

# Wireless-G USB Network Adapter

Use this guide to install:

WUSB54G

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This Wireless-G USB Network Adapter has been tested and complies with the specifications 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 according to 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 is found 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 or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

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. FCC RF Radiation Exposure Statement

This device and its antenna(s) must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users must be provided with specific operations for satisfying RF exposure compliance.

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This Class B digital apparatus complies with Canadian IC-03.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations.

## EC DECLARATION OF CONFORMITY (EUROPE)

Linksys Group declares that the product included conforms to the specifications listed below, following the provisions of the EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC:

ETS 301489-17, 301 489-1 General EMC requirements for Radio equipment.

EN 609 50 Safety

ETS 300-328-2 Technical requirements for Radio equipment.

Note: This equipment is intended to be used in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. For more details, contact Linksys Corporate Compliance.

Note: Combinations of power levels and antennas resulting in a radiated power level of

above 100 mW are considered as not compliant with the above mentioned directive and are not allowed for use within the European community and countries that have adopted the European R&TTE directive 1999/5/EC and/or the CEPT recommendation Rec 70.03. For more details on legal combinations of power levels and antennas, contact Linksys Corporate Compliance.

# Table of Contents

## Chapter 1: Introduction

The Wireless-G USB Network Adapter

Features

## Chapter 2: Planning Your Wireless Network

Network Topology

Ad-Hoc versus Infrastructure Mode

## Chapter 3: Getting to Know the Wireless USB Network Adapter

The Wireless-G USB Network Adapter's Port and LEDs

## Chapter 4: Software Installation and Configuration for Windows 98SE, Me, and 2000

Overview

Instructions for Windows 98SE, Me, and 2000

## Chapter 5: Hardware Installation

Connecting the Adapter

Using the Adapter's Wall Mount

## Chapter 6: Driver Installation and Configuration for Windows XP

Overview

Driver Installation for Windows XP

Windows XP Wireless Zero Configuration

## Chapter 7: Using the WLAN Monitor for Windows 98SE, Me, and 2000

Overview

Starting the WLAN Monitor

Link Information

Site Survey

Profiles

Creating a New Profile

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1999/5/EY, direktiivin 89/336/EEC ja direktiivin 73/23/EEC oleellisten vaatimusten ja sitä koskevien näiden direktiivien muiden ehtojen mukainen.

- Linksys Group déclare que l' adaptateur réseau USB est conforme aux conditions essentielles et aux dispositions relatives à la directive 1999/5/EC, la directive 89/336/EEC, et à la directive 73/23/EEC.
- Belgique B L' utilisation en extérieur est autorisé sur le canal 11 (2462 MHz), 12 (2467 MHz), et 13 (2472 MHz).

Dans le cas d' une utilisation privée, à l' extérieur d' un bâtiment, au-dessus d' un espace public, aucun enregistrement n' est nécessaire pour une distance de moins de 300m.

Pour une distance supérieure à 300m un enregistrement auprès de l' IBPT est requise.

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- France F: Restricted frequency band: only channels 10, 11, 12, 13 (2457, 2462, 2467, and 2472 MHz respectively) may be used in France. License required for every indoor and outdoor installations. Please contact ART for procedure to follow.

- Deutschland D: Anmeldung im Outdoor-Bereich notwendig, aber nicht genehmigungspflichtig.

Bitte mit Händler die Vorgehensweise abstimmen.

- Germany D: License required for outdoor installations. Check with reseller for procedure to follow.

- Italia I: E' necessaria la concessione ministeriale anche per l'uso interno. Verificare con i rivenditori la procedura da seguire. L'uso per installazione in esterni non e' permessa.

- Italy I: License required for indoor use. Use with outdoor installations not allowed.

- the Netherlands NL License required for outdoor installations. Check with reseller for procedure to follow.

- Nederlands NL Licentie verplicht voor gebruik met buitenantennes. Neem contact op met verkoper voor juiste procedure.

# Chapter 1: Introduction

Connect your USB-equipped desktop or notebook computer to a wireless network

with the Linksys Wireless-G USB Network Adapter, without the trouble of opening up the case of your desktop computer.

To install, simply plug the Adapter into any available USB port. It gets its power through the USB connection, so no power cord is necessary. The included Setup Wizard walks you through configuring the Adapter to your wireless network settings, step by step. And your wireless communications can be protected

by 128-bit encryption, so your data stays secure.

