JATON TECH

JATONTECH JT8500D JT8500H LTE-A Pro CAT15 Outdoor CPE Administrator User Manual V1.0

PLEASE READ THESE SAFETY PRECAUTIONS!

This device complies with part 96 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 96 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and 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.

RF Exposure Information (MPE)

This device has been tested and meets applicable limits for Radio Frequency (RF) exposure.

This equipment should be installed and operated with minimum distance 32 cm between the radiator & your body.

Table of Contents

1. Overview

JATONTECH 8500D/H(JT8500D/H) is highly advanced TDD LTE-A Pro CAT15 outdoor data unit specially designed to meet the most challenging demands of today's high speed wireless backhaul and fixed wireless access deployments by the CBRS 4G service operators. The unit can support multiple TDD band operations. Multiple operator network support can also be provisioned on the unit to allow the deployment across entire country with different operators.

■ User Interface Specification

Model	Description & User Interface

JT8500D
JT8500H
	- Panel antenna:
	  - JT8500D 14dBi
	  - JT8500H 17dBi
	- 1 RJ45 10/100/1000M LAN Port
	- PWR, SYS, SIM, LINK, ACT, and LTE (1-5) LEDs
	- 48V/0.5A PoE supply, ODU Power <15 Watts
	- Dimensions: 250 mm (L) × 250 mm (W) × 75 mm (D)
	- Weight: <2.5 Kg

2. Getting Started

1) Packing list

Upon receiving the product, please unpack the product package carefully. Each product is shipped with the following items:

Table 2-1 Packing List

Outdoor CPE Products	Quantity
ODU unit	1
PoE adapter	1
Power cord	1
Mounting brackets	1
PC Ethernet Cable	1

If you find any of the items is missing, please contact our local distributor immediately.

2) Unpacking the Equipment

Table 2-1 lists all the standard parts that are supplied in your LTE CPE Unit Installation Package. Please take the time to unpack the package and check its contents against this list.

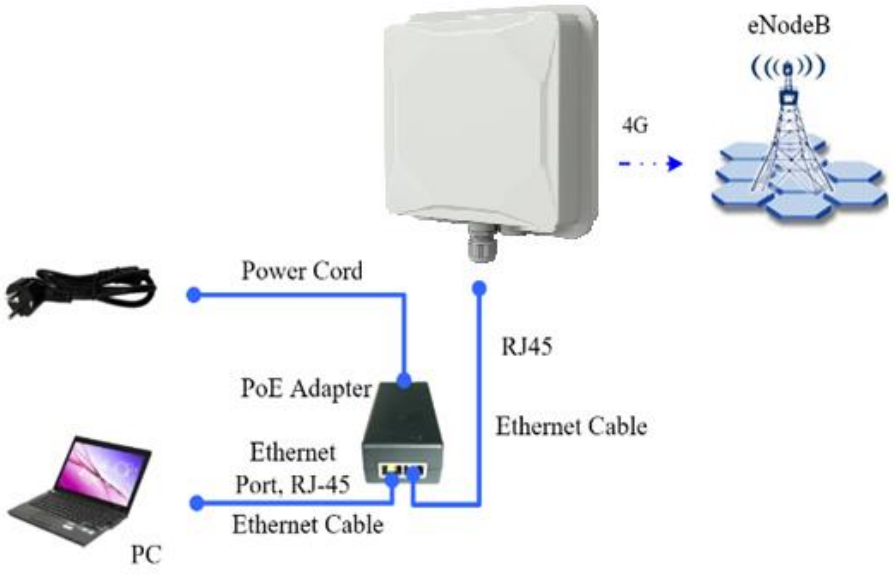
3) Installing the Equipment

■ Device Logic connection

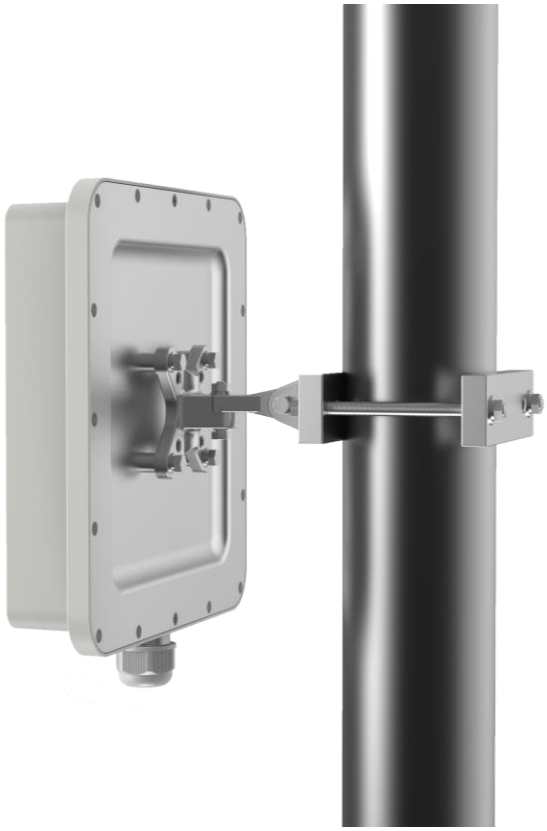
For outdoor CPE product, it is suggested that the CPE device be installed in a shaded area to avoid direct sun light exposure which may cause over heat in certain extreme weather condition.

To power on the device, the outdoor CPE must use a 48V PoE integrated DC power supply adapter. The power adapters can operate in 100-240V AC range and therefore can be used in different country. Once the device is powered up, the user should wait for about 1 minutes before the device becomes operational. When the RF1 LED becomes blinking green, it indicates the system has completed the startup procedure.

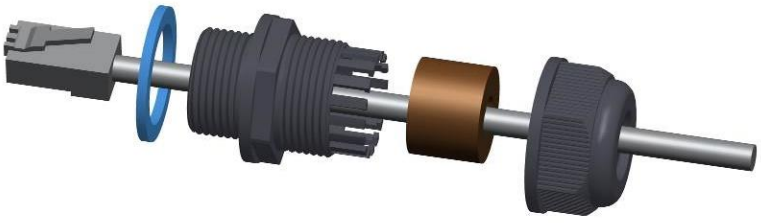
To connect PC, LAN switch or other type of IP device to the CPE product, the user should use SFTP CAT5E Ethernet cable and connect to the appropriate LAN port. Once connected, the ETH LED indicator should come on.



- **Installing Mounting brackets**



- **Header Connection**



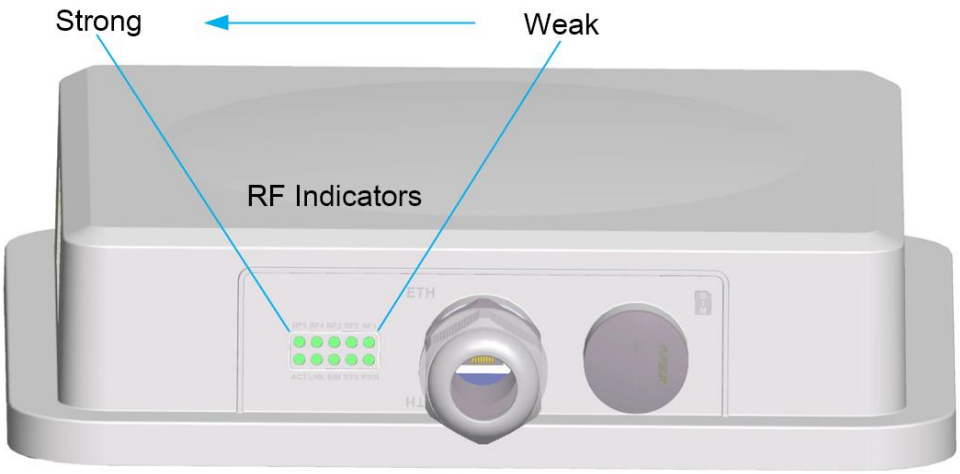
2 LED Display

Type	LED	Function	Description
ODU	PWR	Power indicator	Solid Blue – Device is power on.
	SYS	System run indicator	Solid Blue – Device is in normal operation.
	SIM	SIM card indicator	Light is on – SIM card state is ready, Blinking Blue – SIM card is error.
	LINK	LAN port status	Solid Blue – LAN port is up.
	ACT	LAN port status	Blinking Blue – LAN data transmission.
	RF (5LEDs)	RF Signal Strength	5 level signal strengths indication by 5 Blue LEDs. 1st Blue LED: -115dBm < RSRP 2nd Blue LED: -115dBm <= RSRP < -105dBm 3rd Blue LED: -105dBm <= RSRP < -95dBm 4th Blue LED: -95dBm <= RSRP < -85dBm 5th Blue LED: -85 <= RSRP

■ RF Signal Adjustment

After the CPE outdoor unit has installed, the direction of antenna's azimuth and pitch angle needs to adjust for the best signal strength. In near line of sight condition, the CPE will have the best signal when the antenna is directly pointing the base station.

User can adjust the holder to change the direction and angle of the antenna while observing the RF LED on the outdoor unit which indicates the signal strength.

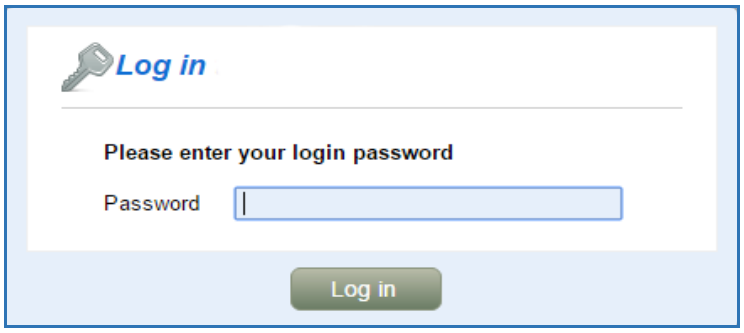


3 Managing CPE Device

JT8500D/H is a user-friendly LTE CPE, and very easy to configure and setup. Subscribers can just connect the device to their computer or home switch/router and the device is ready to provide Internet Services.

■ WEB Login

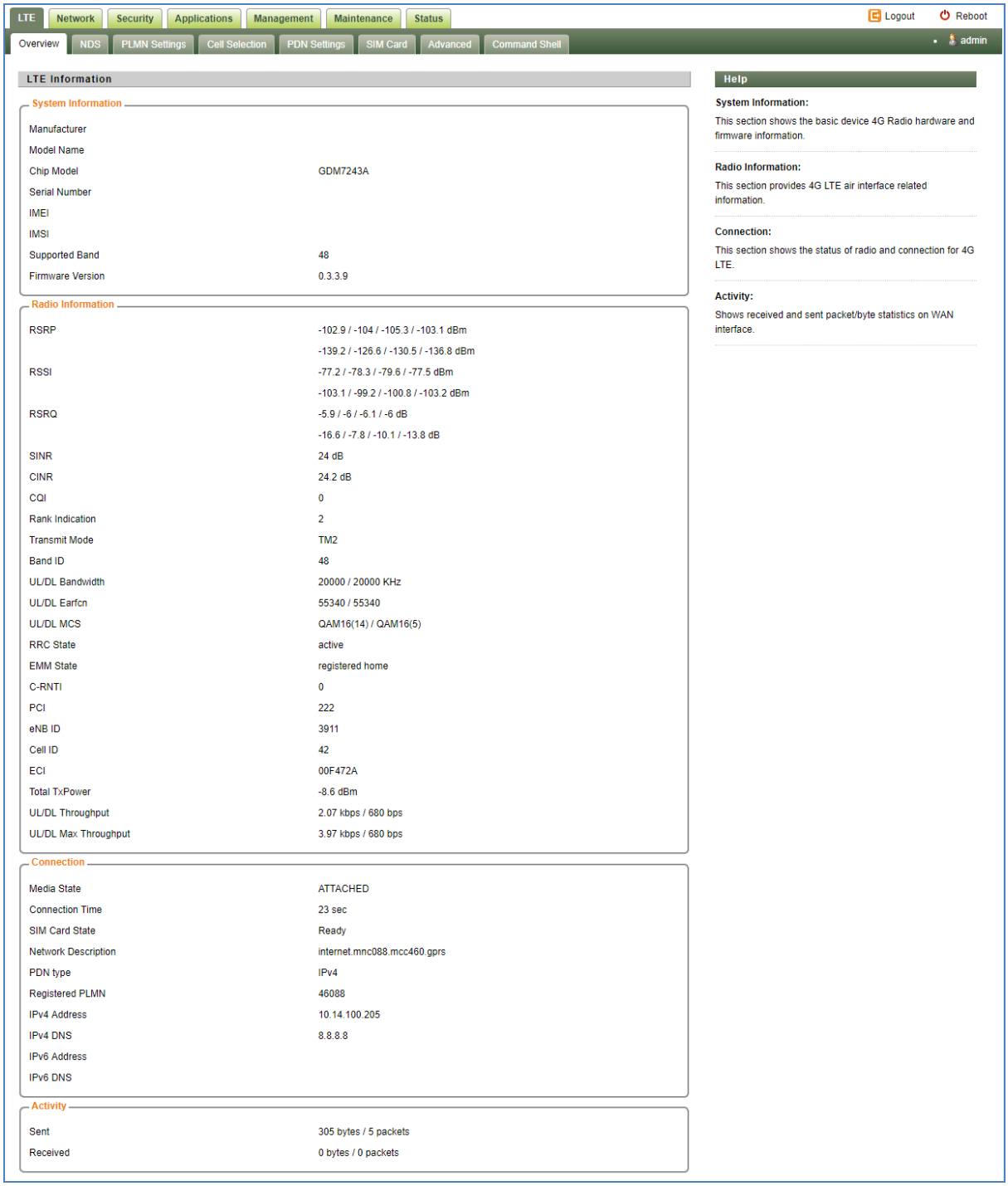
It is a preferred to setup the CPE using a Web browser from a local PC connected to device LAN port. The user should ensure that the connected PC have acquired IP address via DHCP from the device. After IP connectivity is established between the PC and CPE device, the user may launch a Web browser and specify http://10.1.1.1 in the address bar. A window will pop up requesting password. Input the user or administrator login password and then click the "Log in" button. After successful log on, the default home page will appear. Note the default user & administrator passwords are "user123" and "admin123" respectively.



4 LTE Configuration

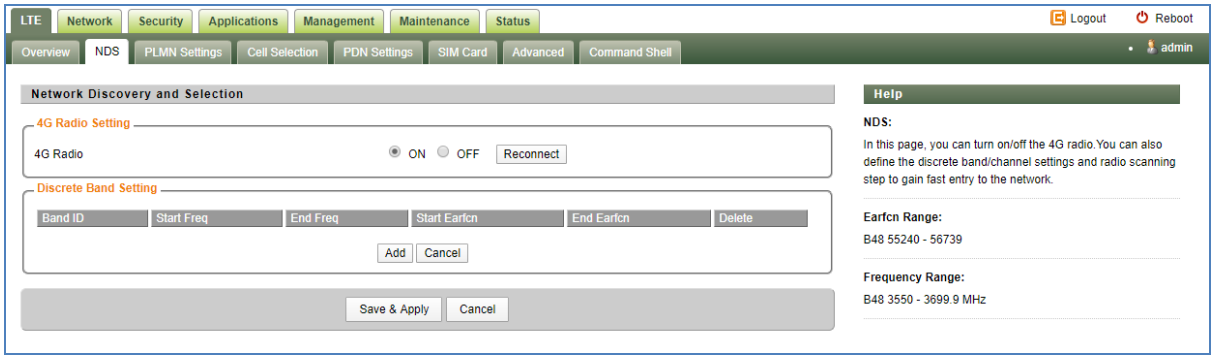
■ Overview

Once the user is logged in, the following window device status window will be prompted for viewing. It contains both the system information, networking and device information configured for the device.


