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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

William F. Caton
Acting Secretary
Federal Communications Commission
Mail Stop 1170
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Dear Mr. Caton:

Re: *CC Docket No. 95-20 - Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services*

On behalf of Pacific Bell and Nevada Bell, please find enclosed an original and six copies of their "Comments" in the above proceeding.

Please stamp and return the provided copy to confirm your receipt. Please contact me should you have any questions or require additional information concerning this matter.

Sincerely,



Enclosure

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)
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)

Computer III Further Remand Proceedings:)
Bell Operating Company Provision of)
Enhanced Services)
_____)

CC Docket No. 95-20

**COMMENTS OF PACIFIC BELL AND NEVADA BELL
ON THE NOTICE OF PROPOSED RULEMAKING**

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SUMMARY

Events have proven that the Commission was correct in the Computer III proceeding, and again in the Remand proceeding, when it decided that the public interest benefits of integration far outweigh any potential costs. The Commission's decision in 1986 to allow the BOCs to integrate enhanced and basic network services created a thriving market for network-based voice mail services and foreshadowed the integrated development of the telecommunications and information industries in general. In order to succeed, competing providers of all types, not just the BOCs, are expanding, converging, and integrating their service offerings in order to give customers what they want -- one-stop shopping for myriad new and lower-priced services that improve their ability to communicate and to acquire information.

The Commission now has years of positive experience with non-structural safeguards for BOC offerings of both enhanced services and CPE. In addition, changed circumstances make BOC attempts to discriminate even much less likely than they were when the Commission created the safeguards. These changed circumstances are 1) the substantial growth of the enhanced services markets, 2) the substantial growth in network services competition, and 3) the substantial increase in BOC unbundling and Intelligent Network competition.

In 1986, opponents of the Commission's proposal to remove structural separation requirements argued that enhanced services were in their infancy and needed protection. Those parties cannot rationally argue that anymore. The enhanced services market grew from \$7.5 billion in 1988 to \$10.2 billion in 1991, and to \$13.6

billion in 1993. Insight Research estimates that revenues reached approximately \$17 billion in 1994. Revenues are growing at a rate of approximately 16 percent per year and are expected to reach \$36 billion by the end of the decade. ESPs of all types are expanding into each others' markets, and are converging and integrating formerly discrete offerings of enhanced services in order to meet customer demands.

The BOCs are major competitors for Voice Mail and Voice Store & Forward services. As a result of the Commission's Computer III policy, the BOCs have been able to help bring tremendous growth to the mass market. Pacific Bell has sold more than 800,000 voice mailboxes to residential and business customers. More than 140 Pacific Bell voice mail machines are processing more than 125 million calls per month. These services face stiff competition from national providers, combinations of automated and live answering services, and CPE.

The corporate giants that provide enhanced services across the nation ensure that the BOCs could not sustain policies of access discrimination. These large competitors would notice discriminatory treatment by the BOCs and would complain to the Commission. No formal complaints alleging access discrimination, however, have been filed by ESPs against the BOCs. The current success and rapid growth of these unaffiliated ESPs also provide strong evidence that ESPs are not facing BOC access discrimination.

Moreover, because of the success and rapid growth of network alternatives, a policy of discrimination would be corporate suicide. If we provide access to other ESPs that is inferior to that we provide our own enhanced service operation, or

if we refuse to provide network services that ESPs want and that are technically and economically feasible, the ESPs will purchase network services from others or even build their own. Since all our network services are either currently competitive or on the verge of becoming so, we would be encouraging our customers to leave us.

This increased network services competition is seen most clearly in the pending demise of the exclusive local franchise. On April 3, 1995, Pacific Bell filed a report at the California PUC entitled "Competition to the Core," in which we seek the implementation of local competition as early as January 1, 1996, with regulatory reform and a universal service funding plan. Competitors are ready to take immediate advantage of these regulatory and network changes. The California Cable Television Association was reported as recently stating that some cable partnerships and joint ventures "could begin offering service immediately in some capacity." Nationally, MCI plans to spend \$20 billion and Sprint and its cable TV partners \$8 billion on their local service expansions.

Although some of the plans for local competition depend on the pending actions of state regulators, other plans have been long implemented. Technology and the marketplace have not waited for regulators, who can no more halt new providers from entering the market than King Canute could command the ocean to subside. Competition is here now. ESPs have increasing choices, and any BOC discrimination against ESPs would simply drive away business.

