WPA Personal

Select an encryption method, **TKIP** or **AES**, and then enter a passphrase.

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

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

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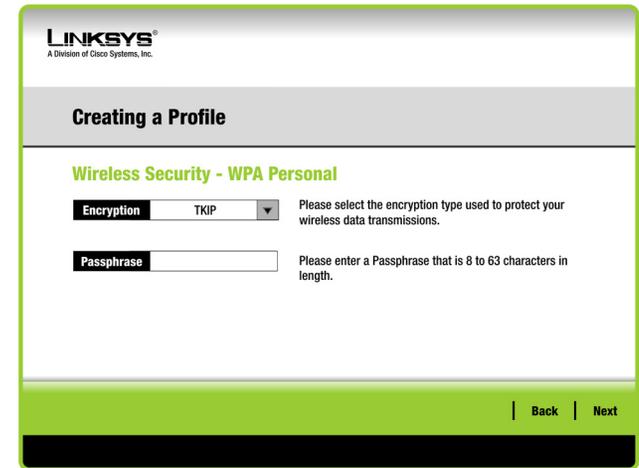

Figure 4-18: Wireless Security - WPA Personal Screen

WPA2 Personal

WPA2 Personal automatically uses AES, which is a stronger encryption method than TKIP. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

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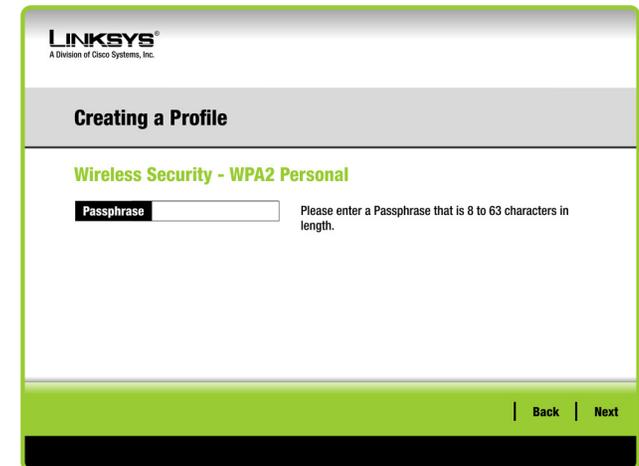

Figure 4-19: Wireless Security - WPA2 Personal Screen

WPA Enterprise

WPA Enterprise is used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) WPA Enterprise offers two encryption methods, TKIP and AES, with dynamic encryption keys. It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - 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**.

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

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - 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**.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

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

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

Figure 4-20: Wireless Security - WPA Enterprise Using EAP-TLS Screen

Figure 4-21: Wireless Security - WPA Enterprise Using PEAP Screen

RADIUS

RADIUS uses the security of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - 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**.

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

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

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

Figure 4-22: Wireless Security - RADIUS Screen

radius (remote authentication dial-in user service): a protocol that uses an authentication server to control network access.

5. The next screen displays all of the Adapter's settings. If these are correct, click **Save** to save these settings to your hard drive. If these settings are not correct, click **Back** to change your settings.
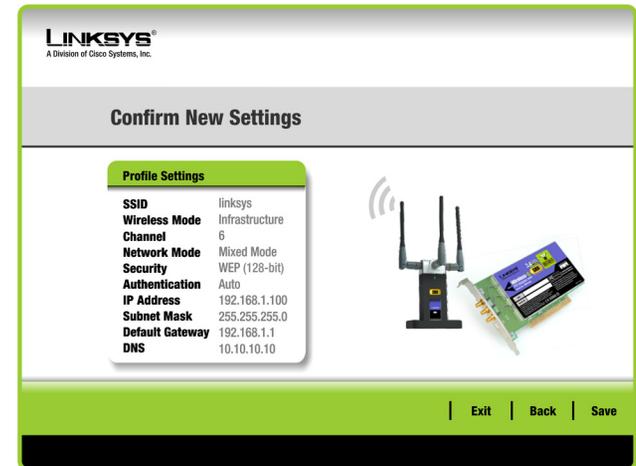
Figure 4-23: Confirm New Settings Screen

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

Congratulations! Setup is complete.

