EtherFast® 10/100 Bridge & USB Adapter

Use this guide to install the following products:

PLEBR10
PLUSB10

User Guide

LINKSYS®

Table of Contents

Chapter 1: Introduction to the EtherFast 10/100 Bridge

The Linksys EtherFast® 10/100 Bridge

The Linksys Instant PowerLine™ EtherFast® 10/100 Bridge offers a complete Internet connection solution for your home powerline network. The PowerLine Bridge makes sharing your broadband access easier than ever. Build a strong and simple-to-use home network by taking advantage of the most pervasive home networking medium—powerlines.

The PowerLine Bridge is ideal for users who already have a router. It can be plugged into an Ethernet port on a router to equip a network with powerline capabilities and take advantage of the router's features. The PowerLine Bridge can also plug directly into a cable or DSL modem to allow Internet access and data transfer rates up to 14Mbps over home powerlines.

With the PowerLine Bridge, create a network in no time at all to share an Internet connection (a router may be required), files, and printers, or even play multi-user network games at blazingly fast speeds. It's easy, convenient, and cost-effective.

Features

- Connects 10/100 Ethernet Network to Powerline Network for Seamless Integration
- Share Internet Access Across Your Entire Home Powerline Network*
- Up to 14Mbps Data Transfer Over Powerlines
- Bridges Cable or DSL Modem Connection and HomePlug Connection
- Fully HomePlug 1.0 Compliant
- No New Wires™ Approach
- PowerPacket™ Technology Facilitates Efficient Packet Transmission
- 56-Bit Data Encryption to Ensure Data Security and Reliability
- Easy-to-Read LED indicators
- Easy Installation—No Software Required
- Free Technical Support—24 Hours a Day, 7 Days a Week, Toll-Free US Calls
- 1-Year Limited Warranty

* Router may be required

Package Contents

Figure 1-1

- One Instant PowerLine EtherFast 10/100 Bridge
- One Power Cord
- One Setup Utility CD-ROM
- One User Guide
- Quick Installation and Registration Card (not shown)

System Requirements for the EtherFast® 10/100 Bridge

- Existing Ethernet/Fast Ethernet Network or an Existing Ethernet/Fast Ethernet Network Adapter and Network Cable
- TCP/IP Protocol
- CD-ROM Drive

Chapter 2: Introduction to the USB Adapter

The Linksys USB Adapter

The newest and fastest way to network your PCs is through powerline networking, which allows you to turn the powerlines in your home into your network cable. The easiest way to integrate any PC or laptop into such a powerline network is with the Linksys Instant PowerLine™ USB Adapter. Use your existing USB port with your existing powerlines! The Plug-and-Play USB Adapter connects directly to virtually any USB-ready PC—just plug it in and you're ready to share data, printers, or high-speed Internet access over your existing powerline network. For desktop installation, you don't have to open your PC's case. With user-friendly software, it's simple to set up.

Not only is the Instant PowerLine USB Adapter easy to install and use, but it's also powerful. You can send and receive data at speeds of up to 12Mbps. It's also versatile. Need to use it temporarily on another PC? No problem. Plug it into the USB port; set it up, and you're ready to go.

So for full desktop and notebook PC flexibility and powerline convenience, the Instant PowerLine USB Adapter provides the perfect solution!

Features

- Up to 12Mbps High-Speed Data Transfer Rate
- Share Internet Access Across Your Entire Home Powerline Network
- Fully HomePlug 1.0 Compliant
- Provides Powerline Connectivity Through Your USB Port—No Additional Wiring Needed
- PowerPacket™ Technology Facilitates Efficient Packet Transmission
- PowerLine Products Integrate with Your Existing Network
- Can Be Used with Multiple PCs to Reduce Networking Costs
- 56-Bit Data Encryption to Ensure Data Security and Reliability
- Easy-to-Read LED indicators
- Compatible with Windows 98, Millennium, 2000, and XP
- Plug-and-Play Operation Provides Easy Setup
- Works with Virtually All Standard Internet Applications
- Free Technical Support—24 Hours a Day, 7 Days a Week, Toll-Free US Calls
- 1-Year Limited Warranty

Package Contents

Figure 2-1

- One Instant PowerLine USB Adapter
- One Power Cord
- One USB Cable
- One Setup Utility CD-ROM
- One User Guide
- Quick Installation and Registration Card (not shown)

System Requirements

- Pentium-Class 90MHz or Higher
- Minimum 32MB RAM
- USB-Ready PC
- Windows 98, Millennium, 2000, or XP
- CD-ROM Drive

Chapter 3: Getting to Know the EtherFast 10/100 Bridge

The EtherFast 10/100 Bridge's Ports

Figure 3-1

Powerline   The Powerline Port is where you will connect your power cord.

Figure 3-2

10/100 RJ-45   The 10/100 RJ-45 Port is where you will connect your UTP Category 5 cable.

The EtherFast 10/100 Bridge's Front Panel LEDs

Figure 3-3

PowerLine Status

Power   *Green.* The Power LED will light up when the PowerLine Bridge is powered on.

Link   *Green.* The Link LED will light up when the PowerLine Bridge is powered on.

Activity   *Green.* The Activity LED will light up when there is power-line network traffic.

Collision   *Orange.* The Collision LED flashes when there is a collision.

Ethernet Status

Link   *Green.* The Link LED will be lit steadily when there is a physical LAN connection.

100   *Green.* The 100 LED will be lit steadily when there is a physical 100Mbps LAN connection.

Activity   *Green.* The Activity LED will light up when there is LAN traffic.