There is no need for any additional unbundling of the BOCs' networks prior to reinstatement of full structural relief. Non-structural safeguards and competition among providers of network services ensure that the BOCs will offer ESPs unbundled

services that are economically and technically feasible, whether or not the BOCs' enhanced service operations want to use the unbundled services. For instance, we want to better meet the needs of third-party providers, including ESPs, so that they will continue to use our network in the face of increasing alternatives. Accordingly, we want to provide appropriate access to our Advanced Intelligent Network on an unbundled basis in order to help other providers create new services for their end users. In addition, subsequent to the record before the Ninth Circuit, an important part of the "fundamental unbundling" concept has been achieved via expanded interconnection. This achievement makes it all the easier for the Commission to find, and explain its finding, that the current level of unbundling justifies full structural relief.

In their affidavit, attached hereto as Exhibit A, Jerry A. Hausman and Timothy J. Tardiff show that structural separation of basic and enhanced services creates substantial societal costs. They explain that the largest cost is the delay or complete withholding of new services from the market. They point out that the inability to perform integrated marketing is a major cost as well.

We will have to incur significant costs if we are required to move from an integrated operation to complete structural separation. That cost can be divided into three parts: 1) the financial cost associated with eliminating attributes of integration (e.g., collocation, joint sales, joint operational support systems, and joint research and development); 2) the tremendous potential for interruption of service to the customer and potential loss of the customer's good will; and 3) the potential loss of regulated revenue due to the inability to joint market enhanced services with network services.

Our residential and small business consumers are the biggest beneficiaries of our integrated marketing and would suffer the most from structural separation. Allowing us to continue to fully develop our customer relationships via integration will be the surest way for the Commission to continue to encourage the expansion of the fullest spectrum of services, to the broadest cross-section of consumers, in the shortest amount of time.

In 1986, the Commission recognized the societal loss that had resulted from preventing integrated voice mail services. In their affidavit attached hereto as Exhibit A, Hausman and Tardiff estimate that the cost to consumers of this delay has exceeded well over \$10 billion since 1981. The Commission should consider the societal loss that would occur today from a policy reversal, now that the BOCs have helped develop a robust voice messaging market and are helping to develop the market for electronic messaging applications that include telemedicine, distance learning, and widespread Internet access. These applications, as well as emerging video dial tone enhanced services, can help bring the benefits of the Information Age to virtually everyone in our country, if the Commission reaffirms its Computer III policy and grants the BOCs full structural relief.

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**COMMENTS OF PACIFIC BELL AND NEVADA BELL
ON THE NOTICE OF PROPOSED RULEMAKING**

Pacific Bell and Nevada Bell submit these Comments in response to the Notice of Proposed Rulemaking ("Notice") released by the Commission on February 21, 1995, in the above-captioned proceeding.

I. **INTRODUCTION -- THE COMMISSION'S COMPUTER III POLICY IS BENEFITING CONSUMERS AND SHOULD BE REAFFIRMED THROUGH FULL STRUCTURAL RELIEF**

Events have proven that the Commission was correct in the Computer III proceeding, and again in the Remand proceeding, when it decided that the public interest benefits of integration far outweigh any potential costs. The Commission's decision in 1986 to allow the BOCs to integrate enhanced and basic network services

created a thriving market for network-based voice mail services and foreshadowed the integrated development of the telecommunications and information industries in general. In order to succeed, competing providers of all types, not just the BOCs, are expanding, converging, and integrating their service offerings in order to give customers what they want -- one-stop shopping for myriad new and lower-priced services that improve their ability to communicate and to acquire information. The market includes, for example, very large Value Added Network ("VAN") providers which combine their own network and enhanced services without structural separation requirements. Strong, unshackled competitors are needed, in order to bring the benefits of competition to consumers. BOC participation in the enhanced services market, without structural separation requirements, has been good for competition and for consumers -- it has led to lower prices and greater output.

