C774 User Guide

4G LTE Broadband Wireless 11n

CPE Router

Franklin Wireless C774 User Guide_EN

www.franklinwireless.com

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Contents

Chapter 1 Overview

Chapter 2 Getting Started

Chapter 3 Browser Interface and Settings for Wi-Fi and LAN service

Chapter 4 Interface and Settings for Voice Call Service

Chapter 5 Troubleshooting

Chapter 6 Regulatory Statements

Chapter 7 Glossary

Chapter 1

Overview

General Features

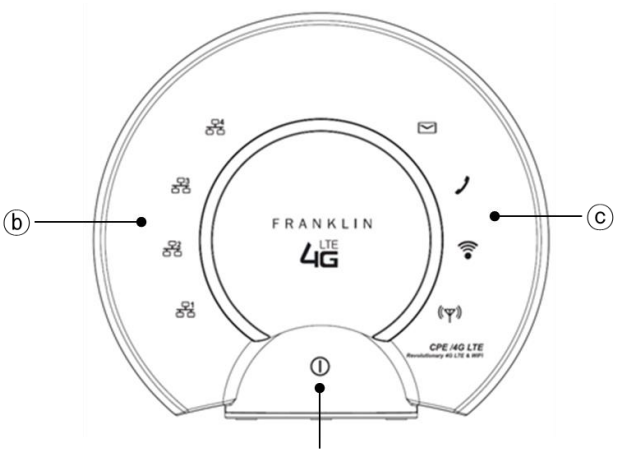
- 4G LTE High-Speed Wireless Data
- LAN (RJ-45) and Wi-Fi Connectivity
- Home Phone Voice Connectivity (RJ-11) – PLEASE NOTE THAT THIS FEATURE DESCRIBED THROUGHOUT THIS USER GUIDE IS NOT AVAILABLE ON CERTAIN VERSIONS OF THIS PRODUCT
- Manage Wired and Wireless Network Activity
- Easy-to-use web-based interface that allows you to manage, monitor, and customize your LAN, Wi-Fi and 4G LTE connection.
- Advanced Antenna Design
- External Antenna Port for Data services.

What's in the box?

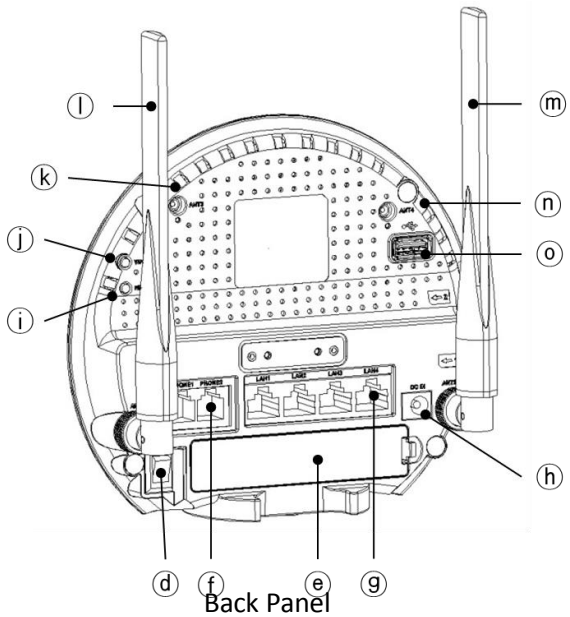
The following items are included:

- CPE Router
- 1050mAh Standard Lithium Ion Battery
- A/C Power Adapter
- Quick Start Guide
- RJ-45 Ethernet LAN Cable
- RJ-11 POTS Telephone Line Cable (if applicable)

Components



Front Panel



Back Panel

ⓐ Power LED

ⓑ LAN LED

ⓒ Voice Call and Voice Mail (if applicable) and Wi-Fi & LTE LED

ⓓ Power On/Off Button

ⓔ Battery Cover

ⓕ RJ-11 POTS Telephone Line Ports (1-2)

ⓖ RJ-45 Ethernet LAN Ports (1-4)

ⓗ A/C Power Connector

ⓘ Reset Button

ⓙ WPS Button

ⓚ N/A

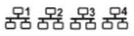
ⓛ LTE Secondary Antenna

ⓜ LTE Primary Antenna

ⓝ N/A

ⓞ USB Port

Service Status Indicator (LED) Description

No	LED Indicator			Description	Remark
	LED	Color	Solid/Blinking		
1	Power 	No Light	-	Device is powered off	
			Solid	Low battery(battery bar level = 1)	Battery is critically low. Please connect to a power source.
			Blinking	External power removed	Battery power will be consumed; please connect to ower source.
			Solid	Low battery(battery bar level = 2)	
			Solid	Battery bar level = 3+ bars	Indicator is green when fully charged.
2	LTE 	No Light	-	Device is powered off	
			Solid	No service or Inactive	
			Solid	Weak Signal	LTE service is available
		Green 	Solid	Good Signal	
3	Wi-Fi 	No light	-	Radio off	
			Blinking	In WPS operation	Used for Wi-Fi pairing.
			Solid	Radio on	
4	LAN[1..4] 	No light	-	No connected LAN users	
			Solid	Connected User	LEDs indicate whether users 1-4 are active.
5	Voice Mail (if applicable) 	No light	-	No voice mail	Where supported
			Solid	Voice mail is available	Where supported
6	Voice Call (if applicable) 	No light	-	Device is powered off	
			Solid	No service or Inactive	
			Solid	Weak Signal	Voice service is available
			Blinking	Conversation in progress	
			Solid	Good Signal	
			Blinking	Conversational progress	

Network Access

- **4G Mobile Broadband with LTE***

  - Download speeds of up to 100 Mbps

  - Upload speeds of up to 50 Mbps

- **3G Mobile Broadband with EVDO Rev.A***

  - Download speeds of up to 3.1 Mbps.

  - Upload speeds of up to 1.8 Mbps.

- **2G Voice Call service with 1xRTT (if applicable) ***

  -Incoming and Outgoing Voice Call Service

- **Wi-Fi 802.11b/g/n**

  - 802.11b/g/n – speed of up to 11 Mbps/54 Mbps/150 Mbps

All Speed are theoretical and are dependent on actual network conditions

Chapter 2

Getting Started

To get started, take the following steps before you set up CPE.

① Install the 4G LTE SIM card (see “Installing the 4G LTE SIM Card “, Page 8)

② Install the Antennas (see “Installing the Antennas”, Page 9)

③ Insert and charge the battery (see “Charging the battery”, Page 9)

④ Hooking up your telephone (if applicable; see “Hooking up your telephone“, Page 11)

⑤ Plug-in the Power Adapter and turn on the device (see “Turning on the device“, Page 11)

⑥ Activating your device (see “Activating your device”, Page 13)

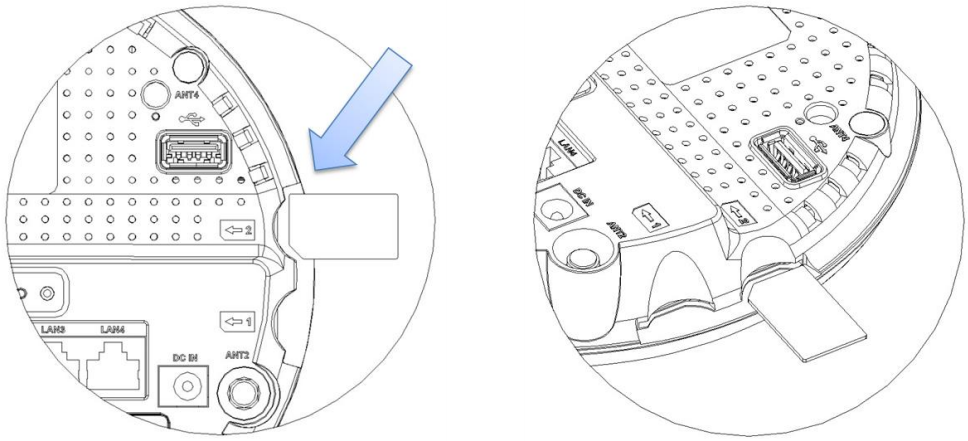
⑦ Connect the device to your computer using Wi-Fi or LAN. (see “Connecting to the Router“, Page 15)

Installing the 4G LTE SIM Card

To install your SIM card, follow these steps.

① Insert your SIM card into the **UPPER 2nd** slot.

② The SIM card MUST remain in the SIM card slot when in use.



Note:

If you ever need to remove your SIM card from your router, gently press the SIM card inward to release it, and remove it from the slot.

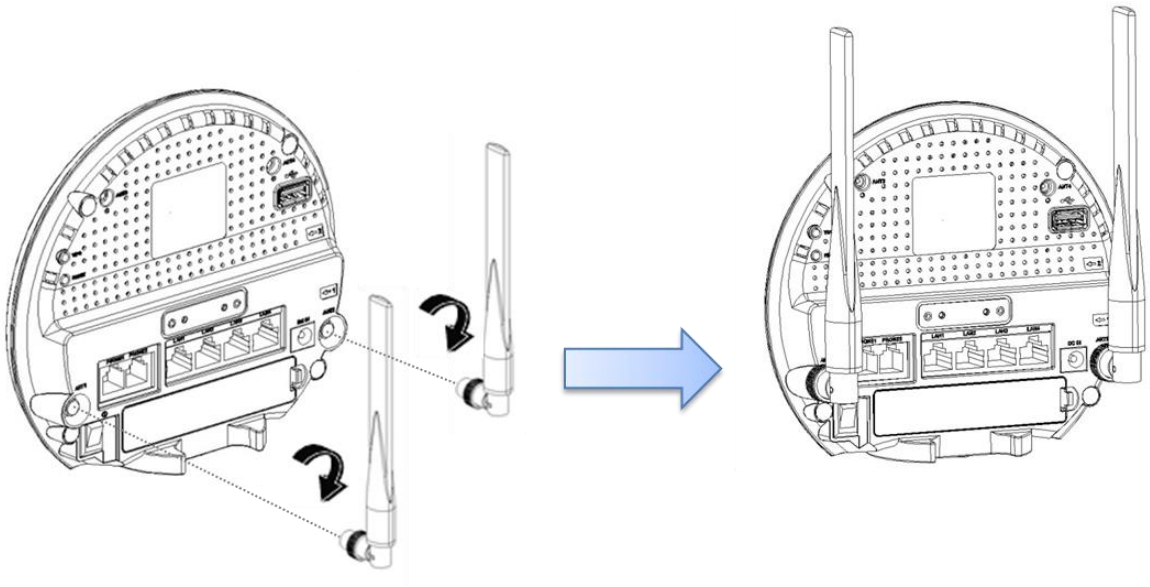
Installing the Antennas

To install the antennas, follow these steps:

① Align the antennas with the antenna posts on the CPE router as shown below.

② Mount the antennas on the antenna posts.

③ Swivel the antennas in any direction and check placement to improve signal.



Note:

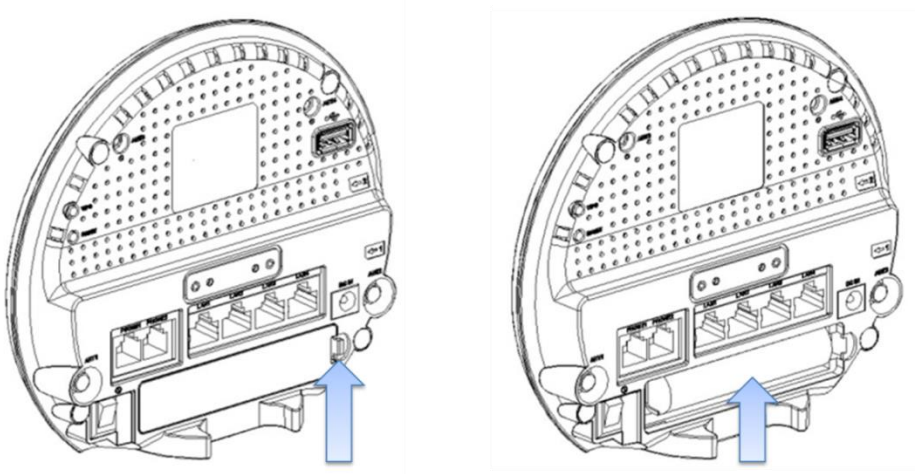
These two external antennas are required for proper 4G LTE service; please position these antennas on a right angle to each other for the best 4G LTE signal reception.

Charging the battery

① Open the battery door at the back panel of CPE router.

② Insert the new battery with the plus (+) and minus (-) markings matching the markings in the battery compartment.

③ Close the battery door.



Note:

• When the AC adapter is connected the battery will charge automatically.

