Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 9:59 AM
T BSC CLEC
Subject: Focal Communications Corporation Reports Strong First Quarter Results

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Focal Communications Corporation Reports Strong First Quarter Results

PR News Wire via Dow Jones

Telecom Segment Continues to Gain Momentum

CHICAGO, April 26 /PRNewswire/ -- Focal Communications Corporation (Nasdaq: FCOM), a leading national broadband communications provider, today reported record results for its first quarter, ended March 31, 2001. Revenue was $81.9 million during the first quarter of 2001, compared to revenue of $45.3 million during the first quarter of 2000. Revenue for the first quarter of 2001 included approximately $6.0 million in non-recurring revenue. Excluding the non-recurring portion, revenue for the first quarter of 2001 was $75.9 million. Telecom services revenue was $28.4 million and data services revenue was $47.5 million on a normalized basis for the first quarter of 2001. This compares to telecom services and data services revenue of $13.1 million and $32.2 million, respectively during the first quarter of 2000.

The Company's total access lines in service were 501,029 as of March 31, 2001, an increase of 15% over the fourth quarter of 2000. Line installations in the telecom services segment represented 82% of new line installations during the quarter. With this strong performance, the telecom segment now accounts for 44% of the total line base as of March 31, 2001, compared to 39% as of December 31, 2000.

"We are pleased to announce that we had another great quarter, making this the 13th consecutive quarter that we have met or exceeded revenue and EBITDA expectations," commented Robert Taylor, president and chief executive officer of Focal. "Our results this quarter demonstrate that our business is healthy and growing. Momentum continues to build in our telecom services segment, yielding a dramatic increase in both revenue and lines."

Operational Highlights

During the quarter, the Company launched service in Baltimore, its 21st market. Focal continues to roll out its Focal Internet eXchange platform across its markets. During the first quarter, the Company launched Focal Internet eXchange service in three new markets: Seattle, Los Angeles and Orange County. The Company now offers managed Internet access, colocation and private peering services in twelve tier-one markets.

Recent Developments

The Company announced on March 29th and April 18th that it had entered into regionwide interconnection agreements with BellSouth Corporation and Verizon Communications, Inc., respectively. These agreements establish, among other provisions, inter-carrier compensation rates for traffic exchanged between the companies' networks in 17 states. Focal's existing and planned markets that are covered under these agreements are: Boston, New York, Northern New Jersey, Philadelphia, Washington D.C., Northern Virginia, Baltimore, Atlanta and Miami.

"We are pleased with the progress we have made dealing directly with the incumbents on the interconnection issues covered under these agreements," commented Robert Taylor. "These agreements provide us with a level of certainty for reciprocal compensation in some of our largest markets and highlight the fact that market-based solutions can be reached."

Focal also recently entered into a nationwide network interconnection agreement with Sprint Corporation's local telephone companies. Additionally, t´ Federal Communications Commission (FCC) recently announced a new nationwide r .procal compensation transition plan for all local traffic. Reciprocal compensation refers to the compensation exchanged between carriers for handling local traffic received from one another's networks. This plan, along with Focal's recent interconnection agreements with Incumbent Local Exchange Carriers (ILECs), has dramatically clarified the regulatory environment for the Company.

Financial Highlights

Revenue was $81.9 million during the first quarter of 2001, an 81% increase over revenue of $45.3 million during the first quarter of 2000 and a 22% increase over revenue of $67.4 million during the fourth quarter of 2000. Revenue during the first quarter of 2001 included approximately $6.0 million in non-recurring revenue. Excluding the non-recurring portion, revenue for the first quarter of 2001 was $75.9 million, an increase of 68% and 13% over the first quarter of 2000 and the fourth quarter of 2000, respectively. On a normalized basis, telecom services revenue rose 19% to $28.4 million and data services revenue increased 9% to $47.5 million over the fourth quarter of 2000.

Earnings before interest, income taxes, depreciation and amortization (EBITDA) during the first quarter of 2001 was $3.8 million. Normalized EBITDA for the first quarter was $(2.1) million. Focal reported a net loss for the first quarter of 2001 of $33.5 million, or a net loss of $0.55 per share, compared to a net loss of $20.8 million, or a net loss of $0.35 per share, during the first quarter of 2000.

For the second quarter of 2001, Focal expects to report revenue of $83-$85 million and an EBITDA loss of ($1.5) to ($2.0) million. The Company is reconfirming its full year 2001 targets of revenue between $375-$400 million and a BITDA margin between 0% to 5%.

Selected Operational Results and Statistics

Focal provides market specific information to provide insight into the life-cycle performance of its markets. The following table presents the operating results for a group of Focal's mature markets for the three months ended March 31, 2001. The Company's mature markets are Chicago, New York, San Francisco, San Jose, Oakland and Philadelphia. The Company's EBITDA margin in its mature markets was 52% during the first quarter of 2001.

Focal Communications Corporation Summary Results for Mature Markets
For the three months ended March 31, 2001
($ in thousands, except lines installed)

	Revenue	EBITDA(a)	EBITDA Margin	Lines Installed (as of Mar. 31, 2001)
Mature Markets	$57,408	$ 29,934	52.0%	319,053
New Markets	$24,443	$ (2,366)	(9.7)%	181,976

(a) Excludes corporate overhead expenses.

Selected Statistical Information:

The following table presents selected quarterly statistical information for Focal Communications Corporation.

	3/31/01	12/31/00	9/30/00	6/30/00	3/31/00
Lines Sold to Date	567,834	526,356	427,641	356,918	291,443
Lines Installed to Date	501,029	435,272	365,016	298,983	238,697
timated Telecom ines as % of Installed Lines	44%	39%	35%	32%	29%
ILEC Switches					

Interconnected	2,062	1,975	1,823	1,677	1,447
Quarterly Minutes of Use in Billions	7.5	7.4	7.1	6.6	6.4
Markets in Operation	21	20	20	19	18
MSAs Served	50	49	49	48	47
rcuit Switches operational	21	20	19	16	14
Circuit Switches Under Development	12	5	6	8	7
ATM Switches Deployed	28	28	22	16	6
Fiber Miles Operational	10,544	9,730	7,914	4,488	864
Focal Customer Colocation Space in Service (Sqr. Ft.)	120,299	107,201	107,201	80,096	73,840
Capital Expenditures ($mil)	$22	$82	$99	$77	$52
Employees	1,228	1,130	1,089	935	747
Sales Force (a)	210	184	180	166	124

(a) Quota bearing sales professionals. Does not include sales engineers or customer support personnel.

Focal will conduct a conference call to discuss the first quarter 2001 results at 10:00 a.m. Central Standard Time on Friday, April 27. Investors can access the call by dialing 800-446-2782 or 847-413-3235 (international) and giving the password "Focal Communications." An audio simulcast will be offered on Focal's website (www.focal.com). To access the live streaming media event, go to the Investor Relations section of Focal's website and click on the webcast event icon.

About Focal

Focal Communications Corporation (www.focal.com) is a rapidly growing r 'onal broadband communications provider. Headquartered in Chicago, Focal o. ers innovative voice, data and Internet infrastructure services to large corporations, Internet service providers, content and application service providers, and value-added resellers across the United States. Focal currently services 21 major metropolitan markets and has announced plans to deploy services in a total of 24 markets, encompassing 56 metropolitan statistical areas nationwide. Focal's common stock is traded on the Nasdaq National Market under the symbol FCOM.

Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 9:22 AM
T BSC CLEC
S ject: Goldman: XO: Revising Estimates. & Price Target--New Growth Assumptions.

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08:40am EDT 27-Apr-01 Goldman Sachs (BENN) XOXO
XO: Revising Estimates. & Price Target--New Growth Assumptions.

Goldman, Sachs & Co. Investment Research

XO: Revising Estimates. & Price Target--New Growth Assumptions.

****
* XO has announced plan alterations that extend funding an additional year*
* into 2003 and cut the funding gap in half to approximately $1 billion. *
* The company has also received a $250 million equity infusion. More *
* conservative growth assumptions (necessitated by the curtailment of *
* expansion plans), coupled with the dilutive impact of the equity *
* raising, significantly reduces our DCF target to $10 per share. Despite*
* the DCF consequences, we view the plan curtailment as prudent and the *
* dilution as necessary (albeit painful). The stock remains on our *
* Recommended List given the significant upside potential from current *
* levels, & our confidence in management to execute the revised plan well.*
****

Larry Benn (New York) 1 212-902-2464 - Investment Research
Frank J. Governali, CFA (Portland) 1 207-772-3300 - Investment Research

================ NOTE 7:32 AM April 27, 2001 ====================

	Stk Rtg	Latest Close	52 Week Range	Mkt Cap (mm)	YTD Pr Change	Cur Yield
XO Communications	RL	4.32	46-2	1353.0	-76%	0.0%

XOXO (US$)	Mar	Jun	Sep	Dec	FY	CY
2002 FY						
2001 FY	-1.31A	-1.14	-1.13	-1.15	-4.71	
2000 FY(A)	-0.80	-0.95	-1.20	-1.29	-3.69	

(Earnings Per Share)

	-Abs P/E on- Cur	Nxt	-Rel P/E on-- Cur	Nxt	EV/NxtFY EBITDA	LT EPS Growth
XOXO FY	NMX	NMX	NMX	NMX	NA	NA%

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* KEY ELEMENTS AND CONSEQUENCES OF THE PLAN REVISION. The principal elements of the plan curtailment are (1) a renegotiation of the fiber agreement with Level 3 such that XO will purchase wavelength services rather than light its own North America intercity network; (2) the cancellation of the European expansion plan; and (3) the scaleback of expansion plans in domestic markets. Management expects that these revisions will (1) result in a $2 billion reduction in capex over the next 5 years, and (2)extend the company's funding by roughly one year into mid-2003 (we estimate positive full-year free cash flow generation from 2005).

* AN IMPORTANT FIRST STEP, BUT CHALLENGES REMAIN. We view XO's plan curtailment as a prudent attempt at curbing the high cash burn rate and

significantly extending liquidity. However, plan curtailment does not address balance sheet leverage (XO's net debt is $3.3 billion and redeemable preferreds are $2.1 billion) and its consequent high fixed charges (we estimate fixed charges at more than $400 million per year). Moreover, XO will also need to address the remaining $1 billion funding shortfall, which may entail additional dilutive equity issuances, monitizing assets, or other plan alterations. As we detailed in our recent report 'Are There More Wolves in the Woods?' solutions for these challenges (not only for XO, but for other highly leveraged carriers with funding gaps) may be disruptive for equity investors because of the uncertainties about future cash flows that plan revisions raise, or because of the equity dilution that may come with moderating debt-heavy capital structures.

* FIRST QUARTER RESULTS WERE MIXED; WE HAVE REVISED OUR ESTIMATES. The first-quarter EBITDA loss of $77.1 million was better than our estimate of a loss of $85 million primarily as a result of significantly lower SG&A. Revenues of $277 million were largely in line with our $280 million estimate, but the proportion of revenues from data services was weaker than expected due to a rise in customer bankruptcies, the discontinuation of particular services, pricing pressure and other factors. Based on the plan curtailment initiatives outlined above, we have reduced our 2001 revenue estimate 8% to $1.2 billion (we acknowledge that our revenue ramp may seem somewhat aggressive in light of the potential persistence of factors that impeded growth in Q1) and have reduced our EBITDA estimate to a loss of $230 million from a loss of $225 million. We have also reduced our 2002 revenue estimate 14% to $1.9 billion and have lowered our EBITDA estimate 31% to $100 million. As noted above, we have also revised our longer-term growth rate assumptions, introduced more conservative assumptions into our DCF (higher discount rate and lower terminal multiple), and consequently, lowered our price target to $10 per share from $50 per share.

==

1 THE PLAN REVISION. XO expects to realize capex reductions of ~~approximately $2 billion over the next 5 years (of which we estimate $800~~ million of savings will be realized over 2001 and 2002) by several means: (1) rather than lighting its long haul network, the company will purchase wavelength services from Level 3; (2) the company has cancelled its European expansion plans (on-net offerings of high-end data services), and will instead limit its European presence to Concentric's existing business; and (3) the company will scaleback its domestic expansion through such efforts as networking fewer buildings, initiating service in fewer markets, building-out fewer data centers, etc. Our model assumes that the revised business plan is funded into mid-2003; however, our model assumes that it will generate more modest long-term revenue and EBITDA growth than the predecessor plan.

2. FORSTMANN LITTLE'S $250 MILLION EQUITY INFUSION. Management announced that a major equity sponsor, Forstmann Little, has made an additional $250 million investment in the company (Forstmann had previously invested $1.2 billion), increasing its ownership stake in XO to 22%. XO will issue Forstmann 50 million shares of common stock, but also lower the conversion price on Forstmann's existing preferreds from roughly $31 to $17 per share, with the consequence that if converted, shares outstanding would increase an additional 34 million. We estimate the resulting dilution at 18%. Management has stated that it expects the transaction to close by the end of the current quarter. The transaction is obviously beneficial from a funding perspective, and given the company's already high balance sheet leverage, it is preferable to debt. Nevertheless, it also another demonstration of why we have been referring to equity financing as a 'double-edged sword'-positive for liquidity and debt-heavy capital s ctures, but potentially quite dilutive (given low stock prices) for e ity investors.

3. FIRST QUARTER RESULTS. XO reported first quarter revenues of $277.3

million, up 10% sequentially, and largely in line with our estimate. Nevertheless, revenue mix was weaker than expected as data revenues ($142.2 million) increased only 3% sequentially (versus our estimate of a 10% increase), reflecting the negative impact of several factors: (1) the discontinuation of ASP initiatives; (2) customer bankruptcies; (3) de-e asizing dial-up Internet access and lower-end DSL services (this c pens revenue growth but should be positive for margins); and (4) lower pricing on VPN services for a large customer. Voice revenues ($131.1 million) grew 16% sequentially, versus our estimate of 12%, in part because of higher-than-expected reciprocal compensation (4% of revenues v. 3% in the prior quarter).

Despite the weaker-than-expected revenue growth, the company posted strong EBITDA improvement (losses declined 13% to $77.1 million, versus our expectation of only 4% improvement) primarily as a consequence of good SG&A controls. SG&A as a percentage of revenues declined to 64% from 72% in the prior quarter (employment was held largely flat at fourth quarter's levels, for example). Gross margins showed no change from the fourth quarter (flat at 36%) primarily because of the bankruptcy of several on-net customers.

In the quarter, the number of buildings directly on XO's network increased 7% to 2,090, down from the 11% growth experienced in the fourth quarter. Management has lowered its on-net targets for 2001 as part of its plan curtailment (management expects on-net buildings to increase 20% in 2001 versus it's prior expectation of a 40% increase). Buildings that are served by XO but are not on the company's network (therefore service is provided at lower margins on leased facilities) increased 24% quarter over quarter to 63,641 buildings. Sequentially, the company's total customer base increased 5% (down from 11% in the prior quarter) to 91,722, and the average revenue per customer increased 3% (but up 29% year over year) to $941 per month. The higher average revenue per customer per month partially reflects the fact that bundled products constitute a growing proportion of services sold (47% of voice lines sold in the quarter were part of a bundle), and the proportion of 'up-market' products in the mix c inues to increase. Additionally, VGEs (in the fourth quarter, m agement replaced the access line metric with VGEs) increased 33% sequentially to 14.8 million, versus 26% growth in the prior quarter. Of the 3.7 million VGE installs in the quarter, 68% were directly on the company's network; and in total, 59% of XO's VGEs are now directly on the network. Capex in the quarter totaled $593 million (we had expected $520 million).

4. BALANCE SHEET AND LIQUIDITY. XO finished the quarter with net debt of $3.3 billion (equating to a net debt-to-capital ratio of 79%), and total liquidity of $2.3 billion ($1.9 billion of cash and $388 million of availability on its bank line). Pro forma for the equity investment from Forstmann Little, liquidity would be approximately $2.6 billion. We expect that the first quarter's cash burn (approximately $700 million) will the highest of the year; we estimate cash burn of approximately $480 million in the second quarter, with the bulk of the decline being attributable to lower capex spending. We estimate that the company will finish 2001 with liquidity of approximately $1.1 billion. Moreover, based on the revised capex and EBITDA ramp assumptions, our model assumes that XO is funded into mid-2003, and then has a funding gap of approximately $1 billion between 2003 and full-year free cash flow positive in 2005.

Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 9:15 AM
T BSC CLEC
S ject: Salomon: XOXO: Seasoned Management Does the Right Thing; Still Signific...

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08:57pm EDT 26-Apr-01 Salomon Smith Barney (Jack B. Grubman 212-816-2877) XOXO
XOXO: Seasoned Management Does the Right Thing; Still Signific...

SALOMON SMITH BARNEY

XO Communications, Inc. (XOXO)
XOXO: Seasoned Management Does the Right Thing; Still Significant Risk to Story

1S (Buy, Speculative)
Mkt Cap: $1,852.4 mil.

April 26, 2001

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SUMMARY
* XO announced today a $250M equity infusion by Forstmann Little at $5 per share and a capex reduction plan totaling $2B over 5 yrs., which reduces funding gap to $750M. Forstmann conversion price on converts also reworked to $17.00 from $36 3/8.
* XO rep'ted 1Q01 results in line w/ests; 1Q revs $277.3M in-line w/est. of $284M, but EBITDA loss $77M better than our est. $85M loss. On-net buildings grew to 2,090 this qtr. from 1,947 at year-end.
* XO gave '01 guid. for revs of $1.275-1.3B, slightly less than our est. of $1.4B, '01 EBITDA loss of 205-235M, vs. our EBITDA loss est. of $241M, and '01 capex of $1.3-1.5B, vs. prev. guid of $1.9-2.1B and vs.our est. of $2B.
* Establishing new price target of $10 based on new short and long-term plan guidance on capex and additional equity dilution. There is risk to execution but seasoned mgmt. & liquidity until 2003, lead us to maintain Buy rating.

FUNDAMENTALS

P/E (12/01E)	NA
P/E (12/02E)	NA
TEV/EBITDA (12/01E)	NA
TEV/EBITDA (12/02E)	50.1x
Book Value/Share (12/01E)	$3.08
Price/Book Value	1.3x
Dividend/Yield (12/01E)	NA/NA
Revenue (12/01E)	$1,289.0 mil.
Proj. Long-Term EPS Growth	0%
ROE (12/01E)	NA
Long-Term Debt to Capital(a)	84.0%

(a) Data as of most recent quarter

SHARE DATA		RECOMMENDATION	
Price (4/24/01)	$4.10	Current Rating	1S
52-Week Range	$45.66-$2.78	Prior Rating	1S
Shares Outstanding(a)	451.8 mil.	Current Target Price	$10.00
C ertible	No	Previous Target Price	$60.00

EARNINGS PER SHARE

FY ends	1Q	2Q	3Q	4Q	Full Year

12/00A	Actual	($0.80)A	($0.95)A	($1.20)A	($1.46)A	($4.22)A
12/01E	Current	($1.31)A	($1.41)E	($1.23)E	($1.20)E	($5.15)E
	Previous	NA	NA	NA	NA	($6.20)E
12/02E	Current	NA	NA	NA	NA	($4.60)E
	Previous	NA	NA	NA	NA	NA
J [illegible]3E	Current	NA	NA	NA	NA	NA
	Previous	NA	NA	NA	NA	NA

First Call Consensus EPS: 12/01E ($5.48); 12/02E ($4.98); 12/03E NA

OPINION

XO announced significant actions that stretch its current liquidity into the first half of 2003, but nonetheless leaves it with a $1 billion funding gap which will become $750 million once the new equity money comes in from Forstmann Little. As we expressed in our April 4th "Don't Panic-Emerging Telecom Model is Still Valid" note, we thought that XO had levers it could play with in order to conserve and stretch liquidity. We also wrote at the time that our own 20+ year personal experience in knowing Dan Akerson and Nate Davis led us to believe that they would do the right thing even if it meant diluting current equity holders, something that we even stressed had to be done in the March 21st "State of the Union" report.

XO announced a series of actions including a $250M equity infusion from Forstmann Little at $5 per share, and reworking of the original Forstmann Little convert to lower the conversion price to $17 down from $36 3/8, which obviously is dilutive to current equity holders. Although, the lower conversion price seems fair to us given that Forstmann stepped up especially, since the stock is still trading at 25% of the conversion price, we have a way to go until the Forstmann convertible preferred issues are back in the money and thus, will be considered debt not equity for now. Furthermore, if this ever converts to equity, no equity holder should be upset since it would mean that XO's stock price has quadrupled from where it is today. Without this consideration to Forstmann Little, XO would not be in the position of having more financial flexibility.

T. company also announced a capital program reduction of $2 billion over the ~~course of the next 5 years. We will go into gory detail on all of the~~ specifics surrounding the financing and the capital reduction, along with the impact that has to our long term model (given a scale back plan means lower revenue and EBITDA in the out years). Furthermore, XO reported its first quarter results which were essentially in-line and gave new guidance for 2001 and 2002. We will also discuss in detail in this note the drivers behind that guidance and what it takes to achieve those numbers.

Suffice it to say that we believe XO's actions were the necessary albeit somewhat painful steps to take in order to continue as a viable entity in the telecom market. Our experience following MCI in the 1980's taught us that companies with tremendous opportunity to gain share in a large market sometimes have to bite the bullet and make tough decisions in order to fight the fight over the long term. It is comforting to know that Dan Akerson and Nate Davis were at MCI during the 80's when MCI went from being the poster child of the junk bonds market to becoming AT&T's worst nightmare. Therefore, we continue with our buy on the stock, however, as we also alluded to in the "Don't Panic" note, you will see in all of our DCF models price targets coming down from embarrassingly stale levels as one by one the companies report, change guidance, change capital spending projections and in some cases, have to do financing that may or may not be dilutive.

For XO, we are establishing a new price target of $10 per share which takes into account the compounding effect of what we are going to assume is a permanently reduced plan, meaning no European expansion, no new markets in the US and a constrained penetration of new buildings within existing markets. Obviously, that has an impact of reducing out-year revenue and EBITDA given t[illegible] 90+% of the present value of DCF driven stories for emerging telecom names i[illegible] .epresented by the present value of the perpetual cash flow. Reducing substantially out-year revenue and EBITDA levels has a material impact to the net present value of the equity. Furthermore, the dilutive nature of the financings announced by XO on top of the fact that they do need another $750 million post closing of the Forstmann Little transaction means that all things considered there will be less revenue and EBITDA, the same amount of fixed cash interest payments and more diluted shares over which to spread the net equity value.

I ple might ask, what about the capital spending reductions? The problem with that is that only favorably impacts the discounted free cash flow in years 1-10 which in a DCF model for an emerging telco is unfortunately not a major contributor to NPV. Frankly for a $10 price target, which is still 2.5x current valuation, we still have to make ambitious assumptions for out-year revenues and EBITDA. Specifically, we have revenue growth rates of 26% per year over the next 10 years and EBITDA margin of 37% in year 10. We feel the EBITDA margin is probably feasible, but there clearly is risk to that level of sustainable revenue growth.

Over the near term, we think, to be blunt, XO will either make it to the next level or not depending on how it meets its guidance over the next two to three quarters. For XO to meet its revised targets for 2001, it still has to dramatically ramp its absolute dollar sequential revenue gains during the course of the year. For example, there was a $24 million sequential increase in revenues this quarter, and the company needs to ramp that up to $40 million by the fourth quarter of this year. This is particularly tough to do when certain former Concentric revenue streams are being de-emphasized and in general, spending is being cut in terms of new market entry and new building penetration where there tends to be low hanging fruit.

Our view is that the 2001 plan will live or die based on three product sets, the most important being dedicated network access or local high cap connectivity. Secondly, continued selling of the bundled voice products and thirdly, Internet access. Clearly the first two are by far the most important contributors in making the 2001 revised guidance. We think operating metrics such as number of OCX versus DS circuits installed and provisioned and number bundled units sold will be the gating factors for success or failure. We know t Nate Davis and his operating team will be monitoring pick ups in those o-ating metrics to gauge whether or not guidance will be met.

We think, generally speaking, that the ratio of optical to electronic local network transport needs to increase by about 40% and that the number of bundled units sold have to increase by about 25-30% in order for XO to make its numbers. Another monitored metric is the increase in monthly recurring new revenue for national accounts sales which need to grow from $1.2 million to $1.7 million. Thus, there is clearly risk in making even the 2001 numbers, much less the long term numbers. Our view is that with the stock at current levels, with liquidity that legitimately does take them into early to middle part of 2003, we think that even though this is a high risk situation there is a reasonable chance that XO meets its targets. Frankly if XO meets its 2001 objectives, we actually think that getting to 2002 objectives will be materially easier given what it would take for XO to meet its 2001 targets and what that would imply for exit run rates going into 2002.

The bottom line in the stock is we think management did the right thing in terms of its revised plan and modifications to its capital structure. Equity holders had to be diluted in order to give XO a fighting chance to evolve as a company. There is clearly a lot of risk associated with the near term guidance and obviously to get equity value much above the current stock price, it is necessary to make reasonably aggressive assumptions for the out-years. However, if XO does execute its revised plan in 2001, our confidence levels for out-year performance would dramatically rise. This is because 2001, given all the chaos in the market, is likely to prove the toughest road to hoe for XO.

DON'T GENERALIZE ON XO-LVLT DEAL

O other thought before turning to the details of the recapitalization efforts a. operating results. There is a notion that the deal between XO and LVLT somehow represents an epiphany in this industry, which demonstrates the virtue of a disaggregate model. That is patently superficial. The deal is an outgrowth of XO's need to conserve cash. XO, if it had all the liquidity in the world, would want to own and operate and control end to end network facilities. Dan Akerson and Nate Davis, like us, grew up in this industry believing you need ownership of end to end capabilities if you really are going to control customers. We believe that if XO fortunes turn, such that in a few ' -s it actually has excess liquidity, there is no doubt it will embark on a s ategy to have ownership of facilities. In the mean time, leasing wavelengths is a good stop gap and cash conservation measure.

Frankly, the only way that a disaggregate industry model is ever going to be proven is if the likes of AT&T and WCOM materially outsourced or bought a big chunk of network capacity from players in the market. So far, neither seems compelled to do so since it is hard to economically prove that anybody would have a lower marginal cost position in actually lighting network capacity. Given the buying power of the likes of WCOM, it is hard to see how they would ever be at a higher cost position from a procurement prospective and given natural advances in technology with unit costs dropping 60-70% per year at the optical and WDM layers, a third party would have to forward price extremely aggressively and still be able to get a return on sunk capital as well as incremental capital to make a go of it.

Our point is this, don't read into the XO agreement with LVLT anymore than it is. XO has a liquidity issue. They are doing all they can to rectify that, and one of the things they're doing is forgoing ownership of dark fiber to not have to light up network as opposed to buy available capacity on a leased basis.

CHANGE IN PRICE TARGET TO $10 DOWN FROM $60 PER SHARE

We have significantly lowered our price target derived from our DCF model. We have lowered 2010 revenues to $10.5 billion down from $17.6 billion since XO has pulled out of its European expansion and scaled back its domestic business plan. In addition, we slightly lowered our year 10 EBITDA margin to 37% down from 40% to be more conservative. We have adjusted our discount rate given the i ease in risk (e.g., bonds trading wider, increased beta and they are still n. fully funded). Our new discount rate is 16.3% up from 12.5%. We have ~~also lowered our terminal multiple to 10x FV/EBITDA down from 13x, in our~~ previous DCF. We have increased shares outstanding to include the 50 million new shares which will be issued to Forstmann when the equity deal closes in June. We continue to view the convertible preferred offerings as debt since they are "out of the money". The resulting DCF theoretical value is $10 per share which is thus, our new price target. Now we will turn to the gory details.

$250 MILLION EQUITY INFUSION BY FORSTMANN LITTLE

XO announced today that Forstmann Little & Co. is putting in straight equity of $250 million at $5 per share, adding 50 million shares. XO is also amending the terms of the preferred stock held by Forstmann to reduce the share conversion price from $31.625 to $17.00 per share. This deal adds an additional 34 million shares on conversion, so now on a fully diluted basis, Forstmann owns 22.4% of XO. This will dilute Craig McCaw's economic stake from 22% down to 17%, and he will have over 48% voting power (he will have majority voting power when considering his wife's voting share as well).

The Forstmann deal is expected to close by the end of the 2nd quarter. Assuming that the Forstmann investment closes and given that the company had $1.9 billion of cash and short term investments at the end of the quarter, XO believes that it has a $750 million funding gap with its scaled back business plan.

$2 BILLION REDUCTION IN CAPEX SPENDING OVER NEXT 5 YEARS

T company announced today a cut in capex spending that would total $2 billion o. - the next five years. This reduction can be primarily attributed to three areas. First, XO will terminate its expansion in Europe, though it will continue its current operations (mostly from the CNCX acquisition). Second, XO will not light its long-haul fiber, which was suppose to occur in 3Q'01. Instead, it will lease capacity from other long-haul providers. Finally, it will scale back its domestic expansion plans. Instead of entering 4 to 5 new markets this year, it will now only enter 2 new markets, Cincinnati and Minneapolis. It has also decided to exit the ASP market, which it has deemed to be incompatible with its business strategy. As a part of this scale back effort, XO has renegotiated its agreement with LVLT, which was discussed above.

DETAILS OF THE QUARTER

XO reported 1Q01 results essentially in-line with our expectations. Revenues in the quarter of $277.3 million and EBITDA loss of $77.1 million were basically in-line with expectations of $284 million and a loss of $85 million, respectively. This represented revenue growth of 162% year over year and 10% sequentially from $253 million in 4Q'00. EBITDA improvement over the 4th quarter 2000 loss of $89 million was due to efforts by the company to focus on conserving cash, in particular, reducing its SG&A as a percentage of revenues which declined to 64% in 1Q'01 down from 72% last quarter and 88% a year ago. On that note, employee headcount remained essentially flat at 7,425 employees versus 7,400 employees at year-end. Although XO will scale back its expansion plan and thus, network build, the company has historically hired outside contractors to do the construction, so there should be little impact on headcount from that perspective. Additionally, XO marginally increased its direct sales force to 1,189 people up from 1,135 at year-end.

XO reported a 36% gross margin this quarter, essentially flat from 4Q'00 levels of roughly 37%. The softness is due to the bankruptcies of certain large customers, who had been primarily on-net. In addition, 1Q'01 EPS loss was ($1.31) versus our estimate of ($1.27).

The company spent $593 million of capex this quarter, of which 50% was for new and existing metro network, 25% for long haul, 10% for OSS, 10% for International and 5% for Other. See guidance section below for further details about capex spending going forward.

With accounts receivable of $190 million at the end of the quarter, XO's days sales outstanding improved by 1 day quarter over quarter to 60 days this quarter from 61 days at year end. It is also important to note that the company has reserved against 100% of gross receivable balances greater than 90 days and 70% for balances greater 60 days but less than 90 days.

REVENUE SEGMENT BREAKDOWN

In 1Q'01, voice revenues were $131 million vs. our estimate of $122 million and up 16% vs. $113 million in 4Q'00 and up 68% year over year. Voice revenue is comprised of switched voice revenues (bundled local and LD services) and Other voice (standalone LD, enhanced and shared tenant services revenue.) Switched voice revenues were $118.7 million was higher than our estimate of $110 million and up over 17% versus 4Q'00 switched voice revenues of $101 million. The higher than expected switched voice revenues was due primarily to a reciprocal compensation cash settlement. XO books reciprocal compensation revenues typically when cash is received. Thus, in the current quarter, reciprocal compensation represented 4% of revenues versus 3% historically. The remaining $12.4 million was from Other Voice Revenues, which was up 5% from 4Q'00.

Data revenues were $142 million versus our estimate of $158 million and up almost 3% versus $138 million in 4Q'00 and up over 400% year over year. Data revenues are composed of Internet access (includes DSL,) Network access (local and LH dedicated products, VPN, collocation and IP products,) and web hosting. Within data, internet access was $39.3 million, which was flat from 4Q'00 of $40.2 and lower than our estimate of $45.2 million due to flat DSL business, natural attrition and decline in low-end DSL and dial-up Internet. DSL was flat to reflect the fact that XO raised rates and no longer waives installation charges. Thus, although this may result in less revenue growth, it enhances profitability. Furthermore, XO had to transition some of its DSL customers off of the Northpoint network, who went bankrupt, onto its own network or COVAD's network. XO reported that 80% of the previous customers on Northpoint have been successfully transferred, but the difference also accounts for a portion of the lower internet access revenues.

Network access came in at $86.5 million lower than our estimate of $88.3 million, but up 11% versus 4Q'00 network access of $78.2 million. Network ; ss came in a little lower because the effects of a VPN customer price 1. ‿tiation offset the 16% growth in Transport. Web hosting/e-commerce came in at $16.4 million lower than our estimate of $24.1 million and down from 4Q'00 of $19.4 million. The decline is due to the company winding down its e-commerce activities, specifically the ASP market (XO Interactive) and the termination of a couple contracts related to the ASP product.

Other revenue is comprised of integrated products and other miscellaneous revenue, such as web design and came in at $4.0 million, essentially in-line with our estimates of $4.7 million, but up 105% sequentially as this product line was introduced to market fairly recently. The sequential growth is due primarily to the growth in the integrated package XO's bundled product. The company disclosed that revenue per customer per month for the integrated access bundled product rose to $661 in 1Q'01 up from $190 a year ago.

1Q'01 OPERATING METRICS ARE GOOD

XO increased its customer base this quarter to 91,722 customers, up from 87,755 at year-end. The average revenue per customer per month increased to $941 in 1Q'01 up from $916 in 4Q'00 and $728 a year ago. Roughly 47% of lines sold this quarter were a part of a bundled package, which has helped increase the revenue per customer this quarter.

XO ended the first quarter with over 1 million fiber miles. Obviously, metro is the most important part of the value chain given the scarcity of bandwidth in the metro area, and the fact that one has to connect to customers. XO has right around 2,090 completely on-net buildings with another 60,000+ connected via tail circuits leased from the ILEC or others. Of these counts, the fixed wireless portion of XO's business remains in 27 markets, the same as year-end ; `.

~~Beginning last quarter, XO reported VGE's as opposed to lines. At the end of~~ this quarter, XO had almost 14.9 million VGE's, of which 55% is on-net (on XO's transmission facility), versus 11.2 million at year end. Of the additional 3.7 million VGE's added this quarter, 68% was on-net. The company ended the quarter with 34 voice switches, 50 ATM switches and 10 operational data centers.

EARLY MARKETS INFORMATION CONTINUE TO SHOW IMPROVEMENT

The result of XO's early market demonstrate that the business model can progress towards profitability, in our view. For the markets that were first built in 1996, including Memphis, Nashville, Spokane and Central, PA, XOXO saw sequential revenue growth of 15%, achieved 70% gross margins and 38% EBITDA margins before corporate allocation. Of the markets built in 1997, including Cleveland, Philadelphia, LA, Salt Lake City, Columbus, and Las Vegas, XOXO saw 11% sequential revenue growth, 68% gross margins in 1Q'01, and had positive EBITDA margins of 16%. The markets that were built in 1998 including all Tier-1 cities such as Chicago, San Francisco, New York, Atlanta, Dallas, Denver and Miami saw sequential revenue growth of 15%. The Class of '98 markets have gross margins of 67% and 7% EBITDA in 1Q'01. XO introduced the Class of 99 markets which grew revenues 25% sequentially, had a gross margin of 63% and is on track to reach EBITDA positive within the 30 month time frame from time of market entry. The template is quite clear. For a facilities-based CLEC, the path to EBITDA positive is anywhere from 20-30 months, as we see it, depending on the market situation. Once that path is passed, there should be huge leverage to the cash flow line.

R SED GUIDANCE

Due to the termination of European expansion plans, the scale back of domestic operations, and the abandonment of the e-commerce ASP business, the company has revised revenue, EBITDA and capex guidance, as shown in table below. The restructuring of the agreement with LVLT is also included in company guidance.

The roughly $550-600 million reduction in 2001 capex guidance to $1.3-1.5 billion down from $1.9-2.1 billion can be broken down as follows: $250-300 m ion from halting European expansion; $100 million from postponing lighting c he long haul fibers this year, $150 million from reducing new market entries in 2001 to 2 markets, as previously discussed; and $50 million from exiting the ASP market.

RISKS

While we believe that XO is confident that it will meet its guidance, we would like to highlight certain risks that investors must incorporate in their analysis. The first is that, given the current stock price and the negative sentiment surrounding CLECs, XO has to convince new and existing customers that it will not go out of business. With telecom being the lifeline to many businesses, customers will not quietly sit by wondering if XO will be around. In fact, top management has already had to fly out and personally meet with some of its accounts in order to keep existing or gain new business, which would have been atypical a year ago. However, this risk is tempered by the fact that XO's management team, led by Dan Akerson and Nate Davis, has many years of proven telecom experience, which has helped convince customers to remain with XO. Another risk is pricing. With so many CLECs fighting to survive in this market downturn, it is possible that pricing wars may put pressure on XO's revenue growth. XO will have to create unique product offerings or better service in order to overcome such pressure. Furthermore, the silver lining to the situation is that the survivors, whether it be XO or another CLEC, in this space will emerge stronger and healthier with less competition in the market.

NET/NET

We continue to believe that there will be a handful of well-heeled, competitive p ers emerging out of the carnage of the past year. Above all else, we b eve the most important asset is management. There is absolutely no ~~question in our minds that Dan Akerson and Nate Davis have been through worse~~ wars in the past, and have not only survived, but thrived in them. Thus, we maintain our Buy rating and establish a $10 price target even in light of all the risks associated with XO having to execute its business plan.

Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 1:22 PM
To: BSC CLEC; BSC DataList
Subject: JP Edwards: Competitive Telecom Services Industry: The Matrix

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09:44am EDT 27-Apr-01 J.P. Morgan (BARDEN, DAVID (1-212) 270-6611) LVLT
Competitive Telecom Services Industry: The Matrix

April 27, 2001

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Competitive Telecom Services Industry

THE MATRIX : INTERDEPENDENCE IN TELECOM SERVICES AND FINANCING

Highlights:

ú We are publishing a report in which we analyze the interdependence in the telecommunications market

ú In our analysis, we assess the exposures of key companies in the telecommunications sector to each other to identify potential points of strength or weakness as market consolidation continues.

ú We conclude that the telecommunications service industry is highly, perhaps far more highly than investors anticipated, interconnected at both commercial and financial levels.

ú Please contact your JPMS salesperson for a copy of our accompanying "Telecom Services Matrix" for a full color poster representation of the relationships discussed in this report

Today we are publishing a report in which we analyze the interdependence in the telecommunications market among three key groups: telecommunications service companies (both emerging and incumbent), telecommunications equipment vendors, and investment banks. Please contact your JPMS salesperson for a copy of our accompanying "Telecom Services Matrix" for a full color poster representation of the relationships discussed in this report

The intertwining of fortunes of telecommunications services companies has increased as a result of "coopetition," a relatively recent phenomenon within the sector. In order to avoid the high up-front costs of individually investing in new infrastructure, services companies have frequently entered barter or commercial transactions that allow capital expenses to be shared across companies. This cooperation in the construction of new telecommunications platforms is rapidly followed by competition to serve customers on the same footprint. Furthering these interrelationships are the transactions that have evolved from the seller's desire to further lay off the run-rate costs of maintaining a large physical infrastructure and the buyer's desire to develop new horizontal business models that focus on perfecting one sliver of the integrated telecommunications value proposition. These relationships are not limited to the emerging telecommunications sector, as they also reach the large incumbent telecommunications companies.

We have extended our analysis beyond service company interrelationships to include key financing relationships in the industry, as these relationships have proved critical to the development c he competitive telecommunications industry and we expect their success o. failure will partially determine the industry's future. Beyond traditional commercial relationships, vendors became an important source of finance in the industry as they vied to showcase new technologies and secure long-term relationships with the industry's new blood. These relationships have come under increasing scrutiny and, at times, criticism, and the prospect of a diminished vendor financing market has exacerbated the problem of capital flight in the emerging telecommunications sector. Banks, frequently factoring investment banking revenue into their total return versus risk calculations, have extended themselves into this market as well.

In our analysis, we assess the exposures of key companies in the telecommunications sector to each other to identify potential points of strength or weakness as market consolidation continues. We conclude that the telecommunications service industry is highly, perhaps far more highly than investors anticipated, interconnected at both commercial and financial levels. There are apparent epicenters to these relationships, such as Level 3 Communications (LVLT/$13.04/Buy), Metromedia Fiber, and others, representing the highest level of diversity within the sector but also the largest exposure to it. While most of the relationships here reflect the healthy functioning of the sector, some critical path links exist, and our Matrix is meant to aid investors in the large-scale industry what-if analysis of individual corporate success or distress.

Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 9:17 AM
T BSC CLEC
S. ,ect: Credit Suisse: XOXO: 1Q Rpt'd; Scaled Back Plan Ann'd -

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XOXO: 1Q Rpt`d; Scaled Back Plan Ann`d -

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STRONG BUY
MID CAP
XO Communications, Inc. (XOXO)
1Q Rpt'd (Detailed Note): Scaled Back Plan Ann'd; $250M of New Equity from Forstmann; Reit Strong Buy

Summary

Consistent with our "what if" scenario we published (see our April 16 report entitled "Scale Back Announcement Expected...), on April 26, XOXO ann'd a scaled back business plan but surprised us on the upside with a $250M additional equity investment by Forstmann Little.

Xr¨ reported solid results with total revenues in line with expectations and w. EBITDA performance that was better than expected.

With the combination of the scaled back business plan and the incremental equity received, we believe that XOXO is now funded into 1H03, out 12 months vs. our prior forecast. Additionally, we estimate that XOXO's funding gap to reach a free cash flow positive status is now $1.1B, $2B less than our forecast funding gap under the prior business plan and $300M less than our estimate under our "what if" scenario, largely due to the Forstmann investment.

To adjust for our scaled back model, lowering price objective to $26, a 57% reduction versus our prior target of $61. Reiterate Strong Buy.

Price 4/26/011	Price Target	Div.	Yield	Mkt.Value (MM)	52-Week Price Range	
4.32	$26	NA	None	$1,594.1	$47.13-2.40	
	Annual EPS	Prev. EPS	Abs. P/E	Rel. P/E	EV/ EBITDA	EBITDA/ Share
12/01E	$(5.31)					$(0.97)
12/00A	$(3.83)					$(0.97)
	March	June	Sept.	Dec.		FY End
2001E	$(1.31)	$(1.36)	$(1.34)	$(1.30)		
				Dec 31		

ROIC (12/00)	--
Total Debt (12/00)	$6.5bil.
Book Value/Share 2/00)	$5.04
WACC (12/00)	--
Debt/Total Capital (12/00)	78%
Common Shares	369.0mil
EF ¯rend2	Postitive
E. 5-Yr. EPS Growth	NA
Est. 5-Yr. Div. Growth	NA

1 On 4/26/01 DJIA closed at 10,692.4 and S&P 500 at 1234.5.
2 Economic profit trend.

XO Communications (XOXO) is a facilities based CLEC that provides local, long distance and data services to small and medium business customers throughout t United States. XOXO offers a wide variety of services by utilizing its o. . fiber, leasing of ILEC local facilities and fixed broadband wireless facilities.

Investment Summary

Consistent with our "what if" scenario we published (see our report entitled "Scale Back Announcement Expected; A What If Scenario" issued on April 16, 2001), on April 26, XO Communications (XOXO) announced a scaled back business plan but surprised us on the upside with a $250M additional equity investment by Forstmann Little. XOXO also reported solid results with total revenues in line with expectations and with EBITDA performance that was better than expected. We reiterate our Strong Buy.

With the combination of the scaled back business plan and the incremental equity received, we believe that XOXO is now funded into 1H03, out 12 months vs. our prior forecast. Additionally, we estimate that XOXO's funding gap to reach a free cash flow positive status is now $1.1B, $2B less than our forecast funding gap under the prior business plan and $300M less than our estimate under our "what if" scenario, largely due to the Forstmann investment. Finally, as we had indicated in our "what if" report, there is still significant equity value with the scaled back plan. To reflect our new long-term forecast, we are lowering our price objective to $26, a 57% reduction versus our prior target of $61, but over 5-fold upside from current trading levels. Key assumptions underlying our new DCF valuation include a 15% discount rate (a 100 basis point increase from our prior discount rate to reflect funding uncertainties), an 11x terminal-year EBITDA multiple and no public market discount.

N work Scale Back and Additional Funding Announced
X. .O announced a major scale back in its business plan that it will save ~~approximately $2B in capital expenditures over the next five years. Details~~ of the scaled back plan are comprised of 3 main initiatives:

European Expansion Cancelled: XOXO has cancelled the European network expansion plans that were originally announced on May 23, 2000 and subsequently scaled back on November 28. To date, XOXO has paid $128M to Level3 (LVLT) for the purchase of European inter- and intracity fiber. XOXO will return to LVLT all network assets already bought within Europe as well as the 25% tag along rights on conduits 6 through 12 on the U.S. network. The $128M will now be applied to the remaining liability of $280M that is due to LVLT for the balance of the 16,000 route mile, 24 fiber network in the U.S. XOXO will still keep the 2.5 Gbps of transatlantic capacity bought from LVLT, for which it will pay $15M.

Delay Lighting of Long Haul Network: Instead of lighting the 16,000 mile LVLT long haul network during FY01, XOXO has instead signed a $30M contract to purchase wavelengths (i.e., capacity) over a 5-year period on the LVLT network. XOXO will pay for the capacity by transferring equipment to LVLT that XOXO has already deployed to light existing intercity fiber. In total, XOXO will receive a $61M credit, $30M of which will be used for this contract, and the remainder to be used for additional capacity as needed.

Slow Metro Deployment in New and Existing Markets: With 62 markets operational at 1Q01 end, XOXO will slow down deployment of additional fiber in existing markets as well as only enter two new markets during FY01, vs. our prior forecast of 4 new markets during the year. Additionally, XOXO will halt fixed wireless deployment at the current 27 markets. In making a "depth" v "breadth" decision, management will now focus on penetrating existing m. .kets deeper to save capital and leverage existing infrastructure investment.

On the capital-raising front, XOXO issued $250M of new equity (50M common shares at $5 per share) to Forstmann Little and reduced the share conversion price on the original $1.25B investment (via convertible preferred shares) from $31.625 to $17 per share. This additional capital brings the total investment by Forstmann Little to $1.5B, or a 22.4% stake in XOXO, up from the 11% prior ownership. We estimate that these two transactions increase fully diluted share count (using the treasury stock method) by 19%, to approximately 535M shares.

Highlights from 1Q01 Are as Follows: (See Table 1 Below)

Revenues: XOXO reported 1Q revenues of $277.3M, up 10% sqt'ly and 162% y/y, in line with our forecast. The reported revenue breakdown is as follows:

Voice revenues are comprised of the following: a) Bundled local and LD revenues of $118.7M, up 17% sqt'ly and 78% y/y, 6% above our forecast; and b) Other voice revenues of $12.4M, up 5% sqt'ly and 8% y/y, 8% above our forecast. Total Voice revenues were $131.1M, up 16% sqt'ly and 68% y/y, 6% above our forecast.

Data revenues are comprised of the following: a) Internet access revenues of $39.3M, down 2% sqt'ly and incomparable y/y, 9% below our forecast; b) Network access revenues of $86.5M, up 11% sqt'ly and 212% y/y, 4% below our forecast; and c) Web hosting / e-commerce revenues of $16.4M, down 15% sqt'ly and incomparable y/y, 25% below our forecast. Total Data revenues were $142.2M, up 3% sqt'ly and over 4-fold y/y, 8% below our forecast.

Other revenues came in at $4.0M, up 67% sqt'ly and almost 40-fold y/y, 60% above our forecast.

We note that the variance in data revenues is attributable to two factors as follows: 1) XOXO stopped marketing lower revenue ADSL and IDSL services that residential and very small business customers typically subscribe to, accounting for the decline in internet access revenues; and, 2) XOXO is winding down its e-commerce business that was focused on web design services for Tier 1 customers.

~~Reciprocal compensation (reported as part of bundled voice and LD) came in at~~ approximately $11.1M for the quarter, at 4% of total revenues, up vs. the 2.5% seen during 4Q. We attribute the rise during 1Q01 to one-time cash settlements that occurred during the quarter.

Network Metrics: Following XOXO's announcement that it will no longer disclose local access lines adds during 4Q00 reporting, management again highlighted the two key new metrics detailing CLEC revenue growth as follows: 1) revenue per customer (excluding revenues and customer counts attributable to Europe, shared hosting and dial up internet access) was $941/month, up 3% sqt'ly and 29% y/y, in line with our forecast; and 2) voice grade equivalents - VGEs -- (the total number of DS-0, or 64 Kbps channel equivalents provisioned on XOXO's network) were 14.9M, up 33% sqt'ly and 346% y/y, 11% above our forecast. Over 55% of total VGEs, or approximately 8.2M, were on-net at 1Q01 end.

EBITDA: 1Q01 reported EBITDA loss was $77.1M, a $11.6M sqt'l narrowing and $8.1M narrower than our forecast. We attribute the variance to lower than forecast SG&A expenditures of $177.9M, down 3% sqt'ly and 7%, or $14.1M, lower than our forecast. Operating expenses of $176.5M were in line with our forecast. 1Q gross margins came in at 36.3%, down 90 basis points sqt'ly but up 810 basis points y/y, 170 basis points lower than our 1Q01 forecast. The variance in gross margins is largely due to the bankruptcies of several data customers, including NorthPoint Communications, for which XOXO lost revenue but still incurred costs.

Network Deployment (See Table 2 Below): At 1Q01 end, XOXO had 22,416 route miles of fiber installed within its network, up 66% sqt'ly, with 73% of the total related to intercity fiber, both within the US and in Europe. We note that Level 3 (LVLT) delivered a total of almost 8,500 route miles during 1Q, broken down as follows: 1) 6,379 route miles of US intercity fiber, up 141%

vs. the 2,645 route miles delivered during 4Q00; 2) 57 route miles of intracity European fiber, a deceleration of 60% vs. the rate during 4Q00; and 3) 2,037 route miles of intercity European fiber, up 24% vs. the 1,641 route miles delivered during 4Q00. (We note that XOXO will return the European metro and intercity fiber to LVLT as part of the scale back agreement discussed above.) LVLT is still on track to deliver its US network to XOXO by the contractually agreed upon date of YE01. At 1Q01 end, XOXO had 2,090 buildings on its network, up 7% sqt'ly and 41% y/y, in line with our forecast. However, in conjunction with the slow down in metro deployment, we now expect that XOXO will end FY01 with 2,350 buildings on-net, up 21% y/y, but down from our prior forecast of 2,700 on-net buildings at YE01.

Capital Expenditures: XOXO incurred $593M in capital expenditures during 1Q01, up 14% sqt'ly and 205% y/y, in line with our estimate. Cap ex for the quarter breaks down as follows: Metro Networks, 50%; Intercity, 25%; International, 10%; OSS (Operations Systems & Support), 10%; and Other, 5%. We are lowering our FY01 capital expenditure forecast by 30% to $1.4B, described in detail below in our forecast revision section.

Funding: In addition to the $250M equity investment by Forstmann Little, XOXO ended the quarter with $1.9B in cash and cash equivalents and $388M available on its credit facility. (We note that XOXO drew down $237M of the existing $1B bank credit facility during 1Q, bringing a total of $613M outstanding under the facility.) Total available funding (pro-forma for the Forstmann investment) therefore was over $2.5B at quarter end, which, in combination with the scaled back business plan, we forecast is enough to fund the company into 1H03. By our estimates, XOXO would need an additional $500M to be funded through FY03. Although the public markets, both on the equity and the debt side, are closed at least over the near-term, we believe that other sources are available, including additional private equity, network capacity sales (i.e., a wholesale agreement with a carrier looking for either local or long haul capacity) or actual asset sales (i.e., a sale of a portion of the LVLT network that XOXO will own.) We do note that the LVLT agreement prohibits a partial sale of dark fiber assets until mid '02, but we understand that XOXO could structure a capacity sale up front, followed by an asset sale such that the terms of the contract would not be violated.

Days Sales Outstanding (DSOs): Due to the financial difficulties of several public and private internet-related companies that purchase network services from CLECs, we have recently begun to place a more detailed emphasis on DSOs as a proxy to determine the viability of a CLEC's customer base. As we detail in Table 3, XOXO's DSOs at 1Q01 end fell for the fourth consecutive quarter, down 4% sqt'ly to 63, and down 34% from 1Q00's peak of 95 days. We find this progression impressive, especially when we compare XOXO to other CLECs that have DSOs in excess of 90 days, or a full quarter to collect from customers on average. In addition, we highlight XOXO's transition over the past several quarters to take a more conservative stance on bad debt reserves. As a percentage of gross accounts receivable, XOXO has increased bad debt reserves by approximately 700 basis points over the past year. We therefore believe that there is a low chance that the company will be required to take a write down for delinquent customers especially in the "dot.com" sector. At 1Q01 end, XOXO was 100% reserved for customers with more than 90 days aged receivables and 70% reserved for those with more than 60 days aged receivables.

Forecast Revisions:
To reflect the scaled back business plan, we have adjusted our forecasts as follows: (See Table 4 Below):

Revenues: For FY01, we are lowering our total revenue forecast by 9% to $1.28 or 77% y/y growth vs. our prior forecast of 94% y/y growth. We are raising our voice revenue forecast by 3% to $607M, and are lowering our FY01 data revenue forecast by 17% to $664M. For FY02, we are lowering our total revenue forecast by 10% to $2.0B, our voice revenue estimate by 4% to $867M, and our data revenue estimate by 15% to $1.1B. For FY03, we are lowering our total revenue forecast by 19% to $2.7B, our voice revenue estimate by 13% to $1.1B, and our data revenue estimate by 22% to $1.6B. For FY09, the terminal year in our DCF model, we are lowering our total revenue forecast by 49% to

$8.4B, our voice revenue forecast by 9% to $3.7B, and our data revenue forecast by 59% to $4.7B. By FY09, our total revenue forecast is down by 46% to $8.4B, implying a 10-year CAGR of 41% vs. 50% in our existing model.

EBITDA: We make no material change to our FY01 EBITDA loss forecast of $223M, r ve expect the reduction of revenue for the year to be offset by savings i SG&A expenditures. For FY02, we are raising our EBITDA forecast by 46% to $128.9M. Although the loss of higher margin data revenues would negatively impact EBITDA, we believe that over the intermediate term, significant reductions and deferrals in SG&A spending could more than offset the slower revenue run rate. Beyond FY03, however, we believe that the loss of data revenue growth should begin to have a larger impact on EBITDA results, as XOXO continues to advance within positive EBITDA territory and the loss of the higher margin data revenue streams begins to exert a bigger drag on EBITDA progression. We are therefore lowering our FY09 EBITDA forecast by 52% to $3.2B. In addition, due to lower expense leverage and network utilization, we are lowering our terminal year EBITDA margin by 490 basis points to 37.5%.

Capital Expenditures: We are lowering our capital expenditure forecasts for FY01 and beyond to reflect the network deployment scale back. For FY01, we would are lowering our capital expenditure forecast by $600M, or 30% to $1.4B, the components of which are as follows: 1) $100M savings from the delaying of the lighting of the long haul network; 2) $300M savings from halting of international expansion; 3) $150M savings from stopping construction of new local markets, including a slow down in the level of fixed wireless deployment; and 4) $50M savings from the abandonment of the XO Interactive, ASP strategy. For FY02, we are lowering our cap ex forecast by $500M, or 45% to $600M, and we are lowering our cap ex estimates for FY03 and beyond by 33% to $600M.

Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 10:08 AM
T BSC CLEC
S. ,ect: US LEC Corp. Announces Strong First Quarter 2001 Results

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US LEC Corp. Announces Strong First Quarter 2001 Results

PR News Wire via Dow Jones

Q1 Core Revenue Grows 56% Year Over Year and 12% Over Prior Quarter;
EBITDA Loss Improves to $5.3 Million

* Added over 11,300 business trunks, a 14% increase from the previous quarter.
* Added over 5,700 business lines, a 21% increase from the previous quarter.
* Exceeded the 500th customer milestone for installation of data services including frame relay, digital private line, web hosting and US LECnet.
* Announced that the United States General Services Administration (GSA) has selected US LEC to provide telecommunications services to additional locations in Atlanta, Georgia, and for the first time in Jacksonville, Florida, adding to US LEC's GSA contracts in Memphis, Tennessee.
* Announced that ECPI College of Technology has selected US LEC to provide an integrated package of voice and data services to ten campuses located in Virginia and North Carolina.
* Introduced services to our Hickory, NC, Gainesville, FL, and Fredericksburg, VA markets.

CHARLOTTE, N.C., April 27 /PRNewswire/ -- US LEC Corp. (Nasdaq: CLEC) a leading provider of integrated voice, data and Internet telecommunications services today announced strong first quarter results with record core revenue or revenue excluding reciprocal compensation and related facilities revenue, of $34.3 million and EBITDA losses narrowing to ($5.3) million.

Net revenues for the quarter ended March 31, 2001, increased 50% to $38.1 million, compared with $25.4 million for the quarter ended March 31, 2000, and 13% sequentially compared to $33.6 million reported in the fourth quarter of 2000. EBITDA loss for the first quarter improved to ($5.3) million compared to an EBITDA loss of ($5.8) million (excluding the $40 million provision for disputed receivables) in the fourth quarter of 2000. The Company reported a net loss of ($18.4) million, or ($0.66) per share, on 27.8 million average shares outstanding for the first quarter ended March 31, 2001, compared with net loss of ($39.6) million, or ($1.44) per share, on 27.5 million average shares outstanding for the first quarter last year.

Commenting on the Company's first quarter 2001 results, Aaron D. Cowell, US LEC's president, said, "We are very pleased to report another solid quarter for US LEC. We are on target for our financial plans for 2001. As a company, we are focused on high quality revenue streams and on providing exceptional customer care. These disciplines have resulted in record sales and installations during the quarter making March our best month ever. As a highlight, we're particularly pleased with our strong results in the data services marketplace. We reached the 500 data customer installation milestone in February and our data revenues increased 32% for the quarter. Additionally, 40% of our new customers in the first quarter selected US LEC for data services. ' are confident our demonstrated ability to integrate best-of-class data s .ices with proven local and long distance services in a bundled offering is providing a compelling competitive advantage for US LEC."

Michael K. Robinson, executive vice president and chief financial officer of US LEC added, "US LEC solidly met its financial targets for the quarter. We remain focused on managing the cost side of the equation in today's difficult financial market environment. Notably, one of our most important metrics, core revenue, increased 56% to $34.3 million in the first quarter over last year, and increased 12% sequentially over the previous quarter. In addition, we achieved gross margins of 50% while continuing to expand into additional markets and adding to our network infrastructure to support future growth. Our EBITDA losses continued to narrow and with approximately $70 million cash on hand and $20 million available in our credit line, we believe our announced business plan is fully funded to EBITDA positive. In addition, we believe that we are well positioned to meet our growth objectives for the year while continuing our march to positive EBITDA."

US LEC Corp will hold a conference call to discuss this press release on Friday, April 27, 2001, at 10:00 a.m. EDT. A live broadcast of the conference call will be available online at www.uslec.com, and www.streetevents.com. To listen to the live call, please go to either web site at least fifteen minutes early to register, download, and install any necessary audio software. For those who cannot listen to the live broadcast, a replay will be available shortly after the call through the close of business on May 3, 2001.

US LEC currently offers local, long distance, data, Internet and enhanced services to customers in Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia and Washington D.C. In addition, US LEC is currently certified to provide telecommunications services in Connecticut, Delaware, Indiana, Massachusetts, New Jersey, New York, Ohio and Texas. US LEC's network is currently comprised of 23 Lucent 5ESS(R) AnyMedia(TM) digital switches, 17 Lucent CBX500 ATM switches, and an Alcatel MegaHub(R) 600ES switch in Charlotte. The Company primarily serves telecommunications- intensive customers such as businesses, universities, financial institutions, professional service firms, hospitals, Internet service providers, hotels, and government agencies. US LEC can be found on the World Wide Web at www.uslec.com.

Except for the historical information contained herein, this report contains forward-looking statements, subject to uncertainties and risks, including the demand for US LEC's services, the ability of the Company to introduce additional products, the ability of the Company to successfully attract and retain personnel, competition in existing and potential additional markets, uncertainties regarding its dealings with ILECs and other telecommunications carriers and facilities providers, regulatory uncertainties, the possibility of adverse decisions related to reciprocal compensation and access charges owing to the Company by BellSouth, Sprint and other carriers, as well as the Company's ability to begin operations in additional markets. These and other applicable risks are summarized in the "Forward-Looking Statements and Risk Factors" section and elsewhere in the Company's Annual Report on Form 10-K for the period ended December 31, 2000, and in other reports which are on file with the Securities and Exchange Commission.

US LEC Corp. and Subsidiaries
Consolidated Statements of Operations
(in thousands, except per share data)
(Unaudited)

	Three Months Ended March 31, 2001	Three Months Ended March 31, 2000
Revenue, net	$ 38,055	$ 25,363
Cost of services	19,171	11,051
Gross margin	18,884	14,312
Selling, general and administration	24,228	16,013
Loss on resolution of disputed revenue	--	55,345
Depreciation and amortization	7,775	4,393
Interest income	(1,248)	(114)
Interest expense	3,228	2,004
Loss before income taxes	(15,099)	(63,329)
Income tax benefit	--	(23,727)
Net loss	$ (15,099)	$ (39,602)

Less: Preferred stock dividends	(3,131)	--
Less: Accretion of preferred stock issuance cost	(120)	--
Net loss attributable to common stockholders	$ (18,350)	$ (39,602)
Net loss per common share:		
Basic and diluted	$ (0.66)	$ (1.44)
›ighted average number of common shares outstanding:		
›asic and diluted	27,768	27,513
EBITDA(A)	$ (5,344)	$ (1,701)

(A) EBITDA consists of earnings (loss) before interest income and expense, income taxes, depreciation and amortization, excluding loss of $55.3 million on resolution of disputed revenue.

US LEC Corp. and Subsidiaries
Condensed Consolidated Balance Sheets
(in thousands, except per share data)
(Unaudited)

	March 31, 2001	December 31, 2000
ASSETS		
Cash and cash equivalents	$ 69,735	$ 105,821
Restricted cash	1,300	1,300
Accounts receivable, net	70,935	61,165
Prepaid expenses and other assets	8,147	4,802
Property and equipment, net	187,940	188,052
Deferred income taxes	4,775	4,148
Other assets	8,384	7,871
Total assets	$ 351,216	$ 373,159
LIABILITIES AND STOCKHOLDERS' DEFICIENCY		
Accounts payable	$ 23,529	$ 30,556
Deferred revenue	4,818	3,350
Accrued network costs	9,535	9,302
Accrued expenses	13,009	15,199
Deferred income taxes	4,775	4,148
Long-term debt	130,000	130,000
Total liabilities	185,666	192,555
›eries A Redeemable Convertible Preferred Stock	206,106	202,854

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ORIGINAL

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MAY - 1 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

May 1, 2001

15A

Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte Communication
CC Docket No. 96-98 (*UNE Remand Proceeding*)

Dear Ms. Salas:

I. Introduction

The unbundling obligations contained in the Telecommunications Act of 1996 ("1996 Act") were intended to open the existing exchange network to competitive providers. Over the past several months, Allegiance Telecom and Verizon have filed proposals that would dramatically diminish the unbundling obligations of incumbent local exchange carriers ("ILECs") under the 1996 Act.[1] However, with local competition at a critical juncture, it is more vital than ever that the Commission's unbundling regime provide a framework that is both stable and useful for competitive entry.

Although targeted at unbundled local switching, the Allegiance/Verizon approach is corrosive to the Commission's entire unbundling framework. Access to local switching is one of core unbundling obligations established by Congress. Unbundled local switching was included in the Section 271 competitive checklist, and repeatedly

[1] *See* Letter from Thomas Jones, Counsel for Allegiance Telecom, to Magalie Roman Salas, Secretary, Federal Communications Commission, January 30, 2001 ("Allegiance Ex Parte"); Letter from Gordon Evans, Vice President Federal Regulatory, Verizon, to Dorothy Attwood, Chief, Common Carrier Bureau, Federal Communications Commission, March 12, 2001 ("Verizon Ex Parte").

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referenced in the accompanying Conference Report.[2] Unbundled local switching is as much a part of the fabric of the 1996 Act as unbundled loops and unbundled transport. Weaken access to unbundled local switching and the Act itself begins to unravel. The recent petition by three RBOCs to cease offering high-capacity loops (in addition to dedicated transport) illustrates the speed at which the ILECs will seek further erosion in the Commission's unbundling scheme.[3]

As explained below, the impairment analysis recommended by Allegiance and Verizon is fundamentally flawed because it *assumes* that self-provisioned local switching is a viable substitute for unbundled local switching, despite unambiguous evidence to the contrary. The record is clear that CLEC-owned switches generally do not offer the same services, serve the same customers, cover the same geography, or achieve volumes comparable to switching purchased as an unbundled network element. As a result, it is not possible for the Commission to evaluate the impairment experienced by carriers seeking access to unbundled local switching by observing that other carriers, serving different customers, over much smaller areas, and at fractional volumes, have installed their own local switches.[4]

Just as important, however, are the competitive consequences that would result from prematurely removing local switching from the ILECs unbundling obligations. As shown by WorldCom and BellSouth,[5] the Allegiance/Verizon approach is open to wide interpretation and would have a dramatic – indeed preclusive – effect on competition for small business, and by extension, residential customers. WorldCom estimates that the Allegiance/Verizon approach could remove local switching in 114 cities nationwide, while BellSouth's analysis would immediately eliminate local switching in 19 cities in its region. As shown below, given the importance of ubiquity to entry strategies relying on unbundled local switching, eliminating competition in these cities is effectively the same

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2 *See e.g.* Joint Explanatory Statement of the Committee of Conference, pages 3, 33.

3 Joint Petition by BellSouth Corporation, SBC Communications and Verizon Telephone Companies, CC Docket 96-98, ("ILEC Joint Petition"), filed April 5, 2001.

4 Moreover, even where there may be *some* overlap between carriers with self-provisioned local switches and those relying on unbundled local switching, the existence of the former does not rebut the impairment of the latter -- unless the Commission is prepared to validate *every* aspect of the switch-based business plan to determine that it is profitable and sustainable, both in the short and long term. Given the inadequacy of the capital markets to reliably identify profitable local entry strategies, the Commission should be (and, in prior decisions, has been) appropriately reluctant to adopt such a role.

5 *See* Letter from Chuck Goldfarb, WorldCom, Inc. to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, March 29, 2001; Letter from Kathleen Levitz, BellSouth, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, March 27, 2001 ("BellSouth March 27 Letter").

as eliminating competition in the eight states in which they reside and, as a result, in the BellSouth region as a whole.[6]

The Commission should not abandon the goal of mass-market competition for small business and residential consumers as these carriers recommend. As explained by MetTel, the skills needed to compete in the "analog market" transcend business and residential distinctions.[7] If competition for small business customers is truncated, residential competition will be harmed as well.[8] Although some PACE Coalition members may currently serve only one customer segment or the other, there is little doubt that there is broad overlap between the groups, separated more by the incumbent's strategic pricing than by any network or technology distinctions.

The engine of our economy remains the small business, where new ideas are introduced and popular myths discarded. The most fertile ground for local competition would be the small business market[9] -- but only if the tools needed to serve smaller locations are made available. Once competition takes root, the Commission should reasonably expect its extension to residential customers as well, because the entry strategy itself is customer-neutral. To achieve this competition, however, requires that the Commission reject recommendations, such as those offered by Allegiance and Verizon, that would circumscribe the critical value of unbundled local switching to provide a ubiquitous serving platform for the market it is best suited to serve, i.e. the residential and small business customer.

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6 Of the nine states in the BellSouth region, unbundled local switching would only remain available at UNE rates in Mississippi. Given the level of UNE rates in that State, however, there is little reason to expect any real competition there in the near term.

7 *See* Letter from Marshall Aronow, CEO, MetTel, to Michael Powell, Chairman, Federal Communications Commission, CC Docket No. 96-98, April 3, 2001.

8 Moreover, small businesses are as deserving of competitive choices as any other customer. Consider the critical role played by small businesses in the nation's economy. Small businesses employ 53% of the private non-farm workforce and provide 47% of all sales. In addition, from 1990 through 1995, small businesses created 76% of all new jobs. Small businesses provide most initial on-the-job training, and are more likely to employ younger and older workers, former welfare recipients, and women. Source: *The Facts About Small Business – 1999*, U.S. Small Business Administration, Office of Advocacy. There is no single consensus definition of "small business" and the Census Bureau publishes economic information at varying levels of detail. For purposes of the summary statistics quoted here, "small business" is defined as a business with less than 500 employees.

9 Nearly 73% of all business locations have less than 20 employees, while 80% have less than 50 employees. Source: 1997 Economic Census, United States Census Bureau.

II. The Baseless Assumptions Underlying the Allegiance/Verizon Approach

Unlike the Commission's existing impairment framework – which evaluates the self-provisioning of a particular network element as only one of a number of factors[10] – Allegiance and Verizon recommend an impairment analysis that looks *exclusively* at the number of local switches in a market.[11] To begin, there is no verified source as to the number of local switches in an MSA, or even a consensus definition of what constitutes a "switch" with today's technology.[12] More to the point, however, is the fact that CLEC-provided switches are not substitutes for unbundled local switching. As the record in this proceeding makes clear, CLEC-provided switches serve a different customer segment, provide different services, serve a more geographically limited area, and operate at much smaller volumes than unbundled local switching in a UNE-P configuration. Consequently, the mere presence of a CLEC switch (whatever the term is ultimately determined to mean), does not rebut the impairment that confronts an entrant seeking to offer mass-market services to residential and small business customers over a broad geographic footprint.

(A) Target Market

The record is clear that the number of CLEC switches in a market does not demonstrate that those switches are capable of serving residential and small business customers in a commercially viable manner. Consider the following:

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[10] *See e.g.* Third Report and Order on Reconsideration in CC Docket No. 98-147, Fourth Report and Order on Reconsideration in CC Docket No. 96-98, Third Further Notice of Proposed Rulemaking in CC Docket No. 98-147, Sixth Further Notice of Proposed Rulemaking in CC Docket No. 96-98, FCC 01-26, Released January 19, 2001, "*Line Sharing Order*" at ¶ 51.

[11] The principal differences between the Allegiance and Verizon approaches are the number of switches needed to invoke a restriction (Allegiance would require four CLEC switches, while Verizon would require only two), and the scope on the restriction (Allegiance would deny access to unbundled local switching to serve any business customer, while Verizon would deny access to serve any customer, residential and business alike).

[12] Before the Commission could consider adopting the Allegiance/Verizon approach, it would be required to adopt a market validation procedure, as well as a standard definition of exactly what technology and technological configuration constitutes the "presence of a CLEC switch." Even the ILECs acknowledge that there would need to be guidance concerning the appropriate definition of what constitutes a "switch." *See* Letter from Kathleen Levitz to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, March 27, 2001.

- Focal Communications Corporation has informed the Commission that it "...concentrates exclusively on customers that have a current need for DS1 communications functionality or higher;"[13]

- Intermedia Communications' lead product (unifiedvoice.net[SM]) is designed for customers requiring DS-1 connectivity;[14]

- WorldCom's facilities-based strategy is used to serve digital customers with either T-1 or ISDN-PRI needs, connecting to digital PBXs that typically aggregate at least 30 analog lines;[15]

- InfoHighway Communications, which uses UNE-P and leases switch capacity to serve larger customers. has shown that alternative local switching capacity in the New York market – the most *advanced* local market in the nation – is only practically available to serve customers with above DS-1 volumes;[16]

- CBeyond has admitted that it has no intention of serving analog customers at all – it only intends to serve customers using high-speed, digital (DS-1) facilities;[17]

- Customer size and revenue distribution data for Time-Warner and XO clearly demonstrate that these carriers focus on very large digital customers and the provision of data services;[18]

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13 Letter from Richard Metzger and Patrick Donovan to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98. May 19. 2000, page 2.

14 *See* Letter from Genevieve Morelli to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, July 19. 2000, page 7.

15 Letter from Chuck Goldfarb to Magalie Roman Salas. Secretary, Federal Communications Commission, CC Docket No. 96-98, June 21, 2000, page 2.

16 *See* Attachment 6 (Affidavit of Peter Karoczkai, Senior Vice President – Sales and Marketing, InfoHighway Communications) to Letter from Genevieve Morelli to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, July 19, 2000.

17 *See* Letter from Patrick Donovan, Counsel for CBeyond Communications, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 96-98, December 21, 2000, page 1.

18 *See e.g.*, Letter from Albert Kramer and Jacob Farber, Counsel for Birch Telecom, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, January 17, 2001.

* Twelve switch-based CLECs – including, New South, McLeod, and CoreComm – have registered their support for greater availability of unbundled local switching;[19] and

* Aggregate data that characterizes the market overall demonstrates conclusively that switched-based providers have focused on achieving asymmetric traffic patterns that are not indicia of widespread competition for analog customers.[20]

Given these facts, it is not surprising then that even SBC has acknowledged that the degree of competition for customers with more than 20 lines is far greater than for smaller business customers.[21] While some CLECs maintain that they partially overlap with the market served by unbundled local switching, the record reveals such plans are the exception and not the rule.[22] The fundamental assumption of the Allegiance/Verizon approach – that a CLEC-switch should be *assumed* to serve residential and small business customers – is contradicted by the weight of evidence in the proceeding.

(B) Ubiquity

The record also makes clear that CLEC-provided switches are effectively limited to serving customers in a few select end offices, rather than the ubiquitous service area that is possible where unbundled local switching is available.[23] Contrast the geographic focus of Allegiance Telecom to that of one of the *smallest* PACE members, Access Integrated Networks.

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19 Letter from Greg Lawhon, et al. to William Kennard, Chairman, Federal Communications Commission, CC Docket 96-98, January 4, 2001 ("CLEC Letter").

20 *See* Letter from Genevieve Morelli to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, August 24, 2000, Attachment 1.

21 *See* Letter from Genevieve Morelli to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, July 11, 2000, page 7.

22 The PACE Coalition would note that the few CLEC letters that the Commission has received in support of the Allegiance/Verizon approach are generally either from carriers clearly not interested in serving this market (such as XO and Time Warner), or carriers that are affiliated with Allegiance's management. For example, Royce Holland, CEO of Allegiance, serves on the Board of Directors of Choice One, while Thomas Lord, CFO of Allegiance, is a Director of CBeyond. In contrast to the broad CLEC consensus supporting greater availability of unbundled local switching, the voices in opposition are narrow and in some cases are interrelated.

23 *See* Letter from Chuck Goldfarb, WorldCom, Inc., to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, March 2, 2001, page 3.

Comparative Market Coverage

	Access Integrated Networks	Allegiance Telecom[24]
Mode of Entry	UNE-P	UNE-Loop
Geographic Focus	Generally Statewide	Limited Areas of City
Markets Entered	8 States	27 Cities
End-Offices Served	738	636
COs per Market	92	24

The above statistics are not unique to these two carriers. Switch-based providers are limited in geographic reach to dense markets where they have established collocations, while a critical benefit of unbundled local switching is that it enables the entrant to serve an entire footprint, offering services that appeal to a broad cross-section of customers. In contrast, there is no evidence that supports the claim that CLEC switches, even where deployed in a central business district, offer services broadly to residential and small business customers throughout an MSA. Nor would the availability of even an unrestricted EEL change the economics of serving distant customers that are too small to serve using a DS-1. Although EELs may be useful to serve DS-1 (and above) customers in more distant central offices, there is no evidence that EELs provide a viable means of serving analog customers.[25]

(C) Market Trends - Trickle Up, Trickle Out

In addition to demonstrating that CLEC switches focus today on larger customers, recent evidence suggests that switched-based CLECs are gravitating to even larger customers over time. Consider, for instance, the effect of XO Communications's decision to migrate more towards the provision of data services for larger customers:

[24] Source: 4th Quarter 2000 Earnings Announcement. Allegiance Telecom.

[25] The Coalition notes that there appears to be some confusion concerning its position on the availability of EELs. *See e.g.* Verizon Ex Parte, page 6, characterizing the PACE Coalition as stating that there is "no real reason" to condition the restriction on unbundled local switching to the availability of an EEL. The Coalition has explained that the current FCC policy seems to establish exactly the same obligation to provide EELs irrespective of the availability of unbundled local switching – the carrier must order the EEL as a special access or private line circuit, then convert the circuit to UNEs, but only if the EEL complies with the 'predominant local use' test. In this environment, there is no linkage between the EEL and unbundled local switching because the ILECs' obligations are indifferent to whether unbundled local switching is available. However, before expanding any restriction on unbundled local switching beyond the densest central offices in the 50 largest markets it is important that DS-1 EELs (without restriction and without the added cost of the 'double order' process) be offered by the ILEC. Moreover, it is the Coalition's view that CLECs should be entitled to unrestricted EELs as a matter of law and, as such, the ILECs should offer EELs nationwide irrespective of the status of unbundled local switching.

Voice Grade Equivalents per Customer[26]
(XO Communications)

	4th Q 99	1st Q 00	2nd Q 00	3rd Q 00	4th Q 00	1st Q 01
VGEs/Customer	51.9	66.6	75.2	112.6	127.8	162.1
Average added in 2000		215.0				
Average added during 1st Quarter of 2001						921.6

Notably, the above table masks the true extent to which XO has shifted its business strategy to serving larger customers because the table reflects the effect of this decision on *average* customer line size, including the "smaller" customers that XO had initially served. By looking only at those customers and lines added by XO since the beginning of 2000, however, XO's change in emphasis becomes even more apparent. The average customer added in 2000 purchased 215 VGEs, more than four times XO's average at the end of 1999 (when the average was 52 VGEs).[27] Even more dramatic is that the average customer added during the first quarter of 2001 had 921 VGEs – nearly four times *again* the average that it served at the end of 1999.

The unbundled-loop/CLEC-switch business strategy predates the 1996 Act and has now had more than six years (in some States) to demonstrate its versatility. If the strategy was going to "trickle down" to smaller customers and broader markets, there would be ample evidence of this trend. Instead, the emerging trend-line for the strategy is "trickle up" – or "trickle out" -- as carriers shift their focus to larger customers, or exit the market. We offer this observation not as disparagement of the entry strategy. Indeed, many PACE Coalition members are themselves deploying switches and competing in this manner in the appropriate market segment. Our point is simply that the existence of a CLEC switch cannot be presumed to rebut impairment, especially in an environment where such switches focus on different customers, in more limited geographic regions, with a different product mix, than unbundled local switching.

(D) Volume

[26] Source: Lehman Brothers, Quarterly Earnings Review, February 6, 2001 and April 27, 2001.

[27] Notably, even the average customer size in 1999 was more than twice the level needed to justify a high-speed digital connection. The point is that XO's customer base never overlapped with the market served by unbundled local switching, and has moved progressively away from this market over the past year.

One of the key impairments diminished by access to unbundled local switching are the costs, delays and reliability concerns associated with manual provisioning systems.[28] Because unbundled local switching (in combination with unbundled loops) can be provisioned electronically, market experience demonstrates conclusively that far greater competitive levels are achieved with access to unbundled local switching than without it.

Commercial Volumes
(UNE-P versus Hot Cuts – New York)[29]

Month	Platform	Hot Cuts
Oct-00	253,521	4,644
Nov-00	241,105	4,292
December-00	254,112	6,878
January-01	225,139	2,650
February-01	201,066	4,137
Average	234,989	4,520

The above table quantifies, in compelling terms, the very real impairment corrected through access to unbundled local switching. If the Commission were to prematurely withdraw access to unbundled local switching, it would impose on the hot-cut process a 50-fold increase in competitive volume – far more than Verizon would be able to absorb. As the above discussion demonstrates, there is simply no support for the fundamental assertion underlying the Verizon/Allegiance approach – i.e., that the mere presence of a CLEC switch in a market rebuts the impairment faced by other CLECs seeking to broadly offer service to residential and smaller business customers.

III. The Adverse Consequences of the Allegiance/Verizon Approach

Not only does the Allegiance/Verizon approach fail to track, much less measure, impairment in any meaningful way, its adoption would have immediate and significant consequences for local competition and the integrity of the Commission's unbundling regime.

(A) Competitive Impact

Although Allegiance has not produced any data estimating the impact of its proposal, BellSouth has filed State-by-State information as to which markets would

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[28] *See* Letter from Genevieve Morelli to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, February 14, 2001.

[29] Source: Verizon New York Performance Assurance Plan, Observations for Metrics PR-4-04 and PR-4-05 (platform orders with dispatch and without dispatch), and PR-9-01 (number of hot cuts).

immediately experience a ban on the use of unbundled local switching to serve business customers. An analysis of these markets demonstrates that the proposal would effectively eliminate unbundled local switching business plans in the BellSouth region. While BellSouth's proposed ban on local switching would theoretically apply "only" in 19 cities, unbundled local switching would effectively be eliminated as an entry strategy statewide. This is because entry strategies relying on unbundled local switching are intended for mass-market application, which requires ubiquity (or, at least, near ubiquity) to be successful. Punching "holes" in the availability of unbundled switching destroys a central characteristic of the entry strategy – if the "hole" is sufficiently large, the strategy fails, even if some areas theoretically remain open.

The following table shows that the practical effect of the Allegiance proposal in the BellSouth region would be to eliminate unbundled local switching-based entry strategies throughout the entire BellSouth region. As the table shows, such a large portion of each State's market would be foreclosed as to eliminate any reasonable effort at a mass-market strategy that depends upon broad application for success. This is not only true for generalized measures of the excluded market (such as population), but is even more true of measures that look at the impact on the small business marketplace.

Market Foreclosure Under Allegiance/Verizon Approach[30]
(BellSouth Region)[31]

State	Percentage of States' Population in Excluded Markets	Percentage of Small Businesses[32] in Excluded Markets Measured by:		
		Firms	Employees	Payroll
Alabama	33%	35%	35%	40%
Florida	46%	54%	46%	56%
Georgia	47%	55%	53%	63%
Kentucky	25%	29%	30%	34%
Louisiana	42%	45%	45%	49%
North Carolina	46%	51%	51%	58%
South Carolina	36%	39%	39%	43%
Tennessee	52%	57%	58%	65%
Total	43%	49%	46%	54%

The above analysis underestimates the degree of market foreclosure actually experienced by an entrant in two ways. First, the analysis includes markets (such as Tampa. Florida) served by an ILEC other than BellSouth. The result is an understatement of the percentage of BellSouth's market where an entrant would be denied access to unbundled local switching. In addition, the table does not address the effect on an entrant's cost structure caused by denying entry to urban areas. Because loop rates are deaveraged, with the lowest rates in urban markets, UNE-P based entrants would be limited to only the highest cost areas. Between the substantial reduction in addressable market (quantified in the above table), and the increase in average UNE costs (not shown), the practical effect would be to foreclose mass-market competition for the entire State.

Data from New York also demonstrates the severe impact that the elimination of unbundled local switching would have on local competition, in particular on local

30 Source: United States Census Bureau, 1998.

31 The source of the list of MSAs in which unbundled local switching would be restricted to residential customers is the BellSouth March 27 Letter.

32 The Census Bureau's reporting of firm size at the MSA level is more limited than the data collected statewide. As a result, the definition of "small business" used in the analysis is a firm with less than 20 employees. Although the analysis is focused on businesses with less than 20 employees, these firms dominate the small business market. In the affected BellSouth MSAs, more than 83% of the firms in these markets are small businesses with less than 20 employees. Consequently, the analysis reasonably reflects conditions overall.

competition that relies on unbundled loops (either alone or in combination with unbundled switching) to serve residential and small business customers. As indicated earlier, Verizon's average provisioning activity for unbundled loops provisioned in combination with unbundled local switching (i.e., UNE-Platform) is approximately 50 times the level of unbundled loops provisioned as a "hot cut." Verizon has previously submitted that 93% of its UNE-P orders were for residential customers.[33] Assuming that this percentage is correct, the claim actually demonstrates that unbundled local switching is critical to competition for small business as well as residential customers in New York.

**Competitive Importance of Unbundled Local Switching
to UNE-Based Local Competition in New York
(Average Provisioning Levels – Oct-00 to Feb-01)**

Entry Strategy	Residential	Business
Loops with Unbundled Local Switching	218,539	16,449
Stand-Alone Loops (Hot Cuts)[34]	0	4,520
Total	218,539	20,969
Reduction in competition without UNE-P	100%	78.4%

As the above table shows, even if unbundled switching is used more heavily to serve residential customers,[35] its importance to competition for small businesses is not lessened. Without access to unbundled local switching, competition in the small business market would be significantly reduced.

(b) Implications for Other Network Elements and Policies

The Allegiance/Verizon "impairment analysis" for local switching represents a substantial departure from (if not abandonment of) prior Commission decisions concerning impairment and the Commission's intention to assure that retail distinctions in ILEC tariffs not be used to deny entrants access to UNEs. Indeed, the

[33] Letter from W. Scott Randolf, Verizon, to Magalie R. Sales, Secretary, Federal Communications Commission, CC Docket No. 96-98, September 27, 2000.

[34] The analysis assumes that "hot cuts" are used exclusively to serve business customers. To the extent this assumption overstates the number of business hot cuts, the analysis understates the importance of UNE-P to competition for small business customers. As a result, the table should be viewed as a conservative measure of the importance of unbundled local switching to competition for small business customers.

[35] The most likely explanation for such a relationship is that two large entrants, MCI-WorldCom and AT&T, initially used unbundled local switching to serve residential customers only. PACE Coalition members, as well as other entrants, however, rely on unbundled local switching to serve a more diverse customer base and require its continued availability to serve smaller business customers.

Allegiance/Verizon approach jeopardizes the entire unbundling regime, placing the future of local competition in doubt.

The incumbent LECs have already revealed how a decision to remove unbundled local switching from the list of network elements would soon implicate the availability of other network elements. For instance, Verizon recommends not only the lifting of its unbundling obligation with respect to local switching, it also recommends eliminating the requirement that it unbundle dedicated transport and dark fiber. Moreover, Verizon has joined with two other RBOCs (SBC and BellSouth) to petition for the removal of dedicated transport, as well as high capacity loops. These pleadings make clear that the ILECs intend to move quickly to eliminate unbundling altogether.

In addition, the Allegiance/Verizon proposal runs counter to the Commission's impairment analysis that resulted in the unbundling of high-frequency spectrum and line sharing. In the impairment analysis that supported its *Line Sharing Order*, the Commission concluded that carriers seeking to offer advanced services should not also be required to provide voice service.[36] Many members of the PACE Coalition seek to offer advanced data services and the Coalition supports the rationale underlying the Commission's decision to require the unbundling of high frequency spectrum. However, these members also desire to offer voice services through access to unbundled local switching. This desire to do *more* does not mean PACE Coalition members are impaired *less* – just as "pure" xDSL-based providers would be impaired if required to install circuit switches and establish the infrastructure to serve voice customers, Coalition members are impaired if required to install circuit switches in addition to the expensive facilities and functionalities that they are investing in to innovate and differentiate themselves from the ILECs.[37]

Moreover, the principle underlying the *Line Sharing Order* that an entrant to one market should not be required by regulatory policy to compete in another, if consistently applied, should mean that an entrant cannot be forced to compete for high-capacity digital customers in order to be able to compete in the market for more conventional analog services. Hidden within the Allegiance/Verizon approach, however, is just such a requirement. While Allegiance represents that it serves analog customers via its own switches, it only does so as part of a strategy to serve large businesses. The goal of entry and competition is innovation, not replication. Even if Allegiance has found a successful

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36 *Line Sharing Order*, ¶ 49.

37 The PACE Coalition supports the Commission's findings in its *Line Sharing Order* as well as its decision to require that ILECs unbundle dedicated transport, dark fiber and all local loops. Each of these decisions lays an important foundation for local competition. Nevertheless, the Commission should be aware of the interrelationship between these decisions, and the inherent danger that will follow any decision that weakens its commitment to unbundling any network element.

entry strategy – a conclusion that remains in doubt – that should not translate to a impairment analysis that limits competition to the "Allegiance model." The PACE Coalition opposes any impairment analysis that demands that entrants must first serve large customers before they may compete for smaller ones.

Finally, the impairments identified by the PACE Coalition are systemic to the analog marketplace – a marketplace that consists of both small business and residential customers. While Allegiance has recommended a default restriction that tracks the residential-business distinction in ILEC tariffs, it has offered no explanation as to why an impairment finding would track this division.[38] Nor has Allegiance explained how the Commission would reconcile such a blanket restriction with its rule that an ILEC may not limit the availability of an individual interconnection, service, or network element to those requesting carriers serving a comparable class of subscribers or providing the same service as the original party to an interconnection agreement.[39]

The Commission's impairment analyses and unbundling rules should provide the foundation for competition that erodes artificial tariff boundaries, not embrace restrictions intended to sustain them. The Act's provisions concerning universal service reform were intended to address instances where social engineering should take precedence over traffic engineering and innovation.[40] The impairment that requires access to unbundled local switching relates to the size of the customer and its geographic dispersion, not its retail classification.

V. Conclusion

Over the past several months, the PACE Coalition has demonstrated that its members (and CLECs more generally) would be impaired without expanded access to unbundled local switching to serve analog customers, including customers with greater than three lines that are not yet sufficiently large to justify a high-speed digital connection. This analysis has been validated by market facts time and again.

The Coalition believes that the record supports a restriction limited to the top 50 MSAs at the DS-1 level. However, we have also sponsored evidence that would enable the Commission to *approximate* where customers that have not yet migrated from analog

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38 For its part, Verizon simply claims that there is no impairment to serve *any* market, even though it has substantially reduced its own out-of-region entry from that promised to Congress when it announced its merger with GTE. *See* Transcript of Hearing Before U.S. Senate Committee on the Judiciary, Subcommittee on Antitrust, Business Rights and Competition, September 15, 1998, pp. 25-26.

39 47 C.F.R § 51.809(a).

40 This is not to suggest that the PACE Coalition endorses the ILEC claim that business customers subsidize residential customers.

to digital facilities could be economically served by a high-speed facility. We have shown through unrefuted economic analysis that such a cross-over could be as low as 16 lines.

Finally, we have demonstrated that any approach that depends on a "count" of CLEC switches (such as the Allegiance/Verizon approach) flies in the face of substantial record evidence that such switches as a rule serve different customers, with different products, in more limited geographic circumstances than are served with unbundled local switching. Because CLEC switches are not a substitute for unbundled local switching, their mere presence does nothing to challenge our impairment analysis.[41]

Accordingly, the PACE Coalition respectfully recommends that the Commission increase its line-based restriction to more accurately reflect the point at which a customer is sufficiently large to justify a high-speed connection to a CLEC-provided local switch in the top 50 MSAs.

Sincerely,

Genevieve Morelli

Genevieve Morelli

cc: Chairman Michael Powell
Commissioner Susan Ness
Commissioner Harold Furchtgott-Roth
Commissioner Gloria Tristani
Dorothy Attwood
Michelle Carey
Glenn Reynolds
Jonathan Reel
Kyle Dixon
Jordan Goldstein
Sarah Whitesell

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41 The PACE Coalition also notes that the Allegiance/Verizon approach raises a number of implementation issues that cannot be addressed on the basis of this record. Such an approach would require, at a minimum, a clear definition of what constitutes a "CLEC switch," a demonstration that such switches are indeed serving smaller analog customers throughout the MSA, and a finding that ILECs could "hot cut" competitive volumes at a cost, reliability and quantity comparable to that achieved in combination with unbundled local switching. Finally, it would require a regulatory process that would permit entrants to challenge undocumented ILEC assertions.

BEFORE THE TENNESSEE REGULATORY AUTHORITY

NASHVILLE, TENNESSEE

REC'D TN REGULATORY AUTH.

'01 MAY 14 PM 1 45

OFFICE OF THE EXECUTIVE SECRETARY

In RE: *Universal Service Generic Contested Case*
Docket No. 97-00888

COMMENTS OF WORLDCOM

At the February 21, 2001, Agenda Conference, the Directors requested Comments on certain issues related to the provision of universal service in Tennessee. At the Pre-Hearing Conference held on April 3, 2001, the Pre-Hearing Officer asked interested parties to comment on whether the Authority may request revenue information from commercial mobile radio service providers (CMRS), or wireless carriers, and whether wireless carriers should be required to contribute the state universal service fund. MCI WorldCom Communications, Inc. ("WorldCom") hereby files its comments in response to that request.

It is WorldCom's position that any universal service fund should be targeted to end users as narrowly and as precisely as possible and that the financial contributions needed to support such a fund should be spread within the telecommunications industry as widely as possible. This position is based on economic, policy and market facts. First, from an economic perspective, the financial burden for social programs should be spread as widely as possible because the cost burden is ultimately borne by consumers that do not directly benefit from the program. The incidence of the cost burden will affect the prices of other services and thus the level of those services that are produced and consumed. As a means to minimize the economic dislocations associated with the support mechanism, the price effect on other services will be smaller the larger the effective assessment base is. For this reason, the support for the Tennessee state universal service program under development in this docket should assess wireless as well as

State Specific Copy to: Spalding Scan to: Smith

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wireline carriers. The assessment for all carriers should be based on end user intrastate revenues.[1]

Secondly, from a market perspective, it is undeniable that wireless services function as effective substitutes for both local and toll calls carried over wireline networks. In this market environment, to assess one class of carriers while exempting others is patently inequitable and unsustainable. From a policy perspective, the assessment mechanism must be competitively neutral. Competitive neutrality requires that the assessment mechanism neither benefit nor penalize any carrier or group of carriers. According to the FCC, competitive neutrality requires that "no entity receives an unfair competitive advantage that may skew the marketplace or inhibit competition by limiting the available quantity of services or restricting the entry of potential service providers."[2] FCC USF Order at ¶48. In addition, the FCC determined that any universal service funding mechanism should be technologically neutral—i.e. that "universal service support should not be biased toward any particular technologies." Id. at ¶49. These principles of competitive and technological neutrality require that wireless carriers should not only pay into any universal service fund, but should also be able to take out from such a fund. Indeed, wireless carriers should be able to gain eligible carrier status pursuant to §214 of the 1996 Act and should

[1] There are more equitable assessment bases other than intrastate end user revenues that could be adopted. For example, the $50 million state USF in New York is supported by assessments on total intrastate revenue less deductions for payments made to other carriers for such inputs as UNEs and access services. As such, the mechanism used in New York assesses value added rather than billed revenue. In an effort to avoid added controversy and complications, WorldCom is not advocating the use of the New York assessment mechanism in this docket but stands ready to assist the TRA in understanding the benefits of that mechanism. Separately, WorldCom wishes to remind the TRA of the ongoing discussions regarding the federal assessment mechanism referred to in footnote 3.

[2] *Report and Order*, In the Matter of Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Adopted May 7, 1997. ("FCC USF Order").

receive support from the universal service fund for providing the supported services on the same terms and conditions that an ILEC or any other wireline carrier is eligible to receive support from the fund.

Respectfully submitted,

Susan Berlin by WLM w/permission

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I hereby certify that a true and correct copy of the foregoing has been forwarded via U.S. Mail, postage prepaid, to the following on this the 14th day of May, 2001.

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Grubman's State of the Union

Does He Ever Stop Talking?

- ➤ We believe in remaining visible, especially when the stocks are down. During our recent 2½-hour conference call, we made a constructive case for the industry over the next 12-18 months.
- ➤ We see no headline M&A, nor new public capital raised, via IPO or new issues in high yield, to fund private companies over the next 12 months.
- ➤ The pathway to rationalization of industry structure includes the following developments: bankruptcies, scavenger hunts, no new entrants funded, and eventually consolidation.
- ➤ We have a constructive perspective on Telecom Services. In the next 12-18 months, we envision moderating capital expenditures, stabilizing price trends, new sources of revenue, and fewer players, all leading to improved financial performance. At the matter's core, demand for underlying services is growing.
- ➤ Factoring in valuation, risk/reward, strategic position, and visibility on business plan, the eclectic list of names we would highlight consists of WCOM, Q, VZ, GX, MFNX, BRW, MCLD, ALGX, XOXO, and WCII.

Table of Contents

Executive Summary

The state of telecom depends on the structure of the industry, which needs to be rationalized. Players that differentiate themselves in financial performance and are strategically well positioned will create significant value from current levels over the next 12–18 months, in our view.

We don't envision major M&A or new capital. A pathway to rationalization exists.

This is a major factor in our case for positive evolution. The pathway to the rationalization of industry structure includes the following developments: bankruptcies, scavenger hunts (like McLeod acquiring CapRock at opportunistic price levels), and no new entrants funded. Ultimately, consolidation will occur, but as an anchor leg in the race toward a rational industry structure.

Pricing is actually in the carriers' favor: The higher the bit rate service, the better the margin.

One would much rather sell multiple OC-12s at three-tenths of a cent per DS-0 mile than one DS-3 at one cent per DS-0 mile. Similarly, in subsea, a Global Crossing would much rather sell multiple STM-64s at $300,000 per STM-1 than a single STM-1 at $1 million. Gross margin is much higher on higher bit rate services even though the price per bit is far lower. The bottom line is an industry player would much rather sell high bit rate services at a low price per bit, since that drives maximum revenue and gross profit, as well as highest ROA.

History shows that supply is cyclical, but demand is secular.

A financial statement of the telecom industry over the past 30 years would show, midcycle to midcycle, revenue growth less than unit growth, but costs declining faster than prices such that margins and returns expand. However, supply is far more cyclical than demand, and when we go through inflection points like we are now, new supply dramatically lowers costs. Lower costs dramatically lower prices for existing services, before the natural secular upward trend in application-driven demand takes hold. We believe such inflection points tend to occur every seven to ten years in this industry, and we believe we are coming off of the back end of this latest inflection point. The double impact of reduced capital spending and improving incremental margins combine to produce powerful upside leverage in ROIC.

We factor in several considerations to derive our current list of top recommendations. A proper portfolio should balance risk/reward and capture value from disparate business models.

Factoring in valuation, risk/reward, strategic position, and visibility on business plan, the eclectic list of names we would highlight consists of WCOM, Q, VZ, GX, MFNX, BRW, MCLD, ALGX, XOXO, and WCII.

State of the Union

Telecom Is a Growth Industry, but the Structure Needs to Be Worked Through

We intend this report to reiterate and update our investment views on the Telecom Services industry. Despite the turmoil in the overall stock market, we are great believers in staying visible and reminding people where our stance is on the telecom industry. We believe that the underlying demand for network-based services remains strong. We believe that Telecom Services will continue to grow as a percentage of GDP, as it has over the past decade. In fact, we believe that telecom services, as a percentage of GDP, will double within the next seven or eight years. Companies (ranging from General Electric, to Ford, to Oracle, to Merck) are emphasizing their ability to grow by e-enabling their businesses to find new ways to boost productivity and enhance their own strategic decisions. It is clear to us that at the heart of much of this activity will be an increasing use of network-based services — not simply raw bandwidth, but applications and services that use networks. Thus, we continue to view telecom services as a secular growth industry.

The current industry structure is untenable, but there exists a constructive case for value creation over the next 12–18 months.

There is a "however." The "however" is that the current industry structure is clearly untenable with too many separate legal entities, as well as a wholesale/retail mix that is probably out of balance and unsustainable. We believe that there is, in fact, a constructive case for telecom services over the course of the next 12–18 months. This case is very straightforward. Telecom is a high fixed-cost industry. If a case can be made that capex is moderating and pricing is stabilizing to revert to mean trendlines — as opposed to step functions — and that there are new sources of revenue and the number of industry players will rationalize, then that is clearly a recipe for an industry in which the fundamentals will improve while the industry is getting rational.

We do believe that over the next 12–18 months, investors will look back at current prices of the leading players and wish that they had bought stock at these prices.

Improving fundamentals and the number of players rationalizing simultaneously bode well for financial performance. Fewer players with stronger hands leads to expanding valuation in a growth industry. Whether this becomes visible over the next three months, eight months, or 12 months remains to be seen. We do believe that over the next 12–18 months, investors will look back at current prices of the leading players and wish that they had bought stock at these prices. We are not really going to attempt to insult anybody's intelligence by trying to call a bottom; however, we do believe current price levels represent a compelling entry point for those names where risk/reward is good, visibility of business is high, and strategic position is strong.

A model portfolio would transcend all classes of companies to capture value created by different business models.

In this vein, we are putting together an eclectic group of ten names out of the almost 40 we cover domestically that span the spectrum of companies — new and old, wholesale and vertically integrated, global and regional. We believe that an appropriate portfolio in telecom services should span the risk/reward spectrum and should have representation of different business models in order to capture value creation in all parts of the value chain. When we factor in a combination of valuation, risk/reward, business visibility, and strategic position, the names we would be most aggressive on right now for a 12- to 18-month horizon are WorldCom Group, Global Crossing, Qwest, Metromedia Fiber Network, McLeod, Allegiance, XO Communications, Winstar, Broadwing, and Verizon. Clearly, there are riskier and less riskier names on the list. We believe WorldCom, Qwest, and Broadwing have, by far, the lowest risk associated with attaining 2001 estimates by far. On the other hand, the CLEC group in general will be under pressure until visibility of second half results and, in some cases, funding becomes apparent. In particular, XO Communications and Winstar do not have fully funded business plans. Nonetheless, we believe they both have assets and businesses that, at current levels, are not being valued appropriately and should result in value creation over the next 12–18 months.

For XO, the company's current cash position will take it through the next 18 months of operations. Just three years ago, XO needed $12 billion of financing and now it needs $2 billion, so it is in the last leg of funding. In addition, XO has lever points such as postponing its European expansion to conserve cash, if need be.

We reserve the right to either supplement or subtract from our list as circumstances warrant.

We don't necessarily say these are "best-in-breed," per se. Rather, we feel most comfortable with where these companies are with respect to their business plans as well as our perception of risk/reward in current stock prices. For example, Level 3 is now very cheap (about 1x net plant) with great assets, but we need more comfort in its ability to drive recurring network-based business. Also, there are some pressure points with environmental issues in California and other parts of the country. We worry these issues may hold up lighting Level 3's entire network by July 2001. SBC is a fabulous company with a great balance sheet, but we are convinced that 2001 numbers are too high and that 271 release in California will not occur this year. Tycom will be a major global player in a bottleneck part of the value chain (subsea), but we are two quarters away from seeing the first evidence of success. Also, for true small-cap investors (less than $1 billion), we view Group Telecom, in Canada, and Flag Telecom as very good holdings. Both companies are making their numbers, and both have good strategic positions. However, their lack of float hurts both stocks. The bottom line is we reserve the right to either supplement or subtract from our list as circumstances warrant.

A Reminder on the Periodic Inflection Points of the Industry

In this report, we are going to first walk through what we believe are overarching issues that continue to weigh on the space. Secondly, we will drill down into what we call the here and now issues that address each bucket of companies in this space. Finally, we will just talk to what we consider a short list of names that we would be most aggressive on right now, given our perception of risk/reward, current valuation, and overall strategic position in the industry.

Needless to say, we have always believed that the more customers a company controls, and the more network it owns, the more value it creates. We have always preached the benefit of controlling end-to-end assets and having control of customer-facing processes as the way to create maximum value. This is especially true in data/IP where very few customers, be it corporate of carrier, feel comfortable buying higher end data services on a resold basis.

A symbiotic relationship may evolve between new and old carriers.

Obviously, business models that have a subset of this complete value chain can coexist and interact and, thus, can also create value dependent on relative risk/reward. For example, Level 3, which could potentially sell cheap unprotected wavelengths to the likes of a WorldCom, would actually be competing with the likes of a Ciena to supply wavelengths to WorldCom. An unprotected wavelength does not represent a full network service but, rather, it is a component of one. Thus, it is not a given that new focused network suppliers, especially of cheap unfinished wavelengths, are necessarily disruptive to existing network players. Actually, as time progresses, a provider of cheap wavelengths will likely be much more a supplier, than competitor, to full-service network carriers. The irony is that a Level 3, for example, may turn out to take more business away from a Ciena than a WorldCom.

New technology drives new services more often than it cannibalizes old ones.

This industry has always been characterized by technology driving down cost, which drives down prices, which enables new demand. Interestingly, new technology creates new services as opposed to cannibalizing old services. For example, wavelength services based on OC-192 will drive new, very high-bandwidth applications, but a typical intranet that runs on frame relay will never migrate to a OC-192 platform since it would not be cost effective to do so. Thus, the vast majority of new technology works to expand the pie of deliverable services as opposed to cannibalizing existing ones.

Demand is secular but supply is cyclical.

A financial statement of the telecom industry over the past 30 years would show, midcycle to midcycle, revenue growth less than unit growth, but costs declining faster than prices such that margins and returns expand. However, supply is far more cyclical than demand, and when we go through inflection points, such as the ones we are living through now, new supply dramatically lowers costs. Lower costs dramatically lower prices for existing services before the natural secular upward trend in demand driven by new service applications take hold. We believe such inflection points tend to occur every seven to ten years in this industry, and we believe we are coming off of the back end of this latest inflection point.

The combination of declining capex, increasing asset turns, and higher incremental margins is very positive for cash flow and ROA.

The upshot is that telecom is a secular demand industry with cyclicality of supply. As one emerges from a supply cycle, the double impact of reduced capital spending and improving incremental margins combine to produce powerful upside leverage in return on invested capital (ROIC). What drives ROA upward are increasing asset turnover, as more units driven by higher bit rate services grow over fixed network assets. At the same time, continuous decline in unit costs lead to increasing incremental margins in a post-network buildout environment.

As far as industry consolidation is concerned, our view is that there will no headline-grabbing M&A anytime soon, and it is not likely until the middle of next year. We find it amusing that folks who pointed to the removal of goodwill as a reason to conclude M&A would accelerate now understand reality. Having said that, nature will take its course and over the next several years, we believe that wholesalers and retailers will get together and companies will look to fill in holes in their portfolios.

Differentiation among like companies will become apparent.

The upshot is, in this industry, there will become increasing differentiation even among like companies such that those companies that are executing on their business plans over the course of the next 12–18 months will begin to separate themselves from the rest of their so-called "peers." Furthermore, we would expect stronger companies to press their advantages, either financial or operational, by accelerating things like deployment of sales force or by aggressively being opportunistic purchasers of distressed assets. Actually, we would argue that the better players in this industry need to run their business for long-term value creation, even at the expense of some near-term financial performance.

As we said, we do not pretend to know where the bottom of these stocks are. However, we believe valuations are compelling for the stronger names of the group. If given a 12- to 18-month time horizon, we think these price points represent extremely compelling entry levels to begin aggressively building a position in an industry in which secular trends remain unchanged, but which is going through what we believe represent the latter stages of one of its periodic inflection points.

Now, we will turn to a discussion of secular issues and then a detailed discussion of the different segments of this industry.

The Issues Everybody Always Worries About — We Have Some Lucid Answers

We believe there are four or five issues that investors fret over when it comes to telecom services. In no particular order, they are overcapitalization, ROIC/capex, pricing, bandwidth glut, and a general view of whether this is a commodity industry or not. One issue that is a non-issue is regulation. We believe there is little chance of any type of telecom legislation passing the Senate. We doubt the Supreme Court will do anything dramatic. FCC Chairman Michael Powell is not going to interfere with state PUCs in the 271 process (regardless of political persuasion, one does have to follow the law). On that front, it is clear the Bells have a lot of wood to chop in big states like California, Illinois, Ohio, Georgia, Florida, and Pennsylvania. Thus, except for a few marginal items (like dedicated service pricing flexibility for Verizon, which impacts barely more than 10% of its revenues and is probably a positive for all competitors that buy such services), nothing transforming should occur with regard to telecom policy.

Let us attack each of these issues.

Overcapitalization

The pathway to getting an improved industry structure involves rationalization.

The telecom industry is roughly a $3 trillion enterprise value industry, on a global basis, which is about 2.5x revenue and 7x–8x EBITDA. We do not view this as excessive capitalization. However, we are the first to say that there will be no more than 40 to 50 "investable" companies in the world of telecom. The problem is that there are 4x–5x that many stocks that can be invested in at the current time. Having said this, without these new players, innovation doesn't occur (MCI and Sprint led AT&T in fiber deployment in the 1980s). But now the industry structure needs to be rationalized. We believe the pathway to getting a more rational industry structure is the following: first, there will be bankruptcies, then there will be "scavenger" hunts, no new IPOs, and ultimately consolidation.

Companies will run out of money; assets will linger in the industry long after businesses cease to be viable players. For those that worry these companies can go down shooting, so to speak, we are not concerned. This is not like retail, where a store going out of business can sell a sweater at half-price and hurt a well-heeled competitor across the street. In contrast, telecom is an industry where, a service, not a product, is sold. Furthermore, the service being delivered goes well beyond selling a commodity lightwave or a commodity unit of transport. Moreover, large buyers of telecom services need long-term scalability. If anything, companies that are not viewed as being financially strong, or as long-term players, see their businesses spiral down much more quickly. Thus, we are not worried about fringe players in this industry taking down the rest. Frankly, most of the damage from forward pricing is behind us, as it is clear there are no bargains if service is not delivered.