Not surprisingly, some competitors continue to urge the Commission to reverse its Computer III policy and force the BOCs to structurally separate all or some of their enhanced services from their basic network services. Then, of all providers in the industry, only the BOCs would be prevented from offering one-stop shopping and from achieving the efficiency benefits of integration. These costs of structural separation would prevent the BOCs from competing efficiently in the offering of both enhanced services and basic network services. The industry would not collapse. There are other enhanced and network service providers who would benefit from our decline. Consumers and our national economy, however, would be robbed of the benefits of true competition. This loss would affect numerous applications of voice mail,

voice store and forward, and electronic messaging/videotex gateway services that we and other BOCs are offering to customers. The mass market of smaller customers would be harmed the most, since BOC integration has helped them the most.

In 1986, the Commission recognized the societal loss that had resulted from preventing integrated voice mail services. The Commission should consider the societal loss that would occur today from a policy reversal, now that the BOCs have helped develop a robust voice messaging market and are helping to develop the market for electronic messaging applications that include telemedicine, distance learning, and widespread Internet access. These applications, as well as emerging video dial tone enhanced services, can help bring the benefits of the Information Age to virtually everyone in our country, if the Commission reaffirms its Computer III policy.

In the face of this success, there are still competitors who urge the Commission to move backward by reversing its policy. These competitors make unsupported allegations of BOC access discrimination. The Commission defines theoretical "access discrimination" as occurring "when BOCs provide competing enhanced service providers (ESPs) with access to network services inferior to that provided to the BOCs' own enhanced services, or when BOCs otherwise refuse, as a means of exercising market power, to provide network services desired by ESPs."¹ The BOCs could not sustain policies of access discrimination. The corporate giants that provide enhanced services across the nation would notice discriminatory treatment by the BOCs and would complain to the Commission. No formal complaints alleging

¹ Notice, n. 4.

access discrimination, however, have been filed by ESPs against the BOCs. The current success and rapid growth of these unaffiliated ESPs also provide strong evidence that ESPs are not facing BOC access discrimination.

Moreover, because of the success and rapid growth of network alternatives, a policy of discrimination would be corporate suicide. If we provide access to other ESPs that is inferior to that we provide our own enhanced service operation, or if we refuse to provide network services that ESPs want and that are technically and economically feasible, the ESPs will purchase network services from others or even build their own. Since all our network services are either currently competitive or on the verge of becoming so, we would be encouraging our customers to leave us.

Therefore, review of current market forces for both enhanced and basic network services should convince the Commission that the BOCs will not attempt to discriminate against other ESPs. Competitive pressures have increased substantially since the initial Computer III orders, removing whatever threat of access discrimination may have existed at that time. Market forces alone ensure that there is no need for structural separation requirements. Even non-structural safeguards are no longer needed. We do not object, however, to reasonable non-structural safeguards that provide added assurance that any attempt to discriminate would be deterred and detected.

The Commission should grant full structural relief based on the BOCs' previously approved ONA plans and on the Commission's affirmation of the Common Carrier Bureau's decisions that the BOCs have complied with the conditions prescribed

for full structural relief.² Requiring, instead, service specific approvals for integrated enhanced services via CEI plans is unnecessary because ONA subsumes CEI safeguards. The service-specific approach is harmful because it causes unnecessary delay in bringing services to market, provides competitors of the BOCs with the opportunity to encourage further delay through the gaming of the regulatory process, and forces the BOCs to provide advanced notice of their marketing plans to their competitors. The service-specific approach also ignores the reality of the enhanced services market, and of the telecommunications market in general, in which types of services are converging and changing rapidly as providers continually experiment with new features. All of these factors mean that requiring service-specific approvals for one group of competitors, the BOCs, creates inefficient competition, to the detriment of consumers.

The telecommunications industry has had years of positive experience with non-structural safeguards. Based on that experience, the Commission should be fully confident that it made a good decision in 1986, and again in 1991, when it decided to give the BOCs enough freedom to offer services that are efficiently packaged the way customers want them, and that it made a good decision yet again in 1994 when it affirmed full structural relief. These comments and the affidavit of Hausman and Tardiff attached hereto as Exhibit A show that the substantial costs of structural separation far outweigh any conceivable benefits. The Commission should reaffirm its policy of

² Petition for Removal of Structural Separation Requirements and Waiver of Certain State Tariffing Requirements, 9 FCC Rcd 3053 (1994) ("Structural Relief Order"), petition for review pending sub nom. MCI v. FCC, No. 94-1597, (D.C. Cir. filed August 29, 1994).

allowing integration and should grant the BOCs full structural relief. Moreover, the Commission should inform Congress that the Computer III policy is working -- competition is flourishing and consumers and our national economy are obtaining the benefits of new, more efficient, and lower-priced services.