• The battery power can supply power for voice calling service in case of power outage or emergency. The Wi-Fi and LAN service will be disabled during battery-powered operation. (if applicable)

Battery Tips

Warning!

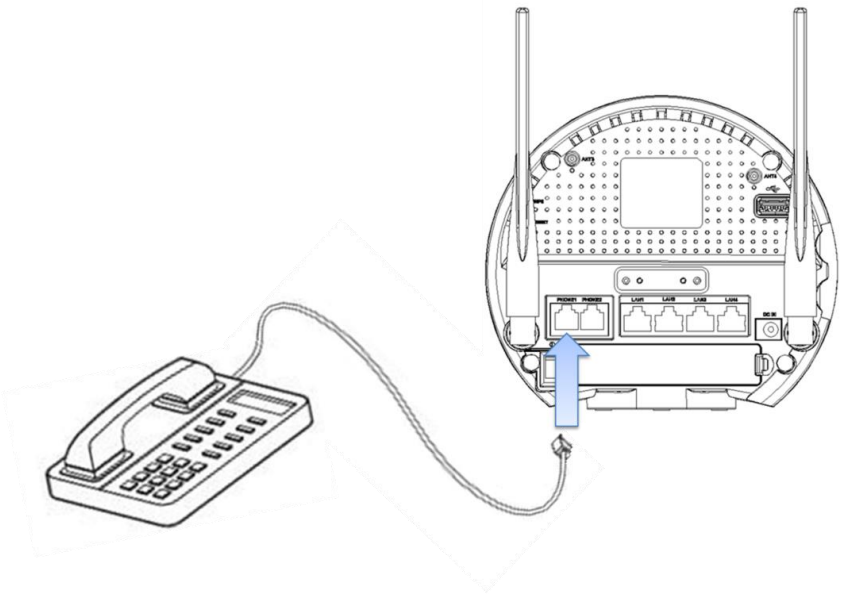
- Use only Franklin Wireless approved batteries and chargers with your device.
- Failure to use a Franklin Wireless approved battery and charger may increase the risk that your device will overheat, catch fire, and/or explode resulting in property damage, serious bodily injury, and/or death.

Battery life may vary based on the network, signal strength, temperature, features enabled, and accessories you use.

- If you connect your device to your computer using the A/Adapter cable, the battery will charge.
- It normally takes at least 3 hours to fully charge the battery with an A/Adapter.
- New batteries or batteries stored for a long time may take additional time to charge.
- When charging your battery, keep it near or below room temperature.
- Never expose batteries to temperatures below 32°F (0°C) or above 113°F (45°C).
- Never leave the device in an unattended vehicle due to uncontrollable temperature variations.
- It is normal for batteries to gradually weaken and require longer charging times.
- If you notice a change in your battery life, it is may be time to purchase a new battery.

Hooking up your telephone (if applicable)

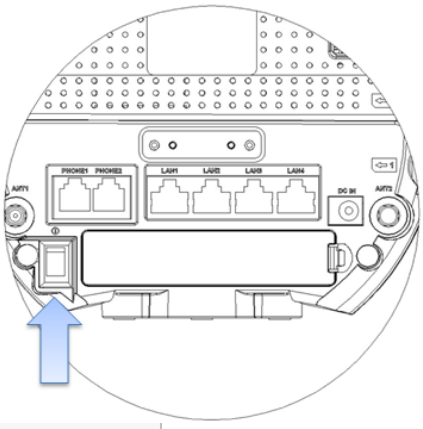
① Plug in your telephone into RJ-11 port 1 or port 2 as shown below.



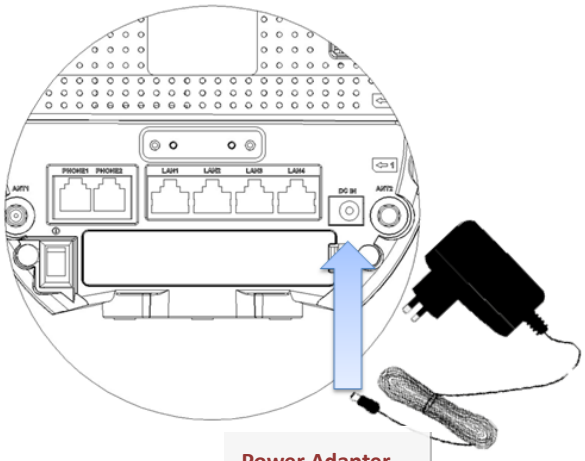
Plugging-in the Power Adapter and Turning on the device

① Connect the Power Adapter to the CPE router and plug the Power Adapter into an outlet.

② Press the Power On/Off button.



Power On/Off Button



Power Adapter

Activating your device

Activating LTE Data Service

① After inserting your SIM card, power up the CPE router, and connect the router with your PC (LAN or Wi-Fi).

② Open your Web browser and enter *http://192.168.1.1/* into the address window. Enter your username and password in the Login dialog. (See more detail in Chapter 4)

③ Once connected, check the 'USIM State' of the WWAN Device Status item in the WWAN menu.

A. If your SIM card did not activate properly, you will see the USIM State as 'Inactive' as shown below.

WWAN Modem status	Values
Manufacturer	N/A
Model	N/A
Firmware Version	N/A
MSISDN	N/A
IMEI	N/A
UICCID	N/A
IMSI	N/A
PRL Version	N/A
USIM State	Inactive
Connection Status	Disconnected
Service Type	No Service
Roaming	No
RSSI	0 dBM

B. If your SIM card activated correctly, you will see the USIM State as 'Active' as shown below.

WWAN Modem status	Values
Manufacturer	Franklin wireless
Model	M774
Firmware Version	M774F38.OM.M788
MSISDN	9393580214
IMEI	990000950008427
UICCID	89011200100001675666
IMSI	330120000167566
PRL Version	407
USIM State	Active
Connection Status	Connected
Service Type	LTE
Roaming	No
RSSI	-47 dBM

Warning

If your SIM card did not come pre-activated or you need to re-activate your SIM card, you may need to:

A. Go to your network operator's retail store.

B. Contact your network operator's customer service department.

In case of using damaged SIM cards, locked SIM card or no SIM Card, you will see an error.

Activating Voice Call Service (If applicable)

① Connect your telephone into the CPE router.

② Hook off your telephone handset.

③ Press the dial button to "***228**" in order to dial up the activation system of your network operator.

④ When the activation process is done, you should hear a voice message from your network operator system.

Warning

If the activation process did not complete or you were unable to make a Voice Call service please:

A. Go to your network operator's retail store.

B. Contact your network operator's customer service department.

Connecting to the Router

Please connect your computer to the CPE router if you haven't done so already.

Wi-Fi connection

① Turn on your computer and turn on the CPE router. The router's LTE ( ) LED should be solid green or orange, indicating the device is in service and ready to connect. The CPE router broadcasts its own wireless network.

② On your computer, use the Wi-Fi manager (Windows) or the AirPort menu bar icon (Mac OS X) to connect wirelessly to the CPE router's wireless network.

③ The steps to connect to a Wi-Fi network may vary depending on your operating system, native Wi-Fi application, or third-party software used. Generally, you click an icon in the Windows notification area where you can select **View Available Wireless Networks,** or click the Airport icon in the menu bar on a Mac. If you are unfamiliar with wireless networking on your computer, consult the computer's help system.

④ Select your CPE router's network name (**Franklin CPE XXXX** Secure, where **XXXX** are digits unique to your device), click **Connect**, and type in your password. Your network name (SSID), and Wi-Fi/Admin passwords are on the back of your device as well as in the Quick Start Guide.

LAN Connection

① Plug in the Ethernet Cable to connect your computer and the CPE router's LAN ( ) LED should be solid blue, indicating the detection for the Ethernet Cable Connection.

② The CPE router uses Standard TCP/IP properties for DHCP (Dynamic Host Configuration Protocol) and should connect immediately without any user action. If you need to use a static IP address you will need to change the settings IP settings using advance options (see the next section).

Voice Connection (if applicable)

① Plug in the RJ-11 Cable to connect your telephone, The router's Voice( ) LED should be solid green or orange, indicating the device is in service and ready to use Voice Call Service.

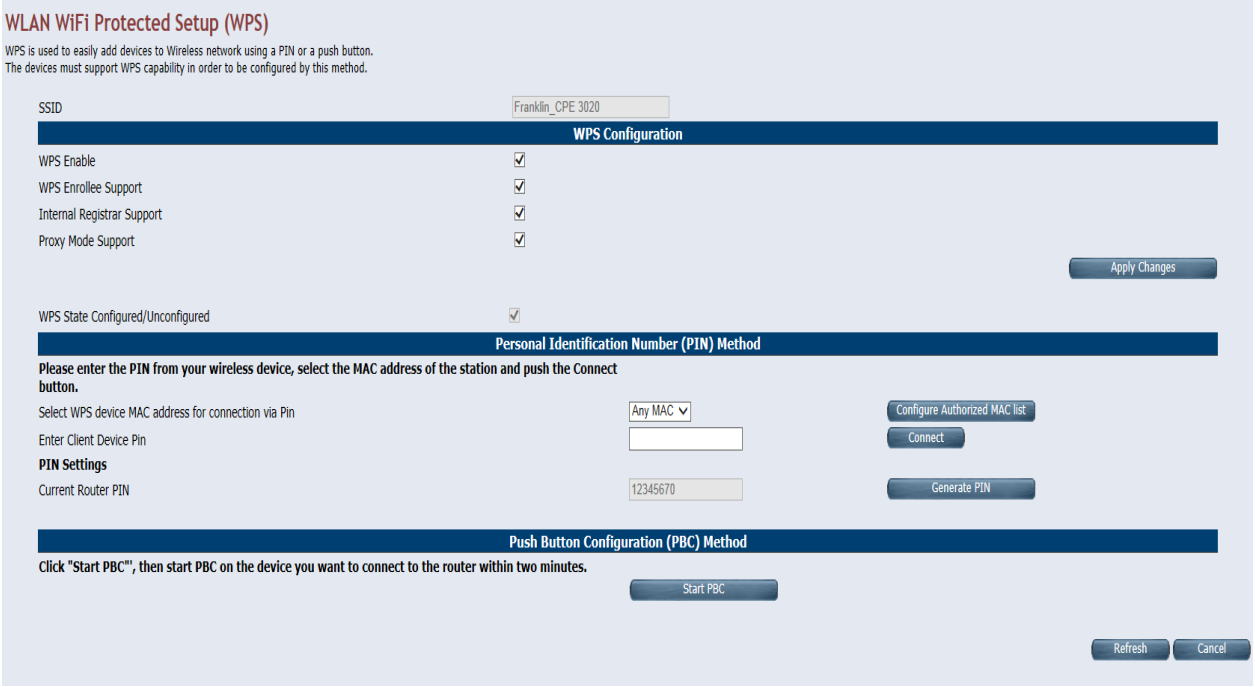
WPS Configuration

Any wireless computer or wireless adapter that connects to the router wirelessly is a client. The client of your computer's system must support a WPS button and also must have a WPS configuration utility. The WPS method is used to easily add devices to the Wireless network using a PIN or a push button. Please note the client's devices must support WPS capability in order to be configured by this method.

To setup the WPS feature between your CPE router and your client, follow the below steps

① Login to your CPE router through Web UI. (See more detail in Chapter 4)

② Go to '**WLAN Wi-Fi Protected Setup**' item in WPS Settings of Wireless menu.



For PBC (Push Button Configuration) method, it will be operated by the WPS button on the C774 router.

③ Push the 'Start PBC' button or press the 'WPS button' on the router.

A. The router will try to make a connection with client device (i.e., personal computer, laptop, smartphone) which will take approximately two minutes.

B. During the WPS operation, the router's Wi-Fi LED will be blinking Blue.

④ Go to the client wireless computer, run a WPS setting utility and click a WPS button in the utility's instruction.

A. If the WPS operation is done, the router's Wi-Fi LED will be lit.

⑤ Go back to the router's Web UI, and check the Wi-Fi status whether the client is connected or not.

Note

• Before the WPS activity, we recommend removing the router's Wi-Fi profile stored on your device (personal computer, laptop, smartphone), and then push the 'Start PBC' button or press the 'WPS button' on the router. The device should connect in about two minutes after pressing the WPS button, if there is no connection within two minutes, the router will restart.

• Only supports 1:1 connection between the router and device (i.e., personal computer, laptop, and smartphone), the WPS function will be operating as the WPA type's security. If you want to use the WPS function with the WPA2 security, client OS version must be more current than Windows XP Service Pack 3. Also please remove the router Wi-Fi profile stored on your device.

• If you want to use a WPS PIN (Personal Identification Number), the client device must support a WPS PIN application located in the WPS configuration utility. To run the WPS PIN procedure, please see the below steps.

