

1 YEAR UPGRADE
BUYER PROTECTION PLAN



CONSUMER'S GUIDE TO

Cell Phones & Wireless Service Plans

**Everything You Need to Choose the Right Brand,
with the Right Feature Sets, for Your Needs:**

- Complete Coverage of All Major Vendor Phones and Service Plans, Including Nokia, Motorola, Sprint, Ericsson, Verizon, AT&T Wireless, Nextel, and More!
- Answers Your Questions About Family Plans, Roaming Packages, and Prepaid Plans
- Tells You What "Free Long Distance" Really Means and Deciphers Misleading or Confusing Service Plans



 **GETCONNECTED**

GetConnected, Inc.
Jeff McLaughlin
Beverly LeDonne

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S Y N G R E S S[®]

CONSUMER'S GUIDE TO
**Cell Phones
& Wireless
Service Plans**



GetConnected Inc.

Jeff McLaughlin

Beverly LeDonne

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We also could not have completed this work without the support of the entire team at GetConnected. From our marketing staff to our programmers, everyone here has devoted themselves to the mission of finding the right type of communication services for every customer who comes to our site, and making sure everyone has the best information possible to choose the best service for their hard-earned money.

Special thanks to the co-founders of GetConnected, Inc., Tracy Lawrence and Sasha Novakovich. These two had the vision to create an electronic resource to help consumers get the most telecommunications service for their money. We are proud to be able to extend their vision into this Guide for wireless consumers.



About GetConnected, Inc.

Founded in 1999, GetConnected, Inc. provides a suite of software tools that facilitate the sale of wireless, broadband, local phone, long distance, cable, and satellite television services.

The Telecommunications Deregulation Act of 1996 was the catalyst for a proliferation of telecommunications services which made the process of selecting the best providers and plans a daunting task for consumers. The Internet offered a tremendous opportunity for consumers to easily find and compare all options available to them and make the right choice through an informative and intuitive electronic shopping process. The Internet was also the ideal medium to help telecommunications service providers cost effectively acquire customers. **www.GetConnected.com** resulted from the confluence of these three market forces.

Named by *Newsweek* as one of the 103 Best Web Sites and by *PC World* as Best Cell Phone Site, GetConnected.com, the showcase of the GetConnected functionality, is an easy-to-use Web site that empowers users with the information necessary to help them select the services that best meet their individual needs. In addition to being a source of the most comprehensive and accurate information available, the GetConnected site, shopping technology and transaction processing capability make the purchase process simple and straightforward. Consumers are shown all plans, products, and special offers available in their area. GetConnected.com also provides highly intuitive and interactive wizards and bill calculators that allow the user to customize searches and make it easier to locate and buy the most suitable plans. The end result? Consumers get the most for their telecommunication dollar.

GetConnected, Inc. offers consumers and small businesses access to its services directly through its Web site www.GetConnected.com, and through a network of partner Web sites. Consumers will also be able to access the GetConnected telecommunication shopping services in private labeled applications at retail, where GetConnected will power the shopping experience and order processing for its retail partners.



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There are three standard wireless phone batteries:

- NiCad An older technology with some technical problems.
- NiMH A newer technology that does not suffer from memory effects.
- Li-Ion A long lasting and light battery that does not suffer from memory effects

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Verizon Wireless

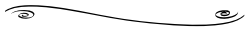
- 28,000,000 subscribers
- 26% market share
- Web site: <http://verizonwireless.com>

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Exploring Domestic Roaming Options



As with any other calling feature, prices and options for domestic roaming vary by where you live and which service provider you choose. If you are the type of person that travels within the United States quite often, you should look for a plan that offers the following:

- Coverage with no roaming costs in the cities and towns from which you will be making your calls.
- Low roaming costs per minute with roaming coverage in all the areas to which you will travel.
- A service that will work when outside your home area at all times. Some new wireless services offer unlimited local calling for a flat fee per month but do not offer the ability to roam outside of your local area.

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- Phones that operate on a PCS system (personal communications service) use digital technology and offer advanced features like caller ID.
- Cellular phones use either digital or analog technology, or both.

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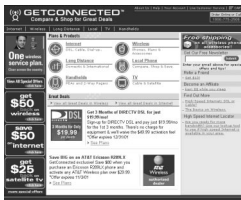
Using Wireless

The average monthly cost for wireless use is around \$40, but varies from less than \$20 for little use to over \$100 for heavy use.

About GetConnected.com

www.GetConnected.com sells a variety of telecommunication services, from wireless phones, to high-speed Internet, to long distance service.

The GetConnected.com Home Page



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Foreword

Telecommunications consumers are paying between 50% and 500% too much every month for the services that keep them in touch, in-tune, and informed. Why would anyone pay \$0.30 per minute for long distance when they could pay just \$0.05? The answer is because there has not been a good way to determine the correct services based on the way *you* use your phone, or your high-speed Internet access, or your wireless phone.

The Consumer's Guide to Wireless Phones and Service Plans will help you determine what you need in a wireless phone and service plan. The information in this Guide is compiled from the data that GetConnected, Inc. collects directly from the wireless service providers and the tools that we have developed to help direct you to the perfect plan and phone. On our Web site, www.GetConnected.com, you can easily compare the data side by side and use these tools to optimize your choices. Both on our Web site and in this book, we help lead you through the maze of offerings based on how you will use your phone to make sure that you spend wisely to take advantage of today's great wireless services.

There is no reason that you should buy a \$200 phone and pay \$75 per month if you only need to use your phone in the case of an emergency. Are you a techno-savvy road warrior or a minimalist? Do you need a wireless phone that lets you read and send e-mail or do you just need it to call for roadside assistance? Will you use your phone only as you drive around your town or will you need it to work in Paris? All these questions will be answered to make sure you buy the phone and service plan that are right for you.

Wireless is everywhere—if you don't own a wireless phone, you have probably used one. If you haven't used a wireless phone, you most certainly have seen people using them. The number of people in the United States who own wireless phones is well over 100 million and growing steadily. At around 40% to 50% U.S. market penetration, we are actually behind most European countries. In Finland, the home country of Nokia, the leading wireless phone manufacturer, over 70% of people own wireless phones. Today's wireless phones can give you access to the Internet, e-mail, your calendar from work,

and even the documents you keep on your computer every day. The combination of voice and data services is quickly evolving wireless phones into pocket-sized, all-in-one communications and productivity tools.

GetConnected is committed to helping you shop for, compare, and buy the perfect telecommunications services—including all your wireless needs. Our team of wireless experts, who made this book possible, continually upload information from numerous carriers and monitor the Web to make sure that we have the latest information on wireless phones, rate plans, accessories, and promotions. The combination of www.getconnected.com and this Guide will help you buy a wireless phone and service plan that will meet your needs, but won't break your wallet.

Special thanks to Bev, Leslie, James, Melissa, and Jeff for all their hard work compiling current information for this book and for always focusing on ways to help consumers select the perfect wireless phone and service plan. After all, that is GetConnected's mission—to help *you* find and buy the telecommunications services that fit *your* needs!

So whatever your needs are for wireless service, this Guide will help point you to the correct purchases. In order to see the most up-to-date offers from all major wireless service providers in the United States, be sure to check www.getconnected.com. While you are there, have a look at the other great telecommunications offers for high-speed Internet access (DSL and cable modems), long distance, local phone, satellite TV, and handheld PDAs—we can definitely help you get the most for your telecommunications dollar!

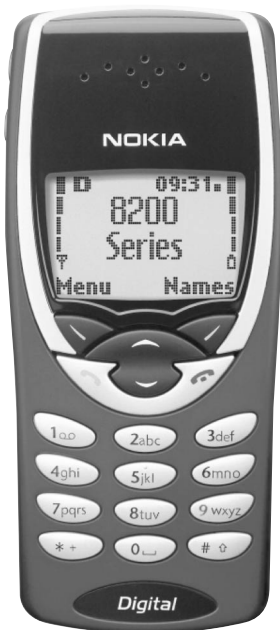
Enjoy this Guide to Wireless and do not hesitate to reference GetConnected.com for the latest rate plan, product pricing, and promotion information as you get closer to your purchase.

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Tracy Lawrence
CEO & Co-Founder
GetConnected, Inc.

Part I

General Information



Chapter 1

How to Choose a Wireless Phone and Service

Quick References in this chapter:

- In the Beginning: An Introduction to Wireless
 - Getting Started
 - Assessing Your Coverage Needs
 - What Comes First, the Phone or the Service?
 - Usage Considerations
 - The Bottom Line: Understanding Cost
 - Bargain Shopping: Looking at Promotions
 - Bells and Whistles: Looking at Accessories
 - Making Sense of it All: The Phone and Plan for Me
-
- ☑ Summary
 - ☑ Quick References

Introduction

The only answer to the question “Which wireless phone should I buy?” is, unfortunately, “It depends.” There are so many choices out there today that the only way to select the perfect phone for you is to look at many different factors—put yourself in the middle of the process and figure out how you will use the phone, where and when you will make most of your calls, and how much you want to spend.

The first thing to realize is that the phone is only as good as the network on which it works. In the “old days” of wireless, a single phone would work on either of the two cellular networks. So, when you plunked down your \$1000 for that huge phone and another \$80 per month with wireless carrier A, if you did not find their service to your liking, you could walk across the street to their only competitor and switch to the competitor’s network using the same phone. That doesn’t work any more.

In the early 1990s, competitors for the two original cellular companies started to spring up—they were called PCS or Personal Communication Services carriers. The only difference between cellular and PCS is that cellular started out transmitting your call using analog technology and PCS started out using all digital transmissions. Cellular companies have all gone over to digital technologies (see Chapter 2, “Analog, Digital—What’s the Difference?” for more information on analog versus digital technologies), so there really is no difference between the original cellular carriers and the newer totally digital PCS carriers any more. One of the things that digital technology allows the carriers to do is to sell phones that will work only on *their* network—so the days of walking across the street to sign up on someone else’s network with the same phone are pretty much gone.

Thinking about making the switch to wireless full time and ditching your home phone completely? Well, you are not alone, but you are among a small group of techno-savvy users who are foregoing the wires for the freedom of wireless. And why not? If you buy a wireless plan with 3000 minutes of use included, you have to use them some time, right? Just beware the pitfalls discussed in Chapter 13, “The Future of Wireless.” So, what factors do you need to consider when buying that perfect wireless phone? There are basically six steps that we will detail in this chapter:

1. Look for service providers with **Coverage** in your area—Where will you use your phone and which wireless carrier has the best service there?
2. Choose the wireless **Phone** you want and/or need—Do you need all the latest options or do you just need to make calls in an emergency?
3. Make sure you know how you will **Use** your wireless phone—How many minutes will you use each month and at what time of the day will you use the most minutes? Will you call locally or long distance?
4. Be aware of how much buying and using wireless will **Cost**—How much are you willing to spend on the monthly service and on the phone?
5. Look for special **Promotions**—Are there any great deals out there that will get you the best deal for the right phone and plan?
6. Don't forget your **Accessories**—Will you need to use a headset for your car, do you need a belt clip or extra batteries?

COMPARING SERVICE PLANS AND PHONES

For the latest information on wireless service plans and phones, and to compare them side by side, log on to www.GetConnected.com.

In the Beginning: An Introduction to Wireless

Think of the walkie-talkie as the electronic equivalent of taking your first step. For many of us, it was our first introduction into the world of wireless technology. Bewildering and exciting, but more importantly, proof that even at an early age, humankind possessed some sort of inherent need to find new ways to communicate. The walkie-talkie was wildly successful.

Fast-forward a few years and we've grown into a more dependable adult version of the walkie-talkie called the cordless phone—a true introduction to what has permeated our lifestyles at home, work, and play. But limitations of physical distance prevented us from taking the cordless on the road until miraculously, the cellular, or wireless, phone appeared and now it's a vicious game of catch-up to understand what wireless means to the average Joe.

The Basics

Today's cellular service operates on much the same principle as our earlier walkie-talkie devices. Your voice is still transmitted through the air from point A to point B, but that's where most of the similarities end.

With cellular technology, messages sound clearer, travel farther, and are received by the second party (with a little luck) as if we were next door. And it's all done through a network built by breaking a geographic region into small areas called *cells*, which include the cellular antennas. Calls are transmitted from the antenna to the wired telephone system until it reaches the target audience on the other end. The term *cellular* is often used to refer to “traditional cellular” or analog technology (AMPS or Advanced Mobile Phone Service), which utilized a network built at 800 MHz by two service providers, or carriers, in each market. This simply means that 800 MHz is the wavelength or frequency at which your voice travels from your phone to the antenna. It also assures you that whether calling from the beach or from a traffic jam, potentially life-altering commands like “half pepperoni” will be heard at the other end.

The Digital Age

Just when you think that you've got a pretty good handle on what analog is all about, digital technology joins the party. This essentially means a second wireless technology; new terminology, products, and services; yet another learning curve; as well as up to five or six new competitors in each market. But the principle between analog and digital remains basically the same. The two most significant differences are that calls now travel at a frequency of either 800 MHz or 1900MHz and, unlike analog, the digital network breaks down the sender's voice into binary code, transmits it as data, and reassembles it on the other end. These digital networks usually are referred to as Personal Communications Service (PCS)

networks, although the traditional cellular carriers also offer digital service, and sometimes call their digital service PCS, also. The relevance of these changes to the every-day consumer is that this break-through affects everything from call quality to network access, and features like caller ID, Internet access, and extended battery life.

Getting Started

Getting fitted for a wireless service provider, plan, and a compatible phone is as easy as doing some painless homework before you buy. We've made the following descriptions as clear as possible for you to understand before you make an educated buying decision, get hooked up, charge your battery, and get ready for the air waves. To make sure you have all the latest, up-to-date phone and plan information, you should use online resources like www.GetConnected.com, the leading communication resource with exhaustive lists of plans and services that empower you, the user, to make the right decision for your lifestyle.

CHOOSE A SERVICE PLAN THAT BEST MEETS YOUR DAY-TO-DAY NEEDS

How many calls will I make each day? Where will I call—local or long distance? Will I travel out of my local area with my phone? Do I need my phone to act as a pager, also? Make sure your service plan and your phone meet your day-to-day needs.

- **Usage** When will you use your phone? This can be a real money-saving decision. Most wireless networks operate at or near capacity during peak business hours, and carriers typically charge users for every second they tie up a circuit. If you use your cellular phone heavily at night and on weekends, many carriers cater to that need by offering off-peak specials of 300, 500, or even 1000 minutes of evening and weekend calling for a nominal fee with the purchase of a standard service plan. These packages can be real money savers if used as intended, but beware: different providers define peak, off-peak, and weekend hours differently.

- **Traveling/Roaming** Do you travel a lot? If you travel outside of your local/home area or service provider network, you can incur roaming charges, which means a surcharge will be applied for calls made and received while out of your home area and your local rate plan costs no longer apply. The good news is that most carriers have plans that cover beyond your local calling area. From regional plans (i.e., Northeast, West Coast, etc.) to national plans, the monthly fees generally are based on the size of the coverage area, and, though more expensive each month than local plans, these plans can be worth it if you expect to incur expensive roaming fees.
- **Traveling Abroad** U.S. digital phones are mostly incompatible with worldwide networks except for parts of Mexico and Canada, where some of the same technology standards are used. If your phone has analog capability (i.e., it is an analog-only or dual/tri-mode phone), it could work in some Caribbean countries, although it may not receive calls. Europe and parts of Asia use mainly a standardized digital network called GSM. Phones built with GSM technology can access the network, regardless of the caller's country of origin, although each wireless carrier has their own charges for roaming into other countries and the phone has to be programmed to work at the frequency of that country.

Assessing Your Coverage Needs

You may have seen the coolest phone being used by your best friend yesterday, but unless you have wireless coverage where you are going to use your phone, it may end up being an expensive paperweight. There are many ways to find out which wireless carriers offer service in your area—TV and newspaper ads, junk mail and inserts, and online sites that show you the coverage maps for each company (see Chapter 9, “Service Providers and Service Areas” for detailed maps). The problem with all these indicators of the companies that say they offer service at your house is that you don't *truly* know how their service works where you want it to work just by looking at a map.

Your Friends Are Your Best Resource

The best way to tell who has the best coverage where you need it (home, school, work, downtown, etc.) is to talk to your friends. Even if you call each wireless carrier in your area (up to seven or eight companies!), they will, of course, tell you that they have the best coverage exactly where you need it—even though they may have minimal coverage there. There is nothing more frustrating than buying a phone with a zillion included minutes for \$25 per month when you cannot use it anywhere you want to use it.

The questions to ask your friends about their wireless phones should be about their experiences with their phones specifically where you want to use yours. Ask if the calls were clear or if they were hard to hear (a sign of poor coverage). Ask if they had trouble making the call and received many busy signals (a sign of low capacity—not many people can make calls at the same time). Here are some starting places:

1. Can you use your phone in your house?
2. Can you use your phone in your office?
3. Can you use your phone in school?
4. Does your call ever get disconnected or “drop” when you are traveling—if so where?
5. Can you use your phone reliably any time of the day or do you get busy signals at certain times, like heavy commuter times (7 A.M. to 9 A.M. or 4:30 P.M. to 7 P.M.)?
6. Does your phone work where you travel—for example if you take trips to the mountains, the beach, the mall, and so on?

Which Comes First, the Phone or the Service?

Should you look for a phone first or a rate plan and wireless carrier? The problem with buying a phone first is that you don't know if it will work on the network that gives you the best coverage. Having said that, it is common for people to see a phone being used by a friend or co-worker, or on TV or in a magazine, and to be completely fixated on buying that phone. That's not a problem—just realize that it may limit

the places you can get the best use out of your phone. If you've got to have that really cool red phone that you saw Billy using, then that is how you need to start shopping.

Buying the wireless phone that is perfect for you is a big piece of getting into wireless. You can spend *lots* of money on a wireless phone with all the latest features, or you can get a phone that is practically free with limited bells and whistles. The options seem to be limitless—large phones, small phones, phones with speaker phones built in, phones that can surf the Web. The choice is yours. Look at:

- Size
- Weight
- Color
- Networks available
- Features

If you do not have any specific phone in mind, you should do a little research to make sure you are buying a phone that will suit your needs. Chapter 6, “Guide to Wireless Phones” describes some of the phones available in the United States right now, but as with any electronic device, there are new models coming out all the time, so be sure to check www.GetConnected.com for the latest phones available.

What Features Do You Need in a Wireless Phone?

When choosing a phone or a service provider, the same is true—ask your friends. People who have wireless phones are great resources when you are looking for a phone. Ask them how the phone works, whether it is too heavy, if you can see the numbers on the screen easily, and so on. Be sure to think about all the things you can do with a wireless phone and whether those things are important to you (see Chapter 6, “Guide to Wireless Phones”). Here is a short list of the features that you may want to use with your new phone:

- **Wireless Internet Access** The ability to look at certain Web sites.
- **Short Message Service (SMS) and E-Mail** The ability to send and receive short messages and text e-mails.

- **Speaker Phone** Some phones allow you to use them as a speaker phone.
- **Two-way Radio Service** Nextel offers a “push to talk” service that lets your phone work like a walkie-talkie for quick, cheap conversations between two or more people.
- **Downloading Different Ring Tones** You can customize the way your phone rings, from a popular song to a classical hit.

What about the Technical Side of the Phone?

When you are looking at a phone, you also want to make sure its technical specifications meet your needs. These are things like the expected battery life, the ability to add a headset, the size of the screen, and more. You can see all the details of each phone at www.GetConnected.com, but here is a short list of what you should consider:

- Size considerations including the height and the weight of the phone
- Expected battery life for talk time and standby time
- Lines of text and characters per line on the screen (how big the screen is and how big the numbers are on the screen)
- Internet capabilities
- Messaging capabilities

Usage Considerations

The most important thing to understand, but the toughest to figure out, is how you will use your phone. If you do a little simple planning now, you will save some money in the selection of your monthly service plan. Will you use it only when you get a flat tire and need to call for help? Or will you use it from dawn to dusk as your only phone? Will you call long distance or just locally? How about international calls?

Rate plans offer the most confusing set of choices yet—peak time, off-peak time, long distance included, roaming costs, wireless data, and so on. To make sure that you buy the service that you need, you need to look at how you will use your phone and make sure that you buy only what you need. The majority of wireless users do not even come close to using the minutes that the service providers give them in their

rate plan. How can you possibly use 3000 minutes on your wireless phone? It is nice to have all these minutes, just in case, but if you can pay \$10 less per month, you can save \$120 per year!

Your Day-to-Day Use

When you really think about it, you can pretty much tell when, where, and how you will be using your phone. Set up a schedule based on your use that will follow the basic parameters of the wireless rate plans.

- How many peak minutes of calling do you need (typically between 7:00 A.M. and 7:00 P.M.)?
- What are your needs for off-peak minutes of calling (7:01 P.M. to 6:59 A.M. and sometimes all day Saturday and Sunday)?
- What percent of your calls will be local calls?
- What percent of your calls will be long distance?
- How often do you think you will use your phone when you are outside of your local calling area (roaming)?

An example of such a schedule can be seen in Table 1.1.

Table 1.1 Sample Schedule Illustrating Potential Phone Use

	Peak Hours	Off-Peak Hours
Weekdays	4 calls	2 calls
Weekends	—	8 calls
Times Days per Week	x 5 days	(2 x 5 days) + (8 x 2 days)
Total Calls per Week	20 calls	26 calls
Times 4 Weeks per Month =	80 calls	104 calls
Times 2 Minutes (avg. call length) =	x 2	x 2
Total Monthly Minutes	160 minutes	208 minutes
Local Calls (70% of all calls)	112 minutes	146 minutes
Long Distance Calls (30% of all calls)	48 minutes	62 minutes
Percent Roaming Use (10% of all calls)	16 minutes	21 minutes

You can put the information from Table 1.1 into the Wireless Wizard at www.GetConnected.com to see all the latest service plans that match your intended use. You can also use this information to make sure that any rate plan you are considering has all the minutes you need to use *when* you need to use them, *how* you intend to use them, and *where* you intend to use them. For this example, make sure that there are at least 160 minutes of peak minutes, 208 off-peak minutes, and that the costs for long distance and roaming are not too high if they are not included. Some plans will include long distance and roaming minutes so you don't have to pay anything extra, but the majority of plans charge extra for each.

FOR MORE INFORMATION

For more details on service plans, see Chapter 8, "Understanding Service Plans" or visit www.GetConnected.com.

The Bottom Line: Understanding Cost

When you are considering cost while picking the perfect phone and plan, realize that there are many different costs involved: phone cost, monthly service plan cost, activation fee, cancellation fee, long distance, roaming, overage costs (using more minutes than are provided in your rate plan). See Chapter 8, "Understanding Service Plans" for full details. First, you need to have a feeling for the basics that constitute the major costs: the phone and the rate plan.

How Much to Spend on the Phone

When looking at the phones available you will see phones that are free, or effectively free with rebates and credits (see Chapter 11, "Understanding Special Deals and Promotions"), and you will see phones that are very expensive, which can act as two-way pagers, personal digital assistants, and may even wash your car if programmed correctly. Free phones almost always have a required contract, or length of service agreement of one or two years. If you are looking to get into wireless on the cheap, then a free phone may work for you, even with the contract. If you want your phone to send e-mail, cruise the Web, and play Beethoven when it rings, you will

have to pay from \$100 on up for the phone. For the details on the wireless phones, see Chapter 6, “Guide to Wireless Phones.”

How Much to Spend on the Rate Plan

Every month you will be charged for your wireless use. If you stay within your allowed minutes, then you will pay the expected amount that you sign up for (plus some taxes and fees that are charged by all carriers, usually a few dollars), but if you use more minutes than allowed in your plan, you will be billed for the extra minutes at premium prices and get a bill potentially much higher than you expect. That is why it is important to think about your use prior to signing up for your service.

You can spend as little as \$20 or so and as much as \$200 or more per month based on the amount of use you will have. Check out www.GetConnected.com for the latest in phones and service plans.

WHAT ABOUT PREPAID?

Prepaid wireless is a great way to get a wireless phone with no credit history, no credit card, and for a short periods of use. Prepaid is perfect for:

- Students and children
- Gifts (no long-term contract needed)
- Short-term use, for example when you need a phone for three months
- Very little monthly use (be careful to make sure the minutes don't expire)

For more information on prepaid wireless, see Chapter 8, “Understanding Service Plans.”

Bargain Shopping: Understanding Promotions

Every wireless service provider offers promotions throughout the year to entice you to sign up for service. They may offer a free phone, a special weekends-free package, or free accessories. When you are looking to sign up for service and have an idea of which service you think you

want, which phones work on that service, how you will use the phone, and how much you are willing to pay, you need to look at the available promotions. Sometimes these promotions can save you hundreds of dollars over the life of your wireless use. But beware of promotions that are not exactly what you are looking for, such as those that may tie you into a long term contract, offer features that you won't use, or add minutes that you could never use even if you are on the phone every waking moment.

For a complete breakdown on promotions, see the details in Chapter 11, "Understanding Special Deals and Promotions," and get the latest available promotions from www.GetConnected.com.

Bells and Whistles: Looking at Accessories

The last things to consider when buying your new phone are the accessories that you may need to make it perfect for you. Ask yourself these questions to determine if you need these accessories:

- **Will I use the phone while driving?** If Yes, get a car kit or a headset (many phones already come with some sort of hands-free head set, so be sure not to buy an extra if it is included).
- **Will I use the phone a lot while driving?** If Yes, then get a car charger or a car kit.
- **Do I need to use my phone for long times while away from my charger?** If Yes, then buy an extra battery and make sure it is a long-life battery.
- **Will I need to charge my phone in more than one place?** If Yes, then buy an extra charger for your office or home.
- **Will I need to carry my phone with me all the time?** If Yes, then buy a leather case for protection with a clip or a belt clip that hooks onto the battery.
- **Do I want to personalize my phone with different colors?** If Yes, then buy a phone that has faceplates and a faceplate to your liking—there are many colors available for some of today's popular phones.

For more information on the myriad of accessories available for wireless phones, refer to Chapter 7, “Accessories for Your Wireless Phones.”

Making Sense of It All: The Phone and Plan for Me

So—confused? Buying wireless is not a simple process designed to make sure you get the phone and service plan that you need. All wireless carriers try to differentiate themselves from their competitors and by doing so, they do not make it simple to compare their plans to other similar plans. The information in this guide will help you make an educated purchase for the rate plan that fits your needs and the phone that will do all that you need it to do. Why pay for a \$60 plan when you only need a \$40 plan? Why buy a \$200 phone when all you need is a \$40 phone? These are the questions that we help you figure out.




Many of the points in this book are based on offers and rate plans that are available at the time of this writing. Wireless carriers change their offers frequently, so the best thing to do after realizing how you will use your plan and phone is to log onto the Internet and visit www.GetConnected.com to make sure you see the most up-to-date information.

Summary

As you can see, there are many things to consider when buying the perfect wireless phone and service for you. It is not hard; it just takes a little homework and research. The important thing to remember is that although there are many confusing options, by realizing how you will use your phone and what your main needs are, and by using online tools like www.GetConnected.com, you can buy the perfect plan and phone.

Table 1.2 shows you the basic categories of phone users, as well as the basic parameters for the phones and the plans that you should keep in mind while you are reading this book and selecting the wireless products that are right for you.

Table 1.2 Guidelines for Equipment and Services for Various Types of Users

If You Are:	Then You Should Get a:	And a:
A techno-savvy road warrior 	National rate plan with roaming included	Digital phone with wireless Internet, two-way messaging, and speed dialing
Always on the go, shuttling the kids, or a working parent A student with no credit history, or buying for a student	Local rate plan lots of minutes with of use Prepaid rate plan with some extra prepaid cards 	Digital phone with caller ID, lots of battery life, and car charger Wireless phone that works in the areas needed—school, home, mall, etc.
A security-minded motorist who will use the phone only in an emergency situation	Very low-priced rate plan with minimal minutes	Phone that will work anywhere and a car charger 

Quick Reference

In the Beginning: An Introduction to Wireless

- ☑ The walkie-talkie started the wireless revolution.
- ☑ Wireless phones began with analog cellular service.
- ☑ Digital technology has taken wireless to new heights.

Getting Started

- ☑ Do a little homework to understand how you will use your wireless phone.

Assessing Your Coverage Needs

- ☑ Where will you use your phone and which wireless carrier has the best service there?
- ☑ Make sure you know all the service providers in your area.
- ☑ Ask your friends who they use and what they think.
- ☑ The important places to have coverage are where you live, work, go to school, and travel.

What Comes First, the Phone or the Service?

- ☑ Do you need all the latest options or do you just need to make calls in an emergency?
- ☑ If you *must* have the coolest phone, go ahead!
- ☑ Figure out if you need all the features or if you just need a basic phone.
- ☑ Make sure the technical aspects of the phone match your needs—battery life, screen size, etc.

Usage Considerations

- ☑ How many minutes will you use each month, and at what time of the day will you use the most minutes? Will you call locally or long distance?

- ☑ Figuring out when, where, and how you will use your phone is the most important piece.
- ☑ Take a few minutes to look at the number of calls you will make, when you will make them, and to and from where.
- ☑ Plug your expected use in online tools and Wizards to see the most current plans that fit your needs.

The Bottom Line: Understanding Cost

- ☑ How much are you willing to spend on the monthly service and on the phone?
- ☑ Be aware of all the costs, including activation fees, taxes, and overage costs.
- ☑ Make sure the phone you *must* have is not too expensive.
- ☑ Keep your monthly service fee under control by choosing the plan correctly.

Bargain Shopping: Looking at Promotions

- ☑ Are there any great deals out there that will get you the best deal for the right phone and plan?
- ☑ Take a look at the latest promotions to make sure you aren't missing out.
- ☑ Don't fall for a promotion you don't need.
- ☑ Make sure the promotion doesn't tie you into a long-term contract if you don't want one.

Bells and Whistles: Looking at Accessories

- ☑ Will you need to use a headset for your car, do you need a belt clip or extra batteries?
- ☑ If the phone is perfect, make sure it has the accessories you need.
- ☑ Don't buy accessories that are already included in the package with the phone.
- ☑ Check the promotions to see if some accessories are free.

Making Sense of It All: The Phone and Plan for Me

- ☑ There are many options out there, but you *can* make sense of it all.
- ☑ Buying the perfect phone and rate plan for you just takes a little time.

Chapter 2

Analog, Digital— What's the Difference?

Quick References in this chapter:

- Evolution of the Wireless Phone
- Exploring Analog Technology
- Examining Digital Technology
- The Pros and Cons of Digital

- ☑ Summary
- ☑ Quick References

Did You Know?

