

IEEE802.11b

Wireless LAN USB Adapter

User Manual

Version 1.0

2003/6/16

REGULATION INFORMATION

The WLAN USB Adapter must be installed and used in strict accordance with the manufacturer's instructions. This device complies with the following radio frequency and safety standards.

FCC (Federal Communications Commission)

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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

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

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

Notice: The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification not expressly approved by the party responsible could void the user's authority to operate the device.

R&TTE Directive

This device complies with the specifications listed below:

- ETS 301-489 -1&-17 General EMC requirements for Radio equipment.
- ETS 300-328 Technical requirements for Radio equipment.
- EN60950 Safety Requirements for Radio equipment

The channel identifiers, channel center frequencies, and regulatory domains of each 22-MHz-wide channel are shown in following Table.

Channel Identifier	Center Frequency (MHZ)	Regulatory Domains					
		Japan	ETSI	North America	Israel	France	Mexico
1	2412	✓	✓	✓			
2	2417	✓	✓	✓			
3	2422	✓	✓	✓	✓		
4	2427	✓	✓	✓	✓		
5	2432	✓	✓	✓	✓		
6	2437	✓	✓	✓	✓		
7	2442	✓	✓	✓	✓		
8	2447	✓	✓	✓	✓		
9	2452	✓	✓	✓	✓		
10	2457	✓	✓	✓		✓	✓
11	2462	✓	✓	✓		✓	✓
12	2467	✓	✓			✓	
13	2472	✓	✓			✓	
14	2484	✓					

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1 Introduction

Thank you for purchasing Wireless LAN USB Adapter. You are about to install a networking system that is not only fast and powerful, but also easy to set up and simple to maintain. In a short time you and those in your network will be able to share a local printer and files, access the Internet, and roam about the office wire-freely.

Using radio frequency (RF) technology, WLAN devices transmit and receive data over the air, minimizing the need for wired connections. Thus, WLANs combine data connectivity with user mobility, and, through simplified configuration, enable movable LANs.

This wireless networking solution has been designed for both large and small businesses, and it is scalable so that you can easily add more users and new network features as your business grows.

This user' s guide will assist you in installing the WLAN USB Adapter.

2 Wireless LAN Basics

Wireless LAN network defined by IEEE 802.11b standard committee could be Configure as: **Ad Hoc wireless LAN** or **Infrastructure wireless LAN**.

Ad Hoc network is a group of notebooks with wireless LAN adapter, called a BSS (Basic Service Set). These notebooks use their wireless LAN adapter to communicate with each other directly.

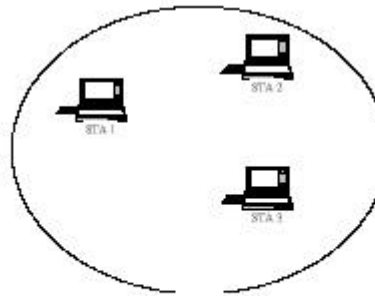


Figure 2-1 Ad Hoc wireless network

The most obvious differentiation between **Infrastructure** wireless network and **Ad Hoc** wireless network is that the notebooks in **Infrastructure** wireless network can make use of the resource in the Internet through **Access Point**.

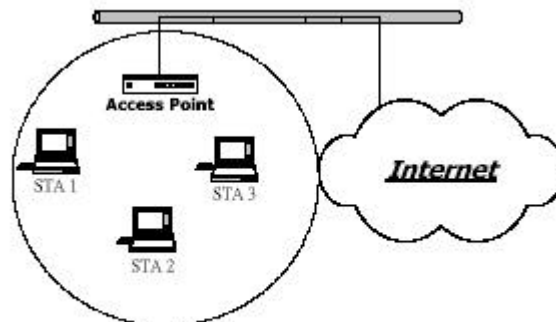


Figure 2-2 Infrastructure wireless network

To set up your notebook' s network as the type of “**Ad Hoc**” or “**Infrastructure**” wireless network depends completely on your requirement. Generally, if your network environment has an **Access Point**, it' s recommend that you set it as “**Infrastructure**” mode to connect to the **Internet**.

3 Drivers and Utility Installation

This section describes the procedures for installing the Wireless LAN USB Adapter.

Before You Start

Before installation, please check your system in advance and ensure it meets the minimum requirements as described below.

- Processor: Intel Celeron / Pentium II / Pentium III / Pentium IV; AMD Duron / Athlon
- Operating System: Microsoft Windows 98SE / ME / 2000 / XP
- System memory: 32MB at least
- Hard Drive Free Space: 5MB

Note: To prevent potential problems during installation, please use the auto-run installation tool on the CD to finish the driver installation before you plug the WLAN USB Adapter into the computer.

To use the WLAN USB Adapter with a computing device, the device must be equipped with an available USB port. All drivers and supporting software for the WLAN USB Adapter must be installed and configured.

