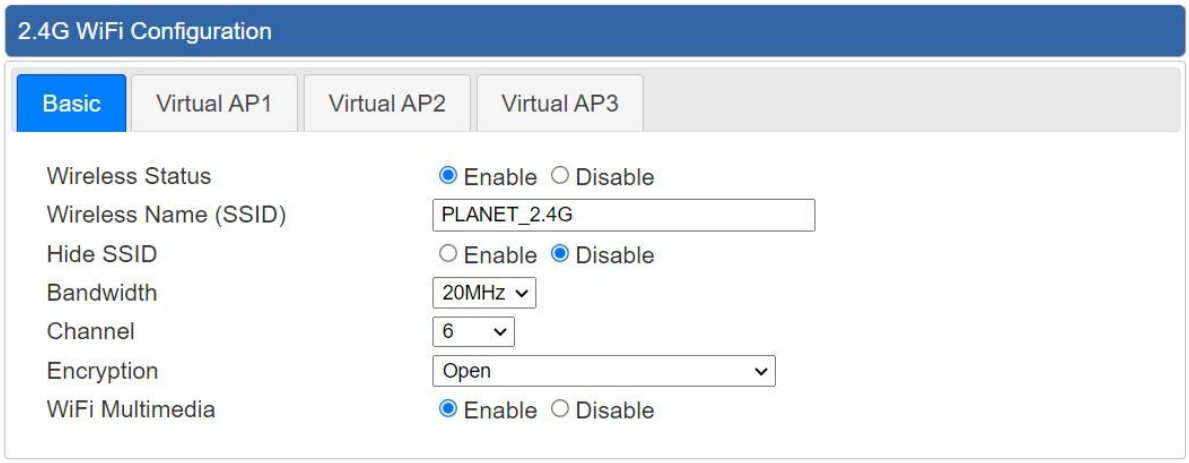


Figure 4-10-2: 2.4G Wi-FI

Object	Description
Wireless Status	Allows user to enable or disable 2.4G Wi-Fi
Wireless Name (SSID)	It is the wireless network name. The default 2.4G SSID is "PLANET_2.4G"
Hide SSID	Allows user to enable or disable SSID
Bandwidth	Select the operating channel width, "**20MHz**" or "**40MHz**"
Channel	It shows the channel of the CPE. Default 2.4GHz is channel 6.
Encryption	Select the wireless encryption. The default is "**Open**"
Wi-Fi Multimedia	Enable/Disable WMM (Wi-Fi Multimedia) function

4.10.2 5G Wi-Fi

This page allows the user to define 5G Wi-Fi as shown in Figure 4-10-3.

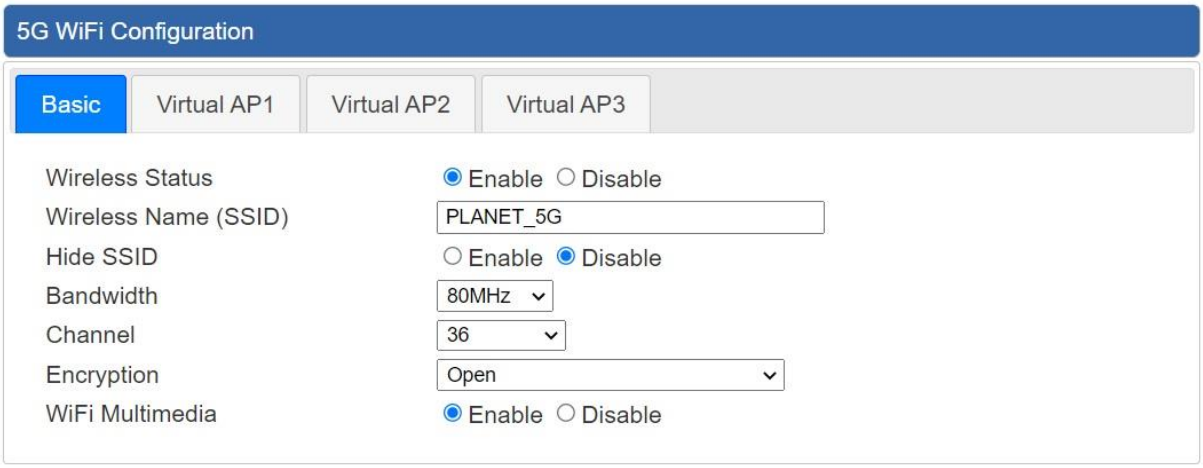


Figure 4-10-3: 5G WFI

Object	Description
Wireless Status	Allows user to enable or disable 5G Wi-Fi
Wireless Name (SSID)	It is the wireless network name. The default 5G SSID is "PLANET_5G"
Hide SSID	Allows user to enable or disable SSID
Bandwidth	Select the operating channel width, "**20MHz**", "**40MHz**" or "**80MHz**"
Channel	It shows the channel of the CPE. Default 5GHz is channel 36.
Encryption	Select the wireless encryption. The default is "**Open**"
Wi-Fi Multimedia	Enable/Disable WMM (Wi-Fi Multimedia) function

