Service or Element Description:	Recurring Charges:	Non-Recurring Charge:
XVII. House and Riser		
Building Access- per pair	$0.30	Service Call Dispatch: $44.64
Floor Access- per floor risen, per pair	$0.01	
Building Setup Service Cost, Per 50 pair	$157.38	Each 15 minutes, period or fraction thereof: $9.11
House and Riser Cable Service Installation Charge,-Per occasion	Time & Material	TC not Ready (per occasion): $19.86No premise visit
		$49.91 Premise visit
50 Pair Terminal Charge	$157.38	
Terminal Charge per pair		$3.15
Cable Investment per floor		$0.01

Service or Element Description:	Recurring Charges:	Non-Recurring Charge:
XIII. DARK FIBER		
Dark Fiber - Records Review	-	$136.78
Dark Fiber - IOF		
Verizon C.O. to Verizon C.O.		
Serving Wire Center ("SWC") Charge	$6.60/SWC/Pair $76.37/Pair/Mile	$52.74/Service Order $28.75/ SWC Installation Charge
IOF Mileage Installation Charge		$188.61/Pair
Expedited Handling Charge		$ 113.46
Verizon C.O. to CLEC C.O.		
SWC Charge/SWC/Pair	$6.60/SWC/Pair	$52.74/Service Order $28.75/SWC Installation Charge
Channel Termination Charge/CLEC C.O.	$56.14	$329.45
Expedited Handling Charge		$ 113.46
Dark Fiber - Loop	Rate Group: A 1- $73.95/Month A2 - $103.28/Month B1 - $129.87/Month	$52.74/Service Order $527.38/Installation
SWC Charge/SWC/Pair	$6.60/SWC/Pair	$23.53/SWC/Pair
Expedited Handling Charge		$238.33
Dark Fiber T&M Charges		
Facilities Management Center		$43.20
OSP Operations/Splicing-NTE Technician		$41.76
CO Frame - CO Technician		$33.29
XIV. Dark Fiber Subloop	TBD	TBD

C. RESALE[12]

I. Wholesale Discount for Resale of Retail Telecommunications Services[13]

Resale of retail services if ***CLEC Acronym TXT*** provides own operator services platform	20.03%
Resale of retail services if ***CLEC Acronym TXT*** uses Verizon operator services platform	17.04%

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12 All rates and charges specified herein are pertaining to the Resale Attachment.

In compliance with the FCC Order approving the Merger of GTE Corporation and Bell Atlantic (CC Docket No. 98-1840), Verizon will offer limited duration promotional discounts on resold residential exchange access lines. The terms and conditions on which these promotional discounts are being made available can be found on Verizon's web site, at http://www.verizon.com/wise for former GTE service areas and former Bell Atlantic service areas.

13 Excludes telecommunications services designed primarily for wholesale, such as switched and special exchange access service, and, subject to the provisions of the Resale Attachment, the following additional arrangements that are not subject to resale: limited duration (90 days or less) promotional offerings, public coin telephone service, and technical and market trials. Taxes shall be collected and remitted by the reseller and Verizon in accordance with legal requirements and as agreed between the Parties. Surcharges (e.g., 911, telecommunications relay service, universal service fund) shall be collected by the reseller and either remitted to the recipient agency or NECA, or passed through to Verizon for remittance to the recipient agency or NECA, as appropriate and agreed between the Parties. End user common line charges shall be collected by the reseller and remitted to Verizon.

