

LINKSYS[®]
A Division of Cisco Systems, Inc.



2.4GHz

Wireless-N
PCI Adapter



User Guide

Model No. **WMP300N**



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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-N PCI Adapter 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 Adapter.



This exclamation point means there is a caution or warning and is something that could damage your property or the Adapter.



This question mark provides you with a reminder about something you might need to do while using the Adapter.

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.

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Chapter 1: Introduction

Welcome

Thank you for choosing the Wireless-N PCI Adapter. Setting up your network and the Adapter is 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, whether it's using the Wireless-G (802.11g) or Wireless-B (802.11b) standard. But with Wireless-N, it has even better range and speed.

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.

The included Setup Wizard walks you through configuring the Adapter to your wireless network settings, step by step. Use the instructions in this Guide to help you install and set up the Adapter using the Setup Wizard. These instructions should be all you need to get the most out of the Adapter.

What's in this User Guide?

This user guide covers the steps for setting up and using the Wireless-N PCI Adapter.

- **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: Getting to Know the Wireless-N PCI Adapter**
This chapter describes the physical features of the Adapter.
- **Chapter 4: Setting up and Connecting the Wireless-N PCI Adapter**
This chapter instructs you on how to install and configure the Adapter.

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

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

802.11g a wireless networking standard that specifies a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz.

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

- **Chapter 5: 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: Windows XP Wireless Zero Configuration**
This appendix describes how to use Windows XP Wireless Zero Configuration.
- **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.
- **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.

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 notebook adapters for your laptop computers, PCI adapters for your desktop PCs, and USB adapters for when you want to enjoy USB connectivity. Wireless products will also communicate with the wireless print server.

topology: the physical layout of a network.

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

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

infrastructure: a wireless network that 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.

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.

Chapter 3: Getting to Know the Wireless-N PCI Adapter

Overview

The Adapter has two parts, the PCI card and antenna stand.

The PCI Card

The Adapter's connectors attach the antenna stand's cables to the PCI card of the Adapter.

**ANT,
CENTER ANT,
ANT**

The antenna connectors are connection points for the PCI card's antenna cables.

LED

Green. The LED lights up when the Adapter has an active wireless connection. It flashes when the Adapter is transmitting or receiving data.

The Antenna Stand

The Adapter's antenna stand has built-in cables that are color-coded to match the connectors on the PCI card.

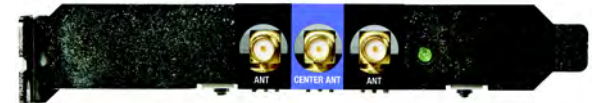


Figure 3-1: Connectors and LED



Figure 3-2: Antenna Stand and Cables

Chapter 4: Setting up and Connecting the Wireless-N PCI Adapter

Starting the Setup

The Wireless-N PCI Adapter Setup Wizard will guide you through the installation procedure. The Setup Wizard will install the driver and Wireless Network Monitor, as well as connect and configure the Adapter.



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

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 the PDF file of this User Guide.

Diagnostic - Click the **Diagnostic** button to run a diagnostic check on your installed Adapter's Wireless Network Monitor and driver.

Exit - Click the **Exit** button 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 the **Next** button if you agree and want to continue the installation, or click the **Cancel** button to end the installation.
3. Windows will begin copying the files onto your PC.



Figure 4-1: Setup Wizard's Welcome



Figure 4-2: Setup Wizard's License Agreement

- The Setup Wizard will now prompt you to install the Adapter into your PC. Click **Next** and power off your PC. After installing the Adapter, as shown below, and restarting your PC, the Setup Wizard will continue.

Connecting the Adapter

- If you haven't already done so, power off your desktop PC before installing the Adapter.
- Open your PC case and locate an available PCI slot on the motherboard. Check with your computer manufacturer for instructions.
- Slide the Adapter into the PCI slot. Make sure that all of its pins are touching the slot's contacts. You may have to apply a bit of pressure to slide the Adapter all the way in. After the Adapter is firmly in place, secure its fastening tab to your PC's chassis with a mounting screw. Then, close your PC.
- Connect the antenna stand's cables to the PCI card of the Adapter. Plug the cable with the blue connector into the blue CENTER ANT port. Then attach the remaining cables to the other ANT ports.



NOTE: The antenna cable with the blue connector must plug into the blue CENTER ANT port. The other antenna cables plug into the rest of the Adapter's ANT ports.

- Power on your desktop PC.

Setting up the Adapter

The next screen to appear will be the *Available Wireless Networks* screen. It provides two options for setting up the Adapter.

- Available Wireless Networks (for most users). Use this option if you already have a network configured. The networks available to this Adapter will be listed on-screen. You can choose one of these networks and click the **Connect** button to connect to it. Click the **Refresh** button to update the Available Wireless Network list.
- Advanced Setup. If your network is not listed on this screen, select **Advanced 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 **Back** to close the Setup Wizard, if you wish to set up the Adapter later.

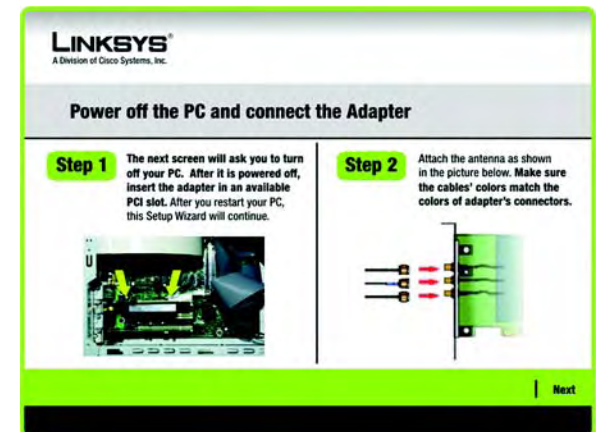


Figure 4-3: Installing the Adapter

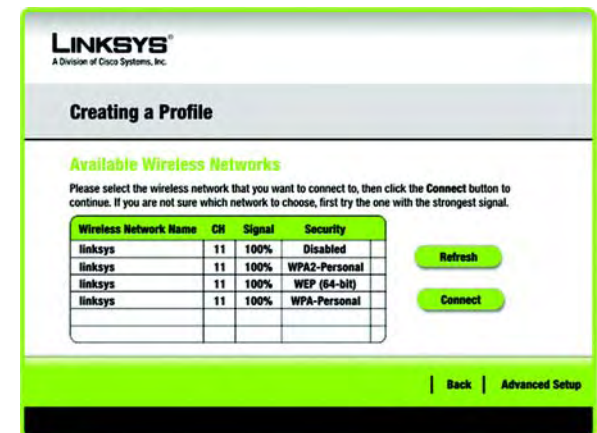


Figure 4-4: Available Wireless Networks

Available Wireless Networks

The available networks are listed in the table on the center of the screen by Wireless Network Name. 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 uses wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

1. If you have wireless security enabled on your network, continue to step 2. If you don't have wireless security enabled, continue to step 3.
2. If your network has WEP, PSK, or PSK2 wireless security enabled, then that security screen will appear. Continue to the section for your wireless security method.

WEP

If you have WEP enabled, this screen will appear. Select **64-bit** or **128-bit** encryption. 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 step 3.

PSK

If your network has the wireless security PSK enabled, this screen will appear.

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

Pre-shared Key - Enter a Pre-shared key of 8-63 characters in the *Pre-shared Key* field.

Then click **Connect** and proceed to step 3.

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

wpa (*wi-fi protected access*: a wireless security protocol using **TKIP** (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a **RADIUS** server.

encryption: encoding data transmitted in a network.

Figure 4-5: WEP Key Needed for Connection

Figure 4-6: PSK Needed for Connection

PSK2

If your network has the wireless security PSK2 enabled, this screen will appear.

Pre-shared Key - Enter a Pre-shared Key of 8-63 characters in the *Pre-shared Key* field.

Then click **Connect** and proceed to step 3.

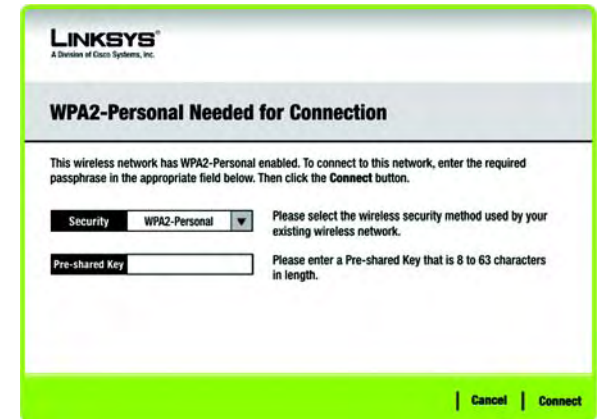


Figure 4-7: PSK2 Needed for Connection

3. After the software has been successfully installed, the *Congratulations* screen will appear. Click **Finish** to exit. For more information about the Wireless Network Monitor, refer to "Chapter 5: Using the Wireless Network Monitor."

Congratulations! The installation of the Wireless-N PCI Adapter is complete.

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



Figure 4-8: Congratulations

Advanced Setup

If your network is not listed with the available networks, you can use Advanced Setup.

1. Click **Advanced Setup** on the *Available Wireless Network* screen to set up the Adapter manually.

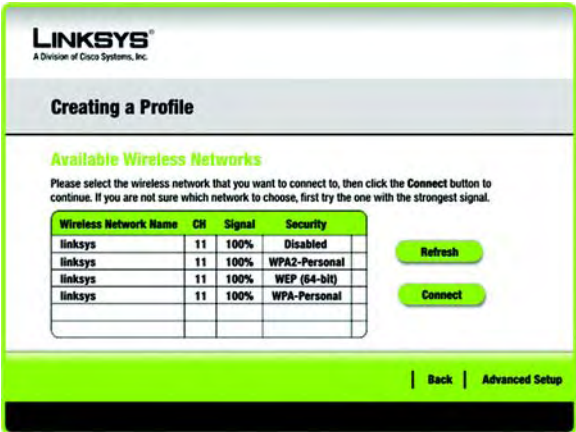


Figure 4-9: Available Wireless Networks

2. The *Network Settings* screen from the Wireless Network Monitor will appear. If your network has a router or other DHCP server, click the **Obtain network settings automatically (DHCP)** radio button.

If your network does not have a DHCP server or router, click the **Specify network settings** radio button. 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 the **Next** button to continue, or click the **Back** button to return to the previous screen.

