

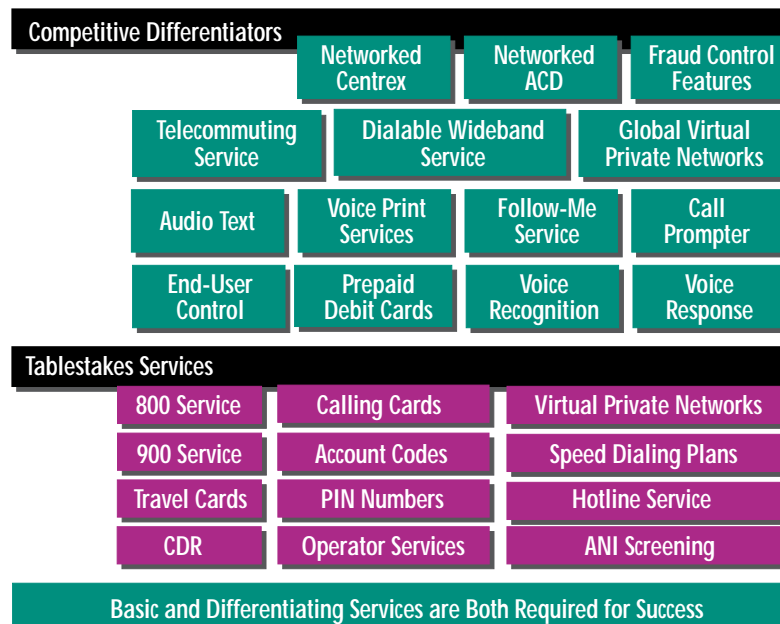
# 1

## *The Opportunity: Revenue-Producing Long Distance Services*

For new or established players alike, success in the long distance market is inevitably linked to the portfolio of service offerings. With a host of choices before them, subscribers are not likely to switch to a provider they perceive to have an inferior selection. And with a long distance provider already in hand, customers are not likely to go through the trouble of switching providers unless they can see a clear advantage to doing so.

Therefore, the first step in entering the long distance market is to move swiftly to provide service parity with the big players. At minimum, new entrants will be expected to offer reliable 1+ calling on a par with industry standards, outbound 1+ 800 number service, calling cards, and operator backing for all services. (Regional Bell Operating Companies have a special challenge in that FCC regulations may require that they deploy these services on an infrastructure separate from their local service.)

Competitive advantage, however, requires more than service parity. It will require strategic differentiators, such as debit card acceptance, voice recognition, global virtual private networks, telecommuting service, and networked centrex systems.



All of these services and more are available on today's technology platforms—and can be creatively packaged to match the network provider's business strategy. Network providers should also be able to choose from unique commercial strategies offered by network vendors for these packages, such as per-port or per-query pricing, that make it possible to wade, rather than plunge, into new waters.

**"Thank You for Using  
InterLATA Telephone"**

In addition to a solid portfolio of services, success in the long distance market requires that consumers know just which company is providing all these valued services.

"Thank you for using ABC Telephone Automated Directory Assistance Service."

Call branding is seen as critical in order to leverage name recognition in the home territory and build brand loyalty. For more information see the section on "The Business of Long Distance Service."

This section describes the wide range of revenue-producing features and services that today's providers are delivering from state-of-the-art digital switching systems.

## BASIC LONG DISTANCE SERVICES

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All long distance providers are expected to provide a collection of basic long distance services, such as regular long distance calls using regular local phone lines, and dedicated access lines, which are dedicated to long distance calls. Some providers offer up to a dozen different packaged services for various market niches, from which customers can choose the package the most closely matches their calling patterns.

### What Characteristics Define Long Distance Service Types?

Basic long distance service packages are differentiated by several key factors: access, pricing, and fees.

Characteristics That Define Service Types
<b>ACCESS</b> How the caller reaches the long distance network
<b>PRICING</b> Base price and discounts for service usage
<b>FEES</b> One-time or monthly fees to subscribe to the service

- **Access**—*How the caller reaches the long distance provider's switch, known as the "point of presence," or POP.*

At its most basic, access is provided through the same phone line used for regular local calls. The phone line is connected to the local telephone company (or alternate local telephone provider); the telephone company switches the call to a Feature Group line that carries the call to the long distance company. Because the local telephone company switches the long distance call, this type of access is often called "switched access." The long distance company pays for the use of the Feature Group lines, and these lines are likely to be shared with other long distance providers.

WATS lines are a special type of switched access. These lines are dedicated to incoming or outgoing long distance service of a particular type. The local telephone service provider switches WATS calls on Feature Group lines to the long distance company. The term "WATS," however, does not strictly refer to dedicated lines; some service providers are using the term loosely to refer to similar services that actually use regular phone lines. A true WATS line cannot be used to place or receive local calls.

Line Rates
<b>DS-0 64 kbps</b> A typical voice phone call
<b>DS-1 1.544 Mbps</b> Equivalent to 24 DS-0s
<b>DS-3 45 Mbps</b> Capable of carrying full-motion audio and video
For more information about line rates, see section 2, “The Technology of Long Distance Service.”

