LTE4506-M606

4G LTE-A HomeSpot

Version 1.00
Edition 1, 05/2016

User's Guide

Default Login Details	
LAN IP Address	http://192.168.1.1
User Name	admin
Password	1234

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IMPORTANT!

READ CAREFULLY BEFORE USE.

KEEP THIS GUIDE FOR FUTURE REFERENCE.

Screenshots and graphics in this book may differ slightly from your product due to differences in your product firmware or your computer operating system. Every effort has been made to ensure that the information in this manual is accurate.

Related Documentation

- Quick Start Guide

  The Quick Start Guide shows how to connect the LTE4506 and access the Web Configurator.

- More Information

  Go to **support.zyxel.com** to find other information on the LTE4506.

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PART I
User's Guide

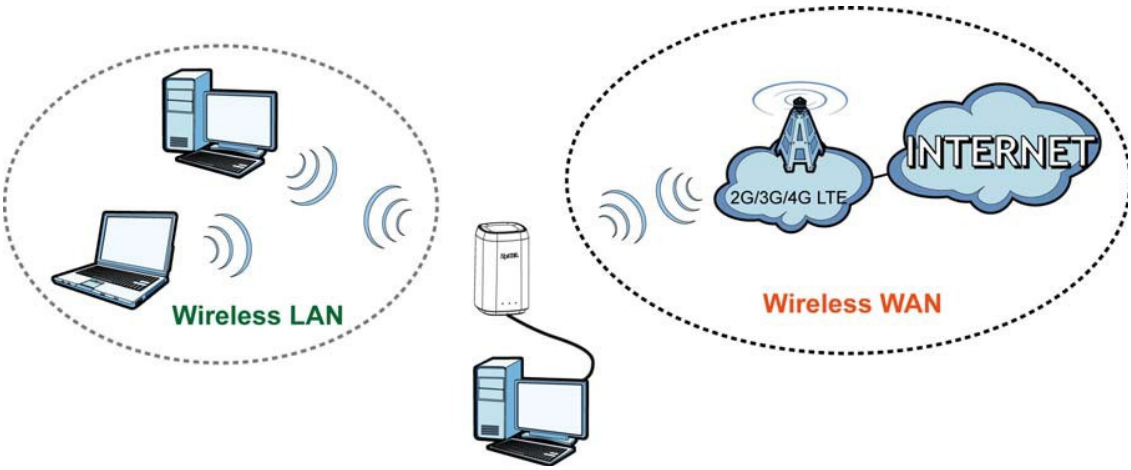
1

Introduction

1.1 Overview

This chapter introduces the main features and applications of the LTE4506.

The LTE4506 is a 4G+ home-spot wireless router, which can connect to a mobile network and the Internet through a wireless WAN connection and provide easy network access to mobile users without additional wiring. You can set up a wireless network with other IEEE 802.11b/g/n compatible devices.



A range of services such as a firewall are also available for secure Internet computing.

Your LTE4506 is easy to install, configure and use. The embedded Web-based configurator enables simple, straightforward management and maintenance. See the Quick Start Guide for how to make hardware connections.

1.2 Ways to Manage the LTE4506

You can use the following way to manage the LTE4506.

Web Configurator

The Web Configurator allows easy LTE4506 setup and management using an Internet browser. This User's Guide provides information about the Web Configurator.

1.3 Good Habits for Managing the LTE4506

Do the following things regularly to make the LTE4506 more secure and to manage it more effectively.

- Change the password often. Use a password that's not easy to guess and that consists of different types of characters, such as numbers and letters.
- Write down the password and put it in a safe place.
- Back up the configuration (and make sure you know how to restore it). Restoring an earlier working configuration may be useful if the device becomes unstable or even crashes. If you forget your password, you will have to reset the LTE4506 to its factory default settings. If you backed up an earlier configuration file, you won't have to totally re-configure the LTE4506; you can simply restore your last configuration.

1.4 Hardware Connections

See your Quick Start Guide for information on making hardware connections. You need to insert a SIM card to the SIM card slot at the bottom of the LTE4506 before you can use it.

1.5 Turn on/off the LTE4506

To turn on the device, press the power button and hold until any of the LED lights turns on

To turn off the device, press the power button and hold until all the LED lights are off.

Figure 1 LTE4506 Power Button

1.6 LED Display

You can check the LED lights to see the 2G/3G/4G connection status, signal strength, and the wireless connection status.

Figure 2 LTE4506 LEDs

The following table describes the LED lights.

Table 1 LTE4506 LEDs

ICONS	DESCRIPTION
	The power signal and quality of the mobile network to which the LTE4506 is connecting. **Flashing red:** the power is on, but there is no LTS/3G signal received. **Solid red:** there is a weak signal quality. **Solid orange:** there is a medium signal quality. **Solid green:** there is a good signal quality.
	The internet connection status and SMS status. **Solid:** the internet access is available and there is no new SMS. **Flashing fast:** the internet access is available and there is a new SMS. **Flashing slow:** the internet access is not available and there is a new SMS. **Off:** the internet access is not available and there is no new SMS.
	The Wi-Fi/WPS status. **Solid green:** the Wi-Fi AP is on. **Flashing green fast:** Data is being transmitted and received. **Flashing green slow:** the WPS is on.

1.7 One-touch Wi-Fi Sharing

Press the One-Touch button on the top of the LTE4506 to turn on the Wi-Fi sharing function. Users can easily connect to the LTE4506.

Figure 3 The Wi-Fi Sharing Button

1.8 Resetting the LTE4506

If you forget your password or IP address, or you cannot access the Web Configurator, you will need to use the physical **Reset** button to reload the factory-default configuration file. This means that you will lose all configurations that you had previously saved, the password will be reset to **1234** and the IP address will be reset to **192.168.1.1**.

1.8.1 How to Use the Physical Reset Button

1 Make sure the LTE4506 is turned on.

2 Press the **Reset** button at the bottom of the LTE4506 until it reboots and set it back to the factory-default configurations.

2

The Web Configurator

2.1 Overview

The LTE4506 Web Configurator allows easy management using an Internet browser.

In order to use the Web Configurator, you must:

- Use Internet Explorer 8.0 and later versions, Mozilla Firefox 43.0 and 44.0 versions, Safari 7.0 and 8.0 versions, or Google Chrome 40.0 and 41.0 versions.
- Allow pop-up windows.
- Enable JavaScript (enabled by default).
- Enable cookies.

2.2 Login Accounts

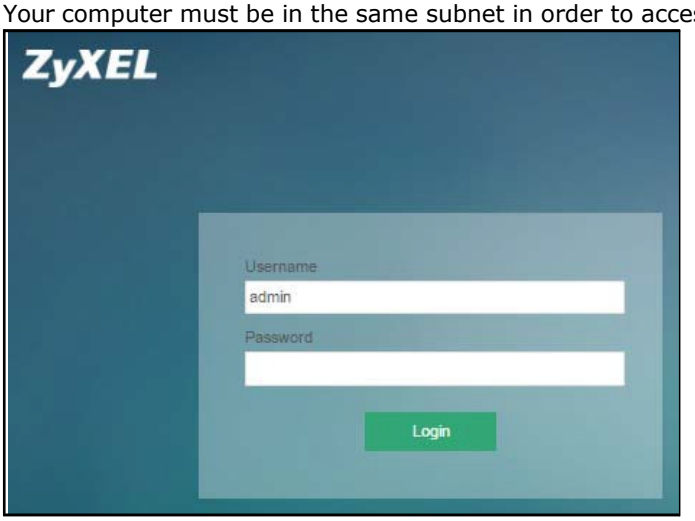
There is one system account that you can use to log in to the LTE4506: "**admin**". The **admin** account allows you full access to all system configurations. The default admin user name is "admin" and password is "1234".

2.3 Access

1. Make sure your LTE4506 hardware is properly connected. See the Quick Start Guide.
2. Launch your web browser.

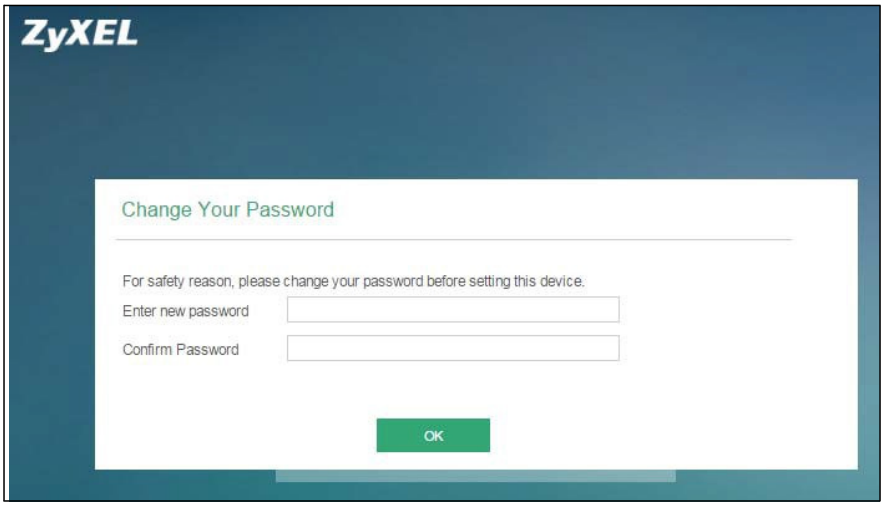
3 Type "http://192.168.1.1" as the website address. The **Login** screen appears.

Your computer must be in the same subnet in order to access this website address.

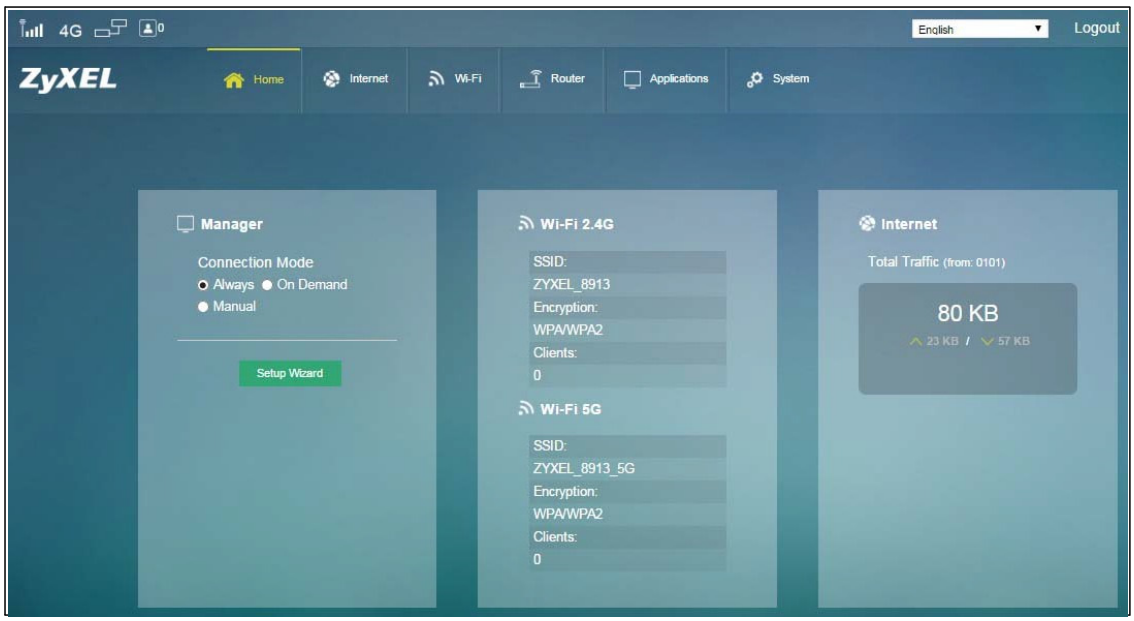


4 Enter the user name (default: "admin") and password (default: "1234"). See Section 2.2 on page 13 for more information about login accounts. Click **Login**.

5 The following screen displays if you have not yet changed your password. Enter a new password, retype it to confirm and click **OK**.



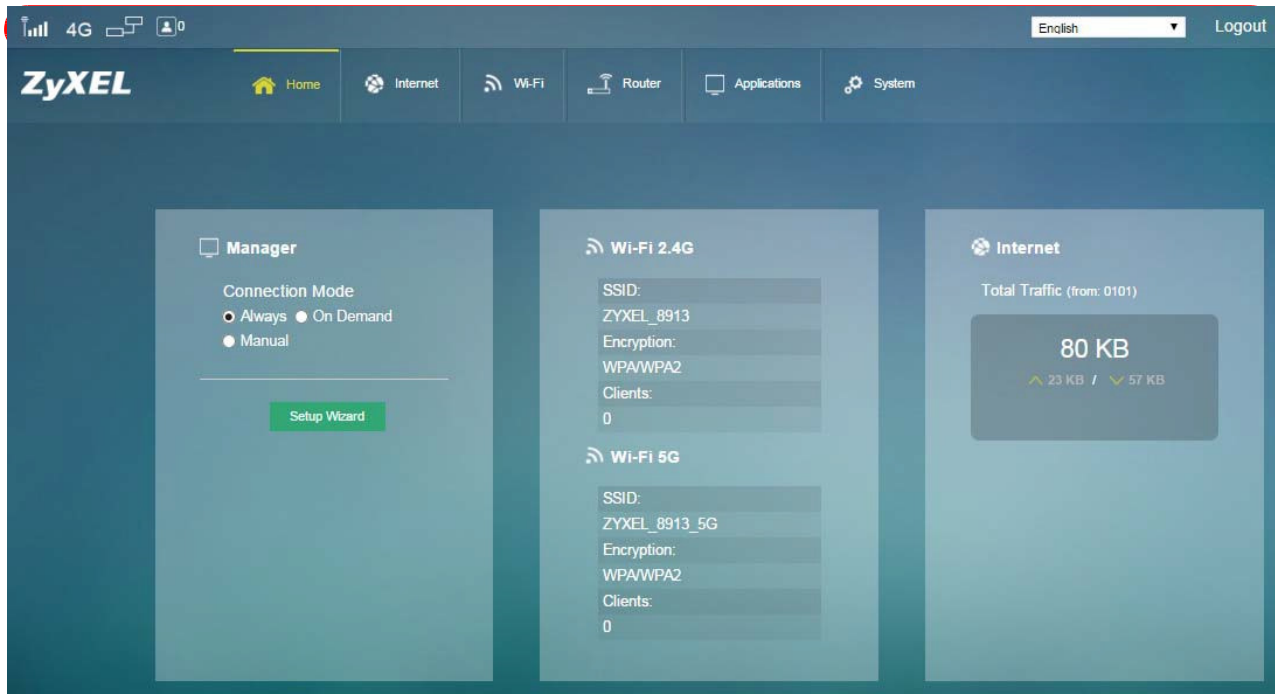
6 The **Home** screen appears.



2.4 Navigating the Web Configurator

The following summarizes how to navigate the web configurator from the **Home** screen.

Figure 4 The Web Configurator's Main Screen



The Web Configurator's main screen is divided into these parts:

- **A** - Title Bar
- **B** - Navigation Panel_Sub-Menus
- **C** - Main Window
- **D** - Navigation Panel_Main Menus

2.4.1 Title Bar

The title bar provides some useful links that always appear over the screens below, regardless of how deep into the Web Configurator you navigate.

Figure 5 Title Bar

The icons provide the following functions.

Table 2 Title Bar: Web Configurator Icons

LABEL	DESCRIPTION
SIM	This shows whether a SIM card is inserted in the LTE4506. The icon shows if there is no SIM card inserted.
Signal Strength	This shows the current signal strength to the mobile network. The icon is grayed out if the mobile data connection is not up.
Service Provider Searching...	This shows the name of the service provider for the mobile network to which the LTE4506 is connected. This shows **Searching...** if the LTE4506 is not connected to a mobile network yet.
Roaming	This shows whether the LTE4506 is connected to another service provider's mobile network using roaming. The icon is grayed out if roaming is disabled on the LTE4506.
Internet	This shows whether the LTE4506 has an Internet connection. The icon shows if the LTE4506 in not connected to the Internet.
Wi-Fi	This shows whether the LTE4506's Wi-Fi network is active and the number of the connected wireless clients.
Language	Choose your language from the drop-down list on the upper right corner of the title bar.
Logout	Click this to log out of the Web Configurator.

2.4.2 Navigation Panel

Use the menu items on the navigation panel to open screens to configure LTE4506 features. The following sections introduce the LTE4506's navigation panel menus and their screens.

Figure 6 Navigation Panel

Home Menu

The Home menu screens display status and statistics information.

Table 3 Home Menu Screens Summary

MAIN MENU	SUB-MENU	FUNCTION
Home		Display connection mode, wireless LAN information and the LTE4506's traffic statistics. Use this screen to access the wizard.

Internet Menu

Table 4 Internet Menu Screens Summary

MAIN MENU	SUB-MENU	FUNCTION
Internet		
Internet Status		Configure the WAN settings on the LTE4506 for Internet access.
PIN Settings		Configure the PIN code when PIN code authentication is enabled. Change the PIN code for the inserted SIM card.
APN Configuration		Configure user-defined connection profiles.
Network Selection		Display available Public Land Mobile Networks and select a preferred network for roaming.
Data Usage/ Statistic		Specify limiting the amount of the package data and view the LTE4506's traffic statistics.

WiFi Menu

Table 5 WiFi Menu Screens Summary

MAIN MENU	SUB-MENU	FUNCTION
WiFi		
Wi-Fi Status		Display information about the 2.4GHz/5GHz wireless LAN.
Wi-Fi Settings		Enable the wireless LAN and configure the basic wireless settings.
MAC Filter		Allow or deny wireless clients based on their MAC addresses from connecting to the LTE4506.
WPS		Activate WPS.

Router Menu

Table 6 Router Menu Screens Summary

MAIN MENU	SUB-MENU	FUNCTION
LAN IP		Configure the management IP address for the LTE4506 LAN interface.
DHCP Server		Enable the DHCP server on the LTE4506. Configure static DHCP entries.
DNS Settings		Automatically configured DNS server from mobile network or manually configure the first and second DNS server IP.
Connected Devices		View current clients information of network clients connected to the LTE4506.
Firewall	IPv4/Port Filter	Configure IPv4/Port filtering rules.
	IPv6/Port Filter	Configure IPv6/Port filtering rules.
	URL Filter	Configure URL filtering rules.
	IP/Port Forwarding	Configure port forwarding rules.

Applications Menu

Table 7 Applications Menu Screens Summary

MAIN MENU	SUB-MENU	FUNCTION
Contacts	Contact List	Configure the contact list saved on the LTE4506.
	SIM Contacts	Display the contact list saved on the SIM card.
	Contacts Settings	Import or export your contacts.
Short Message		
New SMS		Send new SMS messages.
Inbox		Display messages received on the LTE4506.
Outbox		Display messages sent from the LTE4506.
Draft		Display messages not yet sent from the LTE4506.
SIM SMS		Display messages received on the SIM card.

System Menu

Table 8 System Menu Screens Summary

MAIN MENU	SUB-MENU	FUNCTION
System		
System Information		Display the LTE4506's basic information and restart the LTE4506.
User Account		Change administrative settings and the password of your LTE4506.
Settings Profile		Backup and restore device configurations, or reset your device settings back to the factory default.
Firmware Upgrade		Upload new firmware to the LTE4506.
Time Settings		Change the LTE4506's time and date. Select your time zone and configure daylight saving time.
System Log		Configure to where the LTE4506 is to send logs. View the logged messages.

PART II
Technical Reference

3

Home

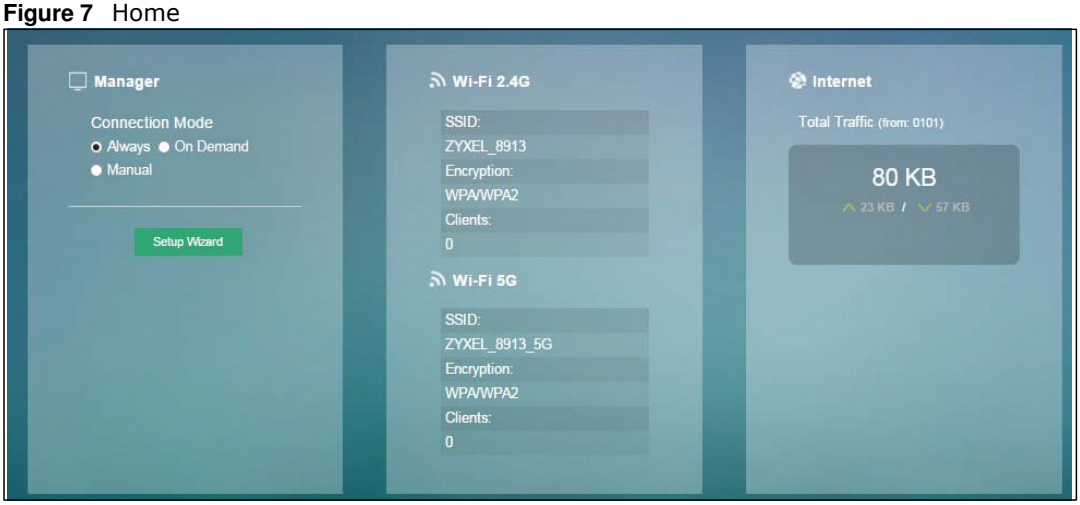
3.1 Overview

Use the **Home** screen to check status information about the LTE4506. Use the **Wizard** screens to configure the LTE4506's basic Internet access and wireless settings.

3.2 Home

This screen is the first thing you see when you log into the LTE4506. It also appears every time you click the **Home** icon in the navigation panel. The **Home** screen displays the LTE4506's connection mode, wireless LAN information and traffic statistics.

Figure 7 Home



The following table describes the labels in this screen.

Table 9 Home

LABEL	DESCRIPTION
Manager	
Connection Mode	This field displays the connected mode of the LTE4506. Select **Always** to connect to the mobile network automatically if there is an available mobile network. Select **On Demand** to connect to the mobile network automatically only when a connected client wants to access the Internet. Otherwise, select **Manual**.
Setup Wizard	Click this button to set up the Internet and Wi-Fi.
Wi-Fi 2.4G	
SSID	This displays a descriptive name used to identify the LTE4506 in the 2.4GHz wireless LAN.

Table 9 Home (continued)

LABEL	DESCRIPTION
Encryption	This displays the level of wireless security the LTE4506 is using.
Clients	This field displays the total number of the associated stations.
Wi-Fi 5G	
SSID	This displays a descriptive name used to identify the LTE4506 in the 5GHz wireless LAN.
Encryption	This displays the level of wireless security the LTE4506 is using.
Clients	This field displays the total number of the associated stations.
Internet	If you have inserted a valid SIM card, this field displays the total amount of data in kilobytes that has been transmitted and received on the WAN interface since the LTE4506 last restarted.