Ask your system administrator for the following information, which you may need during driver installation:

- Your Wireless LAN SSID.
- Your computer's unique client name and workgroup name
- For your network account, your user name and password.
- Your IP address, gateway address, and subnet mask. (If you're not using a DHCP server)

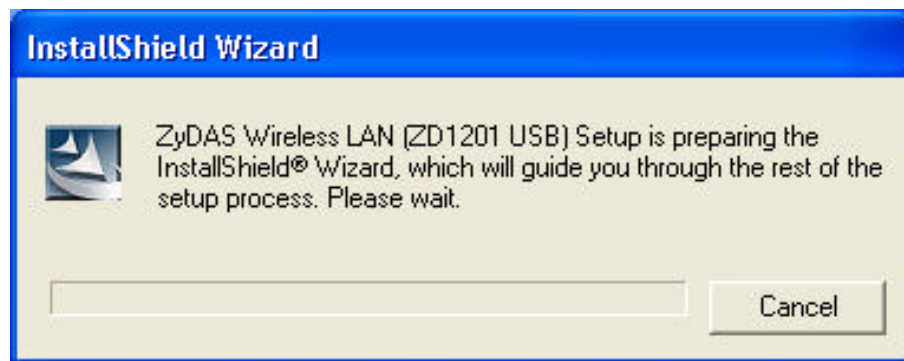
Every computer on a network is identified by a unique network address. There are two methods to assign network addresses to computers on a TCP/IP network:

- Static IP addressing
- Dynamic IP addressing (DHCP)

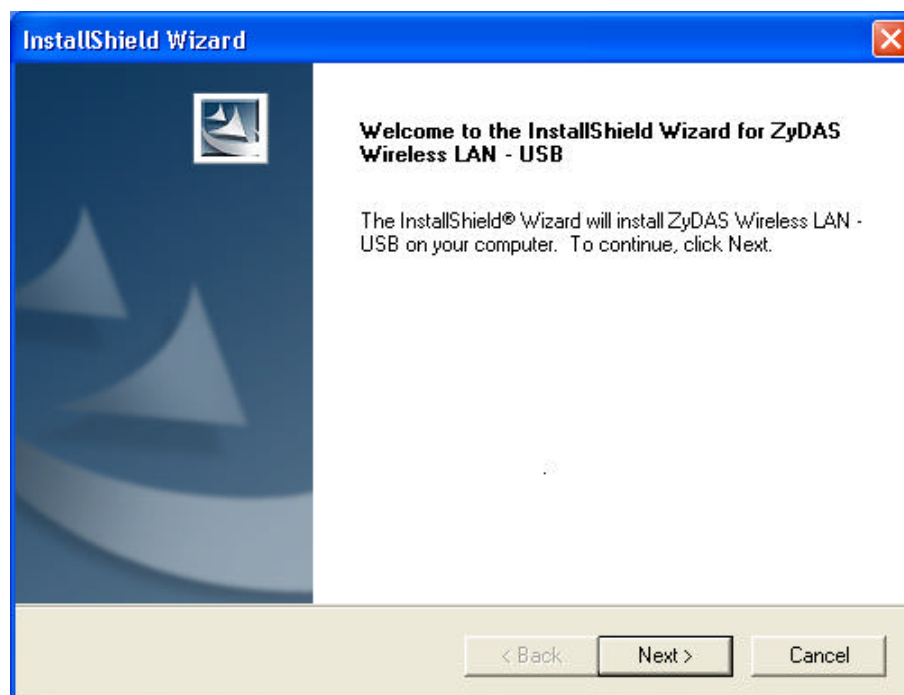
In networks with **static IP** addressing, the network administrator manually assigns an IP address to each computer. Once a static IP address is assigned, a computer uses the same IP address every time it reboots and logs on to the network. You may manually change the IP address in the **Network Properties dialog box**. Networks using static IP addresses are easy to set up and do not require additional network management software.

In networks with **dynamic IP** addressing, a DHCP server in the network dynamically assigns IP addresses to all clients every time they log on to the network. Network using dynamic IP addresses require setting up and running a DHCP Server.

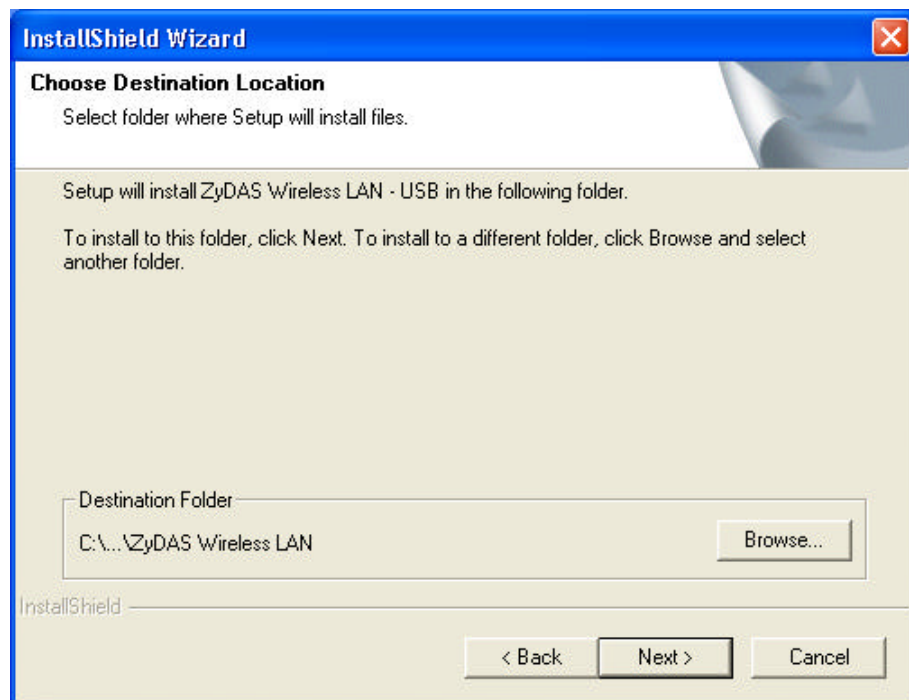
1. Insert the installation & driver CD to your CD-ROM, It will auto run installation program.



