

- require each BOC to provide all interexchange carriers and information service providers exchange access, information access, and exchange service that is equal in type, quality, and price to that provided to the AT&T system. Requirements for the provision of equal exchange access call for a phased-in timetable. Each BOC must begin to offer equal exchange access by Sept. 1, 1984. By Sept. 1, 1985, equal exchange access must be offered by at least one-third of the BOC's exchange access lines and by all of its lines by Sept. 1, 1986.⁴⁰
- require each BOC to file nondiscriminatory tariffs for the provision of exchange access to all interexchange carriers. Such tariffs, called exchange access charges, will be filed for each type of service and shall be cost justified; each tariff will be filed on an unbundled basis and no tariff shall require any interexchange carrier to pay for a service it does not utilize. This access charge system will replace the current division of revenues process, the mechanism currently used to divide interstate revenues between AT&T and the BOCs.⁴¹
- prohibit BOCs which provide billing services for interexchange carriers from discontinuing exchange service to a customer for interexchange non-payment unless the BOC offers to provide billing service for all interexchange carriers. If any interexchange billing service is provided by a BOC, any costs must be included in its tariffed access charge billed to that interexchange carrier.
- require interexchange costs incurred by multifunctional equipment (equipment used in the provision of both exchange and interexchange services) be excluded from the determination of exchange costs in establishing exchange charges.
- stipulate that BOCs must provide interexchange carrier access to all subscribers through a uniform number of dialed digits once the national area code is revised.

⁴⁰ An exception to this timetable was granted to BOCs who use the less flexible electromechanical switches, or are small exchanges with fewer than 10,000 access lines. This exception is only granted, however, if the BOC can prove that the provision of such services would only be feasible at costs so high as to outweigh the potential benefits to users. Any such exception will only be granted for the minimum divergence of access and for the minimum time necessary to achieve feasibility.

⁴¹ The FCC in December 1982 adopted an access charge policy which not only levies a fee on interexchange carriers as directed in the antitrust settlement, but also places an end-user access charge on business and residential subscribers. The imposition of end-user access charges, particularly on residential customers, caused significant controversy. After a number of reconsiderations and postponements, the scheduled effective date for the implementation of interexchange carrier and multi-line business end-user access charges is June 13, 1984; payment of residential and single-line business end-user charges was scheduled to be implemented by June 1985.

Within six months after the divestiture, each BOC was required to submit to the Justice Department a detailed plan of procedures for complying with these requirements. AT&T, Western Electric, and Bell Labs were required to provide the BOCs with research and development, manufacturing, or other support services on a priority basis until Sept. 1, 1987, to enable the BOCs to fulfill the injunctive requirements.

C. OTHER PROVISIONS

The remaining provisions in the settlement concern compliance and enforcement. Included among these were provisions which:

- require AT&T, the BOCs, and affiliated entities to inform relevant personnel of the terms of the settlement, their required compliance, and the penalties for noncompliance.
- grant the Justice Department visiting rights and access to necessary records of BOCs to assure compliance with the settlement.
- stipulate that the U.S. District Court retains jurisdiction over, enforcement of compliance, and punishment of violation, of the settlement.

Parties in the settlement agreed to follow procedures set forth in the 1974 Tunney Act (P.L. 93-528) which requires the publishing of a competitive impact statement, a public comment period, and a judicial determination that the settlement is in the public interest. In accordance with these procedures, the Justice Department published its competitive impact statement on February 17, 1982.⁴² The public comment period, which was extended to include both written and oral presentations, terminated at the end of June 1982. After evaluation of the information provided during the public comment period, Judge Greene announced that he would refuse to approve the settlement unless a number of modifications were incorporated.

⁴² Federal Register. February 17, 1982, v. 47, no. 32. p. 7169-7184.

III. MODIFICATIONS INCORPORATED INTO THE AT&T JANUARY 8, 1982, SETTLEMENT

In accordance with Tunney Act procedures, termination of the antitrust suit was dependent on the holding of public hearings and a public interest evaluation of the settlement's terms by U.S. District Court Judge Harold Greene. While Judge Greene technically did not have the power to modify the terms of the settlement, he was required either to accept or reject it based on its provisions, his power of rejection provided an incentive for the parties to comply with his suggested modifications. After an examination of the testimony presented during lengthy oral and written comment periods, Judge Greene stated in an August 11, 1982, opinion that he would only approve the settlement if the parties were willing to modify its contents to incorporate selected concerns.⁴³ Although Judge Greene approved of the proposed settlement's basic framework -- that is, the divestiture of the local operating companies and the entrance of AT&T into unregulated markets -- he required the incorporation of 10 modifications before he would resolve public interest deficiencies contained in the initial settlement, largely enabled the divested local operating companies to provide CPE, produce "Yellow Pages," and petition the court to provide long distance service and manufacture equipment if they can prove that it will not impede competition. The modifications also prohibited AT&T from engaging in "electronic publishing" over its own transmission facilities for a minimum of seven years; required a relatively equal distribution of debt between AT&T and the divested companies; required or clarified specific behavioral requirements for the divested local operating companies; and granted the court jurisdiction over the implementation and enforcement of the settlement. More specifically, these modifications:

- permitted the divested local operating companies to provide, but not to manufacture, customer premises equipment.
- granted the divested local operating companies the right to produce, publish, and distribute the "Yellow Pages" directories and transferred to the operating companies all necessary facilities, information, and personnel to provide this service.
- expressed a willingness to remove the present restrictions on the divested local operating companies regarding the provision of interexchange service and equipment manufacturing if the operating company can prove to the court that "there is no substantial possibility" that its local monopoly power could be used to impede competition in the market it wishes to enter.