- 1) Go to the client wireless computer and run the client WPS configuration utility and generate a PIN number.
- 2) Notate the client PIN number.
- 3) In the WLAN Wi-Fi protected setup Web page, there is a PIN inputting method for 'Enter Client Device PIN' item.
- 4) Enter the client PIN number noted and press the WPS button. The device will begin trying to make a connection which should takes approximately 4 minutes.

Device Specifications

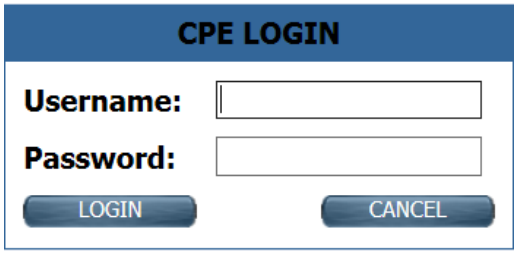
Feature		Description	Remark
Size (W,D,H)		137mm(H) x 153.8mm(W) x 34.5mm(D) (5.39(H) x 6.06(W) x 1.36(D) (inch)	
Weight		About 283g (9.98 oz)	
Operating Temperature		0◦C to 60◦C	
Humidity		65 %	
Storage Temperature		-10 ◦C to 85 ◦C	
Operating time (Battery)		40 minutes (Voice Call Service only)	
Battery and charging		Li-ion Polymer 1050mAh, 3.7V. Rechargeable	
Power		AC Power Adapter 12V/ 2A	
LED Indicators		Power / LAN [1-4] / Voice / Voice Mail/ Wi-Fi/ LTE	
Wireless WAN (WWAN)		4G LTE(B13 or B25 / B12), 3G eHRPD (BC0/BC1) Receiver diversity (LTE MIMO and 3G Diversity support)	
LAN		Ethernet Port (RJ-45) x 4EA	
Voice Call		2G 1xRTT (BC0/BC1) (if applicable) Telephone Port (RJ-11) x 2EA	No Fax
WLAN		IEEE 802.11 b/g/n (2.4GHz)	
Data Speed	**4G LTE**	100Mbps downlink / 50Mbps uplink	
	3GeHRPD	3.1Mbps downlink / 1.8Mbps uplink	
	WLAN	11Mbps/ 54Mbps/ 150Mbps (IEEE 801.11 b/g/n)	
	LAN	10BASE-T / 100BASE-T	
WLAN & LAN features		DHCP server, DDNS, Wireless Mac filtering, Network sharing (Samba)	
WLAN Security		Pre-configurable security (WPA/WPA2PSK)	
USIM (UICC)		Removable UICC Card Support	
Desktop and Wall mount		Supported	
LTE Antenna		LTE Primary & Secondary Antenna	
Voice Service Antenna		Integrated Antenna	

Chapter 3

Browser Interface and Settings for Wi-Fi and LAN service

Login

Open your Web browser and enter *http://192.168.1.1/* into the address window. The web interface should display as shown below.

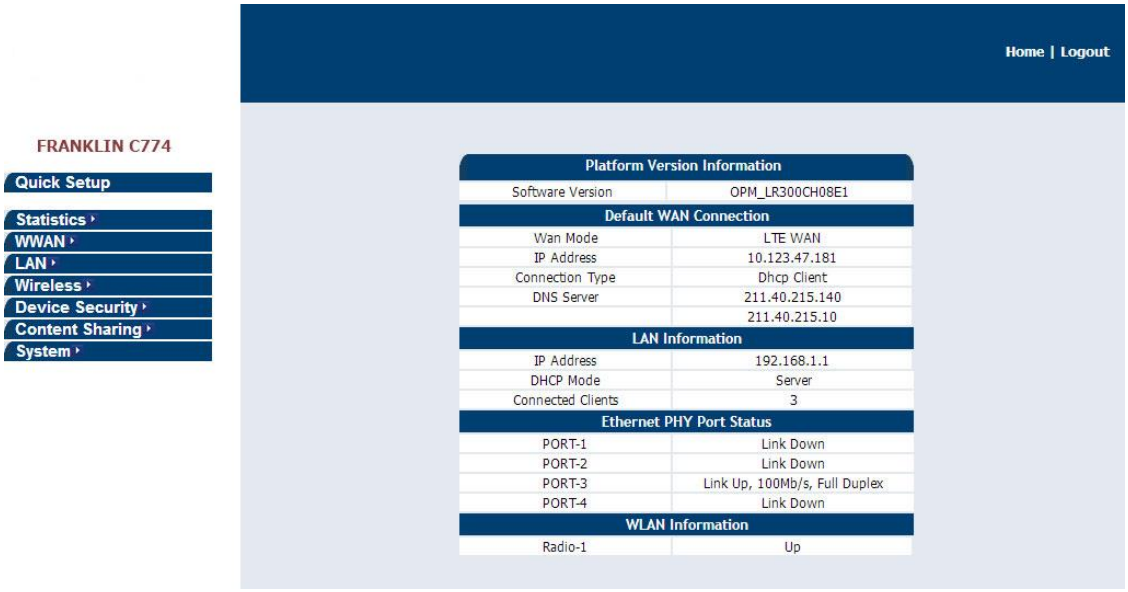


Username: **admin**

Password: **admin**

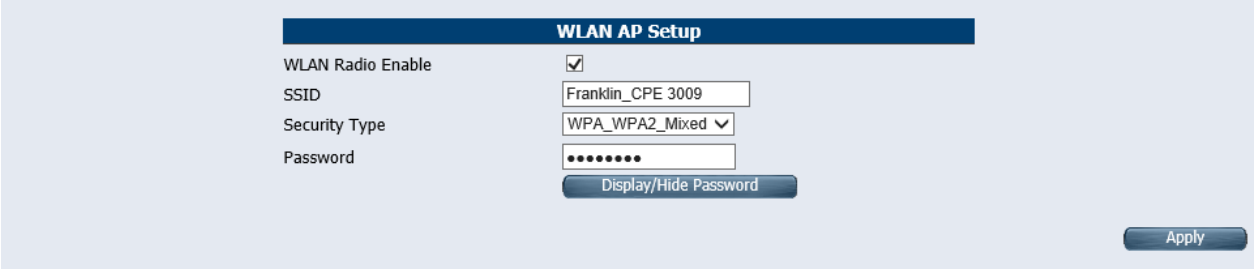
Home Screen Menu

The Home screen is the first screen you see after logging in to the browser interface. It is the main point of entry for all your work in the browser interface. The user menu runs vertically along the left of the browser interface. It shows information of router.



Quick Setup Menu

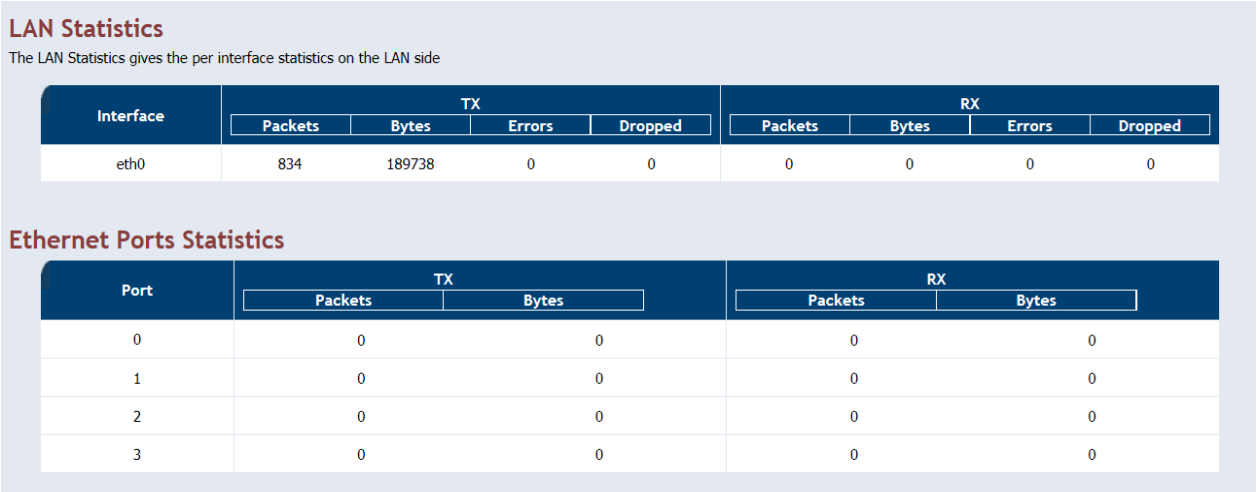
Quick Configuration options for Wi-Fi settings including SSID name and security type, and therefore you can modify those configured items quickly.



Statistics Menu

➢ *LAN*

The LAN statistics provide statistics (by interface) for the connection(s) only.



LAN Statistics

The LAN Statistics gives the per interface statistics on the LAN side

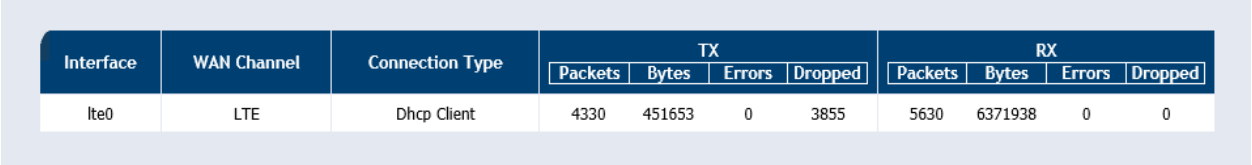
Interface	TX				RX			
	Packets	Bytes	Errors	Dropped	Packets	Bytes	Errors	Dropped
eth0	834	189738	0	0	0	0	0	0

Ethernet Ports Statistics

Port	TX		RX	
	Packets	Bytes	Packets	Bytes
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0

➢ *WAN*

The WAN statistics item provide statistics (by interface) for the WAN connection(s) only.



Interface	WAN Channel	Connection Type	TX				RX			
			Packets	Bytes	Errors	Dropped	Packets	Bytes	Errors	Dropped
lte0	LTE	Dhcp Client	4330	451653	0	3855	5630	6371938	0	0

➢ *WLAN*

The WLAN Statistics provides counters for all WLAN interfaces.

AP/VAP name	TX				RX			
	Packets	Bytes	Errors	Dropped	Packets	Bytes	Errors	Dropped
MyAP1	6932	7408779	0	757	6510	690553	0	0

WWAN Menu

➢ *WWAN Status*

WWAN Status shows your current network information.

No	WAN Channel	Connection Type	Status	IP	Netmask	Connection Name	
1	LTE	Dhcp Client	CONNECTED	23.18.76.86	255.255.255.252	WANIP0	Release Renew

Gateway Information
23.18.76.85

DNS Information	
Primary	67.215.111.51
Secondary	67.215.111.52

➢ *WWAN Device status*

WWAN Device status displays the LTE modem information, and also has the Preferred Mode setting and Data Roaming setting items.

WWAN Modem status	Values
Manufacturer	Franklin wireless
Model	M774
Firmware Version	
MSISDN	01039982443
IMEI	990000950007940
UICCID	8982066711010126146
IMSI	450061039982443
PRL Version	N/A
USIM State	Active
Connection Status	Connected
Service Type	LTE
Roaming	No
RSSI	-53 dBM

WWAN Modem Preferred Mode Setting		
Preferred Mode	LTE/CDMA	Apply

WWAN Modem Data Roaming Setting		
Data Roaming	eHRPD Enabled	Apply

WWAN Modem APN Setting		
APN Info	xxxxx.com	Apply

- WWAN Modem Status displays the following:
  - Router's manufacturer
  - Router's model name
  - Router's firmware version in use
  - Mobile Station International ISDN Number (MSISDN)
  - International Mobile Equipment Identity (IMEI)
  - Universal Integrated Circuit Card Identity (UICCID)
  - International Mobile Subscriber Identity (IMSI)
  - PRL version in use.
  - USIM State (Active, Inactive)
  - Connection status information (Connected, Disconnected, Dormant)
  - Data Service type (LTE, EVDO Rev.0, EVDO Rev.A, eHRPD, 1xRTT, or No Service)
  - Data Roaming Status (Yes, No)
  - RSSI (Received Signal Strength Indicator, dBm) Level

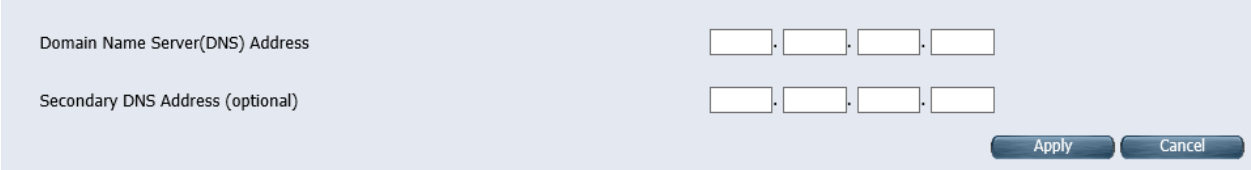
- WWAN Modem Preferred Mode Settings have the following options:
  - LTE/CDMA: the modem will operate and search a network automatically
  - 1xRTT Only : the modem will operate on 1xRTT network
  - EVDO Only : the modem will operate on EVDO network
  - CDMA + EVDO Only : the modem will operate with 1xRTT or EVDO network
  - LTE Only : the modem will operate on LTE network

- WWAN Modem Data Roaming Setting item is used to set the roaming conditions between other operators (currently roaming service is only available for EVDO networks and availability depends on your network operator's policy).
  - eHRPD enable: Enabling the roaming service
  - eHRPD disable: Disabling the roaming service

- WWAN Modem APN Setting item is allowed to set your operator's APN (Access Point Name) information.