Chapter 4: Getting to Know the USB Adapter

The USB Adapter's Ports

Powerline   The Powerline Port is where you will connect your power cord.

Figure 4-1

USB   The USB Port is where you will connect your USB cable. To work with USB ports, your computer must be running Windows 98, 2000, Millennium, or XP.

Figure 4-2

The USB icon shown in Figure 4-2 marks a USB port on a PC or device.

Figure 4-3

Your USB Adapter comes with a USB cable that has two different types of connectors. Type A, the master connector, is shaped like a rectangle and plugs into your computer's USB port. Type B, the slave connector, resembles a square and connects to the USB port on the USB Adapter.

USB Type A   USB Type B
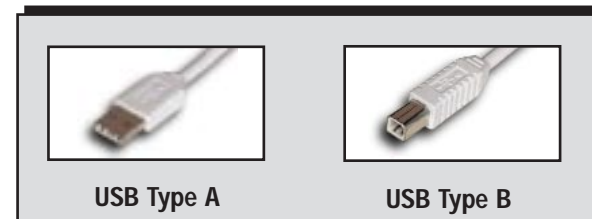
Figure 4-4

Important: Windows 95 and NT do not support the USB Adapter.

The USB Adapter's Front Panel LEDs

Figure 4-5

PowerLine Status

Power   *Green.* The Power LED will light up when the PowerLine USB Adapter is powered on.

Link   *Green.* The Link LED will light up when the PowerLine USB Adapter is powered on.

Activity   *Green.* The Activity LED will light up when there is power-line network traffic.

Collision   *Orange.* The Collision LED flashes when there is a collision.

Chapter 5: Planning Your Powerline Network

With the Instant PowerLine products, a network can be created using home powerlines. Computers can be networked over powerlines using a USB Adapter or an EtherFast 10/100 Bridge. Use the USB Adapter for a USB-enabled computer, or use the 10/100 Bridge for an Ethernet-enabled computer.

The 10/100 Bridge is also ideal for any user who already has a router and wants to share high-speed Internet access across the powerline network. Connect the Bridge to the router after you have configured the Bridge using the Security Configuration Utility. Connect a straight-through UTP Category 5 cable to the uplink port of the router, or connect a crossover UTP Category 5 cable to a LAN port on the router.
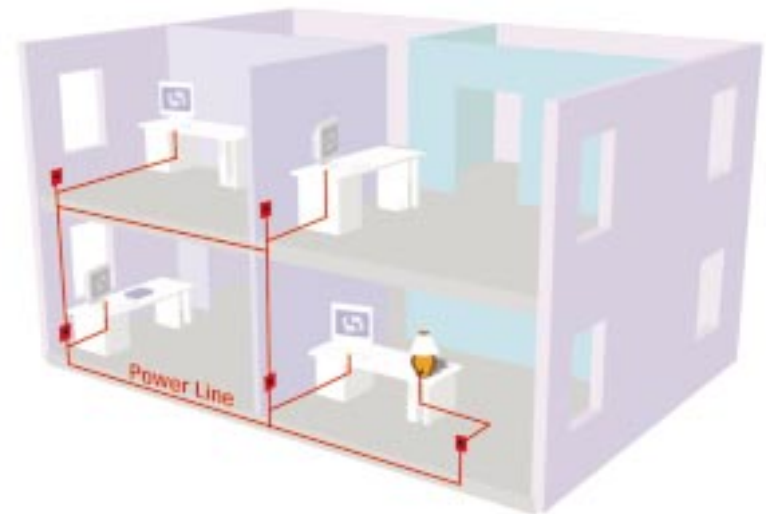
Figure 5-1

Chapter 6: Using the Setup Utility CD-ROM

Overview

To begin installation of the EtherFast 10/100 Bridge or USB Adapter, you will use the Setup Utility CD-ROM to run the InstallShield Wizard. When installing the USB Adapter, you must run the Setup Utility CD-ROM on the PC that will be connected to the Adapter.

Running the InstallShield Wizard

1. Insert the Setup Utility CD-ROM into the computer's CD-ROM drive. The Setup Utility CD-ROM should run automatically. If it does not, click the **Start** button and choose **Run**. In the box that appears, enter **D:\setup.exe** (if "D" is the letter of your CD-ROM drive).
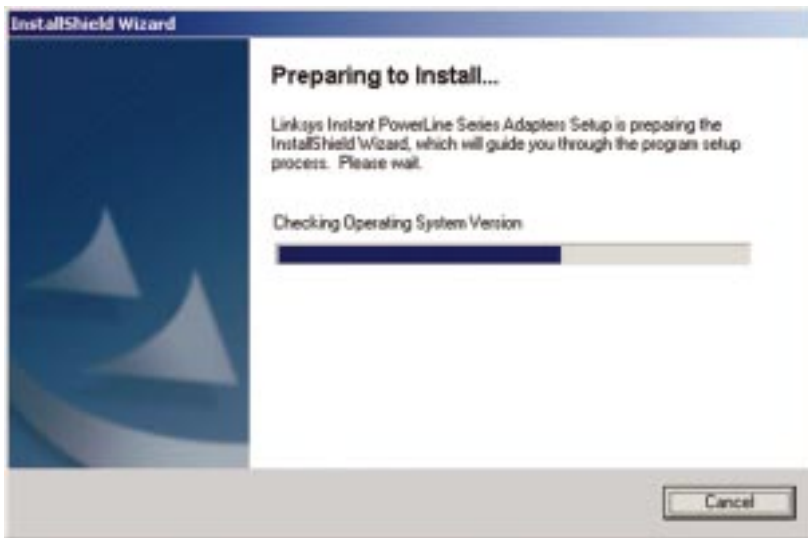
Figure 6-1

