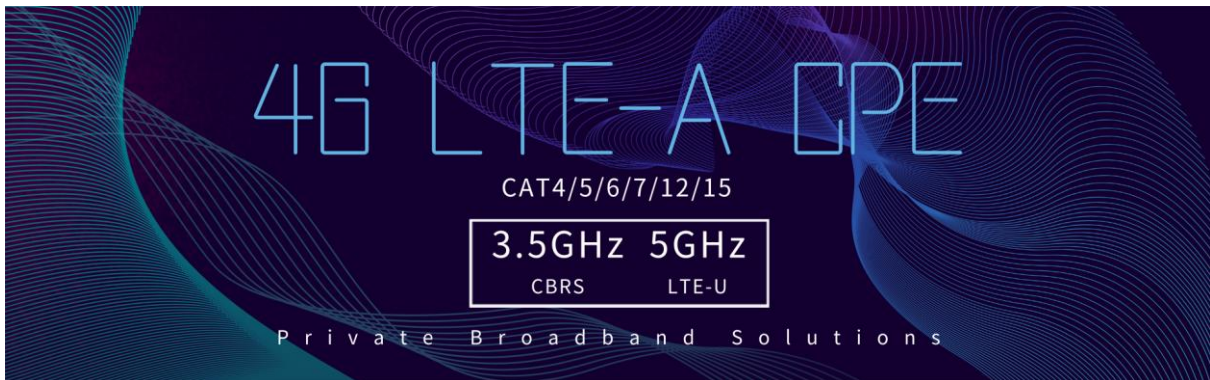


JT4100P LTE Outdoor CPE Administrator User Manual V2.0



PLEASE READ THESE SAFETY PRECAUTIONS!

RF Energy Health Hazard



The radio equipment described in this guide uses radio frequency transmitters. Although the power level is low, the concentrated energy from a directional antenna may pose a health hazard.

Do not allow people to come in close proximity to the front of the antenna while the transmitter is operating.

Protection from Lightning



Before connecting this instrument to the power line, make sure that the voltage of the power source matches the requirements of the instrument. The unit must be standards.

Disposal and Recycling Information



Pursuant to the WEEE EU Directive electronic and electrical waste must not be disposed of with unsorted waste. Please contact your local recycling authority for disposal of this product.

Reduction of Hazardous Substances



This CPE is compliant with the EU Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation (Regulation No 1907/2006/EC of the European Parliament and of the Council) and the EU Restriction of Hazardous Substances (RoHS) Directive (Directive 2002/95/EC of the European Parliament and of the Council).

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1. Overview

JT4100P is a high performance LTE CPE (Customer Premises Equipment) product designed to enable quick LTE service deployment to the remote customers. It provides high data throughput and networking features to end users who need both bandwidth and data roaming capabilities in the remote area.



■ User Interface Specification

Model	Description & User Interface
JT4100P	<ul style="list-style-type: none"> - Panel antenna: B42/43: 13dBi B40/41: 10dBi - 1 RJ45 10/100M LAN Port - SYS, SIM, ETH, and LTE (1-4) LEDs - 24V/0.5A PoE supply, ODU Power <10 Watts - Dimensions: 310 mm (L) × 122 mm (W) × 75 mm (D) - Weight: <1.5 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
Clamp	2
PC Ethernet Cable	1
Quick User Guide	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.



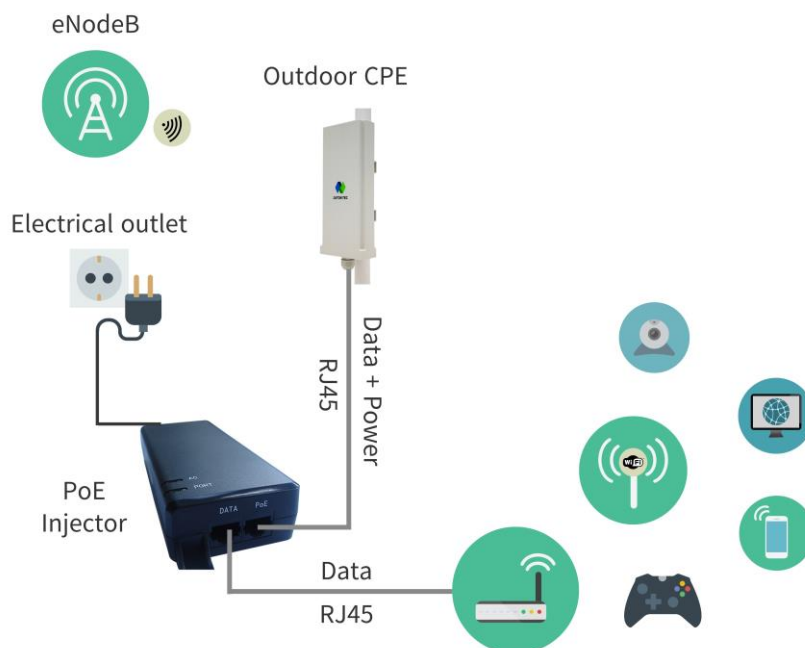
3) Installing the Equipment

■ Device Logic connection

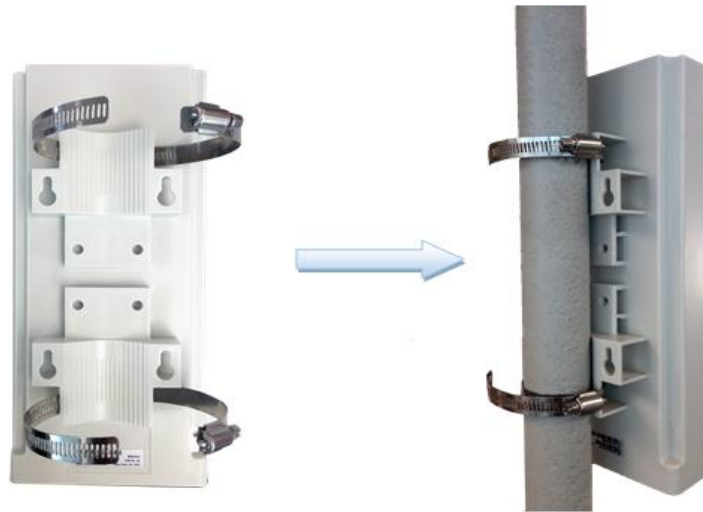
For outdoor CPE product, it is suggested that the CPE device be installed in a shaded area to avoid direct sun light exposure which may cause over heat in certain extreme weather condition.

To power on the device, the outdoor CPE must use a 24V 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 2 minutes before the device becomes operational. When the SYS LED becomes solid green, it indicates the system has completed the startup procedure.

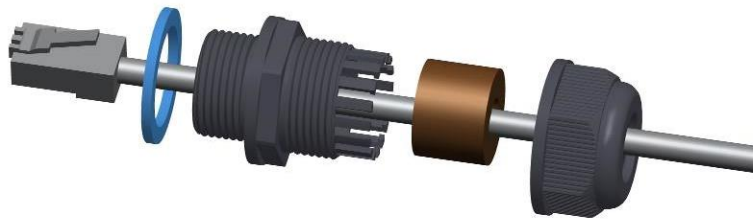
To connect PC, LAN switch or other type of IP device to the CPE product, the user should use SFTP CAT5E Ethernet cable and connect to the appropriate LAN port. Once connected, the ETH LED indicator should come on.



■ Installing Outdoor Unit (ODU) – Clamp



■ Header Connection



2 LED Display

Type	LED	Function	Description
ODU	SYS	System run indicator	Fast Blinking – Device is rebooting. Solid green – Device is in normal operation.
	SIM	SIM card indicator	Light is on – SIM card state is ready.
	ETH	LAN port status	Solid Green – LAN port is up. Blinking Green – LAN data transmission.
	TEL	VoIP Line Status	OFF (Not used for JT4100P)
	RF (4LEDs)	RF Signal Strength	4 level signal strengths indication by 4 green LEDs. 1st: RSRP < -115dBm 2nd: -115dBm <= RSRP < -105dBm 3rd: -105dBm <= RSRP < -95dBm 4th: -95dBm <= 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.

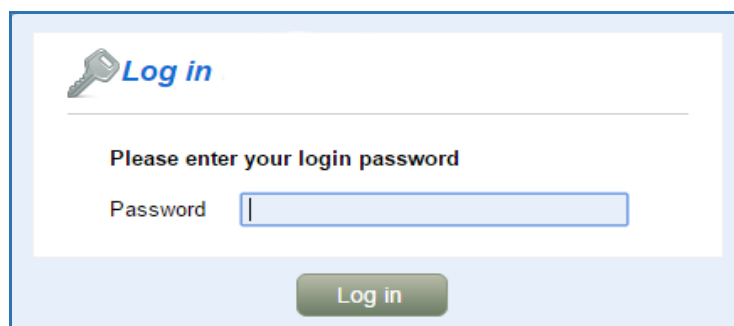


3 Managing CPE Device

JT4100P 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

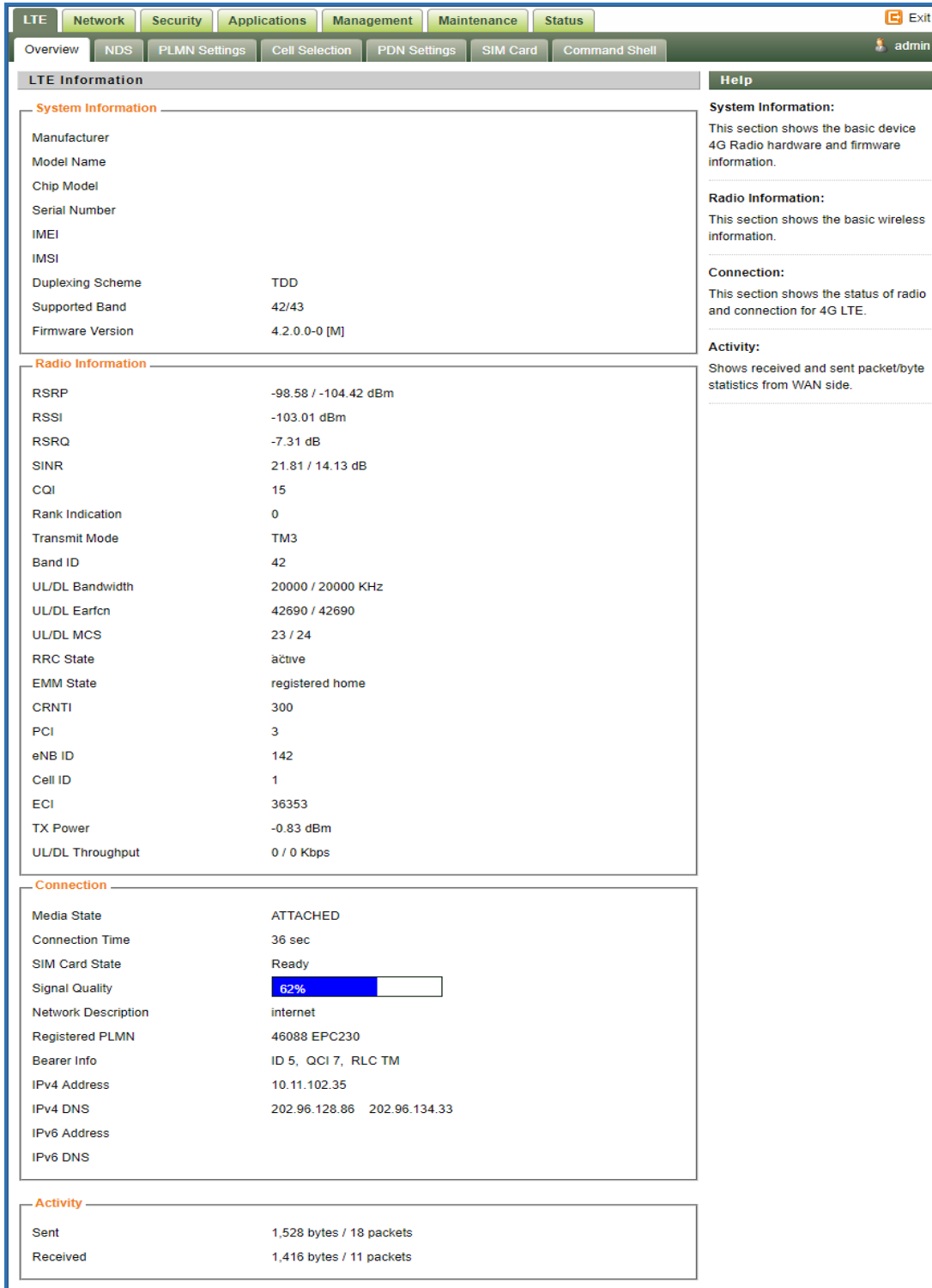
It is a preferred to setup the CPE using a Web browser from a local PC connected to device LAN port. The user should ensure that the connected PC have acquired IP address via DHCP from the device. After IP connectivity is established between the PC and CPE device, the user may launch a Web browser and specify <http://192.168.0.1> 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 “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.



The screenshot displays the LTE Configuration web interface. The top navigation bar includes tabs for LTE, Network, Security, Applications, Management, Maintenance, and Status. Below this is a secondary navigation bar with tabs for Overview, NDS, PLMN Settings, Cell Selection, PDN Settings, SIM Card, and Command Shell. The user is logged in as 'admin'.

