

LP-348



LP-Yagy2415



# LANPRO

## LP-510G/550G 54M Wireless Adapter

PCMCIA/PCI

### User Guide

Ver:2.0

LP-1518



LP-5P



LP-5420G



WWW.LANPRO.COM

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**Infrastructure Network** - An infrastructure network is a group of computers or other devices, each with a wireless adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.**Spread Spectrum** - Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

**SSID** - A Service Set Identification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name. See also Wireless Network Name and ESSID.

**WEP** (Wired Equivalent Privacy) - A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.

**Wi-Fi** - A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see <http://www.wi-fi.net>), an industry standards group promoting interoperability among 802.11b devices.

**WLAN** (Wireless Local Area Network) - A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.

**WPA** (Wi-Fi Protected Access) - A wireless security protocol use TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

#### Appendix C: Contact Information

For help with the Installation or operation of the LANPRO LP-510G/LP-550G 54M Wireless Adapter, please contact us.

E-mail: [support@lan-products.com](mailto:support@lan-products.com)

Website: <http://www.lan-products.com>

Environmental and Physical	
Operating Temp.	0°C - 40°C (32°F-104°F)
Storage Temp.	-40°C - 70°C (-40°F 158°F)
Humidity	10% - 95% RH, Non-condensing
Dimensions (WxDxH)	4,5x2,1x0,2in. (115x54x5mm) (LP-510G) 5,2x4,8x0,9in. (113x121x22mm) (LP-550G)

## Appendix B: Glossary

**2x to 3x eXtended Range WLAN Transmission Technology** - The WLAN device with 2x to 3x eXtended Range™ WLAN transmission technology make its sensitivity up to 105 dB, which gives users the ability to have robust, longer-range wireless connections. With this range-enhancing technology, a 2x to 3x eXtended Range™ based client and access point can maintain a connection at as much as three times the transmission distance of traditional 802.11b and 802.11g products, for a coverage area that is up to nine times greater. A traditional 802.11b and 802.11g product transmission distance is about 300m, A LANPRO 2x to 3x eXtended Range™ based client and access point can maintain a connection transmission distance may be up to 830m.

**802.11b** - The 802.11b standard specifies a wireless product networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.

**802.11g** - specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.

**Ad-hoc Network** - An ad-hoc network is a group of computers, each with a wireless adapter, connected as an independent 802.11 wireless LAN. Ad-hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad-hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.

**DSSS** (Direct-Sequence Spread Spectrum) - DSSS generates a redundant bit pattern for all data transmitted. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).

**FHSS** (Frequency Hopping Spread Spectrum) - FHSS continuously changes (hops) the carrier frequency of a conventional carrier several times per second according to a pseudo-random set of channels. Because a fixed frequency is not used, and only the transmitter and receiver know the hop patterns, interception of FHSS is extremely difficult.

## Package Contents

The following contents should be found in your box:  
 One LP-510G/LP-550G Wireless Adapter  
 Quick Installation Guide  
 One Resource CD for LP-510G/LP-550G, including:  
 • LANPRO Wireless Client Utility (LWCU) and Drivers  
 • User Guide  
 • Other Helpful Information

**Note:** If any of the listed contents are damaged or missing, please contact the retailer from whom you purchased the LP-510G/LP-550G Wireless Adapter for assistance.

## Chapter 1: Introduction

### 1.1 Overview of the product

The LANPRO 54M Wireless Adapter LP-510G/LP-550G gives you the flexibility to install your PC or notebook PC in the most convenient location available, without the cost of running network cables.

The adapter's auto-sensing capability allows high packet transfer rate of up to 54Mbps for maximum throughput, or dynamic range shifting to lower speeds due to distance or operating limitations in an environment with a lot of electromagnetic interference. It can also interoperate with all 11Mbps wireless (802.11b) products. Your wireless communications are protected by up to 152-bit WEP and WPA encryption for high security.

It adopts 2x to 3x eXtended Range™ WLAN transmission technology so that transmission distance is 2-3 times of traditional 11g/b solutions, up to 855.36m tested in China. Transmission range is extended to 4-9 times.