⁴³ See United States v. American Telephone and Telegraph Co., 552 F Supp. 131 (D.D.C. 1982), Affirmed, 103 S. Ct. 1240 (1983).

- prohibited AT&T from offering "electronic publishing" services over its own transmission facilities for a minimum of seven years.⁴⁴ AT&T, however, is permitted to provide electronic directory information as well as time and weather in areas which, as of January 8, 1982, it was already engaged in the provision of such services.
- required any local operating company which is providing billing services for AT&T's interexchange (long distance) services to notify customers on their interexchange bill that such a service is not connected to their exchange (local) service and may be provided by other companies.
- required any divested local operating company to charge tariffs for exchange access which reflect the quality of the service provided. That is, if access that is less than equal in type and quality to that given to AT&T is provided to other interexchange carriers, the price charged for such access should be proportionately discounted.
- transferred from AT&T to the divested local operating company any joint facilities or other assets which were predominantly used by that operating company. (The court, upon petition, may grant an exception to this requirement.)
- required that at the time of divestiture, the local companies have debt ratios of approximately 45 percent⁴⁵ and that the quality of the debt be representative of AT&T's debt. (The court, upon petition, may grant exception to this requirement.)
- granted the court the power to issue orders for the implementation, enforcement of compliance, and punishment of violations of the decree.
- prohibited the implementation of the reorganization plan for divestiture until court approval is granted.

⁴⁴ As defined in Part VIII of Judge Greene's August 11, 1982 opinion, "electronic publishing" means "the provision of any information which AT&T or its affiliates has, or has caused to be, originated, authored, compiled, collected, or edited, or in which it has a direct or indirect financial or proprietary interest, and which is disseminated to an unaffiliated person through some electronic means."

⁴⁵ Pacific Telephone and Telegraph Co., one of the 22 local operating companies facing divestiture, was given a debt ratio requirement of 50 percent, due to its less favorable economic condition. It should be noted, however, the Pacific Telephone Company's holding company was divested with a debt/equity ratio of 46.5.

Despite Judge Greene's rejection of the Justice Department's request to limit the divested local operating companies solely to the provision of "residential and single-line business customer premises equipment,"⁴⁶ both parties agreed to the court's modifications. Once these modifications were incorporated into a newly filed settlement, Judge Greene's approval quickly followed, and on August 24, 1982, Judge Greene filed a Modification of Final Judgement,⁴⁷ and dismissed the antitrust suit. Following Judge Greene's approval, as required by the settlement, AT&T had six months (until February 24, 1983) in which to file a plan detailing the implementation of the settlement's terms, and one year (until February 24, 1984) in which to carry it out.

⁴⁶ The Justice Department's memorandum in response to Judge Greene's opinion of August 11, 1982, see: Daily Report for Executives (BNA), No. 161, August 19, 1982. p. B1.

⁴⁷ This settlement became commonly known as the "modified final judgement" or MFJ, since it technically is a modification of the previously discussed 1956 consent decree.

See United States v. American Telephone and Telegraph Co., 552 F. Supp. 131 (D.D.C. 1982), affirmed, 103 S. Ct. 1240 (1983).

DIVESTITURE OF AT&T

CHRONOLOGY OF EVENTS

- 11/20/74 -- The U.S. Department of Justice instituted an antitrust action against the American Telephone and Telegraph Company, Inc. (AT&T), the Western Electric Company, Inc., and Bell Laboratories, Inc., alleging that the companies had violated Section 2 of the Sherman Act by conspiring to monopolize three major markets in the domestic telecommunications industry.
- 01/08/82 -- The U.S. Department of Justice and AT&T reached a negotiated settlement of their pending antitrust suit. Major terms required the divestiture of the exchange access and service functions of the 22 Bell Operating Companies (BOCs) in return for the vacating of a 1956 consent decree which had prevented AT&T from entering into unregulated markets.
- 01/25/82 -- Senate Commerce, Science and Transportation Committee, Subcommittee on Telecommunications, and the Senate Judiciary Committee held hearings on the ramifications of the AT&T/Justice Department settlement.
- 01/28/82 -- House Committee on Energy and Commerce, Subcommittee on Telecommunications, Consumer Protection and Finance, and Committee on the Judiciary, Subcommittee on Monopolies and Commercial Law, completed two days of joint hearings on the ramifications of the AT&T/Justice Department settlement.
- 02/10/82 -- The Justice Department filed its competitive impact statement regarding the AT&T settlement with the United States District Court.
- 02/17/82 -- The Justice Department's competitive impact statement appeared in the Federal Register, commencing a 60-day public comment period.
- 02/19/82 -- AT&T released its "planning model" for divestiture which grouped the local operating companies into seven independent, regional holding companies.
- 03/25/82 -- House Committee on Energy and Commerce, Subcommittee on Telecommunications, Consumer Protection and Finance passed, after further revision, H.R. 5158, a measure which altered the proposed antitrust settlement by attempting to strengthen the local operating companies.
- 05/19/82 -- AT&T announced the appointment of the chief executive officers of the seven tentative regional holding companies.