Affidavit Of Hausman And Tardiff

Attached hereto as Exhibit A is an affidavit by Jerry A. Hausman, Professor of Economics at the Massachusetts Institute of Technology, and by Timothy J. Tardiff of the National Economic Research Associates. Their affidavit is entitled "Benefits and Costs of Vertical Integration of Basic and Enhanced Telecommunications Services." Hausman and Tardiff conclude that "the costs of replacing non-structural safeguards with structural separation far exceed any benefits to competition that could conceivably arise."³ They summarize their affidavit as follows:

This paper identifies and quantifies the potential benefits and costs of vertical integration of basic and enhanced telecommunications services. In particular, we find that joint production facilitates the offering of new products and services, which provide large benefits to consumers. Focusing on voice messaging -- to date the most prominent Regional Bell Operating Company enhanced service -- we calculate that the delay in making this service available has cost consumers well over \$1 billion annually. The cost to consumers of delay has exceeded well over \$10 billion since 1981. In addition, the extra production costs that would be incurred by foregoing the economies of scope from joint production would amount to over \$100 million annually. In contrast, (1) the enhanced service markets in which the BOCs operate are robustly competitive, (2) the existing open

³ Exhibit A hereto, affidavit, p. 25.

network architecture rules followed by the BOCs are designed to offer nondiscriminatory access at prices that avoid cross-subsidies, and (3) all available evidence shows that these rules are working as intended and that the enhanced service market is thriving. It is clear that any benefits to competition that may arise from structural separation are far outweighed by the loss of benefits and extra costs we have identified which arise from structural separation.⁴

II. THE ENHANCED SERVICES MARKET IS COMPETITIVE AND THRIVING

In 1986, opponents of the Commission's proposal to remove structural separation requirements argued that enhanced services were in their infancy and needed protection.⁵ Those parties cannot rationally argue that anymore. The enhanced services market grew from \$7.5 billion in 1988 to \$10.2 billion in 1991, and to \$13.6 billion in 1993.⁶ Insight Research estimates that revenues reached approximately \$17 billion in 1994.⁷ Revenues are growing at a rate of approximately

⁴ Id. at 3.

⁵ See Amendment of Sections 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry), CC Docket No. 85-229, Phase I, Report and Order, 104 FCC 2d 958, para. 65 (1986) ("CI-III Phase I Report and Order"); Memorandum Opinion and Order on Further Reconsideration, 3 FCC Rcd 1135 (1988), ("CI-III Phase I Further Reconsideration Order"); Phase II, Report and Order, 2 FCC Rcd 3072 (1987) ("CI-III Phase II Report and Order"); Memorandum Opinion and Order on Reconsideration, 3 FCC Rcd 1150 (1988) ("CI-III Phase II Order on Reconsideration"); Phase I and Phase II, Memorandum Opinion and Order on Further Reconsideration and Second Further Reconsideration, 4 FCC Rcd 5927 (1990) ("CI-III Phase I Second Further Reconsideration and Phase II Further Reconsideration").

⁶ U.S. Industrial Outlook: 1990 (p. 29-2), 1992 (p. 26-1), 1994 (p. 25-2). The Department of Commerce discontinued this publication in 1995.

⁷ Report on the State of the Enhanced Voice & Data Marketplace, 1994-1999, April 1994, The Insight Research Corporation, pp. 2, 3, 85 ("Insight Research").

16 percent per year and are expected to reach \$36 billion by the end of the decade.⁸ ESPs of all types are expanding into each others' markets, and are converging and integrating formerly discrete offerings of enhanced services in order to meet customer demands.

The major competitors in the electronic messaging/videotex gateway⁹ markets are national and international providers, many of whom have their own local and global networks. The BOCs have been held back in these markets by the MFJ restriction on interLATA services. Nevertheless, the BOCs are making important contributions. In Part III below, we discuss Pacific Bell's many applications of these services which are benefiting the public.

The BOCs are major competitors for Voice Mail and Voice Store & Forward services, which are used extensively for local and regional, in addition to national, communications. As a result of the Commission's Computer III policy, the BOCs have been able to help bring tremendous growth to the residential market. These services face stiff competition from national providers, combinations of automated and live answering services, and CPE. In Part III below, we discuss Pacific Bell's substantial contribution to this market.

