/ISUS

WiFi-AP @n

User Guide

E5885

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Contents

Contents

About this guide

This user guide contains the information you need to install and configure your ASUS WiFi-AP @n wireless solution.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the general features of the ASUS WiFi-AP @n wireless solution. The chapter also presents the LED indications, and recommended WiFi-AP @n network settings.

- **Chapter 2: Installation**

  This chapter provides step by step instructions on installing the wireless LAN adapter drivers and software applications using the support DVD.

- **Chapter 3: Setting up**

  This chapter provides information on how to set up the WiFi-AP @n in your home or office network using the setup wizard.

- **Appendices**

  The Appendix lists the wireless LAN channels available for use in your country or location and safety statements.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this guide.

WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Information that you MUST follow to complete a task.

NOTE: Tips and additional information to aid in completing a task.

WiFi-AP @n specifications

Standard	IEEE 802.11n Draft 2.0, Wi-Fi compliant IEEE 802.11b/g,
Data rate	802.11n (HT40) @15, 30, 45, 60, 90. 120, 135, 150Mbps 802.11n (HT20) @7.222, 14.444, 21.667, 28.889, 43.333, 57.778, 65, 72.222Mbps 802.11g @6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11b @1, 2, 5.5, 11Mbps
Security	AES, TKIP, WEP
Network architechture types	Access point mode Client mode
Frequency band	2.4GHz ISM radio band

Operating range	802.11n
	  - Up to 980ft (300m) for outdoor
	  - Up to 330ft (100m) for indoor
	
	802.11g
	  - Up to 200ft (60m) for outdoor
	  - Up to 100ft (30m) for indoor
	
	802.11b
	  - Up to 1000ft (310m) for outdoor
	  - Up to 130ft (40m) for indoor

Number of connected devices (AP mode)	up to 16 stations
Antenna	ASUS Wi-Fi AP @n omni-directional antenna
LED	Green data transmission (AIR) LED
Support OS	Windows® XP 32 / 64 bit, Vista 32 / 64 bit
Compatibility	Fully compatible with IEEE 802.11b/g, IEEE 802.11n Draft 2.0 products
ASUS special features	Supports 16 stations connection. ASUS EZ WiFi mode: Running wireless network in AI-Nap mode
Software support	ASUS Wi-Fi AP @n Wizard ASUS Wi-Fi AP @n

Specifications are subject to change without notice.

Chapter 1

WiFi-AP @n

This chapter describes the general features of the ASUS WiFi-AP @n wireless solution. The chapter also presents the LED indications, and recommended WiFi-AP @n network settings.

Product introduction

1.1   Welcome!

Thank you for choosing the ASUS WiFi-AP @n wireless solution!

The WiFi-AP @n is an easy-to-use wireless local area network (WLAN) adapter designed for home or office use. The WiFi-AP @n is backward compatible with the earlier IEEE 802.11b/g/n standard allowing seamless integration of both wireless LAN standards in a single network.

The WiFi-AP @n also supports several wireless network configuration including Client mode and Access Point mode. This gives you flexibility to your existing or future wireless network configurations.

To provide efficient security to your wireless communication, WiFi-AP @n employs both 64-bit/128-bit Wired Equivalent Privacy (WEP) and Wi-Fi Protected Access (WPA/WPA2) encryptions.

With these and many more, ASUS WiFi-AP @n is sure to keep you ahead in the world of wireless computing.

1.2   Features

ASUS EZ WiFi mode

Users will be able to play LAN games, connect to the Internet, access and share printers, and use Skype from anywhere within the range.

WiFi-AP @n can provide these functions even when the PC is in the AI Nap mode. Hence, users can use Skype instead of the traditional long distance telephone service.

No hardware installation

Because the WiFi-AP @n wireless LAN adapter comes embedded in your ASUS motherboard, no hardware installation is needed. Just install the drivers and utilities from the motherboard support DVD and start computing wirelessly in no time.

Up to 300Mbps speed advantage

With data transmission rate up to five times faster than IEEE 802.11b/g standards, the WiFi-AP @n breaks the wireless data transmission speed barrier to give you faster Internet connection and file sharing capabilities.

> The real transmission rate may be slower than 300Mbps depending on the router/switch used and the user environment.

Easy integration

The WiFi-AP @n is backward compatible with all IEEE 802.11b/g devices so you can still use your IEEE 802.11b/g devices in the WiFi-AP @n network.

Access point mode function

In AP Mode, WiFi-AP @n can support up to 16 stations with wireless LAN adapters making it an ideal solution for homes and offices with single Internet connection or network printer.

Moveable omni-directional antenna

A pair of moveable, omni-directional antennas come with your WiFi-AP @n to maximize your wireless coverage.

1.3   LED and antenna port

The WiFi-AP @n comes with a green data transmission LED (AIR) and an antenna port located at the motherboard rear panel.