2. When you see Figure 6-2, click the **Next** button to continue.

Figure 6-2

3. Enter your **User Name** and **Company Name**. Select **Anyone who uses this computer (all users)** to install a shortcut to the Security Configuration Utility on every user's desktop (This selection is not available for Windows 98 and ME users). Then click the **Next** button to continue.
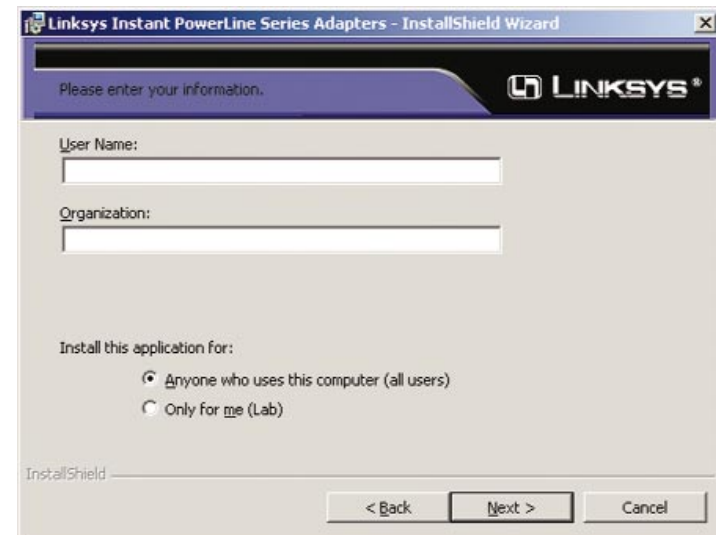
Figure 6-3

4. Click the **Install** button to begin installation of the Security Configuration Utility.

Figure 6-4

Windows 2000 users: Windows will inform you that there was no digital signature found. Click the **Yes** button to proceed with the installation.

Figure 6-5

Windows XP users: Windows will notify you that the driver has not passed Windows Logo testing. Click the **Continue Anyway** button.
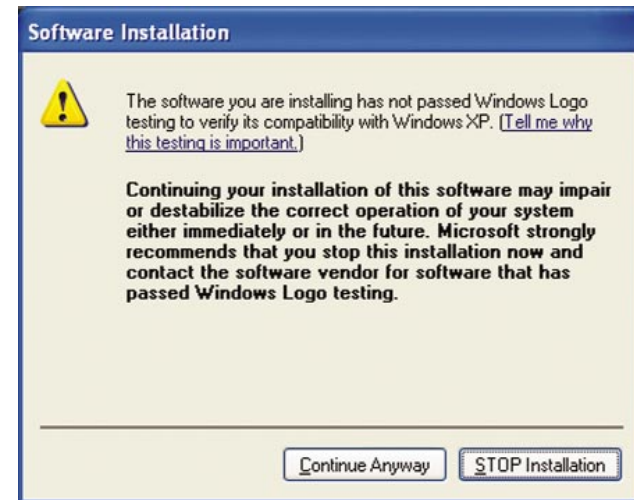
Figure 6-6

5. If you are installing the **10/100 Bridge**, proceed to step 6.

If you are installing the **USB Adapter**, click the **Finish** button to exit the InstallShield Wizard, and proceed to **Chapter 8: Connecting the USB Adapter**.

Figure 6-7

6. You will see Figure 6-8. Proceed to **Chapter 7: Connecting the EtherFast 10/100 Bridge**. After installing the Bridge hardware, click the **OK** button.

Figure 6-8

7. If the 10/100 Bridge is connected to the PC as shown in the diagram (see Figure 6-9), click the **Yes** button. Otherwise, click the **No or Not Sure** button.
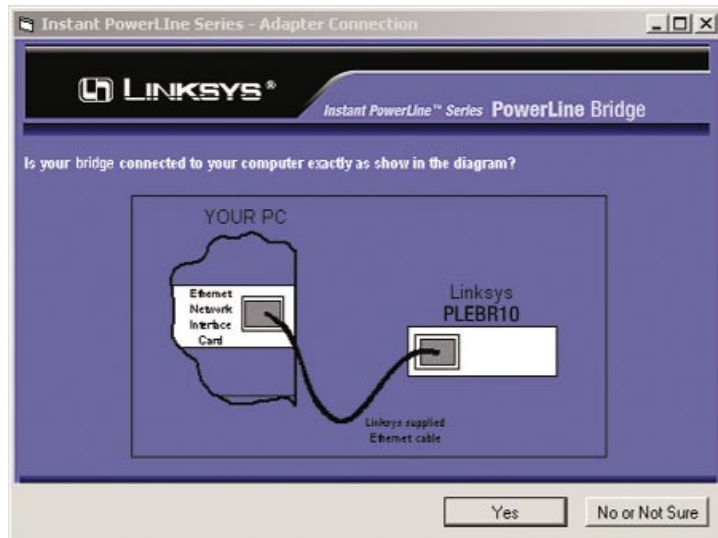
Figure 6-9

