Wireless 802.11b/g/n Mesh Router

Model:
OM2P-LC
OM2P-HS

User Manual

Version : 1.0

Table of Contents

About ThisDocument

Audience

This document is written for networking professionals responsible for installing and managing the EnGenius ENH Series Outdoor Access Point/Bridge. To use this guide, you should have knowledge about TCP/IP and IEEE 802.11 standards, and be familiar with the concepts and terminology associated with wireless local-area networks (WLANs).

This document provides the information you need to install and configure your Access Point/bridge.

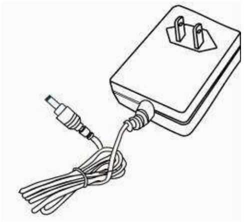
Convention

This publication uses these conventions/symbols to convey instructions and information and highlight special message.

CAUTION	Caution: This symbol represents the important message on incorrect device operation that might damage the device
NOTE	Note: This symbol represents the important message for the settings.
TIP	Tip: This symbol represents the alternative choice that can save time or resources.

Icons used

Figures in this document may use the following generic icons.

EHN device	WLAN signal 	Client computer laptop
Internet 	Client computer desktop 	PoE injector
Power adapter 		

Chapter 1 Product Overview

Thank you for choosing OM2P-LC/OM2P-HS. The OM2P-LC/OM2P-HS is a long range, high-performance IEEE 802.11b/g/n network solution that provides Access Point, Client Bridge, WDS, and Client Router functions in a single device.

In addition to providing the latest wireless technology, the OM2P-LC/OM2P-HS supports Power over Ethernet and Power by Adapter capabilities, which allow the device to be installed easily in nearly any indoor or outdoor location. Advanced features include power level control, narrow bandwidth selection, traffic shaping, and Real-time RSSI indication.

A variety of security features help to protect your data and privacy while you are online. Security features include Wi-Fi Protected Access (WPA-PSK/WPA2-PSK), 64/128/152-bit WEP Encryption, and IEEE 802.1x with RADIUS.

1.1 Feature

The following list summarizes the key features of the OM2P-LC/OM2P-HS:

- High-speed data rates up to 150 Mbps make the OM2P-LC/OM2P-HS ideally suited for handling heavy data payloads such as MPEG video streaming
- Fully Interoperable with IEEE 802.11b/IEEE 802.11g/IEEE 802.11n-compliant devices
- Multi-function capabilities enable users to use different modes in various environments
- Point-to-point and point-to-multipoint wireless connectivity enable data transfers between two or more buildings
- Channel bandwidth selection allows the appropriate bandwidth to be used to reach various distances
- RSSI indicator makes it easy to select the best signal for Access Point connections
- Power-over-Ethernet capabilities allow for flexible installation locations and cost savings
- Four SSIDs let clients access different networks through a single Access Point, and assign different policies and functions for each SSID
- WPA2/WPA/ WEP/ IEEE 802.1x support and MAC address filtering ensure secure network connections
- PPPoE/PPTP function support make it easy to access the Internet via Internet Service Provider (ISP) service authentication
- SNMP Remote Configuration Management helps administrators remotely configure or manage the Access Point
- QoS (WMM) support enhances performance and user experiences

1.2 Benefits

The OM2P-LC/OM2P-HS is the ideal product around which you can build your WLAN. The following list summarizes a few key advantages that WLANs have over wired networks:

Ideal for hard-to-wire environments

> There are many scenarios where cables cannot be used to connect networking devices. Historic and older buildings, open areas, and busy streets, for example, make wired LAN installations difficult, expensive, or impossible.

Temporary workgroups

> WLANs make it easy to provide connectivity to temporary workgroups that will later be removed. Examples include parks, athletic arenas, exhibition centers, disaster-recovery shelters, temporary offices, and construction sites.

Ability to access real-time information

> With a WLAN, workers who rely on access to real-time information, such as doctors and nurses, point-of-sale employees, mobile workers, and warehouse personnel, can access the data they need and increase productivity, without having to look for a place to plug into the network.

Frequently changed environments

> WLANs are well suited for showrooms, meeting rooms, retail stores, and manufacturing sites where workplaces are rearranged frequently.

Wireless extensions to Ethernet networks

> WLANs enable network managers in dynamic environments to minimize overhead caused by moves, extensions to networks, and other changes.

Wired LAN backup

> Network managers can implement WLANs to provide backup for mission-critical applications running on wired networks.

Mobility within training/educational facilities

> Training sites at corporations and students at universities are a few examples where wireless connectivity can be used to facilitate access to information, information exchanges, and learning.

1.3 Package Contents

Open the package carefully and make sure it contains all of the items listed below.

- One EnGenius Wireless Access Point / Client Bridge (OM2P-LC/OM2P-HS)

If any item is missing or damaged, contact your place of purchase immediately.

Keep all packing materials in case you need to return the OM2P-LC/OM2P-HS. The OM2P-LC/OM2P-HS must be returned with its original packing materials.

CAUTION Use only the power adapter supplied with your OM2P-LC/OM2P-HS. Using a different power adapter can damage the OM2P-LC/OM2P-HS.

1.3 System Requirement

To install the OM2P-LC/OM2P-HS, you need an Ethernet cable and a computer equipped with:

- An Ethernet interface
- One of the following operating systems: Microsoft Windows XP, Vista, or 7; or Linux
- An Internet browser that supports HTTP and JavaScript

Chapter 2 Hardware Overview

The following figures show the key components on the OM2P-LC/OM2P-HS.

2.1 Bottom View

The bottom panel of the OM2P-LC/OM2P-HS contains two RJ-45 ports, a PoE interface, and a Reset button. A
removable cover covers these components.

- The RJ-45 port connects to an Ethernet adapter in a computer you use to configure the OM2P-LC/OM2P-HS. For more information, see Chapter 4.
- The PoE interface allows the OM2P-LC/OM2P-HS to be powered using the supplied PoE injector.
- The Reset button can be used to reboot the OM2P-LC/OM2P-HS and return the device to its default factory configuration, erasing any overrides you may have made to the device's default settings. The Reset button is recessed to prevent accidental resets. To reboot the OM2P-LC/OM2P-HS, use a flat object such as a pencil to press the Reset button for approximately 10 seconds and then stop pressing the Reset button.

2.2 Back Panel

The back panel of the OM2P-LC/OM2P-HS contains the LED indicators that show the link quality and status of the
OM2P-LC/OM2P-HS.

Chapter 3 Installation

This chapter describes how to install the OM2P-LC/OM2P-HS. It also describes the OM2P-LC/OM2P-HS LEDs.

NOTE Only experienced installation professionals who are familiar with local building and safety codes and, wherever applicable, are licensed by the appropriate government regulatory authorities should install the OM2P-LC/OM2P-HS.

3.1 Pre-installation Guidelines

Select the optimal locations for the equipment using the following guidelines:

- The OM2P-LC/OM2P-HS should be mounted on a 1"-4" pole. Its location should enable easy access to the unit and its connectors for installation and testing.
- The higher the placement of the antenna, the better the achievable link quality.
- The antenna should be installed to provide a direct, or near line of sight with the Base Station antenna. The antenna should be aligned to face the general direction of the Base Station.

3.2 Installing the OM2P-LC/OM2P-HS

To install the OM2P-LC/OM2P-HS, use the following procedure to mount the device on a pole and refer to the figure below.

1. The bottom of the OM2P-LC/OM2P-HS is a movable cover. Grab the cover and pull it back hard to remove the cover.
2. Insert a standard Ethernet cable into the RJ-45 port labeled MAIN LAN.
3. Slide the cover back to seal the bottom of the OM2P-LC/OM2P-HS.
4. Remove the power cord and PoE injector from the box and plug the power cord into the DC port of the PoE injector.

CAUTION Only use the power adapter supplied with the OM2P-LC/OM2P-HS. Using a different power adapter might damage the OM2P-LC/OM2P-HS.

5. Plug the other side of the Ethernet cable in step 3 into the PoE port of the PoE injector. When you finish step 5, the installation will resemble the following picture.
6. Turn over the OM2P-LC/OM2P-HS. Then insert the mast strap through the middle hole of the OM2P-LC/OM2P-HS.

   Use a screwdriver to unlock the pole-mounting ring putting it through the OM2P-LC/OM2P-HS.
7. Mount the EOA200 securely to the pole by locking the strap tightly.

This completes the installation procedure.

3.2 Understanding the OM2P-LC/OM2P-HS LEDs

The rear of the OM2P-LC/OM2P-HS has two groups of LEDs. One group, labeled INDICATORS, shows the status of the device. The second group, LINK QUALITY, shows the strength of the link between the OM2P-LC/OM2P-HS and the network. The following table describes the OM2P-LC/OM2P-HS LEDs.

LED	Color	Mode	Status
Power	Green	OFF= OM2P-LC/OM2P-HS is not receiving power. ON= OM2P-LC/OM2P-HS is receiving power.	
LAN	Green	OFF = OM2P-LC/OM2P-HS is not connected to the network. ON = OM2P-LC/OM2P-HS is connected to the network, but not sending or receiving data. Blink = OM2P-LC/OM2P-HS is sending or receiving data.	
WLAN	Green	Access Point or Client Bridge Mode	OFF = OM2P-LC/OM2P-HS radio is off and the device is not sending or receiving data over the wireless LAN. ON = OM2P-LC/OM2P-HS radio is on, and the device is not sending or receiving data over the wireless LAN. Blink = OM2P-LC/OM2P-HS radio is on, and the device

Link Quality	See Status column	Access Point or Client Bridge Mode	Shows the strength of the link between the OM2P-LC/OM2P-HS
			and the network.
			G = good quality (green).
			Y = medium quality (yellow).

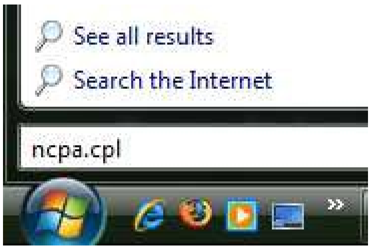
Chapter 4 Configuring Vour Computer for TCP/IP

To configure the OM2P-LC/OM2P-HS ,use a computer that is configured for TCP/IP. This chapter describes how to configure the TCP/IP settings on a computer that will be used to configure the OM2P-LC/OM2P-HS.

4.1 Configuring Microsoft Windows 7

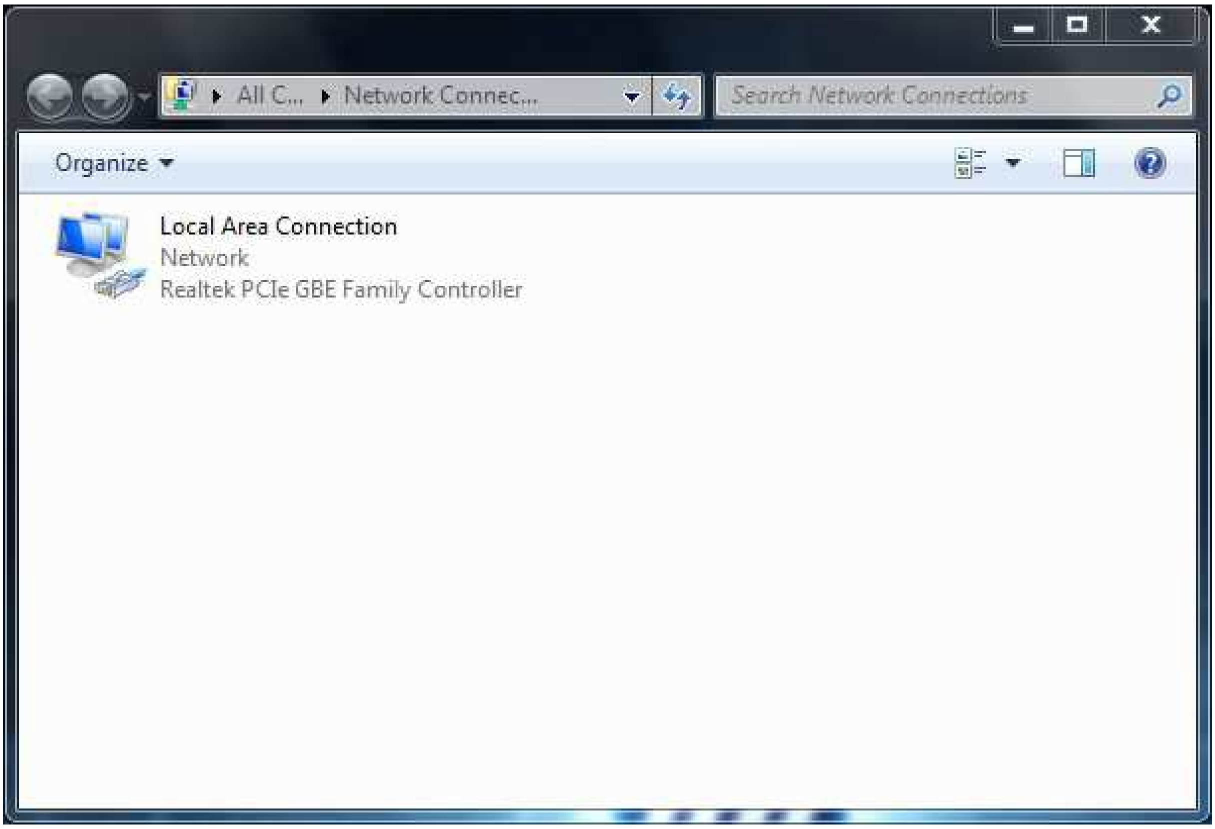
Use the following procedure to configure a computer running Microsoft Windows 7.

1. In the Start menu search box, type: ncpa.cpl



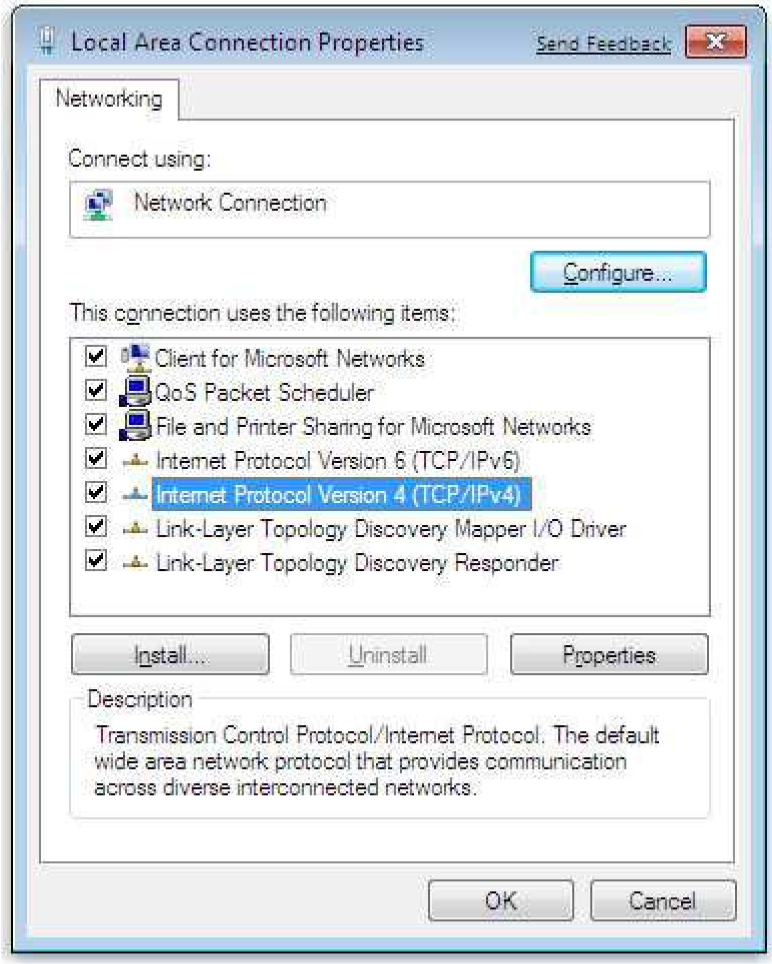
ncpa.cpl

2. When the Network Connections List appears, right-click the Local Area Connection icon and click Properties.



Local Area Connection
Network
Realtek PCIe GBE Family Controller

3. In the Networking tab, click either Internet Protocol Version 4 (TCP/IPv4) or Internet Protocol Version 6 (TCP/IPv6), and then click Properties.



Connect using:

Network Connection

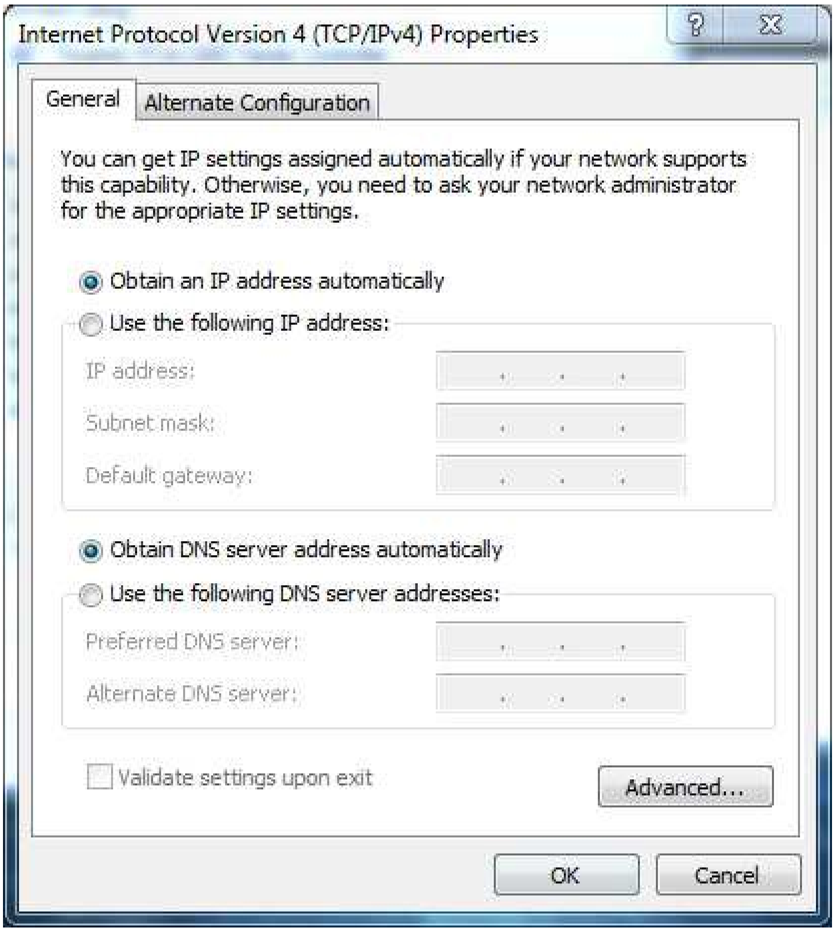
This connection uses the following items:

☑ Client for Microsoft Networks
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

4. In the properties dialog box, click Obtain an IP address automatically to configure your computer for DHCP.



Internet Protocol Version 4 (TCP/IPv4) Properties

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

● Obtain DNS server address automatically

○ Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

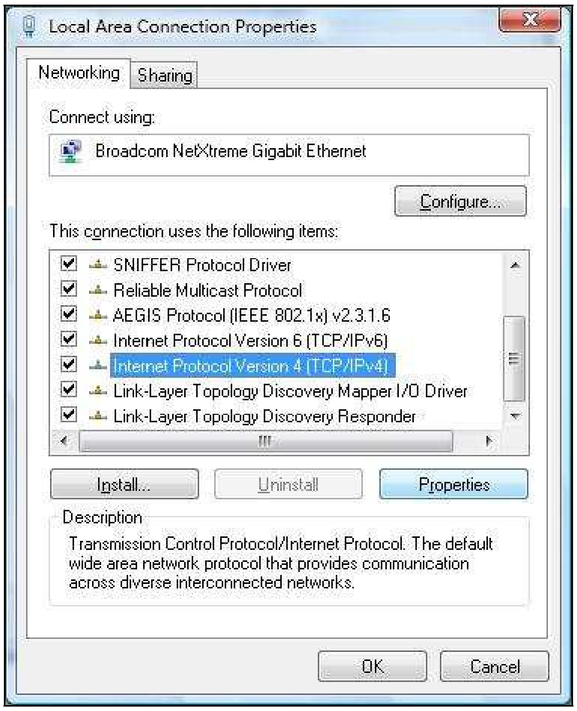
□ Validate settings upon exit

5. Click the OK button to save your changes and close the dialog box.
6. Click the OK button again to save your changes.

4.2 Configuring Microsoft Windows Vista

Use the following procedure to configure a computer running Microsoft Windows V ista with the default interface. If you use the Classic interface, where the icons and menus resemble previous Windows versions, perform the procedure in section 4.4.

1. On the Windows taskbar, click Start, click Control Panel, and then select the Network and Internet icon.
2. Click View Networks Status and tasks and then click Management Networks Connections.
3. Right-click the Local Area Connection icon and click Properties.
4. Click Continue. The Local Area Connection Properties dialog box appears.
5. In the Local Area Connection Properties dialog box, verify that Internet Protocol (TCP/IPv4) is checked. Then select Internet Protocol (TCP/IPv4) and click the Properties button. The Internet Protocol Version 4 Properties dialog box appears.



Connect using:

Broadcom NetXtreme Gigabit Ethernet

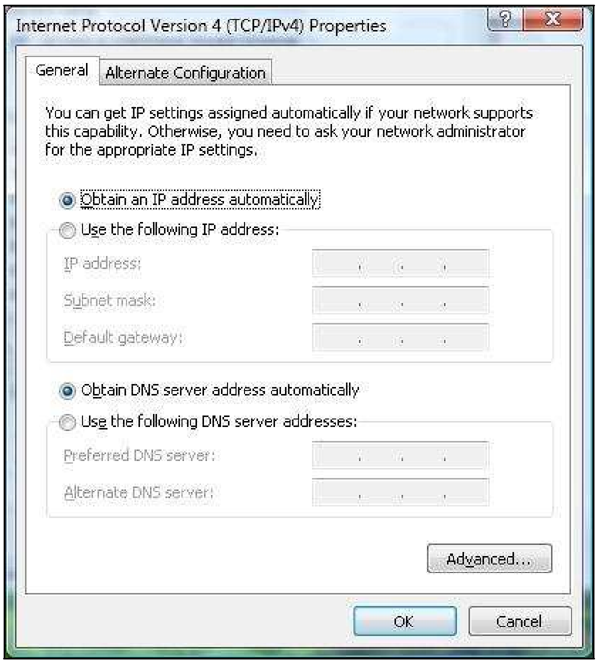
This connection uses the following items:

- ☑ SNIFFER Protocol Driver
- ☑ Reliable Multicast Protocol
- ☑ AEGIS Protocol (IEEE 802.1x) v2.3.1.6
- ☑ Internet Protocol Version 6 (TCP/IPv6)
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- ☑ Link-Layer Topology Discovery Mapper I/O Driver
- ☑ Link-Layer Topology Discovery Responder

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

6. In the Internet Protocol Version 4 Properties dialog box, click Obtain an IP address automatically to configure your computer for DHCP.



You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

● Obtain DNS server address automatically

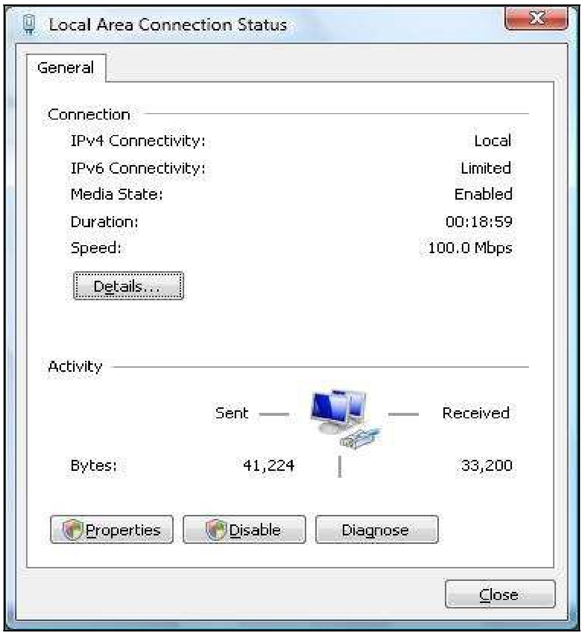
○ Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

7. Click the OK button to save your changes and close the dialog box.

8. Click the OK button again to save your changes.



Local Area Connection Status

General

Connection

IPv4 Connectivity: Local

IPv6 Connectivity: Limited

Media State: Enabled

Duration: 00:18:59

Speed: 100.0 Mbps

Activity

Sent — — Received

Bytes: 41,224 | 33,200

4.3 Configuring Microsoft Windows XP

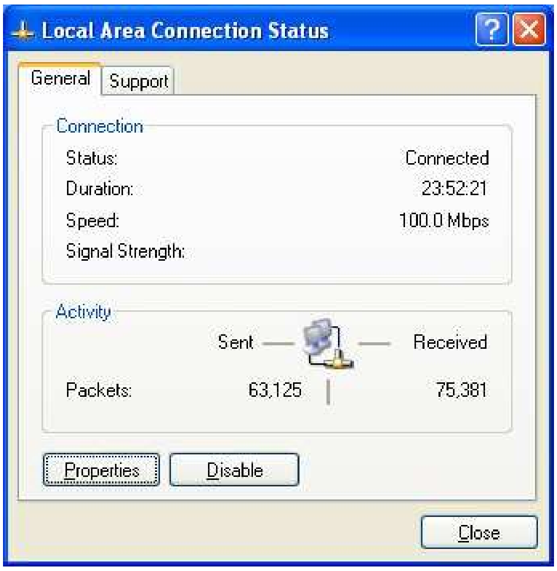
Use the following procedure to configure a computer running Microsoft Windows XP with the default interface. If you use the Classic interface, where the icons and menus resemble previous Windows versions, perform the procedure in section 4.4.

1. On the Windows taskbar, click Start, click Control Panel, and then click Network and Internet Connections.

2. Click the Network Connections icon.

3. Click Local Area Connection for the Ethernet adapter connected to the OM2P-LC/OM2P-HS. The Local
Area Connection Status dialog box appears.

4. In the Local Area Connection Status dialog box, click the Properties button. The Local Area Connection Properties dialog box appears.



Local Area Connection Status

Connection

Status: Connected

Duration: 23:52:21

Speed: 100.0 Mbps

Signal Strength:

Activity

Sent — Received

Packets: 63,125 | 75,381

5. In the Local Area Connection Properties dialog box, verify that Internet Protocol (TCP/IP) is checked. Then select Internet Protocol (TCP/IP) and click the Properties button. The Internet Protocol (TCP/IP) Properties dialog box appears.

6. In the Internet Protocol (TCP/IP) Properties dialog box, click Obtain an IP address automatically to configure your computer for DHCP. Click the OK button to save this change and close the Internet Protocol (TCP/IP) Properties dialog box.

