

**Microsoft Wireless Home
Networking PC Card or USB
Adapter**

User's Guide

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Warning

For use with UL Listed and GS approved personal computers.

Residential Gateway: "Only use AC Adaptor provided with the unit, Part number FA-4A030-1"

Not intended for use in machinery, medical or industrial applications.

Do not use in airplane or in a hazardous locations such as gas station.

For indoor use only

Do not touch or re-orient the antenna while the device is transmitting

Residential Gateway: Device should be located at least 20 cm (8 inches) away from any human body in order to meet FCC exposure limits.

Other adapter: Device should be located at least 5 cm (2 inches) away from any human body in order to meet FCC exposure limits. Exposure time should be limited if the distance is less.

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Chapter 1: Microsoft Wireless Home Networking Overview

Congratulations on the purchase of your Microsoft Wireless Home Networking USB or PC Card Adapter! This chapter provides basic information about your adapter and on wired and wireless networking.

System Requirements

Please read the regulatory warnings and "About your rights and obligations" at the beginning of this book.

Check the system requirements that follow to ensure that your computer has the necessary features to install a Microsoft Wireless Home Networking adapter.

To run the setup software and the Wireless Network Utility, computers must have:

- ⌋ Windows 98 Gold, Windows 98 SE, Windows Millennium Edition, Windows 2000, or Windows XP operating system
- ⌋ Microsoft Internet Explorer 5.0 or later browser software
- ⌋ Pentium class 200 MHz with 32 MB RAM ???/TBD
- ⌋ Disk Space: ???/TBD
- ⌋ Video System: 640x480 16-bit color, Recommended 800x600 16-bit color
- ⌋ 4x CD-ROM drive
- ⌋ Microsoft point device recommended
- ⌋ 3.5" Floppy disk drive recommended

To connect the Microsoft Wireless Home Networking USB Adapter, you must have

- ⌋ An available 1.0 or higher full-speed USB compliant high-power port

-or-

To connect the Microsoft Wireless Home Networking PC Card Adapter, you must have

Note

Each of the required operating systems provides Internet Explorer 5.0 or later, except for Windows 98. If IE5.0 is not installed on your computer, the Microsoft Wireless Home Networking Setup software will detect this and will install it automatically before starting Microsoft Wireless Home Networking Setup. You may be prompted to restart your computer after the automatic installation.

- ⌵ An available 16-bit PCMCIA (PC Card) Type II Extended slot

Check Box Contents

The Microsoft® Wireless Home Networking Adapter consists of the following components:

- ⌵ Start Here Guide and User's Guide
- ⌵ CD-ROM disc (install this first!)
- ⌵ Wireless USB Network Adapter

-or-

Wireless PC Card Adapter

If any of these components are missing or damaged...

Home Networking Components

Broadband Modems

Broadband Internet access provides a high-speed digital connection to the Internet, typically through a Digital Subscriber Line (DSL), which runs over phone lines, or a cable connection, which travels over the same lines as cable TV. Both allow you to use your telephone while you are online, and both offer a perpetual, always-on connection to the Internet without requiring you to dial up an Internet Service Provider (ISP).

Broadband access relies on digital modems, which can carry more frequencies and data types simultaneously than dial-up modems. Because of the amount of data that can be transmitted simultaneously, broadband modem transmission speed is very fast compared to dial-up modem speed, typically greater than 128 Kbps.

Because broadband modems carry so much information and are "always on," they present greater security challenges than dial-up modems, especially if the Internet connection is shared over a network. It is important to implement security through a firewall such as that provided by the Microsoft Wireless Home Networking Router. If attackers access your Internet connection, they will see only the router, which contains no files or data.

Microsoft Wireless Home Networking works only with broadband modems that have external, Ethernet connections.

Routers and Gateways

You can use a router or gateway such as the Microsoft Wireless Home Networking Router as the central point of your wireless network. All your wireless and wired adapters can access the Internet and other devices on the network through the router, which also provides firewall security for your Internet connection. For more information, see the documentation for the Microsoft Wireless Home Networking Router or other router or gateway.

You can set up a network by using only wireless adapters, with no router or gateway, but your Internet connection will not be as secure. See the Installation chapter for instructions.

The Microsoft Wireless Home Networking USB Adapter

The USB Adapter is about 3" x 3" x 1" in size. It has a USB cable, an adjustable antenna, and two indicator lights on the front.

[insert picture of USB Adapter]

After the USB network adapter is connected, its indicator lights will be on, off, or blinking, indicating the following states:

- ⌚ Power (on the left when you are looking at the front of the adapter): on when device is receiving power from the USB port; off when device is not receiving power (not plugged into USB port, computer shut down or suspended, or USB port not working).
- ⌚ Wireless status (on the right): on when connected to the wireless network, off when not connected, blinking when data is being transmitted or received on the wireless link.

The USB adapter must be located near a USB connection on your computer. The adapter has no internal power source, so the USB port must be powered. In general, the ports on your computer are powered, while many USB ports on keyboards or monitors are not powered.

You should also take wireless network range, coverage, and interference into account when positioning your router and antenna. See Wireless Networks for more information.

The Microsoft Wireless Home Networking PC Card Adapter

The PC Card adapter is a credit-card shaped device that fits into the PC Card slot on a laptop or other enabled computer. An adjustable antenna protrudes from the end of the PC Card when it is installed. The two indicator lights on the end of the card will either be on, off, or blinking, according to the following states:

- ⌚ Power (on the left when you are looking down on the card from its end): on when the host computer is providing power to the PC Card slot, off when no power is applied.
- ⌚ Wireless status (on the right): on when connected to the wireless network, off when not connected, blinking when data is being transmitted or received.

Network Connections


You can connect computers to networks by using wired or wireless connections. Some considerations in deciding on the best type of network connection for your computers are:

- ⌚ Speed. Although wireless transmission speed is faster than broadband connection speed, it is slower than Ethernet. If speed of connection between your networked computers is important, you may want to use Ethernet adapters.
- ⌚ Accessibility. You can set up wireless connections without having to run wire or open up your computers. On the other hand, if your computers already have Ethernet connections, it may be more convenient to leave the Ethernet network in place.
- ⌚ Range and Coverage. Either Ethernet or wireless networks can cover most home and small business areas. Depending on the physical characteristics and interference factors in your environment, one or the other types of networks may be more effective.