➢ *DNS*

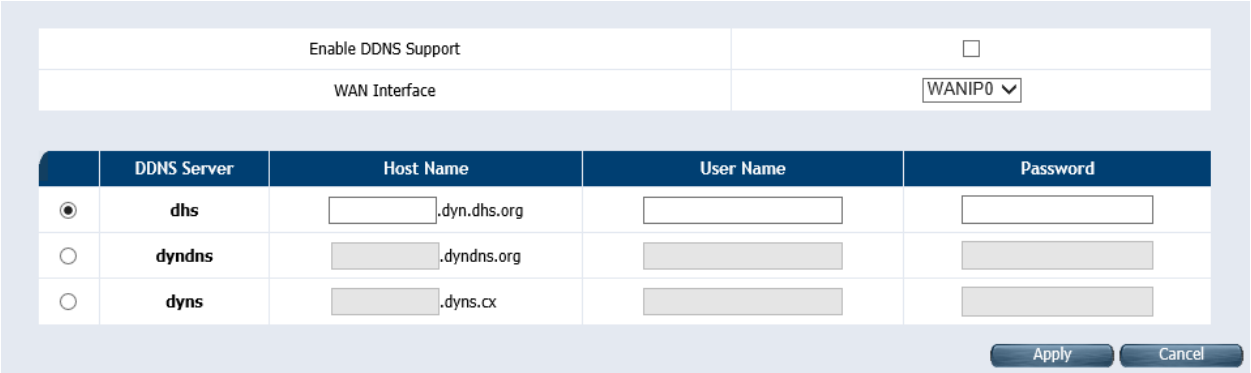
A Domain Name System server translates hostnames or domain names to IP addresses. If there is a DNS server that you would rather use, you can specify it in the IP address box below.



➢ *DDNS*

Dynamic DNS allows you to update your dynamic IP address with one or many dynamic DNS server.

You can use this to allow can access your local FTP or Web service using a DNS-like address.



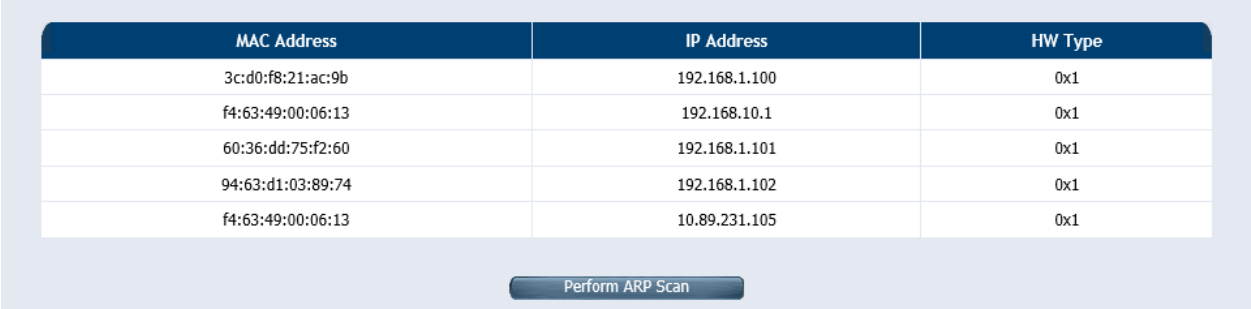
Note

• If your ISP assigns a private WAN IP address such as '192.168.x.x' or '10.x.x.x', the Dynamic DNS service will not work because the private addresses are not routed on the Internet.

LAN Menu

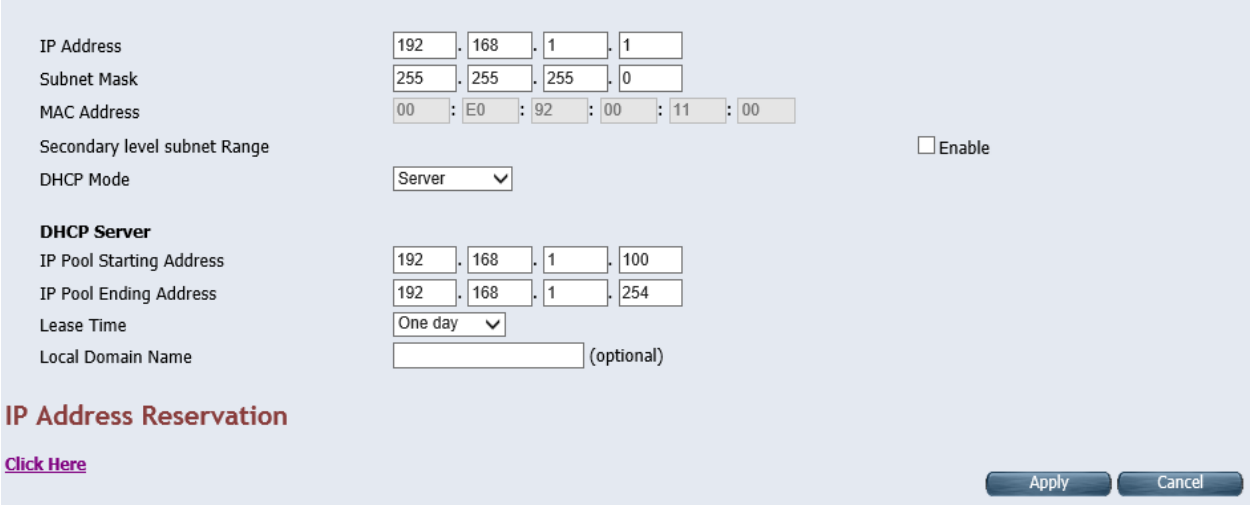
➢ *LAN ARP List*

The ARP list allows you to see which clients are connected to the CPE device via IP address and MAC address.



➢ *LAN Settings*

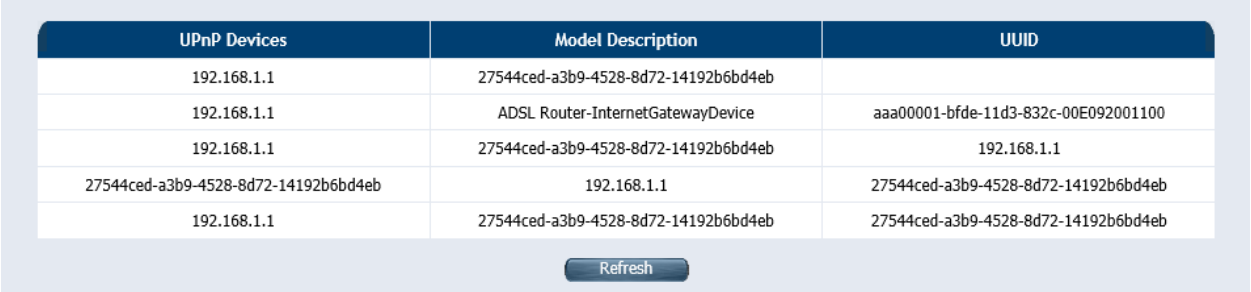
You can configure LAN settings of the router device such as LAN IP Address and DHCP configuration.



IP reservation allows static IP address assignment by DHCP server for specified MAC address.

➢ *UPnP Devices*

The UPnP Devices list allows you to see all UPnP devices that are discovered by the CPE.



UPnP Devices	Model Description	UUID
192.168.1.1	27544ced-a3b9-4528-8d72-14192b6bd4eb	
192.168.1.1	ADSL Router-InternetGatewayDevice	aaa00001-bfde-11d3-832c-00E092001100
192.168.1.1	27544ced-a3b9-4528-8d72-14192b6bd4eb	192.168.1.1
27544ced-a3b9-4528-8d72-14192b6bd4eb	192.168.1.1	27544ced-a3b9-4528-8d72-14192b6bd4eb
192.168.1.1	27544ced-a3b9-4528-8d72-14192b6bd4eb	27544ced-a3b9-4528-8d72-14192b6bd4eb

Refresh

➢ *Routing Table List*

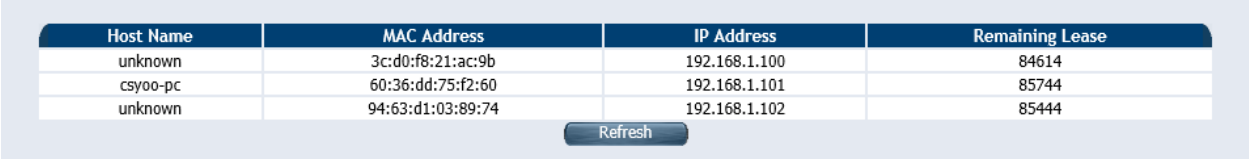
The Routing Table displays configured routes and interfaces on CPE device.

Destination IP	Subnet Mask	Gateway	Metric	Interface
10.89.231.104	255.255.255.252	0.0.0.0	0	lte0
192.168.1.0	255.255.255.0	192.168.1.1	0	br0
192.168.1.0	255.255.255.0	0.0.0.0	0	br0
239.0.0.0	255.0.0.0	0.0.0.0	0	br0
0.0.0.0	0.0.0.0	10.89.231.105	0	lte0

Refresh

➢ *DHCP Client List*

The DHCP client list allows you to see which clients are connected to the CPE device via IP address and MAC address.



Host Name	MAC Address	IP Address	Remaining Lease
unknown	3c:d0:f8:21:ac:9b	192.168.1.100	84614
csyoo-pc	60:36:dd:75:f2:60	192.168.1.101	85744
unknown	94:63:d1:03:89:74	192.168.1.102	85444

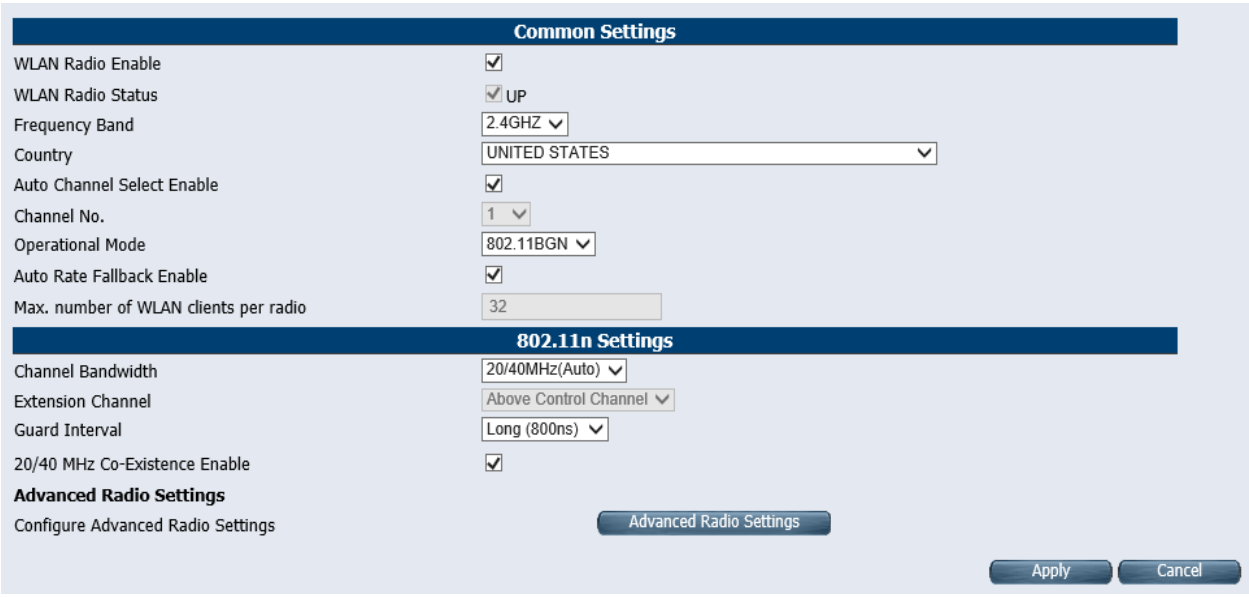
Refresh

Wireless Menu

➢ *Radio Settings*

Configure common WLAN parameters applicable to all active AP in the system.