7. Click the OK button again to save your changes.

8. Restart your computer.

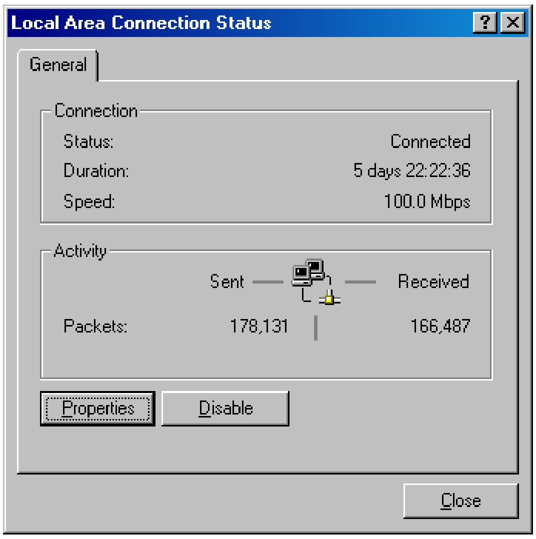
4.4 Configuring Microsoft Windows 2000

Use the following procedure to configure your computer if your computer has Microsoft Windows 2000 installed.

1. On the Windows taskbar, click Start, point to Settings, and then click Control Panel.

2. In the Control Panel window, double-click the Network and Dial-up Connections icon. If the Ethernet adapter in your computer is installed correctly, the Local Area Connection icon appears.

3. Double-click the Local Area Connection icon for the Ethernet adapter connected to the OM2P-LC/OM2P-HS. The Local Area Connection Status dialog box appears.



Connection

Status: Connected

Duration: 5 days 22:22:36

Speed: 100.0 Mbps

Activity

	Sent	Received
Packets:	178,131	166,487

4. In the Local Area Connection Status dialog box, click the Properties button. The Local Area Connection Properties dialog box appears.

5. In the Local Area Connection Properties dialog box, verify that Internet Protocol (TCP/IP) is checked. Then select Internet Protocol (TCP/IP) and click the Properties button.

6. Click Obtain an IP address automatically to configure your computer for DHCP.

7. Click the OK button to save this change and close the Local Area Connection Properties dialog box.

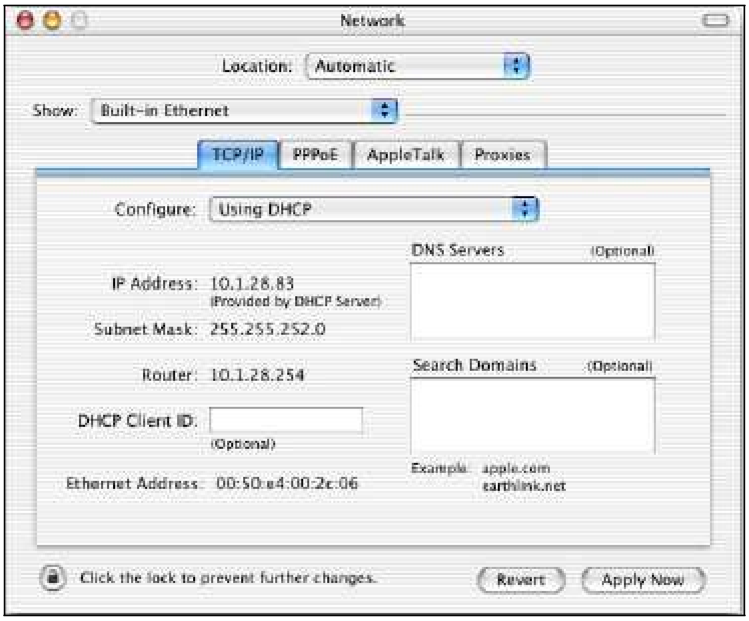
8. Click OK button again to save these new changes.

9. Restart your computer.

4.5 Configuring an Apple Macintosh Computer

The following procedure describes how to configure TCP/IP on an Apple Macintosh running Mac OS 10.2. If your Apple Macintosh is running Mac OS 7.x or later, the steps you perform and the screens you see may differ slightly from the following. However, you should still be able to use this procedure as a guide to configuring your Apple Macintosh for TCP/IP.

1. Pull down the Apple Menu, click System Preferences, and select Network.
2. Verify that the NIC connected to the OM2P-LC/OM2P-HS is selected in the Show field.
3. In the Configure field on the TCP/IP tab, select Using DHCP.
4. Click Apply Now to apply your settings and close the TCP/IP dialog box.



Location: Automatic

Show: Built-in Ethernet

Configure: Using DHCP

IP Address: 10.1.28.83
(Provided by DHCP Server)

Subnet Mask: 255.255.252.0

Router: 10.1.28.254

DHCP Client ID:
(Optional)

Ethernet Address: 00:50:e4:00:2c:06

DNS Servers (Optional)

Search Domains (Optional)

Example: apple.com
earthlink.net

Click the lock to prevent further changes.

Chapter 5 Introducing the Web Configurator

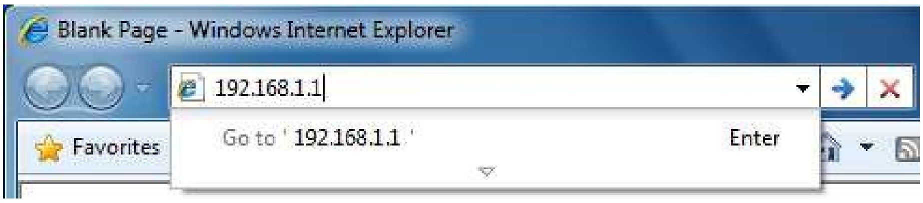
The OM2P-LC/OM2P-HS has a built-in Web Configurator that lets you manage the unit from any location using a
Web browser that supports HTTP and has JavaScript installed.

5.1 Logging in to the Web Configurator

After configuring the computer for TCP/IP using the procedure appropriate for your operating system, use that computer's Web browser to log in to the OM2P-LC/OM2P-HS Web Configurator.

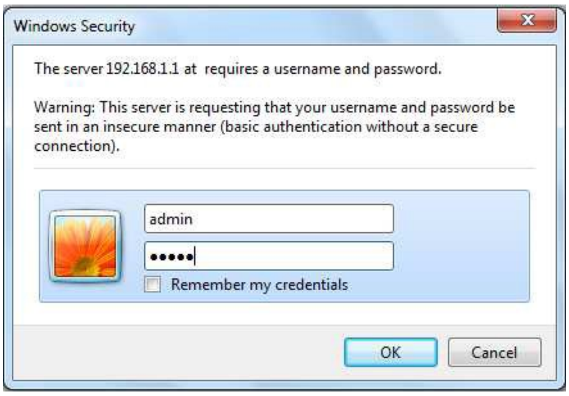
1. Launch your Web browser.

2. In the browser address bar, type 192.168.1.1 and press the Enter key.



NOTE If you changed the OM2P-LC/OM2P-HS LAN IP address, enter the correct IP address.

3. When the Windows Security window appears, type admin as the username in the top field and type admin as the password in the bottom field.


Windows Security

The server 192.168.1.1 at requires a username and password.

Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).

admin

•••••

□ Remember my credentials

OK Cancel

4. Click OK

You are now ready to use the instructions in the following chapters to configure the OM2P-LC/OM2P-HS.

5.2 Best Practices

Perform the following procedures regularly to make the OM2P-LC/OM2P-HS more secure and manage the OM2P-LC/OM2P-HS
more effectively.

- Change the default password. Use a password that is not easy to guess and that contains different characters, such as numbers and letters. The OM2P-LC/OM2P-HS username cannot be changed. For more information, see page 69.
- Back up the configuration and be sure you know how to restore it. Restoring an earlier working configuration can be useful if the OM2P-LC/OM2P-HS becomes unstable or crashes. If you forget your password, you will have to reset the OM2P-LC/OM2P-HS to its factory default settings and lose any customized override settings you configured. However, if you back up an earlier configuration, you will not have to completely reconfigure the OM2P-LC/OM2P-HS. You can simply restore your last configuration. For more information, see page 73.

Chapter 6 Status

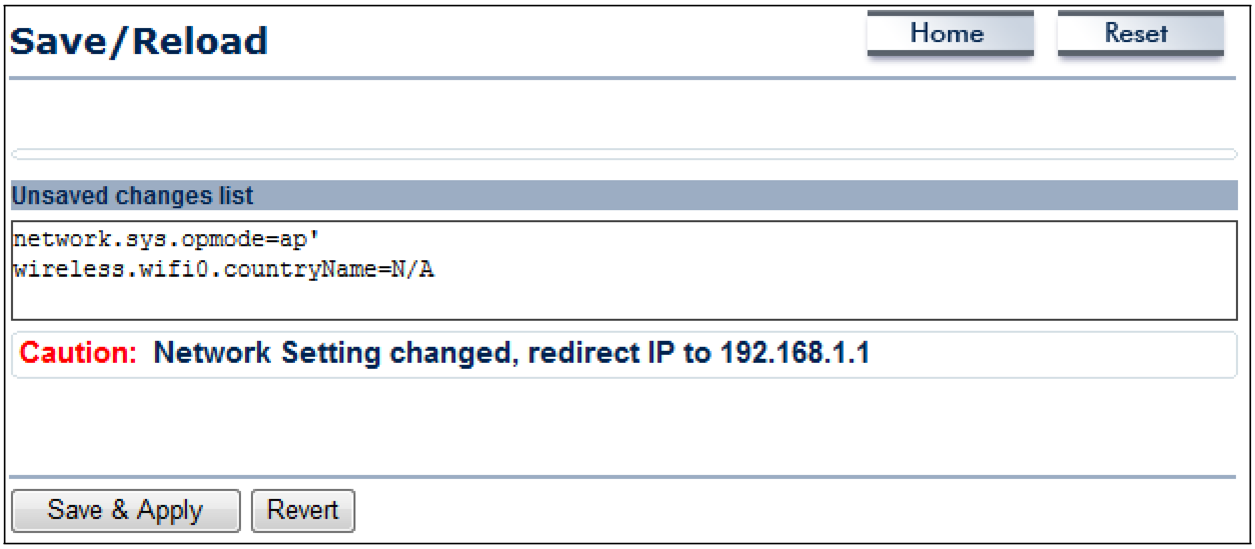
The Status section on the navigation drop-down menu contains the following options:

- Main
- Wireless Client List
- System Log
- Connection Status

The following sections describe these options.

6.1 Save/Load

This page lets you save and apply the settings shown under Unsaved changes list, or cancel the unsaved changes and revert to the previous settings that were in effect.



Unsaved changes list

```
network.sys.opmode=ap'
wireless.wifi0.countryName=N/A
```

Caution: Network Setting changed, redirect IP to 192.168.1.1

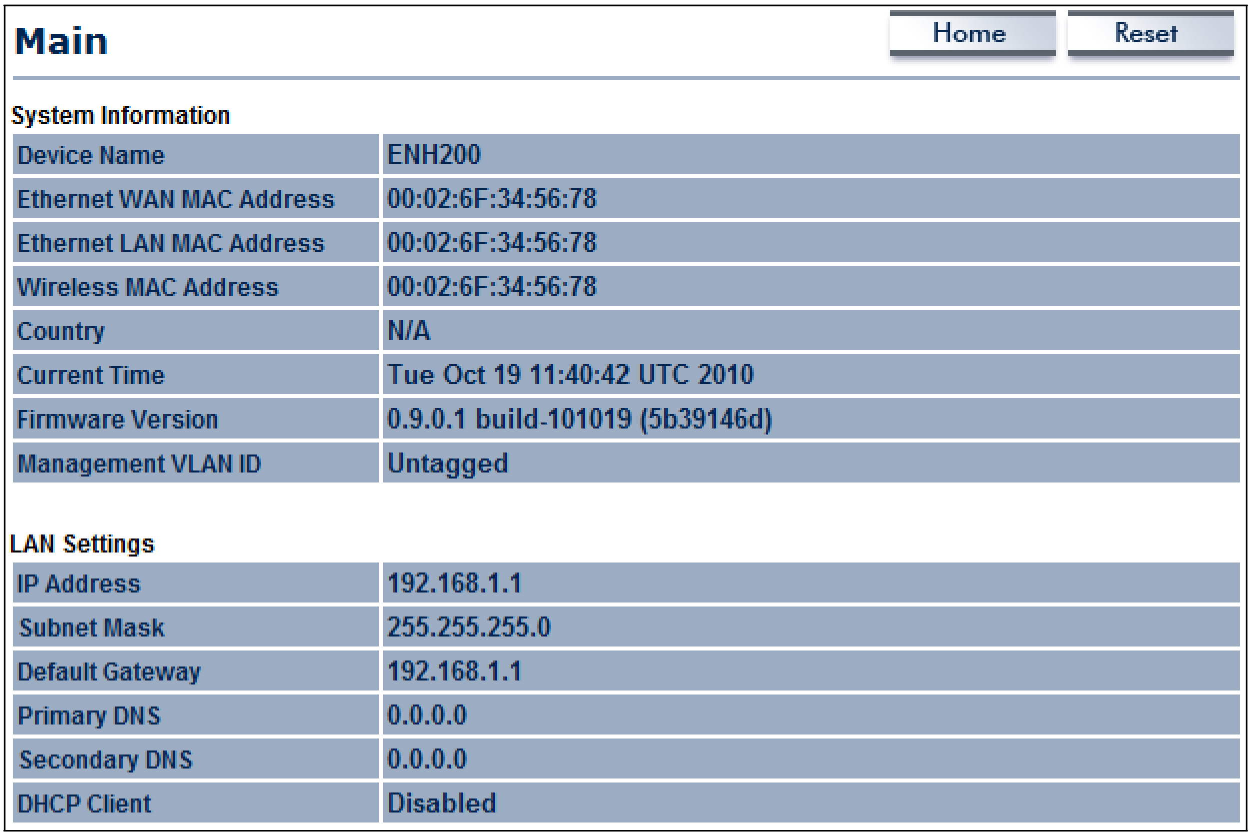
6.2 Main

Clicking the Main link under the Status drop-down menu or clicking Home at the top-right of the Web Configurator shows status information about the current operating mode.

- The System Information section shows general system information such as operating mode, system up time, firmware version, serial number, kernel version, and application version.

- The LAN Settings section shows Local Area Network setting such as the LAN IP address, subnet mask, and MAC address.

- The Current Wireless Settings section shows wireless information such as frequency and channel. Since the OM2P-LC/OM2P-HS supports multiple-SSIDs, information about each SSID, such as its ESSID and security settings, are displayed.

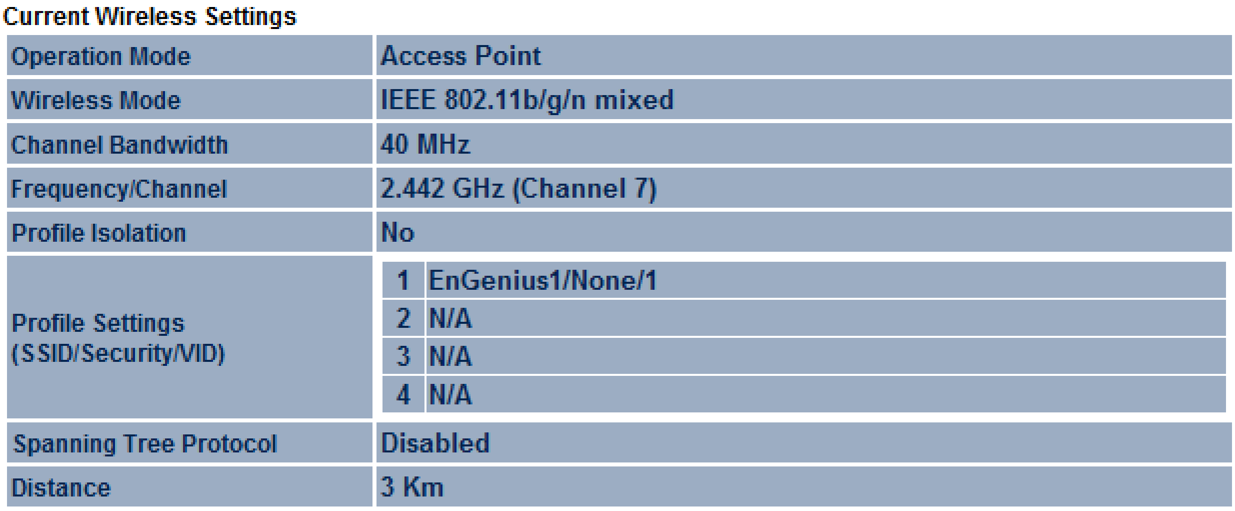


System Information

Device Name	ENH200
Ethernet WAN MAC Address	00:02:6F:34:56:78
Ethernet LAN MAC Address	00:02:6F:34:56:78
Wireless MAC Address	00:02:6F:34:56:78
Country	N/A
Current Time	Tue Oct 19 11:40:42 UTC 2010
Firmware Version	0.9.0.1 build-101019 (5b39146d)
Management VLAN ID	Untagged

LAN Settings

IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0
DHCP Client	Disabled

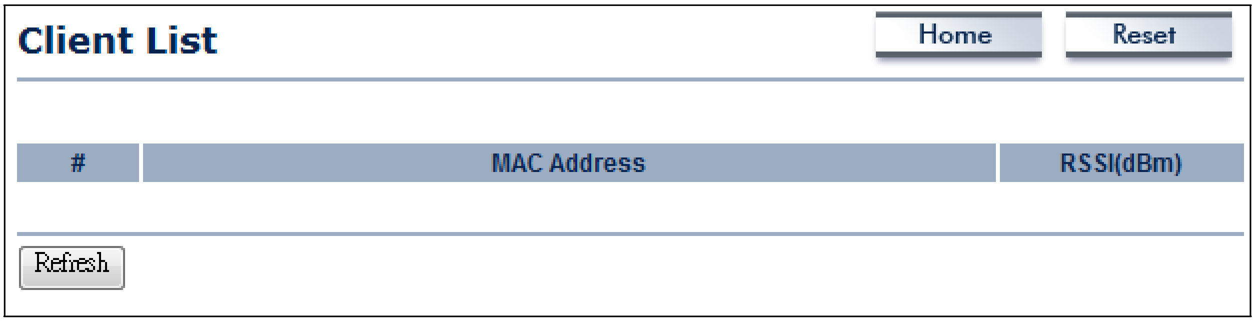


Current Wireless Settings

Operation Mode	Access Point
Wireless Mode	IEEE 802.11b/g/n mixed
Channel Bandwidth	40 MHz
Frequency/Channel	2.442 GHz (Channel 7)
Profile Isolation	No
Profile Settings (SSID/Security/VID)	1 EnGenius1/None/1 2 N/A 3 N/A 4 N/A
Spanning Tree Protocol	Disabled
Distance	3 Km

6.3 Wireless Client List

Clicking the Wireless Client List link under the Status drop-down menu displays the list of clients associated to the OM2P-LC/OM2P-HS, along with the MAC addresses and signal strength for each client. Clicking the Refresh button updates (refreshes) the client list.



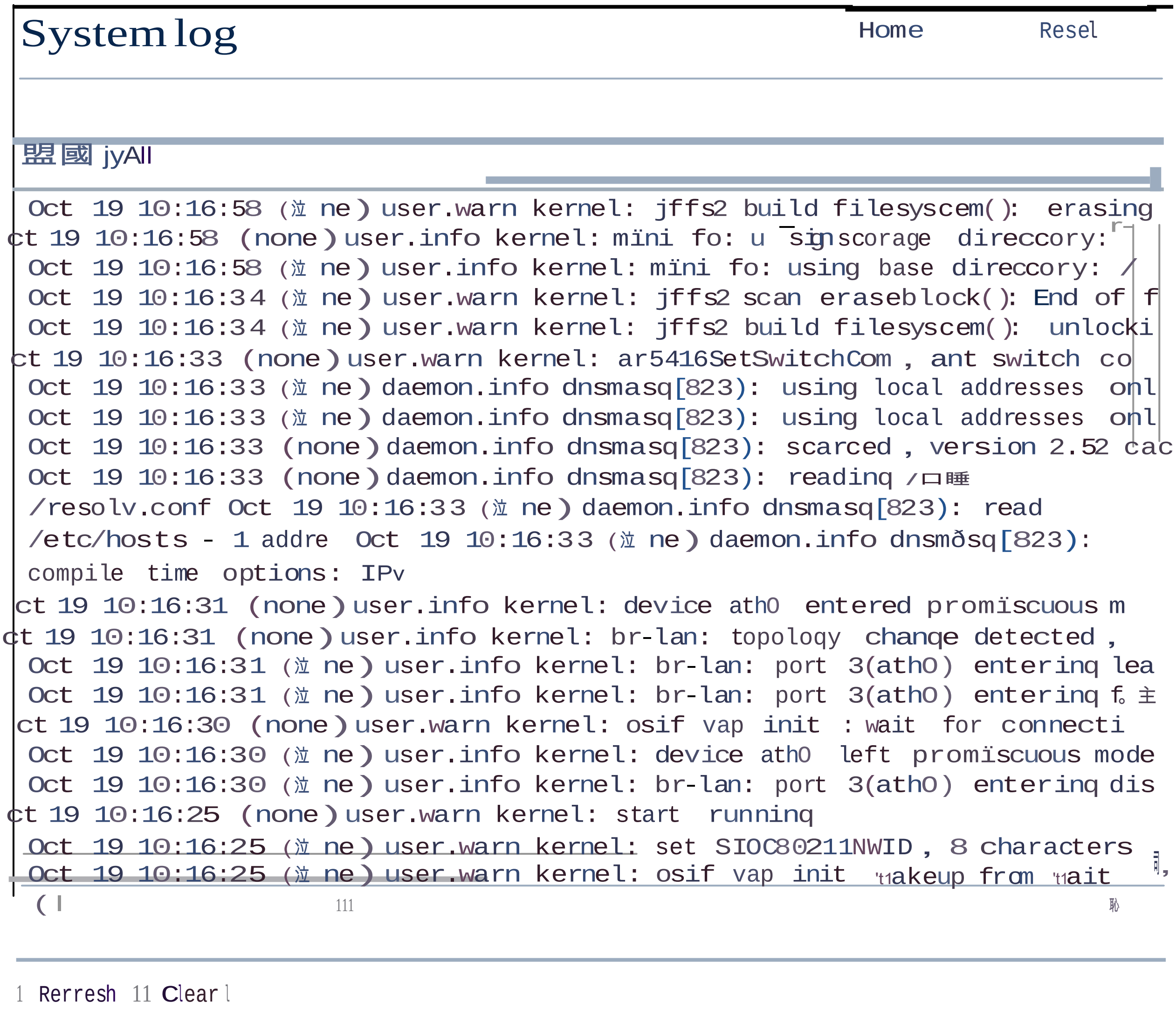
Client List

#	MAC Address	RSSI(dBm)

6.4 System Log

The OM2P-LC/OM2P-HS automatically logs (records) events of possible interest in its internal memory.To view the logged information, click the System Log link under the Status drop-down menu.If

there is not enough internal memory to log all events, older events are deleted from the log.



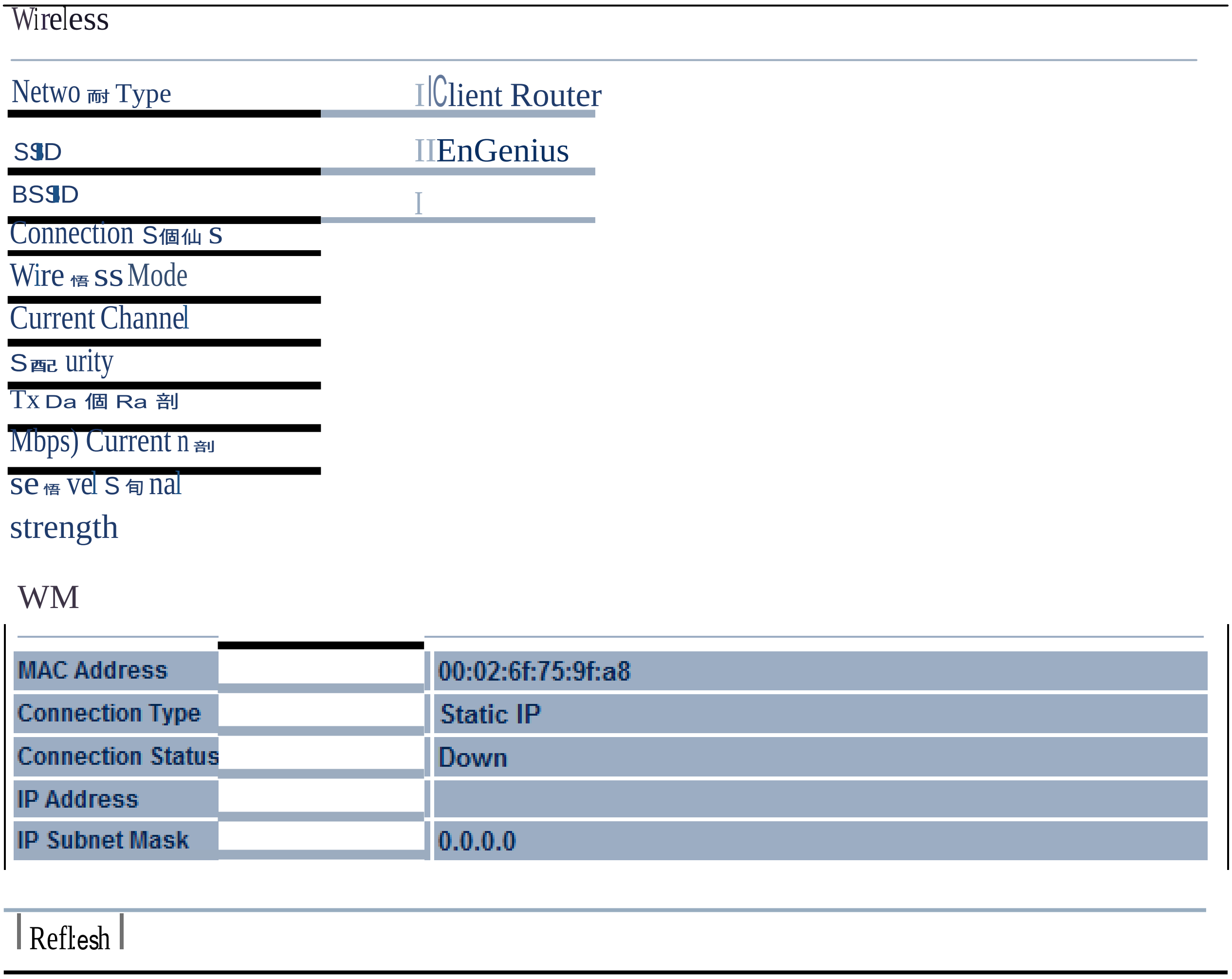
System log

```
 Oct 19 10:16:58 (泣 ne) user.warn kernel: jffs2 build filesyscem(): erasing
ct 19 10:16:58 (none) user.info kernel: mini fo: u sigscorage direccory:
 Oct 19 10:16:58 (泣 ne) user.info kernel: mini fo: using base direccory: /
 Oct 19 10:16:34 (泣 ne) user.warn kernel: jffs2 scan eraseblock(): End of f
 Oct 19 10:16:34 (泣 ne) user.warn kernel: jffs2 build filesyscem(): unlocki
ct 19 10:16:33 (none) user.warn kernel: ar5416SetSwitchCom , ant switch co
 Oct 19 10:16:33 (泣 ne) daemon.info dnsmasq[823): using local addresses onl
 Oct 19 10:16:33 (泣 ne) daemon.info dnsmasq[823): using local addresses onl
 Oct 19 10:16:33 (none) daemon.info dnsmasq[823): scarced , version 2.52 cac
 Oct 19 10:16:33 (none) daemon.info dnsmasq[823): readinq /口睡
 /resolv.conf Oct 19 10:16:33 (泣 ne) daemon.info dnsmasq[823): read
 /etc/hosts - 1 addre  Oct 19 10:16:33 (泣 ne) daemon.info dnsmðsq[823):
 compile time options: IPv
ct 19 10:16:31 (none) user.info kernel: device ath0 entered promïscuous m
ct 19 10:16:31 (none) user.info kernel: br-lan: topoloqy chanqe detected ,
 Oct 19 10:16:31 (泣 ne) user.info kernel: br-lan: port 3(ath0) enterinq lea
 Oct 19 10:16:31 (泣 ne) user.info kernel: br-lan: port 3(ath0) enterinq f。主
ct 19 10:16:30 (none) user.warn kernel: osif vap init : wait for connecti
 Oct 19 10:16:30 (泣 ne) user.info kernel: device ath0 left promïscuous mode
 Oct 19 10:16:30 (泣 ne) user.info kernel: br-lan: port 3(ath0) enterinq dis
ct 19 10:16:25 (none) user.warn kernel: start runninq
 Oct 19 10:16:25 (泣 ne) user.warn kernel: set SIOC80211NWID , 8 characters
 Oct 19 10:16:25 (泣 ne) user.warn kernel: osif vap init 't1akeup from 't1ait
```

1 Rerresh 11 Clear l

6.5 Connection Status

Clicking the Connection Statuslink under the Status drop-down menu displays the current status of the network. The information shown includes network type, SSID, BSSID, connection status, wireless mode, cu rrent channe l, security, data rate, noise level, and sig nal strength.



