Wireless Networking

Mac/PC Compatibility:
QuickStart Guide for Business
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The Basics

Wireless networking is an alternative to running cable around your office. Using radio frequencies, wireless networks permit computers, servers, and even printers to communicate with one another.

**User benefit:** Freedom. Not only can your employees use a wireless-enabled computer in different locations around the office, they also can access email, websites, and other network services via wireless access points (often called “hot spots”) in airports, hotels, coffee shops, and other places.

**Business benefit:** Wireless networking is an attractive alternative to installing costly, labor-intensive network cable. And when your users can work wherever they need to be, they stay more productive.

Standards and Buzzwords

Here are some common terms associated with wireless networking.

**802.11.** Wireless networking uses IEEE 802.11 standards. See the chart for a speed comparison of different versions of 802.11. Currently, 802.11b and 802.11g are the most widely used protocols, but many companies (including Apple) already are starting to support 802.11n, compatible with 802.11b and 802.11g. By the way, you’ll often hear “Wi-Fi” in reference to 802.11-compatible wireless networks and devices. That term was created by Wi-Fi Alliance, a global nonprofit industry association that Apple belongs to.

**AirPort.** AirPort is Apple’s wireless networking technology based on IEEE 802.11 standards. All current AirPort products support the popular 802.11b and 802.11g wireless networking standards; the new AirPort Extreme Base Station and Apple computers with Intel Core 2 Duo processors also support 802.11n.

**Hot spot.** Location that offers public access to a wireless network. Access may or may not be free. Typical locations for wireless hot spots include airports, cafés, libraries, bookstores, and hotels.

**Internet protocols.** Just as with a wired network, computers and other devices connected wirelessly communicate using standard languages, often called “protocols.”

**DHCP (Dynamic Host Configuration Protocol).** DHCP is comparable to having the phone company automatically assign a telephone number to each unit of a new apartment building. Every computer that uses the Internet needs a distinct Internet Protocol (IP) address. DHCP allows network routers to assign IP addresses automatically, eliminating the need for users to enter them manually. Routers used as Internet gateways for wired or wireless networks typically include DHCP capability.
WPA and WEP. WPA and WEP are wireless access protocols that password-protect your wireless network and encrypt traffic broadcast over it. WPA is more secure, and is therefore preferred for protecting your wireless network. Both are supported by Apple Airport products.

How the Mac Does It
MacBook Pro, MacBook Air, MacBook, and iMac systems come with AirPort wireless networking technology already built in. You also can add an AirPort wireless card to a Mac Pro computer.

In addition, Apple offers the AirPort Extreme Base Station for easy setup of office wireless networks, and the palm-size AirPort Express Base Station for portable wireless networking (or extending the range of a base station) at home or on the road. In addition to AirPort wireless networking technology, Time Capsule serves as a wireless base station, as well as a powerful back-up drive.

Apple supports 802.11n technology in most of the latest Mac computers, Apple TV, and AirPort Extreme Base Station. (The base station also supports 802.11a networking in addition to the usual 802.11b and g.)

Mac/Windows Compatibility
As mentioned, Apple’s AirPort technology is based on IEEE 802.11 standards, so if you already have a wireless local area network—whether based on a Mac OS, Windows, or other platform—your Mac is ready to work with it. That includes accessing servers or printers shared via your wireless network.

Conversely, Windows-based desktop and laptop systems that are Wi-Fi compatible can join a wireless network you have created with an AirPort Express or AirPort Extreme Base Station. (Note that if 802.11b and 802.11g devices are connected to the same network, the network will slow to 802.11b speeds to maintain compatibility with 802.11b units.)

Setting Up a Wireless Network
Don’t yet have a wireless base station? Or thinking of taking a portable base station with you on business trips? Apple has made it easy to set up and manage your own AirPort wireless network.

Mac systems come with AirPort Setup Assistant, which guides you through quickly configuring an AirPort Extreme or AirPort Express Base Station and sharing printers on your wireless network.

For more advanced options, use the AirPort Admin Utility. For example, you can restrict access to your base station and Internet connection, change the base station’s frequency, or change the type of security your wireless network uses. With the new 802.11n-compatible AirPort base station, all functionality in AirPort Setup Assistant and AirPort Admin Utility now can be found in AirPort Utility. You can find all of these programs in the Utilities folder within the Applications folder.
How Do I Get Started?

When you first start up a new Mac system, the Mac OS X Setup Assistant asks you for information about your Internet and other network settings. Once you’ve entered that information, your computer is ready to connect to the Internet via both wired and wireless networks.