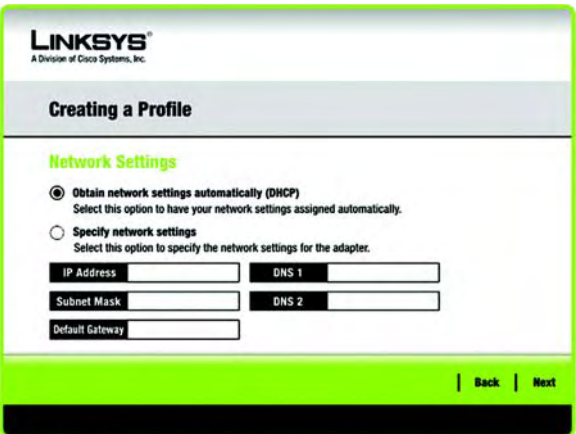


Figure 4-10: Network Settings

- 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. Enter the Wireless Network Name 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.

Wireless Network Name- This is the wireless network name (SSID) 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 the **Next** button to continue, or click the **Back** button 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.
The wireless network name is shared by all devices in a wireless network and is case-sensitive.

Wireless Network Name

[Back](#) [Next](#)

Figure 4-11: Wireless Mode

- If you chose Infrastructure Mode, go to step 5 now. If you chose Ad-Hoc Mode, the *Ad-Hoc Mode Settings* screen will appear.

Network Mode - Select the Network Mode in which your wireless network will operate. In Mixed mode, Wireless-N, Wireless-B and Wireless-G devices can operate on the same network. In Wireless-G Only mode, no Wireless-B devices can operate in the network.

Standard Channel - 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, **Auto**.

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

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Creating a Profile

Ad-Hoc Mode Settings

Network Mode Select the **Network Mode** in which your wireless network will operate. In **Mixed** mode, Wireless-N, Wireless-B and Wireless-G devices can operate on the same network. In **Wireless-G Only** mode, no Wireless-B devices can operate in the network.

Standard Channel 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 **Auto**.

[Back](#) [Next](#)

Figure 4-12: Ad-Hoc Mode Settings

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

If your wireless network has wireless security, select the method of security used: WEP, PSK, PSK2, PSK+RADIUS, PSK2+RADIUS or RADIUS.

WEP stands for Wired Equivalent Privacy. PSK is a stronger security method than WEP.

PSK2 is a stronger security method than PSK. RADIUS stands for Remote Authentication Dial-In User Service. Click the **Next** button to continue or the **Back** button to return to the previous screen.

Proceed to the appropriate section for your security method: WEP, PSK, PSK2, PSK+RADIUS, PSK2+RADIUS, or RADIUS.

WEP

WEP - Select **64-bit** or **128-bit** encryption. Then enter a passphrase or WEP key.

Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. It is case-sensitive and should not be longer than 16 alphanumeric characters. This passphrase must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

WEP Key - The WEP key you enter must match the WEP key of your wireless network. 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".

Advanced Users

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**, so it will auto-detect for Shared Key or Open System authentication. For Shared Key authentication, both the sender and the recipient share a WEP key for authentication. For Open System authentication, the sender and the recipient do not share a WEP key for authentication. If you are not sure which authentication method to select, keep the default, **Auto**.

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

Figure 4-13: Wireless Security

Figure 4-14: Wireless Security - WEP

PSK

PSK offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select TKIP or AES for encryption. Then enter a Pre-shared Key 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.

Pre-shared Key - Enter a Pre-shared Key of 8-63 characters in the *Pre-shared Key* field.

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



The screenshot shows the Linksys 'Creating a Profile' screen for 'Wireless Security - WPA Personal'. At the top, the Linksys logo is displayed. Below it, the title 'Creating a Profile' is centered. The main section is titled 'Wireless Security - WPA Personal'. It contains two fields: 'Encryption' with a dropdown menu currently set to 'TKIP', and 'Pre-shared Key' with a text input field. To the right of the 'Encryption' dropdown, there is a note: 'Please select the encryption type used to protect your wireless data transmissions.' To the right of the 'Pre-shared Key' field, there is a note: 'Please enter a Pre-shared Key that is 8 to 63 characters in length.' At the bottom right of the screen, there are two buttons: 'Back' and 'Next'.

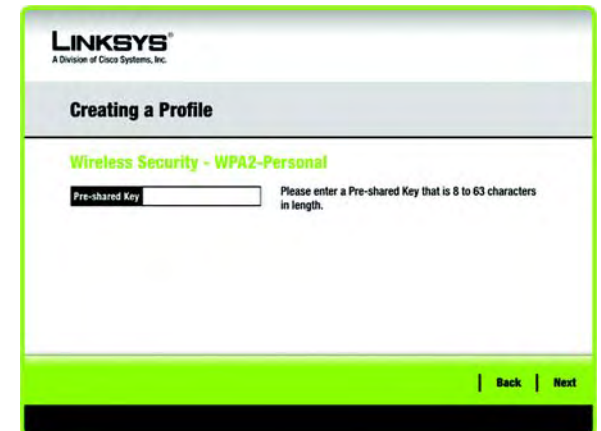
Figure 4-15: Wireless Security - PSK

PSK2

Enter a Pre-shared Key that is 8-63 characters in length.

Pre-shared Key - Enter a Pre-shared Key of 8-63 characters in the *Pre-shared Key* field.

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



The screenshot shows the Linksys 'Creating a Profile' screen for 'Wireless Security - WPA2-Personal'. At the top, the Linksys logo is displayed. Below it, the title 'Creating a Profile' is centered. The main section is titled 'Wireless Security - WPA2-Personal'. It contains one field: 'Pre-shared Key' with a text input field. To the right of the 'Pre-shared Key' field, there is a note: 'Please enter a Pre-shared Key that is 8 to 63 characters in length.' At the bottom right of the screen, there are two buttons: 'Back' and 'Next'.

Figure 4-16: Wireless Security - PSK2

PSK+RADIUS

PSK+RADIUS features PSK security used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) PSK+RADIUS 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 used inside the PEAP tunnel. 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 'Creating a Profile' page for 'Wireless Security - WPA Enterprise'. 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'. The 'Encryption' dropdown is set to 'TKIP'. The page includes instructions for each field and 'Back' and 'Next' buttons at the bottom.

Figure 4-17: Wireless Security - PSK+RADIUS - EAP-TLS

The screenshot shows the 'Creating a Profile' page for 'Wireless Security - WPA Enterprise'. 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'. The 'Encryption' dropdown is set to 'AES'. The page includes instructions for each field and 'Back' and 'Next' buttons at the bottom.

Figure 4-18: Wireless Security - PSK+RADIUS - PEAP

PSK2+RADIUS

PSK2+RADIUS Enterprise features PSK2 security used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) PSK2+RADIUS offers two authentication methods, EAP-TLS and PEAP.

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.

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 used inside the PEAP tunnel.

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

The screenshot shows the 'Creating a Profile' section of the Linksys configuration interface. Under 'Wireless Security - WPA2 Enterprise', the 'Authentication' dropdown is set to 'EAP-TLS'. To the right, instructions state: 'Please select the authentication method that you use to access your network.' Below this, there are three input fields: 'Login Name' with the instruction 'Enter the Login Name used for authentication.', 'Server Name' with the instruction 'Enter the Server Name used for authentication. (Optional)', and 'Certificate' with a dropdown menu and the instruction 'Please select the certificate used for authentication.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-19: Wireless Security - PSK2+RADIUS - EAP-TLS

The screenshot shows the 'Creating a Profile' section of the Linksys configuration interface. Under 'Wireless Security - WPA2 Enterprise', the 'Authentication' dropdown is set to 'PEAP'. To the right, instructions state: 'Please select the authentication method that you use to access your network.' Below this, there are five input fields: 'Login Name' with the instruction 'Enter the Login Name used for authentication.', 'Password' with the instruction 'Enter the Password used for authentication.', 'Server Name' with the instruction 'Enter the Server Name used for authentication. (Optional)', 'Certificate' with a dropdown menu set to 'Trust Any' and the instruction 'Please select the certificate used for authentication.', and 'Inner Authen.' with a dropdown menu set to 'EAP-MSCHAP v2' and the instruction 'Please select the inner authentication method used inside the PEAP tunnel.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 4-20: Wireless Security - PSK2+RADIUS - PEAP

RADIUS

RADIUS features use of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) RADIUS offers two authentication types: EAP-TLS and PEAP.

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.

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 used inside the PEAP tunnel.

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 grey header bar with the text 'Creating a Profile'. The main content area is titled 'Wireless Security - RADIUS'. It contains four fields: 'Authentication' (a dropdown menu set to 'EAP-TLS'), 'Login Name' (a text input field), 'Server Name' (a text input field), and 'Certificate' (a dropdown menu). To the right of each field is a small instruction: 'Please select the authentication method that you use to access your network.', 'Enter the Login Name used for authentication.', 'Enter the Server Name used for authentication. (Optional)', and 'Please select the certificate used for authentication.' respectively. At the bottom right, there are two buttons: 'Back' and 'Next'.

Figure 4-21: Wireless Security - RADIUS - EAP-TLS

The screenshot shows the 'LINKSYS' logo at the top. Below it is a grey header bar with the text 'Creating a Profile'. The main content area is titled 'Wireless Security - RADIUS'. It contains five fields: 'Authentication' (a dropdown menu set to 'PEAP'), 'Login Name' (a text input field), 'Password' (a text input field), 'Server Name' (a text input field), and 'Certificate' (a dropdown menu set to 'Trust Any'). To the right of each field is a small instruction: 'Please select the authentication method that you use to access your network.', 'Enter the Login Name used for authentication.', 'Enter the Password used for authentication.', 'Enter the Server Name used for authentication. (Optional)', and 'Please select the certificate used for authentication.' respectively. Below the 'Certificate' field is an additional field 'Inner Authen.' (a dropdown menu set to 'EAP-MSCHAP v2') with the instruction 'Please select the inner authentication method used inside the PEAP tunnel.' At the bottom right, there are two buttons: 'Back' and 'Next'.

Figure 4-22: Wireless Security - RADIUS - PEAP

5. The *Confirm New Settings* screen will appear next and show the new settings. To save the new settings, click the **Save** button. To edit the new settings, click the **Back** button. To exit the Advanced Setup through the Wireless Network Monitor, click **Exit**.