### 1.2 Features

Complies with IEEE802.11g, IEEE802.11b standards  
 Adopts 2x to 3x eXtended Range™ wireless LAN transmission technology  
 Supports WPA/WPA2 data security, IEEE802.1x authentication, TKIP/AES encryption, 64/128/152-bit WEP encryption  
 Supports 54/48/36/24/18/12/9/6Mbps or 11/5.5/3/2/1Mbps wireless LAN data transfer rates  
 Provides 32-bit PCI interface (LP-550G) or 32-bit CardBus interface (LP-510G)  
 Supports Ad-Hoc and Infrastructure modes  
 Supports roaming between access points when configured in Infrastructure mode  
 Ease to configure and provides monitoring information  
 Supports Windows 2000, XP  
 Internal Antenna (LP-510G)

### 1.3 LED Status

#### 1.3.1 LP-510 LED Indications

LED Indications	Status	Working Status
Status Green	Intermittently	The Adapter is in an electricity saving status
Activity Green	Not lit	
Status Green	Lit	The adapter is on wake up status
Activity Green	Not lit	
Status Green	Flashing Alternately	The adapter is trying to scan a networking connection.
Activity Green	Flashing Alternately	
Status Green	Intermittently	The adapter is already connected but is not transmitting or receiving data
Activity Green	Intermittently	
Status Green	Flashing	The adapter is transmitting or receiving data
Activity Green	Flashing	

#### 1.3.2 LP-550 LED Indications

LED Indications	Status	Working Status
Status	Intermittently	The adapter is in an electricity saving status or the adapter is already connected but is not transmitting or receiving data
Status Green	Lit	The adapter is on wake up status.
Status Green	Flashing	The adapter is transmitting and receiving data

## Chapter 2: Installation Guide

### 2.1 Hardware Installation

#### 2.1.1 LP-550G Hardware Installation

To install the adapter, follow these steps listed below:

1. Turn off your desktop PC and disconnect the power.
2. Open your PC case and locate an available PCI slot on the motherboard. Remove the metal slot cover on the back of the PC. Check with your computer manufacturer for instructions if needed.
3. Slide the PCI Adapter into the PCI slot. Make sure that all of its pins are touching the slot's contacts. Once the adapter is firmly in place, secure its fastening tab to your PC's chassis with a mounting screw. Then, close your PC case.
4. Reconnect your PC's power and turn on your desktop PC.

#### 2.1.2 LP-510G Hardware Installation

To install the adapter, follow these steps listed below:

1. Locate an available CardBus slot on your laptop.
2. With the connector pin end facing the CardBus slot and the label facing up, slide the Adapter into the CardBus slot until it locks in place.
3. The Status LED should Intermittent flashing when the Adapter is installed correctly.

### 3.3.1 Check Driver Information

The Adapter Information contains general information about the wireless network adapter and the Network Driver Interface Specification (NDIS) driver. Access the adapter information from the Diagnostics tab.

Card Name - The name of the wireless network adapter.

MAC Address - The MAC address of the wireless network adapter.

Driver - The driver name and path of the wireless network adapter driver.

Driver Version - The version of the wireless network adapter driver.

Driver Date - The creation date of the wireless network adapter driver.

Client Name - The name of the client computer.

### 3.3.2 Check Receive and Transmit Statistical Information

The Advanced Statistics show receiving and transmitting statistical information for the following receive and transmit diagnostics for frames received by or transmitted to the wireless network adapter.

Advanced Statistics			
<b>Transmit</b>			
Frames Transmitted OK:	630	RTS Frames:	24
Frames Retried:	27	CTS Frames:	0
Frames Dropped:	1	No CTS Frames:	24
No ACK Frames:	116	Retried RTS Frames:	24
ACK Frames:	630	Retried Data Frames:	27
<b>Receive</b>			
Beacons Received:	5624	Authentication Time-Out:	0
Frames Received OK:	556	Authentication Rejects:	0
Frames Received with Errors:	630	Association Time-Out:	0
CRC Errors:	2976	Association Rejects:	0
Encryption Errors:	0	Standart MIC OK:	0
Duplicate Frames:	5	Standart MIC Errors:	0
AP Mismatches:	0	CKIP MIC OK:	0
Data Rate Mismatches:	0	CKIP MIC Errors:	0

