



2.4GHz
802.11g **Wireless-G**



**USB Network Adapter
with Wi-Fi Finder**

User Guide

Model No. **WUSB54G**



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WARNING: This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

How to Use this User Guide

This User Guide has been designed to make understanding networking with the Wireless-G USB Network Adapter with Wi-Fi Finder easier than ever. Look for the following items when reading this User Guide:



This checkmark means there is a Note of interest and is something you should pay special attention to while using the Wireless-G USB Network Adapter with Wi-Fi Finder.



This exclamation point means there is a Caution or warning and is something that could damage your property or the Wireless-G USB Network Adapter with Wi-Fi Finder.



This question mark provides you with a reminder about something you might need to do while using the Wireless-G USB Network Adapter with Wi-Fi Finder.

In addition to these symbols, there are definitions for technical terms that are presented like this:

word: definition.

Also, each figure (diagram, screenshot, or other image) is provided with a figure number and description, like this:

Figure 0-1: Sample Figure Description

Figure numbers and descriptions can also be found in the "List of Figures" section in the "Table of Contents".

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Chapter 1: Introduction

Welcome

Thank you for choosing the Wireless-G USB Network Adapter with Wi-Fi Finder. With this Adapter, your wireless networking experience will be faster and easier than ever.

How does the Adapter do this? Like all wireless products, the Adapter allows for greater range and mobility within your wireless network. Connecting to your PC via the USB port means that this Adapter leaves the PC's slots open for other purposes. This adapter communicates over the 802.11g wireless standard, one of the newest wireless standards, to communicate with your network. It also has a convenient Wi-Fi Finder that enables you to find an available wireless network to connect to with just a click of a button.

But what does all of this mean?

Networks are useful tools for sharing computer resources. You can access one printer from different computers and access data located on another computer's hard drive. Networks are even used for playing multiplayer video games. So, networks are not only useful in homes and offices, they can also be fun.

PCs equipped with wireless cards and adapters can communicate without cumbersome cables. By sharing the same wireless settings, within their transmission radius, they form a wireless network.

Use the instructions in this Guide to help you connect the Adapter, set it up, and configure it for your network. These instructions should be all you need to get the most out of the Adapter.

network: *a series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.*

adapter: *a device that adds network functionality to your PC.*

802.11g: *an IEEE wireless networking standard that specifies a maximum data transfer rate of 54Mbps, an operating frequency of 2.4GHz, and backward compatibility with 802.11b devices.*

What's in this Guide?

This user guide covers the steps for setting up and using the Wireless-G USB Network Adapter with Wi-Fi Finder.

- **Chapter 1: Introduction**
This chapter describes the Adapter's applications and this User Guide.
- **Chapter 2: Planning Your Wireless Network**
This chapter discusses a few of the basics about wireless networking.
- **Chapter 3: Setting Up and Connecting the Wireless-G USB Network Adapter with Wi-Fi Finder.**
This chapter shows you how to setup and connect the Adapter.
- **Chapter 4: Using the Wireless Network Monitor**
This chapter show you how to use the Adapter's Wireless Network Monitor.
- **Appendix A: Troubleshooting**
This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the Adapter.
- **Appendix B: Using Windows XP Wireless Configuration**
This appendix describes how Windows XP users can use Window's built-in wireless configuration to monitor their Adapter.
- **Appendix C: Wireless Security**
This appendix discusses security issues regarding wireless networking and measures you can take to help protect your wireless network.
- **Appendix D: Windows Help**
This appendix describes how you can use Windows Help for instructions about networking, such as installing the TCP/IP protocol.
- **Appendix E: Glossary**
This appendix gives a brief glossary of terms frequently used in networking.
- **Appendix F: Specifications**
This appendix provides the Adapter's technical specifications.
- **Appendix G: Warranty Information**
This appendix supplies the Adapter's warranty information.

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- **Appendix H: Regulatory Information**
This appendix supplies the Adapter's regulatory information.
- **Appendix I: Contact Information**
This appendix provides contact information for a variety of Linksys resources, including Technical Support.

Chapter 2: Planning your Wireless Network

Network Topology

A wireless network is a group of computers, each equipped with one wireless adapter. Computers in a wireless network must be configured to share the same radio channel. Several PCs equipped with wireless cards or adapters can communicate with one another to form an ad-hoc network.

Linksys wireless adapters also provide users access to a wired network when using an access point or wireless router. An integrated wireless and wired network is called an infrastructure network. Each wireless PC in an infrastructure network can talk to any computer in a wired network infrastructure via the access point or wireless router.

An infrastructure configuration extends the accessibility of a wireless PC to a wired network, and can double the effective wireless transmission range for two wireless adapter PCs. Since an access point is able to forward data within a network, the effective transmission range in an infrastructure network can be doubled.

Roaming

Infrastructure mode also supports roaming capabilities for mobile users. Roaming means that you can move your wireless PC within your network and the access points will pick up the wireless PC's signal, providing that they both share the same channel and SSID.

Before enabling you consider roaming, choose a feasible radio channel and optimum access point position. Proper access point positioning combined with a clear radio signal will greatly enhance performance.

ad-hoc: a group of wireless devices communicating directly with each other (peer-to-peer) without the use of an access point

access point: device that allows wireless-equipped computers and other devices to communicate with a wired network.

infrastructure: Configuration in which a wireless network is bridged to a wired network via an access point.

roaming: the ability to take a wireless device from one access point's range to another without losing the connection.

ssid: your wireless network's name

Network Layout

Linksys wireless access points and wireless routers have been designed for use with 802.11a, 802.11b, and 802.11g products. With 802.11g products communicating with the 802.11b standard and some products incorporating both “a” and “g”, products using these standards can communicate with each other.

Access points and wireless routers are compatible with 802.11a, 802.11b and 802.11g adapters, such as the PC Cards for your laptop computers, PCI Card for your desktop PC, and USB Adapters for when you want to enjoy USB connectivity. Wireless products will also communicate with the wireless PrintServer.

When you wish to connect your wired network with your wireless network, network ports on access points and wireless routers can be connected to any of Linksys's switches or routers.

With these, and many other, Linksys products, your networking options are limitless. Go to the Linksys website at www.linksys.com for more information about wireless products.

802.11a: A wireless networking standard that specifies a maximum data transfer rate of 54Mbps and an operating frequency of 5GHz.

802.11b: A wireless networking standard that specifies a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

802.11g: an IEEE wireless networking standard that specifies a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz. It is backward compatibility with 802.11b devices.

switch: device that is the central point of connection for computers and other devices in a network, so data can be shared at full transmission speeds.

router: a networking device that connects multiple networks together, such as a local network and the Internet.

Chapter 3: Getting to Know and Using the Wireless-G Network Adapter with Wi-Fi Finder

The Front Panel

The Network Adapter's LEDs and Wi-Fi Finder LCD screen are located on the Front Panel.