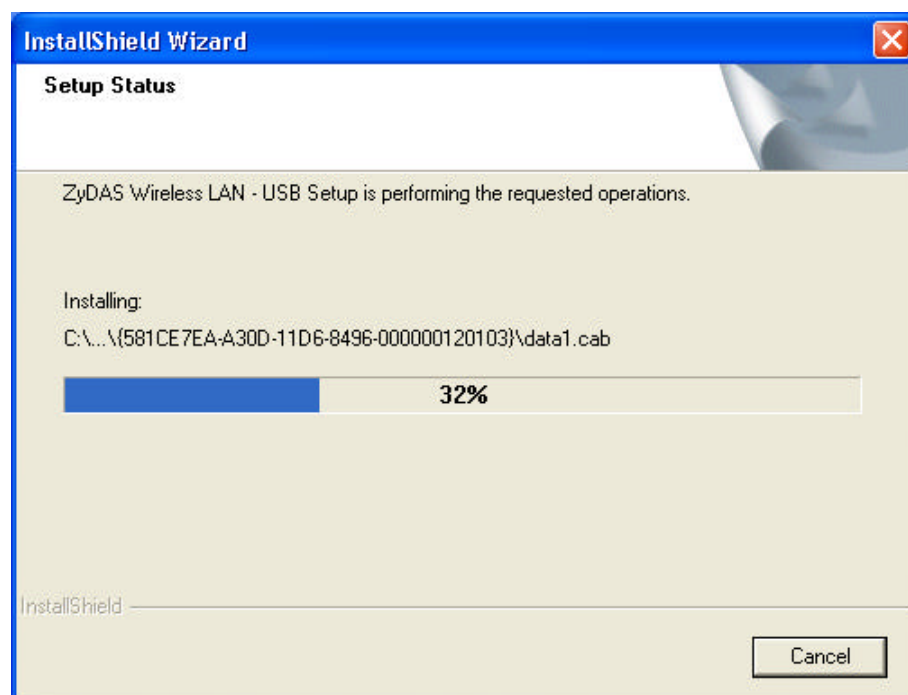
2. Click "Next" to continue.



3. Click “Next” to install at the designated folder. Or, click “Browse” to select different folder.



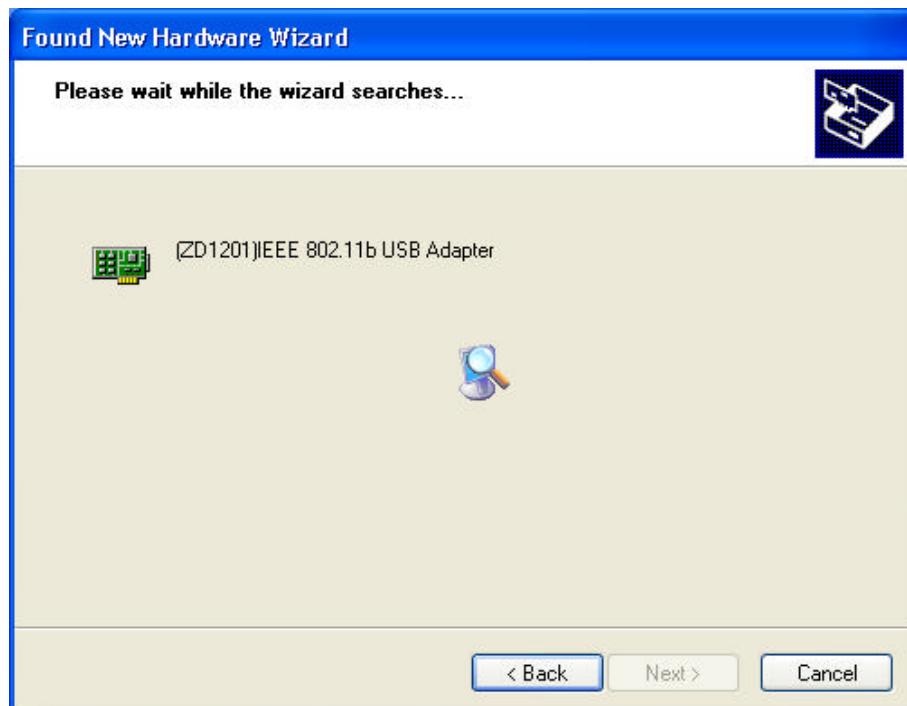
4. Start copying files until it finish the installation.



