

Instant Wireless® Series

Wireless-G Game Adapter



Use this guide to install: WGA54G ver. 2

User Guide

LINKSYS®

COPYRIGHT & TRADEMARKS

Specifications are subject to change without notice. Copyright © 2003 Linksys, All Rights Reserved. Instant Wireless, Linksys, and the Linksys logo are registered trademarks of Linksys Group, Inc. Microsoft, Windows, and the Windows logo are registered trademarks of Microsoft Corporation. All other trademarks and brand names are the property of their respective proprietors.

LIMITED WARRANTY

Linksys guarantees that every Wireless-G Game Adapter will be free from physical defects in material and workmanship for three years from the date of purchase, when used within the limits set forth in the Specifications section of this User Guide.

This Warranty is valid and may be processed only in the country of purchase.

If the product proves defective during this warranty period, go to the Linksys website at www.linksys.com for complete RMA (Return Merchandise Authorization) assistance. You can also call Linksys Technical Support in order to obtain a RMA Number. 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. When returning a product, mark the RMA Number clearly on the outside of the package and include a copy of your original proof of purchase. All customers located outside of the United States of America and Canada shall be held responsible for shipping and handling charges.

IN NO EVENT SHALL LINKSYS'S 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. Linksys makes no warranty or representation, expressed, implied, or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaims its quality, performance, merchantability, or fitness for any particular purpose. Linksys reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity. Please direct all inquiries to:

Linksys P.O. Box 18558, Irvine, CA 92623.

SAFETY AND REGULATORY NOTICES

FCC STATEMENT

This Wireless-G Game 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 change or modification to the product not expressly approved by Linksys could void the user's authority to operate the device.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

- Access points with 2.4 GHz or 5 GHz integrated antenna must operate with a separation distance of at least 20 cm from all persons using the cable provided 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.

Note: Dual antennas used for diversity operation are not considered co-located.

INDUSTRY CANADA (CANADA)

This Class B digital apparatus complies with Canadian ICES-003.

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 Instant Wireless Series products included in the Instant Wireless Series conform to the specifications listed below, following the provisions of the EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC:

- ETS 300-826, 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.

- Linksys Group vakuuttaa täten että Instant Wireless Wireless-G Game Adapter tyyppinen laite on direktiivin 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 le pont Ethernet sans fil G 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.

Table of Contents

- 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. Pour une utilisation publique à l'extérieur de bâtiments, une licence de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.
- France F: Bande de fréquence restreinte: seuls les canaux 10, 11, 12, 13 (2457, 2462, 2467, et 2472 MHz respectivement) doivent être utilisés en France. Toute utilisation, qu'elle soit intérieure ou extérieure, est soumise à autorisation. Vous pouvez contacter l'Autorité de Régulation des Télécommunications (<http://www.art-telecom.fr>) pour la procédure à suivre.
- 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	1
The Wireless-G Game Adapter	1
Features	1
Chapter 2: Getting to Know the Wireless-G Game Adapter	2
The Wireless-G Game Adapter's Back Panel	2
The Wireless-G Game Adapter's Front Panel LEDs	3
Chapter 3: Planning Your Wireless Network	4
Network Topology	4
Ad-Hoc versus Infrastructure Mode	4
Chapter 4: Fast Setup for Head-to-Head Play	6
Chapter 5: Setting Up the Wireless-G Game Adapter for Network Play	7
Connecting the Game Adapter to Your PC	7
Starting the Setup Wizard from your PC	8
Easy Setup Wizard Configuration for Head-to-Head Play	9
Advance Setup Wizard Configuration for Head-to-Head Play	11
Setup Wizard Configuration for Internet Play	14
Connecting the Game Adapter to Your Game Console	18
Chapter 7: Using the Wireless-G Game Adapter's Web-based Utility	19
Overview	19
Starting the Web-based Utility	19
Setup	21
Advanced	24
Help	27
Appendix A: Troubleshooting	28
Common Problems and Solutions	28
Frequently Asked Questions	29

Chapter 1: Introduction

The Wireless-G Game Adapter

The Wireless-G Game Adapter gives any wired Ethernet-equipped game console wireless connection capabilities. The Game Adapter can be used in two different ways. If you have an existing home wireless network and a cable or DSL Internet connection, the Game Adapter lets your PlayStation®2, Xbox™ or GameCube™ attach to the network so you can get into online games without running wires to the game room. Or, use a pair of Game Adapters to form a "cable-less cable" between two game consoles for head-to-head gaming -- in the same room, or all the way across the house.

It's completely driver-free, so it works on any platform. Since there's no drivers to load, setup is a snap. In some cases, it works right out of the box! If your setup's a little different -- just configure the network settings through your PC's web browser, plug it into your game box, and go.