The main content area is titled 'LTE Information' and is divided into four sections:

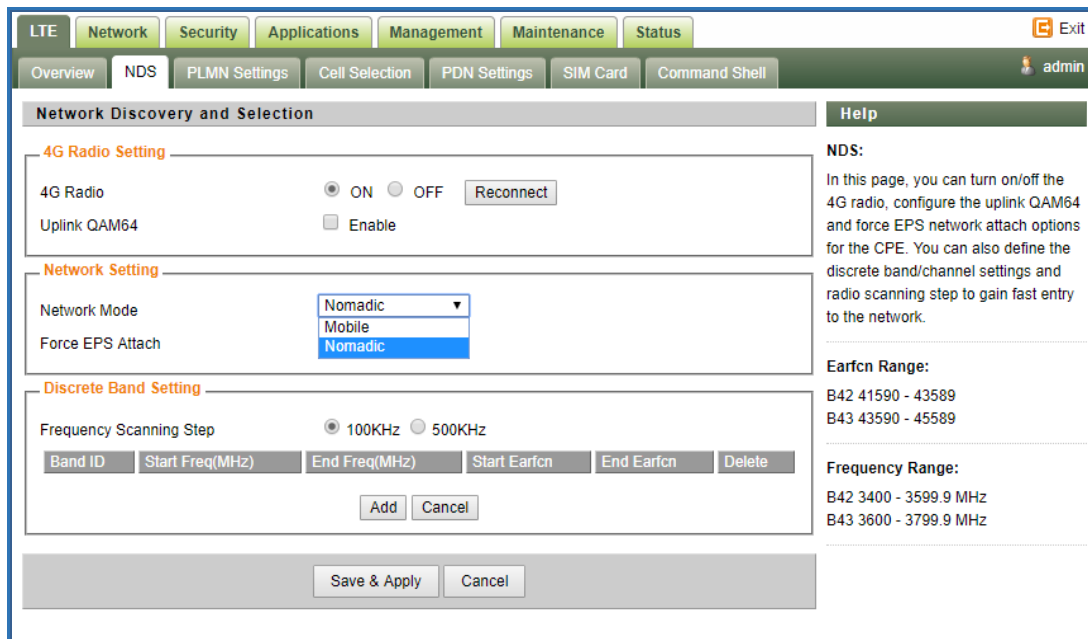
- System Information:** Displays basic device information including Manufacturer, Model Name, Chip Model, Serial Number, IMEI, IMSI, Duplexing Scheme (TDD), Supported Band (42/43), and Firmware Version (4.2.0.0-0 [M]).
- Radio Information:** Displays radio-related parameters such as RSRP (-98.58 / -104.42 dBm), RSSI (-103.01 dBm), RSRQ (-7.31 dB), SINR (21.81 / 14.13 dB), CQI (15), Rank Indication (0), Transmit Mode (TM3), Band ID (42), UL/DL Bandwidth (20000 / 20000 KHz), UL/DL Earfcn (42690 / 42690), UL/DL MCS (23 / 24), RRC State (active), EMM State (registered home), CRNTI (300), PCI (3), eNB ID (142), Cell ID (1), ECI (36353), TX Power (-0.83 dBm), and UL/DL Throughput (0 / 0 Kbps).
- Connection:** Displays connection status including Media State (ATTACHED), Connection Time (36 sec), SIM Card State (Ready), Signal Quality (62%), Network Description (internet), Registered PLMN (46088 EPC230), Bearer Info (ID 5, QCI 7, RLC TM), IPv4 Address (10.11.102.35), IPv4 DNS (202.96.128.86, 202.96.134.33), IPv6 Address, and IPv6 DNS.
- Activity:** Displays network activity statistics: Sent (1,528 bytes / 18 packets) and Received (1,416 bytes / 11 packets).

A 'Help' sidebar on the right provides descriptions for each section: System Information (basic device 4G radio hardware and firmware), Radio Information (basic wireless information), Connection (status of radio and connection for 4G LTE), and Activity (received and sent packet/byte statistics from WAN side).

■ ND&S Configuration

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

The CPE support both Mobile and Nomadic network selection mode. The Mobile mode will automatically scan the network and attach soon as the system has completed the startup procedure. The Nomadic mode allows user to configure the fixed channel and perform PLMN & cell selection based on certain criteria as specified in “Cell Selection” tab.



The screenshot displays the 'Network Discovery and Selection' (NDS) configuration page. It includes sections for 4G Radio Setting, Network Setting, and Discrete Band Setting. The 4G Radio is currently ON, and the Network Mode is set to Nomadic. The Discrete Band Setting section includes a table for defining frequency ranges and scanning steps.

Band ID	Start Freq(MHz)	End Freq(MHz)	Start Earfcn	End Earfcn	Delete

Help text: NDS: In this page, you can turn on/off the 4G radio, configure the uplink QAM64 and force EPS network attach options for the CPE. You can also define the discrete band/channel settings and radio scanning step to gain fast entry to the network.

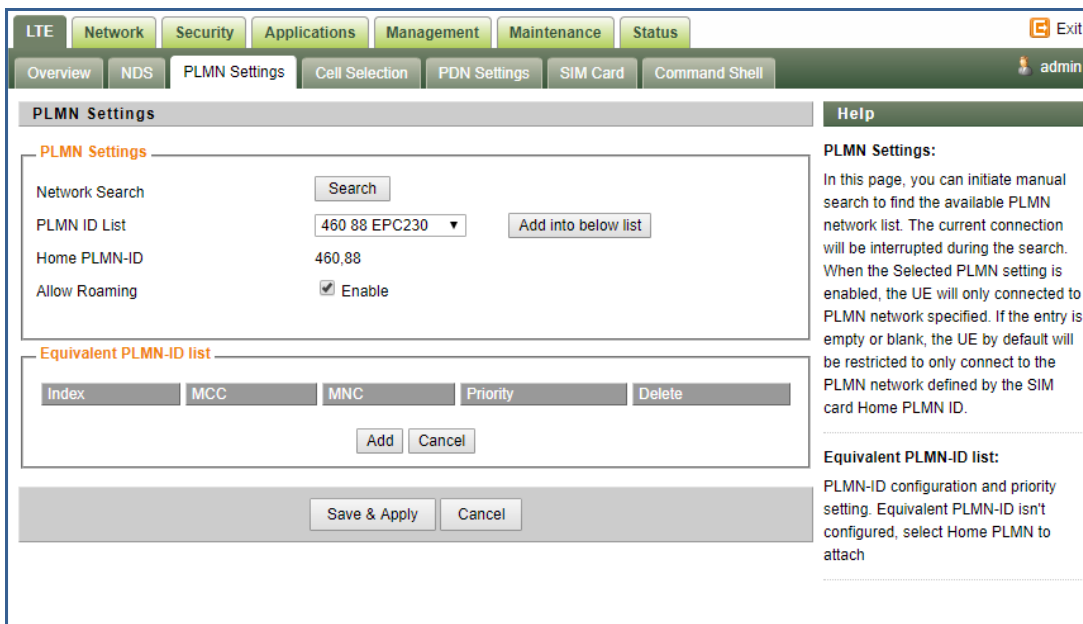
Earfcn Range:
B42 41590 - 43589
B43 43590 - 45589

Frequency Range:
B42 3400 - 3599.9 MHz
B43 3600 - 3799.9 MHz

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

If the network mode is configured to be Nomadic in the ND&S menu, then you 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.



PLMN Settings

Network Search

PLMN ID List

Home PLMN-ID

Allow Roaming Enable

Equivalent PLMN-ID list

Index	MCC	MNC	Priority	Delete
<input type="button" value="Add"/> <input type="button" value="Cancel"/>				

Help

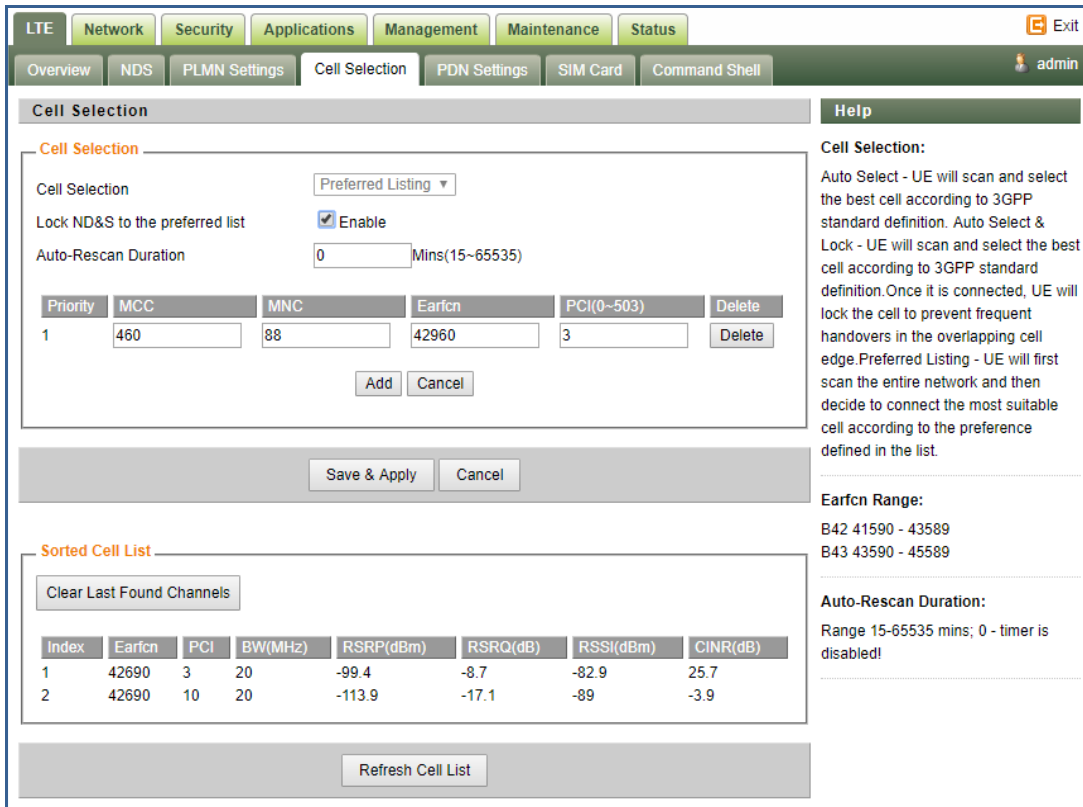
PLMN Settings:
 In this page, you can initiate manual search to find the available PLMN network list. The current connection will be interrupted during the search. When the Selected PLMN setting is enabled, the UE will only connected to PLMN network specified. If the entry is empty or blank, the UE by default will be restricted to only connect to the PLMN network defined by the SIM card Home PLMN ID.

Equivalent PLMN-ID list:
 PLMN-ID configuration and priority setting. Equivalent PLMN-ID isn't configured, select Home PLMN to attach

■ 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. If Lock ND&S to the preferred list is enabled, the CPE will not connect to any cell if they are in the list.

Note the Cell Selection and PLMN setting will work together when ND&S network mode is set to Nomadic.



The screenshot shows the 'Cell Selection' configuration page. At the top, there are navigation tabs: LTE, Network, Security, Applications, Management, Maintenance, and Status. Below these are sub-tabs: Overview, NDS, PLMN Settings, Cell Selection, PDN Settings, SIM Card, and Command Shell. The 'Cell Selection' sub-tab is active.

Cell Selection

Cell Selection: Preferred Listing ▾

Lock ND&S to the preferred list: Enable

Auto-Rescan Duration: 0 Mins(15~65535)

Priority	MCC	MNC	Earfcn	PCI(0~503)	Delete
1	460	88	42960	3	Delete

Buttons: Add, Cancel

Buttons: Save & Apply, Cancel

Sorted Cell List

Clear Last Found Channels

Index	Earfcn	PCI	BW(MHz)	RSRP(dBm)	RSRQ(dB)	RSSI(dBm)	CINR(dB)
1	42690	3	20	-99.4	-8.7	-82.9	25.7
2	42690	10	20	-113.9	-17.1	-89	-3.9

Buttons: Refresh Cell List

Help

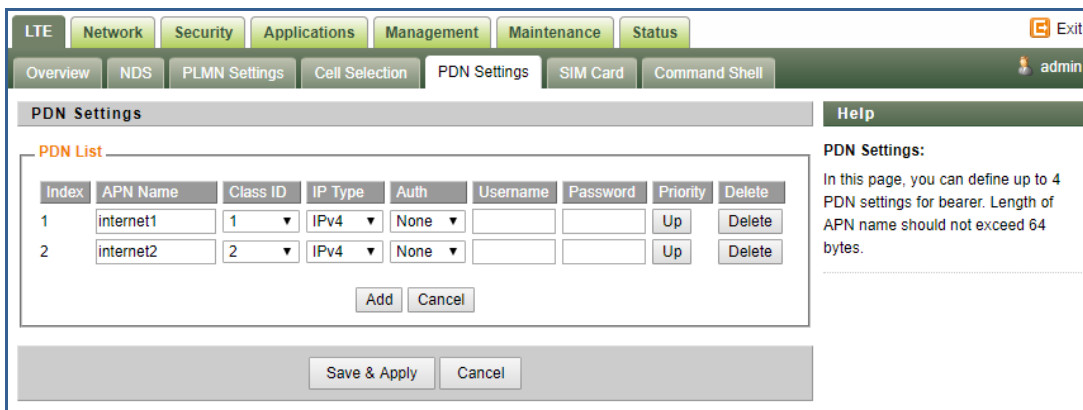
Cell Selection:
Auto Select - UE will scan and select the best cell according to 3GPP standard definition. Auto Select & Lock - UE will scan and select the best cell according to 3GPP standard definition. Once it is connected, UE will lock the cell to prevent frequent handovers in the overlapping cell edge. Preferred Listing - UE will first scan the entire network and then decide to connect the most suitable cell according to the preference defined in the list.

Earfcn Range:
B42 41590 - 43589
B43 43590 - 45589

Auto-Rescan Duration:
Range 15-65535 mins; 0 - timer is disabled!

■ 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.



The screenshot shows the 'PDN Settings' configuration page. At the top, there are navigation tabs: LTE, Network, Security, Applications, Management, Maintenance, and Status. Below these are sub-tabs: Overview, NDS, PLMN Settings, Cell Selection, PDN Settings, SIM Card, and Command Shell. The 'PDN Settings' sub-tab is active.