Service or Element Description:	Recurring Charges:	Non-Recurring Charge:
D. OPERATION SUPPORT SYSTEMS		
1. Pre-Ordering	$.28/Query	Not Applicable
2. Ordering	$4.72/Transaction	Not Applicable
3. Provisioning	Included in Ordering	Not Applicable
4. Maintenance & Repair		
a. ECG Access	$.28/Query	Not Applicable
b. EB/OSI Access	$1.15/Trouble Ticket	Not Applicable
5. Billing		
a. CD-ROM	$250.25/CD-ROM	Not Applicable
b. Daily Usage File		
b.1. Existing Message Recording	$.001500/Message	Not Applicable
b.2. Delivery of DUF		
Data Tape	$12.93/Tape	$56.62/Programming Hour
Network Data Mover	$.000295/Message	Not Applicable
CMDS	$.000150/Message	$56.62/Programming Hour
c. DUF Transport		
9.6 kb Communications Port	$43.45/Month	
56 kb Communications Port	$253.42/Month	
256 kb Communications Port	$1,158.46/Month	
T1 Communications Port	$6,987.00/Month	
d. DUF Transport (Maintenance)		
9.6 kb Communications Port	$0.53/Month	
56 kb Communications Port	$3.10/Month	
256 kb Communications Port	$14.19/Month	
T1 Communications Port	$85.58/Month	
Line Installation	Not Applicable	$56.62/Programming Hour
Port Set-up	Not Applicable	$10.43/Port
Network Control Programming Coding	Not Applicable	$56.62/Programming Hour

Service or Element Description:	Recurring Charges:	Non-Recurring Charge:
Data Transmission	Not Applicable	$56.62/Programming Hour

E. 911/E911

Transport	Per section B. above.	
Data Entry and Maintenance	No Charge	

F. Time and Materials

Service Technician (service work on unbundled loops outside of the Central Office)	Not Applicable	$44.64/Premises Visit $9.11 Labor Charge/ Per Quarter Hour After First Quarter Hour

RECIPROCAL COMPENSATION TRAFFIC TERMINATION RATES

A. Charges by Verizon

(a) Traffic delivered to Verizon Tandem:

Tandem Rate.

(b) Traffic delivered directly to terminating Verizon End Office: End Office Rate.

B. Charges by ***CLEC Acronym TXT***

1. Single-tiered interconnection structure:

CLEC Acronym TXT's rates for the termination of Verizon's Reciprocal Compensation Traffic under the single-tiered interconnection structure shall be recalculated once each year on each anniversary of the Effective Date (the "Rate Determination Date"). The methodology for recalculating the rates is as follows:

Tandem Minutes = Total minutes of use of Reciprocal Compensation Traffic delivered by ***CLEC Acronym TXT*** to the Verizon Tandem for most recent billed quarter.

End Office Minutes = Total minutes of use Reciprocal Compensation Traffic delivered by ***CLEC Acronym TXT*** directly to the terminating Verizon End Office for most recent billed quarter.

Total Minutes = Total minutes of use of Reciprocal Compensation Traffic delivered by ***CLEC Acronym TXT*** to Verizon for most recent billed quarter.

CLEC Acronym TXT Charge at the ***CLEC Acronym TXT***-IP =

$$\frac{(\textit{Tandem Minutes} \times \text{Tandem Rate}) + (\textit{End Office Minutes} \times \text{End Office Rate})}{\textit{Total Minutes}}$$

For the first year after the Effective Date, the ***CLEC Acronym TXT*** charge shall be calculated based on the traffic data of the quarter immediately preceding such Effective Date, or if no such traffic exists, on the proportion of Reciprocal Compensation Traffic termination trunks to Verizon End Offices and to Verizon Tandems.

2. Multiple-tiered interconnection structure (if offered by ***CLEC Acronym TXT*** to any carrier)

(a) Reciprocal Compensation Traffic delivered to ***CLEC Acronym TXT*** Tandem: Tandem Rate

(b) Reciprocal Compensation Traffic delivered to terminating ***CLEC Acronym TXT*** End Office/node: End Office Rate

C. Miscellaneous Notes

1. The ***CLEC Acronym TXT*** termination rate under the single-tiered interconnection structure set forth above is intended to be a Reciprocal Compensation Traffic termination rate for Interconnection to the ***CLEC Acronym TXT***-IP within each LATA that is reciprocal and equal to the actual rates that will be charged by Verizon to ***CLEC Acronym TXT*** under the two-tiered Reciprocal Compensation Traffic termination rate structure described above that will apply after the first anniversary of the Effective Date. The single ***CLEC Acronym TXT*** termination rate is also intended to provide financial incentives to ***CLEC Acronym TXT*** to deliver traffic directly to Verizon's terminating End Offices once ***CLEC Acronym TXT***'s traffic volumes reach an appropriate threshold.