Secondly, we believe there will be so-called scavenger hunts. There is no question that there are good assets that happen to be in the hands of bad businesses. Time Warner Telecom's acquisition of GST's assets out of bankruptcy or McLeod's acquisition of CapRock come to mind. There should be other cases like this where on a prospective basis, capitalization in this industry will be shrinking as companies take out assets, which reduces the number of independent players.

We believe the spigot of new companies will be shut off.

Third, there will likely be no new IPOs. We fundamentally believe that the odds of a private company in telecom services raising new money in the public market is virtually zero. We believe that will be true for all of this year and well into next year. Thus, the spigot of new companies will be shut off, and you are not going to see five more long-haul players, 30 more CLECs, or a dozen more pan-European companies come public with equity or high-yield debt. In fact, if anything, the complete shutting down of the capital markets will work to completely erase business plans that have been on the table which, in a better market, would have allowed these companies to come public. A healthier capital market would have only prolonged the situation that we find ourselves in today.

Big mergers will be the anchor leg in the relay race toward industry rationalization.

As for M&A, our attitude is that the likely buyers of big deals have either balance sheet or regulatory issues that have to be worked through over 2001 and 2002. Maybe smallish deals will occur, but we don't think that M&A is going to lead the rationalization of the industry. Rather, it will be bankruptcies, folks running out of money, and the fact that no new incremental public capital will be raised that will be the leading driver of rationalization in this industry. Big mergers will be akin to the anchor leg of the relay race that puts the industry across the finish line of a rational industry structure. However, the lead-off legs will be existing weak players vanishing and good assets getting scooped up out of bankruptcy.

Capital Spending/ROIC

Since the Telecom Act was passed in 1996, in order to know what has happened with market perception of this space, just look at the relationship between capital spending and revenue. In 1996, the telecom industry spent $41 billion on capital expenditures; in 2000, it was $110 billion. Capex as a percentage of revenue grew to 36% in 2000 from 20% in 1996, a growth rate of 28% per annum. When capex grows at 4x–5x the rate of revenue growth, it typically does not bode well for ROIC or free cash flows, not to mention near-term disruption to pricing.

We believe that capex will decline 5%–15% per year over the 2001 and 2002 time frame and will not show positive growth until 2003–04. Thus, capex as a percentage of revenues should get back down to a 24% level by 2003. Capex as a percentage of revenue will decline, with capex not growing and actually declining over the next couple of years. Beyond that, capex should grow no more than 60%–70% the rate of revenue growth. Obviously, this bodes well for the visibility on the bend in the J-curve for the ROIC, as well as ultimate free cash flow generation.

There are five reasons why capex will moderate.

We believe there are five reasons why capex will moderate: no new players, a shift to discretionary spending, consolidation, getting better pricing on equipment, and utilization of unlit network capacity by existing players in lieu of capital projects. First, 47% of incremental capex from 1996 to 2000 were by companies that did not exist in 1996. As we said above, with no new money available for new network-based companies, that driver of capex will dry up. Second, building a network is akin to building a house. There is nondiscretionary and discretionary spending.

When constructing a house, the digging of the foundation, the framing of the house, a rough plumbing, and rough electric are nondiscretionary. However, with the finished work — windows, floors, hardware, moldings, etc. — the spending becomes much more discretionary.

This proves the same thing with networks. Over the past four years, the industry has essentially decided to go from a circuit switch to a packet switch world. That entails nondiscretionary spending in fiber, in amplifiers, in regens, in laser systems, etc. Going forward, much more of the spending will be discretionary and tied to revenue and demand visibility, which manifests itself in lighting a network or adding capacity as opposed to just building a foundation of a network. This means that the payback on capex is much quicker. The preponderance of spending will be on lower ticket items (laser cards versus lasers) than higher ticket items. In general, the incremental returns on capital will be far higher, allowing companies to not only see margins expand but also to recover the sunk costs in building the network.

Thirdly, we believe there will be consolidation. As we alluded to, McLeod buying a CapRock meant that McLeod did not have to build new network itself where CapRock operated. This kind of activity will continue to occur over the next couple of years, even if there is not a headline-making M&A accomplished. This prospectively shrinks capital budgets. Fourth, with all due apologies to our equipment friends, the reality is that the basic law of economics says pressure works its way through the supply chain. With network service providers having seen pricing squeezed, they turn around and squeeze the systems guys, the components guys, the chipset guys, etc. There is no question that network service providers are expecting and will get much more bang for the buck when it comes to capex. There have been a lot of equipment vendors that have sprung on the surface.

Clearly, we believe the service companies, especially now that they are in a discretionary versus nondiscretionary mode of capital deployment, will no doubt leverage their position into better pricing for the equipment that they buy. This is especially true given the fifth reason for reduced capex, leasing of capacity on the part of industry players from one another.

Ironically, new network carriers may have more negative impact to equipment suppliers than to full-service network

Forget about outsourcing a firm's entire network; a WCOM would never give up control of its network given its mantra of end-to-end service, especially for data/IP, in our view. However, if one can lease unprotected wavelengths in an economic fashion to defray capex on, for example, DWDM systems, then why not fold these wavelengths into your network platforms? Furthermore, we believe purchases of dark fiber will decline while purchases of wavelength will decrease. This leads to less incremental capex industry wide. Ironically, the emergence of new network carriers such as Level 3 and Williams Communications Group may turn out to be a negative for equipment suppliers and a positive for those carriers that can economically lease big chunks of capacity rather than deploy capital. WorldCom, for example, will win big if it can buy very cheap wavelengths, since providers like Level 3 are not competing with, but are rather supplying, to full network carriers. In essence, a Level 3 is competing with a Ciena for WorldCom's next expenditure on an incremental wavelength.

The Third Thing That Everybody Worries About Is Pricing

The short response is that pricing goes down. As we said, in telecom, technology drives down cost. In 1994, an optical layer of a long-haul network cost $210,000 per gbp. Today, it is $4,000 per gbp. In 1988, the first fiber cable TAT-8 costs $356 million for half of a gbp, or $700 million per gbp. Today, that cost is less than $500,000 per gbp. Obviously, with that type of drop in unit cost, pricing follows suit.

Supply is more cyclical than demand.

However, it is important to note that supply is far more cyclical than demand. Thus, periodically, this industry goes through sea changes in technology, whether it's analog microwave to digital radio, digital radio to multimode fiber, multimode fiber to single-mode fiber, and now circuit-to-packet switch transition. In each instance, the cost structure of the industry dramatically declines with the first consequence being a dramatic step function down in pricing on existing services. That takes its toll on industry profitability until new services are deployed to take up the added capacity brought on by lower cost technology.

We would argue that this time around, there are two factors that are exasperating this typical trend that occurred in the late 70s, in the mid-80s, in the early 90s, and now, today. First, all of the aforementioned transitions that we cited were changes in transmission, but with the basic circuit switch fabric of the networks remaining unchanged. This time, we are going into a seminal technology change from circuit to packet switch. The distinction is that when the transition is complete, the cost/mbp of transmission may be as low as one-tenth of what it was, with no doubt yield/mbp in terms of revenues being as low as one-eighth. Thus, we have a much more transforming change versus incremental change in network technology.

Secondly, it is true that this time around, there are far more new players out there that have raised money than ever before in this industry. Thus, on top of a very transforming change in technology, we clearly have players out there that have aggressively forward priced on the vision of networks as opposed to the reality of networks, and that price disruption is clearly working its way through the industry. However, we think the worm has turned on this and large buyers of telecom services, or even bandwidth, are demanding real existing levels of service guarantees and not promises of future delivery. This includes voice, where a new network that is solely IP-based is not capable of even being a wholesaler of voice because a true IP-only platform does not allow for toll-quality service.

As the industry evolves to revenue generating units of bits per second per mile, scalability will drive revenue growth upward.

Our view is that the telecom industry will evolve from an industry where the reported revenues are a function of minutes of use, or private line circuits, to an industry where reported revenues are a function of a revenue-generating unit such as bits per second per mile or VGE miles or something like that. As that occurs, there will be much more scalability on each revenue-generating unit than in the past. For example, if a minute of use cost you $0.10 and tomorrow it costs you $0.05, you may make more calls, but the yield per minute of use for the network carrier will be cut in half. Conversely, if you went to frame relay, which is the oldest fast-packet service out there, frame relay ports grew 12% in 2000, the same rate of growth as frame relay revenue, which also grew 12%. You might think that pricing was stable in frame relay when nothing could be further from the truth. Frame relay price per port, dropped, we believe, as much as 25%, but speed per port increased dramatically such that the mix of port speeds are much more than T-1s, and much less than 56 kbps. Similar trends hold in ATM.

Right now, services priced on a bit per second per mile basis are relegated to pure bandwidth services. A year ago at this time, the average payload, so to speak, was DS-3s or multiple DS-3s, priced at $0.01–$0.015 per DS-0 mile. Today, in the bandwidth world, the average payload of OC-12s is priced at three-tenths of a cent per DS-0 mile, but with 12x the capacity. Thus, the revenue per VGE mile, or revenue per bit per second per mile, has growth in the bandwidth area of 30%fl40% despite the fact that price per bit per second per mile is down by at least that much. This is because the number of bits per second per mile has dramatically increased.

Higher bit rate services drive margins as well as revenue.

A carrier would much rather sell multiple OC-12s at three-tenths of a cent per DS-0 mile than one DS-3 at one cent per DS-0 mile. Similarly, in subsea, a Global Crossing would much rather sell multiple STM-64s at $300,000 per STM-1 than a single STM-1 at $1 million. Furthermore, the higher the bit rate service, the better the margin. An OC-12, which is much closer to the OC-192 backbone bit rate than the DS-3, would need much less in the way of "daxing," "muxing/de-muxing," etc. to break down bandwidth into services. Thus, gross margin is much higher on higher bit rate services even though the price per bit is far lower. The bottom line is an industry player would much rather sell high bit rate services at low price per bit, since that drives maximum revenue and gross profit dollars. Hence, scalability (not elasticity) drives more revenue over fixed assets, leading to higher asset turnover and obviously higher ROIs.

Ironically, if in 2003, revenue growth in telecom is 200–300 bps higher than it is today, the spread between revenue per unit growth and unit growth will be much wider than it is today.

As we go from less than 5% of the industry's revenues being priced on a bit per second per mile basis, to a majority of the industry revenues being priced this way, the irony will be the following. We believe that two years from today, the growth rate in the telecom industry in terms of revenues will be accelerating. No doubt, folks will declare victory and say that pricing has stabilized. Actually, in our view, nothing would be further from the truth. We would argue that, if in 2003, revenue growth in telecom is 200–300 bps higher than it is today, the spread between revenue per unit growth and unit growth will be much wider than it is today. It is just that the units, i.e., bits per second per mile, will be scalable.

Our view is that in the next 12–18 months, the pricing dynamics in this industry will be much more of a function of long-term cost trends and much less a function of the step function downward that new supply tends to create. As far as the ability of someone being able to just disrupt pricing based on pure technology factors, we tend to disagree with that notion. The service that's being delivered in telecom is not a pure wavelength of light. It is a service that requires provisioning, connectivity, points of presence, restoration rates, bit error rates, etc. Much of this service delivery entails a full level of performance that includes, among other things, having thousands of technicians available to do 72 hours of straight work in order to do a hot cut for a customer network.

Nobody in this industry has control over intellectual property. This is a transparent industry that is a service industry, not a technology industry.

Thus, the notion that someone could come in and be a price disrupter based on a lower cost associated with deploying an unprotected wavelength of light is nonsense. Unprotected wavelengths are a component of a network-based service and not a service in and of itself. If anything, providers of cheap, unprotected wavelengths won't be disruptive to carriers but, rather, will be constructive toward lowering the capital costs for full network service providers, since they will act as suppliers rather than competitors. Furthermore, we don't see players in this industry in a controlling position like the Microsoft or Intel of ten years ago. Nobody in this industry has control over intellectual property. This is a transparent industry that is a service industry, not a technology industry.

Bandwidth Glut

The natural follow up point to number 3: "Is there a glut of bandwidth?" As we have written many times: NO. Dark fiber does not equal capacity. Only about 5% of the dark fiber in the ground is lit. To light a fiber pair, it takes $400 million or $500 million and about 15 months to do. That is, if you already have a network with the systems in place. If a customer buys dark fiber, which we believe less and less folks will do, it still takes the better part of 2½ years to actually have an operating network. Clearly, anyone who tries to build its network today from scratch would still be doing it four years from now. The fact is that the standard service level intervals for delivering optical carrier products is 120 days for basic bit rate circuit services. More sophisticated bandwidth-based services take even longer. This tends to fly in the face of this notion that there is always excess capacity laying around. Even large buyers of nationwide OC-12s, like Time Warner Telecom, will tell you there is no glut and they are in the market buying bandwidth. A Time Warner Telecom requires complete on-net provisioning from the carriers they buy bandwidth, with very high level SLAs. This type of purchase is of a service that does not just fall off of a shelf.

The real key is demand. Our view is that as applications get developed to increase bandwidth per user — especially in the business segment, as more devices proliferate, and as the metro bottleneck gets broken — there will be many drivers of demand. Thus, our view is that, while there may be a lot about fiber in the ground, the reality is that there is a tightness relative to demand for true optical carrier services.

Is Telecom a Commodity?

If our clients believe telecom is a commodity, we have not done the best job at disseminating information.

Perhaps the one overarching thing that everyone really worries about is: "Is telecom services just a commodity?" We believe the answer is "no." Telecom requires a level of performance that goes far beyond a commodity like natural gas, steel, or chemicals. Size counts. Scale and scope of facilities, along with depth and breadth of connectivity, plus products and systems are what drive value, not cheap lightwave.

As the salience of risk goes up, the service, by definition, becomes less of a commodity and its differentiation becomes much more critical to the needs of buyers.

When big buyers of telecom think about their needs, they think about things like provisioning, connectivity, points of presence, restoration, bit error rates, and guaranteed levels of performance that go well beyond just the provisioning of raw light or raw transport. Those carriers that have broad reach, regional concentration, and a full suite of services and support will capture the lion's share of value in the telecom industry. There's little doubt that some parts of the food chain are more commodity-like. However, the bottom line is the buyers of telecom that drive growth, namely corporate enterprises and, for that matter, large carrier customers, view telecom as mission critical. As the salience of risk goes up, the service, by definition, becomes less of a commodity and much more critical to the needs of buyers.

We believe there is a constructive case to be made for the industry over the course of the next 12–18 months that says capex will be moderating, there will be new sources of revenue, and pricing will revert to meanline trends. There will be a lot less true industry players. If all of this is correct, this bodes well for financial performance in a high fixed-cost business.

Now, we will turn to here and now issues in this industry.

Every Type of Company in this Industry Has Issues

We will now address what we consider are the issues for each bucket of companies in the telecom space.

RBOCs — We believe Their Relative Position in the Industry Can Only Weaken

It is hard to argue with the perception that the Bells are clearly in the strongest position going forward, relative to the industry, that they are ever likely to be in. While competition is clearly having an impact, it has not yet been pervasive, as the RBOCs' relative financial position remains strong. If the Bells do not take advantage of this to expand their capabilities, we believe the inevitable weight of an increasingly competitive landscape will relegate them to a much weaker relative position over the next several years.

The Bells are in a box.

We believe the Bells face a mathematical, as well as a "what do we do when we grow up?" problem. First the math problem. Every RBOC wants to have top-line growth in the high-single-digit, if not low double-digit growth, despite the fact that their core wireline business grows, in many cases, half that much or less. The sources of growth for the Bells that can drive this superior revenue growth, whether it's DSL or LD or wireless, all carry with them margins that are far lower, in many cases, than core wireline services. Thus, by definition, the growth initiatives that the Bells are undertaking are margin dilutive. Even accounting for synergies, we are hard pressed to see how an RBOC can have margin expansion.

In addition, the Bells are very solid credits: 'A' or 'AA' in many cases. They do not have high coupon debt to be refinanced. The true FCF generation is not significant. Thus, we don't really believe there is a lot of balance sheet leverage, so to speak, to goose earnings. Therefore, we have a hard time seeing how an RBOC can grow earnings at a much higher rate than revenue growth.

We have a hard time believing that the Bells can truly simultaneously make both their earnings and revenue guidance.

The more qualitative issue of the Bells is simply this: the RBOCs happen to have virtually all of their customers in their given territories. They are going to lose some of those customers in all segments of the market. Furthermore, there is an avalanche of metro capacity being deployed that will disrupt pricing in many high-margin RBOC services. Thus, to grow their business, the Bells need to either sell more services to existing customers or get new customers, typically, out of their franchise area. Either endeavor costs money, since they have to pay to play. Thus, any endeavor is likely to be dilutive to current earnings. Thus, while we have a hard time believing that the Bells can truly simultaneously make both their earnings and revenue guidance.

The Bells are in a bit of a box. They have historically traded at 80%–90% of the market multiple (which is where they trade today), which is fine, but clearly, they have grander aspirations to trade at premiums to the market on a sustainable basis. To do that, they will have to spend to grow, and this brings up an issue. The traditional value investors are increasingly viewing the Bells as more risky than they used to be, which is why the Bell stocks have not done particularly well relative to other defensive names in this bearish market for technology and the Nasdaq. On the other hand, there is no growth buyer out there that truly views the RBOCs as growth stocks and, thus, are not willing to pay big multiples for the Bells.

We believe the RBOCs will be better off taking an aggressive stance and being realistic in near-term guidance. If we were running an RBOC (a scary thought, we know), we would first eliminate the dividend; second, use their balance sheets to expand the scope of facilities and, in general, add leverage; and third, sacrifice near-term earnings growth to spend on initiatives that would accelerate long-term growth rates.

Bells are too passive on DSL.

We don't believe that what the Bells point to for growth initiatives, such as DSL, LD, or wireless, really moves the needle. With DSL, we believe that the RBOCs are being quite passive, relative to what they could be in ramping DSL. There is little question that as the Bells continue to worry about impacts to near-term earnings, they will wake up three years from now with a decided minority share of the consumer broadband access space relative to cable modems. Once that occurs, there is no reversing that given the investment a consumer has to make in order to buy either service. We view high-speed Internet access as just the beginning of what is likely to be many layers of services layered on to other DSL or cable modem. If we were the Bells, we would put pedal to the metal, even acknowledging that every DSL customer takes 18 months to pay back. Nonetheless, we would clearly sacrifice earnings to take the initiative away from cable companies that, we believe, so far have the upper hand in cable modem in general versus DSL.

There is little question that the Bells will rule the roost in consumer LD — so what!

As far as LD is concerned, well over 90% of Bell LD customers are consumers. We believe that the Bells will rule the roost in consumer LD, but the problem with that is 85% of households in the United States make less than $25 per month worth of LD calls. What is interesting about that statistic is, when we joined AT&T long lines in 1977, that exact number was true then. The point is that consumers don't scale. When we joined AT&T, the average rate per minute (ARPM) in consumer LD approached $0.40. Today, it is barely over $0.10. Household spending on things like LD tend to be pretty static.

Bells need assets and products to gain traction at corporate enterprises.

To move the needle for growth, an RBOC has to be a big player in data/IP, especially in packet and cell-based services. More than 70% of revenues in these services are generated by corporate enterprises, not government, military, education, or consumers. The corporate enterprises, by and large, have national, if not global, requirements. The Bells, to be blunt, have very little traction at the high end of the market. Thus, if an RBOC is truly going to move the needle on its growth rate, it will need national capabilities in data/IP. This will entail green field builds or acquisitions, both of which could be dilutive to financials, but are the necessary conditions to transform RBOC growth rates.

Wireless is getting commoditized rapidly.

As far as wireless is concerned, there are some folks around who worry that wireless is a six-player game with undifferentiated products. They worry that, already, pricing is brutal, when there still exists capacity issues, and mobility is still, to many people, a virtue.

This represents an interesting dilemma for SBC, BellSouth, and Verizon. Do they issue equity at valuations that are going to be far lower than any of them thought last summer when they started this process, or do they not carve out these wireless properties at low valuations, but instead keep the debt required to finance new licenses at the parent company balance sheet? Again, relating to what we said about balance sheets, we would prefer the latter rather than the former.

The Bells need to face the music.

The point is that the Bells are, at this moment, somewhere in no-man's land. They are not quite the same value stocks that they were in the 80s and most of the 90s, nor are they truly the growth stocks that growth managers want. We believe that the Bells must face the music and make hard decisions on compromising either near-term earnings guidance or revenue guidance. Our preference is for them to sacrifice their near-term earnings guidance to position themselves for long-term growth. At current valuations, we don't really think there will be a lot of downside in the stocks if they did that. If anything, we believe there is an overhang, since most investors do not believe the Bells can make their current numbers, so once they come clean, we believe investors will become constructive on names like SBC and Verizon (of the two, we feel there is more risk to SBC numbers).

We know that in the aftermath of SBC lowering guidance for the first quarter, some folks who chose to stay with the overall guidance for the year have commented that it is impossible to do quarterly breakouts for SBC or other Bells. With all due respect, any analysis of historical RBOC earnings suggests otherwise. In the 17 years since the telcos were public companies, the Bells' earnings distributions have not changed by more than 1% or 2% on a quarterly basis. That is why, when it comes to SBC in particular, we have a hard time believing they could start the year at $0.50 per share in earnings and end the year at close to $0.70 per share in earnings in order to make their guidance, which is why we took our numbers down to $2.40.

We've always liked SBC management. We think they run a superb company; however, we believe there are some disconnects, since their explanations and numbers need to be rectified, in our view. Most notably, fourth quarter to first quarter being down $0.07 per share flies in the face of historical trends over the last decade where fourth quarter to first quarter rose on average $0.02. All that has been cited by SBC, namely, DSL, Sterling, Ameritech, LD, and Cingular, were in fact there in the fourth quarter. Even acknowledging that a shift in Directory causes a $0.04 that leaves a $0.03 negative sequential comparison versus a historical $0.02 positive swing. Thus, there is a nickel unexplained.

Our view is that Qwest is operating much closer to what we think the Bells will have to operate at.

Within the Bells, our view is that Qwest is operating much closer to how we think the Bells will have to operate. First, Qwest, by nature of where it came from, has the most proper leverage in the group. It clearly reduced its dividend, which saves cash. Qwest manages to an EBITDA rather than to a GAAP EPS number, all of which we think gives Qwest a lot more flexibility to invest for growth. Since almost 20% of Qwest's cash flow comes from Qwest Classic, it is clearly growthier than the average RBOC. Furthermore, when Qwest does get 271 relief, because of the Qwest network and the product set it has, we think it could go up market much sooner and have the composition of LD customers that is much more oriented to higher end businesses than the typical Bell. Even acknowledging that Qwest's long-term growth rates for revenue and EBITDA might seem like a stretch, at current prices, Qwest is selling at little premium to the other Bells on a FV/EBITDA basis (9x versus 7x). We think it clearly has a higher growth profile, a better set of assets, and a shareholder base that is more flexible in allowing Qwest to invest for growth.

Verizon's EPS guidance and revenues are together more in sync than SBC.

We would also cite Verizon, whose revenue and EPS guidance are more in sync than SBC. Verizon's valuation is quite cheap, continuing to trade at the low end of RBOC multiples. Furthermore, we think Verizon is much closer to 271 relief in its major states than any other RBOC, and its ultimate control of Genuity assets gives it product capabilities and owned and controlled national IP assets. These attributes should allow Verizon, over time, to leverage itself into data-intensive large corporate enterprises.

CLECS — Huge Opportunity but Challenges: Next 12 Months Will Involve Serious Decisions

There is no question that if the CLECs did not exist, the Bell numbers would be higher. CLECs have cost the Bells their cushion in numbers.

Looking at the other side of the trade, we think a lot of people have decided that the CLEC model doesn't work simply because the CLEC stocks are down a lot. We think that nothing could be further from the truth. From a standing start in 1996, the CLECs today have 7% or 8% share of the business market, which is not bad considering how capital and labor intensive it is to become a CLEC. In fact, we believe there is no question that if the CLECs did not exist, the Bell numbers would be higher. For example, a typical ten-line customer generates $800 per month in revenue and $450 in EBITDA for an RBOC. If that customer leaves the Bell to go to a CLEC in, what we call, the regular way with an unbundled loop as opposed to resale or completely on-net, we think the Bell retains no more than 40% of revenue and 25%–30% of EBITDA. There is virtually no question that the CLEC presence has caused the Bells to have much less cushion in their numbers. There is no doubt in our mind that the CLECs are having an impact to Bell financials.

We recommend a basket approach in purchasing CLEC stocks.

As far as the CLECs themselves are concerned, 15–20 years ago, there were hundreds of competitive LD carriers. Out of these, only a handful became real players. The same thing holds true with the CLECs. There are upward of 100 certified private and public CLECs around the United States. Of these, only a handful will become real businesses. We believe that Allegiance, McLeod, XO Communications, and Winstar, of the stocks we follow, are the ones that are likely to gain the most traction to evolve into long-term free-standing enterprises. Each of these companies have both risk and opportunities such that we believe a basket approach is worthwhile.

XO Communications has big losses to eat through and large funding requirements but has great assets and management.

For XO, we would make an analogy to a diver that is attempting a dive with a high degree of difficulty. If they pull it off, they get the best score. By this, we mean that XO has an array of assets with its 50 metro fiber networks, 65 markets with fixed wireless, long-haul fiber from LVLT, and the European network that it has bought. This should allow XO to have customers that are upmarket in the business segment. However, XO's current customer base today is composed of ten-line customers. Thus, there is a disconnect between its customers and its assets.

What XO needs to do is, over the next year or two, get the customer-facing tools in marketing, sales, systems and products that will allow it to move upmarket, so it can have a set of customers much more aligned with its set of assets. In addition, XO needs roughly $2 billion of financing to get to FCF positive and needs to expand gross margin and shrink losses. However, the management team, led by Dan Ackerson, Nate Davis, and others, is superb. If they pull off their business plan, which we think they will, this stock will be many multiples of itself over the course of the next several years. Furthermore, we need to put funding in perspective. XO's current cash position will take it through the next 18 months of operations. Just three years ago, XO needed $12 billion of financing and now it needs $2 billion, so it is in the last leg of funding. In addition, XO has lever points such as postponing its European expansion to conserve cash, if need be.

Allegiance has a steady business model.

Allegiance is almost in the opposite situation. Allegiance's target market is your small and medium business customers, with 5–15 lines. They make no apologies. This customer base accounts for 60% of business services in the United States and has always been underserved by the telecom industry. Allegiance's assets, namely collocations, or colo's, and fiber transport that it leases or buys, dovetail nicely with this customer base. Allegiance clearly has a superb back office and product set to serve this customer base, along with a great sales force. Allegiance also has a very unleveraged balance sheet, with 35% debt to total capital. That is why its bonds actually trade reasonably well despite the fact that it is not as asset intensive as others.

We feel the issue with Allegiance, if this can even be called an issue, is that its business model is such that if it maxes out its business plan, versus say, an XO, XO over time will have a market cap many times that of Allegiance. Nevertheless, on a risk-adjusted basis, we would argue that the spread is much narrower. Furthermore, we hope Allegiance has the back office scalability to handle millions of transactions ~~per day given how good its front-end electronic bonding and provisioning systems~~ are in getting customers. As such, Allegiance, in our mind, still represents a very compelling value here.

Winstar needs a major fix to its balance sheet.

Winstar is probably the name in this group for which we get the most pushback on. We think the main reason for that is, to be blunt, CEO Bill Rouhana, does not have quite the same extensive telecom background of Clark McLeod, Dan Ackerson, or Royce Holland. If any of those executives were running Winstar, even with Winstar's current balance sheet, but with the metrics that Winstar has reported, Winstar stock would be trading well above its current prices. Winstar has done a superb job in gaining traction in its business. It will be EBITDA positive in second quarter 2001, two years after peak EBITDA losses occurred, and it has expanded gross margins for eight straight quarters. Revenue per customer per month is $1,850, or 2x–3x its peer group. People tell us all the time that this is because WCII has bigger customers. We respond to that with, "That's the point." Winstar has 4,400 buildings on net, 4,200 of which are with fixed wireless. It should be in 10,000 buildings by year-end with a very expansive and direct on-net presence. We believe business metrics at Winstar continue to exceed expectations and are quite robust.

As far as Winstar's balance sheet, the noise surrounding its ability to make interest payments is just that. Winstar is current on all of its cash pay, and the principal on most of its debt instruments is not due until 2008. However, Winstar is over leveraged, with a leverage ratio between 3:1 and 4:1, and by our estimates, it has funding needs of $1.0 to $1.5 billion to get to free cash flow positive. Just like we think incumbent players should be more leveraged, we also think the right credit rating for a new entrant that is going to be a long-term player is a 'BB'. Winstar is nowhere near that credit rating. Yet, if we were Winstar, we would bite the bullet and issue a lot of equity, even at these levels, despite the fact that it would be dilutive to current shareholders. This way, Winstar shores up its balance sheet; it gets funding that will get it to free cash flow positive; and, if it continues to hit its business targets, no one will mind two years from now or even one year from now.

We remind people that it wasn't that long ago in 1986–87 when MCI had negative equity value.

We remind people that it wasn't that long ago in 1986–87 when MCI had negative equity value. The fact is that for this industry, start-up companies in the past had to issue equity at levels they didn't like to get the funding they needed and to shore up their balance sheet. Those companies that did that and continued to run their businesses have made huge money for equity holders. We think that is the situation Winstar is in today.

McLeod is in a very strong position, but has to balance near-term financials with spending to accelerate long-term growth opportunities.

Finally, McLeod is the fourth player we view as a clear long-term winner. We believe that McLeod's core business of its 25-state territory as an integrated communications provider is going extremely well. There is no question that McLeod will be a dominant telecom provider in its core markets. Frankly, we think that if McLeod had its druthers, it would expand its sales force more quickly than plan in order to accelerate growth into 2002. The CapRock acquisition, at 1x plant, bought McLeod a couple of years in time-to-market; that makes sense. The real issue for McLeod is Splitrock. This is a national data network that had a lousy business, namely wholesale ISP, much like Genuity, PSInet, and others. However, it is a data asset with more than 400 data nodes around the United States. With it, McLeod has a nationwide data network, off of which it can sell data network products and services. We think the issue with McLeod is clearly how does it leverage that network into something that generates value for shareholders.

The real question for McLeod is: "Does it run as two separate companies: an integrated communications provider west of the Mississippi, and a national data wholesale business, or does it somehow integrate the Splitrock assets over time into a more national strategy?" That clearly is the issue many people are looking at for McLeod. Otherwise, its balance sheet is good. It is well funded and the management is superb.

One thing we do take exception to is the worry that the CLECs have back-end loaded business plans.

One thing we do take exception to is this notion that the CLECs have back-end loaded business plans. As we have written many times, we would like to see somebody mathematically prove to us how a company could grow 50%–100% year over year and not be back-end loaded. In fact, the first company that tells you it will grow at a high-double-digit rate and not have a ramp during the course of the year is the one you should run away from. Even the RBOCs get 52% of their revenue in the second half of the year, because in a recurring service business, that is how the math works. If you add that to the fact that CLECs are expanding customers, expanding markets, expanding sales force, and expanding network, getting 57% of revenue in the second half of the year, on average, for the CLECs is hardly an unrealistic goal.

We would also say that people, we think, have lost sight about something for the CLECs. By and large, these names, over the last couple of years, have dramatically increased their businesses, while at the same time, managed to winnow down EBITDA losses and expand gross margins, all the while coming reasonably close to expectations. This is no mean feat given all the moving parts of the industry. We do think it is a bit bizarre that the market holds the CLEC seat to the fire with such specificity on a quarter-by-quarter basis when these companies are still very much in a start-up mode. Even the Bells, much less a company like an AT&T, have increasingly less precision to their forecast.

CLEC winners should drive long-term value creation.

Thus, on the CLECs, we believe there are only a handful of them that we believe are going to be true long-term value creators. Clearly, current prices are quite compelling. We also think that, as we exit this year and enter next year, the CLECs will begin to get valued much more on revenue multiples and, ultimately, on EBITDA multiples versus discounted cash flows. While we still think that DCFs are mathematically quite legitimate, we know that as the market can start to work out multiples of revenue and ultimately EBITDA, these metrics will be better for the so-called legitimacy of CLEC valuations. As we speak, CLECs are selling at below 4x next year's revenues, which puts them within shouting distance of the Bells, which sell at almost 3x next year's revenues. This seems, to us, a rather interesting convergence of valuation, which makes no sense given the relative growth profiles of the two different spaces.

Bandwidth Names — Segment of Industry Where Most Turbulence Can Occur

We believe that the most turbulent sector is likely to be in the bandwidth space.

We believe that the most turbulent sector is likely to be in the bandwidth space, where wholesalers are going to have to prove that they have a real recurring business model and that they are selling services and not assets. Otherwise, it is difficult to see how the market will value these names at much above 1x plant. Clearly, large incumbent players (AT&T, WorldCom, the RBOCs, etc.) may do large capacity purchases if the economics of doing capacity leases, vis-a-vis incurring capital expenditures, work. However, we are not sure massive network outsourcing will occur, where control of the network is transferred. Control of network elements is too critical for a carrier to guarantee quality of service, control product deployment, and occupy a low-cost position. In general, our view is this: either we would like to see a network-based company start commercializing its business, or we would like to be an owner of bottleneck assets.

Global Crossing is commercializing its business.

On this first front, we view Global Crossing as the most compelling stock in this space. Global Crossing has built a global network with both terrestrial and subsea assets. The network is paid for. It clearly needs no funding and it is in the process of commercializing its network with products, sales force, and ultimately customers. It has laid out a business model where it is clear that the bulk of its growth is going to come from commercial service revenue as opposed to carrier-type IRUs (obviously, an ambitious plan). If it, in fact, does what it says it's going to do, this stock will be multiples of itself a year from now. An interesting sidebar to this is that Global Crossing's bonds trade basically at par, with a yield to worst of about 8.5%–9.0%. That bond price and yield belie a mid-teens equity value. The bond market is telling investors that Global Crossing has built its network, paid for it, is fully funded, and has very low execution risk. We believe that as the visibility of success in the commercial market appears, the stock price will go a lot higher.

Metromedia Fiber Network is a great bottleneck asset.

Secondly, we look at Metromedia Fiber Network as a true bottleneck asset. It is tough to build metro networks; it is much more capital and labor intensive than long-haul construction. There are far fewer dense metro networks than there are long-haul networks. There is a lot of private money activity funding metro-wide optical initiatives, many of which point to Metromedia Fiber Network as being a supplier. Metromedia Fiber Network is trading at below 2x net plant. For net plant, Metromedia Fiber Network has arguably some of the more valuable net plant in the industry. It has a $4 billion backlog (40% of which is SBC and Verizon). We believe that if a company wants to be a pure wholesale player, occupying a bottleneck part of the value chain is most likely the driver of success. Metromedia Fiber Network has far and away the best strategic position in the totality of the value chain to be a long-term carrier's carrier while also delivering high-end bandwidth services to large corporate users that require metro-wide bandwidth capabilities.

Broadwing is very strong in the commercial space and has great visibility on its 2001 numbers.

Broadwing is clearly well funded, has a commercial business, and obviously has the Cincinnati Bell assets to help generate cash. On the bandwidth side, we would argue that Broadwing is much further up the curve of recurring network services and commercial customers than some of its peer group. We are very confident in the visibility on Broadwing's numbers for 2001, as it continues to gain traction with commercial customers while simultaneously increasing operating efficiency. Broadwing's issues remain more strategic than operational. It clearly needs to figure out an access and egress strategy at the metro level. To a lesser degree, it needs to worry about what it wants to do internationally. Certainly, Broadwing, we believe, has good visibility on its numbers and has no risk at all from a balance sheet perspective. The stock is currently at 12x 2001 EBITDA, less than half its growth rate, and this is based on GAAP EBITDA.

We expect subsea to stay conducive to the wholesale model given its bottleneck nature.

Subsea is another area that we believe will stay conducive to a wholesale model given its bottleneck nature. The fact is that there is a lot less supply coming in subsea than what might have been expected a year or so ago. Many of the systems that have been announced are not being built or co-built with multiple players. Consortium cables such as TAT-14 and Japan-US may never see the light of day. It is clear that despite 360 Networks' (TSIX) issues, Flag Telecom, TyCom, and Global Crossing are seeing increasingly big orders with an increasing amount having up-front deposits. Carriers would much rather sell multiple STM-64s at low prices versus single STM-1s at high prices, given the much higher revenue and margin per fixed asset in the former scenario versus the latter.

TyCom and Flag Telecom will likely benefit from relative scarcity of subsea supply versus demand.

TyCom, no doubt, being owned by Tyco, will get its system built, funded, and operational. We think that at current levels, TyCom represents a very compelling play on a pure subsea part of the value chain, but clearly needs visibility on turning on its system and driving capacity sales. TyCom and Global Crossing will be two global subsea networks, with Flag Telecom likely to be the centerpiece of a third. We think the subsea part of the value chain will continue to drive value for those carriers' carriers that have truly global reach.

Level 3 and Williams Communications Group face the biggest challenges.

As far as Level 3 and Williams Communications Group are concerned, our view is they have issues they have to address. Level 3 has built a very impressive array of assets. The stock at current levels is very cheap, selling at below 1x net plant. We think that it is largely funded and that it will clearly have both long haul and metro, domestic and global networks that will be operational. The real issue is that so far, its mix of revenues tend to be much more dark-fiber oriented or collocation-oriented than recurring service transport oriented. We think that until it shows increasing visibility on the recurring service side, the stock is going to continue to trade closer to 1x net plant. Furthermore, as we indicated earlier in the report, we worry if Level 3 will light up its network on time; a delay in lighting could forestall capacity sales. As we said, at current prices, the stock really is very cheap, trading at below 1x net plant. However, we think that Level 3 needs to step up the activity on the recurring network service side of the business to allay fears that it basically built a big network asset, off of which to sell nonrecurring pieces of the network.

We think that Williams Communications Group frankly has a full array of recurring network services, but unfortunately it needs to address a funding gap of more than a billion dollars after taking into account its $950 million increase in its existing senior credit facility and its intention to issue $1.4 billion in structured notes in a private placement. Williams Communications Group also needs to discuss with more specificity its international and, to some degree, metro strategy. Furthermore, we believe that until the complete spin from the parent company, Williams Companies, occurs, and Williams Companies shareholders decide what to do with Williams Communications Group stock, there will be an overhang on the shares.

AT&T, WorldCom, and Sprint — Only WorldCom Has Strong Fundamentals

Finally, we'll turn to the so-called Big Three, which are not nearly as big as they used to be. We would not be buyers of AT&T or Sprint at all. We would be very aggressive buyers of WorldCom. We know that we are the minority, with most Wall Street analysts recommending AT&T and Sprint, but not WorldCom.

Sprint is a bet on a takeout which we do not believe will occur.

Our view on Sprint is that consensus numbers of $1.65–$1.75 (we are at $1.50) are way too high and that the bullish case on Sprint is simply a bet on someone buying it. We don't think that is seriously going to happen any time soon, if at all. First of all, as we alluded to earlier, we don't think any of the natural buyers out there has any ability to do anything for the next 12–18 months. Secondly, anyone who would buy Sprint would also end up with Sprint PCS, and in many cases, that would result in a conflict. Thirdly, for companies like an RBOC or a European PTT that might be interested in a company like Sprint, a major reason would be to gain traction in the corporate enterprise world. The problem with that is Sprint is an extremely distant third to WorldCom and AT&T in corporate enterprise. As such, we're not sure that it would actually help a potential acquirer that much in moving the needle.

Thus, if someone is forced to look at Sprint, based on public valuations, we would argue that, as we speak, if one looks at the RBOCs and does a strip valuation (meaning stripping out the valuation of international and wireless assets and looking at what's implied by current stock prices for the value of their incumbent LEC), we think the Bells' incumbent LECs trade at an implied value of between 5x–6x EBITDA. We do not think that Sprint's ILEC business is worth any more or, for that matter, any less than a Bell's ILEC. Thus, if that is applied to Sprint, plus about a 1.0x–1.5x revenue for Sprint's LD business, which is certainly not being too chintzy given that Sprint's LD business is not growing and is undersized with respect to scale, then net of debt, Sprint is worth about $18 per share.

AT&T's business, lacks visibility and a breakup of the company has risks associated with it.

As for AT&T, the bottom line is this: over a span of a four- or five-year period, from 1998–2002/2003, AT&T would have bought a lot of assets, killed its balance sheet, sold a lot of assets, and at the end of the day, it is not obvious that anybody would have made a lot of money on the stock, unless they were quite nimble in trading the stock. More specifically, from where we sit today, it is going to be a better part of a year and a half before AT&T completely breaks up the company. In the meantime, there is execution and market risk to such a strategy. Finally, we believe AT&T's core communications business, which at last look still contributes the bulk of revenue and cash flow, is deteriorating before our eyes with very little visibility within AT&T. This is why the GAAP EPS estimate for 2001 has declined from $2.00 established a year ago to the current consensus of about $0.30.

How does AT&T allocate brand value to different shareholder groups, and do they need new equity to maintain credit ratings?

Furthermore, we have yet to figure out how AT&T is going to allocate its brand name (and, thus, attribute value of the brand to different shareholder bases) among its different piece part companies, especially those that have no legal connection whatsoever to the resultant AT&T. Moreover, AT&T's current debt load, which everyone conveniently subtracts en masse from sum-of-the-parts analysis to get an equity value, could be problematic in splitting up between the piece parts. It seems, assuming every part of AT&T's business must maintain a strong investment-grade credit, there might be too much debt to allocate among the different piece parts. Specifically, AT&T needs to either sell about $25 billion worth of assets beyond what it has already sold (e.g., TWE and Cablevision) or it has to raise $25 billion of new equity if it wants to maintain an 'A' credit on the remaining AT&T Communications business while having 'BBB' ratings on both broadband and wireless.

Thus, we think the following is a fair characterization of AT&T. It is selling assets to pay down debt to maintain credit ratings, often selling assets at less than what it paid, though, the last time we looked, selling assets below cost does not increase shareholder equity. In the meantime, the visibility of AT&T's core business seems to be slipping and any potential break up of the company is a good 15–18 months away with all the corresponding risk associated with that. We have a hard time figuring out what, in any of that, represents a constructive fundamental stock story.

WorldCom is ready to resume the leadership position.

For WorldCom, we know that WorldCom is in disfavor right now. Of course, WorldCom has gone through its issues over the last 12–18 months. However, let's not forget one thing. To serve corporate enterprises with data/IP connectivity and services, very few, if any, companies in the world can match WorldCom's array of assets. WorldCom Group has, by far, the largest IP network on the planet, whether measured by points of presence, fiber miles, traffic, reach, ubiquity, etc. To serve large corporate enterprises with IP-based network solutions, a company needs a large secure, reliable IP backbone because no corporate enterprise on the planet will put mission-critical transactions, not to mention highly sensitive information, on the public Internet. It also helps if a company can migrate older legacy networks to an IP backbone, especially since 98% of corporate networks are non-IP based and it will stay that way for quite some time. It also helps to connect to the end-user location. WorldCom Group has 150 local markets around the world, 50 of which are outside the United States. WorldCom Group also has sales force, systems, products, and other capabilities, such as Digex, to fold into its offerings.

Thus, there is nobody out there that is remotely close to the totality of attributes that WorldCom Group brings to the table to serve corporate enterprise customers, especially for data/IP solutions. We believe that the value of WorldCom Consolidated will be solely captured by WorldCom Group. We view the MCI tracker as nothing more than financial engineering. On a matter of principle, we ascribe no equity value to it. We believe that the MCI tracker is an interim step to a full spin or perhaps the sale to a private equity group, or a financial buyer that views the MCI tracker as sort of a royalty trust that can be leveraged to pay down the debt, manage for cash flow, and, at some point, it should have residual value.

Increasing visibility on the numbers.

As far as WorldCom Group is concerned, we believe that it has a lot of visibility in its business, which is why we raised our revenue estimate for both the first quarter 2001 (12%–12.5%) and full year (13.2%–14%), none of which includes revenues from Digex. Europe is going well, now that the PTT's have much less pricing flexibility, given their highly leveraged balance sheet, and we've already seen a rationalization in that market in terms of number of players. WorldCom seems to be just about the PTT's worse nightmare — a "new entrant" with scale and scope of new assets that also happens to be a "real" company. Furthermore, there are only two players in the corporate enterprise world that matter: AT&T and WorldCom, and AT&T is in disarray. The fact is that WorldCom Group is gaining further traction in the corporate enterprise space.

It will be very clear, come first quarter results, that WorldCom Group is in a very different position than AT&T or Sprint within the business segment. We believe WorldCom Group will post double-digit growth versus little or no growth at Sprint, and negative growth at AT&T, in their business segments. We are not talking about consumer, which is negative for everyone. We are talking about selling services to business customers. WorldCom's relative performance versus its peers should put to rest what we view as the ridiculous notion that all three companies are in the same business.

It is WorldCom's UUNET and global city networks that differentiate it from AT&T and Sprint.

WorldCom's array of assets allow it to be much more exposed to the global data/IP space and much less vulnerable to pure domestic business voice and old private line than either AT&T or Sprint. The numbers speak for themselves. It may take another quarter before people believe that WorldCom is back on track, but we believe that if the numbers play out, WorldCom stock will more than double a year from now.

Our Highlight List

We think an eclectic list that balances relative levels of risk/reward, and captures the ability to realize value from different business strategies is appropriate.

We cover almost 40 companies in the United States alone. At any given time, there are stocks more compelling than others. Given that the entire sector is flat on its back, it is tempting to say that if the whole group recovers, everyone in the group is likely to recover. While that may be true, if we look at our space and try to factor in current stock prices, risk/reward, and overall long-term strategic position, the following would be our short list of stocks that we would be most aggressive on today looking out 12–18 months. Given that we follow all segments of the industry, the list includes RBOCs, bandwidth plays, CLECs, and a global vertically integrated player. Clearly, there are riskier and less riskier names on the list. We believe WorldCom, Qwest, and Broadwing have, by far, the lowest risk associated with attaining 2001 estimates. On the other hand, the CLEC group in general will be under pressure until visibility of second half results and, in some cases, funding, become apparent. In particular, XO Communications and Winstar are clearly the riskiest names within our top pick list for reasons that we have highlighted in this report. Nonetheless, we think they both have assets and businesses that, at current levels, are not being valued appropriately and should result in value creation over the next 12–18 months. We think an eclectic list that balances relative levels of risk/reward and captures the ability to realize value from different business strategies is appropriate. The following are our names:

WorldCom will likely demonstrate strong operations in first quarter 2001, and it will be clear that WorldCom is in a very different business than its so-called peers; it is not just a long distance company.

Global Crossing, we believe, is the most commercially oriented of the network bandwidth plays. Its bonds tell you that the stock is worth a lot more.

Qwest is at a valuation that is not much above the other RBOCs, but clearly it has a growth profile that is stronger and is structured to be much more flexible in growing its business.

A basket of **Allegiance**, **Winstar**, **McLeod**, and **XO Communications** represents the four CLECs we truly believe will be long-term survivors and players in this industry.

Metromedia Fiber Networks, which represents perhaps the epitome of a bottleneck asset in this space and is frankly one of the few companies, if not the only company, that we follow that has actually raised guidance for 2001.

Broadwing, we believe, has little or no risk to its current business. It has a great balance sheet, but it also has some broader strategic issues it has to deal with.

Verizon is a lower beta name to include on the list. We think it has a much more realistic relationship between earnings and revenue guidance than its brethren, as we speak, with clearly a better wireless footprint, and ultimate control over Genuity, which gives it a leg up in terms of strategic assets to serve corporate users.

The bottom line is that we thought it might be useful to review where we stand in the industry and address what we think are some of the long- and near-term issues.

Net/Net

Telecom is a growth industry. Every once in a while, telecom is disrupted by both supply and, in this particular time frame, new players hitting the market. Those things tend to work themselves out when the companies come out of the back end of this inflection point, and we see a constructive case building for value creation among the players that are left standing.

Companies mentioned in this report:

Allegiance Telecom, Inc.# (ALGX-$16.94; 1S)
AT&T# (T-$23.35; 3M)
BellSouth Corp.# (BLS-$40.35; 3M)
Broadwing Inc. (BRW-$20.80; 1M)
Flag Telecom Holdings Ltd.# (FTHL-$7.67; 1H)
Global Crossing Ltd. (GX-$15.07; 1S)
Level 3 Communications, Inc.# (LVLT-$18.56; 1S)
McLeodUSA, Inc.# (MCLD-$11.31; 1S)
Metromedia Fiber Network# (MFNX-$7.19; 1S)
Qwest Communications (Q-$37.00; 1M)
SBC Communications# (SBC-$43.06; 1M)
Sprint Corp.# (FON-$22.00; 3M)
The Williams Companies, Inc.# (WMB-$40.99; 1H)
Tyco International Ltd.# (TYC-$45.40; 1M)
TyCom Ltd.# (TCM-$13.99; 1S)
Verizon Communications (VZ-$48.88; 1M)
Williams Communications Group, Inc.# (WCG-$10.33; 1S)
Winstar Communications, Inc.# (WCII-$4.00; 1S)
WorldCom, Inc.# (WCOM-$18.38; 1M)
XO Communications, Inc. (XOXO-$9.41; 1S)

BEFORE THE TENNESSEE REGULATORY AUTHORITY

NASHVILLE, TENNESSEE

REC'D TN REGULATORY AUTH.

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OFFICE OF THE EXECUTIVE SECRETARY

In RE: *Universal Service Generic Contested Case*
Docket No. 97-00888

COMMENTS OF WORLDCOM

At the February 21, 2001, Agenda Conference, the Directors requested Comments on certain issues related to the provision of universal service in Tennessee. At the Pre-Hearing Conference held on April 3, 2001, the Pre-Hearing Officer asked interested parties to comment on whether the Authority may request revenue information from commercial mobile radio service providers (CMRS), or wireless carriers, and whether wireless carriers should be required to contribute the state universal service fund. MCI WorldCom Communications, Inc. ("WorldCom") hereby files its comments in response to that request.

It is WorldCom's position that any universal service fund should be targeted to end users as narrowly and as precisely as possible and that the financial contributions needed to support such a fund should be spread within the telecommunications industry as widely as possible. This position is based on economic, policy and market facts. First, from an economic perspective, the financial burden for social programs should be spread as widely as possible because the cost burden is ultimately borne by consumers that do not directly benefit from the program. The incidence of the cost burden will affect the prices of other services and thus the level of those services that are produced and consumed. As a means to minimize the economic dislocations associated with the support mechanism, the price effect on other services will be smaller the larger the effective assessment base is. For this reason, the support for the Tennessee state universal service program under development in this docket should assess wireless as well as

State Specific
Copy to:
Spalding
Scan to: Smith

Notified of Scan/Faxed:
/Lackey /Carver
/Twomey /Edenfield
/Turner /
Other:

wireline carriers. The assessment for all carriers should be based on end user intrastate revenues.[1]

Secondly, from a market perspective, it is undeniable that wireless services function as effective substitutes for both local and toll calls carried over wireline networks. In this market environment, to assess one class of carriers while exempting others is patently inequitable and unsustainable. From a policy perspective, the assessment mechanism must be competitively neutral. Competitive neutrality requires that the assessment mechanism neither benefit nor penalize any carrier or group of carriers. According to the FCC, competitive neutrality requires that "no entity receives an unfair competitive advantage that may skew the marketplace or inhibit competition by limiting the available quantity of services or restricting the entry of potential service providers."[2] FCC USF Order at ¶48. In addition, the FCC determined that any universal service funding mechanism should be technologically neutral—i.e. that "universal service support should not be biased toward any particular technologies." Id. at ¶49. These principles of competitive and technological neutrality require that wireless carriers should not only pay into any universal service fund, but should also be able to take out from such a fund. Indeed, wireless carriers should be able to gain eligible carrier status pursuant to §214 of the 1996 Act and should

[1] There are more equitable assessment bases other than intrastate end user revenues that could be adopted. For example, the $50 million state USF in New York is supported by assessments on total intrastate revenue less deductions for payments made to other carriers for such inputs as UNEs and access services. As such, the mechanism used in New York assesses value added rather than billed revenue. In an effort to avoid added controversy and complications, WorldCom is not advocating the use of the New York assessment mechanism in this docket but stands ready to assist the TRA in understanding the benefits of that mechanism. Separately, WorldCom wishes to remind the TRA of the ongoing discussions regarding the federal assessment mechanism referred to in footnote 3.

[2] *Report and Order*, In the Matter of Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Adopted May 7, 1997. ("FCC USF Order").

receive support from the universal service fund for providing the supported services on the same terms and conditions that an ILEC or any other wireline carrier is eligible to receive support from the fund.

Respectfully submitted,

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United States General Accounting Office

GAO

Report to the Subcommittee on Antitrust, Business Rights and Competition, Committee on the Judiciary, U.S. Senate

January 2000

TELECOMMUNICATIONS

Development of Competition in Local Telephone Markets

GAO

Accountability * Integrity * Reliability

GAO/RCED-00-38

Contents

Abbreviations

AT&T	American Telephone and Telegraph
DOJ	Department of Justice
FCC	Federal Communications Commission
LATA	local access and transport area
OSS	operations support systems
UNE	unbundled network element

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Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

Resources, Community, and Economic
Development Division

B-283167

January 25, 2000

The Honorable Mike DeWine
Chairman
The Honorable Herb Kohl
Ranking Minority Member
Subcommittee on Antitrust, Business Rights
and Competition
Committee on the Judiciary
United States Senate

The breakup in 1984 of the American Telephone and Telegraph Company (now called AT&T) promoted competition in the long-distance and telephone equipment markets. The breakup was not, however, designed to promote competition in local telephone service markets[1] since it was assumed that these markets were likely to remain monopolistic. By the early 1990s, some companies had begun to enter local telephone markets and compete against incumbent carriers, particularly in large cities, prompting some states to make regulatory changes to encourage further entry. Ultimately, many experts came to believe that more competition in the provision of local telephone service was possible but would not fully develop without significant revisions to communications law. With the enactment of the Telecommunications Act of 1996 on February 8, 1996, the Congress sought to increase competition in local telephone and other telecommunications markets. The law imposed a variety of obligations on incumbent local telephone companies that were designed to open their networks to competitors. Six months later, the Federal Communications Commission (FCC) issued its first major set of rules implementing the provisions of the act affecting local telephone markets.

[1]Local telephone service includes calls that are made within a designated geographic area or locality without payment of long-distance charges.

You asked us to provide information on (1) the development of competition in local telephone markets and the market strategies employed by new carriers in five states under the 1996 Telecommunications Act and (2) the key issues affecting that development and the enforcement activities of federal and state regulators to address those issues.[2] To respond to these questions, we visited five states: California, Illinois, New York, South Carolina, and Texas. (App. I discusses the criteria we used to choose these states.) In these states, we interviewed competing carriers, incumbent carriers, and state public utility commissions. We also surveyed all 50 state utility commissions to obtain information on the development of competition in local telephone markets and on the state commissions' activities (see app. II). In addition, we reviewed relevant laws and FCC proceedings.

Results in Brief

To date, little competition has emerged in local telephone markets, but new competing carriers are pursuing several different market strategies. According to data from FCC and the industry, incumbent local telephone service providers controlled all but about 3 percent of the traditional wireline local telephone service market as of December 1998—the most recent date for which data were available. The number of lines competing carriers serve has, however, increased rapidly, approximately tripling in 1998 alone. We found, as have FCC and others, that competing carriers have concentrated on serving relatively profitable urban business communities. At the same time, some of the competing carriers we interviewed in the five states we visited were also serving other markets—residential customers and customers outside the largest cities. The competing carriers we interviewed were delivering services through all of the methods envisioned by the 1996 act: reselling—or acting as retailers of—incumbents' services, leasing parts of incumbents' networks, or constructing their own facilities. Finally, an important competitive strategy being undertaken by both competing and incumbent carriers is the

[2]This report is the second in a series of three reports GAO is issuing for your Subcommittee on the development of competition in telecommunications markets. The first report examined competition in the video market. (See GAO/RCED-99-158, July 8, 1999.) The third report will examine the development of competition in the market for Internet services and is scheduled for release later in 2000. It will focus on several issues, including the technical characteristics underlying the provision of Internet access by various types of companies (telephone, cable, wireless) and the legal and regulatory differences governing the provision of Internet access by these companies. As part of that assignment, we plan to review municipal policies on open access issues.

simultaneous marketing and sale of a package of varied telecommunications services including, for example, local and long-distance telephone service, Internet access, wireless telephone service, and video services.

The further development of competition in local telephone markets will depend, in part, on the resolution of several key issues that may have thus far affected that development. In particular, the act requires incumbent carriers to provide competing carriers with access to elements of their telephone networks, such as equipment and facilities, to enable those competing carriers to order and provide service to their own customers. However, our discussions with competing and incumbent carriers in the five states we visited, as well as with FCC staff, suggest that providing this access has been difficult because these incumbents' systems were not originally designed to be accessible to users external to the incumbent carrier. In addition, some competing carriers in the five states told us that negotiating the necessary agreement that details the terms and conditions governing the business relationship between an incumbent and competing carriers—referred to as an interconnection agreement—can take a significant amount of time and thereby delay their market entry. Similarly, some of the competing carriers we spoke with in the five states said that negotiating the placement of their equipment in an incumbent's facilities can take a significant amount of time. Incumbent carriers noted, however, that they had invested money and other resources to make elements of their telephone network accessible to competing carriers, had signed interconnection agreements, and had allowed competing carriers to place their equipment inside their own facilities.

Competing carriers in the five states also told us that the act and accompanying rules needed better enforcement. We found, through our discussions with FCC officials and our survey of staff at the 50 state commissions, that state and federal regulators recognize their role is changing to become less focused on traditional rate-setting regulation and more focused on mediating disputes among carriers and enforcing laws and regulations. Consequently, federal and state regulators are in the process of adjusting their enforcement tools in ways that may lead to a greater focus on enforcement. For example, FCC recognizes the need to develop greater staff expertise on enforcement issues and recently created a new bureau to focus exclusively on enforcement. FCC has also instituted a formal expedited process for resolving complaints against telecommunications carriers called the "accelerated docket." In addition, regulators at the state and federal level are working with carriers to establish systems that will measure incumbent carriers' performance in providing service to competing carriers and automatically assess penalties against incumbent carriers that are not in compliance with the act.

The 1996 act and its implementing regulations imposed significant changes on local telephone service markets. In the years since the act's passage, competing carriers have developed entry strategies, incumbent carriers have responded to the obligations imposed on them by the act and have simultaneously undertaken their own new strategies, and regulators and the courts have played roles in implementing and interpreting the act. Despite the minimal competition that has emerged thus far in the market, further competition seems likely to develop in local telephone markets because competing carriers continue to expand their market share, these carriers are using all entry modes envisioned by the act, legal and regulatory issues are increasingly becoming clarified, and the packaging of varied telecommunications services may enable firms providing other communications services to effectively compete for local telephone customers. Moreover, FCC and state regulators are taking steps indicative of greater enforcement efforts in the future. This report contains no recommendations.

Background

For the first hundred years after the invention of the telephone, federal and state laws and regulations helped shape the structure of the telecommunications industry. Over that period, the primary focus of these laws and regulations shifted from controlling the market dominance of AT&T to promoting competition in telecommunications markets. During the 1970s and 1980s, much of the effort to promote competition was geared toward the long-distance telephone market, but the Telecommunications Act of 1996 was designed, in part, to open local telephone markets to greater competition. Technological changes in the telecommunications industry have also led to changes in the structure of the telephone industry and in the laws and regulations governing it.

Laws and Regulations Have Helped Shape the Structure of the Telephone Industry

After receiving patents for telephone technology in 1876 and 1877, Alexander Graham Bell and the Bell Telephone Company (later called the American Telephone and Telegraph Company and then AT&T) controlled the developing market for telephone service. Once the patents expired, however, a myriad of independent local telephone service providers entered the market, and by 1907, the independents provided just over 50 percent of local telephone service in the United States. AT&T responded by reducing its prices in markets directly threatened by competitors, purchasing independent telephone providers, and refusing to allow other carriers to interconnect with its network. This refusal disadvantaged AT&T's rivals because they were unable to route calls from their customers to customers on AT&T's much larger network. These actions made it difficult for independent companies to compete, and many accepted AT&T's offer to acquire them.

By the 1930s, communications had become so important to the country that the Congress passed the Communications Act of 1934, which, among other things, created FCC and gave it authority over interstate telecommunications, while leaving the oversight of intrastate telephone service to state regulators. For many years, AT&T was the primary provider of local telephone service, long-distance telephone service, and telephone equipment in the United States. AT&T carried roughly 80 percent of the nation's local telephone traffic by the early 1980s, and the remaining 20 percent of local traffic was carried by the independent local companies unaffiliated with AT&T. Beginning in the 1950s, new companies began trying to compete against AT&T's monopoly in the telephone equipment and long-distance markets. In 1974, the Department of Justice (DOJ) alleged that AT&T was undertaking anticompetitive actions aimed at stifling this new competition and filed an antitrust suit against the company. This case was resolved when a federal court approved a consent decree entered into by DOJ and AT&T in 1982. Under this decree, known as the Modification of Final Judgment, AT&T was required to divest its ownership of the 22 Bell Operating Companies, its local telephone subsidiaries. However, the company was permitted to continue manufacturing telephone equipment and offering long-distance service and to enter some markets from which it was previously excluded—notably the computer market.

The 22 Bell Operating Companies were reorganized into seven regional entities, which have since been reduced to four companies through mergers. While the consent decree permitted the Regional Bells to provide service within 161 designated local areas that covered much of the country, it limited the lines of business these companies could enter to ensure that their monopoly status in the local telephone market did not affect the development of competition in other telecommunications markets. For example, the Regional Bells were not permitted to provide long-distance telephone service or to manufacture telephone equipment without obtaining a waiver from the federal court.

By the late 1980s, new companies had begun to compete directly against incumbent local telephone carriers in some locations by building facilities that paralleled the incumbent telephone companies' networks—particularly in large cities.[3] To enhance their likelihood of success, however, these companies wanted some regulatory changes that would facilitate the interconnection of their networks with those of incumbent carriers. Some states enacted legislation or adopted regulations, and FCC put forth rules designed to facilitate competitors' entry.[4] Meanwhile, the Regional Bells were becoming increasingly dissatisfied with their exclusion from the long-distance telephone market and the extensive control by the federal court over their activities. These and other changes in the market led many experts, as well as some Members of Congress, to believe that the Communications Act was becoming outdated and that a major revision of the law was needed.

The 1996 Act and Its Implementing Regulations Establish a Framework for Greater Competition in Local Telephone Markets

The passage of the Telecommunications Act of 1996 constituted the first comprehensive amendments to the federal Communications Act since its enactment in 1934. One of the key goals of the act was to encourage competition in local telephone service. To do this, the act imposed a variety of obligations on incumbent carriers designed to facilitate new companies' entry via three modes envisioned in the act. The three modes of entry are as follows:

- Resale. This entry method allows new companies to resell, or act as retailers of, an incumbent's telephone services. Resellers purchase local telephone services from an incumbent at wholesale rates and resell the services to end users at retail rates.
- Access to Network Elements. This entry method enables new companies to lease parts of an incumbent's network—facilities and equipment that are used to provide local telephone service—at cost-

[3]Incumbent local telephone companies include the Regional Bells as well as many other independent local telephone carriers that were providing local telephone service before the 1996 act was passed.

[4]For example, in 1989, the New York Public Service Commission required New York Telephone, part of NYNEX, to allow certain types of competitors to interconnect with its network. Also, in 1995, the Illinois Commerce Commission approved part of Ameritech's "Customer First Plan," under which Ameritech made some pieces of its network available to competing carriers. In exchange, Ameritech expected to obtain pricing flexibility and approval to offer long-distance telephone service in its service region.

based rates. These leased parts of the incumbent's network are generally referred to as "unbundled network elements"—also known as UNEs—because they are specific, or discrete, parts or functions of the telephone network. Entrants provide local telephone service by leasing designated pieces of the incumbent's network or by leasing some pieces and combining them with their own facilities.

- Construction of New Facilities. Finally, carriers may enter local telephone markets by building entirely new facilities. Under a full "facilities-based" method of entry, an entrant builds all the facilities that it needs to serve customers, including the "last mile," or the connection to a user's premises. This method of entry still requires the incumbent to allow entrants to interconnect with the incumbent's network.

To facilitate competitors' entry into local telephone markets using these methods, the act prohibits states from restricting entry into the local telephone market and requires all telecommunications companies to interconnect their networks and facilities with those of others. While other obligations of the act were imposed on all local telephone carriers—for example, all telephone companies must allow users to keep their existing telephone numbers when possible and provide access to operator services and directory assistance without undue delays—additional competition-enhancing obligations were imposed only on incumbent carriers.[5] Among other things, incumbent carriers are required to negotiate, in good faith, agreements that lay out terms governing the interconnection of their networks when requested by competitors; allow entrants to resell the same services that the incumbents provide to their own retail customers; make UNEs available for purchase at rates that are based on their cost;[6] and allow competing carriers to "collocate," or place their own equipment in incumbents' central offices.[7] In addition, the Congress required the Regional Bells to demonstrate that they have adequately opened their networks to competitors before they can provide long-distance[8] telephone service in their designated local service areas.[9] Specifically, the act lays out a 14-point checklist (47 U.S.C. 271), which generally requires that a Bell Company demonstrate to regulators its compliance with the interconnection and network access requirements detailed in earlier sections of the act.[10]

[5]The market-opening obligations discussed here are contained in Section 251 of the Communications Act of 1934, as amended (47 U.S.C. 251).

[6]The act was not explicit about how "cost" should be calculated or defined. However, FCC and state commissions are charged with making this determination.

[7]If the incumbent local exchange carrier can demonstrate to the state commission that physical collocation is not practical for technical reasons or because of space limitations, the carrier may provide for "virtual" collocation. (47 U.S.C. 251(c)(6)).

[8]Long-distance service includes toll calls within "local access and transport areas" (LATA) and across LATAs. The Regional Bells are allowed to provide intraLATA toll service, but not interLATA toll service. In the remainder of this report, when we refer to "long-distance" telephone service, we are referring to interLATA toll service.

[9]The Bell Operating Companies were allowed to provide long-distance telephone service outside their local service areas as of the date of the 1996 act's enactment.

[10]Satisfying the 14-point checklist is a determination that FCC must make in approving a Regional Bell's entry into the long-distance market (see 47 U.S.C. 271(d)(3)).

In August 1996, FCC issued an order implementing the local competition provisions of the act.[11] Among the regulations included in that order, FCC established rules about how interconnection and collocation were to be provided, put forth a method that state commissions should use to establish prices for interconnection and UNEs,[12] and specified which parts of an incumbent's network must be made available to competing carriers (and are, therefore, UNEs). One of the elements that must, under FCC's order, be unbundled and provided to competing carriers as a UNE is an incumbent's "operations support systems"—the computer systems and personnel that entrants use to place orders and provision local telephone service.[13] After FCC released its rules, several telephone service providers and state regulators challenged the rules before the U.S. Court of Appeals for the Eighth Circuit. The Eighth Circuit overturned many of FCC's rules on the grounds that the commission had exceeded its authority and misinterpreted the law. Ultimately, in early 1999, the Supreme Court issued a decision that addressed many of the issues raised in the Eighth Circuit decision.[14] The Supreme Court, noting that the Telecommunications Act of 1996 was vague in some respects, affirmed FCC's rulemaking authority to implement the local competition provisions of the act and upheld most of FCC's rules. The case was sent back to the lower court for further proceedings consistent with the Supreme Court's decision.

Although FCC establishes nationwide guidelines for incumbent telephone service providers and state regulators, state regulators themselves have major roles in implementing key provisions of the act, several of which are directly related to promoting local telephone competition. For example, state commissions must approve or reject interconnection agreements, and they have a role in arbitrating and mediating these agreements if asked to

[11]This order was the first part of FCC's "competition trilogy," a set of rulemakings implementing the 1996 act. 11 FCC Rcd 15499 (released Aug. 8, 1996). The trilogy also includes orders relating to other key facets of telecommunications policy issues—universal service and access charges.

[12]FCC determined that the prices charged by incumbents for UNEs should be based on forward-looking economic costs and adopted a pricing methodology known as "Total Element Long Run Incremental Cost."

[13]FCC also required incumbent carriers to provide resellers with access to their operations support systems under section 251(c)(4) of the Communications Act. FCC further noted that providing nondiscriminatory access to these systems could be viewed as a "term or condition" of unbundling other network elements under section 251(c)(3).

[14]*AT&T Corp. v. Iowa Utilities Board*, 525 U.S. 366 (1999).

do so by the negotiating carriers. State regulators are also charged with developing and implementing cost-based prices for interconnection and UNEs.

Technology of Telephone Transmission Has Evolved Over Time

The technology used to transmit telephone calls has evolved since the invention of the telephone in 1877. In the conventional telephone network, "dialtone" is transmitted over a pair of copper wires from a telephone company's facility, known as a central office, to the caller's telephone when the handset is lifted. As the caller dials another party's number, the number pattern is received at the central office, and the call is routed through the telephone network and transmitted to the called party's telephone. When the call is answered, the two parties hear each other's voices because telephones convert sound into electrical signals that are transmitted through the telephone lines at both the calling and receiving ends.

In recent years, the conventional telephone network has been modernized. For example, a new generation of advanced electronic equipment is being installed in incumbents' central offices to improve the transmission of telephone calls. In addition, new delivery systems are being deployed and/or adapted to provide local telephone service. For example, fiber-optic cable—a higher-speed, higher-capacity alternative to copper wire—is being deployed by both incumbent and competitive carriers. Cable companies are also upgrading their facilities to transport two-way voice services over their existing coaxial cable transmission facilities. Wireless technologies, which do not require cables for the transmission of telephone calls, are providing another alternative to traditional wireline local telephone service.

While Little Competition in Local Telephone Markets Has Emerged, New Carriers Are Pursuing Varied Market Strategies

While competing carriers are still serving only a small portion of the local telephone market—approximately 3 percent—several carriers have entered the market using a variety of market strategies. These carriers are serving primarily urban business customers; however, some competing carriers are also serving residential customers and those outside the largest cities. We found that competing carriers were using all of the modes of entry envisioned by the Telecommunications Act of 1996—reselling incumbents' services, leasing UNEs, and building facilities. We also found that the fundamental manner in which telecommunications services are produced and marketed is changing as competing and incumbent carriers are pursuing strategies to offer customers packages of telecommunications services, such as local and long-distance telephone service, Internet access, and video service.

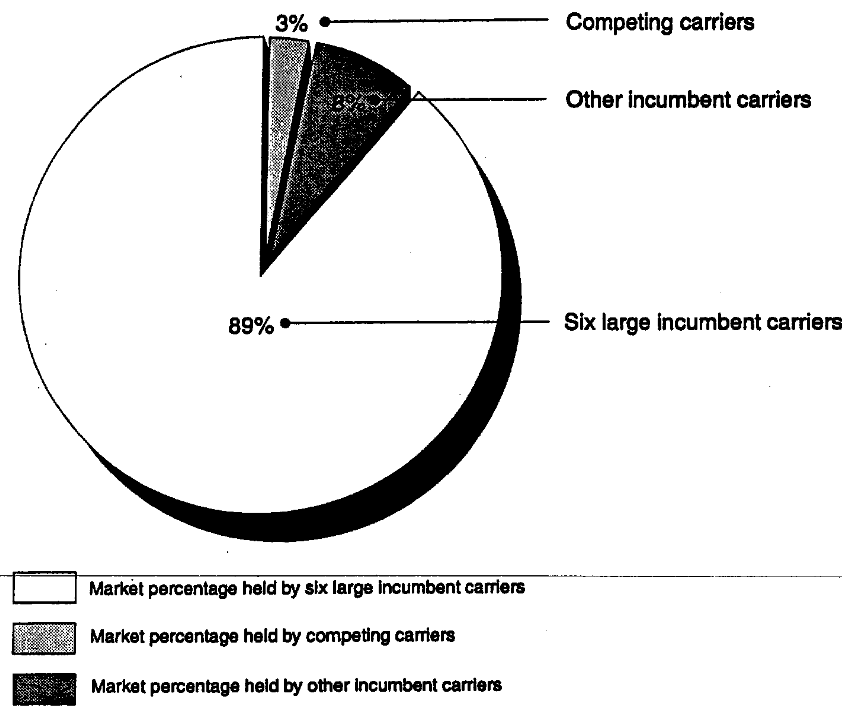
Competing Carriers Provide Only a Small Percentage of Local Telephone Service

According to FCC, as of December 1998—the latest point for which data are available[15]—there were more than 180 million local telephone lines in the United States. Although no comprehensive data are available on the numbers of lines served by different types of carriers, information from FCC's voluntary surveys and analysts' reports suggest that by the end of 1998, approximately 89 percent of these lines were served by six large incumbent local telephone service providers (the four remaining Regional Bell Companies, GTE, and the local telephone division of Sprint), about 3 percent were served by competing carriers,[16] and the remainder were served by the many other independent incumbent carriers (see fig. 1).

[15]At this time, FCC has only preliminary data for June 1999.

[16]Because competing carriers do not have to report the size of their customer base to regulators and few participate in FCC's voluntary surveys, there is no strictly reliable measure of the size of the market that bypasses incumbents' networks. FCC reports that analysts' estimates of the market also vary somewhat, generally placing competing carriers' market share between 2 and 3 percent of the market. Using survey data on competing carriers reported by New Paradigm Research Group, Inc., we estimate that competing carriers are serving about 3 percent of the local market.

Figure 1: Market Shares of the Local Telephone Market, by Type of Carrier

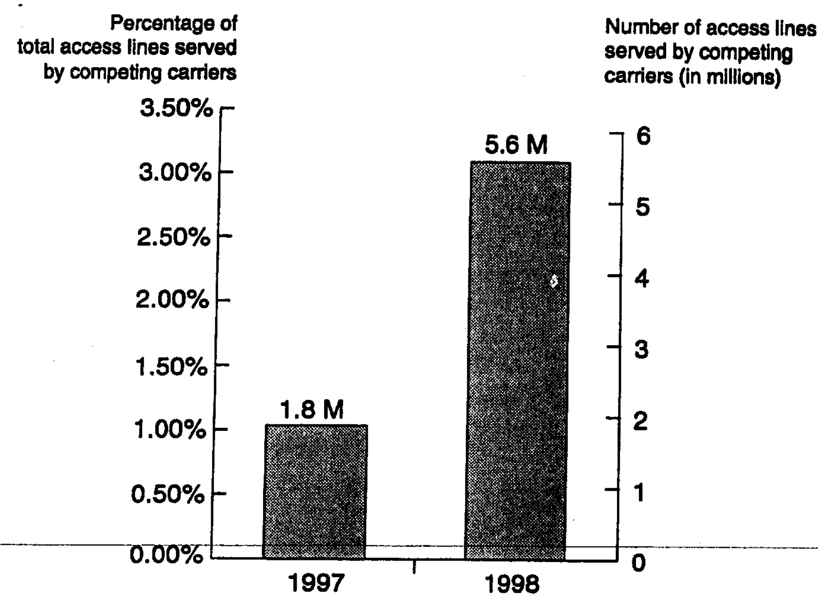


Note: Other incumbent carriers include over 1,300 mostly small local telephone carriers.

Source: GAO's analysis of FCC's and analysts' data.

Despite the small presence of competing carriers, our estimates—based on data from FCC and the industry—show that the number of lines they serve approximately tripled between December 1997 and December 1998 (see fig. 2).

Figure 2: Growth in the Number of Access Lines Served by Competing Carriers, 1997-98



Source: GAO's analysis of data from FCC and *The 1999 CLEC Report*™ from New Paradigm Resources Group, Inc.

While none of the competing carriers were serving large numbers of local telephone lines, some of these carriers are large telecommunications companies. For example, in 1998, one large telecommunications service provider had total revenues of $53.2 billion from its provision of varied telecommunications services—including long-distance and wireless services—although only a small fraction of its total revenues are from local telephone service. At the same time, many of the new companies providing local telephone service are much smaller. For example, 16 of the competing carriers we interviewed serve fewer than 100,000 local telephone lines, and 15 have less than $100 million in revenues. The six large incumbent companies also vary considerably in size—the largest of these carriers as of 1998 earned $26 billion from its provision of domestic telephone services in that year and served about 41 million telephone lines, while the smallest of these carriers earned $5 billion from its local telephone operations and served about 7 million telephone lines.

Our analysis of the status of competition in local telephone markets was limited because systematically collected data were not available on the local telephone service that competing carriers provide throughout the country. FCC recently acknowledged its own difficulties in evaluating the degree of competition in its October 1999 Notice of Proposed Rulemaking on Local Competition and Broadband Reporting.[17] In that notice, FCC stated that more data on companies' provision of local telephone and broadband services (such as high-speed connections to the Internet) are needed to evaluate the effectiveness of the Commission's decisions and otherwise understand the development of competition in these markets. Obtaining such data would allow parties to better understand and evaluate the level of competition in this evolving market.

Most Competing Carriers Focus on Urban Business Markets, but Some Choose to Serve Other Markets

In its August 1999 report on competition in local telephone markets, FCC provided statistical support showing that competition is expanding most rapidly in urban business districts. In addition, staff at the state utility commissions we surveyed reported that competition was developing more rapidly in business markets than in residential markets. For example, staff at 36 state commissions reported to us that large business markets were very or somewhat competitive, while staff at 45 state commissions said that residential markets were not very competitive or had no competition at all. In addition, staff at many of the state commissions explicitly noted in their comments that competition was developing most rapidly in urban business areas within their states. Many of the incumbent carriers we spoke to noted that the urban business market was one of the markets being targeted by competing carriers.

Competing carriers are focusing on the urban business market because it is generally more profitable than other local telephone markets. In particular, the concentration of customers in urban areas reduces the cost of service because it shortens the average length of the telephone line that connects a customer's premises to a telephone company's primary facilities. Additionally, business users can generate more revenue and be less costly to serve because businesses are more likely than residential customers to buy a greater volume and variety of telecommunications services. The greater profitability of serving urban business markets is also related to the prices—set by regulators—that incumbent carriers charge for telephone service. Regulators set the rates that incumbent telephone companies

[17]FCC 99-283, Oct. 1999.

charge for local business telephone service, special features (such as caller ID and voice mail), and long-distance telephone service at levels that are high relative to cost so that they could set the rates for residential and rural local telephone service at levels that are low relative to the cost of providing the service, while still enabling the companies to earn a profit. Thus, new carriers are likely to find it profitable to serve urban business customers because incumbents' prices tend to be high relative to the cost of serving these customers. This pricing structure may change as FCC and the states work, as required under provisions of the 1996 act, to make the subsidies that have been implicit within the rate structure more explicit.

In the five states we visited, we interviewed 24 competing carriers that are using a variety of market strategies and are often serving more than one market segment.[18] Some of these carriers focused mostly on serving large businesses in large cities, while others focused on serving businesses in smaller cities, and more than half served at least some residential customers. In addition, a number of these carriers were providing service outside the urban business market, including the following:

- Some competing carriers had chosen to serve smaller cities or smaller businesses in order to focus their entry in areas where larger competing carriers would be less likely to operate.
- Several competing carriers were targeting small- and medium-sized businesses by offering them the same kinds of personal service that larger carriers offer only their largest business users. These companies told us that by developing highly efficient support systems, they can profitably offer relatively specialized services to these businesses.
- Some competing carriers that were already providing video or long-distance services to consumers in residential markets—in particular, cable and long-distance companies—are focusing their entry in these areas.

[18] One of the carriers we interviewed does not provide voice services.

- In New York City, Chicago, and southern California, competing carriers were choosing to serve residential customers in multiple dwelling units, which include apartment buildings and condominiums. A carrier in southern California told us that this market is attractive because a third to a half of the residential customers in California live in multiple dwelling units. In addition, because residential users are highly concentrated in these buildings, they can be less expensive to serve.[19]
- Some carriers had found a profitable niche serving residential consumers who could no longer obtain telephone service from incumbent providers because they had not paid their bills. These competing carriers charge a prepaid amount as high as $49 a month for service strictly limited to the local calling area.

Competing Carriers Are Using All Modes of Entry Envisioned by the Act

The 1996 act outlined three means by which competing carriers could provide local telephone service: reselling incumbents' services, leasing incumbents' network elements, and constructing their own facilities. National data and our interviews with competing companies indicated that entering companies are pursuing all of these means, to varying degrees.

Resale

FCC reported that in December 1998, about 1.9 percent of the access lines in the United States were being served by resellers.[20] In responding to our survey of the 50 state utility commissions, staff at 25 of the commissions said that resale constituted a major portion of competing carriers' service to residential customers in their states, while staff at 18 commissions said that resale constituted a major portion of competing carriers' services to business customers. In addition, in about 23 states, commission staff reported that they expect the use of resale to increase in both business and residential markets.

Although resale is the most common entry mode employed by competing companies, the resellers we interviewed almost universally told us that resale is not a profitable means of providing local telephone service. They noted that resale can be a good way to enter the market quickly and build a customer base before investing in facilities. However, these carriers told us

[19]Despite their focus on serving multiple dwelling units, competing carriers undertaking this strategy told us they are having problems accessing essential telephone facilities in these properties.

[20]FCC's preliminary data for June 1999 suggest that resale has continued to grow modestly as a percentage of access lines.

that they cannot earn a profit from reselling incumbents' local telephone service because there is not a great enough difference between the wholesale rates resellers pay incumbent carriers for service—rates set by state commissions in accordance with specifications in the 1996 act—and the retail prices resellers can charge their own customers. Nevertheless, one competing carrier told us that carriers may pursue this strategy because of the profits they earn by providing customers with packages of telecommunications services.

Access to Network Elements

FCC reported that in December 1998, only two-tenths of 1 percent of the telephone lines in the United States were being served by competing carriers that were leasing UNEs from incumbent carriers.[21] Nevertheless, FCC's data show that competing carriers have collocated their equipment in the incumbents' central offices that provide almost 50 percent of the nation's local telephone lines, indicating that competing carriers may have the potential to serve many more customers through the leasing of UNEs. Staff at utility commissions in only four states said that competing carriers were using UNEs to deliver a major portion of their service to businesses, and staff in only two states reported that competing carriers were using UNEs to deliver a major portion of their service in residential markets; however, staff at 26 of the state commissions expected the use of UNEs to increase in both residential and business markets in the future. Additionally, 15 of the companies we interviewed were providing local telephone service to some of their customers by combining incumbents' UNEs with elements of their own networks.

[21]FCC's preliminary data for June 1999 suggest that the use of UNEs has grown markedly as a percentage of access lines, although the use of UNEs still accounts for less than 1 percent of the market.

Competing carriers' decisions to provide service using UNEs depended, in part, on the prices of these elements. Like the wholesale rates that resellers pay incumbent carriers, the rates that entrants pay for UNEs are set by state commissions in accordance with provisions of the act and direction from FCC. FCC directed that the states use a forward-looking economic cost methodology to set these rates.[22] Under this approach, rates would be based on the forward-looking cost to incumbent carriers of providing the UNE using the most efficient technologies currently available—a method that may lead, in many cases, to rates that are lower than would be realized under other cost methods.[23] In the five states we visited, the commissions were in various stages of setting prices for UNEs.

Some competing carriers are attempting to provide local telephone service by leasing an incumbent's entire set of UNEs—a method that has come to be called the UNE-Platform. Although the act did not specifically mention the UNE-Platform as an entry method, it did allow competing carriers to purchase combinations of network elements. Some competing carriers told us that because UNEs must be sold at rates based on cost, this entry method can be more cost-effective than resale but still has the advantage of requiring minimal investment. According to FCC, very little service is currently being offered using the UNE-Platform. In responding to our survey, staff at only one state commission reported that the UNE-Platform was the major method being used by competing carriers to provide service to both business and residential users in their state. In one of the five states we visited, the Bell Company was being explicitly required to offer the platform, and a competing carrier reported that, as a result, the company had acquired upwards of 60,000 new local residential customers in that state during the first 5 months of 1999.[24]

Construction of Facilities

The degree to which local telephone service is provided by competing carriers that rely entirely on their own facilities is not well known because these providers do not have to report information about their businesses to

[22] The appropriateness of the forward-looking cost method is currently under review by the U.S. Court of Appeals for the Eighth Circuit.

[23] FCC has also directed states to "deaverage" UNE rates across urban and rural regions so that UNE prices more accurately reflect the differential cost to incumbents of providing UNEs in these different settings.

[24] In another of the states we visited, the incumbent carriers were being required to offer the UNE-Platform as part of the standard interconnection agreement.

regulatory authorities and do not purchase services on an individual telephone line basis from incumbents. These full-facilities-based competing carriers are employing a variety of strategies. For example, we spoke to some carriers that were targeting business customers by deploying fiber-optic cable within and around cities. Additionally, some carriers we spoke to are reconfiguring existing cable systems or building new systems to provide local telephone service mostly to residential customers. While estimates show that full-facilities-based carriers were providing local telephone service to only about 1 percent of the national market at the end of 1998, FCC estimates that the amount of fiber-optic cable owned by competing carriers increased fivefold between 1995 and 1998. Some full-facilities-based carriers are also using wireless technologies. For example, the wireless carrier we interviewed was using a fixed wireless technology to serve customers primarily in multiple dwelling units in large cities.

Competing and Incumbent Carriers Are Providing Packages of Telecommunications Services and Entering New Markets

Both competing and incumbent carriers are providing packages of telecommunications services—including local telephone service, long-distance service, data services, Internet access, video service, wireless telephone service, and directory assistance—to consumers.[25] This focus is generally attributed to consumers' desire for a "one stop shop" for their varied telecommunications needs. Additionally, some savings in the cost of providing these services can occur when several services are offered over the same infrastructure or when the marketing and administrative functions for several services can be combined. The tendency of carriers to provide an array of telecommunications services is fundamentally changing how carriers operate in the market and how telecommunications services are bought and sold.

To provide an array of services, many communications companies are redesigning their infrastructures to expand their capabilities. For example, cable television companies are modifying their networks—which were initially designed for one-way video transmission over coaxial cable wire—to accommodate high-quality, two-way voice and data transmissions as well. Similarly, incumbent telephone companies are developing higher-capacity transmission technologies to remain competitive in the market for

[25]Another new line of business for incumbent carriers—though not a part of the package of services they supply to retail customers—is the wholesale services (i.e., resale and UNEs) they provide to competing carriers. Officials of several of the incumbent carriers said they recognize that these wholesale operations are becoming increasingly important.

high-speed interactive data transmission (for example, Internet access). In addition, some mobile and fixed wireless companies are providing telephone service, data services, and, in some cases, video services.

Both competing and incumbent carriers are also entering new markets, sometimes through corporate mergers. For example, some of the incumbent carriers told us they were starting to enter other incumbents' traditional territories to compete—that is, they are becoming competing carriers in other incumbents' regions. In addition, both competing and incumbent carriers are entering new markets by merging with other companies whose telecommunications infrastructures or service offerings complement their own. For example, some of the competing carriers have been acquired by long-distance companies. Also, Bell Atlantic expanded its service area by acquiring NYNEX, and SBC expanded its area by acquiring PacTel, Southern New England Telephone Company, and Ameritech. US WEST is awaiting FCC's approval of its proposed merger with Qwest, a provider of data and long-distance telephone services.

A unique challenge for the Regional Bell Companies in attempting to offer a competitive package of telecommunications services is the prohibition on their providing long-distance service within their service region until they have received approval from FCC through the process outlined in the 1996 act. In December 1999, Bell Atlantic received approval from FCC to enter the long-distance market in its New York region.[26] On January 10, 2000, SBC Communications filed an application with the FCC to provide long-distance service within the state of Texas. The two remaining Regional Bell Companies are pursuing FCC's approval but have made varying degrees of progress toward attaining it.

Several Issues Affect the Development of Competition in Local Telephone Markets

Several issues may have slowed the development of competition in local telephone markets. Competing carriers, incumbent carriers, and regulators cited difficulties in making incumbent carriers' operations support systems—needed to perform critical business functions—accessible to competing carriers. Competing carriers and regulators also cited difficulties in negotiating interconnection agreements and obtaining adequate collocation space as problems that may have inhibited or delayed market entry. Additionally, some competing carriers stated that greater

[26]After FCC's approval of the Bell Atlantic 271 application, AT&T and Covad Communications challenged this approval in federal court.

enforcement of the act would help to foster a more competitive environment in local telephone markets.

While Critical to the Development of Competition, Equivalent Access to Incumbent Carriers' Operations Support Systems Has Been Difficult to Achieve

In its order on local competition implementing the 1996 act, FCC required incumbent local telephone carriers to give competitors access to the incumbents' computer systems and personnel that competing carriers need to perform critical business functions—systems known collectively as operations support systems (OSS).[27] FCC specified that competitors must have access to incumbents' OSS so that they can perform business functions such as ordering, provisioning, and maintaining telephone service for their customers.[28] According to FCC, competing carriers must be able to use these systems to perform these business functions as easily as incumbents perform these functions for themselves in terms of quality, accuracy, and timeliness. If incumbent carriers access these business functions electronically, then they are required to provide competitors with equivalent electronic access to these functions; likewise, if incumbents perform these functions manually—by telephone or fax—then the same access is required for competitors.[29] In responding to our survey, staff at nearly all of the state regulatory commissions said that competitors' access to incumbents' OSS functions is very important to the development of local telephone competition.

Obtaining equivalent access to OSS functions is important for competing carriers to attract and retain customers. The competing carriers we interviewed often cited deficiencies in access to OSS functions as a serious impediment to the development of competition. Some competing carriers noted that incumbents' systems were frequently unable to complete electronically placed orders without manual intervention, especially for

[27]In its local competition order, FCC identified OSS as an "unbundled network element" and determined that incumbents must provide access to OSS functions under their duty to provide UNEs and their duty to offer resale services. Incumbents must provide access to computer systems that contain information related to telephone service, such as available service plans and installation options, customer profiles, and the availability of telephone numbers.

[28]FCC specified five critical business functions: (1) pre-ordering (developing the customer profiles—e.g., name, address, and existing telephone services—necessary to place accurate orders for potential customers); (2) ordering; (3) provisioning (executing customers' requests for local telephone service); (4) maintenance and repair; and (5) billing.

[29]For OSS functions for which there is no retail analog, incumbents must provide access sufficient to give efficient competitors a "meaningful opportunity to compete."

complex orders. In addition, competing carriers noted that ordering services from more than one incumbent carrier can be cumbersome because incumbents use different ordering systems. Competing carriers also told us that incumbents were not confirming orders and assigning installation dates in a timely manner. Additionally, competing carriers told us that incumbents occasionally left customers without telephone service by failing to transfer them to the competitor's system at the designated time. Some carriers also claimed that they are not notified in advance if the facilities at a customer's site require special preparation before installation and are then charged excessive fees for the special preparation. Finally, competing carriers noted that incumbents' wholesale operations staff often failed to handle service requests in a timely and effective manner, a problem that carriers attributed partially to a lack of training and experience on the part of incumbents' wholesale personnel.

Incumbent carriers acknowledged that there have been problems with adapting their OSS to the needs of entering companies. Incumbents said that providing comparable access to their support system functions is difficult, however, because these computer systems were designed at an earlier time for internal use by the incumbent, not for external use or use by other companies. Incumbents also noted that giving competitors access to these complex systems requires significant technical modifications, resources, and time. They said they are expending significant effort to improve the ability of competitors to access these system functions. For example, one incumbent carrier said that it now offers competing carriers the choice of five electronic systems and provides an electronic handbook on the Internet to facilitate competitors' access. That incumbent also showed us materials that it is using to train competing carriers' personnel to better use the available systems, while another incumbent said that it is training its own personnel to provide better service to its wholesale customers. However, incumbent carriers said that problems still occur when competing carriers' personnel make errors or are unwilling to use the appropriate electronic systems.

An FCC official agreed with incumbents that an important reason access to OSS is difficult to provide is that such systems were designed for internal use. FCC officials further noted that there were no national standards for OSS and, as a result, these systems varied considerably across carriers. A DOJ official and state officials also told us that problems in accessing OSS functions pose the primary impediment to the development of local telephone competition. Additionally, staff at 27 state commissions reported that the Regional Bell Company in their state was working to address OSS issues and had made at least "some" progress. In the states where the Regional Bell Companies are seeking authority to provide long-distance service, the state commissions have been helping to address OSS issues by testing incumbents' OSS. In one region, several state commissions are cooperating with each other and with the incumbent carrier to test its OSS functions.

Some Competing Carriers Cited Difficulties Negotiating Interconnection Agreements

The 1996 act requires incumbent carriers to negotiate agreements that stipulate how and under what conditions competing carriers will connect their facilities and equipment with those of incumbents.[30] The act and FCC's implementing rules provide competing carriers with several options for developing interconnection agreements: negotiating their own agreement, adopting an agreement that another carrier has negotiated with the incumbent in that state, or choosing provisions from other signed agreements within the state to form a new agreement or to combine with other newly negotiated provisions.[31] The act authorizes state utility commissions to mediate or arbitrate interconnection disputes between the carriers if requested by the carriers and requires the state commissions to approve or reject all agreements.

Some competing carriers were concerned that difficulties they are having negotiating interconnection agreements may delay their market entry. These carriers told us that incumbent carriers did not always negotiate contracts in a timely manner and that disputes involving the agreements were sometimes slow to be resolved. For example, one carrier told us that it can take almost a year to negotiate an agreement with an incumbent. In an arbitration proceeding involving another carrier, the arbitrator stated that the incumbent carrier had not been negotiating in good faith as required by the act. Some competing carriers told us that they opt into existing contracts even when the contracts are not relevant to their needs because doing so eliminates costly and time-consuming negotiations.

[30]The terms and conditions of interconnection agreements are to be just, reasonable, and nondiscriminatory.

[31]The last of these options, known as "pick and choose," has been the subject of court challenges; however, in Jan. 1999, the Supreme Court affirmed FCC's interpretation of the statutory language that requires an incumbent carrier to allow competing carriers to choose options from prior contracts signed by that incumbent.

Incumbent carriers, on the other hand, said they are working to facilitate negotiations on interconnection agreements and point to a large number of signed interconnection agreements as evidence that there are no major problems for competitors in this area. According to a telecommunications trade association, incumbent and competitive carriers had signed over 5,400 interconnection agreements nationwide as of February 1999, 3 years after the 1996 act became law. One incumbent carrier we interviewed said it had concluded over 400 agreements that had been approved by the state and was currently negotiating another 750.[32]

The five utility commissions in the states we visited had approved and arbitrated interconnection agreements. For example, in 1998, the Illinois utility commission approved 37 agreements. In Texas, the public utility commission has responded to complaints from some competing carriers by developing a preapproved interconnection agreement that competing carriers may adopt. While one competing carrier expressed concern that the terms of the proposed interconnection agreement would not meet its needs, the staff of the Texas commission noted that the agreement provides consistency and addresses certain issues that earlier interconnection agreements did not discuss.

Some Competing Carriers Reported Difficulties Obtaining Adequate Collocation Space

Under the 1996 act, an incumbent carrier must allow competing carriers to collocate, or place their equipment in the incumbent's central offices, on nondiscriminatory, just and reasonable rates, terms, and conditions. Several of the competing carriers we interviewed reported difficulties in obtaining adequate collocation space. These difficulties included insufficient collocation space, long delays in providing space, high rates for providing the cages (metal frames) within which competing carriers store their facilities, and inconvenient access to collocation equipment. For example, after an incumbent carrier reported having no space in its central offices, the state commission found that the incumbent could convert space that was being used for less important functions. Even when collocation space is available, staff at a state utility commission said it takes as long as 18 months for competing carriers to obtain collocation space. Additionally, some competing carriers alleged that incumbents charge high rates for collocation. Finally, competing carriers reported that incumbents adopted policies that made it inconvenient for the competing

[32]This incumbent reported that only 60 of the 440 companies with which it has reached an interconnection agreement are actually providing local telephone service.

companies to service their collocation equipment. For example, some competing carriers told us that their access within central offices is so limited that, in some cases, they cannot use restrooms, elevators, or other facilities in the offices.

Competing carriers were collocating equipment in many incumbents' central offices in the five states we visited. According to FCC's August 1999 report on local telephone competition, as of the end of 1998, approximately 50 percent of the incumbents' customer telephone lines were served by central offices where competing carriers had collocation arrangements. Incumbent carriers told us that collocation space is expensive to prepare and maintain. Additionally, while incumbent carriers told us that collocation space is limited, one such carrier also described its efforts to provide space when requested. For example, this carrier showed us space that had been converted from a break room for employees to collocation space. Another incumbent carrier also told us that it had made restrooms and frame rooms available to designated employees of competing companies.

Staff at several state commissions mentioned collocation as one of the 1996 act's most difficult requirements to satisfy. Until recently, FCC allowed incumbent carriers to require competing carriers to place their equipment in a cage that is at least 100 square feet—specifications that competing carriers believed increased the difficulty and cost of obtaining adequate collocation space. Recognizing that collocation was a continuing problem for new entrants, FCC issued new rules on March 31, 1999, that allow collocators to share a collocation cage with other competing carriers or to install their equipment in uncaged space. Some of the competitors with whom we spoke believed that the new rules would improve their ability to collocate their equipment in incumbents' central offices.

Competing Carriers Consider Enforcement Necessary to Open Local Telephone Markets to Competition

FCC and state utility commissions have the primary responsibilities for enforcing the 1996 act. However, according to the competing carriers we spoke with, the act is not being adequately enforced. Incumbent carriers also expressed concerns about the regulators' implementation and enforcement of telecommunications laws. As a result of the act, federal and state regulators are having to adapt to changing roles, and many are taking actions that may improve enforcement, such as resolving complaints more quickly and adopting performance measures.

Competing Carriers Say Enforcement Is Critical to Their Success

Although many competing carriers told us that the Telecommunications Act of 1996 does not need to be revised, several said that swifter enforcement of the law is needed. In particular, carriers emphasized that their market strategies are often contingent on their ability to enter the market rapidly and develop a customer base. Therefore, quickly resolving the problems that they described to us, such as difficulties in accessing an incumbent's OSS, negotiating interconnection agreements, or obtaining collocation space, is crucial for the successful implementation of their business plans. Moreover, several competing carriers told us that regulators do not impose penalties, do not assess penalties in a timely manner, or levy penalties that are too small to influence an incumbent's behavior or fully compensate a competing carrier for the loss of its customers.

Despite their desire for greater enforcement, many competing carriers expressed concern about making direct complaints to enforcement authorities because they were reluctant to jeopardize their relationships with their only wholesale suppliers. These and other carriers were worried about losing their retail customers if those customers were alerted to problems the carriers were having with their primary wholesalers. Finally, some companies did not have the time or resources to be involved in protracted regulatory processes.

Some competing carriers noted that the process that Regional Bells must go through to gain approval to enter the long-distance market—known as the section 271 process—serves as an incentive for the Regional Bell Companies to open their markets to competition. These competing carriers said that Bell Companies seeking approval to offer long-distance service were more responsive to the concerns of competing carriers than were other incumbents that are already permitted to offer long-distance service in their service regions. These competing carriers are concerned about the loss of this incentive when the Bell Companies gain approval to enter the long-distance market.

Incumbent Carriers Also Express Concerns About Regulators' Implementation and Enforcement of Telecommunications Laws

The incumbent carriers we spoke with expressed some concerns about how regulators are implementing and enforcing the Telecommunications Act of 1996. The incumbents were concerned primarily about what they saw as a lack of clear guidance from FCC on what the Regional Bell Companies must do to pass the 14-point checklist required for entry into the long-distance telephone market. One incumbent carrier told us that it thought it was in compliance with the items on the checklist only to find that FCC considered its progress insufficient. However, FCC did not, in the that FCC now focuses more on mediating and refereeing differences among telecommunications providers. In particular, FCC officials told us that as telecommunications markets become more competitive, there will be less need for FCC to regulate carriers and more demand for the agency to ensure the efficient functioning of the market by mediating disputes and enforcing compliance with the law. Recognizing these changes, the relevant congressional committees recently approved FCC's plan for an enforcement bureau to strengthen the agency's efforts to enforce the law. This plan was implemented in November 1999. FCC officials also told us that the Commission recognizes the need for staff training in the enforcement area. FCC has likewise recognized the importance of swifter enforcement and has instituted an "accelerated docket," a formal expedited process to resolve all forms of complaints against telecommunications carriers.[34] In addition, FCC has used its authority to impose conditions on recent merger approvals as a way to encourage incumbents to further remove impediments to competition. For example, in approving the Bell Atlantic-NYNEX merger, FCC required the merged company to improve competing carriers' access to OSS by offering them a uniform computer interface in the states where Bell Atlantic now operates.

According to FCC officials, under FCC's authority to approve applications by Regional Bell Companies to enter the long-distance market in their local telephone service areas, the Commission has spent considerable resources clarifying the entry requirements for these companies. These officials said that they provided early guidance on satisfying the entry requirements set forth in the 14-point checklist in their August 1996 order implementing the local competition provisions of the 1996 act and in their response to the first application for entry into the long-distance market by a Bell Company. More recently, the officials said, they addressed the requirements for all 14 points in an October 1998 order denying Bell South's second application to enter the long-distance market in Louisiana. And, in a December 1999 document approving Bell Atlantic's application to enter the long-distance market in New York, they again provided guidance for satisfying all 14 points.

When we asked staff at the state utility commissions whether the role of the commissions had changed since the act's passage, staff at 48 commissions said that the role had changed, and staff at 36 of these

[34]In addition to formal proceedings, regulators are also using informal procedures to resolve many complaints.

opinion of officials at this Regional Bell Company, provide adequate guidance on what actions the company would need to take to be in compliance with the checklist. One incumbent carrier suggested that FCC had raised the "hurdle" over time, increasing the requirements for satisfying the checklist. Representatives of some of these companies told us that even today, they do not have a clear sense of what will enable their companies to pass the checklist and gain approval to enter the long-distance market. However, one incumbent did say that FCC's replies to applications from Bell Companies to enter the long-distance market had provided somewhat more detailed guidance over time.

Regulators Adapt Enforcement Tools and Role to Changing Market

At the federal level, the Congress charged FCC with implementing the local competition provisions of the 1996 act. FCC has a variety of enforcement tools that can be used to implement these provisions, including, for example, the authority to issue penalties and resolve complaints. As previously noted, FCC also has the authority, after consultation with DOJ and the relevant state commission, to approve an application by a Regional Bell Company to enter the long-distance market in its local telephone service area.[33] In addition, states and state utility commissions have enforcement authority under the 1996 act and their own laws. In responding to our survey, staff at some state utility commissions indicated that their commissions had certain tools for enforcing their laws. For example, the authority to issue civil penalties or revoke carriers' operating licenses. Many of the states have an expedited process for handling complaints similar to FCC's, and some other states are considering the adoption of an expedited process. Staff at many of the state commissions believe, however, that their authority to assess fines is not adequate to enforce the laws and regulations that govern local telephone companies. Staff at some state commissions said that they have no fining authority and must rely on a court or other state agency to issue monetary penalties against a carrier or have fining authority that is restricted to specific retail abuses.

According to FCC officials, the 1996 act has shifted the balance between FCC's roles as an industry regulator and a market facilitator in such a way

[33]FCC is required to give substantial weight to DOJ's evaluation. If FCC determines that a Bell Operating Company has fallen out of compliance with the competitive checklist after authority to provide in-region long-distance service has been granted, FCC may issue an order directing the company to correct the deficiency, impose a penalty on the company, or suspend or revoke such authority.

commissions said that the role had changed greatly. Staff at some commissions said they were doing less traditional regulation, such as rate setting, while staff at many commissions said they were more involved in resolving disputes among carriers. These state commission staff characterized their roles since the act's passage as mediators, arbitrators, and referees. In addition, staff at 31 of the 50 state commissions reported at least some increase in the resources devoted to the regulation of telephone service during the act's first 3 years. However, staff at 40 commissions noted that at least some increase in resources was needed to address the increased workload that has occurred since the act's passage; staff at 31 of these commissions said they needed a moderate or large increase in resources.

Regulators and Carriers Believe Performance Measures Are Necessary to Ensure Compliance

One of the actions that regulators are taking to better enforce laws and regulations is to develop better information about the services incumbents are providing to competing carriers. In general, telephone companies use "performance measures" to measure the quality of the services they provide. For example, one performance measure might indicate how long it takes, on average, to install a customer's telephone service. Another measure might track the time required to repair a customer's telephone service. Competing carriers and regulators have urged the development of performance measures to ensure that incumbent carriers comply with the 1996 act's requirement to provide the same quality of service to competing carriers as they provide to their own retail customers. In addition, one senior DOJ official stated that performance measures are important for the development of competition in local telephone markets. Similarly, staff from 40 of the state commissions claimed that performance measures were very important for opening local markets to competition.

Performance measures are being designed to enable regulators, competing carriers, and incumbent carriers themselves to monitor incumbents' performance. In several of the performance measurement plans being considered by the state commissions, monetary penalties paid to a competing carrier are automatically imposed on an incumbent when one or more of the performance measures indicate that the incumbent has not provided adequate service to the competing carrier. Furthermore, some plans give state regulators the authority to impose additional financial penalties on an incumbent carrier that continues to provide inadequate service to its competitors. In its December 1999 approval of Bell Atlantic's application to enter the long-distance market in New York, FCC said that it will use the performance measures developed in New York to monitor Bell Atlantic's performance for at least 1 year after that company enters the long-distance market. FCC says that if those measures fall sufficiently below the ones submitted by Bell Atlantic when it applied to enter the long-distance market in New York, FCC will take enforcement action, including the possible suspension or revocation of the company's authority to offer long-distance service in New York.

Incumbent and competing carriers hold different views on how performance measures should be evaluated, how many are needed, and how great the penalties should be.

- Incumbents and larger competing carriers differ over which statistical measures provide the most reliable and cost-effective information on incumbents' performance. Smaller competing carriers are generally more interested in whether measures of an incumbent's overall performance will appropriately reflect the quality of the service being provided to individual companies.
- The number of required performance measures varies among the states that have developed performance plans. Some incumbent carriers told us that often there were more performance measures than needed to comply with the act's requirements, while competing carriers favored additional measures to ensure that they have adequate data to determine whether incumbents are providing all of the required services.
- Incumbent and competing carriers also had different views on provisions in some of the performance plans that impose monetary penalties on incumbent carriers if they do not provide required services to competitors. Incumbents noted that the penalties in plans proposed by some states, including annual maximums, are sufficiently high. Competing carriers told us that the penalties in several of these plans are not high enough to encourage compliance with the performance standards and deter misconduct.

Observations

The Telecommunications Act of 1996 fundamentally changed the laws and regulations governing the telecommunications industry. However, some of the companies and regulators we spoke with noted, as did the Supreme Court, that the act was not entirely clear about how some provisions were to be implemented. In the 4 years since the act was passed, regulatory actions and court decisions have clarified some of these issues, while others are awaiting resolution or clarification. During the same 4 years, an array of companies—both incumbents and new competing carriers—have spent considerable resources responding to the incentives and obligations created by the act. They have pursued new business plans, developed new technologies, invested in new facilities, adapted existing facilities, restructured their businesses through mergers, and otherwise refocused their companies toward the future. Thus, the time since the act's passage has constituted a necessary period of adjustment, for regulators and companies alike.

Given the many changes that have taken place and are ongoing, it is difficult to determine whether the degree of competition that has emerged in local telephone markets thus far should be viewed as disappointing or as about what should have been expected. Moreover, the market for local telephone service is continuing to evolve. For example, some forms of communication, such as mobile wireless telephone service and electronic mail, are already being substituted at times for traditional voice telephone service, and the Internet may soon provide further alternatives. Most important, the carriers we spoke with noted that customers are increasingly influenced in their selection of local telephone service providers by whether carriers can also provide other telecommunications services, such as long-distance service and Internet access. That is, consumers now focus less on purchasing individual telecommunications services and give more attention to simultaneously purchasing a package of these services. This packaging is thus blurring the traditional distinctions among telecommunications services and among providers, as firms that once provided only certain services broaden their market offerings. Understanding this trend is important for analyzing the further development of competition throughout this industry. As the marketplace continues to change, one of the many remaining challenges for regulators and the Congress will be to obtain the information needed to measure and track the development of competition.

Agency Comments

We provided a draft of this report to the Federal Communications Commission (FCC) and to the Department of Justice (DOJ) for review and comment. DOJ officials did not have any comments on this report. FCC officials, including the Associate Chief, Common Carrier Bureau, provided oral comments to us. They stated that that they had no significant disagreement with the overall findings and conclusions of the report. In addition, they provided a variety of technical clarifications and comments that we incorporated as appropriate.

We conducted our review from April 1999 through December 1999 in accordance with generally accepted government auditing standards. For more information on our scope and methodology, see appendix I.

As agreed with your offices, unless you publicly release its contents earlier, we plan no further distribution of this report until 14 days after the date of this letter. At that time, we will send copies of this report to interested congressional committees; the Honorable William E. Kennard, Chairman, Federal Communications Commission; the Honorable Joel Klein, Assistant Attorney General, Antitrust, Department of Justice; and other interested parties. We will also make copies available to others on request.

If you or your staff have any questions about this report, please contact me at (202) 512-7631. Key contributors to this report are listed in appendix III.