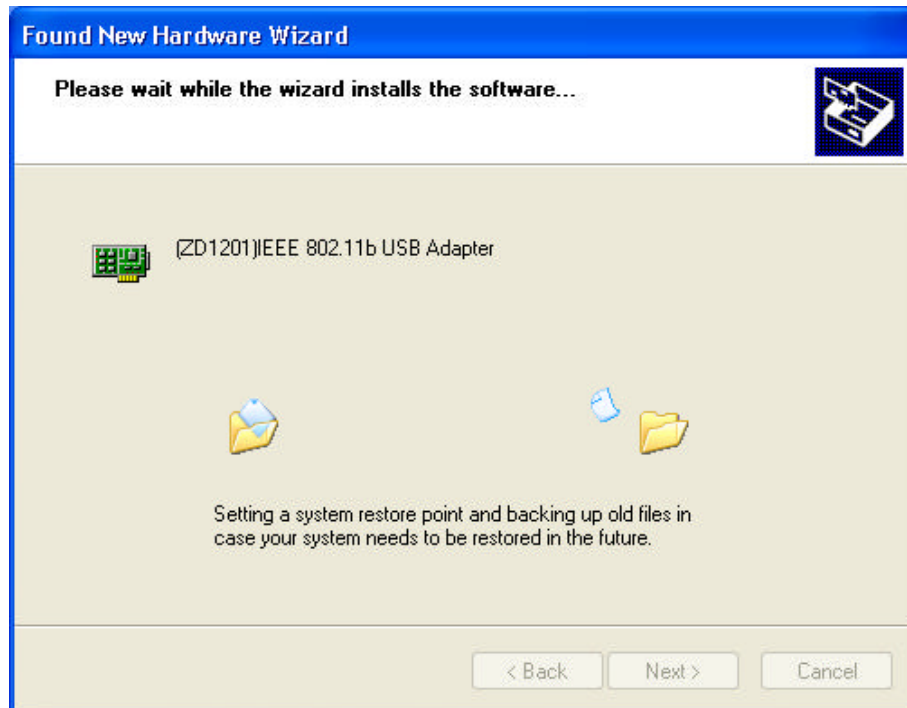
5. Plug the USB adapter into the USB of your PC. When Windows is ready to configure the new hardware, it opens the “Found New Hardware Wizard” dialog box as shown below. Select “Install the software automatically (Recommended)” and click “Next” to continue.



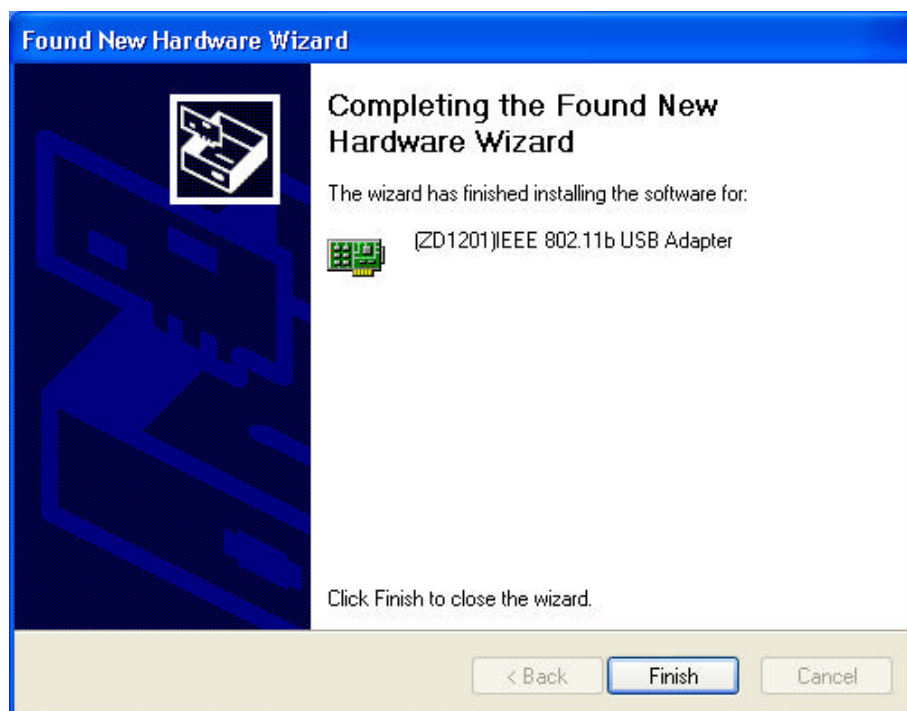
6. The Wizard is searching the driver.