A wireless phone is a radio. It operates with a transmitter and a receiver to make sure you can hear the message coming in and the other person can hear you.

Introduction

Remember the days before cellular phones, when the only methods of communicating while on the road were by using walkie-talkies or CB radios? That equipment was so restrictive that you could call only one or two select people within a very short distance (under 50 miles). Well, believe it or not, that wasn’t all that long ago. Mobile communication has increased dramatically in popularity and availability in the last 20 years. This can certainly be credited to the ever-improving, ever-expanding wireless technology.

There are many types of wireless technologies available throughout the nation. What are they? What’s the best technology for your needs? Do you need more than one? And what do all those terms mean, anyway? In this chapter, we will answer these questions for you.

Generally speaking, wireless technology can be broken down into two categories, analog and digital. Analog has been around the longest and as a result has a more expansive coverage area than digital. Digital is a fairly new technology and therefore it may not be available in all rural areas. However, digital wireless is growing rapidly and its coverage area is expanding everyday. If digital technology is not available in your area today, you could possibly wake up tomorrow and learn that it is.

Of course digital wireless is not the end-all and be-all of wireless technology. It does have its restrictions. We will examine the pros and cons of both analog and digital technology—and let you decide which is best for you.

Evolution of the Wireless Phone

Wireless phones work using technology similar to CB radios, AM/FM radios, and walkie-talkies. However, they are a bit more complex and

as a result, they are better suited to fit today’s needs for communications on the go—staying in touch no matter where you are. A simple way to explain it is to compare a wireless phone to a CB radio or a walkie-talkie.

Both CB radios and walkie-talkies are simplex devices. This means that two people that communicate on a CB radio talk on the same frequency; but only one person can talk at a time. A wireless phone is a duplex device. A duplex device uses two frequencies. One frequency is used for talking and a second, separate frequency is used for listening. Among many other uses, a wireless phone (or duplex device), allows both people on a call to talk at once. Not only does the wireless phone eliminate the need to use terms such as “Roger” and “over and out,” but also more importantly makes the flow of the conversation smoother. From a user’s standpoint, talking on a wireless phone feels much like talking on your home phone. The only difference is that you can be a hundred miles from any city, house, or telephone pole.

Wireless technology is based on the car-mounted police radios of the 1920s. Mobile telephone service became available to private customers in the 1940s. In 1947, Southwestern Bell and AT&T launched the first commercial mobile phone service in St. Louis, Missouri, but the Federal Communications Commission (FCC) limited the amount of frequencies available, which made only 23 simultaneous phone conversations available within a service area (the mobile phones offered only six channels with a 60 KHz spacing between them).

Unfortunately, that spacing schema led to very poor sound quality due to cross-channel interference, much like the cross talk on wireline phones. The original public wireless systems generally used single high-powered transmitters to cover the entire coverage area. In order to utilize the precious frequencies allotted to them, AT&T developed an idea to replace the single high-powered transmitters with smaller, strategically placed transmitters throughout the metropolitan area; calls would switch between transmitters as they needed a stronger signal. Although this method of handling calls certainly eased some of the problems, it did not eliminate the problem altogether. In fact, the problem of too few voice channels plagued the wireless phone industry for several years.

The main problem was that demand always seemed to exceed supply. Since the FCC refused to allocate more frequencies for mobile wireless use, waiting lists became AT&T’s temporary solution as the company strove for the technological advances necessary to accommodate

everyone. For example, in 1976, there were less than 600 mobile phone customers in New York City, but there were over 3500 people on the waiting lists. Across the United States at that time, there were nearly 45,000 subscribers, but there were still another 20,000 people on waiting lists as much as 10 years long. Compare this situation to today’s, where service providers give away free phones and thousands of minutes to gain customers. Wireless technology has come a long way. The term “cellular” describes how each geographic region of coverage is broken up into cells. Within each of these cells is a tower or antenna, a radio transmitter, and control equipment. Early wireless transmission operated at 800 MHz on analog signals, which are sent on a continuous wave. Analog signals are covered in more detail later on this chapter. When a customer presses the SEND button on their wireless phone, the first signal sent allows the network to identify the caller as a recognized customer, then it verifies that he or she is a customer of the service with an active account and finds a free channel to place the call to the other party.

Personal Communication Services (PCS), operating at 1900 MHz, followed years later. PCS refers to the digital wireless services that a given wireless carrier can bundle together for the user. Services like messaging, paging, and voice mail are all part of the PCS environment. Most of the wireless carriers in the United States offer PCS services, even the carriers that operate at 800 MHz, or the original analog frequency. Some wireless providers began looking into digital technology as a way to increase the number of customers that could use their networks simultaneously, thus increasing the number of customers they could add to their network (basically, digital signals are encoded voice delivered by bit-streams, which is described more fully later in this chapter). Some wireless providers are using digital signals to send not only voice, but also data. Digital signals are based on three technologies: Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA), and Global System for Mobile Communication (GSM). A more detailed description of these technologies can be found in Chapter 3, “CDMA to TDMA—Digital Terms and Basic Definitions.”

Exploring Analog Technology

In the early 1980s, the Federal Communications Commission (FCC) approved the first analog wireless telephone standard known as Advanced Mobile Phone Service (AMPS). The term “wireless” often is used to

refer to “traditional wireless,” analog, or AMPS. Analog utilizes a network built at 800 MHz. This simply means that 800 MHz is the wavelength or frequency at which your voice travels in a continuous wave between the wireless phone and the closest antenna at those frequencies. To put this into perspective, an FM radio functions at between 88 and 108 MHz.

An easy way to think about analog voice signals is to realize that when you talk to another person in the same room, your voice arrives in his or her ears using analog voice waves. The sounds you make travel through the air as a continuous analog sound wave. The biggest difference between talking to your friends in person and over an analog wireless phone is the frequency at which your voice is transmitted.

So, in a sense, analog was the pioneer for today’s wireless technology. As with any new productivity enhancing technology, it quickly became popular among business professionals, traveling salespeople, and people who needed to be in touch wherever they were. Since the new-found mobility of communications was primarily a business tool, the prices were well out of reach for the every day consumer. Fortunately for American consumers, in 1996 the FCC put the Telecommunications Act into effect, which would increase competition for all telecommunications services including adding up to six or seven new wireless carriers in all major markets. To learn more about wireless carriers and their coverage, refer to Chapter 9, “Service Providers and Service Areas.”

AMPS

Advanced Mobile Phone service, or AMPS, was the original cellular technology used in the United States. It offered basic voice service and would connect a wireless phone user to the closest cellular tower by sending the conversation over the airwaves in a continuous flow, or analog sound wave. This was a great starting point, but it had many limitations. A version of AMPS known as Narrowband Advanced Mobile Phone Service (NAMPS) incorporates some digital technology to allow the system to carry about three times as many calls as the original version. Even though it uses digital technology, it is still considered analog. AMPS and NAMPS operate in the only 800-MHz band and do not offer many of the features common in digital wireless service, such as e-mail and Web browsing. For more information on AMPS, refer to Chapter 3, “CDMA to TDMA—Digital Terms and Basic Definitions.”

Examining Digital Technology

Just when you think that you’ve got a pretty good handle on what analog is all about, digital technology joins the party. This essentially means a second wireless network, new terminology, new products and services, and yet another learning curve. But the principle between analog and digital remains basically the same. The most significant difference is that unlike analog, the digital network does not send out your voice on a continuous wave through the air, but breaks down your voice into binary code (0’s and 1’s), transmits it as data, and reassembles it on the other end. These digital networks are usually referred to as Personal Communications Service or (PCS) networks. (Refer to Chapter 3, “CDMA to TDMA—Digital Terms and Basic Definitions” for more information on the various types of digital technologies.) The relevance of these changes to the every-day consumer is that this breakthrough affects everything from call quality, to the number of people who can access the network in any geographical area, and to features like caller ID, Internet access, or extended battery life.

Digital wireless phones use the same radio technology as analog phones, but they use it in a different way. Analog systems use the signal between the phone and the wireless network mostly on a one-to-one basis (one channel for one call). Digital networks allow multiple calls per channel, or frequency, which allows the wireless carrier to offer service to more people in their coverage area. Some of the digital technologies have increased the number of people who can talk at the same time by six to ten times that allowed by analog systems. So, in a nutshell, digital technology is more efficient than analog.

The Pros and Cons of Digital

As with any comparison, there are pros and cons to each item. When choosing between digital or analog, the most important thing to remember is that analog is an established technology; it has been around long enough and is available in most areas, even very rural locations. However, established is not always good—there is always room for improvement. Digital wireless uses newer technology;

although it may not be available everywhere, it offers many features that are unavailable to analog customers. Because of the advanced technology that digital wireless uses, it is the primary service being offered today to customers by almost all wireless carriers. The following lists break down the pros and cons for digital technology and can help you decide what's best for you.

Advantages of Digital Phones

- **Clarity** Digital wireless calls are often clearer than analog wireless calls.
- **Capacity** By enabling more calls to use the same bandwidth, digital technology reduces the busy signals that occur on analog networks when too many people attempt to use their phones at the same time.
- **Value** Digital plans tend to offer cheaper, bundled minutes than the analog alternatives because the wireless carrier has more bandwidth on digital than on analog.
- **Better Phone Choices** Because digital wireless can utilize more advanced features than analog, most digital phones come with innovative features (like a calendar, calculator, and wireless Internet capabilities). The popularity of digital phones has also created an increased demand for phones resulting in more phone choices for the consumer.
- **Battery Life** Digital wireless phones generally have a longer battery life than analog phones. This explains why digital phones are usually smaller and come with more talk time than analog phones. Analog phones have to be in active mode all the time, which drains the battery; digital phones can use a standby or sleep mode, which saves battery use.
- **Security** Digital technology breaks your voice into zeros and ones before it transmits it through the air, making it inherently more secure than analog technology. This makes it more difficult for anyone to eavesdrop on your wireless calls.
- **Extra Features** In general, digital networks tend to offer the customer more network feature options like Caller ID, Text Messaging, and even Web surfing.

Disadvantages of Digital Phones

- **Coverage** In the United States, the networks are still relatively young and do not offer a coverage area as comprehensive as the analog networks.
- **Single Band Phones** Some digital phones operate only on the digital network that is the primary network of the carrier. These phones are great when they are in the digital coverage of the carrier, but will not be able to make or receive calls when outside of the digital network, for example when in a rural area on vacation or while traveling in nonpopulated areas.
- **Roaming Fees** Some wireless carriers offer their low per-minute cost or included minutes only while you are operating on their digital network, which may be only in a metropolitan area and the immediate surroundings. When you drive outside that area, you are using roaming minutes, which are more expensive and often are not included in your monthly service fee.
- **Digital Sound Problems** Although digital sound quality has dramatically improved since its introduction, you are likely to find areas on the edges of the digital coverage area where the sound is like calling from under water, or where your call will just be disconnected. Sometimes that is better than the analog static, but other times it can be just as frustrating.

Summary

Although the coverage areas when using analog is still superior to the coverage you will find on a digital phone, the advantages of a digital phone far surpass those of an analog phone. The majority of wireless phones available offer a secondary mode of operation on the analog network to make sure you have as much coverage as possible, which is an important factor when looking at phones. There is nothing worse than spending \$200 on a phone that offers the latest in digital capabilities only to have it not work as soon as you leave the highway!

Quick References

Evolution of the Wireless Phone

- ☑ Wireless phones work on technology that is similar to that of CB radios, AM/FM radios, and walkie-talkies.
- ☑ A cellular phone is a duplex device. This means it can send and receive voice signals at the same time so you don't have to talk like you are on a walkie-talkie.
- ☑ With wireless technology, messages sound clearer, travel farther, and are received by the person you are calling as if you were next door.

Exploring Analog Technology

- ☑ In the early 1980s, the FCC approved the first analog wireless telephone standard known as AMPS.
- ☑ Analog was the pioneer for wireless technology.
- ☑ Analog wireless sends your voice in a continuous wave from your phone to the closest tower and forwards it to the other party.

Examining Digital Technology

- ☑ Just when you think that you've got a pretty good handle on what analog is all about, digital technology joins the party.
- ☑ Digital wireless phones use the same radio technology as analog phones, but they use it in a different way.

- ☑ Digital wireless sends your voice as 0's and 1's from your phone to the closest tower and reassembles it to send it to the other party.
- ☑ In a nutshell, digital is more efficient than analog.

The Pros and Cons of Digital

- ☑ Digital networks are often clearer than analog wireless.
- ☑ Digital phones generally have a longer battery life than analog phones.
- ☑ Analog still has more coverage for calling from more places.

Chapter 3

CDMA to TDMA— Digital Terms and Basic Definitions

Quick References in this chapter:

- Code Division Multiple Access
- Global Systems for Mobile Communications
- Time Division Multiple Access
- Enhanced Specialized Mobile Radio
- Service Providers and Technologies

- ☑ Summary
- ☑ Quick References

Introduction

As wireless technology becomes more and more popular, service providers and wireless providers will offer their customers more and more advanced features. Since the introduction of digital into the cellular world, the possibilities seem endless. Although analog technology, the original wireless technology, continues to be the most expansive network available, it is being challenged by digital technology as digital technology offers superior abilities to better serve the consumer. One of the major problems with digital wireless today is the sheer number of digital wireless service providers that exist. For the average customer, knowing what the different types of digital services are, what services the different providers have to offer, and why one service provider is better or worse than the other is almost impossible.

The only thing that matters to most people buying wireless is that it works clearly and consistently and is relatively inexpensive. Reasonable expectations, but when someone ventures online or into a wireless store to buy a wireless phone and service plan, they are confronted with so many similar choices that it can be overwhelming and quite confusing. The reasons that the wireless carriers moved from analog to digital or built their networks using only digital are many, but the most compelling reason is that digital allows them to offer more. More features. More customers per channel of frequency allocated by the FCC. More seamless use across the country. Just plain more.

Early mobile telephone systems allowed only one conversation per frequency, which was very limiting to the carriers in terms of how many customers they could serve. There was nothing that could really be done based on technology that did not allow for frequencies to be reused in any single geographical area. However the demand for wireless phones has led to systems whose design is based on the reuse of frequencies. One of the first services to design a frequency reuse plan, or cellular plan, was the Advanced Mobile Phone Service (AMPS).

Before AMPS there were a limited number of channels available for wireless phones; the towers to transmit and receive the signal from the mobile units were designed to cover large geographic areas, so as to limit the number of towers and to lower costs. However, this resulted in very low user density and crippled the systems in highly populated areas. AMPS was designed to allow frequencies to be reused in a smaller geographic area, thereby increasing the available user density. Digital technologies

expanded on the reuse of frequency to allow each channel to carry three, six, and even ten times as many calls as the older systems. The ability to take a person's voice, break it down into 0's and 1's, and reassemble it when it got to a tower enabled each bit of frequency to be used for many voice calls and for passing data back and forth across the network.

The types of digital service that have evolved in the United States and around the world vary from each other mostly in technical ways, but also in some very customer-affecting ways. There are four types of digital systems in the United States:

- Code Division Multiple Access (CDMA)
- Global System for Mobile Communications (GSM)
- Time Division Multiple Access (TDMA)
- Enhanced Specialized Mobile Radio (ESMR)

The differences of the types of digital service are discussed in the remaining sections of this chapter.

COMPETING DIGITAL STANDARDS

Wireless carriers are always trying to find the best way to optimize their networks with new technologies, while making sure that once a customer is on their network, it is tough for them to leave for the competitor. In the early days of wireless, the cellular providers all got together, so the story goes, and agreed to move from their analog systems to a common digital standard. This would allow for simple customer roaming and migration from one network to another, thus creating the easiest solution for the consumer. Immediately after the hands were shaken to agree on this one standard, the carriers all started making their own arrangements and vendor choices based on different standards, including TDMA, GSM, and CDMA, and the simplicity that once existed in the analog world quickly ended.

Code Division Multiple Access

Code Division Multiple Access (CDMA) is often referred to as the most interesting, but hardest to implement method of carrying wireless services. CDMA systems have no channels, but instead encode each call as a coded sequence across the entire frequency spectrum. Each conver-

sation is modulated, in the digital domain, with a unique code that makes it distinguishable from the other calls in the frequency spectrum.

CDMA is the newest of the multiple access technologies; it is not yet as widely used but is showing great promise. CDMA does not divide the allocated block of frequencies into individual channels. It assigns a unique code to each signal and then combines all the signals into a single large channel. The receiver receives the integrated signal and uses the same code just to process the desired signal. CDMA is gaining popularity as a third-generation (3G) wireless phone technology because it is very efficient at utilizing bandwidth, plus it is natively very secure because all conversations are uniquely encoded.

The fact that CDMA shares frequencies with neighboring wireless towers allows for easier installation of extra capacity, since extra capacity can be achieved by simply adding extra cell sites and shrinking power levels of nearby sites. The downside to CDMA is the complexity of deciphering and extracting the received signals, especially if there are multiple signal paths (reflections) between the phone and the wireless tower (called multipath interference). As a result, CDMA phones are sometimes more expensive than other digital phones and CDMA antenna site equipment is three to four times the price of the other digital network equivalents.

Benefits of CDMA

CDMA networks cover more wireless users in the United States than any other digital standard and include benefits such as:

- Advanced features like caller ID, text messaging
- Voice clarity and overall call quality
- The ability to filter out background noise and interference
- Fewer dropped calls (as compared to analog)
- Improved security and privacy—the digitally encoded, spread spectrum transmissions minimizes eavesdropping
- A large number of customers who can share the same radio frequencies
- The greatest customer capacity of network equipment for low cost
- Less battery power (when compared to analog)

Global Systems for Mobile Communications

Global Systems for Mobile Communication (GSM) is the main technology used by the international digital wireless systems; however, GSM is used only by a small percentage of wireless carriers in the United States. GSM is interesting in that it uses a modified and far more efficient version of TDMA (explained later in this chapter). GSM keeps the idea of timeslots on frequency channels, but corrects several major shortcomings. Since the GSM timeslots are smaller than TDMA, they hold less data but allow for data rates starting at 300 bits per second. Thus, a call can use as many timeslots as necessary up to a limit of 13 kilobits per second. When a call is inactive (silence) or can be compressed more, fewer timeslots are used. To facilitate filling in gaps left by unused timeslots, calls do *frequency hopping* in GSM. This means that calls will jump between channels and timeslots to maximize the system's usage. A control channel is used to communicate the frequency hopping and other information between the antenna tower and the phone.

The architecture used by GSM consists of three main components: a mobile station, a base station subsystem, and a network subsystem. These components work in tandem to allow a user to travel seamlessly without interruption of service, while offering the flexibility of having any device used permanently or temporarily by any user. Utilizing the three separate components of the GSM network, this type of communication is truly portable. A user can place an identification card called a Subscriber Identity Module (SIM) in the wireless device, and the device will take on the personal configurations and information of that user. This includes telephone numbers, home system, and billing information. Although the United States has migrated towards CDMA and TDMA as the premier mode of wireless communications, a large part of the world uses GSM.

Benefits of GSM

GSM networks cover the most wireless users around the world and the technology is gaining favor in the United States because of the following benefits:

- Provides integrated voice, high-speed two-way data, fax, and short message services capabilities
- Offers advanced features such as caller ID, text messaging
- Offers superior voice clarity and overall call quality
- Provides personal identification tied to a Subscriber Information Module (SIM) card that can be used in multiple phones, not tying the user to one phone
- Offers voice privacy
- Uses less battery power (when compared to analog)
- Enables a single technology handset to work around the world where GSM is available (as long as the frequencies are accessible by the handset)

Time Division Multiple Access

Time Division Multiple Access (TDMA) divides wireless conversations by frequency and time to increase the capacity of the network. TDMA uses a single voice channel for multiple calls by taking each call, breaking it into timed sections of a digital transmission to the tower, and reassembling the call based on the timeslot. For example, call A has all its parts put into timeslot A, call B has its parts put into timeslot B, and each are sent in one transmission to the tower, where the calls are put back together for transmission to the other party. TDMA was one of the original digital systems used and has gone through many revisions to make sure it utilizes the network to the best of its abilities. Based on a limited number of timeslots for each call in a channel, TDMA has no accommodations for silence in a telephone conversation. In other words, once a call is initiated, the channel/timeslot pair belongs to the phone for the duration of the call.

Each channel using TDMA technology for wireless calls is further divided into timeslots. Each timeslot is assigned to a different user. The transmitter transmits information for all timeslots at the same frequency and the receivers receive all the timeslots but listen only to the timeslot they have been allocated. The net effect is that the efficiency of the channel is increased by a multiple of the number of timeslots that are being used. Most common second-generation TDMA phone systems use three timeslots.

Benefits of TDMA

TDMA was one of the first technologies to expand analog's voice capabilities beyond one call per channel. TDMA has many other benefits:

- Provides advanced features like caller ID, text messaging
- Economizes bandwidth
- Provides voice clarity and overall call quality, even over long distances
- Is difficult to decode, therefore only minimal eavesdropping is possible
- Uses less battery power (when compared to analog)
- Offers voice privacy

Enhanced Specialized Mobile Radio

Enhanced Specialized Mobile Radio (ESMR) systems use digital radio transmissions similar to other digital technologies. Spread-spectrum modes, such as frequency hopping, are common. One major difference from other networks is that in an ESMR system, connections between users is almost instantaneous, compared to the typical delays required to dial and set up a call in a public cellular network. This capability allows the ESMR carrier to offer walkie-talkie-like services on its network, as well as cellular calling. This is a great advantage for large work groups who need to be in constant contact with just a touch of a button, for example a construction crew. ESMR services also allow customers to contact many people at the same time, much like a CB radio, thus creating a multiple person "call."

Examples of ESMR networks include Ericsson's Enhanced Digital Access Communications System (EDACS), Motorola's Integrated Dispatch Enhanced Network (iDEN), and the Nextel System.

Delivery and courier services, which depend on mobility and speed, also typically employ ESMR for voice communications between the delivery vehicles and the office. The technology consists of a dispatcher in an office plotting out the day's events for the driver. When the driver arrives at his location, he radios the dispatcher and lets him know his location. The benefit of ESMR is its ability to act like a CB radio, allowing all users on one channel to listen, while still allowing two users

to communicate personally. This arrangement allows the dispatcher to coordinate schedules for both pick-ups and deliveries, and to track the driver's progress. Drivers with empty loads can be routed to assist backlogged drivers. Drivers that are on the road can be radioed if a customer cancels a delivery. This type of communication benefits delivery services in two major areas, saving time and increasing efficiency.

Benefits of ESMR

ESMR is a unique digital service that allows the user a couple ways to communicate, including:

- Push-to-talk features that operate like walkie-talkies allow users to talk directly to another person without a delay in setting up the call
- Group calling allows users to talk to many people at one time
- Digital transmissions assure privacy
- Two-way data features are available
- International systems allow the use of one handset anywhere the service is available

Service Providers and Technologies

Now that we've covered the basic digital technology offerings, you may be wondering which service providers or wireless carriers offer which services. To help you make sense of this we've provided the leading service providers and their offerings in Table 3.1.

NOTE

Be aware that Table 3.1 is not a complete list of U.S. wireless service providers.

Table 3.1 Service Providers and the Technologies That They Offer

Wireless Technology				
Service Provider	CDMA	TDMA	GSM	ESMR
AT&T Wireless		✓	✓	
Cingular Wireless		✓	✓	
Nextel				✓
Qwest Wireless	✓			
Sprint PCS	✓			
SunCom		✓		
Verizon Wireless	✓			
Century Tel		✓		
NTELOS	✓			
PrimeCo	✓			
US Cellular		✓		
Cincinnati Bell Wireless		✓		
VoiceStream Wireless			✓	

Summary

Digital technology is quickly outpacing analog with its advanced features, incredible battery life, and voice quality. The limitation of coverage for each of the four types of digital coverage in the United States can sometimes be overcome by using a wireless phone that has digital service and analog capabilities in order to maximize the places in the U.S. where the phone will work. The differences between the types of digital available to consumers is tough to discern, so the best way to judge which one is best for you is to consider the features, coverage, and quality of that digital coverage in your location.

Quick References

Code Division Multiple Access

- ☑ CDMA networks cover more wireless users in the United States than any other digital standard and include benefits such as:
 - Advanced features like caller ID and text messaging
 - Most capacity of all digital networks
 - Secure calling

Global Systems for Mobile Communications

- ☑ GSM networks cover the most wireless users around the world and the technology is gaining favor in the United States because of the following benefits:
 - Provides integrated voice, high-speed two-way data, fax, and short message services capabilities
 - Enables a single technology handset to work around the world where GSM is available
 - SIM card feature keeps subscriber information

Time Division Multiple Access

- ☑ TDMA was one of the first technologies to expand analog's voice capabilities beyond one call per channel. TDMA has many other benefits:
 - Secure calling
 - Advanced features like caller ID and text messaging
 - Economizes bandwidth

Enhanced Specialized Mobile Radio

- ☑ ESMR is a unique digital service that allows the user a couple ways to communicate, including:
 - Directly connect to other users like a walkie-talkie
 - Talk to groups of people like a CB radio
 - Two-way data

Chapter 4

Wireless Data and the Wireless Internet—Do I Need It?

Quick References in this chapter:

- What Is the Wireless Internet?
- How Does It Work?
- What Kind of Phone Do I Need?
- What Services Can I Get from the Wireless Carriers?
- What Services Can I Get from Third Parties?
- Wireless Data and Fax

- ☑ Summary
- ☑ Quick References

Introduction

Imagine that the four hours you spent sitting in the airport waiting for a delayed flight yesterday could have been as productive as being in the office, sitting at your desk. Instead of getting friendly with the airport bartender, you could have been browsing the 80 unread e-mails in your inbox, checking your stock portfolios, or even looking up directions to that impending business meeting. Yes, you can do all this in the palm of your hand as long as you have the right phone and access to the Wireless Internet.

What Is the Wireless Internet?

Like millions of others around the world, you use the Internet from your home or work computer every day to communicate with friends, family, and co-workers; check your stocks; keep up with the news and weather; make travel plans; get directions; and check movie times. Missing e-mail messages, updates on your stocks, or some news you just need to know can be detrimental to your personal and professional life. How would you like the freedom of leaving the office for a while, but still being connected to the world around you?

Thanks to the Wireless Internet, you can get away from the office for a bit, while maintaining complete control over the information that matters most to you. Answer e-mail, check sports scores and news, all from the palm of your hand.

The Wireless Internet gives your phone a dual personality—one for voice and one for data. All the data that you need every day may very well be available to you by using your wireless phone. The Wireless Internet lets you read, reply, forward, and manage your e-mail. It helps you to be more efficient when you are on the run, or when you need to access information while you are away from the office. There are many software companies today that are creating applications to allow you to see all the data that you use at work through your wireless phone. Although the information will not be presented in a format that you are familiar with, you will be able to access and manipulate it—read it, fax it, e-mail it, delete it.

How Does It Work?

Perhaps the most important factor in the birth of Wireless Internet has been the immense growth of wireless phones in the last few years. With

digital wireless networks expanding at record pace, a solid foundation for Wireless Internet services was established. In 1997, Nokia, Motorola, Ericsson, and Phone.com came together to create the Wireless Application Protocol (WAP) because they believed a universal standard was critical to the successful implementation of the Wireless Internet. WAP uses Wireless Markup Language (WML), which includes the Handheld Device Markup Language (HDML) developed by Phone.com (now called OpenWave after their merger with Software.com). The wireless phones are also equipped with a piece of software called a micro-browser, which is analogous to the Web browser you use to access the Internet from your home or work PC. The micro-browser allows you either to enter a Web address or to click on a page link, which will then bring you to that page.

Most wireless phones have data transfer rates of 14.4 kbps or less. Compared to a typical home PC 56 kbps modem, cable modem, or DSL connection (100 kbps+), wireless speeds are much slower. Wireless Internet content is typically text-based, so the time it takes to download content is less than if the page were loaded with graphics. And although you don't get the graphical beauty of the Internet, you are able to gain access to the information that matters to you most, while on the go. A comparison of a typical Web page and its wireless Web counterpart can be seen in Figures 4.1 and 4.2.

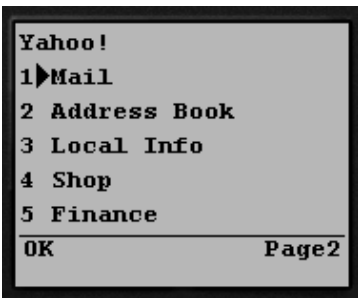
The relatively small size of the liquid crystal display (LCD) on a wireless phone certainly presents another challenge. Most Web sites are designed for a resolution of 640 by 480 pixels, which is ideal for viewing on a desktop or laptop computer. The page simply will not fit on wireless phone displays, which average 150 by 150 pixels. Also, the majority of wireless devices use monochromatic screens. Pages are more difficult to read when the text and background colors become similar shades of gray. WAP takes each of these limitations into account and provides a way for pages to be displayed for optimal viewing capabilities on a wireless phone screen.

New applications are being developed to allow more graphics to be downloaded onto wireless phones. Given the limitations of the phone screen, the normal graphics you are used to will not appear on your phone. Some phones and wireless services can accept wireless bitmap pictures (WBMP), which offer a taste of things to come in the delivery of images to wireless phones, albeit not a high resolution, full-color animated picture like you'd see on your home computer.

Figure 4.1 Yahoo! Home Page Tool Bar on the Typical Computer Screen



Figure 4.2 Yahoo! Home Page Tool Bar on the Typical Wireless Phone Screen



There are many steps involved in accessing a Web page through your wireless phone:

1. The handset establishes a connection with its base station.
2. Once this connection is set up, the micro-browser initiates a connection to a WAP gateway predefined in the phone's configuration.

3. The micro-browser requests a URL from the WAP gateway. This is done via a compact binary encoded request.
4. The gateway translates this request into an HTTP request, and sends it over the wired Internet to the specified content server.
5. The content server responds by sending a page of WML content, which may also contain WMLScript (similar to JavaScript), and special graphics in WBMP format.
6. The gateway compresses the response into a special binary format optimized for low-bandwidth networks, and then sends it back to the micro-browser. It also compiles any WMLScript found in the response.
7. The micro-browser decodes the compressed signal and attempts to display it, if possible.

Don't worry if this seems like too much information—there are many steps involved in getting information from the Web to your small wireless phone screen. Each step along the way may vary slightly based on the kind of content you are requesting and the kind of phone you are using. As the Wireless Internet matures, there will be fewer steps that vary from the wired Internet, thus allowing any device to access the online information in virtually the same way.

What Kind of Phone Do I Need?