Stanley J. Czerwinski

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Associate Director, Housing, Community
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Appendix I

Objectives, Scope, and Methodology

To obtain information about competition in local telephone markets, the Chairman and the Ranking Minority Member of the Subcommittee on Antitrust, Business Rights, and Competition, Senate Committee on the Judiciary, asked us to conduct a study on emerging competition in local telephone markets. In response to this request, we analyzed (1) the development of competition in local telephone markets and the market strategies employed by new carriers in five states under the 1996 Telecommunications Act, and (2) the key issues affecting that development and the enforcement activities of federal and state regulators to address those issues. To obtain information about how competition is developing in local telephone markets, we visited five states—California, Illinois, New York, South Carolina, and Texas—that had varying demographic and telephone usage characteristics (see table 1). We chose these states because they varied by the date when competing carriers first entered the marketplace, contained urban and rural areas, varied in the status of the Bell Company's application for entry into the long-distance market, and had public service commissions with different focuses. In addition, these were among the states recommended by trade association officials and other experts whom we asked for recommendations.

Table 1: Income and Telephone Data for the Five Selected States

Criterion	California	Illinois	New York	South Carolina	Texas
Median household income in 1998	$40,934	$43,178	$37,394	$33,267	$35,783
Percentage of households with telephone service in July 1999	96.5%	91.7%	95.4%	91.1%	93.5%
Total number of telephone lines as of December 1998 (in thousands)	22,222	8,209	12,844	2,248	12,617
Percentage of total state lines provided to competing carriers for resale as of December 1998	1.4%	2.4%	1.9%	2.6%	3.0%
Percentage of resold lines provided by large incumbent carriers serving residences as of December 1998	51.5%	42.6%	23.8%	59.3%	59.4%
Percentage of total U.S. telephone revenue in 1997	11.8%	4.4%	7.4%	1.3%	6.9%

Sources: These data were the most recent available. The median household income numbers are from the U.S. Bureau of the Census, *State and Metropolitan Area Data Book 1997-98;* the remaining information is based on data in FCC's *Trends in Telephone Service* (Sept. 1999).

In these five states, we interviewed and collected information from officials of the Regional Bell Companies and other incumbent carriers, state public utility commissions, and 24 competing carriers. We chose the competing carriers by talking to experts and officials at state utility commissions. In each state, we attempted to identify competing carriers that served different markets and used different technologies to deliver local telephone service. To gain information about how competition is evolving more broadly and how well state officials feel they are able to implement the 1996 act, we mailed surveys to staff at the public utility commissions of all 50 states and received responses from all of them. The survey was sent to staff members who were charged with ensuring that knowledgeable staffers completed it. To ensure that all commissions participated in the survey and that we fully understood the answers to our questions, we telephoned all 50 state public utility commissions to pose follow-up questions and record all survey responses. In addition, some state commissions provided written responses by mail. The survey administered to the Alaska and Hawaii commissions differed from the one administered to the other 48 commissions because Alaska and Hawaii do not have Regional Bell Companies and, therefore, some of the questions were not applicable. Because we did not speak to commissioners, the survey responses represent the views of commission staff. See appendix II for the survey responses.

To identify the key issues affecting the development of competition and the enforcement activities of federal and state regulators to address those issues, we interviewed and collected information from officials at the Regional Bell Companies and other incumbent carriers, the state public utility commissions, and competing carriers in the selected states. We also used, as appropriate, information from our surveys of the state public utility commissions. In addition, we interviewed officials at and gathered information about FCC, DOJ, trade associations, and other experts. Moreover, we conducted literature searches and legal and regulatory research related to relevant federal and state legislation and legal documents.

Responses to Survey of State Utility Commissions

Note: Numbers show the number of commissions selecting each response.

Some questions were not answered by all respondents and therefore totals do not necesari'y add to 50 states.

GAO Survey on Local Telephone Competition

Abbreviations/Definitions

BOC Bell Operating Company

CLEC competitive local exchange carriers, includes IXCs (interexchange carriers)

ILEC incumbent local exchange carriers, includes BOCs

Introduction

The U.S. General Accounting Office (GAO), a federal agency that reviews federal programs for the U.S. Congress, is surveying public utility commissions in the 50 states and the District of Columbia. This survey asks questions about implementation in your state of local telephone competition as provided by the federal Telecommunications Act of 1996. We plan to report the information from this survey and other sources in a report on the opening of local telephone markets to competition.

The information we are requesting focuses on the experiences of each state with its different mix of residents, businesses, and access to telephone services. This is the only way we can inform the Congress about the opening of markets to telephone competition on a nationwide basis.

We recognize that this survey is one of many that you receive, including others from our agency. Hence, we simplified the questions and omitted information that requires timely research. It should take 20 to 25 minutes for a knowledgeable person to complete the questionnaire.

If you have questions about this survey, please call Nancy Barry of our Boston office at 617-565-8871 or the GAO evaluator who contacted you.

Thank you for your assistance.

1

Please provide the following information.

Name: ____________________

Title: ____________________

Phone: ____________________

State: ____________________

Roles and Resources

1. To what extent, if any, has your state's role as a telecommunications regulator changed as a result of the passage of the 1996 Telecommunications Act? *(Check one.)*

1. [11] Very great change
2. [25] Great change
3. [7] Moderate change
4. [5] Some change
5. [0] Little or no change
6. [0] No basis to judge
7. [2] Other *(Please describe.)*

Note: Alaska and Hawaii were not asked questions regarding Section 271 and regional Bell carriers since they do not have such carriers.

2

2. How have the resources devoted to the regulation of local telephone service in your state changed over the last three years? *(Check one.)*

   1. [13] Increased greatly
   2. [18] Increased somewhat
   3. [14] Stayed about the same
   4. [2] Decreased somewhat
   5. [3] Decreased greatly
   6. [0] No basis to judge
   7. [0] Other *(Please describe.)*

3

3. How, if at all, has your state commission's use of the following sources of technical help changed since your state's implementation of the 1996 Telecommunications Act? *(Check one for each row.)*

	Increased greatly (1)	Increased somewhat (2)	No change (3)	Decreased somewhat (4)	Decreased greatly (5)	*No basis to judge (6)*
a. Hiring employees with technical expertise for our commission staff	4	16	28	2	0	0
b. Technical training for our commission staff	6	21	22	1	0	0
c. Using staff from our other state agencies for technical help	1	6	41	0	0	2
d. Using outside consultants for technical help	10	13	26	0	1	0
e. Contacting other state commissions for technical help	7	25	17	0	0	1
f. Contacting FCC staff for technical help	7	27	14	0	1	1
g. Contacting trade associations for technical help	4	11	33	0	0	2
h. Contacting local exchange carriers	10	16	21	0	0	1

i. Please list any other major sources of technical help below.

4

4. Which of the choices below best describes your state commission's most likely approach to addressing forward-looking pricing (such as TELRIC) for interconnection and network elements? *(Check one.)*

   1. [18] Develop our own state approach
   2. [0] Adapt another state's approach
   3. [7] Use approach developed by telephone carrier(s)
   4. [18] A combination of the above
   5. [0] Not planning to implement forward-looking pricing in our state
   6. [1] No basis to judge
   7. [6] Other *(Please describe.)*

5. Do you think that your state commission has access to the technical expertise you need to develop and/or use forward-looking prices? *(Check one.)*

   1. [19] Definitely yes
   2. [15] Probably yes
   3. [4] Uncertain
   4. [6] Probably not
   5. [2] Definitely not
   6. [0] No basis to judge
   7. [4] Other *(Please describe.)*

6. Please consider your state commission's current resources (staff, budget) compared to what you need in order to regulate local telephone service. What change, if any, do you need in your current resources? *(Check one.)*

   1. [9] Need large increase
   2. [22] Need moderate increase
   3. [9] Need some increase
   4. [7] Can stay about the same
   5. [1] No basis to judge
   6. [2] Other *(Please describe.)*

5

Competition for local telephone service

7. Below is a list of items from the 1996 Telecommunications Act that are related to opening local telephone markets to competition. As of August 1, 1999, please indicate whether the Bell Operating Company (BOC) in your state has satisfied your state commission's criteria for each item. *(Check one for each row.)*

Has the BOC satisfied your state commission's criteria for ...	Yes (1)	No (2)	*Uncertain (3)*
a. Collocation	7	9	31
b. Interconnection	17	9	20
c. Access to network elements	9	14	23
d. Access to poles, conduits, and rights-of-way at reasonable rates	21	5	20
e. Local loop transmission (unbundled)	12	9	25
f. Local transport from trunk side of LEC switch (unbundled)	13	7	26
g. Local switching (unbundled)	13	9	24
h. Access to 911	19	5	22
i. Directory assistance	16	6	24
j. Operator call completion services	17	4	24
k. White pages listings for other carrier's customers	21	5	20
l. Access to telephone numbers for assignment to other carrier's customers	22	3	21
m. Access to data and signaling for call routing and completion	17	5	18
n. Number portability	19	6	21
o. Local dialing parity	29	3	14
p. Reciprocal compensation	19	7	20
q. Resale of local telephone service	23	4	18

6

8. Please estimate the portion of local **business** telephone service in your state that is currently provided by CLECs. *(Check one.)*

1. [0] None
2. [13] Less than 1 percent
3. [23] 1 to 5 percent
4. [4] 6 to 10 percent
5. [3] Over 10 percent
6. [6] No basis to judge
7. [1] Other *(Please describe.)*

9. Please consider the local **business** telephone service currently provided by CLECs in your state. About what portion, if any, is provided in each of the following ways? *(Check one for each row.)*

If no CLECs currently offer local **business** telephone service in your state, please check this box and skip to the next question. → [ ]

	Portion of current CLEC service to business customers				
	Major portion (1)	Moderate portion (2)	Minor portion (3)	None (4)	*No basis to judge (5)*
a. Resale	18	6	14	1	10
b. UNE-Platform (UNE-P)	1	1	12	23	11
c. Facilities-based UNE (such as unbundled loops)	4	8	17	7	13
d. Total bypass of the local loop	3	14	14	2	16

7

10. Please give your best estimate of the changes you expect, if any, in the ways that CLECs will provide local **business** telephone service in your state over the next two years. *(Check one for each row.)*

	Increase greatly (1)	Increase somewhat (2)	Stay about the same (3)	Decrease somewhat (4)	Decrease greatly (5)	*No basis to judge (6)*
a. Resale	5	19	11	2	1	12
b. UNE-Platform (UNE-P)	14	16	7	0	0	12
c. Facilities-based UNE (such as unbundled loops)	13	18	7	0	0	12
d. Total bypass of the local loop	8	24	4	1	0	13

11. Please estimate the portion of local **residential** telephone service in your state that is currently provided by CLECs. *(Check one.)*

1. [4] None
2. [26] Less than 1 percent
3. [12] 1 to 5 percent
4. [0] 6 to 10 percent
5. [1] Over 10 percent
6. [6] No basis to judge
7. [1] Other *(Please describe.)*

8

12. Please consider the local **residential** telephone service currently provided by CLECs in your state. About what portion, if any, is provided in each of the following ways? *(Check one for each row.)*

If no CLECs currently offer local **residential** telephone service in your state, please check this box and skip to the next question. → [ ]

	Portion of current CLEC service to residential customers				
	Major portion (1)	Moderate portion (2)	Minor portion (3)	None (4)	*No basis to judge (5)*
a. Resale	25	3	7	0	11
b. UNE-Platform (UNE-P)	1	1	5	27	12
c. Facilities-based UNE (such as unbundled loops)	2	2	13	17	12
d. Total bypass of the local loop	3	3	11	13	16

13. Please give your best estimate of the changes you expect, if any, in the ways that CLECs will provide local **residential** telephone service in your state over the next two years. *(Check one for each row.)*

	Increase greatly (1)	Increase somewhat (2)	Stay about the same (3)	Decrease somewhat (4)	Decrease Greatly (5)	*No basis to judge (6)*
a. Resale	8	23	4	3	0	12
b. UNE-Platform (UNE-P)	8	18	8	0	0	16
c. Facilities-based UNE (such as unbundled loops)	5	21	10	0	0	14
d. Total bypass of the local loop	8	23	5	0	0	14

9

14. How would you characterize the current state of competition for **local** telephone service in your state for the types of service listed below? *(Check one for each row.)*

	Very competitive (1)	Somewhat competitive (2)	Not very competitive (3)	No competition (4)	*No basis to judge (5)*
a. Service for **large** businesses (for example, 100 lines or more)	9	27	12	0	2
b. Service for **medium** and **small** businesses (for example, fewer than 100 lines)	0	23	24	0	3
c. Service for residences	0	3	33	12	2

15. Over the next two years, how competitive do you think the following types of connections to customers will be in the market for local telephone service in your state? *(Check one for each row.)*

Connection to customer	Major competitor (1)	Moderate competitor (2)	Minor competitor (3)	Little or no presence (4)	*No basis to judge (5)*
a. Wireline operated by BOC or another ILEC	27	9	7	1	*6*
b. Wireline operated by CLEC (including IXCs)	5	25	13	1	*6*
c. Cable	4	19	10	5	*12*
d. Wireless	4	20	19	0	*7*
e. Other *(Please specify.)*	0	1	1	0	*2*

10

Section 271 of the 1996 Telecommunications Act

16. Has there been an active 271 docket in your state? Such an active docket would consider a Bell Operating Company's (BOC's) application for providing long distance telephone service under Section 271 of the 1996 Telecommunications Act. *(Check one.)*

1. [18] Yes, there is an active docket open now
2. [5] Yes, there was an active docket at one time, but it was closed without approval
3. [7] No active 271 dockets
4. [2] Already recommended approval for 271 application
5. [6] Other *(Please describe.)*

17. What is your best estimate for when your state utility commission will recommend that the BOC in your state be allowed into the long distance market under the 271 process? *(Check one.)*

1. [3] Have already recommended approval for 271 application
2. [1] 1999
3. [5] January 2000 – June 2000
4. [9] July 2000 – December 2000
5. [6] 2001
6. [1] 2002 or later
7. [19] Uncertain
8. [0] Do not expect a 271 application to be submitted in this state
9. [3] Other *(Please describe.)*

11

18. As of August 1, 1999, what progress has the BOC in your state made on the following items that relate to meeting the Federal Communications Commission's (FCC's) criteria for Section 271 approval? *(Check one for each row.)*

	Criteria completely satisfied (1)	Criteria almost satisfied (2)	Some progress (3)	No progress (4)	*Uncertain (5)*
a. Operating support system (OSS)	2	4	21	5	15
b. Uniform pricing for interconnection and network elements that is "forward-looking"	6	13	13	3	12
c. Performance measures for quality of services provided by BOC/ILEC to CLEC	1	4	21	7	14

19. Considering the current technologies (such as copper wire, fiber optics, cable, wireless) used to provide local telephone service in your state, how important are the following items for establishing competition in the local telephone market in your state? *(Check one for each row.)*

	Very important (1)	Moderately important (2)	Somewhat important (3)	Not very important (4)	*Uncertain (6)*
a. Operating support system (OSS)	46	2	1	0	0
b. Uniform pricing for interconnection and network elements that is "forward-looking"	33	10	6	0	0
c. Performance measures for quality of services provided by BOC/ILEC to CLEC	40	8	1	0	0

12

20. In your opinion, how difficult is it for the BOC to complete the **technical** steps needed to obtain your state commission's recommendation for approval of the BOC's 271 application? *(Check one.)*

1. [0] Extremely difficult, if not impossible
2. [10] Very difficult
3. [13] Moderately difficult
4. [7] Somewhat difficult
5. [4] Not difficult
6. [13] No basis to judge
7. [0] Other *(Please describe.)*

21. Has FCC provided enough specificity in its rule-makings for your state commission to know what the FCC requires for 271 approval? (*Check one.)*

1. [7] Definitely yes
2. [21] Probably yes
3. [8] Uncertain
4. [6] Probably not
5. [2] Definitely not
6. [2] No basis to judge
7. [1] Other (*Please describe.*)

13

Performance measures

22. In your opinion, what is the most appropriate level for establishing uniform performance measures for the quality of service provided by the BOC/ILEC to the CLEC? *(Check one.)*

1. [8] National
2. [15] Regional
3. [24] State-wide
4. [2] No basis to judge
5. [1] Other *(Please describe.)*

23. ***Considering your answer to the previous question,*** which of the following groups would be most useful to help design these uniform performance measures for local telephone service? *(Check one for each row.)*

	Very useful (1)	Somewhat useful (2)	Not very useful (3)	*No basis to judge (4)*
a. Telephone industry forum or other group representing telephone companies	31	15	3	1
b. Groups representing users/consumers	19	20	6	5
c. Contract with independent third party	10	16	13	11
d. FCC	15	27	2	6
e. Your state commission	33	13	0	2
f. Other state commissions	18	27	0	5
g. Other	1	3	0	1

14

24. Please rate the helpfulness of FCC's ARMIS monitoring data. *(Check one.)*

1. [2] *Do not use ARMIS data*
2. [14] Very helpful
3. [8] Generally helpful
4. [19] Somewhat helpful
5. [2] Not very helpful
6. [5] Uncertain
7. [0] Other *(Please describe.)*

Enforcement

25. Considering both informal and formal complaints that your state commission has received, what portion of the complaints by a CLEC about an ILEC were formal? *(Check one.)*

1. [9] All/Almost all
2. [6] More than half
3. [4] About half
4. [9] Less than half
5. [15] Very few
6. [3] None
7. [3] No basis to judge
8. [1] Other (*Please describe.*)

15

26. On average, how much time elapses from the point at which your state commission receives a **formal** complaint from a CLEC (including IXCs) about an ILEC until the complaint is resolved? *(Check one.)*

1. [5] Less than 3 months
2. [16] 3 to 6 months
3. [10] 7 to 12 months
4. [2] 13 to 18 months
5. [0] 19 to 24 months
6. [0] Over 2 years
7. [12] No basis to judge
8. [5] Other (*Please describe.*)

16

27. Since the passage of the 1996 Telecommunications Act, what is the longest period of time your commission spent to resolve a **formal** complaint by a CLEC about an ILEC? *(Check one.)*

1. [2] Less than 3 months
2. [4] 3 to 6 months
3. [13] 7 to 12 months
4. [6] 13 to 18 months
5. [6] 19 to 24 months
6. [5] 2 to 3 years
7. [0] Over 3 years
8. [2] *No complaints filed yet*
9. [9] No basis to judge
10. [3] Other (*Please describe.*)

17

28. Does your state commission have an expedited process for handling formal complaints by CLECs concerning an ILEC? *(Check one.)*

1. [17] Yes
2. [9] No, but are considering one
3. [23] No
4. [1] No basis to judge
5. [0] Other (*Please describe.*)

29. What is the maximum fine that your state commission can use to enforce state laws and commission orders that relate to local telephone competition? *(Check all that apply.)*

1. [11] No fines are allowed
2. [16] Per event maximum

   → a. What is that amount? (*Enter number.*)

   $ ______________

3. [23] Per day maximum

   → b. What is that amount? (*Enter number.*)

   $ ______________

4. [2] No basis to judge
5. [14] Other (*Please describe.*)

18

30. Considering Sections 251 and 271 of the 1996 Telecommunications Act, do you feel that the fines available to your state commission are high enough to adequately enforce related state laws and commission orders? *(Check one.)*

1. [2] Definitely yes
2. [12] Probably yes
3. [10] Uncertain
4. [7] Probably not
5. [4] Definitely not
6. [8] *No fines allowed, but should have them*
7. [6] Other *(Please specify.)*

a. If you checked "4," "5," or "6" for Question 30 above, what fine would be high enough?

$__________ per _______

31. Are there any other effective penalties that your state commission can use currently to enforce your state laws and commission orders regarding local telephone competition? *(Please describe.)*

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GAO Contacts and Staff Acknowledgments

GAO Contacts

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Acknowledgments

In addition to those named above, Dennis Amari, Nancy Barry, Elizabeth Eisenstadt, Thomas Farrell, Fran Featherston, Jennifer McCarthy, Myrna Pérez, and Mindi Weisenbloom made key contributions to this report.

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ALTS

ASSOCIATION FOR LOCAL TELECOMMUNICATIONS SERVICES

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703 318-7590
jcrawford@crawfordpr.com

ALTS URGES FCC TO PROMOTE DSL COMPETITION OVER FIBER-FED LOOPS

ILECs Should Not Be Allowed to Block Competition To Customers Served By Next Generation Loop Facilities

WASHINGTON, D.C., March 13, 2001 – Incumbent monopolies should not be allowed to block competitors from accessing customers served by fiber-based loop technology, the Association for Local Telecommunications Services (ALTS) said today in a filing with the Federal Communications Commission.

"The FCC has already ordered the ILECs to provide line sharing over fiber-fed loops with remote terminals, and they should do so in any technically feasible manner," said John D. Windhausen, Jr., ALTS President. "It is essential that the ILECs provide competitors with the full 'features, functions and capabilities' of the loop, regardless of whether it is used to provide voice or data services."

"The FCC should not allow monopolies to offer DSL capabilities to customers served through a remote terminal until they provide competitors with the same capability," said Tiki Gaugler, Regulatory Attorney for ALTS. "This would eliminate ILEC incentives to continue stonewalling competitors who want to provide services to those customers."

In reply comments addressing how the ILECs should implement the FCC's line-sharing requirement, ALTS noted that although there is competition for DSL-based services, there is virtually no competition in the provision of the underlying local loop on which DSL rides. The ILECs' arguments that they should be exempt from unbundling rules simply because DSL competition exists were characterized by ALTS as a "red herring."

ALTS is the leading national industry association whose mission is to promote facilities-based local telecommunications competition. Located in Washington, D.C., the organization was created in 1987 and represents companies that build, own, and operate competitive local networks. For more information on ALTS, visit the ALTS Web site at www.alts.org.

***

ALTS' Annual Report on the State of the Local Telecom Industry, 2001

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ALTS Association for Local Telecommunications Services

Report Editor: David A. Wolcott

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ALTS Association for Local Telecommunications Services

Cover Art: DeLancey Printing

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Association for Local Telecommunications Services (ALTS)

ALTS is the leading national industry association whose mission is to promote facilities-based local telecommunications competition. Created in 1987, ALTS is headquartered in Washington, DC and now represents more than 200 companies that build, own, and operate competitive networks – CLECs that are facilities-based. ALTS was founded to harness the shared energy and vitality of the new local competitors and to help ensure that the 1996 Telecom Act is fully implemented and enforced.

Companies Building Digital Futures...

ALTS *Association for Local Telecommunications Services*

ALTS *Association for Local Telecommunications Services*

February 20, 2001

An Open Letter From John Windhausen, Jr.
President, ALTS

Re: **ALTS' ANNUAL MESSAGE ON THE STATE OF COMPETITION IN LOCAL TELECOMMUNICATIONS**

The competitive landscape in local telecommunications has changed dramatically for the better, and consumers are the big winners. For years, telecommunications consumers demanded new high-speed Internet connectivity, responsive customer service, and lower prices. In passing the Telecommunications Act of 1996, Congress answered the call by opening the local telephone market to competition and creating a new breed of telecommunications company, known as CLECs (Competitive Local Exchange Carriers).

Five years after the passage of the Act, the United States has reasserted its position as the world leader in communications and information technology. Our nation's longest economic expansion in history could not have happened as quickly without the faster, cheaper and more efficient technologies built by America's competitive local exchange carriers.

Substantial Evidence That The Act Is Working

Clearly, Congress had the right idea. The emergence of competition in the local telephone marketplace has generated enormous investment in new technologies and consumer services. Consumers are now beginning to enjoy unprecedented access to high-speed, low-cost Internet access services. Today, over one-half of the U.S. can now receive Digital Subscriber Line (DSL) service – the newest and cheapest broadband technology. Schools, small businesses and consumers are already taking advantage of this low-cost technology. Once the remaining barriers to competition are removed, residential consumers will find that high-speed Internet connections and competitive voice services will be as affordable and as easy to install as a telephone.

ALTS has assembled this second Annual Report on the State of Local Competition to document our tremendous progress since 1996. As the Report demonstrates, the competitive telecommunications industry has grown in almost every way imaginable – access lines, miles of new networks constructed, revenues, market share, and customers served. To highlight just one statistic, CLECs now claim over 8% of the local telecommunications market with over 16 million access lines in service.

The new competitive telecom companies have invested massive amounts of capital in new networks that have made access to the Internet faster and more reliable, helping to enable our 'New Economy'. These new local telecom companies have created almost 100,000 high-tech jobs and invested $56 billion in new infrastructure to serve the booming demand for voice and data services.

ALTS Association for Local Telecommunications Services

Challenges to the '96 Act Remain: Threats to Nascent Competition

Notwithstanding the tremendous progress made by CLECs, the competitive industry continues to face enormous challenges. The incumbent telephone companies continue to make it extremely difficult for competitors to interconnect with their networks, despite numerous federal and state orders requiring the ILECs to open their networks to competition. Furthermore, building owners often resist competitors' requests to provide broadband wireless and wireline services to commercial tenants and apartment-dwelling families. Finally, many cities make competitors' lives miserable by imposing enormous franchise fees and onerous regulations that are unnecessary and anti-competitive

Thus, despite our significant growth, competitors remain far behind the behemoth Bell Companies in revenues, customers, and lobbying resources. **The incumbent local exchange companies, the "ILECs", still serve about 92% of the local telephone market.** Rather than compete against each other outside their home territories, the Baby Bells have merged into even larger companies.

In short, while we have made great strides in serving the needs of consumers, we could have done so much more if the marketplace had been fully and irreversibly opened to competition. For these reasons, ALTS will focus in the coming year on opening the local market even further. We will begin by attempting to improve the level of cooperation from incumbent telephone companies, building owners and cities. We will continue to develop stronger ties with the consumers who demand our services and work together to remove the last remaining barriers to competitive service.

Looking Forward

A year from now, I hope to report significant progress on all these fronts. Ultimately, I believe the irresistible force of consumer demand – demand for the fruits of competition in telecommunications – will prevail over monopoly obstruction, which once appeared immovable. Our success in bringing competition to local markets will translate into tremendous benefits for every American and extend our nation's global leadership in telecommunications.

Sincerely,

John Windhausen, Jr.

John Windhausen, Jr.
President
ALTS

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Eagle Communications
Electric Lightwave
En-Touch Systens
FairPoint Communications
FBN Indiana
FiberNet Telecom
Florida Digital Network
Focal Communications
Gabriel Communications
Global NAPs
ICG Telecom Group
Intermedia Communications
IP Communications
KMC Telecom
Local Telephone Data Service
McLeodUSA
Metromedia Fiber Network
Network Access Solutions
Network One
Network Plus
Network Telephone
New Edge Networks
NewSouth Communications
North American Telecom
NorthPoint Communications
OpTel
Pac-West Telecomm
Pae Tec Communications
Penn Telecom
RCN
Reliant Energy HL&P
Rhythms NetConnections
SCC Communications
TalkingNets
TelePacific Communications
Teligent
TESS Communications
Time Warner Telecom
TXU Communications
Universal Access
US LEC
VarTec Telecom
Virtual Hipster Corporation
Western Wireless
Winstar Communications
XO Communications
Yipes Communications
Zama Networks

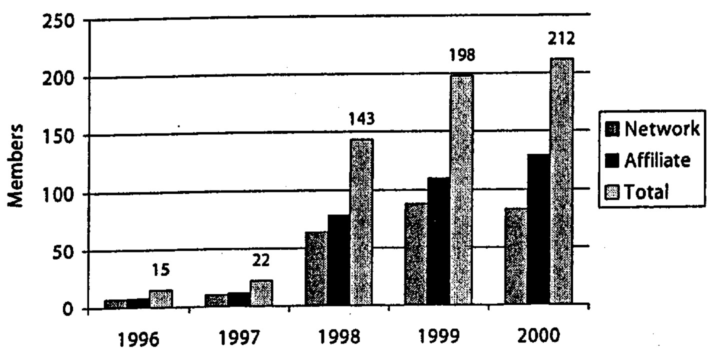
ALTS Affiliate Members

ABC
Accelerated Networks
Access Lan
Accordion Networks
Adesta Communications
Advanced Fibre Comm.
Advanced Switching (ASC)
Alcatel
Allied Capital
Amber Networks
American Management Sys. (AMS)
AssetDepot.com
AterWynne LLP
Atlantic-ACM
B2B Connect
Beacon Networks
BizSpace, Inc.
Broadband Gateways
BroadSoft
Calix Networks
Casey, Gentz & Sifuentes
Cathey Hutton & Associates
Cisco Systems
Cole, Raywid & Braverman
COLO.com
Comdisco
CommTech Corporation
CompassRose International
Convergent Networks
Copper Mountain Networks
CopperCom
Coreon, Inc.
Corning, Inc.
Cygent
Daniels & Associates
Davis Wright Tremaine
Dickstein, Shapiro, Morin & Oshinsky
DSET Corporation
Dun & Bradstreet
Dynegy Connect
EDSL Networks, Inc.
Eftia-OSS Solutions, Inc.
Encompass Global Technologies
Ensemble Communications
Fiber Technologies
Fiberworks, Inc.
GE Capital Corp.
General Datacomm, Inc.
Geyser Networks
Henkels & McCoy, Inc.
Hitachi Telecomm (USA), Inc.
Holland & Knight LLP
HyperEdge
iMagicTV
IMCI Technologies
Innovative Systems
Intertech Management
Jenkens & Gilchrist
Jetstream Communications
John Staurulakis, Inc.
Katz, Kutter, Haigler, Alderman
Kelley Drye & Warren
LeBoeuf, Lamb, Greene & MacRae
Lemay-Yates Associates
LighTrade, Inc.
Linguateq, Inc.
LiveVault Corporation
Lucent Technologies
Lynch Associates
Macrologic, Inc.
Management Recruiters of Stamford
Mandl & Mandl LLP
Marconi Communications
Martin & Associates, Inc.
MaxBill
Mayan Networks
Media Venture Partners
MetaSolv Software, Inc.
NCH Communications
Network Engineering Consultants
Neustar
New Paradigm Resources Group (NPRG)
Nichols & Pena, LLP
NightFire Software
Norris, McLaughlin & Marcus, P.A.
Nortel Networks
Norwest Equity Partners
Nossaman Guthner Knox & Elliot LLP
OAN Services
Occam Networks
O'Keefe Ashenden Lyons & Ward
Parker Poe Adams & Bernstein
Pivotech Systems, Inc.
Pliant Systems, Inc.
Precision Software
PriceWaterhouseCoopers
Quintessant Communications
Ryan, Russell, Ogden & Seltzer
SALIX Technologies
Santera Systems
Schiff Hardin & Waite
Sedona Networks
Siemens ICN
Smith, Gambrell & Russell, LLP
Sonus Networks
Sphera Optical Networks, Inc.
Swidler & Berlin
Syndeo Corporation
Tachion Networks, Inc.
TD Madison & Associates
Technologies Management, Inc.
Tekelec
Telcordia Technologies, Inc.
Telica
Telsource Corporation
The Management Network Group
TollBridge Technologies, Inc.
Trendium, Inc.
TSI
Turnstone Systems
Tyco Electronics Corporation
Verizon
VINA Technologies
Vocal Data, Inc.
Vroom Technologies
Walters & Joyce, P.C.
Warren Morris & Madison
Willkie Farr & Gallagher
Yale Properties USA

Companies Building Digital Futures...

ALTS Membership Trends

1996 - 2000



CLEC Industry Metrics

CLEC Access Lines: 16,162,223
Total U.S. Access Lines: 196,000,000
Market Share: 8.2%
Route Miles: 218,445
Buildings Served: 1,146,882
Voice Switches: 991
Data Switches: 2,071
Employees: 94,494

Source: New Paradigm Resources Group (NPRG); Credit Suisse First Boston (CSFB), FCC

Note(s): Facilities and employee data based on 3Q00 company reports. Employee total does not include ALLTEL, AT&T or WorldCom

ALTS Membership Trends

ALTS' membership 'took off' after the passage of the 1996 Telecom Act. However, CLEC consolidation, bankruptcies and insolvency are likely to cause a drop in ALTS' membership in 2001. ALTS expects membership to rebound in 2002 as the industry matures and as ALTS strengthens its membership outreach.

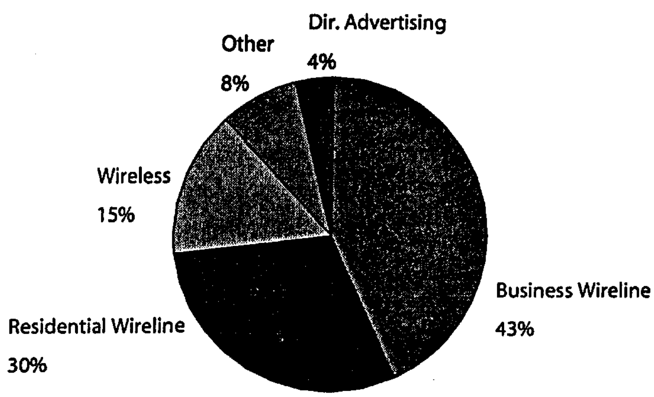
CLEC Industry Metrics

Five years after the passage of the Act, CLECs now hold over 8% of all local access lines, up from 5.6% one year ago. Network route-miles, the infrastructure upon which the New Economy will depend, have increased from 78,506 in 1997 to over 200,000 miles today. Starting with just 331 data switches in 1997, CLECs now have over 2,000 installed as America enters the digital broadband age. Most notable is the CLEC investment in human capital with CLECs creating almost 100,000 skilled, high-tech jobs.

Companies Building Digital Futures...

U.S. Communications Market

CLEC Addressable Market Opportunity

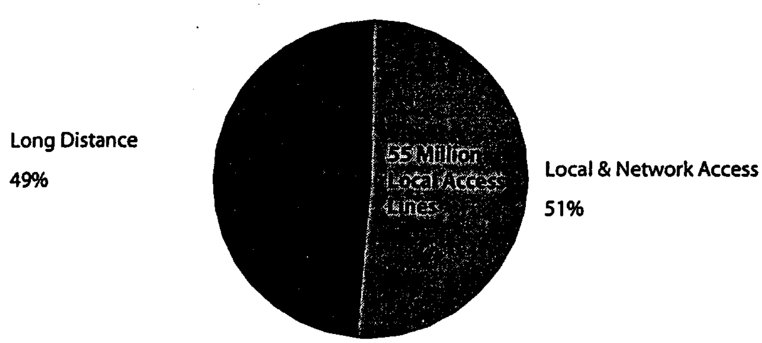


$285 Billion

Source: Bear Stearns

U.S. Business Wireline Market

CLEC Addressable Market Opportunity



$122 Billion

Source: Bear Stearns

U.S. Communications Market

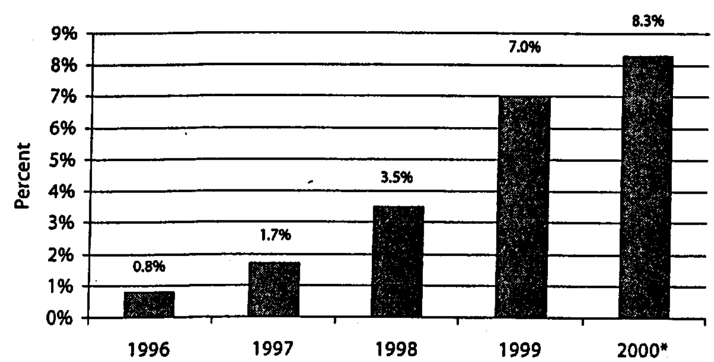
The U.S. communications market has seen remarkable growth since the 1984 divestiture and the passage of the 1996 Act. With the demand for communications more insatiable than ever, the U.S. market has reached a value of $285 billion today. High-volume business customers account for 43% of the market with residential users accounting for 30% of the market. Wireless, also a nascent industry, today accounts for 15% of the market.

U.S. Business Wireline Market

The business wireline market is one of the most attractive markets for many CLECs. To raise capital and build their networks, CLECs must target customers that offer the greatest rate of return. This strategy is consistent with how the Bell system originally erected its network, first to serve highly concentrated areas while letting independent telcos serve the more rural areas. Such high-volume clients enable CLECs to take advantage of geographic concentration and network scalability. As the industry matures, we will see a greater push into residential markets further expanding the benefits of competition.

Companies Building Digital Futures...

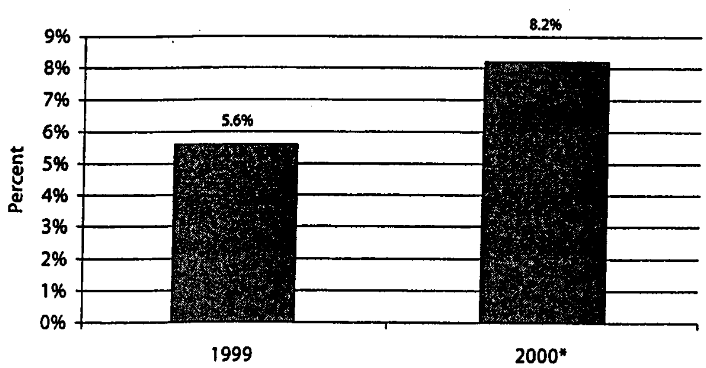
CLEC Market Share: Revenue



Note: (*) 2000 data based on 3Q00 company reports & 4Q00 estimates.

Source: NPRG, FCC, Bear Stearns

CLEC Market Share: Access Lines



Note: (*) 2000 data based on 3Q00 company reports.

Source: NPRG

CLEC Market Share: Revenue

As of the 4Q00, CLECs are estimated to hold 8.3% of the local telecommunications market in terms of revenue. In dollar terms, CLECs posted $39.1 billion in total revenue with $7.5 billion of such revenue derived from switched local access service. Due to the market slowdown, increased bankruptcies and a maturing market, 2000 represents the first year that CLECs will not have doubled their revenue market share.

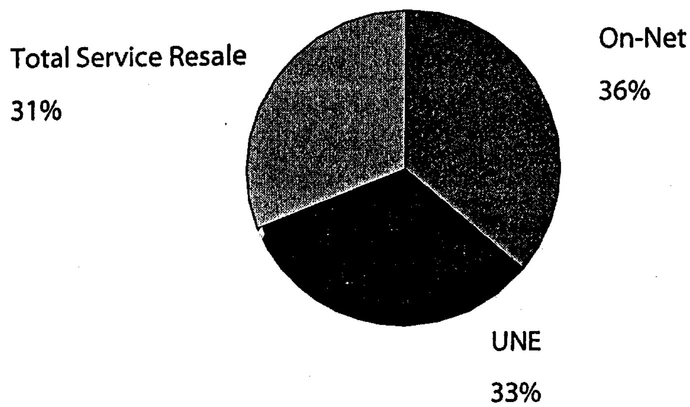
CLEC Market Share: Access Lines

As of the 3Q00, CLECs held 8.2% of the local telecommunications market in terms of access lines. If the 2000 trend continues, CLECs can reasonably be expected to hold 9.3[illegible] total access lines as [illegible]Q00. In terms of access lines, 2000 also represents the first year that CLECs will not have doubled their market share. This trend is to be expected, however as many larger CLECs experienced financial difficulty in 2000 leading to lower access line growth.

ALTS

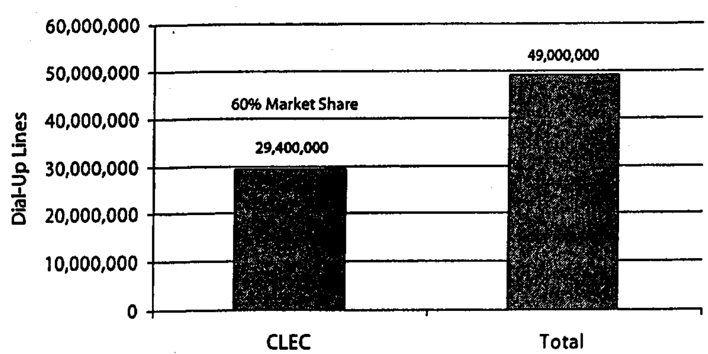
Companies Building Digital Futures...

2Q00 CLEC Line Mix



Source: Credit Suisse First Boston

Internet Dial-Up Lines Served by CLECs



Source: NPRG

2Q00 CLEC Line Mix

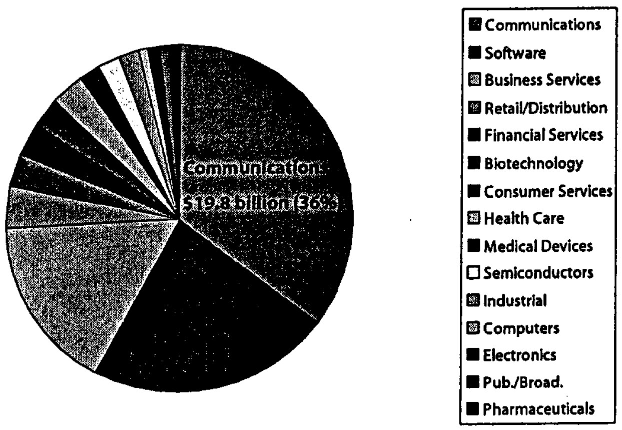
Congress envisioned three methods by which carriers could enter the local market, (1) facilities-based entry, (2) unbundled network elements (UNEs), and (3) resale. ALTS represents CLECs that are facilities-based, CLECs that invest in their own facilities or use portions of the ILEC network (UNEs) in conjunction with their own equipment. As seen, carriers utilizing these two entry strategies account for almost 70% of local competition. The amount of resale competition is expected to decline as CLECs continue to build their networks.

Internet Dial-Up Lines Served by CLECs

With the passage of the 1996 Act, Internet service providers (ISPs) found an industry group willing and able to supply the growing demand for increased connectivity and modernized facilities. Brad Jenkins, President of JPS.net, the largest ISP in northern California outside San Francisco, notes that without CLEC networks, ISP customers in "rural communities like... Laytonville, Mojave and Yosemite would pay per-minute charges to reach the nearest larger city."

Companies Building Digital Futures...

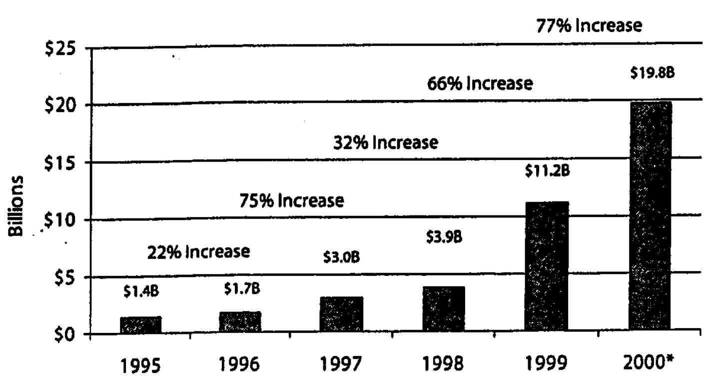
2000 (*Q1-Q3*) Venture Capital Spending by Industry



Source: PriceWaterhouseCoopers

Total 2000 (Q1 - Q3) VC Investment: $54.5B

VC Dollars Spent in Communications



Note: (*) 2000 data represents 1Q00 - 3Q00.

Source: PriceWaterhouseCoopers

2000 Venture Capital Spending by Industry

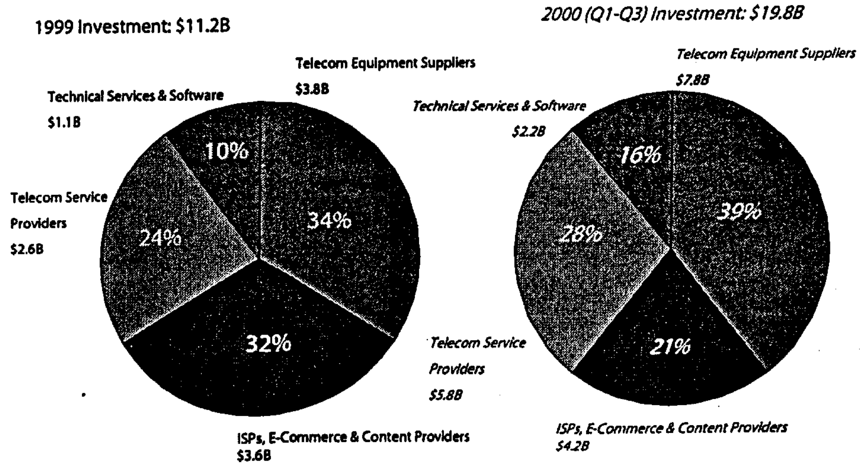
Despite the slowdown in equity markets, investment in communications on the part of venture capitalists continued to grow unabated in 2000. For the first three quarters of 2000, $19.8 billion, or 36%, of the $54.5 billion total venture capital (VC) was directed towards the communications industry. This represents an increase from 30% for the same period in 1999 and an increase from 28% in 1998.

VC Dollars Spent in Communications

With the passage of the 1996 Act, the communications industry saw a massive influx in VC as innovation and entrepreneurialship took hold. With $1.4 billion of VC directed towards the communications industry in 1995, that figure reached almost $20 billion in the first three quarters of 2000 alone. Since 1995, growth rates for communications VC have consistently reached double-digits with the previous two years experiencing growth rates in excess of 50%.

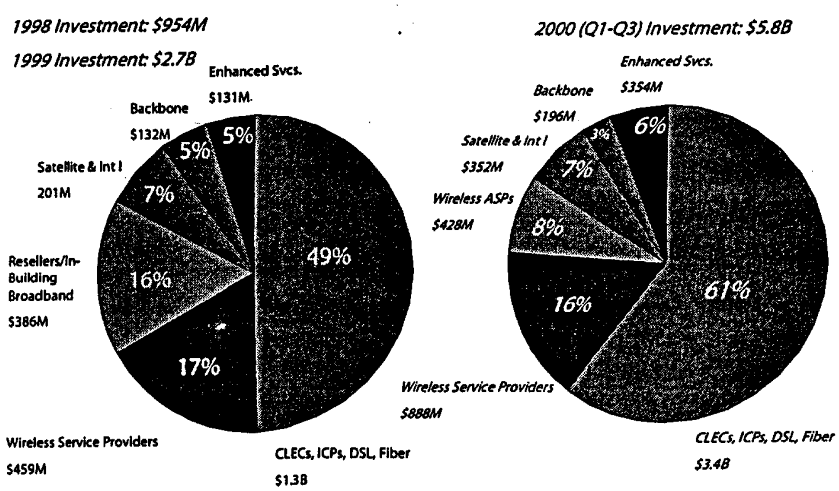
Companies Building Digital Futures...

VC Investments in the Communications Industry



Source: PriceWaterhouseCoopers

VC Investments in Telecom Service Providers



Source: PriceWaterhouseCoopers

VC Investments in the Communications Industry

For the first three quarters of 2000, $5.8 billion, or 28%, of the $19.8 billion total VC, or 'seed money', in the communications industry was directed at service providers, up from $2.6 billion in 1999. This represents an increase from 24% in 1999. Equipment suppliers, the companies that manufacture the facilities on which competition is built, secured the lion's share of VC investment. Equipment vendors secured $3.8 billion, or 34%, of communications VC in 1999 and $7.8 billion, or 39%, for the first three quarters of 2000. The recent financial problems plaguing CLECs have spread to this crucial sector as well with Barron's noting that "the elephant in the room that now threatens to bring down the economy is the telecommunications industry".

VC Investments in Telecom Svc. Providers

Companies competing for the local market led telecommunications service providers in VC investments. In the first three quarters of 2000, CLECs, ICPs, DSL and fiber companies received $3.4 billion, or 61%, of total service provider VC.

ALTS

Top 2000* VC Investments in the CLEC** Sector

Company	Service	Amount ($M)
Carolina Broadband *(Charlotte, NC)*	ICP	$409
Looking Glass Networks *(Oak Brook Terr., IL)*	Fiber optic network	$236
Velo.com *(Englewood, CA)*	Fixed local wireless	$234
Yipes *(San Francisco, CA)*	Fiber optic network	$217
NT Corporation *(Pensacola, FL)*	DLEC-DSL	$213
Cogent *(Washington, DC)*	All-optical network	$206
Formus Communications *(Reston, VA)*	Local broadband wireless	$175
Global Metro Networks *(Silver Spring, MD)*	Metro dark fiber networks	$155
Broadview Networks *(New York, NY)*	ICP	$150
KNOLOGY *West Point, GA)*	ICP	$150
Darwin Networks *(Louisville, KY)*	DLEC-DSL	$121
Grande Communications *(Austin, TX)*	ICP	$109
Aerie Networks *(Denver, CO)*	Broadband fiber optic	$105
@Link Holdings *(Louisville, CO)*	DLEC-DSL	$101
CityNet Corp. *(Silver Spring, MD)*	Broadband Wholesaler, CLEC	$100
airBand Communications *(Addison, TX)*	High-speed Broadband	$ 90
Flashcom *(Huntington Beach, CA)*	DLEC-DSL	$ 84
2nd Century *(Arlington, VA)*	ICP	$ 77
Digital Broadband *(Waltham, MA)*	DLEC-DSL	$ 75
TriVergent *(Greenville, SC)*	ICP-DSL	$ 67
STSN *(Salt Lake City, UT)*	Hotel In-Building Broadband	$ 65
New Edge Networks *(Vancouver, WA)*	DLEC-DSL	$ 63
Urban Media *(Palo Alto, CA)*	In-Building Broadband	$ 59
Net Rail *(Atlanta, GA)*	Internet Backbone Provider	$ 55
InternetConnect *(Torrance, CA)*	ISP-DSL	$ 53
Maverix.net *(Chicago, IL)*	DLEC-DSL	$ 43
BlueStar *(Nashville, TN)*	DLEC-DSL	$ 34
Total		**$3.4B**

Notes: (*) 2000 data represents 1Q00 - 3Q00. (**) includes CLECs, ICP, DSL & fiber.

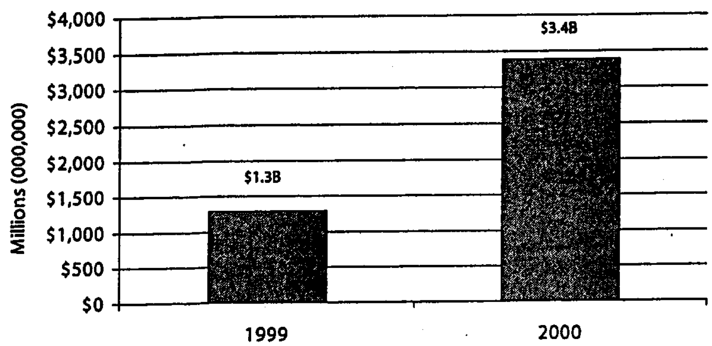
Source: PriceWaterhouseCoopers

Top 2000 VC Investments in the CLEC Sector

While many of the capital markets were virtually closed to the CLEC industry, the VC segment continued to invest large amounts of capital in the CLEC sector. VC provides the critical seed money for new competitors to secure their first rounds of financing. As companies mature, much of the sources of funding shifts to the equity markets and strategic and institutional investors. In 2000, seizing the opportunity created by the overwhelming demand for broadband connectivity, VC investment flowed heavily into data and broadband providers. A total of $3.4 billion was poured into the CLEC, ICP, DSL and fiber industries. Of the top VC investments noted, 8 were directed at ALTS members: Carolina Broadband, Yipes Communications, CityNet Corp., 2nd Century Communications, Digital Broadband Communications, TriVergent (Gabriel Communications), New Edge Networks and Bluestar (Covad). Digital Broadband recently filed for Chapter 11 bankruptcy.

Venture Capital Investments in the CLEC Sector*

*1999 vs 2000***



Notes: (*) Includes CLECs, ICP, DSL & fiber. (**) 2000 data represents 1Q00 - 3Q00.

Source: PriceWaterhouseCoopers

Select Strategic Investments in the CLEC Sector

Date	Company	Investor	Amount ($M)
January 2000	Digex (Intermedia)	Compaq	$50
January 2000	Digex (Intermedia)	Microsoft	$50
January 2000	Intermedia	KKR	$200
February 2000	US LEC	Bain Capital, Thomas Lee Partners	$300
March 2000	CTC Communications	Bain Capital, Thomas Lee Partners, CSFB	$300
March 2000	CAIS Internet	3COM	$20
May 2000	CAIS Internet	Microsoft	$40
May 2000	XO Communications	Forstmann Little	$400
November 2000	Winstar	Microsoft, CPQ Holdings, CSFB & WCAS	$270
Total			*$1.63B*

Source: Morgan Stanley Dean Witter

Venture Capital Investments in the CLEC Sector: *1999 vs. 2000*

As noted, the CLEC sector saw an increase in VC funding from $1.3 billion in 1999 to $3.4 billion for the first three quarters of 2000. This funding provides crucial cash to sustain and expand operations in such a capital-intensive market. Seeking to build networks that span all across the country, CLECs use this funding to compete for customers with the incumbents that begin with 100% market share.

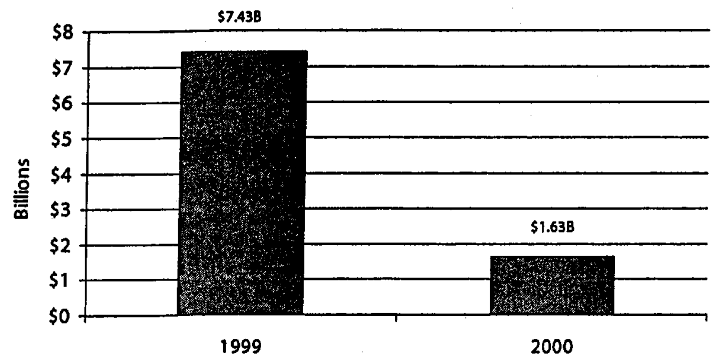
Select Strategic Investments in the CLEC Sector

For the year-end 2000, the CLEC industry saw a marked decrease in strategic investments, or private funding. Morgan Stanley Dean Witter values the top investments in CLECs, or their subsidiaries, at $1.63 billion. Of the investments noted, 5 were directed at ALTS network members, (1) Intermedia, (2) US LEC, (3) CTC Communications, (4) XO Communications (*formerly NEXTLINK*), and (5) Winstar.

Companies Building Digital Futures...

Select Strategic Investments in the CLEC Sector

1999 vs 2000



Source: Morgan Stanley Dean Witter

Merger & Acquisition Activity in the CLEC Sector

Date	Acquirer	Target	Firm Value ($B)
January 2000	XO Communications	Concentric Networks	$2.217
February 2000	Global Crossing	Ixnet	$3.672
February 2000	Global Crossing	IPC	$2.865
April 2000	McLeodUSA	Splitrock	$1.826
April 2000	CoreComm	ATX	$ .900
April 2000	Time Warner Telecom	GST	$ .690
April 2000	Advanced Radio Telecom	Broadstream	$ .365
April 2000	Mpower	Primary Network	$ .145
May 2000	Choice One	US XChange	$ .515
June 2000	Covad	Bluestar	$ .202
June 2000	Gabriel *(equal merger)*	TriVergent	
September 2000	WorldCom	Intermedia	$5.509
October 2000	McLeodUSA	CapRock	$ .532
December 2000	Hughes	Telocity	$ .180
Total			***$19.618B***

Note: Date indicates month that transaction was announced. Not all transactions have been completed.

Source: Morgan Stanley Dean Witter

Select Strategic Investments in the CLEC Sector: *1999 vs. 2000*

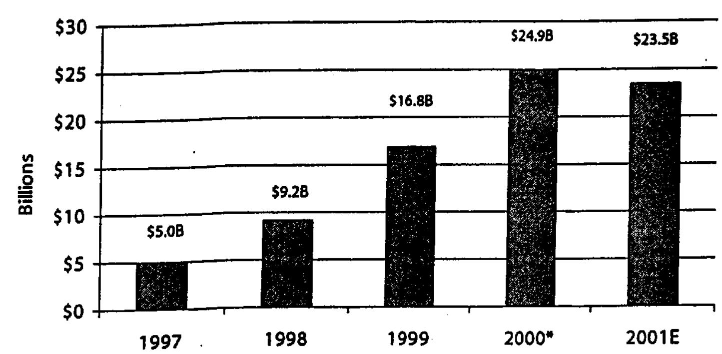
As noted, the CLEC sector saw a marked decrease in strategic investments as this sector of the capital markets was virtually off-limits to CLECs. At year end 1999, CLECs secured $7.43 billion in strategic investments. In 2000, with financial markets souring and private investors shutting their doors, investment dropped to $1.63 billion.

Merger & Acquisition Activity in the CLEC Sector

Seeking to cover the broadest possible service area and to combine capital resources, a number of CLECs merged or were acquired in 2000. Of the transactions noted, 14 were ALTS members at the time of the announcement, (1) XO Communications, (2) McLeodUSA, (3) CoreComm, (4) Time Warner Telecom, (5) GST, (6) Advanced Radio Telecom, (7) Mpower, (8) Choice One, (9) US XChange, (10) Intermedia, (11) Gabriel, (12) TriVergent, (13) Covad, and (14) Bluestar.

Companies Building Digital Futures...

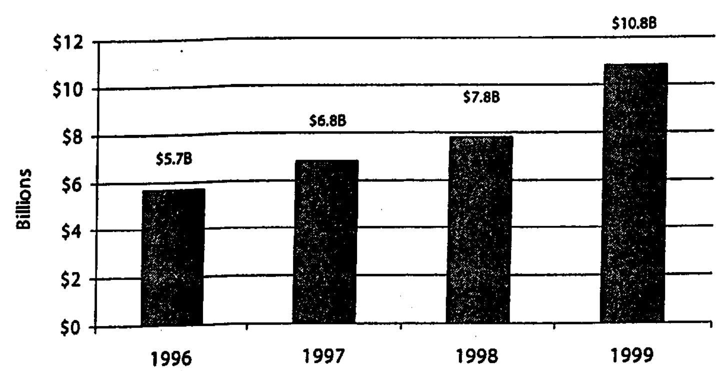
Annual CLEC Capital Expenditures
$56 Billion Since 1997



Note: (*) Actual data through 3Q00 and projected 4Q00 expenditures.

Source: Paine Webber, NPRG

Cable Industry Capital Expenditures
1996 - 1999



Source: National Cable Television Association (NCTA)

Annual CLEC Capital Expenditures

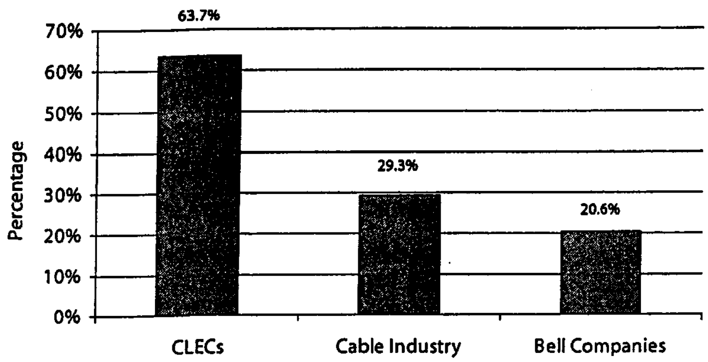
CLECs are in a highly capital-intensive industry. One measurement of CLECs' commitment to building new networks is their level of capital expenditures. Since 1997, CLECs have invested $56 billion in infrastructure that will carry the next generation of communications. With the current market uncertainty, analysts expect capital expenditures to level off in 2001.

Cable Industry Capital Expenditures

When comparing the CLEC and cable industries for the years 1997 - 1999, CLECs outpaced cable in capital expenditures each of the last two years on record. CLECs outpaced cable industry capital expenditures by $1.4 billion in 1998 and $6 billion in 1999. With both industries competing for many of the same voice and data customers, the intense rivalry has contributed to the rapid growth of high-speed broadband Internet access in the United States.

Companies Building Digital Futures...

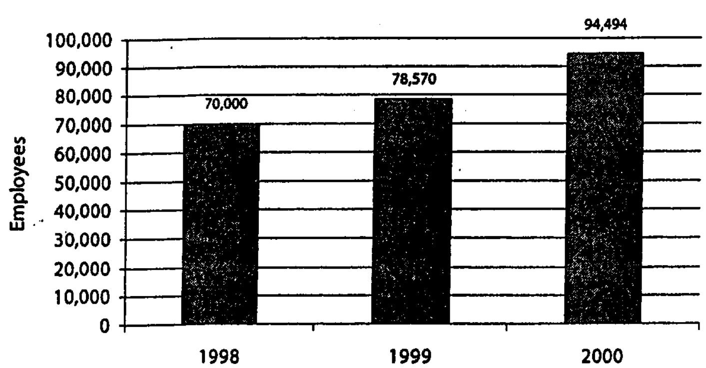
Capital Expenditures as a Percentage of Revenues



Notes: Cable industry data represents 1999 data. CLECs and Bell Companies represents 2000 data.

Source: NPRG, NCTA, company reports

CLEC Employees



Note: Employee totals do not include AT&T, WorldCom or ALLTEL.

Source: NPRG, Merrill Lynch

Capital Expenditures as a Percentage of Revenue

In comparison to the cable industry and the Bell Companies, CLECs reinvest a much larger portion of their revenues back into facilities (e.g. capital expenditures). In 2000, CLECs invested almost 64% of their revenues in capital expenditures. For the same period, the Bell Companies invested 21% with the cable industry investing 30% in 1999. Total capital expenditures were valued at $24.9 billion for CLECs (2000), $10.2 billion for the cable industry (1999) and $33.6 billion for the Bell Companies (2000).

CLEC Employees

The growth in the CLEC industry has led to new, high-value jobs in the communities in which they invest and compete. The competitive industry has grown from a negligible employee base to almost 100,000 employees today. However, with the recent downturn in the equity markets and with investor sentiment towards CLECs at historic lows, many companies have announced sharp cutbacks in staffing levels as they attempt to conserve cash to continue operations through more challenging financial times.

Public CLECs

Market Cap & 52 Week Performance

Company	Market Cap ($M)	52 Week Change	Ticker Symbol
Adelphia Business Solutions	$480.7	-86.30%	ABIZ
Advanced Radio Telecom	$89.7	-94.10%	ARTT
Allegiance Telecom	$2,130	-77.50%	ALGX
Allied Riser	$157.6	-89.50%	ARCC
ChoiceOne Communications	$504.7	-61.60%	CWON
Convergent Communications	$30.6	-89.00%	CONV
CoreComm Ltd.	$135	-94.40%	COMM
Covad Communications	$3449	-94.90%	COVD
CTC Communications	$300.7	-68.00%	CPTL
Cypress Communications	$53	-95.00%	CYCO
DSL.net	$132	-93.40%	DSLN
e.spire Communications	$54.8	-92.40%	ESPI
Electric Lightwave	$212.4	-79.70%	ELIX
FiberNet Telecom Group	$137.7	-75.80%	FTGX
Focal Communications	$932.3	-65.20%	FCOM
General Communications	$390.0	+16.10%	GNCMA
ICG**	$16	-98.00%	ICGX
Intermedia	$855.1	-76.10%	ICIX
ITC^DeltaCom	$427.2	-80.10%	ITCD
Log On America	$15.1	-91.30%	LOAX
McLeodUSA	$7,946	-52.40%	MCLD
Mpower Communications	$327.8	-85.90%	MPWR
Net2000 Communications	$98.5	-63.29%*	NTKK
Network Access Solutions	$71	-95.10%	NASC
Network Plus	$324.6	-85.10%	NPLS
NorthPoint Communications**	$79	-98.00%	NPNT
NTELOS	$269.2	-46.50%	NTLO
Pac-West Telecom	$169.6	-83.50%	PACW
RCN	$756.8	-86.00%	RCNC
Rhythms NetConnections	$94.5	-97.00%	RTHM
Teligent	$115.4	-97.70%	TGNT
Time Warner Telecom	$6,713	-06.70%	TWTC
US LEC	$228.3	-77.00%	CLEC
USOL Holdings	$23.3	-78.90%	USOL
Winstar	$1,173	-73.50%	WCII
XO Communications	$6,354	-66.90%	XOXO

Market Cap **$32.14 billion**

Note(s): as of mid-day 2.20.01 unless noted otherwise; includes providers that operated primarily as a CLEC and derive a significant portion of revenues from CLEC services. For example, AT&T (T), ALLTEL (AT), Level 3 (LVLT), Metromedia Fiber Network (MFNX) and WorldCom (WCOM) were excluded; (*) reflects 6-month change; (**) as of 11.30.00

Sources: WSJ.com, MSNBC.com, NPRG, Morgan Stanley Dean Witter

Public CLECs

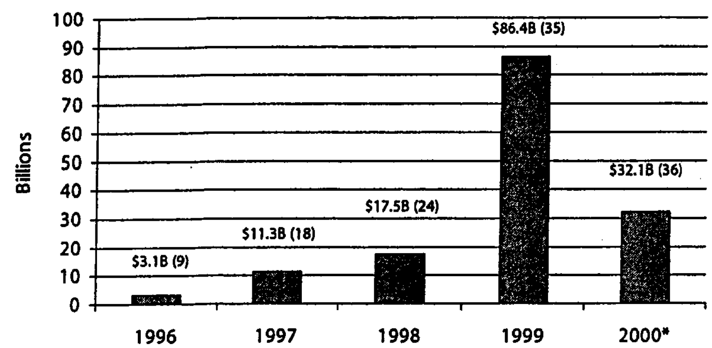
In 1999, there were 35 public CLECs. In 2001, there are 36 publicly listed CLECs. With the equity markets virtually closed to the CLEC industry, few CLECs successfully went public in 2000. In addition, many of the companies noted are in danger of being delisted or are currently in Chapter 11 proceedings. Of the public CLECs, only one saw a positive 52-week change, General Communications of Alaska. A majority (33 of 36) saw their equity values fall over 50% in the previous 52-weeks.

In addition to the companies noted, the following CLECs have parent companies that are publicly traded: ALLTEL (AT), Avana Communications (GCDV), Black Hills FiberCom (BKH), Cablevision Lightpath (CVC), Comcast Communications (CMCSK), Conectiv Communications (CIV), Cox Communications (COX), CTC Exchange Services (CTCI), CTSI (CTCO), HickoryTech (HTCO), MH Lightnet-Comcast (CMCSA), NEON Optica (NOPT), SBC Telecom (SBC), TDS Metrocom (TDS) and Vitts (SFE).

ALTS

Companies Building Digital Futures...

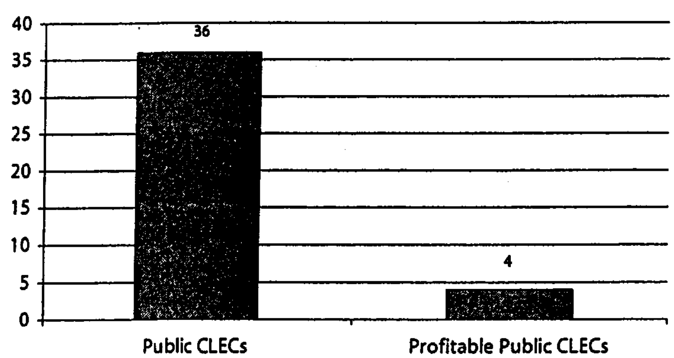
Market Capitalization



Note(s): (*) as of mid-day 2.20.01; includes providers that operated primarily as a CLEC and derive a significant portion of revenues from CLEC services. For example, AT&T (T), ALLTEL (AT), Level 3 (LVLT), Metromedia Fiber Network (MFNX) and WorldCom (WCOM) were excluded. Number of public CLECs in parentheses.

Source: WSJ.com, MSNBC.com, NPRG, Morgan Stanley Dean Witter, ALTS

CLECs Earning A Profit



Note: Profitability defined as a positive net profit margin.

Source: WSJ.com, MSNBC.com, NPRG, Morgan Stanley Dean Witter, ALTS

Market Capitalization

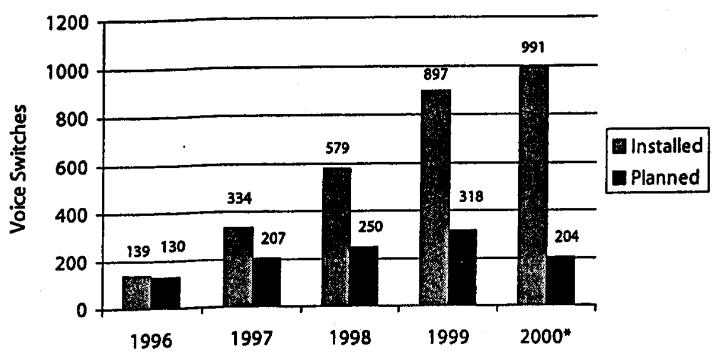
Due to the steep fall in CLEC equity values, total CLEC market capitalization fell over 50%, from $86 billion in 1999 to $32 billion as of February 2000. The number of public CLECs saw an increase from 9 in 1996 ($3.1 billion market cap) to 36 in 2000. The total 2000 market cap escaped an even steeper drop due to the less severe decline in some of the first-tier CLECs which comprise a larger portion of total CLEC market capitalization.

CLECs Earning a Profit

Exemplifying the capital intensive nature of local telecommunications, five years after the passage of The Act, only 4 of the public CLECs are profitable (defined as a positive net profit margin). In 1999, only 1 public CLEC was profitable and prior to 1999, no public CLECs were profitable. The four CLECs in question are Intermedia Communications, NTELOS, Pac-West Telecomm & Time Warner Telecom.

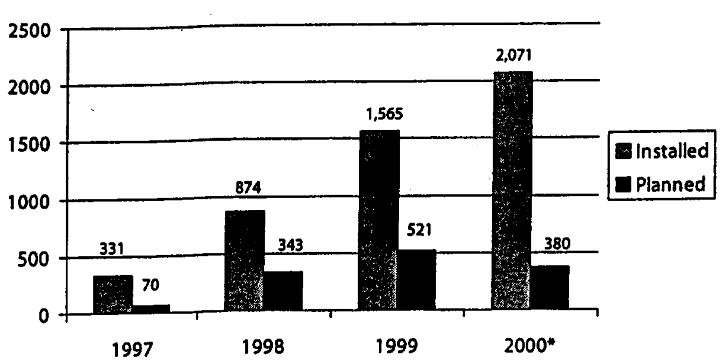
Companies Building Digital Futures...

Voice Switches:
Installed & Planned



Note: (*) 2000 data through 3Q00.
Source: NPRG

Data Switches:
Installed & Planned



Note: (*) 2000 data through 3Q00.
Source: NPRG

Voice Switches:
Installed & Planned

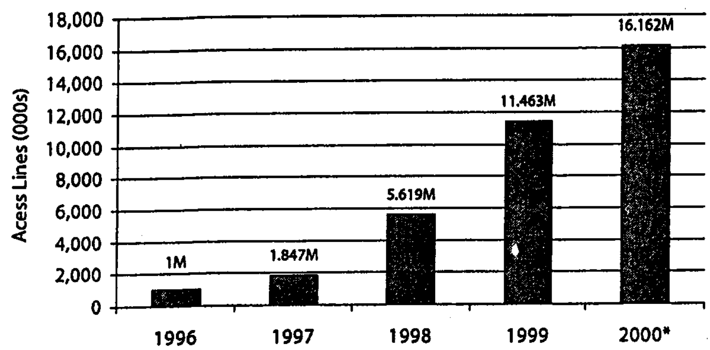
The most basic level of the network is the switch, the piece of equipment that selects the appropriate path for the transmission of a telecommunications signal. CLECs have been rapidly installing these crucial facilities and have almost 1,000 voice switches in operation as of the 3Q00. However, with many companies experiencing scaled back operations amid financial difficulties, planned switches experienced its first decrease since the passage of the Act.

Data Switches:
Installed & Planned

Fueled by the demand for broadband connectivity, data switches have seen an even faster deployment rate than traditional voice switches. In an effort to meet the soaring demand for broadband services, CLECs now have over 2,000 such switches in place. However, again due to scaled back network expansion, planned data switches also experienced its first drop in 2000.

Companies Building Digital Futures...

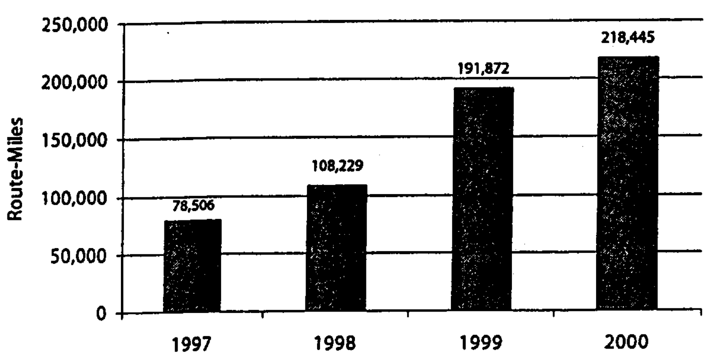
CLEC Access Line Growth



Note: (*) 2000 data through 3Q00.

Source: ALTS, NPRG

Network Route-Miles



Source: NPRG

CLEC Access Line Growth

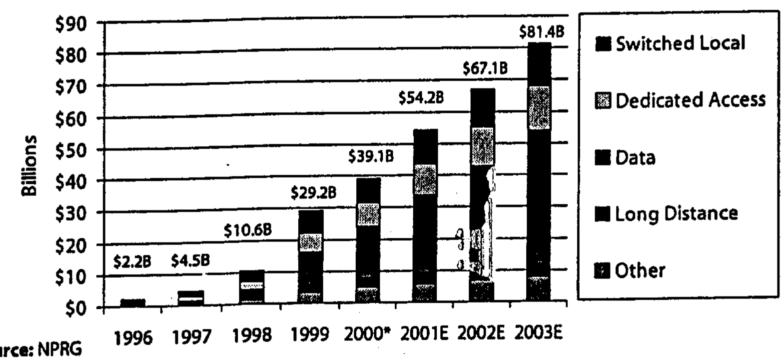
One of the most critical measures of competition in the local loop is the number of access lines served by CLECs. With just one million CLEC lines in service in 1996, CLECs now serve over 16 million access lines. This represents over 8% of all access lines in the United States. According to the FCC, CLEC market share in individual states exceeds the national average in Illinois (9%), Iowa (9%), Louisiana (11%), Kansas (16%) and New York (16%). Nationally, because only carriers with more than 10,000 access lines in service must report, the FCC estimates CLEC market share at 6.7% as of 2Q00.

Network Route-Miles

To transmit the massive amounts of voice and data traffic generated by consumers, CLECs have been aggressively building out local and long-haul networks. A large portion of the $56 billion in capital expenditures has been invested in erecting such networks. Since 1997, CLECs have almost tripled their route-miles in service. These high-speed, state-of-the-art networks carry the next generation of voice and data traffic.

Companies Building Digital Futures...

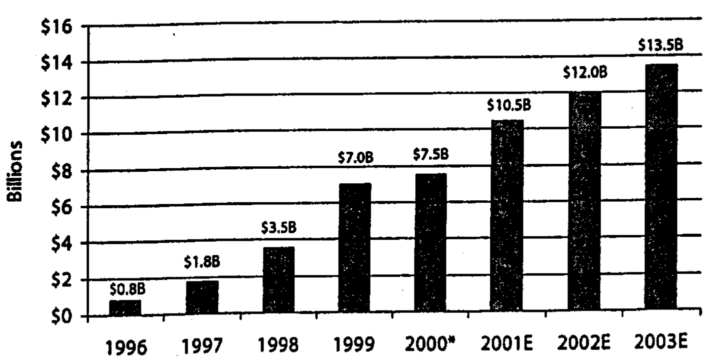
Total CLEC Revenue Growth



Source: NPRG

Note: (*) 2000 data through 3Q00 with 4Q00 projections. Switched Local Service & Long Distance Service include resale revenues. Data includes all data and data-Related services (e.g. Frame Relay, ATM, DSL, etc.). Other includes miscellaneous revenues (e.g. reciprocal compensation) as well as non-telecom related revenue (e.g., network development).

Switched Local Access Revenue Growth



Source: NPRG

Note(s): (*) 2000 date through 3Q00 with 4Q00 projections. Includes resale revenues.

Total CLEC Revenue Growth

In 2000, CLECs are expected to report $39.1 billion in revenue, up from $2.2 billion in 1996. While this represents a marked increase over 1999, 2000 will mark the first time in the industry's history that CLECs did not double revenues over the previous year. Analysts predict, however, that as consolidation takes hold and the local market matures, revenues will continue to grow at a rapid, albeit somewhat reduced, rate. Of the various categories of revenue, data services represented the largest and strongest growth area as the demand for high-speed broadband services continues to grow unabated.

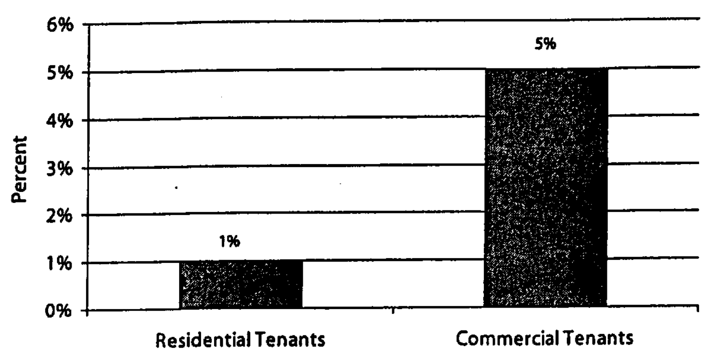
Switched Local Access Revenue Growth

While CLECs doubled revenues between 1998 and 1999 in switched local access services, this area saw a leveling off in 2000 as uncertainty entered the marketplace. However, analysts expect local access revenues to rebound in 2001.

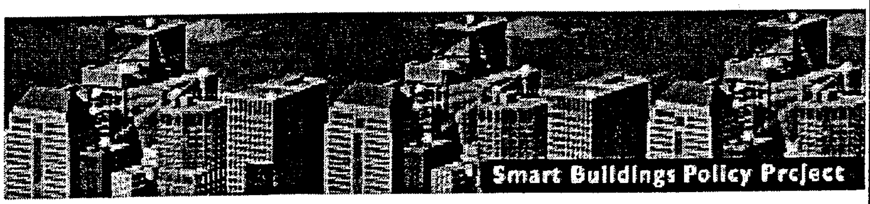
ALTS

Companies Building Digital Futures...

Multi-Tenant Unit (MTUs) Occupants with Access to Competitive Telecom Services



Source: Smart Buildings Policy Project



The Smart Buildings Policy Project (SBPP) was launched by ALTS on June 21, 2000 by 20 leading telecommunications providers and consumer organizations in an effort to eliminate barriers to building access and promote advanced broadband services to millions of American consumers. The SBPP is committed to insuring reasonable and nondiscriminatory access to rooftops and inside wiring in multi-tenant environments (MTEs). The SBPP believes that the absence of federal rules governing access to MTEs permits building owners to exert considerable control over the development of facilities-based competition. By denying competitive carriers access to the space necessary for the equipment required to provision facilities-based telecommunications and broadband services, building owners violate the letter and the spirit of the Telecommunications Act of 1996.

The SBPP is a growing coalition of telecommunications carriers, equipment manufacturers and trade organizations that includes: Alcatel, the Association for Local Telecommunications Services (ALTS), AT&T, the Commercial Internet eXchange Association (CIX), the Competition Policy Institute (CPI), the Competitive Telecommunications Association (CompTel), Digital Microwave Corporation, Focal Communications, The Harris Corporation, Highspeed.com, the Information Technology Association of America (ITAA), the International Communications Association (ICA), Lucent Technologies, NEXTLINK Communications, Nokia, P-Com, Siemens, the Telecommunications Industry Association (TIA), Teligent, Time Warner Telecom, Winstar Communications, Wireless Communications Association (WCA) and WorldCom.

The SBPP may be found on-line at www.buildingconnections.org.

Sources (sidebar): SBPP; Fortune Magazine

MTU Occupants with Access to Competitive Telecom Services

Despite the enormous inroads made by CLECs, building owners often refuse to offer carriers nondiscriminatory access to tenants in MTUs. Despite tenant requests, building owners continue to deny tenants choice in local telecommunications and high-speed Internet access service. With consumers beholden to the wishes of their landlords, millions of consumers stand to miss out on the new technologies being brought to market.

One-third of Americans live in apartment buildings.

The vast majority of small and medium-sized businesses are located in America's 760,000 commercial buildings.

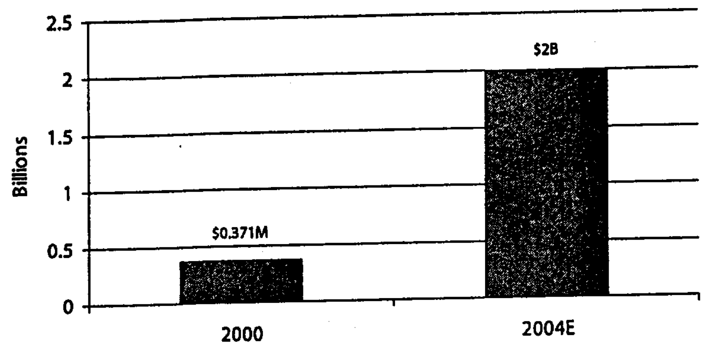
Only 20% of the 6.5 million small businesses in the United States are on-line, whether through a dial-up or broadband connection.

Most wireline competitive local exchange carriers (CLECs) are connected to 10,000 or fewer buildings.

Only 5% percent of commercial tenants, and less than 1% of residential tenants, have access to competitive telecommunications services.

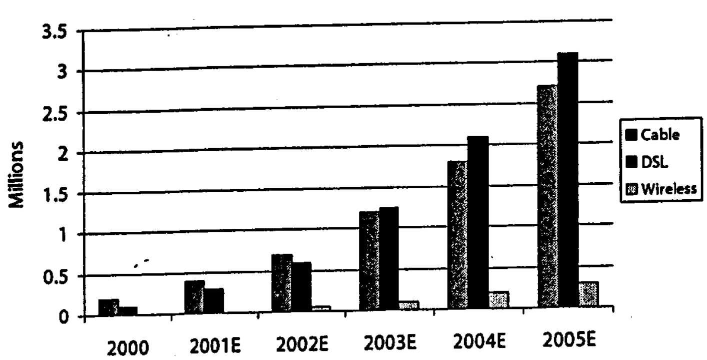
Companies Building Digital Futures...

U.S. Multi-Tenant
Broadband Equipment Market



Source: Cahners In-Stat Group

Residential High-Speed
Internet Subscribers in MTUs



Source: The Strategis Group

U.S. Multi-Tenant Broadband Equipment Market

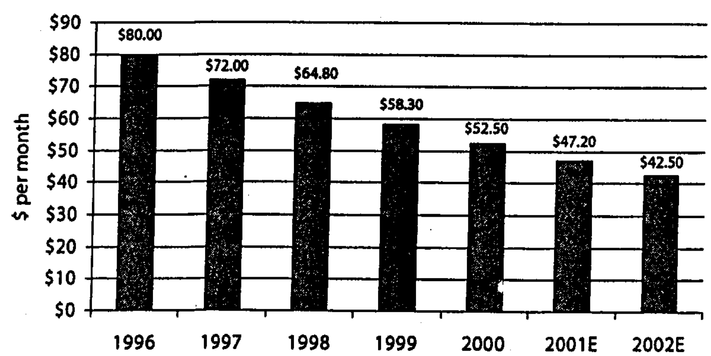
With consumers demanding high-speed broadband connections, the multi-tenant broadband equipment market is predicted to grow from just $371 million in 2000 to $2 billion in 2004. However, with the downturn in the CLEC industry, even the equipment suppliers and manufacturers, who rely heavily on CLEC demand, have not escaped the slowdown in 2000. For the 12 months ending 2.15.01, the stock value of Cisco (CSCO) has dropped 51% while the stock value of Lucent (LU) has dropped 73.8%.

Residential High-Speed Internet Subscribers in MTUs

As residents of MTUs demand faster always-on Internet connections, analysts predict that almost 6 million residential consumers will subscribe to such services by 2005. Analysts further predict that, in 2003, DSL will surpass cable as the preferred high-speed service of MTU residents.

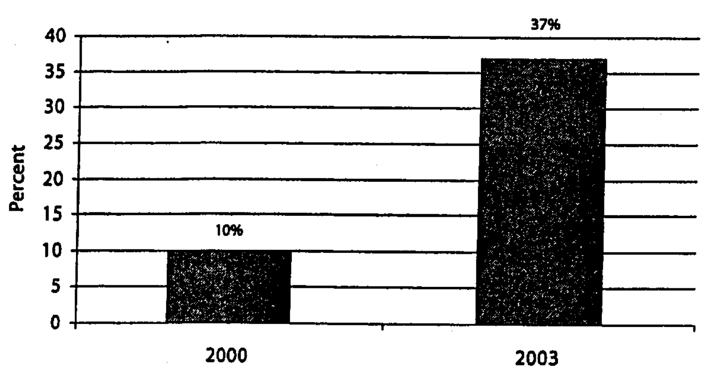
Companies Building Digital Futures...

Residential Broadband Pricing



Source: NxGen Data Research

U.S. Households Subscribing to Broadband



Source: Cisco

Residential Broadband Pricing

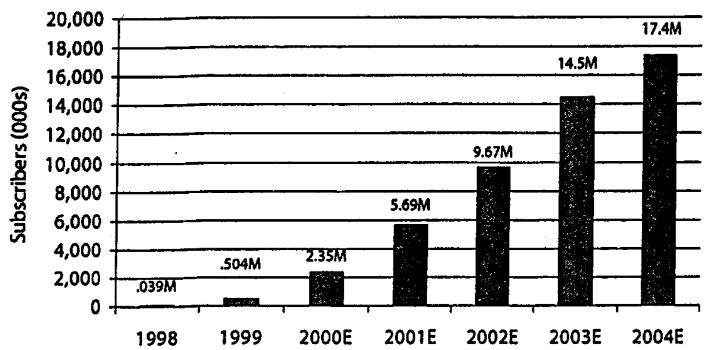
As a result of the tremendous competition in broadband markets, the price of residential broadband access is expected to drop by almost 50% between 1996 and 2002. Without the Act and the emergence of CLECs, it is likely that access to high-speed DSL services would not be available to millions of consumers. In 1999, the Council of Economic Advisers noted that "the incumbent's decision finally to offer DSL service followed closely the emergence of competitive pressures from... the entry of new direct competitors..."

U.S. Households with Broadband

With broadband service now available to over half of the nation's consumers, analysts predict that almost 40% of U.S. households will subscribe to broadband services in 2003. As consumers adopt more advanced Internet applications which require greater bandwidth, carriers will rush to meet the insatiable demand for high-speed connectivity.

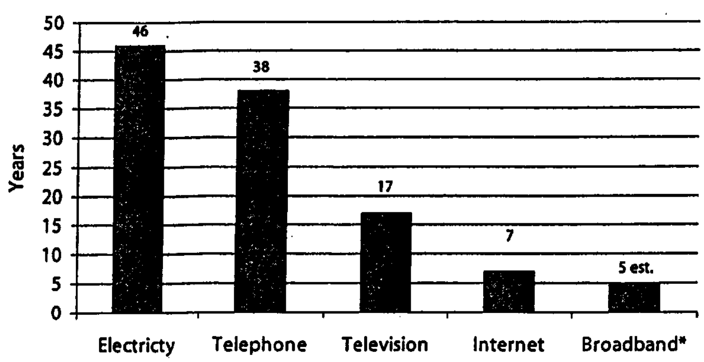
Companies Building Digital Futures...

Projected DSL Line Growth



Source: TeleChoice, Cisco

Years To Achieve 30% Penetration



Note: (*) includes all broadband access (e.g., DSL, cable, etc.)

Source: TeleChoice, Cisco, ALTS

Projected DSL Line Growth

Starting from just 39,000 subscribers in 1998, the DSL market exploded to almost 2.5 million subscribers at year-end 2000. Analysts expect triple-digit growth rates to continue through 2001 and slow to double-digit rates through 2004. DSL is expected to become the preferred technology of choice over cable modem service due to the dedicated nature of the connection and the faster upload speeds.

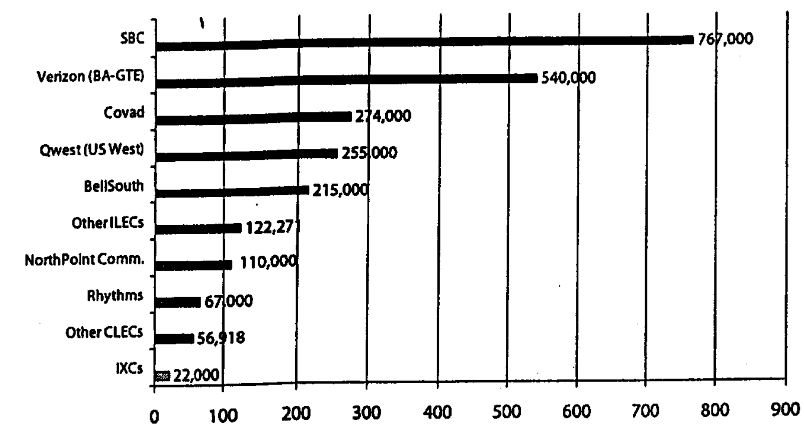
Years to Achieve 30% Penetration

As the country and world move at an increasingly faster pace, so has the adoption of new technologies. It took the United States almost 50 years to achieve 30% penetration for electric service, almost 40 years for telephone service and almost 20 years for television. On the other hand, it has taken only 7 years to achieve such penetration for the Internet and it is estimated that broadband service will achieve a 30% penetration rate in only five years.

Companies Building Digital Futures...

State of DSL Competition

4Q00 DSL Subscriber Lines



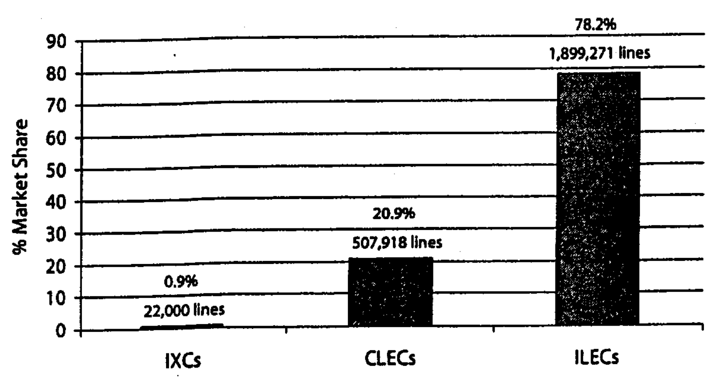
Note: NorthPoint Communications data represents ALTS estimate.

Source: Company Reports; TeleChoice

Total DSL Lines in Service = 2,429,189

DSL Market Share

4Q00 DSL Subscriber Lines



Source: TeleChoice

State of DSL Competition

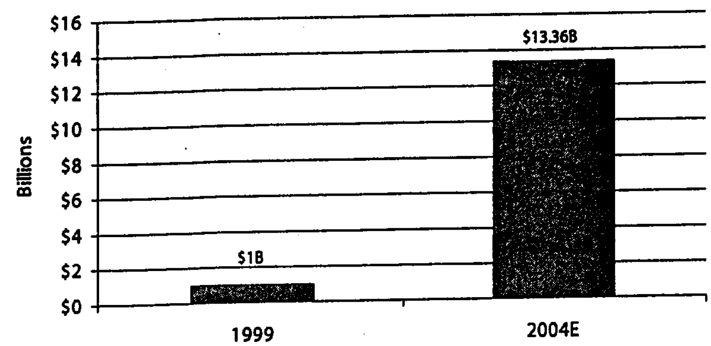
Through continued mergers, the Bell Companies have greatly increased individual RBOC DSL line counts. SBC (Ameritech, Pac Bell, Nevada Bell, SNET, SWBT), now serves almost 800,000 DSL customers while Verizon (Bell Atlantic, GTE, NYNEX) serves over 500,000 subscribers. Covad, the leading data CLEC (DLEC) ranks third in DSL subscribers with 274,000 as of 4Q00. Covad, NorthPoint Communications and Rhythms are all ALTS members. The recent souring of DLEC equities and the prospects for diminished competition has emboldened some of the Bell Companies, such as SBC to raise its monthly residential DSL rate to $50.

DSL Market Share

As of the 4Q00, CLECs held 21% of the DSL market, down from 23% as of the 3Q00. The incumbents hold the lion's share of the market with over 78% of DSL subscribers while the long distance companies (IXCs) hold just under 1% of the DSL market.

Companies Building Digital Futures...

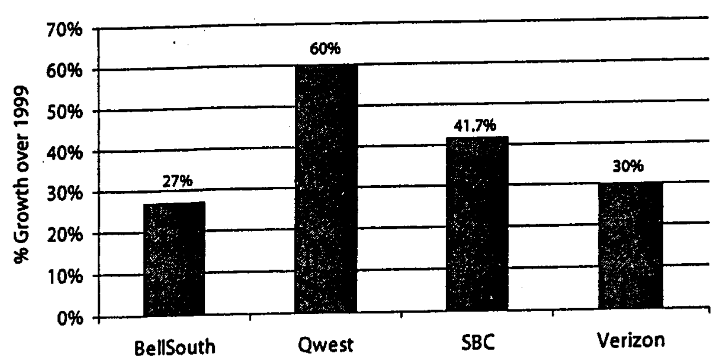
Residential Broadband Revenues



Source: Cahners In-Stat Group

RBOC Data Revenue Growth

Growth Between 1999 & 2000



Source: Company Reports

Residential Broadband Revenues

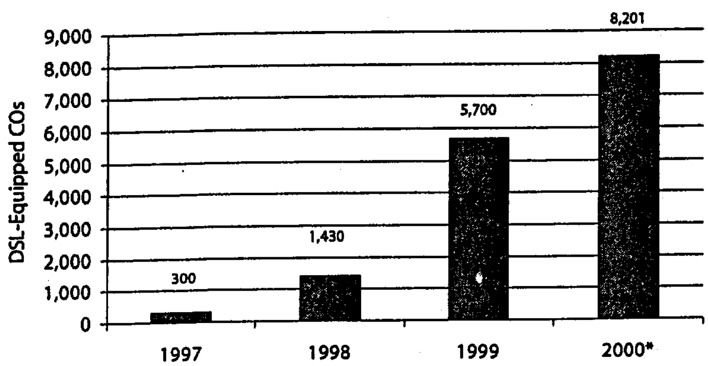
With residences continuing to migrate from dial-up Internet access to broadband, analysts predict an explosion in residential broadband revenues. From only $1 billion in 1999, residential broadband revenues will exceed $13 billion in 2004. This trend represents the increasing reliance Internet users will have on broadband. Within two years, analysts expect a majority of time spent on-line will be over broadband connections as opposed to dial-up connections.

RBOC Data Revenue Growth

A persistent argument made by the Bell Companies is that they lack the ability to successfully enter the broadband market due to interLATA restrictions. However, in the last year, each of the four RBOCs saw data revenue growth in excess of 25%. The revenue potential in the data market is enormous with analysts noting that the volume of data traffic now exceeds the volume of voice traffic.

Companies Building Digital Futures...

Data CLEC Central Office (CO) Collocations

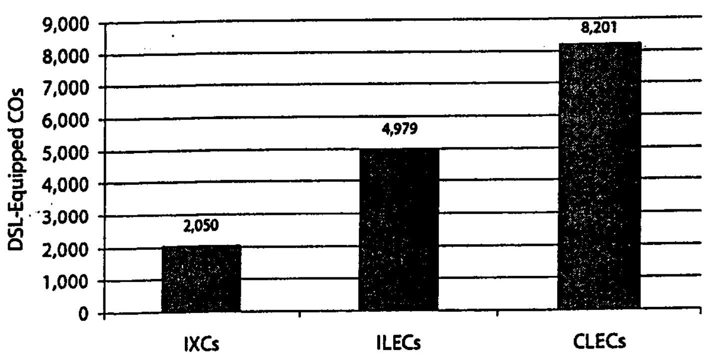


Note(s): (*) 2000 data through 3Q00; data represents pieces of equipment collocated in CO

Source: Company Reports; ALTS; CSFB; TeleChoice

DSL-Equipped Central Offices (COs)

3Q00



Note(s): Data represents pieces of equipment collocated in CO

Source: TeleChoice

DLEC CO Collocations & DSL-Equipped COs

Data CLECs specialize in deploying equipment in ILEC central offices that channel enormous amounts of data over the telephone companies' copper wires. From just over 200 central office collocations in 1997, CLECs have now placed over 8,000 pieces of equipment in ILEC central offices. As of the 3Q00, DLECs, with their national deployment plans, led the way in central office collocations.

Report Editor:

David A. Wolcott

David A. Wolcott is Director, Public Policy Research for ALTS. In this capacity, Mr. Wolcott conducts industry research to support the CLEC industry on Capitol Hill, before the FCC and in the public policy arena.

Prior to joining ALTS, Mr. Wolcott was a consultant in the international telecommunications industry focusing on the deregulation of international telecom markets. Mr. Wolcott worked with a number of carriers to identify new markets and market entry strategies in the Americas, Asia and Europe. Mr. Wolcott also interacted with the various international policy bodies that oversee international telecommunications policy.

Mr. Wolcott holds a Master of Arts degree in International Trade Policy from George Mason University's (GMU) International Institute in Arlington, Virginia. He earned his Bachelor of Arts degree in International Affairs with a concentration in Economics from James Madison University (JMU) in Harrisonburg, Virginia.

The State of Competition In the U.S. Local Telecommunications Marketplace

An Annual Report of the Association for Local Telecommunications Services (ALTS) February 2000

Executive Summary

This report, the first of its kind for ALTS and for the U.S. telecommunications industry, highlights the tremendous changes and growth in the local telecommunications marketplace since it was officially opened to competition by the Telecommunications Act of 1996. The information on the following pages demonstrates that local telephone competitors are growing significantly in number, billions of dollars invested, customers, revenues and broadband deployment. Policy-makers can expect even greater progress in the near future if the pro-competitive policies of the 1996 Act are fully implemented and enforced.

ALTS' Annual Report On The State of Local Telecom Competition:
New Data On A New Industry Group

Contents

ALTS

ASSOCIATION FOR LOCAL TELECOMMUNICATIONS SERVICES

February 2, 2000

An Open Letter From
John Windhausen, Jr.,
President of ALTS

Re: *ALTS' ANNUAL MESSAGE ON THE STATE OF COMPETITION IN LOCAL TELECOMMUNICATIONS*

The competitive landscape in local telecommunications has changed dramatically for the better, and consumers are the big winners. For years, telecommunications consumers demanded new high-speed Internet connectivity, responsive customer service, and lower prices. In passing the Telecommunications Act of 1996, Congress answered the call by opening the local telephone market to competition and creating a new breed of telecommunications company, known as "CLECs" (Competitive Local Exchange Carriers).

Substantial Evidence That The Act Is Working

Clearly, Congress had the right idea. The emergence of competition in the local telephone marketplace has generated enormous investment in new technologies and consumer services. Consumers are now beginning to enjoy unprecedented access to high-speed, low-cost internet access services. Close to one-half of the U.S. can now receive Digital Subscriber Line (DSL) service – the newest and cheapest broadband technology. Schools, hospitals and small businesses are already taking advantage of this low-cost technology that was previously available only to big businesses. Once the remaining barriers to competition are removed, residential consumers will find that high-speed Internet connections and competitive voice services will be as affordable and as easy to install as a telephone.

ALTS has assembled this first Annual Report on the State of Local Competition to document our tremendous progress since 1996. As the Report demonstrates, the competitive telecommunications industry has grown in almost every way imaginable – number of carriers, miles of new networks constructed, revenues, market share, and customers served. To pick out just one statistic, **CLECs have doubled their total local revenues every year since 1996.**

Today, we are also releasing our first ALTS Analysis, a paper written for ALTS by HAI, Inc. This paper concludes that the growth of competition has generated significant benefits for consumers and for the national economy as a whole. The paper documents the enormous explosion of investment in telecommunications by both CLECs and ILECs in the last four years. The analysis concludes **that CLECs alone have invested $30 billion in new networks since passage of the Act and are now investing over $1 billion every month in their networks.**

ALTS' own growth is equally impressive. As the attached chart shows, ALTS' membership has grown from 13 CLECs in 1996 to almost 90 CLECs today. Including our affiliate members, ALTS now represents the interests of almost 200 companies involved in providing competitive local telephone service.

Challenges to the '96 Act Remain; Threatens Nascent Competition

Notwithstanding the tremendous progress made by CLECs, the competitive industry continues to face enormous challenges. The incumbent telephone companies continue to make it extremely difficult for competitors to interconnect with their networks, despite numerous federal and state orders requiring the ILECs to open their networks to competition. Furthermore, many cities make competitors' lives miserable by imposing enormous franchise fees and onerous regulations that are unnecessary and unwise. Finally, building owners often resist competitors' requests to provide broadband wireless and wireline services to commercial tenants and apartment-dwelling families.

Thus, despite our significant growth, competitors remain far behind the behemoth Bell Companies and GTE in revenues, customers, and lobbying resources. **The incumbent local exchange companies, the "ILECs", still serve between 93% and 95% of the local telephone market.**

Meanwhile, of the 375 competitive companies in the local marketplace, none are generating any earnings, and only three are currently generating more revenue than expenses (that is, are EBITDA positive). All CLECs continue to be highly dependent upon capital markets to build out their networks in existing areas and expand to new ones. Additional capital is also required to meet payroll, sustain operations, and market to new customers. This is, of course, typical of start-up businesses in capital-intensive industries.

As a result, the future of the competitive industry is extremely vulnerable to shifting expectations in the capital markets. We are dependent upon the willingness of financial houses to sell our stock and issue more debt. Legislation such as H.R. 2420, (the Tauzin-Dingell bill) can create such uncertainty on Wall Street that investors could be frightened away, leaving us gasping for more capital to pay our debts and build our networks. The future of competition in the local exchange industry remains fragile and requires that policy-makers stay committed to enforcing the 1996 Act.

In short, while we have made great strides in serving the needs of consumers so far, we could have done so much more if the marketplace had been fully and irreversibly opened to competition. For these reasons, ALTS will focus in the coming year on opening the local market even further. We will begin by attempting to improve the level of cooperation from incumbent telephone companies, cities and building owners. We will develop stronger ties with the consumers who want our services and work together to remove the last remaining barriers to competitive service.

If these efforts do not succeed, however, we will use every weapon in our arsenals to ensure that the market is opened to competition as the law requires. We applaud Chairman Kennard's commitment to enhance the FCC's enforcement efforts, and we look forward to working more closely with state regulatory commissions to protect our rights.

We will continue to press for self-executing enforcement penalties for non-performance, and pursue complaint proceedings and other legal actions at both the federal and state levels. If even these efforts do not work, we believe it will then be necessary to consider even more drastic action – such as divesting the telephone companies into wholesale and retail units, as contemplated by the state of Pennsylvania and Senator Hollings' legislation (S. 1312).

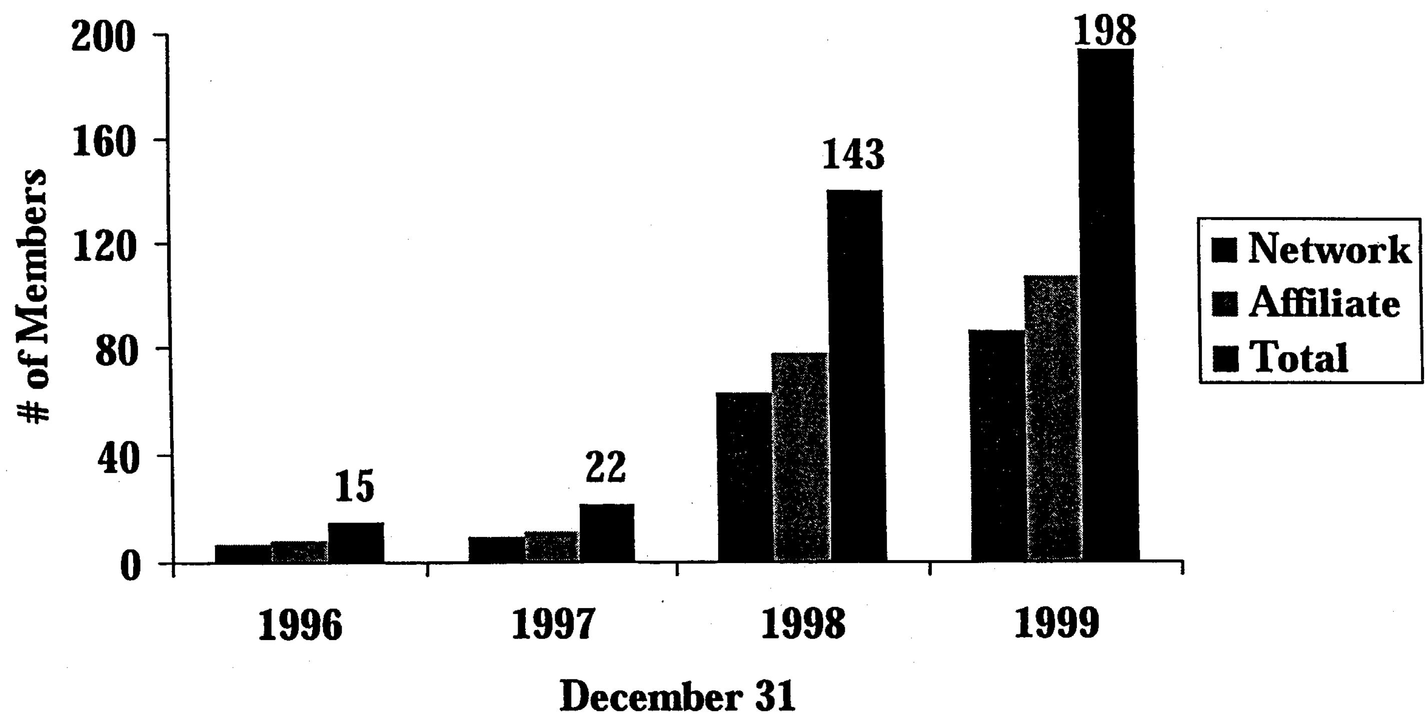
Looking Forward

A year from now, I hope to report significant progress on all these fronts. It will be a major victory for consumers if I can, indeed, make such a report. I am confident we will make substantial progress. Ultimately, I believe the irresistible force of consumer demand – demand for the fruits of competition in telecommunications – will prevail over monopoly obstruction, which once appeared immovable. Our success in bringing competition to local markets will translate into tremendous benefits for every American and extend our nation's global leadership in telecommunications.

Sincerely,

John Windhausen, Jr.
President
ALTS

ALTS MEMBERSHIP TRENDS
1996-1999



ALTS' ANNUAL REPORT ON THE STATE OF LOCAL TELECOM COMPETITION

New Data On A New Industry Group

February 2, 2000

Overview

In this, ALTS' first Annual Report on the state of local telecom competition, we document the impressive growth in the competitive local exchange carrier (CLEC) industry since passage of the Telecommunications Act of 1996. This report demonstrates the tremendous progress made by competitors in raising capital, building new telecom networks, signing up customers, generating revenues, and creating value for shareholders. Much of this tremendous growth is the direct result of the Telecom Act and the federal and state policies to implement that Act.

The telecom industry is undergoing rapid change, but measuring the magnitude of this change can be extremely difficult. The companies involved in providing local telecom services are continually expanding their markets, rolling out new services, and acquiring more capital. The data can be difficult to assemble, and in the fast-paced telecommunications industry, traditional sources of telecom data are often a year old by the time the data is gathered and processed.

For this reason, ALTS has put together this Annual Report in order to provide as comprehensive and as timely an update of developments in the local telecom marketplace as possible. ALTS believes it is essential that policymakers, the media, consumer groups and the financial community have an accurate view of trends and growth in that market.

Some of the data here are new and are the exclusive product of ALTS' surveys of its member companies. Other information has been compiled from a variety of different sources. All sources are carefully noted.

It is our hope that this report is useful and informative. We also hope that this information will enhance the debate over how best to encourage and support implementation of the pro-competition, pro-consumer 1996 Telecommunications Act. If you have questions about how this information was obtained or collected, or if you have additional information you would like to include in future versions of this Annual Report, please let us know.

A Snapshot of the New Competitors in the Local Telecom Market

Today, there are over 375 CLECs in operation. Of these, 333 CLECs own or control and operate some of their own facilities. This means that an extremely high percentage of CLECs are investing in new, state-of-the-art infrastructure. This investment will yield broader economic benefits to the communities they serve, just as investments in new "traditional" infrastructure -- roads, bridges, airports -- yield broader economic development in the communities where they are built.

CLEC growth also means new, high-value jobs in the communities where they invest and compete. The competitive industry has grown from virtually nothing to employ about 70,000 people today. As competitors continue to deploy infrastructure and offer services, these job numbers should continue to increase.

The following two pages present two complementary snapshots of the CLEC sector of the telecommunications industry.

Graphic A summarizes the existing state of competition according to a number of essential statistics. For instance, it demonstrates that the number of CLECs has increased dramatically since passage of the 1996 Act, when there were only about 50 competitive entities.

Graphic B is a map of the United States using color codes to indicate how many CLECs are currently operating in each state in the country. Of most significance is that competitors operate in every single state in the nation. Even some of the most rural states, such as Alaska, Montana and West Virginia, have at least one competitor. Perhaps even more striking is that the "average" state already has 21 to 30 CLECs in operation. This is a strong sign that competitors intend to offer competitive service in urban, suburban and rural areas of the country.

