LINKSYS®

A Division of Cisco Systems, Inc.

2.4 GHz

Wireless-N Notebook Adapter

User Guide

WIRELESS

Cisco Systems

Model No. WPC300N

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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 Notebook 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 Notebook Adapter.

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

This question mark provides you with a reminder about something you might need to do while using the Notebook 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 Notebook Adapter. Setting up your network and your Wireless-N Notebook 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 set up and connect the Adapter using the Setup Wizard. These instructions should be all you need to get the most out of 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.*

bit: *a binary digit.*

encryption: *encoding data transmitted in a network*

What's in this User Guide?

This user guide covers the steps for setting up and using the Wireless-N Notebook 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 Notebook Adapter
  This chapter describes the physical features of the Adapter.
- Chapter 4: Setting up and Connecting the Wireless-N Notebook Adapter
  This chapter instructs you on how to install and configure the Adapter.

- 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.

***topology**: the physical layout of a network.*

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

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

***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.*

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 at the PC Cards for your laptop computers, PCI Card for your desktop PC, and USB Adapters for when you want to enjoy USB connectivity. Wireless products will also communicate with the wireless PrintServer.

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

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

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

The LED Indicators

The Network Adapter's LEDs display information about network activity.

Figure 3-1: Front Panel

Power	*Green*. The Power LED lights up when the Adapter is powered on.
Link/Act	*Green*. The Link/Act LED lights up when the Adapter has an active connection.

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

Starting the Setup

The Wireless-N Notebook 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).

Figure 4-1: Setup Wizard's Welcome Screen

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 Notebook 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 4-2: Setup Wizard's License Agreement

Connecting the Adapter

1. Locate an available CardBus slot on your notebook PC.
2. With the connector pin end facing the CardBus slot and the label facing up, slide the Adapter into the CardBus slot until it locks in place.
3. Windows will begin copying the driver files to your computer.
4. Click **Next**.

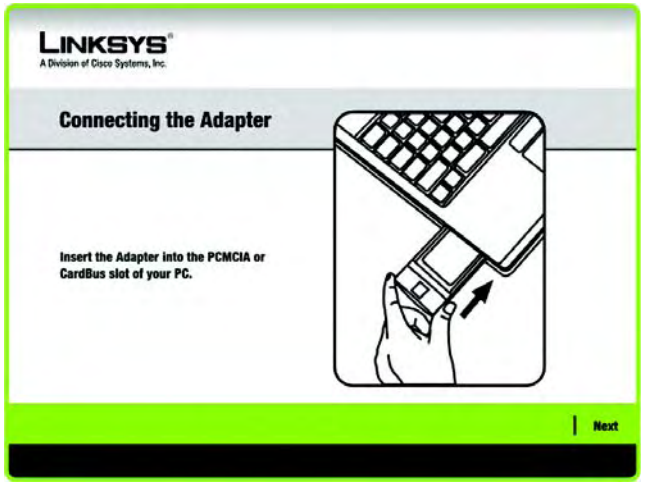

Figure 4-3: Connecting the Adapter

Setting up the Adapter

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

This screen provides two options for setting up the Adapter.

- Available Wireless Networks. (For most users.) Use this option if you already have a network set up. The networks available to this Adapter will be listed on this 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.
- Manual 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 **Exit** 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 utilizes wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

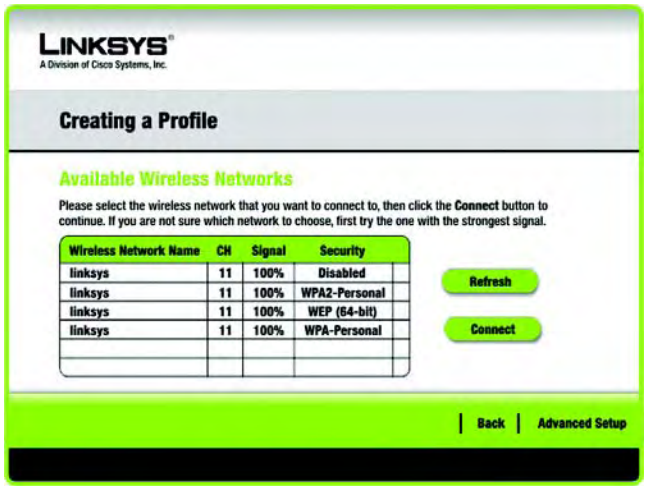

Figure 4-4: Available Wireless Networks

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 screen for your wireless security.

