



Keeping you mobile...™

[www.Laptopsinc.com](http://www.Laptopsinc.com)

## PC Card Radio

Wi-Fi networks use a radio band to "broadcast" data to other Wi-Fi enabled equipment and the most common client device is the PC Card Wi-Fi radio. There are hundreds of variations, but most look like a standard Type II PC Card that slides into your laptop's PC Card slot. These cards used to be known as PCMCIA (Personal Computer Memory Card International Association) cards but are now simply called PC Cards.)

The protruding end of most Wi-Fi PC Cards contains a built-in antenna, usually a miniature twin diversity antenna, which can sometimes spring out to improve coverage. Some of them have a tiny connector on the end to which you can attach a larger, more powerful antenna to maximize range.

On many laptop computers, the software and drivers for these PC Cards are already built in. If you are using Windows XP, you may find that when you slide in the card, the drivers and software will load automatically. The computer will then scan the area to find and log onto the closest Wi-Fi network.

You can also use Wi-Fi PC Card Radios in various cameras, audio systems, PDAs and other mobile computing devices that have a PC Card slot.

## Mini-PC Module

---

### Mini-PCI Modules and Embedded Radios

Your desktop or laptop may come Wi-Fi enabled. If so, it most likely has a Mini-PCI radio installed by the manufacturer. Many manufacturers now install an embedded Mini-PCI Wi-Fi radio in laptop computers and other mobile computing devices before they leave the factory. Apple Computers uses a somewhat similar Wi-Fi radio module, the Apple AirPort that can be installed by the factory, the retail outlet or the end user.

If you are using a Windows-based laptop in your network and you can't use a PC Card or other Wi-Fi adapter, you'll need one with a pre-installed Mini-PCI Wi-Fi radio. You should ask the factory to install one when you order a new laptop.



Keeping you mobile...™

[www.Laptopsinc.com](http://www.Laptopsinc.com)

## USB Adapters

---

### USB Adapters

Most desktop computers do not provide PC slots for Wi-Fi PC radios. You can solve this problem by using a PCI/ISA bus adapter (see below) or a USB adapter

For most users with desktop computers, the easiest way to add a Wi-Fi radio is to use a USB adapter, a one-piece unit that combines a Wi-Fi radio and a USB converter circuit. Simply plug the USB connector into one of the USB jacks on your desktop PC. Because their power is delivered through the USB cable, most USB adapters don't require a separate DC power module.

## PCI and ISA Bus Adapters

---

### PCI and ISA Bus Adapters

Many Wi-Fi vendors provide ISA and PCI-compliant radios that fit inside a desktop computer and enable the computer to work in a Wi-Fi network. (Until recently, most computers internally contained open slots called ISA and PCI buses, but in most new computers you will find only PCI.) These can be either one-piece ISA or PCI radios or two-piece units that comprise a PC Card reader or adapter and a separate Wi-Fi PC Card Radio that slides into the reader.

---

### Compact Flash and Other Small-Client Formats

Designed for smaller PDAs and other mobile computing devices, 802.11b/Wi-Fi radios can be built onto a Compact Flash format. Much smaller than a typical Type II PC Card, CF (Compact Flash) Wi-Fi cards have the same range and performance as their larger cousins.



Keeping you mobile...™

[www.Laptopsinc.com](http://www.Laptopsinc.com)

## Access Points and Gateways

---

### Access Points and Gateways

Even though client device radios can be configured to talk to each other, a Wi-Fi network operates more effectively when using a central base station to coordinate communications.

There are two types of Wi-Fi wireless base stations: a gateway and an access point. However, the distinctions between the two are not always clear, in part because the functions they perform can overlap. Even more confusing, many wired devices and other home Internet appliances also call themselves gateways.

A wireless gateway is targeted toward a totally wireless home or small-office environment; an access point is targeted toward a more integrated combined Ethernet and wireless environment-usually - larger businesses, campuses, or corporations. Gateways and access points can also differ regarding their capacity to perform security functions, provide firewall protection, and manage network traffic and tasks.

Gateways often include NAT (Network Address Translation) routing and DHCP (Dynamic Host Control Protocol) services. These create and provide the individual IP addresses all the wireless (and wired) clients need to function in a network and also enable a single Wi-Fi gateway to simultaneously provide Internet access to numerous users from a single shared Internet connection . Gateways may also include other applications and features such as encryption and security, VPN, firewall, and Voice over Internet Protocol (VoIP).

An access point does not usually furnish NAT routing or DHCP; the wired routers in the system provide those network functions. Access points work as merely transparent bridges between wired networks and the various wireless users throughout a facility. Even though access points generally do not provide NAT or DHCP, they usually enable roaming (the ability to move from one access point to another without losing contact with your network), higher levels of security, and a high level of network control and management. Some gateways also provide these services. In fact, by toggling certain functions on and off, many wireless base stations can operate either as a gateway or as an access point. But a gateway is usually the only wireless base station in a small office or home, whereas in a large office or campus there might be hundreds or thousands of access points forming one or multiple overlapping wireless networks.