

how to

Hitch a Ride on Any Broadband Line



by Leigh Webber

Fighting over the remote control is old hat. These days, people wage battles over custody of the lone household Internet connection. If you're lucky enough to have a high-speed Internet connection—either DSL or cable—your arm-wrestling days are over. Rather than spring for a costly second hookup, you can piggyback your Mac onto your housemate's broadband connection and invade the Internet simultaneously. All it takes is a small hardware investment and a simple crash course in networking know-how to get up and running.

Here, we show you how to connect multiple computers to a single DSL or cable-modem connection so you can get more baud for your buck—plus firewall protection against hackers.

First, you need to subscribe to either DSL or cable broadband service. Those of you with pokey dial-up connections can technically (though not necessarily effectively) share Internet service (check out Vicomsoft's Internet Gateway software—\$149, www.vicomsoft.com—for this alternative), but if speed is what you're after, broadband is a must. Depending on where you live, you may or may not have a choice between DSL or cable service—check to see what's available in your area and sign up.

You also need a router to divvy up the bandwidth from your DSL or cable line to your various Macs. This small piece of hardware

connects multiple computers to a high-speed modem, splits the bandwidth, and allocates it to all the connected computers (see “Which Router to Take,” p71, for a list of Mac-compatible routers). Don't forget to pick up enough Ethernet (RJ-45) cables to connect the router to your DSL or cable modem, and each computer to the router.

A router functions as a middleperson between your computers, or LAN (local-area network), and the Internet, or WAN (wide-area network). The WAN talks directly to the router through your modem connection; the router then talks to your LAN. Thus, the Internet and your computers never talk to each other directly without going through the router.

Routers offer greater security against Internet invaders—they provide a fixed Internet Protocol (IP) address while doling out distinct IP addresses to each connected computer. This procedure is known as Network Address Translation (NAT). Each networked computer essentially hides behind the fixed identity of the router. No outside computer on the WAN can see the addresses of the computers behind the router, so the router functions as a firewall to protect your computers from the beady gaze of hackers. If hackers can't see your computers, they can't hack into them.

WHAT YOU NEED



Router



High-speed Internet service (DSL or cable)



Ethernet cables (RJ-45)

What the WAN is LAN?

Not privy to networking lingo? Here's our Internet-terminology cheat sheet to keep you sounding smart around the IT department's water cooler.

DHCP (Dynamic Host Configuration Protocol) A technology that assigns a different (dynamic) IP address to a computer every time it connects to the Internet, thus providing greater security. DHCP also abolishes the need to enter an IP address manually for every new user you add to the network.

Firewall A system of hardware, software, or both that prevents unauthorized access to or from a network.

IP (Internet Protocol) Address A unique number (for example, 196.168.1.1) that identifies a computer's network identity.

SET UP YOUR NETWORK

1 Connect the Router to the Modem

Once you have a router, connecting it to the rest of your setup is as easy as plugging in a phone. First, shut off all your equipment—Macs, high-speed modem, and router. Then connect your modem to the WAN port on the router using an Ethernet cable (see “What the WAN Is LAN?” for our networking lingo decoder ring).

Connect your DSL or cable modem (above right) to the router's WAN port (below right) with an Ethernet cable.



2 Connect Your Computers to the Router

Next, connect each computer via its Ethernet port to one of the LAN slots on the router using more Ethernet cables. If you run out of LAN ports before running out of computers, use the Uplink port on the router and attach an additional hub (the Linksys BEFSR41 router—pictured at right—can support 253 users on one DSL or cable line). Finally, plug the router into an AC outlet and power up the router, the modem, and your Mac.



Connect each computer (above) to one of the router's LAN ports (below) with Ethernet cables.

