

802.11n 2.0 draft Wireless

LAN CardBus Adapter

User's Guide

Federal Communication Commission Interference Statement

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

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

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

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

IMPORTANT NOTE:

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

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

SAR compliance has been established in typical laptop computer(s) with CardBus slot, and product could be used in typical laptop computer with CardBus slot. Other application like handheld PC or similar device has not been verified and may not compliance with related RF exposure rule and such use shall be prohibited.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN 60 950-1: 2001 +A11: 2004

Safety of Information Technology Equipment

EN 50392: (2004-01)

Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz - 300 GHz)

EN 300 328 V1.7.1: (2006-10)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

EN 301 489-1 V1.6.1: (2005-09)

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

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










Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

C € 0560 !

 Česky [Czech]	<i>[Jméno výrobce]</i> tímto prohlašuje, že tento <i>[typ zařízení]</i> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
 Dansk [Danish]	Undertegnede <i>[fabrikantens navn]</i> erklærer herved, at følgende udstyr <i>[udstyrets typebetegnelse]</i> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
 Deutsch [German]	Hiermit erkläre <i>[Name des Herstellers]</i> , dass sich das Gerät <i>[Gerätetyp]</i> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
 Eesti [Estonian]	Käesolevaga kinnitab <i>[tootja nimi = name of manufacturer]</i> seadme <i>[seadme tüüp = type of equipment]</i> vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
 English	Hereby, <i>[name of manufacturer]</i> , declares that this <i>[type of equipment]</i> is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
 Español [Spanish]	Por medio de la presente <i>[nombre del fabricante]</i> declara que el <i>[clase de equipo]</i> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
 Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ <i>[name of manufacturer]</i> ΔΗΛΩΝΕΙ ΟΤΙ <i>[type of equipment]</i> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
 Français [French]	Par la présente <i>[nom du fabricant]</i> déclare que l'appareil <i>[type d'appareil]</i> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
 Italiano [Italian]	Con la presente <i>[nome del costruttore]</i> dichiara che questo <i>[tipo di apparecchio]</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo <i>[name of manufacturer / izgatavotāja nosaukums]</i> deklarē, ka <i>[type of equipment / iekārtas tips]</i> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo <i>[manufacturer name]</i> deklaruoją, kad šis <i>[equipment type]</i> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.









 Nederlands [Dutch]	Hierbij verklaart [<i>naam van de fabrikant</i>] dat het toestel [<i>type van toestel</i>] in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
 Malti [Maltese]	Hawnhekk, [<i>isem tal-manifattur</i>], jiddikjara li dan [<i>il-mudel tal-prodott</i>] jikkonforma mal-htigijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Direttiva 1999/5/EC.
 Magyar [Hungarian]	Alulírott, [<i>gyártó neve</i>] nyilatkozom, hogy a [<i>... típus</i>] megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
 Polski [Polish]	Niniejszym [<i>nazwa producenta</i>] oświadczam, że [<i>nazwa wyrobu</i>] jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
 Português [Portuguese]	[<i>Nome do fabricante</i>] declara que este [<i>tipo de equipamento</i>] está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
 Slovensko [Slovenian]	[<i>Ime proizvajalca</i>] izjavlja, da je ta [<i>tip opreme</i>] v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	[<i>Meno výrobcu</i>] týmto vyhlasuje, že [<i>typ zariadenia</i>] spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
 Suomi [Finnish]	[<i>Valmistaja = manufacturer</i>] vakuuttaa täten että [<i>type of equipment = laitteen tyyppimerkintä</i>] tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
 Svenska [Swedish]	Härmed intygar [<i>företag</i>] att denna [<i>utrustningstyp</i>] står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

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Technical Specifications	錯誤! 尚未定義書籤。

INTRODUCTION

Congratulations on your purchase of this 802.11n 2.0 draft Wireless LAN CardBus Adapter .

This manual contains detailed instructions regarding the operation of this product. Please keep this manual for future reference.

With the 802.11n 2.0 draft Wireless LAN CardBus Adapter , a desktop or laptop computer can communicate with another computer wirelessly. An easy-to-use utility is bundled with the Wireless USB Adapter for configuration, monitoring, and diagnostic purposes.

The 802.11n 2.0 draft Wireless LAN CardBus Adapter can wirelessly transmit and receive data, at a speed of up to 54 megabits per second.

The 802.11n 2.0 draft Wireless LAN CardBus Adapter provides users with access to real-time information anywhere in their organization. The mobility of the 802.11n 2.0 draft Wireless LAN CardBus Adapter provides productivity and service, which are not available under wired networks. The 802.11n 2.0 draft Wireless LAN CardBus Adapter can easily adapt from peer-to-peer networks, suitable for a small number of users, to full infrastructure networks of thousands of users that allow roaming around a broad area.

Overview of this User's Guide

Introduction. Describes the 802.11n 2.0 draft Wireless LAN CardBus Adapter and its features.

Unpacking and Setup. Helps you get started with the basic installation of the 802.11n 2.0 draft Wireless LAN CardBus Adapter .

Hardware Installation. Describes the LED indicator on the Adapter.

Software Installation. Describes how to setup the driver and the utility setting.

