

8. Infrastructure and New Services

This section presents an extract of the summary infrastructure data contained in the report "Infrastructure of the Local Operating Companies Aggregated to the Holding Company Level," released March 13, 1997, and includes revisions to data in the last Monitoring Report. The data are filed each year at the end of June and are summarized from ARMIS Infrastructure Reports (FCC report 43-07).¹ To date, information is available for the years 1989 through 1995. This summary covers the 5-year period 1991 through 1995 and is intended to highlight underlying changes in the use of technology in the local telephone company plant.

The ARMIS 43-07 reports are filed only by those local exchange companies originally subject to mandatory price-cap regulation -- the Bell operating companies and the telephone operating companies owned by GTE.² Together, these large companies provide service to more than 90% of the nation's telephone lines. The data are generally filed at the "study area" level (an operating company's operations within a state). The state-by-state data, including, in some cases, disaggregation into Metropolitan Statistical Area (MSA) and non-MSA detail, are available from the FCC-State Link electronic bulletin board.³

1 ARMIS, an acronym for Automated Reporting Management Information System, is a repository of financial, plant, demand, and quality of service data needed to administer various provisions of the Commission's Rules. Additional infrastructure data are contained in the ARMIS 43-08 report. See Statistics of Communications Common Carriers, published annually by the FCC (Industry Analysis Division) for a compilation of 43-08 infrastructure data.

2 See Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, FCC Rcd 6786 (1990) (LEC Price Cap Order), Erratum, 5 FCC Rcd 7664 (Com. Car. Bur. 1990). See also Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, 8 FCC Rcd 7474 (Common Carrier Bureau 1993).

3 Infrastructure summary reports released April 24, 1995 and March 13, 1997 are available from our internet site (<http://www.fcc.gov/ccb/>) by selecting a link to the FCC-State Link web page. The files are contained in the infrastructure section under the file names INFRA95.ZIP and INFRA93.ZIP, respectively. The raw data upon which the reports are based and the actual summary reports are also available on our dial-up FCC-State Link bulletin board at (202) 418-0241. Raw data are contained on the BBS in a directory entitled ARMIS4307, and a spreadsheet template viewer file IVIEW2.ZIP can be downloaded to facilitate viewing the raw ASCII data files. Instructions for using the viewers are contained in a readme.txt file within the "zip" archive. This "zip" file contains two infrastructure data viewers, an executable program for translating the raw data files into ASCII output files with full annotations and data labels, and a second spreadsheet template for achieving the same goal by adding the annotations to the data using a spreadsheet template.

The information summarized in this section is arranged as two tables: Table 8.1 shows switching system data and Table 8.2 shows transmission system data. Each table contains segments for each of the regional Bell companies, one for the companies owned by GTE, and two that summarize data for the Bell companies and for all reporting companies. The data summarized for each holding company reflect the aggregate of data filed for individual states or study areas and should be useful in assessing overall trends.

The data has been aggregated where region-wide or company-wide composites were not filed. Many of the company totals were recalculated to more effectively identify errors.⁴ Some of the data originally filed by the companies contained errors, particularly in the earlier years. A number of the obvious errors have been corrected by subsequent refiling, but caution should be observed because errors may still be present. GTE and Contel's company totals have been aggregated into a single GTE composite. There have been many structural and ownership changes within GTE and several discrepancies have been identified with its data. Since GTE did not file any revisions in response to our inquiry, the user should exercise caution when using GTE's data.

The full range of infrastructure data received in the ARMIS 43-07 reports and the items listed below that are contained in Tables 8.1 and 8.2 are described in the report entitled "Infrastructure of the Local Operating Companies Aggregated to the Holding Company Level" along with data qualifications and observations about the data itself. The user should also refer to the source data, which contain more detailed study area information. Further analysis supplemented with data from state regulatory commissions may be needed to address localized issues.

Description of the Technologies and Analysis of the Data

The data in the attached tables provide a historical series for a variety of plant elements that illustrate the deployment of technology in the networks of the major local exchange carriers. The data items provide a picture of the key technologies presently in use. For example, although the issue of fiber in the local loop has gained a great deal of attention because of its potential for facilitating development of wideband video services, the progression of lower data-rate digital technologies to greater numbers of customers through an increased use of digital local access has been occurring for some time now. Both switching and transmission technology provide the building blocks that make this possible. In the switch, Signalling System 7 (SS7) provides a means for networks and interoffice switches to communicate with each other. This system uses separate digital links outside the voice channel to accomplish this. Other elements in the data relating to equal access switches and touch-tone capable switches show that most switches now support equal access and that nearly all switches are equipped for touch-tone dialing.

4 A number of obvious discrepancies in calculation of totals were corrected and may account for small differences between company-filed totals and the ones presented here. Most of these discrepancies were identified as being associated with cumulative effects of rounding, typically associated with data presented in thousands.

A useful overall measure of company activity is gross capital expenditures, which increased about 5% for the BOCs in 1995. The data reported include all capital expenditures on both switching and transmission facilities. Gross capital expenditures tends to correspond closely with the overall access line growth. Bell Atlantic, NYNEX, and US West are the only companies where capital expenditure growth exceeded access line growth in 1995. Capital expenditure levels should continue to be an important overall parameter in assessing deployment of new technology in the local service business and its relationship to future service quality.

SBC Communications (Southwestern Bell) and GTE reported the only appreciable net gains in switching entities during 1995 with about 9% and 2% increases, respectively, and have significantly increased the number of Integrated Services Digital Network (ISDN) capable switches. Other companies experienced no net gain in switches during 1995. Except for SBC, the number of access lines per switching entity increased in 1995 over 1994. Pacific Telesis now supports more than 18,000 access lines per switching entity on average, the largest number shown. Data for other companies typically fall in the range of 9,000 to 14,000 access lines per switching entity.

Although there is considerable interest in digital switching, the term "digital switch" by itself is often misleading and does not address the important issues of switching capability and modularity. For example, while most network switches are presently classified as digital stored program controlled switches, this classification by itself does not indicate whether the switch has ISDN or SS7 capability and does not address the issue of modularity that allows lower-cost expansion. Therefore, measurement of digital switching proliferation requires one to look at more than a single statistic. While there are no across-the-board relationships between modularity and switch capability, many of the switches with ISDN capability also tend to be modular in design and can often be upgraded with software that can facilitate lower-cost expansion. The data presently being collected only cover circuit switches that provide a dedicated path through the network for the duration of a call, not routers or statistical switches that are used in internet services that are specifically designed to handle data packets.

