

# Wireless-G USB 2.0 Adapter

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*User Manual (GWU523)*





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## Welcome

Thank you for choosing IOGEAR® to serve your wireless needs. In no time you will be sharing files or surfing the Internet wirelessly. We hope you will have as much fun using your IOGEAR® Wireless-G USB 2.0 Adapter, as we had designing it.

Rest assured, your IOGEAR® Wireless-G USB 2.0 Adapter is built rock-solid to ensure maximum up-time for you to stay up-and-running. If for any reason you have a problem, we stand behind our products with an industry-leading 3 year factory warranty, so you can have peace-of mind with your current and future IOGEAR® purchases.

We want you to be happy with your purchase, so we have made every effort to ensure product quality, reliability, and ease-of-use.

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## Package Contents

This package contains...

- 1 x 802.11g USB 2.0 Adapter
- 1 x Quick Start Guide
- 1 x Installation & Manual CD-ROM
- 1 x Warranty/Registration Card

Check to make sure that all the components are present and that nothing was damaged in shipping. If you encounter a problem, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit, and/or any of the devices that connect to it.

## Overview

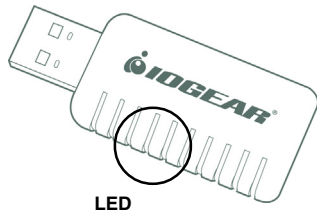
Being five times faster than the speed of 802.11b network standard devices, the innovative 802.11g standard lets the wireless network become incredibly easier and faster (up to 54Mbps) than ever.

Your Wireless-G USB 2.0 Adapter surely will bring you into such a high-speed network sphere. This document describes how to install your Wireless-G USB 2.0 Adapter, which aims to let your computer communicate with 802.11 networks quickly and seamlessly. Wireless LAN is local area networking without wires, which uses radio frequencies to transmit and receive data between PCs or other network devices.

Additionally, wireless LAN is able to configure either independent networks, which are also known as ad-hoc networks, or infrastructure networks. The former is suitable for small or temporary peer-to-peer configurations, and the later offers fully distributed data connectivity to the Internet.

- Support Microsoft Windows 98SE, Me, 2000 and XP.
- Operating distance of up to 300 meters in free space.
- 54 Mbps Data Rate.
- Support USB 1.1 and 2.0 (preferred) interface.
- Security with 64-bit or 128-bit WEP (Wired Equivalent Privacy).
- DSSS (Direct Sequence Spread Spectrum).
- Easy operation and setting up.

## Pictorial Introduction



### LED

- LED turns on when POWER is applied to the IOGEAR Wireless-G USB 2.0 Adapter.
- LED is blinking when PC is sending data through IOGEAR Wireless-G USB 2.0 Adapter.



## System Requirements

- Windows 98SE, ME, 2000 or XP
- available USB 1.1. or 2.0 port.

## Installation

### CONNECTING YOUR WLAN USB ADAPTER TO PC

- Install driver.
- Connect your Wireless-G USB 2.0 Adapter.

**Note:** Once you insert the installation and driver CD, it will automatically activate the Autorun installation program. If your autorun is disabled please run the **iogear.exe** file on the CD.

#### Step 1 :

Insert the Manual and installation CD into your CD-ROM. You will be prompted with the following window. Choose install driver to proceed with the installation



## STEP 2

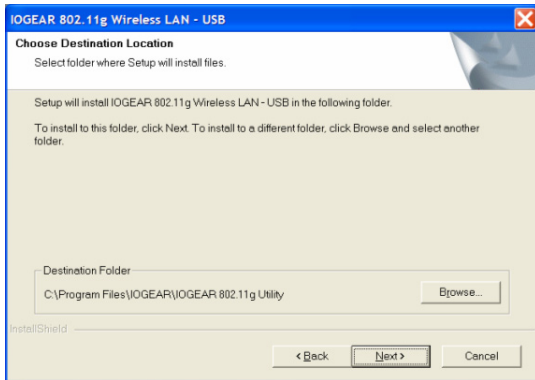
Click **Next** to continue.



