WIMAX CPE

WM5347N

Users Manual

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Revision and Amendment Records

Revision	Date	Descriptions	Author
1.0	2010-03-12	Initial Draft	Hsling Lin
1.1	2010-03-19	Initial Release	Hsling Lin
1.2	2010-06-15	Initial Release	Dennis Tien
1.3b	2010-10-06	Release	Dennis Tien, Kevin Tsou

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1. Overview

This chapter provides an overview of the WiMAX modem and describes its features and system requirements.

This chapter contains the following topics:

- Introduction
- Features
- System Requirements

Introduction

Congratulations on becoming the owner of the WiMAX modem. You will now be able to access the Internet using high-speed WiMAX connection. This user manual will show the User how to install and set up this device.

Features

- WiMAX Module for high-speed internet access Features
- 10/100Base-T Ethernet to provide Internet connectivity for all computers on User LAN
- Supports 802.16e WAN
- Access configuration program via a HTML browser

System Requirements

In order to use this WiMAX modem, User must have the following:

- Up and running ISP service on User WiMAX network
- A web browser such as Internet Explorer v5.0, Netscape v4.7 or later- For system configuration, using the supplied web-based program.

2. Installation

2.1. In The Box

In addition to this document, the WiMAX modem should come with the following:

1. Warranty Card x 1
2. Quick Installation Guide x 1
3. CD-ROM x 1
4. WM5347N x 1
5. Power Adaptor x 1
6. Ethernet Cable x 1

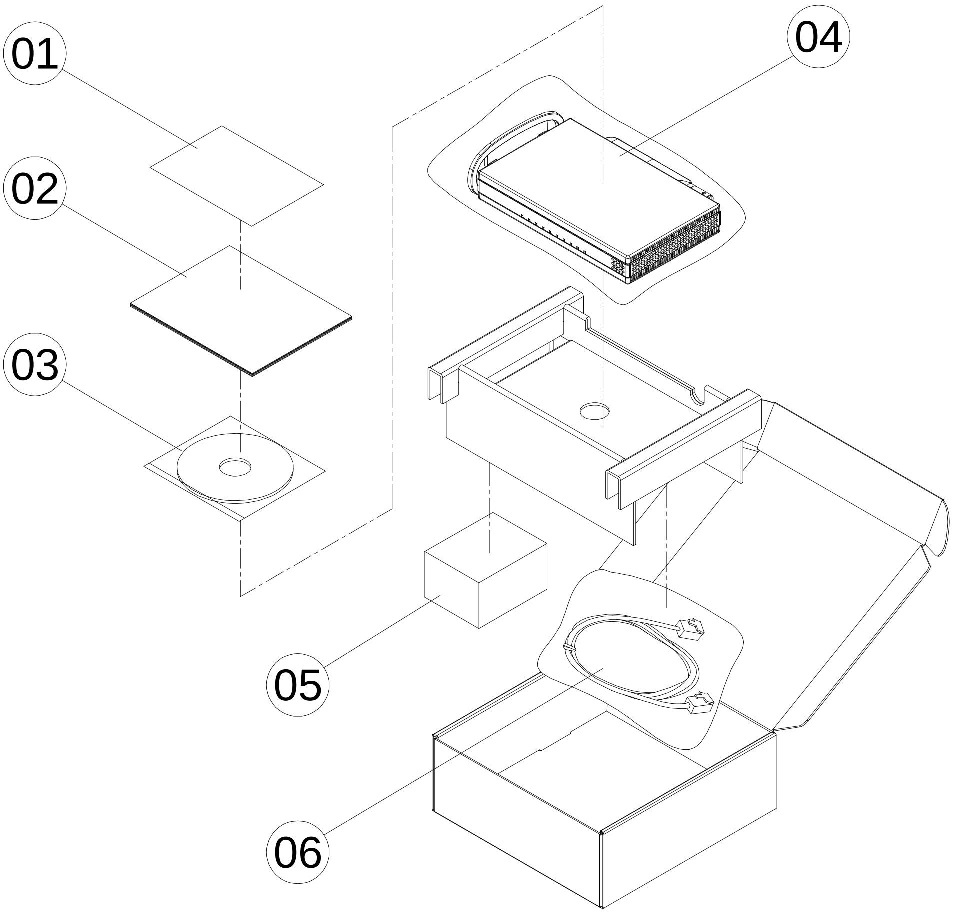


Figure 1. Device Installation

2.2. Indicators

LEDs on the front panel indicate the status of WiMAX modem (see Figure 2).

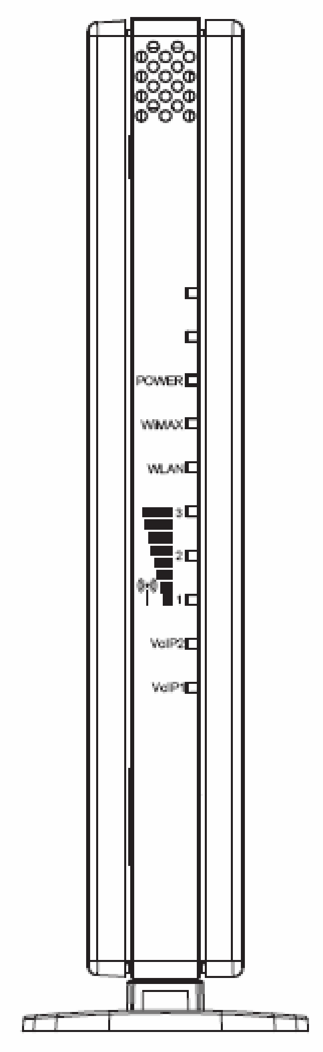


Figure 2. Device Front Panel

Label	Color	Function
Power	Green	On: Unit is powered on Off: Unit is powered off
WiMAX	Orange	On: WAN is active Off: No WAN link
WLAN	Green	On: WIFI is enabled Off: WIFI is disabled

	Green	Signal strength of the WiMAX
VoIP1 / VoIP2	Green	On: Registered on server Off: Non-register
LAN1 / LAN2	Green	On: LAN connected Blinking: Data transfer Off: No connection

Note: LAN LED's are on RJ-45 connectors.

Table 1. Illustration of WM5047 Front Panel

2.3. Connectors

Ports on the rear panel for WiMAX modem are for data and power connections (see Figure 3).

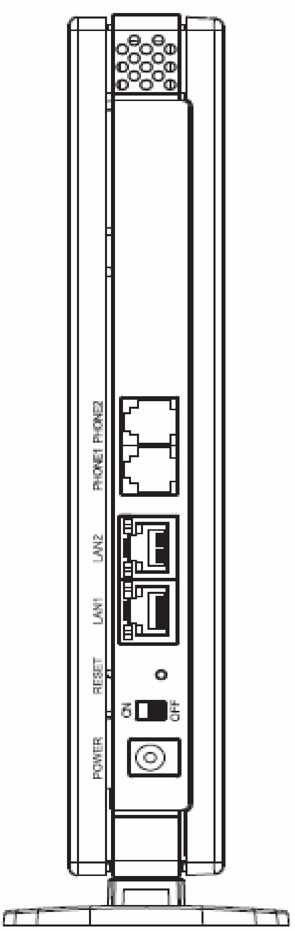


Figure 3. Device Pear Panel

Label	Function
LAN1, LAN2	RJ-45 connector: Connect device to PC’s Ethernet port, or to the uplink port on LAN hub, using the cable provided.
PHONE1, PHONE2	RJ-11 connector: Connect device to telephone port using the cable provided.
RESET	Press 5 seconds to return device to Factory Default Setting.
ON / OFF	Power ON / OFF the modem.
POWER	Connect to the supplied power adapter cable.

Table 2. Illustration of Device Rear Panel

⚠

WARNING

Before you start, switch off all devices.

These include the User computer(s), User LAN hub /switch (if applicable), and WiMAX modem.

2.4. Network Connection

Figure 4 illustrates the hardware connections. The layout of the parts on the device may differ from the layout shown. Refer to the steps below for specific instructions.

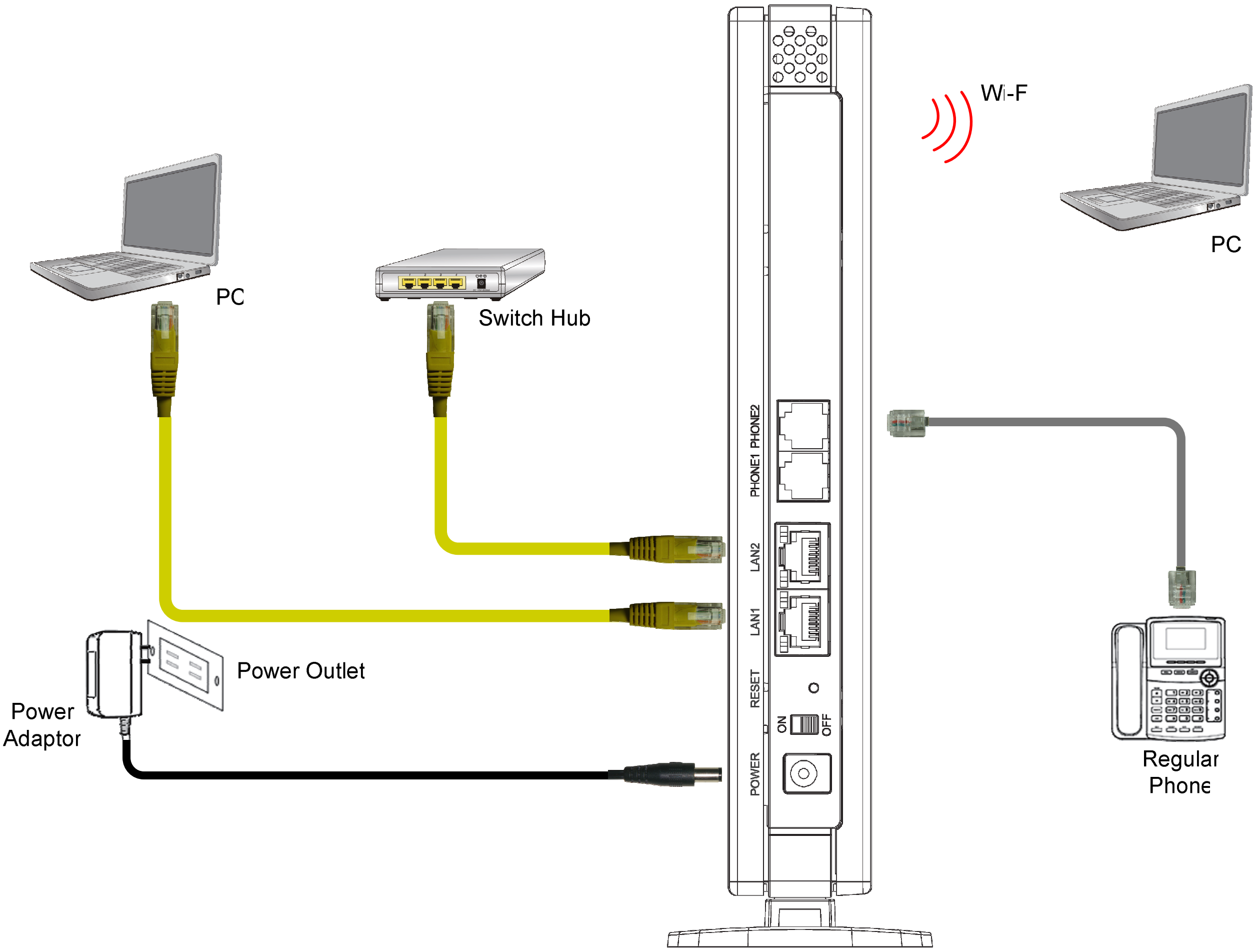


Figure 4. Overview of Hardware Connections

Step 1. Connect Ethernet cable.

If user is connecting WiMAX modem to LAN, attach one end of the Ethernet cable to a regular hub port or PC, and the other to the Ethernet port on WiMAX modem.

Step 2. Attach power connector.

Connect AC power adapter plug to DC 12V connector on the back of the WiMAX modem and plug power adapter into a wall outlet or power strip.

Step 3. Turn the power switch to ON.

Turn the power switch to ON.

Step 4. Configure WiMAX modem through WEB interface

The detail for Step 4 will be described in Chapter 3. It will help user to configure the WiMAX modem based on user needs.

Step 5. Save the configurations and Reboot.

All the settings that user makes on the WiMAX modem will take effect after rebooting.

3. Introduction

The CPE Software platform comes from with a Web-based Configuration Manager, which gives users the ability to manage, configure and analyze the platforms environment. The Connection Manager works with all versions of Windows after Windows 95.

The supported browser version:

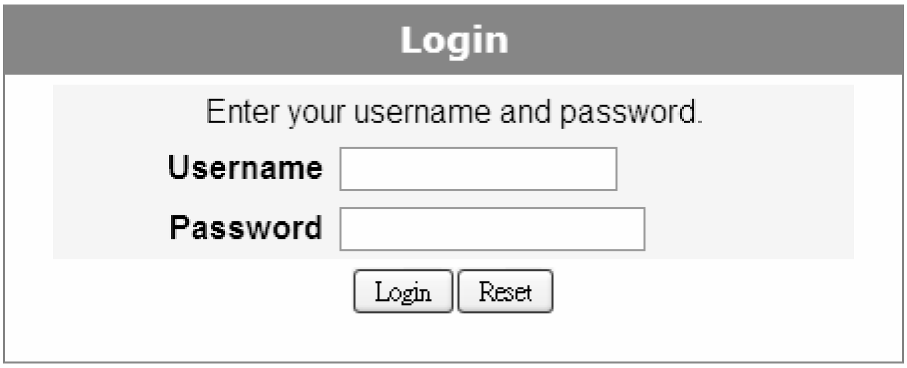
- Internet Explorer 6.0 or later (Recommended)
- Netscape 7.1 and higher
- Firefox 1.0 and higher
- Mozilla 1.5 and higher

3.1. Connect

User need to connect to the CPE platform properly. It's assumed that the user has a fully working CPE platform and properly connected. From the web browser, connect to the device by entering the IP address of the device; it will prompt you to enter your username and password. The default usernames and passwords are as follows:

Username/password

- **admin/admin**
- **guest/guest**



Login

Enter your username and password.

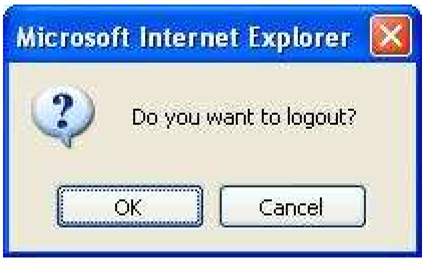
Username

Password

Figure 5. Login

3.2. Logout

The “Logout” window allows users to disconnect from the device and exit the Web-based Configuration Manager.

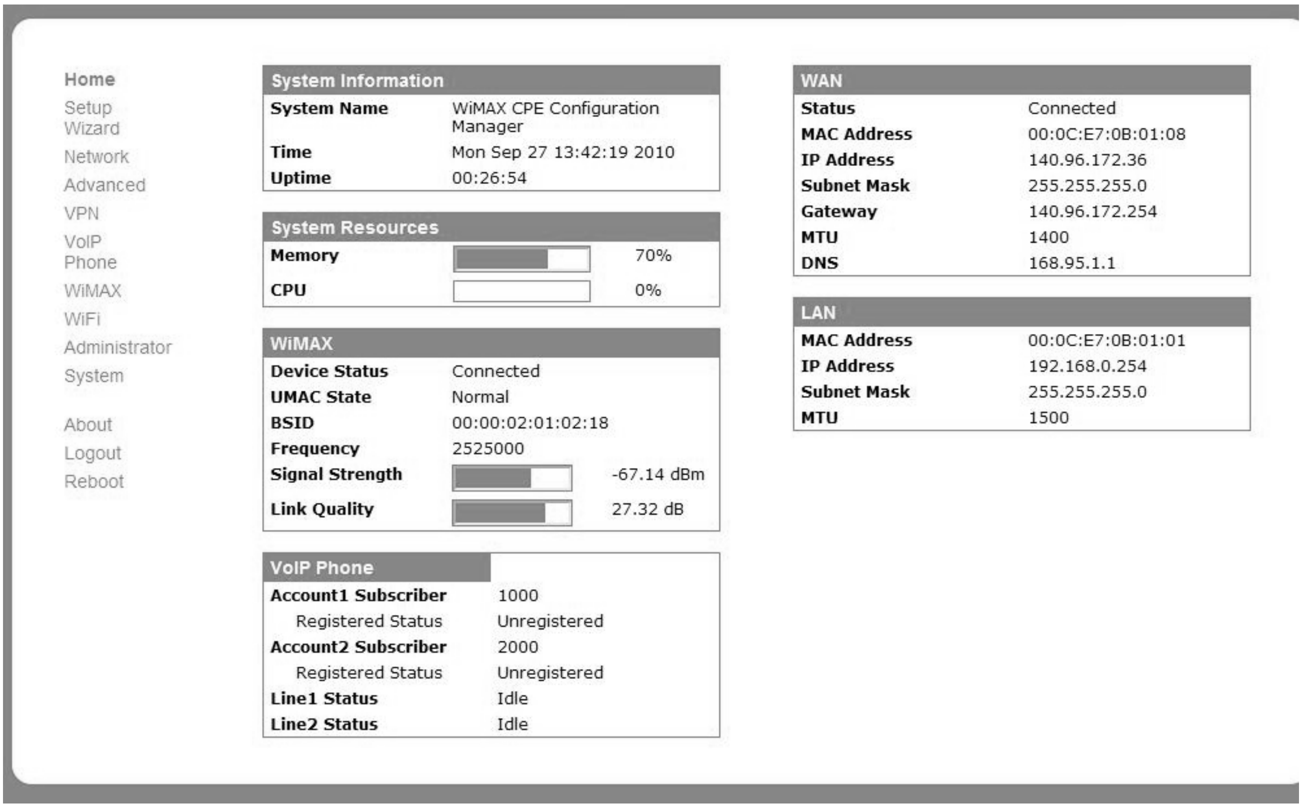


Do you want to logout?

Figure 6. Logout

3.3. Home

After you’ve established a connection, you will see the “Home” window. This window shows all the settings as they currently are configured and system information. It gives you an initial overview of the current status of your device.



System Information	
System Name	WiMAX CPE Configuration Manager
Time	Mon Sep 27 13:42:19 2010
Uptime	00:26:54

System Resources	
Memory	70%
CPU	0%

WiMAX	
Device Status	Connected
UMAC State	Normal
BSID	00:00:02:01:02:18
Frequency	2525000
Signal Strength	-67.14 dBm
Link Quality	27.32 dB

VoIP Phone	
Account1 Subscriber	1000
Registered Status	Unregistered
Account2 Subscriber	2000
Registered Status	Unregistered
Line1 Status	Idle
Line2 Status	Idle

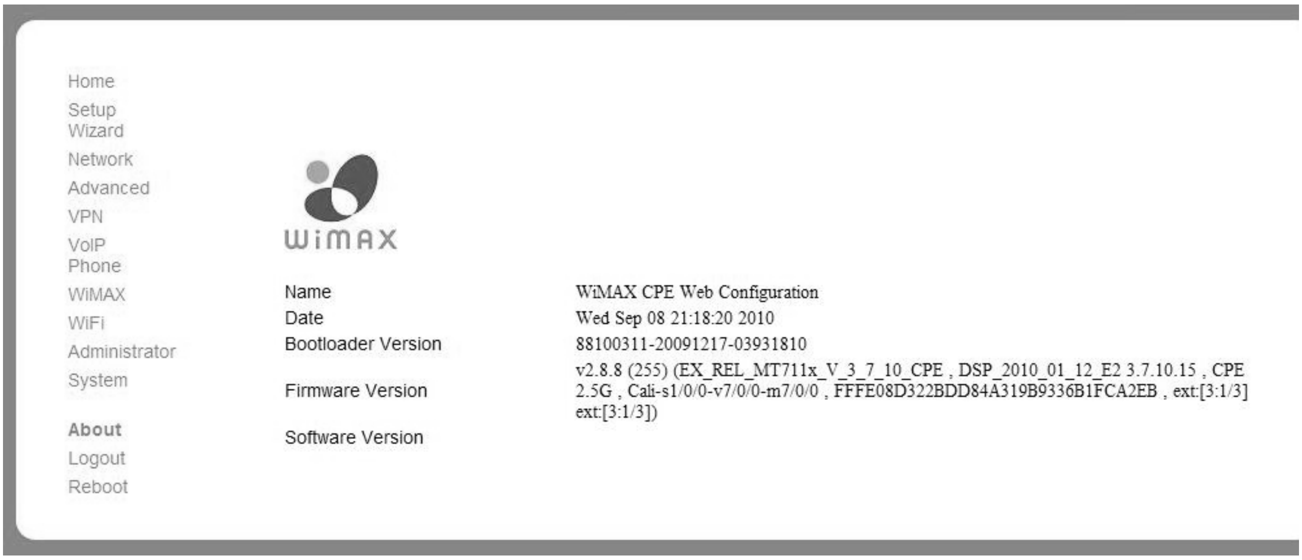
WAN	
Status	Connected
MAC Address	00:0C:E7:0B:01:08
IP Address	140.96.172.36
Subnet Mask	255.255.255.0
Gateway	140.96.172.254
MTU	1400
DNS	168.95.1.1

LAN	
MAC Address	00:0C:E7:0B:01:01
IP Address	192.168.0.254
Subnet Mask	255.255.255.0
MTU	1500

Figure 7. Home

3.4. About

The “About” window will show you pertinent version information on the CPE.



Name	WiMAX CPE Web Configuration
Date	Wed Sep 08 21:18:20 2010
Bootloader Version	88100311-20091217-03931810
Firmware Version	v2.8.8 (255) (EX_REL_MT711x_V_3_7_10_CPE , DSP_2010_01_12_E2 3.7.10.15 , CPE 2.5G , Cali-s1/0/0-v7/0/0-m7/0/0 , FFFE08D322BDD84A319B9336B1FCA2EB , ext:[3:1/3] ext:[3:1/3])
Software Version	

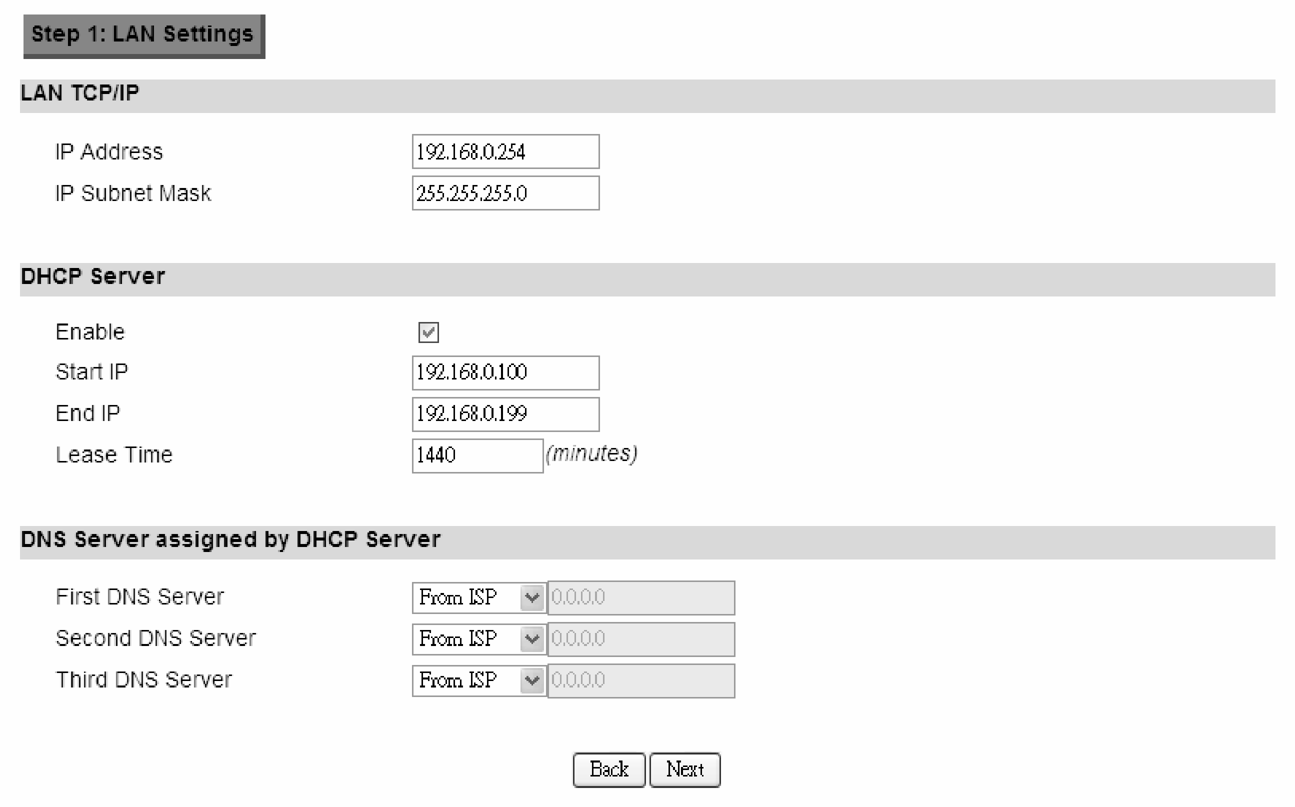
Figure 8. About CPE Configuration Manager

4. Wizard

The wizard will allow you to quickly configure the basic networking settings on the CPE. Click the “Wizard” menu item to enter the wizard. The first page will display all the steps necessary to complete the wizard settings. Click the “Next” button to continue to the next step.

Name	Description
Next	Continue to the next step.
Back	Return to the previous step.
Save	Commit the changes mad and save to CPE device.

- **Step 1:** LAN Settings. In this step you can configure both IP and DHCP configuration parameters.



Step 1: LAN Settings

LAN TCP/IP

IP Address: 192.168.0.254
IP Subnet Mask: 255.255.255.0

DHCP Server

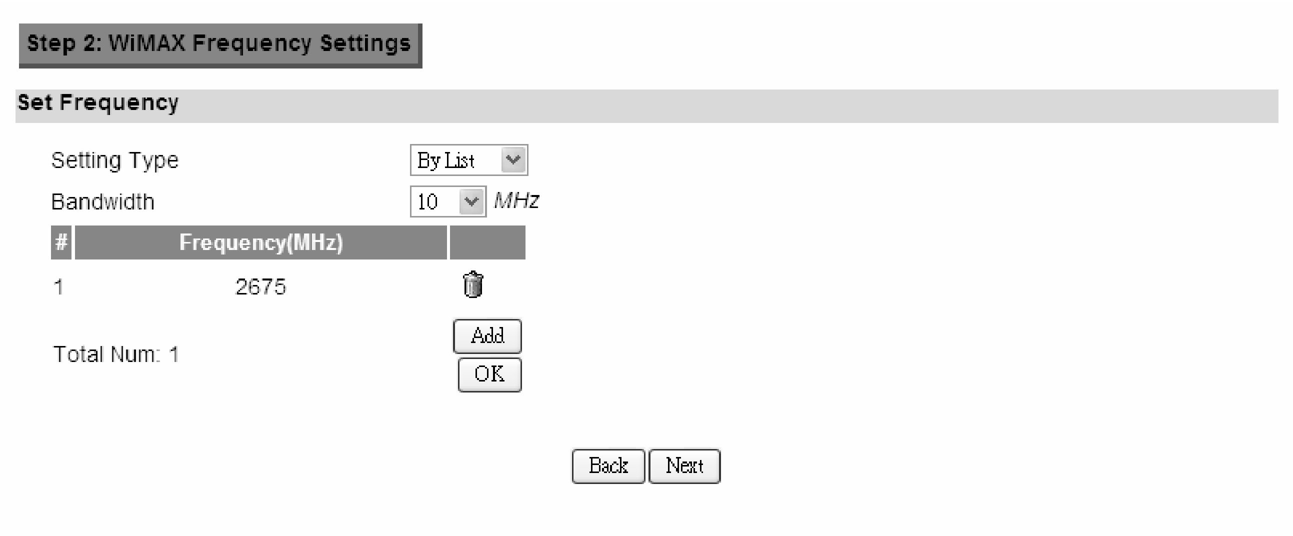
Enable: ☑
Start IP: 192.168.0.100
End IP: 192.168.0.199
Lease Time: 1440 (minutes)

DNS Server assigned by DHCP Server

First DNS Server: From ISP 0.0.0.0
Second DNS Server: From ISP 0.0.0.0
Third DNS Server: From ISP 0.0.0.0

Figure 9. Wizard LAN Settings

- **Step 2:** WiMAX Frequency Settings. This step will quickly configure the WiMAX frequencies. You have two forms of configuring the frequency. You can configure it through simply entering a frequency list or by setting a range, by giving a starting and ending frequency value and a step size to traverse the range.



Step 2: WiMAX Frequency Settings

Set Frequency

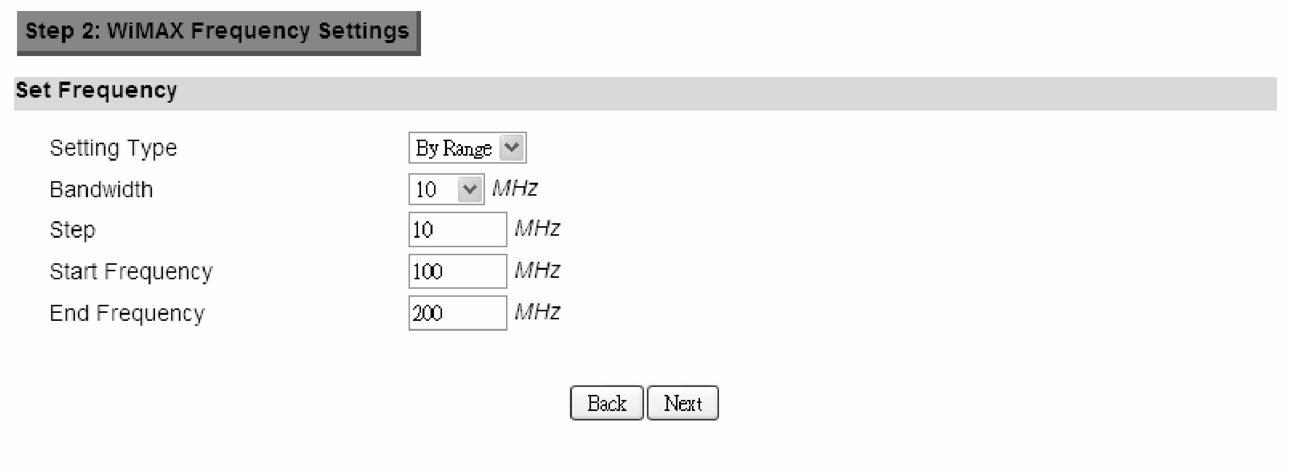
Setting Type: By List

Bandwidth: 10 MHz

#	Frequency(MHz)	
1	2675	🗑

Total Num: 1

Figure 10. Wizard WiMAX Frequency (By List)



Step 2: WiMAX Frequency Settings

Set Frequency

Setting Type: By Range

Bandwidth: 10 MHz

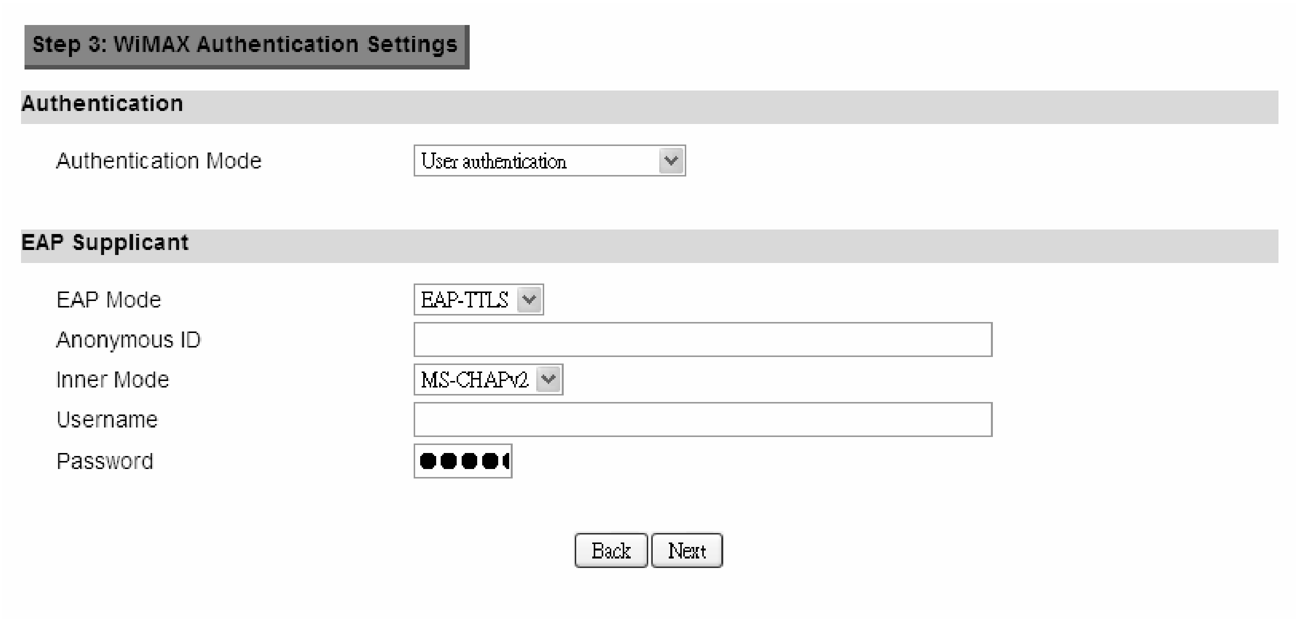
Step: 10 MHz

Start Frequency: 100 MHz

End Frequency: 200 MHz

Figure 11. Wizard WiMAX Frequency (By Range)

- **Step 3:** WiMAX Authentication Settings. This will configure WiMAX Authentication settings. There are 4 possible options for “Authentication Mode”. Depending on which mode you select, you will have different EAP settings to configure.



Step 3: WiMAX Authentication Settings

Authentication

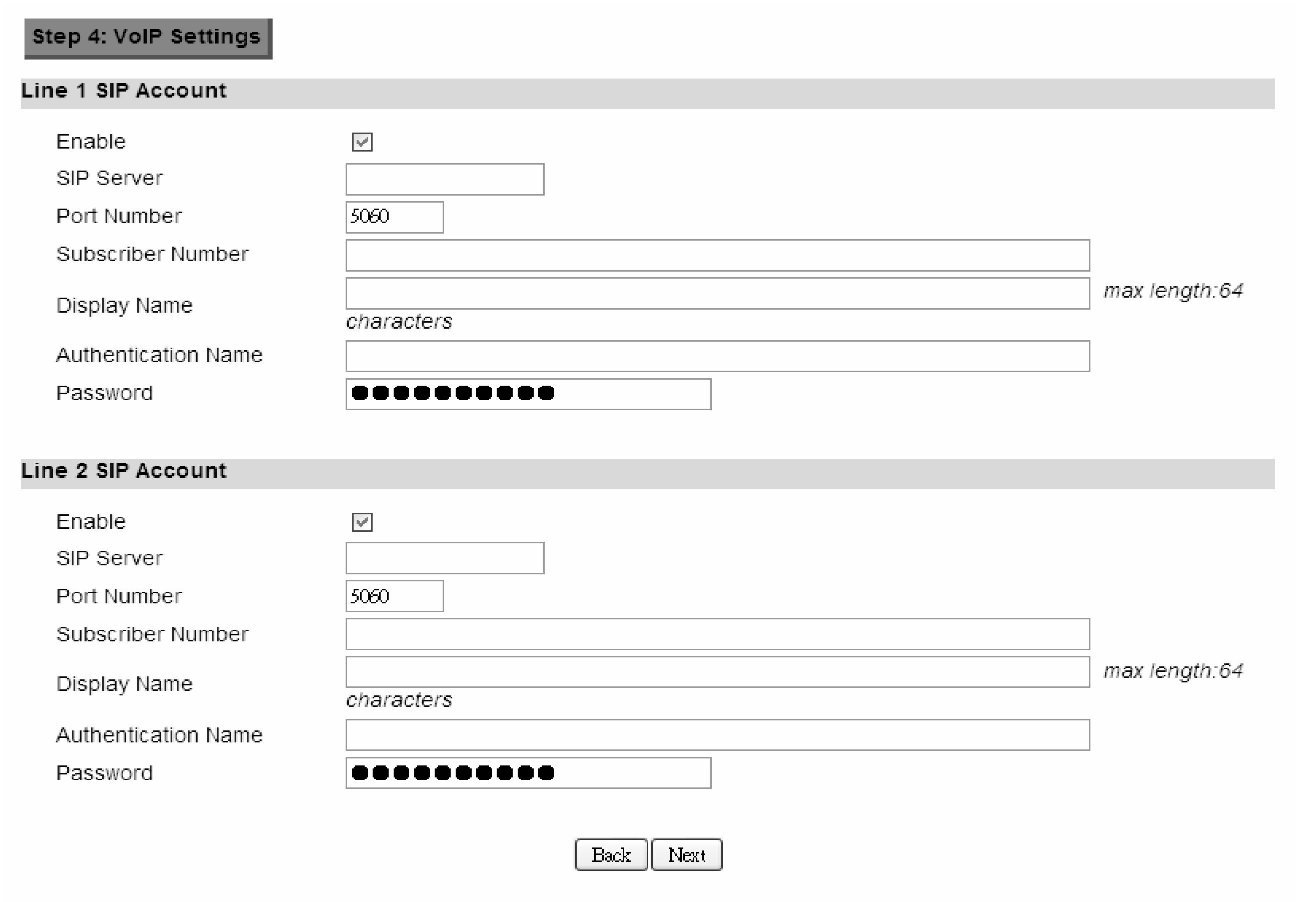
Authentication Mode	User authentication ▾

EAP Supplicant

EAP Mode	EAP-TTLS ▾
Anonymous ID	
Inner Mode	MS-CHAPv2 ▾
Username	
Password	●●●●●

Figure 12. Wizard WiMAX Authentication Settings

- **Step 4:** VoIP Settings. This step will configure VoIP.



Step 4: VoIP Settings

Line 1 SIP Account

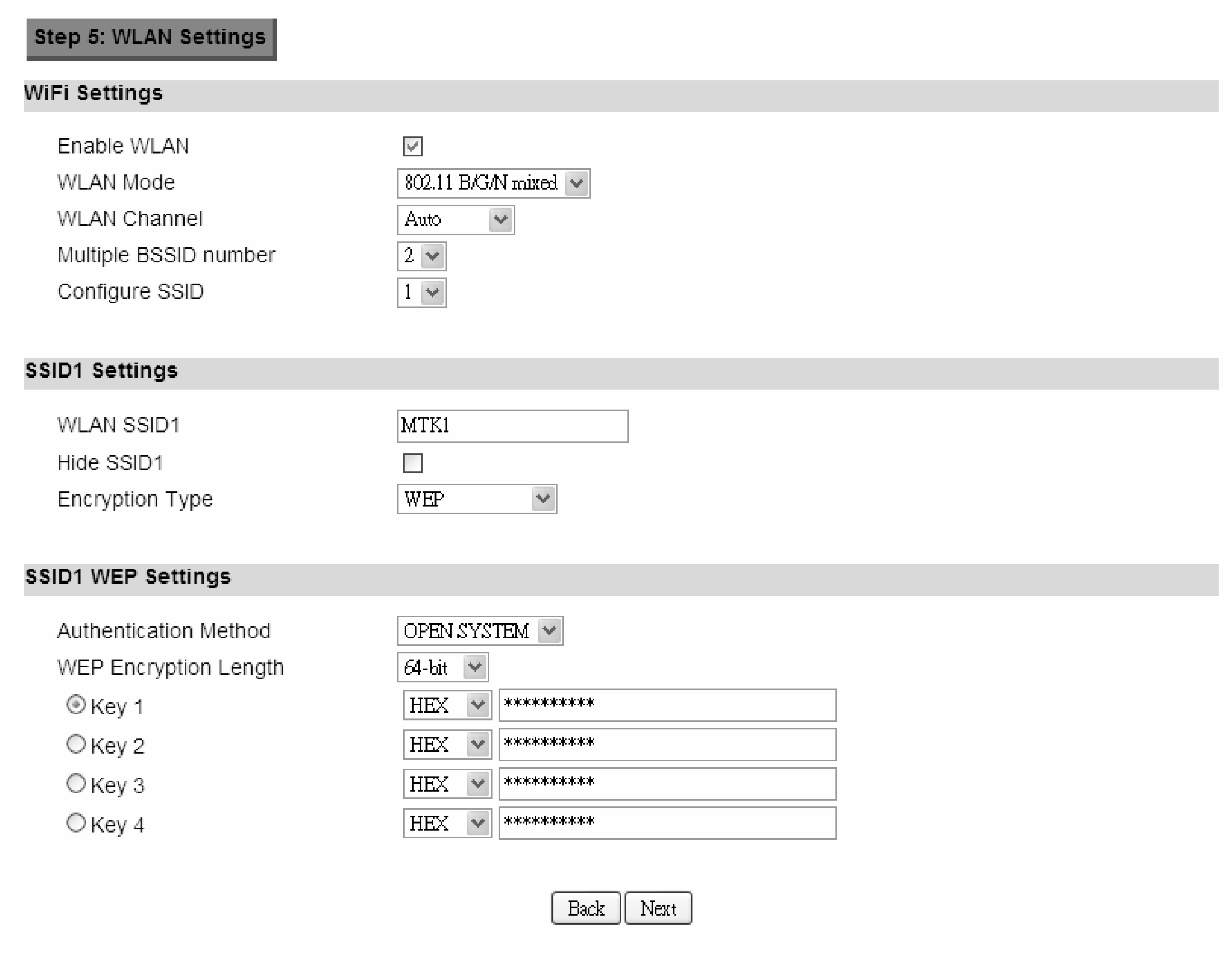
Enable	☑
SIP Server	
Port Number	5060
Subscriber Number	
Display Name	*max length:64 characters*
Authentication Name	
Password	●●●●●●●●●●●

Line 2 SIP Account

Enable	☑
SIP Server	
Port Number	5060
Subscriber Number	
Display Name	*max length:64 characters*
Authentication Name	
Password	●●●●●●●●●●●

Figure 13. Wizard VoIP Settings

- **Step 5:** Configures WLAN settings. See section WiFi WLAN for complete details on WLAN setting parameters. Depending on which encryption type you select, you will get corresponding attributes to configure for that encryption type.