Graphic A

CLEC Industry Metrics

(as of 12/31/99)

- Total CLECs: 375+
- Facilities-based CLECs: 333
- Employees: 70,000
- CLEC Access Lines: 10.4 million
- Total Access Lines in the U.S.: 185 million
- Route Miles: 161,717
- Voice Switches: 828
- Data Switches: 1,416

Sources: ALTS, New Paradigm Resources Group, Merrill Lynch

NOTES AND SOURCES:

Total CLECs: Number is derived from ALTS member roster, New Paradigm Resources Group's (NPRG) *CLEC Report 2000* and FCC's *Report on Local Competition: August 1999,* including facilities-based CLECs, local resellers and long distance carriers reporting CLEC revenues.

Facilities-based CLECs: Number is derived from ALTS member roster, Company Reports, NPRG's *CLEC Report 2000* and FCC's *Report on Local Competition: August 1999.* Number includes long distance carriers offering CLEC services, but excludes local resellers. See map for CLEC distribution by state. All other metrics in this report are derived only from facilities-based CLECs unless noted.

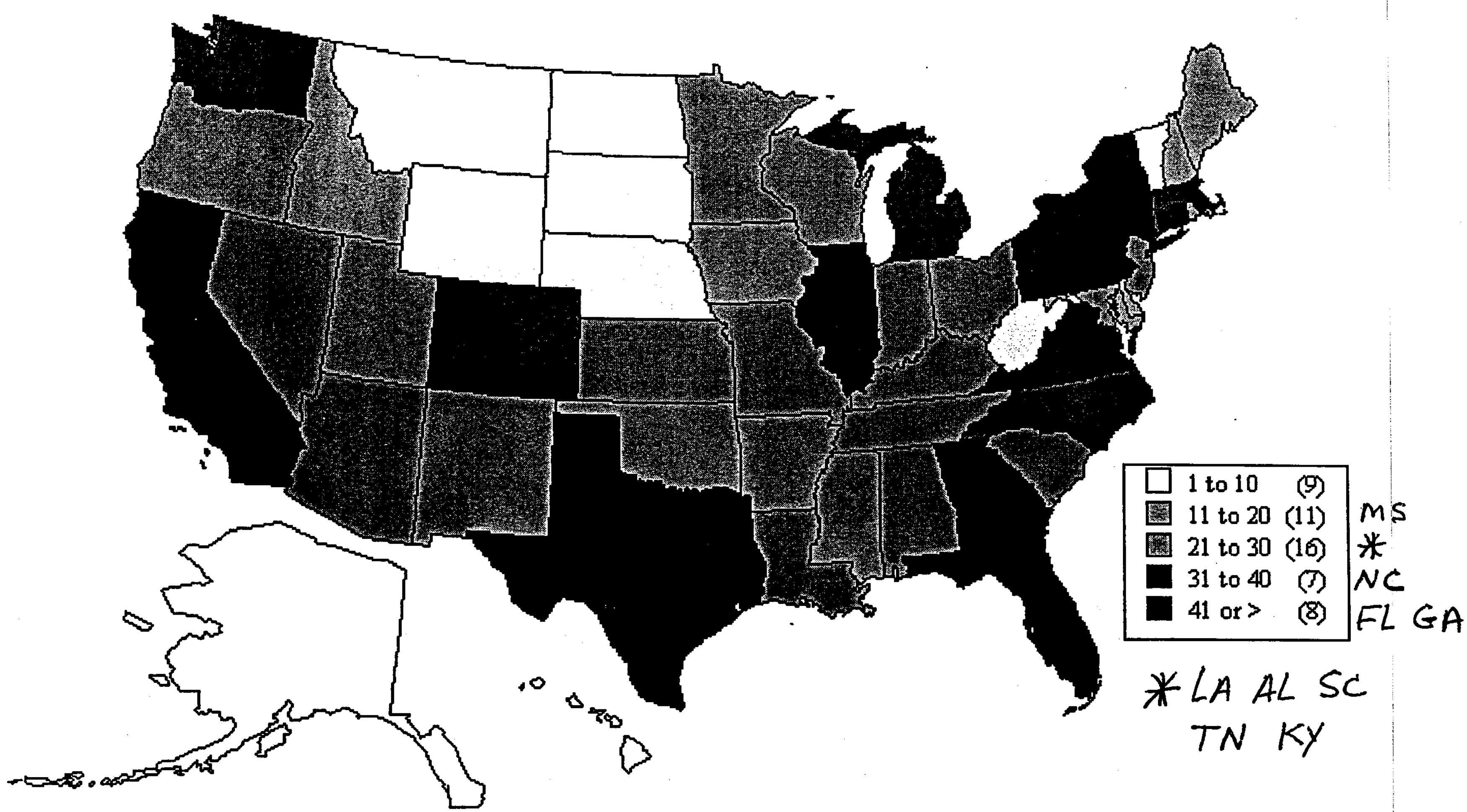
Employees: Number is derived from NPRG's estimates and company filings with the SEC. Total does not include MCI Worldcom and AT&T employees.

Total Access Lines: Number is derived from Merrill Lynch's 2Q99 estimates, accounting for line additions in the second half of 1999.

CLEC Access Lines, Route Miles, Voice and Data Switches: Numbers are all NPRG estimates.

Graphic B

FACILITIES-BASED CLECS
BY STATE



Sources: ALTS, Company Reports, New Paradigm Resources Group, FCC

CLEC Capital Formation

CLECs require enormous amounts of funding for a variety of reasons. They are competing in a very capital-intensive business. They are seeking to serve virtually all markets in the country -- well over 100M residences and businesses. They are going up against incumbent monopolists that start with all the customers.

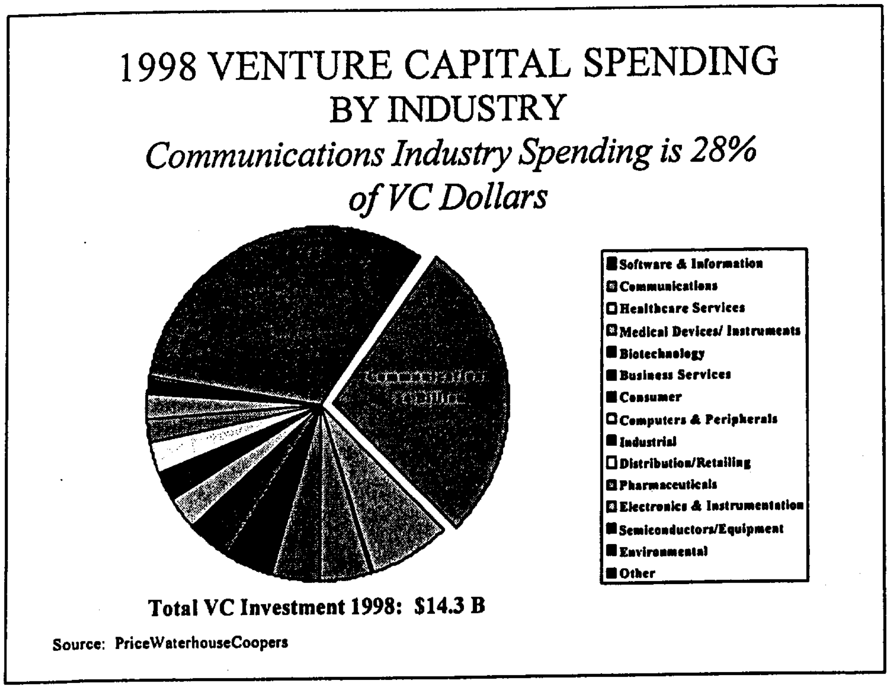
The cycle of capital formation by a CLEC is an ongoing process -- from obtaining start-up capital from private investors, venture capitalists, and private lenders (including vendors), to going to the public markets for equity and debt, to acquiring additional funding from any number of public and private sources. At each stage, a CLEC must demonstrate that it has a skilled management team that can execute on a well-constructed business plan. It also needs to show that the market-opening laws will remain in place so its plan can be brought to fruition.

Graphic C shows that about 30% of all venture capital invested in the U.S. is going to fund communications. In 1998, $3.954B out of a total of $14.3B in venture capital financing was invested in the communications sector of the economy. For the first three quarters of 1999, the communications sector received $6.3B out of $21.2B.

Graphic D lists the CLECs that had initial public offerings (IPOs) in 1999. The most prominent companies coming to market had business plans based upon broadband networks and offerings. These IPOs were very successful-- raising over $1.5B -- and enabled these firms to return to the market later in 1999 to obtain further equity and debt financing.

Graphic E, which lists the private sources of funding for CLECs, may be the major CLEC financing story in 1999. Until this year, private capital (other than initial seed investments) had largely avoided investing in CLECs because the risk was too great. This year private sources invested about $7.5B. Because these investments are only made after rigorous standards are met, this is a major vote of confidence in the CLEC industry.

Graphic C



NOTES AND SOURCES:

Venture Capital Investments: Data is derived from PriceWaterhouseCoopers.

Graphic D

CLEC INITIAL PUBLIC OFFERINGS
1999

Company	Date	Amount (in $M)
NorthPoint Communications	5/6	$360
Time Warner Telecom	5/12	$252
Rhythms NetConnections	4/7	$197
Covad Communications	1/22	$140
Focal Communications	7/28	$129
Network Plus	6/30	$128
Convergent Communications	7/20	$126
Pac-West Telecomm	11/5	$91
Network Access Solutions	6/4	$78
DSL.net	10/6	$54
Log On America	4/23	$22
		$1,577

Source: ALTS

NOTES AND SOURCES:

CLEC Initial Public Offerings: The compilation of CLEC companies that had initial public offerings in 1999 was compiled by ALTS.

Graphic E

STRATEGIC INVESTMENTS IN CLEC SECTOR

$7.43 Billion in 1999

Date	Target	Investor	Amount ($B)
3/8	RCN	Hicks Muse	$0.25
6/1	Advanced Radio Telecom	Qwest	$0.25
7/14	Birch	KKR	$0.11
8/4	Allegiance	Vulcan Ventures	$0.22
8/30	McLeod*USA	Forstmann Little	$1.00
10/4	RCN	Vulcan Ventures	$1.65
10/7	Metromedia Fiber	Bell Atlantic	$1.70
11/5	Teligent	Microsoft, Hicks Muse, et al	$0.50
12/8	NEXTLINK	Forstmann Little	$0.85
12/15	Winstar	Microsoft, Welsh Carson, CSFB, et al	$0.90
			$7.43

Source: Credit Suisse/First Boston

NOTES AND SOURCES:

Strategic Investments: Investors and numbers are derived from Credit Suisse/First Boston's January 5, 2000 research report on Telecom Services: CLECs.

CLEC Capital Expenditures on New Infrastructure

As noted in the previous section, CLECs are in a highly capital-intensive business, and they are building out new infrastructure at a rapid rate. One way to demonstrate this commitment to constructing new networks is to examine the capital expenditures of CLECs.

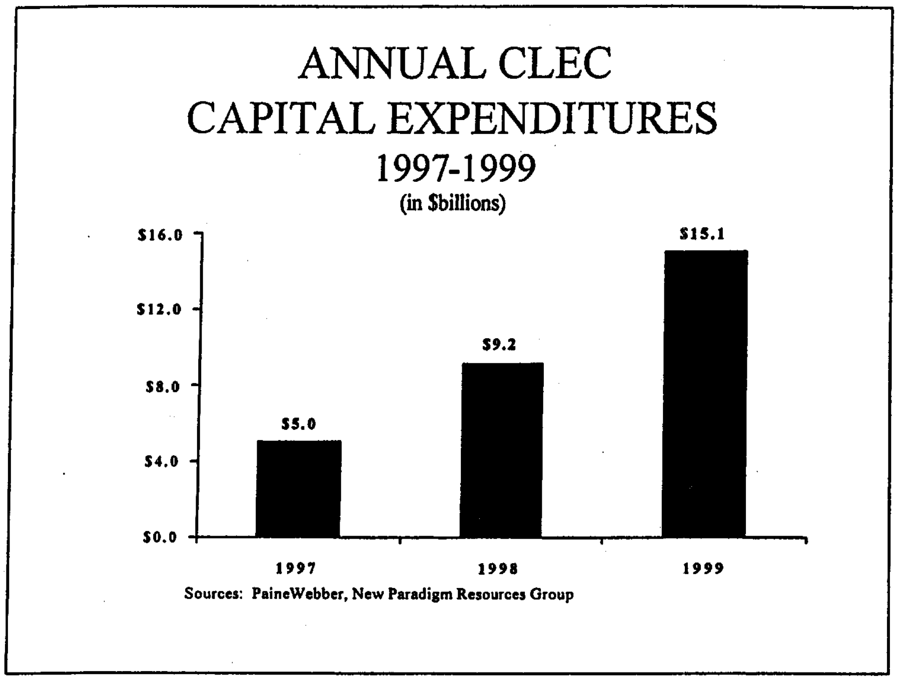
Graphic F shows the impressive growth in CLEC capital expenditures since passage of the Telecommunications Act of 1996. In the past four years, local competitors have increased their spending on new infrastructure by over 400%. In 1998, for total capital expenditures on all activities, the competitors expended about 30% of the amount of the incumbent local exchange carriers. In 1999, the CLECs' total expenditures were about 43% of the incumbents, even though the amount spent by incumbents was increasing. These expenditure amounts are especially significant given that CLECs take in only 7% of the ILECs revenues from local service. In total, since the 1996 Act, competitors have invested over $30B on new telecom infrastructure.

Four years ago, CLECs had about 100 switches and 1 million miles of fiber. Today, competitors have over 800 switches and about 4 million miles of fiber. Intermedia Communications, for example, has 25 voice switches, 173 data switches, and 46,424 miles of fiber. Winstar, a wireless broadband competitor, has 24 voice and 106 data switches.

CLECs build infrastructure in part to create and deploy innovative services more rapidly. There are also higher gross margins associated with "on-net" services. During 1999, many ALTS member companies sought to expedite moving their traffic entirely to their own networks or at least through their own switches. ICG, for example, has over 50% of its lines "on-net" and an additional 28% "on-switch". Intermedia Communications has over 60% "on-switch", and Allegiance and Nextlink have over 80%.

Graphic G examines total capital expenditures as a percentage of total revenues for CLECs and ILECs for 1999. This indicates how much revenue is plowed back into building infrastructure. For CLECs, over 56% of total revenue is invested in new networks; for ILECs, 23.3%.

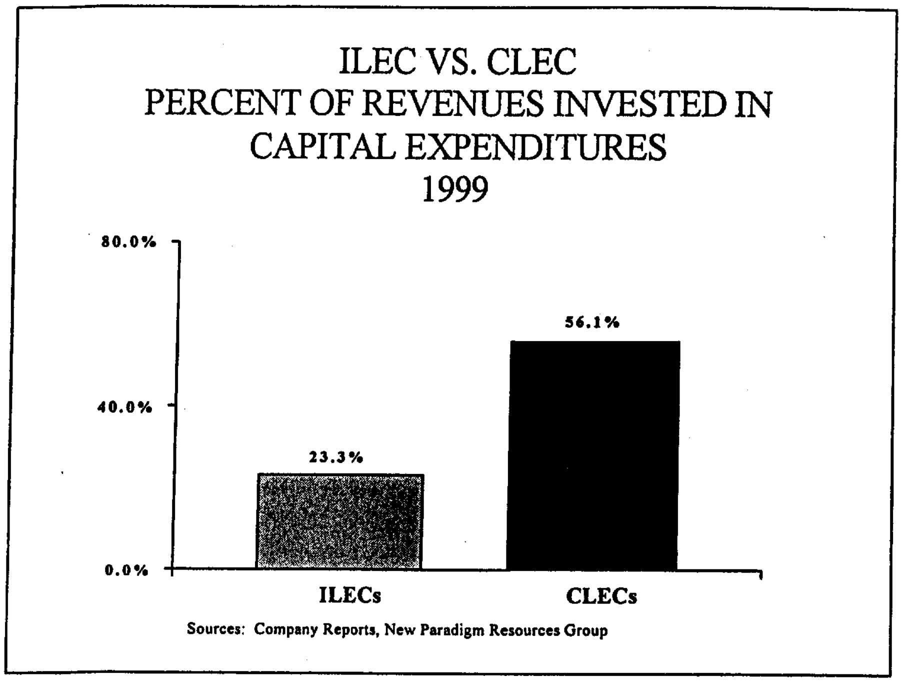
Graphic F



NOTES AND SOURCES:

Annual CLEC Capital Expenditures: 1997 and 1998 numbers are PaineWebber estimates. 1999 estimates are derived from New Paradigm Resources Group's *CLEC Report 2000.*

Graphic G



NOTES AND SOURCES:

Total Revenues/Capital Expenditures: Percentages are based on actual ILEC total revenues and capital expenditures as reported by the RBOCs and GTE and CLEC estimates derived from New Paradigm Resources Group's *CLEC Report 2000.*

CLEC Revenue and Access Line Growth

With their initial network deployments, CLECs have been able to offer a wide variety of innovative services. As a result, local revenue and access line growth has accelerated.

Graphic H shows that in 1999 CLECs had $6.3B in local switched revenue, a sixfold increase since 1996. CLECs served about 7% of the local telecommunications market in 1999.

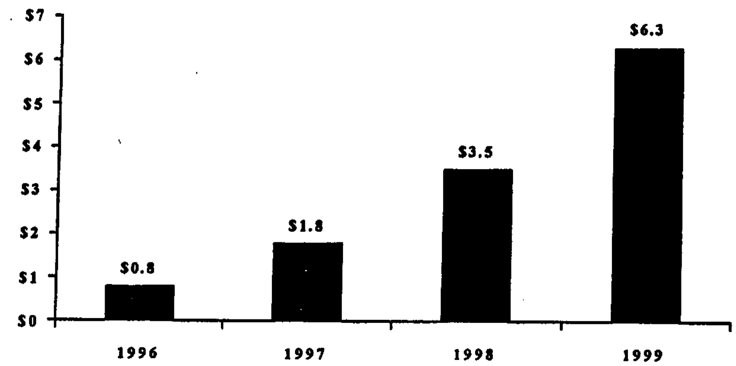
Graphic I combines this local switched revenue with four other sources of revenue: dedicated services, data services, long distance services, and all other activities. Dedicated revenue growth was also impressive, increasing to about $5.6B from about $.6B four years ago. Data revenues (both long distance and local), which are growing very rapidly throughout the industry, were over $9.4B in 1999 (from a 1996 base of $87M).

Graphic J shows CLEC Access Line Growth, which has also grown significantly since 1996 when the competitors had only 1M lines. By the end of 1999, this number had increased to over 10M. This number shows competitors holding a 5% share of all access lines nationwide.

Graphic H

CLEC SWITCHED LOCAL REVENUE GROWTH 1996-1999

(in $billions)

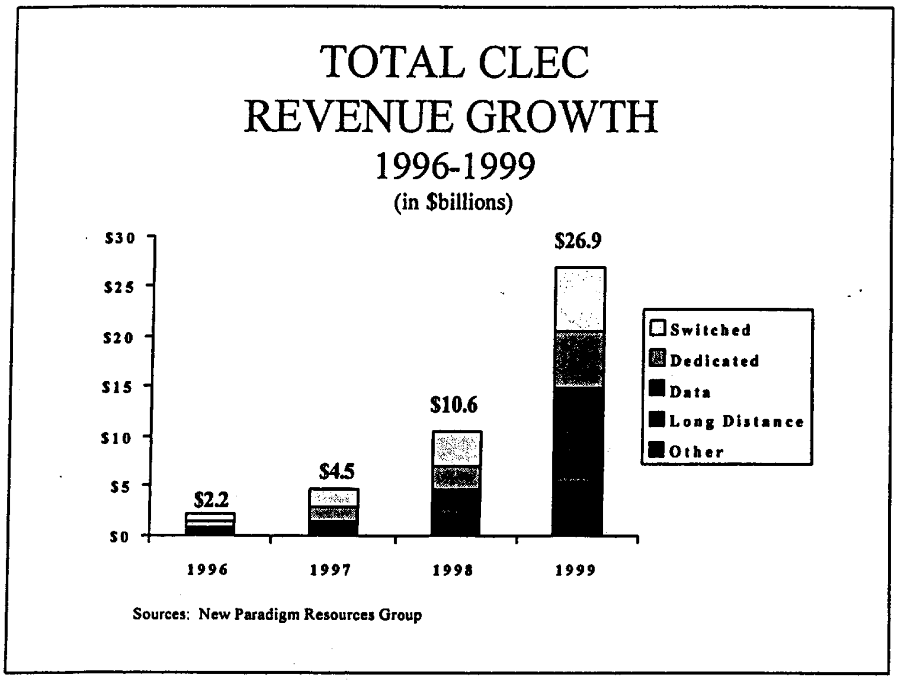


Sources: New Paradigm Resources Group

NOTES AND SOURCES:

CLEC Switched Local Revenues: Numbers are derived from New Paradigm Resources Group estimates reported in *1998 CLEC Report* and *CLEC Report 2000*. The revenue estimates include local resale revenues, but do not include dedicated access and private line, long distance, data or reciprocal compensation revenues.

Graphic I

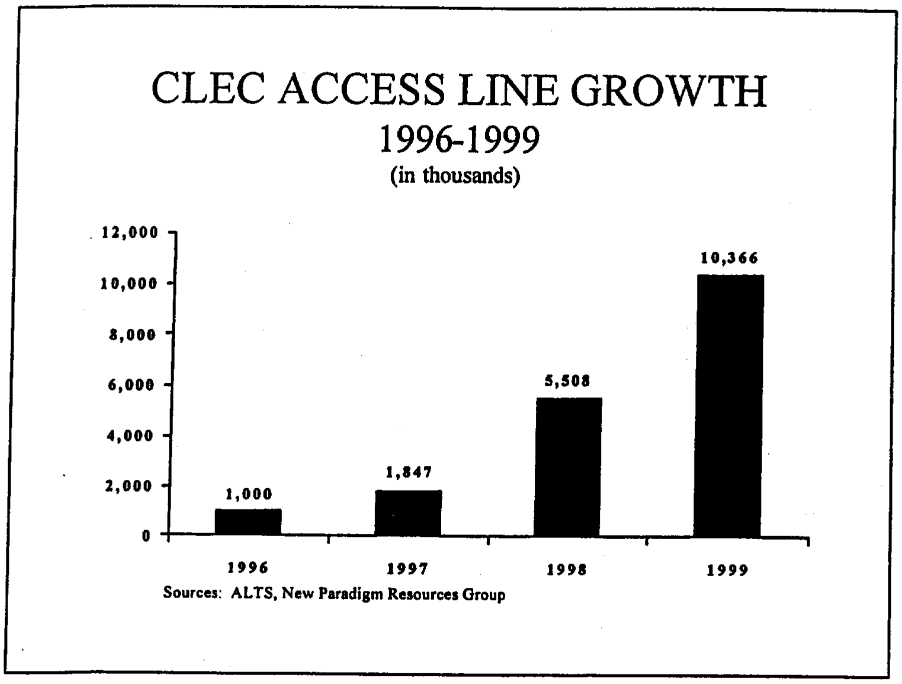


NOTES AND SOURCES:

CLEC Total Local Revenues: Numbers are derived from New Paradigm Resources Group estimates reported in *1998 CLEC Report* and *CLEC Report 2000*. The revenue estimates include switched local access, dedicated access and private line, data, local resale revenues, as well as long distance and other revenues.

(in billions)	1996	1997	1998	1999
Switched	$0.782	$1.768	$3.546	$6.296
Dedicated	$0.608	$1.301	$2.450	$5.667
Data	$0.087	$0.541	$2.466	$9.462
Long Distance	$0.543	$0.657	$1.041	$2.224
Other	$0.153	$0.268	$1.141	$3.205
Total	$2.173	$4.535	$10.644	$26.854

Graphic J



NOTES AND SOURCES:

CLEC Competitive Access Lines: 1997-1999 estimates are derived from New Paradigm Resources Group's *1998 CLEC Report* and *CLEC Report 2000*. ALTS estimated 1996 access lines is based on historical data.

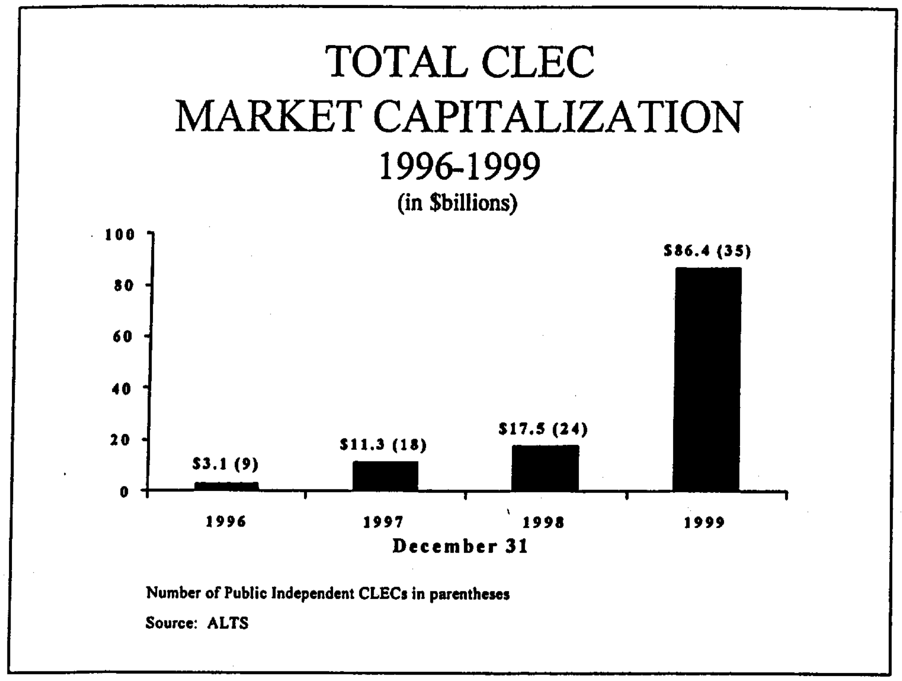
Based upon Merrill Lynch's estimate on the total number of access lines, CLEC access line market share has grown from less than 1% in 1996 to over 5% in 1999.

CLEC Access to Buildings

There are over 750,000 commercial buildings in the United States. These buildings contain most of the business customers. In addition, about 30% of residential customers live in multi-tenant buildings. Without access to these buildings, CLEC networks would be of little value because they could not connect their services to the consumers. Competitors have worked diligently to reach customers who do business at or reside in these locations. Nextlink leads the CLECs and has so far been able to connect to over 17,000 buildings -- or only about 2% of the nation's buildings. Most other wireline based CLECs connect to 5,000 or fewer buildings.

Graphic K gives the total number of buildings reached by the wireless CLECs. This group includes such companies as Winstar and Teligent. At the end of 1999, these CLECs had access rights to over 15,000 buildings -- from around 2,250 in 1997.

Graphic O

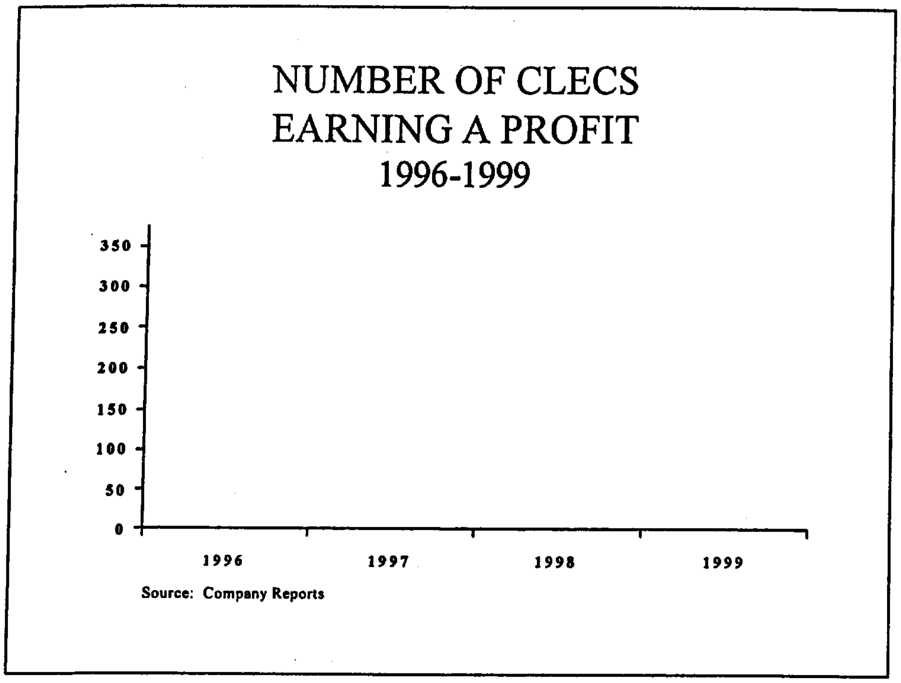


NOTES AND SOURCES:

Total CLEC Market Capitalization: These numbers were calculated independently by ALTS. The only public companies included were those that operated primarily as a CLEC and derived most of their revenues from CLEC services. For example, AT&T, MCI Worldcom, and Level 3 Communications were excluded under these stipulations.

Calculations were based on shares outstanding, as reported in SEC filings, multiplied by the December 31st share price for the respective years.

Graphic P



NOTES AND SOURCES:

CLEC Profitability: Based on company reports, no CLECs have earned any profits to date.

NEWS

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FOR IMMEDIATE RELEASE
December 21, 2000

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FCC Releases Study on Telephone Trends

Washington, D.C. – Today, the Federal Communications Commission (FCC) released its bi-annual report, *Trends in Telephone Service.* The report provides answers to some of the most frequently asked questions about the telephone industry asked by consumers, members of Congress, other government agencies, telecommunications carriers, and members of the business and academic communities.

Highlights from sections in the report on advanced telecommunications services, international calling, local competition, long distance industry, telephone rates, subscribership, and toll-free numbers are shown below:

Advanced Telecommunications Services

- High-speed lines (over 200 kbps in at least one direction) connecting homes and small businesses to the Internet increased by 57% during the first half of 2000, to a total of 4.3 million lines (or wireless channels) in service from 2.8 million at the end of 1999.
- About 2.8 million high-speed lines provided speeds of over 200 kbps in both directions, and thus met the Commission's definition of advanced services, compared to 2.0 million at the end of 1999.

International Calling

- The number of calls made from the United States to other countries increased from 200 million in 1980 to 5.2 billion in 1999.
- In 1999, Americans spent about $14.4 billion on international calls. On average, carriers billed $0.51 per minute for international calls in 1999, a decline of 50% in the per minute price since 1980.

Local Competition

- As of June 2000, Competitive Local Exchange Carriers (CLECs) provided 12.7 million (or 6.7%) of the approximately 192 million nationwide local telephone lines that were in service to end users as opposed to 8.3 million (or 4.4%) of nationwide local telephone lines at the end of 1999. This represents a 53% growth in CLEC market size during the first six months of this year.
- About one-third of CLEC end-user lines are served over "local loop" facilities that the CLECs own.

- Incumbent Local Exchange Carriers (ILECs) reported providing other carriers about 5.7 million lines on a resale basis, at mid-year 2000, compared to over 3 million unbundled network elements (UNE) loops.

Long Distance Industry

- Since divestiture, interstate-switched access minutes have nearly quadrupled to about 600 billion, and long distance carrier toll revenues have more than doubled from $39 billion to $99 billion.
- AT&T's share of interstate carrier toll revenues has decreased from 90% in 1984 to 41% in 1999; WorldCom's and Sprint's collective shares accounted for about 33% in 1999 and more than 700 smaller long distance carriers accounted for the remaining 26%.

Telephone Rates

- Local phone rates have remained steady during the last decade. The average monthly local residential charge for service was $19.87 in October 1999 as compared to $19.24 in 1990; for a business with a single phone line, the representative charge for service was $41.00 in October 1999 as compared to $41.21 in 1990.

Subscribership

- Twenty million households have been added to the nation's telephone system since November 1983. As of July 2000, 99.1 million households had telephone service.

Toll-Free Numbers

- There are currently four toll-free prefixes in use - 800, 888, 877, and 866 - with almost 24 million toll-free numbers assigned as of the end of November 2000. The next new code - 855 - is expected to be placed in service in 2001.

This report is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th, S.W. Copies may be purchased by calling International Transcription Services, Inc. (ITS) at (202) 857-3800. The report can be downloaded [file names: TREND200.ZIP, TREND200.PDF] from the **FCC-State Link** Internet site at <http://www.fcc.gov/ccb/stats>.

-- FCC --

For further information, contact the Industry Analysis Division, Common Carrier Bureau, at (202) 418-0940, or for users of TTY equipment, call 202-418-0484.

Trends in Telephone Service

Industry Analysis Division
Common Carrier Bureau

December 2000

This report is available for reference in the FCC's Information Center at 445 12th Street, S.W., Courtyard Level. Copies may be purchased by calling International Transcription Service, Inc. at (202) 857-3800. The report can also be downloaded [file names: TREND200.ZIP, TREND200.PDF] from the ***FCC-State Link*** *Internet site at <http://www.fcc.gov/ccb/stats>.*

Table of Contents

9 Local Telephone Competition

For most of the past century, households and businesses have had no choice in selecting their local telephone company. Mobile or wireless telephone services are widely available, at an increasing range of prices, but they are not yet accepted in the marketplace as complete substitutes for traditional local telephone service. In the 1980s, competitive access providers (CAPs) began to market to business customers access services provided over CAPs' wired networks. To some extent they also carried local telephone calls among their customers. In the 1990s, some CAPs and other companies, including affiliates of cable television companies and local service divisions of long distance companies, began to offer local telephone calling services to a broader range of customers. Companies with operations in larger cities added operations in smaller cities, where the typical customer is more likely to be a small or medium-sized business than a large business, and some new companies focused on smaller cities from the beginning. The newer competitors are often called competitive local exchange carriers (CLECs), although the terms CAPs and CLECs are sometimes used interchangeably.

The Telecommunications Act of 1996 (1996 Act) contemplated three incrementally powerful vehicles for competitors to enter local telephone service markets. First, CLECs may resell the services of incumbent local exchange carriers (ILECs). Second, CLECs may make use of ILEC facilities, for example, by leasing ILEC unbundled network element (UNE) loops to use in combination with the CLECs' own switching capabilities, or by leasing the so-called UNE-platform that combines the loop with ILEC switching services. (Here, we use the term "UNE loop" to refer to these and other combinations of ILEC unbundled network elements that include the UNE loop.) Third, CLECs may build the complete set of facilities they need to compete. Individual competitors have used various combinations of these methods at different times.

1. CLEC Share of Local Telephone Lines:

Table 9.1 shows that, as of June 30, 2000, CLECs provided 12.7 million (or 6.7%) of the approximately 192 million nationwide local telephone lines that were in service to end-users, according to information reported semiannually in the Commission's "Local Competition and Broadband" data collection program (FCC Form 477). By contrast, CLECs provided 8.3 million (or 4.4%) of nationwide local telephone lines at the end of 1999. This represents a 53% growth in CLEC market size during the first six months of this year. Table 9.2 indicates that more than 60% of CLEC local telephone lines served medium and large business, institutional, and government customers at mid-year 2000. By contrast, almost 80% of ILEC local telephone lines served residential and small business customers.

About one-third of CLEC end-user lines are served over "local loop" facilities that the CLECs own, according to information CLECs report to the Commission, which is summarized in Table 9.3. To serve the remainder of their end-user lines, CLECs resell the services of ILECs or use UNE loops that they lease from other carriers. As shown in Table 9.4, ILECs reported providing other carriers about 5.7 million lines on a resale basis, at mid-year 2000, compared to over 3 million UNE loops. The number of UNE loops provided to CLECs has increased rapidly since the end of 1997 (when the Commission began to survey large ILECs for this information) and more than doubled during the first six months of 2000.

The Commission's semiannual data collection provides information about CLEC local telephone lines (and thus the CLEC share of total end-user lines in service) in individual states. See Table 9.5. Relatively large numbers of CLEC lines are associated with the more populous states. With respect to the calculated CLEC share of local telephone lines in service, however, relatively large values are reported for some less populous states, such as Kansas, Louisiana, and Iowa, as well as for some more populous states, such as New York and Illinois.

2. CLEC Share of Local Telephone Service Revenues:

Table 9.6 shows that carriers competing with the ILECs nearly doubled their local telephone service revenues from 1998 to 1999 – from $3.5 billion to $6.3 billion. The share of nationwide local telephone service revenues claimed by the competitors increased from 3.5% in 1998 to 5.8% in 1999.

3. Telephone Numbers Transferred Among Carriers:

Table 9.7 presents information on telephone numbers "ported" (transferred) from one telephone switch to another (usually between carriers). Telephone numbers are transferred between local switches for a variety of reasons. For instance, some telephone numbers are ported from one carrier to another as part of a telephone number conservation measure known as number pooling, which is where carriers with spare telephone numbers port large blocks of numbers to a carrier in need of numbers. Such quantities appear in the first set of columns in Table 9.7.

Telephone numbers are also ported between carriers for other reasons, including, in particular, accommodating customers who switch local telephone service providers and wish to keep their same telephone numbers. Quantities of telephone numbers transferred between local telephone companies to accommodate customer requests and for other, non-pooling, reasons appear in the second set of columns. Over 6.7 million such telephone numbers were transferred as of August 1, 2000. Most, but not all of those 6.7 million numbers, were ported from ILECs to CLECS, but some of them were ported from CLECs to ILECs, and others from CLECs to CLECs.

Finally, carriers sometimes port numbers to themselves, to enable telephone customers to be hooked up to a switch that had no other available telephone numbers. Such quantities appear in the third set of columns. In all, as of August 1, 2000, over 8.3 million telephone numbers had been transferred.

This information is developed from the telephone number porting database, managed by the Local Number Portability Administrator (currently NeuStar, Inc.). The database contains all telephone numbers that are ported at that point in time. If a telephone number is ported a second time, the database contains only the information from the most recent port. Monthly "snapshots" of the database are taken, which allow the Commission to determine the number of telephone numbers that have been ported, the reason those numbers were ported, and the date those numbers were most recently ported. The snapshot does not allow the Commission to determine if a particular number has been ported. Sequential snapshots of the database should help quantify both the number of customer lines served by competitive local telephone carriers over time, and telephone number churn.

Table 9.7 shows the same information at two different points in time - August 1, 2000 and

January 1, 2000. Table 9.8 of the March 2000 edition of *Trends* should not be used for comparison purposes because it was developed from an inaccurate database snapshot.

The information in Table 9.7 can be used to quantify telephone number churn. Telephone number churn happens when a single telephone number is ported from one carrier to another, then to another (or back to the original carrier), and so on. Table 9.8 shows telephone number churn for one category of telephone numbers (those telephone numbers ported due to customer request or for other non-pooling reasons). The information in Table 9.8 can best be examined by looking at an example. The January 1, 2000 portion of Table 9.7 shows that 430,141 telephone numbers had been ported between carriers for "customer requests and other reasons" during December 1999. The August 1, 2000 portion of Table 9.7 shows that 408,944 of those numbers were still ported as of August 1, 2000. The difference of 21,197 is shown in Table 9.8, and reflects the number of telephone numbers that were either ported to yet another carrier or ported back to the original carrier between January 1, 2000 and August 1, 2000. The difference of 21,197 represents 4.9% of the telephone numbers that had been ported for customer requests or for other non-pooling reasons in December 1999. This translates into an annualized churn rate of 8.4%. The same type of calculation can be made with data from the other months in Table 9.7, but the reader should beware that some of the telephone numbers that had originally been ported in (say) January 1999 had already been ported to yet a third carrier or back to the original carrier before the January 1, 2000 snapshot was taken.

Table 9.1
Total End-User Lines Reported

	ILEC Lines	CLEC Lines	Total	CLEC Share
December 1999	181,307,695	8,318,244	189,625,939	4.4%
June 2000	178,864,907	12,746,924	191,611,831	6.7%

Source: Industry Analysis Division, *Local Telephone Competition: Status as of June 30, 2000.*

Table 9.2
End-User Lines by Customer Type

	ILECs			CLECs		
	Residential & Small Business	**Other 1/**	**% Residential & Small Business**	**Residential & Small Business**	**Other 1/**	**% Residential & Small Business**
December 1999	143,388,368	37,919,327	79%	3,373,662	4,944,582	41%
June 2000	140,486,770	38,378,137	79%	4,597,807	8,149,117	36%

Source: Industry Analysis Division, *Local Telephone Competition: Status as of June 30, 2000.*

1/ Medium and large business, institutional, and government customers.

Table 9.3
Reporting Competitive Local Exchange Carriers
(End-User Lines in Thousands)

Date	CLECs Reporting	Total End-User Lines	Acquired Lines 1/	Percent	CLEC Owned Lines	Percent
December 1999	81	8,318	5,471	65.8 %	2,847	34.2 %
June 2000	76	12,747	8,443	66.2	4,304	33.8

Source: Industry Analysis Division, *Local Telephone Competition: Status as of June 30, 2000*.

1/ Lines acquired from other carriers as UNE loops or under resale arrangements.

Table 9.4
Reporting Incumbent Local Exchange Carriers
(Lines in Thousands)

Date 1/	ILECs Reporting	Total Lines	End-User Lines	Lines Provided to Other Carriers			
				Lines Resold	UNE Loops Leased	Total	Percent of Total Lines
December 1997	9	159,008	157,132	1,743	133	1,876	1.2 %
June 1998	8	161,810	159,118	2,448	244	2,692	1.7
December 1998	7	164,614	161,191	3,062	361	3,423	2.1
June 1999	7	167,177	162,909	3,583	685	4,268	2.6
December 1999	168	187,431	181,308	4,649	1,474	6,123	3.3
June 2000	160	187,784	178,865	5,662	3,257	8,919	4.7

Source: Industry Analysis Division, *Local Telephone Competition: Status as of June 30, 2000*.

1/ Data for December 1997 through June 1999 are from Common Carrier Bureau voluntary surveys. Data for December 1999 and June 2000 are from FCC Form 477 filings.

Table 9.5
End-User Lines Served by Reporting LECs
(As of June 30, 2000)

State	ILECs	CLECs	Total	CLEC Share
Alabama	2,380,178	140,901	2,521,079	6 %
Alaska	486,337	*	*	*
Arizona	3,051,648	155,657	3,207,305	5
Arkansas	1,422,736	*	*	*
California	23,436,793	1,317,414	24,754,207	5
Colorado	2,887,311	204,608	3,091,919	7
Connecticut	2,438,119	136,086	2,574,205	5
Delaware	570,331	*	*	*
District of Columbia	914,716	72,696	987,412	7
Florida	11,121,374	983,047	12,104,421	8
Georgia	4,883,136	348,213	5,231,349	7
Hawaii	737,255	*	*	*
Idaho	724,440	0	724,440	0
Illinois	7,990,635	749,446	8,740,081	9
Indiana	3,597,365	156,280	3,753,645	4
Iowa	1,414,622	140,706	1,555,328	9
Kansas	1,533,755	295,133	1,828,888	16
Kentucky	2,135,858	*	*	*
Louisiana	2,432,846	289,798	2,722,644	11
Maine	818,979	*	*	*
Maryland	3,760,409	131,272	3,891,681	3
Massachusetts	4,313,988	384,548	4,698,536	8
Michigan	6,363,024	359,231	6,722,255	5
Minnesota	2,935,154	258,522	3,193,676	8
Mississippi	1,314,049	*	*	*
Missouri	3,508,475	178,377	3,686,852	5
Montana	514,992	*	*	*
Nebraska	1,010,682	*	*	*
Nevada	1,341,786	*	*	*
New Hampshire	813,919	*	*	*
New Jersey	6,705,441	294,690	7,000,131	4
New Mexico	947,809	*	*	*
New York	11,532,265	2,157,618	13,689,883	16
North Carolina	5,036,347	215,390	5,251,737	4
North Dakota	354,945	*	*	*
Ohio	6,944,806	266,235	7,211,041	4
Oklahoma	1,983,984	*	*	*
Oregon	2,119,998	58,699	2,178,697	3
Pennsylvania	8,200,347	671,437	8,871,784	8
Puerto Rico	1,288,076	*	*	*
Rhode Island	639,438	*	*	*
South Carolina	2,173,077	*	*	*
South Dakota	353,073	*	*	*
Tennessee	3,314,966	210,489	3,525,455	6
Texas	12,349,899	1,042,606	13,392,505	8
Utah	1,207,581	79,034	1,286,615	6
Vermont	377,987	*	*	*
Virgin Islands	69,063	0	69,063	0
Virginia	4,184,850	285,015	4,469,865	6
Washington	3,837,744	184,353	4,022,097	5
West Virginia	910,992	*	*	*
Wisconsin	3,239,809	238,306	3,478,115	7
Wyoming	237,588	*	*	*
Nationwide	178,864,907	12,746,924	191,611,831	7

Source: Industry Analysis Division, *Local Telephone Competition: Status as of June 30, 2000.*

Note: Carriers with under 10,000 lines in a state were not required to report.

* Data withheld to maintain firm confidentiality.

Table 9.6
Nationwide Local Service Revenues and New Competitors' Share 1/
(Dollar Amounts Shown in Millions)

	TRS Data				TRS & USF Data		Form 499-A Data
	1993	1994	1995	1996	1997	1998	1999
Number of Local Competitors							
RBOCs & Other Incumbent LECs	1,281	1,347	1,347	1,376	1,410	1,348	1,335
CAPs & CLECs	20	30	57	94	129	212	349
Local Resellers, Shared Tenant, Private Carriers & Other Local	NA	NA	NA	25	18	64	147
All Other Carriers Reporting local Exchange Service Revenues	NA	NA	NA	74	109	133	143
Total	1,301	1,377	1,404	1,569	1,666	1,757	1,974
Local Service Revenues 2/							
Incumbent LECs							
Bell Operating Companies 3/	$58,838	$61,415	$65,485	$70,290	$68,028	$69,801	$76,586
Other Incumbent LECs 3/	20,894	22,507	24,269	24,899	24,960	26,989	26,084
Total 3/	79,732	83,922	89,754	95,189	92,988	96,790	102,670
Local Service Competitors							
CAPs & CLECs	174	269	595	949	1,556	2,393	4,505
Local Resellers, Shared Tenant, Private Carriers & Other Local	NA	NA	NA	NA	224	329	522
All Other Carriers (Local Exchange Service Revenues Only) 4/	46	32	56	59	381	809	1,319
Total	220	301	651	1,008	2,161	3,530	6,347
Total	$79,952	$84,224	$90,405	$96,197	$95,149	$100,320	$109,016
Share of Local Service Revenues							
Incumbent LECs							
Bell Operating Companies	73.6%	72.9%	72.4%	73.1%	71.5%	69.6%	70.3%
Other Incumbent LECs	26.1%	26.7%	26.8%	25.9%	26.2%	26.9%	23.9%
Total	99.7%	99.6%	99.3%	99.0%	97.7%	96.5%	94.2%
Local Service Competitors							
CAPs & CLECs	0.2%	0.3%	0.7%	1.0%	1.6%	2.4%	4.1%
Local Resellers, Shared Tenant, Private Carriers & Other Local	NA	NA	NA	NA	0.2%	0.3%	0.5%
All Other Carriers	0.1%	0.0%	0.1%	0.1%	0.4%	0.8%	1.2%
Total	0.3%	0.4%	0.7%	1.0%	2.3%	3.5%	5.8%
Total Telecommunications Revenues (Including Payphone, Mobile & Toll Service)							
Incumbent LECs 3/	$95,228	$98,431	$102,820	$107,905	$105,154	$108,234	$112,216
Local Competitors	191	274	637	1,012	2,481	4,034	6,508
Ratio of Total Telecommunications Revenues, ILEC to Local Competitor	498 : 1	351 : 1	165 : 1	107 : 1	42 : 1	27 : 1	17 : 1

Source: Data filed on FCC Forms 431, 457 and 499-A worksheets. See also: *Telecommunications Industry Revenues*, September 2000.

NA - Not Available.

1/ Some previously published data have been revised. Some breakouts are not available prior to 1997 due to differences in how data were reported.

2/ For 1993 through 1996, for most categories of carriers, local service revenues include revenues from the following TRS reporting categories: local exchange, local private line, other local services, interstate access services and intrastate access services. The amounts shown do not include pay telephone, mobile or toll service revenues. See also note 4/ 1998 revenues for carriers that filed TRS worksheets but not universal service worksheets was estimated using 1998 TRS worksheets. These worksheets contain carrier revenue data for calendar year 1997.

3/ Incumbent LEC local service revenues for 1996 and prior years include significant amounts of yellow pages, billing and collection and other revenues that were reported as other local service revenues. If these revenues were included in 1997, incumbent LECs would show significant revenue growth from 1996 to 1997. Inside wire maintenance was included in local service revenue in 1997 but not thereafter.

4/ Toll carriers typically provide resold special access and private line services as part of toll service operations. Accordingly, the table shows local exchange revenue rather than all local revenue for these carriers.

Table 9.7
Telephone Numbers Transferred or Ported 1/
(As of August 1, 2000)

		Transferred Between Carriers				Transferred Within Same Carrier		
		Pooling		Customer Requests and Other Reasons				
Year	Month	Numbers Ported	Cumulative	Numbers Ported	Cumulative	Numbers Ported	Cumulative	Total Numbers Transferred
1997	December	0	0	80	80	0	0	80
1998	January	0	0	202	282	0	0	282
	February	0	0	9	291	0	0	291
	March	12	12	229	520	0	0	532
	April	16	28	503	1,023	0	0	1,051
	May	18	46	1,927	2,950	0	0	2,996
	June	24	70	4,872	7,822	0	0	7,892
	July	491	561	13,830	21,652	761	761	22,974
	August	1,393	1,954	27,446	49,098	2,192	2,953	54,005
	September	1,912	3,866	33,825	82,923	1,000	3,953	90,742
	October	2,897	6,763	92,340	175,263	1,000	4,953	186,979
	November	11,663	18,426	105,541	280,804	0	4,953	304,183
	December	21,249	39,675	140,693	421,497	2,947	7,900	469,072
1999	January	6,586	46,261	146,107	567,604	8,029	15,929	629,794
	February	6,023	52,284	172,942	740,546	3,998	19,927	812,757
	March	7,445	59,729	203,392	943,938	44,025	63,952	1,067,619
	April	8,876	68,605	214,205	1,158,143	56,703	120,655	1,347,403
	May	15,623	84,228	235,533	1,393,676	6,814	127,469	1,605,373
	June	19,360	103,588	281,460	1,675,136	41,843	169,312	1,948,036
	July	12,902	116,490	285,137	1,960,273	14,990	184,302	2,261,065
	August	35,803	152,293	303,987	2,264,260	13,670	197,972	2,614,525
	September	44,709	197,002	325,227	2,589,487	21,916	219,888	3,006,377
	October	40,249	237,251	380,190	2,969,677	18,994	238,882	3,445,810
	November	60,022	297,273	337,068	3,306,745	18,058	256,940	3,860,958
	December	37,307	334,580	408,944	3,715,689	7,000	263,940	4,314,209
2000	January	38,148	372,728	354,726	4,070,415	12,881	276,821	4,719,964
	February	55,256	427,984	407,200	4,477,615	50,352	327,173	5,232,772
	March	58,152	486,136	447,780	4,925,395	31,820	358,993	5,770,524
	April	88,949	575,085	411,542	5,336,937	109,709	468,702	6,380,724
	May	84,283	659,368	444,237	5,781,174	156,975	625,677	7,066,219
	June	116,081	775,449	486,120	6,267,294	65,000	690,677	7,733,420
	July	102,616	878,065	433,565	6,700,859	70,980	761,657	8,340,581

Source: Local Number Portability Administrator (NeuStar, Inc.)

1/ Some telephone numbers are ported to another carrier, and then sent back to the original carrier. During the time the telephone number is ported, the number will be included in this table. When the number is sent back to the original carrier, it will no longer be included in this table.

Table 9.7
Telephone Numbers Transferred or Ported 1/ -- Continued
(As of January 1, 2000)

		Transferred Between Carriers				Transferred Within Same Carrier		
		Pooling		Customer Requests and Other Reasons				
Year	Month	Numbers Ported	Cumulative	Numbers Ported	Cumulative	Numbers Ported	Cumulative	Total Numbers Transferred
1997	December	0	0	80	80	0	0	80
1998	January	0	0	202	282	0	0	282
	February	0	0	11	293	0	0	293
	March	13	13	231	524	0	0	537
	April	16	29	547	1,071	0	0	1,100
	May	20	49	1,975	3,046	0	0	3,095
	June	27	76	5,257	8,303	0	0	8,379
	July	616	692	14,494	22,797	761	761	24,250
	August	1,723	2,415	29,918	52,715	2,192	2,953	58,083
	September	2,209	4,624	36,011	88,726	1,000	3,953	97,303
	October	3,462	8,086	100,992	189,718	1,000	4,953	202,757
	November	12,467	20,553	108,952	298,670	0	4,953	324,176
	December	21,736	42,289	147,071	445,741	2,947	7,900	495,930
1999	January	7,038	49,327	158,256	603,997	8,041	15,941	669,265
	February	6,614	55,941	180,952	784,949	4,000	19,941	860,831
	March	8,236	64,177	214,692	999,641	44,599	64,540	1,128,358
	April	10,078	74,255	225,649	1,225,290	58,743	123,283	1,422,828
	May	16,428	90,683	246,746	1,472,036	6,862	130,145	1,692,864
	June	21,850	112,533	298,309	1,770,345	41,914	172,059	2,054,937
	July	19,369	131,902	296,385	2,066,730	15,002	187,061	2,385,693
	August	38,539	170,441	318,941	2,385,671	13,811	200,872	2,756,984
	September	48,739	219,180	341,902	2,727,573	21,997	222,869	3,169,622
	October	47,161	266,341	397,897	3,125,470	18,999	241,868	3,633,679
	November	67,299	333,640	352,942	3,478,412	18,999	260,867	4,072,919
	December	40,936	374,576	430,141	3,908,553	7,000	267,867	4,550,996

Source: Local Number Portability Administrator (NeuStar, Inc.)

1/ Some telephone numbers are ported to another carrier, and then sent back to the original carrier. During the time the telephone number is ported, the number will be included in this table. When the number is sent back to the original carrier, it will no longer be included in this table.

Table 9.8

Churn in Telephone Numbers Transferred at Customer Request or for Other Reasons[1]

Year	Month	Numbers Still Ported on January 1, 2000	Numbers Still Ported on August 1, 2000	Difference	7 Month Churn Rate (%)	Annualized Churn Rate[2] (%)
1997	December	80	80	0	0.0%	0.0%
1998	January	202	202	0	0.0	0.0
	February	11	9	2	18.2	31.2
	March	231	229	2	0.9	1.5
	April	547	503	44	8.0	13.8
	May	1,975	1,927	48	2.4	4.2
	June	5,257	4,872	385	7.3	12.6
	July	14,494	13,830	664	4.6	7.9
	August	29,918	27,446	2,472	8.3	14.2
	September	36,011	33,825	2,186	6.1	10.4
	October	100,992	92,340	8,652	8.6	14.7
	November	108,952	105,541	3,411	3.1	5.4
	December	147,071	140,693	6,378	4.3	7.4
1999	January	158,256	146,107	12,149	7.7	13.2
	February	180,952	172,942	8,010	4.4	7.6
	March	214,692	203,392	11,300	5.3	9.0
	April	225,649	214,205	11,444	5.1	8.7
	May	246,746	235,533	11,213	4.5	7.8
	June	298,309	281,460	16,849	5.6	9.7
	July	296,385	285,137	11,248	3.8	6.5
	August	318,941	303,987	14,954	4.7	8.0
	September	341,902	325,227	16,675	4.9	8.4
	October	397,897	380,190	17,707	4.5	7.6
	November	352,942	337,068	15,874	4.5	7.7
	December	430,141	408,944	21,197	4.9	8.4

Source: Local Number Portability Administrator (NeuStar, Inc.) and the FCC.

[1] This table shows the number of telephone numbers that had been transferred between carriers for reasons other than pooling (e.g. customer requests and other reasons), but were either ported back to the original carrier or to yet another carrier between January 1, 2000, and August 1, 2000.

[2] The annualized churn rate is calculated as twelve sevenths of the 7 month churn rate.

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FEDERAL COMMUNICATIONS COMMISSION RELEASES DATA ON HIGH-SPEED SERVICES FOR INTERNET ACCESS

High-Speed Lines to the Internet Increased 57% During the First Six Months of Year 2000 For a Total of 4.3 Million Subscribers

Washington, D.C. – The Federal Communications Commission (FCC) today released summary statistics of its latest data on the deployment of high-speed Internet services in the United States. Qualifying providers file such data twice a year under the Commission's local competition and broadband data gathering program (FCC Form 477).

The local competition and broadband data gathering program was adopted in March 2000 to assist the Commission in its efforts to further implement the pro-competitive, deregulatory provisions of the Telecommunications Act of 1996. Specifically, the data from this effort are used by the Commission for its evaluation of the availability of advanced telecommunications services, known as 706 reports.

The information released today was filed by qualifying providers on September 1, 2000, and includes data as of June 30, 2000. Noteworthy data include:

- High-speed lines connecting homes and small businesses to the Internet increased by 57% during the first half of 2000, to a total of 4.3 million lines (or wireless channels) in service from 2.8 million at the end of 1999.
- About 2.8 million of high-speed lines provided speeds of over 200 kbps in both directions, and thus met the Commission's definition of advanced services, compared to 2.0 million at the end of 1999.
- The presence of high-speed service subscribers was reported in all fifty states, the District of Columbia, and Puerto Rico, and in about 70% of the nation's zip codes, compared to 59% at the end of 1999.
- High-speed asymmetric DSL (ADSL) lines in service increased by 157%, to almost one million lines, compared to about 370,000 lines at the end of 1999.
- High-speed lines in service over coaxial cable systems remained more numerous, increasing 59% to about 2.2 million lines, compared to 1.4 million at the end of 1999.

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- High-speed lines (or wireless channels) delivered over fiber, satellite, fixed wireless, and wireline technologies other than ADSL increased by at least 18% during the first half of this year.

- High-speed subscribers are reported to be present in 96% of the most densely populated zip codes and in 40% of zip codes with the lowest population densities. The number of sparsely populated zip codes with high-speed subscribers increased by 69% during the first half of the year, compared to an increase of 4% for the most densely populated zip codes.

As additional information from Form 477 becomes available, it will be routinely posted on the Commission's Internet site. Because Form 477 was adopted recently, there may be some need for further clarification and adjustment of the reporting system.

The data summary is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th Street, SW, Washington, DC. It can be downloaded [file name: HSPD1000.zip, HSPD1000.pdf] from the **FCC-State Link** Internet site at http://www.fcc.gov/ccb/stats. Copies may be purchased by calling International Transcription Services, Inc. (ITS) at (202) 857-3800.

\- FCC -

Common Carrier Bureau contact: Industry Analysis Division at (202) 418-0940; TTY (202) 418- 0484.

High-Speed Services for Internet Access: Subscribership as of June 30, 2000

October 2000

Industry Analysis Division
Common Carrier Bureau
Federal Communications Commission
Washington, DC 20554

This publication is available for reference in the FCC's Information Center at 445 12th Street, S.W., Courtyard Level. Copies may be purchased by calling International Transcription Service, Inc. at (202) 857-3800. The publication can also be downloaded [file names: HSPD1000.ZIP, HSPD1000.PDF] from the **FCC-State Link** internet site at http://www.fcc.gov/ccb/stats on the World Wide Web.

High-Speed Services for Internet Access: Subscribership as of June 30, 2000

Congress directed the Commission and the states, in section 706 of the Telecommunications Act of 1996, to encourage deployment of advanced telecommunications capability in the United States on a reasonable and timely basis.[1] To assist in its evaluation of such deployment, the Commission launched a formal data collection program to gather standardized information about subscribership to high-speed services, including advanced services, from wireline telephone companies, cable providers, terrestrial wireless providers, satellite providers, and any other facilities-based providers of advanced telecommunications capability.[2]

Results from the first data collection, in which providers reported numbers of subscribers to high-speed services at the end of 1999, were presented in the Commission's second report to Congress on advanced telecommunications capability.[3] We summarize here comparable information from the second data collection, thereby presenting a snapshot of subscribership at mid-year 2000.[4] Subscribership to high-speed services for Internet access increased by 57% during the first half of 2000. At mid-year, the presence of high-speed service subscribers was reported in all fifty states, the District of Columbia, and Puerto Rico, and in about 70% of the zip codes in the United States.

Before presenting the new information in some detail, a brief description of the Commission's data collection program is in order to enable the reader to better understand how the nationwide information presented here may compare to similar information derived from other sources. First, a facilities-based provider of high-speed service lines (or wireless channels) in a given state reports to the Commission basic information about its service offerings and customers if the provider has at least 250 such lines in service in that state. While providers not meeting the reporting threshold may provide information on a voluntary basis, as some have done, we have no assurance that all such providers have reported data.[5] In particular, we do not know how comprehensively small providers, many of which serve rural areas

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[1] *See* §706, Pub.L. 104-104, Title VII, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. §157. We define services as "high-speed" that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps) in at least one direction. "Advanced services," which provide the subscriber with transmissions at a speed in excess of 200 kbps in each direction, are a subset of high-speed services.

[2] *Local Competition and Broadband Reporting*, CC Docket No. 99-301, Report and Order, 15 FCC Rcd 7717 (rel. March 30, 2000) (*Data Gathering Order*). The formal program followed several attempts by the Common Carrier Bureau to collect information on a voluntary basis. *See Local Competition and Broadband Reporting*, CC Docket No. 99-301, Notice of Proposed Rulemaking, 14 FCC Rcd 18106 (rel. Oct. 22, 1999).

[3] *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Second Report (rel. Aug. 21, 2000) (*Second Report on Advanced Telecommunications Capability*), available at http://www.fcc.gov/broadband. In the report, the Commission's data collection program (FCC Form 477) is referred to as the "Broadband Survey."

[4] Providers filed data for June 30, 2000 on September 1, 2000. During this data gathering program, qualifying providers will file FCC Form 477 each year on March 1 (reporting data for the preceding December 31) and September 1 (reporting data for June 30 of the same year). An updated FCC Form 477 for each specific round of the data collection may be downloaded from the FCC Forms website at http://www.fcc.gov/formpage.html.

[5] We received 84 state-specific voluntary submissions (made by 41 holding companies) in the first Form 477 filing and 78 voluntary submissions (made by 33 holding companies) in the second filing.

with relatively small populations, are represented in the data summarized here. Second, lines (or wireless channels) that do not meet the Commission's definition of "high-speed" (i.e., delivering transmissions to the subscriber at a speed in excess of 200 kbps in at least one direction) are not reported. Some asymmetric digital subscriber line (ADSL) services and Integrated Services Digital Network (ISDN) services provided by telephone companies and some services that connect subscribers to the Internet over cable systems do not meet this criterion, but may nevertheless meet the needs of the subscribers who select them.[6]

As the Commission's data collection program was only recently implemented, we expect providers to report data more accurately as they gain experience with the program. There also may be some need for further clarification and adjustment of the reporting system. Nevertheless, based on the information now available, the following broad conclusions emerge:

- Subscribership to high-speed services increased by 57% during the first half of 2000, to a total of 4.3 million lines (or wireless channels) in service.

- Considering services according to the technology deployed in the "last few feet" to the subscriber's premises, high-speed ADSL lines in service increased at the fastest rate during the six months, 157%, to almost one million lines.[7] High-speed lines in service over coaxial cable systems (cable modem service) remained more numerous, increasing 59% to a total of 2.2 million lines.[8] See Table 1.

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[6] For example, based on a systematic, large scale personal interview survey, the Department of Commerce estimates that about 4.4% of the approximately 105 million U.S. households access the Internet at speeds faster than regular "dial-up" telephone lines. This implies about 4.6 million such Internet connections, compared to our estimate, discussed below, that about 3.1 million residences (and home office and other small business customers) connect to the Internet at speeds in excess of 200 kbps in at least one direction. The Department of Commerce notes that their survey results include lines that are slower than the Commission's definition of "high-speed." *See* U.S. Department of Commerce, *Falling Through the Net: Toward Digital Inclusion* (October 2000), available at http://www.esa.doc.gov/fttn00.pdf.

[7] Providers are instructed to report a high-speed subscriber in the (mutually exclusive) technology category that characterizes the last few feet of distribution plant to the subscriber's premises, e.g., coaxial cable in the case of the hybrid fiber-coax (HFC) architecture of upgraded cable systems. As noted above, ADSL services that do not deliver over 200 kbps in at least one direction are not included in the data reported here. Symmetric DSL services at speeds exceeding 200 kbps are included in the "other wireline" category because they are typically used to provide data services that are functionally equivalent to the T1 and other data services that wireline telephone companies have offered to business customers for some time.

[8] In addition, reported high-speed lines (or wireless channels) delivered over wireline technologies other than ADSL, fiber to the end-user's premises (e.g., Fiber-to-the-Home, or FTTH), satellite, and fixed wireless technologies increased by 18%. However, because of previously unidentified inconsistencies in reported data, we believe the true rate of increase is closer to 25%. (Based on discussions with reporting service providers, we believe year-end 1999 fiber lines are overstated by about 50,000 and "satellite & fixed wireless" channels by about 4,000.)

- Subscribership to the subset of high-speed services that the Commission defines as advanced services (i.e., delivering to subscribers transmissions at a speed in excess of 200 kbps in each direction) increased by 41% during the first half of 2000, to a total of 2.8 million lines (or wireless channels) in service. Advanced services lines provided by means of ADSL technology increased by 75%, and advanced services lines provided over coaxial cable systems increased by 63%.[9] See Table 2.

- As of June 30, 2000, there were about 3.1 million residential and small business subscribers to high-speed services. By contrast, there were approximately 1.8 million such subscribers at the end of 1999. See Table 3.

- Providers of high-speed ADSL services report serving subscribers in 49 states and the District of Columbia, while providers of high-speed services over cable systems report serving subscribers in 47 states and the District of Columbia. High-speed service providers who use wireline technologies other than ADSL, optical carrier (i.e., fiber), satellite, or fixed wireless technologies in the last few feet to the subscriber's premises report serving subscribers in all fifty states, the District of Columbia, and Puerto Rico.[10] See Table 4.

- The Commission's data collection program uniquely gathers from providers information about the number of high-speed lines in service in individual states, in total and by technology deployed in the last few feet to the subscriber's premises. Relatively large numbers of total high-speed lines in service are associated with the more populous states.[11] See Table 5.

- The Commission's data collection program also requires service providers to identify each zip code in which the provider has at least one high-speed subscriber. As of June 30, 2000, subscribers to high-speed services were reported in about 70% of the nation's zip codes. Multiple providers reported having subscribers in more than 40% of the nation's zip codes.[12] See Table 6.

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[9] Similarly to the situation for high-speed lines, discussed above, we believe year-end 1999 advanced services lines (or wireless channels) provided over fiber to the end-user's premises and over "satellite & fixed wireless" technology are somewhat overstated due to previously unidentified inconsistencies in the reported data.

[10] This information is reported in a single category, for the individual states, to honor requests for nondisclosure of information that reporting entities assert is competitively sensitive. In the *Data Gathering Order*, the Commission agreed to publish high-speed data only once it has been aggregated in a manner that does not reveal individual company data. *See Data Gathering Order*, 15 FCC Rcd 7760. The Commission is optimistic that this approach will encourage providers that fall below the threshold for mandatory reporting of high-speed subscribership information to participate on a voluntary basis in future rounds of the data collection.

[11] The most populous state, California, has the largest reported number of high-speed lines. The second and third largest numbers of high-speed lines are reported for New York and Texas, which are the third and second most populous states, respectively.

[12] A list of zip codes with number of service providers as reported in the first Form 477 filing (data as of December 31, 1999) is available at http://www.fcc.gov/ccb/stats. Lists from subsequent filings will be posted when available.

- Our analysis indicates that about 95% of the country's population lives in the 70% of zip codes where a provider reports having at least one high-speed service subscriber.[13] Moreover, numerous competing providers report serving high-speed subscribers in the major population centers of the country. See Figure 1.

- In each of California, Massachusetts, and the District of Columbia, at least one-fifth of zip codes have seven or more providers that report having at least one subscriber for high-speed service in the zip code. By contrast, 3% of nationwide zip codes have seven or more such providers. See Table 7.

- High population density has a positive correlation with reports that high-speed subscribers are present, and low population density has a negative correlation. For example, as of June 30, 2000, high-speed subscribers are reported to be present in 96% of the most densely populated zip codes and in 40% of zip codes with the lowest population densities.[14] However, the number of sparsely populated zip codes with high-speed subscribers increased by 69% during the first half of this year, compared to an increase of 4% for the most densely populated zip codes. See Table 8.

- High median family income also has a positive correlation with reports that high-speed subscribers are present. In the top one-tenth of zip codes ranked by median family income, high-speed subscribers are reported in 95% of zip codes. By contrast, high-speed subscribers are reported in only 51% of zip codes with the lowest median family income. See Table 9.

As other information from the Commission's data collection program (FCC Form 477) becomes available, it will be included in future reports on the deployment of advanced telecommunications capability and in publications such as this one.

We invite users of this information to provide suggestions for improved data collection and analysis by:

- Using the attached customer response form,
- E-mailing comments to eburton@fcc.gov,
- Calling the Industry Analysis Division at (202) 418-0940, or
- Participating in any formal proceedings undertaken by the Commission to solicit comments for improvement of FCC Form 477.

[13] We note that some providers have not strictly followed instructions to report zip codes in which a high-speed subscriber is present and have reported, for example, all zip codes within the boundary of a "wire center" that serves at least one high-speed subscriber.

[14] For this comparison, we consider the most densely populated zip codes to be those with more than 268 persons per square mile (the top three deciles), and the least densely populated zip codes to be those with fewer than 25 persons per square mile (the bottom three deciles).

Table 1
High-Speed Lines
(Over 200 Kbps in at Least One Direction)

Types of Technology*	December 1999	June 2000	% Change
ADSL	369,792	950,590	157%
Other Wireline	609,909	747,028	22
Coaxial Cable	1,414,183	2,248,981	59
Fiber	312,204	307,151	n.m.
Satellite & Fixed Wireless	50,404	65,615	n.m.
Total Lines	2,756,492	4,319,365	57%

Table 2
Advanced Services Lines
(Over 200 Kbps in Both Directions)

Types of Technology*	December 1999	June 2000	% Change
ADSL	185,950	325,901	75%
Other Wireline	609,909	747,028	22
Coaxial Cable	879,671	1,434,237	63
Fiber	307,315	301,551	n.m.
Satellite & Fixed Wireless	7,816	3,649	n.m.
Total Lines	1,990,662	2,812,366	41%

Table 3
Residential and Small Business High-Speed Lines
(Over 200 Kbps in at Least One Direction)

Types of Technology*	December 1999	June 2000	% Change
ADSL	291,757	771,311	164%
Other Wireline	46,856	104,647	123
Coaxial Cable	1,404,600	2,179,749	55
Fiber	1,023	325	n.m.
Satellite & Fixed Wireless	50,404	64,320	n.m.
Total Lines	1,794,640	3,121,653	74%

*The mutually exclusive types of technology are, respectively: Asymetric digital subscriber line (ADSL) technologies, which provide speeds in one direction greater than speeds in the other direction; wireline technologies "other" than ADSL, including traditional telephone company high-speed services and symmetric DSL services that provide equivalent functionality; coaxial cable, including the typical hybrid fiber-coax (HFC) architecture of upgraded cable TV systems; optical fiber to the subscriber's premises (e.g., Fiber-to-the-Home, or FTTH); and satellite and (terrestrial) fixed wireless systems, which use radio spectrum to communicate with a radio transmitter at the subscriber's premises.

n.m.: Not meaningful due to previously unidentified inconsistencies in reported data.

Table 4
High-Speed Providers by Technology as of June 30, 2000

	ADSL	Coaxial Cable	Other #	All Broadband (Unduplicated)
Alabama	*	6	5	11
Alaska	0	0	*	*
Arizona	*	*	7	7
Arkansas	*	*	4	6
California	8	8	17	22
Colorado	*	*	9	10
Connecticut	*	4	7	10
Delaware	*	*	4	5
District of Columbia	*	*	8	8
Florida	5	8	11	16
Georgia	*	4	8	12
Hawaii	*	*	*	*
Idaho	*	*	*	4
Illinois	6	4	10	13
Indiana	*	4	7	11
Iowa	*	6	6	9
Kansas	*	*	6	7
Kentucky	4	*	5	8
Louisiana	*	*	5	7
Maine	*	*	*	4
Maryland	*	4	8	11
Massachusetts	4	4	12	15
Michigan	*	5	9	13
Minnesota	4	7	8	16
Mississippi	*	*	*	5
Missouri	*	4	9	11
Montana	*	*	*	*
Nebraska	*	*	5	6
Nevada	*	*	7	8
New Hampshire	*	*	6	6
New Jersey	*	*	10	11
New Mexico	*	0	4	4
New York	8	*	13	19
North Carolina	5	4	7	12
North Dakota	*	*	4	6
Ohio	6	*	14	15
Oklahoma	*	*	*	5
Oregon	4	*	9	10
Pennsylvania	7	4	15	18
Puerto Rico	0	0	*	*
Rhode Island	*	*	*	4
South Carolina	*	4	6	9
South Dakota	*	*	5	5
Tennessee	*	*	5	10
Texas	7	4	14	17
Utah	*	*	5	6
Vermont	*	*	*	4
Virginia	5	4	14	16
Washington	8	*	12	15
West Virginia	*	*	*	4
Wisconsin	6	*	8	11
Wyoming	*	0	*	*
Nationwide (Unduplicated)	45	33	69	106

Other includes other wireline, fiber, satellite and fixed wireless.

* Indicates 1-3 providers reporting.

Table 5
High-Speed Lines by Technology

	December 1999	June 2000				
	Total	ADSL	Coaxial Cable	Other #	Total	Percentage Change from 1999 to 2000
Alabama	19,796	*	17,164	*	32,679	65 %
Alaska	*	0	0	*	*	n.a.
Arizona	58,825	*	*	48,983	111,678	90
Arkansas	8,155	*	*	3,688	15,484	90
California	547,179	373,574	297,415	238,700	909,689	66
Colorado	36,726	*	*	13,127	64,033	74
Connecticut	36,488	*	47,127	*	63,772	75
Delaware	1,558	*	*	1,506	3,660	135
District of Columbia	13,288	*	*	10,766	16,926	27
Florida	190,700	37,806	127,238	75,851	240,895	26
Georgia	75,870	*	48,947	*	130,292	72
Hawaii	*	*	*	*	*	n.a.
Idaho	*	*	*	*	8,070	n.a.
Illinois	77,672	12,812	83,737	70,384	166,933	115
Indiana	20,059	*	33,431	*	49,599	147
Iowa	19,258	*	42,081	*	49,159	155
Kansas	26,179	*	*	5,171	42,679	63
Kentucky	23,570	*	*	*	24,019	2
Louisiana	28,133	*	*	11,749	43,294	54
Maine	19,878	*	*	*	17,864	-10
Maryland	52,749	*	42,412	*	71,005	35
Massachusetts	114,116	15,802	148,233	19,922	183,957	61
Michigan	81,223	*	94,586	*	135,318	67
Minnesota	38,268	25,975	30,485	8,375	64,835	69
Mississippi	*	*	*	*	6,514	n.a.
Missouri	23,347	*	16,482	*	46,903	101
Montana	*	*	*	*	*	n.a.
Nebraska	36,748	*	*	5,609	44,184	20
Nevada	23,514	*	*	10,441	40,582	73
New Hampshire	22,807	*	*	2,580	33,045	45
New Jersey	101,832	*	*	36,909	144,203	42
New Mexico	*	*	0	*	2,925	n.a.
New York	186,504	41,576	*	*	311,839	67
North Carolina	57,881	8,662	42,290	30,158	81,110	40
North Dakota	*	*	*	1,632	3,467	n.a.
Ohio	160,792	33,603	*	*	156,888	-2
Oklahoma	*	*	*	*	162,790	n.a.
Oregon	27,062	19,989	*	*	44,186	63
Pennsylvania	71,926	18,313	38,340	23,239	79,892	11
Puerto Rico	*	0	0	*	*	n.a.
Rhode Island	*	*	*	*	20,628	n.a.
South Carolina	25,229	*	20,190	*	32,824	30
South Dakota	*	*	*	5,414	7,991	n.a.
Tennessee	66,307	*	*	23,979	85,500	29
Texas	152,518	73,117	135,999	65,014	274,130	80
Utah	11,635	*	*	4,828	19,612	69
Vermont	*	*	*	*	1,551	n.a.
Virginia	51,305	9,510	40,337	22,153	72,000	40
Washington	71,930	52,345	*	*	118,318	64
West Virginia	*	*	*	*	1,835	n.a.
Wisconsin	18,599	1,063	*	*	34,220	84
Wyoming	*	*	0	*	*	n.a.
Nationwide Reported Total	2,756,492	950,590	2,248,981	1,119,794	4,319,365	57

Other includes other wireline, fiber, satellite and fixed wireless.

* Data witheld to maintain firm confidentiality.

n.a.: Not available

Table 6
Percentage of Zip Codes with High-Speed Service

Providers	December 1999	June 2000
Zero	44.0 %	30.1 %
One	24.5	27.8
Two	14.2	18.6
Three	8.1	9.3
Four	4.4	5.0
Five	2.6	3.4
Six	1.5	2.6
Seven	0.6	1.7
Eight	0.2	0.9
Nine	0.0	0.4
Ten or More	0.0	0.4

Figure 1
High-Speed Providers by Zip Code

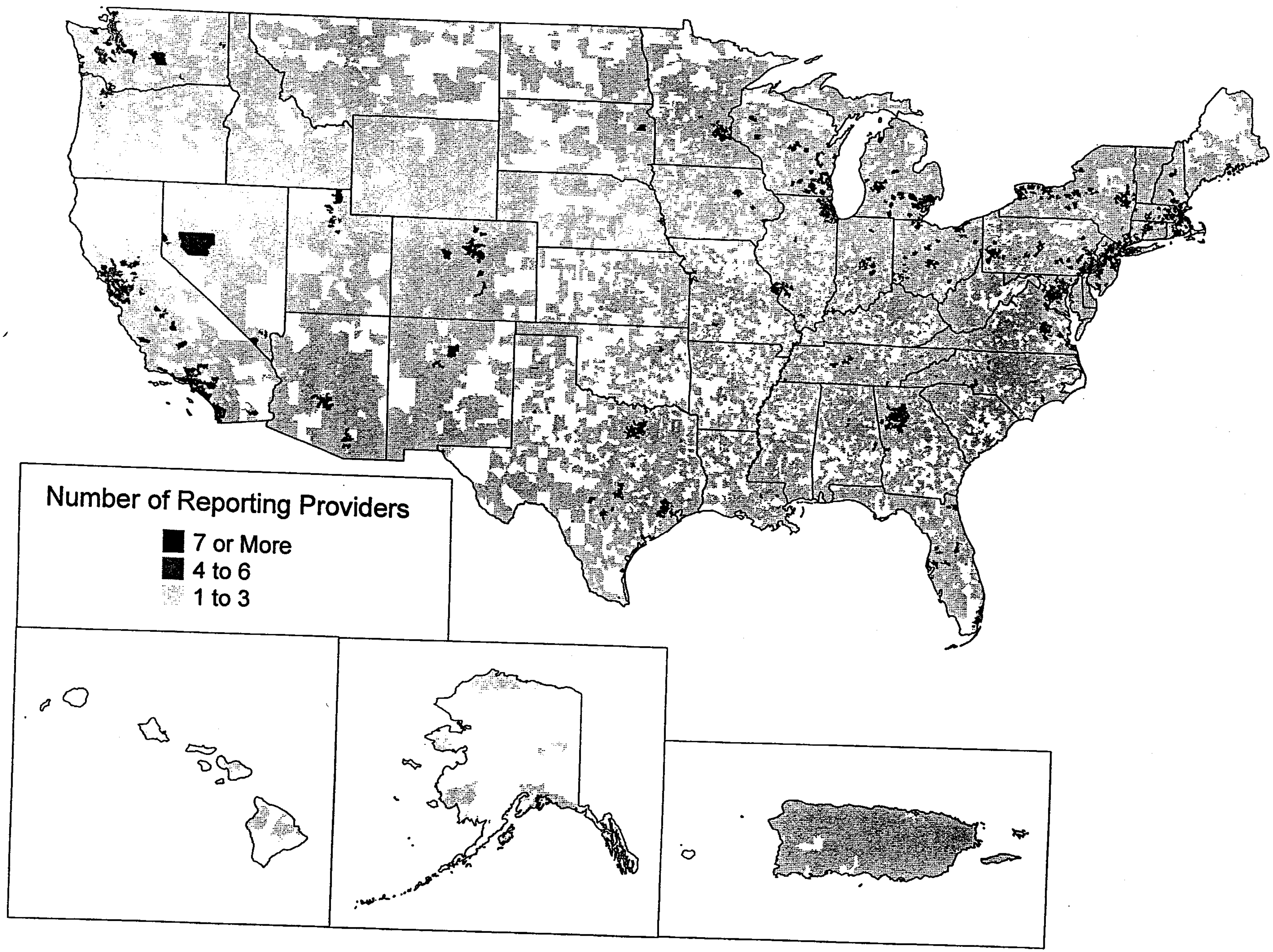

Table 7
Percentage of Zip Codes with High-Speed Lines as of June 30, 2000

	Number of Providers					
	Zero	One - Three	Four	Five	Six	Seven or More
Alabama	38 %	61 %	1 %	0 %	0 %	0 %
Alaska	78	22	0	0	0	0
Arizona	14	50	8	11	13	4
Arkansas	66	34	0	0	0	0
California	17	40	7	7	8	20
Colorado	13	63	5	6	6	8
Connecticut	8	69	17	4	3	0
Delaware	0	98	2	0	0	0
District of Columbia	0	33	4	11	26	26
Florida	12	62	9	8	4	4
Georgia	34	49	6	5	3	3
Hawaii	49	51	0	0	0	0
Idaho	31	69	0	0	0	0
Illinois	39	44	7	5	2	2
Indiana	35	60	4	1	0	0
Iowa	41	58	1	0	0	0
Kansas	50	50	0	0	0	0
Kentucky	55	45	0	0	0	0
Louisiana	39	59	1	0	0	0
Maine	30	70	0	0	0	0
Maryland	1	68	8	9	9	5
Massachusetts	1	49	14	5	5	26
Michigan	18	64	6	6	4	3
Minnesota	33	57	5	4	1	0
Mississippi	47	53	0	0	0	0
Missouri	57	36	3	3	1	0
Montana	49	51	0	0	0	0
Nebraska	48	48	4	0	0	0
Nevada	26	59	11	3	0	0
New Hampshire	5	85	4	5	0	0
New Jersey	2	51	21	14	7	5
New Mexico	33	62	5	0	0	0
New York	11	62	8	7	5	6
North Carolina	24	73	2	1	0	0
North Dakota	59	41	1	0	0	0
Ohio	19	69	7	3	1	0
Oklahoma	58	40	3	0	0	0
Oregon	23	66	4	4	2	2
Pennsylvania	25	56	7	4	5	2
Puerto Rico	15	85	0	0	0	0
Rhode Island	0	81	19	0	0	0
South Carolina	35	65	0	0	0	0
South Dakota	41	58	1	0	0	0
Tennessee	34	63	2	0	0	0
Texas	33	49	5	4	4	5
Utah	20	64	9	8	0	0
Vermont	8	92	0	0	0	0
Virginia	25	59	3	2	4	7
Washington	20	52	6	6	7	9
West Virginia	25	75	0	0	0	0
Wisconsin	34	54	8	4	0	0
Wyoming	26	74	0	0	1	0
Nationwide	30	56	5	3	3	3

Table 8
High-Speed Subscribership in Zip Codes Ranked by Population Density

Deciles (blocks of zip codes grouped by density)	Persons per square mile (in each decile of zip codes)	% of zip codes in decile with at least one high-speed subscriber		% of population in decile that reside in zip codes with high speed service	
		December 1999	June 2000	December 1999	June 2000
90-100	More than 3,147	96.2	97.6	99.0	99.7
80-90	947-3,147	93.2	96.0	98.4	99.4
70-80	268-947	87.2	93.6	96.2	98.4
60-70	118-268	77.8	87.2	91.7	96.2
50-60	67-118	66.3	78.7	82.9	90.4
40-50	41-67	53.7	66.9	72.2	82.1
30-40	25-41	40.2	56.8	59.1	73.0
20-30	15-25	27.9	44.7	48.5	63.4
10-20	6-15	23.9	38.9	46.6	61.6
0-10	less than 6	18.7	35.4	36.1	56.4

Table 9
High-Speed Subscribership in Zip Codes Ranked by Median Household Income

Deciles (blocks of zip codes grouped by median household income)	Median household income (in each decile of zip codes)	% of zip codes in decile with at least one high-speed subscriber		% of population in decile that reside in zip codes with high speed service	
		December 1999	June 2000	December 1999	June 2000
90-100	$53,494 to $291,938	90.8	95.4	98.4	99.5
80-90	$43,617 to $53,478	77.4	86.9	95.9	98.2
70-80	$38,396 to $43,614	67.0	78.1	94.3	96.8
60-70	$34,744 to $38,395	59.6	73.6	91.7	95.6
50-60	$32,122 to $34,743	53.7	68.3	89.4	93.9
40-50	$29,893 to $32,121	51.8	65.0	88.2	92.7
30-40	$27,542 to $29,892	49.1	62.4	85.9	91.4
20-30	$24,855 to $27,541	48.8	59.6	85.1	90.3
10-20	$21,645 to $24,855	45.3	55.7	82.5	88.1
0-10	$0 to $21,644	41.7	50.5	84.1	89.5

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August 31, 2000

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FCC RELEASES LOCAL TELEPHONE COMPETITION REPORT

Summarizing December 31, 1999 data from Forms 477 and 499-A

Washington, D.C. – The Federal Communications Commission (FCC) today released its latest report about competition in the market for local telecommunications services. The report summarizes information that has recently become available from two sources. The first source is data filed on May 15, 2000 in response to the Commission's recently adopted local competition and broadband data gathering program (FCC Form 477). The second source is revenue information about all segments of the telecommunications industry that is submitted pursuant to the Commission's consolidated Telecommunications Reporting Worksheet (FCC Form 499-A). Initial information from these two sources reflects the status of local telephone service competition and state-specific mobile telephone subscribership as of year-end 1999.

The new information shows competitors of the incumbent telephone companies claiming about 4 percent of the 190 million telephone lines that served end-user customers at the end of 1999. Reporting competitors indicate that about 34 percent of these lines were local loops that they own, while the remaining lines were served by means of unbundled network elements (UNEs) or services acquired from other carriers. The number of UNEs that incumbent telephone companies reported providing to other carriers more than doubled during the six months from June through December 1999—from about 700,000 to nearly 1.5 million. Lines that incumbent companies provided to other carriers under service resale arrangements remained more common, growing from 3.6 million to 4.6 million during the same period.

As additional information from these sources becomes available, it will be routinely posted on the Commission's Internet site, as will summaries of the data submitted in the September 1 Form 477 filing. Because both Forms 477 and 499-A were adopted recently, there may be some need for further clarification and adjustment of the reporting system. We invite users of the information in this report to make suggestions to that effect.

This report is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th Street, SW, Washington, DC. The report can be downloaded [file name: LCOM0800.zip, LCOM0800.pdf] from the **FCC-State Link** Internet site at http://www.fcc.gov/ccb/stats. Copies of the publication also may be purchased by calling International Transcription Services, Inc. (ITS) at (202) 857-3800.

- FCC -

Common Carrier Bureau contact: Industry Analysis Division at (202) 418-0940; TTY (202) 418-0484.

Local Telephone Competition at the New Millennium

(Summarizing December 31, 1999 data from Forms 477 and 499-A)

August 2000

Industry Analysis Division
Common Carrier Bureau
Federal Communications Commission
Washington, DC 20554

This report is available for reference in the FCC's Information Center at 445 12th Street, S.W., Courtyard Level. Copies may be purchased by calling International Transcription Service, Inc. at (202) 857-3800. The report can also be downloaded [file names: LCOM0800.ZIP, LCOM0800.PDF] from the **FCC-State Link** internet site at http://www.fcc.gov/ccb/stats on the World Wide Web.

LOCAL TELEPHONE COMPETITION AT THE NEW MILLENNIUM

This brief report about competition in the market for local telecommunications services in the United States summarizes information that has recently become available from two sources.

The first source is data filed by carriers on May 15, 2000 in response to the Commission's recently adopted local competition and broadband data gathering program (FCC Form 477). This program replaced a previous, voluntary local competition data gathering program which was administered by the Common Carrier Bureau. The new Commission program requires providers of local telephone services to file, twice each year, information for each state in which they have at least 10,000 lines in service. The initial information utilized in this report reflects the status of local telephone service competition and state-specific mobile wireless telephone subscribership as of year-end 1999 and is presented in Tables 1 through 5.

The second source of data utilized in this report is telecommunications carrier information submitted pursuant to the Commission's Telecommunications Reporting Worksheet (FCC Form 499-A). Form 499-A consolidates provider reports associated with the administration of Telecommunications Relay Services, North American Numbering Plan, Local Number Portability, and Universal Service Support Mechanisms. These reports, filed by about 4,500 legal entities, provide revenue information about all segments of the telecommunications industry. Consequently, they provide information on the size and growth of local competitors in comparison to incumbent local exchange carriers (ILECs). Form 499-A data form the basis of Tables 6 and 7 in this report.

As both Forms 477 and 499-A were adopted recently, there may be some need for further clarification and adjustment of the reporting system. Nevertheless, based on the information now available, the following broad conclusions emerge:

- In the first filing of Form 477, 168 ILECs provided information on their local telephone service. Where companies served more than one state, information was provided separately for each state. There were a total of 330 state reports. Of these, 321 were from companies that had at least 10,000 lines in a particular state and were thus required to file the reports. Nine of the reports were from carriers with fewer than 10,000 lines and were voluntary. See Table 1.

- In the first filing, 81 competitive local exchange carriers (CLECs) filed local competition data for year-end 1999, providing 251 required reports and 46 voluntary reports.

- The large number of voluntary filings makes it possible to report more richly detailed results than would otherwise be possible without revealing carrier-specific results.

- At least one CLEC reported providing service in each of 53 reported jurisdictions except for Idaho, Puerto Rico, and the U.S. Virgin Islands. Four or more CLECs were reported operating in 29 reported jurisdictions.[1]

- At the end of 1999, reporting ILECs provided slightly over 6 million local telephone lines to other carriers. By comparison, they provided over 181 million lines to their own end-user customers. See Table 2.

- The number of lines that ILECs provided as unbundled network elements (UNEs) more than doubled during the six months from June through December 1999—from about 700,000 to nearly 1.5 million. Lines provided under resale arrangements, however, remained more common, growing from 3.6 million to 4.6 million during the same period. These numbers may be slightly understated because smaller carriers are not required to report data.[2] However, as the reporting ILECs account for about 98 percent of all ILEC lines, the understatement should not be large.[3] ILECs also reported acquiring about 400,000 lines from other carriers on a resale basis, so ILECs provided about 5.7 million net lines to other carriers at the end of 1999.

- Reporting CLECs provided at least 8 million telephone lines to their own end-user customers at the end of 1999. Over 2.8 million of these lines were served by local loop facilities that the CLECs own. The remaining lines were acquired from other carriers.[4] See Table 3.

- Reporting CLECs provided about 4 percent of nationwide end-user telephone lines at the end of 1999, including over 1 million lines in California and also in New York. See Table 4.

- By comparison to the 190 million fixed-facility[5] local telephone lines serving end-user customers reported at the end of 1999, the 76 mobile telephone service providers that reported information in the first Form 477 filing served about 80 million subscribers.[6] See Table 5.

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[1] These jurisdictions consist of 28 states and the District of Columbia.

[2] Carriers with fewer than 10,000 lines in a state need not report, although a number made voluntary filings.

[3] All ILECs, whether or not they normally report to the FCC, provide data on the number of telephone lines served to the National Exchange Carrier Association for use in conjunction with the Commission's universal service mechanisms.

[4] Reports by CLECs on the number of lines acquired from other carriers under resale arrangements and, separately, as UNEs differ substantially from the numbers reported by the ILECs. It therefore appears that CLECs may be interpreting the reporting instructions differently and that clarification is needed.

[5] That is, voice telephone lines provided by means of wireline or fixed wireless technology.

[6] Facilities-based providers with fewer than 10,000 mobile telephone service subscribers in a state (measured by revenue-generating handsets in service) are not required to report. By comparison, the

- When filing revenue information on Form 499-A, the number of firms reporting that they provided some form of local service in 1999 was 1,855. In addition to 1,318 ILECs and 298 carriers that identified themselves as CLECs,[7] 239 other carriers also reported local service revenues.[8] See Table 6.

- The *local service* revenues of carriers that identified themselves as CLECs[9] nearly doubled from 1998 to 1999—rising from $2.4 billion to $4.5 billion.

- Firms that do not identify local service as being their primary line of business reported substantial growth in local service revenues. The *local service* revenues of *all* local service competitors increased from $3.5 billion to $6.3 billion.

- The share of local service revenues claimed by carriers competing with the ILECs rose from 3.5% in 1998 to 5.8% in 1999.

- The *total* telecommunications revenues of all firms engaged in providing local service in competition with the ILECs was about $90 billion in 1999—reflecting the operations of large firms such as AT&T and WorldCom, which have significant revenue from other telecommunications services. Thus, while competitors now claim only a small share of the local telephone service market, large firms with substantial resources are entering that market. See Table 7.

As other information from these two particular sources becomes available, it will be routinely posted on the Commission's Internet site, as will results from the September 1 Form 477 filing.

We invite users of this information to provide suggestions for improved data collection and analysis by:

- Using the attached customer response form,
- E-mailing comments to eburton@fcc.gov,
- Calling the Industry Analysis Division at (202) 418-0940, or
- Participating in any formal proceedings undertaken by the Commission to solicit comments for improvement of Form 477 or Form 499-A.

Cellular Telecommunications Industry Association reports 86 million subscribers in December 1999 based on a survey with a 91.4 percent response rate.

[7] These 298 carriers include firms that identified themselves as either CLECs or competitive access providers (CAPs), an older term associated with some of the first local competitors, who tended to build their own facilities.

[8] The number of reporting entities self-identifying in any particular category, however, can change widely with corporate acquisitions, divestitures, and reorganizations. In the opinion of Industry Analysis Division staff, the revenue numbers are much less subject to such variation.

[9] That is, entities that selected CLEC (or CAP) as their principal line of business.

Table 1
Number of Reporting Local Exchange Carriers: Year-End 1999

State	ILECs	CLECs	Total
Alabama	9	4	13
Alaska	4	2	6
Arizona	2	8	10
Arkansas	5	1	6
California	9	17	26
Colorado	4	7	11
Connecticut	2	5	7
Delaware	1	1	2
District of Columbia	1	5	6
Florida	8	17	25
Georgia	15	13	28
Hawaii	1	2	3
Idaho	3	0	3
Illinois	6	13	19
Indiana	7	7	14
Iowa	6	3	9
Kansas	5	2	7
Kentucky	12	4	16
Louisiana	5	6	11
Maine	5	2	7
Maryland	1	4	5
Massachusetts	1	9	10
Michigan	6	5	11
Minnesota	17	10	27
Mississippi	4	4	8
Missouri	6	5	11
Montana	7	2	9
Nebraska	6	1	7
Nevada	5	3	8
New Hampshire	5	2	7
New Jersey	3	8	11
New Mexico	3	2	5
New York	9	21	30
North Carolina	14	8	22
North Dakota	7	2	9
Ohio	9	10	19
Oklahoma	9	2	11
Oregon	8	6	14
Pennsylvania	11	13	24
Puerto Rico	1	0	1
Rhode Island	1	1	2
South Carolina	14	1	15
South Dakota	6	2	8
Tennessee	14	7	21
Texas	15	21	36
U.S. Virgin Islands	1	0	1
Utah	3	2	5
Vermont	4	1	5
Virginia	7	7	14
Washington	9	9	18
West Virginia	2	1	3
Wisconsin	10	8	18
Wyoming	2	1	3
Nationwide - Unduplicated	168	81	249
Total State Reports*	330	297	627
Required Reports*	321	251	572
Voluntary Reports*	9	46	55

* Each report represents all of a company's operations in a given state. Carriers with both ILEC and CLEC operations in the same state provide separate reports.

Table 2
Reporting Incumbent Local Exchange Carriers: Lines in Thousands

Date*	ILECs Reporting	Total Lines Reported	Lines Resold	Percent	UNE Loops Leased	Percent	End-User Lines	Percent
Dec-97	9	159,008	1,743	1.1 %	133	0.1 %	157,132	98.8 %
Jun-98	8	161,810	2,448	1.5	244	0.2	159,118	98.3
Dec-98	7	164,614	3,062	1.9	361	0.2	161,191	97.9
Jun-99	7	167,177	3,583	2.1	685	0.4	162,909	97.4
Dec-99	168	187,431	4,649	2.6	1,474	0.8	181,308	96.7

Table 3
Reporting Competitive Local Exchange Carriers: Lines in Thousands

Date	CLECs Reporting	Total End-User Lines Reported	Resold Lines or UNE Loops	Percent	Facilities-Based End-User Lines	Percent
Dec-99	81	8,318	5,471	65.8 %	2,847	34.2 %

*Data for December 97 through June 99 are from Common Carrier Bureau voluntary surveys. Data for December 99 are from Form 477 filings.

Table 4
End-User Lines Served by Reporting LECs: Year-End 1999 **

State	ILECs	CLECs	Total	CLEC Share
Alabama	2,360,023	131,357	2,491,380	5 %
Alaska	460,425	*	*	*
Arizona	*	125,991	*	*
Arkansas	1,396,981	*	*	*
California	23,198,657	1,027,200	24,225,857	4
Colorado	2,873,169	141,135	3,014,304	5
Connecticut	2,416,300	86,385	2,502,685	3
Delaware	581,714	*	*	*
District of Columbia	994,975	77,865	1,072,840	7
Florida	11,090,801	681,382	11,772,183	6
Georgia	4,869,774	254,672	5,124,446	5
Hawaii	736,080	*	*	*
Idaho	*	0	*	*
Illinois	8,040,394	443,936	8,484,330	5
Indiana	3,559,946	96,091	3,656,037	3
Iowa	1,439,574	*	*	*
Kansas	1,543,799	*	*	*
Kentucky	2,126,249	45,522	2,171,771	2
Louisiana	2,423,524	195,207	2,618,731	7
Maine	822,990	*	*	*
Maryland	3,932,708	79,173	4,011,881	2
Massachusetts	4,580,383	277,476	4,857,859	6
Michigan	6,287,424	208,980	6,496,404	3
Minnesota	2,926,177	202,675	3,128,852	6
Mississippi	1,288,847	57,914	1,346,761	4
Missouri	3,464,118	113,347	3,577,465	3
Montana	530,884	*	*	*
Nebraska	946,718	*	*	*
Nevada	1,331,122	*	*	*
New Hampshire	861,976	*	*	*
New Jersey	*	161,312	*	*
New Mexico	940,489	*	*	*
New York	12,675,692	1,191,446	13,867,138	9
North Carolina	4,922,110	166,473	5,088,583	3
North Dakota	357,062	*	*	*
Ohio	6,904,938	262,159	7,167,097	4
Oklahoma	2,008,819	*	*	*
Oregon	2,104,982	47,239	2,152,221	2
Pennsylvania	8,474,914	412,761	8,887,675	5
Puerto Rico	1,294,962	0	1,295,000	0
Rhode Island	676,212	*	*	*
South Carolina	2,222,641	*	*	*
South Dakota	353,816	*	*	*
Tennessee	3,322,220	129,987	3,452,207	4
Texas	12,601,936	586,111	13,188,047	4
U.S. Virgin Islands	*	0	*	*
Utah	*	*	1,231,394	3
Vermont	404,836	*	*	*
Virginia	4,853,301	88,431	4,941,732	2
Washington	3,811,920	138,449	3,950,369	4
West Virginia	*	*	*	*
Wisconsin	3,184,664	177,336	3,362,000	5
Wyoming	255,572	*	*	*
Nationwide	181,307,695	8,318,244	189,625,939	4

* Data withheld to maintain firm confidentiality.

** Voice-grade equivalent lines including voice-grade equivalent wireless channels in service. Carriers with under 10,000 lines in a state were not required to report.

Table 5
Mobile Telephone Subscribers Reported: Year-End 1999 **

State	Number of Carriers	Subscribers	Percent of Nation	Population ***	Subscribers per Capita
Alabama	10	1,080,410	1.4 %	4,369,862	0.25
Alaska	5	165,221	0.2	619,500	0.27
Arizona	9	1,125,321	1.4	4,778,332	0.24
Arkansas	5	719,919	0.9	2,551,373	0.28
California	11	8,544,941	10.7	33,145,121	0.26
Colorado	8	1,552,718	1.9	4,056,133	0.38
Connecticut	6	1,077,089	1.4	3,282,031	0.33
Delaware	5	270,848	0.3	753,538	0.36
District of Columbia	5	910,116	1.1	519,000	1.75
Florida	14	5,158,079	6.5	15,111,244	0.34
Georgia	13	2,538,983	3.2	7,788,240	0.33
Hawaii	8	288,425	0.4	1,185,497	0.24
Idaho	4	271,436	0.3	1,251,700	0.22
Illinois	10	3,922,482	4.9	12,128,370	0.32
Indiana	10	1,318,975	1.7	5,942,901	0.22
Iowa	9	774,773	1.0	2,869,413	0.27
Kansas	11	669,472	0.8	2,654,052	0.25
Kentucky	12	911,700	1.1	3,960,825	0.23
Louisiana	9	1,227,106	1.5	4,372,035	0.28
Maine	4	187,003	0.2	1,253,040	0.15
Maryland	7	1,473,494	1.8	5,171,634	0.28
Massachusetts	6	1,892,014	2.4	6,175,169	0.31
Michigan	13	3,512,813	4.4	9,863,775	0.36
Minnesota	13	1,550,411	1.9	4,775,508	0.32
Mississippi	6	673,355	0.8	2,768,619	0.24
Missouri	10	1,855,452	2.3	5,468,338	0.34
Montana	*	*	*	882,779	*
Nebraska	4	576,296	0.7	1,666,028	0.35
Nevada	7	750,335	0.9	1,809,253	0.41
New Hampshire	6	280,508	0.4	1,201,134	0.23
New Jersey	5	2,289,181	2.9	8,143,412	0.28
New Mexico	6	363,827	0.5	1,739,844	0.21
New York	7	4,833,816	6.1	18,196,601	0.27
North Carolina	11	2,536,068	3.2	7,650,789	0.33
North Dakota	*	*	*	633,666	*
Ohio	12	3,237,786	4.1	11,256,654	0.29
Oklahoma	9	826,637	1.0	3,358,044	0.25
Oregon	7	914,848	1.1	3,316,154	0.28
Pennsylvania	12	2,767,474	3.5	11,994,016	0.23
Puerto Rico	*	*	*	3,889,507	*
Rhode Island	6	279,304	0.4	990,819	0.28
South Carolina	7	1,137,232	1.4	3,885,736	0.29
South Dakota	*	*	*	733,133	*
Tennessee	9	1,529,054	1.9	5,483,535	0.28
Texas	20	5,792,453	7.3	20,044,141	0.29
U.S. Virgin Islands	*	*	*	120,917	*
Utah	8	643,824	0.8	2,129,836	0.30
Vermont	*	*	*	593,740	*
Virginia	12	1,860,262	2.3	6,872,912	0.27
Washington	8	1,873,475	2.4	5,756,361	0.33
West Virginia	7	241,265	0.3	1,806,928	0.13
Wisconsin	9	1,525,818	1.9	5,250,446	0.29
Wyoming	4	127,634	0.2	479,602	0.27
Nationwide	76	79,696,083	100.0	276,701,237	0.29

* Data withheld to maintain firm confidentiality.
** Carriers with under 10,000 subscribers in a state were not required to report.
*** Population as of July 1999.

Table 6
Local Service Market *
(Dollar Amounts Shown in Millions)

	TRS Data				TRS & USF Data		Form 499-A
	1993	1994	1995	1996	1997	1998	1999
Number of Local Competitors							
RBOCs & Other Incumbent LECs	1,281	1,347	1,347	1,376	1,410	1,348	1,318
CAPs & CLECs	20	30	57	94	129	355	298
Local Resellers, Shared Tenant, Private Carriers & Other Local	n.a.	n.a.	n.a.	25	18	59	96
All other carriers reporting local exchange service revenue	n.a.	n.a.	n.a.	74	109	133	143
Total	1,301	1,377	1,404	1,569	1,666	1,895	1,855
Local Service Revenues **							
Incumbent LECs							
Bell Operating Companies ***	$58,838	$61,415	$65,485	$70,290	$68,028	$69,801	$76,586
Other Incumbent LECs ***	20,894	22,507	24,269	24,899	24,960	26,989	26,084
Total ***	79,732	83,922	89,754	95,189	92,988	96,790	102,670
Local Service Competitors							
CAPs & CLECs	174	269	595	949	1,556	2,393	4,505
Local Resellers, Shared Tenant, Private Carriers & Other Local	n.a.	n.a.	n.a.	n.a.	224	329	522
All other carriers (local exchange service revenue only) ****	46	32	56	59	381	809	1,319
Total	220	301	651	1,008	2,161	3,530	6,347
Total	$79,952	$84,224	$90,405	$96,197	$95,149	$100,320	$109,016
Share of Local Service Revenues							
Incumbent LECs							
Bell Operating Companies	73.6%	72.9%	72.4%	73.1%	71.5%	69.6%	70.3%
Other Incumbent LECs	26.1%	26.7%	26.8%	25.9%	26.2%	26.9%	23.9%
Total	99.7%	99.6%	99.3%	99.0%	97.7%	96.5%	94.2%
Local Service Competitors							
CAPs & CLECs	0.2%	0.3%	0.7%	1.0%	1.6%	2.4%	4.1%
Local Resellers, Shared Tenant, Private Carriers & Other Local	n.a.	n.a.	n.a.	n.a.	0.2%	0.3%	0.5%
All other carriers	0.1%	0.0%	0.1%	0.1%	0.4%	0.8%	1.2%
Total	0.3%	0.4%	0.7%	1.0%	2.3%	3.5%	5.8%

Source: Data filed on FCC Forms 431, 457 and 499-A worksheets. See also: *Telecommunications Industry Revenue*, October 1999.

* Some previously published data have been revised.

** For 1993 through 1996, for most categories of carriers, local service revenues include revenues from the following TRS reporting categories: local exchange, local private line, other local services, interstate access services and intrastate access services. The amounts shown do not include pay telephone, mobile or toll service revenue. See also note ****. 1998 revenue for carriers that filed TRS worksheets but not universal service worksheets was estimated using 1998 TRS worksheets. These worksheets contain carrier revenue data for calendar year 1997.

*** Incumbent LEC local service revenues for 1996 and prior years include significant amounts of yellow pages, billing and collection and other revenues that were reported as other local service revenues. If these revenues were included in 1997, incumbent LECs would show significant revenue growth from 1996 to 1997. Inside wire maintenance was included in local service revenue in 1997 but not thereafter.

**** Toll carriers typically provide resold special access and private line services as part of toll service operations. Accordingly, the table shows local exchange revenue rather than all local revenue for these carriers. All local exchange revenue for these carriers are shown below. The 1998 figure is high because many toll carriers misread instructions and reported a total of about $1.2 billion of PICC pass-through charges as tariffed subscriber line charge and end-user PICC revenue rather than reporting those charges as toll revenue.

All local service revenue reported by all other carriers	1993	1994	1995	1996	1997	1998	1999
	$243	$212	$297	$291	$1,274	$3,418	$1,848

Table 7
Total Telecommunications Revenue *
(Dollar Amounts Shown in Millions)

	TRS Data **					TRS & USF Data		Form 499-A
	1992	1993	1994	1995	1996	1997	1998	1999
Total telecommunications revenues including local, pay telephone, mobile and toll service								
Incumbent LECs **	$91,584	$95,228	$98,431	$102,820	$107,905	$105,154	$108,234	$112,216
CAPs & CLECs	69	191	274	637	1,012	1,919	3,348	5,652
Local Resellers, Shared Tenant, Private Carriers & Other Local	n.a.	n.a.	n.a.	n.a.	n.a.	562	686	857
All other carriers reporting local exchange service revenue	n.a.	n.a.	n.a.	n.a.	n.a.	74,421	76,025	83,677
Carriers not included above (Carriers that do not report any local exchange service revenues)	n.a.	n.a.	n.a.	n.a.	n.a.	49,113	58,099	66,103
Industry Total	$153,409	$165,342	$174,890	$190,076	$211,782	$231,168	$246,392	$268,505
Ratio of Incumbent LEC's total telecommunications revenues to the total telecommunications revenues of:								
CAPs & CLECs	1336 : 1	498 : 1	359 : 1	161 : 1	107 : 1	55 : 1	32 : 1	20 : 1
Local Resellers, Shared Tenant, Private Carriers & Other Local						187 : 1	158 : 1	131 : 1
Share of industry total telecommunications revenues								
Incumbent LECs **	59.7%	57.6%	56.3%	54.1%	51.0%	45.5%	43.9%	41.8%
CAPs & CLECs	0.0%	0.1%	0.2%	0.3%	0.5%	0.8%	1.4%	2.1%
Local Resellers, Shared Tenant, Private Carriers & Other Local						0.2%	0.3%	0.3%

Source: Data filed on FCC Form 431, 457 and 499-A worksheets. See also: *Telecommunications Industry Revenue,* October 1999.

