

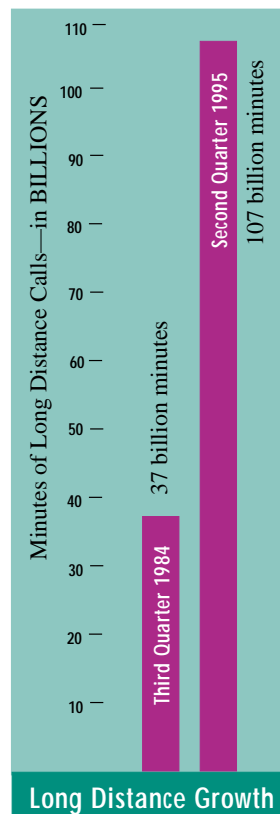
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The Business of Long Distance Service

The long distance industry currently generates \$70 billion in revenue in North America each year. This figure has doubled since 1984, and the total number of minutes of use has tripled. According to estimates published by NATA Telecommunications for Forecast, total revenues in long distance services are expected to reach \$87 billion by 1997. Revenues from international calling, 900 number, and pay phone services are expected to grow 10 percent per year.

Even a small percentage of share in this expanding market could translate into millions of dollars.

Nortel has had the unique privilege of working with 50+ carriers in North America, including top players, helping them to build successful businesses in this market. This section shares some of the lessons learned and experiences gained.



WHO ARE THE PLAYERS?

Until the early 1980s, most of the public switched network in the United States was in many respects an AT&T monopoly, set up to ensure universal service and to keep the price of local calls to a minimum. AT&T usually carried traffic the full trip from the originator's phone through an extensive long-distance network to its final destination.

A series of antitrust suits prompted the 1982 Modified Final Judgment (MFJ) from the federal judiciary, which broke off the seven Regional Bell Operating Companies (RBOCs—Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Telesis, Southwestern Bell, and US West—often called the “Baby Bells”) from AT&T and prohibited the company from offering local telephone services.

This divestiture created two essential types of wireline carriers in the U.S.:

- Local exchange carriers (LECs)—which make connections for calls originating and terminating in the same local area
- Interexchange carriers (IXCs, sometimes abbreviated as IECs)—Long distance providers that take calls originating in one local exchange area and transport it for connection to a caller outside the local area

Under the terms of the MFJ ruling, the LECs, or Regional Bell Operating Companies (RBOCs or BOCs) would continue to provide local telephone service as regulated monopolies, providing local and long distance calls within LATAs (Local Access and Transport Areas). They would permit various long distance companies—not just AT&T—to have access to their facilities to complete long distance calls to their subscribers.

This second provision, known as “equal access,” required that the RBOCs modify their local switches to provide access equal in type, quality, and price to that provided to AT&T and its affiliates. Older switches, which are governed by mechanical design rather than by changeable software, were exempt from this ruling. So were end offices that served fewer than 10,000 lines. These two categories of end-offices—those using electro-mechanical switches or serving very small line sizes—were known as “non-conforming” end offices.

The number of non-conforming end offices is diminishing as older switches are upgraded to new, computerized switches and as end-offices are upgraded with add-on devices that allow them to provide equal access.

Although the Modified Final Judgment doesn't apply to independent operating companies, the FCC has applied equal access concepts to independents as well,

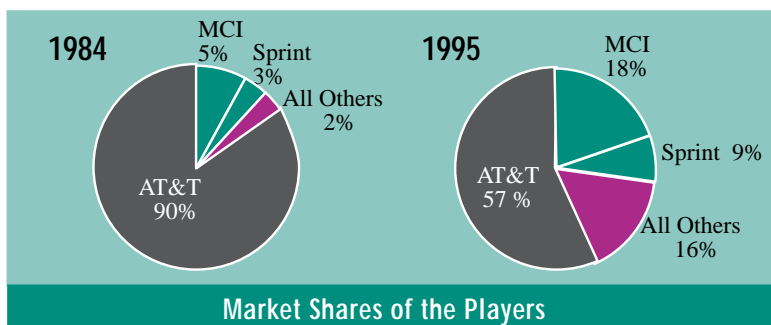
A Host of New Players

In addition to creating a distinction between local and interexchange carriers, the MFJ opened up competition that invited many new types of players in the market, including Competitive Access Providers (CAPs) or Alternative Access Providers (ALTs)—some with their own networks and some reselling capacity leased or purchased from others. Utility and cable television companies have also entered the market and are changing the face of service offerings.

requiring them to provide equal access within a reasonable period of time to long distance companies that request it—unless they can prove that it would not be feasible. As a result, a significant percentage of independents' switches are capable of providing equal access, meaning that subscribers can simply dial 1 plus the 10-digit number to place a call on the long distance carrier of their choice.

Market Shares of the Players

The Modified Final Judgment removed some major obstacles to long distance competition. Today, more than 500 interexchange carriers compete for long-distance traffic in the U.S. The market is currently dominated by a few big players (namely, AT&T, MCI, and Sprint), who together account for 86% of the total market share.



The rest of the market—which amounts to more than \$10 billion annually, is divided up among hundreds of smaller players. Bell Communications Research has assigned more than 800 Carrier Identification Codes (CICs), which identify long distance carriers requesting access from local end office switches. Of these, more than 500 carriers have purchased the premium equal access required to provide direct-dial long distance services. However, these carriers are not necessarily providing long distance service to others. Some, such as large corporations with private networks, are purchasing access for their own use.

This makes the competition in the long distance market hard to gauge. What we do know is that the market share of the biggest player is shrinking while the market share for smaller and emerging players is growing. This trend is evident in measures of lines, minutes of usage, and revenue.

Lines—Take, for instance, trends in “pre-subscribed lines.” Telephone lines are said to be pre-subscribed to the long distance carrier chosen by the subscriber (where equal access is available). If the subscriber dials a normal 1+ long distance number, the call is automatically routed to the pre-subscribed carrier. According to the National Exchange Carrier Association (NECA), AT&T’s share of pre-subscribed lines has remained flat while the number of lines pre-subscribed to other carriers has grown. Nonetheless, in mid-1994 AT&T still held 71% of these lines. MCI had 15%, Sprint had 6%, and the other 400+ carriers accounted for the remaining 8% of the industry—some 11 million lines.

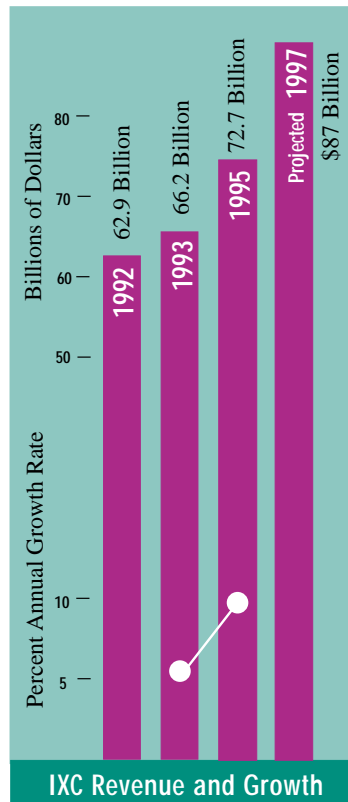
Minutes—Long distance switched access traffic billed minutes went up 8.2 percent in 1994 from the previous year. During that period, AT&T’s total billed minutes went up 5.1 percent while the rest of the industry collectively showed a 12.7 percent increase. In the last 10 years AT&T’s market share of interstate toll traffic declined

from 80 percent to less than 60 percent. AT&T's share of the equal access market (which was 100 percent before equal access was mandated), has also dropped to less than 60 percent.

At the same time, the other big players have grown their market shares by 5 to 8 percent—and a group of 400+ smaller providers have increased their collective market share by about 25 percent. The trends show clearly that entrepreneurial long distance providers have good growth opportunity, even in a market that has historically been dominated by a single, powerful competitor.

Revenue—With substantial pricing discounting being used to attract and keep customers, revenues have not risen as fast as minutes of usage. However, in the last 10 years long distance revenues have nearly doubled, from \$38.7 billion in 1984 to more than \$70 billion in 1995—and expected to reach \$87 billion by 1997. AT&T reaps about 55% of this revenue, MCI about 18%, Sprint about 11%—and all other long distance carriers about 12% (a share that amounts to more than \$10 billion each year). If present trends continue, though, AT&T's share will steadily decline while all other players will see their shares steadily increase.

Nonetheless, these three large carriers are experiencing continued growth—4% growth from 1992 to 1992, 6.6% growth from 1993 to 1994. The rest of the carrier pool is growing at a more aggressive pace, with revenues up 33% in one year alone (1993 to 1994), more than double the growth rate of the previous year.



Players in the New Market

Today, the long distance market is served by widely divergent types of enterprises—from the full-service carrier that owns its own nationwide network . . . to the independent sales agent who sells new accounts on a commission basis and then steps out of the picture.

Let's look at the major categories of long distance providers:

Carriers tend to own almost all of their own network facilities—switches, transmission systems, and special access lines. Their own sales forces identify and close customer sales. Their own business offices manage their accounts, provide customer service, and bill customers. AT&T, MCI, Sprint, LCI, and Frontier, for instance, fall into this category.

Resellers lease facilities or buy services in bulk from other carriers to sell to customers. The sub-industry known as reselling began with the Modified Final Judgment requirement that AT&T resell its services. Under the terms of that settlement, AT&T had to lease lines to other carriers and directly sell long distance services to other carriers without discrimination. In their early days, even MCI and Sprint relied heavily on buying services from AT&T, because they did not own national networks. (In 1986, Sprint started building a national fiber-optic network, spurring MCI and AT&T to accelerate their plans for fiber deployment.)

Facilities-based switched resellers own some network facilities but lease others. For example, many small long distance carriers purchase local subscriber access in only one state, and provide nationwide service by reselling services purchased from other carriers. These resellers are likely to perform their own marketing, customer service, and billing—although they may outsource any or all of these functions.

“Switchless” resellers, sometimes known as “true resellers,” lease all of the network facilities required to provide long distance services. From the customer's perspective, these companies look like long distance companies—they market and sell services branded with their name—but in fact they are reselling a carrier's switching, access, transmission, and billing.

Wholesalers, also known as “aggregators,” do not own or lease long distance facilities; they simply resell volume blocks of long distance service provided and billed by others. This business began in 1988 with wholesaling AT&T WATS (Wide Area Telecommunications Service) and 800 service. Today, wholesalers/aggregators resell services from Sprint, Allnet, and others. In fact, MCI and Sprint have been the largest providers of wholesale switched services.