The Wireless-G Game Adapter provides lag-free gaming with communication speeds up to 54Mbps when connected to other Wireless-G devices. It can also connect to Wireless-B (802.11b) devices and networks at 11Mbps.

Spend your time gaming, not stringing wires, with the Linksys Wireless-G Game Adapter.

Features

- Compatible with all 802.11b and draft 802.11g compliant devices
- Operates in the 2.4GHz frequency range for maximum distance
- Dynamically shifts channels and wireless networks based on signal strength and link quality for maximum availability and reliability of connection
- Utilizes up to 128 Bit Wired Equivalency Protection (WEP) to ensure security
- Works with all network-ready game consoles, including Xbox, Playstation 2* and GameCube*

*May require additional Network Adapter Accessory

Appendix B: Glossary	30
Appendix C: Specifications	35
Environmental	35
Appendix D: Warranty Information	36
Appendix E: Contact Information	37

Chapter 2: Getting to Know the Wireless-G Game Adapter

The Wireless-G Game Adapter's Back Panel

The Back Panel is where you'll connect the Game Adapter and find the Reset button.

- Reset** The Reset button resets the Game Adapter to its factory default settings.
- LAN** The LAN port is where you will connect the Ethernet network cable.
- Power** The Power port is where you will connect the power adapter.



Figure 2-1

The Wireless-G Game Adapter's LEDs

The Game Adapter's LEDs display the activity on your network.

- Power** *Green.* The Power LED will light up when the Game Adapter is powered on.
- Ethernet** *Green.* The Ethernet LED will be lit steadily when the Game Adapter is connected to the wired network. The LED will blink when there is wired network traffic.
- Wireless-G** *Green.* The Wireless-G LED will be lit steadily when the Game Adapter is connected to the wireless network. The LED will blink when there is wireless network traffic.



Figure 2-2

Chapter 3: Planning Your Wireless Network



Note: The Game Adapter can be used right out of the box if you are only using it to play head-to-head with another game console. Just plug it in and play.

But if you are connecting it to a wireless network, or using it to play over the Internet, you must configure it with your wireless network. Refer to “Chapter 5: Setting up the Wireless-G Game Adapter for Network Play” for more information.

Network Topology

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.

Ad-Hoc versus Infrastructure Mode

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 accessible 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 (see Figure 3-1). 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 hardware as well.

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

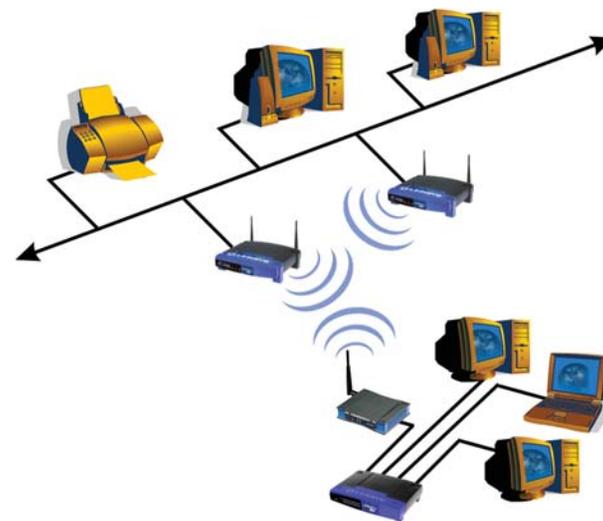


Figure 3-1

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.

Figure 3-2 shows a wireless bridging scenario using two Wireless-G Game Adapters. Each wireless network is connected to a Wireless-G Game Adapter through a switch. A separate computer is equipped with a wireless PC card and can communicate with both wireless networks as long as it has the same SSID and channel as both wireless networks.



Figure 3-2

Chapter 4: Fast Setup for Head-to-Head Play



Note: These directions are provided for gamers playing Head-to-Head with no setting changes. If you wish to change the Game Adapter's settings to match those of your wireless network, you should follow the directions provided in "Chapter 5: Setting up the Wireless-G Game Adapter for Network Play".

1. Plug the included Ethernet network cable into the Game Adapter's LAN port, as shown in Figure 4-1.
2. Plug the other end of the Ethernet network cable into the RJ-45 port of your game console.
3. Plug the supplied power cable into the Game Adapter's Power port, as shown in Figure 4-2. Then, plug the other end into an electrical outlet, preferably a surge protector.
4. Set your game console for multiplayer gaming as usual.



Figure 4-1



Figure 4-2

Chapter 5: Setting Up the Wireless-G Game Adapter for Network Play

Connecting the Game Adapter to Your PC

1. Plug the included Ethernet network cable into the Game Adapter's LAN port, as shown in Figure 5-1.
2. Plug the other end of the Ethernet network cable into your PC's RJ-45 port.