AIR LED
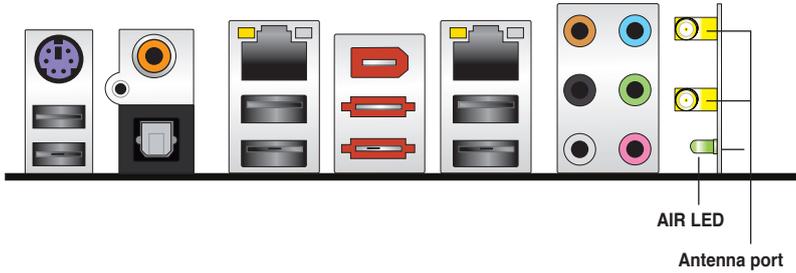
Antenna port

- The location of the WiFi-AP @n data transmission LED and antenna port may vary on motherboard models.
- The back I/O may vary depending on the models.

LED indicators

Refer to the table below for LED indications.

LED	Status	Indication
AIR LED	On	Power on but no data activity.
	Off	Power off or no wireless connection.
	Blinking quickly	Transmitting and/or receiving data.
	Blinking slowly	Site survey.

1.4   Choosing an appropriate wireless network

You can use the ASUS WiFi-AP @n in various wireless network configurations. It is recommended that you select the most appropriate configuration for your home or office network before setting up the WiFi-AP @n.

The following pictures and descriptions are for reference only and may not exactly match your actual network configuration.

Select Mode

AP Mode   **Client Mode**

Infrastructure Mode   **Ad-Hoc Mode**
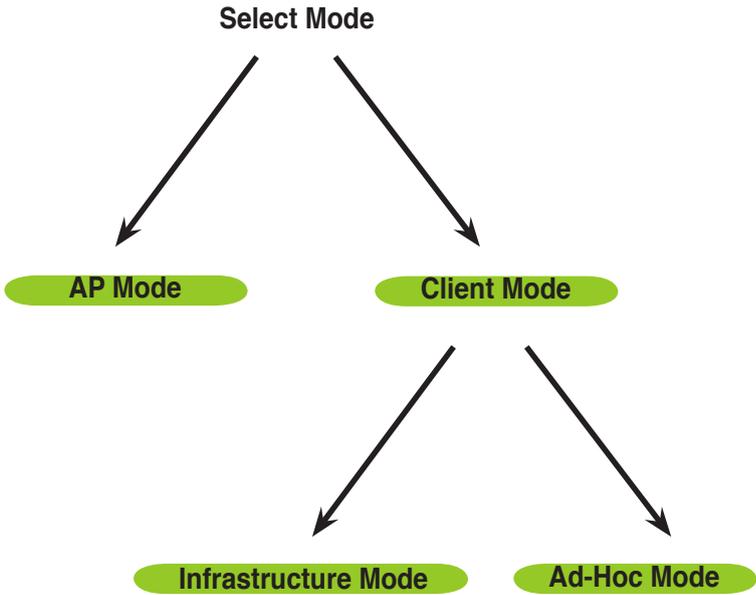
1.4.1 Access Point Mode (AP Mode)

If you wish to share the Internet access with the wireless stations in your environment, you can configure the WiFi-AP @n in an access point mode (AP Mode). In this mode, the WiFi-AP @n becomes the wireless access point that provides local area network and Internet access for your wireless stations.

The requirement of using AP Mode function is an onboard Ethernet LAN adapter with the driver properly installed.

The AP Mode feature is ideal for home/SOHO networks with several computers, a shared printer, and a shared Internet connection.
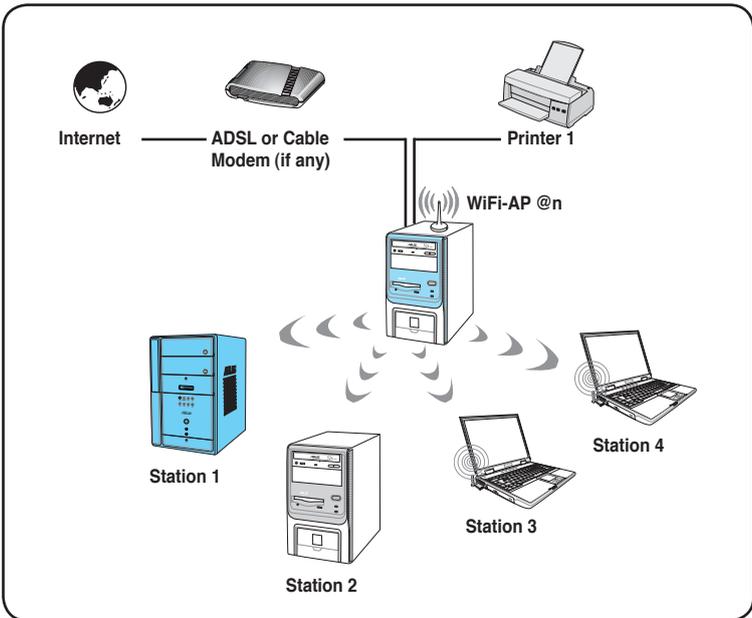
1.4.2   Client mode 1: Infrastructure mode

An Infrastructure wireless network is centered on a wireless access point (AP) that provides Internet access and LAN communication for the wireless stations. In Infrastructure mode, the wireless LAN stations communicate with each other via the wireless AP.