The end-user (typically a business customer) is still billed by the carrier—although carriers are pressuring wholesalers to provide their own billing and customer service. The wholesaler is paid a commission that is typically calculated as a share of the amount saved by the customer.

The wholesale market gave rise to a new type of long distance company, the *“carriers' carrier.”* Carriers' carriers build extensive fiber optic and microwave circuits primarily to sell to other carriers, rather than to retail to end customers. For

example, QWEST and IXC have built extensive long distance networks for the purpose of wholesaling services to other carriers.

The carriers' carrier market is particularly appealing for utility companies and railroad companies, which can easily install fiber networks alongside utility lines and tracks in the rights-of-way they already own or control.

In fact, some utility companies are spending \$2 to \$4 billion per year developing telecommunications activities. Electric utilities in particular already have significant network infrastructures consisting of fiber, microwave, and radio systems that transport voice and data among offices, power plants, and substations. By mid-1995, interexchange carriers were leasing more than 2,000 miles of fiber from electric companies. (Apart from some provisions of the 60-year-old Public Utility Holding Company Act, which sets some restrictions on entering "non-core" lines of business, there are few regulatory barriers for electric companies seeking to explore telecommunications opportunities.)

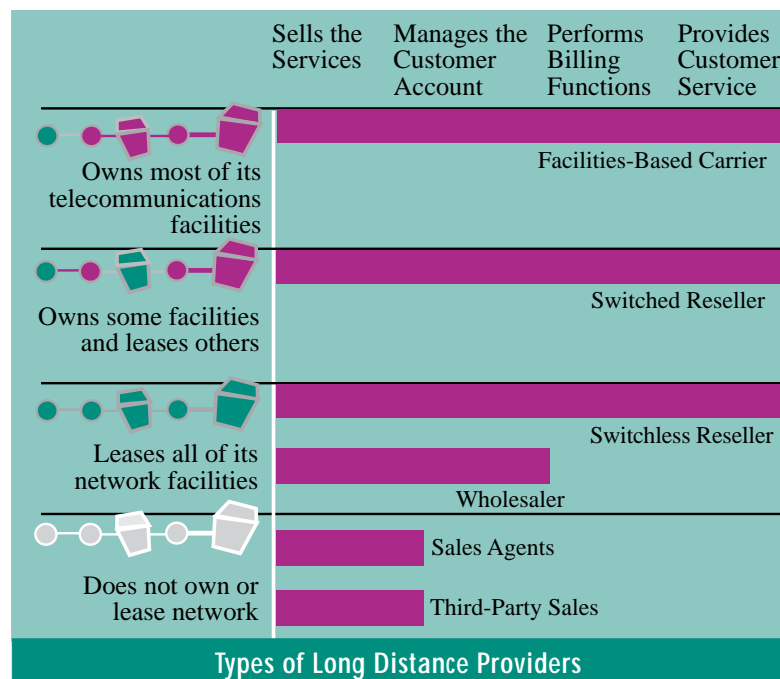
Basic Categories of Providers
Facilities-Based Carriers
Own switches and most network facilities May resell capacity and services to others Provide billing and customer service Have their own identification codes and pay access fees
Switched Resellers
Own some facilities (at least a switch) Lease circuits, bulk facilities, and other services to resell Provide billing and customer service
Switchless Resellers
Generally lease 100% of their network facilities at a discounted, bulk rate to resell to end users Generally provide customer service and bill under their own logo
Wholesaler (Aggregator)
Gather long distance companies to take advantage of special rates Earn revenues as a share of the amount saved by the user Do not supply network services, billing, or customer services

What Kind of Business to Be?

The distinction between carrier, reseller, and wholesaler is fuzzy, because long distance companies fall into virtually every gradation between these definitions, or provide

combinations of all types of services. In general, though, long distance providers fall into one of the following categories:

- **National carriers** with their own network to many locations, such as MCI and Sprint
- **Local or regional companies** that own some of their own facilities but buy or lease time from the big guys or from carriers' carriers
- **Local or regional resellers** who own none of their networks and lease most of their circuits from carriers' carriers
- **Carriers' carriers**—regional fiber and microwave carriers who wholesale their circuits to resellers and large corporations
- **Alliances of regional carriers' carriers** that link members' networks to give broader geographic coverage for reselling
- **Resellers of carriers' carrier services**, who combine and mix services and sell the new product to retail long distance companies and large corporations, often at lower prices



Which of these alternatives makes the most sense for a new entrant into the long distance market, especially an established local carrier?

Local network providers already have established expertise in switching, access, and transmission—plus marketing, customer support, and billing. Leveraging this established knowledge, these companies are well positioned to become carriers or resellers of long distance service. The question is whether it is advantageous to serve as a carrier—owning and controlling its own switches—or as a reseller, capitalizing on facilities provided by other companies. Here are some considerations that weigh into this decision:

Network Costs—Carriers that own their own switches and transmission systems are in control of operations cost. In addition, as new technologies become available to reduce operations costs—such as improvements in access and transmission systems, and centralized network management systems—the savings are seen immediately. Carriers that rely on others to provide facilities may or may not see these savings passed along in lease rates. Consider that for switchless resellers, network acquisition and management costs (which can represent 60 to 70 percent of total costs) are determined and controlled by a third party that is also likely to be a competitor in the retail market.

Features—Network features, such as sophisticated new calling capabilities, are controlled by the network provider. Carriers that own their own switches determine which features to purchase, based on their own knowledge of their customers. Given that many sales are won or lost on features and feature flexibility, providers would be hard-pressed to offer a competitive edge when they didn't control the set of features they could offer. Resellers that don't own the switches are also unlikely to be invited into the feature design process.

Customer Information—The organization that owns the long distance switch and billing system also has the customer information it produces, including name, number, billing data, and usage trends. The billing data produced by switches is extremely valuable input for target marketing programs. Which customers bill more than \$1,000 a month in long distance calls? Which ones are candidates for more sophisticated services or a new bundling of services? Which business customers are new or have grown more than 25 percent in the last three years? For switchless resellers, this kind of information is in the hands of a carrier who could also be a competitor.

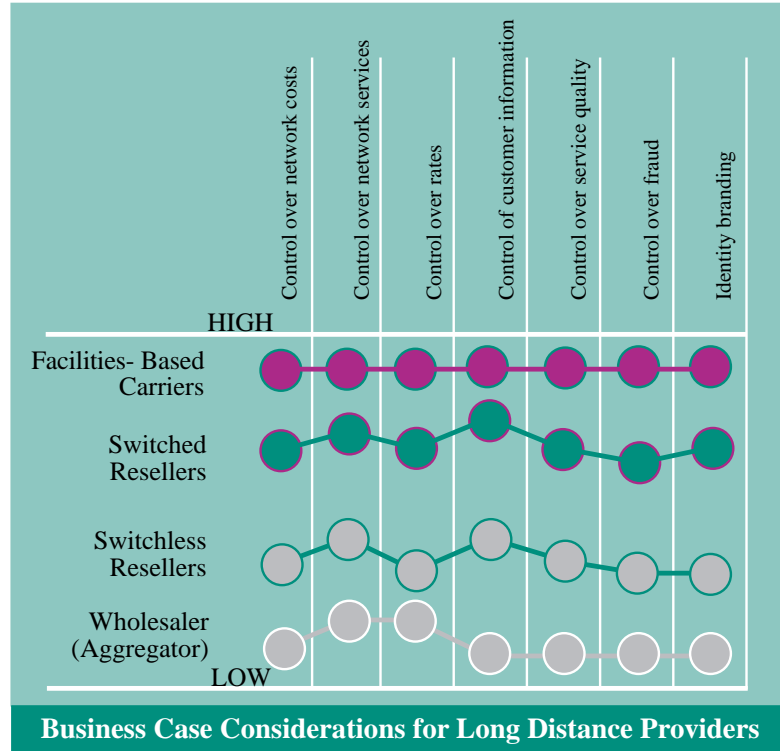
Quality—Control and responsibility over quality of service is determined by the provider that owns the switch. In the event of a service problem, the customer can become aware that his service is not actually provided by the “branded” carrier but by another carrier. In this case, customers are likely to question whether they should be getting their service directly from the carrier that owns the facilities.

Efficient Resource Utilization—Carriers that control their own facilities can capitalize on every opportunity to squeeze more capacity or services from their investment. For example, with a SONET backbone in place, carriers can ensure that Wave Division Multiplexing (a capacity-enhancing feature) and “extra traffic” (non-critical traffic carried on protection channels) are used to get the most out of their fiber and drive “per-bit” costs to the lowest level possible. Similarly, carriers with extra capacity can lease that capacity to others or pursue incremental revenue opportunities, such as video backhaul.

Fraud—Typically, the reseller that does not own its own long distance switches is responsible for the costs of fraudulent use of the phone system—over which it has no control. On the other hand, carriers that own their switches can implement fraud prevention systems to control or eliminate this cost.

Brand Identification—Whether the carrier owns its own switches or procures switch services from another carrier, it is essential that the call be “branded” appropriately. When long distance customers reach directory assistance and recorded

announcements, for example, they should hear the name of the company selling the service, which may or may not be the company with the switch. The technology is available to have switches and audio processing platforms brand calls for different carriers, but the control for implementing this capability correctly will rest with the carrier that owns the switch platform.



Major Trends of the Coming Five Years

For switch-owning and switchless carriers alike, there's no doubt that the next five years will bring major changes in the long distance industry. Industry watchers and long distance providers agree on the following major trends:

- **Competition will increase in many aspects of the business**, especially local access, international resale, intraLATA toll, and cable bypass. The imminent entry of Regional Bell Operating Companies and other established local carriers into the fray will change the competition more than any other major competitive force of the previous five years.
- **Consolidation of providers will continue**, as smaller carriers join forces to improve their bargaining positions and find ways to complement their limited resources. We're likely to see more local and regional carriers partner to share networks and terminate traffic to each other. Numerous smaller carriers whose revenues are less than \$100 million a year are being acquired or merging with larger carriers. A storm of mergers and acquisitions has caused carrier identities to change frequently but kept many small carriers afloat. The market is shaking out into two main camps:

- Information providers (such as television networks, the Disney corporation, cable TV programmers, and on-line services)
- Network providers, who provide the pipeline (including RBOCs, independent operating companies, electric utilities, cable television companies, and interexchange carriers)

If mergers and acquisitions are market indicators, it seems that large multi-national companies want to be both, while the smaller companies are focusing on the business of providing networks rather than content.