- WEP (Wired Equivalent Privacy)

  If you have WEP enabled, this screen will appear. Select 64-bit or 128-bit. Then enter a passphrase or WEP key.

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

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

  Then click **Connect** and proceed to 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.

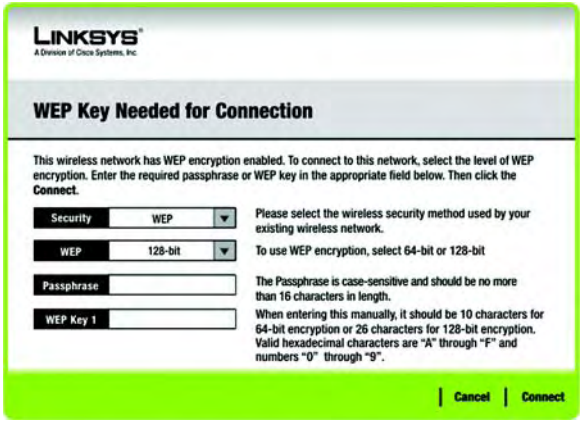

Figure 4-5: WEP Key Needed for Connection

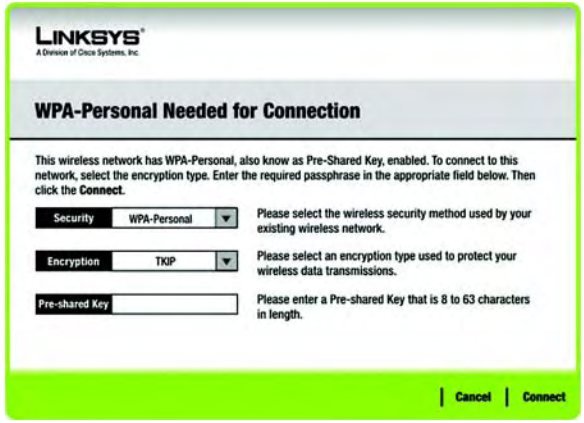

Figure 4-6: PSK Needed for Connection

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

encryption: *encoding data transmitted in a network.*

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.*

- 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.

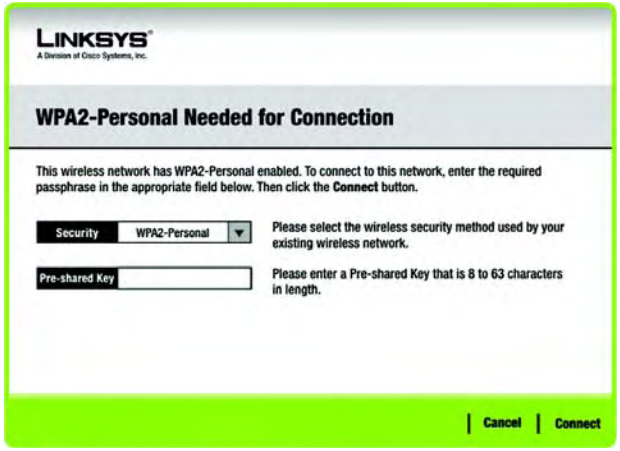

Figure 4-7: PSK2 Personal Needed for Connection

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 Notebook 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 Manual Setup.

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

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

   If your network does not have a DHCP server or router, click the radio button next to Specify network settings. Enter an IP Address, Subnet Mask, Default Gateway, and DNS addresses appropriate for your network. You must specify the IP Address and Subnet Mask on this screen. If you are unsure about the Default Gateway and DNS addresses, leave these fields empty.

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

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

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

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

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

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.