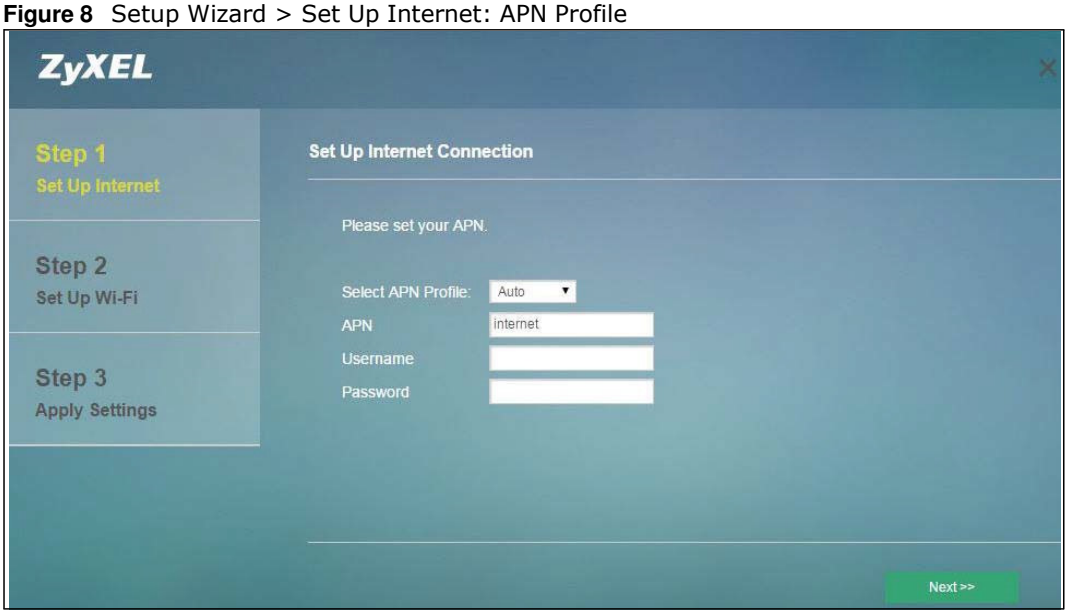
3.3 Setup Wizard

Click **Home > Setup Wizard** to open the wizard screen.

3.3.1 Internet

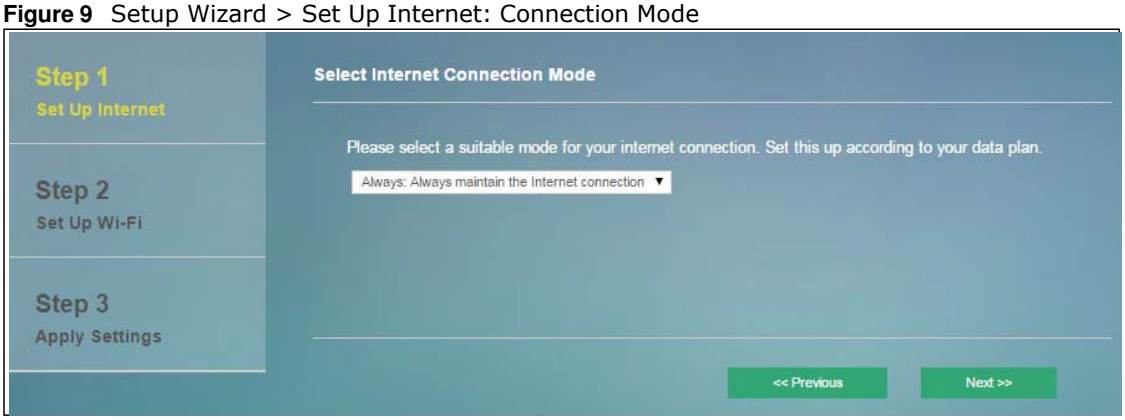
Select the **Auto** option if you did not configure the connection profile. Click **Next** to continue.

Figure 8 Setup Wizard > Set Up Internet: APN Profile



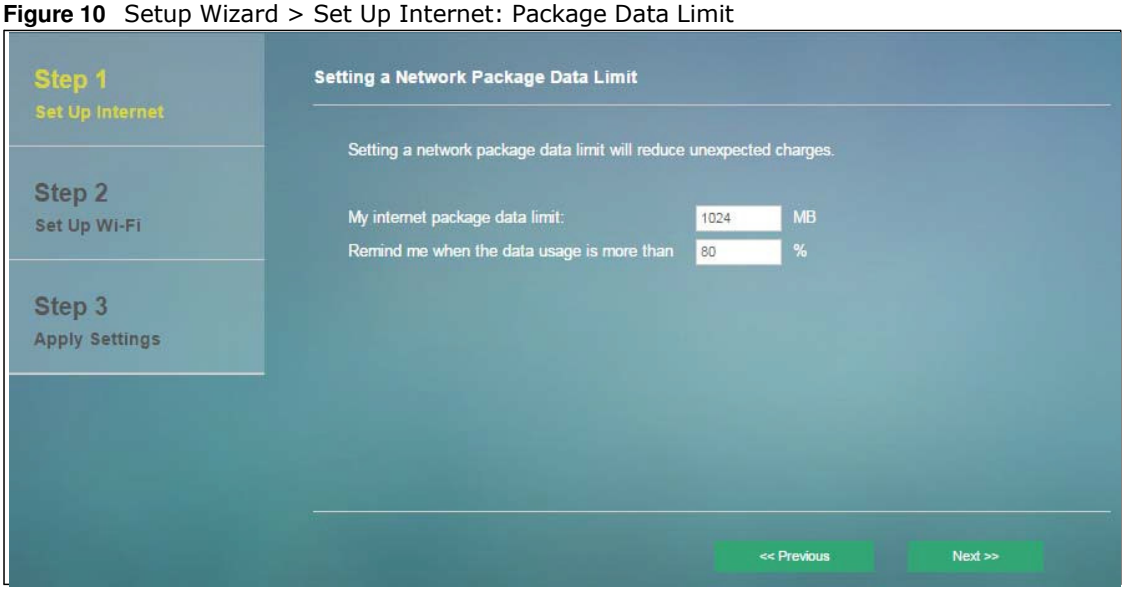
Select the Internet connection mode of the LTE4506. Click **Next** to continue.

Figure 9 Setup Wizard > Set Up Internet: Connection Mode



Specify limiting the amount of the package data and reminding the percentage of the package data usage. Click **Next** to configure the Wi-Fi settings.

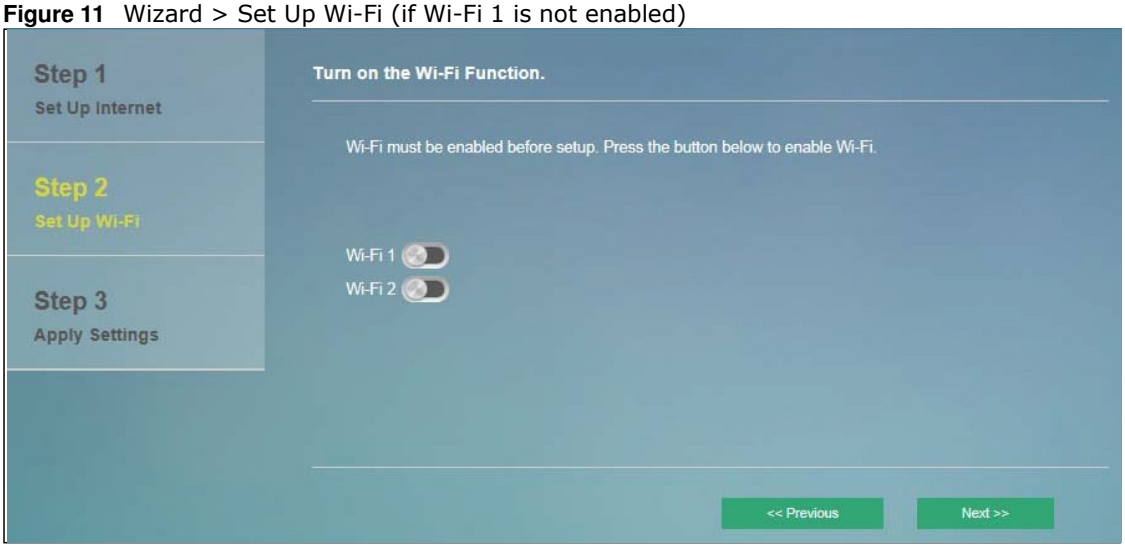
Figure 10 Setup Wizard > Set Up Internet: Package Data Limit



3.3.2 Wi-Fi

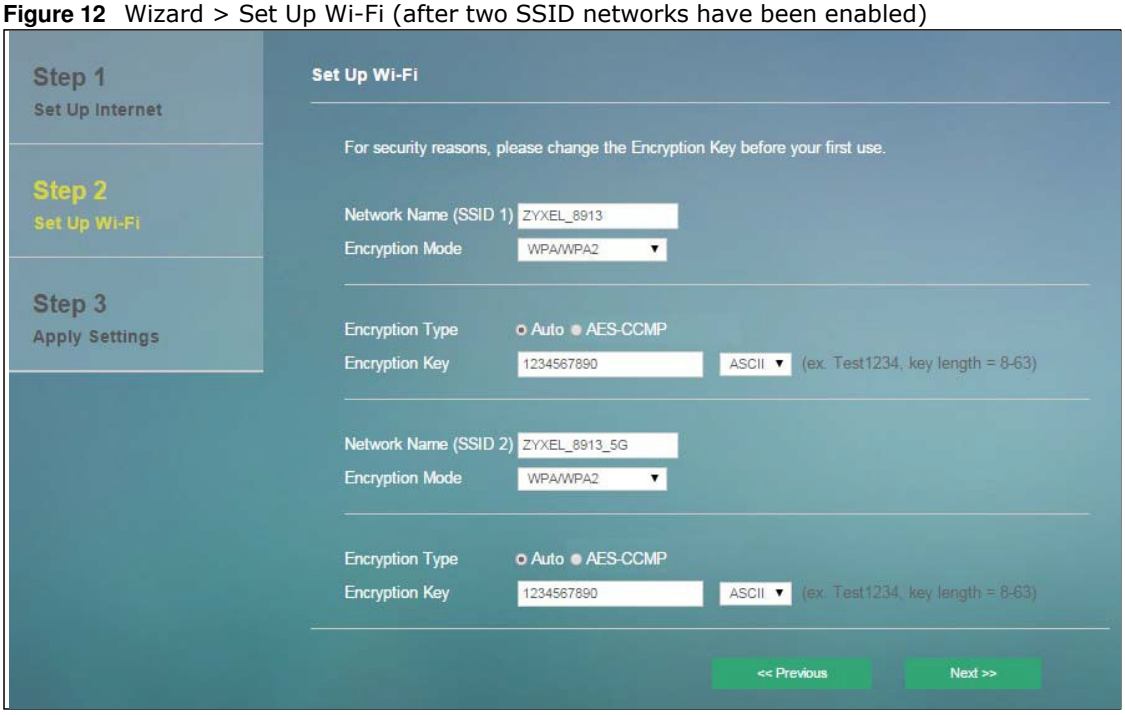
If you have not enabled the Wi-Fi 1 network, this screen shows the Wi-Fi 1 and Wi-Fi 2 network status. Click the button of a Wi-Fi network to enable it. Click **Next** to go to the next step.

Figure 11 Wizard > Set Up Wi-Fi (if Wi-Fi 1 is not enabled)



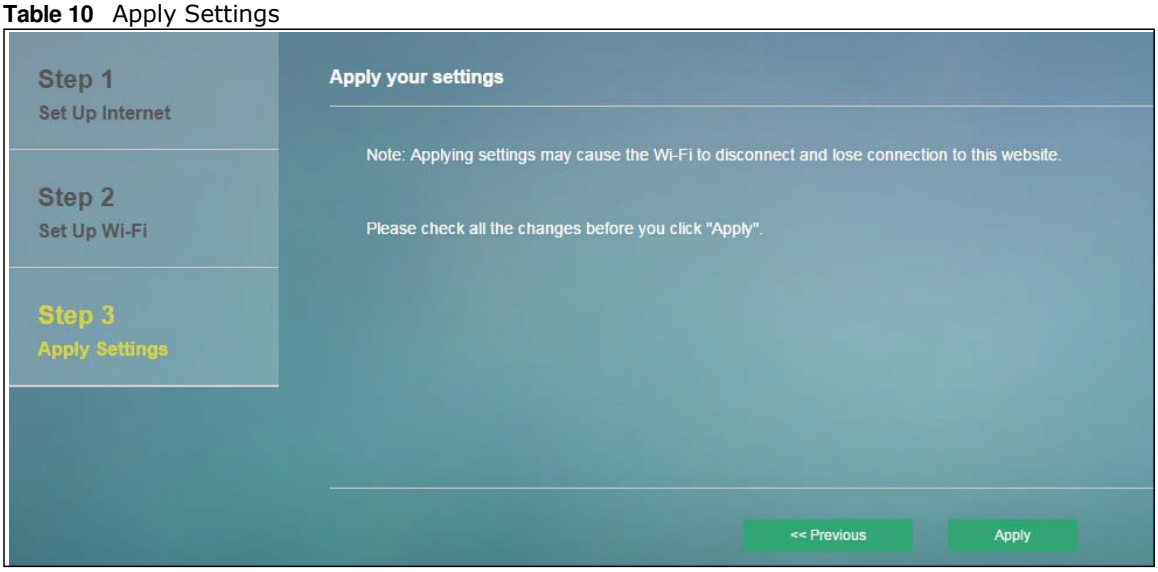
If you have enabled the Wi-Fi 1 network, this screen shows the default Wi-Fi key and SSID for the LTE4506's wireless network. If you set up a new key and SSID, the wireless clients will lose their wireless connection and need to use new wireless settings. Click **Next** to go to the next step.

Figure 12 Wizard > Set Up Wi-Fi (after two SSID networks have been enabled)



Click **Apply** to save your changes. The LTE4506 will restart.

Table 10 Apply Settings



4

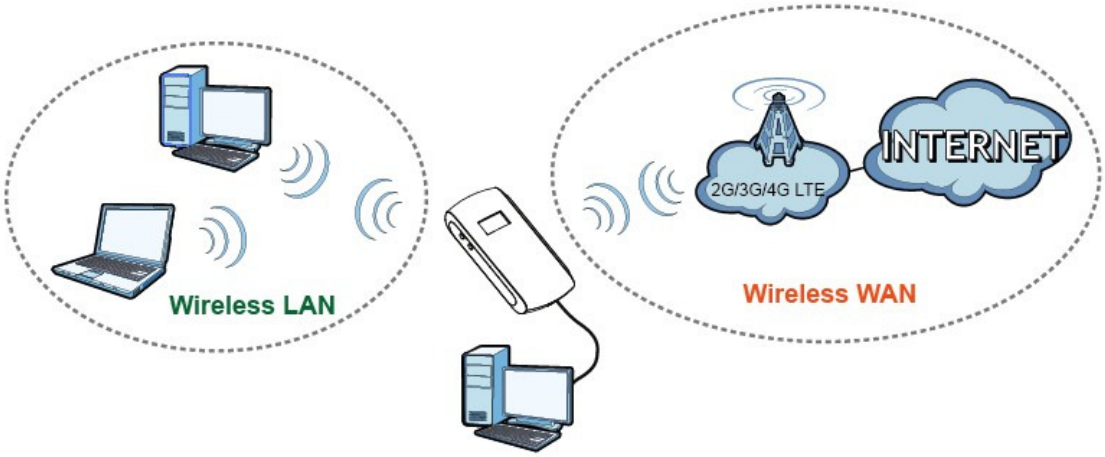
Internet

4.1 Overview

This chapter discusses the LTE4506's **Internet** screens. Use these screens to configure your LTE4506 for Internet access.

A WAN (Wide Area Network) connection is an outside connection to another network or the Internet. It connects your private networks, such as a LAN (Local Area Network) and other networks, so that a computer in one location can communicate with computers in other locations.

Figure 13 LAN/Wireless LAN and Wireless WAN



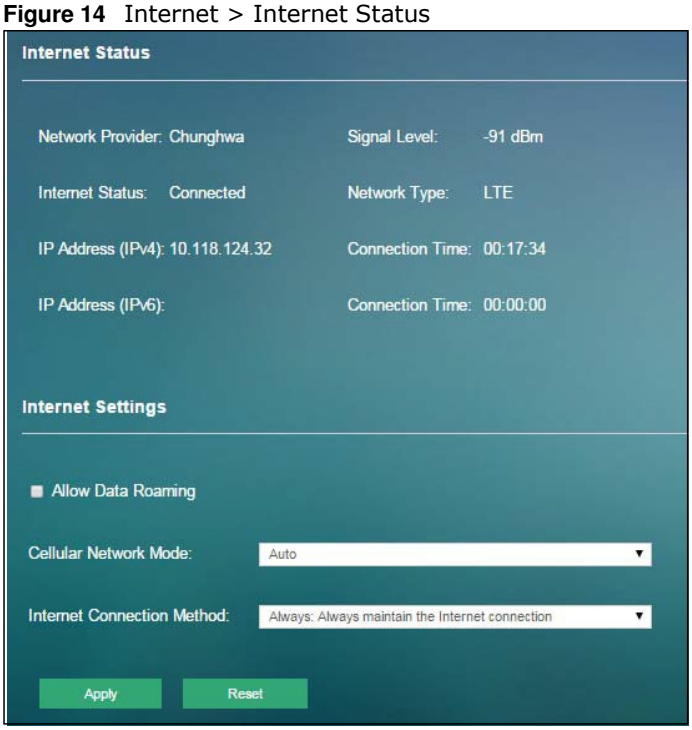
4.1.1 What You Can Do in this Chapter

- Use the **Internet Status** screen to configure the WAN settings on the LTE4506 for Internet access (Section 4.2 on page 26).
- Use the **PIN Settings** screen to enable or disable PIN code authentication (Section 4.3 on page 27).
- Use the **APN Configuration** screen to configure user-defined connection profiles (Section 4.4 on page 28).
- Use the **Network Selection** screen to display available Public Land Mobile Networks and select a preferred network for roaming (Section 4.5 on page 29).
- Use the **Data Usage/Statistic** screen to specify limiting the amount of the package data and view the LTE4506's traffic statistics (Section 4.6 on page 30).

4.2 Internet Status Screen

Use this screen to change your LTE4506's Internet access settings. Click **Internet > Internet Status**. The screen appears as shown next.

Figure 14 Internet > Internet Status



The following table describes the labels in this screen.

Table 11 Internet > Internet Status

LABEL	DESCRIPTION
Internet Status	
Network Provider	This shows the name of the service provider for the mobile network to which the LTE4506 is connected.
Internet Status	This shows the mobile data connection status.
IP Address (IPv4)	This field displays the current IPv4 address assigned to the WAN interface.
IP Address (IPv6)	This field displays the current IPv6 address assigned to the WAN interface.
Signal Level	This shows the current signal strength to the mobile network in dBm.
Network Type	This shows the type of the mobile network (such as LTE, UMTS, GSM, HSPA+, etc.) to which the LTE4506 is connecting.
Connection Time	This field displays how long you connect to the Internet through IPv4.
Internet Settings	

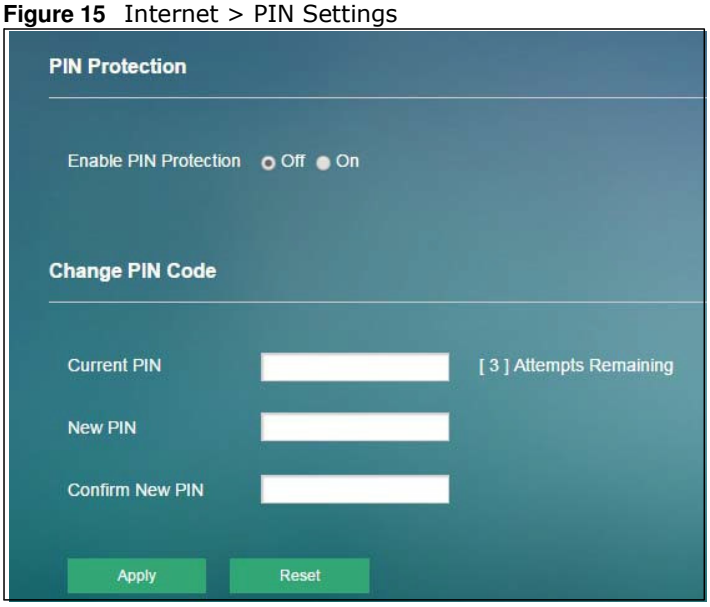
Table 11 Internet > Internet Status (continued)

LABEL	DESCRIPTION
Allow Data Roaming	Select this check box to enable data roaming on the LTE4506. 4G roaming is to use your mobile device in an area which is not covered by your service provider. Enable roaming to ensure that your LTE4506 is kept connected to the Internet when you are travelling outside the geographical coverage area of the network to which you are registered.
Cellular Network Mode	Select the type of the network (**4G Mode**, **3G Mode**, or **2G Mode**) to which you want the LTE4506 to connect and click **Apply** to save your settings. Otherwise, select **Auto** to have the LTE4506 connect to an available network using the default settings on the SIM card. If the currently registered mobile network is not available or the mobile network's signal strength is too low, the LTE4506 switches to another available mobile network.
Internet Connection Method	Select **Always** to connect to the mobile network automatically if there is an available mobile network. Select **On Demand** to connect to the mobile network automatically only when a connected client wants to access the Internet. Otherwise, select **Manual**.
Disconnect in	Specifies the period of time the user can be idle before he/she is disconnected.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

4.3 PIN Settings Screen

Use this screen to turn on or turn off PIN code authentication on the inserted SIM card. Click **Internet > PIN Settings**. The screen appears as shown next.

Figure 15 Internet > PIN Settings



The following table describes the labels in this screen.

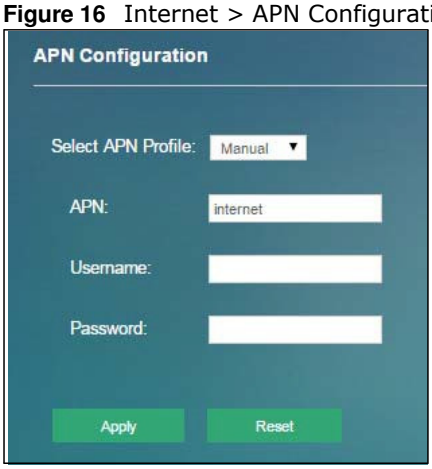
Table 12 Internet > PIN Settings

LABEL	DESCRIPTION
PIN Protection	
Enable PIN Protection	Click **On** to turn on PIN code authentication. Otherwise, click **Off** to turn off PIN code authentication. A PIN (Personal Identification Number) code is a key to a SIM card. Without the PIN code, you cannot use the SIM card.
Change PIN Code	
Current PIN	Enter the default or existing PIN code for the inserted SIM card.
New PIN	Configure a new PIN code for the SIM card. You can specify any four to eight digits to have a new PIN code.
Confirm New PIN	Enter the new PIN code again for confirmation.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

4.4 APN Configuration Screen

Use this screen to view or configure a connection profile. A connection profile defines the parameters that you need to connect to a mobile network, such as the APN, user name and password. Click **Internet > APN Configuration**. The screen appears as shown next.

Figure 16 Internet > APN Configuration



The following table describes the labels in this screen.

