

EnGenius® X-TRA RANGE®



ENS200 LONG RANGE WIRELESS 11N OUTDOOR CB / AP
User Guide

V1.0

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Conventions

The following conventions are used to give the user additional information about specific procedures or content. It is important to pay attention to these conventions as they provide information to prevent damage to equipment or personal injury.

General Conventions

The following general conventions are used in this document.



CAUTION!

CAUTIONS APPEAR BEFORE THE TEXT IT REFERENCES. CAUTIONS APPEAR IN CAPITAL LETTERS TO EMPHASIZE THAT THE MESSAGE CONTAINS VITAL HEALTH AND SAFETY INFORMATION.



WARNING!

Warning information appears before the text it references to emphasize that the content may prevent damage to the device or equipment.



Important:

Indicates information that is important to know for the proper completion of a procedure, choice of an option, or completing a task.



Note:

Indicates additional information that is relevant to the current process or procedure.



Example:

Indicates information used to demonstrate or explain an associated concept.

N/A:

Indicates that a component or a procedure is not applicable to this model.

Prerequisite:

Indicates a requirement that must be addressed before proceeding with the current function or procedure.

Typographical Conventions

The following typographical conventions are used in this document:

Italics

Indicates book titles, directory names, file names, path names, and program/process names.

Constant width

Indicates computer output shown on a computer screen, including menus, prompts, responses to input, and error messages.

Constant width bold

Indicates commands lines as entered on the computer. Variables contained within user input are shown in angle brackets (< >).

Bold

Indicates keyboard keys that are pressed by the user.

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Product Overview

Chapter 1

1.1 Package Contents

ITEM	QUANTITY
ENS200 Wireless Access Point / Client Bridge	1
PoE injector (EPE-24R)	1
12V, 1A Power Adaptor	1
Ethernet Cable	1
Mast Strap	1
Quick Installation Guide	1
User CD (with user manual)	1
Technical Support Card	1

1.2 Product Overview

Thank you for choosing ENS200. The ENS200 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 ENS200 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), 64/128/156 bit WEP Encryption, and IEEE 802.1x with RADIUS.

Key Features

- High-speed data rates up to 150 Mbps make the ENS200 ideally suited for handling heavy data payloads such as MPEG video streaming
- High output power up to 26 dBm delivers superior range and coverage
- 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

Benefits

The ENS200 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.

Technical Specification

Physical Interface

- 2x10/100Mbps LAN Ports
- Reset Button

Wireless Specification

- IEEE 802.11 B/G/N, 150Mbps Wireless Speed
- Frequency bands: 2.4Ghz

Hardware Specification

- Dimension: 186mm x 100mm x 29mm (L x W x H)
- Power Adapter: 12V/1A
- Passive PoE
- Encryption: WEP/WPA/WPA2/TKIP/AES
- Hidden ESSID
- MAC Address Filtering
- PPTP/IPSec/L2TP Pass-through
- Remote Control/Firmware Upgrade
- Backup/Restore Setting
- DHCP Server (Client Router mode)
- NAT/NAPT (Client Router mode)

- Port Forwarding/Mapping/Virtual Server (Client Router mode)
- Port Triggering (Client Router mode)
- WAN Type: PPPoE/PPTP/L2TP (Client Router mode)

1.3 Product Layout

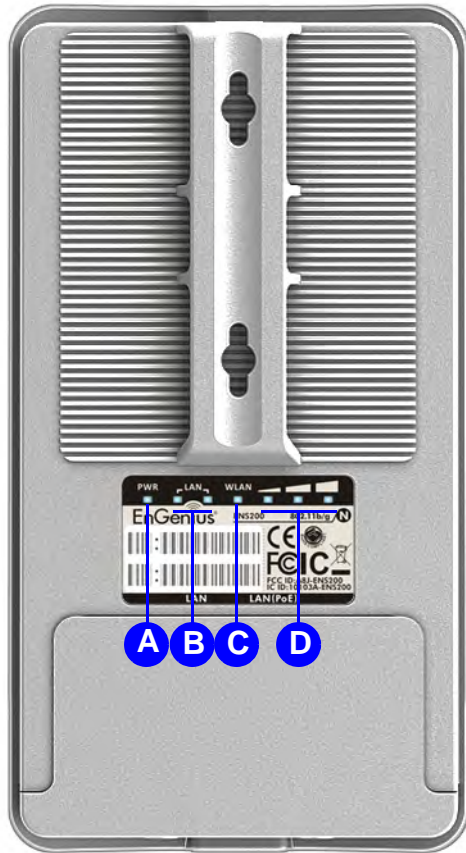
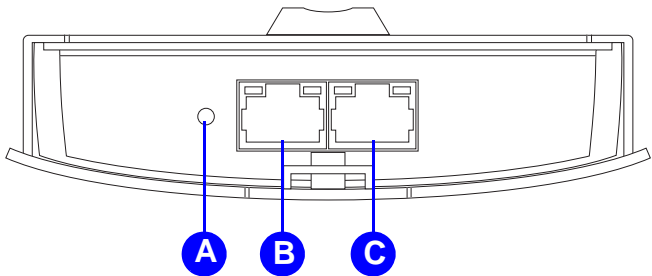


