Chapter 1

A Buyer's Scoop on Telecom

In This Chapter

- Getting a general understanding of telecom
- Checking out the players
- Planning and implementing effective telecom systems
- Making major telecom decisions
- Finding people to help you make the right choices
- Setting up for future expansion
- Troubleshooting your telecom system

Every business in the world either uses or could benefit from using phone service. Even if your business deals directly with the public, you still need to call your manufacturer for updates on shipments, check on the ads you have going out, and make sure your accountant has all of your financial information. As your business grows, so does your need for phone lines, not just to enable you to speak to your customers and suppliers, but also to transmit data between offices, and possibly even maintain a Web site to receive and track orders.

Growth in business is great, but you may easily find yourself overwhelmed by the logistics involved in all the changes. The phone system you had 2 years ago may have been perfect for you at the time, but today you have 20 new employees in house, 5 new outside sales reps, and the Web site for Internet orders is being released next week. If that is the case, you have probably outgrown your old telephone system. The important thing to know is how to gauge the technology you have, where you are going, and what technology you need to get there. In this chapter, I help you figure out what you're dealing with and get you started on your quest to improve your telecommunication, or *telecom* system.

Assessing Your Telecom Services As They Are Now

At the most basic level, *telecom* refers to any service that is provided over phone lines. Included in this definition are

- Internet connections over *dedicated circuits* or dial-up modems
- Regular phone lines used to place and receive calls to your mom
- *High-speed data links* used for transmitting information

When you boil things down, all phone service can be reduced to the same basic principles of transmitting and receiving signals over fiberoptic or copper wire.

For example, if a backhoe cuts through a fiberoptic cable that supplies your Internet connection, along with the service from your local carrier, your only connection to the outside world becomes your mobile phone. If your mobile phone provider also uses that link to complete calls, you still may not have a connection to the outside world. With the increase in *redundancy* being built into the local and long-distance networks, you shouldn't have an outage that completely shuts down your service. If you have a good telecom system, when (not if) a breakdown in the network occurs, stopping calls from passing through the east side of town, your system can automatically route calls to an alternative network on the west side.

Many companies rely heavily upon their phone service, and any outage, no matter how small, has a large impact. Sometimes the problem is an act of God, (say your carrier's switch is struck by a bolt of lightening, reducing it to a smoldering brick of silicon and steel valuable only as a piece of modern art). Other issues may be the result of bottlenecks in your own phone system, or just a need for more phone lines. The first step to taking care of these issues is to assess the phone service you need right now.

Identifying Your Carriers

A telecom *carrier* is an entity that provides and bills for phone service. It would be convenient if I could classify a carrier based on the fact that it owns a large fiberoptic network and multimillion-dollar phone switches, but not all of them do. Some carriers own no hardware and simply contract with other companies that have sophisticated hardware networks.

Actually, all carriers have contracts with other carriers to sublet space on their networks. Subletting enables them to build more redundancy into their systems (which is good thing for customers). In some areas, subcontracting also helps carriers get substantial price breaks when they try to negotiate new contracts to gain entrance into a specific market.

In fact, the best way to understand carriers is based on their functions. Carriers treat local networks, long-distance networks, mobile networks, and more.

Looking locally

Local carriers provide local service. If you call from your office to the building next door, your local carrier receives the call and completes it to the other building. In addition to providing local calling services, local carriers also provide you with dial tone on your residential or simple business phone lines, assign your phone number, provide 911 (emergency service), 411 (information), toll-free service and a host of other features like call waiting, caller ID, and sometimes even voicemail. One of the most important functions of the local carrier is to identify every call you make as being local, long distance, or toll free, and then to route it to the appropriate carrier to complete.

The industry refers to local carriers primarily as *local exchange carriers* (LECs). When you think of LECs, names like Bell Atlantic, Bell South, Ameritech, or Verizon come to mind. These are all companies that were lucky enough to be given the limited monopoly to provide local service to a specific geographic area. America was carved up based on local population statistics and state borders when the Ma Bell monopoly got broken up in the 1980s.