- o Mobility. Wirelessly connected computers have the potential for mobility. This may be relatively unimportant for a desktop computer, but a much larger consideration for a laptop or notebook computer.
- o Security. Because of the unrestricted nature of their transmission, wireless networks have inherent security issues. However, you can implement security measures such as Wired Equivalency Privacy (WEP) encryption to improve your wireless security.

Wired Network Connections

Microsoft Wireless Home Networking provides wired as well as 802.11b Wi-Fi wireless connectivity. In most cases, you will use a wired Ethernet connection to connect your modem and at least one computer to a router or gateway.

Ethernet is the most common and fastest wired network protocol, with connection speeds of 10 to 100 megabits per second (Mbps). Each computer on an Ethernet network has an internal Ethernet network interface card, which provides an Ethernet port on the back of the computer, which resembles a phone connection. Other devices, such as broadband modems, also have Ethernet ports. Ethernet ports may be designated by the following symbol:  For more information about Ethernet connections and networks, see the documentation for the Microsoft Wireless Home Networking Router.

Wireless USB adapters attach to computers through wired USB connections. If all your computers have USB connections, they can all be attached to USB adapters, and can then connect to the router and the Internet wirelessly.

Microsoft Wireless Home Network USB adapters are connected to computers through Universal Serial Bus (USB) connections. A USB port looks like a small (about 1/2" wide), rectangular connection on the front or back of your computer. The USB ports on the back of the computer are usually located below your mouse and keyboard connections, although this may vary. USB connections may be indicated by the following symbol: 

The Wireless Home Networking USB adapter has no internal power source, so it must be connected to a powered USB port. The ports on your computer are

powered, but many USB ports on keyboards or monitors are not powered.

Wireless Networks

Microsoft Wireless Home Networking employs a wireless transmission protocol called 802.11b, or Wi-Fi (for Wireless Fidelity). It works by radio transmission, so does not require cables to connect the computers as wired networks do.

The range of Wi-Fi wireless networks is up to 4000 square feet, and transmission occurs at speeds of up to 11 Mbps. Wireless networks can transmit through walls and floors, but the presence of many physical barriers may affect signal strength and transmission speed. The following table shows the interaction between wireless coverage area and transmission speed for Microsoft Wireless Home Networking components under various installation circumstances.

Condition	Distance(m)	Rate(Mbps)
Closed : (Typical Home Construction)	25	11
	35	5.5
	40	2
	50	1
Semi-Open: (Office Cubicles)	50	11
	70	5.5
	90	2
	115	1
Open: (Outdoor or Line of sight)	160	11
	270	5.5
	400	2
	550	1

Wireless signals may be vulnerable to interference from some cordless phone frequencies, microwave ovens, other wireless devices, and neighboring wireless networks. The wireless adapters have external antennas, which can be positioned for best reception.

Tip

If you are not sure what types of connections you have or of the best way to connect your network, refer to the Network Connections section, page X, in Chapter 1: Overview.

Important

It is important to follow the installation instructions in the order given.

- o Install the software before connecting the adapter. If you connected the adapter before running Setup, see If You Connected Your Hardware First on page X.
- o If you have a Wireless Home Networking Router, install and configure it on the computer that is connected to your modem before you install the Wireless Home Networking USB or PC Card Adapter on a different computer.

Chapter 2: Setting Up Your Adapter

This chapter will guide you through the installation of the Microsoft Wireless Home Networking USB or PC Card Adapter. This adapter will allow a computer to connect to a 802.11b (Wi-Fi) wireless network.

Recommended Connection Method

The recommended connection method for the Microsoft Wireless Home Networking USB or PC Card Adapter is to

1. Install the software on the computer that will be connected to the adapter
2. Connect the adapter to the computer
3. Configure the adapter by using the software
4. Connect to the network wirelessly

insert diagram of scenario 1 - PC wireless w/1 USB, 1 PC Card or either? to router/network

You can install the Microsoft Wireless Home Networking Adapter this way if your computer meets the system requirements, is not currently networked, and has an available USB or PC Card connection.

If your computer has a different configuration, is on an existing network, or needs additional or alternative connection options, refer to Adding to Your Network, page X; or Alternate Connection Options, page X, for customized instructions.

If you have a Microsoft Wireless Home Networking Router, it is important to install the router first, and then the USB or PC Card Adapter. When installing the adapter, it is important to install the software first, and then connect the hardware. This takes full advantage of the software's ability to automatically configure your network settings.

Important

Install the Microsoft Home Networking software to enable the computer to recognize the adapter before you connect the adapter. Please do not connect your adapter until you are instructed to do so. If you connected your adapter before installing the software, see *If You Connected the Hardware First*, page X.

Note

If you have a Windows 98 computer, you may be prompted to restart your computer at several points during the setup process.

Note

On Windows 2000 and XP Pro computers, network setup can be performed only by an Administrator. If you are not logged in as an Administrator, a dialog box will inform you that setup cannot proceed. To log in as an Administrator, choose *Log Off* from the *Start* menu, then press **CTRL+ALT+DEL**, and then log in with the name *Administrator* and your administrative password.

To install the software

1. Take the following items to the computer to be networked:
 - ⌞ The floppy disk, printout, or written record of network settings that you created during the setup of the first computer
 - ⌞ The Microsoft Wireless Home Networking Setup CD
 - ⌞ The Microsoft Wireless Home Networking USB or PC Card Adapter
 - ⌞ The printed *Start Here!* guide or these installation instructions.
2. Insert the Microsoft Wireless Home Network Setup CD into the CD-ROM drive. The Setup program should start automatically after a few seconds. If it does not, click *My Computer* on the Microsoft Windows Desktop (or the Windows Start menu, depending on your operating system), double-click the drive that contains your Setup CD, and then double-click *Setup.exe*.
3. Follow the setup software instructions.
 - a. When you are asked which device you are setting up, if you will be connecting a USB adapter, choose *USB Adapter*. If you are inserting a PC Card adapter, choose *PC Card Adapter*.
 - b. If you have a floppy disk of network settings that you saved from the setup of another computer, insert the diskette when prompted. Otherwise, select your wireless Network Name (SSID), and type in your network's WEP encryption key and workgroup name, if used, when you are prompted to do so.
4. When you are instructed to connect your USB or PC Card adapter, follow the instructions below.