Table 13 Internet > APN Configuration

LABEL	DESCRIPTION
Select APN Profile	Select **Auto** to reload the default profile provided in the SIM card. Otherwise, select **Manual** to configure a connection profile.
APN	This field displays the Access Point Name (APN) in the profile. For WIND Italy is **internet.wind** Enter the Access Point Name (APN) provided by your service provider. Connections with different APNs may provide different services (such as Internet access or MMS (Multi-Media Messaging Service)) and charging method. You can enter up to 30 printable ASCII characters. Spaces are allowed.
Username	This field displays the user name in the profile. For WIND Italy is empty**.** Type the user name (of up to 31 printable ASCII characters) given to you by your service provider.
Password	This field displays the password in the profile. For WIND Italy is empty**.** Type the password (of up to 31 printable ASCII characters) associated with the user name above.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

4.5 Network Selection Screen

This screen allows you to view available Public Land Mobile Networks (PLMNs) and select your preferred network when the LTE4506 is outside the geographical coverage area of the network to which you are registered and roaming is enabled.

Click **Internet > Network Selection**. The screen appears as shown next.

Figure 17 Internet > Network Selection

The following table describes the labels in this screen.

Table 14 Internet > Network Selection

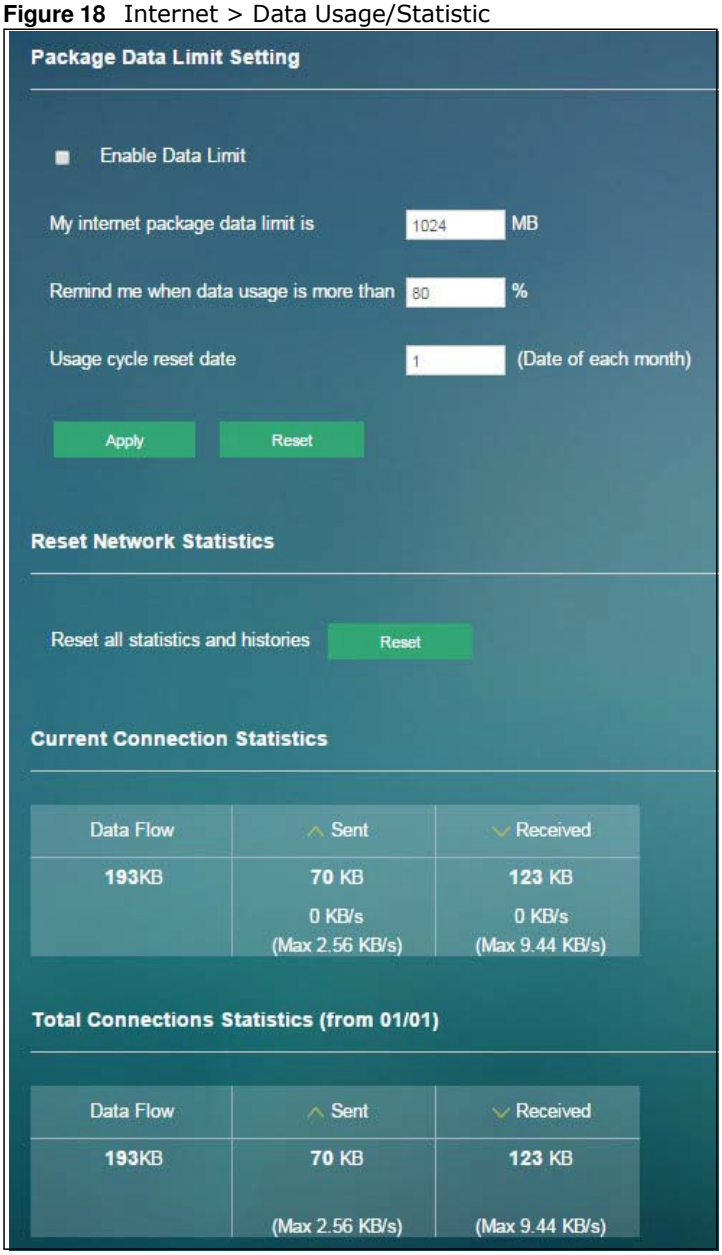
LABEL	DESCRIPTION
Select PLMN Mode	Select **Auto** to have the LTE4506 automatically connect to the first available mobile network using roaming when it is outside the coverage area of the original service provider's network. Select **Manual** to display the network list and manually select a preferred network.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

4.6 Data Usage/Statistic Screen

This screen allows you to configure limiting the amount of the package data and view the LTE4506's traffic statistics.

Click **Internet > Data Usage/Statistic**. The screen appears as shown next.

Figure 18 Internet > Data Usage/Statistic



The following table describes the labels in this screen.

Table 15 Internet > Data Usage/Statistic

LABEL	DESCRIPTION
Package Data Limit Setting	
Enable Data Limit	Select the check box to enable data limits.
My Internet package data limit is	Specify the limiting the amount of the package data in this field.

Table 15 Internet > Data Usage/Statistic

LABEL	DESCRIPTION
Remind me when data usage is more than	Specify the reminding percentage of the package data usage in this field.
Usage cycle reset date	Specify the date that you want the LTE4506 to restart calculating the amount of the package data per month.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.
Reset Network Statistics	
Reset all statistics and histories	Click **Reset** to remove all traffic statistics.
Current Connection Statistics	
Data Flow	This indicates the current traffic flow transmitting from/to the LTE4506.
Sent	This indicates the number of transmitted packets on the LTE4506.
Received	This indicates the number of received packets on the LTE4506.
Total Connection Statistics	
Data Flow	This indicates total traffic flows transmitting from/to the LTE4506.
Sent	This indicates the number of transmitted packets on the LTE4506.
Received	This indicates the number of received packets on the LTE4506.

5

Wi-Fi

5.1 Overview

This chapter describes the LTE4506's **Wi-Fi** screens. Use these screens to set up your LTE4506's wireless LAN connection.

5.1.1 What You Can Do in this Chapter

- Use the **Wi-Fi Status** screen to view information about the 2.4GHz/5GHz wireless LAN (Section 5.2 on page 34).
- Use the **Wi-Fi Settings** screen to enable the wireless LAN, enter the SSID and select the wireless security mode (Section 5.3 on page 35).
- Use the **MAC Filter** screen to deny wireless clients based on their MAC addresses from connecting to the LTE4506 (Section 5.4 on page 37).
- Use the **WPS** screen to activate WPS via PBC or PIN configuration (Section 5.5 on page 39).

5.1.2 What You Need to Know

Wireless Basics

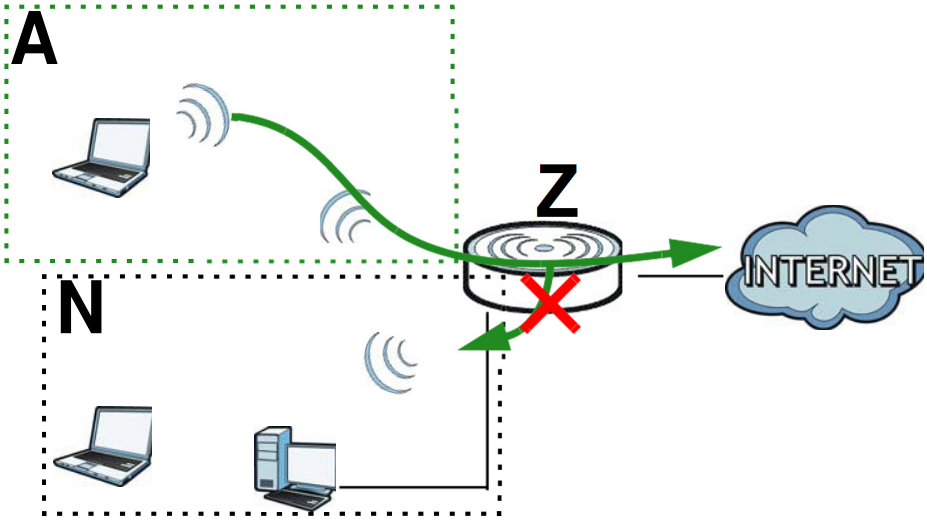
"Wireless" is essentially radio communication. In the same way that walkie-talkie radios send and receive information over the airwaves, wireless networking devices exchange information with one another. A wireless networking device is just like a radio that lets your computer exchange information with radios attached to other computers. Like walkie-talkies, most wireless networking devices operate at radio frequency bands that are open to the public and do not require a license to use. However, wireless networking is different from that of most traditional radio communications in that there a number of wireless networking standards available with different methods of data encryption.

Guest WLAN

Guest WLAN allows you to set up a wireless network where users can access to Internet via the LTE4506 (**Z**), but not other networks connected to the **Z**. In the following figure, a guest user can access the Internet from the guest wireless network **A** via **Z** but not the home or company network **N**.

Note: The home or company network **N** and Guest WLAN network are independent networks.

Guest Wireless LAN Network**Finding Out More**



See Section 5.6 on page 40 for advanced technical information on wireless networks.

5.2 Wi-Fi Status Screen

Use this screen to view information about the 2.4GHz/5GHz wireless LAN. Click **Wi-Fi > Wi-Fi Status** to access this screen.

Figure 19 Wi-Fi > Wi-Fi Status

The following table describes the labels in this screen.

Table 16 Wi-Fi > Wi-Fi Status

LABEL	DESCRIPTION
Wi-Fi Status	
SSID 1/ SSID2	The SSID (Service Set IDentity) identifies the service set with which a wireless device is associated. Wireless devices associating to the access point (AP) must have the same SSID. This displays the basic wireless settings of **SSID 1** and **SSID 2**.
SSID 1/ SSID2	This displays a descriptive name used to identify the LTE4506 in the 2.4GHz/5GHz wireless LAN.
Encryption	This field displays the level of wireless security the LTE4506 is using.
MAC Address	This field displays the 2.4GHz/5GHz wireless adapter MAC Address of your device.
Channel	This field displays the channel number which you select manually.

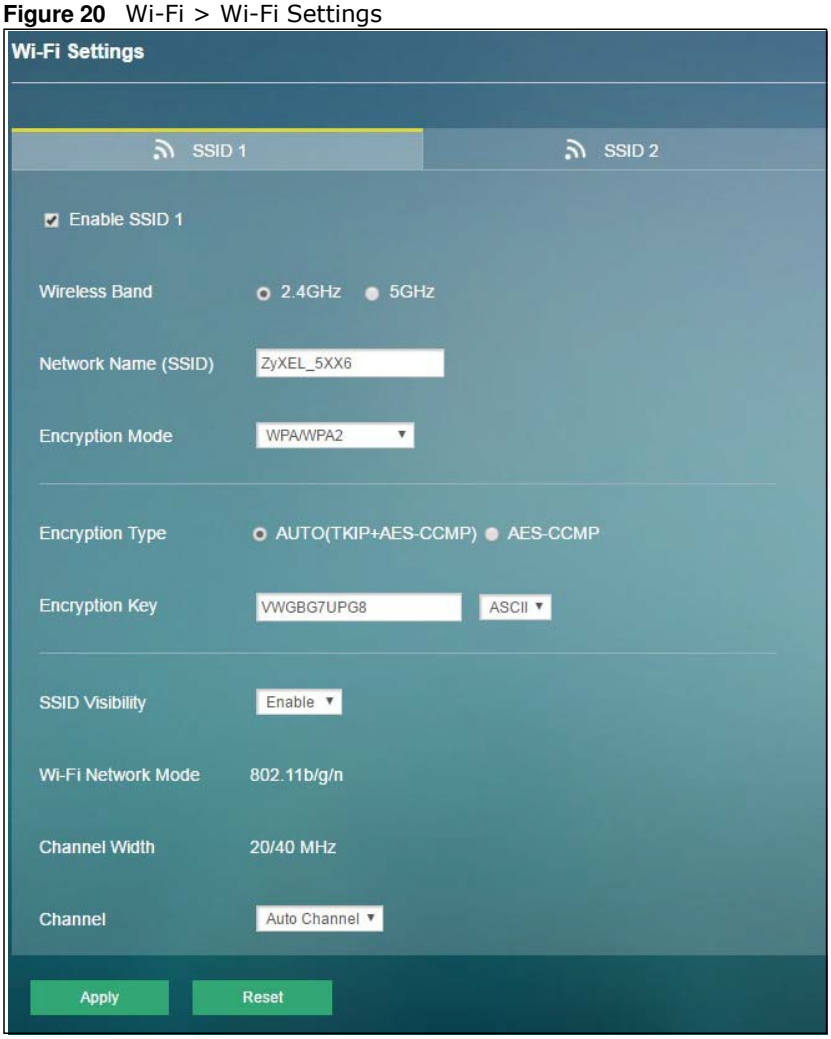
5.3 Wi-Fi Settings Screen

Use this screen to enable the wireless LAN, enter the SSID and select the wireless security mode.

Note: If you are configuring the LTE4506 from a computer connected to the wireless LAN and you change the LTE4506's SSID, channel or security settings, you will lose your wireless connection when you press **Apply** to confirm. You must then change the wireless settings of your computer to match the LTE4506's new settings.

To access this screen, click **Wi-Fi > Wi-Fi Settings**.

Figure 20 Wi-Fi > Wi-Fi Settings



The following table describes the labels in this screen.

Table 17 Wi-Fi > Wi-Fi Settings

LABEL	DESCRIPTION
SSID 1/ SSID 2	Select **SSID 1** (or **SSID 2**) to configure the basic wireless settings.
Enable SSID 1 (or SSID 2)	Select the check box to enable the wireless LAN of the LTE4506.
Wireless Band	Select the frequency band to set whether you want to apply the wireless and security settings to the default **2.4GHz** or **5GHz** wireless LAN.
Network Name (SSID)	The SSID (Service Set IDentity) identifies the service set with which a wireless device is associated. Wireless devices associating to the access point (AP) must have the same SSID. Enter a descriptive name (up to 32 English keyboard characters) for the wireless LAN.

Table 17 Wi-Fi > Wi-Fi Settings

LABEL	DESCRIPTION
Encryption Mode	Select **WPA**, **WPA2**, or **WPA/WPA2** to add security on this wireless network. The wireless clients which want to associate to this network must have same wireless security settings as the LTE4506. When you select to use a security, additional options appears in this screen. Select **WPA/WPA2** to allow wireless devices that support either WPA or WPA2 to connect to your LTE4506's wireless network. Select **WPA** to allow only wireless devices that support WPA to connect to your LTE4506's wireless network. Select **WPA2** to allow only wireless devices that support WPA2 to connect to your LTE4506's wireless network. Or you can select **NO ENCRYPTION** to allow any client to associate this network without any data encryption or authentication.
SSID Visibility	Select **Disable** to hide the SSID in the outgoing beacon frame so a station cannot obtain the SSID through scanning using a site survey tool. Otherwise, select **Enable**.
Wi-Fi Network Mode	If you set **Wireless Band** to **2.4GHz**, you can use the 802.11 mode from the following: • **802.11 bgn**: allows IEEE802.11b, IEEE802.11g and IEEE802.11n compliant WLAN devices to associate with the LTE4506. The transmission rate of your LTE4506 might be reduced. If you set **Wireless Band** to **5GHz**, you can use the 802.11 mode from the following: • **802.11a/n/ac**: allows IEEE802.11n, IEEE802.11a and IEEE 802.11c compliant WLAN devices to associate with the LTE4506.
Channel Width	This field displays the wireless channel width used by LTE4506. A standard 20MHz channel offers transfer speeds of up to 144Mbps (2.4GHz) or 217Mbps (5GHZ) whereas a 40MHz channel uses two standard channels and offers speeds of up to 300Mbps (2.4GHz) or 450Mbps (5GHZ).
Channel	Set the channel depending on your particular region. Select a channel or use **Auto Channel** to have the LTE4506 automatically determine a channel to use. If you are having problems with wireless interference, changing the channel may help. Try to use a channel that is as many channels away from any channels used by neighboring APs as possible. The channel number which the LTE4506 is currently using then displays next to this field.
	The following fields are available if you set **Encryption Mode** to **WPA**, **WPA2**, or **WPA/ WPA2**.
Encryption Type	Select the encryption type (**AES-CCMP** or **AUTO**) for data encryption. Select **AES-CCMP** if your wireless clients can all use **AES-CCMP**. Select **AUTO (TKIP+AES-CCMP)** to allow the wireless clients to use either TKIP or **AES-CCMP**.
Encryption Key	Select **ASCII** in order to enter ASCII characters as WEP key. Select **HEX** in order to enter hexadecimal characters as a WEP key.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

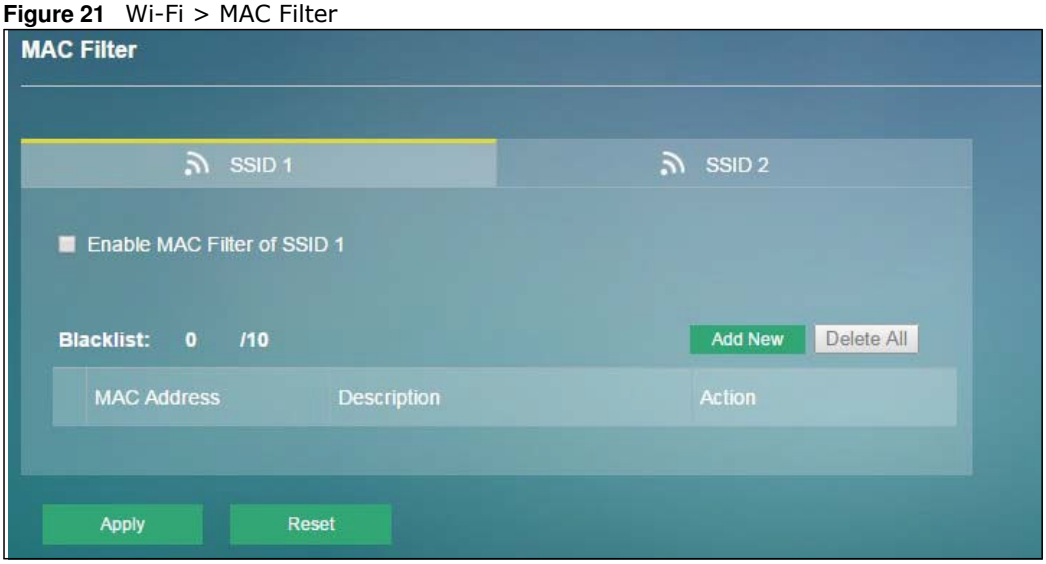
5.4 MAC Filter Screen

This screen allows you to configure the LTE4506 to exclude specific devices from accessing the LTE4506 (**Deny**). Every Ethernet device has a unique MAC (Media Access Control) address. The

MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:A0:C5:00:00:02. You need to know the MAC addresses of the devices to configure this screen.

Use this screen to view your LTE4506's MAC filter settings and add new MAC filter rules. Click **Wi-Fi > MAC Filter**. The screen appears as shown.

Figure 21 Wi-Fi > MAC Filter



The following table describes the labels in this screen.

Table 18 Wi-Fi > MAC Filter

LABEL	DESCRIPTION
SSID 1/ SSID 2	Select **SSID 1** (or **SSID 2**) to configure the MAC filtering rules.
Enable MAC Filter of SSID 1 (or SSID 2)	Select **Enable MAC Filter of SSID 1** (or **SSID 2**) to prohibit devices with the MAC addresses you configured.
Blacklist	This field displays how many entries you display on this page.
Add New	Click **Add New** to create a new entry.
Delete All	Click **Delete All** to remove all entries.
	This field displays the index number of the MAC address entry.
MAC Address	This field displays the MAC addresses of the wireless devices that are allowed or denied access to the LTE4506. Click **Add New** or **Edit** to enter or change the MAC address of the wireless devices that are allowed or denied access to the LTE4506 in this field. Enter the MAC addresses in a valid MAC address format, that is, six hexadecimal character pairs, for example, 12:34:56:78:9a:bc.
Description	This field displays the name of the MAC address entry. Click **Add New** or **Edit** to enter a descriptive name to identify the MAC address entry. You can enter up to 20 printable ASCII characters. Spaces are allowed.
Action	Click **Edit** to go to the screen where you can edit the rule. Click **Delete** to remove the MAC address entry.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

5.5 WPS Screen

Use this screen to configure Wi-Fi Protected Setup (WPS) on your LTE4506.

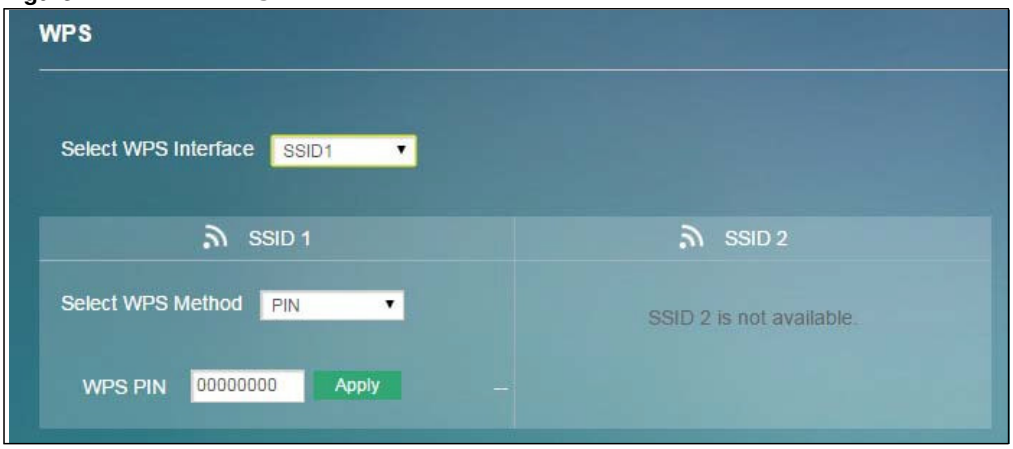
WPS allows you to quickly set up a wireless network with strong security, without having to configure security settings manually. Set up each WPS connection between two devices. Both devices must support WPS. See Section 5.6.5.3 on page 47 for more information about WPS.

Note: To use the WPS feature, make sure you have wireless enabled in the **Wi-Fi** > **Wi-Fi Settings** screen.

Note: If you want to use the WPS feature set the security type to **WPA** or **None**.

Click **Wi-Fi > WPS**. The following screen displays.

Figure 22 Wi-Fi > WPS



The following table describes the labels in this screen.

Table 19 Wi-Fi > WPS

LABEL	DESCRIPTION
Select WPS Interface	Select **SSID 1** (or **SSID 2**) to configure WPS.

Table 19 Wi-Fi > WPS (continued)

LABEL	DESCRIPTION
Select WPS Method	• Select **PBC** to set up a WPS wireless network using Push Button Configuration (PBC). If you select **PBC**, click **Activate** to add another WPS-enabled wireless device (within wireless range of the LTE4506) to your wireless network. This button may either be a physical button on the outside of device, or a menu button similar to the **Connect** button on this screen. Note: You must press the other wireless device's WPS button within two minutes of pressing this button. • Select **PIN** to set up a WPS wireless network by entering the PIN of the client into the LTE4506.
WPS PIN	This field is available only when you set **Select WPS Method** to **PIN**. Select this option and enter the PIN of the device that you are setting up a WPS connection with and click **Apply** to authenticate and add the wireless device to your wireless network. You can find the PIN either on the outside of the device, or by checking the device's settings. Note: You must also activate WPS on that device within two minutes to have it present its PIN to the LTE4506.

5.6 Technical Reference

This section discusses wireless LANs in depth.

5.6.1 Wireless Network Overview

Wireless networks consist of wireless clients, access points and bridges.