ISDN technology provides the service protocols and channel designations for digital services to customers and can convey voice, computer data or compressed video. Basic rate ISDN services are provided as two 64-kilobit data channels and one 16-kilobit control channel associated with each basic-rate access line. The control channels allow the transfer of special information between the switch and the customer, unavailable with in-band signalling, as well as advanced network control features presently used in a number of enhanced services. Primary rate ISDN provides the capacity of twenty-three 64-kilobit data channels and one 64-kilobit control channel. Although these services can potentially provide for improved communication between computers, the lack of a critical mass of customers using ISDN was a stumbling block in the early proliferation of end-to-end digital services. Availability of the service is significant and expanding. There are, however, important

regional and localized differences in investment and customer demand patterns that may require examination of data at a more localized level than presented here.⁵

In the aggregate there was a 20% increase in the number of BOC ISDN-capable switches in 1995 following a 27% increase in 1994. All companies except US West and NYNEX reported a double-digit percentage gain in ISDN-capable switches in 1995. GTE and SBC reported the largest gains. Although switch capabilities and modularity tend to vary by vendor, these switches tend to be better able to deal with the changing characteristics of telecommunication traffic.⁶

The companies typically report the number of access lines that can be connected to ISDN service within each wire center or switch. Bell Atlantic and NYNEX began to report all access lines that can receive ISDN service, even those requiring a foreign exchange link to another wire center. These companies were notified that their method of counting ISDN-capable access lines was inconsistent with the Commission's reporting requirements. NYNEX subsequently refiled its 1995 data, which is reflected in the accompanying tables.⁷

Because ISDN is a digital service, it is equipped to handle communication between computers without the need to first convert the signal to an analog form. Early on it was primarily marketed as a medium for enhanced voice services and was primarily targeted to business users. It has become an increasingly attractive alternative for residential customers and small businesses needing a second line for a computer and therefore its pricing in relation to the cost of two analog lines can significantly affect proliferation of the service. Many of the companies had installed digital switches in response to equal access requirements of divestiture. About 99% of the Bell Company switching entities have equal access capability. Although 90% of the BOC switching entities are digital-stored-program-controlled switches, only about 29% have ISDN capability. As of the end of 1995, the companies

5 Individual study-area data are also available to address more localized issues that will become increasingly important in the coming years. This information is available by dial-up access described in footnote 3. A new viewer in executable format also described in footnote 3 has been created to further facilitate examination of the raw data files.

6 Continuing changes in demand patterns for new access lines and in the character of telephone traffic from pure voice traffic to a changing mix of voice and data underscore the desirability of targeted improvement to the switching infrastructure. Use of easily upgradable switching systems will be increasingly important.

7 Company totals have been recalculated to minimize errors in summing raw study-area data. In calculating industry totals, some adjustments may have been made to account for missing or irregular company data and for rounding errors. In certain instances, the classification "other" was used for adjustment purposes so that the respective totals would properly reflect the sum of their components.

generally had been responding to increased interest in ISDN service and internet use by replacing or upgrading existing switches for ISDN capability.⁸

A number of transmission elements are included in the tables. These illustrate the rapid development of fiber capacity in terms of terminations, sheath-kilometers, and links. The tables also highlight the relative magnitude of equipped and working channels, providing an indication of termination equipment utilization. Declines in the number of analog links can be noted, and for some time the number of interoffice fiber carrier links has significantly exceeded the number of copper carrier links for all companies shown. Although data on links and channels shows that circuits connecting local central offices could typically be provided on only two fibers, the economics of fiber deployment have resulted in deployments of typical fiber cables containing more than 35 fibers. This suggests that there is a significant amount of fiber capacity presently unused in the interoffice transmission plant.⁹

Although the overall level of growth in fiber has been high, its use in the local loop is presently relatively small. The BOCs had an installed base of about 185 million copper-pair mainframe terminations in their central offices for local loop use in 1995. About 824,000 BOC fiber terminations had been installed by end-of-year 1995, up 21% from the prior year. Since fibers are not necessarily in current use and since there is a greater potential for more than one access line to be provided on one fiber than on one copper pair, especially nearer to the central offices, the ultimate number of central office fiber terminations needed to equip all access lines for fiber is expected to be considerably lower than the present number of copper terminations. However, due to the fact that

8 Increased use of ISDN services for internet access could lead to a critical mass of residential users that would be mutually beneficial to customers and the companies by driving down ISDN per-unit costs further. While increased business use should continue to be an important revenue source and a driving force leading to improved efficiencies in providing ISDN service, new marketing, pricing and regulatory factors could make ISDN more attractive for residential customers. Competitive activity and interconnection should require incumbent carriers to pay greater attention both to strategic planning and customer service. In the short term, investment, packaging and pricing strategies for ISDN services that consider local and regional issues might facilitate overall service quality improvement by encouraging migration from analog to digital access services, leading to improvement of the switching infrastructure. Next-generation wideband capabilities will become increasingly important in the longer term.

9 A large portion of the cost of fiber deployment is associated with labor and installation rather than with the cable itself. Thus, the incremental cost of installing a larger fiber cable is typically relatively small. This suggests that the sheath-kilometer parameter shown in the attached tables may be a better measure of fiber coverage than fiber kilometers. In general, care should be exercised in interpreting aggregate fiber data when determining, for example, whether fiber is concentrated in certain parts of a company's service area with relatively little fiber elsewhere. See FCC Fiber Deployment Update - End of Year 1995, released July 19, 1996.

less sharing of transmission facilities is possible in the portion of plant closest to customers, the cost of providing loop capacity nearest to the customer is greatest. Based on these considerations, it is likely that significantly fewer than 824,000 fibers actually terminate on customer premises. Fiber will become increasingly important in the local loop as the number of high-quality copper pairs available to support digital services declines.