## Installation

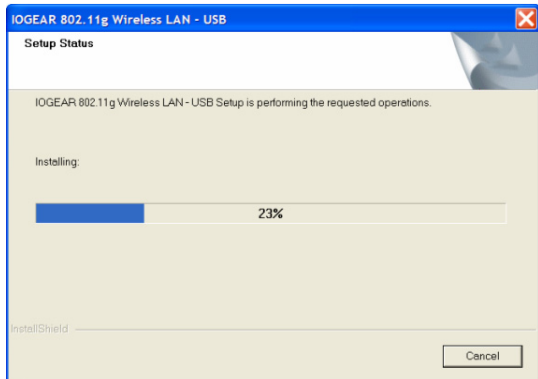
### Step 3 :

Click **Next** to install at the designated folder. Or, click "**Browse**" to select different folder.



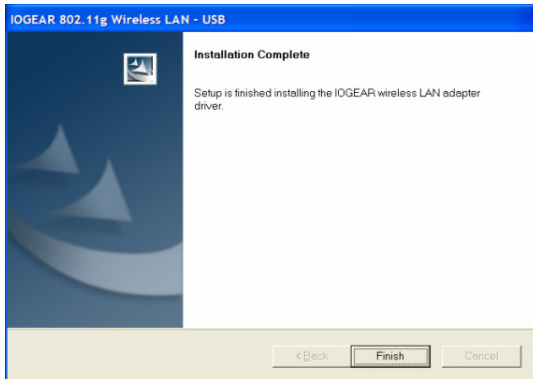
## Step 4 :

Start copying files until it finish the installation.



## Installation

**Step 5 :**  
Click **Finish** to complete installation.



### Step 6 :

After finished install driver and utility on your system,

#### Windows XP/2000

Plug the USB adapter into the USB port of your PC. It will automatically detect the USB Adapter.

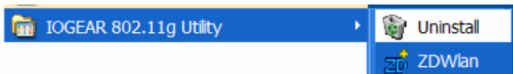
#### Windows ME/98SE

You will be asked to restart your PC. After rebooting, plug the USB adapter into the USB port of your PC. It will automatically detect the USB Adapter.

Wireless USB Adapter uses its own management software. All functions controlled by users are provided by this application. When you insert the Wireless USB Adapter into the USB port of PC, a new icon should appear in the Windows System Tray automatically.

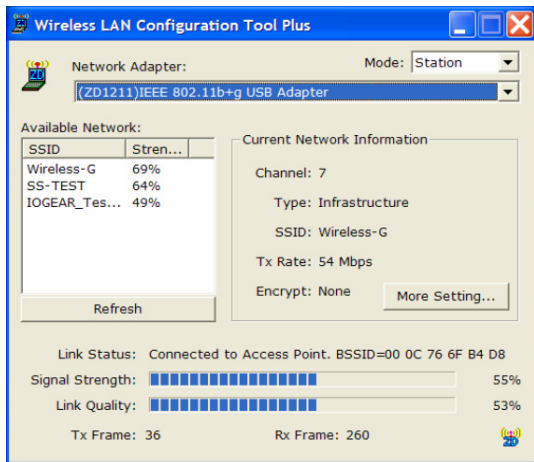


If the icon does not show in the System Tray, launch the program from start-programs-and click-on - ZDWlan:



## Installation

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





The Link Quality and Signal Strength bar chart is only active when the node is in Infrastructure Mode. The bar graph displays the quality and strength of the link between the node and its Access Point. Link Quality is a measurement of receiving and transmitting performances over the radio. Tx/Rx Frame displays the instantaneous wireless Transmit and Receive throughput in bytes per second. These values are updated every two seconds.

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

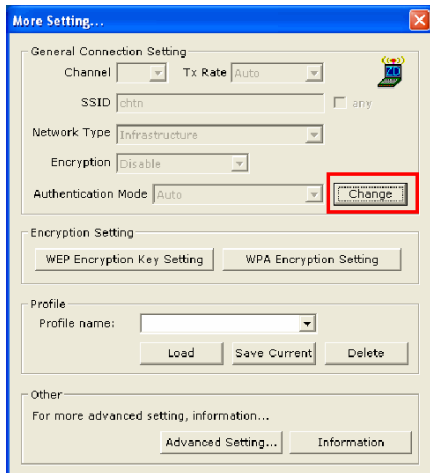
Current Network Information displays the current network configuration. If you want to change network configuration, click “More Setting”.