* Some previously published data have been revised.

** Incumbent LEC local service revenues for 1996 and prior years include significant amounts of yellow pages, billing and collection and other revenues that were reported as other local service revenues. If these revenues were included in 1997, incumbent LECs would show significant revenue growth from 1996 to 1997. Inside wire maintenance was included in local service revenue in 1997 but not thereafter. 1998 revenues for carriers that filed TRS worksheets but not universal service worksheets were estimated using 1998 TRS worksheets. These worksheets contain carrier revenue data for calendar 1997.

Customer Response

Publication: Local Telephone Competition at the New Millennium (Summarizing December 31, 1999 data from Forms 477 and 499-A)
August 2000

You can help us provide the best possible information to the public by completing this form and returning it to the Industry Analysis Division of the FCC's Common Carrier Bureau.

1. Please check the category that best describes you:

____ press
____ current telecommunications carrier
____ potential telecommunications carrier
____ business customer evaluating vendors/service options
____ consultant, law firm, lobbyist
____ other business customer
____ academic/student
____ residential customer
____ FCC employee
____ other federal government employee
____ state or local government employee
____ Other (please specify) ______________________________

2. Please rate the report:

	Excellent	Good	Satisfactory	Poor	No opinion
Data accuracy	(_)	(_)	(_)	(_)	(_)
Data presentation	(_)	(_)	(_)	(_)	(_)
Timeliness of data	(_)	(_)	(_)	(_)	(_)
Completeness of data	(_)	(_)	(_)	(_)	(_)
Text clarity	(_)	(_)	(_)	(_)	(_)
Completeness of text	(_)	(_)	(_)	(_)	(_)

3. Overall, how do you rate this report?

	Excellent	Good	Satisfactory	Poor	No opinion
	(_)	(_)	(_)	(_)	(_)

4. How can this report be improved?

____
____
____
____
____
____
____

5. May we contact you to discuss possible improvements?
Name:
Telephone #:

<table>
<tr><td colspan="3">To discuss the information in this report, contact:
Industry Analysis Division at 202-418-0940</td></tr>
<tr><td>Fax this response to</td><td rowspan="2">or</td><td>Mail this response to</td></tr>
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Equity Research

Americas | U.S./Telecommunications/CLECs | April 3, 2001

Telecom Services - CLECs:

4Q00 Vital Signs Review: Solid 4Q00 Results Reported, Though Funding Issues Continue to Overhang Group

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- Overall the CLEC sector reported solid 4Q00 results with revenues and EBITDA in line with expectations. Execution among members of the group improved as companies focused on expense control and strict capital management in an effort to preserve or improve current funding positions. We believe the issue of funding will continue to overhang the group in the near term and look for many CLECs to focus on increased utilization of network assets through deeper penetration of existing markets in order to preserve capital. We believe those CLECs that continue to execute on plan will be best positioned for raising additional funds and an acceleration of planned expansion once more favorable market conditions arise.
- Total 4Q00 CLEC revenue, for the companies we track, increased to approximately $2.1 billion, up 11% sequentially and 59% year over year on a comparable basis, in line with our estimates. Reciprocal compensation as a percent of total revenues decreased to 8% of revenues on a weighted average basis from 11% in 2Q00. Excluding ICG, reciprocal compensation decreased to 8% of revenues during 4Q00 versus 9% during 3Q00.
- As of December 31, 2000, new entrants' (CLECs and the local efforts of the large long distance companies) revenue share of the estimated $114 billion U.S. local telecom market was approximately 9.6%, up 60 basis points sequentially from the September 30, 2000 share of 9.0% and up 270 basis points from December 31, 1999 share of 6.9%.
- Overall, 4Q00 EBITDA performance by the CLECs we cover were in line with expectations led by Adelphia Business Solutions, McLeodUSA, Focal, Allied Riser and XO, all which exceeded our expectations for the quarter. Winstar and McLeodUSA posted the strongest sequential EBITDA performance in the CLEC sector during 4Q00, improving EBITDA by $12M and $11M, respectively, on a sequential basis.
- During 4Q00, the average CLEC stock fell 41% on a cap weighted basis versus an 8% decrease in the S&P and a 33% decrease in the NASDAQ. The best performer during 4Q00 was Time Warner Telecom (+31%) and year to date (as of 4/2/01) has been Intermedia (+117%).
- Our top picks remain McLeodUSA (MCLD, Strong Buy) and XO Communications (XOXO, Strong Buy) as both companies continue to best exemplify our SAC investment strategy within the CLEC sector.
- Please see our long report under the same title for an in-depth analysis of 4Q00 results for the companies we follow.

Table 1
CLEC Coverage Universe

CLECs	Opinion*	Symbol	04/02/01 Price	Revenue (M's) 2000A	Revenue (M's) 2001E	EBITDA (M's) 2000A	EBITDA (M's) 2001E	1Q01E (M's) Rev	1Q01E (M's) EBITDA	Price Obj	% Upside	Analyst^
Adelphia Business Solutions	H	ABIZ	$4.31	$352.0	$484.7	($99.3)	($27.7)	$109.9	($18.3)	--	--	MK/JD
Allied Riser	B	ARCC	$1.38	$14.5	$48.5	($136.6)	($117.4)	NA	NA	$18	1209%	MK/MD
CTC Communications	B	CPTL	$5.88	$214.5	$323.2	($27.8)	($18.5)	$67.4	($8.7)	$50	751%	MK/JD
Electric Lightwave	H	ELIX	$2.38	$244.0	$280.0	$1.8	$26.4	$65.2	$5.2	--	--	MK/JD
Focal	B	FCOM	$8.63	$234.1	$406.4	($11.1)	$20.6	$77.0	($2.3)	$107	1141%	MK/JD
Intermedia	RSTR	ICIX	$15.56	$1,043.4	RSTR	($100.9)	RSTR	RSTR	RSTR	--	--	MK/JD
McLeodUSA*	SB	MCLD	$7.88	$1,404.0	$2,124.0	$68.1	$217.0	$432.0	$22.0	$39	395%	MK/JD
RCN Communications	H	RCNC	$5.09	$405.4	$526.0	($344.6)	($352.4)	$121.1	($106.5)	--	--	MK/MD
Teligent	H	TGNT	$0.41	$152.1	$262.6	($451.6)	($306.2)	NA	NA	--	--	MK/MD
Winstar	SB	WCII	$0.88	$759.3	$1,058.1	($153.4)	$16.9	$229.5	($13.8)	$79	8929%	MK/MD
XO Communications	SB	XOXO	$5.22	$723.9	$1,404.1	($309.4)	($222.9)	$281.1	($85.2)	$61	1069%	MK/MD
Value Added Network Providers												
Telocity	RSTR	TLCT	$2.09	$0.2	$9.4	($39.9)	($127.8)	RSTR	RSTR	--	--	MK/MD
Data CLECs												
Covad (E)	H	COVD	$1.22	$66.5	$217.8	($129.5)	($475.2)	$61.5	($187.0)	--	--	MK/MD
Rhythms NetConnections**	H	RTHM	$0.31	$11.1	$58.6	($167.9)	($432.5)	NA	NA	--	--	MK/MD

(E) = COVD estimated, has yet to report 4Q00 results.
* MCLD FY00 include $9M in rev and an EBITDA loss of $3M attributable to CapRock which was acquired on 12/7/00.
**RTHM results exclude the impact of SAB 101.

* Opinion
SB: Strong Buy
B: Buy
H: Hold
RSTR: Restricted

^ MK: Mark Kastan 212-325-5441
JD: John Doughty 212-325-6672
MD: Marty Dropkin 212-325-8915
MS: Michael Shrekgast 212-325-9643

Source: Company reports and CSFB estimates.

Table 2
CLEC Overview

Company	Rating	4/2/01 Price	Shares O/S	Mkt Value of Equity	Net Debt	Enterprise Value ($M's)	Discount Rate	Term. EBITDA Multiple	1/1/01 PMV	% Upside	1/1/02 PMV	% Upside	Target Price	% Upside
Adelphia Business Solutions	H	$4.31	70.5	304.0	1,521.5	$1,825.5	–	–	–	–	–	–	–	–
Allegiance	NA	$12.25	109.6	1,342.6	(104.6)	$1,238.0	–	–	–	–	–	–	–	–
Allied Riser	B	$1.38	55.6	76.5	(118.2)	($41.7)	–	–	–	–	–	–	–	–
CTC Communications	B	$5.88	26.5	155.7	229.1	$384.8	15%	11	$15	991%	$18	1209%	$18	1209%
Electric Lightwave	H	$2.38	50.5	119.9	711.4	$831.3	14%	9	$46	683%	$50	751%	$50	751%
Focal	B	$8.63	60.9	524.9	325.3	$850.2	15%	8	$90	946%	$107	1141%	$107	1141%
Intermedia	RSTR	$15.56	54.7	850.7	3,334.6	$4,185.3	–	–	–	–	–	–	–	–
McLeodUSA*	SB	$7.88	590.6	4,651.3	2,791.4	$7,442.7	14%	12	$32	307%	$39	395%	$39	395%
Metromedia Fiber Networks	NA	$4.96	549.5	2,725.5	989.7	$3,715.2	–	–	–	–	–	–	–	–
RCN	H	$5.09	86.5	440.8	2,525.1	$2,965.9	–	–	–	–	–	–	–	–
Teligent	H	$0.41	61.5	25.0	1,553.1	$1,578.1	–	–	–	–	–	–	–	–
Time Warner Telecom	NA	$35.94	105.8	3,801.4	330.9	$4,132.2	–	–	–	–	–	–	–	–
Winstar	SB	$0.88	92.4	80.9	3,367.2	$3,448.1	15%	11	$57	6440%	$79	8929%	$79	8929%
XO Communications	SB	$5.22	365.8	1,909.0	4,632.6	$6,541.6	14%	11	$50	866%	$71	1256%	$61	1069%

	Revenue		EV/Revenue		EBITDA		EV/EBITDA		Gross PP&E		EV/PP&E	
	2000A	2001E	2000A	2001E	2000A	2001E	2000A	2001E	2000A	2001E	2000A	2001E
Adelphia Business Solutions	352.0	484.7	5.2	3.8	(99.3)	(27.7)	NM	NM	1,754.4	2,229.4	1.0	0.8
Allegiance	285.2	549.6	4.3	2.3	(118.4)	(102.5)	NM	NM	907.2	1,257.2	1.4	1.0
Allied Riser	14.5	48.5	(2.9)	(0.9)	(136.6)	(117.4)	NM	NM	54.3	256.7	(0.8)	(0.2)
CTC Communications	214.5	323.2	1.8	1.2	(27.8)	(18.5)	NM	NM	195.7	315.7	2.0	1.2
Electric Lightwave	244.0	280.0	3.4	3.0	1.8	26.4	466.0	31.5	1,086.9	1,216.9	0.8	0.7
e.spire	344.2	NA	NM	NM	(36.7)	NA	NM	NM	968.7	NA	NM	NM
Focal	234.1	406.4	3.6	2.1	(11.1)	20.6	NM	41.2	536.4	736.4	1.6	1.2
ICG (E)	630.0	NA	NM	NM	17.0	NA	NM	NM	1,805.4	NA	NM	NM
Intermedia	1,043.4	RSTR	4.0	NM	(100.9)	RSTR	NM	NM	2,782.6	RSTR	1.5	NM
McLeodUSA*	1,404.0	2,124.0	5.3	3.5	68.1	217.0	109.3	34.3	3,440.0	4,440.0	2.2	1.7
Metromedia Fiber Networks	188.2	475.0	19.7	7.8	(150.1)	(150.0)	NM	NM	3,001.2	4,001.2	1.2	0.9
RCN	405.4	526.0	7.3	5.6	(344.6)	(352.4)	NM	NM	2,100.2	2,849.4	1.4	1.0
Teligent	152.1	262.6	10.4	6.0	(451.6)	(306.2)	NM	NM	744.2	993.7	2.1	1.6
Time Warner Telecom	487.3	748.9	8.5	5.5	32.1	138.6	49.2	11.4	1,195.7	1,795.7	3.5	2.3
Winstar	759.3	1,058.1	4.5	3.3	(153.4)	16.9	NM	204.2	3,330.1	4,031.3	1.0	0.9
XO Communications	723.9	1,404.1	9.0	4.7	(309.4)	(222.9)	NM	NM	2,794.1	4,794.1	2.3	1.4
Total/Average	7,482.1	8,691.0	5.2	4.0	(1,821.0)	(878.2)	38.9	37.2	26,697.1	28,917.7	1.6	1.3
Y/Y Growth	58%	59%							67%	37%		

Note: Y/Y Growth comparisons for 2001E exclude e.spire, ICG, & Intermedia.
* MCLD FY00 include $9M in rev and an EBITDA loss of $3M attributable to CapRock which was acquired on 12/7/00.
(E) = ICG estimated, has yet to report 4Q00 results.

Source: Company reports and CSFB estimates.

Executive Summary

- Overall the CLEC sector reported solid 4Q00 results with revenues and EBITDA in line with expectations. Execution among members of the group improved as companies focused on expense control and strict capital management in an effort to preserve or improve current funding positions. We believe the issue of funding will continue to overhang the group in the near term and look for many CLECs to focus on increased utilization of network assets through deeper penetration of existing markets in order to preserve capital. We believe those CLECs that continue to execute on plan will be best positioned for raising additional funds and an acceleration of planned expansion once more favorable market conditions arise.

- During 4Q00, new entrants added an estimated 1.4 million net local access lines, an acceleration of 4% both sequentially and year over year (owing to the drop off in lines at ICG and the scaleback in UNE-P deployment at AT&T beginning in 3Q00). The largest increases in sequential net access line growth rates in the quarter occurred at ITC Deltacom (+77%), RCN (+30%) and Allegiance and e.spire (+18%). Electric Lightwave (-148%) and Intermedia (-74%) experienced the most significant slowdown in line additions among the CLECs during the quarter. For 1Q01, we expect total CLEC line additions to increase by roughly 6% sequentially to 1.48 million.

- As of year end 2000, new entrants' (CLECs and the local efforts of the large long distance companies) revenue share of the estimated $114 billion U.S. local telecom market was approximately 9.6%, up 60 basis points sequentially from the September 30, 2000 share of 9.0% and up 270 basis points from year end 1999 share of 6.9%. On an annualized basis, all new entrants gained market-share at an annualized rate of 3.0% during 4Q00, flat versus 3Q00.

- Total 4Q00 CLEC revenue for the companies we track increased to approximately $2.1 billion, up 11% sequentially and 59% year over year. Overall, revenues were in line with our forecasts for the companies we track. The strongest sequential revenue growth in the quarter came from Allied Riser (+50%), Net2000 (+28%), Adelphia Business Solutions (+20%), Allegiance (+19%), Teligent (+17%) and Winstar (+15%). CLEC sequential revenue growth advanced 11% on a weighted average basis during 4Q00, a deceleration from the 16% sequential increase experienced in 3Q00, excluding ICG.

- On a comparable basis excluding ICG, reciprocal compensation revenue decreased 3% sequentially during 4Q00, following an 8% decrease during 3Q00. Reciprocal compensation continues to be a material portion of quarterly revenues for a number of CLECs including: Adelphia Business Solutions (9% of 4Q00 revenues versus 11% of revenues in 3Q00), Electric Lightwave (14% in 4Q00 versus 16% in 3Q00) and Focal (20% in 4Q00 versus 23% in 3Q00). We expect to see a continued decrease in reliance on reciprocal compensation revenues going forward as CLECs renegotiate contracts at lower rates in anticipation of an FCC ruling which we expect to gradually phase in lower reciprocal compensation rates of approximately $0.001 per minute or possibly zero over the next 12-24 months.

- Overall, 4Q00 EBITDA performance by the CLECs we cover were in line with expectations led by Adelphia Business Solutions, McLeodUSA, Focal, Allied Riser and XO, all which exceeded our expectations for the quarter. Winstar and McLeodUSA posted the strongest sequential EBITDA performance in the

CLEC sector during 4Q00, improving EBITDA by $12M and $11M, respectively, on a sequential basis. In an effort to slow cash burn and extend funding, most CLECs are in the process of, or have already modified operations in order to more quickly reach positive free cash flow. Specifically, CLECs that sequentially improved EBITDA in the 4Q00 numbered 11 versus 7 in 3Q00 and 5 in 2Q00. We believe investors have clearly sent a message that visibility to profitability for CLECs is an important criteria in valuing CLEC stocks and we believe many are responding well to the challenge.

- During 4Q00 and following the reporting of results we adjusted our forecasts for a number of the CLECs as follows:

Adelphia Business Solutions: On April 2, Adelphia Business Solutions released results with revenues slightly above our forecast and a narrower than estimated EBITDA loss on a normalized basis. Following a conference call with management to discuss 4Q00 results and the FY01 outlook, we reduced our FY01 revenue estimate to $485 million from $496 million to reflect our expectations for flat 1Q01 revenue growth and continued concerns over customer churn. We also revised our EBITDA loss estimate to $28 million from $33 million. In addition, we established our 1Q01 revenue and EBITDA estimates of $110 million (relatively flat with the prior quarter as a result of management's intentional churn of some delinquent customers, primarily small local and regional ISPs) and a loss of $18 million, respectively.

Electric Lightwave: On March 8, Electric Lightwave released detailed 4Q00 results, with revenues and access line additions below our forecast, but a stronger EBITDA improvement than anticipated. Following the reporting of results we revised downward our FY01 revenue by 10% to $280 million from $310 million and our EBITDA estimates by 12% to $26.4 million from $30.0 million. We have cut numbers for two reasons: 1) slower anticipated growth in-line adds; and 2) the loss of Qwest as a major wholesale customer (the company contributed approximately $40 million in revenues in FY00 via ISP local access services).

Further, we reduced our estimate of year-end FY01 line additions by 24,000 or 60% to just 16,000 line adds, bringing total estimated lines at year-end to 220,200. In addition, we cut our capex forecast by 35% to $130 million from $200 million to reflect a less aggressive capital deployment program than previously estimated.

Focal: On February 20, Focal released detailed 4Q00 and YE00 results with revenue and line adds ahead of our forecast and a narrower EBITDA loss than anticipated. Owing to an all around solid performance and our belief that Focal's business plan remains intact, we did not change our FY01 revenue estimate of $406 million and our EBITDA estimate of $20.6 million (5.0% margin). However, we reduced our FY01 capex estimate by $105 million to $200 million, to reflect: (a) lower switch port pricing from Nortel; (b) anticipated benefits from the rollout of soft switch technology later in the year; and (c) opportunistic purchases of used equipment from financially distressed carriers.

McLeodUSA: On January 30, McLeodUSA released detailed 4Q00 and year-end 2000 results with normalized revenues in-line with our forecasts; both normalized EBITDA and line additions were solidly ahead of our estimates. At that time we adjusted our 2001 estimates to reflect the inclusion of results from the recently acquired CapRock. We raised our full-year revenue estimate for 2001 by 11%, to $2.1 billion from $1.9 billion, now a 50% increase year over year, to reflect the contribution of $200 million in revenues from CapRock. We believe the acquisition of CapRock will have a neutral effect on both EBITDA and capex, and therefore, we made no change to either our 2001 EBITDA estimate of $227 million, an increase of 260% year over year, or our 2001 capex estimate of approximately $1 billion, a decrease of 19% year over year.

On February 26, following a 2001 financial guidance conference call hosted by management, we adjusted our quarterly estimates for 2001, but maintained our full year 2001 revenue and EBITDA estimates. We now look for a 5% sequential rise in 1Q01 revenue to $432 million, a slowdown from the 9% sequential rise in 4Q00, as the company is not counting on approximately $14 million in "dubious" wholesale data revenues associated with both the Splitrock and CapRock acquisitions. In addition we modified our estimate to include a sequential decline in first quarter EBITDA to $22.0 million from $26.6 million, reflecting an increase in sales head count and seasonality in the directory business.

We further modified our 2001 estimates slightly following the announcement on March 20 of the acquisition of Intelispan, a provider of secure business-to-business virtual private networks (VPNs) and managed network services. As a result of the acquisition, we made no material change (+$8M) to our FY01 revenue estimate of $2.1B, but we lowered our EBITDA estimate by $10M or 10% to $217M as we expect cost synergy efforts to only partially offset the current pace of EBITDA burn at Intelispan.

- **XO Communications:** On February 5, XO Communications reported solid 4Q00 results with total revenue in-line with expectations. EBITDA performance was better than expected, as the company finally reached the inflection point on losses. Following the reporting of 4Q00 results, we lowered our FY01 revenue forecast by 3% to $1.4 billion, now a 94% year-over-year growth versus our prior estimate of 100% year-over-year growth, to reflect both slower growth in voice revenues and a ramp-up of advanced data services that looks more skewed towards 2H01 than we previously expected. In addition, after discussions with management, we adjusted our FY01 revenue estimate due to a combination of the following: (1) a slower pace of long haul network deliveries from Level 3; and (2) an ongoing mix shift toward large business customers that have longer sales cycles. We made no change to our FY01 EBITDA loss forecast of $223 million, as we believe that XOXO's focus on selling higher-margin data services on the new Level 3-supplied long haul network that we estimate provide gross margins of 70-80% will offset our reduction in revenues.
- During 4Q00, the average CLEC stock fell 41% on a cap weighted basis versus an 8% decrease in the S&P and a 33% decrease in the NASDAQ. The best performing stocks during 4Q00 was Time Warner Telecom (+31%) and year –to-date (as of 4/02/01) was Intermedia (+117%).
- We reiterate our Strong Buy rating on XO Communications (XOXO) and McLeodUSA (MCLD) shares and continue to highlight these companies as our two top picks in the CLEC sector. XO once again turned in a solid quarter with EBITDA ahead of and revenues in line with expectations. We believe this reinforces our SAC investment strategy with extremely strong execution, demonstrated access to funding and its status as a clear beneficiary of consolidation. For McLeodUSA, the company stands out based on strong fundamentals, consistently strong operating results, a fully funded business plan, top tier management, and potential benefits from the growth opportunities associated with the recent acquisition of Splitrock Service.
- Several private investment funds, sponsored by Credit Suisse Group, participated in a $400 million investment in Winstar Series G Senior Cumulative

Participating Convertible Preferred Stock and most recently a $100 million investment in the Series H Cumulative Participating Convertible Preferred Stock. Certain employees of CSFB, including the author of this report, have an economic interest in these transactions. Additionally, the Fund will be entitled to designate one director nominee to the company's Board of Directors.

N.B.: CREDIT SUISSE FIRST BOSTON CORPORATION may have, within the last three years, served as a manager or co-manager of a public offering of securities for or makes a primary market in issues of any or all of the companies mentioned.

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FOR IMMEDIATE RELEASE:
October 31, 2000

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FEDERAL COMMUNICATIONS COMMISSION RELEASES DATA ON HIGH-SPEED SERVICES FOR INTERNET ACCESS

High-Speed Lines to the Internet Increased 57% During the First Six Months of Year 2000 For a Total of 4.3 Million Subscribers

Washington, D.C. – The Federal Communications Commission (FCC) today released summary statistics of its latest data on the deployment of high-speed Internet services in the United States. Qualifying providers file such data twice a year under the Commission's local competition and broadband data gathering program (FCC Form 477).

The local competition and broadband data gathering program was adopted in March 2000 to assist the Commission in its efforts to further implement the pro-competitive, deregulatory provisions of the Telecommunications Act of 1996. Specifically, the data from this effort are used by the Commission for its evaluation of the availability of advanced telecommunications services, known as 706 reports.

The information released today was filed by qualifying providers on September 1, 2000, and includes data as of June 30, 2000. Noteworthy data include:

- High-speed lines connecting homes and small businesses to the Internet increased by 57% during the first half of 2000, to a total of 4.3 million lines (or wireless channels) in service from 2.8 million at the end of 1999.
- About 2.8 million of high-speed lines provided speeds of over 200 kbps in both directions, and thus met the Commission's definition of advanced services, compared to 2.0 million at the end of 1999.
- The presence of high-speed service subscribers was reported in all fifty states, the District of Columbia, and Puerto Rico, and in about 70% of the nation's zip codes, compared to 59% at the end of 1999.
- High-speed asymmetric DSL (ADSL) lines in service increased by 157%, to almost one million lines, compared to about 370,000 lines at the end of 1999.
- High-speed lines in service over coaxial cable systems remained more numerous, increasing 59% to about 2.2 million lines, compared to 1.4 million at the end of 1999.

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- High-speed lines (or wireless channels) delivered over fiber, satellite, fixed wireless, and wireline technologies other than ADSL increased by at least 18% during the first half of this year.

- High-speed subscribers are reported to be present in 96% of the most densely populated zip codes and in 40% of zip codes with the lowest population densities. The number of sparsely populated zip codes with high-speed subscribers increased by 69% during the first half of the year, compared to an increase of 4% for the most densely populated zip codes.

As additional information from Form 477 becomes available, it will be routinely posted on the Commission's Internet site. Because Form 477 was adopted recently, there may be some need for further clarification and adjustment of the reporting system.

The data summary is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th Street, SW, Washington, DC. It can be downloaded [file name: HSPD1000.zip, HSPD1000.pdf] from the **FCC-State Link** Internet site at http://www.fcc.gov/ccb/stats. Copies may be purchased by calling International Transcription Services, Inc. (ITS) at (202) 857-3800.

- FCC -

Common Carrier Bureau contact: Industry Analysis Division at (202) 418-0940; TTY (202) 418- 0484.

High-Speed Services for Internet Access: Subscribership as of June 30, 2000

October 2000

Industry Analysis Division
Common Carrier Bureau
Federal Communications Commission
Washington, DC 20554

This publication is available for reference in the FCC's Information Center at 445 12th Street, S.W., Courtyard Level. Copies may be purchased by calling International Transcription Service, Inc. at (202) 857-3800. The publication can also be downloaded [file names: HSPD1000.ZIP, HSPD1000.PDF] from the **FCC-State Link** internet site at http://www.fcc.gov/ccb/stats on the World Wide Web.

High-Speed Services for Internet Access: Subscribership as of June 30, 2000

Congress directed the Commission and the states, in section 706 of the Telecommunications Act of 1996, to encourage deployment of advanced telecommunications capability in the United States on a reasonable and timely basis.[1] To assist in its evaluation of such deployment, the Commission launched a formal data collection program to gather standardized information about subscribership to high-speed services, including advanced services, from wireline telephone companies, cable providers, terrestrial wireless providers, satellite providers, and any other facilities-based providers of advanced telecommunications capability.[2]

Results from the first data collection, in which providers reported numbers of subscribers to high-speed services at the end of 1999, were presented in the Commission's second report to Congress on advanced telecommunications capability.[3] We summarize here comparable information from the second data collection, thereby presenting a snapshot of subscribership at mid-year 2000.[4] Subscribership to high-speed services for Internet access increased by 57% during the first half of 2000. At mid-year, the presence of high-speed service subscribers was reported in all fifty states, the District of Columbia, and Puerto Rico, and in about 70% of the zip codes in the United States.

Before presenting the new information in some detail, a brief description of the Commission's data collection program is in order to enable the reader to better understand how the nationwide information presented here may compare to similar information derived from other sources. First, a facilities-based provider of high-speed service lines (or wireless channels) in a given state reports to the Commission basic information about its service offerings and customers if the provider has at least 250 such lines in service in that state. While providers not meeting the reporting threshold may provide information on a voluntary basis, as some have done, we have no assurance that all such providers have reported data.[5] In particular, we do not know how comprehensively small providers, many of which serve rural areas

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[1] *See* §706, Pub.L. 104-104, Title VII, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. §157. We define services as "high-speed" that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps) in at least one direction. "Advanced services," which provide the subscriber with transmissions at a speed in excess of 200 kbps in each direction, are a subset of high-speed services.

[2] *Local Competition and Broadband Reporting*, CC Docket No. 99-301, Report and Order, 15 FCC Rcd 7717 (rel. March 30, 2000) (*Data Gathering Order*). The formal program followed several attempts by the Common Carrier Bureau to collect information on a voluntary basis. *See Local Competition and Broadband Reporting*, CC Docket No. 99-301, Notice of Proposed Rulemaking, 14 FCC Rcd 18106 (rel. Oct. 22, 1999).

[3] *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, CC Docket No. 98-146, Second Report (rel. Aug. 21, 2000) (*Second Report on Advanced Telecommunications Capability*), available at http://www.fcc.gov/broadband. In the report, the Commission's data collection program (FCC Form 477) is referred to as the "Broadband Survey."

[4] Providers filed data for June 30, 2000 on September 1, 2000. During this data gathering program, qualifying providers will file FCC Form 477 each year on March 1 (reporting data for the preceding December 31) and September 1 (reporting data for June 30 of the same year). An updated FCC Form 477 for each specific round of the data collection may be downloaded from the FCC Forms website at http://www.fcc.gov/formpage.html.

[5] We received 84 state-specific voluntary submissions (made by 41 holding companies) in the first Form 477 filing and 78 voluntary submissions (made by 33 holding companies) in the second filing.

with relatively small populations, are represented in the data summarized here. Second, lines (or wireless channels) that do not meet the Commission's definition of "high-speed" (i.e., delivering transmissions to the subscriber at a speed in excess of 200 kbps in at least one direction) are not reported. Some asymmetric digital subscriber line (ADSL) services and Integrated Services Digital Network (ISDN) services provided by telephone companies and some services that connect subscribers to the Internet over cable systems do not meet this criterion, but may nevertheless meet the needs of the subscribers who select them.[6]

As the Commission's data collection program was only recently implemented, we expect providers to report data more accurately as they gain experience with the program. There also may be some need for further clarification and adjustment of the reporting system. Nevertheless, based on the information now available, the following broad conclusions emerge:

- Subscribership to high-speed services increased by 57% during the first half of 2000, to a total of 4.3 million lines (or wireless channels) in service.
- Considering services according to the technology deployed in the "last few feet" to the subscriber's premises, high-speed ADSL lines in service increased at the fastest rate during the six months, 157%, to almost one million lines.[7] High-speed lines in service over coaxial cable systems (cable modem service) remained more numerous, increasing 59% to a total of 2.2 million lines.[8] See Table 1.

[6] For example, based on a systematic, large scale personal interview survey, the Department of Commerce estimates that about 4.4% of the approximately 105 million U.S. households access the Internet at speeds faster than regular "dial-up" telephone lines. This implies about 4.6 million such Internet connections, compared to our estimate, discussed below, that about 3.1 million residences (and home office and other small business customers) connect to the Internet at speeds in excess of 200 kbps in at least one direction. The Department of Commerce notes that their survey results include lines that are slower than the Commission's definition of "high-speed." *See* U.S. Department of Commerce, *Falling Through the Net: Toward Digital Inclusion* (October 2000), available at http://www.esa.doc.gov/fttn00.pdf.

[7] Providers are instructed to report a high-speed subscriber in the (mutually exclusive) technology category that characterizes the last few feet of distribution plant to the subscriber's premises, e.g., coaxial cable in the case of the hybrid fiber-coax (HFC) architecture of upgraded cable systems. As noted above, ADSL services that do not deliver over 200 kbps in at least one direction are not included in the data reported here. Symmetric DSL services at speeds exceeding 200 kbps are included in the "other wireline" category because they are typically used to provide data services that are functionally equivalent to the T1 and other data services that wireline telephone companies have offered to business customers for some time.

[8] In addition, reported high-speed lines (or wireless channels) delivered over wireline technologies other than ADSL, fiber to the end-user's premises (e.g., Fiber-to-the-Home, or FTTH), satellite, and fixed wireless technologies increased by 18%. However, because of previously unidentified inconsistencies in reported data, we believe the true rate of increase is closer to 25%. (Based on discussions with reporting service providers, we believe year-end 1999 fiber lines are overstated by about 50,000 and "satellite & fixed wireless" channels by about 4,000.)

- Subscribership to the subset of high-speed services that the Commission defines as advanced services (i.e., delivering to subscribers transmissions at a speed in excess of 200 kbps in each direction) increased by 41% during the first half of 2000, to a total of 2.8 million lines (or wireless channels) in service. Advanced services lines provided by means of ADSL technology increased by 75%, and advanced services lines provided over coaxial cable systems increased by 63%.[9] See Table 2.

- As of June 30, 2000, there were about 3.1 million residential and small business subscribers to high-speed services. By contrast, there were approximately 1.8 million such subscribers at the end of 1999. See Table 3.

- Providers of high-speed ADSL services report serving subscribers in 49 states and the District of Columbia, while providers of high-speed services over cable systems report serving subscribers in 47 states and the District of Columbia. High-speed service providers who use wireline technologies other than ADSL, optical carrier (i.e., fiber), satellite, or fixed wireless technologies in the last few feet to the subscriber's premises report serving subscribers in all fifty states, the District of Columbia, and Puerto Rico.[10] See Table 4.

- The Commission's data collection program uniquely gathers from providers information about the number of high-speed lines in service in individual states, in total and by technology deployed in the last few feet to the subscriber's premises. Relatively large numbers of total high-speed lines in service are associated with the more populous states.[11] See Table 5.

- The Commission's data collection program also requires service providers to identify each zip code in which the provider has at least one high-speed subscriber. As of June 30, 2000, subscribers to high-speed services were reported in about 70% of the nation's zip codes. Multiple providers reported having subscribers in more than 40% of the nation's zip codes.[12] See Table 6.

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[9] Similarly to the situation for high-speed lines, discussed above, we believe year-end 1999 advanced services lines (or wireless channels) provided over fiber to the end-user's premises and over "satellite & fixed wireless" technology are somewhat overstated due to previously unidentified inconsistencies in the reported data.

[10] This information is reported in a single category, for the individual states, to honor requests for nondisclosure of information that reporting entities assert is competitively sensitive. In the *Data Gathering Order*, the Commission agreed to publish high-speed data only once it has been aggregated in a manner that does not reveal individual company data. *See Data Gathering Order*, 15 FCC Rcd 7760. The Commission is optimistic that this approach will encourage providers that fall below the threshold for mandatory reporting of high-speed subscribership information to participate on a voluntary basis in future rounds of the data collection.

[11] The most populous state, California, has the largest reported number of high-speed lines. The second and third largest numbers of high-speed lines are reported for New York and Texas, which are the third and second most populous states, respectively.

[12] A list of zip codes with number of service providers as reported in the first Form 477 filing (data as of December 31, 1999) is available at http://www.fcc.gov/ccb/stats. Lists from subsequent filings will be posted when available.

- Our analysis indicates that about 95% of the country's population lives in the 70% of zip codes where a provider reports having at least one high-speed service subscriber.[13] Moreover, numerous competing providers report serving high-speed subscribers in the major population centers of the country. See Figure 1.

- In each of California, Massachusetts, and the District of Columbia, at least one-fifth of zip codes have seven or more providers that report having at least one subscriber for high-speed service in the zip code. By contrast, 3% of nationwide zip codes have seven or more such providers. See Table 7.

- High population density has a positive correlation with reports that high-speed subscribers are present, and low population density has a negative correlation. For example, as of June 30, 2000, high-speed subscribers are reported to be present in 96% of the most densely populated zip codes and in 40% of zip codes with the lowest population densities.[14] However, the number of sparsely populated zip codes with high-speed subscribers increased by 69% during the first half of this year, compared to an increase of 4% for the most densely populated zip codes. See Table 8.

- High median family income also has a positive correlation with reports that high-speed subscribers are present. In the top one-tenth of zip codes ranked by median family income, high-speed subscribers are reported in 95% of zip codes. By contrast, high-speed subscribers are reported in only 51% of zip codes with the lowest median family income. See Table 9.

As other information from the Commission's data collection program (FCC Form 477) becomes available, it will be included in future reports on the deployment of advanced telecommunications capability and in publications such as this one.

We invite users of this information to provide suggestions for improved data collection and analysis by:

- Using the attached customer response form,
- E-mailing comments to eburton@fcc.gov,
- Calling the Industry Analysis Division at (202) 418-0940, or
- Participating in any formal proceedings undertaken by the Commission to solicit comments for improvement of FCC Form 477.

[13] We note that some providers have not strictly followed instructions to report zip codes in which a high-speed subscriber is present and have reported, for example, all zip codes within the boundary of a "wire center" that serves at least one high-speed subscriber.

[14] For this comparison, we consider the most densely populated zip codes to be those with more than 268 persons per square mile (the top three deciles), and the least densely populated zip codes to be those with fewer than 25 persons per square mile (the bottom three deciles).

Table 1
High-Speed Lines
(Over 200 Kbps in at Least One Direction)

Types of Technology*	December 1999	June 2000	% Change
ADSL	369,792	950,590	157%
Other Wireline	609,909	747,028	22
Coaxial Cable	1,414,183	2,248,981	59
Fiber	312,204	307,151	n.m.
Satellite & Fixed Wireless	50,404	65,615	n.m.
Total Lines	2,756,492	4,319,365	57%

Table 2
Advanced Services Lines
(Over 200 Kbps in Both Directions)

Types of Technology*	December 1999	June 2000	% Change
ADSL	185,950	325,901	75%
Other Wireline	609,909	747,028	22
Coaxial Cable	879,671	1,434,237	63
Fiber	307,315	301,551	n.m.
Satellite & Fixed Wireless	7,816	3,649	n.m.
Total Lines	1,990,662	2,812,366	41%

Table 3
Residential and Small Business High-Speed Lines
(Over 200 Kbps in at Least One Direction)

Types of Technology*	December 1999	June 2000	% Change
ADSL	291,757	771,311	164%
Other Wireline	46,856	104,647	123
Coaxial Cable	1,404,600	2,179,749	55
Fiber	1,023	325	n.m.
Satellite & Fixed Wireless	50,404	64,320	n.m.
Total Lines	1,794,640	3,121,653	74%

*The mutually exclusive types of technology are, respectively: Asymetric digital subscriber line (ADSL) technologies, which provide speeds in one direction greater than speeds in the other direction; wireline technologies "other" than ADSL, including traditional telephone company high-speed services and symmetric DSL services that provide equivalent functionality; coaxial cable, including the typical hybrid fiber-coax (HFC) architecture of upgraded cable TV systems; optical fiber to the subscriber's premises (e.g., Fiber-to-the-Home, or FTTH); and satellite and (terrestrial) fixed wireless systems, which use radio spectrum to communicate with a radio transmitter at the subscriber's premises.

n.m.: Not meaningful due to previously unidentified inconsistencies in reported data.

Table 4
High-Speed Providers by Technology as of June 30, 2000

	ADSL	Coaxial Cable	Other #	All Broadband (Unduplicated)
Alabama	*	6	5	11
Alaska	0	0	*	*
Arizona	*	*	7	7
Arkansas	*	*	4	6
California	8	8	17	22
Colorado	*	*	9	10
Connecticut	*	4	7	10
Delaware	*	*	4	5
District of Columbia	*	*	8	8
Florida	5	8	11	16
Georgia	*	4	8	12
Hawaii	*	*	*	*
Idaho	*	*	*	4
Illinois	6	4	10	13
Indiana	*	4	7	11
Iowa	*	6	6	9
Kansas	*	*	6	7
Kentucky	4	*	5	8
Louisiana	*	*	5	7
Maine	*	*	*	4
Maryland	*	4	8	11
Massachusetts	4	4	12	15
Michigan	*	5	9	13
Minnesota	4	7	8	16
Mississippi	*	*	*	5
Missouri	*	4	9	11
Montana	*	*	*	*
Nebraska	*	*	5	6
Nevada	*	*	7	8
New Hampshire	*	*	6	6
New Jersey	*	*	10	11
New Mexico	*	0	4	4
New York	8	*	13	19
North Carolina	5	4	7	12
North Dakota	*	*	4	6
Ohio	6	*	14	15
Oklahoma	*	*	*	5
Oregon	4	*	9	10
Pennsylvania	7	4	15	18
Puerto Rico	0	0	*	*
Rhode Island	*	*	*	4
South Carolina	*	4	6	9
South Dakota	*	*	5	5
Tennessee	*	*	5	10
Texas	7	4	14	17
Utah	*	*	5	6
Vermont	*	*	*	4
Virginia	5	4	14	16
Washington	8	*	12	15
West Virginia	*	*	*	4
Wisconsin	6	*	8	11
Wyoming	*	0	*	*
Nationwide (Unduplicated)	45	33	69	106

Other includes other wireline, fiber, satellite and fixed wireless.

* Indicates 1-3 providers reporting.

Table 5
High-Speed Lines by Technology

	December 1999	June 2000				Percentage Change from 1999 to 2000
	Total	ADSL	Coaxial Cable	Other #	Total	
Alabama	19,796	*	17,164	*	32,679	65 %
Alaska	*	0	0	*	*	n.a.
Arizona	58,825	*	*	48,983	111,678	90
Arkansas	8,155	*	*	3,688	15,484	90
California	547,179	373,574	297,415	238,700	909,689	66
Colorado	36,726	*	*	13,127	64,033	74
Connecticut	36,488	*	47,127	*	63,772	75
Delaware	1,558	*	*	1,506	3,660	135
District of Columbia	13,288	*	*	10,766	16,926	27
Florida	190,700	37,806	127,238	75,851	240,895	26
Georgia	75,870	*	48,947	*	130,292	72
Hawaii	*	*	*	*	*	n.a.
Idaho	*	*	*	*	8,070	n.a.
Illinois	77,672	12,812	83,737	70,384	166,933	115
Indiana	20,059	*	33,431	*	49,599	147
Iowa	19,258	*	42,081	*	49,159	155
Kansas	26,179	*	*	5,171	42,679	63
Kentucky	23,570	*	*	*	24,019	2
Louisiana	28,133	*	*	11,749	43,294	54
Maine	19,878	*	*	*	17,864	-10
Maryland	52,749	*	42,412	*	71,005	35
Massachusetts	114,116	15,802	148,233	19,922	183,957	61
Michigan	81,223	*	94,586	*	135,318	67
Minnesota	38,268	25,975	30,485	8,375	64,835	69
Mississippi	*	*	*	*	6,514	n.a.
Missouri	23,347	*	16,482	*	46,903	101
Montana	*	*	*	*	*	n.a.
Nebraska	36,748	*	*	5,609	44,184	20
Nevada	23,514	*	*	10,441	40,582	73
New Hampshire	22,807	*	*	2,580	33,045	45
New Jersey	101,832	*	*	36,909	144,203	42
New Mexico	*	*	0	*	2,925	n.a.
New York	186,504	41,576	*	*	311,839	67
North Carolina	57,881	8,662	42,290	30,158	81,110	40
North Dakota	*	*	*	1,632	3,467	n.a.
Ohio	160,792	33,603	*	*	156,888	-2
Oklahoma	*	*	*	*	162,790	n.a.
Oregon	27,062	19,989	*	*	44,186	63
Pennsylvania	71,926	18,313	38,340	23,239	79,892	11
Puerto Rico	*	0	0	*	*	n.a.
Rhode Island	*	*	*	*	20,628	n.a.
South Carolina	25,229	*	20,190	*	32,824	30
South Dakota	*	*	*	5,414	7,991	n.a.
Tennessee	66,307	*	*	23,979	85,500	29
Texas	152,518	73,117	135,999	65,014	274,130	80
Utah	11,635	*	*	4,828	19,612	69
Vermont	*	*	*	*	1,551	n.a.
Virginia	51,305	9,510	40,337	22,153	72,000	40
Washington	71,930	52,345	*	*	118,318	64
West Virginia	*	*	*	*	1,835	n.a.
Wisconsin	18,599	1,063	*	*	34,220	84
Wyoming	*	*	0	*	*	n.a.
Nationwide Reported Total	2,756,492	950,590	2,248,981	1,119,794	4,319,365	57

Other includes other wireline, fiber, satellite and fixed wireless.

* Data witheld to maintain firm confidentiality.

n.a.: Not available

Table 6
Percentage of Zip Codes with High-Speed Service

Providers	December 1999	June 2000
Zero	44.0 %	30.1 %
One	24.5	27.8
Two	14.2	18.6
Three	8.1	9.3
Four	4.4	5.0
Five	2.6	3.4
Six	1.5	2.6
Seven	0.6	1.7
Eight	0.2	0.9
Nine	0.0	0.4
Ten or More	0.0	0.4

Figure 1

High-Speed Providers by Zip Code

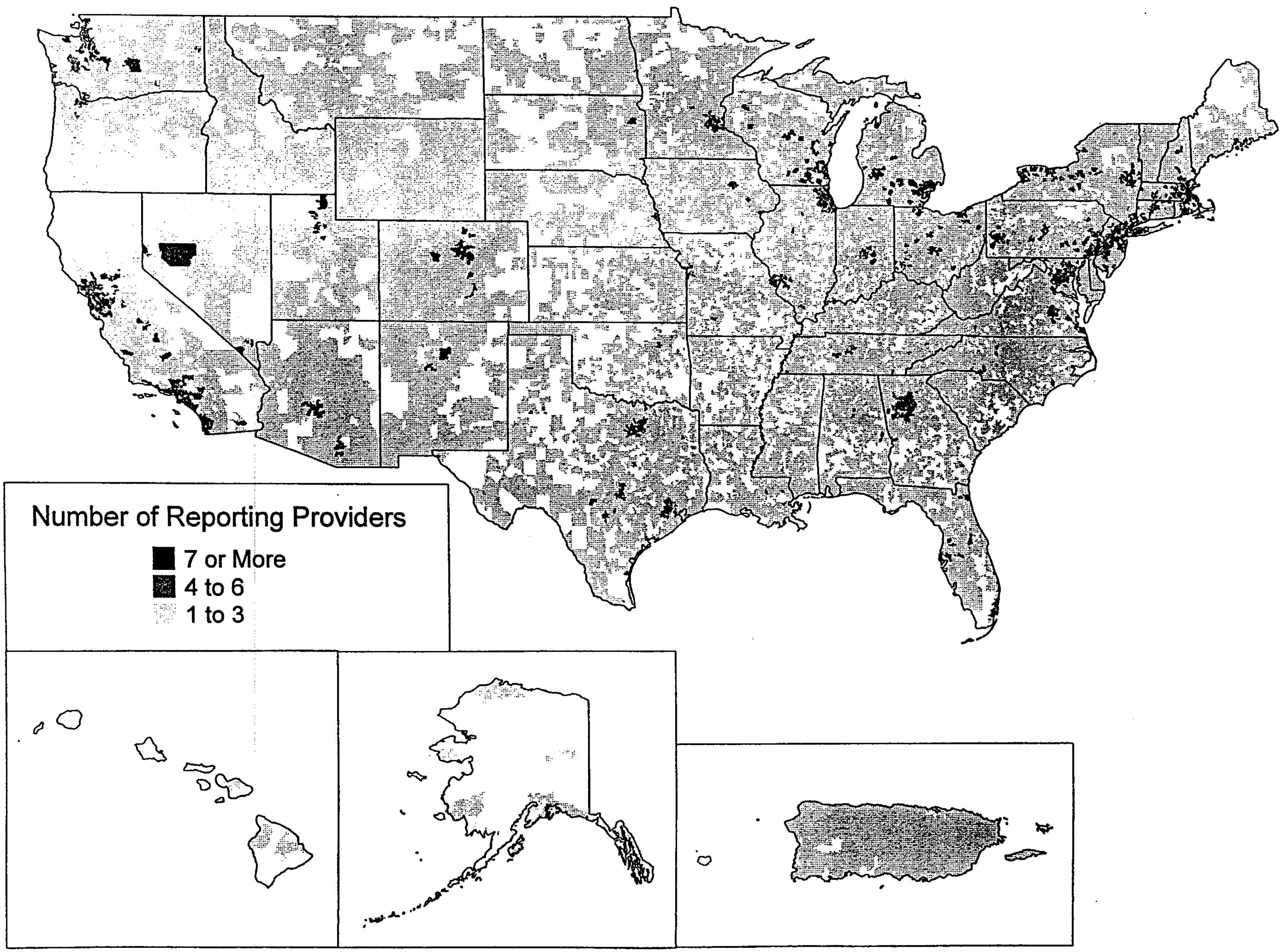

Table 7
Percentage of Zip Codes with High-Speed Lines as of June 30, 2000

	Number of Providers					
	Zero	One - Three	Four	Five	Six	Seven or More
Alabama	38 %	61 %	1 %	0 %	0 %	0 %
Alaska	78	22	0	0	0	0
Arizona	14	50	8	11	13	4
Arkansas	66	34	0	0	0	0
California	17	40	7	7	8	20
Colorado	13	63	5	6	6	8
Connecticut	8	69	17	4	3	0
Delaware	0	98	2	0	0	0
District of Columbia	0	33	4	11	26	26
Florida	12	62	9	8	4	4
Georgia	34	49	6	5	3	3
Hawaii	49	51	0	0	0	0
Idaho	31	69	0	0	0	0
Illinois	39	44	7	5	2	2
Indiana	35	60	4	1	0	0
Iowa	41	58	1	0	0	0
Kansas	50	50	0	0	0	0
Kentucky	55	45	0	0	0	0
Louisiana	39	59	1	0	0	0
Maine	30	70	0	0	0	0
Maryland	1	68	8	9	9	5
Massachusetts	1	49	14	5	5	26
Michigan	18	64	6	6	4	3
Minnesota	33	57	5	4	1	0
Mississippi	47	53	0	0	0	0
Missouri	57	36	3	3	1	0
Montana	49	51	0	0	0	0
Nebraska	48	48	4	0	0	0
Nevada	26	59	11	3	0	0
New Hampshire	5	85	4	5	0	0
New Jersey	2	51	21	14	7	5
New Mexico	33	62	5	0	0	0
New York	11	62	8	7	5	6
North Carolina	24	73	2	1	0	0
North Dakota	59	41	1	0	0	0
Ohio	19	69	7	3	1	0
Oklahoma	58	40	3	0	0	0
Oregon	23	66	4	4	2	2
Pennsylvania	25	56	7	4	5	2
Puerto Rico	15	85	0	0	0	0
Rhode Island	0	81	19	0	0	0
South Carolina	35	65	0	0	0	0
South Dakota	41	58	1	0	0	0
Tennessee	34	63	2	0	0	0
Texas	33	49	5	4	4	5
Utah	20	64	9	8	0	0
Vermont	8	92	0	0	0	0
Virginia	25	59	3	2	4	7
Washington	20	52	6	6	7	9
West Virginia	25	75	0	0	0	0
Wisconsin	34	54	8	4	1	0
Wyoming	26	74	0	0	0	0
Nationwide	30	56	5	3	3	3

Table 8
High-Speed Subscribership in Zip Codes Ranked by Population Density

Deciles (blocks of zip codes grouped by density)	Persons per square mile (in each decile of zip codes)	% of zip codes in decile with at least one high-speed subscriber		% of population in decile that reside in zip codes with high speed service	
		December 1999	June 2000	December 1999	June 2000
90-100	More than 3,147	96.2	97.6	99.0	99.7
80-90	947-3,147	93.2	96.0	98.4	99.4
70-80	268-947	87.2	93.6	96.2	98.4
60-70	118-268	77.8	87.2	91.7	96.2
50-60	67-118	66.3	78.7	82.9	90.4
40-50	41-67	53.7	66.9	72.2	82.1
30-40	25-41	40.2	56.8	59.1	73.0
20-30	15-25	27.9	44.7	48.5	63.4
10-20	6-15	23.9	38.9	46.6	61.6
0-10	less than 6	18.7	35.4	36.1	56.4

Table 9
High-Speed Subscribership in Zip Codes Ranked by Median Household Income

Deciles (blocks of zip codes grouped by median household income)	Median household income (in each decile of zip codes)	% of zip codes in decile with at least one high-speed subscriber		% of population in decile that reside in zip codes with high speed service	
		December 1999	June 2000	December 1999	June 2000
90-100	$53,494 to $291,938	90.8	95.4	98.4	99.5
80-90	$43,617 to $53,478	77.4	86.9	95.9	98.2
70-80	$38,396 to $43,614	67.0	78.1	94.3	96.8
60-70	$34,744 to $38,395	59.6	73.6	91.7	95.6
50-60	$32,122 to $34,743	53.7	68.3	89.4	93.9
40-50	$29,893 to $32,121	51.8	65.0	88.2	92.7
30-40	$27,542 to $29,892	49.1	62.4	85.9	91.4
20-30	$24,855 to $27,541	48.8	59.6	85.1	90.3
10-20	$21,645 to $24,855	45.3	55.7	82.5	88.1
0-10	$0 to $21,644	41.7	50.5	84.1	89.5

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Cable Television Industry
OVERVIEW 2000

Introduction

Once simply considered just a distributor of analog video programming, cable's broadband infrastructure provides what analysts have called the perfect pipeline for delivery of many advanced services, including high-speed cable modem Internet service, digital video, residential cable telephony and interactive TV.

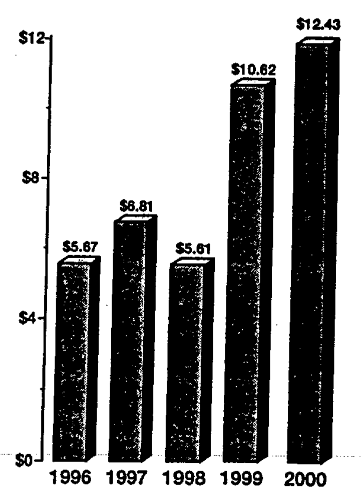
The cable industry is actively providing facility upgrades, better sound and video, innovative quality programming, improved customer service, and new broadband services. Investments in these improvements will yield higher value for customers, making cable the technology of choice in the increasingly competitive telecommunications industry.

CABLE: The Broadband Future

Cable companies invested heavily in infrastructure upgrades and facility improvements — **$12.43 billion in 2000 alone** — bringing customers higher quality pictures and sound, more programming and two-way technology. **Since the 1996 Telecommunications Act became law, cable's infrastructure investments have totaled more than $41 billion (from 1996-2000).**[1] (See chart at right.)

Cable Industry Construction/ Upgrade Expenditures

(In Billions)



Source: Paul Kagan Associates, Inc., *Cable TV Financial Databook*, 2000, p.150

Facility Upgrades

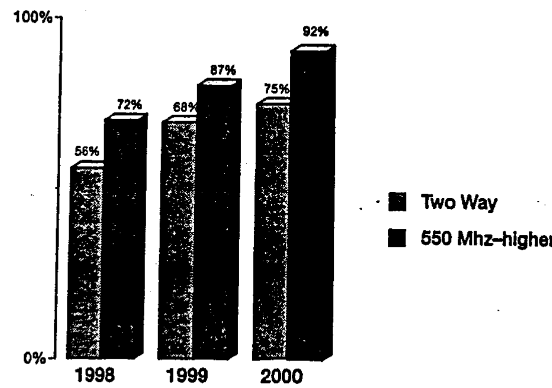
- In 2000, cable operators continued to upgrade their facilities to 550MHz-750MHz, creating additional bandwidth for the delivery of more channels, digital and HDTV programming, and two-way interactive services.
- **It is estimated that 92% of all cable homes now are passed by at least 550MHz plant — with 81% of cable homes passed by systems with 750MHz or higher, positioning**

[1] Paul Kagan Associates, Inc., *The Cable TV Financial Databook*, 2000, p. 150.

cable to compete more effectively with DBS companies, which typically offer more than 100 channels.[2] (See chart at right.)

- Industry analysts estimate that **75% of all cable homes are passed by activated two-way plant,** allowing for the deployment of interactive on-line services and telephony.[3] (See chart at right.)

Cable System Upgrades



Source: Paul Kagan Associates, Inc., *Broadband Technology,* March 28, 2000, p.5.

Cable Programming: The Best on Television

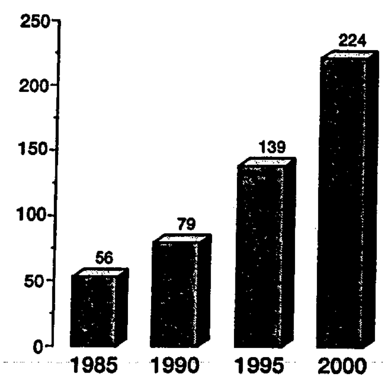
Cable also has made substantial investments in programming — more than $8 billion in 1999 and 2000, with nearly $8.9 billion in 2000[4] — leading to more choice and higher quality programming that draws increasingly more viewers to cable networks month after month. In addition to more and better programming, cable's investments also have resulted in the creation of more cable networks — from 79 networks in 1990 to 224 networks in 2000 — a 184% increase over 10 years.[5]

Cable Programming Attracts More Viewers[6]

- Viewership continued to grow for ad-supported cable television during the 1999/2000 TV season. Meanwhile, the broadcast audience again declined - despite its higher profile programming.[7]

- **In all television households, basic cable networks received 45.7% of all viewing during the 1999/2000 season. During the past 10 years, basic cable network viewing share in all television households increased roughly 118% (and 70% in cable households).[8]** (See charts on p. 3 and 4.)

Increased Number of National Cable Networks



Source: Cable Networks: NCTA, *Cable Television Developments.*

[2] Paul Kagan Associates, Inc., *Broadband Technology*, March 28, 2000, p. 5.
[3] *Ibid.*, p. 5.
[4] NCTA estimate based on Paul Kagan Associate, Inc., data and U.S. Copyright Office.
[5] Estimate based on NCTA's *Cable Television Developments.*
[6] Data provided by Cabletelevision Advertising Bureau (CAB), *Cable TV Facts*, 2000, "Television Still Delivering Consistently High Viewing Levels," p. 16-17.
[7] CAB-issued press release, "Ad-Supported Cable Tallies Record Primetime and Total Day Viewership Levels for Just-Completed 1999/2000 TV Season," September 20, 2000.
[8] 1999/2000 viewing shares include ad-supported and non-premium service cable.

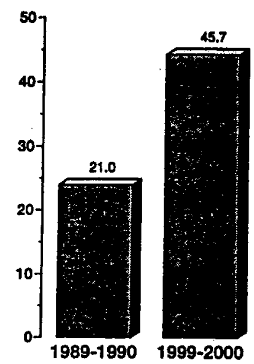
Children's Programming

- In 2000, cable networks remained the clear leaders in offering a wide variety of quality programming for children and families.
- Cable networks provide more than three times as much children's programming,[9] and have more audience share, than all other programming sources combined.[10]

  For example, Nickelodeon offers *Blue's Clues*, its acclaimed, signature show for preschoolers, while Disney Channel has designed its *Playhouse Disney* programming block for a pre-school-aged audience. Programs such as Discovery Channel's *Sci Squad* and *Outward Bound*, Fox Family Channel's *The Kids from Room 402*, and Animal Planet's *Crocodile Hunter* engage young viewers through programming that's both educational and fun. Cartoon Network's daily line-up entertains families through animated features.

- Through its Cable in the Classroom initiative, the cable industry provides U.S. schools with more than 540 hours monthly of commercial-free, educational programming. Thirty-nine national cable networks and 8,500 local cable companies spend more than $2 million each week on this public service.

Total Television Households
Basic Cable Network Viewing Shares
1989-1990 v. 1999-2000 Season*
(All Day Viewing)



Source: Cable Advertising Bureau, *November* 2000; 1989-1990 figure from Cable Television Advertising Bureau, *Cable TV Facts*, 1991.
*1999-2000 figures include ad-supported and non-premium service cable.

Local and Regional Programming

- The cable television industry also provides a broad array of local and regional programming. Cable companies provide space for public, educational and governmental (PEG) access channels. They also often produce their own local and regional programming, ranging from news to sports to weather and traffic. Networks such as Orange County News Channel (Orange County, CA), R News of Rochester (Rochester, NY and western Finger Lakes), and Arizona News Channel (Phoenix metro area), deliver 24-hour local news, weather, and sports. Cablevision's MetroChannels (New York, Connecticut, New Jersey) provide a suite of channels dedicated to a wide range of "hyper-local" information geared towards the tri-state region, including a 24-hour entertainment and lifestyle guide.

Political and Public Affairs Programming

- In Election 2000, cable took over as the leading video source of primary, convention and general election political news – on a national, regional and local level.

[9] CAB - 2nd quarter figures.
[10] Cabletelevision Advertising Bureau, *Cable TV Facts*, 2000, "Kids' Cable Programming Gets Dominant Share of Viewing In All TV Households," p. 56.

- As broadcast networks cut back their public affairs coverage, cable networks such as C-SPAN, CNN, MSNBC and Fox News Channel offered viewers the most complete coverage – varied, thorough, and from several vantage points – of the primary season, the national Republican and Democratic Conventions, key Presidential debates and continuing election reports.

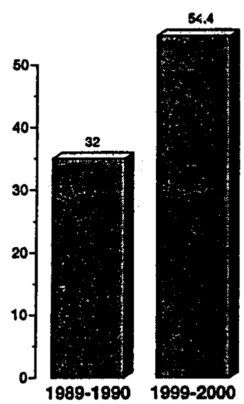
- During Election 2000, C-SPAN's coverage included live, gavel-to-gavel coverage of five party conventions (Republican, Democratic, Green, Libertarian and Reform); eighteen months of regular *Road to the White House* reality programming; live coverage of the presidential debates and comprehensive coverage of House and Senate campaigns. Cable companies offer the nonprofit network as a public service.

- Local cable channels such as News Channel 8 (Washington DC metro area), News Channel 12 (New York City metro area), Pennsylvania Cable Network, The California Channel, Bay News 9 (Tampa Bay metro area) and CN8 (Philadelphia metro area) offered a regional perspective.

- With numerous specialized networks, cable's coverage extended beyond its varied news and public affairs venues. Channels such as MTV (*Choose or Lose: Why Care?*), Comedy Central (*Indecision 2000*), Nickelodeon (*Kids Pick the President*), BET (*Lead Story*), Lifetime (*Every Woman Counts* campaign), Oxygen (*Be Fearless with Your Vote* campaign), The International Channel (Mandarin telecast of the Democratic National Convention), Univision and Telemundo (Hispanic focus on election issues) provided election programming and initiatives that catered to specific audiences.

Cable Television Households
Basic Cable Network Viewing Shares
1989-1990 v. 1999-2000 Season*

(All Day Viewing)



Source: Cabletelevision Advertising Bureau, November 2000; 1989-1990 figure from Cabletelevision Advertising Bureau, *Cable TV Facts*, 1991.
*1999-2000 figures include ad-supported and non-premium service cable.

Diverse Programming

Cable has assumed an increased leadership position in addressing the most serious issues facing contemporary American society. Recent programming points to cable's unique willingness to take on matters of significant societal concern, from diversity to education to hate and alienation. Series such as *The Brothers Garcia* (Nickelodeon) and *Resurrection Blvd.* (Showtime) represent the Latino community, while programs such as *Strong Medicine* (Lifetime) and *Cool Women* (Romance Classics) address women's issues. The recently debuted Showtime series *Queer as Folk* provides a candid glimpse of homosexual life. Additionally, *Warning from a Small Town* (Discovery) and HBO's *HATE.COM – Extremists in the Internet* explore the issues of hate, alienation and violence.

Delivering New Products & Services

Cable is upgrading its infrastructure to deliver new technologies, products and services to provide its customers with greater value in the face of growing competition. Fiber optics and cable's hybrid fiber coaxial (HFC) architecture now connect consumers to a broadly enhanced range of video, voice and high-speed data communication possibilities, as well as improved signal reliability, better pictures and superior two-way transmission capability.

High Speed Internet

Cable's superior bandwidth enables significantly faster transmission speed (50 to 100 times faster than telephone-based modem technologies); the cable connection is "always on" and does not interfere with normal telephone activity or usage. The cable industry also has developed standards to make interoperable, non-proprietary cable modems available at retail distributors.

- Cable operators continue to create new on-line services that take advantage of cable's high speed and bandwidth, such as **Excite@Home, Road Runner, HSA, Optimum Online, PowerLink** and **Charter Pipeline.** These cable Internet services provide content-rich local and national programming and access to other educational and informational resources.
- As of September 30, 2000, nearly 3 million U.S. cable customers subscribed to cable's high-speed service, and that number should reach 3.6 million by year-end.[11]
- CableLabs established a formal certification process for cable modem equipment suppliers to obtain a compliance certificate for their data delivery systems. By mid-October 2000, 38 companies had achieved certified status for about 100 high-speed data devices.[12]

Multiple Internet Service Provider Technical Trials

- The cable industry is committed to providing consumers with a choice of Internet service providers (ISPs). The three largest MSOs (AT&T Broadband, Time Warner Cable and Comcast Cable Communications) have embarked upon or announced technical trials.
- In November 2000, AT&T Broadband initiated a multiple-ISP trial including eight diverse providers over its broadband network in Boulder, CO. AT&T Broadband Choice offers up to 500 customers a choice of ISPs for high-speed, always-on cable Internet service. The eight options include Excite@Home (traditional cable company ISP), EarthLink, Juno and WorldNet (national ISPs), FriendlyWorks (national ISP geared towards seniors), RMI.net (Denver-based regional ISP), Winfire and Flashcom (DSL Internet service providers). Another multiple-ISP trial, which incorporates findings from the Boulder trial, is planned for 2001 in Massachusetts.[13]
- In February 2000, Time Warner Cable and America Online signaled their commitment to multiple ISP choices by developing a framework for agreements to provide AOL service and other ISPs on Time Warner's broadband cable systems.[14] Juno Online Services, Inc. became the first ISP (other than Road Runner) to reach a business agreement with Time Warner Cable for

[11] Broadband Intelligence, Inc., *High-Speed Internet Competition*, December 2000, p. 3.
[12] CableLabs-issued press release, "CableLabs Certifies More Modems," October 20, 2000.
[13] AT&T-issued press release, "Eight ISPs Join AT&T Broadband Choice Trial," November 1, 2000.
[14] Time Warner-issued press release, "America Online and Time Warner Announce Framework for Agreements to Offer AOL Service and Other ISPs on Time Warner Broadband Cable Systems," February 29, 2000.

broadband Internet access. The companies began with a trial in Columbus, OH, and plan to roll out the service elsewhere.[15] Time Warner Cable also reached an agreement with EarthLink to offer the ISP's broadband Internet services over Time Warner Cable systems. Roll-out is anticipated for the second half of 2001.[16]

- In November 2000, Comcast announced its first multiple ISP trial. Comcast will offer high-speed Internet access service from Juno Online Services over its cable system in a Philadelphia-area trial starting during first-quarter 2001.[17]

Digital Cable TV

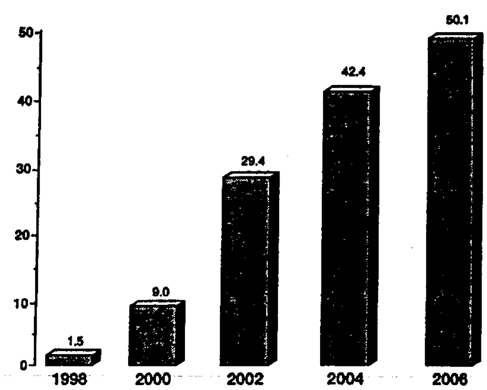
Cable companies are using their upgraded digital networks to offer a wide array of new broadband video services to customers.

- As of September 30, 2000, an estimated 7.8 million homes subscribed to a cable digital service. The number of digital service customers is expected to increase to 9 million homes by the end of 2000 and is projected to grow to 50.1 million homes by 2006.[18]
- Cable is transitioning from analog to digital programming and distribution systems to increase customer satisfaction and meet the competition posed by DBS, wireless cable, broadcasters, and telephone companies.
- The transition to digital provides new value to customers — and cable operators are upgrading facilities to provide both the digital and HDTV programming viewers want — but the transition is an evolutionary process, requiring large capital outlays and construction market by market.
- Cable operators and broadcasters are involved in negotiations about carriage arrangements for broadcasters' digital signals. But cable remains strongly opposed to government-mandated must carry of the broadcasters' digital signal during the transition period – a policy which would result in a "double-dose" of must carry that would relegate cable networks to second-class status.

  HBO, Showtime, Discovery, A&E and Madison Square Garden Network are investing in the production and conversion of programming to high-definition resolution (HDTV) formats. Meanwhile, others, such as Nickelodeon, ESPN, Home & Garden TV, The History Channel, The Weather Channel, AMC and the International Channel, are taking advantage of digital technology to offer more channels of special interest programming.

Digital Subscriber Projections

(Millions of Homes)



Source: 2000 estimates from NCTA research; all other dates from Paul Kagan Associates, Inc., *Cable TV Financial Databook*, 2000, p.10.

[15] Time Warner Cable-issued press release, "Juno And Time Warner Reach Agreement to Offer Juno Express Over Time Warner Cable Systems," July 31, 2000.
[16] Time Warner Cable-issued press release, "EarthLink and Time Warner Cable Announce Definitive Agreement to Offer EarthLink Broadband Internet Services over Time Warner Cable Systems," November 20, 2000.
[17] Comcast-issued press release, "Comcast and Juno Announce Multiple ISP Trial," November 29, 2000.
[18] Paul Kagan Associates, Inc., *Cable TV Financial Databook*, 2000, p. 10.

Digital TV Specifications

- The OpenCable™ initiative, managed by the Advanced Platforms and Services group at Cable Television Laboratories, Inc. (CableLabs), has produced a set of interface specifications that define the next generation of digital cable television set-top boxes and other digital devices to be deployed by cable operators in North America. Key to these interface specifications is the definition of a removable security module, which is the basis for making the devices commercially available at retail as well as portable from one cable system to another. In addition to designing the interface specifications, CableLabs has also created a process and the facilities to test and certify the interoperability of OpenCable devices. These test facilities enable designers and manufacturers to validate the functionality and performance of their equipment in a real-world cable network environment that includes head-end equipment and interconnected devices from multiple vendors. The OpenCable interface specifications, together with the proliferation of digital cable upgrades being rolled-out by cable operators, create business opportunities that have not previously existed.

- On February 23, 2000, the Consumer Electronics Association (CEA) and NCTA announced that they had reached voluntary agreements that will help foster compatibility between consumer digital television receiving devices and cable television systems. The agreements detail the technical specifications that will enable consumers to receive digital programming and services over cable systems and were reflected in a February 22, 2000, joint letter from NCTA and CEA to FCC Chairman William Kennard.

  The first agreement details the technical requirements for the network interface specifications that permit direct connection of consumer digital receivers to cable television systems. These network interface specifications were adopted as a U.S. cable industry standard on May 30, 2000, by the SCTE as document DVS 313. DVS 313 assures a cable customer who buys a digital television receiver built to that standard will connect directly to a cable system.

  The second agreement details the means of carriage, when available, of Program and System Information Protocol ("PSIP") data on cable systems, including virtual channel tables and event information data, to support the navigation function in DTV receivers.

Cable Telephony

The cable industry continues to move forward to offer local residential telephone service. At least nine of the nation's largest multiple system operators (MSOs) now offer residential and/or commercial phone service in more than 45 markets, and companies have reached interconnection agreements in at least 40 states and the District of Columbia.[19]

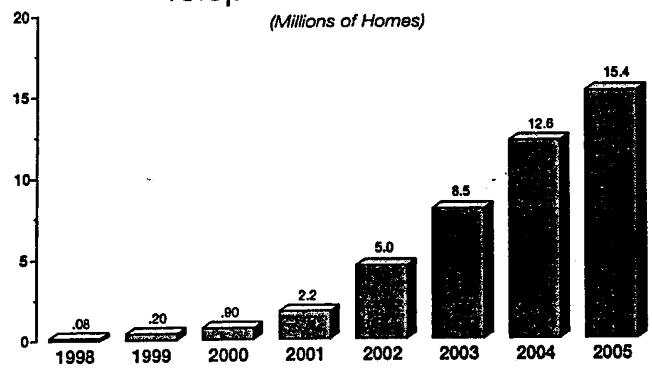
- Cox Communications continued to lead the industry's push into residential and commercial local telephone service by offering local, long distance and alternate access services in Orange County and San Diego County, CA; Cheshire, Manchester, Meriden, South Windsor and Southington, CT; Phoenix, AZ; Omaha, NE; Hampton Roads, VA; and northern Rhode Island. Cox Communications offers its first residential line for about 10% less than the incumbent Bells, and the second line at roughly 50% off. Feature packages, such as call waiting, are offered at 20-30% discounts.

[19] Paul Kagan Associates, Inc., *Cable TV Financial Databook*, 2000, p. 67-68.

- On December 7, 2000, AT&T Broadband announced that it reached its year-end goal of 500,000 local-phone customers a few weeks ahead of schedule.[20]
- Cablevision Systems Corp. is now offering a package of local, regional and long distance service to homes and businesses on Long Island and in Norwalk, CT, at monthly savings of up to 20% (or more) each month by crediting a percentage of customers' phone bills to their cable TV bills.

Residential Cable Telephone Subscribers

(Millions of Homes)



Source: Paul Kagan Associates, Inc., *Cable TV Financial Databook*, 2000, p. 11.

- By year-end 2000, cable operators will serve more than 800,000 residential cable telephony customers.

Interactive TV

Development of interactive TV (ITV) moved rapidly during 2000. As cable operators upgrade their systems with digital capability and two-way plant, they make possible interactive services such as interactive program guides (IPGs), personal video recorders (PVRs), enhanced TV services (ETV), TV-based commerce (T-Commerce), TV-based web access and video on demand (VOD). (See chart on p. 9 for projected penetration of ITV services/devices.)

Cable systems already have introduced some interactive services and ITV trials. For example:

- Using currently deployed digital set-top boxes, AT&T Broadband teamed with WorldGate in November 2000 to enhance its AT&T Digital Cable offering with interactive television service in Cedar Falls and Waterloo, IA.[21] The enhanced services include e-mail, e-commerce, interactive video content/advertising and Internet access.
- Charter Communications teamed with the City of LaGrange, GA, in Spring 2000 to offer free Internet-over-TV access to all of its customers, using WorldGate's Internet on EVERY TV℠ service.[22] The service, which Charter first introduced in 1998, provides customers with Internet access, e-mail and locally available information through their TV sets and the cable network, rather than a personal computer and telephone.
- Comcast Corporation has begun to deliver personal video recorder (PVRs) services, in some markets, allowing viewers to instantly control playback (pause, rewind, fast-forward, etc.) of programming. In July and August 2000, Comcast began a ReplayTV service trial in Burlington County, NJ,[23] and deployment of the TiVo Personal TV Service in Cherry Hill, NJ.[24] In both cases, customers lease a digital video recorder (then receive the personal TV service) as part of their monthly cable bill.

[20] AT&T-issued press release, "AT&T Broadband Meets Phone-Customer Goal," December 7, 2000.
[21] AT&T-issued press release, "AT&T Broadband and WorldGate Announce Interactive Television Deployment in Three Cities," November 6, 2000.
[22] Charter Communications-issued press release, "Charter Communications Opens a Window to the *Wired World*™ Through Unique Partnership with LaGrange, GA," March 22, 2000.
[23] Comcast-issued press release, "Comcast Corporation to Begin ReplayTV Service Trial in August," July 25, 2000.
[24] TiVo-issued press release, "TiVo and Comcast Cable to Jointly Deliver Personal Video Recorders with the TiVo Service in Single Market Deployment," July 25, 2000.

- Cox Communications launched its Movies-On-Demand (MOD) service to some San Diego customers in September 2000. Using existing digital set-top boxes and remote controls, viewers can choose among hundreds of titles, and can pause, fast-forward and rewind the selected programs.[25]

- In several locations, Insight Communications has introduced two new products as part of its Insight Digital product:

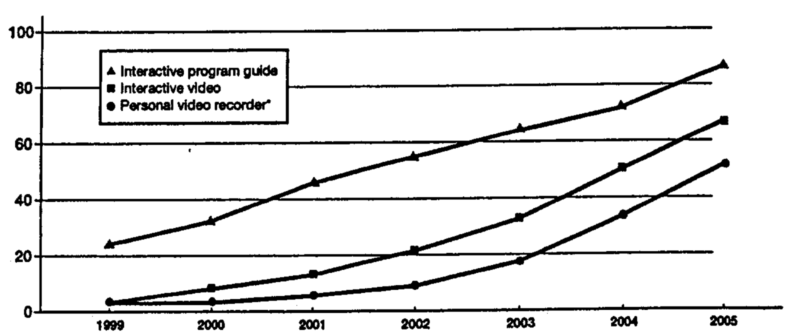
  - LocalSource (a service of Interactive Channel) brings interactive, localized programming to viewers' living rooms via a customized community guide, which delivers popular entertainment and consumer information on-demand.

  - Insight also is the first cable operator to offer DIVA's video-on-demand service DIVA's On Demand TV as part of its core digital platform. DIVA's On Demand TV is a source of hundreds of movies easily accessed by a remote control and on-screen navigator and includes full VCR functionality.

- As part of its Digital Cable Service, Time Warner Cable's Honolulu, Hawaii-based system (Oceanic Cable) offers iControl Video-on-Demand, which instantly delivers pay-per-view movies that viewers can rewind and fast-forward. In select locations, Oceanic Cable also is delivering Pizza on Demand (POD)(T-commerce) through Pizza Hut.[26]

Penetration of Smart TV Devices and Services

(Millions of U.S. Households)



	1999	2000	2001	2002	2003	2004	2005
▲	23.2	33.9	44.3	54.1	62.3	73.6	
■	00.7	04.9	12.2	21.1	34.4	49.0	65.2
●	00.0	00.8	03.6	08.2	17.6	34.0	53.0

Source: Forrester Research, Inc. (Reprinted with permission.)
*Includes devices with hard drives and headened recording.

[25] Cox Communications-issued press release, "Cox Communications Launches Movies-On-Demand Service in San Diego," September 25, 2000.
[26] HonoluluAdvertiser.com, February 4, 2000, "One Click Delivers a Flick," by Vicki Viotti, Staff Writer, *The Honolulu Advertiser.*

Competition to Cable Continues to Grow

Video Competition

Today, the American television consumer can choose from a variety of multichannel video providers, including DBS, broadband overbuilds, telephone companies, and utilities. As a result of this competition, 18.68 million consumers (21.5% of multichannel video subscribers) now obtain multichannel video programming from some company other than their local cable operator.[27] (See chart below.) Over the past seven years, non-cable MVPD homes have increased by more than 15.5 million. (See chart p. 11.)

Direct Broadcast Satellite (DBS)

- During 2000, DBS competitors launched "local-to-local" service in more than 38 markets, reaching 59% of television households.[28] This service provides local ABC, CBS, NBC, and FOX signals (and a national PBS feed) via satellite.

Analysis of Market Share of Multichannel Video Program Distributors (MVPDs) December 2000

	Subscribers (In Millions)	Percent of MVPD Market
Cable	68.21	78.50%
DBS	14.10	16.23%
C-Band	1.29	1.48%
MMDS	0.70	0.81%
SMATV (Satellite Master Antenna Television)	1.50	1.73%
Local Telephone Companies	0.43	0.49%
Broadband Competitors	0.66	0.76%
Total Multichannel Subscribers	86.89	100.00%

Source: A.C. Nielsen, Paul Kagan Associates, *Cable Program Investor*, SkyREPORT, *Media Business Corporation*.

Broadband Overbuilds

New local broadband overbuilders are establishing themselves as competitive providers of video programming.

- While the two major DBS companies are available to consumers nationwide, satellite is hardly the only alternative to incumbent cable operators. In the past year, activity in terrestrial wireline overbuilds has expanded dramatically.

[27] NCTA estimates based on data from A.C. Nielsen, Paul Kagan Associates, Inc., SkyREPORT, and individual companies.
[28] DirecTV-issued press release, "DirecTV Offers Local Broadcast Network Channels in Greensboro, N.C. and San Antonio," November 7, 2000.

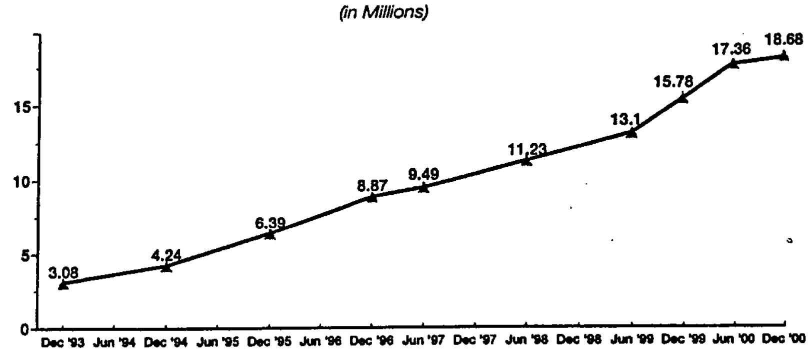
- RCN Corporation is the largest of the broadband overbuilders. Already offering service in the Boston, MA;[29] New York, NY; Philadelphia, PA; San Mateo, CA; Chicago, IL; San Francisco, CA; and Washington, DC areas, RCN announced in 2000 plans to offer service in Seattle, WA; Portland, OR; and Los Angeles, CA. RCN was also just granted a cable franchise in Arlington County, VA (Washington, DC area), which brings RCN's potential reach in the Washington area to over 600,000 homes.[30] In total, RCN plans to target 7.6 million homes and already has over 335,000 subscribers. RCN Corporation has raised $6.56 billion in capital.

- Digital Access, with $1.3 billion in financing, plans to overbuild existing cable systems in Indianapolis IN (along with eight area suburbs); Kansas City, MO; Milwaukee, WI (and 29 surrounding communities); and Nashville, TN. In total, Digital Access plans to target 1.2 million homes in these communities.

- Knology already offers service in Columbus, GA; August, GA; Huntsville, AL; Montgomery, AL; Charleston, SC; and Panama City, FL. It has recently acquired a franchise in Knoxville, TN; and has applied for a franchise in Nashville.[31]

- WideOpenWest, LLC, is raising capital to offer service in the Greater Denver area; Aurora, CO; Portland, OR; Dallas-Fort Worth, TX; and Houston, TX.[32] WideOpenWest has also recently announced plans to offer service in Minnesota and Missouri and has applied for cable franchises in 120 communities in these two states, including St. Louis and Minneapolis-St. Paul.[33]

Non-Cable MVPD Households
December 1993-December 2000
(in Millions)



Source: Dec 93-June 1999: FCC Sixth Annual Report, Appendix C-1; July-December 2000: NCTA estimate based on Kagan and SkyREPORT data.

- Other broadband overbuilders (and their targeted markets) include: Carolina Broadband (major cities in North Carolina and South Carolina), Western Integrated Networks (WIN) (nearly 500,000 homes in Dallas, Houston, Austin, and San Antonio, TX; Sacramento and San Diego, CA), Clear Source (Waco, Corpus Christi, Midland/Odessa, and Amarillo, TX; other smaller southwestern communities),[34] Everest Connection Corp. (Amarillo and Lubbock, TX; smaller Texas communities; Lenexa, KS; Kansas City, MO; Grand Rapids, MI; and the Minneapolis-St. Paul, MN region),[35] Grande Communications (San Antonio, Austin, San Marcos, Dallas, and Houston, TX), American Broadband (Rhode Island and several "medium-sized" East Coast cities), Millennium Digital Media (Issaquah, Seattle and Bellevue, WA; Snohomish and King

[29] Dedham and Arlington, MA, are the latest communities in the Boston area to receive RCN's ResiLink service. *Communications Daily*, August 7, 2000, p. 7.
[30] *Communications Daily*, August 9, 2000, p. 5.
[31] Knology-issued press release, "Knology Applies for Cable TV Franchise in Nashville," March 31, 2000.
[32] WideOpenWest's original plans to target San Antonio and Austin were recently scrapped as numerous other overbuilders have entered those markets. (*Multichannel News*, May 15, 2000, p. 12).
[33] "WideOpenWest Aims at AT&T Bastions," *Multichannel News*, July 10, 2000. p. 20.
[34] Donaldson, Lufkin & Jenrette, "Cable Overbuilders: Who Wants to Borrow a Billion?" *Media and Entertainment*, April 18, 2000, p. 9.
[35] "Nashville Loses Potential Overbuilder," *Multichannel News*, June 26, 2000, p. 8.

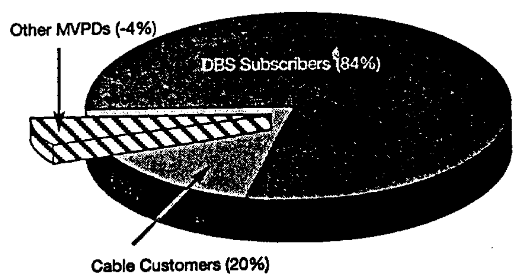
Counties, (WA)).[36] In addition, broadband overbuilds are planned by Open Access Broadband (in Tier 1 Cities), DeCom (Charlotte, NC) and Altrio Communications (Los Angeles, CA).[37]

Telephone Companies

Phone companies are adding a video-programming component to their full-service packages.

- As voice, video and data services are increasingly bundled together into full-service packages, incumbent local exchange carriers – which still serve 96% of the nation's residential households and business customers[38] – are adding video programming and high-speed Internet components to their offerings.
- Unlike the new broadband telecommunications companies, ILECS cannot easily use the same facilities for the provision of voice and video services. Therefore, they have powerful incentives to find alternative means of providing video services, and their dominance in the provision of local telephone service gives them strong marketing advantages in offering bundled services.
  - Verizon and SBC are utilizing existing DBS services for the video component of a full-service communications package.
  - BellSouth has utilized multichannel multipoint distribution systems (MMDS) and cable systems for video programming delivery.

Distribution of Net New Multichannel Households 2000



Source: Paul Kagan Associates, Inc., *Cable Program Investor, June 16, 2000.*

- Qwest is delivering video programming to telephone subscribers in the metropolitan Phoenix area using its existing fiber-optic and residential copper-wire telephone facilities. The new technology – VDSL (very-high-speed digital subscriber line) – is similar to the DSL service employed by telephone companies for high-speed Internet service.

High-Speed Internet Competition

Competition in broadband exploded during 2000. Cable's leadership in creating and developing the market for affordable high-speed Internet access has led to a profusion of competitive offerings from other facilities-based suppliers, as well as a plethora of new service offerings. Statistics compiled by analysts and the Federal Communications Commission document that consumers are increasingly enjoying an expanding choice of broadband providers, including cable, DSL, wireless, satellite, alternate broadband suppliers and overbuilders.

The FCC reported that the number of high speed "lines" (both wired and wireless) connecting homes and businesses to the Internet increased 57% during the first half of 2000, to a total of 4.3 million lines (or wireless channels).[39] Third quarter results document accelerated growth, and the trend was continuing.

[36] "Comcast Takes Over in D.C. Suburb," *Multichannel News*, July 24, 2000.
[37] Donaldson, Lufkin, & Jenrette, "Cable Overbuilders: Who Wants To Borrow a Billion?" *Media and Entertainment*, April 18, 2000, p. 9.
[38] FCC-issued press release, "FCC Releases Local Telephone Competition Report," August 31, 2000.
[39] Federal Communications Commission; *High-Speed Services for Internet Access: Subscribership as of June 30, 2000.*

DSL

- DSL service providers include the four major ILECS [BellSouth, Qwest Communications, SBC Communications, and Verizon (product of the Bell Atlantic/GTE merger)], Broadwing (formerly Cincinnati Bell), and DLECs (data-centric competitive local exchange carriers) such as Covad, NorthPoint and Rhythms.
- By third quarter 2000, the combined DSL outlets had more than 1.5 million subscribers – a 565% increase compared to 238,500 DSL customers a year earlier.[40] The major ILECS are projected to grow from 1.9 million subscribers (year-end 2000) to 4.8 million at the end of 2001 – a 150% growth rate.[41] (Residential DSL subscribers counts alone are expected to increase from 1.5 million at year-end 2000 to 3.7 at the end of 2001 – a 147% growth rate.[42])
- DSL prices have decreased by more than 50% in response to cable's deployment of high-speed Internet service.[43]

Wireless

High-speed Internet access via fixed wireless, both multichannel multipoint distribution service (aimed at residential subscribers) and local multipoint distribution service (offered to the business market), were initiated in earnest in late 2000 in a dozen major markets.

- Sprint first introduced its broadband wireless service (Sprint Broadband Direct℠) in May 2000 in Phoenix, AZ.[44] The company has since entered the Tucson, AZ;[45] Denver, Boulder and Colorado Springs, CO; Detroit, MI; Houston, TX; San Jose and Oakland, CA, markets with its broadband wireless service. As of September 30, 2000, Sprint already was delivering its fixed wireless technology to approximately 10,000 high-speed Internet access customers.[46]
- In November 2000, WorldCom announced the first U.S. commercial launch of its new fixed-wireless MMDS high-speed Internet access service in Memphis, TN. The company already had introduced tests of its new two-way technology in Boston, MA; Jackson, MS and Baton Rouge, LA.[47] WorldCom plans to deploy the service in 30 markets nationwide by year-end 2001.[48]

Satellite

Satellite firms also stepped up their high-speed access offerings in the second half of the year on a nationwide basis.

- In November 2000, StarBand Communications announced availability of its StarBand℠ service (Ku-band, two-way satellite broadband) to nearly every household in the Continental U.S. with a clear view of the southern sky.[49]

[40] Broadband Intelligence, Inc., *High-Speed Internet Competition*, December 2000, chart "Growth in DSL Subscriber Counts," p. 5-6.
[41] Morgan Stanley, Telecom – Wireline: *DSL . . . It's Going Well*, November 7, 2000.
[42] Broadband Intelligence, Inc., *High-Speed Internet Competition*, December 2000, "Cable and Telco High-Speed Residential Customer Growth," p. 11.
[43] *Ibid.*, p.8.
[44] Sprint-issued press release, "Sprint Launches First Broadband Wireless Market in Phoenix," May 8, 2000.
[45] Sprint-issued press release, "Sprint Launches Second Broadband Market," June 29, 2000.
[46] Broadband Intelligence, Inc., *High-Speed Internet Competition*, December 2000, p. 16.
[47] *Ibid.*, p.16.
[48] WorldCom-issued press release, "WorldCom Launches Fixed-Wireless High-Speed Internet Service in Memphis," November 15, 2000.
[49] StarBand-issued press release, "StarBand Communications Launches Nation's First Consumer Two-Way High Speed Internet Service Via Satellite," November 6, 2000.

- DirecPC, launched in late 1998, is the Internet access arm of Hughes Network Systems-owned direct broadcast satellite service DirecTV. DirecPC's service depends on telephone return technology for upstream communications. Hughes will enter the two-way, high-speed satellite-delivered market within two years via its own Ka-band service, *Spaceway*.[50]

Terrestrial Broadband Providers

Terrestrial broadcasters also announced plans to offer high-speed Internet access. Geocast expects its interactive broadband service to launch third-quarter 2001, and Iblast plans to launch its service in early 2001.[51]

Cable Industry Facts at a Glance as of December 2000

U.S. Television Households (TVHH)*^	102,184,810
Basic Cable Subscribers*	69,297,290
Cable Penetration of TVHH*	67.8%
Pay Cable Units**	48,300,000
Annual Cable Revenue**	$42.11 billion
Homes Passed by Cable**	97,700,000
Homes Passed as a Percent of TVHH**	96.7%
Cable Systems***	10,466
Cable Employees (1998)****	133,705
National Cable Networks*****	224

* A.C. Nielsen Media Research
** Paul Kagan Associates, Inc.
*** Warren Publishing, Inc.
**** Federal Communications Commission
***** NCTA, *Cable Television Developments*
^ Estimate as of January 2001

[50] Broadband Intelligence, Inc., *High-Speed Internet Competition* December 2000, p.13.
[51] *Ibid.*, p.14.

Produced by the National Cable Television Association. For additional information please contact the NCTA Communications Department at 202-775-3629.

NCTA

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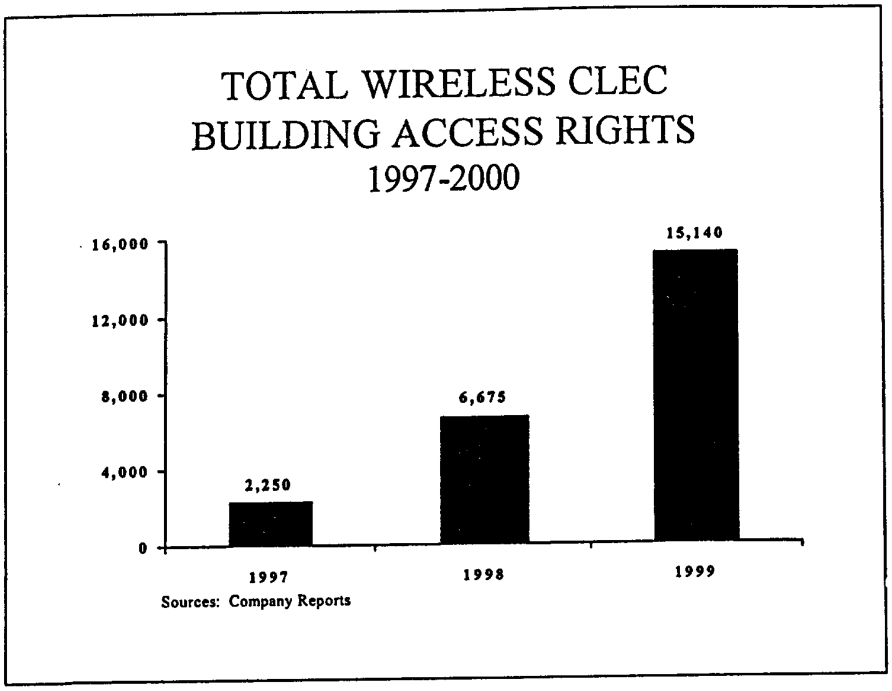
Washington, DC 20036

Graphic K



NOTES AND SOURCES:

Wireless CLEC Building Access Rights: 1997-1999 estimates are based upon data collected from company reports.

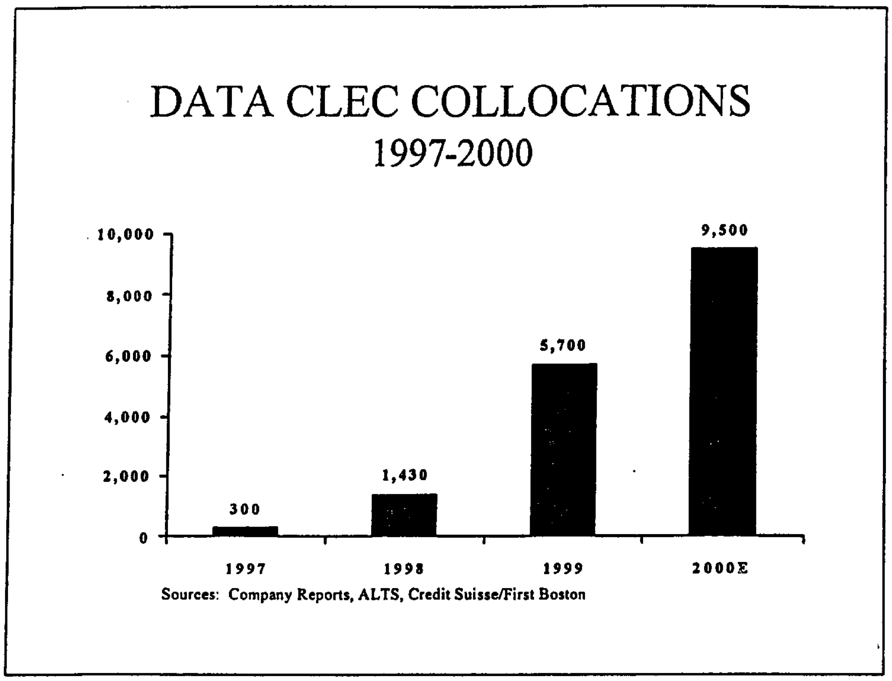
DSL Deployment by Data CLECs.

One of the innovative services brought to market in the past year is Digital Subscriber Line (DSL), a group of services that provide high-speed data services over existing copper wires. The entire telecommunications industry barely offered this service a year ago. Today, competitors are leading the way in deploying DSL.

Graphic L shows growth in these networks by using, as a surrogate, CLEC collocations of data equipment. In 1998, CLECs were collocated in 1,430 end offices. In 1999, this number increased to 5,700, and, as competitors rush to roll out broadband plant, collocations should approach 10,000 in 2000. As a result, at the end of 1999, data CLECs were able to offer DSL service to about 25% of the nation, and this number is expected to increase to 40% in the coming year.

Today, there are about 500,000 DSL lines in service, and, as Graphic M shows, competitors supply over 100,000 of these DSL lines. The number of lines in service for competitors is expected to increase fivefold in 2000. Graphic N lists all of the major DSL service providers -- ILEC and CLEC. The leading provider is SBC with 169,000 lines in service. (SBC includes the assets of two other RBOCs – Pactel and Ameritech.) USWest has 110,000. The leading CLEC is Covad with 57,000 lines, followed by Northpoint with 23,500 lines. The CLEC market share of DSL lines at the end of 1999 was about 20%.

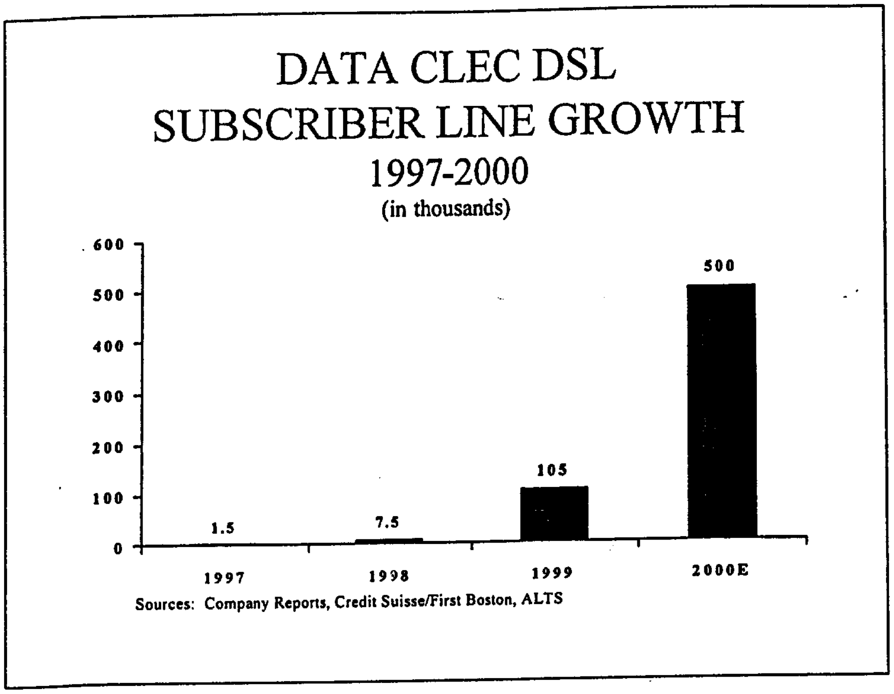
Graphic L



NOTES AND SOURCES:

Data CLEC Central Office Collocations: 1997-1999 estimates are based upon data collected from company reports. ALTS' 2000 estimate is based upon company estimates and Credit Suisse/First Boston estimates.

Graphic M



NOTES AND SOURCES:

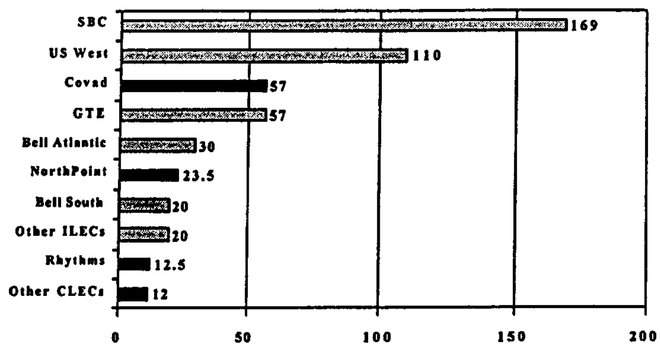
Data CLEC DSL Subscriber Lines: 1997-1999 numbers were derived from company reports and filings.

The 2000 estimate is based on Credit Suisse/First Boston estimates for Covad Communications, Rhythms NetConnections, and NorthPoint Communications, which between them, currently have approximately 90% market share of CLEC DSL subscriber lines.

Graphic N

1999 DSL SUBSCRIBER LINES

(in thousands, as of 12/31/99)



Sources: Company Reports, Bear Stearns

ILECs & GTE = 406K (79.5%)
CLECs = 105K (20.5%)

NOTES AND SOURCES:

1999 DSL Subscriber Lines: Numbers are as of December 31, 1999, based upon company reports, except for Bell South, which is a Bear Stearns estimate.

Of those companies represented on this chart, Covad Communications, NorthPoint Communications, and Rhythms NetConnections are CLECs, representing approximately 90% of the CLEC market share.

CLEC Market Capitalization

Market capitalization can fluctuate significantly depending upon external market events, as well as on company performance. It is thus a statistic that needs to be used carefully to demonstrate the health of an industry. If external economic effects can be held constant, CLECs' market capitalization can be seen as indicating that the financial markets believe that there is tremendous potential for new entrants to meet burgeoning customer demand, that CLECS have executed on their business plans, and that there are sound public policies in place to develop local competition.

Graphic O shows that since the 1996 Act, CLEC market capitalization has grown dramatically -- from about $3.1B in 1996 to around $85B today. CLECs have worked hard to gain the confidence of investors. They also understand that this confidence can be transitory. In 2000, they plan to redouble their efforts to execute on their plans and bring competitive choices to customers throughout the country.

Graphic P shows that no CLEC has yet to make a profit. Only four independent CLECs – McLeod, Intermedia, ICG, and GST – are EBITDA positive. As indicated earlier in Graphic G, CLECs continue to plow most of their revenues into building new plant. In addition, CLECs are competing against ILECs who begin with 100% of the customers. Over the next several years, we expect more CLECs to turn EBITDA positive, but showing a real profit is still some time away.

Wakeling, Victor

From: BellSouth Investor Relations
Sent: Friday, April 27, 2001 9:12 AM
~~: BSC Regulatory; BSC CLEC; BSC DataList; BSC Institutional Group
Ŀ ,ect: Tim Horan's daily datatimes excerpts -- 4/27/01

Tim Horan-Worldcom Reports Mixed 1Q01

WCOM reported a mixed 1Q01. Normalized consolidated EPS was $0.25, which at first blush exceeded our $0.24 estimate. However, adjusting for 2-3 cents of negative FX from Embratel, earnings were actually a couple of pennies below what we expected. Reported consolidated EPS was $0.20, which included various charges.

Positively, WCOM's business unit hit revenue guidance (up 12%), with EBITDA slightly better than our estimate. On the consumer side, however, MCI Group performed worse than expected, missing both our revenue (down 13% versus our estimate of an 11% decrease) and EBITDA numbers. The shortfall was made up by aggressive below-the-line items. On a consolidated basis, revenue growth was flat (up 1%) and slightly below our estimate, which was at the low end of the Street. Consolidated EBITDA of $2.87bn was in-line with our estimate.

Business voice LD (up 1% sequentially) stabilized in the quarter, echoing AT&T and Sprint's 1Q results. We believe pricing pressures have slowed (temporarily) due to: (a) slower than expected LD entry for the RBOCs; (b) less aggressive marketing by the emerging carriers (LVLT and WCG) as they transition from leased networks to owned networks; and (c) less price competition between incumbents, who are strapped for cash. We expect a reacceleration in price declines in the 3Q and beyond, due to a supply-demand imbalance in long distance.

The balance sheets experienced continued deterioration, as net debt rose from $24.9bn to $26.7bn. Vhile leverage has yet to reach critical levels, it could become more of a factor if fundamentals worsen. Generally, when services companies come under stress, the first signs of trouble appear on the balance sheets - increasing debt, deferred tax liability, and net PP&E - all evidenced by WCOM in 1Q.

Our concern is that revenue and EBITDA guidance may be difficult to achieve given voice LD is disappearing as a business, FX will continue to hamper Embratel results, and (CONTINUED) data will be under stress due to slowing demand and the entry of new competitors. We believe that WCOM is the only major US company that is "only-long distance," and as such, is significantly exposed as that business disappears, as we currently know it, over the next two to three years. Given the increasing leverage in WCOM's balance sheets, it may become difficult for the company to reposition itself as its core business goes away.

Normalized for its interest in Embratel, WCOM Group currently trades at 9X EBITDA, which we consider fully-valued versus the RBOCs' 6.5X and AT&T Business unit's estimated 4X. In light of the company's rich valuation and fundamental concerns, we reiterate our HOLD rating and lower our 2002 EPS estimate to $0.80 from $1.05.

Cannon Carr-XOXO: Restructuring a Positive, But Doesn't Quite Address Long-Term Concerns

XO Communications (XOXO) reported 1Q01 results that generally exceeded expectations and, as expected, announced a scaled back business plan and $250M in additional funding from Forstmann Little in order to address its capital needs. We view these as incrementally positive, although the company must still take substantial measures to overcome its overlevered capital structure.

Ve view this restructuring as a positive, since it addresses the company's most important near-term .ssue and buys an additional 12 months of funding (late 2002 by our model, vs. late 2001 previously). Nevertheless, it was not as extensive as we had hoped and does not reduce XO's exceedingly high debt (over $7B in debt/preferred, roughly 1.7X gross PP&E). We remain cautious in our outlook for the company until we gain better visibility on this issue as well as its 2002 plan, which still appears to be aggressive.

Highlights from the restructuring: 1) the Forstmann Little investment; 2) capex reductions; 3) cancellation of its European expansion; 4) a curtailed domestic expansion; and 5) choosing to purchase lit capacity from Level 3.

As expected with the restructuring, the company is reducing both revenue and capex forecasts for this year, while guidance for EBITDA losses stays roughly in line. It is also projecting 2002 revenue of $2B, which appears optimistic, and we are maintaining our estimate of $1.5B, which assumes the company can negotiate debt covenant relief.

The key questions now are: 1) will another equity investor materialize over the next three months? and 2) can the company reduce its debt load by selling assets for cash?

We will be updating our model once after speaking with the company, but we remain cautious over the next six months despite today's news.

Cannon Carr-FCOM Reports Mixed 1Q01

Focal Communications (FCOM) reported mixed 1Q results after the close yesterday. On the positive side, revenue and EBITDA losses appeared slightly ahead of our forecasts, while the company appeared to improve its revenue mix. However, gross margins were weaker than expected, and both line sales and installs for the quarter appeared light. In all, we continue to be cautious on FCOM as it attempts to gain traction with large business customers while addressing: 1) its exposure to the weakening ISP sector; 2) softening pricing trends in data/dial-up services, and 3) a funding gap of $200-$300M.

Recurring revenue for the quarter was $75.9M (net of non-recurring revenue of $5.9M), ahead of our forecast of $74.9M and in line with guidance of $74-$77M. While reported gross margins were down 200 basis points sequentially, to 59.3%, excluding non-recurring revenue, normalized gross margin fell over 500 basis points, to 56.1%. Although we hope to gain additional clarity into this, we believe it may be due to some bankruptcies, particularly among its ISP customer base.

Recurring EBITDA losses of $2.1M were also slightly ahead of our forecast of $2.2M and company guidance of $2.2-$2.5M. The company appears to have offset gross margin declines by keeping expenses in check, with SG&A increasingly only $700K. Receivables appeared to improve somewhat, with days sales outstanding falling to 63 days from 68 days last quarter, by our calculation.

The company appeared to have improved its line add mix, with 82% of new lines coming from its Telecom segment vs. 55% last quarter. As a consequence, total net line adds actually fell from 70.3K last quarter to 65.8 in 1Q, due to a huge dropoff in ISP lines installed. Lines sold during the quarter also fell, from almost 100K lines in 4Q to 41K this quarter, although this may be a timing issue since 4Q appeared exceptionally strong. The same likely holds true for capex, which fell to $22M during the quarter, down significantly from $82M in 4Q.