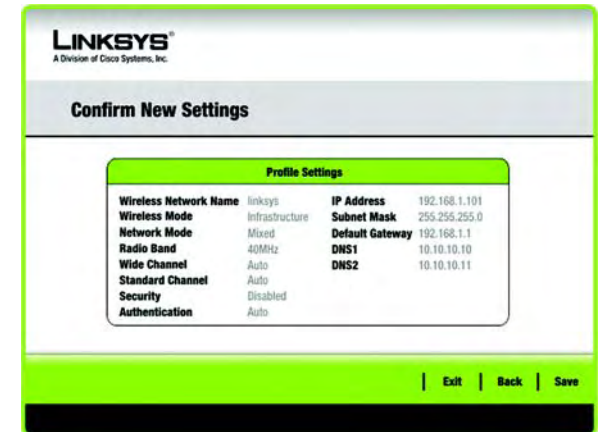


Figure 4-23: Confirm New Settings

6. The *Congratulations* screen will appear next. Click **Connect to Network** to implement the new settings and return to the *Link Information* screen. Click **Return to Profiles** to return to the *Profiles* screen.

Congratulations! Your advanced setup through the Wireless Network Monitor is complete.

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

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 installing the Adapter, the Wireless Network Monitor icon will appear in the system tray of your computer. 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 installed, then the icon will be gray.



Figure 5-1: Wireless Network Monitor Icon

Using the Wireless Network Monitor

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 information about the current wireless connection. To search for available wireless networks, click the **Connect** 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.

Radio Band - This shows the radio band used on the network.

Wireless Network Name - This is the unique name (SSID) of the wireless network.

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

Wide Channel - This displays the Wireless-N primary channel used with a 40 MHz radio band network.

Standard Channel - This displays the channel used by your wireless network.

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.

DNS1 - This is the DNS address of the Adapter.

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 **Statistics** button to go to the *Wireless Network Statistics* screen. Click the **Back** button to return to the initial *Link Information* 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

Connect

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

Wireless Network Name - 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:

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

Network Type- This is the network type used by your wireless network.

Radio Band - This is the radio band used by your wireless network.

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 security enabled, then you will see a new screen appear.

- WEP Key Needed for Connection

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 the **Connect** button. To cancel the connection, click the **Cancel** button.

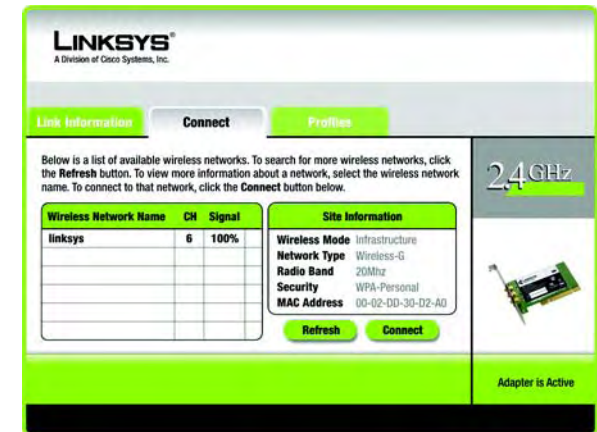


Figure 5-5: Connect

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

wpa (wi-fi protected access: a wireless security protocol using TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

encryption: encoding data transmitted in a network.

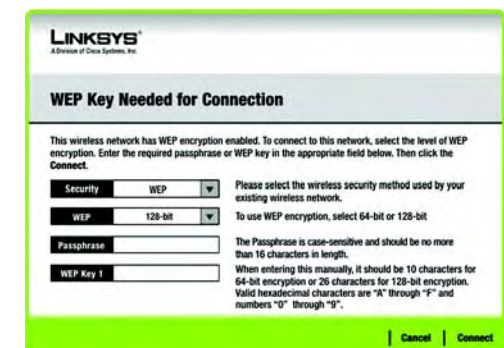
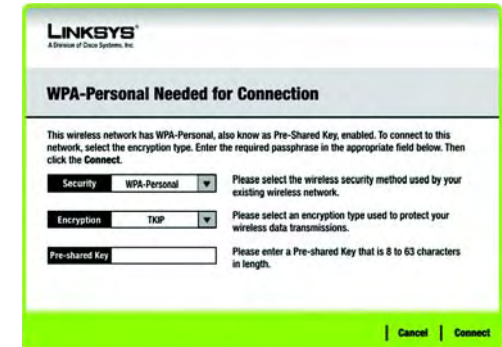


Figure 5-6: WEP Key Needed for Connection

- PSK Needed for Connection

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

The screenshot shows a Linksys web interface for connecting to a wireless network. The title is "WPA-Personal Needed for Connection". Below the title, a message states: "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 button." There are three input fields: "Security" with a dropdown menu showing "WPA-Personal", "Encryption" with a dropdown menu showing "TKIP", and "Pre-shared Key" with a text input field. To the right of each field is a descriptive instruction. At the bottom right, there are "Cancel" and "Connect" buttons.

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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 button.

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

Encryption Please select an encryption type used to protect your wireless data transmissions.

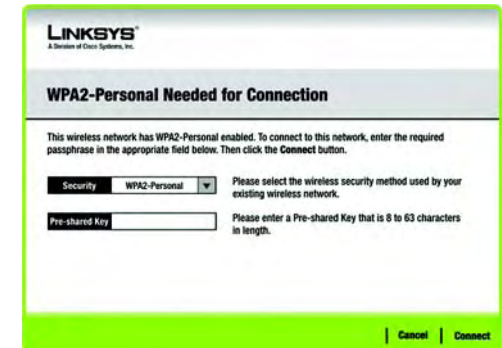
Pre-shared Key Please enter a Pre-shared Key that is 8 to 63 characters in length.

Cancel Connect

Figure 5-7: PSK Needed for Connection

- PSK2 Needed for Connection

If the network has the wireless security PSK2 enabled, then you will see the *PSK2 Needed for Connection* screen. Enter the network's Pre-shared Key in the *Pre-shared Key* field. To connect to the network, click the **Connect** button. To cancel the connection, click the **Cancel** button.

The screenshot shows a Linksys web interface for connecting to a wireless network. The title is "WPA2-Personal Needed for Connection". Below the title, a message states: "This wireless network has WPA2-Personal enabled. To connect to this network, enter the required passphrase in the appropriate field below. Then click the Connect button." There are two input fields: "Security" with a dropdown menu showing "WPA2-Personal" and "Pre-shared Key" with a text input field. To the right of each field is a descriptive instruction. At the bottom right, there are "Cancel" and "Connect" buttons.

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WPA2-Personal Needed for Connection

This wireless network has WPA2-Personal enabled. To connect to this network, enter the required passphrase in the appropriate field below. Then click the Connect button.

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

Pre-shared Key Please enter a Pre-shared Key that is 8 to 63 characters in length.

Cancel Connect

Figure 5-8: PSK2 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 Wireless Network Names.

Profile - The name of the profile is displayed here.

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

Site Information

For each profile selected, the following are listed:

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

Wide Channel - This displays the Wireless-N primary channel used with a 40 MHz radio band network.

Standard Channel - This displays the channel used by your wireless network.

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 **Connect**.

New - Click the **New** button 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 the **Edit** button.

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

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

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

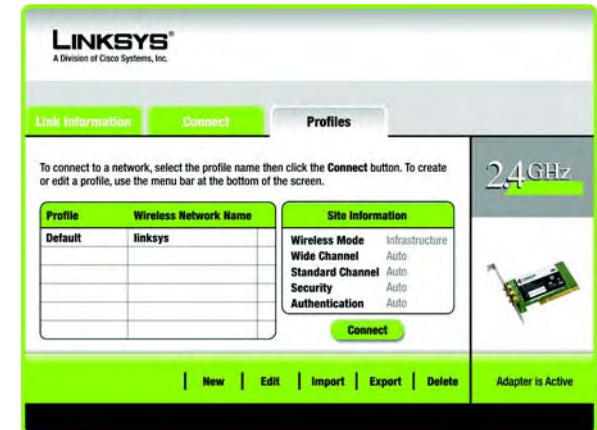


Figure 5-9: Profiles



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

Creating a New Profile

The next screen to appear will be the *Available Wireless Networks* screen. It provides two options for setting up the Adapter.

- **Available Wireless Networks** (for most users). Use this option if you already have a network configured. The networks available to this Adapter will be listed on-screen. You can choose one of these networks and click the **Connect** button to connect to it. Click the **Refresh** button to update the Available Wireless Network list.
- **Advanced Setup**. If your network is not listed on this screen, select **Advanced 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 **Back** to close the Setup Wizard, if you wish to set up the Adapter later.

Available Wireless Networks

The available networks are listed in the table on the center of the screen by Wireless Network Name. 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 uses wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

1. If you have wireless security enabled on your network, continue to step 2. If you don't have wireless security enabled, continue to step 3.
2. If your network has WEP, PSK, or PSK2 wireless security enabled, then that security screen will appear. Continue to the section for your wireless security method.

WEP

If you have WEP enabled, this screen will appear. Select **64-bit** or **128-bit** encryption. 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.)

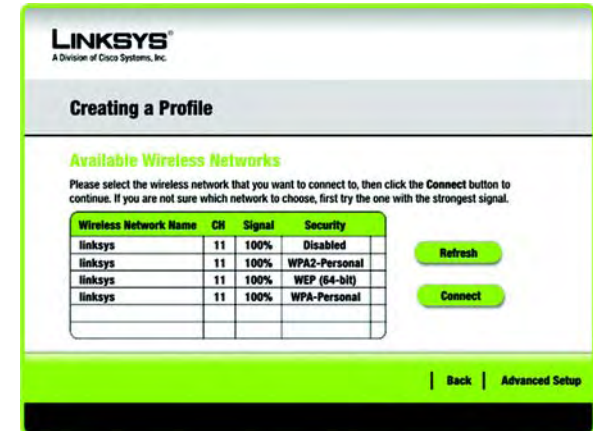


Figure 5-10: Available Wireless Networks

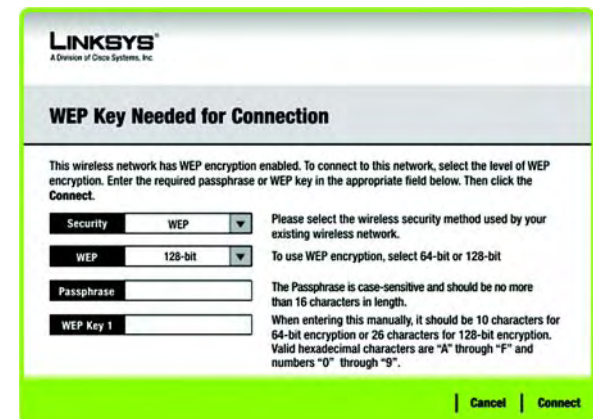


Figure 5-11: WEP Key Needed for Connection

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 step 3.

