

You can use a “wizard” to set up sharing, but what if it doesn’t work? This demonstration will show you what to look for and how to troubleshoot your home network. It will show you how to network your computers without using a “wizard” and how to share a printer.

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1) Plug in router.

The “WAN” port on the router goes to your cable / DSL modem.

The other ports on the router are your “LAN”. Your computers get connected to the LAN ports.

2) Connect computers.

Connect computers using the appropriate patch cables. See the Glossary for more information.

3) Turn computers on.

Your router will automatically assign IP addresses to your computers.

If you want to check what your IP address is (and to make sure your computer is connected), the easiest way is:

1. Start → Run.
2. Type “cmd” and press [Enter].
3. Type “ipconfig” and press [Enter]. This will give you basic information including your IP address.

If your IP address starts with “169...” or is all zeros, then your computer is not getting a valid IP address. Addresses that start with “169” are dummy addresses. Check your connections and make sure the router is on. Most home routers are set up so that computers get IP addresses that start with “192.168...”

To release an IP address, type “ipconfig /release”.

To renew an IP address, type “ipconfig /renew”.

For detailed information, you can type “ipconfig /all”.

4) Check Computer Names and Workgroup Name

Make sure all your computers have a different name. Tip: Keep the names short and without spaces. It will save you problems in the long run. If you have spaces in the name, you always have to enclose everything in quotes and that can be a pain.

Make sure all your computers are part of the same “workgroup”. It might be “MSHOME” or “WORKGROUP”, but just make sure all your computers have the same workgroup name.

Windows XP	Windows Vista
<p>There are several ways to find the computer name and workgroup:</p> <ul style="list-style-type: none"> • Right-click on “My Computer” on the desktop, then select “Properties”. Click on the “Computer Name” tab. • Start → Control Panel → System. Click on the “Computer Name” tab. <p>If you want to change the computer name or workgroup, click the [Change] button.</p> <p>If you make changes, reboot your computer.</p>	<p>There are several ways to find the computer name and workgroup:</p> <ul style="list-style-type: none"> • Right-click on “Computer” on the desktop, then select “Properties”. • Start → Control Panel (Classic View) → System • Start → Control Panel (non-Classic View) → System and Maintenance → System (or “See the name of this computer) <p>If you want to change the computer name or workgroup, click “Change Settings”, then click the [Change...] button.</p> <p>Another way to get to the System Properties box:</p> <ul style="list-style-type: none"> • Start → Control Panel (Classic View) → Network and Sharing Center. Expand “Network Discovery” and click on “Change Settings”. • Start → Control Panel (non-Classic View) → Network and Internet → Network and Sharing Center. Expand “Network Discovery” and click on “Change Settings”. <p>If you make changes, reboot your computer.</p>

Workgroup vs. Domain (F.Y.I.)

For home networks, choose workgroup. Domains are for businesses and require a server with a server operating system installed (such as Windows 2003 Server).

5) Turn sharing on.

Windows XP	Windows Vista
<p>There are a few ways to get to where you need to be:</p> <ul style="list-style-type: none"> • Right-click Network Places on the desktop and select “Properties”. Right-click “Local Area Connection” and select “Properties”. • Start → Control Panel → Network Connections. Right-click “Local Area Connection” and select “Properties”. <p>There should be a check-mark in “File and Printer Sharing for Microsoft Networks”. (Note: If you don’t see this entry, you need to [Install] the service. You may need your Windows CD for this.)</p>	<p>There are a few ways to get to where you need to be:</p> <ul style="list-style-type: none"> • Right-click on “Network” on the desktop, then select “Properties”. • Start → Control Panel (Classic View) → Network and Sharing Center. • Start → Control Panel (non-Classic View) → Set Up File Sharing (under Network and Internet) <p>Make sure Network Discovery is on. Make sure File sharing, and/or Public Folder Sharing is turned on.</p>

Turn on Simple File Sharing in Windows XP:

This makes it easier to share folders. Otherwise, you need to look at both Sharing and Security.

1. Windows Explorer (or My Computer) → Tools menu → Folder Options → View tab.
2. Scroll down to the very bottom for Simple File Sharing and check the box.