Figure 1-1: Back Panel View

BACK PANEL VIEW		DESCRIPTION
A	Power LED	OFF = ENS200 is not receiving power ON = ENS200 is receiving power
B	LAN (2) LEDs	OFF = ENS200 is not connected to the network. ON = ENS200 is connected to the network, but not sending or receiving data Blink = ENS200 is sending or receiving data
C	WLAN LED	(Access Point or Client Bridge Mode) OFF = ENS200 radio is off and the device is not sending or receiving data over the wireless LAN. ON = ENS200 radio is on, and the device is not sending or receiving data over the wireless LAN. Blinking = ENS200 radio is on, and the device is sending or receiving data over the wireless LAN.
D	Signal Indicator LED	(Access Point or Client Bridge Mode) Green - Signal is good Orange - Signal is normal Red - Signal is weak or non-existent



BOTTOM VIEW		DESCRIPTION
A	Reset Button	To reset to factory settings, press button for > 10 seconds.
B	LAN Connector	To configure the ENS200, connect to an Ethernet adapter in a computer. For more information
C	PoE LAN Connector	The PoE interface allows the ENS200 to be powered using the supplied PoE injector

Installation

Chapter 2

2.1 System Requirements

To install the ENS200, you need the following:

- Computer (Windows, Linux, OSX Operating System)
- CD-ROM *
- Web Browser (Internet Explorer, FireFox, Chrome, Safari)
- Network Interface Card with an open RJ-45 Ethernet Port
- Wi-Fi Card or USB Wi-Fi Dongle (802.11 B/G/N) **
- An existing router or access point (AP) with SSID broadcast
- CAT5 Ethernet Cables



Note:

* Windows Only: Using ENS200 Setup CD

** Optional

2.2 Installing the Device

Installing the ENS200 on a pole or wall optimizes the wireless access range.

**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 ENS200.

Pre-Installation Guidelines

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

- The ENS200 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.

Installing the Device

To install the ENS200, use the following procedure to mount the device on a pole and refer to the figure below.

1. Remove the bottom cover protecting the RJ-45 connectors.
2. Insert an Ethernet cable into the RJ-45 port labeled LAN.
3. Install the bottom cover to protect the RJ-45 connectors.
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 ENS200. USING A DIFFERENT POWER ADAPTER MIGHT DAMAGE THE ENS200.