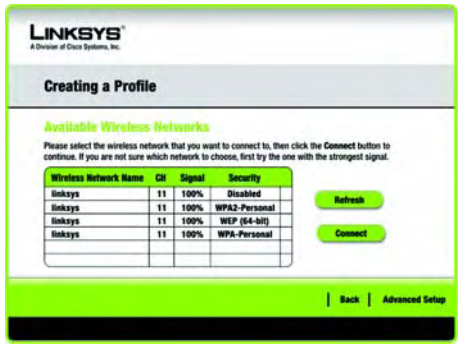

Figure 4-9: Available Wireless Network

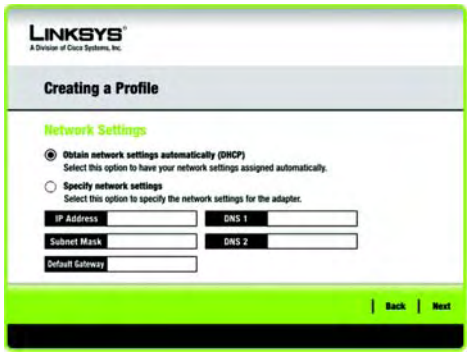

Figure 4-10: Network Settings

Figure 4-11: 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. Click the **Back** button to change any settings.

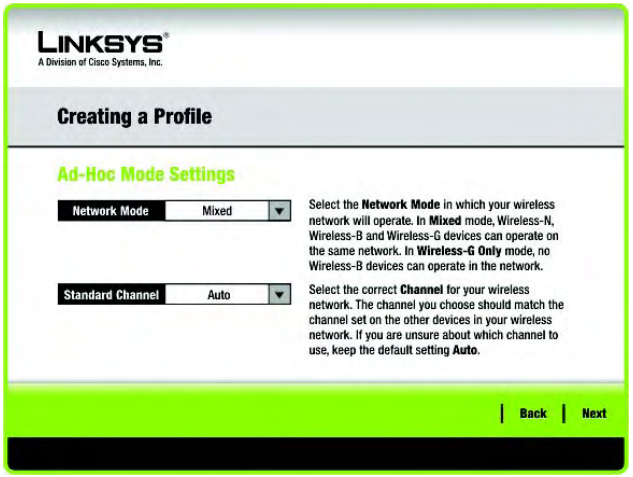

Figure 4-12: Ad-Hoc Mode Settings

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, and 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

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.)

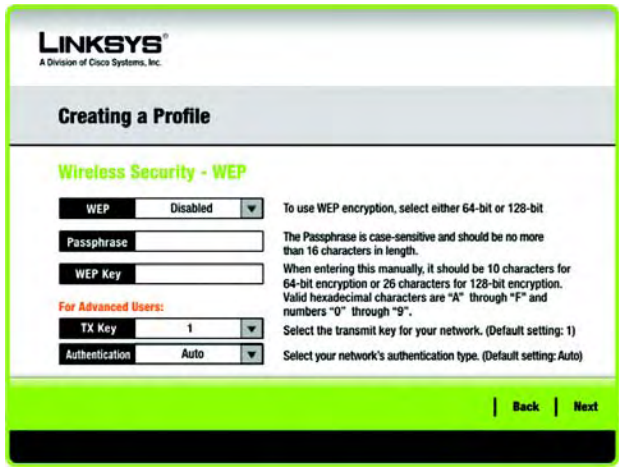

Figure 4-13: Wireless Security - WEP

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.

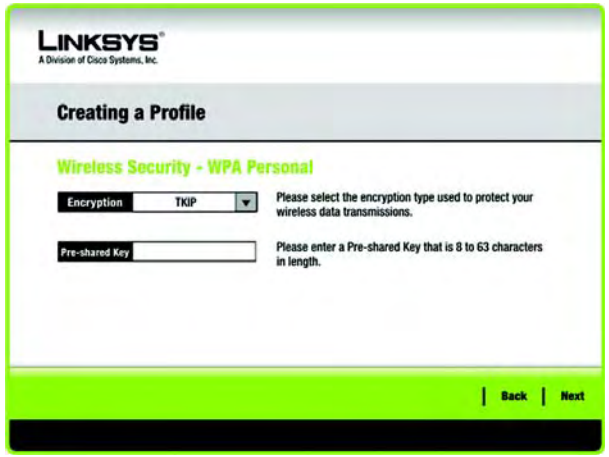

Figure 4-14: Wireless Security - PSK

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.