4.10.3 MAC ACL

This page provides MAC ACL configuration as shown in Figure 4-10-4.

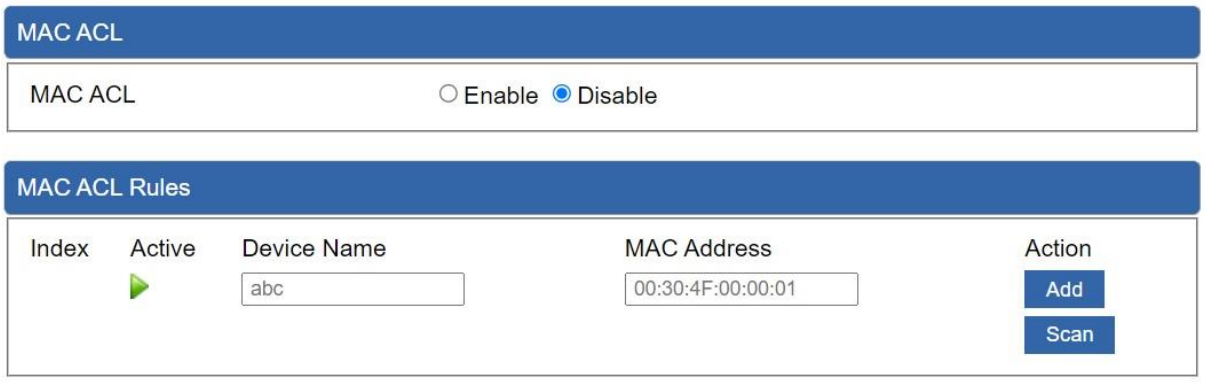


Figure 4-10-4: MAC ACL

Object	Description
Active	Allows the devices to pass the MAC ACL rule
Device Name	Set an allowed device name
MAC Address	Set an allowed device MAC address
Add	Press the "**Add**" button to add end-device that is scanned from wireless network and mark them
Scan	Connect to client list

4.10.4 Wi-Fi Advanced

This page allows the user to define advanced setting of Wi-Fi as shown in Figure 4-10-5.

