

# INDUSTRIAL PROPERTIES



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## How to choose telecommunication equipment and services

*Everything you need to know about these daunting decisions, and then some*

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The selection and management of telecommunications systems is one of the most important, yet least commonly understood considerations in facility management, upgrade and relocation.

This article, in an effort to clear up some of that confusion will present an overview of the most common office telecommunication equipment systems and then outline what the systems do, how to choose them, when we can maintain them ourselves and when we should call for assistance from outside experts.

Additionally, we will examine some of the ways to choose from among the available services; that is, local, long distance, and broadband or high-speed coverage for data transmission and access to the Internet. Not all of the answers will be presented, but many of the important questions to ask will be.

### How did it get so complicated?

For many years in this country telephone service was a strictly regulated public utility. It was simple, easily understood and reliable. One call delivered the proven telephone instrument to the home or office,

along with a phone number, local and long distance access, pleasant knowledgeable and timely repair service, and one understandable monthly statement.

The Information Age has increased our ability to transmit more data and manage information better. Congress and the Federal Communications Commission (FCC) have developed laws and regulations that promote competition among vendors of service and equipment, with the objective of providing broader service options at lower costs to consumers. That has led to tremendous increases in productivity and consequently in the range of available equipment and services.

Today we have options in choosing the telephone equipment, often from five or more competing vendors, more if voicemail is included. Similarly we can look to more than one vendor to provide all of our transmission services, or we can select different vendors to provide local, inter-LATA (between local exchanges), long distance, and broadband services or combinations of services. Some vendors offer combined or "bundled" services. This is the environment we seek to understand and in which to make informed choices.



### Simplify the Process by Looking at the Pieces

Begin by examining your own needs. Choosing telecommunication systems and service can be thought of as an "Inside - Outside - Inside" process. Simply put, start by examining how your organization currently uses its communication system and what improvements and added capabilities might be helpful. Then seek outside advice from multiple vendors and/or consultants to understand the range of services and equipment options that address those needs and what new capabilities are offered. Finally, focus your new knowledge of options back inside the organization to select the combination that best meets your needs.

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## Equipment – Telephone and Voicemail Systems

Most basic office systems include a telephone system and a voicemail system. Sometimes a Local Exchange Carrier (LEC), like Ameritech/SBC in Chicago, can host those functions on the equipment in their central office through a system like Centrex, but most companies maintain purchased or leased telephone and voicemail systems in their own offices. The office telephone system is really a computer that routes the outgoing calls and manages the incoming calls over the available telephone lines or “trunks” that connect to the LECs central office.

A helpful and efficient feature is Direct Inward Dialing or DID. This feature allows more office telephones with direct numbers than there are incoming lines or trunks. This reduces switchboard traffic by automatically routing incoming calls to a person’s desk, while holding down the number of trunks the company has to pay for. The voicemail system also is a separate computer that can be programmed to operate with the telephone system, and in some cases can be part of the phone system itself.

Before selecting the telephone and voicemail systems, it is important to have thought about the internal needs of the organization: who should answer which incoming calls, how should they be handled or routed, and what happens to unanswered calls. Once these needs are specified, most systems can be programmed to handle them.

### Comparing and selecting systems

Two of the important criteria in comparing and selecting systems include the current and anticipated service features, and the cost of growing or “scaling” the system quoted.

It is important to understand the incremental cost of adding two, five, ten or more telephones. To add a limited number of phones the incremental cost often can be under \$500.00 per additional phone, but at some point it becomes necessary to purchase additional equipment or “cards” to enable the system to add more phones. These

cards, which usually handle four or eight phones, can cost several thousand dollars each. In comparing systems it is worthwhile knowing at what point additional cards or cabinets would be needed.

Another important consideration is deciding who will perform ongoing maintenance of the system as new employees are added, moved to a different desk or transferred to another location. Both the telephone and voicemail systems must be reprogrammed to

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follow the employee. If the vendor must be called for each change, significant ongoing costs can accumulate.

Usually an organization will assign a person as administrator to perform these functions. This person, and his or her later replacement, must be trained initially and given reference materials and ongoing phone support. This level of support should be specified in any proposal. Many vendors invite prospective purchasers to see the phone system in live operation in their sales office or in a customer’s office. This can be time extremely well spent and useful in the decision process.

### Transmission Services – Voice/Data

The other major election is the vendor and method of transmission for

voice and data traffic. You will be called upon to decide whether to use slower, but less expensive analog service (normal phone lines) or more expensive but much faster digital service. At this point you normally would be seeking guidance from a number of trusted vendors and/or an independent telecommunications consultant. If you already have spoken with an equipment vendor, they might have recommended a vendor for transmission services.

### Digital vs. Analog Transmissions

Before further discussing the transmission decision, it is useful to distinguish between the two types of transmission signals, analog and digital. Telephone equipment in customers’ offices and in the LECs central office send and receive sound waves over the wires in analog form. Picture them as waves you might see at the ocean, continuous and gently rippling with peaks and valleys. Computers on the other hand, send and receive data in digital form. This you might liken to watching a lighthouse on the beach at night. As the light turns in the distance, you see it as on then off, on then off, and so on. This is similar to a digital signal.

Analog receiving equipment cannot understand digital signals, nor can digital equipment decipher analog signals. When you use a computer to connect to the Internet over normal telephone lines, you need a device called a modem, which changes the computer’s digital signal to analog and sends it over the wire. At the destination another modem receives the analog signal and converts it back to digital so the computer it is connected to can understand the signal. This works, but at a much slower rate than purely digital signals. So it is possible to configure a system that connects the telephones directly to the regular phone lines and the computers to the same lines through modems. This is not a fast solution, but it is less expensive.

Another option, much more expensive, is to purchase the use of digital lines, which are very fast but expensive to use. The computers can be connected to the digital lines more or less

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directly, and the phones will need devices to convert their analog signals to digital for transmission. This conversion equipment, needed at both ends, also is expensive. This kind of system can send a high volume of data very fast but is expensive.

A third, middle of the road alternative is to configure a system that uses a combination of less expensive analog lines for the phone system and the more expensive digital lines for data transmissions. Often one vendor can provide this kind of "bundled" service, but it is equally likely

that more than one vendor could be used, especially where there is a cost saving. However, do not underesti-



mate the importance of having one responsible vendor when problems occur.

Again, it makes sense at this point in your decision process to consider the recommendations from multiple service vendors and/or from an independent telecommunications consultant. Seeking guidance and information from reliable and trusted vendors can be a very valuable and cost-effective in the decision making process.

*Some of the information contained in this article has been provided courtesy of the Midwest Industrial Relocation Association (MIRA) as a part of their Planning Guide for Facility Expansion and Relocation. MIRA is a not-for-profit association, whose members provide guidance and services for organizations expanding or relocating facilities to new locations.*

*More information about MIRA, its sessions and the Planning Guide is available by calling 800-741-8044 or by visiting them on the Internet at [www.miramoves.org](http://www.miramoves.org).*

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