# WF820+ Outdoor LTE CPE

# With Wi-Fi Router

User Manual

WF820+ Router

FCC ID：SRQ-WF820R

LTE CPE

FCC ID：SRQ-WF820E

# Index

# 1 Getting Started

## 1.1 Welcome to the CPE

In this document, the LTE (Long Term Evolution) CPE (customer premises equipment) will be replaced by the CPE. Carefully read the following safety symbols to help you use your CPE safely and correctly:

| | |
|---|---|
| | Additional information |
| | Optional methods or shortcuts for an action |
| | Potential problems or conventions that need to be specified |

## 1.2 Computer Configuration Requirements

For optimum performance, make sure your computer meets the following requirements.

| Item | Requirement |
|---|---|
| CPU | Pentium 500 MHz or higher |
| Memory | 128 MB RAM or higher |
| Hard disk | 50 MB available space |
| Operating system | • Microsoft: Windows XP, Windows Vista, or Windows 7<br>• Mac: Mac OS X 10.5 or higher |
| Display resolution | 1024 x 768 pixels or higher |
| Browser | • Internet Explorer 7.0 or later<br>• Firefox 3.6 or later<br>• Opera 10 or later<br>• Safari 5 or later<br>• Chrome 9 or later |

## 1.3 Logging In to the Web Management Page

Use a browser to log in to the web management page to configure and manage the CPE.

The following procedure describes how to use a computer running Windows XP and Internet Explorer 7.0 to log in to the web management page of the CPE.

1. Connect the CPE properly.

2. Launch Internet Explorer, enter http://192.168.1.1 in the address bar, and press Enter. As shown in Figure 1-1.


Figure 1-1

3. Enter the user name and password, and click Log In.

You can log in to the web management page after the password is verified. As shown in Figure 1-2.

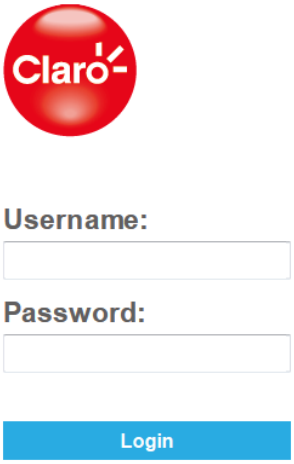



Figure 1-2

The default user name is **1admin0,** and password is **ltecl4r0**. If you want to view or configure the CPE more, you should use the super account to log in to the web management page. Please contact customer service for the super account.

To protect your CPE from unauthorized access, change the password after your first login.

The CPE supports diagnostic function. If you encounter problems, please contact customer service for the specific using method.

To ensure your data safety, it is recommended that you turn on the firewall, and conserve your login and FTP password carefully.

# 2 Overview

## 2.1 Viewing the System Information

To view the System Information, perform the following steps:

1. Choose **Overview**;
2. In the **System Information** area, view the system status, such as Running time. As shown in Figure 2-1.

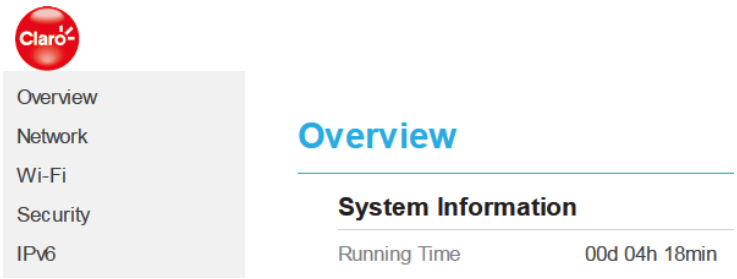



Figure 2-1

## 2.2 Viewing the Version Information

To view the Version Information, perform the following steps:

1. Choose **Overview**;
2. In the **Device Information** area, view the version information, such as Product name, Software version, UBoot version. As shown in Figure 2-2.

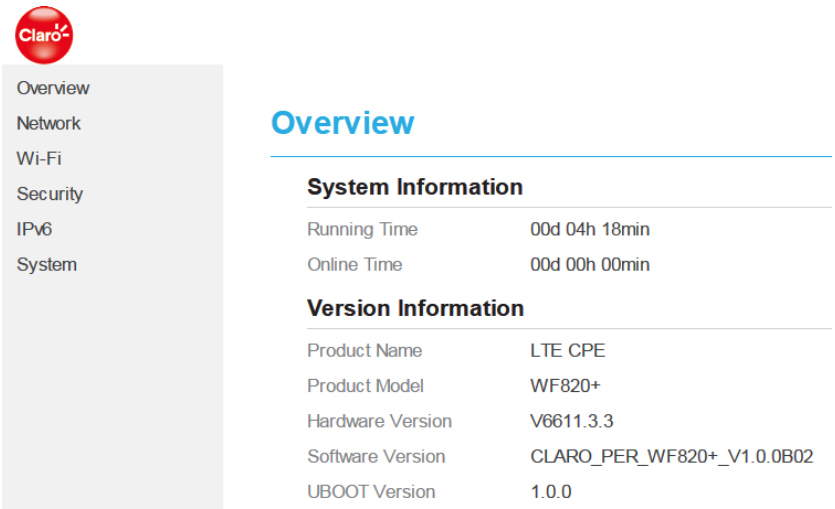



Figure 2-2

## 2.3 Viewing CPU Usage

To view the CPU usage, perform the following steps:

1. Choose **Overview**;
2. In the **CPU Usage** area, view the CPU usage information, such as Current CPU usage, Max CPU usage, Min CPU usage. As shown in Figure 2-3.

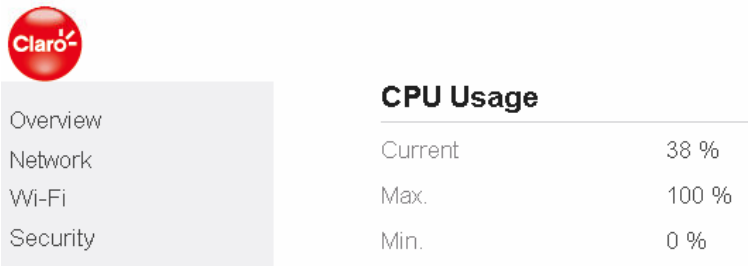


Figure 2-3

## 2.4 Viewing Memory Usage

To view the memory usage, perform the following steps:

1. Choose **Overview**;
2. In the **Memory Usage** area, view the memory usage information, such as Total memory, Current memory usage, Max memory usage and Min memory usage. As shown in Figure 2-4.

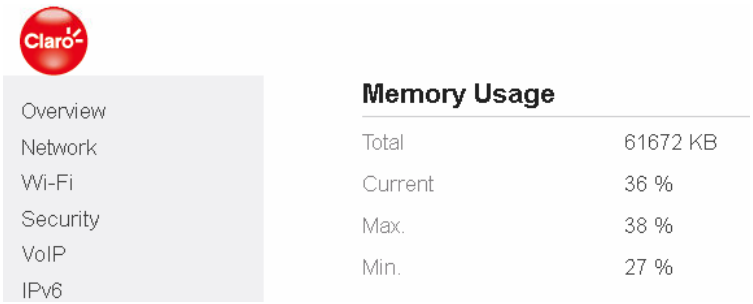



Figure 2-4

## 2.5 Viewing 4G Status

To view the 4G network status, perform the following steps:

1. Choose **Overview**;
2. In the **LTE Status** area, view the information about USIM card status, Connect status, Operator, Current Mobile Network, Signal quality and so on. As shown in Figure 2-5.

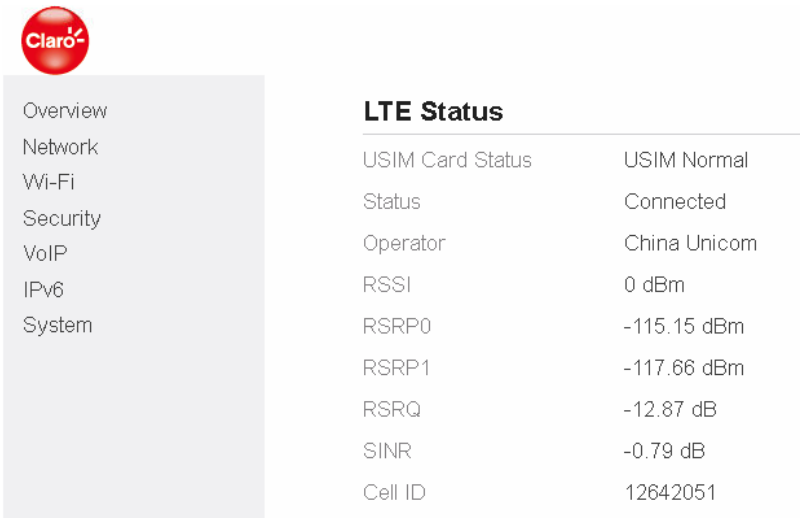



Figure 2-5

## 2.6 Viewing LAN Status

To view the LAN status, perform the following steps:

1. Choose **Overview**;
2. In the **LAN Status** area, view the LAN status, such as Mac address, IP address and Subnet mask. As shown in Figure 2-6.


Figure 2-6

## 2.7 Viewing Wi-Fi Status

To view the Wi-Fi status, perform the following steps:

1. Choose **Overview**;
2. In the **Wi-Fi Status** area, view the information about Wi-Fi status, SSID, Chanel NO., MAC address and WDS status. As shown in Figure 2-7.

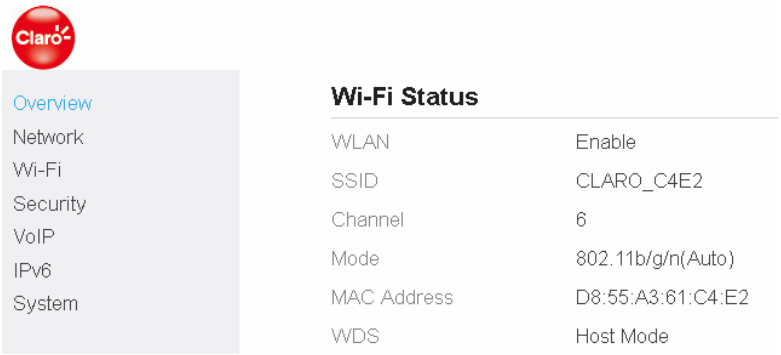



Figure 2-7

## 2.8 Viewing Throughput Statistics

To view the throughput statistics, perform the following steps:

1. Choose **Overview**;
2. In the **Throughput Statistics** area, view the throughput statistics, such as WAN throughput and LAN throughput. As shown in Figure 2-8.

**Throughput Statistics**

| Port | Received | | | | Sent | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Traffic | Packets | Errors | Dropped | Total Traffic | Packets | Errors | Dropped |
| CLARO DATOS TDD | 97 KB | 1119 | 0 | 0 | 171 KB | 1663 | 0 | 0 |
| CLARO VOZ TDD | 930 Bytes | 3 | 0 | 0 | 227 KB | 604 | 0 | 0 |
| APN3 | -- | -- | -- | -- | -- | -- | -- | -- |
| APN4 | -- | -- | -- | -- | -- | -- | -- | -- |
| LAN | 1.98 MB | 37448 | 0 | 0 | 3.69 MB | 23653 | 0 | 0 |

Figure 2-8

## 2.9 Viewing Device List

To view the device list, perform the following steps:

1. Choose **Overview**;
2. In the **Device List** area, view the device information which connect to the CPE, such as Device name, Mac address, IP address and Lease time. As shown in Figure 2-9.


Figure 2-9

# 3 Network

## 3.1 WAN Settings

### 3.1.1 Network Mode

To set the network mode, perform the following steps:

1. Choose **Network** >**WAN Settings**;
2. In the **Network Mode** area, select a mode between **BRIDGE** and **NAT**;
3. Click **Submit**. As shown in Figure 3-1.

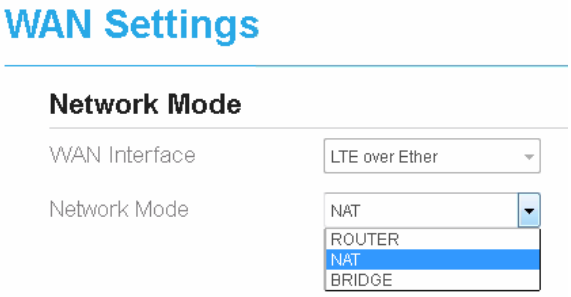



Figure 3-1

## 3.2 LTE Settings

### 3.2.1 LTE Setting

To set the LTE network, perform the following steps:

1. Choose **Network** >**LTE Settings**;
2. In the **Setting** area, you can set the configuration of LTE network;

3. In the **LTE Settings** area, you can view the LTE network connect status, such as Frequency, RSSI, RSRP, RSRQ, CINR, SINR, Cell ID and so on. As shown in Figure 3-2.

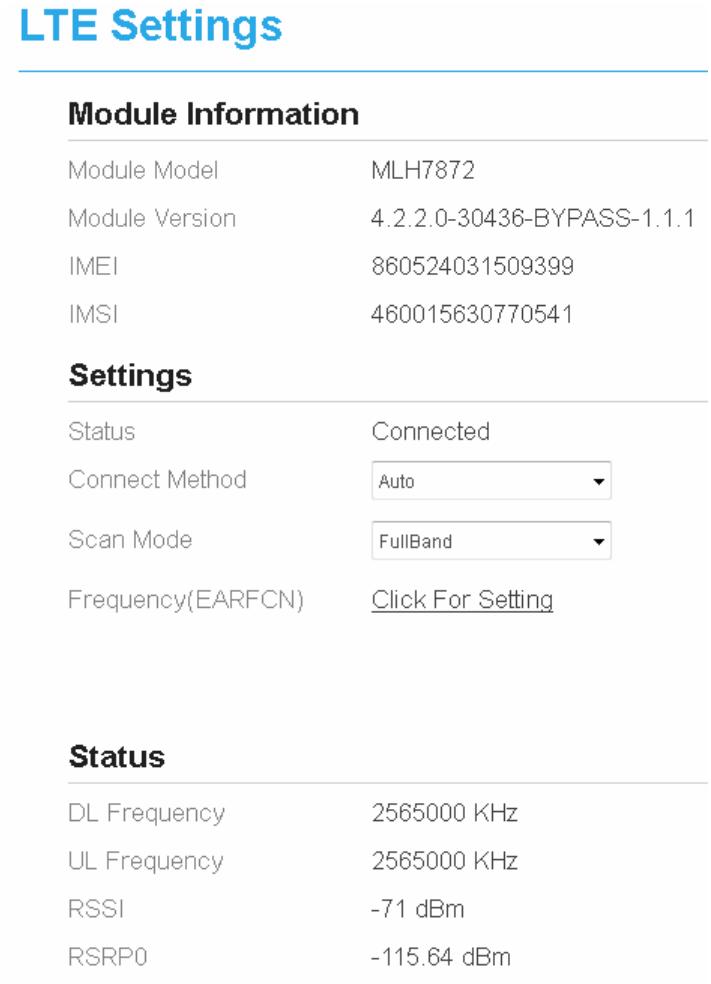



Figure 3-2

## 3.2.2 Connect Method Setting

To set the connect method, perform the following steps:

1. Choose **Network > LTE Settings**;
2. In the **Setting** area, Select a connect method between **Auto** and **Manual**. As shown in Figure 3-3.

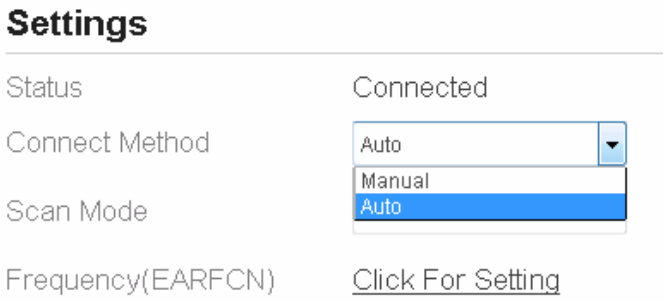



Figure 3-3

#### 3.2.2.1 Auto Connect LTE Network

To set the CPE automatically connect to the internet, perform the following steps:

1. Choose **Network > LTE Settings**;
2. In the **Setting** area, set the connect method as **Auto**, when the LTE network is ready, the CPE will be connected automaticity. As shown in Figure 3-4.