⁸ Id.

⁹ Electronic messaging and videotex have converged, and there are no clear distinctions between them or their various applications.

A. Electronic Messaging/Videotex Gateway Services

One of the fastest growing sections of the enhanced services market is composed of Value Added Network ("VAN") services. The top six VANs, which control nearly half the VAN services revenues, are BT/MCI Tymnet (Concert), SprintNet, INFONET, GE Information Services, IBM/Sears (Advantis), and CompuServe.¹⁰ AT&T Accunet X.25 is another major competitor. WilTel is a new entrant for X.25 service in California and provides further evidence that this market is fully competitive. Enhanced VAN services include online databases, electronic yellow pages, voice messaging, electronic-mail, fax-mail, electronic data interchange ("EDI"), and enhanced protocol and code conversion.¹¹ VAN services are growing at a rate of approximately 15 percent annually. In 1993, the VAN market was \$12 billion worldwide and \$3.4 billion in the United States.¹² IBM/Sears Advantis is an example of the fast growth of this market; Advantis started in 1992 and now has over one million users.¹³

Electronic-mail ("e-mail") is growing rapidly. The compound annual growth rate for public e-mail service from 1994-1999 is estimated at 25 percent.¹⁴ The largest public e-mail vendors include: AT&T, Sprint, MCI, BT/MCI Tymnet, GEIS, IBM/Sears Advantis, CompuServe, Prodigy, America Online, and various Internet

¹⁰ See: Insight Research, pp. 52-53; "Telecommunication Services -- Industry Overview," Information Access Co., January 1994; and "Building a Race of Global Supercarriers," McGraw Hill, December 1994.

¹¹ See id.

¹² Data Channels, January 31, 1994.

¹³ Insight Research, p. 82.

¹⁴ Id. at 93.

access providers.¹⁵ Mobile services are expected to grow especially fast. The market for mobile e-mail and short message services is expected to grow from \$7 million in 1995 to approximately \$2 billion by 2000. E-mail services often offer electronic data interchange and electronic document interchange ("EDI") capabilities.¹⁶

The EDI market was estimated at \$509.6 million in 1994. It is expected to grow at a 35 percent compound annual growth rate through 1999.¹⁷ EDI capabilities are used with numerous types of information, and each market area has its own set of competitors. Competitors, in addition to Pacific Bell, who offer Health Information Networks with EDI capabilities for either enterprises or communities include: Ameritech/Health Network Ventures; SMS; IMS; Sprint; First Data Corporation; HBOC; and IDX. Competitors, in addition to Pacific Bell, specifically in the California marketplace for financial and administrative healthcare EDI include: CyData; Electronic Data Systems; ENVOY; EQUIFAX; Healthtronics; and IMS.

The market for online electronic information services was approximately \$6.3 billion in 1994. Consumer online services represented about \$630 million of that total and are expected to grow at a compound annual growth rate of 30.98 percent until 1999, when the consumer market will be about \$2.4 billion.¹⁸ Fastest growing is CompuServe. In 1994, CompuServe's revenues rose 38.2 percent to \$102 million, and

¹⁵ See id. at 49.

¹⁶ EDI is electronic store and forwarding used in business-to-business and consumer-to-business transactions to exchange business transactional information and documents in standard formats. EDI is used for purchase orders, electronic funds transfers, inventories, and many other purposes.

¹⁷ Insight Research, p. 92.

¹⁸ Id. at 85.

its subscriber base grew 46.1 percent to over 2 million.¹⁹ Other major consumer online services include Prodigy, with 2 million subscribers, America Online, with 450,000 subscribers, and GEIS, with 400,000 subscribers.²⁰ Some believe that Microsoft will rapidly take the lead in the provision of online services. They point out that "[i]f only 10 percent of its expected 30 million Windows 95 customers choose the recently announced Microsoft Network, the company has the other online vendors beat."²¹

The U.S. business online information market has 8 million customers and is expected to grow by 80 percent this year.²² The largest online business information and business news providers include: Dun & Bradstreet; Dow Jones News/Retrieval; Disclosure, Inc.; Mead Data Central; Newsnet; and Market Analysis and Information Database.²³

The Commission notes that "nearly 100 newspapers...are now available electronically through competitive gateways such as America Online and Prodigy."²⁴ Numerous newspapers are now also available directly on the Internet via numerous Internet access providers.²⁵ In addition, "[n]ewspapers are launching recorded message telephone services, interactive audio/video links, and online data bases in an

¹⁹ Annual Report to Stockholders, H&R Block, Inc., 1994.