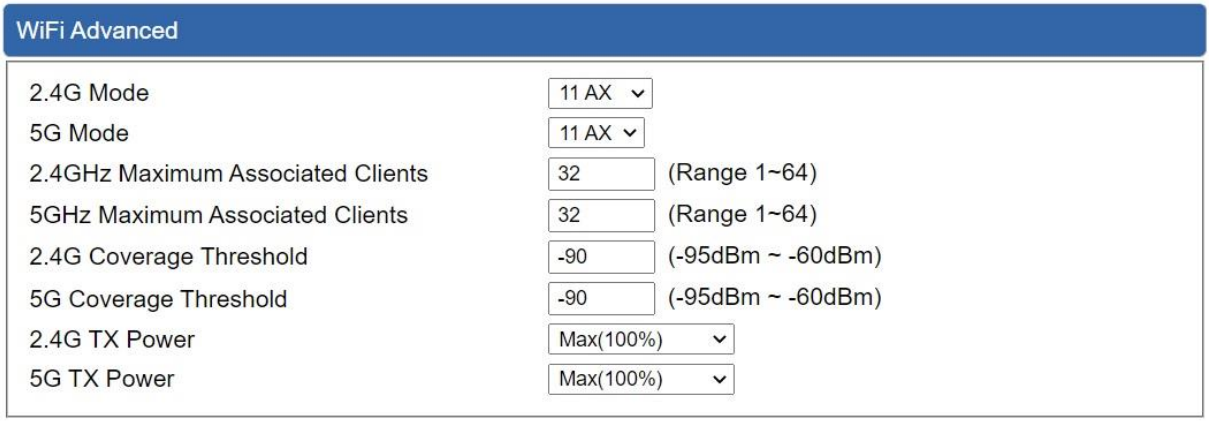


Figure 4-10-5: Wi-Fi Advanced

Object	Description
2.4G Mode	11AC: Select 802.11B/G or 802.11N/G 11AX: Select 802.11B/G or 802.11N/G or 802.11AX
5G Mode	11AC: Select 802.11A or 802.11AN or 802.11AC 11AX: Select 802.11A or 802.11AN or 802.11AC or 802.11AX
2.4GHz Maximum Associated Clients	The maximum users are 64
5GHz Maximum Associated Clients	The maximum users are 64
2.4G Coverage Threshold	The coverage threshold is to limit the weak signal of clients occupying session. The default is -90dBm
5G Coverage Threshold	The coverage threshold is to limit the weak signal of clients occupying session. The default is -90dBm
2.4G TX Power	The range of transmit power is **Max (100%)**, **Efficient (75%)**, **Enhanced (50%), Standard (25%)** or **Min (15%)**. In case of shortening the distance and the coverage of the wireless network, input a smaller value to reduce the radio transmission power
5G TX Power	The range of transmit power is **Max (100%)**, **Efficient (75%)**, **Enhanced (50%), Standard (25%)** or **Min (15%)**. In case of shortening the distance and the coverage of the wireless network, input a smaller value to reduce the radio transmission power

4.10.5 Wi-Fi Statistics

This page displays Wi-Fi statistics as shown in Figure 4-10-6.

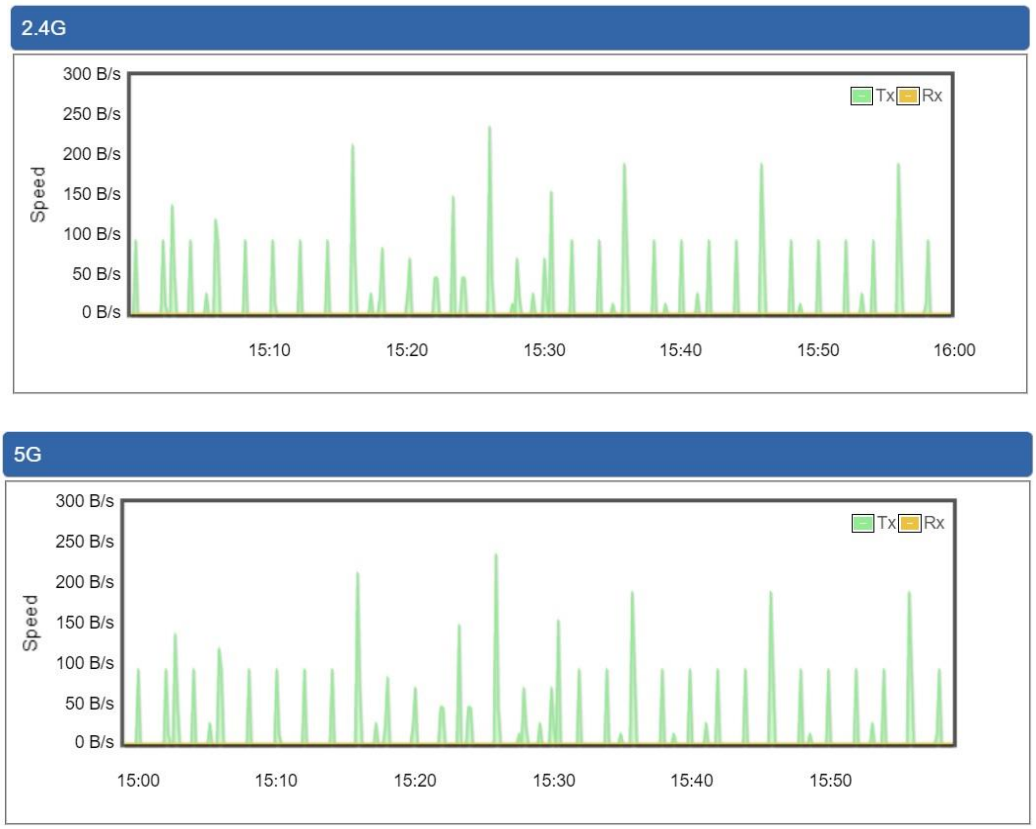


Figure 4-10-6: Wi-Fi Statistics

4.10.6 Connection Status

This page shows the host names and MAC address of all the clients in your network as shown in Figure 4-10-7.