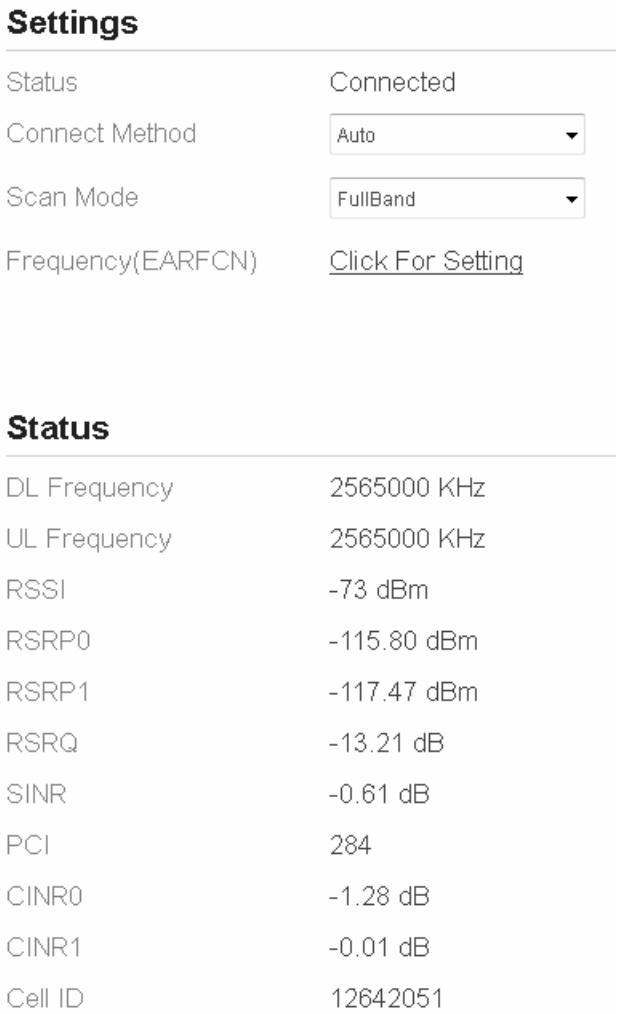



Figure 3-4

#### 3.2.2.2 Manual Connect Mobile Network

To set the mobile network manual connect to the internet, perform the following steps:

1. Choose **Network > LTE Settings**;
2. In the **Setting** area, set the connect method as **Manual**, when the LTE network is ready, you can set the CPE connect to the LTE network or disconnect from the LTE network. As shown in Figure 3-5.

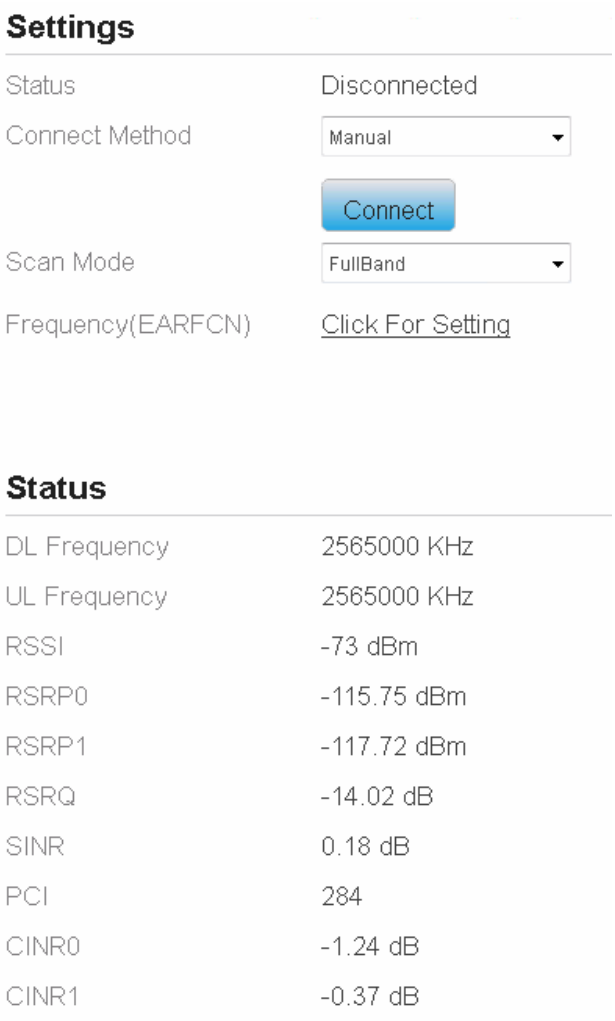



Figure 3-5

## 3.3 APN Management

### 3.3.1 APN Settings in NAT mode

To set and manage APN in NAT mode, perform the following steps:

1. Choose **Network>APN Management**.
2. In the **APN Management** area, you can set the APN.
3. Choose a **APN number** which you want to set.
4. In the **APN Setting** area you can set the APN parameters, such as enable or disable the apn, apn name, username, password and so on.
5. If you want set a APN as **default gateway**, you should check that is enabled.
6. Select a APN type from the drop-down list, such as VoIP, TR069 or VoIP+TR069.
7. Click **Submit.** As shown in Figure 3-6.

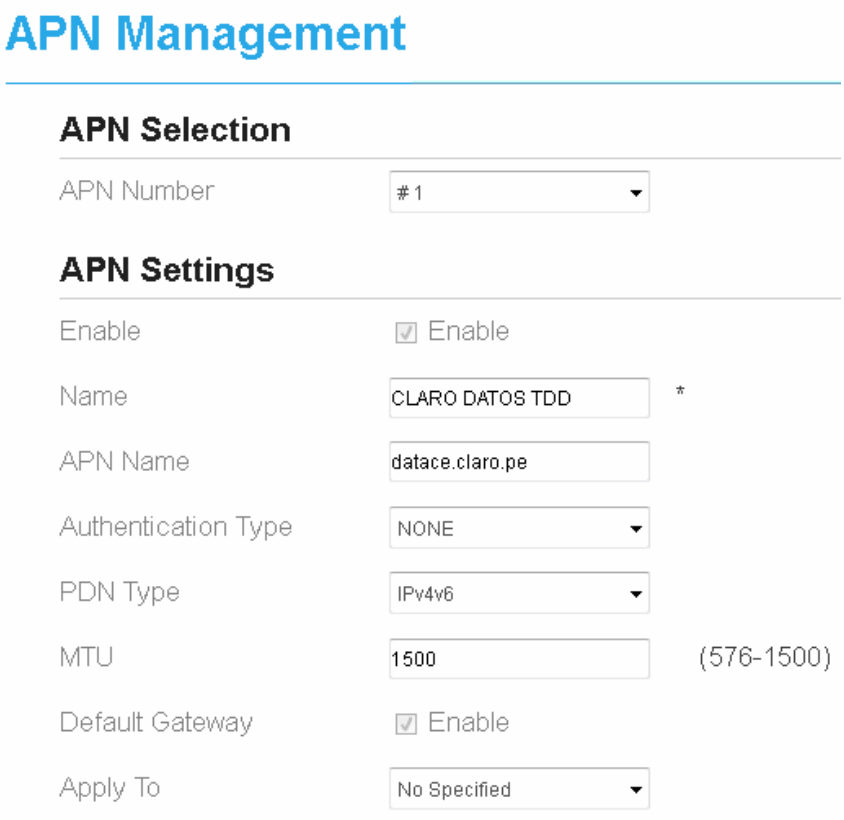



Figure 3-6

## 3.3.2 APN Settings in BRIDGE mode

If you want to set the CPE work in bridge mode, please set and manage APN performing the following steps:

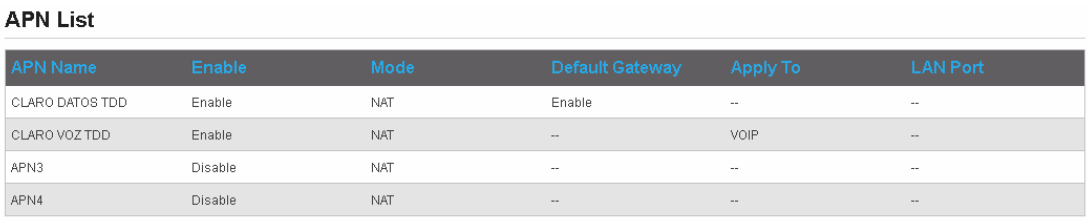
1. Choose **Network>WAN Settings**.
2. Set the network mode as **BRIDGE.**
3. Choose **Network> APN Management.**
4. In the **APN Management** area, you can set the APN.
5. Choose a **APN number** which you want to set.
6. In the **APN Settings** area, set the mode as **Bridge.**
7. Set the APN parameters, such as enable or disable the APN, APN name, username, password and so on.
8. In the **LAN Port Settings** list, select a LAN port you want to use as bridge mode.
9. Click **Submit.** As shown in Figure 3-7.


Figure 3-7

## 3.3.3 APN list

To view the APN list, perform the following steps:

1. Choose **Network>APN Management**.
2. In the **APN list** area you can view the APN list. As shown in the figure 3-8.



**APN List**

| APN Name | Enable | Mode | Default Gateway | Apply To | LAN Port |
|---|---|---|---|---|---|
| CLARO DATOS TDD | Enable | NAT | Enable | -- | -- |
| CLARO VOZ TDD | Enable | NAT | -- | VOIP | -- |
| APN3 | Disable | NAT | -- | -- | -- |
| APN4 | Disable | NAT | -- | -- | -- |

Figure 3-9

## 3.4 PIN Management

To manage the PIN, you can perform the following operations on the PIN Management page:

1. Enable or disable the PIN verification.
2. Verify the PIN.
3. Change the PIN.
4. Set automatic verification of the PIN. As shown in Figure 3-9.

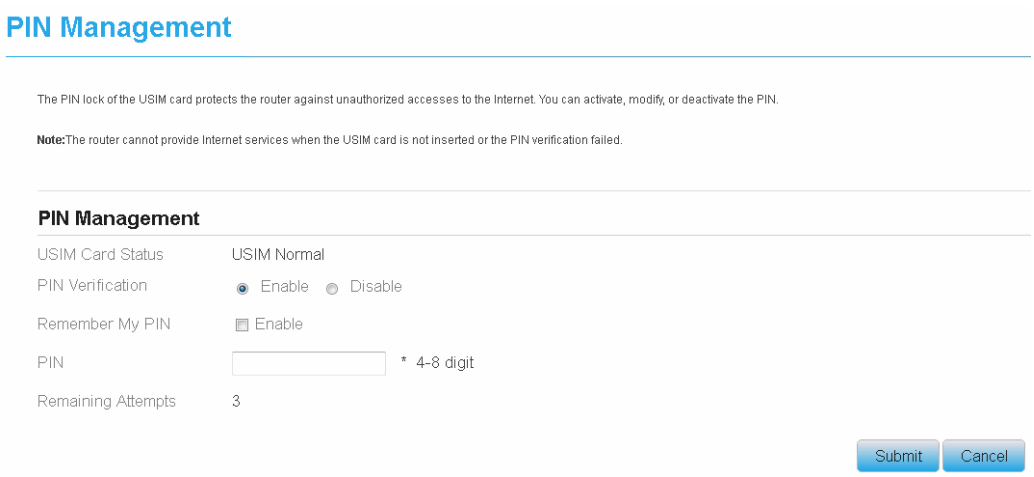



Figure 3-9

## 3.4.1 Viewing the Status of the USIM Card

To view the status of the USIM card, perform the following steps:

1. Choose **Network** >**PIN Management**.
2. View the status of the USIM card in the **USIM card status** field.

## 3.4.2 Enabling PIN Verification

To enable PIN verification, perform the following steps:

1. Choose **Network** >**PIN Management**.
2. Set **PIN verification** to **Enable**.
3. Enter the PIN (4 to 8 digits) in the **Enter PIN** box.
4. Click **Submit**.

## 3.4.3 Disabling PIN Verification

To disable PIN verification, perform the following steps:

1. Choose **Network** >**PIN Management**.
2. Set **PIN verification** to **Disable**.
3. Enter the PIN (4 to 8 digits) in the **Enter PIN** box.
4. Click **Submit**.

## 3.4.4 Verifying the PIN

If PIN verification is enabled but the PIN is not verified, the verification is required. To verify the PIN, perform the following steps:

1. Choose **Network** >**PIN Management**.
2. Enter the PIN (4 to 8 digits) in the **PIN** box.

3. Click **Submit**.

## 3.4.5 Changing the PIN

The PIN can be changed only when PIN verification is enabled and the PIN is verified.
To change the PIN, perform the following steps:

1. Choose **Network**>**PIN Management**.
2. Set PIN verification to **Enable**.
3. Set **Change PIN** to **Enable**.
4. Enter the current PIN (4 to 8 digits) in the **PIN** box.
5. Enter a new PIN (4 to 8 digits) in the **New PIN** box.
6. Repeat the new PIN in the **Confirm PIN** box.
7. Click **Submit**.

## 3.4.6 Setting Automatic Verification of the PIN

You can enable or disable automatic verification of the PIN. If automatic verification is enabled, the CPE automatically verifies the PIN after restarting. This function can be enabled only when PIN verification is enabled and the PIN is verified.

To enable automatic verification of the PIN, perform the following steps:

1. Choose **Network > PIN Management**.
2. Set Pin verification to **Enable**.
3. Set Remember my PIN to **Enable**.
4. Click **Submit**.

## 3.4.7 Verifying the PUK

If PIN verification is enabled and the PIN fails to be verified for three consecutive times, the PIN will be locked. In this case, you need to verify the PUK and change the PIN to unlock it.

To verify the PUK, perform the following steps:

1. Choose **Network**> **PIN Management**.
2. Enter the PUK in the **PUK** box.
3. Enter a new PIN in the **New PIN** box.
4. Repeat the new PIN in the **Confirm PIN** box.
5. Click **Submit**.

## 3.5 LAN Setting

### 3.5.1 Setting LAN Host Parameters

By default, the IP address is 192.168.1.1 with a subnet mask of 255.255.255.0. You can change the host IP address to another individual IP address that is easy to remember. Make sure that IP address is unique on your network. If you change the IP address of the CPE, you need to access the web management page with the new IP address.

To change the IP address of the CPE, perform the following steps:

1. Choose **Network Setting**>**LAN Settings**.
2. In the **LAN Host Settings** area, set IP address and subnet mask.
3. In the **DHCP Setting** area, set the DHCP server to **Enable**.
4. Click **Submit**. As shown in Figure 3-10.

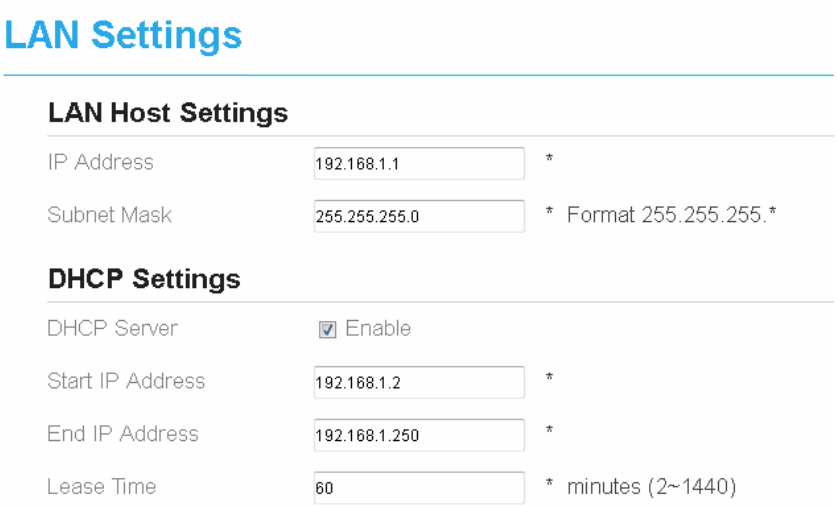



Figure 3-10

### 3.5.2 Configuration the DHCP Server

DHCP enables individual clients to automatically obtain TCP/IP configuration when the server powers on. You can configure the CPE as a DHCP server or disable it. When configured as a DHCP server, the CPE automatically provides the TCP/IP configuration for the LAN clients that support DHCP client capabilities. If DHCP server services are disabled, you must have another DHCP server on your LAN, or each client must be manually configured.

To configure DHCP settings, perform the following steps:

1. Choose **Network Setting** > **LAN Settings**.
2. Set the DHCP server to **Enable**.
3. Set **Start IP** address.

This IP address must be different from the IP address set on the **LAN Host Settings** area, but

they must be on the same network segment.

4. Set **End IP** address.

   This IP address must be different from the IP address set on the **LAN Host Settings** area, but they must be on the same network segment.

5. Set **Lease time**.

   **Lease time** can be set to 2 to 1440 minutes. It is recommended to retain the default value.

6. Click **Submit**. As shown in Figure 3-11.

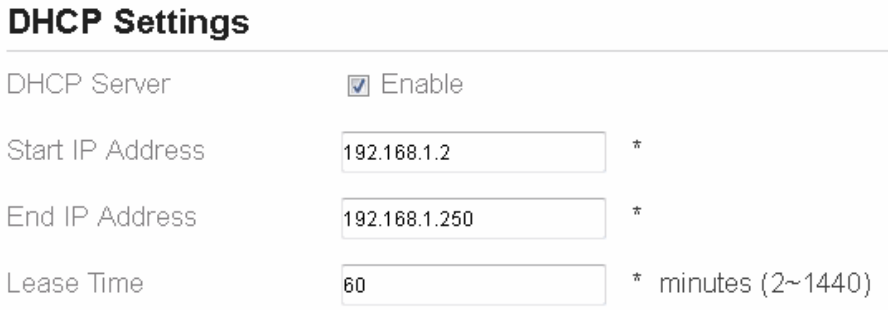



Figure 3-11

## 3.5.3 Bundled Address List

You can bind an IP address to a device based on its MAC address. The device will receive the same IP address each time it accesses the DHCP server. For example, you can bind an IP address to an FTP server on the LAN.