Dedicated Access Lines (DALs) also go directly from the subscriber’s location (usually an office) to the long distance provider. The local telephone provider often provides the lines, but doesn’t care what digits are dialed and doesn’t do any switching. Unlike WATS calls, traffic on the DAL line is just automatically forwarded to the long distance company. The lines can be DS-0, DS-1, or DS-3 capacity, and can also be provided by the cable company, competitive access provider, or other organization with facilities to the end user.

Large businesses (those that spend more than \$3,000 per month on long distance calls from one location) have the additional option of connecting to the long distance company through high-capacity T-1 lines. These 1.544 Mbps digital lines carry up to two dozen voice conversations at once from private branch exchanges (PBXs) directly to the long distance company. This arrangement requires that the subscriber have a PBX with a digital interface or a channel bank to perform analog-to-digital conversion.

- **Pricing**—There are two basic schools of thinking here: distance counts or it doesn’t. Pricing per minute of long distance service can be based on mileage, geographical area, LATA, area code, or flat rate—with or without term discounts or volume discounts.
- **Fees**—Is there a charge to have the service or just a fee to use the service? Basic long distance does not typically carry a fee. If the service is not used, there is no charge. Other services charge a monthly fee whether the service is used or not. For example, in a typical incentive package, the subscriber could pay a \$10 monthly fee in order to receive a 10% discount on long distance calls. The monthly fee applies whether or not any long distance calls are made. Charges for special access lines, such as WATS or DAL lines, are additional, as are per-call charges. For example, a business might pay \$150 to \$500 per month per DS-1 access line, and receive a 20 to 50% discount on the per-minute call rate (compared to traditional switched access).

More information about pricing long distance service is found in chapter 3, “The Business of Long Distance Service.”

#### Basic Categories of Long Distance Service

##### Basic Categories of Service

###### **Basic Long Distance (MTS)**

Simple long distance, with calls going through regular phone lines

###### **Fee-Based Services**

###### **Using Regular Lines**

Discount plans with monthly fees but lower per-minute charges

###### **Dedicated Line**

###### **Long Distance Services**

Direct connections between customer and long distance carrier, bypassing the local telephone company

This leaves us with three primary categories of long distance service:

- **Regular Long Distance**, usually called Message Telecommunications Service, or MTS. The call goes through regular phone lines to the local telephone service provider, which recognizes the call as a long-distance call and switches it to Feature Group trunks to the long-distance provider. This is typically a long-distance provider’s highest-priced service, but it carries no monthly fee, provides an itemized bill that details all calls made, and requires no special access lines. This service usually offers discounts for calls made after 5 pm and on weekends. Some companies offer discounts for high-volume callers.
- **Fee-Based Services Using Regular Lines**, which charge a monthly fee but offer lower rates per call than regular MTS long distance. For example, a typical plan would cost \$15 per month and give 15% off the long distance provider’s regular rates. The monthly fee is charged per customer, not per line. Because the fee is charged whether or not any calls are made, this type of service is generally a good idea for users incurring \$150 to \$1,000 per month in long distance charges. Less than \$150, and the discount doesn’t pay off the monthly fee. More than \$1,000, and the customer should be looking at dedicated line service. As with regular service, the subscriber uses the same phone lines used for local service and receives a detailed monthly bill that itemizes all calls.

- **Dedicated Line Long Distance Services**, including WATS lines, DALs, and private leased lines, such as PBX tie trunks and foreign exchange lines.

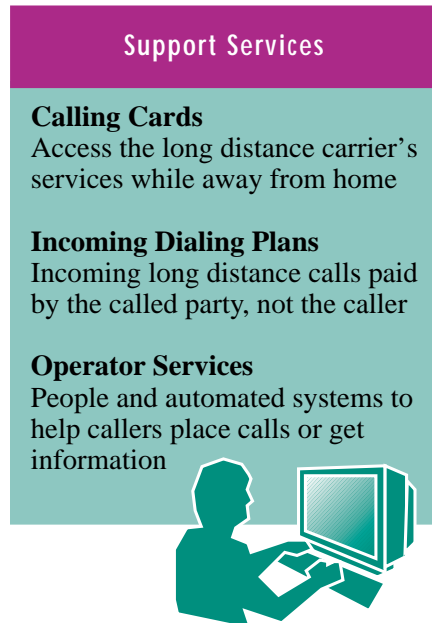
*WATS lines*—which only cost \$35 to \$40 per month, plus a modest fee per group of lines to one location—are well suited for small to medium sized businesses. Calls can be billed as a fixed rate per hour (regular banded WATS) or priced by calling distance (virtual banded WATS). Discounts may be offered for large call volumes. Because WATS calls are switched through the local central office, they can be screened or blocked. For example, the local central office can stop a local call from going through on a WATS line, or an interstate call from going out on an intrastate WATS.

