

# Chapter 1

## Taking the Wi-Fi Highway

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### *In This Chapter*

- ▶ Discovering Wi-Fi on the highway
  - ▶ Looking at your choices
  - ▶ Breaking down the parts of wireless access
  - ▶ Meeting your over-the-road wireless needs
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**E**ven though I think anybody choosing an over-the-road lifestyle has got to have adventurer's, explorer's, or maybe even pirate's blood running through their veins, I appreciate the fact that few are those who blaze new trails through unknown territory. Myself, I'm no Captain Kirk; adventure or not, I prefer to go where at least a few people have gone before. I always get a little nervous when kids come running out of their houses to watch the big truck go by. Well, the Wi-Fi highway's been paved, the kids have become bored with the passing traffic, and it looks like it's here to stay.

If it's new to you, then you might feel a little anxious about taking the on-ramp. Don't be; the weather's great, the curves and slopes are gentle, and the scenery's always interesting. Some parts of the highway — even though it's fairly new — are being repaired and improved upon; other parts, though passable, are still under construction. Just think of me, someone who's been down this road before, as a fellow traveler.

### *Why Wireless?*

In the sociology of science, there are two competing theories regarding technological development. One of them, the *genius theory*, holds the view that inventors or scientists make discoveries independent of any outside influences, just because they're so darn smart. The other theory, known as *deterministic theory*, holds the view that social and environmental forces, the needs and desires of the people, *require* that inventions or discoveries be made, and that the individual making them is incidental to the process.

Personally, I think a combination of genius and environment — both social and technological — must be necessary for invention.

For example, wireless technology — from home phones to cellphones to computers — has been developed (if not by geniuses, then at the very least by people a whole lot smarter than me) in response to the unmet needs and desires of those wishing to roam freely while staying connected. Wireless phone handsets meet the needs of those who want to leave the kitchen or bedroom while conversing; cellphones meet the needs of those desiring freedom of travel while maintaining their ability to reach out and touch — or be touched by — someone. That's environment and genius coming together, meeting the needs of the populace; so it is with Wi-Fi.

## *Exploring the advantages*

I'm thinking that shortly after the first phone cord was connected to a computer (tethering both it and the user to a small and specific radius), somebody — possibly an ungrateful son or a meddling daughter-in-law — began trying to figure out how to cut the cord. When the first laptops hit the market, the movement toward a wireless Internet connection hit high gear. Included among the needs and desires that wireless Internet connection technology strives to meet are the following:

- ✔ **Convenience:** I think this is the most attractive of all wireless Internet attributes. When using a dialup connection, it's sometimes difficult to find a suitable spot from which to connect the cord. Because Wi-Fi does away with the cord or cable, everyplace within range of the wireless access point is suitable for use. (I explain wireless access points later in this chapter.)
- ✔ **Privacy:** To a certain extent, this attribute goes hand-in-hand with freedom and convenience. I've seen RV parks that require dialup computer users to sit in the office or laundry room, and truck stops usually relegate dialup users to a noisy coffee shop or noisier TV room. When using Wi-Fi you can, if you choose, sit comfortably in the privacy of your own home on wheels.
- ✔ **Speed:** Download speeds for wireless broadband Internet connections are typically as much as ten to twenty times faster than dialup. In Chapter 2, I discuss Wi-Fi data-transfer speeds in greater detail.
- ✔ **Ease of use:** Yeah, okay, I hear you: "If it's so easy to use, why do I need a book?" Well, it really is easy to set up and use, but as with anything, there's a learning curve. Besides, I've got to make a living somehow.
- ✔ **Reasonable cost:** If you've already got a laptop or PDA, you can easily and inexpensively adapt it for wireless Internet access. (I tell you more about this in Chapters 3 and 4.) And Internet services, which I talk about in Chapter 6, are usually reasonably priced, too.