Note:

Typically, the USB ports on your computer are powered, while many USB ports on keyboards or monitors are not powered.

To connect the adapter

- ⌵ Plug in the USB cable that is attached to your adapter to an available, powered USB port on your computer.

Insert diagram of USB Adapter plugged into PC Card slot, & to router wirelessly

-or-

- ⌵ Insert the PC Card adapter into the PC Card slot on your computer.

Insert diagram of PC Card Adapter plugged into PC Card slot, & to router wirelessly

Note

For more information about network name, WEP Security, computer and workgroup names, file and printer sharing, and other setup options, click the Help button on each setup screen, or refer to the appropriate chapter in this User's Guide.

To configure the adapter

1. After you have connected the adapter, return to the Home Networking Setup software and click Next. Follow the software instructions.
 - c. When you are asked whether you want to set up file and printer sharing, choose Yes or No.
 - d. If you choose Yes to set up file and printer sharing, enter names for your computer, printers, and workgroup on the appropriate screens. If you want to share printers and files with other computers on the network, you should set the same workgroup name. The computer and printer names should be unique.[T8]
2. After you click Finish to exit Setup, view the status of your network in the Wireless Network Utility and test your Internet connection by accessing a Web site through your browser.
3. Remove the setup CD-ROM from the CD-ROM drive and the floppy diskette (if used) from the floppy disk drive. Keep the CD and the diskette to use for setting up additional computers.

Adding Computers to Your Network

Now that you have installed a Microsoft Wireless Home Networking USB or PC Card Adapter and connected to your wireless network and Internet, you can add more devices to your home or small office network. Refer to the sections below for instructions on

- o Adding Additional Wireless USB or PC Card Adapters to Microsoft Wireless Home Networks
- o Adding Microsoft Wireless Home Networking Adapters to Previously-Networked Computers
- o Adding Microsoft Wireless Home Networking Adapters to Non-Windows Computers or Non-Microsoft Wireless Networks
- o Adding Wireless Adapters to Non-Computer Devices

Adding Additional Wireless USB or PC Card Adapters to Microsoft Wireless Home Networks

To add additional Microsoft Wireless Home Networking adapters to your wireless network, simply repeat the connection steps for installing the USB or PC Card adapter. The router can support up to eight? wireless devices simultaneously.

Connecting Microsoft Wireless Home Networking Adapters to Previously-Networked Computers

If you are adding a Microsoft Wireless Home Networking USB or PC Card Adapter to a computer that was connected to an existing network, disable any Internet connection sharing or firewall software on the computer before you start setting up the Microsoft Wireless Home Networking Adapter.

If your computers were networked directly together with crossover Ethernet, direct USB link, or LapLink cables, you can disconnect them and install USB or PC Card wireless adapters on each computer. If the computers were networked through an Ethernet hub, you can disconnect the computers from the hub and install USB or PC Card wireless adapters on each computer. Keep in mind that wireless transmission speeds, although faster than broadband Internet connections, are still slower than Ethernet networks. Depending on how you use your computers, you may want to keep them connected to the network through Ethernet.

Adding Microsoft Wireless Home Networking Adapters to Non-Windows Computers or Non-Microsoft Wireless Networks

You can add a Microsoft Wireless Home Networking Adapter to a non-Windows computer if the computer has

an available USB port or PC Card slot. Refer to your computer's documentation for instructions on configuring the adapter. You cannot connect a Microsoft Wireless Home Networking USB or PC Card Adapter to a Macintosh computer.

To add a Microsoft Wireless Home Networking USB or PC Card Adapter to a non-Microsoft wireless network, set up the adapter as instructed in this chapter, but when you are asked whether you have a floppy disk of network settings, click No. Then, select your non-Microsoft network's Network Name (SSID) and type its WEP Encryption Key, if used, into the manual settings screen. Refer to your network documentation for information on how to obtain these settings.

Adding Wireless Adapters to Non-Computer Devices

Non-computer devices, such as X-Box games devices, TIVO or Replay TV consoles, or security cameras, can be added to wireless networks by installing wireless adapters. If your device has a USB or PC Card port, you can attach a Microsoft Wireless USB or PC Card Adapter and set it up just as for a wireless computer.

Alternate Connection Methods

Microsoft Wireless Home Networking Adapters work with many types of computer and network configurations. See the following sections for information on

- ⌋ Changing Adapter Settings During or After Setup
- ⌋ Working with Domains
- ⌋ Configuring a Microsoft Wireless Home Networking USB or PC Card Adapter If You Connected the Hardware First
- ⌋ Installing an Adapter through the Windows Plug and Play Dialog
- ⌋ Connecting a Microsoft Wireless Home Networking Router Wirelessly by Using a USB or PC Card Adapter
- ⌋ Setting Up a Wireless Network with Two or More Adapters and No Router

Changing Adapter Settings During or After Setup

Although it is possible to change settings manually when setting up a USB or PC Card adapter, the adapter may not be able to connect to the network if the rest of the network still uses the old settings. It is better to reconfigure the network first, and then use the new settings to set up the adapter.

To change your adapter settings after setup is complete, you can rerun setup from the Wireless Network Utility. Make sure that all the devices on your network share the same Network Name (SSID), Channel, and WEP Key, if enabled.

Working with Domains

If your computer is already a member of a domain, do not change your file or printer sharing setup during Microsoft Wireless Home Networking setup. [What else do they need to do differently during Setup??] See Chapter X for more information on working with domains.

Configuring a Microsoft Wireless Home Networking Adapter If You Connected the Hardware First

USB is plug and play technology, meaning that a Windows computer will recognize when a USB device has been plugged in and will immediately try to configure the device. The Microsoft Wireless Home Networking Adapter setup software suppresses this behavior and configures the adapter automatically. However, if you connect a USB adapter before installing the Microsoft Wireless Home Networking software, Windows Plug and Play will start.