Technical Specifications. Lists the technical (general, physical and environmental) specifications of the 802.11n 2.0 draft Wireless LAN CardBus Adapter .

UNPACKING AND SETUP

This section provides unpacking and setup information for the 802.11n 2.0 draft Wireless LAN CardBus Adapter

Unpacking

The box should contain the following items:

- ◆ One 802.11n 2.0 draft Wireless LAN CardBus Adapter
- ◆ One Driver & Utility CD-ROM

If any item is found missing or damaged, please contact your local reseller for replacement.

Setup

Before installation, check the following:

- Make sure your computer is running at least a 150 MHz or above processor with 256MB RAM or above
- Visually inspect the CardBus Adapter and make sure that it is fully plugged in to the CardBus slot.
- The operating system on your computer must be the following: Windows 2000 (Service Pack 4), XP (Service Pack 2), Windows Vista
- A draft 802.11n or 802.11b/g access point.
- Make sure the environment has minimal interference and obstructions.

IDENTIFYING EXTERNAL COMPONENTS

LED

When the LED is blinking, the WLAN Adapter is transmitting or receiving data on the Wireless Ethernet network.

Check the installation

The LEDs of the Wireless LAN Adapter are clearly visible and the status of the network link can be seen instantly:

1. Once the device is plugged to the station's CardBus slot, the LED of the Wireless LAN Adapter will light up indicating a normal status.
2. When the device plugged to the station's CardBus slot and the driver was installed, the ACT will start alternate blinking, it means that the device is starting to scan the wireless devices near the Wireless LAN Adapter.
3. While the Wireless LAN Adapter linked up and transmitting data to the Access Point or to other Wireless LAN station, the Link LED will lighted green.

SOFTWARE INSTALLATION

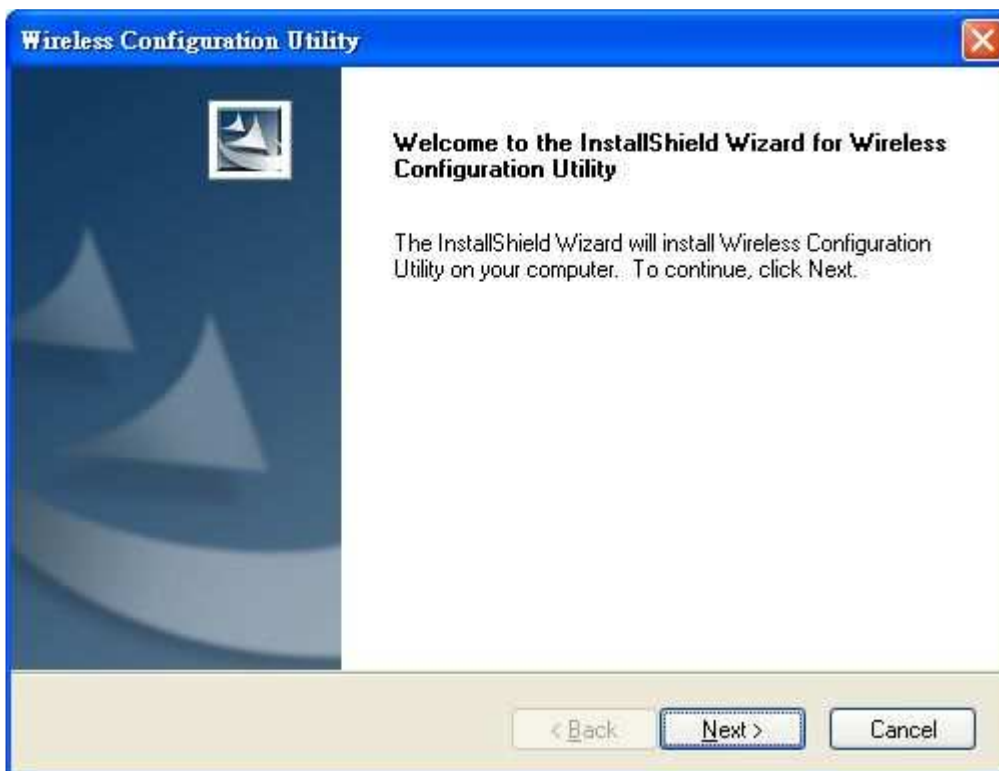
This section describes how to install the driver and utility for the 802.11n 2.0 draft Wireless LAN CardBus Adapter .