6) Share a folder.

You can have all your computers networked together, and they can all access the Internet, but if you want to share files between them you have to decide what folders to share. We like to use advanced options when sharing. You have more control over the share name and who has access.

Windows XP	Windows Vista
<p>In Windows Explorer, right-click on the folder you want to share and select “Properties”. Click on the “Sharing” tab.</p> <p>There may be two links in the “Network Sharing” section. If you go through the Network Setup Wizard, it makes a number of assumptions and you don’t have any control. It may turn off sharing for security reasons. It may make changes to Windows Firewall. It also shares all your printers whether you want to or not and gives them random names.</p> <p>Depending on whether you went through the wizard, whether you have simple file sharing on or off, and your version of XP, the exact screen you see will vary. Therefore, we are not listing every variation here. Turn on the option to share the folder, give the folder a share name, and set permissions.</p>	<p>If you turned Public Folder Sharing on, there is a folder called “Public” that is shared. Move files to that folder that you want to share with others on the network.</p> <p>To share other folders, right-click on the folder and select “Properties”. Click on the Sharing tab. Click the [Advanced Sharing] button. Check-mark the “Share this folder” box. Change the Share Name if you wish. Click on “Permissions” and give “Everyone” full control if you want to be able to copy files back and forth.</p>

How do you tell what folders are shared?

Windows XP	Windows Vista
There are a few ways to get to	There are a few ways to get to “Computer Management”:

<p>“Computer Management”:</p> <ul style="list-style-type: none"> • Right-click on “My Computer” on the desktop and select “Manage”. • Start → Programs → Administrative Tools → Computer Management (assuming you have the Administrative Tools menu turned on.) <p>Once you have Computer Management open, expand System Tools → Shared Folders and click on “Shares”.</p>	<ul style="list-style-type: none"> • Right-click on “Computer” on the desktop and select “Manage”. • Start → Control Panel (Classic View) → Administrative Tools → Computer Management. • Start → Control Panel (non-Classic View) → System Maintenance → Administrative Tools → Computer Management. <p>Once you have Computer Management open, expand System Tools → Shared Folders and click on “Shares”.</p> <p>Another place to see what folders are being shared:</p> <ul style="list-style-type: none"> • Go to the “Network and Sharing Center” (see the previous two sections on how to get there) and click on “Show me all the files and folders I am sharing”.
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Another way is to use the command “net share” at the command line (Start → Run → cmd).

The command “net view \\<computer name>” will give you just non-hidden shares.

Administrative Shares (F.Y.I.)

You may see some shares that end with “\$” such as “ADMIN\$”, “C\$”, and “IPC\$”. These are hidden shares that the system uses. Do not delete them; they will come back anyway the next time you reboot. They are necessary for file and printer sharing.

- ADMIN\$ - This is used for remote administration of a computer. It’s the Windows or %SYSTEMROOT% folder.
- C\$ - This is referred to as the “root” of your C: drive.
- IPC\$ - Inter-Process Communication share is used for sharing data between applications. This cannot be deleted and is fundamental to the proper functioning of the OS and programs.
- PRINT\$ - Use for remote administration and installation of printer drivers.

7) See other computers on the network.

Windows XP	Windows Vista
<p>Double-click “My Network Places” on the desktop.</p> <p>Go to Entire Network → Microsoft Windows Network → Workgroup (or whatever you named your workgroup).</p>	<p>Double-click “Network” on the desktop.</p> <p>Expand “Network”, and the name of the computer you want to look at. Shared folders are listed underneath.</p>

Troubleshooting Shares

If you get “Access Denied” when trying to open a shared folder, go to the computer with the shared folder. Right-click on the folder and select “Properties”. Check both the “Sharing” and “Security” tabs if they are there.

If you have any firewall software (such as Zone Alarm), check the settings or temporarily disable it. It may be blocking file sharing.

Mapping a Network Drive:

If you want a permanent connection between two computers, you can map a network drive. Then you will be able to access the shared folder on the other computer by a drive letter.