LTE
Network
Security
Applications
Management
Maintenance
Status
Logout
Reboot
Overview
NDS
PLMN Settings
Cell Selection
PDN Settings
SIM Card
Advanced
Command Shell
admin
LTE Information
System Information
Manufacturer
Model Name
Chip Model GDM7243A
Serial Number
IMEI
IMSI
Supported Band 48
Firmware Version 0.3.3.9
Radio Information
RSRP -102.9 / -104 / -105.3 / -103.1 dBm
-139.2 / -126.6 / -130.5 / -136.8 dBm
RSSI -77.2 / -78.3 / -79.6 / -77.5 dBm
-103.1 / -99.2 / -100.8 / -103.2 dBm
RSRQ -5.9 / -6 / -6.1 / -6 dB
-16.6 / -7.8 / -10.1 / -13.8 dB
SINR 24 dB
CINR 24.2 dB
CQI 0
Rank Indication 2
Transmit Mode TM2
Band ID 48
UL/DL Bandwidth 20000 / 20000 KHz
UL/DL Earfcn 55340 / 55340
UL/DL MCS QAM16(14) / QAM16(5)
RRC State active
EMM State registered home
C-RNTI 0
PCI 222
eNB ID 3911
Cell ID 42
ECI 00F472A
Total TxPower -8.6 dBm
UL/DL Throughput 2.07 kbps / 680 bps
UL/DL Max Throughput 3.97 kbps / 680 bps
Connection
Media State ATTACHED
Connection Time 23 sec
SIM Card State Ready
Network Description internet.mnc088.mcc460.gprs
PDN type IPv4
Registered PLMN 46088
IPv4 Address 10.14.100.205
IPv4 DNS 8.8.8.8
IPv6 Address
IPv6 DNS
Activity
Sent 305 bytes / 5 packets
Received 0 bytes / 0 packets
Help
System Information:
This section shows the basic device 4G Radio hardware and firmware information.
Radio Information:
This section provides 4G LTE air interface related information.
Connection:
This section shows the status of radio and connection for 4G LTE.
Activity:
Shows received and sent packet/byte statistics on WAN interface.

■ ND&S Configuration

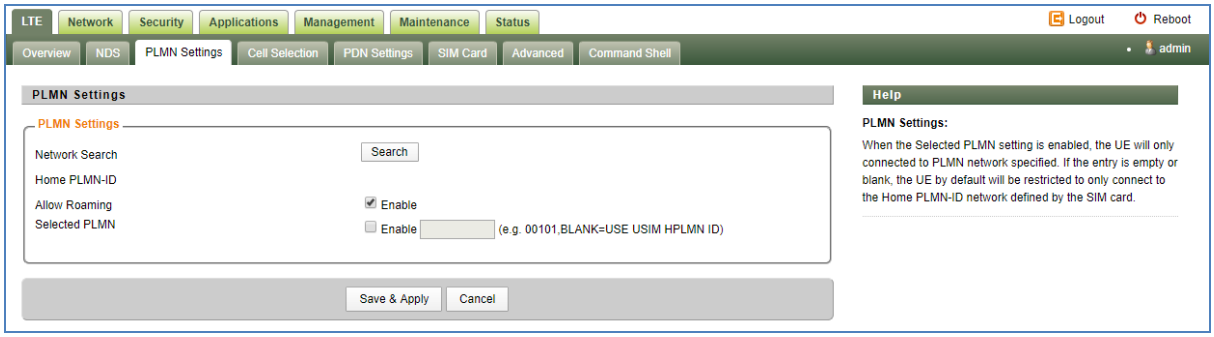
The LTE radio can be enabled or disabled via 4G Radio setting. The radio can also be reset via Reconnect.



Note: After configure any parameters of the device, you must click the "**Save & Apply**" button to save the configuration. Otherwise the configuration will not take effect.

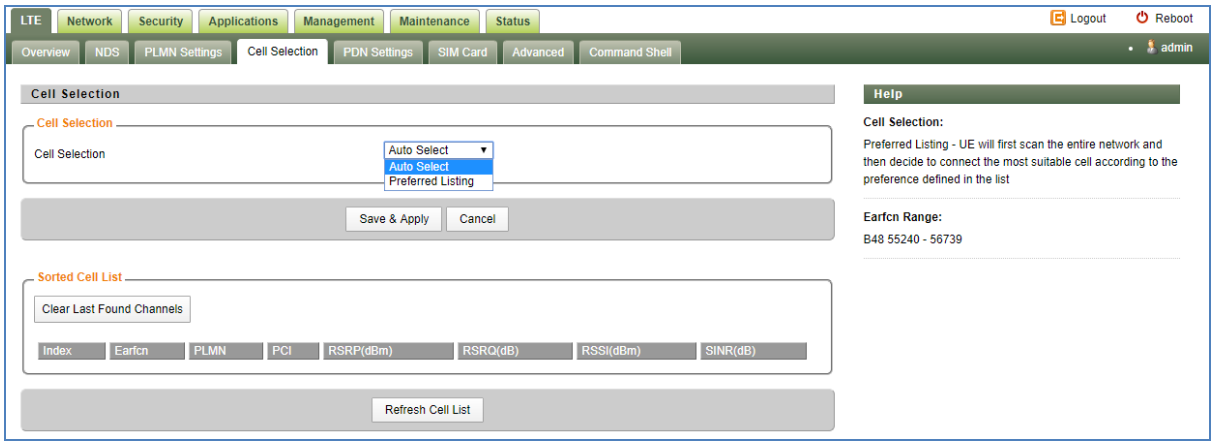
■ PLMN Selection

The user can add and configure the PLMN list to restrict the CPE to attach. The CPE will attach to network according to the PLMN priority assigned.



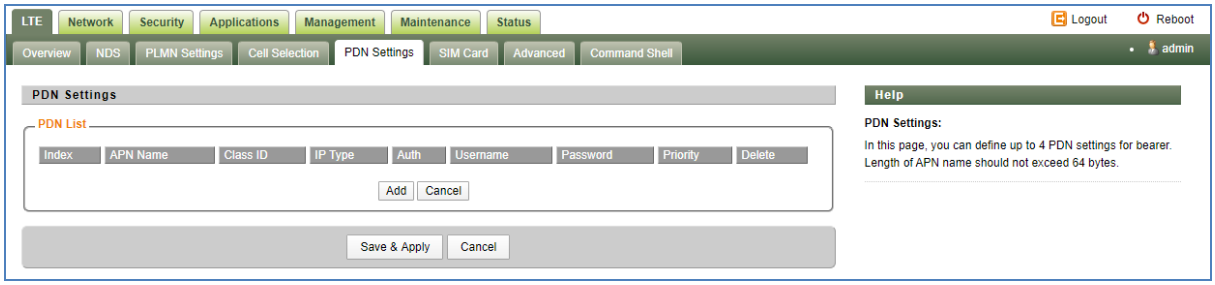
■ Cell Selection

The cell selection menu is used to configure how CPE will select the best cell. User can configure the "Auto Select" mode to select cell based 3GPP standard. When configured with "preferred Listing", user add the desired cell ID to the list and the CPE will attach to the appropriate cell after a full scan.



■ PDN Setting

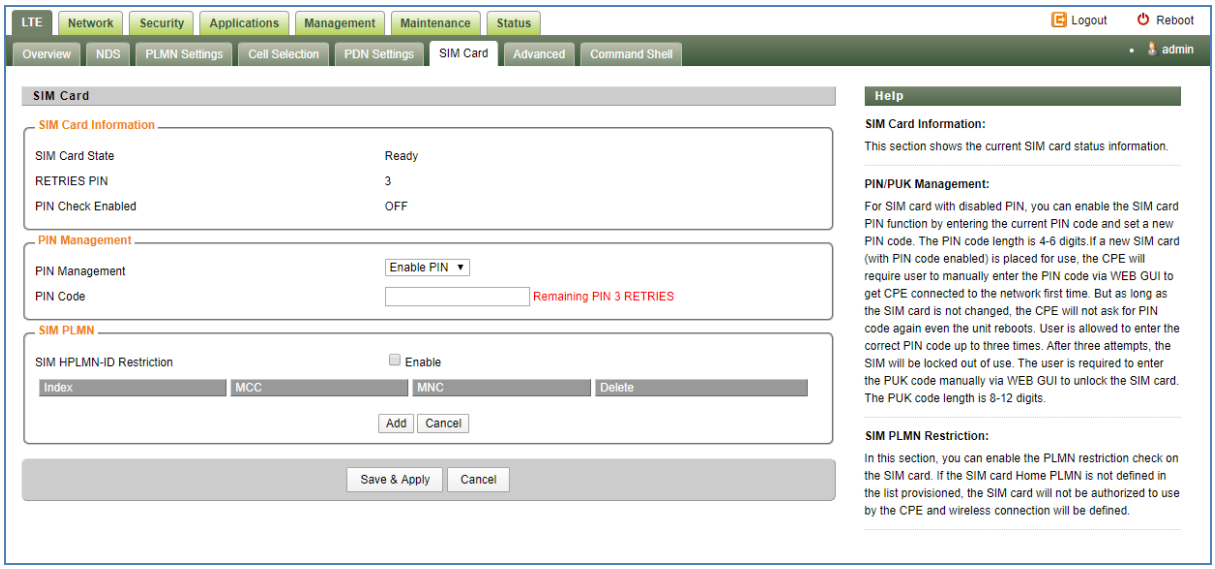
This menu is used to configure the operator APN profile. You can configure single or multiple APNs for the operator network. The below shows an example of two APN configuration.



You can view the APN status info in the Status menu.

■ SIM Card

The SIM card menu is used to view the SIM card status and perform PIN code management for SIM card. You disable or enable the SIM card PIN check on the CPE to bind the SIM card inserted.

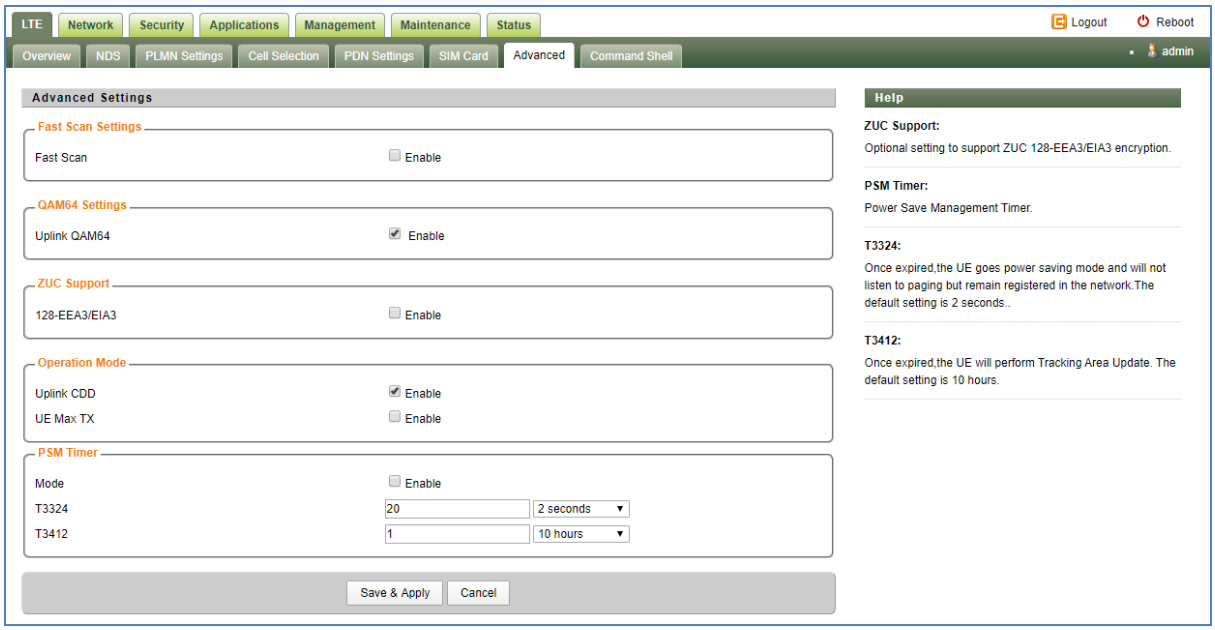


■ Advanced

In this menu, you can configure advanced options for the CPE operation.

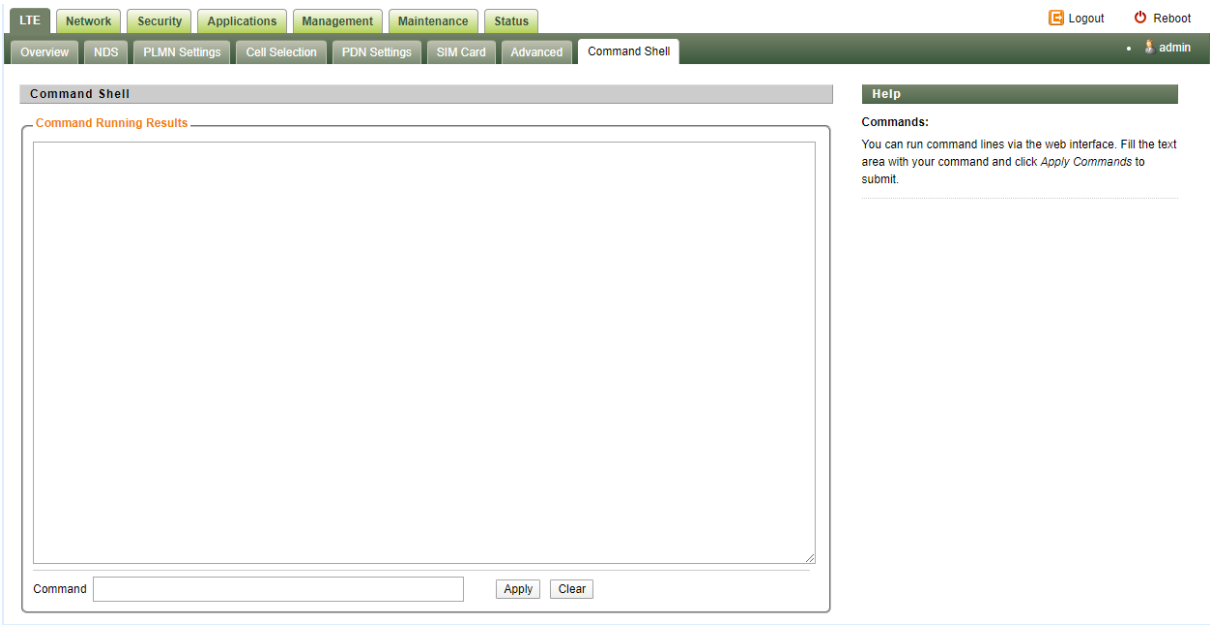
Fast scan will allow you to quickly connect to good cell when they are first found instead of search the best cell. The ZUC encryption support is only required when your core network (EPC) force to use the ZUC encryption for access authentication. The operation mode allows you to select the UE capability for receiving and transmitting.

In addition, the PSM timer and location service UE settings can also be configured for advanced users. Default settings should be used for normal operation.



