



# User's Manual

## HP-8501APg

Powerline 85Mbps

Wireless-G Access Point



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## **FCC Part 68**

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. You must provide this information to the telephone company upon request.

The REN is useful to determine the quantity of devices you may connect to the telephone line and still have those entire devices ring when your number is called. In most, but not all areas, the sum of the REN of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If the modem causes harm to the telephone network, the telephone company may discontinue your service temporarily.

If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible.

You will be advised of your right to file a complaint with the FCC.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this modem, please contact your dealer for repair/warranty information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected or you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

## **FCC Part 15**

The modem generates and uses radio frequency energy. If it is not installed and used properly in strict accordance with the user's manual, it may cause interference with radio and television reception. The modem has been tested and found to comply with the limits for Class B computing devices in accordance with the specifications in Subpart B, Part 15 of the FCC regulations. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. FCC regulations require that shielded interface cables be used with your modem.

If interference does occur, we suggest the following measures be taken to rectify the problem:

- 1) Move the receiving antenna.
- 2) Move the modem away from the radio or TV.
- 3) Plug the modem into a different electrical outlet.
- 4) Discuss the problem with a qualified radio / TV technician.

### **CAUTION:**

Changes or modifications not expressly approved by the party responsible for compliance to the FCC Rules could void the user's authority to operate this equipment.

### **Cable connections:**

All equipment connected to this modem must use shielded cable as the interconnection means.

### **Notes:**

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.



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## Chapter 1 Introduction

Congratulations on your purchase of an Instant Powerline 85M Wireless Access Point. The Powerline Access Point is the perfect choice for a small group of PCs or wireless clients. While integrating wireless ability to powerline networks, this device is able to extend the network coverage of your home / office network.

### 1.1 Overview

PowerLine Access Point comes with four 10/100M Ethernet ports, so you can use it with your existing wired network devices. You can also use integrated wireless Ethernet and powerline network to extend network coverage without setting up new wired Ethernet cables.

### 1.2 Features

- Supported network protocols
  - TCP/IP, UDP, ICMP, ARP, RARP, Static IP
- Standard
  - IEEE 802.3, 802.3u Ethernet standards
  - HomePlug 1.0
  - IEEE 802.11b and 802.11g Wireless Ethernet standards
- QoS
  - Prioritized random access, contention-free access and segment bursting
  - CSMA/CA with prioritization and ARQ for reliable delivery of Ethernet packets via Packet Encapsulation Security Features
- Powerline Modulation
  - OFDM (Orthogonal Frequency Division Multiplexing) with patented signal processing techniques for high data reliability in noisy media conditions
  - Supports QAM 256/64/16, DQPSK, DBPSK and ROBO modulation schemes
- Security
  - Provides 56-bit DES link encryption for Powerline network
- Wireless Features
  - Support 802.11b/g Wireless Access Point
  - Support 128-Bit and 64-Bit WEP encryption , 802.1x, WPA, WPA2
- Other Features
  - High-Speed Powerline adapter with Ethernet interface for high-speed data transfer over the existed household power cables.
  - High-speed transfer rates - maximum 85Mbps, it's possible to transfer video data at DVD quality!
  - No new cables needed, just use any power socket on the wall, with ranges up to 200 meters.

- Web-Based Device Management
  - Web-based Firmware upgrade.
  - Password-protected access control.

### **1.3 System Requirements**

- 1) Personal computer (PC).
- 2) Pentium II 233 MHz processor or above.
- 3) 32 MB of RAM or more.
- 4) At least 20 MB of free disk space.
- 5) One Ethernet Interface on PC.
- 6) Internet Browser

## Chapter 2 Familiar with your PowerLine Access Point

This chapter provides information about installing your new PowerLine Access Point. If you are not familiar with the terms in this chapter, please ask an experienced network administrator or your internet service provider for help..

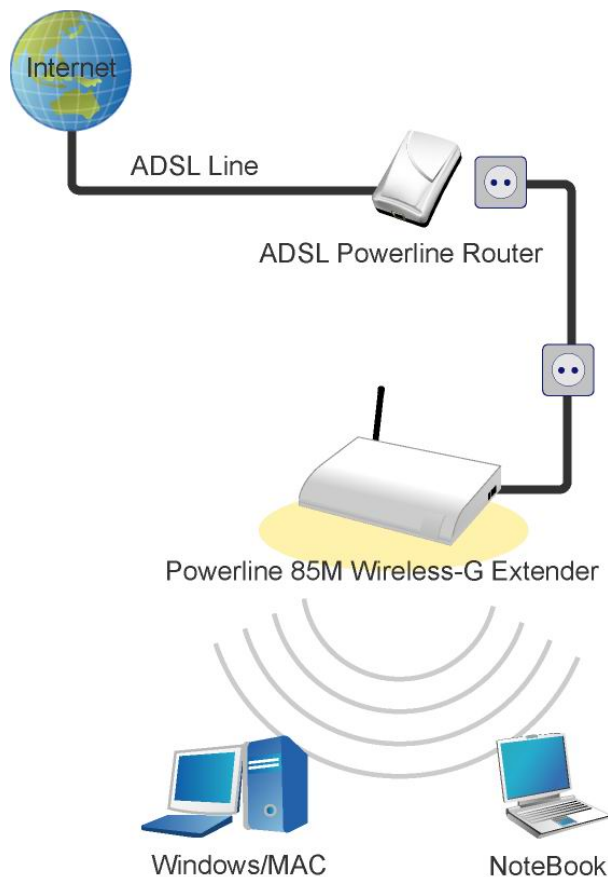
### 2.1 Package Contents

Check the package of this product carefully, make sure that every item listed below is not missing. If any of the items are missing or damaged, contact your local distributor. The contents of your carton may vary depending on your service provider.

#### Contents description

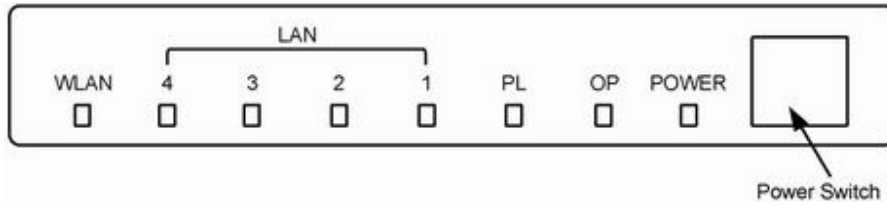
- 1) Powerline Access Point
- 2) Powerline Access Point Installation and Operation Guide (you are reading now!)
- 3) Power Cord
- 4) Ethernet cable Ethernet category 5 twisted pair cable (6 ft)

#### Installation examples for PowerLine Access Point



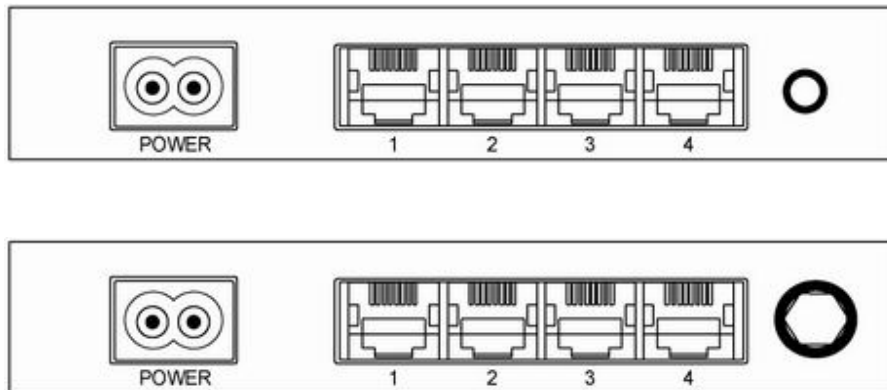


## 2.2 Front LEDs



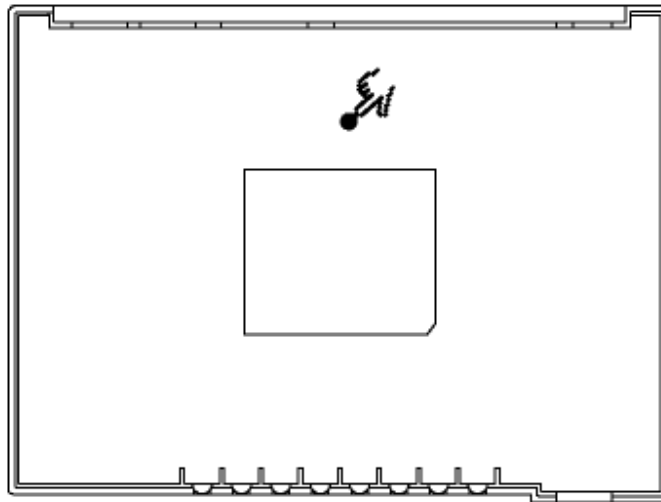
LED	State	Description
<b>POWER</b>	ON	Wireless Access Point is powered on
<b>OP</b>	Flashing	The Wireless Access Point is running well.
<b>PL</b>	Flashing	Other PowerLine devices detected
<b>LAN 1-4</b>	ON	Ethernet link is present at this port
	Flashing	TX or RX activity
	OFF	Ethernet link is not present at this port
<b>WLAN</b>	ON	Wireless function on
	Flashing	Data transferring between this Wireless Access Point and wireless clients
	OFF	Wireless function off

## 2.3 Rear Ports



Connector	Description
<b>POWER</b>	Connect to power cord.
<b>LAN (1-4)</b>	Wireless Access Point is connected to a device through the corresponding port (1, 2, 3 or 4). While data is sending or receiving by that port, corresponding LED will be flashing.
<b>Antenna</b>	Two kinds of antenna connector available: fixed or R/SMA connector.

## 2.4 Reset Switch



Connector	Description
<b>Reset Switch</b>	Press and hold this button for few seconds to clear all settings of this Wireless Access Point

## Chapter 3 Configuration

### 3.1 Determine the type of your internet connection

Before you configure the Wireless Access Point; you need to know the type of internet connection you're using. You can ask your internet service provider to know the type of internet connection you're using.

### 3.2 Connecting the Powerline Access Point to your network

Please connect the your PC to one of LAN ports of Wireless Access Point by Ethernet cable, then follow the instructions given in next section to configure your Wireless Access Point. You can also connect other wired Ethernet devices to LAN ports of Wireless Access Point at this time, too. However, before the configuration process of Wireless Access Point is completed, wireless devices cannot connect to this Wireless Access Point.