**Table 8.1 Switching System Data
(a): Ameritech**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	1,877	1,716	1,719	1,517	1,578
Local Switches	1,421	1,430	1,422	1,413	1,415
Tandem Switches	49	46	47	47	46
Hosts	224	228	230	236	238
Remotes (Stand Alone Only)	654	666	684	717	731
Total Switching Entities	1,438	1,473	1,469	1,460	1,461
Electromechanical	46	0	0	0	0
Analog Stored Pgm. Control	373	318	224	119	97
Digital Stored Pgm. Control	1,019	1,155	1,245	1,341	1,364
Total Access Lines (000)	16,633	16,886	17,500	18,123	19,310
Electromechanical Switches	65	6	0	0	0
Analog Stored Pgm Ctrl Sw.	9,076	7,892	5,862	3,845	3,727
Digital Stored Pgm Ctrl Sw.	7,492	8,988	11,638	14,278	15,583
Touch Tone Capable Switches	1,394	1,473	1,469	1,460	1,415
T. Tone Capable Access Lines (000)	16,586	16,889	17,500	18,122	19,310
Equal Access Switches	1,390	1,470	1,469	1,450	1,461
Equal Access Lines (000)	16,563	16,855	17,500	18,122	19,310
Signal. Sys 7 Switch (SS7-394)	213	646	1,001	1,254	1,400
SS7-394 Access Lines (000)	4,779	9,216	13,376	16,482	18,538
Signal. Sys 7 Switch (SS7-317)	502	863	1,116	1,347	1,417
SS7-317 Access Lines (000)	7,662	10,455	13,961	17,217	18,653
ISDN Capable Switches	108	181	387	444	489
ISDN Access Line Capac. (000)	1,738	3,839	8,056	10,259	12,860
ISDN Basic Rate Interf. Eq'pd	55,890	56,352	67,415	87,862	97,550
ISDN Primary Rate Interf. Eq'pd	703	728	707	1,505	5,812

**Table 8.1 Switching System Data
(b): Bell Atlantic**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	2,353	2,111	2,133	2,107	2,390
Local Switches	1,404	1,416	1,405	1,408	1,406
Tandem Switches	43	42	42	42	42
Hosts	227	203	193	199	202
Remotes (Stand Alone Only)	639	661	666	685	696
Total Switching Entities	1,414	1,432	1,421	1,422	1,420
Electromechanical	0	0	0	0	0
Analog Stored Pgm. Control	267	212	157	123	93
Digital Stored Pgm. Control	1,147	1,220	1,264	1,299	1,327
Total Access Lines (000)	17,750	18,180	18,646	19,167	19,820
Electromechanical Switches	0	0	0	0	0
Analog Stored Pgm Ctrl Sw.	7,974	6,624	5,627	4,753	3,607
Digital Stored Pgm Ctrl Sw.	9,776	11,556	13,019	14,414	16,213
Touch Tone Capable Switches	1,404	1,416	1,405	1,408	1,406
T. Tone Capable Access Lines (000)	17,750	18,180	18,644	19,167	19,820
Equal Access Switches	1,411	1,432	1,421	1,422	1,420
Equal Access Lines (000)	17,740	18,180	18,644	19,167	19,820
Signal. Sys 7 Switch (SS7-394)	0	444	720	1,263	1,374
SS7-394 Access Lines (000)	0	7,362	13,240	18,120	19,709
Signal. Sys 7 Switch (SS7-317)	1,178	1,306	1,359	1,374	1,373
SS7-317 Access Lines (000)	15,953	17,182	18,220	19,049	19,780
ISDN Capable Switches	332	367	515	580	671
ISDN Access Line Capac. (000)	8,514	8,745	9,923	12,022	19,419
ISDN Basic Rate Interf. Eq'pd	16,880	92,654	95,858	153,378	201,361
ISDN Primary Rate Interf. Eq'pd	7	50	113	5,311	9,185

**Table 8.1 Switching System Data
(c): BellSouth**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	2,841	2,925	3,012	3,118	3,160
Local Switches	1,666	1,664	1,661	1,658	1,647
Tandem Switches	62	66	70	70	71
Hosts	270	272	269	280	289
Remotes (Stand Alone Only)	696	703	714	732	742
Total Switching Entities	1,680	1,678	1,680	1,677	1,668
Electromechanical	0	0	0	0	0
Analog Stored Pgm. Control	318	283	236	182	158
Digital Stored Pgm. Control	1,362	1,395	1,444	1,495	1,510
Total Access Lines (000)	17,971	18,607	19,233	20,141	21,064
Electromechanical Switches	0	0	0	0	0
Analog Stored Pgm Ctrl Sw.	7,726	7,173	5,929	4,837	4,455
Digital Stored Pgm Ctrl Sw.	10,245	11,434	13,304	15,304	16,609
Touch Tone Capable Switches	1,666	1,664	1,661	1,658	1,647
T. Tone Capable Access Lines (000)	17,970	18,607	19,233	20,141	21,064
Equal Access Switches	1,680	1,678	1,680	1,677	1,668
Equal Access Lines (000)	17,970	18,607	19,233	20,141	21,064
Signal. Sys 7 Switch (SS7-394)	590	966	1,447	1,627	1,629
SS7-394 Access Lines (000)	9,391	14,231	18,067	20,118	20,737
Signal. Sys 7 Switch (SS7-317)	956	1,121	1,452	1,628	1,630
SS7-317 Access Lines (000)	14,634	15,959	18,122	20,136	20,755
ISDN Capable Switches	171	224	324	407	467
ISDN Access Line Capac. (000)	3,321	4,934	7,606	9,708	10,988
ISDN Basic Rate Interf. Eq'pd	34,613	50,774	65,607	76,348	80,641
ISDN Primary Rate Interf. Eq'pd	282	559	1,814	3,534	4,803

**Table 8.1 Switching System Data
(d): NYNEX**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	2,099	2,003	2,152	2,208	2,316
Local Switches	1,316	1,317	1,307	1,297	1,290
Tandem Switches	29	23	23	23	23
Hosts	137	151	155	125	169
Remotes (Stand Alone Only)	531	668	699	722	728
Total Switching Entities	1,336	1,336	1,326	1,316	1,309
Electromechanical	128	0	0	0	0
Analog Stored Pgm. Control	274	251	192	123	101
Digital Stored Pgm. Control	934	1,085	1,134	1,193	1,208
Total Access Lines (000)	15,409	15,699	16,129	16,578	17,139
Electromechanical Switches	447	0	0	0	0
Analog Stored Pgm Ctrl Sw.	5,590	5,173	4,123	2,800	1,969
Digital Stored Pgm Ctrl Sw.	9,372	10,526	12,006	13,778	15,170
Touch Tone Capable Switches	1,229	1,317	1,307	1,297	1,286
T. Tone Capable Access Lines (000)	15,284	15,699	16,129	16,578	17,139
Equal Access Switches	1,167	1,291	1,307	1,316	1,308
Equal Access Lines (000)	15,093	15,606	16,077	16,578	17,139
Signal. Sys 7 Switch (SS7-394)	161	739	970	1,119	1,203
SS7-394 Access Lines (000)	3,147	8,457	11,300	13,852	15,168
Signal. Sys 7 Switch (SS7-317)	430	739	969	1,119	1,203
SS7-317 Access Lines (000)	4,360	8,457	11,300	13,832	15,168
ISDN Capable Switches	27	42	114	247	259
ISDN Access Line Capac. (000)	843	1,232	3,483	9,357	11,583
ISDN Basic Rate Interf. Eq'pd	25,529	39,653	62,522	118,150	139,694
ISDN Primary Rate Interf. Eq'pd	0	251	837	1,082	3,322