■ Command Shell

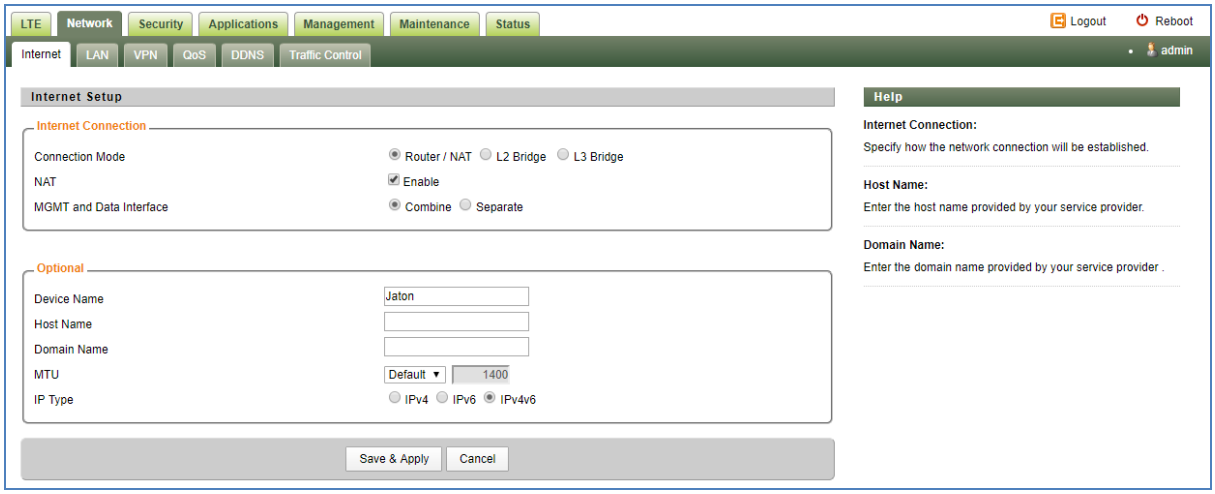
The Command Shell is used to run LTE command via the WEB GUI interface. You can type the command and click the APPLY button to execute.



5 Network Configuration

■ Internet

This section allows user to configure the CPE operation mode, device name, MTU and etc. The CPE default Operation Mode is Router, and the LAN PC connected to device LAN port will obtain IP address via DHCP server of the device. The default MTU Size is 1500, user can modify the MTU Size if necessary.



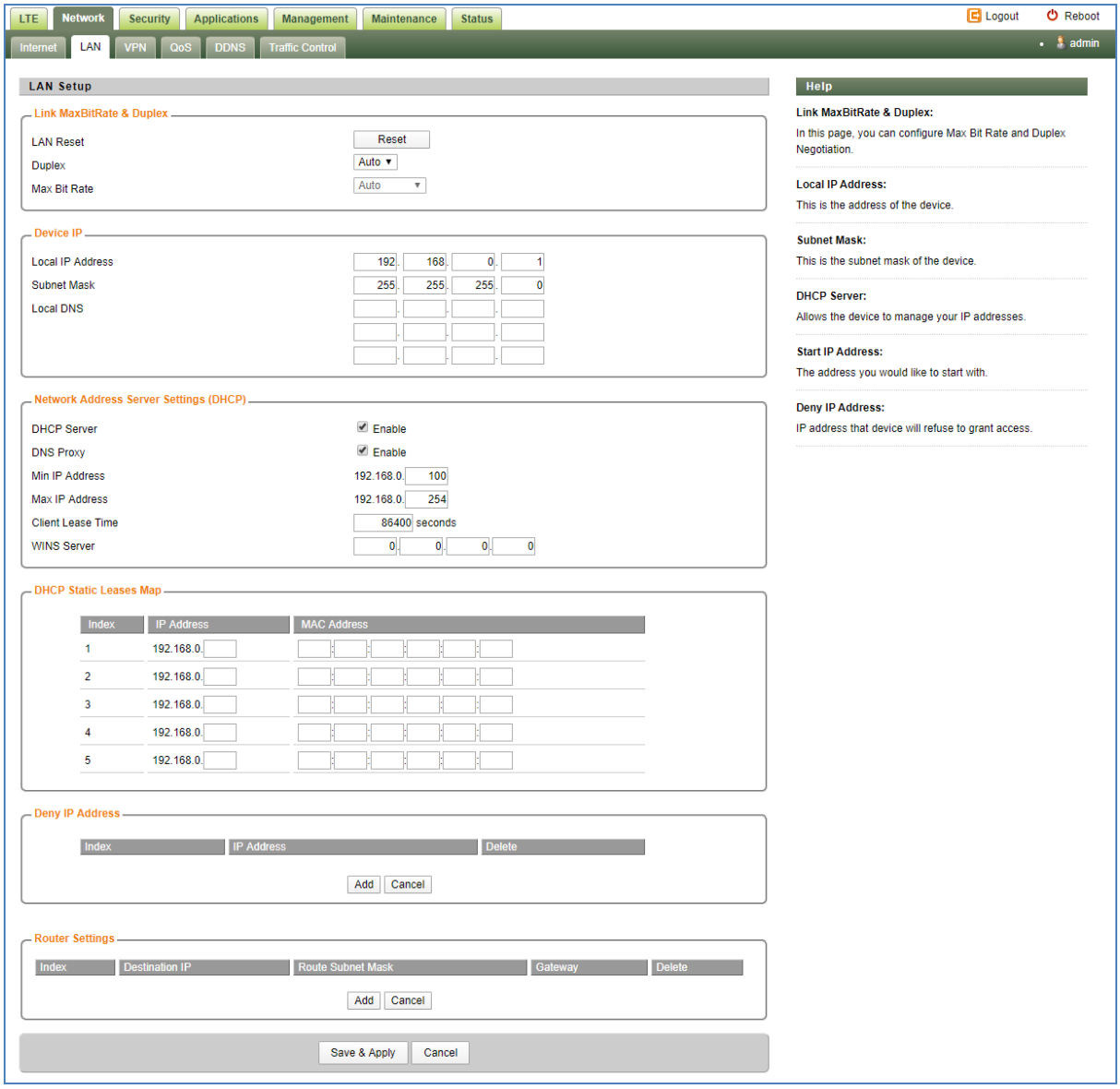
Note when setting the connection mode as L2 Bridge or L3 Bridge, there will be a warning window pops up. Remember the management IP address 192.168.0.1 and click the "**ok**" button.

When the user wants to manage the home page again, the PC should be configured a static IP address as 10.1.1.X manual in order to visit the CPE managing page http://10.1.1.1.

■ LAN Setting

The LAN setting allows user to specify the device LAN IP, DHCP server setting, Local DNS and etc. When Router mode is selected, the DHCP server should be enabled by default.

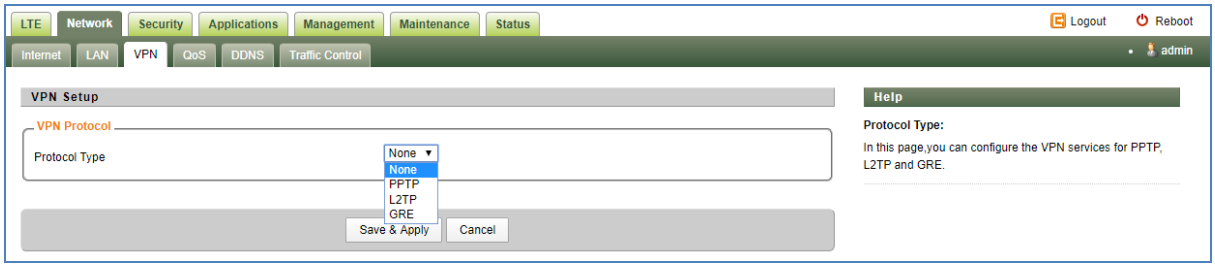
User is advised to leave the default setting unchanged for quick configuration and smooth device operation.



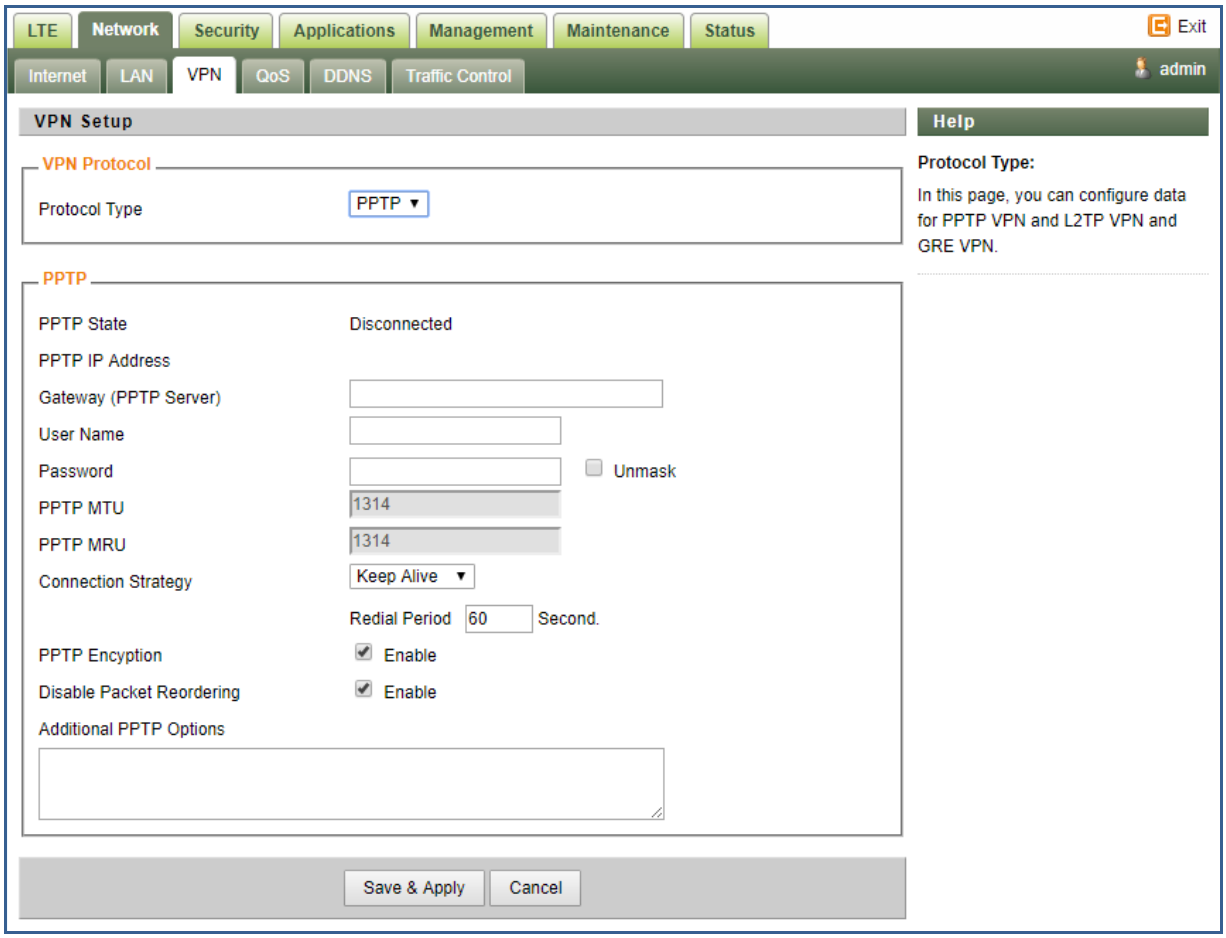
■ VPN Setting Under Router Mode

This section allows user to configure VPN service for selected connection mode. In router mode, PPTP, L2TP and GRE can be selected. In L2 Bridge mode, only L2 GRE can be configured.

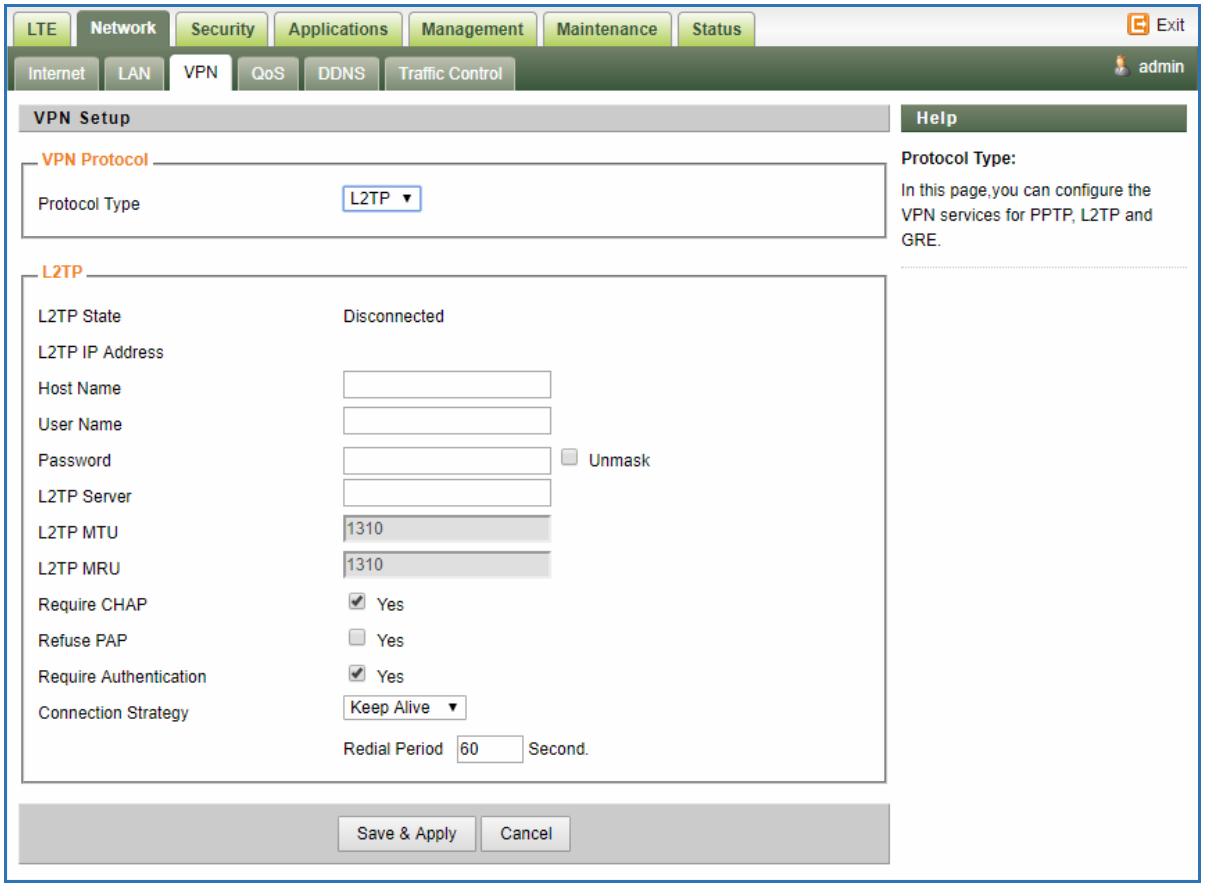
The router mode VPN configuration is shown below.