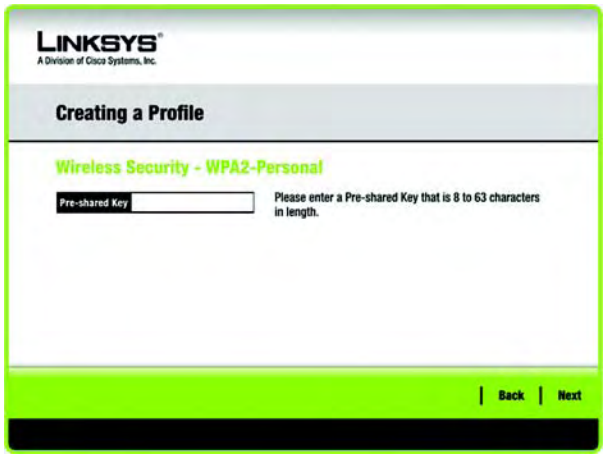

Figure 4-15: Wireless Security - PSK2

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.

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 Enterprise offers two authentication methods, EAP-TLS and PEAP, as well as two encryption methods, TKIP and AES, with dynamic encryption keys.

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

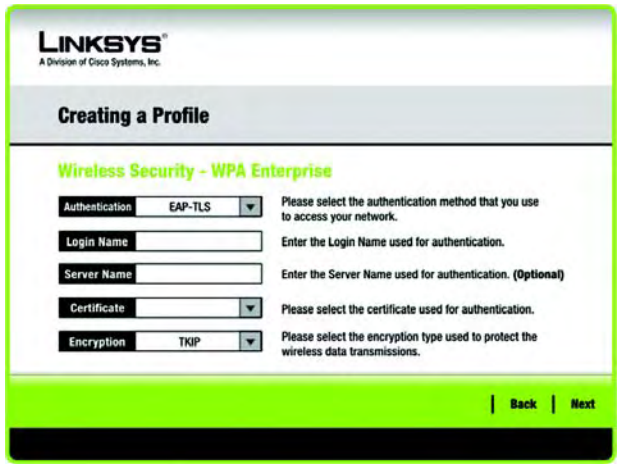

Figure 4-16: Wireless Security - PSK+RADIUS - EAP-TLS

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.

Figure 4-17: Wireless Security - PSK+RADIUS - PEAP

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.

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.

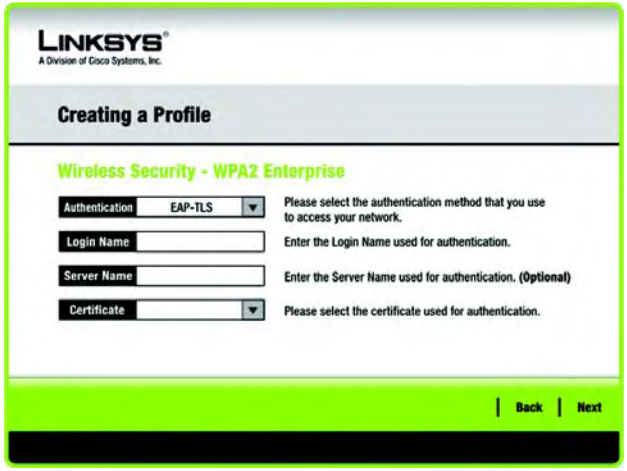

Figure 4-18: Wireless Security - PSK2+RADIUS - EAP-TLS

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.

Figure 4-19: 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.

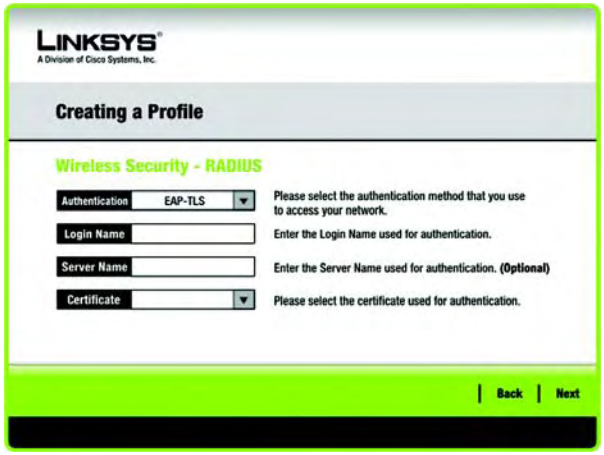

Figure 4-20: Wireless Security - RADIUS - EAP-TLS

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.