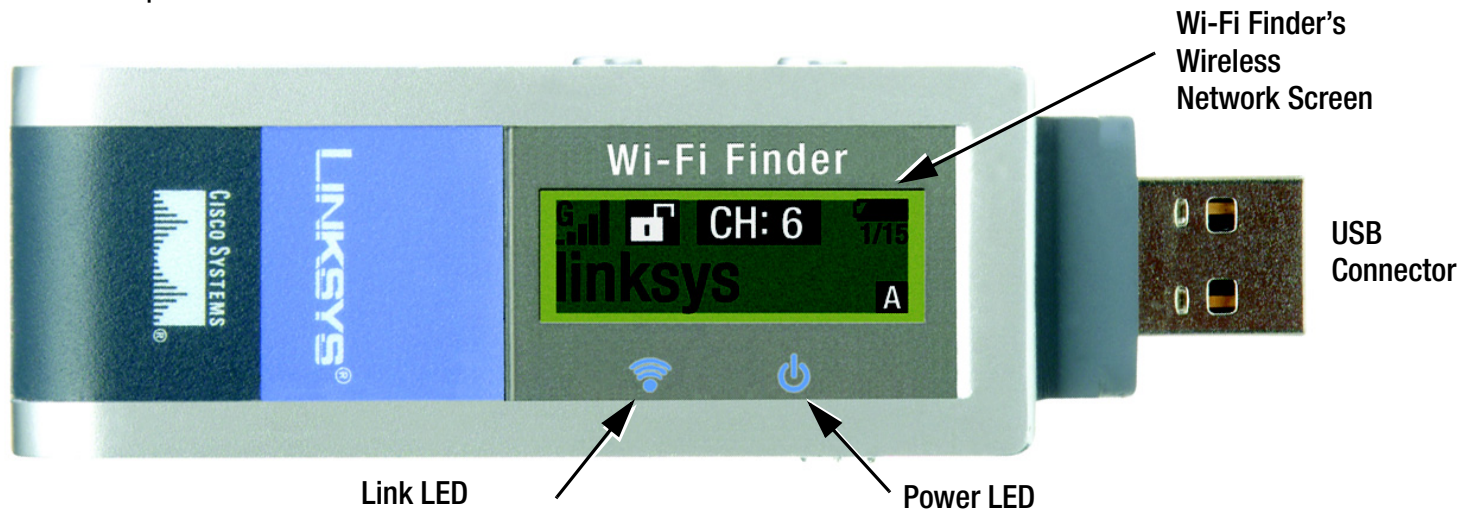


Figure 3-1: Front Panel

LEDs

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

Link *Green.* The Link LED lights up when there is wireless activity.

Using the Wi-Fi Finder

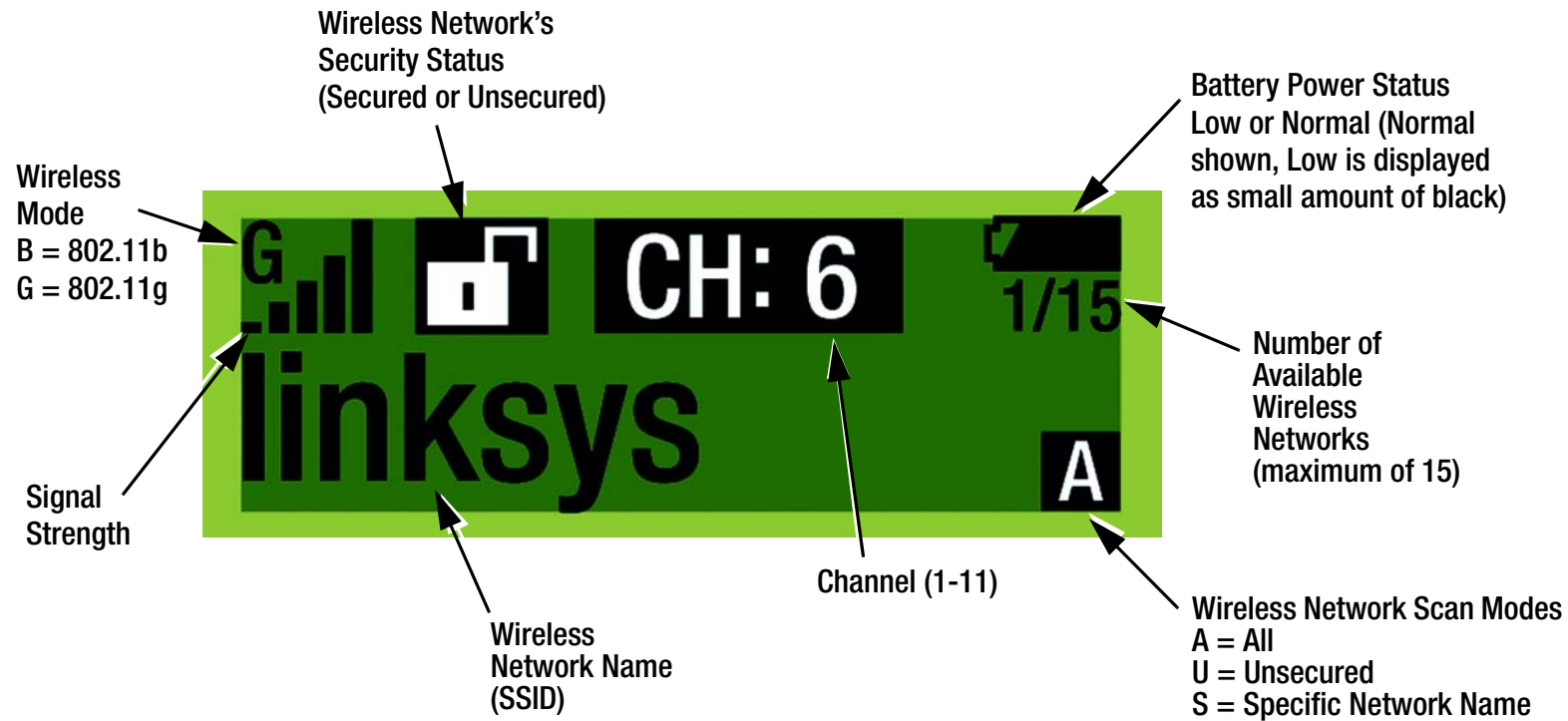


Figure 3-2: Wi-Fi Finder's Wireless Network Screen



Figure 3-3: Wi-Fi Finder's ON/OFF Switch and Buttons

ON/OFF Switch The ON/OFF switch is located on the side panel. Slide the button to the right side to turn on the Wi-Fi Finder.

Scan The Scan button is located on the side panel. Push the **Scan** button to scan for a wireless network.

There are three Wireless Network Scan Modes (shown in bottom right corner of screen):
A = All Networks (default mode), U = Unsecured Networks, S = Specific Network Name

To change the mode, push and hold the **Scan** button.

- **All Networks:** This default mode scans and displays all secure and unsecure networks.
- **Unsecured Networks:** This mode scans and displays only unsecured networks.
- **Specific Network Name:** This mode scans and displays any networks with a selected specific network name. First, while in the All Networks mode, use the **Scroll** button and scroll until the network that you want is on your screen, then push and hold the **Scan** button to change the icon to S. Then, push the **Scan** button again to scan for any network with the selected name.

Scroll The Scroll button is located on the side panel. Push the **Scroll** button to view the next available wireless network, which will be displayed in the order of strongest to weakest signal strength. A maximum of fifteen wireless networks can be viewed.

Chapter 4: Setting up and Connecting the Wireless-G USB Network Adapter with Wi-Fi Finder

The Wireless-G USB Network Adapter with Wi-Fi Finder is set up with the Setup Wizard that comes on the CD enclosed with the Adapter. This chapter will guide you through the setup procedure.



IMPORTANT: Do not connect the Adapter until you are instructed to do so or the setup will not work.

Starting the Setup Wizard

To begin the setup process, 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).

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

Click Here to Start - Click the **Click Here to Start** button to begin the software installation process.

User Guide - Click the **User Guide** button to open this User Guide.

Exit - Click **Exit** to exit the Setup Wizard.

1. To install the Adapter, click the **Click Here to Start** button on the *Welcome* screen.
2. After reading the License Agreement, click **Next** if you agree and want to continue the installation, or click **Cancel** to end the installation.