Figure 3-13 Advanced Statistics

## Appendix A: Specifications

Normal	
Interface	LP-510G: 32-bit CardBus LP-550G: 32-bit PCI
Standards	IEEE802.11b; IEEE802.11g
Operating System	Windows 2000, XP
Transmission distance extended	Indoor up to 100m, outdoor up to 300m (Standard Range WLAN transmission technology, it is limited to the environment)
Radio Data Rate (Rate Sensing)	54/48/36/24/18/12/9/6/ Mbps or 11/5,5/3/2 Mbps. (Auto)
Modulation 24m	1M DBPSK; 2M DQPSK; 5,5M, 11M CCK; 6M, 9M, 12M, 18M, 36M, 48M, 54M, OFDM;
Media Acces	CSMA/CA with ACK
Protocol	
Transmit Power	18dB (Typical)
Data Security	WPA/WPA2; 64/128//152-bit WEP, TKIP/AES
Frequency	2,4 - 2,4835GHz
Spread Spectrum	Direct Sequence Spread Spectrum (DSSS)

### 3.2.7 Auto Profile Selection Management

The auto selection feature allows the wireless adapter to automatically select a profile from the list of profiles and use it to connect to the network. To add a new profile into the Auto Selected Profiles list, please follow these steps.

1. On the Profile Management tab, click Order Profiles

2. The Auto Profiles Selection management window will appear, with a list of all created profiles in the Available Profiles box.

3. Highlight the profiles to add to auto profile selection, and click Add. The profile will appear in the Auto Selected Profiles box.

4. Highlight a profile in the Auto Selected Profiles box.

5. Click Move Up or Move Down as appropriate. Note: The first profile in the Auto Selected Profiles box has highest priority, and the last profile has lowest priority.

6. Click OK.

7. Check the Auto Select Profiles checkbox on the Profile Management tab.

**Note:** When auto profile selection is enabled by checking Auto Select Profiles on the Profile Management tab, the client adapter will scan for an available network. The profile with the highest priority and the same SSID as one of the found networks will be used to connect to the network. If the connection fails, the client adapter will try the next highest priority profile that matches the SSID until an available network is found.

### 3.3 Diagnostics

The Diagnostics tab of the LANPRO Wireless Client Utility (LWCU) provides buttons used to retrieve receiving and transmitting statistics. The Diagnostics tab does not require any configuration. The Diagnostics tab lists the following receive and transmit diagnostics for frames received or transmitted by the wireless network adapter:

Multicast frames transmitted and received

Broadcast frames transmitted and received

Unicast frames transmitted and received

Total bytes transmitted and received

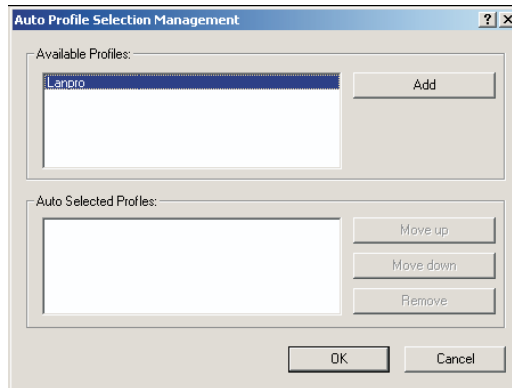


Figure 3-11 Auto Profile Selection Management Dialog

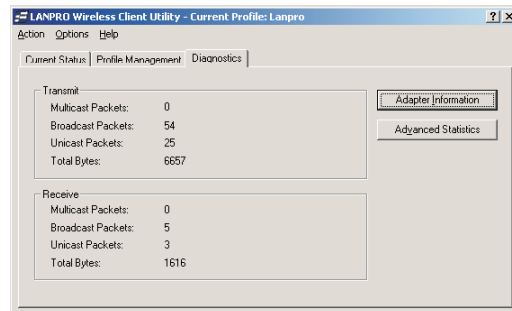


Figure 3-12 Diagnostics tab

## 2.2 Software Installation

### 2.2.1 Overview

The Adapter's Setup Wizard will guide you through the Installation procedure for Windows 2000, XP. The Setup Wizard will install the LANPRO Wireless Client Utility (LWCU) and drivers.

When you install the hardware before installing the software, the system will prompt "Found New Hardware Wizard", click Cancel, and run the Setup Wizard program on the CD-ROM.