- 07/20/82 -- House Committee on Energy and Commerce terminated the markup of H.R. 5158 before completion.
- 08/11/82 -- Judge Harold Greene announced that he would approve in terms of the AT&T Justice Department proposed antitrust settlement only if the two parties agreed to his list of proposed modifications.
- 08/19/82 -- Although opposed to certain aspects of Judge Greene's modifications, AT&T and the Justice Department announced that they would modify the proposed settlement to incorporate Judge Greene's changes.
- 08/24/82 -- Judge Greene approved the newly-filed settlement which incorporated his 10 modifications and dismissed the antitrust case. AT&T is required to file its reorganization plan by February 24, 1983, and implement the plan within a year (February 24, 1984).
- 10/25/82 -- Various groups filed appeals challenging the AT&T/Justice Department antitrust settlement.
- 11/04/82 -- AT&T filed in U.S. District Court its plan of proposed geographic boundaries to define future exchange areas (local access and transport areas [LATAs]) designating the service areas of the divested 22 local operating companies.
- 12/16/82 -- AT&T filed its reorganization plan with the court. A 110-day public comment period followed.
- 01/13/83 -- The Federal Communications Commission (FCC) petitioned AT&T to submit details of its reorganization plan. A reply was requested by March 1.
- 02/28/83 -- The Supreme Court affirmed the D.C. District Court's acceptance of the consent decree.
- 04/20/83 -- Judge Greene approved, with minor modifications, the 161 proposed local access and transport areas contained in the proposed AT&T reorganization plan.
- 05/10/83 -- Judge Greene requested written briefs and scheduled a public hearing for June 2, to consider unresolved issues regarding AT&T's proposed reorganization plan.
- 07/08/83 -- Judge Greene issued his ruling on the AT&T reorganization plan, seeking six major modifications before granting approval.