The Wireless-G USB Network Adapter's high-gain antenna lets you put your computer almost anywhere in the building, without the cost and hassle of running cables. Now you don't have to drill holes in your walls and climb through the attic or cellar to get connected to the network. Once you're connected, you can keep in touch with your e-mail, access the Internet, use instant messaging to chat with friends, and share files and other resources such as printers and hard disk storage space with other computers on the network.

So don't hassle with running cables through your house – get connected the easy way with the Wireless-G USB Network Adapter.

- Up to 54Mbps, High-Speed Data Transfer Rate
- Plug-and-Play Operation Provides Easy Setup
- Interoperable with 802.11g (OFDM) 2.4GHz-Compliant Equipment
- Compatible with Windows 98SE, Me, 2000, and XP
- Capable of up to 128-bit WEP Encryption
- Integrated Equalizer Recovers Weak Signals and Enhances Sensitivity
- Movable External Antenna Improves Signal Quality
- USB Port Powers Your Adapter—No Power Supply Needed!
- User-Friendly Setup Software Provides Hassle-Free Configuration
- Works with All Standard Internet Applications
- Free Software Driver Upgrades
- Free Technical Support—24 Hours a Day, 7 Days a Week, Toll-Free US Calls
- 1-Year Limited Warranty

## **Appendix A: Troubleshooting 30**

Common Problems and Solutions 30

Frequently Asked Questions 30

## **Appendix B: Glossary 34**

## **Appendix C: Specifications 39**

Environmental 39

## **Appendix D: Warranty Information 41**

## **Appendix E: Contact Information 42**

If the wireless network is relatively small and needs to share resources only with the other computers on the wireless network, then the **ad-hoc** mode can

be used. Ad-hoc mode allows computers equipped with wireless transmitters and receivers to communicate directly with each other, eliminating the need for an access point. The drawback of this mode is that, in Ad-Hoc mode, wireless-equipped computers are not able to communicate with computers on a wired network. And, of course, communication between the wireless-equipped computers is limited by the distance and interference directly between them.

# Chapter 2: Planning Your Wireless Network

A wireless local area network (WLAN) is exactly like a regular local area network

(LAN), except that each computer in the WLAN uses a wireless device to connect to the network. Computers in a WLAN share the same frequency channel and SSID, which is an identification name for wireless devices.

Unlike wired networks, wireless networks have two different modes in which they may be set up: **infrastructure** and **ad-hoc**. An infrastructure configuration is a WLAN and wired LAN communicating to each other through an access point. An ad-hoc configuration is wireless-equipped computers communicating

directly with each other. Choosing between these two modes depends on whether or not the wireless network needs to share data or peripherals

with a wired network or not.

If the computers on the wireless network need to be accessed by a wired network or need to share a peripheral, such as a printer, with the wired network computers, the wireless

network should be set up in **infrastructure** mode. The basis of infrastructure mode centers around an *access point*, which serves as the main point of communications in a wireless network. Access points transmit data to PCs equipped with wireless network cards, which can *roam* within a certain radial range of the access point. Multiple access points can be arranged to work in succession to extend the roaming range, and can be set up to communicate with your Ethernet (wired) hardware as well.

## Chapter 4: Software Installation and Configuration for Windows 98SE, Me, and 2000

The Wireless Wireless-G USB Network Adapter Setup Wizard will guide you through the installation procedure for Windows 98SE, Me, and 2000. The Setup Wizard will install the WLAN Monitor and driver, as well as configure the Adapter.

Insert the **Setup Wizard CD-ROM** into your CD-ROM drive. The Setup Wizard should run automatically, and the *Welcome* screen should appear. If it does not, click the **Start** button and choose **Run**. In the field that appears, enter **D:\setup.exe** (if “D” is the letter of your CD-ROM drive).

**Note for Windows 98SE, Me, and 2000 users:** You must run the Setup Wizard to install the software before installing the hardware.

**Note for Windows XP users:** Do **NOT** run the Wireless-G USB Network Adapter Setup Wizard. Proceed directly to “Chapter 5: Hardware Installation.”

## Chapter 3: Getting to Know the Wireless USB Network Adapter

### Port

**USB** The Adapter’s USB port is located on the side of the Adapter. You will attach the included USB cable to this port. The other end of the cable will connect to your PC’s USB port.