SUPPLEMENTAL REPLY DECLARATION OF PATRICK A. GARZILLO AND MARSHA S. PROSINI

ATTACHMENT 2

REDACTED – FOR PUBLIC INSPECTION

REDACTED – FOR PUBLIC INSPECTION

SUPPLEMENTAL REPLY DECLARATION OF PATRICK A. GARZILLO AND MARSHA S. PROSINI

ATTACHMENT 3

REDACTED – FOR PUBLIC INSPECTION

REDACTED – FOR PUBLIC INSPECTION

SUPPLEMENTAL REPLY DECLARATION OF PATRICK A. GARZILLO AND MARSHA S. PROSINI

ATTACHMENT 4

An Updated Study of AT&T's Competitors' Capacity to Absorb Rapid Demand Growth

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G. A. Hallas
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J. D. Rustwick
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to constrain AT&T's market behavior and inhibit it from charging excessive rates."[6] In 1992, AT&T showed that these previous estimates of its competitors' ability to absorb traffic from AT&T customers were conservatively low because MCI and Sprint had increased their fiber facilities and switching capacity and other inter-exchange carriers (IXCs) had attained a significant market presence in the two years since the initial studies were performed.[7]

The 1990 study showed that AT&T's competitors' networks had the necessary geographic coverage with their facility deployment to absorb AT&T customers. Since then, AT&T's competitors have installed additional transmission facilities and switching plant. In addition, technological advances have increased the capacity of previously existing facilities and switches. Further, advances in computing technology have increased the processing capability and decreased the price of the computing systems used to support signaling, operations and billing functions. The combined effect of performance improvements and plant additions is that AT&T's competitors' in-service and potential network capacity have grown faster than the industry's market demand. As a result, they generally have a greater capacity for growth in all geographic areas than in 1990.

AT&T has updated the above referenced studies and confirmed that AT&T's competitors have retained the ability to absorb a significant percentage of traffic from AT&T customers. The ability of AT&T's competitors to absorb AT&T's customers was based on MCI's, Sprint's, and LDDS/Wiltel's networks. Today, AT&T's competitors can instantaneously absorb a minimum of 15% of AT&T's total 1993 switched minutes on their existing networks without incurring any incremental capital costs.[8] An additional 17% of AT&T's total 1993 switched minutes could be absorbed by AT&T's competitors within 3 months utilizing spare switch ports and existing transport facilities. Within one year, AT&T's competitors could absorb 63% of AT&T's total switched minutes by adding switch ports, echo cancellers, and digital cross connect equipment. All of AT&T's switched minutes could be absorbed by AT&T's competitors within 18 months by adding switch ports and lighting dark fiber with the latest electronics, the principal limiting factor being the rate at which they could obtain additional switch ports from their switch suppliers. The capital investment for AT&T's competitors to absorb all of AT&T's 1993 switched services and dedicated services transport is approximately $2.2 billion.

In instances where judgment was required to estimate the characteristics of its competitors' networks, AT&T understated existing competitor network capacity and overstated the quantity of plant additions and associated capital investment required to serve a given amount of demand absorbed from AT&T. Further, this study is also conservative because it analyzes only the capacities of MCI, Sprint, and LDDS/Wiltel, and ignores the transport and switching capacities of the other facility-based carriers. Therefore, the estimate of the percentage of AT&T's demand that its competitors can absorb within a given time frame is conservatively low and the associated investments is conservatively high.