**Table 8.1 Switching System Data
(e): Pacific Telesis**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	1,688	1,625	1,734	1,620	1,664
Local Switches	842	853	846	837	840
Tandem Switches	20	20	20	20	20
Hosts	102	103	111	121	117
Remotes (Stand Alone Only)	238	253	302	320	316
Total Switching Entities	862	873	866	856	859
Electromechanical	4	3	3	2	1
Analog Stored Pgm. Control	242	218	176	109	87
Digital Stored Pgm. Control	616	652	687	745	771
Total Access Lines (000)	14,381	14,661	14,971	15,384	15,984
Electromechanical Switches	1	1	1	1	0
Analog Stored Pgm Ctrl Sw.	8,557	8,128	7,036	5,029	4,036
Digital Stored Pgm Ctrl Sw.	5,823	6,532	7,934	10,354	11,948
Touch Tone Capable Switches	842	853	846	837	840
T. Tone Capable Access Lines (000)	14,381	14,661	14,971	15,384	15,984
Equal Access Switches	832	844	844	834	838
Equal Access Lines (000)	14,348	14,630	14,949	15,360	15,966
Signal. Sys 7 Switch (SS7-394)	53	374	522	764	772
SS7-394 Access Lines (000)	1,161	9,638	12,490	14,781	15,512
Signal. Sys 7 Switch (SS7-317)	253	374	522	764	772
SS7-317 Access Lines (000)	7,190	9,638	12,490	14,781	15,512
ISDN Capable Switches	88	150	229	347	417
ISDN Access Line Capac. (000)	1,567	2,905	5,349	8,494	10,291
ISDN Basic Rate Interf. Eq'pd	36,246	47,661	65,683	115,146	171,305
ISDN Primary Rate Interf. Eq'pd	113	308	357	708	3,491

**Table 8.1 Switching System Data
(f): Southwestern Bell**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	1,519	1,835	1,723	1,739	1,759
Local Switches	1,356	1,392	1,437	1,511	1,644
Tandem Switches	48	67	64	60	60
Hosts	131	191	230	233	245
Remotes (Stand Alone Only)	311	488	672	779	935
Total Switching Entities	1,380	1,425	1,469	1,539	1,679
Electromechanical	398	222	83	73	58
Analog Stored Pgm. Control	366	348	308	264	252
Digital Stored Pgm. Control	616	855	1,078	1,202	1,369
Total Access Lines (000)	12,357	12,693	13,180	13,611	14,095
Electromechanical Switches	686	314	102	96	62
Analog Stored Pgm Ctrl Sw.	7,704	7,454	7,078	6,608	6,531
Digital Stored Pgm Ctrl Sw.	3,967	4,925	6,000	6,907	7,502
Touch Tone Capable Switches	1,356	1,392	1,437	1,511	1,644
T. Tone Capable Access Lines (000)	12,357	12,693	13,180	13,611	14,095
Equal Access Switches	871	1,119	1,340	1,511	1,644
Equal Access Lines (000)	11,517	12,284	13,060	13,611	14,095
Signal. Sys 7 Switch (SS7-394)	0	607	723	1,263	1,466
SS7-394 Access Lines (000)	0	8,116	8,828	12,787	13,289
Signal. Sys 7 Switch (SS7-317)	105	563	649	1,263	1,466
SS7-317 Access Lines (000)	2,332	7,732	8,468	12,787	13,289
ISDN Capable Switches	79	92	92	123	303
ISDN Access Line Capac. (000)	981	1,963	1,476	1,933	8,826
ISDN Basic Rate Interf. Eq'pd	47,230	88,960	88,960	57,041	108,784
ISDN Primary Rate Interf. Eq'pd	161	380	410	1,238	5,084

**Table 8.1 Switching System Data
(g): US West**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	2,126	2,413	2,210	2,359	2,570
Local Switches	1,824	1,833	1,834	1,737	1,641
Tandem Switches	53	51	52	52	51
Hosts	172	195	223	232	238
Remotes (Stand Alone Only)	515	692	880	984	961
Total Switching Entities	1,847	1,852	1,852	1,751	1,654
Electromechanical	572	390	205	20	1
Analog Stored Pgm. Control	327	294	261	213	188
Digital Stored Pgm. Control	948	1,168	1,386	1,518	1,465
Total Access Lines (000)	12,886	13,268	13,710	14,309	14,817
Electromechanical Switches	677	396	161	18	1
Analog Stored Pgm Ctrl Sw.	6,823	6,508	6,257	5,303	4,706
Digital Stored Pgm Ctrl Sw.	5,386	6,364	7,292	8,988	10,110
Touch Tone Capable Switches	1,824	1,833	1,834	1,735	1,641
T. Tone Capable Access Lines (000)	12,886	13,268	13,710	14,267	14,817
Equal Access Switches	1,250	1,458	1,636	1,723	1,638
Equal Access Lines (000)	12,182	12,844	13,529	14,287	14,816
Signal. Sys 7 Switch (SS7-394)	231	470	620	819	1,116
SS7-394 Access Lines (000)	4,899	7,623	9,931	11,685	13,411
Signal. Sys 7 Switch (SS7-317)	246	471	621	839	1,116
SS7-317 Access Lines (000)	5,196	7,679	9,931	11,783	13,411
ISDN Capable Switches	115	163	213	240	262
ISDN Access Line Capac. (000)	3,603	4,757	3,982	5,045	6,192
ISDN Basic Rate Interf. Eq'pd	72,904	92,613	108,775	120,058	126,530
ISDN Primary Rate Interf. Eq'pd	387	396	674	742	2,315