### LED Indicators

**Power Green.** The **Power** LED lights up when the Adapter is powered on.

**Link Green.** The **Link** LED lights up when the Adapter has an active connection.

7 6

3. The Setup Wizard will ask you to choose a network mode. Click the **Infrastructure Mode** radio button if you want your wireless computers to network with computers on your wired network using a wireless access point. Click the **Ad-Hoc Mode** radio button if you want multiple wireless computers to network directly with each other.

In the *SSID* field, enter the **SSID** of your wireless network. The SSID must be identical for all devices in the network. The default setting is **linksys** (all lowercase). Click the **Next** button.

On the *Welcome* screen, you have the following choices:

- **Install** - Click the **Install** button to begin the software installation process.
  - **User Guide** - Click the **User Guide** button to open the PDF file of this User Guide.
  - **Exit** - Click the **Exit** button to exit the Setup Wizard.
1. To install the Adapter, click the **Install** button on the *Welcome* screen.
  2. After reading the License Agreement, click the **Next** button if you agree, or click the **Cancel** button to end the installation.

6. After the software has been successfully installed. Click the **Exit** button. **Proceed to “Chapter 5: Hardware Installation.”**

4. If you chose **Infrastructure Mode**, go to Step 5 now. If you chose **Ad-Hoc Mode**, select the correct operating channel for your network. The channel you choose should match the channel set on the other devices in your wireless network. Then click the **Next** button.

5. The Setup Wizard will ask you to review your settings before it starts to copy files. Click the **Next** button to save these settings, or click the **Back** button to change any settings.

2. The Power LED should light up when the Adapter is plugged in. (Make sure your PC is powered on.)

3. Raise the antenna. Make sure the antenna is positioned straight up into the air, at a 90° angle from the Adapter. This will ensure optimum wireless operating range and performance.

**If your PC is running Windows XP, proceed to “Chapter 6: Driver Installation and Configuration for Windows XP.”**

**If your PC is running Windows 98SE, Me, or 2000, the installation of the Wireless-G USB Network Adapter is complete. If you want to check the link information, search for available wireless networks, or make additional configuration changes, proceed to “Chapter 7: Using the WLAN Monitor for Windows 98SE, Me, and 2000.”**

The Adapter’s Wall Mount allows you to easily attach the Adapter onto your wall for better reception and more convenient placement.

## Chapter 5: Hardware Installation

1. The Adapter comes with the USB cable you will use to connect the Adapter to your PC.

Connect one end of the USB cable to the USB port of the Adapter. Connect the other end of the USB cable to one of the USB ports on your computer.

**Important for Windows 98SE, Me, and 2000 users:** You must run the Setup Wizard to install the software before installing the hardware.

**Important for Windows XP users:** You must install the Adapter’s

hardware before installing the software.

**Note:** If you want to attach the Adapter onto your wall, go to the next section, “Using the Adapter’s Wall Mount,” before proceeding to the appropriate chapter for your PC’s operating system.

### **Wireless-G USB Network Adapter**

#### **STEP C**

3. Using the velcro strip on the Adapter’s Wall Mount, attach the Adapter to the velcro strip on your wall.

**If your PC is running Windows XP, proceed to “Chapter 6: Driver Installation and Configuration for Windows XP.”**

**If your PC is running Windows 98SE, Me, or 2000, the installation of the Wireless-G USB Network Adapter is complete. If you want to check the link information, search for available wireless networks, or make additional configuration changes, proceed to “Chapter 7: Using the WLAN Monitor for Windows 98SE, Me, and 2000.”**

13

1. Attach the separate adhesive strip of velcro to the wall where you will be mounting the Adapter.

2. To attach the Wall Mount to the Adapter, slide the Wall Mount into the grooves on the back panel of the Adapter, as shown in Steps A, B, and C.

#### **STEP A**

#### **STEP B**

2. When Windows has finished installing the driver, click the **Finish** button.

**You have now completed the driver installation for the Wireless-G USB Network Adapter. To configure the Adapter, proceed to the next section, “Windows XP Wireless Zero Configuration.”**

## Chapter 6: Driver Installation and Configuration for Windows XP

After connecting the Adapter to your computer, you will install the driver and configure the Adapter.

1. Windows XP will automatically detect the Adapter. Insert the Setup CDROM into your CD-ROM drive. Click the radio button next to **Install the software automatically (Recommended)**. Then click the **Next** button.

**Important for Windows XP users:** Do NOT run the Wireless USB Network Adapter Setup Wizard. If the Setup Wizard runs automatically after the Setup CD-ROM has been inserted, click the **Exit** button.