Figure 5-1

3. Plug the supplied power cable into the Game Adapter's Power port, as shown in Figure 4-2. Then, plug the other end into an electrical outlet, preferably a surge protector.
4. Start your PC.



Figure 5-2

Starting the Setup Wizard from Your PC

Next, you will configure the Wireless-G Game Adapter with your PC. The Setup Wizard will guide you through all the steps necessary.

1. Insert the **Setup CD-ROM** into your PC's CD-ROM drive. The Setup Utility should run automatically, and the screen in Figure 5-3 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).



Figure 5-3

- **Setup** - Click **Setup** to proceed with the Setup Wizard.
- **User Guide** - Click **User Guide** to open the PDF file of this User Guide.
- **LINKSYS Web** - Click **LINKSYS Web** to access the Linksys website using an active Internet connection.
- **Exit** - Click **Exit** to exit the Setup Wizard.

Click **Setup** to begin the setup process.

2. The Setup Wizard will search for the Game Adapter.

If it cannot find one, you will be asked to check the connections, as shown in Figure 5-4. Review your connections and click **Continue**. The Setup Wizard will search again.

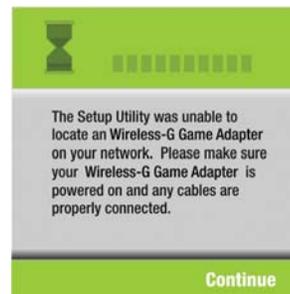


Figure 5-4

When the Game Adapter is located, you will be asked to enter your network password. Type the password in the field, as shown in Figure 5-5, and click **Enter**.



Figure 5-5

After you have entered your password, choose the following set of directions to configure the Game Adapter. “Easy Setup Wizard Configuration for Head-to-Head Play” is a simple procedure for verifying correct settings. “Advanced Setup Wizard Configuration for Head-to-Head Play” allows you to modify the Game Adapter’s settings for Head-to-Head play. “Setup Wizard Configuration for Internet Play” should be used when configuring the Game Adapter to play games over a broadband Internet connection. After you have completed these steps, disconnect the Game Adapter from your PC and connect it to your game console as shown in “Connecting the Game Adapter to Your Game Console”.

Easy Setup Wizard Configuration for Head-to-Head Play

Easy Setup is included for when you wish to verify that the Game Adapter’s settings are correct.

1. From the screen shown in Figure 5-6, select the **Head to Head (Console to Console)** radio button and click **Next**.



Figure 5-6

- From the next screen, shown in Figure 5-7, select a radio button next to the **Easy** selections. When setting up Adapter 1, chose the radio button beside **Adapter 1**. When setting up Adapter 2, chose the radio button beside **Adapter 2**. When selecting Adapter 2, the Game Adapter's IP Address will change as not to conflict with Adapter 1.

After making your selection, click **Next**.



Figure 5-7

- Verify the Game Adapter's settings from the following screen, shown in Figure 5-8. Then, click **Yes** to accept these settings.



Figure 5-8

- Now that the settings have been verified, Easy Setup is complete.



Figure 5-9

Advanced Setup Wizard Configuration for Head-to-Head Play

Advanced Setup allows you to modify the Game Adapter's settings for Head-to-Head Play.

- From the screen shown in Figure 5-10, select the **Head to Head (Console to Console)** radio button and click **Next**.



Figure 5-10

2. From the next screen, shown in Figure 5-11, select a radio button next to the **Advanced (Manual Configuration)** selection. Then, click **Next** to continue.



Figure 5-11

3. The wireless settings screen will now appear, shown in Figure 5-12. Enter your wireless network's SSID and select the channel at which the network broadcasts its wireless signal. Then, click **Next** to continue or **Back** to return to the previous screen.



Figure 5-12

- **SSID** - The SSID is the unique name shared among all devices in your wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 alphanumeric characters, which can be any keyboard character.
- **Channel** - From the drop-down menu, select the appropriate channel to match your network settings. All devices in your wireless network must use the same channel in order to function correctly.

4. From the next screen, shown in Figure 5-13, enter the IP Settings unique to your network. Then, click **Next** to continue or **Back** to return to the previous screen.

- **IP Address** - This IP address must be unique to your network.
- **IP Mask** - The Game Adapter's IP Mask (also known as Subnet Mask) must be the same as your wired network's Subnet Mask.
- **Gateway** - Enter the IP address of your network's Gateway.