PDN Settings

PDN List

Index	APN Name	Class ID	IP Type	Auth	Username	Password	Priority	Delete
1	internet1	1 ▾	IPv4 ▾	None ▾			Up	Delete
2	internet2	2 ▾	IPv4 ▾	None ▾			Up	Delete

Buttons: Add, Cancel

Buttons: Save & Apply, Cancel

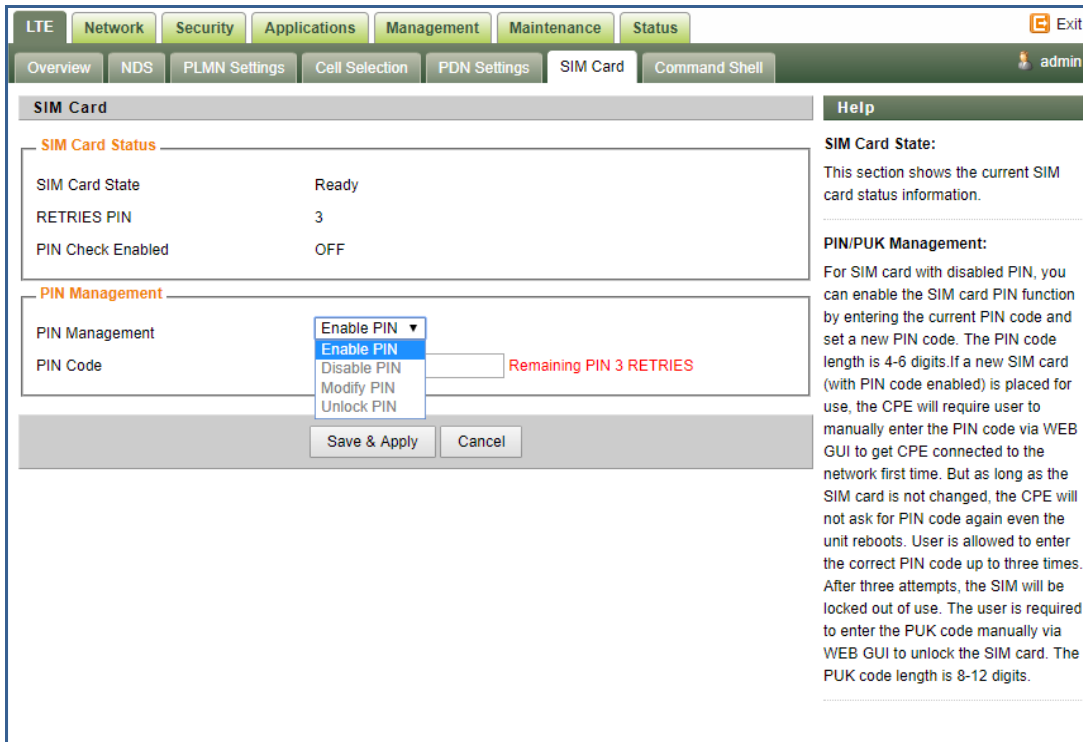
Help

PDN Settings:
In this page, you can define up to 4 PDN settings for bearer. Length of APN name should not exceed 64 bytes.

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.



The screenshot shows the 'SIM Card' configuration page. The top navigation bar includes 'LTE', 'Network', 'Security', 'Applications', 'Management', 'Maintenance', and 'Status'. Below this, there are tabs for 'Overview', 'NDS', 'PLMN Settings', 'Cell Selection', 'PDN Settings', 'SIM Card', and 'Command Shell'. The 'SIM Card' tab is active.

SIM Card Status

SIM Card State	Ready
RETRIES PIN	3
PIN Check Enabled	OFF

PIN Management

PIN Management: Enable PIN ▼
 Enable PIN
 Disable PIN
 Modify PIN
 Unlock PIN

PIN Code: Remaining PIN 3 RETRIES

Buttons: Save & Apply, Cancel

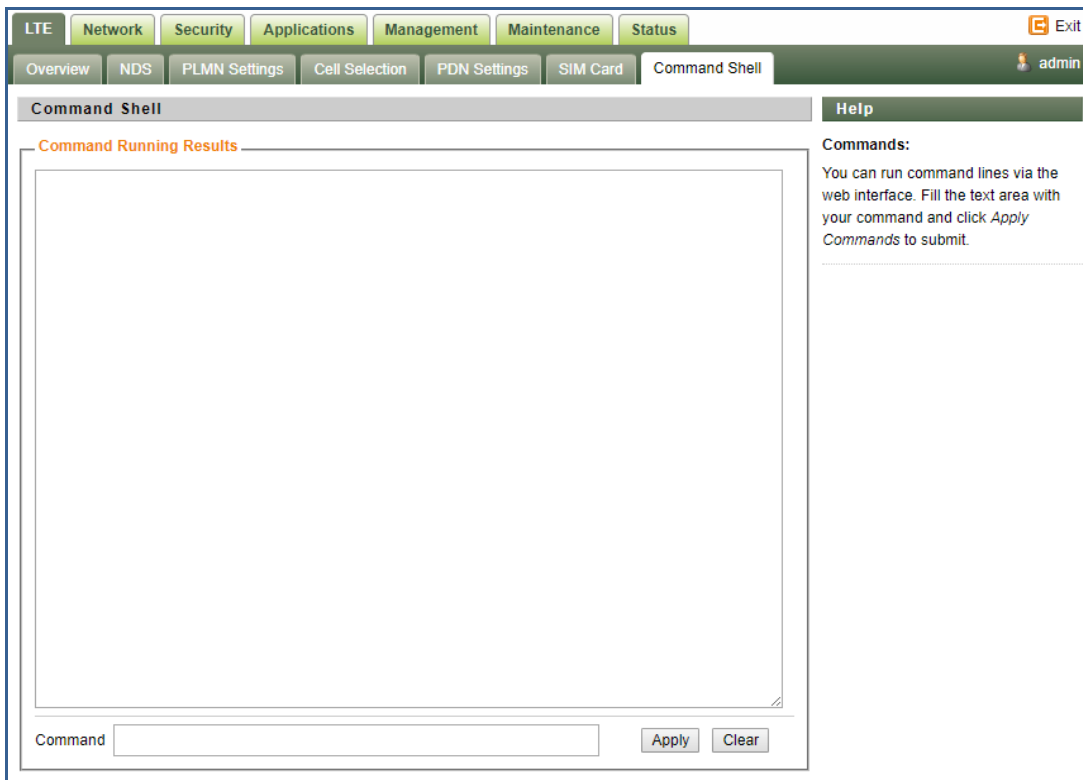
Help

SIM Card State:
This section shows the current SIM card status information.

PIN/PUK Management:
For SIM card with disabled PIN, you can enable the SIM card PIN function by entering the current PIN code and set a new PIN code. The PIN code length is 4-6 digits. If a new SIM card (with PIN code enabled) is placed for use, the CPE will require user to manually enter the PIN code via WEB GUI to get CPE connected to the network first time. But as long as the SIM card is not changed, the CPE will not ask for PIN code again even the unit reboots. User is allowed to enter the correct PIN code up to three times. After three attempts, the SIM will be locked out of use. The user is required to enter the PUK code manually via WEB GUI to unlock the SIM card. The PUK code length is 8-12 digits.

■ 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.



The screenshot shows the 'Command Shell' page. The top navigation bar is the same as in the previous screenshot. Below it, there are tabs for 'Overview', 'NDS', 'PLMN Settings', 'Cell Selection', 'PDN Settings', 'SIM Card', and 'Command Shell'. The 'Command Shell' tab is active.

Command Shell

Command Running Results

Command: Apply Clear

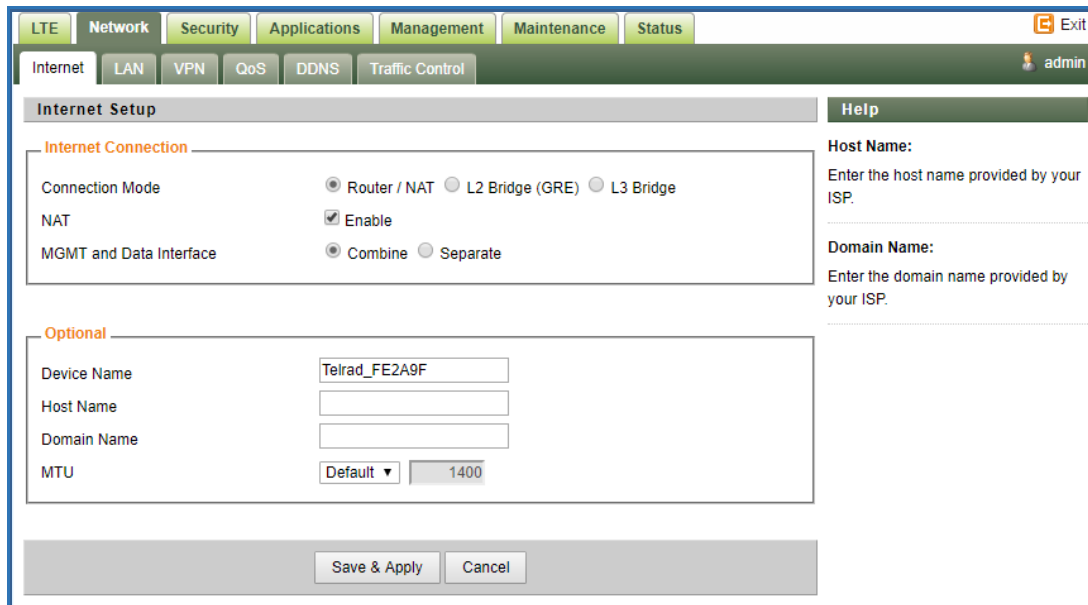
Help

Commands:
You can run command lines via the web interface. Fill the text area with your command and click *Apply Commands* to submit.

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.



The screenshot displays the 'Internet Setup' configuration page. At the top, there are navigation tabs: LTE, Network, Security, Applications, Management, Maintenance, and Status. Below these are sub-tabs: Internet, LAN, VPN, QoS, DDNS, and Traffic Control. The 'Internet Setup' section is divided into 'Internet Connection' and 'Optional' sections. In the 'Internet Connection' section, 'Connection Mode' has radio buttons for 'Router / NAT' (selected), 'L2 Bridge (GRE)', and 'L3 Bridge'. 'NAT' is checked as 'Enable'. 'MGMT and Data Interface' has radio buttons for 'Combine' (selected) and 'Separate'. The 'Optional' section includes input fields for 'Device Name' (filled with 'Telrad_FE2A9F'), 'Host Name', 'Domain Name', and 'MTU' (set to 'Default' with a value of '1400'). A 'Help' section on the right provides instructions for 'Host Name' and 'Domain Name'. At the bottom, there are 'Save & Apply' and 'Cancel' buttons.

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 172.16.1.1 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 192.168.0.x manual in order to visit the CPE managing page <http://192.168.0.1>

■ 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.

LTE
Network
Security
Applications
Management
Maintenance
Exit

Internet
LAN
VPN
QoS
DDNS
Traffic Control
user

LAN Setup
Help

Link MaxBitRate & Duplex

LAN Reset Reset

Duplex Auto ▾

Max Bit Rate Auto ▾

Device IP

Local IP Address 192. 168. 254. 251

Subnet Mask 255. 255. 255. 0

Local DNS

Network Address Server Settings (DHCP)

DHCP Server Enable

DNS Proxy Enable

Start IP Address 192.168.254. 2

Maximum DHCP Users 200

DHCP Static Leases Map

Index	IP Address	MAC Address
1	192.168.254.	: : : : : :
2	192.168.254.	: : : : : :
3	192.168.254.	: : : : : :
4	192.168.254.	: : : : : :
5	192.168.254.	: : : : : :

Deny IP Address

Index	IP Address	Delete

Add Cancel

Save & Apply Cancel

Link MaxBitRate & Duplex:
In this page, you can configure Max Bit Rate and Duplex Negotiation.

Local IP Address:
This is the address of the device.

Subnet Mask:
This is the subnet mask of the device.

DHCP Server:
Allows the device to manage your IP addresses.

Start IP Address:
The address you would like to start with.

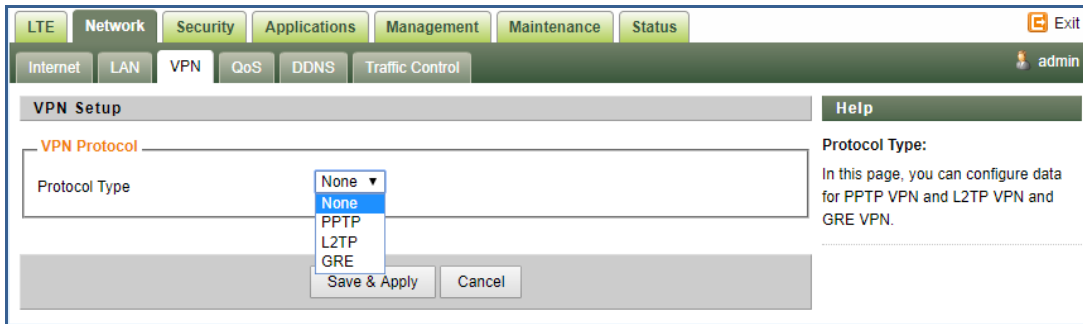
Maximum DHCP Users:
You may limit the number of addresses your device hands out.

Deny IP Address:
IP address that device will refuse to grant access.