3. If WEP is enabled, the screen will appear. Enter the WEP key of your wireless network in the *Network key* field, and re-enter it in the *Confirm network key* field. Then click the **Connect** button, and go to step 4.

4. The screen will appear if your connection is active.

For more information about wireless networking on a Windows XP computer, click **Start** and then **Help and Support**. Enter the keyword **wireless** in the field provided, and press the **Enter** key.

**Congratulations! The installation of the Wireless-G USB Network Adapter is complete.**

17 16

1. After installing the Adapter, the Windows XP Wireless Zero Configuration icon will appear in your computer's system tray. Right click the Icon select the "View Available Wireless Networks".

2. The screen that appears will show any available wireless network. Select the network you want.

If this network has WEP encryption enabled, go to step 3.

If this network does not have WEP encryption

enabled, then the screen will appear. Make sure the box next to *Allow me to connect to the selected wireless network, even though it is not secure* is checked. Then click the **Connect** button, and go to step 4.

**Note for Windows XP users:** Windows XP has a built-in configuration tool. Use Windows XP Wireless Zero Configuration (in the system tray at the bottom of your screen) to configure the Adapter.

**Note:** Steps 2 and 3 are the instructions and screenshots for Windows XP with Service Pack 1 installed.

If you have not installed Service Pack 1, select the network you want, and click the **Connect** button. If the network has WEP encryption enabled, enter the WEP key in the *Network key* field, and then click the **Connect** button.

**Note:** Windows XP Wireless Zero Configuration does not support the use of a passphrase. Enter the exact WEP key used by your access point.

The *Link Information* screen displays network mode, signal strength, and link quality information about the current connection. It also provides a button to click for additional status information.

**Ad-Hoc Mode or Infrastructure Mode** - The screen indicates whether the Adapter is currently working in ad-hoc or infrastructure mode.

**Signal Strength** - The Signal Strength bar indicates signal strength, from 0 to 100%.

**Link Quality** - The Link Quality bar indicates the quality of the wireless network connection, from 0 to 100%.

Click the **More Information** button to view additional information about the wireless network connection.

Click the **X** (Close) button in the upper right corner to exit the WLAN Monitor.

# Chapter 7: Using the WLAN Monitor for Windows 98SE, Me, and 2000

Use the WLAN Monitor to check the link information, search for available wireless networks, or create profiles that hold different configuration settings.

After installing the Adapter, the Wireless-G USB Network Adapter WLAN Monitor icon will appear in your system tray.

Double-click the icon.

The *Link Information* screen will appear. From this screen, you can find out how strong the current wireless signal is and how good the connection's quality is. You can also click the **More Information** button to view additional status information about the current wireless connection. To search for available wireless networks, click the **Site Survey** tab. To perform configuration changes, click the **Profiles** tab.

**Important for Windows XP users:** Windows XP has a built-in configuration tool. Use the Windows XP Wireless Zero Configuration (in the system tray at the bottom of your screen) to configure the Adapter. See "Chapter 6: Driver Installation and Configuration for Windows XP."

## Wireless Network Status

**Status** - The status of the wireless network connection.

**SSID** - The SSID of the wireless network.

**Network Mode** - The wireless mode currently in use.

**Transfer Rate** - The data transfer rate of the current connection.

**Channel** - The channel to which the wireless network devices are set.

**WEP** - The status of the WEP encryption security feature.

**MAC** - The MAC address of the wireless network's access point.

## TCP/IP Setting

**IP Address** - The IP Address of the Adapter.

**Subnet Mask** - The Subnet Mask of the Adapter.

**Default Gateway** - The Default Gateway address of the Adapter.

**DNS** - The DNS address of the Adapter.

**DHCP** - The status of the DHCP client.

**Save to Profile** - Click the **Save to Profile** button to save the current settings in a configuration profile. Then the *Create connection profile* screen will appear. Enter a name for the new profile, and click the **OK** button.

Click the **Back** button to return to the initial *Link Information* screen.

Click the **X** (Close) button in the upper right corner to exit the WLAN Monitor.

20  
The *Site Survey* screen displays a list of infrastructure and ad-hoc networks available for connection.

For all networks detected, the following are listed:

**SSID** - The SSID, unique name, of the wireless network.

**Signal** - The qualitative strength of the wireless signal.

## Site Information

For each network selected, the following settings are listed:

**Network Mode** - The wireless mode currently in use.

**Channel** - The channel to which the wireless network devices are set.

**WEP** - The status of the WEP encryption security feature.

**MAC** - The MAC address of the wireless network's access point.

**Surveyed at** - The time at which the wireless network was scanned.

**Refresh** - Click the **Refresh** button to perform a new search for wireless devices.

**Connect** - To connect to one of the networks on the list, select the wireless network, and click the **Connect** button. If the wireless network has WEP encryption enabled, you will see the screen shown.