Figure 4-1: Setup Wizard's Welcome Screen

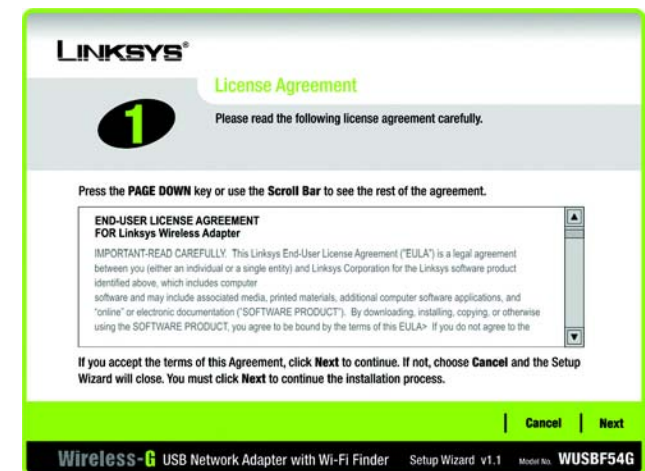


Figure 4-2: Setup Wizard's License Agreement

3. Windows will begin copying the files onto your PC.
4. The Setup Wizard will now prompt you to connect the Adapter to your PC's USB port. Once you've connected, click **Next**.
5. If prompted by Windows, Windows 98SE and ME users will need to restart their PCs.

Connecting the Adapter

1. Insert the USB connector end of the Adapter into the USB port of the PC.
2. The Power LED should light up when the Adapter is plugged in.

Setting Up the Adapter

The next screen to appear will be the *Available Wireless Network* screen.

This screen provides two options for setting up the Adapter

- **Available Wireless Network. (For most users.)** Use this option if you have already set up a network and the network is listed on the screen. Select the network and click the **Connect** button to connect to it. If you need to update the Available Wireless Network list, click the **Refresh** button.
- **Manual Setup.** If your network is not listed on this screen, select **Manual Setup** to set up the Adapter manually. This method of setting up the Adapter is intended for Advanced Users only.

The setup for each option is described, step by step, under the appropriate heading on the following pages.

Click **Exit** to close the Setup Wizard, if you wish to set up the Adapter later.



Figure 4-3: The Connecting the Adapter Screen

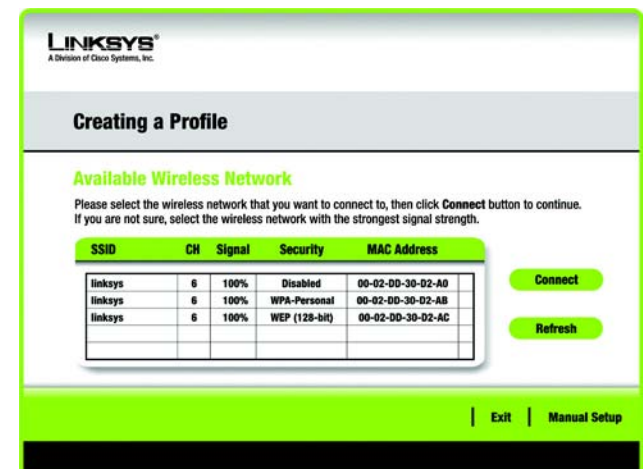


Figure 4-4: Available Wireless Network

Setting Up the Adapter with Available Networks

The available networks are listed in the table on the center of the screen by SSID. Select the wireless network you wish to connect to and click the **Connect** button. (If you do not see your network listed, you can click the **Refresh** button to bring the list up again.) If the network utilizes wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

1. If wireless security has been enabled on this network, you will see a wireless security screen. If your network utilizes WEP (Wired Equivalent Privacy) encryption, the *WEP Key Needed for Connection* screen will appear. If your network utilizes WPA-Personal (Wi-Fi Protected Access) encryption, the *WPA-Personal Needed for Connection* screen will appear.

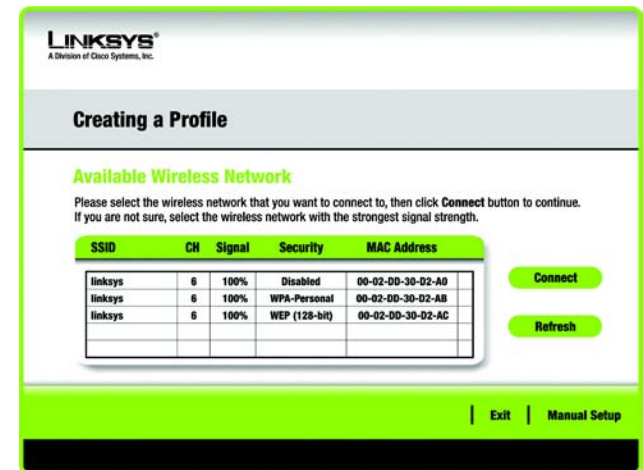


Figure 4-5: Available Wireless Network

WEP Key Needed for Connection

Select **64-bit** or **128-bit**.

Then, enter a passphrase or WEP key.

Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. The passphrase is case-sensitive and should not be longer than 16 alphanumeric characters. It 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. For 64-bit encryption, enter exactly 10 hexadecimal characters. For 128-bit encryption, enter exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

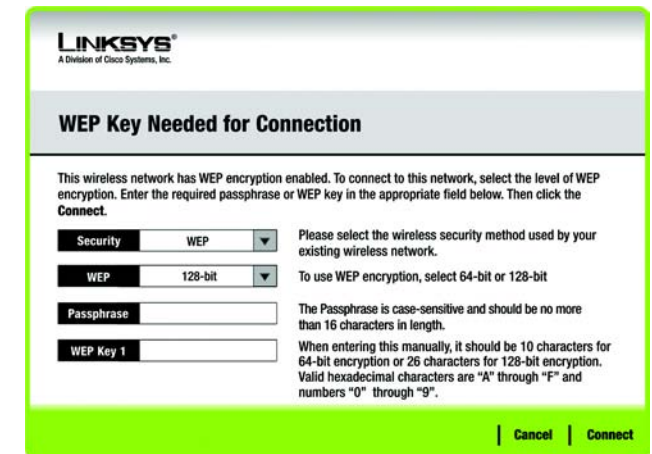


Figure 4-6: Wireless Security - WEP

WPA-Personal Needed for Connection

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The passphrase must match the devices on your wireless network.

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

2. After the Adapter has been configured for the network, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network.

Congratulations! Setup is complete.

To check the link information, search for available wireless networks, or make additional configuration changes, refer to *Chapter 5: Using the Wireless Network Monitor*



Figure 4-7: Wireless Security - WPA Personal

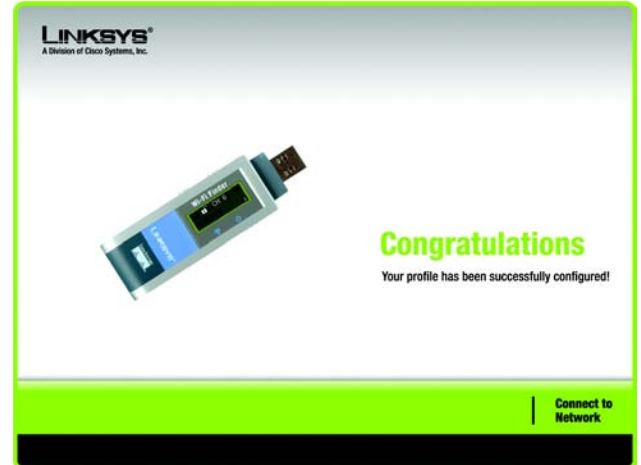


Figure 4-8: Congratulations

Setting Up the Adapter with Manual Setup

If your network is not listed with the available networks, click **Manual Setup** on the *Available Wireless Network* screen to set up the Adapter manually.

- 1. After clicking **Manual Setup**, the *Network Settings* screen will appear. If your network has a router or other DHCP server, click the radio button next to **Obtain network settings automatically (DHCP)**.

If your network does not have a Router or DHCP server, click the radio button next to **Specify network settings**. Enter an IP Address, Subnet Mask, Default Gateway, and DNS addresses 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 addresses, leave these fields empty.

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 wired Ethernet network here.

Click **Next** to continue, or click **Back** to return to the *Available Wireless Network* screen.