Wireless

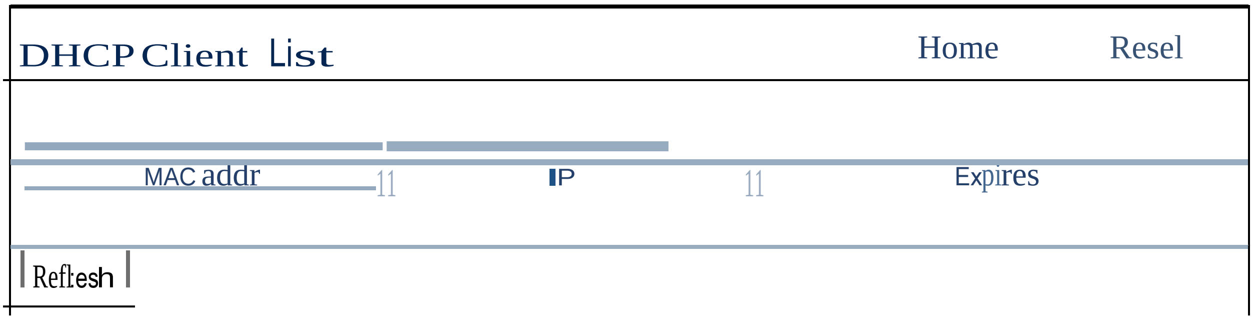
Netwo 耐 Type	Client Router
SSID	EnGenius
BSSID	
Connection S個仙 s	
Wire 悟 ss Mode	
Current Channel	
S酉己 urity	
Tx Da 個 Ra 剖	
Mbps) Current n 剖	
se 悟 vel S 旬 nal strength	

WM

MAC Address	00:02:6f:75:9f:a8
Connection Type	Static IP
Connection Status	Down
IP Address	
IP Subnet Mask	0.0.0.0

6.6 DHCP Client Table

Clicking the DHCP Client List link under the Status drop-down menu displays the clients that are associated to the OM2P-LC/OM2P-HS through DHCP.The MAC addresses and signal strength for each client are also shown. Clicking the Refresh button updates (refreshes) the client list.



DHCP Client List

MAC addr	IP	Expires

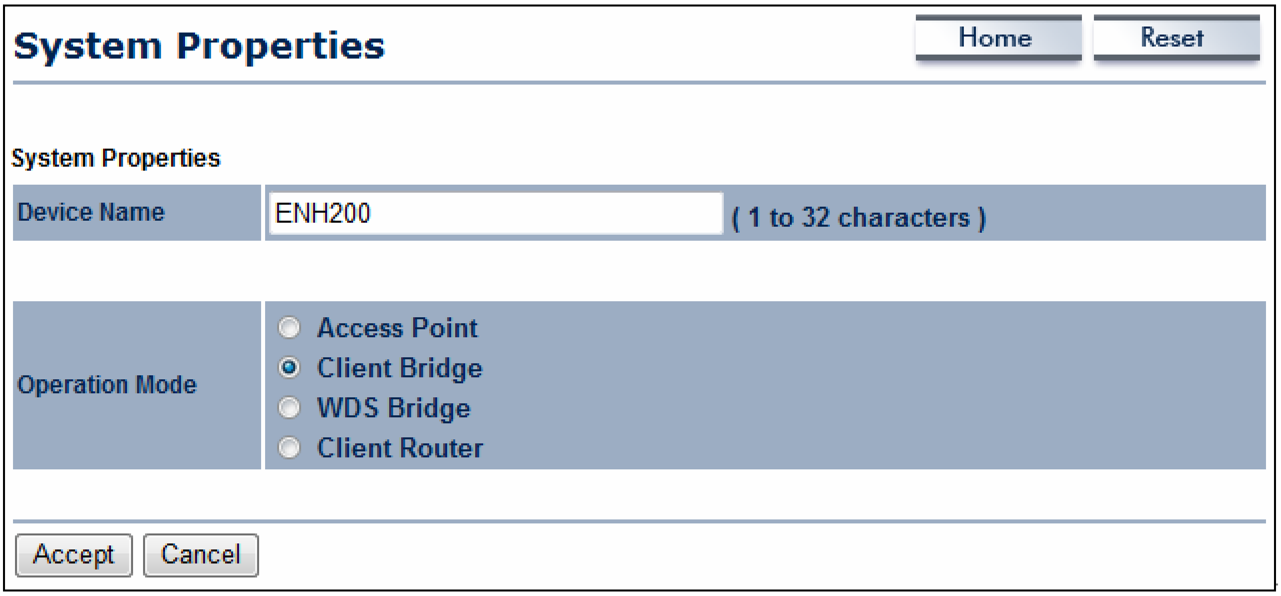
Chapter 7 System

This chapter describes how to change the OM2P-LC/OM2P-HS operating modes.

7.1 Changing Operating Modes

The OM2P-LC/OM2P-HS supports four operating modes:

- Access Point
- Client Bridge
- WDS Bridge
- Client Router



System Properties

System Properties

Device Name	ENH200 (1 to 32 characters)
Operation Mode	○ Access Point ● Client Bridge ○ WDS Bridge ○ Client Router

To select an operating mode, click System Properties under System Section. Then go to System > Operation mode.

.Device Name: Enter a name for the device. The name you type appears in SNMP management. This name is not the SSID and is not broadcast to other devices.

Operation Mode: Use the radio button to select an operating mode. To use Access Point mode with WDS, select Access Point here and then enable the WDS function in the Wireless Network section (see section 8.6).

Click Accept to confirm the changes.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

Chapter 8 Wireless Configuration

This chapter describes the OM2P-LC/OM2P-HS's wireless settings. Please read the information in this
chapter carefully. If you configure a setting improperly, it can impact performance and affect the network adversely. Before you continue, be sure you selected the appropriate operating mode (see Chapter 7).

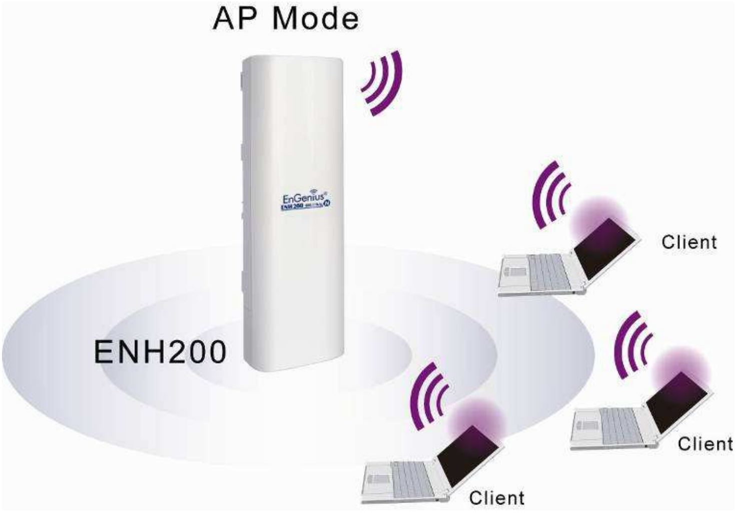
8.1 Wireless Settings

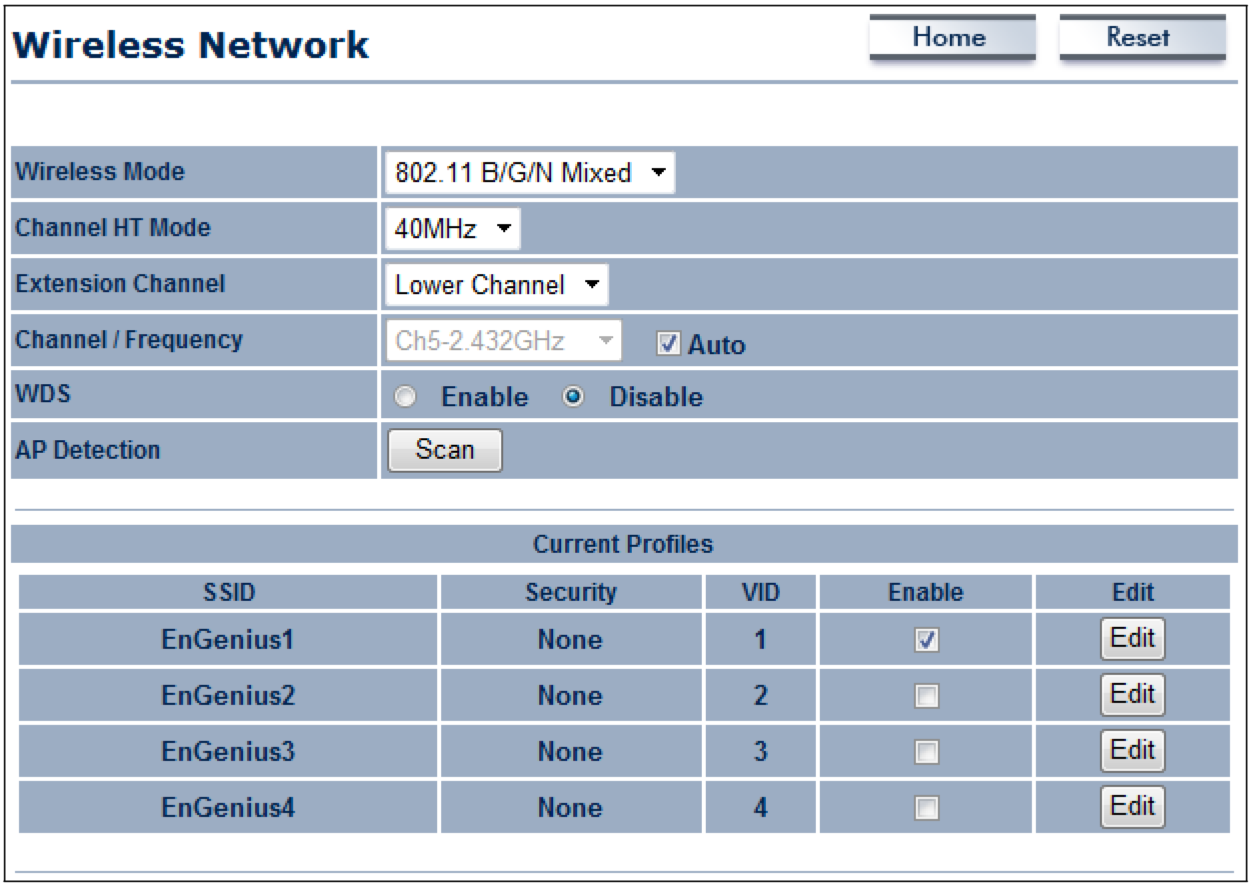
This section describes basic wireless settings. For more information, see Chapter 12.

8.1.1 Access Point Mode

The OM2P-LC/OM2P-HS supports Access Point Mode. In this mode, users with a wireless client device within range can connect to the OM2P-LC/OM2P-HS to access the WLAN. The following figure shows an example of an OM2P-LC/OM2P-HS operating in Access Point Mode.

The sections that follow the figure below describe how to configure your OM2P-LC/OM2P-HS for Access
Point Mode.

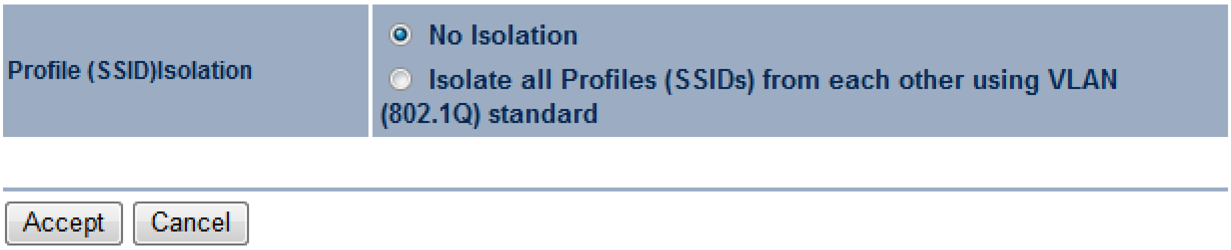




Wireless Mode	802.11 B/G/N Mixed
Channel HT Mode	40MHz
Extension Channel	Lower Channel
Channel / Frequency	Ch5-2.432GHz ☑ Auto
WDS	○ Enable ● Disable
AP Detection	Scan

Current Profiles

SSID	Security	VID	Enable	Edit
EnGenius1	None	1	☑	Edit
EnGenius2	None	2	□	Edit
EnGenius3	None	3	□	Edit
EnGenius4	None	4	□	Edit



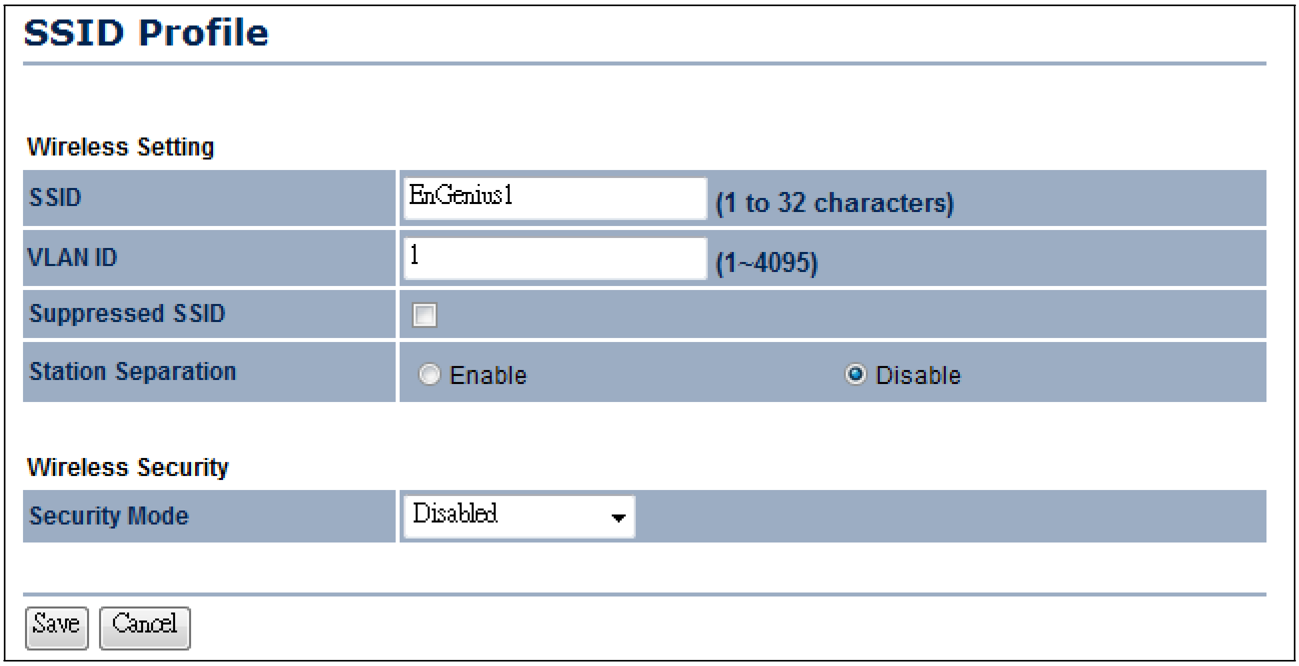
Profile (SSID)Isolation	● No Isolation ○ Isolate all Profiles (SSIDs) from each other using VLAN (802.1Q) standard

Wireless Mode	Wireless mode supports 802.11b/g/n mixed modes.
Channel HT Mode	The default channel bandwidth is 40 MHz. The larger the channel, the better the transmission quality and speed.
Extension Channel	Select upper or lower channel. Your selection may affect the Auto channel function.
Channel / Frequency	Select the channel and frequency appropriate for your country's regulation.
Auto	Check this option to enable auto-channel selection.
AP Detection	AP Detection can select the best channel to use by scanning nearby areas for Access Points.
Current Profile	Configure up to four different SSIDs. If many client devices will be accessing the network, you can arrange the devices into SSID groups. Click Edit to configure the profile and check whether you want to enable extra SSID.

Profile Isolation	Restricted Client to communicate with different VID by Selecting the radio button.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).



SSID Profile

Wireless Setting

SSID	EnGenius1 (1 to 32 characters)
VLAN ID	1 (1~4095)
Suppressed SSID	□
Station Separation	○ Enable ● Disable

Wireless Security

Security Mode	Disabled

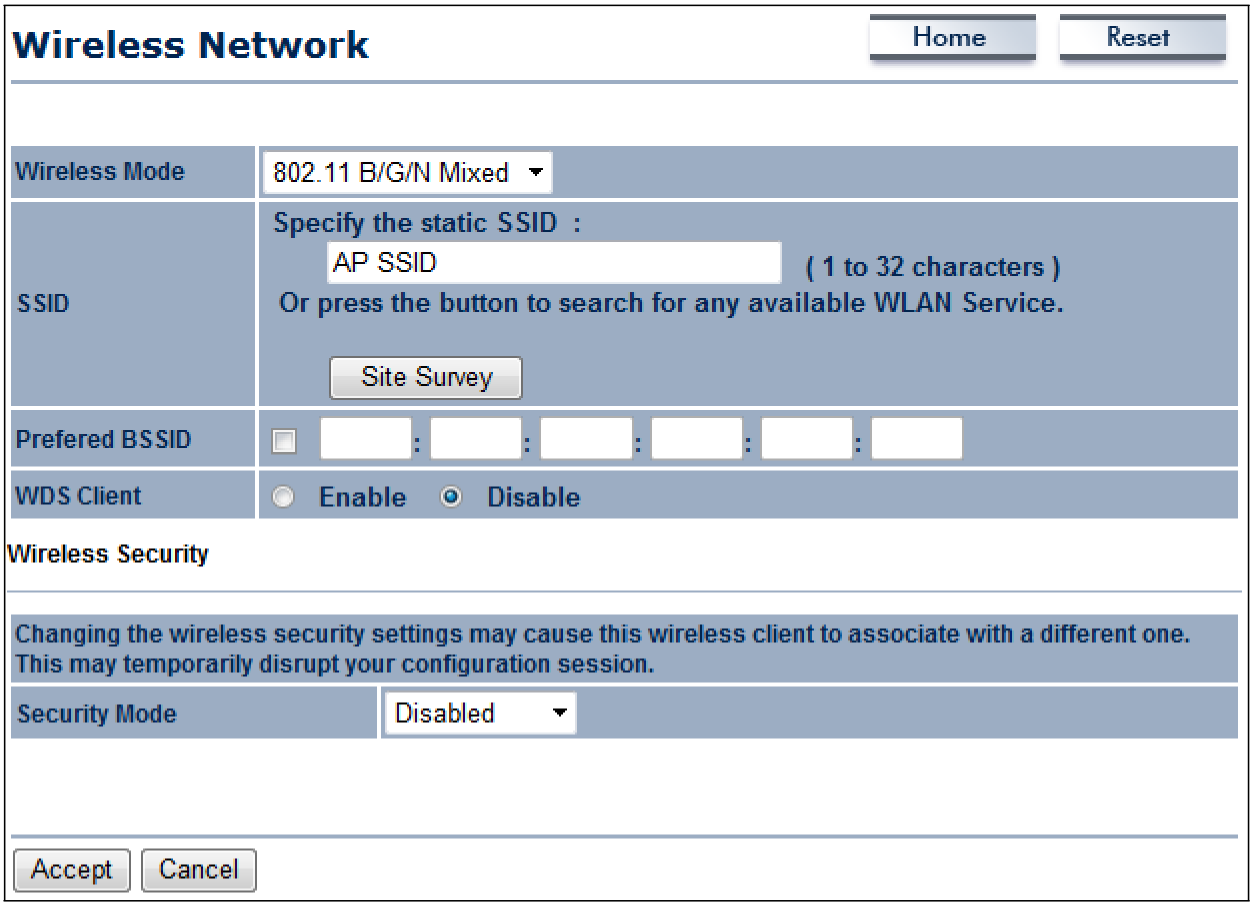
SSID	Specify the SSID for the current profile.
VLAN ID	Specify the VLAN tag for the current profile.
Suppressed SSID	Check this option to hide the SSID from clients. If checked, the SSID will not appear in the site survey.
Station Separation	Click the appropriate radio button to allow or prevent communication between client devices.
Wireless Security	See the Wireless Security section.
Save / Cancel	Click Save to accept the changes or Cancel to cancel and return previous settings.

8.1.2 Client Bridge Mode

Client Bridge Mode lets you connect two LAN segments via a wireless link as though they are on the same physical network. Since the computers are on the same subnet, broadcasts will reach all machines. As a result, DHCP information generated by the server will reach all client computers as though the clients resided on one physical network.

The following figure shows an example of an OM2P-LC/OM2P-HS communicating with an Access
Point/Wireless Router, such as the EnGenius EOA7530, operating in Client Bridge Mode.

The sections that follow the figure below describe how to configure your OM2P-LC/OM2P-HS for Client
Bridge Mode.



Wireless Network

Wireless Mode	802.11 B/G/N Mixed
SSID	Specify the static SSID : AP SSID (1 to 32 characters) Or press the button to search for any available WLAN Service.
Prefered BSSID	□ : : : : :
WDS Client	○ Enable ● Disable

Wireless Security

Changing the wireless security settings may cause this wireless client to associate with a different one. This may temporarily disrupt your configuration session.

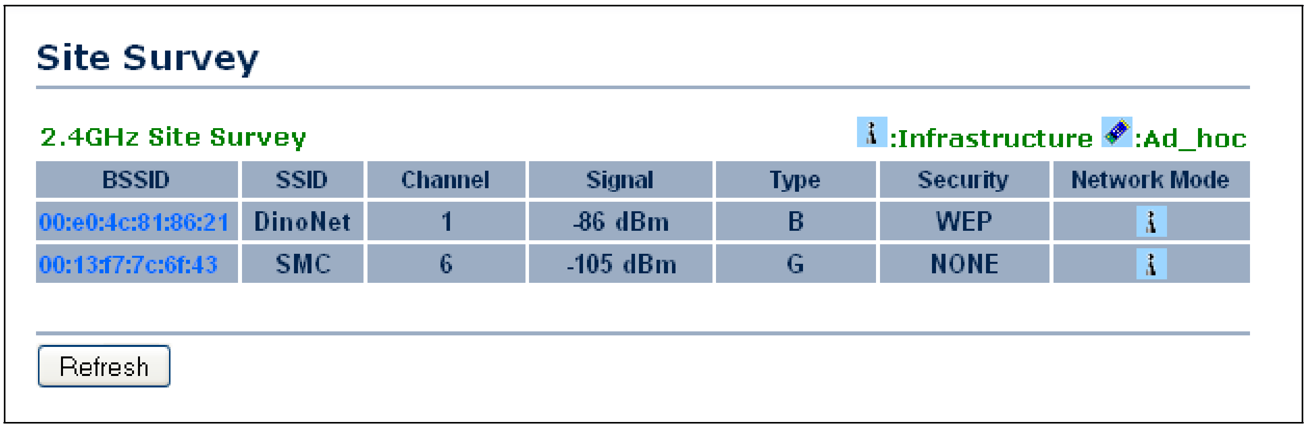
Security Mode	Disabled

Wireless Mode	Wireless mode supports 802.11b/g/n mixed modes.
SSID	Specify the SSID if known. This field is completed automatically if you select an Access Point in the Site Survey.
Site Survey	Scans nearby locations for Access Points. You can select a

	discovered Access Point to establish a connection.
Prefer BSSID	Enter the MAC address if known. If you select an Access Point in the Site Survey, this field is completed automatically.
WDS Client	Click the appropriate radio button to enable or disable WDS Client.
Wireless Security	See section 8.2 for information.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).



Site Survey

2.4GHz Site Survey ℹ:Infrastructure ◆:Ad_hoc

BSSID	SSID	Channel	Signal	Type	Security	Network Mode
00:e0:4c:81:86:21	DinoNet	1	-86 dBm	B	WEP	ℹ
00:13:f7:7c:6f:43	SMC	6	-105 dBm	G	NONE	ℹ

Profile	If you used the Site Survey, the Web Configurator shows nearby Access Points. To connect to an Access Point, click the Access Point's BSSID.
Wireless Security	See the Wireless Security section.
Refresh	Click Refresh to scan again.