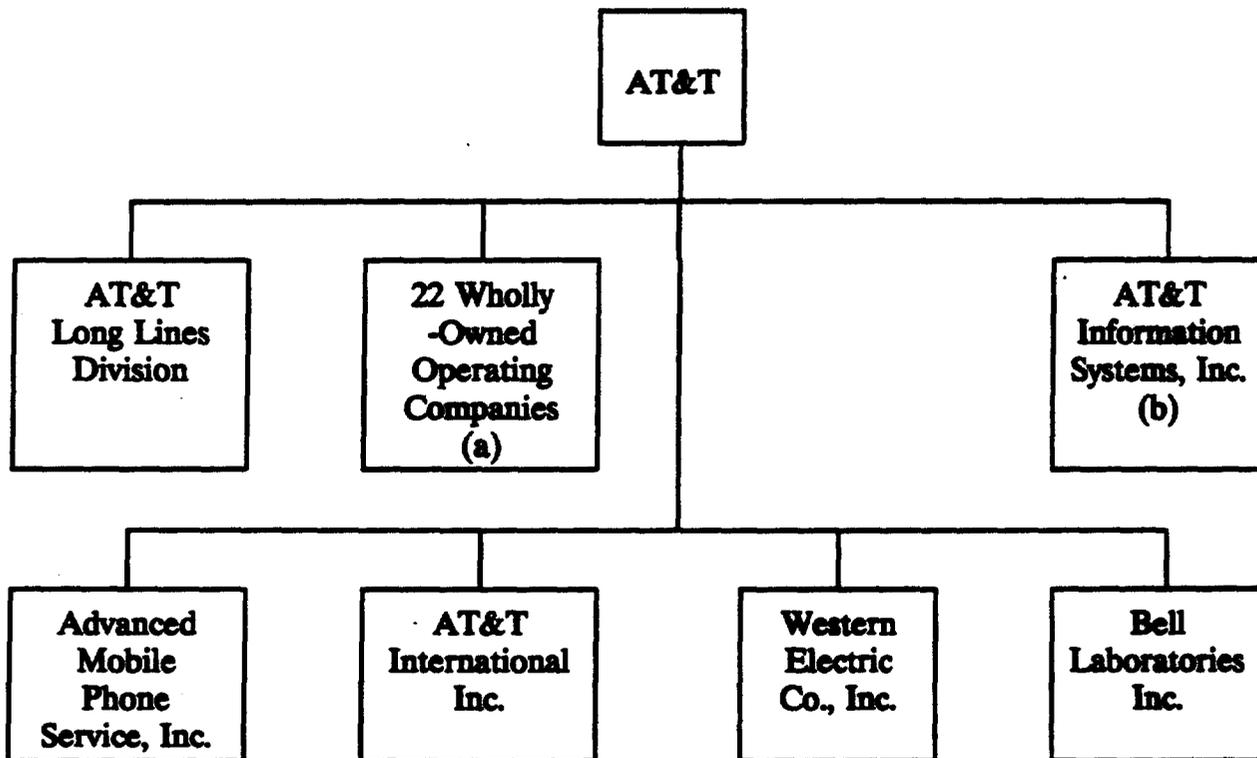
Industry Background and Analysis

- 07/15/83 -- AT&T filed a partial response to Judge Greene's modifications to the reorganization plan, requesting the removal or modification of the provision guaranteeing AT&T's coverage of operating company interexchange access costs remaining after Jan. 1, 1994.
- 08/03/83 -- AT&T and the Justice Department announced that they would accept Judge Greene's suggested modifications to the reorganization plan after the incorporation of an interexchange cost proviso.
- 08/05/83 -- Judge Greene issued an order putting into effect the amended reorganization plan.
- 10/19/83 -- AT&T announced the incorporation of a \$5.2 billion (later revised to \$5.5 billion) one-time, end-of-year charge against 1983 earnings caused by a write-down of AT&T's post-divestiture assets and other accounting changes.
- 11/16/83 -- AT&T filed financial data with the Securities and Exchange Commission to enable it to start the trading of the stocks and the "new" AT&T and of the seven regional holding companies.
- 11/21/83 -- The stocks of the "new" AT&T and the seven regional holding companies began trading on a "when issued" basis.
- 12/01/83 -- The FCC approved the transfer of various assets and radio licenses among AT&T and the Bell Operating Companies as required by the reorganization plan.
- 12/12/83 -- The Supreme Court upheld the AT&T reorganization plan, removing any further legal obstacles to the settlement.
- 01/01/84 -- Pursuant to the terms of the settlement and the reorganization plan, AT&T divested itself of its 22 wholly-owned local operating companies.
- 02/15/84 -- The final day of trading of the pre-divestiture AT&T stock and the termination of "when issued" trading of the stocks of the "new" AT&T and the seven regional holding companies.

DIVESTITURE OF AT&T

Table I

**The Pre-Divestiture Bell System Organization Structure
(Major Subsidiaries, end of year 1983)**



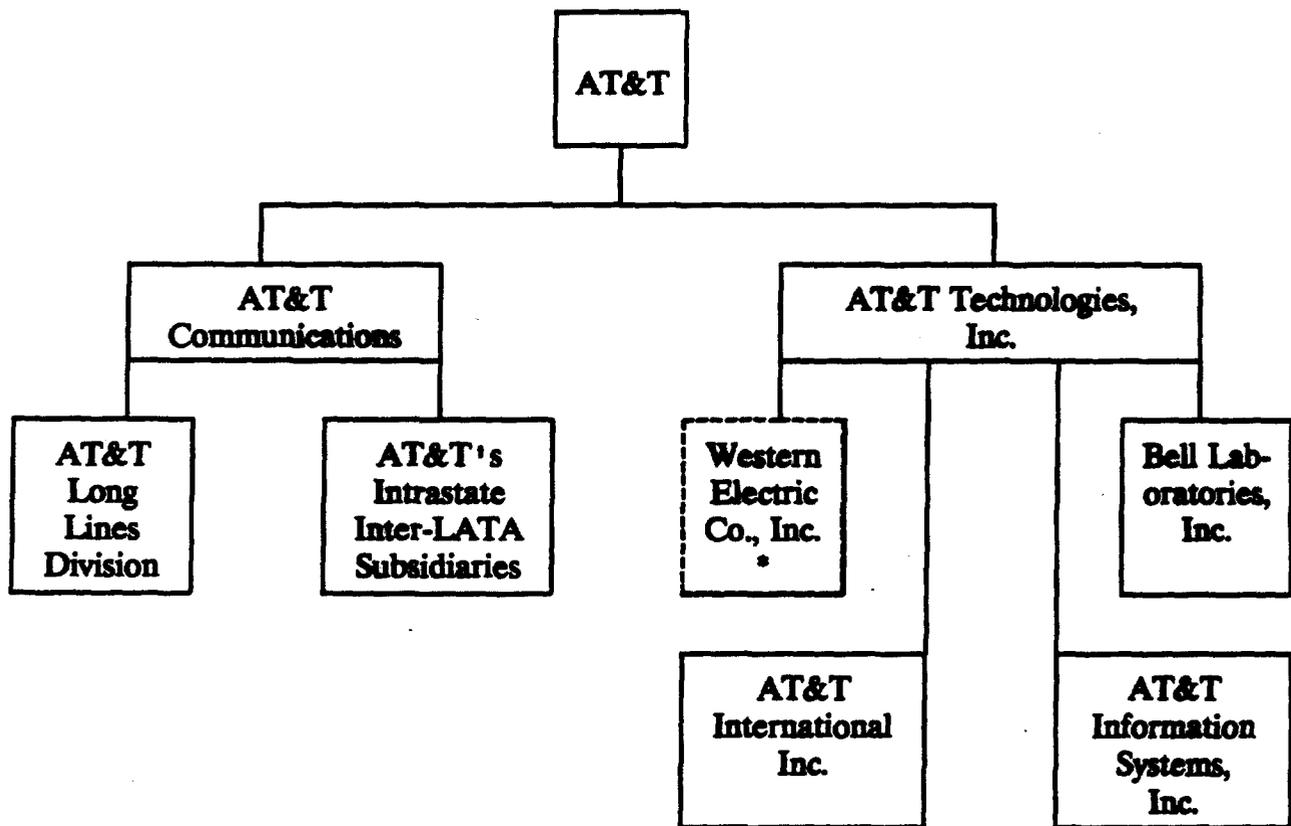
(a) At the time of divestiture, AT&T also had a minority ownership in two other operating companies, the Southern New England Telephone Company and Cincinnati Bell, Inc.

(b) To comply with modifications incorporated into the reorganization plan regarding the use of the word "Bell," effective August 23, 1983, AT&T changed the name of its unregulated subsidiary from American Bell, Inc., to AT&T Information Systems, Inc.

DIVESTITURE OF AT&T

Table II

The Post-Divestiture AT&T Organizational Structure
(major subsidiaries as of January 1, 1984)



* As of January 1, 1984, Western Electric Co., Inc., ceased to exist as a separate division and its employees and functions were redistributed among the various divisions of AT&T Technologies.