In the *WEP* drop-down box, select the type of WEP encryption used by the wireless network: **64-bit / 10 hex. characters** or **128-bit / 26 hex. characters**. If the wireless network uses a passphrase, enter the passphrase in the *Passphrase* field. If the wireless network uses a WEP key, enter the WEP key in the *Key 1* field.

Click the **OK** button to complete the network connection and return to the *Site Survey* screen, or click the **Cancel** button to cancel the network connection and return to the *Site Survey* screen.

On the *Site Survey* screen, click the **X** (Close) button in the upper right corner to exit the WLAN Monitor.

The *Profiles* screen lets you save different configuration profiles for different network setups. You can also import or export profiles. The default profile holds the initial configuration saved when you ran the Setup Wizard.

For all profiles, the following are listed:

**Profile** - Name of the connection profile.

**SSID** - The wireless network's SSID, as set in the connection profile.

#### Profile Information

For each profile selected, the following are listed:

**Network Mode** - The mode of the wireless network currently in use.

**Transfer Rate** - The Adapter is set to Auto mode, so it will dynamically shift to the fastest data transfer rate possible at any given time.

**Channel** - The channel to which the wireless network devices are set.

**WEP** - The status of the WEP encryption security feature.

**Connect** - To connect to a wireless network using a specific profile, select the profile, and click the **Connect** button.

**Edit** - Select a profile, and click the **Edit** button to change an existing profile.

**New** - Click the **New** button to create a new profile. See the next section, "Creating a New Profile," for detailed instructions.

1. On the *Profiles* screen, click the **New** button to create a new profile.
2. Enter a name for the new profile, and click the **OK** button. Click the **Cancel** button to return to the *Profiles* screen.

**Import** - Click the **Import** button to import a profile that has been saved in another location. Select the appropriate file, and click the **Open** button.

**Export** - Select the profile you want to save in a different location, and click the **Export** button. Direct Windows to the appropriate folder, and click the **OK** button.

**Delete** - Click the **Delete** button to delete a profile.

Click the **X** (Close) button in the upper right corner to exit the WLAN Monitor.

**Note:** If you want to export more than one profile, you have to export them one at a time.

27 26

4. The *Network Mode* screen shows a choice of two network modes. Click the **Infrastructure Mode** radio button if you want your wireless computers to

communicate with computers on your wired network via a wireless access point. Click the **Ad-Hoc Mode** radio button if you want multiple wireless computers to communicate directly with each other.

Then complete the *SSID* field. Click the **Next** button to continue or the **Back** button to return to the previous screen.

**Infrastructure Mode** - This mode allows wireless and wired networks to communicate through an access point.

**Ad-Hoc Mode** - This mode allows wireless-equipped computers to communicate directly with each other. No access point is used.

**SSID** - The SSID is the unique name shared by all devices in a wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 characters (use any of the characters on the keyboard). Make sure this setting is the same for all devices in your wireless network.

3. The *Network Setting* screen will appear next. If your network has a DHCP server, click the radio button next to *Obtain an IP address automatically (DHCP)*. Click the **Next** button to continue, or click the **Cancel** button to return to the *Profiles* screen.

If your network does not have a DHCP server, click the radio button next to *Specify the IP Address*. Enter an **IP Address**, **Subnet Mask**, **Default Gateway**, and **DNS** appropriate for your network. You must specify the IP Address and Subnet Mask on this screen. If you are unsure about the Default Gateway and DNS address, then leave these fields alone. Click the **Next** button to continue, or click the **Cancel** button to return to the *Profiles* screen.

**IP Address** - This IP Address must be unique to your network.

**Subnet Mask** - The Adapter's Subnet Mask must be the same as your wired network's Subnet Mask.

**Default Gateway** - Enter the IP address of your network's Gateway here.

**DNS 1** and **DNS 2** - Enter the DNS address of your Ethernet (wired) network here.

**Passphrase** - Instead of manually entering a WEP key, you can enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. It is case-sensitive and should not be longer than 16 alphanumeric characters. This passphrase must match the passphrase of your other wireless



network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

**WEP Key** - The WEP key you enter must match the WEP key of your wireless network. If you are using 64-bit WEP encryption, then the key must consist of exactly 10 hexadecimal characters. If you are using 128-bit WEP encryption, then the key must consist of exactly 26 hexadecimal characters. Valid hexadecimal characters are “0” to “9” and “A” to “F”.