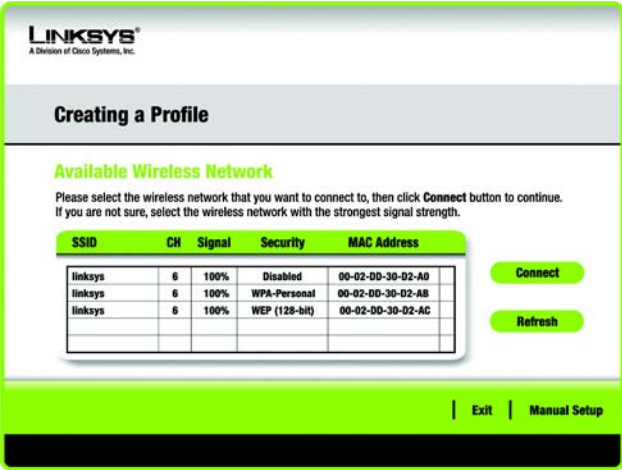


Figure 4-9: Available Wireless Network

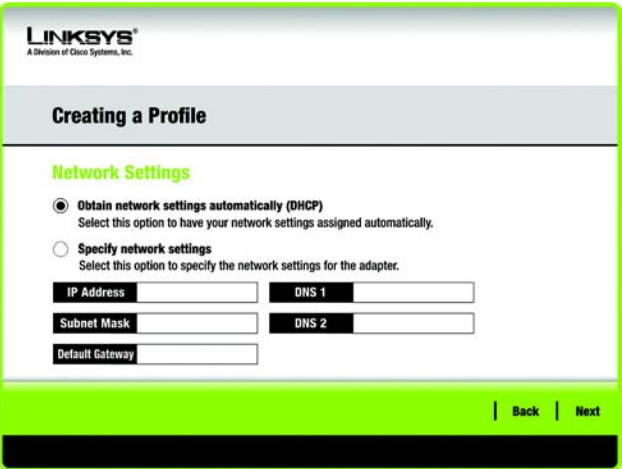


Figure 4-10: Network Settings

- The *Wireless Mode* screen shows a choice of two wireless modes. Click the **Infrastructure Mode** radio button if you want to connect to a wireless router or access point. Click the **Ad-Hoc Mode** radio button if you want to connect to another wireless device directly without using a wireless router or access point. Then, enter the SSID for your network.

Infrastructure Mode - Use this mode if you want to connect to a wireless router or access point.

Ad-Hoc Mode - Use this mode if you want to connect to another wireless device directly without using a wireless router or access point.

SSID - This is the wireless network name that must be used for all the devices in your wireless network. It is case-sensitive and should be a unique name to help prevent others from entering your network.

Click **Next** to continue or **Back** to return to the previous screen.

The screenshot shows the 'Creating a Profile' screen for the Linksys Wireless Mode. At the top, it says 'LINKSYS A Division of Cisco Systems, Inc.' Below that is a header 'Creating a Profile'. The main section is titled 'Wireless Mode' and includes instructions: 'Please choose the Wireless Mode that best suits your needs.' There are two radio buttons: 'Infrastructure Mode' (selected) and 'Ad-Hoc Mode'. To the right of each radio button is a brief description of the mode. Below the radio buttons, there is a text input field for 'SSID' with 'linksys' entered. To the right of the input field is a note: 'The SSID (Service Set Identifier) is the wireless network name shared by all devices in a wireless network. Note: The SSID is case-sensitive.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-11: Wireless Mode

- If you chose **Infrastructure Mode**, go to Step 4 now. If you chose **Ad-Hoc Mode**, the *Ad-Hoc Mode Settings* screen will appear.

Select the correct **Channel** for your wireless network. The channel you choose should match the channel set on the other devices in your wireless network. If you are unsure about which channel to use, keep the default setting.

Then, select the **Network Mode** in which your wireless network will operate. In **Mixed Mode**, Wireless-B and Wireless-G devices can both operate on the network, though at a slower speed. In **G-Only Mode**, no Wireless-B devices can operate in the network.

Click **Next** to continue or click **Back** to change any settings.

The screenshot shows the 'Creating a Profile' screen for the Linksys Ad-Hoc Mode Settings. At the top, it says 'LINKSYS A Division of Cisco Systems, Inc.' Below that is a header 'Creating a Profile'. The main section is titled 'Ad-Hoc Mode Settings'. There are two dropdown menus: 'Channel' (set to 6) and 'Network Mode' (set to Mixed Mode). To the right of each dropdown menu is a brief description of the setting. At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-12: Ad-Hoc Mode Settings

4. The *Wireless Security* screen will appear. This step will configure wireless security.

If your wireless network doesn't use wireless security, select **Disabled** and then click the **Next** button to continue. Proceed to Step 5.

Select **WEP**, **WPA-Personal**, **WPA-Enterprise**, or **Radius** for the Encryption Method. WEP stands for Wired Equivalent Privacy, WPA stands for Wi-Fi Protected Access, which is a security standard stronger than WEP encryption, and RADIUS stands for Remote Authentication Dial-In User Service. If you don't want to use encryption, select **Disabled**.

Then, click the **Next** button to continue or the **Back** button to return to the previous screen.

WEP

WEP - To use WEP encryption, select 64-bits or 128-bit characters from the drop-down menu, and enter a passphrase or key.

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".

Passphrase - Instead of manually entering a WEP key, you can enter a passphrase in the Passphrase field, so a WEP key is automatically generated. This case-sensitive 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.)

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, select the appropriate number from the *TX Key* drop-down box.

Authentication -The default is set to **Auto**, where it auto-detects for **Shared Key** or **Open** system. Netshared Key is when both the sender and the recipient share a WEP key for authentication. Open key is when the sender and the recipient do not share a WEP key for authentication. All points on your network must use the same authentication type.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.



Figure 4-13: Wireless Security

encryption: encoding data transmitted in a network.

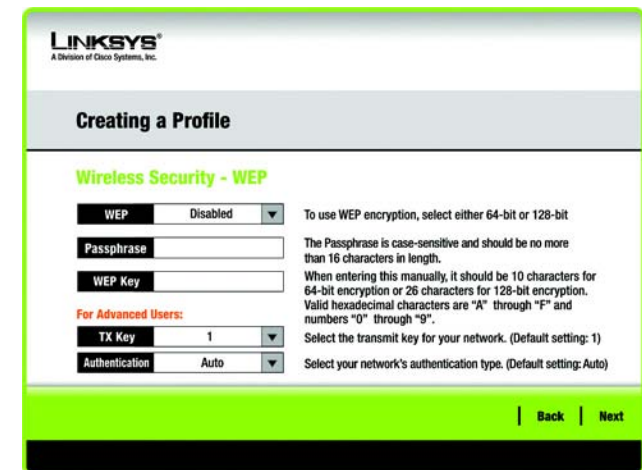


Figure 4-14: Wireless Security - WEP

wep (wired equivalent privacy): a method of encrypting network data transmitted on a wireless network for greater security.

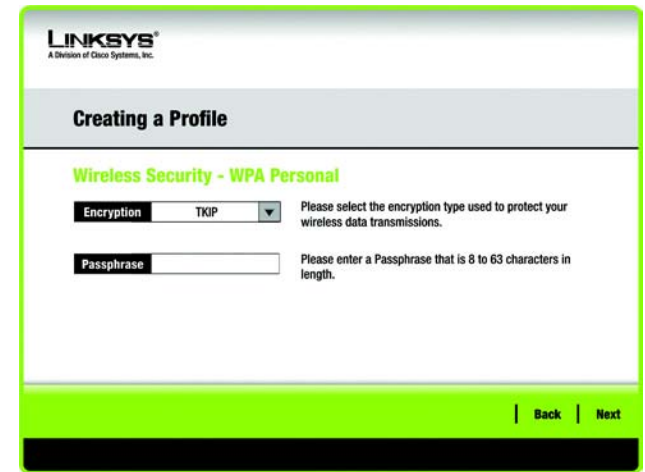
WPA Personal

WPA Personal offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select **TKIP** or **AES** for encryption. Then enter a Passphrase that is 8-63 characters in length.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The passphrase must match the devices on your wireless network.

Click the **Next** button to continue or the **Back** button to return to the previous screen.