²⁰ Insight Research, p. 21.

²¹ "The Company People Love To Hate," San Francisco Chronicle, March 13, 1995, p. B1, 3.

²² "On-Line For America," Associated Newspapers, Ltd., March 19, 1995, p. 6.

²³ Insight Research, pp. 30-33.

²⁴ Notice, n. 80.

²⁵ See, e.g., "Chronicle to take Leap to Computer Cyberspace," The Houston Chronicle, January 15, 1995, Section A, p. 1 (lists 23 other newspapers available on the Internet).

effort to push their product into a wider market."²⁶ The total number of newspapers offering some form of electronic information rose from 450 in 1991 to 3,200 in 1995, a seven-fold increase.²⁷ Even publishers known as "holdouts" in the electronic front, including Gannett Co. and New York Times Co., are taking "major steps to prepare for a new generation of electronic communications."²⁸ Gannett is forming a subsidiary to explore electronic services, and the New York Times Co. will spend "\$30 million to \$40 million over the next few years on such services, including an online service at the Boston Globe, electronic New York Times classified ads and more at its regional dailies."²⁹

The professional subsegments (e.g., legal) of the online information services segment are not expected to experience any appreciable growth through 1999. This lack of online growth, however, is not a sign of any decline in the growth of this market. Rather, it is caused by the advent of CD-ROM competition. As more PCs are equipped with CD-ROM capabilities, it becomes more economical to deliver less volatile information by this medium rather than online via network services.³⁰

There are numerous other online electronic messaging/videtex gateway subsegments. Many of them are relatively new areas, and each has its own set of competitors. For instance, in the area of multi-media development, Pacific Bell faces

²⁶ "US Newspaper Industry Blasts Into Cyberspace," Agence France Presse, March 16, 1995.

²⁷ Id.

²⁸ "1993 Ends On High Note," Editor & Publisher Magazine, January 7, 1995, News Section, p. 15.

²⁹ Id.

³⁰ Insight Research, p. 87.

the following competitors: Sprint (DRUMS); America Online and other online information services; Emass; Clarion and other mass storage systems; Syquest and other CPE storage devices; Westlight and other stock houses; Kodak Picture Exchange; Picture Network International and other online image and audio databases; and PressLink and other news photo services. Other potential multi-media development competitors in California include: RenderRing; Microsoft; Sony; Knight Ridder; Reuters; Dow Jones; Sun Microsystems; Click 3X; Coconut Computing, Inc.; Buzz Image Group; and Co-Net Communications, Inc. In the area of store and forward distribution of movies to theaters, Pacific Bell faces the following potential competitors in California: Alcatel Network Systems; Bell Atlantic and other BOCs; Hughes/JVC; AT&T and other IXC and CAPs; and Qualcomm and other satellite-based services.

B. Voice Mail And Voice Store & Forward Services

In 1986, the Commission found that structural separation requirements had "prevented consumers, and particularly small-business and residential consumers," from being offered network-based voice messaging services.³¹ The rapid development of these services since the Commission's removal of structural separation requirements shows that the Commission was right. If the Commission retains its policy of allowing enhanced service integration, the market is expected to continue its rapid expansion.

³¹ CI-III Phase I Report and Order, para. 90.

From 1989 to 1991, users of voice messaging equipment grew from 5.3 million to 11.6 million.³² The voice messaging market segment grew from \$665 million in 1989 to \$1.1 billion in 1991, and to \$1.54 billion in 1994. The market is expected to grow to over \$3 billion by 2000, with forecasted annual growth of 12.7 percent.³³ In addition to the BOCs, major competitors include Tigon (Octel), Voice-Tel, Voice-Com,³⁴ and MCI.³⁵ There also are approximately 4,000 voice messaging and live answering firms in the United States.³⁶ As fast as the general voice messaging market is growing, mobile voice mail service is expected to grow much faster, multiplying "12 times to reach \$7.2 billion in the United States and 17 times to \$8.6 billion in Europe by the year 2000."³⁷

Interactive voice response and audiotex services are expected to continue to increase at a compound annual growth rate of 30 percent, from \$1.95 billion in 1994 to \$7.24 billion in 1999.³⁸ In addition to BOCs, major competitors include Call Interactive, InfoAccess, Scherers Communications, and U.S. Audiotex.³⁹

³² NATA, 1991 Telecommunications Market Review and Forecast, p. 135.