**Tx Key** - The default transmit key number is 1. If your network’s access point or wireless router uses transmit key number 2, 3, or 4, then select the appropriate number in the *Tx Key* drop-down box.

5. If you chose Infrastructure Mode, then proceed to step 6. If you chose Ad-Hoc Mode, then the *Wireless Channels* screen will now appear. Select the channel at which the network broadcasts its wireless signal. Then click the **Next** button to continue or the **Back** button to return to the previous screen. **Channel** - From the drop-down box, select the appropriate channel that corresponds

with your network settings. All devices in your wireless network must use the same channel in order to communicate.

6. The *Security Settings* screen will appear. Choose the Wired Equivalent Privacy (WEP) encryption settings for your wireless network. If you enable WEP, enter a passphrase or WEP key. Then click the **Next** button to continue or the **Back** button to return to the previous screen.

**WEP** - If you do not want to use WEP encryption, keep the default setting, **Disable**. To use WEP encryption (recommended to increase wireless network security), select **64-bit / 10 hex. characters** or **128-bit / 26 hex. characters** from the drop-down menu, and enter a passphrase or WEP key.

## Appendix A: Troubleshooting

This chapter provides solutions to problems usually occurring during the installation

and operation of the Wireless-G USB Network Adapter. Read the description below to solve your problems. If you can’t find an answer here, check the Linksys website at [www.linksys.com](http://www.linksys.com).

1. My computer does not recognize the Wireless-G USB Network Adapter.

- Make sure that the Wireless-G USB Network Adapter is properly inserted into the USB port.
- Also, make sure that the USB Controller is enabled in the BIOS. Check with your motherboard’s user guide for more information.

2. The Wireless-G USB Network Adapter does not work properly.

- Reinsert the Wireless-G USB Network Adapter into the notebook or desktop’s USB port.

• For Windows 98SE or Me, right-click on **My Computer**, and select **Properties**. Select the **Device Manager** tab, and click on the Network Adapter. You will find the Wireless-G USB Network Adapter if it is installed successfully. If you see a yellow exclamation mark, the resources may be conflicting and you must follow the steps below:

- Uninstall the driver software from your PC.
- Restart your PC and repeat the hardware and software installation as specified in this User Guide.

3. I cannot communicate with the other computers linked via Ethernet in the Infrastructure configuration.

- Make sure that the notebook or desktop is powered on.
- Make sure that the Wireless-G USB Network Adapter is configured with the same SSID and WEP settings as the other computers in the Infrastructure configuration.

Can I run an application from a remote computer over the wireless network?

This will depend on whether or not the application is designed to be used over a network. Consult the application’s user guide to determine if it supports operation over a network.

7. The *Confirm New Settings* screen will appear next shown the new settings. To save the new settings, click the **Yes** button. To edit the

new settings, click the **Back** button.

8. The *Congratulations* screen will appear next. Click **Activate new settings now** to implement the new settings immediately and return to the *Link Information* screen. Click **Activate new settings later** to keep the current settings active and return to the *Profiles* screen.

**You have successfully created a connection profile. Click the X (Close) button in the upper right corner to exit the WLAN Monitor.**

that links access points and nodes. In such a system, the user's end node undertakes a search for the best possible access to the system. First, it evaluates such factors as signal strength and quality, as well as the message load currently being carried by each access point and the distance of each access point to the wired backbone. Based on that information, the node next selects the right access point and registers its address. Communications between end node and host computer can then be transmitted up and down the backbone.

As the user moves on, the end node's RF transmitter regularly checks the system to determine whether it is in touch with the original access point or whether it should seek a new one. When a node no longer receives acknowledgment from its original access point, it undertakes a new search. Upon finding a new access point, it then re-registers, and the communication process continues.

What is ISM band?

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the 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.

What is Spread Spectrum?

Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade-off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

What is DSSS? What is FHSS? And what are their differences?

Frequency-Hopping Spread-Spectrum (FHSS) uses a narrowband carrier that changes frequency in a pattern that is known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise.

Direct-Sequence Spread-Spectrum (DSSS) generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission.

Can I play computer games with other members of the wireless network?