**Table 8.1 Switching System Data
(h): GTE/Contel Companies**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	2,784	2,661	2,618	2,771	2,620
Local Switches	6,422	6,597	6,731	6,153	6,271
Tandem Switches	159	162	158	143	157
Hosts	737	924	955	849	884
Remotes (Stand Alone Only)	2,048	1,558	1,732	1,767	2,031
Total Switching Entities	6,441	6,631	6,769	6,171	6,291
Electromechanical	1,462	1,339	1,197	934	679
Analog Stored Pgm. Control	98	83	78	46	26
Digital Stored Pgm. Control	4,881	5,209	5,494	5,191	5,586
Total Access Lines (000)	15,633	15,781	16,275	16,064	16,642
Electromechanical Switches	1,434	1,260	1,084	797	533
Analog Stored Pgm Ctrl Sw.	1,388	1,030	834	508	378
Digital Stored Pgm Ctrl Sw.	12,811	13,491	14,357	14,759	15,731
Touch Tone Capable Switches	6,422	6,597	6,731	6,153	6,274
T. Tone Capable Access Lines (000)	15,633	15,781	16,274	16,064	16,641
Equal Access Switches	3,006	4,930	5,399	5,121	5,622
Equal Access Lines (000)	13,211	14,186	15,069	15,190	16,114
Signal. Sys 7 Switch (SS7-394)	0	1,499	2,034	2,250	2,930
SS7-394 Access Lines (000)	0	6,506	8,885	10,774	12,868
Signal. Sys 7 Switch (SS7-317)	421	2,042	2,157	2,250	2,930
SS7-317 Access Lines (000)	4,872	9,073	9,715	10,774	12,868
ISDN Capable Switches	44	218	272	270	390
ISDN Access Line Capac. (000)	730	1,399	2,095	5,003	6,249
ISDN Basic Rate Interf. Eq'pd	8,884	22,763	30,741	63,012	91,326
ISDN Primary Rate Interf. Eq'pd	77	475	896	1,406	2,703

**Table 8.1 Switching System Data
(i): Bell Company Totals**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	14,502	14,629	14,683	14,667	15,436
Local Switches	9,829	9,905	9,912	9,861	9,883
Tandem Switches	304	315	318	314	313
Hosts	1,263	1,343	1,411	1,426	1,498
Remotes (Stand Alone Only)	3,584	4,131	4,617	4,939	5,109
Total Switching Entities	9,957	10,069	10,083	10,021	10,050
Electromechanical	1,148	615	291	95	60
Analog Stored Pgm. Control	2,167	1,924	1,554	1,133	976
Digital Stored Pgm. Control	6,642	7,530	8,238	8,793	9,014
Total Access Lines (000)	107,387	109,994	113,369	117,313	122,229
Electromechanical Switches	1,876	717	264	115	63
Analog Stored Pgm Ctrl Sw.	53,450	48,952	41,912	33,175	29,031
Digital Stored Pgm Ctrl Sw.	52,061	60,325	71,193	84,023	93,135
Touch Tone Capable Switches	9,715	9,948	9,959	9,906	9,879
T. Tone Capable Access Lines (000)	107,214	109,997	113,367	117,270	122,229
Equal Access Switches	8,601	9,292	9,697	9,933	9,977
Equal Access Lines (000)	105,413	109,006	112,992	117,266	122,210
	0	0	0	0	0
Signal. Sys 7 Switch (SS7-394)	1,248	4,246	6,003	8,109	8,960
SS7-394 Access Lines (000)	23,377	64,643	87,232	107,825	116,364
Signal. Sys 7 Switch (SS7-317)	3,670	5,437	6,688	8,334	8,977
SS7-317 Access Lines (000)	57,327	77,102	92,492	109,585	116,568
ISDN Capable Switches	920	1,219	1,874	2,388	2,868
ISDN Access Line Capac. (000)	20,567	28,375	39,875	56,818	80,159
ISDN Basic Rate Interf. Eq'pd	289,292	468,667	554,820	727,983	925,865
ISDN Primary Rate Interf. Eq'pd	1,653	2,672	4,912	14,120	34,012

**Table 8.1 Switching System Data
(j): All Company Totals**

	1991	1992	1993	1994	1995
Gross Plant Expenditures (In Millions \$)	17,286	17,290	17,302	17,438	18,056
Local Switches	16,251	16,502	16,643	16,014	16,154
Tandem Switches	463	477	476	457	470
Hosts	2,000	2,267	2,366	2,275	2,382
Remotes (Stand Alone Only)	5,632	5,689	6,349	6,706	7,140
Total Switching Entities	16,398	16,700	16,852	16,192	16,341
Electromechanical	2,610	1,954	1,488	1,029	739
Analog Stored Pgm. Control	2,265	2,007	1,632	1,179	1,002
Digital Stored Pgm. Control	11,523	12,739	13,732	13,984	14,600
Total Access Lines (000)	123,020	125,775	129,644	133,377	138,871
Electromechanical Switches	3,310	1,977	1,348	912	596
Analog Stored Pgm Ctrl Sw.	54,838	49,982	42,746	33,683	29,409
Digital Stored Pgm Ctrl Sw.	64,872	73,816	85,550	98,782	108,866
Touch Tone Capable Switches	16,137	16,545	16,690	16,059	16,153
T. Tone Capable Access Lines (000)	122,847	125,778	129,641	133,334	138,870
Equal Access Switches	11,607	14,222	15,096	15,054	15,599
Equal Access Lines (000)	118,624	123,192	128,061	132,456	138,324
Signal. Sys 7 Switch (SS7-394)	1,248	5,745	8,037	10,359	11,890
SS7-394 Access Lines (000)	23,377	71,149	96,117	118,599	129,232
Signal. Sys 7 Switch (SS7-317)	4,091	7,479	8,845	10,584	11,907
SS7-317 Access Lines (000)	62,199	86,175	102,207	120,359	129,436
ISDN Capable Switches	964	1,437	2,146	2,658	3,258
ISDN Access Line Capac. (000)	21,297	29,774	41,970	61,821	86,408
ISDN Basic Rate Interf. Eq'pd	298,176	491,430	585,561	790,995	1,017,191
ISDN Primary Rate Interf. Eq'pd	1,730	3,147	5,808	15,526	36,715