If the Plug and Play dialog starts up, you can either cancel it, disconnect the adapter, and run the Microsoft Wireless Home Networking software before reconnecting the adapter, or you can install the adapter drivers through the Plug and Play dialog. Refer to Installing Drivers through the Windows Plug and Play Dialog below. You should still install the Wireless Home Networking software to obtain other needed files, such as Help files and the Wireless Network Utility.

Installing an Adapter through the Windows Plug and Play Dialog

If you connected a USB [or PC Card?] Adapter before being prompted by the Microsoft Wireless Home

Networking software, or if you do not wish to use the Microsoft Wireless Home Networking software to install the adapter, you can install the adapter drivers through the Windows Plug and Play dialogs.

After you connect the adapter to a USB port on your computer, the New Hardware, Add New Hardware, or Found New Hardware Wizard (depending on operating system) appears. Follow the instructions below to install the adapter driver.

To set up an adapter through Windows Plug and Play on a Windows XP computer

1. Click the notification icon for Found New Hardware Device to start the New Hardware Wizard.
2. In the New Hardware Wizard, choose Install from a List or Specific Location, and click Next.
3. Either choose Search for the best driver and check Search removable media; or choose Include this location in the search, and browse to the location of your CD-ROM drive.
4. Insert the Microsoft Wireless Home Networking setup CD in your CD-ROM drive, and click Next.
5. After the New Hardware Wizard has located and loaded your adapter driver, click Finish to exit the wizard.

To set up an adapter through Windows Plug and Play on a Windows 2000 computer

1. The Found New Hardware Wizard appears. Click Next.
2. Check Search for a suitable driver for my device, and select CD-ROM drive.
3. Insert the Microsoft Wireless Home Networking setup CD in your CD-ROM drive, and click Next.
4. After the Found New Hardware Wizard has located and loaded your adapter driver, click Finish to exit the wizard.

To set up an adapter through Windows Plug and Play on a Windows 98 computer

1. The Add New Hardware Wizard appears. Click Next.

2. Check Search for the best drivers for my device, and click Next.
3. Check CD-ROM drive; or check Specify a location, click the Browse button, and browse to the location of your CD-ROM drive.
4. Insert the Microsoft Wireless Home Networking setup CD in your CD-ROM drive, and click Next.
5. After the New Hardware Wizard has located and loaded your adapter driver, click Finish to exit the wizard.

To set up an adapter through Windows Plug and Play on a Windows Me computer

6. [procedure to come]

Connecting a Microsoft Wireless Home Networking Router Wirelessly by Using a USB or PC Card Adapter

You can connect a Microsoft Wireless Home Networking Router wirelessly if none of your computers can be conveniently located near the modem and router, or if you want all of your computers to be mobile. You can also connect the router wirelessly if none of your computers have Ethernet connections, but one computer is currently connected through USB to a broadband modem that has USB and Ethernet connections.

To set up the router wirelessly, you can install a USB or PC Card adapter on the computer that was originally connected to the modem, and then configure the router through this adapter. For complete instructions, refer to the User's Guide for the Microsoft Wireless Home Networking Router.

Setting Up a Wireless Network with Two or More Adapters and No Router

You can set up a wireless network by connecting a wireless adapter to each computer without using a router. You might want to do this if you have no Internet connection, or if you want to share your Internet connection through a Windows XP computer. Keep in mind that connecting to the Internet through a router provides greater security and connectivity than connecting through a computer. If you use your Windows XP computer for your

Internet connection, be sure to address security and connectivity issues for the shared Internet connection.

To set up a wireless network by using two adapters

1. Set up the computer that is currently connected to your broadband modem first. Follow the regular setup steps, with the following exceptions:
 - e. When you are asked to choose your setup path, choose Create Network and Two-Adapter.
 - f. When you are directed to connect your adapter, connect the USB or PC Card adapter to your computer in the usual way and continue to follow the software instructions.
2. Set up additional computers as above.



Chapter 3: Using Your Microsoft Wireless Network

After setting up your wireless network, you can use the Microsoft Wireless Network Utility to manage your network and use Microsoft Windows to perform common networking tasks, such as sharing printers and files, sending Instant Messages, and playing games.

This chapter describes how to:

- Manage your network
- Perform common networking tasks
- Secure your network

Before performing any network tasks, it is important to understand how to navigate your network.

In order to use your network, you must always log on to your workgroup after starting your computer.

Need graphic of log-on screen. Add callouts: Step 1 pointing to workgroup name, step 2 pointing to password, and step 3 pointing to OK. Line w/red X through it pointing to Cancel button.

Do not click Cancel during the log-on process, even if your password is blank. Make sure your workgroup name is visible in the log-on screen, enter your password, and then click OK.

Note

You do not have to run the Wireless Network Utility to use your network. You can view the status of your network at any time from the tray icon on your desktop

Once you are logged on, you can perform certain network functions, like accessing the Internet or opening shared files from Windows. You do not need to run the Microsoft Wireless Network Utility for your network setup to function.

If you want to change your network setup or check the status of your network, however, you will need to open the Microsoft Wireless Network Utility.

The following table specifies the tasks you can perform in Windows and those you can perform in the Wireless Network Utility. Note that some tasks can be performed either from Wireless Network Utility or from the Windows Control Panel.

Task	Windows	Wireless Network Utility
View Network Settings	Yes	Yes
Add a printer	Yes	No
Share Files and Folders	Yes	No
Access shared files and folders	Yes	No
Diagnose Network Problems	??	Yes
Install and Uninstall Network software	Yes	No
Update Network Software	No	Yes
Play games on the network	??	☐??
Log on to the network	Yes	☐No
What other tasks do we need?		☐
		☐

Caution: If you are running Windows XP or Windows ME on your computer and you have the Microsoft Wireless Network software installed, do not run the Windows Network Setup Wizard available from the Windows Control Panel. Running the Windows Network Setup Wizard may overwrite your Wireless Home Network settings so that your network may not function properly.

Manage your Network

Review Note: I need information on any functionality that disappears if user does not have Router installed.

You can view information about your network and perform network maintenance from the Microsoft Wireless Network Utility. The Wireless Network Utility is installed on your computer when you install the network software.