The Setup steps for Windows 2000 and XP are very similar. The following setup steps are for Windows 2000.

#### 2.2.2 Software Installation for Windows -2000

1. Insert the Resource CD into your CD-ROM drive, click Start and choose Run. In the field that appears, enter F:\LP-510G\_550G\Win2000\_XP\Setup.exe (if "F" is the letter of your CD-ROM drive), figure 2-1 should then appear.

2. You can click Cancel to end the installation on the Preparing Setup screen, figure 2-1. Otherwise, the Setup Wizard will display a screen similar to that shown in figure 2-2 after a moment.

3. To continue, click Next on the screen, figure 2-2. Click Cancel to end the Installation.

4. The Setup Wizard will ask you to choose a Setup type in figure 2-3. It is recommended that you select Install Client Utilities and Driver. Select Install Driver Only to install driver only, select Make Driver Installation Diskette(s) to make the diskette(s) as the installation driver. Select Install Client Utilities and Driver and click Next to continue the

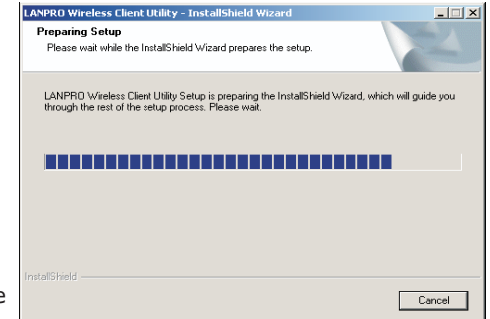


Figure 2-1 LANPRO Wireless Client Utility - Install Shield Wizard

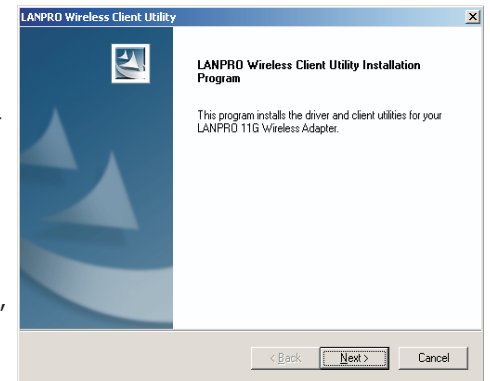


Figure 2-2 LANPRO Wireless Client Utility Installation Program

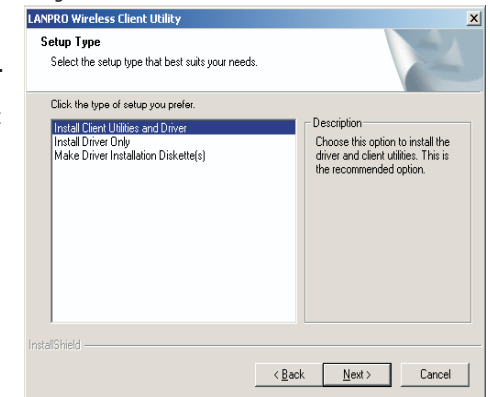


Figure 2-3 Select the setup type.

9. While files are copying, you will see a warning box, shown in figure 2-8. Please select YES to continue installation. Our drivers have been tested thoroughly, **and are** able to work with the operating system.

**Note:** In Windows XP, the warning box is similar to that shown figure 2-8a, Please select Continue Anyway to continue installation.



Figure 2-8 Widows 2000 Warning Box

10. After the files have been successfully copied, the screen in figure 2-9 will appear. Click Finish to reboot the system.

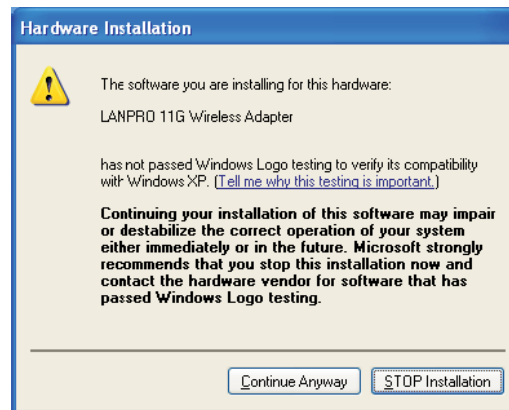




Figure 2-9 Finish

### Chapter 3: Configuration

LANPRO Wireless Adapter LP-510G/LP-550G can be configured by LANPRO Wireless Client Utility (LWCU). This chapter describes how to configure your LANPRO Wireless Adapter for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.