7. Start copying the driver



8. Click "Finish" to complete the Setup.



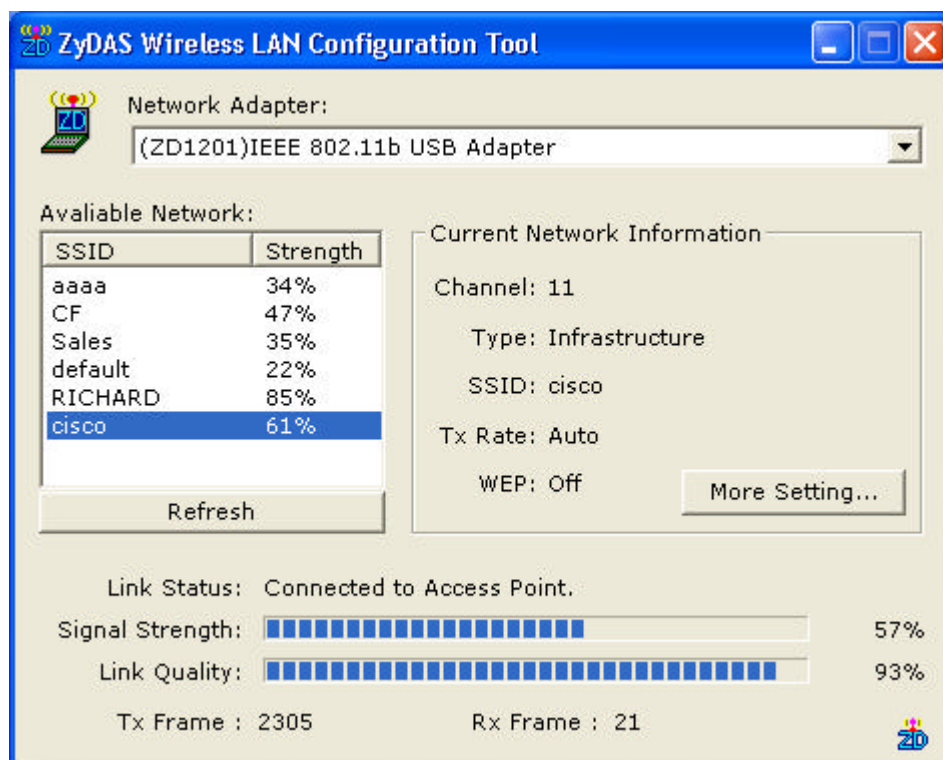
4 Wireless Network Configuration

WLAN USB Adapter uses its own management software. All functions controlled by users are provided by this application. When you insert the WLAN USB Adapter into

the USB Adapter slot, a new icon, , should appear in the Windows System Tray automatically. If the icon is in red, it means that WLAN USB Adapter configuration is invalid or incomplete. Double click that icon and the configuration window will pop up as shown below. It shows the SSID of available network. Once a network is chosen, the signal strength and link quality are displayed

The Link Quality and Signal Strength bar graph is only active when the node is in Infrastructure Mode. The bar graph displays the quality and strength of the link between the node and its Access Point. Link Quality is a measurement of receiving and transmitting errors over the radio.

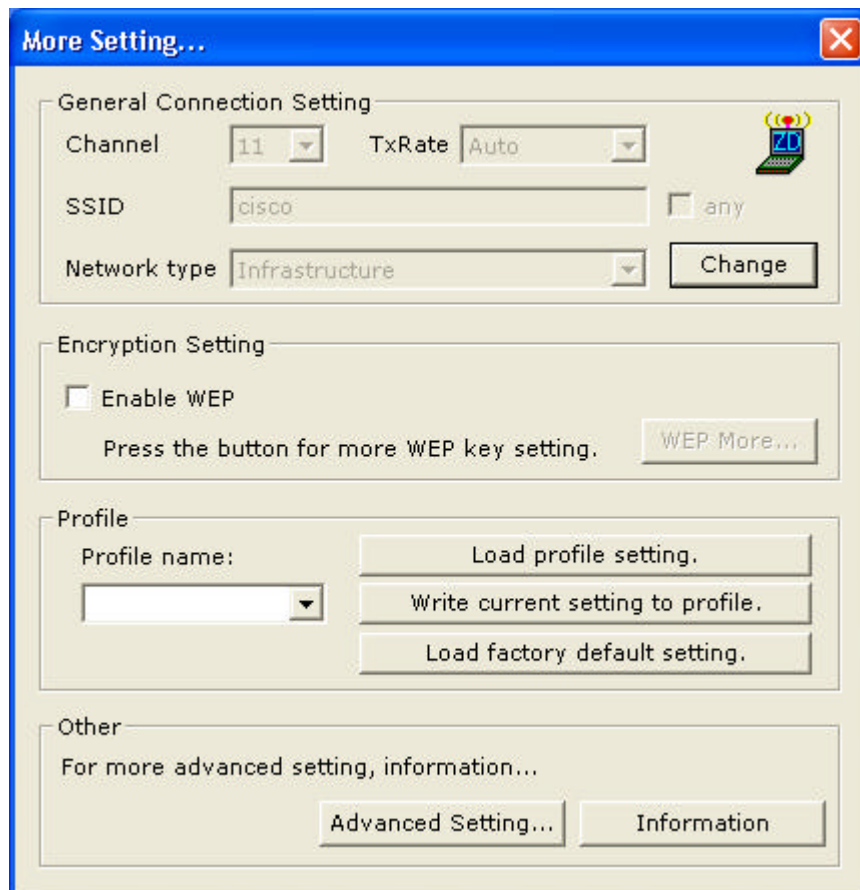
Tx/Rx Frame displays the instantaneous wireless Transmit and Receive throughput in bytes per second. These values are updated every two seconds.



The Configuration Tool contains several fields where operating parameters of the driver can be viewed or changed. Changes to any of the parameters in this panel can be applied to the driver without a need to restart the computer.

Current Network Information displays the current network configuration. If you want to change network configuration, click “More Setting” .

In this panel, you can modify the general network connection setting, enable/disable the WEP, load/modify profile and other setting. Through this control panel, you will be able to access the corporate wireless LAN or hot spots such as hotel, airport, and conference hall.