■ VPN Setting Under Router Mode

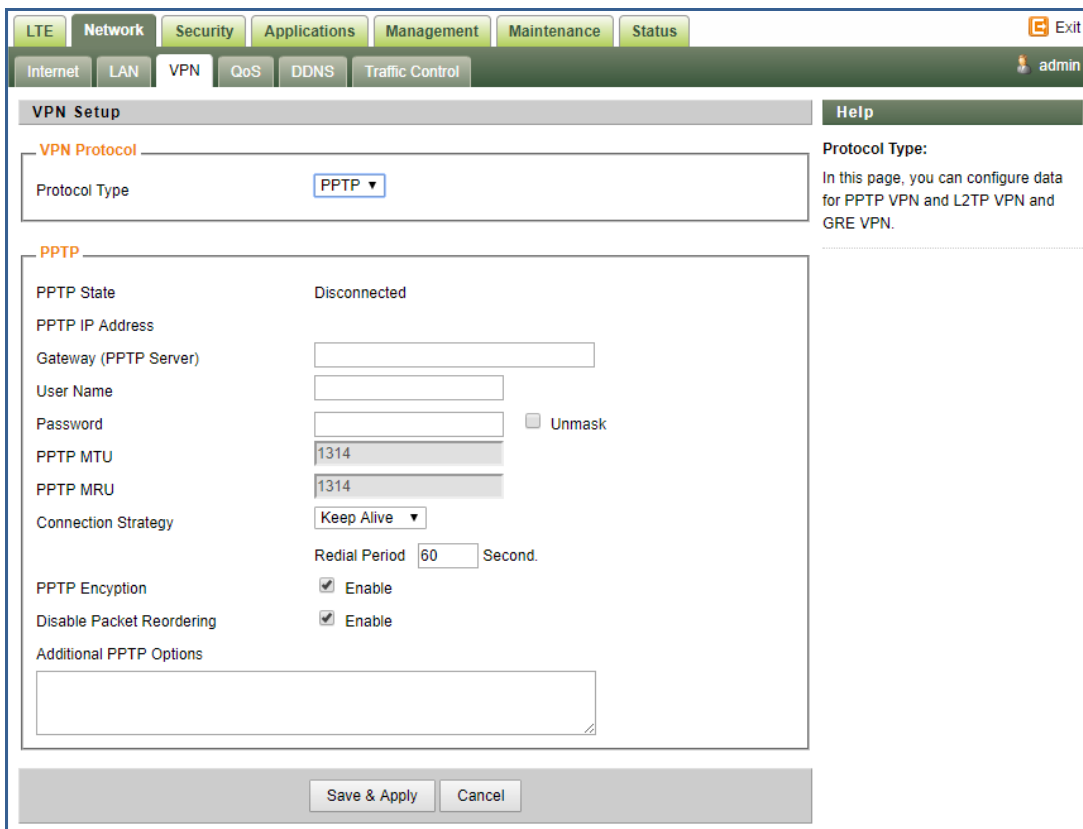
This section allows user to configure VPN service for selected connection mode. In router mode, PPTP, L2TP and GRE can be selected. In L2 Bridge mode, only L2 GRE can be configured.

The router mode VPN configuration is shown below.



The screenshot shows the 'VPN Setup' configuration page. The 'Protocol Type' dropdown menu is open, displaying the following options: None, PPTP, L2TP, and GRE. The 'None' option is currently selected. The page includes a 'Help' section on the right and 'Save & Apply' and 'Cancel' buttons at the bottom.

The PPTP configuration under router mode is shown below.

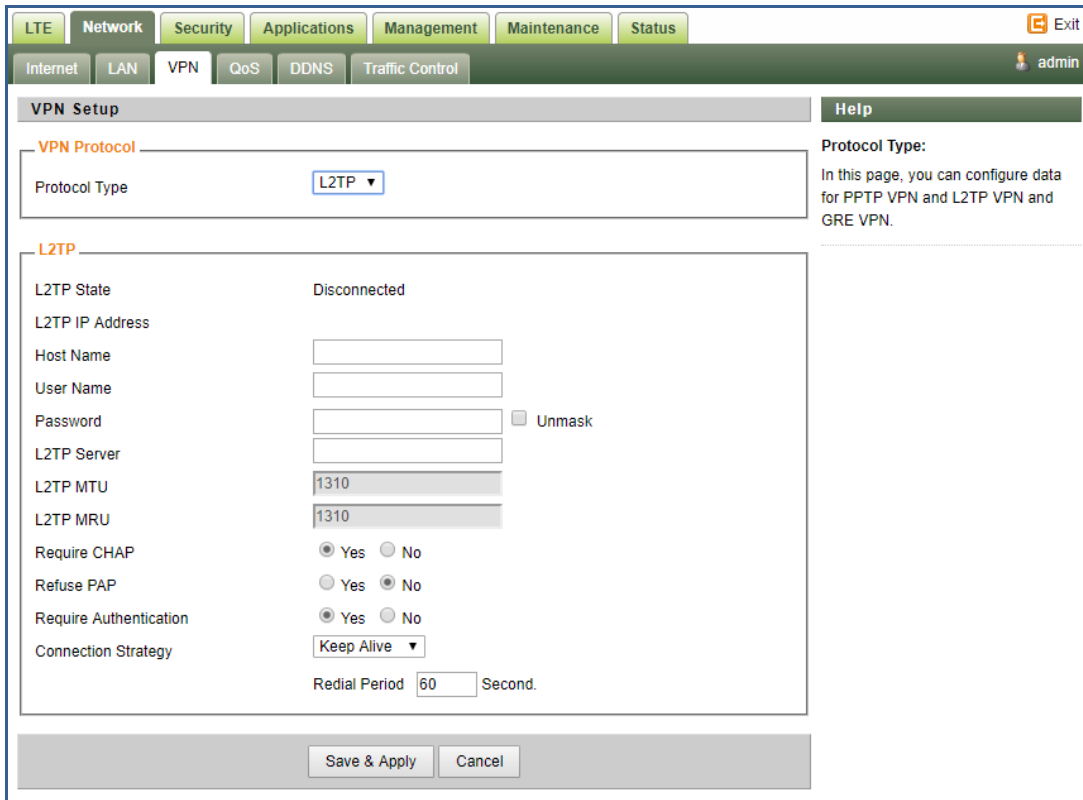


The screenshot shows the 'VPN Setup' configuration page with 'PPTP' selected as the protocol type. The configuration details for PPTP are as follows:

- PPTP State:** Disconnected
- PPTP IP Address:** [Empty field]
- Gateway (PPTP Server):** [Empty field]
- User Name:** [Empty field]
- Password:** [Empty field] Unmask
- PPTP MTU:** 1314
- PPTP MRU:** 1314
- Connection Strategy:** Keep Alive
- Redial Period:** 60 Second.
- PPTP Encyption:** Enable
- Disable Packet Reordering:** Enable
- Additional PPTP Options:** [Empty text area]

The page includes a 'Help' section on the right and 'Save & Apply' and 'Cancel' buttons at the bottom.

The L2TP configuration under router mode is shown as follows.

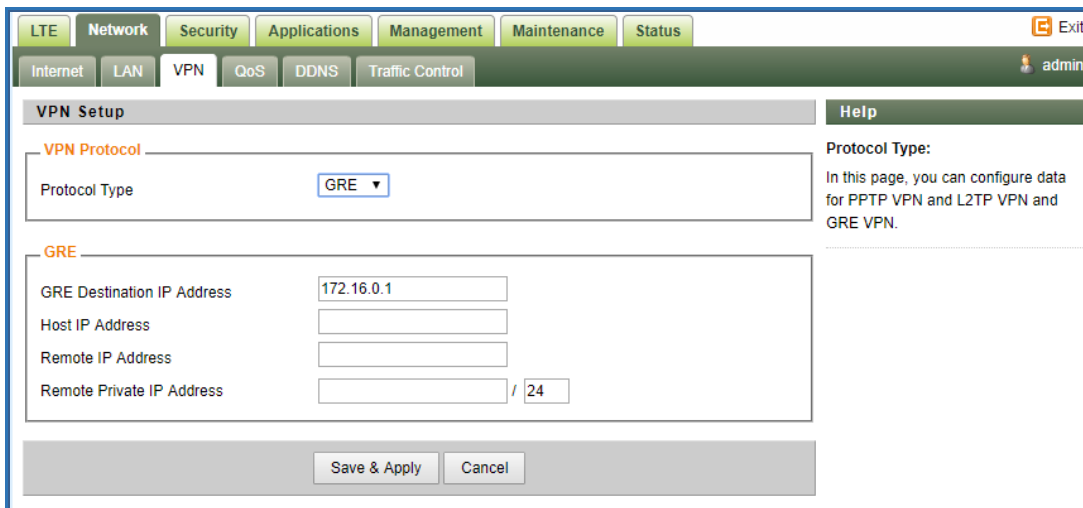


The screenshot shows the 'VPN Setup' configuration page for L2TP. The 'VPN Protocol' is set to 'L2TP'. The 'L2TP' section includes the following fields and options:

- L2TP State: Disconnected
- L2TP IP Address: [Empty]
- Host Name: [Empty]
- User Name: [Empty]
- Password: [Empty] Unmask
- L2TP Server: [Empty]
- L2TP MTU: 1310
- L2TP MRU: 1310
- Require CHAP: Yes No
- Refuse PAP: Yes No
- Require Authentication: Yes No
- Connection Strategy: Keep Alive
- Redial Period: 60 Second.

Buttons at the bottom: Save & Apply, Cancel.

The L2 GRE configuration under router mode is shown below.



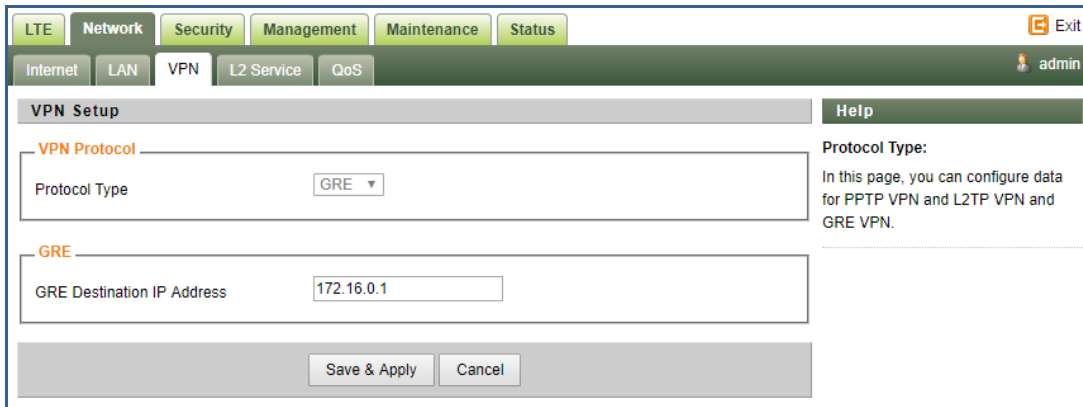
The screenshot shows the 'VPN Setup' configuration page for GRE. The 'VPN Protocol' is set to 'GRE'. The 'GRE' section includes the following fields:

- GRE Destination IP Address: 172.16.0.1
- Host IP Address: [Empty]
- Remote IP Address: [Empty]
- Remote Private IP Address: [Empty] / 24

Buttons at the bottom: Save & Apply, Cancel.

■ VPN Setting Under L2 Bridge Mode

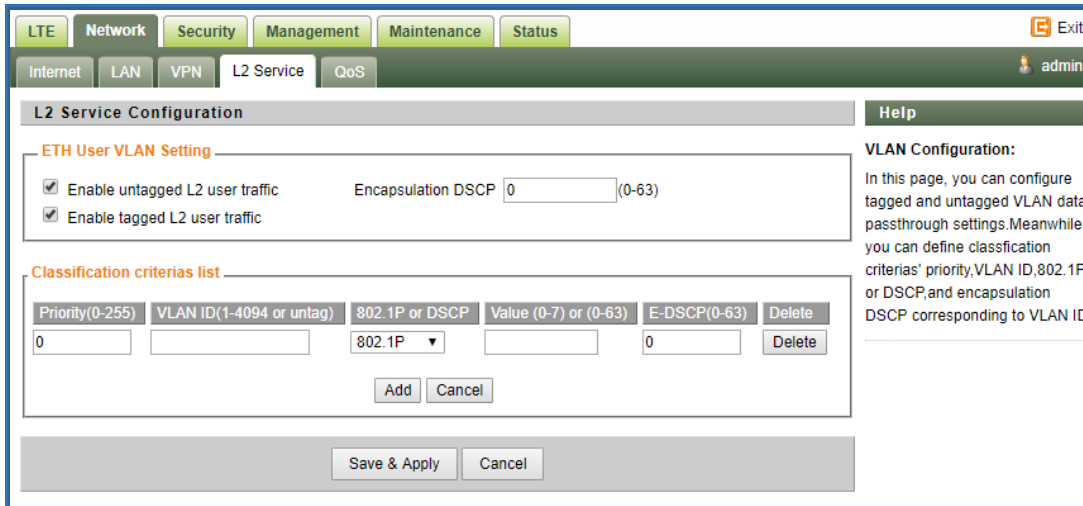
Under the L2 Bridge connection mode, only L2 GRE can be configured as follows.



The screenshot shows the 'VPN Setup' configuration page. The 'VPN Protocol' is set to 'GRE'. The 'GRE Destination IP Address' is set to '172.16.0.1'. There are 'Save & Apply' and 'Cancel' buttons at the bottom. A 'Help' section on the right explains that this page is for configuring PPTP VPN, L2TP VPN, and GRE VPN.

■ 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.