To access the Wireless Internet, you will need to get an Internet-ready phone. These phones currently range in price from \$100 to \$500. Three examples of Internet-ready phones can be seen in Figures 4.3, 4.4, and 4.5.

NOTE

For a more complete sampling of Internet-ready phones, refer to Chapter 6, "Guide to Wireless Phones."

Wireless Internet service also enables users to connect their laptops to the Internet without plugging into the phone socket in the wall. You can purchase a separate cable that will allow you to connect to the Internet using your phone as your modem. The range of prices for

Figure 4.3 The Ericsson R289LX Internet-Ready Phone



Figure 4.4 The Samsung N200 Internet-Ready Phone



Figure 4.5 The Mitsubishi T250 Internet-Ready Phone



these kits covers the spectrum from \$20 to \$200, depending on the kit and its accompanying services. Often, using your phone as a modem will use minutes on your monthly rate plan, but sometimes you need to get an additional rate plan specifically for data.

What Services Can I Get from the Wireless Carriers?

Thanks to the advancements made in wireless phone technology over the past few years, virtually every large wireless service provider now offers Wireless Internet service to their customers, some including basic Wireless Internet for no additional charge, with others charging an additional monthly fee in addition to monthly service plan charges.

Some of the standard Wireless Internet services available include stock quotes, show times, restaurant reviews, and door-to-door directions right from your Wireless Internet-ready phone. Wireless Internet services that come standard on Internet-ready phones are pretty much limited to the basic services at this point, but are expanding all the time. Many companies are creating new ways to use the Wireless Internet from all Internet-ready phones to allow the user to customize the phone for Web surfing. Some of the services available today include weather, sports scores, news headlines, horoscopes, e-mail notification, and calendar reminders.

The one feature that all Wireless Internet users love is the ability to have e-mail access in their back pockets. Check your e-mail whenever and wherever you want—while watching your daughter's soccer game or at the top of a mountain. Some wireless carriers e-mail packages allow you to print your e-mail simply by faxing the e-mail to the nearest fax machine. This is very handy if you need a copy of an inventory list, or directions to hand to someone else.

Each wireless carrier will have slightly different services that come with their Wireless Internet package, so be sure to look for one that fits your needs. If you only want to casually cruise the Web, then look for one that is free, or has a low per-use cost. If you will depend on your wireless phone for data as much as voice, make sure that the data coverage that you will receive is of similar quality as the voice coverage that you expect. Also make sure that the e-mail use that you want is what is available. Most e-mail accounts that reside behind a

firewall (for example Exchange or Lotus enterprise applications) can be tricky to access with your wireless phone. It is easier to direct your wireless phone to standard Internet e-mail accounts, called POP3 e-mail.

What Services Can I Get from Third Parties?

Making a Web site accessible to a wireless device is quite a challenge. So far only a small portion of sites, approximately 1.5 million of the more than one billion Web sites, provide any Wireless Internet content. As the use of Web-enabled wireless devices grows, you can expect increasing numbers of Webmasters to create wireless content for their Web sites to get the attention of the new wireless Web surfers.

TOP WIRELESS INTERNET PORTALS

These portals are the most popular available to send customized information via the Wireless Internet straight to your wireless phone:

- Yahoo! (<http://mobile.yahoo.com>)
 - MSN Mobile (<http://mobile.msn.com>)
 - America Online (<http://devices.aol.com/mobile>)
 - Excite (www.excite.com/info/excite_mobile)
 - Vindigo (www.vindigo.com)
-

Wireless carriers are partnering with many Internet content providers to add value to their customer's Wireless Internet experience. Many of the content providers allow users to download simple content for specific items like weather or airline schedules and the other items mentioned earlier. Many of the top names on the Internet are creating customized areas for wireless users to access their own customized information wherever they are, whenever they want it. The wireless carriers are partnering with these portals to keep their customers accessing their Wireless Internet often, adding to the value that they bring to the wireless experience.

Portals that lead the Internet are hoping to get the same advantage on the Wireless Internet and attract the new generation of Internet users to their wireless areas. New names are trying to lead the charge in the Wireless Internet and take a piece of the customer base away from the established Web leaders by enhancing the experience beyond what the existing Web portals are doing. The future of Wireless Internet is looking to be a great one for what will be available, with increased download speeds, graphics, color, and interactive access like games with multiple players.

Wireless Data and Fax

An increasing number of digital phones can now be used as if they were modems. Therefore, with a data cable, you can use your phone and a laptop to connect to your usual Internet service provider (AOL, Earthlink, etc.) while on the road. These phones can also be used for receiving faxes, as long as your laptop has a fax software application.

If you want to use your wireless phone as a modem, you need to ask yourself the following questions:

1. **Does the phone I want to buy have data or/and fax capability?**

When you are purchasing a phone, make sure the phone is Data/Fax Capable. This will assure you that your phone will be able to operate as a modem.

2. **Does your wireless service provider offer that function?**

There is usually a low monthly cost associated with the data service. However, since you will most likely be using your plan minutes to access the Internet on your computer, the only charges you should incur would be for long distance (if not included with your plan) or additional minutes (if you exceed your included plan minutes). In any case, you should check with your wireless service provider prior to accessing the Internet on your computer with your wireless phone.

3. **What data speed is supported on the network to which you want to subscribe, and what kind of data transfer is it?**

This is a very important question because not all types of networks allow for the same data speeds and they don't use the same methods of transferring data. Wireless carriers use either circuit-switched data transfer or packet-switched data transfer, meaning that the network either ties up a single channel for your data to be transmitted or it sends the data in small packets from one end to the other, using multiple channels. The difference is that typically, packet-switched data is faster and more reliable, since the network has the ability to detect corrupted data streams when a packet is missing and can correct itself or ask your computer to fix it, whereas circuit-switched data either will be working or it will not—the channel will be on or off. If the channel turns off in the middle of a data transmission, typically you have to start all over again.



Summary

The Wireless Internet is basically a subset of the wired Internet. You should remember that accessing the Internet with your cellular phone does not give you to the same amounts of computer memory, processing power, or monitor space as your desktop computer does, so your experience will be quite a bit different. When you use your wireless phone as a modem from your laptop to access the Internet, you can see the same things you do when plugged in at work or at home; it just takes a bit longer—and is more prone to need reconnection.

Wireless phones are still basically meant to do one primary thing—allow you to talk to any one, any time, from anywhere. The addition of data capabilities is something that is incredibly useful for many people and is adding to the overall features that you can get with your wireless phone purchase—but the ability to toss your computer is still years away. You can increase your productivity, access information that is critical to you, and keep in touch with e-mail and short messages using your wireless phone; many users become quickly addicted to this capability.

Do you need the Wireless Internet? If you are the type of person who always needs to be in touch and know what is going on with your e-mail and electronic calendar, but you also need to be in two or three places at once, then yes, you should strongly consider the addition of the Wireless Internet to your cellular phone service plan.

Quick References

What Is the Wireless Internet?

- The Wireless Internet adds Internet access to your wireless phone.
- Use your phone to see short pieces of information, like weather, news, and sports.
- You can access your e-mail from your phone so that you will always be in touch.

How Does It Work?

- Your wireless phone uses a Wireless Internet standard and a micro-browser to access the Web.

- ☑ Internet pages are written in a new language (WML or WMLScript) that is viewable on wireless phones.
- ☑ Internet content is sent to the phone as text without graphics due to slower speeds and smaller screens than the wired Internet.

What Kind of Phone Do I Need?

- ☑ Many phones are available that include a micro-browser and the ability to access the Web.
- ☑ Prices for phones with Wireless Internet Capabilities are approximately \$100 to \$500.

What Services Can I Get from the Wireless Carriers?

- ☑ Wireless carriers have a number of options, but primarily use standard content providers with a preset selection of sites.
- ☑ Stock quotes, weather, movie times, directions, and sport scores are all examples of information that is available from most wireless carriers who offer Wireless Internet access.
- ☑ E-mail and short message service are two-way data messaging offers from wireless carriers.

What Services Can I Get from Third Parties?

- ☑ Wireless portals are expanding the number of sites you can view.
- ☑ Currently, Internet search engines are developing search engines that will allow you to search the Web for information from your wireless phone.

Wireless Data and Fax

- ☑ Connecting your wireless phone to your laptop can give you access to the Internet with the same look and feel as the wired Internet, just a bit slower.
- ☑ Faxing to and from your laptop using your wireless phone as a modem can be a life saver if you are stuck on the road and need to get some work done.
- ☑ Make sure your phone can act as a modem and that your computer can handle dialing out over a wireless device.

Part II

Equipment



Chapter 5

The Components of a Wireless Phone

Quick References in this chapter:

- The Basics
- A Beginner's Guide to Phone Features
- The Cutting Edge
- ☑ Summary
- ☑ Quick References

Introduction

Choosing the right phone for you is important. For many people, a wireless phone is a constant companion and fashion accessory. For others, a wireless phone is a functional device that they dig out when they need to place a call. Determining how you feel about your phone will make it easier to decide which features are more or less important to you.

The main components that make a phone more or less attractive are size, standard features, advanced features, and accessory options. The price of a phone usually is determined by these components. The smaller the size and weight of a phone, the more expensive it tends to be. The more advanced features (like wireless Internet access) the phone has, the more expensive it tends to be. Accessory options such as higher quality batteries, interchangeable faceplates, hands-free kits, and battery chargers don't change the initial price of the phone, but they do impact the bottom-line price.

Wireless carriers tend to offer at least one less expensive basic model phone with their plans. That phone is usually a good quality phone with standard features, an average weight, and an average battery. The section, "A Beginner's Guide to Phone Features" will detail what you can expect to get from that type of phone.

Every wireless carrier will also offer a "hot" new phone that has the latest and greatest everything—and is the most expensive. These phones are typically the latest innovation in size (palm size), exterior appeal (stainless steel), advanced features (MP3 players), or a combination of these components. The section, "The Cutting Edge" will review today's latest novelties.

If you want more than the basic phone but don't need as much as the hot phone, there are plenty of options. Knowing what the components do will help you buy the phone that works best for you and that fits into your budget.

The Basics

The Ericsson R289LX is one of the most popular phones today because it offers many of the best features for a reasonable price. Figure 5.1 shows the Ericsson R289LX and calls attention to the various elements you will find on most wireless phones. These elements are described in further detail in the following sections.

Figure 5.1 The Basic Components of All Cellular Phones Illustrated Using the Ericsson R289LX



Display Screen

- **Screen Size** If you plan to use the phone for wireless Internet applications, then a larger, multiline screen is a must. Look at how many lines of text can fit on a screen, and how many characters per line. Also be sure to check if you are able to read the letters on the screen or if they are just simply too small.
- **Monochromatic versus Color Displays** Most wireless phones have monochromatic (i.e., black and white, all amber, or all green) displays, but there are a growing number of phones that offer color LCD displays. Wireless phones with color screens use more memory and are more expensive; they are the cutting edge of wireless phone display technology.

Antenna

Antennas are internal, fixed, or extendable. Extendable antennas must be fully extended to give you their maximum range. The best kind of

antenna depends on where you use your phone and how strong the coverage is in that area. Most of the time, an internal or fixed antenna works just fine, but when you are at the edge of a wireless carrier's coverage area, you may get better quality from a phone with an extendable antenna.

Menu Selection and Scroll Keys

The look and feel of the menu selection and scroll keys varies by phone model. The usability of these keys is very important if you plan to use your phone for Internet surfing or for text messaging.

- **Scroll Keys** Let you quickly surf through menus, submenus, and phone books.
- **Menu Selection Keys** Let you choose the option that is currently displayed above the key.
- **Phone Menu** Lets you customize your phone to make it your own—for example, the sound of the ring, the volume of the earpiece or the key pad when you press the numbers, and so on. The phone menu is where you will find all these settings; every phone is slightly different as to how the menu is laid out and displayed. The user's manual for your phone will walk you through all the selections.

Other Keys

To save on size, most keypads have multiple functions. Many features are available through the menus, but shortcuts and certain basic functions are available only by pressing the keys in a certain order. For example, to lock your keypad you may press ***0**, or to speed dial a number you may press **#8**. Reading the user's manual that comes with the phone will explain exactly how this works for the phone you choose.

- **Keypad Letters** When you use a wireless phone to send two-way messages or e-mail, you enter the text using your keypad. Each number corresponds with certain letters, for example A, B, and C are on the **2** key. In order to type a C into your phone, you press the **2** key three times.

- **Clear Key** Most phones have a key that will allow you to erase the last number or letter you entered (usually labeled CLR). Press the **CLR** button once to remove the last digit entered or hold it down to erase the entire entry.
- **Message Key** Most digital phones are able to receive text messages and will also display when you have a voice mail waiting for you. The message key will allow you to access these messages for review.

PREDICTIVE TEXT ENTRY

Many wireless phones are loaded with software that helps you type words with fewer keystrokes. Tegic (www.tegic.com) is one company that offers software called T9 (www.t9.com), which helps you use the nine keys on your phone to type thousands of words by pressing each number key only once, instead of up to three times. When you are typing many short messages using your phone, it is *much* easier to use predictive text entry software than continually typing the number keys.

Battery

The quality of the battery will determine the talk/standby time of your phone. Generally, phones are sold with a standard battery that gives you an average talk/standby time. Extra batteries can be bought as accessories and upgraded later, so we do not recommend making the talk/standby time of the standard battery the decisive factor in determining which phone you choose to purchase (see Chapter 7, “Accessories for Your Wireless Phone”).

Jacks

If you plan on charging your phone in the car or using a hands-free accessory, then you want to make sure that the phone model that you purchase will support these kinds of accessories. A quick way to verify compatibility is to make sure the jacks for these accessories are physically available.

- **Hands-Free Jack** Some phones require a special attachment for using a head set or a hands-free device. Others accessories often offer a standard plug that will work with many different types of phones.
- **Charger Jack (or connection)** Most phones will have a number of charger types available (standard charger, rapid charger, and car adaptor charger). They each have advantages, so if you want a specific charger, make sure the phone supports it.

A Beginner's Guide to Phone Features

No one can decide for you which features are more important than others. However, knowing what the features are can help you decide for yourself if it is something that you will never use or something you can't live without. Since the type of features a phone has is directly proportional to the amount it may cost you, reviewing the list of features will help you decide between the \$400 phone and the \$40 phone. And when you are comparing similar phones, the one that has the right features for you is the one you want.

Standard Features

Standard features tend to vary by phone manufacturer (such as Motorola or Nokia) and model rather than by wireless service carrier. A Nokia 8200 model offered by Cingular will have the same standard features as a Nokia 8200 model offered by AT&T Wireless (even though they use different networks). How the different wireless carriers choose to highlight and advertise those features can vary widely. The following features are in alphabetical order and are available on most phones currently on the market. Some very basic phones may not have all of these features.

- **Automatic Redial** Let your phone do the work for you. A wireless phone with automatic redial will continually dial a call until you get through to the number you are attempting to reach.

- **Battery Level Indicator** Can't remember when you charged your battery last? This indicator is usually fixed on the first screen, so you always know how much power you have left.
- **Calculator** Always have a calculator handy. Great for splitting the bill at restaurants.
- **Calendar/Reminder** Set up reminders for important meetings, birthdays, and such.
- **Call Log** Tracks recently dialed, received, and missed calls. The number of calls stored varies by phone, but is usually between five and twenty.
- **Clock** Leave your alarm clock at home. Most phone clocks also have an alarm feature.
- **Display Own Phone Number** Great for when you first get your phone and are updating all of your friends and family on your new number, but you just can't remember it.
- **External Volume/Ringer Control** Turn the volume of your ringer up when you are outside, turn it down when you go out to dinner or to the movies.
- **Games** Every manufacturer has their own games installed. These are great for occupying free moments while waiting in line, for example.
- **Incoming Number Storage** This is a quick and easy way to add phone numbers to your phone book. When you get a call, choose this option and add the name later.
- **Keypad Lock** Allows you to lock the keypad so you don't accidentally make a call while your phone is in your bag or pocket. Especially useful for "non-flip" phone designs.
- **Last Number Recall** Did you hang up too soon? Last-number recall allows you call the person right back, without having to find the number again.
- **Message Indicator** Lets you know if you have a numeric, text, or voice message waiting.
- **Numeric Paging** Use your cellular phone as a pager; no need to carry around two devices.

- **Personalized/Custom Ring Tones** Set your ring to whatever makes you happy. You will always be able to tell it's your phone. Or program a different ring for each of your favorite callers, so you can tell who is calling before you even find your phone. In addition to the standard tones, many Web sites also offer downloadable rings that increase your options (for compatible phones).
- **Phone Book (size varies)** Every phone has some type of phone book. The most basic phone books allow you to store about 20 phone numbers with names. The most advanced phone books allow you to store over 100 entries with business card information, e-mail addresses, and up to four contact numbers per entry.
- **Security Lock** Password-protect your phone so that only you can use it. Most phones let you do this manually or automatically. Advanced phones let you password-protect sections of your information (like your phone book). A nice feature to have in case you accidentally leave your phone somewhere.
- **Signal Strength Indicator** Like the battery indicator this indicator is usually fixed on the first screen, so you always know how good you can expect your reception to be.
- **Speed Dialing/One-Touch Dialing** This feature allows you to program certain keys to dial frequently called numbers. Keeps the fumbling to a minimum when you are on the go or in a hurry.
- **Vibrate Mode** Similar to the ring volume, the vibrate mode is considered most polite when you are at the movies or other places where discretion is advised. Vibrate mode can also work better than ring volume in extremely loud places like concerts. Depending on the manufacturer, vibrate can be a function of either the phone or the battery. If it is the battery, you can always upgrade later.
- **Volume Controls** Allows you to turn up the volume for low talkers and turn down the volume for loud talkers. The most advanced phones have a built-in function that modulates the volume for you.

Features Requiring Service

All of the following features are considered standard features on most phones, but they also require your service carrier to provide the service. These services can be included, or they can have a per-use monthly charge, depending on the wireless service plan you choose. So in order to use any of the following features, you need to check your phone model and your service plan.

- **Call Forwarding** Allows you to send calls to another phone number when your wireless phone number is unavailable (turned off, out of range, or busy). Depending on the primary use of your phone, you can use this feature to redirect calls to your office or home and make sure your callers are always taken care of.
- **Call Waiting** If you prefer to take your calls as they come in, you can use call waiting. This feature notifies you if another caller is trying to get through when you are already on the telephone. Then, you can put the first caller on hold while you take the other call, switch between the two callers, or end one call to take the other. Or, you can ignore the tones and let the second caller be forwarded to your voicemail.
- **Caller ID** Lets you see who's calling before you answer. On most models, it also works with your phone book to provide a name if you have programmed the name into your phone book.
- **Emergency Calling** Every network uses 911 for emergency calls. Some phones also have preprogrammed "hot" keys that allow one-touch dialing for personal emergencies. According to the FCC, as long as you are in an area that has any wireless coverage at all, and regardless of the activation status of your phone, your 911 call will be placed.
- **Roaming Indicator** This on-screen indicator lets you know that you are entering an area where you will be charged additionally for your calls. It is up to the wireless carrier to decide if they provide this service or not.
- **Three-Way Calling** Need to make plans with more than one person? Three-way calling lets you conference in two other phones, so you don't have to call anyone back. More

advanced phones have multi-party calling, allowing you to conference with up to five additional phones.

- **Voice-Activated Functions** Talk to your phone and it does what you tell it to. This feature can be as limited as the ability to dial certain numbers or it can retrieve your sports score updates, depending on the phone model.
- **Vicemail** Allows people to leave you a message when your phone is unavailable (turned off, out of range, or busy). This feature can let you be a one-person office, if you prefer not to forward your calls.

Advanced Features Requiring Service

These features are available on a growing number of phones. Every manufacturer and every wireless carrier offers at least one phone that allows you to use the following features. The usability and availability of these features gets better every year. So if one of these features is interesting to you, but not the right thing now, check back next year and see how it has improved.

- **Text Messaging, or Short Message Service (SMS)** Allows you to exchange short alphanumeric messages with other phones, wireless devices, or PCs. If you plan to use this feature often, make sure you get a phone with a comfortable keypad and large enough display area. Some text messaging services are only for receiving messages, so if you want to send messages, make sure it is two-way capable.
- **Wireless Internet Access (WAP)** Allows you to surf the Web, in a manner of speaking. Sites that have created WAP interfaces let you get the basics of what you need including weather, stocks, news, and scheduled updates. May also allow you to access e-mail, depending on the phone model and plan. Keypad ergonomics and display screen size will play a big part in how much you like this feature. (See Chapter 4, “Wireless Data and the Wireless Internet—Do I Need It?” for more information.)
- **Data/Fax Capable** Allows you to use your phone as a modem or a fax, if your wireless carrier supports this service.

Speeds are available up to 14.4 Kbps, but they vary by wireless carrier (see Chapter 4, “Wireless Data and the Wireless Internet—Do I Need It?” for more information).

The Cutting Edge

These features are available on a limited basis now, but they will be widely available soon enough. Most of these features exist around the idea of combining your wireless phone with your Palm or other PDA (see Chapter 13, “The Future of Wireless Communications”) so you end up with a phone, Palm, and Internet access in one device that goes everywhere with you.

- **Business Card Exchange** Allows you to use the infrared port on your phone to send or receive data from other compatible phones or handheld devices.
- **Currency Converter** Think of it as an advanced calculator that helps you travel smart. If you are an international traveler, this could be a very handy feature.
- **Infrared** This is the physical feature that allows you to do all that data beaming back and forth. Check around the perimeter of the phone for a little red plastic rectangle.
- **MP3 Player** This type of phone is a two-for-one bargain. You only have to carry around one device and you get all your calls and can listen to your favorite tunes in between calls.
- **Multicolor Display Screen** Right now the colors being offered are basic: red, blue, green, yellow. Some phones let you switch from color to color for a monochrome view. Other phones let you highlight certain features using the colors. For example, your Mom’s number could be in red, your best friend’s number in green, and your incoming stock updates can be in blue. As the wireless Web applications become more advanced, color may become more necessary.
- **Picture Messaging** Allows you to store and send small images with your text messages. The phone model may have some pre-entered images already loaded.
- **Real-Time Clock** Never have to set your clock again—let your phone connect to the Internet and fix itself.

- **Speaker Phone Capability** Eliminates the need for a hands-free set, allowing you to do other tasks while you talk.
- **Sync Your Phone with a Palm or PC** Whether you enter your data on the go or in the office, once you sync you will have all of the information you need in all the places you use it. This option requires additional software and may require additional hardware.
- **To Do Lists** Helps you keep up with your daily tasks. It also coordinates with your calendar.
- **Voice Memo Recorder** Need to remember something, but don't have time to enter it? Use your phone's memo recorder and leave yourself a message for later.
- **Predictive Text Input** Sure, sending text messages, surfing the Web, and using your phone as your Palm sound great, but how are you going to enter all that data. One short-cut is to sync with your PC. The other is to have this feature, predictive text input. Using a stored dictionary, the phone "guesses" what word you are typing in and lets you finish it faster. This feature also lets you insert certain words or phrases by using hot keys you program yourself.

Summary

The features available on a wireless phone are one way to differentiate one phone from another. If you know the difference between the features, you can quickly scan the lists of features and decide if a phone is worth the price for you. You wouldn't pay more for a car because it comes with a steering wheel, and you shouldn't pay more because a phone offers different ring tones.

Knowing your preferences and potential uses is also important. If you just need a phone that won't break and won't break your wallet, any phone with standard features will suit your purposes. If you're the person on your block that always has the latest gadgets, then wireless Web access is a must-have for you and your eye will be wandering toward the PDA phones. If you are looking to combine all your devices into one, then you are definitely looking at the cutting-edge phones.

Quick References

The Basics

- ☑ The basic physical features of a phone are the same from model to model.
- ☑ The way different models package these features varies greatly (see Chapter 6, "Guide to Cellular Phones").
- ☑ Certain physical features like display screen can cause the phone to be more expensive, if the screen is especially large or multicolor.

A Beginner's Guide to Phone Features

- ☑ Most phones have these features in some capacity.
- ☑ Standard features vary from manufacturer to manufacturer rather than by wireless carrier.
- ☑ Standard features include automatic redial, phone book, battery level indicator, and more.
- ☑ In order to get these common features, not only do you need a compatible phone but you also need a wireless plan that supports the service you are looking for.

- ☑ The wireless plan may charge additional fees for these service-based features.
- ☑ Other features include call waiting, voice mail, and three-way calling.
- ☑ These features also require service support from your wireless carrier, but they are available only in certain phone models.
- ☑ The wireless plan may charge additional fees for these service-based features.
- ☑ These features are improving all of the time.
- ☑ Service-based features also include text messaging and Wireless Internet.

The Cutting Edge

- ☑ These features are the latest technology advances for phones.
- ☑ Be prepared to pay more for these features.
- ☑ Look here if you are trying to combine multiple devices (e.g., your phone and your PDA) into one.
- ☑ These features include MP3 player, sync with your PC, and speaker phone.

Chapter 6

Guide to Wireless Phones

Quick References in this chapter:

- Size and Weight
- Networks Available
- Case Design
- Color
- Cost
- Talk Time and Standby Time
- Popular Wireless Phones
- ☑ Summary
- ☑ Quick References

Introduction

You have several options when selecting a phone that fits your price range, and with enough features to suit your lifestyle; there are many diverse styles of phones. The form, color, and size of the phone you carry can serve as a reflection of your character and speak volumes to those around you as to what type of person you are.

As current general rules dictate, the most popular phones are extremely small, thin, or lightweight. These days, it seems that just as one manufacturer creates the smallest, lightest, or thinnest phone, there is another company developing a phone that claims to be even better.

In addition to phones varying in size and weight, many phones let you change the appearance of the phone by letting you change the faceplate. The ability to make such transformations makes it feel as if you have an entirely different phone, by spending only a small amount.

With so many options, the decision as to which style of phone is right for you is a difficult one to make. In this chapter, we explore the variety of options that are available, hopefully making the choice clearer for you.

Size and Weight

For the past couple of years, phones have become smaller and smaller, to the point where it has become almost miraculous that even smaller phones are being produced. In the 1980s, wireless phones ranged in size from 8 to 12 inches. However, as with all technology, engineers developed methods of creating even smaller phones, to the point we are at today, where we can tuck our phones away in a shirt or pants pocket and forget about it.

Large Phones

Surprisingly enough, any phone that is more than five inches in length is considered large. Additionally, these phones are usually the heaviest phones on the market, with most weighing more than six ounces. Larger sized phones may not necessarily be heavier than smaller phones, however, since several manufacturers are creating new phones that are long, but extremely thin and light. If size or weight is a strong concern for you, a small- or medium-sized, lightweight phone, which offers similar features in a much more manageable size, may be a better option for you.

Some of the phones that are classified as large often are used in promotions as free phones, but others, like the Kyocera (shown in Figure 6.4), are the most advanced phones on the market today and can be as expensive as \$500. Figures 6.1 through 6.4 depict the most popular types of today's large phones.

Figure 6.1 Motorola i700:
8.6 oz., 5.2 inches



Figure 6.2 Ericsson R289LX:
6.1 oz., 5.1 inches



Figure 6.3 Nokia 5165:
6.0 oz., 5.2 inches



Figure 6.4 Kyocera QCP 6035:
7.4 oz., 5.6 inches



Medium-Sized Phones

A phone that is four to five inches long and three to five ounces in weight qualifies as medium-sized. These phones are typically in the middle price range and have many of the latest features. Some exceptions are phones that include the latest and greatest features, like the ability to load and play MP3 music. Figures 6.5 through 6.8 are indicative of the medium-sized phones that are most common with the general public.

Figure 6.5 Nokia 3360:
4.8 oz., 4.5 inches



Figure 6.6 Samsung N200:
4.7 oz., 4.3 inches



Figure 6.7 Touchpoint 2100:
4.6 oz., 4.8 inches



Figure 6.8 Samsung Upoar MP3 Phone:
4.2 oz., 4.2 inches



Small or Compact Phones

Any phone shorter than four inches is considered to be small or compact. In addition to being the smallest sized phones on the market, they are usually the lightest. You will find many of the cutting edge features on these phones, including color screens and the ability to load pictures that can pop up on the screen when certain people call you. Figures 6.9 through 6.11 illustrate some of the more popular compact phones available today.

Figure 6.9 Nokia 8260:
3.4 oz., 4.0 inches



Figure 6.10 Touchpoint 1100:
4.2 oz., 3.4 inches



Figure 6.11 Touchpoint 5200: 3.7 oz., 3.4 inches



Networks Available

Most of the phones available today are digital phones, but if they operate only on a single digital frequency and not on the more ubiquitous analog network, you may end up with a phone that works only in very limited areas. Phones on the market today fall into three categories:

- Single Mode
- Dual Mode
- Tri-Mode

For more information regarding analog and digital technologies, see Chapter 2, “Analog, Digital—What’s the Difference?”

Single Mode

Some of the newest digital phones being introduced support only a single digital network because the manufacturer wanted to get it to market quickly to make sure they got the newest, coolest phone on the shelf first. All manufacturers produce single mode phones. But the problem may be that it’s cool when it works downtown, but if you try to use it when driving to your house in the suburbs you may be out of luck. Before purchasing a phone, remember to check the phone’s specifications, or ask a customer service representative to explain the phone’s mode to make sure it will work everywhere you need it to work.

Dual Mode

Many digital phones are dual mode; that is, they work on two networks—digital and analog. Some of the phones that are available as dual mode actually work on three networks—for example, the 800 MHz analog network, the 800 MHz digital network, and the 1900 MHz digital network. These phones will allow you the most use, because they are most likely to find an available network wherever you are.

Tri-Mode

A small number of phones available today are called tri-mode. This means that they work on three frequencies: 800 MHz analog, 1900 MHz U.S. digital, and another international digital frequency. Tri-mode

phones are the ones that will work overseas in many countries around the world.

Case Design

In addition to varying dramatically in dimension and weight, wireless phones also differ greatly in their overall body style. All phones fall into one of two categories:

- Traditional
- Flip

Traditional Style

Roughly 75 percent of wireless phones fall under the traditional design category, incorporating a one-piece design, with keypad and screen in plain view and accessible at all times. Nokia originally popularized the traditional body style and has incorporated this design into most of the phones it sells. The traditional-style phones vary dramatically in size in weight. Figures 6.12 through 6.14 are good examples of the most common traditional style.