House Subcommittee Approves InterLATA Data Relief Bill

The House Energy and Commerce Committee, by a 19-14 vote, today approved the InterLATA data relief bill. The bill, co-sponsored by Reps. Billy Tauzin (R-LA) and John Dingell (D-MI), would immediately allow the RBOCs to enter the long-distance data market. Currently, RBOCs cannot provide in-region interLATA services -- voice or data -- until they have shown to be in compliance with the market-opening requirements of the 1996 Telecom Act. While we were convinced Tauzin at some point would re-introduce the bill (it died in committee the first time around), it appears to be playing out faster than we expected. We had believed that other legislative action would likely take precedence, with the bill actually being considered in early 2002. However, it now looks like a vote by the entire House will take place within a few weeks, followed by another couple of weeks of debate in the Senate, although trying to predict how quickly

Congress will act is next to impossible. Nonetheless, we continue to believe the bill has a reasonable chance of getting approved by the House but faces a daunting task in the Senate, where the split among Republicans and Democrats is 50-50 and a handful of Republicans, including Trent Lott (MS) and Ted Stevens (AK), have voiced concerns over the bill. We continue to believe passage of such a controversial bill is unlikely this year, but if passed we would clearly view it as a blow to emerging providers, since the)Cs would have less of an incentive to open their markets.

eLEC

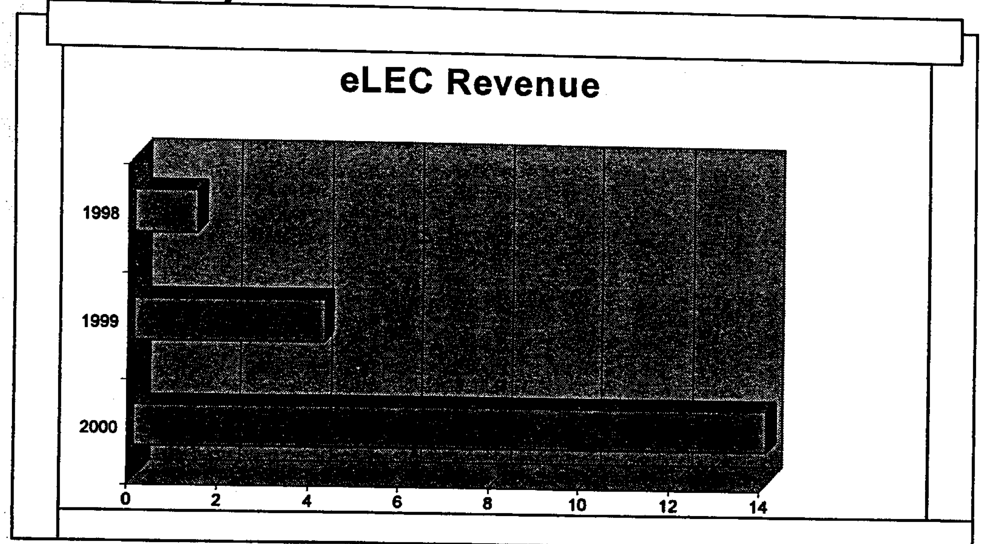
eLEC Communications Corp.

NASDAQ: ELEC

Shares outstanding: 14 million

Web site: www.elec.net

Products & Services: local voice service, long distance, calling card, Web site design, Web site hosting, ASP services, dedicated access, xDSL



The eLEC Strategy

Growth Focused on Local Phone Service

Customer First – Deferred Build

Flexibility

Leverage the Power of Packet-Switching

Lease the Circuit – Build the Packet

eLEC

Summary of Local Service Approaches

1. Build a circuit switched network (be facilities based)
   - High equipment costs
   - High stranded plant costs
   - Labor intensive deployment
   - Slow market entry
   - Provisioning delays from ILEC
   - High margins – including carrier access fees

2. Be a reseller
   - Rapid market entry
   - Low equipment costs
   - No stranded plant
   - Very low margins

3. Utilize the UNE-P service offering

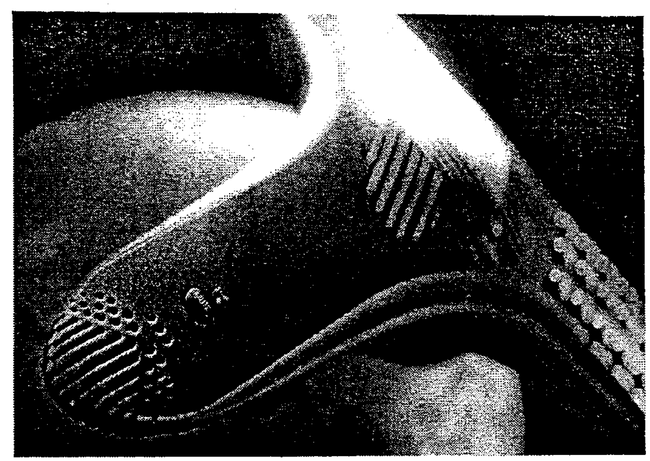
Unbundled Network Elements Platform

(Leasing the Circuit)

UNE-P allows a carrier to obtain the benefits of being facilities-based without the high costs of facilities

The UNE-P principle allows carriers to lease multiple UNEs and combine them into a full service platform. The major categories of network elements are:

- *Loops and Sub-Loops*
- *Network Interface Devices*
- *Local Switching Facilities*
- *Transport Between Central Offices*
- *Signaling and Call-Related Databases*
- *Operations Support Systems*



eLEC

Comparison of UNE-P vs. Resale

Data represents One (1) line sold at a 10% discount in New York.

	UNE-P	Resale
Revenues		
Local revenue per line	15.30	15.30
Intralata revenue per line	12.60	12.60
Features per line	3.60	3.60
Subscriber line charge	8.31	8.31
PICC Fee	4.31	-
Access Fee	4.00	-
Total revenues	48.27	39.81
Costs		
Cost of line	21.49	25.39
Cost of features	-	3.28
Subscriber line charge	-	8.31
Access costs	2.00	-
Total costs	23.49	36.98
Gross Margin	24.78	2.84
Gross Margin %	51%	7%

eLEC

UNE-P in Action

Gross Margin of UNE-P Carrier, Access One Communications, As reported in Form S-4 filed by Talk.com Three months ended April 30, 2000

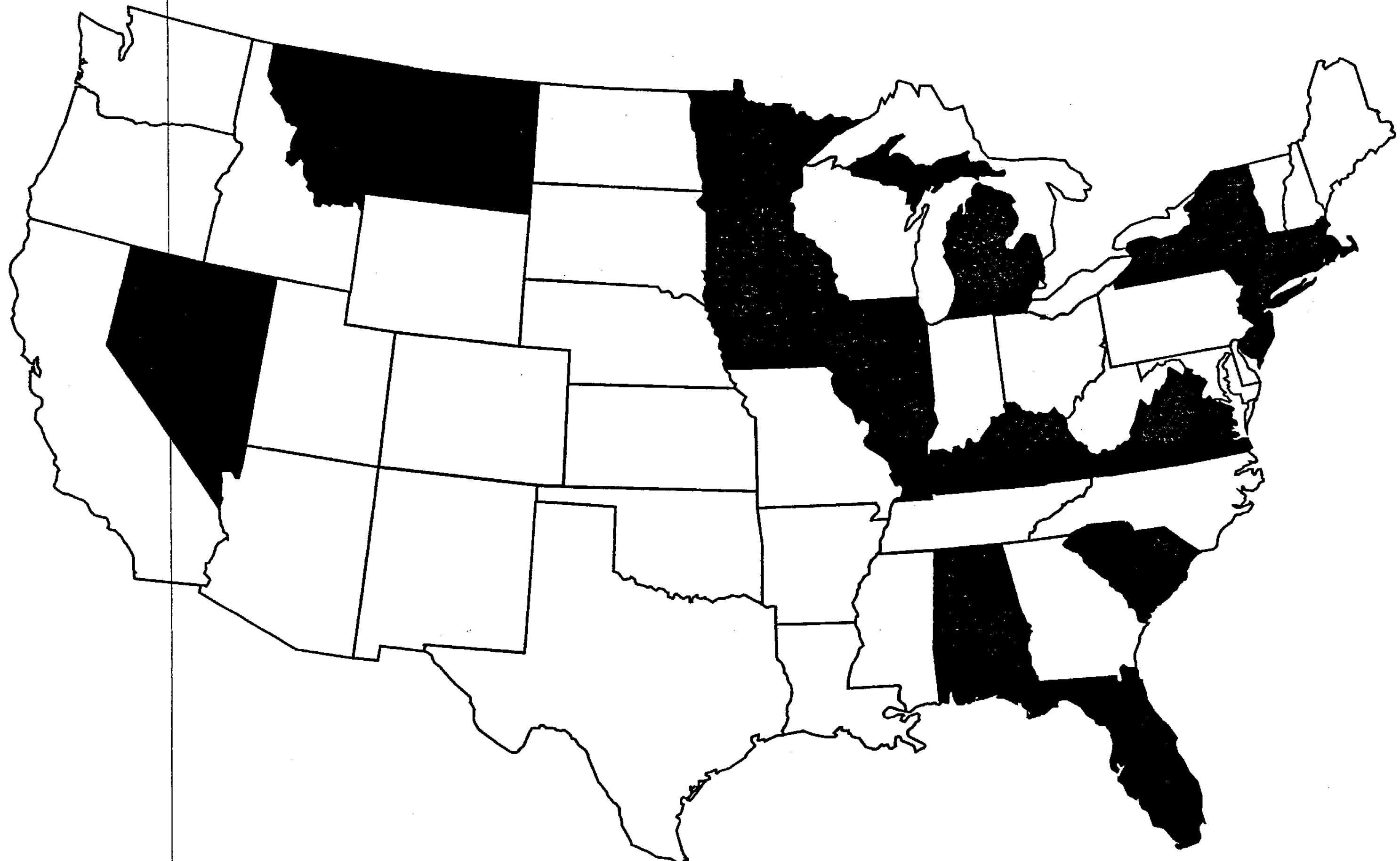
Sales	$10,225,000
Cost of sales	5,423,000
Gross Profit	4,832,000
Gross Margin	47%

Addressable Market

In addition to high margins and rapid market entry, UNE-P provides eLEC with a ubiquitous reach throughout the US.

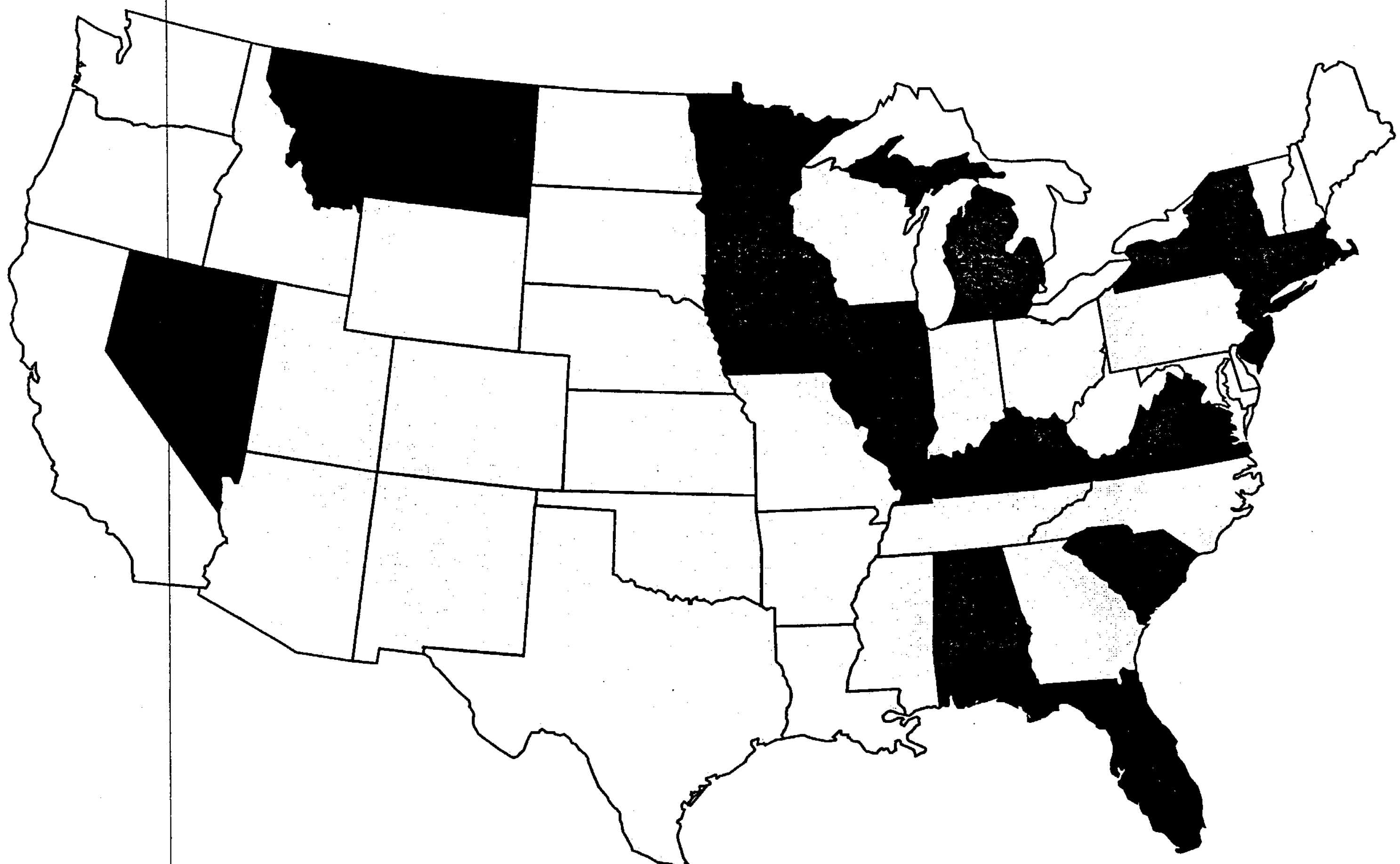
- 165 Million local access lines in the US – all within our reach
- $100 Billion in annual revenues in the US local exchange market

CLEC Certification



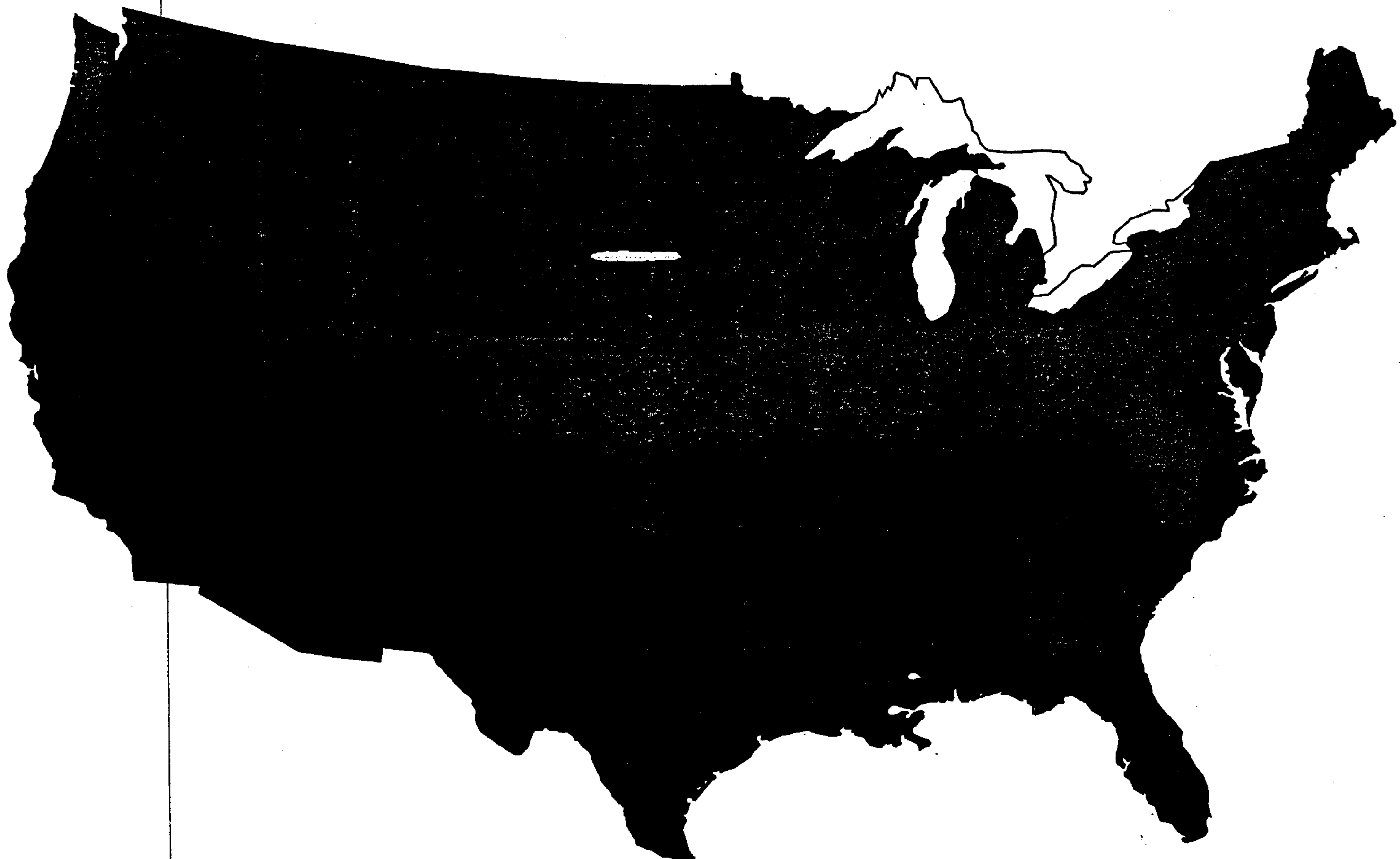
Current State Certifications Represent 58 Million Local Access Lines

CLEC Certification



Projected CLEC Certification in 45 States Within Six Months
Represents 142 Million Local Access Lines

CLEC Certification



Projected CLEC Certification in 48 States Within Twelve Months
Represents 165 Million Local Access Lines

eLEC

Marketing Strategy

Telemarketing: Small Businesses with 2 to 10 Lines

- *Most predictable*
- *Low acquisition cost per line of $45*
- *Grow to 250,000 lines in 2002*

Agent Accounts – Business with 10 to 50 Lines

- *Uses existing telco agents*
- *Pay 10% commission on sales*
- *Grow to 50,000 lines in 2002*

Wholesale Accounts – ISPs, Payphones, CLECs

- *Multi-state, multi-RBOC territory accounts*
- *20% discount on lines & features, 40% on usage*
- *Grow to 100,000 lines in 2002*

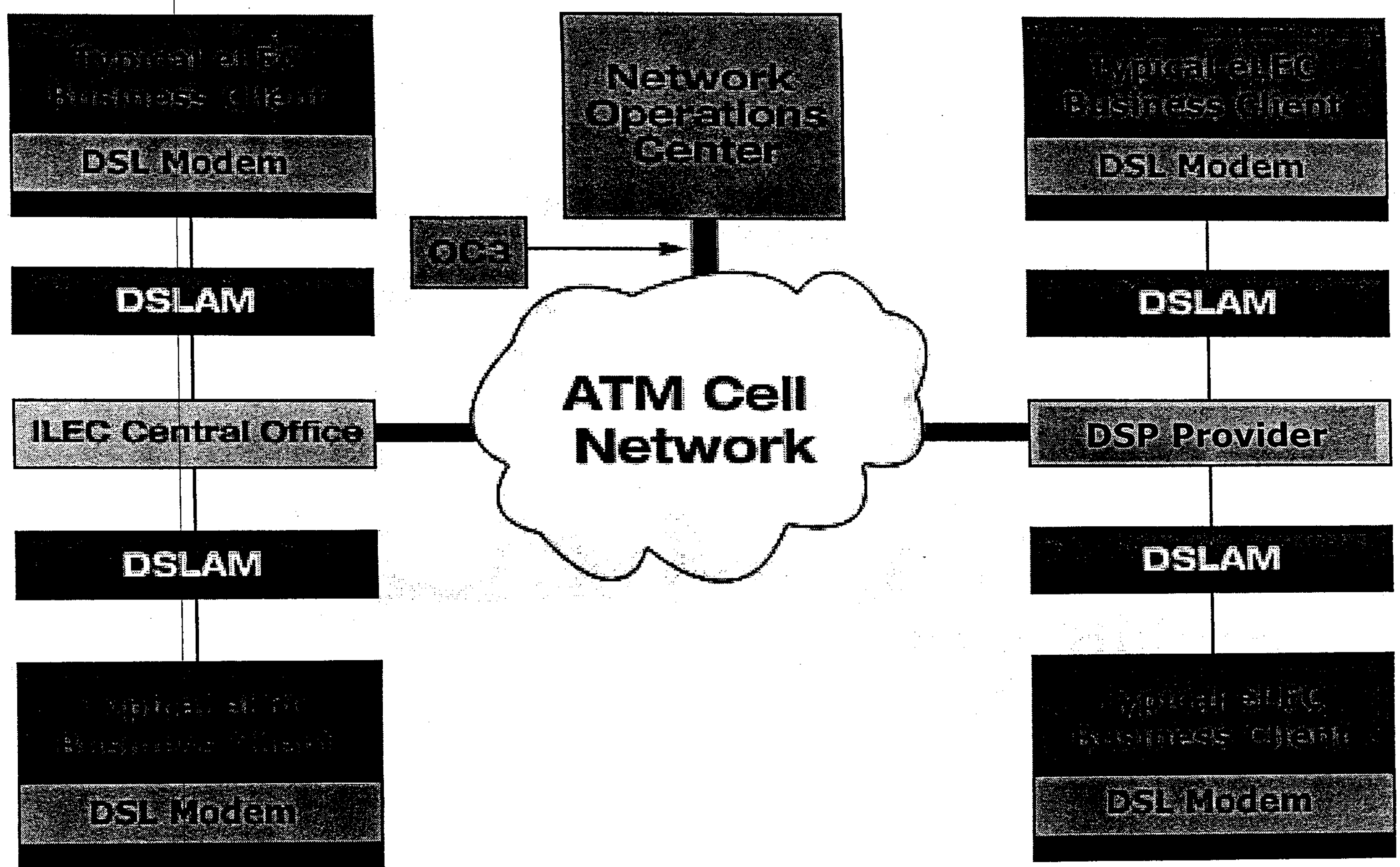
eLEC

Building the Packet

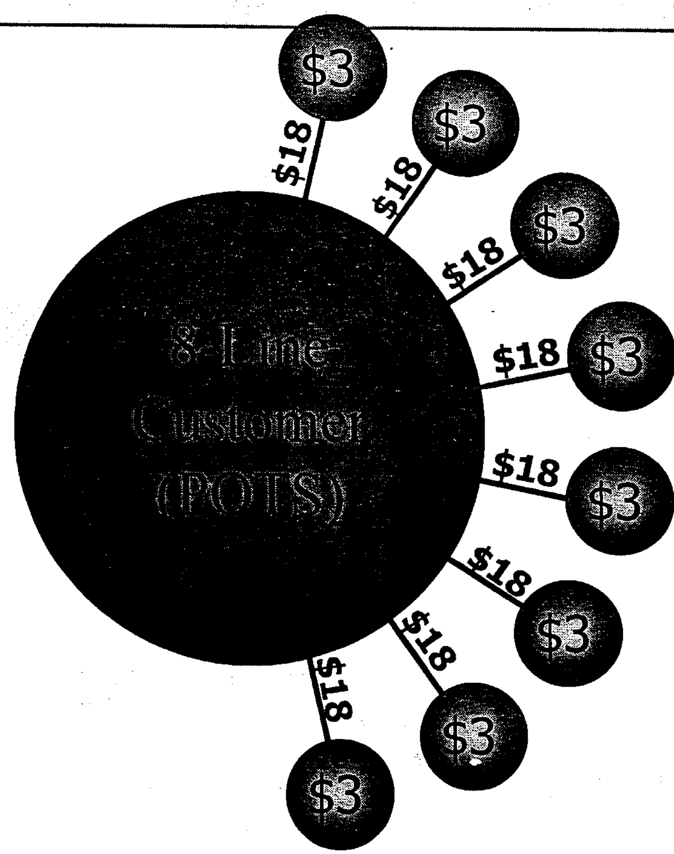
Customer first – Deferred Build

- *Build a customer base on DSL and VoDSL utilizing our ATM Cloud to carry data to our Network Operations Center.*
- *The ATM Cloud allows us to build our network without incurring the high expense of placing our own equipment in the field.*
- *One pipe from our ATM Cloud into a BellSouth, or any ILEC or DSP hub turns on all their associated DSLAMs to provide DSL to our customers.*

ATM Private Network



Local Voice Over Packet



Line & Port Fees

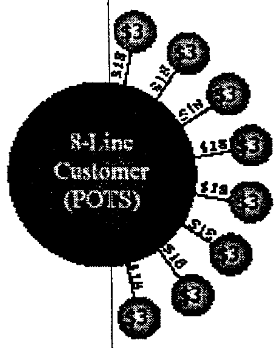
$21 x 8 Lines = $168

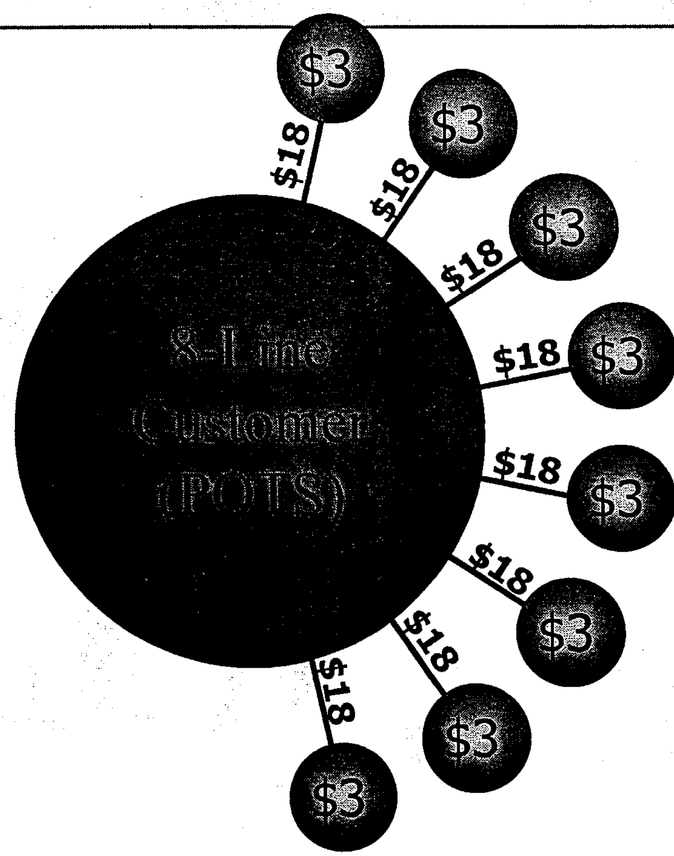
Local Voice Over Packet

Line & Port Fees = $0

PVC Cost = $89

Local Voice Over Packet





Line & Port Fees

$21 x 8 Lines = $168

eLEC

Capital Sufficiency

- Our Smart-Build strategy requires limited capital expenditures.
- eLEC beneficially owns approximately 2 million shares of Talk.com (NASDAQ:TALK) which has been and will continue to be utilized to finance the growth of eLEC.
- TALK is not the only valuable asset we own.
- We already own and operate our own scalable billing system.

eLEC

Proprietary Technologies

Active Bill Pro – Billing Platform

Application development with Microsoft COM technology and Microsoft SQL server for Enterprise class scalability and reliability.

Key Features:

- Billing ASP services to B2B Agent/CLEC relationships.
- Customized billing reports (DAC, Invoices, Management Reports).
- Customizable Rating Engine (Line Level Rating).
- Ubiquitous Client Interface (Web Based Client).

eLEC

Third Quarter Financial Data

Income Statement	9 Months	3 Months
August 31, 2000		
Revenues	$ 9,500,000	$4,078,000
Net income per share	($0.17)	($0.01)
Comprehensive income	$ 11,300,000	$ 13,400,000
Balance Sheet Data		
Current Assets	$ 19,000,000	
Total Assets	$ 25,000,000	
Current Liabilities	$ 4,200,000	
Total liabilities	$ 4,500,000	
Stockholders' equity	$ 20,500,000	
Liabs + Equity	$ 25,000,000	
Valuation Analysis at $2 per share		
Price to Sales	2.00	
Price to Book	1.35	
Price to Tangible Book	1.61	

eLEC

Summary

Lease the Circuit, Build the Packet

- Leased lines, via UNE-P, provide rapid market entry without the high costs of facilities, but with all the benefits of ubiquity, high margins and carrier access billing.
- eLEC will build its own packet-switched network. Voice over packet is very valuable to a local carrier.
- Be flexible. Do not become a captive of our own equipment.
- Leverage ability to sell, provision, bill and service a customer in 48 states on our own platform.

LETTER TO OUR SHAREHOLDERS

We at eLEC Communications are very pleased with the support and encouragement that we receive from our shareholders. For us, fiscal 2000 has been a year of substantial growth and progress, and we look forward to using our fiscal 2000 accomplishments to springboard the Company to record sales levels in fiscal 2001.

We were able to make significant achievements in 2000, despite the dramatic reversal in the amount of capital available to competitive local exchange carriers (CLECs). Having witnessed an increasing number of bankruptcy filings in recent months of facilities-based CLECs and Internet service providers (ISPs), we intend to hold true to our number one rule: do not become a captive of your own network. Not being a captive of our network allows us to maintain the necessary flexibility to adjust to business trends and new technological developments.

BENEFITS OF UNE-P

In December 2000 and January 2001, we visited several CLECs and ISPs that were almost insolvent and were seeking to be acquired. In each case, however, we found that even with a buyout at a distressed sales price, it would have been too costly to feed their network. Instead of sinking money into an over-built and underutilized network, we continue to have success in leasing the reliable infrastructure that the incumbents have constructed. We have made substantial progress this year in the rollout of the unbundled network elements platform (UNE-P) service offering to provide local telephone service to our customers. The UNE-P service offering allows us to quickly and inexpensively provision customers on our own customized platform as a facilities-based carrier, without experiencing the delays and high costs associated with building a circuit-switched network.

We believe that UNE-P continues to be the best networking strategy for a rapid profitable market entry, especially for our targeted base of small business owners. Moreover, it allows us to target multi-location and multi-state customers who want to receive discounted telephone service for many small locations but receive only one detailed invoice.

However, as attractive as UNE-P is for eLEC now, we do not necessarily believe that it will be our long-term service platform. This valuable stepping stone allows us to build a customer base without the high expenses and delays associated with installing circuit-switched equipment in the field.

VOICE OVER PACKETS

Once we have built a substantial customer base and have established geographical concentrations of customers, we can then begin migrating our local voice customers to a service platform that carries local voice over packets. Packet switching is flexible and very inexpensive when compared to circuit switched equipment. We believe packet switching is the backbone that will bring the convergence of voice, data and video networks into one network.

SUBSTANTIAL ACHIEVEMENTS

We are well on our way to being able to send local voice traffic over a packet-switched network. However, there are many additional steps we need to take in order to achieve all of our goals. I am proud to report several accomplishments that have occurred during the past year.

We have made substantial achievements with back office systems, sales, internal marketing and licensing. We believe the back office system is critical to the successful execution of a business plan. We have created internally developed software that allows us to enter, schedule, provision and track a customer's order from point of sale through the billing and collection process. These systems are web-enabled, are owned by us and have been developed by our employees. They include collection tools that allow us to view individual invoices, cash collections, notes from conversations with any customer, invoice registers, aging reports and gross margin reports.

The billing system is line level rated, so that we know the cost of each line and the revenue from each. Local billing systems are complex, and we believe a CLEC must know the gross margin generated from each line. Our newly developed gross margin reports by line provide us with a valuable verification procedure to insure that we are not being overcharged by the ILEC and that we are not forgetting to bill any lines.

HIGHLIGHTS OF SEVERAL ACCOMPLISHMENTS IN THE PAST YEAR

We are very proud of the substantial progress we have made over the past year, including the following:

- Received CLEC licensing in 28 states
- Signed interconnection agreements with the major ILEC in 48 states
- Became fully operational on the UNE-P service offering in nine states
- Developed sophisticated web-enabled back office tools for provisioning, billing and collecting
- Increased fiscal 2000 sales by more than three times fiscal 1999 sales
- Pioneered new method of delivering xDSL services to consumer:
  - Pre-configured router: a plug & play device
  - No truck rolls
  - Utilizes existing ATM clouds of incumbents
  - No costly stranded plant
  - No need to buy and install DSLAMs
  - Services remotely provisioned at our Network Operations Center
- Acquired billing platform subsidiary
- ~~Acquired internal telemarketing engine~~
- Acquired call center building for our new corporate headquarters
- Focused business on telecommunications as we divested our affiliates and discontinued our incubation of small high growth potential companies

GOALS

The current condition of the capital markets impacts our goal setting for the year. Instead of a rapid expansion of our customer base, which requires high amounts of cash expenditures for marketing, we believe that in the current capital markets environment, we should base our plans on conserving cash and reaching profitability on a monthly basis during fiscal 2001. In the event we are able to economically access the capital markets, we may alter our path to seek rapid monthly growths which would delay reaching the break-even level. However, we would only take that path if we were sure that we had sufficient liquid assets to fund rapid growth. Given the current economic environment, our goals for 2001 are:

- Maintain flexibility (in our network, billing platform, business plan – in everything)
- Increase revenue per line by upselling features and long distance to our current customer base
- Achieve a 50% penetration rate of long distance services to our new local customers
- Take advantage of universal client technology to complete web interfaced interaction with our customer, so that our customer can view his/her account on the Internet
- Obtain increased brand recognition via limited advertising and earned publicity on the consumer level
- Obtain market coverage by one or more industry analysts

SUMMARY

eLEC continues with its primary focus and vision: one pipe into the customer that fulfills all of the customer's needs. We believe a single pipe should carry from six to eight local lines, long distance, xDSL, and various application and hosting services that simplify and enhance our customer's communications needs.

Other CLECs had the vision: "build a network and they will come." This philosophy was unfounded, however, and customers failed to flock to these CLECs as expected. Unfortunately, the valuation of all CLECs has been hurt by bankruptcies in the industry or steep funding requirements of those that overbuilt their networks without first having the revenues to support the financing required to pay for such facilities.

Our strategy of building the customer base first, while leasing the circuit switched network from the incumbent carriers avoids the high cost of stranded plant and obsolete equipment. However, in our current economic climate, the capital markets are not yet fully recognizing which CLECs will prosper and which will fail. The investment community has punished many CLECs that may indeed be tomorrow's success stories.

We believe the most successful CLECs will be those that can execute their business plans. Believing any CLEC needs strong back office systems in order to execute, we have expended substantial energies and capital to create a dynamic back office system that can deliver competitively priced services to our consumers.

We believe we now have the infrastructure in our back office systems and an internal marketing engine to support sustained growth, to take advantage of innovative products and to build shareholder value.

We very much appreciate the support we have received from our shareholders. We will continue to work to further the communications revolution and take advantage of the development of packet switching to build value for our company.

Very truly yours,

Paul H. Riss

Paul H. Riss
Chief Executive Officer
February 28, 2001

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SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)
[X] QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934.

For the quarterly period ended February 28, 2001.

OR

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934.

For the transition period from --------------- to --------------.

Commission file number 0-4465

eLEC Communications Corp.

(Exact Name of Registrant as Specified in Its Charter)

New York	13-2511270
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)
543 Main Street New Rochelle, New York	10801
(Address of Principal Executive Offices)	(Zip Code)

Registrant's Telephone Number, Including Area Code 914-632-8005

509 Westport Avenue Norwalk, Connecticut 06851

(Former Name, Former Address and Former Fiscal Year, if Changed Since Last Report)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes X No .

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as

of the latest practicable date: 14,942,421 shares of Common Stock, par value

$.10 per share, as of April 1, 2001.

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PART 1. FINANCIAL INFORMATION

Item 1. Financial Statements

eLEC Communications Corp. and Subsidiaries
Condensed Consolidated Balance Sheets

<TABLE>
<CAPTION>

<S>	Feb. 28, 2001 (Unaudited) <C>	Nov. 30, 2000 (See note) <C>
Assets		
Current assets:		
Cash and cash equivalents	$ 248,488	$ 509,657
Accounts receivable	3,326,307	2,803,888
Investment securities	733,542	1,619,822
Inventory	392,697	529,933
Prepaid expenses and other current assets	572,041	579,107
Land and building held for sale	--	533,239
Total current assets	5,273,075	6,575,646
Property, plant and equipment, net	3,452,922	2,035,117
Other assets		
Other investments	240,000	100,000
Goodwill	3,260,535	3,421,512
Investment securities, non-current	1,468,800	2,000,000
Other	714,234	734,555
	5,683,569	6,256,067
Total assets	$ 14,409,566	$ 14,866,830
Liabilities and stockholders' equity		
Current liabilities:		
Secured short-term borrowings	$ 150,000	$ 150,000
Current maturities of long-term debt	103,060	398,709
Accounts payable	2,623,130	2,364,977
Accrued expenses	1,500,711	1,294,457
Taxes payable	425,476	311,165
Total current liabilities	4,802,377	4,519,308
Long-term debt, less current maturities	3,736,951	1,715,723
Stockholders' equity:		
Preferred stock, $.10 par value, 1,000,000 shares authorized Series B issued, 16 and 116 shares in 2001 and 2000	2	12
Common stock $.10 par value, 50,000,000 shares authorized, 14,942,421 and 14,642,421shares issued in 2001 and 2000	1,494,242	1,464,242
Capital in excess of par value	25,429,467	25,319,457
Retained earnings (deficit)	(23,218,006)	(21,744,234)
Treasury stock at cost, 11,000 shares	(27,500)	(27,500)
Accumulated other comprehensive income (loss)	2,192,033	3,619,822
Total stockholders' equity	5,870,238	8,631,799
Total liabilities and stockholders' equity	$ 14,409,566	$ 14,866,830

</TABLE>

See notes to the condensed consolidated financial statements

Note: The balance sheet at November 30, 2000 has been derived from audited financial statements at that date but does not include all the information and footnotes required by generally accepted accounting principles

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eLEC Communications Corp. and Subsidiaries
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)

<TABLE>
<CAPTION>

	For the Three Months Ended	
	Feb. 28, 2001	Feb. 29, 2000
<S>	<C>	<C>
Revenues	$ 4,730,647	$ 2,226,233
Cost of revenues	3,055,839	1,484,456
Gross profit	1,674,808	741,777
Costs and expenses:		
Selling, general and administrative	3,420,758	1,264,358
Depreciation and amortization	235,373	105,365
Equity in loss of investee	--	77,321
Total costs and expenses	3,656,131	1,447,044
Loss from operations	(1,981,323)	(705,267)
Other income (expense):		
Interest expense	(132,423)	(19,163)
Interest income	5,806	8,251
Miscellaneous income, net	634,168	67,279
	507,551	56,367
Net loss	(1,473,772)	(648,900)
Other comprehensive loss - unrealized loss on marketable securities	(794,798)	--
mprehensive loss	($ 2,268,570)	($ 648,900)
Basic and diluted loss per share	($ 0.10)	($ 0.06)
Weighted average number of common shares outstanding	14,711,421	11,739,156

</TABLE>

See notes to the condensed consolidated financial statements

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eLEC Communications Corp. and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(Unaudited)

<TABLE>
<CAPTION>

	For the Three Months Ended	
	Feb. 28, 2001	Feb. 29, 2000
<S>	<C>	<C>
Net cash used in operating activities:	($1,672,591)	($ 760,151)
Cash flows from investing activities:		
Purchase of property and equipment	(794,982)	(164,112)
Proceeds from sale of marketable securities	633,033	--
Acquisition of Telecarrier Services Inc.	--	(7,718)
Proceeds from sale of property	933,238	--
Proceeds from agreement to sell subsidiary	14,554	14,554
Net cash provided by (used in) investing activities	785,843	(157,276)
Cash flows from financing activities:		
Increase in loans payable to financial institutions	909,499	187,445
Pay-off of Canadian mortgage	(283,920)	--
Proceeds from exercise of warrants	--	929,375
Proceeds from private placement of common stock	--	1,379,500
Proceeds from exercise of stock options	--	214,250
Net cash provided by financing activities	625,579	2,710,570
Effect of exchange rate changes on cash	--	40,011
(Decrease) increase in cash and cash equivalents	(261,169)	1,833,154
Cash and cash equivalents at beginning of period	509,657	591,299
Cash and cash equivalents at the end of period	$ 248,488	$ 2,424,453
pplemental disclosures of cash flow information		
.sh paid during the period for:		
Interest	$ 132,423	$ 27,200
Income taxes	--	--

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See Part II, Item 2., Changes in Securities, for non-cash financing activities during the three-month period ending February 28, 2001

See notes to the condensed consolidated financial statements.

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eLEC COMMUNICATIONS CORP.

Notes To Condensed Consolidated Financial Statements (Unaudited)

Note 1-Basis of Presentation

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with generally accepted accounting principles for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. In the opinion of management, all adjustments (consisting of normal recurring accruals) considered necessary for a fair presentation have been included. Operating results for the three-month period ended February 28, 2001 are not necessarily indicative of the results that may be expected for the year ended November 30, 2001. For further information, refer to the consolidated financial statements and footnotes thereto included in the Company's Annual Report on Form 10-K for the year ended November 30, 2000.

Note 2-Principal Financing Arrangements

On October 23, 2000, we converted our existing receivable sales agreement between RFC Capital Corporation ("RFC") and our wholly-owned subsidiary, Essex Communications, Inc. ("Essex"), to a loan and security agreement with RFC. The new loan agreement initially provides for a loan facility of up to $5,000,000 based upon a borrowing eligibility formula contained in the agreement. Loans under the loan agreement bear interest at a rate per annum equal to the prime rate plus 4.5% (13% at February 28, 2001), and require an annual fee of $75,000. The loan agreement contains various financial and operating covenants on the part of Essex, including restrictions on borrowings, payment of dividends, asset dispositions and capital expenditures. Essex may increase the maximum loan amount available under the loan agreement if RFC, in its sole discretion, agrees in writing to such increase, in minimum increments of $1,000,000 to a maximum loan amount of up to $10,000,000, subject to the formula restrictions, by paying additional fees. All amounts payable under the loan agreement are secured by substantially all of the assets of Essex. eLEC Communications Corp. ("eLEC"), the parent company of Essex, has guaranteed the repayment of all borrowings under the loan agreement, and has pledged as collateral 1,000,000 shares of common stock of Talk America Holdings, Inc. ("Talk"). The loan agreement has a termination date of the earlier of (a) October 23, 2003; (b) the occurrence of a termination event (as defined); (c) the occurrence of an event of seller default (as defined); or (d) 90 days following payment by Essex of a termination fee (as defined). In addition, upon execution of the loan agreement, we granted RFC warrants to purchase 200,000 shares of our common stock. The fair market value of the warrants has been accounted for as an additional interest expense over the term of the agreement. At February 28, 2001, approximately $2,770,000 was outstanding under the agreement.

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Note 3-Investment Securities

Details as to investment securities at February 28, 2001 are as follows:

	Cost	Fair Value	Unrealized Holding Gain
Equity securities	$10,308	$2,202,341	$2,192,033

Our investment securities consisted of 1,499,415 common shares of Talk valued at $1.4688 per share. 187,691 of such shares were placed in escrow until August 2001. 1,000,000 of such shares were held in escrow by RFC to secure long-term debt, and are classified as a non-current asset. In addition, we hold a non-marketable warrant to purchase 285,714 Talk shares at $2.10 per share, expiring in 2005. The Talk shares have been subject to market fluctuations.

During the quarter ended February 28, 2001, we sold 316,496 shares of Talk, realizing a gain of $617,422, which is included under the caption Miscellaneous income, net on the Condensed Consolidated Statements of Operations and Comprehensive Loss.

Note 4-Operating Segment Information

We are organized into two operating segments, a full-service telecommunications segment and a specialty retail segment. A discussion of segment results is presented in "Item 2. Management's Analysis and Discussion of Financial Condition and Results of Operations."

Segment information is summarized as follows:

	For the Three Months Ended Feb. 28, 2001	Feb. 29, 2000
Telecommunications		
Revenues	$ 4,213,544	$ 1,750,843
Net loss	($ 1,509,783)	($ 684,939)
Specialty retail		
Revenues	$ 517,103	$ 475,390
Net income	$ 36,011	$ 36,039
Total		
Revenue	$ 4,730,647	$ 2,226,233
Net loss	($1,473,772)	($ 648,900)

Note 6- Major Customer

During the three months ended February 28, 2001, we had telecommunications revenue from one customer that accounted for 22% of telecommunications revenue.

Note 7 - Income Taxes

At November 30, 2000, we had net operating loss carryforwards for Federal income tax purposes of approximately $15,000,000 expiring in the years 2001 through 2019. There is an annual limitation of approximately $187,000 on the utilization of approximately $2,000,000 of such net operating loss carryforwards under the provisions of Internal Revenue Code Section 382.

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ɟ of February 28, 2001, we had an unrealized gain on our ownership of Talk of approximately $2,192,000. Upon the sale of the Talk stock, the net operating loss will be reduced to the extent of any realized gain on the sale. Accordingly, deferred taxes have not been provided on the unrealized gain.

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Item 2. Management's Analysis and Discussion of Financial Condition and Results of Operations

The statements contained in this Report that are not historical facts are "forward-looking statements" which can be identified by the use of forward-looking terminology, such as "estimates," "projects," "plans," "believes," "expects," "anticipates," "intends," or the negative thereof or other variations thereon, or by discussions of strategy that involve risks and uncertainties. Management wishes to caution the reader of the forward-looking statements, that such statements, which are contained in this Report, reflect our current beliefs with respect to future events and involve known and unknown risks, uncertainties and other factors, including, but not limited to, economic, competitive, regulatory, technological, key employee, and general business factors affecting the Company's operations, markets, growth, services, products, licenses and other factors discussed in the Company's other filings with the Securities and Exchange Commission, and that these statements are only estimates or predictions. No assurances can be given regarding the achievement of future results, as actual results may differ materially as a result of risks facing the Company, and actual events may differ from the assumptions underlying the statements that have been made regarding anticipated events. Factors that may cause actual results, performance or achievements of the Company, or industry results, to differ materially from those contemplated by such forward-looking statements include, without limitation: (1) the availability of additional funds to successfully pursue the Company's business plan; (2) the Company's ability to maintain, attract and integrate internal management, technical information and management information systems; (3) the time and expense to construct the Company's planned network operations center and digital subscriber line network; (4) the cooperation of incumbent carriers in implementing the unbundled network elements platform required by the Federal Communications Commission; (5) the Company's ability to market its services to current and new customers and generate customer demand for its product and services in the geographical areas in which the Company can operate; (6) the Company's success in gaining regulatory approval to access new markets; (7) the Company's ability to negotiate and maintain suitable interconnection agreements with the incumbent carriers; (8) the availability and maintenance of suitable vendor relationships, in a timely manner, at reasonable cost; (9) the impact of changes in telecommunication laws and regulations; (10) the intensity of competition; and (10) general economic conditions. All written and oral forward looking statements made in connection with this Report that are attributable to the Company or persons acting on its behalf are expressly qualified in their entirety by these cautionary statements. Given the uncertainties that surround such statements, prospective investors are cautioned not to place undue reliance on such forward-looking statements.

Overview

eLEC is a full-service telecommunications company that focuses on developing integrated telephone service in the emerging competitive local exchange carrier ("CLEC") industry. We offer an integrated set of telecommunications products and services, including local exchange, local access, domestic and international long distance telephone, calling cards, paging, Internet access, dedicated access, Web site design, Web site hosting, Internet-based yellow-pages directory listings and other enhanced and value-added telecommunications services tailored to meet the needs of our customers and the growing marketplace demand from small- and medium-sized businesses for reliability and speed.

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.ne nature of our telecommunications business is rapidly evolving and has a limited operating history. It has rapidly grown and is now substantially larger in revenues than a specialty retail business we also own, which sells products over the Internet and in three retail stores. As a result, we believe period-to-period comparisons of our revenues and operating results, including our network operations and other operating expenses as a percentage of total revenue, are not meaningful and should not be relied upon as indicators of future performance. We also believe our historical growth rates are not indicative of future growth rates.

We primarily utilize the Unbundled Network Elements Platform ("UNE-P") to provide local telephone service to our customers. The UNE-P service offering allows us to lease from the incumbent local exchange carriers ("ILECs"), on an as-needed basis, multiple unbundled network elements and combine them into our own full service platform. We lease a combination of network elements, including the local loop, a network interface device, where the local loop terminates at the customer's premises, a switch port that connects the local loop to the ILEC's switch, the switching functionality of the ILEC's switch, and the transport of telephone calls between ILEC switches for local calls, or to a long distance telephone company's point-of-presence for a long distance call. We have chosen this platform to grow our customer base because it allows us to rapidly enter new markets with minimal capital expenditures. For example, we can build a customer base without deploying either a local switch or last-mile infrastructure. Instead of buying and maintaining our own equipment in the field, we utilize the reliable equipment owned by the ILECs and focus our resources on building a customer base.

We have applied for certification in 48 states to operate as a facilities-based CLEC so that we can utilize the UNE-P service offering in the entire continental United States. We are also building a network operations center ("NOC") in Norwalk, Connecticut to provide us with surveillance and deployment capabilities for high-speed Internet access via Digital Subscriber Lines ("DSL"). We are currently provisioning DSL on a limited basis and we use the infrastructure of incumbent carriers to carry traffic on our own packet-switched data network. We initially plan to offer DSL services to our existing voice customer base, so that we can eventually use packet-switched technology to route local and long distance voice traffic over the Internet. We are currently testing local voice traffic solutions over a packet-switched network through our data switch that is located in Norwalk.

Building and expanding our business has required and will continue to require us to make significant expenditures in excess of the amounts of cash that our business is generating. As part of our "smart build" network strategy, we defer the purchase of equipment in the field and focus first on building our customer base. We believe our strategy of leasing the circuit-switched networks and building our own packet-switched network will help our operations to generate positive cash flow much sooner than the strategy used by other CLECs of building a circuit-switched network before a customer base has been established.

We have experienced operating losses and generated negative cash flow since we began operating as a CLEC and we expect to continue to generate negative cash flow for a period of time while we continue to expand our network and develop product offerings and our customer base. We cannot assure you that our revenue or customer base will increase or that we will be able to achieve or sustain positive cash flow.

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Three Months Ended February 28, 2001 vs. Three Months Ended February 29, 2000

Continuing operations

Our net revenues for the three-month period ending February 28, 2001 increased by approximately $2,505,000, or approximately 113%, to approximately $4,731,000 as compared to approximately $2,226,000 reported for the three-month period ending February 29, 2000.

Net revenues of our telecommunications division increased by approximately $2,463,000, or approximately 141%, to approximately $4,214,000 for the three-month period ending February 28, 2001 from approximately $1,751,000 reported in the three-month period ending February 29, 2000. The increase was attributable to the continued rapid growth in the number of installed access lines that we provisioned from approximately 11,000 installed access lines as of February 29, 2000 to approximately 40,000 installed access lines as of February 28, 2001.

Net revenues of our specialty retail sales division, consisting of the operations of Airline Ventures, Inc. ("AVI"), increased for the three-month period ending February 28, 2001 by approximately $42,000, or approximately 9%, to approximately $517,000 from approximately $475,000 reported in the three-month period ending February 2, 2000. AVI operates three retail stores in Texas for professional airline flight crew members and sells pilot uniforms, study guides and travel products. Its products are sold on the E-commerce site www.avishop.com.

Our gross profit for the three-month period ending February 28, 2001 increased by approximately $933,000 to approximately $1,675,000 from approximately $742,000 reported in the three-month period ending February 29, 2000, and the gross profit percentage increased to 35.4% from 33.3% reported in the prior fiscal period. For the three-month period ending February 28, 2001, the gross profit percentage of our telecommunications division increased to approximately 34.8% from 30.7% reported in the prior fiscal period. The increase in gross profit percentage is primarily attributable to our ability to reduce the costs we pay to the incumbent carriers for our service platform. We anticipate that we will be able to maintain a gross margin of approximately 35% or higher, as we expand into expand into new geographical territories. However, our costs of providing services vary in each state and our blended gross margins may be impacted by our concentration of customers in each state in which we operate. r specialty retail division recorded a gross profit percentage of proximately 40.7% for the three-month period ending February 28, 2001 as compared to approximately 42.9% reported in the prior fiscal period. We expect the gross margin of our specialty retail segment to continue at its current level of over 40%.

Selling, general and administrative expenses increased by approximately $2,157,000, or approximately 171%, to approximately $3,421,000 for the three-month period ending February 28, 2001 from approximately $1,264,000 reported in prior fiscal period. A major portion of this increase was attributable to the costs of our expanding marketing efforts and to the labor and facility expenses incurred by our telecommunications division. This increase in expense is directly related to the significant increase in telecommunications revenues in the three-month period ending February 28, 2001 as compared to the prior fiscal period in 2000.

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At February 28, 2001, we had no ownership interest in RiderPoint, Inc. ("RiderPoint") as compared to our ownership interest of approximately 27% at February 29, 2000. As our investment in RiderPoint was accounted for under the equity method of accounting, we were required to include a portion of RiderPoint's operating net loss in our results of operations. For the three-month period ending February 29, 2000, we recorded a loss of approximately $77,000 relating to our investment in RiderPoint.

Interest expense for the three-month period ending February 28, 2001 increased by approximately $113,000 from the amount reported in the three-month period ending February 29, 2000 primarily due to increased average borrowings.

Miscellaneous income for the three-month period ending February 28, 2001 of $634,000 resulted primarily from the sale of Talk shares.

Liquidity and Capital Resources

At February 28, 2001, we had cash and cash equivalents available of approximately $248,000, and working capital of approximately $471,000, a decrease of approximately $2,176,000 and $1,605,000, respectively, from amounts reported in the prior fiscal period. During February 2000, we received net proceeds of approximately $2,000,000 from the exercise of warrants and from a private placement of our common stock. At February 28, 2001, we owned 1,499,415 shares of Talk, at a market value of $2,192,033. However, 1,000,000 of the shares of Talk were classified as a non-current asset because they are held in escrow by a lender in conjunction with a long-term debt facility.

Net cash used in operating activities aggregated approximately $1,673,000 and $760,000 in the three-month periods ending February 28, 2001 and February 29, 2000, respectively. The principal use of cash in fiscal 2001 and 2000 was approximately $1,474,000 and $649,000, respectively, relating to the losses for the periods.

Net cash provided by (used in) investing activities aggregated approximately $786,000 and ($157,000) in the three-month periods ending February 28, 2001 and February 29, 2000, respectively. The sources of cash provided by investing activities in fiscal 2001 were the proceeds from the sale of marketable securities of approximately $633,000, the proceeds from the sale of property of approximately $933,000 and the proceeds from the 1992 sale of a subsidiary of approximately $15,000. This was partially offset by the purchase of property and equipment of approximately $795,000. Net cash used in fiscal 2000 was for the purchase of fixed assets and the acquisition of Telecarrier, amounting to approximately $164,000 and $8,000, respectively. The source of cash provided from investing activities in the first fiscal quarter of 2000 was the proceeds of approximately $15,000 from the 1992 sale of a subsidiary.

Net cash provided by financing activities aggregated approximately $626,000 and $2,711,000 in the three-month periods ending February 28, 2001 and February 29, 2000, respectively. The source of net cash provided by financing activities resulted primarily from the proceeds of borrowings from financial institutions of approximately $909,000, offset by the pay-off of our Canadian mortgage of approximately $284,000. In fiscal 2000, the source of net cash provided by

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nancing activities resulted from the proceeds of a private equity placement of approximately $1,380,000, the exercise of warrants of approximately $929,000, the exercise of stock options of approximately $214,000 and borrowings from financial institutions of approximately $187,000.

On October 23, 2000, we converted our existing receivable sales agreement between RFC and our wholly-owned subsidiary, Essex, to a loan and security agreement with RFC. The new loan agreement initially provides for a loan facility of up to $5,000,000 based upon a borrowing eligibility formula contained in the agreement. Loans under the loan agreement bear interest at a rate per annum equal to the prime rate plus 4.5% (13% at February 28, 2001), and require an annual fee of $75,000. The loan agreement contains various financial and operating covenants on the part of Essex, including restrictions on borrowings, payment of dividends, asset dispositions and capital expenditures. Essex may increase the maximum loan amount available under the loan agreement if RFC, in its sole discretion, agrees in writing to such increase, in minimum increments of $1,000,000 to a maximum loan amount of up to $10,000,000, subject to the formula restrictions, by paying additional fees. All amounts payable under the loan agreement are secured by substantially all of the assets of Essex. eLEC, the parent company of Essex, has guaranteed the repayment of all borrowings under the loan agreement, and has pledged as collateral 1,000,000 shares of common stock of Talk. The loan agreement has a termination date of the earlier of (a) October 23, 2003; (b) the occurrence of a termination event (as defined); (c) the occurrence of an event of seller default (as defined); or (d) 90 days following payment by Essex of a termination fee (as defined). In addition, upon execution of the loan agreement, we granted RFC warrants to purchase 200,000 shares of our common stock. The fair market value of the warrants has been accounted for as an additional interest expense over the term of the agreement. At February 28, 2001, approximately $2,770,000 was outstanding under the agreement.

For the three-month period ending February 28, 2001, our capital expenditures amounted to approximately $1,895,000, which included the purchase of a 40,000 square foot building in New Rochelle, New York for $1,500,000. The seller financed $1,100,000 of the purchase with a five-year mortgage loan, which bears interest at a rate of 10% per annum for the first year and 11% per annum thereafter. We expect to make additional capital expenditures related to the acquisition of this building so that it can serve as an in-bound and out-bound call center, our second network operations center and our corporate headquarters. We anticipate that we will need to spend an additional $200,000 in fiscal 2001 for equipment, furniture and fixtures. Equipment purchases are anticipated to be financed through equipment leases or with working capital.

At April 10, 2001, we beneficially owned approximately 1.8 million shares of Talk (NASDAQ:TALK). Of such shares, we can sell approximately 300,000 shares without permission from RFC. We require RFC's consent to sell one million of such shares. Approximately 200,000 additional shares are held in escrow and we have the right to purchase approximately 300,000 additional shares if we exercise a warrant. The warrant exercise price is $2.10 per share and, at April 10, 2001, was not in-the-money, as the closing price of Talk common stock was $2.01 per share at such date. At April 10, 2001, we also owned 1.4 million shares of CyberOpticsLabs Inc. (OTCBB:CYOL). These shares are "restricted securities" and will not be eligible for sale in the public markets until February 2002. In addition to the securities that we own, we have a loan facility with RFC that allows us to borrow based upon a multiple of our cash collections. We believe this facility alone will not be sufficient to provide us with the growth capital we need to achieve the growth rates that our back office

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stems can support. As a result, the price that we receive from selling our shares of Talk common stock will impact our growth rate in fiscal 2001.

Management believes that the working capital and cash flow from operations of our retail division will be sufficient to meet the cash and capital requirements of our retail division for the next 12 months. Our plan for the growth of our telecommunications division includes an aggressive strategy to obtain as many new local access lines as our cash resources allow. We will need to expend cash and incur additional losses before we are able to grow our telecommunications business to a profitable level. We believe our cash and investment securities at February 28, 2001, in addition to our loan facility with RFC, will provide us with sufficient liquidity to grow our business and carry out many of our expansion plans. However, the market relating to such securities could vary widely during the year, and we may ultimately monetize some or all of such securities at prices that will not generate sufficient cash to enable us to carry out our fiscal 2001 operating plans. We also believe that we could receive additional funding from a private placement of our common stock. However, there can be no assurances that we will be able to obtain such funding when needed, or that such funding, if available, will be obtainable on terms acceptable to us. Moreover, we have been notified by NASDAQ that in accordance with Marketplace Rule 4310(c)(8)(B), we have until June 18, 2001 to regain compliance with Rule 4310(c)(4), which requires that our common stock maintain a minimum bid price of $1.00. If we are unable to demonstrate compliance with this rule on or before June 18, 2001, we will receive written notification that our securities will be delisted. Although we are allowed to appeal such delisting notice, such notice may further impact our ability to raise capital. The inability to carry out our fiscal 2001 operating plans may result in the continuance of unprofitable operations, which would adversely affect our financial condition and results of operations.

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eLEC COMMUNICATIONS CORP.
PART II-OTHER INFORMATION

Item 2. Changes in Securities

On February 2, 2001, we issued an aggregate of 200,000 shares of our common stock in conjunction with the purchase of certain investments. Such transaction was effected pursuant to Sections 4(2) of the Securities Act of 1933, as amended.

On February 8, 2001, a holder of 100 shares of our Series A Preferred Stock, par value $.10, converted such shares of preferred stock into 100,000 shares of our common stock. Such transaction was effected pursuant to Sections 3(9) of the Securities Act of 1933, as amended.

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Item 6. Exhibits and Reports on Form 8-K

(a) Exhibits.
None

(b) Reports on Form 8-K
None.

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Signatures

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

eLEC Communications Corp.

April 16, 2001

Date

By: /s/ Paul H. Riss

Paul H. Riss
Chief Executive Officer
(Principal Financial and
Accounting Officer)

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</SUBMISSION>

FOR IMMEDIATE RELEASE

Contact: TELECO Inc.
Bill Rogers
864-297-4401
wmr@teleco.com

Access One Communications Acquires OmniCall, Combined Companies, with over 50,000 Local Access Lines in Southeast, Intend Nationwide Expansion.

Ft. Lauderdale, FL and Greenville, SC ... October 22, 1999 --- Access One Communications, an affiliate of Sirco International Corp. (NASDAQ:ELEC), and OmniCall, Inc. today announced that Access One has signed a definitive agreement, subject to customary regulatory approval, to acquire all the outstanding shares of OmniCall. The combination will result in a Competitive Local Exchange Carrier ("CLEC") with approximately 55,000 access lines in the BellSouth territory operating on Access One's UNE-P network.

"This acquisition is an important milestone for Access One," said Ken Baritz, Access's Chairman and CEO. "Not only does it put us over 50,000 lines, but this acquisition represents the third opportunity Access One has had to take a large reseller base that is losing money and convert it to our UNE platform so that it generates positive EBITDA. We have already converted our own reseller base and a reseller base we purchased from e.spire (NASDAQ:ESPI). In both instances the lines were losing a substantial amount of money until we successfully converted them to our own network where they now generate a positive contribution margin to the company. We expect to have OmniCall's base generating positive EBITDA within 90 days."

Baritz continued, "Our combined companies create a powerful CLEC that operates throughout the southeast (Florida, Georgia, Tennessee, Kentucky, South Carolina, North Carolina, Louisiana, Alabama and Mississippi) with annual revenue in excess of $40 million. In addition, we are pleased to have a seasoned telecom executive and investor, William M. Rogers, join our board of Directors. Mr. Rogers has extensive telecommunications experience, which includes the co-founding of: OmniCall, Inc., Teleco, Inc. and Corporate Telemanagement Group, Inc, ("CTG"), a $100 million facilities-based long distance carrier."

Mr. Rogers stated, "OmniCall is very excited about moving its business onto Access One's network. In addition to our core business in the southeast, OmniCall is licensed in 12 states, representing five additional Bell Operating territories, which will enable Access One to rapidly expand beyond its current southeastern base. Access One now has a nationwide footprint and can expand its presence rapidly, using the same customer-first approach that has helped them grow from 2,500 lines to more than 50,000 lines during the last two years. We bring to Access One an association of approximately 160 established dealers (Teleco, Inc.) as a nationwide marketing and distribution channel. This unique marketing advantage represents potential annual recurring revenue in excess of $450 million in just the nine-state BellSouth territory. We believe Access One's strategy works and that they can now leverage our existing licenses and our relationship with Teleco to create the same growth they enjoyed in the BellSouth territory throughout all of the Bell regions." The OmniCall offices will remain at its Greenville, SC location.

Paul Riss, eLEC's CEO, stated, "eLEC indeed welcomes this merger and the addition of Bill Rogers to the Access One Board of Directors. In 1989, Mr. Rogers cofounded CTG, a long distance carrier that was purchased in 1995 for $140 million by LCI. With the subsequent sale of LCI to Qwest (NASDAQ:QWST), Mr. Rogers became one of the largest individual shareholders in Qwest. His telecom expertise and relationships will be highly valued by us."

Mr. Baritz continued, "We are very pleased with OmniCall's customer base, which compared to other CLECs, contains superior revenues per line, lines per customer, and length of customer contracts, while maintaining minimal bad debt and churn levels. Many of these customers were introduced by Teleco, which has twice been named to the Inc. 500 list and was also named four consecutive times as the largest independent interconnect organization in the country by Teleconnect Magazine."

Larry Long, current President of OmniCall will join Access One in a senior management position focusing on maximizing the revenue of the combined companies. Mr. Long previously was the C.O.O. at MFS Intelenet, the largest revenue contributor to MFS prior to its purchase by Worldcom in 1996. Mr. Long's primary role at MFS was driving the Centex and Realcom acquisitions that contributed in excess of $250 million in revenue at MFS.

Access One Communications is a Florida-based competitive local exchange carrier, which provides an integrated suite of telecommunications and Internet services to small and medium-sized business in the Southeastern United States. Access One is operating under a virtual local services network platform through the first region-wide UNE-P Agreement with a Regional Bell Operating Company.

eLEC Communication Corp. (formerly Sirco International Corp., name change pending) is a publicly traded local telecommunications company that is taking advantage of the convergence of the current and future competitive technological and regulatory developments in the Internet and telecommunications markets through the integration of its wholly-owned subsidiaries, Essex Communications and WebQuill Internet Services. The company provides an integrated suite of communications services to small and medium-sized business customers, including local, long distance, dial-up access, dedicated access, and Web site design and hosting.

****

This release contains forward-looking statements that involve risks and uncertainties. The company's actual results may differ materially from the results discussed in the forward-looking statements. Factors that might cause such a difference include, among others, availability of management; availability, terms, and deployment of capital; the Company's ability to successfully market its services to current and new customers, generate customer demand for its product and services in the geographical areas in which the Company can operate, access new markets, negotiate and maintain suitable reseller and interconnection agreements with the incumbent local exchange carriers, and negotiate and maintain suitable vendor relationships, all in a timely manner, at reasonable cost and on satisfactory terms and conditions, as well as regulatory, legislative and judicial developments that could cause actual results to vary in such forward-looking statements.

LOCAL CO'   'TION REPORT
Ma... ,1, 2001

DATE		AL	FL	GA	KY	LA	MS	NC	SC	TN	REGION
3/31/01 (unless indicated)	**CLEC Certifications (Wireline)**										
	PSC Approved	163	447	214	154	110	101	162	175	187	1,713
	Pending	22	13	64	312	95	0	44	0	30	580
	Operational CLECs	74	151	120	82	81	65	75	68	97	286
	Resale Only	43	92	61	49	40	38	30	41	55	178
	Facility-based Only	17	39	37	20	24	15	31	15	29	66
	Both	14	20	22	13	17	12	14	12	13	42
	Planned Switches and Points of Interface	13	42	28	11	11	12	18	10	15	160
	Total Operational Switches & POIs	36	118	60	23	57	24	67	28	40	453
	Operational Switches	24	59	35	13	34	12	33	15	25	250
	Operational Points of Interface (POIs)	12	59	25	10	23	12	34	13	15	203
	Total Local Interconnection Trunks**	51,345	355,886	246,395	39,036	63,703	17,256	127,053	49,040	127,285	1,076,999
	CLEC-to-BST Trunks	19,037	132,850	105,948	8,820	26,023	6,745	53,690	24,198	43,909	421,220
	BST-to-CLEC Trunks	32,308	223,036	140,447	30,216	37,680	10,511	73,363	24,842	83,376	655,779
	Access and Transport**	465	3,336	2,375	228	647	224	1,437	731	1,464	10,907
	Directory Assistance	113	1,031	569	65	145	40	392	141	433	2,929
	Operator Services incl. Verification	156	1,197	504	61	238	62	439	240	509	3,406
	E911	178	1,078	1,272	96	246	102	582	340	506	4,400
	Intercept	18	30	30	6	18	20	24	10	16	172
	Collocated Interconnectors	28	50	50	21	31	21	39	25	35	85
	Collocation Arrangement (activity)	477	1,531	789	163	427	109	685	328	624	5,133
	Physical	460	1,336	657	146	405	102	618	308	566	4,598
	Virtual	17	195	132	17	22	7	67	20	58	535
	Physical-in progress	4	138	56	38	111	69	140	13	95	664
	Virtual-in progress	0	20	9	2	4	2	14	0	0	51
	Wire Centers with Collocation	69	135	89	41	60	36	73	45	76	624
	Total Ported Numbers (estimated)**	67,407	309,088	330,803	29,983	97,559	22,100	154,973	61,963	202,416	1,276,292
	Ported Res. Lines	7,243	49,578	70,528	113	288	35	3,891	2,654	264	134,594
	Ported Bus. And Govt. Lines	60,164	259,510	260,275	29,870	97,271	22,065	151,082	59,309	202,152	1,141,698
	Total Unbundled Loops & Sub-Loops (Non Data/Combo)	15,831	106,529	76,745	4,431	11,435	4,898	37,444	12,719	47,495	317,527
	Total Unbundled Ports*	4	30	333	2	9	4	2	0	4	388
	Total Unbundled Loop/Port Combos*	32,238	71,588	102,310	14,635	11,239	8,566	24,210	16,241	22,230	303,257
	Res. Unbundled Loop/Port Combos	8,885	15,596	47,068	3,363	4,608	1,975	15,156	2,054	7,636	106,341
	Bus. Unbundled Loop/Port Combos	23,353	55,992	55,242	11,272	6,631	6,591	9,054	14,187	14,594	196,916
	Total UNE-p Coin Combos	3	116	17	6	1	0	0	2	1	146
	Total EELs	25	1,196	1,404	23	54	0	85	10	12	2,809
	Total Unbundled Data Loops (ISDN & xDSL)*	1,704	10,328	10,325	899	2,649	988	5,254	942	3,376	36,465
	Total Unbundled I/O Transport DS1 equivalents	885	3,368	1,035	494	1,004	362	1,461	491	1,367	10,467
	Total Resold Lines*	53,006	194,941	127,234	35,506	102,525	67,068	67,874	58,528	52,813	759,495
	Resold Bus. Lines	12,712	80,719	28,032	11,494	28,599	13,413	28,297	13,476	12,911	229,653
	Resold Res. Lines	37,711	100,799	89,638	22,666	70,075	52,090	36,507	42,768	38,573	490,827
	Resold ISDN Lines	174	620	694	169	445	130	350	261	303	3,146
	Resold PBX Trunks	1,196	9,223	3,911	963	1,619	802	1,543	1,405	703	21,365
	Resold Multiserv Lines	205	2,323	2,280	96	666	161	353	152	47	6,283
	Resold Private Lines/Data CKTs	1,008	1,257	2,679	118	1,121	472	824	466	276	8,221
	Total Facility-Based Lines (estimated)	134,244	680,373	638,333	62,375	126,840	33,433	236,940	92,261	280,821	2,285,620
	Facility-based Business	122,182	547,940	501,990	58,872	121,988	31,268	196,201	89,785	269,555	1,939,781
	Facility-based Residential	12,062	132,433	136,343	3,503	4,852	2,165	40,739	2,476	11,266	345,839
	Total CLEC-Provided Access Lines	187,250	875,314	765,567	97,881	229,365	100,501	304,814	150,789	333,634	3,045,115

LEGEND: LOCAL COMPETITION SUMMARY REPORT

CLEC Certifications (PSC Approved, Pending): The CLEC Certifications count and category breakdowns are rolled up from the Weekly Harmonize Report as well as input from the State Regulatory staffs. Note: AL, MS, NC, TN show March data. All other states are as of February 1, 1999.

Operational CLECs (Resale Only, Both): Facility-based CLECs ("Facility-based Only" and "Both") have **currently in-service** interconnection, UNEs, collocation arrangements, switches and/or number portability services associated with the facility-based provisioning of services. Resale CLECs ("Resale Only" and "Both") reflect those CLECs with 10 or more wholesale access lines in service during the reporting period.

Operational Switches: Total CLEC switches currently deployed. These only include switches that have BST interconnection trunks assigned to them. In many cases a CLEC has a ring with several switches but only one point of interconnection with BellSouth.

Operational Points of Interface: May include remote switching terminals or network terminating equipment.

Planned Switches: Non-operational CLEC switches, which are announced or are currently being installed.

Total Local Interconnection Trunks (CLEC-to-BST Trks, BST-to-CLEC Trks): Reflects current in-service DS-0 equivalents (Currently includes only BST-provisioned trunks).

Access and Transport (Directory Assistance, Operator Services, E911, Intercept) Reflects current in-service DS-0 equivalents for unbundled transport providing CLEC access to BST network services and databases.

Collocated Interconnectors: Number of companies who have requested and/or completed collocation arrangements with BST within the state. Summarized from Interconnection Services' Collocation Reports. CLECs that have gone bankrupt, are not paying their bills and do not have active circuits are not included.

Collocation Arrangements: (Physical and Virtual) Total number of collocation arrangements, including virtual and physical collocation, in service or pending. From Interconnection Services' Collocation Reports.

Wire Centers with Collocation: Number of Wire Centers (Central Offices) with one or more currently active or pending collocation arrangements. Summarized from Interconnection Services' Collocation Reports.

Total Ported Numbers (Ported Res.Lines, Ported Bus. Lines): BST assigned numbers "ported out stand alone" and "ported out w/loop" to CLEC networks. Includes both Interim and Long-term Number Portability. Ported Bus. Lines include Government and Business numbers.

Total Unbundled Loops: Total number of Unbundled loops and sub-loops in-service including 2-wire, 4-wire, ISDN, etc.

Total Unbundled Ports: Total number of Unbundled ports in-service.

Total Unbundled Port/Loop Combos: Total number of Unbundled port/loop residential and business combos in-service.

Total Unbundled Port/Loop Combos: Total number of Unbundled t/loop residential and business combos in-service.

Total EELs: Total number of DS1 I/O transport/loop combos in-service. The DS1 combo local loop count determines this number.

Total Unbundled Interoffice Transport Facilities: Total number of DS0, DS1 and DS3 Unbundled transport facilities reported as DS1 equivalents. This number does not include EELs.

Total Facility Based Lines: Cumulative Total estimated number of CLEC facility based lines (see explanation below)

CLEC Facilities-Based Access Line Estimation Methodology

In order to give an accurate assessment of the level of competition in the wireline telecommunications markets that BellSouth operates in, Interconnection Services issues the monthly Local Competition Report. This report shows various categories of information reflecting the current level of competitive activity of CLECs for each of the nine states the company provides local access service. The number of total access lines is estimated for each state and this total is composed of CLECs' resold BellSouth lines and their own facilities-based lines. The facilities-based access line estimate is the summation of the business and residence line estimates. Both of these facilities-based estimates are calculated using data from BellSouth billing systems records and therefore are conservative in nature since they usually do not capture customers of CLECs who obtain their access lines directly from a CLEC utilizing only the CLECs facilities.

Facilities-based Business Access Lines

The facilities-based business access lines estimate uses four sources of information for each CLEC in each state: unbundled network loops (UNEs), interconnection trunks (both CLEC to BST and BST to CLEC), unbundled network business combinations (UNE business combos), and E911 listings. The greatest of these four sources of information is used as the estimate with an adjustment to three of the four sources to create a business and residence line split. UNEs, interconnection trunks and E911 listings are a combined business and residence number and therefore must be adjusted to reflect the split between business and residence lines. This split is calculated by taking the greater of residence directory listings and residence ported numbers (both interim and permanent) and subtracting that from the number UNEs, interconnection trunks or E911 listings. The end result of this split adjustment produces both the business and the residence CLEC facilities-based estimates. There is no need to make this adjustment for UNE business combos since they are by definition only business lines. It should be noted that one interconnection trunk is counted as one access line. This estimate is d

Facilities-based Residence Lines

The facilities-based residence access lines estimate uses two sources of information for each CLEC in each state: unbundled network residence combinations (UNE residence combos) and the residence split portion of UNEs, interconnection trunks or E911 listings. This residence split portion is only used as the residence line estimate when there are no UNE residence combos and when the business estimate relied on the business and residence split adjustment. This estimate is done by CLEC and summed up by state for the Local Competition Report.

Local Competition Report

March 31, 2001

New Comments:

e.spire filed for bankrupcy protection (4/11/01)

Allegiance, Time Warner, ITC^Deltacom are the strongest CLECs (Merrill Lynch, Goldman Sachs)

McLeod, XO and Winstar are in decent financial position

Merrill Lynch expects 50% of all CLECs to go bankrupt
- including ART, Rhythms, Teligent, Intermedia, DSL.Net, Covad, NET2000, Convergent

Winstar filed Ch. 11 bankrupcy (4/18/01)

Convergent filed for Chapter 11 Bankrupcy (4/24/01)

Old Comments:

Vectris, Net-Tel and NorthPoint have gone out of business.(3/15/01)

We changed our methodology for estimating the facilities-based line by eliminating the used of ported residence numbers and residence directory listings. The CLEC facilities-based residence access line estimate is the greater of 911 residence listings and UNE residence combinations. The CLEC facilities-based business access line estimate is the great of 911 business listings, UNE business combinations, interconnection trunks, and UNE loops. In the case that trunks or loops are used as the business estimate, since they are a total business and residence number we subtract out the residence estimate for that CLEC.

EELs and Unbundled Interoffice Transport facilities were added under the UNE section (2/28/01).

Unbundled Interoffice Transport Facilities were added under the UNE section. These are DS0, DS1 and DS3 facilities reported as DS1 equivalents. (2/28/01)

Facility Based Estimate Methodology has been added to the LCR Legend (03/06/01)

Ported Numbers are no longer used as an estimator for Facility Based Lines. This resulted in a decline for some states. (03/05/01)

American Metrocomm went out of business and Madison River purchased the assets and customer base (03/08/01)

The Local Interconnection Trunks and Access/Transport numbers are the same as Dec. 00 because of a problem with the information download (3/8/01)

NorthPoint and Vectris have applied for Bankruptcy (02/19/01)

Last month's comment about ICG going out of business was in error. ICG was delisted from the stock exchange but they received additional funding (02/12/01)

Insight.com was added as a source of info. For the Operational CLEC numbers (02/12/01)

Operational CLEC data will be distributed by February 7th

THE OTHER PHONE COMPANY had significant line losses this month (02/05/01)

~~UNE Combos were added this month as another source of data for estimating facilities based lines (12/27/00)~~

JATO AND ICG went out of business this month (1/2/00)

UNE-p coin combos (680) will be tracked starting on 10/31/00 (12/1/00); this month's data only includes test lines

Collocation and Operational CLEC data will be available in approximately 10 days. (10/31/00)

UNE combo data will indicate res.(644) And bus. (681) Numbers starting this month. Bus. numbers will be released within 10 days (10/31/00)

LOCAL COMPETITION REPORT
Cover

The dates on the report have been changed to the last day of the month. For example, August 31 indicates data for the month of August up to and including August 31st. (9

The August 31 report reflects NewSouth's acquisition of UniversalCom

The collocation data is now reflected through the 31st of the month

CLEC Certification data was not received from FL, LA, MS, and TN so July data was used (10/5/00)

New facility based CLECs in the region: FPL Fibernet, Linedrive Communications, US Carrier Telecom (10/5/00)

CLEC Certification data was not received from FL, GA, MS, NC and SC so June data was used (7/31/00)

Lousiana July 1 Business Facility Based estimate is restated (Aug. 1, '00)

An additional data source was added for the Facility Based Line Estimates. This resulted in a higher increase for business lines compared to previous months (July '00)

MediaOne data is included with AT&T starting with July's report

TN Facility Based Estimates for Business were revised for March, April and May

The Operational CLECs numbers show a decrease due to acquisitions reflected in the calculations (May '00)

The methodology used to determine the number of unbundled ports was changed in March '00

The methodology used to determine the number of switches vs. the number of POIs was changed in March '00

Gregg Beck
BellSouth - Interconnection Services
(404) 927-8684
Date Revised: 07/24/00

eLEC

formerly

Essex Comm

affiliates of

Access One

Omnicall

CITIES WITH 100,000(+) POPULATION
1998 - US CENSUS BUREAU

	ALABAMA	FLORIDA	GEORGIA	KENTUCKY	LOUISIANA	MISSISSIPPI	NOR CARO	SO CARO	TENNESSEE
1	Birmingham	Clearwater	Atlanta	Lexington-Fayette	Baton Rouge	Jackson	Charlotte	Columbia	Chattanooga
2	Huntsville	Coral Springs	Augusta	Louisville	Lafayette		Durham		Knoxville
3	Mobile	Ft. Lauderdale	Columbus		New Orleans		Greensboro		Memphis
4	Montgomery	Hialeah	Macon		Shreveport		Raleigh		Nashville
5		Hollywood	Savannah				Winston-Salem		
6		Jacksonville							
7		Miami							
8		Orlando							
9		Pembroke Pines							
10		St. Petersburg							
11		Tallahassee							
12		Tampa							

	Large Cities	Large CLECs	Num MSAs
MISSISSIPPI	1	2	2
SO CARO	1	2	3
KENTUCKY	2	3	2
ALABAMA	4	4	4
LOUISIANA	4	7	4
TENNESSEE	4	8	3
GEORGIA	5	13	5
NOR CARO	5	9	4
FLORIDA	12	16	13

	Large Cities	*Large CLECs*
Large Cities	1	
Large CLECs	0.897038117	1

	Large CLECs	*Num MSAs*
Large CLECs	1	
Num MSAs	0.814488	1

CITIES WITH 100,000(+) POPULATION
1998 - US CENSUS BUREAU

	4	16	13	3	7	2	9	2	8
	ALABAMA	FLORIDA	GEORGIA	KENTUCKY	LOUISIANA	MISSISSIPPI	NOR CARO	SO CARO	TENNESSEE
1	Birmingham	Clearwater	Atlanta	Lexington-Fayette	Baton Rouge	Jackson	Charlotte	Columbia	Chattanooga
2	Huntsville	Coral Springs	Augusta	Louisville	Lafayette	1	Durham	1	Knoxville
3	Mobile	Ft. Lauderdale	Columbus	2	New Orleans		Greensboro		Memphis
4	Montgomery	Hialeah	Macon		Shreveport		Raleigh		Nashville
5	4	Hollywood	Savannah		4		Winston-Salem		4
6		Jacksonville	5				5		
7		Miami							
8		Orlando							
9		Pembroke Pines							
10		St. Petersburg							
11		Tallahassee							
12		Tampa							
		12							

CITIES WITH 100,ט00(+) POPULATION
1998 - US CENSUS BUREAU

	4	16	13	3	7	2	9	2	8
	ALABAMA	FLORIDA	GEORGIA	KENTUCKY	LOUISIANA	MISSISSIPPI	NOR CARO	SO CARO	TENNESSEE
1	Birmingham	Clearwater	Atlanta	Lexington-Fayette	Baton Rouge	Jackson	Charlotte	Columbia	Chattanooga
2	Huntsville	Coral Springs	Augusta	Louisville	Lafayette		Durham		Knoxville
3	Mobile	Ft. Lauderdale	Columbus		New Orleans		Greensboro	~~3~~	Memphis
4	Montgomery	Hialeah	Macon	2	Shreveport		Raleigh		Nashville
5		Hollywood	Savannah				Winston-Salem		
6	4	Jacksonville	5		4				3
7		Miami							
8		Orlando							
9		Pembroke Pines							
10		St. Petersburg							
11		Tallahassee							
12		Tampa							

Daytona
Ft Myers
Ft Pierce
Lakeland/W Haven
Melbourne
Pensacola
Sarasota
W Palm Bch
13

MS
Biloxi Gulfport Pascagoula
2

SC
Charleston
Greenville Sparta
3

NC
Fayetteville
Hickory Morganton
4

No. 39. Cities With 100,000 or More Inhabitants in 1998—Population, 1980 to 1998, and Land Area, 1990

[Population: As of April 1; except 1998, as of July 1 (98 represents 98,000). Data refer to boundaries in effect December 1994. Minus sign (-) indicates decrease]

City	Population									Land area, 1990 (square miles)
		1990					1998			
			Percent—							
	1980, total (1,000)	Total (1,000)	Black	American Indian, Eskimo, Aleut	Asian, Pacific Islander	Hispanic [1]	Total (1,000)	Rank	Percent change, 1990-98	
Abilene, TX	98	107	7.0	0.4	1.3	15.5	108	203	1.5	103.1
Akron, OH	237	223	24.5	0.3	1.2	0.7	216	74	-3.3	62.2
Albuquerque, NM	332	385	3.0	3.0	1.7	34.5	419	36	8.9	132.2
Alexandria, VA	103	111	21.9	0.3	4.2	9.7	118	173	6.4	15.3
Allentown, PA	104	105	5.0	0.2	1.3	11.7	101	215	-4.3	17.7
Amarillo, TX	149	158	6.0	0.8	1.9	14.7	171	113	8.7	87.9
Anaheim, CA	219	266	2.5	0.5	9.4	31.4	295	57	10.8	44.3
Anchorage, AK	174	226	6.4	6.4	4.8	4.1	255	65	12.7	1,697.6
Ann Arbor, MI	108	110	9.0	0.4	7.7	2.6	110	197	0.3	25.9
Arlington, TX	160	262	8.4	0.5	3.9	8.9	306	54	17.1	93.0
Arlington, VA [2]	153	171	10.5	0.3	6.8	13.5	177	108	3.7	25.9
Atlanta, GA	425	394	67.1	0.1	0.9	1.9	404	39	2.5	131.8
Augusta-Richmond County, GA [3]	(NA)	187	(NA)	(NA)	(NA)	(NA)	188	96	0.6	(NA)
Aurora, CO	159	222	11.4	0.6	3.8	6.6	251	67	12.8	132.5
Aurora, IL	81	100	11.9	0.2	1.3	23.0	125	162	25.1	33.5
Austin, TX	346	472	12.4	0.4	3.0	23.0	552	21	17.0	217.8
Bakersfield, CA	106	176	9.4	1.1	3.6	20.5	210	79	19.3	91.8
Baltimore, MD	787	736	59.2	0.3	1.1	1.0	646	16	-12.3	80.8
Baton Rouge, LA	220	220	43.9	0.1	1.7	1.6	212	77	-3.6	73.9
Beaumont, TX	118	114	41.3	0.2	1.7	4.3	110	198	-3.9	80.1
Bellevue, WA	(NA)	95	(NA)	(NA)	(NA)	(NA)	104	208	9.3	(NA)
Berkeley, CA	103	103	18.8	0.6	14.8	8.4	108	204	5.2	10.5
Birmingham, AL	284	265	63.3	0.1	0.6	(Z)	253	66	-4.7	148.5
Boise City, ID	102	127	0.6	0.6	1.6	2.7	157	122	24.3	46.1
Boston, MA	563	574	25.6	0.3	5.3	10.8	555	20	-3.3	48.4
Bridgeport, CT	143	142	26.6	0.3	2.3	26.5	137	143	-3.0	16.0
Brownsville, TX	85	107	0.2	0.1	0.3	90.1	138	141	28.8	27.9
Buffalo, NY	358	328	30.7	0.8	1.0	4.9	301	56	-8.4	40.6
Carrollton, TX	41	82	4.9	0.4	6.8	10.2	100	216	22.3	34.8
Cedar Rapids, IA	110	109	2.9	0.2	1.0	1.1	115	182	5.3	53.5
Chandler, AZ	30	90	2.6	1.2	2.4	17.3	160	121	78.4	47.6
Charlotte, NC	315	420	31.8	0.4	1.8	1.4	505	25	20.3	174.3
Chattanooga, TN	170	152	33.7	0.2	1.0	0.6	148	133	-3.0	118.4
Chesapeake, VA	114	152	27.4	0.3	1.2	1.3	200	83	31.3	340.7
Chicago, IL	3,005	2,784	39.1	0.3	3.7	19.6	2,802	3	0.7	227.2
Chula Vista, CA	84	135	4.6	0.6	8.9	37.3	161	120	18.8	29.0
Cincinnati, OH	385	364	37.9	0.2	1.1	0.7	336	51	-7.6	77.2
Clearwater, FL	85	99	9.0	0.2	1.0	2.9	101	212	2.8	24.9
Cleveland, OH	574	506	46.6	0.3	1.0	4.6	496	28	-1.9	77.0
Colorado Springs, CO	215	280	7.0	0.8	2.4	9.1	345	48	23.0	183.2
Columbia, SC	101	111	43.7	0.3	1.4	2.0	111	192	0.1	117.1
Columbus, GA [3]	169	179	38.1	0.3	1.4	3.0	182	102	2.0	216.1
Columbus, OH	565	633	22.6	0.2	2.4	1.1	670	15	5.9	190.9
Concord, CA	104	111	2.4	0.7	8.7	11.5	118	174	5.7	29.5
Coral Springs, FL	37	79	3.5	0.2	2.1	7.1	112	187	41.7	23.5
Corona, CA	38	76	2.8	0.8	7.1	30.4	113	186	48.6	28.5
Corpus Christi, TX	232	257	4.8	0.4	0.9	50.4	281	59	9.3	135.0
Costa Mesa, CA	83	96	1.3	0.5	6.6	20.0	102	211	6.2	15.6
Dallas, TX	905	1,008	29.5	0.5	2.2	20.9	1,076	9	6.8	342.4
Dayton, OH	194	182	40.4	0.2	0.6	0.7	167	115	-8.0	55.0
Denver, CO	493	468	12.8	1.2	2.4	23.0	499	27	6.7	153.3
Des Moines, IA	191	193	7.1	0.4	2.4	2.4	191	91	-1.0	75.3
Detroit, MI	1,203	1,028	75.7	0.4	0.8	2.8	970	10	-5.6	138.7
Durham, NC	101	139	45.7	0.2	2.0	1.2	154	125	10.5	69.3
Elizabeth, NJ	106	110	19.8	0.3	2.7	39.1	111	194	0.6	12.3
El Monte, CA	79	106	1.0	0.6	11.8	72.5	112	188	5.2	9.5
El Paso, TX	425	515	3.4	0.4	1.2	69.0	615	17	19.3	245.4
Erie, PA	119	109	12.0	0.2	0.5	2.4	103	209	-5.6	22.0
Escondido, CA	64	109	1.5	0.8	3.7	23.4	121	169	11.0	35.6
Eugene, OR	106	113	1.3	0.9	3.5	2.7	128	156	13.8	38.0
Evansville, IN	130	126	9.5	0.2	0.6	0.6	123	166	-2.8	40.7
Flint, MI	160	141	47.9	0.7	0.5	2.9	132	152	-6.6	33.8
Fontana, CA	37	88	8.7	0.9	4.5	36.1	110	199	25.4	35.6
Fort Collins, CO	65	87	1.0	0.5	2.4	7.1	109	200	24.5	41.2
Fort Lauderdale, FL	153	149	28.1	0.2	0.9	7.2	154	124	3.0	31.4
Fort Wayne, IN	172	196	16.7	0.3	1.0	2.7	186	98	-5.1	62.7
Fort Worth, TX	385	448	22.0	0.4	2.0	19.5	492	29	9.9	281.1
Fremont, CA	132	173	3.8	0.7	19.4	13.3	204	81	17.9	77.0
Fresno, CA	217	354	8.3	1.1	12.5	29.9	398	40	12.4	99.1
Fullerton, CA	102	114	2.2	0.5	12.2	21.3	122	167	6.8	22.1
Garden Grove, CA	123	143	1.5	0.6	20.5	23.5	151	129	5.8	17.9
Garland, TX	139	181	8.9	0.5	4.5	11.6	193	90	7.1	57.3
Gary, IN	152	117	80.6	0.2	0.2	5.7	108	201	-7.0	50.2
Glendale, AZ	97	147	3.0	0.9	2.1	15.5	193	89	31.6	52.2
Glendale, CA	139	180	1.3	0.3	14.1	21.0	185	100	2.8	30.6
Grand Prairie, TX	71	100	9.7	0.8	3.0	20.5	113	185	13.8	68.5
Grand Rapids, MI	182	189	18.5	0.8	1.1	5.0	185	99	-2.0	44.3

See footnotes at end of table.

No. 39. Cities With 100,000 or More Inhabitants in 1998—Population, 1980 to 1998, and Land Area, 1990—Continued

[See headnote, p. 39]

City	Population										Land area, 1990 (square miles)
		1990						1998			
			Percent—								
	1980, total (1,000)	Total (1,000)	Black	American Indian, Eskimo, Aleut	Asian, Pacific Islander	Hispanic [1]	Total (1,000)	Rank	Percent change, 1990-98		
Greensboro, NC	156	184	33.9	0.5	1.4	1.0	198	84	7.6		79.8
Hampton, VA	123	134	38.9	0.3	1.7	2.0	137	144	2.4		51.8
Hartford, CT	136	140	38.9	0.3	1.4	31.6	132	153	-5.9		17.3
Hayward, CA	94	115	9.8	1.0	15.5	23.9	129	155	12.4		43.5
Henderson, NV	24	65	2.7	1.0	2.0	8.1	153	126	135.1		71.5
Hialeah, FL	145	188	1.9	0.1	0.5	87.6	211	78	12.4		19.2
Hollywood, FL	121	122	8.5	0.2	1.3	11.9	130	154	6.8		27.3
Honolulu, HI [4]	365	377	1.3	0.3	70.5	4.6	396	41	5.0		85.7
Houston, TX	1,595	1,638	28.1	0.3	4.1	27.6	1,787	4	9.1		539.9
Huntington Beach, CA	171	182	0.9	0.6	8.3	11.2	195	87	7.6		26.4
Huntsville, AL	143	160	24.4	0.5	2.1	1.2	176	109	10.1		164.4
Independence, MO	112	112	1.4	0.6	1.0	2.0	117	178	4.0		78.2
Indianapolis, IN [3]	701	731	22.6	0.2	0.9	1.1	741	13	1.4		361.7
Inglewood, CA	94	110	51.9	0.4	2.5	38.5	112	189	1.8		9.2
Irvine, CA	62	110	1.8	0.2	18.1	6.3	136	147	23.7		42.3
Irving, TX	110	155	7.5	0.6	4.6	16.3	178	107	15.0		67.6
Jackson, MS	203	202	55.7	0.1	0.5	0.4	188	94	-6.8		109.0
Jacksonville, FL [3]	541	635	25.2	0.3	1.9	2.6	694	14	9.2		758.7
Jersey City, NJ	224	229	29.7	0.3	11.4	24.2	232	71	1.7		14.9
Kansas City, KS	161	152	29.3	0.7	1.2	7.1	141	139	-6.7		107.8
Kansas City, MO	448	435	29.6	0.5	1.2	3.9	442	33	1.6		311.5
Knoxville, TN	175	170	15.8	0.2	1.0	0.7	166	117	-2.5		77.2
Lafayette, LA	81	102	27.2	0.2	1.3	1.7	114	184	11.5		40.9
Lakewood, CO	114	126	1.0	0.7	1.9	9.1	137	145	8.2		40.8
Lancaster, CA	48	97	7.4	0.9	3.7	15.2	119	172	21.8		88.8
Lansing, MI	130	127	18.6	1.0	1.8	7.9	128	157	0.4		33.9
Laredo, TX	91	123	0.1	0.2	0.4	93.9	176	110	43.0		32.9
Las Vegas, NV	165	258	11.4	0.9	3.6	12.5	404	37	56.6		83.3
Lexington-Fayette, KY	204	225	13.4	0.2	1.6	1.1	242	68	7.3		284.5
Lincoln, NE	172	192	2.4	0.6	1.7	2.0	213	76	11.0		63.3
Little Rock, AR	159	176	34.0	0.3	0.9	0.8	175	111	-0.2		102.9
Livonia, MI	105	101	0.3	0.2	1.3	1.3	101	213	0.5		35.7
Long Beach, CA	361	429	13.7	0.6	13.6	23.6	431	35	0.4		50.0
Los Angeles, CA	2,969	3,486	14.0	0.5	9.8	39.9	3,598	2	3.2		469.3
Louisville, KY	299	270	29.7	0.2	0.7	0.7	255	64	-5.4		62.1
Lowell, MA	92	103	2.4	0.2	11.1	10.1	101	214	-2.3		13.8
Lubbock, TX	174	186	8.6	0.3	1.4	22.5	191	92	2.6		104.1
Macon, GA	117	107	52.2	0.1	0.4	0.6	114	183	6.5		47.9
Madison, WI	171	191	4.2	0.4	3.9	2.0	209	80	9.7		57.8
Manchester, NH	91	99	1.0	0.2	1.1	2.1	103	210	3.2		33.0
McAllen, TX	66	84	0.3	0.2	0.7	77.0	107	206	27.1		32.4
Memphis, TN	646	619	54.8	0.2	0.8	0.7	604	18	-2.4		256.0
Mesa, AZ	152	289	1.9	1.0	1.5	10.9	360	46	24.5		108.6
Mesquite, TX	67	101	5.8	0.5	2.6	8.8	115	181	13.0		42.8
Miami, FL	347	359	27.4	0.2	0.6	62.5	369	44	2.8		35.6
Milwaukee, WI	636	628	30.5	0.9	1.9	6.3	578	19	-7.9		96.1
Minneapolis, MN	371	368	13.0	3.3	4.3	2.1	352	47	-4.5		54.9
Mobile, AL	200	196	38.9	0.2	1.0	1.0	202	82	3.0		118.0
Modesto, CA	107	165	2.7	1.0	7.9	16.3	182	103	10.5		30.2
Montgomery, AL	178	190	42.3	0.2	0.7	0.8	197	85	3.5		135.0
Moreno Valley, CA	([5])	119	13.8	0.7	6.6	22.9	145	135	21.7		49.1
Naperville, IL	43	86	2.1	0.1	4.8	1.8	117	177	36.5		27.9
Nashville-Davidson, TN [3]	456	488	24.3	0.2	1.4	0.9	510	24	4.5		473.3
Newark, NJ	329	275	58.5	0.2	1.2	26.1	268	60	-2.7		23.8
New Haven, CT	126	130	36.1	0.3	2.4	13.2	123	165	-5.6		18.9
New Orleans, LA	558	497	61.9	0.2	1.9	3.5	466	31	-6.3		180.6
Newport News, VA	145	171	33.6	0.3	2.3	2.8	179	106	4.2		68.3
New York, NY	7,072	7,323	28.7	0.4	7.0	24.4	7,420	1	1.3		308.9
Norfolk, VA	267	261	39.1	0.4	2.6	2.9	215	75	-17.6		53.8
Oakland, CA	339	372	43.9	0.6	14.8	13.9	366	45	-1.7		56.1
Oceanside, CA	77	128	7.9	0.7	6.1	22.6	152	127	19.0		40.7
Oklahoma City, OK	404	445	16.0	4.2	2.4	5.0	472	30	6.2		608.2
Omaha, NE	314	343	13.1	0.7	1.0	3.1	371	43	8.3		100.6
Ontario, CA	89	133	7.3	0.7	3.9	41.7	147	134	10.5		36.7
Orange, CA	91	111	1.4	0.5	7.9	22.8	124	164	11.9		23.3
Orlando, FL	128	165	26.9	0.3	1.6	8.7	181	104	10.0		67.3
Overland Park, KS	82	112	1.8	0.3	1.9	2.0	140	140	25.0		55.7
Oxnard, CA	108	143	5.2	0.8	8.6	54.4	155	123	8.5		24.4
Palmdale, CA	12	70	6.4	0.9	4.4	22.0	100	218	42.5		77.6
Pasadena, CA	118	132	19.0	0.4	8.1	27.3	135	149	2.3		23.0
Pasadena, TX	113	120	1.0	0.5	1.6	28.8	134	150	12.0		43.8
Paterson, NJ	138	141	36.0	0.3	1.4	41.0	148	131	5.2		8.4
Pembroke Pines, FL	36	66	5.3	0.2	2.0	11.5	115	180	75.9		31.9
Peoria, IL	124	114	20.9	0.2	1.7	1.6	111	191	-2.1		40.9
Philadelphia, PA	1,688	1,586	39.9	0.2	2.7	5.6	1,436	5	-9.4		135.1
Phoenix, AZ	790	984	5.2	1.9	1.7	20.0	1,198	7	21.7		419.9
Pittsburgh, PA	424	370	25.8	0.2	1.6	0.9	341	49	-7.9		55.6

See footnotes at end of table.

No. 39. Cities With 100,000 or More Inhabitants in 1998—Population, 1980 to 1998, and Land Area, 1990—Continued

[See headnote, p. 39]

City	Population									Land area, 1990 (square miles)
	1980, total (1,000)	1990					1998			
		Total (1,000)	Percent—				Total (1,000)	Rank	Percent change, 1990-98	
			Black	American Indian, Eskimo, Aleut	Asian, Pacific Islander	Hispanic [1]				
Plano, TX	72	128	4.1	0.3	4.0	6.2	219	72	71.6	66.2
Pomona, CA	93	132	14.4	0.6	6.7	51.3	136	148	3.0	22.8
Portland, OR	368	464	7.7	1.2	5.3	3.2	504	26	8.7	124.7
Providence, RI	157	161	14.8	0.9	5.9	15.5	151	130	-6.1	18.5
Provo, UT	74	87	0.3	1.1	2.7	4.2	110	196	27.2	38.6
Pueblo, CO	102	99	2.2	0.8	0.6	39.5	107	205	8.8	35.9
Raleigh, NC	150	212	27.6	0.3	2.5	1.4	259	62	22.3	88.1
Rancho Cucamonga, CA	55	101	5.9	0.6	5.4	20.0	120	170	18.4	37.8
Reno, NV	101	134	2.9	1.4	4.9	11.1	163	119	22.0	57.5
Richmond, VA	219	203	55.2	0.2	0.9	0.9	194	88	-4.3	60.1
Riverside, CA	171	227	7.4	0.8	5.2	26.0	262	61	15.7	77.7
Rochester, NY	242	230	31.5	0.5	1.8	8.7	217	73	-5.8	35.8
Rockford, IL	140	142	15.0	0.3	1.5	4.2	144	136	1.3	45.0
Sacramento, CA	276	369	15.3	1.2	15.0	16.2	404	38	9.4	96.3
St. Louis, MO	453	397	47.5	0.2	0.9	1.3	339	50	-14.5	61.9
St. Paul, MN	270	272	7.4	1.4	7.1	4.2	257	63	-5.5	52.8
St. Petersburg, FL	239	240	19.6	0.2	1.7	2.6	236	70	-1.8	59.2
Salem, OR	89	108	1.5	1.6	2.4	6.1	127	161	17.5	41.5
Salinas, CA	80	109	3.0	0.9	8.1	50.6	121	168	11.7	18.6
Salt Lake City, UT	163	160	1.7	1.6	4.7	9.7	174	112	9.0	109.0
San Antonio, TX	786	959	7.0	0.4	1.1	55.6	1,114	8	16.1	333.0
San Bernardino, CA	119	170	16.0	1.0	4.0	34.6	186	97	9.6	55.1
San Diego, CA	876	1,111	9.4	0.6	11.8	20.7	1,221	6	9.9	324.0
San Francisco, CA	679	724	10.9	0.5	29.1	13.9	746	12	3.0	46.7
San Jose, CA	629	782	4.7	0.7	19.5	26.6	861	11	10.1	171.3
Santa Ana, CA	204	294	2.6	0.5	9.7	65.2	306	55	4.1	27.1
Santa Clara, CA	88	94	2.6	0.5	18.6	15.2	100	217	7.2	18.3
Santa Clarita, CA	(5)	120	1.5	0.6	4.2	13.4	127	159	5.8	40.5
Santa Rosa, CA	83	113	1.8	1.2	3.4	9.5	127	160	12.0	33.7
Savannah, GA	142	138	51.3	0.2	1.1	1.4	132	151	-4.5	62.6
Scottsdale, AZ	89	130	0.8	0.6	1.2	4.8	195	86	50.2	184.4
Seattle, WA	494	516	10.1	1.4	11.8	3.6	537	22	4.0	83.9
Shreveport, LA	206	199	44.8	0.2	0.5	1.1	188	95	-5.1	98.6
Simi Valley, CA	78	100	1.5	0.6	5.5	12.7	110	195	10.2	33.0
Sioux Falls, SD	81	101	0.7	1.6	0.7	0.6	117	179	15.8	45.1
Spokane, WA	171	177	1.9	2.0	2.1	2.1	184	101	3.9	55.9
Springfield, IL	100	105	13.0	0.2	1.0	0.8	117	176	11.1	42.5
Springfield, MA	152	157	19.2	0.2	1.0	16.9	148	132	-5.6	32.1
Springfield, MO	133	140	2.5	0.7	0.9	1.0	143	137	1.7	68.0
Stamford, CT	102	108	17.8	0.1	2.6	9.8	111	193	2.4	37.7
Sterling Heights, MI	109	118	0.4	0.2	2.9	1.1	124	163	5.5	36.6
Stockton, CA	150	211	9.6	1.0	22.8	25.0	240	69	13.8	52.6
Sunnyvale, CA	107	117	3.4	0.5	19.3	13.2	127	158	8.6	21.9
Syracuse, NY	170	164	20.3	1.3	2.2	2.9	152	128	-7.1	25.1
Tacoma, WA	159	177	11.4	2.0	6.9	3.8	180	105	1.8	48.0
Tallahassee, FL	82	125	29.1	0.2	1.8	3.0	137	146	9.5	63.3
Tampa, FL	272	280	25.0	0.3	1.4	15.0	289	58	3.3	108.7
Tempe, AZ	107	142	3.2	1.3	4.1	10.9	168	114	18.0	39.5
Thousand Oaks, CA	77	104	1.2	0.4	4.8	9.6	117	175	12.3	49.6
Toledo, OH	355	333	19.7	0.3	1.0	4.0	312	53	-6.2	80.6
Topeka, KS	119	120	10.6	1.3	0.8	5.8	119	171	-0.8	55.2
Torrance, CA	130	133	1.5	0.4	21.9	10.1	138	142	3.3	20.5
Tucson, AZ	331	411	4.3	1.6	2.2	29.3	460	32	11.9	156.3
Tulsa, OK	361	367	13.6	4.7	1.4	2.6	381	42	3.8	183.5
Vallejo, CA	80	109	21.2	0.7	23.0	10.8	112	190	2.1	30.2
Virginia Beach, VA	262	393	13.9	0.4	4.3	3.1	432	34	10.0	248.3
Waco, TX	101	104	23.1	0.3	0.9	16.3	108	202	4.5	75.8
Warren, MI	161	145	0.7	0.5	1.3	1.1	142	138	-1.7	34.3
Washington, DC	638	607	65.8	0.2	1.8	5.4	523	23	-13.8	61.4
Waterbury, CT	103	109	13.0	0.3	0.7	13.4	105	207	-3.3	28.6
Wichita, KS	280	304	11.3	1.2	2.6	5.0	329	52	8.3	115.1
Winston-Salem, NC	132	151	39.3	0.2	0.8	0.9	164	118	8.8	71.1
Worcester, MA	162	170	4.5	0.3	2.8	9.6	167	116	-1.9	37.6
Yonkers, NY	195	188	14.1	0.2	3.0	16.7	190	93	1.1	18.1

NA Not available. Z Less than .05 percent. [1]Hispanic persons may be of any race. [2]Data are for Arlington CDP (census designated place) which is not incorporated as a city but is recognized for census purposes as a large urban place. Arlington CDP is coextensive with Arlington County. [3]Represents the portion of a consolidated city that is not within one or more separately incorporated places. [4]The population shown in this table is for the CDP; the 1990 census population for the city and county of Honolulu is 836,231. [5]Not incorporated.

Source: U.S. Census Bureau, *1980 Census of Population*, Vol. 1, Chapters A and B; *1990 Census of Population and Housing, Population and Housing Unit Counts*, (CPH-2) and *General Population Characteristics*, (CP-1); and "Population Estimates for Places: Annual Time Series, July 1, 1990, to July 1, 1998"; published 30 June 1999; <http://www.census.gov/population/estimates/metro-city/scts/SC98TS-DR.txt>.