*Dedicated Access Lines (DALs)*, which bypass the local telephone switch entirely, cost more to subscribers than WATS lines—\$100 to \$500 per month. However, because the local end office switch doesn't "see" the dialed digits—just automatically sends them to the long distance company—the local telephone company cannot screen or block calls.

For higher monthly fees, large businesses can choose dedicated high-capacity lines, such as T-1 digital access service or private tie trunks between PBX systems in different cities. These options are often used as the basis of a private network, carrying calls that are switched to many locations in the enterprise's private network.

*Foreign exchange service* is a dedicated line service much like an extension cord to another city. Pick up the phone and get dial tone in another city, even another state, and place calls in that local calling area just as though you were there. Similarly, people in the distant city can call the foreign exchange number like a local call and it will ring at the home office in another city or state. Foreign exchange service is typically billed as a flat monthly fee plus small per-minute charges for interstate calls—incoming and outgoing. Toll calls within a state sometimes carry small per-minute charges as well.

#### Support Services



For any of these service types, subscribers expect to be able to get the following basic support services:

- **Calling Cards and Incoming Dialing Plans.** Sometimes known as “travel features,” these options give callers a way to charge calls to their accounts from other locations.

*Calling Cards*—Calling cards, which look much like credit cards, are issued by local and national telephone service providers. With some providers, such as some RBOCs, callers place a toll call by dialing “0” plus the area code plus the number, waiting for a tone or announcement, then entering the calling card number—which is usually a combination of the account-holder’s phone number plus a four-digit code. With most other carriers, the caller dials a 1-800 number (or 1-0-CIC) to reach the calling card platform, then dials an authorization code and the dialed number.

Callers using rotary phones need operator assistance; they give the calling card number to the operator, who completes the call for them. For any of these access methods, charges for the call will appear on the regular monthly statement for the caller’s account.

*Incoming Dialing Plans*—Several dialing plans are available for offering incoming long-distance calls paid by the receiver, not the caller. The most basic methods are collect calling and calls billed to a third number. For higher volume needs, however, businesses (and now individuals) use 800 number service. With 800 number service, calls are placed from anywhere in the same country at no charge to the caller, even from a pay phone. Monthly and per-minute charges are paid by the party that receives the call, who subscribes to the 800 service. 800 number services are described separately later in this chapter.

- **Operators.** For all types of long distance calls, subscribers expect to have access to an operator to help them find a number, place a call, or resolve a problem. Not all long distance providers offer operator services. However, subscribers have a strong perception that their long distance provider should have human beings to help them whenever they need it, for whatever type of service they are using.

Today's networks support extensive automation of traditional operator services, plus tools to create custom information services that can present innovative revenue opportunities. Operator services are an important ingredient in the long distance service portfolio; as such, they are addressed separately later in this chapter.

Because of the complexity and cost of providing the desired level of service, many new providers may not initially want to establish their own operator service centers. Outsourcing arrangements with other providers are readily available for companies that make this choice.

#### Packaging for Profitability

From the subscriber's perspective, their long distance provider must be able to provide a basic service package that is perceived to be better and cheaper than they can get somewhere else. For the provider, the key is to provide that package of services in the most cost-effective (and therefore the most profitable) way. Pricing and packaging incentives are the tools that providers use to achieve this—along with speed to market. More information about incentive strategies is found in section 4, "The Business of Long Distance."



## VALUE-ADDED LONG DISTANCE SERVICES

In addition to basic long distance services—which provide basic toll revenues—the competitive long distance provider will offer additional revenue-generating services, such as information databases, enterprise networking, data and video services, and multiple dialing plans such as International Direct Distance Dialing (IDDD). These services make extensive use of advanced signaling systems such as SS7 and ISDN PRI, as well as Intelligent Network (IN) capabilities.

Some key offerings are described here.

Switch-Based Long Distance Services			
Information Database Services	Enterprise Network Services	Data and Video Services	Multiple Dialing Plans
N00 Number Services	Dedicated Access Lines	Switched 56-kbps	Full 10-Digit Routing
Account Codes	Meridian Switched Network	Dialable Wideband Service	7-Digit Private Virtual Network Routing
Authorization Codes	Virtual Access to Private Networks	ISDN PRI Service	15-Digit International Dialing
Calling Card Validation			User Partitioning
PIN Codes			Speed Dialing
			Hotline Number Dialing

## INFORMATION DATABASE SERVICES



When industry standard interfaces and communication protocols are used among network components, switches can send inquiries to external databases to get special information about how to handle the call. For example, an external database could contain information that translates 800 numbers into the actual directory number of the location. Or an external database could contain records that detail the kinds of calls a subscriber can make, the authorization or account code of the subscriber, and even the telephone numbers he or she is allowed to call.

By placing this information on an external database rather than on the switch itself, it can be accessed by many switches—and only has to be updated in one or a few locations, rather than at every switch in the network.

- **500 and 700 Number Services**—Interexchange carriers use 500 and 700 numbers to trigger information database queries for a number of purposes, some of which are still being defined.

For example, a travelling business person could have a 700 number assigned by the IXC which, when called, would trigger a database query to find out where this caller is at the moment and how to direct the call—to a home phone, office phone, cellular phone, fax machine, or pager.