- **New technologies will change the market** with a host of new products to offer to customers. Video telephony (video-on-demand), multimedia services to the home, and global networking will create new revenue opportunities and new regulatory issues for long distance providers. Successful providers will be the ones that accurately predict the demands of a changing market—differentiating between what sizzles and what consumers really will buy—and make informed, low-risk technology choices.

In addition, technological advances are expected to reduce the cost of providing services—and provide the foundation for more advanced services. For example, Nortel's S/DMS TransportNode OC-192 system makes it possible to pump eight times the amount of traffic into an existing fiber route, compared to OC-48 systems (the previous high-end standard). Other major technology trends include widespread deployment of intelligent networking with SS7 signaling, complete fiber digital connectivity between LATAs, digital switching in almost every exchange in North America, and new digital access methods, such as ISDN, fiber alternatives, cable TV alternatives, and fixed radio.

- **Regulation (and/or deregulation) will bring significant changes.** Reform legislation is bringing sweeping changes to the nature of the long distance industry. In broad terms, federal regulatory change is designed at promoting fair competition in local and long distance markets. For the RBOCs, that means the ability to compete in the long distance market. For existing long distance providers, it means at least temporary protection from competition from the RBOCs while whittling away at state laws that prevent long distance carriers from offering local phone service.

Deregulation of local telephone monopolies is happening at the state levels too, with many states being more aggressive than the current federal legislation. Deregulation is the key force behind many of the acquisitions and mergers we're seeing in the industry, as companies scramble to be the one-stop-shop in the Information Highway.

- **International calling will gain prominence.** U.S. carriers, particularly, are focusing more and more on markets outside the U.S., which are seen as more profitable and faster growing than domestic markets. U.S. carriers are creating consortia and partnerships to venture into international markets. With growth projections depending on network globalization, network providers must rely on vendors with international presence, whose network systems meet international telecommunications standards as well as North American standards.

HOW TO COMPETE AND SUCCEED IN LONG DISTANCE

Competition in the long-distance market is aggressive. Price discounting, prevalent through the 1980s, has given way to brand recognition and market differentiation. Carriers are investing heavily in promotion and advertising, service customization, and international expansion in order to continue the high growth levels they previously experienced.

In the U.S., expected industry deregulation will result in further levels of competition as new entrants, including RBOCs and other local carriers, attempt to maximize market share. This in turn will result in new levels of competition based on price, branding, differentiation and niche marketing.

The successful interLATA and international long distance carrier will provide all these things:

- Service parity with the big players
- Differentiating services
- Speed to market
- Brand recognition and image
- Premium service quality
- Competitive price
- Successful selling in niche markets

How to Compete and Succeed
Service Parity
At minimum, 1+ 800 service, calling cards, and operator backing
Differentiators
Innovative services, discounting, or packaging
Speed to Market
Early entry to market with new services
Brand Recognition
Awareness, image, and identity, backed by aggressive advertising
Premium Quality
Superior availability, reliability, and signal quality
Competitive Price
Creating the customer perception of offering the best value
Target Marketing
Selling customized products aimed at unserved niche markets

Service Parity with the Big Players

Whatever the unique needs of each territory, the first step in entering the market will be to move swiftly to provide service parity with the big players. At minimum, new entrants will be expected to offer 1+ outbound 800 number service, calling cards, and operator backing for all services. RBOCs may have to provide all this on an infrastructure separate from their local service.

Differentiating Services

Success will require more than an equivalent offering, though. If business and residential subscribers are to be won over from their existing carrier, they must perceive some advantage to making a change—and that advantage has to outweigh the inconvenience and uncertainty of change. Therefore, the successful long distance provider will be pressed to make ongoing investments in service offerings to differentiate itself from other carriers. Differentiation doesn't necessarily mean more new services; it can mean innovative pricing or packaging of groups of services.

Programs such as Friends and Family, 1-800-Collect, and fraud management are recent examples of differentiated service offerings. A complete description of basic and value-added services is found in section 1, “The Opportunity.”

Speed to Market

When technology or consumer readiness signals a new market opportunity, the winning long distance carrier will be the first to capitalize on that opportunity. When speed to market is measured in weeks, not months, success can depend on a close partnership with a key supplier that has the experience, resources and financing necessary to support rapid business launch and service delivery.

The deployment of Advanced Intelligent Networking and other off-switch industry standard processing platforms has dramatically shortened the time to market for new services. Network providers are no longer tied to lengthy switch software development schedules; they can move quickly to have their own or third-party developers create services in common software languages, such as C++—then roll them out across a whole region without upgrading hundreds of switches.

Brand Recognition and Image

The flood of new entrants into the long distance market is creating a confusion of choices for consumers—in which the familiar and trusted name of their local exchange carrier will be a comfortable choice. If that familiar and trusted name can also provide a broad range of services with transparent interworking, all the better.

Yankee Group research has shown that consumers are driven more by brand loyalty, brand recognition, and reliability than by price, which ranked only fifth in importance in a recent poll. With that in mind, it does indeed seem possible that RBOCs and other established local carriers will garner the 10 to 30 percent market share they are anticipating of the new, deregulated long distance market.

Local telephone companies are certainly at an advantage to build upon strong brand awareness, image, and identity in the local serving area, but aggressive newcomers are by no means locked out. Massive advertising budgets are the norm for market entry and maintenance as carriers jockey for position and market share.

As important, the long distance company must be able to tell its customers just which company they’re using for all their valued services. “Thank you for using InterLATA Telephone.” Identification of the carrier handling the call—known as call branding—is essential.

Call branding is usually triggered by switch software and actually “spoken” by an audio processor within the switched or connected to the switch through a LAN. For calls that are switched through the local exchange carrier, the local end-office switch brands the call. For calls that bypass the end office, branding is done by the interexchange carrier’s switch.

For operator services that are supported by automation—such as the computerized directory assistance systems that are used almost everywhere today—the automation system triggers call branding from an audio response unit. For example, Nortel’s Network Applications Vehicle “brands” Directory One directory assistance calls. Even for simple, non-automated operator services, operators have technology support;

they can record frequently spoken phrases in their own voices to a “personal audio response system,” then play the recording to save their voices.

Premium Service Quality

The growth of all-digital—even all-fiber—networks has raised the stakes on what is deemed “quality” service. SONET, the industry standard for fiber-optic transmission, offers an embedded overhead channel that allows network providers to monitor the performance of an entire network from a single workstation. End-to-end surveillance and troubleshooting capabilities are essential for uncompromising performance.

In addition to signal quality, customers expect highly *reliable* networks for all their long distance services, even services that are not perceived to be “mission-critical.” Network providers build reliability into their transmission networks by having backup facilities ready to take over for working facilities, if necessary, and by providing alternate routing around problem areas.

The latest transmission systems offer automatic protection switching for service-affecting components. Backup circuit packs take over automatically in the event of degraded performance on a “working” circuit pack. For additional protection, the network elements can be configured in one-way or two-way fiber ring configurations. With SONET rings, traffic can be instantly re-routed from a degraded or failed route to an alternate route, without disrupting service. By designating some network elements to perform as “matched nodes,” this protection can be extended to paths that cross multiple rings.

Competitive Price.

Pricing structures vary widely, with the goal being to produce a 28-35% gross margin while remaining competitive in the marketplace and creating the customer perception of offering the best value. Rates are defined independently for each category of service, such as switched outbound MTS, dedicated outbound long distance lines, 800-number service, and calling card service. Some services may have only a few rate structures defined, while others may have a dozen or more rate plans, targeted at various customer types or adjustable by patterns of use.

Successful Selling in Niche markets

New entrants are particularly successful when they develop customized products aimed at unserved niche markets. These niches may be particular to a given region, or may be a result of business, demographic or geographic characteristics.

Smaller carriers have been successful targeting pre-paid card services, or specific demographic groups, geographic areas, or industries. Many mid-range carriers are targeting niche markets with focused products. For instance, a significant number of competitive access providers (CAPs) have built successful enterprises solely by connecting large businesses directly to long distance carriers to bypass the established local telephone company. Another inviting market niche is the “high toll” user—approximately one-seventh of residential subscribers (15 million lines) and two-thirds of business lines (20 million lines), who spend \$100 or more per month on long distance calls.

Carriers with substantial network reach have found a niche reselling capacity to other carriers. WorldCom, for example, experienced an average 30% growth rate primarily as a reseller of service to other carriers. And the biggest carriers are extending their markets into high margin international opportunities by forming “super-carrier” alliances.

A BUSINESS CASE FOR THE NEW MARKET ENTRANT

Principle Components of the Business Model

The challenges facing long distance providers seem formidable—they must adapt to new regulations, adopt new technologies, and offer an ever-expanding portfolio of new services. With this challenge, though, come boundless opportunities, as providers can readily enter new markets, serve new end users, and—by offering an array of new services—differentiate themselves in the competitive arena and profit in the process.

Particularly for resellers of interexchange services, the challenge is complex. Buffeted by tight revenue margins, an increase in competitive service offerings, potential new competition in the form of cable TV and local telephone companies, and more demanding customer service requirements—particularly for one-stop shopping—some resellers today are considering reinventing their businesses to establish themselves as full-service, facilities-based interexchange carriers.

Nortel has created a computer business model designed to help long distance providers make strategic decisions about entering, expanding, or re-defining their businesses. Should facilities be leased or bought? Operator services staffed or outsourced? Services originated or resold from others? At what market share or number of minutes of service is the break-even point for new facilities?

By plugging basic assumptions into the model, these questions can be answered, factoring in dozens of interdependent variables. Here are some key components of the business model:

- **Operating Revenue**

1+ Revenue—Per minute charges for inter- and intra-LATA toll calls, based on assumptions of market share for each year in the forecast

800 Revenue—Monthly and per-use charges for 800-number service, based on assumptions about number of accounts secured in year one, year two, and so on

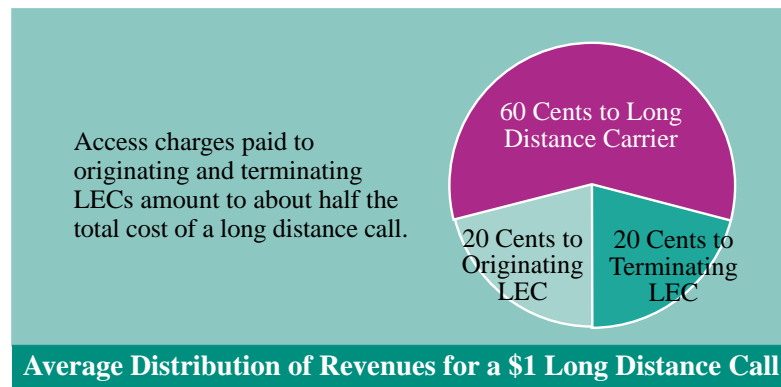
Operator/Calling Card Revenue—Per-use fees for operator-assisted services or information/listing services, plus charges captured by enabling users to access the long distance carrier when away from home

International Revenue—Charges for calls placed from North America to other countries, or for calls from one international destination to another, using North American operator assistance.