No. 34. Large Metropolitan Areas—Population: 1980 to 1998

[In thousands, except percent (825 represents 825,000). As of April 1, except as noted. Covers 18 consolidated metropolitan statistical areas (CMSAs), their 73 component primary metropolitan statistical areas (PMSAs), and the remaining 121 MSAs with 250,000 and over population in 1998 as defined by the U.S. Office of Management and Budget as of June 30, 1999. For definitions and components of all metropolitan areas and population of NECMAs (New England County Metropolitan Areas), see Appendix II. Minus sign (-) indicates decrease]

Metropolitan area	Number (1,000)						Percent change	
	1980	1990 [1]	1995 (July)	1997 (July)	1998 (July)	Rank, 1998	1980-90	1990-98
Albany-Schenectady-Troy, NY MSA	825	862	881	874	872	55	4.5	1.2
Albuquerque, NM MSA	485	589	660	674	679	62	21.4	15.2
Allentown-Bethlehem-Easton, PA MSA	551	595	611	615	617	65	8.0	3.7
Anchorage, AK MSA	174	226	251	251	255	138	29.8	12.7
Appleton-Oshkosh-Neenah, WI MSA	291	315	336	342	344	115	8.2	9.3
Atlanta, GA MSA	2,233	2,960	3,430	3,634	3,746	11	32.5	26.6
Augusta-Aiken, GA-SC MSA	363	415	452	455	458	85	14.2	10.4
Austin-San Marcos, TX MSA	585	846	1,002	1,070	1,106	41	44.6	30.7
Bakersfield, CA MSA	403	545	613	625	631	64	35.2	15.9
Baton Rouge, LA MSA	494	528	562	571	575	70	6.9	8.9
Beaumont-Port Arthur, TX MSA	373	361	375	374	376	106	-3.2	4.0
Biloxi-Gulfport-Pascagoula, MS MSA	300	312	341	344	349	113	4.1	11.8
Birmingham, AL MSA	815	840	895	901	909	53	3.0	8.2
Boise City, ID MSA	257	296	361	384	396	100	15.2	33.8
Boston-Worcester-Lawrence, MA-NH-ME-CT CMSA	5,122	5,455	5,521	5,593	5,633	7	6.5	3.3
Boston, MA-NH PMSA	3,149	3,228	3,244	3,273	3,289	(X)	2.5	1.9
Brockton, MA PMSA	225	236	244	248	251	(X)	5.1	6.2
Fitchburg-Leominster, MA PMSA	125	138	139	141	142	(X)	10.5	2.4
Lawrence, MA-NH PMSA	298	353	367	377	382	(X)	18.4	8.2
Lowell, MA-NH PMSA	249	281	287	293	295	(X)	12.5	5.3
Manchester, NH PMSA	146	174	180	184	187	(X)	18.9	7.9
Nashua, NH PMSA	134	168	176	180	182	(X)	25.4	8.5
New Bedford, MA PMSA	167	176	175	175	176	(X)	5.4	0.1
Portsmouth-Rochester, NH-ME PMSA	189	223	228	233	236	(X)	18.0	5.5
Worcester, MA-CT PMSA	439	478	483	488	492	(X)	8.9	2.9
Brownsville-Harlingen-San Benito, TX MSA	210	260	304	319	326	118	24.0	25.5
Buffalo-Niagara Falls, NY MSA	1,243	1,189	1,181	1,163	1,153	38	-4.3	-3.1
Canton-Massillon, OH MSA	404	394	402	403	402	97	-2.6	2.1
Charleston-North Charleston, SC MSA	430	507	526	534	541	76	17.8	6.8
Charleston, WV MSA	270	250	254	253	253	139	-7.1	1.1
Charlotte-Gastonia-Rock Hill, NC-SC MSA	971	1,162	1,287	1,352	1,383	32	19.6	19.0
Chattanooga, TN-GA MSA	418	424	442	448	450	88	1.6	6.1
Chicago-Gary-Kenosha, IL-IN-WI CMSA	8,115	8,240	8,629	8,751	8,810	3	1.5	6.9
Chicago, IL PMSA	7,246	7,411	7,769	7,883	7,939	(X)	2.3	7.1
Gary, IN PMSA	643	605	620	623	624	(X)	-5.9	3.2
Kankakee, IL PMSA	103	96	101	102	102	(X)	-6.5	6.1
Kenosha, WI PMSA	123	128	139	143	144	(X)	4.1	12.6
Cincinnati-Hamilton, OH-KY-IN CMSA	1,726	1,818	1,906	1,934	1,948	23	5.3	7.2
Cincinnati, OH-KY-IN PMSA	1,468	1,526	1,587	1,607	1,618	(X)	4.0	6.0
Hamilton-Middletown, OH PMSA	259	291	320	327	330	(X)	12.6	13.4
Cleveland-Akron, OH CMSA	2,938	2,860	2,911	2,915	2,912	15	-2.7	1.8
Akron, OH PMSA	660	658	681	687	689	(X)	-0.4	4.8
Cleveland-Lorain-Elyria, OH PMSA	2,278	2,202	2,231	2,227	2,223	(X)	-3.3	0.9
Colorado Springs, CO MSA	309	397	465	480	490	80	28.3	23.5
Columbia, SC MSA	410	454	491	504	512	79	10.7	12.9
Columbus, GA-AL MSA	255	261	272	272	272	135	2.4	4.3
Columbus, OH MSA	1,214	1,345	1,430	1,456	1,470	31	10.8	9.2
Corpus Christi, TX MSA	326	350	378	386	388	103	7.3	10.8
Dallas-Fort Worth, TX CMSA	3,046	4,037	4,447	4,678	4,802	9	32.5	19.0
Dallas, TX PMSA	2,055	2,676	2,960	3,123	3,210	(X)	30.2	19.9
Fort Worth-Arlington, TX PMSA	991	1,361	1,487	1,555	1,593	(X)	37.4	17.0
Davenport-Moline-Rock Island, IA-IL MSA	385	351	357	357	358	109	-8.8	2.0
Dayton-Springfield, OH MSA	942	951	958	952	949	51	1.0	-0.3
Daytona Beach, FL MSA	270	399	449	463	471	82	48.1	17.9
Denver-Boulder-Greeley, CO CMSA	1,742	1,980	2,227	2,319	2,365	19	13.7	19.5
Boulder-Longmont, CO PMSA	190	225	253	262	267	(X)	18.8	18.6
Denver, CO PMSA	1,429	1,623	1,826	1,902	1,939	(X)	13.6	19.4
Greeley, CO PMSA	123	132	148	156	159	(X)	6.8	20.9
Des Moines, IA MSA	368	393	423	432	437	92	6.9	11.2
Detroit-Ann Arbor-Flint, MI CMSA	5,293	5,187	5,380	5,443	5,458	8	-2.0	5.2
Ann Arbor, MI PMSA	455	490	521	539	548	(X)	7.7	11.8
Detroit, MI PMSA	4,388	4,267	4,425	4,469	4,474	(X)	-2.8	4.9
Flint, MI PMSA	450	430	434	435	436	(X)	-4.4	1.3
El Paso, TX MSA	480	592	672	690	703	60	23.3	18.8
Erie, PA MSA	280	276	279	278	276	133	-1.5	0.3
Eugene-Springfield, OR MSA	275	283	303	311	314	122	2.8	11.0
Evansville-Henderson, IN-KY MSA	276	279	287	289	291	129	1.0	4.2
Fayetteville, NC MSA	247	275	284	284	285	131	11.1	3.6
Fayetteville-Springdale-Rogers, AR MSA	179	211	254	268	273	134	18.1	29.3
Fort Myers-Cape Coral, FL MSA	205	335	374	386	393	101	63.3	17.2
Fort Pierce-Port St. Lucie, FL MSA	151	251	281	291	295	127	66.1	17.5
Fort Wayne, IN MSA	445	456	471	478	481	81	2.6	5.5
Fresno, CA MSA	578	756	841	863	870	56	30.8	15.2

See footnotes at end of table.

No. 34. Metropolitan Areas—Population: 1980 to 1998—Continued

[See headnote, page 33]

Metropolitan area	Number (1,000) 1980	1990 [1]	1995 (July)	1997 (July)	1998 (July)	Rank, 1998	Percent change 1980-90	1990-98
Grand Rapids-Muskegon-Holland, MI MSA	841	938	1,002	1,028	1,038	47	11.5	10.7
Greensboro—Winston-Salem—High Point, NC MSA	951	1,050	1,123	1,153	1,168	36	10.5	11.2
Greenville-Spartanburg-Anderson, SC MSA	744	831	882	907	918	52	11.6	10.6
Harrisburg-Lebanon-Carlisle, PA MSA	556	588	611	615	616	66	5.7	4.8
Hartford, CT MSA	1,081	1,158	1,142	1,141	1,144	39	7.1	-1.2
Hickory-Morganton, NC MSA	270	292	310	318	323	119	8.1	10.3
Honolulu, HI MSA	763	836	873	874	872	54	9.7	4.3
Houston-Galveston-Brazoria, TX CMSA	3,118	3,731	4,153	4,314	4,408	10	19.6	18.1
Brazoria, TX PMSA	170	192	215	225	230	(X)	13.0	20.1
Galveston-Texas City, TX PMSA	196	217	237	242	246	(X)	11.1	13.0
Houston, TX PMSA	2,753	3,322	3,701	3,847	3,932	(X)	20.7	18.4
Huntington-Ashland, WV-KY-OH MSA	336	313	316	315	314	123	-7.1	0.4
Huntsville, AL MSA	243	293	328	334	340	116	20.6	16.2
Indianapolis, IN MSA	1,306	1,380	1,474	1,504	1,519	29	5.7	10.0
Jackson, MS MSA	362	395	415	425	430	93	9.2	8.7
Jacksonville, FL MSA	722	907	980	1,029	1,045	45	25.5	15.2
Johnson City-Kingsport-Bristol, TN-VA MSA	434	436	453	460	462	84	0.6	6.0
Kalamazoo-Battle Creek, MI MSA	421	429	442	445	446	91	2.1	3.9
Kansas City, MO-KS MSA	1,449	1,583	1,686	1,717	1,737	24	9.2	9.7
Killeen-Temple, TX MSA	215	255	291	299	301	126	19.0	18.1
Knoxville, TN MSA	546	586	639	655	659	63	7.2	12.5
Lafayette, LA MSA	331	345	364	372	376	105	4.3	8.9
Lakeland-Winter Haven, FL MSA	322	405	435	446	453	87	26.0	11.6
Lancaster, PA MSA	362	423	447	454	456	86	16.7	7.9
Lansing-East Lansing, MI MSA	420	433	454	450	450	89	3.1	3.9
Las Vegas, NV-AZ MSA	528	853	1,138	1,262	1,322	33	61.5	55.0
Lexington, KY MSA	371	406	434	444	450	90	9.4	10.8
Little Rock-North Little Rock, AR MSA	474	513	542	552	556	72	8.1	8.4
Los Angeles-Riverside-Orange County, CA CMSA	11,498	14,532	15,259	15,550	15,781	2	26.4	8.6
Los Angeles-Long Beach, CA PMSA	7,477	8,863	9,029	9,117	9,214	(X)	18.5	4.0
Orange County, CA PMSA	1,933	2,411	2,572	2,664	2,722	(X)	24.7	12.9
Riverside-San Bernardino, CA PMSA	1,558	2,589	2,954	3,048	3,114	(X)	66.1	20.3
Ventura, CA PMSA	529	669	704	722	732	(X)	26.4	9.4
Louisville, KY-IN MSA	954	949	984	995	999	49	-0.5	5.3
Macon, GA MSA	273	291	309	316	320	121	6.6	9.8
Madison, WI MSA	324	367	409	422	425	95	13.5	15.7
McAllen-Edinburg-Mission, TX MSA	283	384	477	505	522	78	35.4	36.2
Melbourne-Titusville-Palm Bay, FL MSA	273	399	450	460	466	83	46.2	16.8
Memphis, TN-AR-MS MSA	939	1,007	1,064	1,083	1,093	42	7.3	8.5
Miami-Fort Lauderdale, FL CMSA	2,644	3,193	3,478	3,602	3,656	12	20.8	14.5
Fort Lauderdale, FL PMSA	1,018	1,256	1,413	1,473	1,503	(X)	23.3	19.7
Miami, FL PMSA	1,626	1,937	2,064	2,129	2,152	(X)	19.2	11.1
Milwaukee-Racine, WI CMSA	1,570	1,607	1,644	1,645	1,646	26	2.4	2.4
Milwaukee-Waukesha, WI PMSA	1,397	1,432	1,461	1,460	1,460	(X)	2.5	1.9
Racine, WI PMSA	173	175	184	185	186	(X)	1.1	6.3
Minneapolis-St. Paul, MN-WI MSA	2,198	2,539	2,726	2,795	2,831	16	15.5	11.5
Mobile, AL MSA	444	477	516	527	532	77	7.5	11.6
Modesto, CA MSA	266	371	409	419	426	94	39.3	15.1
Montgomery, AL MSA	273	293	314	319	322	120	7.3	10.0
Nashville, TN MSA	851	985	1,092	1,137	1,156	37	15.8	17.4
New London-Norwich, CT-RI MSA	273	291	285	285	282	132	6.5	-2.9
New Orleans, LA MSA	1,304	1,285	1,311	1,308	1,309	34	-1.5	1.9
New York-Northern New Jersey-Long Island, NY-NJ-CT-PA CMSA	18,906	19,565	19,844	20,006	20,124	1	3.5	2.9
Bergen-Passaic, NJ PMSA	1,293	1,296	1,321	1,336	1,344	(X)	0.3	3.7
Bridgeport, CT PMSA	439	442	440	442	443	(X)	0.8	0.3
Danbury, CT PMSA	175	194	197	200	202	(X)	10.3	4.3
Dutchess County, NY PMSA	245	259	261	264	265	(X)	5.9	2.3
Jersey City, NJ PMSA	557	553	551	555	557	(X)	-0.7	0.7
Middlesex-Somerset-Hunterdon, NJ PMSA	886	1,020	1,077	1,106	1,122	(X)	15.1	10.0
Monmouth-Ocean, NJ PMSA	849	986	1,051	1,079	1,093	(X)	16.1	10.8
Nassau-Suffolk, NY PMSA	2,606	2,609	2,648	2,661	2,673	(X)	0.1	2.5
New Haven-Meriden, CT PMSA	500	530	523	522	523	(X)	5.9	-1.4
New York, NY PMSA	8,275	8,547	8,602	8,650	8,693	(X)	3.3	1.7
Newark, NJ PMSA	1,964	1,916	1,934	1,943	1,952	(X)	-2.4	1.9
Newburgh, NY-PA PMSA	278	336	358	365	369	(X)	20.8	10.1
Stamford-Norwalk, CT PMSA	326	330	330	332	333	(X)	1.3	0.9
Trenton, NJ PMSA	308	326	329	330	332	(X)	5.8	1.8
Waterbury, CT PMSA	205	222	221	222	222	(X)	8.1	0.2
Norfolk-Virginia Beach-Newport News, VA-NC MSA	1,201	1,445	1,532	1,545	1,542	27	20.3	6.7
Oklahoma City, OK MSA	861	959	1,013	1,031	1,039	46	11.4	8.4
Omaha, NE-IA MSA	605	640	670	687	694	61	5.6	8.5
Orlando, FL MSA	805	1,225	1,389	1,463	1,505	30	52.2	22.8
Pensacola, FL MSA	290	344	377	395	400	99	18.9	16.0
Peoria-Pekin, IL MSA	366	339	345	345	345	114	-7.3	1.7

See footnotes at end of table.

No. 34. Metropolitan Areas—Population: 1980 to 1998—Continued

[See headnote, page 33]

Metropolitan area	Number (1,000)					Rank, 1998	Percent change	
	1980	1990 [1]	1995 (July)	1997 (July)	1998 (July)		1980-90	1990-98
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD CMSA	5,649	5,893	5,973	5,975	5,988	6	4.3	1.6
Atlantic-Cape May, NJ PMSA	276	319	331	334	336	(X)	15.6	5.2
Philadelphia, PA-NJ PMSA	4,781	4,922	4,953	4,940	4,947	(X)	2.9	0.5
Vineland-Millville-Bridgeton, NJ PMSA	133	138	141	141	140	(X)	3.9	1.7
Wilmington-Newark, DE-MD PMSA	459	513	548	560	565	(X)	11.9	10.1
Phoenix-Mesa, AZ MSA	1,600	2,238	2,661	2,842	2,931	14	39.9	30.9
Pittsburgh, PA MSA	2,571	2,395	2,386	2,360	2,346	20	-6.9	-2.0
Portland-Salem, OR-WA CMSA	1,584	1,793	2,025	2,115	2,149	22	13.3	19.8
Portland-Vancouver, OR-WA PMSA	1,334	1,515	1,712	1,790	1,819	(X)	13.6	20.0
Salem, OR PMSA	250	278	313	325	330	(X)	11.3	18.7
Providence-Fall River-Warwick, RI-MA MSA	1,077	1,134	1,123	1,121	1,123	40	5.4	-1.0
Provo-Orem, UT MSA	218	264	320	329	336	117	20.9	27.3
Raleigh-Durham-Chapel Hill, NC MSA	665	858	993	1,050	1,080	44	29.1	25.8
Reading, PA MSA	313	337	350	354	356	111	7.7	5.8
Reno, NV MSA	194	255	290	307	314	124	31.5	23.2
Richmond-Petersburg, VA MSA	761	866	927	947	957	50	13.7	10.6
Rochester, NY MSA	1,031	1,062	1,085	1,084	1,082	43	3.1	1.8
Rockford, IL MSA	326	330	349	355	357	110	1.2	8.3
Sacramento-Yolo, CA CMSA	1,100	1,481	1,605	1,656	1,686	25	34.7	13.8
Sacramento, CA PMSA	986	1,340	1,458	1,504	1,532	(X)	35.8	14.3
Yolo, CA PMSA	113	141	148	152	154	(X)	24.6	9.0
Saginaw-Bay City-Midland, MI MSA	422	399	402	402	402	98	-5.3	0.7
St. Louis, MO-IL MSA	2,414	2,492	2,542	2,559	2,564	18	3.2	2.9
Salinas, CA MSA	290	356	343	358	366	108	22.5	2.8
Salt Lake City-Ogden, UT MSA	910	1,072	1,213	1,251	1,268	35	17.8	18.2
San Antonio, TX MSA	1,089	1,325	1,455	1,507	1,538	28	21.7	16.1
San Diego, CA MSA	1,862	2,498	2,641	2,724	2,781	17	34.2	11.3
San Francisco-Oakland-San Jose, CA CMSA	5,368	6,278	6,552	6,718	6,816	5	16.9	8.6
Oakland, CA PMSA	1,762	2,108	2,214	2,274	2,319	(X)	19.7	10.0
San Francisco, CA PMSA	1,489	1,604	1,642	1,670	1,683	(X)	7.7	5.0
San Jose, CA PMSA	1,295	1,498	1,567	1,620	1,641	(X)	15.6	9.6
Santa Cruz-Watsonville, CA PMSA	188	230	235	238	243	(X)	22.1	5.8
Santa Rosa, CA PMSA	300	388	415	426	433	(X)	29.5	11.6
Vallejo-Fairfield-Napa, CA PMSA	334	450	480	489	497	(X)	34.6	10.3
Santa Barbara-Santa Maria-Lompoc, CA MSA	299	370	381	387	390	102	23.7	5.4
Sarasota-Bradenton, FL MSA	351	489	523	535	543	75	39.6	11.0
Savannah, GA MSA	231	258	279	284	286	130	11.8	10.7
Scranton—Wilkes-Barre—Hazleton, PA MSA	659	639	631	621	615	67	-3.2	-3.6
Seattle-Tacoma-Bremerton, WA CMSA	2,409	2,970	3,264	3,378	3,424	13	23.3	15.3
Bremerton, WA PMSA	147	190	226	234	233	(X)	28.9	22.6
Olympia, WA PMSA	124	161	192	200	202	(X)	29.8	25.4
Seattle-Bellevue-Everett, WA PMSA	1,652	2,033	2,199	2,279	2,313	(X)	23.1	13.8
Tacoma, WA PMSA	486	586	647	665	677	(X)	20.7	15.4
Shreveport-Bossier City, LA MSA	377	376	379	379	379	104	-0.1	0.6
South Bend, IN MSA	242	247	256	258	258	137	2.2	4.5
Spokane, WA MSA	342	361	401	405	409	96	5.7	13.1
Springfield, MO MSA	228	264	294	301	305	125	15.9	15.3
Springfield, MA MSA	570	588	577	575	574	71	3.2	-2.4
Stockton-Lodi, CA MSA	347	481	524	540	550	73	38.4	14.5
Syracuse, NY MSA	723	742	748	738	735	59	2.7	-1.0
Tallahassee, FL MSA	190	234	257	260	261	136	22.7	11.7
Tampa-St. Petersburg-Clearwater, FL MSA	1,614	2,068	2,175	2,225	2,257	21	28.2	9.1
Toledo, OH MSA	617	614	611	611	610	68	-0.4	-0.7
Tucson, AZ MSA	531	667	754	779	791	57	25.5	18.6
Tulsa, OK MSA	657	709	745	765	777	58	7.9	9.6
Utica-Rome, NY MSA	320	317	308	298	295	128	-1.1	-6.9
Visalia-Tulare-Porterville, CA MSA	246	312	345	350	355	112	26.9	13.9
Washington-Baltimore, DC-MD-VA-WV CMSA	5,791	6,726	7,085	7,213	7,285	4	16.2	8.3
Baltimore, MD PMSA	2,199	2,382	2,462	2,476	2,484	(X)	8.3	4.3
Hagerstown, MD PMSA	113	121	127	128	127	(X)	7.3	4.9
Washington, DC-MD-VA-WV PMSA	3,478	4,223	4,495	4,609	4,674	(X)	21.4	10.7
West Palm Beach-Boca Raton, FL MSA	577	864	974	1,013	1,033	48	49.7	19.6
Wichita, KS MSA	442	485	520	533	544	74	9.7	12.2
York, PA MSA	313	340	365	371	373	107	8.5	9.9
Youngstown-Warren, OH MSA	645	601	600	595	592	69	-6.8	-1.5

X Not applicable. [1] The April 1, 1990, census count includes resolution corrections processed through December 1996 and does not include adjustments for census coverage errors.

Source: U.S. Census Bureau, *1990 Census of Population and Housing, Supplementary Reports, Metropolitan Areas as Defined by the Office of Management and Budget, June 30, 1993* (CPH-S-1-1); *1990 Census of Population and Housing, Population and Housing Unit Counts* (CPH-2-1); "MA-98-3b Population Estimates for Metropolitan Areas and Components, Annual Time Series April 1, 1990, to July 1, 1998"; published: 17 December 1999; <http://www.census.gov/population/estimates/metro-city/ma98-03b.txt>; and unpublished data.

PBT

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When you're looking for reliable, quality telephone service - PBT is the answer.

HOME

Products & Services

PBT is committed to providing quality products and services to both residential and business customers. From Auto Answer voice mail to business phone systems, we offer a wide range of telecommunications technology. Take advantage of this tremendous resource. When you feel overwhelmed by the storm of change in our industry, look to your guide, PBT and PBT Communications.

- Auto Answer Voice Mail
- Broad Band Services
- Business Phone Systems
- Call Forwarding Features
- Call Screening Features
- Equipment Leasing and Sales
- Individual Features
- Inside Wire Protection
- PBT Connect Calling Cards
- PBT Prepaid Calling Cards
- PBT Long Distance
- PBT Paging
- Toll Free Service
- ValueNet Internet Service

Auto Answer Voice Mail

Now your touch-tone telephone can do everything an answering machine ever could and more! Auto Answer is an easy to use voice answering service that offers several advantages over answering machines. It allows incoming calls to be forwarded to your mailbox even if you're on the phone or accessing the Internet. Auto Answer even works with Call Waiting. Auto Answer takes up no space, never needs repairs and works with any touch-tone phone. Optional features provide pager notification, fax interface, group distribution, as well as additional message and greeting capacity. Don't miss another call, sign up for Auto Answer today!

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Now PBT Communications can provide your business with high bandwidth connections via our Broadband ATM Switch. ATM, Frame Relay, and traditional circuit protocols are supported. The switch is part of a statewide network that is monitored 24 hours a day. PBT Communications can support your bandwidth demands throughout the state and beyond. The flexibility of ATM allows for transfer of voice, data, and video over circuits provisioned with a fixed plus on demand bandwidth. For more information on Broadband Services contact PBT Communications.

Business Phone Systems

Let PBT Communications customize a telecommunications system for your business. One of our account managers will visit you at your business to discuss a system especially for you. PBT Communications has several options available and will work with you through installation, training and service after the sale. Your company will operate more efficiently with a PBT Business Phone System.

Call Forwarding Features

Doesn't it always seem to happen? The moment you leave your home or office, that's when you get the call you've been waiting for. Now you can relax with our Call Forwarding feature options. So go ahead, enjoy coffee with your neighbor or attend that important meeting. You can have your calls follow you to another location.

Call Screening Features

Wouldn't it be nice if your telephone was able to screen your calls? Well, now it can with our advanced Call Screening options. You can identify who a call is for, or who is calling and selectively block or receive phone calls. It's like having your own receptionist -

without the expense.

Equipment Leasing and Sales

PBT Communications offers excellent quality phones for sale or lease. If you choose to lease, a durable, commercial quality name brand phone will be supplied to you. If problems arise with your guaranteed phone, you never have to pay for a service call or repair and we will repair or replace it immediately.* If you choose to purchase a phone from PBT Communications, we offer a wide variety of functional and decorative models. In addition to telephones, PBT Communications leases or sells all types of telecommunications equipment. This list includes Caller ID Boxes, outdoor phone bells, paging horns, jacks, cords, pagers and various other items. When you need specific telecommunications devices, Call PBT Communications.

* Leased sets will be replaced for normal wear and tear due to proper use. In event of abuse, customers will be charged for the replacement set.

Individual Features

Technology advances in the communications industry offer you a variety of choices for customizing your telephone features. PBT has several options to tailor your phone service to your exact needs. Some of these features include: Call Waiting, Speed Dialing, Three-Way Calling, Call Return and Repeat Dialing.

Inside Wire Protection

Protect yourself against the cost of unexpected service calls and repair fees. Many telephone line troubles occur in the wiring or telephone jacks in your home. If any troubles occur in your wiring, PBT Communications will make repairs to the wiring at no additional cost to you.* For just pennies a day, PBT Communications will maintain the wire inside your home or business if the wiring meets the required specifications.

* Once Inside Wire Protection is requested, a 30 day waiting period applies. Certain repairs may not be covered in the case of abuse or intentional damage.

PBT Connect Calling Cards

PBT Connect Calling Cards are an easy and cost effective way to make long distance calls when you are away from home. PBT Connect Card rates are at least 50% lower than operator assisted (collect) calls. The card is accessed toll free so you can always get to the PBT Communications' network or one of our operators no matter where you are. You can even use the card when you travel outside the United States. You will have peace of mind knowing that PBT Communications has fraud prevention procedures in place to protect you when travelling. This is a feature not all card companies offer.

PBT Prepaid Calling Cards

Yet another way to easily use the PBT Communications network is with Prepaid Calling Cards. Prepaid Cards are very useful when traveling, for emergencies, for controlling toll costs at home or as gifts. With PBT Prepaid Calling Cards you never get a bill. You may purchase a prepaid card at any PBT office and when the balance is used, simply throw the card away and purchase another. PBT Prepaid Calling Cards can be used to call anywhere in the world. (International toll rates apply.)

PBT Long Distance

PBT Communications is committed to quality long distance service that is not complicated. Our plans are designed with the customer in mind. With PBT Communications long distance you will have no minimum restrictions or hidden charges. PBT Communications can complete your call in its entirety any time and anywhere. As the telecommunications industry continues to evolve, many long distance carriers are billing customers directly for their long distance. This means you must write two checks for your telephone service. With PBT Communications, you'll have the ease of paying all your telephone charges with one check. PBT Communications will bill all long distance charges on your monthly PBT bill.

PBT Paging

You are always easily accessible with PBT Paging. Our paging area extends throughout South Carolina and beyond. PBT Communications is the only paging service which offers statewide coverage with a local number. You can be paged without long distance charges by anyone dialing from your local calling area. Additionally, PBT Communications can bill your pager service with your local telephone service bill for all PBT customers. Local pager numbers are also available for customers in Batesburg-Leesville, Johnston, Saluda and Springfield-Salley. PBT Paging offers both purchase and lease plans with the options of regional or statewide coverage.

Toll Free Service

PBT Communications offers toll free service. Give your customers a new and easy way to contact you. A toll free number may be the difference between a customer placing an order with you or your competitor. Toll free numbers make sense for every business. Residential customers use toll free numbers more than ever. When family members live far away, toll free numbers give them an easy and free way to stay in touch. Toll free numbers also work well for students away from home - parents know they are just a free call away. Trust PBT Communications to deliver quality toll free service at competitive, easy to understand prices.

ValueNet Internet Service

You get the best Internet service when you find the right balance of five features: Low Price, High Speed, Dependable Service, Up-To-Date Software, and Full Support. Don't be fooled by offers and gimmicks that promote an extraordinary deal on one feature. Compare our features with other providers and you'll find out why we are the best Internet Service Provider in this area.

PBT *Communications* 1660 Juniper Springs Road, Gilbert SC 29054 (803) 894-3121 · (803) 685-3121

Please submit your questions or comments to pbwebmaster@pbtcomm.net

Last modified: December 30, 1999

SEC Filing - EDGAR Online

NasdaqNM: LVLT

May 03, 2001

LEVEL 3 COMMUNICATIONS INC (LVLT)

Quarterly Report (SEC form 10-Q)

Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion should be read in conjunction with the Company's consolidated condensed financial statements (including the notes thereto), included elsewhere herein.

This document contains forward looking statements and information that are based on the beliefs of management as well as assumptions made by and information currently available to the Company. When used in this document, the words "anticipate", "believe", "plans", "estimate" and "expect" and similar expressions, as they relate to the Company or its management, are intended to identify forward-looking statements. Such statements reflect the current views of the Company with respect to future events and are subject to certain risks, uncertainties and assumptions. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those described in this document. For a more detailed description of these risks and factors, please see the Company's additional filings with the Securities and Exchange Commission.

Recent Developments

Recent Accounting Developments

In June 1998, the Financial Accounting Standards Board, ("FASB"), issued Statement of Financial Accounting Standard, ("SFAS") No. 133, "Accounting for Derivative Instruments and Hedging Activities" ("SFAS No. 133"). SFAS No. 133, as amended by SFAS Nos. 137 and 138, is effective for fiscal years beginning January 1, 2001. SFAS No. 133 requires that all derivative instruments be recorded on the balance sheet at fair value. Changes in the fair value of derivatives are recorded each period in current earnings or other comprehensive income, depending on whether a derivative is designated as part of a hedge transaction and, if it is, the type of hedge designated by the transaction. The Company currently makes minimal use of derivative instruments as defined by SFAS No. 133. Derivative instruments, as defined by SFAS No. 133, held by the Company at March 31, 2001 include an interest rate cap with a market value of less than $1 million. The Company did not designate the interest rate cap as part of a hedge transaction. If the Company does not increase the utilization of derivatives, the adoption of this standard is expected to have a minimal effect on the Company's results of operations or its financial position.

In December 1999, the SEC staff released Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements" ("SAB 101"). SAB 101 provides interpretive guidance on the recognition, presentation and disclosures of revenue in the financial statements effective for all transactions on or after January 1, 2000. The adoption of SAB 101 in 2000 did not have a material affect on the Company's financial results.

Effective July 1, 1999, the FASB issued Interpretation No. 43, "Real Estate Sales, an Interpretation of FASB Statement No. 66." Certain sale and long-term indefeasible right-to-use agreements of dark fiber and capacity entered into after June 30, 1999 are required to be accounted for in the same manner as sales of real estate with property improvements or integral equipment. Failure to satisfy the requirements of the FASB Interpretation results in the deferral of revenue recognition for these agreements over the term of the agreement (currently up to 20 years). This FASB Interpretation does not have an effect on the Company's cash flows however, it results in substantial amounts of deferred revenue being recorded on the balance sheet.

Accounting practice and guidance with respect to the accounting treatment of the above transactions is evolving. Any changes in the accounting treatment could affect the manner in which the Company accounts for revenue and expenses associated with these agreements in the future.

On April 26, 2001, the Company announced it has signed a new agreement with XO Communications, Inc. ("XO"), that amends the companies previously announced dark fiber agreements. The original agreements between the companies included the purchase of 24 fiber, an empty conduit and tag-along rights for additional fibers in certain conduits of Level 3's North America network by XO for $700 million. At the date of this announcement, over 60 percent of this commitment had been purchased and paid for. The previous agreements also provided that XO purchase nine European fiber networks and a pan-European intercity fiber network from Level 3 for $148 million, as well as transatlantic capacity for an additional $15 million. The new agreement provides that XO and Level 3 have canceled agreements relating to the purchase of the European metro and inter-city fiber networks from Level 3. The related $128 million in payments that have already been made to Level 3 will be applied as a reduction in the remaining amounts payable by XO under its $700 million North American intercity network commitment. Additionally, XO will purchase wavelength services from Level 3 beginning with a $30 million purchase. XO will transfer certain transmission equipment it has purchased to Level 3, the value of which will be applied toward the purchase price of these services. Furthermore, XO will purchase transatlantic capacity per the original European agreement and give up certain previous contractual provisions including the tag-along rights for additional fibers in the North American network.

Results of Operations 2001 vs. 2000

First Quarter 2001 vs. First Quarter 2000

Revenue for the quarters ended March 31, is summarized as follows (in millions):

Thre

Communictions..	$
Information Services...	
Coal Mining..	
Other	
	$

Communications revenue for the three months ended March 31, 2001 increased 297% compared to the same period in 2000. Included in total communications revenue of $385 million, was $193 million of services revenue and $155 million of non-recurring revenue from dark fiber contracts entered into before June 30, 1999. Also included in total communications revenue for the quarter was $37 million attributable to reciprocal compensation. Communications revenue for 2000 was comprised of $88 million of services revenue, $1 million of dark fiber revenue and $8 million of reciprocal compensation. The increase in service revenue was due to growth in both existing customers as well as new customer contracts. The increase in dark fiber revenue is attributable to the completion of several segments of the Company's intercity network during the first quarter of 2001. The increase in reciprocal compensation in 2001 is a result of the Company receiving regulatory approval from several states regarding its agreements with Verizon and SBC Communications. These agreements established a rate structure for transmission and switching services provided by one carrier to complete or carry traffic originating on another carrier's network. It is the Company's policy not to recognize revenue from these agreements until the relevant regulatory authorities approve the agreements.

Information services revenue, which is comprised of applications and outsourcing businesses, increased from $26 million in the three months ended March 31, 2000 to $33 million for the respective period in 2001. This $7 million increase is attributable to outsourcing revenue which increased to $21 million for the first

quarter of 2001 from $14 million for the same period in 2000 primarily due to new long-term contracts signed in the last half of 2000. Cash Revenue is not intended to represent revenue under generally accepted accounting principles.

The communications business generated Cash Revenue of $657 million during the three months ended March 31, 2001. The Company defines Cash Revenue as communications revenue plus changes in cash deferred revenue during the respective period. Communications Cash Revenue reflects upfront cash received for dark fiber and other capacity sales that are recognized over the term of the contract under generally accepted accounting principles ("GAAP"). Cash deferred revenue for the communications business for the period increased $242 million compared to the same period in 2000. This increase is a result of growth in both services provided to existing customers as well as new customer contracts. Communications Cash Revenue was $127 for the three months ended March 31, 2000.

Coal mining revenue decreased $23 million in the first quarter of 2001 compared to the same period in 2000. The decrease in revenue is primarily attributable to the expiration of long-term coal contracts with Commonwealth Edison and the sale of the Company's interest in Walnut Creek Mining Company in September 2000. These decreases were partially offset by increased spot coal sales.

Other revenue for the period was comparable to 2000 and is primarily attributable to California Private Transportation Company, L.P. ("CPTC") the owner-operator of the SR91 tollroad in southern California.

Cost of Revenue for the first quarter 2001 was $268 million, representing a 106% increase over first quarter 2000 cost of revenue of $130 million. This increase is a result of the expanding communications business. Overall the cost of revenue for the communications business, as a percentage of revenue, decreased significantly from 95% during the quarter ended March 31, 2000 to 58% during the same period of 2001. This decrease can be attributed to the migration of customer traffic from a leased network to the Company's own operational network. Additionally, the decrease can be attributed to the increase in dark fiber sales from $1 million in the first quarter of 2000 to $155 million for the current period. The cost of revenue for the information services businesses, as a percentage of its revenue, was 82% for the first quarter of 2001 a slight increase from the same period in 2000. The cost of revenue for the coal mining business, as a percentage of revenue, was 64% for the first quarter of 2001 up from 40% for the same period in 2000. This increase can be attributed to the expiration of high margin long-term coal contracts and the increase in lower margin spot coal sales.

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Depreciation and Amortization expenses for the quarter were $239 million, a 172% increase from the first quarter 2000 depreciation and amortization expenses of $88 million. This increase is a direct result of the communications assets placed in service in the latter half of 2000 and during the three months ended March 31, 2001, including gateways, local networks and intercity segments.

Selling, General and Administrative expenses were $372 million in the three months ended March 31, 2001, a 58% increase over first quarter 2000. This increase is primarily a result of the Company's addition of 1,200 employees hired since the end of first quarter 2000. Compensation costs increased substantially due to the additional employees. Additionally, the Company recorded a one-time charge of approximately $10 million during the first quarter of 2001 related to a workforce realignment and reduction. The Company also recorded $77 million in non-cash compensation for the first quarter 2001 for expenses recognized under SFAS No. 123 related to grants of stock options, warrants and other stock based compensation programs; $48 million of non-cash compensation was recorded for the same period in 2000. The increase in non-cash compensation is predominantly due to an increase in the number of employees and the C-OSOs granted in September and December of 2000. Costs attributable to the communications business such as rent, software and hardware maintenance and license fees also contributed to the higher selling, general and administrative expenses. Selling, general and administrative costs for the remainder of 2001 are not expected to increase significantly from the first quarter 2001 levels.

EBITDA, as defined by the Company, consists of earnings (losses) before interest, income taxes, depreciation, amortization, non-cash operating expenses (including stock-based compensation and in-process research and development charges) and other non-operating income or expenses. The Company excludes non-cash compensation due to its adoption of the expense recognition provisions of SFAS No. 123. EBITDA improved to a loss of $114 million in the first quarter of 2001 from a $141 million loss for the same period in 2000. This improvement was predominantly due to the higher margins earned by the communications business.

Adjusted EBITDA, as defined by the Company, is EBITDA as defined above plus the change in cash deferred revenue and excluding the non-cash cost of goods sold associated with certain capacity sales and dark fiber contracts. For the three months ended March 31, 2001, Adjusted EBITDA was $240 million compared to $96 million for the same period in 2000. This increase can be attributed to an increase in cash deferred revenue and non-cash cost of goods sold related to transoceanic and dark fiber transactions of $354 million.

EBITDA and Adjusted EBITDA are not intended to represent operating cash flow for the periods indicated and are not GAAP. See Consolidated Condensed Statement of Cash Flows.

Interest Income was $61 million for the first quarter of 2001 which is consistent with the same period in 2000. The Company derives interest income from cash, cash equivalents and marketable securities balances. Pending utilization of the cash, cash equivalents and marketable securities, the Company invests the funds primarily in government and government agency securities. The investment strategy will provide lower yields on the funds, but is expected to reduce the risk to principal in the short term prior to using the funds in implementing the Company's business plan.

Interest Expense, net increased by $88 million to $138 million during the first quarter of 2001. Interest expense increased substantially due to the debt offerings completed in late February 2000, the commercial mortgages entered into the latter half of 2000 and the additional credit facility draws in the first quarter of 2001. The amortization of the related debt issuance costs also contributed to the increased interest expense in 2001. Additionally, the increase can be attributed to a decrease in the amount of interest capitalized in the first quarter of 2001 as compared to the same period in 2000. The Company completed a significant portion of the network by the end of 2000, therefore reducing the amount of interest capitalization. Capitalized interest was $67 million in the first quarter of 2000 and $43 million in the first quarter of 2001.

Equity in Losses of Unconsolidated Subsidiaries was $2 million in the first quarter of 2001, compared to $55 million for the same period in 2000. The equity losses in 2000 are predominantly attributable to RCN Corporation, Inc. ("RCN"). RCN is a facilities-based provider of communications services to the residential markets primarily on the East and West coasts as well as in Chicago and the largest regional Internet service provider in the Northeast. RCN is incurring significant costs in developing its business plan. The Company's proportionate share of RCN's losses exceeded the remaining carrying value of Level 3's investment in RCN during the fourth quarter of 2000. Level 3 does not have additional financial commitments to RCN; therefore it can only recognize equity losses equal to its investment in RCN. The Company will not record any equity in RCN's future profits, if any, until unrecorded equity losses have been offset. Since RCN did not become profitable in the first quarter of 2001, the Company did not record any previously unrecorded losses attributable to RCN. Additionally, the Company recorded $1 million of equity earnings and $2 million of equity losses for the periods ended March 31, 2000 and 2001 respectively related to the investment in Commonwealth Telephone Enterprises, Inc.

Gain on Equity Investee Stock Transactions was $38 million for the three months ended March 31, 2000. Specifically, RCN issued stock for certain transactions, which diluted the Company's ownership interest. The $38 million pre-tax gain resulted from the increase in the Company's proportionate share of RCN's net assets related to these transactions. The Company did not record any gains on equity investee stock transactions in the first quarter of 2001.

Other, net decreased to a $26 million loss in the first quarter of 2001 from zero in the same period of 2000. The decrease is primarily attributable to the first quarter loss from other-than temporary changes in the value of investments of $28 million. Additionally, the Company recorded a loss of $15 million in the first quarter of 2001 related to the write-down of assets held for sale. These losses were partially offset by the $14 million first quarter 2001 income from realized gains from the sale of marketable securities denominated in foreign currencies.

Income Tax Benefit for the first quarter of 2001 was zero as a result of the Company exhausting the taxable income in the carryback period in 2000, and that it is unable to determine when the tax benefits attributable to the net operating losses will be realizable. The tax benefit for 2000 differs from the statutory rate due to the limited availability of taxable income in the carryback period for which current year losses can be offset. In 2000, Level 3 recognized a portion of the expected annual ~~benefit equal to the ratio of pre-tax loss for the period to the total estimated loss for the year.~~

Financial ConditionMarch 31, 2001

The Company's working capital decreased from $3.1 billion at December 31, 2000 to $2.8 billion at March 31, 2001 due primarily to the use of available funds for selling, general and administrative expenses, and in construction of the Level 3 network partially offset by proceeds from the Senior Secured Credit Facility borrowings.

'ash provided by operations increased from $138 million in the first quarter of 2000 to $292 million ı the same period of 2001. Changes in components of working capital, which are primarily ·esponsible for the increase in cash provided by operations include, a $310 million increase in ayments for dark fiber transactions for which revenue will be deferred. These increases were offset y a $203 million decrease over the period ended March 31, 2000 in federal income tax refunds ·eceived.

ıvesting activities include using the proceeds from the first quarter Senior Secured Credit Facility raws and cash on hand to purchase $1.1 billion of marketable securities and complete approximately 1.2 billion of capital expenditures, primarily for the expanding communications business. The 'ompany also realized $1.6 billion of proceeds from the sales and maturities of marketable securities.

'inancing sources in 2001 consisted primarily of the net proceeds of $636 million from the first uarter 2001 Senior Secured Credit Facility draws. The Company also repaid long-term debt of $2 ıillion during the three months ended March 31, 2001 primarily attributable to capitalized leases and .on-recourse debt at CPTC.

.iquidity and Capital Resources

'ince late 1997, the Company has substantially increased the emphasis it places on and the resources evoted to its communications and information services business. The Company is a facilities-based rovider (that is, a provider that owns or leases a substantial portion of the property, plant and quipment necessary to provide its services) of a broad range of integrated communications services. 'he Company has created, through a combination of construction, purchase and leasing of facilities nd other assets, an advanced, international, end-to-end, facilities-based communications network. 'he Company has designed its network based on Internet Protocol technology in order to leverage the fficiencies of this technology to provide lower cost communications services.

ADV TECH LO-COST

'he continued development of the communications and information service businesses will require ignificant capital expenditures, a substantial portion of which will be incurred before any significant elated revenues are expected to be realized. These expenditures, together with the associated early perating expenses, may result in substantial negative operating cash flow and substantial net perating losses for the Company for the foreseeable future. Although the Company believes that its ost estimates and build-

ut schedule are reasonable, the actual construction costs or the timing of the expenditures may eviate from current estimates. The Company's capital expenditures in connection with its business lan were approximately $1.2 billion during the first quarter of 2001. The majority of the spending vas for construction of the U.S. and European intercity networks, certain local networks in the U.S. nd Europe, and the transoceanic cable network. Through March 31, 2001, the total cost of the Level network by region, including intercity and metropolitan networks, optronic and other transmission quipment, transmission facilities including gateway facilities and the regions allocated portion of ındersea cables was $8.2 billion for North America, $1.7 billion for Europe and $0.3 billion for Asia. 'otal capital expenditures for 2001 are expected to be approximately $3.3 to $3.4 billion. The roceeds received from the February 2000 debt and equity offerings, the 2001 Senior Secured Credit 'acility borrowings and combined with the cash and marketable securities already on hand and the ındrawn commitments of $650 million at March 31, 2001 under the expanded Senior Secured Credit 'acility, provided Level 3 with approximately $4.5 billion of funds available at the end of the first uarter 2001. The Company's current liquidity, cash flows from committed contracts for ommunications services and dark fiber IRUs and anticipated future cash flows from operations hould be sufficient to fund the currently committed portions of the business plan.

n January 2000, the Company announced that it was expanding the scope of its business plan to nclude a significant increase in the amount of colocation space available to the Company's

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ommunications intensive customers, and additional local fiber facilities. The Company currently stimates that the implementation of the business plan from its inception through free cash flow reakeven will require approximately $13 billion to $14 billion on a culumulative basis. The ompany also currently estimates that its operations will reach free cash flow breakeven in late 2003. he Company's successful debt and equity offerings in February 2000 have given the Company the bility to implement the committed portions of the business plan. However, if additional pportunities should present themselves, the Company may be required to secure additional financing the future. In order to pursue these possible opportunities and provide additional flexibility to fund s business plan, the Company filed a "universal" shelf for an additional $3 billion of common stock, referred stock, debt securities, warrants, stock purchase agreements and depositary shares. This shelf ling, in combination with the remaining availability under the existing universal shelf registration atement, will allow Level 3 to offer an aggregate of up to $3.156 billion of additional securities to nd its business plan.

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addition to raising capital through the debt and equity markets, the Company may sell or dispose existing businesses or investments to fund portions of the business plan. The Company may also ll or lease fiber optic capacity, or access to its conduits. The Company may not be successful in oducing sufficient cash flow, raising sufficient debt or equity capital on terms that it will consider ceptable, or selling or leasing fiber optic capacity or access to its conduits. In addition, proceeds om dispositions of the Company's assets may not reflect the assets' intrinsic values. Further, penses may exceed the Company's estimates and the financing needed may be higher than timated. Failure to generate sufficient funds may require the Company to delay or abandon some of future expansion or expenditures, which could have material adverse effect on the implementation the business plan.

connection with implementing the business plan, management will continue reviewing the existing sinesses of the Company to determine how those businesses will complement the Company's focus communications and information services. If it is decided that an existing business is not mpatible with the communications and information services business and if a suitable buyer can be und, the Company may dispose of that business.

arket Risk

vel 3 is subject to market risks arising from changes in interest rates, equity prices and foreign change rates. The Company's exposure to interest rate risk increased due to the $1.375 billion nior Secured Credit Facility entered into by the Company in September 1999, the additional $400 llion added to the Senior Secured Credit Facility during the first quarter of 2001 and the mmercial mortgages entered into in

00. As of March 31, 2001, the Company had borrowed $1.125 billion under the Senior Secured edit Facility and $233 million under the commercial mortgages. Amounts drawn on the debt truments bear interest at the alternate base rate or LIBOR rate plus applicable margins. As the ernate base rate and LIBOR rate fluctuate, so too will the interest expense on amounts borrowed der the credit facility and mortgages. The weighted average interest rate based on outstanding ounts under these variable rate instruments of $1.358 billion at March 31, 2001, was proximately 8.6%. A hypothetical increase in the variable portion of the weighted average rate by (i.e. a weighted average rate of 9.6%), would increase annual interest expense of the Company by proximately $14 million. In an effort to reduce the risk of increased interest rates related to the man commercial mortgage, in January 2001 the Company entered into an interest rate cap eement. The terms of the agreement provide that the net interest expense related to the Lehman nmercial mortgage will not exceed 8% plus the original spread. The agreement therefore caps the BOR portion of the interest rate at 8%. At March 31, 2001, the Company had $6.6 billion of fixed debt bearing interest ranging from 6% to 12.875%. A decline in interest rates in the future will benefit the Company due to the terms and conditions of the loan agreements that prohibit payment of the debt or require the company to repurchase the debt at specified premiums. The mpany continues to evaluate alternatives to limit interest rate risk.

Level 3 continues to hold positions in certain publicly traded entities, primarily Commonwealth Telephone and RCN. The Company accounts for these two investments using the equity method. The market value of these investments was approximately $527 million at March 31, 2001, which is significantly higher than their carrying value of $104 million. The Company does not currently have plans to dispose of these investments, however, if any such transaction occurred, the value received for the investments would be affected by the market value of the underlying stock at the time of any such transaction. A 20% decrease in the price of Commonwealth Telephone and RCN stock would result in approximately a $105 million decrease in fair value of these investments. The Company does not currently utilize financial instruments to minimize its exposure to price fluctuations in equity securities.

The Company's Business Plan includes developing and constructing networks in Europe and Asia. As of March 31, 2001, the Company had invested significant amounts of capital in both regions and will continue to expand its presence in Europe and Asia throughout 2001. The Company issued (euro)800 million in Senior Euro Notes in February 2000 as an economic hedge against its net investment in its European subsidiaries. Due to the historically low exchange rates involving the U.S. Dollar and the Euro during the fourth quarter of 2000, Level 3 elected to set aside, and continues to hold, the remaining Euros received from the debt offerings and purchase on the spot market the Euros required to fund its current European investing and operating activities. Other than the issuance of the Euro denominated debt and the purchase of the Euros on the spot market, the Company has not made significant use of financial instruments to minimize its exposure to foreign currency fluctuations. The Company continues to analyze risk management strategies to reduce foreign currency exchange risk.

The change in interest rates and equity security prices is based on hypothetical movements and are not necessarily indicative of the actual results that may occur. Future earnings and losses will be affected by actual fluctuations in interest rates, equity prices and foreign currency rates.

LEVEL 3 COMMUNICATIONS, INC. AND SUBSIDIARIES

Company Info

Featured Stories FAQs Glossary

back to Company Info main page.

FAQs

1. Where is eLEC Communications headquartered?
The World Headquarters of eLEC Communications is in Norwalk, Connecticut (our principal office is located at 509 Westport Avenue). In addition, we have operations in four other states -- Florida, New Jersey, New York, and Ohio.

2. Who is the head of your company?
Paul H. Riss is the Chief Executive Officer of eLEC Communications Corp. Mr. Riss earned an MBA degree with distinction from New York University's Stern School of Business. He is a *magna cum laude* graduate with distinction from Carleton College. He is also a Certified Public Accountant and a member of the American Institute of Certified Public Accountants (AICPA) and the New York State Society of Certified Public Accountants (NYSSCPA). In addition to leading our transformation into a communications company, we are very proud that the NYSSCPA presented him this year with the James P. Kelly award for distinguished public service.

3. When was the company founded?
The Company was founded in 1964. We commenced operations in the telecommunications industry in 1998 when we acquired Essex Communications, Inc., a newly formed CLEC. In addition to our telecommunications strategy implemented on August 14, 1998, we acquired WebQuill Internet Services, LLC, an Internet Service Provider (ISP) based in Connecticut. Due to an increased focus on e-commerce sites, Internet access, and telecommunications services, our Board of Directors decided on a name change from Sirco International Corp. to eLEC Communications Corp. Our main business direction was changed to focus on the local exchange market, which is an estimated $100 billion industry and one of the most profitable segments in the communications industry. With this new focus, we wanted our company name to include the letters L, E, and C, representing our focus on being a Local Exchange Carrier. However, in this electronic age and with our wholly-owned ISP to provide Internet access, DSL services, and web site design and hosting, we believed the addition of "e" more

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appropriately described our new business operations. We consequently changed our name to eLEC Communications Corp., our ticker symbol to ELEC, and our web site to www.elec.net. Please go to eLEC's Evolution for more information about the development of eLEC Communications Corp. over the years.

4. How many employees do you have?
eLEC Communications Corp. employs over 100 people worldwide.

5. What are your main product lines?
eLEC Communications' main business area is telecommunications. The consumer products include Voice, Data, and Internet and Equipment Services.

6. I am a shareholder or am thinking about investing. How do I get more information?
Visit Investor Info for more information.

7. How do I get a copy of your Annual Report?
For your convenience, our Annual Report is available on this web site.

8. Can I get a list of your products?
Please refer to our Annual Report on our website for a product overview.

9. I am interested in working at eLEC Communications. How do I submit a résumé?
We strongly prefer that you submit your résumé electronically. eLEC Communications uses an advanced system that attempts to match your résumé either with your specified choice of job openings or with all openings across disciplines and all business units of eLEC Communications. You may still, however, submit a hard copy. If there is a match between our hiring needs and your qualifications we may contact you directly. We welcome and encourage submission of résumés in response to postings detailed on this web site. In the absence of a posting for a position in which you are interested, you may submit your résumé as an indication of general interest in employment with eLEC Communications.

Do you have a question for us?

Email:
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Question:

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Featured Stories

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eLEC Spotlighted at The Third Annual Emerging Communications Conference

eLEC Communications Corp. Spotlighted at The Third Annual Emerging Communications Conference.

The conference, held October 19th & 20th at W New York, was hosted by Kaufman Bros. L.P., a research-based, full service investment bank, securities trading firm, and brokerage operation serving the emerging communications universe.

Paul H. Riss, CEO of eLEC Communications, made the following PowerPoint Presentation to a packed room of institutional investors, financial advisors, an KBRO clients.

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webmaster@elec.net

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KBRO Discusses UNE Platform; eLEC Communications Pioneering a New Method of Delivering Broadband Services to Consumers

Date: 15-Mar-01

Summary: KBRO Discusses UNE Platform; eLEC Communications Pioneering a New Method of Delivering Broadband Services to Consumers

Contacts: Ursula Natusch
unatusch@elec-corp.com

KBRO Discusses UNE Platform; eLEC Communications Pioneering a New Method of Delivering Broadband Services to Consumers

NEW ROCHELLE, NY – March 15, 2001 – eLEC Communications is favorably mentioned this morning in KBRO's The Morning Exchange – Part I written by Vik Grover, CFA.
The Morning Exchange article, "UNE-P - A Forgotten Market About to Go To Come Alive Through 'DSL-P'," states that emerging telcos using unbundled network element platform (UNE-P) to target the consumer/SOHO market are positioned to attack 100+ million addressable lines nationwide with almost zero capital expenditures.

Vik Grover states, "Two UNE-P carriers investors should focus on in this evolution

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of the consumer/SOHO local marketplace are ELEC and TALK. Both companies trade at very low valuations despite significantly improving prospects for growth, completion of back office systems, and a waning list of competitors that we think position both to become significantly larger companies during 2001/2002 through consolidation."

"eLEC has invested millions in its OSS platform," Grover continues, "which we believe is best of breed in the UNE-P space since it has sophisticated rating and billing engines and provides a scalable platform for growth during the coming periods."

eLEC, which recently negotiated agreements with BellSouth, Network Access Solutions (NAS) and SBC Communications, will be able to plug its WorldCom-based ATM cloud into ILEC DSL backbones in order to provision broadband services to customers without truck rolls.

Grover states, "We believe eLEC could be pioneering a new method of delivering broadband services to customers that requires no capital expenditures, very little truck rolls and significant returns on invested capital. We coin this new method of delivering DSL solutions to the masses, "DSL-P."

For the complete KBRO article, please visit our website at www.elec.net or Kaufman Bros, L.P. website at www.kbro.com

About eLEC Communications

eLEC Communications Corp. is a publicly-traded local telecommunications company that is taking advantage of the convergence of the current and future competitive technological and regulatory developments in the Internet and telecommunications markets. eLEC provides an integrated suite of communications services to small and medium-sized business customers, including local, long distance, dial-up access, dedicated access, xDSL, and web site design and hosting. For further information, visit the eLEC web site at http://www.elec.net.

This release contains forward-looking statements that involve risks and uncertainties. eLEC's actual results may differ materially from the results discussed in the forward-looking statements. Factors that might cause such a elec.net

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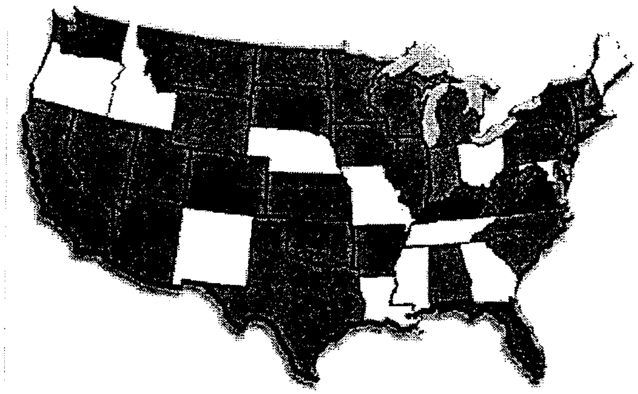

eLEC Currently Provides Long Distance Phone Services in These States

eLEC Currently Provides Local & Long Distance Phone Services in These States

eLEC Has Been Certified in These States for Local Phone Service

eLEC

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Latest News

April 16, 2001
eLEC Communications Reports First Quarter Results Including 141% Sales Growth
Read About It!

March 19, 2001
eLEC Communications Now Licensed for Local Phone Service in Thirty-Two States; Market Coverage Expands to More Than 100 Million Lines
Read About It!

March 19, 2001
eLEC Communications Opens World-Class Customer Contact Center Located in its New Headquarters in New Rochelle, NY
Read About It!

Hot Topics

Investors Look Here!

-KBRO Article, March 15, 2001 (*Click Here*)

-Learn about eLEC Communications. (*Click Here*)

-Know what an ATM Cloud is? (*Click Here*)

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NOTE: This site is optimized for ***IE 4.0+***.
Netscape users will still be able to view this site, but enhanced features will not be available.

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eLEC Communications Now Licensed for Local Phone Service in Thirty-Two States; Market Coverage Expands to More Than 100 Million Lines

Date: 19-Mar-01

Summary: eLEC Communications Now Licensed for Local Phone Service in Thirty-Two States; Market Coverage Expands to More Than 100 Million Lines

Contacts: Ursula D Natusch
unatusch@elec-corp.com

eLEC communications

eLEC Communications Now Licensed for Local Phone Service in Thirty-Two States;
Market Coverage Expands to More Than 100 Million Lines

NEW ROCHELLE, NY...March 19, 2001--- eLEC Communications Corp. (NASDAQ:ELEC) announced today that it has received approval to operate as a competitive local exchange carrier (CLEC) in a total of thirty-two states. eLEC's most recently received approvals are in Arkansas, Delaware, Indiana and Oklahoma.

eLEC CEO Paul Riss stated, "As stated before, we continue to work on receiving approvals to operate in additional states until we reach our goal of being able to sell local and long distance phone services in 48 states. With the addition of four more states, our authorized market has now increased to more than 100 million local access lines.

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"We are especially looking forward to operating in territories that are served by incumbent local exchange carriers (ILECs) that are new to us. The value of our local access platform will be enhanced once we have operating relationships with each major ILEC. We are currently working closely with a southwestern and western ILEC so that we can begin provisioning local access lines in the territories they serve."

eLEC Communications has now received state authorizations to provide local phone services in 32 states including: Alabama, Arkansas, Colorado, Connecticut, Delaware, Florida, Illinois, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New York, Nevada, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

eLEC Communications Corp. is a publicly-traded local telecommunications company that is taking advantage of the convergence of the current and future competitive technological and regulatory developments in the Internet and telecommunications markets. eLEC provides an integrated suite of communications services to small and medium-sized business customers, including local, long distance, dial-up access, dedicated access, xDSL, and Web site design and hosting. For further information, visit the eLEC Web site at www.elec.net.

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This release contains forward-looking statements that involve risks and uncertainties. eLEC's actual results may differ materially from the results discussed in the forward-looking statements. Factors that might cause such a difference include, among others, availability of management; availability, terms, and deployment of capital; eLEC's ability to successfully market its services to current and new customers, generate customer demand for its product and services in the geographical areas in which eLEC can operate, access new markets, negotiate and maintain suitable interconnection agreements with the incumbent local exchange carriers, and negotiate and maintain suitable vendor relationships, all in a timely manner, at reasonable cost and on satisfactory terms and conditions, as well as regulatory, legislative and judicial developments that could cause actual results to vary in such forward-looking statements.

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eLEC Communications Reports First Quarter Results Including 141% Sales Growth

Date: 16-Apr-01

Summary: eLEC Communications Reports First Quarter Results Including 141% Sales Growth

Contacts: Ursula D Natusch
unatusch@elec-corp.com

eLEC Communications Reports First Quarter Results Including 141% Sales Growth

Norwalk, CT -- April 16, 2001 -- eLEC Communications Corp. (NASDAQ: ELEC), a provider of integrated communications services to business customers, today announced the results of its operations for the first quarter ended February 28, 2001.

eLEC reported revenues for the first quarter ended February 28, 2001, of $4,730,647, an increase of $2,504,414, or 141%, over the revenues from the first quarter of fiscal year 2000. The company also reported a net loss of ($1,473,772), or ($0.10) per share, and an EBITDA loss of ($1,105,976), or ($0.08) per share for the quarter ended February 28, 2001. These amounts compare to a net loss of ($648,900), or ($0.06) per share and an EDITDA loss of ($524,372), or ($0.04) per share for the prior year quarter.

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for the fiscal 2000 quarter.

eLEC CEO Paul Riss stated, "We are very pleased to report our seventh consecutive quarter of strong revenue growth and a noted improvement in our gross margins. Although the first quarter margins in fiscal 2000 were acceptable, they deteriorated throughout the year as we added lines in New Jersey, where the UNE-P service offering was not made available to us until December 2000. Consequently, our gross margins for fiscal 2000 amounted to only 27.4%. This year, we are only adding new customer lines in states where we have approval to utilize the UNE platform. These efforts will help us to maintain 35% margins throughout the year.

"Our selling expense for the quarter was approximately $1.1 million, an increase of approximately $1 million over the first quarter in fiscal 2000," continued Riss. "This significant increase in expense is directly related to our acquisition of Line One, which we completed during the fourth quarter of fiscal 2000, and the further investment we have made to integrate Line One's marketing operations into our company. Our efforts are now focused on optimizing our marketing capabilities, so that we can grow our company more efficiently while containing our costs.

"We are now entering a period where we plan to cut our overhead expenses while maintaining our continued growth. We reiterate our desire to focus on conserving capital and reaching profitability," stated Riss. "Our primary goal is to reach EBITDA positive on a monthly basis before the end of this year. By the end of the second fiscal quarter, we will have consolidated our New York customer care and telemarketing operations into our new building in New Rochelle, New York. We believe our high degree of flexibility will allow us to make several additional adjustments to take advantage of our customer care center and advanced back office systems."

eLEC Communications Corp. is a publicly-traded local telecommunications company that is taking advantage of the convergence of the current and future competitive technological and regulatory developments in the Internet and telecommunications markets. eLEC provides an integrated suite of communications services to small and medium-sized business customers, including local, long distance, dial-up access, dedicated access, xDSL, and Web site design and hosting.

35%
MARGIN
UNE-

eLEC Communications Corp. and Subsidiaries
Condensed Consolidated Statements of Operations
(Unaudited)

	For the Three Months Ended	
	Feb. 28, 2001	Feb. 29, 2000
Revenues	$4,730,647	$2,226,233
Cost of revenues	3,055,839	1,484,456
Gross Profit	1,674,808	741,777
Costs and expenses:		
Selling, general and administrative	3,420,758	1,264,358
Depreciation and amortization	235,373	105,365
Equity in loss of investee	-	77,321
Total costs and expenses	3,656,131	1,447,044
Loss from operations	(1,981,323)	(705,267)
Other (income) expense:		
Interest expense	132,423	19,163
Interest income	(5,806)	(8,251)
Miscellaneous income, net	(634,168)	(67,279)
	(507,551)	(56,367)
Net loss	**($1,473,772)**	**($648,900)**
Basic and diluted loss per share	**($0.10)**	**($0.06)**
Weighted average number of common shares outstanding	**14,711,421**	**11,739,156**

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This release contains forward-looking statements that involve risks and uncertainties. eLEC's actual results may differ materially from the results discussed in the forward-looking statements. Factors that might cause such a difference include, among others, availability of management; availability, terms, and deployment of capital; eLEC's ability to successfully market its services to current and new customers, generate customer demand for its product and services in the geographical areas in which eLEC can operate, access new markets, negotiate and maintain suitable interconnection agreements with the incumbent local exchange carriers, and negotiate and maintain suitable vendor relationships, all in a timely manner, at reasonable cost and on satisfactory terms and conditions, as well as regulatory, legislative and judicial developments that could cause actual results to vary in such forward-looking statements.

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eLEC Communications Now Licensed for Local Phone Service in Twenty-Six States; Market Coverage Expands to More Than 85 Million Lines

Date: 20-Dec-00

Summary: eLEC Communications Now Licensed for Local Phone Service in Twenty-Six States

Contacts: Paul Riss, CEO
phriss@elec-corp.com

eLEC communications

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eLEC Communications Now Licensed for Local Phone Service in Twenty-Six States; Market Coverage Expands to More Than 85 Million Lines

New Rochelle, NY...December 20, 2000--- eLEC Communications Corp. (NASDAQ:ELEC) announced today that it has received approval to operate as a competitive local exchange carrier (CLEC) in a total of twenty-six states. eLEC has recently received approval in Texas, Illinois, Minnesota, New Hampshire, South Carolina, Vermont, Washington, West Virginia, Wisconsin and Wyoming.

eLEC CEO Paul Riss stated, "We are very excited to have passed the half-way mark with the CLEC certification process. We continue to work on receiving approvals to operate in additional states until we reach our goal of being able to sell local and long distance phone services in 48 states. Our presence throughout the nation will create a ubiquitous marketing opportunity for us and will allow us to take advantage of our ability to provide valuable discounted telecommunications services to multi-state businesses without the delay or high costs associated with installing circuit-switched equipment. Our deferred-build strategy on the Unbundled Network Elements Platform (UNE-P) service offering continues to give us rapid market entry with ample margins to build an integrated communications business. Our authorized market has now increased to more than 85 million local access lines.

"We are eager to begin provisioning lines in new territories, such as Texas and Illinois," continued Mr. Riss. "We find that once state approvals are received, it takes us approximately 90 to 180 days until we are able to begin provisioning lines."

eLEC Communications has now received state authorizations to provide local phone services in 26 states including: Alabama, Colorado, Connecticut, Florida, Illinois, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New York, Nevada, North Dakota, Pennsylvania, Rhode Island, South Carolina, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

eLEC Communications Corp. is a publicly-traded local telecommunications company that is taking advantage of the convergence of the current and future competitive technological and regulatory developments in the Internet and telecommunications markets. eLEC provides an integrated suite of communications services to small and medium-sized business customers, including local, long distance, dial-up access, dedicated access, xDSL, and Web site design and hosting. For further information, visit the eLEC Web site at www.elec.net.

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Talk.com Buys Southeast Service Firm

By *Denise Culver*, Inter@ctive Week
April 27, 2000 7:46 AM PT
URL:

Gabe Battista continues to make good on his promise that Talk.com's future no longer will be tied solely to the coattails of America Online.

Battista's latest move in disentangling Talk's business plan from AOL (www.aol.com) came with the acquisition last month of Florida-based service provider Access One Communications (www.accessone.org), which claims be the only local competitor to have a regionwide agreement with a Bell company regarding unbundled network elements. Access One sells local and long-distance phone and Internet service to small and midsized businesses in nine Southeastern states, serving about 30,000 access lines in BellSouth's operating region. Talk paid about $200 million in stock for the privately held Access One.

The price sounds a little steep for a phone company that has no facilities equipment, but Battista says it's a good move for both sides.

"It's a smart deal for us because Access One has the ability to do unbundled network element platforms professionally and with an established customer base," Battista says. "It's a smart deal for them, because we bring to the deal financial strength and a marketing machine they didn't have."

Mark of Soros

Some of Talk's financial strength comes from an $80 million investment in the company by Soros Private Equity Partners, an investment firm run by billionaire tycoon George Soros.

Battista says he was introduced to Soros about two weeks before the Access One agreement. Soros cut a deal in which it would receive preferred shares from the acquisition in exchange for the money, which Talk will use for general working capital and the possible acquisition of other companies.

"The investment enhances our balance sheet and gives us the financial flexibility that we need to move forward," Battista says. "The Access One deal was done as a shares deal, because we wanted them to be just as committed to shareholder value as we are. But there will be future deals that warrant a cash-only commitment from us."

Battista's plan is to bring together Access One's unbundled network element strategy with

Talk's customer base in the Southeast to create a strong presence in the region. Talk has about 300,000 long-distance subscribers in the Southeast, and will use Access One to sell local and Internet service to those customers.

One challenge in that fusion is that Access One to date has focused on business customers, while Talk has a definite consumer focus, dating back to its origins as Tel-Save.

It was Tel-Save's exclusive marketing deal with AOL that created deep losses — $300 million in 1998 alone — for the company. Soon after taking over the company in early 1999, Battista renegotiated the AOL deal, trading exclusivity for lower payments to AOL. Under the new deal, Talk's right to be the exclusive marketer of long-distance phone service on AOL's Web site expires in July.

. . : :Advantages of UNEP(Virtual Facilities)

- **No Capital Investment in Facilities**
- **Region Wide Ubiquity**
- **Facilities Flexibility, No Stranded Plant**
- **Speed to Market**
- **Ability to Compete with any Other Network**
- **Superior Service Quality**
- **End-to-End Maintenance and Provisioning**
- **Streamlined Electronic Ordering**
- **No Skill Acquisition or Training Needed**
- **Cashflow**
- **Variable vs. Fixed Cost**

. . : :Reliability

One thing we can say about our current local phone service is that it *always* works

Unlike other newly formed local telephone companies, Access One did not set out to try and duplicate what is considered the most advanced, state of the art, and reliable network today.

We simply provide you with the same network and product line that you are currently using and that has been proven for over 100 years.

Access One offers the safe reliable choice at a discount.

eLEC

Essex Comm

Access One Commun

Omnicall

Omnicall Intl

Talk.com

Annual Report & Form 10-K Year 2000

McLeodUSA®

Integrated Communications Services

Overview. As of December 31, 2000, we provided service, on a retail basis, to about 1.1 million local lines in our markets, primarily to small and medium sized business customers in major metropolitan areas and in second and third tier markets, and to residential customers in second and third tier markets. Since beginning sales activities in January 1994, we have increased our revenue from the sale of local and long distance telecommunications services from $4.6 million for the year ended December 31, 1994 to $716.2 million for the year ended December 31, 2000.

As of December 31, 2000, we have received state regulatory approval to offer local switched services using our own communications network facilities in Arkansas, Arizona, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Tennessee, Texas, Utah, Washington, Wisconsin and Wyoming. We intend to offer additional local switched services using our own network facilities, either alone or in combination with network elements purchased from existing telephone companies, in selected markets in 25 states. We plan to expand these facilities-based services as our communications network develops and our market penetration increases.

In certain locations, we enter the market by reselling standard retail business services. This strategy allows us to aggressively capture customer share and generate revenue in a market with little up-front cost in comparison to establishing Centrex or other resold service, while we complete our own communications network. We will move relatively quickly from a resale mode to providing facilities-based services. In many other markets we have installed facilities and are aggressively capturing customer share utilizing our own switching facilities.

We use several platforms to aggressively capture customer share. We utilize resale, facilities-based services, including both leased switch port and loop combinations and our own switching facilities combined with leased loops and direct build platforms. [redacted] Our communications network and switching capacity is also designed to serve other wireline and wireless carriers on a wholesale basis.

In order to provide local communications services to most of our business and residential customers, we purchase switch port and local loop combinations through various agreements with Qwest Communications, Inc. Depending on the availability of certain platforms and the relative economics of each, we purchase a variety of service platforms (resold Centrex or other local services, and unbundled network elements, including local loops, and switch port and local loop combinations) through various interconnection agreements with subsidiaries of SBC Communications, Inc. Our providers bill us for all the lines assigned to our customers and provide us with call detail reports, which enable us to verify our customers' bills for both local and long distance service. Our Qwest agreements protect us from unilateral rate increases until 2002 or 2003, depending on the state. In most Qwest states, we believe that our local services are superior to a standard business or residential telephone line in most markets since we can offer features, such as three-way calling, consultation hold and call transfer at no extra charge. Other custom calling features are available at additional cost. Because we also purchase certain functionality from our providers, our personnel have on-line access to their systems, allowing us to efficiently make changes to our customers' services at a lower cost.

Our plans to provide local switched services using our own communications network facilities will depend upon obtaining and maintaining favorable interconnection agreements and terms for leasing network elements from existing telephone companies. In August 1996, the FCC

pathnet

our press room

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PATHNET REPORTS THIRD QUARTER RESULTS

RESTON, VA (Nov. 14, 2000) - Pathnet Telecommunications, Inc. (Pathnet), the industry's first wholesale, convergent telecommunications service provider combining competitive local access services and long-haul transport in underserved markets, today announced its financial and operating results for the quarter ended Sept. 30, 2000.

Third quarter revenue increased to $17.8 million as compared to revenue of $0.6 million in the third quarter of 1999. On a sequential basis, revenue increased 40 percent from $12.6 million in the prior quarter. As expected, construction revenue for the quarter accounted for approximately 92 percent of total revenue, with service revenue comprising the balance. Earnings before interest, taxes, depreciation and amortization (EBITDA) for the quarter was a loss of $10.4 million versus a loss of $6.9 million in the year-ago quarter.

Customer demand for Pathnet's single integrated platform of VPOP Plus Services--including Internet dial access, xDSL and Private Line connection services--continues to increase. The company's sales backlog increased $35 million and now stands at $234 million, comprised of $195 million in telecom services and $39 million in construction and infrastructure services.

"Pathnet is executing nicely on its plan of becoming the first convergent communications services provider focused on underserved markets," said Richard Jalkut, president and chief executive officer. "Customer demand for our unique VPOP services family has been outstanding as evidenced by our growing sales backlog. Customers are looking for capital efficient, low-cost service that is available in multiple markets--which Pathnet provides. We've also continued to bolster our financial position by securing $260 million in credit facilities with various vendors."

During the third quarter, Pathnet successfully secured a total of $260 million in credit facilities from two vendors and closed a $25 million second tranche of equity from Colonial Pipeline Co. The company's $210 million credit facility from Nortel Networks has a term of six years and will support the expansion of Pathnet's continued fiber optic build-out through the financing of goods and services purchased from Nortel. The second vendor's $50 million

credit facility will help Pathnet finance purchases including softswitches, gateways and optical muxes, which will support Pathnet's offering of unique VPOP Plus Services.

Pathnet completed 300 additional route miles of network and 20 additional collocations during the quarter, bringing its total network to 7,700 route miles and 106 collocations in 73 cities. The company continues to target 150 collocations in 80 cities by the end of the year. Pathnet increased its gross property and equipment by $51 million in the quarter, bringing total property and equipment acquired to $272 million at quarter-end.

Third Quarter Highlights and Recent Developments

- Secured $210 million credit facility from Nortel Networks
- Secured a $50 million credit facility from a second vendor
- Closed $25 million second tranche of equity from first quarter's strategic investment transaction
- Increased sales backlog to $234 million from $200 million
- Lit Omaha-to-Denver route to complete lighting on Chicago-to-Denver route
- Completed 20 collocations, bringing cumulative total to 106
- Achieved CLEC approval in 10 new states, for a year-to-date total of 35 CLEC approvals

Pathnet will be discussing its third quarter results this morning at 11:00 a.m. EST. Interested parties may listen to the call by dialing (719) 457-2633. A telephone replay will be available approximately two hours after the conclusion of the call for approximately one week. The replay call-in number is (719) 457-0820; both the call and the replay can be accessed using the passcode 652085.

CLICK HERE FOR 3rd QUARTER RESULTS TABLES

Pathnet is a wholesale telecommunications service provider that delivers broadband access and transport solutions to underserved markets nationwide over a wholly convergent network. Pathnet provides service to classic telecommunications carriers, as well as to emerging carriers such as Internet service providers and competitive local exchange carriers, giving them the ability to improve their profitability in today's environment via capital-free, low-risk market expansion. Pathnet currently has 7,700 route miles of completed network and 1,900 additional route miles of network under construction or swap commitment. Additional information about Pathnet can be found on the company's web site at: www.pathnet.net.

The statements made by Pathnet in this press release may be forward-looking in nature. No assurance can be given that future results will be achieved; actual results may differ materially from those projected in forward-looking statements. Pathnet believes that its primary risk factors include, but are not limited to: signing additional agreements with private network operators and others; offering services to telecommunication service providers; entering into partnering arrangements; building a digital network; meeting market demand and customer service expectations; and obtaining additional financing. Additional information concerning these and other potentially important factors can be found within Pathnet's Registration Statement and periodic reports filed with the U.S. Securities and Exchange Commission under the federal securities laws. Statements in this release should be evaluated in light of these important factors.

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Adm_CXR	company_n	AREA	Trk_Type_T	SumOfinSvc
			DAJ Total	2820
			DTJ Total	24
			✓EDJ Total	505170
			ESJ Total	4037
			ETJ Total	4
			IEJ Total	4
			IRJ Total	174
			ITJ Total	168
			✓OGJ Total	5952
			PHJ Total	0
			SLJ Total	295
			✓TDJ Total	510109
			TFJ Total	144
			✓TGJ Total	19008
			✓TOJ Total	3480
			VRJ Total	500
			Grand Tota	1051889

JAN '01 REGION

Adm_CXR company_nAREA	Trk_Type_T	SumOfinSvc	
	DAJ Total	2820	DIR. ASST. CALL completion
	~~**BTJ Total**~~	~~24~~	
	EDJ Total	505170	END USER
911 →	**ESJ Total**	4037	911
	~~**ETJ Total**~~	~~4~~	
	~~**IEJ Total**~~	~~4~~	
	IRJ Total	174	INTERCEPT TRUNKS
?	**ITJ Total**	168	
	OGJ Total	5952	OL
	~~**PHJ Total**~~	~~0~~	
	SLJ Total	295	SS7 Links
	TDJ Total	510109	
	TFJ Total	144	
	TGJ Total	19008	
	TOJ Total	3480	
	VRJ Total	500	INWARD OPS TRUNKS
	Grand Tota	1051889	

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Feb

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JAN '01

Adm_CXR company_name	AREA	Type_7_3	SumOfinSvc
	AL	DAJ Total	109
		EDJ Total	20981
		ESJ Total	178
		IRJ Total	18
		OGJ Total	144
		SLJ Total	80
		TDJ Total	33447
		VRJ Total	49
	FL	DAJ Total	999
		EDJ Total	180205
		ESJ Total	958
		IRJ Total	32
		OGJ Total	960
		PHJ Total	0
		SLJ Total	60
		TDJ Total	178769
		VRJ Total	151
	GA	DAJ Total	551
		EDJ Total	139727
		ESJ Total	1220
		ETJ Total	4
		IRJ Total	30
		OGJ Total	2304
		SLJ Total	42
		TDJ Total	96985
		VRJ Total	75
	KY	DAJ Total	65
		EDJ Total	17082
		ESJ Total	94
		IRJ Total	6
		OGJ Total	96
		SLJ Total	11
		TDJ Total	13267
		TGJ Total	3792
		TOJ Total	1224
		VRJ Total	2
	LA	DAJ Total	134
		EDJ Total	21620
		ESJ Total	212
		IEJ Total	4
		IRJ Total	18
		OGJ Total	672
		SLJ Total	3

LA	TDJ Total	37322
	VRJ Total	53
	DAJ Total	46
	EDJ Total	7562
	ESJ Total	102
MS	IRJ Total	20
	SLJ Total	2
	TDJ Total	10099
	TFJ Total	144
	VRJ Total	14
	DAJ Total	388
	EDJ Total	49906
	ESJ Total	488
	IRJ Total	24
NC	OGJ Total	768
	SLJ Total	21
	TDJ Total	61636
	TGJ Total	216
	VRJ Total	64
	DAJ Total	117
	EDJ Total	16271
	ESJ Total	304
	IRJ Total	10
SC	OGJ Total	528
	SLJ Total	38
	TDJ Total	28229
	TOJ Total	720
	VRJ Total	41
	DAJ Total	411
	DTJ Total	24
	EDJ Total	51816
	ESJ Total	481
TN	IRJ Total	16
	ITJ Total	168
	OGJ Total	480
	SLJ Total	38
	TDJ Total	50355
	TGJ Total	15000
	TOJ Total	1536
	VRJ Total	51
	Grand Total	1051889

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Financial Statements

Mpower Communications Reports Fourth Quarter and Year-End 2000 Results

- Fourth quarter revenue increased 12% sequentially; hits high end of guidance
- EBITDA loss for the quarter reduced to $50.8 million from $55.6 million; substantially surpasses expectations
- Lines in service increased by 36,225 for the quarter; exceeds expectations

ROCHESTER, NY - February 15, 2001 - Mpower Communications Corp. (NASDAQ: MPWR), a provider of broadband high-speed Internet access and telephony services to business customers, today announced results of its operations for the fourth quarter and year-ended December 31, 2000.

Fourth Quarter Results
Mpower reported revenue for the fourth quarter of $44.6 million, a 122% increase over fourth quarter 1999 revenue of $20.1 million, and a 12% increase sequentially over the third quarter of 2000 (excluding the one-time $6.2 million gain in switched access and reciprocal compensation reported in the third quarter). Mpower reported 16% sequential growth in its recurring core customer revenue in the fourth quarter (excluding switched access, reciprocal compensation and dial-up ISP revenue).

In the quarter, the company added a record 36,225 net lines to reach a total of 285,130 lines in service at the end of the year. This growth represents a 15% increase over the 248,905 lines in service at the end of the third quarter.

The company brought 53 central office collocations online in the fourth quarter and reported capital expenditures of $73.1 million in the quarter, $20 million under its guidance due to timing issues. The $20 million will be carried over and is added to Mpower's 2001 guidance. The company's gross margin increased 300 basis points to (1%) from (4%) in the third quarter.

Mpower posted an EBITDA (earnings before interest, taxes, stock-based compensation, depreciation and amortization and non-recurring network optimization cost) loss of $50.8 million for the quarter, an improvement of $4.8 million over third quarter (excluding one-time switched access and reciprocal compensation gain).

At the end of the third quarter Mpower initiated a number of cost control initiatives, including a plan to eliminate 339 collocations and delay its expansion into Northeast and Northwest markets. As a result of these efforts, the company reduced its selling, general and administrative (SG&A) costs as a percent of revenue to 113% in the fourth quarter from 136% in the third quarter.

Year-End 2000 Results
For the full year 2000, Mpower reported $146.9 million total revenue or $140.7 million in recurring revenue (excluding one-time switched access and reciprocal compensation gain), a 156% increase over the $55.1 million in revenue the

company had in 1999.

Mpower's EBITDA loss for 2000 was $154.0 million, compared to a $39.8 million loss reported in 1999. The company netted 128,595 line additions for the full year 2000, a 90% increase in lines in service from year-end 1999. Mpower exited 2000 with $503 million in cash.

Mpower's integrated voice and data network now reaches 40 markets with 761 revenue ready central office collocations, 16 voice switches and 18 data switches. Selling into this network today is a direct sales force of 306 quota-carrying representatives who are exclusively dedicated to the small and mid-size business customer segment. Mpower ended 2000 with 82% of its lines from business customers, up from 67% a year ago.

"2000 was a year of dramatic growth in Mpower's network as we truly became a national company, growing from 13 to 40 markets and nearly tripling our addressable market," said Huff. "It's remarkable to note that since the majority of our new markets came online towards the very end of the year, we were able to more than double our revenue largely from the 13 markets we had in service at the end of 1999."

In order to present the company's financial performance in a format more closely aligned with its peers, Mpower has reclassified labor costs from network operations from the "Costs of operating revenues" category to "Selling, general and administrative" in its financial statements. This change results in reported gross margin of 6% for the fourth quarter and 18% for the full year, compared to 24% for the full year 1999.

2001 Focus on Core Business
"While our main focus in 2000 was building and expanding our footprint, in 2001 it is on operational excellence," Huff continued. "To us this means an unwavering commitment to strengthening our customer relationships and adding profitable revenue."

Across the country, Mpower is consolidating provisioning centers and standardizing provisioning processes to continue to improve its cost structure and enhance the service delivery experience for its customers. The company recently announced the addition of Steven A. Reimer as Senior Vice President of Customer Operations to oversee its service delivery operations on a national scale.

In addition, Mpower plans to further bolster its back office support structure with strategic investments in operating support systems that will enhance and further automate its customer relationship management, provisioning flow-through and network monitoring capabilities.

"Rescaling new market growth and adding scale to our existing footprint have enabled us to right-size our cost structure and significantly reduce our operating cash flow loss as a percent of revenue," stated Mpower Communications President and Chief Executive Officer Rolla P. Huff. "Given our focus on profitability and the state of the capital markets, we have made the decision to move the Northeast and Northwest collocations from deferred status to cancelled status. While we continue to see these markets as very attractive for future expansion, our first priority is leveraging the considerable footprint already in place and protecting our strong funding position."

Mpower is canceling its plans to enter 12 markets in the Northeast and Northwest, representing an additional 351 collocations. The company expects to take a charge of $20-24 million in the first quarter of 2001 associated with the investment it made in switch sites and collocations for these markets. Equipment will be redeployed for growth in the company's existing network. "This charge will have no impact on revenue, EBITDA or CapEx guidance," explained Huff. "Eliminating rental expenses for these collocations will actually improve our funding position."

Consistent with the company's business customer focus, earlier this month Mpower agreed to sell its residential dial-up ISP business segment to EarthLink, Inc., a leading Internet Service Provider. Mpower acquired this ISP business through its acquisition of St. Louis-based Primary Network in June of 2000. The quarterly revenue contribution from this dial-up ISP segment is approximately $1.6 million. Mpower does not anticipate any effect on previously communicated revenue or EBITDA guidance.

Long-Term Economic Model
Mpower recently filed an 8-K and has posted on its Website major assumptions and estimates on the economics of its business. This presentation can also be used to gain a better understanding of the fundamentals of the Competitive Local Exchange Carrier (CLEC) industry in general and can be found on the Internet at http://www.mpowercom.com/corpinfo/relationships.htm.

"We have provided an in-depth view into each of the cost and revenue drivers required to create value in this industry," stated Huff. "After this exhaustive analysis, we believe now more than ever, that this is a great business and we hope that this information will provide investors with a tool to better compare and contrast various companies in our industry."

"As the results we've announced today and our guidance for the first quarter of 2001 will indicate, we have turned the corner on the up-front investments in our expansion and have put Mpower on a path toward positive operating cash flow," he concluded.

First Quarter and Full-Year 2001 Guidance
Also today, Mpower reiterated its financial guidance for full-year 2001 operating results and provided guidance for the first quarter. "We are pleased that while switched access rates will step down in the first quarter, the impact on total revenue will be offset by strong growth in our core customer revenue," said Huff. "We also expect to continue to improve our EBITDA results, even with the switched access step down. There will be no further material decline in switched access rates for the balance of the year."

	4Q 2000 (in millions)	1Q 2001 Sequential Growth	YE 2001 (in millions)
Core Customer Revenue	$27.3	11-13%	$163-180
Switched Access & Other	$17.3	(21)-(18)%	$47-50
Total Revenue	$44.6	(1)-1%	$210-230
EBITDA *	$(50.8)	3-5%	$(185)-(160)
CapEx	$73.1	(32)-(25)%	$105-120

* Earnings before interest, taxes, stock-based compensation, depreciation and amortization and non-recurring network optimization cost

Mpower Communications Fourth Quarter and Year-End Earnings Conference Call
Mpower will host a conference call today at 10:00 a.m. Eastern Standard Time, to further discuss its fourth quarter and year-end 2000 financial and operating results. The call is open to the public. The company's senior management team will also take this opportunity to discuss the operational and financial outlook for the first quarter and full-year 2001. The dial-in and replay information for the call is as follows:

Date: February 15, 2001
Time: 10:00 a.m. (Eastern Standard Time)

Participants:	Rolla P. Huff, President and Chief Executive Officer Michael R. Daley, Executive Vice President and Chief Financial Officer
Dial-in Number:	1-800-550-7368, reference Mpower Fourth Quarter & Year-End Results
Webcast:	A live audio Webcast is also available using Windows Media Player by visiting Mpower's Website at http://www.mpowercom.com/webcast.
Replay Number:	1-800-633-8284, reservation #: 17539611 Available 12:00 p.m. EST, 2/15/01 through 12:00 p.m. EST, 2/22/01
Webcast Replay:	The on-demand (replay) audio Webcast will be available on this Website through March 15, 2001.

About Mpower Communications Corp.

Mpower Communications Corp. (Nasdaq: MPWR) is a facilities-based broadband communications provider offering a full range of data, telephony, Internet access and Web hosting services for small and medium-size business customers. Further information about the company can be found at www.mpowercom.com.

Forward-Looking Statements

Under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, Mpower Communications cautions investors that certain statements contained in this press release that state Mpower Communications and/or management's intentions, hopes, beliefs, expectations or predictions of the future are forward-looking statements. Management wishes to caution the reader these forward-looking statements are not historical facts and are only estimates or predictions. Actual results may differ materially from those projected as a result of risks and uncertainties including, but not limited to, projections of future sales, market acceptance of our product offerings, our ability to secure adequate financing or equity capital to fund our operations and network expansion, our ability to manage rapid growth and maintain a high level of customer service, the performance of our network and equipment, the cooperation of incumbent local exchange carriers in provisioning lines and interconnecting our equipment, regulatory approval processes, changes in technology, price competition and other market conditions and risks detailed from time to time in Mpower's Securities and Exchange Commission filings.

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Wakeling, Victor

From: BellSouth Investor Relations
Sent: Monday, March 19, 2001 2:47 PM
To: BSC CLEC; BSC Institutional Group
Subject: Sanders Morris Harris: SANDERS MORRIS HARRIS: TELECOM SERVICES UPDATE

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SANDERS MORRIS HARRIS: TELECOM SERVICES UPDATE
11:54am EST 19-Mar-01 Sanders Morris Harris (Research Department 800/423-96) T

March 19, 2001

Dan Ross (713) 220-5154; dan.ross@smhhou.com

SMH is pleased to announce the availability of our Telecom Services Update, dated March 19, 2001. The report, available in pdf format or print provides a look into the telecommunications services industry, our current stock universe, our opinions on how we see stocks in our universe performing this year vs. the averages as well as some overall thoughts on commonly asked questions about the technology cycle and where to look for investments this year. The below first call note is a condensed version.

Format:
- Industry Overview

- Company News
  (Allegiance Telecom (BUY) -- Our standout in the CLEC industry.
  (McLeodUSA (BUY) - Where customer service reigns supreme.
  (SBC Communications (BUY) - Price dip is a Reason to Buy.

  Technology Q&A: Frequently Asked Questions.

- Valuation and Performance
  (Telecom Services Equity Performance Template
  (Telecom-Related Equity Performance Template

SMH's Telecommunications Services Recommendations

Company Name	Ticker	Price	Rating	Target Price
SBC Communications	SBC	$42.14	Buy	$55
Allegiance Telecom	ALGX	$17.69	Buy	$50
McLeodUSA	MCLD	$11.69	Buy	$25
Rhythms.Net	RTHM	$ 0.56	HOLD	N/A
Covad Communications	COVD	$ 1.44	HOLD	N/A
DSL.Net	DSLN	$ 1.03	HOLD	N/A

Investment Opinion

After taking a drubbing last year, the telecom services sector is once again hitting investors' radar screens. The sector has held its own thus far this year. We suspect it is the beneficiary of both value-oriented investors looking to pick up some octane with CLECs (Competitive Local Exchange Carriers) and the broader investor community flocking to the somewhat predictable cash flows of RBOCs (Regional Bell Operating Companies). On a year-to-date basis, our recommended stocks have slightly under performed the S&P 500, primarily due to recent price movement in the stocks. In our opinion, the leading CLECs -- Allegiance Telecom and McLeodUSA - will continue to separate themselves from their peers over the next six months and shall demonstrate to investors that the ›del of the CLEC does work and can generate substantial returns for investors. ‹ believe over the next six to nine months that our BUY rated stocks should outperform the broader market.

Our opinion of the current market and valuation is somewhat upbeat and is based on the following:

1. Telecom service stocks are capital intensive and react favorably to interest rate cuts. We believe continued interest rate cuts will help short-term movements in the stocks. More important, we believe the fundamentals remain intact and are strong for our Buy-rated stocks.

2. Both McLeodUSA and Allegiance Telecom have stated that a weak economy should not affect them. We believe this is true. In our opinion, companies in the CLEC sector that cite a weak economy as justification for poor results will see their valuations punished.

3. We believe the overall market will remain highly volatile over the next three to six months as some technology companies continue to ratchet down earnings expectations.

4. We believe calendar 2001 will be subject to tremendous amounts of both positive and negative news for the telecommunications services industry. We believe CLECs and long-distance companies will continue to see price volatility, and that less volatility will occur within the more-diversified, cash-flow-friendly businesses in which the RBOCs currently participate. Specifically, we believe the following will occur:

The capital markets will open up again for well-managed CLECs. Poorly run CLECs, and those with high debt levels, will have an increasingly difficult time raising capital (especially with terms similar to a year ago). As a result, we believe several CLECs will face bankruptcy and that a consolidation effort will begin, led by CLECs with funding.

Investors will flock to well-run RBOCs. During periods of volatility and in weak economies, investors seeking representation in telecommunications services historically seek out proven management teams. As SBC has a five-year average ROE (return on equity) of approximately 39%, we believe SBC may participate in ney inflows and provide upside from current levels. If the EPS growth rate celerates beyond our forecast of 11.1%, we believe additional upside is likely above our current target price of $55.00.

Calendar 2001 will finally demonstrate that network design does matter. For long-distance carriers this is tremendously significant, as many of their networks will not be able to attain comparable operating margins relative to several next-generation networks nearing completion. Given that next-generation networks will be utilized by many RBOCs and that these companies have such a dominant position within their regions, FY01 will be an extremely tough year for long-distance companies, even those focused on growing their data businesses. Once any company has a large market share it is extremely difficult to avoid macro trends within an industry (we do believe that well-run CLECs will be a thorn to RBOCs on the local side in the long-term). Due to consolidation of the long-distance business, we believe the impact of RBOC long-distance approvals will be substantial. Furthermore, the strong momentum exhibited by Verizon Communications in New York and SBC Communications in Texas makes us wary of the long-distance companies' ability to outperform the market. At this time we have no formal ratings on any large, long-distance companies.

We remain cautious about the wireless telecommunications sector, as 2001 will mark continued consolidation within that industry -- and market scale and scope will matter substantially. Based on our conversations with independent contractors (those actually putting up the towers and wiring the equipment) we remain very pessimistic about network build-out costs over the next three to five years. A recent analysis of the European Cellular industry by Forrester Research addressed the difficulty of determining a valuation for wireless businesses.

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legiance Telecom (ALGX- $17.69)
Rating: Buy
Investment Opinion: Allegiance Telecom's fourth-quarter 2000 results illustrate

that it is scaling its business in a profitable manner. More important, this company continues to grow organically and consistently attains our projections. We believe Allegiance Telecom is a standout within the CLEC industry. We reiterate our BUY rating and $50 target price.

LeodUSA (MCLD- $11.69)
Rating: Buy
Investment Opinion: McLeodUSA is poised to become a leading CLEC, increasingly expanding its reach and footprint through selective acquisitions. Given the company's commitment to excellent customer service and its growth prospects in the years ahead, we reiterate our Buy rating and $25 price target.

SBC Communications (SBC- $42.14)
Rating: Buy
Investment Opinion: Despite our concerns about wireless growth, dating back to our initiation in February (we initiated with an Accumulate rating at that time), the potential growth in DSL subscribers, international growth and continued penetration in IntraLATA long-distance services will be a major growth engine for all RBOCs in 2001, and for SBC in particular. We reiterate our Buy rating and $55 target price.

CT Communications Announces 2000 Earnings

March 5, 2001

CT Communications, Inc. (CTC; Nasdaq: CTCI) announces revenues of $115.7 million for the year 2000, a 10% increa over 1999. Net income for the year was $40.8 million versus $23.1 million in 1999. Diluted earnings per common share the year 2000 was $2.15 per share, compared to $1.22 per share in 1999. The 2000 results included a $23.7 million af tax gain on the sale of CTC's 1.96% interest in the BellSouth Carolinas PCS Partnership. Excluding the BellSouth gain 2000 and a $6.7 million one-time larger than normal after-tax gain on the sale of securities in 1999, diluted earnings pe common share was $.90 per share in 2000, versus $.87 per share in 1999.

Revenues were $30.2 million for the fourth quarter 2000, an increase of 10% over the fourth quarter 1999. Net income $3.3 million for the fourth quarter 2000 versus the $5.0 million for the fourth quarter 1999. I share for the fourth quarter 2000 was $.17 per share, compared to $.27 per share for the f

To reduce costs and enhance operating margins, CTC plans to reduce the existing workfo or 3.7% through an early retirement program offered to 22 employees and attrition. The co charge of not more than $1.5 million in first quarter of 2001 associated with these reductio focus growth in 2001 exclusively in markets the company has already entered as a CLEC Exchange Carrier) in order to improve margins.

Results for the year by business unit were:

- **Concord Telephone Company, the incumbent local exchange carrier (ILEC)**

The ILEC grew access lines to 122,498 total lines, a 4.8% increase over December lines grew at nearly 8% and residential lines grew nearly 4%. Revenue increased 7.4% while expenses remaine relatively flat with 1999. The EBITDA margin for the ILEC was 48.7% due to effective management of costs and continued emphasis on profitability of products and services. In 2001, ILEC revenue is forecasted to increase approximately 5% while margins should improve slightly.

- **CTC Exchange Services, the competitive local exchange carrier (CLEC)**

The CLEC continued to improve the provisioning process throughout 2000. In the fourth quarter, the business un provisioned a record number of 3,882 access lines. At December 31, 2000, the CLEC served 11,825 total acces lines, more than 200% higher than at December 31, 1999 and growth of 49% from the end of third quarter 2000. Revenues increased 70.2% over 1999 and the unit reported $9.6 million of EBITDA loss for the year. In late 200 the CLEC opened a second market when it moved into the Greensboro metro area and continues to focus effort the Charlotte metro area market as well. The CLEC added 12 collocation sites throughout the year. In 2001, the CLEC will focus on driving customer penetration and profitability in existing markets. The company does not plan expand to any new markets in 2001. The CLEC expects revenues to increase to approximately $7.7 million in 20

- **Greenfield, the satellite local exchange carrier (SLEC)**

The SLEC signs agreements with developers and builders to become the "official telecommunications provider" their developments. Prior to 2000, four preferred provider agreements had been signed, including Concord Mills north of Charlotte. In 2000, 15 more agreements were signed, adding a potential 14,000 additional SLEC lines in future. In 2001, the SLEC will continue to concentrate on the existing Raleigh and Charlotte, NC markets. The S will focus on clustering new projects around existing projects for capital and service efficiencies. In 1999 and 200 the SLEC financial results were included in the CLEC business unit. Starting in 2001 CTC will report the SLEC financial information as a separate business unit.

- **CTC Internet Services**

In 2000, CTC added 1,420 xDSL lines and increased web hosting and high speed access customers by 39% an 50%, respectively. The internet services business unit reported revenues of $6.9 million, 20.7% over 1999 and h $.3 million of EBITDA losses. The business unit continues to concentrate on profitable growth by focusing on val added products and services. The company plans on the internet services business unit becoming EBITDA posi during 2001 with revenue growth expected to be in excess of 50%.

- **WebServe**

WebServe, a Charlotte, NC based web design and hosting company was acquired in mid-December of 2000 by CTC. The acquisition will provide additional capabilities in programming and web design that should complemen CTC's existing products and services. For the twelve months ended December 31, 2000, the company had $2.7 million in revenue.

- **CTC Wireless**

Digital wireless revenue grew 47.8% over 1999 to $7.7 million for the year 2000. This growth was driven by a 53 increase in subscribers due to the effective sales and distribution in our target market. CTC ended the year with total of 16,356 digital wireless customers, approximately 2,800 of which were pre-pay customers. In the spring o 2001 CTC will partition its portion of the Carolinas PCS network from BellSouth and acquire approximately 10,00 additional subscribers. The digital wireless business unit is expected to be EBITDA positive by the middle of 200 with revenue growth estimated to be more than 70%.

Operating EBITDA for the consolidated company was $8.1 million for the fourth quarter 2000 versus $9.2 million for the fourth quarter 1999. The 2000 operating EBITDA was $34.2 million versus $37.5 million in 1999 reflecting the investme in the competitive growth businesses during 2000.

Depreciation and amortization was $5.3 million for fourth quarter 2000 versus $3.6 million for fourth quarter 1999. The 2000 depreciation and amortization was $18.7 million, a $3.6 million or 24% increase over 1999, primarily reflecting network additions in the ILEC. Capital spending in 2001 is expected to increase $25 million to approximately $85 millio driven by two one-time significant capital expenditures, partitioning of the digital wireless assets and a new corporate building. These capital additions, coupled with other 2000 additions are expected to result in an increase in depreciatio and amortization in 2001 of over 28%.

Operating income was $2.8 million in the fourth quarter 2000 versus $5.6 million in the fourth quarter 1999. The 2000 operating income was $15.5 million versus $22.4 million in 1999.

Other income was $2.8 million in fourth quarter 2000, including $3.4 million of pre-tax gain from the sale of securities partially offset by interest expense. The 2000 other income was $52.5 million, including a $39.2 million pre-tax gain fro the sale of CTC's interest in the BellSouth Carolinas PCS Partnership and a $12.5 million pre-tax gain from the compa orderly liquidation of equity securities. In third quarter 2000 BellSouth Corporation's PCS subsidiary acquired CTC's 1. limited partnership interest in the BellSouth Carolinas PCS partnership for a $39.2 million pre-tax gain, $23.7 million af tax gain or $1.25 earnings per diluted common share in 2000.

The company forecasts total revenue growth in 2001 of approximately 15% and anticipates net income will be flat with 2000, excluding the gain from the sale of the BellSouth partnership interest in 2000.

"In 2000, we started new programs and built capacity in our businesses. We are now ready for a productive year in 200 We will concentrate on penetrating existing markets, increasing margins and focusing our efforts on profitable custome growth. With the stage set in 2000 and a profitable growth plan for 2001, we have confidence in our ability to be successful." said Michael R. Coltrane, President and Chief Executive Officer of CTC.

Consolidated Statements

of Income

($ in thousands, except per share amounts)

	Three Months Ended December 31, 2000	Three Months Ended December 31, 1999	% Chan
Operating Revenue ILEC Services	$21,557	$19,730	9.3
CLEC Services	1,175	794	48.0
Long Distance Services	3,367	3,466	(2.9
Internet & Data Services	1,832	1,492	22.8
Digital Wireless Services	2,161	1,518	42.4
Other	113	563	(79.9
Total Operating Revenue	**$30,205**	**$27,563**	**9.6**
Operating Expenses ILEC Services	10,916	11,075	(1.4
CLEC Services	4,650	1,381	236.7
Long Distance Services	2,022	2,296	(11.9
Internet & Data Services	1,586	1,402	13.1
Digital Wireless Services	2,798	2,153	30.0
Other	152	15	913.3

Operating Expenses	**$22,124**		**$18,322**		**20.8**
Operating EBITDA	**$8,081**		**$9,241**		**(12.6**
Depreciation and Amortization	5,326		3,607		47.7
Operating Income	**$2,755**		**$5,634**		**(51.1**
Other Income/(Expense)	2,779		2,682		3.6
Tax Expense	2,258		3,275		(31.1
Net Income	**$3,276**		**$5,041**		**(35.0**
Dividends on preferred stock	7		7		
Earnings for Common Stock	**$3,269**		**$5,034**		**(35.1**
Weighted Average Diluted Shares	18,913		18,854		0.3
Diluted Earnings per common share	$.17		$.27		(37.0

Consolidated Statements of Income

($ in thousands, except per share amounts)

	12 Months Ended December 31, 2000		12 Months Ended December 31, 1999		% Chan
Operating Revenue	$82,353		$76,653		7.4

ILEC Services					
CLEC Services	4,447		2,613		70.2
Long Distance Services	13,832		14,291		(3.2
Internet & Data Services	6,899		5,717		20.7
Digital Wireless Services	7,674		5,193		47.8
Other	450		1,125		(60.0
Total Operating Revenue	**$115,655**		**$105,592**		**9.5**
<u>**Operating Expenses**</u>					
ILEC Services	42,209		41,932		0.7
CLEC Services	14,047		4,870		188.4
Long Distance Services	7,896		8,619		(8.4
Internet & Data Services	7,225		5,320		35.8
Digital Wireless Services	9,441		6,866		37.5
Other	620		492		26.0
Operating Expenses	**$81,438**		**$68,099**		**19.6**
Operating EBITDA	**$34,217**		**$37,493**		**(8.7**
Depreciation and Amortization	18,711		15,125		23.7
Operating Income	**$15,506**		**$22,368**		**(30.7**
Other Income/(Expense)	52,502		16,398		220.2

Tax Expense	27,228		15,698		73.4
Net Income	**$40,780**		**$23,068**		**76.8**
Dividends on preferred stock	27		26		3.8
Earnings for Common Stock	**$40,753**		**$23,042**		**76.9**
Weighted Average Diluted Shares	18,931		18,858		0.4
Diluted Earnings per common share	$2.15		$1.22		76.2
Consolidated Balance Sheets					
($ in thousands)					

	At December 31,	At December 31,
	2000	1999
ASSETS Current Assets	$32,576	$23,999
Investment securities	23,900	81,950
Investment in affiliates	38,311	31,684
Property, plant and equipment, net	151,784	114,175
Other Assets	13,060	5,887

TOTAL ASSETS	**$259,631**	**$257,695**
LIABILITIES &		
STOCKHOLDERS' EQUITY		
Current Liabilities	$24,901	$15,873
Long-term debt	34,000	20,000
Deferred credits and other liabilities	25,263	46,543
Redeemable preferred stock	100	113
Stockholders' Equity	175,367	175,166
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	**$259,631**	**$257,695**

CT COMMUNICATIONS CUSTOMER GROWTH

	At 12/31/00	At 12/31/99	% Change
ILEC Access Lines			
Business Lines	31,339	29,078	7.8%
Residential Lines	91,159	87,857	3.8%
Total ILEC Lines	**122,498**	**116,935**	**4.8%**
CLEC Access Lines	**11,825**	**3,522**	**235.7%**
Long Distance Lines	**82,669**	**79,658**	**3.8%**
ISP Customers			
Dial-Up	15,878	16,405	(3.2%)
DSL Lines	1,420	117	1,113.7%
Web Hosting	328	236	39.0%
High Speed/Co-Lo	403	254	58.7%
Total ISP Customers	**18,029**	**17,012**	**6.0%**
Wireless Subscribers	**16,356**	**10,700**	**52.9%**

Certain statements contained in this press release are "forward-looking statements," within the meaning of federal securities laws. We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements in the federal securities laws. These forward-looking statements are subject to risks, uncertainties a assumptions made by management about us, including, among other things, changes in industry conditions created by Telecommunications Act and related state and federal legislation and regulations, recovery of the substantial costs tha result from the implementation of our new businesses, retention of our existing customer base and our ability to attract customers, rapid changes in technology, and actions of our competitors. These forward-looking statements may differ materially from actual results because they involve estimates, assumptions and uncertainties and should be viewed wi caution. In some cases, you can identify these statements by our use of forward-looking words such as "expects," "estimates," "intends," "plans," "believes," "projection," "will continue," "is anticipated," and "is forecasted." We undertak no obligation to update or revise any forward-looking statements, whether as the result of new information, future even otherwise. Readers are also directed to consider the risks, uncertainties and other factors discussed in documents filed us with the Securities and Exchange Commission.

CT Communications, Inc., which is headquartered in Concord, N.C., is a growing provider of integrated telecommunications services to residential and business customers located primarily in North and South Carolina. CT Communications, Inc. offers a comprehensive package of telecommunications services, including local and long distan telephone services, Internet and data services and digital wireless services.

###

Contact: Barry Rub
704.722.2

Mary Jean
704.722.3

CTCI
NASDAQ
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CT Communications, Inc.

CT Communications provides integrated telecommunications services to residential and business customers located primarily in North and South Carolina. We offer a comprehensive package of telecommunications services, including local and long distance telephone, Internet and data services, and digital wireless services.

We began operations in 1897 as The Concord Telephone Company and continue to operate as an incumbent local exchange carrier (ILEC) in Cabarrus, Stanly, and Rowan Counties, North Carolina. Today, we serve over 120,000 access lines in this territory.

Our Vision *top*
We will be the communications provider of choice for customers in the Carolinas who require integrated solutions and premier service. Our keys to success will include:

- Adhering to our Customer Pledge with every customer contact
- Building a team of skilled, committed and accountable employees
- Leveraging relationships with others into a portfolio of opportunities.

Our Mission *top*
At CT Communications, Inc., we go far beyond providing reliable basic telephone service. Customers find every communications solution they need. From local and long distance services, to new technology such as digital wireless phones, paging, Internet, data services, and business telephone systems, we are your "one-stop" telecommunications company.

As we move forward with more far-sighted strategies, we're absolutely committed to offering the personal service for which we're known. Our total communications specialists make people's lives easier by helping them use new technology. Additionally, they help businesses run better and more profitably. By consulting with our customers, sorting out options, and making it simple to do business with a single company, we make communications technology the helpful tool it's meant to be. Concord Telephone Company continues to increase its customer base. We now have more than 100,000 local telephone lines in Cabarrus, Stanly and Rowan counties, and we're growing daily.

Our Values *top*
CT Communications' key strategic advantage is our work force of dedicated, talented and technically skilled individuals whose commitment ensures that we can maintain competitive rates. When compared with rates of adjacent communities served by other companies, our customers save on telecommunications services every day.

Furthermore, our employees hold traditional values that shape our corporate culture. Here, treating people with respect and courtesy is still valued. And you'll not only find these values in how we treat each other within our company but, more importantly, in how we treat our customers.

We also believe in sharing the benefits of our success with our communities. One of the largest employers in our region, we're among the top taxpayers and we're also a major contributor to the United Way and other causes. Serving a 700-square-mile area in Cabarrus, Rowan, and Stanly counties, we have more than 600 employees and retirees in the region. This "family" and all of our neighbors are foremost in decisions we make as a company.

CT Communications Customer Pledge *top*
We are ethical, honest, and respectful in all our relationships.
We guarantee quality telecommunications services.
We are flexible, knowledgeable, and dedicated to exceeding customer expectations.
We take ownership of customer problems.
We develop and deliver creative, diversified services that are competitive and dependable.