After Installing the Adapter, the Adapter's tray icon  will appear in your system tray. It appears at the bottom of the screen, and shows the signal strength using color and the received signal strength indication (RSSI).

 If the icon is gray, there is no connection.

 If the icon is red, there is poor signal strength and the RSSI is less than 5dB.

 If the icon is yellow, there is poor signal strength and the RSSI is between 5dB and 10dB.

### 3.2.2 Remove a profile

1. Go to the Profile Management tab.
2. Select the profile name to remove in the Profiles List.
3. Click Remove.

### 3.2.3 Switch another Profile

1. Go to the Profile Management tab.
2. Click on the profile name in the Profiles List.

### 3. Click Activate.

### 3.2.4 Import a Profile

1. From the Profile Management tab, click Import Profile. The Import Profile dialog will appear.
2. Browse to the directory where the profile is located.
3. Highlight the profile name.
4. Click Open, the imported profile will then appear in the Profiles List.

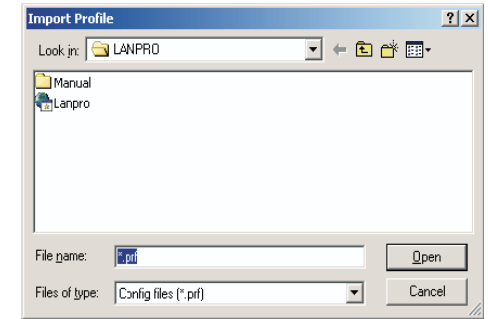


Figure 3-8 Import Profile Dialog

### 3.2.5 Export a Profile

1. From the Profile Management tab, click Export Profile. The Export Profile dialog will appear.
2. Click Export..., the Export Profile window will then appear.
3. Browse the directory to export the profile to.
4. Click Save. The profile should then appear in the Profiles List.

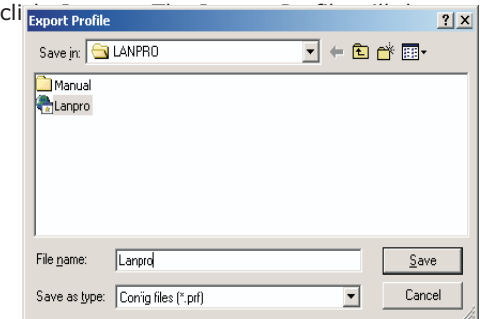


Figure 3-9 Export Profile Dialog

### 3.2.6 Scan Available Networks

1. Click Scan on the Profile Management tab. The Available Infrastructure and Ad Hoc Networks window will appear.
2. Click Refresh to refresh the list at any time.

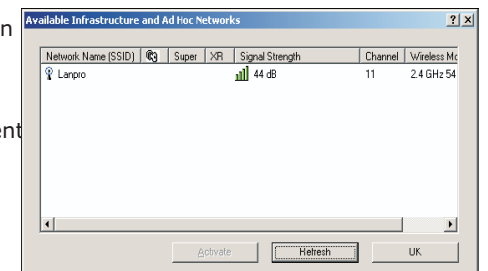


Figure 3-10 Scan Available Networks Dialog

3. Highlight a network name and click Activate to connect an available network. If no configuration profile exists for that network, the Profile

### 3. Edit the Advanced tab

Power Save Mode -

- **Maximum** - Selects maximum mode to let the access point buffer incoming messages for the wireless adapter. The adapter will detect the access point if any messages are waiting periodically.
- **Normal** - In Normal mode, the adapter will be switched to maximum mode automatically when no large packets are retrieved
- **Off** - turns power saving off, thus powering up the wireless adapter continuously for a short message response time.

802.11b Preamble: Specifies the preamble setting in 802.11b. The default setting is Short & Long (access point mode), which allows both short and long headers in the 802.11b frames. The adapter can only use short radio headers if the access point supports and uses them. Set to Long Only to override allowing short frames.

**Wireless Mode:** Specifies 2.4 GHz 54 Mbps or 2.4 GHz 11 Mbps operation in an access point network. The wireless adapter must match the wireless mode of the access point with which it associates.