LECs are also known by other names. The LECs that were part of the initial monopolies given by the U.S. government and generally have the word *Bell* in their names are sometimes grouped as *RBOCs* (pronounced *ahrr-boks*). An RBOC is a *Regional Bell Operating Company.* At times, RBOCs are also referred to as *ILECs* (pronounced *eye-leks*). The ILEC designation identifies a carrier as being the senior LEC in the area, specifically, the *incumbent local exchange carrier.* Throughout this book, I avoid using too much jargon by simply referring to the carrier that supplies your local telecom service as your local carrier.

Introducing competing local exchange carriers

A *competing local exchange carrier* (CLEC) does the same work as other local carriers. The special name simply signifies that these carriers arrived on the scene later than the baby Bells referred to in the previous section, "Looking locally."

Understanding how CLECs got a piece of the pie

There were two basic ways the CLECs gained the ability to provide local service to their customers. They either spent millions of dollars on cabling and hardware to replace the networks of the ILECS or they contracted with the ILECs to resell ILEC services at discounted rates. Companies like ICG Communications and XO Communications spent millions of dollars building their infrastructures and securing contracts in the local area to allow them to compete with the ILECs.

All this work was done in an attempt to gain access to the businesses and residences in the CLEC's target market. The advent of functional Voice over IP (VoIP) enables CLECs to use the existing copper wires that connect networks to the Internet so that they can also carry phone calls. Making phone calls online greatly increases the number of potential customers for the CLECs and reduces the overhead required to connect to them. I discuss VoIP in Chapter 15.

Any company that can assign you a phone number, but was not given the monopoly for the area by the government, is technically a CLEC. This category includes wireless providers, *VoIP (Voice over IP)* providers, and the true CLECs whose sole goal, in the spirit of free-market economics, is to compete with (and eventually replace) the Verizons and Ameritechs of America.

Going for long distance

Long-distance carriers receive and complete calls that terminate outside of the U.S., across a state border, or across a geographically defined border within the state called a LATA *(Local Access Transport Area)*. Long-distance functions were specifically denied to the local carriers during deregulation and spawned the growth of the long-distance industry.

You can break long-distance carriers into two categories:

- **Facilities-based long-distance carriers:** The first companies that come to mind when you think of long-distance carriers are AT&T, Sprint, and MCI. These are companies that own huge telecom networks, million-dollar telephony routing switches, and enough cabling to tie us to the moon ten times. All the equipment and stuff — the hardware and cabling — that these companies own establish these carriers as facilities-based providers. Generally, only large companies worth hundreds of millions of dollars fall into this category, but ever since the long-distance industry was born, the number of facilities-based long-distance carriers has been growing.
- **Switchless resellers:** Along with the AT&Ts and MCIs of the U.S. came a new breed of long-distance carrier. These companies don't own any

hardware or network facilities, but simply resell existing services from the larger facilities-based carriers like Sprint or Qwest. So-called *switchless resellers* sign contracts with large carriers for a specific per-minute rate and then resell the service to companies and residences for a profit.

Generally, switchless resellers are much smaller companies and fit a niche market of customers who want to mix the personal service typically available from a smaller company with the stability and network functions that only a large company can provide. In return for an inexpensive per-minute rate from the carrier, the switchless reseller takes over the job of providing all customer service functions and billing services to customers. Switchless resellers can be your business's best friend, *and* save you quite a bit of money; or they can be a nightmare and cost you a lot. If you're considering using a switchless reseller, you should research the company and its management team. Ask for some references before you jump into a contract with any switchless reseller.

Working with wireless providers

Wireless communication is a method of transporting a call more than it is a standard division of labor within the telecom world. The wireless industry was born after the telecom industry was deregulated and as a result, the industry enjoys all the benefits of the breakup. The wireless companies function just as CLECs do, but can also provide long-distance service.

Wireless providers have the benefit of much lower start-up costs than other telecom providers, because they simply install hardware to transmit and receive wireless calls where the hardware is needed instead of digging up endless miles of roads to lay down new cabling. Today, technology has evolved to the point that you can send and receive e-mail and text messages, surf the Internet, and download video — all with your wireless phone. This is the one part of telecom that enables you to have it all in one device.