Step 5: WLAN Settings

WiFi Settings

Enable WLAN	☑
WLAN Mode	802.11 B/G/N mixed
WLAN Channel	Auto
Multiple BSSID number	2
Configure SSID	1

SSID1 Settings

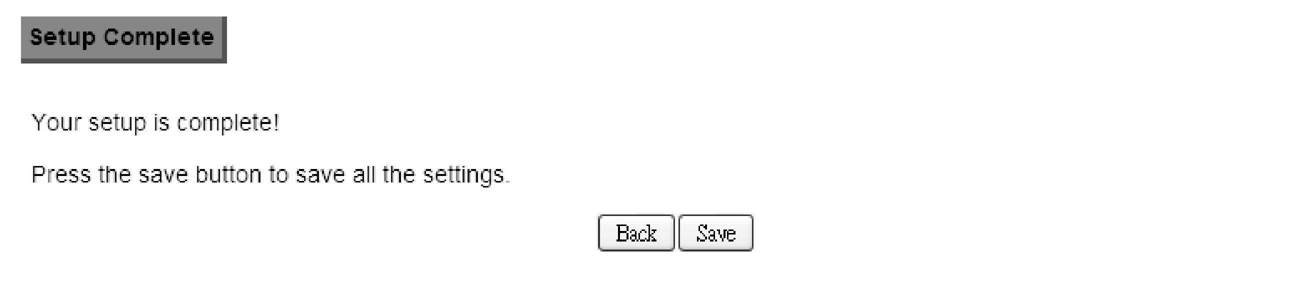
WLAN SSID1	MTK1
Hide SSID1	□
Encryption Type	WEP

SSID1 WEP Settings

Authentication Method	OPEN SYSTEM	
WEP Encryption Length	64-bit	
● Key 1	HEX	**********
○ Key 2	HEX	**********
○ Key 3	HEX	**********
○ Key 4	HEX	**********

Figure 14. Wizard WLAN Settings

Once you've completed all the steps, you need to click on the "Save" button to save the settings, or click on "Back" to return to the previous step. It will reload some services and return to the "Home" window.



Setup Complete

Your setup is complete!

Press the save button to save all the settings.

Figure 15. Wizard Save

5. Network

Refer to Figure 12, for proper network connection.

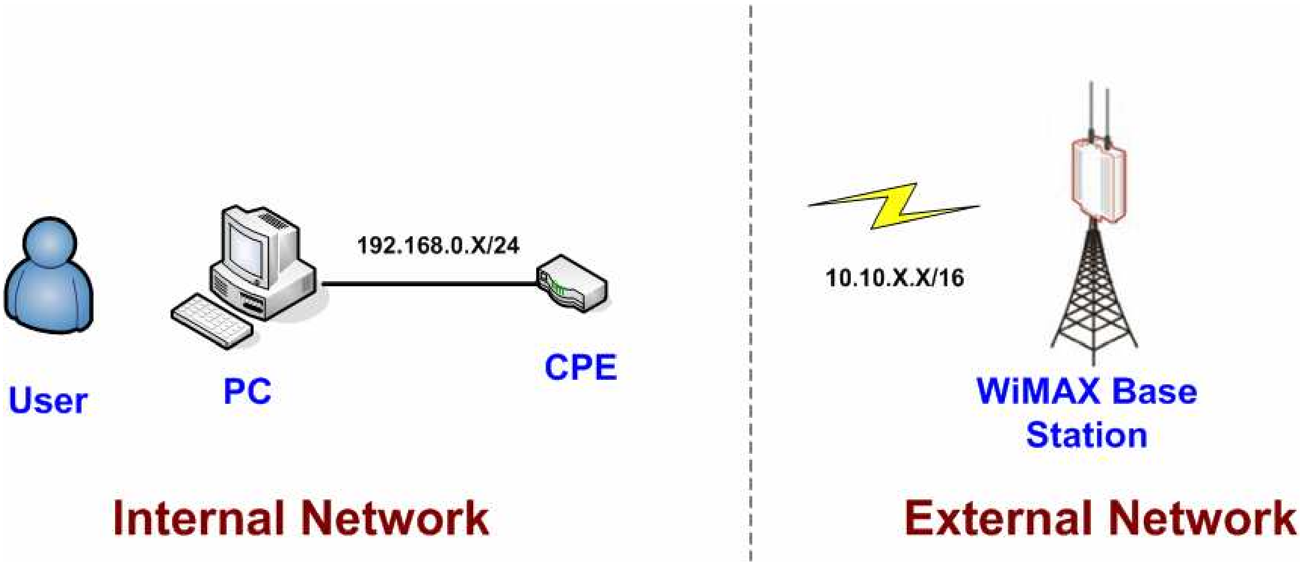


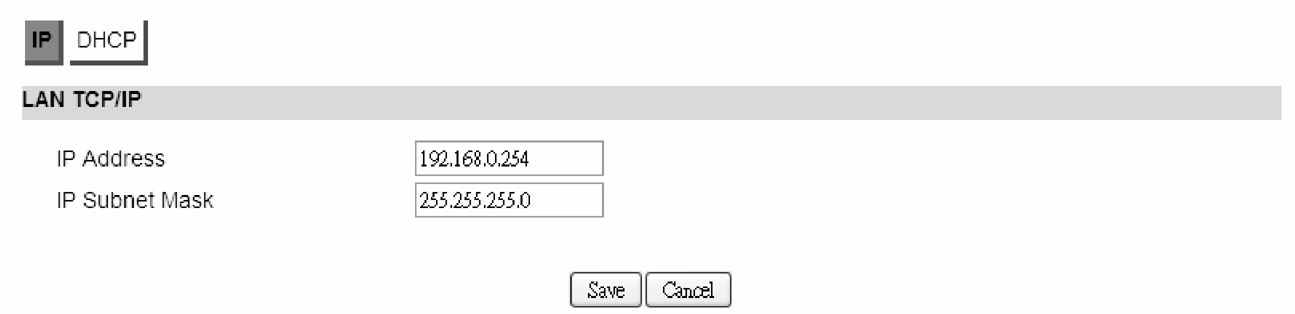
Figure 16. Network Topology

5.1. LAN

5.1.1. IP

From the “Network>LAN>IP” window, you can update the LAN information.

Name	**Description**
IP Address	IP address of the CPE device.
IP Subnet Mask	Subnet Mask of the CPE device.
Save	Commit the changes made, and set the LAN IP information, some services will be reloaded.
Cancel	Reset fields to the last saved values.



LAN TCP/IP

IP Address 192.168.0.254

IP Subnet Mask 255.255.255.0

Figure 17. Network>LAN>IP

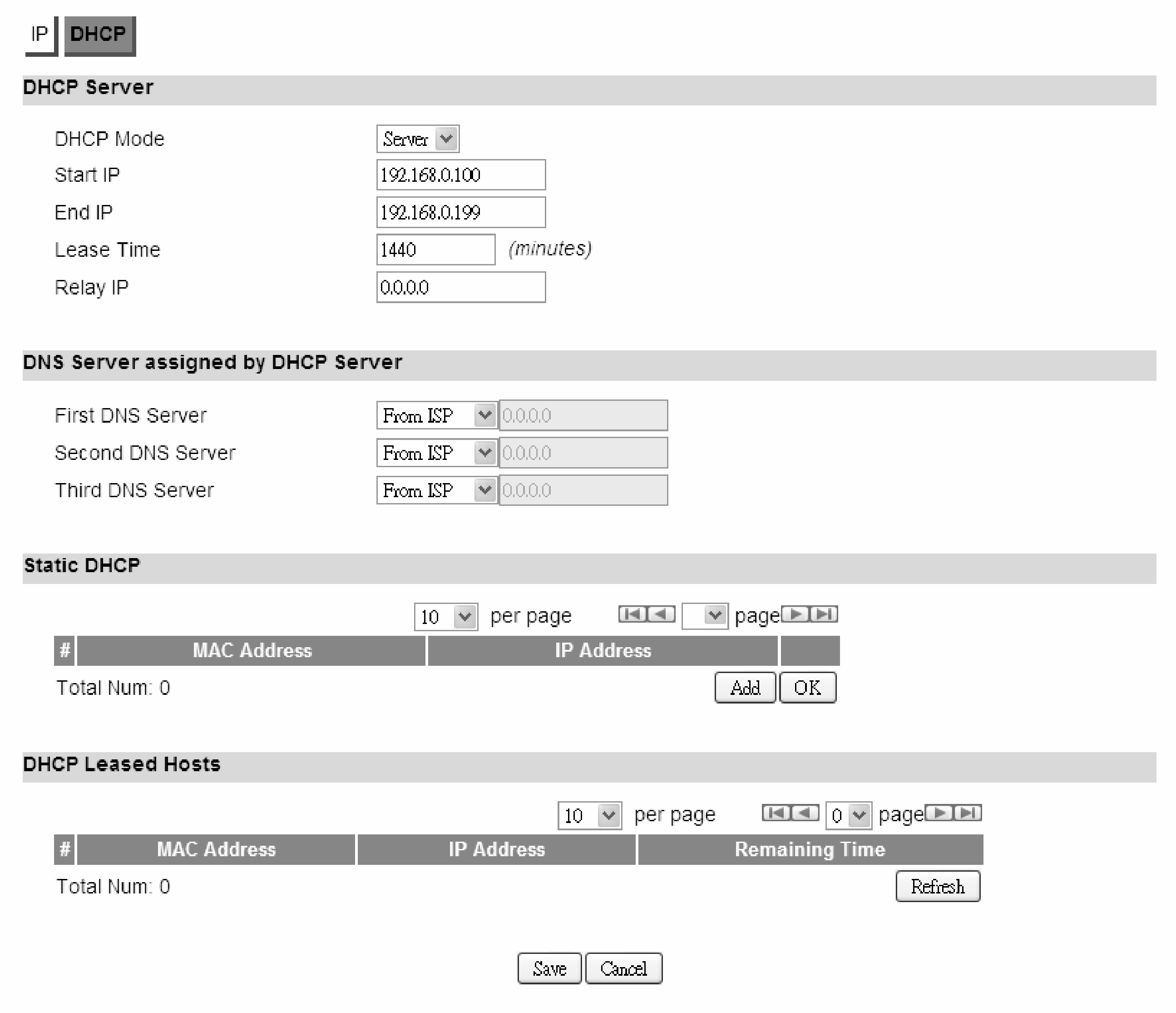
5.1.2. DHCP

Use the “Network>LAN>DHCP” tab to configure the DHCP server information. There are three DNS servers the user can configure to assign an IP address. Static DHCP will assign an IP address on the LAN to a specific device based on its MAC address.

“Network>LAN>DHCP”

Name	**Description**
DHCP Server	
DHCP Mode	➢ None ➢ Server ➢ Relay When Server mode is selected, the DHCP server will assign IP address to its client with the specified IP address range. When Relay IP mode is selected, you need to assign a DHCP relay agent in “Relay IP” column.
Start IP	Starting IP address range.
End IP	Ending IP address range.
Lease Time	The lease time is a controlled time period, allowing the DHCP server to reclaim (and then reallocate) IP addresses that are not renewed (dynamic re-use of IP addresses) Lease time is measured in minutes in the Configuration Manager.
Relay IP	User needs to assign a DHCP relay agent IP address, when “Relay mode” selected.
DNS Server assigned	
First DNS Server	You can specify three DNS server and select how the

Second DNS Server Third DNS Server	DNS Server is assigned. There are three options for assigning the DNS server: ➢ From ISP ➢ User Defined ➢ None If User selects “None”, then the DHCP server will not give clients the DNS server information. If all the three DNS servers setting are set to “None”, then the DHCP server will use the LAN IP address as the DNS server information for the clients. If the user chooses “User Defined” and leaves the IP address as “0.0.0.0” it will change the field to “None”.
Static DHCP	
Add	Click on the “Add” button, to enter a static leased IP address. Enter the MAC address of the Ethernet device and enter the IP address.
OK	Click the “OK” button to exit the table edit mode.
DHCP Leased Hosts	
Refresh	Click the “Refresh” button to refresh DHCP leased hosts information.
Save	Commit the changes made, and save to CPE device, some services will be reloaded.
Cancel	Reset fields to the last saved values.



DHCP Server

DHCP Mode: Server
Start IP: 192.168.0.100
End IP: 192.168.0.199
Lease Time: 1440 (minutes)
Relay IP: 0.0.0.0

DNS Server assigned by DHCP Server

First DNS Server: From ISP 0.0.0.0
Second DNS Server: From ISP 0.0.0.0
Third DNS Server: From ISP 0.0.0.0

Static DHCP

10 per page

#	MAC Address	IP Address	

Total Num: 0

DHCP Leased Hosts

10 per page 0 page

#	MAC Address	IP Address	Remaining Time

Total Num: 0

Figure 18. Network>LAN>DHCP

5.2. WAN

The wide area network is another network that you can connect to the internet with the CPE device.

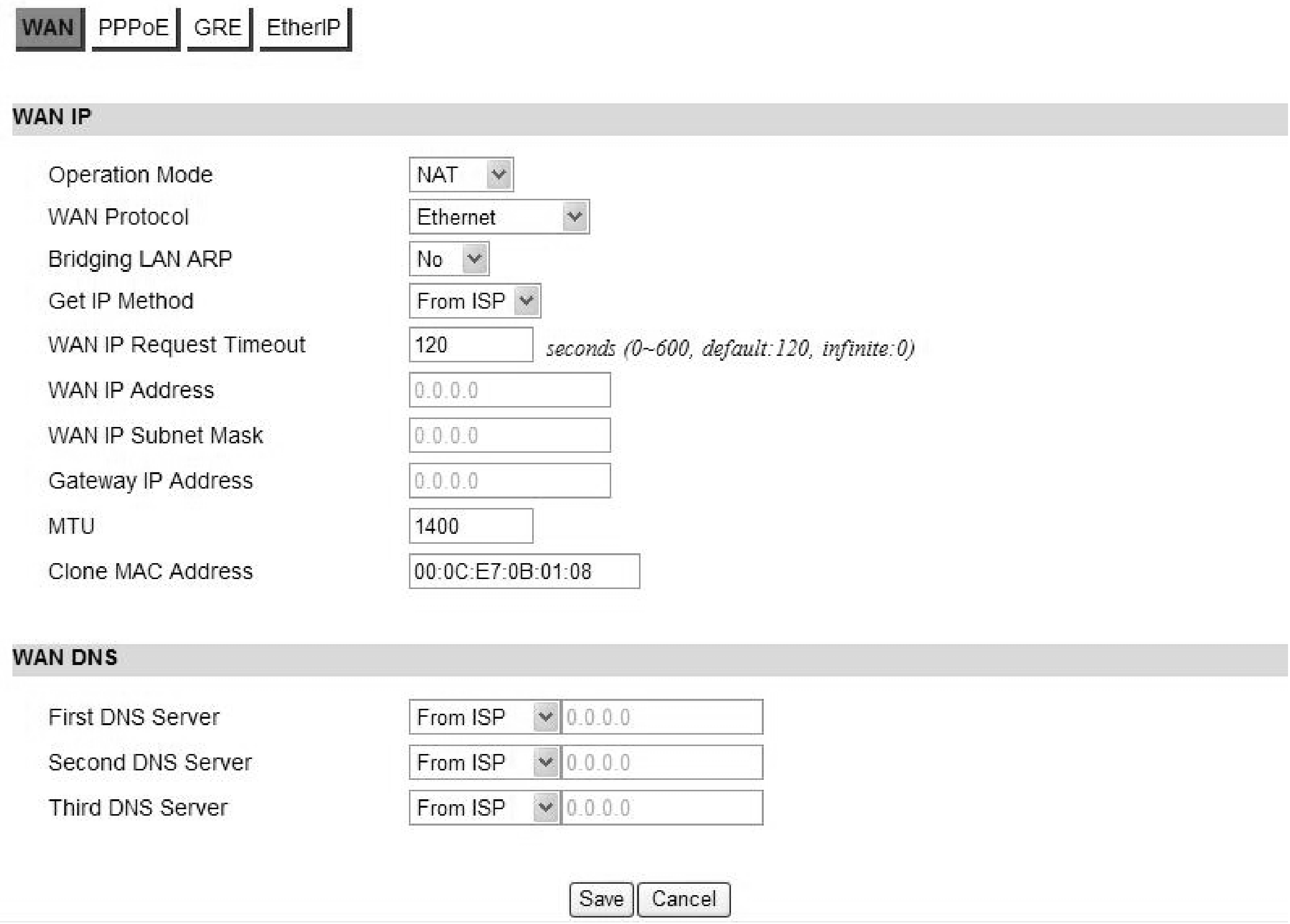
5.2.1. WAN

“Network>WAN>WAN”

Name	Description
WAN IP	
Operation Mode	Here provides three operation modes: ➢ Bridge

	➢ Router ➢ NAT
WAN Protocol	Please base on ISP provides connection method to select one protocol for network connection. ➢ Ethernet ➢ PPPoE ➢ GRE Tunnel ➢ EtherIP Tunnel
Bridging LAN ARP	Bridging LAN ARP: ➢ Yes ➢ No
Get IP Method	Enter the IP gotten method: ➢ From ISP ➢ User
WAN IP Request Timeout	The time the DHCP client waits to receive the IP address from the BS. If it doesn't get the IP it will timeout and the CPE will disconnect the WiMAX connection. The default value is 120 seconds. If you enter 0, will wait to receive the IP address infinitely until it's stopped by the user.
WAN IP Address	If you chose "User" for IP Method, enter the WAN IP address.
WAN IP Subnet Mask	If you chose "User" for IP Method, enter the WAN IP subnet Mask.
Gateway IP Address	If you chose "User" for IP Method, enter the IP gateway address.
MTU	Enter the MTU.
Clone MAC Address	Clone MAC address of WAN port.
WAN DNS	
First DNS Server	Enter the WAN DNS information. ➢ User Defined ➢ From ISP If you select "User Defined", you need to enter a valid IP address for the DNS server.
Second DNS Server	See First DNS Server.
Third DNS Server	See First DNS Server.
Save	Commit the changes made, and save to CPE device, after clicking the Save button you will get a message asking if you want to reboot the CPE. Reboot is required so the

	device can switch to a different profile.
Cancel	Reset fields to the last saved values.



WAN IP

Operation Mode	NAT
WAN Protocol	Ethernet
Bridging LAN ARP	No
Get IP Method	From ISP
WAN IP Request Timeout	120 *seconds (0~600, default:120, infinite:0)*
WAN IP Address	0.0.0.0
WAN IP Subnet Mask	0.0.0.0
Gateway IP Address	0.0.0.0
MTU	1400
Clone MAC Address	00:0C:E7:0B:01:08

WAN DNS

First DNS Server	From ISP	0.0.0.0
Second DNS Server	From ISP	0.0.0.0
Third DNS Server	From ISP	0.0.0.0

Figure 19. Network>WAN>WAN

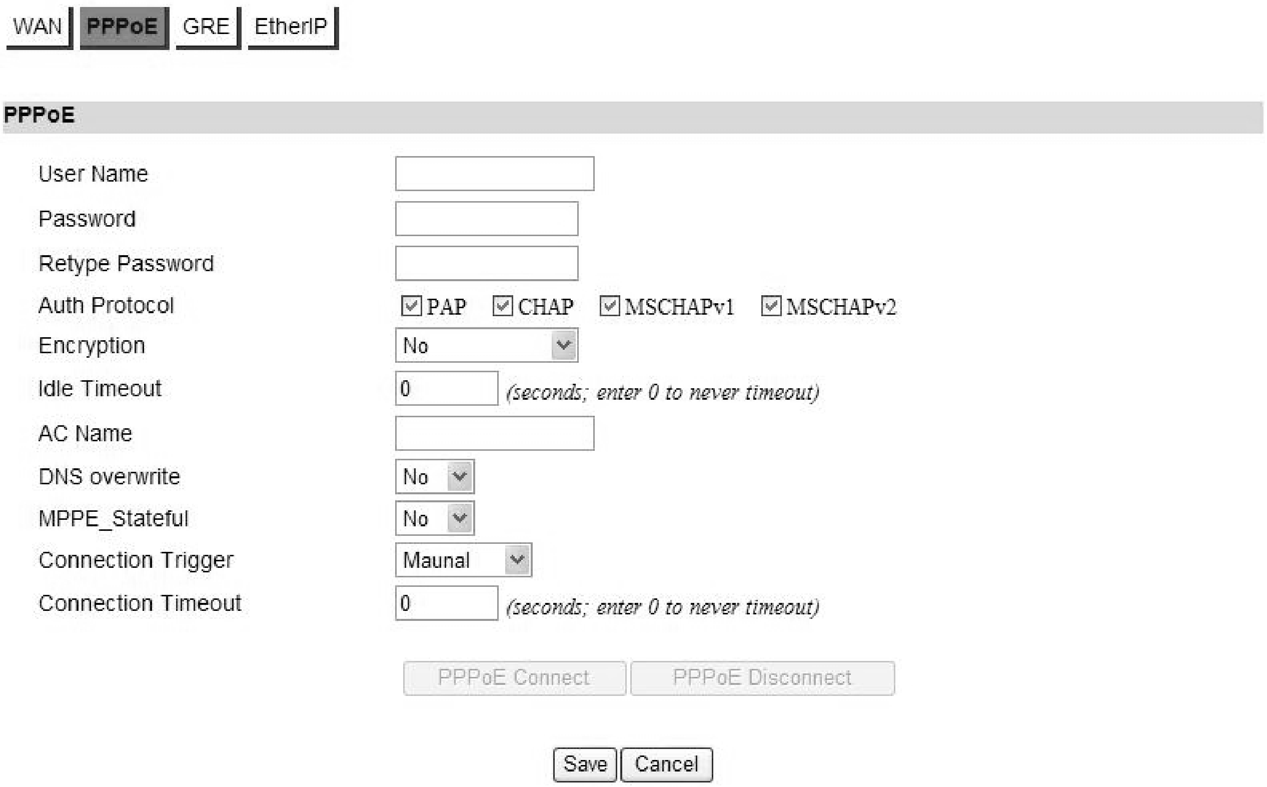
5.2.2. PPPoE

Before you configure PPPoE, you need to set “WAN” Protocol to “PPPoE” in WAN page.

“Network>WAN>PPPoE”

Name	Description
User Name	Enter the username.
Password	Enter the password.
Retype Password	Enter the password again.
Auth Protocol	Require the peer to authenticate itself before allowing network packets to be sent or received. We support the following protocol:

	➢ **PAP**: Password Authentication Protocol. ➢ **CHAP**: Challenge Handshake Authentication Protocol. ➢ **MSCHAP**: Microsoft Challenge Handshake Authentication Protocol. **MSCHAPv2**: Microsoft Challenge Handshake Authentication Protocol, Version2.
Encryption	Encryption Scheme: ➢ None: ➢ MPPE 40 bits: 40-bit encryption with MPPE. ➢ MPPE 128 bits: 128-bit encryption with MPPE. Auto: automatically select encryption scheme.
Idle Timeout	Disconnect if the link is idle for the assigned seconds.
AC Name	AC name.
DNS overwrite	DNS overwrite.
MPPE_Stateful	MPPE Stateful.
Connection Trigger	Connection Trigger Model: ➢ AlwaysOn: Trigger connection automatically. ➢ Manual: Trigger connection by manual.
Connection Timeout	Connection timeout.
PPPoE Connect	Click this button to connect network.
PPPoE Disconnect	Click this button to disconnect network.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



PPPoE

User Name	
Password	
Retype Password	
Auth Protocol	☑ PAP ☑ CHAP ☑ MSCHAPv1 ☑ MSCHAPv2
Encryption	No
Idle Timeout	0 *(seconds; enter 0 to never timeout)*
AC Name	
DNS overwrite	No
MPPE_Stateful	No
Connection Trigger	Maunal
Connection Timeout	0 *(seconds; enter 0 to never timeout)*

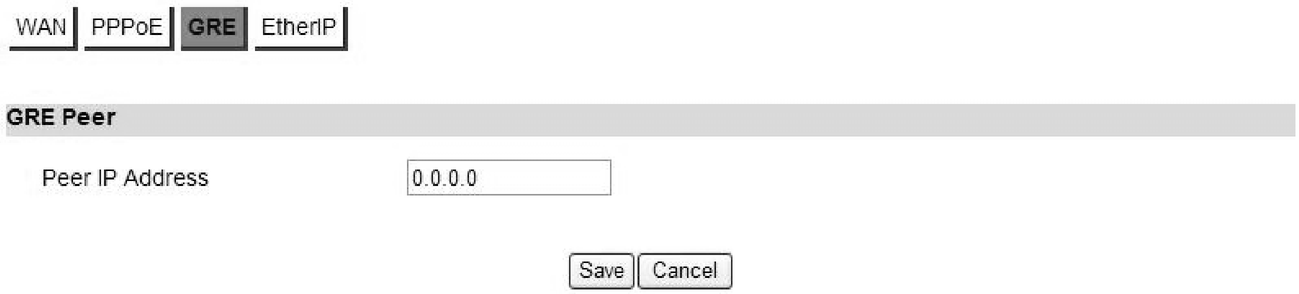
Figure 20. Network>WAN>PPPoE

5.2.3. GRE

Before you configure GRE, you need to set “WAN Protocol” to “GRE Tunnel” in WAN page.

“Network>WAN>GRE”

Name	Description
Peer IP Address	Enter IP address.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



GRE Peer

Peer IP Address: 0.0.0.0

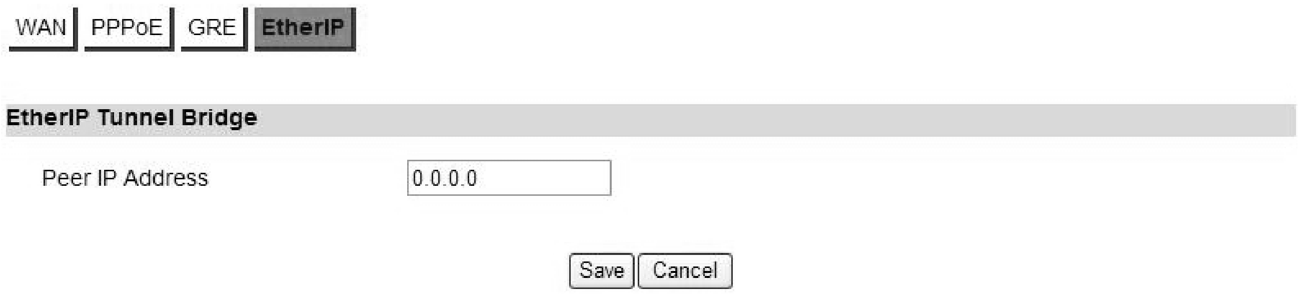
Figure 21. Network>WAN>GRE

5.2.4. EtherIP

Before you configure EtherIP, you should set “WAN Protocol” to “EtherIP Tunnel” in WAN tag.

“Network>WAN>EtherIP”

Name	Description
Peer IP Address	Enter IP address.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



EtherIP Tunnel Bridge

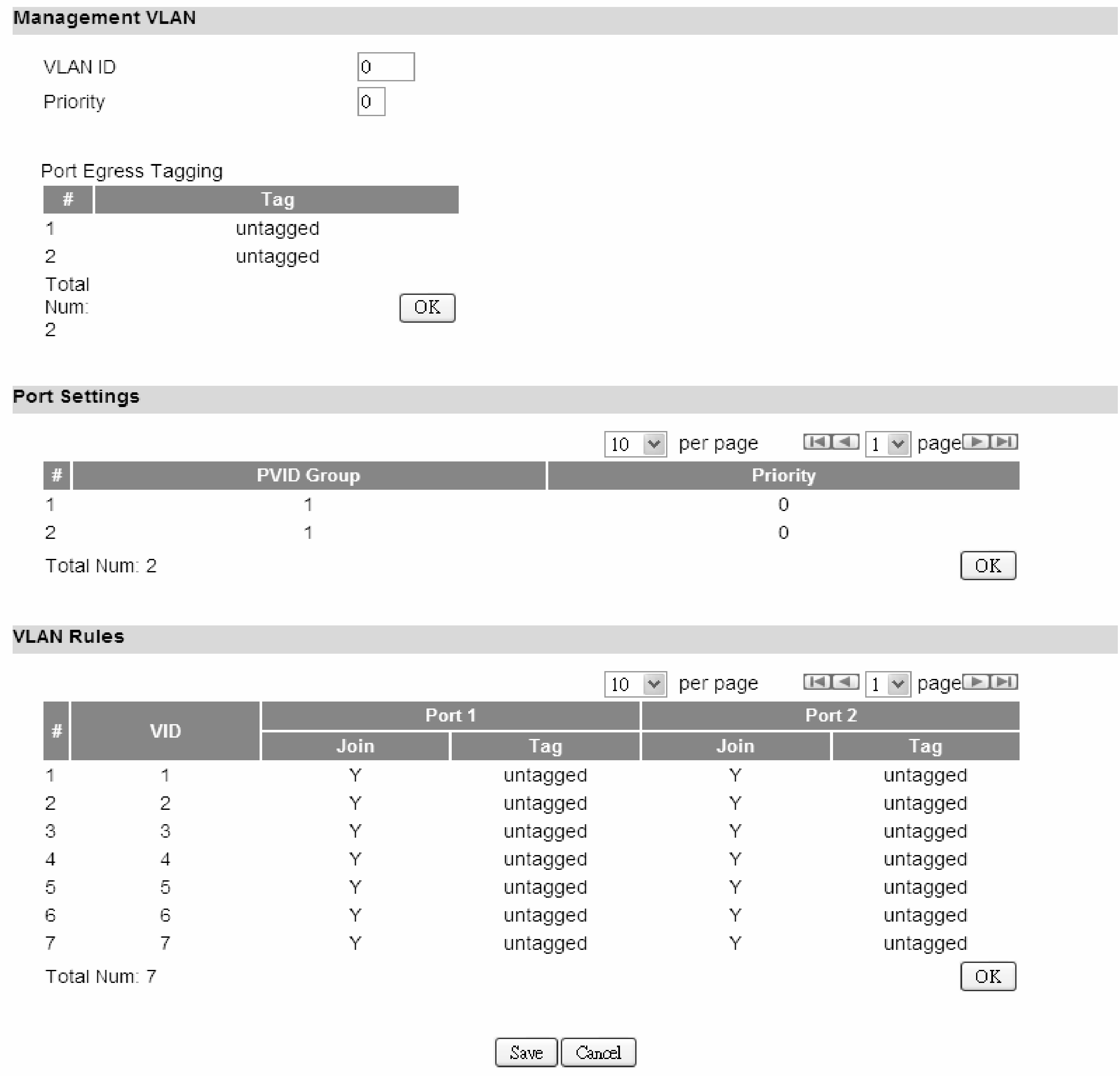
Peer IP Address: 0.0.0.0

Figure 22. Network>WAN>EtherIP

5.3. VLAN

“Network>VLAN”

Name	Description
Management VLAN	
VLAN ID	Setting the management VLAN ID.
Priority	Setting the management Priority.
Port Settings	
PVID Group	Select the VLAN group as the PVID
Priority	Setting the port Priority.
VLAN Rules	
VID	Setting the VID of this group.
Join	Add this port into this group.
Tag	Mark the out-going packets of this port in this VLAN as tagged or untagged.
Save	Commit the changes made and save to CPE device
Cancel	Reset fields to the last saved values



Management VLAN

VLAN ID: 0

Priority: 0

Port Egress Tagging

#	Tag
1	untagged
2	untagged

Total Num: 2

Port Settings

#	PVID Group	Priority
1	1	0
2	1	0

Total Num: 2

VLAN Rules

#	VID	Port 1		Port 2	
		Join	Tag	Join	Tag
1	1	Y	untagged	Y	untagged
2	2	Y	untagged	Y	untagged
3	3	Y	untagged	Y	untagged
4	4	Y	untagged	Y	untagged
5	5	Y	untagged	Y	untagged
6	6	Y	untagged	Y	untagged
7	7	Y	untagged	Y	untagged

Total Num: 7

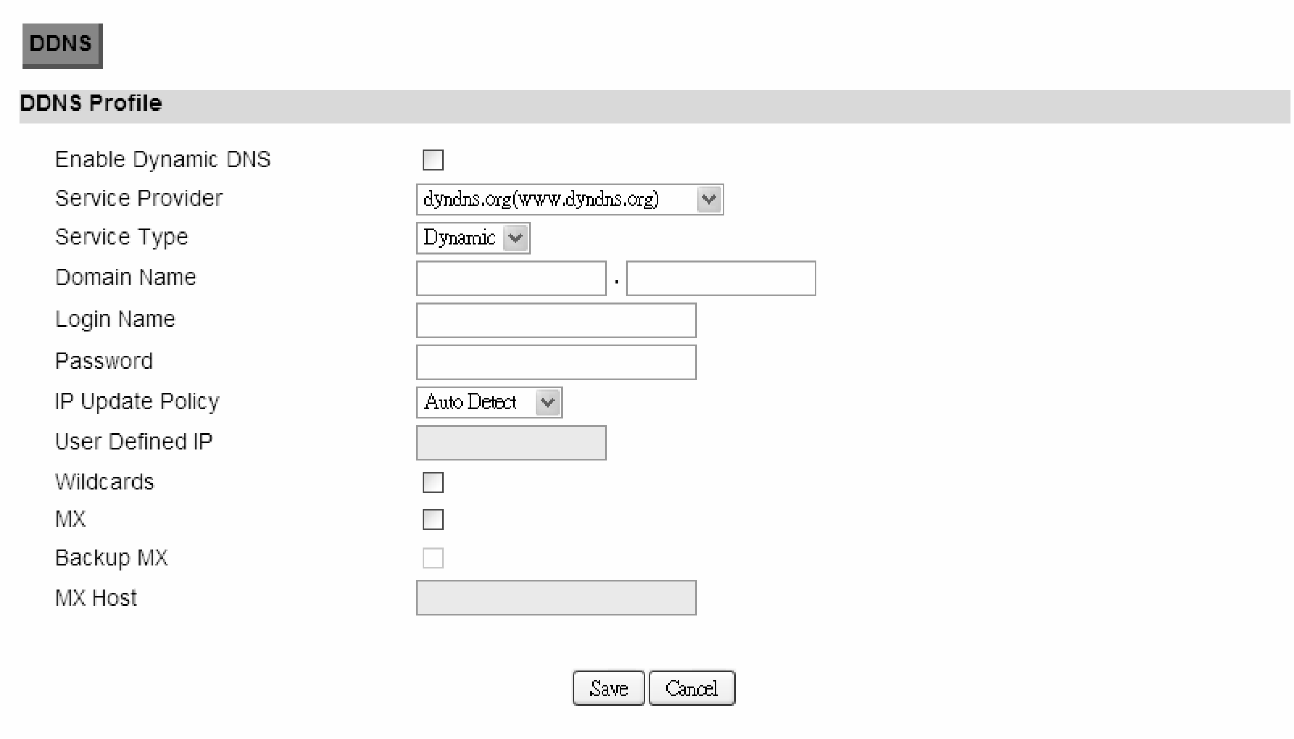
Figure 23. Network>VLAN

5.4. DDNS

“Network>DDNS”

Name	**Description**
Enable Dynamic DNS	Click the check box to enable dynamic DNS.
Service Provider	Enter the URL of the service provider.
Service Type*	Enter the service type (DYNDNS only) ➢ Dynamic ➢ Static ➢ Custom
Domain Name	Enter the domain name.
Login Name	Enter the username.
Password	Enter the password.
IP Update Policy	Select the Policy to be used: ➢ Auto Detect ➢ WAN IP ➢ User Defined
User Defined IP	If you selected “User Defined” ad the IP policy, then enter the IP address.
Wildcards*	Allows hostname to use wildcards such as “*”. It will allow “*hos.dyndns.org” to be aliased to the same IP address as “host.hyndns.org”.
MX*	Enable mail routing.
Backup MX*	Enable Second mail routing.
MX Host*	Host where mail will be routed to.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.

NOTE: * Supported by DYNDNS service provider



DDNS

DDNS Profile

Enable Dynamic DNS	□
Service Provider	dyndns.org(www.dyndns.org)
Service Type	Dynamic
Domain Name	.
Login Name	
Password	
IP Update Policy	Auto Detect
User Defined IP	
Wildcards	□
MX	□
Backup MX	□
MX Host	

Figure 24. Network>DDNS

6. Advanced Setting

The "Advanced Settings" window will allow you to set rules for incoming and outgoing traffic.

6.1. NAT

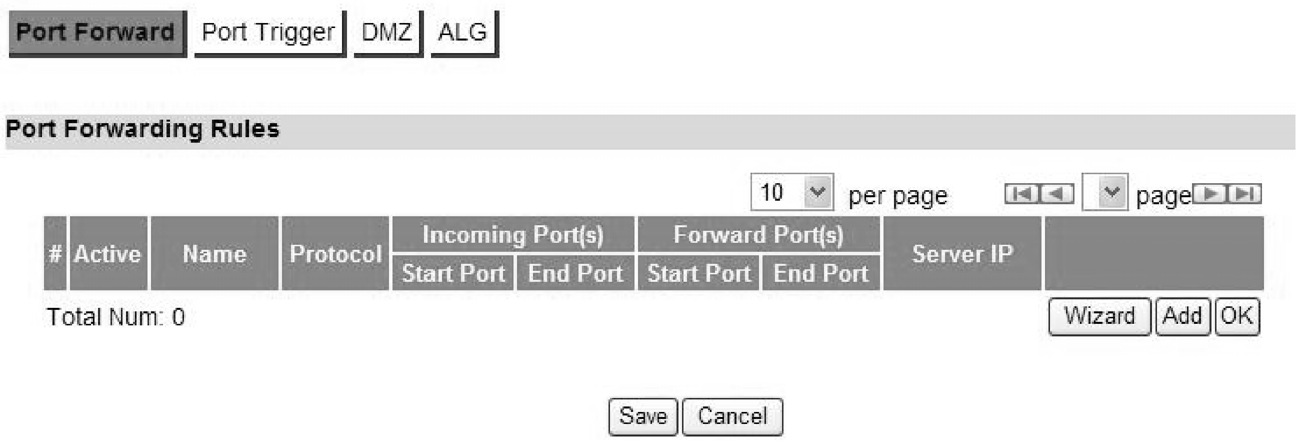
Network Address Translation (**NAT**) is the process of modifying the network address information of the host in a packet while in transit, so that it can be remapped to a given address space in another network. For example, the source address of a packet in a network is changed to a different IP address known within another network.

6.1.1. Port Forward

The "Advanced>NAT>Port Forward" tab is used to create "Port Forward" rules based on protocol port. Click the "Add" button to add a Port Forward rule.

"Advanced>NAT>Port Forward"

Name	Description
Activate	Check the box to activate the "Port Forward" rule.
Name	Name of the Port Forward rule.
Protocol	Which Protocol to be matched by the rule? Available options are: TCP, UDP, or TCP/UDP.
Incoming Port(s)	Which port range to be matched by the Port Forward rule? Enter the starting and ending port range.
Forward Ports(s)	Which port range will be translated to if it matches the rule? The packet will be forwarded to one of these ports if it matches the rule. Enter the starting and ending port range.
Server IP	Which IP address will be translated to if it matched the rule? The packet will be forwarded to this IP address if it matched the rule.
Trash	Delete the Port Forward rule.
Add	Click the "Add" button to create a new Port Forward rule.
Wizard	The wizard will allow you to quickly configure Port Forward rule.
OK	Click the "OK" button to exit the table edit mode.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



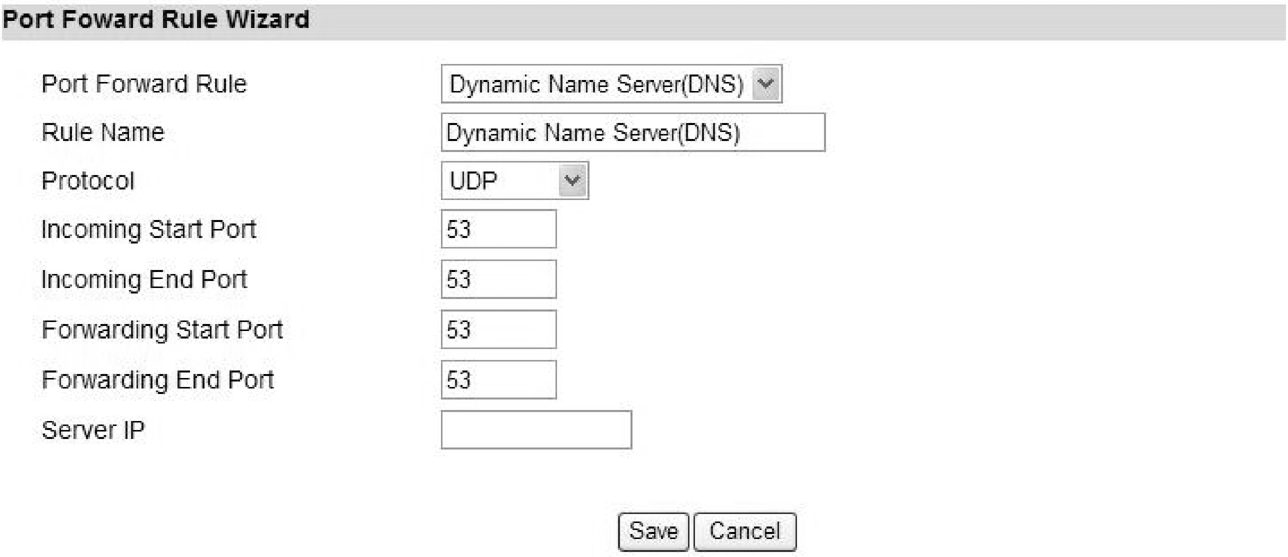
#	Active	Name	Protocol	Incoming Port(s)		Forward Port(s)		Server IP	
				Start Port	End Port	Start Port	End Port		

Figure 25. Advanced>NAT>Port Forward

“Advanced>NAT>Port Forward>Wizard”

Name	Description
Port Forward Rule	Select one protocol for Port Forward Rule: ➢ Dynamic Name Server (DNS) ➢ FTP Server ➢ IPSEC ➢ Mail(POP3) ➢ Mail(SMTP) ➢ PPTP ➢ RealPlayer 8 Plus ➢ SSH ➢ SNMP ➢ SNMP Trap ➢ Telnet Server ➢ TFTP
Rule Name	Name of the Port Forward rule.
Protocol	Which Protocol to be matched by the rule? Available options are: TCP, UDP, or TCP/UDP.
Incoming Start and End Port(s)	Which port range to be matched by the Port Forward rule? Enter the starting and ending port range.
Forwarding Start and End Ports(s)	Which port range will be translated to if it matches the rule? The packet will be forwarded to one of these ports if it matches the rule. Enter the starting and ending port range.