### 3.3 Configuring Powerline Access Point with Web Browser

It is highly recommended to change the default administrator password to avoid unauthorized access to your Wireless Access Point. To configure the Wireless Access Point, launch your browser, and type '<http://192.168.2.1>' in the address bar and click 'Go' to get to the Wireless Access Point login page.



localhost

User name: admin

Password: [masked]

Remember my password

OK Cancel

When you're prompted to input username and password, input '**admin/1234**' for username and password. You can change password later if you wish. Click '**OK**' to login.

- System Status
- Quick Setup
- LAN Configuration
- Wireless Configuration
- System Setup

## System

<b>Manufacturer</b>	Realtek Semiconductor Corporation
<b>Product Model</b>	RTL865xB
<b>Firmware Version</b>	0.6.6-3R.5
<b>Firmware Date</b>	2006/12/22 14:22:26
<b>Loader Version</b>	0.0.20
<b>Rome Driver Version</b>	3.6-3
<b>Memory Status</b>	9164 / 1540

## LAN

<b>IP Address</b>	192.168.2.1
<b>Subnet Mask</b>	255.255.255.0
<b>MAC Address</b>	00:0E:2E:9B:4D:7C
<b>LAN 1 Status</b>	Link is down. No cable detected
<b>LAN 2 Status</b>	Link is Up. 100Mbps, full- duplex
<b>LAN 3 Status</b>	Link is down. No cable detected
<b>LAN 4 Status</b>	Link is down. No cable detected
<b>Received</b>	4904 packets, 503167 bytes
<b>Transmitted</b>	4286 packets, 945862 bytes
<b>Dropped</b>	0 packets

## Wireless

<b>Product Model</b>	RT2561
<b>Status</b>	Enable

- System Status
- Quick Setup
- LAN Configuration
- Wireless Configuration
- System Setup

## Quick Setup - Lan Configuration

<b>IP Address</b>	<input type="text" value="192"/>	<input type="text" value="168"/>	<input type="text" value="2"/>	<input type="text" value="1"/>
<b>Subnet Mask</b>	<input type="text" value="255"/>	<input type="text" value="255"/>	<input type="text" value="255"/>	<input type="text" value="0"/>
	<input type="button" value="Next"/>	<input type="button" value="Reset"/>		

You can use "Quick Setup" to setup the device, and choose the connection method you want to use.

### 3.3.1 LAN Interface Configuration

**EDIMAX**  
NETWORKING PEOPLE TOGETHER

- System Status
- Quick Setup
- LAN Configuration
- Wireless Configuration
- System Setup

## Lan Interface Configuration

<b>IP Address</b>	192	168	2	1
<b>Subnet Mask</b>	255	255	255	0

完成 網際網路

Please input the IP address and network mask of LAN interface here..

### 3.4.1 Wireless Settings



#### Wireless Mode

You can select wireless operating mode here. Available options are: Auto (both 802.11b and 802.11g), 802.11b only, 802.11g only, and Disable (Wireless disabled)

#### SSID

SSID is the short for 'Service Set Identifier'. Wireless devices use this identifier to identify which access point they should connect. You can change SSID here, and all your wireless devices should set to the same SSID.

#### Channel

The radio channel number that wireless network uses. All your wireless devices should set to the same channel. If you select 'Auto', Wireless Access Point will choose a channel automatically, and your wireless clients should set channel to 'Auto' too. (In most cases, you don't have to set wireless channel for your wireless clients, they will pick a channel automatically).

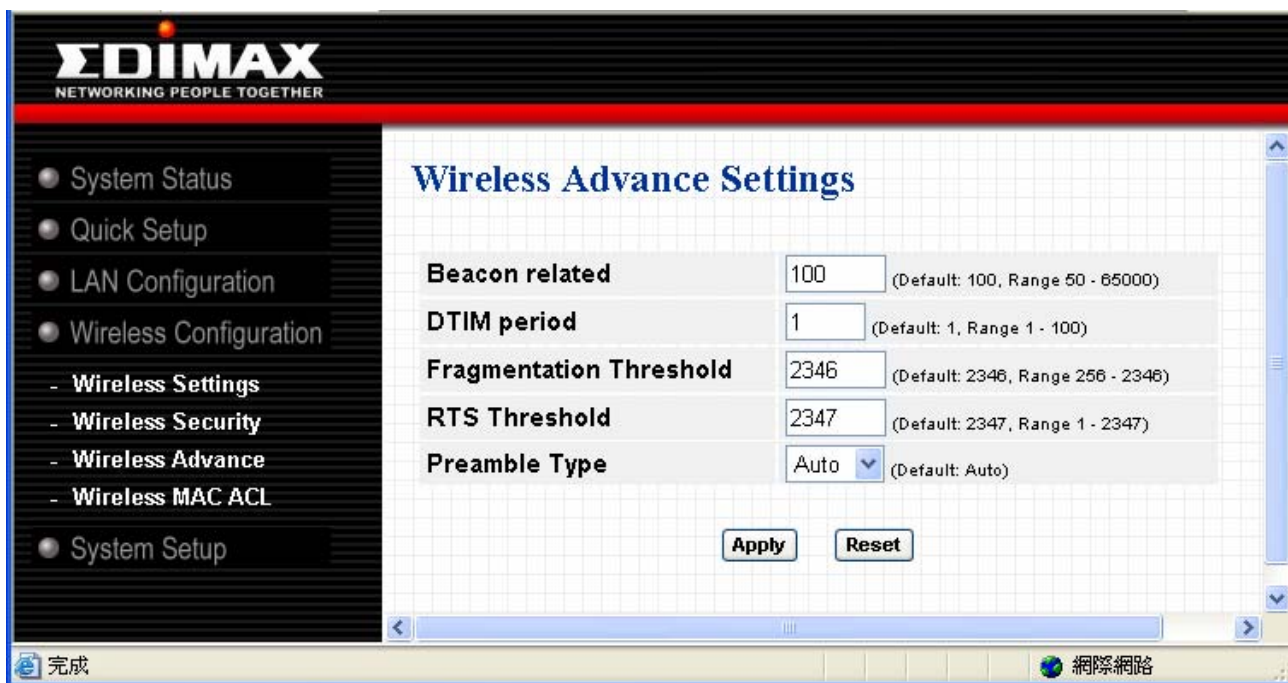
### 3.4.2 Wireless Security



You can select the wireless authentication method here. Available options are: 'Open System', 'Shared Key', 'WPA-PSK', 'WPA2-PSK', and 'WPA-PSK/WPA2-PSK'.



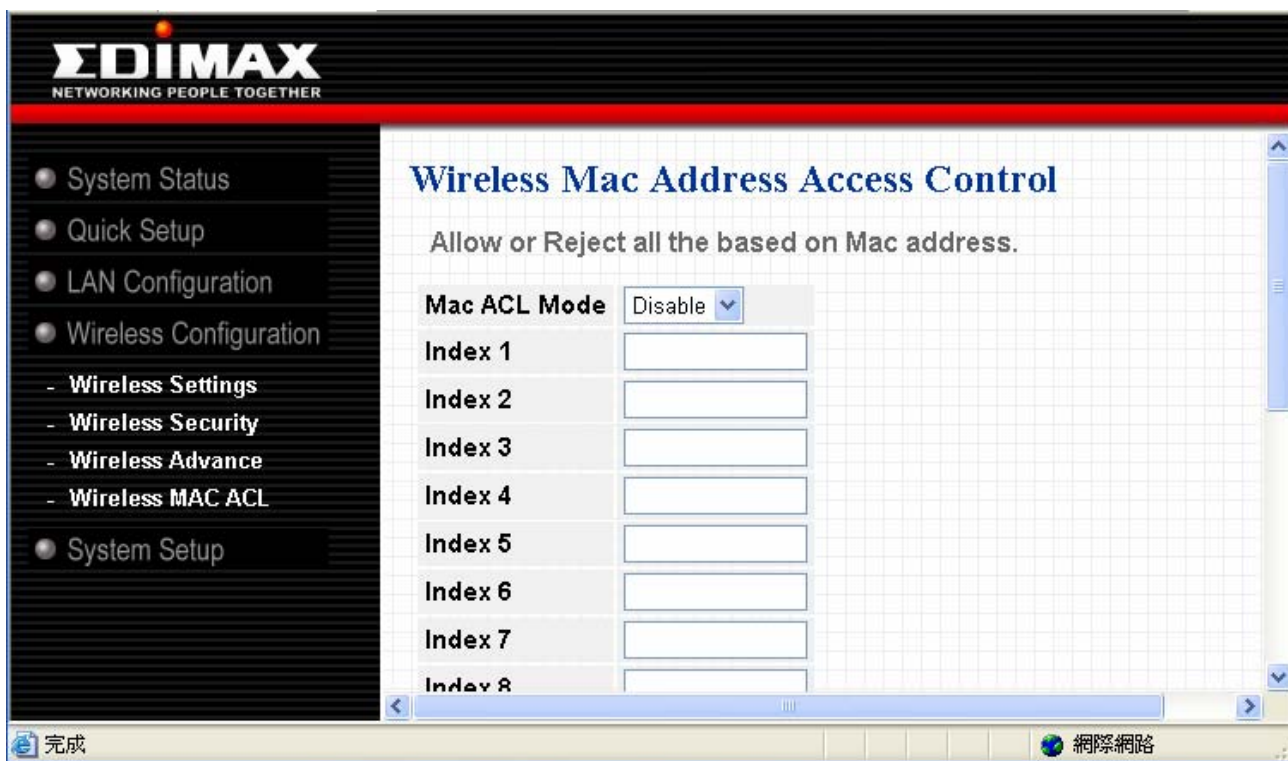
### 3.4.3 Advanced Wireless Settings



You can set some advanced wireless settings here. In most cases you don't have to change these settings, and you can use default settings without any problem. Only change these settings when you understand the function of these functions.

PLEASE NOTE: IMPROPER VALUE FOR THESE SETTINGS COULD CAUSE PERFORMANCE PROBLEM.

### 3.4.4 MAC-based Wireless Access Control



You can allow or reject wireless clients with certain MAC address to connect to Wireless Access Point. Please select a MAC ACL mode you wish to use ('Disable', 'Allow', or 'Reject'), and input MAC address(es) you wish to allow (or reject) in every index field.

An example of MAC address is aa-bb-cc-dd-ee-ff or 1a-2b-3c-4d-5e-6f.