Other Telecom Services—Per-use fees for such services as message delivery, voice mail, directory assistance, and automated directory assistance call completion.

- **Cost of Service**

1+ Expense—Access charges, transmission leasing, wholesale termination and origination charges, and other miscellaneous charges can be directly related to providing 1+ long distance services. On average in the industry, cost of service amounts to 60-78% of revenue, with gross margins of 28 to 40%. For purposes of a mid-range business case, a 30% gross margin is a reasonable assumption.



800 Expense—As with 1+ service, the cost of providing 800 service is likely to represent about 70 percent of 800-service revenues. The gross margin varies depending on access rates, transmission lease costs, and competition in a given serving area, but generally falls into the 30 to 40% range.

Operator/Calling Card Expense—Whether outsourced or staffed internally, the long distance carrier will pay to have attendant backing for its services. Expenses for an operator service center will include salaries, benefits, workstations, and space for an operator workforce, plus hardware and software systems to support operator services. This expense category also includes the hardware and software for automated call completion services, such as calling cards and prepaid debit cards. For purposes of a preliminary business case, this expense category can be estimated at 70% of operator services/calling card revenues.

International Expense—Chargebacks to telecommunications providers in other countries for their part in handling international calls—plus access and network charges for the domestic portion of the call—can reasonably be estimated to represent 70% of international call revenues.

Other Telecom Service Expenses—This category covers the cost of providing miscellaneous services, such as systems to support message delivery, national directory assistance, or directory assistance call completion.

- **Gross Profit**—The difference between operating revenues and cost of services.

- **Operating Expenses**

Sales and Marketing—This line item covers salaries, commissions, travel, and other expenses for direct sales representatives, plus salaries and expenses for a sales/marketing manager or director.

Advertising—A potent tool for attracting and keeping customers in a carnival atmosphere of heightened competition, advertising is a big expense for the top long distance carriers, who each spend about \$1 billion per year on print and television ads. (Compare this to the \$500 million typical for Regional Bell Operating Companies.)

Network Expense—For pure resellers, this category includes the cost of leasing network facilities from other carriers. For most carriers, though, network maintenance and upgrades—along with salaries for switching and network technicians—are factored into this expense category. Switch and network equipment maintenance typically amounts to 4-5% of total expense (when access charges are included in the equation).

Bad Debt Expense—Bad debt, as a percentage of revenues, varies widely by type of service—with 1+ MTS service showing the lowest bad debt ratio (1-4%), and 900 number service having the highest bad debt (40-50%). This flip side is that the services with the highest bad debt ratios are also those with the highest profit margins. Bad debt is lower when local and long distance charges are presented on the same bill from the local exchange carrier—higher when charges are presented on separate bills. A business case assumption on bad debt can be calculated based on the service mix the provider expects to have.

Interest Expense—The business case must consider interest on capital infrastructure. However, carriers wishing to implement their own facilities may be able to take advantage of creative financing strategies, such as per-port or per-query pricing, that allow them to “pay as they play” with minimal up-front investment and reduced risk.

Depreciation and Amortization—For carriers that own their own facilities, the business case accounts for depreciation and amortization of switches, access and transmission systems, billing systems, and other network equipment.

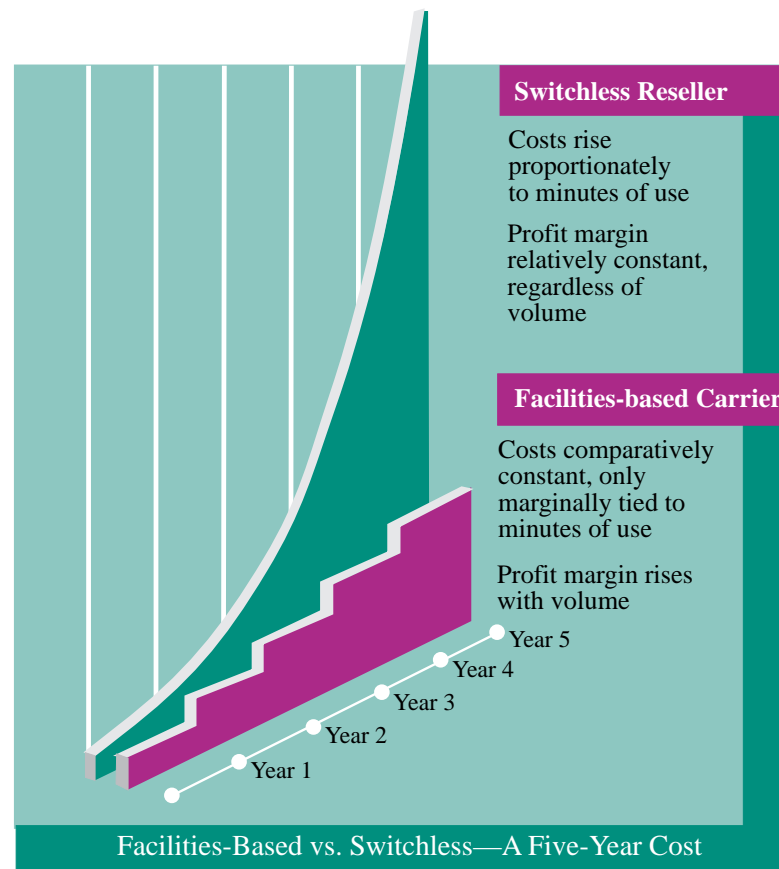
General Office Expense—Salaries for accounting, administration, marketing, customer service, and engineering personnel—whether staffed internally or contracted from outside sources—are included in this expense category, along with miscellaneous office expenses.

Billing Expense—For companies that perform their own billing, expense is incurred for billing hardware, software, and personnel—plus resources to keep the billing system current with new services and regulatory requirements. For companies that have a local exchange carrier or service bureau perform their billing, the service is typically charged as a combination of a per-message (transaction) fee and per-bill fee. Estimates for business case purposes can be derived from estimates of number of customers served.

Other Operating Expense—Office lease/purchase, utilities, external legal and accounting services, insurance, training, and other miscellaneous expenses are considered in the “Other Operating Expense” category—and estimated based on regional averages for rents, professional services, and supplies.

These and other variables—such as number of days turn-around for accounts payable and accounts receivable—can be plugged into the business model to produce forecasts for the first five years of operation as either a reseller or facilities-based carrier.

Research with the business model has shown that the break-even point for owning one’s own network equipment is remarkably low—a market share of 1-1.5%, or 40,000 minutes of network use, or \$25 million of generated revenue.



About Tariffs

The FCC requires long distance providers to file a tariff statement outlining its interstate rates and services. Tariff documents describe the geographic area to be served, limitation of liability, services to be provided, prices for those services, and terms and conditions of service.

Probably the most complex area of the tariff filing is the rate structure, which is usually defined rather creatively to differentiate the provider from the competition while providing reasonable profitability—while meeting FCC expectations that rates be comparable to those charged by others.

The access charge contains several components—tandem-switched transport, direct-trunked transport, and entrance facilities. The long distance provider can choose to purchase all, some, or none of the network facilities to bypass those charges.

An example would be to purchase the entrance facility, tandem-switched transport, or direct-trunked transport from a competitive access provider (CAP)—or bypass the switched network completely by leasing or constructing dedicated facilities directly to the end user.

What are the other guys charging? That's not an easy question to answer. The price for a five-minute long distance voice call on one carrier can be 60 cents—or \$1.90—or any number of prices in between, depending on who you are, when you call, and how far you're calling. The rate structure is different for residential and business customers, different for day, evening, and night/weekend calls, and variable by mileage.

Industry trends are hard to find. Rates for some kinds of calls are dropping, while rates for others are going up. For example, one carrier's tariff filing shows that a five-minute call from New York to Denver would cost \$1.48 during the day, compared with \$2.70 a decade ago. At the same time, the five-minute call that crosses LATA boundaries (and therefore technically is a long distance call) but only goes five miles away, would cost 80 cents, more than double the rate of 10 years ago.

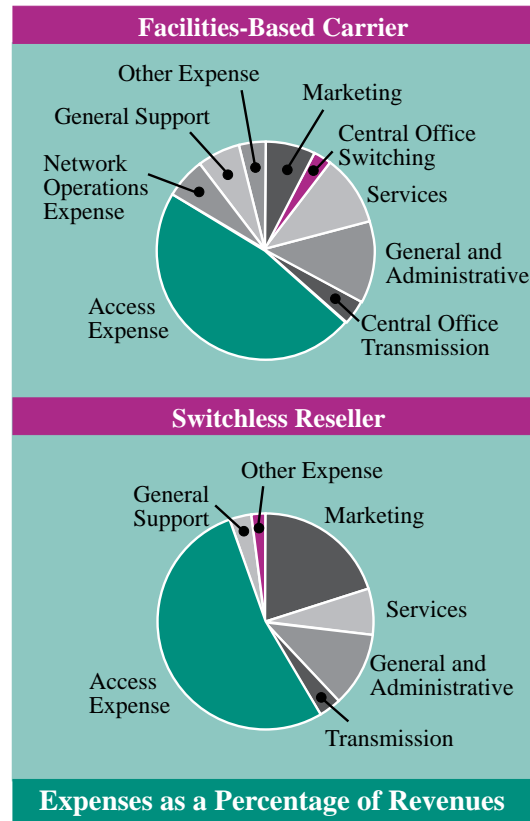
The only constant is that average annual telecommunications expense—expressed as a percentage of total household expense—has stayed the same for 15 years—a mere 2%. Today, the average household spends approximately \$19 to receive basic local service (unlimited local service, taxes, and subscriber line charges) and about \$40 on toll service and other telephone expenditures. Monthly per-household revenues are expected to rise dramatically as the telephone provider offers new business and entertainment services, such as telecommuting service (usually ISDN lines for voice and data) and video-to-the-home.