NOTE

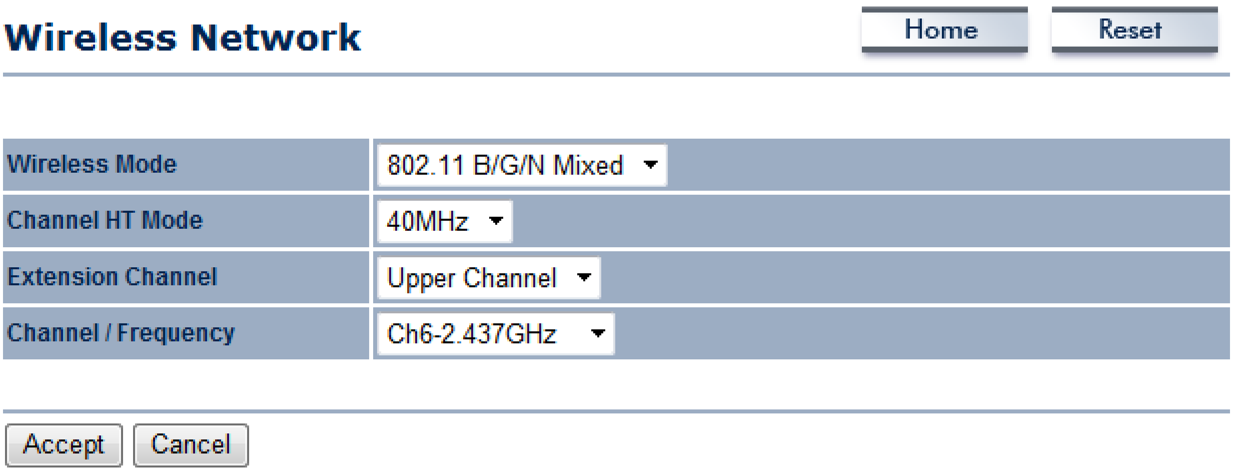
If the Access Point has been configured to suppress its SSID, the SSID section will be blank and must be completed manually.

8.1.3 WDS Bridge Mode

Unlike traditional bridging. WDS Bridge Mode allows you to create large wireless networks by linking several wireless access points with WDS links. WDS is normally used in large, open areas, where pulling wires is cost prohibitive, restricted or physically impossible.

The following figure shows an example of three OM2P-LC/OM2P-HS configured for WDS Bridge Mode communicating with each other. In this configuration, the OM2P-LC/OM2P-HS device on the left side of the figure behaves as a standard bridge that forwards traffic between the WDS links (links that connect to other OM2P-LC/OM2P-HS WDS bridges).

The sections that follow the figure below describe how to configure your OM2P-LC/OM2P-HS for WDS Bridge Mode.

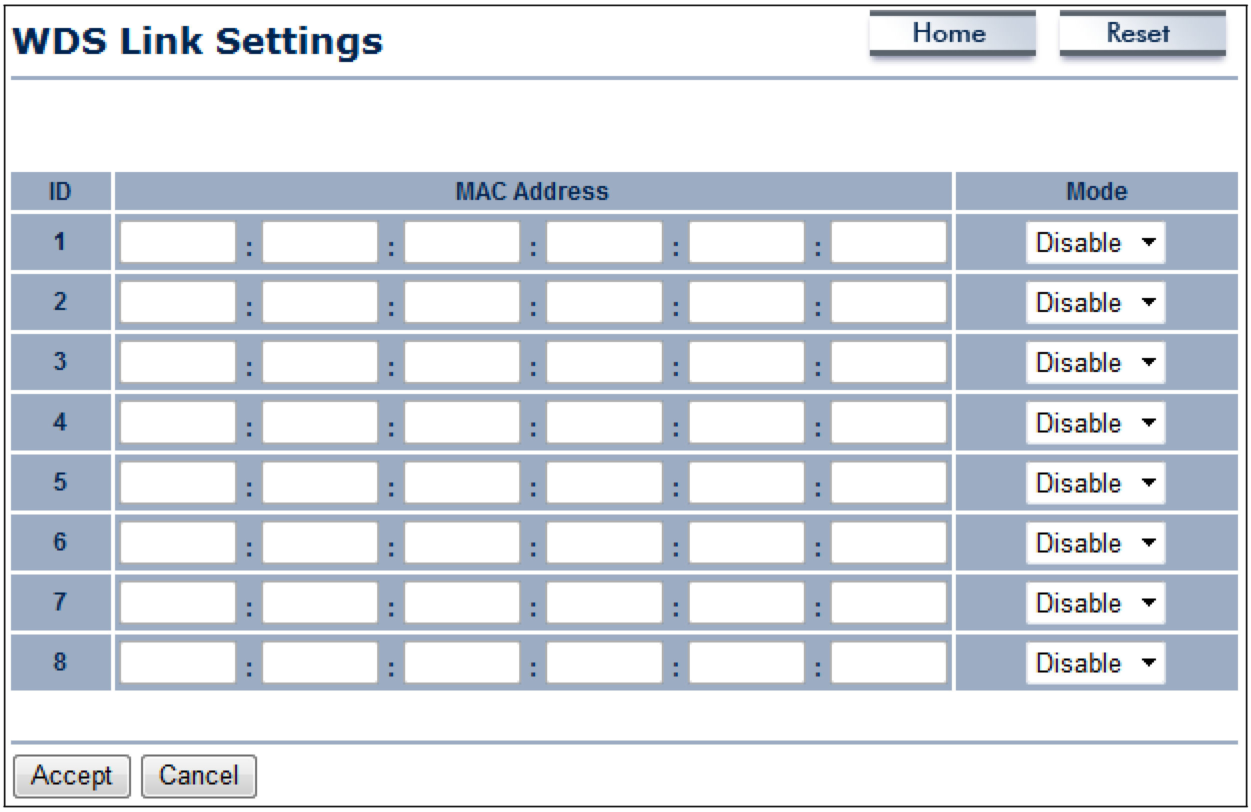


Wireless Network

Wireless Mode	802.11 B/G/N Mixed
Channel HT Mode	40MHz
Extension Channel	Upper Channel
Channel / Frequency	Ch6-2.437GHz

Wireless Mode	Wireless mode supports 802.11b/g/n mixed modes.
Channel HT Mode	The default channel bandwidth is 40 MHz. The larger the channel, the better the transmission quality and speed.
Extension Channel	Select upper or lower channel. Your selection may affect the Auto channel function.
Channel / Frequency	Select the channel and frequency appropriate for your country's regulation.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).



WDS Link Settings

ID	MAC Address	Mode
1	: : : : :	Disable ▾
2	: : : : :	Disable ▾
3	: : : : :	Disable ▾
4	: : : : :	Disable ▾
5	: : : : :	Disable ▾
6	: : : : :	Disable ▾
7	: : : : :	Disable ▾
8	: : : : :	Disable ▾

MAC Address	Enter the MAC address of the Access Point to which you want to extend wireless connectivity.
Mode	Select Disable or Enable to disable or enable WDS.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

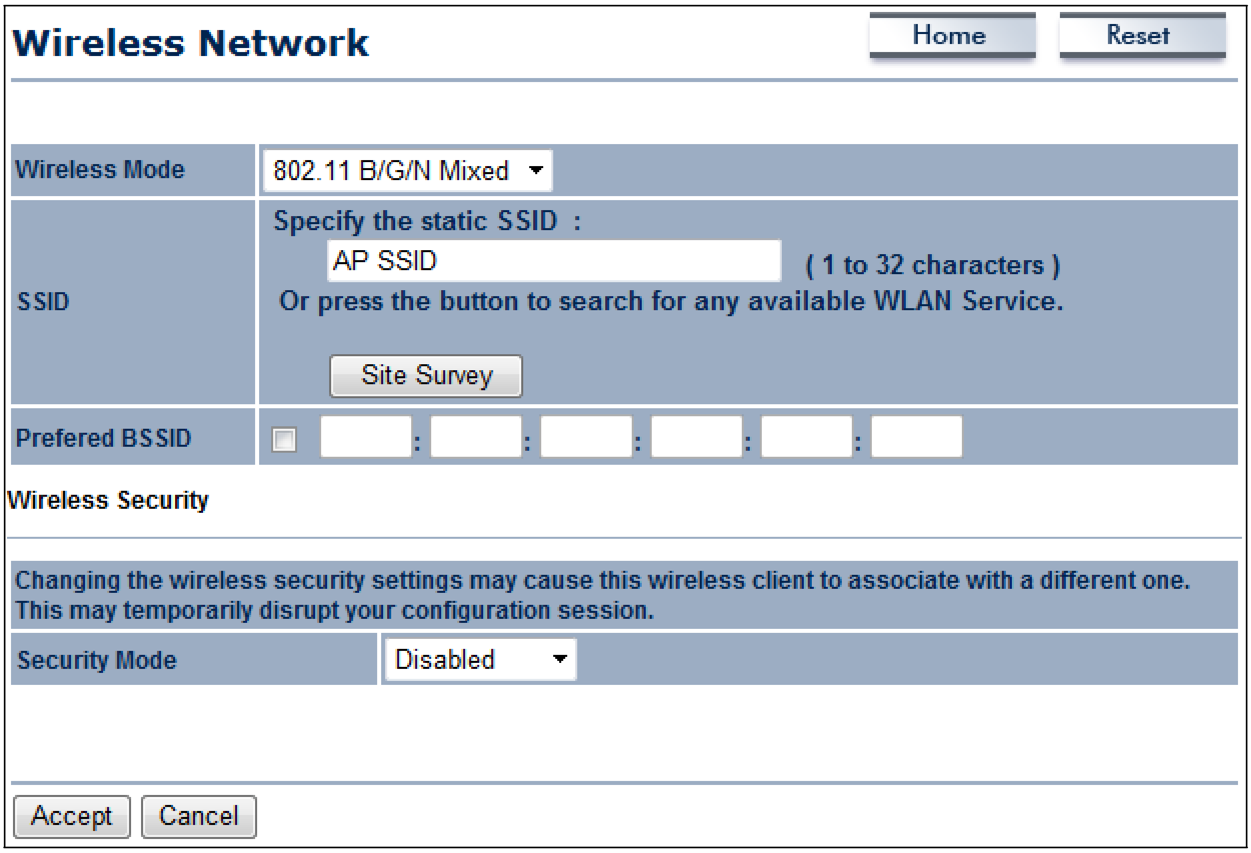
1. Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

2. The Access Point to which you want to extend wireless connectivity must enter the OM2P-LC/OM2P-HS's MAC address into its configuration. For more information, refer to the documentation for the Access Point. Not all Access Point supports this feature.

8.1.4 Client Router Mode

In Client Router Mode, you can access the Internet wirelessly with the support of a WISP. In AP Router Mode, the OM2P-LC/OM2P-HS can access the Internet via a cable or DSL modem. In this mode, the OM2P-LC/OM2P-HS can be configured to turn off the wireless network name (SSID) broadcast, so that only stations that have the SSID can be connected. The OM2P-LC/OM2P-HS also provides wireless LAN
64/128/152-bit WEP encryption security, WPA/WPA2, and WPA-PSK/WPA2-PSK authentication, as well as TKIP/AES encryption security. It also supports VPN pass-through for sensitive data secure transmission.

The following figure shows an example of an OM2P-LC/OM2P-HS communicating with a Wireless ISP (WISP) Access Point in Client Router Mode. The sections that follow the figure below describe how to configure your OM2P-LC/OM2P-HS for Client Router Mode.



Wireless Network

Wireless Mode: 802.11 B/G/N Mixed

SSID: Specify the static SSID : AP SSID (1 to 32 characters)
Or press the button to search for any available WLAN Service.

Prefered BSSID ☐ : : : : :

Wireless Security

Changing the wireless security settings may cause this wireless client to associate with a different one. This may temporarily disrupt your configuration session.

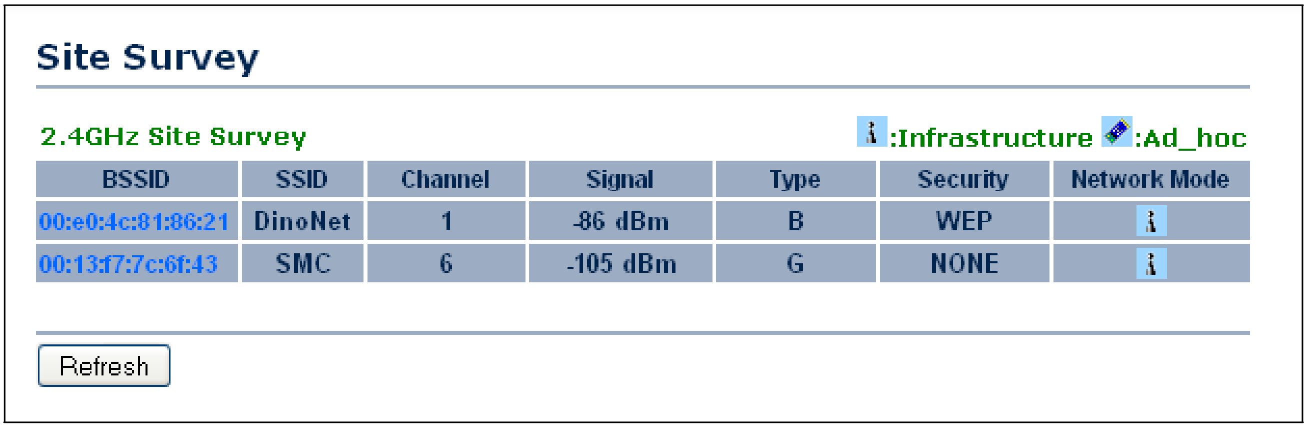
Security Mode: Disabled

Wireless Mode	Wireless mode supports 802.11b/g/n mixed modes.
SSID	Specify the SSID if known. This field is completed automatically if you select an Access Point in the Site Survey.
Site Survey	Scans nearby locations for Access Points. You can select a discovered Access Point to establish a connection.

Prefer BSSID	Enter the MAC address if known. If you select an Access Point in the Site Survey, this field is completed automatically.
Wireless Security	See section 10.2.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).



Site Survey

2.4GHz Site Survey

i :Infrastructure ✎ :Ad_hoc

BSSID	SSID	Channel	Signal	Type	Security	Network Mode
00:e0:4c:81:86:21	DinoNet	1	-86 dBm	B	WEP	i
00:13:f7:7c:6f:43	SMC	6	-105 dBm	G	NONE	i

Profile	If you used the Site Survey, the Web Configurator shows nearby Access Points. To connect to an Access Point, click the Access Point's BSSID.
Wireless Security	See the Wireless Security section.
Refresh	Click Refresh to scan again.

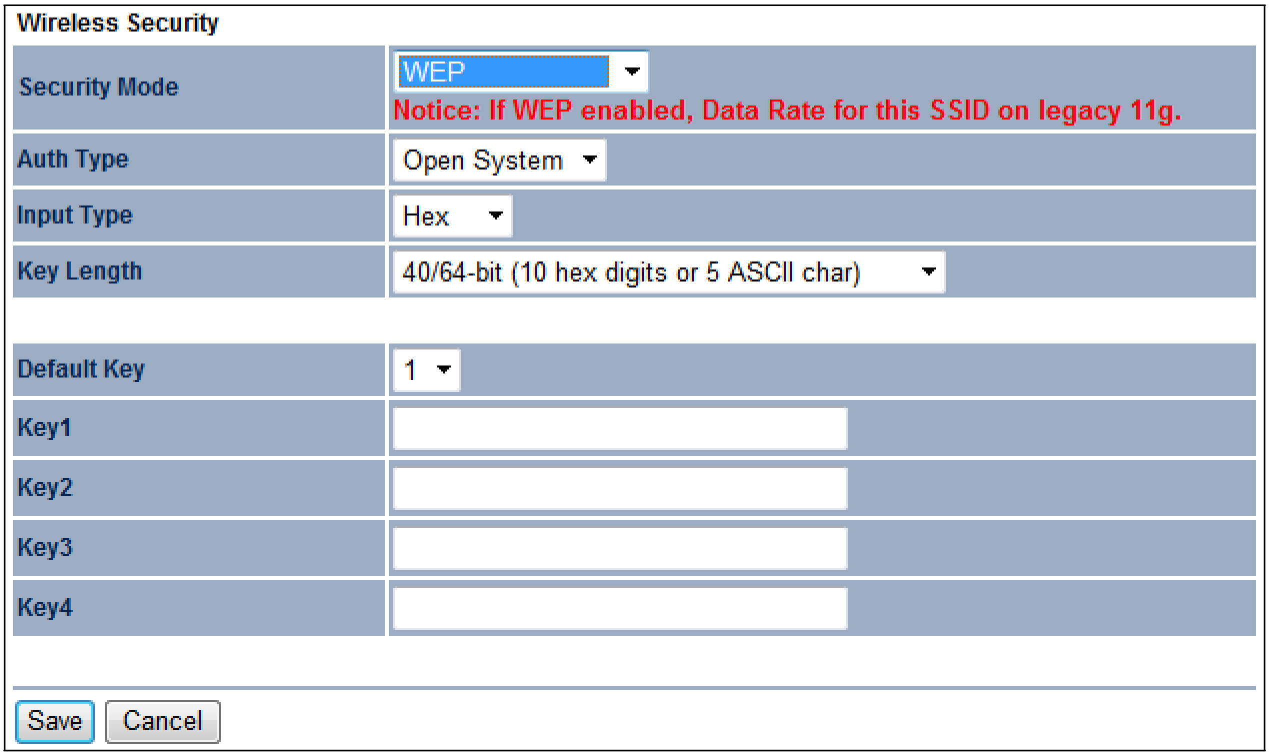
NOTE

If the Access Point has been configured to suppress its SSID, the SSID section must be completed manually.

8.2 Wireless Security Settings

The Wireless Security Settings section lets you configure the EOH200's security modes: WEP, WPA-PSK, WPA2-PSK, WPA-PSK Mixed, WPA, WPA2, and WPA Mixed. We strongly recommend you use WPA2-PSK.

8.2.1 WEP



Wireless Security

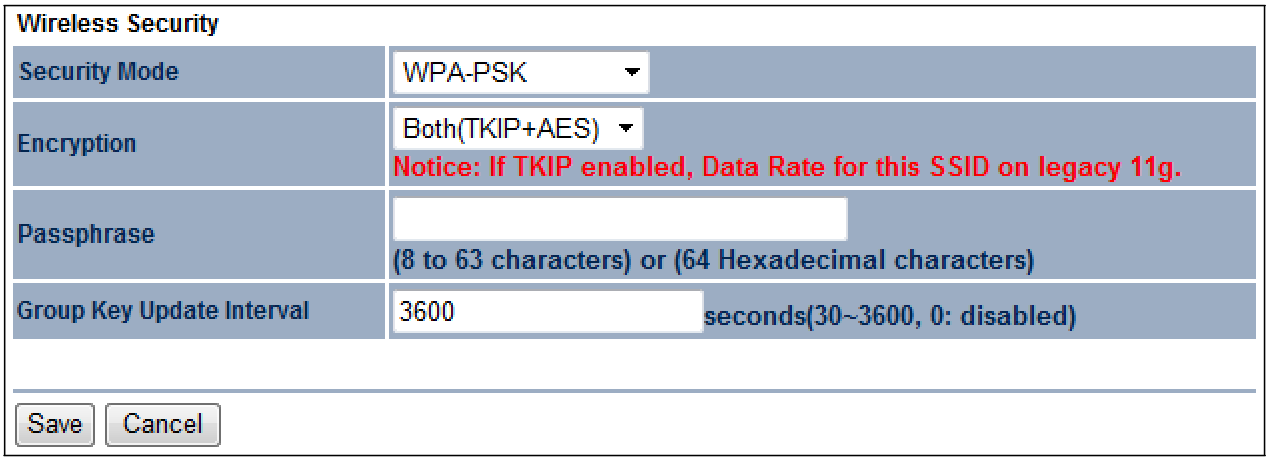
Security Mode	WEP Notice: If WEP enabled, Data Rate for this SSID on legacy 11g.
Auth Type	Open System
Input Type	Hex
Key Length	40/64-bit (10 hex digits or 5 ASCII char)
Default Key	1
Key1	
Key2	
Key3	
Key4	

Security Mode	Select WEP from the drop-down list to begin the configuration.
Auth Type	Select Open System or Shared.
Input Type	Select an input type of Hex or ASCII.
Key Length	Level of WEP encryption applied to all WEP keys. Choices are Select a 64/128/152-bit password lengths.
Default Key	Specify which of the four WEP keys the OM2P-LC/OM2P-HS uses as its default.
Key1	Specify a password for security key index No.1. For security, each typed character is masked by a dot (●).
Key2	Specify a password for security key index No.2. For security, each typed character is masked by a dot (●).
Key3	Specify a password for security key index No.3. For security, each typed character is masked by a dot (●).
Key4	Specify a password for security key index No.4. For security, each typed character is masked by a dot (●).

NOTE

802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The connection mode will drop from 802.11n to 802.11g.

8.2.2 WPA-PSK



Wireless Security

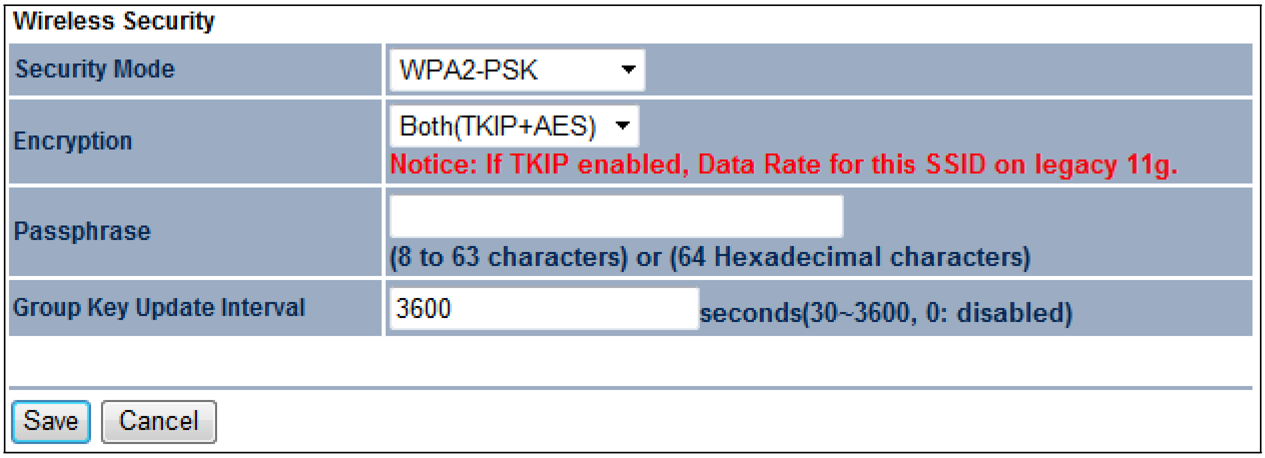
Security Mode	WPA-PSK
Encryption	Both(TKIP+AES) Notice: If TKIP enabled, Data Rate for this SSID on legacy 11g.
Passphrase	(8 to 63 characters) or (64 Hexadecimal characters)
Group Key Update Interval	3600 seconds(30~3600, 0: disabled)

Security Mode	Select WPA-PSK from the drop-down list to begin the configuration.
Encryption	Select Both, TKIP, or AES as the encryption type. • Both = uses TKIP and AES. • TKIP = automatic encryption with WPA-PSK; requires passphrase. • AES = automatic encryption with WPA2-PSK; requires passphrase.
Passphrase	Specify the security password. For security, each typed character is masked by a dot (●).
Group Key Update Interval	Specify how often, in seconds, the group key changes.

NOTE

802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The connection mode will drops from 802.11n to 802.11g.

8.2.3 WPA2-PSK



Wireless Security

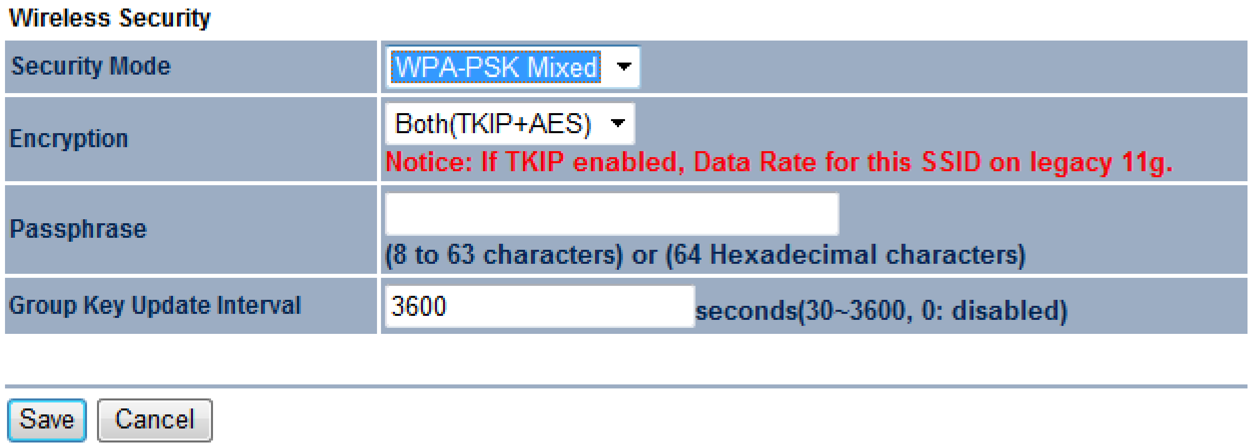
Security Mode	WPA2-PSK
Encryption	Both(TKIP+AES) Notice: If TKIP enabled, Data Rate for this SSID on legacy 11g.
Passphrase	(8 to 63 characters) or (64 Hexadecimal characters)
Group Key Update Interval	3600 seconds(30~3600, 0: disabled)

Security Mode	Select WPA2-PSK from the drop-down list to begin the configuration.
Encryption	Select Both, TKIP, or AES as the encryption type. • Both = uses TKIP and AES. • TKIP = automatic encryption with WPA-PSK; requires passphrase. • AES = automatic encryption with WPA2-PSK; requires passphrase.
Passphrase	Specify the security password. For security, each typed character is masked by a dot (●).
Group Key Update Interval	Specify how often, in seconds, the group key changes.

NOTE

802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The connection mode will change from 802.11n to 802.11g.