The 500 and 700 number capability can also be used to give callers access to network features and other customized services. For example, the customer might call 1-500-MESSAGE to reach the voice mail system to retrieve messages—or 1-700-4VIDEOS to hear a listing of new movie releases now available on video.

The number 700-555-4141 is used industry wide to enable the caller to identify his or her presubscribed long distance carrier. Other numbers could be reserved for customer service numbers. The difference between 700 service and 500 service is that 700-number calls are automatically routed to the presubscribed interexchange carrier, and 500 number service is routed to the carrier associated with the NXX code of the call.

- **800 Number Services**—With an 800 number, businesses and individuals can receive—and pay a bulk rate for—high levels of incoming calling traffic across LATA boundaries. The person placing the call is not charged for the call. Therefore, 800 number services are indispensable marketing tools for order-taking, reservations centers, customer service lines, and inbound telemarketing applications. In 1994, this service accounted for \$10 billion of the long distance market, with an annual growth rate of about 14%.

(The advent of 800 number portability—the ability to keep your 800 number even when you change long distance carriers—caused a dramatic surge in demand for 800 numbers, to the point where it seemed that the available supply of numbers might be exhausted. As a result, 888 numbers will be assigned for toll-free service beginning in 1996.)

When used in an advanced intelligent networking environment, where an external database is available to provide detailed call-handling information, a number of revenue-generating enhancements are possible. For example, calls could be directed to regional order-taking centers during the day—and forwarded to one all-night order-taking center at night. Calls could be accepted only from certain geographic areas, or processed by multiple interexchange carriers, or re-routed anytime a reservation center is short-staffed or experiences a problem with its computer system.

Because basic and enhanced 800 number services are so fundamental to the long distance business, they are described in more detail later in this section.

- **900 Number Services**—Companies use 900 numbers to offer information to the calling public for a fee. Unlike 800-number calls, which are paid for by the owner of the 800 number (and free to the caller), 900-number calls are charged to the caller, often for per-minute rates as high as \$3 or \$5. As a result, 900 number

service is expected to account for about \$300 million of long distance revenue each year.

Companies use 900 numbers both for automated services (such as stock quotes, weather information, public opinion polls, or daily horoscopes) and attendant-backed services (such as a help desk for software or hardware users, legal advice, or “personal” psychic predictions).

- **Account Codes**—An information database can contain profiles identifying employees of a company, account codes for those employees, and authorization to use long distance service. With this service (usually carrying a monthly fee of up to \$10), the caller dials an account code (2 to 12 digits in length) along with the dialed number. The account code identifies the person, department, or account to which the call is being charged—and processes the call in accordance with information contained in the caller’s profile.

This service is valuable for controlling fraudulent use of telephone accounts and unauthorized types of calls. In addition, account codes allow the customer’s long distance phone bill to be organized by account, a valued service for attorneys or multi-department organizations, for example—or any enterprise where telephone charges must be allocated to different budgets.

- **Authorization Codes**—Authorization codes of 5 to 7 digits in length are used to identify a subscriber, bill a call, prevent unauthorized network use, determine the originator’s class of service, and control access to special features in a Virtual Private Network. The use of authorization codes is defined by the service provider.

For example, an authorization code might be dialed by a telecommuter to get access to the office computer network. Or, families could choose to block anyone from placing 900-number calls from the household phone, unless an authorization code was dialed first. Or an authorization number could be required before retrieving messages or from a voice mail system—or before inquiring into financial transactions in an on-line banking application.

- **Calling Card and Personal Identification Number (PIN) Calls** recognize dialed codes as a request by the customer for access to a special long distance service, carrier, or billing account. Because it allows customers to access their long distance carriers when away from home, this service alone accounts for \$6 to \$7 billion of the long distance market. When using this service, typically the customer dials an 800 number to access the IXC switch, followed by an authorization code and PIN, and then the calling number.

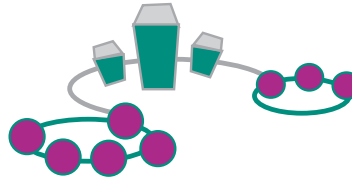
Calling card service is described in more detail later in this chapter, in the section, “Calling Card and Operator Services.”

- **Debit Card and Prepaid Card Calls**—This new and fast-growing service allows consumers to pre-purchase a fixed number of minutes or dollars of long distance service with a specific carrier. This service is particularly appealing for college students, military personnel, international visitors, or for promotional purposes.

The difference between debit cards and prepaid cards is that debit cards are discarded when they are depleted; prepaid cards can be recharged by an operator. The market for this service was about \$100 million in 1994 but is expected to grow ten-fold to \$1 billion by 1998.

## ENTERPRISE NETWORK SERVICES

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Long-distance providers can offer various services that use public telecommunications facilities to create enterprise networks that cross LATA boundaries. Even though these services use a hybrid of the company's private network and the carrier's "public" network, they look and feel just like a completely private network to the user. Multilocation businesses use these services to provide the functionality of a national or international private network without the prohibitive cost of installing and maintaining one.