**Joining a Wireless Network**

One of the most common wireless setups in homes and offices today uses 802.11 and DHCP. In this scenario, it’s easy to connect a Mac to your wireless network. When your computer is within range of an open wireless network (not protected by a password), Mac OS X will automatically identify the closest network and ask whether you want to join it. If your network is password protected (as it should be for added security), you follow the steps outlined in “Changing your wireless settings.”

Alternatively, you can see a list of available wireless networks (both open and closed) and choose one to join. Click the AirPort icon in your menu bar or bring up the AirPort window in the Network System Preferences pane.

If you don’t see your desired wireless network listed, or you need to change your AirPort settings, read the next section.

**Changing Your Wireless Settings**

After initial setup, you can adjust your settings—including the ones for AirPort—from the Network pane of the System Preferences application.

System Preferences is ready to launch from the Dock (the Dock is a row of application icons at the bottom of your screen).

Another way to configure your wireless preferences is to launch the System Preferences application from the Applications folder of your Mac (or the Apple Menu at the upper-left corner of your screen).

Once you’ve opened System Preferences and selected the Network pane, choose AirPort from the side menu. Then the Network pane can configure wireless networking on your Mac. If needed, you can set up different network configurations for different locations where you use your Mac. For now, just use the Automatic location.
Can’t change your Network preferences?

If the options in the Network pane are grayed out, look for a padlock symbol in the lower left corner of the pane. You’ll see the padlock closed, with the note “Click the lock to make changes.”

When you click the lock, you’ll be asked to enter your Mac password. The padlock will open, and you will be able to change your network settings. To protect those settings, click the padlock again.

Accessing AirPort Preferences from the Menu Bar

Mac computers let you customize which information is displayed in the menu bar at the top of your screen. If you’d like to have the AirPort control menu accessible from your menu bar and it isn’t already there, launch System Preferences from the Dock. Open the Network pane and choose AirPort from the column on the left. Click the checkbox next to “Show AirPort status in menu bar” near the bottom of the window.

If you see the AirPort icon, you can uncheck that box to remove it from the menu bar. You also can remove the icon without using System Preferences. While holding down the Command (Apple) key, click the icon and drag it out of the menu bar. It will disappear.
Network Default Setting

By default, AirPort is configured to join any network it has previously connected to, giving preference to the most recent one.

But you can select one network to be the default by selecting it from the “Network Name” menu. Also, you can edit a list of preferred networks—add, subtract, or change order or preference—by clicking the “Advanced” button on the AirPort Network page and selecting the AirPort tab.

Whenever you connect to a new wireless network, it will automatically be added to this list. You also can click the + button to add a network to the list. (If the network requires a password, enter that password when you add the network to the list.) You can delete networks you no longer want on the list with the - button. And you can prioritize the names on the list to determine the order in which AirPort attempts to join them simply by clicking one and dragging it up or down the list.

Note the “Assist me…” button at the bottom of the Network pane. Anytime you need help with configuring network settings on your Mac, just click this button to bring up Network Setup Assistant, which will walk you through step-by-step to set up or troubleshoot a network.
TCP/IP and Other Settings
Communication between your Mac and the Internet were established when you ran Mac OS X Setup Assistant. The Network window allows you to look up or change those settings, if necessary. In the TCP/IP pane, you can choose a method of getting an IP address for your computer (such as manually or via DHCP), establish dial-up connections, configure AppleTalk networking options, and set up network proxies. For more information about any options in this window, and troubleshooting tips, select the Help option in System Preferences.

Printer and Disk Sharing with AirPort
AirPort Extreme also allows users to turn almost any external USB hard drive into a shared drive. Simply connect the drive to the USB port on the back of your AirPort Extreme, and the files on the drive instantly become available to anyone on the secure network, Mac and PC alike. You also may set up password-protected accounts for everybody on the network, or allow read-only access to certain files and folders.

The same USB port does double duty by letting you share a printer throughout the network, allowing users to take advantage of one centrally available printer. Wirelessly, of course.
Beyond the Office

Apple's AirPort technology is great for your off-hours and your work time. For example, the convenient palm-size AirPort Express Base Station not only provides 54Mbps wireless networking, it also comes with AirTunes software that lets you enjoy your iTunes music library in virtually any room of your house—or even in several rooms at once.

All you have to do is connect your sound system to the audio port on AirPort Express using an audio cable, and AirTunes lets you play your iTunes music through your stereo system or powered speakers—wirelessly. iTunes automatically detects the connection of AirTunes and alerts you to choose where you can output your music.

For More Information

To learn more about the Mac and wireless networking, visit:

- www.apple.com/airportextreme
- www.apple.com/airportexpress
- www.apple.com/macbookpro/wireless.html
- www.apple.com/imac/design.html

To learn more about Macs in business, visit www.apple.com/business