8. Click the **Finish** button to exit the InstallShield Wizard.
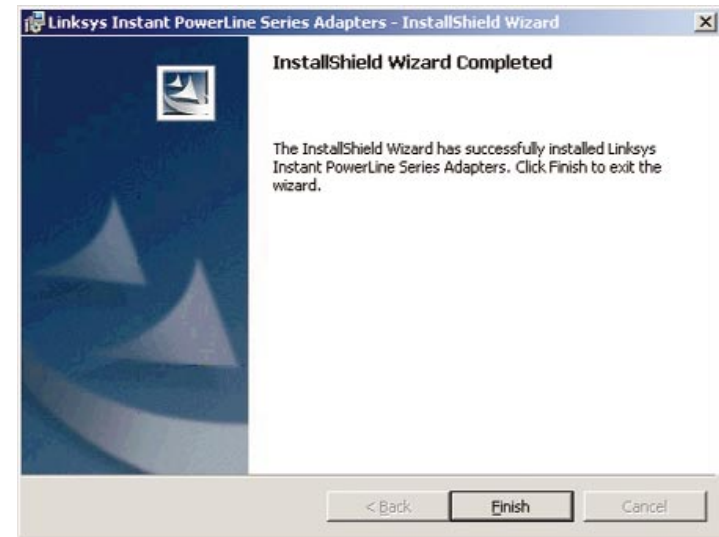
Figure 6-10

9. You will be asked to restart your computer. Click the **Yes** button to restart now, or click the **No** button to restart later.
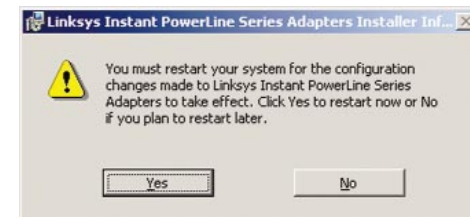
Figure 6-11

The installation of the EtherFast 10/100 Bridge is complete. Proceed to Chapter 10: Using the Instant PowerLine Security Configuration Utility.

Chapter 7: Connecting the EtherFast 10/100 Bridge

1. Plug the other end of the UTP Category 5 cable into the computer's LAN port.

2. Plug the UTP Category 5 cable into the 10/100 RJ-45 port on the 10/100 Bridge.

3. Plug the power cord into the powerline port on the EtherFast 10/100 Bridge.

Figure 7-1

4. Plug the other end of the power cord into an power outlet.

> ⚠️ **Important:** Use only the supplied power cord to connect the 10/100 Bridge to the power outlet.

> ⚠️ **Important:** Because the 10/100 Bridge sends data over the power-lines of your house, it is best to plug the Bridge's power cord directly into a power outlet. Do not plug the device into a UPS or power strip with surge protection. The 10/100 Bridge has its own power filter for protection against surges.

The hardware installation of the EtherFast 10/100 Bridge is complete. Return to step 6 of Chapter 6: Using the Setup Utility CD-ROM.

Chapter 8: Connecting the USB Adapter

1. Insert the other end of the USB cable with the Type A connector into the computer's USB port. Figure 8-1 shows two USB ports as they might appear on your computer. Note the two USB icons marking the ports.

2. Insert the standard USB cable's Type B connector into the USB port on the USB Adapter.

Figure 8-1

3. Plug the power cord into the powerline port on the USB Adapter.

Figure 8-2

4. Plug the other end of the power cord into an electrical outlet.

> ⚠️ **Important:** Use only the supplied power cord to connect the 10/100 Bridge to the power outlet.

> ⚠️ **Important:** Because the USB Adapter sends data over the power-lines of your house, it is best to plug the USB Adapter's power cord directly into a power outlet. Do not plug the device into a UPS or power strip with surge protection. The USB Adapter has its own power filter for protection against surges.

The hardware installation of the USB Adapter is complete. Proceed to Chapter 9: Installing the Driver the USB Adapter.

Chapter 9: Installing the Driver for the USB Adapter

Overview

After installing your USB Adapter in your computer, you will install the network driver. The installation procedure for the network driver will vary depending on which operating system you are using on your computer. Proceed to the instructions for your operating system: Windows 98, 2000, Millennium, or XP.

Windows 98

1. Windows 98 will automatically detect the presence of the USB Adapter hardware in your computer once you have completed the hardware installation. Click the **Next** button.
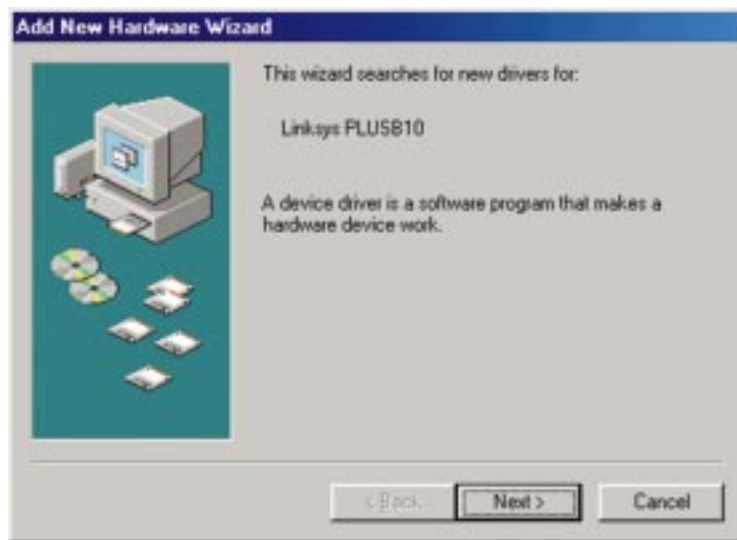
Figure 9-1

2. Click the radio button next to **Search for the best driver for your device. (Recommended)**.

Figure 9-2

3. Windows will look for new drivers and ask you which locations you want to search. Select **Specify a location:**, and enter **C:\Program Files\Linksys\USB Drivers** in the **location** field (if "C" is the letter of your hard drive). Click the **Next** button to continue.

Figure 9-3

4. Windows will display a screen announcing that it is ready to install the driver for the USB Adapter. Click the **Next** button to continue.