- **Dedicated Access Lines (DALs)** allow a business to lease public network trunks and use them for private wide area network (WAN) data and voice communications—bypassing the local telephone company and its access charges for long distance service. The long distance provider typically leases these access lines from the local exchange carrier or a competitive access provider. This approach is appealing to business customers with more than \$1,000 per month in long distance charges. The monthly fee for the dedicated access line (generally \$150 to \$500) is offset by eliminating the access charges that the LEC charges to originate or complete long distance call.
- **Networked Centrex** allows business customers to have centrex systems that cross LATA boundaries—while retaining the use of special centrex features, such as call transfer and conference calling. Even if the business locations are across the state or across the country, the centrex user can communicate with others in the organization just as if they were all in the same building.
- **Virtual Access to Private Networks (VAPN)** allows multi-location business customers to route private network traffic through public facilities and cross LATA boundaries to other company branches without the expense of leasing private lines. The company benefits from the robustness and route-diversity of the public network—while enjoying considerable cost savings over maintaining its own network facilities. From the user's standpoint, the network performs just like a private network, using public network facilities behind the scenes.

## DATA AND VIDEO SERVICES

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Interexchange data and video switching is growing at an increasing pace as businesses expand operations and require sophisticated communications technologies to keep them competitive.

- **ISDN Primary Rate Interface (PRI)** is a protocol for customer T-1 circuits that dedicates one of the T-1's 24 channels (the D-channel) to signaling, so that a customer can transmit data and voice on any combination of the remaining 23 "B" channels at speeds somewhat higher than on a common T-1 circuit. In addition to allowing more data capacity on T-1 circuits, PRI (with its separate signaling channel) allows voice and data equipment to communicate more effectively. For example, PRI lets ISDN PBX systems in separate locations connect calls as quickly—and use the same features, such as calling line ID or call transfer—as calls within a building.

Many larger businesses have PRI service provided by long distance carriers, often using the PRI connection to aggregate a lot of telecommunications traffic from multiple locations and funnel it to the public network.

- **Dialable Wideband Service** offers on-demand, easily tracked connections of variable bandwidth—such as that required in videoconferencing—over public facilities, potentially reaching any subscriber in the international numbering plan.

The steady growth of wideband applications—such as videoconferencing, CAD/CAM, image transfer, and electronic data interchange (EDI)—has been largely accomplished in the past through private DS-1 lines interconnecting key corporate locations. But business success relies more and more on real-time collaboration and data-sharing with a rapidly changing roster of customers, suppliers, and key partners—none of which reside on the same private network. Dialable Wideband Service expands the reach beyond the limitations of private DS-1 lines in an easily accessible, affordable manner via the public network.

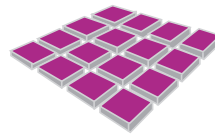
- **Ethernet and X.25 File Transfers** provide high-speed data transfer for specific business network applications. Like Dialable Wideband Service, bypassing the local exchange carrier can save significant access charges for the customer.
- **Bearer Capability Routing** routes an incoming call based on the contents of the user service information within the PRI or CCS7 messages. Bearer Capability (BC) is essential in the ISDN environment, providing the call origination requirements over an ISDN signal. The origination message stream tells whether the call terminates on a speech or data device, which must be known for successful call routing. For example, when a video conference call is originated, the message stream identifies the transmission mode and layer compatibility required. The terminating switch receives this information and provides the requested

termination (or an error message and log, if the requested facilities are not available).

- **Integrated Echo Cancellation**, on a per-call basis, uses the intelligence of digital switching to enhance the quality of transmission and allow the integration of voice and data within the network without the expense of external echo cancellers. An echo (the caller hears a delayed side tone of his own speech) is usually caused by an impedance mismatch associated with the four-wire to two-wire hybrid conversion. Without echo cancellation, users would perceive this annoying effect with every four-wire-to-two-wire connection. With integrated echo cancellation, the system automatically and immediately identifies a condition that requires echo cancellation—modifies the condition based on continual Echo Return Loss (ERL) and the Echo Return Loss Enhanced (ERLE) readings—and provides quality service for the caller.

## MULTIPLE DIALING PLANS

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The long-distance switch can recognize, process, and route different signaling protocols and multiple dialing plans.

- **Full 10-Digit Routing** provides 10-digit routing to the station level.
- **7-Digit On-Network Routing** facilitates Virtual Private Network services by allowing private-to-private, private-to-public, and public-to-private network 7-digit dialing.
- **User Partitioning** allows multiple private users to share trunk facilities.
- **Private and Public Speed Dialing** allows abbreviated dialing for long distance calls.
- **Hotline Number Dialing** is an emergency number service that allows the user to connect to a dedicated number without dialing it.
- **Automatic Number Identification** via DTMF Trunks facilitates calling line identification to call centers not yet using ISDN PRI trunks.
- **International Direct Distance Dialing** (IDDD), sometimes known as 15-Digit International Dialing, allows direct dialing by the subscriber to international numbers using a new expanded dialing plan.