Figure 6.12 The Nokia 5165

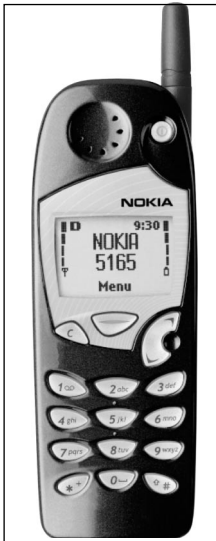


Figure 6.13 The Motorola i2000



Figure 6.14 The Ericsson R289LX

Flip Style

Flip style phones feature a cover that either partially or completely encloses the phone in the closed position. The flip feature can serve as an answer or end call function and protects the keypad and/or display screen, depending on the size of the flip. Almost all flip phones can be classified as compact or small in terms of their size and weight. Some of the most common flip phones can be seen in Figures 6.15 through 6.17.

Color

Bermuda blue, gecko green, red pepper, brushed aluminum? With so many options available, it is hard to decide which color will suit you best. A phone that looks really fashionable when you purchase it may lose its appeal as the months pass. One consolation is that there are several phones available (i.e., Nokia 3360, Nokia 8290, and Kyocera QCP-2035) that allow you to change the faceplate of the phone, virtually giving you a brand new phone for just a fraction of the price. (See Chapter 7, “Accessories for your Wireless Phone” for more information on faceplates.)

Figure 6.15 The Motorola i1000



Figure 6.16 The Touchpoint 1100



Figure 6.17 The Samsung N200



Cost

Phone prices range from free to \$600, with most of the phones averaging between \$100 and \$200. The prices that you see are the retail prices, which include the requirement to sign up for a service plan when buying the phone. If you are looking to buy a phone without a service plan, the prices tend to be higher.

In fact, there are few places where you can buy a phone without the service plan attached today. Phones that cost \$200 with a service contract typically carry a list price of \$500 if you would like to purchase the phone without a designated service plan. Cellular service providers pay a rebate to retailers in exchange for a service contract and retailers pass on the cost savings to customers—as long as the service contract remains in the deal.

You pay a premium for tiny, lightweight models whether they are digital or analog. Wireless phones that sell for under \$100 are on the budget plan. These phones are typically larger and heavier, with minimal features, although they generally perform just as well as phones that are more expensive. Mid-priced phones in the \$100 to \$250 range are smaller and lighter, with extended-life batteries, alphanumeric text messaging, directory features, and more. High-end phones sell for \$400 and up, and offer the latest features, the smallest designs, and the most attractive styling.

Talk Time and Standby Time

Depending on how often you plan to use your phone, talk time and standby time amounts are something that you should definitely consider when selecting a wireless phone. If you are traveling across the United States, do you want your phone to run out of power when you reach Missouri? Of course not. However, if you plan on using your phone only for short conversations and have the ability to recharge the phone every evening, then talk time and standby time will not be as big of a concern for you. Talk time is the actual amount of time spent on conversation, and standby is the time a phone is on and ready to receive a call. Digital phones are more efficient and have longer talk and standby times than analog phones. A battery that offers 110 minutes talk time/50 hours standby time in analog mode might deliver more than three hours talk time or eight days standby when used with a digital phone. If the battery runs out, it simply turns off the wireless phone until you recharge it or you are able to replace the battery with a fully

charged one. A longer talk time could save you a lot of time and frustration, but if you do not talk on your phone a lot, it could be unnecessary. Batteries generally have a range from 60 to 600 minutes for talk time. Standby time ranges from 2 to 484 hours.

Another thing to remember when you look at the talk time and standby time for a battery or phone—very seldom do you use only talk time or only standby time; you typically use a combination of the two. Just as your car’s mileage is better on the highway, your phone’s battery lasts longer while you are not talking (standby). But always beware, just like your car, “your mileage may vary” from what the manufacturer states in the specifications.

Popular Wireless Phones

This section will allow you to browse through the specifics for many phones on the market (in alphabetical order) so you can compare them side-by-side. We’ve taken some of the more popular wireless phones available today and provided you with the following details for each phone:

- Service Provider
- Price
- Weight
- Height
- Mode
- Internet Ready
- Text Messaging Capabilities

Remember, however, that manufacturers are always creating new phones, and that the phones and prices displayed in this section are the current offerings. New models may be released to the general public, and prices for consumers are subject to change.

NOTE

This section shows some of the phones available from a few wireless carriers so you can see the wide variety of phones and prices out there today. For a complete list of currently available phones, check www.getconnected.com because the phone models and prices change often.

The Ericsson R289LX



- Service Provider: AT&T
- Price: \$99.99
- Weight: 6 ounces
- Height: 6.3 inches
- Mode: Tri-mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Kyocera QCP-2035



- Service Provider: Sprint PCS
- Price: \$99.99
- Weight: 4.4 ounces
- Height: 5.1 inches
- Mode: Tri-mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Kyocera QCP-6035



- Service Provider: Sprint PCS
- Price: \$399.99
- Weight: 7.4 ounces
- Height: 5.6 inches
- Mode: Tri-mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Mitsubishi T250



- Service Provider: AT&T
- Price: \$99.99
- Weight: 7 ounces
- Height: 5.6 inches
- Mode: Tri-Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Motorola i1000plus



- Service Provider: Nextel
- Price: \$149.99
- Weight: 5.4 ounces
- Height: 4.5 inches
- Mode: Single Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Motorola i2000



- Service Provider: Nextel
- Price: \$199.99
- Weight: 7.9 ounces
- Height: 5.0 inches
- Mode: Tri-mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Motorola i550plus



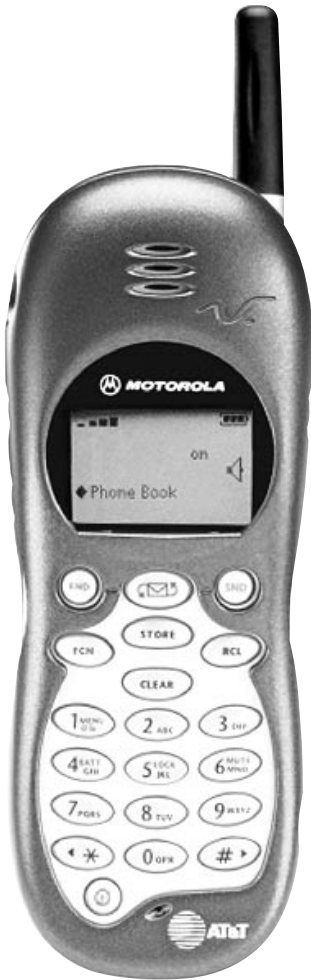
- Service Provider: Nextel
- Price: \$79.99
- Weight: 9 ounces
- Height: 5.2 inches
- Mode: Single Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Motorola i700plus



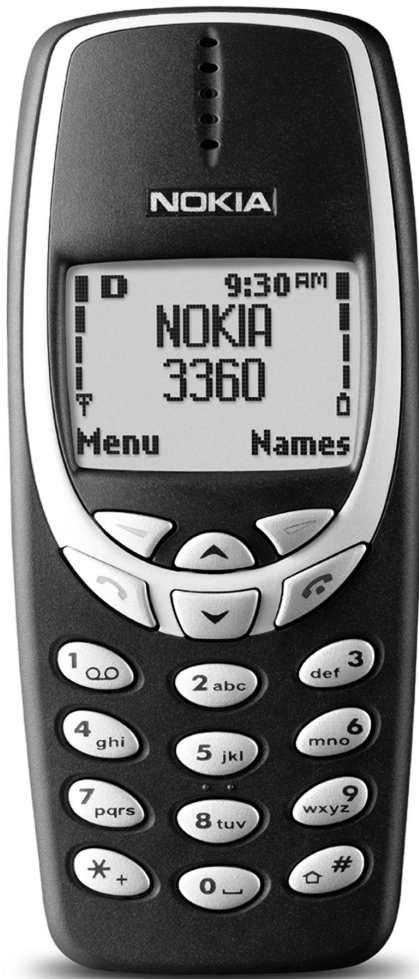
- Service Provider: Nextel
- Price: \$99.99
- Weight: 8.6 ounces
- Height: 5.2 inches
- Mode: Single Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Motorola V2397



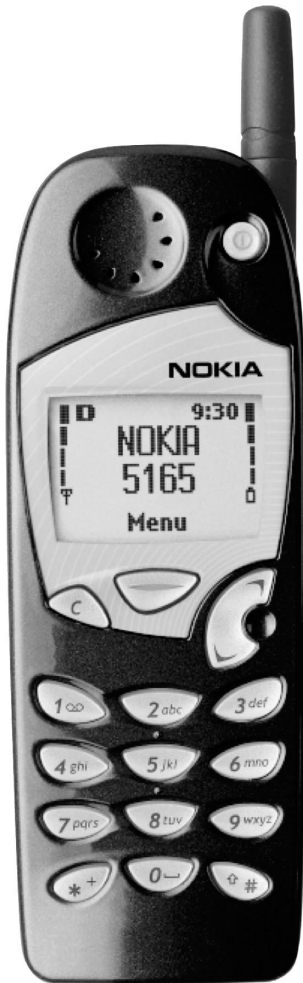
- Service Provider: AT&T
- Price: \$49.99
- Weight: 3.8 ounces
- Height: 5.1 inches
- Mode: Tri-mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Nokia 3360



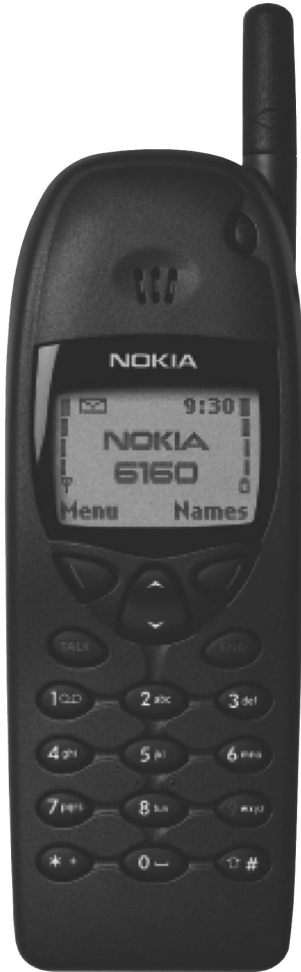
- Service Provider: AT&T
- Price: \$129.99
- Weight: 4.8 ounces
- Height: 4.5 inches
- Mode: Tri-mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Nokia 5165



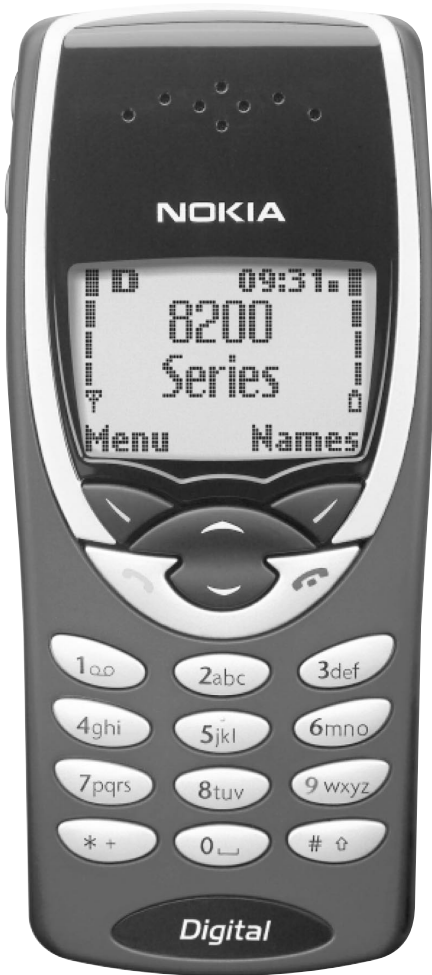
- Service Provider: AT&T
- Price: \$79.99
- Weight: 6 ounces
- Height: 5.2 inches
- Mode: Tri-Mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Nokia 6160



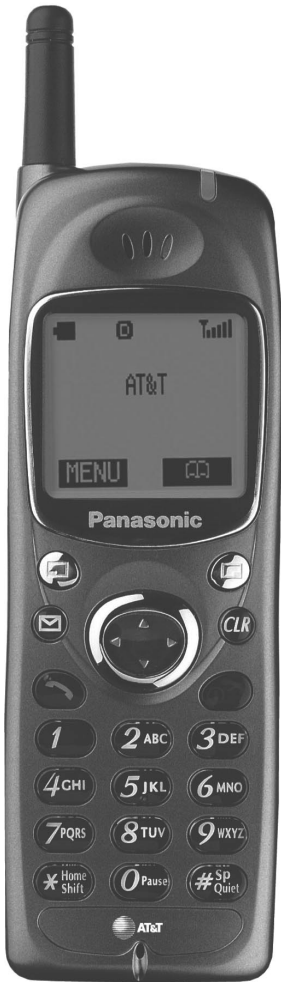
- Service Provider: AT&T
- Price: \$129.99
- Weight: 6 ounces
- Height: 5.2 inches
- Mode: Tri-mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Nokia 8260



- Service Provider: AT&T
- Price: \$199.99
- Weight: 3.4 ounces
- Height: 4.1 inches
- Mode: Tri-mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Panasonic Allure



- Service Provider: AT&T
- Price: \$149.99
- Weight: 2.7 ounces
- Height: 4.6 inches
- Mode: Tri-Mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Panasonic Versio



- Service Provider: AT&T
- Price: \$129.99
- Weight: 3.1 ounces
- Height: 4.6 inches
- Mode: Tri-mode
- Internet Ready: No
- Text Messaging Capabilities: Yes

The Samsung N200



- Service Provider: Sprint PCS
- Price: \$179.99
- Weight: 4.7 ounces
- Height: 4.3 inches
- Mode: Dual Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Samsung Uproar MP3



- Service Provider: Sprint PCS
- Price: \$199.99
- Weight: 4.2 ounces
- Height: 4.2 inches
- Mode: Dual Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Sanyo SCP-5000



- Service Provider: Sprint PCS
- Price: \$499.99
- Weight: 3.6 ounces
- Height: 3.7 inches
- Mode: Dual Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Sanyo SCP-6000



- Service Provider: Sprint PCS
- Price: \$299.99
- Weight: 2.3 ounces
- Height: 5.0 inches
- Mode: Single Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Sprint Touchpoint 1100



- Service Provider: Sprint PCS
- Price: \$129.99
- Weight: 4.2 ounces
- Height: 3.4 inches
- Mode: Single Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Sprint Touchpoint 2100



- Service Provider: Sprint PCS
- Price: \$129.99
- Weight: 4.6 ounces
- Height: 4.8 inches
- Mode: Dual Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

Sprint Touchpoint 2200



- Service Provider: Sprint PCS
- Price: \$149.99
- Weight: 4.5 ounces
- Height: 4.8 inches
- Mode: Dual Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

The Sprint Touchpoint 5200



- Service Provider: Sprint PCS
- Price: \$199.99
- Weight: 3.7 ounces
- Height: 3.4 inches
- Mode: Dual Mode
- Internet Ready: Yes
- Text Messaging Capabilities: Yes

Summary

There are many things to evaluate when deciding on the wireless phone for you. The height, weight, features, and price are just some of the things to consider when making your decision.

Quick References

Size and Weight

- ☑ For the past several years, phones have become smaller and smaller.
- ☑ Large phones are five or more inches in length and usually weigh more than six ounces.
- ☑ Medium phones are four to five inches in length and weigh three to five ounces.
- ☑ Small or compact phones are less than four inches long and usually weigh less than four ounces.

Networks Available

- ☑ Most of the phones available today are digital phones, but if they operate on only a single digital frequency and not on the more ubiquitous analog network, you may end up with a phone that works only in very limited areas. Phones on the market today fall into three categories:
 - Single mode
 - Dual mode
 - Tri-Mode

Case Design

- ☑ In addition to varying dramatically in dimension and weight, wireless phones also differ greatly in their overall body style. All phones fall into one of two categories, traditional or flip.

Color

- ☑ Phones come in many different colors.
- ☑ If you want to be able to change the color of your phone, purchase one that allows you to change the faceplate.

Cost

- ☑ Phone prices range from free to \$600, with most of the phones averaging from \$100 to \$200.
- ☑ Most wireless phones must be purchased with a service plan to get the retail pricing; buying a phone without a plan can cause the price to skyrocket.

Talk Time and Standby Time

- ☑ Talk time is the actual amount of time spent talking on your phone; it ranges from two to eight hours, depending on the phone.
- ☑ Standby is the actual amount of time can be phone on and ready to receive calls; it ranges from 50 to 300 hours, depending on the phone.

Popular Wireless Phones

- ☑ Compare phones by service provider, price, weight, height, mode, Internet capability, and text messaging capability.

Chapter 7

Accessories for Your Wireless Phone

Quick References in this chapter:

- Hands-Free Kits
- Cases and Belt Clips
- Chargers
- Batteries
- Faceplates

- ☑ Summary
- ☑ Quick References

Introduction

When you are deciding on the wireless phone you want to buy, you may want to consider what kind of accessories you will need.

Depending on how you use your phone, certain accessories, like a hands-free kit or a cigarette lighter adapter, could come in quite handy. If you are a fashion-conscious individual, you may want to buy a colorful faceplate or a light-up antenna. We especially recommend using a hands-free kit in the car because talking on the phone while driving can prove to be quite dangerous, and has even been outlawed in certain cities.

The accessories shown here are just a small number of the total accessories available. We have broken them down into categories so you can get an idea of the types of accessories you may want to add to your phone purchase. The prices vary based on the model of phone and the manufacturer of the accessory. Once you choose your phone, however, make sure that the accessories you want are available for it before you actually make the purchase.

Hands-Free Kits

Given recent national legislation outlawing operation of a wireless phone while driving, hands-free kits quickly have become the most popular type of accessory. Simple hands-free kits include an earpiece

Figure 7.1 The Nokia Hands-Free Kit



Figure 7.2 The Samsung Car Hands-Free Kit

and microphone, allowing you to talk on your phone without using your hands. Kits start at \$20 and come in a variety of styles. Simple hands-free kits come in a variety of styles, so it is important to check all your options before purchasing. Many phones also come with a hands-free earpiece/microphone, so check to make sure you do not buy one if you don't need to. Figures 7.1 and 7.2 show two of the more popular hands-free kits and car kits available today.

Car hands-free kits sometimes require professional installation and include a microphone that typically attaches to a visor, a speaker that is mounted near the dash, a cradle that holds the phone, and a junction box where all cords connect. Prices range from \$180 to \$300 for these more sophisticated kits, depending on the phone and features.

Cases and Belt Clips

Cases protect a phone from dust and moisture while still allowing you to operate the phone. Dust and moisture can seep into your phone and possibly ruin its inner circuitry. Cases are especially helpful if you know that you will be submitting your phone to regular abuse because they absorb some of the shock or cover the screen to prevent it from cracking if dropped. Some cases cover the entire phone; others simply protect the screen or keypad. Holsters are another kind of case that clip onto your belt. Simply slide your phone in and out while the holster remains fastened securely to your belt clip. These cases usually cost \$10 to \$20 on average.

Figure 7.3 The Nokia Full-Phone Case



Figure 7.4 The Samsung Full-Phone Case



Figure 7.5 The Nokia Semi-Phone Case



Belt clips provide easy access to your phone when receiving a call. Most belt clips also offer swivel features that allow you to access your phone more easily. Holsters also cost between \$10 and \$20. Figures 7.3 through 7.5 show different types of carrying cases; the more common types of belt holsters can be seen in Figures 7.6 and 7.7.

Figure 7.6 A Nokia Belt Clip



Figure 7.7 A Samsung Belt Clip



Chargers

Phones are usually sold with standard AC battery chargers that you can plug into the wall in your home or office. Rapid travel chargers can cut charging times in half. Charging times vary based on the type of phone and battery. A typical rapid battery charger can charge a lithium-ion (Li-Ion) battery used with a digital phone in two hours, compared to four hours with a standard charger. Rapid chargers for the car plug into the cigarette lighter adapter and can often provide a

full charge in two hours. Phones can often charge and be used for conversation simultaneously, although the charging time lengthens when the phone is in use. The price range for standard, rapid, and vehicle chargers is between \$15 and \$30. Different types of chargers can be seen in Figures 7.8 through 7.10.

Figure 7.8 A Nokia Car Charger



Figure 7.9 A Nokia AC Battery Charger



Figure 7.10 A Nokia Desktop Charger



Batteries

All wireless phone batteries are rechargeable. A rechargeable battery can accept 200 to 400 recharges before it needs to be replaced. Having a spare charged battery ensures that you will always be able to make and receive calls. Accessory batteries range from about \$25 for a standard-life battery to \$80 for an extended-life lithium-ion battery. Battery capacity is measured in talk time or standby time. Digital phones consume less power than analog phones because the digital phones have the ability to use the power they require more economically. Extended lithium-ion batteries offer the best performance, usually allowing five hours talk time or one to two weeks standby in digital mode.

The following is a breakdown of the three standard wireless phone batteries: nickel cadmium (NiCad), nickel metal hydride (NiMH), and lithium-ion (Li-Ion):

- **NiCad** This is an older technology and has some technical problems. Memory effect, also known as ledges, can reduce the capacity of the battery if it is charged repeatedly without being fully discharged. In addition, the battery must be disposed of properly, because it is an environmental hazard.
- **NiMH** A newer technology that does not suffer from memory effects like the NiCad battery. It also holds a charge longer than the NiCad.
- **Li-Ion** A long lasting and light battery that does not suffer from memory effects. It is, however, more expensive than the other battery types.

Faceplates

If you're the type of person who likes to change looks at a moment's notice, then a phone with the ability to change faceplates is the choice for you. Faceplates allow you to feel like you have a new phone, without having to shell out the cash. There are many different colors and designs for many models of phones. If you want to be blue one day and have tiger stripes the next, you can with certain phones. Look to see if the phone you are interested in has changeable faceplates to be sure you can customize your look. Faceplates usually cost under \$20 and come in a variety of colors and textures.

Summary

Just as there are many wireless phones from which to choose, there are even more phone accessories to consider buying. The basic categories of accessories will help you determine if you need or want accessories. Sometimes the accessories you want are necessities, like a car charger if you use your phone while on the road. Other times, accessories can be just for fun, like a faceplate that has your favorite college logo on it. And wireless phone accessories make great gifts, too. You will get a standard charger and a battery with your phone, although you may get more, like a hands-free earpiece. If you want added convenience or added personalization for your phone, then add some accessories when you buy your phone.

Quick References

Hands-Free Kits

- ☑ Simple hands-free kits include an earpiece and microphone, allowing you to talk on your phone without using your hands. These kits start at \$20 and come in a variety of styles.
- ☑ Car hands-free kits sometimes require professional installation and include a microphone that typically attaches to a visor, a speaker that is mounted near the dash, a cradle that holds the phone, and a junction box where all cords connect. Prices range from \$180 to \$300, depending on the phone and features.

Cases and Belt Clips

- ☑ Cases protect a phone from dust and moisture while allowing you to operate the phone.
- ☑ Belt clips provide easy access to your phone when receiving a call.
- ☑ Prices for cases and belt clips range from \$10 to \$20.

Chargers

- ☑ Phones are usually sold with standard AC battery chargers.
- ☑ Car chargers are available if you spend time on the road.
- ☑ Rapid travel chargers can cut charge time in half.
- ☑ Charging times vary based on the type of phone and battery.

Batteries

- ☑ All wireless phone batteries are rechargeable.
- ☑ A rechargeable battery can accept 200 to 400 recharges before it needs to be replaced.
- ☑ Batteries range from about \$25 for a standard-life battery to \$80 for an extended-life lithium-ion battery.

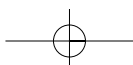
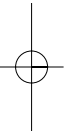
Faceplates

- ☑ Faceplates allow you to feel like you have a new phone, without having to shell out the cash.
- ☑ Faceplates are usually under \$20 and come in a variety of colors, designs, and textures.

Part III

Service Plans and Rates





Chapter 8

Understanding Service Plans

Quick References in this chapter:

- Understanding Basic Plan Structures
- Breaking Down Wireless Plans and Fees
- The Prepaid Option

- ☑ Summary
- ☑ Quick References

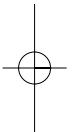
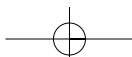
Introduction

Choosing your wireless phone is only one part of the puzzle—the other piece is the wireless service or rate plan. Shopping for a wireless plan can be an extremely overwhelming experience, especially if it is your first time. There are so many plans to choose from, so many details, so many “great offers” to take advantage of. Understanding how plans are structured, how they are priced, and how your usage patterns fit into these plans should help you find the best plan for you.

Service plans have gone through some major changes over the years. Originally, you would buy a rate plan, which would charge you for simple network access, and for every minute you used to talk on your wireless phone. You would be charged extra for long distance calls, and if you wanted to use your phone while driving across the country, forget it! You could use your phone when you were far away from home, but you needed to carry a huge book with you full of 800 numbers to call based on where you were and on whose network you would come up on—and then you would be charged incredible rates per minute to make a call. That was early roaming—thankfully it is a whole lot easier now, and a whole lot less expensive.

As wireless carriers are merging and forming more national networks, the nature of plan structures are also changing and becoming more affordable. This affordability can be customized depending on how you use your phone, as many service providers now offer different flavors of wireless rate plans:

- All-inclusive plans, which offer one rate for all calls made or received on that *specific* wireless carrier’s network
- All-inclusive plans, which offer one rate for all calls made or received on *any* wireless carrier’s network
- Regional and local rate plans with à la carte selections for local calling minutes
- Long distance calling
- Middle of the day calling
- Weekend calling
- International calling



Basically, there is something for everyone, which is why you need to understand what this all means and how you will use your phone in order to select the plan that is perfect for you.

Understanding Basic Plan Structures

After years of changing plan structures around, wireless service providers seem to have agreed for the time being that offering three types of plans makes the most sense. The three general types of plans are:

- Local plans
- Regional plans
- National plans, available with or without roaming charges

Choosing the right type is key to getting the most for your money. Although a local plan may offer you the most minutes per dollar, it may not be the best plan for you if you travel frequently. Choosing the best service plan for you will require you to understand wireless plans, as well as to understand how, when, and where you plan to use your phone. Refer to Table 8.1 for a quick comparison of the different types of plans.

Local Plans

The service area (see Chapter 9, “Wireless Carriers and Service Areas” for more information) for a local plan is usually your metropolitan area and immediate surrounding areas. For example, a user with a local plan in the Boston area would likely be able to make and receive calls from inside the Boston metropolitan area and some of the surrounding areas (some may include areas in Rhode Island, New Hampshire, and Connecticut) without being charged extra fees. When using your phone outside of your service area, you will be charged a roaming fee. Some wireless providers will charge you a regional roaming fee and a higher national fee, depending on where you are. You should make sure you check out both the service area and roaming rates of the plans you are considering. Additionally, if you are making calls to places outside of your calling area, you will be charged a long distance fee.

Table 8.1 A Side-by-Side Look at Types of Wireless Phone Plans

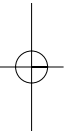
	Local Plans	Regional Plans	National Plans— No Fees	National Plans— With Fees	Nextel/ VoiceStream
Coverage	Your metropolitan area and some surrounding areas	Greater coverage than local plans—usually include most of the surrounding states (i.e., Northeast coverage may include all states from Maine down to D.C.)	All of the U.S.	Anywhere on the wireless carrier's network (most major metropolitan and surrounding areas)	Anywhere on their network (most major metropolitan areas)
Roaming Charges	Per-minute roaming fees for any minutes used outside of your local area	Per-minute fees charged for any minutes used outside of your region	No roaming fees—your included monthly minutes can be used anywhere you can get service	Per-minute roaming fees for calls made anywhere that is not on the wireless carrier's network, if you can get a signal your phone will work on	Your phone will not work if you are off the network
Long Distance	Per-minute fees for any long distance call, no matter where you place the call (some wireless carriers are now offering promotions for free long distance for calls made from within your coverage area)	Free long distance for calls made from within your coverage area, but will have per-minute fees for calls made from outside your coverage area	Free long distance for calls made from anywhere	Free long distance if the call is made from the network; per-minute fees for calls made off the network	Depends on the plan—some plans include free long distance and some do not
Who Should Use It?	If you plan to use your phone for local calling primarily around town, these are great plans, and include the most minutes per dollar	If you travel mostly regionally, and plan to use your phone when you travel, these are appropriate for you; per minute, they are more expensive than local plans, but it may be worth it	These are the most expensive plans when looking at the price per included minute, but if you plan to use your phone all over the country on a consistent basis, this will end up being your best option	Good value if you plan to use your phone mostly in major metropolitan and surrounding areas	Nextel appeals to business users because of their Direct Connect Minutes, which allows you to use your phone as a walkie-talkie, which is very inexpensive per-minute. VoiceStream has great plans with any-time minutes for their network

REALLY LOCAL WIRELESS

Cricket Communications is a unique wireless provider, as they provide only local service (currently in some areas of AZ, AR, CO, GA, ID, KS, NM, NC, OK, PA, TN, UT, and WA). For around \$30, Cricket gives you unlimited local calling. Long distance charges are additional per-minute fees. Other wireless carriers are starting to offer services similar to Cricket's, such as NorthCoast PCS in Cleveland, so this idea is catching on and may make sense if you use your phone only in your local area. Another use for these types of wireless services are for use as a second phone line in your home instead of adding another home phone number.

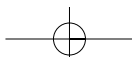
Regional Plans

Regional plans are the next level of service plans. They will be slightly more expensive per minute than a local plan, but it may be well worth it for you. The service areas for these plans include most of your region; for example, most of the Northeastern states or Southeastern states. If you travel and plan to use your phone in the states surrounding yours, these plans are probably appropriate for you. You will not be charged any roaming fees within your service area, and you will not be charged long distance fees for making long distance calls from within your service area. You will be charged both roaming and long distance fees (when applicable) for calls made from outside of your service area.



National Plans without Roaming Charges

National plans (such as AT&T's Digital One Rate plans, Cingular's Nation rate plans, or Verizon's SingleRate plans) are examples of rate plans with no additional roaming charge anywhere you make or receive calls. These plans allow you to use your phone anywhere to call anywhere, without being charged roaming or long distance fees. Even though these plans are the most expensive plans per minute, they may be well worth your money if you travel extensively or make a considerable number of long distance calls per month.



National Plans with Roaming Charges

Some wireless carriers offer national plans with no roaming charges or long distance fees when you are anywhere in the United States on their network (for example, Sprint PCS). This is different from the other national rate plans in that if you go outside of that wireless carrier's network into another network where you can make calls, you will be charged roaming fees. This means that if you plan to use your phone mostly in metropolitan areas where the wireless carrier's network is established, you will not be charged any additional fees. If you plan to use your phone outside of their coverage areas, you will be charged roaming fees. These national plans can be an excellent value if you will be traveling across the country on the wireless carrier's network. Just be sure to check the coverage for the cities to which you plan on traveling.