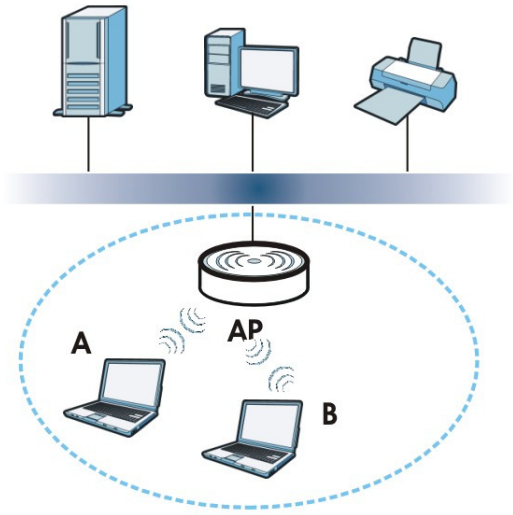
- A wireless client is a radio connected to a user's computer.
- An access point is a radio with a wired connection to a network, which can connect with numerous wireless clients and let them access the network.
- A bridge is a radio that relays communications between access points and wireless clients, extending a network's range.

Traditionally, a wireless network operates in one of two ways.

- An "infrastructure" type of network has one or more access points and one or more wireless clients. The wireless clients connect to the access points.
- An "ad-hoc" type of network is one in which there is no access point. Wireless clients connect to one another in order to exchange information.

The following figure provides an example of a wireless network.

Figure 23 Example of a Wireless Network



The wireless network is the part in the blue circle. In this wireless network, devices **A** and **B** use the access point (**AP**) to interact with the other devices (such as the printer) or with the Internet. Your LTE4506 is the AP.

Every wireless network must follow these basic guidelines.

- Every device in the same wireless network must use the same SSID.

  The SSID is the name of the wireless network. It stands for Service Set IDentifier.
- If two wireless networks overlap, they should use a different channel.

  Like radio stations or television channels, each wireless network uses a specific channel, or frequency, to send and receive information.
- Every device in the same wireless network must use security compatible with the AP.

  Security stops unauthorized devices from using the wireless network. It can also protect the information that is sent in the wireless network.

Radio Channels

In the radio spectrum, there are certain frequency bands allocated for unlicensed, civilian use. For the purposes of wireless networking, these bands are divided into numerous channels. This allows a variety of networks to exist in the same place without interfering with one another. When you create a network, you must select a channel to use.

Since the available unlicensed spectrum varies from one country to another, the number of available channels also varies.

5.6.2 Additional Wireless Terms

The following table describes some wireless network terms and acronyms used in the LTE4506's Web Configurator.

Table 20 Additional Wireless Terms

TERM	DESCRIPTION
RTS/CTS Threshold	In a wireless network which covers a large area, wireless devices are sometimes not aware of each other's presence. This may cause them to send information to the AP at the same time and result in information colliding and not getting through. By setting this value lower than the default value, the wireless devices must sometimes get permission to send information to the LTE4506. The lower the value, the more often the devices must get permission. If this value is greater than the fragmentation threshold value (see below), then wireless devices never have to get permission to send information to the LTE4506.
Preamble	A preamble affects the timing in your wireless network. There are two preamble modes: long and short. If a device uses a different preamble mode than the LTE4506 does, it cannot communicate with the LTE4506.
Authentication	The process of verifying whether a wireless device is allowed to use the wireless network.
Fragmentation Threshold	A small fragmentation threshold is recommended for busy networks, while a larger threshold provides faster performance if the network is not very busy.

5.6.3 Wireless Security Overview

By their nature, radio communications are simple to intercept. For wireless data networks, this means that anyone within range of a wireless network without security can not only read the data passing over the airwaves, but also join the network. Once an unauthorized person has access to the network, he or she can steal information or introduce malware (malicious software) intended to compromise the network. For these reasons, a variety of security systems have been developed to ensure that only authorized people can use a wireless data network, or understand the data carried on it.

These security standards do two things. First, they authenticate. This means that only people presenting the right credentials (often a username and password, or a "key" phrase) can access the network. Second, they encrypt. This means that the information sent over the air is encoded. Only people with the code key can understand the information, and only people who have been authenticated are given the code key.

These security standards vary in effectiveness. Some can be broken, such as the old Wired Equivalent Protocol (WEP). Using WEP is better than using no security at all, but it will not keep a determined attacker out. Other security standards are secure in themselves but can be broken if a user does not use them properly. For example, the WPA-PSK security standard is very secure if you use a long key which is difficult for an attacker's software to guess - for example, a twenty-letter long string of apparently random numbers and letters - but it is not very secure if you use a short key which is very easy to guess - for example, a three-letter word from the dictionary.

Because of the damage that can be done by a malicious attacker, it's not just people who have sensitive information on their network who should use security. Everybody who uses any wireless network should ensure that effective security is in place.

A good way to come up with effective security keys, passwords and so on is to use obscure information that you personally will easily remember, and to enter it in a way that appears random

and does not include real words. For example, if your mother owns a 1970 Dodge Challenger and her favorite movie is Vanishing Point (which you know was made in 1971) you could use "70dodchal71vanpoi" as your security key.

The following sections introduce different types of wireless security you can set up in the wireless network.

5.6.3.1 SSID

Normally, the LTE4506 acts like a beacon and regularly broadcasts the SSID in the area. You can hide the SSID instead, in which case the LTE4506 does not broadcast the SSID. In addition, you should change the default SSID to something that is difficult to guess.

This type of security is fairly weak, however, because there are ways for unauthorized wireless devices to get the SSID. In addition, unauthorized wireless devices can still see the information that is sent in the wireless network.

5.6.3.2 MAC Address Filter

Every device that can use a wireless network has a unique identification number, called a MAC address.[1] A MAC address is usually written using twelve hexadecimal characters[2]; for example, 00A0C5000002 or 00:A0:C5:00:00:02. To get the MAC address for each device in the wireless network, see the device's User's Guide or other documentation.

You can use the MAC address filter to tell the LTE4506 which devices are allowed or not allowed to use the wireless network. If a device is allowed to use the wireless network, it still has to have the correct information (SSID, channel, and security). If a device is not allowed to use the wireless network, it does not matter if it has the correct information.

This type of security does not protect the information that is sent in the wireless network. Furthermore, there are ways for unauthorized wireless devices to get the MAC address of an authorized device. Then, they can use that MAC address to use the wireless network.

5.6.3.3 User Authentication

Authentication is the process of verifying whether a wireless device is allowed to use the wireless network. You can make every user log in to the wireless network before using it. However, every device in the wireless network has to support IEEE 802.1x to do this.

For wireless networks, you can store the user names and passwords for each user in a RADIUS server. This is a server used in businesses more than in homes. If you do not have a RADIUS server, you cannot set up user names and passwords for your users.

Unauthorized wireless devices can still see the information that is sent in the wireless network, even if they cannot use the wireless network. Furthermore, there are ways for unauthorized wireless users to get a valid user name and password. Then, they can use that user name and password to use the wireless network.

1. Some wireless devices, such as scanners, can detect wireless networks but cannot use wireless networks. These kinds of wireless devices might not have MAC addresses.
2. Hexadecimal characters are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F.

5.6.3.4 Encryption

Wireless networks can use encryption to protect the information that is sent in the wireless network. Encryption is like a secret code. If you do not know the secret code, you cannot understand the message.

The types of encryption you can choose depend on the type of authentication. (See Section 5.6.3.3 on page 43 for information about this.)

Table 21 Types of Encryption for Each Type of Authentication

	NO AUTHENTICATION	RADIUS SERVER
Weakest	No Security	WPA
↕	Static WEP	
	WPA-PSK	
Strongest	WPA2-PSK	WPA2

For example, if the wireless network has a RADIUS server, you can choose **WPA** or **WPA2**. If users do not log in to the wireless network, you can choose no encryption, **Static WEP**, **WPA-PSK**, or **WPA2-PSK**.

Usually, you should set up the strongest encryption that every device in the wireless network supports. For example, suppose you have a wireless network with the LTE4506 and you do not have a RADIUS server. Therefore, there is no authentication. Suppose the wireless network has two devices. Device A only supports WEP, and device B supports WEP and WPA. Therefore, you should set up **Static WEP** in the wireless network.

Note: It is recommended that wireless networks use **WPA-PSK**, **WPA**, or stronger encryption. The other types of encryption are better than none at all, but it is still possible for unauthorized wireless devices to figure out the original information pretty quickly.

When you select **WPA2** or **WPA2-PSK** in your LTE4506, you can also select an option (**WPA compatible**) to support WPA as well. In this case, if some of the devices support WPA and some support WPA2, you should set up **WPA2-PSK** or **WPA2** (depending on the type of wireless network login) and select the **WPA compatible** option in the LTE4506.

Many types of encryption use a key to protect the information in the wireless network. The longer the key, the stronger the encryption. Every device in the wireless network must have the same key.

5.6.4 Signal Problems

Because wireless networks are radio networks, their signals are subject to limitations of distance, interference and absorption.

Problems with distance occur when the two radios are too far apart. Problems with interference occur when other radio waves interrupt the data signal. Interference may come from other radio transmissions, such as military or air traffic control communications, or from machines that are coincidental emitters such as electric motors or microwaves. Problems with absorption occur when physical objects (such as thick walls) are between the two radios, muffling the signal.

5.6.5 WiFi Protected Setup (WPS)

Your LTE4506 supports WiFi Protected Setup (WPS), which is an easy way to set up a secure wireless network. WPS is an industry standard specification, defined by the WiFi Alliance.

WPS allows you to quickly set up a wireless network with strong security, without having to configure security settings manually. Each WPS connection works between two devices. Both devices must support WPS (check each device's documentation to make sure).

Depending on the devices you have, you can either press a button (on the device itself, or in its configuration utility) or enter a PIN (a unique Personal Identification Number that allows one device to authenticate the other) in each of the two devices. When WPS is activated on a device, it has two minutes to find another device that also has WPS activated. Then, the two devices connect and set up a secure network by themselves.

5.6.5.1 Push Button Configuration

WPS Push Button Configuration (PBC) is initiated by pressing a button on each WPS-enabled device, and allowing them to connect automatically. You do not need to enter any information.

Not every WPS-enabled device has a physical WPS button. Some may have a WPS PBC button in their configuration utilities instead of or in addition to the physical button.

Take the following steps to set up WPS using the button.

1. Ensure that the two devices you want to set up are within wireless range of one another.
2. Look for a WPS button on each device. If the device does not have one, log into its configuration utility and locate the button (see the device's User's Guide for how to do this - for the LTE4506, see Section 5.5 on page 39).
3. Press the button on one of the devices (it doesn't matter which). For the LTE4506 you must press the WPS button for more than three seconds.
4. Within two minutes, press the button on the other device. The registrar sends the network name (SSID) and security key through an secure connection to the enrollee.

   If you need to make sure that WPS worked, check the list of associated wireless clients in the AP's configuration utility. If you see the wireless client in the list, WPS was successful.

5.6.5.2 PIN Configuration

Each WPS-enabled device has its own PIN (Personal Identification Number). This may either be static (it cannot be changed) or dynamic (in some devices you can generate a new PIN by clicking on a button in the configuration interface).

Use the PIN method instead of the push-button configuration (PBC) method if you want to ensure that the connection is established between the devices you specify, not just the first two devices to activate WPS in range of each other. However, you need to log into the configuration interfaces of both devices to use the PIN method.

When you use the PIN method, you must enter the PIN from one device (usually the wireless client) into the second device (usually the Access Point or wireless router). Then, when WPS is activated

on the first device, it presents its PIN to the second device. If the PIN matches, one device sends the network and security information to the other, allowing it to join the network.

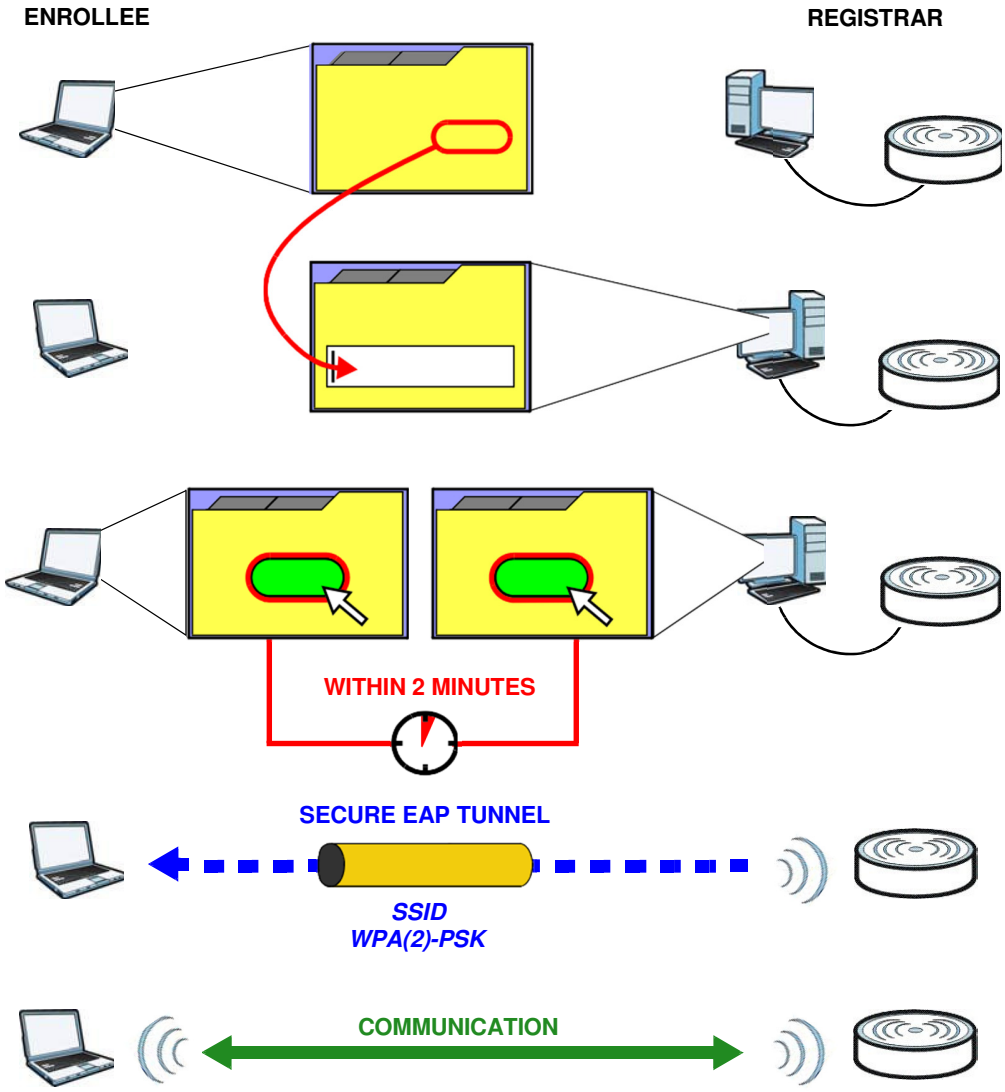
Take the following steps to set up a WPS connection between an access point or wireless router (referred to here as the AP) and a client device using the PIN method.

1. Ensure WPS is enabled on both devices.
2. Access the WPS section of the AP's configuration interface. See the device's User's Guide for how to do this.
3. Look for the client's WPS PIN; it will be displayed either on the device, or in the WPS section of the client's configuration interface (see the device's User's Guide for how to find the WPS PIN - for the LTE4506, see Section 5.5 on page 39).
4. Enter the client's PIN in the AP's configuration interface.
5. If the client device's configuration interface has an area for entering another device's PIN, you can either enter the client's PIN in the AP, or enter the AP's PIN in the client - it does not matter which.
6. Start WPS on both devices within two minutes.
7. Use the configuration utility to activate WPS, not the push-button on the device itself.
8. On a computer connected to the wireless client, try to connect to the Internet. If you can connect, WPS was successful.

   If you cannot connect, check the list of associated wireless clients in the AP's configuration utility. If you see the wireless client in the list, WPS was successful.

   The following figure shows a WPS-enabled wireless client (installed in a notebook computer) connecting to the WPS-enabled AP via the PIN method.

Figure 24 Example WPS Process: PIN Method

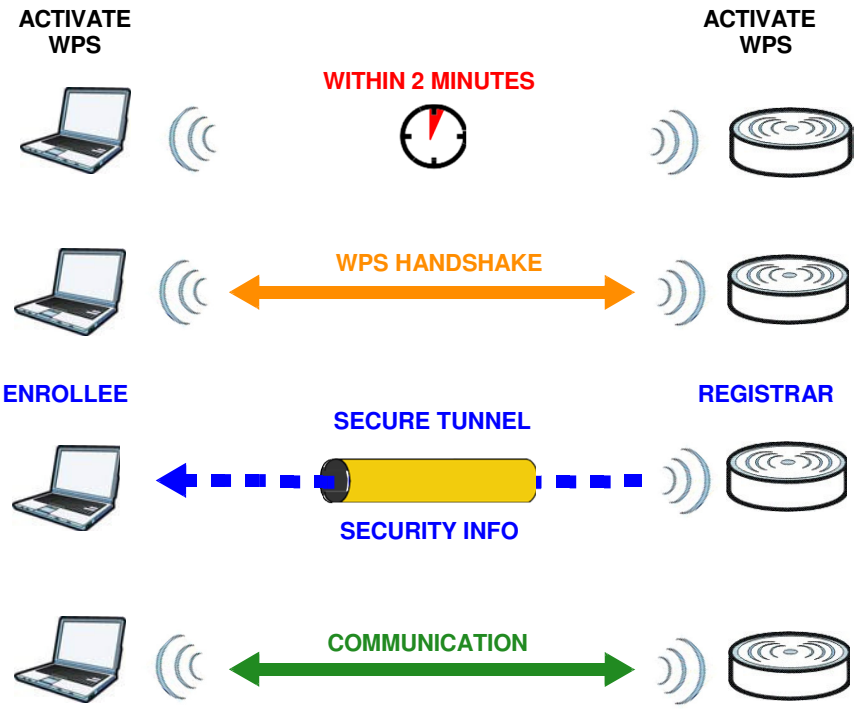


5.6.5.3 How WPS Works

When two WPS-enabled devices connect, each device must assume a specific role. One device acts as the registrar (the device that supplies network and security settings) and the other device acts as the enrollee (the device that receives network and security settings. The registrar creates a secure EAP (Extensible Authentication Protocol) tunnel and sends the network name (SSID) and the WPA-PSK or WPA2-PSK pre-shared key to the enrollee. Whether WPA-PSK or WPA2-PSK is used depends on the standards supported by the devices. If the registrar is already part of a network, it sends the existing information. If not, it generates the SSID and WPA(2)-PSK randomly.

The following figure shows a WPS-enabled client (installed in a notebook computer) connecting to a WPS-enabled access point.

Figure 25 How WPS works



The roles of registrar and enrollee last only as long as the WPS setup process is active (two minutes). The next time you use WPS, a different device can be the registrar if necessary.

The WPS connection process is like a handshake; only two devices participate in each WPS transaction. If you want to add more devices you should repeat the process with one of the existing networked devices and the new device.

Note that the access point (AP) is not always the registrar, and the wireless client is not always the enrollee. All WPS-certified APs can be a registrar, and so can some WPS-enabled wireless clients.

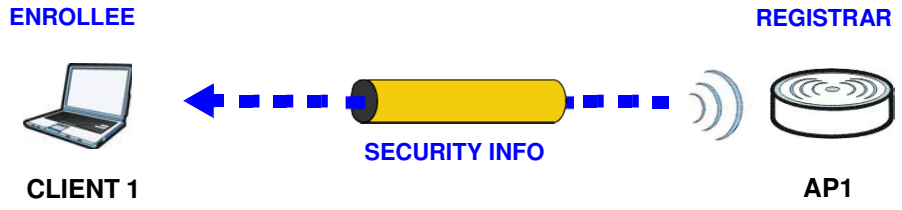
By default, a WPS devices is "unconfigured". This means that it is not part of an existing network and can act as either enrollee or registrar (if it supports both functions). If the registrar is unconfigured, the security settings it transmits to the enrollee are randomly-generated. Once a WPS-enabled device has connected to another device using WPS, it becomes "configured". A configured wireless client can still act as enrollee or registrar in subsequent WPS connections, but a configured access point can no longer act as enrollee. It will be the registrar in all subsequent WPS connections in which it is involved. If you want a configured AP to act as an enrollee, you must reset it to its factory defaults.

5.6.5.4 Example WPS Network Setup

This section shows how security settings are distributed in an example WPS setup.

The following figure shows an example network. In step **1**, both **AP1** and **Client 1** are unconfigured. When WPS is activated on both, they perform the handshake. In this example, **AP1** is the registrar, and **Client 1** is the enrollee. The registrar randomly generates the security information to set up the network, since it is unconfigured and has no existing information.

Figure 26 WPS: Example Network Step 1

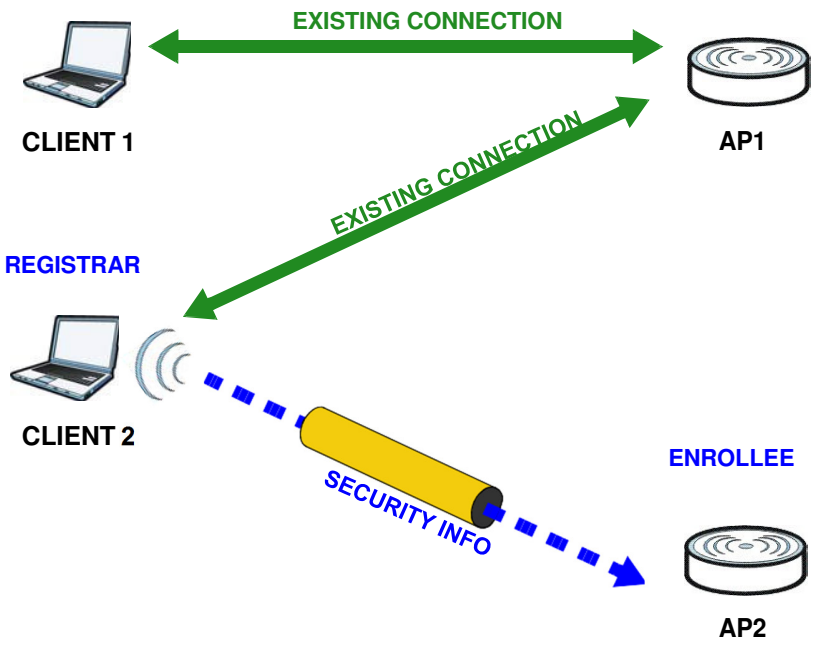


In step **2**, you add another wireless client to the network. You know that **Client 1** supports registrar mode, but it is better to use **AP1** for the WPS handshake with the new client since you must connect to the access point anyway in order to use the network. In this case, **AP1** must be the registrar, since it is configured (it already has security information for the network). **AP1** supplies the existing security information to **Client 2**.

Figure 27 WPS: Example Network Step 2

In step 3, you add another access point (**AP2**) to your network. **AP2** is out of range of **AP1**, so you cannot use **AP1** for the WPS handshake with the new access point. However, you know that **Client 2** supports the registrar function, so you use it to perform the WPS handshake instead.