Figure 4-10-7: Connection Status

Object	Description
Name	Display the host name of connected clients.
MAC Address	Display the MAC address of connected clients.
Signal	Display the connected signal of connected clients.
Connected Time	Display the connected time of connected clients.

4.11 Maintenance

The Maintenance menu provides the following features for managing the system as shown in Figure 4-11-1

Figure 4-11-1: Maintenance Menu

Object	Description
Administrator	Allows changing the login username and password.
Date & Time	Allows setting Date & Time function.
Save/Restore Configuration	Export the cellular gateway's configuration to local or USB sticker. Restore the cellular gateway's configuration from local or USB sticker.
Firmware Upgrade	Upgrade the firmware from local or USB storage.
Reboot / Reset	Reboot or reset the system.
Auto Reboot	Allows setting auto-reboot schedule.
Diagnostics	Allows you to issue ICMP PING packets to troubleshoot IP.

4.11.1 Administrator

To ensure the cellular gateway's security is secure, you will be asked for your password when you access the cellular gateway's Web-based utility. The default user name and password are "**admin**". This page will allow you to modify the user name and passwords as shown in Figure 4-11-2.

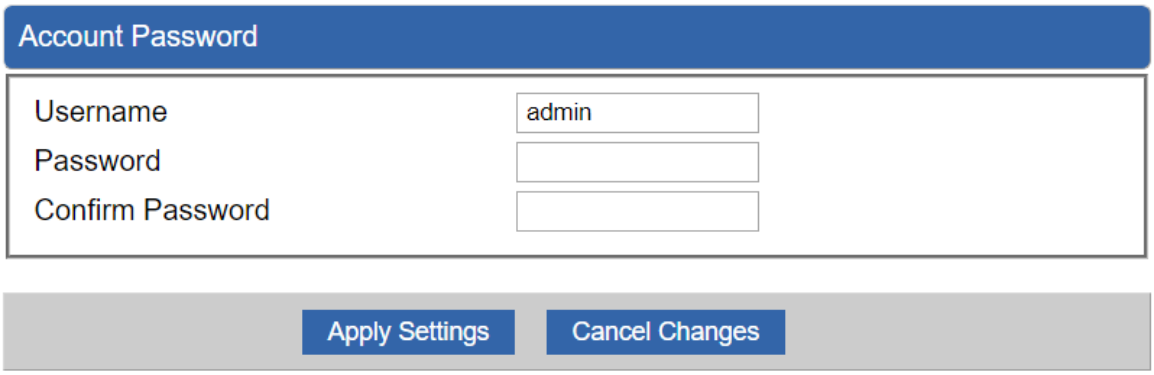


Figure 4-11-2: Account and Password Page

Object	Description
Username	Input a new username.
Password	Input a new password.
Confirm Password	Input password again.

4.11.2 Date and Time

This section assists you in setting the system time of the cellular gateway. You are able to either select to set the time and date manually or automatically obtain the GMT time from Internet as shown in Figure 4-11-3.

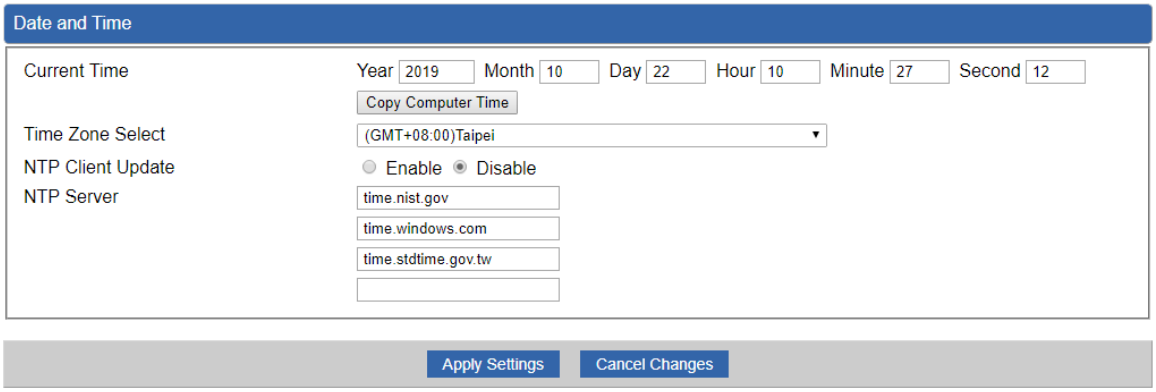


Figure 4-11-3: Date and Time Page

Object	Description
Current Time	Show the current time. User is able to set time and date manually.
Time Zone Select	Select the time zone of the country you are currently in. The cellular gateway will set its time based on your selection.
NTP Client Update	Once this function is enabled, cellular gateway will automatically update current time from NTP server.
NTP Server	User may use the default NTP sever or input NTP server manually.