The screenshot shows the Linksys web interface for configuring wireless security. At the top, the Linksys logo and "A Division of Cisco Systems, Inc." are visible. Below this is a header "Creating a Profile". The main section is titled "Wireless Security - WPA Personal". It contains two fields: "Encryption" with a dropdown menu currently set to "TKIP", and "Passphrase" with a text input field. To the right of the "Encryption" dropdown is a note: "Please select the encryption type used to protect your wireless data transmissions." To the right of the "Passphrase" field is a note: "Please enter a Passphrase that is 8 to 63 characters in length." At the bottom right of the form, there are "Back" and "Next" buttons.

Figure 4-15: Wireless Security - WPA Personal

WPA Enterprise

WPA Enterprise features WPA security used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) WPA Enterprise offers two authentication methods, EAP-TLS and PEAP, as well as two encryption methods, TKIP and AES, with dynamic encryption keys.

Authentication - Select the authentication method your network is using, **EAP-TLS** or **PEAP**.

EAP-TLS

If you selected EAP-TLS, enter the login name of your wireless network in the *Login Name* field. Enter the name of the authentication server in the *Server Name* field (this is optional). From the *Certificate* drop-down menu, select the certificate you have installed to authenticate you on your wireless network. Select the type of encryption, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Click the **Next** button to continue or the **Back** button to return to the previous screen.

PEAP

If you selected PEAP, enter the login name of your wireless network in the *Login Name* field. Enter the password of your wireless network in the *Password* field. Enter the name of the authentication server in the *Server Name* field (this is optional). From the *Certificate* drop-down menu, select the certificate you have installed to authenticate you on your wireless network; if you want to use any certificate, keep the default setting, **Trust Any**. Then select the authentication method (Inner Authen.) used inside the PEAP tunnel. Select **EAP-MSCHAP v2**. Then, select the type of encryption, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Click the **Next** button to continue or the **Back** button to return to the previous screen.

The screenshot shows the 'LINKSYS' logo at the top. Below it is a header 'Creating a Profile'. The main section is titled 'Wireless Security - WPA Enterprise'. It contains several fields and dropdown menus with instructions:

- Authentication:** A dropdown menu set to 'EAP-TLS'. Instruction: 'Please select the authentication method that you use to access your network.'
- Login Name:** A text input field. Instruction: 'Enter the Login Name used for authentication.'
- Server Name:** A text input field. Instruction: 'Enter the Server Name used for authentication. (Optional)'
- Certificate:** A dropdown menu. Instruction: 'Please select the certificate used for authentication.'
- Encryption:** A dropdown menu set to 'AES'. Instruction: 'Please select the encryption type used to protect the wireless data transmissions.'

At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-16: Wireless Security - WPA Enterprise - EAP-TLS

The screenshot shows the 'LINKSYS' logo at the top. Below it is a header 'Creating a Profile'. The main section is titled 'Wireless Security - WPA Enterprise'. It contains several fields and dropdown menus with instructions:

- Authentication:** A dropdown menu set to 'PEAP'. Instruction: 'Please select the authentication method that you use to access your network.'
- Login Name:** A text input field. Instruction: 'Enter the Login Name used for authentication.'
- Password:** A text input field. Instruction: 'Enter the Password used for authentication.'
- Server Name:** A text input field. Instruction: 'Enter the Server Name used for authentication. (Optional)'
- Certificate:** A dropdown menu set to 'Trust Any'. Instruction: 'Please select the certificate used for authentication.'
- Inner Authen.:** A dropdown menu set to 'EAP-MSCHAP v2'. Instruction: 'Please select the inner authentication method used inside the PEAP tunnel.'
- Encryption:** A dropdown menu set to 'AES'. Instruction: 'Please select the encryption type used to protect the wireless data transmissions.'

At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-17: Wireless Security - WPA Enterprise - PEAP

RADIUS

RADIUS uses the security of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) It offers two authentication methods: EAP-TLS and PEAP.

Authentication - Select the authentication method your network is using, **EAP-TLS** or **PEAP**.

EAP-TLS

Enter the Login name of your wireless network in the *Login Name* field. From the *Certificate* drop-down menu, select the certificate you have installed to authenticate you on your wireless network.

PEAP

If you selected PEAP, enter the login name of your wireless network in the *Login Name* field. Enter the password of your wireless network in the *Password* field. Enter the name of the authentication server in the *Server Name* field (this is optional). From the *Certificate* drop-down menu, select the certificate you have installed to authenticate you on your wireless network; if you want to use any certificate, keep the default setting, **Trust Any**. Then select the authentication method (Inner Authen.) used inside the PEAP tunnel. Select **EAP-MSCHAP v2**.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

The screenshot shows the 'Creating a Profile' screen for 'Wireless Security - RADIUS'. The 'Authentication' dropdown is set to 'EAP-TLS'. The 'Login Name' field is empty. The 'Server Name' field is empty. The 'Certificate' dropdown is set to 'Trust Any'. Instructions on the right side of the form explain the purpose of each field. At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-18: Wireless Security - RADIUS - EAP-TLS

The screenshot shows the 'Creating a Profile' screen for 'Wireless Security - RADIUS'. The 'Authentication' dropdown is set to 'PEAP'. The 'Login Name' field is empty. The 'Password' field is empty. The 'Server Name' field is empty. The 'Certificate' dropdown is set to 'Trust Any'. The 'Inner Authen.' dropdown is set to 'EAP-MSCHAP v2'. Instructions on the right side of the form explain the purpose of each field. At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-19: Wireless Security - RADIUS - PEAP

5. The next screen displays all of the Adapter's settings. If these are correct, you can save these settings to your hard drive by clicking **Save**. Click **Next** to continue and finish the setup. If these settings are not correct, click **Back** to change your settings. To exit the setup, click **Exit**.



Figure 4-20: Confirm New Settings

6. After the software has been successfully installed, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network. Clicking **Return to Profiles screen** will open the Wireless Network Monitor's *Profiles* screen. For more information about the Wireless Network Monitor, refer to *Chapter 5: Using the Wireless Network Monitor*.

Congratulations! Setup is complete.

To check the link information, search for available wireless networks, or make additional configuration changes, refer to *Chapter 5: Using the Wireless Network Monitor*.



Figure 4-21: Congratulations

Chapter 5: Using the Wireless Network Monitor

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

Accessing the Wireless Network Monitor

After setting up and connecting the Adapter, the Wireless Network Monitor icon will appear in your PC's system tray. If the Wireless Network Monitor is enabled, then the icon will be green. If the Wireless Network Monitor is disabled or the Adapter is not connected, then the icon will be gray.



NOTE: The Wireless Network Monitor should only be accessed **AFTER** connecting the Adapter. For more information on Setting Up and Connecting the Adapter, refer to *Chapter 4: Setting Up and Connecting the USB Network Adapter*.



Figure 5-1: Wireless Network Monitor Icon

Link Information Screens

The opening screen of the Wireless Network Monitor is the *Link Information* screen. 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 and statistics about the current wireless connection. To search for available wireless networks, click the **Site Survey** tab. To perform configuration changes or create connection profiles, click the **Profiles** tab.

Link Information

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.

Link Quality - The Link Quality bar indicates the quality of the wireless network connection.

Click the **More Information** button to view additional information about the wireless network connection on the *Wireless Network Status* screen.



Figure 5-2: Link Information

Wireless Network Status

The *Wireless Network Status* screen provides information on your current network settings.

Status - This shows the status of the wireless network connection.

SSID - This is the unique name of the wireless network.

Wireless Mode - The mode of the wireless network currently in use is displayed here.

Transfer Rate - The data transfer rate of the current connection is shown here.

Channel - This is the channel to which the wireless network devices are set.

Security - The status of the wireless security feature is displayed here.

Authentication - This is your wireless network's authentication method.

IP Address - The IP Address of the Adapter is displayed here.