Figure 9-4

5. Windows will ask you to supply your Windows 98 Installation Files. Insert the Windows 98 CD-ROM into the CD-ROM drive of your computer. Then click the **OK** button to continue.

Figure 9-5

6. Windows will tell you when it has finished installing the new driver. Click the **Finish** button.

Figure 9-6

7. Click the **Yes** button to restart your computer, or click the **No** button to restart later.

Figure 9-7

**The Windows 98 driver installation is now complete.
Proceed to Chapter 10: Using the Instant PowerLine Security
Configuration Utility.**

Windows 2000

1. Windows 2000 will automatically detect the presence of the USB Adapter in your computer after you have completed the hardware installation. Windows will inform you that there was no digital signature found. Click the **Yes** button to install the USB driver.

Figure 9-8

**The Windows 2000 driver installation is now complete.
Proceed to Chapter 10: Using the Instant PowerLine Security
Configuration Utility.**

Windows Millennium

1. Windows Millennium will automatically detect the presence of the USB Adapter in your computer after you have completed the hardware installation. Windows will ask you the location of the USB driver files. Enter **C:\Program Files\Linksys\USB Drivers** in the **Copy files from:** field (if "C" is the letter of your hard drive). Then click the **OK** button to install the USB driver.
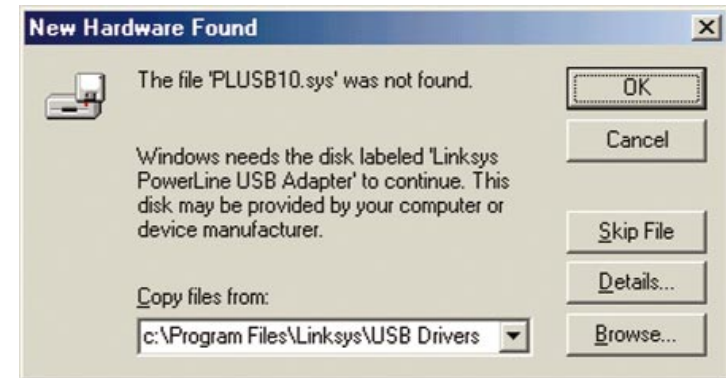
Figure 9-9

**The Windows Millennium driver installation is now complete.
Proceed to Chapter 10: Using the Instant PowerLine Security
Configuration Utility.**

Windows XP

1. Windows XP will automatically detect the presence of the USB Adapter in your computer after you have completed the hardware installation. Click the radio button next to **Install from a list or specific location** (**Advanced**). Then click the **Next** button.

Figure 9-10

2. Click the radio button next to **Search for the best driver in these locations**. Select **Include this location in the search:**, and enter **C:\Program Files\Linksys\USB Drivers** in the **location** field (if "C" is the letter of your hard drive). Then click the **Next** button.
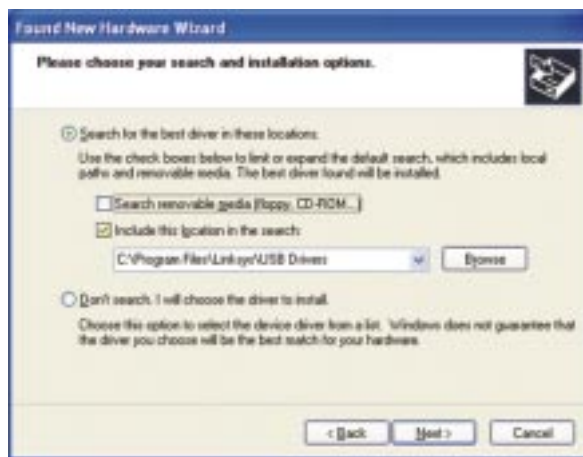
Figure 9-11

3. Windows will notify you that the driver has not passed Windows Logo testing. Click the **Continue Anyway** button.

Figure 9-12

4. Windows will tell you when it has finished installing the new driver. Click the **Finish** button.
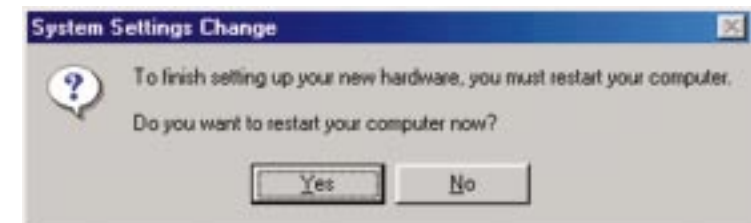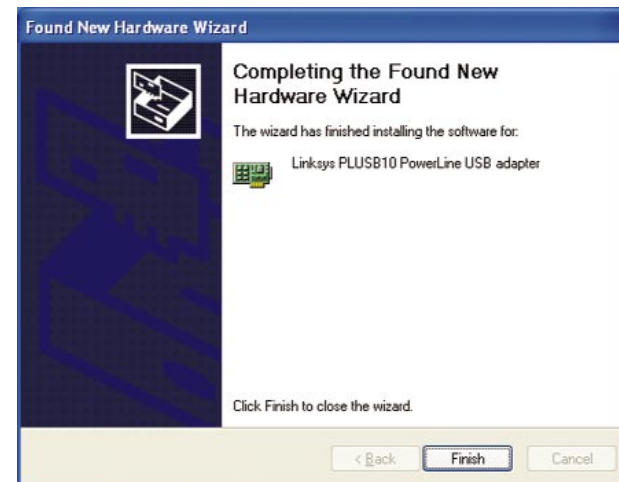

Figure 9-13

**The Windows XP driver installation is now complete.
Proceed to Chapter 10: Using the Instant PowerLine Security
Configuration Utility.**

Chapter 10: Using the Security Configuration Utility

Overview

After installing your EtherFast 10/100 Bridge or USB Adapter and USB driver, you will run the Security Configuration Utility for each Instant PowerLine device. This utility will set up security using a network password.