CONFIGURE THE ROUTER

Sadly, not all routers are created equal. Each usually comes equipped with its own specific setup protocol and a poorly written manual to help you stumble through the ordeal. Luckily, router setup is the same for both DSL and cable users. Which computer you choose to set up first is up to you—there's no administrator or head computer. Though your router's specific setup may vary, following are the general steps for configuring a router. Note: Some Internet apps, such as America Online or your ISP's setup software, may conflict with your router's settings. If they do, uninstall these troublemakers.

1 Set Up TCP/IP

Start with your Mac. Under the Apple menu, select Control Panels, then TCP/IP to open the settings window. Select Ethernet from the Connect Via drop-down menu, and select Using DHCP Server from the Configure menu. In the DHCP Client ID field, type your router's default IP address—you can usually find this in the manual. DHCP enables dynamic addressing—though the IP address of your router always stays the same, the router gives each networked computer a different address every time it connects to the Internet.



Enter the IP address in the TCP/IP window.

ISP (Internet Service Provider) The company that sells you access to the Internet. Some of the most popular ISPs include Earthlink, AOL, DirectTV DSL, and AT&T Cable.

LAN (local-area network) A network of computers, set up in a home or office, that allows you to share local resources like printers, file servers, and the Internet.

NAT (Network Address Translation) This Internet standard provides a type of firewall to protect your network of computers against the outside world. It provides one set of dynamic IP addresses on the LAN for your network, and a different IP address for your Internet-connected router.

PPPoE (Point-to-Point Protocol over Ethernet) A specification some ISPs use to connect Ethernet users to the Internet via a shared broadband connection.

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Which Router to Take

Routers come in a variety of flavors: They can be wired or wireless; they can support Macs, PCs, or both platforms; and they can work with cable and/or DSL services. Before buying a router, read its specs carefully to make sure it supports the features you need. If you're connecting multiple computers to one broadband line, your router should house enough LAN ports to connect your entire network.

You can connect Macs, PCs, and Linux boxes to the same router and share a single DSL or cable line. Each computer must have an Ethernet port, TCP/IP, and any Web browser. Here are a few Mac-friendly routers to consider:

Apple AirPort

\$299 (SRP) for AirPort Base Station, \$99 (SRP) for AirPort Card; www.apple.com/airport Wireless, Mac-only hub. Requires one AirPort Base Station plus an AirPort card for each Mac.

Netline Broadband Gateway/4s

\$129.99 (SRP); www.proxim.com Wired, four-port cable and/or DSL router. Compatible with Macs and PCs.

Asanté FriendlyNet

\$379 (SRP); www.asante.com Wired or wireless, three-port cable and/or DSL router with AirPort support. Compatible with Macs and PCs.

Macsense XRouter Aero

\$299 (SRP); www.xsense.com Wired or wireless, four-port cable and/or DSL router. Compatible with Macs and PCs.

Netline Wireless Broadband Gateway

\$299.99 (SRP); www.proxim.com Wireless, cable and/or DSL router. Compatible with Macs and PCs.

Linksys EtherFast BEFSR41

\$99 (street); www.linksys.com Wired, four-port cable and/or DSL router. Compatible with Macs and PCs.

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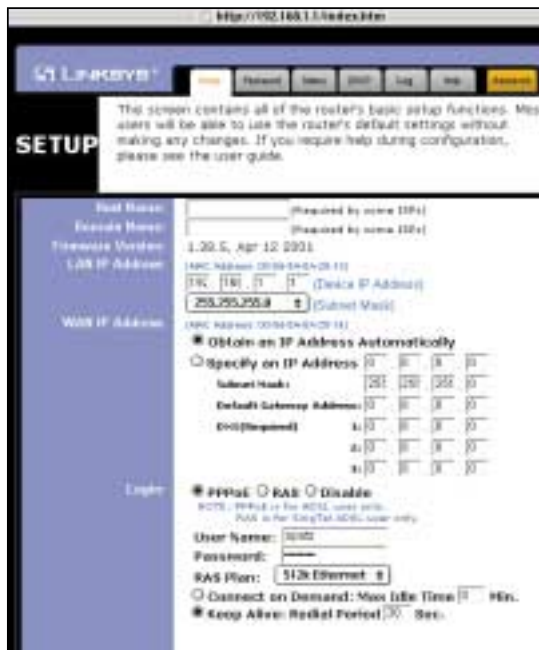
2 Set Up the Router