## General Connection Setting

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

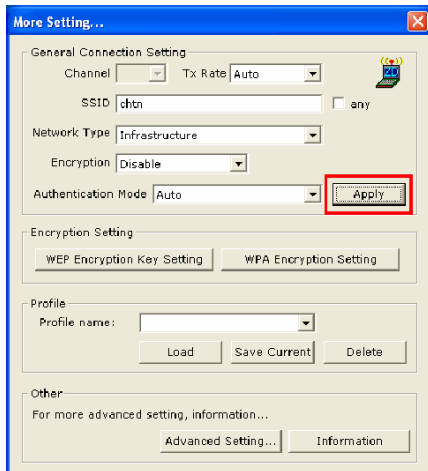
Click “**Change**” to start input of settings. The settings include :

- SSID.
- Network Type.
- Transmit Rate.
- Encryption.
- Authentication Mode



## General Connection Setting

When settings are input, click **Apply** to confirm changes of them.

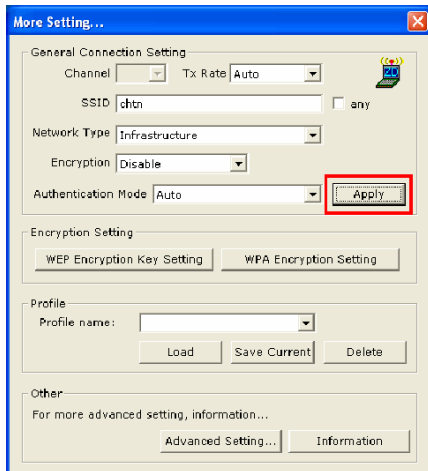


## WEP Encryption Key Setting

### WEP Encryption Key Setting

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

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



## WEP Encryption Key Setting

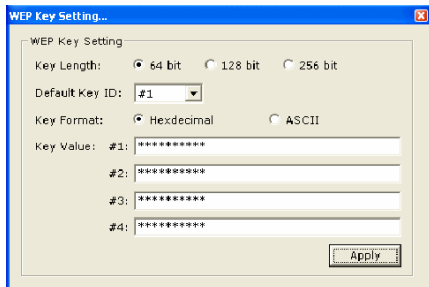
The default state in Encryption Setting is WEP disabled. Check **“Enable WEP”** to enable the encryption.

For more WEP key setting, Click **“WEP Encryption Key Setting”**.

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

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

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



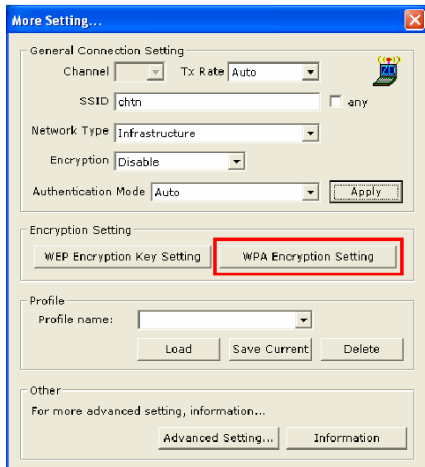
## WPA Encryption Setting

Click the “x” at the upper right hand corner to return to Configuration Tool.

### WPA Encryption Setting

WPA (Wi-Fi Protected Access) is a security technology for wireless networks. WPA improves on the authentication and encryption features of WEP (Wired Equivalent Privacy).

To improve data encryption, WPA utilizes its Temporal Key Integrity Protocol (TKIP). TKIP provides important data encryption enhancements including a per-packet key mixing function, a message integrity check (MIC, named Michael), an extended initialization vector (IV) with sequencing rules, and a re-keying mechanism.



## WPA Encryption Setting

WPA Pre-Shared Key (WPA-PSK) is a simplified but still powerful form of WPA most suitable for home Wi-Fi networking. To use WPA-PSK, a person sets a static key or “passphrase” as with WEP. But, using TKIP, WPA-PSK automatically changes the keys at a preset time interval, making it much more difficult for hackers to find and exploit them.