To show WLAN Advanced Radio Settings page, press the corresponding ‘Advanced Radio Settings’ button.



Common Settings

WLAN Radio Enable	☑
WLAN Radio Status	☑ UP
Frequency Band	2.4GHZ
Country	UNITED STATES
Auto Channel Select Enable	☑
Channel No.	1
Operational Mode	802.11BGN
Auto Rate Fallback Enable	☑
Max. number of WLAN clients per radio	32

802.11n Settings

Channel Bandwidth	20/40MHz(Auto)
Extension Channel	Above Control Channel
Guard Interval	Long (800ns)
20/40 MHz Co-Existence Enable	☑

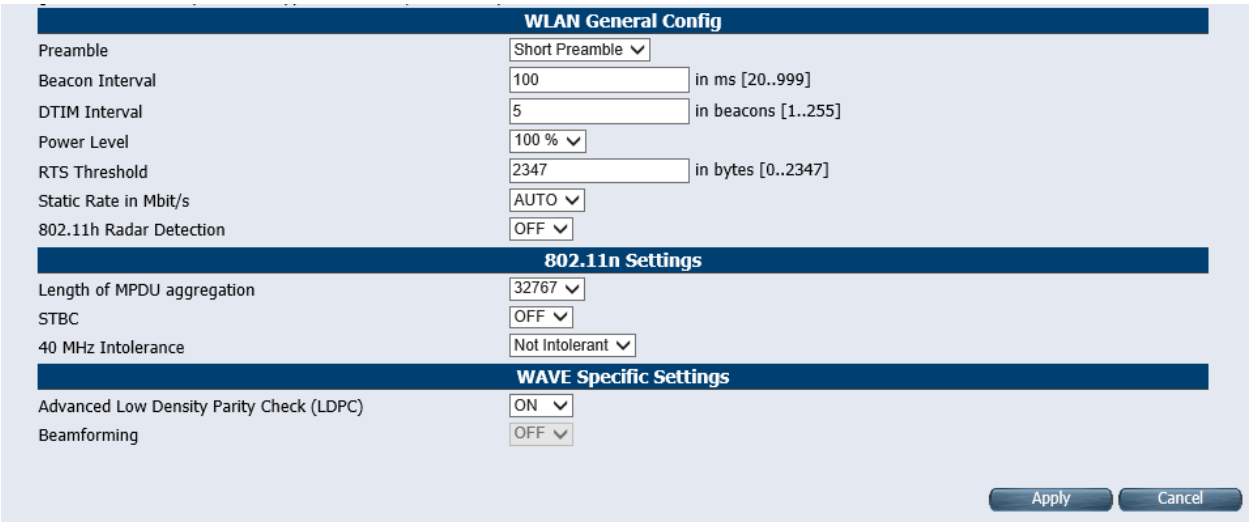
Advanced Radio Settings

Configure Advanced Radio Settings — Advanced Radio Settings

Apply Cancel

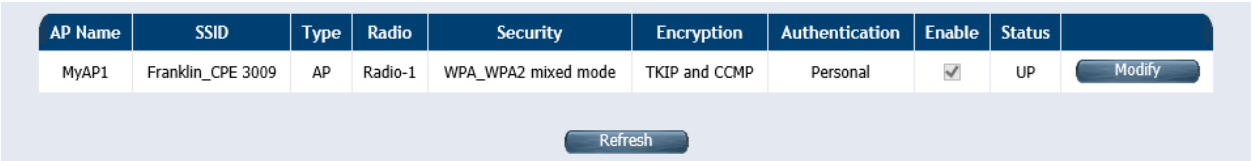
➢ *WLAN Advanced Radio Settings*

Configure advanced WLAN parameters applicable to all AP in the system.

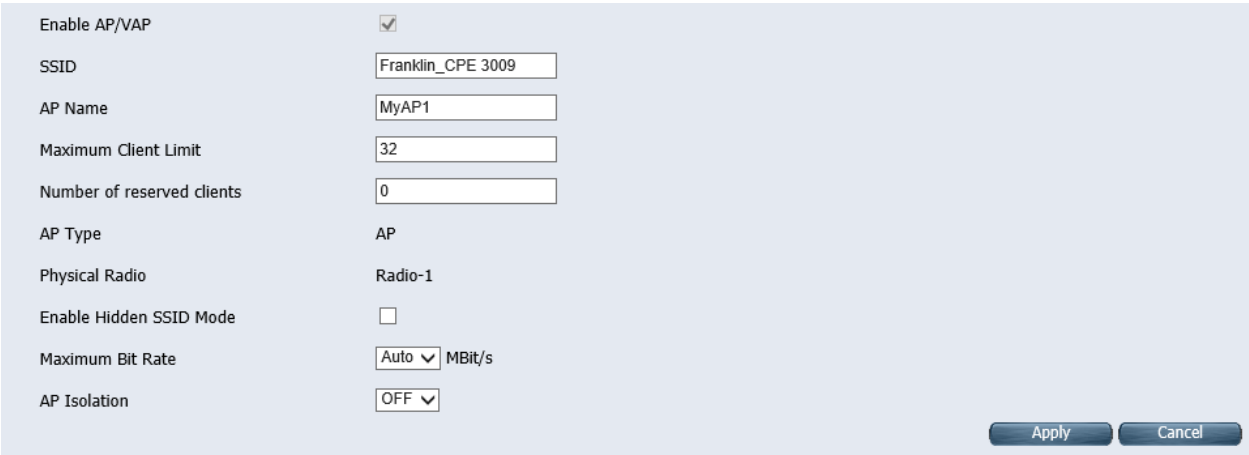


➢ *Wireless Settings*

This page shows all WLAN AP profiles on the CPE router. To modify the main parameters of an AP, press the corresponding 'Modify' button.



This page allows to modifying an existing WLAN profile.

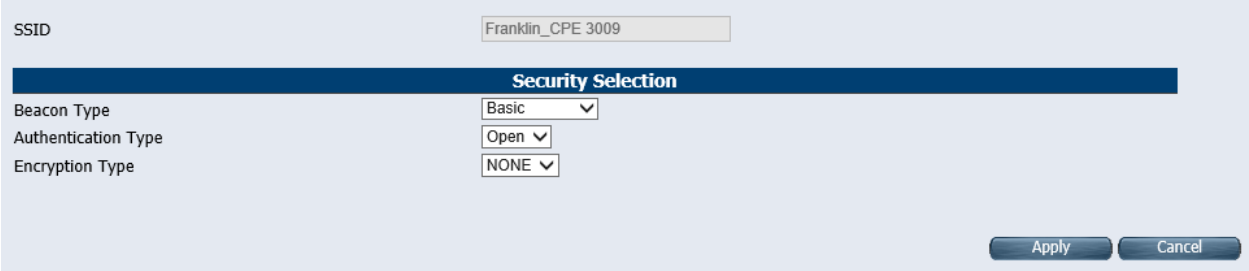


- **SSID:** you can change or input new Network Name (SSID), the router's default SSID is last 4 digit of 'Franklin CPE XXXX', 'XXXX' is your router's Network Name (SSID).
- **AP Name:** you can change or input new Application Processor Name (AP) which is corresponding with the WLAN radio's parameter such as 'Radio-1.' **Maximum Client Limit:** you can change or input the number of the WLAN connectivity, currently the CPE router allows **32** users to wirelessly connect.
- **Enable Hidden SSID Mode:** when you enable the item, you can hide your wireless network name regarding Franklin CPE_XXXX (SSID), meaning that you can restrict wireless access for your network by not broadcasting the wireless network name (SSID).

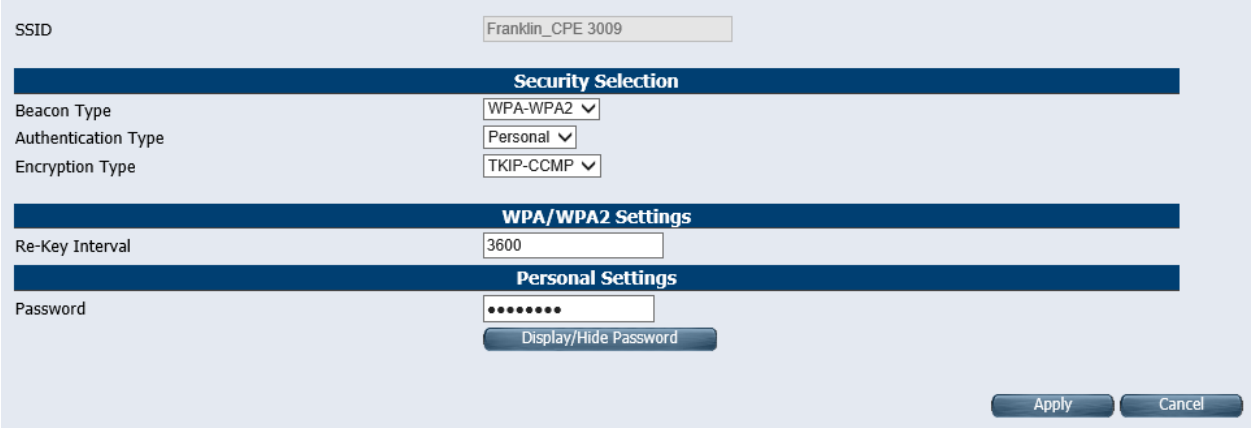
  Note: When the Hidden SSID mode is enabled, you must match the exact SSID string in your computer, otherwise you may not able to establish a wireless connection to the CPE router.

➢ *Security Settings*

AP/VAP related security configuration settings.



- Basic Wi-Fi security setting configured



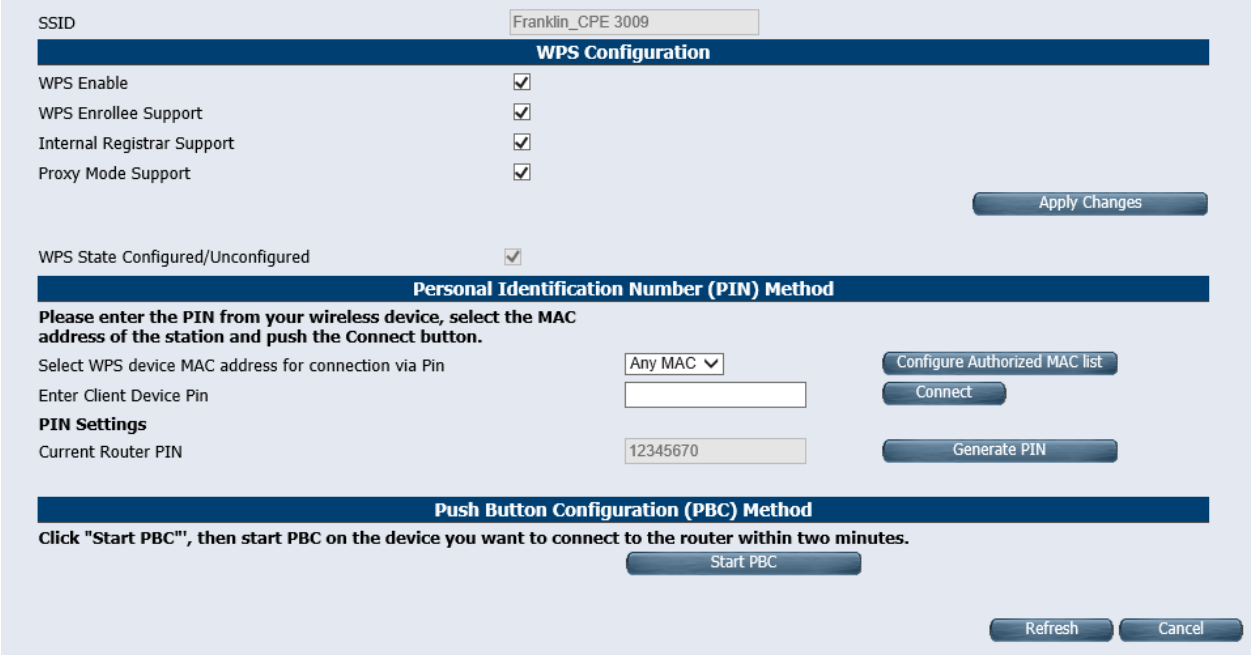
- The CPE router is preconfigured to the wireless security option WPA-WPA2 with TKIP-CCMP encryption type.
- Beacon type:

Basic	Allow any wireless connection without a security option.