### 3.5.1 System Setup

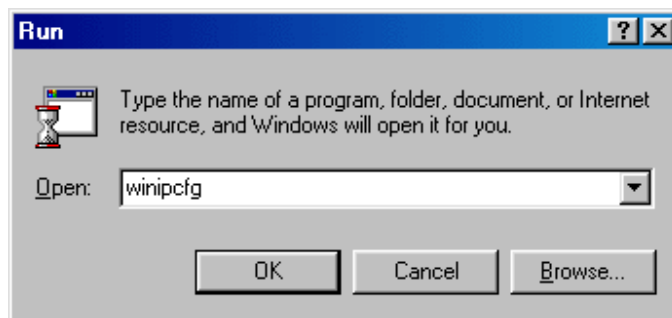


- 1) You can change the name of super user (administrator) account from admin to any name you wish to use by inputting a new name in 'Account' field.
- 2) If you downloaded latested firmware file from Edimax website, you can upload and update the firmware here. Click 'browse' to select firmware file you just downloaded, and click 'Update' to start update procedure. DO NOT CLOSE WEB BROWSER WINDOW OR REMOVE NETWORK CONNECTION DURING UPDATE, IF THE FIRMWARE UPDATE PROCESS FAILS, WIRELESS ACCESS POINT MAY NOT BE ABLE TO FUNCTION AGAIN!
- 3) Click 'Factory Default' to restore all settings of Wireless Access Point to factory default settings.
- 4) Click 'System Restart' to restart the Wireless Access Point.

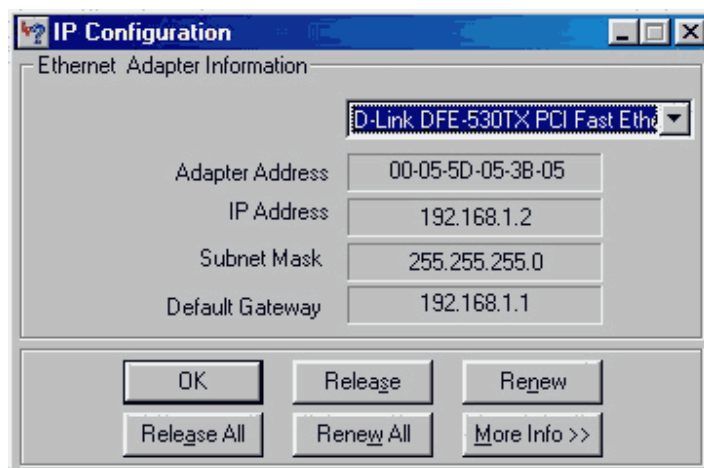
### 3.6.1 TCP/IP Settings for Windows Operating System

#### 1. How to check my IP Address in Windows 95, 98, or Me?

- Click **Start**, then click **Run**.
- The Run Dialogue Box will appear. Type **winipcfg** in the window as shown then click OK



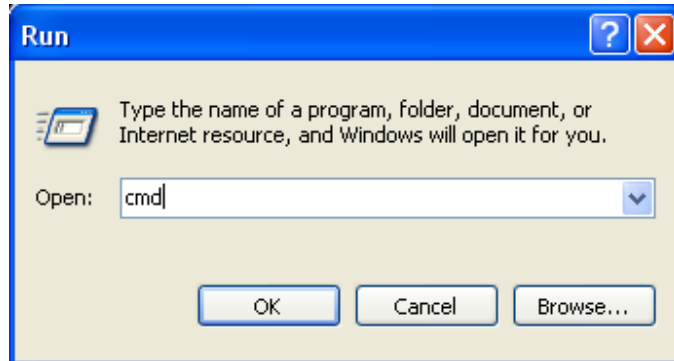
- The **IP Configuration** window will appear, displaying your **Ethernet Adapter Information**.
- Select your network adapter from the drop down menu.
- If you can not see your network adapter in the drop down menu, your adapter may not properly installed.



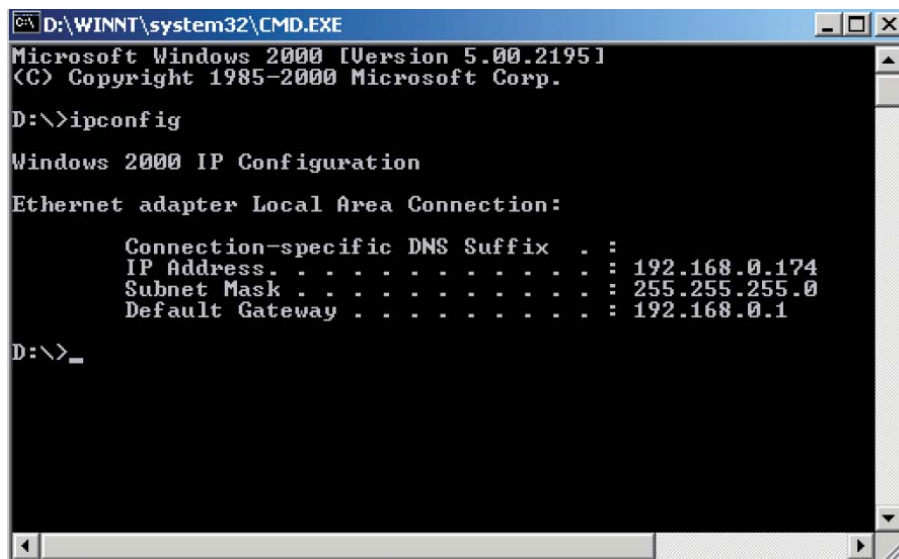
- After selecting your adapter, your IP Address, subnet mask, and default gateway setting will be displayed.
- Click **OK** to close the IP Configuration window.

2. How to check my IP Address in Windows 2000/XP?

- Click **Start**, then click **Run**.
- Type **cmd** then click **OK**.



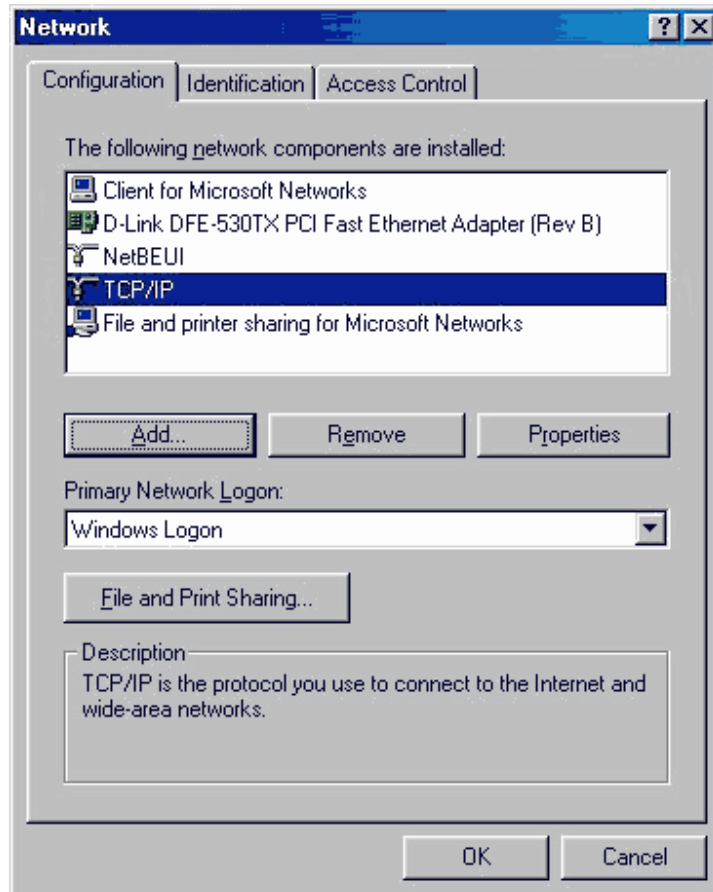
- From the command prompt, type **ipconfig**. It will return with your IP Address, subnet mask, and default gateway information.



- Type **exit** to close the command prompt.
- Please check the IP address of default gateway. It should be the address of Wireless Access Point. By default, the IP address of Wireless Access Point is 192.168.2.1.

### 3. How can I assign a Static IP Address in Windows 98/Me?

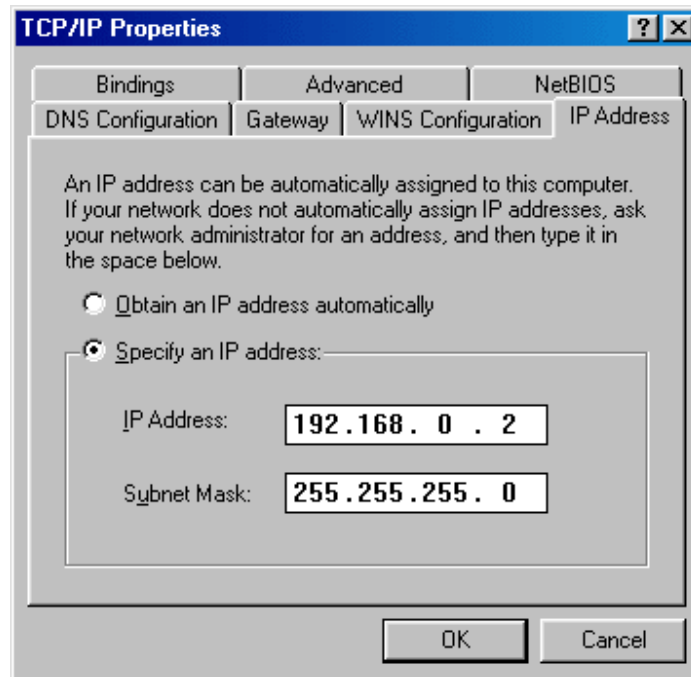
- From the desktop, right-click on the **Network Neighborhood** icon (Win ME - My Network Places) and click **Properties**.
- Highlight **TCP/IP** and click the **Properties** button. If you have more than 1 adapter, then there will be a 'TCP/IP Binding' for each adapter. Highlight **TCP/IP > (your network adapter)** and then click **Properties**.



- Click **Specify an IP Address**.

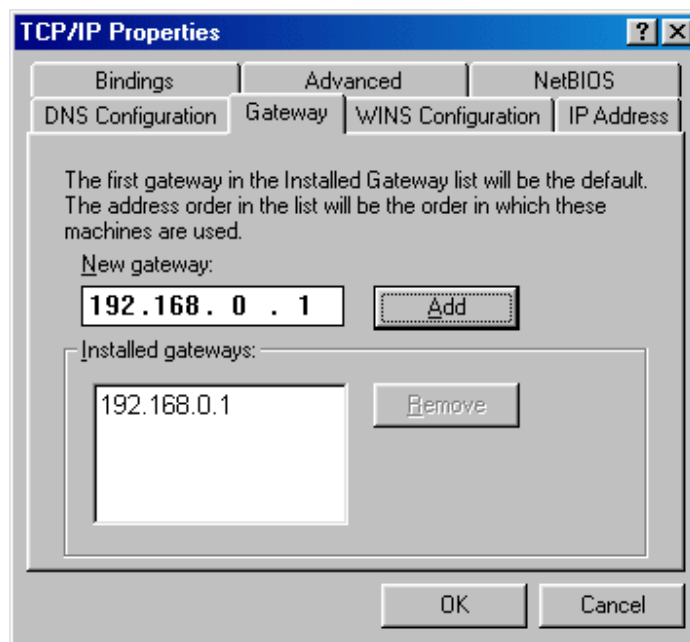
- Enter in an IP Address that is on the same subnet of your Wireless Access Point.