Rate Setting as a Relation to Cost—The only other given in rate-setting is you have to charge more than it costs to provide the service. The rules of fair competition—and the watchful eye of federal regulators and the judiciary system—currently dictate that providers cannot use their market power or profits from other lines of business to subsidize their long distance business and squelch their competition.

Regulated companies, such as Regional Bell Operating Companies, are under intense rate regulation and generally required to go through detailed rate calculation and justification, based on FCC-compliant accounting of operating costs and revenues. For resources shared with other lines of business, costs may be prorated by ports (trunks and lines), by minutes of usage, processing time, or such.

Unregulated companies generally are not required to justify their rates in relation to their operating costs, on the theory that competition will keep rates in check. However, some large carriers are required to file limited information to ensure that rates are above cost and are not using their market power to cripple competitors. The services of an attorney and accounting advisors are recommended to create accounting practices that meet FCC standards.

A Note About Operating Costs—Operating costs—network, personnel, and business expenditures—account for only about 60 percent of the long distance dollar. Another 40 percent currently goes to the originating and terminating local exchange carriers in the form of access fees.



Access fees are charged by the local telephone company for the use of its facilities to complete calls from the long distance provider to the local calling area. The per-call access charges paid by the IXC's for connection to the local network have become a major source of income for the local telephone companies, representing almost 25 percent of their revenues (an even larger percentage of their profits) in 1995. This large pot of money—approximately \$25 billion in 1994—has spawned intense competition and encouraged new market entrants, as well as generating unprecedented legal and lobbying activity to either protect or reduce the level of these charges. Overall, the trend is toward reduced access charges.

Often the type of interconnection tariff applied to the new entrant is based on whether the carrier is classified as a co-carrier or a reseller. Co-carriers (that is, companies considered as full peers to the telephone company) usually pay lower interconnection charges, but the new carrier is also likely to be subject to similar stringent regulations as those that govern the established provider. Resellers, on the other hand, are less regulated but may have to operate under less favorable tariffs.

Components of a Rate Plan—A single service—800 number service, for example—could have as many as a dozen different rate plans defined, targeted to different customer types or geographic areas. Each of these rate plans can include a number of variables that fall into three basic categories:

Key Components of a Rate Plan
Base Rate Per minute or per-service usage base rate
Discounts Time of Call Volume Term Multiple Purchase Promotional Calling Circle
Monthly Fees Recurring or non-recurring fee to subscribe to the service

- Base Rate**—The base rate for a service is often determined by the number of miles the service traffic travels across the network. (Computer systems can calculate mileage from the latitude and longitude coordinates of the source and destination of the call.) Other measures of distance can be used to calculate base rate, such as area code, exchange, LATA, state-to-state, interstate—or any combination of these. Alternatively, the base rate can be a flat fee regardless of mileage or area. Adjunct services, such as directory assistance fees and message delivery fees are generally set on a flat rate—perhaps 35 to 50 cents per use.
- Discounts off the Base Rate**—To attract and keep customers, rate plans very often include a discount structure of any of the following types:
 - Time of call discounts.* “Call on evenings or weekends for a reduced rate per minute.”
 - Volume discounts.* Spend more to save more. “Get 5% off your first \$50 of service, 10% off the next \$50 of service,” (for a total savings of \$7.50 on \$100 of long distance charges). Or, “Get 5% off every dollar up to \$50. If you spend \$100, get 10% off every dollar,” (for a total savings of \$10 on \$100 of long distance charges).
 - Term discounts.* Sign up for longer to save. “Sign up for one year of this service for a 5% discount, or get a 10% discount if you sign up for two years.”
 - Multiple purchase discounts.* Save on a bundle of services. “Get our complete service package tailored for attorneys and save 12% over purchasing these services individually.” Or, save on a bundle of locations. “Sign up all your branch offices for this service and get a 10% discount.”
 - Promotional discounts.* Sign up today and save. “Sign up now and receive an additional 25% on the first two months of service.” “Switch to us today and get \$10 of calling free.”

—*Calling circle discounts.* Discounts on calls to specific areas or numbers have been widely used and heavily advertised. “Save 10% on the calls to your friends and family members.” “Save 15% on calls to the one international city you call the most.”

- **Monthly Fees**—Many services carry recurring or non-recurring monthly fees that can be another source of revenue. For example, dedicated access lines could cost \$150 to \$500 per month. Or, an 800 number might carry a \$5.00 per month charge. Creative and variable discounts can be applied to monthly fees, just as they are to base rate charges.

MARKETING LONG DISTANCE SERVICES

With hundreds of long distance carriers vying for their share of customers, providers must be as competent in marketing their services as they are providing them.

Toll traffic within a local provider's area (intraLATA toll) has not generated much marketing activity in the past, because the local exchange carrier generally had a virtual monopoly on the service (though some providers have mounted campaigns designed to increase toll calls). However, the opening of this arena to competition (a market change that has already been mandated by regulators in a number of states in the U.S.) means marketing skills are needed to enjoy a large market share.

The interLATA toll market is already characterized by the competition, fierce advertising, and targeted marketing techniques that most of us are familiar with through the battles between AT&T, MCI, and Sprint. The vast revenues available from this segment intensify the need to use a broad range of marketing strategies, from traditional advertising to strategic pricing.

Primary Marketing Approaches

Primary Marketing Approaches
Direct Sales
Person-to-person selling for new accounts and new services to existing accounts
Telemarketing
Telephone selling to small business and residential customers
In-House Marketing
Advertising, promotions, sales strategies, and market development
External Sales Agents
Wholesalers and retailers—often targeting specific niches—paid on commission
Affinity Programs
Sales incentives to established groups to promote sales to their members

Most long distance providers support sales and marketing staffs that include the following key groups:

Direct Sales—The core of the sales department, direct sales people focus on medium and large accounts (“medium” defined as \$150 to \$1000 per month in toll usage and “large” being \$1000 and up). Direct selling has been proven highly effective in winning new accounts and selling new services to existing accounts. A typical direct sales person is assigned 300 to 500 accounts, makes perhaps 6 to 10 face-to-face presentations each working day (“cold” calls and appointments), and sells an average of \$2,000 to \$3,500 per month (8 to 14 sales averaging \$250). Compensation is usually composed of base salary (\$18,000 to \$28,000) plus commission (30-50% of new sales), for an average annual total of \$30,000 to \$50,000. Compensation and performance expectations naturally vary by market area, competition, target accounts, marketing support, and the degree of network knowledge required.

Telemarketing—Telemarketing is a cost-effective way to reach small business and residential customers, who are likely to spend less than \$150 per month in long distance services. A telemarketing agent can reach 10 to 15 customers per hour at a cost of only \$2 to \$6 per contact. Some long distance providers use telemarketing agencies. Outside service bureaus are a good option if any of the following conditions

exist: the program should be started immediately, start-up money is scarce or unavailable, call volume is expected to fluctuate greatly, the telemarketing campaign will be short-lived, or internal expertise is not available.

An in-house telemarketing program offers the advantages of lower cost, faster feedback, close coordination with other marketing activities, and greater control over the way marketing activities are carried out. For either approach, telemarketing can be combined with direct mail for maximum effectiveness.

Marketing—The marketing department is primarily responsible for sales strategies, product development (rates and new products), promotions (“No monthly fee if you sign up now!”), advertising, and other sales support functions, such as appearances at local events, production of brochures and bill-stuffers, a sales presentation manual, and managing the sales/marketing database. The marketing department also conducts or commissions sales research, such as tracking the competition and market trends.

External Sales Agents—In addition to internal marketing efforts, network providers have effectively used independent agents, who represent the provider’s services and are paid on a commission basis. The agent may be authorized to sell only certain products, only to certain customer types, or within a defined territory—or given free rein to sell from the carrier’s entire portfolio to any potential customers.

Sales agent contracts can be exclusive—the provider agrees not to use other sales agents for the targeted niche or territory, or the agent agrees not to sell other carrier’s products—or non-exclusive. Commission structures are set accordingly, with exclusivity considered a premium offering. Generally the agent is paid a one-time fee upon making the sale (5 to 30% of the sale value) and receives a recurring fee (2 to 10%) as long as the customer subscribes to the service.

Affinity programs are marketing approaches that build community goodwill while promoting sales. Under affinity programs, the network provider offers sales incentives to established groups—such as chambers of commerce, schools, clubs, or trade organizations. Profit-making groups, such as a local board of Realtors, for instance—might receive discounts for group members. Not-for-profit groups, such as churches or schools—might receive a percentage of revenue generated from group members.

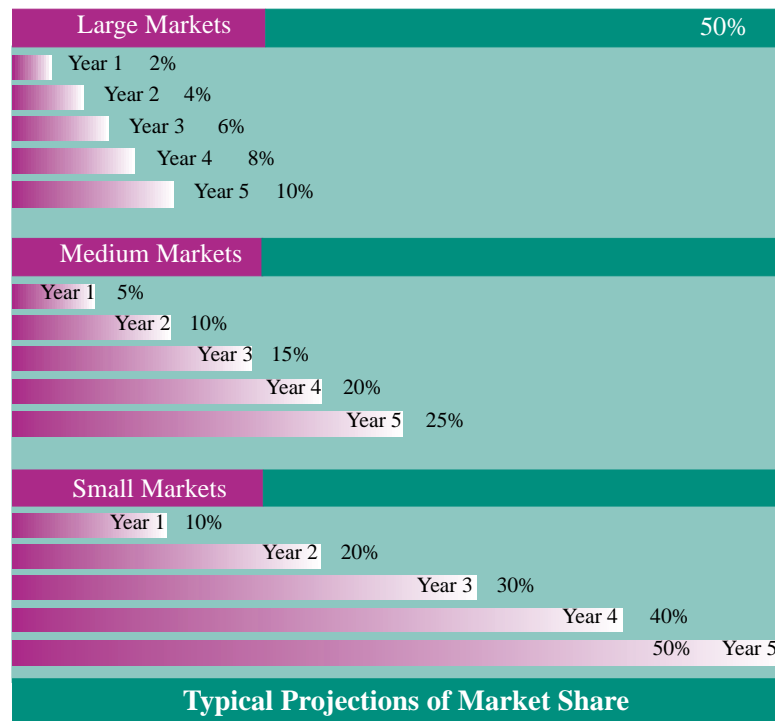
Making Market Projections

A key to success of a marketing program is setting achievable but aggressive goals. Marketers often refer to “sales penetration rates,” which means the same as “market share”—percentage of the total market. The total potential market can be roughly estimated from local exchange carriers’ data on number of lines—then assuming \$25 per month revenue per residential line and \$75 per month per business line.