Windows Based Utility Installation

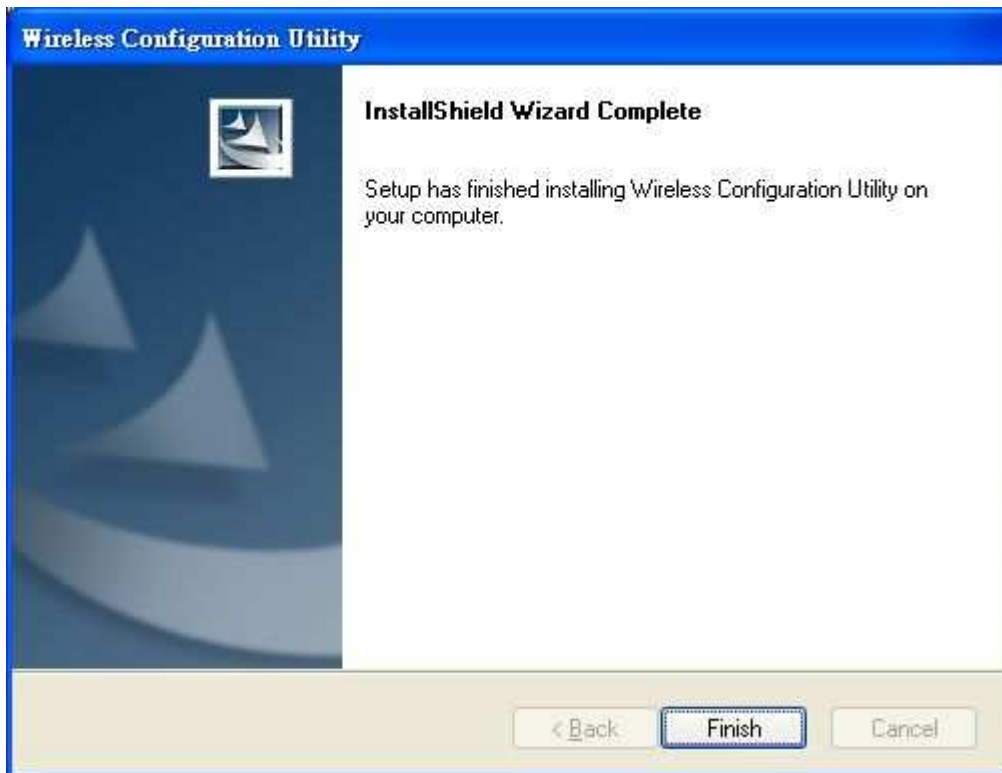
- 1) Insert the Utility and Driver CD-ROM into your computer's CD-ROM Drive and then click **Install Utility**.



- 2) Follow the InstallShield Wizard Instructions



3) Click **Finish** to restart the computer.



4) Plug the 802.11n 2.0 draft Wireless LAN CardBus Adapter into an available CardBus slot on your computer

Wireless Utility Setting

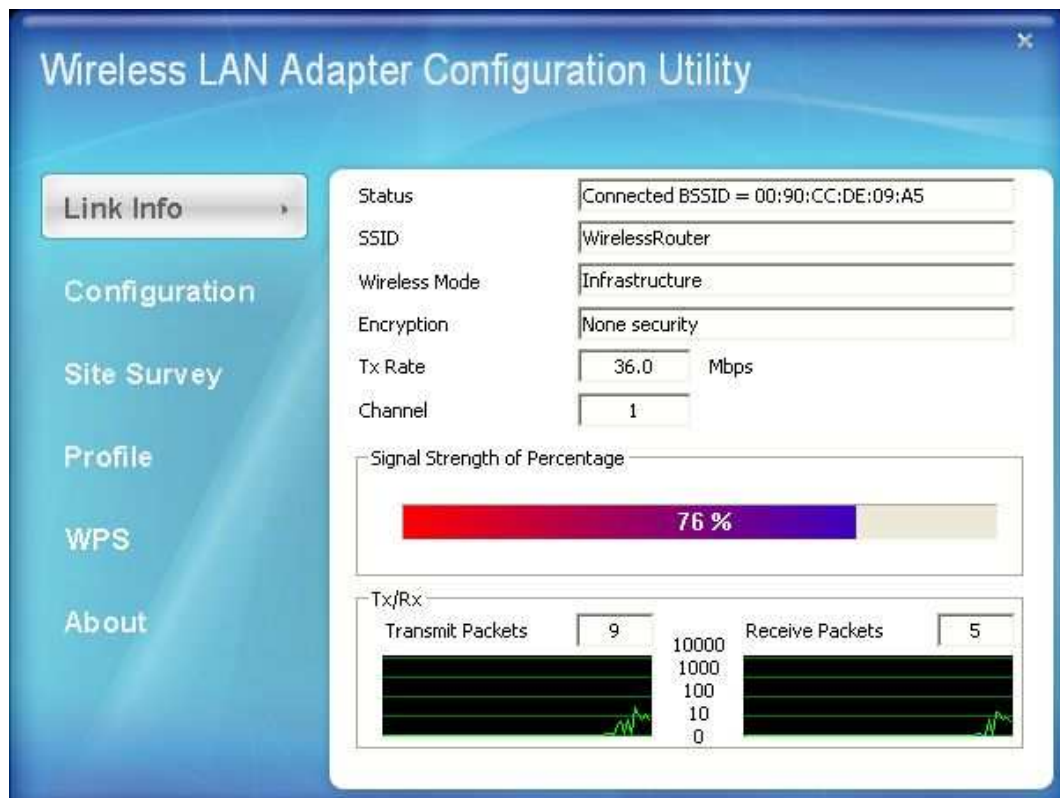
The user can configure the wireless settings using the Wireless Adapter Configuration Utility. Double-click the utility icon that appears in the taskbar.