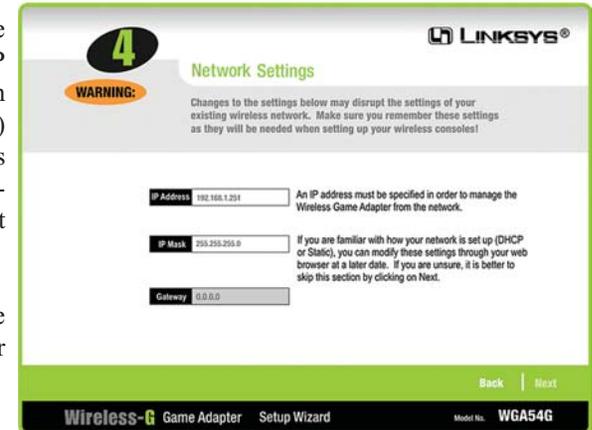


Figure 5-13

5. Confirm your changes to the Game Adapter's settings from the following screen, shown in Figure 5-14. Then, click **Yes** to accept these settings.



Figure 5-14

6. The following screen (shown in Figure 5-15) confirms that Advanced Setup is complete.



Figure 5-15

Setup Wizard Configuration for Internet Play

Console to Internet Setup allows you to configure the Game Adapter's settings for playing games over a broadband Internet connection.

1. From the screen shown in Figure 5-16, select the **Console to Internet** radio button and click **Next**.



Figure 5-16

2. The Basic Settings screen will now appear, shown in Figure 5-17. Enter your wireless network's SSID and select the level of WEP Encryption you wish to apply to your network transmissions. Then, click **Next** to continue or **Back** to return to the previous screen.

- **SSID** - The SSID is the unique name shared among all devices in your wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 alphanumeric characters, which can be any keyboard character.
- **WEP (Disabled/64-bit WEP/128-bit WEP)** - In order to utilize WEP encryption, select **64-bit** or **128-bit WEP** from the drop-down menu.

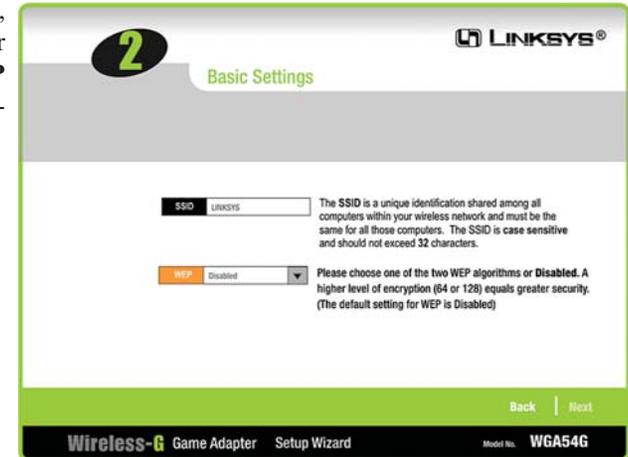


Figure 5-17

3. If you chose to enable WEP Encryption, the Security Setting screen will appear, shown in Figure 5-18. Enter a Passphrase, which is like a security password. This will generate a WEP key in the *Key* field. (If you want to enter a WEP key manually, leave the Passphrase field blank and enter the WEP key as described below.)

- **Passphrase** - Instead of manually entering a WEP key, you can enter a Passphrase, and the WEP Key will appear in the *Key* field. The Passphrase is case-sensitive and should have 16 or fewer alphanumeric characters. It must match the passphrase of your wireless network and is compatible with Linksys wireless products only. (You will have to enter the WEP key manually on any non-Linksys wireless products.) Write down the Passphrase and click **Next** to continue.

- You can also enter the WEP Key manually in the *Key* field. 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”-“9” and “A”-“F”. Then, click **Next**.

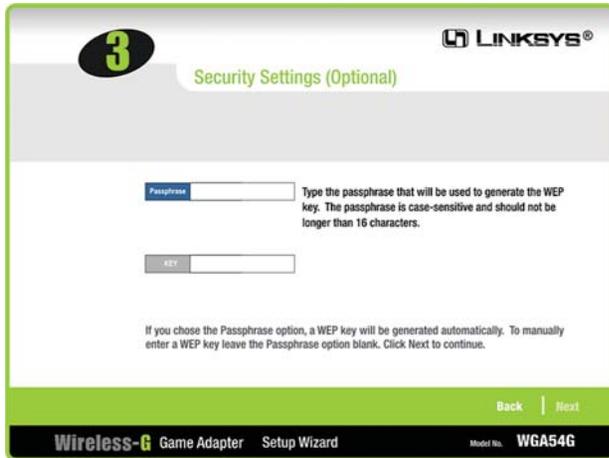


Figure 5-18

- From the next screen, shown in Figure 5-19, enter the IP Settings unique to your network. Then, click **Next** to continue or **Back** to return to the previous screen.