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

Figure 4-24: Congratulations Screen

Chapter 5: Using the Wireless Network Monitor

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

Accessing the Wireless Network Monitor

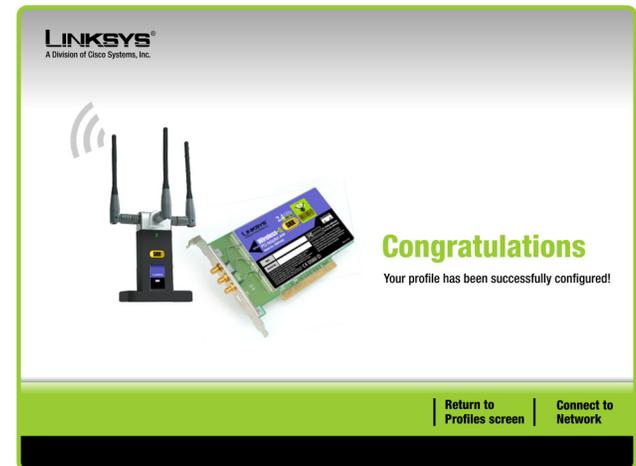After setting up and connecting the Adapter, the Wireless Network Monitor icon will appear in your PC's system tray. If the Wireless Network Monitor is enabled, then the icon will be green. If the Wireless Network Monitor is disabled or the Adapter is not connected, then the icon will be gray.

Link Information Screens

The opening screen of the Wireless Network Monitor is the *Link Information* screen. From this screen, you can find out how strong the current wireless signal is and how good the connection's quality is. You can also click the **More Information** button to view additional status and statistics about the current wireless connection. To search for available wireless networks, click the **Site Survey** tab. To perform configuration changes or create connection profiles, click the **Profiles** tab.

Link Information

The *Link Information* screen displays network mode, signal strength, and link quality information about the current connection. It also provides a button to click for additional status information.

Ad-Hoc Mode or **Infrastructure Mode** - The screen indicates whether the Adapter is currently working in Ad-Hoc or Infrastructure mode.

Signal Strength - The Signal Strength bar indicates signal strength.

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

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

NOTE: The Wireless Network Monitor should only be accessed AFTER installing the Adapter. For more information on setting up and connecting the Adapter, refer to "Chapter 4: Setting Up and Connecting the Wireless-G PCI Adapter."
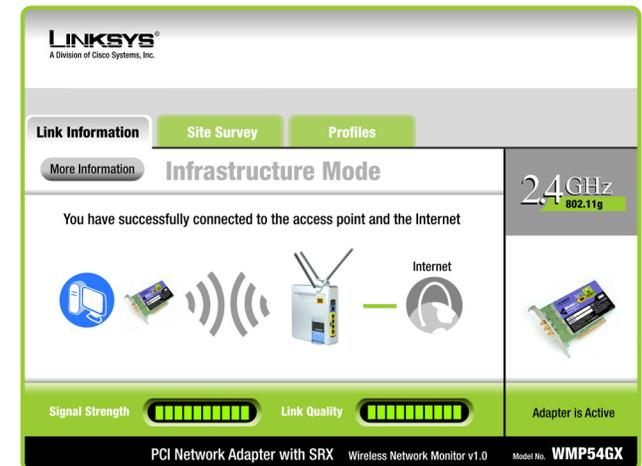

Figure 5-1: Wireless Network Monitor Icon

Figure 5-2: Link Information Screen

Wireless Network Status

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

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

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

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

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

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

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

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

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

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

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

DNS - This is the DNS address of the Adapter.

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

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

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

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

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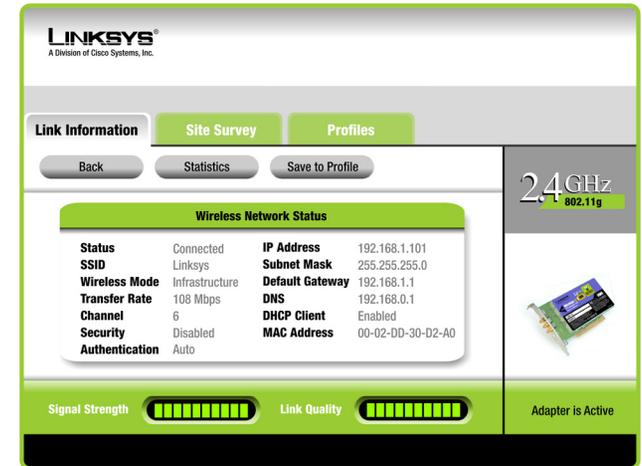

Figure 5-3: More Information - Wireless Network Status Screen

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 number of 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 number of 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 number of 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 number of bytes transmitted from 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.