PSK

If your network has the wireless security PSK enabled, this screen will appear.

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

Pre-shared Key - Enter a Pre-shared key of 8-63 characters in the *Pre-shared Key* field.

Then click **Connect** and proceed to step 3.

PSK2

If your network has the wireless security PSK2 enabled, this screen will appear.

Pre-shared Key - Enter a Pre-shared Key of 8-63 characters in the *Pre-shared Key* field.

Then click **Connect** and proceed to step 3.

- After the software has been successfully installed, the *Congratulations* screen will appear. Click **Finish** to return to the *Link Information* screen.

Congratulations! The profile has been successfully configured.

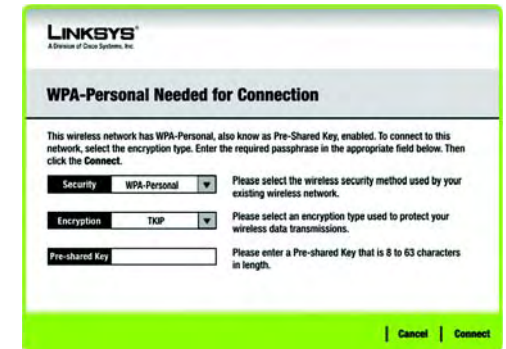


Figure 5-12: PSK Needed for Connection

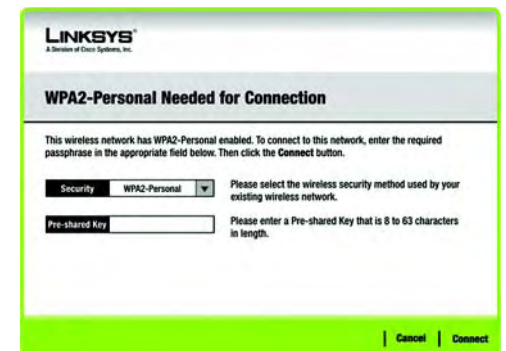


Figure 5-13: PSK2 Needed for Connection

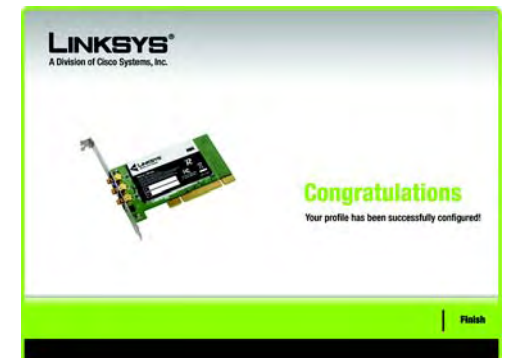


Figure 5-14: Congratulations

Advanced Setup

If your network is not listed with the available networks, you can use Advanced Setup.

1. Click **Advanced Setup** on the *Available Wireless Network* screen to set up the Adapter manually.

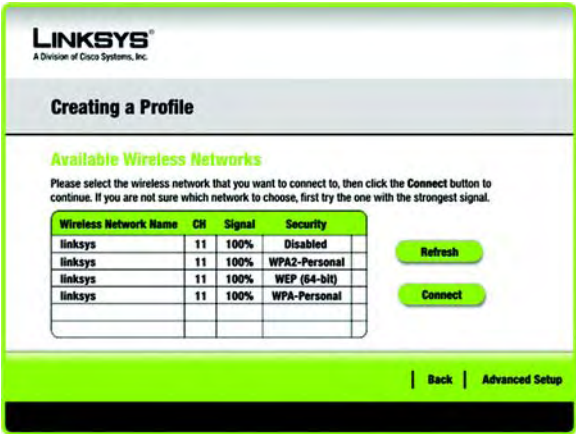


Figure 5-15: Available Wireless Networks

2. The *Network Settings* screen from the Wireless Network Monitor will appear. If your network has a router or other DHCP server, click the **Obtain network settings automatically (DHCP)** radio button.

If your network does not have a DHCP server or router, click the **Specify network settings** radio button. 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 the **Next** button to continue, or click the **Back** button to return to the previous screen.

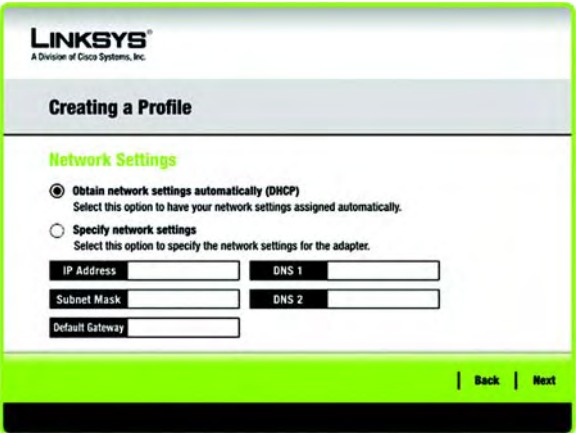


Figure 5-16: Network Settings

3. 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. Enter the Wireless Network Name 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.

Wireless Network Name- This is the wireless network name (SSID) 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 the **Next** button to continue, or click the **Back** button 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. The wireless network name is shared by all devices in a wireless network and is case-sensitive.

Wireless Network Name

[Back](#) [Next](#)

Figure 5-17: Wireless Mode

4. If you chose Infrastructure Mode, go to step 5 now. If you chose Ad-Hoc Mode, the *Ad-Hoc Mode Settings* screen will appear.

Network Mode - Select the Network Mode in which your wireless network will operate. In Mixed mode, Wireless-N, Wireless-B and Wireless-G devices can operate on the same network. In Wireless-G Only mode, no Wireless-B devices can operate in the network.

Standard Channel - 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, **Auto**.

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

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Creating a Profile

Ad-Hoc Mode Settings

Network Mode Select the **Network Mode** in which your wireless network will operate. In **Mixed** mode, Wireless-N, Wireless-B and Wireless-G devices can operate on the same network. In **Wireless-G Only** mode, no Wireless-B devices can operate in the network.

Standard Channel 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 **Auto**.

[Back](#) [Next](#)

Figure 5-18: Ad-Hoc Mode Settings

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

If your wireless network has wireless security, select the method of security used: WEP, PSK, PSK2, PSK+RADIUS, PSK2+RADIUS, or RADIUS.

WEP stands for Wired Equivalent Privacy. PSK is a stronger security method than WEP. PSK2 is a stronger security method than PSK. RADIUS stands for Remote Authentication Dial-In User Service. Click the **Next** button to continue or the **Back** button to return to the previous screen.

Proceed to the appropriate section for your security method: WEP, PSK, PSK2, PSK+RADIUS, PSK2+RADIUS, or RADIUS.

WEP

WEP - Select **64-bit** or **128-bit** encryption. Then enter a passphrase or WEP key.

Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. It is case-sensitive and should not be longer than 16 alphanumeric characters. This passphrase must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

WEP Key - The WEP key you enter must match the WEP key of your wireless network. 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".

Advanced Users

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**, so it will auto-detect for Shared Key or Open System authentication. For Shared Key authentication, both the sender and the recipient share a WEP key for authentication. For Open System authentication, the sender and the recipient do not share a WEP key for authentication. If you are not sure which authentication method to select, keep the default, **Auto**.

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

Figure 5-19: Wireless Security

Figure 5-20: Wireless Security - WEP

PSK

PSK offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select TKIP or AES for encryption. Then enter a Pre-shared Key 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.

Pre-shared Key - Enter a Pre-shared Key of 8-63 characters in the *Pre-shared Key* field.

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


The screenshot shows the Linksys web interface for creating a wireless profile. The title is "Creating a Profile". Below it, the section is "Wireless Security - WPA Personal". There are two main fields: "Encryption" with a dropdown menu currently set to "TKIP", and "Pre-shared Key" with a text input field. To the right of the "Encryption" dropdown, there is a note: "Please select the encryption type used to protect your wireless data transmissions." To the right of the "Pre-shared Key" field, there is a note: "Please enter a Pre-shared Key that is 8 to 63 characters in length." At the bottom right, there are "Back" and "Next" buttons.

Figure 5-21: Wireless Security - PSK

PSK2

Enter a Pre-shared Key that is 8-63 characters in length.

Pre-shared Key - Enter a Pre-shared Key of 8-63 characters in the *Pre-shared Key* field.

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

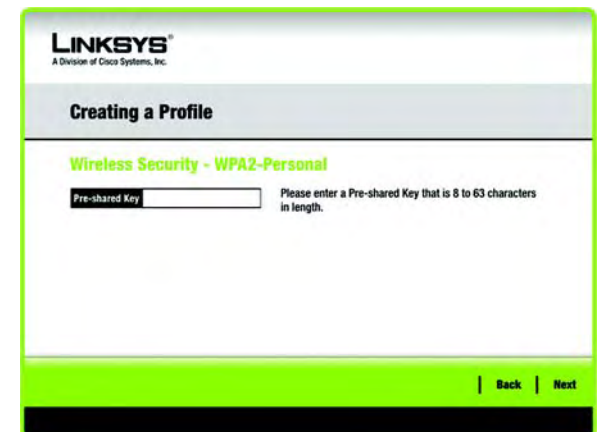
The screenshot shows the Linksys web interface for creating a wireless profile. The title is "Creating a Profile". Below it, the section is "Wireless Security - WPA2-Personal". There is one main field: "Pre-shared Key" with a text input field. To the right of the "Pre-shared Key" field, there is a note: "Please enter a Pre-shared Key that is 8 to 63 characters in length." At the bottom right, there are "Back" and "Next" buttons.