**Table 8.2 Transmission System Data
(a): Ameritech**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	547,157	552,800	556,814	537,133	562,934
Copper Sheath-Kilometers	522,154	522,374	521,187	498,238	519,775
Fiber Sheath-Kilometers	24,559	29,468	34,655	37,980	42,370
Other Sheath-Kilometers	444	958	972	915	789
Total Carrier Links	291,734	336,055	452,276	535,085	715,434
Copper Links	92,021	84,444	69,609	55,193	46,806
Fiber Links	194,437	246,811	377,963	475,981	667,746
Radio Links	5,276	4,800	4,704	3,911	882
Total Circuit Links	2,628,075	2,783,389	2,800,655	2,964,296	3,278,058
Baseband Links	187,964	151,207	59,460	56,164	56,287
Analog Links	3,295	1,734	468	440	189
Digital Links	2,436,816	2,630,448	2,740,727	2,907,692	3,221,582
Equipped Channels	29,845,700	29,831,652	30,818,288	31,847,802	31,957,238
Copper	29,005,102	28,551,452	29,549,360	29,482,848	29,124,886
Fiber	840,598	1,280,200	1,268,928	2,364,952	2,832,350
Other	0	0	0	2	2
Working Channels	19,055,583	19,283,746	18,610,716	19,105,654	19,714,345
Copper	18,588,688	18,317,812	17,811,512	18,096,152	18,478,770
Fiber	466,895	965,933	799,203	1,009,500	1,235,575
Other	0	1	1	2	0
Copper Pair Sw. Term.-Loop	28,038,406	28,244,800	28,687,860	28,645,732	28,217,638
Fiber Cent. Ofc. Loop Termin.	31,299	40,664	56,834	66,035	79,661
DS-1 Term.- Cust. Prem. Fiber	13,964	18,905	23,675	26,660	31,941
DS-3 Term.- Cust. Prem. Fiber	1,462	1,871	2,434	2,755	3,192

**Table 8.2 Transmission System Data
(b): Bell Atlantic**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	495,980	501,229	507,245	514,377	518,999
Copper Sheath-Kilometers	465,277	462,151	461,040	461,558	460,772
Fiber Sheath-Kilometers	29,644	38,123	45,402	52,014	57,425
Other Sheath-Kilometers	1,059	955	803	805	802
Total Carrier Links	235,043	243,064	252,108	278,199	303,468
Copper Links	77,730	67,892	62,122	63,297	66,127
Fiber Links	149,457	167,892	182,816	207,750	230,335
Radio Links	7,856	7,280	7,170	7,152	7,006
Total Circuit Links	2,441,962	2,513,861	2,550,021	2,604,573	2,766,872
Baseband Links	243,128	146,756	105,941	73,773	42,296
Analog Links	0	0	0	0	0
Digital Links	2,198,834	2,367,105	2,444,080	2,530,800	2,724,576
Equipped Channels	32,859,604	33,799,192	44,052,466	45,745,024	56,613,564
Copper	30,977,904	31,304,768	32,594,232	32,385,128	34,269,368
Fiber	1,881,699	2,494,419	11,458,234	13,359,894	22,344,196
Other	1	5	0	2	0
Working Channels	19,527,458	19,749,054	20,859,312	21,356,842	23,514,796
Copper	18,478,872	18,285,784	18,366,516	18,223,592	19,067,568
Fiber	1,048,584	1,463,270	2,492,795	3,133,250	4,447,227
Other	2	0	1	0	1
Copper Pair Sw. Term.-Loop	29,920,518	30,272,652	30,504,710	30,479,864	30,444,726
Fiber Cent. Ofc. Loop Termin.	14,189	125,719	129,509	168,147	182,097
DS-1 Term.- Cust. Prem. Fiber	9,103	13,408	25,922	37,197	47,737
DS-3 Term.- Cust. Prem. Fiber	285	234	443	731	970

**Table 8.2 Transmission System Data
(c): BellSouth**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	966,488	979,751	993,633	1,005,397	980,420
Copper Sheath-Kilometers	916,955	921,509	927,265	930,812	899,685
Fiber Sheath-Kilometers	47,759	56,692	65,100	73,370	79,014
Other Sheath-Kilometers	1,774	1,550	1,268	1,215	1,721
Total Carrier Links	567,759	792,341	991,365	1,035,404	1,068,631
Copper Links	81,426	89,264	86,390	52,813	48,503
Fiber Links	474,939	675,449	877,770	958,357	1,003,735
Radio Links	11,394	27,628	27,205	24,234	16,393
Total Circuit Links	2,459,749	2,702,141	2,935,064	4,287,654	4,756,430
Baseband Links	59,780	28,095	17,575	14,713	9,985
Analog Links	630	122	99	50	0
Digital Links	2,399,339	2,673,924	2,917,390	4,272,891	4,746,445
Equipped Channels	31,352,184	31,742,418	33,070,338	34,669,704	36,022,280
Copper	28,925,108	28,821,672	29,291,198	29,995,724	30,351,792
Fiber	2,426,385	2,919,937	3,778,341	4,673,140	5,669,647
Other	691	809	799	840	841
Working Channels	19,915,442	20,196,488	21,275,556	23,284,636	24,682,892
Copper	18,002,278	17,874,950	18,288,532	19,283,574	19,871,262
Fiber	1,913,109	2,321,451	2,986,937	4,000,986	4,811,550
Other	55	87	87	76	80
Copper Pair Sw. Term.-Loop	26,383,292	26,382,232	26,433,408	26,451,200	26,527,294
Fiber Cent. Ofc. Loop Termin.	44,363	52,591	59,663	73,260	106,710
DS-1 Term.- Cust. Prem. Fiber	2,726	4,681	9,078	13,941	19,132
DS-3 Term.- Cust. Prem. Fiber	2,918	5,490	3,294	4,034	3,632

**Table 8.2 Transmission System Data
(d): NYNEX**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	443,967	448,417	451,030	452,707	453,951
Copper Sheath-Kilometers	420,342	417,866	416,312	414,170	412,025
Fiber Sheath-Kilometers	23,625	28,496	33,013	37,118	41,000
Other Sheath-Kilometers	0	2,055	1,705	1,419	926
Total Carrier Links	371,972	388,726	442,636	459,959	467,055
Copper Links	95,207	76,200	50,392	51,873	45,579
Fiber Links	271,777	308,053	389,124	406,135	420,415
Radio Links	4,988	4,473	3,120	1,951	1,061
Total Circuit Links	2,757,499	2,628,803	2,609,151	2,596,631	2,446,502
Baseband Links	590,617	406,393	310,515	244,437	170,544
Analog Links	197	0	0	0	0
Digital Links	2,166,685	2,222,410	2,298,636	2,352,194	2,275,958
Equipped Channels	30,981,104	31,948,464	32,786,502	33,221,540	33,494,240
Copper	30,012,852	30,800,664	31,399,860	31,706,560	31,393,668
Fiber	968,252	1,147,800	1,386,642	1,514,975	2,100,572
Other	0	0	0	5	0
Working Channels	18,147,166	18,418,984	18,869,249	18,776,462	20,176,170
Copper	17,676,516	17,836,040	18,135,776	17,874,872	18,859,714
Fiber	470,649	582,943	733,473	901,589	1,316,456
Other	1	1	0	1	0
Copper Pair Sw. Term.-Loop	30,116,462	29,386,450	30,053,156	30,097,348	30,190,920
Fiber Cent. Ofc. Loop Termin.	48,329	88,279	143,770	188,194	214,587
DS-1 Term.- Cust. Prem. Fiber	8,270	19,682	21,911	28,732	30,529
DS-3 Term.- Cust. Prem. Fiber	260	442	869	1,036	1,363