8.2.4 WPA-PSK Mixed



Wireless Security

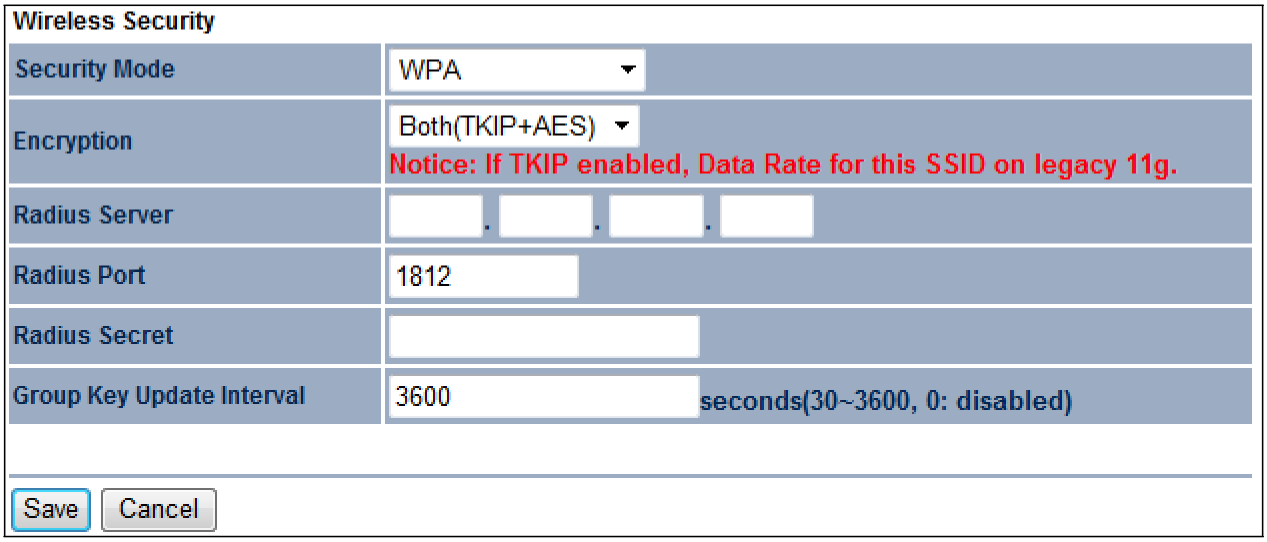
Security Mode	WPA-PSK Mixed
Encryption	Both(TKIP+AES) Notice: If TKIP enabled, Data Rate for this SSID on legacy 11g.
Passphrase	(8 to 63 characters) or (64 Hexadecimal characters)
Group Key Update Interval	3600 seconds(30~3600, 0: disabled)

Security Mode	Select WPA-PSK Mixed from the drop-down list to begin the configuration.
Encryption	Select Both, TKIP, or AES as the encryption type. • Both = uses TKIP and AES. • TKIP = automatic encryption with WPA-PSK; requires passphrase. • AES = automatic encryption with WPA2-PSK; requires passphrase.
Passphrase	Specify the security password. For security, each typed character is masked by a dot (●).
Group Key Update Interval	Specify how often, in seconds, the group key changes.

TIP

WPA-PSK Mixed can allow multiple security modes at the same time.
802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The connection mode will change from 802.11n to 802.11g.

8.2.5 WPA



Wireless Security

Security Mode	WPA ▾
Encryption	Both(TKIP+AES) ▾ Notice: If TKIP enabled, Data Rate for this SSID on legacy 11g.
Radius Server	. . .
Radius Port	1812
Radius Secret	
Group Key Update Interval	3600 seconds(30~3600, 0: disabled)

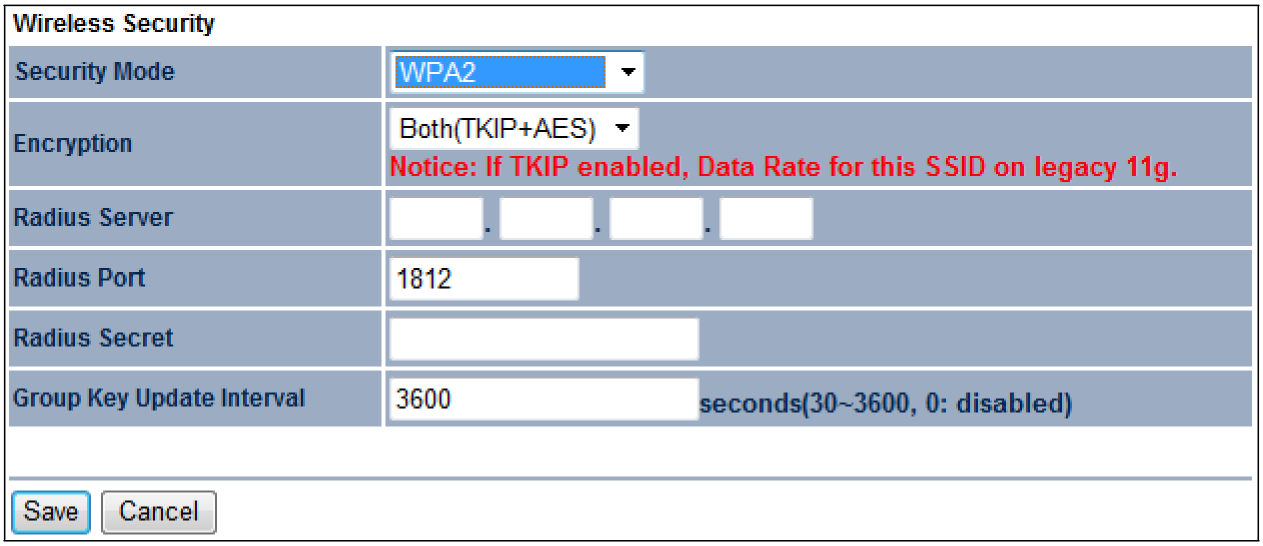
Save Cancel

Security Mode	Select WPA from the drop-down list to begin the configuration.
Encryption	Select Both, TKIP, or AES as the encryption type. • Both = uses TKIP and AES. • TKIP = automatic encryption with WPA-PSK. • AES = automatic encryption with WPA2-PSK.
Radius Server	Specify the IP address of the RADIUS server.
Radius Port	Specify the port number that your RADIUS server uses for authentication. Default port is 1812.
Radius Secret	Specify RADIUS secret furnished by the RADIUS server.
Group Key Update Interval	Specify how often, in seconds, the group key changes.

NOTE

802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The connection mode will drops from 802.11n to 802.11g.

8.2.6 WPA2



Wireless Security

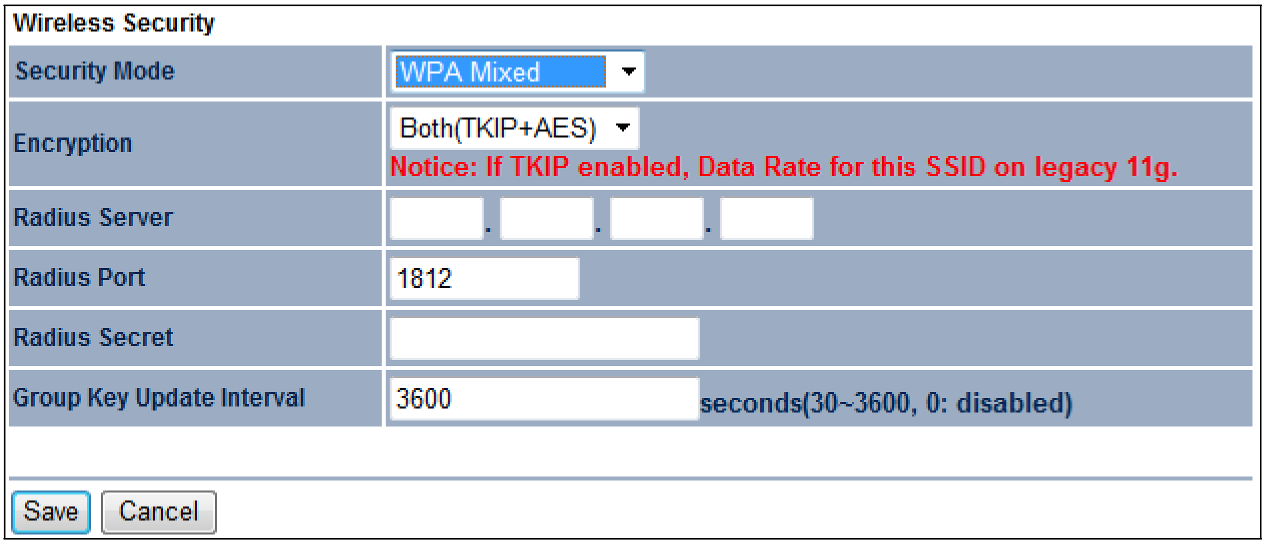
Security Mode	WPA2
Encryption	Both(TKIP+AES) Notice: If TKIP enabled, Data Rate for this SSID on legacy 11g.
Radius Server	. . .
Radius Port	1812
Radius Secret	
Group Key Update Interval	3600 seconds(30~3600, 0: disabled)

Security Mode	Select WPA2 from the drop-down list to begin the configuration.
Encryption	Select Both, TKIP, or AES as the encryption type. • Both = uses TKIP and AES. • TKIP = automatic encryption with WPA-PSK. • AES = automatic encryption with WPA2-PSK.
Radius Server	Specify the IP address of the RADIUS server.
Radius Port	Specify the port number that your RADIUS server uses for authentication. Default port is 1812.
Radius Secret	Specify RADIUS secret furnished by the RADIUS server.
Group Key Update Interval	Specify how often, in seconds, the group key changes.

NOTE

802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The date rate will drop from 802.11n to 802.11g.

8.2.7 WPA Mixed



Wireless Security

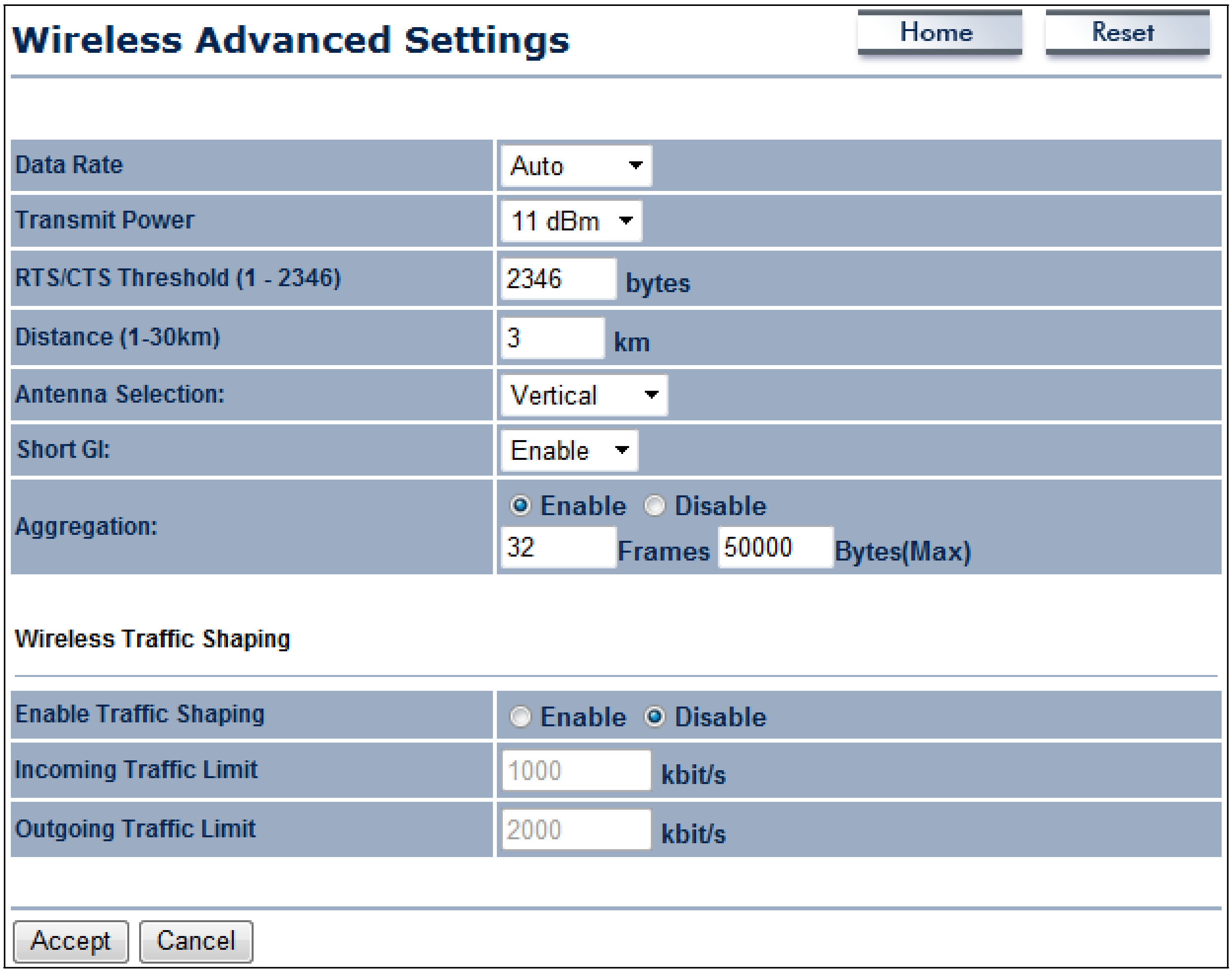
Security Mode	WPA Mixed
Encryption	Both(TKIP+AES) Notice: If TKIP enabled, Data Rate for this SSID on legacy 11g.
Radius Server	. . .
Radius Port	1812
Radius Secret	
Group Key Update Interval	3600 seconds(30~3600, 0: disabled)

Security Mode	Select WPA Mixed from the drop-down list to begin the configuration.
Encryption	Select Both, TKIP, or AES as the encryption type. • Both = uses TKIP and AES. • TKIP = automatic encryption with WPA-PSK. • AES = automatic encryption with WPA2-PSK.
Radius Server	Specify the IP address of the RADIUS server.
Radius Port	Specify the port number that your RADIUS server uses for authentication. Default port is 1812.
Radius Secret	Specify RADIUS secret furnished by the RADIUS server.
Group Key Update Interval	Specify how often, in seconds, the group key changes.

NOTE

802.11n does not allow WEP/WPA-PSK/WPA-PSK TKIP security mode. The connection mode will change from 802.11n to 802.11g.

8.4 Wireless Advanced Settings



Wireless Advanced Settings

Data Rate	Auto
Transmit Power	11 dBm
RTS/CTS Threshold (1 - 2346)	2346 bytes
Distance (1-30km)	3 km
Antenna Selection:	Vertical
Short GI:	Enable
Aggregation:	● Enable ○ Disable 32 Frames 50000 Bytes(Max)

Wireless Traffic Shaping

Enable Traffic Shaping	○ Enable ● Disable
Incoming Traffic Limit	1000 kbit/s
Outgoing Traffic Limit	2000 kbit/s

Data Rate	Select a data rate from the drop-down list. The data rate affects throughput. If you select a low data rate value, for example, the throughput is reduced but the transmission distance increases.
RTS/CTS Threshold	Specify the threshold package size for RTC/CTS. A small number causes RTS/CTS packets to be sent more often and consumes more bandwidth.
Distance	Specify the distance between Access Points and clients. Longer distances may drop high-speed connections.
Antenna Selection	Specify the internal antenna type.
Short GI	Sets the time that the receiver waits for RF reflections to settle out before sampling data. Using a short (400ns) guard interval can increase throughput, but can also increase error rate in some installations due to increased sensitivity to radio-frequency reflections. Select the option that works best for your installation.
Aggregation	Merges data packets into one packet. This option reduces the

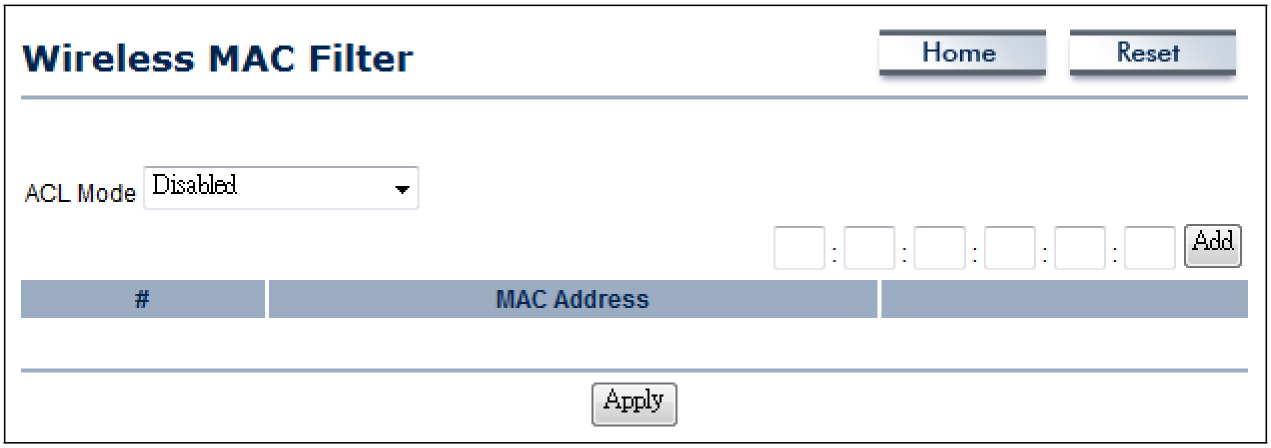
	number of packets, but increases packet sizes.
Wireless Traffic Shaping	Check this option to enable wireless traffic shaping. Traffic shaping regulates the flow of packets leaving an interface to deliver improved Quality of Service.
Incoming Traffic Limit	Specify the wireless transmission speed used for downloading.
Outgoing Traffic Limit	Specify the wireless transmission speed used for uploading.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

1. Changing Wireless Advanced Settings may adversely affect wireless performance. Please accept all default settings, unless you are familiar with the wireless options.
2. Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

8.5 Wireless MAC Filter

Wireless MAC Filters are used to allow or deny network access to wireless clients according to their MAC addresses. You can manually add a MAC address to restrict the permission to access OM2P-LC/OM2P-HS. The default setting is Disable Wireless MAC Filters.



Wireless MAC Filter

ACL Mode Disabled

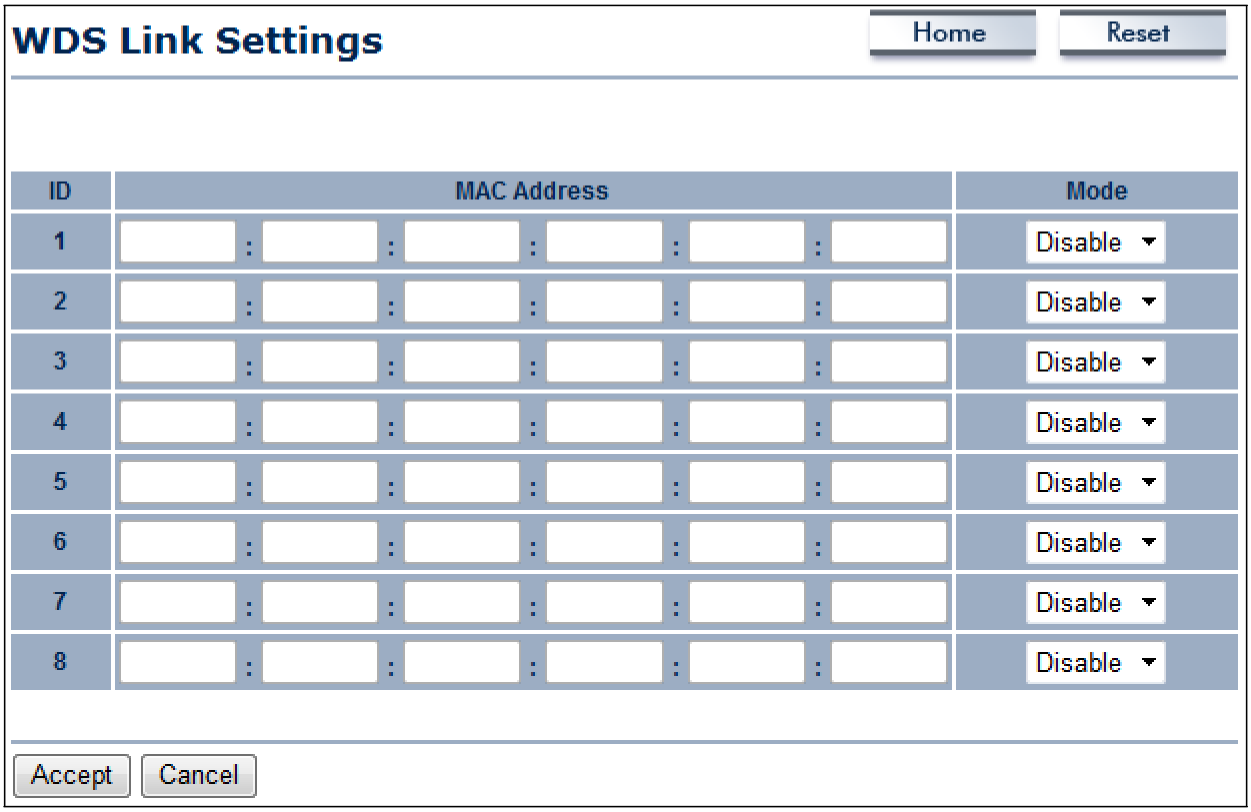
#	MAC Address	

0.

ACL Mode	Determines whether network access is granted or denied to clients whose MAC addresses appear in the MAC Address table on this page. Choices are Disable, Deny MAC in the list, or Allow MAC in the list.
MAC Address Filter	Enter the MAC address of the device.
Add	Click Add to add the MAC address to the MAC Address table.
Apply	Click Apply to apply the changes.

8.6 WDS Link Settings

Using WDS Link Settings, you can create a wireless backbone link between multiple access points that are part of the same wireless network. This allows a wireless network to be expanded using multiple Access Points without the need for a wired backbone to link them, as is traditionally required.



WDS Link Settings

ID	MAC Address	Mode
1	: : : : :	Disable ▾
2	: : : : :	Disable ▾
3	: : : : :	Disable ▾
4	: : : : :	Disable ▾
5	: : : : :	Disable ▾
6	: : : : :	Disable ▾
7	: : : : :	Disable ▾
8	: : : : :	Disable ▾

MAC Address	Enter the Access Point's MAC address to which you want to extend the wireless area.
Mode	Select Disable or Enable from the drop-down list.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

NOTE

The Access Point to which you want to extend wireless connectivity must enter the OM2P-LC/OM2P-HS's

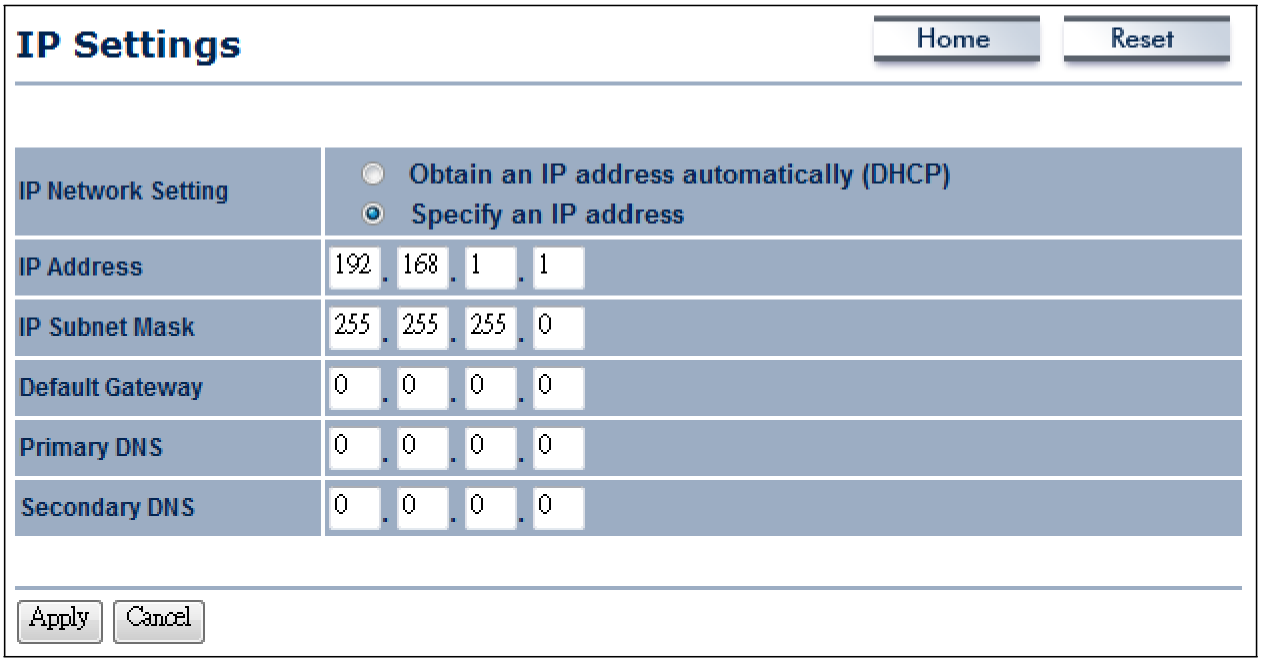
MAC address into its configuration. For more information, refer to the documentation for the Access Point. Not all Access Point supports this feature.

Chapter 9 LAN Setup

This chapter describes the OM2P-LC/OM2P-HS Local Area Network (LAN) settings.

9.1 IP Settings

This section is only available for Non-Router Mode. IP settings lets you configure the OM2P-LC/OM2P-HS LAN port IP address.



IP Settings

IP Network Setting	○ Obtain an IP address automatically (DHCP) ● Specify an IP address
IP Address	192 . 168 . 1 . 1
IP Subnet Mask	255 . 255 . 255 . 0
Default Gateway	0 . 0 . 0 . 0
Primary DNS	0 . 0 . 0 . 0
Secondary DNS	0 . 0 . 0 . 0

IP Network Setting   Select whether the OM2P-LC/OM2P-HS IP address will use the
static IP address

specified in the IP Address field or be obtained automatically when the OM2P-LC/OM2P-HS connects to a device that has a

DHCP server .

IP Address   Enter the IP address of the OM2P-

LC/OM2P-HS. IP Suet Mask   Enter the OM2P-LC/OM2P-

HS subnet mask. Default Gateway   Enter the OM2P-

LC/OM2P-HS default gateway. Primary DNS   Enter the

OM2P-LC/OM2P-HS primary DNS. Secondary DNS   Enter

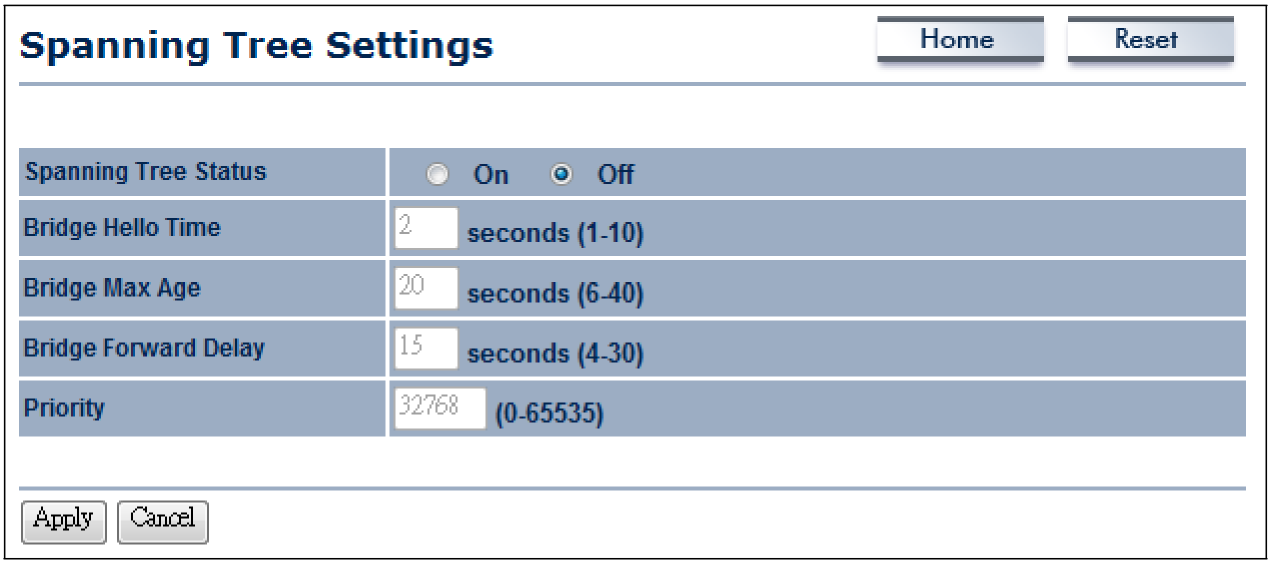
the OM2P-LC/OM2P-HS secondary DNS.