Figure 5-22: Wireless Security - PSK2

PSK+RADIUS

PSK+RADIUS features PSK security used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) PSK+RADIUS 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 used inside the PEAP tunnel. 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 the heading 'Creating a Profile'. The main section is titled 'Wireless Security - WPA Enterprise'. It contains several fields and dropdown menus: 'Authentication' is set to 'EAP-TLS', 'Login Name' is empty, 'Server Name' is empty, 'Certificate' is empty, and 'Encryption' is set to 'TKIP'. To the right of these fields are instructions: 'Please select the authentication method that you use to access your network.', 'Enter the Login Name used for authentication.', 'Enter the Server Name used for authentication. (Optional)', 'Please select the certificate used for authentication.', and 'Please select the encryption type used to protect the wireless data transmissions.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 5-23: Wireless Security - PSK+RADIUS - EAP-TLS

The screenshot shows the 'LINKSYS' logo at the top. Below it is the heading 'Creating a Profile'. The main section is titled 'Wireless Security - WPA Enterprise'. It contains several fields and dropdown menus: 'Authentication' is set to 'PEAP', 'Login Name' is empty, 'Password' is empty, 'Server Name' is empty, 'Certificate' is set to 'Trust Any', 'Inner Authen.' is set to 'EAP-MSCHAP v2', and 'Encryption' is set to 'AES'. To the right of these fields are instructions: 'Please select the authentication method that you use to access your network.', 'Enter the Login Name used for authentication.', 'Enter the Password used for authentication.', 'Enter the Server Name used for authentication. (Optional)', 'Please select the certificate used for authentication.', 'Please select the inner authentication method used inside the PEAP tunnel.', and 'Please select the encryption type used to protect the wireless data transmissions.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 5-24: Wireless Security - PSK+RADIUS - PEAP

PSK2+RADIUS

PSK2+RADIUS features PSK2 security used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) PSK2+RADIUS offers two authentication methods, EAP-TLS and PEAP.

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.

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 used inside the PEAP tunnel.

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

The screenshot shows the 'Creating a Profile' section of the Linksys configuration interface. Under 'Wireless Security - WPA2 Enterprise', the 'Authentication' dropdown is set to 'EAP-TLS'. The 'Login Name' field is empty. The 'Server Name' field is empty. The 'Certificate' dropdown is empty. Instructions on the right side of the form state: 'Please select the authentication method that you use to access your network.', 'Enter the Login Name used for authentication.', 'Enter the Server Name used for authentication. (Optional)', and 'Please select the certificate used for authentication.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 5-25: Wireless Security - PSK2+RADIUS - EAP-TLS

The screenshot shows the 'Creating a Profile' section of the Linksys configuration interface. Under 'Wireless Security - WPA2 Enterprise', 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 Authn.' dropdown is set to 'EAP-MSCHAP v2'. Instructions on the right side of the form state: 'Please select the authentication method that you use to access your network.', 'Enter the Login Name used for authentication.', 'Enter the Password used for authentication.', 'Enter the Server Name used for authentication. (Optional)', 'Please select the certificate used for authentication.', and 'Please select the inner authentication method used inside the PEAP tunnel.' At the bottom right, there are 'Back' and 'Next' buttons.

Figure 5-26: Wireless Security - PSK2+RADIUS - PEAP

RADIUS

RADIUS features use of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) RADIUS offers two authentication types: EAP-TLS and PEAP.

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.

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 used inside the PEAP tunnel.

Click the **Next** button to continue 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'. The 'Inner Authen.' dropdown is set to 'EAP-MSCHAP v2'. The 'Back' and 'Next' buttons are at the bottom right.

Figure 5-27: 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'. The 'Back' and 'Next' buttons are at the bottom right.

Figure 5-28: Wireless Security - RADIUS - PEAP

- The *Confirm New Settings* screen will appear next and show the new settings. To save the new settings, click the **Save** button. To edit the new settings, click the **Back** button. To exit the Advanced Setup through the Wireless Network Monitor, click **Exit**.



Figure 5-29: Confirm New Settings

- The *Congratulations* screen will appear next. Click **Connect to Network** to implement the new settings and return to the *Link Information* screen. Click **Return to Profiles** to return to the *Profiles* screen.

Congratulations! The profile has been successfully configured.

Appendix A: Troubleshooting

This appendix consists of two parts: “Common Problems and Solutions” and “Frequently Asked Questions.” This appendix provides solutions to problems that may occur during the installation and operation of the Wireless-N PCI Adapter. Read the description below to solve your problems. If you can't find an answer here, check the Linksys website at www.linksys.com.

Common Problems and Solutions

1. *The Wireless-N PCI Adapter does not work properly.*

- Power off the PC and remove the Adapter. Then reinstall the Adapter.
- Make sure you have installed the proper driver.

If the Adapter does not function after attempting the above steps, remove it and do the following:

- Uninstall the driver software from your PC.
- Run the Setup Wizard again to re-install the driver and software.

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

Make sure that the Adapter is configured with the same wireless network name (SSID) and security options as the other computers in the Infrastructure configuration.

Frequently Asked Questions

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 computer games with other members of the wireless network?

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

What is the 802.11b standard?

It is one of the standards for wireless networks. The 802.11b standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11b standard. The 802.11b standard states a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

What is the IEEE 802.11g standard?

It is one of the IEEE standards for wireless networks. The 802.11g standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11g standard. The 802.11g standard states a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz.

What 802.11b features are supported?

The product supports the following 802.11b functions:

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

What IEEE 802.11g features are supported?

The product supports the following IEEE 802.11g functions:

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

What is ad-hoc mode?

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

What is infrastructure mode?

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

What is roaming?

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

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

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

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

What is ISM band?

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

What is Spread Spectrum?

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

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

Frequency-Hopping Spread-Spectrum (FHSS) uses a narrowband carrier that changes frequency in a pattern that is known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise. Direct-Sequence Spread-Spectrum (DSSS) generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

What is WEP?

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

What is WPA?

WPA is Wi-Fi Protected Access, a wireless security protocol that can be used in conjunction with a RADIUS server.

What is RADIUS?

RADIUS is Remote Authentication Dial-In User Service, which uses an authentication server to control network access.

Appendix B: Windows XP Wireless Zero Configuration

If your computer is running Windows XP, then this choice will be available. If you want to use Windows XP Wireless Zero Configuration to control the Adapter, instead of using the Wireless Network Monitor, then right-click the Wireless Network Monitor and select **Use Windows XP Wireless Configuration**.

If you want to switch back to the Wireless Network Monitor, right-click the Wireless Network Monitor icon, and select **Use Linksys Wireless Network Monitor**.



Figure B-1: Wireless Network Monitor Icon

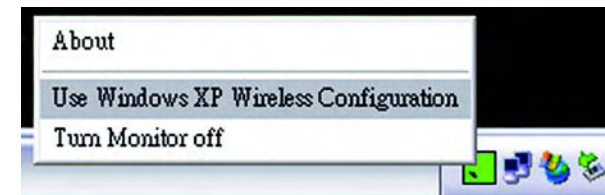


Figure B-2: Windows XP - Use Windows XP Wireless Configuration

1. After installing the Adapter, the Windows XP Wireless Zero Configuration icon will appear in your computer's system tray. Double-click the icon.



NOTE: For more information about Wireless Zero Configuration, refer to Windows Help.



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

If your network does not have wireless security enabled, go to step 3.

If your network does have wireless security enabled, go to step 4.



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

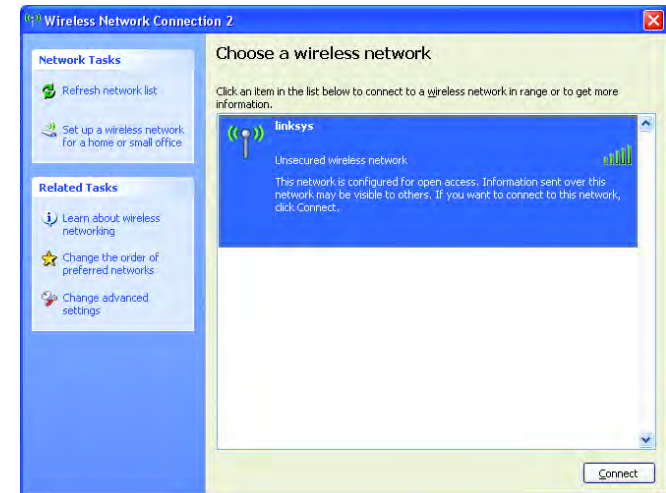


Figure B-4: Available Wireless Network

3. If your network does not have wireless security enabled, click the **Connect Anyway** button to connect the Adapter to your network.



Figure B-5: No Wireless Security

4. If your network uses wireless security WEP, enter the WEP Key used in the *Network Key* and *Confirm network key* fields. If your network uses wireless security WPA Personal, enter the Passphrase used in the *Network Key* and *Confirm network key* fields. Click the **Connect** button.



Figure B-6: Network Connection - Wireless Security



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

5. Your wireless network will appear as Connected when your connection is active.

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

The setup of Windows XP Wireless Configuration is complete.

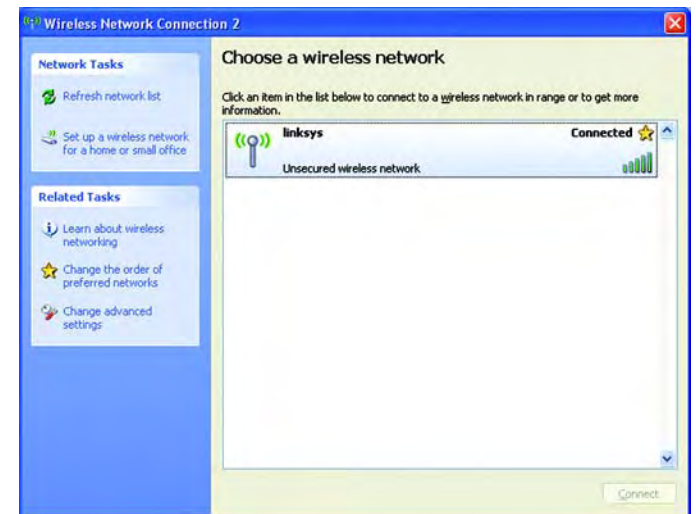


Figure B-7: Wireless Network Connection

Appendix C: Wireless Security

Linksys wants to make wireless networking as safe and easy for you as possible. The current generation of Linksys products provide several network security features, but they require specific action on your part for implementation. So, keep the following in mind whenever you are setting up or using your wireless network.

Security Precautions

The following is a complete list of security precautions to take (at least steps 1 through 5 should be followed):

1. Change the default SSID.
2. Disable SSID Broadcast.
3. Change the default password for the Administrator account.
4. Enable MAC Address Filtering.
5. Change the SSID periodically.
6. Use the highest encryption algorithm possible. Use WPA if it is available. Please note that this may reduce your network performance.
7. Change the WEP encryption keys periodically.