In a large market (population 150,000 and up), a long distance provider might realistically seek 2% of the total interstate toll market in the first year, 4% in the second year, 6% in the third year, and so on. Penetration rates are likely to be higher in medium-sized markets, where targeted and localized sales efforts are easier to conduct.

In a medium market (population 50,000 to 150,000), a provider might work toward 5% penetration in the first year, 10% in the second year, 15% in the third year, and so on.

In the smallest markets (under 50,000), there are usually fewer competitors, more community awareness, and more sales resources per capita. A new entrant can realistically seek to capture 10% of interstate toll revenues in the first year, 20% in the second year—then as much as 50% of the total market by Year 5.



The largest share of revenue—about half—can be expected from medium-sized businesses that use \$100 to \$5000 worth of long distance services each month. To go after this market, the carrier would likely target such organizations as auto dealers, insurance companies, financial firms, hospitals, hotels, law firms, utilities, real estate offices, and schools.

Small businesses and large businesses represent the next major revenue sources, each accounting for 10 to 15% of total revenues. Retail stores, restaurants, service stations, and small service industries generally account for less than \$100 per month in long distance, but there are a lot of them. Large accounts—such as telemarketing firms, collection agencies, and large businesses—are few and far between, but they typically use \$5,000 or more in monthly long distance and therefore are attractive targets for marketing efforts. This high-echelon set of customers is also likely to be the target of the most aggressive marketing efforts of competitors as well.

Whichever sales and marketing approaches are used, penetration rates will generally be higher the more targeted and localized the approach. The numbers presented earlier are just ballpark averages—and are highly variable depending on competition in the

market, concentration of resources, and targeted market niche. Sales goals should also be re-evaluated and adjusted regularly based on actual market experience.

Database Marketing

Telecommunications network providers have a unique advantage in marketing in that their core business automatically produces valuable customer information to support highly targeted market research. “Database marketing” means using computerized information about your customers and market to identify prospects, test market to a subset of the total market, spot market trends, and build customer relationships.

The marketing database should contain updated records of customer and prospect names and addresses, demographics, response history, purchasing history, and contact history. This information can then be sorted and tabulated in any number of ways to produce customized mailings, segment part of the market for specialized sales strategies, or the like.

Incentive Marketing

In the new heat of competition, the straight sale (“Here’s my offer, take it or leave it”) is giving way to incentives and promotions. Everybody wants to get the best value, and the long distance market is no exception. Aggressive marketers are using the gamut of incentives to attract and keep customers. Here are some typical offers:

- Special pricing or payment terms, especially effective for customers who know your products or services but need a nudge to buy
- Introductory offer, often a free trial or substantial discount, to introduce new prospects to your company
- Multiple product discounts, whereby the buyer gets a second or third product for a reduced rate or for free
- Premium, a promotional give-away or business information that is given with the sale to motivate the prospect to purchase now

Marketers also use free demos, money-back satisfaction guarantees, performance guarantees, and trade-in offers in their arsenal of incentives.

Cooperative Marketing

Since vendors of telecommunications equipment and features have a vested interest in stimulating demand for the products they sell, they are often available as partners in the marketing process—sharing both costs, risks, and strategies. These partnerships range from:

- Providing admaker kits to quickly customize and deliver newspaper ads, bill stuffers, and television campaigns
- Providing soft copy of other collateral and technical marketing materials for customization under the provider’s logo
- Sharing customer databases
- Sharing technical and marketing expertise for the provider’s tariffing and pricing activities

- Providing cooperative marketing funds in the form of a percentage rebate on sale of equipment/software for redeployment into marketing efforts

BILLING FOR LONG DISTANCE SERVICES

The lifeblood of the long distance carrier is the ability to bill and be paid for services. This requires the maintenance of real-time, transaction-based billing records for many thousands of customers and scores of variants in service pricing—flat fees for some services, per-minute charges for others, access charges, special discounting programs, and varying rate structures by customer, call volume, time of day, and day of the week.

Fortunately, software available for digital switches significantly simplifies this task by automatically providing the raw data from which bills are constructed. The format of the raw data is determined by Bellcore and depends on the line or trunk type being used:

- Station Message Detail Recording (SMDR) for centrex line calls
- Bellcore Automatic Message Accounting (AMA) for local, message rate, and toll calls
- Call Detail Recording (CDR) used for calls originating on long distance trunk groups.

This raw data is transported either on magnetic tape or electronically over dial-up or dedicated data links, to a regional billing office. The billing center then computes and creates the actual bill to the customer. Information generated in the course of billing often becomes invaluable source material for strategic market analysis.

Who Does the Billing?

Historically, billing functions were all handled by the long distance carrier, because cost-effective alternatives simply weren't available. Now interexchange carriers, even resellers, have several options for billing: direct billing from their own in-house billing system, outsourcing to a third party billing service bureau, or having the local exchange carrier create and send the bill and perform collections.

Typical Billing Arrangements
In-House Billing <p>The long distance provider owns its own billing system and sends bills to customers under its own name.</p> <p>The customer receives separate local and long distance bills.</p> <p>Billing services can be resold to others.</p>
Service Bureau <p>A billing agency owns the billing system and sends bills based on raw data received from the long distance provider.</p> <p>The billing vendor manages the interface with the multiple LECs involved.</p>
Local Provider <p>The long distance provider sends raw data to the subscriber's LEC.</p> <p>The LEC processes this data and includes long distance charges on its bills for a per-message and per-bill fee.</p>

The Long Distance Provider Does the Billing—Under a direct billing arrangement, the long distance provider can develop or purchase its own billing system and send its own bills to customers. The customer will receive one bill for local telephone service and another for long distance service. This method offers the advantage that the company can control everything about how bills are calculated, presented, and collected—and have access to the valuable customer information that resides in the billing system. Billing systems can be custom-designed to offer features that would attract and keep customers, such as exceptional rating/pricing flexibility, or custom reporting.

In addition, if the provider has its own billing systems, it can resell billing capability to other telephony providers outside its service area.

However, direct billing requires that the company invest in billing software and hardware—and be prepared to implement billing changes as required to support new services, regulatory requirements, and customer expectations. Another key drawback is that customers—especially residential customers—generally do not appreciate

receiving separate local and long distance bills. Collection ratios are significantly lower when local and long distance charges are presented on separate bills.

A Service Bureau Does the Billing—Some carriers select third party firms to outsource the billing function. These service bureaus accept multiple record types, track uncollectibles, and provide flexible bill formatting and management reports. The long distance provider has on-line access to their billing records at the service bureau for reporting and analysis purposes.

A key advantage of a service bureau arrangement is that the long distance provider doesn't have to support billing personnel or systems. The service bureau bears the responsibility for updating billing hardware and software—a cost that it can more easily bear since it shares this equipment among many clients.

Outsourcing the billing function also allows long distance providers to focus their energies and attentions on their core business, rather than on getting paid. Given that long distance companies may have to work with many local exchange carriers, a billing clearinghouse significantly streamlines the billing process.

The Local Exchange Carrier Does the Billing—The local exchange carrier can serve as the billing agent, an arrangement becoming more common as subscribers expect to get one bill, rather than several, for all the services they receive. Under this arrangement, the long distance provider sends Call Detail Recording (CDR) to the local exchange carrier. The LEC processes this raw data and includes long distance charges on its bills along with local phone charges.

The local exchange carrier charges a fee for this service, usually calculated as a combination of per-message (transaction) and per-bill fees. For this fee, the local exchange carrier records, rates, bills, collects, and long distance charges—and provides customer support such as handling billing questions from customers. (These services can generally also be purchased separately.)

However, this strategy requires the long distance provider to maintain its own customer database for marketing purposes—and it relies on the LEC to pursue bad debts. Bad debts amount to only 3 to 4 percent (or less) of 1+ calling charges, 6 to 10 percent of operator service and pay phone charges—but as much as 50 percent of 900 number charges. As a result, some long distance carriers—even if they have the LEC bill for regular long distance calls—migrate 900 number billing to their own billing centers or to service bureaus with aggressive collections capabilities.

Another traditional drawback of LEC billing has been having less control over rating calculations and bill formats. The latest trend is toward long distance providers creating their own invoices and sending the already processed invoice to the local exchange carrier for inclusion in the local bill. Contracts for this service are made directly with the local exchange carrier or with clearinghouses that have contracts with the local carriers. The clearinghouse option is an efficient alternative for long distance providers that deal with many local telephone providers.

This alternative also addresses one of the chief concerns over outsourcing the billing function: giving away access to the valuable customer/marketing information contained in billing records. Should a provider retain control over the names,

demographics, and calling habits of its customers—or place this information in the hands and computers of a potential competitor?

Considerations in Choosing a Billing System

Whether the long distance provider chooses to handle its own billing or outsource it to a service bureau or LEC, certain billing capabilities must be present to enable it to meet its business objectives.

For one, the billing system must be flexible enough to accommodate a wide range of rating/pricing schemes—such as special discount packages, time-of-day rating, and customer-specific pricing—and change them quickly. This flexibility should extend to calculation of other charges, such as taxes, surcharges, installation charges, and recurring charges.

Customer bills should be easy to read and adaptable to serve marketing purposes as well as billing purposes. Short turnaround from billing cycle close to bill delivery is critical. Business customers, especially large businesses, will expect to have the option of receiving their long distance bills in electronic format—CD-ROM or magnetic tape, for example—which enables them to perform their own analyses.

For the network provider's purposes, the billing system should be designed to handle the anticipated volume of billing data comfortably, with high accuracy shown in exception reports. It should be able to produce customized, ad hoc management reports showing which customers are buying what—broken down by product, geographic area, and services. Ideally, the system would also show detail for rejected and unbillable calls, such as fraudulent calls, closed accounts, collect calls to pay phones, and calls made with stolen credit cards

THE REGULATORS

In the United States, state and federal authorities regulate providers who offer 1+ and 0+ inter- and interstate message telecommunication service (MTS).

U.S. State Regulation

Most states regulate the entry of long distance providers and require some type of filing before offering intrastate service. These requirements vary from a simple letter filing accompanying a tariff to obtaining a “Certificate of Public Convenience and Necessity” after a public hearing. As it stands, about 45 of the 50 states require some form of certification or notification along with the filing of a state tariff. Certification generally requires that the applicant demonstrate that the enterprise possesses the technical, managerial, and financial resources to provide the services.