**Table 8.2 Transmission System Data
(e): Pacific Telesis**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	348,654	351,748	351,695	343,658	346,127
Copper Sheath-Kilometers	335,484	336,461	334,674	324,942	325,537
Fiber Sheath-Kilometers	11,266	13,412	15,814	17,598	19,472
Other Sheath-Kilometers	1,904	1,875	1,207	1,118	1,118
Total Carrier Links	1,013,792	839,818	890,851	962,858	1,383,705
Copper Links	439,687	344,924	335,250	153,493	123,014
Fiber Links	565,533	486,811	546,847	801,638	1,252,043
Radio Links	8,572	8,083	8,754	7,727	8,648
Total Circuit Links	2,233,398	2,104,431	2,137,179	2,568,706	2,646,904
Baseband Links	118,782	89,606	66,642	42,095	35,016
Analog Links	1,854	710	609	451	256
Digital Links	2,112,762	2,014,115	2,069,928	2,526,160	2,611,632
Equipped Channels	16,684,591	25,576,496	26,287,308	26,447,356	26,850,298
Copper	16,417,534	25,239,668	25,859,696	25,914,608	26,178,876
Fiber	266,970	336,737	427,522	532,661	671,162
Other	87	91	90	87	260
Working Channels	15,393,192	15,624,516	15,840,904	16,110,206	16,877,850
Copper	15,222,339	15,400,695	15,556,249	15,758,760	16,448,199
Fiber	170,776	223,744	284,575	351,364	429,536
Other	77	77	80	82	115
Copper Pair Sw. Term.-Loop	23,813,846	24,098,662	24,632,896	24,577,002	24,619,462
Fiber Cent. Ofc. Loop Termin.	31,676	35,565	39,830	33,538	34,692
DS-1 Term.- Cust. Prem. Fiber	570	628	701	756	655
DS-3 Term.- Cust. Prem. Fiber	777	1,710	2,410	3,108	4,047

**Table 8.2 Transmission System Data
(f): Southwestern Bell**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	631,229	637,841	646,283	652,224	662,108
Copper Sheath-Kilometers	603,323	605,825	608,238	609,725	612,764
Fiber Sheath-Kilometers	24,226	28,406	35,548	40,621	47,530
Other Sheath-Kilometers	3,680	3,610	2,497	1,878	1,814
Total Carrier Links	409,041	539,611	519,243	717,489	1,116,226
Copper Links	136,055	106,744	109,423	119,709	120,615
Fiber Links	254,978	419,710	394,948	584,519	982,517
Radio Links	18,008	13,157	14,872	13,261	13,094
Total Circuit Links	1,812,234	2,028,241	2,132,469	2,271,891	2,583,685
Baseband Links	68,676	50,622	42,930	32,798	26,474
Analog Links	14,371	6,676	2,080	827	97
Digital Links	1,729,187	1,970,943	2,087,459	2,238,266	2,557,114
Equipped Channels	22,805,216	23,280,470	22,801,616	23,675,324	23,990,229
Copper	22,387,044	22,835,410	21,895,338	22,010,812	23,356,682
Fiber	414,723	444,970	906,188	1,664,422	633,547
Other	3,449	90	90	90	0
Working Channels	12,924,549	13,400,320	13,431,477	15,446,486	15,917,610
Copper	12,595,246	13,047,301	12,703,861	14,046,786	15,376,311
Fiber	327,985	352,945	727,542	1,399,626	541,299
Other	1,318	74	74	74	0
Copper Pair Sw. Term.-Loop	21,723,564	22,047,874	21,379,496	22,010,904	21,990,828
Fiber Cent. Ofc. Loop Termin.	37,827	41,947	56,560	66,497	124,026
DS-1 Term.- Cust. Prem. Fiber	28,216	33,162	38,568	44,622	48,552
DS-3 Term.- Cust. Prem. Fiber	1,338	1,612	1,916	2,566	2,733

**Table 8.2 Transmission System Data
(g): US West**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	727,799	743,027	757,869	750,757	753,942
Copper Sheath-Kilometers	692,087	699,219	707,384	694,797	691,844
Fiber Sheath-Kilometers	35,712	43,808	50,485	55,960	62,098
Other Sheath-Kilometers	0	0	0	0	0
Total Carrier Links	394,615	430,532	471,975	505,550	633,861
Copper Links	126,419	99,584	89,849	73,050	35,964
Fiber Links	242,922	305,459	357,269	409,034	575,849
Radio Links	25,274	25,489	24,857	23,466	22,048
Total Circuit Links	2,050,073	2,175,630	2,315,598	2,569,216	2,802,203
Baseband Links	55,824	33,267	27,397	24,530	27,184
Analog Links	46,224	19,714	12,879	5,702	4,376
Digital Links	1,948,025	2,122,649	2,275,322	2,538,984	2,770,643
Equipped Channels	23,249,348	23,531,608	23,876,584	26,559,536	24,246,872
Copper	22,812,490	22,956,294	23,170,964	25,859,210	23,561,094
Fiber	435,420	575,314	703,502	698,147	685,674
Other	1,438	0	2,118	2,179	104
Working Channels	13,690,957	14,174,295	14,809,462	16,618,801	15,347,150
Copper	13,482,875	13,846,854	14,359,158	16,138,681	14,873,448
Fiber	207,186	327,441	449,121	478,913	473,650
Other	896	0	1,183	1,207	52
Copper Pair Sw. Term.-Loop	21,773,704	22,015,832	22,128,232	24,473,136	22,168,428
Fiber Cent. Ofc. Loop Termin.	51,375	65,444	73,993	83,313	81,953
DS-1 Term.- Cust. Prem. Fiber	10,882	11,837	20,010	24,386	28,875
DS-3 Term.- Cust. Prem. Fiber	1,088	1,434	1,066	1,297	1,339