WPA	Allow only computers which are configured with WPA security option.
WPA2	Allow only computers which are configured with WPA2 security option.
WPA-WPA2	Allow computers which are configured with either WPA-PSK or WPA2-PSK security option.

➢ *WPS Settings*

WPS is used to easily add devices to wireless network using a PIN or a push button, the devices must support WPS capability in order to be configured by this method.



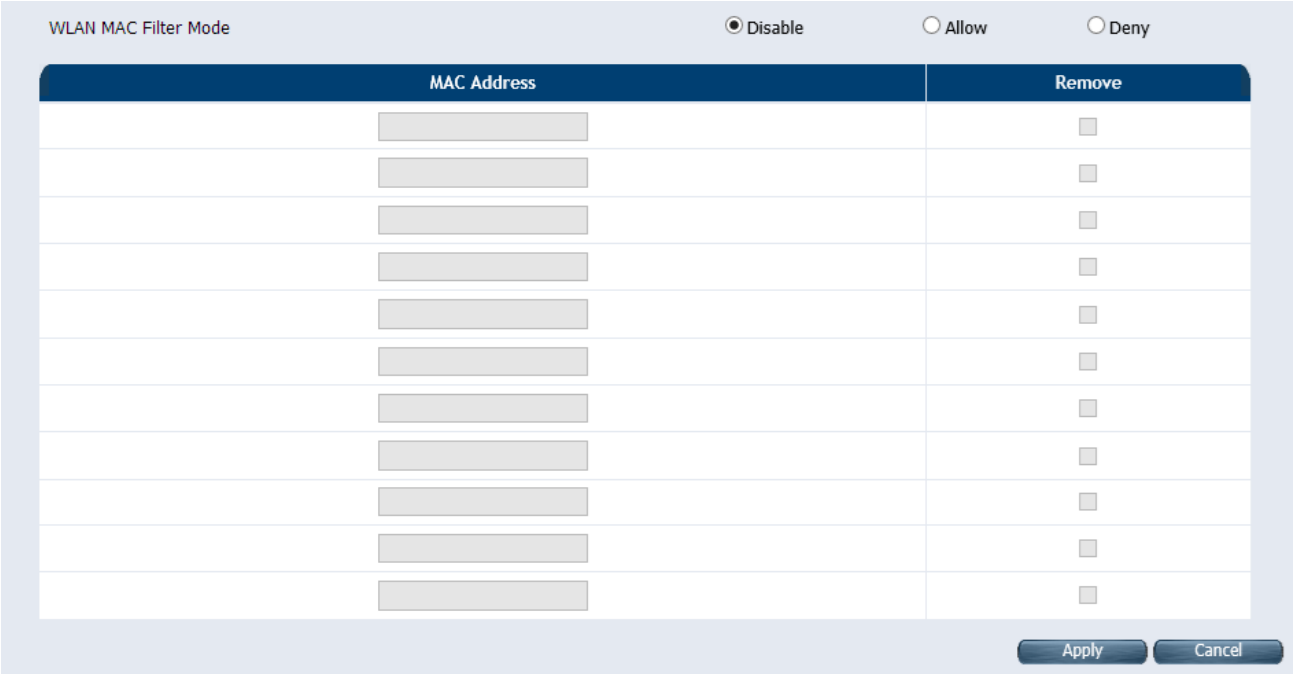
To show WLAN WPS Authorized MAC Configuration page, press the corresponding 'Configure Authorized MAC list' button.

➢ *WLAN WPS Authorized MAC Configuration*

This page allows you to configure the list of devices which are allowed to connect using WPS PIN. A total of 16 entries can be created.

➢ *W(Wireless) MAC Filter*

This page allows you to control WLAN association by specifying computer's MAC addresses. A total of 32 entries can be created. For instance, you can restrict access to the wireless network to allow only specified computers based on their MAC addresses, meaning that you can restrict to only trusted computers so that unknown computers will not available to access wirelessly in your CPE device.



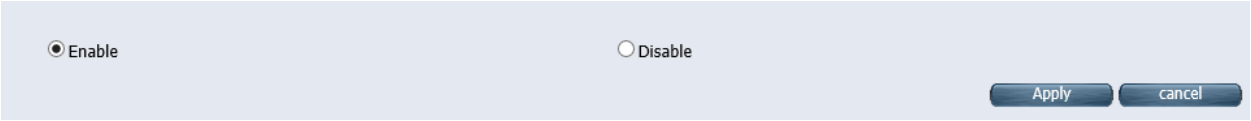
Note

• If you configure the CPE router from a wireless computer, you must add your computer's MAC address into the access control list. Otherwise, you will lose your wireless connection when you click "Apply." In this case, you must access the router from a computer connected via wire, or from a wireless computer, then set the allowed MAC address, into the access control list, to make any further changes.

Device Security Menu

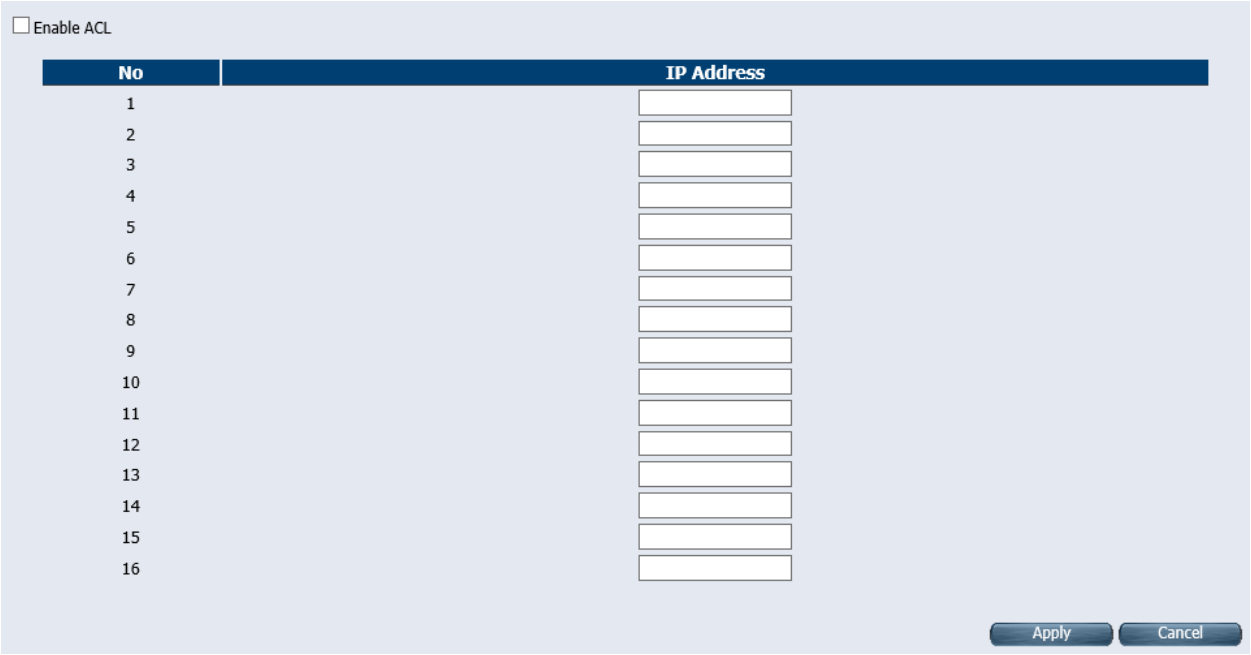
➢ *Device Security Settings*

Device security related configuration setting. Enable or Disable use of "Access Control" feature to allow access to the GUI for specific user.



➢ *Access Control*

Access to the CPE device is restricted to IP Addresses listed here. For instance, you can restrict access to the local network to allow only specified computers based on their IP addresses, meaning that you can restrict access to only trusted computers so that unknown computers will not be available to access your CPE device.



Note

• If you configure the CPE router from a wireless computer, you must add your computer's IP address into the access control list. Otherwise, you will lose your wireless connection when you click "Apply." In this case, you must then access the CPE router from a configured computer, set the allowed IP address into the access control list.

Content Sharing Menu

Content Sharing Menu describes how to access and configure a USB storage drive attached to your router. The USB port on the router can be used only to connect USB storage devices like flash USB drives. Do not connect computers, USB modems, CD drives, or DVD drives to the router USB port

➢ *USB Driver Requirements*

The router works with 1.0 and 1.1 (USB Full Speed) and 2.0 (USB High Speed) standards. The approximate USB bus speeds are shown in the following table. Actual bus speeds may vary, depending on the CPU speed, memory, speed of the network, and other variables.

USB Spec	Speed/Sec
USB 1.1	12Mbits
USB 2.0	480Mbits

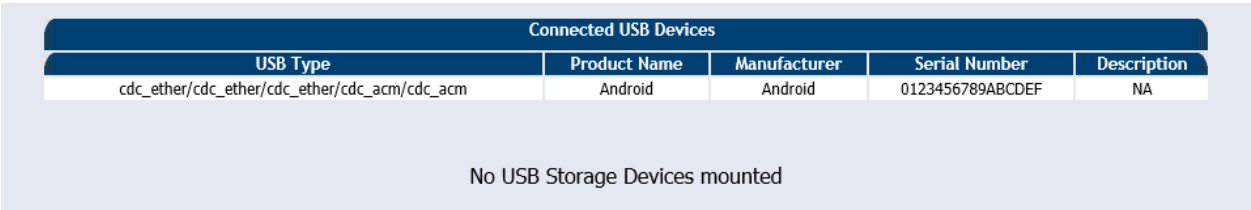
Note

• The router supports both read and write attributes for FAT16, FAT32, NTFS, and Linux file systems.

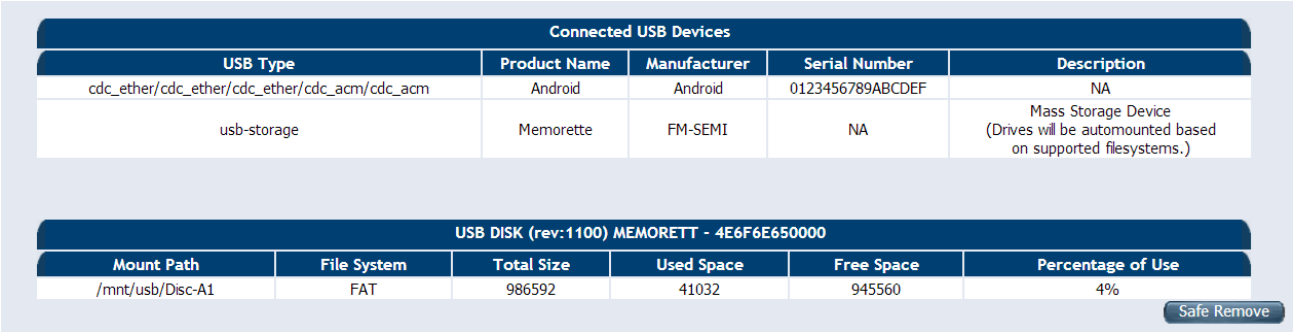
• Some USB external hard drives and flash drives require checking on your computer, any other USB spec listed above will not be compatible with the router.

➢ *USB Settings*

In the USB settings, you can see a list of USB device plugged on the CPE router, and you will see the modem information for 'cdc_ether/ cdc_ether/cdc_acm' in the USB type , and also you will see the basic mounted file system information to 'usb-storage' in the USB type.



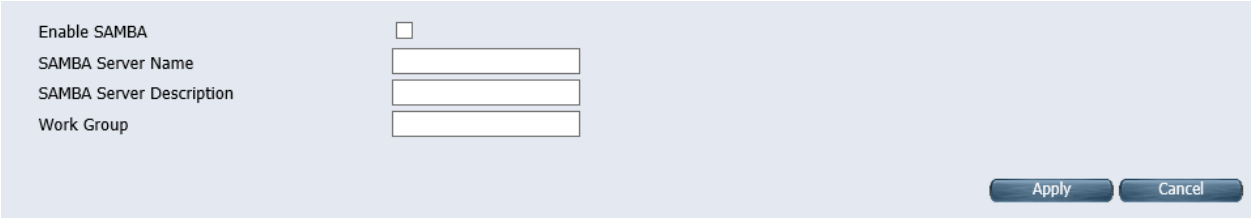
If you plug your USB memory stick into the CPE router's USB connector, you will see your USB storage information mounted as following.



Please note the Mount Path information for '/mnt/usb', because it will be used as the Folder Path name in the File Share item.

- *Enabling Sharing (SAMBA) Server*

In the SAMBA Sever item, you can manage the enabling or disabling the sharing (SAMBA) server.



- Check the 'Enable SAMBA' field for enabling the sharing server.
- Input the Server Name into the 'SAMBA Server Name' field like 'My Share Server.'
- Input a Server Name Description into the 'SAMBA Server Description' field.
- Input a Work Group Name into the 'Work Group' item like 'WORKGROUP.'