In this mode, your WiFi-AP @n acts as a wireless adapter. It communicates with the LAN computers and accesses Internet through the wireless AP.
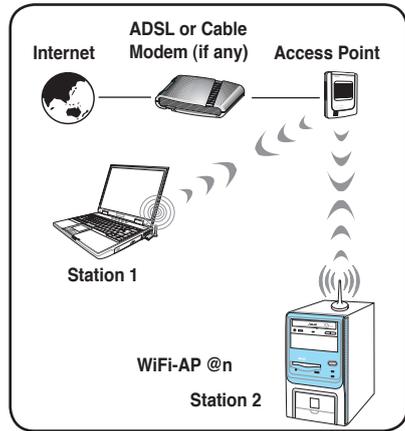
1.4.3   Client mode 2: Ad-hoc mode

In the Ad-hoc mode, the WiFi-AP @n acts as a wireless card and connects directly to other wireless device within its operating range. In the Ad-Hoc mode, your computer communicate with other wireless stations without an access point (AP).
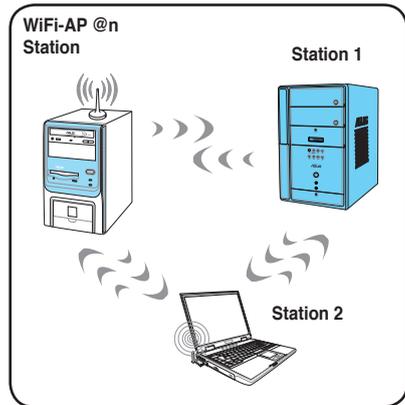
The ASUS Wi-Fi AP @n utility doesnt' provide infrastructure mode and ad-hoc mode configuration under Client Mode. To set up an infrastructure or ad-hoc network, use Windows Zero Configuration under Windows® XP or WLAN AutoConfig under Windows® Vista. Refer to 3.4 Setting up Ad-hoc mode or Infrastructure Mode under Windows® on page 3-11 for more details.

Chapter 2

This chapter provides step by step instructions on installing the WiFi-AP @n drivers and utilities to your computer. This part also provides information on installing the antenna.

Installation

2.1   Installation

2.1.1   System requirements

Before installing the WiFi-AP @n drivers and utilities, make sure that your system meets the following requirements.

- ASUS motherboard with WiFi-AP @n onboard solution
- Minimum 256MB system memory
- Operating system:
  Client mode: Windows® XP/ Vista / 7 (32-bit / 64-bit)
  AP mode: Windows® XP/ Vista / 7 (32-bit / 64-bit)
- Optical drive for utilities and driver installation

2.1.2   Signal range

The signal range of WiFi-AP @n depends on the operating environment. Obstacles such as walls and metal barriers could reflect or absorb radio signals. Devices such as microwave stove can also greatly interfere with the wireless network.

Signal range:

- 802.11g: Indoor 80ft (30m), outdoor (LOS, Light-Of-Sight) 200ft (60m)
- 802.11b: Indoor 130ft (40m), outdoor (LOS, Light-Of-Sight) 1000ft (310m)
- 802.11n: Indoor 330ft (100m), outdoor (LOS, Light-Of-Sight) 980ft (300m)

By default, the device automatically adjusts the data rate and the closer the wireless station is, the better signal and transmit speed it receives. To improve your wireless transmission, move your wireless stations closer to the WiFi-AP @n.

2.1.3 Installing the antennas

The WiFi-AP @n wireless solution comes with a pair of omni-directional and moveable antennas to maximize the WiFi-AP @n coverage.

To install the antenna:

1. Locate the wireless LAN antenna ports on the motherboard rear panel.

2. Connect the antenna twist-on connector (female) to the wireless LAN antenna port (male).

3. Place the antennas at elevated locations and keep appropriate distance to enhance your wireless LAN coverage.
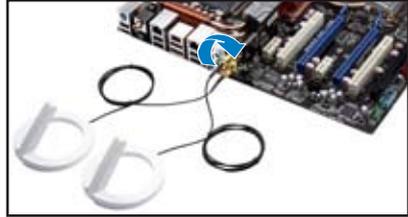
   To optimize the WiFi performance, we recommend the following:

   • The antennas should be placed on top of the chassis.

   • The distance between the antennas should be 20 cm. The distance should not be shorter than 10 cm.

• The antennas may differ depending on the model.

• Do not place the antennas under your table or in a closed compartment.

2.2 Driver and utilities installation

- The contents of the motherboard support DVD are subject to change without notice. Visit the ASUS website for driver/utilities updates.

- If you use a Windows® operating system, your computer auto-detects the WiFi-AP @n when system boots and displays an **Add New Hardware Wizard** window. Click Cancel then proceed with the following instructions.

To install the WiFi-AP @n driver and utilities:

1. Place the motherboard support DVD to the optical drive.
2. The DVD automatically displays the **Drivers** menu if Autorun is enabled in your computer. Click the wireless driver and follow screen instructions to install the WiFi-AP @n driver.

If Autorun is disabled in your computer, locate the Wireless folder under the root directory of the support DVD, then double click the Setup.exe file to begin installation.

To use soft AP function, you may need to install Ethernet adapter driver.