Example: If the Wireless Access Point's LAN IP Address is 192.168.2.1, make your IP Address 192.168.2.X where X is a value between 2 to 99. Make sure that the number you choose is not in use on the network.

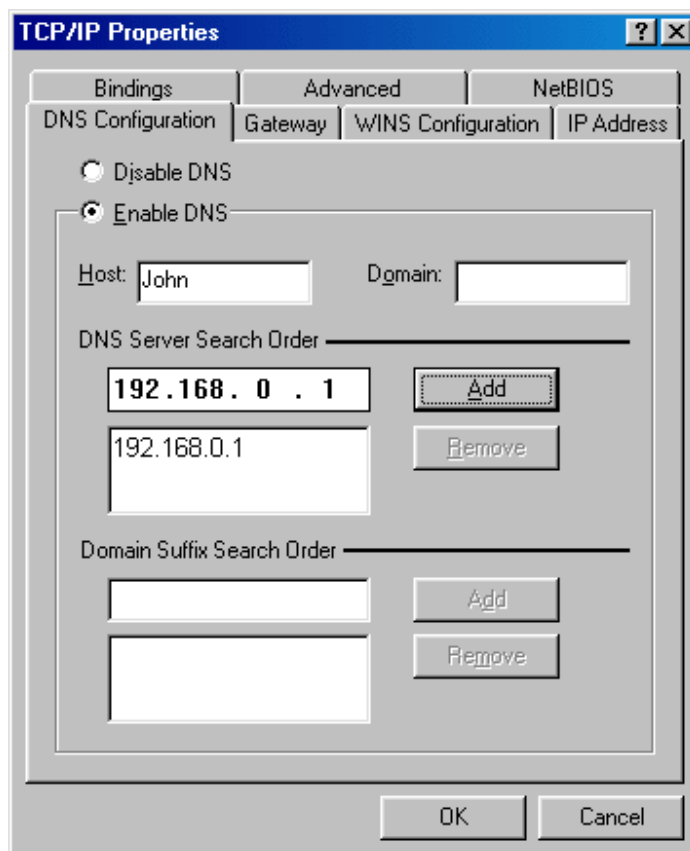


- Click **Gateway** tab.

- Enter the LAN IP Address of your Wireless Access Point here (192.168.2.1), then click 'Add'.
- Click 'OK'.



- Click **DNS Configuration** tab.
- Click **Enable DNS**. Type in a **Host** (can be anything like John or Apple). For 'DNS server search order' field, enter the IP Address of your Wireless Access Point (192.168.2.1), then click **Add**.

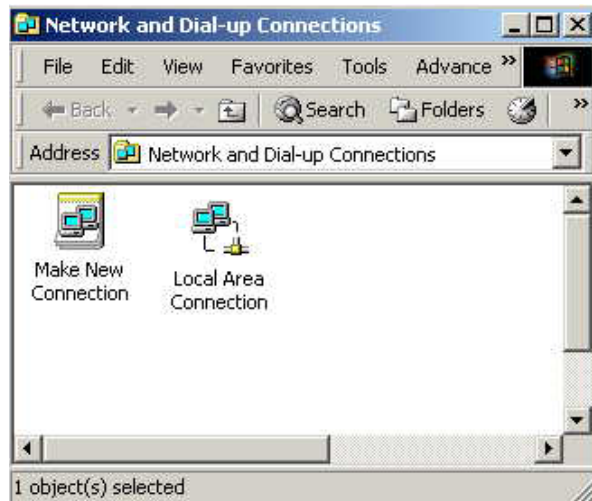




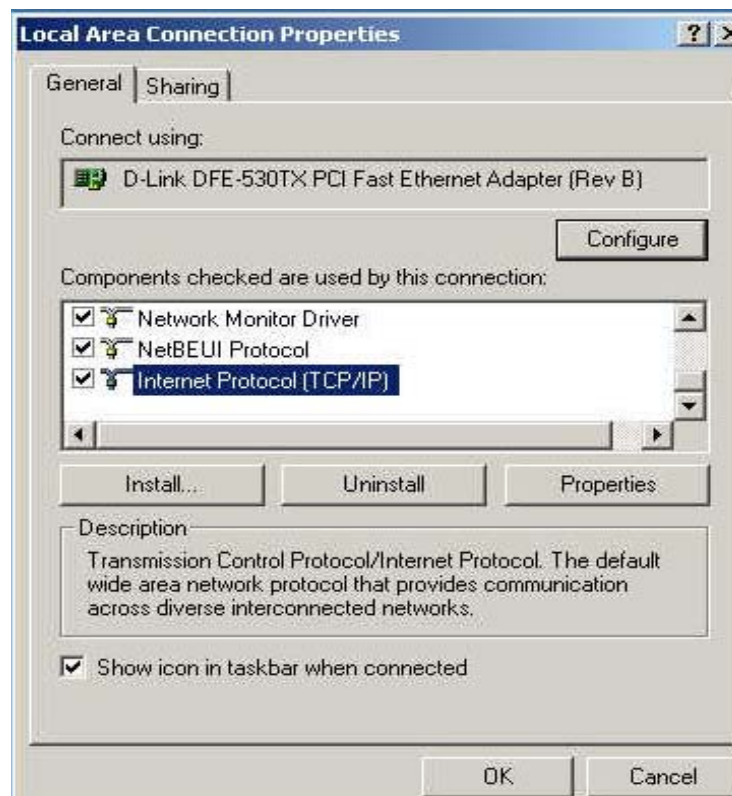
- Click **OK** once, then click **OK** again in next dialogue box.
- When you're prompted to reboot your computer, click **Yes**. After the computer is rebooted, the computer will have a static private IP Address.

4. How can I assign a Static IP Address in Windows 2000?

- Right-click on **My Network Places** then click **Properties**.
- Right-click on the **Local Area Connection** which represents your network card and select **Properties**.



- Highlight **Internet Protocol (TCP/IP)** and click **Properties**.



- Click **Use the following IP Address** and enter an IP Address that is on the same subnet of your Wireless Access Point. Example: If the Wireless Access Point's LAN IP Address is 192.168.2.1, make your IP Address 192.168.2.X where the value of X is 2 to 99. Make sure that the number you choose is not in use on the network.
- Set the **Default gateway** to the IP Address of your Wireless Access Point (192.168.2.1).
- Set the **Primary DNS** to the IP address of your Wireless Access Point (192.168.2.1).
- **The Secondary DNS** is not required, or you can enter the IP address of the DNS server provided by your

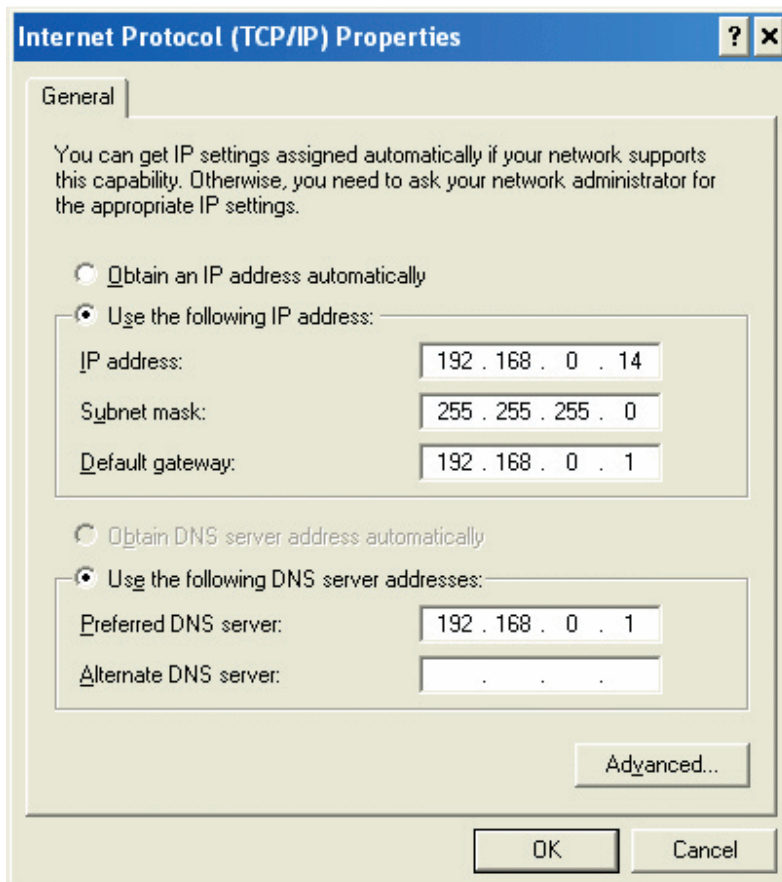
ISP.

- Click **OK** once, then click **OK** again in next dialogue box. If you're prompted to reboot your computer, click **Yes**.

#### 5. How can I assign a Static IP Address in Windows XP?

- Click on **Start > Control Panel > Network and Internet Connections > Network connections**.
- Please follow the instructions given in previous section (assigning a static IP address in Windows 2000)

and continue from there.



- Launch your Web browser and enter the IP Address of your Wireless Access Point in the address bar. You should be able to see the login page of Wireless Access Point. Input administrator account and password to login.

## Chapter 4. Network Utility for PowerLine Access Point

**Note:** The device is able to detect other powerline devices which is on the same power circuit automatically. You only need to install this utility program when you want to enable the encrypt function of Powerline Access Point to secure your data, or you have problem connecting other powerline devices.

### Introduction of Configuration Utility

The configuration utility for Windows OS enables the user to search all Powerline Ethernet devices on the Powerline network; check data rate and performance, enables encryption, and performing diagnostics.

### 4.1 Software Setup

#### 4.1.1 Installation

Please verify that no other Powerline Management Utilities are installed before installing this software. If other utilities are installed, uninstall them first and restart your computer before installing this software.

To install, insert the Windows OS configuration utility setup utility CD-ROM into the computer's CD-ROM or DVD-ROM drive. The Setup utility shall run automatically. Alternatively this can also be done manually by double clicking the setup.exe file on the CD. A welcome screen will be shown as *Figure 1*.

Click the **Next** button to continue.