Accept / Cancel   Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

If you change the LAN IP address, you will be directed to the new IP address after you click Apply.

9.2 Spanning Tree Settings



Spanning Tree Settings

Spanning Tree Status	○ On ● Off
Bridge Hello Time	2 seconds (1-10)
Bridge Max Age	20 seconds (6-40)
Bridge Forward Delay	15 seconds (4-30)
Priority	32768 (0-65535)

Spanning Tree Status	Enable or disable the OM2P-LC/OM2P-HS Spanning Tree function.
Bridge Hello Time	Specify Bridge Hello Time, in seconds. This value determine how often the OM2P-LC/OM2P-HS sends hello packets to communicate information about the topology throughout the entire Bridged Local Area Network
Bridge Max Age	Specify Bridge Max Age, in seconds. If another bridge in the spanning tree does not send a hello packet for a long period of time, it is assumed to be dead.
Bridge Forward Delay	Specify Bridge Forward Delay, in seconds. Forwarding delay time is the time spent in each of the Listening and Learning states before the Forwarding state is entered. This delay is provided so that when a new bridge comes onto a busy network, it looks at some traffic before participating.
Priority	Specify the Priority number. Smaller number has greater priority.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

Chapter 10 Router Settings

This section is only available for AP Router Mode and Client Router Mode.

10.1 WAN Settings

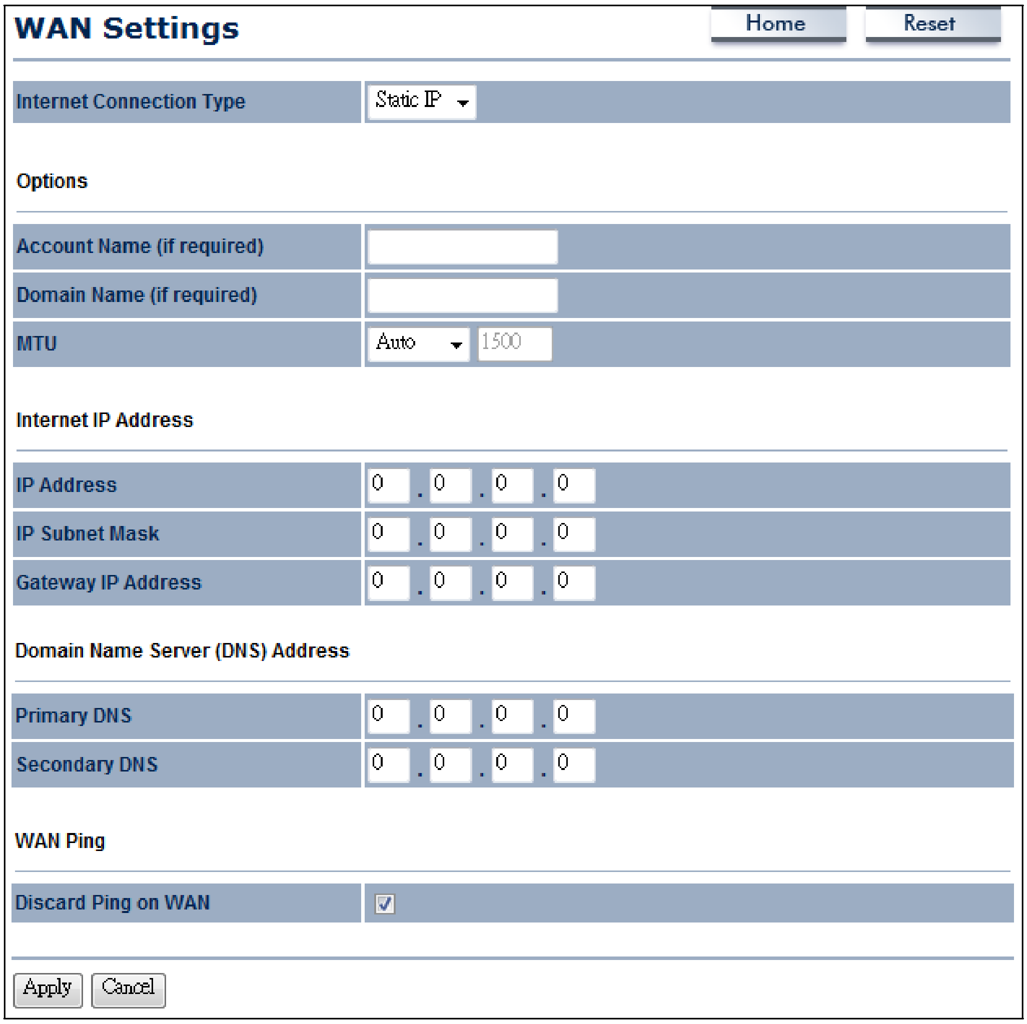
This chapter describes the OM2P-LC/OM2P-HS WAN settings. There are four types of WAN connections:

- Static IP
- DHCP
- PPPoE
- PPTP

Please contact your ISP to find out which settings you should choose..

10.1.1 Static IP

Select Static IP for your WAN connection if your ISP provided information about which IP address, subnet mask, default gateway, primary DNS, and secondary DNS to use.



WAN Settings

Internet Connection Type	Static IP

Options

Account Name (if required)	
Domain Name (if required)	
MTU	Auto 1500

Internet IP Address

IP Address	0 . 0 . 0 . 0
IP Subnet Mask	0 . 0 . 0 . 0
Gateway IP Address	0 . 0 . 0 . 0

Domain Name Server (DNS) Address

Primary DNS	0 . 0 . 0 . 0
Secondary DNS	0 . 0 . 0 . 0

WAN Ping

Discard Ping on WAN	☑

Internet Connection Type	Select Static IP to begin configuration of the Static IP connection.
Account Name	Enter the account name provided by your ISP.
Domain Name	Enter the domain name provided by your ISP.
MTU	Specify the Maximum Transmit Unit size. It is recommended you accept the default setting of Auto. Otherwise, packets will be fragmented downstream if the MTU is set too high or too low, which impacts network performance. In extreme cases, an MTU setting that is too low can prevent the OM2P-LC/OM2P-HS from establishing some connections.
IP Address	Enter the WAN port IP address. IP
Subnet Mask	Enter the WAN IP subnet mask.
Gateway IP Address	Enter the WAN gateway IP address.
Primary DNS	Enter the primary DNS IP address.
Secondary DNS	Enter the secondary DNS IP address.
Discard Ping on WAN WAN interface	Check to Enable to recognize pings on the OM2P-LC/OM2P-HS or Disable to block pings on the OM2P-LC/OM2P-HS WAN interface. Note:

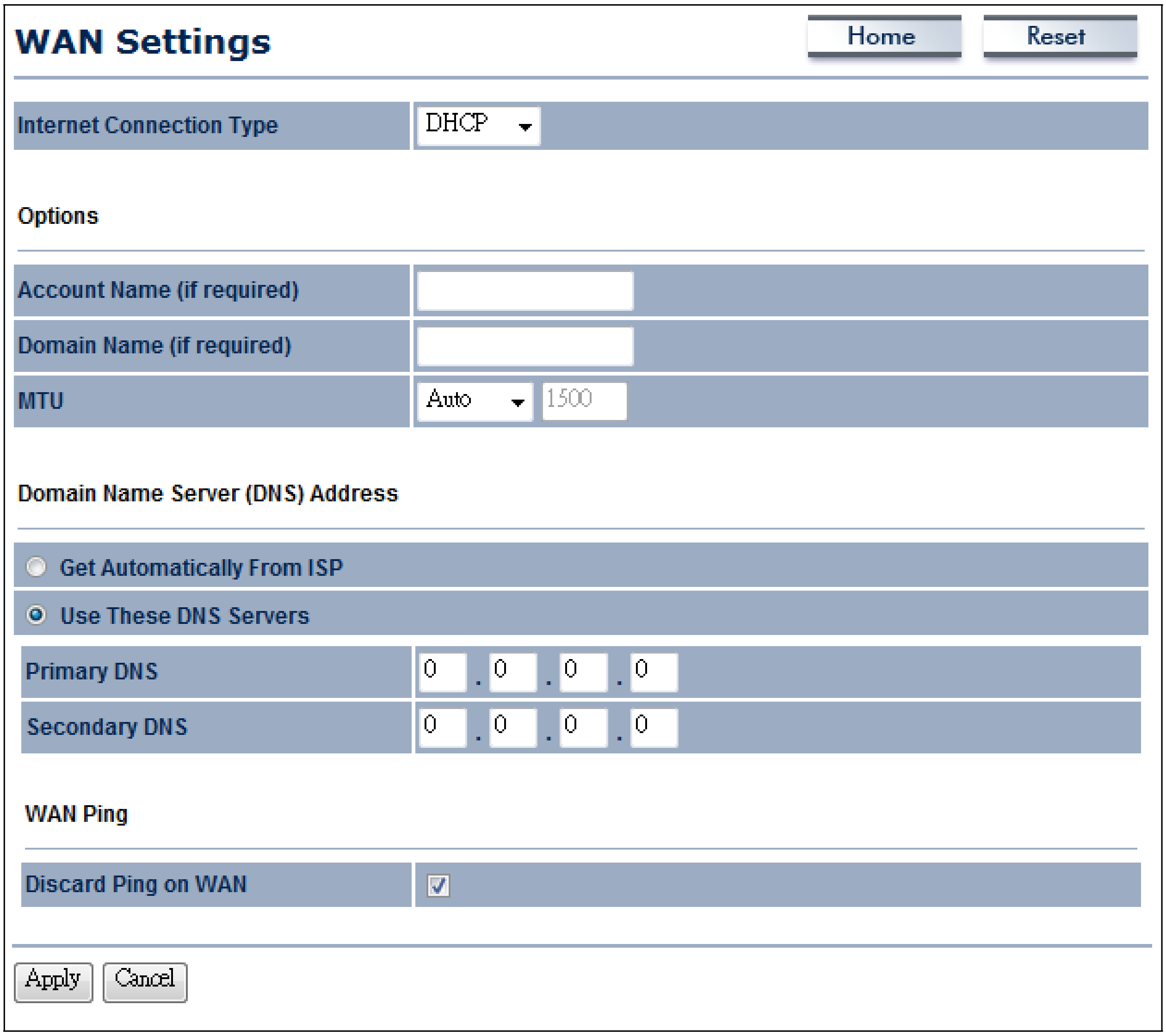
	Pinging IP addresses is a common method used by hackers to test whether the IP address is valid. Blocking pings provides some extra security from hackers.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

10.1.2 DHCP (Dynamic IP)

Select DHCP as your WAN connection type to obtain an IP address automatically. You will need to enter account name as your hostname and, optionally, DNS information.



WAN Settings

Internet Connection Type	DHCP

Options

Account Name (if required)	
Domain Name (if required)	
MTU	Auto 1500

Domain Name Server (DNS) Address

○ Get Automatically From ISP

● Use These DNS Servers

Primary DNS	0 . 0 . 0 . 0
Secondary DNS	0 . 0 . 0 . 0

WAN Ping

Discard Ping on WAN	☑

Internet Connection Type	Select DHCP to begin configuration of the DHCP connection.
Account Name	Enter the account name provided by your ISP.
Domain Name	Enter the domain name provided by your ISP.
MTU	Specify the Maximum Transmit Unit size. It is recommended you accept the default setting of Auto. Otherwise, packets will be fragmented downstream if the MTU is set too high or too low, which impacts network performance. In extreme cases, an MTU setting that is too low can prevent the OM2P-LC/OM2P-HS from establishing some connections.

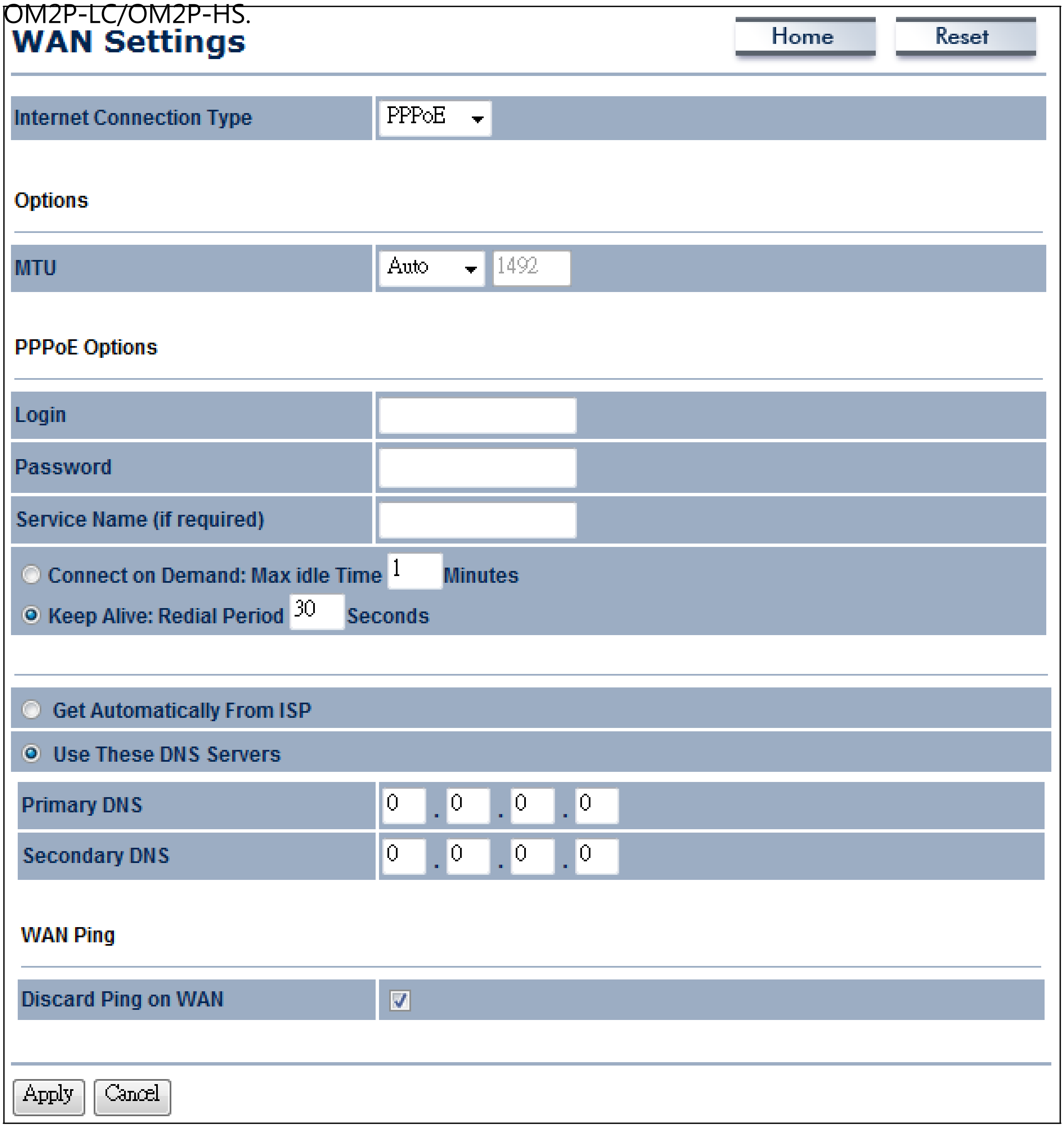
Get Automatically From ISP	Click this radio button to obtain the DNS automatically from the DHCP server.
Use These DNS Servers	Click the radio button to set up the Primary DNS and Secondary DNS servers manually.
Discard Ping on WAN	Check to Enable to recognize pings on the OM2P-LC/OM2P-HS WAN interface or Disable to block pings on the OM2P-LC/OM2P-HS WAN interface. Note: Pinging IP addresses is a common method used by hackers to test whether the IP address is valid. Blocking pings provides some extra security from hackers.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

10.1.3 PPPoE (Point-to-Point Protocol over Ethernet)

Select Point to Point Protocol over Ethernet (PPPoE) if your ISP uses a PPPoE connection. Your ISP will provide you with a username and password. This selection is typically used for DSL services. Remove your PPPoE software from your computer, as it is not needed and will not work with your OM2P-LC/OM2P-HS.



WAN Settings

Internet Connection Type	PPPoE

Options

MTU	Auto 1492

PPPoE Options

Login	
Password	
Service Name (if required)	

○ Connect on Demand: Max idle Time 1 Minutes
● Keep Alive: Redial Period 30 Seconds

○ Get Automatically From ISP
● Use These DNS Servers

Primary DNS	0 . 0 . 0 . 0
Secondary DNS	0 . 0 . 0 . 0

WAN Ping

Discard Ping on WAN	☑

Internet Connection Type	Select PPPoE to begin configuration of the PPPoE connection.
MTU	Specify the Maximum Transmit Unit size. It is recommended you accept the default setting of Auto. Otherwise, packets will be fragmented downstream if the MTU is set too high or too low, which impacts network performance. In extreme cases, an MTU

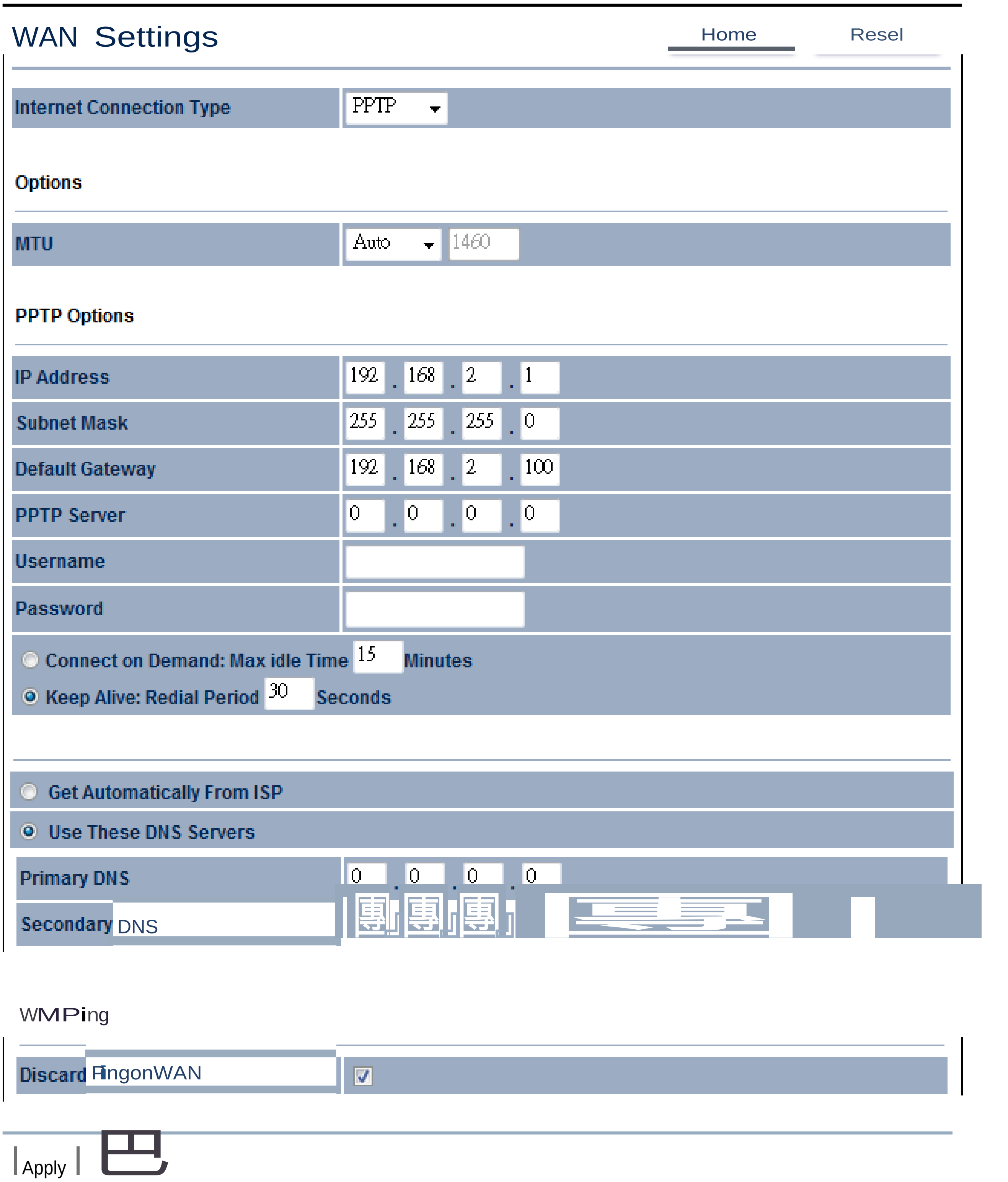
	setting that is too low can prevent the OM2P-LC/OM2P-HS from establishing some connections.
Login	Enter the Username provided by your ISP.
Password	Enter the Password provided by your ISP.
Service Name	Enter the Service Name provided by your ISP.
Connect on Demand	Select the radio button to specify the maximum idle time. Internet connection will disconnect when it reach the maximum idle time, but it will automatically connect when user tries to access the network.
Keep Alive	Select whether to keep the Internet connection always on, or enter a redial period once the internet lose connection.
Get Automatically From ISP	Select whether to obtain the DNS automatically from the DHCP server.
Use These DNS Servers	Click the radio button to set up the Primary DNS and Secondary DNS servers manually.
Discard Ping on WAN	Check to Enable to recognize pings on the OM2P-LC/OM2P-HS WAN interface or Disable to block pings on the OM2P-LC/OM2P-HS WAN interface. Note: Pinging IP addresses is a common method used by hackers to test whether the IP address is valid. Blocking pings provides some extra security from hackers.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

10.1.4 PPTP (Point-to-Point Tunneling Pr叫“。 "

Select PPTP as your WAN connection type if your ISP uses a Point-to-Point-Tunneling Protocol (PPTP) connection. You will need to provide the IP add ress, subnet mask, defau lt 9ateway (optional), DNS (optional), server Ip , username, and password provided by you r ISP.



WAN Settings

Internet Connection Type	PPTP ▾

Options

MTU	Auto ▾ 1460

PPTP Options

IP Address	192 . 168 . 2 . 1
Subnet Mask	255 . 255 . 255 . 0
Default Gateway	192 . 168 . 2 . 100
PPTP Server	0 . 0 . 0 . 0
Username	
Password	

○ Connect on Demand: Max idle Time 15 Minutes

● Keep Alive: Redial Period 30 Seconds

○ Get Automatically From ISP

● Use These DNS Servers

Primary DNS	0 . 0 . 0 . 0
Secondary DNS	

WMPing

Discard PingonWAN	☑

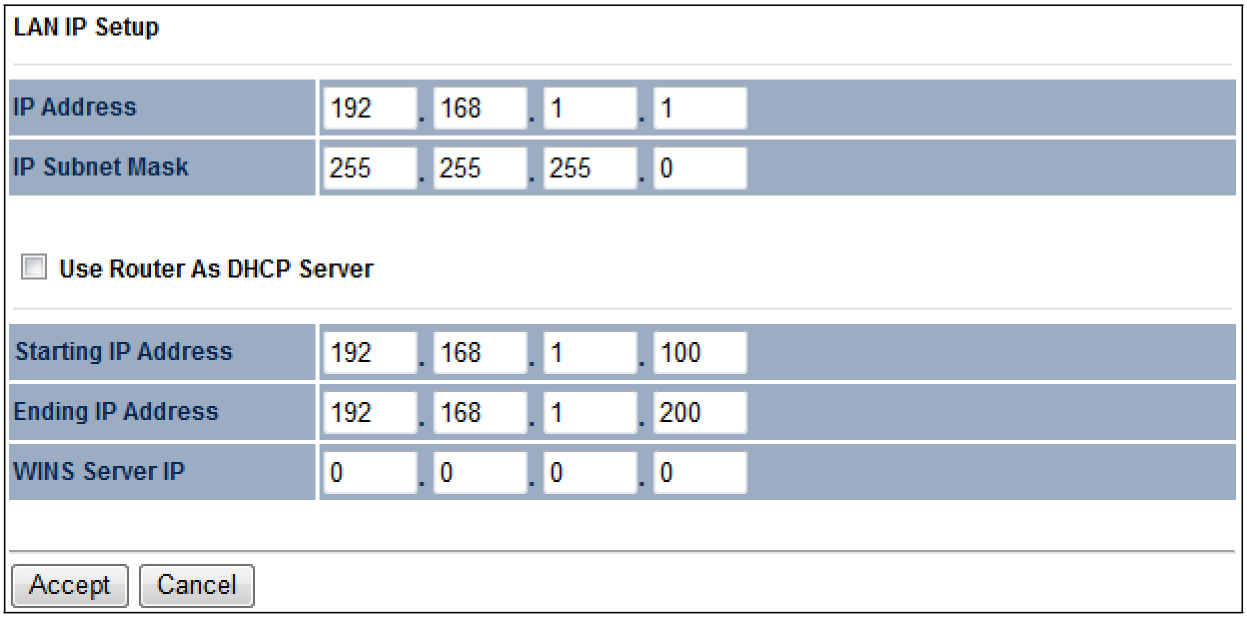
Internet Connection Type	Select PPTP to begin configuration ofthe PPTP connection.