Chapter 3

This chapter provides information on how to set up the WiFi-AP @n in your home or office network.

Setting up

3.1   About the setup utilities

After you have installed the WiFi-AP @n drivers and utilities to your system, you are now ready to setup WiFi-AP @n in your network.

Make sure that you have selected the most appropriate configuration for your wireless network before you proceed. Refer to section 1.4 for details.

Make sure you have connected the supplied antenna to the antenna connector on the motherboard, or the WiFi-AP @n may not be able to detect other wireless devices in your environment.

The WiFi-AP @n provides two configuration approaches: the setup wizard and the setup utility. The former scheme provides an easy approach to the most frequently used functions while the latter allows configuring all the functions, including the advanced settings.

For normal users, the setup wizard helps to configure the WiFi-AP @n as an access point or wireless station.

For advanced users, the setup utility helps to:

- Configure the WiFi-AP @n as an access point, or wireless station.
- Enable or disable the WiFi-AP @n.
- Show statistics.

3.2   Setting up with WiFi-AP @n Wizard

You can create your own wireless local area network (WLAN) in your home using the WiFi-AP @n Access Point Mode (AP Mode) feature. Create your own WLAN if:

- Your computer is connected to the Internet.
- The operating system of your computer is Windows® XP 32 / 64 bit, Windows® Vista 32 / 64 bit.
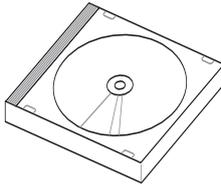
Install the WiFi-AP @n software from the support DVD.

**WiFi-AP @n
Setup Wizard**

After completing the installation, the WiFi-AP @n Setup Wizard will run automatically.

AP Mode

To use AP Mode, refer to Section 3.2.1.

Client Mode

To use Client mode, refer to Section 3.2.2.

3.2.1 Setting up the AP Mode

1. To launch the WiFi-AP @n setup wizard, right-click the system tray icon ![icon] and select **Wizard**.

Launch Config Utility
Switch To Station Mode
Wizard
About
Exit

    10:15 AM
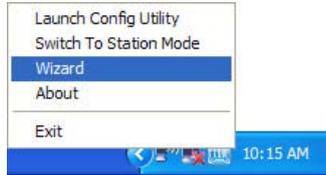
2. Select **Create a wireless access point** and click **Next**.

3. The system automatically generates an SSID for the AP mode. You can rename the SSID, if desired.

4. Select a Network Security level for your AP mode. The configurable options are **None**, **WEP**, **WPA-Personal**, and **WPA2-Personal**. Refer to section 3.5 for detailed security information. Select an appropriate level and click **Next**.

5. If you select **WEP**, **WPA-Personal** or **WPA2-Personal** in Step 4, you are required to input a password. Follow the wizard guidelines for key entry rules. Click **Next** to continue.
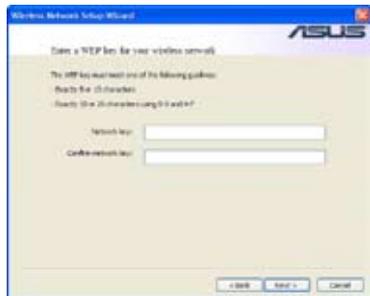
6. Select your Internet connection and click **Next**.
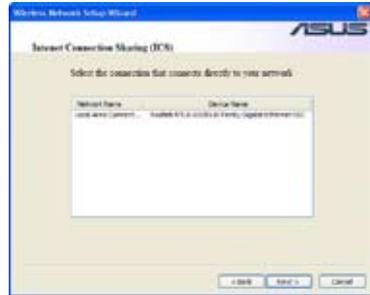
7.	The AP mode configuration is complete. Record the setup information on your note
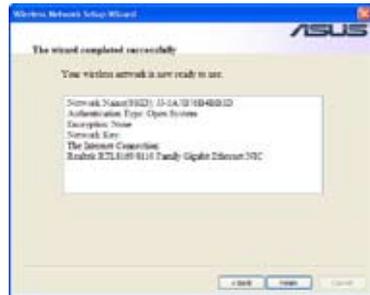
• As Internet sharing capability is supported via Microsoft ICS (Internet Connection Sharing), the WiFi-AP @n will only function as a standard access point without Internet sharing capability, once its default network configuration has been altered under the software access mode.

• This includes changing the range of private IP addresses that are handed out (DHCP allocator), enabling or disabling DNS, and configuring a range of public IP addresses.

• For more information, refer to the following FAQs from Microsoft at **http://support.microsoft.com/kb/308006/en-us**.

3.2.2 Setting up the Client Mode

In the client mode, you can connect to the LAN or Internet, or both, through a wireless AP.

1. To launch the WiFi-AP @n setup wizard, right-click the system tray icon ![icon] and select **Wizard**.
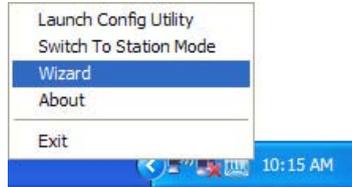
2. Select **Join an existing wireless network** and click **Next**.