## INTERNATIONAL LONG DISTANCE

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International calling has become an increasingly important segment of the telecommunications market. From 1980 to 1993, the number of international calls jumped more than 600%—now more than 2 billion calls a year. Since 1985, when MCI first entered the market in competition with AT&T, numerous carriers have begun to provide dial calling to international locations all over the world on regular phone lines as part of regular MTS service. They sell their own calls to the countries they serve, and resell AT&T or other carriers' services to other countries.

International calling is still just a small percentage of total voice long distance, but it is growing faster than domestic long distance. Collectively, carriers offering international services are showing more than 14% compound annual growth rate in international business revenues, more than 10% for residential—compared to 9 and 4 percent for domestic business and residential revenues, respectively.

International long distance—business and residential combined—represented about \$8 billion in revenue in 1995. And that's just what U.S. carriers retain, after paying foreign carriers for their part in processing international calls. On average, carriers bill \$1.00 per minute for international calls and pay 55 cents per minute to foreign carriers. Conversely, they receive settlements from foreign carriers for terminating calls that originate in other countries. In 1993, settlements from foreign carriers netted \$3.7 billion in revenue to U.S. carriers.

On a per call basis, international calling is not as profitable as domestic business. Some carriers resell international calls at or near their cost just to be able to offer a more complete package and win the subscriber's more profitable domestic business.

## A CLOSER LOOK AT 800 NUMBER SERVICE

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Toll-free 800 number service is listed earlier in this section under “Information Database Services,” because that’s what it is, but it is so fundamental to the long distance business that it merits further discussion here.

For one, 800 number service is expected of long distance providers, and it is big business. The annual market for 800 number services in North America is estimated at \$10 billion, and growing.

Furthermore, 800 number service is different from other long distance services because it is bought for marketing purposes as well as for communications purposes. More purchases are influenced by marketing managers than by telecommunications managers. Toll-free “vanity” numbers, such as 1-800-4 NORTEL or 1-800-BUY CARS, are promoted heavily in advertising and are powerful tools for connecting with customers. Because they make it so easy for customers to place orders or get information, 800 numbers can profoundly change the way a company does business. Most catalog and direct mail marketers would have a hard time running their businesses without it.

**Equal Access and 800 Number Services.** In the old days (say, 10 years ago), there was really only one player in the 800 market. That company owned the 800 number database, controlled the distribution of 800 numbers, and received all 800 calls directly from the local switch where the call originated. Interstate and intrastate lines were purchased separately.

In the late 1980s, MCI, Sprint, and Western Union entered the 800 market and were allocated blocks of 800 numbers. Other carriers followed suit, opening up new competition. 800 number calls were routed to the carrier based on the NXX digits dialed (the first three digits after “800”). However, under this arrangement, any customer that wished to change its 800 carrier also had to change its 800 number—an unwelcome proposition when thousands or millions of dollars have been spent advertising an 800 number to their customers.

In September 1991 the Federal Communications Commission (FCC) mandated a series of network requirements designed to ensure that business subscribers could receive the 800 number of their choice from the carrier of their choice. The new FCC requirements would mean that rather than dividing up blocks of 800 numbers to be “owned” by the service provider, the number would be “owned” by the subscriber. The car rental company that wants to advertise at 1-800-CAR-RENT could deal with any carrier that offers the best or the most economical service, and the telemarketer with an inventory of catalogs offering service at 1-800-NEW-SUIT could keep that number if it chose to switch carriers.



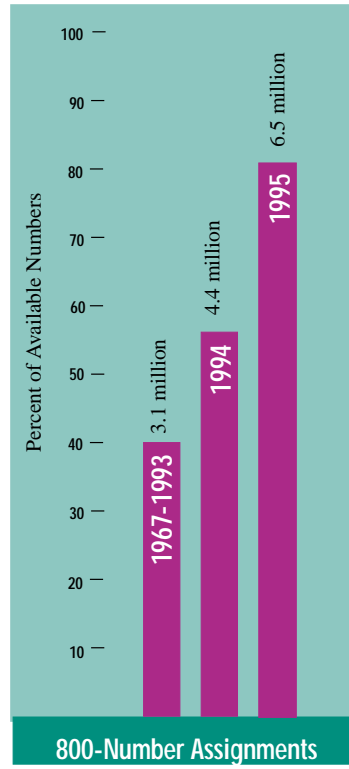
This capability, known as “800 number portability,” relies on a large database maintained by Database Service Management, Inc. (DMSI) that translates 800-number digits into the actual 10-digit phone number of the called party. DMSI has designated 138 “responsible organizations” that can take 800 numbers from that database and provide these numbers to long distance and local telephone companies that, in turn, provide 800 service to end users (consumers and businesses). Some “responsible organizations” are telephone companies that also offer 800 service. This entire process is overseen by the Carrier Liaison Committee of the FCC.

The long distance provider maintains service translation data for its pool of 800 numbers on a Service Management System (SMS) in the Advanced Intelligent Network (AIN) infrastructure.