1. In Windows Explorer (or My Computer), Tools → Map Network Drive.
2. Pick a drive letter. Don't use Z: or anything too close to the first part of the alphabet. For example, if you often connect external or USB flash drives and they always use E:, F:, G:, etc., use another letter.
3. You can either [Browse] the network for the folder or type in:
`\\<computer name>\<share name>`.
4. Put a check-mark in "Reconnect at Login" to have the drive always be mapped.

8) Sharing printers

1. On the computer that has the printer attached, go to Start → Printers and right-click on the printer. Select "Properties". Click on the "Sharing" tab. Select "Share this printer" and give it a share name (avoid using spaces in the name). Click [Ok].
2. On the other computer, go to Start → Printers and double-click "Add Printer". Select "Add a Network Printer". Either browse for the printer on the network, or type:
`\\<computer name>\<share name>`
You will be prompted to install the driver.

If you have problems printing, you may need to uninstall the printer, install the printer drivers from the CD, then reinstall the printer.

9) Setting up a Wireless Connection

Set up the router

1. You must set up the router using a wired connection first. Default password is usually "admin", "default" or "password". You should change it to something else.
2. There are different types of security. You can select a security mode and/or set up MAC address filtering.
 - a. Security modes require setting up a pass phrase which must be entered on all the computers connecting to the wireless router. All computers should be capable of using the mode chosen.
 - b. MAC address filtering requires that you enter the MAC addresses of all the computers that are allowed access. Use "ipconfig /all" to find these.

Set up the computer

1. Install your wireless adapter software if it isn't already installed on your computer.
2. Insert your wireless adapter card if it's an external card.
3. Double-click on the icon in the System Tray for your wireless adapter. Note: The icon is different for different vendors.
4. Select the network to connect to, click [Connect], and enter the pass phase if required. Choose the appropriate security mode if prompted.

Glossary:

Ethernet

A local-area network architecture that supports data transfer rates of 10 Mbps (megabits per second). Fast Ethernet supports 100 Mbps and Gigabit Ethernet supports 1 gigabit per second (i.e. 1,000 Mbps).

NIC

Network Interface Card. These come in different speeds. Now-a-days most cards you buy new are gigabit cards, but there may still be 100 megabit or even 10 megabit cards for sale.

Router

A home router is actually a combination of several pieces:

- A router: Connects two (or more) networks together. For example, it connects the Internet (i.e. the “Outside World”) to your home network (i.e. your private network).
- A firewall: Filters traffic into or out of a network. For example, certain ports may be blocked or allowed through. HTTP traffic uses port 80 and is allowed through. A program such as Timbuktu (a remote access program) uses ports 1417 through 1420. If you need to use that program, you can unblock those ports on your router.
- A Hub or Switch: This allows you to connect more than one computer together. Home routers usually have four ports. A switch is newer technology. It’s smarter and more efficient than a hub.
- DHCP Server: Assigns IP addresses to computers on the network.

In the business world, a large company actually has separate devices. It has a router that only routes traffic. It has a separate box for the firewall. Then, there may be many hubs or switches connecting all the computers together. A home router combines all these pieces into one box.

Routers come in different speeds such as 10 Mbps, 100 Mbps, and 1,000 Mbps.

Patch Cables – Rule of Thumb:

- Category 3 – ok for 10 Mbps networks, but not used any more. This is equivalent to phone cord. You won’t find CAT3 patch cables sold at computer stores.
- Category 5 (a.k.a. CAT5) – for 100 Mbps networks. There is also CAT5E (enhanced) which is a little better.
- Category 6 (a.k.a. CAT6) – for 1,000 Mbps (i.e. “gigabit”) networks.

The patch cable is the “weakest link”. If you have a gigabit network card and/or a gigabit switch, but CAT5 cable, you may have drop-outs and problems on your network. It looks like Best Buy only sells CAT6 cable now.

If you have a gigabit switch, but only a 100 megabit network card, the switch will usually sense what device is connected to it and adjust automatically, and vice-versa. If you have network problems, you might have to manually set the speeds on the NIC and the port on the switch.

LAN

Local Area Network. This is your home network. The router connects your LAN to the Internet.

WAN

Wide Area Network. Your LAN is part of your ISP’s WAN which is part of the Internet.