3. The wizard indicates you to use windows automatic wireless network configuration to connect an existing wireless network or change the wireless network connection settings. Click **Finish** to exit the wizard.

> The ASUS Wi-Fi AP @n utility doesnt' provide infrastructure mode and ad-hoc mode configuration under Client Mode. To set up an infrastructure or ad-hoc network, use Windows Zero Configuration under Windows® XP or WLAN AutoConfig under Windows® Vista. Refer to **3.4 Setting up Ad-hoc mode or Infrastructure Mode under Windows®** on page 3-11 for more details.

3.3   Setting up with WiFi-AP @n Utility

3.3.1   How to launch ASUS WiFi-AP @n Utility

You can launch **Wifi-AP @n** from the Windows® Program menu, the tray icon, or the desktop icon.

Windows® Program Menu

It is the absolute way to launch the WiFi-AP @n from the program folder.

Desktop and Tray Icon

You could double-click the icon to launch the WiFi-AP @n Wizard.

3.3.2   Utility Window

The ASUS WiFi-AP @n utility consists of two different main windows, providng various functions and information.

AP mode main window

Four option pages are available in the AP mode, including **Config**, **Association List**, **Advanced**, and **ICS (Internet Connection Sharing)**.

Client mode main window

Three option pages are available in the Client mode, including **Link Status**, **Statistics**, and **About**. You can also enable or disable the ASUS WiFi-AP @n connectivity by clicking the **Radio On/Off** key.

3.3.3 Setting up AP Mode

In AP mode, WiFi-AP @n becomes a wireless access point that provides local area network and Internet access for your wireless stations. Refer to the **Mode Indicator** on the top-right corner of the main window to know which mode WiFi-AP @n is in. If WiFi-AP @n is in Client Mode, click the **Mode Switch** key to switch to AP Mode.

Config page

- **Network Name (SSID)**:

  The system automatically generates an SSID for the AP mode. You can rename the SSID, if desired.

- **Channel**:

  Select the channel number you would like to use from 1 to 11.

- **Authentication**:

  Select a Network Security level for your AP mode. The configurable options are **Open System**, **Shared Key**, **WPA-PSK**, and **WPA2-PSK**.

- **Data encryption**:

  The **Data encryption** options vary with **Authentication** settings. Refer to the table below for details.

Authentication	Data encryption
Open system	None
	WEP
Shared Key*[1]	WEP*[1]
WPA-PSK	TKIP
WPA2-PSK*[2]	AES*[2]

*[1]   When WiFI-AP @n is set to **Shared Key** authentication with **WEP** encryption, Follow the instructions below if you want to connect other computers to WiFi-AP @n.

For Windows XP:

1.   Launch **Windows Zero Configuration** and click **Change advanced settings**.

2.	Switch to the **Wiress Networks** tab and click **Add**.

3.	In **Network name (SSID)**, input the SSID you set in the Wifi-AP @n utility. Set the **Network Authertication** to **Shared** and **Data encryption** to **WEP**. Uncheck **The key is provided for me automatically** box and input the **Network key**. Click **OK** to close all windows.
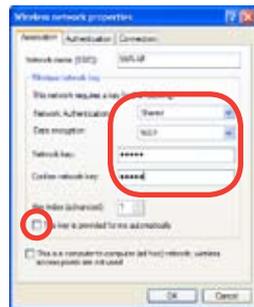
For Windows Vista

1.	Launch the **Network and Sharing Center** from the Control Panel and click **Set up a connection or network**.
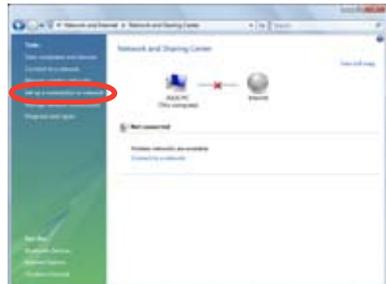
2.	Select **Manually connect to a wireless network** and click **Next**.
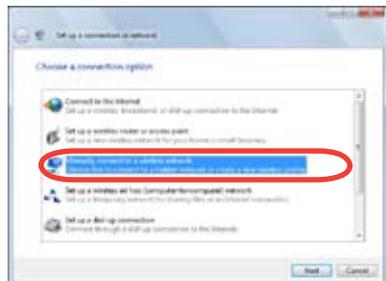
3. In **Network name**, input the SSID you set in the Wifi-AP @ n utility. Set the **Security type** to **WEP** and input the **Security Key**. Click **Next**.

4. Click **Change connection settings**.
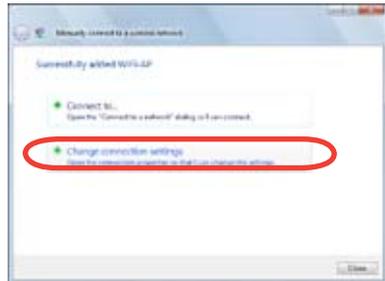
5. In the **Wireless Network Properties** window, switch to the **Security** tab. Set the **Security type** to **Shared** and the **Encryption type** to **WEP**. Input the **Network security key** and click **OK**. Close all windows.
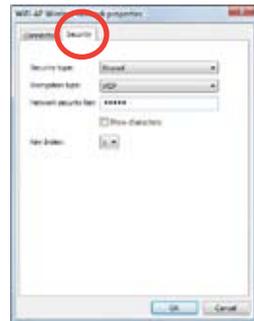
*² When WiFI-AP @n is set to **WPA2-PSK** authentication with **AES** encryption, Follow the instructions below if you want to connect other computers to WiFi-AP @n.