To add an item to the setup list, perform the following steps:

1. Choose **Network Setting > LAN Settings**.
2. Click **Add list**.
3. Set the **MAC address** and **IP Address**.
4. Click **Submit.** As shown in Figure 3-12.

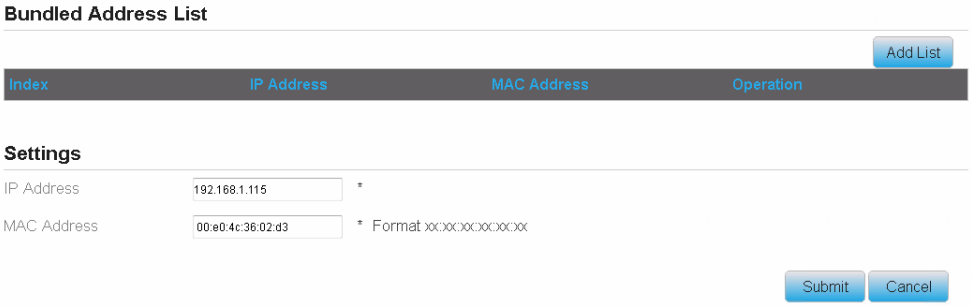



Figure 3-12

To modify an item in the setup list, perform the following steps:

1. Choose **Network Setting > LAN Settings**.
2. Choose the item to be modified, and click **Edit**.
3. Set the **MAC address** and **IP Address**.
4. Click **Submit**. As shown in Figure 3-13.

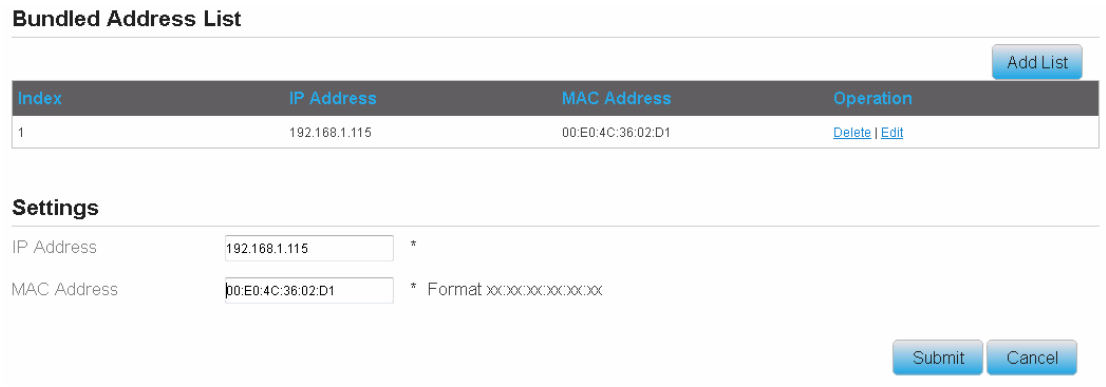



Figure 3-13

To delete an item in the setup list, perform the following steps:

1. Choose **Network Setting > LAN Settings**.
2. Choose the item to be deleted, and click **Delete**.

## 3.6 DMZ Settings

If the demilitarized zone (DMZ) is enabled, the packets sent from the WAN are directly sent to a specified IP address on the LAN before being discarded by the firewall.

To set DMZ, perform the following steps:

1. Choose **Network Setting > DMZ Settings.**
2. Set DMZ to **Enable**.
3. (Optional) Set **ICMP Redirect** to **Enable**.
4. Set **Host address**.

   This IP address must be different from the IP address set on the **LAN Host Settings** page, but they must be on the same network segment.

5. Click **Submit**. As shown in Figure 3-14.

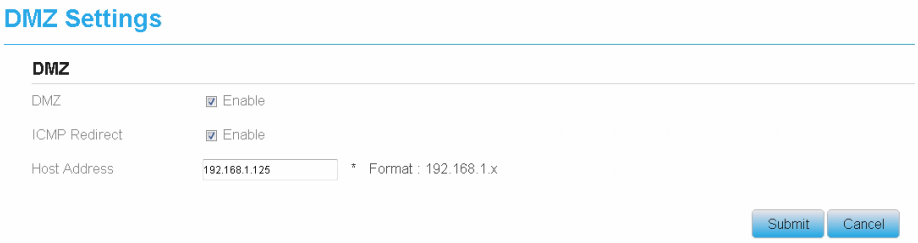



Figure 3-14

## 3.7 Static Route

### 3.7.1 Add Static Route

To add a static route, perform the following steps:

1. Choose **Network Setting**>**Static Route**.
2. Click **Add list**.
3. Set the **Dest IP address** and **Subnet mask**.
4. Select an **Interface** from the drop-down list.
5. If you select **LAN** as the interface, you need set a Gateway.
6. Click **Submit.** As shown in Figure 3-15.

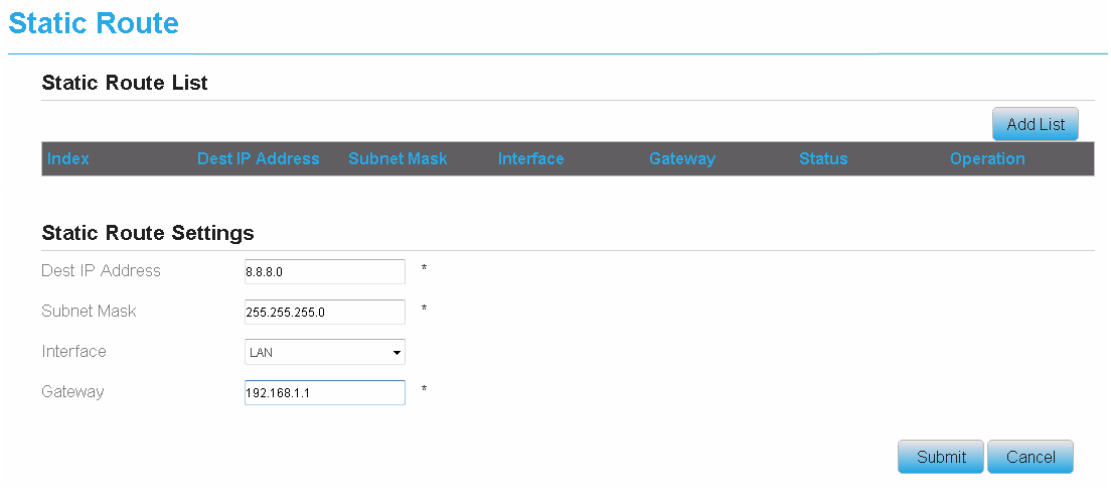



Figure 3-15

## 3.7.2 Modify Static Route

To modify an access restriction rule, perform the following steps:

1. Choose **Security**>**Static Route**.
2. Choose the item to be modified, and click **Edit**.
3. Repeat steps 3 through 5 in the previous procedure.
4. Click **Submit**. As shown in Figure 3-16.

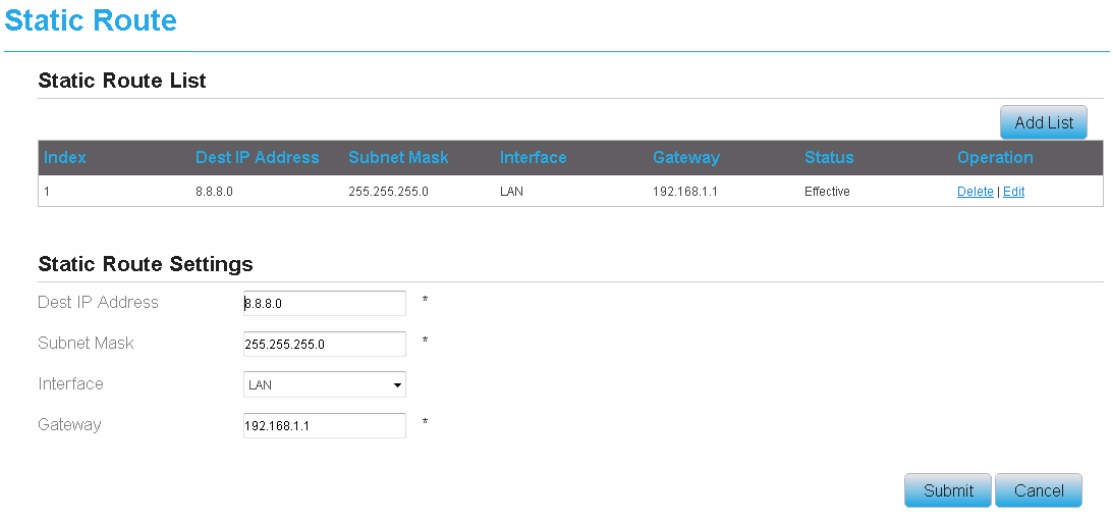



Figure 3-16

### 3.7.3 Delete Static Route

To delete a static route, perform the following steps:

1. Choose **Security**>**Static Route**.
2. Choose the item to be deleted, and click **Delete**.

# 4 Wi-Fi

## 4.1 WLAN Setting

This function enables you to configure the Wi-Fi parameters.

### 4.1.1 Setting General Parameters

To configure the general Wi-Fi settings, perform the following steps:

1. Choose **Wi-Fi > Wi-Fi Settings**.
2. In the **General Settings** area, set WLAN to **Enable**.
3. Set **Mode** to one of the values described in the following table:

| Parameter Value | Description |
|---|---|
| 802.11b/g/n | The Wi-Fi client can connect to the CPE in 802.11b, 802.11g, or 802.11n mode. If the client connects to the CPE in 802.11n mode, the Advanced Encryption Standard (AES) encryption mode is required. |
| 802.11b/g | The Wi-Fi client can connect to the CPE in 802.11b or 802.11g mode. |
| 802.11b | The Wi-Fi client can connect to the CPE in 802.11b mode. |
| 802.11g | The Wi-Fi client can connect to the CPE in 802.11g mode. |

4. Set the **Channel No.** from 1 to 11.
5. Set the Tx Power from 20% to 100%.
6. Click **Submit**. As shown in Figure 4-1.

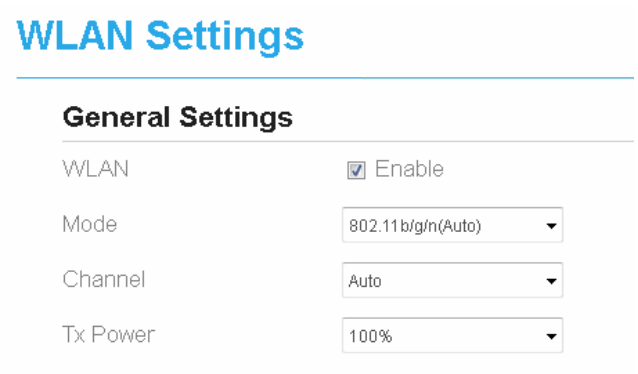



Figure 4-1

### 4.1.2 WPS Settings

Wi-Fi Protected Setup (WPS) enables you to simply add a wireless client to the network without needing to specifically configure the wireless settings, such as the SSID, security mode and passphrase. You can use either the WPS button or PIN to add the wireless client.

To configure Wi-Fi WPS settings, perform the following steps:

1. Choose **Wi-Fi** > **WPS Settings**.
2. Set **WPS** to **Enable**.
3. Click **Submit**. As shown in Figure 4-2.


Figure 4-2

## 4.2 Setting SSID Profile

After you configure the CPE on the **SSID Profile** page, the Wi-Fi client connects to the CPE based on preset rules, improving access security.

To configure the CPE on the **SSID Profile** page, perform the following steps:

1. Choose **Wi-Fi** > **Wi-Fi Settings**.
2. Set **SSID**.
   The SSID can contain 1 to 32 ASCII characters. It cannot be empty and the last character cannot be a blank character. In addition, the SSID cannot contain the following special characters: / ' = " \ &
   The Wi-Fi client connects to the CPE using the found SSID.
3. Set **Maximum number of devices**.
   This parameter indicates the maximum number of Wi-Fi clients that connect to the CPE. A maximum of 32 clients can connect to the CPE.
4. Set **Hide SSID broadcast** to **Enable**.
   If the SSID is hidden, the client cannot detect the CPE's Wi-Fi information.
5. Set **AP isolation** to **Enable**.
   The clients can connect to the CPE but cannot communicate with each other.

6. Set **Security**.

   If **Security** is set to **NONE (not recommended)**, Wi-Fi clients directly connect to the CPE. This security level is low.

   If **Security** is set to **WEP**, Wi-Fi clients connect to the CPE in web-based encryption mode.

   If **Security** is set to **WPA-PSK**, Wi-Fi clients connect to the CPE in WPA-PSK encryption mode.

   If **Security** is set to **WPA2-PSK**, Wi-Fi clients connect to the CPE in WPA2-PSK encryption mode. This mode is recommended because it has a high security level.

   If **Security** is set to **WPA-PSK & WPA2-PSK**, Wi-Fi clients connect to the CPE in WPA-PSK&WPA2-PSK encryption mode.

7. Set the encryption mode.

| If… | Sets to | Description |
|---|---|---|
| WEP | Authentication mode | ● **Shared authentication**: The client connects to the CPE in shared authentication mode.<br>● **Open authentication**: The client connects to the CPE in open authentication mode.<br>● **Both**: The client connects to the CPE in shared or open authentication mode. |
| | Encryption password length | ● **128bit**: Only 13 ASCII characters or 26 hex characters can be entered in the **Key 1** to **Key 4** boxes.<br>● **64bit**: Only 5 ASCII characters or 10 hex characters can be entered in the **Key 1** to **Key 4** boxes. |
| | Current password index | This value can be set to **1**, **2**, **3**, or **4**. After a key index is selected, the corresponding key takes effect. |
| WPA-PSK | WPA-PSK | Only 8 to 63 ASCII characters or 8 to 64 hex characters can be entered. |
| | WPA encryption | This value can be set to **TKIP+AES**, **AES**, or **TKIP**. |
| WPA2-PSK(recommended) | WPA-PSK | Only 8 to 63 ASCII characters or 8 to 64 hex characters can be entered. |
| | WPA encryption | This value can be set to **TKIP+AES**, **AES**, or **TKIP**. |
| WPA-PSK & WPA2-PSK | WPA-PSK | Only 8 to 63 ASCII characters or 8 to 64 hex characters can be entered. |
| | WPA encryption | This value can be set to **TKIP+AES**, **AES**, or **TKIP**. |

8. Click **Submit**. As shown in Figure 4-3.

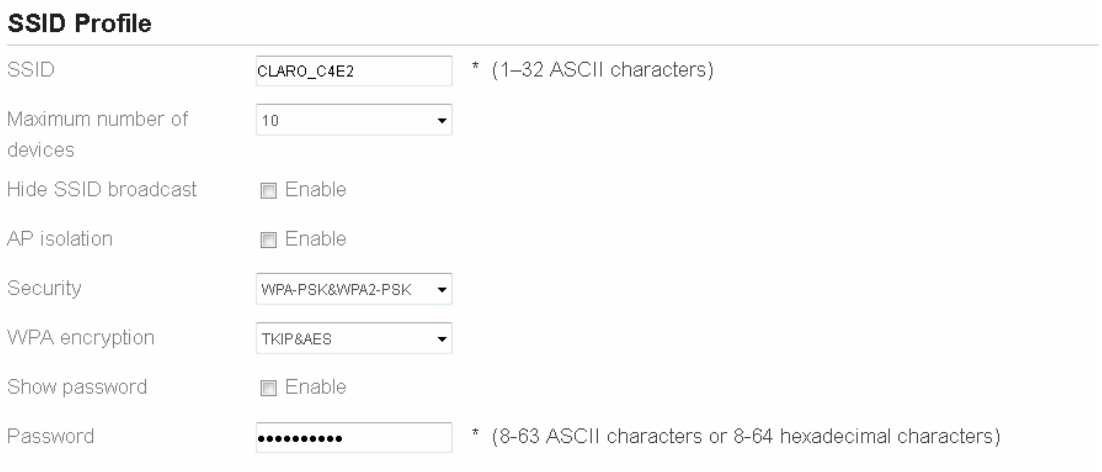



Figure 4-3

# 4.3 Access Management

## 4.3.1 Setting the Access Policy

This function enables you to set access restriction policies for each SSID to manage access to the CPE.