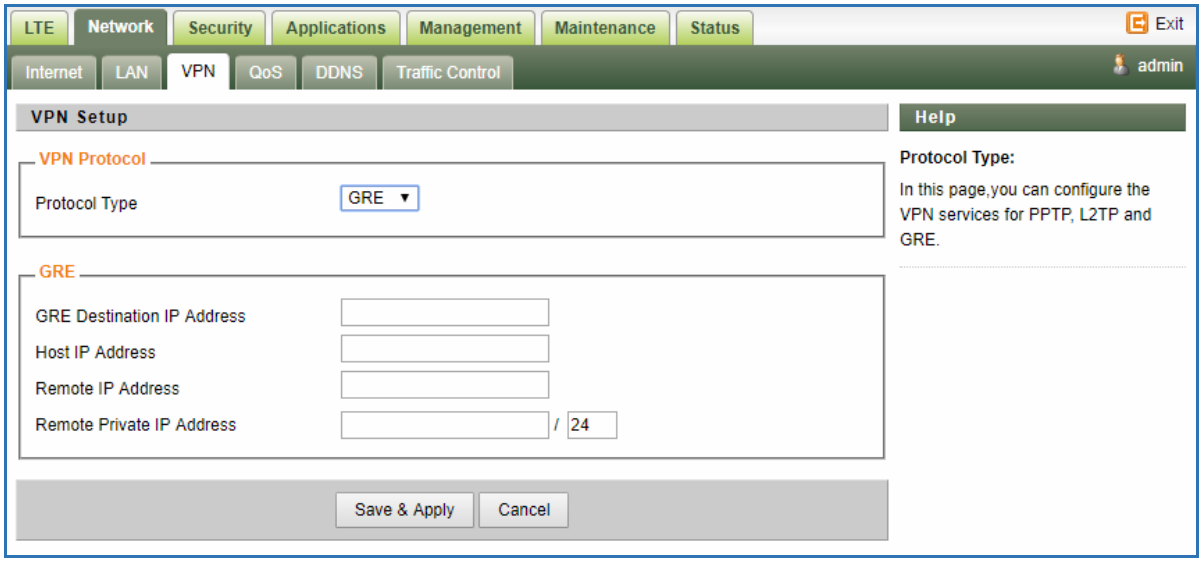
The PPTP configuration under router mode is shown below.



The L2TP configuration under router mode is shown as follows.

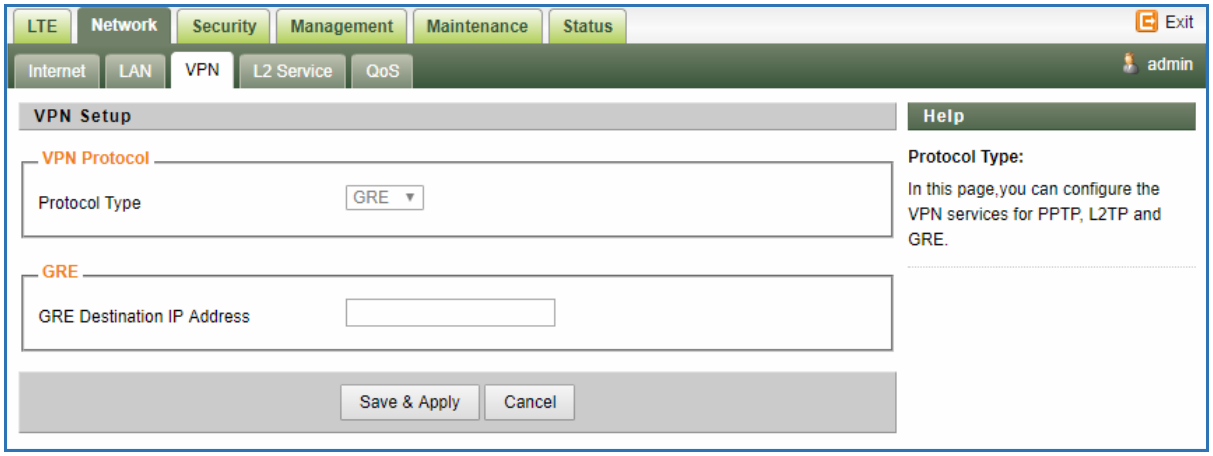


The L2 GRE configuration under router mode is shown below.



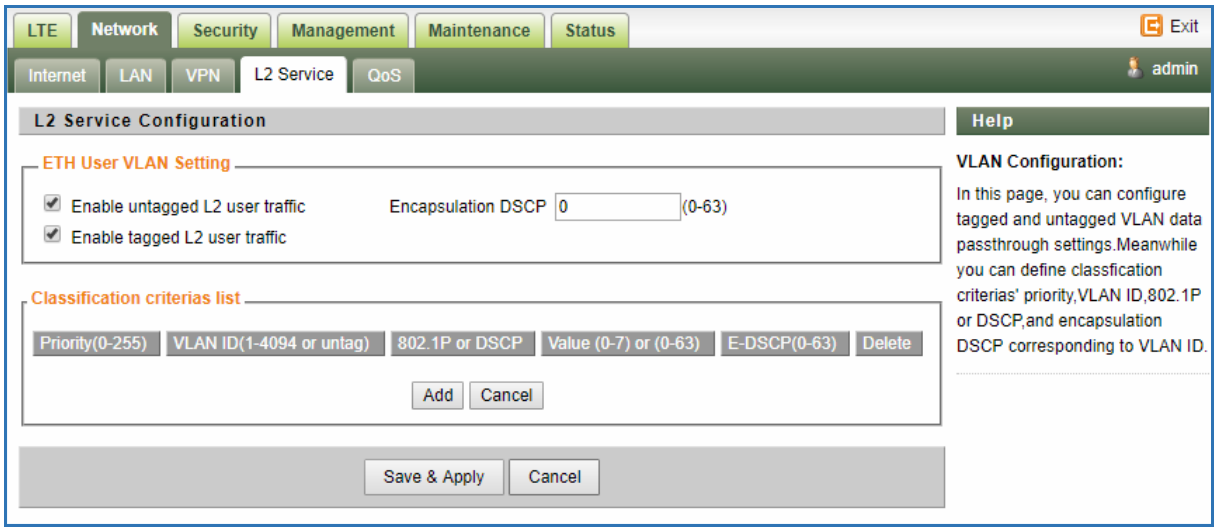
■ VPN Setting Under L2 Bridge Mode

Under the L2 Bridge connection mode, only L2 GRE can be configured as follows.



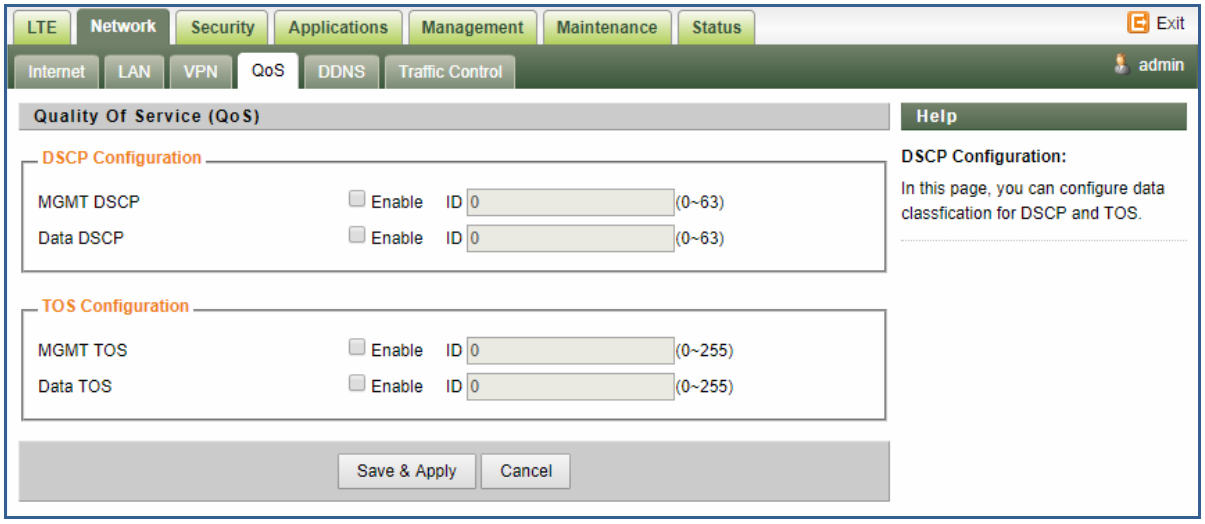
■ L2 Service Under L2 Bridge Mode

Under the L2 Bridge connection mode, the user can use L2 Service configuration to manage and tag 802.1p or DSCP for different VLAN packets.



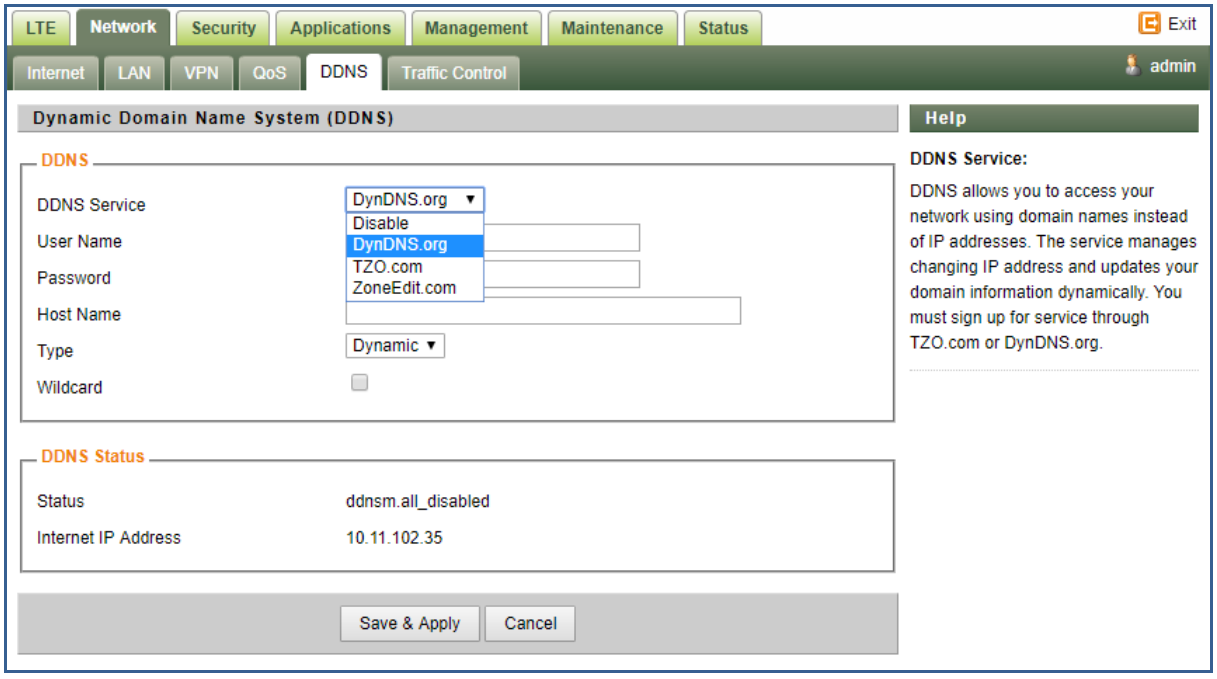
■ QoS Setting

This configuration menu allows user to tag DSCP or TOS value for CPE local data (Management) and LAN port data (Data).



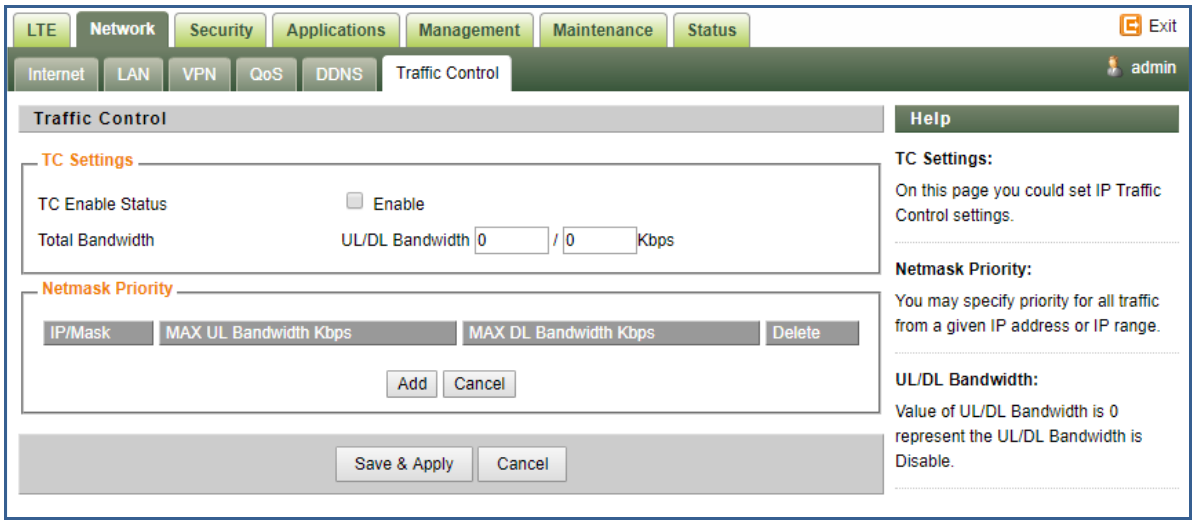
■ DDNS Setting Under Router Mode

This configuration menu allows user to configure use of different DDNS service for router mode operation.



■ Traffic Control Setting Under Router Mode

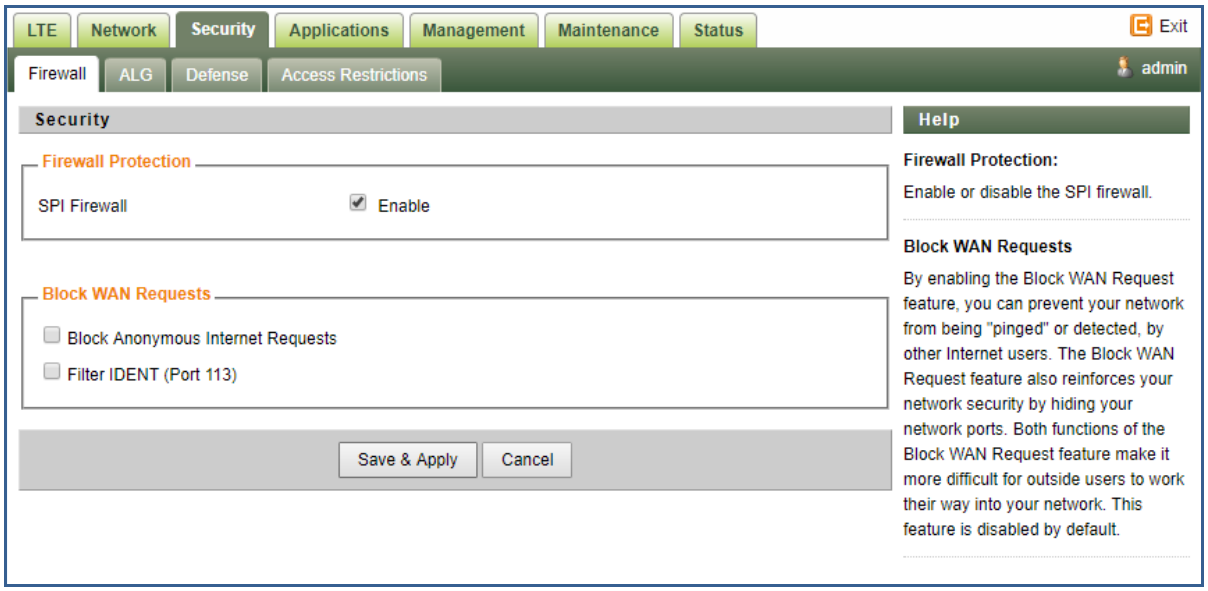
This configuration menu allows user to configure the data priority and allowed bandwidth for LAN data traffic.