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6 FCC report and Order, CC Docket No. 90-132, Sep. 16, 1991, Paragraph 48

7 AT&T's Comments, CC Docket No. 92-134, Price Cap Performance review for AT&T, pp. 8-10, Sep. 4, 1992

8 Switched minute data for 1993 were used as the frame of reference because at the time this study was performed these were the most recent data available from the report "Statistics of Communications Carriers" released by FCC, Feb. 2, 1995

The following sections describe the methodology used to estimate the rate at which AT&T's competitors can absorb AT&T's customers and the associated capital investment that they would need to supplement their existing networks. The Industry and Technology Trends Section describes the general impact of advances in transmission, switching, and computing technologies on the in-service and potential network capacities of AT&T's competitors. The next section, AT&T's Competitors' Ability To Absorb AT&T's Customers, analyzes in more detail AT&T's competitors' transport, switching, signaling, billing, operations support systems and human resources to determine their existing capacities and their ability to expand in order to absorb increased market demand. The results of this section are used in the following section, AT&T's Competitors' Ability to Absorb AT&T's Customers Over Time, to estimate the percentage of traffic from AT&T customers that its competitors could absorb instantaneously, within three months, within one year, and within eighteen months. The associated capital investments were also estimated. The results of these analyses are summarized in the last section, Summary of Results.

2. INDUSTRY AND TECHNOLOGY TRENDS

Advances in transmission, switching, and computing technologies since 1989 have increased the capacity and price-performance of transmission systems, switches, and computing systems for operations and billing used in IXC networks. The following three sections describe some of these advances and show that AT&T's competitors not only have network capacity in excess of that required to handle their existing demand, but that they can also rapidly increase their networks' capacities at minimal cost.

2.1 Transmission

The electronics which drive the throughput of fiber optic cable have increased transmission rates over the last five years and will continue to increase transmission rates dramatically over the next several years. In 1989, the typical electronics on fiber provided transmission speeds of 417 Megabits per second (Mbps), 1.2 Gigabits per second (Gbps) and 1.7 Gbps. During 1990 and 1991, wave division multiplexing (WDM) of 1.2 Gbps and 1.7 Gbps was introduced - doubling the potential capacity to 2.4 Gbps and 3.4 Gbps respectively on a single fiber. During 1992 and 1993, 2.5 Gbps technology on a single fiber became available. In 1994, the ability to have three times 1.7 Gbps on one fiber for a total of 5.1 Gbps became available. Transmission suppliers are promising two times 2.5 Gbps in 1995 - providing 5.0 Gbps on a single fiber. In 1996, transmission suppliers are also promising eight times 2.5 Gbps - providing 20 Gbps on a single fiber; and single wavelength 10 Gbps on a single fiber. In the near future transmission suppliers expect the transmission rate to rise to 40 Gbps on a single fiber. The latest electronics can be deployed on fiber that already exists in the ground. Even those fibers that are currently lit with electronics of slower speeds can be upgraded with electronics of faster speeds.[9]

The next chart illustrates how advances in electronics have increased the potential capacity of a single strand of one directional fiber. The left axis shows the speed of the electronics on a single fiber in Gbps. The right axis shows the number of DS-3s that can be carried on a single fiber pair (multiplying the number of DS-3s by 672 gives the capacity in voice circuits).

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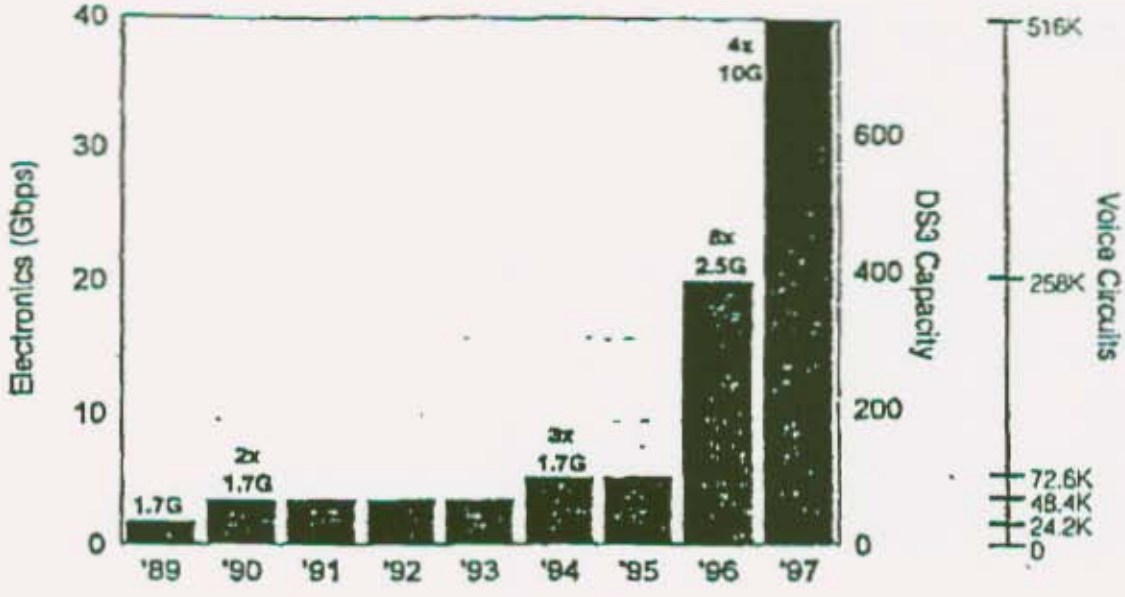
[9] "SONET: Is the Glass Half Full?", B. W. Stuck, *Business Communications Review*, pp. 57-59, Mar. 1995