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.

Refresh - Click the **Refresh** button to reset the statistics.

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.
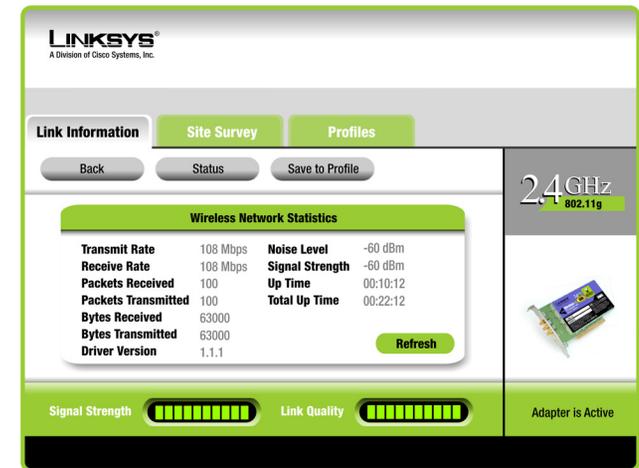

Figure 5-4: More Information - Wireless Network Statistics Screen

Site Survey

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

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

CH - This is the channel that the network uses.

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

Site Information

For each network selected, the following settings are listed:

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

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

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

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

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

Refresh - Click the **Refresh** button to perform a new search for wireless devices.

Connect - To connect to one of the networks on the list, select the wireless network, and click the **Connect** button. If the network has wireless security enabled, a screen requiring security information will appear.

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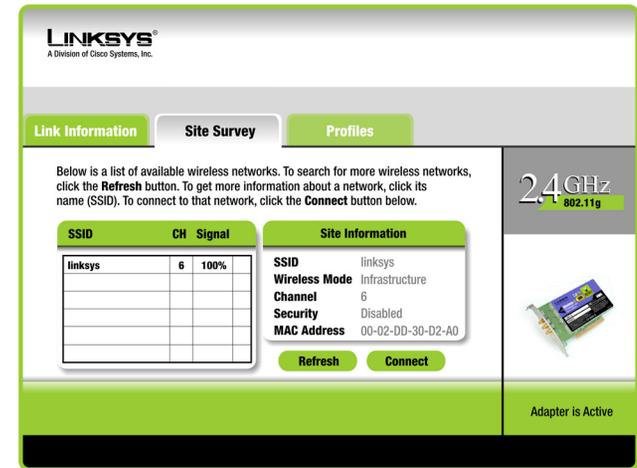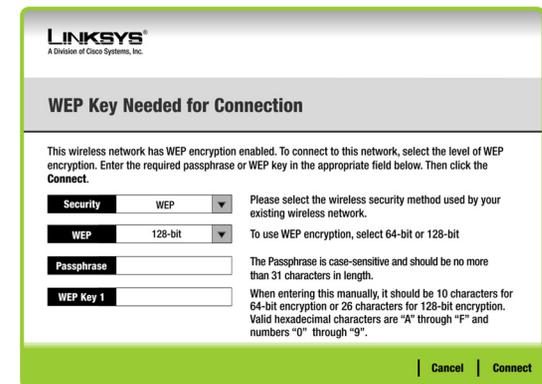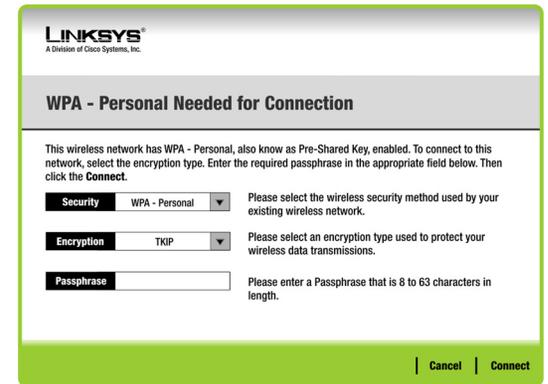