## So . . . what, no disadvantages?

Well, yes, I have to admit that for all its affirmative attributes, Wi-Fi does have a few disadvantages. Among them, the following three are primary:

- ✓ **Range:** Because of federally mandated power limitations — as well as the attributes of a high-frequency radio signal — Wi-Fi has a limited range. Another factor influencing range is interference; in a truck stop or RV park, that's the usual result when signals are blocked or bounced by trucks, trailers, and other RVs. I discuss increasing effective range in Chapter 3.
- ✓ **Roaming:** Unlike cellphone providers, most of those providing wireless Internet access have no roaming agreements. When, for example, you sign up for service with Flying J, you need to be in or near a Flying J facility in order to access the Internet. Flying J and others do provide access in areas other than their own facilities — and they're working on other solutions as well. You get a look at the details of connecting to hotspots (and examples of different plans) in Chapters 6.
- ✓ **Security:** Okay, you're sending data using a radio signal, which means someone could intercept your transmissions. It is possible, but in Part IV, I discuss in detail methods of maintaining security and privacy.

## Examining your options

If the allure of an untethered connection to the Internet beckons you forward, you might wonder about your choices and options. Currently, the primary methods of connecting to the Internet that are free from the tether of a phone cord include the following:

- ✓ **Wi-Fi:** Believe it or not, even though it's fully functional — and its use and availability are rapidly expanding — this technology's still in development. Wi-Fi uses a high-frequency, low-power radio signal to transmit and receive data. To use Wi-Fi, you must be within range of the access point transceiver, which is known as a *hotspot*. I tell you more about this in the next few sections.
- ✓ **High-speed cellular:** On a cellphone, data's often carried separately from voice; usually you need a data-service subscription in addition to your voice-service subscription. I tell you more about cellular data service in Chapter 7.
- ✓ **Satellite:** Requiring the use of some fairly expensive and specialized equipment (not to mention a commitment to a hefty monthly subscription), this option is most popular with those living full-time in their RVs. I tell you more about satellite Internet in Chapter 9.

## *Taking the plunge*

Of all the options available to you, the easiest and least expensive method of making a wireless connection to the Internet is Wi-Fi. In order to get started down the Wi-Fi highway, you need the following:

- ✓ **Wi-Fi-enabled computer:** There are two methods for enabling a laptop or PDA for use in a wireless environment:
  - *Wi-Fi adapter:* By using an inexpensive adapter, wireless capability can be added to almost every laptop and most PDA devices. I tell you more about finding adapters in Chapter 3 and more about setting them up in Chapter 4.
  - *Integrated card:* Most new laptop computers, and quite a few PDA devices, come equipped with a built-in wireless card. If you're shopping for a new computer, I give you some helpful hints in Chapter 3.
- ✓ **Hotspot proximity:** You need to be within the coverage area of the radio transceiver, or access point, that has a wired or satellite connection to the Internet. (I introduce hotspots in the “What the heck is a hotspot?” section later in this chapter, and Chapter 5 explains how you can find them.)
- ✓ **Wireless Internet service provider:** Better known as and often referred to as a WISP, most hotspot operators are WISPs or they contract with WISPs for service. In most cases, you can buy an hourly, daily, monthly, or annual subscription to a WISP — as you discover in Chapter 6.

## *The Nuts and Bolts of Wi-Fi*

To put it very simply, Wi-Fi uses a two-way radio signal instead of wires to complete the connection between your computer and the wired connection to the Internet. Also, instead of using slow dialup, the business end of a wireless Internet connection is usually high-speed DSL, cable, or T-1 line.