Knowing Why Your Company Needs Telecom

The first question you need to ask yourself is, "What do I want telecom to do for me?" The answer to this question depends on several factors, including the following:

- Your industry
- The type of business you have
- The size of your business

If your business is in the car rental industry and all of your competitors have toll-free numbers, then you probably need to keep up with the Joneses. If your business deals only with exotic car rentals, a toll-free number may not be mandatory, but a Web site displaying the Porsches and Ferraris may be a must. A national car rental chain may need an extensive data network to keep everyone informed about which cars are available at all locations. Take a moment to look at your company and your competitors to find out where you want to be in your industry. The services you and your customers demand will fall into five categories:

- **Voice service:** This is standard phone service that you have been using since the first time you called your Grandma to thank her for a birthday present. You need voice service (and you probably already have it), so a bigger question is whether most of your calls are outbound, inbound, or a relatively even combination of outbound and inbound calls. If most of your calls are outbound, and you only receive a few inbound calls a week, then standard voice service may be all your business needs.
- **Toll-free service:** A *toll-free number* is a special number that enables calls to come in from anywhere without the caller incurring a charge. The called party pays all the charges for the call. How much the called party pays for a call depends on the arrangements made with the long-distance carrier. If you look at all of your voice calls and find that the majority of them are inbound from customers, you could probably benefit from toll-free service. For many companies, not having a toll-free number is disastrous. If your car breaks down and you have to call for assistance from a pay phone, would you rather pay 50 cents to contact the answering machine of a tow truck or taxi company, or would you rather call for free? If you're on hold for a couple of minutes on a toll-free call, at least you're not paying for it. Toll-free service is more complex than regular outbound service, and is covered in detail in Chapter 5.

  People prefer to dial 800 numbers when they are going to order something, be it Diamonique jewelry or towing service. If you have to pay $75 to tow your car (and goodness knows how much to repair it), at least you can rest easy knowing that your phone call to the towing agency is the only part of the experience that doesn't cost a thing.
- **Data services:** The term *data services* usually refers to non-voice communications such as e-mail, text messaging, and fax services that are transmitted over a private network. In every company, information needs to travel from one side of the office to another side of the office. The sales team closes the order and relays it to the order-entry department. The order-entry department logs the order and sends it to the manufacturing department; the manufacturing department builds and tracks the order; and the shipping department sends the order to the customer. For smaller companies, all these steps may be taken care of

with an Excel spreadsheet or an industry-specific software package. As your company grows, however, more people in more offices need the same information, and the physical location of the offices is farther and farther apart. Last year, your business's second location may have been across the hall in the same building, but today you could have a London office that generates information that comes to you in Los Angeles before you send it off to your Tokyo division. Data transmission can be done in many ways, and your decision will be based on the physical location of your offices, the frequency of data transmissions, and the amount of data being transmitted. The up-and-coming data service technologies, as well as the old standbys, are covered in greater detail in Chapter 14.

- **Internet Service:** Every office needs a connection to the Internet, if for no other reason than to enable employees to send and receive e-mail and while away the hours Googling their names. Many companies use the Internet to research their competitors, or they may use the Internet to visit suppliers' Web sites to place orders, review shipments, and request services. I can safely say that this portion of your telecom needs will not decrease in the future — it will increase incrementally. Many companies integrate the private networks transmitting their data services and their need to access the Internet on the public network.
- **Wireless service:** Wireless service can encompass all the other categories in this list, but because wireless service is usually provided by a different company than the one that provides your land lines, you need to view it as a separate telecom service. If you have an external sales force or a 24-hour service department that makes house calls, wireless service is an essential part of your business.

Introducing Dedicated Long-Distance Circuits

There is one big hurdle in telecom, and after you jump this barrier you move from Junior Varsity to Varsity. That transition is the jump from regular phone lines (what the industry calls *switched* lines) for long-distance use to *dedicated long-distance circuits*.

You probably use regular *switched* phone lines at home every day. Many small businesses have them, and even large businesses have a handful of switched lines for backup purposes, to run security services, or to handle overflow phone calls. Switched lines are wonderful because you can do everything with them: You can call 411 or 911, dial a toll-free number, call your brother next door, or your aunt on vacation in Istanbul. What is even better is that other people can easily call you.