Figure 5-5: Site Survey Screen

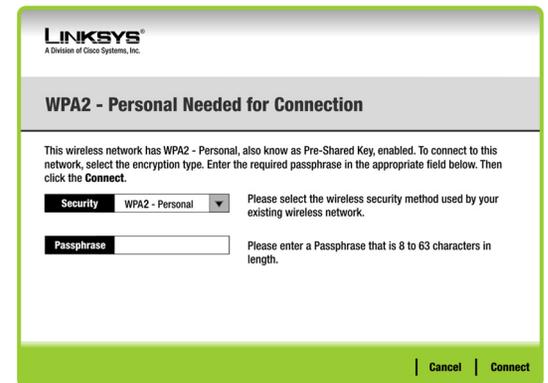**Figure 5-6: WEP Key Needed for Connection**

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

If the network has WPA2 Personal security enabled, then you will see the *WPA2-Personal Needed for Connection* screen. Enter the network's Passphrase or pre-shared key in the *Passphrase* field. To connect to the network, click **Connect**. To cancel the connection, click **Cancel**.

Figure 5-7: WPA-Personal Needed for Connection

Figure 5-8: WPA2-Personal Needed for Connection

Profiles

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

Profile - The name of the profile is displayed here.

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

Site Information

For each profile selected, the following are listed:

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

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

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

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

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

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

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

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

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

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

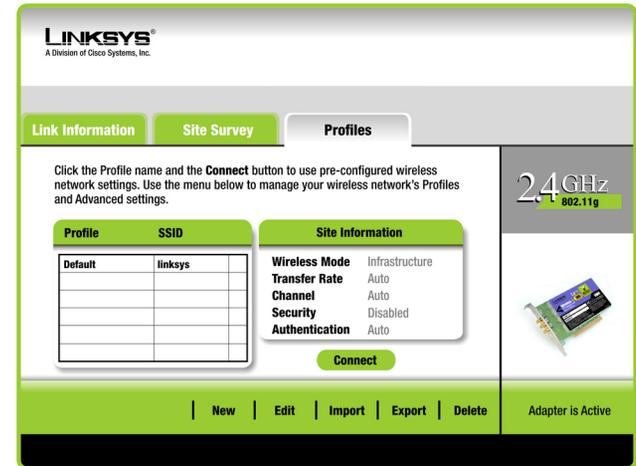**Delete** - Select the profile you want to delete, and then click **Delete**.

Figure 5-9: Profiles Screen

Figure 5-10: Import a Profile

Figure 5-11: Export a Profile

Creating a New Profile

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

The *Available Wireless Network* screen provides two options for setting up a profile.

- **Available Wireless Network.** Most users should use this option. 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.** To set up the Adapter manually, select **Manual Setup**.

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.
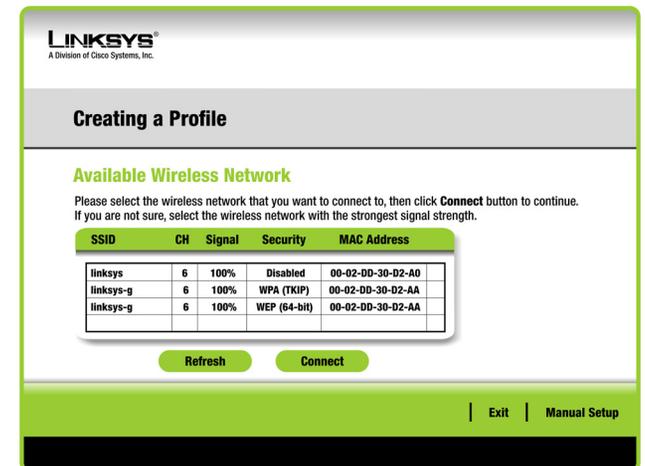
Figure 5-12: Create a New Profile

Figure 5-13: Available Wireless Network Screen

Setting Up the Adapter with an Available Network

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

Figure 5-14: Available Wireless Network Screen

1. If wireless security has been enabled on this network, you will see a wireless security screen. If your network uses WEP (Wired Equivalent Privacy) encryption, the *WEP Key Needed for Connection* screen will appear. If your network uses WPA Personal or WPA2 Personal security, a screen will appear for one of those encryption methods.