**Wireless Mode** when Starting an Ad Hoc Network: Specifies 2.4 GHz 54/11 Mbps to start an Ad Hoc network if no matching network name is found after scanning all available modes. This mode also allows the selection of the channel the wireless adapter uses. The channels available depend on the regulatory domain. If the adapter finds no other ad hoc adapters, the channel that the adapter starts the ad hoc network with will be selected automatically. The wireless adapter must match the wireless mode and channel of the clients it associates.

802.11 Authentication Mode: Select which mode the wireless adapter uses to authenticate to an access point:

- **Automatic** causes the adapter to attempt authentication using shared, but switches it to open authentication if shared fails.
- **Open System** enables an adapter to attempt authentication regardless of its WEP settings. It will only associate with the access point if the WEP keys on both the adapter and the access point match.
- **Shared-key** only allows the adapter to associate with access points that have the same WEP key.

For infrastructure (access point) networks, click Preferred APs... to specify up to four access points to the client adapter that attempt to be associated to the access points.

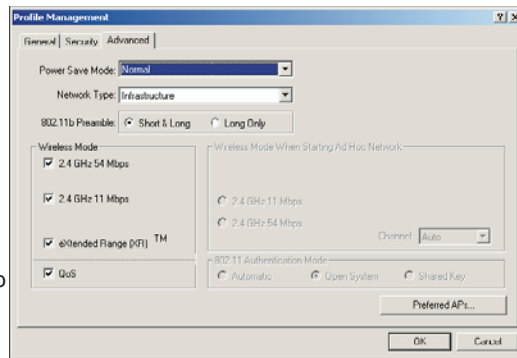


Figure 3-7 Advanced tab of Profile Management



If the icon is green, there is good signal strength and the RSSI is between 10dB



20dB.

If the icon is green, there is excellent signal strength and the RSSI is more than 20dB.

Double-click the icon and the LWCU will run. You can also run the utility by clicking the Start>Program>LANPRO>LANPRO Wireless Client Utility. The LWCU provides a complete and easy to use set of tools to:

Display current status information

Edit and add configuration profiles

Display current diagnostics information

The section below introduces these above capabilities.

### 3.1 Current Status

The Current Status tab contains general information about the program and its operations. The Current Status tab does not require any configurations.

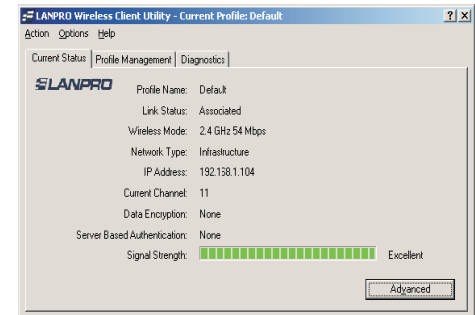


Figure 3-1 Current Status

The following table describes the items found on the Current Status screen.

- **Profile Name** - The name of current selected configuration profile. Set up the configuration name on the General tab of Profile Management.
- **Link Status** - Shows whether the station is associated to the wireless network.
- **Wireless Mode** - Displays the wireless mode. Configure the wireless mode on the Advanced tab of Profile Management.
- **Network Type** - The type of network and the station currently connected. The options include:
  - Infrastructure (access point)
  - Ad Hoc

## Configure the network type on the Advanced tab of Profile Management.

**IP Address** - Displays the computer's IP address.

**Current Channel** - Shows the currently connected channel.

**Data Encryption** - Displays the encryption type the driver is using. Configure the encryption type on the Security tab of Profile Management.

**Server Based Authentication** - Shows whether server based authentication is used.

**Signal Strength** - Shows the strength of the signal.

**Note:** In the LWCU, access the General tab, **Security** tab and **Advanced** tab by clicking **New** or **Modify** on the Profile Management tab.

Click Advanced to see advanced information about the program and its operations. For more information, please refer to the help file of the utility.

### 3.2 Profile Management

Click the Profile Management tab on will appear, figure 3-3. The Profile

Add a profile

Edit a profile

Remove a profile

Switch to another Profile

Import a Profile

Export a Profile

Scan Available Networks

Order profiles

#### 3.2.1 Add or Modify a Configuration Profile

To add a new configuration profile, modify a configuration profile, select the configuration from the Profile list and click Modify.