Getting dedicated locally

Dedicated circuits are classified by the carrier to which they terminate. A dedicated circuit that ends at your long-distance carrier is a *dedicated long-distance circuit.* A dedicated circuit that ends at your local carrier is a *dedicated local circuit.* Local circuits can be filled with phone numbers that act just like switched lines.

Those businesses with dedicated local services have several phone numbers for each local circuit, probably 24 (one for each usable channel). The only problem you may have with dedicated local circuits is that your long-distance carrier sees the outbound calls coming from your local circuit as originating from a phone number and not a circuit. Your dedicated long-distance rates are only applied on calls that originate on a dedicated long-distance circuit. Calls originating from a local circuit appear as coming from a regular switched phone line, and as a result, your long-distance carrier rates these calls at a higher switched rate. There are instances where the benefits of a local circuit outweigh the increased per-minute cost you will see from your long-distance carrier, but you should keep the financial consequences in mind when you decide to make the leap to a dedicated local circuit.

Dedicated long-distance circuits are good *only* for long-distance calls, whether they are to another state or another country. However, dedicated long-distance circuits do have some downsides. Several of the features that you take for granted are not provided on them. Services that are not available on dedicated long-distance circuits are:

- Access to 911 emergency service.
- Access to 411 information service.
- Access to 611 telephone repair service.
- The ability to dial toll-free numbers.
- The ability to dial long-distance bypass codes for your calls. These are the 10-10 codes you may have heard about on TV.
- The ability to receive calls by any means other than a toll-free number.

Actually, no dedicated circuit has a phone number naturally built into it. You can receive inbound calls on your dedicated circuit, but only with a toll-free number pointed to your circuit or special *Direct-Inward Dialing* (DID) service from a carrier. DIDs only allow you to receive calls, and act like toll-free numbers, sending calls into your dedicated circuit, but not being listed on your caller ID when you dial out from it. DIDs are generally only available on circuits set up by your local carrier, and not for long-distance circuits.

With all these limitations on long-distance circuits, you might wonder why anyone orders them. The reasons add up quickly in per-minute cost savings. Just as you get a better deal when you buy anything in bulk, you receive a better per-minute rate on a dedicated circuit.

If you're pushing enough long-distance minutes through your existing phone lines, you simply have to add up the numbers to see whether jumping to a dedicated circuit will benefit your business in the short and long term.

The leap from switched service to dedicated circuits is the only significant jump to be made in telecom. The industry recognizes two categories of pricing: one for switched phone lines and the second for service provided via dedicated circuits. Unless you elect to become a carrier and become eligible for *dedicated carrier pricing*, there isn't another plateau in the industry available capable of reducing your per-minute cost by 40 percent. The moment you install additional dedicated circuits you are not guaranteed a better rate, but you do have more leverage when you renegotiate your contract. The cost justification for dedicated service is covered in detail in Chapter 2 with some real-world numbers that can guide you to see if it is right for your business.

Finding People to Help You Make the Right Choices

The one thing I can guarantee about telecom is that it is always changing. The hot technology of today will be replaced by the hot technology of six months from now. Unless you work in the telecom industry, it is very difficult to keep up on the changes and figure out how your company can best use them. You need a support team. In telecom, just as in life, everyone is a potential source of information. Keep that in mind when it comes to your phone service. Some of the people to whom you have access could save you thousands or millions of dollars on your phone bill over the course of a year. The following sections point out the important people you need to know and trust if you want to use the best technology at the lowest rates.

Meeting the sales rep

Every carrier has a sales force whose members would love to meet you if they haven't already. The sales people come in two flavors, the *carrier sales rep,* and the *independent sales agent.* They are distinctly separate creatures and should be treated as such.