Figure 2.1 Transport Capacity Increases



Capacity increases of fiber over time

In the past, AT&T's competitors did not generally deploy the fastest possible electronics available in their networks. The following chart shows the potential fiber electronics that existed for the years 1989 through 1993, the number of corresponding DS-3s, and the average number of DS-3s per fiber pair that AT&T's competitors had deployed in their networks.[10] It is believed that the average electronics decline in 1990 may reflect the expansion of access routes with lower capacity requirements and therefore lower electronics speeds.

Table 2-1 Available Fiber Electronics Versus Average Electronics Deployed

Year	Available Electronics	# DS-3s per Fiber Pair	Average Competitor # DS-3s per Fiber Pair
1989	417 Mbps	9	10.3
	1.2 Gbps	24	
	1.7 Gbps	36	
1990	2.4 Gbps (2 x 1.2 Gbps)*	48	9.1
	3.4 Gbps (2 x 1.7 Gbps)*	72	
1991	2.4 Gbps (2 x 1.2 Gbps)*	48	12.6
	3.4 Gbps (2 x 1.7 Gbps)*	72	
1992	2.5 Gbps	48	13.2
1993	2.5 Gbps	48	16.3
1994	5.1 Gbps (3 x 1.7 Gbps)*	108	Not Available
1995	5.0 Gbps (2 x 2.5 Gbps)*	96	
1996	10 Gbps	192	
	20 Gbps (8 x 2.5 Gbps)*	384	

* - uses wave division multiplexing (WDM)

[10] Derived from data in FCC "Fiber Deployment Updates" dated Apr. 1990, Apr. 1991, Apr. 1992, Apr. 1993, Apr. 1994, Johnathan M. Kraushaar

The following charts illustrate that since the 1990 Study, the actual and potential capacity installed by AT&T's competitors have grown faster than their own and the industry's switched demand. The Competitors' Transport Capacity - Growth by Component chart illustrates how increases in capacity have been largely due to faster electronics and not just the laying of new fiber in the ground. From 1990 to 1993,[11] the DS-3 capacity of AT&T's competitors has increased nearly 2.5 times, while fiber miles have only increased about 1.2 times.[12] Furthermore, the potential capacity of the existing lit fibers using the latest electronics was more than 4 times greater than the capacity of AT&T's competitors' networks at the end of 1993 as shown on the Competitor Transport Capacity - Potential & Actual chart.

The Competitors' Transport Capacity - Growth by Component chart shows that the increases in competitors' capacity have been the result of increases in three factors: electronics, fiber miles; and percentage of fiber lit. The impacts of each factor were estimated and are shown. This chart was developed by normalizing competitors' DS-3 capacity to one for 1990, the year of the prior study, and showing the contribution of each of these factors over time. The Minute Growth chart to the right shows that minutes, normalized to one in 1990 for AT&T's competitors, have grown at a slower rate than actual capacity. Industry minutes include all IXC minutes.