**Table 8.2 Transmission System Data
(h): GTE/Contel Companies**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	944,665	1,582,102	1,495,496	1,318,502	1,234,633
Copper Sheath-Kilometers	896,306	1,259,691	1,147,707	1,252,041	1,167,365
Fiber Sheath-Kilometers	48,359	52,093	69,349	66,461	67,268
Other Sheath-Kilometers	0	270,318	278,440	0	0
Total Carrier Links	211,857	346,524	411,407	499,921	606,379
Copper Links	88,636	116,096	117,500	118,932	118,759
Fiber Links	115,893	216,679	282,841	368,310	475,945
Radio Links	7,328	13,749	11,066	12,679	11,675
Total Circuit Links	2,703,433	2,989,915	3,098,419	3,430,454	4,104,644
Baseband Links	138,930	62,506	60,567	58,835	55,704
Analog Links	20,921	8,124	6,680	4,736	3,729
Digital Links	2,543,582	2,919,285	3,031,172	3,366,883	4,045,211
Equipped Channels	27,825,252	28,018,836	28,605,286	28,043,406	30,593,768
Copper	26,829,116	26,644,992	26,989,260	26,280,274	28,716,902
Fiber	993,596	1,370,617	1,607,049	1,758,085	1,871,908
Other	2,540	3,227	8,977	5,047	4,958
Working Channels	17,827,976	18,770,008	18,672,864	18,809,320	19,749,732
Copper	17,152,862	17,846,680	17,557,932	17,636,318	18,476,992
Fiber	673,074	921,388	1,113,803	1,170,276	1,270,132
Other	2,040	1,940	1,129	2,726	2,608
Copper Pair Sw. Term.-Loop	26,611,408	26,610,870	58,156,304	26,074,368	28,707,804
Fiber Cent. Ofc. Loop Termin.	18,640	26,504	38,494	55,481	71,762
DS-1 Term.- Cust. Prem. Fiber	1,410	4,455	5,984	7,941	14,619
DS-3 Term.- Cust. Prem. Fiber	523	2,031	3,825	4,436	4,556

**Table 8.2 Transmission System Data
(i): Bell Company Totals**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	4,161,274	4,214,813	4,264,569	4,256,253	4,278,481
Copper Sheath-Kilometers	3,955,622	3,965,405	3,976,100	3,934,242	3,922,402
Fiber Sheath-Kilometers	196,791	238,405	280,017	314,661	348,909
Other Sheath-Kilometers	8,861	11,003	8,452	7,350	7,170
Total Carrier Links	3,283,956	3,570,147	4,020,454	4,494,544	5,688,380
Copper Links	1,048,545	869,052	803,035	569,428	486,608
Fiber Links	2,154,043	2,610,185	3,126,737	3,843,414	5,132,640
Radio Links	81,368	90,910	90,682	81,702	69,132
Total Circuit Links	16,382,990	16,936,496	17,480,137	19,862,967	21,280,654
Baseband Links	1,324,771	905,946	630,460	488,510	367,786
Analog Links	66,571	28,956	16,135	7,470	4,918
Digital Links	14,991,648	16,001,594	16,833,542	19,366,987	20,907,950
Equipped Channels	187,777,747	199,710,300	213,693,102	222,166,286	233,174,721
Copper	180,538,034	190,509,928	193,760,648	197,354,890	198,236,366
Fiber	7,234,047	9,199,377	19,929,357	24,808,191	34,937,148
Other	5,666	995	3,097	3,205	1,207
Working Channels	118,654,347	120,847,403	123,696,676	130,699,087	136,230,813
Copper	114,046,814	114,609,436	115,221,604	119,422,417	122,975,272
Fiber	4,605,184	6,237,727	8,473,646	11,275,228	13,255,293
Other	2,349	240	1,426	1,442	248
Copper Pair Sw. Term.-Loop	181,769,792	182,448,502	183,819,758	186,735,186	184,159,296
Fiber Cent. Ofc. Loop Termin.	259,058	450,209	560,159	678,984	823,726
DS-1 Term.- Cust. Prem. Fiber	73,731	102,303	139,865	176,294	207,421
DS-3 Term.- Cust. Prem. Fiber	8,128	12,793	12,432	15,527	17,276

**Table 8.2 Transmission System Data
(j): All Company Totals**

	1991	1992	1993	1994	1995
Total Sheath-Kilometers	5,105,939	5,796,915	5,760,065	5,574,755	5,513,114
Copper Sheath-Kilometers	4,851,928	5,225,096	5,123,807	5,186,283	5,089,767
Fiber Sheath-Kilometers	245,150	290,498	349,366	381,122	416,177
Other Sheath-Kilometers	8,861	281,321	286,892	7,350	7,170
Total Carrier Links	3,495,813	3,916,671	4,431,861	4,994,465	6,294,759
Copper Links	1,137,181	985,148	920,535	688,360	605,367
Fiber Links	2,269,936	2,826,864	3,409,578	4,211,724	5,608,585
Radio Links	88,696	104,659	101,748	94,381	80,807
Total Circuit Links	19,086,423	19,926,411	20,578,556	23,293,421	25,385,298
Baseband Links	1,463,701	968,452	691,027	547,345	423,490
Analog Links	87,492	37,080	22,815	12,206	8,647
Digital Links	17,535,230	18,920,879	19,864,714	22,733,870	24,953,161
Equipped Channels	215,602,999	227,729,136	242,298,388	250,209,692	263,768,489
Copper	207,367,150	217,154,920	220,749,908	223,635,164	226,953,268
Fiber	8,227,643	10,569,994	21,536,406	26,566,276	36,809,056
Other	8,206	4,222	12,074	8,252	6,165
Working Channels	136,482,323	139,617,411	142,369,540	149,508,407	155,980,545
Copper	131,199,676	132,456,116	132,779,536	137,058,735	141,452,264
Fiber	5,278,258	7,159,115	9,587,449	12,445,504	14,525,425
Other	4,389	2,180	2,555	4,168	2,856
Copper Pair Sw. Term.-Loop	208,381,200	209,059,372	241,976,062	212,809,554	212,867,100
Fiber Cent. Ofc. Loop Termin.	277,698	476,713	598,653	734,465	895,488
DS-1 Term.- Cust. Prem. Fiber	75,141	106,758	145,849	184,235	222,040
DS-3 Term.- Cust. Prem. Fiber	8,651	14,824	16,257	19,963	21,832