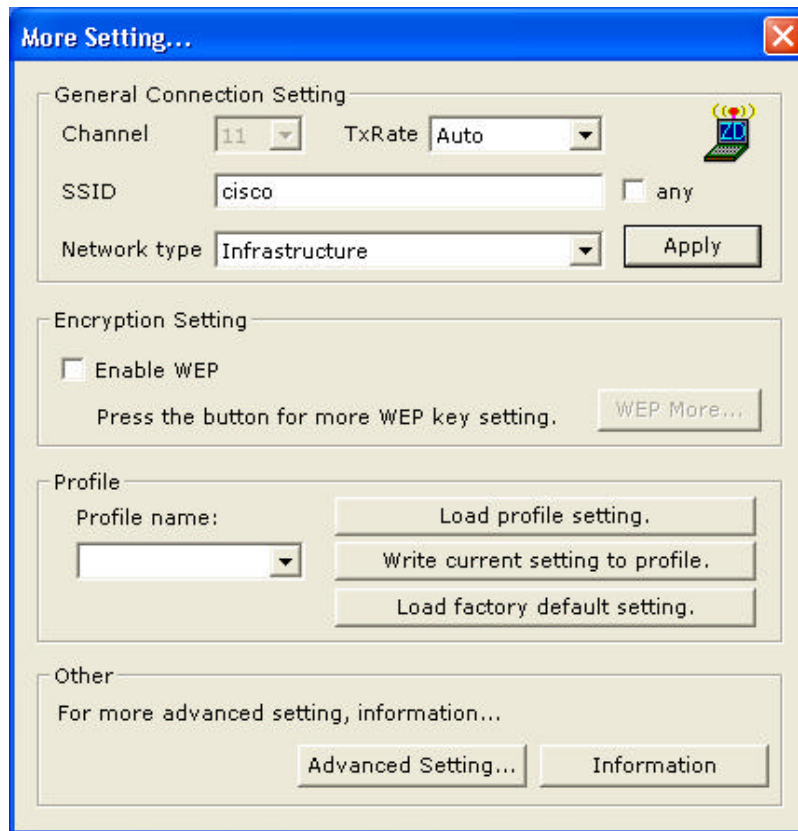


The screenshot shows a Windows-style dialog box titled "More Setting...". It contains four main sections: "General Connection Setting", "Encryption Setting", "Profile", and "Other".

- General Connection Setting:** Includes a "Channel" dropdown set to "11", a "TxRate" dropdown set to "Auto", an "SSID" text field containing "cisco", a checkbox for "any" (unchecked), a "Network type" dropdown set to "Infrastructure", and a "Change" button.
- Encryption Setting:** Includes a checkbox for "Enable WEP" (unchecked), a text prompt "Press the button for more WEP key setting.", and a "WEP More..." button.
- Profile:** Includes a "Profile name:" label, a dropdown menu, and three buttons: "Load profile setting.", "Write current setting to profile.", and "Load factory default setting."
- Other:** Includes a text prompt "For more advanced setting, information..." and two buttons: "Advanced Setting..." and "Information".

4.1 General Connection Setting

Click "Apply" to modify SSID, network type or select Transmit rate.



The screenshot shows a Windows-style dialog box titled "More Setting...". It contains four main sections:

- General Connection Setting:** Includes a "Channel" dropdown set to "11", a "TxRate" dropdown set to "Auto", an "SSID" text field containing "cisco", a "Network type" dropdown set to "Infrastructure", and an "Apply" button. There is also a small icon of a wireless card with "ZD" on it.
- Encryption Setting:** Features a checkbox for "Enable WEP" which is currently unchecked. Below it is the text "Press the button for more WEP key setting." and a "WEP More..." button.
- Profile:** Includes a "Profile name:" label, a dropdown menu, and three buttons: "Load profile setting.", "Write current setting to profile.", and "Load factory default setting."
- Other:** Contains the text "For more advanced setting, information..." and two buttons: "Advanced Setting..." and "Information".

4.2 Encryption Setting

You may want an additional measure of security on your wireless network, which can be achieved by using WEP (Wired Equivalent Privacy) encryption. WEP encrypts each frame transmitted from the radio using one of the Keys entered in this panel.

When an encrypted frame is received it will only be accepted if it decrypts correctly. This will only happen if the receiver has the same WEP Key used by the transmitter.