NEXTEL AND VOICESTREAM NATIONAL PLANS

Nextel and VoiceStream are a little bit different as well. They, like Sprint, have built their network in most major metropolitan areas. Their current phones do not have the ability to work on an analog network or other digital technology, so if you go off of their network, you cannot make or receive calls.

Breaking Down Wireless Plans and Fees

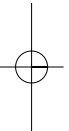
Every wireless plan has some basics associated with it that you should understand. Each plan has a monthly fee, a number of included minutes, and additional fees when you use your phone above what is included in your monthly plan. For example, a typical wireless phone plan (with local coverage) has a monthly fee of about \$30 to \$40, and may include 400 local minutes. You would be charged additional fees (say, \$0.25 per minute) if you use more than your allotted monthly minutes, if you make any long distance calls (another \$0.25 per minute), or if you make any calls from outside of your coverage area (roaming fees of maybe \$0.60 per minute). So that \$30 to \$40 plan can end up costing you a great deal more if you don't understand your plan and what it includes (see Table 8.2).

Table 8.2 A Generic Monthly Bill for Wireless Service

ABC Wireless Company			
123 Main St. Wireless City, USA 12345		Questions? Call us at 800-555-1122	
BILL DATE: 8/21/2001 PERIOD: 07/21/01 thru 08/20/01 ACCOUNT: 22222222 PHONE #: 123-456-7899			
DETAIL OF ACCOUNT SUMMARY			
PAYMENTS			
Previous pay- ments on your account	7/23	54.99	
	Total Payments		54.99cr
DETAIL OF CURRENT CHARGES			
Plan—Regional Plan \$49.99			
Monthly Fee \$49.99			
450 minutes			
Peak \$0.35 Off-peak \$0.35			
Monthly Service Charges			
Summary of your current n	Monthly Service - 07/21/01 thru 08/20/01	49.99	
	Total Monthly Service Charges		49.99
HOME USAGE CHARGES			
Breakdown of minutes that used. If you d more min- s than are luded in your n, you will that here.	Minutes	Rate	
	Included in Plan - Peak	193 (x)	0.00
	Included in Plan - Off-Peak	257 (x)	0.00
	Billed Peak	4 (x)	0.35
	Billed Off-peak	4 (x)	0.35
	Total Air Charges	458	2.80
	Directory Assistance Charges		1.29
	Total Home Usage Charges		4.09
ROAMING CHARGES (calls placed outside the home service area)			
aming fees— u will often charged per minute in addi- n to an erall sur- arge for aming.	Roaming Usage Charges		5.04
	Roaming Surcharges		4.20
	Total Roaming Charges		9.24
OTHER CHARGES AND CREDITS			
eral charges	Federal Universal Service		0.46
	Total Other Charges and Credits		0.46
TAXES			
es	Federal		2.37
	State		3.95
	Total Taxes		6.32
TOTAL CURRENT CHARGES		70.10	

Here are the things to look at when selecting your rate plan:

- **Included Minutes** Every plan has a number of minutes that you are allotted per month. Usually, the greater the number of minutes included, the greater the monthly fee. Some plans break their included minutes down further to let you know when you can use them (i.e., anytime versus off-peak or weekend minutes). Make sure you understand how these time periods are broken down.
- **Monthly Fee** This is the basic cost for one month of service.
- **Additional Per Minute Fee** You will be charged a per-minute fee after you have used all of your included minutes. These fees can be as much as \$0.45 a minute, so they can add up quickly. Some service providers have ways you can check to see how many minutes you have remaining on your account for the month, but others do not.
- **Roaming Fees** These depend on the coverage of the plan you choose, but you will be charged for using your phone outside of your service area. You will be charged a per-minute fee, and possibly a monthly roamer fee (usually around \$3) when you use your phone while roaming.
- **Long Distance Fees** Again, depending on your plan, you will be charged a per-minute fee for making calls to numbers outside of your service region.

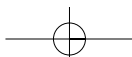


ALWAYS UNDERESTIMATE!

Wireless providers will often allow you to upgrade your plan if you consistently use more minutes than your monthly allowance. You may be required to renew your contract when you do this, but it will probably be worth your while. However, they will not usually allow you to downgrade your plan to a cheaper one. If you are not sure which plan to go with, always go with the less expensive plan.

10 SECONDS = 1 MINUTE?

Most service providers have one-minute billing increments. This means that on your bill, a ten second call counts as one minute.



YOU'RE NOT STUCK

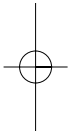
You're not stuck with the long distance service (and rates) that your wireless provider offers. Ask the wireless sales representative or customer service agent for other wireless long distance carriers to see if you can save some money. Also, there are companies that are similar to "dial-around" or 10-10 services from your home phone. These companies can help cut your wireless long distance bill and can help you make affordable international calls.

Additional Plan Features and Fees

There are many of other plan features that may be included in your service plan, or you may choose to add onto your service plan. Each service provider offers a different set of features, and will include different features with their plans. The following includes a fairly standard list of features to consider with your plan:

- **Activation Fee** Most service providers will charge you a one-time fee when you set up your service, usually along the lines of \$25 to \$50.
- **Cancellation Fee** Most wireless providers will also charge you if you want to end your service before the end of your contract. This can be as much as \$150 to \$250, so make sure you know what it is before you cancel.
- **Taxes** Depending on what state you live in, you will have to add a couple dollars of taxes onto your monthly bill, as well as a universal service fee.
- **Voice Mail** Most service providers include some sort of voice mail service in their plans. Enhanced voice mail service may cost you extra, however. And consumers should keep in mind that some service providers deduct minutes from your included minutes when you check your voice mail from your phone.
- **Caller ID** The ability to see the number of the person calling without answering the phone. Being able to screen your calls can be a time and money saver.

- **Call Waiting** The ability to receive incoming calls while on the phone.
- **Call Forwarding** The ability to send incoming calls to another number. Even though the “ability” to do this is often include in your plan, you may be charged for the airtime when using it, or pay an additional per minute fee.
- **Three-Way Calling** The ability to speak with two parties simultaneously.
- **Wireless Internet Access** The ability to access Internet-based messages, news, and information from your phone.
- **Text Messaging** The ability to receive textual messages on your phone’s screen.
- **Directory Assistance Per-Call Fee** Charging \$0.99 per call to call directory assistance is typical.
- **Mobile-to-Mobile Calling** Some service providers offer special rates for placing calls to other mobile customers on their network.
- **Handset Insurance** Most service providers offer you the option to pay a monthly fee for insurance that will allow you to replace your handset for free if it is lost or stolen.
- **International or Certain Country Calling** Most wireless carriers will restrict your calls to destinations in the United States. Some are adding the ability to call Canada or Mexico for a low monthly fee plus your minutes of use.

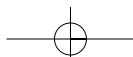


CONSERVE YOUR MINUTES

To conserve your minutes, you may want to check your voice mail from a landline. Even though voice mail may be included in your plan, the airtime will probably be deducted from your monthly minutes.

The Prepaid Option

If you truly need a phone only for emergency uses (or very limited use), it may be a good idea to consider prepaid plans (see Table 8.3).



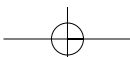
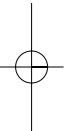
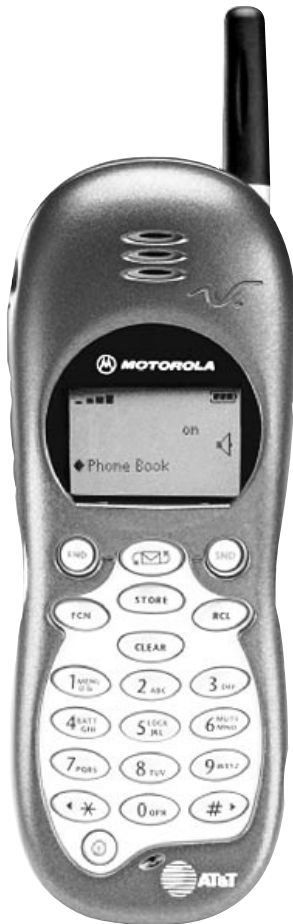
With prepaid plans, you don't have a monthly fee or blocks of monthly minutes. Instead, you purchase a package of minutes to use at your convenience. When you run out of minutes, you purchase more. One downfall of prepaid plans is that you will end up paying more per-minute in lieu of the monthly fee you would be paying with a standard plan. For most wireless providers, the more minutes you purchase at once, the lower the "per-minute" cost will be (i.e., a \$25 refill card may work out to about \$0.35/min, while a \$100 card may work out to about \$0.25/minute). Additionally, the minutes that you purchase won't last forever. Most often, they will expire in two to three months.

Table 8.3 A Sample of Service Providers and Their Prepaid Plans

Service Provider	Name of Prepaid Service	Summary of Service
AT&T Wireless	Free2Go Wireless SM	Offers both local and national coverage. Minutes sold in \$25, \$50, \$100, or \$200 denominations. Per-minute rates range from \$0.15 to \$0.35 per minute for the local plan (depending on denomination purchased). Per-minute rates range from \$0.25 to \$0.65 per minute for national plan (depending on denomination purchased).
Cingular Wireless	Cingular Wireless Prepaid	Local coverage (no long distance charges for calls made from within home coverage to U.S., Mexico, or Canada). Roaming is \$1.95 per minute. Minutes sold in \$10, \$20, \$30, \$40, \$50, and \$100 denominations. Per-minute rates range from \$0.30 to \$0.50 per minute depending on denomination purchased.
Verizon Wireless	[FREEUP] Prepay Service	National coverage (on the Verizon Wireless [FREEUP] Network). Roaming is \$0.99 per minute off of the network. Minutes sold in \$30, \$50, \$75, \$150 denominations. Weekday per-minute rates range from \$0.25 to \$0.35 per minute (depending on denomination purchased). Night and weekend per-minute rates are \$0.10 per minute.

FOR THE CREDIT-CHALLENGED

All wireless service providers will run a credit check on you when you order their service. Depending on what their criteria is and what your credit history is, you may be required to have someone cosign your account, you may have to give them a deposit, or you may be denied service. Prepaid plans, however, do not require a credit check, so this may be a good option for you.



Summary

Wireless service providers generally offer three types of service plans with three types of coverage: local, regional, and national. Within each of those types, service providers offer plans with different numbers of included minutes (the more minutes, the higher the monthly fee). Some plans will include basic plan features. Beyond that, you will be charged additional fees for extra features, for using more minutes than are in your plan, or for roaming or long distance charges.

Quick References

Understanding Basic Plan Structures

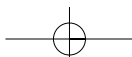
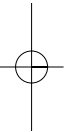
- ☑ **Local Plans** You can use your included monthly minutes in your local area, and will be charged roaming and long distance fees outside of that.
- ☑ **Regional Plans** Your coverage area is larger than that of local plans (usually most of your surrounding states). You will be charged for roaming outside of your region.
- ☑ **National Plans** Your coverage area is the whole United States. You will not be charged any roaming or long distance fees regardless of where you are for some national plans, and you will pay extra only when you go outside of the wireless carrier's network for other national plans.

Breaking Down Wireless Plans and Fees

- ☑ All plans have a basic monthly fee that includes a number of allotted minutes every month. You will be charged for using more minutes than are included in your plan.
- ☑ You will be charged roaming fees for making calls while outside of your coverage area.
- ☑ You will be charged long distance fees for making calls to areas outside of your coverage area.
- ☑ Your plan will include some basic features like voice mail and caller ID. You may be charged monthly for other features.

The Prepaid Option

- ☑ Prepaid plans are a good idea if you plan to use your phone only in emergencies, or on a very limited basis.
- ☑ Prepaid plans allow you to pay as you go, so when you run out of minutes, you buy more.
- ☑ Prepaid plans cost more per-minute than standard monthly plans.



Chapter 9

Service Providers and Service Areas

Quick References in this chapter:

- What Services Are Available to You?
- Service Areas
- Quality of Service
- Wireless Carrier Directory

- ☑ Summary
- ☑ Quick References

Introduction

So now you understand what wireless service plans are all about, how the plans are structured, and how you will be billed (for more information, see Chapter 8, “Understanding Service Plans”). Finding out what service providers offer service in your area, what kinds of services they offer, and which one has the best coverage, is a tough task. Each service provider in your area will offer slightly different kinds of service. It’s important to do your research to figure out which one will best meet your needs.

What Services Are Available to You?

In most major cities in this country, you will find that you have anywhere between three and eight wireless providers from which to choose. Each of the service providers available in your area received (bought) licenses from the FCC to offer wireless service in your area and then built the wireless network from the ground up. Some of the wireless carriers have been around for 20 years, and some have been around only for four or five years. Although all networks are designed to maximize the quality of each call made by the wireless customers, some of the areas that supposedly are covered by the wireless carrier have less than complete coverage. There are many factors that determine if the coverage area will be satisfactory or unsatisfactory—the topography of the area, the number of users that will be using the network, and the distance that the users are away from the closest tower.

Because each wireless carrier has built their own network, you will never find two wireless networks with the same voice quality in the same place. The quality of service varies from service provider to service provider. The quality of service from one provider will also vary from city to city, as wireless carriers have developed their networks more completely in some areas more than others. It is important that you research the quality of service of the service provider that you are considering since you probably will be committing yourself to the service for a year or so.

Wireless Service Providers

There are a multitude of wireless service providers out there—actually between 350 and 400 licensed wireless carriers. Some service providers

you will recognize immediately, some service providers you may never have heard of. Some offer national service, some regional, and some offer only local service in just a few markets. Table 9.1 lists some of the top service providers and what kind of coverage they offer with their plans. This table also shows what kinds of rate plans are available from the wireless carriers. A more complete service carrier directory can be seen later in this chapter.

Table 9.1 Service Providers and the Types of Rate Plans They Offer

Service Provider	National Rate Plans	Regional Rate Plans	Local Rate Plans
Alltel*	Yes	Yes	Yes
AT&T Wireless**	Yes	Yes	Yes
Cingular Wireless**	Yes	Yes	Yes
Cricket Communications	No	No	Yes
Nextel**	Yes	No	Yes
Sprint PCS**	Yes	No	No
Triton PCS/SunCom*	Yes	Yes	Yes
U.S Cellular*	Yes	Yes	Yes
Verizon**	Yes	Yes	Yes
VoiceStream**	Yes	Yes	Yes

* These carriers offer national rate plans that use networks through agreements with other carriers in many major metropolitan areas.

** These carriers are considered national carriers with their own networks in the majority of the top metropolitan areas in the United States.

Finding Service Providers in Your Area

Simply paying attention to advertising is an easy way to figure out who offers wireless service in your area. We're sure that you have noticed how inundated you are with ads for promotions and special offers on wireless service in your area. To find out if a specific service provider offers service in your area, call them directly, or visit their Web site. You can also visit www.getconnected.com to find this information. Here, you can enter your ZIP code and see all of the service providers and plans that are available your area.

Service Areas

The FCC defined the coverage areas and how they are broken down from city to city when it sold licenses to the service providers. Each metropolitan and rural area of the United States was mapped out and given a number. Each wireless carrier knows within which areas it can sell service and where they cannot. The networks that the wireless carriers have built have been based on where they are licensed to sell service, and on their ability to cover those areas with their wireless signal.

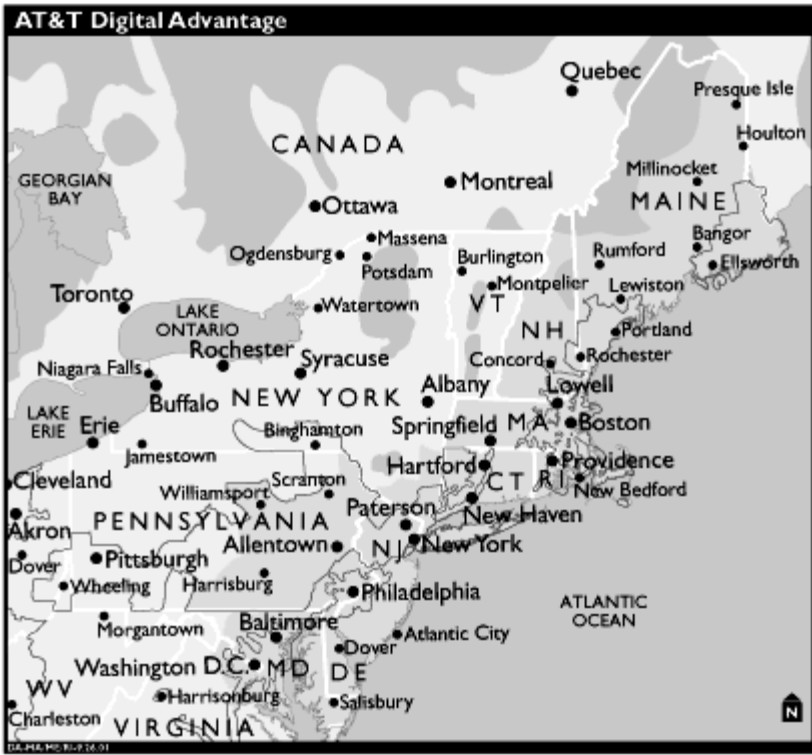
You are probably used to seeing service areas represented by coverage maps, which show you what areas are covered by your service plan and what areas are roaming areas (for more information on roaming, see Chapter 10, “Traveling: Your Domestic and International Roaming Options”). These coverage maps typically show areas where the wireless carrier offers service and areas where they will offer service in the future. Although it is great that the service providers are expanding their service areas, it will not help you if you live or work in one of these future areas. Also, know that some maps represent the areas where the wireless carrier allows you to use your phone without getting charged roaming fees, but other maps represent where the service provider has built its network. The difference between these two types of rate plans are often referred to as rate maps versus coverage maps.

Local Coverage

Figure 9.1 shows an example of a coverage map that represents the service area for an AT&T Wireless local calling plan in Boston, MA.

In this example, the shaded area from Washington, DC to Maine represents the home coverage area for the Boston service area. This is the area where your included monthly minutes can be used. Outside of this area, you would be charged roaming fees. In this case, there is only one per-minute roaming rate, which would be charged anywhere on the map that is outside of the shaded states. Some service providers will charge you different roaming rates when you are outside of your home service area but still in your general region, than they will if you are roaming outside the region. You will also notice that there are some areas on this map where there is no wireless service at all, shaded in

Figure 9.1 Sample Coverage Map Depicting the AT&T Wireless Local Calling Plan for Boston, MA



- Home Calling Area**
 Minutes of use will be applied to the included minutes in your calling plan. Long distance charges may apply.
- National Roaming Area**
 When placing or receiving calls in the U.S., customers will be billed \$.60 per minute where service is available. Long distance charges apply.
- AT&T Digital PCS Features Area**
 Your digital PCS features are available including Extended Battery Life, Message Waiting Indicator, and in certain areas, AT&T Text Messaging service and AT&T Caller ID.
- No Wireless System**
 No wireless system constructed in this area.

This map is a general representation of coverage. Coverage areas shown are approximate. Actual coverage depends on system availability and capacity, system repairs and modifications, customer's equipment, terrain, signal strength, weather conditions and other conditions.

Figure 9.2 Sample Coverage Map Depicting the AT&T Wireless Northeast Regional Calling Plan



- Home Calling Area**
 Minutes of use will be applied to the included minutes in your calling plan. Includes domestic wireless long distance. Int'l tolls may apply.
- National Roaming Area**
 When placing or receiving calls in the U.S., customers will be billed \$.60/min. where service is available. Includes domestic wireless long distance. Int'l tolls may apply.
- AT&T Digital PCS Features Area**
 Your Digital PCS features are available including Extended Battery Life, Message Waiting Indicator and in some areas, AT&T Text Messaging service and AT&T Caller ID.
- No Wireless System**
 No wireless system constructed in this area.

This map is a general representation of coverage. Coverage areas shown are approximate. Actual coverage depends on system availability and capacity, system repairs and modifications, customer's equipment, terrain, signal strength, weather conditions and other conditions.

dark gray (for example, in northwestern Maine). These are areas where there is no wireless system built that will work with the technology of AT&T Wireless phones.

Regional Coverage

Figure 9.2 shows an example of a coverage map for a regional plan for the northeastern United States from AT&T Wireless.

Notice the differences between the shaded area of this map and that of the local plan. The shaded area is still the home coverage area, but this area is much larger, extending from North Carolina to Maine. And again, areas outside of the shaded area would be charged roaming fees, with the darkest gray areas not offering any service.

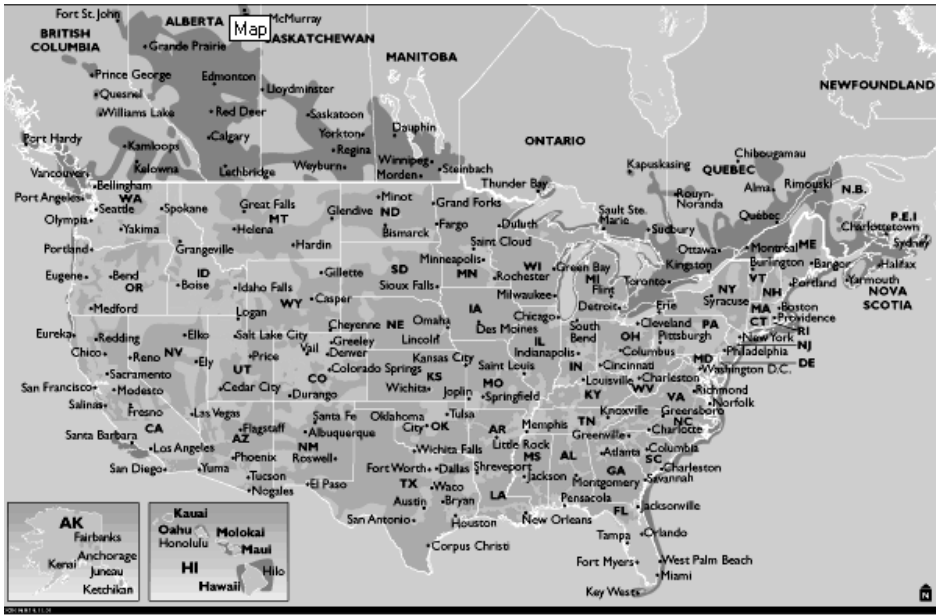
National Coverage

Some service providers offer national coverage. This means that they have built their networks across a good part of the country and offer service in most major metropolitan areas, or they have agreements with other service providers in areas where they have not built their network. Over the past year or so, there has been a trend among wireless service providers to merge and become larger, national providers. These service providers are able to offer wireless customers all-inclusive, single-rate plans. The Yankee Group, one of the leading telecommunications industry analyst companies, estimates that national service providers account for about 75 percent of all wireless subscribers in the United States. Figures 9.3 through Figure 9.6 represent some of the wireless service providers who have a national network and offer national coverage service plans.

NOTE

Verizon's map (which can be seen on page 140) is *not* a map of where your wireless phone will work, but rather a map to show where your wireless phone will be charged the rates you signed up for under their Single Rate plans. There are still areas of the country where you will not be able to make or receive calls.

Figure 9.3 AT&T Wireless National Network



- Wireless Coverage: Make and receive calls.
- AT&T Digital PCS Features Area Your Digital PCS features are available including Extended Battery Life, Message Waiting Indicator, and in certain areas, AT&T Text Messaging service and AT&T Caller ID.
- Marine Coverage
- AT&T Digital One Rate (applies to U.S. only) Every call is like a local call where service is available. No domestic long distance and no roaming charges. Credit card calls excluded.
- AT&T Digital One Rate with AT&T Canada Calling (Applies to U.S. and areas indicated in Canada.)
- No Wireless System No wireless system constructed in this area.

This map is a general representation of coverage. Coverage areas shown are approximate. Actual coverage depends on system availability and capacity, system repairs and modifications, customer's equipment, terrain, signal strength, weather conditions and other conditions.

Quality of Service

Any wireless phone user will tell you that they do not always have perfect service. One of the trade-offs between being able to use your phone while driving is that the science of wireless is not perfect. Everyone occasionally must deal with dropped calls, dead spots in coverage, and weak signals. But if you do your research to find out which of the service providers in your area have the best service, you can minimize these annoyances.

Figure 9.4 Sprint PCS National Network



Why Is Service Quality Inconsistent?

Your service quality may vary from time to time based on a number of factors including, but not limited to, the weather, your distance from a tower, and large obstacles (such as buildings), which cause service interference. If you travel extensively, you may also find that call quality varies from city to city, as service providers are still expanding their networks, and they have done so at different rates in different cities. You

Figure 9.5 Verizon Wireless National Rate Map Representing Where Their National Rates Are in Effect

■ National SingleRatesm Rate Area



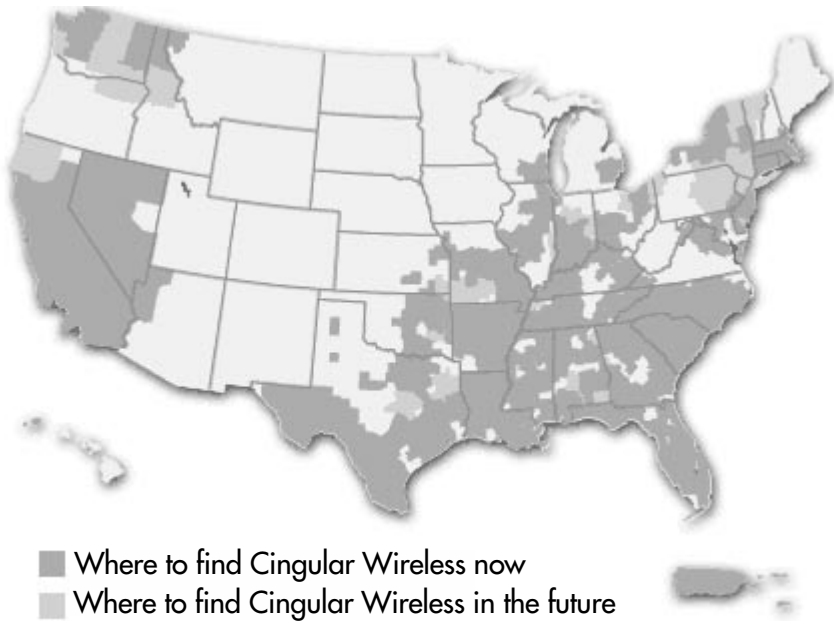
Verizon Wireless is a trademark of Verizon Trademark Services, LLC. SingleRate is a service mark of Cellco Partnership d/b/a Verizon Wireless.

These rate maps show where rates apply and are NOT depictions of actual service availability or wireless coverage. The mapped territory contains areas with no service. Wireless service is subject to network and transmission limitations, including cell site unavailability, particularly in remote areas. Alaska has limited service. Customer equipment, weather, topography, and other environmental considerations associated with radio technology also affects service.

may notice that, on your drive to work, for example, that your reception gets fuzzy in the same place everyday. This may be because, as you are driving, you are driving away from one service tower, and into the service of another tower. The area where you are “handed off” from one tower to the next may not have very strong service. Or, you may notice areas in large buildings where you cannot get service (e.g., the elevator, basement, or even areas behind some hills and mountains). The signal cannot penetrate through the thick walls and sometimes has trouble reaching phones in the “shadow” of a hill or mountain.

Who Has the Best Service?

This is a tricky question, because the answer is different in every city. And the answer may even be different depending on where you live or

Figure 9.6 Cingular Wireless Service National Coverage Map

Current coverage area depicted in graphical representation shows approximate licensed coverage area of Cingular Wireless. Actual coverage may vary due to terrain, weather, signal strength, customer equipment, and other factors. Clarity and reception may be diminished by obstruction such as buildings and foliage. No guarantee of coverage is available.

around a city. The best way to find out who has the best service is to ask friends and neighbors who use their phones in the same places you plan to use yours. Even though one service provider is known for having great service in your city, they may not have the best service in your immediate area or where you need to use your phone (i.e., if you can't get service in your house or on your drive to work, you may have a slightly different opinion of their service). Keep in mind that you will not find a service provider that has perfectly complete coverage, and that all service providers are working to expand and improve their networks.

Wireless Carrier Directory

This section includes a sampling of the major wireless carriers in the United States. Wireless carriers are presented by numbers of subscribers and percentage of market share.

NOTE

The data in this section came from each of the service provider's Q2 2001 financial press releases, Web sites, and directly from the wireless carrier. Market share percentage is based on number of subscribers compared to all subscribers in the United States at the end of Q2 2001.





Verizon Wireless

- 28,000,000 subscribers
- 26% market share
- Web site: <http://verizonwireless.com>

Figure 9.7 depicts the Verizon Wireless National Rate Map (represents where their national rates are in effect).

Figure 9.7 The Verizon Wireless National Rate Map

■ National SingleRatesm Rate Area



Verizon Wireless is a trademark of Verizon Trademark Services, LLC. SingleRate is a service mark of Cellco Partnership d/b/a Verizon Wireless.

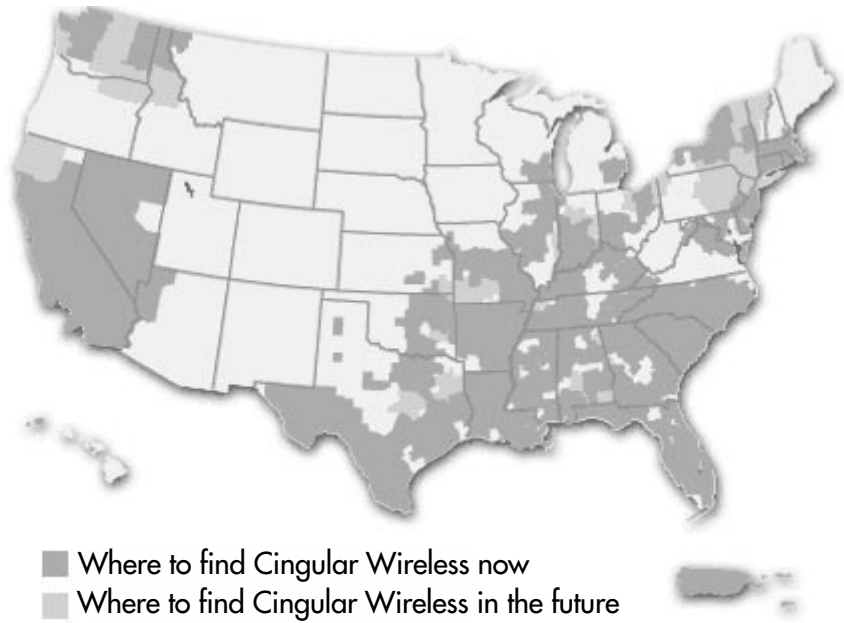
These rate maps show where rates apply and are NOT depictions of actual service availability or wireless coverage. The mapped territory contains areas with no service. Wireless service is subject to network and transmission limitations, including cell site unavailability, particularly in remote areas. Alaska has limited service. Customer equipment, weather, topography, and other environmental considerations associated with radio technology also affects service.