The pre-shared key is consisting of alphanumeric characters including punctuation and spaces between 8 and 63 characters long. Wireless clients are only required to enter the pre-shared key. If the pre-shared keys match, secure wireless communications can begin to take place.

For more WPA setting, Click “**WPA Encryption Setting**”

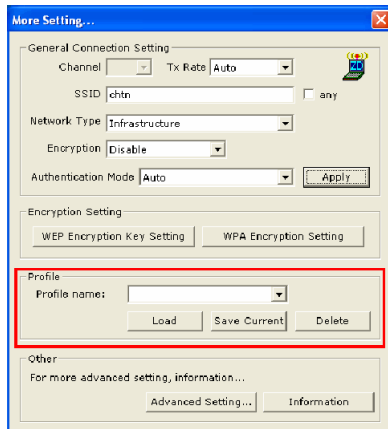
The screenshot shows a 'WPA Setting...' dialog box with the following fields and options:

- Connect Information:**
  - Protocol: TLS (dropdown menu)
  - User Name: (text input field)
  - Password: (text input field)
- Pre-shared Key:**
  - Passphrase: (text input field)
  - Note: (ASCII format, the length must be in 8..63)
- Certificate:**
  - (dropdown menu)
- WEP Key:**
  - WEP KEY SETTING (button)

An 'Apply' button is located at the bottom right of the dialog.

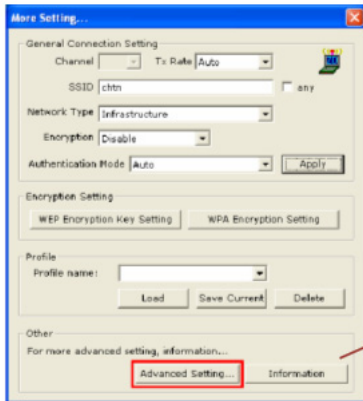
## Profile

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





### Advanced Setting



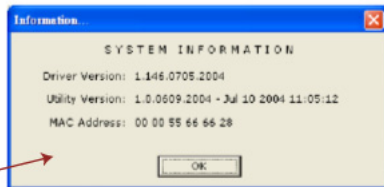
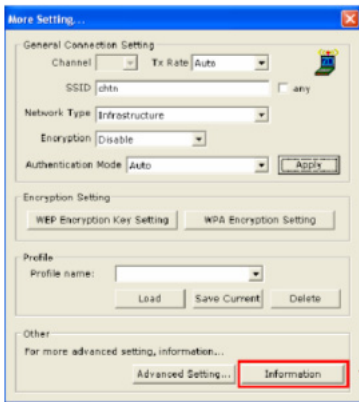
Click “**Advanced Setting**” to select power consumption setting that has 3 different modes. In this panel, you can select different user interface and country roaming. It also allows you to set the threshold of fragmentation and RTS/CTS.



## System Information

### System Information

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



### WIRELESS LAN BASICS

Wireless LAN network defined by IEEE 802.11b/g standard committee could be configured as :

1. **Ad Hoc wireless LAN**, or
2. **Infrastructure wireless LAN**.

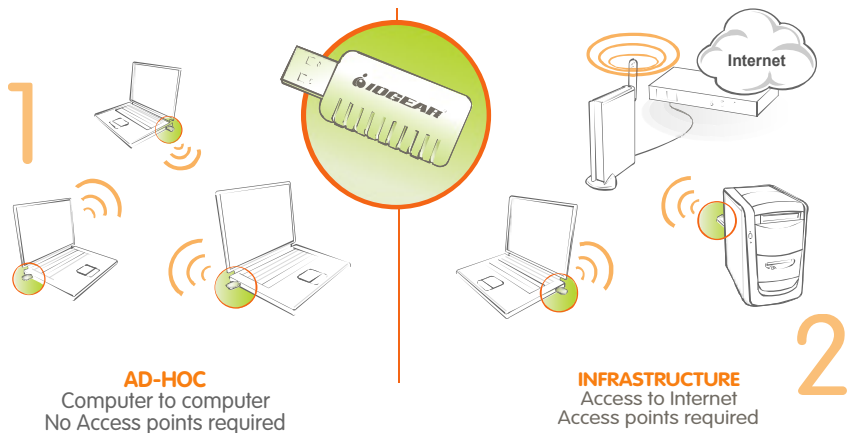
Ad Hoc network is a group of PCs installed with wireless LAN cards, this group of PCs is called a BSS (Basic Service Set). PCs in this group can use their wireless LAN cards to communicate with each other, but **can not connect to the Internet**.