Figure 4-21: Wireless Security - RADIUS - PEAP

4. 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**.

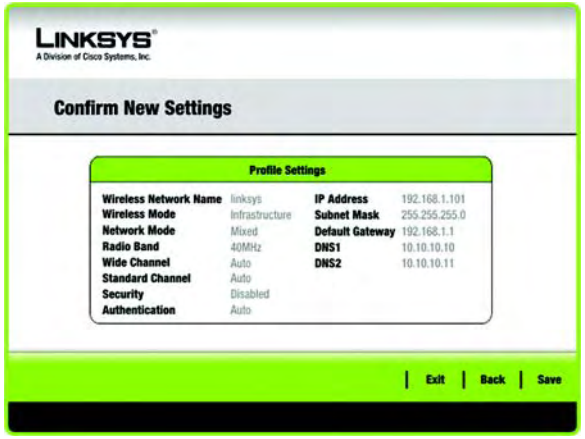

Figure 4-22: Confirm New Settings

5. 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** screen to return to the Profiles screen.

Figure 4-23: Congratulations 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 connected, 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 - Network Statistics

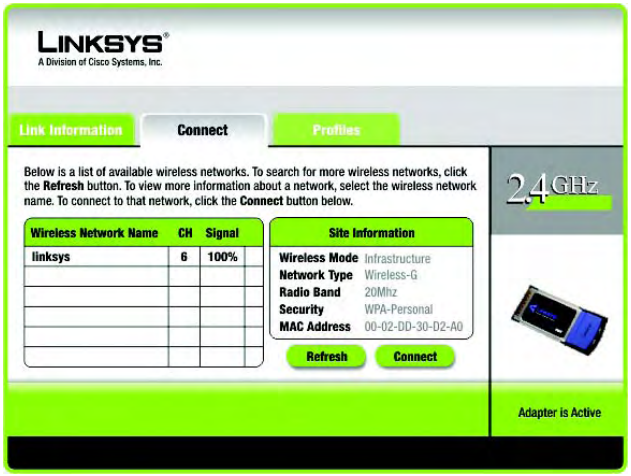

Figure 5-5: Connect

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

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

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

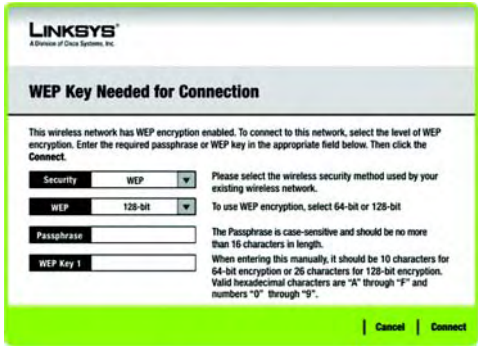

Figure 5-6: WEP Key Needed for Connection

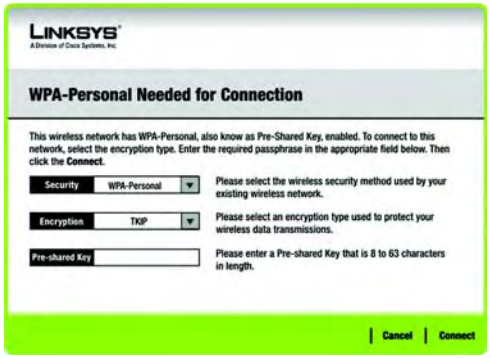

Figure 5-7: PSK Needed for Connection

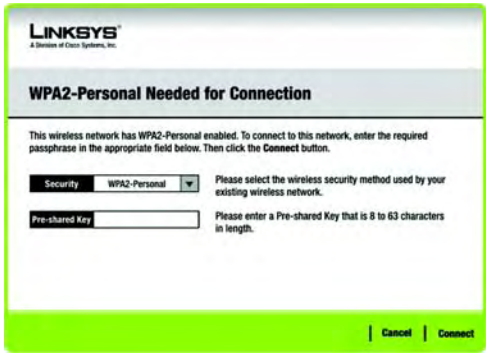

Figure 5-8: PSK2 Needed for Connection

- If the network has PSK2 wireless security 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 **Connect**. To cancel the connection, click **Cancel**.