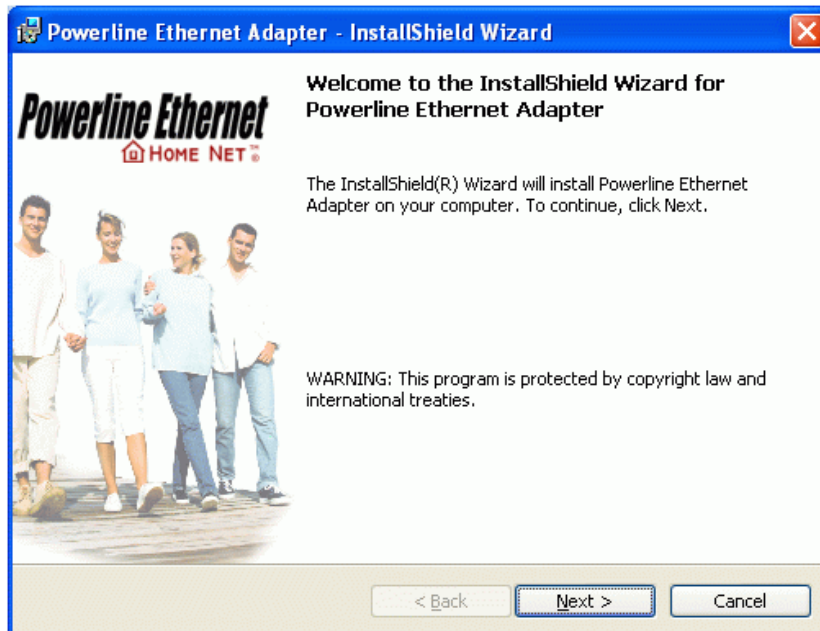


Figure 1: Welcome Screen

## 4.2 Windows Configuration Utility

In order to run the utility, double-click the utility icon. *Figure 2* shows the content of main tab of the configuration utility. The following picture shows a Powerline Ethernet device connected as a local device and other Powerline Ethernet devices as remote devices.

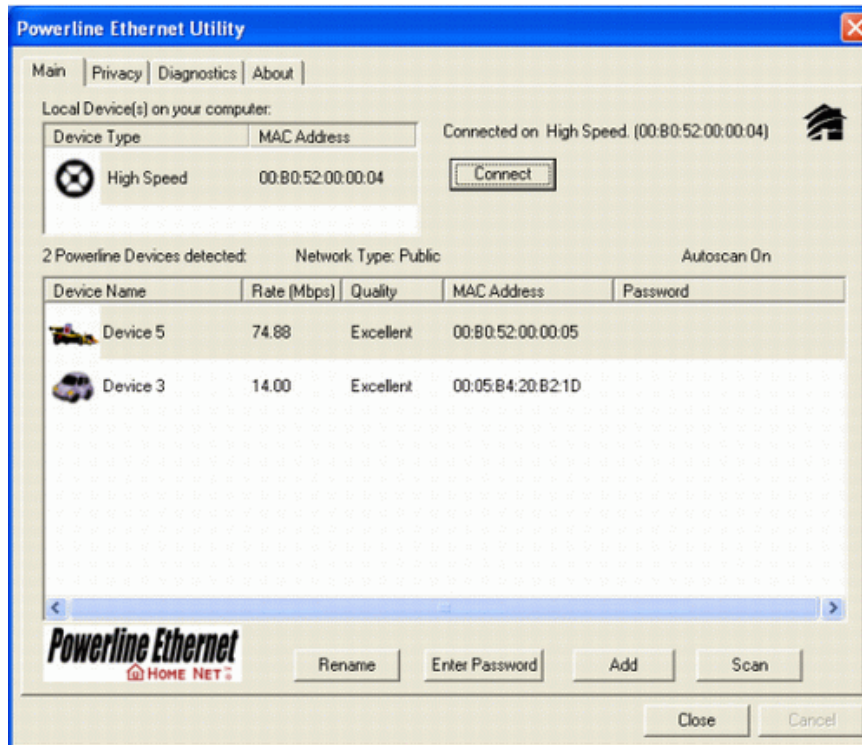


Figure 2: Main tab with a local high-speed Powerline Ethernet device

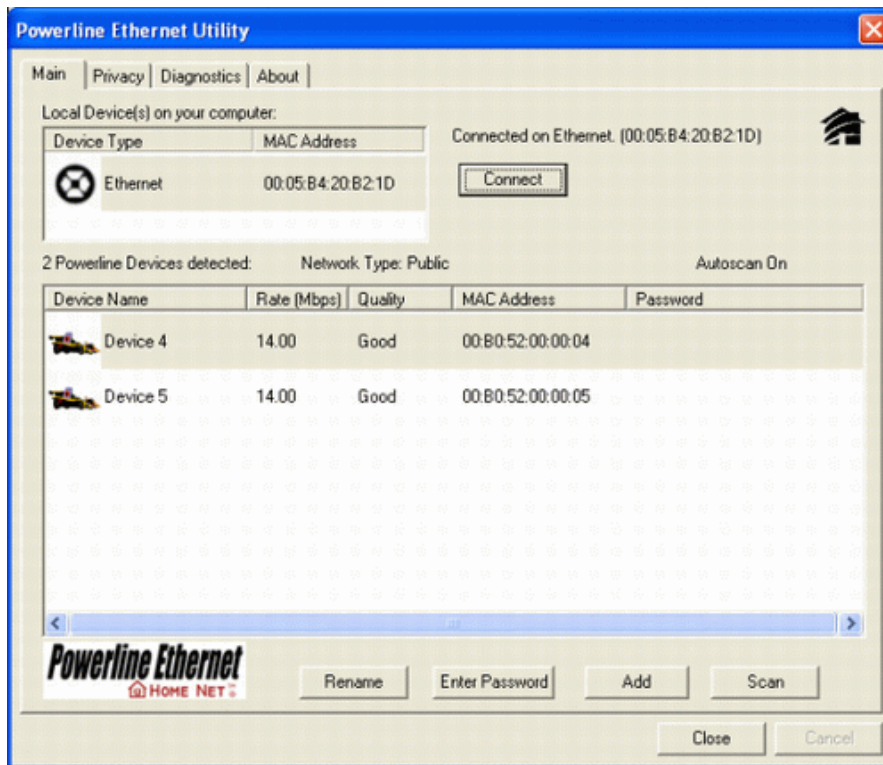


Figure 3 : Main tab with local low-speed Powerline Ethernet device

## 4.3 User Interface

### 4.3.1 The 'Main' Tab

The **Main** tab provides a list of all Powerline Ethernet devices logically connected to the computer where the configuration utility is running. The top panel shows all local Powerline Ethernet devices found. In most cases, only one device will be shown there. In environments where there are more than one device connected to the same computer, such as a USB and an Ethernet device, the user have to click the device he or she wish to manage and then click the **Connect** button to its right. The status area above the button indicates that your PC is connected to selected device. Once connected to the a chosen local device, the utility will automatically scan the power line periodically for any other Powerline Ethernet devices. If no local Powerline Ethernet devices are discovered, the status area above the connect button will indicate that accordingly.

Figure 4 illustrates the presence of two local devices connected to the same computer.

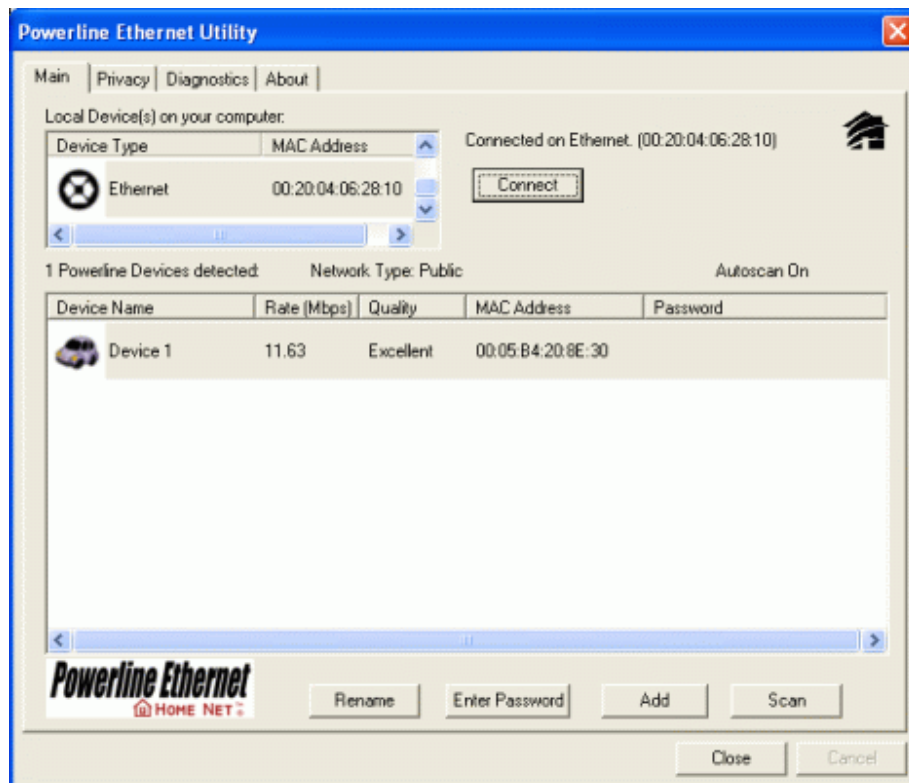
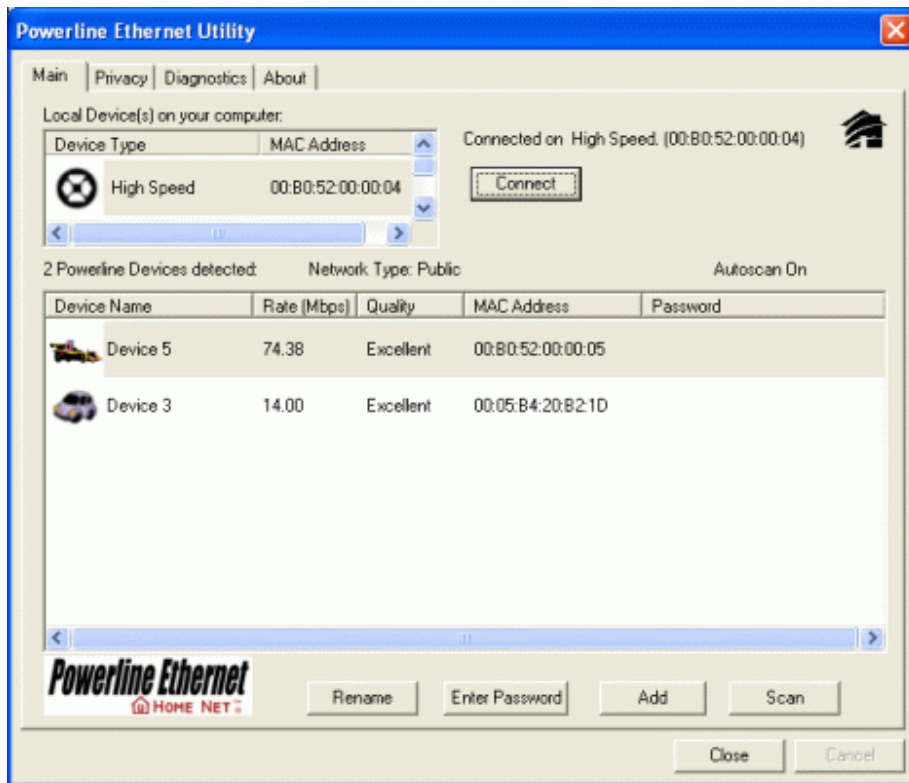


Figure 4: Multiple local devices found



The **lower panel** displays all the Powerline Ethernet devices, discovered on the current logical network (remote devices). The number of remote devices found, the type of logical network (Public or Private), and a message area that reports connectivity and scan status will be displayed above this panel. The following information is displayed for each devices found:

**Device Name** column shows the name of a found device. You can click on the name or click 'Rename' to change the name of a selected device. An icon is optionally shown with the name. You can identify the speed of a device by its icon (14Mbps or 85Mbps). By default, the icon is displayed with the name.