NOTE: Note: Some of these security features are available only through the network router or access point. Refer to the router or access point's documentation for more information.

Security Threats Facing Wireless Networks

Wireless networks are easy to find. Hackers know that in order to join a wireless network, wireless networking products first listen for "beacon messages". These messages can be easily decrypted and contain much of the network's information, such as the network's SSID (Service Set Identifier). Here are the steps you can take:

Change the administrator's password regularly. With every wireless networking device you use, keep in mind that network settings (SSID, WEP keys, etc.) are stored in its firmware. Your network administrator is the only person who can change network settings. If a hacker gets a hold of the administrator's password, he, too, can change those settings. So, make it harder for a hacker to get that information. Change the administrator's password regularly.

SSID. There are several things to keep in mind about the SSID:

1. Disable Broadcast
2. Make it unique
3. Change it often

Most wireless networking devices will give you the option of broadcasting the SSID. While this option may be more convenient, it allows anyone to log into your wireless network. This includes hackers. So, don't broadcast the SSID.

Wireless networking products come with a default SSID set by the factory. (The Linksys default SSID is "linksys".) Hackers know these defaults and can check these against your network. Change your SSID to something unique and not something related to your company or the networking products you use.

Change your SSID regularly so that any hackers who have gained access to your wireless network will have to start from the beginning in trying to break in.

MAC Addresses. Enable MAC Address filtering. MAC Address filtering will allow you to provide access to only those wireless nodes with certain MAC Addresses. This makes it harder for a hacker to access your network with a random MAC Address.

WEP Encryption. Wired Equivalent Privacy (WEP) is often looked upon as a cure-all for wireless security concerns. This is overstating WEP's ability. Again, this can only provide enough security to make a hacker's job more difficult.

There are several ways that WEP can be maximized:

1. Use the highest level of encryption possible
2. Use "Shared Key" authentication
3. Change your WEP key regularly

WPA. Wi-Fi Protected Access (WPA) is the newest and best available standard in Wi-Fi security. **WPA2** is the newer version of Wi-Fi Protected Access with stronger encryption than WPA. WPA gives you a choice of two encryption methods: TKIP (Temporal Key Integrity Protocol), which incorporates Message Integrity Code (MIC) to provide protection against hackers, and AES (Advanced Encryption System), which utilizes a symmetric 128-Bit block data encryption. WPA2 uses AES encryption. (AES is stronger than TKIP.)



IMPORTANT: Always remember that each device in your wireless network **MUST** use the same encryption method and encryption key or your wireless network will not function properly.

WPA-Enterprise and WPA2-Enterprise use WPA/WPA2 security and a RADIUS (Remote Authentication Dial-In User Service) server for authentication. RADIUS uses a RADIUS server.

WPA/WPA2-Personal. Select the type of algorithm, **TKIP** or **AES** (AES is automatically selected for WPA2-Personal), and enter a password in the *Pre-shared Key* field of 8-63 characters.

WPA/WPA2-Enterprise. This method is WPA or WPA2 used in coordination with a RADIUS server. Select the authentication method, **EAP-TLS** or **PEAP**. Then configure the appropriate settings for your authentication method.

RADIUS. This method features use of a RADIUS server. Select the authentication method, **EAP-TLS** or **PEAP**. Then configure the appropriate settings for your authentication method.

Implementing encryption may have a negative impact on your network's performance, but if you are transmitting sensitive data over your network, encryption should be used.

These security recommendations should help keep your mind at ease while you are enjoying the most flexible and convenient technology Linksys has to offer.

Appendix D: Windows Help

Almost all wireless products require Microsoft Windows. Windows is the most used operating system in the world and comes with many features that help make networking easier. These features can be accessed through Windows Help and are described in this appendix.

TCP/IP

Before a computer can communicate with an access point or wireless router, TCP/IP must be enabled. TCP/IP is a set of instructions, or protocol, all PCs follow to communicate over a network. This is true for wireless networks as well. Your PCs will not be able to utilize wireless networking without having TCP/IP enabled. Windows Help provides complete instructions on enabling TCP/IP.

Shared Resources

If you wish to share printers, folder, or files over your network, Windows Help provides complete instructions on utilizing shared resources.

Network Neighborhood/My Network Places

Other PCs on your network will appear under Network Neighborhood or My Network Places (depending upon the version of Windows you're running). Windows Help provides complete instructions on adding PCs to your network.

Appendix E: Glossary

This glossary contains some basic networking terms you may come across when using this product. For more advanced terms, see the complete Linksys glossary at <http://www.linksys.com/glossary>.

Access Point - A device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network.

Ad-hoc - A group of wireless devices communicating directly with each other (peer-to-peer) without the use of an access point.

AES (Advanced Encryption Standard) - A security method that uses symmetric 128-bit block data encryption.

Bandwidth - The transmission capacity of a given device or network.

Bit - A binary digit.

Boot - To start a device and cause it to start executing instructions.

Broadband - An always-on, fast Internet connection.

Browser - An application program that provides a way to look at and interact with all the information on the World Wide Web.

Byte - A unit of data that is usually eight bits long

Cable Modem - A device that connects a computer to the cable television network, which in turn connects to the Internet.

Daisy Chain - A method used to connect devices in a series, one after the other.

DDNS (Dynamic Domain Name System) - Allows the hosting of a website, FTP server, or e-mail server with a fixed domain name (e.g., www.xyz.com) and a dynamic IP address.

Default Gateway - A device that forwards Internet traffic from your local area network.

DHCP (Dynamic Host Configuration Protocol) - A networking protocol that allows administrators to assign temporary IP addresses to network computers by “leasing” an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.

DMZ (Demilitarized Zone) - Removes the Router's firewall protection from one PC, allowing it to be “seen” from the Internet.

DNS (Domain Name Server) - The IP address of your ISP's server, which translates the names of websites into IP addresses.

Domain - A specific name for a network of computers.

Download - To receive a file transmitted over a network.

DSL (Digital Subscriber Line) - An always-on broadband connection over traditional phone lines.

Dynamic IP Address - A temporary IP address assigned by a DHCP server.

EAP (Extensible Authentication Protocol) - A general authentication protocol used to control network access. Many specific authentication methods work within this framework.

Encryption - Encoding data transmitted in a network.

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

Firewall - A set of related programs located at a network gateway server that protects the resources of a network from users from other networks.

Firmware - The programming code that runs a networking device.

FTP (File Transfer Protocol) - A protocol used to transfer files over a TCP/IP network.

Full Duplex - The ability of a networking device to receive and transmit data simultaneously.

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

Half Duplex - Data transmission that can occur in two directions over a single line, but only one direction at a time.

HTTP (HyperText Transport Protocol) - The communications protocol used to connect to servers on the World Wide Web.

Infrastructure - A wireless network that is bridged to a wired network via an access point.

IP (Internet Protocol) - A protocol used to send data over a network.

IP Address - The address used to identify a computer or device on a network.

IPCONFIG - A Windows 2000 and XP utility that displays the IP address for a particular networking device.

IPSec (Internet Protocol Security) - A VPN protocol used to implement secure exchange of packets at the IP layer.

ISP (Internet Service Provider) - A company that provides access to the Internet.

LAN - The computers and networking products that make up your local network.

MAC (Media Access Control) Address - The unique address that a manufacturer assigns to each networking device.

Mbps (MegaBits Per Second) - One million bits per second; a unit of measurement for data transmission.

NAT (Network Address Translation) - NAT technology translates IP addresses of a local area network to a different IP address for the Internet.

Network - A series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.

Packet - A unit of data sent over 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.

Ping (Packet Internet Groper) - An Internet utility used to determine whether a particular IP address is online.

POP3 (Post Office Protocol 3) - A standard mail server commonly used on the Internet.

Port - The connection point on a computer or networking device used for plugging in cables or adapters.

Power over Ethernet (PoE) - A technology enabling an Ethernet network cable to deliver both data and power.

PPPoE (Point to Point Protocol over Ethernet) - A type of broadband connection that provides authentication (username and password) in addition to data transport.

PPTP (Point-to-Point Tunneling Protocol) - A VPN protocol that allows the Point to Point Protocol (PPP) to be tunneled through an IP network. This protocol is also used as a type of broadband connection in Europe.

RADIUS (Remote Authentication Dial-In User Service) - A protocol that uses an authentication server to control network access.

RJ-45 (Registered Jack-45) - An Ethernet connector that holds up to eight wires.

Roaming - The ability to take a wireless device from one access point's range to another without losing the connection.

Router - A networking device that connects multiple networks together.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

SMTP (Simple Mail Transfer Protocol) - The standard e-mail protocol on the Internet.

SNMP (Simple Network Management Protocol) - A widely used network monitoring and control protocol.

SPI (Stateful Packet Inspection) Firewall - A technology that inspects incoming packets of information before allowing them to enter the network.

SSID (Service Set Identifier) - Your wireless network's name.

Static IP Address - A fixed address assigned to a computer or device that is connected to a network.

Static Routing - Forwarding data in a network via a fixed path.

Subnet Mask - An address code that determines the size of the network.

Switch - 1. A data switch that 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.

TCP (Transmission Control Protocol) - A network protocol for transmitting data that requires acknowledgement from the recipient of data sent.

TCP/IP (Transmission Control Protocol/Internet Protocol) - A set of instructions PCs use to communicate over a network.

Telnet - A user command and TCP/IP protocol used for accessing remote PCs.

TFTP (Trivial File Transfer Protocol) - A version of the TCP/IP FTP protocol that has no directory or password capability.

Throughput - The amount of data moved successfully from one node to another in a given time period.

TKIP (Temporal Key Integrity Protocol) - a wireless encryption protocol that provides dynamic encryption keys for each packet transmitted.

Topology - The physical layout of a network.

TX Rate - Transmission Rate.

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

Upload - To transmit a file over a network.

URL (Uniform Resource Locator) - The address of a file located on the Internet.

VPN (Virtual Private Network) - A security measure to protect data as it leaves one network and goes to another over the Internet.

WAN (Wide Area Network)- The Internet.

WEP (Wired Equivalent Privacy) - A method of encrypting network data transmitted on a wireless network for greater security.