Subnet Mask - The Subnet Mask of the Adapter is shown here.

Default Gateway - The Default Gateway address of the Adapter is displayed here.

DNS - This is the DNS address of the Adapter.

DHCP Client - This displays the Adapter's status as a DHCP client.

MAC Address - The MAC address of the wireless network's access point or wireless router is shown here.

Signal Strength - The Signal Strength bar indicates the signal strength.

Link Quality - The Link Quality bar indicates the quality of the wireless network connection.

Click the **Back** button to return to the initial *Link Information* screen. Click the **Statistics** button to go to the *Wireless Network Statistics* screen. Click the **Save to Profile** button to save the currently active connection settings to a profile.



Figure 5-3: More Information - Wireless Network Status

Wireless Network Statistics

The *Wireless Networks Statistics* screen provides statistics on your current network settings.

Transmit Rate - This is the data transfer rate of the current connection. (In Auto mode, the Adapter dynamically shifts to the fastest data transfer rate possible at any given time.)

Receive Rate - This is the rate at which data is received.

Packets Received - This shows the packets received by the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Packets Transmitted - This shows the packets transmitted from the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Bytes Received - This shows the bytes received by the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Bytes Transmitted - This shows the bytes transmitted by the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Driver Version - This shows the version of the Adapter's driver.

Noise Level - This shows the level of background noise affecting the wireless signal. A lower reading translates into a higher quality signal.

Signal Strength - This is the intensity of the wireless signal received by the Adapter.

Transmit Power - This is the power output at which the Adapter is transmitting.

Up Time - This indicates the length of the most recent connection to a wireless network.

Total Up Time - This indicates the cumulative total of the Adapter's connection time.

Signal Strength - The Signal Strength bar indicates the signal strength.

Link Quality - The Link Quality bar indicates the quality of the wireless network connection.

Click the **Back** button to return to the initial *Link Information* screen. Click the **Status** button to go to the *Wireless Network Status* screen. Click the **Save to Profile** button to save the currently active connection settings to a profile. Click the **Refresh** button to reset the statistics.

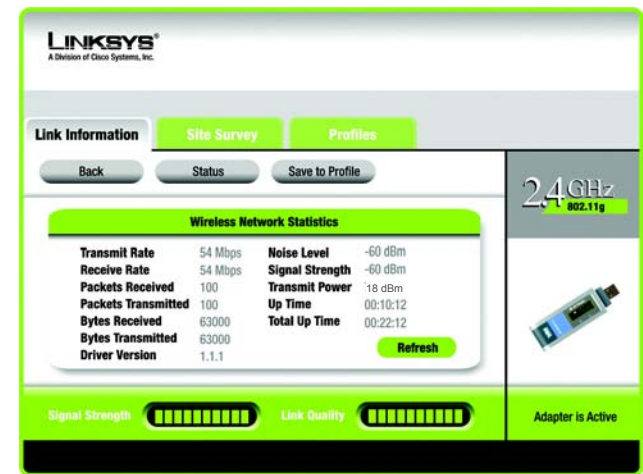


Figure 5-4: More Information - Wireless Network Statistics

Site Survey

The *Site Survey* screen displays a list of available networks in the table on the left. The table shows each network's SSID, Channel, and the quality of the wireless signal the Adapter is receiving. You may click **SSID**, **CH** (Channel), or **Signal**, to sort by that field.

SSID - The SSID or unique name of the wireless network is displayed here.

CH - This is the channel that the network uses.

Signal - This is the percentage of signal strength, from 0 to 100%.

Site Information

For each network selected, the following settings are listed:

SSID - This the SSID or unique name of the wireless network.

Wireless Mode - This is the mode of the wireless network currently in use.

Channel - This is the channel to which the wireless network devices are set.

Security - The status of the wireless security feature is displayed here.

MAC Address- The MAC address of the wireless network's access point is displayed here.

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 network has encryption enabled, a screen appear requiring security information.

If the network has the wireless security WEP encryption enabled, then you will see the *WEP Key Needed for Connection* screen. Select the appropriate level of WEP encryption, **64-bit** or **128-bit** Then enter the network's Passphrase or WEP Key. To connect to the network, click **Connect**. To cancel the connection, click **Cancel**.

If the network has WPA-Personal wireless security enabled, then you will see the *WPA-Personal Needed for Connection* screen. Select the appropriate encryption type, **TKIP** or **AES**. Enter the network's Passphrase or pre-shared key in the *Passphrase* field. To connect to the network, click **Connect**. To cancel the connection, click **Cancel**.

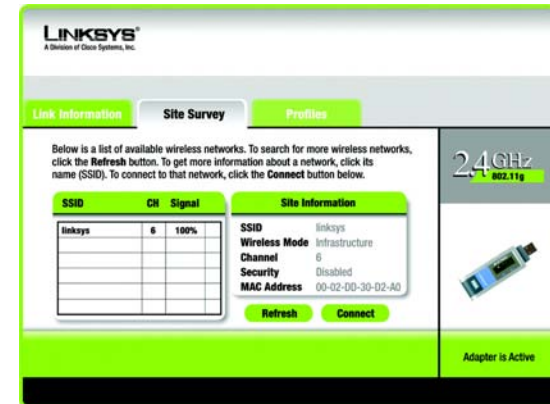


Figure 5-5: Site Survey

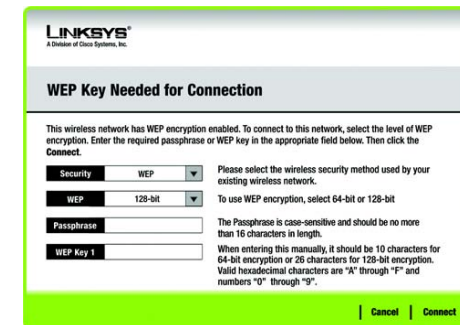


Figure 5-6: WEP Key Needed for Connection

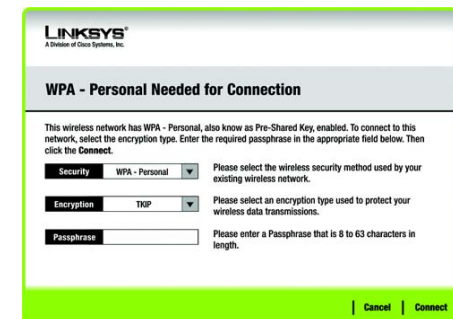


Figure 5-7: WPA-Personal Needed for Connection

Profiles

The *Profiles* screen lets you save different configuration profiles for different network setups. The table on the left displays a list of available profiles with their profile names and SSIDs.

Profile - The name of the profile is displayed here.

SSID - The SSID or unique name of the wireless network is displayed here.

Profile Information

For each profile selected, the following are listed:

Wireless Mode - This is the mode of the wireless network currently in use.

Channel - This is the channel to which the wireless network devices are set.

Security - The status of the wireless security feature is displayed here.

Authentication - The authentication setting for the network is shown here.

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

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

Edit - Select the profile you want to change, and then click **Edit**.

Import - Click **Import** 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 **Export**. Direct Windows to the appropriate folder, and click the **Save** button.

Delete - Select the profile you want to delete, and then click **Delete**.