6 Security Configuration

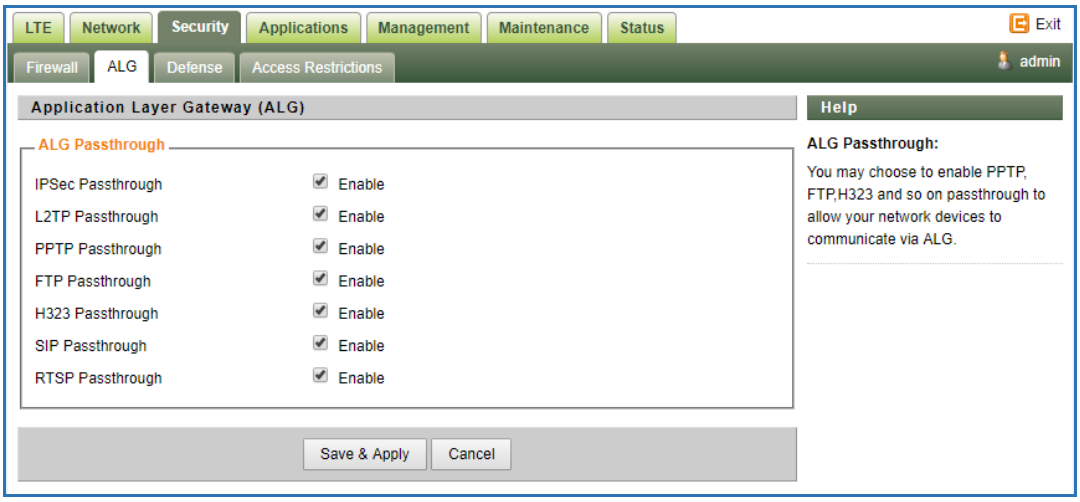
■ Firewall

This allows user to configure CPE firewall.



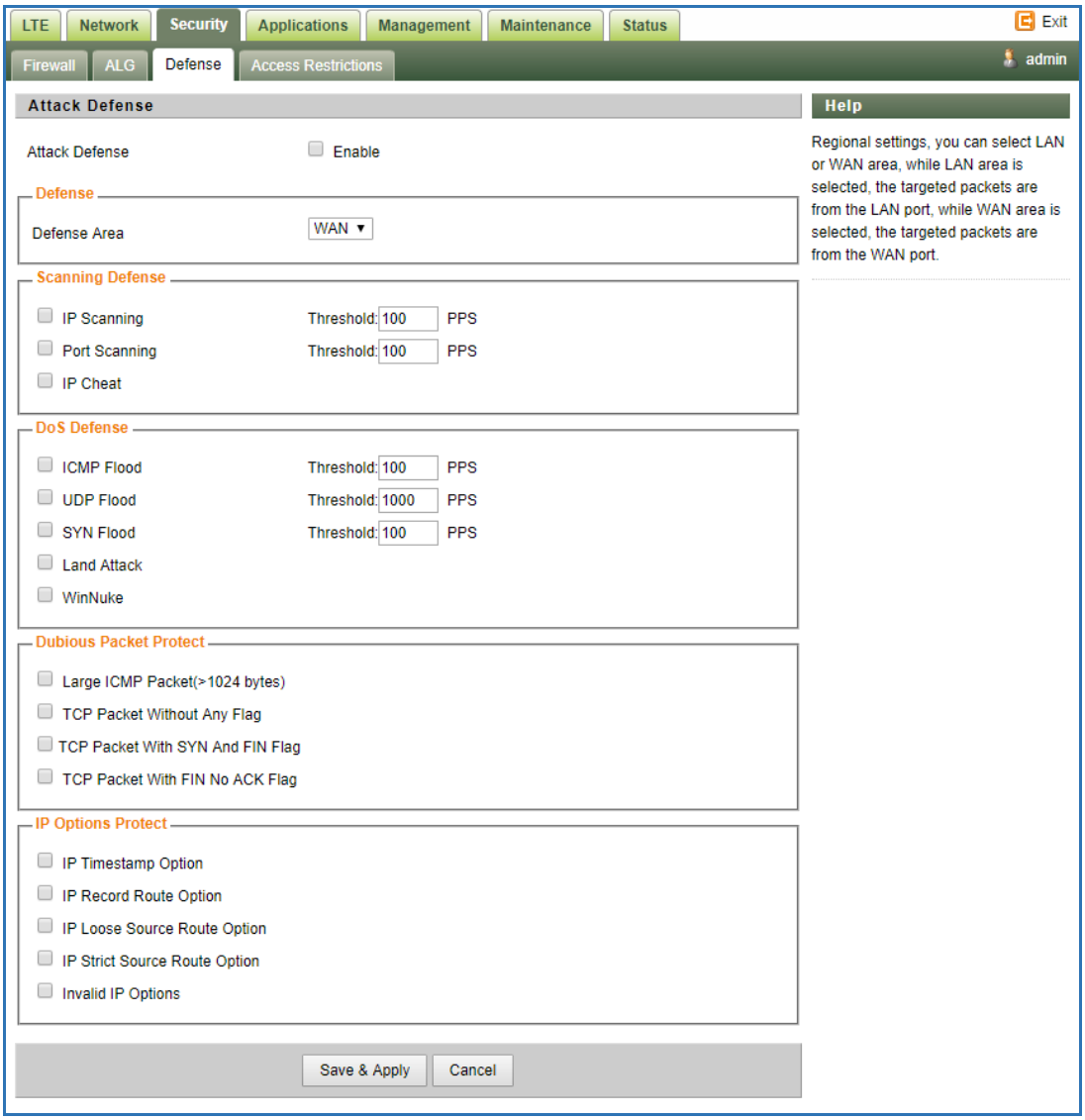
■ ALG

This allows user to configure the application level gateways for many common applications.



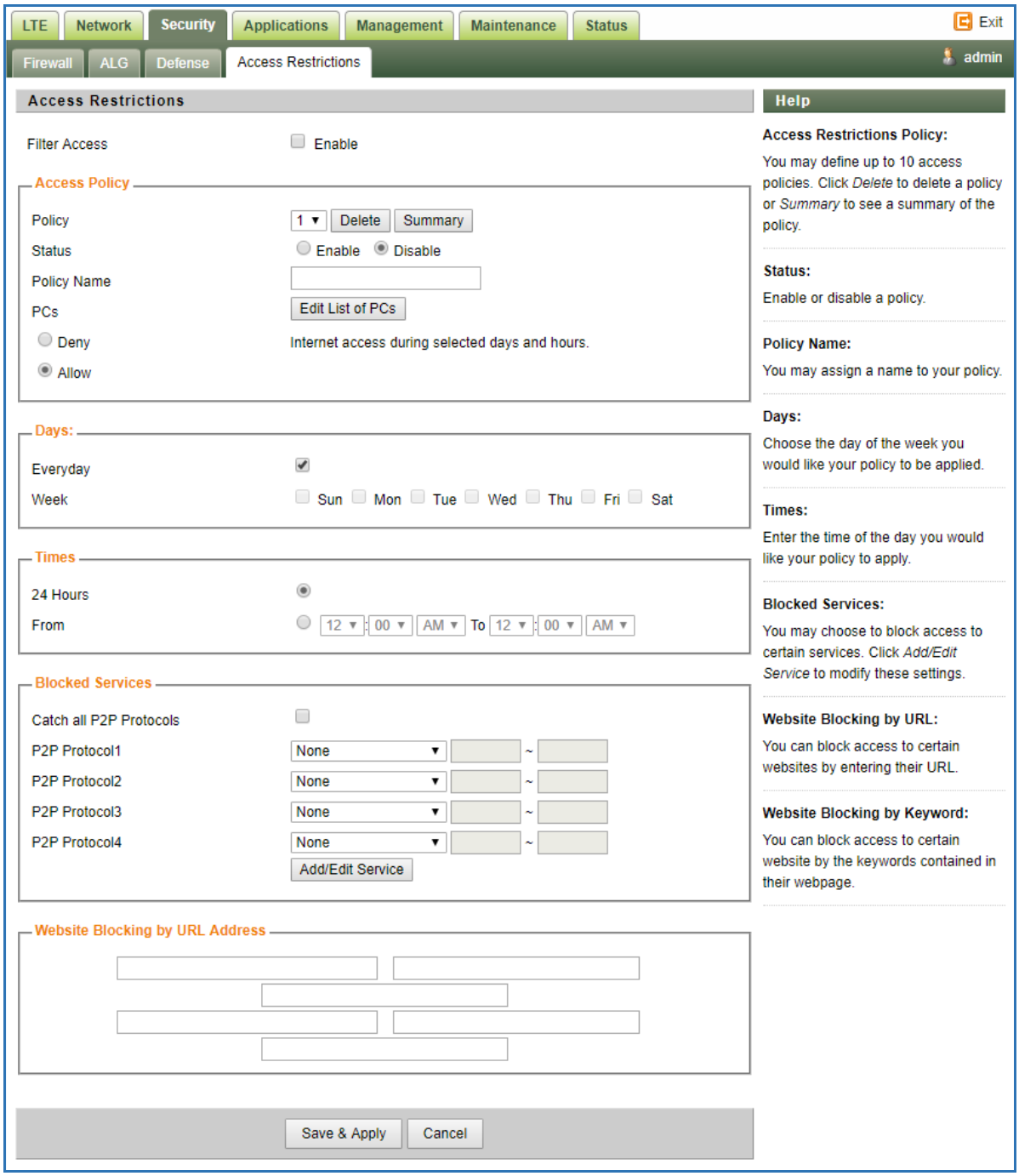
■ Defense

This allows user to configure defense policy for the LTE and local LAN interface to prevent hostile attack.



■ Access Restrictions

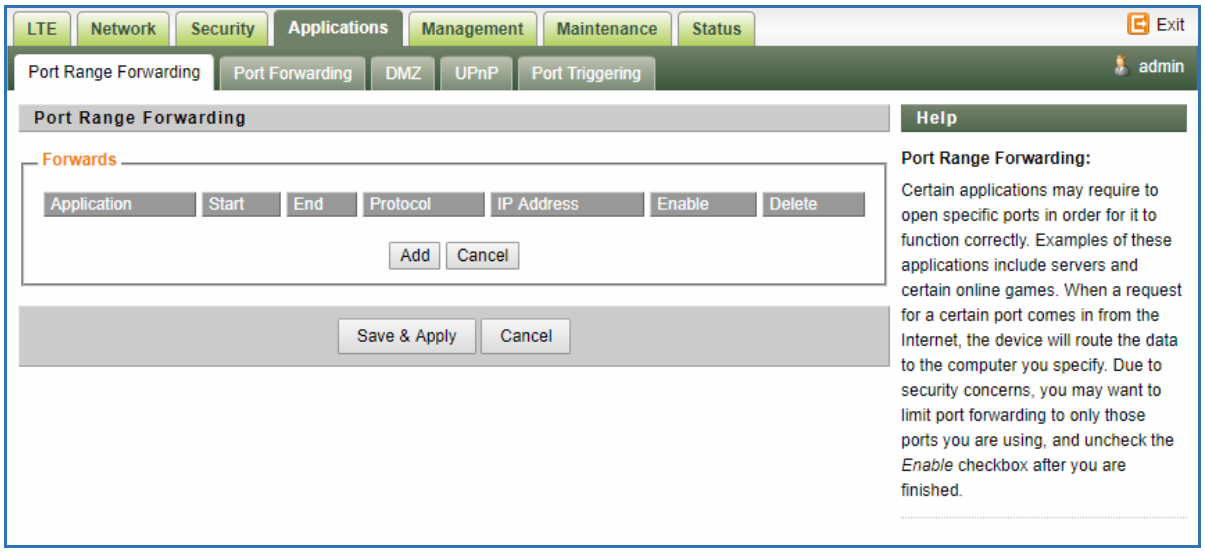
This allows user to define access policy for LAN devices. It can support URL blocking as well.



7 Applications Configuration

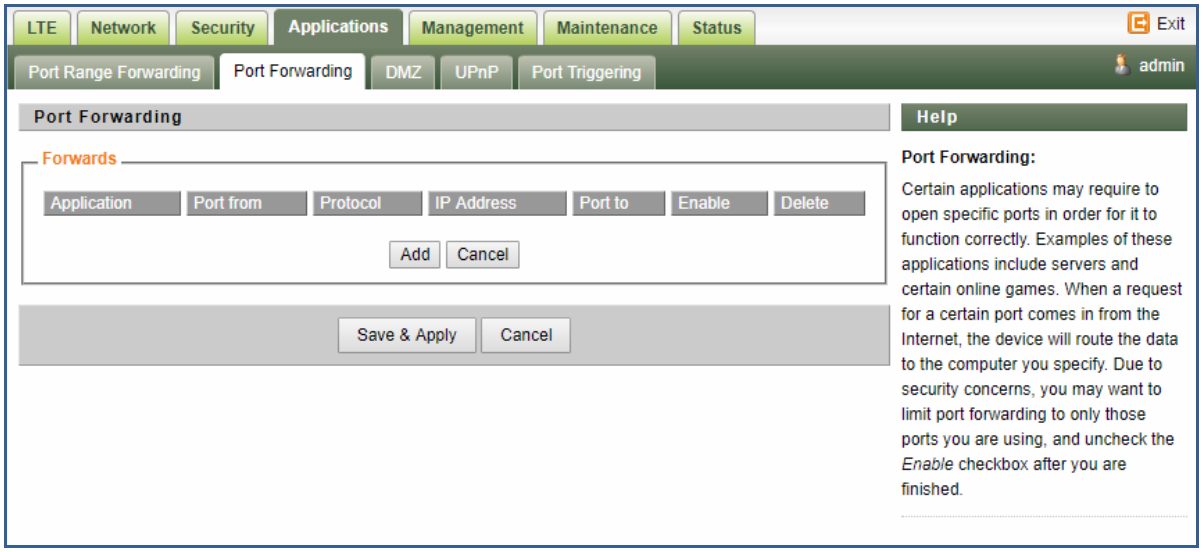
■ Port Range Forwarding

This allows user to configure the port range forwarding rules for the CPE in router mode.



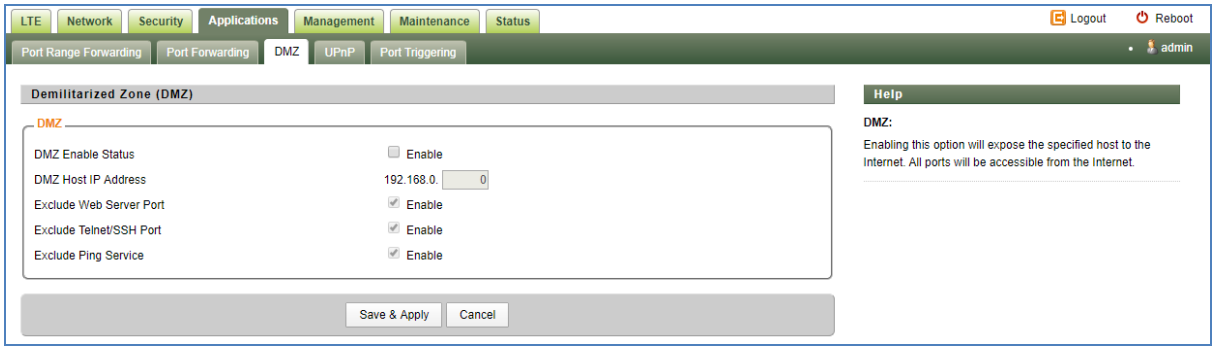
■ Port Forwarding

This menu allows user to configure the port forwarding rules for the CPE in router mode.