Figure 28 WPS: Example Network Step 3



5.6.5.5 Limitations of WPS

WPS has some limitations of which you should be aware.

- WPS works in Infrastructure networks only (where an AP and a wireless client communicate). It does not work in Ad-Hoc networks (where there is no AP).
- When you use WPS, it works between two devices only. You cannot enroll multiple devices simultaneously, you must enroll one after the other.

  For instance, if you have two enrollees and one registrar you must set up the first enrollee (by pressing the WPS button on the registrar and the first enrollee, for example), then check that it successfully enrolled, then set up the second device in the same way.
- WPS works only with other WPS-enabled devices. However, you can still add non-WPS devices to a network you already set up using WPS.

  WPS works by automatically issuing a randomly-generated WPA-PSK or WPA2-PSK pre-shared key from the registrar device to the enrollee devices. Whether the network uses WPA-PSK or WPA2-PSK depends on the device. You can check the configuration interface of the registrar device to discover the key the network is using (if the device supports this feature). Then, you can enter the key into the non-WPS device and join the network as normal (the non-WPS device must also support WPA-PSK or WPA2-PSK).
- When you use the PBC method, there is a short period (from the moment you press the button on one device to the moment you press the button on the other device) when any WPS-enabled device could join the network. This is because the registrar has no way of identifying the "correct" enrollee, and cannot differentiate between your enrollee and a rogue device. This is a possible way for a hacker to gain access to a network.

  You can easily check to see if this has happened. WPS works between only two devices simultaneously, so if another device has enrolled your device will be unable to enroll, and will not have access to the network. If this happens, open the access point's configuration interface and look at the list of associated clients (usually displayed by MAC address). It does not matter if the

access point is the WPS registrar, the enrollee, or was not involved in the WPS handshake; a rogue device must still associate with the access point to gain access to the network. Check the MAC addresses of your wireless clients (usually printed on a label on the bottom of the device). If there is an unknown MAC address you can remove it or reset the AP.

6

Router

6.1 Overview

This chapter describes how you can configure the management IP address, DHCP settings of your LTE4506, the IP filtering and content filtering settings.

The Internet Protocol (IP) address identifies a device on a network. Every networking device (including computers, servers, routers, printers, etc.) needs an IP address to communicate across the network. These networking devices are also known as hosts.

6.1.1 What You Can Do in this Chapter

- Use the **LAN IP** screen to configure the LTE4506's LAN IP address (Section 6.2 on page 52).
- Use the **DHCP Server** screen to enable the DHCP server on the LTE4506 (Section 6.3 on page 53).
- Use the **DNS Settings** screen to configure the LTE4506's DNS settings (Section 6.4 on page 55).
- Use the **Connected Devices** screen to view current clients information (Section 6.5 on page 55).
- Use the **IPv4/Port Filter** screen to view and configure IPv4/Port filtering rules (Section 6.6 on page 56).
- Use the **IPv6/Port Filter** screen to view and configure IPv6/Port filtering rules (Section 6.7 on page 57).
- Use the **URL Filter** screen to view and configure content filtering rules (Section 6.8 on page 58).
- Use the **IP/Port Forwarding** screen to view and configure port forwarding rules (Section 6.9 on page 59).

6.2 LAN IP Screen

Use this screen to view or configure the management IP address for your LTE4506. To access this screen, click **Router > LAN IP**.

Note: If you change the LTE4506's IP address, you need to use the new IP address to access the LTE4506's web configurator.

Figure 29 Router > LAN IP

The following table describes the labels in this screen.

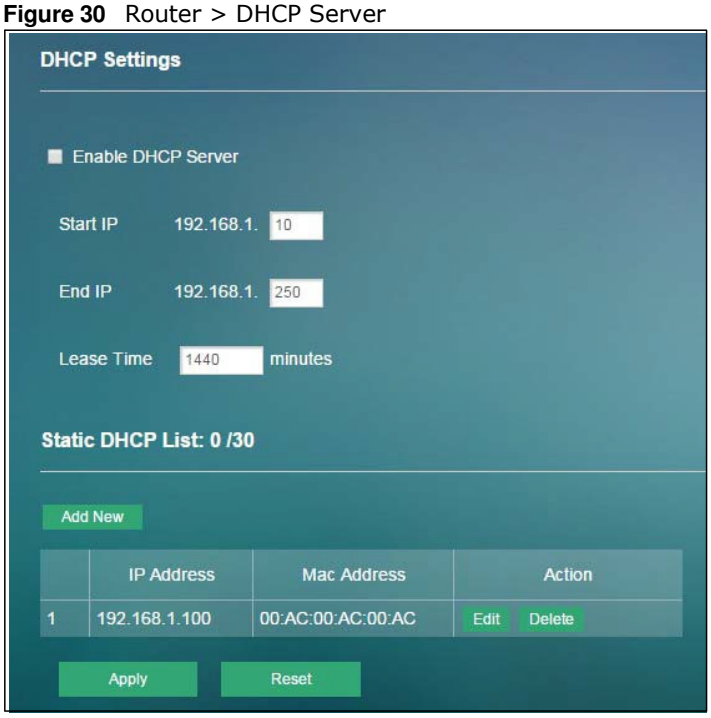
Table 22 Router > LAN IP

LABEL	DESCRIPTION
Host Name	This shows the default host name. Enter the new host name for the LTE4506 if you want to change it.
IP Address	This shows the default LAN IP address. Enter the new IP address for the LTE4506's LAN interface if you want to change it.
Subnet Mask	This shows the default subnet mask. Enter the subnet mask of this interface in dot decimal notation. The subnet mask indicates what part of the IP address is the same for all computers in the network.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

6.3 DHCP Server Screen

The LTE4506 has built-in DHCP server capability that assigns IP addresses to systems that support DHCP client capability. Use this screen to enable the DHCP server. To access this screen, click **Router > DHCP Server**.

Figure 30 Router > DHCP Server



The following table describes the labels in this screen.

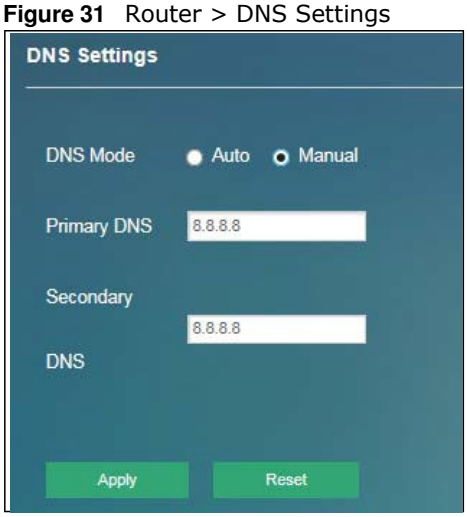
Table 23 Router > DHCP Server

LABEL	DESCRIPTION
DHCP Settings	
Enable DHCP Server	Select the check box to enable the DHCP server on the LTE4506.
Start IP	The LTE4506 is pre-configured with a pool of 240 IP addresses starting from 192.168.0.10 to 192.168.0.250. This field specifies the first of the contiguous addresses in the IP address pool.
End IP	This field specifies the last of the contiguous addresses in the IP address pool.
Lease Time (minutes)	Specify how long (in minutes) each computer can use the information (especially the IP address) before it has to request the information again.
Static DHCP List	
Add New	Click **Add New** to create a new entry.
	This field displays the index number of the static IP address entry.
IP Address	This field displays the IP address that the LTE4506 assigns to a device with the entry's MAC address.
MAC Address	This field displays the MAC address of the device to which the LTE4506 assigns the entry's IP address.
Action	Click **Edit** to go to the screen where you can edit the static IP address. Click **Delete** to remove the static IP address entry.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

6.4 DNS Settings Screen

Click **Router > DNS Settings** to configure the LTE4506's DNS settings. The following screen displays.

Figure 31 Router > DNS Settings



The following table describes the labels in this screen.

Table 24 Router > DNS Settings

LABEL	DESCRIPTION
DNS Mode	Select **Auto** if your ISP dynamically assigns DNS server information (and the LTE4506's WAN IP address). Otherwise, select **Manual** if you have the IP address of a DNS server.
Primary DNS Secondary DNS	Select **Manual** if you have the IP address of a DNS server. Enter the DNS server's IP address in the field.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

6.5 Connected Devices Screen

Click **Router > Connected Devices** to view current clients information (including IP Address, Host Name and MAC Address) of network clients connected to the LTE4506. The following screen displays.

Figure 32 Router > Connected Devices

The following table describes the labels in this screen.

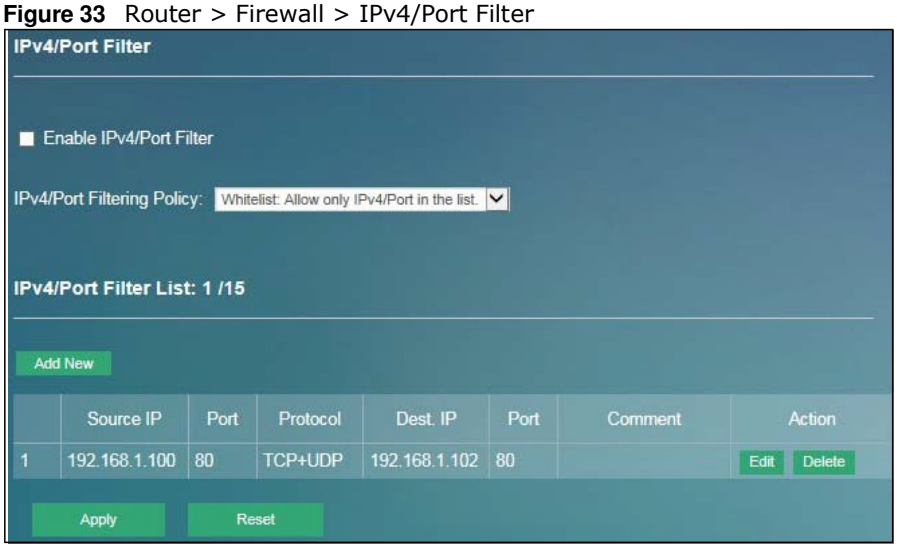
Table 25 Router > Connected Devices

LABEL	DESCRIPTION
MAC Address	This field displays the MAC address of the device.
Host Name (If any)	This field displays the device host name.
IP Address	This field displays the IP address that the LTE4506 assigns to the device.

6.6 IPv4/Port Filter Screen

The LTE4506 firewall is a packet filtering firewall and restricts access based on the source/ destination computer network address of a packet and the type of application. Use this screen to configure IP filtering rules. To access this screen, click **Router > Firewall > IPv4/Port Filter**.

Figure 33 Router > Firewall > IPv4/Port Filter



The following table describes the labels in this screen.

Table 26 Router > Firewall > IPv4/Port Filter

LABEL	DESCRIPTION
IPv4/Port Filter	
Enable IPv4/ Port Filter	Select the check box to enable the rule.
IPv4/Port Filtering Policy	Select **Whitelist** to allow packets that match the filtering rules defined on this screen to pass through. Select **Blacklist** to block packets that match the filtering rules defined on this screen.
IPv4/Port Filter List	
Add New	Click **Add New** to create a new rule.
	This field displays the rule index number.
Source IP	This field displays the source IPv4 addresses to which this rule applies.

Table 26 Router > Firewall > IPv4/Port Filter

LABEL	DESCRIPTION
Port	This field displays a single port number of the source or a port range. Enter the port number/range of the source that define the traffic type, for example TCP port 80 defines web traffic.
Protocol	This field displays the protocol (**TCP**, **UDP**, **TCP+UDP** or **any**) used to transport the packets for which you want to apply the rule.
Dest. IP	This field displays the destination IPv4 addresses to which this rule applies.
Port	This field displays a single port number of the destination or a port range. Enter the port number/range of the destination that define the traffic type, for example TCP port 80 defines web traffic.
Comment	Enter descriptions of the rule in this field.
Action	Click **Edit** to go to the screen where you can edit the filtering rule. Click **Delete** to remove the filtering rule.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

6.7 IPv6/Port Filter Screen

The LTE4506 firewall is a packet filtering firewall and restricts access based on the source/ destination computer network address of a packet and the type of application. Use this screen to configure IP filtering rules. To access this screen, click **Router > Firewall > IPv6/Port Filter**.

Figure 34 Router > Firewall > IPv6/Port Filter

The following table describes the labels in this screen.

Table 27 Router > Firewall > IPv6/Port Filter

LABEL	DESCRIPTION
IPv6/Port Filter	
Enable IPv6/ Port Filter	Select the check box to enable the rule.

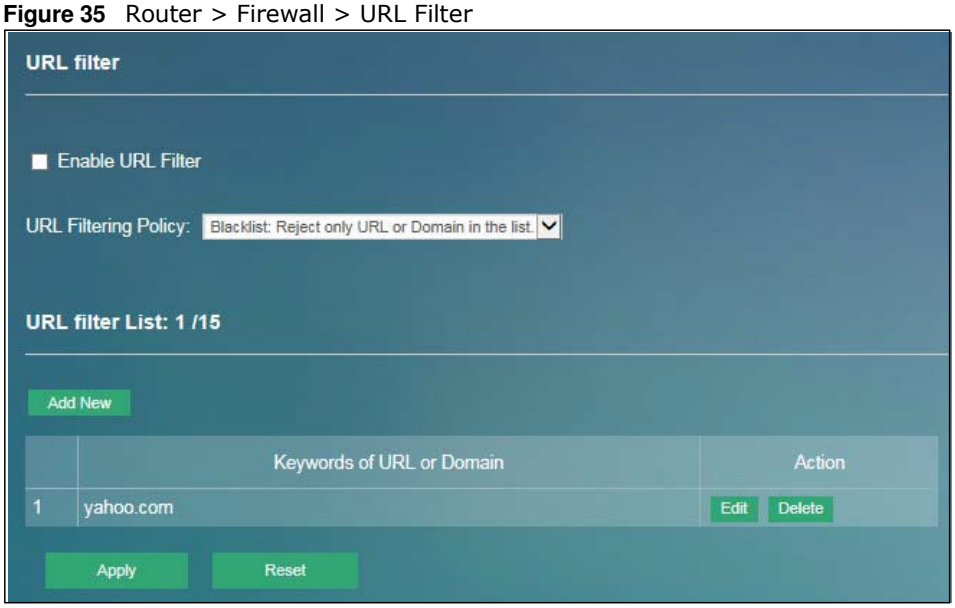
Table 27 Router > Firewall > IPv6/Port Filter

LABEL	DESCRIPTION
IPv6/Port Filtering Policy	Select **Whitelist** to allow packets that match the filtering rules defined on this screen to pass through. Select **Blacklist** to block packets that match the filtering rules defined on this screen.
IPv6/Port Filter List	
Add New	Click **Add New** to create a new rule.
	This field displays the rule index number.
Source IP	This field displays the source IPv6 addresses to which this rule applies.
Port	This field displays a single port number of the source or a port range. Enter the port number/range of the source that define the traffic type, for example TCP port 80 defines web traffic.
Protocol	This field displays the protocol (**TCP**, **UDP**, **TCP+UDP** or **any**) used to transport the packets for which you want to apply the rule.
Dest. IP	This field displays the destination IPv6 addresses to which this rule applies.
Port	This field displays a single port number of the destination or a port range. Enter the port number/range of the destination that define the traffic type, for example TCP port 80 defines web traffic.
Comment	Enter descriptions of the rule in this field.
Action	Click **Edit** to go to the screen where you can edit the filtering rule. Click **Delete** to remove the filtering rule.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

6.8 URL Filter Screen

Use this screen to block the users on your network from accessing certain web sites. To access this screen, click **Router > Firewall > URL Filter**.

Figure 35 Router > Firewall > URL Filter



The following table describes the labels in this screen.

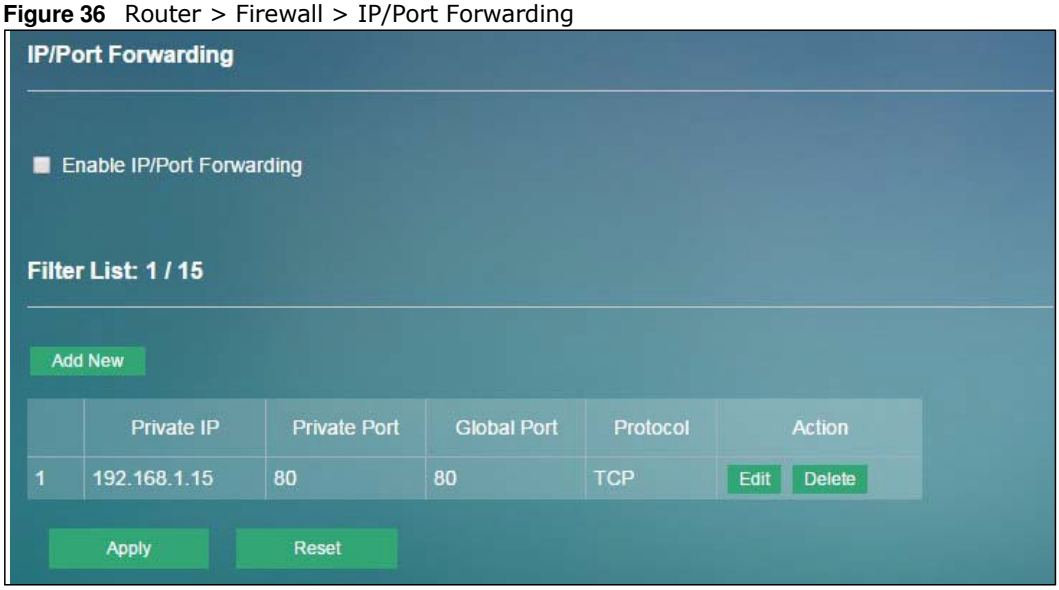
Table 28 Router > Firewall > URL Filter

LABEL	DESCRIPTION
URL filter	
Enable URL Filter	Select the check box to enable the rule.
URL Filtering Policy	Select **Whitelist** to allow users to access the websites that match the filtering rules defined on this screen. Select **Blacklist** to block users to access the websites that match the filtering rules defined on this screen.
URL filter List	
Add New	Click **Add New** to create a new rule.
	This field displays the rule index number.
Keywords of URL or Domain	This field displays the keywords of URL or domain to which the LTE4506 block or allow.
Action	Click **Edit** to go to the screen where you can edit the filtering rule. Click **Delete** to remove the filtering rule.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

6.9 IP/Port Forwarding Screen

Use this screen to configure port forwarding rules. To access this screen, click **Router > Firewall > IP/Port Forwarding**.

Figure 36 Router > Firewall > IP/Port Forwarding



The following table describes the labels in this screen.

Table 29 Router > Firewall > IP/Port Forwarding

LABEL	DESCRIPTION
IP/Port Forwarding	
Enable IP/Port Forwarding	Select the check box to enable port forwarding rules.
Filter List	
Add New	Click **Add New** to create a new rule.
	This field displays the rule index number.
Private IP	This field displays the inside IP address of the server. Enter the inside IP address of the virtual server here.
Private Port	A private port is a port that causes (or triggers) the LTE4506 to record the IP address of the LAN computer that sent the traffic to a server on the WAN. Enter the port number/range of the private in this field.
Global Port	A global port is a port that a server on the WAN uses when it sends out a particular service. The LTE4506 forwards the traffic with this port to the client computer on the LAN that requested the service. Enter the port number/range of the global in this field.
Protocol	This field displays the protocol (**TCP**, **UDP**, **TCP+UDP**) used to transport the packets for which you want to apply the rule.
Action	Click **Edit** to go to the screen where you can edit the port forwarding rule. Click **Delete** to remove the port forwarding rule.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

7

Applications

7.1 Overview

This chapter shows you how to set up a contact list, send and view the text messages.

SMS (Short Message Service) allows you to send and view the text messages that the LTE4506 received from mobile devices or the service provider.

When the SMS box is full the LTE4506 will begin to delete older entries as it adds new ones.

7.1.1 What You Can Do in this Chapter

- Use the **Application > Contacts > Contact List** screen to configure the contact list saved on the LTE4506 (Section 7.2 on page 61).
- Use the **Application > Contacts > SIM Contacts** screen to view the contact list saved on the SIM card (Section 7.3 on page 62).
- Use the **Application > Contacts > Contacts Settings** screen to import or export the contacts files (Section 7.4 on page 63).
- Use the **Application > Short Message > New SMS** screen to send new messages (Section 7.5 on page 63).
- Use the **Application > Short Message > Inbox** screen to view messages received on the LTE4506 (Section 7.6 on page 64).
- Use the **Application > Short Message > Outbox** screen to view messages sent from the LTE4506 (Section 7.7 on page 65).
- Use the **Application > Short Message > Draft** screen to view messages not yet sent from the LTE4506 (Section 7.8 on page 65).
- Use the **Application > Short Message > SIM SMS** screen to view messages received on the SIM card (Section 7.9 on page 66).

7.2 Contact List Screen

Use this screen to configure the contact list saved on the LTE4506. To access this screen, click **Application > Contacts > Contact List**.

Figure 37 Application > Contacts > Contact List

The following table describes the labels in this screen.

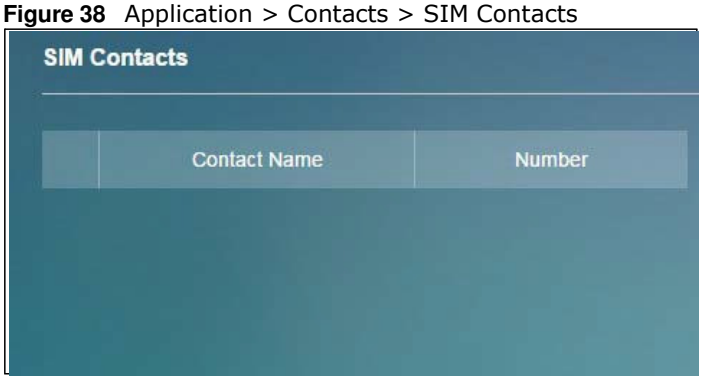
Table 30 Application > Contacts > Contact List

LABEL	DESCRIPTION
Delete	Select the check box which next to the contact name and click **Delete** to remove the entry.
New	Click **New** to create a new entry.
Contact Name	This field displays a descriptive name used to identify contacts.
Number	This field displays the mobile phone number of contacts.
Actions	Click **Edit** to go to the screen where you can edit the contact details.

7.3 SIM Contacts Screen

Use this screen to view the contact list saved on the SIM card. To access this screen, click **Application > Contacts > SIM Contacts**.

Figure 38 Application > Contacts > SIM Contacts



The following table describes the labels in this screen.