✎
- Windows XP does not support WPA2-PSK authentication with AES encryption, but you could download the **Windows XP Hot fix KB893357** from Microsoft® official website at **http://www.microsoft. com/en/us/default.aspx**. After installing the patch, follow the next steps to set up the wireless network connection.
- Windows® Vista natively supports WPA2-PSK authentication with AES encryption. No further setting is needed.

1. Launch **Windows Zero Configuration** and click **Change advanced settings**.
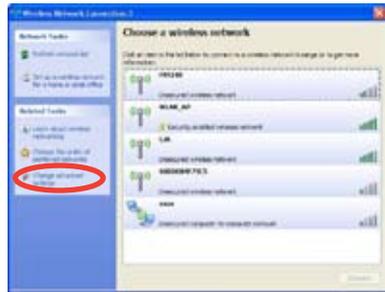
2. Switch to the **Wiress Networks** tab and click **Add**.

3. In **Network name (SSID)**, input the SSID you set in the Wifi-AP @n utility. Set the **Network Authentication** to **WPA2-PSK** and **Data encryption** to **AES**. Input the **Network key**. Click **OK** to close all windows.
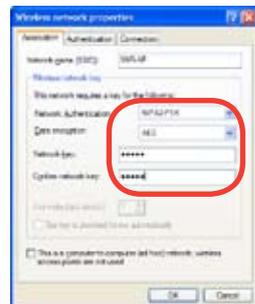
Association List page

You can check the MAC addresses of the wireless stations that have connected to the WiFi-AP @n (AP mode).

Advanced page

You can configure some advanced settings in this page.

- **Beacon Interval**: The value ranges from **20 ~ 1000**.
- **Channel Width**: You can choose from **20 MHz** and **Auto 20/40 MHz**.

ICS (Internet Connection Sharing) page

Select the LAN port used for internet connection sharing and click **Apply**.

3.3.4   Setting up the Client Mode

In Client Mode, you can connect to the LAN or Internet, or both, through a wireless AP. Refer to the **Mode Indicator** on the top-right corner of the main window to know which mode WiFi-AP @n is in. If WiFi-AP @n is in AP Mode, click the **Mode Switch** key to switch to Client Mode.

Link Status page

You can check out the basic information of the WiFi-AP @n, including Status, SSID, Channel, BSSID, Network type, Authentication, Encryption, Link Speed, Link Quality, and Signal Strength.

Statistics page

This page shows the statistics records of both transmitted and received data packages. You can clear the record by clicking **Reset Counters**.

About page

You can check out the utility details, including driver version and date, utility version and date, EEPROM version, and firmware version. You can also connect to www.asus.com for product information.

Radio On/Off key

You can enable or disable the connectivity of WiFi-AP @n with a single click. When the radio is off, all buttons are disabled, and the links with other wireless network nodes are disconnected.

3.4   Setting up Ad-hoc or Infrastructure Mode under Windows®

This section describes how to set up your computer to Ad-hoc mode or Infrastructure mode using Windows Zero configuration under Windows® XP or WLAN Autoconfig under Windows® Vista.

## 3.4.1   Setting up Ad-hoc mode under Windows® XP

1. Launch **Windows Zero Configuration** and click **Change advanced settings**.
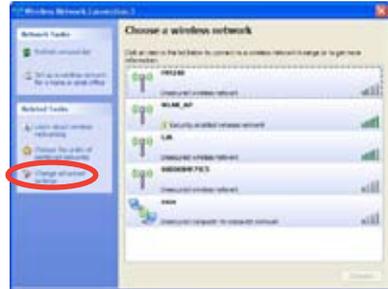
2. Switch to the **Wiress Networks** tab and click **Advanced**.

3. Select **Computer-to-computer (ad hoc) networks only** and clear the **Automatically connect to non-preferred networks** box if it is seleted. Click **Close**.

4. On the **Wireless Networks** tab, click **Add**. In the **Wireless Network Properties** dialog box, specify a Network name (SSID). Click **OK** to close all dialog boxes.
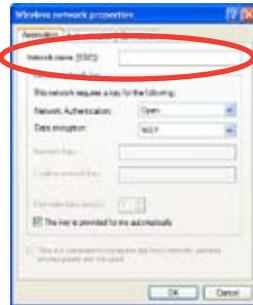
5. Launch **Windows Zero Configuration** again. Select the desired ad-hoc network and click **Connect**.
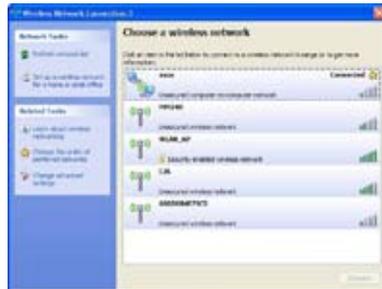
3.4.2   Setting up Infrastructure mode under Windows® XP

1. Choose an available wireless network in **Windows Zero Configuration** and click **Connect**.
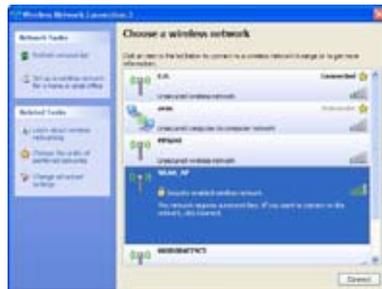
2. If you choose a security-enabled wireless network, input the network key and click **Connect**.