Next, access your router's Web-based setup page by typing its default IP Address into Netscape's or Explorer's address field. In the Setup page, the top two fields call for a host and domain name. Some ISPs require you to fill in these fields with pass codes your ISP supplies. Otherwise, leave these fields blank.

In the LAN IP Address field, type in the router's default IP Address and then select the Subnet Mask number, also contained in your router's manual. In the WAN IP Address field, check the Obtain An IP Address Automatically button to enable this function.

Some DSL ISPs require you to choose PPPoE (Point-to-Point Protocol over Ethernet) to connect—check with your DSL service provider to see if this is the case. If so, next to Login, check the PPPoE button and then enter the user name and password you selected through your DSL service. If you're a cable subscriber or if your DSL service does not use PPPoE, select Disable (user name and password not required).

If you want to dictate when your computer connects to the Internet, choose Connect On Demand in the setup window. If you want a 24/7, always-on connection, select Keep Alive. Keep in mind that it's better to take your computer offline when you aren't using it to better protect your network.



Configure the router via the manufacturer's Web site.

3 Configure DHCP

Next, click the DHCP tab at the top of the Web page to open the DHCP controls. Enable DHCP Server and then type in the number of computers on your network in the Number Of DHCP Users field. Leave the Starting IP Address field as is. Then click Apply to save your settings. Your router is now ready for use.



Enabling DHCP allows dynamic addressing.

4 Reset and Reboot

To get your network up and running, reset the power on your DSL or cable modem and then restart your Mac. To set up the other computers on your network (again, you can set up various types—Mac, PC, Linux, and so forth), make sure to connect each computer to the router and set each one's TCP/IP settings to Configure Using DHCP Server (see step 1 in "Configure the Router," p71). Restart each computer, and your network's good to go.

What the WAN Is LAN?

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Router A device that allows you to network local computers and connect them to another network, such as the Internet.

TCP (Transmission Control Protocol) A network procedure that allows two computers to transmit and receive streams of data.

WAN (wide-area network) A network of computers that spans a large geographical area, connecting computers around the world (the Internet, for example).

DHCP Dilemma

Even though most routers work cross platform, they were originally designed with Windows in mind. This sometimes causes DHCP problems on non-Windows operating systems, which can translate to long waits when loading a Web page or make your router malfunction—even if you've set the configurations correctly by the book.

If you encounter either of these problems, disable DHCP and assign static IP addresses to all the computers on your network. This won't impair your firewall since the router still displays a different IP address to the outside world, not the IP addresses you assign to your computers. Here's how to do this:

1. Log back on to the router's Web-based setup page. Click the DHCP tab, disable DHCP Server, and click Apply.
2. Launch the TCP/IP control panel on your Mac. Instead of configuring via DHCP, select Manually from the Configure drop-down menu.
3. In the IP Address field, type in a new IP address—this should be the router's IP address followed by two additional numbers of your choice. For example, if your router's IP address is 192.168.1.1, assign a unique IP address to each networked computer, such as 192.168.1.101 or 192.168.1.102. Keep the Subnet Mask number (the one that comes with your router) the same.
4. Enter your router's IP address (the same one you use to access the Web setup page) in the Router Address field.
5. The Name Server Address field should already display the numerical Web address of your ISP's domain server. If this field is blank, consult your ISP's literature and enter its domain server addresses here.
6. Repeat these steps for each computer on your network, making sure to assign a different IP address to every computer.

When traveling with her TiBook, Leigh Webber constantly prowls for generous Internet users with broadband to share.