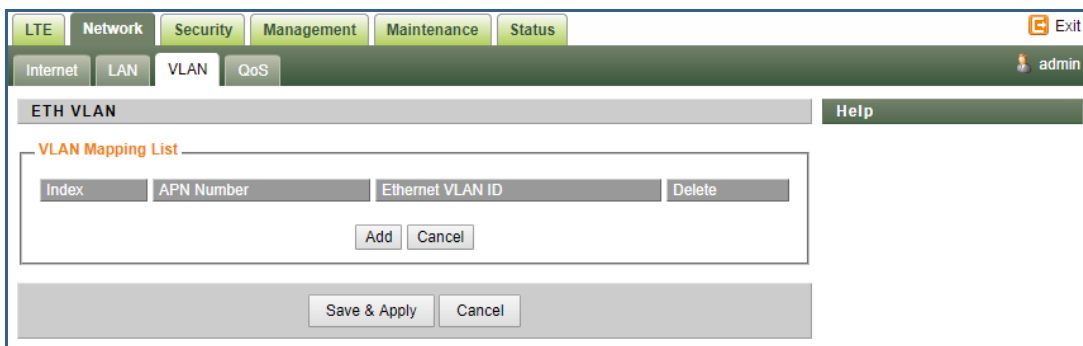
The screenshot shows the 'L2 Service Configuration' page. Under 'ETH User VLAN Setting', both 'Enable untagged L2 user traffic' and 'Enable tagged L2 user traffic' are checked. 'Encapsulation DSCP' is set to '0'. The 'Classification criteria list' table is as follows:

Priority(0-255)	VLAN ID(1-4094 or untag)	802.1P or DSCP	Value (0-7) or (0-63)	E-DSCP(0-63)	Delete
0		802.1P		0	Delete

Buttons for 'Add', 'Cancel', 'Save & Apply', and 'Cancel' are present at the bottom.

■ VLAN Setting Under L3 Bridge Mode

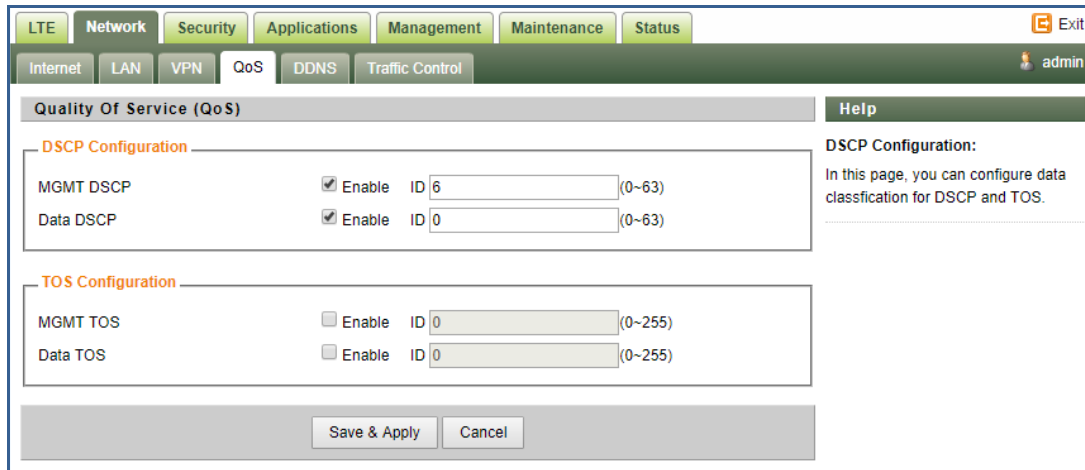
Under the L3 Bridge connection mode, the following VLAN setting can be configured. When multiple APNs are configured, different VLAN LAN packets can be forwarded to different APN.



The screenshot shows the 'ETH VLAN' configuration page. It features a 'VLAN Mapping List' table with columns for 'Index', 'APN Number', 'Ethernet VLAN ID', and 'Delete'. There are 'Add' and 'Cancel' buttons below the table, and 'Save & Apply' and 'Cancel' buttons at the bottom of the page.

■ QoS Setting

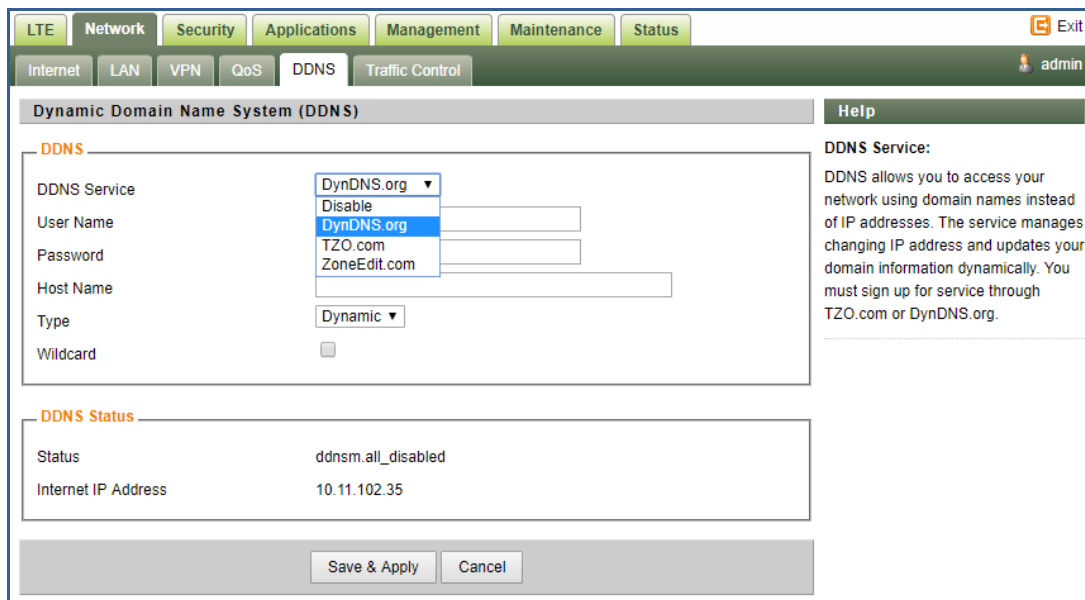
This configuration menu allows user to tag DSCP or TOS value for CPE local data (Management) and LAN port data (Data).



The screenshot shows the 'Quality Of Service (QoS)' configuration page. The navigation menu includes LTE, Network, Security, Applications, Management, Maintenance, and Status. The sub-menu includes Internet, LAN, VPN, QoS, DDNS, and Traffic Control. The page is titled 'Quality Of Service (QoS)' and has a 'Help' button. The 'DSCP Configuration' section has two rows: 'MGMT DSCP' with 'Enable' checked and 'ID' set to 6 (range 0~63), and 'Data DSCP' with 'Enable' checked and 'ID' set to 0 (range 0~63). The 'TOS Configuration' section has two rows: 'MGMT TOS' with 'Enable' unchecked and 'ID' set to 0 (range 0~255), and 'Data TOS' with 'Enable' unchecked and 'ID' set to 0 (range 0~255). At the bottom are 'Save & Apply' and 'Cancel' buttons.

■ DDNS Setting Under Router Mode

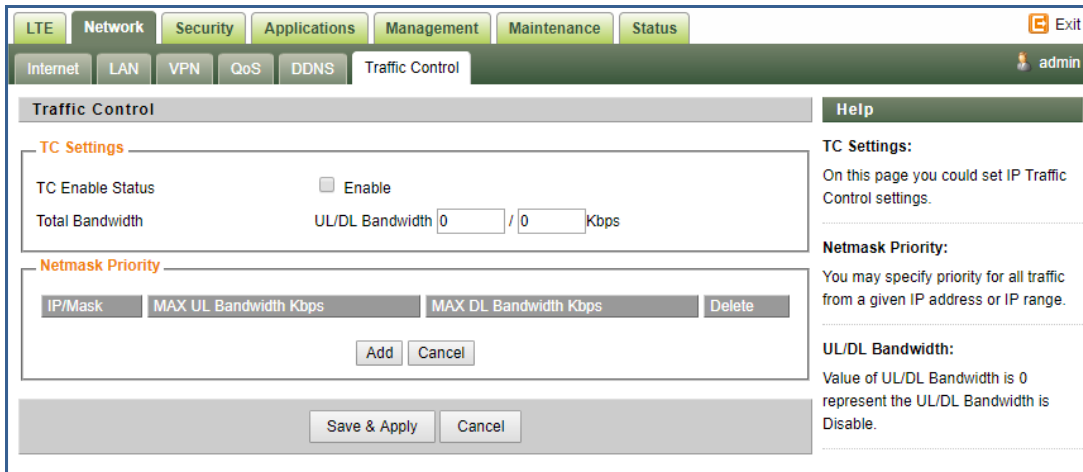
This configuration menu allows user to configure use of different DDNS service for router mode operation.



The screenshot shows the 'Dynamic Domain Name System (DDNS)' configuration page. The navigation menu is the same as the QoS page. The sub-menu includes Internet, LAN, VPN, QoS, DDNS, and Traffic Control. The page is titled 'Dynamic Domain Name System (DDNS)' and has a 'Help' button. The 'DDNS' section has a dropdown menu for 'DDNS Service' with options: DynDNS.org, Disable, DynDNS.org (selected), TZO.com, and ZoneEdit.com. Below are input fields for 'User Name', 'Password', and 'Host Name'. The 'Type' dropdown is set to 'Dynamic' and 'Wildcard' is unchecked. The 'DDNS Status' section shows 'Status' as 'ddnsm.all_disabled' and 'Internet IP Address' as '10.11.102.35'. At the bottom are 'Save & Apply' and 'Cancel' buttons.

■ Traffic Control Setting Under Router Mode

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

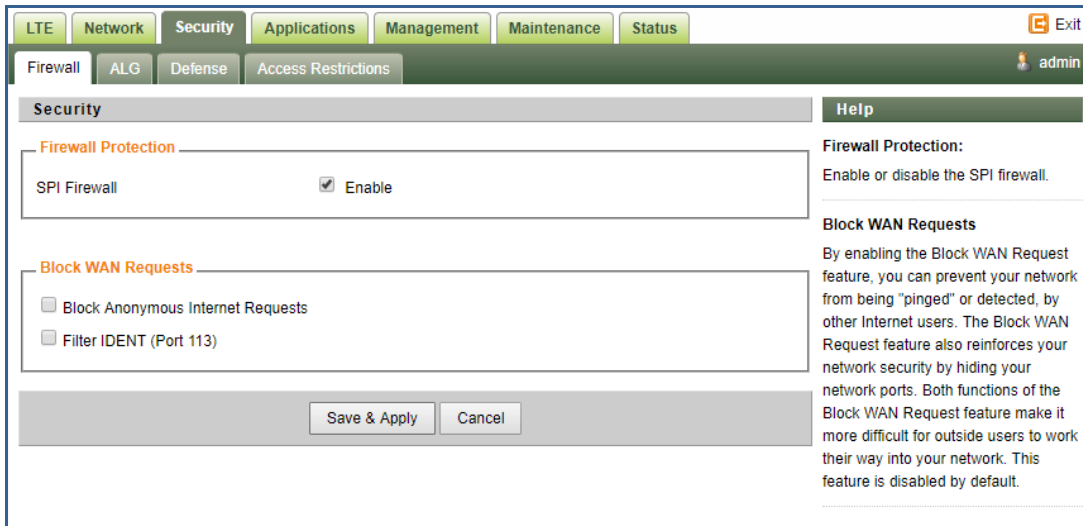


The screenshot shows the 'Traffic Control' configuration page. The top navigation bar includes 'LTE', 'Network', 'Security', 'Applications', 'Management', 'Maintenance', and 'Status'. Below this, a sub-menu shows 'Internet', 'LAN', 'VPN', 'QoS', 'DDNS', and 'Traffic Control'. The main content area is titled 'Traffic Control' and contains a 'TC Settings' section with a 'TC Enable Status' checkbox (unchecked) and a 'Total Bandwidth' section with 'UL/DL Bandwidth' input fields set to '0 / 0' Kbps. Below this is a 'Netmask Priority' section with a table for adding entries and 'Add' and 'Cancel' buttons. At the bottom are 'Save & Apply' and 'Cancel' buttons. A 'Help' sidebar on the right provides instructions for TC Settings, Netmask Priority, and UL/DL Bandwidth.

6 Security Configuration

■ Firewall

This allows user to configure CPE firewall.



The screenshot shows the 'Firewall' configuration page. The top navigation bar includes 'LTE', 'Network', 'Security', 'Applications', 'Management', 'Maintenance', and 'Status'. Below this, a sub-menu shows 'Firewall', 'ALG', 'Defense', and 'Access Restrictions'. The main content area is titled 'Security' and contains a 'Firewall Protection' section with an 'SPI Firewall' checkbox (checked) and an 'Enable' button. Below this is a 'Block WAN Requests' section with two checkboxes: 'Block Anonymous Internet Requests' and 'Filter IDENT (Port 113)'. At the bottom are 'Save & Apply' and 'Cancel' buttons. A 'Help' sidebar on the right provides instructions for Firewall Protection and Block WAN Requests.

■ ALG

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

LTE Network Security Applications Management Maintenance Status Exit
Firewall ALG Defense Access Restrictions admin

Application Layer Gateway (ALG)

ALG Passthrough

IPSec Passthrough	<input checked="" type="checkbox"/>	Enable
L2TP Passthrough	<input checked="" type="checkbox"/>	Enable
PPTP Passthrough	<input checked="" type="checkbox"/>	Enable
FTP Passthrough	<input checked="" type="checkbox"/>	Enable
H323 Passthrough	<input checked="" type="checkbox"/>	Enable
SIP Passthrough	<input checked="" type="checkbox"/>	Enable
RTSP Passthrough	<input checked="" type="checkbox"/>	Enable

Help

ALG Passthrough:
 You may choose to enable PPTP, FTP, H323 and so on passthrough to allow your network devices to communicate via ALG.