4.11.3 Saving/Restoring Configuration

This page shows the status of the configuration. You may save the setting file to either USB storage or PC and load the setting file from USB storage or PC as Figure 4-11-4 is shown below:

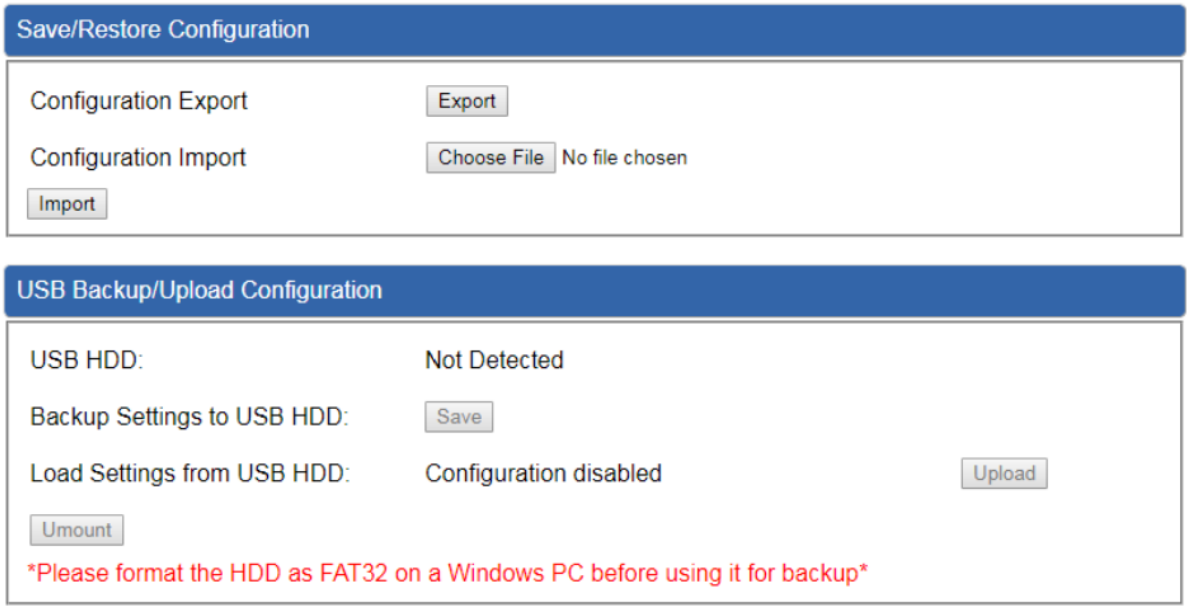


Figure 4-11-4: Saving/Restoring Configuration

■ Save Setting to PC

Object	Description
Configuration Export	Press the Export button to save setting file to PC.
Configuration Import	Press the Choose File button to select the setting file, and then press the Import button to upload setting file from PC.

■ Save Setting to USB Storage

Object	Description
USB Storage	The status of USB storage.
Backup Settings to USB Storage	Press the Save button to save setting file to USB storage.
Load Settings from USB Storage	Press the Upload button to upload setting file from USB storage.
Unmount	Before removing the USB storage from the cellular gateway, please press the “Unmount” button first.

4.11.4 Upgrading Firmware

This page provides the firmware upgrade function as shown in Figure 4-11-5

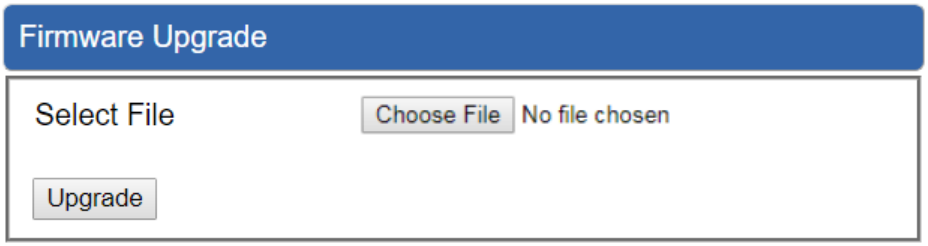


Figure 4-11-5: Firmware Upgrade Page

Object	Description
Choose File	Press the button to select the firmware.
Upgrade	Press the button to upgrade firmware to system.