- **The carrier sales rep** works solely for, and is paid by, one carrier (whether a long-distance carrier, a local carrier, a wireless service provider, or another carrier). Whatever your application is, the rep finds some solution, based on the technology the carrier has available. Remember, this solution may not be the best solution for *you,* but it is the best solution the carrier can offer. For example, maybe you need a low-cost calling option for your sales force in Germany. Instead of offering you international toll-free numbers, the carrier sales rep may offer calling cards with international origination.
- **The independent sales agent** is generally a better person to chat with. She probably represents four or five different carriers, all with different strengths, weaknesses, and support levels. The best thing about an independent sales agent is that the agent doesn't have any allegiance to any one of the networks. The agent will sell you toll-free numbers from MCI just as quickly as she'll offer outbound dedicated circuits from Qwest and calling cards from Broadwing. The independent sales agent really doesn't care which options you choose, just as long as you're happy and you renew your contracts.

If you're not sure what you want to do, talk to your carrier sales rep first. This person is outstanding if you're fishing for new ideas. Start your conversation by asking the rep to go over your existing telecom services; then discuss what you want telecom to do for you. Ask what alternatives the carrier has for accomplishing those goals. I promise that if you present a salesperson with a telecom problem, he or she will come back with at least one solution, even if it's not the best one. If you don't have an existing long-distance carrier sales rep, you can have one assigned to you by calling the customer service department and asking to speak to someone.

Seeking out a hardware vendor

If you have anything more complicated than single-line local carrier services, you need a hardware vendor. If you have a phone system, you may already have a hardware vendor that you call when you need service.

The technician that actually services your hardware probably loves all things complex and convoluted. Reps and techies for hardware vendors are outstanding individuals to chat with when you are about to make any change to your phone service. Your vendor rep or technician probably knows the latest technology on the market and would love to tell you about it — you may even get more information than you ever asked for or wanted. The best thing is that your hardware vendor already knows what kind of phone system you have — and whether the latest gadget can actually be installed with it.

It is wonderful that VoIP is the darling of the telecom world today, but if you have to completely rip out $35,000 in phones and equipment and shell out $100,000 for new hardware, this technology may not be such a great deal after all. Your hardware vendor can alert you of this fact immediately.

Begin your quest for new and better solutions with a carrier sales rep or independent sales agent, and then circle back to your hardware vendor to confirm that your plans won't require a complete overhaul of your existing system. If you don't have a vendor, check out the following sections, "Finding a hardware vendor from your sales agent" and "Finding a hardware vendor from the manufacturer."

Finding a hardware vendor from your sales agent

If you inherited your phone system, you may not know where it was purchased. Likewise, if you don't have any phone system to speak of, you need to find a vendor on your own.

You're better off finding a vendor today than waiting until your system goes down or you're ready for an upgrade. Finding a new vendor who can give you an accurate assessment of your current telecom system can take three months or more. Your sales agent is generally a good person to ask for references on hardware vendors. Over the course of a career in telecom, sales agents bump into good vendors and bad vendors. Your agent can happily refer you to a competent and professional company, often offering testimonials about how this or that person helped the agent or a colleague out of a tight spot.

Ask for at least two different companies, just so you have some options. Hardware vendors generally specialize on certain makes or models of specific phone systems, so your first question should be, "Which phone systems are your specialties?" If a vendor only handles Newbridge channel banks and you have an Avaya system, you need to keep searching. Honest vendors have no problem referring you to a business in the industry that specializes in the hardware you have.

Finding a hardware vendor from the manufacturer

If you strike out with your sales agent and their referrals (see "Finding a hardware vendor from your sales agent"), don't give up; contact the manufacturer of your hardware.

Not sure who made your hardware? Take a small walk to your phone closet. No idea where your phone closet is? Follow these steps to find out more about your system and use the info to track down a vendor:

1. **Track all of your phone lines to the place in your office where they converge into one large plastic or metal box.**

That's your phone closet. On the outside of the box, you see a manufacturer name and model. For example, the outside of the box might say something like `ADTRAN TSU600` or `Newbridge 3624 Mainstreet`.

2. **Write down the names on all the boxes your phone lines go through before they leave the phone closet.**

   Be especially careful to note anything that has the words *MUX, multiplexer, PBX,* or *key system.* The more information you have the better.

3. **After you acquire information about the manufacturer, track down the companies on the Internet.**

   Somewhere on the manufacturer's Web site you will see a section for service. Many manufacturers even include vendor locators.