To open the Wireless Network Utility, click **Programs** from your Start Menu, and then click **NetCenter**.

Note You can also open Wireless Network Utility by clicking the XXX icon in the Notification Area.

Insert screenshot of WNU UI with callouts describing what user sees from the UI.

The right pane of the Wireless Network Utility shows the devices currently connected to your network. You can click the icon for any network device to see status information on that device.

Insert screenshot here showing the properties of a device connected to the network

The left pane of the Wireless Network Utility shows the status of your Internet connection, local area network, and the computer you are currently using.

Insert screenshot of left pane with callouts for the Firewall Security, Wireless Signal Strength, and Shared Resources.

The following sections provide general information on other tasks you can perform from the Wireless Network Utility, including how to diagnose network problems and view network settings.

If at any time you require more detailed information about these tasks, you can access the Online Help system from the Wireless Network Utility.

To open the Help system, select Wireless Network Utility Help from the Help menu.

Diagnose Network Problems

When you are having a problem with your network, you can use the Diagnostics Tool to diagnose the problem.

To Diagnose Network Problems

1. In the Wireless Network Utility Window, click Diagnose Problems to start the Diagnostics process.
2. Review the report for problems. If you want more details, click See Details.

After you have reviewed the diagnostic report, you can access the Troubleshooting section of the Online Help to get more information on the problem.

View Network Settings

At times, you may want to view or change your network settings. For example, if you change Internet Service Providers, you will need to change the IP address your

network uses. You may also want to change the name of your network workgroup.

To view network settings, click Network Settings in Wireless Network Utility or select View Settings from the File menu.

Insert Screenshot of Network Settings page.

To change any of the settings listed, click Change network settings. **Can user change settings from here?**

You will be required to enter the password you created when you set up your network to change these settings.

Create a Floppy Disk of Network Settings

At any time, you can add an additional computer or printer to your network, or remove one of these items from your network. If you want to add a computer, you will need to copy your network settings to the new device before you connect it to your network. You can copy network settings on to a floppy disk from the Wireless Network Utility.

To copy network settings to a new computer

1. Insert a floppy disk into the disk drive of a computer on your network.
2. Open the Wireless Network Utility, and then select Create Floppy from the File Menu.

Need to see UI for this dialog box to finish this part of procedure.

3. Remove the floppy disk from the first computer, and then insert it into the computer where you want to copy the network settings.
4. Open the Wireless Network Utility on the second computer, and then select Read Floppy from the File Menu.

Need to see UI for this dialog box to finish procedure.

Perform Common Networking Tasks

You can use Microsoft Windows to perform common networking tasks, such as sharing files and printers, sharing an Internet connection, and sending Instant Messages.

Note Only the computer users on your local network will have access to the files you share. Computers on the Internet will not be able to access your files..

Share Files and Folders

Through Windows, you can make some or all of the files on your computer available to the other computers on the network. You can also share an entire drive with the network or share specific folders.

Let's say that you store photographs of your children in the path **C:\Images\Family Photos\Kids**. To make these photographs available to the network without sharing anything else on drive C, you would only share the Kids folder and leave C:\ (the root folder) and all other folders in the file path not shared.

Now let's say that you want to make the photographs in the Kids folder unavailable to the other computers on your network. To stop sharing the Kids folder you should stop sharing drive C or any of the folders in the path, including the Kids folder. Then, individually share any folder on drive C that you want to be available to the network.

For specific instructions on how to share your files and perform other related tasks, see the Windows Help file.

Use Windows Explorer to access your files

Windows Explorer displays the hierarchical structure of files, folders, and drives on your computer.

Need graphic of Windows Explorer.

It also shows any network drives that have been mapped to drive letters on your computer. Using Windows Explorer, you can copy, move, rename, and search for files and folders. For example, you can open a folder that contains a file you want to copy or move, and then drag the file to another folder or drive.

To open Windows Explorer, click **Start**, point to **All Programs** (or **Programs**, in older versions of Windows), point to **Accessories**, and then click Windows Explorer.

For more information about using Windows Explorer, see the Windows Help file.

Use My Network Places or Network Neighborhood to access and organize your network files

Depending on your version of Windows, you can use My Network Places or Network Neighborhood to view all of the shared files and folders on your network.

Need graphics of My Network Places and Network Neighborhood.

My Network Places (or Network Neighborhood, in older versions of Windows) presents a view of the network similar to the view of your computer presented by Windows Explorer. Use My Network Places/Network Neighborhood when you want to see all the resources available on the network, when you know where the resource you want is located, or when you want to copy files and folders from one network location to another.

To open My Network Places, click **Start**, and then click My Network Places.

To open Network Neighborhood (in older versions of Windows), double-click Network Neighborhood on your desktop.

To copy a file from your computer to another place on the network

1. Open My Network Places or Network Neighborhood.
2. Locate the file on your computer that you want to save to another computer on the network.
3. Locate the destination folder on the other computer.
4. Drag the file from your computer to the folder on the other computer.

To save a file to a computer on the network from within a program such as Microsoft Word

1. On the program's **File** menu, click **Save As**.
2. Open the Save In box and click the drive letter that has been assigned to the drive where you want to save the file.
3. Locate the folder where you want to save your file, and then click Save.

To open a file stored on another computer on the network

1. Open My Network Places or Network Neighborhood.
2. Double-click the name of the computer that has the file you want to open.
3. Locate the file that you want to open.

4. Double-click the file.

Share Printers

Using Windows, you can print documents on a printer that is attached to another computer on your network. This makes it possible to print without transferring files from one computer to another.

Before you can use a network printer, you must first enable the printer (or make it available to the network from the computer it is attached to). Then you will need to install the printer software on each computer from which you want to print, and then connect to the printer over the network.

See the Windows Help file for complete instructions and information about sharing printers.

The following topics provide general guidance for a few basic printer-sharing tasks.

[Note to Susan: I thought the user could choose to share their files and printers during Fox setup. DanSan says that the File and Printer Sharing and Client for Microsoft Networks features (necessary for sharing files and printers) are not programmatically enabled in Fox, but that these features may be added back. Is that correct? Do we need to describe in the print chapter how to enable File and Printer Sharing and Client for Microsoft Networks in Windows?]