Yes, as long as the game supports multiple players over a LAN (local area network). Refer to the game's user guide for more information.

What is the IEEE 802.11g standard?

It is one of the IEEE standards for wireless networks. The 802.11g standard allows wireless networking hardware from different manufacturers to communicate,

provided that the hardware complies with the 802.11g standard. The 802.11g standard states a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz.

What IEEE 802.11g features are supported?

The product supports the following IEEE 802.11g functions:

- CSMA/CA plus Acknowledge protocol
- Multi-Channel Roaming
- Automatic Rate Selection
- RTS/CTS feature

- Fragmentation
- Power Management

What is ad-hoc mode?

When a wireless network is set to ad-hoc mode, the wireless-equipped computers are configured to communicate directly with each other. The ad-hoc wireless network will not communicate with any wired network.

What is infrastructure mode?

When a wireless network is set to infrastructure mode, the wireless network is configured to communicate with a wired network through a wireless access point.

What is roaming?

Roaming is the ability of a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single access point. Before using the roaming function, the workstation must make sure that it is the same channel number with the access point of dedicated coverage area.

To achieve true seamless connectivity, the wireless LAN must incorporate a number of different functions. Each node and access point, for example, must always acknowledge receipt of each message. Each node must maintain contact with the wireless network even when not actually transmitting data. Achieving these functions simultaneously requires a dynamic RF networking technology

35 mission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

Would the information be intercepted while transmitting on air?

WLAN features two-fold protection in security. On the hardware side, as with Direct Sequence Spread Spectrum technology, it has the inherent security feature of scrambling. On the software side, WLAN offers the encryption function (WEP) to enhance security and access control.

What is WEP?

WEP is Wired Equivalent Privacy, a data privacy mechanism based on a 40/64 bit shared key algorithm, as described in the IEEE 802.11 standard.

34

## Appendix B: Glossary

**802.11g** - One of the IEEE standards for wireless networking hardware.

Products that adhere to a specific IEEE standard will work with each other, even if they are manufactured by different companies. The 802.11g standard specifies a maximum data transfer rate of 54Mbps, an operating frequency of 2.4GHz, and WEP encryption for security. 802.11g networks are also referred to as Wi-Fi networks.

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

**CTS (Clear To Send)** - An RS-232 signal sent from the receiving station to the transmitting station that indicates it is ready to accept data.

**Default Gateway** - The router used to forward all traffic that is not addressed to a station within the local subnet.

**DHCP (Dynamic Host Configuration Protocol)** - A protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection

to the Internet, an IP address must be assigned to each machine.

Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute

IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially

useful in education and other environments where users change frequently.

Using very short leases, DHCP can dynamically reconfigure networks

in which there are more computers than there are available IP addresses.  
37 36

**LAN.** In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure

wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.

**IP Address** - In the most widely installed level of the Internet Protocol (IP) today, an IP address is a 32-bit binary digit number that identifies each sender or receiver of information that is sent in packet across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requester or the e-mail sender and can respond by sending another message using the IP address it received.

**IPCONFIG** - A utility that provides for querying, defining and managing IP addresses within a network. A commonly used utility, under Windows NT and 2000, for configuring networks with static IP addresses.

**ISP** - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as Web site building and virtual hosting.

**LAN** - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

**MAC Address** - The MAC (Media Access Control) address is your computer's unique hardware number.

**mIRC** - mIRC runs under Windows and provides a graphical interface for logging

onto IRC servers and listing, joining and leaving channels.

**Network Mask** - also known as the "Subnet Mask."

**Plug-and-Play** - The ability of a computer system to configure expansion

boards and other devices automatically without requiring the user to turn off the system during installation.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

**DNS** - The domain name system (DNS) is the way that Internet domain names are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.

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

**Dynamic IP Address** - An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

**ESS (Extended Service Set)** - A set of more than two or more BSSs (multiple access points) forming a single network.

**Firmware** - Code that is written onto read-only memory (ROM) or programmable

read-only memory (PROM). Once firmware has been written onto the ROM or PROM, it is retained even when the device is turned off.

**IEEE** - The Institute of Electrical and Electronics Engineers. The IEEE describes itself as "the world's largest technical professional society—promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the wellbeing of our members."

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has many local chapters, and several large societies in special areas, such as the IEEE Computer Society.

**Infrastructure Network** - An infrastructure network is a group of computers or other devices, each with a wireless adapter, connected as an 802.11 wireless

cient delivery over the network. UDP is known as a “connection-less” protocol due to NOT requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet (as opposed to TCP).