> **Note:** Make sure your TCP/IP protocol is set up appropriately on your computer before running the Security Configuration Utility. For more information, refer to Appendix C: IP Addressing.

Setting Up Security on an Instant PowerLine Device

To ensure the security of an Instant PowerLine Device, set up a network password using the Instant PowerLine Security Configuration Utility. To begin, double-click the **Security Configuration Utility icon** on your desktop.

1. You will see the screen shown in Figure 10-1. Click the **Next** button.

Figure 10-1

---

2. All of the Instant PowerLine devices on your powerline network must share the same network password. The password must have between 4 and 24 characters. The password is case-sensitive, so note whether you use lowercase or uppercase letters. The password can include any letters of the alphabet, numbers, or punctuation marks. Type in your password in the **Network Password** field. Then click the **Next** button.

> **Important:** Remember this password. You will need to set this password on each Instant PowerLine device on your powerline network.
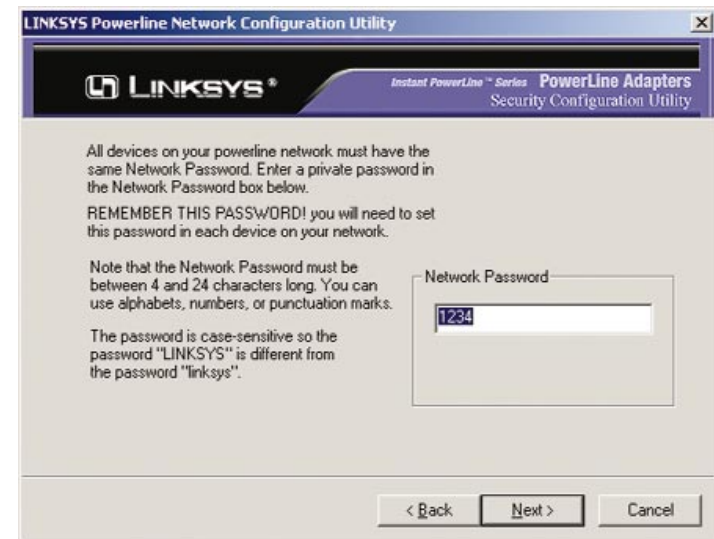
Figure 10-2

3. The Security Configuration Utility will search your powerline network for the other Instant PowerLine devices configured with the same network password. These devices will be listed in the Powerline Network Devices MAC Address box. Then click the **Next** button.
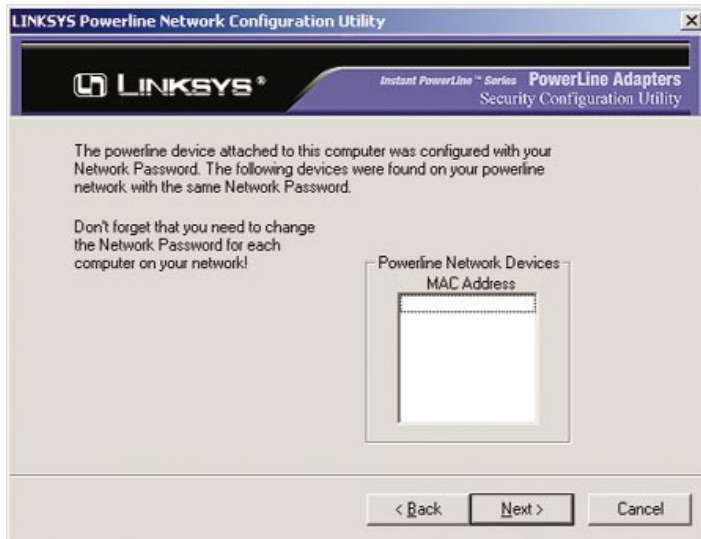
Figure 10-3

4. The Security Configuration Utility will tell you when the Instant PowerLine device has been configured with the network password. Click the **Finish** button.

Figure 10-4

The security configuration of your EtherFast 10/100 Bridge or USB Adapter is now complete.

Appendix A: Troubleshooting

Common Problems and Solutions

This section provides possible solutions to problems regarding the installation and operation of the EtherFast 10/100 Bridge or USB 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.

1. The power LED does not light up after I installed the Instant PowerLine device.
   • Unplug the UTP Category 5 or USB cable from the computer. Unplug the power cord from the power outlet. Then repeat the hardware installation process. Make sure the power outlet is working properly.

2. The Link LED for Ethernet status does not light up on the EtherFast 10/100 Bridge.
   • When the Ethernet port detects a LAN connection, the Link LED will light up. Check the Ethernet adapter on your computer to see if the connection and adapter are working properly. Make sure you are using a straight-through UTP Category 5 cable to connect the 10/100 Bridge to your computer.
   • For use with a router, connect a straight-through UTP Category 5 cable to the uplink port of the router, or connect a crossover UTP Category 5 cable to a LAN port on the router.

3. I can't connect to other computers on my powerline network or to the Internet.
   • Make sure the IP address and TCP/IP protocol are set up correctly for all the powerline networked computers. For more information on IP addresses, see **Appendix C: IP Addressing**.
   • Make sure all devices on the powerline network have been configured using the Security Configuration Utility. The network password must be the same for all devices in order for them to communicate with each other. See **Chapter 10: Using the Security Configuration Utility**.