To configure Wi-Fi MAC control settings, perform the following steps:

1. Choose **Wi-Fi** > **Access Management**.
2. In the **WLAN Access List Settings** area, set Access Policy.
   The access policy can be set to **Disable**, **Blacklist** or **Whitelist**.
   - If SSID's MAC Access is set to **Disable**, access restrictions do not take effect.
   - If SSID's MAC Access is set to **Blacklist**, only the devices that are not in the blacklist can connect to the CPE.
   - If SSID's MAC Access is set to **Whitelist**, only the devices in the whitelist can connect to the CPE.
3. Click **Submit**. As shown in Figure 4-4.

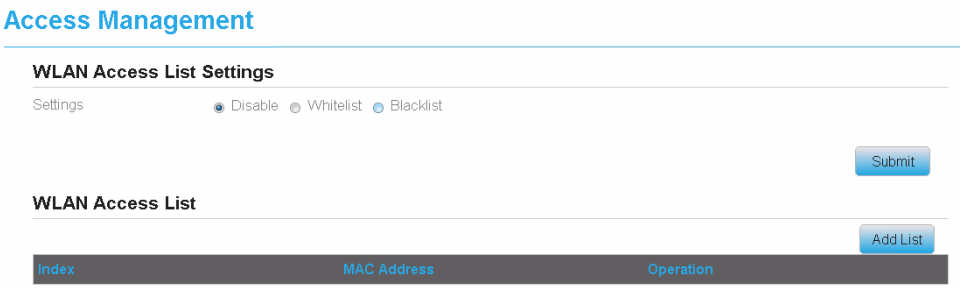



Figure 4-4

## 4.3.2 Managing the Wi-Fi Access List

This function enables you to set the SSID access policies based on MAC addresses.

To add an item to the Wi-Fi access list, perform the following steps:

1. Choose **Wi-Fi** > **Access Management**.
2. Click **Add**.
3. Set **MAC address**.
4. Click **Submit**. As shown in Figure 4-5.


Figure 4-5

To modify an item in the Wi-Fi access list, perform the following steps:

1. Choose **Wi-Fi** > **Access Management**.
2. Click **Edit MAC List**.
3. Choose the item to be modified, and click **Edit**.
4. Set MAC address.
5. Set one of the SSID to **Enable** to make the MAC address take effect for the SSID**.**
6. Click **Submit**. As shown in Figure 4-6.


Figure 4-6

To delete an item from the Wi-Fi access list, perform the following steps:

1. Choose **Wi-Fi** > **Access Management**.
2. Choose the item to be deleted, and click **Delete**. As shown in Figure 4-7.

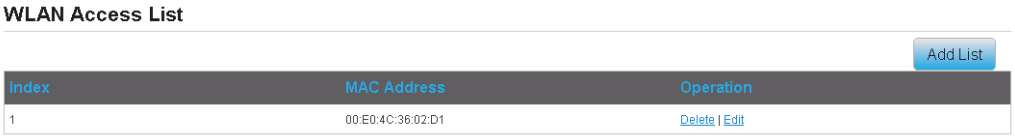



Figure 4-7

## 4.4 WDS

The CPE supports the wireless distribution system (WDS). All Wi-Fi devices in a WDS must be configured to use the same radio channel, encryption mode, SSID, and encryption key. You can set the WDS encryption mode to NONE or WPA/WPA2. If you set the WDS encryption mode to NONE, the Wi-Fi clients can use NONE or WEP encryption mode. If you set the WDS encryption mode to WPA/WPA2-PSK, the Wi-Fi clients can use WPA/WPA2-PSK encryption mode. After WDS is enabled, disable DHCP on CPEs that are not directly connected to the WAN port.

If WDS is enabled, the WPS function will not take effect. If the channel is set to **Auto**, you need to set the channel.

To configure the WDS, perform the following steps:

1. Choose **Wi-Fi** > **WDS**.
2. Set **WDS** to **Enable**.
3. Set WDS Mode as **Repeater Mode**;
4. Click **Scan**.
   From the search results, choose the SSID of the networking device.
5. Set **Security**.
   **WPA-PSK** can contain 8 to 63 ASCII characters or 64 hex characters.
6. Click **Submit**. As shown in Figure 4-8.

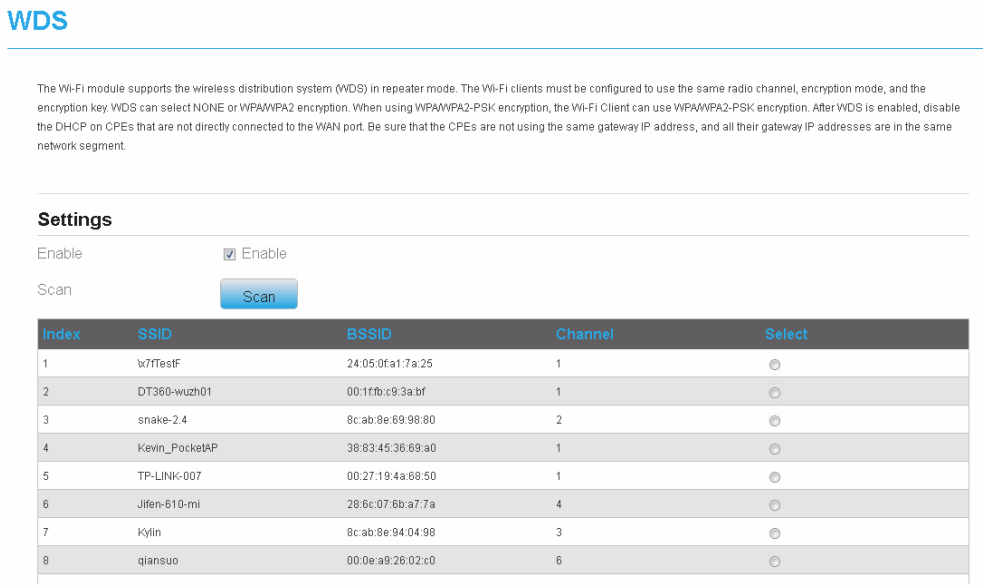



Figure 4-8

# 5 Security

## 5.1 MAC Filtering

This page enables you to configure the MAC address filtering rules.

### 5.1.1 Enabling MAC Filter

To enable MAC address filter, perform the following steps:

1. Choose **Security**>**MAC Filtering**
2. Set MAC filtering to **Enable**.
3. Click **Submit**. As shown in Figure 5-1.

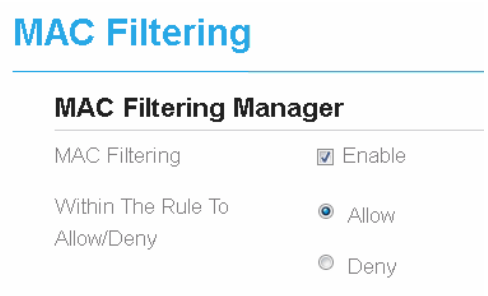



Figure 5-1

### 5.1.2 Disabling MAC Filter

To disable MAC address filter, perform the following steps:

1. Choose **Security**>**MAC Filtering**
2. Set MAC filtering to **Disable**.
3. Click **Submit**. As shown in Figure 5-2.

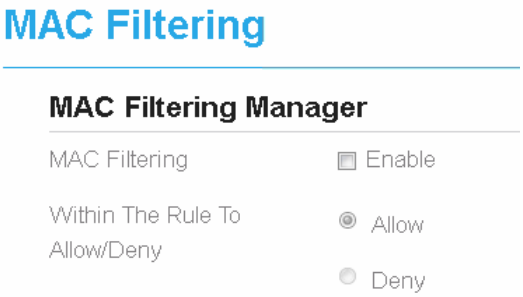



Figure 5-2

## 5.1.3 Setting Allow access network within the rules

To set allow access network within the rules, perform the following steps:

1. Choose **Security**>**MAC Filtering**.
2. Set **Allow access network** within the rules.
3. Click **Submit**. As shown in Figure 5-3.

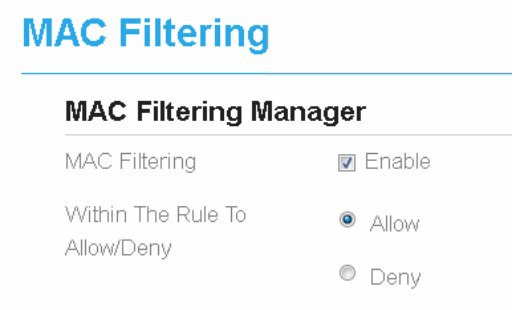



Figure 5-3

## 5.1.4 Setting Deny access network within the rules

To set deny access network within the rules, perform the following steps:

1. Choose **Security**>**MAC Filtering**.
2. Set **Deny access network** within the rules.
3. Click **Submit**. As shown in Figure 5-4.

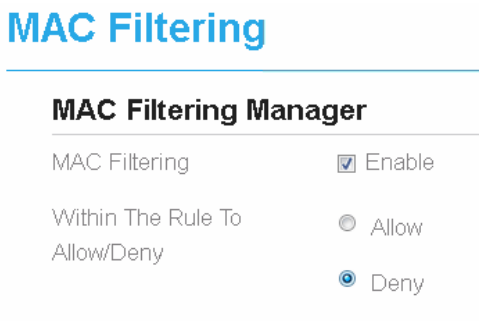



Figure 5-4

## 5.1.5 Adding MAC Filtering rule

To add a MAC filtering rule, perform the following steps:

1. Choose **Security**>**MAC Filtering**.
2. Click **Add list**.
3. Set **MAC address**.
4. Click **Submit**. As shown in Figure 5-5.

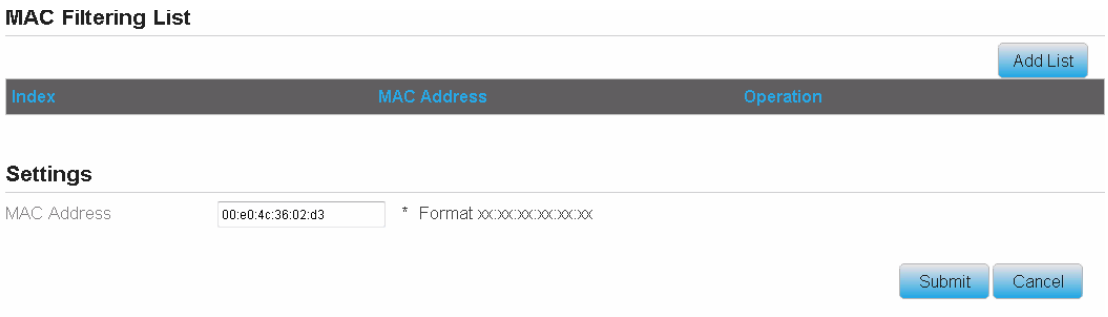



Figure 5-5

## 5.1.6 Modifying MAC Filtering rule

To modify a MAC address rule, perform the following steps:

1. Choose **Security**>**MAC Filtering**.
2. Choose the rule to be modified, and click **Edit**.
3. Set **MAC address**.
4. Click **Submit**. As shown in Figure 5-6.

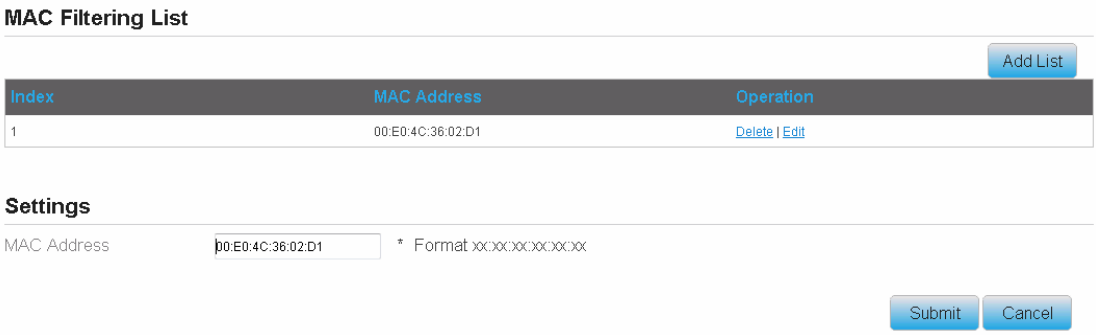



Figure 5-6

## 5.1.7 Deleting MAC Filtering rule

To delete a MAC address filter rule, perform the following steps:

1. Choose **Security**>**MAC Filtering**.
2. Choose the rule to be deleted, and click **Delete**. As shown in Figure 5-7.

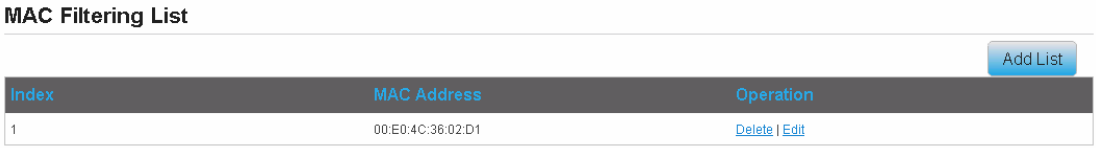



Figure 5-7

## 5.2 IP Filtering

Data is filtered by IP address. This page enables you to configure the IP address filtering rules.

## 5.2.1 Enabling IP Filtering

To enable IP Filtering, perform the following steps:

1. Choose **Security>IP Filtering**.
2. Set IP Filtering **Enable**.
3. Click **Submit**. As shown in Figure 5-8.

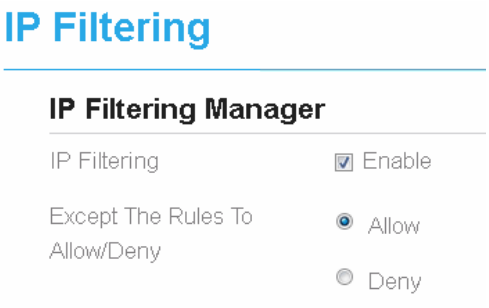



Figure 5-8

## 5.2.2 Disabling IP Filtering

To disable IP Filtering, perform the following steps:

1. Choose **Security>IP Filtering**.
2. Set IP Filtering **Disable**.
3. Click **Submit**. As shown in Figure 5-9.

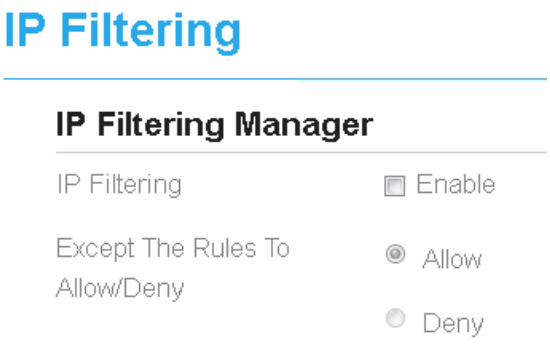



Figure 5-9

## 5.2.3 Setting Allow access network outside the rules

To set allow access network, perform the following steps:

1. Choose **Security>IP Filtering**.
2. Set **Allow access network** outside the rules.
3. Click **Submit**. As shown in Figure 5-10.

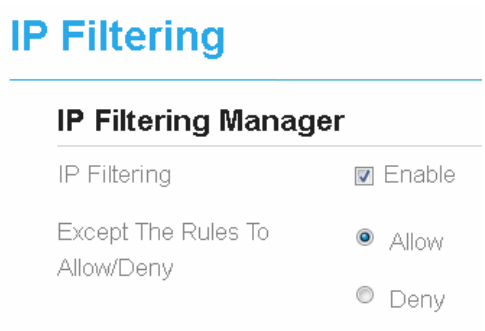



Figure 5-10

## 5.2.4 Setting Deny access network outside the rules

To set allow access network, perform the following steps:

1. Choose **Security**>**IP Filtering**.
2. Set **Deny access network** outside the rules.
3. Click **Submit**. As shown in Figure 5-11.

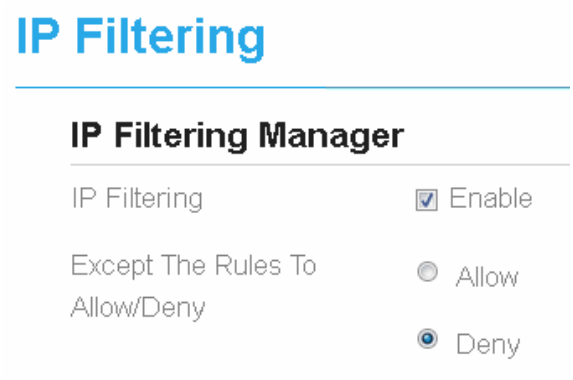



Figure 5-11

## 5.2.5 Adding IP Filtering rule

Add an IP address filtering rule, perform the following steps:

1. Choose **Security**>**IP Filtering**.
2. Click **Add list**.
3. Set **Service**.
4. Set **Protocol**.
5. In the **Source IP Address Range** box, enter the source IP address or IP address segment to be filtered.
6. In the **Source port range** box, enter the source port or port segment to be filtered.
7. In the **Destination IP Address Range** box, enter the destination IP address or IP address segment to be filtered.
8. In the **Destination port Range** box, enter the destination port or port segment to be filtered.
9. In the **Status** box, choose a status the rule will be executed.
10. Click **Submit**. As shown in Figure 5-12.