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

WPA (Wi-Fi Protected Access) - a wireless security protocol using TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

Appendix F: Specifications

Model	WMP300N
Standards	IEEE 802.11b, IEEE 802.11g, draft IEEE 802.11n
Channels	802.11b/802.11g/Wireless-N (20MHz) 11 Channels (USA, Canada) 13 Channels (Europe)
LEDs	ACT
Protocols	802.11b: CCK, QPSK, BPSK 802.11g: OFDM Wireless-N: BPSK, QPSK, 16-QAM, 64-QAM
Transmitted Power	802.11g: 12±1dBm (Typical) Wireless-N: 10±1dBm (Typical)
Receive Sensitivity	54Mbps @ -70dBm (Typical) Wireless-N @ -70dBm (Typical)
Security Features	WEP Encryption Security
Dimensions	5.24" x 0.87" x 4.76" (133 mm x 22 mm x 121 mm)
Unit Weight	2.19 oz. (0.062 kg)
Power	3.3V
Operating Temp.	0°C to 50°C (32°F to 122°F)

Wireless-N PCI Adapter

Storage Temp.	-25°C to 70°C (-13°F to 158°F)
Operating Humidity	10% to 80% Non-Condensing
Storage Humidity	5% to 90% Non-Condensing

Appendix G: Warranty Information

LIMITED WARRANTY

Linksys warrants to You that, for a period of three years (the “Warranty Period”), your Linksys Product will be substantially free of defects in materials and workmanship under normal use. Your exclusive remedy and Linksys' entire liability under this warranty will be for Linksys at its option to repair or replace the Product or refund Your purchase price less any rebates. This limited warranty extends only to the original purchaser.

If the Product proves defective during the Warranty Period call Linksys Technical Support in order to obtain a Return Authorization Number, if applicable. BE SURE TO HAVE YOUR PROOF OF PURCHASE ON HAND WHEN CALLING. If You are requested to return the Product, mark the Return Authorization Number clearly on the outside of the package and include a copy of your original proof of purchase. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE. You are responsible for shipping defective Products to Linksys. Linksys pays for UPS Ground shipping from Linksys back to You only. Customers located outside of the United States of America and Canada are responsible for all shipping and handling charges.

ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE WARRANTY PERIOD. ALL OTHER EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF NON-INFRINGEMENT, ARE DISCLAIMED. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to You. This warranty gives You specific legal rights, and You may also have other rights which vary by jurisdiction.

This warranty does not apply if the Product (a) has been altered, except by Linksys, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Linksys, or (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident. In addition, due to the continual development of new techniques for intruding upon and attacking networks, Linksys does not warrant that the Product will be free of vulnerability to intrusion or attack.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL LINKSYS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF THE THEORY OF LIABILITY (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE PRODUCT (INCLUDING ANY SOFTWARE), EVEN IF LINKSYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL LINKSYS' LIABILITY EXCEED THE AMOUNT PAID BY YOU FOR THE PRODUCT. The foregoing limitations will apply even if any warranty or remedy provided under this Agreement fails of its essential purpose. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to You.

Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623.

Appendix H: 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:

- (1) Reorient or relocate the receiving antenna.
- (2) Increase the separation between the equipment or devices.
- (3) Connect the equipment to an outlet other than the receiver's.
- (4) 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.
- IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.
This equipment has been SAR-evaluated for use in notebooks with side slot configuration.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
End users must follow the specific operating instructions for satisfying RF exposure compliance.
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.

IC STATEMENT

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.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for uncontrolled environments.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Declaration d'Industrie Canada

Le fonctionnement est soumis aux conditions suivantes:

- (1) Ce peripherique ne doit pas causer d'interferences;
- (2) Ce peripherique doit accepter toutes les interferences recues, y compris celles qui risquent d'entrainer un fonctionnement indesirable.

User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE)

This document contains important information for users with regards to the proper disposal and recycling of Linksys products. Consumers are required to comply with this notice for all electronic products bearing the following symbol:



English

Environmental Information for Customers in the European Union

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Ceština/Czech

Informace o ochraně životního prostředí pro zákazníky v zemích Evropské unie

Evropská směrnice 2002/96/ES zakazuje, aby zařízení označené tímto symbolem na produktu anebo na obalu bylo likvidováno s netříděným komunálním odpadem. Tento symbol udává, že daný produkt musí být likvidován odděleně od běžného komunálního odpadu. Odpovídáte za likvidaci tohoto produktu a dalších elektrických a elektronických zařízení prostřednictvím určených sběrných míst stanovených vládou nebo místními úřady. Správná likvidace a recyklace pomáhá předcházet potenciálním negativním dopadům na životní prostředí a lidské zdraví. Podrobnější informace o likvidaci starého vybavení si laskavě vyžádejte od místních úřadů, podniku zabývajícího se likvidací komunálních odpadů nebo obchodu, kde jste produkt zakoupili.

Dansk/Danish**Miljøinformation for kunder i EU**

EU-direktiv 2002/96/EF kræver, at udstyr der bærer dette symbol på produktet og/eller emballagen ikke må bortskaffes som usorteret kommunalt affald. Symbolet betyder, at dette produkt skal bortskaffes adskilt fra det almindelige husholdningsaffald. Det er dit ansvar at bortskaffe dette og andet elektrisk og elektronisk udstyr via bestemte indsamlingssteder udpeget af staten eller de lokale myndigheder. Korrekt bortskaffelse og genvinding vil hjælpe med til at undgå mulige skader for miljøet og menneskers sundhed. Kontakt venligst de lokale myndigheder, renovationstjenesten eller den butik, hvor du har købt produktet, angående mere detaljeret information om bortskaffelse af dit gamle udstyr.

Deutsch/German**Umweltinformation für Kunden innerhalb der Europäischen Union**

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltsmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Eesti/Estonian**Keskkonnaalane informatsioon Euroopa Liidus asuvatele klientidele**

Euroopa Liidu direktiivi 2002/96/EÜ nõuete kohaselt on seadmeid, millel on tootet või pakendil käesolev sümbol, keelatud kõrvaldada koos sorteerimata olmejäätmetega. See sümbol näitab, et toode tuleks kõrvaldada eraldi tavalistest olmejäätmevoogudest. Olete kohustatud kõrvaldama käesoleva ja ka muud elektri- ja elektroonikaseadmed riigi või kohalike ametiasutuste poolt ette nähtud kogumispunktide kaudu. Seadmete korrektne kõrvaldamine ja ringlussevõtt aitab vältida võimalikke negatiivseid tagajärgi keskkonnale ning inimeste tervisele. Vanade seadmete kõrvaldamise kohta täpsema informatsiooni saamiseks võtke palun ühendust kohalike ametiasutustega, jäätmekäitlusfirmaga või kauplusega, kust te toote ostsite.

Español/Spanish**Información medioambiental para clientes de la Unión Europea**

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

Ελληνικά/Greek**Στοιχεία περιβαλλοντικής προστασίας για πελάτες εντός της Ευρωπαϊκής Ένωσης**

Η Κοινοτική Οδηγία 2002/96/EC απαιτεί ότι ο εξοπλισμός, ο οποίος φέρει αυτό το σύμβολο στο προϊόν και/ή στη συσκευασία του δεν πρέπει να απορρίπτεται μαζί με τα μικτά κοινотικά απορρίμματα. Το σύμβολο υποδεικνύει ότι αυτό το προϊόν θα πρέπει να απορρίπτεται ξεχωριστά από τα συνήθη οικιακά απορρίμματα. Είστε υπεύθυνος για την απόρριψη του παρόντος και άλλου ηλεκτρικού και ηλεκτρονικού εξοπλισμού μέσω των καθορισμένων εγκαταστάσεων συγκέντρωσης απορριμμάτων οι οποίες παρέχονται από το κράτος ή τις αρμόδιες τοπικές αρχές. Η σωστή απόρριψη και ανακύκλωση συμβάλλει στην πρόληψη πιθανών αρνητικών συνεπειών για το περιβάλλον και την υγεία. Για περισσότερες πληροφορίες σχετικά με την απόρριψη του παλιού σας εξοπλισμού, παρακαλώ επικοινωνήστε με τις τοπικές αρχές, τις υπηρεσίες απόρριψης ή το κατάστημα από το οποίο αγοράσατε το προϊόν.

Français/French**Informations environnementales pour les clients de l'Union européenne**

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets des ménages. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano/Italian**Informazioni relative all'ambiente per i clienti residenti nell'Unione Europea**

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

Latviešu valoda/Latvian**Ekoloģiska informācija klientiem Eiropas Savienības jurisdikcijā**

Direktīvā 2002/96/EK ir prasība, ka aprīkojumu, kam pievienota zīme uz paša izstrādājuma vai uz tā iesaiņojuma, nedrīkst izmest nešķīrotā veidā kopā ar komunālajiem atkritumiem (tiem, ko rada vietēji iedzīvotāji un uzņēmumi). Šī zīme nozīmē to, ka šī ierīce ir jāizmet atkritumos tā, lai tā nenonāktu kopā ar parastiem mājāsaimniecības atkritumiem. Jūsu pienākums ir šo un citas elektriskās un elektroniskās ierīces izmest atkritumos, izmantojot īpašus atkritumu savākšanas veidus un līdzekļus, ko nodrošina valsts un pašvaldību iestādes. Ja izmestā atkritumos un pārstrāde tiek veikta pareizi, tad mazinās iespējamais kaitējums dabai un cilvēku veselībai. Sīkākas ziņas par novecojuša aprīkojuma izmešanu atkritumos jūs varat saņemt vietējā pašvaldībā, atkritumu savākšanas dienestā, kā arī veikalā, kur iegādājāties šo izstrādājumu.

Lietuvškai/Lithuanian**Aplinkosaugos informacija, skirta Europos Sąjungos vartotojams**

Europos direktyva 2002/96/EC numato, kad įrangos, kuri ir (arba) kurios pakuotė yra pažymėta šiuo simboliu, negalima šalinti kartu su nerūšiuotomis komunalinėmis atliekomis. Šis simbolis rodo, kad gaminį reikia šalinti atskirai nuo bendro buitinių atliekų srauto. Jūs privalote užtikrinti, kad ši ir kita elektros ar elektroninė įranga būtų šalinama per tam tikras nacionalinės ar vietinės valdžios nustatytas atliekų rinkimo sistemas. Tinkamai šalinant ir perdurbant atliekas, bus išvengta galimos žalos aplinkai ir žmonių sveikatai. Daugiau informacijos apie jūsų senos įrangos šalinimą gali pateikti vietinės valdžios institucijos, atliekų šalinimo tarnybos arba parduotuvės, kuriose įsigijote tą gaminį.