- IP Address** - This IP address must be unique to your network.
- IP Mask** - The Game Adapter’s IP Mask (also known as Subnet Mask) must be the same as your wired network’s Subnet Mask.
- Gateway** - Enter the IP address of your network’s Gateway.



Figure 5-19

- Confirm your changes to the Game Adapter’s settings from the following screen, shown in Figure 5-20. Then, click **Yes** to accept these settings.



Figure 5-20

- The following screen (shown in Figure 5-21) confirms that Advanced Setup is complete. Later changes can be made from the Web-based Utility, as shown in “Chapter 6: Using the Wireless-G Game Adapter’s Web-based Utility”.



Figure 5-21

Connecting the Game Adapter to Your Game Console

Now that the Game Adapter is configured properly, as shown in the previous three sections, you can connect to your game console and start gaming.

1. Plug the included Ethernet network cable into the Game Adapter's LAN port, as shown in Figure 5-22.
2. Plug the other end of the Ethernet network cable into the RJ-45 port of your game console.



Figure 5-22

3. Plug the supplied power cable into the Game Adapter's Power port, as shown in Figure 5-23. Then, plug the other end into an electrical outlet, preferably a surge protector.
4. Set your game console for multiplayer gaming as usual.



Figure 5-23

Chapter 6: Using the Wireless-G Game Adapter's Web-based Utility

Overview

The Game Adapter is designed to function properly after configuration using the Setup Wizard. However, if you would like to change these settings or make more advanced configuration changes, use your web browser and the Wireless-G Game Adapter's Web-based Utility. This chapter explains how to use the Utility.

Starting the Web-based Utility

1. Open your web browser, and enter the Game Adapter's IP address (the default is **192.168.1.250**). Press the **Enter** key, and the screen shown in Figure 6-1 will appear. In lowercase letters, enter the default password, **admin**, in the *Password* field. Click the **OK** button. You can set a new password on the *Advanced* screen later.



Figure 6-1

2. The *Setup* screen will appear, shown in Figure 6-2.

WIRELESS LINKSYS
Nobody makes networking easier.™

Setup Setup | Advanced | Help

This screen allows changes to basic settings. Click the **Apply** button to save any changes. If this page does not automatically refresh after clicking the **Apply** button, then click the refresh button of your browser.

Firmware 1.05 April 10, 2003
MAC Address 00:06:04:40:24:1A
SSID
Network Type Infrastructure
Channel: 1
WEP Enable Disable **WEP Key Settings**

Select one of the available networks below and click Connect to join the network.

	SSID	MAC address	Channel	Signal Strength(%)	Mode
<input type="radio"/>	wa600bbb	00-02-00-E4-AC-91	6	69%	802.11b
<input type="radio"/>	-none-	00-09-41-2E-35-17	6	70%	802.11b
<input type="radio"/>	allied	00-07-40-29-05-23	2	71%	802.11b
<input type="radio"/>	Speed	00-02-00-33-02-31	10	72%	802.11b
<input type="radio"/>	wa601	2E-09-00-21-D1-C5	1	75%	802.11b

Connect **Refresh**

Apply **Cancel** **Help**

Wireless-G
Game Adapter

Figure 7-2

The Utility provides a convenient, web-browser-based way to alter the Game Adapter's settings. It offers five main tabs:

- **Setup** - Enables you to configure the IP address and wireless settings.
- **Advanced** - Lets you change the advanced wired and wireless settings, clone a MAC address onto the Game Adapter, change the password, and restore default settings.
- **Help** - Provides explanations of various configuration settings and links to online technical support resources.

Setup

The *Setup* screen, shown in Figure 6-2, lets you configure the Game Adapter's wireless network settings.



Note: You may have to refresh this page to see any new settings.

- **Firmware** - The version number of the Game Adapter's firmware is displayed here. Firmware should be upgraded **ONLY** if you experience problems with the Game Adapter. Firmware updates are posted at www.linksys.com.
- **MAC Address** - The Game Adapter's MAC Address is displayed here.
- **SSID** - The SSID is the network name shared among 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 alphanumeric characters, which may be any keyboard character (do not use any spaces). Make sure this setting is the same for all devices in your wireless network. For added security, you should change the default SSID (**linksys**) to a name of your choice.
- **Network Type** - Choose the Game Adapter's wireless operating mode here. Keep the default setting, **Infrastructure**, if you want your wireless-equipped device to communicate with computers and other devices on your wired network using a wireless access point. Select **Ad-Hoc** button if you want multiple wireless-equipped devices to communicate directly with each other, such as when playing head-to-head.