Portability—coupled with an explosion in catalog and direct mail marketing—dramatically increased demand for 800 numbers. In 1995, more than 5 million 800-numbers are in service in the United States, up from 3 million in 1993 when 800-number portability was first implemented.

**800 Number Exhaustion.** In 1994, the Carrier Liaison Committee projected that, with 30,000 new 800 numbers being given out each week, the existing supply of 800 numbers would run out by fall 1996. But by early 1995, assignment rates for 800 service increased dramatically (113,000 new numbers in one week, for example) and the industry realized that the supply of 800 numbers would run out by July 1995. With the threat of exhausting all available 800 numbers by mid-1995, rationing of new 800 numbers was instituted and plans accelerated to introduce a new toll-free (or “called-party paid”) code—888—in April 1996.

In addition, the FCC has encouraged conservation measures to make more efficient use of 800 numbers. For example, customers might notice more use of identification codes and menus to direct them to their destination within a company—rather than each division or department having its own 800 number.



## CALLING CARD AND OPERATOR SERVICES

Although calling card and operator services represent a relatively small segment of the traffic served by an interexchange carrier, they are critical for allowing callers to reach and use the long distance network when away from home or office.

Just as important, this is the vital network element that provides the human interaction that is expected and demanded when a caller needs help. By bringing calling card and operator services together, the carrier can provide a level of service and customer care that will match or surpass the established norm in both local and long distance markets.

In addition, calling card and operator services provide high-margin revenues—from service charges for using calling cards or special operator assistance. These revenues can be expanded by providers who bring ingenuity to the table as well—creating high-value services accessible through the calling card menu or performed by an operator.

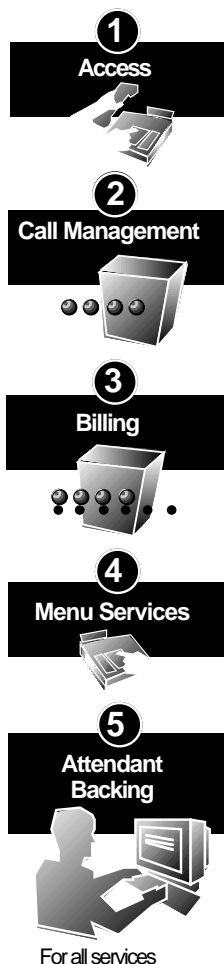
Today's technology supports extensive automation of straightforward operator services—such as collect calls or charging calls to a calling card or third number—plus tools to give operators the information they need to quickly help callers who really need individual attention.

An effective calling card and operator services platform allows callers to . . .

- Conveniently access their chosen long distance carrier
- Use multiple billing options
- Select services from the calling card menu
- Request assistance at any time

These calls can be managed to detect fraud, provide special handling based on a number of variables (screening), and special treatment for corporate users.

These access, call management, billing, and services capabilities—with attendant backing for all services—are tablestakes requirements for success in the long distance market, especially where major competitors already provide these services.



## Access Capabilities

Customers must be able to conveniently access the long distance network when away from home or business. This capability not only generates revenue from calling card and operator service charges, it also captures the long-distance charges incurred with the call. The calling card and operator services platform should allow callers to easily access the provider of choice through a number of standard dialing arrangements, such as 1-800 numbers, 0+, 00-, or 10 *CIC* 0.

## Call Management Capabilities

An advanced calling card and operator services system supports sophisticated options for managing calls behind the scenes, such as the following:

- **Fraud control** capabilities, allowing restrictions to be defined on how and when calling cards can be used. In addition to protecting the network provider from potentially uncollectable charges, fraud control capabilities provide protections that customers recognize and appreciate.
- **Screening** capabilities, allowing the network to automatically enable or block calls on the basis of a number of variables, as defined by screening tables in the switch or calling card database
- **Profile management** capabilities, which offer exceptional control and flexibility in the assignment and activation of PINs. These features—such as the ability to allow multiple personal identification codes for a single phone number, or end-user control over PIN assignment—are attractive to business customers.

## Billing Capabilities

An effective calling card and operator services platform supports multiple billing methods, such as collect calls, calls billed to other numbers, and calls billed to

## 1 Access

Callers access the long distance network by dialing:

1 8 0 0 n u m b e r

To reach a toll-free 800 number or call

0 N P A n u m b e r

To receive a service, such as bill-to-third-party, for a call to this number

0 0 N P A n u m b e r

To reach a long distance operator services platform

1 0 C I C 0

To reach a designated carrier for services for a call to this number

1 0 C I C 0

To reach a designated carrier for operator assistance

0

To reach a local operator, who can transfer to a long distance operator

0 0

To reach a long distance operator

## 2 Call Management

The system performs some behind-the-scenes tasks to manage the call:

### Fraud Management

- "This is not the person authorized to use this calling card."
- "This credit card is not valid."

### Screening

- "This caller can only place domestic calls."
- "This phone number cannot be billed for calls to 900 numbers."
- "This is a phone in a prison; it cannot place an outgoing call."
- "This account number can only be used for calls to this person's office."