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.

Profile 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.

Create a New Profile

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

This screen provides two options for setting up the Adapter.

- Available Wireless Networks. (For most users.) Use this option if you already have a network set up. The networks available to this Adapter will be listed on this 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 Networks 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 **Exit** to close the Setup Wizard, if you wish to set up the Adapter later.

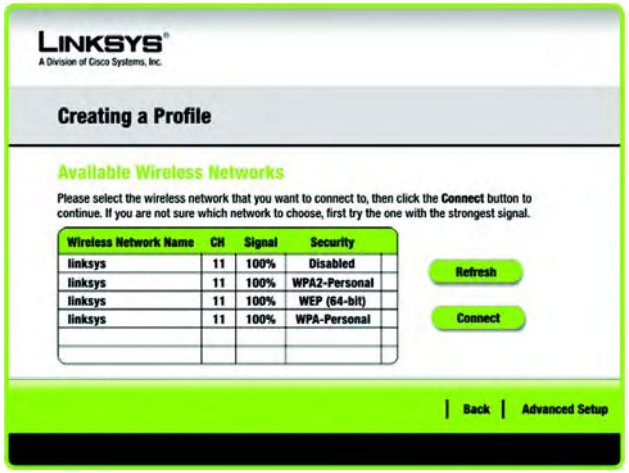

Figure 5-10: Creating a Profile

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 utilizes wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

1. If 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 screen for your wireless security.

   - WEP (Wired Equivalent Privacy)

     If you have WEP enabled, this screen will appear. Select 64-bit or 128-bit. Then enter a passphrase or WEP key.

     Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. The passphrase is case-sensitive and should not be longer than 16 alphanumeric characters. It must match

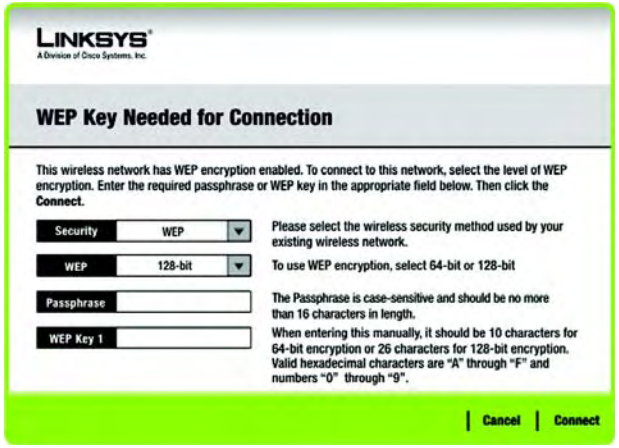

Figure 5-11: WEP Key Needed for Connection

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.

- 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.

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.

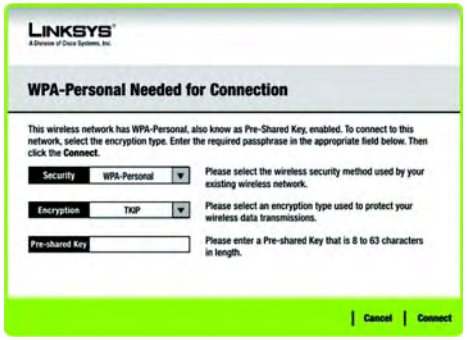

Figure 5-12: PSK Needed for Connection

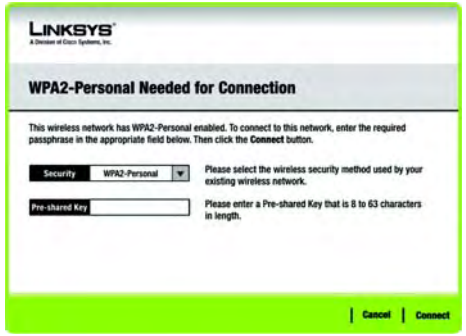

Figure 5-13: PSK2 Needed for Connection

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 Networks* screen to set up the adapter manually.