Cingular Wireless

- 21,200,000 subscribers
- 19% market share
- Web site: www.cingular.com

Figure 9.8 illustrates the coverage area for Cingular Wireless Service.

Figure 9.8 Cingular Wireless Coverage Map



Current coverage area depicted in graphical representation shows approximate licensed coverage area of Cingular Wireless. Actual coverage may vary due to terrain, weather, signal strength, customer equipment, and other factors. Clarity and reception may be diminished by obstruction such as buildings and foliage. No guarantee of coverage is available.

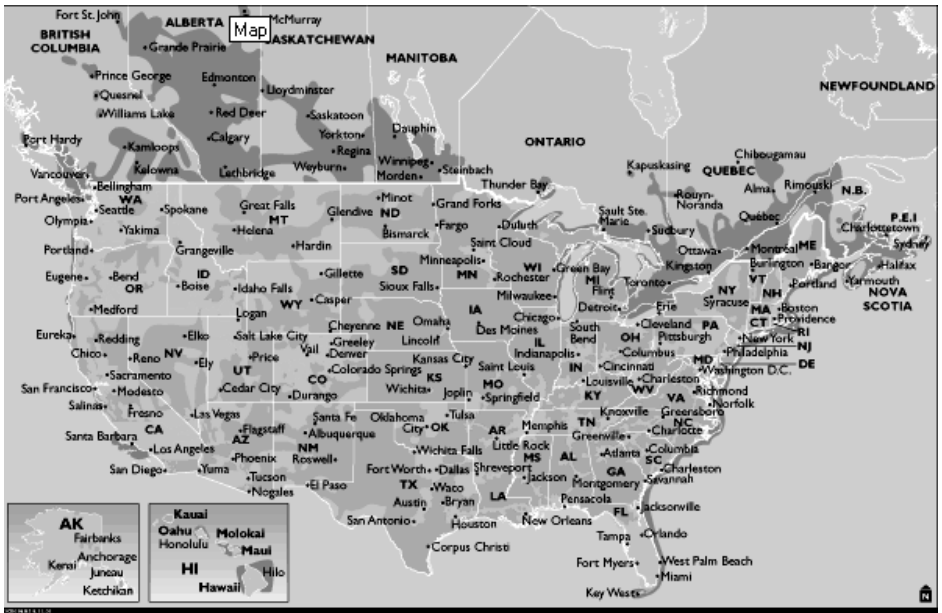


AT&T Wireless

- 16,400,000 subscribers
- 15 % market share
- Web site: www.attws.com

Figure 9.9 shows the coverage areas for the AT&T Wireless national network.

Figure 9.9 The AT&T Wireless National Network



- Wireless Coverage: Make and receive calls.
- AT&T Digital PCS Features Area Your Digital PCS features are available including Extended Battery Life, Message Waiting Indicator, and in certain areas, AT&T Text Messaging service and AT&T Caller ID.
- Marine Coverage
- AT&T Digital One Rate (applies to U.S. only) Every call is like a local call where service is available. No domestic long distance and no roaming charges. Credit card calls excluded.
- AT&T Digital One Rate with AT&T Canada Calling (Applies to U.S. and areas indicated in Canada.)
- No Wireless System No wireless system constructed in this area.

This map is a general representation of coverage. Coverage areas shown are approximate. Actual coverage depends on system availability and capacity, system repairs and modifications, customer's equipment, terrain, signal strength, weather conditions and other conditions.



Sprint PCS

- 12,823,000 subscribers
- 12% market share
- Web site: www.sprintpcs.com

Figure 9.10 shows the completely digital Sprint PCS National Network.

Figure 9.10 The Sprint PCS National Network



This map is a general representation of coverage. Coverage areas shown are approximate. Actual coverage depends on system availability and capacity, system repairs and modifications, customer's equipment, terrain, signal strength, weather conditions, and other conditions.



Nextel

- 7,680,000 subscribers
- 7% market share
- Web site: www.nextel.com

Figure 9.11 is an approximation of the national coverage offered by Nextel.

Figure 9.11 Nextel's Nationwide Coverage



The coverage area shown on the Nextel Nationwide Coverage map is an approximation. Actual coverage may vary.

Alltel

- 7,040,000 subscribers
- 6% market share
- Web site: www.alltel.com

The screenshot shows the 'GETCONNECTED' website interface. At the top, there's a navigation bar with links for 'About Us | Help | Your Account | Live Customer Service | CART' and a contact number '1800-775-2506'. Below this is a category menu with 'Internet | Wireless | Long Distance | Local | TV | Handhelds'. The main content area is titled 'Home : Wireless : View All Plans' for 'Somerville, MA'. It features a search and filter section with dropdowns for 'Max Monthly Fee', 'Total Monthly Minutes', and 'Provider', along with 'Show All' buttons and a 'Filter View' button. A comparison banner states 'Compare up to 5 plans side-by-side in detail!'. The main table lists several plans:

Provider	Plan	Promo	Monthly Fee	Minutes	Long Distance	See Phones	How to Buy
Sprint PCS	2500 Minutes/Free Long Distance Promo	\$	\$39.99	2500	Included	Phones	Add to Cart Details
Sprint PCS	Total Digital 2500	\$	\$59.99	2500	Included	Phones	Add to Cart Details
AT&T Wireless authorized dealer	Regional Advantage \$199.99	\$	\$199.99	2500	Included	Phones	Add to Cart Details
Sprint PCS	Free & Clear Most Minutes 200	\$	\$34.99	2000	\$0.20/min	Phones	Add to Cart Details
Sprint PCS	Free & Clear Long Distance 2000	\$	\$49.99	2000	Included	Phones	Add to Cart Details
AT&T Wireless authorized dealer	Digital Advantage \$149.99	\$	\$149.99	2000	\$0.15/min	Phones	Add to Cart Details

On the left side of the page, there is a 'Shopping' menu with options like 'By Plans', 'By Phones', 'By Accessories', 'By Promotions', 'Lifestyles', 'Wizard', and 'Bill Calculator'. Below it is a 'Resources' menu with 'Glossary', 'Help: Wireless', and 'Refer a Friend, Get \$10'.



VoiceStream®

- 5,280,000 subscribers
- 5% market share
- Web site: www.voicestream.com

The VoiceStream Wireless National Network map can be seen in Figure 9.12.

Figure 9.12 VOICESTREAM® Wireless National Network



VOICESTREAM® is a registered trademark of VoiceStream Wireless Corporation, its subsidiaries and/or affiliates.

This map is a general representation of coverage. Coverage areas are approximate. Actual coverage depends on system availability and capacity, system repairs and modifications, customer's equipment, terrain, signal strength, weather conditions, and other conditions.



U.S. Cellular

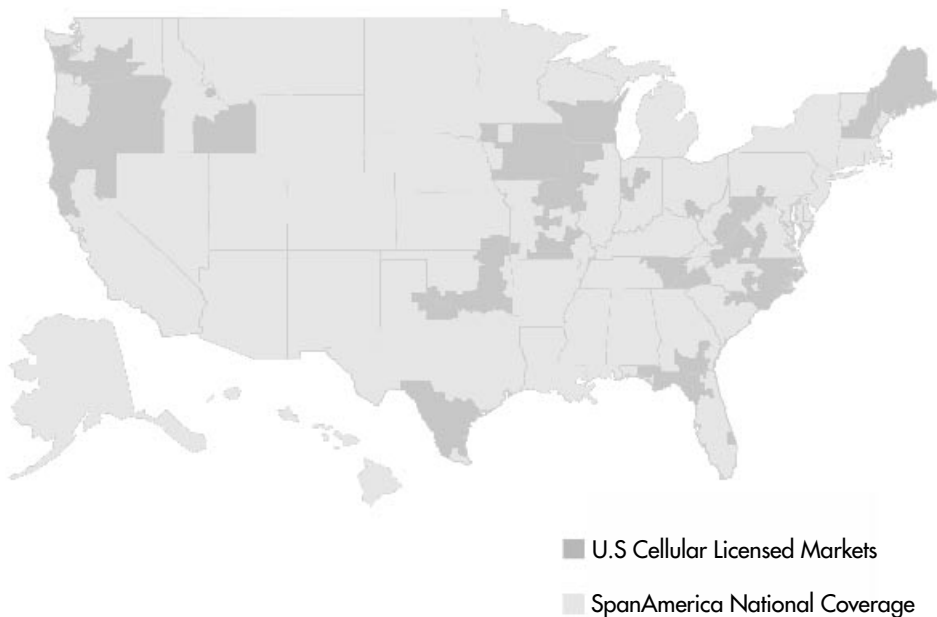
- 3,294,000 subscribers
- 3% market share
- Web site: www.uscc.com

The national U.S. Cellular Network can be seen in Figure 9.13.

NOTE

SpanAmerica is U.S. Cellular's national rate plan name.

Figure 9.13 U.S. Cellular National Network

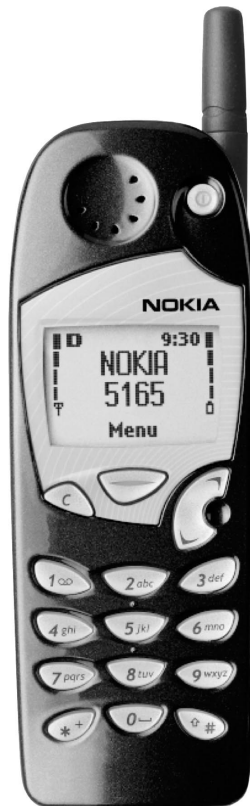


Map depicts an approximation of coverage area. Actual coverage may vary.



Qwest

- 1,000,000 subscribers
- Less than 1% market share
- Web site: www.qwestwireless.com



Triton PCS

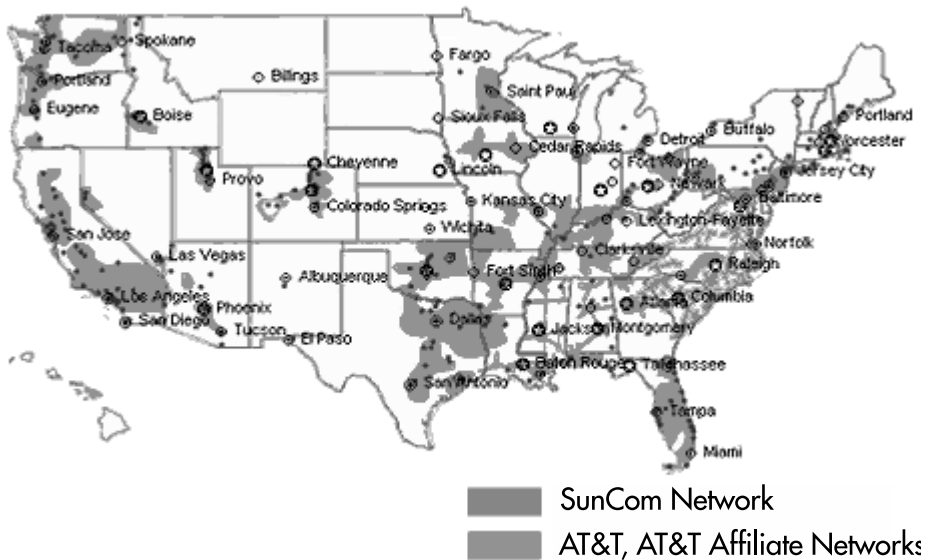
- 560,652 subscribers
- Less than 1% market share (based on the number of total U.S. subscribers)
- Web site: www.suncom.com

NOTE

Triton PCS is an affiliate of AT&T Wireless, and sells service under the brand name of SunCom.

The Triton PCS (a.k.a. SunCom/AT&T) network is illustrated in Figure 9.14.

Figure 9.14 Triton PCS National Coverage Map



Western Wireless

- 1,210,000 subscribers
- Less than 1% market share
- Web site: www.westernwireless.com

Dobson Communication Corp.

- 1,068,430 subscribers
- Less than 1% market share
- Web site: www.dobson.net

Telecorp

- 823,000 subscribers
- Less than 1% market share
- Web site: www.suncom1.com

Century Telephone

- 780,000 subscribers
- Less than 1% market share
- Web site: www.centurytel.com

Centennial Cellular

- 761,000 subscribers
- Less than 1% market share
- Web site: www.centennialcom.com

Rural Cellular Corporation

- 660,000 subscribers
- Less than 1% market share
- Web site: www.rccwireless.com

Cricket

- 472,000 subscribers
- Less than 1% market share
- Web site: www.cricketcommunications.com

Cincinnati Bell Wireless

- 415,000 subscribers
- Less than 1% market share
- Web site: www.cbwireless.com



Summary

There are most likely a handful of service providers that offer wireless service in your area. Each will offer a variety of different service plans from which to choose with different types of coverage and service plans. It is important to understand the coverage area on which your service plan is based, to make sure that you are not charged more than you are expecting when you use your phone. The quality of service you will get when using your wireless phone will also vary from service provider to service provider, from city to city, and from place to place within a city. Your best resource in finding good coverage is to talk to people who use the service in those areas, so do your homework before signing up with a service provider.

Quick Reference

What Services Are Available to You?

- ☑ There are between three and eight service providers who offer service in most major metropolitan areas.
- ☑ Quality of service will vary from service provider to service provider and from city to city.
- ☑ Service providers offer different kinds of coverage and different kinds of service plans.

Service Areas

- ☑ Wireless plans are based on service areas that are defined by the FCC who licensed the rights to the wireless carriers.
- ☑ Service areas are represented by coverage maps, showing the areas that the wireless carriers have built their networks to cover with their signal.
- ☑ Check out coverage maps closely to make sure you understand your service area, and also understand that some wireless carriers present their maps as rate maps, showing where you can expect to pay their rates, if you have coverage to make a call.

Quality of Service

- ☑ Factors such as weather, your distance from a tower, and large obstacles (such as buildings) can cause your service quality to vary.
- ☑ Quality will also change as you get “handed off” between service towers.
- ☑ All service providers have dead spots in their coverage, or areas where their signal doesn’t reach. Talk to friends and neighbors to make sure you will have coverage where you will need it.

Chapter 10

Traveling: Your Domestic and International Roaming Options

Quick References in this chapter

- What Is Roaming?
- Domestic Roaming Options
- International Roaming Options
- Guide to International Wireless Carriers

- ☑ Summary
- ☑ Quick References

Introduction

Do you travel a lot? If you travel outside of the home calling area or *zone* of your local service provider network, you can incur roaming charges, which means a surcharge will be applied for all calls you either make or receive from your wireless phone. The charges will vary from wireless carrier to wireless carrier but are explained in the details of all service plans.

When you travel in the United States, you can make calls from almost anywhere—the only question is if you will be charged extra for the call or if it is covered in your rate plan. National rate plans usually include roaming charges so you don't have to pay any extra for calling from far away from your home. Regional calling plans usually include your region—the Northeast, the Northwest, and so on, as defined by your service provider, and calls from those areas are usually at no extra cost. Local calling plans, however, tend to allow calls only from your immediate local area—your city or surrounding towns—and when you travel a few states away or to the other side of the country, you will have to pay extra per minute to make and receive wireless calls.

If you try to use your phone outside of the United States, the chances are that it probably will not work. There are a few exceptions to that rule based on three factors:

- The country that you are in
- The service provider that you have
- The type of phone that you use

The types of services and wireless phones you can use outside of the United States is presented later in the chapter.

What Is Roaming?

When you use your phone outside of your local calling area (as defined by your service provider), you are *roaming* on another wireless provider's network. Airtime minutes used when roaming are generally not part of your basic calling plan. Check your service provider's plan details to determine when you are roaming, and how you are charged for these calls (see Chapters 8 and 9 for more on service providers and service areas).

On the display screen of most digital phones, a symbol will indicate when you are roaming. The symbol will vary from phone to phone, but

typically will be ROAM, Extended Area, R, or some other indicator that is different than when you are in your home area.

Roaming was one of the most challenging issues the cellular phone industry faced in the early days. The goal was simple: a phone that could be used anywhere in the United States or the world where a compatible network is available. The difficult part is getting various systems to communicate and pass routing and billing information to each other.

When the initial cellular carriers built their networks, they enabled wireless phones from other networks to operate on their network only after dialing a special roamer port toll-free number prior to dialing the phone number you wanted to call. So, in order to use your Dallas-based phone in San Francisco, you would need to look up the roamer number, dial it, listen for another dial tone and then dial the complete 11-digit phone number for whom you wanted to call. And your bill may not reflect the charges for your call for a couple months. The challenge of making the ability to roam seamless and keep the billing simple did not happen until years after the cellular carriers launched their service. The fees associated with roaming included a high daily or monthly fee and a high per-minute fee, which varied by location.

Domestic Roaming Options

Virtually every service provider offers domestic roaming options regardless of which service plan you select. (Go to www.GetConnected.com for a comprehensive listing of plans available in your area.) However, there are always exceptions to the rule. For example, Cricket does not offer roaming service. Once you are outside of their coverage area, there is no service. Another example is Nextel, who offers service on their network across the United States and around the world; however, you cannot use their phones where they do not have coverage. This has to do with the type of network their phones work on—the newer digital networks are not as widely available as analog networks, which are the default networks for many who travel outside their areas. This is a good thing to keep in mind as you research your roaming options.

When you are using your phone outside of your home area, you will most likely not even notice that you are roaming unless you see a roaming symbol on your phone, as mentioned previously. The sound quality usually remains the same as when you are using your phone from your local calling area. In some isolated areas in the country, your

wireless carrier may not have an agreement with whoever the local carrier is to allow seamless roaming calls, and you may end up being connected to a roaming call service. These services usually start off with a message like “Thank you for calling Wireless Express. We are happy to place your wireless call for \$1.95 per minute. Please enter your credit card number now.” At this point, you have to decide if this call is *really* important enough to pay \$1.95 per minute for! Sometimes it is worth the extra per-minute fee, especially in emergency situations when you really need to get a call through.

As with any other calling feature, prices and options for domestic roaming vary by where you live and which service provider you choose. If you are the type of person that travels within the United States quite often, you should look for a plan that offers the following:

- Coverage with no roaming costs in the cities and towns from which you will be making your calls.
- Low roaming costs per minute with roaming coverage in all the areas to which you will travel.
- A service that will work when outside your home area at all times. Some new wireless services offer unlimited local calling for a flat fee per month but do not offer the ability to roam outside of your local area.

The following sections offer some additional details for the top selling service providers and some of their roaming options to give you an idea of what they offer. Refer to Chapter 9, “Service Providers and Service Areas” for a listing of service providers and their domestic coverage maps.

AT&T Wireless: AT&T Digital One Rate Plans

These plans are great for frequent travelers:

- No roaming fees—you can be on anywhere in the United States where digital service is available.
- There are no additional domestic long distance charges for calls made *to* anywhere in the United States *from* anywhere in the United States.
- A digital multi-network phone is required.
- Total minutes included vary from 450 to 2000 minutes per month.

Refer to Chapter 9 for more information on wireless service plans, or visit the AT&T Digital Wireless Web site at www.attws.com.

Sprint PCS: Real Nationwide Long Distance

Sprint PCS plans have consistently added more customers per quarter than any wireless carrier in the United States. They are great for someone that travels around the country and needs coverage in major metropolitan cities and their surrounding towns. Sprint PCS currently covers over 300 metropolitan areas across the United States. Features include the following:

- Sprint PCS plans work in any Sprint PCS coverage area across the country. This means on any plan you can call to anywhere in the United States from your mobile phone and you can call from any city in the United States that Sprint PCS has covered.
- Nationwide long distance is included when calling from the Sprint PCS network.
- Roaming is not included when off of the Sprint PCS network, but no roaming fees apply when you are on their network anywhere in the United States.
- Roaming is \$0.39 per minute outside Sprint's network within your home area and \$0.69 per minute outside Sprint's network outside of your home area.
- Included minutes vary from 40 to 3000 minutes per month.

Refer to Chapter 9 for more information on Wireless Service Plans or visit the Sprint PCS Web site at www.sprintpcs.com.

Verizon Wireless: National SingleRateSM

Verizon offers national plans (SingleRate) that are very similar in structure to the AT&T Digital One Rate plans:

- Verizon offers the largest coverage area in the United States and is the largest wireless carrier with the most customers. You can call from anywhere there is digital or analog service; however, a tri-mode phone is required in order to get full service with the Verizon Wireless national plans.

- Nationwide long distance is included—call to anywhere in the United States from anywhere in the United States.
- Nationwide roaming is included—with a tri-mode phone, customers can call from anywhere in the United States that analog or digital service is available.
- Included minutes vary from 150 to 3000 minutes per month.

Refer to Chapter 9 for more information on Wireless Service Plans or visit the Web site at www.verizonwireless.com.

International Roaming Options

Now that you know what to look for in order to make calls across the United States, what about taking your wireless phone outside of the US? This brings us to international roaming, which is quite bit more complicated than domestic roaming.

The challenge that was overcome to allow seamless roaming across the United States was simple in comparison to the ability to take your phone with you around the world. The United States wireless carriers all operate on the same frequencies as licensed by the FCC—either the cellular, or 800 MHz frequencies, or the PCS, or 1900 MHz frequencies—but they do not operate using the same digital technologies. So where your phone will work across the country is dependent on the network that your phone uses—CDMA, GSM, or TDMA. In many areas of the world, the type of network is not the problem since the GSM standard is the primary technology for delivering cellular service to people in foreign countries. However, the GSM frequency used for wireless phones internationally differs from the frequencies on which GSM operates within the United States. The European frequency is at 900 MHz, but the U.S. GSM frequency is at 1900 MHz. Even GSM carriers in the United States like VoiceStream have trouble operating in Europe unless the customer buys a phone that works on both the U.S. frequency and the European frequency. The customer will be able to use that phone only in specific parts of the world. For instance, South America works primarily on TDMA and many other areas use CDMA (see “Guide to International Carriers,” later in this chapter).

The basics of using your wireless phone around the world are the following:

- The phone must operate on the network where you plan on traveling.
- Expect to be charged extra for calls made and received while abroad.
- Some international offers require a different phone than the one you use in the United States, which you typically lease.
- When you use your phone in other countries, your level of service may not be what you have come to expect in the United States, with instant connections and simple dialing, you may need to dial additional numbers and call through operators when you need to make calls.
- Per minute fees vary by country and service provider.
- Fees could vary depending on whom you call. You may be charged one fee for placing calls to another cellular phone, and be charged a different fee for placing calls to traditional landline phones.
- The countries where you will be able to use your international wireless phone will vary greatly from wireless carrier to wireless carrier—check the details of the international plans for each wireless carrier.

Many U.S.-based service providers offer international roaming (including Nextel, VoiceStream, WorldCell, and AT&T Wireless, which are all discussed next). If you are looking specifically for a wireless plan with international roaming options, you may be limited to specific plans or need to have the international calling plan added to your regular service plan at an additional per month fee.

Nextel WorldwideSM

Nextel offers a wireless phone, the Motorola i2000plus, which works anywhere in the world where Nextel has a working network (currently over 80 countries). For more information you should visit their Web site at www.nextel.com/phone_services/worldwide/NWWservices.shtml. You do not have to have a separate phone, a different phone number, or

a different bill. There are additional charges to use your phone overseas—a specified flat rate per minute based on the country you are in. Anyone trying to reach you can just dial your wireless phone number and your phone will ring wherever you are in the world on Nextel's network, making this one of the simplest international offers.

AT&T WorldConnect® Service

AT&T Wireless (www.attwireless.com) offers a program called AT&T WorldConnect that lets you use your existing wireless phone account and phone number in many countries around the world, but not your wireless phone. AT&T will lease you a GSM phone, which will be programmed to receive calls from people dialing your regular wireless phone number. The charges show up on your monthly bill. This service is available in many countries across Europe, Asia, Africa, Australia, Latin America, and the Middle East. The ability to use your existing phone number and pay for the international use on your normal wireless bill allows you to change few things before traveling abroad.

VoiceStream

VoiceStream's (www.voicestream.com) network uses the GSM standard, which is the most prevalent standard around the world. If you buy a wireless phone from VoiceStream that is capable of operating on the GSM frequency in other countries as well as in the United States, for example the tri-mode Ericsson World Phone, then you can use the same phone here and in many places around the world. If you are a current VoiceStream customer, you can also rent a tri-mode phone for your international travels, if you do not have one. The calling patterns may change from country to country, and the rate will be based on where in the world you are, but the charges will all show up on your regular bill and you do not need to have a separate phone. VoiceStream has recently merged with Germany's Duetsche Telecom, which will prove to increase the global roaming capabilities for anyone traveling between here and there.

WorldCell

There are some companies that have created partnerships with wireless carriers around the world and will rent or sell you a phone that will

work in over 100 countries. These services are available for weekly or monthly use and are available for ordering right over the Web or the phone.

WorldCell (www.worldcell.com) offers many types of phones that will work around the globe, and lists the prices for calls from many countries as roughly between \$1 and \$3 per minute. As with the other international roaming options, the typical user will be a business person who needs to be in touch wherever he or she is, or a vacationer who wants the security he or she enjoys at home with a wireless phone in the glove box. WorldCell service is a great way to make sure you are in touch while globetrotting.

Guide to International Wireless Carriers

Table 10.1 shows 20 of the top countries in the world for wireless use based on number of customers. The wireless carriers in the countries and the type of network they operate are listed next to the country. The network standards that each country offers will dictate if an international phone from the United States will work in that country.

NOTE

This is a partial list, so check with the U.S. wireless carrier for a list of countries where their international offers work before you make plans to travel with your wireless phone.

Table 10.1 The GetConnected.com Guide to the Top 20 Countries for Wireless Use

Country	Wireless Carrier(s)	Wireless Network(s)
Argentina	CTI Movil/PCS, Mobicom, BellSouth International, Personal, Telefonica Unifon	AMPS, CDMA, TDMA
Australia	Cable & Wireless Optus, Hutchison Telecommunications, One.Tel, Telstra, Vodafone Australia	AMPS, CDMA, GSM
Brazil	Too many wireless carriers to list	CDMA, TDMA
Canada	Rogers AT&T Wireless, Bell Mobility, Microcell, Telus	AMPS, CDMA, GSM, TDMA
China	China Mobile, China Unicom	AMPS, CDMA, GSM, TACS
France	Bouygues Telecom, France Telecom Mobiles, SFR, Orange	GSM, NMT, RC
Germany	Duetsche Telecom Mobile, E-Plus Mobilfunk, Mannesmann Mobilfunk, Viag Interkom	GSM
Italy	Blu, Omnitel Pronto Italia, TIM, Wind Telecom	GSM, TACS
Japan	Astel Group, DDI Pocket Telephone Group, J-Phone, NTT DoCoMo	CDMA, PDC, PHS, TACS
Mexico	Iusacell, Pegaos, Portatel del Surestes, Telcel, Unefon, Baja Cellular, Mexicana, Cedetel, Movitel del Noroeste, Norcel	AMPS, CDMA, GSM, TDMA
Netherlands	Ben Nederland, Dutchtone, KPN Mobile, Libertel-Vodafone, Telfort Mobile	GSM, NMT
Portugal	Optimus, Telecel, TMN	C-450, GSM
South Africa	MTN, Vodacom	GSM
South Korea	KT M.com, KTF, LG Telecom, Shinsegi Telecom, SK Telecom	AMPS, CDMA
Spain	Airtel, Amena, Telefonica Moviles	GSM, TACS
Sweden	Comviq, Europolitan, Telia Mobile	GSM, NMT
Taiwan	Chungwa Telecom, Far EastTone Telecom, KG Telecom, Mobitai Communications, Taiwan Cellular, TransAsia Telecom	AMPS, GSM
Turkey	Aria, Telsim, Turkcell	GSM, NMT
United Kingdom	BT Cellnet, One2One, Orange, Vodafone	GSM, TACS

Summary

Roaming per-minute fees can be pricey (typically \$0.35 to \$1 per minute plus long distance charges in the United States and up to \$3+ per minute internationally). If you plan on making a significant number of calls to your family back in New York while on your month-long trip to London and you have a domestic wireless plan, be prepared for a big bill that month and you may have to carry a different wireless phone than the one you use at home. As wireless service becomes more and more popular across the globe, international calling and roaming will become more available and less expensive. You can make calls from almost anywhere in the world using a satellite phone, but the cost of the phone (up to \$1500) and the calls per minute (approximately \$2) may not make it the best option for you.

Quick References

What Is Roaming?

- Roaming is the ability to use your wireless phone beyond your home area.
- Additional fees will apply if you do not sign up for a plan that includes national roaming.
- Some networks allow national roaming without roaming fees only on the wireless carrier's network; others allow no-fee roaming anywhere you can get a signal.

Domestic Roaming Options

- AT&T Wireless provides a large coverage area, which equals minimal roaming fees.
- Sprint PCS covers most major metropolitan areas in the country, but roaming fees apply when on analog networks.
- Verizon Wireless provides the most coverage of any wireless carrier, and national rate plans that cover almost everywhere.

International Roaming Options

- ☑ Nextel's i2000 phone can be used domestically or internationally.
- ☑ With AT&T Wireless WorldConnect you can keep your number and your account, and get a GSM phone.
- ☑ With VoiceStream, you can purchase a tri-mode world phone so you can call your friends and families while traveling throughout much of the world.
- ☑ With WorldCell, you can lease a phone for the time you need to use it while abroad.

Guide to International Wireless Carriers

- ☑ From Argentina to the UK, wireless is booming around the world.

Chapter 11

Understanding Special Deals and Promotions

Quick References in this chapter:

- Types of Promotions
- Helpful Hints
- ☑ Summary
- ☑ Quick References

Introduction

There are many types of promotions to look for when signing up for wireless service—not just one-time freebies that you get for signing up for a new service plan. Wireless carriers offer rebates, service credits, more minutes, free advanced services, free accessories, and additional incentives for signing longer contracts. These promotional offers can be combined with offers from the wireless phone manufacturers and offers from the retailer. Finding the right promotion can significantly change the value of a plan over the length of a contract.

What about the fine print? Every promotion has fine print and wireless promotions are no exception. The promotions always have expiration dates. They are available only on some plans or certain plan/phone combinations. They give you free features that work only with advanced phones. The additional minutes may all be during off-peak hours when you are more likely to be sleeping than using your phone.

How do you sort through it all? Relax, sit back, and read through the following tips and tricks from veteran wireless phone researchers.