    WEP Key Needed for Connection

    Select the level of encryption you want to use, **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 31 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 1 - The WEP key you enter must match the WEP key of your wireless network. For 64-bit encryption, enter exactly 10 hexadecimal characters. For 128-bit encryption, enter exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

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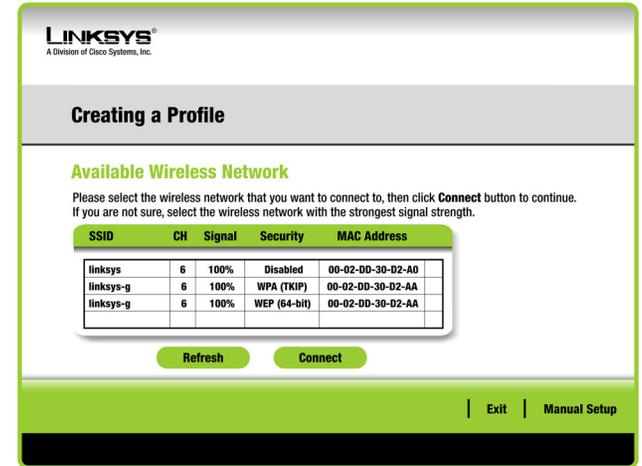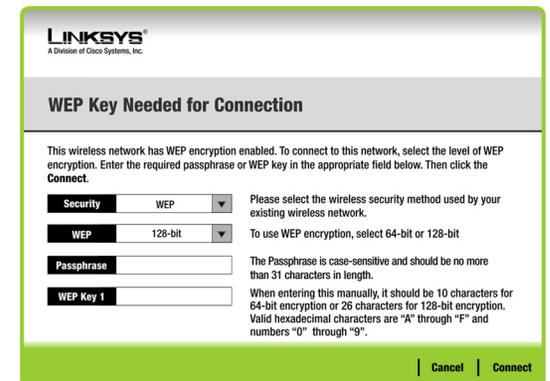

Figure 5-15: WEP Key Needed for Connection

WPA-Personal for Connection

WPA Personal offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select one of these methods. Then enter a passphrase.

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

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The longer and more complex your Passphrase is, the more secure your network will be.

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

Figure 5-16: WPA-Personal Needed for Connection

WPA2 - Personal Needed for Connection

AES is automatically used as the encryption method. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The longer and more complex your Passphrase is, the more secure your network will be.

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

Figure 5-17: WPA2-Personal Needed for Connection

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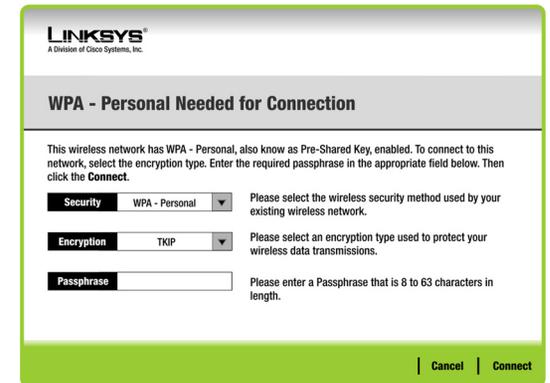
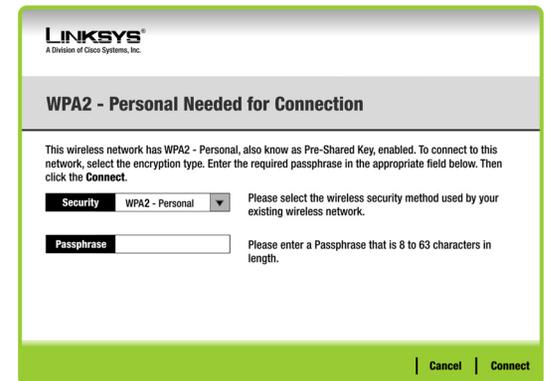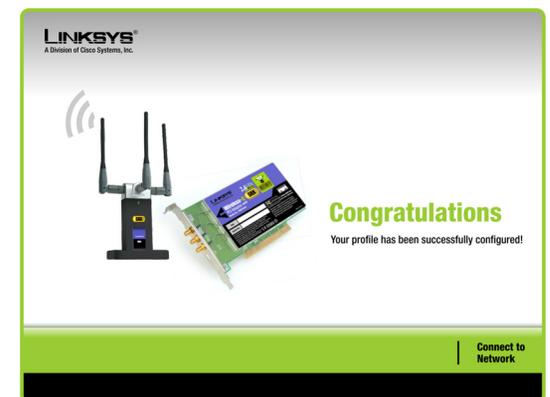**Congratulations! The profile is complete.**