3.   You are now connected to a
      wireless network successfully.
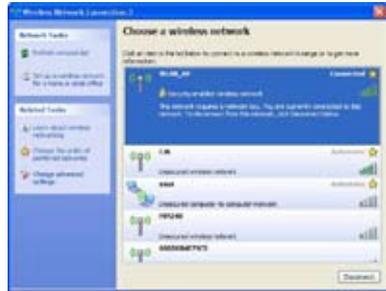
3.4.3   Setting up Ad-hoc mode under Windows®
Vista

1.   Launch the **Network and
      Sharing Center** from the
      Control Panel and click **Manage
      wireless networks**.
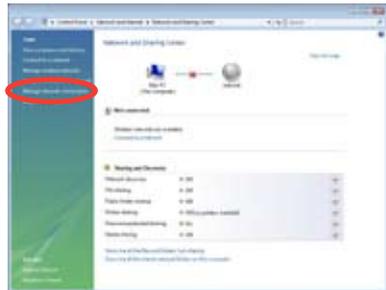
2.   In the Manage wireless
      networks that use (Wireless
      Network Connection) window,
      click **Add**.
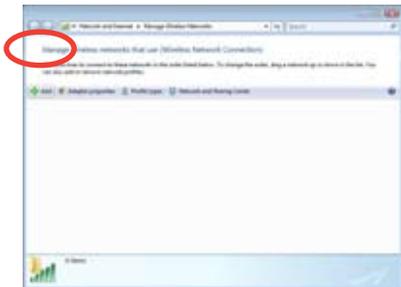
3. Click **Create an ad hoc network**.
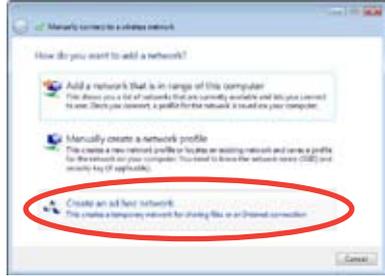
4. In the "Set up a wireless ad hoc network" window, click **Next**.

5. Speficy a network name and select the security type. Click **Next**.
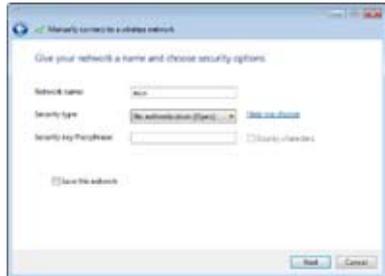
6. You have completed setting up an Ad-hoc network. Click **Close** to exit.

3.4.4 Setting up Infrastructure mode under Windows® Vista

1.   Launch the **Network and Sharing Center** from the Control Panel and click **Connect to a network**.
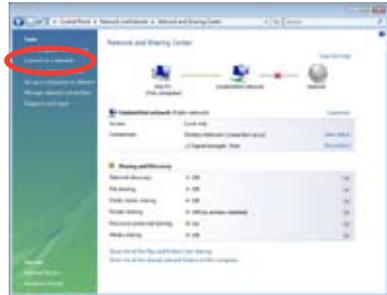
2.   Choose an available network and click **Connect**.

3   If you choose a security-enabled wireless network, input the network key and click **Connect**.

4.   You are now connected to a wireless network successfully. Click **Close** to exit.

3.5 Setting up wireless security

To protect your wireless network, you need to setup a security mechanism on your WiFi-AP @n.

Network authentication

Network authentication uses certain types of mechanism to identify authenticated wireless clients. WiFi-AP @n supports the following authentication methods:

Open system: This option disables authentication protection for your wireless network. Under the Open mode, any IEEE802.11b/g wireless client can connect to your wireless network.

Shared key: Shared means using the same WEP keys for authentication and encryption.

WPA-PSK: WPA-PSK (Pre-Shared Key) is the solution for home and SOHO users who have no 802.11X authentication server within the LAN. To setup WPA-PSK, you need to input a passphrase and let the system generate the key. Combination of letters, numbers and non-alphnumeric charecters is recommended for ensuring security.

WPA2-PSK: WPA2 (WI-FI Protected Access 2) provides network administrators with a high level of assurance that only authorized users can access the network. Based on the ratified IEEE 802.11i standard, WPA2 provides government grade security. The WPA2 can be enabled in two versions -- WPA2-Personal and WPA2-Enterprise. WPA2-Personal protects unauthorized network access by utilizing a set-up password. WPA2-Enterprise verifies network users through a server. WPA2 is backward compatible with WPA.