The Wireless Adapter Configuration Utility is divided into six sections: Link Info, Configuration, Site Survey, Profile, WPS and About.

I. Link Information

This is the default screen after launching the Utility program.



Status: Shows the associated BSSID, which can be used to identify the wireless access point.

SSID: Shows the current SSID, which must be the same on the wireless client and AP in order for communication to be established.

Frequency: Shows the current frequency used for the wireless network.

Wireless Mode: Shows the current wireless mode used for wireless communication.

Encryption: Shows the current encryption mode used on the wireless network.

TxRate: Shows the current data rate used for transmitting.

Channel: Shows the current channel for communication.

Link Quality: Shows the link quality of the 802.11n 2.0 draft Wireless LAN CardBus Adapter with the Access Point when operating under Infrastructure mode.

Signal Strength: Shows the wireless signal strength of the connection between the 802.11n 2.0 draft Wireless LAN CardBus Adapter with the Access Point.

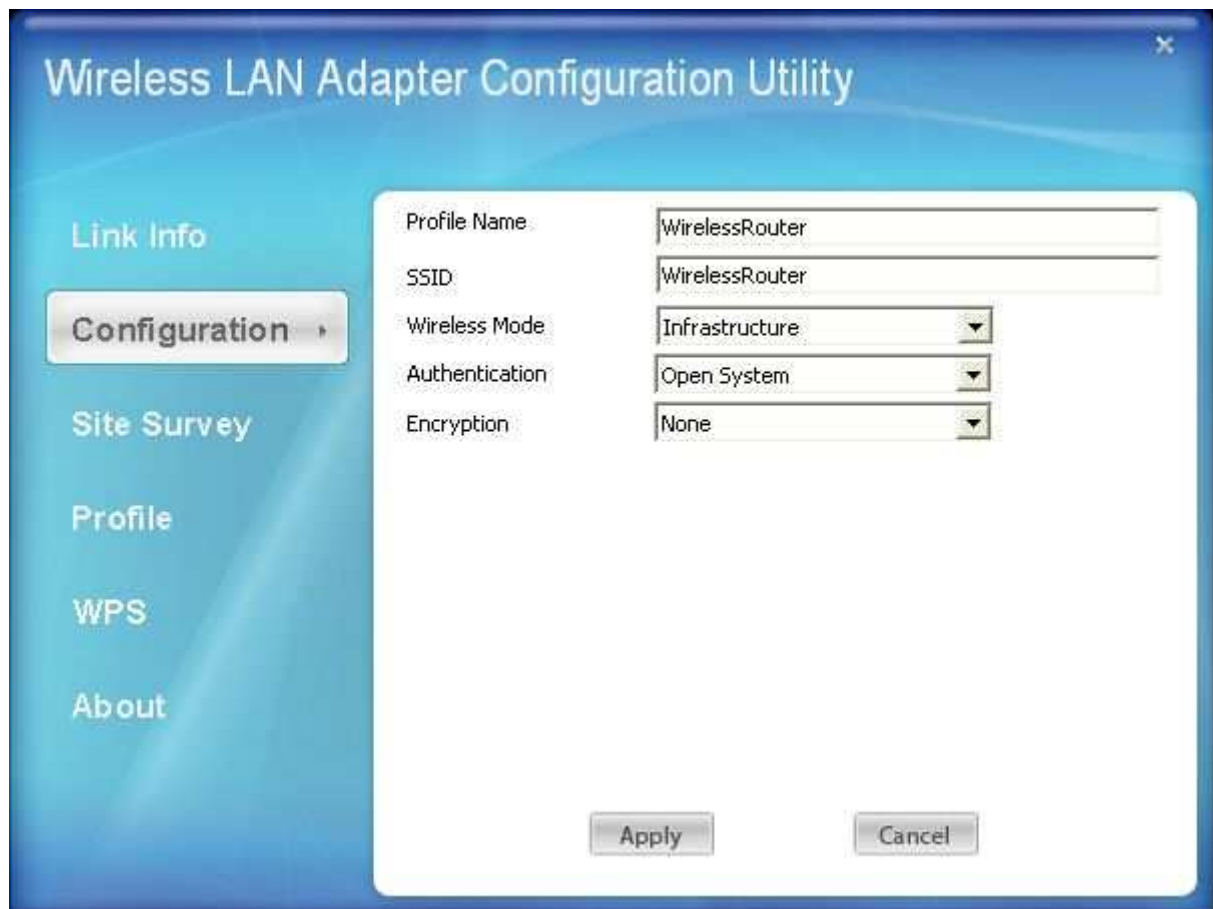
Data Rate: Shows the statistics of data transfer, and the calculation is based on the number of packets transmitted and received.

Note: For FCC domain device, you can only select Channel 1~11

For ETSI domain device, you can only select Channel 1~13.

II. Configuration

This screen is where you set the basic wireless settings for the 802.11n 2.0 draft Wireless LAN CardBus Adapter



SSID: Service Set Identifier, which is a unique name shared among all clients in a wireless network. The SSID must be identical for each client in the wireless network.