To enable the Windows File and Printer Sharing feature
[Placeholder text, in case we need to add the procedure.]

To enable the Windows Client for Microsoft Networks feature
[Placeholder text, in case we need to add the procedure.]

To connect to a printer on the network

[Note to Susan: Wasn't sure whether or not you want instructions for multiple operating systems in the print chapter, so I've included them for this review.]

The following procedure varies depending on your version of Windows.

If you have Windows XP:

1. Click Start, and then click Printers and Faxes.

2. Under Printer Tasks, click Add a printer to open the Add Printer Wizard, and then click Next.
3. Click A network printer, or a printer attached to another computer, and then click **Next**.
4. Click Connect to this printer.
5. Connect to the desired printer using one of the following two methods:
 - Browse for the printer on the network.
 - Type the printer name using the following format:
[\\printserver_name\share_name](#)
6. Click Next, and then click the printer in Shared printers.
7. Click Next.

If you have Windows 2000:

1. Click **Start**, point to **Settings**, and then click **Printers**
2. Double-click **Add Printer** to start the Add Printer wizard, and then click **Next**.
3. Click **Network printer**, and then click **Next**.
4. Connect to the desired printer by typing its name using the following format, or clicking **Next** to locate the printer on the network:

\\printserver_name\share_name
5. Follow the instructions on the screen to finish connecting to the network printer.

The icon for the printer appears in your Printers folder.

If you have Windows Me:

1. Double-click **My Network Places**, and then locate the computer with the printer you want to use.
2. Click the computer with the printer you want, and then click the printer icon.
3. Click the **File** menu, and then click **Install**.

If you have Windows 98:

1. Double-click **Network Neighborhood**, and then locate the computer with the printer you want to use.

2. Click the computer with the printer you want, and then click the printer icon.
3. To set up the printer, follow the instructions on the screen.

To make a printer available to other computers on the network

The following procedure varies depending on your version of Windows.

If you have Windows XP:

1. Click Start, and then click Printers and Faxes.
2. Right-click the printer you want to share, and then click **Sharing**.
3. On the Sharing tab, click Share this printer and then type a share name for the shared printer.
4. If you share the printer with users on different operating systems, click Additional Drivers. Click the environment and operating system for the other computers, and then click OK to install the additional drivers.

Printer drivers for Windows 95, Windows 98 and Windows NT 4.0 are located on the Windows XP CD. If you can't find the driver you need, check your printer manufacturer's Web site.

5. Click OK, or, if you have installed additional drivers, click Close.

If you have Windows 2000:

1. Click **Start**, point to **Settings**, and then click **Printers**.
2. Right-click the printer you want to share, and then click **Sharing**.
3. On the **Sharing** tab, click **Shared as** and then type a name for the shared printer.

If you share the printer with users on different hardware or different operating systems, click **Additional Drivers**. Click the environment and operating system for the other computers, and then click **OK** to install the additional drivers.

Note Some printer drivers are not designed for sharing printers. For more information, see the documentation that came with your printer.

4. Click **OK**, or if you have installed additional drivers, click **Close**.

If you have Windows Me or Windows 98:

1. Click **Start**, point to **Settings**, and then click **Printers**.
2. Click the printer you want to share.
3. On the **File** menu, click **Sharing**.
4. Click **Shared As**.

Note: If the Sharing command or tab is not visible, you need to enable file and print sharing services. See To enable the Windows File and Printer Sharing feature earlier in this chapter.

To view a list of printers that are available to your computer

1. Open the Microsoft Wireless Network Utility.

The Other network devices section appears on the right side of the screen.

Need graphic of basic WNU UI that contains, among other things, an enabled printer and a not-enabled printer. Add line pointing to Other Network Devices section.

2. The network printers that appear in the list include:

Need graphic of computer/printer icon representing available printer.

Network printers that are available and enabled.

Need graphic of grayed-out computer/printer icon representing available/not enabled printer.

Network printers that are available, but not enabled.

To print to a printer that is attached to another computer on the network

1. Open the document or file you want to print (for example, a document in Microsoft Word).
2. On the File menu, click Print.
3. In the Name box at the top of the Print dialog, select the name of your networked printer from the drop-

down list. (Note: The way you select the printer may vary, depending on the application you're using.)

4. Click OK.

Note Some Internet service providers allow customers to share an Internet connection across computers using just one Internet account. In some cases, however, customers must purchase additional accounts. Please check with your Internet service provider about their policy before you proceed with Internet sharing.

Share an Internet Connection

If you have the Microsoft Wireless Network Router or Windows XP, and a broadband connection to the Internet, the other computers on your network can share that original Internet connection.

If you're using a Windows XP computer as your Internet access point (instead of a router), you can use the Internet Connection Sharing feature in Windows XP.

About Internet Connection Sharing

Internet Connection Sharing (ICS) is a Windows XP feature that allows computers on a network to access online services through a single Internet connection.

If you use your Windows XP computer as your Internet access point (or ICS host), you must leave your Windows XP computer on in order for the other computers in your network to connect to the Internet.

Also, because a router contains no files, folders, or other data, and cannot be used to manipulate computers to which it is linked, a router offers a greater degree of protection than an ICS host computer.

For more information about Internet Connection Sharing, look up "Internet Connection Sharing" in the Windows XP Help file.

To access the Internet from each computer on a network

After you've created your wireless network, you can access the Internet the way you usually do.

1. Make sure you have an Internet browser (such as Microsoft Internet Explorer) installed on each computer that is connected to your network.
2. On any of the networked computers, open the Internet browser.
3. Search for the Web site you want, or enter the URL in the address bar.

Note The rate that you are able to send and receive data over the Internet is highly dependent on many factors. On average, adding another user to your Internet connection will cause some slow-down; however, you probably won't notice very much, if any, slowing.

Read E-mail Over the Network

If you share a common e-mail address with others on your network, you can have the e-mail delivered to the network server rather than downloaded to one computer. This way, all members of the network can access the new, incoming e-mail at any time.