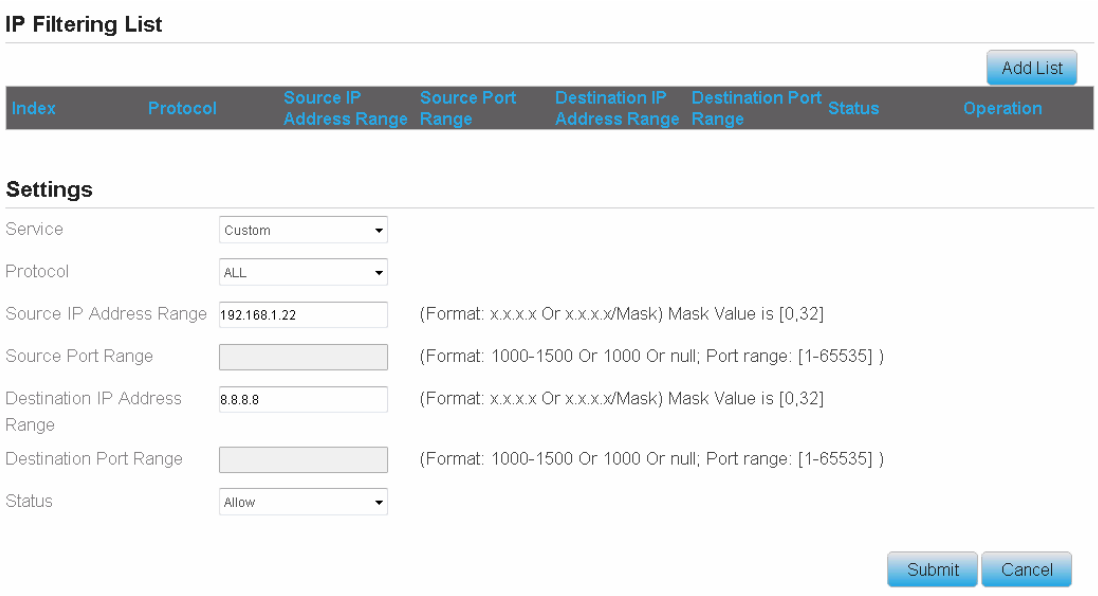



Figure 5-12

## 5.2.6 Modifying IP Filtering rule

To modify an IP filtering rule, perform the following steps:

1. Choose **Security > IP Filtering**.
2. Choose the rule to be modified, and click **Edit**.
3. Repeat steps 3 through 9 in the previous procedure.
4. Click **Submit**. As shown in Figure 5-13.

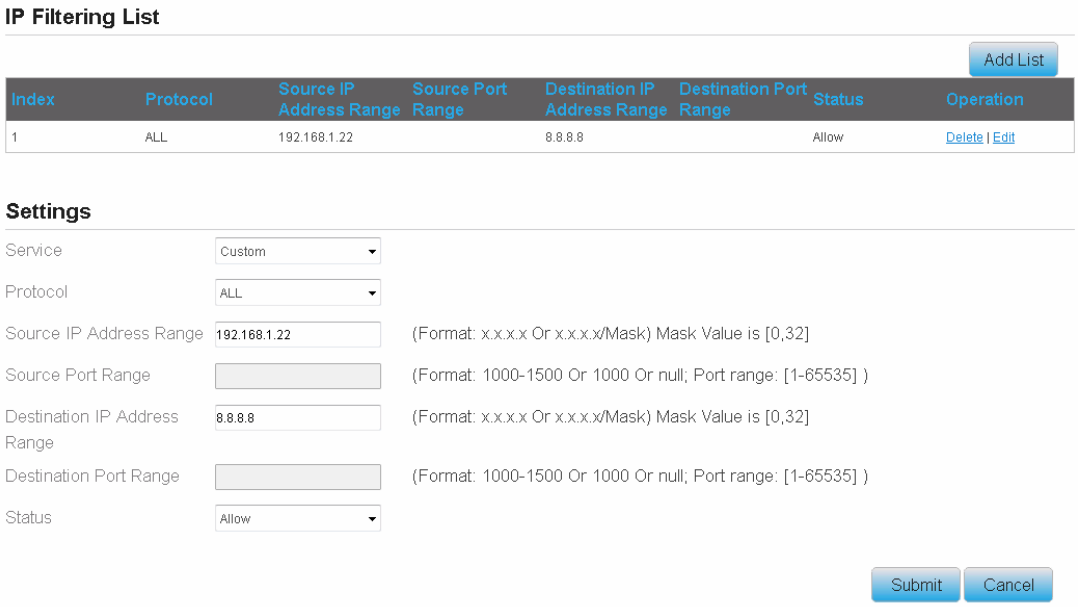



Figure 5-13

## 5.2.7 Deleting IP Filtering rule

To delete an IP address filtering rule, perform the following steps:

1. Choose **Security > IP Filtering**.
2. Choose the rule to be deleted, and click **Delete**. As shown in Figure 5-14.

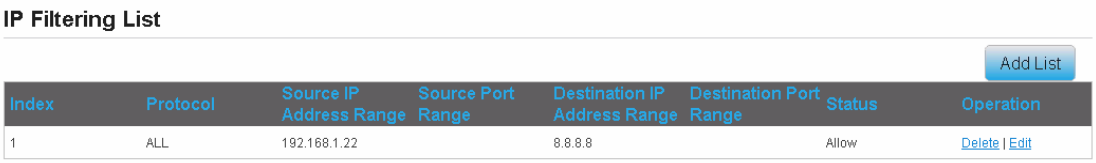



Figure 5-14

## 5.3 URL Filtering

Data is filtered by uniform resource locator (URL). This page enables you to configure URL filtering rules.

## 5.3.1 Enabling URL Filtering

To enable URL Filtering, perform the following steps:

3. Choose **Security**>**URL Filtering**.
4. Set **URL Filtering** to **Enable**.
5. Click **Submit**. As shown in Figure 5-15.


Figure 5-15

## 5.3.2 Disabling URL Filtering

To disable URL Filtering, perform the following steps:

1. Choose **Security**>**URL Filtering**.
2. Set **URL Filtering** to **Disable**.
3. Click **Submit**. As shown in Figure 5-16.

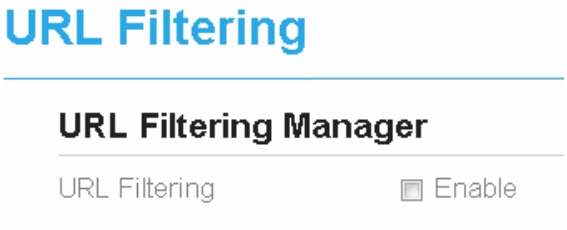



Figure 5-16

## 5.3.3 Adding URL Filtering list

To add a URL filtering list, perform the following steps:

1. Choose **Security**>**URL Filtering**.
2. Click **Add list**.
3. Set **URL**.
4. Click **Submit**. As shown in Figure 5-17.


Figure 5-17

## 5.3.4 Modify URL Filtering list

To modify a URL filtering rule, perform the following steps:

1. Choose **Security**>**URL Filtering**.
2. Choose the rule to be modified, and click **Edit**.
3. Set **URL** address.
4. Click **Submit**. As shown in Figure 5-18.

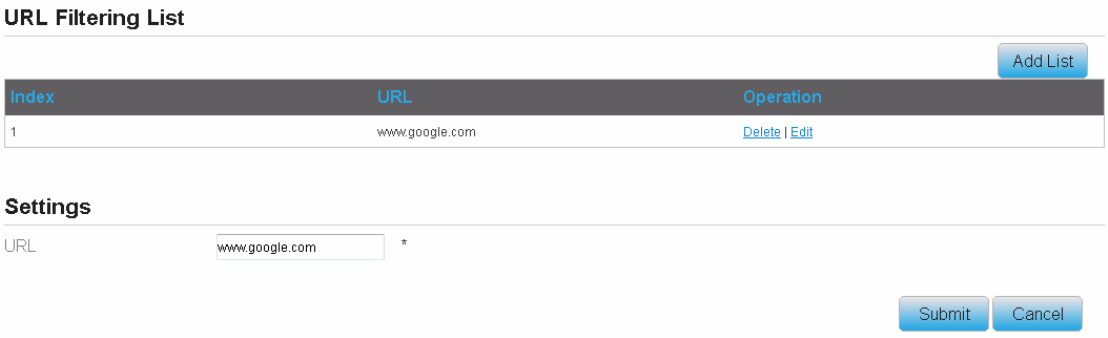



Figure 5-18

## 5.3.5 Deleting URL Filtering list

To delete a URL list, perform the following steps:

1. Choose **Security**>**URL Filtering**.
2. Choose the item to be deleted, and click **Delete**. As shown in Figure 5-19.


Figure 5-19

## 5.4 Port Forwarding

When network address translation (NAT) is enabled on the CPE, only the IP address on the WAN side is open to the Internet. If a computer on the LAN is enabled to provide services for the Internet (for example, work as an FTP server), port forwarding is required so that all accesses to the external server port from the Internet are redirected to the server on the LAN.

## 5.4.1 Adding Port Forwarding rule

To add a port forwarding rule, perform the following steps:

1. Choose **Security** > **Port Forwarding**.
2. Click **Add list**.
3. Set **Service**.
4. Set **Protocol**.
5. Set **Remote port range**.

   The port number ranges from 1 to 65535.

6. Set **Local host.**

   This IP address must be different from the IP address that is set on the **LAN Host Settings** page, but they must be on the same network segment.

7. Set **Local port**.

   The port number ranges from 1 to 65535.

8. Click **Submit**. As shown in Figure 5-20.

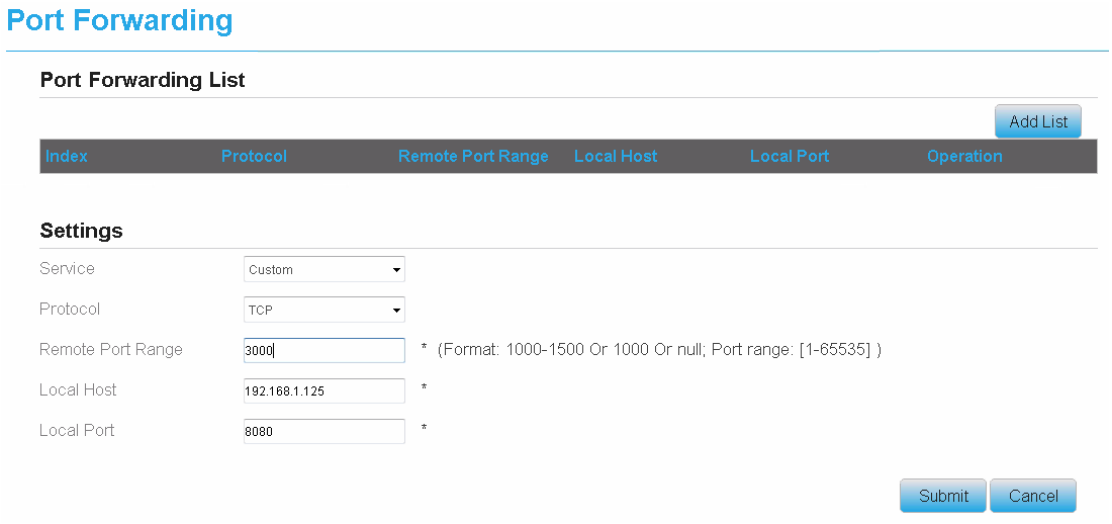



Figure 5-20

## 5.4.2 Modifying Port Forwarding rule

To modify a port forwarding rule, perform the following steps:

1. Choose **Security > Port Forwarding.**
2. Choose the item to be modified, and click **Edit**.
3. Repeat steps 3 through7 in the previous procedure.
4. Click **Submit**. As shown in Figure 5-21.

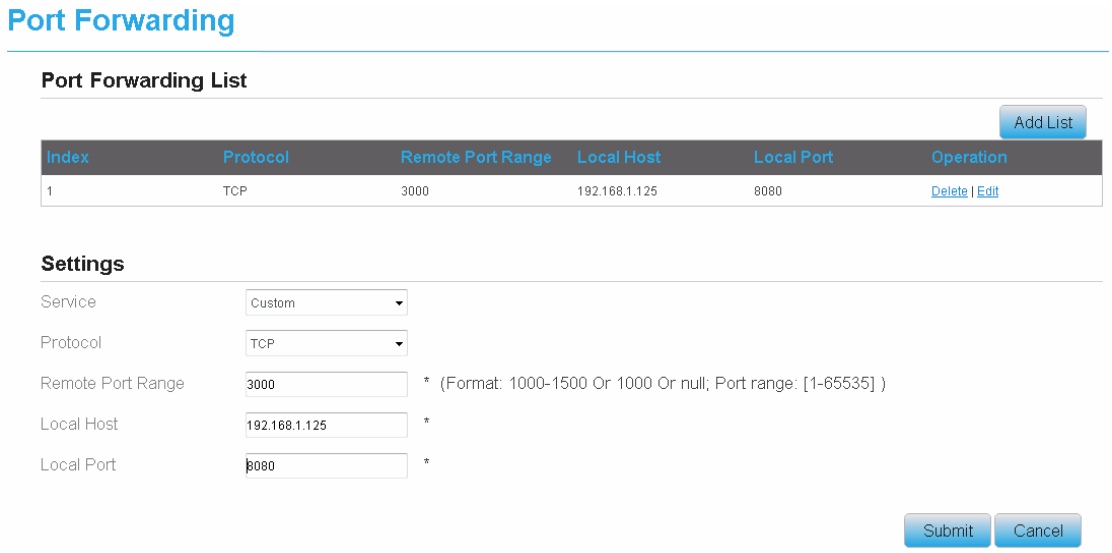



Figure 5-21

## 5.4.3 Deleting Port Forwarding rule

To delete a port forwarding rule, perform the following steps:

1. Choose **Security > Port Forwarding.**

2. Choose the item to be deleted, and click **Delete**. As shown in Figure 5-22.

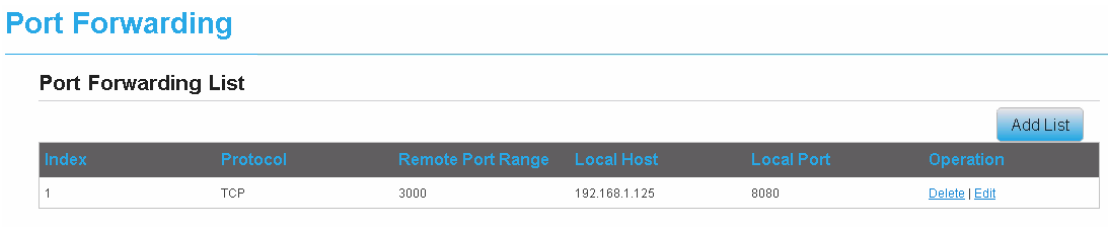



Figure 5-22

## 5.5 UPnP

On this page, you can enable or disable the Universal Plug and Play (UPnP) function.

To enable UPnP, perform the following steps:

1. Choose **Security > UPnP**.

2. Set **UPnP** to **Enable**.

3. Click **Submit**. As shown in Figure 5-23.

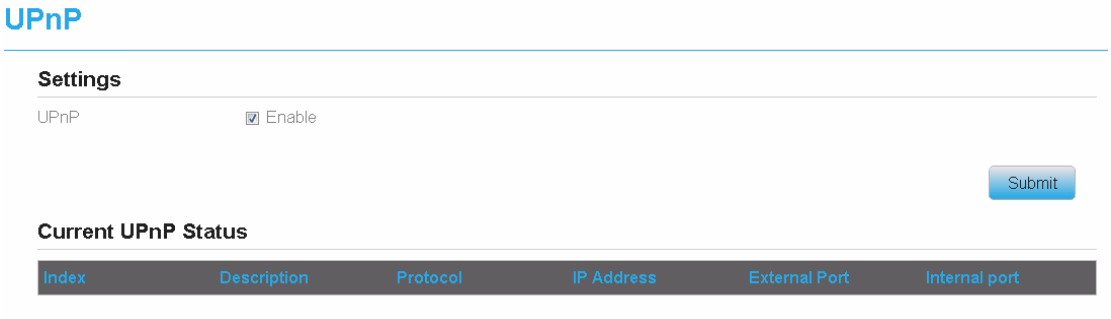



Figure 5-23

## 5.6 DOS

On this page, you can enable or disable the DOS function.