MTU	Specify the Maximum Transmit Unit size. It is recommended you accept the default setting of Auto. Otherwise, packets will be fragmented downstream if the MTU is set too high or too low, which impacts network performance. In extreme cases, an MTU setting that is too low can prevent the OM2P-LC/OM2P-HS from establishing some connections.
IP Address	Enter the WAN port IP address. IP
Subnet Mask	Enter the WAN IP subnet mask.
Gateway IP Address	Enter the WAN gateway IP address.
PPTP Server	Enter the IP address of the PPTP server.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.
Connect on Demand	If you want the OM2P-LC/OM2P-HS to end the Internet connection after it has been inactive for a period of time, select this option and enter the number of minutes you want that period of inactivity to last.
Keep Alive	If you want the OM2P-LC/OM2P-HS to periodically check your Internet connection, select this option. Then specify how often you want the OM2P-LC/OM2P-HS to check the Internet connection. If the connection is down, the OM2P-LC/OM2P-HS automatically re-establishes your connection
Get Automatically From ISP	Obtains the DNS automatically from DHCP server.
Use These DNS Servers	Click the radio button to set up the Primary DNS and Secondary DNS servers manually.
Discard Ping on WAN	Check to Enable to recognize pings on the OM2P-LC/OM2P-HS WAN interface or Disable to block pings on the OM2P-LC/OM2P-HS WAN interface. Note: Pinging IP addresses is a common method used by hackers to test whether the IP address is valid. Blocking pings provides some extra security from hackers.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

10.2 LAN Settings (Router Mode)



LAN IP Setup

IP Address	192 . 168 . 1 . 1
IP Subnet Mask	255 . 255 . 255 . 0

□ Use Router As DHCP Server

Starting IP Address	192 . 168 . 1 . 100
Ending IP Address	192 . 168 . 1 . 200
WINS Server IP	0 . 0 . 0 . 0

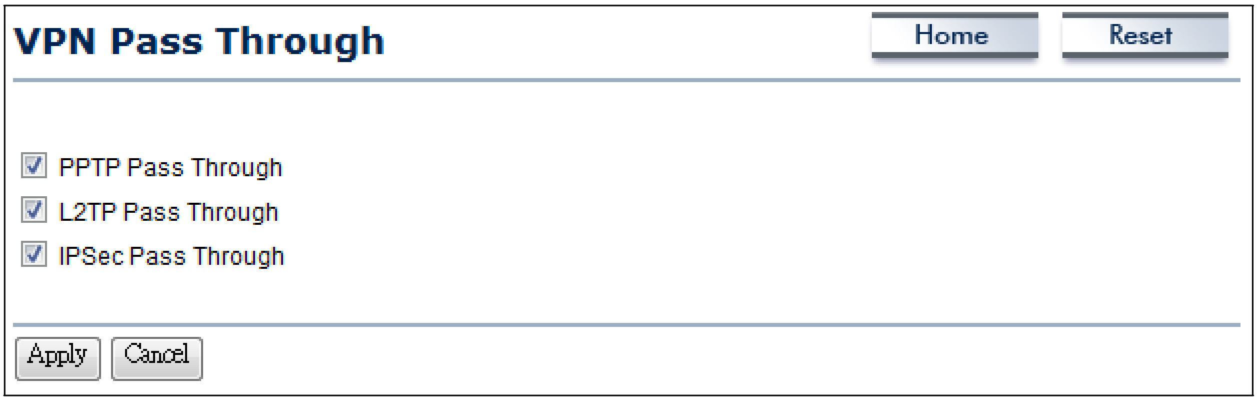
IP Address	Enter the LAN port IP address.
IP Subnet Mask	Enter the LAN IP subnet mask.
WINS Server IP	Enter the WINS Server IP.
Use Router As DHCP Server	Check this option to enable the OM2P-LC/OM2P-HS internal DHCP server.
Starting IP Address	Specify the starting IP address range for the pool of allocated for private IP addresses. The starting IP address must be on the same subnet as the ending IP address; that is the first three octets specified here must be the same as the first three octets in End IP Address.
Ending IP Address	Specify the ending IP address range for the pool of allocated for private IP addresses. The ending IP address must be on the same subnet as the starting IP address; that is the first three octets specified here must be the same as the first three octets in Start IP Address.
WINS Server IP	Enter the IP address of the WINS server.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

10.3 VPN Pass Through

VPN Passthrough allows a secure virtual private network (VPN) connection between two computers. Enabling the options on this page opens a VPN port and enables connections to pass through the OM2P-LC/OM2P-HS without interruption.



VPN Pass Through

☑ PPTP Pass Through
☑ L2TP Pass Through
☑ IPSec Pass Through

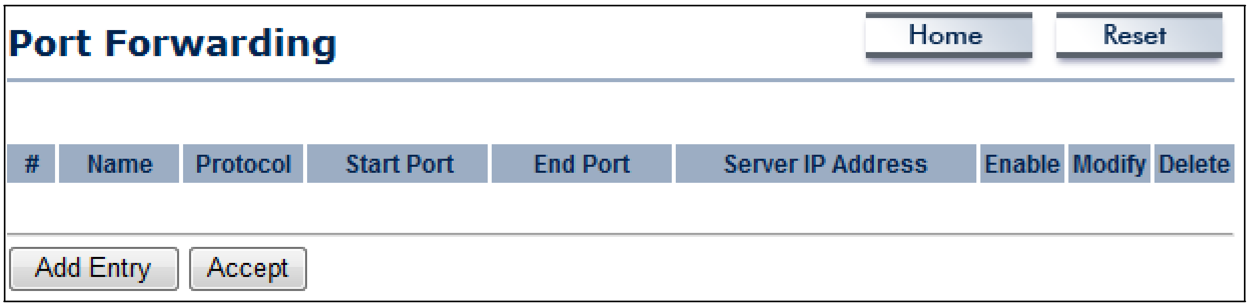
PPTP Pass Through	Check this option to enable PPTP pass-through mode.
L2TP Pass Through	Check this option to enable L2TP pass-through mode. IPSec
Pass Through	Check this option to enable IPSec pass-through mode.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

10.4 Port Forwarding

Port forwarding can be used to open a port or range of ports to a device on your network Using port forwarding, you can set up public services on your network. When users from the Internet make certain requests on your network, the OM2P-LC/OM2P-HS can forward those requests to computers equipped to handle the requests. If, for example, you set the port number 80 (HTTP) to be forwarded to IP address 192.168.1.2, all HTTP requests from outside users are forwarded to 192.168.1.2.

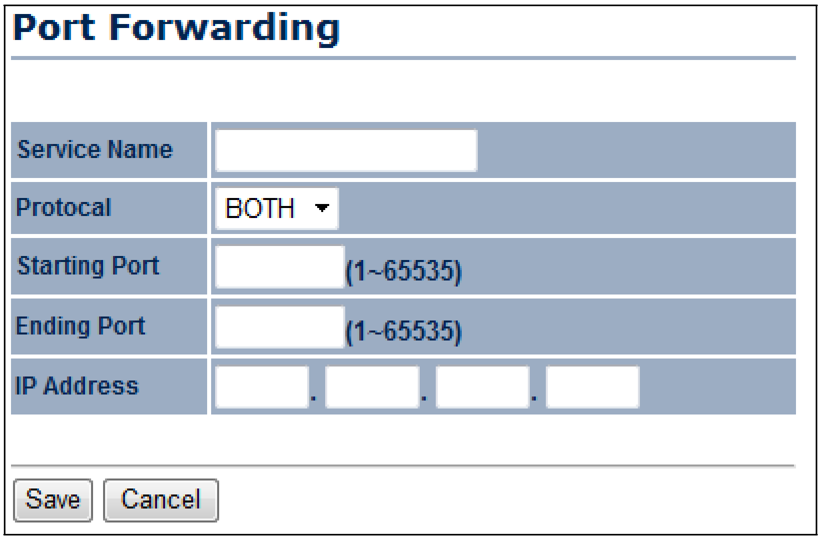


#	Name	Protocol	Start Port	End Port	Server IP Address	Enable	Modify	Delete

Add Entry	Click Add Entry to add port forwarding rules.
Accept	Click Accept to confirm the changes.

NOTE

Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).



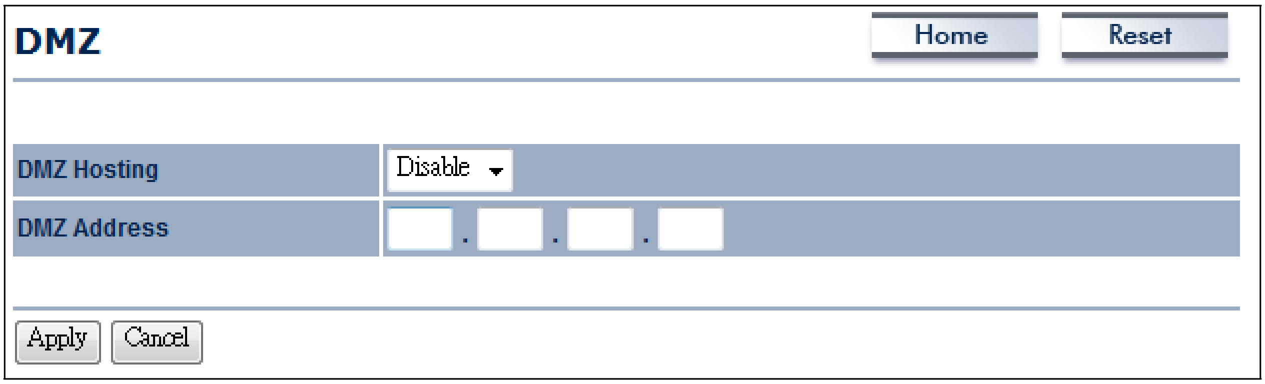
Port Forwarding

Service Name	
Protocal	BOTH
Starting Port	(1~65535)
Ending Port	(1~65535)
IP Address	. . .

Service Name	Enter a name for the port forwarding rule.
Protocol	Select a protocol for the application: Choices are Both, TCP, and UDP.
Starting Port	Enter a starting port number.
Ending Port	Enter an ending port number. All ports numbers between the starting and ending ports will forward users to the IP address specified in the IP Address field.
IP Address	Enter the IP address of the server computer on the LAN network where users will be redirected.
Save / Cancel	Click Save to apply the changes or Cancel to return previous settings.

10.5 DMZ

If you have a computer that cannot run Internet applications properly from behind the OM2P-LC/OM2P-HS,
you can allow the computer to have unrestricted Internet access. Enter the IP address of that computer as a Demilitarized Zone (DMZ) host with unrestricted Internet access. Adding a client to the DMZ may expose that computer to a variety of security risks, so use this option as a last resort.



DMZ

DMZ Hosting: Disable

DMZ Address: . . .

DMZ Hosting	Enables or disables the OM2P-LC/OM2P-HS DMZ function.
DMZ Address	Enter an IP address of the computer that will have unlimited Internet access.
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

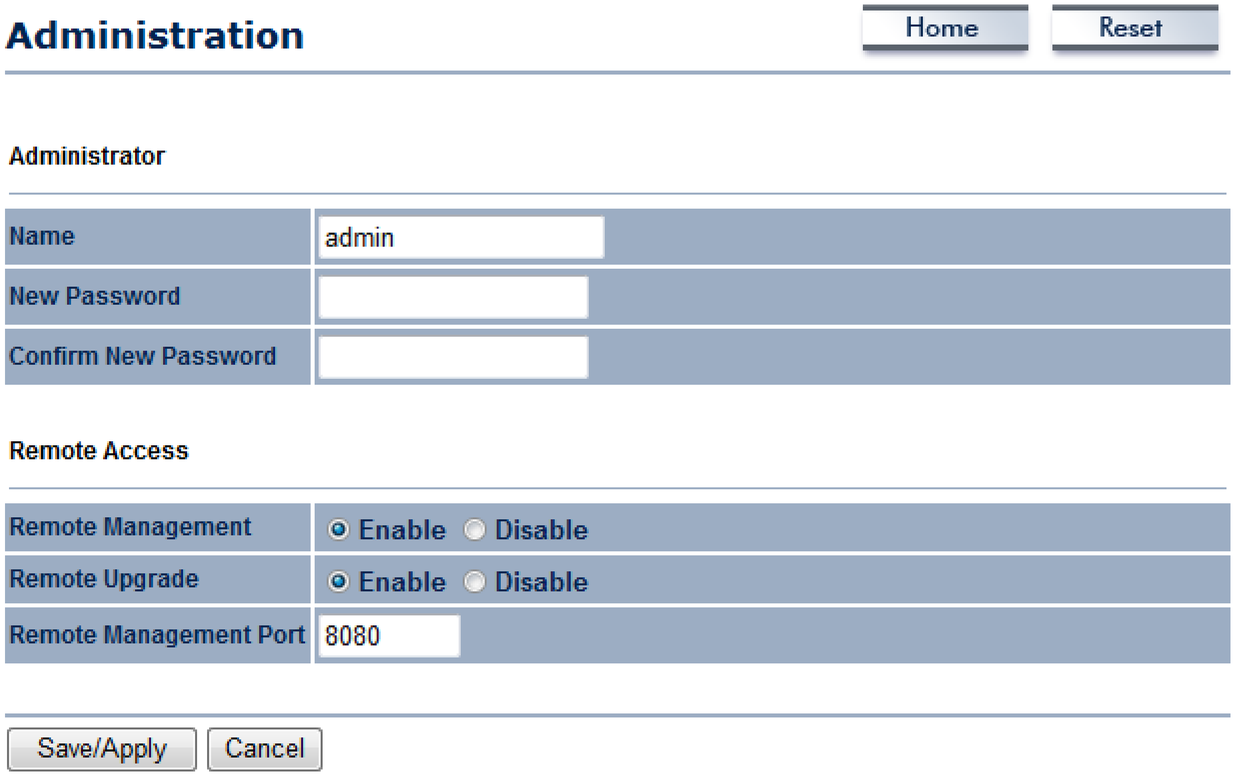
Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

Chapter 11 Management Settings

The Management section lets you configure administration, management VLAN, SNMP settings, backup/restore settings, firmware upgrade, time settings, and log settings. This chapter describes these settings.

11.1 Administration

Click the Administration link under the Management menu to change the user name and password used to log on to the OM2P-LC/OM2P-HS Web Configurator . The default user name is admin and the default password is admin. Changing these settings protects the OM2P-LC/OM2P-HS configuration settings from being accessed by unauthorized users.



Administration

Administrator

Name	admin
New Password	
Confirm New Password	

Remote Access

Remote Management	● Enable ○ Disable
Remote Upgrade	● Enable ○ Disable
Remote Management Port	8080

Name	Enter a new username for logging in to the Web Configurator.
Password	Enter a new password for logging in to the Web Configurator
Confirm Password	Re-enter the new password for confirmation.
Remote Management	Enable or disable remote management.
Remote Upgrade	Specify whether the OM2P-LC/OM2P-HS firmware can be upgraded remotely.
Remote Management Port	If remote management is enabled, enter the port number to be used for remote management. For example: If you specify the port number 8080, enter http://<IP address>:8080 to access

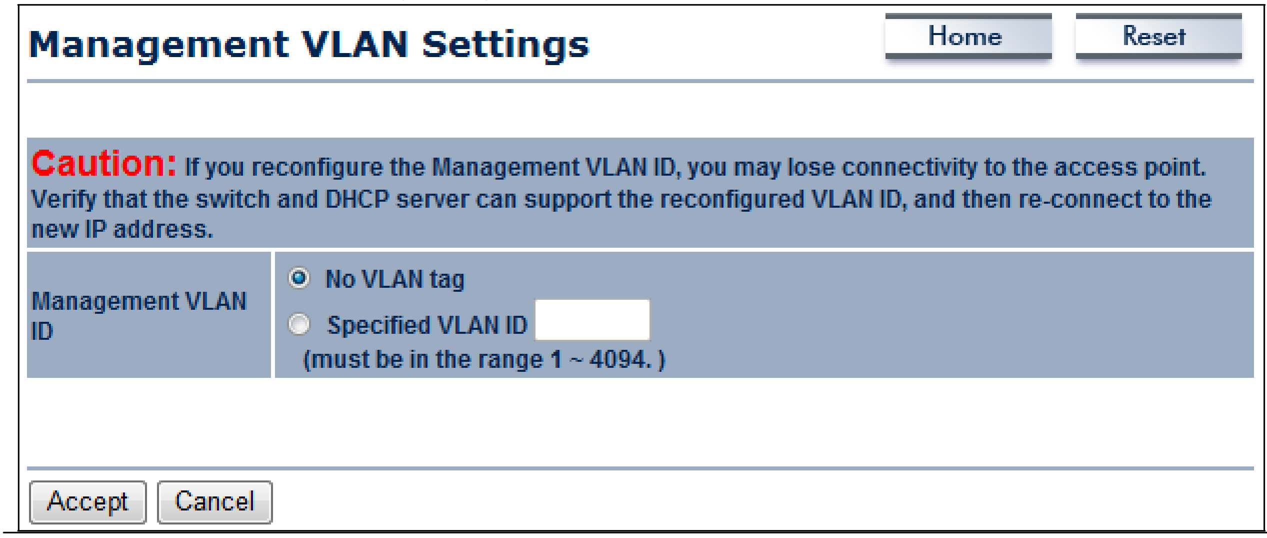
	the OM2P-LC/OM2P-HS Web Configurator.
Save/Apply / Cancel	Click Save/Apply to apply the changes or Cancel to return previous settings.

NOTE

Clicking Save/Apply changes the settings immediately. You cannot undo the action.

11.2 Management VLAN

Click the Management VLAN link under the Management menu to assign a VLAN tag to the packets. A VLAN is a group of computers on a network whose software has been configured so that they behave as if they were on a separate Local Area Network (LAN). Computers on VLAN do not have to be physically located next to one another on the LAN



Management VLAN Settings

Caution: If you reconfigure the Management VLAN ID, you may lose connectivity to the access point. Verify that the switch and DHCP server can support the reconfigured VLAN ID, and then re-connect to the new IP address.

Management VLAN ID
● No VLAN tag
○ Specified VLAN ID
(must be in the range 1 ~ 4094.)

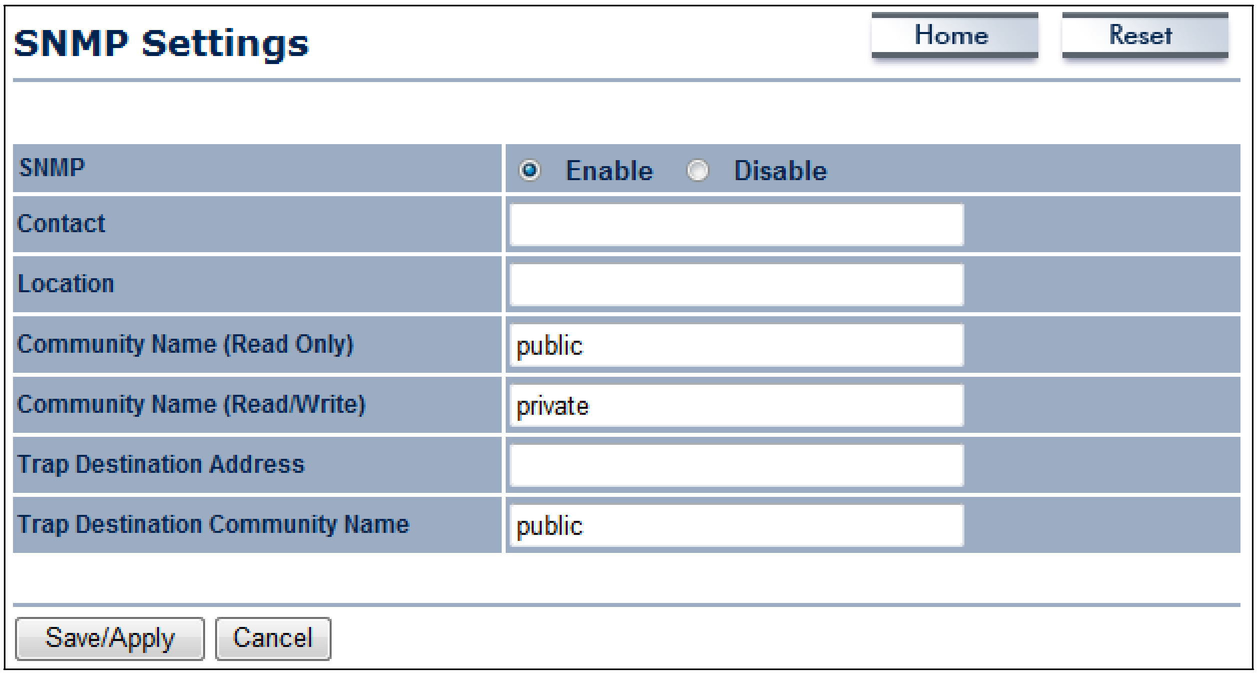
Management VLAN ID	If your network includes VLANs and if tagged packets need to pass through the Access Point, enter the VLAN ID. Otherwise, click No VLAN tag .
Accept / Cancel	Click Accept to confirm the changes or Cancel to cancel and return previous settings.

NOTE

1. If you reconfigure the Management VLAN ID, you may lose your connection to the OM2P-LC/OM2P-HS.
Verify that the DHCP server supports the reconfigured VLAN ID and then reconnect to the OM2P-LC/OM2P-HS using the new IP address.
2. Clicking Accept does not apply the changes. To apply them, use Status > Save/Load (see section 4.1).

11.3 SNMP Settings

Click the SNMP Settings link under the Management menu to monitor network-attached devices using the Simple Network Management Protocol (SNMP). SNMP allows messages (called “protocol data unit’s) to be sent to various parts of a network. Upon receiving these messages, SNMP-compatible devices (called agents) return data stored in their Management Information Bases.



SNMP Settings

SNMP	● Enable ○ Disable
Contact	
Location	
Community Name (Read Only)	public
Community Name (Read/Write)	private
Trap Destination Address	
Trap Destination Community Name	public

SNMP Enable/Disable	Enable or disable the OM2P-LC/OM2P-HS SNMP function.
Contact	Enter the contact details of the device.
Location	Enter the location of the device.
Community Name	Enter the password for accessing the SNMP community for read-only access.
Community Name	Enter the password for accessing the SNMP community for read and write access.
Trap Destination IP Address	Enter the IP address where SNMP traps are to be sent.
Trap Destination Community Name	Enter the password of the SNMP trap community.
Save/Apply / Cancel	Click Save/Apply to apply the changes or Cancel to return previous settings.

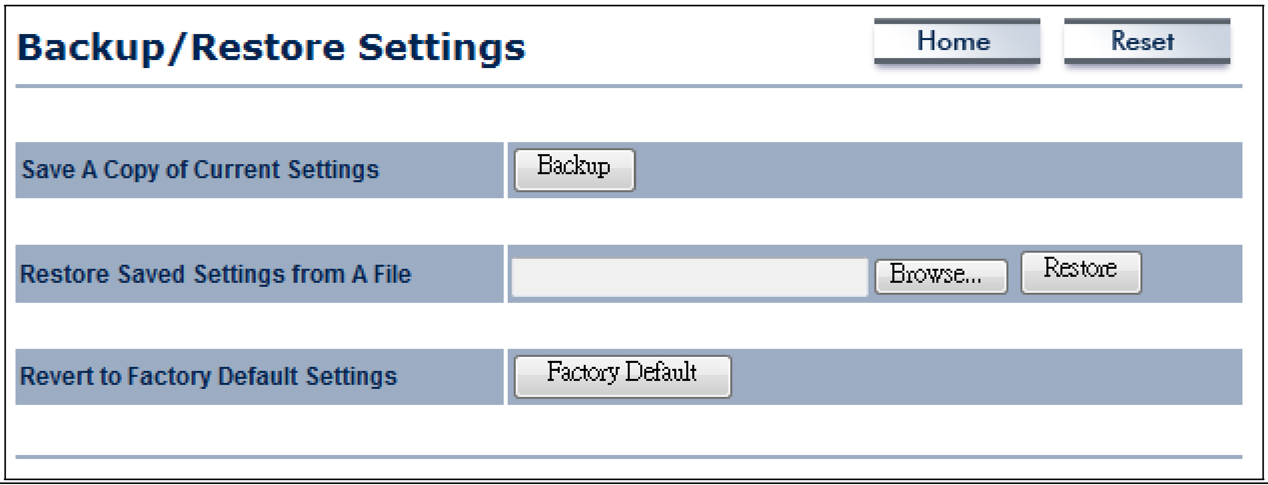
NOTE

Clicking Save/Apply change the setting immediately. You cannot undo the action.

11.4 Backup/Restore Settings

Click the Backup/Restore Setting link under the Management menu to save the OM2P-LC/OM2P-HS's
current settings in a file on your local disk or load settings onto the device from a local disk. This feature is particularly convenient administrators who have several OM2P-LC/OM2P-HS devices that need to be configured with the same settings.

This page also lets you return the OM2P-LC/OM2P-HS to its factory default settings. If you perform this procedure, any changes made to the OM2P-LC/OM2P-HS default settings will be lost.



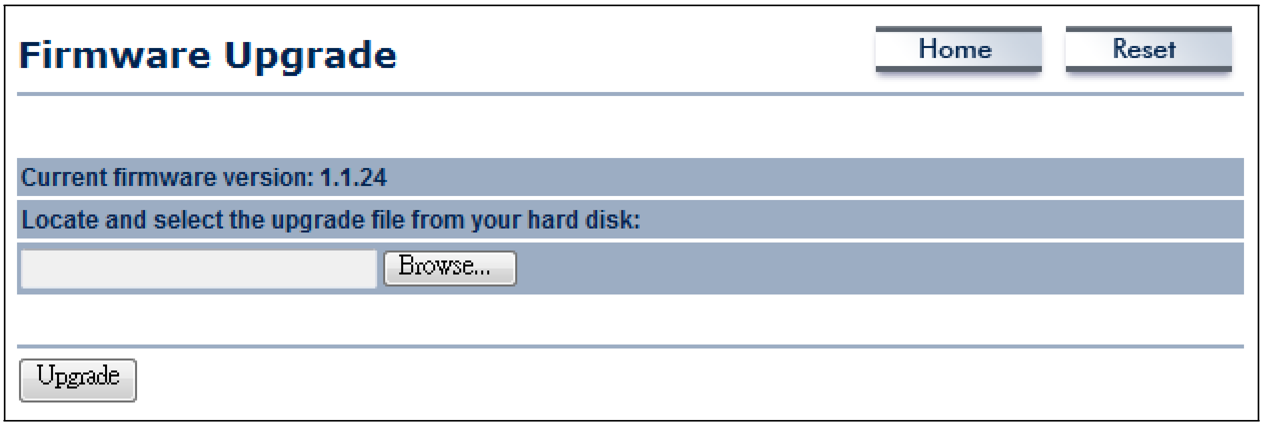
Backup/Restore Settings

Save A Copy of Current Settings	Backup
Restore Saved Settings from A File	Browse... Restore
Revert to Factory Default Settings	Factory Default

Save A Copy of Current Settings	Click Backup to save the current configured settings.
Restore Saved Settings from a File	To restore settings that have been previously backed up, click Browse, select the file, and click Restore.
Revert to Factory Default Settings	Click this button to restore the OM2P-LC/OM2P-HS to its factory default settings.

11.5 Firmware Upgrade

Click the Firmware Upgrade link under the Management menu to upgrade the firmware of the device. To perform this procedure, downloaded the appropriate firmware from your vendor.