Eight states (Alabama, Florida, Maine, Mississippi, North Carolina, New Mexico, South Carolina, and Wyoming) also require a formal hearing.

U.S. Federal Regulation

Facilities Authorization—Prior authorization from the FCC is not required for providing interstate domestic long distance service. If international service is considered, prior authorization must be obtained under Section 214 of the Communications Act.

Tariffs—The FCC requires long distance providers to maintain a recorded interstate tariff for domestic and international long distance service. Domestic tariffs are subject to streamlined treatment and may become effective on one day’s notice. International tariffs receive similar treatment but must take effect on at least 14 days’ notice.

Interstate Operator Services—The long distance provider should be aware of federal requirements concerning interstate operator services. The Telephone Operator Consumer Services Improvement Act of 1990 required the FCC to (1) establish consumer safeguards that apply to providers of operator services, and (2) set requirements for entities that make telephones available to the public in the ordinary course of business. This includes local exchange carriers, pay telephone owners, hotels, hospitals, airports, gas stations, etc. If a company’s long distance operations will include automated or live assistance to complete or bill an interstate call, then provisions of the Communications Act are likely to apply. Among other things, this means that the provider must file, maintain, and update an information tariff that provides information on the terms, conditions, and rates of its operator services.

Telecommunications Relay Service Fund—All carriers providing voice transmission, including long distance carriers, are required to make telecommunications relay service (TRS)—special service for the hearing impaired—available to their users. In addition, all providers of interstate common carrier voice services must make payments to a TRS Fund—administered by the National Exchange Carrier Association—designed to act as a shared funding mechanism for interstate TRS. Each year, long distance carriers contribute an amount based on a contribution factor set by the FCC. Under the 1995 rules, carriers completed a TRS Worksheet and contributed 0.047% of their gross interstate revenues (as defined in Section 64.604(c) of the FCC's rules) or the minimum payment of \$100.

Annual Regulatory Fees—Under the Omnibus Budget Reconciliation Act of 1993, large carriers pay annual fees to the FCC. For fiscal year 1995, interexchange carriers (including resellers of interexchange services) paid annual regulatory fees of \$0.00088 per dollar of interstate revenue.

Canadian Regulation

The Canadian telecommunications industry is regulated by the Canadian Radio-Television and Telecommunications Commission (CRTC), which is similar to the FCC in scope and authority. Provinces have limited regulatory authority similar to state authority.

In 1992, the CRTC gave the nod to wide-open competition in Canada's long-distance market. As a result, the country's 10 established companies lost 18 percent of the \$6.8 billion long distance market to their competitors, many of them resellers. Today, the Canadian market is characterized by feverish price-cutting and promotional offers (rates have dropped 30 percent or more in 1994 and 1995) in an effort to convince consumers that switching phone companies is advantageous.

OPERATING THE LONG DISTANCE COMPANY

Long distance providers are not unique in their requirement to run lean and mean in order to be profitable. Every aspect of company operations, from staffing to network engineering to customer support, must be efficiently managed to provide service at competitive cost. This section looks at some of the key considerations of:

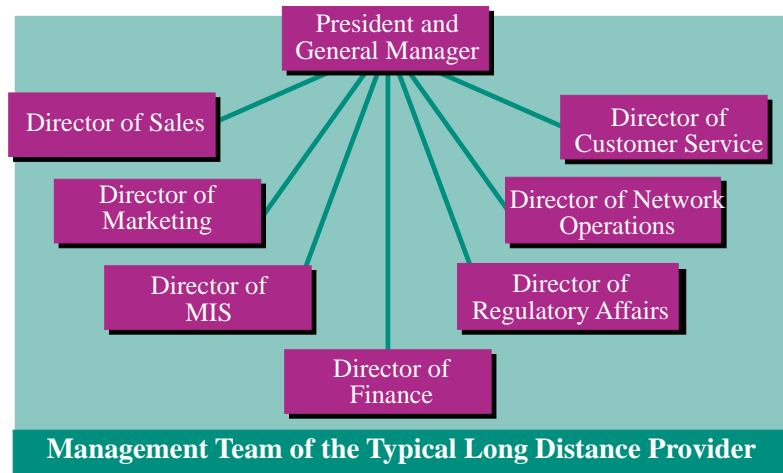
- Organizational structure
- Customer support
- Network planning and engineering
- Network maintenance
- Environmental and powering considerations
- Managing the work of operators and operator centers

Organizational Structure

If the interexchange venture is part of a larger company, it should be set up as a separate operating division—with separate accounting and personnel (especially personnel dealing with customers). For some carriers, this separation will be required by federal regulation.

Although the organizational structure of this enterprise will vary by type of carrier and by market, the following key executive positions are customary:

- President and General Manager, with overall responsibility for operations and finances of the organization
- Director of Sales, including direct sales, telemarketing, and external sales representatives
- Director of Marketing, responsible for guiding product development, advertising, and sales support
- Director of Customer Service, responsible for billing, collections, and customer service
- Director of Network Operations, responsible for engineering, operating, and maintaining network hardware and software
- Director of Management Information Systems (MIS), who manages internal information systems, such as hardware and software for business planning, database marketing, and desktop office systems
- Director of Regulatory Affairs, responsible for filing tariffs, keeping up with regulatory change, and ensuring the company's compliance with state and federal regulations
- Director of Finance, responsible for financial planning and reporting, including state and federal fees



Customer Support Services

Most carriers and some resellers maintain their own customer support centers to answer questions, take orders for new service, resolve problems, and provide other forms of customer assistance.

The business office and customer service are the first line of contact in a business where service is increasingly becoming a differentiator. The established customer expectations are simple: they expect features and services to be turned up quickly and they expect these services to be maintained in all but the most catastrophic of natural emergencies.

That means that a customer service phone line must be staffed 24 hours a day and on-call repair technicians available 24 hours a day. Small carriers may choose to outsource the phone-answering function. Whichever approach is used, customer service representatives must have the training and reference information to answer typical customer questions. “How do I get new service to my new home under construction?” “How can I get calls organized by attorney on my bill?” “How do I get a prepaid debit card to charge long distance calls?” “Who can give me statistics on the signal quality and up-time of your dedicated data lines?”

The number of agents provided to handle this task will vary by call volume, number of customers, and type of customers—and should be monitored and adjusted regularly to ensure premium customer service.

In the event of trouble, the customer service representative takes the information and refers the issue to a trouble desk. Trouble desk staff log the problem, coordinate the work of a technician to resolve the problem, and follow up with the customer.

In addition to a customer service department and trouble desk function, a long distance carrier will typically support an engineering department—which engineers the network to supply the required capacity and services—and an operations department—responsible for the installation and maintenance of that network equipment. A typical

Like billing and network maintenance, customer support services can be outsourced—a strategy that allows emerging network providers to focus on their core businesses.

small- to medium-sized carrier with one switching center and limited facilities might have one or two network engineers and two or three operations specialists. However, in many small operations, the same people perform both tasks.

Multiple departments work together to provision new services. For example . . .

- **If a business customer requests a dedicated access line**, the sales and marketing department forwards the request to the engineering department, which orders the appropriate facilities from the LEC or transmission provider. The operations department follows up with installation and testing.
- **If a business customer requests an 800 number**, the sales and marketing department receives customer information from the customer (for direct sales) or LEC (if the customer request came through the local provider). A specialist within the customer service department loads this information into the Service Management System (SMS) database and internal billing database(s)—or coordinates this process with a wholesale provider of 800 number services.
- **If a residential customer requests new service**, the customer's local exchange carrier sends the customer information to a customer service representative, who enters this information into the switch and billing system databases. The customer service representative also coordinates with the local exchange carrier to load or change the carrier information in the subscriber's record on the LEC switch.

Network Planning and Engineering

Switch planners have to juggle two contradictory mandates to arrive at appropriate network engineering decisions. Ideally, they would build a network with enough resources so that every call will always and immediately connect to its destination. However, since traffic surges on certain days of the year and varies widely by the hour of the day, meeting this ideal would mean provisioning significantly more equipment than needed most of the time—and would substantially drive up the cost of providing service.

The key concept in traffic engineering is the busy hour, the hour in an average day—usually late morning—when the system is stressed with the most traffic (a related term—high day busy hour [HDBH]—is the busiest hour on the busiest day of the year, traditionally Mother's Day. If the network were engineered to carry all the traffic during HDBH, then it would, of course, be capable of always carrying the traffic at any other time. However, it would be a very needlessly expensive network, with a large part of its equipment standing idle most of the time.

Therefore, network traffic engineers must weigh and balance the highest-traffic needs of the network against their customers' tolerance for allowing calls to be blocked occasionally during the busiest calling time of the year. Grade of service—the probability that a call will get blocked—is designated as a percentage of calls that are allowed to be blocked during times when the network is congested. The decision to block, say, 3 percent of calls during peak hours means a dramatic reduction in the amount of incremental equipment that needs to be bought, engineered, deployed, and maintained—and thus a dramatic reduction in the cost of running the network.

Another key concern for planners is the average amount of time that any given trunk or dedicated access line is being used. Planners calculate this percentage in units called ccs (centum call seconds)—or the number of 100 seconds in any given hour that a line is in use. A 3 ccs line means the line is, on average, in use 300 seconds out of every hour. (A related term often used in trunk planning—erlang—is equal to 36 ccs. One erlang is the maximum physical capacity of a line or trunk and is expressed in percentages, i.e., 0.7 erlangs, etc.)

Network Maintenance



A key advantage of today's digital long distance switches and transmission equipment is the degree to which maintenance is automated and centralized. For example, Nortel's DMS-200 and DMS-500 switches and OC-48 SONET transport systems routinely monitor their own performance and perform diagnostic programs that allow proactive preventative action if a difficulty is developing. These systems also generate logs of all significant activity to simplify troubleshooting, and both visual and audible alarms are generated in the event of any subsystem failure. Activities that require human intervention are largely centralized at a maintenance and administration position, a terminal that allows craftspersons to interface the switch for internal maintenance and to troubleshoot individual lines and trunks.

In addition, large network operators reduce expenses by using an operations system (OS) to monitor and administer a large number of switches and SONET network elements from a central location.