5. Plug the other end of the Ethernet cable into the PoE port of the PoE injector.

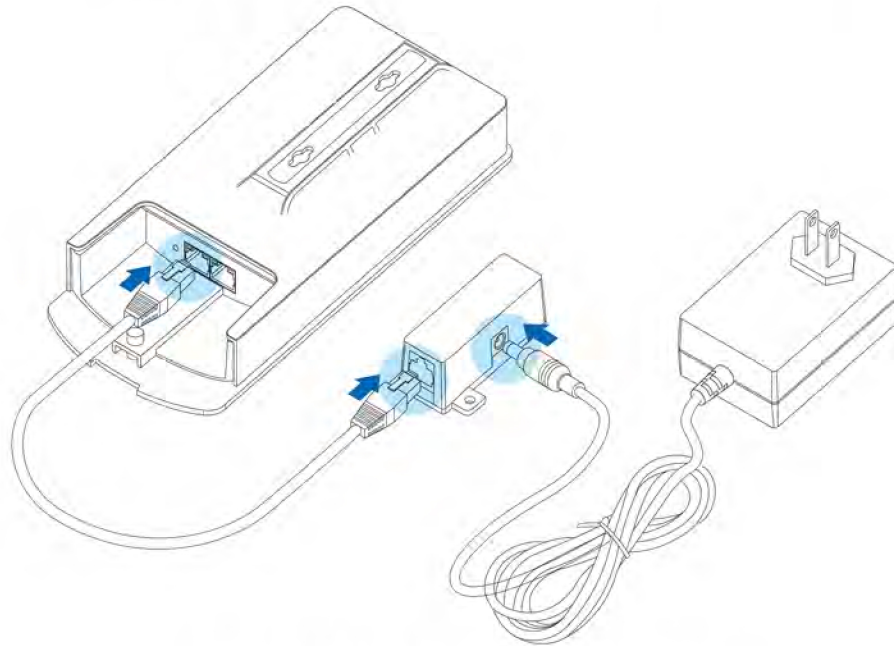


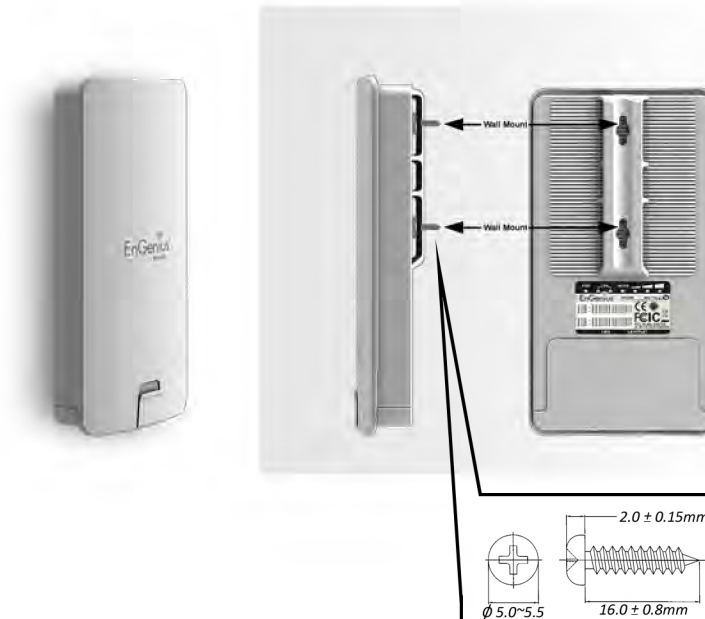
Figure 2-1: Installing the ENS200

6. Turn over the ENS200. Then insert the mast strap through the middle hole of the ENS200. Use a screwdriver to unlock the pole-mounting ring putting it through the ENS200.
7. Mount the ENS200 securely to the pole by locking the strap tightly.

This completes the installation procedure.

Wall Mount Installation

ENS200 allow user to install unit via wall mounting.



Web Configuration

Chapter 3

3.1 Logging In

The ENS200 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.

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 ENS200 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 ENS200 LAN IP address, enter the correct IP address.

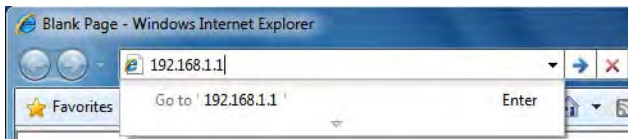


Figure 3-1: Web Browser Address Bar

3. When the Windows Security window appears, enter **admin** for the username in the top field and **admin** for the password in the bottom field.



Figure 3-2: Windows Security Login Dialog

4. Click OK.

You are now ready to use the instructions in the following chapters to configure the ENS200.

Best Practices

Perform the following procedures regularly to make the ENS200 more secure and manage the ENS200 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 ENS200 username cannot be changed. For more information, see *Configuring Administrator Account*.
- **Back up the configuration** and be sure you know how to restore it. Restoring an earlier working configuration can be useful if the ENS200 becomes unstable or crashes. If you forget your password, you will have to reset the ENS200 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 ENS200. You can simply restore your last configuration. For more information, For more information, see *Configuring Administrator Account*.

Basic Network Settings

Chapter 4

4.1 System Status

View the summary of the current system status including system (hardware/software version, date/time), wired network (LAN) and wireless network (WLAN) information.

4.1.1 Using Save/Load

Save and apply the settings shown in the Unsaved changes list, or cancel the unsaved changes and revert to the previous settings that were in effect.