Figure 5-18: Congratulations Screen

Setting Up the Adapter with Manual Setup

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

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

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

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

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

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

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

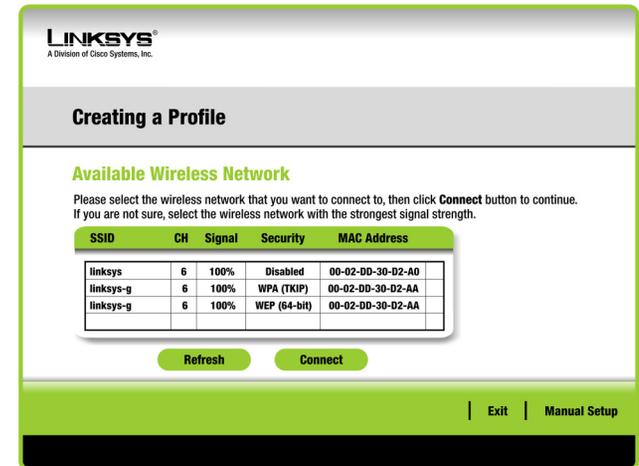   Click **Next** to continue, or click **Back** to return to the *Available Wireless Network* screen.

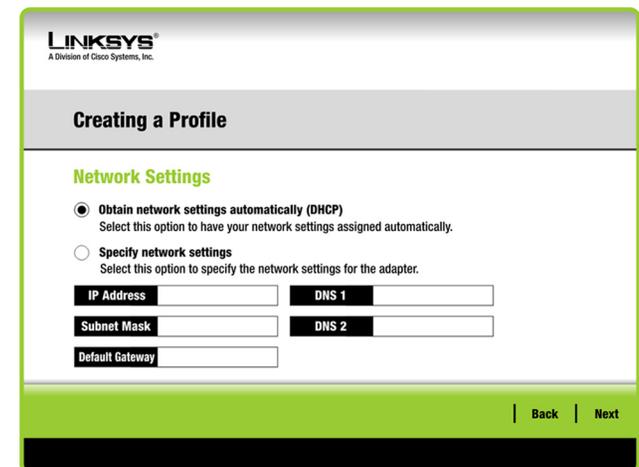**Figure 5-19: Available Wireless Network Screen**

Figure 5-20: Network Settings Screen

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

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

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

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

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

Figure 5-21: Wireless Mode Screen

3. If you chose **Infrastructure Mode**, go to Step 4 now. If you chose **Ad-Hoc Mode**, the *Ad-Hoc Mode Settings* screen will appear. Select your channel and network mode settings on this screen.

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.

Network Mode - Select the mode in which your wireless network will operate. Select **Mixed Mode** if you want both Wireless-B and Wireless-G devices operating on the network, though at a slower speed. Select **G-Only Mode** if you do not want any Wireless-B devices operating on the network.

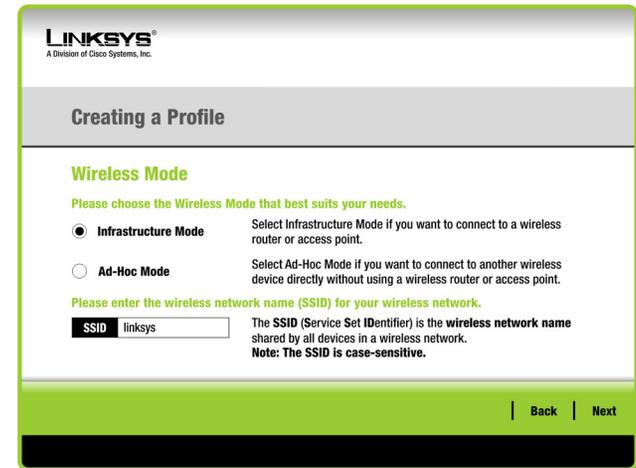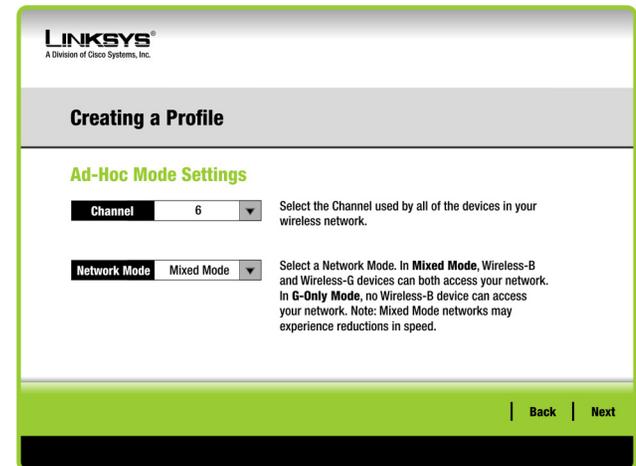Click **Next** to continue or click **Back** to change any settings.