### *CB radios for computers*

Sometime in the late '50s or early '60s, a couple of truckers stuck CB radios in their rigs so they could irritate each other while heading down the highway. Obviously, for radio communication to occur, both drivers had to install radios — and each radio had to be capable of both transmitting and receiving

a signal. Such is the case with Wi-Fi. A few of the attributes and elements of Wi-Fi radios are as follows:

- ✔ **Transceiver:** The ability to both transmit and receive as well as the ability to set and determine the circumstances under which each task is to be performed.
- ✔ **Antenna:** As with a CB radio, the antenna must be capable of both receiving and transmitting a signal in a specific bandwidth. Most antennas are integrated into wireless cards, but in some cases, it's possible to add an external antenna. (I talk more about antennas in Chapters 3 and 4.)
- ✔ **Code/Decode:** Known as a *codec*, this is the method by which (among other things) digital data is converted into a radio signal and vice versa.
- ✔ **Spread-spectrum signal:** High-frequency radio signals used by Wi-Fi are both low-powered and susceptible to interference. Wide-band, spread-spectrum radio signals aren't as sensitive to interference as narrow-band signals — and they're quite efficient at getting the most out of the limited power. They also help in avoiding traffic jams among radio signals, which makes it possible for several Wi-Fi transceivers to operate at the same time.

## What have an actress and composer got to do with Wi-Fi?

For all of you who believe the abilities of entertainers begin and end with their musical or acting talents, read this: Just prior to the American entry into World War II, George Antheil, an American composer, and Hedy Kiesler Markey — better known by her stage name, Hedy Lamarr — got into a discussion over dinner regarding torpedo guidance. Seems like standard entertainer table talk. Ms. Lamarr, who'd been married to an Austrian arms merchant, was interested in the problems surrounding torpedo guidance, and Mr. Antheil understood multichannel synchronization (It's a long story, involving propellers and player pianos). Together they developed — and in August 1942 were granted a patent for — what they called a "Secret Communication System." They hoped the SCS would eliminate,

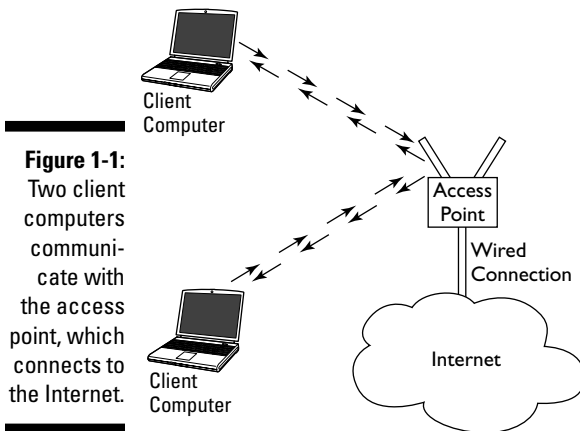
through the use of "frequency hopping," the possibility that the enemy might jam torpedo radio-guidance systems.

Frequency-hopping technology, which couldn't be used until radio technology caught up to it in the early '60s, formed the foundation for the spread-spectrum radio transmissions that all the Wi-Fi standards use. The first 802.11 standard employed frequency-hopping spread spectrum (FHSS), and the 802.11b standard uses direct-sequence spread spectrum (DSSS). Building on these concepts, orthogonal frequency-division multiplexing (OFDM), on which the 802.11g standard is based, was developed and implemented. (Try saying *that* five times fast.)

## What the heck is a hotspot?

The basic definition of a *hotspot* is a wireless local-access network (WLAN) that's open to the public. So, what, you ask, is a WLAN? It is — and I'll never understand why the acronym gods didn't call it a LAWN — nothing more than two or more computers networked together using Wi-Fi. There are two primary types of WLANs:

- ✓ **Ad-hoc:** Also known as *peer-to-peer networks*, computers in an ad-hoc WLAN communicate with each other directly. By switching your Wi-Fi cards to ad-hoc mode, you and a nearby neighbor can create a WLAN to play games, for example.
- ✓ **Infrastructure:** This is the type of WLAN all hotspots use. It's also the most commonly used form of WLAN in home or business and is sometimes referred to as a *client-server* WLAN. There are two basic elements to an infrastructure WLAN, as shown in Figure 1-1.
  - **Client:** Any computer included in the WLAN, accessing the Internet via the access point, is known as a *client*.
  - **Access point:** An *access point* is a Wi-Fi transceiver that's connected directly or by satellite to the Internet. The access point serves, or distributes, the Internet connection to the client computers within the network.