Wireless Mode: There are two modes available for selection

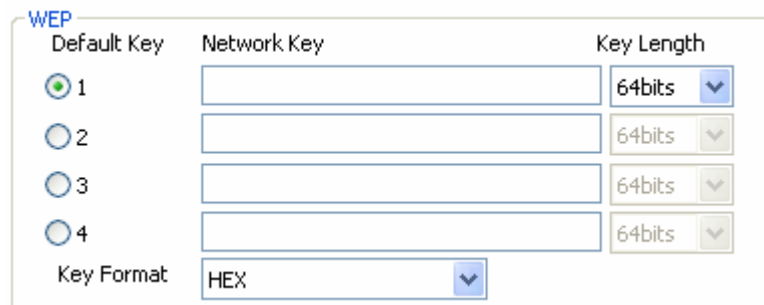
- Infrastructure – to establish wireless communication with the LAN and other wireless clients through the use of Access Points.
- Ad-Hoc – to establish point-to-point wireless communication directly with other wireless client devices.

Authntication: The following options are available: Open System, Shared Key, WPAPSK, WPA2-PSK, WPA EAP-TLS, WPA2 EPA-TLS and WPA2-PSK. Select Open System, Shared Key for WEP data encryption feature.

Open or Shared Key

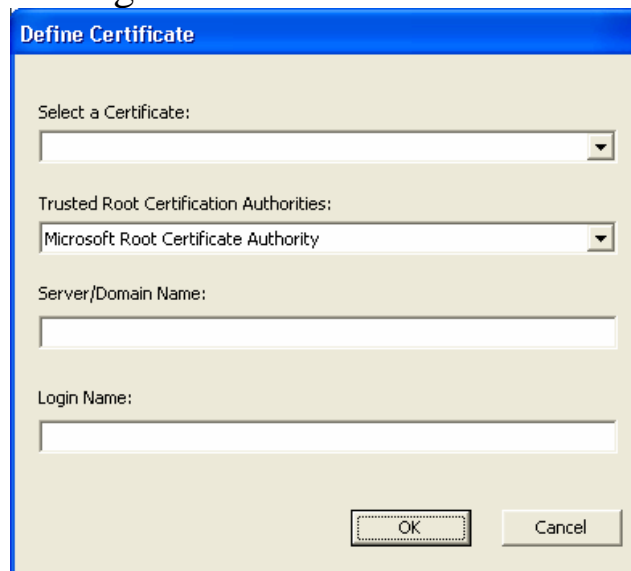
Open System and **Shared Key** require the user to set a WEP key to exchange data with other wireless clients that have the same WEP key.

- **Default Key:** select one of the 4 keys to use.
- **Network Key:** choose the encryption way, either in HEX or ASCII formats, and enter the password in the blank space.
- **Key Length:** select 64 or 128 bits as the length of the keys
Key Format: HEX or ASCII



The image shows a 'WEP' configuration window. It has three columns: 'Default Key', 'Network Key', and 'Key Length'. Under 'Default Key', there are four radio buttons labeled 1, 2, 3, and 4, with button 1 selected. Under 'Network Key', there are four empty text input fields. Under 'Key Length', there are four dropdown menus, each currently set to '64bits'. At the bottom, there is a 'Key Format' dropdown menu set to 'HEX'.

If **WPA/WPA2** is selected, configuration is enabled. Please click the “**configuration**” button. The following window appears. Select the desired Certification, select the desired Certification Authority and then enter the Server/Domain name and Login Name



The image shows a 'Define Certificate' window. It has a title bar 'Define Certificate'. Inside, there are four fields: 'Select a Certificate:' (a dropdown menu), 'Trusted Root Certification Authorities:' (a dropdown menu showing 'Microsoft Root Certificate Authority'), 'Server/Domain Name:' (a text input field), and 'Login Name:' (a text input field). At the bottom, there are 'OK' and 'Cancel' buttons.