Server IP	Which IP address will be translated to if it matched the rule? The packet will be forwarded to this IP address if it matched the rule.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Port Foward Rule Wizard

Port Forward Rule	Dynamic Name Server(DNS)
Rule Name	Dynamic Name Server(DNS)
Protocol	UDP
Incoming Start Port	53
Incoming End Port	53
Forwarding Start Port	53
Forwarding End Port	53
Server IP	

Figure 26. Advanced>NAT>Port Forward>Wizard

6.1.2. Port Trigger

The “Advanced>NAT>Port Trigger” tab allows you to configure Port Trigger rules. Port Trigger is a way to automate port forwarding in which outbound traffic on predetermined ports (“trigger port”) causes inbound traffic to specific incoming ports to be dynamically forwarded to the initiating host, while the outbound ports are in use. This allows users behind CPE on the LAN to provide services that would normally require the computer to have IP address on the LAN. Port triggering triggers an open incoming port (‘open port’) when a client on the local network makes an outgoing connection on a predetermined port or range of ports.

“Advanced>NAT>Port Trigger”

Name	**Description**
Activate	Check the box to activate the “Port Trigger” rule.
Name	Name of the Port Trigger rule.
Protocol	Which Protocol the outgoing packet used will trigger the rule? Available options are: TCP, UDP, or TCP/UDP.
Trigger Port(s)	Which ports range the outgoing packet will trigger the rule?

	Enter the starting and ending port range.
Open protocol	Which protocol will be opened if the rule had been triggered? Available options are: TCP, UDP or TCP/UDP.
Trash	Delete the Port Trigger rule.
Wizard	The wizard will allow you to quickly configure Port Forward rule.
Add	Click the “Add” button to create a new Port Trigger rule.
OK	Click the “OK” button to exit the table edit mode.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.

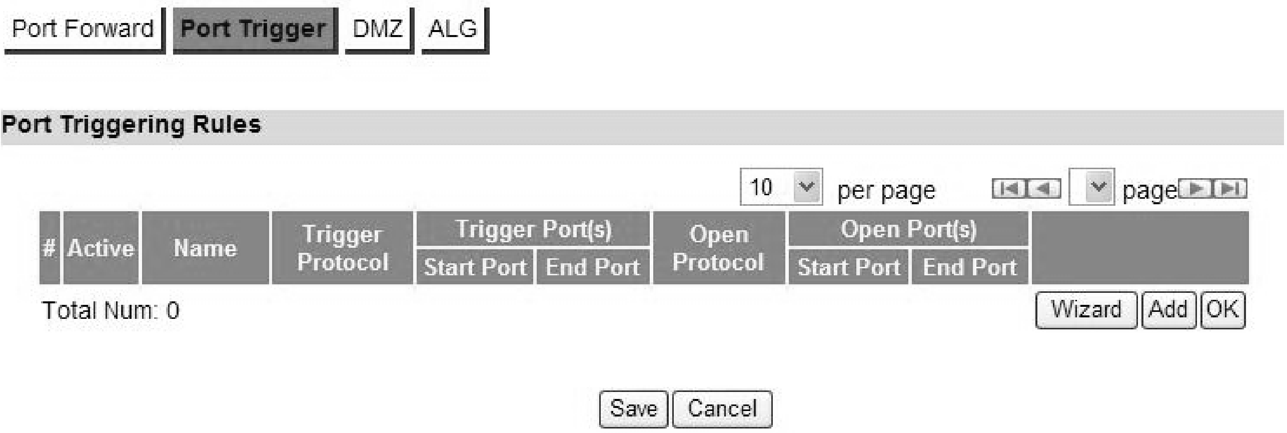
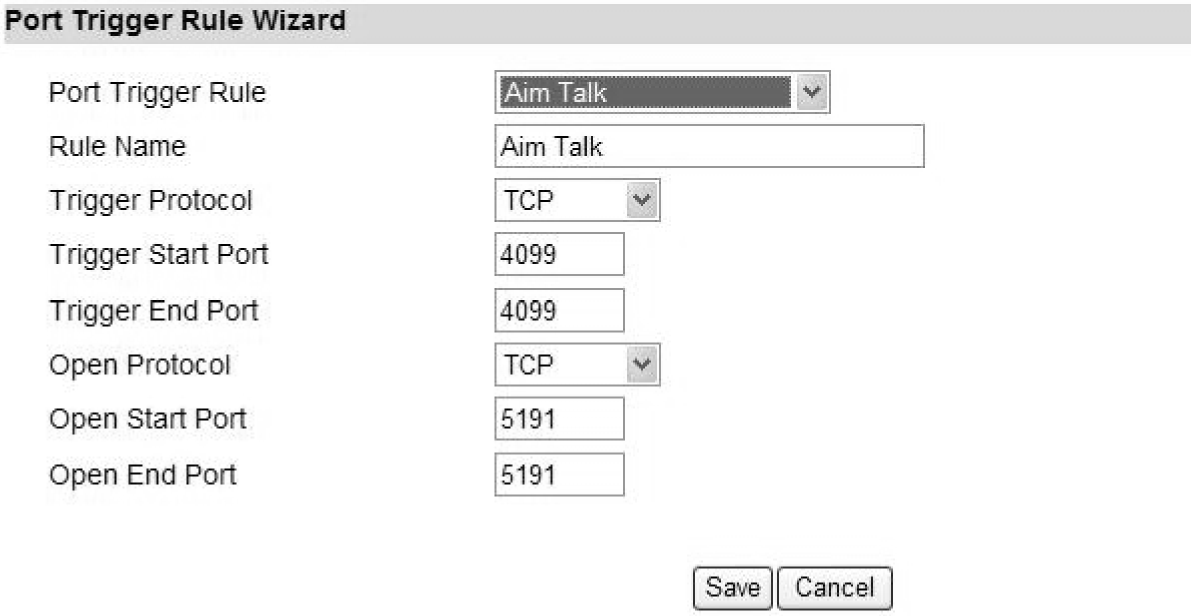


Figure 27. Advanced>NAT>Port Trigger

“Advanced>NAT>Port Trigger>Wizard”

Name	**Description**
Port Trigger Rule	Select one application for Port Trigger Rule: ➢ Aim Talk ➢ Asheron’s Call ➢ Calista IP Phone ➢ Net2Phone ➢ RainboxSix/Rogue Spea
Rule Name	Name of the Port Trigger rule.
Trigger Protocol	Which Protocol the outgoing packet used will trigger the rule? Available options are: TCP, UDP, or TCP/UDP.
Trigger Start and	Which ports range the outgoing packet will trigger the rule?

End Port	Enter the starting and ending port range.
Open protocol	Which protocol will be opened if the rule had been triggered? Available options are: TCP, UDP or TCP/UDP.
Open Start and End Port	Which ports range of the protocol will trigger the rule? Enter the starting and ending port range.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.

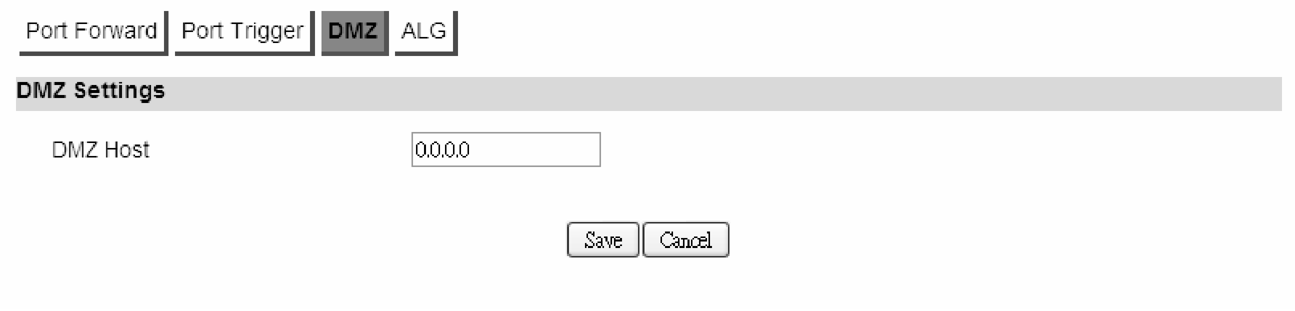

Port Trigger Rule Wizard

Port Trigger Rule	Aim Talk
Rule Name	Aim Talk
Trigger Protocol	TCP
Trigger Start Port	4099
Trigger End Port	4099
Open Protocol	TCP
Open Start Port	5191
Open End Port	5191

Figure 28. Advanced>NAT>Port Trigger>Wizard

6.1.3. DMZ

The “Advanced>NAT>DMZ” tab allows you to configure a **DMZ** (**Demilitarized Zone**) host IP address. Enter the IP address of the DMZ host. The “Save” button will save the changes to CPE device and the “Cancel” button will reset the field to last saved value. Enter “0.0.0.0” to disable DMZ host.



DMZ Settings

DMZ Host 0.0.0.0

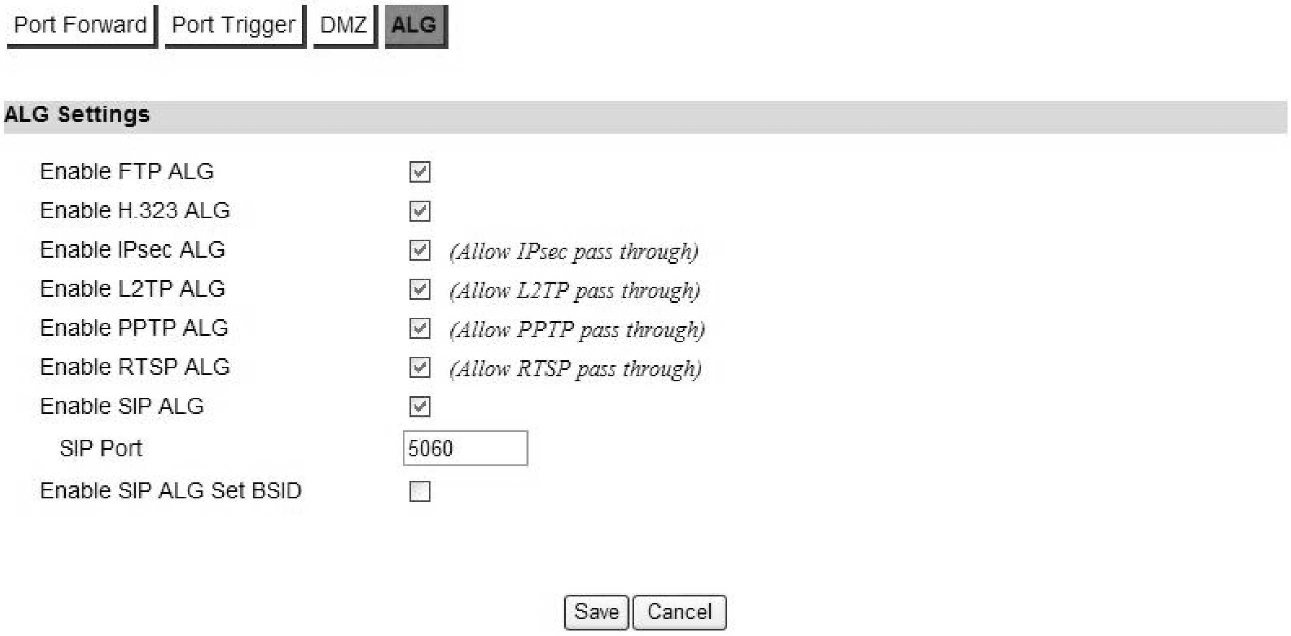
Figure 29. Advanced>NAT>DMZ

6.1.4. ALG

There are three ALGs you can enable from “Advanced>NAT>ALG” tab. ALG allows legitimate application traffic to pass through the CPE device that would have otherwise been restricted. Without ALGs, some application may not work well because of NAT/firewall settings. Click on the check box to enable ALGs.

NOTE: If you are using any of these types of application protocols you need to enable them in the ALG settings.

- Enable FTP ALG
- Enable H.323 ALG
- Enable IPsec ALG
- Enable L2TP ALG
- Enable PPTP ALG
- Enable RTSP ALG
- Enable SIP ALG
- Enable SIP ALG set BSID



ALG Settings

Enable FTP ALG	☑	
Enable H.323 ALG	☑	
Enable IPsec ALG	☑	*(Allow IPsec pass through)*
Enable L2TP ALG	☑	*(Allow L2TP pass through)*
Enable PPTP ALG	☑	*(Allow PPTP pass through)*
Enable RTSP ALG	☑	*(Allow RTSP pass through)*
Enable SIP ALG	☑	
SIP Port	5060	
Enable SIP ALG Set BSID	□	

Figure 30. Advanced>NAT>ALG

6.2. Firewall

In networking, firewalls are used to block un-wanted traffic or prevent from DDoS attacks. It will prevent unauthorized devices to enter a trusted network.

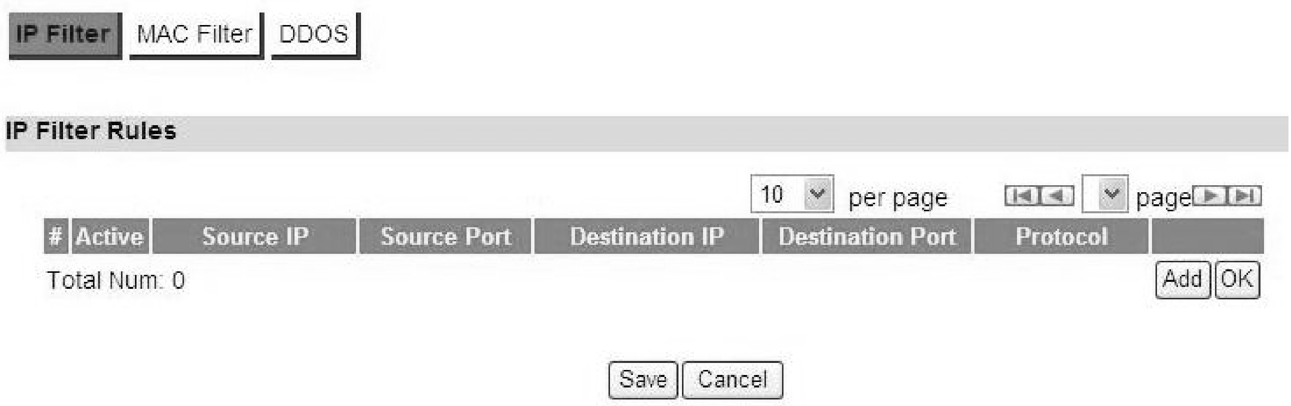
6.2.1. IP Filter

The IP filter rules will drop or discard traffic that fits the filter criteria.

“Advanced>Firewall>IP Filter”

Name	Description
Activate	Check the box to activate the “IP Filter” rule.
Source IP/Mask	Source IP to filter on and mask.
Source Port	Source port to filter on.
Destination IP/Mask	Destination IP to filter on and mask.
Destination Port	Destination port to filter on.
Protocol	Protocol to filter on.
Trash	Delete the IP Filter rule.
Add	Click the “Add” button to create a new IP Filter rule.

OK	Click the “OK” button to exit the table edit mode.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



IP Filter Rules

#	Active	Source IP	Source Port	Destination IP	Destination Port	Protocol	

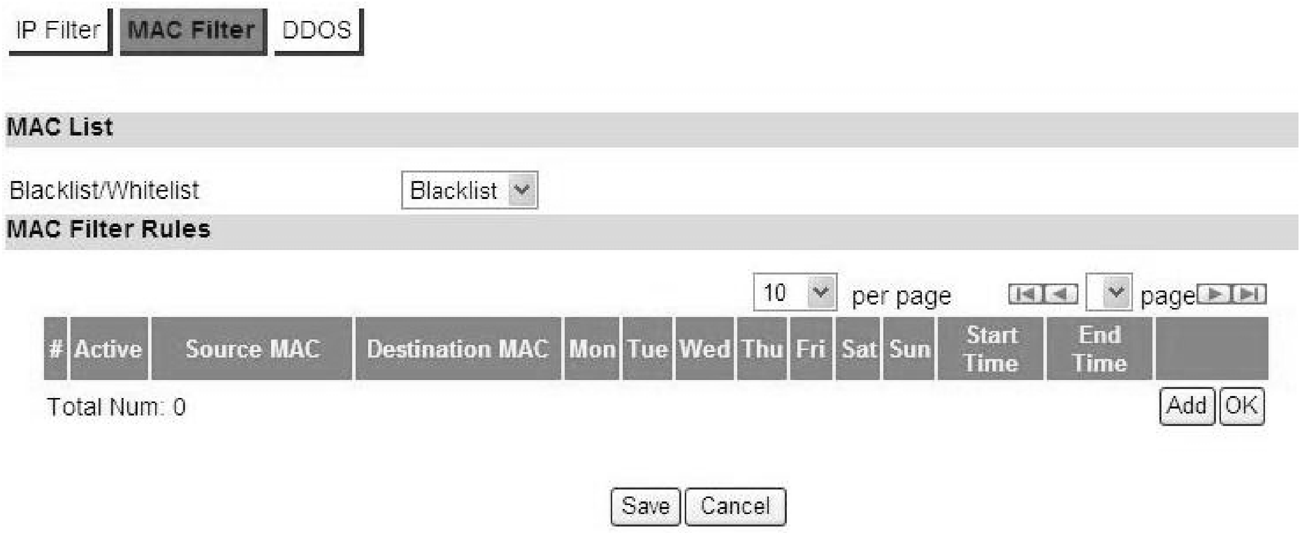
Total Num: 0

Figure 31. Advanced>Firewall>IP Filter

6.2.2. MAC Filter

“Advanced>Firewall>MAC Filter”

Name	**Description**
MAC List	
Blacklist/Whitelist	Select Blacklist or Whitelist.
MAC Filter Rules	
Activate	Check the box to activate the “MAC Filter” rule.
Source MAC	Source MAC to filter on and mask.
Destination MAC	Destination MAC to filter on and mask.
Mon ~ Sun Start Time ~ End Time	You can select days of week, and setup the “Start Time” and “End Time” for MAC filter.
Add	Add a new MAC filter rule.
OK	Click the “OK” button to exit the table edit mode.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



MAC List

Blacklist/Whitelist: Blacklist

MAC Filter Rules

#	Active	Source MAC	Destination MAC	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start Time	End Time	

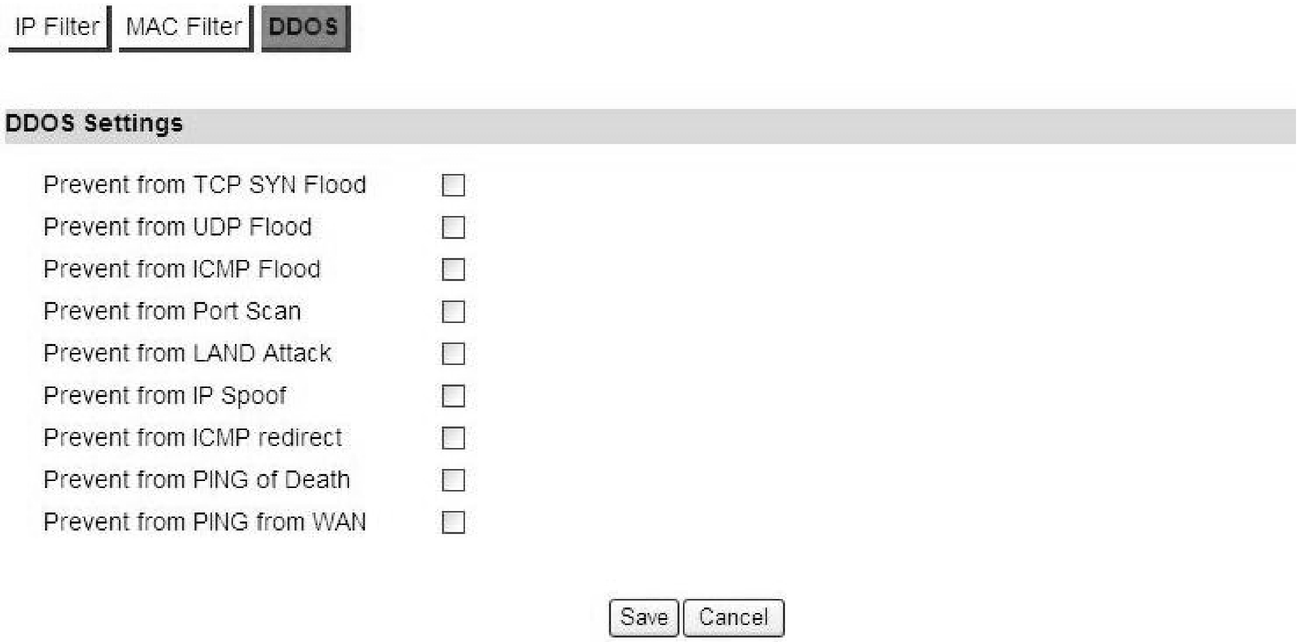
Total Num: 0

Figure 32. Advanced>Firewall>MAC Filter

6.2.3. DDOS

“Advanced>Firewall>DDOS”

Name	Description
TCP SYN Flood UDP Flood	It will prevent SYN flood from WAN or LAN. It will prevent UDP flood to CPE device.
ICMP Flood	It will prevent ICMP flood from WAN or LAN.
Port Scan	It will prevent port scanning from WAN and issue an alarm entry in the system log.
LAND Attack	It will prevent LAND attack.
IP Spoof	It will prevent IP spoof attack.
ICMP redirect	It will prevent ICMP redirect attack.
PING of Death	It will prevent ping of death attack.
PING from WAN	It will ping from WAN.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



IP Filter | MAC Filter | DDOS

DDOS Settings

Prevent from TCP SYN Flood □
Prevent from UDP Flood □
Prevent from ICMP Flood □
Prevent from Port Scan □
Prevent from LAND Attack □
Prevent from IP Spoof □
Prevent from ICMP redirect □
Prevent from PING of Death □
Prevent from PING from WAN □

Save | Cancel

Figure 33. Advanced>Firewall>DDOS

6.3. Route

A route is a path in the network, which can direct the flow of network traffic.

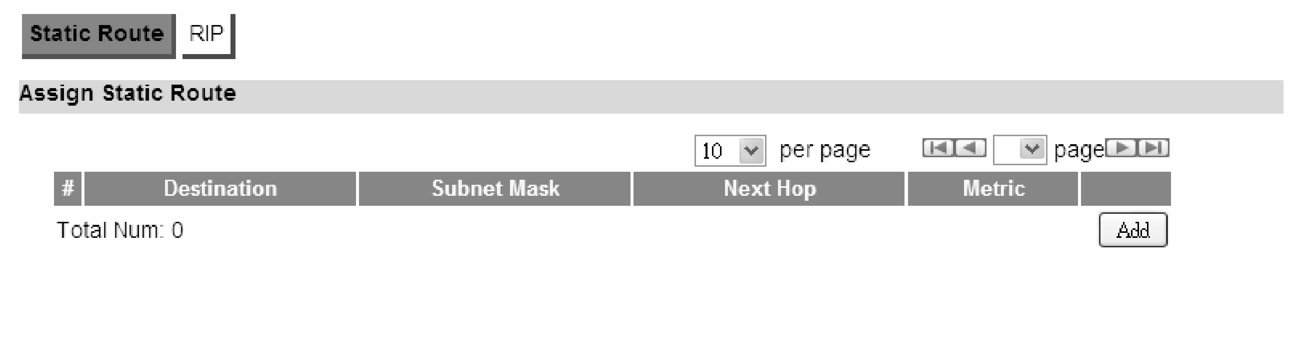
6.3.1. Static Route

The static route is a hard coded path in the router that specifies how it will get to a certain subnet by using a defined path.

"Advanced>Route>Static Route"

Name	Description
Destination IP	Enter the Destination IP address you would like to reach.
Subnet Mask	Enter the subnet mask.
Next Hop	Select where the next hop will be. ➢ WAN or LAN interface directly ➢ IP Address
Metric	Enter the metric value, "cost" of transmission for routing purposes.
Trash	Will remove the selected route.
Add	Will enter in edit mode to add a static route.

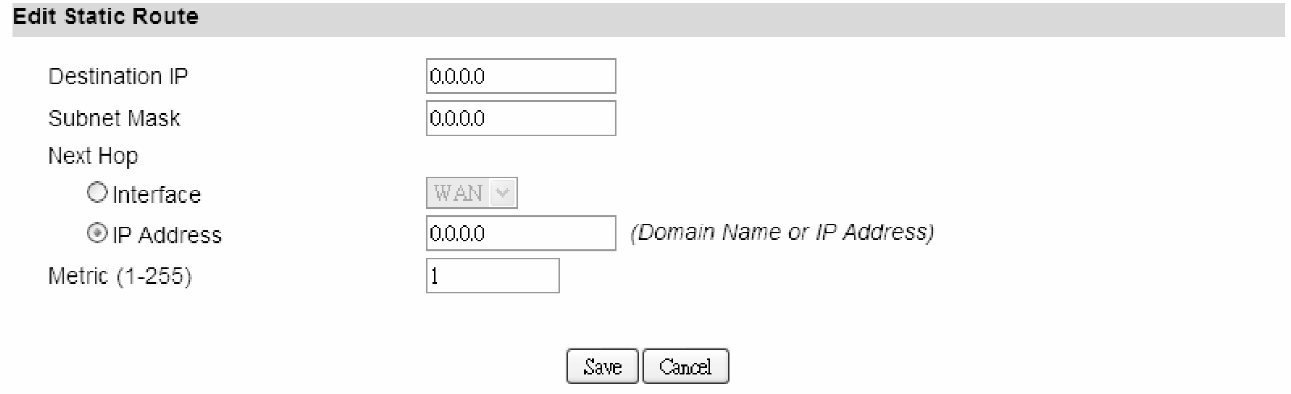
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



#	Destination	Subnet Mask	Next Hop	Metric	

Total Num: 0

Figure 34. Advanced>Route>Static Route



Destination IP: 0.0.0.0
Subnet Mask: 0.0.0.0
Next Hop
○ Interface: WAN
● IP Address: 0.0.0.0 *(Domain Name or IP Address)*
Metric (1-255): 1

Figure 35. Advanced>Route>Static Route>Add

6.3.2. RIP

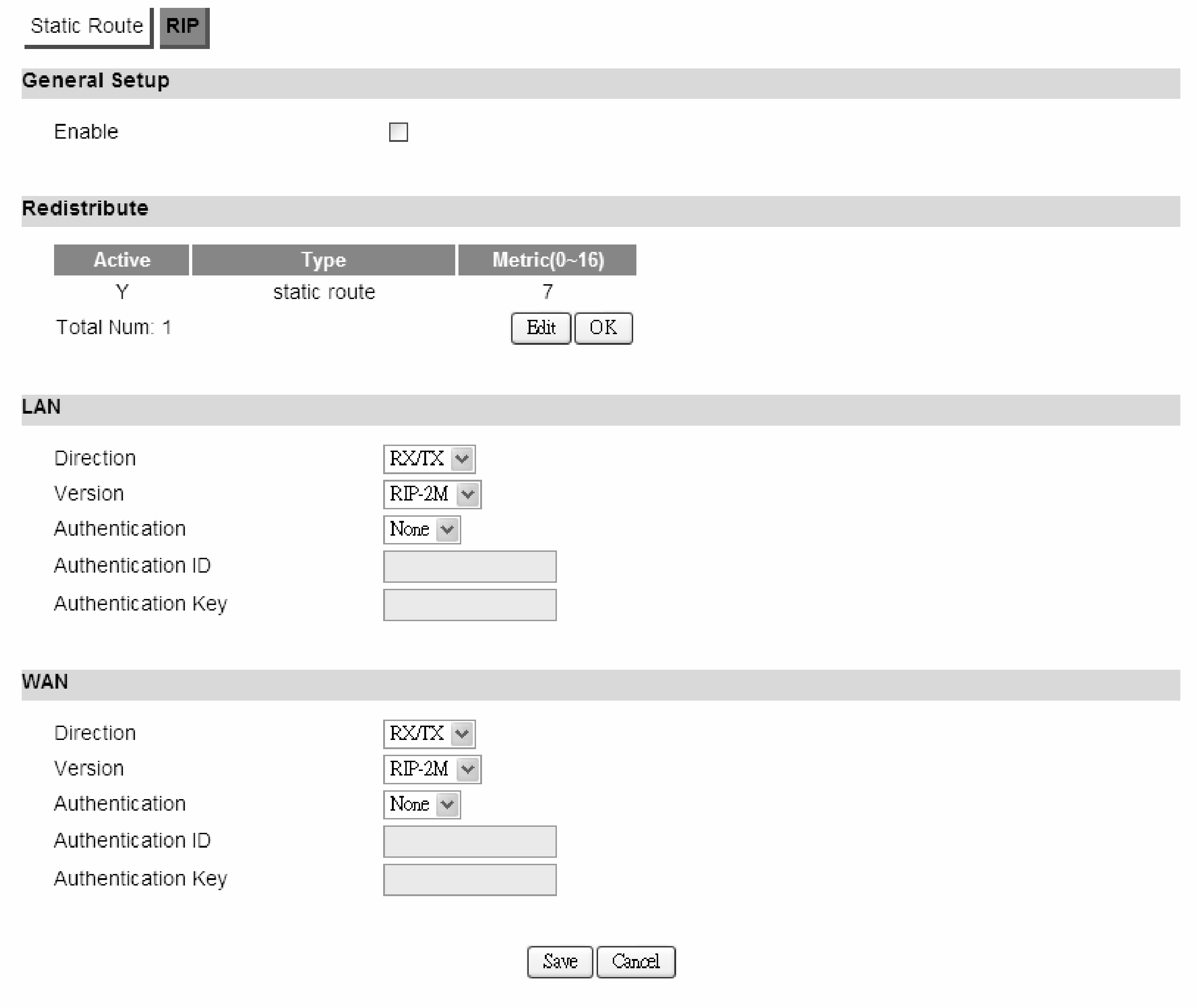
The **Routing Information Protocol** (**RIP**) is a dynamic routing protocol used in local area networks. It allows a router to exchange routing information with other routers.

“Advanced>Route>RIP”

Name	**Description**
General Setup	
Enable	Click the enable check box will activate the RIP routing rule.
Redistribute	
Edit	Click “Edit” button to activate the static route or change the metric value. The static route refers to the static routes

	defined in Advanced>Route>Static Route window.
OK	Click the “OK” button to exit edit table mode.
LAN	
Direction	➢ None ➢ RX ➢ TX ➢ RX/TX
Version	If you select “RX, TX or RX/TX” for Direction you will get the following RIP version options available. ➢ RIP-1 ➢ RIP-2B ➢ RIP-2M
Authentication	If you select “RIP-2B or RIP-2M” for Version, you will get the following Authentication options. ➢ None ➢ Text ➢ MD5
Authentication ID	If you select “MD5” for Authentication type, you can enter the authentication ID and Key.
Authentication Key	If you select “Text” for Authentication you can enter a text authentication key. If you select “MD5” for Authentication type, you also need to enter an Authentication ID and Key.
WAN	
Direction	➢ None ➢ RX ➢ TX ➢ RX/TX
Version	If you select “RX, TX or RX/TX” for Direction you will get the following RIP version options available. ➢ RIP-1 ➢ RIP-2B ➢ RIP-2M
Authentication	If you select “RIP-2B or RIP-2M” for Version, you will get the following Authentication options. ➢ None ➢ Text ➢ MD5
Authentication ID	If you select “MD5” for Authentication type, you can enter

	the authentication ID and Key.
Authentication Key	If you select “Text” for Authentication you can enter a text authentication key. If you select “MD5” for Authentication type, you also need to enter an Authentication ID and Key.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



General Setup

Enable □

Redistribute

Active	Type	Metric(0~16)
Y	static route	7

Total Num: 1

LAN

Direction	RX/TX
Version	RIP-2M
Authentication	None
Authentication ID	
Authentication Key	

WAN

Direction	RX/TX
Version	RIP-2M
Authentication	None
Authentication ID	
Authentication Key	

Figure 36. Advanced>Route>RIP

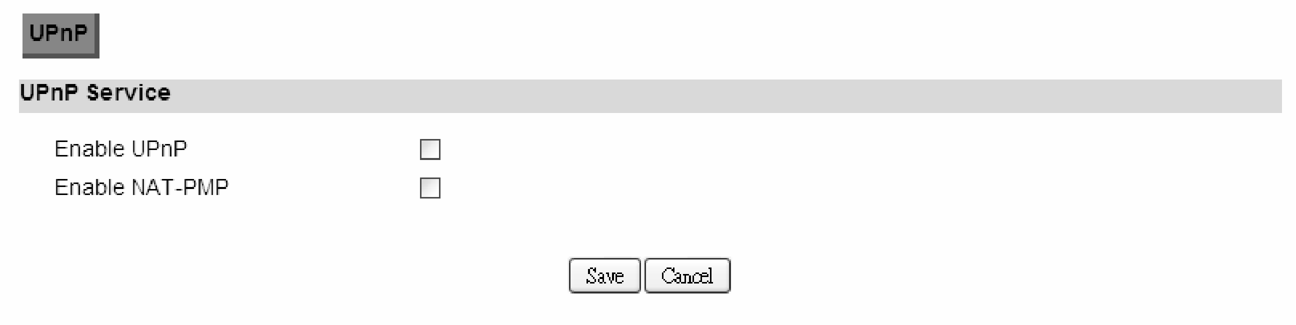
6.4. UPnP

Two methods of simplifying the process of connecting a device to the network are available. UPnP allows devices to connect seamlessly to networks in the home (data sharing, communications, and entertainment) and in corporate environments for simplified installation of computer components. NAT Port Mapping Protocol (NAT-PMP) allows a computer in a private network (behind a NAT router) to automatically configure the router to allow parties outside the private network to contact itself.

6.4.1. UPnP Setting

“Advanced>UPnP”

Name	Description
Enable UPnP	Check the check box to enable UPnP.
Enable NAT-PMP	Check the check box to enable NAT-PMP.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Enable UPnP □

Enable NAT-PMP □

Figure 37. Advanced>UPnP

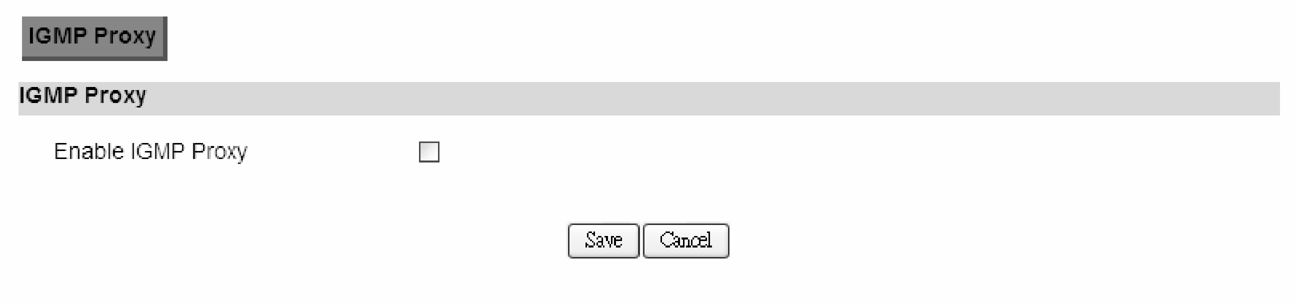
6.5. IGMP Proxy

IGMP proxy enables the system to issue IGMP host messages on behalf of hosts that the system discovered through standard IGMP interfaces. The system acts as a proxy for its hosts.

6.5.1. IGMP Proxy Setting

“Advanced>IGMP Proxy”

Name	Description
Enable IGMP Proxy	Check the check box to enable IGMP Proxy.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



IGMP Proxy

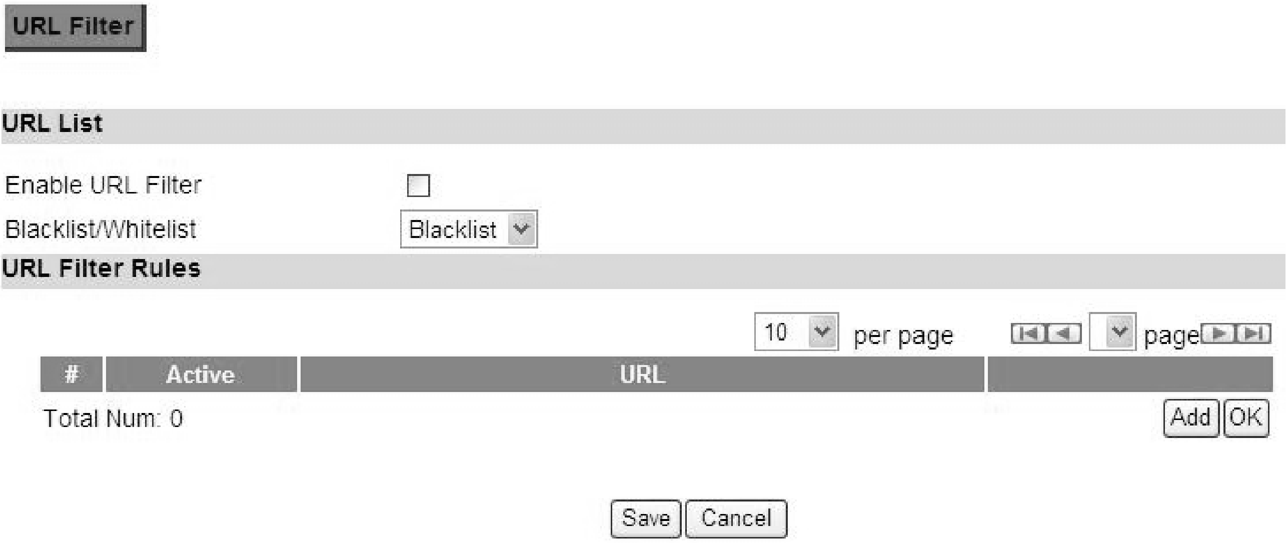
Enable IGMP Proxy □

Figure 38. Advanced>IGMP Proxy

6.6. Content Filter

"Advanced>Content Filter"

Name	**Description**
URL List	
Enable URL Filter	Check the check box to enable URL Filter
Blacklist/Whitelist	Select Blacklist or Whitelist: ➢ Blacklist : The URL list in "URL Filter Rules" wouldn't be allowed to access. ➢ Whitelist : Only allow to access the URL list in "URL Filter Rules".
URL Filter Rules	
Active	Check the box to activate the "URL Filter" rule.
URL	Enter the URL.
Add	Add a new URL filter rule.
OK	Click the "OK" button to exit edit table mode
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



URL Filter

URL List

Enable URL Filter □

Blacklist/Whitelist: Blacklist

URL Filter Rules

10 per page

#	Active	URL	

Total Num: 0

Figure 39. Advanced>Content Filter

7. VPN Setting

The “VPN Settings” window will allow you to set rules for VPN.