**Figure 1-1:** Two client computers communicate with the access point, which connects to the Internet.



Hotspots are WLANs open to the public, but you typically need to provide a password before you can open a hotspot's gateway to the Internet. You can think of an access point like a castle that freely drops the drawbridge over the moat, allowing entry into the gateway tunnel, but opening the gate to the interior only after the visitor gives the proper password.

## Deciding on the Best Route

One thing I've found in my experience with over-the-road types is that everybody's situation is vastly different. Because of that, I'm not likely to come up with a universal solution to the question of how long any Wi-Fi subscription should be, which WISP you should subscribe to, whether you should maintain a dialup account, or whether you should choose to sign up with a cellular carrier for data service.

What I *can* do is give you as much information as possible so that, hopefully, it'll become clear which route is the most beneficial and economical to you. I can also get you started in your decision process.

### If you're a trucker

For years upon years, I've been told by countless truckers that they don't spend much time in truck stops. Right. All those trucks I see clogging the lots must be mirages, merely Fig Newtons of my amalgamation. Face it; trucks stop at truck stops. You and I might *prefer* to spend time elsewhere, but the last time I checked, almost no one else wants a truck parked in their lots any longer than it takes to unload the products necessary for them to do business.

That means a truck stop WISP will probably provide you with the best Wi-Fi service. Still, depending on whether you haul peaches or couches, the plan and provider best suited to you might be drastically different. For example, are you a trucker . . .

- ✔ **With a dedicated route?** If you haul the same freight over the same route week after week, year after year, it's likely that you make the same stops. Are the truck stops you frequent all in the same chain? If they are, signing up for an annual Wi-Fi subscription can save you some money over the long term. If your stops run the gamut of travel plaza chains, could you alter your stops so that an annual subscription might be feasible?
- ✔ **Traveling far and wide?** If you're never heading in the same direction two weeks in a row, or you rarely spend three nights a week in a truck stop of the same chain, you might consider paying for Wi-Fi by the day, using dialup as a backup. If, however, you can plan to be in a position to use the same WISP three or four nights a week, you can save a few bucks by signing up for a monthly or annual plan. (I talk more about using dialup as a backup in Chapter 8.)
- ✔ **Hauling over-dimensional loads?** Having hauled over-dimensional freight (think WIDE LOAD), I know how hard it can be to park within sight of the facilities. Because that's where the access point is most often located, you might be parked, quite often, too far away to make a connection. If that's the case, you might want to investigate a high-speed cell data plan. (See Chapter 7 for more information.)



The level of Internet access that you *require* each day, week, or month is a primary consideration in determining the type and level of wireless Internet service you subscribe to. If, for example, you check your e-mail or surf the Net a couple of times a week, you might want to pay by the day. You also might, however, want to spin through the chapters in Parts V and VI for ways to get more use out of your computer and the Internet.



In Chapter 6, among other things, I compare the plans and costs offered by the major truck stop WISPs. Surprisingly, some of the most competitively priced and widely available Wi-Fi in the nation is provided by the truck-stop and travel-plaza chains.

## *If you're an RVer*

How you use your RV as well as the frequency with which you need access to the Internet are the two most important considerations when determining how wireless Internet access fits into your plans. The type and level of service best suited to your needs is different depending on whether (for example) you're

- ✔ **On vacation:** If you're only away from home for a couple of weeks, or maybe, a month, it makes no sense whatsoever to sign up with a single service for more than one or two days. Using dialup as a back-up, though, does make sense — so you might want to check out Chapter 8 for some ideas about getting the most out of dialup on the road.
- ✔ **On an extended trip:** For trips longer than a month, it might be worth your while to plan your trip in such a way that you can take advantage of a month-to-month subscription. In Chapter 5, I tell you about some ways to find RV-friendly hotspots, and in Chapter 6, I provide information about the major WISPs servicing RV parks and campgrounds.
- ✔ **Living in your RV:** Especially if you need consistent and regular access to the Internet, you might well consider investing in a satellite Internet system, which I cover in Chapter 9.