³³ NATA, 1993-94 Telecommunications Market Review and Forecast, p. 171. Frost & Sullivan, "U.S. Voice Messaging Services Markets," Report 5172-63, December 1994 ("Frost & Sullivan"). Insight Research expects public voice mail service to grow at a compound annual growth rate of 25.94 percent and reach \$4.4 billion by 1999. Insight Research, p. 85.

³⁴ Insight Research, p. 44.

³⁵ Frost & Sullivan, 1994, pp. 4-31, 9-17, 9-18.

³⁶ *Id.* at 5-2.

³⁷ "Value-Added Mobile Services to be Worth \$25.6 Billion by Year 2000, Study Says," Mobile Phone News, February 6, 1995.

³⁸ Insight Research, p. 85.

³⁹ *Id.* at 41.

The total voice messaging services market can be divided into three segments: 1) nationwide; 2) local and regional; and 3) cellular. Nationwide subsegments are 1) interexchange carriers and 2) service bureaus. Local and regional subsegments are 1) the BOCs, 2) independent LECs, and 3) local and regional service bureaus. Each segment and subsegment, except cellular carriers,⁴⁰ can be further divided into 1) residential, 2) small business, 3) medium business, and 4) large business.⁴¹ Providers in all these segments and subsegments face strong competition from CPE (e.g., answering machines).⁴² Service bureaus compete in the voice messaging market by using both live-operator and automated answering services.⁴³

The BOCs and independent LECs have been the primary force behind the development of the residential voice messaging market.⁴⁴ In 1986, when the BOCs were subject to structural separation requirements, there were virtually no network-based voice messaging services and, thus, virtually no residential market.⁴⁵ Live-operator services were too expensive for most people to use. By 1990, thanks to the development of network-based services, the residential end-user market accounted for 16 percent of voice messaging service revenues. Now that figure has risen to over 31 percent and is expected to continue to rise.⁴⁶ The residential market, however, still poses great challenges and opportunities for network-based competitors because this

⁴⁰ Cellular carriers do not distinguish their customers in this manner.

⁴¹ Frost & Sullivan, p. 1-3.

⁴² See id. at 1-7, 3-19, 5-17, 5-27, 6-4, 6-11, 6-12.

⁴³ See id. at 1-2, 2-9, 5-2, 5-53, 5-60, 8-6.

⁴⁴ Insight Research, p. 44; Frost & Sullivan, p. 1-4.

⁴⁵ See CI-III Phase I Report and Order, para. 90.

⁴⁶ Frost & Sullivan, p. 3-16.

market "is still dominated by telephone answering devices, which are relatively inexpensive."⁴⁷ Competition between answering machines and network-based voice mail providers has further benefited consumers because answering machine technology has been improved to provide features similar to those available through voice mail, e.g., date-time stamp and multiple mailboxes on the same machine. End users with personal computers may also use PC boards that provide "a number of communications capabilities, such as voice mail, fax mail, and electronic mail..."⁴⁸ As noted above, fierce competition is expected from mobile voice mail. In addition, cable TV companies represent tremendous potential competition in this market.⁴⁹

The BOCs' ability to serve the large business voice messaging market is limited by the MFJ restriction on BOC interLATA services. Large businesses with widespread locations often can more efficiently satisfy their needs by choosing providers such as MCI or national service bureaus.

The BOCs' ability to use network-based services to meet the needs of medium-size businesses also is limited. These customers are likely to continue to rely primarily on CPE.⁵⁰

In the face of these continuing market forces, the BOCs and independent LECs have played an extremely important role -- providing price competition which is helping to rapidly expand the market for all providers. Frost & Sullivan estimates that from 1990 to 1993 the number of voice mail boxes in use rose from 2.9 million to

⁴⁷ Id. at 1-7.

⁴⁸ Id.

⁴⁹ See id. at 5-36.

⁵⁰ See id. at 5-12.