If you chose Ad-Hoc mode, then select the correct operating channel for your network in the *Channel* drop-down menu. The channel you choose should match the channel set on the other devices in your wireless network.

- **WEP** - To enable WEP encryption, click the **Enable** radio button. You should always employ WEP to increase wireless network security. Then click the **WEP Key Settings** button to configure the WEP settings. To disable WEP encryption, keep the default, **Disable**.

An acronym for Wired Equivalent Privacy, WEP is an encryption method used to protect your wireless data communications. WEP uses 64-bit or 128-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each device in a network must use an identical WEP key. Higher encryption levels offer higher levels of security, but due to the complexity of the encryption, they may decrease network performance.

The wireless networks available to the Game Adapter are listed below. Detailed information about the networks is listed on each line. This information includes SSID, MAC Address, Channel, Signal Strength (as a percentage), and Mode.

- **SSID** - The network name. To join a wireless network, click the radio button next to the **SSID**.
- **MAC Address** - The MAC address of the network's access point.
- **Channel** - The channel setting.
- **Signal Strength (%)** - The percentage of wireless signal strength.
- **Mode** - The type of wireless standard, network mode, and status of WEP encryption.

Click the **Connect** button to connect to the selected network. If your page doesn't automatically refresh itself, then click the **Refresh** button of your web browser.

WEP Encryption

Click the **WEP Key Settings** button from the *Setup* screen to configure the WEP settings. This will open the *WEP Encryption* screen.



Note: Make sure your WEP key matches the WEP key of the wireless network you want to join. Otherwise, the connection will fail.

Figure 7-3



Note: You may have to refresh this page to see any new settings.

- **Default Transmit Key** - Select which WEP key (1-4) will be used when the Game Adapter sends data. Make sure the other wireless-equipped devices are using the same key.
- **WEP Encryption** - In order to use WEP encryption, select **64-Bit (10 hex digits)** or **128-Bit (26 hex digits)** from the drop-down menu.
- **Passphrase** - Instead of manually entering WEP keys, you can enter a Passphrase. This Passphrase is used to generate one or more WEP keys. It is case-sensitive and should not be longer than 16 alphanumeric characters. (The Passphrase function is compatible with Linksys wireless products only. If you want to communicate with non-Linksys wireless products, you will need to enter your WEP key(s) manually on the non-Linksys wireless products.) After you enter the Passphrase, click the **Generate** button to create WEP key(s).

- **Mode.** Select **Mixed** and both Wireless-G and Wireless-B computers will be allowed on the network, but the speed will be reduced. Select **G-Only** for maximum speed, but no Wireless-B users will be allowed on the network.
- **Authentication** - The default setting is **Open**. The choices are **Open** and **Shared**.

This setting allows the Game Adapter to authenticate communication with the wireless devices in your network. With the Shared Key setting, all wireless devices must have the same WEP keys so that the Game Adapter and the client can authenticate each other and start transmitting data. With the Open System setting, any device can join a network without performing any security check.

- **Cloning Mode** - You can clone the MAC address of any network device onto the Game Adapter. To disable MAC address cloning, select **Disable**. The default setting, Automatic, enables the use of the MAC cloning feature.

If you have enabled MAC cloning, then select **Auto** if you want to clone the MAC address of the device currently connected to the Game Adapter's LAN port. The Game Adapter will actively scan for a new MAC address to be cloned whenever you disconnect and re-connect the Game Adapter through its LAN port.

- **Administrative Password** - You should always change the password from that set by the factory, which is **admin**. All users who try to access the Game Adapter's Web-based Utility will be prompted for the Game Adapter's Password. The new Password must not exceed 12 characters in length and must not include any spaces. Enter the new Password a second time to confirm it.
- **Restore Factory Defaults** - Click the **Yes** radio button to reset all configuration settings to their default values. If you do not want to restore the factory defaults, then keep the default setting, **No**.



Note: Any settings you have saved will be lost when the default settings are restored.

Click the **Apply** button to save your changes. If your page doesn't automatically refresh itself, then click the web browser's **Refresh** button. Click the **Cancel** button to cancel your changes. Click the **Help** button for additional on-screen information.

Help

The *Help* screen offers links to all of the help information for the Web-based Utility's screens and this User Guide. All information is read-only.



Figure 7-9

- **Linksys Website** - Click the **Linksys Website** link to visit Linksys's website, www.linksys.com.
- **Online manual in PDF format** - Click the **Online manual in PDF format** to view this User Guide on-screen. It is in Adobe Acrobat Portable Document File (.pdf) format, so you will need the free Adobe Acrobat Reader to view the pdf. If you do not have the Reader, click the Adobe Website link to download it.
- **Adobe Website (to obtain a PDF reader if required)** - If you need to download the Adobe Acrobat Reader to view the User Guide pdf, then click the **Adobe Website** link.
- **Firmware Upgrade** - Click this button to upgrade the Game Adapter's firmware once you have downloaded it from the Linksys Website using the link above.