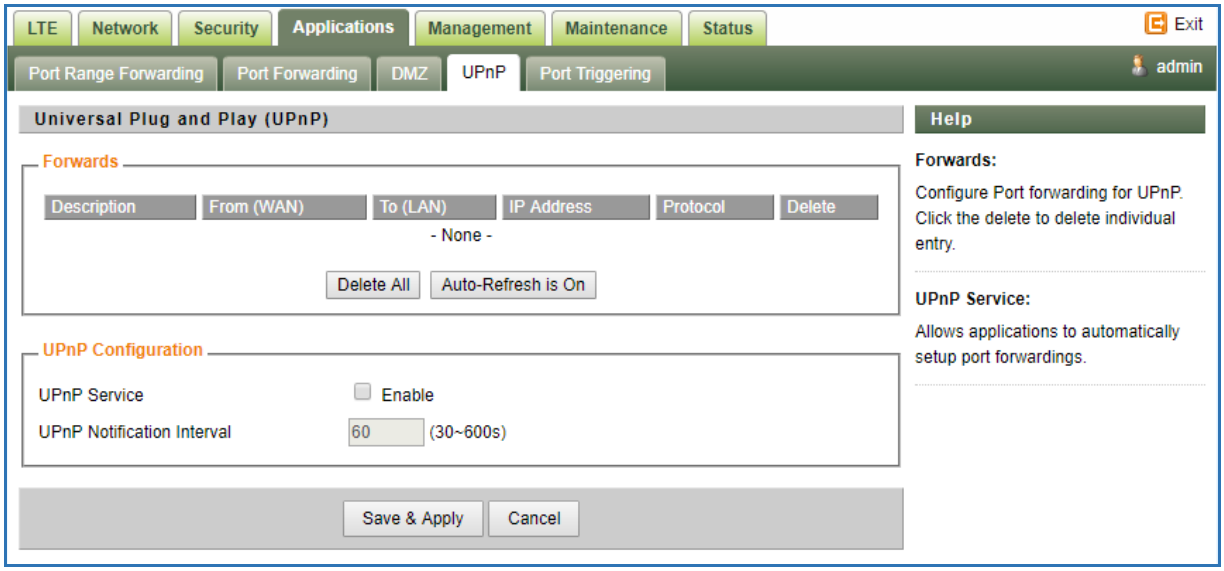
■ DMZ

This menu allows user to configure the DMZ setting for CPE in router mode. Web server, Telnet/SSH and Ping Service port can be exempted from DMZ mapping if required. By enabling DMZ option will make the specified local LAN host (DMZ IP) exposed to Internet.



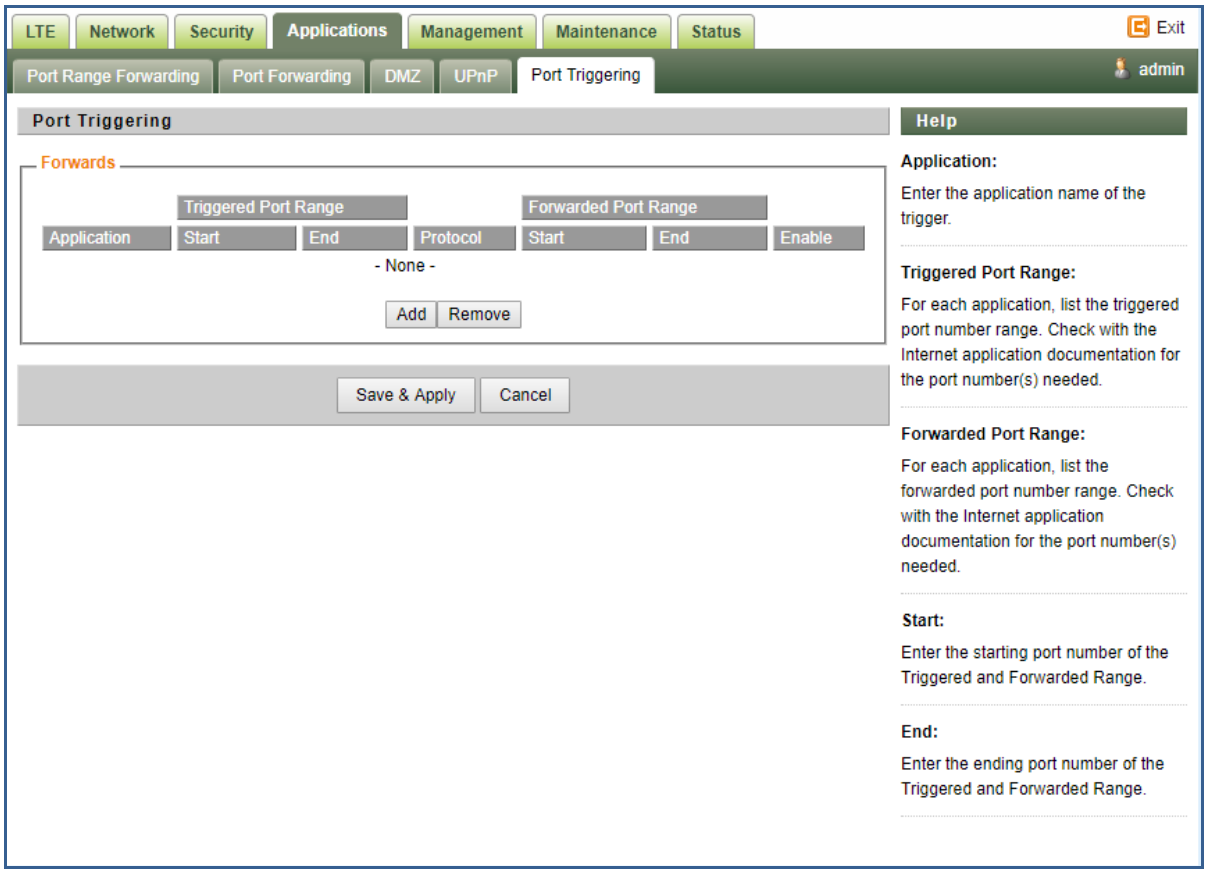
■ UPnP

This menu allows user to configure the uPnP application for on-demand "DMZ" support. The current forwarding rules created can be viewed and cleared if required.



■ Port Triggering

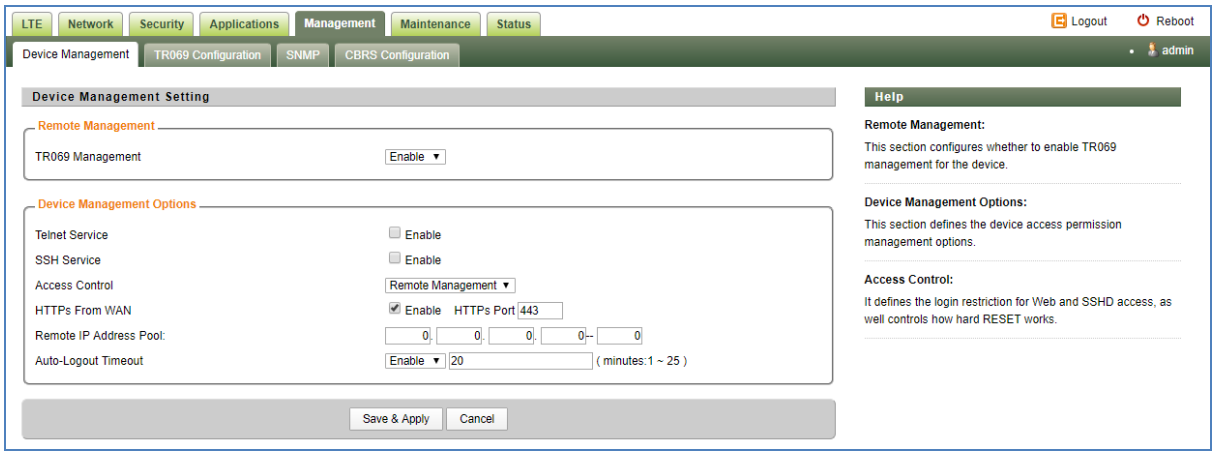
This menu allows user to configure forward certain port range to different port range for specific protocol.



8 Management

■ Device Management

The menu allows user to configure device management mode and various control. Telnet, SSH, and HTTPs can be enabled or disabled via configuration. Auto WEB GUI logout can also be configured.

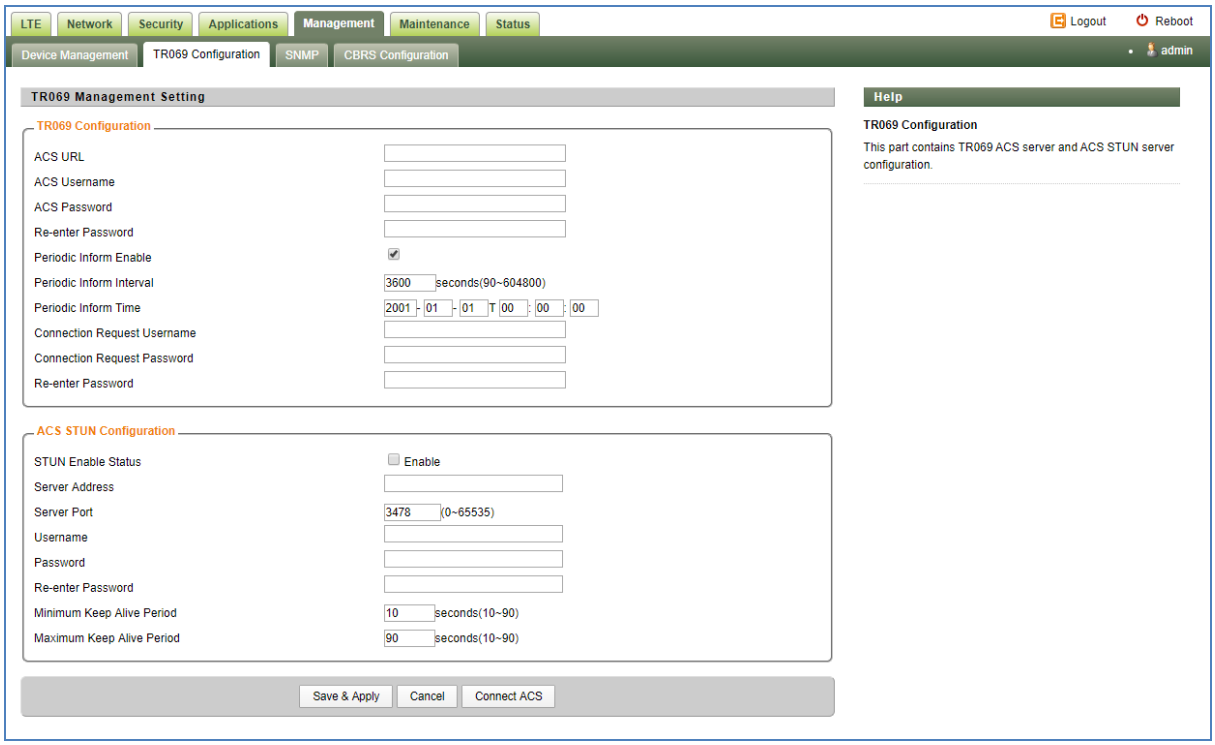


When Telnet is enabled, user can telnet to CPE according to the below steps:

- cmd shell and run command:
- telnet 10.1.1.1
- Login: root
- Password: root123

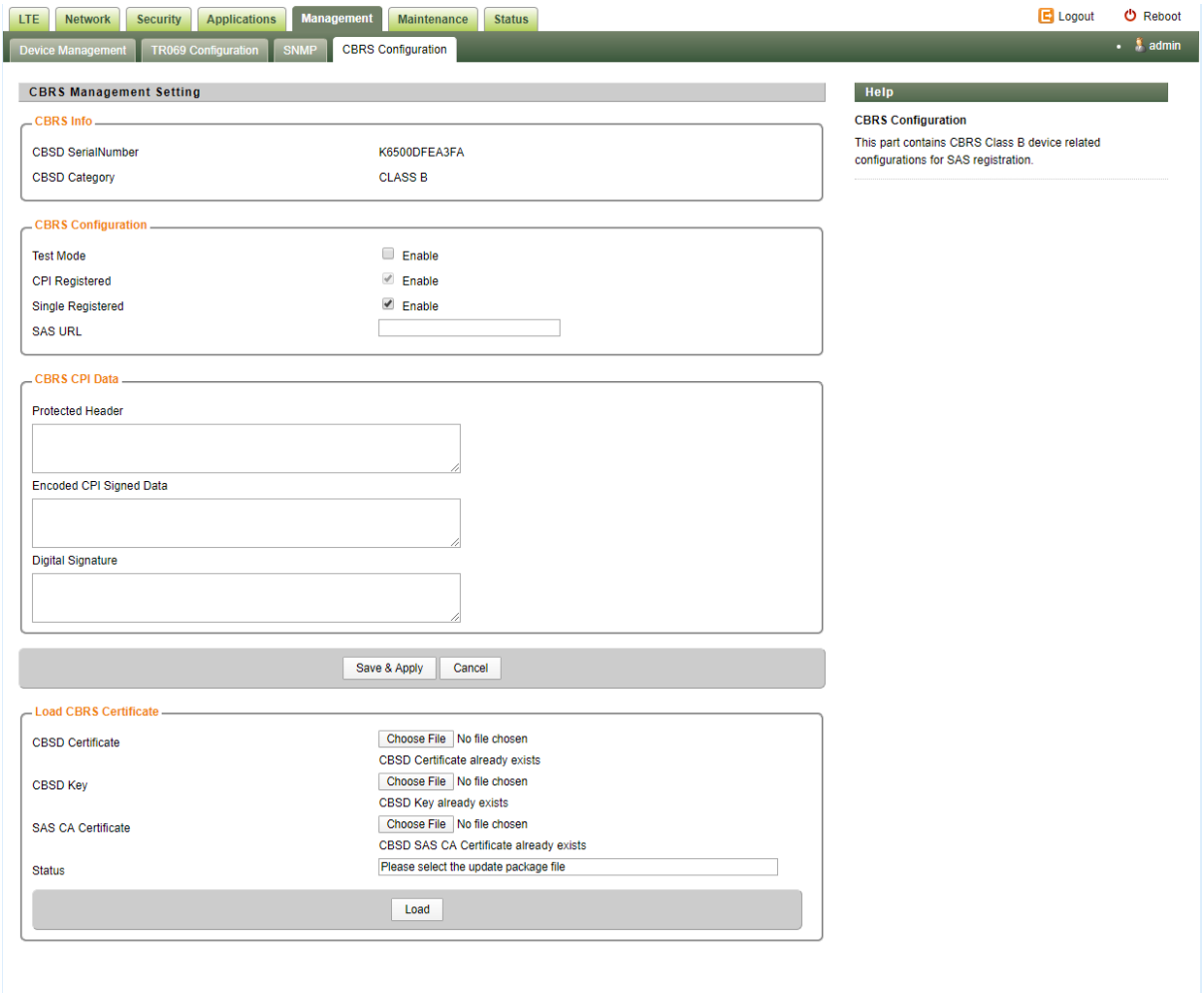
■ TR069

The menu allows user to configure the necessary setting for TR069 management of the CPE device.