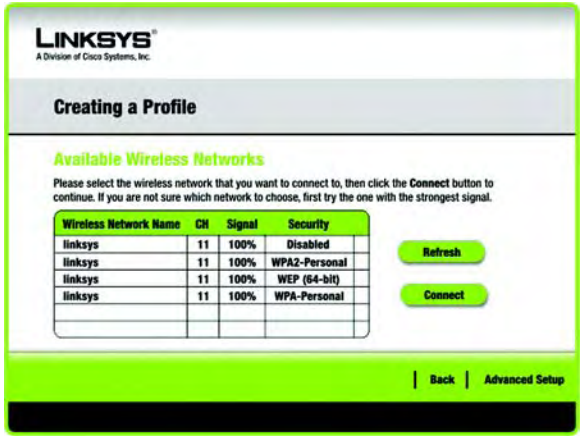

Figure 5-15: Available Wireless Networks

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

   If your network does not have a DHCP server or router, click the radio button next to Specify network settings. Enter an IP Address, Subnet Mask, Default Gateway, and DNS addresses appropriate for your network. You must specify the IP Address and Subnet Mask on this screen. If you are unsure about the Default Gateway and DNS addresses, leave these fields empty.

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

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

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

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

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

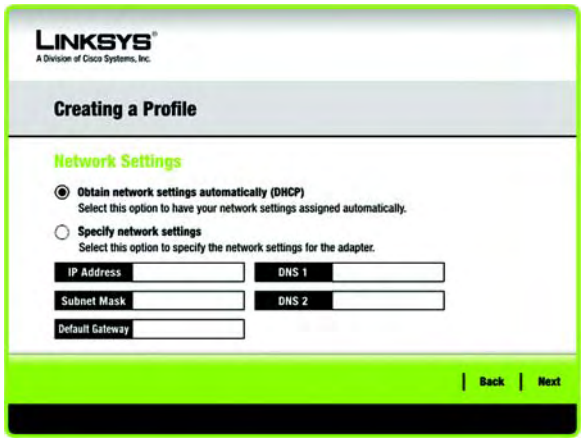

Figure 5-16: Network Settings

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.

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. Click the **Back** button to change any settings.

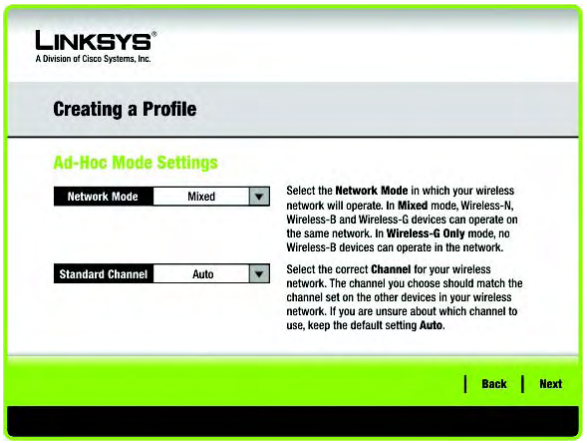

Figure 5-18: Ad-Hoc Mode Settings

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

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.

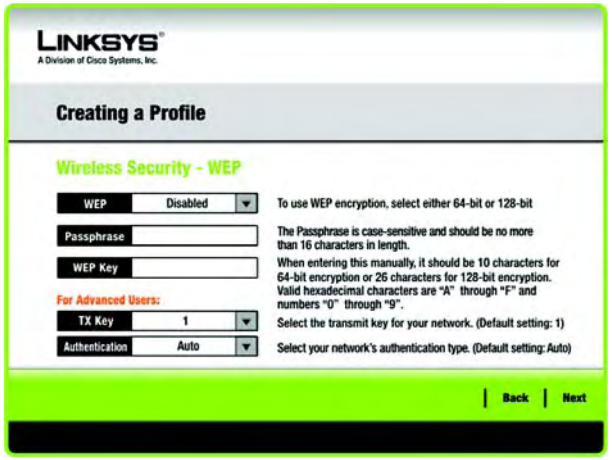

Figure 5-19: Wireless Security - WEP

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