Enable DOS, perform the following steps:

1. Choose **Security > DOS**.

2. Set **DOS** to **Enable**.

3. Click **Submit**. As shown in Figure 5-24.

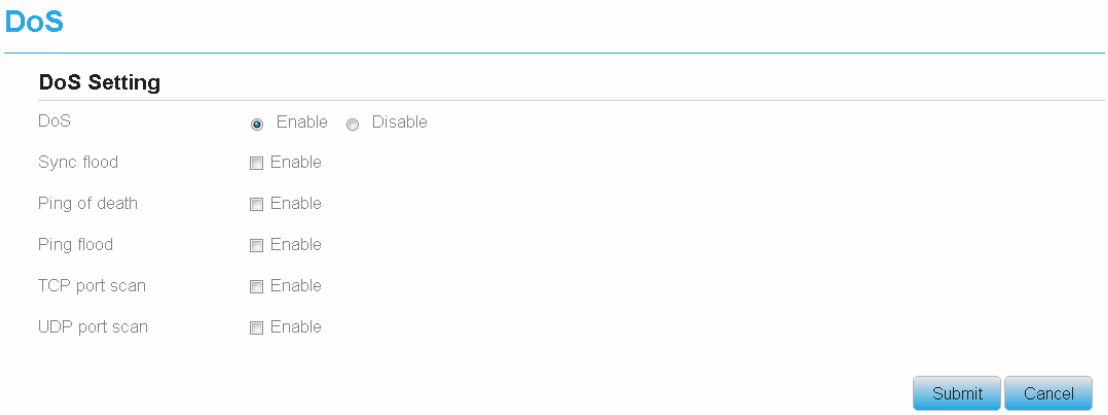



Figure 5-24

# 6 VPN Setting

This function enables you to connect the virtual private network (VPN).

To connect the VPN, perform the following steps:

1. Choose **VPN Setting.**
2. In the **VPN Setting** area, enable VPN.
3. Select a protocol from **Protocol** drop-down list.
4. Enter **Username** and **Password**.
5. Click **Submit**.
6. You can view the status in **VPN Status** area. As shown in Figure 6-1.

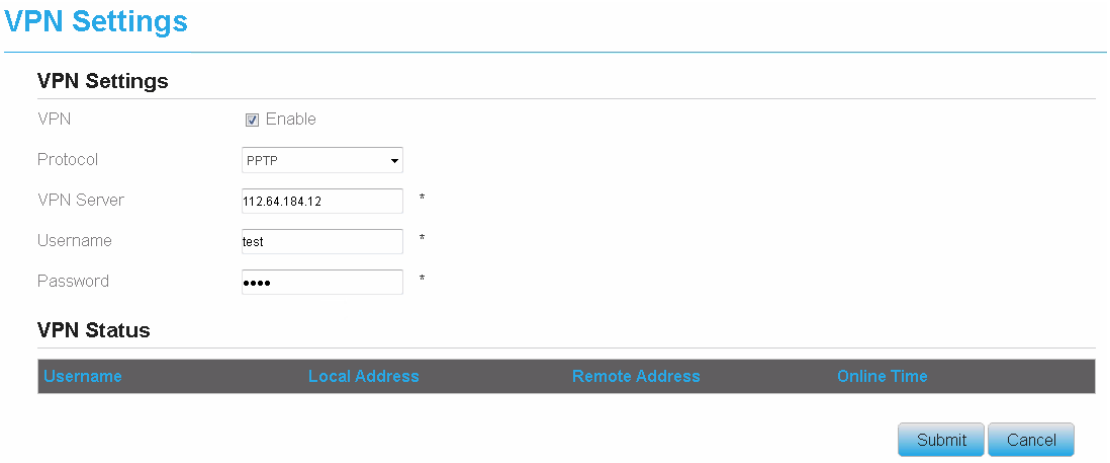



Figure 6-1

# 7 VOIP

The CPE supports voice services based on the Session Initiation Protocol (SIP) and enables voice service interworking between the Internet and Public Switched Telephone Networks (PSTNs).

## 7.1 View VOIP Information

To view VOIP information, perform the following steps:

1. Choose **VOIP** > **VOIP Information**;
2. View the VOIP information, such as the SIP account and status of the SIP registration server.

As shown in Figure 7 - 1.

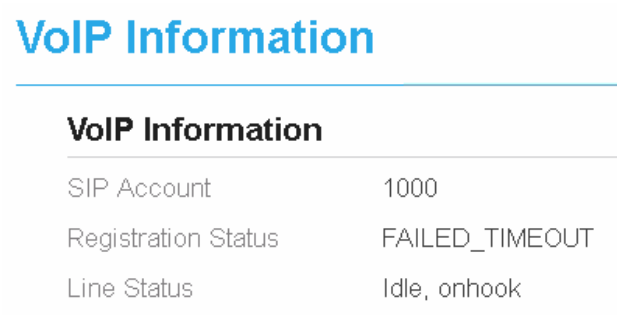



Figure 7-1

## 7.2 Configuring SIP Server

To set the SIP server parameters, perform the following steps:

1. Choose **VOIP** > **SIP Server**;
2. In the **User Agent port** box, enter the port of the SIP account provided by your service provider.
3. In the **SIP server domain name** box, enter the domain name of the SIP server.
4. In the **Proxy server address** box, enter the address of the proxy server provided by your service provider, for example, 192.168.1.10.
5. In the **Proxy server port box**, enter the port of the proxy server provided by your service provider, for example, 5060. The value ranges from 1 to 65535.
6. In the **Registration server address** box, enter the address of the registration server provided by your service provider, for example, 192.168.1.11.
7. In the **Registration server port** box, enter the port of the registration server provided by your service provider, for example, 5060. The value ranges from 1 to 65535.
8. Click Submit. As shown in Figure 7 - 2.

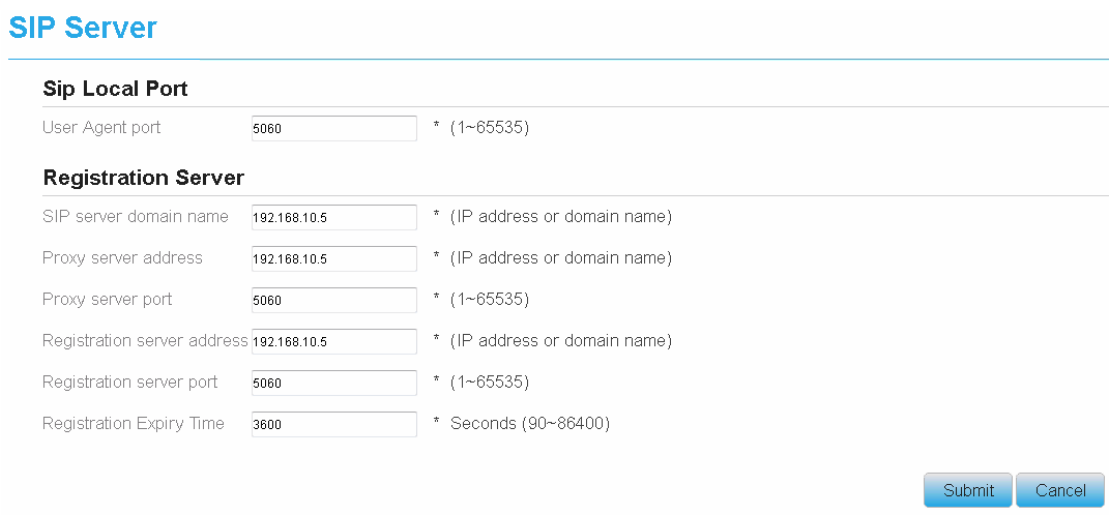



Figure 7 - 2.

## 7.3 Configuring SIP Account

Before configuring SIP accounts, make sure that the registration server has been properly configured.

To configure SIP account, perform the following steps:

1. Choose **VoIP** > **SIP Account**.
2. Set SIP Account Enable.
3. In the **User name and Password** boxes, enter the user name and password of the SIP account provided by your service provider.
4. In the **Phone Number** box, enter the SIP Phone number provided by your service provider.
5. In the **Display Name** box, enter the display name provided by your service provider.
6. In the **Codec Priority area**, set the codec priority.
7. Click Submit. As shown in Figure 7 - 3.

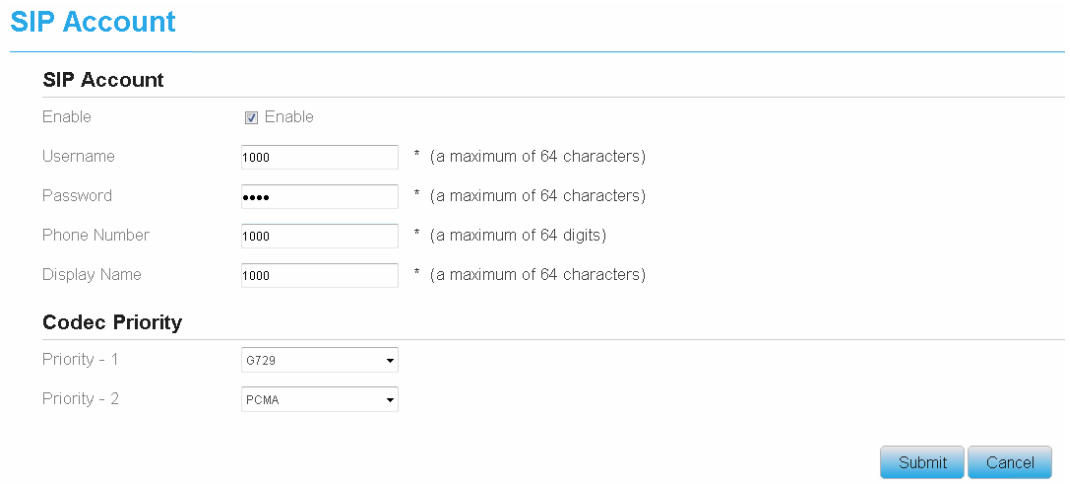



Figure 7 - 3

## 7.4 Advanced SIP

User can import Digit Map, ether can enable Three-way conversion.

To import digit map, perform the following steps:

1. Choose **VOIP**>**Advance SIP**.
2. Click Browse on the Advance SIP page.
3. Click Open.
4. The dialog box choses. In the box to be right of Configuration file, the save path and name of the digit map file are displayed.
5. Click Submit. As shown in Figure 7 - 4.


Figure 7 - 4

# 8 IPv6

Internet Protocol version 6 (IPv6) is the most recent version of the Internet Protocol (IP). Every device on the Internet is assigned a unique IP address for identification and location definition.

## 8.1 Status

The status page shows IPv6 information. As shown in Figure 8-1.

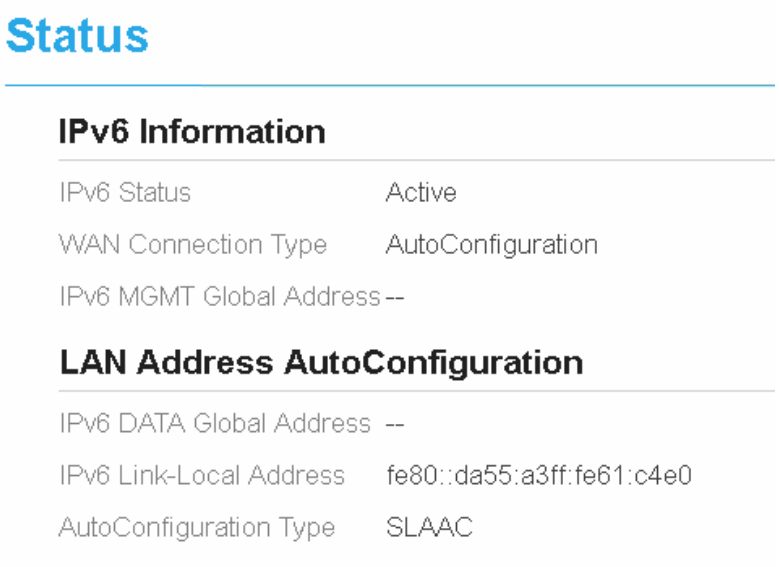



Figure 8-1

## 8.2 IPv6 WAN Settings

In this page, user can enable or disable IPv6 function. Meanwhile, user can set WAN Connection Type and the type of DNS.As shown in Figure 8-2

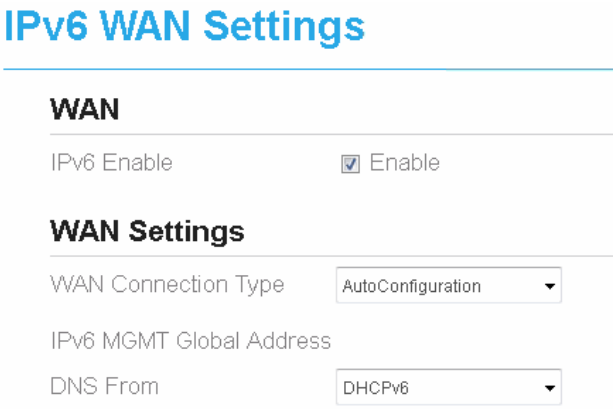



Figure 8-2

## 8.3 IPv6 LAN Settings

In this page, user can chose the AutoConfiguration Type. As shown in Figure 8-3.

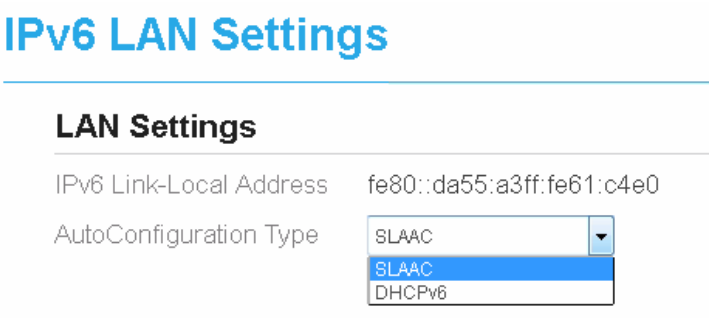



Figure 8-3

# 9 System

## 9.1 Maintenance

### 9.1.1 Restart

This function enables you to restart the CPE. Settings take effect only after the CPE restarts. To restart the CPE, perform the following steps:

1. Choose **System**>**Maintenance**.
2. Click **Restart**. As shown in Figure 9-1.
   The CPE then restarts.

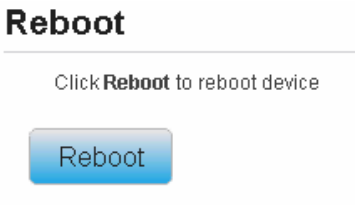



Figure 9-1

### 9.1.2 Factory Reset

This function enables you to restore the CPE to its default settings.
To restore the CPE, perform the following steps:

1. Choose **System**>**Maintenance**.
2. Click **Factory Reset.** As shown in Figure 9-2.
   The CPE is then restored to its default settings.

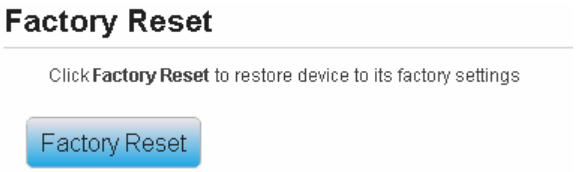


Figure 9-2

### 9.1.3 Backup Configuration File

You can download the existing configuration file to back it up. To do so:

1. Choose **System**>**Maintenance**.
2. Click **Download** on the **Maintenance** page.
3. In the displayed dialog box, select the save path and name of the configuration file to be backed up.
4. Click **Save**. As shown in Figure 9-3.

   The procedure for file downloading may vary with the browser you are using.

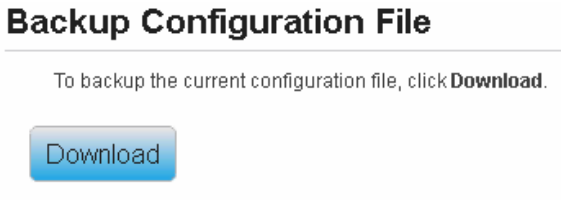



Figure 9-3

### 9.1.4 Upload Configuration File

You can upload a backed up configuration file to restore the CPE. To do so:

1. Choose **System**>**Maintenance**.
2. Click **Browse** on the **Maintenance** page.
3. In the displayed dialog box, select the backed up configuration file.
4. Click **Open**.
5. The dialog box choses. In the box to be right of Configuration file, the save path and name of the backed up configuration file are displayed.
6. Click **Upload**. As shown in Figure 9-4.

The CPE uploads the backed up configuration file. The CPE then automatically restarts.

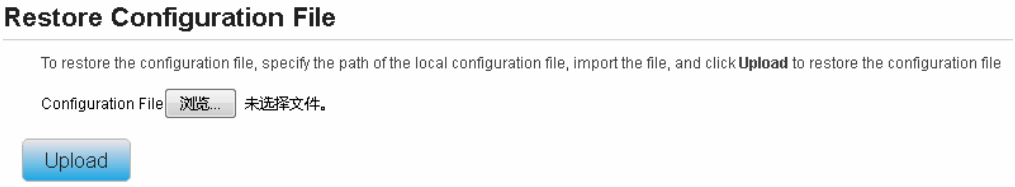



Figure 9-4

## 9.2 Version Manager

This function enables you to upgrade the software version of the CPE to the latest version. It is recommended that you upgrade the software because the new version, certain bugs have been fixed and the system stability is usually improved.