■ Defense

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

LTE Network Security Applications Management Maintenance Status Exit
Firewall ALG Defense Access Restrictions admin

Attack Defense

Attack Defense Enable

Defense

Defense Area: WAN

Scanning Defense

<input type="checkbox"/> IP Scanning	Threshold: <input type="text" value="100"/>	PPS
<input type="checkbox"/> Port Scanning	Threshold: <input type="text" value="100"/>	PPS
<input type="checkbox"/> IP Cheat		

DoS Defense

<input type="checkbox"/> ICMP Flood	Threshold: <input type="text" value="100"/>	PPS
<input type="checkbox"/> UDP Flood	Threshold: <input type="text" value="1000"/>	PPS
<input type="checkbox"/> SYN Flood	Threshold: <input type="text" value="100"/>	PPS
<input type="checkbox"/> Land Attack		
<input type="checkbox"/> WinNuke		

Dubious Packet Protect

- Large ICMP Packet(> 1024 bytes)
- TCP Packet Without Any Flag
- TCP Packet With SYN And FIN Flag
- TCP Packet With FIN No ACK Flag

IP Options Protect

- IP Timestamp Option
- IP Record Route Option
- IP Loose Source Route Option
- IP Strict Source Route Option
- Invalid IP Options

Help

Regional settings, you can select LAN or WAN area, while LAN area is selected, the targeted packets are from the LAN port, while WAN area is selected, the targeted packets are from the WAN port.

■ Access Restrictions

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

LTE
Network
Security
Applications
Management
Maintenance
Status
Exit

Firewall
ALG
Defense
Access Restrictions
admin

Access Restrictions

Filter Access Enable

Access Policy

Policy: 1 Delete Summary

Status: Enable Disable

Policy Name:

PCs: Edit List of PCs

Deny Internet access during selected days and hours.

Allow

Days:

Everyday

Week: Sun Mon Tue Wed Thu Fri Sat

Times:

24 Hours

From: : AM To: : AM

Blocked Services

Catch all P2P Protocols

P2P Protocol1: ~

P2P Protocol2: ~

P2P Protocol3: ~

P2P Protocol4: ~

Add/Edit Service

Website Blocking by URL Address

Help

Access Restrictions Policy:
You may define up to 10 access policies. Click *Delete* to delete a policy or *Summary* to see a summary of the policy.

Status:
Enable or disable a policy.

Policy Name:
You may assign a name to your policy.

Days:
Choose the day of the week you would like your policy to be applied.

Times:
Enter the time of the day you would like your policy to apply.

Blocked Services:
You may choose to block access to certain services. Click *Add/Edit Service* to modify these settings.

Website Blocking by URL:
You can block access to certain websites by entering their URL.

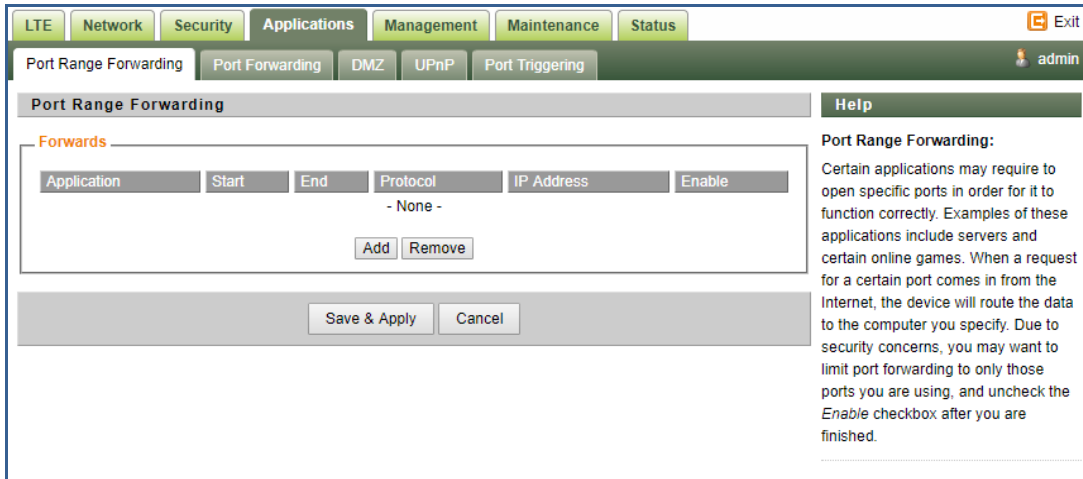
Website Blocking by Keyword:
You can block access to certain website by the keywords contained in their webpage.

Save & Apply Cancel

7 Applications Configuration

■ Port Range Forwarding

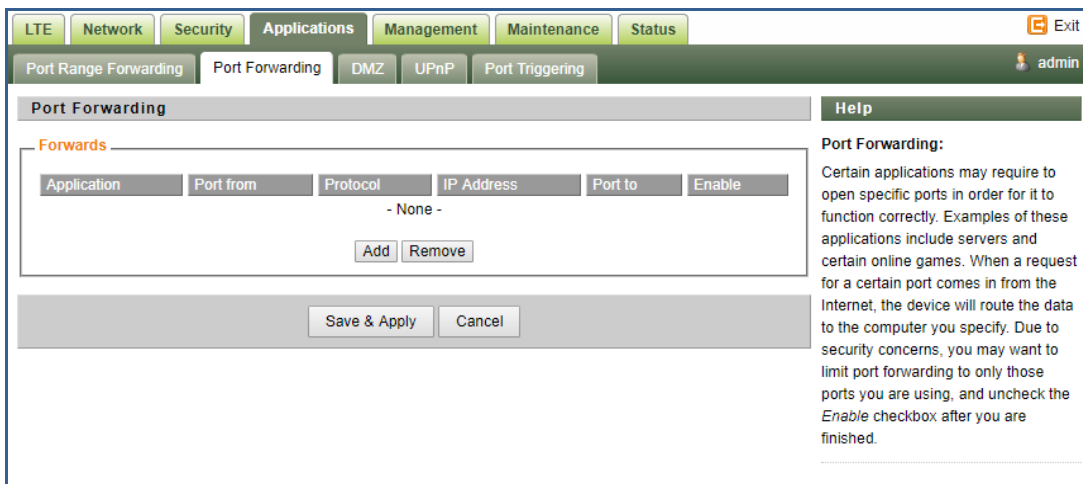
This allows user to configure the port range forwarding rules for the CPE in router mode.



The screenshot shows the 'Port Range Forwarding' configuration page. The top navigation bar includes 'LTE', 'Network', 'Security', 'Applications', 'Management', 'Maintenance', and 'Status'. Below this, there are sub-tabs for 'Port Range Forwarding', 'Port Forwarding', 'DMZ', 'UPnP', and 'Port Triggering'. The main content area is titled 'Port Range Forwarding' and contains a table for 'Forwards' with columns: Application, Start, End, Protocol, IP Address, and Enable. The table currently shows '- None -'. There are 'Add' and 'Remove' buttons below the table. At the bottom, there are 'Save & Apply' and 'Cancel' buttons. A 'Help' section on the right provides a brief explanation of port range forwarding.

■ Port Forwarding

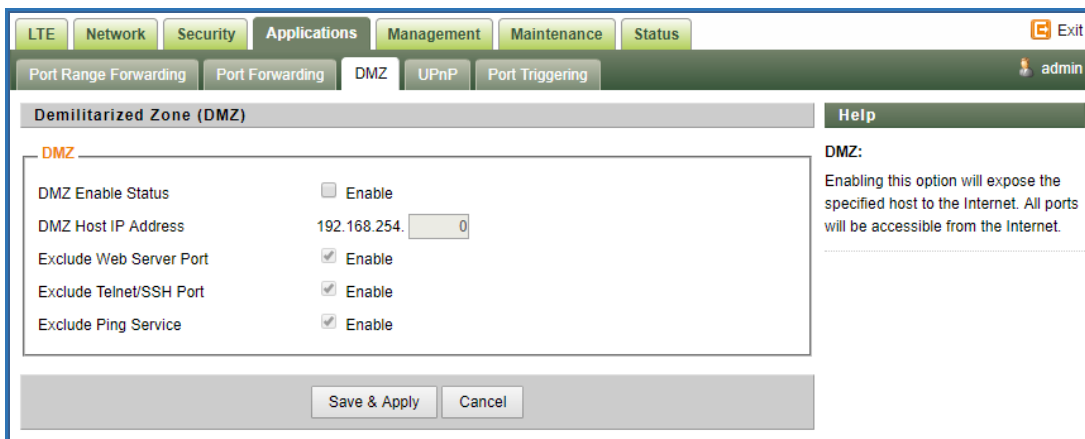
This menu allows user to configure the port forwarding rules for the CPE in router mode.



The screenshot shows the 'Port Forwarding' configuration page. The top navigation bar is the same as in the previous screenshot. The sub-tabs are 'Port Range Forwarding', 'Port Forwarding', 'DMZ', 'UPnP', and 'Port Triggering'. The main content area is titled 'Port Forwarding' and contains a table for 'Forwards' with columns: Application, Port from, Protocol, IP Address, Port to, and Enable. The table currently shows '- None -'. There are 'Add' and 'Remove' buttons below the table. At the bottom, there are 'Save & Apply' and 'Cancel' buttons. A 'Help' section on the right provides a brief explanation of port forwarding.

■ 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.



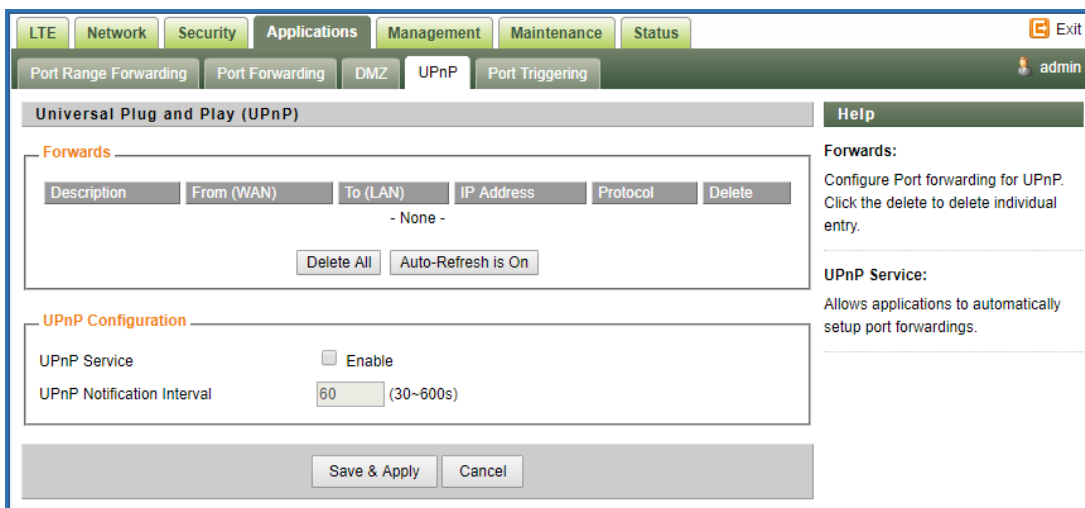
The screenshot shows the 'Demilitarized Zone (DMZ)' configuration page. The navigation tabs at the top include LTE, Network, Security, Applications, Management, Maintenance, and Status. The sub-navigation tabs are Port Range Forwarding, Port Forwarding, DMZ, UPnP, and Port Triggering. The main content area is titled 'Demilitarized Zone (DMZ)' and contains the following settings:

- DMZ Enable Status: Enable
- DMZ Host IP Address: 192.168.254.
- Exclude Web Server Port: Enable
- Exclude Telnet/SSH Port: Enable
- Exclude Ping Service: Enable

Buttons at the bottom include 'Save & Apply' and 'Cancel'. A 'Help' section on the right explains: 'DMZ: Enabling this option will expose the specified host to the Internet. All ports will be accessible from the 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.



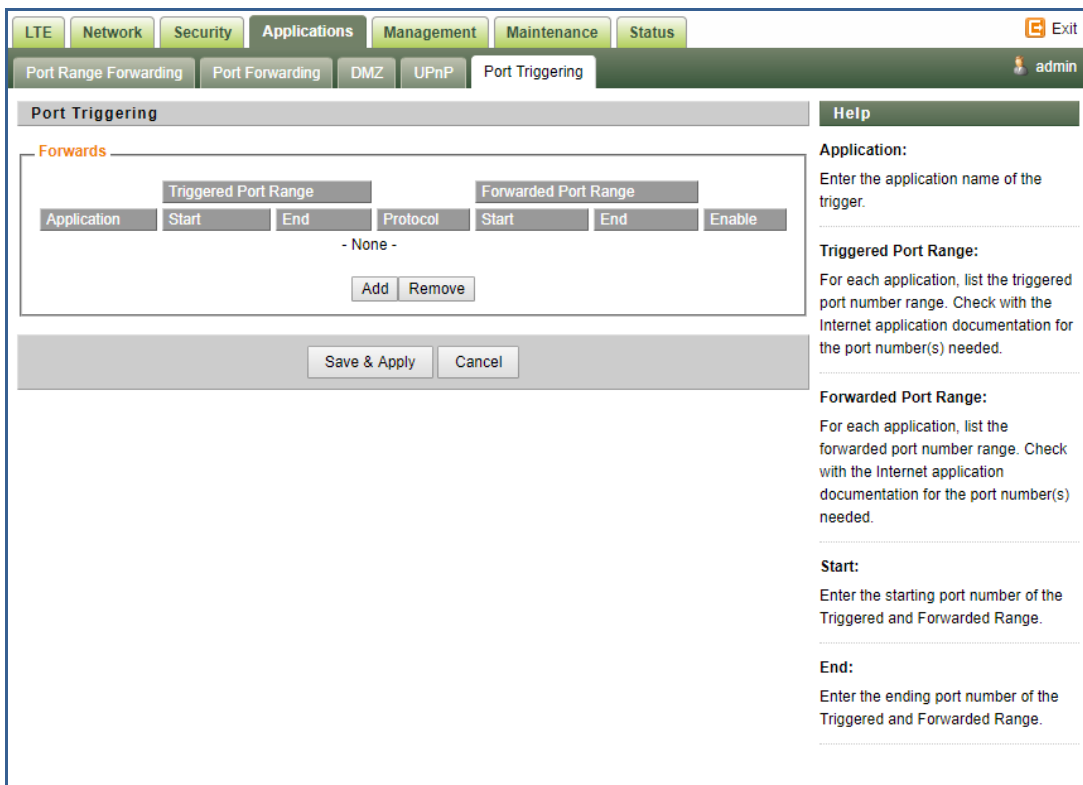
The screenshot shows the 'Universal Plug and Play (UPnP)' configuration page. The navigation tabs at the top are the same as in the DMZ page. The sub-navigation tabs are Port Range Forwarding, Port Forwarding, DMZ, UPnP, and Port Triggering. The main content area is titled 'Universal Plug and Play (UPnP)' and contains the following sections:

- Forwards:** A table with columns: Description, From (WAN), To (LAN), IP Address, Protocol, and Delete. The table is currently empty, showing '- None -'. Below the table are buttons for 'Delete All' and 'Auto-Refresh is On'.
- UPnP Configuration:**
 - UPnP Service: Enable
 - UPnP Notification Interval: (30-600s)

Buttons at the bottom include 'Save & Apply' and 'Cancel'. A 'Help' section on the right explains: 'Forwards: Configure Port forwarding for UPnP. Click the delete to delete individual entry. UPnP Service: Allows applications to automatically setup port forwardings.'