4.11.5 Reboot / Reset

This page enables the device to be rebooted from a remote location. Once the Reboot button is pressed, users have to re-log in the Web interface as Figure 4-11-6 is shown below:

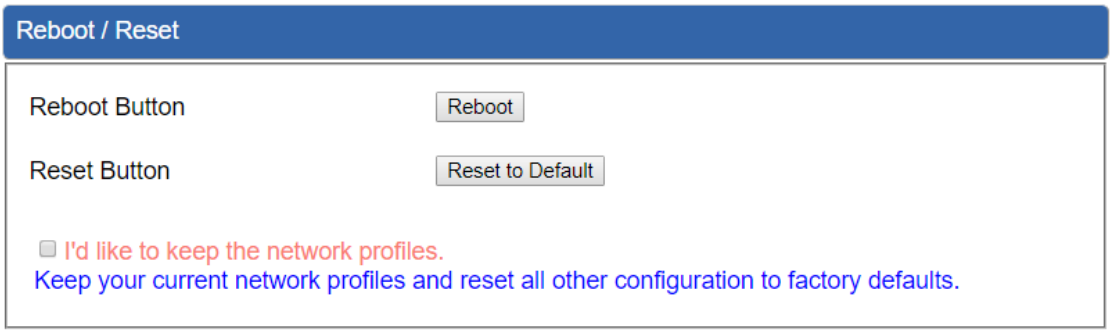


Figure 4-11-6: Reboot/Reset Page

Object	Description
Reboot	Press the button to reboot system.
Reset	Press the button to restore all settings to factory default settings.
I'd like to keep the network profiles.	Check the box and then press the Reset to Default button to keep the current network profiles and reset all other configurations to factory defaults.

4.11.6 Diagnostics

The page allows you to issue ICMP PING packets to troubleshoot IP connectivity issues. After you press “Ping”, ICMP packets are transmitted, and the sequence number and roundtrip time are displayed upon reception of a reply. The Page refreshes automatically until responses to all packets are received, or until a timeout occurs as shown in Figure 4-11-7

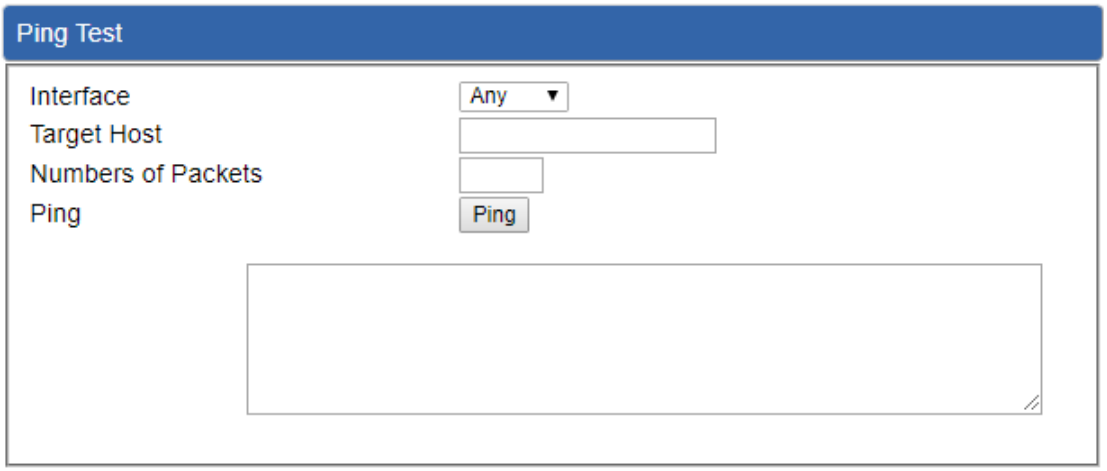


Figure 4-11-7: Diagnostics Page

Object	Description
Interface	Select an interface of the cellular gateway
Target Host	The destination IP Address or domain.
Number of Packets	Set the number of packets that will be transmitted; the maximum is 100.
Ping	The time of ping.

Note

Be sure the target IP address is within the same network subnet of the cellular gateway, or you have to set up the correct gateway IP address.

Appendix A: DDNS Application

Configuring PLANET DDNS steps:

Step 1: Visit DDNS provider's web site and register an account if you do not have one yet. For example, register an account at http://planetddns.com

Step 2: Enable DDNS option through accessing web page of the device.

Step 3: Input all DDNS settings.