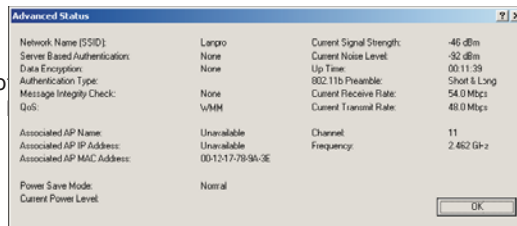


Figure 3-2 Advance Status

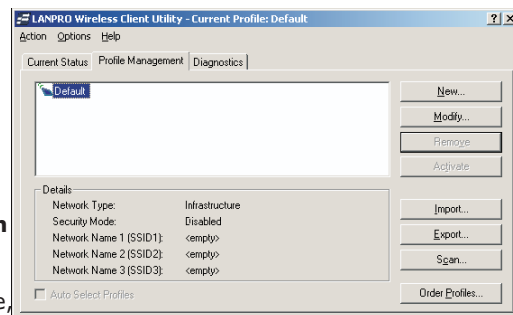


Figure 3-3 Profile Management tab

The Profile Management dialog box

### 1. Edit the General tab

**Profile Name** - Identifies the configuration profile. This name must be unique. Profile names are not case-sensitive.

**Client Name** - Identifies the client machine.

**Network Names (SSIDs)** - The IEEE 802.11 wireless network name. This field has a maximum limit of 32 characters.

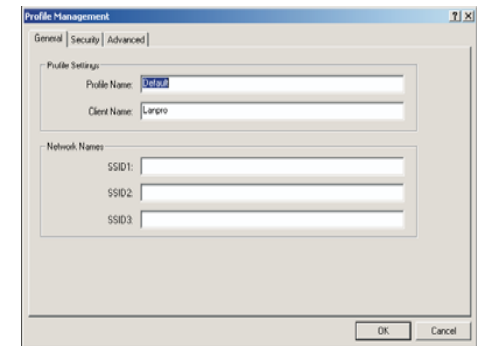


Figure 3-4 General Tab of Profile Management

### 2. Edit the Security tab

•Edit the fields in the Security tab of Profile Management to configure the profile. To define the security mode, select the radio button of the desired security mode.

•**WPA/WPA2:** Wi-Fi Protected Access

•**WPA/WPA2 Passphrase:** Wi-Fi Protected Access Passphrase

•**v802.1x:** Enables 802.1x security.

•**Shared Key (Static WEP):** Enables the use of shared keys that are defined on both the access point and the station. To define shared encryption keys, choose the Shared Key radio button and click Configure to fill in the Define Shared Keys window.

**None:** No security (not recommended).

**Note:** If the access point that the wireless adapter associating to has WEP set to Optional and the client has WEP enabled, make sure that Allow Association to Mixed Cells is checked on the Security Tab to allow association. To complete WEP encryption configuration, you must select the 802.11 Authentication

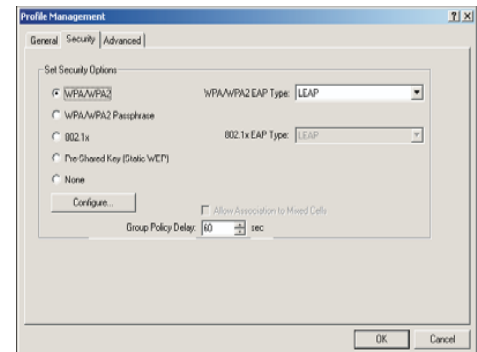


Figure 3-5 Security tab of Profile Management

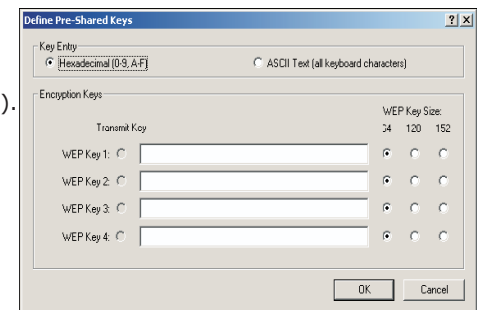


Figure 3-6 Define Shared Keys