## 9.2.1 Viewing Version Info

To view the version info, perform the following steps:

1. Choose **System**>**Version Manager**.
2. In the **Version Info** area, you can view the product name and software version. As shown in Figure 9-5.


Figure 9-5

## 9.2.2 Local Upgrade

To perform an upgrade successfully, connect the CPE to your computer through a network cable, save the upgrade file on the computer, and make sure the CPE is not connected to anything other than a power adapter and the computer.

To perform an upgrade, perform the following steps:

6. Choose **System**>**Version Manager**.
7. In the **Version Upgrade** area, click **Browse**. In the displayed dialog box, select the target software version file.
8. Click **Open**. The dialog box choses. The save path and name of the target software version file are displayed in the Update file field.
9. Click **Submit**.
10. The software upgrade starts. After the upgrade, the CPE automatically restarts and runs the new software version. As shown in Figure 9-6.

During an upgrade, do not power off the CPE or disconnect it from the computer.


Figure 9-6

## 9.2.3 Online Upgrade

This function is designed for FOTA. If you have set the FOTA settings, you can click **check** to check whether there is a new version for the CPE.

To perform an upgrade, perform the following steps:

1. Choose **System**>**Version Manager**.
2. In the **Online Upgrade** area, click check.
3. The software upgrade starts. After the upgrade, the CPE automatically restarts and runs the new software version. As shown in Figure 9-7.

During an upgrade, do not power off the CPE or disconnect it from the computer.

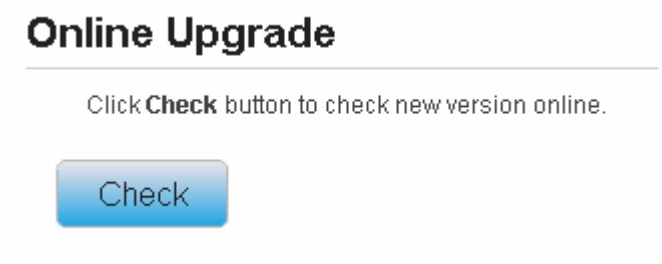



Figure 9-7

## 9.3 Module Manager

This function enables you to upgrade the ODU software version of the CPE to the latest version. It is recommended that you upgrade the software because the new version, certain bugs have been fixed and the system stability is usually improved.

## 9.3.1 Viewing Version Info

To view the version info, perform the following steps:

3. Choose **System**>**Module Manager**
4. In the **Version Info** area, you can view the product name and software version. As shown in Figure 9-8.

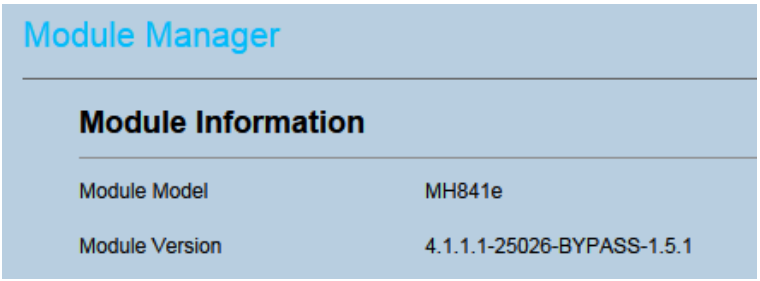



Figure 9-8

## 9.3.2 Module Upgrade

To perform an upgrade, perform the following steps:

1. Choose **System**>**Module Upgrade.**
2. In the **Module Upgrade** area, click **Browse**. In the displayed dialog box, select the target software version file.
3. Click **Open**. The dialog box choses. The save path and name of the target software version file are displayed in the Update file field.
4. Click **Submit**.
5. The software upgrade starts. After the upgrade, the CPE automatically restarts and runs the new software version. As shown in Figure 9-9.

During an upgrade, do not power off the CPE or disconnect it from the computer.


Figure 9-9

## 9.4 FTP auto upgrade

To perform a ftp auto upgrade successfully, make sure the CPE is connected to the Internet.

To perform a ftp auto upgrade, perform the following steps:

1. Choose **System**>**FTP auto upgrade**.
2. Enable **FTP auto upgrade**.
3. If you want to check new firmware after connect to Internet, you need to enable the item of **Check new firmware after connect to Internet**.
4. Set a ftp address to the **Upgrade folder** box.
5. Set **Version file**.
6. Set **User name** and **Password**.
7. Set the **Interval** of checking new firmware.
8. Set **Start time**.
9. Set **Random time**.
10. Click **Submit**. As shown in Figure 9-10.

The CPE will automatically upgrade according to the setting. During an upgrade, do not disconnect the power supply or operate the CPE.

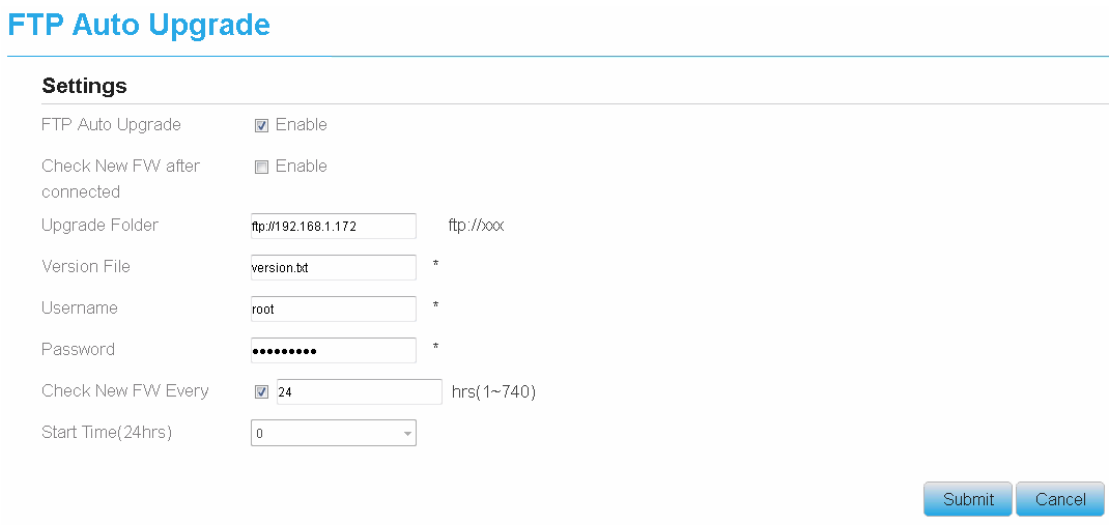



Figure 9-10

## 9.5 TR069

TR-069 is a standard for communication between CPEs and the auto-configuration server (ACS). If your service provider uses the TR069 automatic service provision function, the ACS automatically provides the CPE parameters. If you set the ACS parameters on both the CPE and ACS, the network parameters on the CPE are automatically set using the TR-069 function, and you do not need to set other parameters on the CPE.

To configure the CPE to implement the TR-069 function, perform the following steps:

1. Choose **System**>**TR-069 Settings**.
2. Set **acs URL source**. There are two methods, such as **URL** and **DHCP**.
3. In the **ACS URL** box, enter the **ACS URL** address.
4. Enter ACS **user name** and **password** for the CPE authentication.

   To use the CPE to access the ACS, you must provide a user name and password for authentication. The user name and the password must be the same as those defined on the ACS.

5. If you set **Periodic inform** to **Enable**, set **Periodic inform interval**.
6. Set **connection request user name** and **password**.
7. Click **Submit**. As shown in Figure 9-11.

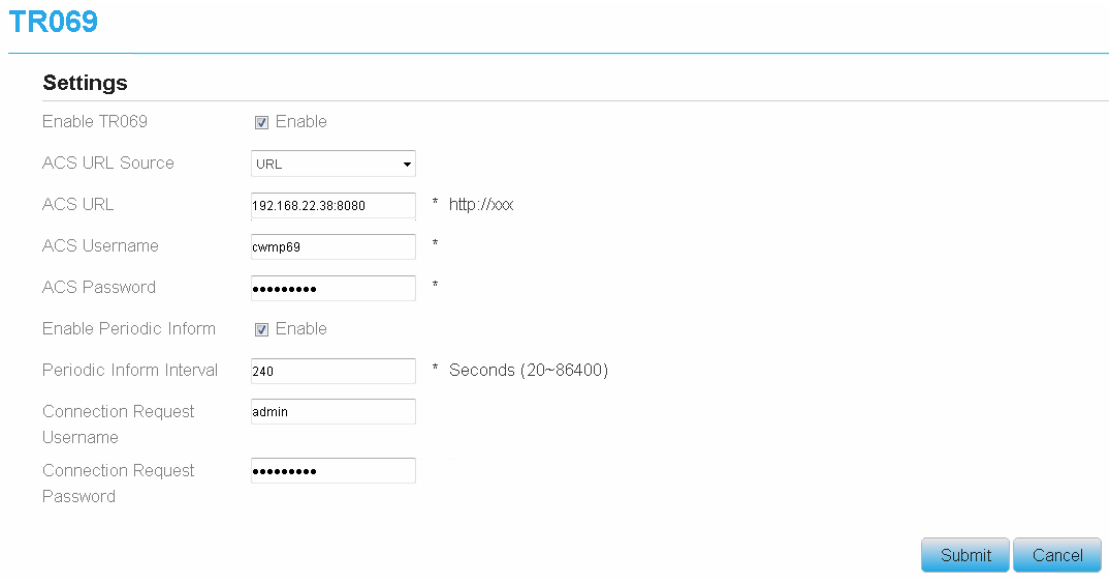



Figure 9-11

## 9.6 FOTA

Over-the-air programming (OTA) refers to various methods of distributing new software. One important feature of OTA is that one central location can send an update to all the users, who are unable to refuse, defeat, or alter that update, and that the update applies immediately to everyone on the channel.

To configure the FOTA to implement the FOTA function, perform the following steps:

1. Choose **System**>**FOTA**.
2. Set **FOTA URL source**. It is a http address of xml configuration.
3. Check the **Start Time(24hrs)** and **Random Time** .You can determine which time to check the FOTA server.
4. Click **Submit**. As shown in Figure 9-12.

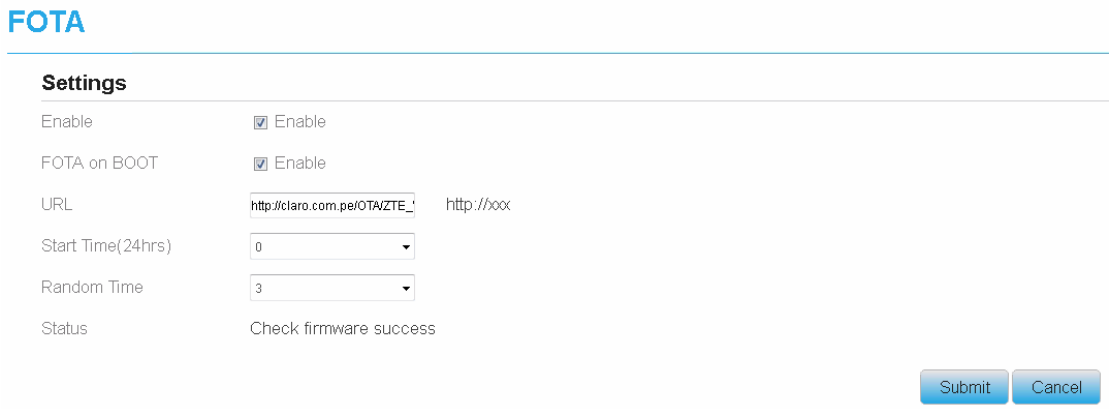



Figure 9-12

## 9.7 Date & Time

You can set the system time manually or synchronize it with the network. If you select **Sync from network**, the CPE regularly synchronizes the time with the specified Network Time Protocol (NTP) server. If you enable daylight saving time (DST), the CPE also adjusts the system time for DST.

To set the date and time, perform the following steps:

1. Choose System > Date & Time.
2. Select Set **manually**.
3. Set **Local time** or click Sync to automatically fill in the current local system time.
4. Click **Submit**. As shown in Figure 9-13.

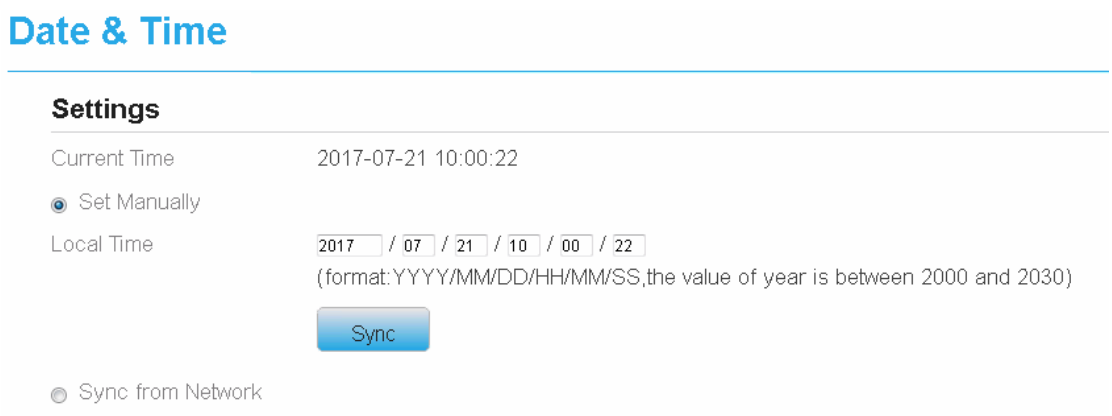



Figure 9-13

To synchronize the time with the network, perform the following steps:

1. Choose **System > Date & Time**.
2. Select **Sync from network**.
3. From the **Primary NTP server** drop-down list, select a server as the primary server for time synchronization.
4. From the **Secondary NTP server** drop-down list, select a server as the IP address of the secondary server for time synchronization.
5. If you don't want to use other NTP server, you need to enable **Optional ntp server**, and set a server IP address.
6. Set **Time zone**.
7. Click **Submit**. As shown in Figure 9-14.

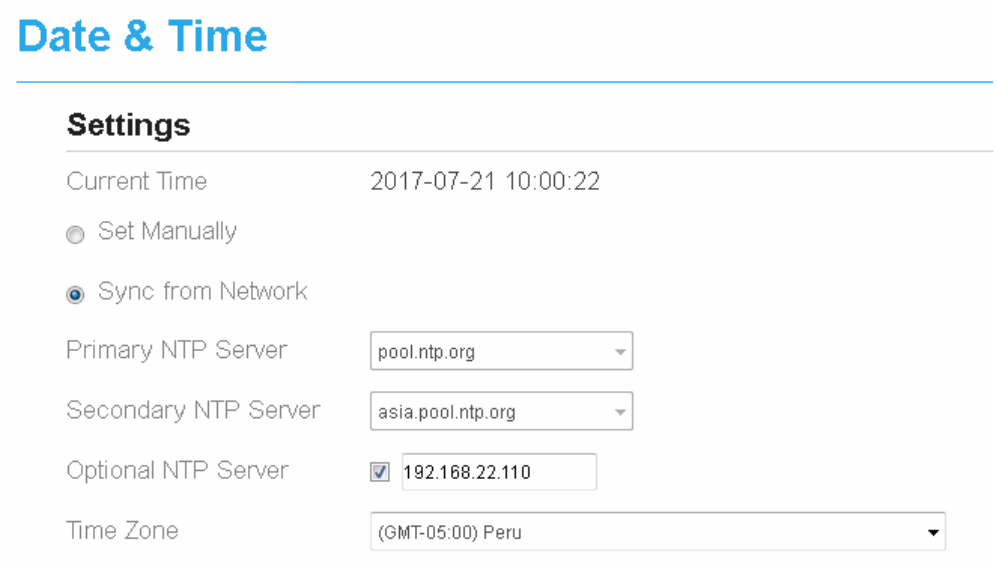



Figure 9-14

To set DST, perform the following steps:

1. Choose **System**>**Date&Time**.
2. Set **DST** enable.
3. Set **Start Time** and **End Time**.
4. Click **Submit**. As shown in Figure 9-15.

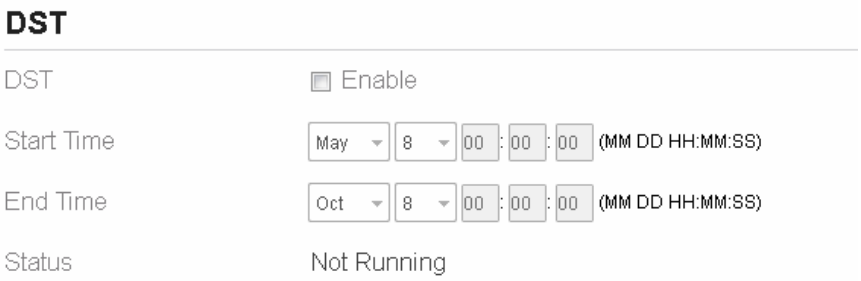



Figure 9-15

The CPE will automatically provide the DST time based on the time zone.