Environmental and Powering Considerations

While digital switches and transmission equipment do not require the "clean room" atmosphere of many more sensitive computing systems, they do need to operate within specific parameters for temperature, humidity, air quality, system grounding, and electromagnetic interference. The "footprint"—the amount of space taken up by the switch—is dramatically smaller for digital switches than for older analog systems, but still can be substantial for larger networks and must be carefully planned for by the network provider. Similarly, capacity-footprint considerations must be engineered for transmission systems.

Because customers expect to continue service even if the power to the community has failed, network equipment generally indirectly powered by large bays of batteries in the central office. Commercial AC power normally keeps these batteries charged in a non-emergency situation.

Managing the Work of Operators and Operator Centers

Long distance providers that support operator centers must be able to evaluate the performance and productivity of operators, operator teams, and operator centers. They must also be able to control the flow of call traffic into operator centers. These functions are usually provided by switch software.

Defining Operator Capabilities—The operator services software permits the definition of several different types of operators with different capabilities. At the top of the hierarchy is the force supervisor, with authority for high-level decisionmaking. Below the force supervisor is the in-charge manager, whose workstation is equipped to help operators who need assistance, monitor and page operators, and evaluate the current status of traffic office. Below the in-charge manager there may be “senior operators” or “operator assistants” defined, who have greater capabilities than basic operator positions.

Managing the Work of Operators—Operators are grouped together in teams—and teams grouped into traffic offices—for statistical or managerial purposes. Operator workstations use an electronic call processor with internal counting and scanning abilities. This processor sends information to the switch, which passes it to a teletypewriter (TTY) or computer to print reports of office activity, such as number of calls (“initial position seizures”) and average work time for these calls, detailed by call type. This information helps supervisors make informed decisions about assigning operators to call types, planning for additional operator training, and selecting automated services for the greatest productivity benefits.

For operator services deployed on an off-switch platform, a separate statistical management system is usually provided on the same architecture as the service.

Managing the Call Flow of Operator Centers—The switch software provides considerable flexibility in establishing how traffic offices and operator positions will be used. For example, with operator centralization software, operators at one central location can process incoming and outgoing calls on behalf of several remote toll centers. Network providers can even rearrange the relationships among remote offices and host offices in the operator services network—for instance, to close down low-volume operator centers during off-peak hours.

Basic switch software queues calls to operators on a first-come, first-served basis, then to an overflow queue if calls have been waiting in queue for too long. Optional queue management systems allow the switch to support hundreds of unique call queues and operator profiles that define the service capabilities of individual operators and teams. Operator calls can even be networked to different operator centralization host switches based on the call’s queue assignment.

Force Management and Statistical Reporting ***Representative Statistics Recorded and Reported***

- Initial position seizures
- Number of calls waiting for an operator
- Number of occupied positions
- Work volume
- Idle time

- Position seizures—transfers and recalls
- Non-queue work volume
- Service initiation, work volume, and average work time by service
- Average work time
- Average occupied positions
- Board hours (hours logged in)
- Percent occupancy

WHAT LONG DISTANCE COMPANIES CAN EXPECT FROM NORTEL

Services Available from Nortel
Network Equipment
Industry's broadest portfolio of network products
Network Planning
Creating long distance networks for 15+ years
Custom Development
Dedicated design teams for differentiating services
Hardware Commonality
End-to-end networks designed to work together
Operational Services
Complete network operations and maintenance
Turnkey Solutions
End-to-end products, services, and integration
Strategic Assistance
Creative financing options

Nortel has been building competitive long distance networks since 1983. Today more than carriers in North America use Nortel equipment and services. With 75% of the market share in North America (excluding AT&T), and more than 270 switches providing 4 million ports in service globally, Nortel has established itself as the preferred supplier of long distance switch solutions.

To achieve this position, Northern has established close working partnerships with each carrier. They tell us what they want in products and services—and in turn these products and services fuel their rapid revenue and market share growth in a competitive industry.

Top carriers have chosen Nortel to be their main resource in North America for digital switching and SONET/SDH transmission systems. Now, as these carriers enter the lucrative international marketplace, they have chosen Nortel as a key partner, selecting DMS switches and S/DMS TransportNode transport as the backbone for their international businesses. In fact, many key customers are replacing non-Nortel switches with DMS switches because of its high reliability, the ability to quickly develop and introduce customized services across an entire region.

When working with Nortel, carriers can expect all of the following:

- **Comprehensive Network Solutions**—Nortel offers the broadest portfolio of network products in the industry, designed specifically for turnkey solutions in long distance markets
- **Experienced Network Planning Resources**—Nortel's veteran network planning organization has worked with new market entrants for 15 years or more. This expertise is available for designing networks that are optimized for cost, utility and flexibility.
- **Custom Development**—The big players already use Nortel's dedicated design teams to provide unique and differentiated services—which can go from conception to in-service in as little as three months.
- **Full Hardware Commonalty**—Nortel's products are designed and built to work together, with common components, operational practices, and interfaces. This strategy reduces costs for training, administration, maintenance and provisioning. It also allows for the flexible reuse of equipment from the local exchange network. And if regulators eventually permit RBOCs to merge their toll and local business, the DMS architecture makes this easy.
- **Operational Services**—Nortel can operate and maintain the long distance network—including switching, transport, and other entities—on behalf of long distance provider. This strategy allows the carrier to focus its attention on its core business—attracting and keeping customers.
- **Turnkey Network Solutions**—With an end-to-end portfolio of products and services for the complete long distance network, Nortel removes the negatives associated with the multi-vendor network: the need to coordinate development activities and interoperability issues with representatives from multiple vendors.

In addition, a full portfolio of compatible products—from key systems to international gateway switches—makes it possible to develop and market truly unique and customized services for end users. With an industry leading AIN service creation environment, these services can be developed fast to lead the market.

- **Flexible Business Relationships**—Nortel can move with ingenuity to meet provider's needs with creative financing options that minimize start-up costs and risks. Providers can then focus their resources on aggressive marketing campaigns for successful market entry.

FOR MORE INFORMATION

For more information about opportunities and technologies for the long distance market, contact Nortel at 1-800-4 NORTEL (466-7835). If your organization is already a Nortel customer, contact your regional representative.

For long distance providers using Nortel DMS switches, Nortel supports user groups that meet approximately twice a year to promote interaction between customers and with Nortel to discuss and resolve technical and support issues—and to attend presentations from industry experts on regulatory trends and technology developments.

Trade Organizations

The following industry organizations are clearinghouses of information and assistance for long distance carriers:

America's Carriers Telecommunication Association (ACTA)

950 South Winter Park Drive, Suite 325, Casselberry, FL 32707

Phone (407) 332-9382 or (800) 881-ACTA — Fax (407) 332-9780

ACTA was established in 1985 by 15 small long distance companies as a national trade association dedicated to the needs of the small, non-dominant long distance carrier. Its mission is to secure a competitive and growing long distance telecommunications industry, and to represent small entrepreneurial carriers in lobbying efforts on the state and national levels. More than 1,000 participants, representing some 80 companies, attend the association's conference. A monthly newsletter, the *ACTA Report*, keeps members up-to-date on industry news.

Competitive Telecommunications Association (CompTel)

1140 Connecticut Avenue, NW, Washington, DC 20036

Phone (202) 296-6650 — Fax (202) 296-7585

The purpose of CompTel is to ensure the survival and prosperity of the long distance competition and to ensure a fully competitive marketplace composed of many participants. Its membership includes non-dominant facilities-based carriers, resellers, and other telecommunications service providers and suppliers. The association's major programs reflect its unique position as public policy advocate for the entire competitive industry.

Telecommunications Resellers Association (TRA)

115 Connecticut Avenue, NW, Washington, DC 20036

Phone (202) 429-6601 — FAX (202) 835-9893

The TRA represents resellers' interests through government relations on the state and federal levels. The organization also strives to build and maintain strong relationships with major carriers, to promote ethical operating practices, and to create an awareness of the value-added services offered by its 300 members.

The TRA organizes biannual conferences and exhibitions that give members an opportunity to network—plus two full days of seminars on the latest regulatory developments, competitive issues, new products and services, and sales and management techniques.

Trade Journals

There is no trade journal targeted exclusively for the long distance marketplace. However, the following trade journals address the issues and products of long distance. Most of them are available by free subscription to readers employed in the telecommunications industry.

America's Network	(218) 723-9477	General telephony
Call Center	(215) 355-2886	Inbound and outbound calling centers
Collector's Advantage	(800) 825-8301	Prepaid debit calling card industry
Communications International	(310) 809-8283	Carriers, hardware, international telephony
Communications Week	(708) 647-6834	Networking, LANs, plus IXC's and LEC's
Computer/Telephony	(215) 355-2886	Computers in telephony
Enterprise Communications	(800) 346-0085	Voice processing, voice cards, etc.
Infofacts	(800) 285-9427	Fax newsletter on debit calling cards
InfoText	(800) 346-0085	Interactive voice response services
Interactive Age	(708) 647-6834	Interactive services, cable, Internet, etc.
International Telecom Network	(602) 990-1101	International telecommunications, including debit cards, cellular, pay phones, etc.
International Telephone Card	(800) 683-0036	United Kingdom journal on calling cards
Long Distance for Less	(800) 262-7353	AT&T, Sprint, and MCI prices
Phone+	(602) 990-1101	Pay phones and general telephony
Premier Telecard	(805) 542-9346	Collectible calling cards and debit cards
Public Communications	(800) 825-0061	Pay phones, resellers, general telephony
Rural Telephony	[PHONE]	General telephony, largely targeted to independent operating companies
TAS Marketing Connections	(406) 827-4131	Telephone answering service/system
Telecard World	(800) 825-0061	Calling cards
Telecommunications	(617) 769-9750	General information
Telecommunications Reports	(800) 822-6338	Telecom regulatory news, events, financials
Teleconnect	(215) 355-2886	Interconnect and general telephony
Telemarketing	(800) 243-6002	Telecommunications telemarketing
Telephony	(800) 441-0294	Carrier and telecom hardware news and ads
Wireless	(800) 915-0999	Cellular, personal communication services, and other wireless services

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All other trademarks are the property of their respective holders.

Information subject to change since Nortel reserves the right to make changes, without notice, in equipment design or components as engineering or manufacturing methods may warrant. Product capabilities and availability dates described in this document pertain solely to Nortel's marketing activities in the United States and Canada. Availability in other markets may vary.

For more information, contact your Nortel representative or call 1-800-4 NORTEL (1-800-466-7835). Our Internet World Wide Web home page is at URL <http://www.nortel.com>.

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