Figure 5-23: Ad-Hoc Mode Settings Screen

4. The *Wireless Security* screen will appear.

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

From the *Security* drop-down menu, select the security method you want to use: **WEP**, **WPA Personal**, **WPA2 Personal**, **WPA Enterprise**, or **RADIUS**. WEP stands for Wired Equivalent Privacy, and WPA uses a security standard stronger than WEP encryption. RADIUS stands for Remote Authentication Dial-In User Service. Then proceed to the appropriate instructions for your security method.

WEP

Select a level of WEP encryption to use, and then enter a passphrase or WEP key.

WEP - To use WEP encryption, select **64-bit** or **128-bit** characters from the drop-down menu.

Passphrase - Instead of manually entering a WEP key, you can enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. This case-sensitive passphrase must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

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

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

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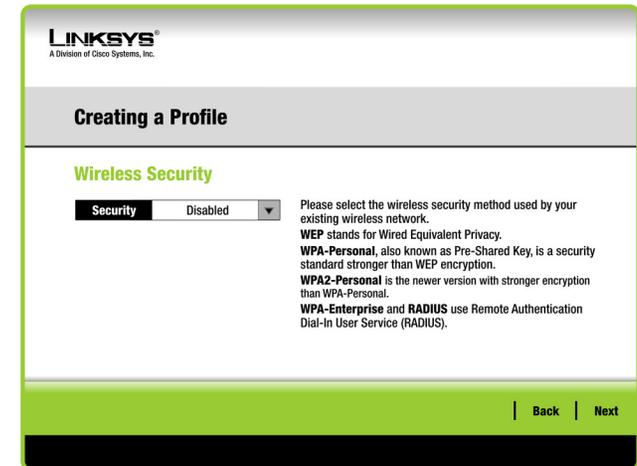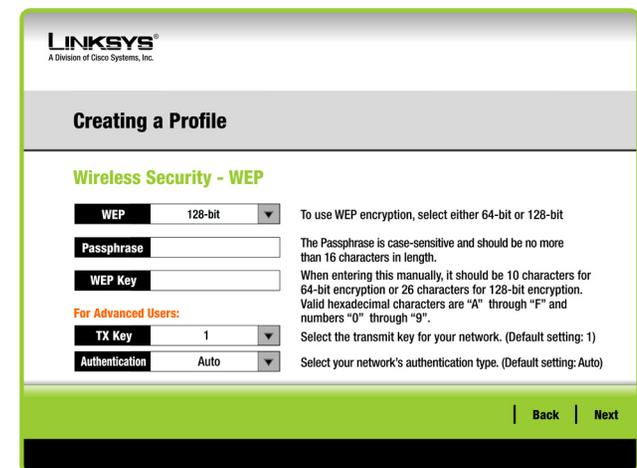

Figure 5-24: Wireless Security Screen

Figure 5-25: Wireless Security - WEP Screen

WPA Personal

Select an encryption method, **TKIP** or **AES**, and then enter a passphrase.

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

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

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

Figure 5-26: Wireless Security - WPA Personal Screen

WPA2 Personal

WPA2 Personal automatically uses AES, which is a stronger encryption method than TKIP. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

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

Figure 5-27: Wireless Security - WPA2 Personal Screen

WPA Enterprise

WPA Enterprise is used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) WPA Enterprise offers two encryption methods, TKIP and AES, with dynamic encryption keys. It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - 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**.