**MAC Address** column shows the device's MAC address.

**Password** column shows the user-defined device password (initially left blank).

A user may change the password by clicking 'Set Password' button. To set the **Password** of the device (required when creating a secured private network), first select the device by clicking on its name in the lower panel and then click on the 'Enter Password' button .A dialog box will appear as shown in Figure 5 for you to type the password. The selected device name is shown so you can make sure which device you're changing the password. Click OK after you've entered the new password. A confirmation box will appear if the password was entered correctly. If a device is not found, the user will be prompted and instructions to this problem will be shown, too.



Figure 5: Set Device Password

The **Add** button is used to add a remote device to your network that is not listed in the lower panel, for example, a device currently located on another logical network. Users will be prompted to input the passwords for all devices they wish to manage and add them to the local logical network by clicking on the Add button. A dialog box will appear as shown below. The dialog box allows user to enter both device name and the password. A confirmation box will appear if the password was entered correctly and the device was found. If a device is not found, the user will be prompted and instructions to this problem will be shown, too.



Figure 6: Add Remote Device

**Note:** The device must be present on the power line (plugged in) in order to check the password so it can be added to the network. If the device could not be located, a warning message will be shown.

The **Scan** button is used to perform an search of the Powerline Ethernet devices connected to the computer. By default, the utility will automatically scan once every few seconds and updates the display. A typical screen after naming and supplying passwords might appear as in *Figure 7*.

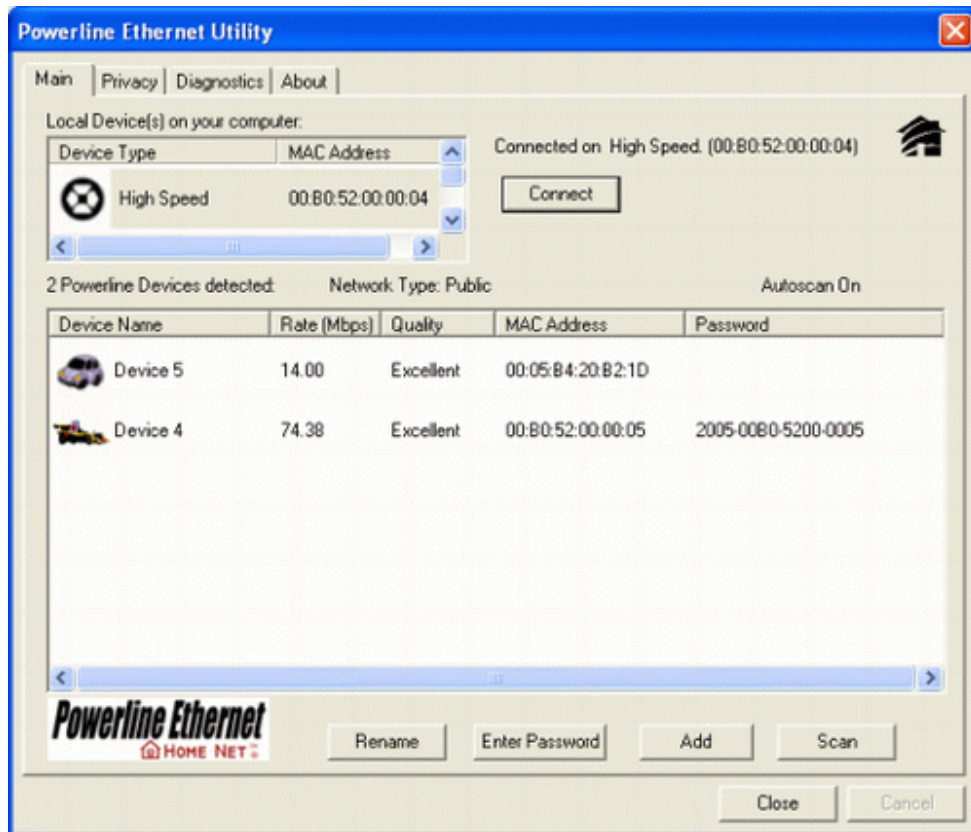


Figure 7: Main tab of the configuration utility

#### 4.3.2 The 'Privacy' Tab

The Privacy dialog screen provides a means for managing the local network and providing additional security. All Powerline Ethernet devices come with a default logical network (network name), which is normally “HomePlug” . The **Privacy** tab allows user to make the network private by changing the network name (network password) of devices. The user can always reset a Powerline Ethernet network to the universal one (public) by entering “HomePlug” as the network name or by clicking on the **Use Default** button.

**Note** : Changing the network name to any other name other than HomePlug will show the network type on the main screen as Private.

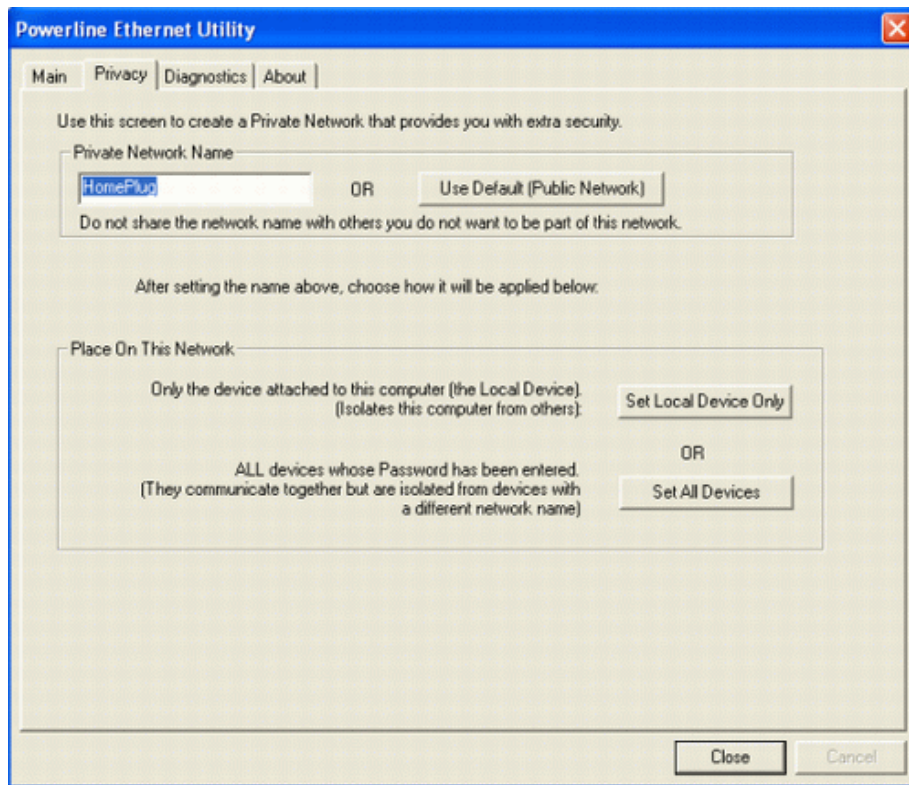


Figure 8: Privacy tab

The **Set Local Device Only** button is used to change the network name (network password) for local devices only. After doing this, all the devices seen on the Main panel prior to this will no longer be reachable or respond to your command, as they will be located in a different logical network hereafter. Devices previously set up with the same logical network (same network name) will appear in the device list afterward by selecting this option.

The **Set All Devices** button is used to change the logical network of all devices that appear on the Main panel. The user must have entered the device's Password in order to set it to the new logical network. A notification message will appear to report this operation is successfully completed.

#### 4.4 The 'Diagnostics' Tab

The **Diagnostics** tab shows system information and a history of all devices seen. It will be something like *Figure 9*.

The **upper panel** shows technical data concerning software and hardware on the host computer used to communicate over Powerline Ethernet Network. It shall include the following information:

- Operating System Type/Version
- Host Network Name
- User Name
- MAC Address of all NICs (network interface card)
- Identify versions of all Driver DLLs and Libraries used (NDIS) and optionally
- Powerline Ethernet device chipset manufacturer name (85Mbps version Only)
- MAC Firmware Version (85Mbps version Only)
- Vendor name

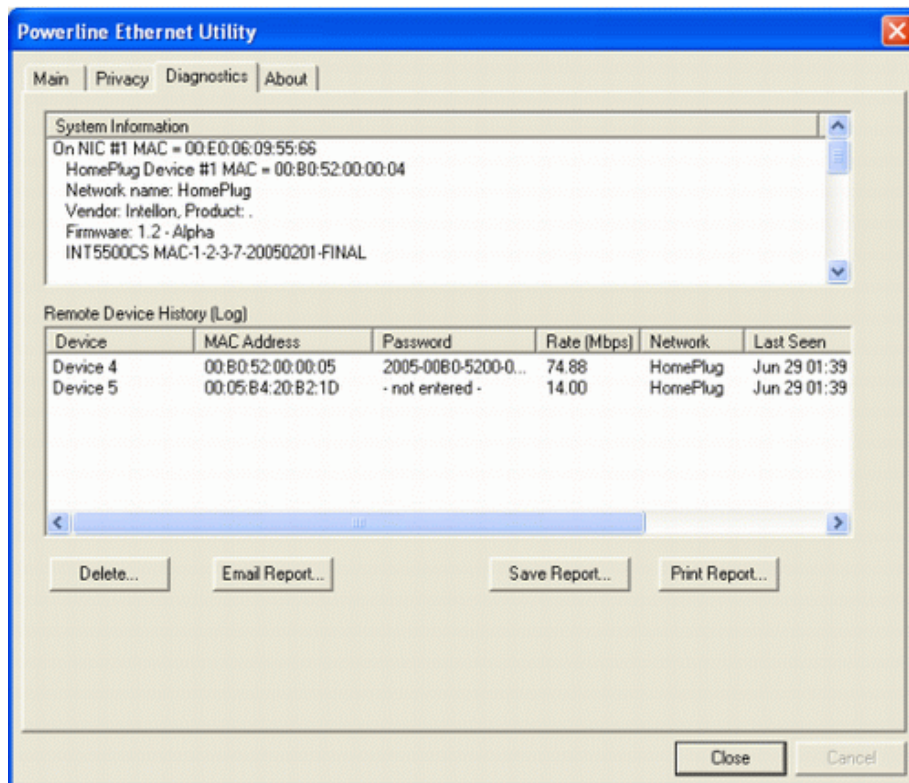


Figure 9: Diagnostics Screen

The **lower panel** contains a history of all remote devices found by the computer. Devices are shown here regardless they are located on the same logical network or not. Devices that are active on the current logical network will show a transfer rate in the 'Rate' column. For those devices which are located on other networks, or devices that may no longer exist are shown with an '?' mark in the 'Rate' column. The following remote device information is available in the diagnostics tab:

- Adapter Alias Name
- Adapter MAC Address
- Adapter Password

- Adapter Last known rate
- Adapter Last Known Network
- HomePlug chipset manufacturer name
- Data devices found lately
- MAC Firmware Version (85Mbps version Only)

The diagnostics information displayed may be saved to a text file for later emailing to technical support of a manufacturer, or printed for reference during a technical support call. Devices no longer part of the network can be deleted using the delete button.

#### 4.4.1 About tab

This tab shows the software release date.



Figure 10: About dialog screen

#### 4.4.2 Preferences

The lower part of the panel may display options for user preferences (such as turning the auto-scan feature on or off) as shown *Figure 10* listed above.



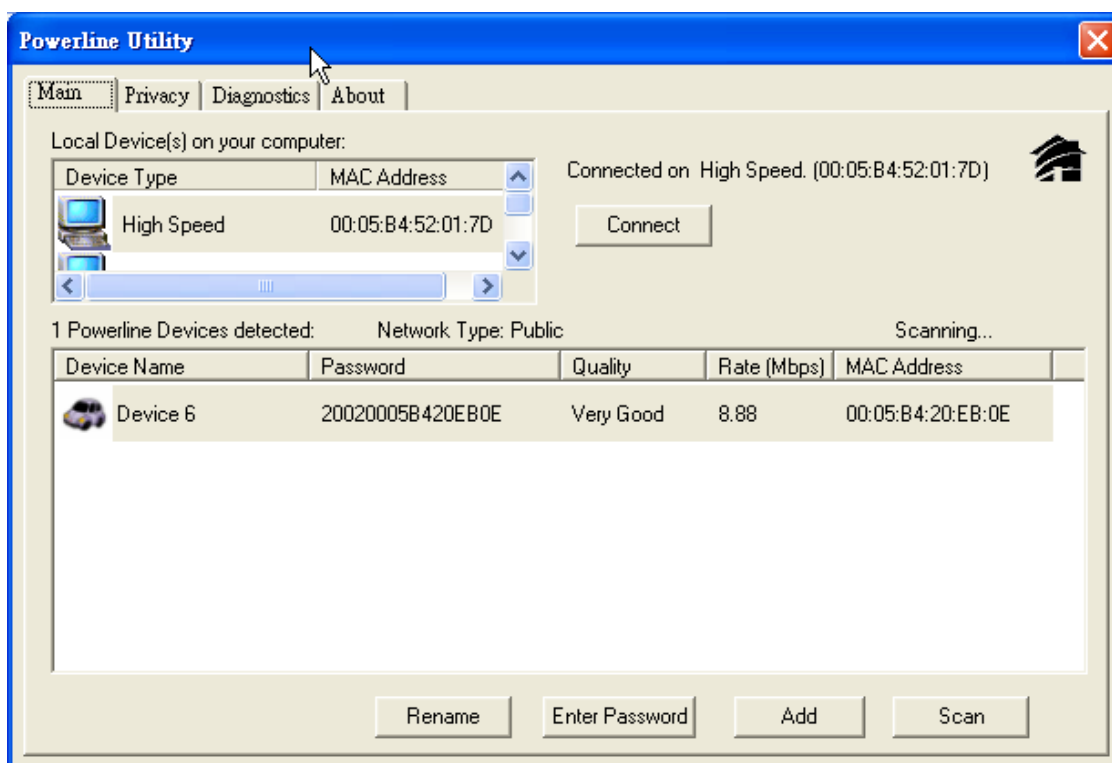
## 4.5 Troubleshooting

This section will introduce how to solve the problem for managing remote Powerline devices.

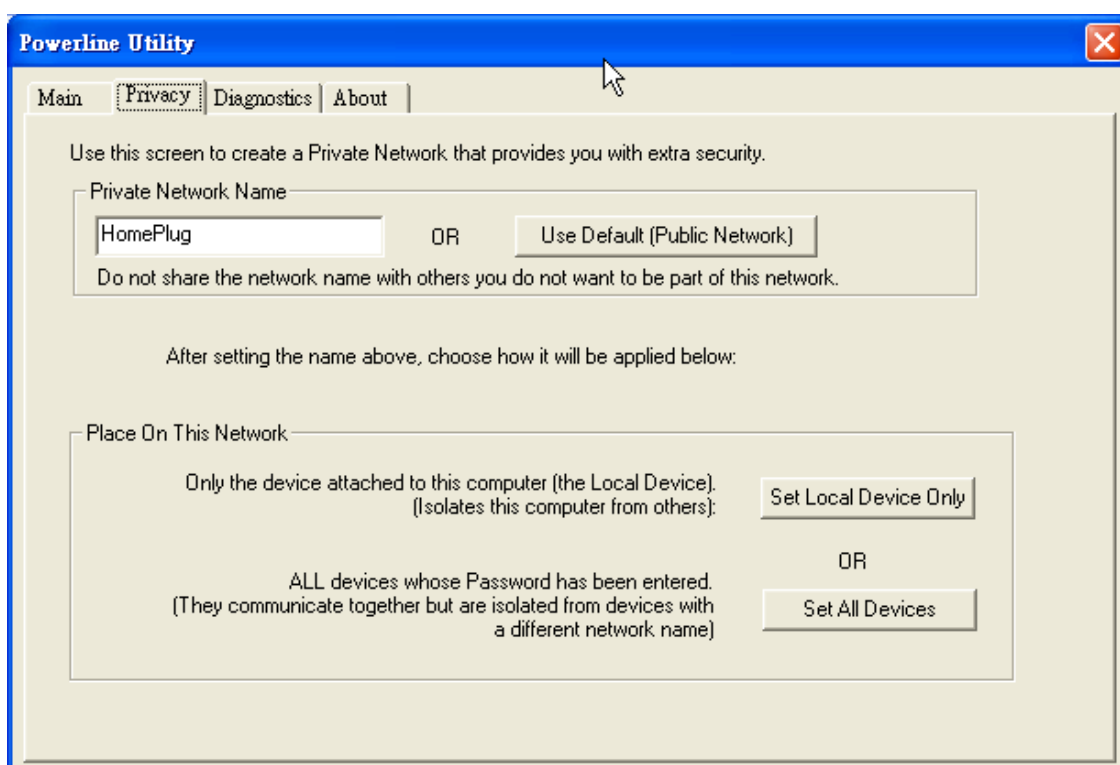
### 4.5.1 Having problem with connecting remote PowerLine Access Point device

When you found that the computer is unable to connect to another or the remote Powerline device can not found by Powerline utility, please follow the following steps to solve the problem.

**Step 1:** Launch the utility to check you can access the device or not. You can click the **Main** tab to check the status of local or remote Powerline devices. If no remote Powerline device is detected, please check network ID, maybe someone changed it..



**Step 2:** Connect to the other Powerline bridge or Wireless Access Point directly which can not be detected in last step 1. On the **Privacy** tab, you can change the Private Network name as the same name of other Powerline device or click the **Use Default (Public Network)** button. Please click the **Set Local Device Only** button to change the network name. Please make sure the Private Network Name value must the same with the other Powerline devices.



**Step 3:** Connect the PC to the Powerline device of step 1, and other Powerline device should be able to be found in the **Main** tab.



## **Appendix A Glossary**

### **Address mask**

A bit mask used to select bits from a set of IP address for subnet addressing. The mask is 32 bits long and network devices uses these bits to identify which bits in an IP address are network number, and which bits are hosy number. Address mask is also known as subnet mask.

### **AAL5**

ATM Adaptation Layer 5 - This layer maps higher layer user data into ATM cells, making the data suitable for transport through the ATM network.

### **ADSL**

Asymmetric digital subscriber line.

### **ATM**

Asynchronous Transfer Mode - A cell-based data transfer technique in which channel demand determines packet allocation.

ATM offers fast packet transfer technology, real time; demand led switching for efficient use of network resources.

### **AWG**

American Wire Gauge - The measurement of the thickness of a wire.

### **Bridge**

A device connects two or more physical networks and forwards packets between them. Bridges can also filter packets, that is, to forward only certain traffic. Related devices are: repeaters which simply forward electrical signals from one network to the other, and full-fledged router which make routing decisions based on several criteria.

### **Broadband**

Characteristic of any network multiplexes independent network carriers onto a single cable. Broadband technology allows several networks to coexist on one single cable; traffic from one network does not interfere with traffic from another. Broadcast a packet delivery system where a copy of a given packet is given to all hosts attached to the network. Example: Ethernet. \*\*Ethernet is based on basdband technology! It's recommended to use cable TV as example for 'multiplexes independent network carriers onto a single cable'.

### **CO**

Central Office. Refers to equipment located at a Telco or service provider's office.

**CPE**

Customer Premises Equipment located in a user's premises.

**DHCP (Dynamic Host Configuration Protocol)**

DHCP is a mechanism that automatically assigns IP addresses to client stations logging onto a TCP/IP network. DHCP eliminates the load of manually assign permanent IP addresses to every device on your network. DHCP software typically runs on servers and also can be found in network devices such as Wireless Access Points.

**DMT**

Discrete Multi-Tone frequency signal modulation

**Downstream rate**

The line rate of data which transfers from the other computer to local computer.

**DSLAM**

Digital Subscriber Line Access Multiplex

**Dynamic IP Addresses**

A dynamic IP address is an IP address that is automatically assigned to a client station (computer, printer, etc.) on a TCP/IP network. Dynamic IP addresses are typically assigned by a DHCP server, which can be a computer on the network or another piece of hardware, such as the Wireless Access Point. A dynamic IP address may change every time your computer connects to the network.