The screenshot displays a web interface for network settings. At the top right, there are two buttons: "Home" and "Reset". Below them is a section titled "Save/Reload". Underneath this title is a box labeled "Unsaved changes list" containing the following text:

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

Below the list is a red warning message: **Caution: Network Setting changed, redirect IP to 192.168.1.1**. At the bottom of the interface are two buttons: "Save & Apply" and "Revert".

4.1.2 Viewing System Information

Displays status information about the current operating mode.

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

System Information	
Device Name	ENS200
Ethernet Main MAC Address	00:02:6F:E4:61:C1
Ethernet Secondary MAC Address	00:02:6F:E4:61:C1
Wireless MAC Address	00:02:6F:E4:61:C0
Country	N/A
Current Time	Fri Aug 31 09:29:44 UTC 2012
Firmware Version	1.1.13

LAN Settings shows Local Area Network settings such as the LAN IP address, subnet mask, and MAC address.

LAN Settings	
IP Address	192.168.1.153
Subnet Mask	255.255.255.0
DHCP Server	Enabled
RX(Packets)	9.19238 KB (77 PKts.)
TX(Packets)	38.4756 KB (93 PKts.)

WAN Settings shows Wide Area Network settings such as the MAC address, connection type, connection status, LAN IP address, subnet mask, primary and secondary DNS.

WAN Settings	
MAC Address	00:02:6F:E4:61:C0
Connection Type	DHCP
Connection Status	Down
IP Address	
IP Subnet Mask	255.255.255.0
Primary DNS	
Secondary DNS	
RX(Packets)	0 B (0 PKts.)
TX(Packets)	10.3838 KB (217 PKts.)

Current Wireless Settings shows wireless information such as frequency and channel. Since the ENS200 supports multiple-SSIDs, information about each SSID, such as its ESSID and security settings, are displayed.

Current Wireless Settings

Operation Mode	Client Router
Wireless Mode	IEEE 802.11b/g/n Mixed
Channel Bandwidth	20/40 MHz
Frequency/Channel	2.452 GHz (Channel 9)
Wireless Network Name (SSID)	AP SSID
Security	None
Distance	1 Km
RX(Packets)	0 B (0 PKts.)
TX(Packets)	10.3838 KB (217 PKts.)

4.1.3 Viewing Wireless Client List

Client List

[Home](#)[Reset](#)

SSID:#	MAC Address	TX(Bytes)	RX(Bytes)	RSSI(dBm)	Kick and Ban
--------	-------------	-----------	-----------	-----------	--------------

[Refresh](#)

Displays a list of clients associated to the ENS200, along with the MAC addresses and signal strength for each client.

Click the `Refresh` button to update the client list.

4.1.4 Viewing System Log

Home
Reset

System Log

Show log type All

```

Aug 31 04:31:09 ENS200 user.warn kernel: ar5416SetSwitchCom, ant switch com = 0xa900120
Aug 31 04:31:06 ENS200 daemon.warn dnsmasq[4012]: failed to access /tmp/resolv.conf: No such file or directory
Aug 31 04:31:06 ENS200 daemon.warn dnsmasq[1573]: failed to access /tmp/resolv.conf: No such file or directory
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: using local addresses only for domain lan
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: started, version 2.52 cachesize 150
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: read /etc/hosts - 1 addresses
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: compile time options: IPv6 GNU-getopt no-DBus no-I18N DHCP TFTP
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[1573]: exiting on receipt of SIGTERM
Aug 31 04:31:04 ENS200 user.info kernel: device ath0 entered promiscuous mode
Aug 31 04:31:04 ENS200 user.info kernel: br-lan: topology change detected, propagating
Aug 31 04:31:04 ENS200 user.info kernel: br-lan: port 3(ath0) entering learning state
Aug 31 04:31:04 ENS200 user.info kernel: br-lan: port 3(ath0) entering forwarding state
Aug 31 04:30:59 ENS200 user.warn kernel: DES SSID SET=AP SSID
Aug 31 04:30:59 ENS200 user.warn kernel:
Aug 31 04:30:58 ENS200 user.warn kernel: wlan_vap_create : exit. devhandle=0x816cc260, opmode=IEEE80211_M_STA, flags=0x3.
Aug 31 04:30:58 ENS200 user.warn kernel: wlan_vap_create : enter. devhandle=0x816cc260, opmode=IEEE80211_M_STA, flags=0x3
Aug 31 04:30:58 ENS200 user.notice root: ATH-LSDK:loaddriver
Aug 31 04:30:58 ENS200 user.err kernel: VAP device ath0 created
Aug 31 04:30:57 ENS200 user.warn kernel: ath_get_caps[4933] rx chainmask mismatch actual 1 sc_chainmak 0
Aug 31 04:30:57 ENS200 user.warn kernel: ath_get_caps[4908] tx chainmask mismatch actual 1 sc_chainmak 0
Aug 31 04:30:57 ENS200 user.warn kernel: __ath_attach: Set global_scn[0]
Aug 31 04:30:57 ENS200 user.warn kernel: UAPSDMinfree = 0
          
```