Firmware Upgrade

Current firmware version: 1.1.24

Locate and select the upgrade file from your hard disk:

CAUTION

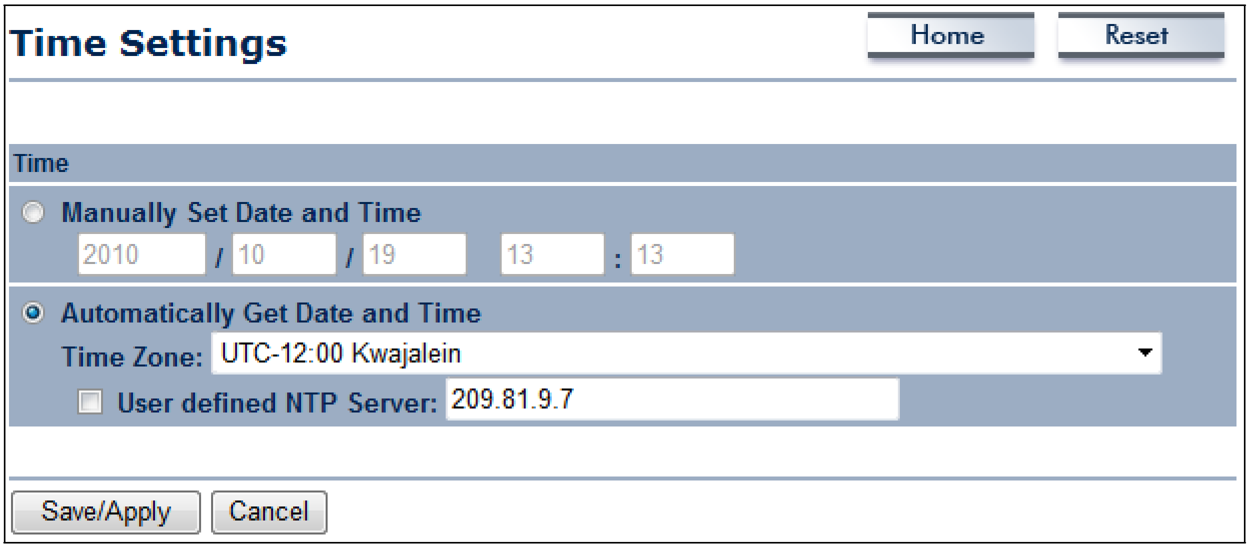
The firmware upgrade procedure can take few minutes. Do not power off the OM2P-LC/OM2P-HS during the firmware upgrade, as it can cause the device to crash or become unusable. The OM2P-LC/OM2P-HS restarts automatically after the upgrade completes.

11.6 Time Settings

Click the Time Settings link under the Management menu to configure the OM2P-LC/OM2P-HS system

time. You can enter the time manually or, to ensure accuracy, synchronize the OM2P-LC/OM2P-HS with

Network Time Protocol (NTP) server.



Time Settings

Time

○ Manually Set Date and Time

2010 / 10 / 19 13 : 13

● Automatically Get Date and Time

Time Zone: UTC-12:00 Kwajalein

□ User defined NTP Server: 209.81.9.7

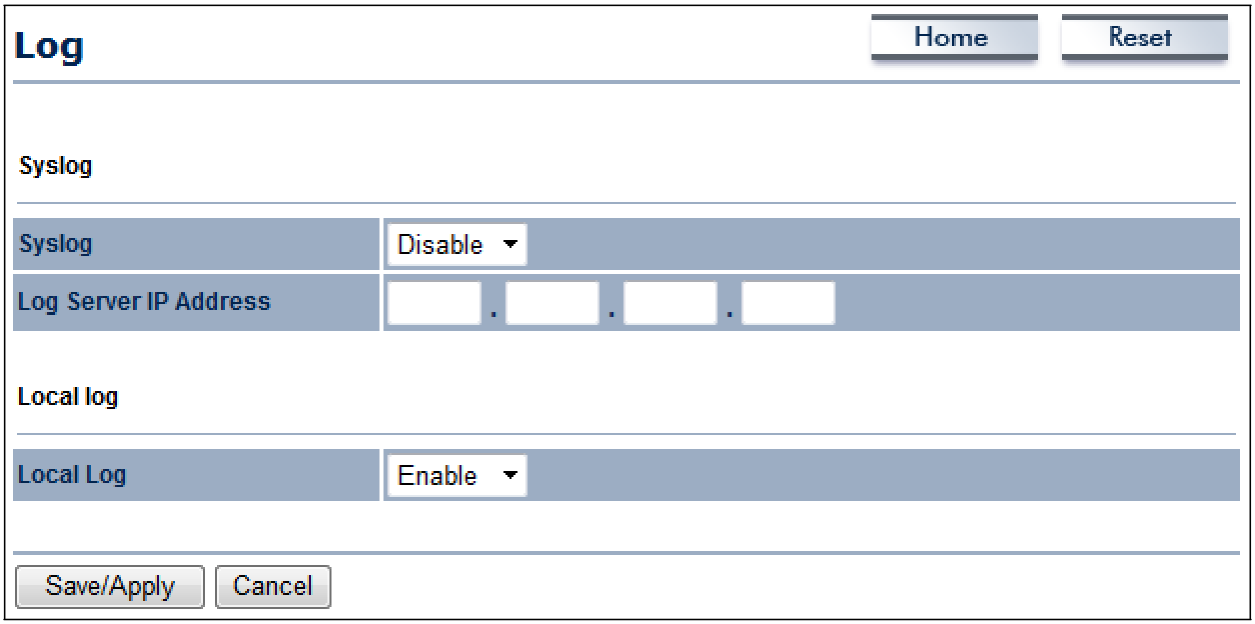
Manually Set Date and Time	Manually specify the date and time.
Automatically Get Date and Time	Select a time zone from the drop-down list and check whether you want to enter the IP address of an NTP server or use the default NTP server.
Save/Apply / Cancel	Click Save/Apply to apply the changes or Cancel to return previous settings.

NOTE

Clicking Save/Apply changes the setting immediately. You cannot undo the action.

11.7 Log

Click the Log link under the Management menu to display a list of events that are triggered on the OM2P-LC/OM2P-HS Ethernet and wireless interfaces. You can consult this log if an unknown error occurs on the system or when a report needs to be sent to the technical support department for debugging purposes.



Syslog

Syslog	Disable
Log Server IP Address	. . .

Local log

Local Log	Enable

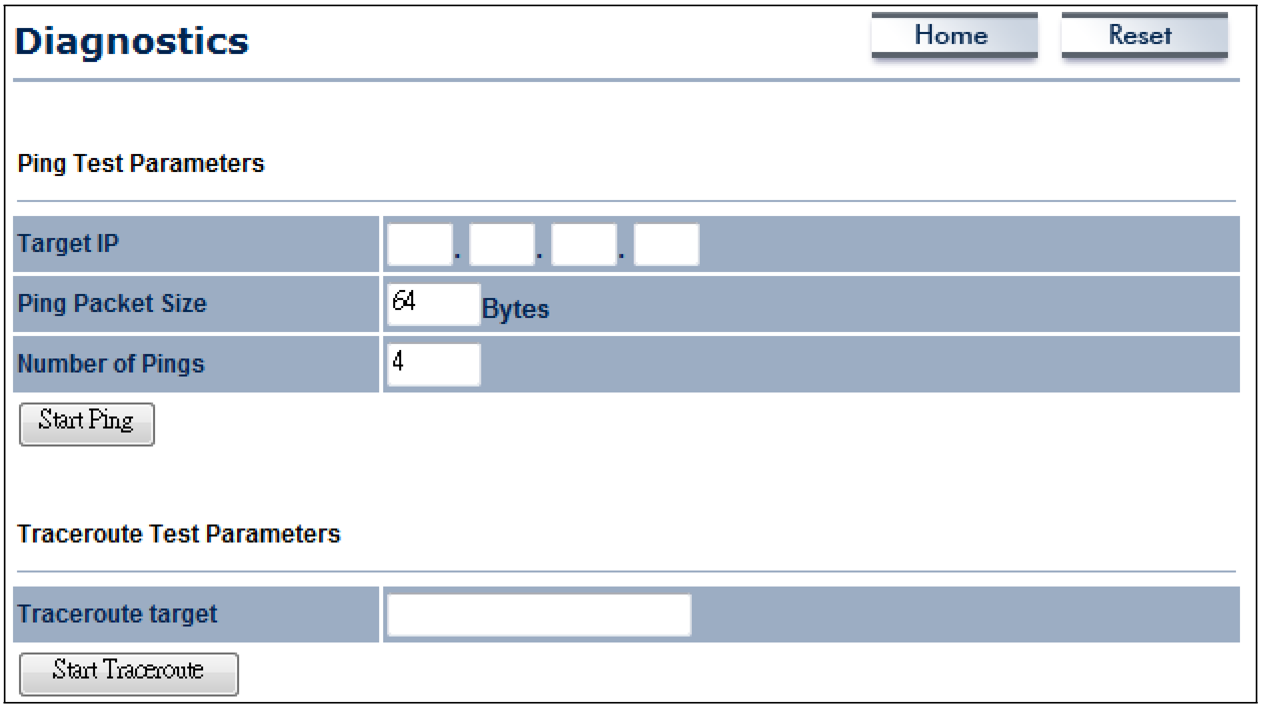
Syslog	Enable or disable the OM2Psyslog function.
Log Server IP Address	Enter the IP address of the log server.
Local Log	Enable or disable the local log service.
Save/Apply / Cancel	Click Save/Apply to apply the changes or Cancel to return previous settings.

NOTE

Clicking Save/Apply changes the settings immediately. You cannot undo the action.

11.8 Diagnostics

Click the Diagnostics link under the Management menu to ascertain connection quality and trace the routing table to the target.



Target IP	. . .
Ping Packet Size	64 Bytes
Number of Pings	4

Traceroute target	

Target IP	Enter the IP address you would like to search.
Ping Packet Size	Enter the packet size of each ping.
Number of Pings	Enter the number of times you want to ping.
Start Ping	Click Start Ping to begin pinging.
Traceroute Target	Enter an IP address or domain name you want to trace.
Start Traceroute	Click Start Traceroute to begin the trace route operation.

Chapter 12 Network Configuration Examples

This chapter provides step-by-step descriptions for using the OM2P-LC/OM2P-HS's operating modes. The

Access Point Mode's default configuration allows the OM2P-LC/OM2P-HS to act as a central unit of a WLAN or as a root device of a wired environment. Repeater mode and Mesh network mode are reserved for future configuration.

12.1 Access Point

Access Point	
Step1	Log in to the Web Configurator with your browser by entering the default IP address 192.168.1.1
Step2	Use site survey to scan channels available in nearby areas.
Step3	Select channel with less interferences.
Step4	Specify the SSID for your broadcast SSID and you can also configure multiple SSID at the same time.
Step5	Verify the VLAN identifier to separate services among clients
Step6	Set the authentication settings.
Step7	Click Apply to save all changes.

NOTE For more advanced settings, refer to the previous chapters.

Wireless Client	
Step1	Select the wireless mode with which you want to associate.
Step2	Use site survey to scan nearby Access Point and either select the Access Point to which you want to connect, or enter the SSID manually.
Step3	Configure the VLAN ID in your wireless device if available.
Step4	Select the appropriate authentication type and password.

NOTE Access Point Mode does not provide DHCP server, so the Wireless Client IP address must be configured manually using the same Local Area Network subnet.

12.2 Client Bridge Mode

Client Bridge Mode functions like a wireless dongle. It must connect to an Access Point/AP Router to join the network.

NOTE Refer to Chapter 13 to check the Access Point's configuration.

Client Bridge	
Step1	Log in to the Web Configurator with the default IP address 192.168.1.1
Step2	For Operation Mode, select Client Bridge from System Properties.
Step3	Use site survey to scan Access Points that are available in nearby areas.
Step4	Select the Access Point with which you want to associate.
Step5	Set up the authentication settings that match the Access Point's settings.
Step6	Click Apply to save all changes.

TIP The Client Bridge IP settings must match the Access Point's subnet.

12.3 WDS Bridge Mode

Use this feature to link multiple Access Points in a network. All clients associated with any Access Points can communicate with each other in an ad-hoc manner.

WDS Bridge	
Step1	Log in to the Web Configurator with the default IP address 192.168.1.1
Step2	For Operation Mode, select WDS Bridge from System Properties.
Step3	Select the channel you want to use.
Step4	Set up the authentication settings
Step5	Set up WDS Link Settings.
Step6	Specify the MAC address of the Access Point with which you want to connect.
Step7	Click Apply to save all changes.

NOTE Each WDS bridge device must use the same Subnet, Wireless Mode, Wireless Channel, and Security Setting.

12.4 Client Router

In Client Router Mode, the OM2P-LC/OM2P-HS's internal DHCP server allows LANs to automatically
generate an IP address to share the same Internet. Connect an Access Point/WISP wirelessly and connect to LANs using a wired connection.

NOTE Refer to Chapter 13 to check the Access Point's configuration.

Client Router	
Step1	Log in to the Web Configurator with the default IP address 192.168.1.1
Step2	For Operation Mode, select Client Router from System Properties.
Step3	Change your Local Area Network setting to Obtain an IP Address Automatically.
Step4	Use site survey to scan Access Points that are available in nearby areas.
Step5	Select the Access Point with you want to associate.
Step6	Set up authentication settings that match the Access Point's settings.
Step7	Set your WAN connection type using the WAN settings provided by your ISP.
Step8	Click Apply to save all changes.

NOTE Client Router's IP setting must match to the Access Point's subnet.

Chapter 13 Building a Wireless Network

With its ability to operate in various operating modes, your OM2P-LC/OM2P-HS is the ideal device around which you can build your WLAN. This appendix describes how to build a WLAN around your OM2P-LC/OM2P-HS using he device's operating modes.

13.1 Access Point Mode

In Access Point Mode, OM2P-LC/OM2P-HS behaves likes a central connection for stations or clients that support IEEE 802.11b/g/n networks. Stations and client must be configured to use the same SSID and security password to associate with the OM2P-LC/OM2P-HS. The OM2P-LC/OM2P-HS supports four SSIDs at the same time for secure guest access.

13.2 Access Point Mode with WDS Function

The OM2P-LC/OM2P-HS Access Point Mode also supports WDS functionality. This operating mode allows wireless connections to the OM2P-LC/OM2P-HS using WDS technology. In this mode, configure the MAC addresses in both Access Points to enlarge the wireless area by enabling WDS Link settings. WDS supports eight AP MAC addresses.

NOTE

Not every Access Point device supports WDS in Access Point Mode. As a result, to use WDS, we recommend you use the OM2P-LC/OM2P-HS.

13.3 Client Bridge Mode

In Client Bridge Mode, the OM2P-LC/OM2P-HS behaves like a wireless client that connects to an Access Point wirelessly and allows users to surf the Internet whenever they want. In this mode, use the OM2P-LC/OM2P-HS Site Survey to scan for Access Points within range. Then configure the OM2P-LC/OM2P-HS SSID and security password accordingly to associate with the Access Point. In this configuration, the station has a wired Ethernet connection to the OM2P-LC/OM2P-HS LAN port.

13.4 WDS Bridge Mode

In WDS Bridge Mode, the OM2P-LC/OM2P-HS can wirelessly connect different LANs by configuring the MAC address and security settings of each OM2P-LC/OM2P-HS device. Use this mode when two wired LANs located a small distance apart want to communicate with each other. The best solution is to use the OM2P-LC/OM2P-HS to wirelessly connect two wired LANs, as shown in the following figure. WDS Bridge Mode can establish 16 WDS links, creating a star-like network.

NOTE

WDS Bridge Mode is unlike Access Point. Access Points linked by WDS are using the same frequency channel, more Access Points connected together may lower throughput. Please be aware to avoid loop in your wireless connection, otherwise enable Spanning Tree Function.

13.5 Client Router Mode

In Client Router Mode, the OM2P-LC/OM2P-HS’s internal DHCP server allows a number of LANs to
automatically generate IP addresses to share the same Internet. In this mode, connect an AP/WISP wirelessly and connect to LANs via a wired connection.

13.6 RADIUS Connections

Remote Authentication Dial In User Service (RADIUS) authentication is available when configuring the OM2P-LC/OM2P-HS wireless advanced settings (see Chapter 8). Use this feature if you have a RADIUS server. WPA(TKIP), WPA2(AES), and WPA2 Mixed encryption types are also supported.

The following figure shows an example of a RADIUS configuration, where two OM2P-LC/OM2P-HS devices installed at different locations communicate with each other wirelessly. In this configuration, one OM2P-LC/OM2P-HS is configured for Access Point Mode and connected to a RADIUS server via a switch, while the other OM2P-LC/OM2P-HS is configured for Client Bridge Mode. The RADIUS server uses an authentication scheme such as PAP or CHAP to verify a user's identification, along with, optionally, other information related to the request, such as the user's network address or phone number, account status and specific network service access privileges. The RADIUS server then returns one of three responses to the OM2P-LC/OM2P-HS : Access Reject (user is denied access to all requested network resources), Access Challenge (requests additional information from the user such as a secondary password), PIN, token or card), or Access Accept (user is granted access).

Appendix A – Troubleshooting

This appendix provides problem-solving information you may find useful in case you need to troubleshoot your OM2P-LC/OM2P-HS. It also includes information about contacting technical support.

A.1 Problem Solving

Question	Answer
How do I reset the OM2P-LC/OM2P-HS?	There are two ways to reset the OM2P-LC/OM2P-HS, a hardware method and a software method. Both methods return the OM2P-LC/OM2P-HS to its factory default configuration. To use the hardware method, open the cover on the bottom panel of the OM2P-LC/OM2P-HS and find the Reset button (see section 2.1). Using a flat object such as a pencil, press the Reset button for approximately 10 seconds and then stop pressing. To use the software method, click Restore to
Why do I not see traffic pass after I connect the OM2P-LC/OM2P-HS to a PoE switch?	The OM2P-LC/OM2P-HS uses a proprietary PoE injector and will not work with standard 802.3af-compliant
What is the default IP address of the OM2P-	The default IP address is 192.168.1.1
I plugged the PoE to the second Ethernet port on the back of OM2P-LC/OM2P-HS but the unit is not on, how come?	You need to plug the Ethernet cable connect to PoE injector to the main LAN port. The secondary Ethernet port is just an additional LAN port for regular Ethernet connection such as IP camera
When I install the PoE connection to the OM2P-LC/OM2P-HS, what kind of PoE should I use?	The OM2P-LC/OM2P-HS uses a proprietary PoE injector and will not work with standard 802.3af-compliant
I want to use higher gain antennas on the OM2P-LC/OM2P-HS, but I don't know what	Use the antenna appropriate for the frequency. (2.4 GHz)
I want to buy a high-gain antenna for the OM2P-LC/OM2P-HS, but I don't know what type of antenna and RF connector to buy.	Use an antenna with a SMA connector to connect to the OM2P-LC/OM2P-HS.

A.2 Contacting Technical Support

If you encounter issues that cannot be resolved using this manual, please contact your vendor where you purchase the device. If you cannot contact your vendor, you may also contact EnGenius Customer Service department in the region where you purchased the device.

Before you contact your local EnGenius office, please prepare the following information:

Product model name and serial number

The place where you purchased the product

Warranty information

The date when you received the product

A brief description about the issue and the attempts you tried to resolve it

To contact EnGenius Customer Service office in the United States, please use either of the following methods:

Email: Support@EnGeniustech.com

Telephone: 1-888-735-7888

Appendix C – Glossary

Access Point

A base station in a WLAN that act as a central transmitter and receiver of WLAN radio signals.

Ad Hoc Network

A short-term WLAN framework created between two or more WLAN adapters, without going through an Access Point. An ad hoc network lets computers send data directly to and from one another. For an ad hoc network to work, each computer on the network needs a WLAN card installed configured for Ad Hoc mode.

Antenna

A device that sends and receives radio-frequency (RF) signals. Often camouflaged on existing buildings, trees, water towers or other tall structures, the size and shape of antennas are generally determined by the frequency of the signal they manage.

Authentication

A process that verifies the identity of a wireless device or end-user. A common form of authentication is to verify identities by checking a user name and password to allow network access.

Backbone

A high-speed line or series of connections that form a major pathway within a network.

Bandwidth

The part of the frequency spectrum required to transmit desired information. Each radio channel has a center frequency and additional frequencies above and below this carrier frequency that carry the transmitted information. The range of frequencies from the lowest to the highest used is called the bandwidth.

Bridge

A wireless device that connects multiple networks that are physically separate or use different media, but which use similar standards.

Bridge Mode

An Access Pointy in bridge mode can operate as a WLAN bridge that connects two wired network segments. The peer device also must be in bridge mode. This wireless bridge connection is equivalent to a Wireless Distribution System (WDS).

CHAP

Challenge Handshake Authentication Protocol. An alternative protocol that uses a challenge/response technique instead of sending passwords over the wire.

Collision

Interference resulting from two network devices sending data at the same time. The network detects the collision of the two transmitted packets and discards both of them.

Coverage

The region within which a paging receiver can reliably receive the transmission of paging signals.

Coverage Area

The geographical area that can be served by a mobile communications network or system.

Coverage Hole

An area within the radio coverage footprint of a wireless system where the RF signal level is below the design threshold. Physical obstructions such as buildings, foliage, hills, tunnels, and indoor parking garages are usually the cause of coverage holes.

Cyclic Redundancy Check (CRC)

A common technique for detecting data transmission errors.

Dynamic Host Configuration Protocol (DHCP)

A protocol that assigns temporary IP addresses automatically to client stations logging onto an IP network, so the IP addresses do not have to be assigned manually. The OM2P-LC/OM2P-HS contains an internal DHCP server that automatically allocates IP address using a user-defined range of IP addresses. Dead Spot

An area within the coverage area of a WLAN where there is no coverage or transmission falling off. Electronic interference or physical barriers such as hills, tunnels, and indoor parking garages are usually the cause of dead spots. See also coverage area.

802.11

A category of WLAN standards defined by the Institute of Electrical and Electronics Engineers (IEEE).

802.11a

An IEEE standard for WLANs that operate at 5 GHz, with data rates up to 54 Mbps.

802.11b

An IEEE standard for WLANs that operate at 2.4 GHz, with data rates up to 11 Mbps.

802.11g

An IEEE standard for WLANs that operates at 2.4 GHz, with data rate of 300 Mbps. The new standard also raises the encryption bar to WPA2. The 40 HT option can be added to increase the data rate.

Encryption

Translates data into a secret code to achieve data security. To read an encrypted file, you must have a secret key or password for decryption. Unencrypted data is referred to as plain text; encrypted data is referred to as cipher text

ESS ID

The unique identifier for an ESS. All Access Points and their associated wireless stations in the same group must have the same ESSID.

Footprint

Geographical areas where an entity is licensed to broadcast its signal.

Gateway

A computer system or other device that acts as a translator between two systems that use different communication protocols, data formatting structures, languages, and/or architecture.

HT mode

In the 802.11n system, two new formats, called High Throughput (HT), are defined for the Physical Layer, Mixed Mode, and Green Field. If a system runs 40 HT, two adjacent 20 MHz channels are used. The larger 40 MHz bandwidth can provide better transmit quality and speed.

Keys

Like passwords, keys open (decrypt) and close (encrypt) messages. While many encryption algorithms are commonly known and public, the key must be kept secret.

Local-Area Network (LAN)

A small data network covering a limited area, such as a building or group of buildings. Most LANs connect workstations or personal computers. LANs let many users share devices such as printers as well as data. LANs also facilitate communication through e-mail or chat sessions.

Media Access Control (MAC) Address

Address associated with every hardware device on the network. Every 802.11 wireless device has its own specific MAC address. This unique identifier is hard-coded into the device and can be used to provide security for WLANs. When a network uses a MAC table, only the 802.11 radios that have their MAC addresses added to that network's MAC table can access the network.

Network Address Translation (NAT)

An Internet standard that lets a LAN use one set of IP addresses for internal traffic and a second set of addresses for external traffic.

Network Time Protocol (NTP)

A protocol that lets devices synchronize their time with a time server. NTP uses TCP or UDP port 123 by default.

Passphrase

A text string that automatically generates WEP keys on wireless client adapters.

Power Over Ethernet (PoE)

A PoE provides power to PoE-enabled devices using an 8-pin CAT 5 Ethernet cable, eliminating the need for a power source.

Preamble

Synchronizes transmissions in a WLAN. The preamble type defines the length of the Cyclic Redundancy Check block for communication between a device and roaming wireless stations.

Protected Extensible Authentication Protocol (PEAP)

Authentication protocol of IEEE 802.1x used to send authentication data and passwords over 802.11 WLANs.

Quality of Service (QoS)

A network’s ability to deliver data with minimum delay. QoS also refers to the networking methods used to provide bandwidth for real-time multimedia applications.

Remote Authentication Dial-In User Service (RADIUS)

Networking protocol that provides centralized authentication, authorization, and accounting management for computers to connect and use a network service. Because of its broad support and ubiquitous nature, the RADIUS protocol is often used by ISPs and enterprises to manage access to the Internet or internal networks, WLANs, and integrated e-mail services.

Service Set Identifier (SSID)

Name of a WLAN. All wireless devices on a WLAN must use the same SSID to communicate with each other.

Simple Network Management Protocol (SNMP)

An Internet-standard protocol for managing devices on IP networks.

Snooping

Passively watching a network for data, such as passwords, that can be used to benefit a hacker.

Temporal Key Integrity Protocol (TKIP)

An encryption protocol that uses 128-bit keys. Keys are dynamically generated and distributed by the authentication server. TKIP regularly changes and rotates encryption keys, with an encryption key never being used twice.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A protocol that allows communications over and between networks. TCP/IP is the basis for Internet communications.

Weighted Fair Queuing (WFQ)

WFQ services queues are based on priority and queue weight. Queues with larger weights get more service than queues with smaller weights. This highly efficient queuing mechanism divides available bandwidth across different traffic queues.

Wired Equivalent Privacy (WEP)

Security protocol that provides a WLAN with a level of security and privacy comparable to that of a wired LAN. WEP encrypts data sent between wired and WLANs to keep transmissions private.

Wireless Local-Area Network (WLAN)

WLANs use RF technology to send and receive data wirelessly in a certain area. This lets users in a small zone send data and share resources such as printers without using cables to physically connect each computer.

Wi-Fi Protected Access (WPA)

A subset of the IEEE 802.11i standard. WPA applies IEEE 802.1x and Extensible Authentication Protocol (EAP) to authenticate wireless clients using an external RADIUS database. WPA uses Temporal Key Integrity Protocol (TKIP), Message Integrity Check (MIC), and IEEE 802.1x to encrypt data. See also WPA-PSK (WPA -Pre-Shared Key).

Wi-Fi MultiMedia (WMM)

Part of the IEEE 802.11e QoS enhancement to the Wi-Fi standard that ensures quality of service for multimedia applications in WLANs.

Wireless Client Supplicants

Software that runs on an operating system, instructing the wireless client how to use WPA.

WPA -Pre-Shared Key (WPA-PSK)

WPA-PSK requires a single (identical) password entered into each Access Point, wireless gateway, and wireless client. A client is granted access to a WLAN if the passwords match.

WPA2

A wireless security standard that defines stronger encryption, authentication, and key management than WPA. It includes two data encryption algorithms, Temporal Key Integrity Protocol (TKIP) and Advanced Encryption Standard (AES), in the Counter mode with Cipher block chaining Message authentication Code Protocol (CCMP).

Wireless Distribution System (WDS)

A technology that lets Access Points communicate with one another to extend the range of a WLAN.

Appendix D – FCC Interference Statement

Federal Communication Commission Interference Statement

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

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.