The most obvious difference between Infrastructure wireless network and Ad Hoc

wireless network is that the PCs in Infrastructure wireless network can access the resource in the Internet through Access Point.

Depending on your requirement, you can easily set up your PC's network to be a "**Ad Hoc**" or "**Infrastructure**" wireless network. Generally speaking, if in your network, there is an **Access Point** in it, we recommend you to set your network as an "**Infrastructure**", so it can connect to the Internet.

## Wireless LAN Basics



### IP ADDRESS

To use the Wireless-G USB 2.0 Adapter with a computing device, your computer must be equipped with an USB 1.1 or 2.0 available ports. All drivers and supporting software for the Wireless-G USB 2.0 Adapter must be installed and configured first. Ask your system administrator for the following information, which you may need to provide during driver installation :

- Your Wireless Client Name.
- Your Wireless SSID.
- Your computer's unique client name and workgroup name.
- For your network account, your user name and password.

- Your IP address, gateway address, and subnet mask if you're not using a DHCP server.

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

- Static IP addressing.
- Dynamic IP addressing (DHCP).

## IP Address

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

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

## Specification

|                          |                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------|
| Product Name             | Wireless-G USB 2.0 Adapter                                                                 |
| Standard                 | IEEE 802.11b/g                                                                             |
| Frequency Band           | 2.400 GHz ~ 2.4835 GHz unlicensed ISM band                                                 |
| Modulation Method        | 802.11b: QPSK/BPSK/CCK<br>802.11g: OFDM                                                    |
| Data Rate                | 54/48/36/24/18/12/11/9/6/5.5/2/1 Mbps                                                      |
| Operating Mode           | Ad hoc<br>Infrastructure (Access Points needed)                                            |
| Transmitter Output Power | <15 dBm                                                                                    |
| Receive Sensitivity      | Operating at 11Mbps @ -80dBm<br>Operating at 54 Mbps @ -70dBm                              |
| Operating Range          | 30 to 200 m, depending on surrounding environment                                          |
| Antenna                  | Chip antenna                                                                               |
| Security                 | 64-bit, 128-bit or 256-bit WEP (Wired Equivalent Privacy);<br>WPA (Wi-Fi Protected Access) |

## Specification

|                            |                                                           |
|----------------------------|-----------------------------------------------------------|
| Product Name               | Wireless-G USB 2.0 Adapter                                |
| I/O Interface              | USB 2.0/1.1                                               |
| LED                        | Link/Active                                               |
| Operating System Supported | Windows 98SE/ME/2000/XP                                   |
| Management                 | Windows-based configuration utility and status monitoring |
| Regulation                 | FCC for North America<br>CE/ETSI for European             |
| Dimensions                 | 77.5mm(L) x 27mm(W) x 10.5mm(H)                           |
| Weight                     | 13g                                                       |
| Operating Temperature      | 0 ~ 50°C                                                  |
| Storage Temperature        | -20 ~ 70°C                                                |
| Humidity                   | 5 ~ 90% (non-condensing)                                  |



**Symptom :**

The LED is off.

**Remedy :**

Make sure the PC Card is inserted properly. Otherwise contact your vendor.

**Symptom :**

The LED is always on not blinking.

**Remedy :**

Make sure that you have installed the driver from attached CD. Otherwise contact your vendor.

**Symptom :**

The LED is blinking but the PC Card icon does not appear in your icon tray.

**Remedy :**

Make sure that you have installed the Utility from the attached CD.

## Troubleshooting

### **Symptom :**

The PC Card is linking, but can't share files with others.

### **Remedy :**

Make sure the file and printer sharing **function is enabled. You can enable the function by checking the icon of My Computer -> Control Panel -> Network -> file and printer sharing -> I want to be able to give others to access to my files.**

### **Symptom :**

Slow or poor performance.