In order to illustrate the increasing potential capacity of the already lit fiber, the Competitors' Transport Capacity - Potential & Actual chart shows the amount of potential capacity available via re-lighting the existing lit capacity with the fastest electronics. In addition, the total amount of available capacity assuming that the fastest available electronics is used on all fibers is also shown. Competitors' DS-3 capacity is normalized to one for 1990. The Minute Growth chart to the right shows that minutes, normalized to one in 1990 for AT&T's competitors, have grown at a slower rate than capacity.

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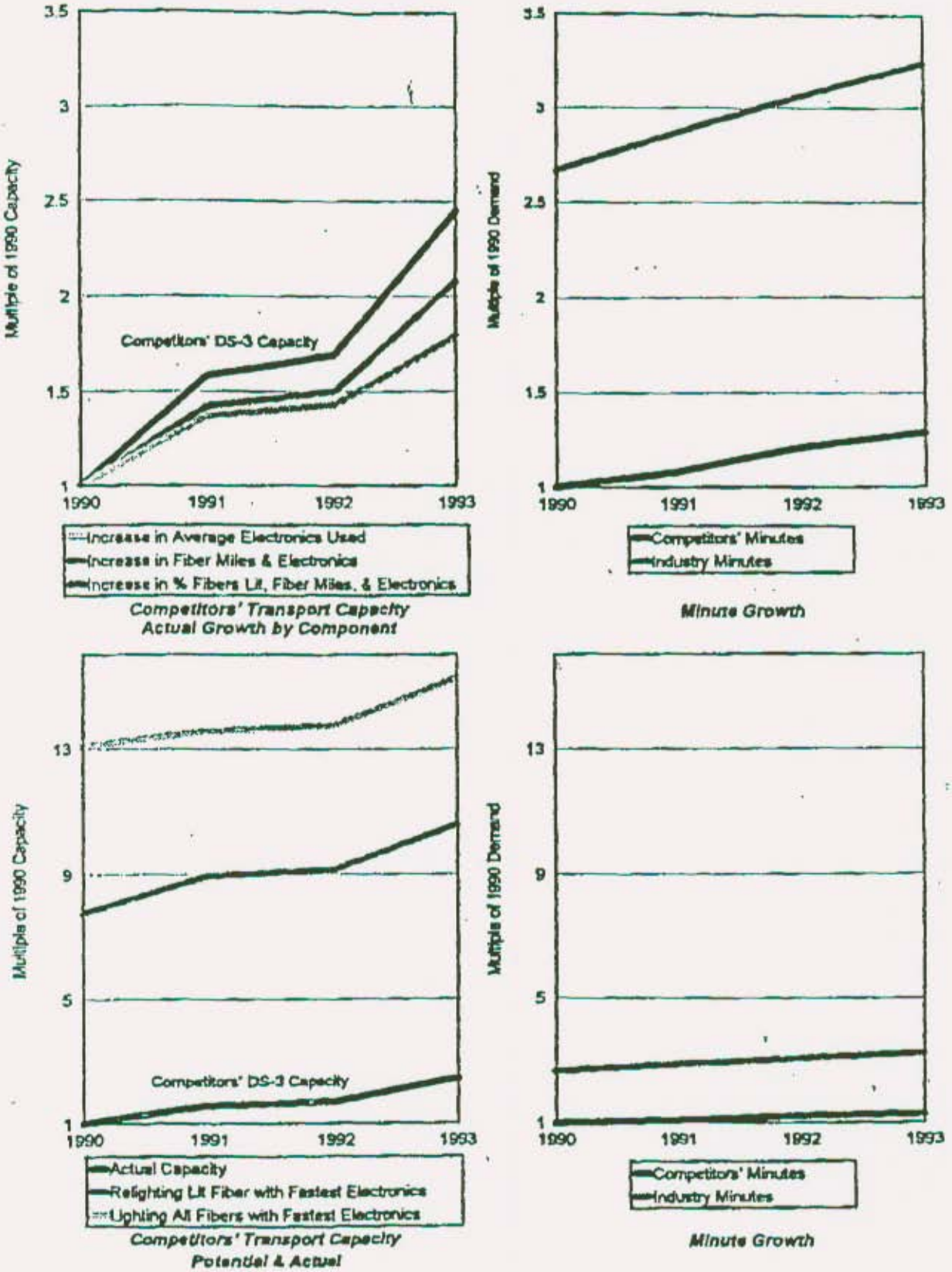
[11] In these charts, 1990 is taken as the reference point. Potential capacity is shown as a multiple of 1990 competitors' DS-3 capacity. Thus, all future values are normalized with respect to the 1990 value.