DIVESTITURE OF AT&T**Table III****Selected Statistics on the Pre-Divestiture Bell System
(end of year 1983)**

Revenue (\$ billion)	\$69.4
Net Income (\$ million)	\$248.7 (a)
Assets (\$ billion)	\$149.5
Access Lines	87,000,00
Employees (end of third quarter 1983)	972,000 (b)

(a) Includes a one-time \$5.5 billion charge against 1983 net income

(b) As estimated by E.F. Hutton & Co., Inc., New York.

Source: 1983 Annual Report, American Telephone and Telegraph Company.

DIVESTITURE OF AT&T

Table IV

Selected "Pre-Divestiture" Statistics on the Seven Regional Holding Companies
(estimated for end of year 1984)

Holding Company	Revenue (\$ billion)	Net Income (\$ million)	Assets* (\$ billion)	Access Lines (millions)	Employees (as of 1/84)
Ameritech	\$8.34	\$923.7	\$16.26	14.2	79,000
Bell Atlantic	8.32	952.2	16.26	14.6	80,000
BellSouth	9.80	1,200.0	20.81	14.1	99,100
NYNEX	9.83	937.6	17.39	13.1	98,200
Pacific Telesis	8.10	827.7	16.19	11.3	82,000
Southwestern Bell	7.76	869.9	15.51	10.5	74,700
US West	7.44	877.8	15.05	10.9	75,000

* Pro forma basis as of June 30, 1983.

Source: Fortune Magazine, 50 Largest Utilities Ranking, 1990. June 3, 1991.

DIVESTITURE OF AT&T**Table V**

**Selected Statistics on the Post-Divestiture AT&T
(estimated for the end of year 1984)**

Revenue (\$ billion)	\$56.54
Net Income (\$ million)	\$2.11
Assets (\$ billion)	\$34.28*
Employees (as of 1/1/84)	373,000

* Pro forma basis as of June 30, 1983.

Source: 1983 Annual Report, The American Telephone and Telegraph Company.

DIVESTITURE OF AT&T

Table VI

**Selected Statistics on the Post-Divestiture AT&T
(estimated for the end of year 1990)**

Revenue (\$ billion)	\$37.5
Net Income (\$ million)	\$2.73
Assets (\$ billion)	\$43.8
Employees (end of year 1990)	273,700

Source: Fortune Magazine, 50 Largest Utilities Ranking, 1990. June 3, 1991, p. 278, 279.

DIVESTITURE OF AT&T

Table VII

Selected "Post-Divestiture" Statistics on the Seven Bell operating Companies
(estimated for end of year 1990)

Holding Company	Revenue (\$ billion)	Net Income (\$ million)	Assets* (\$ billion)	Access Lines (millions)	Employees (as of 12/90)
Ameritech	10.6	1,253.8	21.72	15.9	75,780
Bell Atlantic	12.3	1,312.5	28.00	17.0	81,600
BellSouth	14.4	1,631.5	30.20	16.7	101,945
NYNEX	13.5	949.4	26.25	14.9	93,801
Pacific Telesis	9.7	1,030.0	21.58	14.2	65,829
Southwestern Bell	9.1	1,101.4	22.20	11.4	66,690
US West	9.9	1,198.9	27.05	12.3	65,469

* U.S. Telephone Association (by access lines as of Dec. 1989)

Source: Fortune Magazine, 50 Largest Utilities Ranking, 1990. June 3, 1991, p. 278, 279.

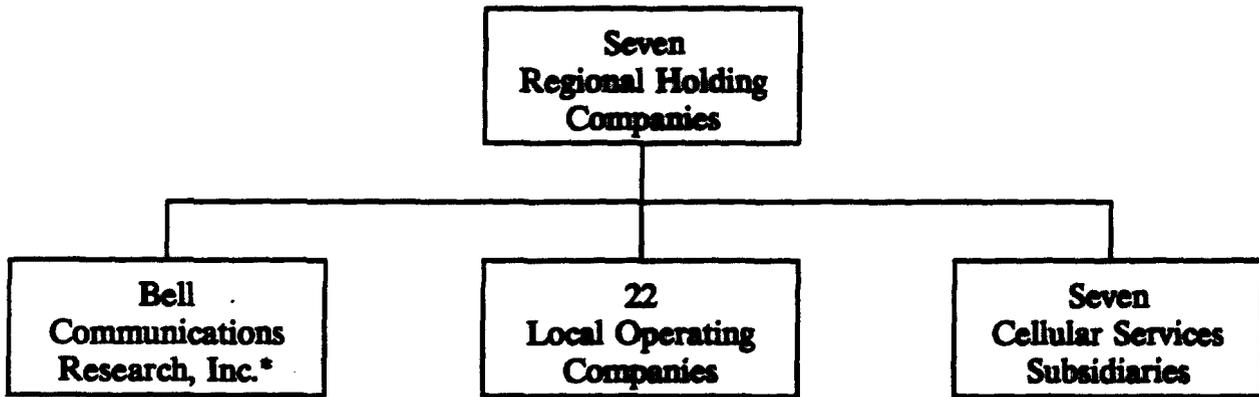
Note:

- AT&T and Bell Operating Companies Pre-Divestiture Combined Assets (year end 1984): \$149.5 Billion
- AT&T and Bell Operating Companies Post-Divestiture Combined Assets (year end 1990): \$186.8 Billion
- AT&T and Seven Regional Bell Operating Companies Combined Net Incomes (year end 1990): \$9.94 Billion

DIVESTITURE OF AT&T

Table VIII

The Post-Divestiture Bell Operating Company Organizational Structure (a)
(as of January 1, 1984)



* This unit was temporarily referred to as the Central Services Organization until February 16, 1984.