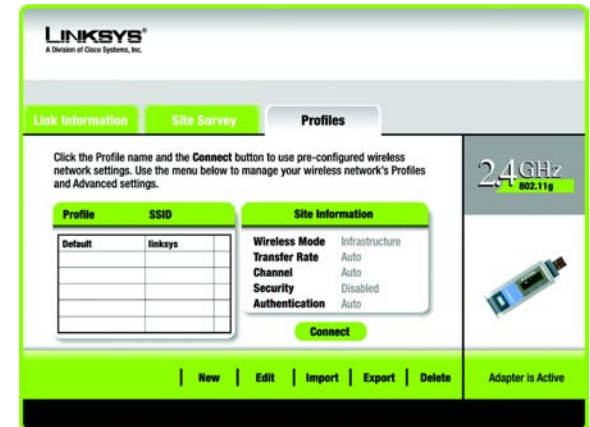


Figure 5-8: Profiles

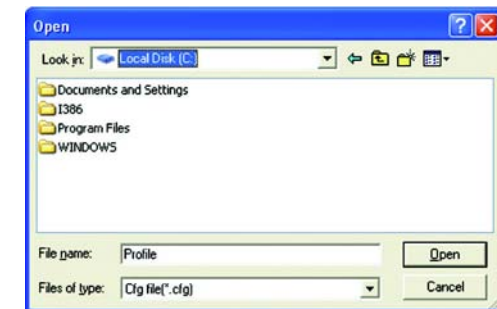


Figure 5-9: Import a Profile

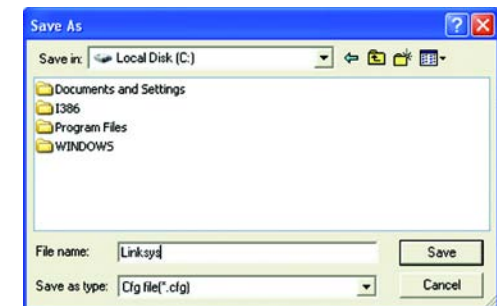


Figure 5-10: Export a Profile



NOTE: If you want to export more than one profile, you must export them one at a time.

Creating a New Profile

On the *Profiles* screen, click the **New** button to create a new profile. Enter a name for the new profile, and click the **OK** button. Click the **Cancel** button to return to the *Profiles* screen without entering a name.

The *Available Wireless Network* screen will appear. This screen provides two options for setting up the Adapter

- **Available Networks.** Use this option if you already have a network set up. The networks available to this Adapter will be listed on this screen. Select the network and click the **Connect** button to connect to it. Click the **Refresh** button to update the Available Wireless Network list.
- **Manual Setup.** If your network is not listed on this screen, select **Manual Setup** to set up the adapter manually. This method of setting up the Adapter is intended for Advanced Users only.

The setup for each option is described, step by step, under the appropriate heading on the following pages.

Click **Exit** to close the Setup Wizard.



Figure 5-11: Create a New Profile

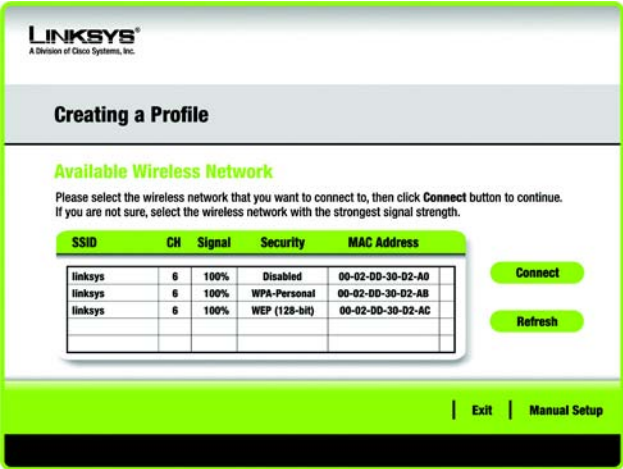


Figure 5-12: Available Wireless Network

Setting Up the Adapter with Available Networks

The available networks are listed in the table on the center of the screen by SSID. Select the wireless network you wish to connect to and click the **Connect** button. (If you do not see your network listed, you can click the **Refresh** button to bring the list up again.) If the network utilizes wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

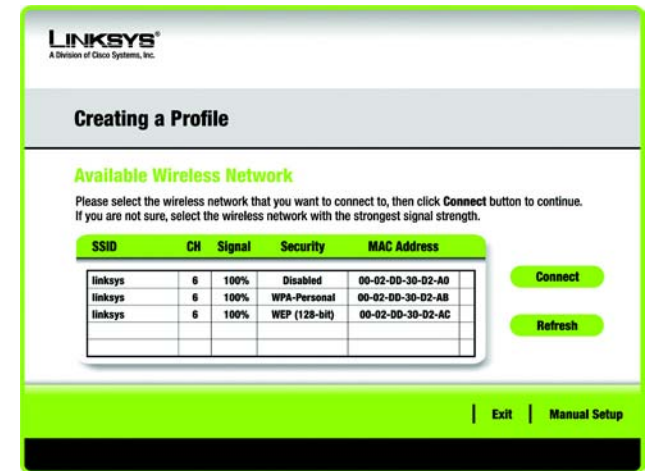


Figure 5-13: Available Wireless Network

1. If wireless security has been enabled on this network, you will see a wireless security screen. If your network utilizes WEP (Wired Equivalent Privacy) encryption, the *WEP Key Needed for Connection* screen will appear. If your network utilizes WPA-Personal (Wi-Fi Protected Access) encryption, the *WPA-Personal Needed for Connection* screen will appear.

WEP Key Needed for Connection

Select **64-bit** or **128-bit**.

Then, enter a passphrase or WEP key.

Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. The passphrase is case-sensitive and should not be longer than 16 alphanumeric characters. It 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. For 64-bit encryption, enter exactly 10 hexadecimal characters. For 128-bit encryption, enter exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

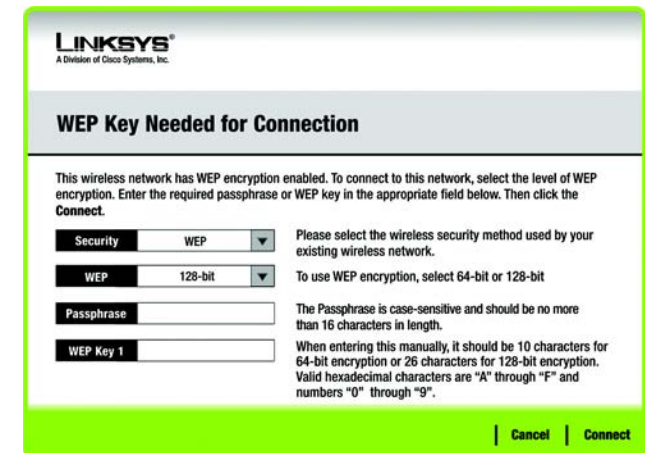


Figure 5-14: WEP Key Needed for Connection

WPA-Personal Needed for Connection

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The passphrase must match the devices on your wireless network.

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

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WPA - Personal Needed for Connection

This wireless network has WPA - Personal, also known as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the **Connect**.

Security	WPA - Personal	Please select the wireless security method used by your existing wireless network.
Encryption	TKIP	Please select an encryption type used to protect your wireless data transmissions.
Passphrase		Please enter a Passphrase that is 8 to 63 characters in length.

| Cancel | Connect

Figure 5-15: WPA-Personal Needed for Connection

2. After the software has been successfully installed, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network.

Congratulations! The profile has been configured.



Figure 5-16: The Congratulations Screen

Setting Up the Adapter with Manual Setup

If your network is not listed among the available networks, click **Manual Setup** on the *Available Wireless Network* screen to set up the adapter manually.

- 1. After clicking **Manual Setup**, the *Network Settings* screen will appear. If your network has a router or other DHCP server, click the radio button next to **Obtain network settings automatically (DHCP)**.

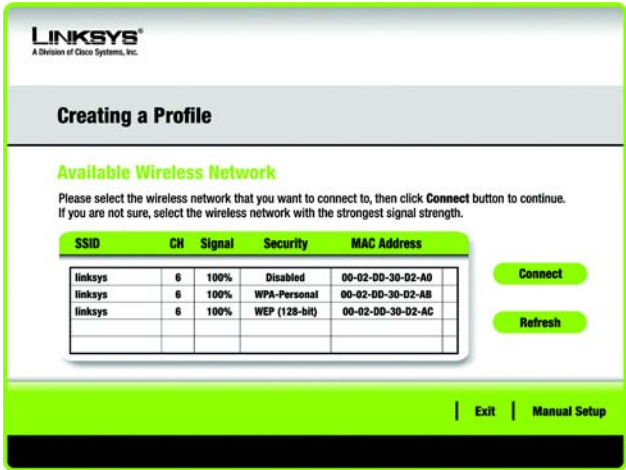


Figure 5-17: Available Wireless Network

If your network does not have a Router or DHCP server, click the radio button next to **Specify network settings**. Enter an IP Address, Subnet Mask, Default Gateway, and DNS addresses 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 addresses, leave these fields empty.