Malti/Maltese**Informazzjoni Ambjentali għal Kliġenti fl-Unjoni Ewropea**

Id-Direttiva Ewropea 2002/96/KE titlob li t-tagħmir li jkun fih is-simbolu fuq il-prodott u/jew fuq l-ippakkjar ma jistax jintrema ma' skart municipli li ma għex isseparat. Is-simbolu jindika li dan il-prodott għandu jintrema separatament minn ma' l-iskart domestiku regolari. Hija responsabbiltà tiegħek li tarmi dan it-tagħmir u kull tagħmir iehor ta' l-elettriku u elettroniku permezz ta' faċilitajiet ta' għbir appuntati apposta mill-gvern jew mill-awtoritajiet lokali. Ir-rimi b'mod korrett u r-riciklaġġ jghin jipprevjeni konsegwenzi negattivi potenzjali għall-ambjent u għas-saħħa tal-bniedem. Għal aktar informazzjoni dettaljata dwar ir-rimi tat-tagħmir antik tiegħek, jekk jogħġbok ikkuntattja lill-awtoritajiet lokali tiegħek, is-servizzi għar-rimi ta' l-iskart, jew il-hanut minn fejn xtrajt il-prodott.

Magyar/Hungarian**Környezetvédelmi információ az európai uniós vásárlók számára**

A 2002/96/EC számú európai uniós irányelv megkívánja, hogy azokat a termékeket, amelyeken, és/vagy amelyek csomagolásán az alábbi címke megjelenik, tilos a többi szelektálatlan lakossági hulladékkal együtt kidobni. A címke azt jelöli, hogy az adott termék kidobásakor a szokványos háztartási hulladékelszállítási rendszerektől elkülönített eljárást kell alkalmazni. Az Ön felelőssége, hogy ezt, és más elektromos és elektronikus berendezéseit a kormányzati vagy a helyi hatóságok által kijelölt gyűjtőrendszeren keresztül számolja fel. A megfelelő hulladékfeldolgozás segít a környezetre és az emberi egészségre potenciálisan ártalmas negatív hatások megelőzésében. Ha elavult berendezéseinek felszámolásához további részletes információra van szüksége, kérjük, lépjen kapcsolatba a helyi hatóságokkal, a hulladékfeldolgozási szolgálattal, vagy azzal üzlettel, ahol a terméket vásárolta.

Nederlands/Dutch**Milieu-informatie voor klanten in de Europese Unie**

De Europese Richtlijn 2002/96/EC schrijft voor dat apparatuur die is voorzien van dit symbool op het product of de verpakking, niet mag worden ingezameld met niet-gescheiden huishoudelijk afval. Dit symbool geeft aan dat het product apart moet worden ingezameld. U bent zelf verantwoordelijk voor de vernietiging van deze en andere elektrische en elektronische apparatuur via de daarvoor door de landelijke of plaatselijke overheid aangewezen inzamelingskanalen. De juiste vernietiging en recycling van deze apparatuur voorkomt mogelijke negatieve gevolgen voor het milieu en de gezondheid. Voor meer informatie over het vernietigen van uw oude apparatuur neemt u contact op met de plaatselijke autoriteiten of afvalverwerkingsdienst, of met de winkel waar u het product hebt aangeschaft.

Norsk/Norwegian**Miljøinformasjon for kunder i EU**

EU-direktiv 2002/96/EF krever at utstyr med følgende symbol avbildet på produktet og/eller pakningen, ikke må kastes sammen med usortert avfall. Symbolet indikerer at dette produktet skal håndteres atskilt fra ordinær avfallsinnsamling for husholdningsavfall. Det er ditt ansvar å kvitte deg med dette produktet og annet elektrisk og elektronisk avfall via egne innsamlingsordninger slik myndighetene eller kommunene bestemmer. Korrekt avfallshåndtering og gjenvinning vil være med på å forhindre mulige negative konsekvenser for miljø og helse. For nærmere informasjon om håndtering av det kasserte utstyret ditt, kan du ta kontakt med kommunen, en innsamlingsstasjon for avfall eller butikken der du kjøpte produktet.

Polski/Polish**Informacja dla klientów w Unii Europejskiej o przepisach dotyczących ochrony środowiska**

Dyrektywa Europejska 2002/96/EC wymaga, aby sprzęt oznaczony symbolem znajdującym się na produkcie i/lub jego opakowaniu nie był wyrzucany razem z innymi niesortowanymi odpadami komunalnymi. Symbol ten wskazuje, że produkt nie powinien być usuwany razem ze zwykłymi odpadami z gospodarstw domowych. Na Państwie spoczywa obowiązek wyrzucania tego i innych urządzeń elektrycznych oraz elektronicznych w punktach odbioru wyznaczonych przez władze krajowe lub lokalne. Pozbywanie się sprzętu we właściwy sposób i jego recykling pomogą zapobiec potencjalnie negatywnym konsekwencjom dla środowiska i zdrowia ludzkiego. W celu uzyskania szczegółowych informacji o usuwaniu starego sprzętu, prosimy zwrócić się do lokalnych władz, służb oczyszczania miasta lub sklepu, w którym produkt został nabyty.

Português/Portuguese**Informação ambiental para clientes da União Europeia**

A Directiva Europeia 2002/96/CE exige que o equipamento que exibe este símbolo no produto e/ou na sua embalagem não seja eliminado junto com os resíduos municipais não separados. O símbolo indica que este produto deve ser eliminado separadamente dos resíduos domésticos regulares. É da sua responsabilidade eliminar este e qualquer outro equipamento eléctrico e electrónico através dos instalações de recolha designadas pelas autoridades governamentais ou locais. A eliminação e reciclagem correctas ajudarão a prevenir as consequências negativas para o ambiente e para a saúde humana. Para obter informações mais detalhadas sobre a forma de eliminar o seu equipamento antigo, contacte as autoridades locais, os serviços de eliminação de resíduos ou o estabelecimento comercial onde adquiriu o produto.

Slovenčina/Slovak**Informácie o ochrane životného prostredia pre zákazníkov v Európskej únii**

Podľa európskej smernice 2002/96/ES zariadenie s týmto symbolom na produkte a/alebo jeho balení nesmie byť likvidované spolu s netriedeným komunálnym odpadom. Symbol znamená, že produkt by sa mal likvidovať oddelene od bežného odpadu z domácností. Je vaša povinnosťou likvidovať toto i ostatné elektrické a elektronické zariadenia prostredníctvom špecializovaných zberných zariadení určených vládou alebo miestnymi orgánmi. Správna likvidácia a recyklácia pomôže zabrániť prípadným negatívnym dopadom na životné prostredie a zdravie ľudí. Ak máte záujem o podrobnejšie informácie o likvidácii starého zariadenia, obráťte sa, prosím, na miestne orgány, organizácie zaoberajúce sa likvidáciou odpadov alebo obchod, v ktorom ste si produkt zakúpili.

Slovenčina/Slovene**Okoljske informacije za stranke v Evropski uniji**

Evropska direktiva 2002/96/EC prepoveduje odlaganje opreme, označene s tem simbolom – na izdelku in/ali na embalaži – med običajne, nerazvrščene odpadke. Ta simbol opozarja, da je treba izdelek odvreči ločeno od preostalih gospodinjstskih odpadkov. Vaša odgovornost je, da to in preostalo električno in elektronsko opremo odnesete na posebna zbirališča, ki jih določijo državne ustanove ali lokalna uprava. S pravilnim odlaganjem in recikliranjem boste preprečili morebitne škodljive vplive na okolje in zdravje ljudi. Če želite izvedeti več o odlaganju stare opreme, se obrnite na lokalno upravo, odpad ali trgovino, kjer ste izdelek kupili.

Suomi/Finnish

Ympäristöä koskevia tietoja EU-alueen asiakkaille

EU-direktiivi 2002/96/EY edellyttää, että jos laitteistossa on tämä symboli itse tuotteessa ja/tai sen pakkauksessa, laitteistoa ei saa hävittää lajittelemattoman yhdyskuntajätteen mukana. Symboli merkitsee sitä, että tämä tuote on hävitettävä erillään tavallisesta kotitalousjätteestä. Sinun vastuullasi on hävittää tämä elektroniikkatuote ja muut vastaavat elektroniikkatuotteet viemällä tuote tai tuotteet viranomaisten määräämään keräyspisteeseen. Laitteiston oikea hävittäminen estää mahdolliset kielteiset vaikutukset ympäristöön ja ihmisten terveyteen. Lisätietoja vanhan laitteiston oikeasta hävitystavasta saa paikallisilta viranomaisilta, jätteenhävityspalvelusta tai siitä myymälästä, josta ostit tuotteen.

Svenska/Swedish

Miljöinformation för kunder i Europeiska unionen

Det europeiska direktivet 2002/96/EC kräver att utrustning med denna symbol på produkten och/eller förpackningen inte får kastas med osorterat kommunalt avfall. Symbolen visar att denna produkt bör kastas efter att den avskiljts från vanligt hushållsavfall. Det faller på ditt ansvar att kasta denna och annan elektrisk och elektronisk utrustning på fastställda insamlingsplatser utsedda av regeringen eller lokala myndigheter. Korrekt kassering och återvinning skyddar mot eventuella negativa konsekvenser för miljön och personhälsa. För mer detaljerad information om kassering av din gamla utrustning kontaktar du dina lokala myndigheter, avfallshantering eller butiken där du köpte produkten.

For more information, visit www.linksys.com.

Appendix I: Contact Information

Need to contact Linksys?

Visit us online for information on the latest products and updates to your existing products at:

<http://www.linksys.com> or
[ftp.linksys.com](ftp://ftp.linksys.com)

Can't find information about a product you want to buy on the web? Do you want to know more about networking with Linksys products? Give our advice line a call at:
Or fax your request in to:

800-546-5797 (LINKSYS)
949-823-3002

If you experience problems with any Linksys product, you can call us at:
Don't wish to call? You can e-mail us at:

800-859-2379
support@linksys.com

If any Linksys product proves defective during its warranty period, you can call the Linksys Return Merchandise Authorization department for obtaining a Return Authorization Number at:
(Details on Warranty and RMA issues can be found in the Warranty Information section in this Guide.)

949-823-3000