### **Remedy :**

Try to select another channel for the communicating group or move your device closer to the Access Point.

## GLOSSARY

### **IEEE 802.11 Standard**

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

### **Access Point**

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

### **Ad Hoc**

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

### **BSSID**

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

### **DHCP**

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

## Glossary

### **Direct Sequence Spread Spectrum**

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

### **ESSID**

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

### **Ethernet**

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

### **Gateway**

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

### **IEEE**

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

### **ISM Band**

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

### **Local Area Network (LAN)**

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

### **Network**

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

## Glossary

### **Protocol**

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

### **Roaming**

In an infrastructure network, this is when a wireless PC moves out of range of the previously connected access point and connects to a newly connected access point. Throughout the network environment where access point is deployed, PCs can always be connected regardless of where they are located or roam.

### **SSID**

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

Simple Network Management Protocol (SNMP)

Simple Network Management Protocol is the network management protocol of TCP/IP. In SNMP, agents-which can be hardware as well as software- monitor the activity in the various devices on the network and report to the network console workstation. Control information about each device is maintained in a structure known as a management information block.

### **Static IP Addressing**

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

### **Temporal Key Integrity Protocol (TKIP)**

The Temporal Key Integrity Protocol, pronounced tee-kip, is part of the IEEE 802.11i encryption standard for wireless LANs. TKIP is the next generation of WEP, the Wired Equivalency Protocol, which is used to secure 802.11 wireless LANs. TKIP provides per-packet key mixing, a message integrity check and a re-keying mechanism, thus fixing the flaws of WEP.

### **Transmission Control Protocol / Internet Protocol (TCP/IP)**

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

### **Transmit / Receive**

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

### **Wi-Fi Alliance**

The Wi-Fi Alliance is a nonprofit international association formed in 1999 to certify interoperability of wireless Local Area Network products based on IEEE 802.11 specification. The goal of the Wi-Fi Alliance's members is to enhance the user experience through product interoperability. The organization is formerly known as WECA.

## Glossary

### **Wi-Fi Protected Access (WPA)**

The Wi-Fi Alliance put together WPA as a data encryption method for 802.11 wireless LANs. WPA is an industry-supported, pre-standard version of 802.11i utilizing the Temporal Key Integrity Protocol (TKIP), which fixes the problems of WEP, including using dynamic keys.

### **Wide Area Network (WAN)**

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

### **Wired Equivalent Privacy (WEP)**

Now widely recognized as flawed, WEP was a data encryption method used to protect the transmission between 802.11 wireless clients and APs. However, it used the same key among all communicating devices. WEP's problems are well-known, including an insufficient key length and no automated method for distributing the keys. WEP can be easily cracked in a couple of hours with off-the-shelf tools.

### **Wireless LAN (WLAN)**

A wireless LAN does not use cable to transmit signals, but rather uses radio or infrared to transmit packets through the air. Radio Frequency (RF) and infrared are the commonly used types of wireless transmission. Most wireless LANs use spread spectrum technology. It offers limited bandwidth, usually under 11Mbps, and users share the bandwidth with other devices in the spectrum; however, users can operate a spread spectrum device without licensing from the Federal Communications Commission (FCC).



## Technical Support

If you need technical support, please check out our IOGEAR Tech Info Library (T.I.L.) at **[www.iogear.com/support](http://www.iogear.com/support)** for the latest tips, tricks, and troubleshooting. The IOGEAR T.I.L. was designed to provide you with the latest technical information about our products. Most of the answers to your questions can be found here, so please try it out before contacting technical support.

Technical support is available Monday through Friday from 8:00 am to 5:00 pm PST and can be reached at 866-946-4327.

## Radio & TV Interference Statement

**WARNING!!!** This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

## Limited Warranty

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

The direct vendor makes no warranty or representation, expressed, implied, or statutory with respect to the contents or use of this documentation, and especially disclaims its quality, performance, merchantability, or fitness for any particular purpose.

The direct vendor also reserves the right to revise or update the device or documentation without obligation to notify any individual or entity of such revisions, or updates. For further inquiries please contact your direct vendor.



**Contact info.**

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