PROMOTIONS AT GETCONNECTED.COM

All of the promotions you will see on the home page and throughout the site are promotions that are currently available through www.GetConnected.com. If you click on any of the promotions, it will lead you to the plan(s) that are eligible for that promotion.

Types of Promotions

First you want to determine the types of promotions that are being offered to you to by the service providers to see which ones may make your wireless service cost less, and which ones you will not need or will not use. The following types are the most common, but creative marketing teams are always working on new ones!

Service Credits

Service credits are similar to rebates, but the dollar amount is credited automatically to your bill. Sometimes the service credits are spread out over a certain length of time to ensure that you stay with the service.

Because service credits are applied automatically to your bill, service credits are more valuable to you than rebates as they require no effort on your part to redeem from the service provider.

Rebates

Rebates range in dollar value, but they have one thing in common. You have to send in the required information (receipts, wireless phone number, etc.) to get them. Many rebates also have length-of-service restrictions that require you to have your service activated for a certain number of days or months, before you can send it in. Rebates are a great way to get you to buy, but they should be only a part of your decision, especially if you are not certain that you will get around to sending it in. And don't forget to send in the rebate or the value for you goes to zero.

More Minutes: "Sign Now and Get 1000 More Minutes!"

This could be a great value—but then again, maybe not. There are many questions to answer before you can decide:

- Is it 1000 minutes each month or 1000 minutes over a one-year contract?
- Are the 1000 minutes anytime minutes or just night and weekend minutes?
- Are the 1000 minutes only in your local coverage area or anywhere on the network?
- Are long distance calls included?
- Are incoming calls included?

After you know the answers to all of those questions you can decide if a free minute promotion is important to you or not.

Free Advanced Services: "Get One Year of MusicPlayer Free (A \$120 Value)!"

Are you already planning on buying the more expensive phone that supports this service? If so, then this is a great deal for you. If not, then this promotion doesn't mean anything to you. Other advanced services that are promoted this way include Wireless Internet access or text messaging.

Contract Length-Based Incentives: “Sign Up for a One-Year Contract and Get Free Long Distance!”

These types of promotions offer a variety of incentives, but they all have one thing in common: you have to sign a one- or two-year contract to get them. First, you have to decide if you are willing to commit to a single service provider for a year or more. If you aren't willing to sign a long-term agreement, then you should stop looking at these promotions. If signing a service agreement of an extended period of time is not a problem for you, then you should examine the details of what the service provider is actually offering you. The most common incentives are free standard features such as long distance, mobile-to-mobile calling minutes, or additional rebates. If you were going to choose one of these options anyway, then this could be a great deal for you.

Free Accessories: “Sign Up Now and Get a Free Headset Kit!”

These types of promotions offer you a tangible incentive, but make sure you know the real value of what you are getting. Many headsets can be bought for prices as low as \$9.99 if you shop around. Is the service provider offering you a free rapid charger? All phones come with a battery charger, otherwise how would you be able to keep using it? Everyone loves free stuff, but view these types of promotion as gravy after you have decided what service plan and phone you really need.

COMBINING PROMOTIONS

Q: Can I get more than one promotion?

A: Absolutely! Unless the promotion says “not available with other offers” it can be combined with other promotions for which the plan or phone qualifies.

Q: Why don't they just make it all one big offer?

A: Frequently the offers are from different sources; one from the wireless carrier, one from the phone manufacturer, and one from the retailer. Also different types of promotions may be running over different time periods.

Helpful Hints

Reading the fine print is key for all promotions. Wireless carriers use promotions to sell more of a certain type of plan or more of a certain type of phone. You need to know what the restrictions on the promotion are so that you can make sure your service plan choice qualifies for the promotion in question. Otherwise you could be disappointed once you get your first bill.

Limited Time Offer

Your wireless account will most likely need to be activated prior to the expiration date, not just ordered, in order for you to qualify for the promotion. If you waited until the last minute and something holds up your order, you could lose out on the promotion.

Plan Restrictions

Plan restrictions refer to promotions that are valid only on plans with a certain monthly fee level and above. The promotion may be further restricted to only local or only regional plans. Sometimes it is just as important to understand what the restrictions on the promotion are to truly understand what the promotional offer means to the consumer.

Phone Restrictions

Some promotions are valid only if you buy a particular name brand or model phone with a service plan within a certain price range. Or the promotion may be for a service that is supported only on certain phones. This is usually the case with features that are supported on advanced phones only.

Minutes

How many minutes are too many? If you could talk for 24 hours straight, you could use up 1440 minutes. Unless you are a teenager, that's almost impossible. More conservatively, if you talked for six hours every weekend in a month, you would use up 1440 minutes. Before you get overly impressed by the number of free minutes that you are entitled to with the special offer, do the math.

The restrictions on the minutes are also important to check. Unless the minutes fit into your already determined usage times and patterns, they won't be valuable to you.

Services You'll Never Use

Can't pass up free long distance? Think again. If you don't call anyone outside of your metro area, you won't get a lot of value. Free mobile-to-mobile minutes? Are your local friends on the same network? If not, try another promotion. Free Wireless Internet service? Is your phone compatible? Have you tried it out to see if the usability will work for you? The Internet service has been available for several years, but if you aren't comfortable with the limitations you won't use it.



Summary

Promotions are geared to get you to buy. They are supposed to look like great deals and great values, and sometimes they are. Service credits and rebates are guaranteed great values. Depending on how you plan to use your phone, a promotion can increase the overall value of your new plan. More minute promotions are like a free upgrade, if the more minutes fit your already determined usage patterns. Contract length incentives are great deals, as long as you aren't planning on moving out of town next month. If you have already decided that you need certain features or accessories, then these types of promotions will be helpful to you.

The important thing to remember is that you should put your basic needs before the promotions that make your heart race. Think of promotions as extra values rather than as the main reason you are buying. A plan that meets your everyday needs will save you more money than free stuff that you never use.

Quick References

Types of Promotions


- ☑ Money Back: Service credits and rebates put the cash back in your pocket.
- ☑ Free Services: Getting a little something extra for nothing is always enticing, but make sure it is something that you want.
- ☑ Free Products: Shop around to find out the real value of the product being offered.

Helpful Hints

- ☑ Read the fine print.
- ☑ Check the expiration dates.
- ☑ Make sure it is a feature or service that fits in with your planned usage patterns and works with your phone choice.

Part IV

Looking Ahead







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Chapter 12

Frequently Asked Questions

- **Frequently Asked Questions about Phones**
- **Frequently Asked Questions about Service Rates and Plans**
- **More Frequently Asked Questions**

Introduction

Everybody has questions. We'll give you the low down on some of the most frequently asked questions that our customer care experts answer daily. Then you can be the expert!

Frequently Asked Questions about Phones

When you look at the hundreds of phones that are on the market today, you are going to have questions about them. The previous chapters gave an overview of the basics and differences. Here we will list some of the most common questions with the short answers.

What are the differences between analog and digital phones?

- Analog phones operate by sending and receiving signals in a continuous sound wave; digital phones send and receive messages by converting sounds and voices into numeric code.
- Analog phones generally are less expensive than digital phones, but the service is usually more costly.
- Analog phones have shorter talk and standby times than digital phones.
- Analog phones offer more complete coverage in rural areas.
- Digital phones offer better voice quality.
- Digital phones have a longer battery life.
- Many digital phones also work on analog networks.

For more information on this topic please refer to Chapter 2.

What is the difference between PCS and cellular?

- Phones that operate on a PCS system (personal communications service) use digital technology and offer advanced features like caller ID.
- Cellular phones can use either digital or analog technology, or both.

For more information on this topic please refer to Chapter 3.

What is Third Generation?

The Third Generation (3G) mobile devices and services are the next wave. 3G will provide the capacity for online, real-time transfer of information, regardless of time and place. For example, you will be able to send images or participate in live video conferencing by using your 3G mobile communications device.

For more information on this topic please refer to Chapter 13.

What is a dual-band phone?

A dual-band phone is a PCS phone (digital) that can operate on analog cellular networks when it is out of range of PCS network antennas.

For more information on this topic please refer to Chapter 6.

What battery has the longest life, NiMH or Li-Ion?

Lithium-ion (Li-Ion) batteries tend to offer the longest talk times and standby times in a lightweight package—and tend to be the most expensive. Nickel Metal Hydride (NiMH) batteries are the reliable standard that offer average talk times (2 to 5 hours) and standby times (24 to 48 hours).

For more information on this topic please refer to Chapter 7.

What is the difference between talk time and standby time?

Talk time is the amount of time you spend conversing on your wireless phone, either making outgoing calls or receiving incoming calls. Standby time is the amount of time that you have your phone on, but are not actually talking on it. You do not have three hours of talk time and thirty hours of standby time on one battery; you have either three hours maximum to talk or thirty hours maximum to be on standby.

For more information on this topic please refer to Chapter 8.

Frequently Asked Questions about Service Rates and Plans

Even after you know all about the different rate plans, services, options, and features you may still have a few questions that you want clarified. If this is the case, you are not alone.

Why is the quality of my wireless service sometimes inconsistent?

Your service quality may vary from time to time based on a number of factors including, but not limited to, the weather, your distance from a tower, and large obstacles (such as buildings) causing service interference.

For more information on this topic please refer to Chapter 9.

Which wireless carrier has the best signal strength?

It depends. As mentioned earlier, the quality of your service will depend on where you live, work, and play. Your best resources for this question are your friends and family. They can tell you first hand what their experience with a network in your area has been.

What is roaming?

When you use your phone outside of your local calling area (as defined by your wireless carrier), you are roaming on another wireless carrier's network. Airtime minutes used when roaming are generally not part of your basic calling plan. Check your wireless carrier's plan details and coverage maps to determine when you are roaming, and how you are charged for these calls. Most wireless carriers also send an indicator to your screen display to tell you when you are roaming.

For more information on this topic please refer to Chapter 10.

If it is called a nationwide plan, then why are there roaming charges?

Nationwide plans tend to have no roaming charges *if* you are in your wireless carrier's network area. If you wander over to another wireless carrier's network, then you may incur roaming charges.

Although many of the nationwide wireless carriers have extensive physical networks built, they don't have every square inch of the United States covered. So you could have a nationwide plan based in New York City, and when you travel to Dallas, San Francisco, and Des Moines, you may have no roaming charges. Then when you take a day trip to rural Pennsylvania, you wind up with roaming charges. It's not how far away you go, but exactly where you go.

What plans do not charge for roaming?

Find the plan that covers the areas in which you travel and you will be all set. If you are trying to find a plan that has absolutely no roaming charges ever, then look for a service plan that will work with phones that can work on digital and analog networks, and which states that there are no roaming fees on any network.

How do I know which mode my phone is in?

Your phone display will have an indicator or symbol to show if you are in a digital or analog mode.

For more information on this topic please refer to Chapter 10.

What do peak and off-peak hours indicate?

Peak hours refer to the hours of highest wireless phone usage. Typically, peak minutes are billed at a service plan's highest rate. Conversely, off-peak hours refer to the hours of the lowest wireless phone usage, and are billed at lower rates.

Peak and off-peak times vary significantly by wireless carrier. Check the details to know for sure. Peak hours typically are between the hours of 7 A.M. and 7 P.M., Monday through Friday. Off-peak hours include the weekends, some holidays, and the hours from 7 P.M. to 7 A.M. during the week.

For more information on this topic please refer to Chapter 8.

How do service providers count anytime minutes versus evening and weekend minutes?

If you call during peak times, you will be using your anytime minutes. If you call during off-peak times, you will be using your evening and weekend minutes. If you call during peak times and talk straight through to off-peak times, the minutes you talk during peak time are counted toward your anytime minutes and the minutes you talk during off-peak time automatically switch over to your evening and weekend minutes.

Do I get charged when people call me?

Yes. You are billed for the amount of airtime minutes that you use, regardless if the call is incoming or outgoing. However, some service providers have a feature that offers a free first minute of incoming calls.

For more information on this topic please refer to Chapter 8.

Does it use up my minutes when I call other wireless phones?

Sometimes. Some service providers also offer a mobile-to-mobile feature for a monthly fee. This nice benefit allows you free local calls to other users of your service provider's wireless phone service. If you call a wireless phone on another network, you will be charged the same number of minutes as if you called a regular phone number.

When I call my voice mail am I using my minutes?

It depends on the wireless carrier and the plan. When you call to retrieve your voice mail messages, you may be charged airtime minutes. You will need to read the fine print or call customer service to verify this on a carrier-by-carrier and plan-by-plan basis.

For more information on this topic please refer to Chapter 8.

What is considered a long distance call?

A wireless call is considered to be long distance if it is placed to a number outside of your local calling area (which is defined by your service provider). Make sure you're familiar with the boundaries of your service provider's coverage map and local calling area.

For more information on this topic please refer to Chapter 9.

Are toll free number calls free?

No. You will not be charged a long distance charge to call a toll free number; however you will be charged airtime for the minutes you are using your phone to call the toll free number.

What is the farthest I can call from my wireless phone?

You can call any phone number around the world with some wireless carriers, but many restrict international calling. Read the details of the service plan to see if international calling is allowed at all or if there is an extra monthly fee to allow it.

Can all cellular phones be used worldwide?

No. To be able to place a call while you are outside the United States, you must have a wireless phone that is designed for use on the network

in the country where you will be traveling. Most countries have some form of wireless phone service, but the phone that you use in a country must be compatible with the prevalent technology in that country. For example, GSM (Global System for Mobile Communication) is most commonly used in Europe, and some phones sold in the United States can work on the European network.

For more information on this topic please refer to Chapter 10.

More Frequently Asked Questions

Still have some questions left? The answers are in here somewhere.

Can I just keep the phone I have and change plans?

We recommend buying a phone at the same time you buy your plan to be sure that your phone is technologically compatible with your plan. For example, if you currently have an analog phone, but you switch to a digital calling plan, your analog phone will be useless. Also, the phone must be programmed for a specific wireless provider. So if you switch wireless providers, your previous phone will not work.

For more information on this topic please refer to Chapter 8.

Can I change my service plan at any time?

If you purchased your current phone in the past year and you want to switch to a different plan that your current wireless carrier is offering, you should be able to do that by contacting your wireless carrier directly. There may be additional fees, depending on the wireless carrier.

For more information on this topic please refer to Chapter 8.

Can I keep my phone number if I move or switch wireless carriers?

No. When you move or switch wireless carriers you will receive a new phone number. The exception would be if you keep the same wireless carrier and move within the same area code—then you may be able to keep the same number.

For more information on this topic please refer to Chapter 8.

If I don't like my phone number, can I change it?

Yes. If you do not like your assigned phone number, you can call your wireless carrier and ask for a new phone number. There may be a fee charged for this service, depending on the wireless carrier.

For more information on this topic please refer to Chapter 8.

Do I have to sign a contract?

Usually, but not always. Although most wireless carriers have a standard one-year contract length, there are wireless carriers who still have month-to-month services available. There may be an additional monthly charge if you do not sign a one-year contract. On the other side, there are frequently incentives (promotions and additional services) if you are willing to sign up for a two-year contract.

For more information on this topic please refer to Chapter 8.

Why do I need a credit card to buy a phone?

If you want the convenience of purchasing online (or by phone), you will need a credit card because computers don't take cash. If you don't have a credit card but you are over 18 and don't have bad credit, then you can usually go to a retail store with two forms of ID and get set up.

For more information on this topic please refer to Chapter 8.

Are rebates for phones instant or mail-in?

It depends on the promotion. Most rebates do need to be mailed in by a certain date to get the credit or check. Wireless carriers try to distinguish between types of rebates by highlighting immediate credit promotions as instant service credits or instant rebates.

For more information on this topic please refer to Chapter 11.

Chapter 13

The Future of Wireless Communications

Quick References in this chapter:

- As Use Increases, Prices Fall
- What to Consider before Throwing Away Your Home Phone
- Wireless as the Only Communications Network
- Combining All Your Devices
- 3G—The Third Generation of Wireless

- ☑ Summary
- ☑ Quick References

Introduction

Market analysts estimate the number of mobile phone users worldwide at just fewer than 500 million, and projections place that number at around 1.25 billion within the next five years. In the United States alone, the number of wireless customers is well over 110 million. People are also starting to dispose of their home phones in favor of wireless phones.

These staggering numbers can mean only one thing: wireless networks are destined to rival the traditional phone services that Ma Bell has been maintaining since before the turn of the century. Annoying no-signal messages will go the way of the switchboard operator. Roaming will cease to have anything to do with complex billing issues and everyone—you, me, that guy who thinks wireless phones are the downfall of society and culture—will carry a wireless phone.

The remaining hurdles for everyone to forsake their home phones in favor of wireless are reliability, coverage, features, and cost. Cost is becoming less and less an issue, as wireless phones and services are becoming more affordable and comparable to home phones. Coverage areas for wireless services in residential areas are getting better in both service areas and quality of service; however, coverage is still an issue for many individuals in overly remote or rural locations. The reliability of wireless service is increasing as coverage areas are increasing, and the features available on wireless phones are rivaling those available on your home phone.

As Use Increases, Prices Fall

The cost of an average wireless minute continues to drop, bringing it closer to the cost of an average minute of use from your home phone, but with the additional features being offered to consumers, the average monthly wireless bill may soon increase. As these per minute prices get closer together, more and more people will abandon their home phones altogether and go purely wireless. Today, according to the Yankee Group, the leading telecommunications industry analysts, approximately 2 to 4 percent of people polled say they are using only wireless phones. That number is a 100 percent increase from last year and is expected to continue to grow exponentially year.

Average monthly wireless bills are approximately \$40, but that number varies greatly between the wireless carriers. Wireless carriers like Nextel, who promote directly to business users, have the highest

average monthly service fee, around \$70. Wireless carriers who have a high percentage of prepaid wireless users have lower average monthly service fees, which could run anywhere from \$20 to \$30. As wireless carriers start to add more and more minutes to their rate plans, the average cost per minute of use will continue to fall and the \$30 you pay for your home phone will be an expense you can easily replace with a \$30 monthly service fee for a phone that you can take anywhere.

The average monthly mobile bill has decreased between 7 and 10 percent per year for the past decade, making mobile phones an increasingly practical investment. As that trend continues, it begs to ask the question, “Why bother owning two phones at all?” In many instances, owning a mobile phone has become more economical than owning only a landline.

However, the trend of lower average per-minute costs for wireless has not escaped notice of the wireless carriers, who are adding new features to their wireless services and charging customers extra to use them, thereby trying to increase the revenue that the wireless carriers see on a monthly basis. So, if you go totally wireless and want to send e-mails from your phone you will pay extra for that, which only makes sense—added features for added cost.

What to Consider before Throwing Away Your Home Phone

Before becoming the savvy, unencumbered, and entirely mobile individual that you aspire to be, consider the following:

- **Clarity** Don't toss out your big button classic until you are comfortable that wireless service will function normally throughout your home. Try a call from the bedroom with the door closed, check your voice mail from the basement, sit in your closet. Even give it a try from the bathroom. There's nothing worse than missing a call while brushing your teeth.
- **Internet Access** Despite the busy signal or instant voice mail that tells friends and family they have been forsaken for the wonders of the Web, dial-up access is still the cheapest and simplest game in town. So unless you are ready to lay down a few bucks for alternate Web access like cable or a Digital Subscriber Line (DSL), you're going to be beholden to your home phone line for a little while longer. There are a number

of wireless Internet services out there, but they are still relatively slow and expensive.

- **Equipment** Many phones using digital networks offer options like caller ID and voice mail, but they're not yet as full-featured as landlines. Also, keep in mind that mobile phone technology is developing at an intense speed, so it's likely that you'll be upgrading in less than a year (six to seven months on average according to one telecom analyst) and at a significant cost.
- **Air Time** Do you talk a lot? If you're a phone junkie, it doesn't matter if you call local or long distance—you'll use most service providers' free minutes plans in a matter of days. And that's when things get expensive.
- **Dead Battery** Barring a compulsive urge to save energy at all costs, you're going to end up with a dead battery at some point.

Wireless as the Only Communications Network

The technology enabling you to dispense of your home phone is only going to improve. In developing countries with little or no telecommunications infrastructure, the obvious and inexpensive solution is wireless for all telephone communications. The signal tower has replaced the telephone pole and airwaves have replaced the wires. It is much less expensive to build a few towers to cover a large population of people for wireless phones than it is to put up phone poles and string telephone cables to all houses in very remote areas.

Around the world, the push is on for reliable wireless service, and the resulting effect of its rapid worldwide establishment is a pent-up demand for wireless. Some countries create waiting lists for wireless phones when a network is being built. And the customers are happy to be on the list—they have been waiting *years* for a landline phone, so a couple weeks to wait for a wireless phone is truly remarkable.

If you opt for a satellite phone, there is virtually no place in the world where you cannot use the phone. The problem with satellite phones is that they are still very expensive (approximately \$1500 for the phone) and the service is prohibitive for most (a call will cost well over \$1 per minute, sometimes four or five times that much). These prices are

decreasing, and as with all wireless technology, prices will become more mainstream if the market place responds with a need for satellite phones.

Combining All Your Devices

Many people carry around multiple electronic devices to stay connected and stay organized—phone, pager, PDA, MP3 player. The future of wireless, is that all these devices can be thrown away and one device can replace them. Why carry a briefcase to lug around all your digital devices when you can have a single device that fits in your shirt pocket?

The struggle that is evolving today is one regarding the “form factor” of the all-in-one devices. Do we want a PDA that works like a phone and pager, or a phone that acts like a PDA? Do we need a full keyboard on the device or will we use a regular phone keypad? Should the device have a microphone built in or should it have an earpiece that pulls out from the device with a wire to use as the earpiece and microphone? The jury is currently out, with things like the formerly voice-less Handspring Visor PDA adding the Visor Phone module to its compatible product list. One sure sign of the push to get consumer adoption of these devices can be seen in the rapid price reductions of the Visor Phone—from \$300 (on top of the cost of the Visor, from \$200 to \$500) to FREE—as long as you activate service with the wireless carrier. On the phone with a PDA included side, Kyocera has come out with a phone that has the Palm operating system built in so you can throw away your Palm Pilot and make calls from their 6035 model phone. The only problem is the price tag—\$400 to \$500.

One of the last hurdles to make that all-in-one device a must-have item is the ability to tie into your information at work. Most companies use an e-mail program and calendar program that sits behind a secure firewall and is next to impossible to access from the outside world with a wireless device—without getting help from the IT department. And even if you can access your e-mail, you typically have to handle multiple e-mail accounts with duplicate e-mails all over the place if you use your wireless phone to read and reply or otherwise manage your e-mail. This is getting better with new applications that are being developed as well as with new technology that the wireless carriers are starting to add to their networks to help make the whole process more customer-friendly

So the future of wireless will see these all-in-one devices come down in price, get smaller in size, and do all the things that your

desktop computer does—without having to work with your IT department or completely reconfigure your computer.

3G—The Third Generation of Wireless

You may have heard about the next step for wireless phones that is coming soon—Third Generation Wireless, or 3G. 3G is an umbrella term covering all the new data services that will be coming soon to your wireless phone and network. These services include high-speed data for e-mail and Web content, downloading songs, and even video conferencing. Although all this sounds great, it will take a tremendous amount of effort and money on the wireless carriers' sides to update their networks for the increased amount of bandwidth that will be required to send these services over the wireless network. Currently, many wireless carriers are preparing their networks for higher speed and bandwidth data requirements. Phone manufacturers are creating phones that will offer these services. In the fall of 2001, NTT DoCoMo in Japan released the first ever 3G phone into the hands of their consumers, including wireless video capabilities. Is 3G coming to the United States? Yes, but it will take a while for it to succeed here with all the features that will drive wireless demand and use (and revenue for the wireless carriers!).

The first generation of wireless was pure voice without wires. The second generation was the ability to send voice and data using digital signals, which is where the majority of wireless users are today. There are many phones out there that can access Web sites, send and receive messages, and listen to music. Some wireless networks are being upgraded to allow what is being called 2.5G services, higher speed data than 2G with “always-on” capability, instead of making the user switch from voice to data when they want to use one or the other. Carriers are starting to prepare for 3G by moving to 2.5G and phone manufacturers are preparing by making phones that can work on today's 2G and 2.5G networks, and that will be upgradeable to the 3G networks.

The only question remaining for the wireless carriers and the phone manufacturers is “What will be the 3G capability that *everyone* will absolutely *need* and be willing to pay extra for?” And the jury is definitely still out on that question. Maybe those lucky enough to buy the new 3G phones in Japan (costing approximately \$600) will discover the answer to that question and tell the rest of the wireless world.

Summary

The future of wireless is looking incredibly bright. The ability to use a wireless phone as your only phone, with the same reliability and clarity you are used to for your home phone, is coming soon—indeed, it is already here in some parts of the country. New services are being added to wireless phones, with more to come all the time, to make your wireless phone the only communication device you need for voice, the Internet, video, music, and more!

Quick References

As Use Increases, Prices Fall

- ☑ The average monthly cost for wireless use is around \$40, but varies from less than \$20 for minimal use to over \$100 for heavy use.
- ☑ Per-minute rates continue to fall with increasingly large included minutes in rate plans.
- ☑ Carriers are looking to extra features like wireless messaging and e-mail at extra cost to help offset the lower per-minute prices or even to increase the monthly revenue.
- ☑ Only approximately 2 to 4 percent of wireless users use *only* wireless and have no home phone.

What to Consider before Throwing Away Your Home Phone

- ☑ Consider clarity and coverage—make sure you have adequate wireless service at your house.
- ☑ Consider other telephone line needs like Internet access, fax machines, etc.
- ☑ Consider the need for power—make sure you have extra batteries or a charger that allows you to talk and charge at the same time.

Wireless as the Only Communications Network

- ☑ Wiring every home in remote areas of the world is incredibly expensive and nearly impossible, so wireless networks can fill the need for developing countries.
- ☑ Waiting lists in countries for years is not uncommon for traditional telephone service, so waiting lists are being created for wireless phones as soon as the first shovel of dirt is taken for a new antenna for a new wireless network.
- ☑ Satellite phones are available and cover virtually the entire world, but are big, expensive, and mostly for individuals that *must* be in touch wherever they are.

Combining All Your Devices

- ☑ Wireless phone, pager, Personal Digital Assistant, MP3 Player—it does it all, but do you or will you need it?
- ☑ Is the best fit a phone with an added PDA or a PDA with an added phone? The debate continues.
- ☑ Price is still driving the decision for potential users—all-in-one devices are about \$400—\$500

3G—The Third Generation of Wireless

- ☑ The first generation of wireless was voice.
- ☑ The second generation of wireless (2G) was voice and data.
- ☑ The second-and-a-half generation of wireless (2.5G) consists of voice, data, Internet content, and higher speed data access.
- ☑ The third generation of wireless (3G) is virtually everything you have with a wired device—voice, data, Internet, high-speed data, video, music, and so on.
- ☑ Japan has 3G today—the rest of the world waits to see what they think and will join them in 2002 or beyond.

Appendix A

Glossary of Wireless Terms

3G The Third Generation of wireless services that include high-speed data, video, and music over high bandwidth access.

Access Fee A monthly charge for the ability to connect to a wireless network. This fee is assessed monthly whether the phone is actually used or not.

Activation Fee A fee charged by service providers to configure a phone to work on a carrier's network. There is usually a charge to activate your phone, somewhere around the \$25 mark.

Advanced Mobile Phone Service The “traditional cellular” phone system.

Air Interface The operating system that a wireless phone is on. These include AMPS CDMA, GSM, and TDMA.

Airtime The amount of time customers spend talking over their wireless networks, for which they are billed. This time usually includes the time spent talking on both incoming and outgoing calls.

Alphanumeric Display A display screen on a phone, usually an LCD screen, that has the ability to display both text and numbers.

Alphanumeric Messaging The capability to display messages on a phone in both text and numbers.

AMPS Refer to **Advanced Mobile Phone Service**.

Analog The original cellular air interface, or technology, used to transmit voice from the wireless phone to the cellular antenna and base station. Analog waves are continuous sound waves that are transmitted from point to point.

Antenna A device for transmitting and receiving radio signals.

Area Code A three-digit telephone number prefix assigned to a calling area.

Automatic Call Delivery A service feature that allows a user to receive calls even when roaming outside of the phone's home coverage area.

Bandwidth The amount of data you can send through a channel. Usually measured in bits-per-second (bps). The greater the bandwidth the greater the amount of data transmitted over a given period of time.

Base Station A fixed location (such as a cellular telephone tower) that communicates to many mobile stations (wireless phones).

Broadband A communications channel of high bandwidth, capable of transmitting a relatively large amount of data over a given period of time.

Bundling Grouping various telecommunications services as a package to increase the appeal to potential customers. For example, a bundled package could include long distance, cellular, Internet, and cable services.

Call Blocking A feature that allows a user to prevent incoming calls from specified callers.

Call Forwarding A feature that allows callers to receive calls at another number when they know they will be away from their phone.

Call Return Usually called *69, this feature allows the user to get the number of the last incoming call.

Call Waiting A feature that allows a user to be notified of another incoming call while a call is already in progress, and gives the user the ability to answer the second call while the first call remains on hold.

Caller ID A feature that displays a caller's telephone number and/or name before the call is answered.

Cancellation Fee A charge for canceling your cellular service contract before the contract has ended. This can be as much as \$200.

Carrier A company that provides telecommunications services. Same as **Service Provider**.

CDMA Refer to **Code Division Multiple Access**.

Cell The geographic region that is serviced by one base station in either analog cellular or digital networks.

Cell Site The location where the wireless antenna and network communications equipment is placed.

Cellular The type of wireless communication that is most familiar to mobile phones users. Called cellular because the system uses many base stations to divide a service area into multiple cells. Cellular calls are transferred from base station to base station as a user travels from cell to cell.

Channel A path or frequency along which a communications signal is transmitted.

Circuit-Switched Data Wireless data transmitted over a single channel, thereby tying up a channel for the entire transmission.

Code Division Multiple Access One method the digital technologies use for wireless phone service. CDMA encodes each call as a coded sequence across the entire frequency spectrum. Each conversation is modulated, in the digital domain, with a unique code that makes it distinguishable from the other calls in the frequency spectrum.

Coverage Area The area in which you can use your wireless service as determined by your service provider. It usually includes your service area around your home as well as some extended service areas where you can use your service, but where you may be charged long distance and/or roaming charges. Same as **Service Area**.

Digital A technology that transmits phone signals across long distances by converting voice and data into binary codes of zeros and ones and sending it across net-

works of small regions, one region at a time, at a certain wavelength. These networks are also known as Personal Communications Service (PCS) networks, a name branded by Sprint.