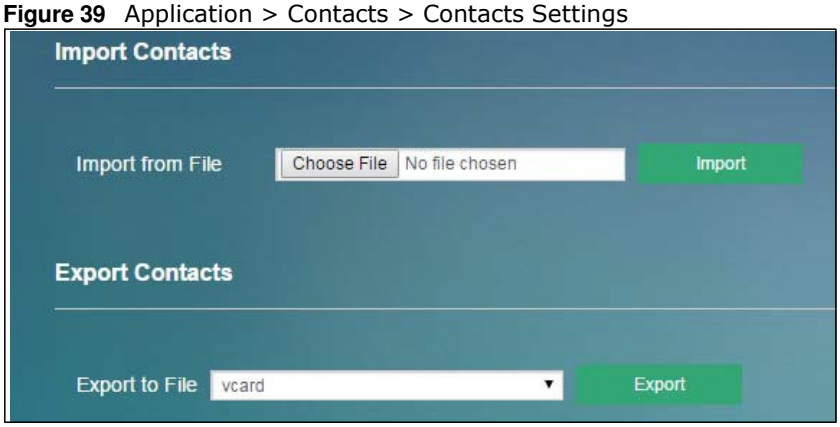
Table 31 Application > Contacts > SIM Contacts

LABEL	DESCRIPTION
	This field displays the index number of the contacts.
Contact Name	This field displays a descriptive name used to identify contacts.
Number	This field displays the mobile phone number of contacts.

7.4 Contacts Settings Screen

Use this screen to import or export the contacts files. To access this screen, click **Application > Contacts > Contacts Settings**.

Figure 39 Application > Contacts > Contacts Settings



The following table describes the labels in this screen.

Table 32 Application > Contacts > Contacts Settings

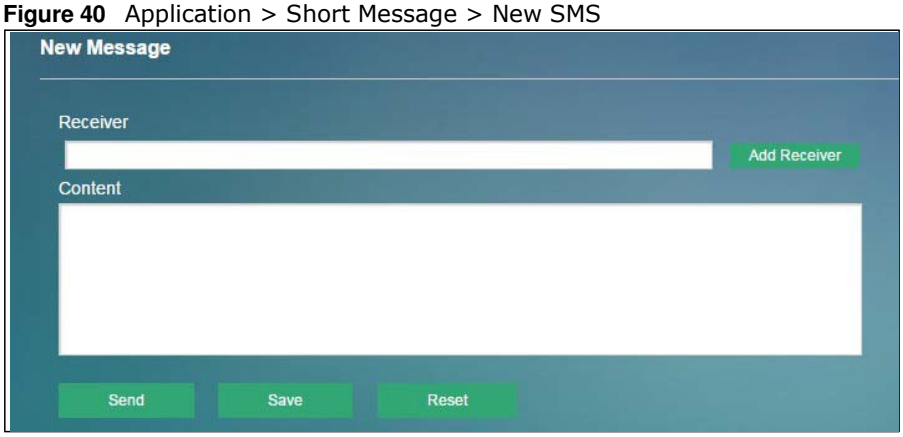
LABEL	DESCRIPTION
Import Contacts	
Import from File	Click **Choose File** to find the .csv file you want to upload. Remember that you must decompress compressed (.zip) files before you can upload them. You can select a .csv or .vcf file, then click import to begin upload process.
Export Contacts	
Export to File	A **csv** (comma-separated values) file is a way to store textual and numeric data. A **vcard** is an electronic business card, and it can store images and sound as well as text. Select a contact format from the drop-down list box to export your contacts. Click **Export** to begin the download process.

7.5 New SMS Screen

Use this screen to send messages using the LTE4506. To access this screen, click **Application > Short Message > New SMS**.

Type a phone number and message content. You can type up to 140 English characters (70 Chinese characters) in one message. If the message exceeds 140 English characters, more than one message will be sent. The maximum number of SMS that can be sent is 8 (1000 English characters or 500 Chinese characters total). Click **Send** to send the message. Click **Save** to store the message as a draft. Click **Reset** to reload the previous configuration for this screen.

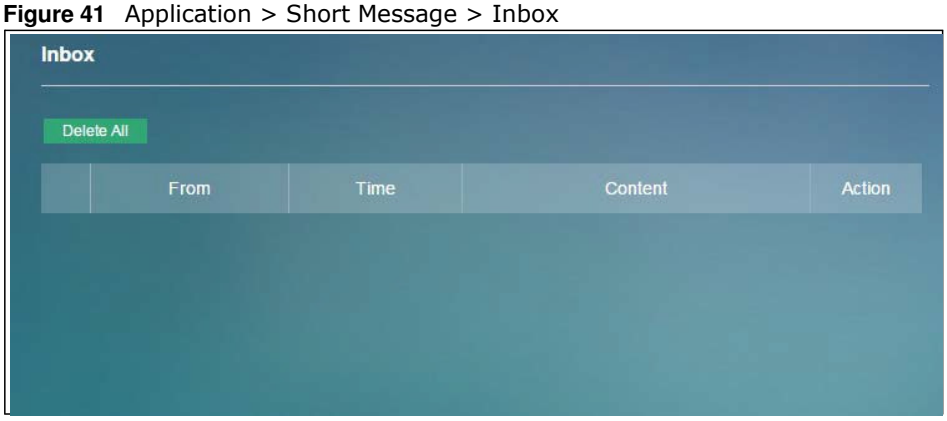
Figure 40 Application > Short Message > New SMS



7.6 Inbox Screen

Use this screen to view messages received on the LTE4506. To access this screen, click **Application > Short Message > Inbox**.

Figure 41 Application > Short Message > Inbox



The following table describes the labels in this screen.

Table 33 Application > Short Message > Inbox

LABEL	DESCRIPTION
Delete All	Click **Delete All** to remove all messages.
	This field displays the index number of the message.
From	This field displays the name from which the message is sent.
Time	This field displays the date and time the message was received.
Content	This field displays the content of the message.
Action	Click **Delete** to remove the message record.

7.7 Outbox Screen

Use this screen to view messages sent from the LTE4506. To access this screen, click **Application > Short Message > Outbox**.

Figure 42 Application > Short Message > Outbox

The following table describes the labels in this screen.

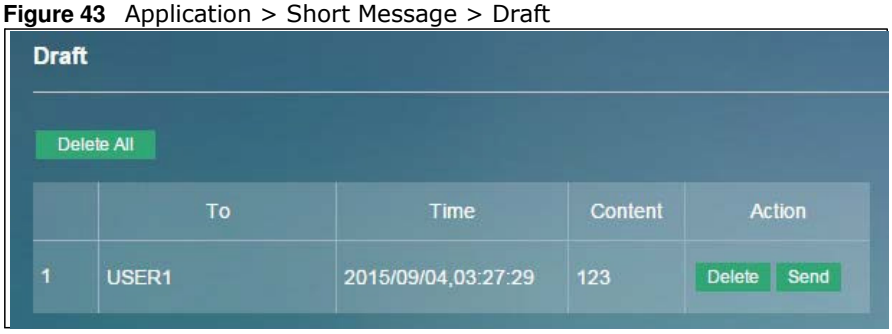
Table 34 Application > Short Message > Outbox

LABEL	DESCRIPTION
Delete All	Click **Delete All** to remove all messages.
	This field displays the index number of the message.
To	This field displays the name the message is sent to.
Time	This field displays the date and time the message was sent.
Content	This field displays the content of the message.
Action	Click **Delete** to remove the message record.

7.8 Draft Screen

Use this screen to view messages not yet sent from the LTE4506. To access this screen, click **Application > Short Message > Draft**.

Figure 43 Application > Short Message > Draft



The following table describes the labels in this screen.

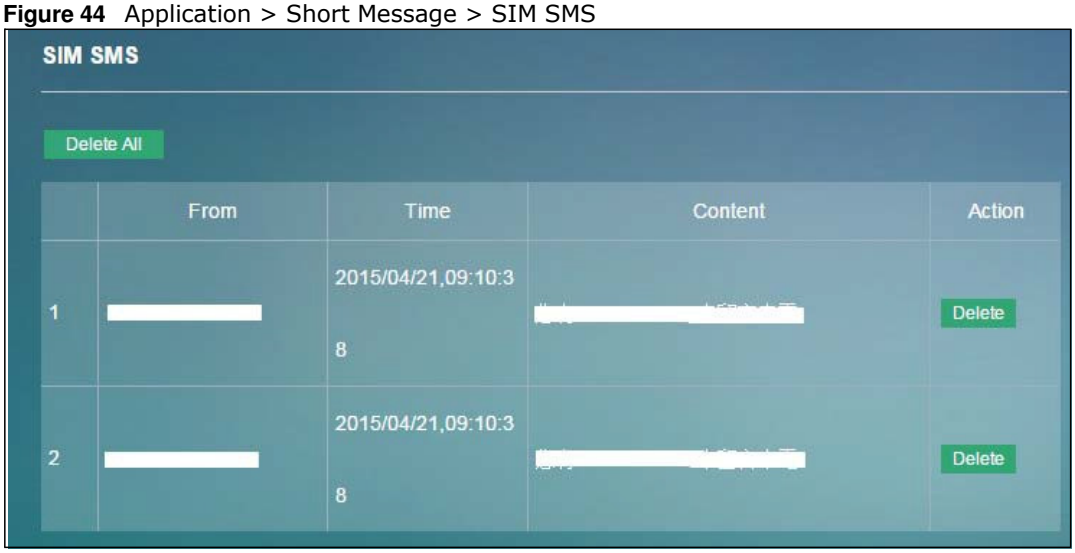
Table 35 Application > Short Message > Draft

LABEL	DESCRIPTION
Delete All	Click **Delete All** to remove all messages.
	This field displays the index number of the message.
To	This field displays the name the message is sent to.
Time	This field displays the date and time the message was sent.
Content	This field displays the content of the message.
Action	Click **Delete** to remove the message record. Click **Send** to deliver the message.

7.9 SIM SMS Screen

Use this screen to view messages received on the SIM card. To access this screen, click **Application > Short Message > SIM SMS**.

Figure 44 Application > Short Message > SIM SMS



The following table describes the labels in this screen.

Table 36 Application > Short Message > SIM SMS

LABEL	DESCRIPTION
Delete All	Click **Delete All** to remove all messages.
	This field displays the index number of the message.
From	This field displays the mobile phone number from which the message is sent.
Time	This field displays the date and time the message was received.
Content	This field displays the content of the message.
Action	Click **Delete** to remove the message record.

8

System

8.1 Overview

Use the system screens to configure general LTE4506 settings.

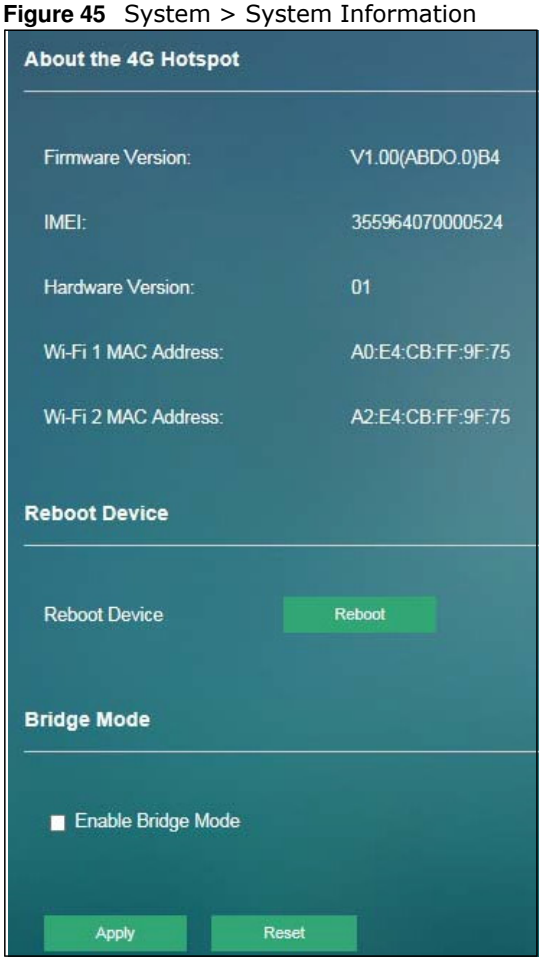
8.1.1 What You Can Do in this Chapter

- Use the **System Information** screen to view basic information about the LTE4506 and restart the LTE4506 (Section 8.2 on page 67).
- Use the **User Account** screen to set the domain name and change the LTE4506's system password (Section 8.3 on page 69).
- Use the **Settings Profile** screen to reset your device settings back to the factory default, backup configuration, and restoring configuration (Section 8.4 on page 70).
- Use the **Firmware Upgrade** screen to upload new firmware to your LTE4506 (Section 8.5 on page 72).
- Use the **Time Settings** screen to change the LTE4506's time and date and configure daylight saving time (Section 8.6 on page 73).
- Use the **System Log** screens to view logged messages and specify to where the LTE4506 is to send logs (Section 8.7 on page 75).

8.2 System Information Screen

Use this screen to view basic information about the LTE4506 and restart the LTE4506. To access this screen, click **System > System Information**.

Figure 45 System > System Information



The following table describes the labels in this screen.

Table 37 System > System Information

LABEL	DESCRIPTION
About the 4G Hotspot	
Firmware Version	This displays the current firmware version of the LTE4506.
IMEI	This displays the International Mobile Equipment Number (IMEI) which is the serial number of the built-in 3G module. IMEI is a unique 15-digit number used to identify a mobile device.
Hardware Version	This displays the hardware version of the LTE4506.
Wi-Fi1 MAC Address Wi-Fi2 MAC Address	This is the MAC address of the wireless network.
Reboot Device	
Reboot Device	Click **Reboot** to restart the device. Wait a few minutes until the login screen appears. If the login screen does not appear, type the IP address of the device in your Web browser.
Bridge Mode	

Table 37 System > System Information (continued)

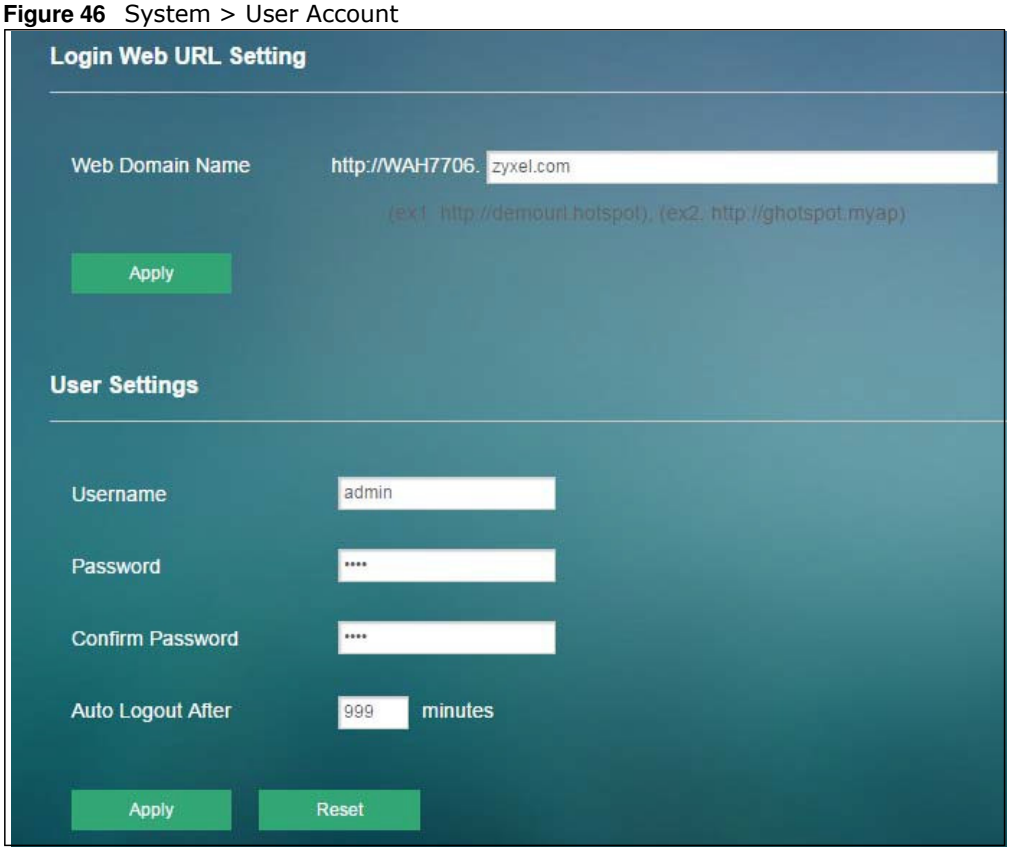
LABEL	DESCRIPTION
Enable Bridge Mode	Select this if you want the LTE4506 to work in bridge mode.
Apply	Click this button to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

8.3 User Account Screen

This screen allows you to set the domain name and change the LTE4506's system password. It is strongly recommended that you change your LTE4506's system password. To access this screen, click **System > User Account**.

See Section 2.2 on page 13 for more information about login accounts.

Figure 46 System > User Account



The following table describes the labels in this screen.

Table 38 System > User Account

LABEL	DESCRIPTION
Login Web URL Setting	
Web Domain Name	Enter the domain name you want to give to the LTE4506.

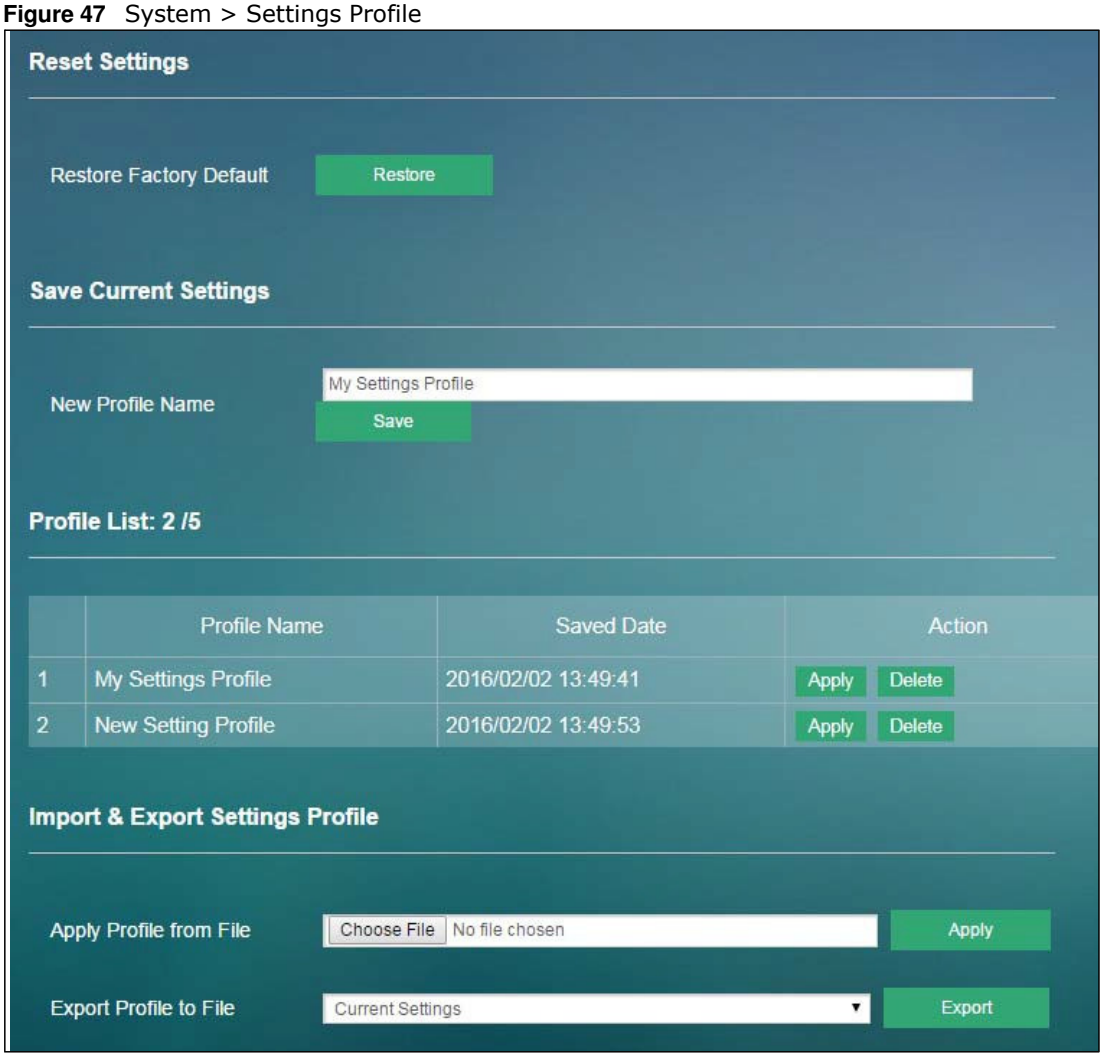
Table 38 System > User Account

LABEL	DESCRIPTION
Apply	Click **Apply** to save your changes back to the LTE4506.
User Settings	
Username	Enter your username of the system account.
Password	Type your new system password. Note that as you type a password, the screen displays as dot (.) for each character you type.
Confirm Password	Type the new password again in this field.
Auto Logout After	Type how many minutes a management session can be left idle before the session times out. The default is 3 minutes. After it times out you have to log in with your password again.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

8.4 Settings Profile Screen

The **Settings Profile** screen allows you to backup and restore device configurations. You can also reset your device settings back to the factory default. To access this screen, click **System > Settings Profile**.

Figure 47 System > Settings Profile



8.4.1 Reset Settings

Click the **Restore** button to clear all user-entered configuration information and return the LTE4506 to its factory defaults. The LTE4506 automatically restarts.

You can also press the **Reset** button on the rear panel to reset the factory defaults of your LTE4506. Refer to Section 1.7 on page 11 for more information on the **Reset** button.

8.4.2 Save Current Settings

Enter the profile name you specified in the **New Profile Name** field, and click **Save**. The profile you saved will be displayed in the **Profile List** field.

The following table describes the labels in this screen.

Table 39 System > Settings Profile

LABEL	DESCRIPTION
	This field displays the index number of the profile.
Profile Name	This field displays the profile name you specified in the **New Profile Name** field.
Saved Date	This field displays the saved time and date of the profile.
Action	Click **Apply** to use the configuration to the LTE4506. Click **Delete** to go to the screen where you can remove the profile.

8.4.3 Import & Export Settings Profile

This screen allows you to upload a new or previously saved configuration file from your computer to your LTE4506.

Type in the location of the file you want to upload in the **Apply Profile from File** field or click **Choose File** to find it. Remember that you must decompress compressed (.ZIP) files before you can upload them. Click **Apply** to begin the upload process. The LTE4506 automatically restarts.

Do not turn off the LTE4506 while configuration file upload is in progress.

Backup Configuration allows you to back up (save) the LTE4506's current configuration to a file on your computer. The configuration file should be saved and edited in UTF-8 (without BOM) format, if you're using Windows Notepad, make sure you choose **File > Save as** UTF-8 in the text editor. Once your LTE4506 is configured and functioning properly, it is highly recommended that you back up your configuration file before making configuration changes. The backup configuration file will be useful in case you need to return to your previous settings.

Select one profile from the drop-down list box in the **Export Profile to File** field, and click **Export** to save the LTE4506's current configuration to your computer.

After the LTE4506 configuration has been restored successfully, the login screen appears. If you uploaded the default configuration file you may need to change the IP address of your computer to be in the same subnet as that of the default device IP address (192.168.1.1).

8.5 Firmware Upgrade Screen

This screen allows you to upload new firmware to your LTE4506. You can download new firmware releases from your nearest ZyXEL FTP site (or www.zyxel.com) to use to upgrade your device's performance.

Only use firmware for your device's specific model.