7.1. PPTP

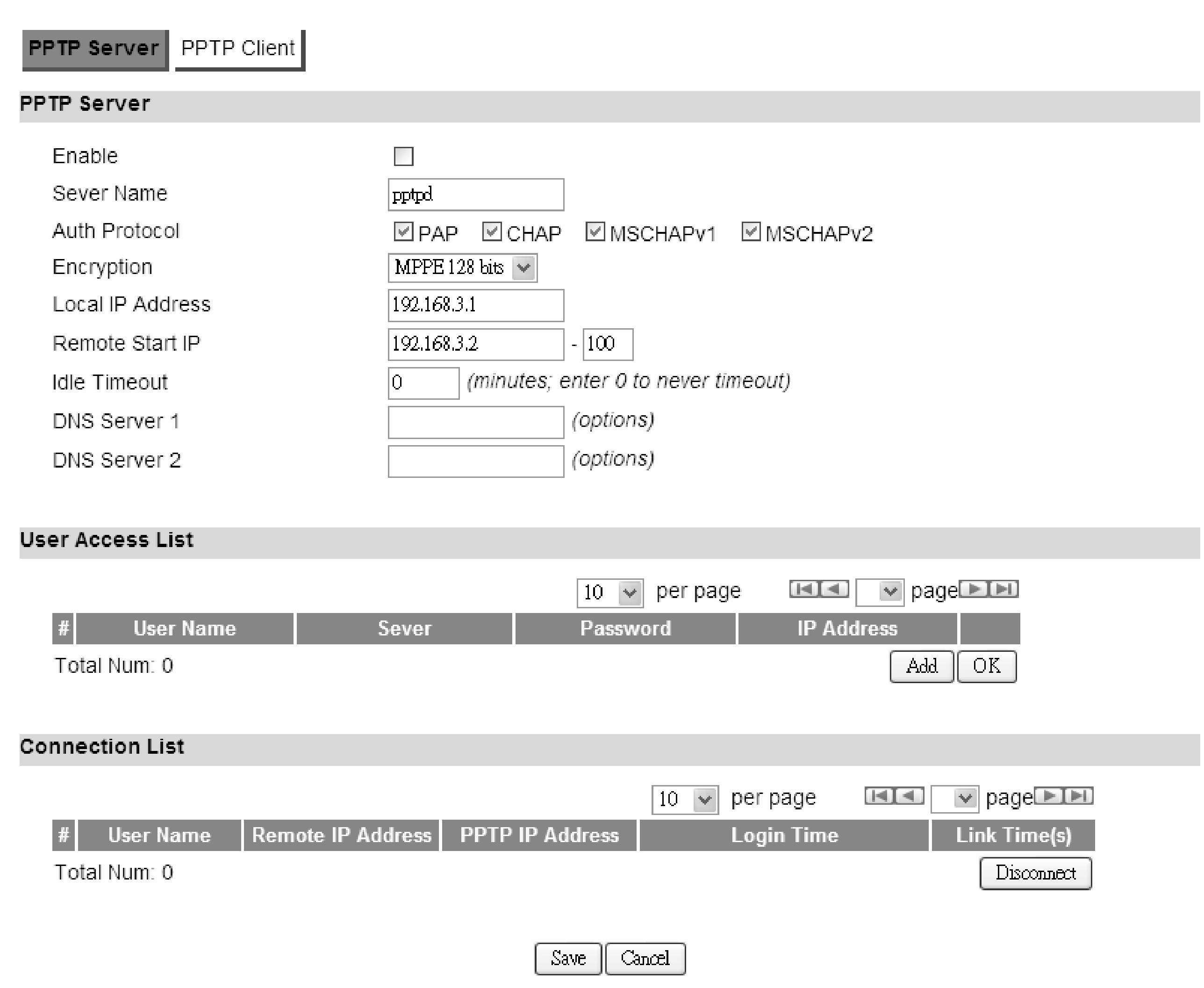
The **Point-to-Point Tunneling Protocol** (**PPTP**) is a method for implementing virtual private networks. PPTP does not provide confidentiality or encryption; it relies on the protocol being tunneled to provide privacy.

7.1.1. PPTP Server

“VPN>PPTP Server”

Name	**Description**
PPTP Server	
Enable	Activate PPTP server.
Server Name	Offer a server name.
Auth Protocol	Require the peer to authenticate itself before allowing network packets to be sent or received. We support the following protocol: ➢ **PAP**: Password Authentication Protocol. ➢ **CHAP**: Challenge Handshake Authentication Protocol. ➢ **MSCHAP**: Microsoft Challenge Handshake Authentication Protocol. ➢ **MSCHAPv2**: Microsoft Challenge Handshake Authentication Protocol, Version2.
Encryption	Encryption Scheme: ➢ None: ➢ MPPE 40 bits: 40-bit encryption with MPPE. ➢ MPPE 128 bits: 128-bit encryption with MPPE. ➢ Auto: automatically select.
Local IP Address	The IP of router.
Remote Start IP	As sessions are established, IP addresses are assigned starting from “Remote Start IP”.
Idle Timeout	Disconnect if the link is idle for the assigned seconds.
DNS Server 1	The primary DNS (Domain Name Server) addresses to the

	clients.
DNS Server 2	The secondary DNS (Domain Name Server) addresses to the clients.
User Access List	
User Name	Username to connect PPTP server via the selected Auth Protocol.
Server	Server protocol type.
Password	Password to connect PPTP server via the selected Auth Protocol.
IP Address	IP address of the connected client.
Connection List	
User Name	The user name of the connection.
Remote IP Address	The peer address of the connection.
PPTP IP Address	The assigned IP address of PPTP.
Login Time	The time of the connection created.
Link Time(s)	Timer from the connected time.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



PPTP Server

Enable	☐
Sever Name	pptpd
Auth Protocol	☑ PAP ☑ CHAP ☑ MSCHAPv1 ☑ MSCHAPv2
Encryption	MPPE 128 bits
Local IP Address	192.168.3.1
Remote Start IP	192.168.3.2 - 100
Idle Timeout	0 (minutes; enter 0 to never timeout)
DNS Server 1	(options)
DNS Server 2	(options)

User Access List

#	User Name	Sever	Password	IP Address	

Total Num: 0

Connection List

#	User Name	Remote IP Address	PPTP IP Address	Login Time	Link Time(s)

Total Num: 0

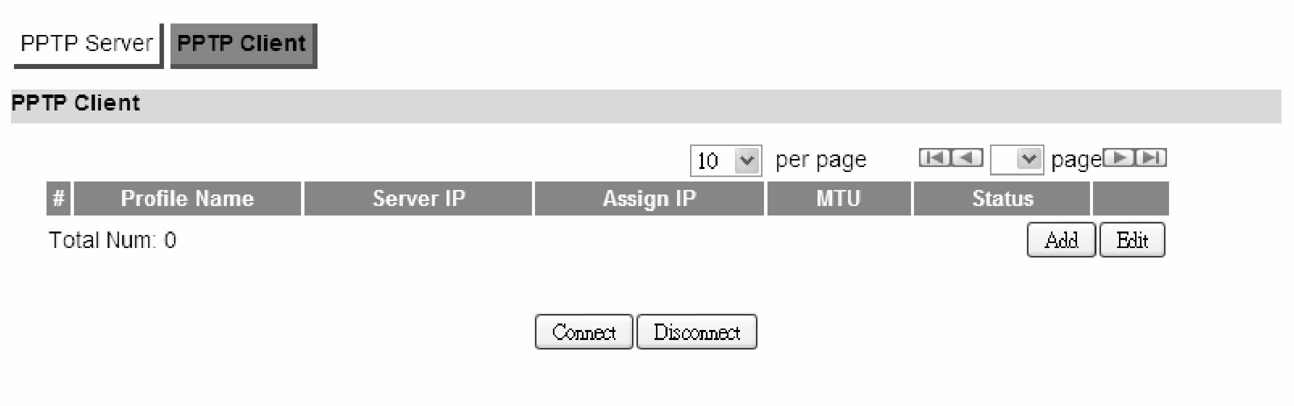
Figure 40. VPN>PPTP Server

7.1.2. PPTP Client

“VPN>PPTP Client”

Name	Description
PPTP Client	
Add	Add a new connection setting.
Edit	Edit the existed connection setting.
Edit PPTP Client	
Profile Name	The name of this connection setting.
Auth Protocol	The authentication protocol of the peer required.
Encryption	Encryption Scheme.
Server IP Address	The IP address of PPTP server.
User Name	The username to connect PPTP server via the selected

	Auth Protocol.
Password	The password of the corresponding username.
Retype	Type the “Password” again.
Get IP automatically?	Obtain the dynamic IP address, assigned by the PPTP server.
Assign IP Address	Assign the static IP address for this connection setting.
Idle Timeout	Disconnect if the link is idle for the assigned seconds.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



PPTP Server | **PPTP Client**

PPTP Client

10 per page | page

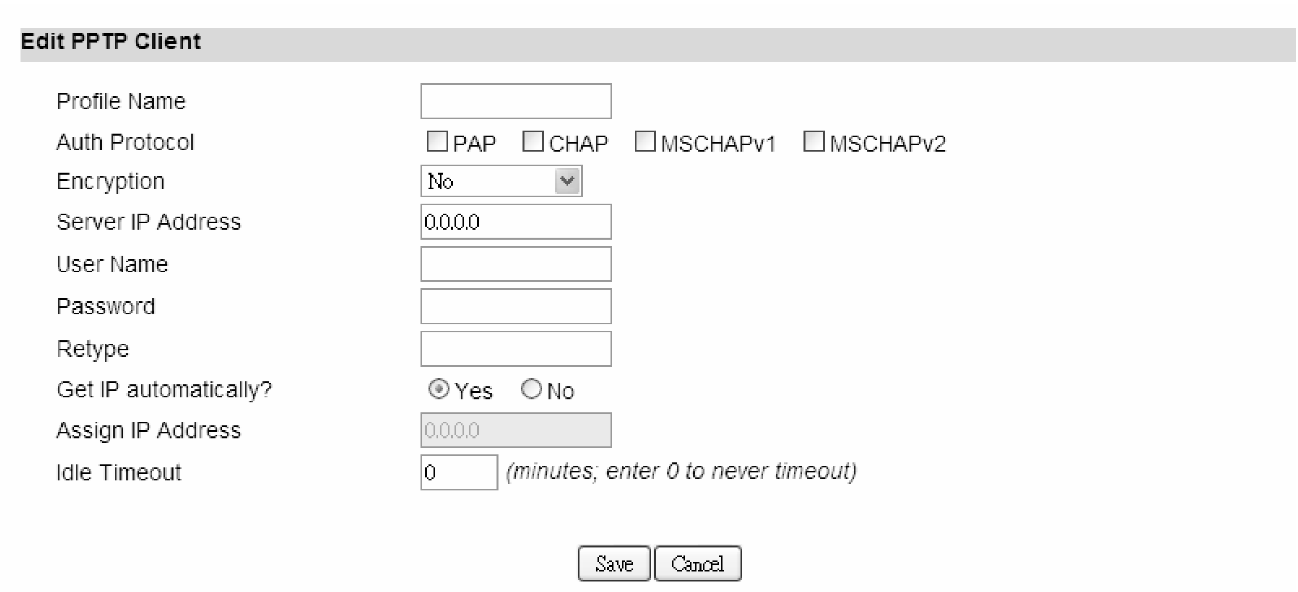
#	Profile Name	Server IP	Assign IP	MTU	Status	

Total Num: 0

Add | Edit

Connect | Disconnect

Figure 41. VPN>PPTP Client



Edit PPTP Client

Profile Name	
Auth Protocol	□ PAP □ CHAP □ MSCHAPv1 □ MSCHAPv2
Encryption	No
Server IP Address	0.0.0.0
User Name	
Password	
Retype	
Get IP automatically?	● Yes ○ No
Assign IP Address	0.0.0.0
Idle Timeout	0 *(minutes; enter 0 to never timeout)*

Save | Cancel

Figure 42. VPN>PPTP Client>Add

7.2. L2TP

In computer networking, **Layer 2 Tunneling Protocol** (**L2TP**) is a tunneling protocol used to support Virtual Private Networks (VPNs). It dies not provide any encryption or confidentiality by itself; It relies on an encryption protocol that it passes within the tunnel to provide privacy. The entire L2TP packet, including payload and L2TP header, is sent within a UDP datagram. It is common to carry Point-to-Point Protocol (PPP) sessions within an L2TP tunnel. L2TP does not provide confidentiality or strong authentication by itself. IPsec is often used to secure L2TP packets by providing confidentiality, authentication and integrity.

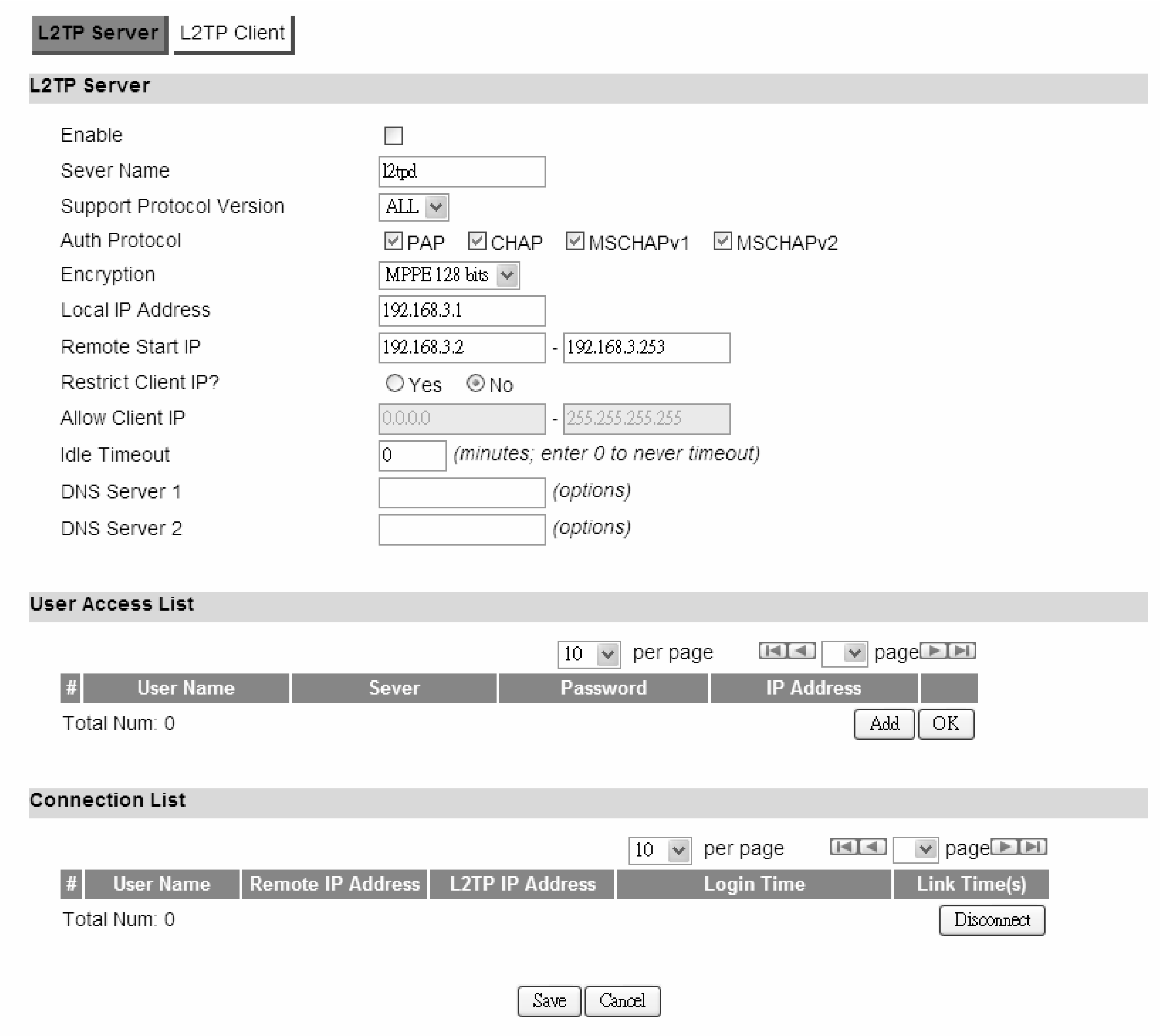
http://en.wikipedia.org/wiki/L2TP#cite_note-0

7.2.1. L2TP Server

“VPN>L2TP Server”

Name	**Description**
L2TP Server	
Enable	Check the box to activate L2TP server.
Server Name	Enter a server name.
Auth Protocol	Require the peer to authenticate itself before allowing network packets to be sent or received. The following protocol are supported: ➢ **PAP**: Password Authentication Protocol. ➢ **CHAP**: Challenge Handshake Authentication Protocol. ➢ **MSCHAP**: Microsoft Challenge Handshake Authentication Protocol. ➢ **MSCHAPv2**: Microsoft Challenge Handshake Authentication Protocol, Version2.
Encryption	Encryption Scheme: ➢ No ➢ MPPE 40 bits: 40-bit encryption with MPPE. ➢ MPPE 128 bits: 128-bit encryption with MPPE. ➢ Auto: automatically select.
Local IP Address	The IP of router.
Remote Start IP	As sessions are established, IP addresses are assigned starting from “Remote Start IP”.
Restrict Client IP?	To restrict IP address range for the client.
Allow Client IP	The IP address range for the client.
Idle Timeout	Disconnect if the link is idle for the given number of

	seconds.
DNS Server 1	The primary DNS (Domain Name Server) addresses to the clients.
DNS Server 2	The secondary DNS (Domain Name Server) addresses to the clients.
User Access List	
User Name	Username to connect L2TP server via the selected Auth Protocol.
Server	Server protocol type.
Password	Password to connect L2TP server via the selected Auth Protocol.
IP Address	IP address of the connected client.
Connection List	
User Name	The user name of the connection.
Remote IP Address	The peer address of the connection.
L2TP IP Address	The assigned IP address of L2TP.
Login Time	The time of the connection created.
Link Time(s)	Elapsed time connected.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



L2TP Server

Enable	□
Sever Name	l2tpd
Support Protocol Version	ALL
Auth Protocol	☑ PAP ☑ CHAP ☑ MSCHAPv1 ☑ MSCHAPv2
Encryption	MPPE 128 bits
Local IP Address	192.168.3.1
Remote Start IP	192.168.3.2 - 192.168.3.253
Restrict Client IP?	○ Yes ● No
Allow Client IP	0.0.0.0 - 255.255.255.255
Idle Timeout	0 *(minutes; enter 0 to never timeout)*
DNS Server 1	*(options)*
DNS Server 2	*(options)*

User Access List

10 per page page

#	User Name	Sever	Password	IP Address	

Total Num: 0

Connection List

10 per page page

#	User Name	Remote IP Address	L2TP IP Address	Login Time	Link Time(s)

Total Num: 0

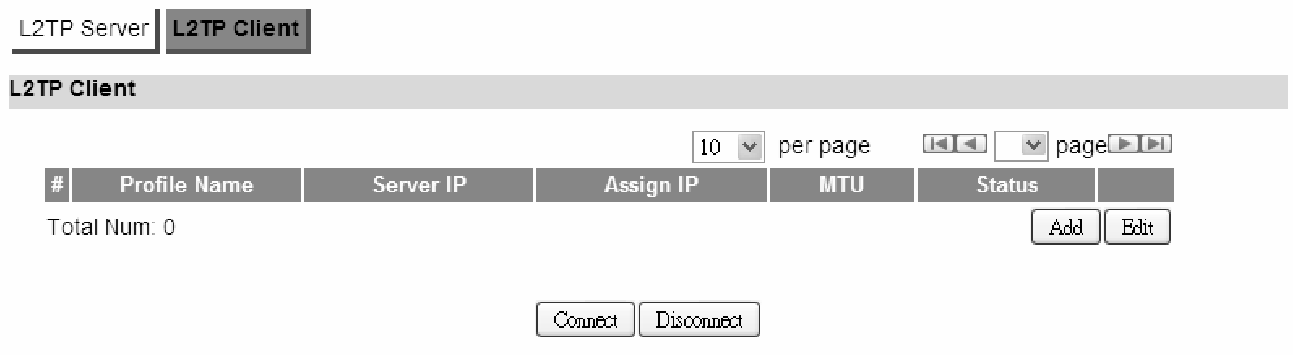
Figure 43. VPN>L2TP Server

7.2.2. L2TP Client

"VPN>L2TP Client"

Name	Description
L2TP Client	
Add	Add a new connection setting.
Edit	Edit the existed connection setting.
Edit L2TP Client	
Profile Name	The name of this connection setting.
Auth Protocol	The authentication protocol of the peer required. Select which Authentication protocol to use.

	➢ PAP ➢ CHAP ➢ MSCHAPv1 ➢ MSCHAPv2
Encryption	Encryption Scheme: ➢ No ➢ MPPE 40 bits: 40-bit encryption with MPPE. ➢ MPPE 128 bits: 128-bit encryption with MPPE. ➢ Auto: automatically select.
Server IP Address	The IP address of L2TP server.
User Name	The username to connect L2TP server via the selected Auth Protocol.
Password	The password of the corresponding username.
Retype	Type the “Password” again.
Get IP automatically?	Obtain the dynamic IP address, assigned by the L2TP server.
Assign IP Address	Assign the static IP address for this connection setting.
Idle Timeout	Disconnect if the link is idle for the assigned seconds.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.

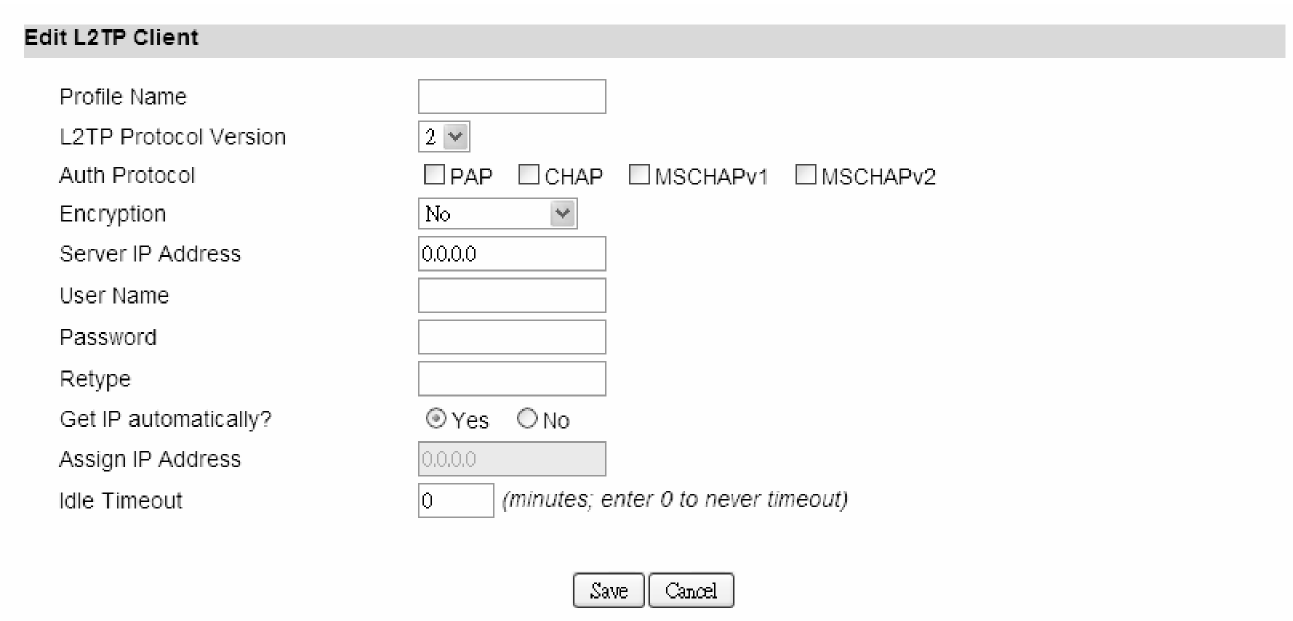


L2TP Client

#	Profile Name	Server IP	Assign IP	MTU	Status	

Total Num: 0

Figure 44. VPN>L2TP Client



Edit L2TP Client

Profile Name	
L2TP Protocol Version	2
Auth Protocol	□ PAP □ CHAP □ MSCHAPv1 □ MSCHAPv2
Encryption	No
Server IP Address	0.0.0.0
User Name	
Password	
Retype	
Get IP automatically?	● Yes ○ No
Assign IP Address	0.0.0.0
Idle Timeout	0 *(minutes; enter 0 to never timeout)*

Figure 45. VPN>L2TP Client>Add

7.3. IPsec

Internet Protocol Security (**IPsec**) is an end-to-end security solution and operated at the IP Layer. It provides secure communication between pairs of hosts, pairs of security gateways or between security gateways and a host. It's based on a suite of protocols for securing IP traffic by authenticating and encrypting each IP packet of the data stream.

7.3.1. Connection

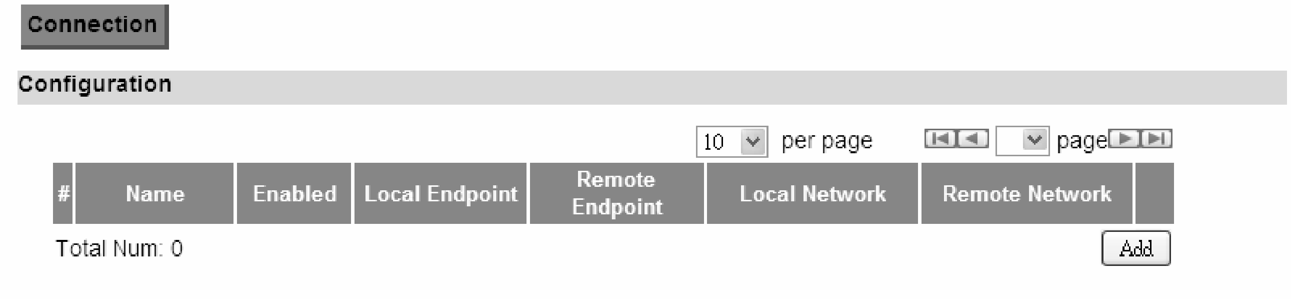
"VPN>IPsec>Connection"

Name	**Description**
Configuration	
Add	Click the "Add" button to add an IPsec connection rule.
Property	
Enable	Enable IPsec connection.
Connection Name	The name of the connection.
Connection Type	Select the connection type: ➢ Initiator ➢ On Demand ➢ Responder
Gateway Information	
Local Endpoint Interface	The interface of the CPE public-network interface.
Local Endpoint IP	The IP address or Domain Name of the CPE

Address	public-network interface.
Remote End point IP Address	The IP address or Domain Name of the remote peer.
Authentication Method	
Pre-Shared Key	The pre-shared key that two security gateways use to authenticate.
Local ID Type	States how the CPE should be identified for authentication. ➢ IP: The CPE is identified by the assigned IP for authentication. The default value is 0.0.0.0.
Content	The IP Address.
Remote ID Type	States how the remote peer should be identified for authentication. ➢ IP: The remote peer is identified by the assigned IP for authentication. The default value is 0.0.0.0; this means the CPE will accept any IP.
Connect	The IP Address.
IKE Phase 1	
Proposal Add	Press the Add button to enter an Encryption and Authentication algorithm. Click the trash to remove the selected algorithm. Encryption Algorithm: ➢ DES ➢ 3DES ➢ AES128 ➢ AES192 ➢ AES256 Authentication Algorithm: ➢ MD5 ➢ SHA-1
Proposal OK	Click the OK button to exit the table edit mode.
Key Group	The DH group used to negotiate the IKE/ISAKMP SA.
SA Life Time	The period that the keying channel of a connection (IKE/ISAKMP SA) should last before being renegotiated.
Dead Peer Detection	Enable or disable the Dead Peer Detection protocol.

(DPD)	(RFC 3706)
DPD Interval	The time interval when R_U_THERE messages are sent to the peer.
DPD Idle Try	The retry counter for DPD. The timeout interval is “DPD interval” multiplied by “DPD Idle Try”. After the timeout interval all connections to the peer are deleted if they are inactive.
Local Network	The private subnet behind the CPE.
Address Type	➢ **Single address:** The private subnet consisting of one IP address. ➢ **Subnet address:** The private subnet consisting within the subnet IP addresses.
Start IP Address	The only IP address allowed in the subnet.
Subnet Mask	The net mask of the subnet. (Subnet address)
Local Port	Restrict the traffic selector to a single protocol and/or port. ➢ **Any:** No restriction ➢ **ICMP:** Restrict the traffic selector to ICMP protocol. ➢ **TCP:** Restrict the traffic selector to TCP protocol. If the port number is 0, all TCP port numbers are accepted. ➢ **UDP:** Restrict the traffic selector to UDP protocol. If the port number is 0, all UDP port numbers are accepted.
Remote Network	The private subnet behind the remote peer.
Address Type	➢ **Single address:** The private subnet consisting of one IP address. ➢ **Subnet address:** The private subnet consisting of the subnet IP addresses.
Start IP Address	The only IP address allowed in the subnet.
Subnet Mask	The net mask of the subnet (Subnet address).
Remote Port	Restrict the traffic selector to a single protocol and/or port. ➢ **Any:** No restriction ➢ **ICMP:** Restrict the traffic selector to ICMP protocol. ➢ **TCP:** Restrict the traffic selector to TCP protocol. If the port number is 0, all TCP port numbers are accepted.

	➢ **UDP:** Restrict the traffic selector to UDP protocol. If the port number is 0, all UDP port numbers are accepted.
IPSec Proposal	
Encapsulation Mode	The type of the connection: ➢ **Tunnel:** Signifying a host-to-host, host-to-subnet, or subnet-to-subnet tunnel. ➢ **Transport:** Signifying host-to-host transport mode.
Activate Protocol	Whether authentication should be done as part of ESP encryption and/or separately using the AH protocol.
Encryption Algorithm	➢ NULL ➢ AES128 ➢ AES192 ➢ AES256 ➢ DES ➢ 3DES
Authentication Algorithm	➢ MD5 ➢ SHA-1
SA Life Time	The time interval a particular instance of a connection (a set of encryption/authentication keys for user packets) should last, from successful negotiation to expiry.
Perfect Forward Secrecy (PFS)	Whether Perfect Forward Secrecy of keys is desired on the connection's keying channel.
Save	Commit the changes made and save to CPE device
Cancel	Reset fields to the last saved values



Connection

Configuration

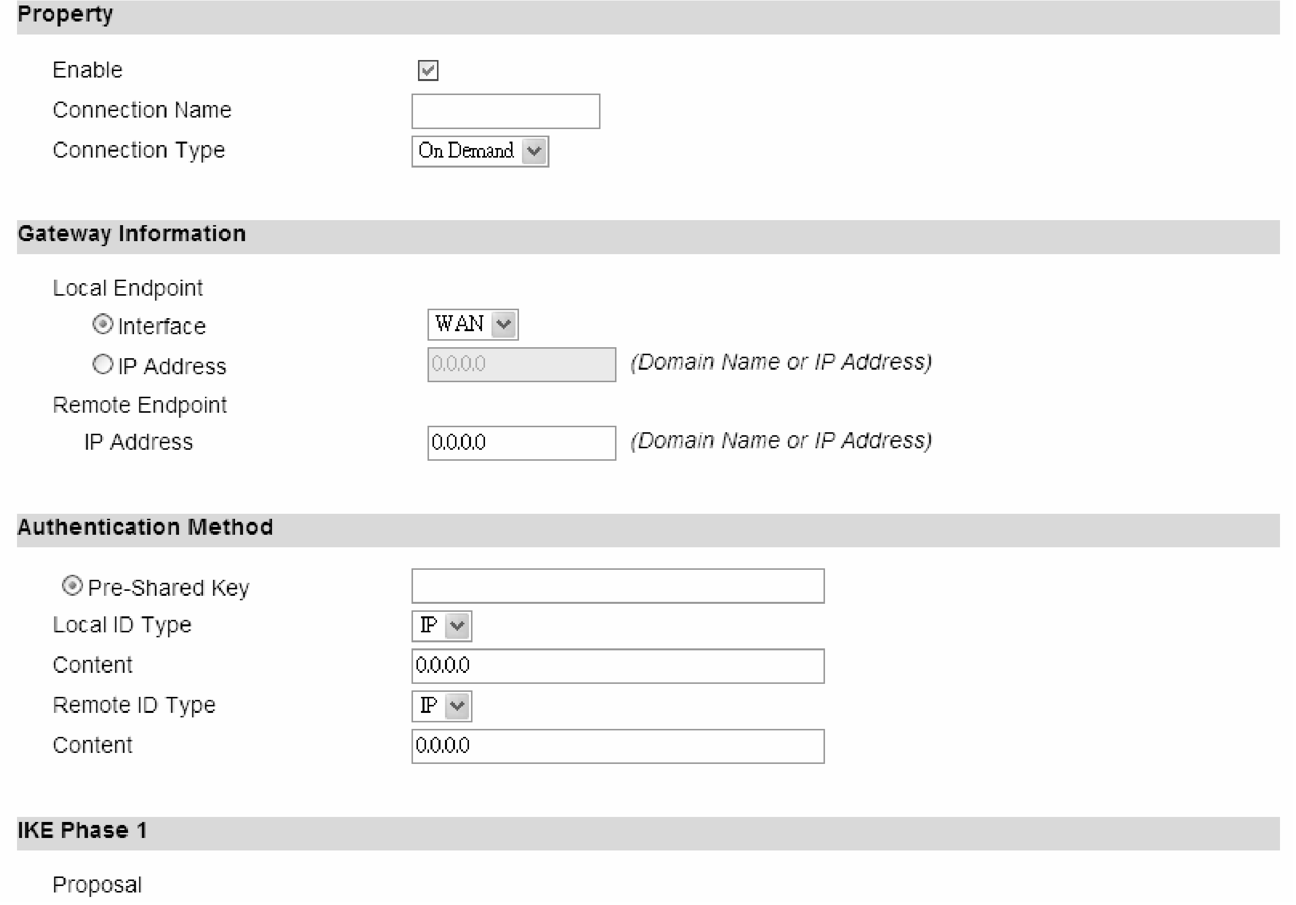
10 per page page

#	Name	Enabled	Local Endpoint	Remote Endpoint	Local Network	Remote Network	

Total Num: 0

Add

Figure 46. VPN>IPsec>Connection Overview



Property

Enable ☑

Connection Name

Connection Type: On Demand

Gateway Information

Local Endpoint

● Interface: WAN

○ IP Address: 0.0.0.0 (Domain Name or IP Address)

Remote Endpoint

IP Address: 0.0.0.0 (Domain Name or IP Address)

Authentication Method

● Pre-Shared Key

Local ID Type: IP

Content: 0.0.0.0

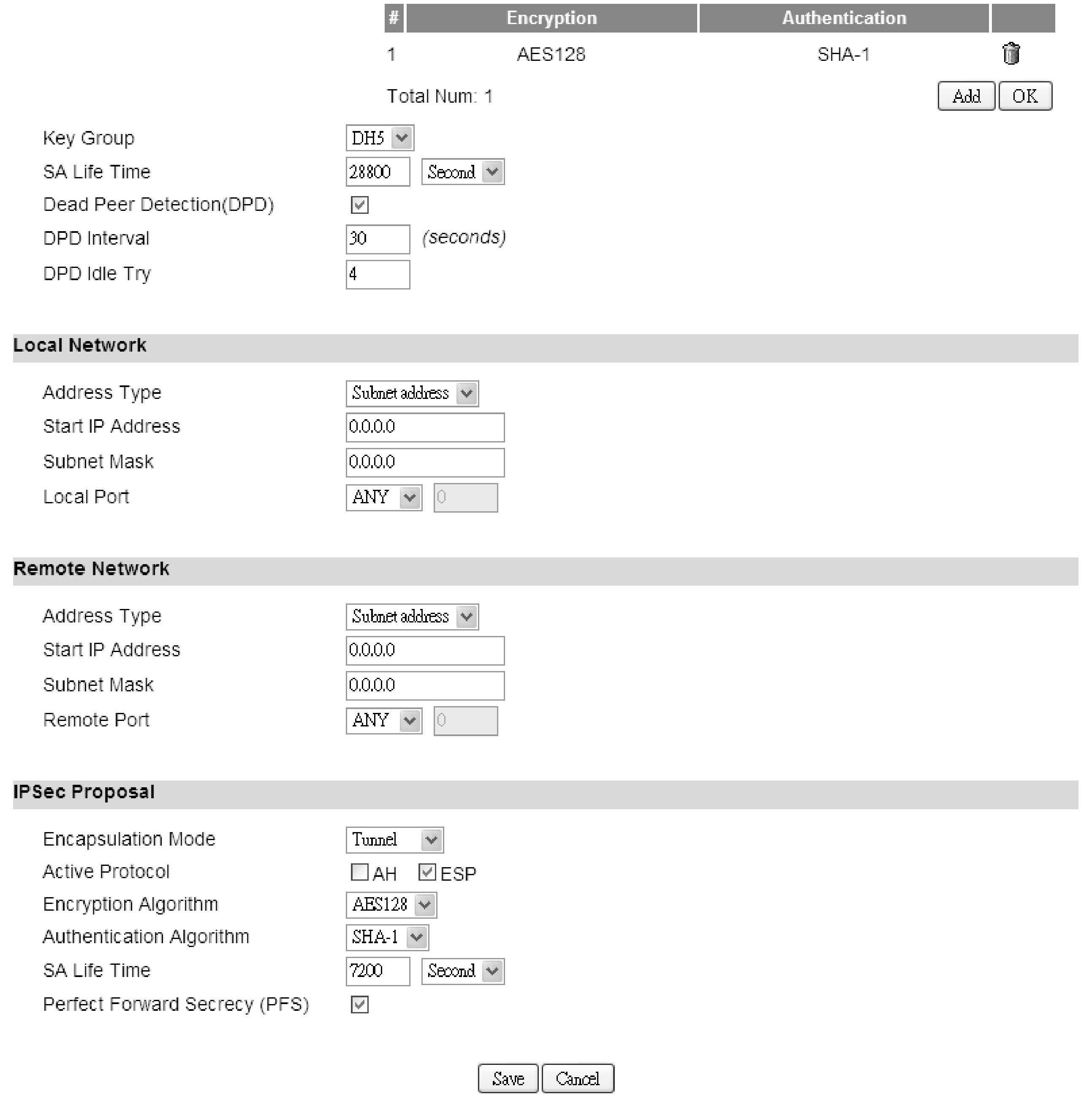
Remote ID Type: IP

Content: 0.0.0.0

IKE Phase 1

Proposal

Figure 47. VPN>IPsec>Connection>Add



#	Encryption	Authentication	
1	AES128	SHA-1	🗑

Total Num: 1

Key Group	DH5
SA Life Time	28800 Second
Dead Peer Detection(DPD)	☑
DPD Interval	30 *(seconds)*
DPD Idle Try	4

Local Network

Address Type	Subnet address
Start IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Local Port	ANY 0

Remote Network

Address Type	Subnet address
Start IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Remote Port	ANY 0

IPSec Proposal

Encapsulation Mode	Tunnel
Active Protocol	□AH ☑ESP
Encryption Algorithm	AES128
Authentication Algorithm	SHA-1
SA Life Time	7200 Second
Perfect Forward Secrecy (PFS)	☑

Figure 48. VPN>IPsec>Connection>Add (Continued)

8. VoIP Phone

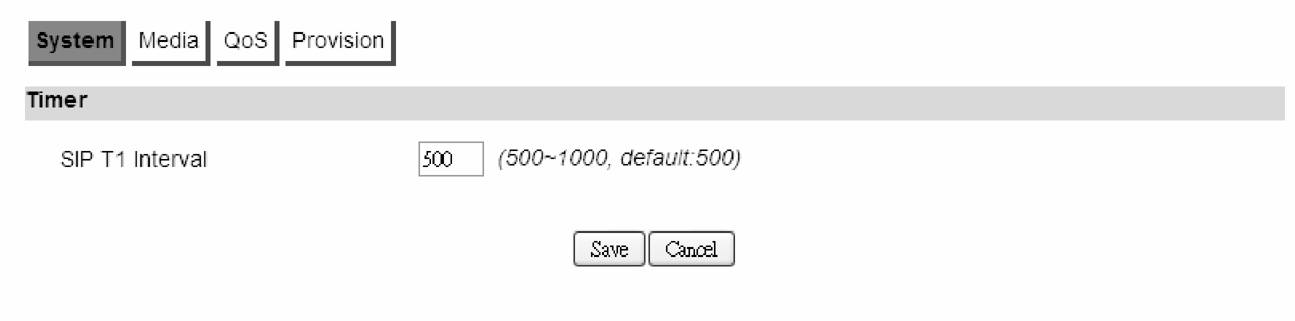
8.1. General

Voice over Internet Protocol (**VoIP**) is a method of delivery of voice communication over the internet or packet-switched network. Internet telephony refers to communications services — voice, facsimile, and/or voice-messaging applications — that are transported via the Internet, rather than the public switched telephone network (PSTN).