**Encapsulation**

The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the physical layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), and followed by the application protocol data.

**Ethernet**

One of the most common network technology used by local area network (LAN).

**FTP**

File Transfer Protocol. The Internet protocol (and program) used to transfer files between server and client.

**Hop count**

A measurement for the distance between two hosts on the network. It is equivalent to the number of routers that separate the source and destination.

**HTML**

Hypertext Markup Language - The page-coding language for the World Wide Web.

**HTML browser**

A browser is a program used to explore the Internet, such as Netscape or Microsoft Internet Explorer.

**http**

Hypertext Transfer Protocol - The protocol used to carry world-wide-web (www) traffic between a www client and the www server.

**ICMP**

Internet Control Message Protocol - The protocol used to handle errors and control messages at the IP layer. ICMP is actually a part of the IP.

**Internet address**

An IP address is assigned in blocks of numbers to user organizations accessing the Internet. These addresses are established by the United States Department of Defense's Network Information Center. Duplicate addresses can cause major problems on the network, but the NIC trusts organizations to use individual addresses responsibly. Each address is a 32-bit address in the form of x.x.x.x where x is an eight-bit number from 0 to 255. There are three major classes: A, B and C, depending on how many computers on the site are likely to be connected.

**Internet Protocol (IP)**

The network layer protocol for the Internet protocol suite

**IP address**

The 32-bit address assigned to hosts that want to participate in a TCP/IP Internet.

**ISP**

Internet service provider - A company allows home and corporate users to connect to the Internet.

**MAC**

Media Access Control Layer - A sub-layer of the Data Link Layer (Layer 2) of the ISO OSI Model responsible for

media control.

### **MIB**

Management Information Base - A collection of objects can be accessed via a network management protocol, such as SNMP and CMIP (Common Management Information Protocol).

### **NAT**

Network Address Translation - A proposal for IP address reuse, where the local IP address is mapped to a globally unique address.

### **NVT**

Network Virtual Terminal

### **PAP**

Password Authentication Protocol

### **PORT**

The abstraction used by Internet transport protocols to distinguish among multiple simultaneous connections to a single destination host.

### **POTS**

Plain Old Telephone Service - This is the term used to describe basic telephone service.

### **PPP**

Point-to-Point-Protocol - The successor to SLIP, PPP provides point-to-point and point-to-network connections over both synchronous and asynchronous circuits.

### **PPPoE**

PPP over Ethernet is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.

### **Remote server**

A network computer allows a user to log on to the network from a distant location.

### **RFC**

Request for Comments - Refers to documents published by the Internet Engineering Task Force (IETF) proposing standard protocols and procedures for the Internet. RFCs can be found at [www.ietf.org](http://www.ietf.org).

## **Route**

The path that network traffic takes from its source to its destination. The route that a datagram passes by may include many routers and many physical networks. In the Internet, each datagram is routed separately.

## **Router**

A system responsible for making decisions about which of several paths network (or Internet) traffic will follow. To do this, it uses a routing protocol to gain information about the network and algorithms to choose the best route based on several criteria known as 'routing metrics'.

## **Routing table**

Information stored within a router that contains network path and status information. It is used to select the most appropriate route to forward information along.

## **Routing Information Protocol**

Routers periodically exchange information with one another so that they can determine minimum distance paths between sources and destinations.

## **SNMP**

Simple Network Management Protocol - The network management protocol of choice for TCP/IP-based Internet.

## **SOCKET**

- (1) The Berkeley UNIX mechanism for creating a virtual connection between processes.
- (2) IBM term for software interfaces that allow two UNIX application programs to talk via TCP/IP protocols.

## **Spanning-Tree Bridge Protocol (STP)**

Spanning-Tree Bridge Protocol (STP) - Part of an IEEE standard. A mechanism for detecting and preventing loops from occurring in a multi-bridged environment. When three or more LAN's segments are connected via bridges, a loop can occur. Because a bridge forwards all packets that are not recognized as being local, some packets can circulate for long periods of time, which will eventually degrading system performance. This algorithm ensures only one path connects any pair of stations, selecting one bridge as the 'root' bridge, with the highest priority one as identifier, from which all paths should radiate.

## **Spoofing**

A method of fooling network end stations into believing that keep alive signals have come from and returned to the host. Polls are received and returned locally at either end

### **Static IP Addresses**

A static IP address is an IP address permanently assigned to computer in a TCP/IP network. Static IP addresses are usually assigned to networked devices that are consistently accessed by multiple users, such as Server PCs, or printers. If you are using your Wireless Access Point to share your cable or DSL Internet connection, contact your ISP to see if they have assigned your home a static IP address. You will need that address during your Wireless Access Point's configuration process.

### **Subnet**

For routing purposes, IP networks can be divided into logical subnets by using a subnet mask. Values below those of the mask are valid addresses on the subnet.

### **TCP**

Transmission Control Protocol - The major transport protocol in the Internet suite of protocols provides reliable, connection-oriented full-duplex streams.

### **TFTP**

Trivial File Transfer Protocol - A simple file transfer protocol (a simplified version of FTP) that is often used to boot diskless workstations and other network devices such as routers over a network (typically a LAN).

### **Telnet**

The virtual terminal protocol in the Internet suite of protocols - Allows users of one host to log into a remote host and act as normal terminal users of that host.

### **Transparent bridging**

It's named because the intelligence necessary to make relaying decisions exists in the bridge itself and is thus transparent to the communicating workstations. It involves frame forwarding, learning workstation addresses and ensuring no topology loops exist (in conjunction with the Spanning-Tree algorithm).

### **UDP**

User Datagram Protocol - A connectionless transport protocol that runs on top of TCP/IP's IP. UDP, like TCP, uses IP for delivery; however, unlike TCP, UDP provides for exchange of datagrams without acknowledgments or guaranteed delivery. Best suited for small, independent requests, such as requesting a MIB value from an SNMP agent, in which first setting up a connection would take more time than sending the data.

### **UNI signaling**

User Network Interface signaling for ATM communications.

**Virtual Connection (VC)**

A link that seems and behaves like a dedicated point-to-point line or a system that delivers packets in sequence, as happens on an actual point-to-point network. In reality, the data is delivered across a network via the most appropriate route. The sending and receiving devices do not have to be aware of the options and the route is chosen only when a message is sent. There is no pre-arrangement, so each virtual connection exists only for the duration of that one transmission.

**WAN**

Wide Area Network - A data communications network that spans any distance and is usually provided by a public carrier (such as a telephone company or service provider).

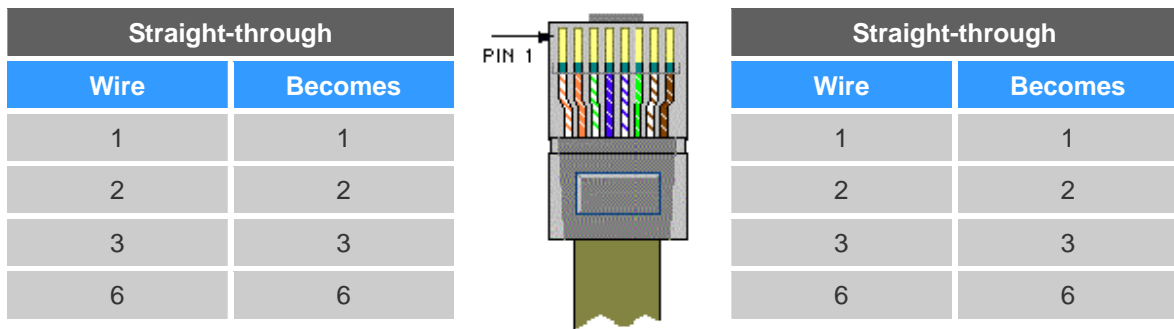
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## Appendix B Cabling / Connection

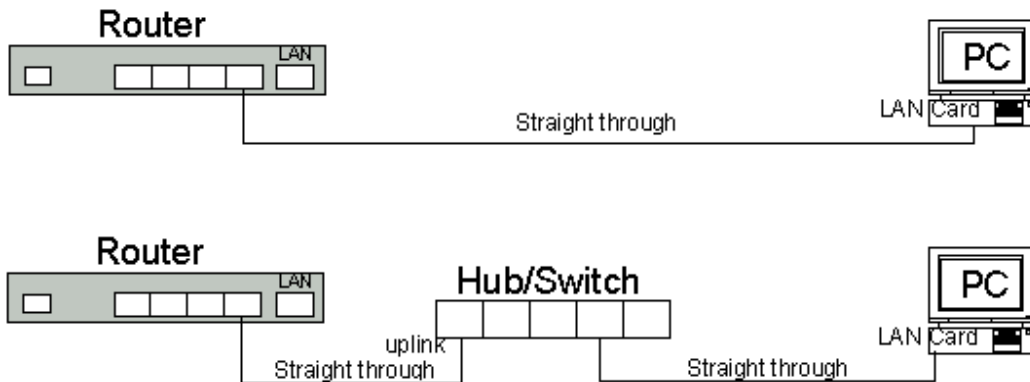
Network cables connect PCs in an Ethernet network Category 5, called as 'Cat5' for short is commonly used type of network cable today.

Cat 5 cables are tipped with RJ-45 connectors, which fit into RJ-45 port.

### Straight-through vs. Crossover Cables:



### LAN Connection:



Check if LEDs are illuminated when you finish connecting two pieces of hardware.

---



**Declaration of Conformity**

The following

Equipment: Powerline 85M Wireless-G Access Point

Report No.: S940111 is herewith confirmed to comply with the requirements set out in the Council Directive on the harmonization of the Laws of the Member States relating to electrical equipment designed for use within certain voltage limits (73/23/EEC).

For the evaluation of above mentioned Directives, the following standards were applied: EN 60950-1: 2001

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For the evaluation of above mentioned Directives, the following standards were applied:

ETSI EN 301 489-17: V1.2.1 (2002-08)

**Declaration of Conformity for CE Marking**

The following

Equipment: Powerline 85M Wireless-G Access Point

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Marking which have been set out in the Council Directive, and published as below:

- 1) The EMC Directives of 89/336/EEC, 92/31/EEC and 93/68/EEC;
- 2) The R&TTE Directive 1999/5/EC

For the evaluation of above mentioned Harmonised Standards, the following technical and test standards were applied:

ETSI EN 300328-1 : 2001

Testing Laboratory:

PEP TECHNOLOGIES LTD.

12FL-3, NO.27-1, LANE 169, KANG NING ST., HSI CHIH CITY, TAIPEI HSIEN, TAIWAN, R.O.C.

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