**USB (Universal Serial Bus)** - A “plug-and-play” interface between a computer and peripherals, such as digital cameras, scanners, game controllers, speakers, keyboards, portable data storage, or printers. With USB, you can add a new peripheral to your computer without having to add an adapter card or powering down the computer. USB also supports hot-swapping, the addition or removal of devices while the computer is running.

USB 2.0-compliant devices support speed of 480 Mbits/sec.

**WEP (Wired Equivalent Privacy)** - A data privacy mechanism based on a 64-bit shared key algorithm.

**WINPCFG** - Configuration utility based on the Win32 API for querying, defining and managing IP addresses within a network. A commonly used utility under Windows 95, 98, and Me.

**WLAN (Wireless Local Area Network)** - A group of computers and associated devices that communicate with each other wirelessly.

**Roaming** - In an infrastructure mode wireless network, this refers to the ability to move out of one access point's range and into another and transparently reassociate and reauthenticate to the new access point. This reassociation and reauthentication should occur without user intervention and ideally without interruption to network connectivity. A typical scenario would be a location with multiple access points, where users can physically relocate from one area to another and easily maintain connectivity.

**SSID (Service Set Identifier)** - An identification name that wireless devices use to make connections. In order for wireless devices to communicate, they must all be set to the same channel and they all must use the same SSID. For instance, if you are using an access point to connect two computers using wireless

devices, the access point and each of the wireless devices must use the same SSID. Even if they are set to the same channel, they cannot communicate unless the SSID is the same.

**Static IP Address** - A permanent IP address that is assigned to a node in a TCP/IP network.

**Subnet Mask** - The method used for splitting IP networks into a series of subgroups,

or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

**TCP (Transmission Control Protocol)** - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient

delivery over the network. TCP is known as a "connection oriented" protocol due to requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet resulting in transmission control.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** - The basic communication

language or set of protocols for communications over a network (developed specifically for the Internet). TCP/IP defines a suite or group of protocols and not only TCP and IP.

**UDP (User Datagram Protocol)** - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), UDP takes care of keeping track of the individual units of data (called packets) that a message is divided into for effi-

**Dimensions** 3.58" x 2.8" x 0.9"

(91 mm x 71 mm x 23 mm)

**Unit Weight** 2.9 oz. (0.08 kg.)

**Certifications** FCC Class B, Wi-Fi

**Operating Temp.** 32°F to 131°F (0°C to 55°C)

**Storage Temp.** -13°F to 158°F (-25°C to 70°C)

**Operating Humidity** 0% to 70%, Non-Condensing

**Storage Humidity** 10% to 90%, Non-Condensing

41 40

## Appendix C: Specifications

**Standards** IEEE 802.11b, IEEE 802.11g, USB 2.0

**Channels** 11 Channels (USA, Canada)

13 Channels (Europe)

14 Channels (Japan)

**Port** USB Type B

**Transmit Power** 16 dBm (typical)

**Receive Sensitivity** -85 dBm (typical)

**Modulation** CCK, DQPSK, DBPSK

**Network Protocols** TCP/IP, IPX/SPX, NetBEUI

**LEDs** Power, Link

**Security Features** WEP Encryption

**WEP Key Bits** 64, 128 Bit

43 42

## Appendix E: Contact Information

For help with the installation or operation of the Wireless-G USB Network Adapter, contact Linksys Technical Support at one of the phone numbers or Internet addresses below.

**Sales Information** 800-546-5797 (1-800-LINKSYS)

**Technical Support** 800-326-7114

**RMA (Return Merchandise**

**Authorization) Issues** [www.linksys.com](http://www.linksys.com) (or call 949-271-5461)

**Fax** 949-265-6655

**E-mail** [support@linksys.com](mailto:support@linksys.com)

**Web site** <http://www.linksys.com>

**FTP site** <ftp://ftp.linksys.com>

## Appendix D: Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF

PURCHASE.

IN NO EVENT SHALL LINKSYS' LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION.

LINKSYS DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

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AND RECEIVING YOUR REPLACEMENT. LINKSYS PAYS FOR UPS GROUND ONLY. ALL CUSTOMERS LOCATED OUTSIDE OF THE UNITED STATES OF AMERICA AND CANADA SHALL BE HELD RESPONSIBLE FOR SHIPPING AND HANDLING CHARGES. PLEASE CALL LINKSYS FOR MORE DETAILS.

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