Frequently Asked Questions

Do the Instant PowerLine products cause interference with other home networking or powerline products?
No. The Instant PowerLine products can co-exist with phoneline and wireless networking technologies. Instant PowerLine operates in a different frequency band than powerline control and can co-exist with technologies such as X-10, CEBus, and LONworks.

How do the Instant PowerLine products handle signal interference between two adjacent homes? How is eavesdropping prevented?
The Instant PowerLine products use 56-bit DES security encryption to ensure network separation between homes. To enable 56-bit DES security encryption on Instant PowerLine products, you must run the Security Configuration Utility on each and every Instant PowerLine product.

How do the Instant PowerLine products handle node addressing on the network?
The Instant PowerLine products adhere to standard Ethernet addressing protocols using destination and source MAC addressing.

Appendix B: Glossary

10BaseT - An Ethernet standard that uses twisted wire pairs.

100BaseTX - IEEE physical layer specification for 100 Mbps over two pairs of Category 5 UTP or STP wire.

Bridge - A device that interconnects different networks together.

CAT 5 - ANSI/EIA (American National Standards Institute/Electronic Industries Association) Standard 568 is one of several standards that specify "categories" (the singular is commonly referred to as "CAT") of twisted pair cabling systems (wires, junctions, and connectors) in terms of the data rates that they can sustain. CAT 5 cable has a maximum throughput of 100 Mbps and is usually utilized for 100BaseTX networks.

CSMA/CD (Carrier Sense Multiple Access/Collision Detection) - The LAN access method used in Ethernet. When a device wants to gain access to the network, it checks to see if the network is quiet (senses the carrier). If it is not, it waits a random amount of time before retrying. If the network is quiet and two devices access the line at exactly the same time, their signals collide. When the collision is detected, they both back off and each wait a random amount of time before retrying.

Default Gateway - The router used to forward all traffic that is not addressed to a station within the local subnet.

DHCP (Dynamic Host Configuration Protocol) - A protocol that lets network administrators centrally manage and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a

user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

DNS - The Domain Name System (DNS) is the way that Internet domain names are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.

Driver - A workstation or server software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific NIC, and is installed during the initial installation of a network-compatible client or server operating system.

Dynamic IP Address - An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

Encryption - A security method that applies a specific algorithm to data in order to alter the data's appearance and prevent other devices from reading the information.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Has a transfer rate of 10 Mbps. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

Fast Ethernet - A 100 Mbps technology based on the 10Base-T Ethernet CSMA/CD network access method.

Firmware - Programming that is inserted into programmable read-only memory, thus becoming a permanent part of a computing device.

HomePlug™ Powerline Alliance - A nonprofit organization established to provide a forum for the creation of specifications for home powerline networking products and services.

Hot Swap - The ability to replace a card or other hardware part in a hardware device without turning it off or losing functionality.

IEEE - The Institute of Electrical and Electronics Engineers. The IEEE describes itself as "the world's largest technical professional society—promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the well-being of our members."

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has many local chapters, and has several large societies in special areas, such as the IEEE Computer Society.

IP Address - In the most widely installed level of the Internet Protocol (Internet Protocol) today, an IP address is a 32-binary digit number that identifies each sender or receiver of information that is sent in packets across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requester or the e-mail sender and can respond by sending another message using the IP address it received.

IPCONFIG - A utility that provides for querying, defining and managing IP addresses within a network. A commonly used utility, under Windows NT and 2000, for configuring networks with static IP addresses.

ISP - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as website building and virtual hosting.

LAN - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

MAC Address - The MAC (Media Access Control) address is a unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level.

Network - A system that transmits any combination of voice, video and/or data between users.

Network Mask - also known as the "Subnet Mask."

Plug-and-Play - The ability of a computer system to configure expansion boards and other devices automatically without requiring the user to turn off the system during installation.

PowerPacket™ - The basis for the HomePlug™ Powerline Alliance 1.0 specification, PowerPacket is a robust, secure, and reliable means of transferring data. This technology reduces interference generated by appliances, electronic devices, and halogen lights. PowerPacket also has encryption techniques built into the hardware to prevent neighbors on the same power grids from gaining access to sensitive data or the Internet connection.

Powerline Networking - Data transmission over powerlines.

RJ-45 - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

Router - Protocol-dependent device that connects subnetworks together. Routers are useful in breaking down a very large network into smaller subnetworks; they introduce longer delays and typically have much lower throughput rates than bridges.

Static IP Address - A permanent IP address that is assigned to a node in a TCP/IP network.

STP (Shielded Twisted Pair) - Telephone wire that is wrapped in a metal sheath to eliminate external interference.

Subnet Mask - The method used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

TCP (Transmission Control Protocol) - A method (protocol) used along with the Internet Protocol (Internet Protocol) to send data in the form of message units between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

TCP/IP - Transmission Control Protocol/Internet Protocol (TCP/IP) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

UDP (User Datagram Protocol) - A communications method (protocol) that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP) and, together with IP, is sometimes referred to as UDP/IP. Like the Transmission Control Protocol, UDP uses the Internet Protocol to actually get a data unit (called a datagram) from one computer to another. Unlike TCP, however, UDP does not provide the service of dividing a message into packets (datagrams) and reassembling it at the other end. Specifically, UDP doesn't provide sequencing of the packets that the data arrives in. This means that the application program that uses UDP must be able to make sure that the entire message has arrived and is in the right order. Network applications that want to save processing time because they have very small data units to exchange (and therefore very little message reassembling to do) may prefer UDP to TCP.

USB (Universal Serial Bus) - A "plug-and-play" interface between a computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners, and printers). With USB, a new device can be added to your computer without having to add an adapter card or even having to turn the computer off. The USB peripheral bus standard was developed by Compaq, IBM, DEC, Intel, Microsoft, NEC, and Northern Telecom and the technology is available without charge for all computer and device vendors.