Refresh
Clear

The ENS200 automatically logs events to internal memory.

Note:

The oldest events are deleted from the log when memory is full.

Click the **Refresh** button to update the client list or the **Clear** button to remove all events.

4.1.5 Viewing Connection Status

System Log

Home

Reset

Show log type All

```

Aug 31 04:31:09 ENS200 user.warn kernel: ar5416SetSwitchCom, ant switch com = 0xa900120
Aug 31 04:31:06 ENS200 daemon.warn dnsmasq[4012]: failed to access /tmp/resolv.conf: No such file or directory
Aug 31 04:31:06 ENS200 daemon.warn dnsmasq[1573]: failed to access /tmp/resolv.conf: No such file or directory
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: using local addresses only for domain lan
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: started, version 2.52 cachesize 150
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[4012]: read /etc/hosts - 1 addresses
Aug 31 04:31:06 ENS200 daemon.info dnsmasq[1573]: exiting on receipt of SIGTERM
Aug 31 04:31:04 ENS200 user.info kernel: device ath0 entered promiscuous mode
Aug 31 04:31:04 ENS200 user.info kernel: br-lan: topology change detected, propagating
Aug 31 04:31:04 ENS200 user.info kernel: br-lan: port 3(ath0) entering learning state
Aug 31 04:31:04 ENS200 user.info kernel: br-lan: port 3(ath0) entering forwarding state
Aug 31 04:30:59 ENS200 user.warn kernel: DES SSID SET=AP SSID
Aug 31 04:30:59 ENS200 user.warn kernel:
Aug 31 04:30:58 ENS200 user.warn kernel: wlan_vap_create : exit. devhandle=0x816cc260, opmode=IEEE80211_M_STA, flags=0x3.
Aug 31 04:30:58 ENS200 user.warn kernel: wlan_vap_create : enter. devhandle=0x816cc260, opmode=IEEE80211_M_STA, flags=0x3
Aug 31 04:30:58 ENS200 user.notice root: ATH-LSDK:loaddriver
Aug 31 04:30:58 ENS200 user.err kernel: VAP device ath0 created
Aug 31 04:30:57 ENS200 user.warn kernel: ath_get_caps[4933] rx chainmask mismatch actual 1 sc_chainmak 0
Aug 31 04:30:57 ENS200 user.warn kernel: ath_get_caps[4908] tx chainmask mismatch actual 1 sc_chainmak 0
Aug 31 04:30:57 ENS200 user.warn kernel: __ath_attach: Set global_scn[0]
Aug 31 04:30:57 ENS200 user.warn kernel: UAPSDMinfree = 0

```

Refresh

Clear

Displays the current status of the network. The information shown includes network type, SSID, BSSID, connection status, wireless mode, current channel, security, data rate, noise level, and signal strength.

Click the **Refresh** button to update the client list or the **Clear** button to remove all events.

4.1.6 Viewing DHCP Client Table

DHCP Client List

[Home](#)[Reset](#)

MAC addr	IP	Host Name	Expires	Revoke	Reserve
----------	----	-----------	---------	--------	---------

[Refresh](#)

Displays the clients that are associated to the ENS200 through DHCP. The MAC addresses and signal strength for each client are also shown.

Click the `Refresh` button to update the client list.

4.1.7 Viewing WDS Link List

WDS Link Status

[Home](#)[Reset](#)

WDS Link ID	MAC Address	Link Status	RSSI (dBm)
-------------	-------------	-------------	------------

[Refresh](#)

Displays the clients that are associated to the ENS200 through WDS. The MAC addresses, link status and signal strength for each client are also shown.

Click the `Refresh` button to update the client list.