■ Port Triggering

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



The screenshot shows the 'Port Triggering' configuration page. At the top, there are navigation tabs: LTE, Network, Security, Applications, Management, Maintenance, and Status. Below these are sub-tabs: Port Range Forwarding, Port Forwarding, DMZ, UPnP, and Port Triggering. The main content area is titled 'Port Triggering' and contains a table for 'Forwards'. The table has columns for Application, Triggered Port Range (Start, End), Protocol, Forwarded Port Range (Start, End), and Enable. Below the table are 'Add' and 'Remove' buttons. At the bottom of the configuration area are 'Save & Apply' and 'Cancel' buttons. On the right side, there is a 'Help' section with the following text:

Application:
Enter the application name of the trigger.

Triggered Port Range:
For each application, list the triggered port number range. Check with the Internet application documentation for the port number(s) needed.

Forwarded Port Range:
For each application, list the forwarded port number range. Check with the Internet application documentation for the port number(s) needed.

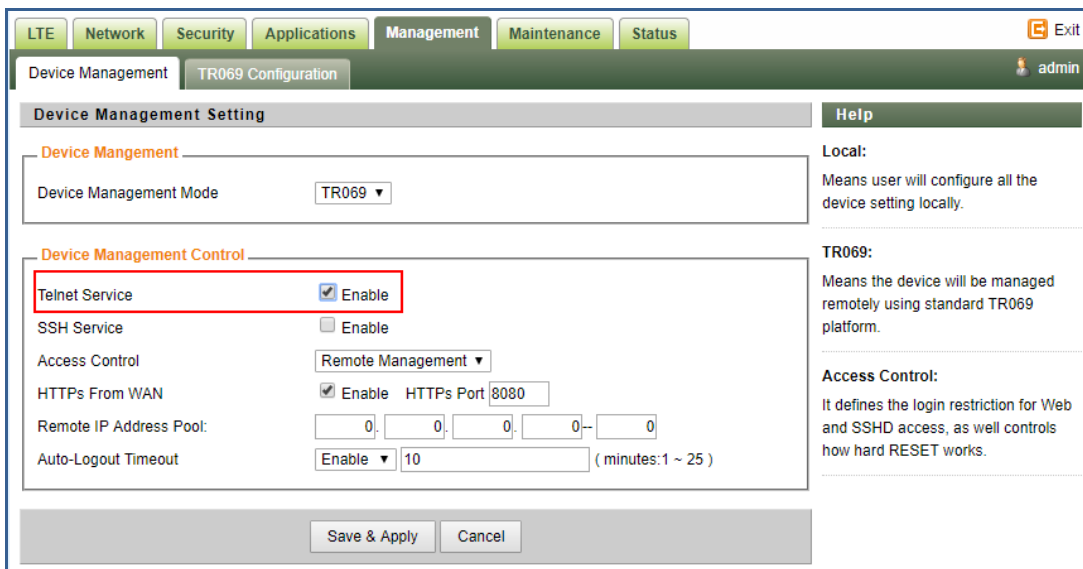
Start:
Enter the starting port number of the Triggered and Forwarded Range.

End:
Enter the ending port number of the Triggered and Forwarded Range.

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.



The screenshot shows the 'Device Management Setting' page. At the top, there are navigation tabs: LTE, Network, Security, Applications, Management, Maintenance, and Status. Below these are sub-tabs: Device Management and TR069 Configuration. The main content area is titled 'Device Management Setting' and contains the following configuration options:

Device Management:
Device Management Mode: TR069

Device Management Control:
 Telnet Service Enable
 SSH Service Enable
 Access Control: Remote Management
 HTTPs From WAN Enable HTTPs Port: 8080
 Remote IP Address Pool: 0.0.0.0--0
 Auto-Logout Timeout: Enable 10 (minutes: 1 ~ 25)

At the bottom of the configuration area are 'Save & Apply' and 'Cancel' buttons. On the right side, there is a 'Help' section with the following text:

Local:
Means user will configure all the device setting locally.

TR069:
Means the device will be managed remotely using standard TR069 platform.

Access Control:
It defines the login restriction for Web and SSHD access, as well controls how hard RESET works.

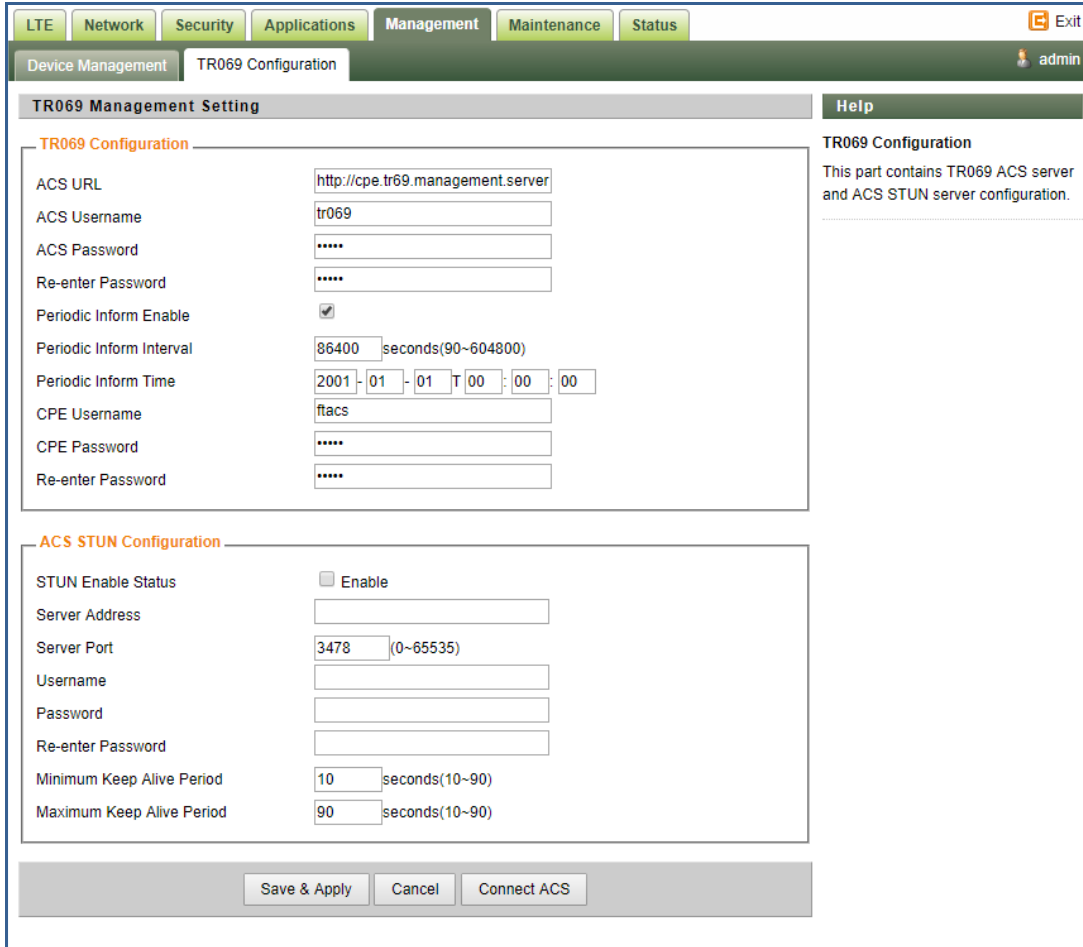
When Telnet is enabled, user can telnet to CPE according to the below steps:

- cmd shell and run command:

- telnet 192.168.0.1
- Login: root
- Password: admin123

■ TR069

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



The screenshot displays the TR069 Configuration web interface. The top navigation bar includes tabs for LTE, Network, Security, Applications, Management, Maintenance, and Status. The Management tab is active, showing sub-tabs for Device Management and TR069 Configuration. The TR069 Configuration page is divided into two main sections: TR069 Management Setting and ACS STUN Configuration. The TR069 Management Setting section includes fields for ACS URL (http://cpe.tr69.management.server), ACS Username (tr069), ACS Password (masked), Re-enter Password (masked), Periodic Inform Enable (checked), Periodic Inform Interval (86400 seconds), Periodic Inform Time (2001-01-01 T 00:00:00), CPE Username (ftacs), CPE Password (masked), and Re-enter Password (masked). The ACS STUN Configuration section includes a checkbox for STUN Enable Status (unchecked), Server Address, Server Port (3478), Username, Password, Re-enter Password, Minimum Keep Alive Period (10 seconds), and Maximum Keep Alive Period (90 seconds). At the bottom, there are buttons for Save & Apply, Cancel, and Connect ACS.

9 Maintenance

■ General

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

LTE Network Security Applications Management Maintenance Status Exit	
General Firmware Upgrade Config Management Ping Iperf System Reset admin	
Change Password	
<p>Change Password</p> <p>Username: <input type="text" value="admin"/></p> <p>Old Password: <input type="password"/></p> <p>New Password: <input type="password"/></p> <p>Re-enter to Confirm: <input type="password"/></p>	
Time Settings	
<p>Time Settings</p> <p>NTP Enable Status: <input checked="" type="checkbox"/> Enable</p> <p>Time Zone / Summer Time (DST): <input type="text" value="UTC / none"/></p> <p>NTP Server: <input type="text" value="0.pool.ntp.org"/> (e.g. time.nist.gov)</p> <p>Use Local Host Time: <input type="text" value="Thu 22 Jun 2017 07:37:14"/> <input type="button" value="Sync"/></p> <p>Refresh Interval: <input type="text" value="5"/> (minutes:5 ~ 1440)</p>	
Language Management	
<p>Language Selection</p> <p>Language: <input type="text" value="English"/></p>	
Auto-Refresh	
<p>Auto-Refresh</p> <p>Auto-Refresh: <input checked="" type="checkbox"/> Enable</p>	
<input type="button" value="Save & Apply"/> <input type="button" value="Cancel"/>	
Help	
<p>Old Password: The password currently in use.</p> <p>New Password: The new password length is 4 to 20 characters, the characters of 0-9 or a~Z.. Enter the new password a second time to confirm it.</p> <p>Time Settings: Choose the time zone you are in and Summer Time (DST) period. The device can use local time or UTC time.</p> <p>Language Management: The language selection allows user to select the preferred language for Web GUI interface.</p> <p>Auto-Refresh: This option controls whether the Web page contains dynamica data will be automatically refreshed when the page is open.</p>	

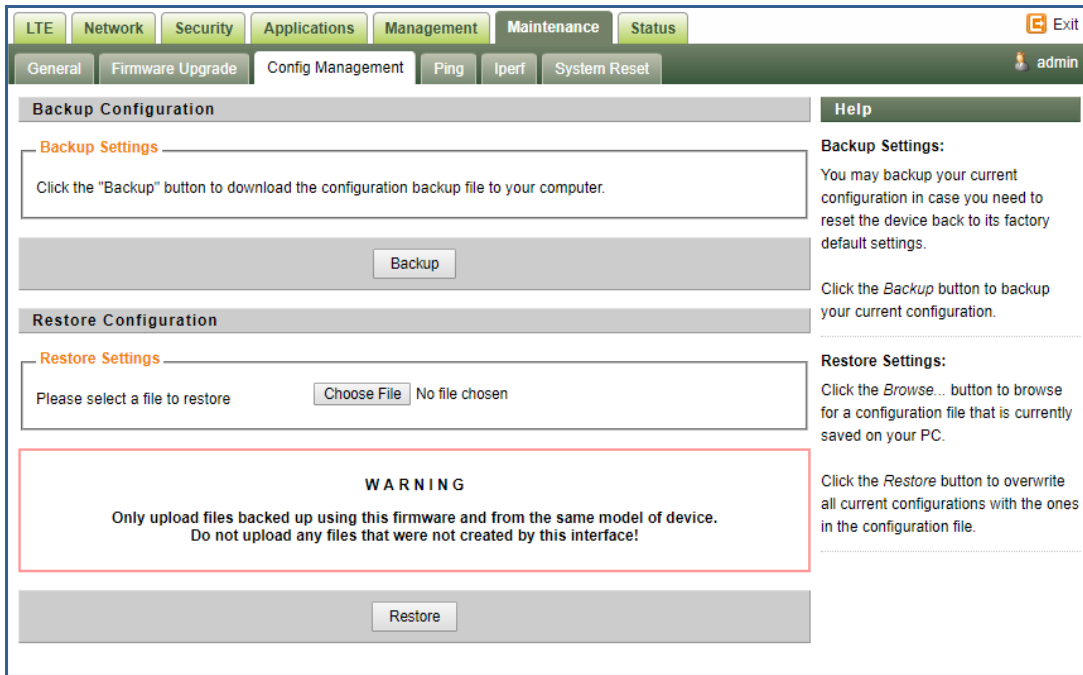
■ Firmware Upgrade

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.