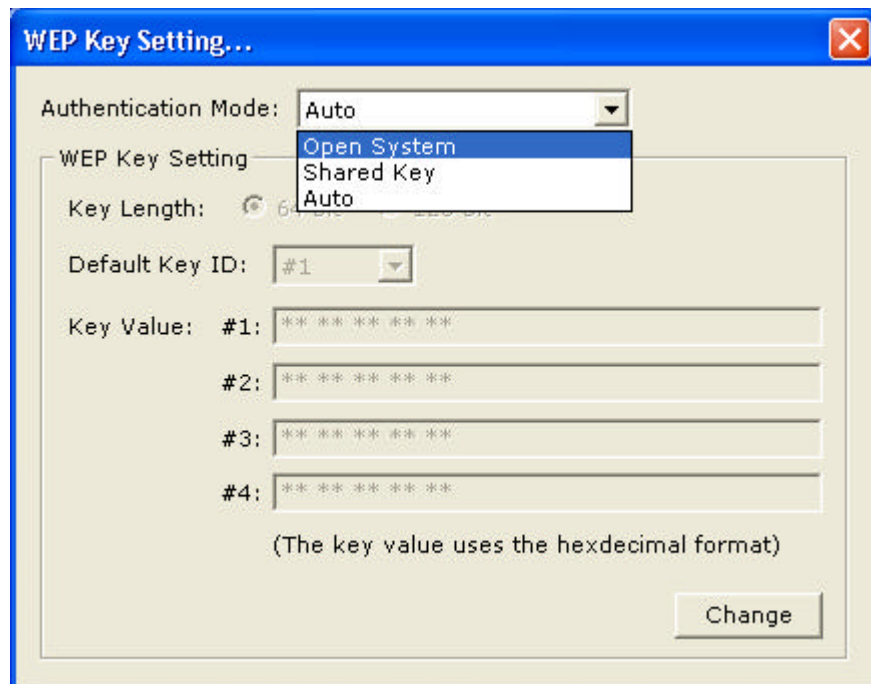
The default state in Encryption Setting is WEP disabled. Check "Enable WEP" to enable the encryption.

For more WEP key setting, Click "WEP more".

Three authentication modes are available: Open System, Shared Key and Auto. The Open System uses default key to authenticate the station and Access Point. Once both parties are authenticated, the station is allowed to send and receive data from the network. However, the data are not encrypted.

In Shared Key system, the station and Access Point are authenticated each other. The data frame is also encrypted by the WEP key.

In Auto Mode, the Access Point takes control of network security setting and station will follow the setting required from AP.



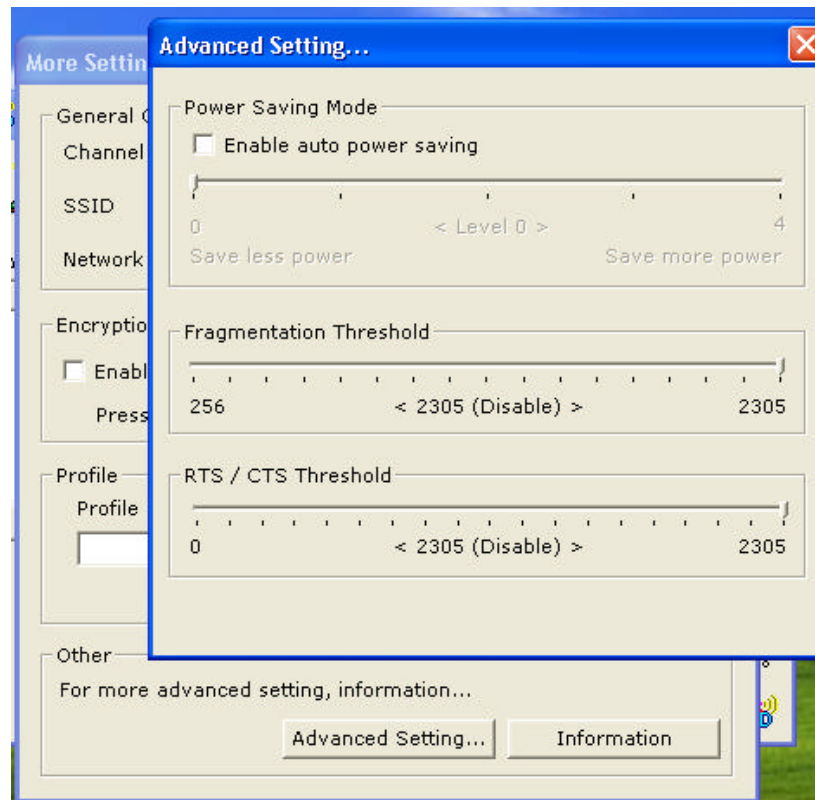
Click the close icon of “WEP Key Setting” windows and return to the main page of Configuration Tool.

4.3 Profile

Each profile represents specific settings of the USB adapter. You can set the settings for each profile. Next time when you want to change the USB adapter settings, you can just select the profile you want to use.

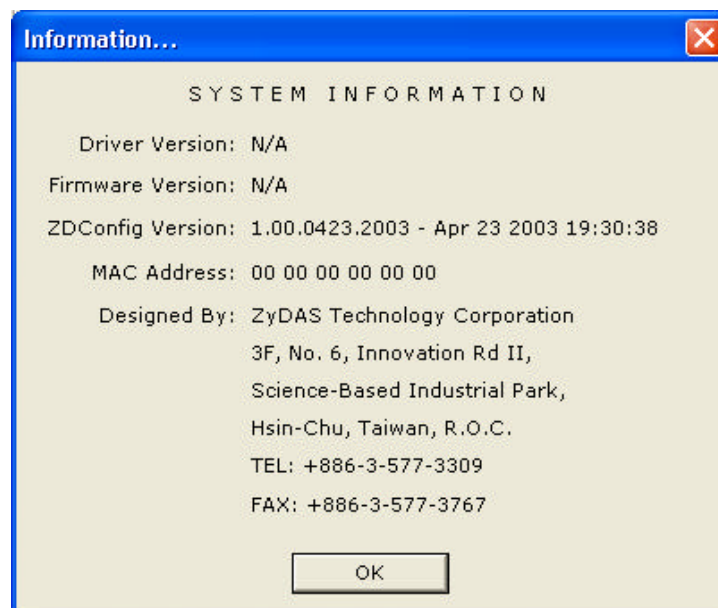
4.4 Advanced Setting

Click “Advanced Setting” to enable power saving mode that has 5 different levels. It also allows you to set the threshold of fragmentation and CTS/RTS.