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

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - 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**.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

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

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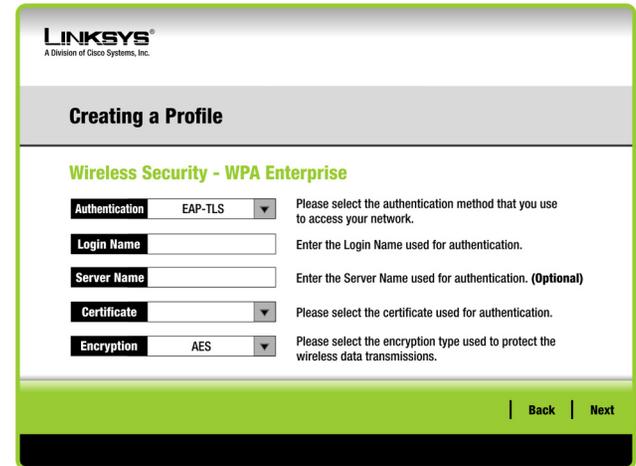

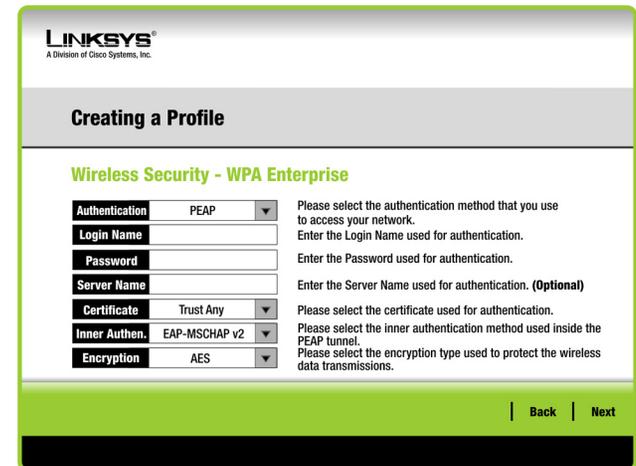**Figure 5-28: Wireless Security - WPA Enterprise Using EAP-TLS Screen**

Figure 5-29: Wireless Security - WPA Enterprise Using PEAP Screen

RADIUS

RADIUS uses the security of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

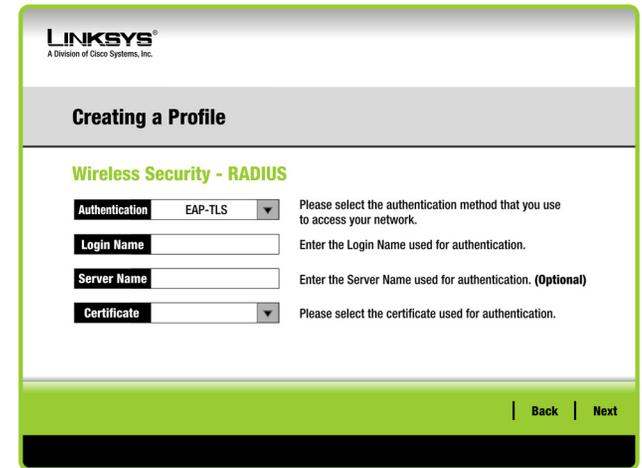**Login Name** - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - 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**.

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

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

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

Figure 5-30: Wireless Security - RADIUS Screen

5. The next screen displays all of the Adapter's settings. If these are correct, click **Save** to save these settings to your hard drive. If these settings are not correct, click **Back** to change your settings.

Figure 5-31: Confirm New Settings Screen

6. After the software has been successfully installed, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network. Click **Return to Profiles screen** to open the Wireless Network Monitor's *Profiles* screen.
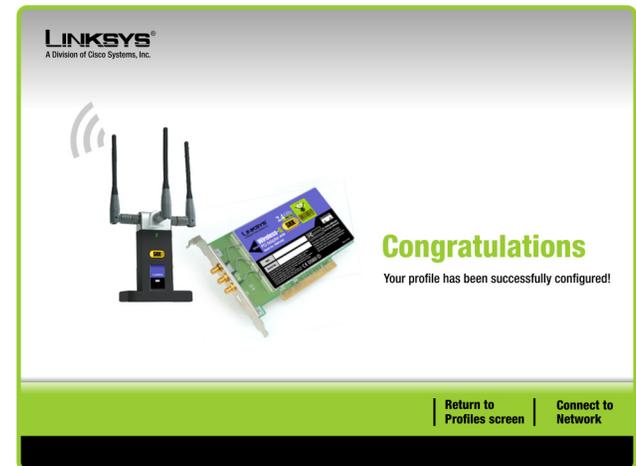
Congratulations! The profile is complete.

Figure 5-32: Congratulations Screen