LTE Network Security Applications Management Maintenance Status Exit	
General Firmware Upgrade Config Management Ping Iperf System Reset admin	
Firmware Management	
<p>Local Firmware Upgrade</p> <p>Reset to defaults after upgrade: <input checked="" type="radio"/> No Reset <input type="radio"/> Reset to Factory Defaults</p> <p>Please select a file to upgrade: <input type="button" value="Choose File"/> No file chosen</p> <p><input type="button" value="Upgrade"/></p>	
<p>Firmware Rollback</p> <p>Current Firmware Version: V1.2.0 PACK 0 (Ver.645) Build on: Jun 6 2017</p> <p>Rollback Firmware Version: V1.2.0 PACK 0 (Ver.645) Build on: Jun 6 2017</p> <p><input type="button" value="Rollback"/></p>	
<p>Remote Firmware Upgrade</p> <p>Update Method: <input type="text" value="None"/></p> <p><input type="button" value="Save & Apply"/> <input type="button" value="Cancel"/></p>	
Help	
<p>Local Firmware Upgrade: Click on the <i>Browse...</i> button to select the firmware file to be uploaded to the device.</p> <p>Click the <i>Upgrade</i> button to begin the upgrade process which must not be interrupted.</p> <p>Remote Firmware Upgrade: You need to fill in the connection configs of HTTP,FTP or TFTP server.</p> <p>Click the <i>Upgrade</i> button to begin the upgrade process which must not be interrupted.</p> <p>Upgrade: Link with eNB is reached in less than 5 minutes since reboot after firmware flashing, and the link is stable during 1 minute, then after 1 minute of link CPE will set the running version as Main automatically</p>	

■ Config Management

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



Backup Configuration

Backup Settings

Click the "Backup" button to download the configuration backup file to your computer.

Restore Configuration

Restore Settings

Please select a file to restore No file chosen

WARNING

Only upload files backed up using this firmware and from the same model of device.
Do not upload any files that were not created by this interface!

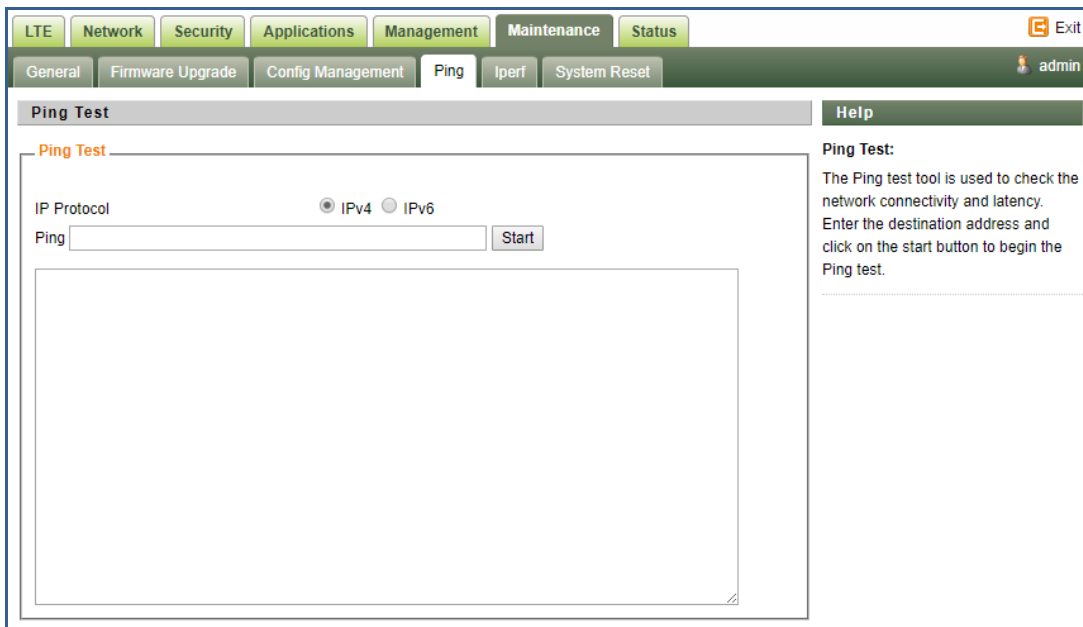
Help

Backup Settings:
You may backup your current configuration in case you need to reset the device back to its factory default settings.
Click the *Backup* button to backup your current configuration.

Restore Settings:
Click the *Browse...* button to browse for a configuration file that is currently saved on your PC.
Click the *Restore* button to overwrite all current configurations with the ones in the configuration file.

■ Ping

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



Ping Test

Ping Test

IP Protocol IPv4 IPv6

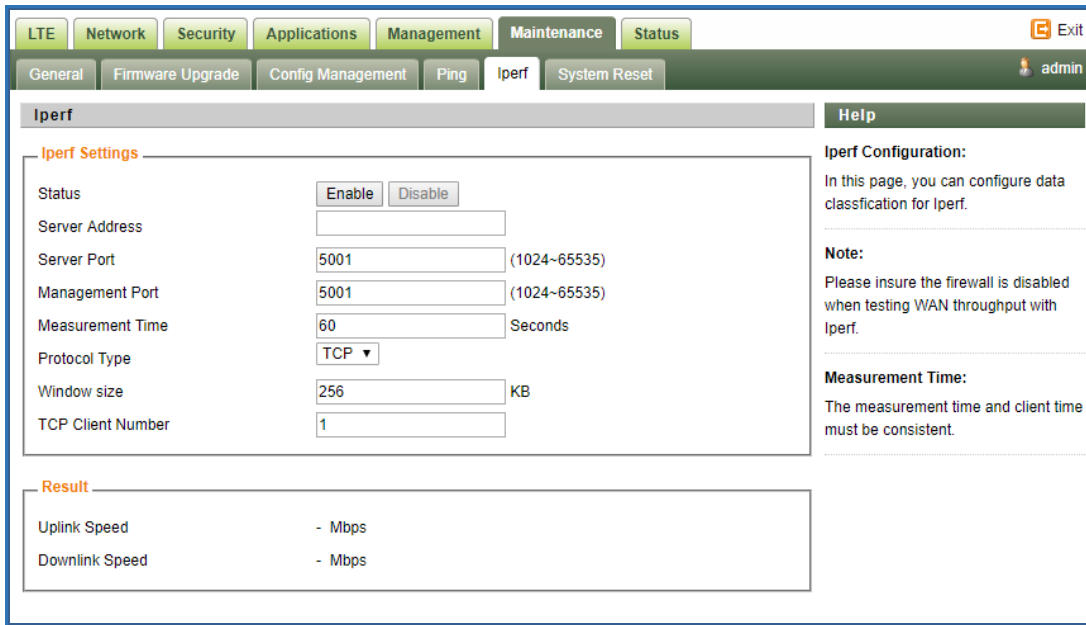
Ping

Help

Ping Test:
The Ping test tool is used to check the network connectivity and latency. Enter the destination address and click on the start button to begin the Ping test.

■ 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.



The screenshot shows the 'Iperf' configuration page. The navigation menu includes LTE, Network, Security, Applications, Management, Maintenance, and Status. The sub-menu includes General, Firmware Upgrade, Config Management, Ping, Iperf, and System Reset. The 'Iperf' page has a 'Help' tab and a 'System Reset' tab. The 'Iperf Settings' section includes:

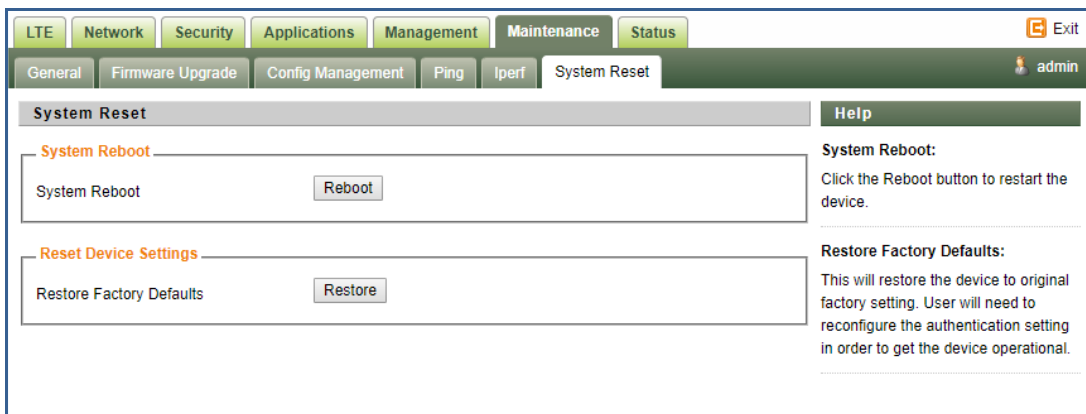
- Status: Enable/Disable buttons
- Server Address: text input
- Server Port: 5001 (range 1024-65535)
- Management Port: 5001 (range 1024-65535)
- Measurement Time: 60 Seconds
- Protocol Type: TCP
- Window size: 256 KB
- TCP Client Number: 1

 The 'Result' section shows Uplink Speed and Downlink Speed, both currently at - Mbps. The 'Help' section contains:

- Iperf Configuration:** In this page, you can configure data classification for Iperf.
- Note:** Please insure the firewall is disabled when testing WAN throughput with Iperf.
- Measurement Time:** The measurement time and client time must be consistent.

■ 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.



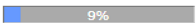
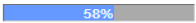

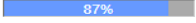
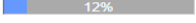
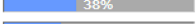
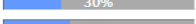
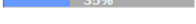
The screenshot shows the 'System Reset' page. The navigation menu is the same as the previous page. The sub-menu includes General, Firmware Upgrade, Config Management, Ping, Iperf, and System Reset. The 'System Reset' page has a 'Help' tab. The 'System Reboot' section includes a 'Reboot' button. The 'Reset Device Settings' section includes a 'Restore' button. The 'Help' section contains:

- System Reboot:** Click the Reboot button to restart the device.
- Restore Factory Defaults:** This will restore the device to original factory setting. User will need to reconfigure the authentication setting in order to get the device operational.

10 Status

■ System

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

LTE		Network		Security		Applications		Management		Maintenance		Status		Exit	
System		Network		LAN										admin	
Internet														Help	
Connection Info														Connection Info: This shows the information required by your ISP for connection to the Internet.	
Login Type		LTE PDN												Device Info: This is the specific name for the device, which you set on the Setup tab.	
IP Address		10.11.102.35												MAC Address: This is the device's MAC Address, as seen by your ISP.	
Subnet Mask		255.255.255.255												Firmware Version: This is the device's current firmware.	
Default Gateway														Current Time: This is the time, as you set on the Setup Tab.	
DNS		202.96.128.86 202.96.134.33												Up Time: This is a measure of the time the device has been "up" and running.	
IPv6 Address														Load Average: This is given as three numbers that represent the system load during the last one, five, and fifteen minute periods.	
IPv6 DNS															
Device Info															
System															
Manufacturer															
Product Type															
Board Name		SQN3220SC-ODU-4100D-B42_43													
Hardware Version															
Firmware Version															
BootRom Version															
MAC Address															
Host Name															
Domain Name															
Current Time		Thu 22 Jun 2017 07:40:39													
Up Time		51 min													
Load Average		0.02, 0.11, 0.13													
CPU															
CPU Model		SQNASIC rev 0													
CPU Clock		400 MHz													
Memory															
Total Available		37972 kB / 65536 kB													
Free		5108 kB / 37972 kB													
Used		32864 kB / 37972 kB													
Buffers		4048 kB / 32864 kB													
Cached		12344 kB / 32864 kB													
Active		9980 kB / 32864 kB													
Inactive		11556 kB / 32864 kB													

■ Network

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

LTE Network Security Applications Management Maintenance Status Exit

System Network LAN admin

Network Status

PDN Info

APN: internet

IP Address: 10.11.102.35

DNS: 202.96.128.86 202.96.134.33

IPv6 Address

IPv6 DNS

Route

Destination	Default Gateway	Genmask	Flags	Metric	Ref	Use	Iface
default	*	0.0.0.0	U	0	0	0	icc0.1121
10.1.1.0	*	255.255.255.0	U	0	0	0	br0
127.0.0.0	*	255.0.0.0	U	0	0	0	lo
192.168.254.0	*	255.255.255.0	U	0	0	0	br0

ARP

IP Address	HW type	Flags	HW Address	Mask	Device
192.168.254.71	0x1	0x2	ac:a2:13:6a:12:09	*	br0

Help

PDN Info:
When the wanprotol is PDN show PDN IP Map.

Route:
The routing table information.

ARP:
The ARP table information.

LAN

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

LTE Network Security Applications Management Maintenance Status Exit

System Network LAN admin

Local Network

LAN Status

MAC Address: 6C:AD:EF:FE:2A:9F

IP Address: 192.168.254.251

Subnet Mask: 255.255.255.0

Local DNS

Port Status: Up

Speed / Duplex: 100Mbps / Full

Sent(Errors/Dropped): 0 packets / 0 packets

Received(Errors/Dropped): 0 packets / 0 packets

RX CRC Errors: 0 packets

Collisions: 0 packets

Sent: 284,287 bytes / 422 packets

Received: 28,803 bytes / 303 packets

Dynamic Host Configuration Protocol

DHCP Status

DHCP Server: Enabled

Start IP Address: 192.168.254.2

End IP Address: 192.168.254.201

Client Lease Time: 1440 minutes

DHCP Clients

Host Name	IP Address	MAC Address	Expires
- None -			

Help

MAC Address:
This is the device's MAC Address, as seen on your local, Ethernet network.

IP Address:
This shows the device's IP Address, as it appears on your local, Ethernet network.

Subnet Mask:
When the device is using a Subnet Mask, it is shown here.

DHCP Server:
If you are using the device as a DHCP server, that will be displayed here.

DHCP Clients:
It displays all the LAN devices that currently connected to the unit.

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 172.16.1.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.