4.5 System Information

Click “Information” and the pop-up window will show the Driver Version, Firmware Version, MAC address of this USB adapter and so on.



5 Technical Specifications of WLAN USB Adapter

Product Name	11b WLAN USB Adapter
Standard	IEEE802.11b
Frequency Band	2.400GHz ~ 2.4835GHz unlicensed ISM band
Spread Spectrum	DSSS (Direct Sequence Spread Spectrum)
Modulation method	DQPSK/DBPSK/CCK
Data Rate	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Operation mode	Ad hoc Infrastructure (Access Points is needed)
Transmitter Output Power	< 15 dBm
Receive Sensitivity	Operating at 11Mbps: Better than 8% PER @ -80dBm
Operating Range	30 to 300 m, depending on surrounding environment
Antenna	Chip antenna
Security	64-bit or 128-bit WEP (Wired Equivalent Privacy)
I/O Interface	USB 1.1
LED	Link/Active
Operating system supported	Windows 98Se, Me, 2000 and XP
Management	Windows-based utility for configuration and status monitoring
Regulation	FCC part 15B/C for North America CE/ETSI for European
Dimension	77.5(L) x 27(W) x 10.5(H) mm
Weight	19 g
Operating Temperature	0 ~ 50°C
Storage Temperature	-20 ~ 70°C
Humidity	5 ~ 90% (non-condensing)

6 Glossary

IEEE 802.11 Standard

The IEEE 802.11 Wireless LAN standards subcommittee, which is formulating a standard for the industry.

Access Point

An internetworking device that seamlessly connects wired and wireless networks together.

Ad Hoc

An Ad Hoc wireless LAN is a group of computers, each with a WLAN adapter, connected as an independent wireless LAN. Ad Hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

BSSID

A specific Ad Hoc LAN is called a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSSID.

DHCP

Dynamic Host Configuration Protocol - a method in which IP addresses are assigned by server dynamically to clients on the network. DHCP is used for Dynamic IP Addressing and requires a dedicated DHCP server on the network.

Direct Sequence Spread Spectrum

This is the method the wireless adapters use to transmit data over the frequency spectrum. The other method is frequency hopping. Direct sequence spreads the data over one frequency range (channel) while frequency hopping jumps from one narrow frequency band to another many times per second.

ESSID

An Infrastructure configuration could also support roaming capability for mobile workers. More than one BSS can be configured as an Extended Service Set (ESS). Users within an ESS could roam freely between BSSs while served as a continuous connection to the network wireless stations and Access Points within an ESS must be configured with the same ESSID and the same radio channel.

Ethernet

Ethernet is a 10/100Mbps network that runs over dedicated home/office wiring. Users must be wired to the network at all times to gain access.

Gateway

A gateway is a hardware and software device that connects two dissimilar systems, such as a LAN and a mainframe. In Internet terminology, a gateway is another name for a router. Generally a gateway is used as a funnel for all traffic to the Internet.

IEEE

Institute of Electrical and Electronics Engineers

Infrastructure

An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to central database, or wireless application for mobile workers.

ISM Band

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the so-called ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

Local Area Network (LAN)

A LAN is a group of computers, each equipped with the appropriate network adapter adapter connected by cable/air that share applications, data, and peripherals. All connections are made via cable or wireless media, but a LAN does not use telephone services. It typically spans a single building or campus.

Network

A network is a system of computers that is connected. Data, files, and messages can be transmitted over this network. Networks may be local or wide area networks.

Protocol

A protocol is a standardized set of rules that specify how a conversation is to take place, including the format, timing, sequencing and/ or error checking.

SSID

A Network ID unique to a network. Only clients and Access Points that share the same SSID are able to communicate with each other. This string is case-sensitive.

Simple Network Management Protocol (SNMP)

Simple Network Management Protocol is the network management protocol of TCP/IP. In

SNMP, agents-which can be hardware as well as software-monitor the activity in the various devices on the network and report to the network console workstation. Control information about each device is maintained in a structure known as a management information block.

Static IP Addressing

A method of assigning IP addresses to clients on the network. In networks with Static IP address, the network administrator manually assigns an IP address to each computer. Once a Static IP address is assigned, a computer uses the same IP address every time it reboots and logs on to the network, unless it is manually changed.

Transmission Control Protocol / Internet Protocol (TCP/IP)

TCP/IP is the protocol suite developed by the Advanced Research Projects Agency (ARPA). It is widely used in corporate Internet works, because of its superior design for WANs. TCP governs how packet is sequenced for transmission the network. The term “TCP/IP” is often used generically to refer to the entire suite of related protocols.

Transmit / Receive

The wireless throughput in Bytes per second averaged over two seconds.

Wide Area Network (WAN)

A WAN consists of multiple LANs that are tied together via telephone services and / or fiber optic cabling. WANs may span a city, a state, a country, or even the world.

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