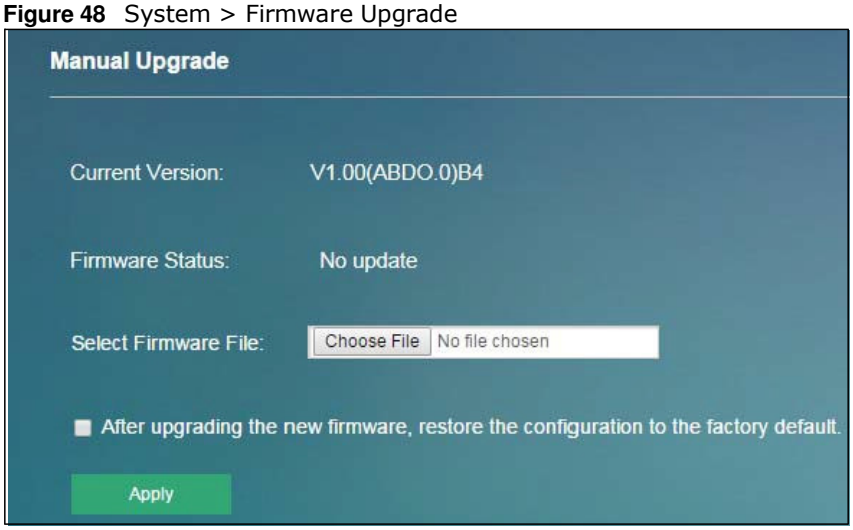
To access this screen, click **System > Firmware Upgrade**. This screen displays the current firmware version and status of the LTE4506. Type in the location of the file you want to upload in the **Select Firmware File** field or click **Choose File** to find it. Remember that you must decompress compressed (.ZIP) files before you can upload them. You can select the check box to

return the LTE4506 to its factory defaults after upgrading the new firmware. Click **Apply** to begin the upload process.

The upload process uses HTTP (Hypertext Transfer Protocol) and may take up to two minutes. After a successful upload, the system will reboot.

Do NOT turn off the LTE4506 while firmware upload is in progress!

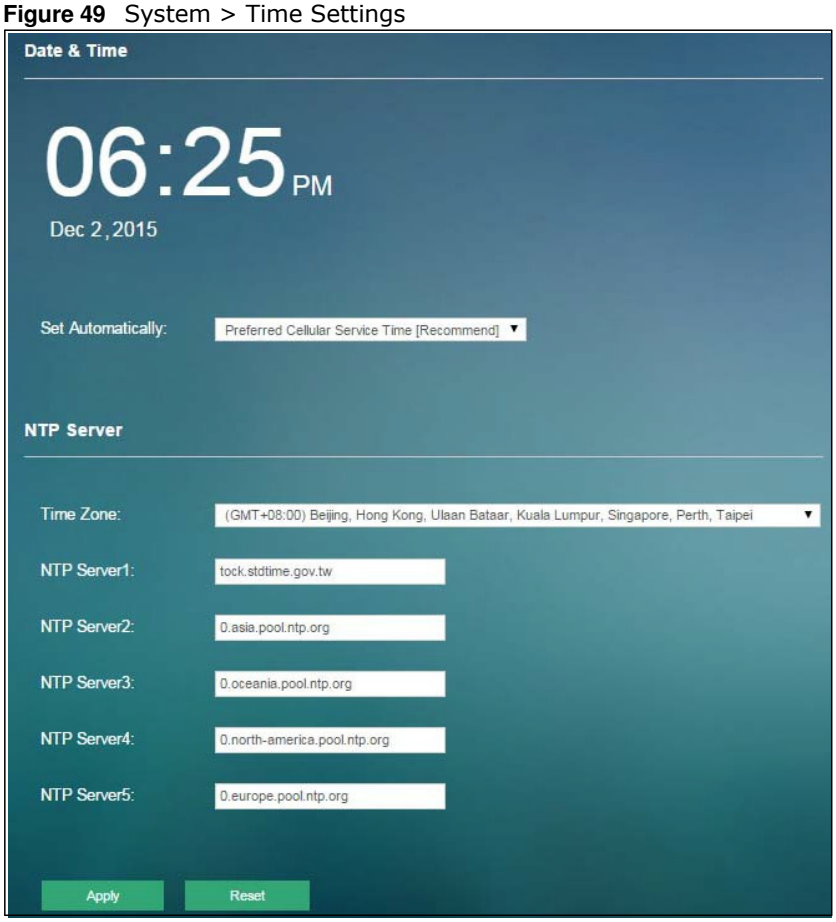
Figure 48 System > Firmware Upgrade



8.6 Time Settings Screen

For effective scheduling and logging, the LTE4506 system time must be accurate. The LTE4506 has a software mechanism to get the current time and date from an external server. To change your LTE4506's time zone, click **System > Time Settings**. The screen displays as shown. You can have the LTE4506 get the date and time from a time server or change the IP address or URL of your time server.

Figure 49 System > Time Settings



The following table describes the labels in this screen.

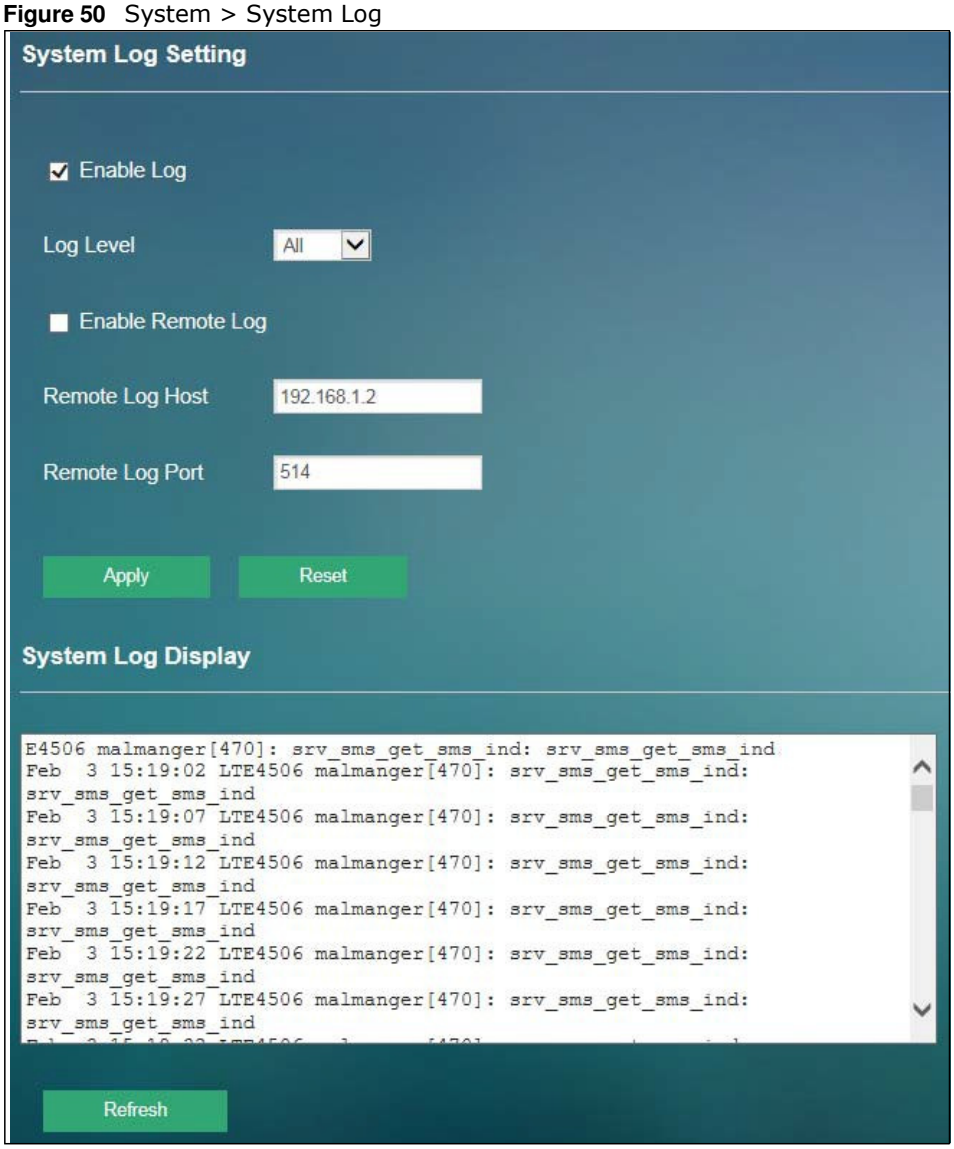
Table 40 System > Time Settings

LABEL	DESCRIPTION
Date & Time	
Device time	This field displays the present time and date of your LTE4506.
Set Automatically	Select **Prefer Cellular Service Time** to have the LTE4506 get the time and date from the cellular service server. Select **Prefer NTP server** to have the LTE4506 get the time and date from the time server you specify.
NTP Server	
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
NTP Server 1~5	Enter the IP address or URL of your time server. Check with your ISP/network administrator if you are unsure of this information.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.

8.7 System Log Screen

Use this screen to specify which logs to display and to where the LTE4506 is to send logs. Click **System > System Log**. The screen displays as shown.

Figure 50 System > System Log



he following table describes the labels in this screen.

Table 41 System > System Log

LABEL	DESCRIPTION
System Log Setting	
Enable Log	Select the check box to enable system logging.
Log Level	Select the level of the logs that the LTE4506 is to record and send to the syslog server. The LTE4506 displays and records the logs with the level equal to or higher than what you selected.

Table 41 System > System Log

LABEL	DESCRIPTION
Enable Remote Log	Select the check box to enable syslog logging. Syslog logging sends a log to an external log server.
Remote Log Host	Enter the domain name or IP address of the syslog server to which the LTE4506 sends the logs.
Remote Log Port	Enter the port number of the syslog server.
Apply	Click **Apply** to save your changes back to the LTE4506.
Reset	Click **Reset** to reload the previous configuration for this screen.
System Log Display The log wraps around and deletes the old entries after it fills. Select what logs you want to see from the **Log Level** drop list. When you select a log level, the LTE4506 searches through all logs of that level or higher. The screen displays the time the log message was recorded. It also displays the reason the log message was generated.	
Refresh	Click **Refresh** to renew the log screen.

9

Troubleshooting

9.1 Overview

This chapter offers some suggestions to solve problems you might encounter. The potential problems are divided into the following categories.

- Power, and Hardware Installation
- LTE4506 Access and Login
- Internet Access
- Wireless Connections

9.2 Power, and Hardware Installation

The LTE4506 does not turn on. None of the LEDs turn on.

1. Make sure the LTE4506 is correctly installed (refer to your Quick Start Guide).
2. Press the power button to turn the LTE4506 on. See Section 1.5 on page 9 and Section 1.6 on page 10.
3. If the problem continues, contact the vendor.

9.3 LTE4506 Access and Login

I forgot the password for the LTE4506.

1. The default IP address is 192.168.1.1.
2. If you changed the IP address and have forgotten it, you have to reset the device to its factory defaults. See Section 1.7 on page 11.

I cannot see or access the **Login** screen in the web configurator.

1. Make sure you are using the correct IP address.
   - The default IP address is 192.168.1.1.
   - If you changed the IP address, use the new IP address.
   - If you changed the IP address and have forgotten it, see the troubleshooting suggestions for LTE4506 Access and Login
2. Make sure the LTE4506 is correctly installed and turned on. See the Quick Start Guide and Section 1.5 on page 9.
3. Make sure your Internet browser does not block pop-up windows and has JavaScripts.
4. Make sure your computer is connected to the LTE4506 and is in the same subnet as the LTE4506.
5. Reset the device to its factory defaults, and try to access the LTE4506 with the default IP address. See Section 1.7 on page 11.
6. Disconnect your computer from the Internet (Wireless and/or Ethernet) and then insert the LTE4506 again.
7. If the problem continues, contact the vendor.

I forgot the password.

1. The default password is **1234**.
2. If this does not work, you have to reset the device to its factory defaults. See Section 1.7 on page 11.

I can see the **Login** screen, but I cannot log in to the LTE4506.

1. Make sure you have entered the user name and password correctly. The default password is **1234**. This fields are case-sensitive, so make sure [Caps Lock] is not on.
2. This can happen when you fail to log out properly from your last session. Try logging in again after five minutes.
3. Disconnect and connect to the LTE4506 again.
4. If this does not work, you have to reset the device to its factory defaults. See Section 1.7 on page 11.

9.4 Internet Access

I cannot access the Internet through a 3G/4G wireless WAN connection.

1. Make sure you insert a 4G SIM card into the card slot before turning on the LTE4506.
2. Make sure your mobile access information (such as APN) is entered correctly in the WAN screen. These fields are case-sensitive, so make sure [Caps Lock] is not on. Check with your service provider for the correct APN if you don't have it.
3. Make sure your SIM card's account is valid and has an active data plan. Check your service contract or contact your service provider directly.
4. If you are using a pre-paid SIM card, insert the SIM card on another mobile device to check if the SIM card still works. If the SIM card works without any problems on another mobile device, contact the vendor. Otherwise, contact your service provider.
5. If the problem continues, contact your ISP.

I cannot access the Internet anymore. I had access to the Internet (with the LTE4506), but my Internet connection is not available anymore.

1. Reboot the LTE4506.
2. If the problem continues, contact your ISP.

The Internet connection is slow or intermittent.

1. There might be a lot of traffic on the network. If the LTE4506 is sending or receiving a lot of information, try closing some programs that use the Internet, especially peer-to-peer applications.
2. Check the signal strength. If the signal strength is low, try moving the LTE4506 closer to the ISP's base station if possible, and look around to see if there are any devices that might be interfering with the wireless network (for example, microwaves, other wireless networks, and so on).
3. Reboot the LTE4506.
4. If the problem continues, contact the network administrator or vendor.

9.5 Wireless Connections

I cannot access the LTE4506 or ping any computer from the WLAN.

1. Make sure the wireless LAN is enabled on the LTE4506.
2. Make sure the wireless adapter (installed on your computer) is working properly.
3. Make sure the wireless adapter (installed on your computer) is IEEE 802.11 compatible and supports the same wireless standard as the LTE4506's active radio.
4. Make sure your computer (with a wireless adapter installed) is within the transmission range of the LTE4506.
5. Check that both the LTE4506 and your computer are using the same wireless and wireless security settings.

I can only see newer logs. Older logs are missing.

When a log reaches the maximum number of log messages, new log messages automatically overwrite existing log messages, starting with the oldest existing log message first.

9.6 Getting More Troubleshooting Help

Search for support information for your model at www.zyxel.com for more troubleshooting suggestions.

A

Common Services

The following table lists some commonly-used services and their associated protocols and port numbers. For a comprehensive list of port numbers, ICMP type/code numbers and services, visit the IANA (Internet Assigned Number Authority) web site.

- **Name**: This is a short, descriptive name for the service. You can use this one or create a different one, if you like.
- **Protocol**: This is the type of IP protocol used by the service. If this is **TCP/UDP**, then the service uses the same port number with TCP and UDP. If this is **USER-DEFINED**, the **Port(s)** is the IP protocol number, not the port number.
- **Port(s)**: This value depends on the **Protocol**. Please refer to RFC 1700 for further information about port numbers.
  - If the **Protocol** is **TCP**, **UDP**, or **TCP/UDP**, this is the IP port number.
  - If the **Protocol** is **USER**, this is the IP protocol number.
- **Description**: This is a brief explanation of the applications that use this service or the situations in which this service is used.

Table 42 Commonly Used Services

NAME	PROTOCOL	PORT(S)	DESCRIPTION
AH (IPSEC_TUNNEL)	User-Defined	51	The IPSEC AH (Authentication Header) tunneling protocol uses this service.
AIM/New-ICQ	TCP	5190	AOL's Internet Messenger service. It is also used as a listening port by ICQ.
AUTH	TCP	113	Authentication protocol used by some servers.
BGP	TCP	179	Border Gateway Protocol.
BOOTP_CLIENT	UDP	68	DHCP Client.
BOOTP_SERVER	UDP	67	DHCP Server.
CU-SEEME	TCP UDP	7648 24032	A popular videoconferencing solution from White Pines Software.
DNS	TCP/UDP	53	Domain Name Server, a service that matches web names (for example www.zyxel.com) to IP numbers.
ESP (IPSEC_TUNNEL)	User-Defined	50	The IPSEC ESP (Encapsulation Security Protocol) tunneling protocol uses this service.
FINGER	TCP	79	Finger is a UNIX or Internet related command that can be used to find out if a user is logged on.
FTP	TCP TCP	20 21	File Transfer Program, a program to enable fast transfer of files, including large files that may not be possible by e-mail.
H.323	TCP	1720	NetMeeting uses this protocol.
HTTP	TCP	80	Hyper Text Transfer Protocol - a client/server protocol for the world wide web.

Table 42 Commonly Used Services (continued)

NAME	PROTOCOL	PORT(S)	DESCRIPTION
HTTPS	TCP	443	HTTPS is a secured http session often used in e-commerce.
ICMP	User-Defined	1	Internet Control Message Protocol is often used for diagnostic or routing purposes.
ICQ	UDP	4000	This is a popular Internet chat program.
IGMP (MULTICAST)	User-Defined	2	Internet Group Management Protocol is used when sending packets to a specific group of hosts.
IKE	UDP	500	The Internet Key Exchange algorithm is used for key distribution and management.
IRC	TCP/UDP	6667	This is another popular Internet chat program.
MSN Messenger	TCP	1863	Microsoft Networks' messenger service uses this protocol.
NEW-ICQ	TCP	5190	An Internet chat program.
NEWS	TCP	144	A protocol for news groups.
NFS	UDP	2049	Network File System - NFS is a client/server distributed file service that provides transparent file sharing for network environments.
NNTP	TCP	119	Network News Transport Protocol is the delivery mechanism for the USENET newsgroup service.
PING	User-Defined	1	Packet INternet Groper is a protocol that sends out ICMP echo requests to test whether or not a remote host is reachable.
POP3	TCP	110	Post Office Protocol version 3 lets a client computer get e-mail from a POP3 server through a temporary connection (TCP/IP or other).
PPTP	TCP	1723	Point-to-Point Tunneling Protocol enables secure transfer of data over public networks. This is the control channel.
PPTP_TUNNEL (GRE)	User-Defined	47	PPTP (Point-to-Point Tunneling Protocol) enables secure transfer of data over public networks. This is the data channel.
RCMD	TCP	512	Remote Command Service.
REAL_AUDIO	TCP	7070	A streaming audio service that enables real time sound over the web.
REXEC	TCP	514	Remote Execution Daemon.
RLOGIN	TCP	513	Remote Login.
RTELNET	TCP	107	Remote Telnet.
RTSP	TCP/UDP	554	The Real Time Streaming (media control) Protocol (RTSP) is a remote control for multimedia on the Internet.
SFTP	TCP	115	Simple File Transfer Protocol.
SMTP	TCP	25	Simple Mail Transfer Protocol is the message-exchange standard for the Internet. SMTP enables you to move messages from one e-mail server to another.
SNMP	TCP/UDP	161	Simple Network Management Program.
SNMP-TRAPS	TCP/UDP	162	Traps for use with the SNMP (RFC:1215).

Table 42 Commonly Used Services (continued)

NAME	PROTOCOL	PORT(S)	DESCRIPTION
SQL-NET	TCP	1521	Structured Query Language is an interface to access data on many different types of database systems, including mainframes, midrange systems, UNIX systems and network servers.
SSH	TCP/UDP	22	Secure Shell Remote Login Program.
STRM WORKS	UDP	1558	Stream Works Protocol.
SYSLOG	UDP	514	Syslog allows you to send system logs to a UNIX server.
TACACS	UDP	49	Login Host Protocol used for (Terminal Access Controller Access Control System).
TELNET	TCP	23	Telnet is the login and terminal emulation protocol common on the Internet and in UNIX environments. It operates over TCP/IP networks. Its primary function is to allow users to log into remote host systems.
TFTP	UDP	69	Trivial File Transfer Protocol is an Internet file transfer protocol similar to FTP, but uses the UDP (User Datagram Protocol) rather than TCP (Transmission Control Protocol).
VDOLIVE	TCP	7000	Another videoconferencing solution.

B

Legal Information

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Regulatory Notice and Statement

UNITED STATES of AMERICA

The following information applies if you use the product within USA area.

FCC EMC Statement

- The device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.
- This product has been tested and complies with the specifications 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 device generates, uses, and can radiate radio frequency energy and, if not installed and used according to 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 device does cause harmful interference to radio or television reception, which is found by turning the device 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 devices
  - •Connect the equipment to an outlet other than the receiver's
  - •Consult a dealer or an experienced radio/TV technician for assistance

FCC Radiation Exposure Statement

- This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must be at least 20 cm from the user and must not be co-located or operating in conjunction with any other antenna or transmitter.

CANADA

The following information applies if you use the product within Canada area

Industry Canada ICES statement

ICAN ICES-3 (B)/NMB-3(B)

Industry Canada RSS-GEN & RSS-247 statement

- This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
- This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

If the product with 5G wireless function operating in 5150-5250 MHz and 5725-5850 MHz , the following attention must be paid,

- The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.
- For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and
- The worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) of RSS 247 shall be clearly indicated.

If the product with 5G wireless function operating in 5250-5350 MHz and 5470-5725 MHz , the following attention must be paid.

- For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit
- Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
- Le présent émetteur radio de modèle s'il fait partie du matériel de catégorieI) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Lorsque la fonction sans fil 5G fonctionnant en5150-5250 MHz and 5725-5850 MHz est activée pour ce produit , il est nécessaire de porter une attention particulière aux choses suivantes

- Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- Pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;
- Les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3) du CNR-247, doivent être clairement indiqués.

  Lorsque la fonction sans fil 5G fonctionnant en 5250-5350 MHz et 5470-5725 MHz est activée pour ce produit , il est nécessaire de porter une attention particulière aux choses suivantes
- Pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e.

Industry Canada radiation exposure statement

This device complies with IC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

EUROPEAN UNION

The following information applies if you use the product within the European Union.