8.1.1. System

“VoIP Phone>General>System”

Name	**Description**
Timer	
SIP T1 Interval	A T1 timer defined in SIP protocol.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



SIP T1 Interval 500 (500~1000, default:500)

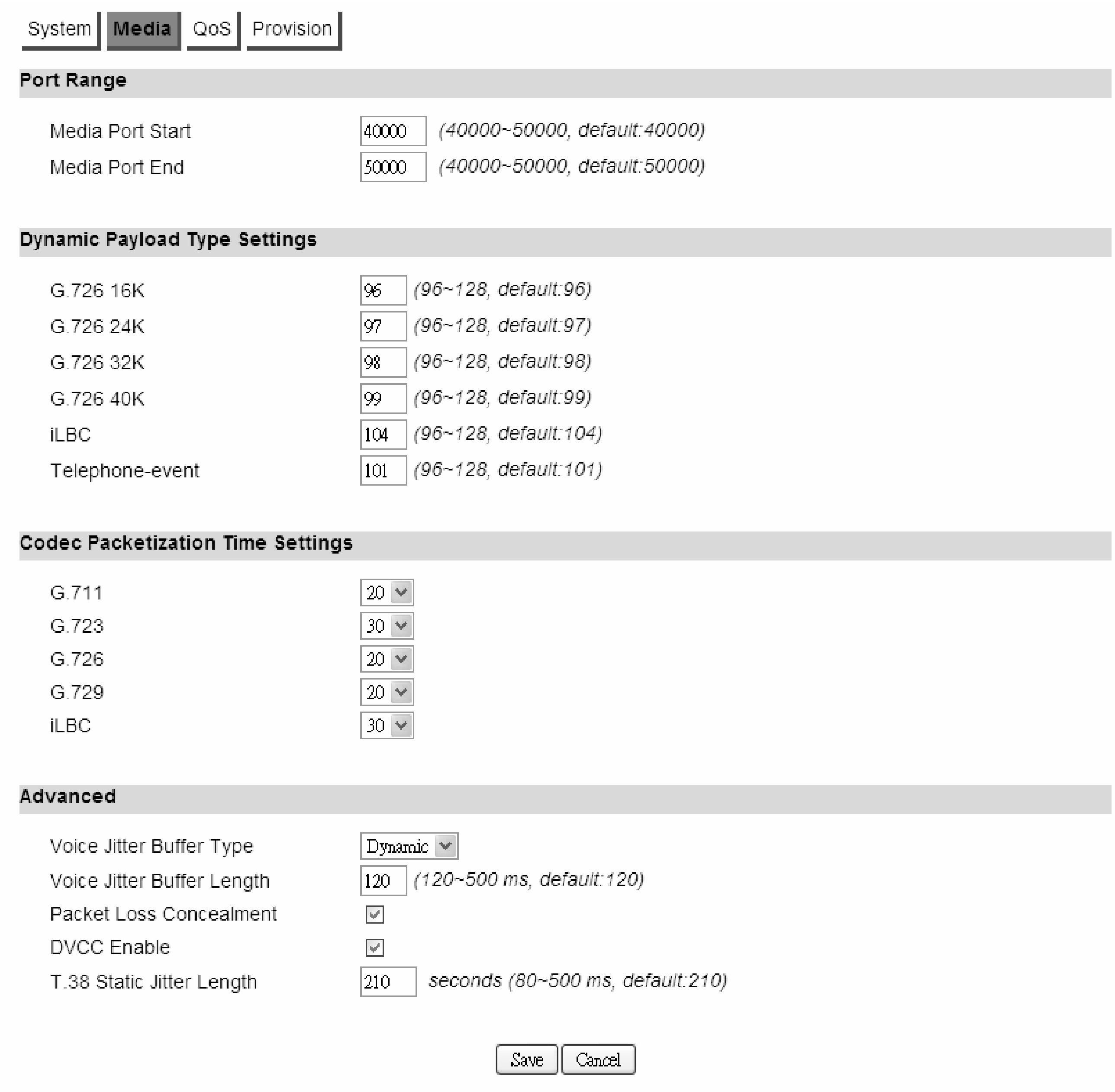
Figure 49. VoIP Phone>General>System

8.1.2. Media

“VoIP Phone>General>Media”

Name	**Description**
Port	
Media Port Start	RTP local start port number, (start~end) defined the RTP listen port range.
Media Port End	RTP local end port number.
Dynamic Payload	

Type Setting	
G.726 16K	Default is 96
G.726 24K	Default is 97
G.726 32K	Default is 98
G.726 40K	Default is 99
iLBC	Default is 104
Telephone-event	Default is 101
Codec Packetization Time Settings	
G.711	Default is 20
G.723	Default is 30
G.726	Default is 20
G.729	Default is 20
iLBC	Default is 30
Advanced	
Voice Jitter Buffer Type	There are “Dynamic” and “Static” type which can be selected in the voice jitter buffer type.
Voice Jitter Buffer Length	Voice Jitter Buffer Length.
Packet Loss Concealment	Enable to mask the effects of packet loss.
DVCC Enable	Enable DVCC.
T.38 Static Jitter Length	T.38 Static Jitter Length.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Port Range

Media Port Start	40000	(40000~50000, default:40000)
Media Port End	50000	(40000~50000, default:50000)

Dynamic Payload Type Settings

G.726 16K	96	(96~128, default:96)
G.726 24K	97	(96~128, default:97)
G.726 32K	98	(96~128, default:98)
G.726 40K	99	(96~128, default:99)
iLBC	104	(96~128, default:104)
Telephone-event	101	(96~128, default:101)

Codec Packetization Time Settings

G.711	20
G.723	30
G.726	20
G.729	20
iLBC	30

Advanced

Voice Jitter Buffer Type	Dynamic	
Voice Jitter Buffer Length	120	(120~500 ms, default:120)
Packet Loss Concealment	☑	
DVCC Enable	☑	
T.38 Static Jitter Length	210	seconds (80~500 ms, default:210)

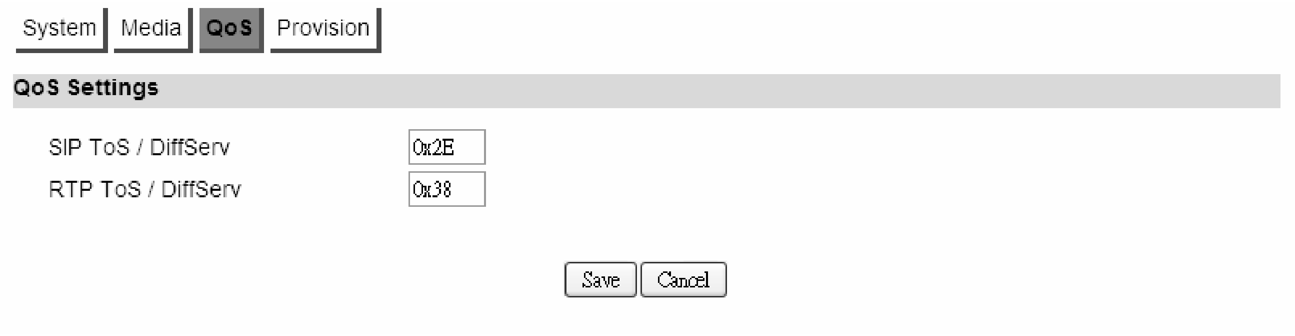
Figure 50. VoIP Phone>General>Media

8.1.3. QoS

QoS is the differentiation between types of traffic and types of services so that the different types of service and traffic can be treated different service. This way, one type can be favored over another. In VoIP, quality simply means being able to listen and speak in a clear and continuous voice, without unwanted noise. DiffServ is a QoS protocol for managing bandwidth application for internet media connections.

“VoIP Phone>General>QoS”

Name	**Description**
QoS Settings	
SIP ToS/DiffServ	The SIP ToS rule will tag each SIP outgoing packet which will prioritize SIP traffic.
RTP ToS/DiffServ	The RTP ToS rule will tag each RTP outgoing packet which will prioritize RTP traffic.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



QoS Settings

SIP ToS / DiffServ 0x2E

RTP ToS / DiffServ 0x38

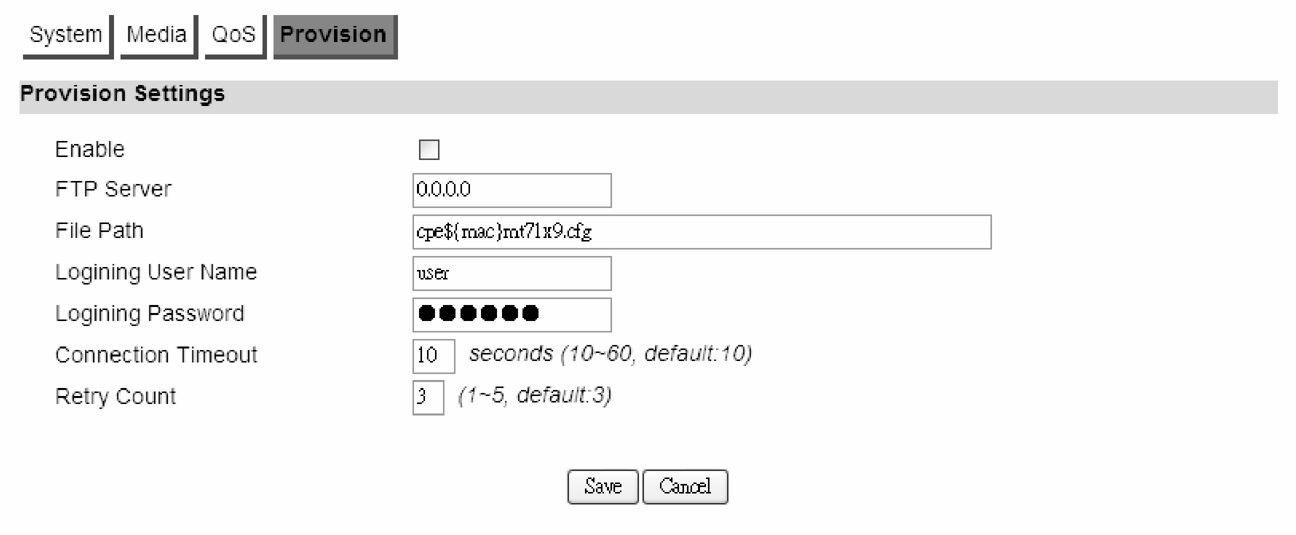
Figure 51. VoIP Phone>General>QoS

8.1.4. Provision

Provision is a functionality to update the configuration by the FTP protocol.

“VoIP Phone>General>Provision”

Name	**Description**
Provision Settings	
Enable	Enable or Disable.
FTP Server	FTP server address.
File Path	File path and file name.
Logging User Name	Login username.
Logging Password	Login password.
Connection Timeout	Connection timeout.
Retry Count	Retry count.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Provision Settings

Enable	□
FTP Server	0.0.0.0
File Path	cpe${mac}mt71x9.cfg
Logining User Name	user
Logining Password	●●●●●●
Connection Timeout	10 *seconds (10~60, default:10)*
Retry Count	3 *(1~5, default:3)*

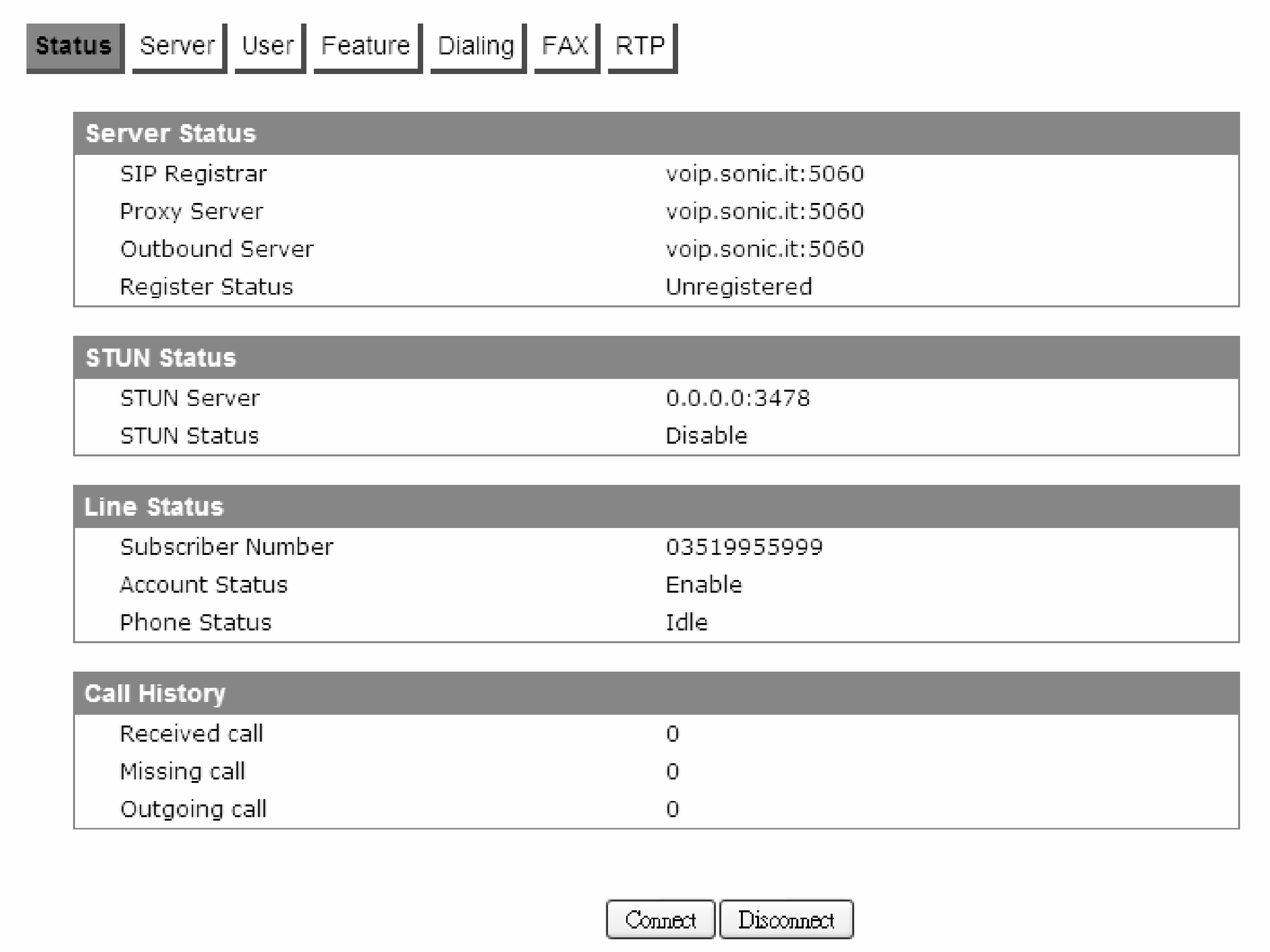
Figure 52. VoIP Phone>General>Provision

8.2. Account

NOTE: The following figures will apply for Account 1, Account 2, Account 3 and Account 4.

8.2.1. Status

Show server information, account register status and call history.



Server Status

SIP Registrar	voip.sonic.it:5060
Proxy Server	voip.sonic.it:5060
Outbound Server	voip.sonic.it:5060
Register Status	Unregistered

STUN Status

STUN Server	0.0.0.0:3478
STUN Status	Disable

Line Status

Subscriber Number	03519955999
Account Status	Enable
Phone Status	Idle

Call History

Received call	0
Missing call	0
Outgoing call	0

Figure 53. VoIP Phone>Account 1-4>Status

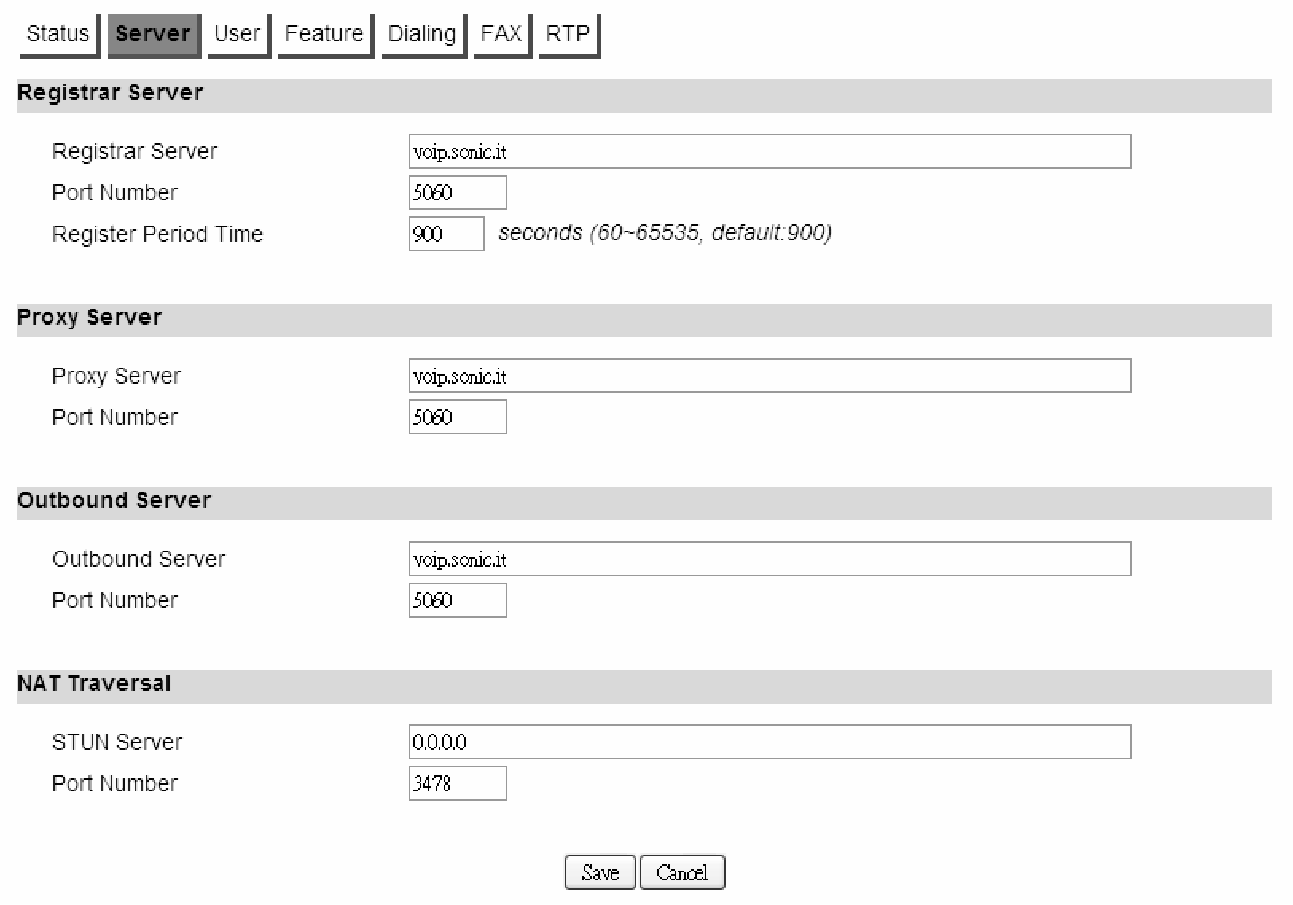
8.2.2. Server

Configure the server information for Account 1 and Account 2.

“VoIP Phone>Account>Server”

Name	Description
Register Server	
Register Server	A SIP registrar is a server in a Session Initiation Protocol (SIP) network that accepts and processes SIP REGISTER requests. Format is “x.x.x.x”.
Port Number	A registrar server port number, default is 5060.
Register Period Time	Register refresh time.
Proxy Server	
Proxy Server	A SIP proxy is a server in a Session Initiation Protocol

	(SIP) network that route sip message to a right place. Format is “x.x.x.x”.
Port Number	A proxy server port number, default is 5060.
Outbound Server	
Outbound Server	The outbound proxy is placed alongside the firewall and is the only way to let SIP traffic pass from the internal network to the internet. Format is “x.x.x.x”.
Port Number	An outbound server port number, default is 5060.
NAT Traversal	
STUN Server	Enter the IP address of the STUN server, it will send and receive STUN requests and responses. Simple Traversal of User Datagram Protocol (STUN) through NATs is a standards-based IP protocol used as one of the methods of NAT traversal in applications of real-time voice, video, messaging, and other interactive IP communications.
Port Number	A STUN server port number, default is 3478.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Registrar Server

Registrar Server	voip.sonic.it
Port Number	5060
Register Period Time	900 *seconds (60~65535, default:900)*

Proxy Server

Proxy Server	voip.sonic.it
Port Number	5060

Outbound Server

Outbound Server	voip.sonic.it
Port Number	5060

NAT Traversal

STUN Server	0.0.0.0
Port Number	3478

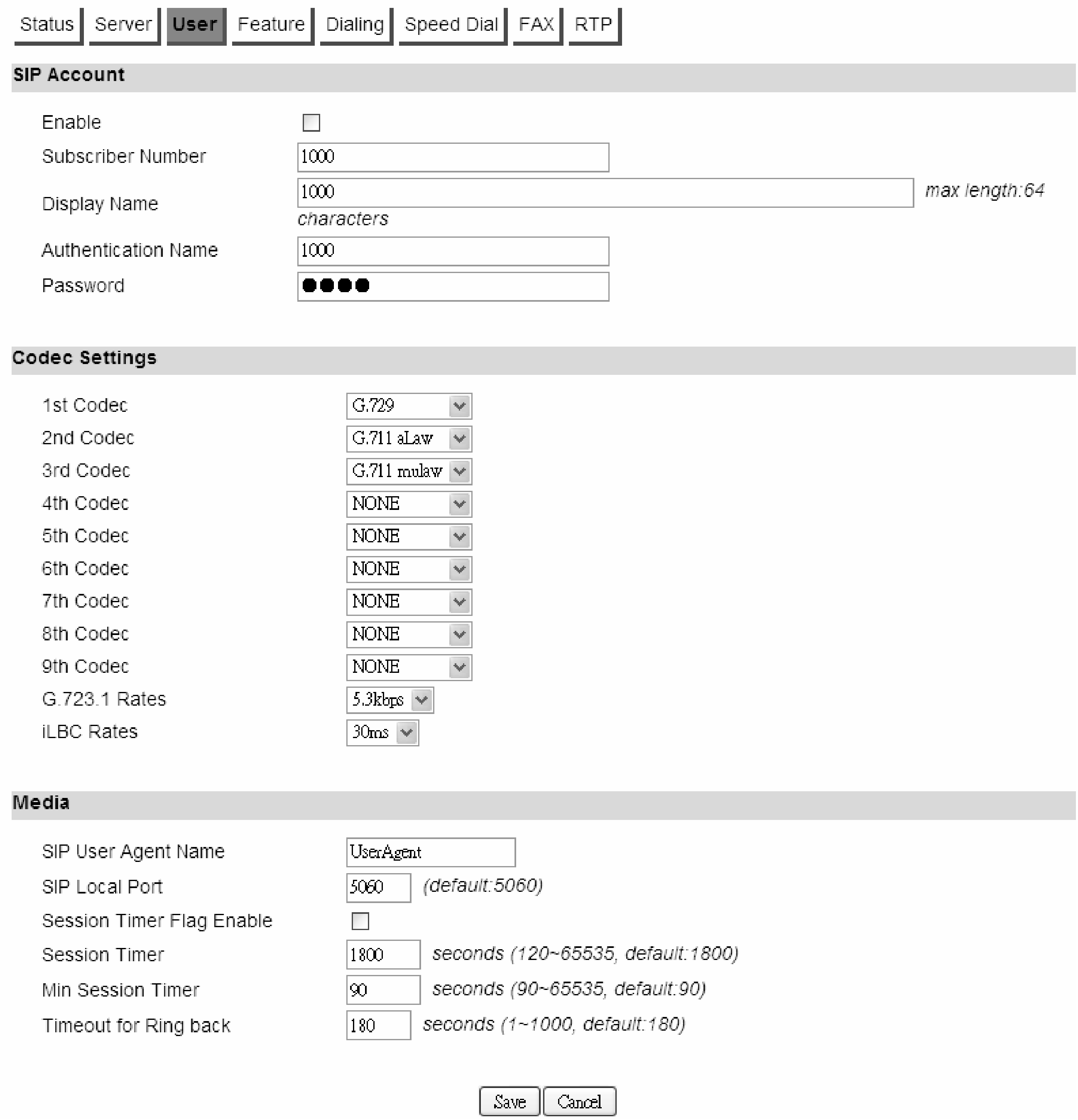
Figure 54. VoIP Phone>Account 1-2>Server

8.2.3. User

"VoIP Phone>Account>User"

Name	**Description**
SIP Account	
Enable	Enable or disable the SIP account.
Subscriber Number	Enter the subscriber number for Line. The number is a unique series of digits of VoIP subscriber. It's used to interconnect with SIP server, for outgoing or incoming calls.
Display Name	The display name of the VoIP subscriber, shown when it makes outgoing calls. Maximum name size is 64 characters.
Authentication Name	A unique string of VoIP subscriber. It's used to authenticate subscriber to get authorization to perform call setup privilege.
Password	Enter the password.
Codec Settings	See Table 3 for Codec options.
1st Codec	Subscriber prefers codec and it has 1st priority in codec negotiation.
2nd Codec	Subscriber prefers codec and it has 2nd priority in codec negotiation.
3rd Codec	Subscriber prefers codec and it has 3rd priority in codec negotiation.
4th Codec	Subscriber prefers codec and it has 4th priority in codec negotiation.
5th Codec	Subscriber prefers codec and it has 5th priority in codec negotiation.
6th Codec	Subscriber prefers codec and it has 6th priority in codec negotiation.
7th Codec	Subscriber prefers codec and it has 7th priority in codec negotiation.
8th Codec	Subscriber prefers codec and it has 8th priority in codec negotiation.
9th Codec	Subscriber prefers codec and it has 9th priority in codec negotiation.

G.723.1 Rates	➢ 5.3 kbps ➢ 6.3 kbps
iLBC Rates	➢ 20 ms ➢ 30 ms
Media	
SIP User Agent Name	Indicates a specific name for SIP user in SIP message.
SIP Port	SIP local port, it responsible for the sip packet send and receive.
Session Timer Flag Enable	Enable session timer.
Session Timer	The SIP session timer periodical refreshes time.
Min Session Timer	The minimal SIP session timer periodical refreshes time.
Timeout for Ring back	Ring back timeout. When ring back timeout judge the action behavior, such as hang-up or busy forward and so on.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



SIP Account

Enable	□
Subscriber Number	1000
Display Name	1000 *max length:64 characters*
Authentication Name	1000
Password	●●●●

Codec Settings

1st Codec	G.729
2nd Codec	G.711 aLaw
3rd Codec	G.711 mulaw
4th Codec	NONE
5th Codec	NONE
6th Codec	NONE
7th Codec	NONE
8th Codec	NONE
9th Codec	NONE
G.723.1 Rates	5.3kbps
iLBC Rates	30ms

Media

SIP User Agent Name	UserAgent
SIP Local Port	5060 *(default:5060)*
Session Timer Flag Enable	□
Session Timer	1800 *seconds (120~65535, default:1800)*
Min Session Timer	90 *seconds (90~65535, default:90)*
Timeout for Ring back	180 *seconds (1~1000, default:180)*

Figure 55. VoIP Phone>Account 1-2>User

Codec Settings Options
1. G.729
2. G.723.1
3. G.726 16K
4. G.726 24K
5. G.726 32K
6. G.726 40K
7. G.711 aLaw
8. G.711 mulaw
9. iLBC

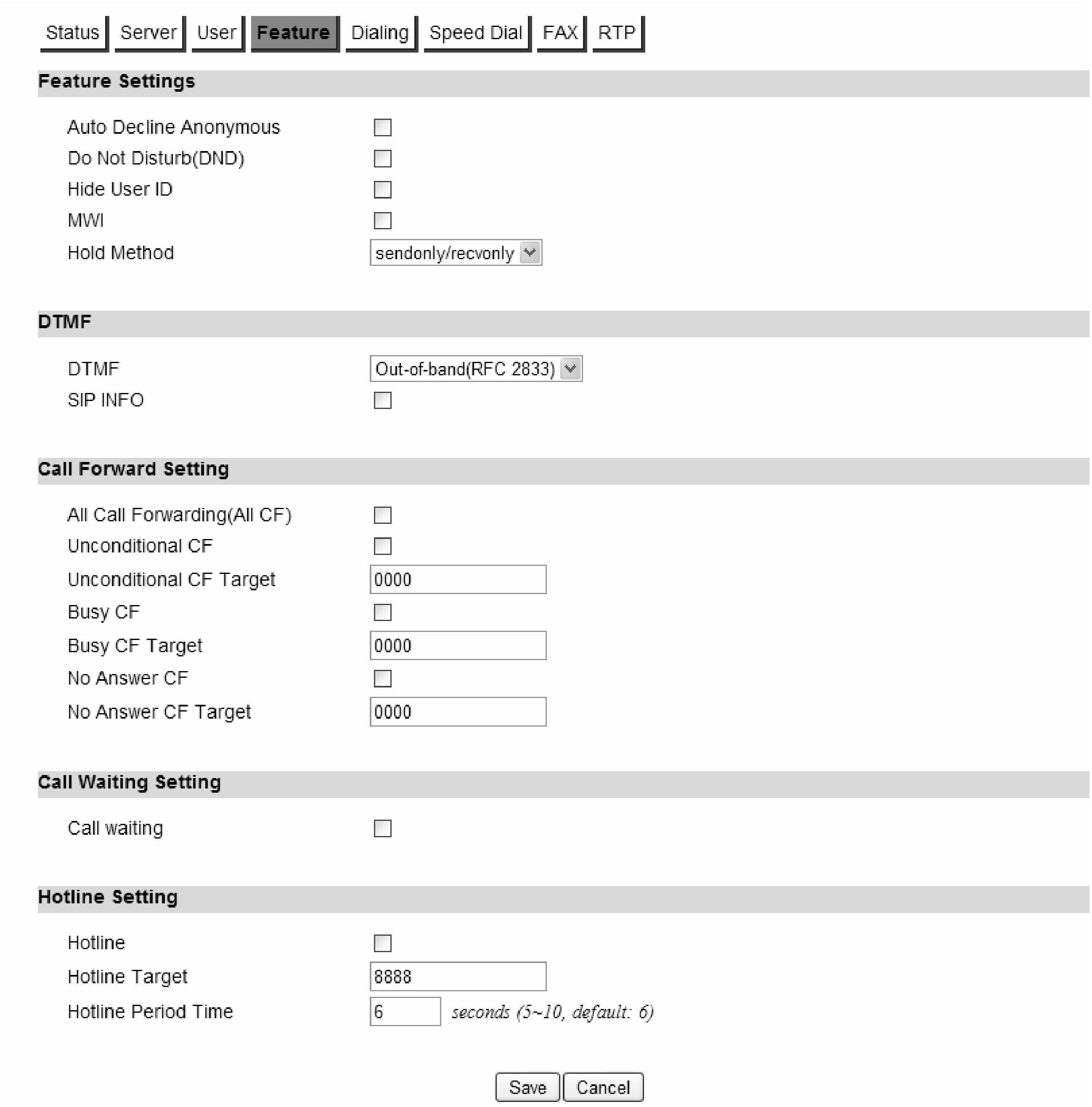
Table 3: Codec Setting Options

8.2.4. Feature

"VoIP Phone>Account>Feature"

Name	Description
Feature Settings	
Auto Decline Anonymous	When VoIP subscriber receives an incoming call with privacy, with display name as "anonymous". VoIP subscriber can REJECT it when the setting "Auto Decline Anonymous" is enabled. If it's not enabled it will treat it as a normal incoming call and allow the phone device to ring.
Do Not Disturb (DND)	When it is enabled, it will reject all incoming call
Hide User ID	As "Calling Line Identification Restriction (CLIR)", VoIP subscriber can enable this function to hide its identifier to others, when VoIP subscriber makes an outgoing call.
MWI	Message waiting indication. The LED on select telephones will light-up to notify the user that they have voicemail.
Call Forwarding Setting	
All Call Forwarding (All CF)	Enable/Disable, call forward feature
Unconditional CF	Enable/Disable unconditional call forward feature.

Unconditional CF Target	Unconditional call forwarding target number.
Busy CF	Enable/Disable, busy forward feature.
Busy CF Target	Busy forward target number.
No Answer CF	Enable/Disable, No Answer call forward feature.
No Answer CF Target	No answer call forward target number.
Call Waiting Setting	
Call Waiting	Enable/Disable Call waiting feature.
Hotline setting	
Hotline	Enable Hotline.
Hotline Target	The number of hotline target.
Hotline Period Time	Period time of hotline.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Feature Settings

Auto Decline Anonymous □

Do Not Disturb(DND) □

Hide User ID □

MWI □

Hold Method: sendonly/recvonly

DTMF

DTMF: Out-of-band(RFC 2833)

SIP INFO □

Call Forward Setting

All Call Forwarding(All CF) □

Unconditional CF □

Unconditional CF Target: 0000

Busy CF □

Busy CF Target: 0000

No Answer CF □

No Answer CF Target: 0000

Call Waiting Setting

Call waiting □

Hotline Setting

Hotline □

Hotline Target: 8888

Hotline Period Time: 6 *seconds (5~10, default: 6)*

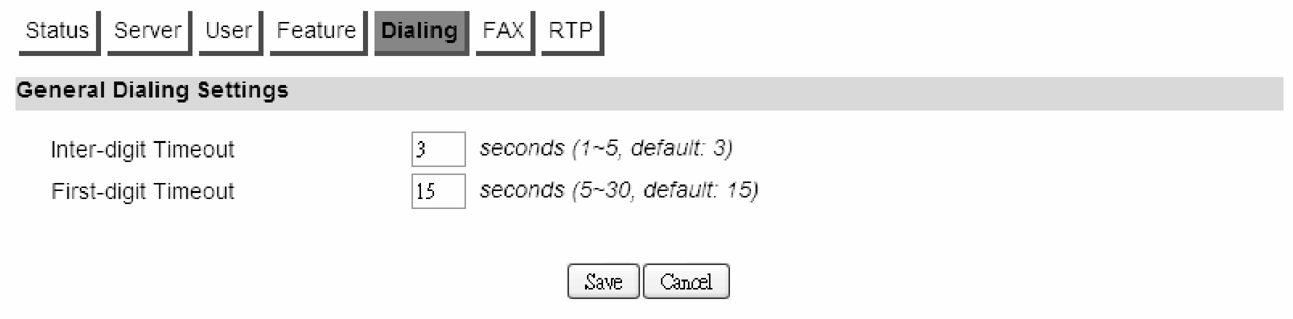
Figure 56. VoIP Phone>Account 1-2>Feature

8.2.5. Dialing

“VoIP Phone>Account>Dialing”

Name	Description
General Dialing Settings	

Inter-digit Timeout	The time period between each digit.
First-digit Timeout	The maximum time allowed between off-hook and entering the first digit.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



General Dialing Settings

Inter-digit Timeout 3 *seconds (1~5, default: 3)*

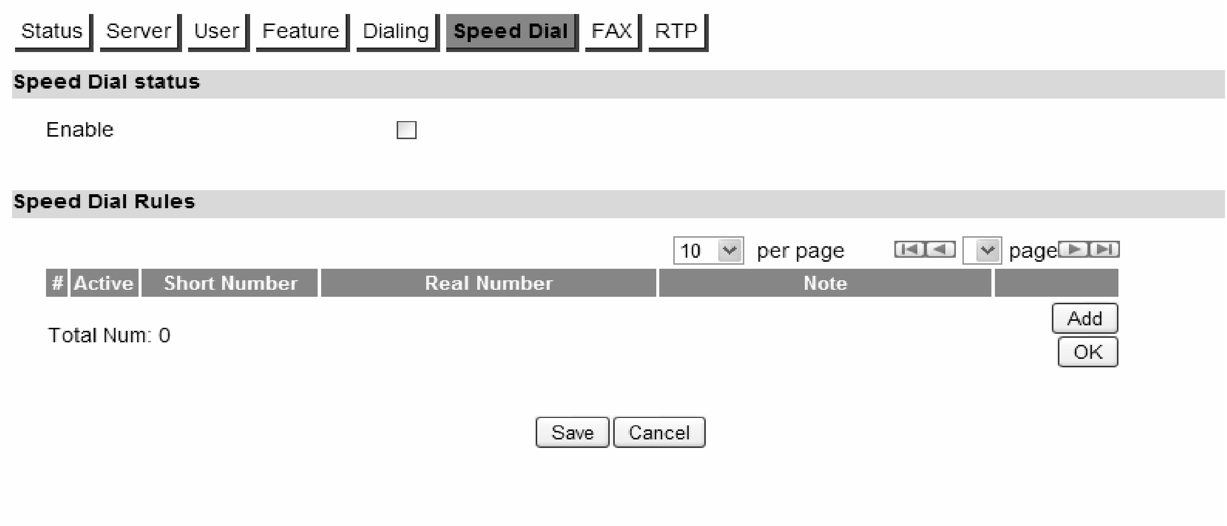
First-digit Timeout 15 *seconds (5~30, default: 15)*

Figure 57. VoIP Phone>Account 1-2>Dialing

8.2.6. Speed Dial

“VoIP Phone>Account>FAX”

Name	**Description**
Speed Dial status	
Enable	Enable Speed dial.
Speed Dial Rules	
	User make real number simplify to short number.



Speed Dial status

Enable □

Speed Dial Rules

10 per page page

#	Active	Short Number	Real Number	Note	

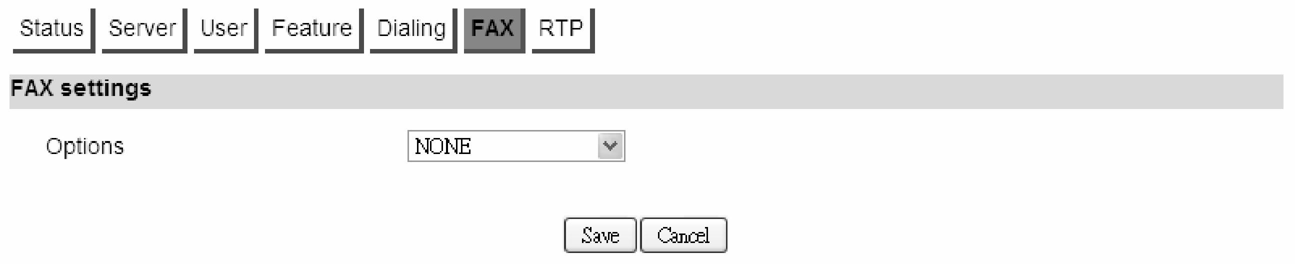
Total Num: 0

Figure 58. VoIP Phone>Account 1-2>Speed Dial

8.2.7. FAX

"VoIP Phone>Account>FAX"

Name	Description
FAX Settings	
Options	➢ NONE ➢ G.711A Pass Through ➢ G.711U Pass Through ➢ T.38 FAX Relay ➢ T.38 FAX Only
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Options: NONE

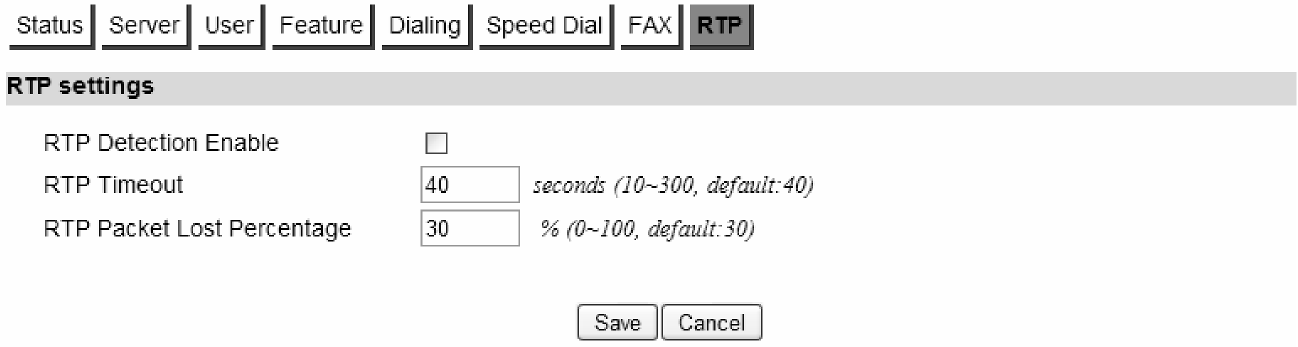
Figure 59. VoIP Phone>Account 1-2>FAX

8.2.8. RTP

"VoIP Phone>Account>RTP"

Name	Description
RTP Setting	
RTP Detection Enable	Enable RTP Detection.
RTP Timeout	The RTP timeout is used to judge the call is it still alive and do the right action. The range is from 10-300, 40 seconds is the default value.

RTP Packet Loss Percentage	You can specify the allowable RTP Packet Loss percentage and if it reaches the %, and do the right action.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



RTP settings

RTP Detection Enable □

RTP Timeout 40 *seconds (10~300, default:40)*

RTP Packet Lost Percentage 30 *% (0~100, default:30)*

Figure 60. VoIP Phone>Account 1-2>RTP

8.3. Line

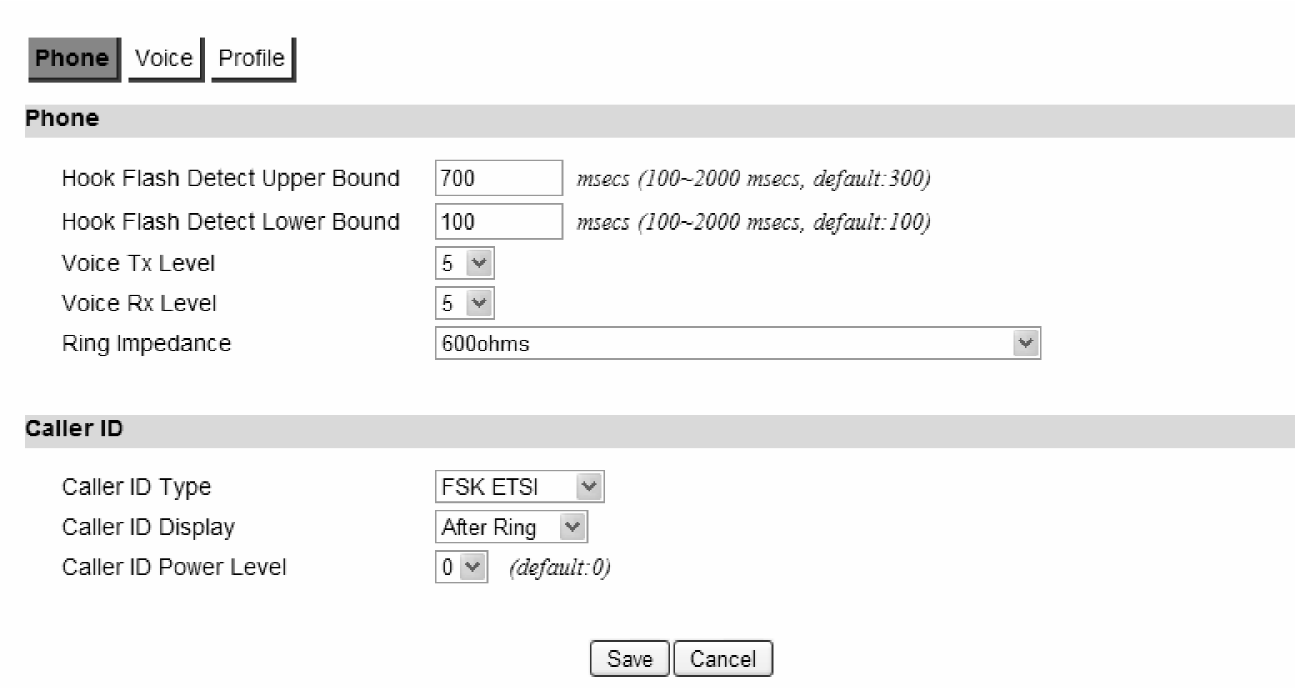
NOTE: The following figures will apply for Line 1 and Line 2. The Line and Account is one-to-one mapping, that is, the Line 1 is mapping to Account 1, and Line 2 is mapping to Account 2.