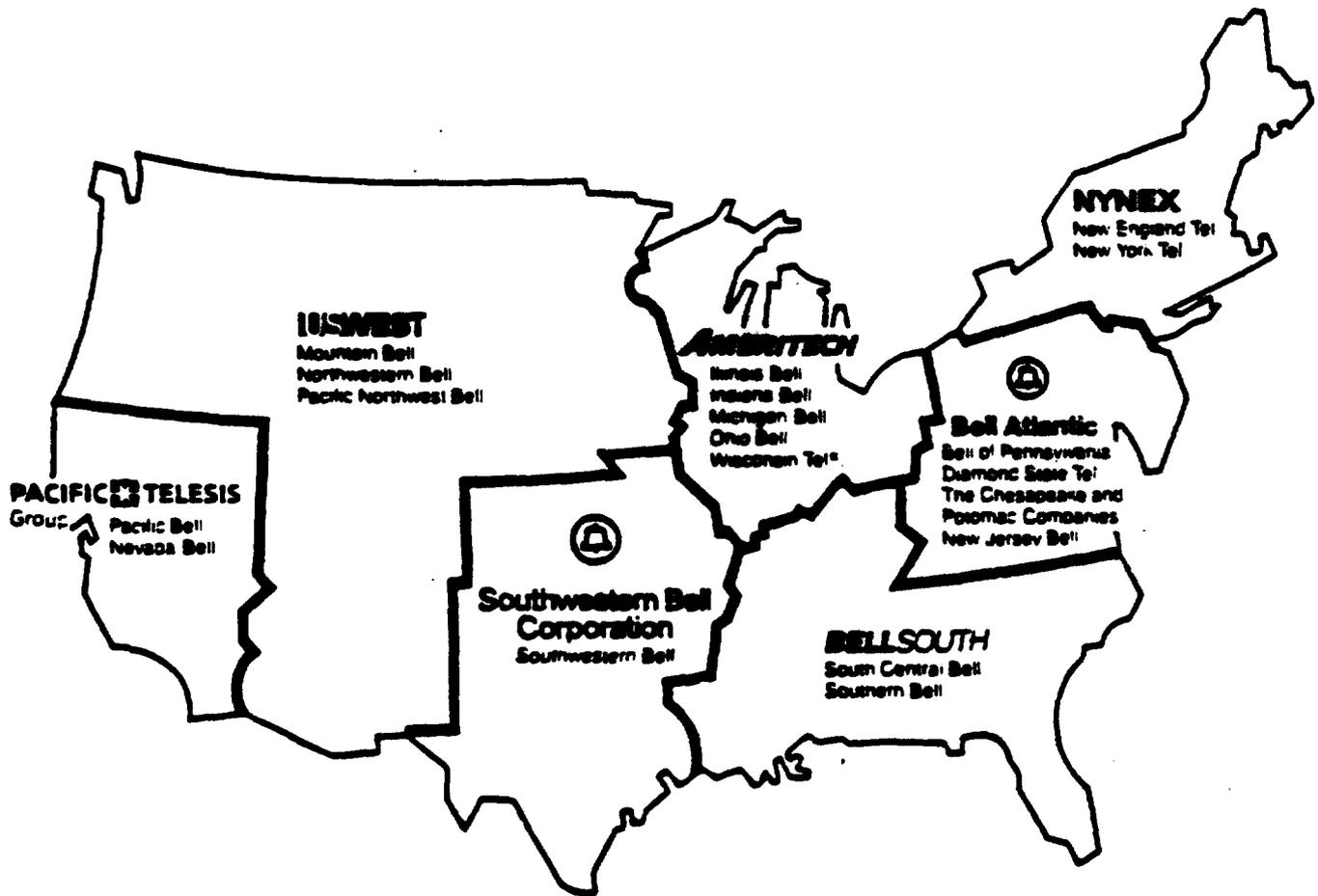
(a) The above organizational chart only depicts the major companies of the post-divestiture operating company organizational structure. For example, the various subsidiaries formed by the individual regional holding companies and future operating company are not included.

Industry Background and Analysis

SINCE DIVESTITURE

Bell Operating Companies

On January 1, 1984, The American Telephone and Telegraph Company (AT&T) divested itself of a major portion of its organizational structure and functions. Under the divestiture environment the Bell System was reorganized into the "new" AT&T and seven independent regional holding companies – American Information Technologies Corp., Bell Atlantic Corp., Bell-South Corp., NYNEX Corp., Pacific Telesis Group, Southwestern Bell Corp., and US West, Inc.