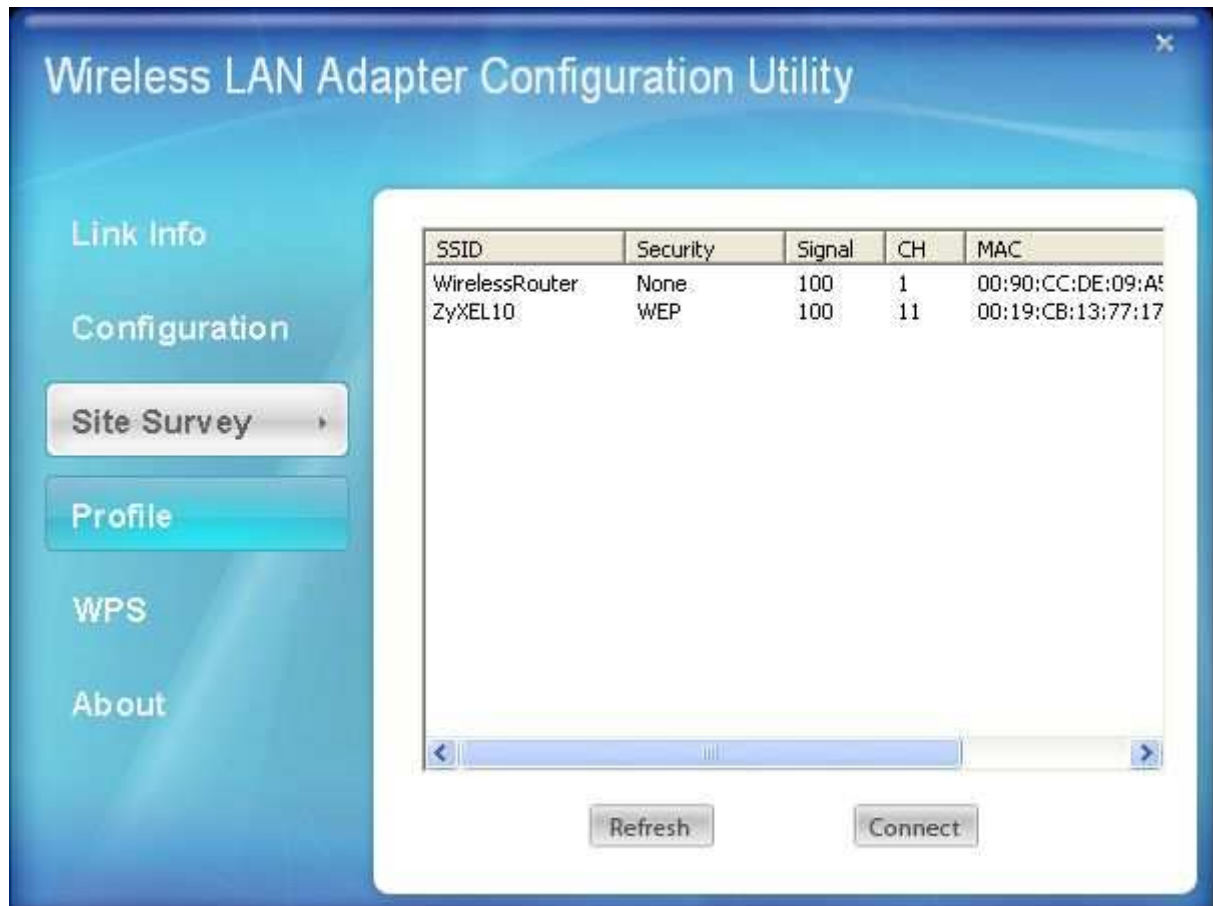
If **WPA-PSK/WPA2-PSK** is selected, click the “**configuration**” button. The below window appears. Please enter a WPA Passphrase.

Define WPA-PSK / WPA2-PSK

Enter your WPA/WPA2 Passphrase. This must be 8 to 63 ASCII characters or 64 hexadecimal characters.

III. Site Survey

This screen allows the user to scan for available wireless networks (wireless clients and Access Points). It also allows the user to establish wireless communications with an available wireless network.



Available Network – displays the wireless networks (wireless clients and access points) that are within range.

Select any one of the wireless networks by **double-clicking** on it or clicking on the **“Connect”** button.

Click the **“Refresh”** button to scan for available networks.