4. **Track down two or three of the nearest service companies and ask to conduct a phone interview.**

   You are looking for a rep that is professional, responsive, and knowledgeable. If you're not filled with confidence when you chat with a rep, you probably won't be filled with much confidence when you see the company's techs stumbling through your equipment.

When you've settled on a vendor, you need to have a rep come to your site to give your hardware a once-over. This meeting gets the vendor familiar with your system — and you familiar with the technicians.

Use this little meet and greet to have the talk about how your system is serving your company's needs. The manufacturer may have released a new card that gives your system twice its current capacity, three times the current number of features, and costs half what you would spend to repair the system in the event of its impending meltdown. You won't know this information until you ask — this is definitely a conversation worth having. See the next section, "Planning for Growth," for more information.

Planning for Growth

No company stands still. Your business is either expanding or (I hope not) contracting. If your company is bursting at the seams, you need to begin chatting with both your hardware vendor and your carrier sales agent today. To service the new employees, new departments, and changing requirements of the company, you may need to upgrade your phone system, add more phone lines, install dedicated circuits, or possibly start over with a brand-new phone system (if your current system has no room left for expansion).

When you're ready to make changes to your system, and after you've established a relationship with your carrier sales agent or independent sales rep, as well as with your hardware vendor, you need to bring everyone together at your office for a chat so that you can determine the best strategy for changing your phone service to respond to your business's growth.

Having a conversation with your hardware vendor is very simple. Your questions are:

- How many more telephones can I install on my system as it is right now?
- How many more lines can my system handle from the carrier as it is right now?
- If I buy additional cards for my current phone system, how many phones for employees can I add before I max out the system?
- How long does it take to receive and install the new cards?
- How much do cards cost to buy and install? Are there any other fees I should know about?
- What are my options when I have no more capacity on the existing phone system?

Getting answers to these questions gives you a sense for the system's current limitations, a rough timeline for adding capacity to your system, and the general cost for the various upgrade options.

On the carrier side, the questions are even fewer. If you are adding individual phone lines, you need to contact your local carrier to find out the installation and monthly cost to add lines, as well as the standard interval to have the lines brought to your phone room and installed. If you're adding dedicated service from your long-distance carrier, your questions are essentially the same. The basic information you need has to do with

- Timelines for installing new circuits.
- Charges, both *monthly recurring charges* (MRCs) and installation charges and other one-time costs (also known as *nonrecurring charges* — NRCs).

When you have all the information you need, you can plan accordingly so that expansion is methodical and planned, as opposed to being anxiety ridden and reactionary. The specific charges associated with dedicated circuits are covered in Chapter 2.

Troubleshooting All Things Telecom

There are three groups of telecom people you need to have on your speed dial *before* you have a crisis. These are the individuals who troubleshoot and repair your phone system problems when you cannot dial out, have static on the line, are dealing with echo (echo, echo), or any issue that prevents you from completing a call. Although I offer extensive troubleshooting information in this book that you can use to isolate problems, you still need the right company to correct problems. These are not DIY tasks. Be prepared to call the following individuals:

- **The customer care center for your long-distance carrier(s):** These people can help you troubleshoot and repair anything that is the responsibility of your long-distance carrier. Not every problem belongs to your long-distance carrier, but when you identify a long-distance telecom issue, you need to call the long-distance carrier. In the event of a serious problem, keep a full phone list that escalates all the way to the vice-president level. Nothing feels worse than having a contact number for the lowest end of the support spectrum, and no way to escalate.
- **The trouble reporting center for your local carrier:** Generally, you can reach this office by dialing 611 from your phone, but if your phone lines are completely out, you may have to use a cellphone. Unfortunately, dialing 611 from your cellphone won't do you any good at all. Instead, find the customer service number on an old phone bill or search the Web for the customer service number, and keep the number handy. As with your long-distance carrier, have an escalating list of phone numbers so that if you don't receive immediate resolution you can talk to someone with more authority.
- **The service number for your hardware vendor:** Keep the number of your hardware vendor close at hand. Sometimes phone issues are hardware related, and in those situations, your long-distance or local carrier can do nothing to resolve them.