  Note: If you are using a Windows workgroup rather than a domain, the workgroup name is displayed. The name works only in an operating system that supports NetBIOS, such as Microsoft Windows.

- *Share Management*

In the Share Management item, you can manage file sharing information. When first accessed, the fields will appear empty.

In the Add/Modify File share item, you can add or modify your file sharing information.

- Input a sharing name into the 'File Share Name' field like 'MyShare.'
- Input a folder path string into the 'Folder Path' field to '**/mnt/usb**' which is described on the USB Settings item.
- Choose the Access Level on your policy for Read Only or Read-Write.
- Select a User which is configured on the User Management item.

After finishing the above procedures, you will see the shared folder information.

Note

• In order to see the mounted folder base on your laptop computer, which is shared by CPE's SAMBA Server, please see the below steps.

- Open Windows Explorer.
- Type the CPE Router's IP Address '\\192.168.1.1\[folder Name like MyShare]' into Windows Explorer.
- You will see the shared folder such as 'MyShare'

• If you type just the router IP address without a shared folder name like '\\192.168.1.1', the network access time on the Windows Explorer will take a long time to find the shared folder.

- Open the Command Prompt on your Windows Operating System.
- Try typing the router IP address with the shared folder name, for example, "C:\ net use m: \\192.168.1.1\[folder name like MyShare]'

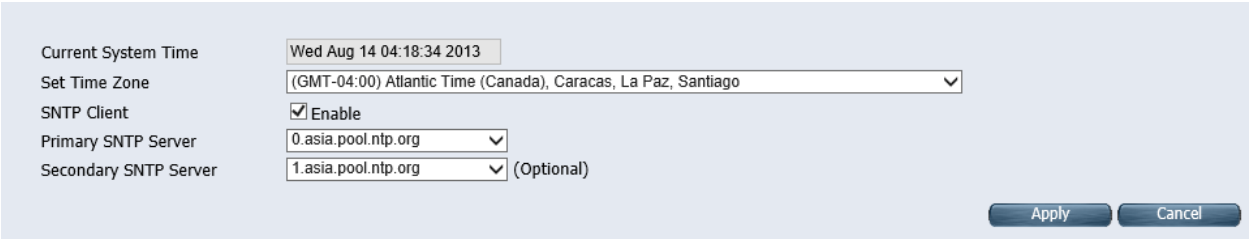
System Menu

- *Host Name Config*

Enter the host name for the CPE device and the domain name you want to configure. Host name can be used in place of IP address.

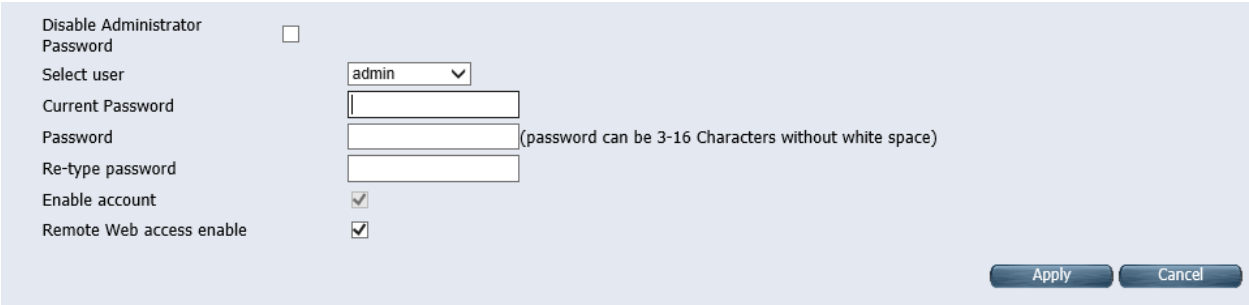
- *System Time*

Connecting to a Simple Network Time Protocol (SNTP) server allows the CPE device to synchronize the system clock to the global Internet.



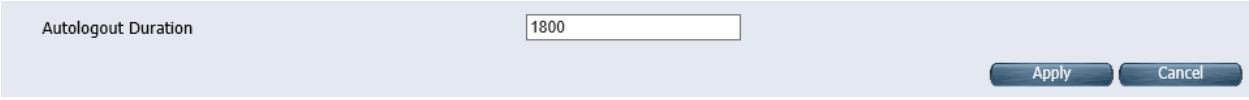
- *Administrator Settings*

Set a password to restrict management access to CPE device.



- *Web Settings*

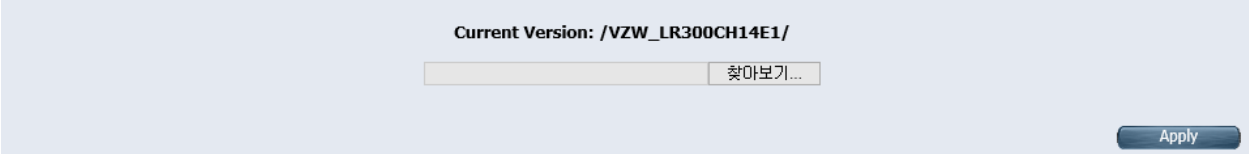
Set Auto logout time limit for CPE device.



- *Software/Firmware Upgrade*

Specify the path and name of the image file to be upgraded and click the APPLY button below.

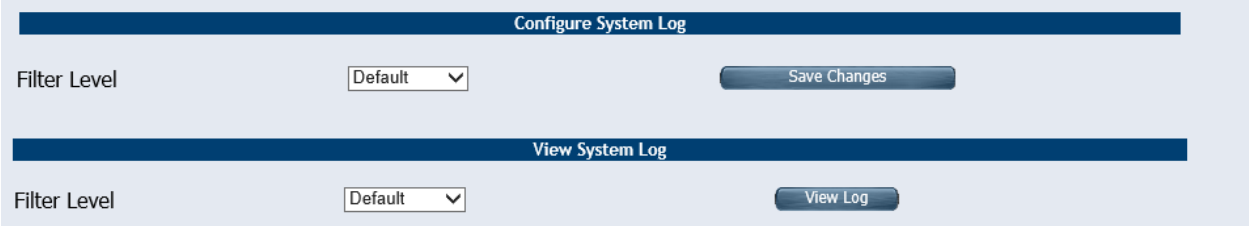
You will be prompted to confirm the upgrade. After the upgrade process, the system will reboot automatically.



➢ *System Log*

System Log allows you to manage the logging options for the CPE router.

For viewing the system log, choose “priority” level or higher, then the selected level will be displayed.



- For configure system log, the events pertaining to the priority equal to or higher than the selected level will be logged. "Default" level logs all events.
- For viewing system log, the events corresponding to the priority level equal to or higher than the selected level will be displayed here. "Default" level logs all events.

➢ *Reset / Factory Reset*

In the event that the CPE device starts malfunctioning in any way, you can perform a reset by clicking on the ‘Reset’ button below.

By pressing ‘Factory Reset’ all user configurations are replaced with factory default configuration settings.

Note:

In the event that the CPE device stops responding correctly or in some way stops functioning, you can perform a reset. To perform the reset, click on the "Reset" button below. You will be asked to confirm your choice. The reset will be complete when the power light stops blinking. Sometimes, the device may be corrupted by faulty configurations, in such a state you can bring the CPE device back to factory default configuration settings by clicking the Factory Reset button. By pressing Factory Reset all user configurations are replaced with factory default configuration settings.

Chapter 4

Interface and Settings for Voice Call Service (if applicable)

User Menu

➢ *Voice User Menu Instructions*

To alter voice options, pick up the handset and enter the appropriate code as listed in the table below. For detailed information on the voice options listed in the table, please refer to the detailed description in the following section(s).

.'

Menu Tree		Entry Code
1. Ring / Sound	1. Ring Type	11
	2. Volume Level	12
	3. DTMF Tone Length (Long or Short)	13
	4. 1Min Alert	14
	5. Svc Alert	15
2.Tools	1. Caller ID	21
	2. Dial Tone	22
3. Time	1. Auto Send Time	31
	2. Flash Time	32
	3. On Hook Time	33
4. Activating	1. New Lock Code	41
	2. Outgoing Restrict	42
	3. Reset Phone	43
	4. Voice Privacy	44

For example, an entry code: '##XX' (where 'XX' is a two digit code in the table above).

##11 → to go to Ring Menu (option 1) and then select the Ring Type (option 1 in sub menu)

##12 → to go to Ring Menu (option 1) and then select the Volume Level (option 2 in sub menu)

Note:

Users will be able to hear a tone after every menu selection, such as a confirmation tone or a "fail" tone.

Ring / Sound Menu (Option 1)

Ring Type	**(Option ##11)**
- There are 9 ring types. - You can select '1~9.' After selecting the desired ring type, press '✱' to store the ring type. - If you choose '0' key instead of '✱', the selection will be cancelled. - If you press '#' to exit. Ex) ##11 ➔ 0 or # ➔ cancel. It will make a terminal to idle status. ##11 ➔ 1 ~ 9 (assign ring tone) ➔ ✱ : Index 1's ring tone will be selected.	

Volume Type	**(Option ##12)**
- You can adjust the ring volume. - Press '1' to increase volume, and press '2' to decrease volume. - Once the preferred volume level is selected, press '✱' to save or press '**#**' to cancel and exit.	

DTMF	**(Option ##13)**
- You can select DTMF tone length. - Press '✱' to increase the tone length, press '**#**' to reduce the tone length (DTMF).	

1 Min Alert	**(Option ##14)**
- You can set/remove the 1 Min alert notification. - If you press '✱' to set this option, the phone will notify alert to you one minute later during the conversation. - If you want to remove this option, press '**#**.'	

Service Alert	**(Option ##15)**
- You can set/remove the Service alert notification. - If you press '✱' to set this option, the phone will notify alert to you in and out Service Area. - To remove this option, press '**#**.'	

Tools Menu (Option 2)

Caller ID	(Option ##21)
- You can select a CID format for your phone type. - There are 3 types of caller ID. - After selecting a CID type, press '✱' to save. - If you don't want to set a caller ID, press '#' to cancel. **Caller ID options:** 1. BELLCORE 2. V.23 3. DTMF 4. None CID (same as '#'key)	

Dial Tone	(Option ##22)
- You can select a dial tone for your country. - There are 6 types of dial tones - Press '✱' to set. Press '#' to cancel. **Dial tone types**: 0. USA 1. India 2. Latin America 3. East Europe 4. China / Syria 5. Nicaragua 6. South Africa Ex) ##22 + 6 + ✱ : to set the dial tone to the South African dial tone.	

Time Menu (Option 3)

Auto send time	**(Option ##31)**

- You can select an auto-send time.
- There are 10 options (Please see the chart below).
- After selecting a desired auto-send time, press '✱' to save.
- If you press '#', the saved auto-send time will be cancelled and revert back to default auto-send time of 3 seconds.

Time table:

1	2	3	4	5	6	7	8	9	0
1 second	2 seconds	3 seconds	4 seconds	5 seconds	6 seconds	7 seconds	8 seconds	9 seconds	10 seconds

Flash time	**(Option ##32)**

- In the Flash time menu, you can change flash time from 50 to 999 ms (default: 100 ms).
- You cannot set a flash time bigger than on-hook time. If you need to do so, please first adjust on-hook time prior to adjusting the flash time (see on hook options below).
- Press '✱' to set. Or press '#' to cancel.

*NOTE: If the entered flash time or on hook time is out of range, it will be ignored.

Ex) ##32 + 300 + ✱ : to set the flash time to 300 ms

On-Hook time	**(Option ##33)**

- In the On-Hook Time menu, you can change the on hook time from 101 to 1000ms (default : 1000 ms).
- Any time entered out of range, will be ignored.
- You cannot set smaller on hook value than the flash time (see flash time above). If you want to do so, please adjust a flash time first, and then, set the on-hook time
- Press '✱' to set, Or press '#' to release.

*NOTE: Any time entered out of range, will be ignored.

Ex)##33 + 500 + ✱ : to set the on hook time to 500 ms

Setting Menu (Option 4)

New Code	(Option ##41)
- This menu will allow you to change a lock code (the default code is '0000'). - Enter ##41, you will hear a confirmation tone. - Enter the current lock code to get a permission to change a lock code. - If the entered current lock code is correct, you will hear a confirmation tone. - After confirmation, you can enter new lock code. The processes of an entering new lock code have two steps: 1) First, you should enter a new lock code and press '✱' key. 2) Enter the lock code again for double verification and press '✱.' - If first code and second code was matched, a confirmation tone will be heard. Otherwise, the codes are different, you will need to restart the process again. - Press '**#**' to cancel. Ex) Suppose that the current lock code is '7777', and user wants to change it to '8888.' ##41 ➔ confirmation tone ➔ 7777 ➔ confirmation tone ➔ 8888 ➔ Press ✱➔ 8888 ➔ Press ✱➔ confirmation tone	

Restrict outgoing	(Option ##42)
- You can restrict outgoing calls using this option. - You can set a restriction by pressing ✱. - Press '**#**' to cancel.	