Note: Firmware should be upgraded **ONLY** if you experience problems with the Game Adapter. Firmware updates are posted at www.linksys.com.

Appendix A: Troubleshooting

Common Problems and Solutions

This section provides solutions to potential problems regarding the installation and operation of the Wireless-G Game Adapter. If you can't find an answer here, check the Linksys website at www.linksys.com.

1. I can't connect to the Game Adapter.
Open the Web-based Utility. On the **Setup** tab, perform the following steps:
 - Verify that the operating mode is set to Infrastructure mode.
 - Make sure that the SSID is the same as the SSID of the access point.
 - On the *WEP Encryption* screen, make sure that all of the WEP settings are the same as the WEP settings of the access point.
2. I don't know how to change the Game Adapter's IP address.
You have two ways to change the Game Adapter's IP address.
 - Open the Web-based Utility. On the *Advanced* screen, click the **Use the following IP settings** radio button, and change the IP address there.
 - If you encounter problems, power the Game Adapter off and on again, or push the Reset button. Then try to change the IP address again.
3. The Web-based Utility doesn't detect the Game Adapter.
Make sure that the Ethernet cable is properly connected and that the Ethernet LED is lit.
4. The Web-based Utility won't open.
Make sure that you have a network adapter installed on the PC so you can use the Web-based Utility.
5. The Web-based Utility does not recognize my password.
The password is case-sensitive. Make sure you are using the correct case(s) when entering the password.

If you forget your password, you can push the Game Adapter's Reset button. This will reset the password to the default setting; however, all other Game Adapter settings will be reset to the factory defaults as well. To use the default setting, enter **admin** in the *Password* field.

6. After I make changes through the Web-based Utility, the new settings aren't displayed on-screen.
Click the **Refresh** button of your web browser. If the new settings aren't displayed, then unplug the power adapter from the Game Adapter. Plug the power adapter back in, and then click the **Refresh** button again.

Frequently Asked Questions

Do Xbox "System Link" games require any special configuration?

Yes. MAC cloning on the Game Adapters used must be set to Automatic.

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.

Can I play multiplayer games with other users of the wireless network?

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

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.

Would the information be intercepted while transmitting on air?

Instant Wireless products feature two-fold protection in security. On the hardware side, it has the inherent security feature of scrambling. On the software side, Instant Wireless products offer the encryption function (WEP) to enhance security and access control. Users can set it up depending upon their needs.

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.

Appendix B: Glossary

802.11b - 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 802.11b standard specifies a maximum data transfer rate of 11Mbps, an operating frequency of 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.

802.11g - A proposed, but as yet unratified extension of the IEEE 802.11 standard for wireless networking hardware. The draft 802.11g specifications used by Linksys specify a maximum data transfer rate of 54Mbps using OFDM modulation, an operating frequency of 2.4GHz, backward compatibility with IEEE 802.11b devices, and WEP encryption for security.

Adapter - This is a device that adds network functionality to your PC, game console, etc.

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 or as peer-to-peer mode, and is useful at a departmental scale.

Bit - A binary digit. The value - 0 or 1-used in the binary numbering system. Also, the smallest form of data.

Broadband - A data-transmission scheme in which multiple signals share the bandwidth of a medium. This allows the transmission of voice, data and video signals over a single medium. Cable television uses broadband techniques to deliver dozens of channels over one cable.

Browser - A browser is an application program that provides a way to look at and interact with all the information on the World Wide Web or PC. The word "browser" seems to have originated prior to the Web as a generic term for user interfaces that let you browse text files online.

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, 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.

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

Download - To receive a file transmitted over a network. In a communications session, download means receive, upload means transmit.

Driver - A software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific device, and is installed during the initial installation of a network-compatible client or server operating system.

DSL (Digital Subscriber Line) - A technology that dramatically increases the digital capacity of ordinary telephone lines into the home or office and, by employing unused bandwidth, still allows for normal phone usage. DSL provides "always-on" operation, eliminating the need to dial in to the service.

Encryption - A security method that applies a specific algorithm to data in order to alter the data's appearance and prevent other devices from reading the information.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium.

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

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Hardware - Hardware is the physical aspect of computers, telecommunications, and other information technology devices. The term arose as a way to distinguish the "box" and the electronic circuitry and components of a computer from the program you put in it to make it do things. The program came to be known as the software.

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 well-being 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.

IP (Internet Protocol) - The method or protocol by which data is sent from one computer to another on the Internet. It is a standard set of rules, procedures, or conventions relating to the format and timing of data transmission between two computers that they must accept and use to be able to understand each other.