Declaration of Conformity with Regard to EU Directive 1999/5/EC (R&TTE Directive)

Compliance information for 2.4GHz and/or 5GHz wireless products relevant to the EU and other Countries following the EU Directive 1999/5/EC (R&TTE)

Български (Bulgarian)	С настоящото ZyXEL декларира, че това оборудване е в съответствие със съществените изисквания и другите приложими разпоредбите на Директива 1999/5/EC.
Español (Spanish)	Por medio de la presente ZyXEL declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Čeština (Czech)	ZyXEL tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/EC.
Dansk (Danish)	Undertegnede ZyXEL erklærer herved, at følgende udstyr udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Deutsch (German)	Hiermit erklärt ZyXEL, dass sich das Gerät Ausstattung in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EU befindet.
Eesti keel (Estonian)	Käesolevaga kinnitab ZyXEL seadme seadmed vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Ελληνικά (Greek)	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ ZyXEL ΔΗΛΩΝΕΙ ΟΤΙ εξοπλισμός ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EC.
English	Hereby, ZyXEL declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Français (French)	Par la présente ZyXEL déclare que l'appareil équipements est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/EC.
Hrvatski (Croatian)	ZyXEL ovime izjavljuje da je radijska oprema tipa u skladu s Direktivom 1999/5/EC.
Íslenska (Icelandic)	Hér með lýsir, ZyXEL því yfir að þessi búnaður er í samræmi við grunnkröfur og önnur viðeigandi ákvæði tilskipunar 1999/5/EC.
Italiano (Italian)	Con la presente ZyXEL dichiara che questo attrezzatura è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviešu valoda (Latvian)	Ar šo ZyXEL deklarē, ka iekārtas atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių kalba (Lithuanian)	Šiuo ZyXEL deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Magyar (Hungarian)	Alulírott, ZyXEL nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EK irányelv egyéb előírásainak.
Malti (Maltese)	Hawnhekk, ZyXEL, jiddikjara li dan tagħmir jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Nederlands (Dutch)	Hierbij verklaart ZyXEL dat het toestel uitrusting in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EC.
Polski (Polish)	Niniejszym ZyXEL oświadcza, że sprzęt jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português (Portuguese)	ZyXEL declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/EC.
Română (Romanian)	Prin prezenta, ZyXEL declară că acest echipament este în conformitate cu cerinţele esenţiale şi alte prevederi relevante ale Directivei 1999/5/EC.
Slovenčina (Slovak)	ZyXEL týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/EC.
Slovenščina (Slovene)	ZyXEL izjavlja, da je ta oprema v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/EC.
Suomi (Finnish)	ZyXEL vakuuttaa täten että laitteet tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska (Swedish)	Härmed intygar ZyXEL att denna utrustning står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EC.
Norsk (Norwegian)	Erklærer herved ZyXEL at dette utstyret er I samsvar med de grunnleggende kravene og andre relevante bestemmelser I direktiv 1999/5/EF.

This device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range.

National Restrictions

This product may be used in all EU countries (and other countries following the EU Directive 1999/5/EC) without any limitation except for the countries mentioned below:

Ce produit peut être utilisé dans tous les pays de l'UE (et dans tous les pays ayant transposés la directive 1999/5/CE) sans aucune limitation, excepté pour les pays mentionnés ci-dessous:

Questo prodotto è utilizzabile in tutte i paesi EU (ed in tutti gli altri paesi che seguono le direttiva 1999/5/EC) senza nessuna limitazione, eccetto per i paesii menzionati di seguito:

Das Produkt kann in allen EU Staaten ohne Einschränkungen eingesetzt werden (sowie in anderen Staaten die der Richtlinie 1999/5/CE folgen) mit Außnahme der folgenden aufgeführten Staaten:

In the majority of the EU and other European countries, the 2.4GHz and 5GHz bands have been made available for the use of wireless local area networks (LANs). Later in this document you will find an overview of countries in which additional restrictions or requirements or both are applicable.

The requirements for any country may evolve. ZyXEL recommends that you check with the local authorities for the latest status of their national regulations for both the 2.4GHz and 5GHz wireless LANs.

The following countries have restrictions and/or requirements in addition to those given in the table labeled "*Overview of Regulatory Requirements for Wireless LANs*":.

Belgium

The Belgian Institute for Postal Services and Telecommunications (BIPT) must be notified of any outdoor wireless link having a range exceeding 300 meters. Please check http://www.bipt.be for more details.

Draadloze verbindingen voor buitengebruik en met een reikwijdte van meer dan 300 meter dienen aangemeld te worden bij het Belgisch Instituut voor postdiensten en telecommunicatie (BIPT). Zie http://www.bipt.be voor meer gegevens.

Les liaisons sans fil pour une utilisation en extérieur d'une distance supérieure à 300 mètres doivent être notifiées à l'Institut Belge des services Postaux et des Télécommunications (IBPT). Visitez http://www.ibpt.be pour de plus amples détails.

Denmark

In Denmark, the band 5150 - 5350 MHz is also allowed for outdoor usage.

I Danmark må frekvensbåndet 5150 - 5350 også anvendes udendørs.

Italy

This product meets the National Radio Interface and the requirements specified in the National Frequency Allocation Table for Italy. Unless this wireless LAN product is operating within the boundaries of the owner's property, its use requires a "general authorization." Please check http://www.sviluppoeconomico.gov.it/ for more details.

Questo prodotto è conforme alla specifiche di Interfaccia Radio Nazionali e rispetta il Piano Nazionale di ripartizione delle frequenze in Italia. Se non viene installato all 'interno del proprio fondo, l'utilizzo di prodotti Wireless LAN richiede una "Autorizzazione Generale". Consultare http://www.sviluppoeconomico.gov.it/ per maggiori dettagli.

Latvia

The outdoor usage of the 2.4 GHz band requires an authorization from the Electronic Communications Office. Please check http://www.esd.lv for more details.

2.4 GHz frekvenèu joslas izmantoðanai ârpus telpâm nepiecieðama atïauja no Elektronisko sakaru direkcijas. Vairâk informâcijas: http://www.esd.lv.

Notes:

1. Although Norway, Switzerland and Liechtenstein are not EU member states, the EU Directive 1999/5/EC has also been implemented in those countries.

2. The regulatory limits for maximum output power are specified in EIRP. The EIRP level (in dBm) of a device can be calculated by adding the gain of the antenna used(specified in dBi) to the output power available at the connector (specified in dBm).

List of national codes

COUNTRY	ISO 3166 2 LETTER CODE	COUNTRY	ISO 3166 2 LETTER CODE
Austria	AT	Liechtenstein	LI
Belgium	BE	Lithuania	LT
Bulgaria	BG	Luxembourg	LU
Croatia	HR	Malta	MT
Cyprus	CY	Netherlands	NL
Czech Republic	CZ	Norway	NO
Denmark	DK	Poland	PL
Estonia	EE	Portugal	PT
Finland	FI	Romania	RO
France	FR	Serbia	RS
Germany	DE	Slovakia	SK
Greece	GR	Slovenia	SI
Hungary	HU	Spain	ES
Iceland	IS	Switzerland	CH
Ireland	IE	Sweden	SE
Italy	IT	Turkey	TR
Latvia	LV	United Kingdom	GB

Safety Warnings

- Do not use this product near water, for example, in a wet basement or near a swimming pool.
- Do not expose your device to dampness, dust or corrosive liquids.
- Do not store things on the device.
- Do not obstruct the device ventilation slots as insufficient airflow may harm your device. For example, do not place the device in an enclosed space such as a box or on a very soft surface such as a bed or sofa.
- Do not install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do not open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.

- Do not remove the plug and connect it to a power outlet by itself; always attach the plug to the power adaptor first before connecting it to a power outlet.
- Do not allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Please use the provided or designated connection cables/power cables/ adaptors. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe). If the power adaptor or cord is damaged, it might cause electrocution. Remove it from the device and the power source, repairing the power adapter or cord is prohibited. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- Do not obstruct the device ventilation slots, as insufficient airflow may harm your device.

The following warning statements apply, where the disconnect device is not incorporated in the device or where the plug on the power supply cord is intended to serve as the disconnect device,

- For permanently connected devices, a readily accessible disconnect device shall be incorporated external to the device;
- For pluggable devices, the socket-outlet shall be installed near the device and shall be easily accessible.

Environment Statement

ErP (Energy-related Products)

ZyXEL products put on the EU market in compliance with the requirement of the European Parliament and the Council published Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (recast), so called

as "ErP Directive (Energy-related Products directive) as well as ecodesign requirement laid down in applicable implementing measures, power consumption has satisfied regulation requirements which are:

Network standby power consumption < 12W, and/or

Off mode power consumption < 0.5W, and/or

Standby mode power consumption < 0.5W.

Wireless setting, please refer to "Wireless" chapter for more detail.

European Union - Disposal and Recycling Information

The symbol below means that according to local regulations your product and/or its battery shall be disposed of separately from domestic waste. If this product is end of life, take it to a recycling station designated by local authorities. At the time of disposal, the separate collection of your product and/or its battery will help save natural resources and ensure that the environment is sustainable development.

Die folgende Symbol bedeutet, dass Ihr Produkt und/oder seine Batterie gemäß den örtlichen Bestimmungen getrennt vom Hausmüll entsorgt werden muss. Wenden Sie sich an eine Recyclingstation, wenn dieses Produkt das Ende seiner Lebensdauer erreicht hat. Zum Zeitpunkt der Entsorgung wird die getrennte Sammlung von Produkt und/oder seiner Batterie dazu beitragen, natürliche Ressourcen zu sparen und die Umwelt und die menschliche Gesundheit zu schützen.

El símbolo de abajo indica que según las regulaciones locales, su producto y/o su batería deberán depositarse como basura separada de la doméstica. Cuando este producto alcance el final de su vida útil, llévelo a un punto limpio. Cuando llegue el momento de desechar el producto, la recogida por separado éste y/o su batería ayudará a salvar los recursos naturales y a proteger la salud humana y medioambiental.

Le symbole ci-dessous signifie que selon les réglementations locales votre produit et/ou sa batterie doivent être éliminés séparément des ordures ménagères. Lorsque ce produit atteint sa fin de vie, amenez-le à un centre de recyclage. Au moment de la mise au rebut, la collecte séparée de votre produit et/ou de sa batterie aidera à économiser les ressources naturelles et protéger l'environnement et la santé humaine.

Il simbolo sotto significa che secondo i regolamenti locali il vostro prodotto e/o batteria deve essere smaltito separatamente dai rifiuti domestici. Quando questo prodotto raggiunge la fine della vita di servizio portarlo a una stazione di riciclaggio. Al momento dello smaltimento, la raccolta separata del vostro prodotto e/o della sua batteria aiuta a risparmiare risorse naturali e a proteggere l'ambiente e la salute umana.

Symbolen innebär att enligt lokal lagstiftning ska produkten och/eller dess batteri kastas separat från hushållsavfallet. När den här produkten når slutet av sin livslängd ska du ta den till en återvinningsstation. Vid tiden för kasseringen bidrar du till en bättre miljö och mänsklig hälsa genom att göra dig av med den på ett återvinningsställe.

Environmental Product Declaration

Български (Bulgarian)	Čeština (Czech)	Dansk (Danish)	Deutsch (German)
Екологична продуктова декларация RoHS Директива 2011/65/ЕС WEEE Директива 2012/19/ЕС PPW Директива 94/62/ЕО REACH РЕГЛАМЕНТ (ЕО) № 1907/2006 ErP Директива 2009/125/ЕО Име/ титла : Richard Hsu / Quality Management Division Senior Manager Подпис : Дата (дд/мм/гггг): 01/10/2014	Environmentální prohlášení o produktu RoHS Směrnice 2011/65/EU WEEE Směrnice 2012/19/EU PPW Směrnice 94/62/ES REACH Nařízení (ES) č. 1907/2006 ErP Směrnice 2009/125/ES Jméno/ titul : Richard Hsu / Quality Management Division Senior Manager Podpis : Datum (dd/mm/rrrr): 01/10/2014	Miljøvaredeklaration RoHS Direktiv 2011/65/EU WEEE Direktiv 2012/19/EU PPW Direktiv 94/62/EF REACH Forordning (EF) nr. 1907/2006 ErP Direktiv 2009/125/EF Navn/ titel : Richard Hsu / Quality Management Division Senior Manager Underskrift : Dato (dd/mm/åااا): 01/10/2014	Produkt-Umweltdeklaration RoHS Richtlinie 2011/65/EU WEEE Richtlinie 2012/19/EU PPW Richtlinie 94/62/EG REACH VERORDNUNG (EG) Nr. 1907/2006 ErP Richtlinie 2009/125/EG Name/ titel : Richard Hsu / Quality Management Division Senior Manager Unterschrift : Datum (jj/mm/tt): 2014/10/01
Eesti keel (Estonian)	**English**	**Español (Spanish)**	**Français (French)**
Toote keskkonnadeklaratsiooni RoHS Direktiiv 2011/65/EL WEEE Direktiiv 2012/19/EL PPW Direktiiv 94/62/EÜ REACH MÄÄRUS (EÜ) nr 1907/2006 ErP Direktiiv 2009/125/EÜ Nimi/ peatkiri : Richard Hsu / Quality Management Division Senior Manager Allkiri : Kuupäev (pp/kk/aaaa): 01/10/2014	Environmental product declaration RoHS Directive 2011/65/EU WEEE Directive 2012/19/EU PPW Directive 94/62/EC REACH Regulation (EC) No 1907/2006 ErP Directive 2009/125/EC Name/ title : Richard Hsu / Quality Management Division Senior Manager Signature : Date (dd/mm/yyyy) : 01/10/2014	Declaraciones Ambientales de Producto RoHS Directiva 2011/65/UE WEEE Directiva 2012/19/UE PPW Directiva 94/62/CE REACH REGLAMENTO (CE) nº 1907/2006 ErP Directiva 2009/125/CE Nombre/ título : Richard Hsu / Quality Management Division Senior Manager Firma : Fecha (aaaa/mm/dd): 2014/10/01	Profil environnemental de produit RoHS Directive 2011/65/UE WEEE Directive 2012/19/UE PPW Directive 94/62/CE REACH RÈGLEMENT (CE) N° 1907/2006 ErP Directive 2009/125/CE Nom/ titre : Richard Hsu / Quality Management Division Senior Manager Signature : Date (aaaa/mm/jj): 2014/10/01
Hrvatski (Croatian)	**Italiano (Italian)**	**Latviešu valoda (Latvian)**	**Lietuvių kalba (Lithuanian)**
Deklaraciju o zbrinjavanju proizvoda RoHS Direktiva 2011/65/EU WEEE Direktiva 2012/19/EU PPW Direktiva 94/62/EZ REACH Uredbe (EZ) br. 1907/2006 ErP Direktiva 2009/125/EZ Ime/ naslov : Richard Hsu / Quality Management Division Senior Manager Potpis : Datum (dd/mm/yyyy): 01/10/2014	Dichiarazione ambientale di prodotto RoHS Direttiva 2011/65/UE WEEE Direttiva 2012/19/UE PPW Direttiva 94/62/CE REACH REGOLAMENTO (CE) n. 1907/2006 ErP Direttiva 2009/125/CE Nome/ titolo : Richard Hsu / Quality Management Division Senior Manager Firma : Data (aaaa/mm/gg): 2014/10/01	Produkta vides ietekmējuma deklarācija RoHS Direktīva 2011/65/ES WEEE Direktīva 2012/19/ES PPW Direktīva 94/62/EK REACH Regula (EK) Nr. 1907/2006 ErP Direktīva 2009/125/EK Nosaukums/ tituls : Richard Hsu / Quality Management Division Senior Manager Paraksts : Datums (dd/mm/gggg): 01/10/2014	Aplinkosauginę gaminio deklaraciją RoHS Direktyva 2011/65/ES WEEE Direktyva 2012/19/ES PPW Direktyva 94/62/EB REACH REGLAMENTAS (EB) Nr. 1907/2006 ErP Direktyva 2009/125/EB Vardas/ titulas : Richard Hsu / Quality Management Division Senior Manager Parašas : Data (dd/mm/mmmm.): 01/10/2014
Magyar (Hungarian)	**Malti (Maltese)**	**Nederlands (Dutch)**	**Polski (Polish)**
Környezetvédelmi terméknyilatkozatot RoHS 2011/65/EU irányelve WEEE 2012/19/EU irányelve PPW 94/62/EK irányelve REACH 1907/2006/EK Rendelete ErP 2009/125/EK irányelve Név/ cím : Richard Hsu / Quality Management Division Senior Manager Aláírás : Dátum (éééé/hh/nn): 2014/10/01	Dikjarazzjoni Ambjentali dwar il-Prodott RoHS Direttiva 2011/65/UE WEEE Direttiva 2012/19/UE PPW Direttiva 94/62/KE REACH REGOLAMENT (KE) NRU 1907/2006 ErP Direttiva 2009/125/KE Isem/ titolu : Richard Hsu / Quality Management Division Senior Manager Firma : Data (ssss/xx/jj): 2014/10/01	Milieuproductverklaring RoHS Richtlijn 2011/65/EU WEEE Richtlijn 2012/19/EU PPW Richtlijn 94/62/EG REACH Verordening (EG) nr. 1907/2006 ErP Richtlijn 2009/125/EG Naam/ titel : Richard Hsu / Quality Management Division Senior Manager Handtekening : Datum (dd/mm/jaar): 01/10/2014	Deklarację środowiskową produktu RoHS Dyrektywa 2011/65/UE WEEE Dyrektywa 2012/19/UE PPW Dyrektywa 94/62/WE REACH Rozporządzenie (WE) nr 1907/2006 ErP Dyrektywa 2009/125/WE Nazwisko/ tytuł : Richard Hsu / Quality Management Division Senior Manager Podpis : Data (rr/mm/dd): 2014/10/01
Português (Portuguese)	**Română (Romanian)**	**Slovenčina (Slovak)**	**Slovenščina (Slovene)**
Declaração ambiental do produto RoHS Directiva 2011/65/UE WEEE Directiva 2012/19/UE PPW Directiva 94/62/CE REACH Regulamento (CE) n.º 1907/2006 ErP Directiva 2009/125/CE Nome/ título : Richard Hsu / Quality Management Division Senior Manager Assinatura : Data (dd/mm/aaaa): 01/10/2014	Declaraţie de mediu privind produsele RoHS Directiva 2011/65/UE WEEE Directiva 2012/19/UE PPW Directiva 94/62/CE REACH REGULAMENTUL (CE) NR. 1907/2006 ErP Directiva 2009/125/CE Numele/ titlu : Richard Hsu / Quality Management Division Senior Manager Semnătura : Data (zz/ll/aaaa): 01/10/2014	Vyhlásenie o environmentálnom výrobku RoHS Smernica 2011/65/EÚ WEEE Smernica 2012/19/EÚ PPW Smernica 94/62/ES REACH Nariadenie (ES) č. 1907/2006 ErP Smernica 2009/125/ES Meno/ titul : Richard Hsu / Quality Management Division Senior Manager Podpis : Dátum (dd/mm/rrrr): 01/10/2014	Okoljsko deklaracijo izdelka RoHS Direktiva 2011/65/EU WEEE Direktiva 2012/19/EU PPW Direktiva 94/62/ES REACH Uredba (ES) št. 1907/2006 ErP Direktiva 2009/125/ES Ime/ naziv : Richard Hsu / Quality Management Division Senior Manager Podpis : Datum (dd/mm/ll): 01/10/2014
Suomi (Finnish)	**Svenska (Swedish)**	**Ελληνικά (Greek)**	**Norsk (Norwegian)**
Standardiin perustuva ympäristötuoteseloste RoHS Direktiivi 2011/65/EU WEEE Direktiivi 2012/19/EU PPW Direktiivi 94/62/EY REACH ASETUS (EY) N:o 1907/2006 ErP Direktiivi 2009/125/EY Nimi/ otsikko : Richard Hsu / Quality Management Division Senior Manager Allekirjoitus : Päivämäärä (pp/kk/vvvv): 01/10/2014	Miljöproduktdeklaration RoHS Direktiv 2011/65/EU WEEE Direktiv 2012/19/EU PPW Direktiv 94/62/EG REACH Förordning (EG) nr 1907/2006 ErP Direktiv 2009/125/EG Namn/ titel : Richard Hsu / Quality Management Division Senior Manager Namnteckning : Datum (dd/mm/åااا): 01/10/2014	Περιβαλλοντική δήλωση προϊόντος RoHS Οδηγία 2011/65/ΕΕ WEEE Οδηγία 2012/19/ΕΕ PPW Οδηγία 94/62/ΕΚ REACH Κ. αονονηημοη (ΕΚ) αριθ. 1907/2006 ErP Οδηγία 2009/125/ΕΚ Όνομα/ τίλος : Richard Hsu / Quality Management Division Senior Manager Υπογραφή : Ημερομηνία (ηη/μμ/εεεε): 01/10/2014	Miljødeklarasjon RoHS Direktiv 2011/65/EU WEEE Direktiv 2012/19/EU PPW Direktiv 94/62/EF REACH Forordning (EF) nr. 1907/2006 ErP Direktiv 2009/125/EF Navn/ tittel : Richard Hsu / Quality Management Division Senior Manager Signatur : Dato (dd/mm/åااا) : 01/10/2014

台灣

以下訊息僅適用於產品具有無線功能且銷售至台灣地區

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司，商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。　低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

無線資訊傳輸設備忍受合法通信之干擾且不得干擾合法通信；如造成干擾，應立即停用，　俟無干擾之虞，始得繼續使用。　無

線資訊傳設備的製造廠商應確保頻率穩定性，如依製造廠商使用手冊上所述正常操作，　發射的信號應維持於操作頻帶中　以下

訊息僅適用於產品操作於5.25-5.35秭赫頻帶內並銷售至台灣地區
• 在5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

以下訊息僅適用於產品屬於專業安裝並銷售至台灣地區

• 本器材須經專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費者

安全警告 為了您的安全，請先閱讀以下警告及指

示 ：

• 請勿將此產品接近水、火焰或放置在高溫的環境。
• 避免設備接觸任何液體 - 切勿讓設備接觸水、雨水、高濕度、污水腐蝕性的液體或其他水份。
• 灰塵及污物 - 切勿接觸灰塵、污物、沙土、食物或其他不合適的材料。
• 雷雨天氣時，不要安裝，使用或維修此設備。有遭受電擊的風險。
• 切勿重摔或撞擊設備，並勿使用不正確的電源變壓器。
• 若接上不正確的電源變壓器會有爆炸的風險。
• 請勿隨意更換產品內的電池。
• 如果更換不正確之電池型式，會有爆炸的風險，請依製造商說明書處理使用過之電池。
• 請將廢電池丟棄在適當的電器或電子設備回收處。
• 請勿將設備解體。
• 請勿阻礙設備的散熱孔，空氣對流不足將會造成設備損害。
• 請插在正確的電壓供給插座(如:北美/台灣電壓110V AC，歐洲是230V AC)。
• 假若電源變壓器或電源變壓器的纜線損壞，請從插座拔除，若您還繼續插電使用，會有觸電死亡的風險。
• 請勿試圖修理電源變壓器或電源變壓器的纜線，若有毀損，請直接聯絡您購買的店家，購買一個新的電源變壓器。
• 請勿將此設備安裝於室外，此設備僅適合放置於室內。
• 請勿隨一般垃圾丟棄。
• 請參閱產品背貼上的設備額定功率。
• 請參考產品型錄或是彩盒上的作業溫度。
• 產品沒有斷電裝置或者採用電源線的插頭視為斷電裝置的一部分，以下警語將適用:
  - 對永久連接之設備，在設備外部須安裝可觸及之斷電裝置；
  - 對插接式之設備，插座必須接近安裝之地點而且是易於觸及的。

Viewing Certifications

Go to http://www.zyxel.com to view this product's documentation and certifications.

ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in material or workmanship for a specific period (the Warranty Period) from the date of purchase. The Warranty Period varies by region. Check with your vendor and/or the authorized ZyXEL local distributor for details about the Warranty Period of this product. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyXEL shall in no event be held liable for indirect or consequential damages of any kind to the purchaser.

To obtain the services of this warranty, contact your vendor. You may also refer to the warranty policy for the region in which you bought the device at http://www.zyxel.com/web/support_warranty_info.php.

Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

Open Source Licenses

This product contains in part some free software distributed under GPL license terms and/or GPL like licenses. Open source licenses are provided with the firmware package. You can download the latest firmware at www.zyxel.com. To obtain the source code covered under those Licenses, please contact support@zyxel.com.tw to get it.

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