Reset phone	(Option ##43)
- You can reset this terminal to make a default factory value. - You can reset a terminal by pressing '✱.' - Press '**#**' to exit the reset menu.	

Voice privacy	(Option ##44)
- You can set the option of Voice privacy to protect your call from being tapped (this feature must be supported by the wireless operator). - You can change the option by doing follows. – Press '✱' for changing a current value to 'Standard' option – Press '#' for changing a current value to 'Enhanced' option. Example - Suppose a current lock code '7777'	

##44 ➔ semi-confirmation tone ➔ 7777 ➔ semi-confirmation tone ➔ Press '#' : Enhanced
##44 ➔ semi-confirmation tone ➔ 7777 ➔ semi-confirmation tone ➔ Press ✱ : Standard

Chapter 5

Troubleshooting

Q: What networks does the router operate on?

A: The router operates using your carriers 3G and 4G wireless networks for data service and 2G wireless network for voice service. (if applicable)

Q: What are the air holes on the back side of the router for?

A: The air holes are designed to reduce the heat generated by the device itself while in use. Keep the device away from open flames, dusty conditions, and keep it dry for optimal performance.

Q: What type of security is available with the router?

A: The router supports advanced Wi-Fi security protocol through standard methods such as Wi-Fi Protected Access (WPA & WPA2) and the older Wired Equivalent Privacy (WEP).
Advanced settings are available in the Web based user interface.

Q: How can the router revert back to the default password?

A: The router can be reset to the default factory password by the Reset button on the device's back side, depress the small button using a paper clip or pen and hold for 5 second. The power LED will turn off-and-on twice to indicate reset is successful. The unit will power up with the factory default configuration.

Q: What do I need to be aware of before sharing with multiple devices?

A: With multiple devices or used as a temporary hotspot:

- If there are several heavy data users on at the same time, you may notice a degradation in performance
- We strongly recommend that users are not allowed to access more than 10 devices in order to keep the optimal user performance.
- Be aware these users are contributing to your data usage. You may want to check your account online to see how much of a difference it is making and how close you are to any usage caps that may apply under your network connection plan.

Q: What is the battery used for?

A: The router is normally powered by the external AC power, however if AC power has failed like in the case of an emergency, the battery power will provide Voice Calling only (if applicable) no internet service.

- The battery will have on average 3 hours of active use time.

Q: Does the router support fax and/or text messaging?

A: Fax and text messaging service are not supported.

Q: Can the router be used for memory storage?

A: The router supports external memory using the external USB connector, so you can plug your USB memory stick into the router and use the file sharing method described in the router's Web UI.

Q: How long does a user need to charge the battery prior to its usage?

A: The battery must be fully charged before using the router for the first time. We recommend a minimum of 2 hours charging time before first use. After the initial use and set-up, you should use the battery with the AC power.

Q: Does the router require software installation?

A: No, the router uses any web browser (via a URL) that allows the user to configure the device without any installation.

Q: What does the user of the router need to begin configuration and activation?

A: See 'Installing the 4G LTE SIM Card' section of this manual for activation instructions.

Q: What if the router cannot access the Internet even though the unit has been activated?

A: Please check CPE router using the steps below.

a. Make sure the SSID is correct.

b. If you use Security Mode, Make sure you use the correct Password.

In the case you forgot the password, press the Reset button for about 5 seconds.

c. Make sure the color of LTE LED ( ) is Green or Orange.

If the LTE LED is Red or off, reboot and make sure the color of LTE LED is Green or Orange.

If the LTE LED is Red or Off after rebooting, do Factory Reset.

d. Make sure Wi-Fi ( ) LED color is Blue.

If the Wi-Fi LED is off, reboot and make sure the color of Wi-Fi LED is Blue.

If the Wi-Fi LED is off after rebooting, do Factory Reset.

e. Maximum 10 devices can share Wi-Fi.

f. Check the signal strength of Wi-Fi. If you are too far from the router, the connection will be limited.

Q: When will a user of the router need to access the browser interface?

A: The router browser interface will only need to be accessed or used when configuring your device for the first time or changing the security settings or establishing more advanced settings.

Q: Why does the router gets warm?

A: The router has two radios inside: the 3G radio and the 4G radio. In fringe areas of low 3G or 4G coverage, the transmit power will be at the max and therefore generate more heat. The device has been environmentally tested and approved by the FCC.

Q: Why can't I access the Internet, even if Wi-Fi is connected?

A: Please verify the below steps.

a. Turn Off the device.
b. Make sure using the SIM card from Carrier.
c. Make sure the SIM card is inserted correctly.
d. Check the SIM card is PIN Locked.
   After connecting Wi-Fi, connect Web UI and check the warning of SIM card (see the 'Install the 4G LTE SIM Card', page 7).
e. Make sure the LTE LED ( ) color is Red or No light.
f. Check the state of Internet connection is "connected" in Web UI.
g. Check the Preferred mode in Diagnostics in WEB UI is "Auto".
h. If the region does not support LTE network, please check what the Data Roaming is "1xEVDO only".
i. In case DNS IP address of Internet connection in Web UI is different from Primary DNS IP address in DNS set up, save the DNS IP address in Internet connection on to Primary DNS in DNS Setup and reboot the router.

Q: Why my device (Laptop, PC, Smartphone and so on) does not connect to the router?

A: Please verify the below steps, if you set a Wi-Fi profile manually and if you use the Wi-Fi security option to WPA/WPA2 mixed-PSK.

a. In case the Security type to WPA-PSK, the Encryption type should be saved to TKIP.
b. In case the Security type to WPA2-PSK, the Encryption type should be saved to AES.

Q: Why can't I access the voice service, even if the telephone line is connected?

A: Please verify the below steps.

a. Make sure the Voice LED ( ) color is Red or No light.
b. Make sure the device is activated or not. (See the 'Activate your device', page 10)

➢ Please note that this feature is not available in certain versions of this product.

Q: Why is the voice service not working even though the Voice LED color is Orange or Green?

A: Please verify the RJ-11 cable between the router and your telephone.

➢ Please note that this feature is not available in certain versions of this product.

Q: There are two RJ-11 ports in the router's back side. Are there two separate voice call services?

A: Only one voice service is active, but two phones may access the call.

- Please note that this feature is not available in certain versions of this product.

Q: Why am I unable to receive incoming call?

A: Please verify your telephone is attached properly. If the telephone is off the hook, you may not hear any ring tone when an incoming call occurs.

- Please note that this feature is not available in certain versions of this product.

Chapter 6

Regulatory Statements

FCC Equipment Authorization ID: XHG-C774

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This product is mobile device that needs to be connected with power adapter. The battery included is only used as backup power during the power outage.

Body-Worn Operation

Output power listed is ERP below 1GHz and EIRP above 1GHz. This device also contains a WLAN transmitter. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with multi-transmitter evaluation procedures as documented in this filing. End-users and installers must be provided with antenna installation and transmitter operating conditions for satisfying RF exposure compliance. Device complies with Mobile RF Exposure requirements of 2.1091 as a desktop wireless router with Hot-Spot capability.

If the subject device requires shielded interface cables to ensure compliance, the user's manual must advise the user of this requirement.

<FCC 15.21 - Information to user>
Caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

<FCC 15.105>
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Chapter 7

Glossary

- **802.11 (b/g/n)** — A set of WLAN communication standards in the 2.4, 3.6 and 5 GHz frequency bands, respectively.
- **Access Point (AP)** — A device that allows wireless communication devices to connect to a wireless network using a standard such as WLAN.
- **DHCP** — Dynamic Host Configuration Protocol. A network application protocol used to obtain configuration information for an Internet Protocol network.
- **DHCP Server** — A server that uses DHCP to obtain configuration information for operation in an Internet Protocol network.
- **DNS** — Domain Name System. A system for converting host names and domain names into IP addresses on the Internet or on local networks that use the TCP/IP protocol.
- **Firmware** — A program that internally controls an electronic device.
- **FTP** — File Transfer Protocol. A network protocol for exchanging files over a TCP network.
- **Gateway** — A network point that acts as an entrance to another network that uses a different protocol.
- **Host Name** — The unique name by which a network-attached device is known on a network.
- **Hotspot** — A WLAN access point or area for connecting to the Internet.
- **HTTP** — Hypertext Transfer Protocol. An application-level protocol for accessing the World Wide Web over the Internet.
- **IP address** — Internet Protocol address. The address of a device attached to an IP network (TCP/IP network).
- **LAN** — Local Area Network. A type of network that lets a group of computers, all in close proximity (such as inside an office building), communicate with one another.
- **MAC Address** — A number that uniquely identifies a given network adapter on a LAN. MAC addresses are 12-digit hexadecimal numbers.
- **MIN**— Mobile Identification Number. It refers to the 10-digit unique number that a wireless operator uses to identify the mobile phone. A MIN is a number that uniquely identifies a mobile working under TIA standards for Cellular and PCS technologies
- **MSID** — Mobile Station ID. A number provisioned by a service provider to a mobile phone that identifies that phone to the network.
- **MSL** — Master Subsidy Lock. A numeric code for accessing certain phone settings.
- **NAI** — Network Access Identifier. A standard way of identifying users who request access to a network.
- **Network Mask** — A number that allows IP networks to be subdivided for security and performance.
- **NNTP** — Network News Transfer Protocol. An Internet application protocol for reading and posting Usenet (newsgroup) articles.
- **POP** — Post Office Protocol. An Internet protocol for retrieving email from a remote server over a TCP/IP connection.

- **Port** — A virtual data connection used by programs to exchange data.
- **Port Forwarding** — A process that allows remote devices to connect to a specific computer within a private LAN.
- **Port Number** — A number assigned to a user session and server application in an IP network.
- **Protocol** — A standard that enables connection, communication, and data transfer between computing endpoints.
- **PPTP** — Point-to-point Tunnelling Protocol. A method for implementing virtual private networks that does not provide confidentiality or encryption.
- **PRL** — Preferred Roaming List. A list that your wireless phone or device uses to determine which networks to connect with when you are roaming.
- **RFB** — Remote Frame Buffer. A protocol for remote access to graphical user interfaces.
- **Router** — A device that connects two networks.
- **RTP** — Real-time Transport Protocol. A packet format for streaming multimedia over the Internet.
- **SMTP** — Simple Mail Transfer Protocol. An Internet standard for email transmission across IP networks.
- **SSID** — Service Set Identifier. The name assigned to a WLAN network.
- **TCP** — Transmission Control Protocol. A core protocol for transmitting and receiving information over the Internet.
- **TCP/IP** — Transmission Control Protocol/Internet Protocol. A communications protocol developed under contract from the U.S. Department of Defence to internetwork dissimilar systems.
- **Telnet** — Telecommunication Network. A network protocol used on the Internet or on local area networks.
- **TFTP** — Trivial File Transfer Protocol. A file transfer protocol with a subset of FTP functionality.
- **UDP** — User Datagram Protocol. A simple transport protocol used to transfer information on the Internet.
- **VNC** — Virtual Network Computing. A graphical desktop sharing system that uses the RFB protocol to remotely control another computer.
- **VPN** — Virtual Private Network. A secure private network that runs over the public Internet.
- **VPN Pass-through** — A feature that allows a client to establish a tunnel only with a specific VPN server.
- **WAN** — Wide Area Network. A public network that extends beyond architectural, geographical, or political boundaries (unlike a LAN, which is usually a private network located within a room, building, or other limited area).
- **WEP** — Wired Equivalent Privacy. An IEEE standard security protocol for 802.11 networks. Superseded by WPA and WPA2.
- **WLAN** — Wireless Fidelity. Any system that uses the 802.11 standard developed and released in 1997 by the IEEE.
- **WLAN Client** — A wireless device that connects to the Internet via WLAN.
- **WLAN** — WLAN LAN.A typically low-power network that transmits a wireless signal over a span of a few hundred feet and usually only to stationary devices.
- **WPA/WPA2** — WLAN Protected Access. A security protocol for wireless 802.11 networks from the WLAN Alliance.
- **WWAN** — Wireless Wide Area Network. Wireless connectivity to the Internet achieved using cellular tower technology. This service is provided through cellular providers. WWAN connectivity allows a user with a laptop and a WWAN device to surf the Internet, check email, or connect to a virtual private network (VPN) from anywhere within the regional boundaries of the cellular service.