Encryption

Encryption is used to convert plain text data into unreadable codes with certain type of algorithm before capsulation for wireless transmission. WiFi-AP @n supports the following encryption methods:

WEP: WEP stands for Wired Equivalent Privacy. It uses 64 or 128-bit static keys. You can let the system generate the WEP keys by inputting a Passphrase.

TKIP: Temporal Key Integrity Protocol (TKIP) dynamically generates unique keys to encypt every data packet in a wireless session.

AES: Advanced Encryption Standard (AES) is a dependable encryption adopted in WPA2 or IEEE802.11i standard. It offers stronger protection and greatly increases the complexity of wireless encryption.

Appendices

The Appendices list the wireless LAN channels available for use in your country or location, and safety warning statements

Wireless LAN channels

The IEEE 802.11b/g standard for wireless LAN allocated the 2.4 GHz frequency band into 13 overlapping operating channels. Each channel corresponds to a different set of frequencies. The table below shows the center frequencies of each channel.

Channel	Center Frequency	Channel	Center Frequency
1	2.412 GHz	8	2.447 GHz
2	2.417 GHz	9	2.452 GHz
3	2.422 GHz	10	2.457 GHz
4	2.427 GHz	11	2.462 GHz
5	2.432 GHz	12	2.467 GHz
6	2.437 GHz	13	2.472 GHz
7	2.442 GHz	14	2.484 GHz

If several Wi-Fi devices are operating in the same vicinity, the distance between the center frequencies of channels used must be at least 25MHz to avoid interference.

The number of channels available for the wireless LAN adapter varies by country/region. Refer to the table below to determine the number of channels available in your location.

Country/Region (Regulating Body)	Available Channels
Australia (ACA)	Channels 1 to 13
Belgium (RTT&E/EMC/LVD)	Channels 1 to 13
Bulgaria (RTT&E/EMC/LVD)	Channels 1 to 13
Canada (CSA/cUL 950 3rd Edition)	Channels 1 to 11
China (MII)	Channels 1 to 11
Cyprus (RTT&E/EMC/LVD)	Channels 1 to 13
Czech Republic (RTT&E/EMC/LVD)	Channels 1 to 13
Denmark (RTT&E/EMC/LVD)	Channels 1 to 13
Finland (RTT&E/EMC/LVD)	Channels 1 to 13
France (RTT&E/EMC/LVD)	Channels 1 to 13
Germany (RTT&E/EMC/LVD)	Channels 1 to 13
Greece (RTT&E/EMC/LVD)	Channels 1 to 13
Hong Kong (OFTA)	Channels 1 to 13

Country/Region (Regulating Body)	Available Channels
Hungary (RTT&E/EMC/LVD)	Channels 1 to 13
Iceland (RTT&E/EMC/LVD)	Channels 1 to 13
Ireland (RTT&E/EMC/LVD)	Channels 1 to 13
Italy (RTT&E/EMC/LVD)	Channels 1 to 13
Japan (TELEC)	Channels 1 to 14
Luxembourg (RTT&E/EMC/LVD)	Channels 1 to 13
Malaysia (SIRIM/CMC)	Channels 1 to 13
Mexico	Channels 9 to 11
Netherlands Antilles (RTT&E/EMC/LVD)	Channels 1 to 13
Netherlands/Holland (RTT&E/EMC/LVD)	Channels 1 to 13
New Zealand (PTC)	Channels 1 to 13
Norway (RTT&E/EMC/LVD)	Channels 1 to 13
Portugal (RTT&E/EMC/LVD)	Channels 1 to 13
Saudi Arabia	Channels 1 to 13
Singapore	Channels 1 to 13
South Korea (KS)	Channels 1 to 13
Spain (RTT&E/EMC/LVD)	Channels 1 to 13
Sweden (RTT&E/EMC/LVD)	Channels 1 to 13
Switzerland (RTT&E/EMC/LVD)	Channels 1 to 13

Channels 1, 6 and 11 are independent and do not overlap each other. We recommended that you tune your wireless LAN adapter to these channels.

Notices

Federal Communications Commission Statement

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

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the Federal Communications Commission (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 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.

> ⚠ **CAUTION**!   You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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Regulatory Information/Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

⚠️ **CAUTION**!   To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance [20cm] between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

Safety Information

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance [20cm] between the radiator and your body. Use only with supplied antenna.

Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

⚠️ **CAUTION**!   Any changes or modifications not expressly approved in this manual could void your authorization to use this device.

MPE Statement

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

Caution Statement of the FCC Radio Frequency Exposure

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65C and found compliant to the requirements as set forth in CFR 47 Sections 2.1091 and 15.247(b)(5) addressing RF Exposure from radio frequency devices. The radiation output power of this Wireless LAN device is far below the FCC radio frequency exposure limits. Nevertheless, this device shall be used in such a manner that the potential for human contact during normal operation – as a mobile or portable device but use in a body-worn way is strictly prohibit. When using this device, a certain separation distance between antenna and nearby persons has to be kept to ensure RF exposure compliance. In order to comply with the RF exposure limits established in the ANSI C95.1 standards, the distance between the antennas and the user should not be less than [20cm].

RF Exposure

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.