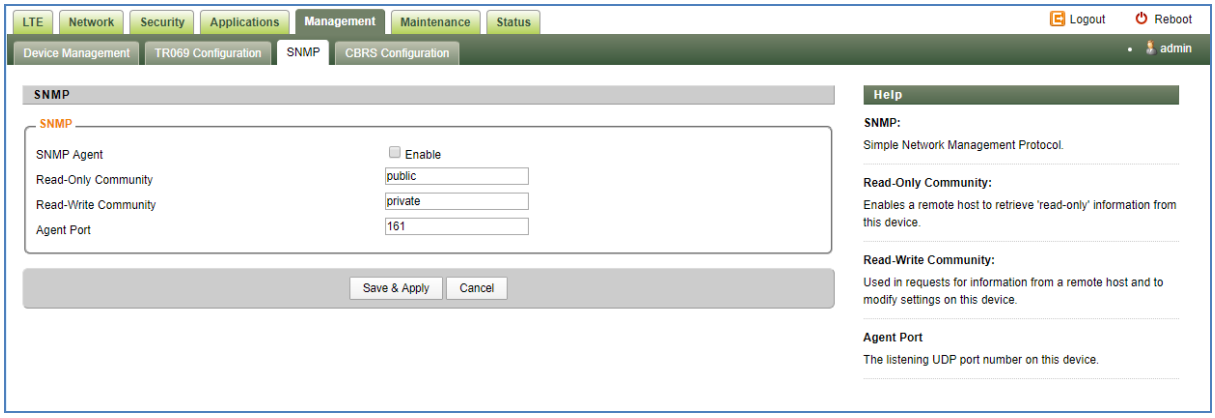
■ CBRS Configuration

The menu allows user to configure the necessary setting for CBRS SAS registration of the CPE device.



■ SNMP

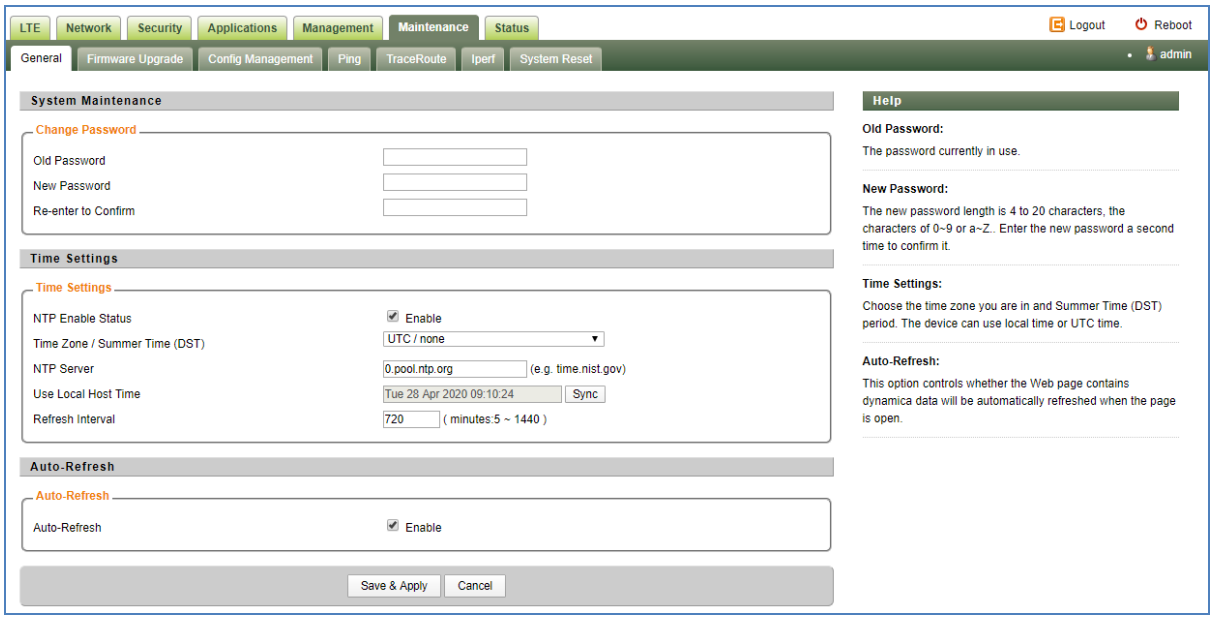
The menu allows user to configure the SNMP setting.



9 Maintenance

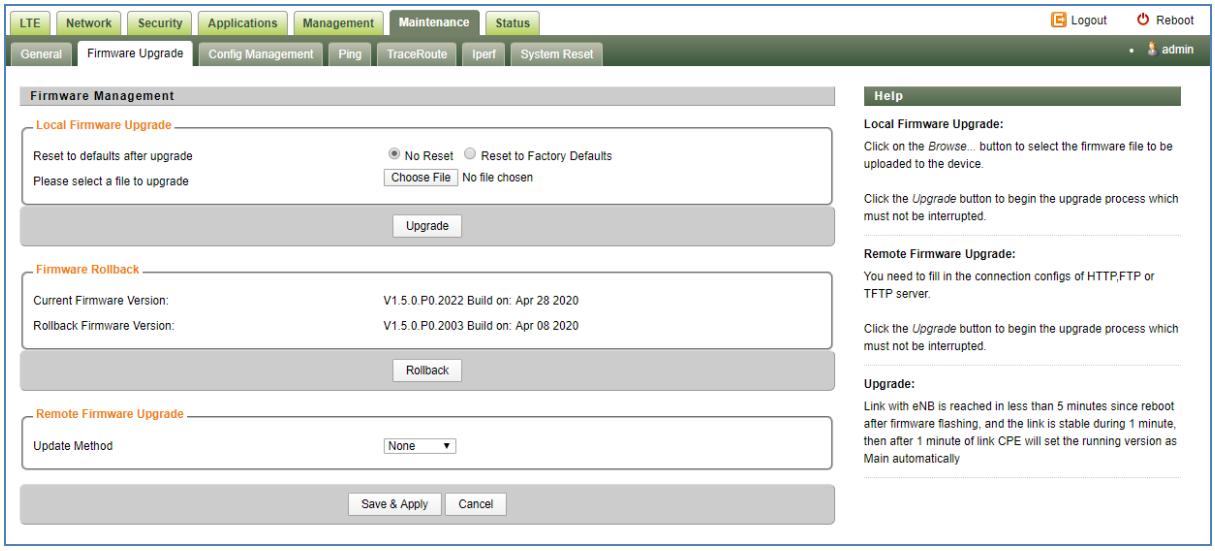
■ General

The menu allows user to configure the WEB GUI login password, time and language setting.



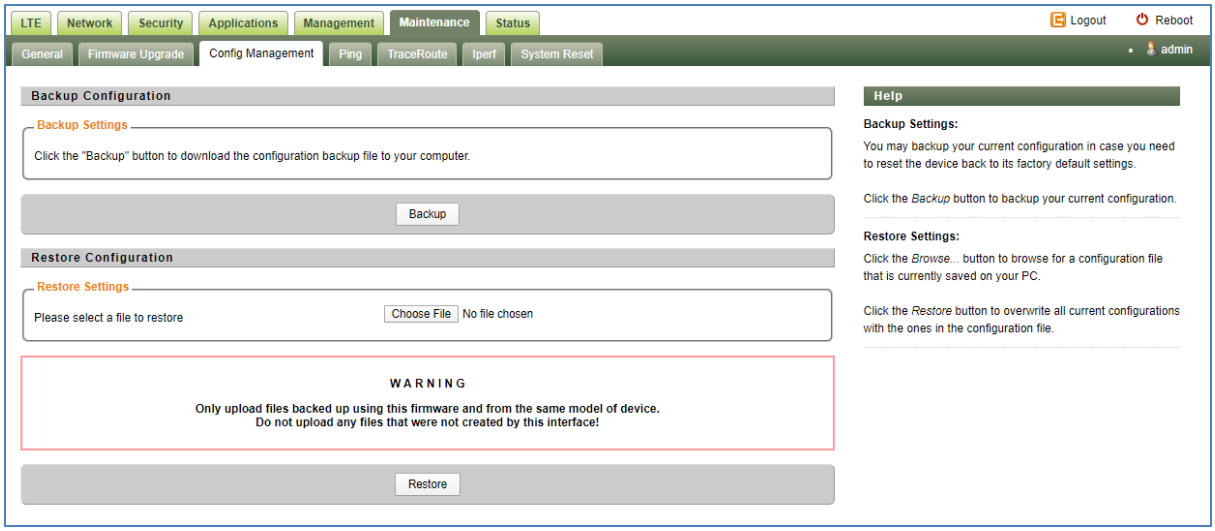
■ Firmware Upgrade

This menu allows user to perform firmware upgrade via WEG GUI with option to reset to factory setting. It can also configure the remote upgrade using FTP, TFTP or HTTP.



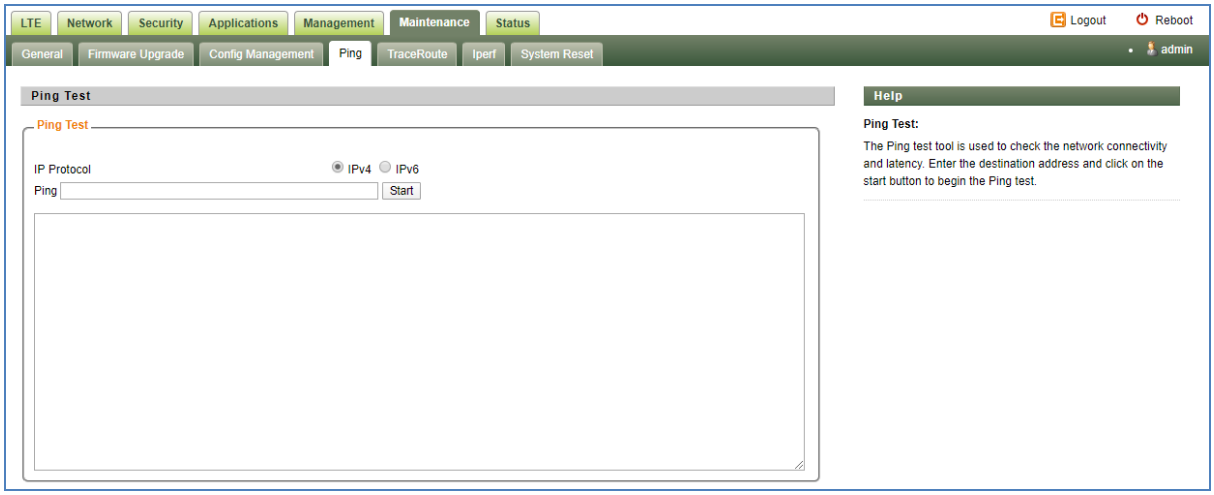
■ Config Management

This menu allows user to backup or restore device configuration file.



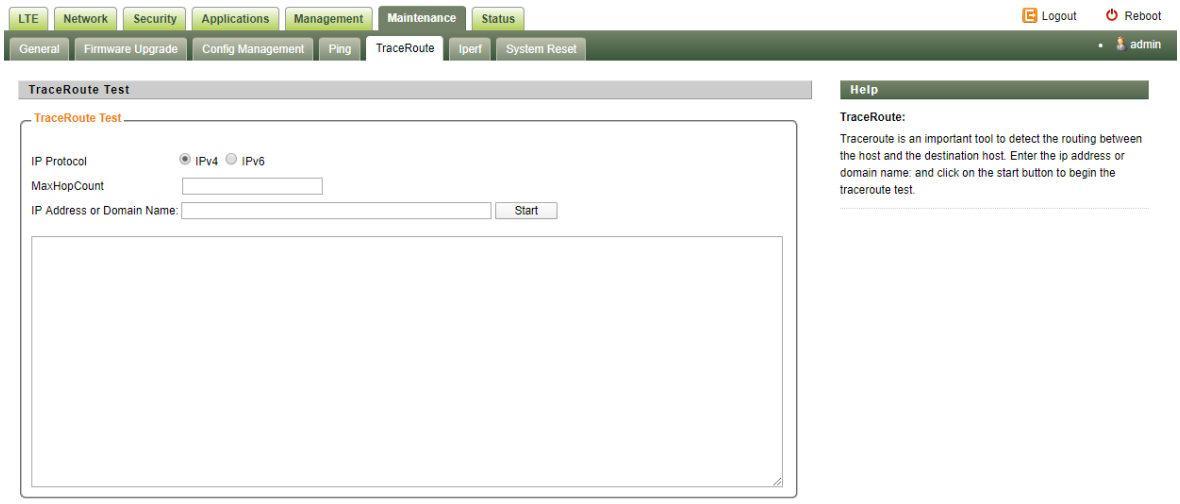
■ Ping

This menu allows user to perform PING tests using WEB GUI interface. Both IPv4 and IPv6 can be supported.



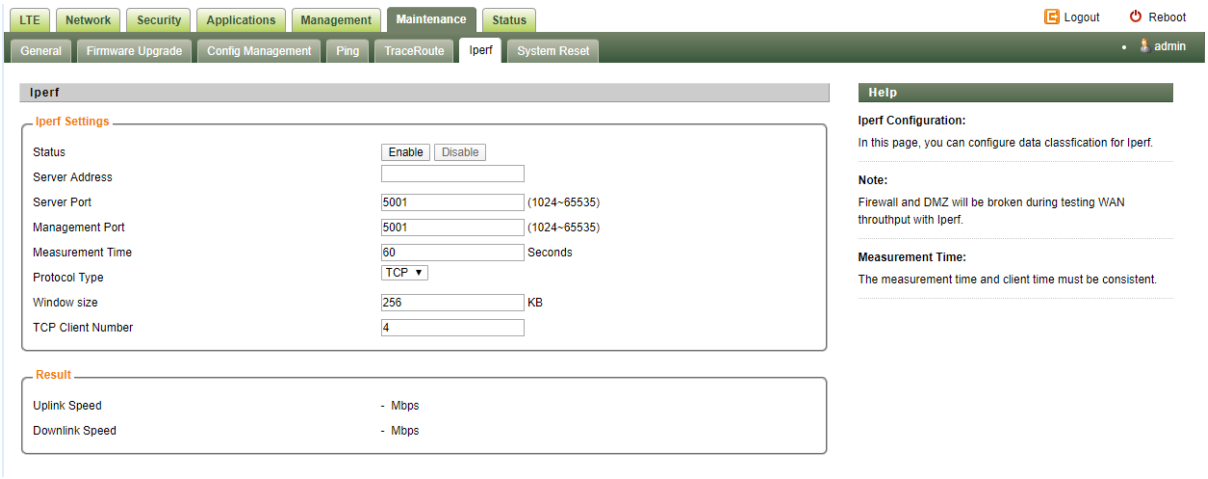
■ TraceRoute

This menu allows user to configure traceroute testing



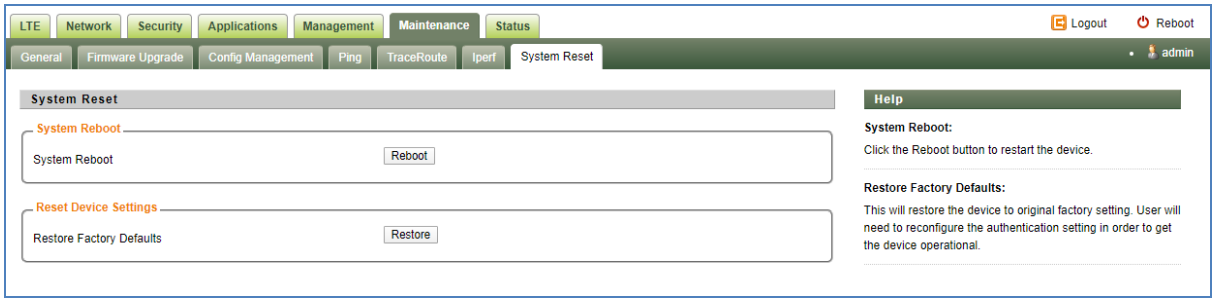
■ Iperf

This menu allows user to configure iPerf testing using WEB GUI interface. Both TCP and UDP tests can be supported. Remote iPerf server is required to conduct the tests.