## 9.8 DDNS

Dynamic Domain Name Server (DDNS) service is used to map the user's dynamic IP address to a fixed DNS service.

To configure DDNS settings, perform the following steps:

1. Choose **System > DDNS**.
2. Set DDNS to **Enable**.

3. In **Service provider,** choose DynDNS.org or oray.com.

4. Enter **Domain name** and **Host name**. For example, if the domain name provided by your service provider is test.customtest.dyndns.org, enter customtest.dyndns.org as Domain name, and test as Host name.

5. Enter **User name** and **Password.**

6. Click **Submit**. As shown in Figure 9-16.

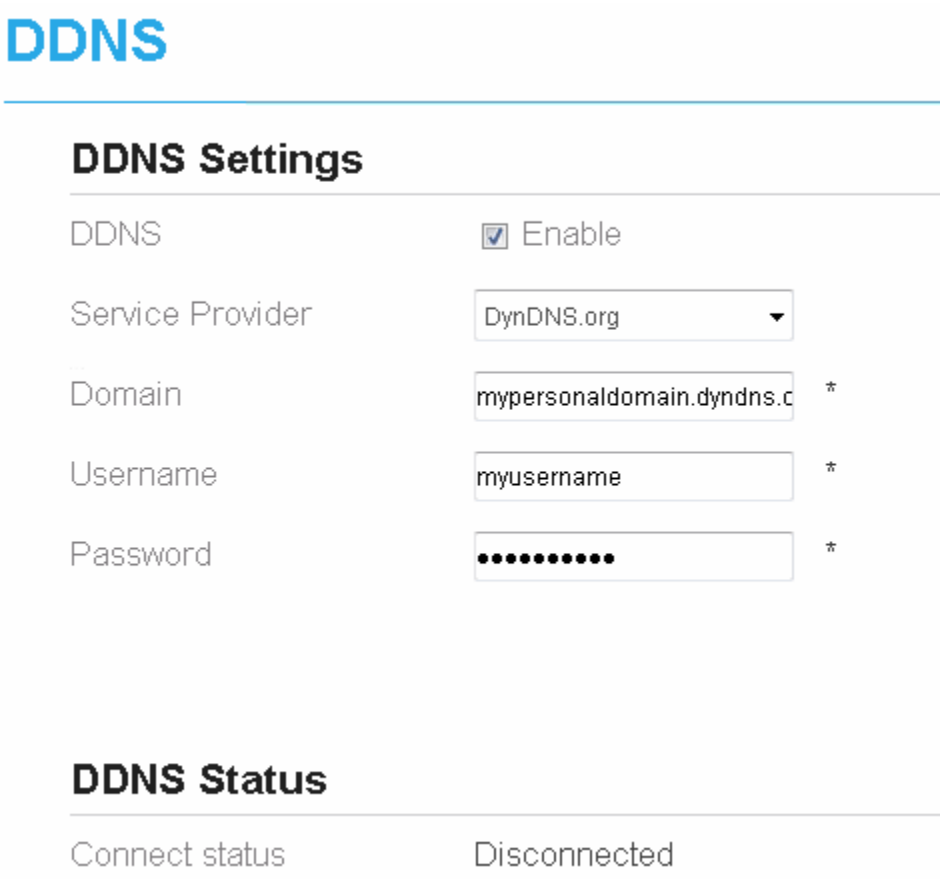



Figure 9-16

## 9.9 Iperf

Iperf is a widely-used tool for network performance measurement and tuning. Iperf has client and server functionality, and can create data streams to measure the throughput between the two ends in one or both directions.

To perform iperf, perform the following steps

1. Choose **System > IPERF**.

2. Set **Server Address** which iperf client running.

3. Click start to perform iperf. As shown in Figure 9-17.

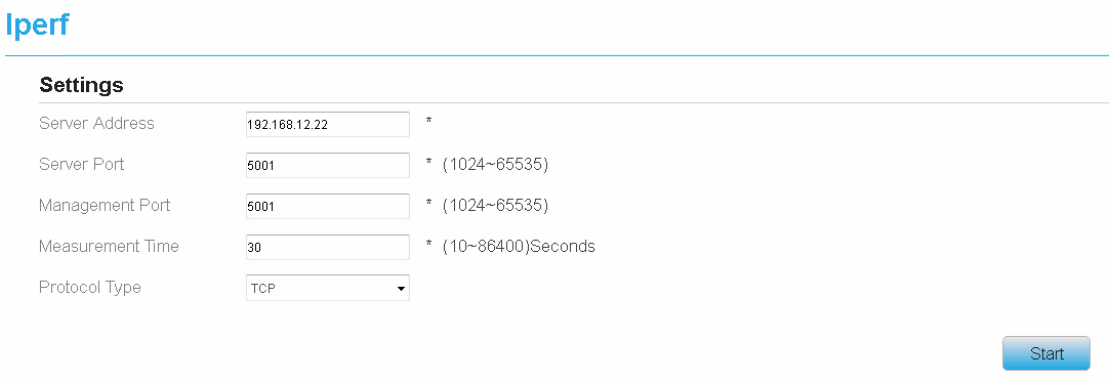



Figure 9-17

## 9.10Diagnosis

If the CPE is not functioning correctly, you can use the diagnosis tools on the **Diagnosis** page to preliminarily identify the problem so that actions can be taken to solve it.

### 9.10.1 Ping

If the CPE fails to access the Internet, run the ping command to preliminarily identify the problem. To do so:

1. Choose **System**>**Diagnosis**.
2. In the Method area, select **Ping**.
3. Enter the domain name in the **Target IP or domain** field, for example, www.google.com.
4. Set **Packet size** and **Timeout**.
5. Set **Count**.
6. Click **Ping**. As shown in Figure 9-18.

Wait until the ping command is executed. The execution results are displayed in the Results box.

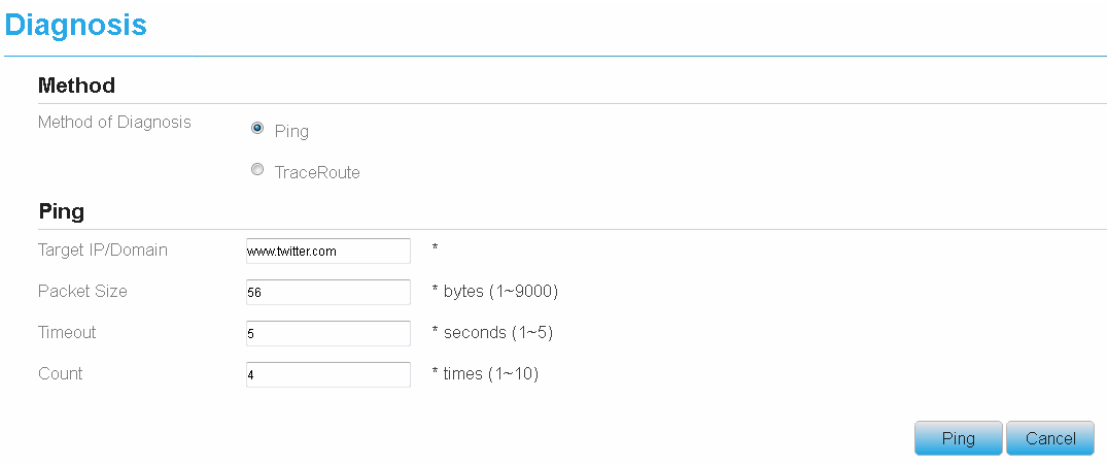



Figure 9-18

## 9.10.2 Traceroute

If the CPE fails to access the Internet, run the Traceroute command to preliminarily identify the problem. To do so:

1. Choose **System**>**Diagnosis**.
2. In the Method area, select **Traceroute**.
3. Enter the domain name in the **Target IP or domain** field. For example, www.google.com.
4. Set **Maximum hops** ad **Timeout**.
5. Click **Traceroute**. As shown in Figure 9-19.

Wait until the traceroue command is executed. The execution results are displayed in the Results box.


Figure 9-19

## 9.11 Port Mirror

Port mirroring is used on a network switch to send a copy of network packets seen on one switch port.To do so:

1. Choose **System**>**Port Mirror**.
2. Enable Port Mirror.
3. Select the **WAN Interface** which you want a copy.
4. Type the **Monitor IP**, where the copy will send to.
5. Click **Sbumit**. As shown in Figure 9-20.

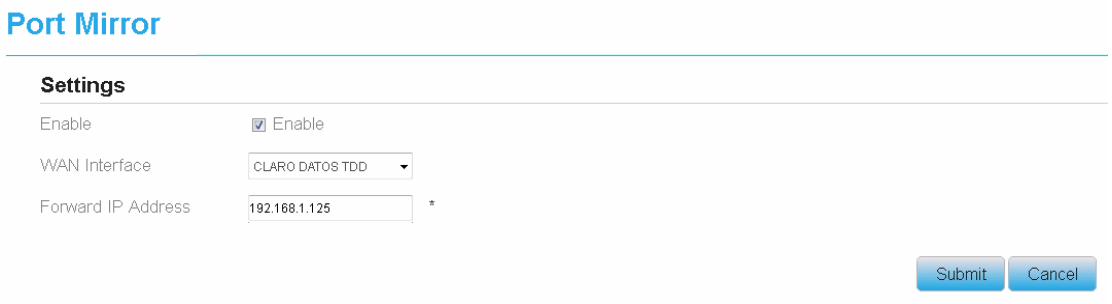



Figure 9-20.

## 9.12 Syslog

The syslog record user operations and key running events. You can click Refresh to reload the logs. As shown in Figure 9-21.

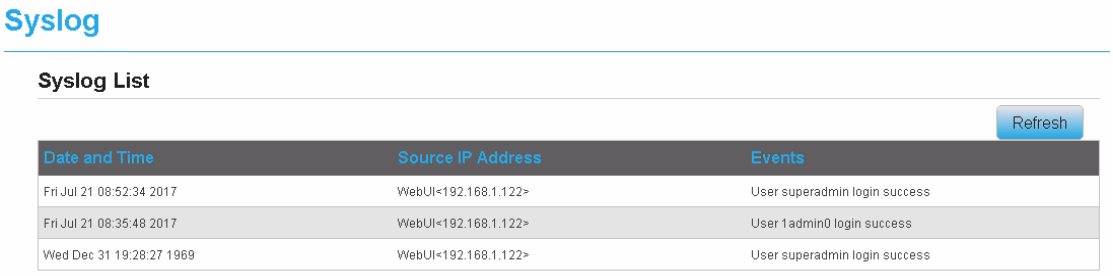



Figure 9-21

## 9.13Account

This function enables you to change the login password of the user. After the password changes, enter the new password the next time you login.

To change the password, perform the following steps:

1. Choose **System**>**Account**.

2. Select the **user name**, if you want to change the password of normal user, you need to set **Enable User** enable.
3. Enter the **current password**, set a **new password** ,and **confirm the new password**.
4. **New password** and **Confirm password** must contain 5 to 15 characters.
5. Click **Submit**. As shown in Figure 9-22.

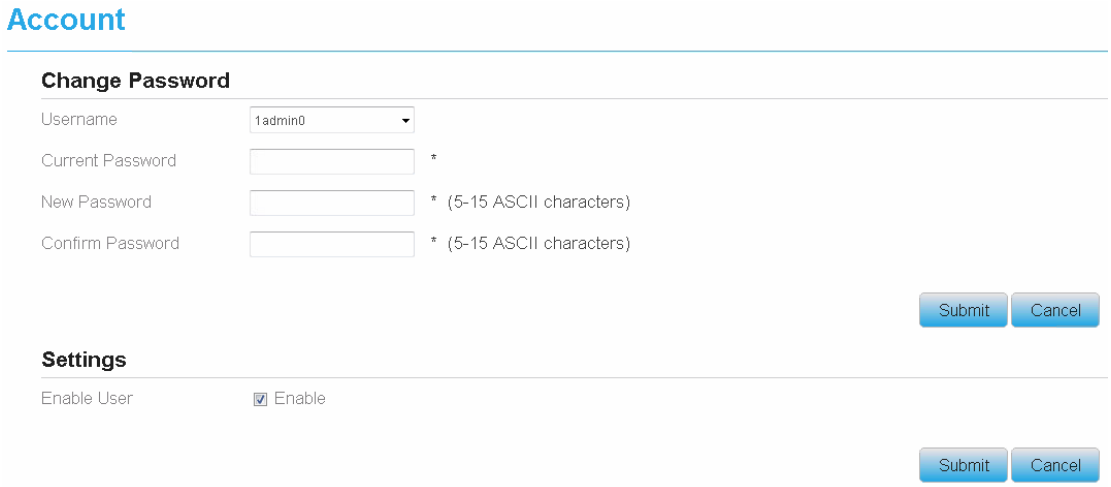



Figure 9-22

## 9.14 WEB Setting

To configure the parameters of WEB, perform the following steps:

1. Choose **System**> **web settings**
2. Set **HTTP** enable. If you set HTTP disable, you will can't login the web management page with the HTTP protocol from WAN side.
3. Set **HTTP port**. If you want to change the login port, you can set a new port in the box, the default HTTP port is 80.
4. Set **HTTPS** enable. If you want to login the web management page with the HTTPS protocol from WAN side, you need to enable the HTTPS.
5. If you want to login the web management page form the **WAN**, you need to Enable **Allowing login from WAN**.
6. Set the **HTTPS port**.
7. Set the **Refresh Time**.
8. Set the **Session Timeout**.
9. Set the **language**.
10. Click **Submit**. As shown in Figure 9-23.

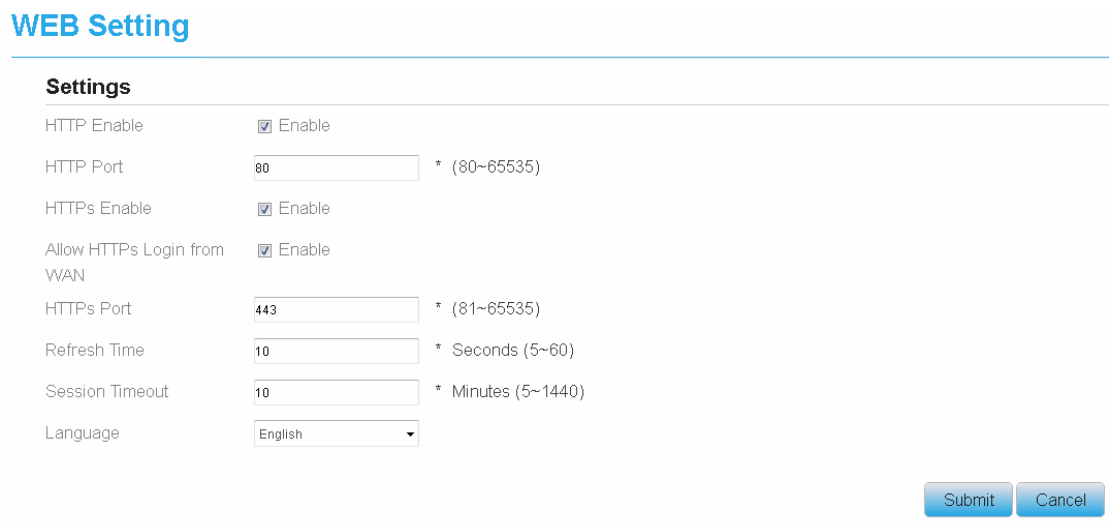



Figure 9-23

## 9.15Logout

To logout the web management page, perform the following steps:

1. Choose **System** and click **Logout**
2. It will back to the login page.

# 10 FAQs

**The POWER indicator does not turn on.**

- Make sure that the power cable is connected properly and the CPE is powered on.
- Make sure that the power adapter is compatible with the CPE.

**Fails to Log in to the web management page.**

- Make sure that the CPE is started.
- Verify that the CPE is correctly connected to the computer through a network cable. If the problem persists, contact authorized local service suppliers.

**The CPE fails to search for the wireless network.**

- Check that the power adapter is connected properly.
- Check that the CPE is placed in an open area that is far away from obstructions, such as concrete or wooden walls.
- Check that the CPE is placed far away from household electrical appliances that generate strong electromagnetic field, such as microwave ovens, refrigerators, and satellite dishes.

If the problem persists, contact authorized local service suppliers.

**The power adapter of the CPE is overheated.**

- The CPE will be overheated after being used for a long time. Therefore, power off the CPE when you are not using it.
- Check that the CPE is properly ventilated and shielded from direct sunlight.

**The parameters are restored to default values.**

- If the CPE powers off unexpectedly while being configured, the parameters may be restored to the default settings.
- After configuring the parameters, download the configuration file to quickly restore the CPE to the desired settings.

# FCC Regulations

This device complies with part 15 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.

This equipment has been tested and found to comply with the limits for a Class B 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 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.

## Caution：

Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body. The antennas must not be co-located with other transmitter antennas.

The device can only operate indoor, and can not operate in outdoor condition.