SINCE DIVESTITURE

The seven Regional Bell Operating Companies (RBOCs) have been actively seeking permission to enter manufacturing, long distance, and information services other than their core telephone business. They are also interested in entering the cable television business. In the 1989-90 election cycle the phone companies and their subsidiaries gave about \$3 million to Congressional candidates. It has also been reported they have amassed a \$21 million war chest for lobbying Washington.⁴⁸

At issue is the original intent of the structural and injunctive requirements under the divestiture agreement with AT&T and the Bell Operating Companies, which was designed to ensure a non-discriminating, competitive environment in the telecommunications markets. The prospect of the RBOCs manufacturing equipment for their own networks raises the possibility of abuse of monopoly power, such as that associated with the former Bell System. Much of the litigation against AT&T in the past focused on its dealings with its manufacturing affiliate, Western Electric. As a monopoly provider of both local and long distance service and as a manufacturer of telecommunications equipment, AT&T had both the incentive and the ability to engage in anticompetitive behavior. The crux of the current debate is whether the RBOCs have similar incentives and capabilities today. It should be noted that GTE Corp. is actually larger in size and scope than most of the RBOCs and offers local exchange service, but is free to engage in interexchange services, information services, and manufacturing. For reasons unknown, there have been no anticompetitive or discriminatory conduct charges alleged against GTE, though it has the same goals and incentives as the RBOCs.⁴⁹

Few, if any, would deny that the telecommunications industry is more competitive today than before the divestiture of AT&T and the Bell Operating Companies.

⁴⁸ National Journal, Drawing the Lines, 10/26/91 pgs. 2588-2592.

⁴⁹ GTE Corp. is now the Nation's largest local exchange telephone company and second-largest cellular carrier, resulting from its 1990 acquisition of Contel Corporation.

<u>GTE Corporation</u>	<u>(billions)</u>
1990 Gross Revenues	\$18.3
Net income	1.54
Assets	33.76
Employees (154,000)	

Source: Fortune Magazine, June 3, 1991

LOCAL TELEPHONE SERVICE

It is also common knowledge in the industry that the 22 Bell Operating Companies continue to monopolize approximately 80 percent of the Nation's local telephone service.⁵⁰ The remaining 20 percent is provided by a thousand independent telephone companies, who serve primarily rural areas.

Eight years after divestiture, small to medium size businesses and U.S. residents do not have a choice of different local telephone service providers. In a recent Andersen Consulting Survey of 200 middle-market business customers, 45 percent of users surveyed said they would switch their local exchange carrier if an alternative was available.⁵¹

In a few major metropolitan markets, including New York and Chicago, alternate local carriers are using high speed, fiber-optic networks to offer large businesses direct access to long distance carriers. These companies, in addition to competing directly on price, also market their services as alternate routes for disaster recovery, or disaster prevention purposes. A recent FCC decision, forcing local exchange carriers to allow alternate carriers to connect to their networks, has brought competition closer to reality.

The RBOCs also face competition in the future from the providers of personal communications services, or wireless telephony. Major cable companies are among the early experimenters in this field, and could eventually pose a challenge to conventional, wired telephone services.

While competition has surfaced in a few segments of the telecommunications industry, by and large, the "Baby Bells" still control access to the public network.

LONG DISTANCE

The long distance market has demonstrated the highest increase in competition since divestiture, with long distance rates declining by 45 percent.⁵² According to the Federal Communications Commission, for the period since divestiture, industry traffic volume grew at an annual rate of 13 percent. AT&T's traffic grew at a slower rate than the industry average, while other carriers' traffic grew nearly 30 percent annually. In the market for interstate switched minutes, the result of an AT&T growth rate slower than the industry

⁵⁰ National Journal, Drawing the Lines, 10/26/91 pgs. 2588-2592.

⁵¹ Communications News, 45% of Users Say They'd Like a Different Local Exchange Carrier (LEC), September 1991, pg. 48.

⁵² The Washington Post, Companies Step Up Battle for Long Distance Market, 12/18/91, pgs. H1, H4.

average has been that AT&T's market share fell from more than 80 percent in 1984 to less than 63 percent in 1991. Due to price cuts, however, AT&T's total toll revenues have declined slightly since 1985 because the volume growth did not offset the impact from rates. AT&T's market share for all long distance revenues, including the LECs, is now less than 50 percent. Excluding the LECs, AT&T's share is about 65 percent, while MCI held a 14 percent share and U.S. Sprint 9.7 percent.

The product market for long distance services has several key segments, by far the largest of which is Message Telephone Service (MTS), used by most people to make direct-dial long distance calls. The MTS market is about \$27 billion, and the annual growth rate is about 3.5 percent. Other important market categories are 800/900 WATS (inbound), outbound WATS, analog and digital private leased circuits, and special services such as ISDN, Virtual Private Networks (VPN), Software Defined Networks (SDN), switched 56 Kbps data service, and others. In the operator services segment, about 300 firms provide directory assistance services. However, only 50 are actual long distance carriers; the rest operate as resellers without purchasing network access.

The next largest revenue category for long distance services, after MTS, is the market for 800 and 900 numbers, which totaled about \$6.5 billion in 1991.⁵³

TELECOMMUNICATIONS EQUIPMENT MARKET

The telecommunications equipment market consists of telecommunications products, or equipment used in both public and private networks to provide telecommunications services, and customer premise equipment (CPE). Telecommunications products generally include central office switches, the switching centers which route calls throughout the networks, transmission equipment, and the copper cables and optical fibers which connect the nodes of the network. CPE ranges from telephones, answering machines, and fax machines, on the low end, to private switching equipment centers, known as PBXs, and sophisticated bridging and routing equipment used to connect private data networks. The overall size of the U.S. equipment market has been estimated at \$33 billion; the worldwide market is approximately \$120 billion.