8.3.1. Phone

“VoIP Phone>Line>Phone”

Name	**Description**
Phone	
Hook Flash Detect Upper Bound	This parameter defines the upper bound of the quick on/off-hook cycle.
Hook Flash Detect Lower Bound	This parameter defines the lower bound of the quick on/off-hook cycle.
Voice Tx Level	The voice gain level that is heard by a telephone user.
Voice Rx Level	The voice gain level that is received by the device.
Ring Impedance	The impedance between tip and ring on the telephone line.
Caller ID	
Caller ID Type	This will allow you to enable and select the Called ID type for your area. You also have the choice to disable caller ID. ➢ Disable

	➢ FSK Bellcore ➢ FSK ETSI ➢ Japan CLIP
Caller ID Display	This parameter configures when Caller ID will be displayed. ➢ Before Ring ➢ After Ring
Caller ID Power Level	The transmitting power level of caller ID to the telephone.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Phone

Hook Flash Detect Upper Bound	700	msecs (100~2000 msecs, default:300)
Hook Flash Detect Lower Bound	100	msecs (100~2000 msecs, default:100)
Voice Tx Level	5	
Voice Rx Level	5	
Ring Impedance	600ohms	

Caller ID

Caller ID Type	FSK ETSI	
Caller ID Display	After Ring	
Caller ID Power Level	0	(default:0)

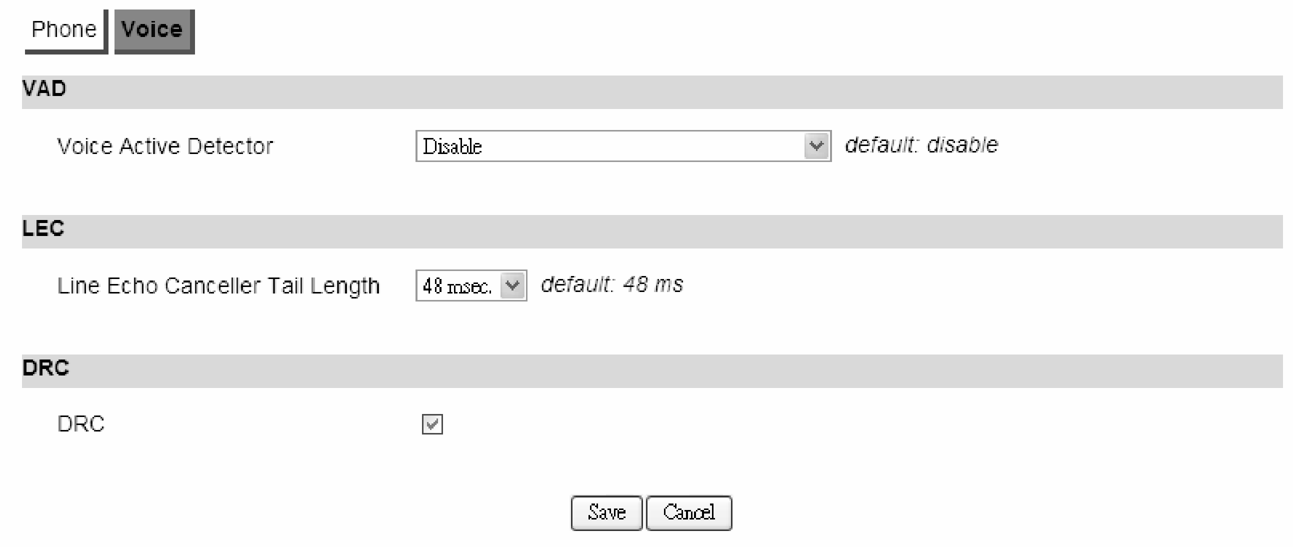
Figure 61. VoIP Phone>Line 1-2>Phone

8.3.2. Voice

"VoIP Phone>Line>Voice"

Name	Description
VAD	
Voice Active	You can enable and select which voice activity detection to

Detector	use. It can facilitate speech processing, and can also be used to deactivate some processes during non-speech segments: it can avoid unnecessary coding/transmission of silence packets in VoIP, saving on computation and on network bandwidth. There are 4 choices to select from. ➢ Disable ➢ Silence Suppression — NO CNG ➢ Silence Suppression — Only G.711 Annex II Type ➢ Silence Suppression — Codec Specific CN (G.729 and G.732)
LEC	
Line Echo Canceller Tail Length	There are processing delays in IP networks that could cause an echo. This function is used to decrease the echo effect. We provide disable, 16ms, 32ms and 48ms echo tail length setting.
DRC	
DRC	Enable/Disable DRC.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Phone | Voice

VAD

Voice Active Detector: Disable — *default: disable*

LEC

Line Echo Canceller Tail Length: 48 msec. — *default: 48 ms*

DRC

DRC ☑

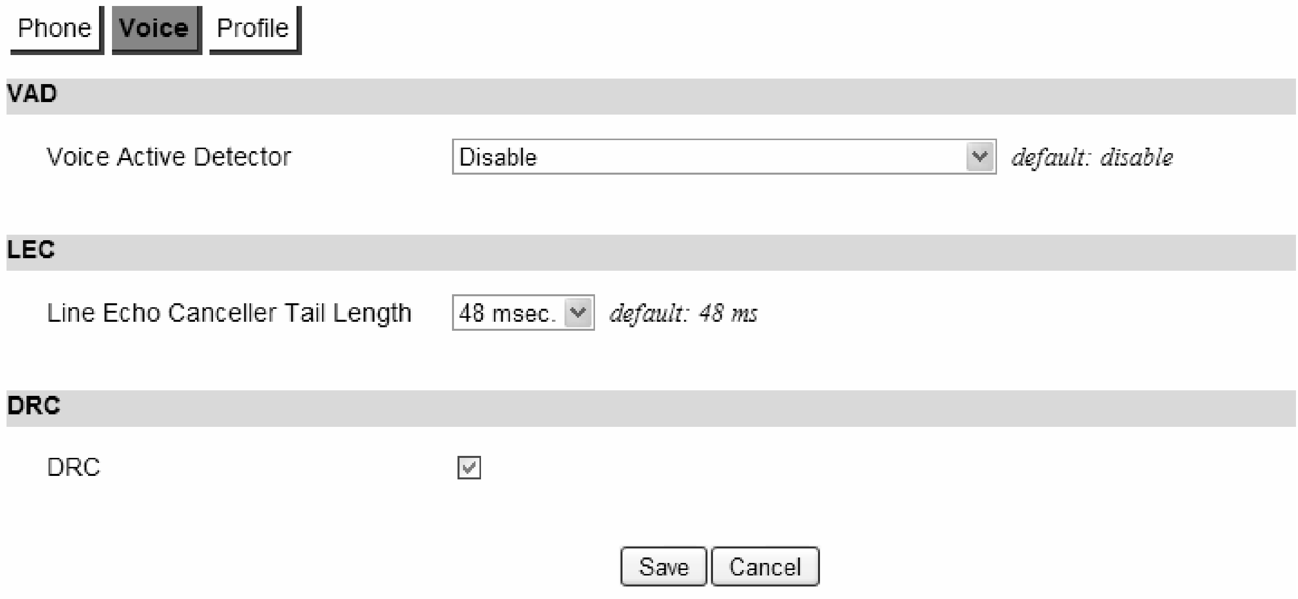
Save | Cancel

Figure 62. VoIP Phone>Line 1-2>Voice

8.3.3. Profile

“VoIP Phone>Line>Profile”

Name	Description
Country Profile	
	For different countries, the tones may be different. This parameter is used to set the country name to change the tones.



VAD

Voice Active Detector: Disable *default: disable*

LEC

Line Echo Canceller Tail Length: 48 msec. *default: 48 ms*

DRC

DRC ☑

Figure 63. VoIP Phone>Line 1-2>Profile

9. WiMAX

This technology is based on the IEEE 802.16 standard, enabling the delivery of last mile wireless broadband access.

9.1. Profile

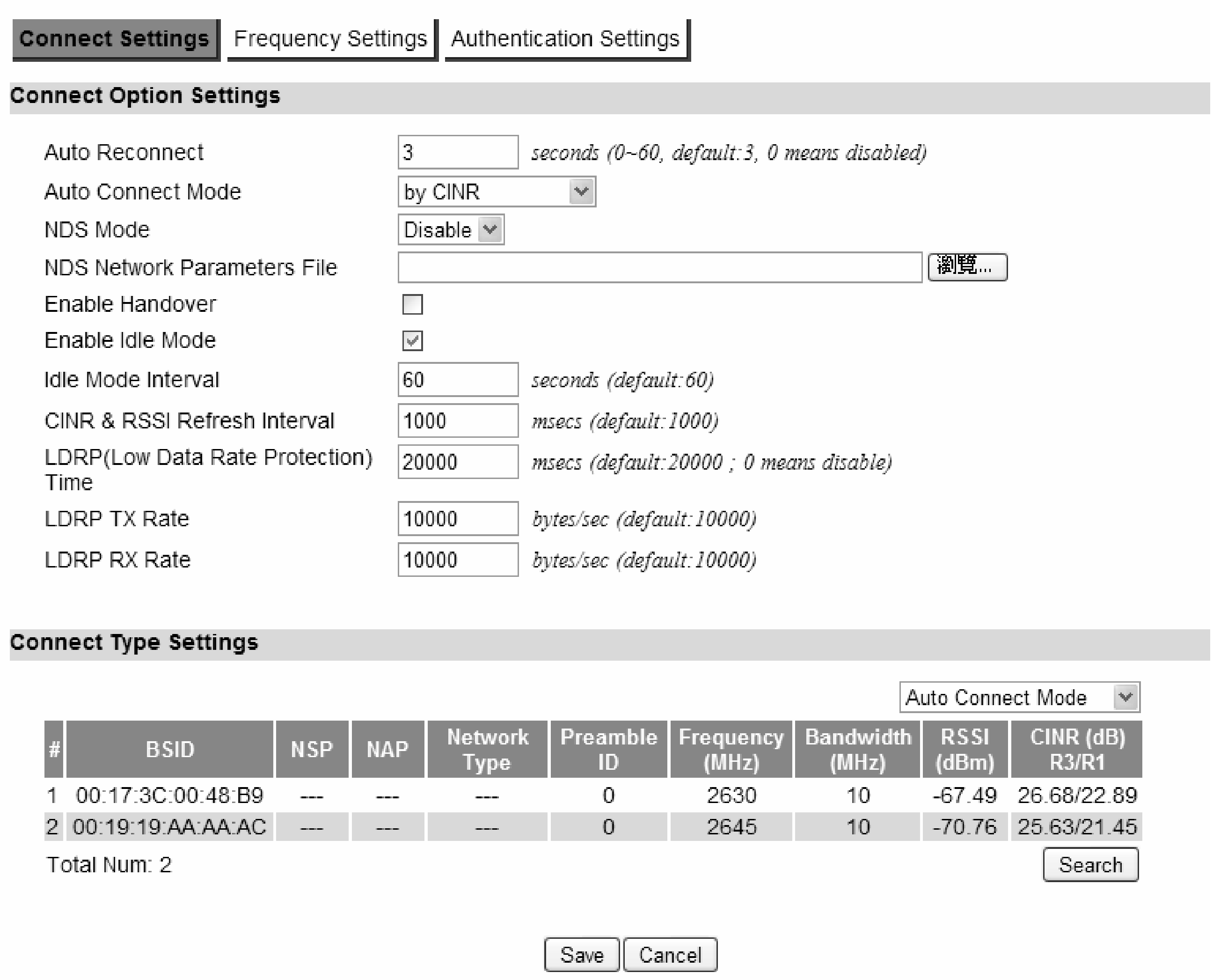
In the profile tab, the user can set WiMAX standard settings, which include how to establish a connection, frequency information and how to authenticate.

9.1.1. Connect Settings

“WiMAX>Profile>Connect Settings”

Name	Description
Auto Reconnect	Indicate the interval in second to “auto reconnect”. 0 means disabled.
Auto connect Mode	Connecting base on CINR or RSSI to connect the best signal.
NDS Mode	Enable NDS mode.
NDS Network Parameters File	Upload NDS Network Parameters File.
Enable Handover	Enable Handover.
Enable Idle Mode	Enable Idle mode.
Idle Mode Interval	The time interval of idle mode.
CINR & RSSI Refresh Interval	Refresh time interval of CINR & RSSI.
LDRP Time	LDRP (Low Data Rate Protection). When it’s enabled, if the uplink/downlink data rate is smaller than the LDRP time, the CPE will send disconnect command to BS.
LDRP TX/RX Rate	LDRP uplink/downlink data rate.
Search	Click on the search button to search for available BSIDs.
Connect Mode	Select a connect mode ➢ **Auto Connect Mode:** It will connect to one of the BSIDs in the list, indiscriminately. ➢ **Network Search Mode:** User needs to select one of the BSIDs from the list, it will use that BSID to connect to WiMAX after device is reboot.

Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Connect Option Settings

Auto Reconnect	3	seconds (0~60, default:3, 0 means disabled)
Auto Connect Mode	by CINR	
NDS Mode	Disable	
NDS Network Parameters File		瀏覽...
Enable Handover	□	
Enable Idle Mode	☑	
Idle Mode Interval	60	seconds (default:60)
CINR & RSSI Refresh Interval	1000	msecs (default:1000)
LDRP(Low Data Rate Protection) Time	20000	msecs (default:20000 ; 0 means disable)
LDRP TX Rate	10000	bytes/sec (default:10000)
LDRP RX Rate	10000	bytes/sec (default:10000)

Connect Type Settings

Auto Connect Mode

#	BSID	NSP	NAP	Network Type	Preamble ID	Frequency (MHz)	Bandwidth (MHz)	RSSI (dBm)	CINR (dB) R3/R1
1	00:17:3C:00:48:B9	---	---	---	0	2630	10	-67.49	26.68/22.89
2	00:19:19:AA:AA:AC	---	---	---	0	2645	10	-70.76	25.63/21.45

Total Num: 2

Figure 64. WiMAX>Profile>Connect Settings

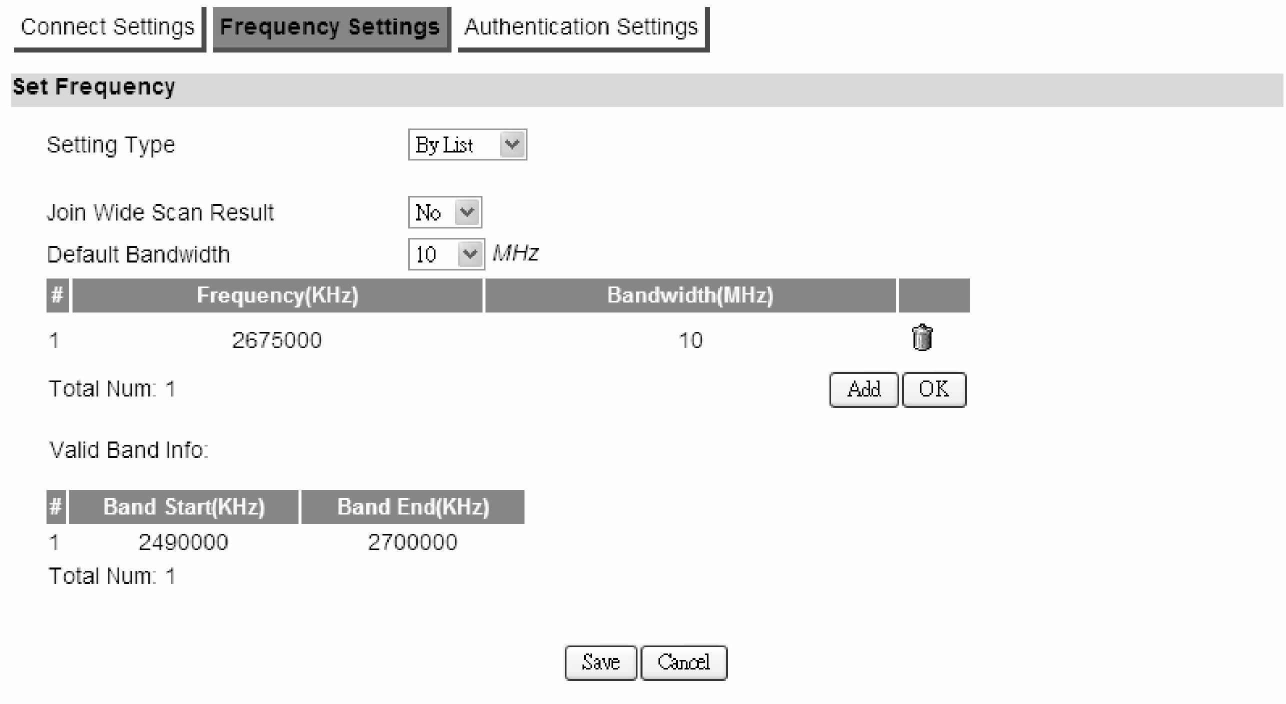
9.1.2. Frequency Settings

The frequency list window will display all the configured frequencies and their bandwidth. To set additional frequencies, click on the “Add” button.

“WiMAX>Profile>Frequency Settings”

Name	Description
Setting Type	There are two display types you can select. ➢ You can choose to display the data by List. If you select

	“By List” you also have the option to add more frequencies. ➢ “By Range” will display the frequency by range and the incremental value. See Figure “Frequency By Range”.
Joint Wide Scan Result	Yes means to append wide scan result to the frequency setting. Only valid when setting type is “By List”.
Valid Band Info	Valid band information. If the frequencies aren’t located using the valid band range, the frequency setting will be rejected.
Add	The “Add” button will aloe you to enter more frequency lists.
OK	Click the “OK” button to exit the table edit mode.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Set Frequency

Setting Type: By List

Join Wide Scan Result: No

Default Bandwidth: 10 MHz

#	Frequency(KHz)	Bandwidth(MHz)	
1	2675000	10	🗑

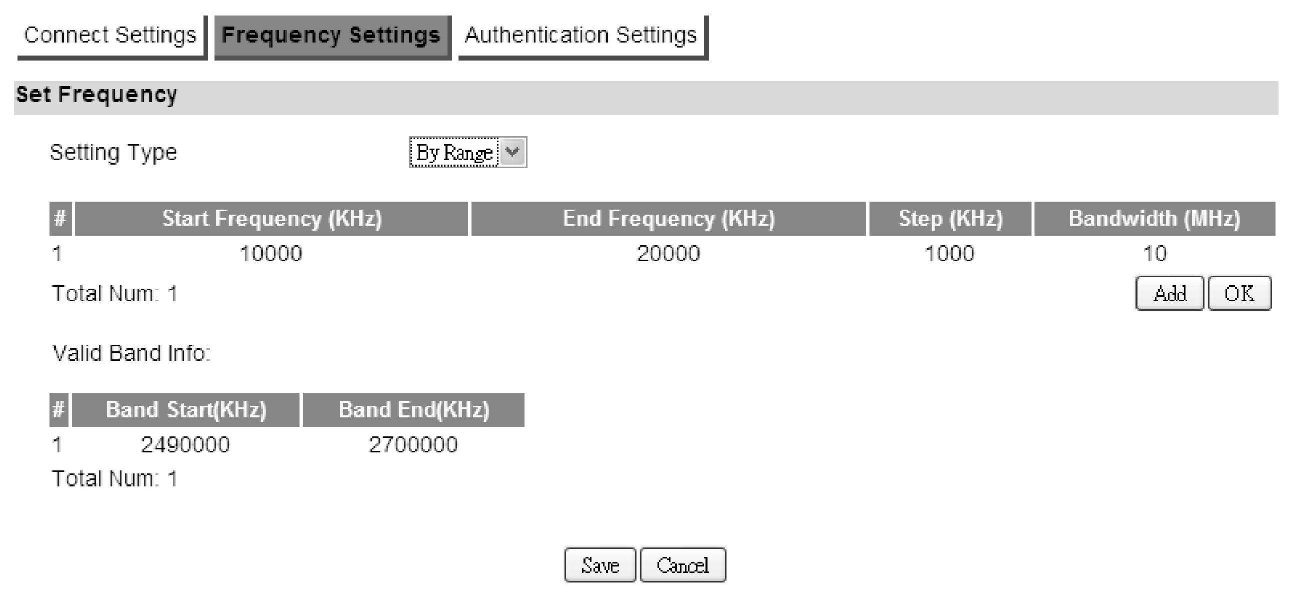
Total Num: 1

Valid Band Info:

#	Band Start(KHz)	Band End(KHz)
1	2490000	2700000

Total Num: 1

Figure 65. WiMAX>Profile>Frequency Settings (By List)



Set Frequency

Setting Type: By Range

#	Start Frequency (KHz)	End Frequency (KHz)	Step (KHz)	Bandwidth (MHz)
1	10000	20000	1000	10

Total Num: 1

Valid Band Info:

#	Band Start(KHz)	Band End(KHz)
1	2490000	2700000

Total Num: 1

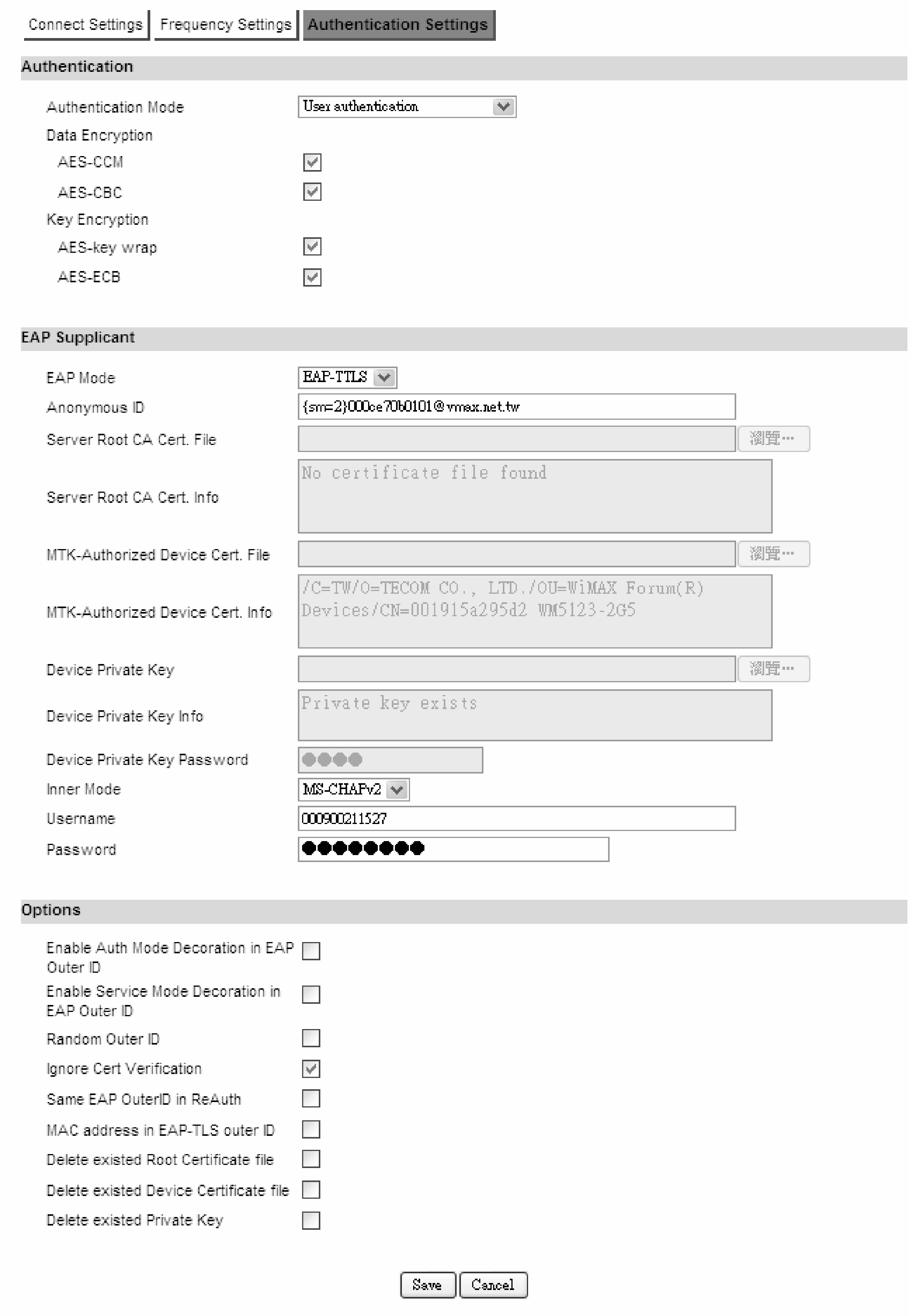
Figure 66. WiMAX>Profile>Frequency Settings (By Range)

9.1.3. Authentication Settings

“WiMAX>Profile>Authentication Settings”

Name	Description
Authentication	
Authentication Mode	The method used in authentication.
Date Encryption AES-CCM	Enable the MS’s capability of encrypting/decrypting the traffic by AES-CCM.
Data Encryption AES-CBC	Enable the MS’s capability of encrypting/decrypting the traffic by AES-CBC.
Key Encryption AES-key wrap	Enable the MS’s capability of decrypting TEK by AES-Key wrap.
Key Encryption AES-ECB	Enable the MS’s capability of decrypting TEK by AES-ECB.
EAP Supplicant	
EAP Mode	The EAP method used in authentication.
Anonymous ID	The identity encoded in EAP Identity Response message.
Server Root CA Certificate	The root CA’s X.509 certificate.
MTK-Authorized Device Certificate	The MS’s X.509 certificate.

Device Private Key	The MS's private key file corresponding to the public key encoded in X.509 certificate.
Device Private Key Password	The key used to decrypt the MS's private key file.
Inner Mode	The EAP-TTLS inner method.
User name	The user name used in EAP-TTLS inner method.
Password	The password used in EAP-TTLS inner method.
Options	
Auto Prepend Auth Mode	Enable the MS to automatically decorate "{am=i}" in the EAP Identity Response message. The value of "i" depends on Authentication Mode field.
Random Outer ID	Enable the MS to generate 16-bytes random number as the user name in the EAP Identity Response message.
Ignore Cert Verification	MS skips to verify the BS's certificate received in the EAP-TLS or EAP-TTLS procedure.
Same EAP outerID in ReAuth	Use the same EAP outer id when doing re-auth.
MAC address in EAP-TLS outer ID	Add MAC address in outer id when EAP mode is EAP-TLS.
Delete existed Device Certificate file	Delete device certificate file which was uploaded in the filed "*MTK-authorized Device Certificate*"
Delete existed Private Key	Delete device private key which was uploaded in the filed "*Device Private Key*"
Save	Commit the changes made and save to CPE device
Cancel	Reset fields to the last saved values



Authentication

Authentication Mode	User authentication
Data Encryption	
AES-CCM	☑
AES-CBC	☑
Key Encryption	
AES-key wrap	☑
AES-ECB	☑

EAP Supplicant

EAP Mode	EAP-TTLS
Anonymous ID	{sm=2}000ce70b0101@vmax.net.tw
Server Root CA Cert. File	瀏覽…
Server Root CA Cert. Info	No certificate file found
MTK-Authorized Device Cert. File	瀏覽…
MTK-Authorized Device Cert. Info	/C=TW/O=TECOM CO., LTD./OU=WiMAX Forum(R) Devices/CN=001915a295d2 WM5123-2G5
Device Private Key	瀏覽…
Device Private Key Info	Private key exists
Device Private Key Password	●●●●
Inner Mode	MS-CHAPv2
Username	000900211527
Password	●●●●●●●●●

Options

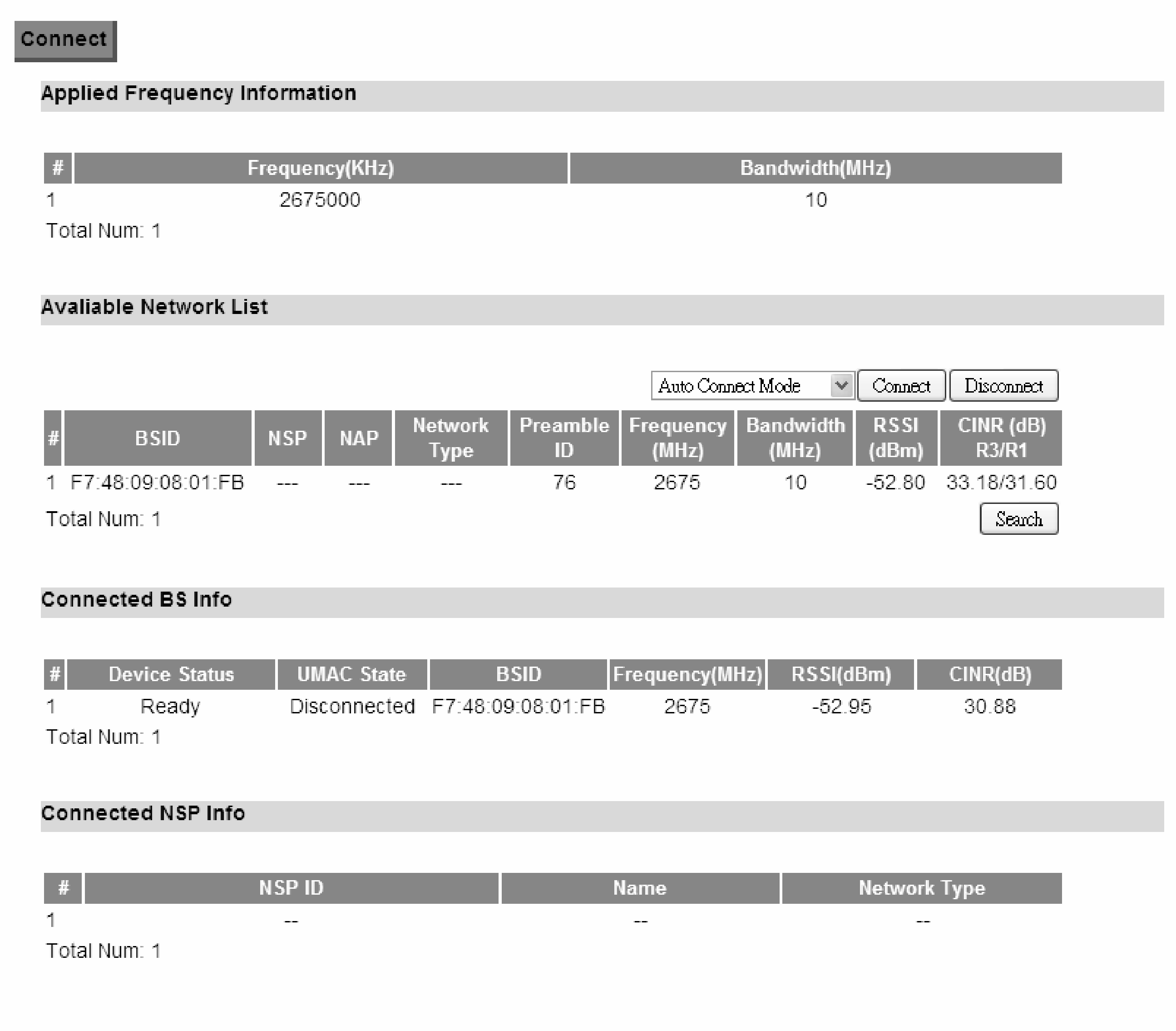
Enable Auth Mode Decoration in EAP Outer ID	□
Enable Service Mode Decoration in EAP Outer ID	□
Random Outer ID	□
Ignore Cert Verification	☑
Same EAP OuterID in ReAuth	□
MAC address in EAP-TLS outer ID	□
Delete existed Root Certificate file	□
Delete existed Device Certificate file	□
Delete existed Private Key	□

Figure 67. WiMAX>Profile>Authentication Settings

9.2. Connect

"WiMAX>Connect>Connect"

Name	**Description**
Disconnect	Click the disconnect button to terminate the connection.
Connect	Click the connect button to connect to a BSID.
Connect Mode	Select a connect mode. ➢ **Auto Connect Mode:** It will connect to one of the BSIDs in the list, indiscriminately. ➢ **Network Search Mode:** User needs to select one of the BSIDs from the list, it will use that BSID to connect to WiMAX after device is reboot.
Search	Click the search button to scan the frequency.



Applied Frequency Information

#	Frequency(KHz)	Bandwidth(MHz)
1	2675000	10

Total Num: 1

Avaliable Network List

#	BSID	NSP	NAP	Network Type	Preamble ID	Frequency (MHz)	Bandwidth (MHz)	RSSI (dBm)	CINR (dB) R3/R1
1	F7:48:09:08:01:FB	---	---	---	76	2675	10	-52.80	33.18/31.60

Total Num: 1

Connected BS Info

#	Device Status	UMAC State	BSID	Frequency(MHz)	RSSI(dBm)	CINR(dB)
1	Ready	Disconnected	F7:48:09:08:01:FB	2675	-52.95	30.88

Total Num: 1

Connected NSP Info

#	NSP ID	Name	Network Type
1	--	--	--

Total Num: 1

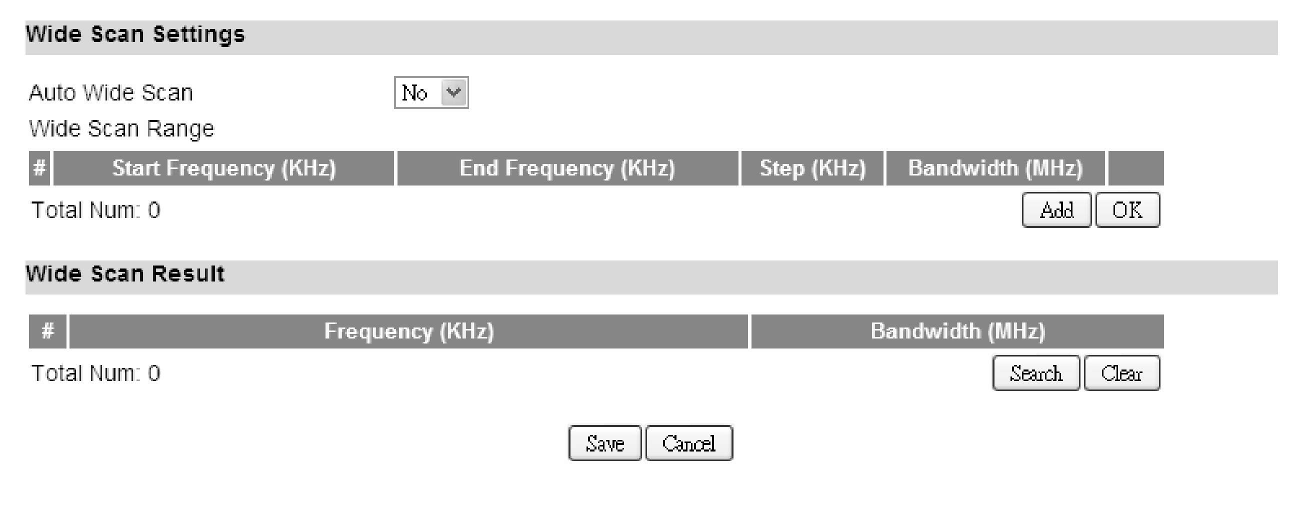
Figure 68. WiMAX>Connect

9.3. Wide Scan

“WiMAX>Wide Scan”

Name	Description
Wide Scan Settings	
Auto Wide Scan	Select “Yes” to do “wide scan” automatically when there are no available BS.
Wide Scan Range	
Add/OK	You can specify the wide scan range to reduce search time.

Wide Scan Result	
Search	Show the result of wide scan. Search button can trigger wide scan.
Clear	Clear button clear current search result.
Save/ Cancel	Save/ Cancel current setting.



Wide Scan Settings

Auto Wide Scan: No

Wide Scan Range

#	Start Frequency (KHz)	End Frequency (KHz)	Step (KHz)	Bandwidth (MHz)	

Total Num: 0

Wide Scan Result

#	Frequency (KHz)	Bandwidth (MHz)

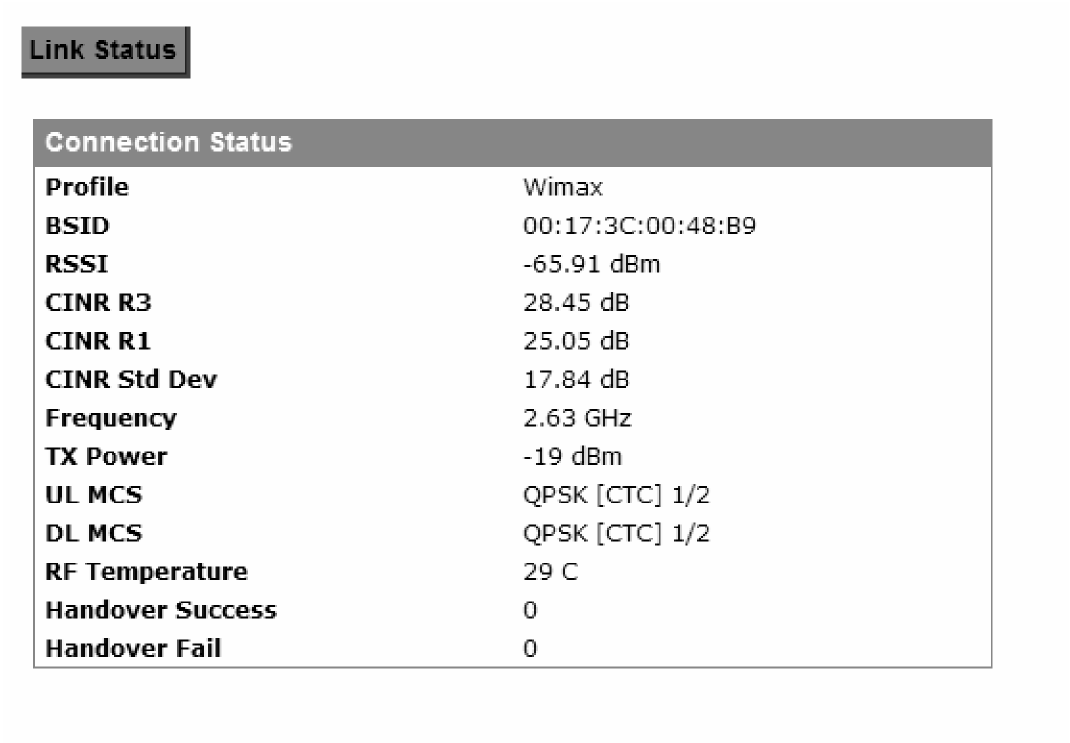
Total Num: 0

Figure 69. WiMAX>Wide Scan

9.4. Link Status

“WiMAX>Link Status>Link Status”

The “Link Status” menu item shows a brief profile of the current WiMAX link.



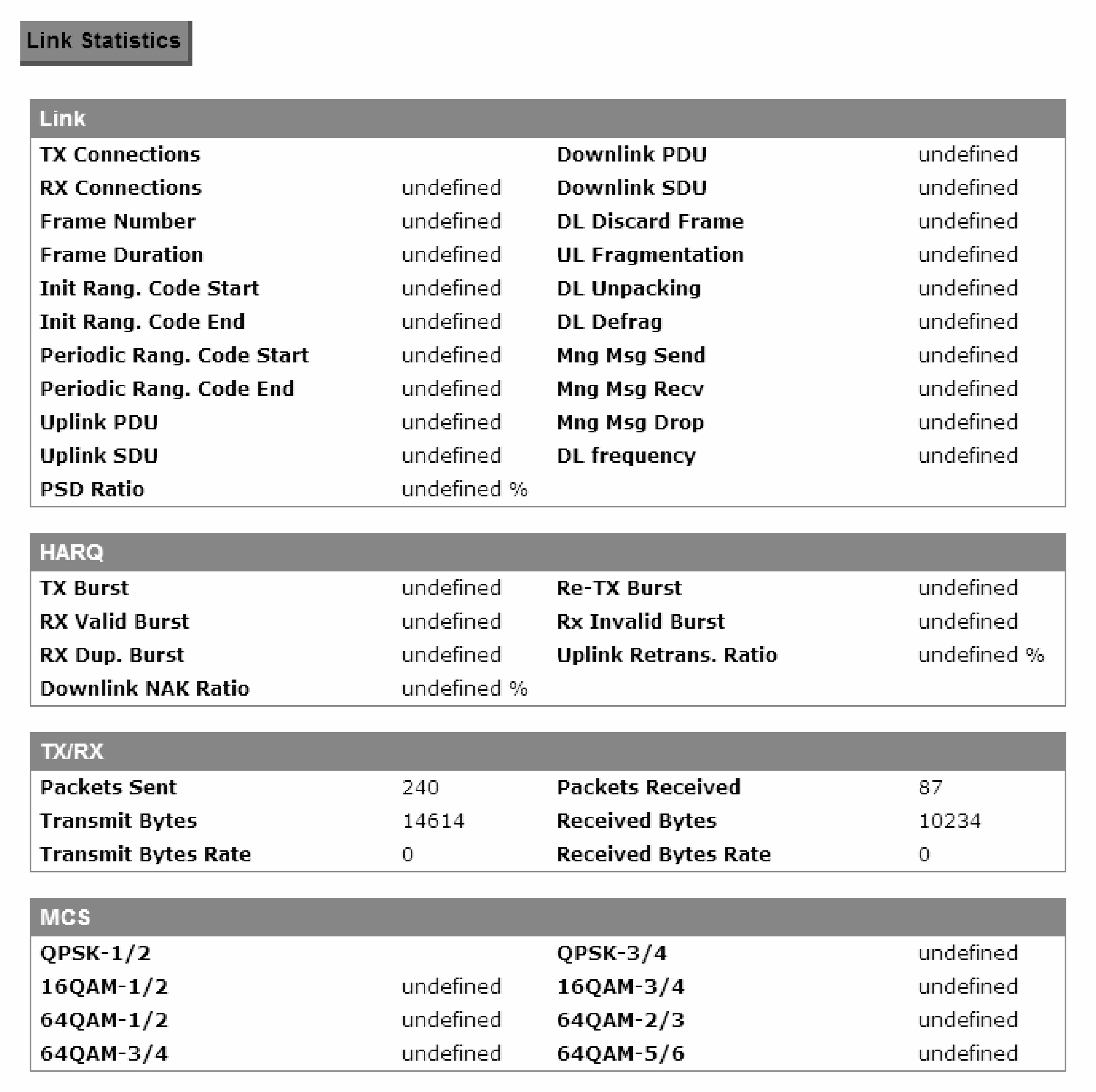
Connection Status	
Profile	Wimax
BSID	00:17:3C:00:48:B9
RSSI	-65.91 dBm
CINR R3	28.45 dB
CINR R1	25.05 dB
CINR Std Dev	17.84 dB
Frequency	2.63 GHz
TX Power	-19 dBm
UL MCS	QPSK [CTC] 1/2
DL MCS	QPSK [CTC] 1/2
RF Temperature	29 C
Handover Success	0
Handover Fail	0

Figure 70. WiMAX Link Status

9.5. Link Statistics

"WiMAX>Link Statistics> Link Statistics"

The "Link Statistics" menu item will display statistical information in the WiMAX link.