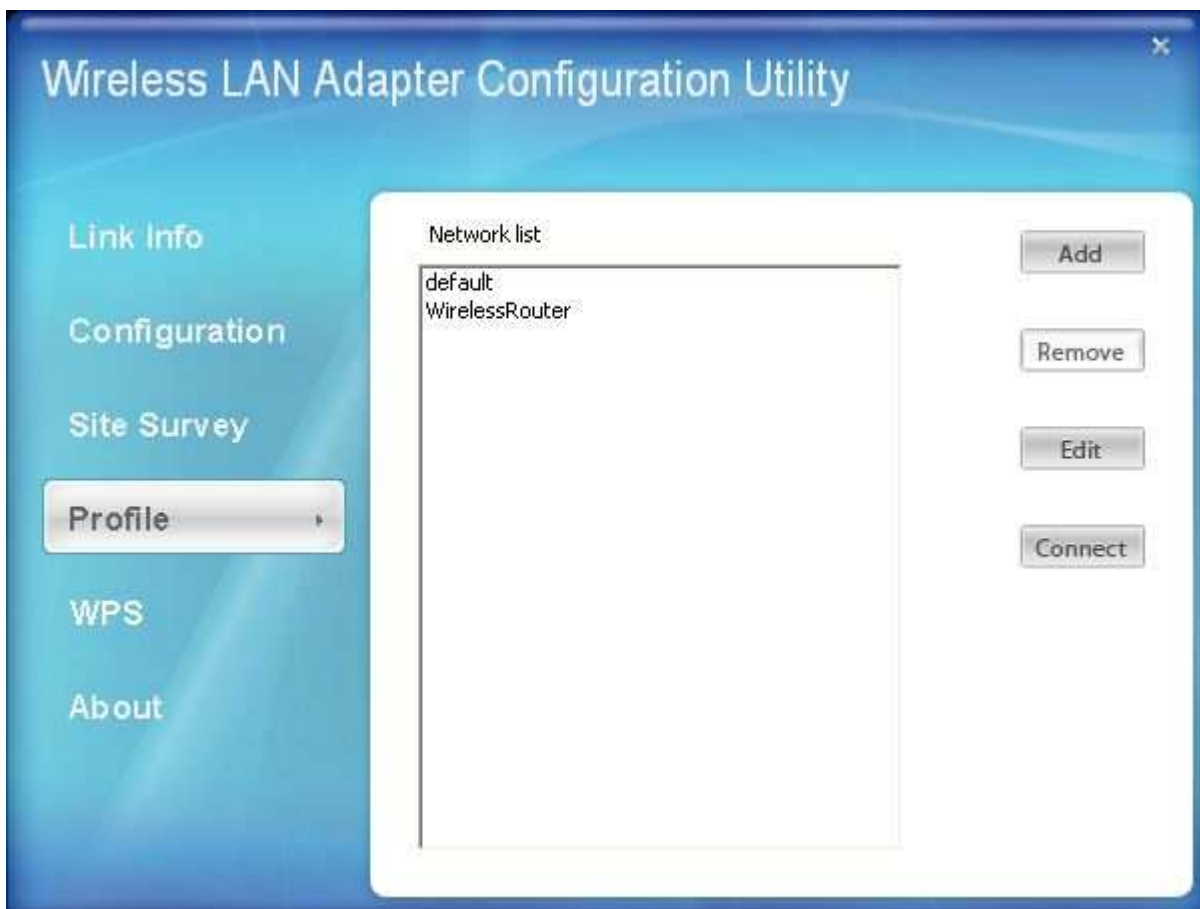
IV. Profile

Profile – The user can create and manage the created profiles for home, work or public areas. By double-clicking on one of the created profile, the setting will adjust to the specific setting such as SSID, channel, and encryption as saved by that particular profile.

Remove: Deletes the selected profile

Add: Adds a profile. The following screen will appear. The user can enter the necessary information required for accessing Access Points or Wireless Router

Connect: The current connected profile information.

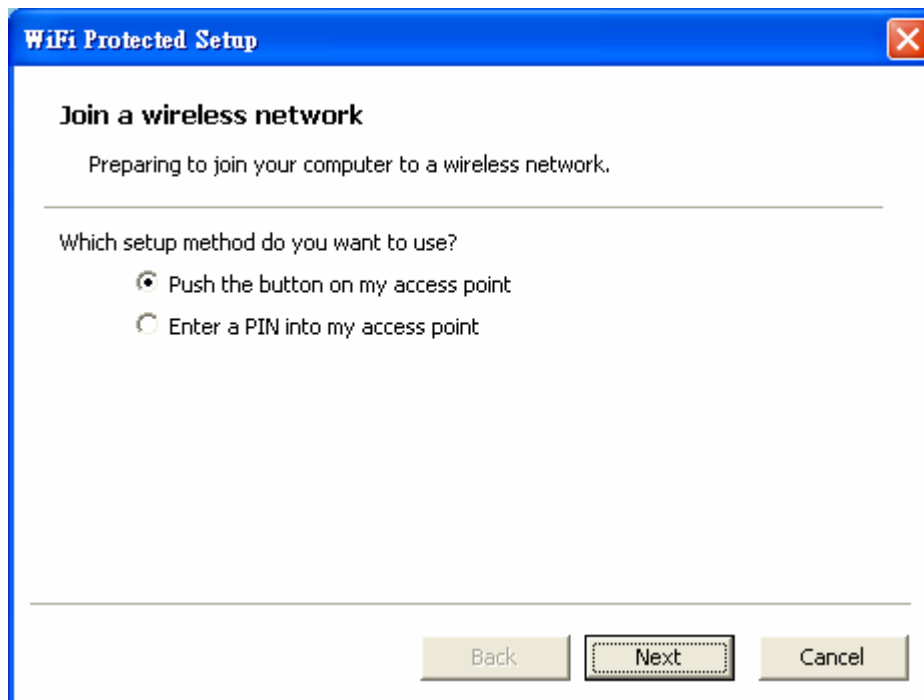


V. WPS

WiFi Protected Setup (WPS) is an optional certification program from the Wi-Fi Alliance that is designed to ease the task of setting up and configuring security on a wireless network. There are two methods used in the WPS as below instruction.

- Push the button on my access point -

To select the Push the button on my access point is for wireless client option. There is a push button on the device or through a simulated button in the utility



- Enter a PIN into my access point -

To Enter a PIN is a mandatory method of setup for all WPS certified devices. If you are using this method, you will need a Registrar Access Points or Wireless Router to initiate the registration between the Wireless N CardBus Adapter and Access Points or Wireless Router. PIN No. is a random numeral.