In the United States, some market segments, such as network transmission equipment and low-end CPE, are characterized by widespread competition, with hundreds of vendors supplying a wide variety of niche products. Other segments, however, tend toward oligopoly, with two or three firms dominating the market. For example, AT&T and Northern Telecom, a Canadian-based firm, supply 81 percent of the central office switch market, garnering market shares of 42 percent, and 39 percent, respectively. Similarly, AT&T and Corning control approximately 75 percent of the market for optical fibers. Despite its strength in some segments of the market, AT&T's dominance has been reduced. The

⁵³ Federal Communications Commission

RBOCs, which represent 70 percent of the market for telecommunications products, now buy about half of their equipment from AT&T's manufacturing arm, Western Electric (since renamed AT&T Technologies). Before divestiture, Western Electric supplied, by some estimates, up to 95 percent of the equipment used in the Bell System.⁵⁴

In 1990, the United States ran an overall trade deficit of approximately \$800 million in the telecommunications sector, with a \$710 million surplus in high-end network switching equipment counteracting a \$2.3 billion deficit in CPE. It should be noted that the surplus in switching equipment includes exports of Northern Telecom switches manufactured in the United States. 20 percent of the U.S. telecommunications equipment market is supplied by foreign firms. Prior to divestiture, the U.S. had a trade surplus with Japan in telecommunications equipment; today there is a significant deficit. A significant recent trend in the international marketplace is that the development costs for high-end equipment have risen dramatically. Development costs for the next generation of network switches have been estimated by various sources to be greater than \$1 billion. In order to recoup such a large investment, some have estimated that a switch vendor would need to capture at least 15 percent of the worldwide market, which would leave room for only six viable manufacturers. Ten firms currently manufacture central office switching equipment.

In considering the market for network equipment, it is necessary to recognize that the technology of the network is changing rapidly. While the components of a telephone network -- central office switches, transmission equipment, copper and fiber cables -- are well-known today, changes in network architecture are creating markets for new equipment.

These new markets pose challenges to traditionally successful vendors and open up opportunities for new ones. The first development to consider is the advent of a signalling network that is separate from the standard voice network. In the past, signaling and voice transmission functions were integrated into a single network. In the traditional, integrated network, the "brains," or the intelligence, were located in central office switches, which controlled the routing of telephone calls through the network.

A new signaling network, known as SS7 (implicated in the recent phone outages at Bell Atlantic and Pacific Bell), takes over many of those control functions. SS7 networks require special hardware and software and one of the most successful vendors in the SS7 equipment market is Digital Switch Corp., a relatively small Texas-based company which has not been a force in the central office switch market. The advent of SS7 foreshadows a major shift in the nature of the telephone network towards software-based services and functions.

⁵⁴ U.S. Library of Congress, Science and Policy Research Division, Should the Baby Bells Be Allowed to Manufacture?, by David B. Hack and Stephen Downs, 12/23/91. U.S. Department of Commerce, International Trade Administration. Ma Bell and Seven, Fortune Magazine, November 4, 1991 p. 15-19.

In the years to come, more and more of the intelligence, hence the added value, in the network will likely migrate away from traditional switches toward adjunct computers. These computers will serve as platforms upon which new services will be offered. As is the trend in the computer industry, the platforms are likely to use open architecture, enabling innumerable vendors to develop software applications for new services.

MANUFACTURING

The RBOCs continue to lobby for permission to manufacture in order to compete in the global market. Serious concerns have been raised by the small business community that allowing the RBOCs to enter the manufacturing business would reduce competition in the industry because the RBOCs, by developing custom products for their networks, would force many smaller companies out of business. Together, the seven RBOCs purchase more than 70 percent of all telecommunications network equipment.

It has been asserted that, if allowed, the RBOCs would acquire proven manufacturers, joint develop, and possibly fund smaller companies' development efforts in order to design service-specific products for their own networks.

Much of the RBOC manufacturing issue focuses on its importance for U.S. employment. They argue that by allowing them to develop, design, and manufacture equipment only in the U.S., many U.S. jobs could be created. At the same time, it can hardly be overlooked that each of the RBOCs' future growth plans call for downsizing their current employment forces. These new jobs the RBOCs might create would only be offset the jobs lost by firms who now manufacture, but whose market share would be diminished by RBOC competition.

Since divestiture, the number of equipment vendors has risen, and AT&T's role as a dominant supplier of CPE and network equipment has diminished considerably. There have been many advances in the CPE market such as cheaper, feature-rich telephones and sophisticated voice message systems, however, aside from equal access to long distance carriers, no major new network services have been made widely available.⁵⁵

⁵⁵ U.S. Library of Congress, Science and Policy Research Division, Should the Baby Bells Be Allowed to Manufacture?, by David B. Hack and Stephen Downs, 12/23/91.

INFORMATION SERVICES

The Regional Bell Operating Companies have also expressed an interest in offering cable television. The current consent decree information services restrictions also apply to video services including cable television, and, while not preventing participation in the transmission or billing of cable television services, continue to prohibit RBOC involvement in cable programming. In addition to information services restrictions contained in the 1982 consent decree, existing Federal Communications Commission (FCC) crossownership rules as well as present Federal law (P.L. 98-549) limit telephone company entrance into this market.

The RBOCs continue to press for removal of all information services restrictions. They would like to be able to participate in content as well as transmission so they may generate their own information services.⁵⁶

⁵⁶ On October 7, 1991, the Federal Appeals court granted the RBOCs permission to begin immediately providing information services. The ruling overturns part of a lower court decision on July 25, 1991, in which Judge Harold H. Greene lifted a longstanding ban that prohibited the RBOCs from owning information services, but also delayed lifting the ban until opponents appealed. It would appear from this ruling that final decision on the exact nature of the role of the RBOCs in information services will be determined by Congress.