USB supports a data speed of 12 megabits per second. This speed will accommodate a wide range of devices, including MPEG video devices, data gloves, and digitizers. It is anticipated that USB will easily accommodate plug-in telephones that use Integrated Services Digital Network and digital private branch exchange.

Since October, 1996, the Windows operating systems have been equipped with USB driver or special software designed to work with specific I/O device types. USB is integrated into Windows 98. Today, most new computers and peripheral devices are equipped with USB.

A different "plug-and-play" standard, FireWire/IEEE 1394, is designed to support much higher data rates and devices such as video camcorders and digital video disk (digital versatile disk) players. Both standards are expected to exist together, serving different device types.

UTP - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

WINIPCFG - Configuration utility based on the Win32 API for querying, defining, and managing IP addresses within a network. A commonly used utility, under Windows 95, 98, and Millennium, for configuring networks with static IP addresses.

Appendix C: IP Addressing

What's an IP Address?

IP stands for Internet Protocol. Every device on an IP-based network, including PCs, print servers, and routers, requires an IP address to identify its "location," or address, on the network. Since the Internet is simply one huge global network, every PC that logs on to the Internet also needs an IP address.

There are two ways of assigning an IP address to your network devices.

Static IP Addresses

A static IP address is a permanent IP address that you assign manually to a PC or other device on a TCP/IP network. Since a static IP address remains valid until you disable it, static IP addressing insures that the device assigned it will always have that same IP address. Static IP addresses are commonly used with network devices such as server PCs or print servers.

Dynamic IP Addresses

A dynamic IP address is automatically assigned to a device on a TCP/IP network, such as PCs and print servers. These IP addresses are called "dynamic" because they are only *temporarily* assigned to the PC or device. After a certain time period, they expire and may change. Dynamic IP addresses are typically assigned by a DHCP server, which can be a computer on the network or another piece of hardware, such as a router.

If a PC logs on to the network (or the Internet) and its dynamic IP address has expired, the DHCP server will assign it a new dynamic IP address.

DHCP (Dynamic Host Configuration Protocol)

DHCP is software that automatically assigns IP addresses to client stations logging onto a TCP/IP network. DHCP frees you from having to manually assign permanent IP addresses to every device on your network. DHCP software typically runs on servers and is also found on network devices such as routers.

Appendix D: Specifications for the EtherFast 10/100 Bridge

Standards:	IEEE 802.3, IEEE 802.3U, HomePlug 1.0
Ports:	
Powerline	One Powerline Port
LAN	One 10BaseT/100BaseTX RJ-45 Port
Cabling Type:	
Powerline	Power Cord
LAN	UTP Category 5 or Better
Topology:	Star (Ethernet), Bus (Powerline)
Speed:	
Powerline	Up to 14Mbps (Powerline)
LAN	10/100Mbps
Encryption:	56-bit Data Encryption with Key Management
LEDs:	Power
Powerline	Link, Activity, Collision
Ethernet	Link, 100, Activity

Environmental

Dimensions: 6.50" x 3.82" x 1.24" (165mm x 97mm x 31.5mm)

Unit Weight: 0.7 oz. (0.3.2 kg)

Certifications: FCC Class B, UL Listed, HomePlug 1.0

Operating Temp.:   32°F to 104°F (0°C to 40°C)

Storage Temp.:   -4°F to 158°F (-20°C to 70°C)

Operating Humidity: 10% to 85% Non-Condensing

Storage Humidity: 5% to 90% Non-Condensing

Appendix E: Specifications for the USB Adapter

Standards: USB Spec. 1.1, HomePlug 1.0

Encryption: 56-Bit Data Encryption with Key Management

Ports:
Powerline   One Powerline Port
USB   One USB Port

Cabling Type:
Powerline   Power Cord
USB   Standard USB Cable

Topology: Bus (Powerline)

Speed:
Powerline   Up to 12Mbps (USB)

LEDs: Power, Link, Activity, Collision

Environmental

Dimensions:	6.50" x 3.82" x 1.24" (165mm x 97mm x 31.5mm)
Unit Weight:	0.7 lbs. (0.3.2 kg)
Certifications:	FCC Class B, UL Listed, HomePlug 1.0
Operating Temp.:	32°F to 104°F (0°C to 40°C)
Storage Temp.:	-4°F to 158°F (-20°C to 70°C)
Operating Humidity:	10% to 85% Non-Condensing
Storage Humidity:	5% to 90% Non-Condensing

Appendix F: Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.

IN NO EVENT SHALL LINKSYS'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. LINKSYS DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

LINKSYS OFFERS CROSS SHIPMENTS, A FASTER PROCESS FOR PROCESSING AND RECEIVING YOUR REPLACEMENT. LINKSYS PAYS FOR UPS GROUND ONLY. ALL CUSTOMERS LOCATED OUTSIDE OF THE UNITED STATES OF AMERICA AND CANADA SHALL BE HELD RESPONSIBLE FOR SHIPPING AND HANDLING CHARGES. PLEASE CALL LINKSYS FOR MORE DETAILS.

Appendix G: Contact Information

For help with the installation or operation of this product, contact Linksys Technical Support at one of the phone numbers or Internet addresses below.

Sales Information   800-546-5797 (LINKSYS)
Tech Support   888-793-4632
RMA Issues   949-261-1288
Fax   949-261-8868
Email   support@linksys.com
Web   http://www.linksys.com
FTP Site   ftp.linksys.com

http://www.linksys.com