### Profile Management

(For business customers)

- Multiple Personal Identification Numbers (PINs)
- Remote Activation

calling cards or commercial credit cards, such as VISA, Master Card, American Express, and Discover. Formerly, these calls always required operator involvement. Today, automated systems perform much of this work, sometimes using advanced speech recognition and recording technology—for example, to accept billing requests and confirm billing acceptance by the party being charged for the call.

### Menu Services

As part of a competitive service offering in the interLATA market, a variety of services may be offered from the calling card menu. Many of these services provide convenience and ease of use for the card user, as well as generating high margin revenue for the carrier. Some key offerings are speed dialing, conference calling, message delivery service, voice mail, and “sequence dialing,” whereby multiple calls can be made without having to re-enter the card number and PIN. Of course, access to a customer service agent should be available at any time by pressing “0”.

### Attendant Backing—Operators or Call Agents Ready to Help

For all types of long distance calls, subscribers expect to have access to an operator to help them find a number, place a call, or resolve a problem. Not all long distance providers offer operator services. However, subscribers have a strong perception that their long distance provider should have human beings to help them whenever they need it, for whatever type of service they are using.

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### Menu Services

The caller responds to a menu of service choices:

- ➊ Speed Dialing
- ➋ Conference Calling
- ➌ Message Delivery
- ➍ Voice Mail
- ➎ Press **#** make another call without re-dialing access/account numbers
- ➏ Press **\*** go back to the previous menu level

Many new providers may not initially want to establish their own operator service centers. Outsourcing arrangements with other providers are readily available for companies that make this choice. However, many of the same arguments apply as in the decision whether to own or lease network capacity. Should the customer's first-line contact with the long distance provider be a person outside the organization? Should someone else have all the say over what services are offered and on what schedule? Should critical business issues—such as operator selection, training, and workforce management—be managed by an outside organization? And should person-to-person contact with customers—each one a valuable public relations opportunity—be passed off to another company?

By and large, callers interact with their local operators rather than long distance operators, but the competitive long distance provider will be expected to provide attendant backing for all services—whether through its own facilities or through an outsourcing arrangement. In addition, operators must be available to complete inbound and most outbound international calls, plus international country-to-country calls (calls placed from one country outside North America to another, using North American operator assistance).

The growth of automation has made toll and assistance services more cost-effective than ever, in some cases completely eliminating the need for operator involvement in the call. However, there will always be a need for skilled, thoughtful operators to provide backup for automated services and to provide special services that only a person can provide.

A key differentiator with state-of-the-art calling card systems is the ability to transfer a caller to a customer agent at any time—with call and service information displayed on the customer agent's screen to help explain the reason for the transfer. This information flow makes possible a truly premium level of customer care.

Callers can request an attendant by pressing “0”—or can be automatically transferred from automated services, perhaps for making no response to a system prompt, making an partial or invalid entry, or making too many unsuccessful tries. These parameters that define when a call will be transferred to an operator are completely under the control of the service provider.

New programmable “intelligent” operator workstations,” such as Nortel’s TOPS MPX-IWS workstations, can support custom services defined by the network provider. Custom information and listing services can provide added value to

## 5 Attendant Backing

The caller presses **0** referred by an automated service to an attendant for personalized attention.



The attendant can provide a full range of operator services from a single workstation:

- ④ Route an emergency call to the appropriate emergency center
- ④ Check to see if a busy line is really busy or just out of order or off the hook
- ④ Help callers who speak languages other than those used in system prompts
- ④ Complete domestic and international calls
- ④ Provide local or national directory assistance
- ④ Provide other information or order-taking services

customers and new revenue to the network provider, while enriching the jobs of operators by giving them new and innovative ways to help callers.

### *Non-Traditional Operator Services*

The greatest opportunity for service providers to differentiate their offerings lies in new, non-traditional listing and information services. The industry trend toward open architectures and open communication protocols lets service providers act on their own ingenuity—creating innovative new revenue-generating services to fit their very specific needs. With increasing inter-operability among services and equipment from different vendors, service providers can do any of the following:

- Create custom information and listing applications that use powerful relational databases to send information to operator workstations or end users.
- Program intelligent operator workstations to support these new services.
- Define hundreds of call queues and agent profiles to closely manage the flow of calls to operators for these new services.
- Use audio development tools to create custom announcements, speech recognition vocabularies, and interactive "audiotext" applications

Sophisticated call-queuing capabilities make it simple to route and manage calls for those services or systems separately from calls requiring traditional operator services. By tapping into databases, operators can offer callers such information as corporate directory listings, zip codes, sports updates, stock quotes, operator-assisted yellow pages, local directions, hotel and restaurant listings, order-taking for retail and service organizations, wake-up service, and weather conditions around the globe. The possibilities are limited only by imagination and regulatory constraints.

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*Chapter 1 described the opportunities for revenue-generating services in the long distance market. The next chapter describes the technology platform to supply these services, with step-by-step descriptions of how these services do what they do.*