Link			
TX Connections		Downlink PDU	undefined
RX Connections	undefined	Downlink SDU	undefined
Frame Number	undefined	DL Discard Frame	undefined
Frame Duration	undefined	UL Fragmentation	undefined
Init Rang. Code Start	undefined	DL Unpacking	undefined
Init Rang. Code End	undefined	DL Defrag	undefined
Periodic Rang. Code Start	undefined	Mng Msg Send	undefined
Periodic Rang. Code End	undefined	Mng Msg Recv	undefined
Uplink PDU	undefined	Mng Msg Drop	undefined
Uplink SDU	undefined	DL frequency	undefined
PSD Ratio	undefined %		

HARQ			
TX Burst	undefined	Re-TX Burst	undefined
RX Valid Burst	undefined	Rx Invalid Burst	undefined
RX Dup. Burst	undefined	Uplink Retrans. Ratio	undefined %
Downlink NAK Ratio	undefined %		

TX/RX			
Packets Sent	240	Packets Received	87
Transmit Bytes	14614	Received Bytes	10234
Transmit Bytes Rate	0	Received Bytes Rate	0

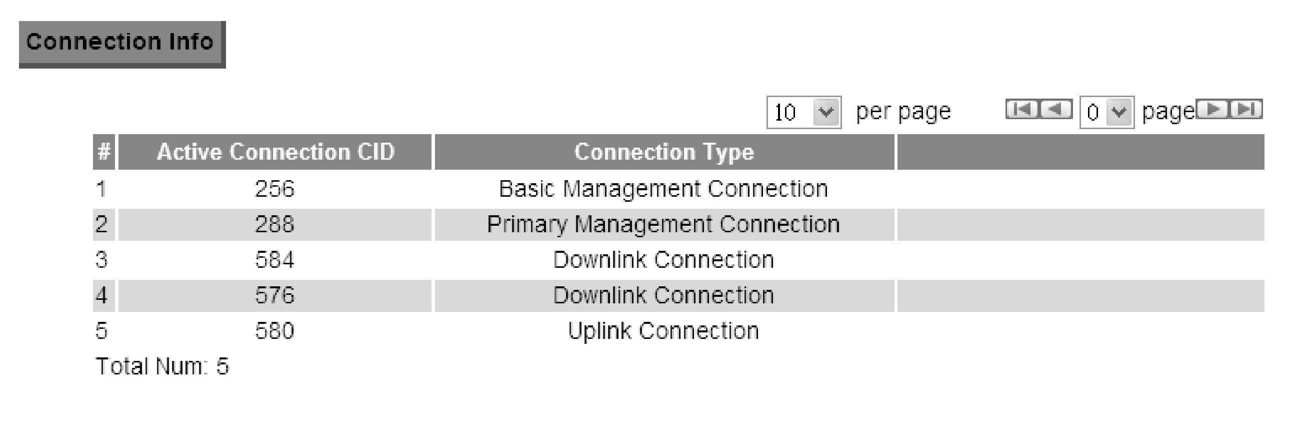
MCS			
QPSK-1/2		QPSK-3/4	undefined
16QAM-1/2	undefined	16QAM-3/4	undefined
64QAM-1/2	undefined	64QAM-2/3	undefined
64QAM-3/4	undefined	64QAM-5/6	undefined

Figure 71. WiMAX Link Statistics

9.6. Connection Info

“WiMAX>Connection Info>Connection Info”

The connection info window will show the connection ID and its connection type.



#	Active Connection CID	Connection Type	
1	256	Basic Management Connection	
2	288	Primary Management Connection	
3	584	Downlink Connection	
4	576	Downlink Connection	
5	580	Uplink Connection	

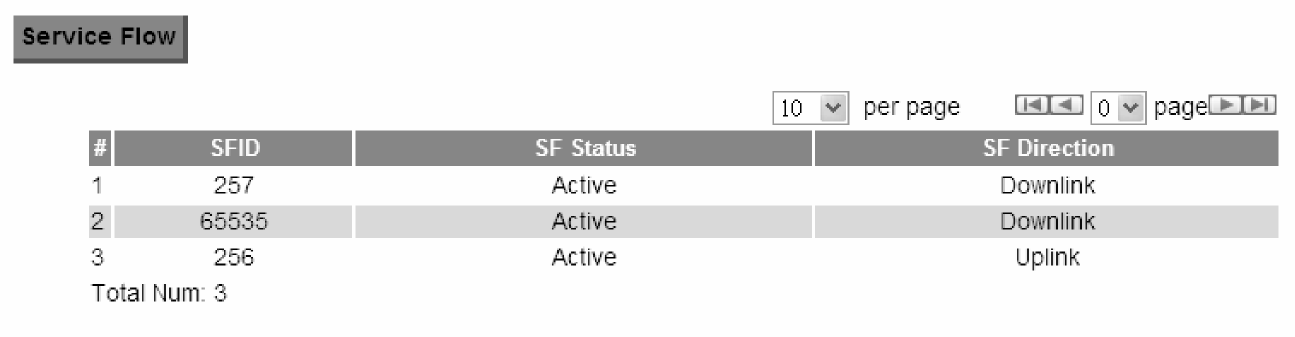
Total Num: 5

Figure 72. WiMAX Connection Info

9.7. Service Flow

“WiMAX>Service Flow>Service Flow”

The WiMAX service flow window will show the status and direction of each service flow ID.



#	SFID	SF Status	SF Direction
1	257	Active	Downlink
2	65535	Active	Downlink
3	256	Active	Uplink

Total Num: 3

Figure 73. WiMAX Service Flow

10. WiFi

Based on the IEEE 802.11 set of standards, WiFi provides wireless networking capabilities.

10.1. WLAN

“WiFi>WLAN”

Name	Description
WLAN Settings	
Enable WLAN	This will enable the CPE to function as a WiFi Access Point.
WLAN Mode	Select the WLAN protocol.
WLAN Channel	Select the WLAN channel. See Table 4 for Channel description. “Auto” will allow CPE to choose the best channel automatically.
WLAN Maximum STA number	The maximum STA number of WLAN. It will control the number user via WLAN to access internet.
WLAN TxPower	This will control transmit power of WLAN.
WLAN TxRate	This will limit transmit rate of WLAN.
WLAN Beacon Interval	The time interval of WAN beacon.
WLAN DTIM period	The period of WLAN DTIM.
WLAN RTS Threshold	Default is 2347.
WLAN Fragmentation Threshold	Default is 2346.
Enable WPS	Enabling the Wi-Fi Protected Setup (WPS) will allow you to easily configure security on your wireless network.
WPS PIN	When using WPS PIN mode, input the PIN (Personal Identification Number) code read from the new wireless client.
Multiple BSSID number	Select how many BSSID will be created.
Configure SSID	Select which BBSID to be configured.

WLAN SSID	Service Set Identifier. The network name used to identify the WLAN. All the WiFi devices on the WLAN must use the same SSID to connect to the CPE.
Hide SSID	Check the box to prevent the CPE from broadcasting its SSID.
Encryption Type	Select the encryption type. You will see further encryption setting for the selected encryption type. For instance, if you select WEP, then you will see WEP settings. ➢ NONE ➢ WEP ➢ WPA Personal ➢ WPA Enterprise
WEP Settings	If “WEP” is selected as the encryption type, you will see the following setting.
Authentication Method	Two types of authentication: ➢ **OPEN SYSTEM:** Open system authentication. All clients that request access to the CPE are accepted without actual authentication. ➢ **SHARED KEY:** Shared Key authentication require the exchange of an authentication key shared among the CPE and clients in the network.
WEP Encryption Length	Length of the WEP encryption key: ➢ 64-bit ➢ 128-bit
Key 1	Set the WEP key 1. If the WEP encryption length is set to 64-bit, then use 10 hexadecimal or 5 ASCII characters as the key. If the WEP encryption length is set to 128-bit, then use 26 hexadecimal or 13 ASCII characters as the key.
Key 2	Set the WEP key 2. Refer to Key 1 for details.
Key 3	Set the WEP key 3. Refer to Key 1 for details.
Key 4	Set the WEP key 4. Refer to Key 1 for details.
WPA Settings	If you select “WPA personal” or “WPA Enterprise” as the encryption type, you will see following settings.
WPA mode	Select the WPA encryption mode.

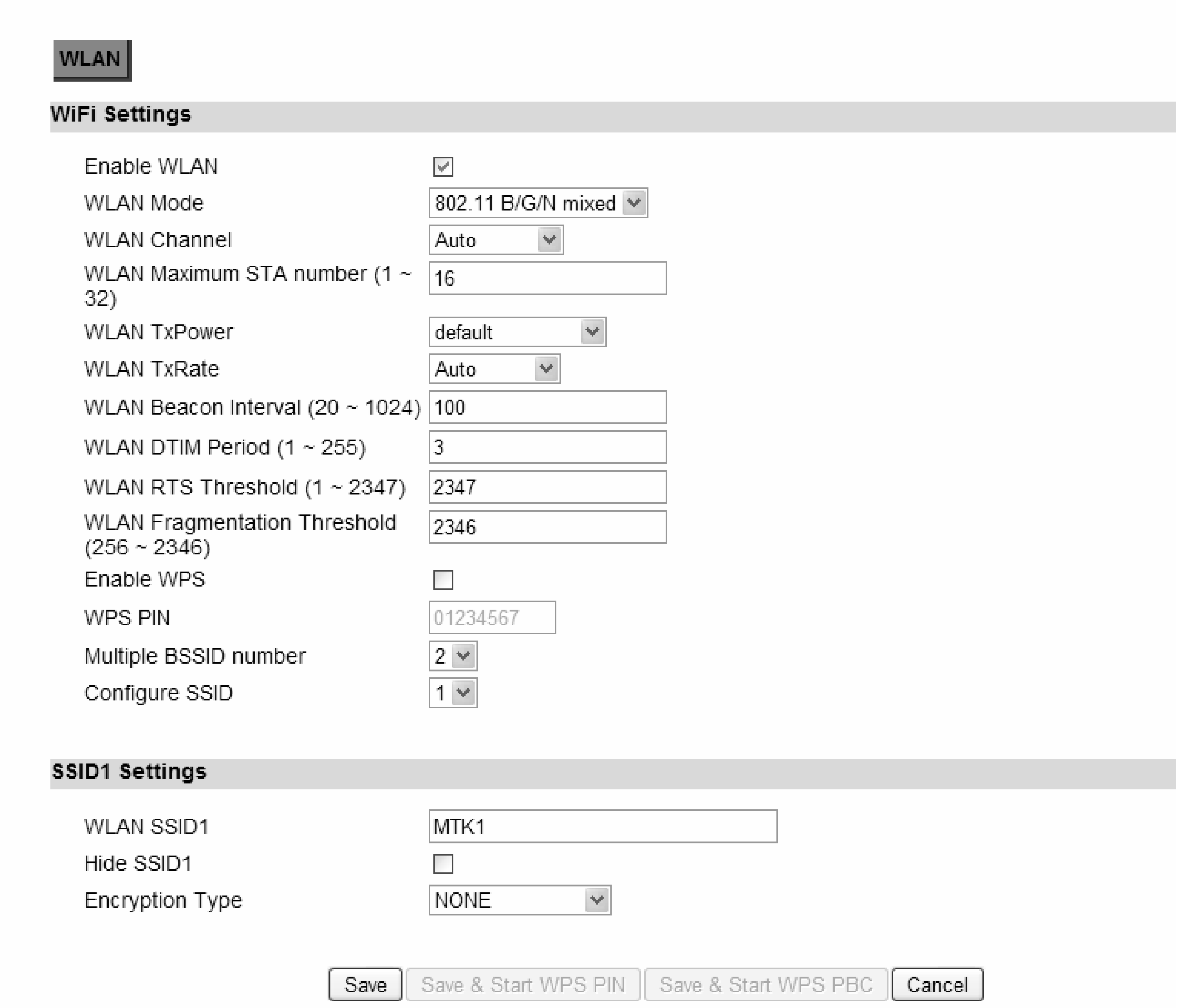
	➢ WPA ➢ WPA2 ➢ Auto (WPA or WPA2)
Cipher Type	Select the Cipher algorithm. ➢ TKIP ➢ AES ➢ TKIP and AES
Pre-shared Key	The pass-phrase used by WPA personal encryption mode. The length is between 8 to 63 characters. This field is disabled when "WPA Enterprise" is selected as the encryption mode.
EAP (802.1X) Settings	If "WPA Enterprise" is selected as the encryption mode, you will see the following settings.
RADIUS Server IP Address	The IP address of the RADIUS server.
RADIUS Server Port	The RADIUS server port number.
RADIUS Server Shared Secret	A case-sensitive password used to validate communications between a RADIUS server and CPE.
Save & Start WPS PIN	Save the configuration and then start the WPS PIN process (need to input WPS PIN field first).
Save & Start WPS PBC	Save the configuration and then start the WPS PBC process.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.

NOTE: When WPS is selected, you will have 3 Save options. If you click "Save" button, it will save the configuration without starting the WPS process. If you select the "Save & Start WPS PIN" or "Save & Start WPS PBC", it will save the configuration and start the WPS process selected at that time.

Frequency(GHZ)	**Channel**
Auto	Auto select the best channel
2.452	Channel 9
2.457	Channel 10
2.462	Channel 11
2.467	Channel 12

2.472	Channel 13

Table 4: WLAN Channel



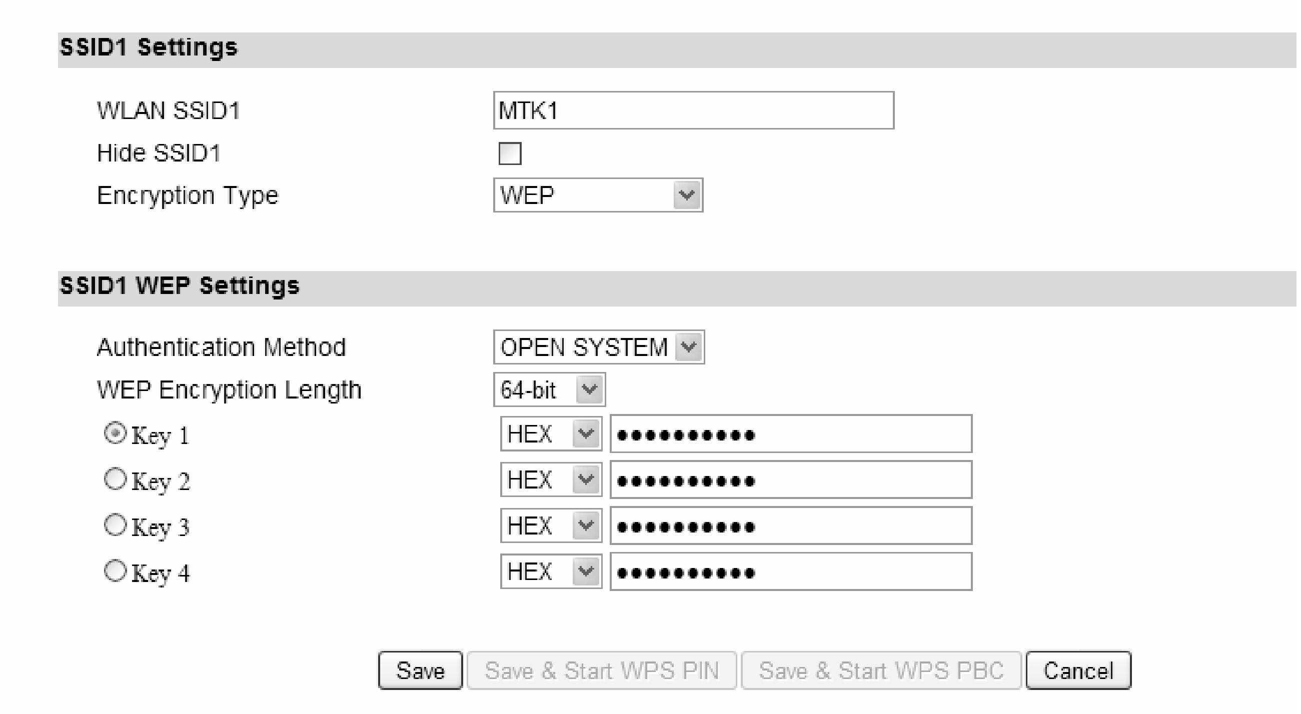
WiFi Settings

Enable WLAN	☑
WLAN Mode	802.11 B/G/N mixed
WLAN Channel	Auto
WLAN Maximum STA number (1 ~ 32)	16
WLAN TxPower	default
WLAN TxRate	Auto
WLAN Beacon Interval (20 ~ 1024)	100
WLAN DTIM Period (1 ~ 255)	3
WLAN RTS Threshold (1 ~ 2347)	2347
WLAN Fragmentation Threshold (256 ~ 2346)	2346
Enable WPS	□
WPS PIN	01234567
Multiple BSSID number	2
Configure SSID	1

SSID1 Settings

WLAN SSID1	MTK1
Hide SSID1	□
Encryption Type	NONE

Figure 74. WiFi>WLAN NONE



SSID1 Settings

WLAN SSID1: MTK1

Hide SSID1: □

Encryption Type: WEP

SSID1 WEP Settings

Authentication Method: OPEN SYSTEM

WEP Encryption Length: 64-bit

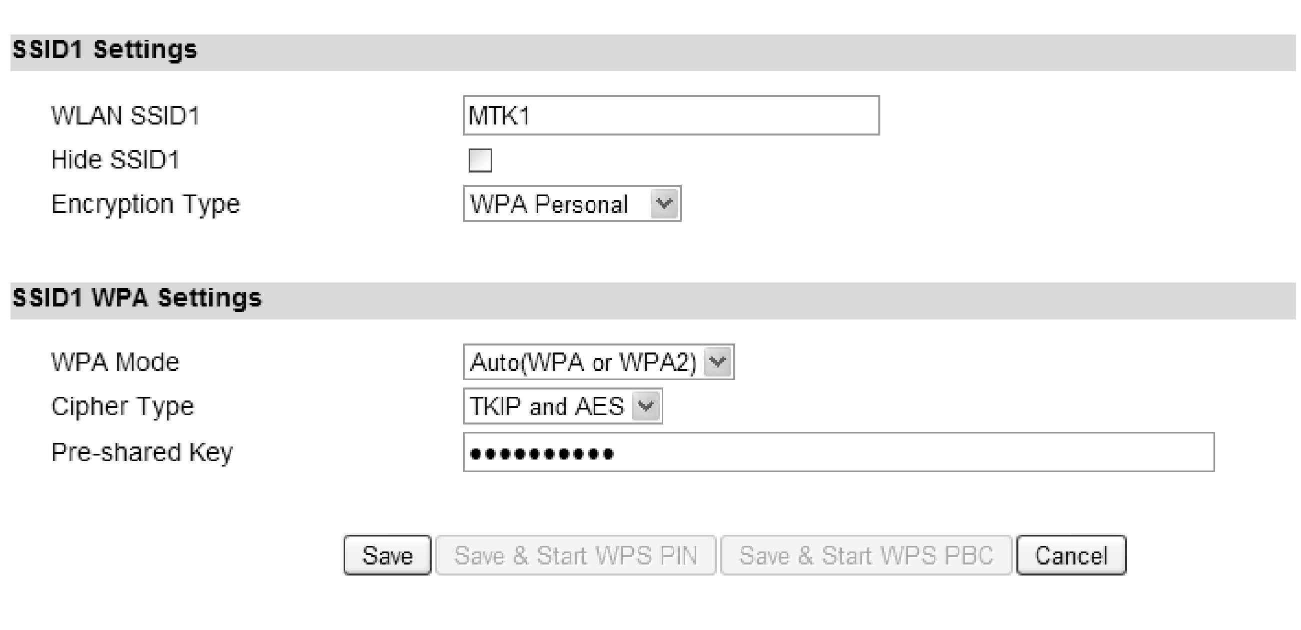
● Key 1: HEX ●●●●●●●●●●

○ Key 2: HEX ●●●●●●●●●●

○ Key 3: HEX ●●●●●●●●●●

○ Key 4: HEX ●●●●●●●●●●

Figure 75. WiFi>WLAN WEP



SSID1 Settings

WLAN SSID1: MTK1

Hide SSID1: □

Encryption Type: WPA Personal

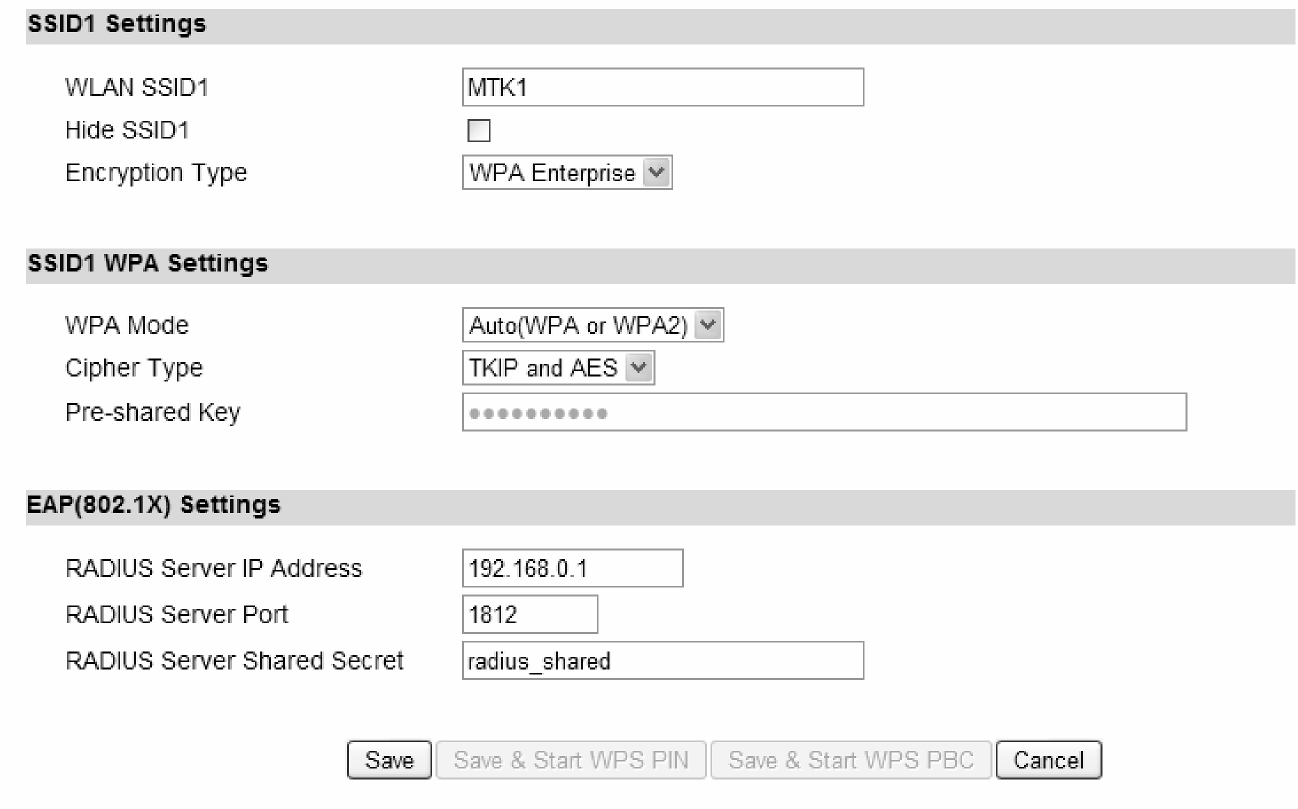
SSID1 WPA Settings

WPA Mode: Auto(WPA or WPA2)

Cipher Type: TKIP and AES

Pre-shared Key: ●●●●●●●●●●

Figure 76. WiFi>WLAN Personal



SSID1 Settings

WLAN SSID1: MTK1

Hide SSID1: □

Encryption Type: WPA Enterprise

SSID1 WPA Settings

WPA Mode: Auto(WPA or WPA2)

Cipher Type: TKIP and AES

Pre-shared Key: ●●●●●●●●●●

EAP(802.1X) Settings

RADIUS Server IP Address: 192.168.0.1

RADIUS Server Port: 1812

RADIUS Server Shared Secret: radius_shared

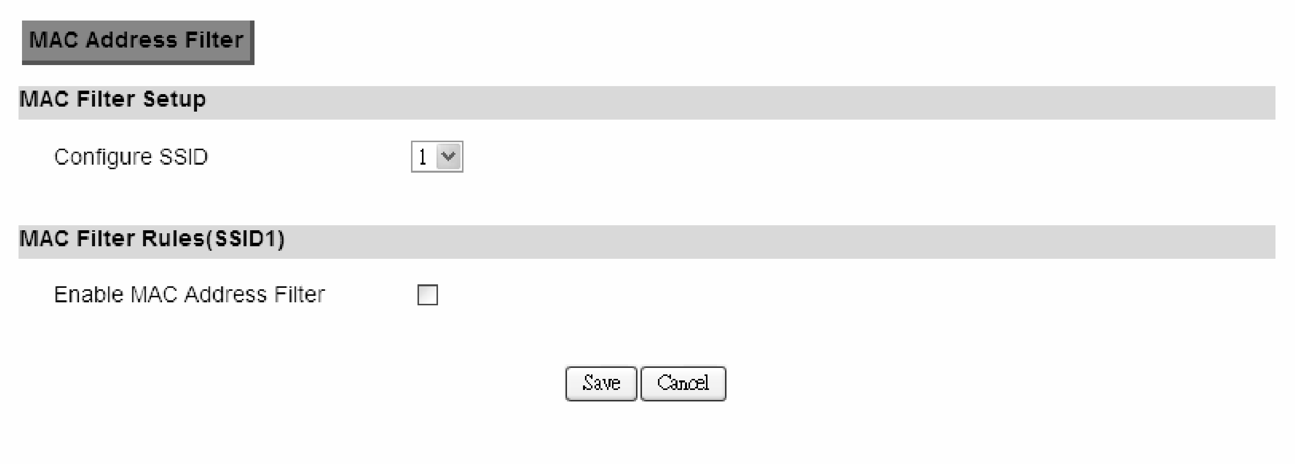
Figure 77. WiFi>WLAN Enterprise

10.2. MAC Address Filter

“WiFi>MAC Address Filter”

Name	Description
MAC Filter Setup	
Enable MAC address Filter	Check the box to enable MAC address filter
Mode	➢ Deny listed stations: Deny WiFi access from the stations listed in MAC Filter Rules. ➢ Allow listed stations: Allow WiFi access from the stations listed in MAC Filter Rules.
MAC Filter Rules	
Add	Click this button to create a MAC filter rule. Enter the MAC address in the following format. 00:00:00:00:00:00 xx:xx:xx:xx:xx:xx
OK	Click this button to finish edition for table entries.

Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



MAC Address Filter

MAC Filter Setup

Configure SSID 1

MAC Filter Rules(SSID1)

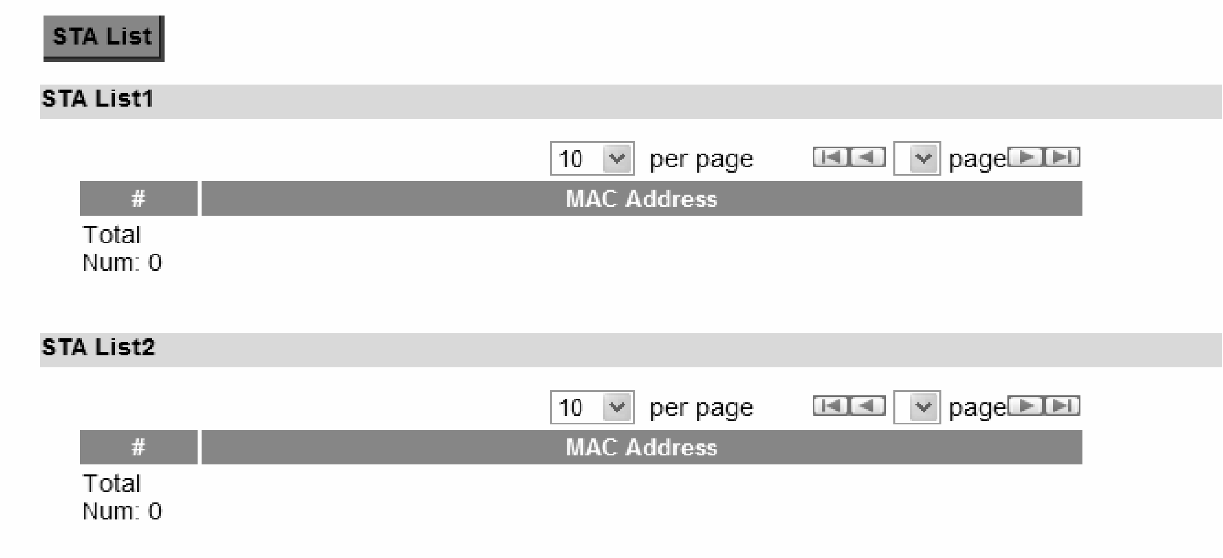
Enable MAC Address Filter □

Figure 78. WiFi>MAC Address Filter

10.3. STA List

"WiFi>STA List"

Name	**Description**
STA List	
	This list observe MAC address of the user who access WLAN.



STA List

STA List1

10 per page page

#	MAC Address

Total Num: 0

STA List2

10 per page page

#	MAC Address

Total Num: 0

Figure 79. WiFi>STA List

11. Administrator

11.1. Remote Control

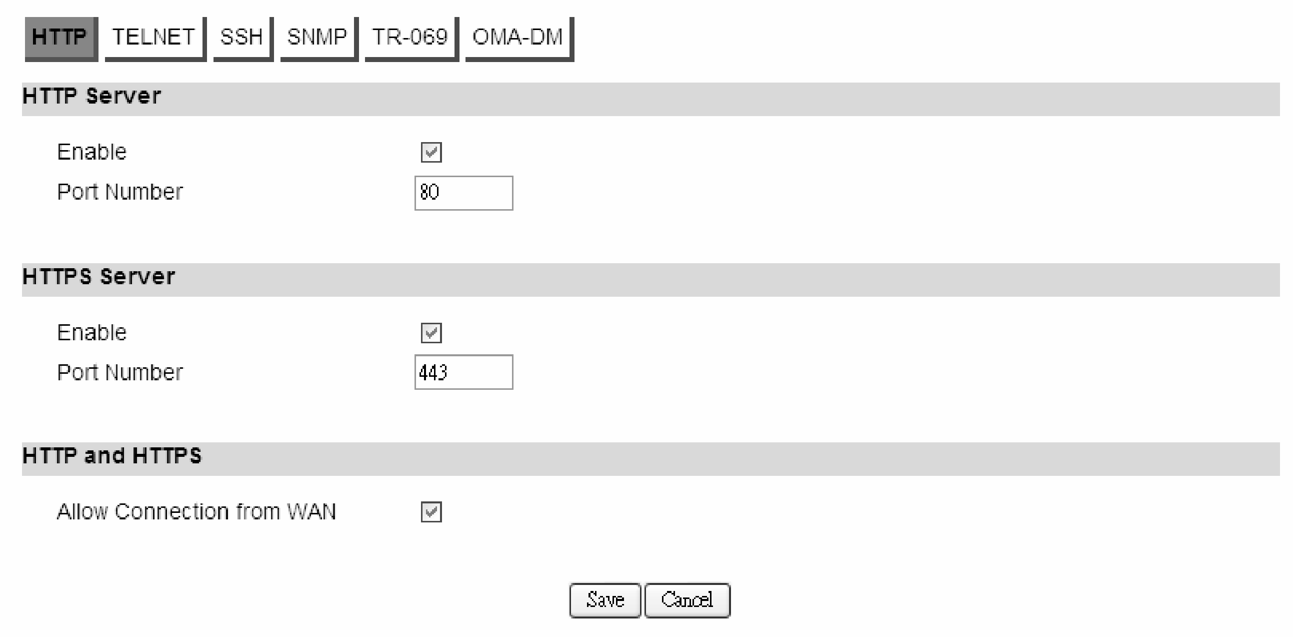
Remote access is the ability to get access to CPE from a remote computer or network. CPE supports six different types of remote access protocols.

- **HTTP** allows you to set the port and configure both HTTP and HTTPS protocols
- **TELNET** typically provides access to a command-line interface on a remote machine
- **SSH** Secure Shell (SSH) is a network protocol used to allow remote connections between two devices using a secure channel. It uses public-key cryptography to authenticate the remote entity. An SSH server, by default, listens on the standard TCP port 22.
- **SNMP** is typically used for network management to monitor network-attached devices for conditions that warrant administrative assistance or to view and retrieve network statistical information.
- **TR-069** Using TR-069 the terminals can communicate with the Auto Configuration Servers (ACS) and establish the configuration automatically.
- **OMA-DM** Using OMA-DM the terminals can communicate with the OMA-DM Server and establish the configuration automatically.

11.1.1. HTTP

“Administration>Remote Control>HTTP”

Name	Description
HTTP Server	
Enable	Check the box to allow http connections.
Port Number	Enter the http port number (default is port 80).
HTTPS Server	
Enable	Check the box to allow https connections.
Port Number	Enter the https port number (default is port 443).
HTTP and HTTPS	
Allow Connection from WAN	Check the check-box to allow connections from WAN.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



HTTP Server

Enable ☑

Port Number 80

HTTPS Server

Enable ☑

Port Number 443

HTTP and HTTPS

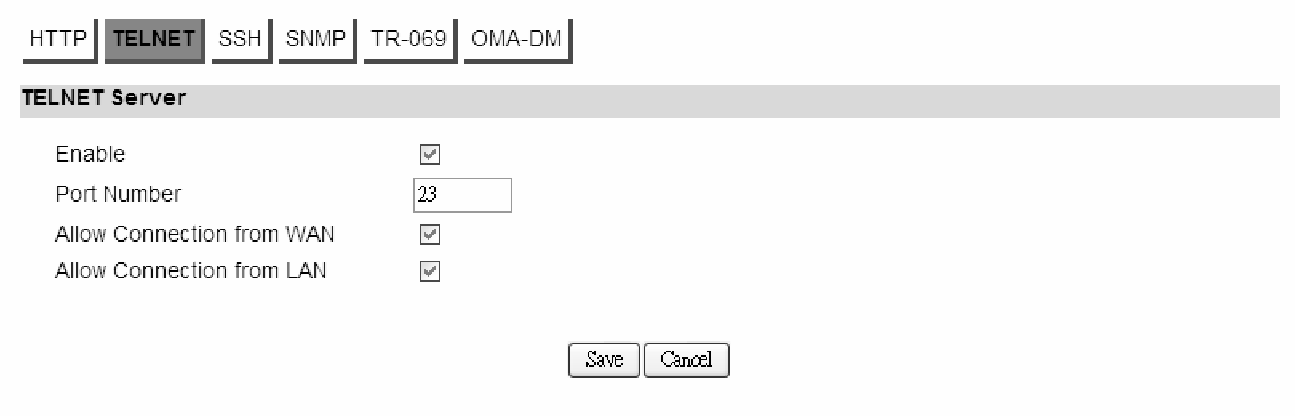
Allow Connection from WAN ☑

Figure 80. Administration>Remote Control>HTTP

11.1.2. TELNET

“Administration>Remote Control>TELNET”

Name	Description
TELNET Server	
Enable	Check the box to allow Telnet connections.
Port Number	Enter the Telnet port number (default is port 23).
Allow Connection from WAN	Check the check-box to allow connections from WAN.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



TELNET Server

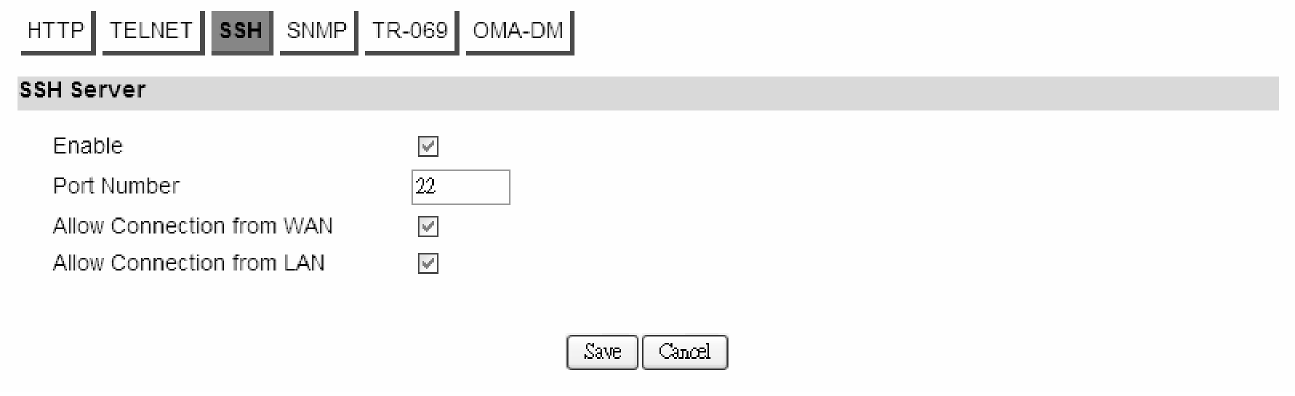
Enable	☑
Port Number	23
Allow Connection from WAN	☑
Allow Connection from LAN	☑

Figure 81. Administration>Remote Control>TELNET

11.1.3. SSH

“Administration>Remote Control>SSH”

Name	**Description**
SSH Server	
Enable	Check the box to allow SSH connections.
Port Number	Enter the SSH port number (default is port 22).
Allow Connection from WAN	Check the check-box to allow connections from WAN.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



SSH Server

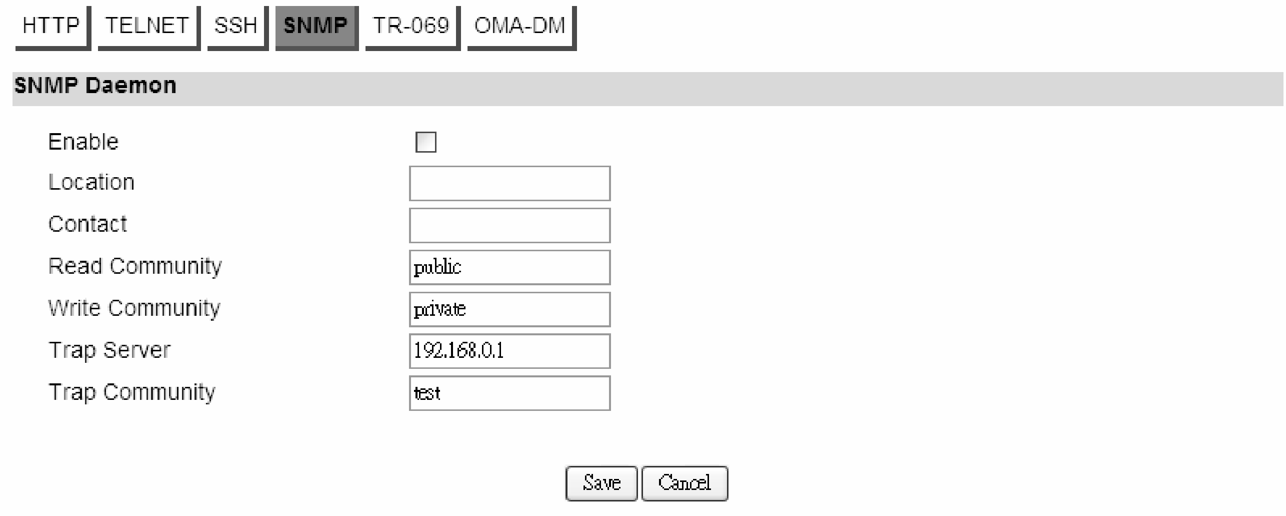
Enable	☑
Port Number	22
Allow Connection from WAN	☑
Allow Connection from LAN	☑

Figure 82. Administration>Remote Control>SSH

11.1.4. SNMP

“Administration>Remote Control>SNMP”

Name	Description
SNMP Daemon	
Enable	Checking the enable button will allow SNMP applications to query and set some of the SNMP variables.
Location	Enter the Location SNMP string variable.
Contact	Enter the Contact SNMP string variable.
Read Community	Enter the Read community string to query SNMP data.
Write Community	Enter the Write community string to set SNMP variables.
Trap server	Enter the IP Address of trap server where you want trap notifications to be sent to.
Trap Community	Enter the Trap community to act as a password for sending trap notifications to the target SNMP manager.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



SNMP Daemon

Enable	□
Location	
Contact	
Read Community	public
Write Community	private
Trap Server	192.168.0.1
Trap Community	test

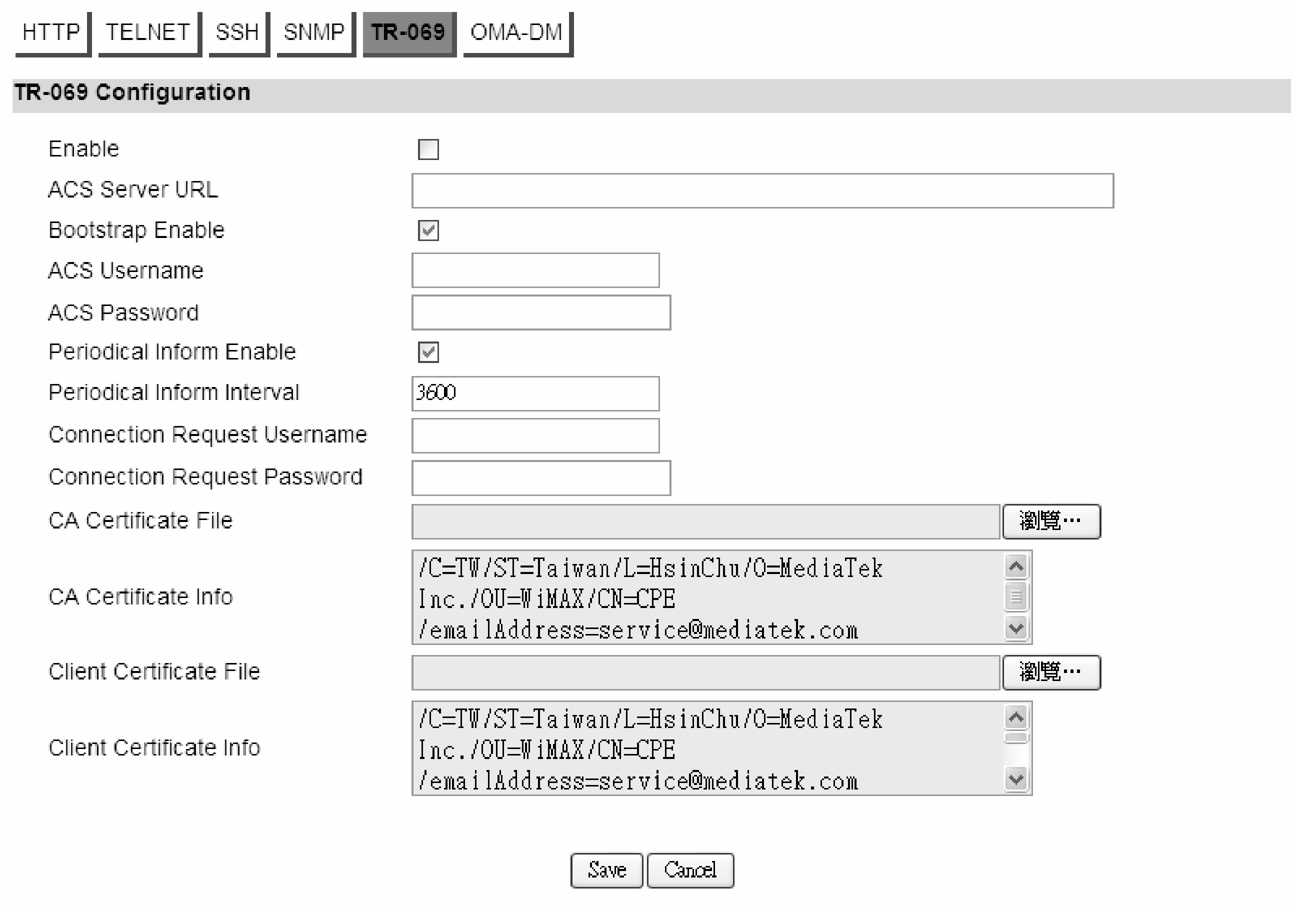
Figure 83. Administration>Remote Control>SNMP

11.1.5. TR-069

Using TR-069 the terminals can communicate with the Auto Configuration Servers (ACS) and establish the configuration automatically. It's the current standard for activation of terminals in the DSL broadband market.