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.

LAN (Local Area Network) - 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 (Media Access Control) Address - A unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level.

Network - A system that transmits any combination of voice, video and/or data between users.

OFDM - Developed for wireless applications, Orthogonal Frequency Division Multiplexing (OFDM) technology offers superior performance--increased data rates and more reliable transmissions--than previous technologies, such as DSSS. OFDM is a scheme in which numerous signals of different frequencies are combined to form a single signal for transmission on the medium.

OFDM works by breaking one high-speed data stream into a number of lower-speed data streams, which are then transmitted in parallel. Each lower speed stream is used to modulate a subcarrier. Essentially, this creates a multi-carrier transmission by dividing a wide frequency band or channel into a number of narrower frequency bands or sub-channels. OFDM is also used for other applications, including powerline networking.

Packet - A unit of data routed between an origin and a destination in a network.

Passphrase - Used much like a password, a passphrase simplifies the WEP encryption process by automatically generating the WEP encryption keys for Linksys products.

PC Card - A credit-card sized removable module that contains memory, I/O, or a hard disk.

Port - A pathway into and out of the computer or a network device. For example, the serial and parallel ports on a personal computer are external sockets for plugging in communications lines, modems and printers.

RJ-45 (Registered Jack-45) - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

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.

Software - Instructions for the computer. A series of instructions that performs a particular task is called a "program." The two major categories of software are

"system software" and "application software." System software is made up of control programs such as the operating system and database management system (DBMS). Application software is any program that processes data for the user.

A common misconception is that software is data. It is not. Software tells the hardware how to process the data.

SSID (Service Set Identifier) - A unique name shared among all points in a wireless network. The SSID must be identical for each point in the wireless network and is case-sensitive.

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.

Switch - 1. A data switch connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

Topology - A network's topology is a logical characterization of how the devices on the network are connected and the distances between them. The most common network devices include hubs, switches, routers, and gateways. Most large networks contain several levels of interconnection, the most important of which include edge connections, backbone connections, and wide-area connections.

Upgrade - To replace existing software or firmware with a newer version.

Upload - To transmit a file over a network. In a communications session, upload means transmit, download means receive.

WEP (Wired Equivalent Privacy) - A data privacy mechanism based on a 64-bit or 128-bit shared key algorithm, as described in the IEEE 802.11 standard.

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

Appendix C: Specifications

Standards IEEE 802.11b, draft 802.11g

Ports Power, Ethernet

Buttons Reset

Cabling Category 5

LEDs Power, Ethernet, Wireless-G

Transmit Power 14dBm +/- 1dBm

Security Features WEP

WEP key bits 64, 128

Warranty 3 Years

Environmental

Dimensions 6.30" x 3.94" x 1.42" (160 mm x 100 mm x 36 mm)

Unit Weight 0.44 lbs. (0.2 kg)

Power 5 volt 2.5 Amp

Certification FCC, IC-03

Operating Temp. 32°F to 104°F (0°C to 40°C)

Storage Temp. -4°F to 158°F (-20°C to 70°C)

Operating Humidity 10% to 85%, Non-Condensing

Storage Humidity 5% to 90%, Non-Condensing

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'S 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.

LINKSYS OFFERS CROSS SHIPMENTS, A FASTER PROCESS FOR PROCESSING 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.

Appendix E: Contact Information

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

Sales Information	800-546-5797 (LINKSYS)
Technical Support	800-326-7114
RMA (Return Merchandise Authorization) Issues	www.linksys.com (or call 949-271-5461)
Fax	949-265-6655
E-mail	support@linksys.com
Web	http://www.linksys.com
FTP Site	ftp.linksys.com

Appendix F: Regulatory Information

FCC STATEMENT

This product 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

•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 Caution: Any changes or modifications not expressly approved by
the party responsible for compliance could void the user's authority to
operate this equipment.
Linksys declares that WGA54G ver. 2 (FCC ID: Q87-WGA54GV2) is
limited in CH1~CH11 for 2.4 GHz by specified firmware controlled in U.S.A.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

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

SAFETY NOTICES

Caution: To reduce the risk of fire, use only No.26 AWG or larger telecommunication line cord.

Do not use this product near water, for example, in a wet basement or near a swimming pool.

Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

INDUSTRY CANADA (CANADA)

To prevent radio interference to the licensed service (i.e. co-channel Mobile Satellite systems) this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.
Operation is subject to the following two conditions:
1) This device may not cause interference and
2) This device must accept any interference, including interference that may cause undesired operation of the device.



<http://www.linksys.com>

© Copyright 2003 Linksys, All Rights Reserved.