■ System Reset

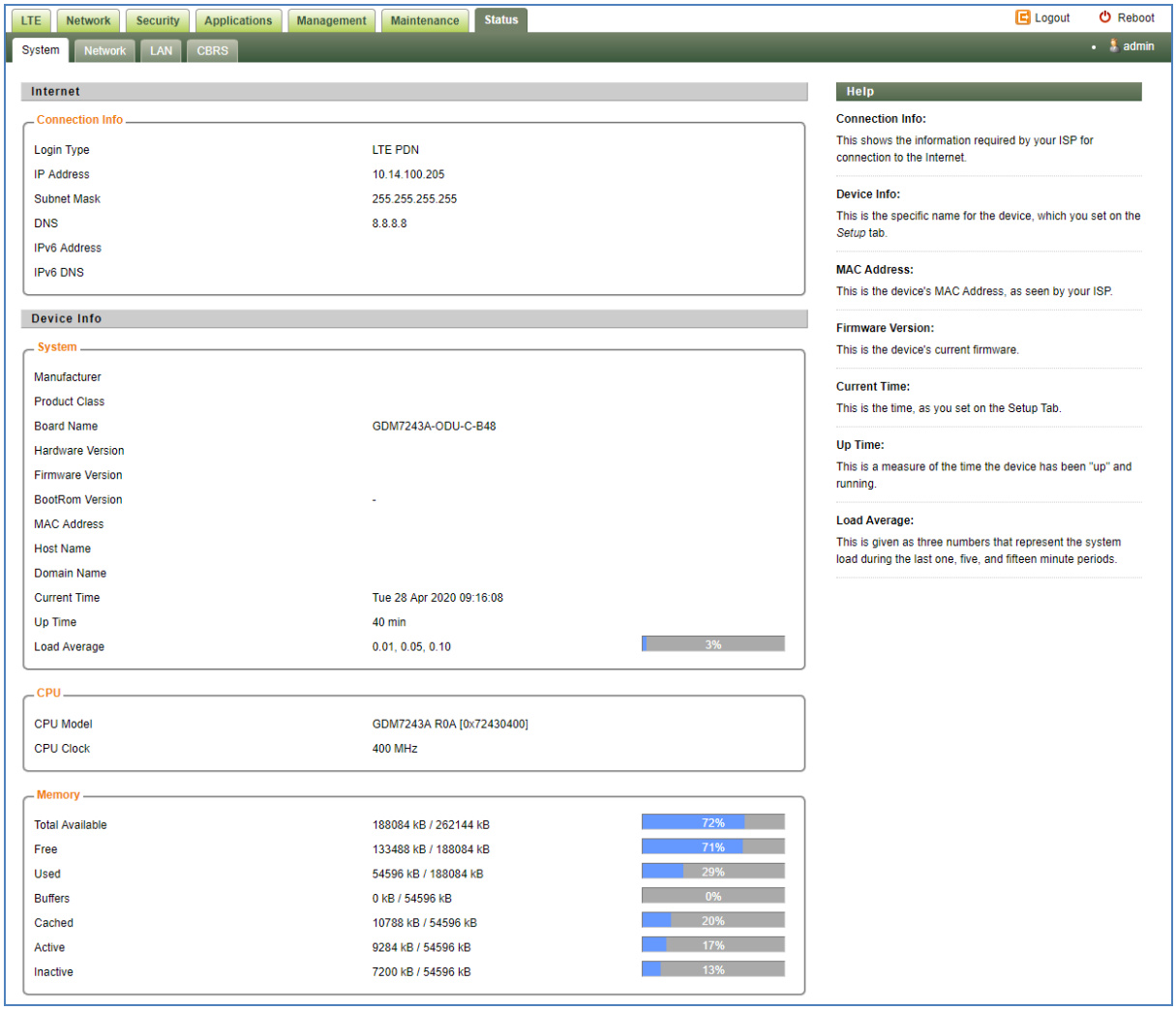
This menu allows user to reboot the device or restore the device to factory defaults. Special care needs to be taken when restoring factory defaults.



10 Status

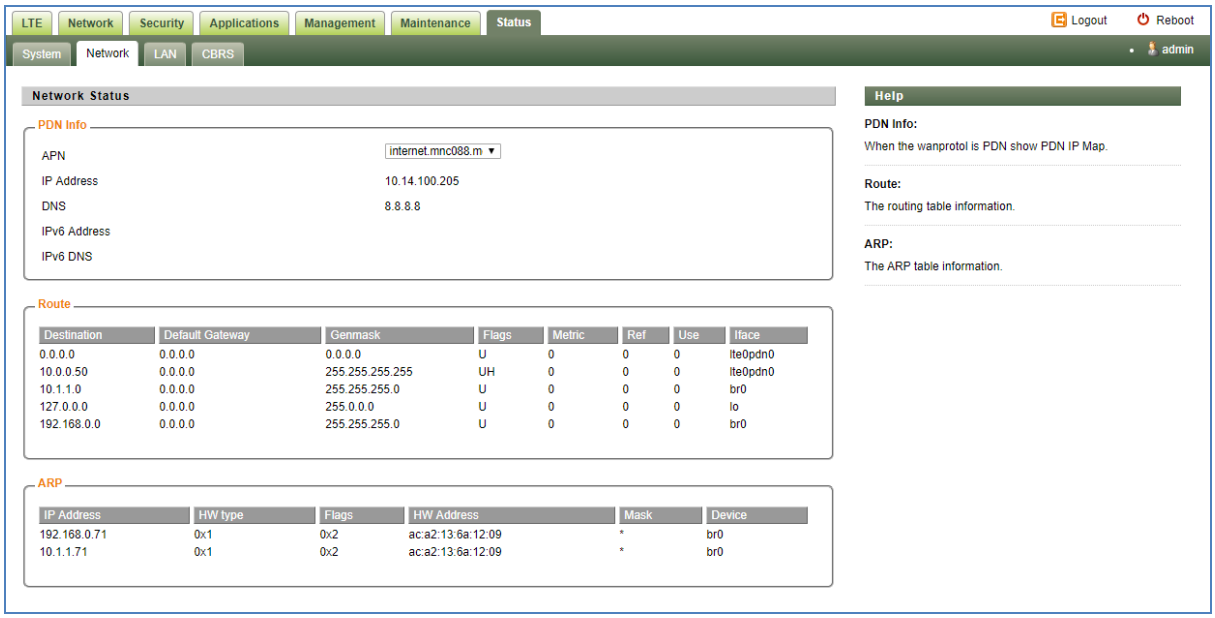
■ System

The menu shows the general system info of the CPE device. It includes connection, system, CPE and memory usage information.



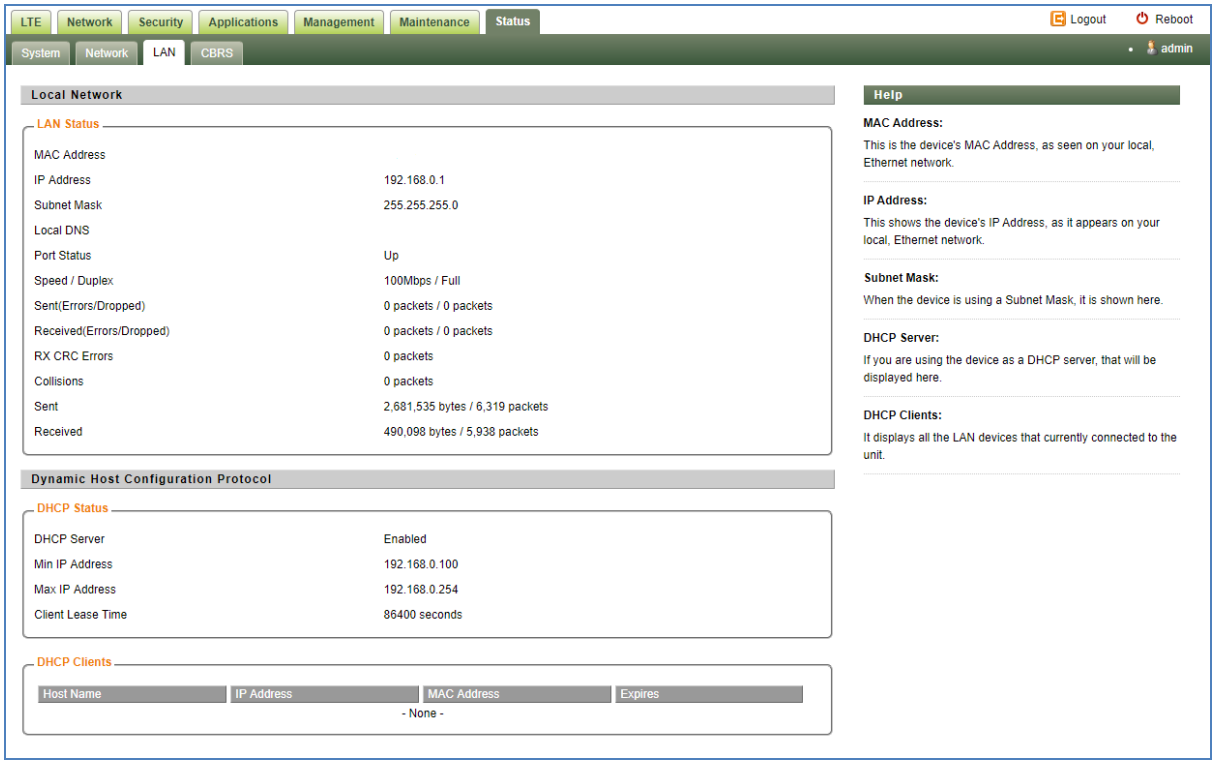
■ Network

The menu shows the general network status that includes PDN interface info, device routing info, and ARP table.



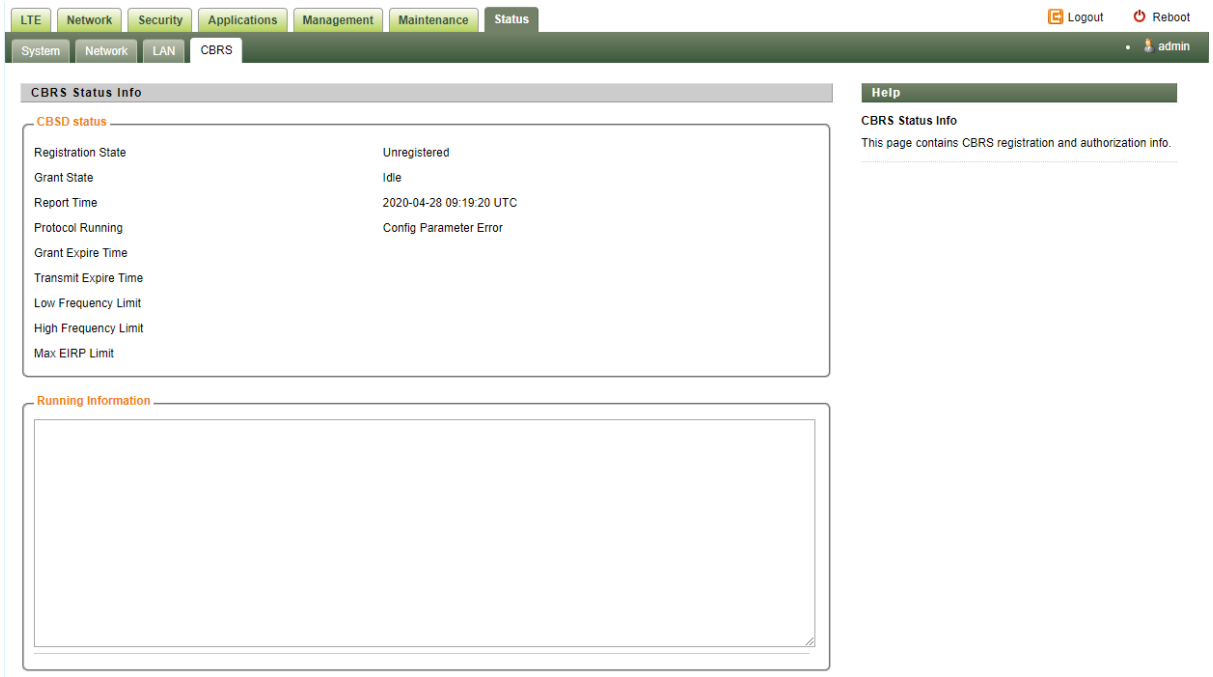
■ LAN

The menu shows the local LAN network status including the LAN interface and DHCP Server setting and current DHCP clients connected.



■ CBRS

The menu shows the CBRS status info.



11 FAQ and Troubleshooting

1) My PC cannot connect to the CPE.

- Re-plug the PC Ethernet cable and check if the PC LAN connection is up or showing activity.
- Check if the PoE power adapter LED is on. If it is not, check the power cord and make sure it is connected properly. Also verify that the AC power supply is available.
- If the PC LAN shows no activity and PoE adapter LED is off but the power cord is connected properly and there is AC supply, then it is likely the PoE adapter is damaged. Please contact distributor to obtain replacement part.

2) My PC cannot acquire IP from the CPE.

- First check if the PC NIC interface is up and working properly. Then check the PC NIC configuration. If the device is running in router mode, then make sure the PC DHCP is enabled. Open the MS-DOS or CMD window, enter "ipconfig /release" and "ipconfig /renew" commands and see if PC can obtain IP correctly.
- If the device is configured to operate in bridge mode, the PC NIC IP should be manually configured to be 10.1.1.X / 255.255.255.0 in order to gain access to the device WEB GUI. When you are done with the device configuration, the PC NIC IP should be reconfigured to use DHCP for proper LTE networking.
- If the problem persists, please contact the operator or distributor for further diagnose.

3) My CPE networking is not working properly.

- You may want to check if the LTE connection is up and running properly. You can do this by login the WEB GUI and check the Interface Info page.
- You may want to perform a factory reset and see if the problem is being corrected. You can do this by log into the WEB GUI using the "admin123" administrator password and perform restore the unit to default factory setting.
- If the problem cannot be corrected by factory reset, please contact the operator or distributor for further diagnose.

4) I forget the login password and like to reset the unit to factory default.

- Please look up the IMEI number in the CPE unit label. The unit can be reset to factory default setting by entering the IMEI number in the WEB login window.
- After the unit is reset to factory default, you can login using the default password.