If you use Microsoft Outlook and Microsoft Exchange server for your e-mail, you can use the following procedure to specify where you want your incoming e-mail delivered. If you use a different e-mail program, see the help documentation for that program for more information.

To specify where you want incoming e-mail delivered in Microsoft Outlook

1. On the Tools menu, click Services.
2. On the Delivery tab, select an option from the drop-down menu under Deliver new mail to the following location. (The option for server delivery usually begins with "Mailbox –".)
3. Click OK.

For more information about e-mail delivery, see the Help file in Microsoft Outlook or your other e-mail program.

Send Instant Messages Over the Network

You can keep in close touch with others on your network by using Windows Messenger (earlier versions are called MSN Messenger). Windows Messenger/MSN Messenger is an instant messaging program that enables you to:

- ⌵ See who is online.
- ⌵ Send an Instant Message.
- ⌵ Call a contact's computer.
- ⌵ Send someone a file.
- ⌵ Have an Instant Message conversation with a group of friends.
- ⌵ Invite someone to play a game.
- ⌵ Get notified of new e-mail at Hotmail.

For more information, click **Help** in the Windows Messenger or MSN Messenger window.

Play Games over the Network and Internet

Many of the most popular games in the past few years have multiplayer capability, allowing two or more players to compete using a local network. With Microsoft Wireless Network Utility and network-enabled games, you can use your computers to play games with friends and family members.

Most games come with documentation that explains all you need to know to configure your network for multiplayer gaming. However, there are some steps you can take now to prepare for playing games over the network.

- o If you have purchased a multiplayer game, be sure to install it on each computer on the network where a person will be playing the game.
- o If you are playing an Internet-based game, you may also be required to pay user fees or download game files to your computer. Be sure to follow the directions provided on the Web site.

Make sure that the network protocols necessary to run the games you want to play are installed on each computer on your network. For more information, see the documentation that came with your games.

To find out which games are automatically configured to run on your Microsoft Wireless Network versus those that need to be configured manually, see the following Web site:

[Need URL]

About playing games on the Internet

In some cases, only one person at a time who is on your network can play Internet-based games. To find out which games all members of your network can play simultaneously, and which games only one member of your network can play at a time, see the following Web site:

[Need URL]

Connect to Other Wireless Networks

Many places, such as offices, hotels, and airports, provide wireless networks that you can access from your laptop computer while you're away from your own home or office.

If you have a Microsoft Wireless Network Adapter (PC Card or USB) and Windows XP, you can connect to other wireless networks, assuming you have the necessary permissions and passwords for those networks.

For example, let's say you're traveling. You've brought along your laptop computer (with the PC Card network adapter), and you're in an airport waiting for your flight. If the airport has a wireless network, you can switch to that network automatically.

To connect to an available wireless network

1. Right-click the network connection icon in the notification area (the area on the taskbar to the right of the taskbar buttons), and then click **View Available Wireless Networks**.
2. In **Connect to Wireless Network**, under **Available Networks**, click the wireless network that you want to connect to.
3. If a network key is required for Wired Equivalent Privacy (WEP), do one of the following:
 - If the network key is automatically provided for you (for example, the key is stored on the wireless network adapter given to you by your administrator), leave **Network Key** blank.
 - If the network key is not automatically provided for you, in Network key, type the key.
4. Click **Connect**.
5. To configure additional wireless network connection settings, or if you are having difficulty making a connection to the wireless network that you selected, click **Advanced**, and then configure the settings in the **Wireless Networks** tab.

[Note to Susan: Do we want to include in the print chapter the info about switching between a workgroup and a domain?]

Use a CD Burner

A CD burner (or CD recorder) is a special type of drive that allows you to record music and other files, such as text and graphics, on to a recordable (or writable) CD-ROM.

Technically, you can share your CD burner with the other computers on your network, just as you would share other drives. However, the performance will be slower over the network, so we recommend that you transfer the files that you want to put on a CD to the computer that has the CD burner.

Secure your Network

The Microsoft Wireless Network Router (sold separately) provides an important security layer between your network computers and the Internet. Some of the security mechanisms provided by the Microsoft Wireless Network Router include:

- Network Address Translation Firewall
- WEP Encryption
- Service Filtering (Not sure what to call this?)

You can view and configure settings related to these security mechanisms from the Wireless Network Utility.

If you do not have the Microsoft Wireless Network router installed, you will not be able to access Security settings from the Wireless Network Utility and Microsoft cannot guarantee the security of your network. **[not sure how to message this.]**

What will user be able to see and do in terms of security without the router?? I've cut all security info out of this SKU. Need to know what to cover and how to position it.

For information on the security options available with the purchase of the Microsoft Wireless Network Router, see the Online Help system.

Chapter 4: Troubleshooting

<PLACEHOLDER>

<APPROXIMATELY: 10 pages>

Glossary

Review note: some of these definitions come straight from the Windows XP glossary. We will modify as necessary to reflect the concerns of our audience. We are thinking of making this a full-scale appendix with diagrams to explain Basic Network Concepts to readers who want it.

Adapter

Administrator

Bandwidth

The amount of information, or size of file, that can be sent through a network connection at one time. A connection with more bandwidth can transfer information more quickly.

~~BroadBand~~ Broadband Connection

A high-speed connection. Broadband connections are typically 256 kilobytes per second (KBps) or faster. Broadband includes DSL and cable modem service.

Cable Modem

A device that enables a broadband connection to the Internet by using cable television infrastructure. Access speeds vary greatly, with a maximum throughput of 10 megabits per second (Mbps).

Category 5 UTP (Ethernet) Cable

Channel

Crossover Ethernet Cable or Connection

DHCP

DNS Server

Domain Name

DSL Modem

Edge computer (?)

Encryption

The process of disguising a message or data in such a way as to hide its substance.

Ethernet

An IEEE 802.3 standard for contention networks. Ethernet uses a bus or star topology and relies on the form of access known as Carrier Sense Multiple Access with Collision Detection (CSMA/DC) to regulate communication line traffic. Network nodes are linked by coaxial cable, fiber-optic cable, or by twisted-pair wiring. Data is transmitted in variable-length frames containing delivery and control information and up to 1,500 bytes of data. The Ethernet standard provides for baseband transmission at 10 megabits (10 million bits) per second.