"Administration>Remote Control>TR-069"

Name	**Description**
TR-069 Configuration	
Enable	To enable or disable the TR-069 on the CPE.
ACS Server URL	The ACS URL for the CPE to connect to.
ACS Username	The username for the CPE when connected to ACS.
ACS Password	The password for CPE when connected to ACS.
Periodical inform Enable	To enable or disable the periodical inform to ACS for the CPE.
Periodical inform Interval	The interval between two periodical inform.
Connection Request Username	Enter the username for the ACS to perform connection request to the CPE.
Connection Request Password	Enter the password for the ACS to perform connection request to the CPE.
CA Certificate File	The CA certificate file is used to identify the certificate of ACS when CPE communicated ACS with HTTPS URL.
CA Certificate Info	Displays the subject field of the CA Certificate.
CLIENT Certificate File	The CLIENT certificate file is used when CPE communicates with HTTPS URL.
CLIENT Certificate Into	Displays the subject field of the CLIENT Certificate.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



TR-069 Configuration

Enable	□
ACS Server URL	
Bootstrap Enable	☑
ACS Username	
ACS Password	
Periodical Inform Enable	☑
Periodical Inform Interval	3600
Connection Request Username	
Connection Request Password	
CA Certificate File	
CA Certificate Info	/C=TW/ST=Taiwan/L=HsinChu/O=MediaTek Inc./OU=WiMAX/CN=CPE /emailAddress=service@mediatek.com
Client Certificate File	
Client Certificate Info	/C=TW/ST=Taiwan/L=HsinChu/O=MediaTek Inc./OU=WiMAX/CN=CPE /emailAddress=service@mediatek.com

Figure 84. Administration>Remote Control>TR-069

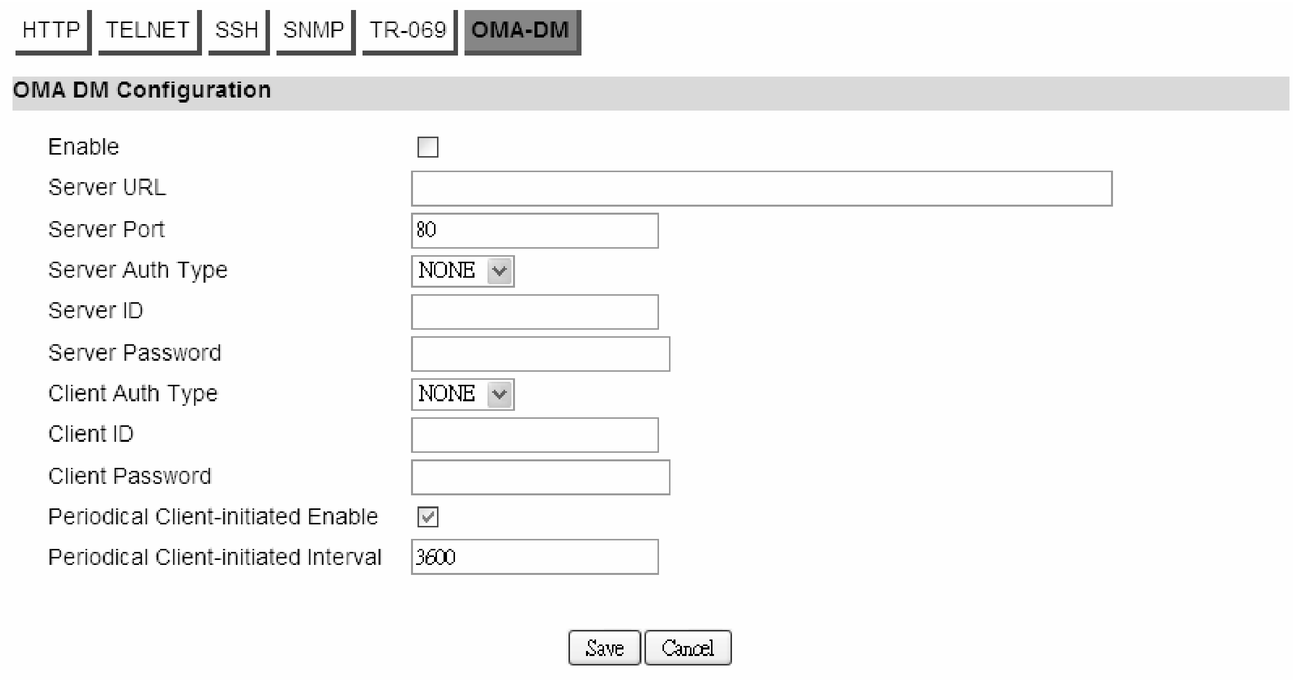
11.1.6. OMA-DM

Using OMA-DM the terminals can communicate with the OMA-DM Server and establish the configuration automatically. It's the current standard for activation of terminals in OMA (Open Mobile Alliance).

"Administration>Remote Control>OMA-DM"

Name	**Description**
OMA DM Configuration	
Enable	To enable or disable the OMA-DM activity of the CPE.
Server URL	The DM Server URL for the CPE to connect to.
Server Port	The DM Server Port for the CPE to connect to.
Server Auth Type	The DM Server authentication type.
Server ID	The server ID for the CPE when connected to the DM

	Server.
Server Password	The server password for the CPE when connected to the DM Server.
Client Auth Type	The DM Client authentication type.
Client ID	The client ID for the CPE when connected to the DM Server.
Client Password	The client password for the CPE when connected to the DM Server.
Periodical Client-initiated Enable	To enable or disable the periodical client-initialed session to DM Server for the CPE.
Periodical Client-initiated Interval	The interval between two periodical client-initiated sessions.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



OMA DM Configuration

Enable	□
Server URL	
Server Port	80
Server Auth Type	NONE
Server ID	
Server Password	
Client Auth Type	NONE
Client ID	
Client Password	
Periodical Client-initiated Enable	☑
Periodical Client-initiated Interval	3600

Figure 85. Administration>Remote Control>OMA-DM

11.2. Password

NOTE: The default usernames and passwords are admin/admin and guest/guest.

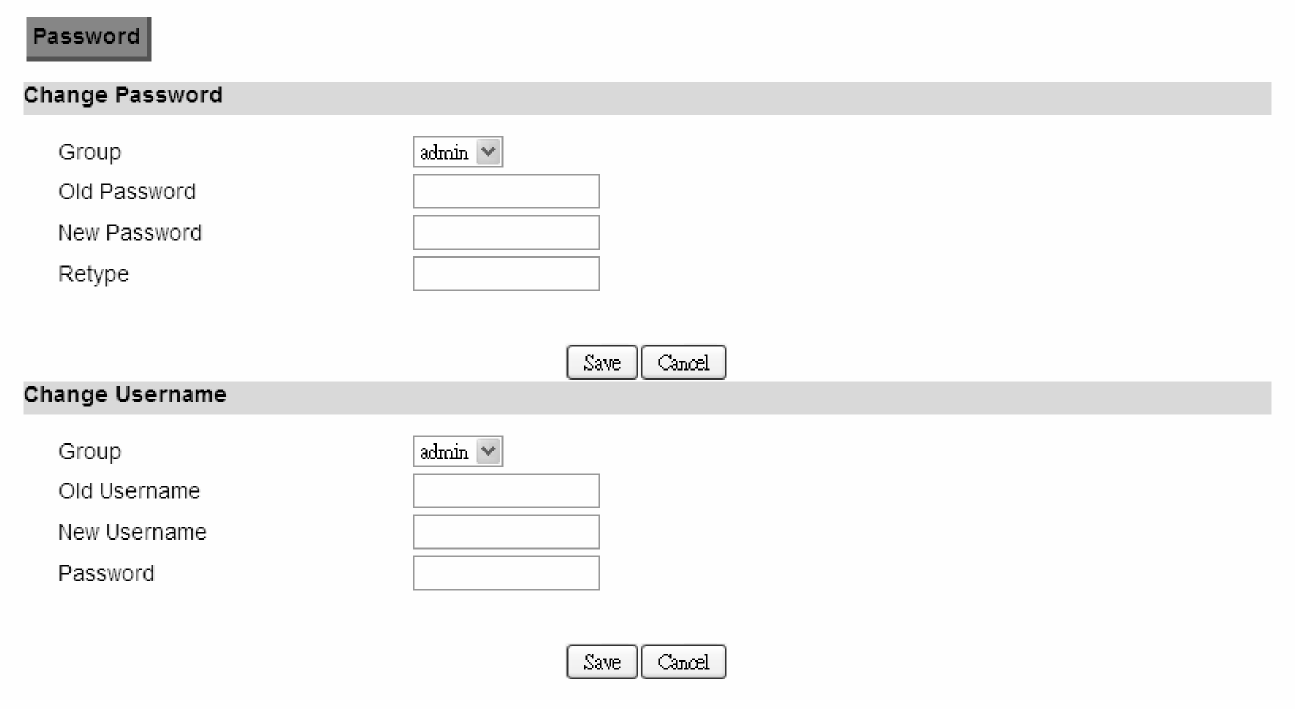
The user with administrative privileges (belonging to the “admin” group) has access to all the features in the software. A user with “guest” privileges (belonging to the “guest” group) only has a subset of the features available to them.

“Administration>Password>Password”

NOTE: There can only be one username in each of the groups (one to one relationship).

Name	**Description**
Change Password	
Group	Select which group the user belongs to that you would like to change the password for. ➢ **admin,** if the user is part of the admin group, they have full access to all the feature. ➢ **guest,** if the user is part of the guest group, they have limited access to the features.
Old Password	Enter the old password.
New Password	Enter the new password.
Retype	Retype the new password.
Save	Commit the changes made and save to CPE device, it will only commit the change made to the password.
Cancel	Reset fields to the last saved values.
Change Username	
Group	Select which group the user belongs to that you would like to change the username for. ➢ **admin,** if the user is part of the admin group, they have full access to all the feature. ➢ **guest,** if the user is part of the guest group, they have limited access to the features.
Old Username	Enter the username you want to change
New Username	Enter the new username
Password	Enter the original password, the password will not change. If you enter an incorrect or different password, the change will not be committed.

Save	Commit the changes made and save to the CPE device, it will only commit the change made to the username.
Cancel	Reset fields to the last saved values.



Password

Change Password

Group: admin

Old Password

New Password

Retype

Change Username

Group: admin

Old Username

New Username

Password

Figure 86. Administration>Password

12. System

12.1. Date and Time

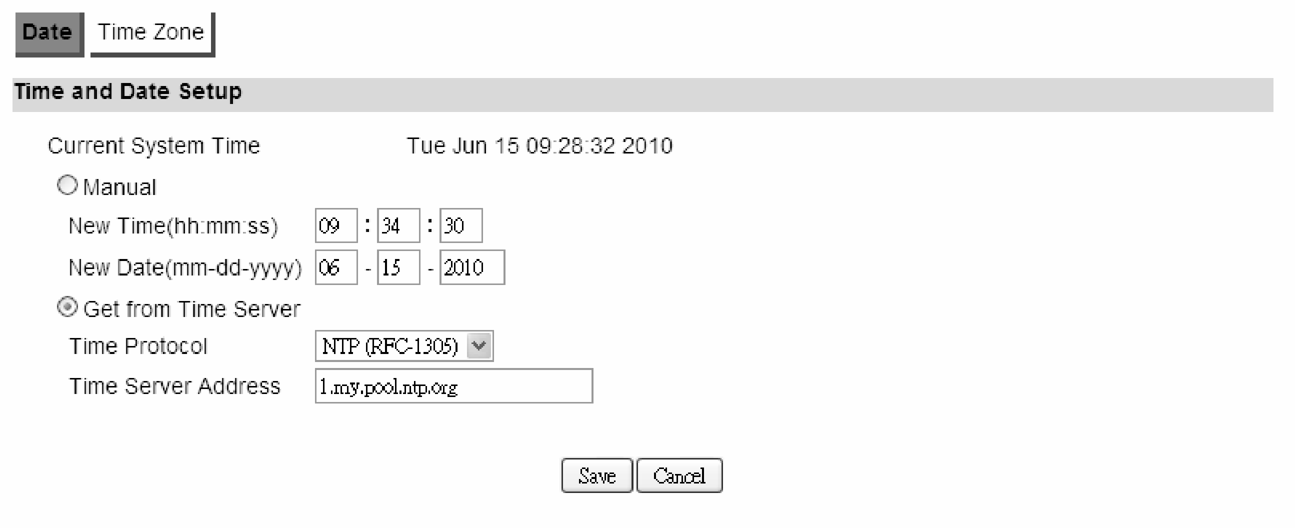
You can configure the date and time on the device. The user can manually configure the system time, or choose to get the date and time from a time server. The "Save" button will commit the configuration, and the "Cancel" button will clear the fields. The "Time Zone" tab will allow you to set the time zone and set the starting and finish time for daylight saving period. You can also enable or disable "Daylight Savings Time".

NOTE: If you don't configure the time on the CPE it will use the default system starting time. The default starting time is set to 1970/1/1 00:00:00.

12.1.1. Date

"System>Date/Time>Date"

Name	**Description**
Time and Date Setup	
Manual	If you select the Manual option, then you are to enter the time and date manually.
New Time	New time manually entered.
New Date	New date manually entered.
Get From Time Server	If you select this option it will get the local time from a time server automatically.
Time Protocol	Select the Time protocol.
Time Server Address	Enter the address of the time server.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Time and Date Setup

Current System Time Tue Jun 15 09:28:32 2010

○ Manual

New Time(hh:mm:ss) 09 : 34 : 30

New Date(mm-dd-yyyy) 06 - 15 - 2010

● Get from Time Server

Time Protocol NTP (RFC-1305)

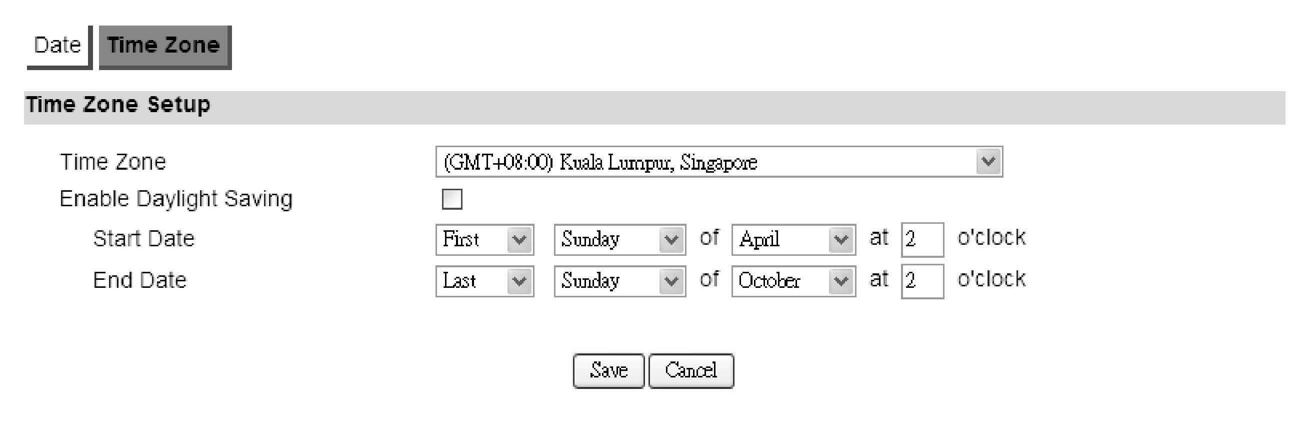
Time Server Address 1.my.pool.ntp.org

Figure 87. System>Date/Time>Date

12.1.2. Time Zone

“System>Date/Time>Time Zone”

Name	**Description**
Time Zone Setup	
Time Zone	Enter the time zone of for your location.
Enable Daylight Savings	If you want to enable Daylight Savings Time, check the box.
Start Date	Enter the beginning date for Daylight Savings time.
End Date	Enter the end date for Daylight Savings time.
Save	Commit the changes made and save to CPE device.
Cancel	Reset fields to the last saved values.



Time Zone Setup

Time Zone: (GMT+08:00) Kuala Lumpur, Singapore

Enable Daylight Saving: □

Start Date: First, Sunday of April at 2 o'clock

End Date: Last, Sunday of October at 2 o'clock

Figure 88. System>Date/Time>Time Zone

12.2. Upgrade Firmware

The “Upgrade” window allows you to upgrade the firmware on you device. Users can choose to upgrade the firmware by entering the file path or entering the URL of the upgrade file.

NOTE: After pressing the “Upgrade” button, it will automatically reboot the CPE and upgrade the firmware with the specified file. You will be prompted to login to the CPE after the upgrade is complete.

12.2.1. Upgrade File

“System>Upgrade Firmware>Upgrade File”

Name	Description
Upgrade Firmware	
Browse	Enter the full path of the file you want to upgrade. The “browse” button will help you find on your server.
Upgrade	It will start upgrading the file.
Status	The status bar will display which segment it’s processing and what percentage of the upgrade has been completed.

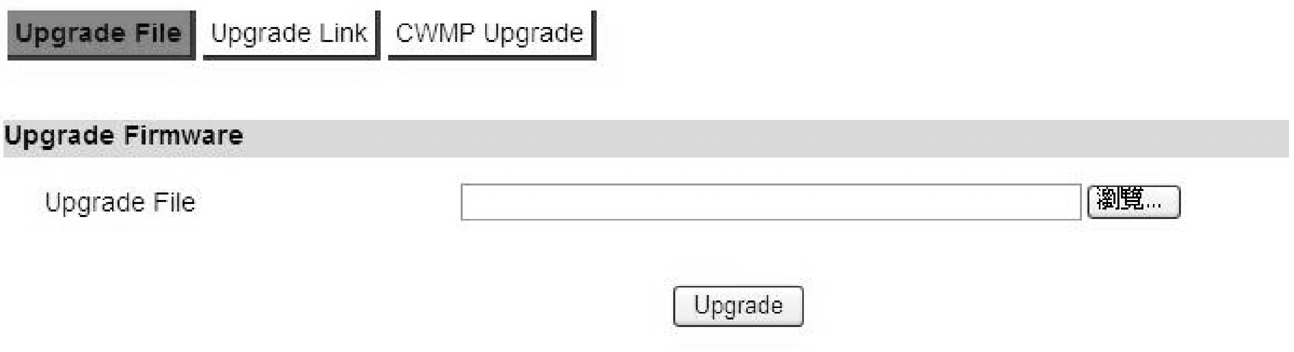


Figure 89. System>Upgrade Firmware>Upgrade File

12.2.2. Upgrade Link

“System>Upgrade Firmware>Upgrade Link”

Name	Description
Upgrade Firmware	
Upgrade Link	Enter the complete URL path of the file you want to upgrade.
Upgrade	It will start upgrading the file.
Status	The status window will display which segment it’s processing and what percentage of the upgrade has been completed.

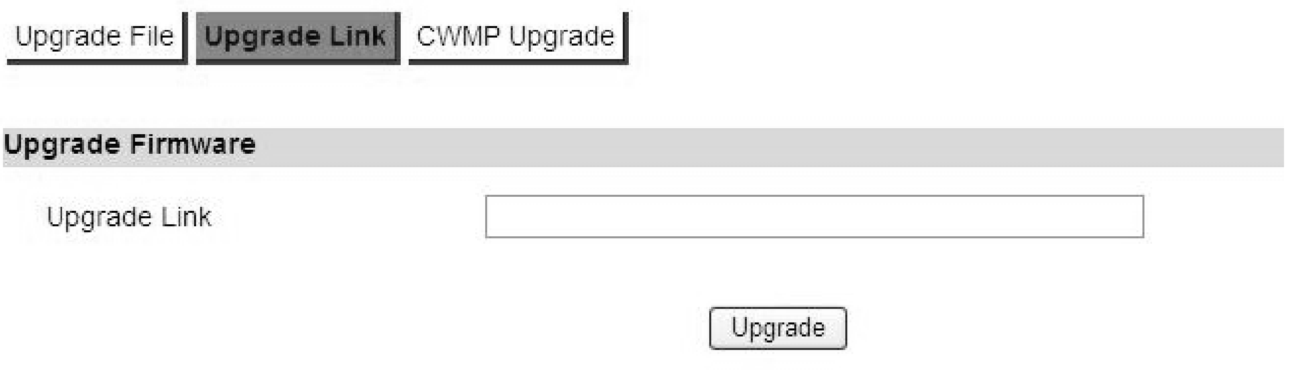


Figure 90. System>Upgrade Firmware>Upgrade Link

12.2.3.

“System>Upgrade Firmware>CWMP Upgrade”

Press “Upgrade” button to upgrade firmware.

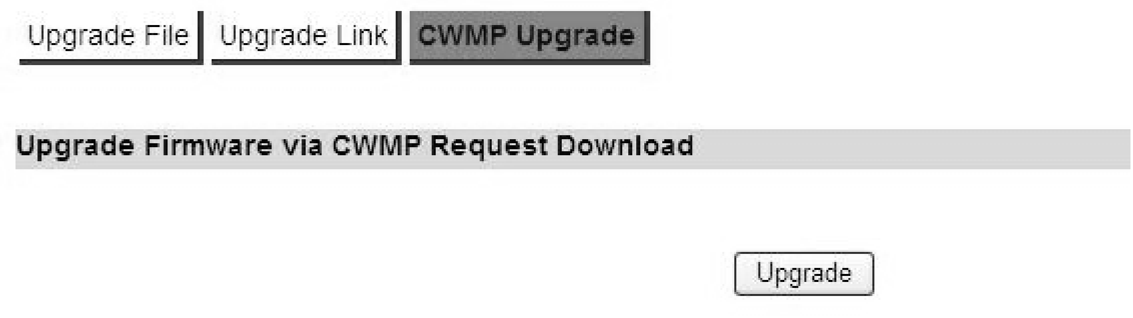
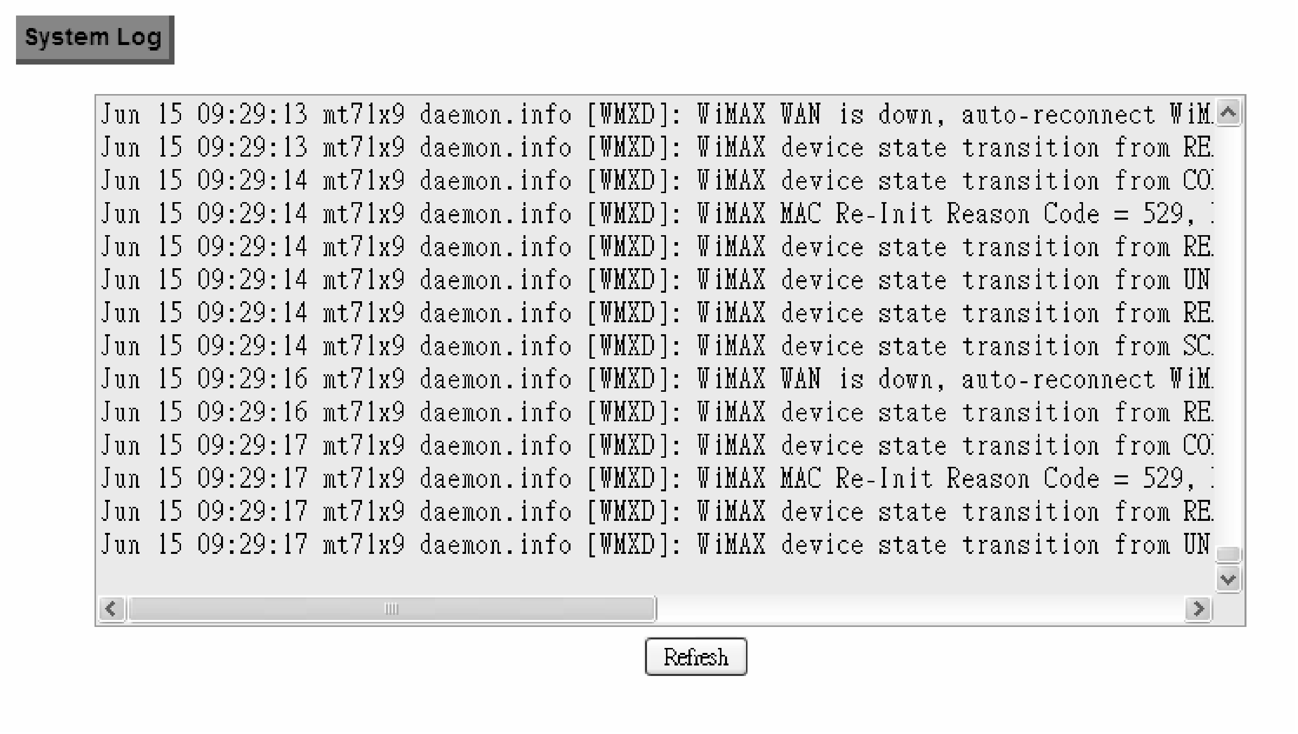


Figure 91. System>Upgrade Firmware>CWMP Upgrade

12.3. Log

The “System>Log” will display system log output. The “Refresh” button will clear the log window and display the most current system log information.



```
Jun 15 09:29:13 mt71x9 daemon.info [WMXD]: WiMAX WAN is down, auto-reconnect WiM
Jun 15 09:29:13 mt71x9 daemon.info [WMXD]: WiMAX device state transition from RE
Jun 15 09:29:14 mt71x9 daemon.info [WMXD]: WiMAX device state transition from CO
Jun 15 09:29:14 mt71x9 daemon.info [WMXD]: WiMAX MAC Re-Init Reason Code = 529,
Jun 15 09:29:14 mt71x9 daemon.info [WMXD]: WiMAX device state transition from RE
Jun 15 09:29:14 mt71x9 daemon.info [WMXD]: WiMAX device state transition from UN
Jun 15 09:29:14 mt71x9 daemon.info [WMXD]: WiMAX device state transition from RE
Jun 15 09:29:14 mt71x9 daemon.info [WMXD]: WiMAX device state transition from SC
Jun 15 09:29:16 mt71x9 daemon.info [WMXD]: WiMAX WAN is down, auto-reconnect WiM
Jun 15 09:29:16 mt71x9 daemon.info [WMXD]: WiMAX device state transition from RE
Jun 15 09:29:17 mt71x9 daemon.info [WMXD]: WiMAX device state transition from CO
Jun 15 09:29:17 mt71x9 daemon.info [WMXD]: WiMAX MAC Re-Init Reason Code = 529,
Jun 15 09:29:17 mt71x9 daemon.info [WMXD]: WiMAX device state transition from RE
Jun 15 09:29:17 mt71x9 daemon.info [WMXD]: WiMAX device state transition from UN
```

Figure 92. System>Log

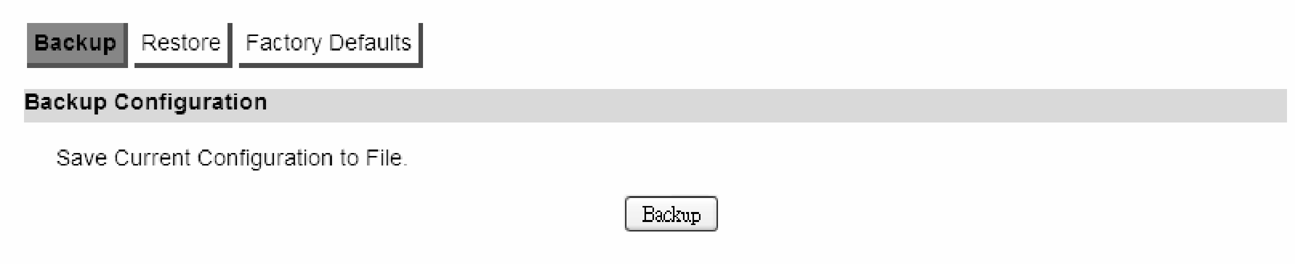
12.4. Backup/Restore

The Backup/Restore tab will allow you to save and restore your configuration on the CPE. You can also reset the CPE to factory defaults from the “Factory Defaults” tab.

12.4.1. Configuration Backup

“System>Backup/Restore>Backup”

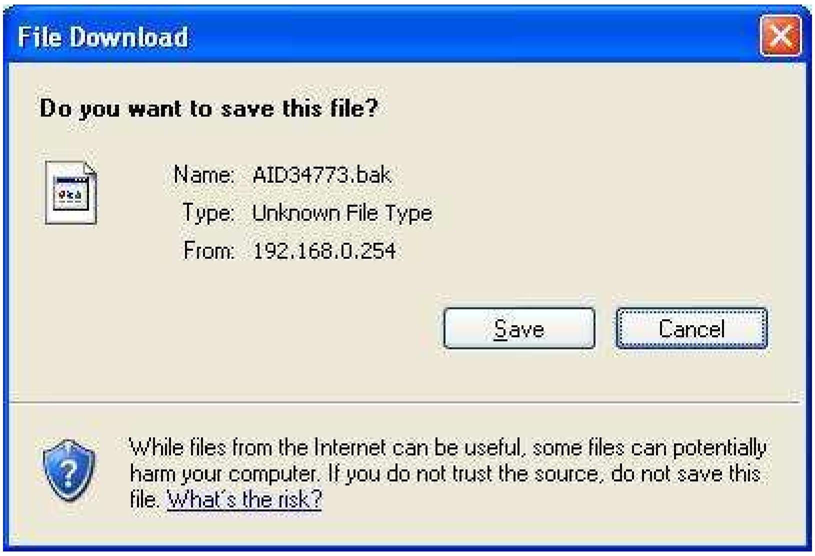
Name	**Description**
Backup Configuration	
Backup	Click the “Backup” button to save the current configuration on the CPE. After you click the “Backup” button “File Download” window will pop-up and prompt you to save the file. In the “Save As” window, enter the name and location, where you wish to download the file to.



Backup Configuration

Save Current Configuration to File.

Figure 93. System>Backup/Restore>Backup



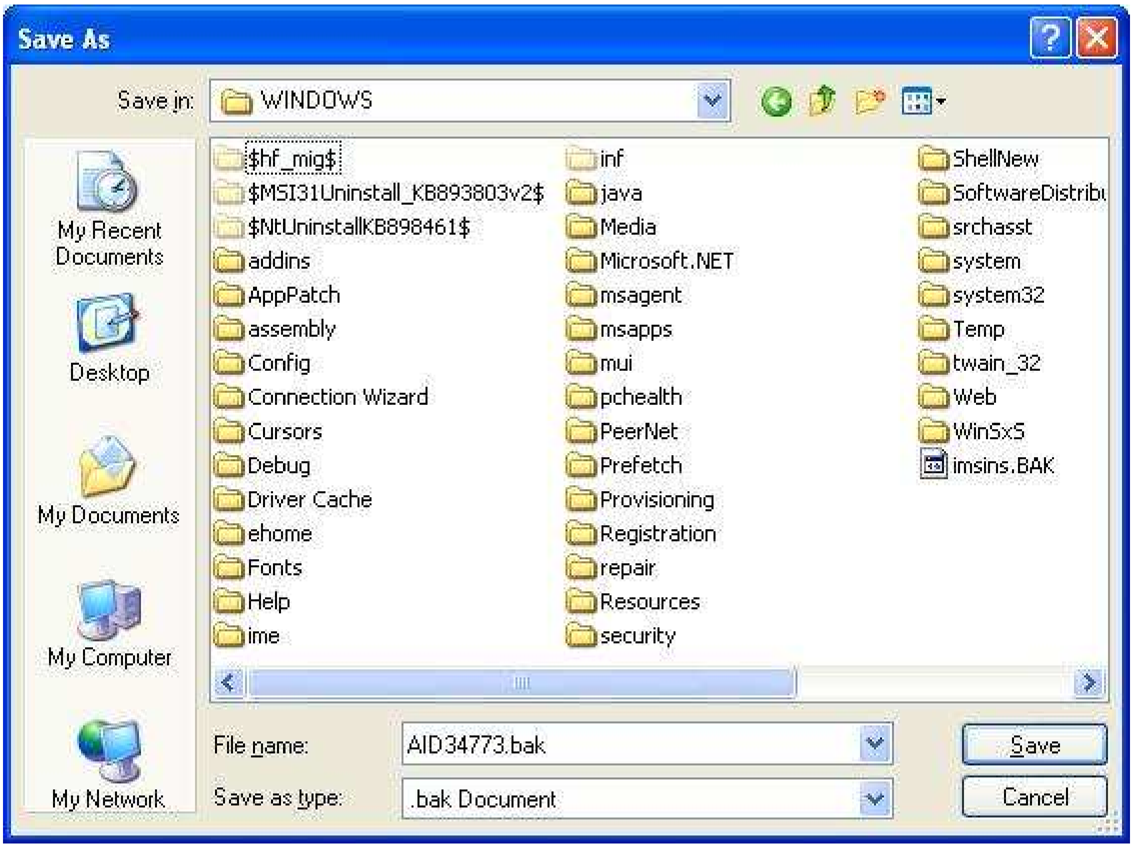
File Download

Do you want to save this file?

Name: AID34773.bak
Type: Unknown File Type
From: 192.168.0.254

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not save this file. What's the risk?

Figure 94. File Download



Save As

Save in: WINDOWS

File name: AID34773.bak

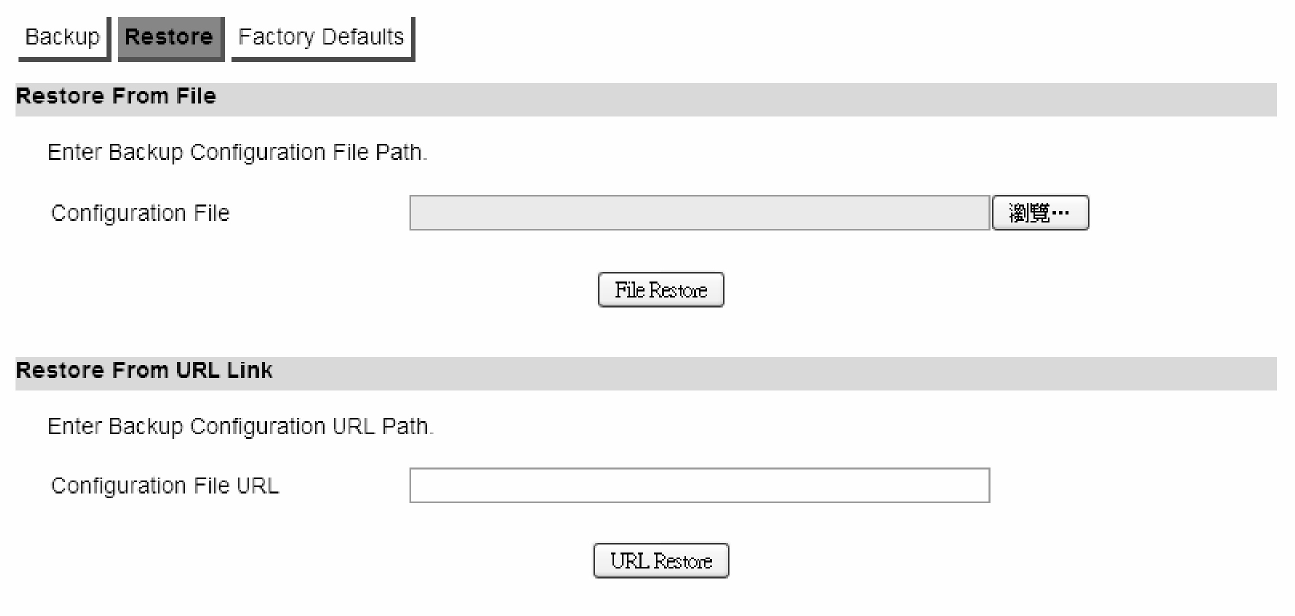
Save as type: .bak Document

Figure 95. Save File As

12.4.2. Configuration Restore

"System>Backup/Restore>Restore"

Name	**Description**
Restore From File	
File Restore	Enter the path of the configuration file you wish to restore. Click on the "Browse" button to help you navigate through directories and search for the file. After you enter the complete file path, click the "File Restore" button, It will begin restoring the configuration from the file specified.
Restore From URL Link	
URL Restore	Enter the configuration URL path you wish to restore from. After you enter the complete URL path, click the "URL Restore" button. It will begin restoring the configuration from the URL location you specified.



Enter Backup Configuration File Path.

Configuration File

Enter Backup Configuration URL Path.

Configuration File URL

Figure 96. System>Backup/Restore>Restore

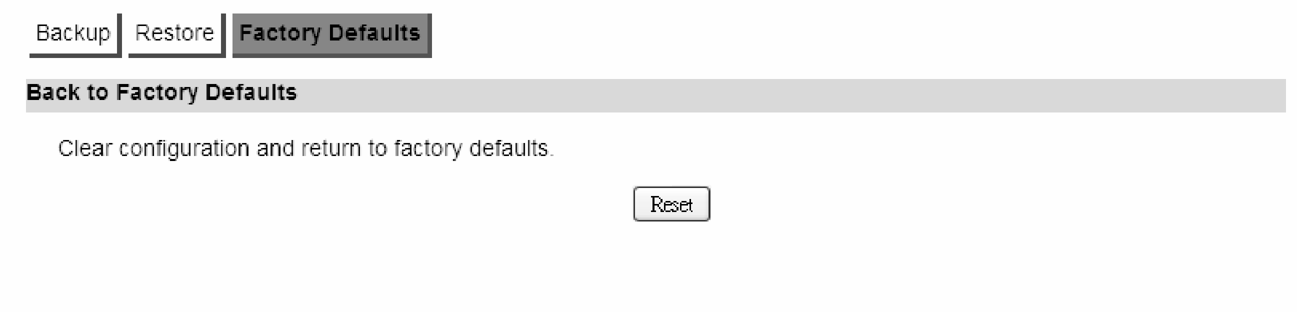
12.4.3. Factory Defaults

“System>Backup/Restore>Factory Defaults”

Factory default will set all the configurations back to factory defaults. Any configurations that you have made will be changed back to the factory default settings. After selecting “Reset” button, you will be prompted with a window to confirm or cancel the action.

WARNING

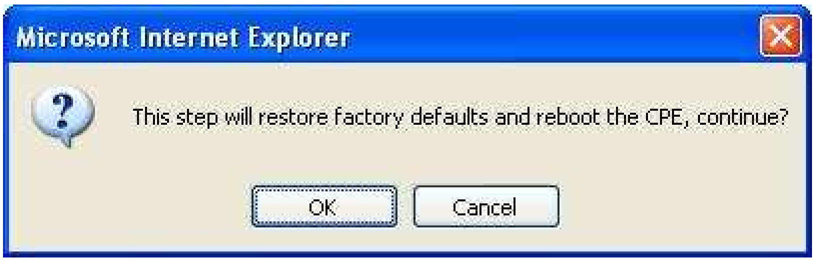
Restore factory defaults will clear any IP addresses and setting you may have configured on the CPE.



Back to Factory Defaults

Clear configuration and return to factory defaults.

Figure 97. System>Backup/Restore>Factory Defaults



This step will restore factory defaults and reboot the CPE, continue?

Figure 98. Restore to Factory Default Warning