Dual Band A feature on some digital phones that allows it to operate on analog networks when digital service is not available and vice versa.

Dual Mode Describes a phone that works on both analog and digital networks.

Enhanced Specialized Mobile Radio Systems that use digital radio transmission similar to other digital technologies. Spread-spectrum modes, such as frequency hopping, are common. One major difference from other networks is that in an ESMR system, connection between users is almost instantaneous, compared with the typical delay required to dial and set up a call in a public cellular network.

ESMR See **Enhanced Specialized Mobile Radio**.

Extended Service Area The part of the carrier's coverage area where you can use the network; you may be charged roaming and/or long distance charges, however.

FCC Refer to **Federal Communications Commission**.

Federal Communications Commission A U.S. government agency responsible for regulating communications industries.

Frequency A measure of the energy, as one or more waves per second, in an electrical or light wave information signal. A signal's frequency is stated in either cycles-per-second or Hertz (Hz).

GHz (gigaHertz) Billions of Hertz.

Global Positioning System A series of 24 geosynchronous satellites that continuously transmit their position. Used in personal tracking, navigation, and automatic vehicle location technologies.

Global System for Mobile Communications The main technology used by the European systems, it is used by only a small percentage of wireless carriers in the United States.

GPS Refer to **Global Positioning System**.

GSM Refer to **Global System for Mobile Communications**.

Handset Any handheld device used to transmit and receive calls from a wireless system. Also known as a wireless phone, a cellular phone, a mobile phone, or a PCS phone.

Hands-Free A feature for mobile phones that allows drivers to use their car phone without lifting or holding the handset to their ears. An important safety feature.

Hands-Free Speakerphone A feature of some wireless phones that allows users to talk and listen to calls without holding the phone against their heads.

Handheld Device Markup Language A language used to create Web sites accessible to wireless devices.

Hand-Off The process where a wireless call is moved from one tower to another while the user is traveling from place to place.

HDML Refer to **Handheld Device Markup Language**.

Hertz A measurement of electromagnetic energy, equivalent to one “wave” or cycle per second.

Home Coverage Area The part of the wireless carrier’s coverage area where the rates are lowest, with no long distance or roaming fees.

Hz Refer to **Hertz**.

iDEN Refer to **Integrated Digital Enhanced Network**.

Incremental Charge The method of rounding used by wireless carriers to compute your bill. Carriers usually round your airtime up to the next full minute, although

some providers round to the closest six seconds or one second.

Integrated Digital Enhanced Network A Motorola Inc. enhanced specialized mobile radio network technology that combines two-way radio, telephone, text messaging, and data transmission into one network.

Integrated Services Digital Network An advanced, high-capacity wireline technology used for high-speed data transfer.

ISDN Refer to **Integrated Services Digital Networking**.

kbps Stands for kilobytes-per-second, and is used for measuring the speed at which data is transmitted.

Landline Traditional wired telephone service.

LCD Refer to **Liquid Crystal Display**.

LEO Refer to **Low-Earth Orbit**.

Liquid Crystal Display A flat-panel screen used to display numbers and/or characters. Often found on a wireless handset.

LNP Refer to **Local Number Portability**.

Low-Earth Orbit A mobile communications satellite between 700 and 2000 kilometers above the earth.

Local Number Portability The ability of subscribers to switch local or wireless carriers and still retain the same phone number, as they can now with long distance carriers. Wireless carriers were originally scheduled for LNP in 1999 but have successfully postponed this regulation as it will require them to spend millions of dollars for system upgrades.

Local Calling Area The region across which the call is truly local, involving no toll charges.

Memory Dialing A feature that allows you to store frequently called numbers and access them by dialing one number.

Message Alert A light or other indicator on a wireless phone that notifies a user that a call has come in. A useful feature especially if the wireless subscriber has voice mail.

Metropolitan Service Area An area defined by the U.S. government for use in grouping census data and other statistics. MSAs include a city of at least 50,000 people or an urbanized area of at least 100,000 people and the counties that include these areas. Not all areas of the United States are in an MSA. The FCC used these area definitions to license cellular telephone service carriers. There are 306 regions of the United States designated as MSAs.

MHz Megahertz, which equals 1 million cycles per second.

Micro-Browser Software loaded onto some wireless phones that is analogous to the Web browser you use to access the Internet from your home or work PC.

MIN Refer to **Mobile Identification Number**.

Mobile Identification Number The 10-digit phone number assigned to your cellular phone.

Monthly Access Charge The monthly fee you pay to have service from a wireless carrier.

MSA Refer to **Metropolitan Service Area**.

NAMPS Refer to **Narrowband Advanced Mobile Phone Service**.

Narrowband Advanced Mobile Phone Service Wireless technology that incorporates some digital technology to allow the system to carry about three times as many calls as the original version of AMPS.

Nationwide Long Distance Calling to anywhere in the United States from anywhere in the United States. An additional per-minute fee typically is charged.

NiCad Refer to **Nickel Cadmium Battery**.

Nickel Cadmium Battery The earliest form of rechargeable battery for wireless phones.

No Service Indicator A feature of wireless phones that tells the user that wireless service is unavailable in a particular location. Usually an LED on the handset.

Off-Peak Designated times when calling rates are low. These times are generally evenings and weekends.

Packet-Switched Data Wireless data transmitted over multiple channels, thereby not tying up a channel for the entire transmission.

Paging A feature of a wireless device that allows reception of a signal or alphanumeric message.

PCS Refer to **Personal Communication Services**.

PDA Refer to **Personal Digital Assistant**.

Personal Communications Services A two-way, 1900 MHz digital voice, messaging and data service designed as the second generation of cellular.

Personal Digital Assistant A portable computing device capable of transmitting data. These devices make possible services such as paging, data messaging, electronic mail, computing, facsimile, date book, and other information handling capabilities.

Peak Period(s) Any time of day, as determined by a wireless carrier, when there are high levels of communications traffic on the system.

Prepaid Cellular A system allowing subscribers to pay in advanced for wireless service. Prepaid is generally used for customers with little or no credit history, students, or those who want to adhere to a budget.

Radio Frequency The range within radio waves may be transmitted, from about 3 KHz to about 300,000 MHz.

RF Refer to **Radio Frequency**.

Roadside Assistance An added feature that gives you roadside emergency help.

Roaming Using your phone outside of your local service area. You usually are charged an additional per-minute fee for this service, and may also be charged an additional monthly roaming fee for the first use per month.

Roaming Indicator The symbol on your phone that indicates that you are outside of your home area.

Roamer Port A special port, or phone number, used in the early days of wireless that the user needed to dial into in order to use the wireless phone while traveling outside of their home area.

Service Area The geographic area served by a wireless system. Same as **Coverage Area**.

Service Charge The amount you pay each month to receive wireless service. This amount is fixed, and paid monthly regardless of how much or how little you use your wireless phone.

Service Plan Rate or calling plan provided by a wireless carrier. Calling rates, allotted minutes per month, and monthly fees vary by the service plan.

Service Provider Synonymous with **Wireless Carrier**. A company that supplies telecommunication services (examples include AT&T, Cingular, Sprint PCS, Verizon).

Short Message Service The ability to send and receive text messages on your wireless phone. Works much like e-mail with a limitation to the number of characters you can send and receive, usually 100 to 200 characters maximum.

Single Band Phone A wireless phone that operates on only one frequency, for example only analog or digital.

Single Mode A wireless phone that operates on only one frequency.

Slamming The unauthorized switching of a customer's phone service to another carrier.

Smart Phone A class of wireless phones typically used to describe handsets with many features and often a keyboard. What makes the phone “smart” is its ability to handle data, not only voice calls.

SMS Refer to **Short Message Service**.

Subscriber A cellular phone user.

Standby Time The amount of time you can leave your phone on before you will need to recharge your battery.

Talk Time The amount of time you can actually talk on your phone before you have to recharge your battery.

TDMA Refer to **Time Division Multiple Access**.

Termination Charges Fees that wireless telephone companies pay to complete calls on wireline phone networks, or vice versa.

Time Division Multiple Access A method of digital wireless communications transmission that allows a large number of users to access (in sequence) a single radio frequency channel without interference by allocating unique time slots to each user within each channel.

Toll Charges Charges for placing long distance calls.

Toll-Free Calling Area An area in which calls can be placed without incurring long distance charges.

Tri-Mode Phone Phones that work on three frequencies, typically using 1900 MHz, 800 MHz digital, or reverting to 800 MHz analog cellular when digital is not available. Also, these phones may have the ability to work on 900 MHz networks overseas.

Voice Activation A feature that allows a subscriber to dial a phone by spoken commands instead of pressing the number keys physically. The feature contributes to convenience as well as safe driving.

Voice Mail A system that answers phone calls and records incoming messages.

Voice Recognition The capability for cellular phones, PCs, and other communications devices to be activated or controlled by voice commands.

Voice-Activated Dialing A feature that allows users to speak words into a wireless phone to cause it to dial preprogrammed telephone numbers without using the buttons.

WAP Refer to **Wireless Application Protocol**.

WBMP Refer to **Wireless Bitmap Images**.

Wireless Using the radio-frequency spectrum for transmitting and receiving voice, data, and video signals for communications.

Wireless Application Protocol A universal standard created to allow access to the wireless Internet.

Wireless Bitmap Images The preferred file format for displaying images on wireless devices.

Wireless Carrier A company that provides wireless telecommunications services. Same as **Service Provider**.

Wireless Internet An RF-based service that provides access to Internet e-mail and/or the World Wide Web.

Wireless Internet Portal Web services that let users create a personal Wireless Internet experience.

Wireless Markup Language The language used to create Web sites accessible by wireless devices.

WML Refer to **Wireless Markup Language**.

WMLScript Web programming similar to JavaScript, which allows the wireless user to see certain Web content.

Appendix B

How to Use the GetConnected.com Web Site

Introduction

The GetConnected.com Web site was created to provide you with a wide choice of up-to-date plans that are available in your area for comparison and purchase. We have created a variety of online tools to help you determine which plan will work best for you. It's like running around all over town and asking all your friends what they do, but you can do it all in less than 30 minutes. Whether you are a first-time buyer, or just looking for a better deal, we can help you.

Home Page

When you go to www.GetConnected.com, you will see our home page (see Figure B.1). We sell a variety of telecommunication services, from wireless phones, to high-speed Internet, and long distance service. Click **Wireless**.

Figure B.1 The GetConnected.com Home Page

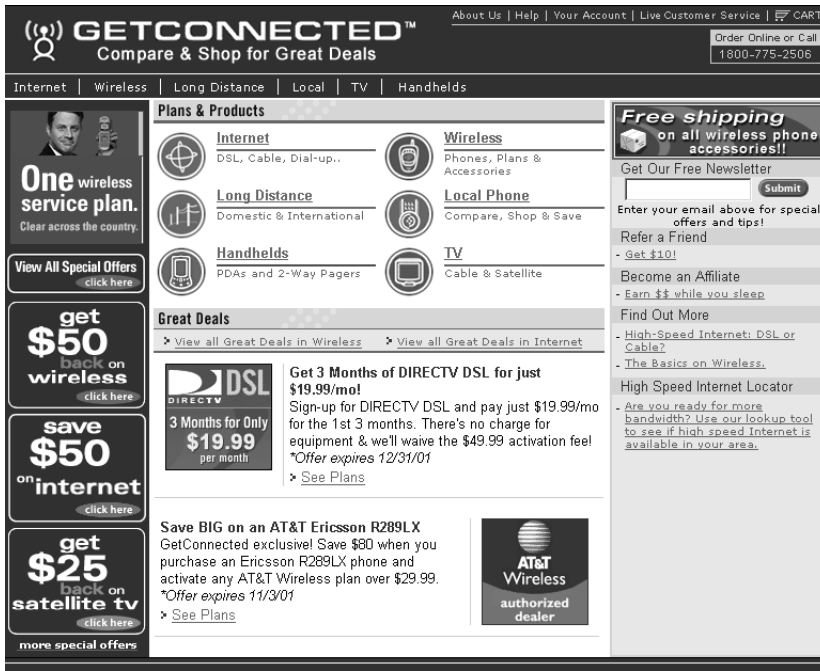


Figure B.2 Enter Your ZIP Code

The screenshot shows the GetConnected.com website interface. At the top, there is a navigation bar with links for "About Us", "Help", "Your Account", "Live Customer Service", and "CART". The main header features the GetConnected logo and the tagline "Compare & Shop for Great Deals". Below the header, there is a secondary navigation bar with categories: "Internet", "Wireless", "Long Distance", "Local", "TV", and "Handhelds". The main content area is titled "Start By Telling Us Where You Are" and prompts the user to "Enter your zip code so we can show you the plans, products and promotions currently available in your area." There is a form field for "Enter Zip Code:" with the value "02144" and a "Go" button. Below this, there is an "OR..." section with instructions: "If you do not know your zip code, select the closest city and state below so we can show you general plan, product and promotion information in your area." This section includes dropdown menus for "State:" and "City:", both set to "Please Select", and a "Go" button. At the bottom of the page, there is a footer with various links including "About Us", "Help", "Your Account", "Affiliate Program", "Customer Service", "Your Shopping Cart", "Home", "Internet", "Wireless", "Long Distance", "Local", "TV", "Handhelds", "Wireless Handhelds", "Wireless Phones", "Wireless Accessories", and "Satellite Dishes". Copyright information for 1999-2001 GetConnected, Inc. is also present, along with links for "Disclaimer", "Privacy Policy", and "Security Policy".

Enter the **ZIP code** for the place you will be activating service (see Figure B.2). For most people this is your home ZIP code. For some, it may be your work ZIP code. If you are moving and don't know your ZIP code yet, you can choose a city and a state and see the plans that are available in the city.

WHY DO YOU NEED MY ZIP CODE?

Wireless services are available only in certain areas. The plans that you can buy are different if you live in California than if you live in Florida. When you enter your ZIP code, we search through all of the plans and show you only the ones that will work where you live.

Wireless Home Page

After entering your ZIP code, you will see all of the options available to you (see Figure B.3). Feel free to browse around. Everyone has dif-

Figure B.3 Shopping Options for Purchasing Wireless

The screenshot displays the GetConnected.com website interface for wireless shopping. At the top, the site logo and navigation links (About Us, Help, Your Account, Live Customer Service, CART) are visible. A search bar contains the text "Order Online or Call 1800-775-2506". Below the navigation bar, the main content area is titled "Home : Wireless : Start Shopping" and shows the location "Somerville, MA".

The "Wireless Shopping" section is divided into two columns: "Browse" and "Shopping Tools".

- Browse:**
 - > By Plans
 - > By Phones
 - > By Accessories
 - > By Promotions
- Shopping Tools:**
 - > Shop by Lifestyle
 - > Wizard
 - > Bill Calculator

Below these columns is a "Great Deals" section featuring three promotional offers:

- \$50 GetConnected Wireless Rebate:** \$50 BACK on wireless service - a GetConnected exclusive. This is a savings in addition to special offers from service providers like AT&T and Sprint! [More Details](#)
- Save BIG on an AT&T Ericsson R289LX:** GetConnected exclusive! Save \$80 when you purchase an Ericsson R289LX phone and activate any AT&T Wireless plan over \$29.99. *Offer expires 11/3/01 [> See Plans](#)
- Unlimited night & weekend minutes from Cingular:** FREE unlimited night and weekend minutes on Cingular Home plans \$29.99 or higher. *Offer expires 10/31/01 [> See Plans](#)

At the bottom of the Great Deals section is another offer:

- 2500 minutes for \$39.99 from Sprint PCS:** Get 350 anytime and 2150 night & weekend minutes, including long distance, for just \$39.99 a month with a 1-year Sprint PCS Advantage Agreement. *Offer expires 11/3/01 [> See Plans](#)

On the right side of the page, there are two promotional boxes:

- Preferred Partner:** AT&T Wireless authorized dealer. Shop the AT&T Wireless Store. Sprint PCS authorized dealer. Shop the Sprint PCS Store.
- Sign Up For Savings:** Get email updates on special deals and hot new products. Includes a form for "Your email" and a "Subscribe" button.

On the left side, there is a vertical navigation menu with sections for "Shopping" (By Plans, By Phones, By Accessories, By Promotions, Lifestyles, Wizard, Bill Calculator) and "Resources" (Glossary, Help: Wireless, Refer a Friend, Get \$10).

ferent shopping styles. We recommend selecting your plan, your phone, and any accessories you might need. Although we detail this shopping process for you, you could choose to start with a phone or a Great Deal! We will also provide some helpful hints on the tools that can help you make a decision.

Haven't Decided Which Plan Is for You? Start Here!

GetConnected.com offers a variety of tools to assist you in selecting the services and phones that are right for you. These tools can help you find exactly what you're looking for online if you haven't already decided.

- **Lifestyles** If you have only a general idea of how you would use your cellular phone, this will be the most helpful tool for you. Based on the lifestyle you select, the plans you see will be narrowed down to the ones that are in that usage range.
- **Wizard** This tool is best if you have a good idea of how you will use your phone (maybe you've had one before), or if there are features you know you need. The more information you provide, the more specific the plans you see will be. If you want to see more plans, back up and deselect information and watch your choices grow.
- **Bill Calculator** Do you happen to have your bill with you? Want to make a best guess? Enter your peak minutes, off-peak minutes, long distance minutes, and roaming minutes and the calculator will show you which plan is the most cost effective for you. The result set you see will list all of the plans, with your calculated monthly bill estimate, sorted by least to most expensive.

Picking a Plan

Click **By Plans** and you will see a complete list of all of the plans available in your ZIP code. This list could contain between 20 and 100 different plans, showing each of the wireless carrier's local, regional, and national plan offerings. It may seem overwhelming, but we have built some features to help you trim the list down quickly to just your range. Then you can compare the details, pick the best plan, and be on your way to choosing a phone.

NOTE

Some wireless carriers that you know in your area might not show up in the listing. This may be because they have been unable to provide us with accurate information.

Browsing by Plans

Thanks to the highly competitive market place that wireless carriers share, you have many different features on which to base your decision.

Figure B.4 Shopping by Rate Plans

The screenshot shows the GetConnected.com website interface. At the top, there's a navigation bar with "GETCONNECTED™ Compare & Shop for Great Deals" and a "CART" icon. Below that, there are tabs for "Internet", "Wireless", "Long Distance", "Local", "TV", and "Handhelds". The main content area is titled "Home : Wireless : View All Plans" for "Somerville, MA". It features a "Filter View" button and a "Compare" button with the text "up to 5 plans side-by-side in detail!". Below this is a table of wireless plans with columns for Provider, Plan, Promo, Monthly Fee, Minutes, Long Distance, See Phones, and How to Buy. The table lists several plans from Sprint and AT&T Wireless, including details like "2500 Minutes/Free Long Distance Promo", "Total Digital 2500", "Regional Advantage \$129.99", "Free & Clear Most Minutes 200", and "Free & Clear Long Distance 2000". Each row has an "Add to Cart" button and a "Details" link.

Provider	Plan	Promo	Monthly Fee	Minutes	Long Distance	See Phones	How to Buy
Sprint	2500 Minutes/Free Long Distance Promo	Ⓢ	\$39.99	2500	Included	Phones	Add to Cart Details
Sprint	Total Digital 2500	Ⓢ	\$59.99	2500	Included	Phones	Add to Cart Details
AT&T Wireless	Regional Advantage \$129.99	Ⓢ	\$199.99	2500	Included	Phones	Add to Cart Details
Sprint	Free & Clear Most Minutes 200	Ⓢ	\$34.99	2000	\$0.20/min	Phones	Add to Cart Details
Sprint	Free & Clear Long Distance 2000	Ⓢ	\$49.99	2000	Included	Phones	Add to Cart Details
AT&T Wireless	Digital Advantage \$149.99	Ⓢ	\$149.99	2000	\$0.15/min	Phones	Add to Cart Details

You can choose by monthly fee, or number of minutes, or wireless carrier brand name. The tools on this page are designed to help you select a plan based on the factors that are most important to you (see Figure B.4).

- Sort Buttons** Click any of the **sort** buttons to sort the plans by the information in that column.
- Filters** By selecting options within these filters, you can narrow down the plans to just what you want to see.
- Compare** See a few plans that look good, but you can't quite tell why they are different? Check the box next to the plan (up to five plans), then click the **Compare** button at the top of that column. You will be shown the detail level information for those plans, side-by-side, so you can pick the best plan for you.
- Detailed Information** To view additional information on any plan, click either the plan name or the **Details** link.
- Promotional Information** Click the **promo icon** to see all of the promotions available with that plan.
- Phones** Want to quickly see which phones are available with which plans? Click the **Phones** link and you will see all of the phone choices available with that plan.

When you find the plan that is right for you, click **Add to Cart** and you will be moved seamlessly on to the next step—choosing a phone.

Picking a Phone

Once you click **Add to Cart**, you will see all the phones available with that plan. Be aware that if you chose a plan because of its advanced features, you will want to make sure the phone you are selecting also has that physical capability. If you are intimidated by the price of the phone, keep in mind that rebates or other promotional offers can significantly reduce the cost to you.

Although the number of phones from which you can select is much smaller than the number of plans you sorted through, it can be equally intimidating if you aren't exactly sure what you want. As in the preceding section, "Browsing by Plans," we have built in some tools to help you narrow down your choices. All of the filter, sort, compare, and detail tools are available in this section as well.

When you see the phone you like, click **Select a Phone** and you will be shown more features of that phone. Click **Add to Cart** and you will be moved on to the next step—selecting accessories.

HELPFUL HINT

Most wireless carriers offer the same set of phones with all of their plans, with the exception of some of the newest phones. If the kind of phone you get is more important to you than the plan you choose, then you may want to start by picking a phone and then choosing between the plans that are compatible with it. www.GetConnected.com helps you shop this way, too!

Browsing by Phones

If only a certain phone will do, choose the **By Phones** selection from the left navigation bar or from the Wireless home page. This page shows you all of the phones available to you in your ZIP code, from all of the wireless carriers (see Figure B.5).

In the **3 Ways to Shop** box, you can either see all the phones in your area or quickly drill down to your top priority. Whether it is Nokia all the way or the smallest phone ever, these links will take you to a list of phones (with pictures) where you have tools to help you

Figure B.5 Browsing by Phones

GETCONNECTED™
Compare & Shop for Great Deals

Order Online or Call
1.800.775.2506

Internet | Wireless | Long Distance | Local | TV | Handhelds

Home : **Wireless Phones** : Home Somerville, MA

Wireless Phones

3 Ways to Shop

- By Phone**
 - View all phones in your area
- By Manufacturer**
 - Audiovox
 - Ericsson
 - Kvocera
 - LG
 - Mitsubishi
 - Motorola
 - Nokia
 - Panasonic
 - Samsung
 - Sprint
- By Features**
 - Low Cost (under \$100)
 - Compact Size (under 4 oz.)
 - Web Enabled
 - Internationally Compatible

Featured Products

Samsung N200 (Sprint PCS)

Stay connected with the sleek new Samsung N200 flip-up phone. Web access, organizer tools and toggle-key make the N200 ideal for people on the go.

Price with Plan and Rebate: \$79.99

[More Info](#)



Nokia 5165 (AT&T)

A standard in the wireless industry, the Nokia 5165 phone delivers functionality, high style and superior performance, with hundreds of compatible accessories and the ability to customize faceplates and ring tones.

Price with Plan and Rebate: Free

[More Info](#)



Top Sellers in Your Area!

-  Ericsson R289LX (AT&T) - \$99.99
-  Nokia 3360 (AT&T) - \$129.99
-  Nokia 8260 (AT&T) - \$199.99
-  Samsung N200 (Sprint PCS) - \$179.99
-  Nokia 5185i (Verizon) - \$49.99

Great Deals!

Save BIG on an AT&T Ericsson R289LX

GetConnected exclusive! Save \$80 when you purchase an Ericsson R289LX phone and activate any AT&T Wireless plan over \$29.99.

**Offer expires 11/3/01*

[See Plans](#)

[About Us](#) | [Help](#) | [Your Account](#) | [Affiliate Program](#) | [Customer Service](#) | [Your Shopping Cart](#)
[Home](#) | [Internet](#) | [Wireless](#) | [Long Distance](#) | [Local](#) | [TV](#) | [Handhelds](#)
[Wireless Handhelds](#) | [Wireless Phones](#) | [Wireless Accessories](#) | [Satellite Dishes](#)

decide. These tools are the filter, sort, compare, and detail tools described earlier.

In the **Top Sellers** box, we show you the top-selling phones for your area, so you know what everyone else is buying. In the **Featured Products** box, we always show you the phones that our in-house experts think are a great value for the price. Click the **picture** to go straight to the detail page for that phone, where you can get more information.

Choosing Accessories

All of the accessories that you will be shown are compatible with the phone that you have selected. If you are interested in customizing your phone so that you can rapidly charge the battery or change the face-

Figure B.6 The Accessories Page

GETCONNECTED™
Compare & Shop for Great Deals

Order Online or Call
1.800.775.2506

Internet | Wireless | Long Distance | Local | TV | Handhelds

Home: **Wireless Accessories** | View Wireless Accessories | Somerville, MA

Wireless Accessories

2 Ways to Shop for Accessories

Shop by Phone

Select the manufacturer and model of your phone to see compatible accessories.

Manufacturer Name Model Name

Shop by Category

- Batteries
- Car Kits
- Cases
- Chargers
- Clips/Holsters
- Faceplates
- Hands Free Kits
- View All Accessories

Featured Products



Jabra EarSet for Samsung Phones
The Jabra EarSet is the only all-in-the-ear speaker and microphone that lets you keep both hands free to drive, write, type and talk on your wireless phone.
Price: \$29.99
[More Info](#) [View All Hands Free Kits](#)



Nokia Lighter Charger
Lightweight and convenient, the Nokia lighter charger allows you to rapid charge and use your phone while in your car.
Price: \$20.99
[More Info](#) [View All Chargers](#)

Top Selling Accessories

-  Nokia 5100/6100/7100 Journey Pack - \$39.99
-  Motorola Lighter Charger - \$19.99
-  Jabra EarSet for Nokia 8200/8800 Phones - \$29.99
-  Samsung Lighter Charger - \$29.99
-  Kyocera 8200/8800 Headset - \$19.99

Change Location

Shopping

- By Plans
- By Phones
- By Accessories
- By Promotions
- Lifestyles
- Wizard
- Bill Calculator

Resources

- Glossary
- Help: Wireless
- Refer a Friend, Get \$10

plate covers, select your accessories here. Click **Add Accessories to Cart**, and anything you have selected will be placed in your cart with your plan and phone.

If you are interested in buying accessories for gifts, you can also buy a phone accessory by itself. Choose the **By Accessories** selection from the left navigation bar or from the Wireless home page (see Figure B.6). As in the section, “Browsing by Phones,” these links will take you to a list of accessories (with pictures) where you have tools to help you decide. These tools are the filter, sort, compare and detail tools described earlier.

In the **Top Sellers** box, we show you the top-selling accessories, so you know what’s popular. In the **Featured Products** box, we display a variety of accessories. Click the **picture** to go straight to the detail page for that phone, where you can get more information. At any point that you find what you are looking for, click **Add Accessories to Cart** and anything you have selected will be placed in your cart.

Your Shopping Cart

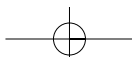
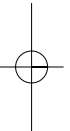
Now you will see a preview of your selected plan, phone, and accessories. You will also see a summary of the promotions available with the items in your cart. These promotions will include promotions available through your wireless carrier and exclusively through your retailer (GetConnected, Inc.). Click **Checkout** and you will be guided through the ordering process.

Ordering at GetConnected, Inc.

Ordering on www.GetConnected.com is easy and secure! All you have to do is complete these few short steps:

1. Begin **Secure Check Out** link.
2. **Your Order Information** Collects the general information about you, such as your name and contact information.
3. **Order Form** Collects specific information that the wireless carrier needs to know about the plan you have selected. This page is where you get to choose your contract lengths and other service options like voice mail.
4. **Shipping Options** If you have selected accessories, you will be asked to choose your preferred shipping method.
5. **Place Your Order Final Confirmation** If your credit card information is required for a credit check or for charges, you will enter that information here. This page also confirms your purchases, your totals, and your promotions. You must click **Place Order** to complete your order.
6. **Order Confirmation** This page has your order number, a summary of your selections, and how you can contact us for additional assistance, if needed.

After you have completed your order, you will receive an e-mail right away that contains your GetConnected, Inc. order number, a summary of your selections, and some specific information on what to expect from the wireless carrier you have selected.



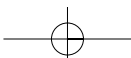
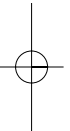
WHAT IF I DON'T LIKE TO ORDER ONLINE?

Call 1-800-775-2506 and our Customer Care Team will complete your order with you. Although our ordering process is completely secure, we understand if you prefer not to put your personal information online.

Checklist

For the quickest way to order a phone, follow these steps:

1. Go to **www.GetConnected.com**.
2. Click **Wireless**.
3. Enter your **ZIP code**.
4. Choose **By Plan**.
5. Pick a plan.
6. Click **Add to Cart**.
7. Pick a phone.
8. Click **Select Phone**.
9. Click **Add to Cart**.
10. Pick accessories for your phone.
11. Click **Add Accessories to Cart**.
12. Review your order selections and click **Checkout**.
13. Click **Begin Secure Checkout**.
14. Fill in your **order information** and click **Continue**.
15. Fill in your **service options** and click **Continue**.
16. Review your order selections for final confirmation and click **Place Order**.
17. Get your brand new phone!



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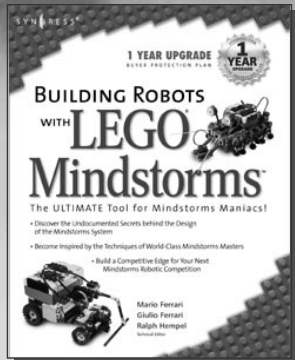
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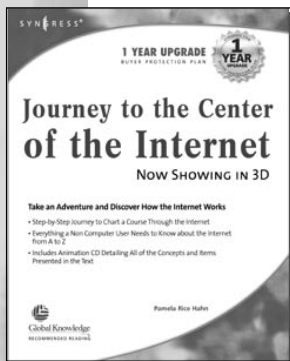
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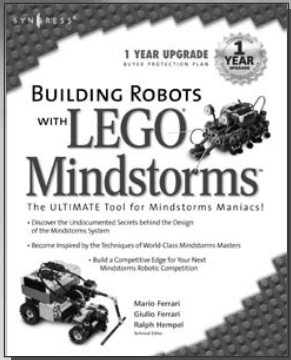
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