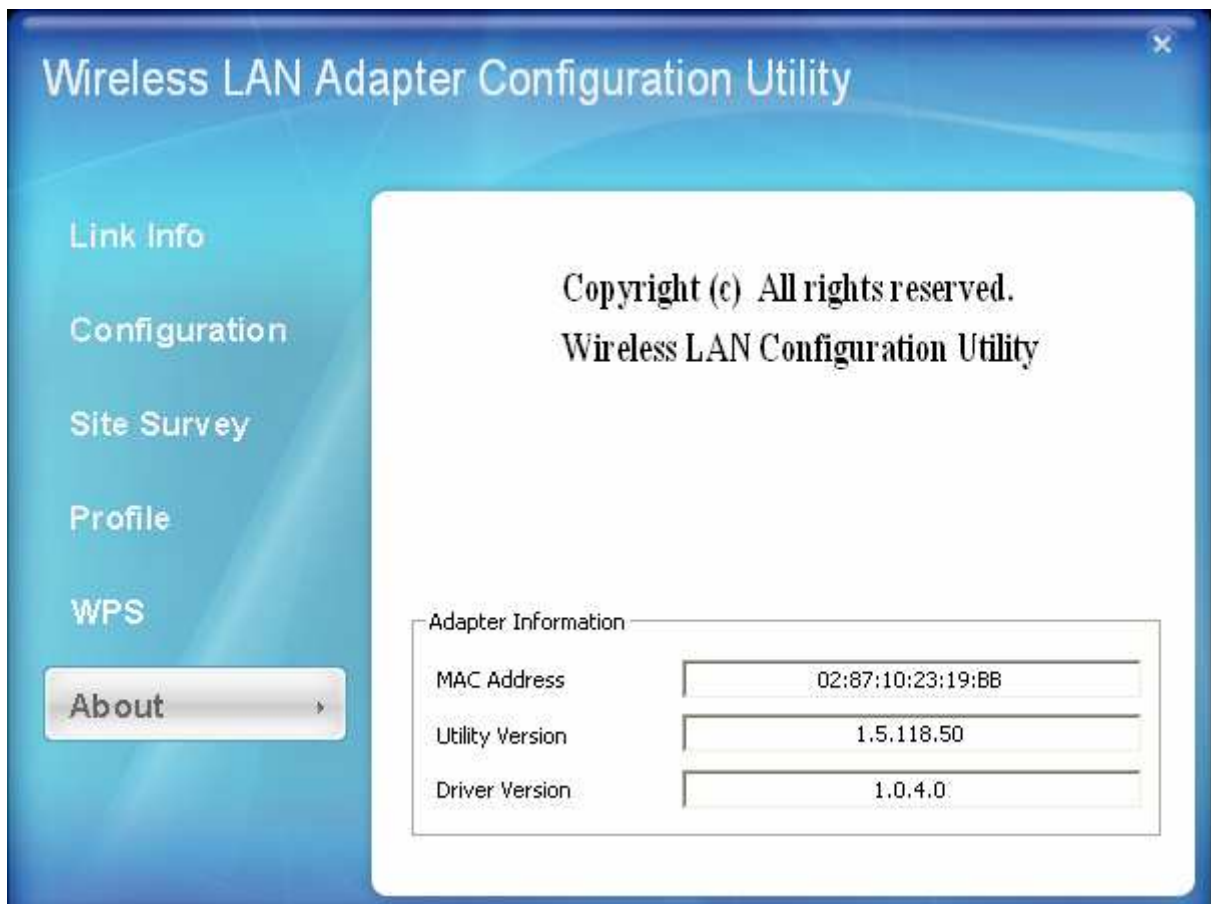
Select one Registrar Access Points or Wireless Router.





VI. About

This screen displays information about the 802.11n 2.0 draft Wireless LAN CardBus Adapter , such as the Driver and Utility version. When a new version of the utility becomes available for upgrade, users will be able to identify by version numbers.



TECHNICAL SPECIFICATIONS

General

Radio Technology	IEEE 802.11b Direct Sequence Spread Spectrum (DSSS) IEEE 802.11g/IEEE 802.11n: Orthogonal Frequency Division Multiplexing (OFDM)
Interface	PCI Adapter: 32-bit PCI bus
Data Transfer Rate	802.11b: 11Mbps, 5.5Mbps, 2Mbps, and 1Mbps 802.11g: 54Mbps, 48Mbps, 36Mbps, 24Mbps, 18Mbps, 12Mbps, 9Mbps and 6Mbps 802.11n: up to 135Mbps
Receiver Sensitivity	135Mbps: Typical -65dBm @ 10% PER (Packet Error Rate) 54Mbps: Typical -68dBm @ 10% PER (Packet Error Rate) 11Mbps: Typical -84dBm @ 8% PER (Packet Error Rate)
Transmit Power	802.11b: 17dBm 802.11g: 16dBm 802.11n: 15dBm
Frequency Range	2412 ~ 2484 MHz ISM band (channels 1 ~ 14) 2400~2483.5MHz ISM band (channels 1 ~ 11)
Modulation Schemes	DBPSK/DQPSK/CCK/OFDM
Channels	1~11 channels (FCC/NCC), 1~13 channels (ETSI)
Media Access Protocol	CSMA/CA with ACK
Security	64/128-bits WEP Encryption, WPA-PSK, WPA2-PSK, WPA, WPA2
Diagnostic LED	CardBus: Link/ Activity
Antenna	Two internal high performance antennas PIFA / 1 dBi

Physical and Environmental

Driver Support	Windows XP, Windows Vista
Temperature	Operating: 0° ~ 40° C, Storage: -10° ~ 70° C
Humidity	10% ~ 95% RH, no condensation
Dimensions	PC Card:115x54x8.7mm
Certifications	FCC Part 15.247 for US, ETS 300 328 for Europe,