[12] Derived from data in FCC "Fiber Deployment Updates" dated Apr. 1990, Apr. 1991, Apr. 1992, Apr. 1993, Apr. 1994, Johnathan M. Kraushaar

Figure 2.2 Capacity and Demand Analysis



This analysis clearly illustrates that AT&T's competitors have enough fiber in the ground to carry many times their 1993 demand and that large increases in AT&T's competitors' network capacity could be obtained by lighting dark fibers with the latest electronics as well as upgrading the electronics on currently lit fibers. In fact, MCI and Sprint have recently announced fiber electronic upgrades using synchronous optical network (SONET) technology that will significantly increase the capacity of their networks.

MCI has stated that high speed SONET 2.5 Gbps technology was deployed in half of its network at year-end 1993, and that SONET will be available throughout MCI's domestic network by the end of 1994.[13] Recent announcements from MCI indicate that it plans to boost its transmission speed to 10 Gbps on a single fiber during 1996, and it is currently introducing new fiber optic technologies that will allow 40 Gbps transmission in 1997 or 1998.[14] In 1994, Sprint announced that in the fourth quarter of 1993 it began conversion of its entire network to 2.5 Gbps transmission speeds scheduled to be completed by mid-1996, which will double its circuit capacity.[15] Furthermore, a new technology called bi-directional coupling is now being introduced that allows each fiber to be used in both directions thereby doubling its effective capacity.

From 1990 to 1993, the available DS-3 capacity of AT&T's competitors' networks has increased nearly 2.5 times. Advances in transmission electronics have increased the capacity that a single fiber can carry from 1.7 Gbps in 1989 to 5.1 Gbps in 1994, with a promise of 20 Gbps on a single fiber in 1996 (an astonishing 12 times increase in capacity on a single fiber when compared to possible fiber capacity in 1989). Inter-exchange carriers benefit from these advances, which can increase the capacity of their networks without laying new fiber in the ground.

2.2 Switching

Advances in switching technology over the last five years have increased the maximum port capacity and call handling capability of switches. Northern Telecom Incorporated (NTI) and DSC, the major switching suppliers to AT&T's competitors in the United States, have continually updated the processors they provide with their switches as processor chip technology has advanced. Specifically, Northern Telecom's Series 20 through 40 processors use Motorola's 680x0 microprocessor technology. Northern Telecom's Series 50 through 70 use BRISC (Northern Telecom's version of reduced instruction set computing (RISC)) technology which was specifically designed for telecommunications switching applications. With RISC and the additional innovations of BRISC, the core processor of the DMS switching system accesses, processes, and transmits information more quickly and efficiently. Busy hour call attempts (BHCA) is a measure of a switch's call processing capacity. The following table and chart describes the capacity improvement that Northern Telecom has gained with each switch upgrade in relation to the Series 20 processor as measured by BHCA. This comparison is normalized to the Series 20 processor which was available in 1987.[16]

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13 "MCI Unveils Long Range Vision: networkMCI", MCI Corporate Release by Connie Weaver, Jan. 4, 1994

14 "MCI Targets Key U.S. Cities for SONET Ring Construction San Diego, Los Angeles and Houston First to Get Technology that Instantly Restores Communications if Fiber Optic Cables Are Cut", *PR Newswire*, Mar. 14, 1995

15 "Sprint Bets on SONET", *Communications Week*, Mar. 14, 1994

16 *DMS-100 Capacity Planner*, Aug. 1994, Issue 1