Firewall

A combination of hardware and software that provides a security system, usually to prevent unauthorized access from outside to an internal network or intranet. A firewall prevents direct communication between network and external computers by routing communication through a proxy server outside of the network. The proxy server determines whether it is safe to let a file pass through to the network. A firewall is also called a security-edge gateway.

Gateway

A device connected to multiple physical TCP/IP networks capable of routing or delivering IP packets between them. A gateway translates between different transport protocols or data formats (for example, IPX and IP) and is generally added to a network primarily for its translation ability. A gateway is also called an IP router.

HomePNA

Home Network Center

Hub

A common connection point for devices in a network. Typically used to connect segments of a local area network (LAN), a hub contains multiple ports. When data arrives at one port, it is copied to the other ports so that all segments of the LAN can see the data.

Internet Connection Sharing (ICS)

A Windows XP feature that allows computers on a home network to access online services through a single Internet connection. This feature is not used when the Microsoft Wireless Home Networking Router is installed.

Internet service provider (ISP)

A company that provides individuals or companies access to the Internet and the World Wide Web. An ISP provides a telephone number, a user name, a password, and other connection information so users can connect their computers to the ISP's computers. An ISP typically charges a monthly or hourly connection fee.

IP address

A 32-bit address used to identify a node on an IP internetwork. Each node on the IP internetwork must be assigned a unique IP address, which is made up of the network ID, plus a unique host ID. This address is typically represented with the decimal value of each octet separated by a period (for example, 192.168.7.27). In this version of Windows, you can configure the IP address statically or dynamically through DHCP.

Modem

NAT (Network Address Translator)

Network

A network is a collection of two or more computers that are connected to one another, either via a wired or wireless medium. These computers can share access to the Internet as well as the use of printers and files.

A home or small office network provides a way for you to use other computers or equipment without actually being at those computers. You can work on photos and files with other family members or co-workers while surfing the Internet at the same time.

Network Name

NIC (Network Interface Card)

Packets (see Data Packets?)

PC Card

Plug and Play

Port

RJ-45 Connector

The connector for Ethernet cables.

Router

SSID (Service Set Identifier)

Straight-through Ethernet Cable or Connection

USB

Universal Serial Bus.

WEP

Wireless Equivalency Privacy security protocol.

Wireless

Refers to technology that connects computers without the use of wires and cables. Microsoft Wireless Home Networking uses radio transmission to connect computers in a network to one another.

Radio signals can be transmitted through walls, ceilings, and floors, so you can connect computers that are in different rooms in the house without physically attaching them to one another.

Regulatory compliance

United States of America

Radio and TV interference regulations

This device complies with Part 15 of the U.S. Federal Communications Commission (FCC) rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Microsoft hardware device(s) that accompanies this software can radiate radio frequency (RF) energy. If not installed and used in strict accordance with the instructions given in the printed documentation and Online User's Guide, the device may cause harmful interference with other radio-communications devices (for example AM/FM radios, televisions, baby monitors, cordless phones, etc.). Any cable that is connected to the device must be a shielded cable that is properly grounded. There is, however, no guarantee that RF interference will not occur in a particular installation.

Your Microsoft hardware device has been tested, and it complies with the limits for a Class B digital device in accordance with the specifications in Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful RF interference in a residential installation.

To determine if your hardware device is causing interference to other radio-communications devices, disconnect the device from your computer. If the interference stops, it was probably caused by the device. If the interference continues after you disconnect the hardware device, turn the computer off and then on again.

If the interference stopped when the computer was off, check to see if one of the input/output (I/O) devices or one of the computer's internal accessory boards is causing the problem. Disconnect the I/O devices one at a time and see if the interference stops.

If this hardware device does cause interference, try the following measures to correct it:

Relocate the antenna of the other radio-communications device (for example AM/FM Radios, televisions, baby monitors, cordless phones, etc) until the interference stops.

Move the hardware device farther away from the radio or TV, or move it to one side or the other of the radio or TV.

Plug the computer into a different power outlet so that the hardware device and radio or TV are on different circuits controlled by different circuit breakers or fuses.

If necessary, ask your computer dealer or an experienced radio-TV technician for more suggestions. You may find helpful information in the booklet "The Interference Handbook" (1995), published by the FCC. The booklet is available from the FCC at 1-888-CALL FCC or at <http://www.fcc.gov/cib/Publications/tvibook.html>.

Note

Any changes or modifications not expressly approved by Microsoft could void the user's authority to operate this device.

FCC Declaration of Conformity

Tested to comply with FCC standards. For home and office use. Model Number: XXXXXXXX

In addition, the following models have been approved under FCC certification rather than under the FCC Declaration of Conformity

FCC Declaration of conformity for RF Exposure

This device meets the FCC Guideline for Human Exposure as per ANSI/IEEE C95.1.

Canada

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

Cet appareil numérique de la classe B est conforme aux normes NMB-003 et CNR-210 du Canada.

Specifications

- ❑ Frequency Bands:
 - 2400 ~ 2483.5MHz (for US, Canada, and ETSI)
 - 2400 ~ 2497MHz (for Japan)
- ❑ Modulation TYPE: CCK,BPSK,QPSK
- ❑ Operating Channels: IEEE 802.11 compliant
 - 11 channels (US, Canada)
 - 13 channels (ETSI)
 - 14 channels (Japan)
- ❑ Radio Technology: Direct Sequence Spread Spectrum
- ❑ Data Rate: 11, 5.5, 2, and 1 Mbps. to fallback data rates in noisy environments.
- ❑ Output Power: > +15dBm, < 17dBm
- ❑ Receive sensitivity (@BER 10E-5):
 - Min. -80dBm for 11Mbps
 - Min. -83dBm for 5.5, 2, and 1 Mbps
- ❑ Coverage range:
 - 150 m for 11Mbps
 - 230 m for 5.5 Mbps
 - 280 m for 1/2 Mbps
- ❑ Operating temperature: 0 to 40 C

- ❑ Storage temperature: -25 to 60 C.

**<HARDWARE WARRANTY—
PLACEHOLDER>**

**<Approximately 2 pages, if we
need to print the warranty (open
issue)>**