- 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 wired Ethernet network here.

Click **Next** to continue, or click **Back** to return to the *Available Wireless Network* screen.

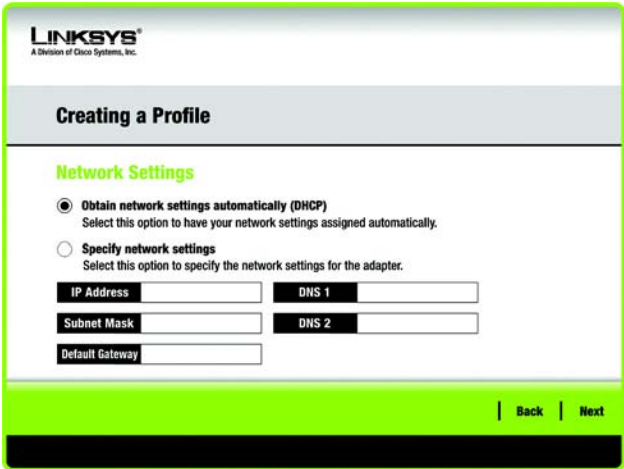


Figure 5-18: Network Settings

- The *Wireless Mode* screen shows a choice of two wireless modes. Click the **Infrastructure Mode** radio button if you want to connect to a wireless router or access point. Click the **Ad-Hoc Mode** radio button if you want to connect to another wireless device directly without using a wireless router or access point. Then, enter the SSID for your network.

Infrastructure Mode - Use this mode if you want to connect to a wireless router or access point.

Ad-Hoc Mode - Use this mode if you want to connect to another wireless device directly without using a wireless router or access point.

SSID - This is the wireless network name that must be used for all the devices in your wireless network. It is case-sensitive and should be a unique name to help prevent others from entering your network.

Click **Next** to continue or **Back** to return to the previous screen.

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Creating a Profile

Wireless Mode

Please choose the Wireless Mode that best suits your needs.

☒ **Infrastructure Mode** Select Infrastructure Mode if you want to connect to a wireless router or access point.

☐ **Ad-Hoc Mode** Select Ad-Hoc Mode if you want to connect to another wireless device directly without using a wireless router or access point.

Please enter the wireless network name (SSID) for your wireless network.

SSID The SSID (Service Set Identifier) is the wireless network name shared by all devices in a wireless network. Note: The SSID is case-sensitive.

Back Next

Figure 5-19: Wireless Mode

- If you chose **Infrastructure Mode**, go to Step 4 now. If you chose **Ad-Hoc Mode**, the *Ad-Hoc Mode Settings* screen will appear.

Select the correct **Channel** for your wireless network. The channel you choose should match the channel set on the other devices in your wireless network. If you are unsure about which channel to use, keep the default setting.

Then, select the **Network Mode** in which your wireless network will operate. In **Mixed Mode**, Wireless-B and Wireless-G devices can both operate on the network, though at a slower speed. In **G-Only Mode**, no Wireless-B devices can operate in the network.

Click **Next** to continue or click **Back** to change any settings.

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Creating a Profile

Ad-Hoc Mode Settings

Channel Select the Channel used by all of the devices in your wireless network.

Network Mode Select a Network Mode. In **Mixed Mode**, Wireless-B and Wireless-G devices can both access your network. In **G-Only Mode**, no Wireless-B device can access your network. Note: Mixed Mode networks may experience reductions in speed.

Back Next

Figure 5-20: Ad-Hoc Mode Settings

4. The *Wireless Security* screen will appear. This step will configure wireless security.

If your wireless network doesn't use wireless security, select **Disabled** and then click the **Next** button to continue. Proceed to Step 6.

Select **WEP**, **WPA-Personal**, **WPA-Enterprise**, or **Radius** for the Encryption Method. WEP stands for Wired Equivalent Privacy, WPA stands for Wi-Fi Protected Access, which is a security standard stronger than WEP encryption, and RADIUS stands for Remote Authentication Dial-In User Service. If you don't want to use encryption, select **Disabled**.

WEP

WEP - To use WEP encryption, select 64-bits or 128-bit characters from the drop-down menu, and enter a passphrase or key.

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".

Passphrase - Instead of manually entering a WEP key, you can enter a passphrase in the Passphrase field, so a WEP key is automatically generated. This case-sensitive 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.)

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, select the appropriate number from the *TX Key* drop-down box.

Authentication - The default is set to **Auto**, where it auto-detects for **Shared Key** or **Open** system. Shared Key is when both the sender and the recipient share a WEP key for authentication. Open key is when the sender and the recipient do not share a WEP key for authentication. All points on your network must use the same authentication type.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

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Creating a Profile

Wireless Security

Security: Disabled

Please select the wireless security method used by your existing wireless network.

WEP stands for Wired Equivalent Privacy.

WPA-Personal, also known as Pre-Shared Key, is a security standard stronger than WEP encryption.

WPA-Enterprise and **RADIUS** use Remote Authentication Dial-In User Service (RADIUS).

Back Next

Figure 5-21: Wireless Security

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Creating a Profile

Wireless Security - WEP

WEP: Disabled

Passphrase:

WEP Key:

For Advanced Users:

TX Key: 1

Authentication: Auto

To use WEP encryption, select either 64-bit or 128-bit

The Passphrase is case-sensitive and should be no more than 16 characters in length.

When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".

Select the transmit key for your network. (Default setting: 1)

Select your network's authentication type. (Default setting: Auto)

Back Next

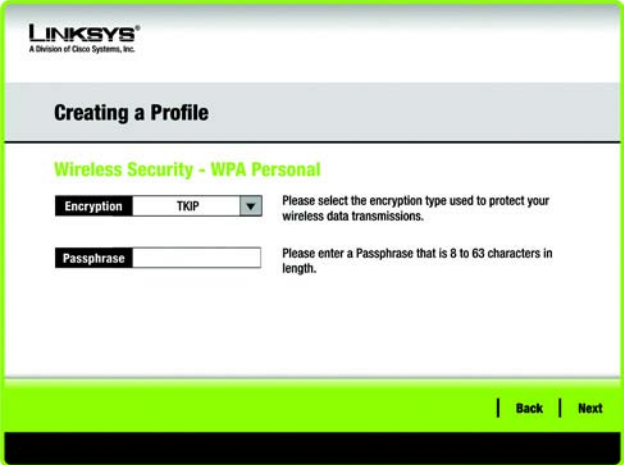
Figure 5-22: Wireless Security - WEP

WPA Personal

WPA Personal offers two encryption methods, *TKIP* and *AES*, with dynamic encryption keys.

Select the type of algorithm, **TKIP** or **AES**, for the *Encryption Type*. Enter a Passphrase of 8-63 characters in the *Passphrase* field. The passphrase must match the devices on your wireless network.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.



The screenshot shows the Linksys web interface for configuring wireless security. At the top, the Linksys logo is displayed. Below it, a grey header bar contains the text "Creating a Profile". The main content area is titled "Wireless Security - WPA Personal" in green. It features two input fields: "Encryption" with a dropdown menu currently set to "TKIP", and "Passphrase" with a text input field. To the right of the "Encryption" field, a note states: "Please select the encryption type used to protect your wireless data transmissions." To the right of the "Passphrase" field, a note states: "Please enter a Passphrase that is 8 to 63 characters in length." At the bottom right of the form, there are two buttons: "Back" and "Next", separated by a vertical line. The entire interface is framed by a green border.

Figure 5-23: Wireless Security - WPA Personal