The Business Journal (Raleigh/Durham) - March 20, 2000
http://triangle.bcentral.com/triangle/stories/2000/03/20/story7.html

The Business Journal
SERVING THE TRIANGLE'S BUSINESS COMMUNITIES

Exclusive Reports

> From the March 17, 2000 print edition

Madison River latest suitor at Interpath

Karine Michael

MORRISVILLE - Madison River Comm-unications Inc. is close to acquiring the local and long-distance phone business of Interpath Communications Inc., sources close to the companies say.

Madison River, a fast-growing Mebane-based telecom firm with backing from some large Wall Street firms, is likely to pay $4 million to $8 million to acquire Interpath's local and long-distance customer base and a Nortel DMS 500 switch.

Interpath, which has said it was planning to sell the business, will retain its 2,000-mile long fiber optic network and focus on offering Internet and network consulting and services, company officials have said.

Madison River spokesman Kevin Hancock says the company has had discussions with Interpath, but declines further comment. Interpath officials wouldn't comment on the negotiations either.

Analysts say that competitive local exchange carriers wanting increased market share in the Triangle would look at Interpath, which has said it has more than 3,000 business customers.

The deal would mean more market share for Madison River, which already has a 500-mile loop through the Triad and Triangle.

Interpath, a subsidiary of Carolina Power & Light Co., is paring down business units that are not profitable and restructuring itself to become what in industry jargon is called an applications service provider.

CP&L has been attempting to sell Interpath for several months, but buyers have balked at the utility's asking price. CP&L has invested more than $200 million in the business since 1997, but is now focused on its $5.3 billion merger with Florida Progress Corp., which is expected to be finalized later this year.

It appears that Interpath is selling off units that have hindered sales with numerous suitors, says Thomas Hamlin, an analyst with First Union Securities in Richmond. Bain Capital of Boston, BTI of Raleigh, BellSouth Corp. of Atlanta, and Qwest Communications of Denver, among others, have looked at the business.

"As CP&L moves on this merger with Florida Progress, it has to take care of sliding investments, that include Interpath," Hamlin says.

Interpath's business unit, however, could mean an expanded local presence for Madison River, which was started in 1996 by former Centel executive Steve Vanderwoude. The company now offers telephone service to 189,000 business lines and 34,000 long-distance customers in several states. Their nearest local operation is Mebtel, the incumbent provider in Mebane in Alamance County.

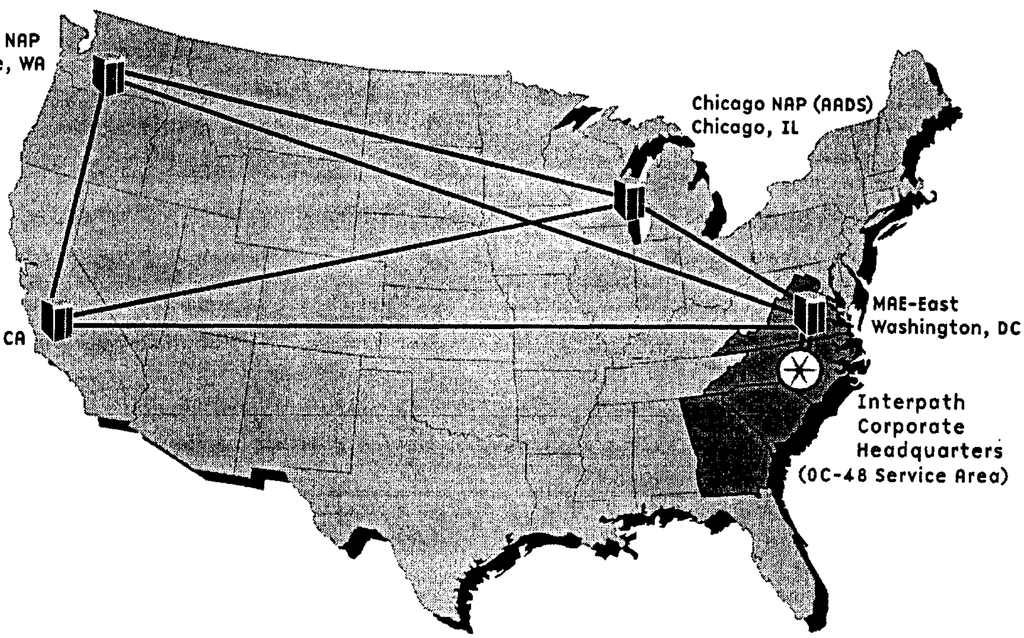
Madison River landed $200 million in a debt offering last November. At the same time, the company announced an additional commitment of $24 million from its equity investors, who include Madison Dearborn Partners Inc., Goldman, Sachs & Co., Providence Equity Partners.

The company has built a 2,2000 mile fiber-optic network from Raleigh to Dallas and is planning to expand further in Midwest markets.

In February the company purchased New Horizons Inc., an Internet service provider in the Triad, gaining several hundred customers. It offers Internet service to 22,000 subscribers.

INTERPATH'S TIER 1 NETWORK

Interpath Communications, Inc. is a fiber-optic leader, providing critical communications to one of the nation's largest investor-owned utilities.



Our network offers high-speed Internet access throughout the Carolinas and Washington, DC. Through our joint ownership of Autonomous Networks, LLC, our nationwide meshed ATM backbone is connected by multiple DS-3's to four Network Access Points (NAPs) around the country.

The result? We minimize traffic jams, so your data can fly to its destination, no matter where it's headed.

Our national backbone interconnects with the Internet at the following major NAPs:

- MAE-EAST (near Washington, D.C.)
- Chicago AADS (Chicago, IL)
- SIX (Seattle)
- MAE-WEST (San Jose, CA)

what an ASP should be.

Interpath Communications, Inc.
P.O. Box 13961, Research Triangle Park, NC 27709-3961

www.interpath.net
800.849.6305

interpath

Interpath Communications, Inc.

Facts at a Glance

Corporate Overview

Interpath, a full-service Application Service Provider (ASP), hosts, delivers, designs and supports a range of mission-critical eBusiness and enterprise applications. Interpath's ASP model allows customers to benefit from speed-to-market advantages; lower implementation and IT investment costs; access to industry-leading applications; and one point of contact for network, system and application management.

Corporate History

Interpath was founded in 1998 as a subsidiary of the FORTUNE 500 utility Carolina Power & Light (CP&L). In July 2000, Bain Capital, Inc.—a $7 billion private equity fund—acquired a 65% interest and majority ownership of Interpath.

Summary of Services

Interpath is leading the way in providing a product suite comprised of hosted eBusiness solutions and enterprise application services in a highly secure and reliable environment.

Interpath's portfolio includes eBusiness solutions from leading eCommerce software platforms such as BroadVision, Microsoft, and Vignette. The Company provides managed complex hosting services, and a suite of Data Services including DSL and Managed Firewall.

To complement this product portfolio, Interpath offers consulting expertise to ensure its customers receive the most appropriate products and services for their business needs. Interpath's customers benefit from the expertise of a highly skilled and experienced team that has provided services to FORTUNE 100 companies as well as mid-sized businesses.

Top Partners

BroadVision, Cisco, IBM, Microsoft, Nortel, Sun Microsystems, and Vignette

Executive Team

Joel A. Schleicher, Chairman and Chief Executive Officer
Lou Salamone, Executive Vice President of Finance and Administration and Chief Financial Officer
Karen A. McKay, Senior Vice President of Finance
John Hayden, Executive Vice President, Marketing
George Caravias, Executive Vice President, Business Development
Tony McGivern, Chief Technology Officer

Corporate Office
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www.interpath.net

interpath

realize your BUSINESS POTENTIAL

SOLUTIONS

eBusiness Solutions

Hosting Solutions

Managed Network Solutions

- Internet Access
- Private Networking
- Security
- FAQ

Information Request Form

SOLUTION PARTNERS

Microsoft

Vignette

Managed Network Solutions

Stay connected. Stay competitive.

Interpath's complete set of high-speed Internet access and private networking solutions make it easy and cost-effective to build and maintain the wide area network (WAN) your enterprise needs for an "always-on" connection--now and in the future. Our Managed Network solutions provide all of the access and security services your business needs--including DSL (Digital Subscriber Line), Frame Relay, Point-to-Point and Managed Firewall.

With Interpath as your partner, you're relieved of the administrative costs and responsibilities. We own, operate and maintain the network hardware; and we order and maintain the circuits for you. In effect, Interpath is your single point of contact for questions and support--and you receive only a single monthly bill.

In the end, you get back to focusing on your business and leave the hassle of managing your network to us.

INTERPATH--YOUR NETWORKING PARTNER

>Robust Architecture
Our network infrastructure delivers high-performance connectivity.

>Reliability
Network redundancy ensures reliable service--and peace-of-mind.

>Service
24/7 network monitoring, maintenance and customer service.

>Accountability
Interpath is your single point of contact.

>Scalability
No matter how fast you grow, your network will keep up.

Private Networking: Digital Subscriber Line

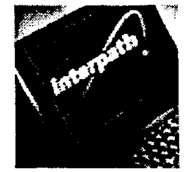
T-1 muscle without the T-1 price.

Interpath's Digital Subscriber Line (DSL) service is a business-class connectivity solution that allows your small business to take advantage of always-on, dedicated Internet Access. Select fixed speeds up to those of a T-1 (1.54Mb/s), upstream and downstream, at a fraction of normal dedicated circuit costs.

Because we provide monitoring and maintenance of all circuits and hardware, you can rest assured that you will always have fast, reliable Internet Access, without the hassle of a dial-up connection, or frequent disconnects. Basically, we'll handle the technology and let you get back to the business you do best--your own.

Let us know if you'd like to be contacted when Interpath DSL service becomes available in your area. Please complete only the required fields on our Information Request Form.

The Interpath Network



High speeds. Anywhere. All the time.

Interpath Communications, Inc. is a fiber-optic leader, providing critical communications to businesses like yours.

Our network offers high-speed Internet access throughout the Carolinas and Washington, DC. Through our joint ownership of Autonomous Networks, LLC, our nationwide meshed ATM backbone is connected by multiple DS-3's to four Network Access Points (NAPs) around the country.

The result? We minimize traffic jams, so your data can fly to its destination, no matter where it's headed.

Our national backbone interconnects with the Internet at the following major NAPs:

- MAE-EAST (near Washington, D.C.)
- Chicago AADS (Chicago, IL)
- SIX (Seattle)
- MAE-WEST (San Jose, CA)

Service

We offer a full range of affordable Internet products, designed to eliminate resource and technical challenges, and keep your business connected today and into the future. Interpath's Managed Network solutions offer simple yet comprehensive and convenient answers to all your communication requirements.

You can download a PDF version of the Interpath Network brochure from our Media Kit.

pathnet

our press room

Patti Kelly
Media Relations
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pkelly@pathnet.net

PATHNET NETWORK CONTINUES RAPID EXPANSION

Boise latest city--and 4th in past week--to join softswitch network

RESTON, VA (Mar. 14, 2001)-- Pathnet Telecommunications, Inc., the industry's first wholesale, convergent telecommunications service provider combining competitive local access services and long-haul transport in underserved markets, today announced that Boise, Idaho, is now being serviced by the world's first softswitch network. Boise is the 19th city to become part of the rapidly growing network; the others are Omaha, Neb.; Des Moines, Cedar Rapids, Council Bluffs, Davenport, and Iowa City, Iowa; Chicago and Rockford, Ill.; Akron and Canton, Ohio; Ann Arbor, Mich.; Amarillo, Beaumont, and Houston, Texas; Bismarck, N.D.; and Denver, Boulder and Longmont, Colo.

Pathnet's signature VPOP Plus service is an innovative broadband solution aggregating and delivering dial PRI access, xDSL, and private line connections from underserved markets to a single DS-3 or OC-x level connection in a major market. VPOP Plus delivers service velocity--the ability to reach more customers, make more connections, faster than any other way, via Cisco's SS7/PRI Gateway solution.

"This announcement is especially gratifying because some of our customers had a particular interest in the Boise market," said Richard Jalkut, Pathnet's president and chief executive officer. "It's also exciting to note that Boise is our 4th city launch in the past week, and I have tasked our team with keeping up the pace."

Boise, the capital of Idaho and its largest city, is the hub of commerce, banking and government for the state. Non-farm employment in Boise exceeds 185,000, and it has an estimated total annual residential and business telecom spend of more than $265 million. A number of large regional, national and international companies are headquartered there, including Albertsons and Micron Technology.

Pathnet is a wholesale telecommunications service provider that delivers broadband access and transport solutions to underserved markets nationwide over a wholly convergent network. Pathnet provides service to classic telecommunications carriers, as well as to emerging carriers such as Internet service providers and competitive local exchange carriers, giving them the ability to improve their profitability in today's environment via capital-free, low-risk market expansion. Pathnet currently has 7,700 route miles of completed network and 3,400 additional route miles of network under construction or swap commitment. Additional information about Pathnet can be found on the company's web site at: www.pathnet.net.

The statements made by Pathnet in this press release may be forward-looking in nature. No assurance can be given that future results will be achieved; actual results may differ materially from those projected in forward-looking statements. Pathnet believes that its primary risk factors include, but are not limited to: signing additional agreements with private network operators and others; offering services to telecommunication service providers; entering into partnering arrangements; building a digital network; meeting market demand and customer service expectations; and obtaining additional financing. Additional information concerning these and other potentially important factors can be found within Pathnet's Registration Statement and periodic reports filed with the U.S. Securities and Exchange Commission under the federal securities laws. Statements in this release should be evaluated in light of these important factors.

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Washtech.com

Pathnet Secures $210Mil Credit Facility

Thursday, August 10, 2000
By Michael P. Bruno,
Washtech.com

Pathnet, which says it is the first convergent communications service provider offering competitive loca access services and high- capacity digital transport to underserved, second-tier and third-tier U.S. cities, this morning said it secured a $210 million credit facility for the purchase of goods and services from Nortel Networks.

Pathnet said in statements it intends to use the credit facility — $210 million over six years — to fund it continued fiber optic network build-out, and deliver its portfolio of convergent broadband services to businesses in more than 80 markets across the country by the end of year.

"We consider this a real boost in speeding up implementation of our business plan," Dick Jalkut, Pathne president and chief executive, said in one statement. "It's an important step toward realizing Pathnet's 'Smart Build' strategy to deliver our carrier customers the virtually untapped market potential in the second and third tiers."

Pathnet and its parent company, Reston, Va.-based Pathnet Telecommunications Inc., provide advanced broadband services to traditional communications carriers, as well as emerging service providers such a competitive local exchange carriers, Internet service providers, application service providers and others. Pathnet said it currently has 7,400 route miles of completed network and 900 route miles of network under construction.

Also today, privately held Pathnet Telecommunications said its second quarter revenue increased 14-fol to $12.6 million compared to revenue of $900,000 in the second quarter of 1999. As expected, construction revenue accounted for approximately 90 percent of total revenue, with service revenue comprising the balance, the company said.

Earnings before interest, taxes, depreciation and amortization for the quarter were a loss of $11.3 million versus a loss of $5.3 million in the year-ago period.

The company also today said it closed a $25 million second tranche of equity from Colonial Pipeline Co In recent weeks, Pathnet has inked new multiyear customer agreements with Brainstorm, DSLi.com, I-Link and NaviPath, all of which adopted Pathnet "VPOP Plus Service" to promote their product offerings.

E-mail (via our form | via your e-mail client) comments, suggestions, etc. to Editor-in-Chief Bob Woods

pathnet

our press room

Press Kit

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· OUR SERVICES
· OUR TECHNOLOGY
· OUR INVESTOR RESOURCE
· OUR EMPLOYMENT OPPORTUNITIES
· OUR PRESS ROOM
FLASH PRESENTATION

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PATHNET REPORTS THIRD QUARTER RESULTS

RESTON, VA (Nov. 14, 2000) - Pathnet Telecommunications, Inc. (Pathnet), the industry's first wholesale, convergent telecommunications service provider combining competitive local access services and long-haul transport in underserved markets, today announced its financial and operating results for the quarter ended Sept. 30, 2000.

Third quarter revenue increased to $17.8 million as compared to revenue of $0.6 million in the third quarter of 1999. On a sequential basis, revenue increased 40 percent from $12.6 million in the prior quarter. As expected, construction revenue for the quarter accounted for approximately 92 percent of total revenue, with service revenue comprising the balance. Earnings before interest, taxes, depreciation and amortization (EBITDA) for the quarter was a loss of $10.4 million versus a loss of $6.9 million in the year-ago quarter.

Customer demand for Pathnet's single integrated platform of VPOP Plus Services--including Internet dial access, xDSL and Private Line connection services--continues to increase. The company's sales backlog increased $35 million and now stands at $234 million, comprised of $195 million in telecom services and $39 million in construction and infrastructure services.

"Pathnet is executing nicely on its plan of becoming the first convergent communications services provider focused on underserved markets," said Richard Jalkut, president and chief executive officer. "Customer demand for our unique VPOP services family has been outstanding as evidenced by our growing sales backlog. Customers are looking for capital efficient, low-cost service that is available in multiple markets--which Pathnet provides. We've also continued to bolster our financial position by securing $260 million in credit facilities with various vendors."

During the third quarter, Pathnet successfully secured a total of $260 million in credit facilities from two vendors and closed a $25 million second tranche of equity from Colonial Pipeline Co. The company's $210 million credit facility from Nortel Networks has a term of six years and will support the expansion of Pathnet's continued fiber optic build-out through the financing of goods and services purchased from Nortel. The second vendor's $50 million

credit facility will help Pathnet finance purchases including softswitches, gateways and optical muxes, which will support Pathnet's offering of unique VPOP Plus Services.

Pathnet completed 300 additional route miles of network and 20 additional collocations during the quarter, bringing its total network to 7,700 route miles and 106 collocations in 73 cities. The company continues to target 150 collocations in 80 cities by the end of the year. Pathnet increased its gross property and equipment by $51 million in the quarter, bringing total property and equipment acquired to $272 million at quarter-end.

Third Quarter Highlights and Recent Developments

- Secured $210 million credit facility from Nortel Networks
- Secured a $50 million credit facility from a second vendor
- Closed $25 million second tranche of equity from first quarter's strategic investment transaction
- Increased sales backlog to $234 million from $200 million
- Lit Omaha-to-Denver route to complete lighting on Chicago-to-Denver route
- Completed 20 collocations, bringing cumulative total to 106
- Achieved CLEC approval in 10 new states, for a year-to-date total of 35 CLEC approvals

Pathnet will be discussing its third quarter results this morning at 11:00 a.m. EST. Interested parties may listen to the call by dialing (719) 457-2633. A telephone replay will be available approximately two hours after the conclusion of the call for approximately one week. The replay call-in number is (719) 457-0820; both the call and the replay can be accessed using the passcode 652085.

CLICK HERE FOR 3rd QUARTER RESULTS TABLES

Pathnet is a wholesale telecommunications service provider that delivers broadband access and transport solutions to underserved markets nationwide over a wholly convergent network. Pathnet provides service to classic telecommunications carriers, as well as to emerging carriers such as Internet service providers and competitive local exchange carriers, giving them the ability to improve their profitability in today's environment via capital-free, low-risk market expansion. Pathnet currently has 7,700 route miles of completed network and 1,900 additional route miles of network under construction or swap commitment. Additional information about Pathnet can be found on the company's web site at: www.pathnet.net.

The statements made by Pathnet in this press release may be forward-looking in nature. No assurance can be given that future results will be achieved; actual results may differ materially from those projected in forward-looking statements. Pathnet believes that its primary risk factors include, but are not limited to: signing additional agreements with private network operators and others; offering services to telecommunication service providers; entering into partnering arrangements; building a digital network; meeting market demand and customer service expectations; and obtaining additional financing. Additional information concerning these and other potentially important factors can be found within Pathnet's Registration Statement and periodic reports filed with the U.S. Securities and Exchange Commission under the federal securities laws. Statements in this release should be evaluated in light of these important factors.

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MEBTEL
COMMUNICATIONS

MEBTEL Communications is rapidly becoming the leading provider of competitive local telecommunications services in North Carolina. Founded almost 80 years ago, MEBTEL Communications combines a legacy of reliable service with the most modern technology available today. For these reasons, MEBTEL is among the fastest growing and financially strongest competitive local exchange carriers in the marketplace. The Triangle Business Journal lists MEBTEL as one of the Top Fifteen Internet Service Providers in the triangle area. The Triad Business Journal also listed MEBTEL as one of the Top Five Interconnect Companies. A facility based CLEC, MEBTEL Communications is developing state-of-the art switching and fiber transport networks to serve our customers. With fiber optic networks in operation or under development in numerous metropolitan areas across North Carolina, MEBTEL Communications is committed to providing a reliable cost-effective alternative to current communications options.

MEBTEL Communications' mission is to provide medium to large organizations, both public and private, as well as home users, with a broad array of innovative voice and data telecommunications solutions transported on the company's state-of-the-art digital fiber optic networks, backed by the highest quality customer service.

The Company provides our customers telecommunications services over digital fiber optic networks that employ advanced, redundant electronics and dual path architecture to ensure reliable and secure telecommunications. MEBTEL networks are monitored 24 hours a day, seven days a week through MEBTEL Communications' network operations and control centers in Mebane, North Carolina, Foley, Alabama and Galesburg, Illinois.

The Company's diverse product line includes the most reliable high-capacity services on the market, such as fiber-based self-healing area networks providing economical voice and data connections, local exchange switched services, xDSL, Centrex, and ATM. MEBTEL Communications is committed to becoming your reliable cost-effective communications partner for the future.

Click below to visit our other sites:

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4/1/01 http://www.mebtel.com/over.html

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- Packages / Pricing
- How DSL Works
- FAQ
- Order Form
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{extreme internet speed}

MEBTEL DSL from Mebtel Communications is your connection for High-Speed-Always-On-Internet-Access for your home or office. We know you've got better things to do than wait for the Internet. With Mebtel DSL, you can finally have a non-stop web connection at blinding speeds - and there's NO OFF button. It's that simple!

Experience mega-speed without spending mega-bucks, Mebtel DSL packages start at just $39.95 a month. Click here to order a Mebtel DSL package and we'll waive the installation fee.

Click here to order one of the new MEBTEL DSL packages and we'll waive the $49.95 installation fee!

So what are you waiting for? Get on with it!

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Get on with it!™

*All Plus packages require a 1-year contract.
**1.1 Mbps throughput speed subject to traffic on network and distance from switch.

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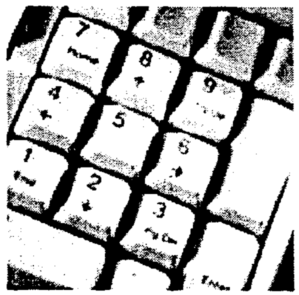
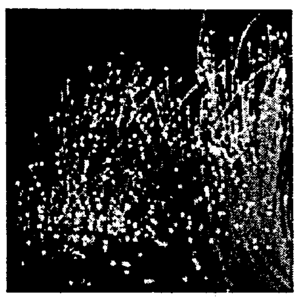
Get on with it!™

{extreme internet speed}

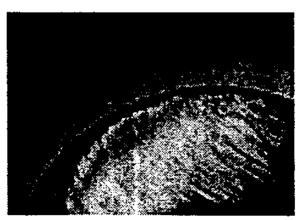
The DSL Mechanism



Mebtel DSL begins in your home with your personal computer and a DSL modem. Provided as part of the monthly fee for Mebtel DSL Service, the modem will be installed and configured as a part of the installation process.



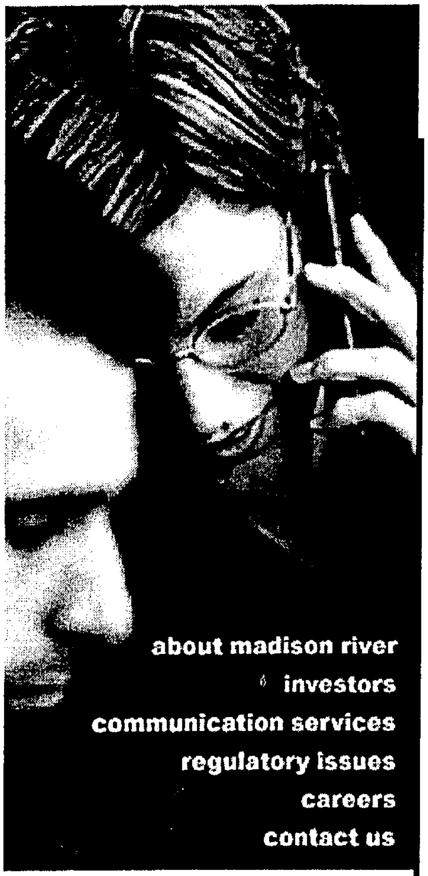
Then DSL signal is carried to Mebtel's Central Office through traditional phone lines.



When the DSL Signal meets the DSL equipment located in the Central Office, the signal is sent on to the Internet or the Local Area Network (LAN).

In the end, the whole process makes Mebtel DSL Service from Mebtel Internet the fast and efficient way to access the Internet.

**The number of e-mail boxes depend on the package.*



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Monday, March 19th, 2001

investors

Small-town operator, big idea
From The News & Observer - May 17, 2000
By KARIN SCHILL RIVES, Staff Writer, The News & Observer

MEBANE -- Steve Vanderwoude put the offices of his fledgling telecommunications venture in a former Maxway discount store in a quiet brick strip mall downtown. On the other side of one wall is Lowes Foods. His 70 staffers have a view of the dilapidated, vacant White Furniture factory across the railroad tracks -- once a source of jobs and pride for this town on the Orange-Alamance county line.

But don't be fooled by the casual clothing and modest, small-town atmosphere at the headquarters of Madison River Communications. The company is the brainchild of powerful Wall Street investors who created it four years ago to tap into the multibillion-dollar small-town market that tends to be overlooked by larger phone companies like BellSouth and AT&T.

Named after the Montana river that Vanderwoude likes to fish when he visits his Big Sky vacation home, Madison River is building a regional telecommunications system that is expected to rake in $405 million a year and serve more than 300,000 phone lines in four states within five years.

A lot of those new customers will be in bigger cities nearby as the company carries out its strategy of grabbing business in some of the hottest midsize markets in the country. While the region's dominant telecom players concentrate on fighting over lucrative business customers in affluent urban areas, Madison River is quietly nibbling away at their territories by buying little-noticed but lucrative rural phone companies not far from thriving business centers. Aided by healthy cash flow from its rural phone operations, Madison River is well-positioned to compete for well-paying customers in the Research Triangle Parks and Triads of the world.

It's a strategy that so far has been embraced by only a handful of telecom newcomers -- but one that's getting the attention of major investment firms. Other companies that have adopted similar business plans include FairPoint Communications of Charlotte, Country Road Communications of Morristown, N.J, and Valor Communications of Irving, Texas.

"I probably get two phone calls a week from venture capitalists who want to get into this area," said Michael Balhoff, who follows rural carriers for the Legg Mason brokerage firm in Baltimore. "They're looking at a cash flow of 60 to 70 percent, which is very significant."

That opportunity, however, wasn't apparent to Vanderwoude a few years ago.

He had left his job as chief operating officer for Sprint's local telecom division in 1993 when that position was transferred to Kansas City; he was unwilling to abandon the 36-acre horse farm in Southern Pines that he and his wife call home. After a brief flirtation with retirement, Vanderwoude jumped into a satellite television project and then a computer gaming operation, enjoying the fast pace of young, cutting-edge technology.

Sleepy, small-town phone businesses were the last thing on his mind.

"I got a call from an analyst in 1995 who said, 'Hey, how would you like to start up a rural telephone company?'" he recalled. "I yawned and said, 'Not interested.' Why would you want to do that when there are a lot of other exciting things to be working on?"

Nonetheless, he did some homework, and it wasn't long before the veteran telecom executive understood what had excited that investment analyst. Vanderwoude put together a four-member management team, three of them industry people he'd known for years and the fourth a financial expert with whom he had worked closely. Then they began developing a business plan.

In 1997, three investment banking firms that now own 95 percent of Madison River -- Madison Dearborn Partners, Goldman Sachs and Providence Equity Partners -- chipped in $5.7 million toward the company's first acquisition: Mebane-based Mebtel Communications. The Rural Telephone Finance Cooperative, a membership organization that offers favorable, nongovernmental loans and expertise to rural carriers, financed the remainder of the $23 million deal.

The attraction was not just the bills that more than 12,500 mostly residential customers pay Mebtel every month. It was also the company's proximity to the booming Triangle and up-and-coming Triad.

By November of last year, Madison River had encircled Raleigh, Durham and Research Triangle Park with a new fiber-optic cable that provides high-speed Internet access and other state-of-the-art services to picky business customers. The company also had extended its 240-mile system to Greensboro and Winston-Salem.

Madison River's Triangle and Triad operations share a Mebane switching station, billing, accounting, network monitoring services and -- at times -- utility trucks and personnel with Mebtel. That has helped Madison River control expenses.

More importantly, ownership of the rural phone company has given Madison River more leverage on Wall Street as it seeks loans for expansion. It also has given the company automatic access to low-interest loans from the federal government and to lenders like the RTFC, which has provided most of the $479 million the company has spent so far to acquire its four rural carriers. At an interest rate of 8.1 percent, RTFC loans were a bargain compared with those available from commercial banks.

As the company built its North Carolina operations, Vanderwoude sniffed opportunities in other states. Next on his shopping list was Gallatin River Communications in central Illinois, which Madison River bought for $232 million in 1998, followed by the $313 million acquisition of Alabama-based Gulf Telephone Co. in 1999 and the $145 million purchase this spring of Coastal Communications, just south of Savannah, Ga.

All are located near the midsize, fast-growing business hubs that Madison River is targeting. By 2004, those markets could give the company access to as many as 2.3 million potential customers, Madison River estimates.

But if such expansion is the heart of his business plan, Vanderwoude said he also sees an opportunity in the small towns that his rural phone companies have traditionally served.

"If you really focus on running telephone companies in rural markets, you can do a great job -- and make money," he said. "Rural residents have very similar appetites for services -- in some cases greater. They also rely on telecommunications access more than they do in urban markets. There's a demand for high-speed Internet service in particular."

Mebtel has signed up 1,417 Internet customers, and Vanderwoude boasts that anyone who wants high-speed service in the town can get it "within three days."

He believes he's blowing fresh air into old-time companies that had been owned by families for generations -- and needed new ideas and modern management practices. Nationwide, there are still several hundred such operations that provide service in small towns.

In Georgia, the two brothers who owned Coastal Communications -- they had taken over after their father, the company's founder, died -- had become such enemies that they refused to be in any building at the same time.

When the deal was closed, one waited outside in his car until the other had signed the papers and left the property before he would come inside.

"You can imagine the effects those dysfunctional relationships have on a business," Vanderwoude said.

But Madison River's accumulation of rural carriers also is ending a tradition of small towns having their own phone companies, owned by families that lived there. That change may not always be welcomed, said Martha Silver, a spokeswoman for The Organization for the Promotion and Advancement of Small Telephone Companies in Washington, D.C.

"The new company may not be familiar with the area to know which services would really benefit consumers," she said. "If in the past local phone companies provided a lot of free service to schools or libraries, that could now disappear. If the company used to be a key player in economic development, that could disappear."

Such fears notwithstanding, Mebane strawberry farmer Cindy Sykes has been pleased with Madison River.

"We felt pretty confident that Bob would choose a good buyer," she said of former owner Bob Hupman. "And the service has actually gotten better. We just joined this new program they came out with that gives us lower rates, so it seems like they're trying to meet people's needs."

It doesn't hurt that Vanderwoude is taking the trouble to nurture Madison River's small-town image, from the simple sign above the door of his Mebane headquarters to the framed hometown newspaper clippings in the lobby.

A native of New York City, the 56-year-old CEO chose one of the smallest offices in the building on purpose -- "I want everybody to know we're about creating value, not big offices" -- and he only wears a suit and tie when he goes on a road show to raise money for expansion.

And when he meets with representatives of the nation's leading investment firms, he leaves on his L.L. Bean boots "just because I can," Vanderwoude said.

"But we're a big-time company with big-time investors and, I would tell you, a big-time management team. We run billion-dollar companies."

- end -

The News & Observer staff writer Karin Schill Rives can be reached at 829-4521 or kschill@nando.com

The News & Observer's online archive of this article

Related Story: Branching out from Mebane (The News & Observer - 05/17/00)

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FOR IMMEDIATE RELEASE

NETWORK TELEPHONE'S NEW BUNDLE: A COMPLETE, SINGLE SOURCE SOLUTION FOR SMALL BUSINESSES

PENSACOLA, Fla. (Feb. 13, 2001) -- Network Telephone Corp., the leading provider of local, long distance and high-speed DSL-based Internet access for businesses in the Southeast U.S., today added business Web site development tools to its bundle of communications services.

With the addition of **eSites**, Network Telephone's bundle – including free 160 Kbps digital subscriber line (DSL) Internet access, local calling with a choice of features, 100 free long distance minutes per voice line and Web hosting, becomes the most complete, competitive offer for small and mid-sized businesses in the markets it serves. Currently the company provides service to more than 250 territories in Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

With the eSites option included in their bundle, Network Telephone customers are able to easily and quickly select from 54 industry-specific content packages, 22 page types and innumerable color and layout combinations, and build a professional, commerce-enabled Web site in a matter of hours. Live Network Telephone support helps the customer develop his Web site from start to finish. After the site is completed, the 'owner' may upgrade or change any component of the site from any desktop.

"Network Telephone is committed to building a relationship with our small business target customers, and we've developed our bundle to include value-added services to match the needs of these businesses," said Dennis Allen, executive vice president and co-founder of Network Telephone. "Because of the Lucent technology we use to deliver service, Network Telephone's small business customers will find that our PowerLine DSL™ bundle is both affordable and flexible."

About Network Telephone

Network Telephone Corp. is a facilities-based broadband Integrated Communications Provider (ICP) using voice over digital subscriber line (VoDSL) technology to deliver local, long distance, high-speed Internet, Web site and applications services to small and medium-sized businesses throughout the Southeast U.S.

-more-

During 2000, the company grew from 150 employees to a current count of more than 700 at its headquarters and 24 regional sales offices. Network Telephone has raised $195.5 million in equity and $140 million in debt, which fully funds the company's aggressive business plan. More than 23,000 lines are in service to date. For more information about Network Telephone, visit the company's Web sites, www.networktelephone.net and www.powerlinedsl.com.

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COPPER MOUNTAIN ENABLES NETWORK TELEPHONE TO LAUNCH LARGEST COMMERCIAL VOICE OVER DSL DEPLOYMENT IN SOUTHEASTERN US

Using Copper Mountain's new IP IQ technology and MGCP-based CopperRocket 408 IAD, Network Telephone activates thousands of customers for Voice over DSL

PALO ALTO, Calif. (August 14, 2000) -- Copper Mountain Networks, Inc., (Nasdaq: CMTN) a leading provider of Digital Subscriber Line (DSL) solutions, today announced that Network Telephone Corporation, a leading provider of facilities-based broadband telecommunications services, has selected Copper Mountain DSL equipment to launch its new business Voice over Digital Subscriber Line (VoDSL) service. Network Telephone's nine-state deployment - Alabama, Florida, Georgia, Louisiana, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee - is the largest Voice over DSL network to date in the southeastern U.S.

Network Telephone chose the market-leading CopperEdge® DSL concentrator and CopperRocket® 408 Integrated Access Device (IAD) because of Copper Mountain's new IP IQ™ technology for voice, which includes support for the media gateway control protocol (MGCP). The MGCP-enabled Copper Mountain equipment enables Network Telephone to offer voice services without deploying an expensive Class 5 switch infrastructure. IP IQ, an advanced networking feature set optimized for concurrent voice and data services, allows Network Telephone to efficiently scale its VoDSL service to meet customer demand.

"Copper Mountain is the industry's proven DSL platform, and its support for MGCP means that we can offer bundled voice and data services using cost-effective next-generation voice networking equipment rather than expensive and difficult to maintain Class 5 switches," said Arvil Fowler, chief technical officer at Network Telephone. "Copper Mountain's IP IQ technology equips Network Telephone to realize an aggressive network growth plan, while scaling our services to meet the needs of our small and mid-sized business customers. We are cost-effectively aggregating voice and data traffic from thousands of subscribers in hundreds of markets with the confidence that we are delivering carrier-class reliability and quality of service."

-more-

Copper Mountain's IP IQ technology recognizes user profiles and services at the IP layer and allocates network resources appropriately for maximize bandwidth utilization. IP IQ supports advanced services such as voice, data and multi-cast traffic, and scales to meet the escalating demands of millions of subscribers. In Network Telephone's case, the technology segregates voice traffic from data traffic for each DSL subscriber, conserves IP addresses for high-speed Internet access, and uses separate, secure private IP address space for voice services. IP IQ is part of a suite of advanced features included in Software Release 3.0 for Copper Mountain's CopperEdge DSL concentrator family. Copper Mountain's CopperEdge software also enables remote configuration and management of CopperRocket and third-party CopperCompatible™ customer premise equipment (CPE).

"Network Telephone shares Copper Mountain's conviction that the future of telecom will belong to those providers who offer cost-effective bundled services and design their networks with IP intelligence that will allow them to scale to meet customer demand," said Copper Mountain chief executive officer Rick Gilbert. "Network Telephone's IP-based network offers businesses a highly cost-effective solution to their voice and data needs, and will easily expand to support dozens of new services and millions of new subscribers."

"Network Telephone's VoDSL offering has enabled us to realize substantial savings in our Internet connectivity and telecommunications needs, while providing us with very high quality service," said Daniel R. Lozier, partner, Lozier Thames & Frazier, P.A., Attorneys at Law. "We are also pleased that Network Telephone is using Copper Mountain equipment, which will easily scale to meet subscriber demand for value-added services over DSL."

Copper Mountain Solutions Deployed by Network Telephone

Copper Mountain's platform provides Network Telephone with end-to-end solutions for provisioning and managing its VoDSL service, including:

- **CopperEdge 200 DSL Concentrator**—Carrier-class DSL concentrator supports up to 192 ports of voice and data services, using any combination of ADSL, G.lite, IDSL, and SDSL concurrently from a single chassis.
- **CopperRocket 408 SDSL Integrated Access Device (IAD)**—With connectivity for up to eight voice ports, the Copper Rocket 408 IAD provides end users plug-and-play, toll-quality voice and data services over DSL at speeds from 128 kbps to 1.568 Mbps.

-more-

- **IP IQ**—Dynamically recognizes user profiles and services at the IP layer and allocates network resources appropriately, enabling service providers to maximize bandwidth utilization, scale to meet the escalating demands of millions of subscribers and support advanced services such as voice, data and multi-cast traffic.
- **CopperView™ Network Management Tools**—Copper View software enables remote configuration, fault analysis and performance monitoring capabilities for thousands of DSL concentrators and companion CPE from a single, central location.

About Network Telephone Corporation

Founded in 1998 and headquartered in Pensacola, Fla., Network Telephone Corporation is a facilities-based broadband Integrated Communications Provider (ICP) targeting small- and mid-sized businesses in the Southeastern U.S. The company currently employs a staff of more than 400, and offers a comprehensive selection of telecommunications services, including DSL-based high-speed, always on-line Internet access, data, local and long-distance telephone service, voice over DSL (VoDSL), and Web hosting, video and audio streaming and ecommerce applications. For more information visit the company's Web sites at www.networktelephone.net and www.powerlinedsl.com.

About Copper Mountain Networks

Copper Mountain Networks, Inc. (Nasdaq: CMTN) develops and markets a comprehensive family of DSL solutions that enable high-speed internetworking over existing copper facilities. The company's mission is to enable carriers and other service providers to offer a full range of high-performance, cost-effective data and voice services over DSL that are easy to deploy, use, and manage. For more information about Copper Mountain products, visit the company's Web site at www.coppermountain.com.

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Portions of this release contain forward-looking statements regarding future events and are subject to risks and uncertainties. Copper Mountain wishes to caution you that there are some factors that could cause actual results to differ materially from the results indicated by such statements. These factors include, but are not limited to, quarterly fluctuations in operating results attributable to the timing and amount of orders for our products, the concentration of our revenue in a small number of customers, factors affecting the rate of DSL deployment by our customers, market acceptance of our products, our ability to keep pace with rapidly changing product requirements, and factors affecting the demand for DSL technologies. We refer you to the documents Copper Mountain files from time to time with the Securities and Exchange Commission, specifically the section titled Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 1999 and other reports and filings made with the Securities and Exchange Commission.

NETWORK TELEPHONE
VOICE · DATA · VIDEO

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FOR IMMEDIATE RELEASE

NETWORK TELEPHONE ACTIVATES 600TH VoDSL LINE
Using Lucent's PathStar™ Access Server

PENSACOLA, Fla. (Nov. 28, 2000) -- Network Telephone Corp., a leading provider of facilities-based broadband telecommunications services, announced today the successful activation of more than 600 lines on the company's voice over digital subscriber line (VoDSL) network, using the Lucent Technologies PathStar™ Access Server and Copper Mountain Networks DSLAM. In August Network Telephone became the first to commercially carry live VoDSL traffic using Lucent's switch.

The first lines carried on Network Telephone VoDSL include customers from Pensacola, Fla., Lafayette, La., Birmingham and Mobile, Ala. The company is quickly turning up switches to service almost 300 markets throughout the Southeastern U.S.

"Our VoDSL deployment is on a roll, with customer lines added daily to our active switches in Pensacola, Hattiesburg, Miss., and Lafayette, La., and new switches turning up in Birmingham and Montgomery, Ala., and Biloxi, Miss.," said Ray Russenberger, chief executive officer for Network Telephone. "We anticipate reaching 2000 lines within the next six to eight weeks and all of our PathStar Access Servers relaying traffic by early next year."

About Network Telephone

Founded in 1997 and headquartered in Pensacola, Fla., USA, Network Telephone Corp. is a facilities-based, broadband Integrated Communications Provider (ICP) targeting small- and mid-sized businesses in the Southeastern U.S. Network Telephone offers a comprehensive selection of telecommunications services, including DSL-based high-speed Internet access, local and long-distance telephone service, voice over DSL (VoDSL), Web hosting, video and audio streaming and e-commerce applications. For more information about Network Telephone, visit the company's Web sites at www.networktelephone.net and www.powerlinedsl.com.

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FOR IMMEDIATE RELEASE

NETWORK TELEPHONE SELECTS LUCENT TECHNOLOGIES AND COPPER MOUNTAIN NETWORKS TO DEPLOY DSL

PENSACOLA, Fla. (July 20, 1999) —Network Telephone, a competitive local exchange carrier (CLEC) based in Pensacola, Fla., will deploy Lucent's PathStar Access Server™ with Copper Mountain's CopperEdge DSL Concentrators and CopperRocket™ Integrated Access Devices to provide voice, data and high-speed Internet access over DSL (digital subscriber line) to business customers in nine states across the Southeast US.

Lucent Technologies (NYSE: LU) has extended its revolutionary PathStar™ family of products to deliver the industry's most feature-rich, end-to-end packet solution for voice over DSL (VoDSL). The Lucent PathStar™ allows new and expanding competitive service providers to more cost-effectively launch integrated voice, data and high-speed internet access over DSL.

The new solution will combine the PathStar™ portfolio of IP-based, multi-service central office products with Lucent's MultiDSL™ Access Concentrators, as well as with Copper Mountain Networks' (NASDAQ: CMTN) CopperEdge ®™ DSL Concentrators, and packet-based Integrated Access Devices (IAD's). Lucent's ATM and frame-based MultiDSL access concentrators were acquired through the company's merger with Ascend.

"Our customers want one-stop shopping for their voice and data needs," said Ray Russenberger, Network Telephone chief executive officer. "Lucent's PathStar™ solution gives us a competitive edge by enabling us to deliver the telephony services our customers demand, over the packet infrastructure we need to offer innovative, high-value, IP-based services. We believe this voice over DSL (VoDSL) solution will provide us a cutting-edge multi-service network."

The PathStar™ solution will enable service providers to deliver eight or more telephony subscriber lines and high-speed data services over a single unbundled local loop. "The regulatory and competitive landscape is driving CLEC's to offer both voice and data services," said Claudia Bacco, director, DSL products, TeleChoice. "The PathStar™ solution offers an option for entering this integrated services marketplace with lower costs than traditional infrastructure options."

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"Our customers need an integrated, multi-service solution that they can deploy quickly and cost-effectively to provide revenue-generating services," said Harry Carr, vice president and chief operations officer for Lucent's InterNetworking Systems. "This solution delivers the combined cost savings of the PathStar™ and DSL, while enabling service providers to offer feature-rich telephony and differentiated enhanced services."

The PathStar™ Solution, The PathStar™ family, including the PathStar Access Server™ and the Business Service Exchange, is designed to enable new service providers, such as CLEC's, Internet Service Providers (ISPs) and IP Telephony Service Providers, as well as established carriers entering new markets to offer low-cost, innovative voice and data services over IP or IP/ATM packet networks.

By integrating the DSLAM aggregation, edge router, and 'Class 5' or local telephony system functions in a single packet-based element, PathStar™ significantly lowers the complexity and reduces cost by nearly $100 per subscriber versus the combined GR-303 Gateway and Class 5 Circuit Switch alternatives, based on estimated average sales prices. The PathStar™ products deliver essential telephony features such as Caller ID, Call Waiting, Voice Messaging and E911, while simultaneously providing IP-based services such as Internet access and Virtual Private Networking (VPN).

About Network Telephone

Founded in 1998, Network Telephone is a Pensacola, Florida-based provider of high speed digital subscriber line (DSL), voice over DSL (VoDSL) and wireless Internet access services, local and long distance voice and video throughout a nine-state Southeastern US footprint. By year-end 2000, Network Telephone will have installed Lucent's PathStar™ "Class 5" switches and Copper Mountain Networks' DSL equipment in more than 315 central offices (CO's). Today Network Telephone employs more than 170 at its corporate headquarters and regional sales offices.

About Lucent Technologies

Lucent Technologies, headquartered in Murray Hill, N.J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronics components. Bell Laboratories is the research and development arm for the company. For more information on Lucent Technologies, visit the company's Web site at www.lucent.com.

About Copper Mountain Networks

Copper Mountain Networks, Inc. (Nasdaq: CMTN) develops and markets a comprehensive family of DSL solutions that enable high-speed internetworking over existing copper facilities. The company's mission is to enable carriers and other service providers to offer a full range of high-performance, cost-effective data and voice services over DSL that are easy to deploy, use, and manage. For more information about Copper Mountain Networks visit the company's Web site at www.coppermountain.com.

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FOR IMMEDIATE RELEASE

NETWORK TELEPHONE COMMITS TO NETOPIA FOR ENHANCED IDSL SERVICE

New DSL Bonding Solution Opens New Markets, New Multimedia Applications

ALAMEDA, Calif. (August 14, 2000) - Netopia, Inc.(NASDAQ: NTPA), a leader in DSL Internet equipment and e-commerce Web platforms for small and mid-sized business, announced that Network Telephone Corporation, a leading provider of facilities-based broadband communications services, has adopted Netopia's R3232 IDSL router to expand the carrier's PowerLine DSL™ menu of services.

The Netopia router bonding capability allows Network Telephone to offer IDSL connections at 432 Kbps and 576 Kbps, in addition to the original 144 Kbps and 288 Kbps speeds.

"DSL bonding gives Network Telephone the access advantage in delivery of high-speed PowerLine DSL™ ," said Arvil Fowler, chief technology officer at Network Telephone. "Netopia's equipment is ideally suited to meet the needs of our business customers. It not only support DSL bonding, but offers value-added features like virtual private network (VPN) security, firewalls, dial-backup, and a built-in Ethernet hub. Standardizing with the Netopia router simplifies installation while ensuring a reliable DSL connection for our customers."

Netopia's DSL router with bonding quadruples traditional IDSL connection speeds while enabling Network Telephone to use aggregated DSL circuits to expand market reach beyond SDSL's three mile access radius.

"Network Telephone has taken a giant step above their competition with the decision to standardize Netopia's customer premise equipment for high-speed IDSL service," said Alan Lefkof, president and chief executive officer at Netopia. "Our DSL bonding component creates a tremendous advantage by increasing Network Telephone's DSL service capacity."

-more-

About Network Telephone

Founded in 1998 and headquartered in Pensacola, Fla., Network Telephone Corporation is a facilities-based broadband Integrated Communications Provider (ICP) targeting small- and mid-sized businesses in the Southeastern U.S. The company currently employs a staff of more than 400, and is expected to grow rapidly within the next 12-18 months. Network Telephone offers a comprehensive selection of telecommunications services, including DSL-based high-speed Internet access, local and long-distance telephone service, Voice over DSL (VoDSL), Web hosting, video and audio streaming and e-commerce applications. For more information about Network Telephone, visit the company's Web sites at www.networktelephone.net and www.powerlinedsl.com.

About Netopia

Netopia, Inc. develops markets and supports Internet and electronic commerce infrastructure for small and medium-sized businesses. Netopia's DSL equipment and e-commerce Web platform enable businesses to connect easily and cost-effectively to the Internet, establish and enhance their Internet presence, and conduct business and electronic commerce on the Web. Further information about Netopia can be obtained via phone 510-814-5100, fax 510-814-5021 or on the web at www.netopia.com.

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Portions of this release include forward-looking statements made pursuant to the safe harbor provisions of the Securities Litigation Reform Act of 1995. Netopia, Inc.'s actual results could differ materially from the results discussed in this release and in the forward-looking statements contained herein for many reasons. Investors are cautioned that all forward-looking statements involve numerous risks and uncertainties, including but not limited to product development, product acceptance, licensing opportunities and general economic conditions. For more information concerning Netopia and risk factors that may affect Netopia's future results and may cause actual results to vary from results anticipated in forward-looking statements, investors should review Netopia's public filings with the United States Securities and Exchange Commission, which are available by calling Netopia at 510-814-5260 or online at www.sec.gov.

NETWORK TELEPHONE
VOICE • DATA • VIDEO

Contact: Clare LaGrand
Director of Corporate Communications
850-432-4855
clarel@networktelephone.net

FOR IMMEDIATE RELEASE

NETWORK TELEPHONE CHARGES INTO ORLANDO, TAMPA AND CHARLESTON

PENSACOLA, Fla. (Nov. 14, 2000) -- Network Telephone Corp., a leading provider of facilities-based broadband telecommunications services, announced today the expansion of the largest VoDSL (voice over digital subscriber line) network in the Southeast U.S. with the opening of three new markets: Orlando and Tampa, Fla. and Charleston, S.C. The company is more than two-thirds of the way towards reaching its goal of almost 40 markets by year-end.

Early in the year, Network Telephone became the first company in the Southeast U.S. to provide small and mid-sized businesses cost effective, complete access solutions using VoDSL through Lucent Technologies PathStar™ Access Server. The company delivers high speed PowerLine DSL™ Internet service, local and long distance voice and Web applications, while accounting for all services to a customer on one monthly bill.

About Network Telephone

Founded in 1997 and headquartered in Pensacola, Fla., Network Telephone Corp. is a facilities-based broadband Integrated Communications Provider (ICP) targeting small- and mid-sized businesses in the Southeastern U.S. The company currently employs a staff of more than 600, and plans to continue its rapid growth over the next 12 months. For more information about Network Telephone, visit the company's Web sites at www.networktelephone.net and www.powerlinedsl.com.

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ATLANTA TECH WEDNESDAY • September 20, 2000

Tech Money: LightNetworks sold after just missing capital round

The buyer is: DSL provider will go to Network Telephone, based in Florida.

Wednesday, September 20, 2000

Jeff Smock, the 26-year-old chief executive of LightNetworks, said June 28 that he was days — if not hours — away from closing a huge round of venture capital.

His first round, announced in March, was $14.7 million, and this would be several times that.

But something happened. The round fell apart. Now Smock is selling his company **to Network Telephone in Pensacola, Fla.**, LightNetworks spokesman Bill Casey confirmed. The amount of the deal has not yet been announced. Smock, who postponed his honeymoon earlier this summer as one deal fell apart and another came together, is vacationing with his wife in Montana this week and could not be reached for comment.

Network Telephone provides small and medium-sized businesses with digital subscriber lines, local and long-distance telephone services, Web hosting, streaming video and other multimedia applications. LightNetworks has focused on providing small businesses with one line for both DSL and regular telephone calls.

PlanetJam Media to raise $3 million

Marietta-based PlanetJam Media Group is raising $3 million, most of it from a venture capital firm in the United Kingdom called IMG, PlanetJam Chief Executive Chris Bell said. PlanetJam is valued at $10 million for the round. Bell said he hopes to close the deal by the end of the month.

AtlantaJournalConstitution.com
Wednesday, September 20, 2000
Visitors per Month: 900,000

STAKING A CLAIM

Competitive DSL providers vie for colocation space, but market turmoil and regulatory rulings could slow the pace.

By David Fairchild

There's a land rush on in the competitive DSL-service sector.

Much like the Sooners of 1889, who burst westward from Oklahoma hoping to be first to reach prime homestead acreage, a growing number of upstart competitive DSL providers are racing to stake their claims at key locations. But the prize in this land rush is not pristine, wide-open prairie land. Rather, it is a precious few cubic feet of colocation space at incumbent-owned COs throughout the nation's urban centers.

The starting gun in this land grab sounded almost five years ago when congress passed the Telecommunications Act of 1996, opening the doors of COs nationwide to competitive voice and data carriers. Since then, data CLECs and other emerging carriers have been installing their own systems at incumbent facilities, first at those situated in the country's biggest cities and, more recently, at facilities in mid-tier markets.

David Fairchild is a freelance writer and the former editor of the online trade publication CLEC.com. He may be reached via e-mail at dfairchild@newworldcontent.com.

In the third quarter of last year alone, the leading trio within the data CLEC arena, namely Covad Communications, Rhythms NetConnections, and NorthPoint Communications, readied DSL systems at more than 600 additional COs nationwide. To date, the three carriers have colocated their own equipment at more than 5,000 COs nationwide.

"I think the big three have expanded their networks significantly, and now they may have plateaued a little," says Craig Clausen, COO of the CLEC research and consulting company, New Paradigm Resources Group Inc. "But there seems to be plenty of new competitors coming in."

In fact, other competitive DSL providers continued DSL colocation efforts at a fevered pitch late into last year, as well. New Edge Networks said in November that it had topped 400 CO locations and was gearing up to debut services from 150 other COs. New Edge Networks even inked a reciprocal-service pact with NorthPoint, effectively expanding the colocation efforts of both carriers by allowing the DSL providers to offer their own brand of services from each other's sites in non-overlapping areas. Together the carriers ultimately plan to provide services from more than 4,000 COs.

Meanwhile, DSL.net says that in November it had added 62 CO locations during the third quarter. By the end of October the carrier had 540 CO sites. And despite disappointing revenues in the third quarter, DSL.net officials said that their firm was in a position to ramp up marketing activities with colocations at as many as 600 COs nationwide by the end of the year.

Settling down

But now the rush for colocation space may be slowing somewhat amid a massive investor pullback coupled with ongoing operational troubles that have left competitive DSL providers across the board reeling. A summer-long tech-sector selloff sent the share prices of virtually all publicly traded data CLECs tumbling to mere fractions of their springtime highs. In fact, many competitors were trading well below their IPO prices as 2000 drew to a close.

Rhythms, Covad, and NorthPoint found it especially hard going on the NASDAQ marketing during the fall. Each were trading at below $2 per share in the waning trading sessions of 2000. Meanwhile, most private DSL providers haven't faired much better financially in recent months.

Among the first signs of major turmoil in the DSL sector was Denver-based Jato Communications' surprise announcement in late September that its President and CEO Gerald Dinsmore had resigned and that it was letting go a significant number of employees. Reports put that number near 350. Since then, nearly all DSL competitors that began the year busily colocating their own systems in incumbent COs have announced similar staff reductions or other negative news.

Telecom industry observers say the market downturn during the second half of 2000 prompted a fundamental shift in the game plans of many DSL competitors.

"My gut instinct tells me that in the near future, perhaps over the next year, you'll see a shakeout in the industry," says Nick Regas, a DSL analyst with *Atlantic-ACM Inc.*, a telecom consulting firm. "And consequently, there is not going to be the same rush for space"

Such a shakeout may already be under way. Just two weeks after announcing it had reached the 400 central-office milestone, New Edge Networks says it was cutting 135 positions, including about 100 jobs at its Vancouver headquarters. The carrier cited a tight bank debt market.

Covad followed New Edge Networks' disappointing news with an announcement that it was releasing 13 percent of its own work force — or about 400 staffers — to cut its costs by 20 to 30 percent. The data CLEC also said it was stemming its colocation efforts, at least for now, after reaching a total of just more than 2,000 COs.The company's CEO Robert Knowling also resigned from his post.

Also in November, DSL-service firm Network Access Solutions said it was eliminating 145 positions, or about 23 percent of its roster.

"In the worst extreme, DLECs are saying, 'Maybe we can't support this footprint,'' Regas says. "'Maybe we need to cut back and focus on some of the more lucrative markets.'"

And so the sector-wide cuts continue with NorthPoint taking perhaps the biggest hit among the data CLECs so far.

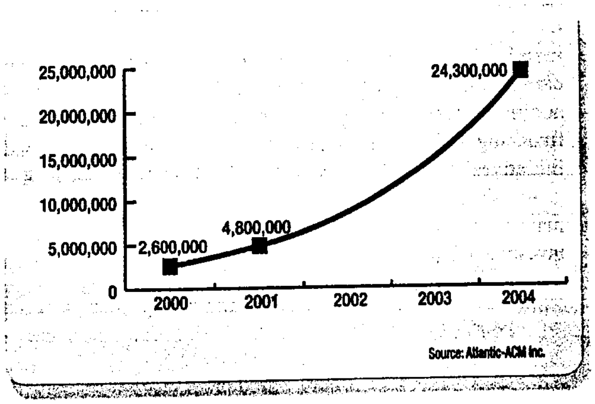
NorthPoint, which saw its DSL connections skyrocket 41 percent to 87,300 lines installed during the third quarter, entered the fourth quarter with high hopes of completing its planned operational merger with RBOC Verizon Communications in the first half of 2001. The $1.3 billion deal would have given the joined carriers an operational base of more than 3,000 COs and would have allowed NorthPoint to offer DSL connectivity to about 63 million homes and businesses nationwide.

After Verizon turned its back on NorthPoint, the data CLEC announced it was slashing nearly 250 jobs and filed a $1 billion suit against the incumbent.

But in December, Verizon cancelled the deal, citing poor operational and financing performance on the part of NorthPoint. Verizon's rejection dealt a major blow not only to NorthPoint's expansion plans, but to the carrier's prospects for survival, as well. After Verizon turned its back on NorthPoint, the data CLEC announced it was slashing nearly 250 jobs and filed a $1 billion suit against the incumbent, alleging Verizon unfairly terminated its contract with NorthPoint to get out of investment obligations outlined in the merger agreement. Verizon had pledged an $800 million investment in NorthPoint as part of the merger pact.

"This is a very difficult time at NorthPoint Communications," Liz Fetter, NorthPoint CEO, said in a statement.

Cumulative DSL lines nationwide



Also in December. HarvardNet said it was cutting 280 jobs and ending its DSL offerings altogether. The carrier said it would instead focus on its Web-hosting and ASP lines.

"There's obviously an expansion slowdown going on with this (investment) pullback," Clausen says. "I think the focus is really shifting to selling services and increasing revenues as opposed to continuing expansions into new areas."

In line with that trend. DSL.net said late in 2000 that it was releasing 141 employees, or about 28 percent of its work force. As part of its cost cutting measures, DSL.net also said it was slowing its network deployment efforts in new areas.

"It's the nature of the beast," Regas says. "[Earlier,] people really focused on expansion and getting customers. Now they're really looking at profitability. So, the focus is much less on going into new colocation space."

But the news isn't all bad among competitive DSL providers as some carriers continue their expansion efforts at a rapid pace.

Rhythms said in December that its customer base is shifting toward well-established, national Internet service firms and major broadband integrators, and away from many smaller ISPs that have proved a source of bad debt for numerous data CLECs in recent months. Also in late November, the carrier announced it had secured an additional $50 million in vendor financing to further its deployment initiatives.

And despite its troubles, Covad managed to close on a $150 million investment from incumbent local service provider SBC Communications in early November.

"With a burgeoning market economy bolstered by evidence that Covad can generate strong sales and provision DSL lines at an accelerating pace, we do not believe that 'the wheels are falling off' the business," *Bear Stearns & Co. Inc.* telecom analyst James Henry wrote in a recent investment opinion.

Going forward

At present, competitive DSL providers await a pair of important FCC decisions on colocation issues that could play major factors in their success. The first ruling will dictate what specific types of equipment competitors will be allowed to deploy at incumbent COs.

Last summer the Commission ruled that incumbent local service providers must grant data CLECs, as well as voice-service competitors, so-called "cageless" colocation space at COs within 90 days after a request is filed. The FCC also said it would reconsider a detailed list of necessary network systems approved for deployment in colocation space after first soliciting comments from CLECs, ILECs, and others. That list is expected in the coming months.

More recently, the Commission said it would allow incumbents to directly operate neighborhood gateways — like those being installed by SBC Communications as part of its Project Pronto network expansion plan — designed to dramatically extend the reach of DSL services. Many CLECs had wanted the FCC to require incumbents to operate such gateways only through separate, competitive data subsidiaries. But the FCC also said it would spell out competitors' rights to colocate their own systems at such gateways in a forthcoming follow-up ruling.

Neighborhood gateways let incumbents extend the reach of residential-class DSL services to virtually unlimited distances. Typically, DSL connections are available only to customers within about 18,000 feet of a CO unless gateways are used.

"I think this issue is critical for the entire industry — integrated voice and data providers, as well as data only CLECs," says Jonathan Lee, vice president of regulatory affairs at *CompTel*, a trade association representing CLECs and other competitive telecom service firms.

Lee says *CompTel* wants the FCC to rule that CLECs will be permitted to access unbundled packet-switching elements at gateway locations. He also says he's not sure how quickly the Commission will make its decision.

For its part, SBC Communications is more than willing to work with CLECs wanting to use neighborhood gateways being deployed along local networks throughout its 13-state territory, says Michael Coe, SBC spokesman. SBC recently announced Project Pronto market trials with 10 CLECs, and more trials are under discussion, SBC officials say.

Yet regardless of how the Commission rules on the pending colocation issues at COs and neighborhood gateways, competitive DSL providers must find a way to quickly reap increasing revenues from the colocation space they've already claimed, Clausen says.

"The ball is in the CLEC industry's court now," he says. "There's no doubt it is time to sell, service, and provision. That's what it is all about."

"The financial markets are now saying, 'It's not all about network expansion and growth across the US any longer, it's about profitability,'" Regas says. "The space issue will become less and less of a problem as there become fewer CLECs." ◆

"The ball is in the CLEC industry's court now. There's no doubt it is time to sell, service, and provision. That's what it is all about."
— *Craig Clausen*

LOCAL COM   ION REPORT
January 31, 2001

DATE		AL	FL	GA	KY	LA	MS	NC	SC	TN	REGION
1/31/01	**CLEC Certifications (Wireline)**										
(unless indicated)	PSC Approved	158	438	233	130	112	100	161	167	194	1,693
	Pending	26	20	80	288	94	0	41	0	18	567
	Operational CLECs	76	155	121	77	81	62	73	66	98	294
	Resale Only	45	92	63	46	39	37	29	41	56	181
	Facility-based Only	17	41	37	18	25	13	30	14	29	69
	Both	14	22	21	13	17	12	14	11	13	44
	Planned Switches and Points of Interface	27	64	40	14	20	18	34	20	28	265
	Total Operational Switches & POIs	32	103	55	22	55	20	62	25	34	408
	Operational Switches	21	53	32	12	33	10	31	15	21	228
	Operational Points of Interface (POIs)	11	50	23	10	22	10	31	10	13	180
	Total Local Interconnection Trunks**	48,321	339,660	236,272	33,201	56,674	16,948	111,037	42,359	116,882	1,001,354
	CLEC-to-BST Trunks	18,175	122,513	101,461	8,029	24,035	6,677	49,891	22,151	41,090	394,022
	BST-to-CLEC Trunks	30,146	217,147	134,811	25,172	32,639	10,271	61,146	20,208	75,792	607,332
	Access and Transport**	423	2,991	2,134	222	571	226	1,223	626	1,352	9,768
	Directory Assistance	100	966	539	65	130	40	357	112	409	2,718
	Operator Services incl. Verification	134	1,118	475	61	226	62	402	208	491	3,177
	E911	171	877	1,090	90	197	104	440	296	436	3,701
	Intercept	18	30	30	6	18	20	24	10	16	172
	Collocated Interconnectors	28	54	44	18	33	20	35	25	34	87
	Collocation Arrangement (activity)	453	1,561	788	167	436	113	689	323	597	5,127
	Physical	436	1,366	655	150	414	107	620	303	539	4,590
	Virtual	17	195	133	17	22	6	69	20	58	537
	Physical-in progress	68	151	97	49	132	78	152	15	143	885
	Virtual-in progress	0	20	10	2	4	2	12	0	0	50
	Wire Centers with Collocation	69	135	85	30	60	37	73	43	76	608
	Total Ported Numbers (estimated)**	61,727	274,630	305,710	26,176	89,132	20,877	144,595	56,701	192,742	1,172,290
	Ported Res. Lines	6,326	44,889	63,924	59	210	31	3,873	2,145	161	121,618
	Ported Bus. And Govt. Lines	55,401	229,741	241,786	26,117	88,922	20,846	140,722	54,556	192,581	1,050,672
	Total Unbundled Loops & Sub-Loops (Non Data/Combo)	15,261	92,711	74,543	4,372	10,106	4,838	34,363	11,936	45,498	293,628
	Total Unbundled Ports*	2	23	330	1	8	8	0	0	4	376
	Total Unbundled Loop/Port Combos*	23,869	52,319	91,902	11,385	8,514	5,929	24,132	12,732	17,131	247,913
	Res. Unbundled Loop/Port Combos	8,004	13,563	45,110	3,378	4,231	2,237	17,060	1,847	6,712	102,142
	Bus. Unbundled Loop/Port Combos	15,865	38,756	46,792	8,007	4,283	3,692	7,072	10,885	10,419	145,771
	Total UNE-p Coin Combos	3	23	11	1	1	0	0	1	0	40
	Total EELs	2	1,146	1,218	15	30	0	63	0	8	2,482
	Total Unbundled Data Loops (ISDN & xDSL)*	1,518	9,111	9,636	780	2,192	730	4,791	807	3,100	32,665
	Total Unbundled I/O Transport DS1 equivalents	958	3,228	866	424	928	362	1,541	417	998	9,722
	Total Resold Lines*	56,239	197,761	130,663	36,603	103,673	65,500	69,808	60,992	52,525	773,764
	Resold Bus. Lines	18,341	96,197	33,077	13,826	31,887	14,206	31,510	17,665	13,549	270,258
	Resold Res. Lines	35,452	88,259	87,784	21,333	67,660	49,723	35,218	40,866	37,376	463,671
	Resold ISDN Lines	181	645	728	168	474	126	355	264	283	3,224
	Resold PBX Trunks	1,235	9,164	3,947	1,061	1,725	864	1,588	1,519	1,013	22,116
	Resold Multiserv Lines	63	2,283	2,561	97	706	162	327	217	47	6,463
	Resold Private Lines/Data CKTs	967	1,213	2,566	118	1,221	419	810	461	257	8,032
	Total Facility-Based Lines (estimated)	119,316	630,521	594,562	51,505	102,386	32,415	196,064	76,601	255,506	2,058,876
	Facility-based Business	101,755	537,082	464,787	48,076	97,952	29,819	175,265	71,938	249,010	1,775,684
	Facility-based Residential	17,561	93,439	129,775	3,429	4,434	2,596	20,799	4,663	6,496	283,192
	Total CLEC-Provided Access Lines	175,555	828,282	725,225	88,108	206,059	97,915	265,872	137,593	308,031	2,832,640

LEGEND: LOCAL COMPETITION SUMMARY REPORT

CLEC Certifications (PSC Approved, Pending): The CLEC Certifications count and category breakdowns are rolled up from the Weekly Harmonize Report as well as input from the State Regulatory staffs. Note: AL, MS, NC, TN show March data. All other states are as of February 1, 1999.

Operational CLECs (Resale Only, Both): Facility-based CLECs ("Facility-based Only" and "Both") have **currently in-service** interconnection, UNEs, collocation arrangements, switches and/or number portability services associated with the facility-based provisioning of services. Resale CLECs ("Resale Only" and "Both") reflect those CLECs with 10 or more wholesale access lines in service during the reporting period.

Operational Switches: Total CLEC switches currently deployed. These only include switches that have BST interconnection trunks assigned to them. In many cases a CLEC has a ring with several switches but only one point of interconnection with BellSouth.

Operational Points of Interface: May include remote switching terminals or network terminating equipment.

Planned Switches: Non-operational CLEC switches, which are announced or are currently being installed.

Total Local Interconnection Trunks (CLEC-to-BST Trks, BST-to-CLEC Trks): Reflects current in-service DS-0 equivalents (Currently includes only BST-provisioned trunks).

Access and Transport (Directory Assistance, Operator Services, E911, Intercept) Reflects current in-service DS-0 equivalents for unbundled transport providing CLEC access to BST network services and databases.

Collocated Interconnectors: Number of companies who have requested and/or completed collocation arrangements with BST within the state. Summarized from Interconnection Services' Collocation Reports. CLECs that have gone bankrupt, are not paying their bills and do not have active circuits are not included.

Collocation Arrangements: (Physical and Virtual) Total number of collocation arrangements, including virtual and physical collocation, in service or pending. From Interconnection Services' Collocation Reports.

Wire Centers with Collocation: Number of Wire Centers (Central Offices) with one or more currently active or pending collocation arrangements. Summarized from Interconnection Services' Collocation Reports.

Total Ported Numbers (Ported Res.Lines, Ported Bus. Lines): BST assigned numbers "ported out stand alone" and "ported out w/loop" to CLEC networks. Includes both Interim and Long-term Number Portability. Ported Bus. Lines include Government and Business numbers.

Total Unbundled Loops: Total number of Unbundled loops and sub-loops in-service including 2-wire, 4-wire, ISDN, etc.

Total Unbundled Ports: Total number of Unbundled ports in-service.

Total Unbundled Port/Loop Combos: Total number of Unbundled port/loop residential and business combos in-service.

Total Unbundled Port/Loop Combos: Total number of Unbundled t/loop residential and business combos in-service.

Total EELs: Total number of DS1 I/O transport/loop combos in-service. The DS1 combo local loop count determines this number.

Total Unbundled Interoffice Transport Facilities: Total number of DS0, DS1 and DS3 Unbundled transport facilities reported as DS1 equivalents. This number does not include EELs.

Total Facility Based Lines: Cumulative Total estimated number of CLEC facility based lines (see explanation below)

CLEC Facilities-Based Access Line
Estimation Methodology

In order to give an accurate assessment of the level of competition in the wireline telecommunications markets that BellSouth operates in, Interconnection Services issues the monthly Local Competition Report. This report shows various categories of information reflecting the current level of competitive activity of CLECs for each of the nine states the company provides local access service. The number of total access lines is estimated for each state and this total is composed of CLECs' resold BellSouth lines and their own facilities-based lines. The facilities-based access line estimate is the summation of the business and residence line estimates. Both of these facilities-based estimates are calculated using data from BellSouth billing systems records and therefore are conservative in nature since they usually do not capture customers of CLECs who obtain their access lines directly from a CLEC utilizing only the CLECs facilities.

Facilities-based Business Access Lines

The ities-based business access lines estimate uses four sources of ir nation for each CLEC in each state: unbundled network loops (UN , interconnection trunks (both CLEC to BST and BST to CLEC), unbundled network business combinations (UNE business combos), and E911 listings. The greatest of these four sources of information is used as the estimate with an adjustment to three of the four sources to create a business and residence line split. UNEs, interconnection trunks and E911 listings are a combined business and residence number and therefore must be adjusted to reflect the split between business and residence lines. This split is calculated by taking the greater of residence directory listings and residence ported numbers (both interim and permanent) and subtracting that from the number UNEs, interconnection trunks or E911 listings. The end result of this split adjustment produces both the business and the residence CLEC facilities-based estimates. There is no need to make this adjustment for UNE business combos since they are by definition only business lines. It should be noted that one interconnection trunk is counted as one access line. This estimate is d

Facilities-based Residence Lines

The facilities-based residence access lines estimate uses two sources of information for each CLEC in each state: unbundled network residence combinations (UNE residence combos) and the residence split portion of UNEs, interconnection trunks or E911 listings. This residence split portion is only used as the residence line estimate when there are no UNE residence combos and when the business estimate relied on the business and residence split adjustment. This estimate is done by CLEC and summed up by state for the Local Competition Report.

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pathnet

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· OUR TECHNOLOGY
· OUR INVESTOR RESOURCE
· OUR EMPLOYMENT OPPORTUNITIES
· OUR PRESS ROOM

FLASH PRESENTATION

our company

Company Backgro
Management Team
Board Of Directors
Frequently Asked Questions

Company Background:

Pathnet is an industry innovator that is successfully extending the reach of telecommunications service providers into the under-served markets throughout the U.S. At the core of the company's "smart build" approach to nationwide expansion is Pathnet's digital network build. By investing in a fiber backbone and combining it with the inherent strengths and economies of wireless technologies, Pathnet is bringing the prospect of immediate growth and profitability to its customers.

Targeting the wide open spaces of second-, and third-tier markets, Pathnet is able to deliver carrier customers - ISPs, CLECs and other service providers - virtually capital free entry to markets comprised of millions of potential customers and billions of dollars in business with little to no competition. Pathnet is on the fast track to becoming the premier, low cost provider of high speed, competitive local access and high capacity transport services in under-served markets nationwide.

Founded in 1995, Pathnet launched as a broadband wireless service provider by leveraging Federal Communications Commission regulations requiring hundreds of private microwave network operators to relocate to a different part of the spectrum. Pathnet's initial strategy was to pursue aggressively Rights-of-Way agreements for telecommunications assets owned by utility, pipeline and railroad companies, and build a digital wireless network.

The company started by upgrading and aggregating existing private infrastructure to a state-of-the art SONET platform. Increasing demand for high-speed data and Internet services, coupled with the advancements in fiber optic technologies, presented Pathnet the opportunity to leverage the inherent value of a digital wireless network reaching out to millions and expand the scope of its founding business strategy to include a fiber backbone.

While growth of the company's fiber optic network still relies on partnering and co-development agreements for unique rights-of-way, the emphasis has shifted from featuring dark fiber to creating and delivering value-added services. Pathnet offers a broad range of products and services under two separate programs - Pathnet Transport Services and Pathnet VPOP Plus Service.

Pathnet VPOP Plus Service is an industry-unique combination of competitive local access in the form of PRI, xDSL and Private Line connections and long haul transport. Pathnet Transport Service offers both On- and Off-Net Private Line service reaching to more than 450 cities via Pathnet's Alliance Reseller Program.

A "next generation" carriers' carrier providing competitive local access and high capacity, digital transport services, Pathnet's telecommunications offerings support the expansion objectives of inter-exchange carriers, local exchange carriers, Internet service providers, Regional Bell Operating companies, cellular operators and resellers. Pathnet Telecommunications, Inc., is the parent company of Pathnet.

Pathnet Milestones

- 7,700 route miles
- 1,900 route miles of network under construction
- 106 collocations completed, 150 planned by year end
- Major switching centers in Tier 1 markets
- 450 cities by 2004
- CLEC approvals in 35 states
- Sales backlog of $230+ million
- Three premier fiber optic routes
  - 1,100-mile network between Chicago and Denver, CO
  - 400-mile network from Grand Junction to Albuquerque, NM
  - 300-mile network from Albuquerque to El Paso, TX
- Recently secured $260 million in credit facilities from two vendors and closed a $25 million second tranche of equity

TOP

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CorpTech Technology Company Information

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Fax: (202) 625-7369

Website - http://www.pathnet.net

Profile
Provider of wholesale long distance communication services. Digital network capacity is provided for resale to ISPs, cellular and PC providers, RBOC and ILECs, local LECs and CAPs and industrial private users. This company was capitalized by private investment.

Government
NOT a Government contractor

Sales
$2.5m to $5m annual sales

Employment
150 employees

People

- Richard A. Jalkut - President/CEO (C.E.O.)
- Robert Rouse - Chief Operating Officer (Tech Transfer)
- Michael Brooks - VP of Network Development (M.I.S.)
- Michael Van Zetta - VP of Sales (Sales)
- Joseph Mastrogiorgio - VP of Marketing (Marketing)
- William Smedberg - EVP of Corporate Development (Corporate Dev.)
- James Craig - Chief Financial Officer (Finance)
- Dan Gray - Comptroller (Administration)
- Tara Merkel - Director of Human Resources (Personnel)
- Kenneth Klamm - Director of Engineering (Engineering)

- Michael Lubin - Vice President/General Counsel
- Rob DiRocco - VP of National Account Sales
- Nicholas Kalavity - VP of Western Region
- Phil Sullivan - VP of Northeast Region
- Chuck Liggett - Senior Vice President/CMO
- Gary Steele - VP of Product Development
- Van Zetta - Senior VP of Sales
- Roger Barton - Director of Facilities Engineering

Primary SIC Code
4800

Products (SIC Code)

- Local wire connected telephone services (4813)

▲ Top

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PATHNET REPORTS THIRD QUARTER RESULTS

RESTON, VA (Nov. 14, 2000) - Pathnet Telecommunications, Inc. (Pathnet), the industry's first wholesale, convergent telecommunications service provider combining competitive local access services and long-haul transport in underserved markets, today announced its financial and operating results for the quarter ended Sept. 30, 2000.

Third quarter revenue increased to $17.8 million as compared to revenue of $0.6 million in the third quarter of 1999. On a sequential basis, revenue increased 40 percent from $12.6 million in the prior quarter. As expected, construction revenue for the quarter accounted for approximately 92 percent of total revenue, with service revenue comprising the balance. Earnings before interest, taxes, depreciation and amortization (EBITDA) for the quarter was a loss of $10.4 million versus a loss of $6.9 million in the year-ago quarter.

Customer demand for Pathnet's single integrated platform of VPOP Plus Services--including Internet dial access, xDSL and Private Line connection services--continues to increase. The company's sales backlog increased $35 million and now stands at $234 million, comprised of $195 million in telecom services and $39 million in construction and infrastructure services.

"Pathnet is executing nicely on its plan of becoming the first convergent communications services provider focused on underserved markets," said Richard Jalkut, president and chief executive officer. "Customer demand for our unique VPOP services family has been outstanding as evidenced by our growing sales backlog. Customers are looking for capital efficient, low-cost service that is available in multiple markets--which Pathnet provides. We've also continued to bolster our financial position by securing $260 million in credit facilities with various vendors."

During the third quarter, Pathnet successfully secured a total of $260 million in credit facilities from two vendors and closed a $25 million second tranche of equity from Colonial Pipeline Co. The company's $210 million credit facility from Nortel Networks has a term of six years and will support the expansion of Pathnet's continued fiber optic build-out through the financing of goods and services purchased from Nortel. The second vendor's $50 million

credit facility will help Pathnet finance purchases including softswitches, gateways and optical muxes, which will support Pathnet's offering of unique VPOP Plus Services.

Pathnet completed 300 additional route miles of network and 20 additional collocations during the quarter, bringing its total network to 7,700 route miles and 106 collocations in 73 cities. The company continues to target 150 collocations in 80 cities by the end of the year. Pathnet increased its gross property and equipment by $51 million in the quarter, bringing total property and equipment acquired to $272 million at quarter-end.

Third Quarter Highlights and Recent Developments

- Secured $210 million credit facility from Nortel Networks
- Secured a $50 million credit facility from a second vendor
- Closed $25 million second tranche of equity from first quarter's strategic investment transaction
- Increased sales backlog to $234 million from $200 million
- Lit Omaha-to-Denver route to complete lighting on Chicago-to-Denver route
- Completed 20 collocations, bringing cumulative total to 106
- Achieved CLEC approval in 10 new states, for a year-to-date total of 35 CLEC approvals

Pathnet will be discussing its third quarter results this morning at 11:00 a.m. EST. Interested parties may listen to the call by dialing (719) 457-2633. A telephone replay will be available approximately two hours after the conclusion of the call for approximately one week. The replay call-in number is (719) 457-0820; both the call and the replay can be accessed using the passcode 652085.

CLICK HERE FOR 3rd QUARTER RESULTS TABLES

Pathnet is a wholesale telecommunications service provider that delivers broadband access and transport solutions to underserved markets nationwide over a wholly convergent network. Pathnet provides service to classic telecommunications carriers, as well as to emerging carriers such as Internet service providers and competitive local exchange carriers, giving them the ability to improve their profitability in today's environment via capital-free, low-risk market expansion. Pathnet currently has 7,700 route miles of completed network and 1,900 additional route miles of network under construction or swap commitment. Additional information about Pathnet can be found on the company's web site at: www.pathnet.net.

The statements made by Pathnet in this press release may be forward-looking in nature. No assurance can be given that future results will be achieved; actual results may differ materially from those projected in forward-looking statements. Pathnet believes that its primary risk factors include, but are not limited to: signing additional agreements with private network operators and others; offering services to telecommunication service providers; entering into partnering arrangements; building a digital network; meeting market demand and customer service expectations; and obtaining additional financing. Additional information concerning these and other potentially important factors can be found within Pathnet's Registration Statement and periodic reports filed with the U.S. Securities and Exchange Commission under the federal securities laws. Statements in this release should be evaluated in light of these important factors.

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Press Releases

Feb 26, 2001

Knology Reports Strong 2000 Results

Contact:
Rob Mills
CFO
Knology Broadband, Inc.
706-645-8970
rob.mills@knology.com

KNOLOGY REPORTS STRONG 2000 RESULTS

WEST POINT, Ga.- (February 26, 2001) -KNOLOGY, Inc. ("KNOLOGY") and Knology Broadband, Inc., a wholly owned subsidiary of KNOLOGY, announced strong 2000 results including growth in connections, revenues and marketable passings.

KNOLOGY experienced strong network and subscriber growth by adding 74,254 marketable homes and 41,276 on-net connections during 2000. During 2000, the on-net telephone connections base grew 19,432, or 54% to 55,311 connections and the high speed Internet connections base grew 9,909, or 199% to 14,898 connections. Revenues for 2000 were $82,573,000, an increase of 24% compared to 1999. Earnings before interest, taxes, depreciation and amortization was ($7,162,000) in 2000 compared to ($6,204,000) in 1999 reflecting the expenditures related to the significant growth in connections during 2000.

KNOLOGY reported 179,223 connections and 380,027 marketable passings at year end. During the fourth quarter, KNOLOGY added 20,288 marketable homes and 8,452 on-net connections. Revenues for the fourth quarter 2000 were $22,694,000, up approximately $1,809,000, or 9% compared to the third quarter 2000 and 27% compared to the fourth quarter 1999. Earnings before interest, taxes, depreciation and amortization was ($1,852,000) for the fourth quarter verses ($2,721,000) for the third quarter.

Rodger Johnson, President and CEO, stated, "2000 was a banner year for Knology. We significantly expanded our homes passed and franchise areas, posted exceptional on-net connection and revenue growth and successfully implemented systems to improve customer service and streamline back office operations. These accomplishments have allowed Knology to continue to make significant progress with our southeastern broadband strategy."

Knology Broadband added 73,159 marketable homes and 39,767 on-net connections during 2000. Revenues for 2000 were $59,615,000, an increase of 33% compared to 1999.

KNOLOGY constructs and operates advanced broadband networks in the Southeastern U.S and has a presence in Augusta, Charleston, Columbus, Huntsville, Knoxville, Montgomery, Panama City and West Point, GA. Across these markets, KNOLOGY offers advanced communications services over a city-wide residential and business broadband network. KNOLOGY has been awarded franchises in the Nashville, Tennessee and Louisville, Kentucky markets. The advanced broadband network is supported by SONET based self-healing fiber rings offering SONET, ATM and HFC based communications services to the residential, business and carrier markets.

KNOLOGY, based in West Point, Ga., is the leading provider of bundled broadband communications services in the Southeast. KNOLOGY's hybrid fiber coaxial networks are some of the most technologically advanced in the country. KNOLOGY is part of the ITC group of companies, which includes ITC^DeltaCom, Powertel and InterCall. For more information, please visit our Web site at http://www.knology.com.

KNOLOGY, Inc.
Operating Results
As of the Quarters Ending

	Dec 31,1999	Sept 30,2000	Dec 31,2000	Sept 30, 2000 to Dec 31, 2000 Change	Dec 31, 1999 to Dec 31, 2000 Change
Marketable Homes Passed	305,773	359,739	380,027	6%	24%
Connections					
Video	89,937	99,565	101,872	2%	13%
Telephone					
On-Net	35,879	51,591	55,311	7%	54%
Off-Net*	7,908	7,224	7,142		
Total Telephone	43,787	58,815	62,453	6%	43%
High Speed Internet	4,989	12,473	14,898	19%	199%
Total On-net Connections	130,805	163,629	172,081	5%	32%
Total Connections	138,713	170,853	179,223	5%	29%

KNOLOGY, Inc.
Financial Results
$(000's)

	Quarter Ended		Year Ended	
	Sept 30, 2000	Dec 31, 2000	Dec 31, 1999	Dec 31, 2000
Revenue	$20,885	$22,694	$66,721	$82,573
Operating Expenses**	$23,606	$24,547	$72,925	$89,735
EBITDA	$(2,721)	$(1,853)	$(6,204)	$(7,162)

Knology Broadband Operating Results As of the Quarters Ending

	Dec 31,1999	Sept 30,2000	Dec 31,2000	Sept 30, 2000 to Dec 31, 2000 Change	Dec 31, 1999 to Dec 31, 2000 Change
Marketable Homes Passed	295,273	348,210	368,432	6%	25%
Connections					
Video	87,020	96,566	98,800	2%	14%
Telephone					
On-Net	13,628	28,381	31,996	13%	135%
Off-Net*	6,621	5,203	4,945		
Total Telephone	20,249	33,584	36,941	10%	82%
High Speed Internet	4,590	11,858	14,209	20%	210%
Total On-net Connections	105,238	136,805	145,005	6%	38%
Total Connections	111,859	142,008	149,950	6%	34%

Knology Broadband Financial Results $(000's)

	Quarter Ended		Year Ended	
	Sept 30,2000	Dec 31,2000	Dec 31,1999	Dec 31,2000
Revenue	$15,142	$16,541	$44,930	$59,615
Operating Expenses**	$19,857	$20,685	$58,589	$75,391
EBITDA	$(4,715)	$(4,144)	$(13,659)	$(15,776)

* Off-net lines include lines leased from third parties

** Excluding Depreciation and Amortization

[home : residential : business : cities : about knology]

TelecomClick
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It's a coincidence

Jim Barthold

Telephony, Dec 18, 2000

Adelphia Business Solutions follows cable sibling's path

It's coincidental that Adelphia Corp.'s Adelphia Business Solutions is sowing seeds in markets in which sister cable business unit Adelphia Communications already has broken ground.

But it's a happy coincidence.

"It looks that way because we bought a very nice cable property out on the West Coast in Los Angeles and, about the same time, announced that we were opening up that market for Adelphia Business Solutions," said John Rogers, vice president of marketing and product development for ABS. Even if ABS had not bought that cable market, it would still be opening up the Los Angeles market for the business unit, he added.

But Rogers won't disassociate himself from the cable end of the business.

"It's working out very nicely from a branding standpoint, wherever we have a cable presence and we introduce Adelphia Business Solutions," he said. "The Adelphia name is pretty well-respected from the cable side of our business, so the branding is very positive for the telephone side of the business."

It's nice, but it's not make-or-break for the unit that was established in 1991 as a wholly owned Adelphia subsidiary and took off as a competitive local exchange carrier (CLEC) in 1997 with 13 Northeast-based markets.

"The business plan - and we haven't wavered from this at all - called for us to build a facilities-based network and to provide bandwidth to a majority of our customers in a Type I and Type II environment," Rogers said. Type I runs fiber to the customer and Type II sources portions of the network from local providers.

ABS has been steadily expanding its nationwide reach, moving "from facilities-based networks in the Northeast, through the Mid-Atlantic states, down through the South, into the Midwest. We have staffed our project management people and our build has started out on the West Coast," Rogers said.

This kind of expansion means good times for firms such as Tekelec, which has been contracted to deliver turnkey signaling, services and diagnostic systems equipment for ABS' national fiber optic network.

"We've sold them a bunch of services, and the idea is we'll turn up and configure the Tekelec network for Adelphia," said Dick Hayter, vice president of Tekelec's Eagle business unit.

ABS represents a foot in the door in an expanding and changing marketplace. "It's a significant opportunity for us," Hayter said. "It's interesting that Adelphia is a cable-based operator. They're one of the better-known, larger CLECs and they represent a significant chunk of business for us both in our existing order flow and going forward."

Tekelec's local number portability technology was an important ingredient. "We're currently doing a lot of local number portability," Rogers said. "When we go in and sell to a 10- or 20-line business, they typically want to keep their phone numbers. One of the things that local number portability allows us to do is provide this service on Adelphia's switches, get them on our infrastructure and facility, but keep their current phone numbers."

Tekelec also provides a service-creation environment and a database that supports telephony applications such as 800-number calling names and travel card services, Hayter added.

That got Rogers excited. "That's going to allow us to go out and create services that could be unique for [ABS] and allow us to differentiate ourselves in the market," he said. "Of course, those services would reside on [the Tekelec signal transfer points] and allow us to create the services and market them to our customers."

Among the additional services ABS anticipates is the ability to have call center routing that "follows the sun," said Tom Ferry, senior director of product development for ABS. "If we have a big customer nationally who has call centers starting up early on the East Coast and turning down late on the West Coast, using this service creation environment, we can create solutions that will allow them to have those calls routed based on the time of day."

The relationship with the cable branch of the family is always close to the surface of this business and will probably come into play with broadband voice over IP - and as Adelphia as a whole attacks the small office/home office and small business customer markets.

"That's a hot button of ours," Rogers said.

That market can be served by several transport mechanisms. "The business solutions can ride over either the twisted pair to the home, DSL to the home or, for that matter, cable," Rogers said. For today, ABS is content to move around the country - with or without Adelphia Communications.

e.spire® ANNOUNCES RECORD FOURTH QUARTER AND YEAR 2000 RESULTS; ACHIEVES POSITIVE ADJUSTED EBITDA IN FOURTH QUARTER

FOR IMMEDIATE RELEASE

- Revenues up 63% to $94 million
- Net loss excluding special charges $(61.3)
- First positive adjusted EBITDA achieved for quarter
- 21 of 28 switched cities generated positive adjusted EBITDA
- Network costs reduced by $3.1 million for quarter

HERNDON, VA, FEBRUARY 15, 2001 — e.spire Communications, Inc. (Nasdaq: ESPI), the communications company for the networked economy, today announced final fourth quarter and year 2000 results. Revenues for the quarter ended December 31, 2000 were a record $93.9 million, compared to $57.5 million for the same quarter in 1999.

Earnings before interest, taxes, depreciation, amortization, and other non-cash items ("adjusted EBITDA") for the quarter was $0.5 million compared to an adjusted EBITDA loss of $(33.7) million for the same quarter in 1999. These adjusted EBITDA results mark the Company's first adjusted EBITDA-positive quarter and reflect a dramatic improvement over the same quarter last year.

For the full year 2000, revenues totaled $344.2 million, compared to $244.0 million for 1999, a 41% increase for the year. Adjusted EBITDA loss for 2000 was $(36.7) million compared to a loss of $(84.2) million for 1999, an improvement of 56%.

"These record fourth quarter and full year results demonstrate that **e.spire** is a changed company and well on its way to profitability," said George F. Schmitt, **e.spire** Chairman and Acting Chief Executive Officer. "When I came on board as Chairman at the end of the first quarter, I promised growth and reduced losses and predicted positive adjusted EBITDA between the fourth quarter 2000 and the second quarter 2001. Obviously, we have achieved these goals, and we expect our results to stay positive going forward."

Results by Business Unit

e.spire Communications, Inc.

e.spire, the integrated communications provider (ICP), reported net revenues of $64.9 million for the quarter, a 68% increase from $38.6 million in the same quarter of 1999. The gross margin for the business unit was 53%, up from 21% last year.

"We reduced our overall expenses in 2000, even while adding almost 400 employees, and we will continue to manage our costs well," said Christopher J. Resavy, **e.spire** Chief Operating Officer. "Network costs were cut by $3.1 million for the quarter and $15 million for the year through invoice audits, dispute settlements, and renegotiated telecom contracts."

"As we continue to reduce our costs, we also expect to see revenue growth, which is even more critical to our success," said Resavy. "We expect revenues to continue to grow in the range of 7% to 10% per quarter and adjusted EBITDA to be positive within the year."

e.spire offers telecom services in 38 metropolitan markets. Of these networks, 28 are equipped with Class 5 voice switches, and 21 of these 28 have attained sustainable positive adjusted EBITDA.

ACSI Network Technologies, Inc.

ACSI NT reported revenues of $21.8 million for the quarter, compared with $12 million for the same period last year. The gross margin reported for the quarter was 49%. Revenues for the year ended December 31, 2000, were $82.8 million, up from $68.3 million in the prior year, a 21% increase. ACSI NT's revenues fluctuate depending on the timing of contract awards and network acceptance.

"We had another outstanding year. With this momentum, we expect to improve on our 2000 revenues, adjusted EBITDA, and cash flow by at least 30% in 2001," said Michael P. Miller, ACSI NT President and COO. "We continue to lease fiber and sell conduit on our key networks in Atlanta, Dallas, Houston, Fort Lauderdale/Miami, Tampa, and Washington, DC/Northern Virginia, and we plan to complete a new network in the first quarter 2001."

CyberGate, Inc./ValueWeb

CyberGate, **e.spire's** Internet subsidiary, a Web hosting and colocation service provider, reported revenue of $7.2 million and positive adjusted EBITDA of $0.1 million for the quarter, compared to revenue of $6.9 million and adjusted EBITDA of $0.1 million for the year ago quarter.

e.spire exited the dial-up ISP business during 2000. This business contributed approximately half of CyberGate's revenue for 1999 and approximately 33% in 2000. **e.spire** expects revenue from CyberGate's core Internet businesses, the remaining Web hosting and colocation services, to be between $26 and $29 million in 2001.

"Although our revenue and adjusted EBITDA remained relatively flat due to our exiting of the ISP business, we have added new services and a substantial number of new customers this year. We expect to begin to see quarter over quarter revenue growth in the 20% range in 2001," said Tomas V. Mikaelsson, CyberGate President and COO. "At the end of the quarter, we hosted 87,507 Web sites, up more than 10% from 78,600 Web sites in the previous quarter, and up 66% over the prior year quarter's 52,749 sites."

Financial Performance

Net loss applicable to common stockholders was $(97.3) million, or $(1.77) per common share, for the fourth quarter, which included a beneficial conversion charge of approximately $9.6 million, or $(0.18) per common share related to the exchangeable preferred stock issued in the third quarter that was subject to shareholder approval received in the fourth quarter. Also, included in net loss was a charge of $16.9 million, or $(0.31) per common share related to impairment charges tied to certain e.spire assets. For the year 2000, net loss applicable to common stockholders was $374.7 million, or $(7.05) per common share. This included a beneficial conversion charge of $34.2 million, or $(0.64) per common share.

Equity Funding and Liquidity

"We are currently negotiating with our bondholders for a restructuring of our bond debt, and we are cautiously optimistic that we will close on a new credit facility soon," added **e.spire** CFO Bradley E. Sparks. "Until we receive this additional funding, with our cash on hand and cash receipts expected soon as announced last week, we are funded into the second half of March."

e.spire has not made the interest payment due on its 13 ¾ % notes and is in ongoing discussions with an informal committee representing a majority of its bonds held by unaffiliated holders, with a view to achieving consensual restructuring. While the ongoing discussions have been constructive, **e.spire** cannot be certain that they will result in a consensual agreement with bondholders.

Shareholder Lawsuit

"We announced in January that the complaint filed last year against us was dismissed with prejudice," said **e.spire** Chairman Schmitt. "As expected, the court found the allegations of wrongdoing insufficient and ruled conclusively in **e.spire's** favor."

"Now **e.spire** is considering whether to file a motion against the plaintiffs to recover attorneys' fees incurred while defending this frivolous lawsuit," added Schmitt.

Outlook

"I expect **e.spire** to improve results for the first quarter of 2001 and the succeeding quarters as well," said **e.spire** Chairman Schmitt. "We have performed as promised for three sequential quarters and expect that our turn around will continue to meet and exceed expectations."

Corporate Background

ACSI NT

ACSI Network Technologies, Inc., a wholly owned subsidiary of **e.spire** Communications, Inc., provides optical fiber infrastructure solutions and strategic network design services for organizations deploying networks in major metropolitan cities throughout the United States. Current clients include telecommunications carriers, municipalities, school districts, utilities, and Fortune 500 companies. ACSI NT has fiber and conduit inventory in Atlanta, Dallas, Houston, Fort Lauderdale/Miami, Tampa, and Washington, DC/Northern Virginia, More information about ACSI NT is available at ACSI NT's Web site, www.acsint.net.

CyberGate and ValueWeb

CyberGate is a wholly owned subsidiary of **e.spire** Communications, Inc., headquartered in Fort Lauderdale, FL. CyberGate's subsidiary, ValueWeb, offers a comprehensive line of shared, dedicated, and colocation Web hosting solutions. Featuring state-of-the-art facility and network infrastructure, e-commerce, and Web design applications, ValueWeb provides businesses turnkey resources for enhancing their Web sites' effectiveness in the marketplace. Now hosting more than 85,000 Web sites for customers in more than 136 countries, ValueWeb is one of the largest Web hosting companies in the world.

ValueWeb is an IBM Premier Business Partner, a Microsoft Certified Solution Provider, a Network Solutions Alliance Partner, a Hewlett Packard Premier Partner, an Intel iASP Alliance Member, and a Cobalt True Blue Sapphire Partner.

More information about ValueWeb dedicated servers and colocation services, including interactive demonstrations of network architecture, is available on the ValueWeb Web site, www.valueweb.com.

e.spire Communications

e.spire's national ATM backbone—one of North America's largest—transports data over long-haul fiber networks and **e.spire's** local metropolitan networks to 46 **e.spire**-owned and -operated Alcatel data switches and 51 carrier-grade routers. Through network-to-network interconnections, the **e.spire** data network accesses nearly 400 points of presence, or POPS, throughout the United States. **e.spire's** carrier-grade backbone now rivals the most extensive backbones in performance, coverage, and redundancy.

e.spire operates 38 local area fiber-optic networks, including six in Tier-1 markets (Atlanta, Miami/Fort Lauderdale, New York, Philadelphia. San Antonio, and Washington, DC/Northern Virginia). In total, as of December 31, 2000, **e.spire's** network is comprised of 28 Class 5 voice switches, 222,555 fiber miles, and 3,900 route miles.

e.spire has networks in the following metropolitan markets (a * indicates networks that are not equipped with a Class 5 switch): Albuquerque, NM; Amarillo, TX*; Atlanta, GA; Austin, TX; Baltimore, MD; Baton Rouge, LA*; Birmingham, AL; Charleston, SC*; Chattanooga, TN*; Colorado Springs, CO; Columbia, SC; Columbus, GA; Corpus Christi, TX*; Dallas, TX; El Paso, TX; Fort Worth, TX; Fort Lauderdale/Miami, FL; Greenville, SC; Irving, TX*; Jackson, MS*; Jacksonville, FL; Kansas City, KS/Kansas City, MO; Las Vegas, NV; Lexington, KY*; Little Rock, AR; Louisville, KY; Mobile, AL; Montgomery, AL; New Orleans, LA; New York, NY; Philadelphia, PA; San Antonio, TX; Shreveport, LA*; Spartanburg, SC*; Tampa, FL; Tucson, AZ; Tulsa, OK; and Washington, DC/Northern Virginia.

e.spire Communications, Inc. is a leading integrated communications provider, offering traditional local and long distance, dedicated Internet access, and advanced data solutions, including ATM and frame relay. **e.spire** also provides Web hosting, dedicated server, and colocation services through its Internet subsidiary, CyberGate, Inc., and its subsidiary ValueWeb.

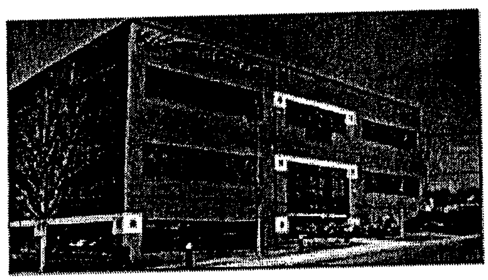
e.spire's subsidiary, ACSI Network Technologies, Inc., provides third parties, including other communications concerns, municipalities, and corporations, with turnkey fiber-optic design, construction, and project management expertise. More information about **e.spire** is available at **e.spire's** Web site, www.espire.net.

Certain statements regarding the development of the Company's businesses, the markets for the Company's services and products, the Company's anticipated capital expenditures, anticipated ADJUSTED EBITDA and other statements are forward-looking statements (as such term is defined in the Private Securities Litigation Reform Act of 1995) which can be identified as any statement that does not relate strictly to historical or current facts. Forward-looking statements use such words as plans, expects, will, will likely result, are expected to, will continue, is anticipated, estimate, project, believes, anticipates, intends and expects, may, should, continue, seek, could and other similar expressions. Although the Company believes that its expectations are based on reasonable assumptions, it can give no assurance that its expectations will be achieved. The important factors that could cause actual results to differ materially from those in the forward-looking statements herein (the "Cautionary Statements") include, without limitation, the Company's degree of financial leverage, risks associated with debt service requirements, debt restructuring, liquidity, and interest rate fluctuations, risks associated with acquisitions and the integration thereof, the impact of restriction under the Company's financial instruments, dependence on availability of transmission facilities, regulation risks including the impact of the Telecommunications Act of 1996, contingent liabilities, the impact of competitive services and pricing, the ability of the Company to successfully implement its strategies, as well as the other risks referenced from time to time in the Company's filings with the SEC, including the Company's Form 10-K for the year ended December 31, 1999. All subsequent written and oral forward-looking statements attributable to the Company or persons acting on its behalf are expressly qualified in their entirety by the Cautionary Statements. The Company does not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events, except as required by the Securities Exchange Act of 1934, as amended.

ABOUT KMC TEL

Corporate Profile

KMC Telecom is a nationwide provider of next generation telecommunications infrastructure and services at the network edge. A fiber-based integrated communications provider, KMC offers a full range of advanced voice, data and Internet infrastructure services in 37 markets across the eastern half of the United States. Dedicated to delivering high-quality and reliable services at highly competitive prices in each of its markets, KMC provides single-source product and service availability and maintains a strong commitment to localized customer care to the communities we service.



KMC's business has two distinct components: serving communications-intensive customers in markets with populations between 100,000 and 750,000, referred to as Tier III markets, which larger carriers have typically overlooked; and providing data services on a nationwide basis. KMC Telecom currently serves small to large businesses, government and institutional end-users, Internet service providers, long distance carriers and wireless service providers.

Tier III Market Services

In each of its local markets, KMC invests in a network infrastructure that is designed to reach approximately 80% of the business access lines through either a direct connection or unbundled network elements leased from the ILEC. KMC generally lays up to 25 miles of advanced fiber-optic local SONET networks in each market. The technology provided by KMC Telecom utilizes such advanced equipment as Lucent 5ESS switches, which ensures state-of-the-art switching capabilities for local, long distance and enhanced telephone services.

Major local communications centers are connected to KMC's network including telephone company central offices, long distance points-of-presence, mobile phone switching centers and

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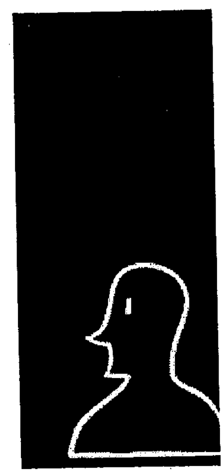


data nodes. In addition, a KMC office is established in each market to focus on local sales, operations and customer service.

Nationwide Data Services

KMC also provides local Internet access in 140 cities across the U.S. for selected major carrier customers by providing remote access servers that are deployed in supernodes, or concentration points, for high-speed connectivity to the Internet. KMC currently has 60 supernodes, including nine in its existing Tier III Markets.

While spurring competition, the breakup of the Bell System also forced businesses to manage their own telecommunications needs such as buying local service from one telephone company and long distance from another. With KMC Telecom, local, long-distance and even Internet services are now available from a single provider.

- Choose Below - NAVIGATE

Type keywords here.

Contact Us

July 6, 2001

NewSouth Communications Announces Merger with UniversalCom

Deal strengthens NewSouth' s presence in Gulf Coast Region; adds thousands to customer base

GREENVILLE, SC, April 13, 2000 –NewSouth Communications Corp., one of the South' s leading broadband Integrated Communications Providers (ICPs), announced today that it has signed a letter of intent to merge with UniversalCom, Inc., a privately owned, Florida-based ICP. With its very strong customer base across the Gulf Coast, the addition of UniversalCom quickly builds a solid presence for NewSouth in this region.

"UniversalCom fits perfectly into NewSouth Communications' strategy of supplying business customers with the best communication services possible. They have a 20-year history of providing excellent customer care, and their ability to give business customers the very best in technology mirrors our philosophy and culture at NewSouth," said Michael L. LaFrance, President & CEO of NewSouth Communications. "We are very excited about welcoming their top-quality people to our team."

This merger adds over 15,000 customers and allows NewSouth Communications to rapidly enhance and expand its network of services in the South. UniversalCom has deployed three major data and voice gateways across the Gulf Coast region in New Orleans, LA; Destin, FL; and Mobile, AL. In addition, both companies utilize a robust packet-switched ATM (asynchronous transfer mode) Cisco Powered Network (NASDAQ: CSCO), which will be joined to create a seamless expanded network throughout the Gulf Coast region. UniversalCom' s portfolio of products includes advanced data services, high-speed Internet service, web hosting, LAN/WAN installations, local dial tone, and long distance. In addition, UniversalCom is one of the largest customer premise equipment providers in the region. All of their products and services will be integrated into NewSouth's bundle of data and telecommunications offerings.

"By combining UniversalCom and NewSouth' s strengths, this move creates new opportunities for all of our partners, as well as current and future customers," explained John McNamara, Chairman of UniversalCom. "Further, UniversalCom' s expertise and proven track record in the data and interconnect arenas will accelerate NewSouth' s ability to provide a full complement of data and voice services."

NewSouth Communications plans to retain the entire UniversalCom team bringing NewSouth' s total staff to over 800. With UniversalCom, NewSouth will now have an active presence in over 100 markets across the South, serving a wide variety of customers including First Union National Bank, the US Navy and Air Force, Bank of America, International Paper, and a vast number of major universities and hotels.

About NewSouth Communications (www.newsouth.com):

NewSouth Communications is a privately held broadband ICP whose senior management team collectively possesses hundreds of years of experience in successful telecommunications-oriented businesses, including ACC Corp., now AT&T (NYSE: T), QWEST (NASDAQ: Q), and MCI WorldCom (NASDAQ: WCOM). The Company is actively expanding its extensive network of Cisco New World packet-based switches (NASDAQ: CSCO), Lucent Technologies, Inc. (NYSE: LU) AnyMediaTM 5ESS-2000 switches, and the Lucent advanced packet-based Softswitch across the South. In addition, NewSouth Communications is a designated Cisco Powered NetworkTM.

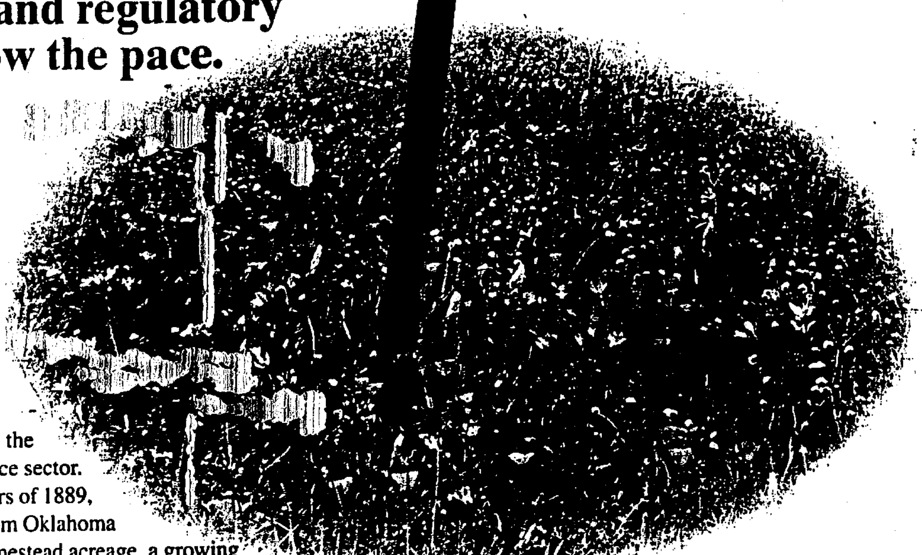
NewSouth Communications currently offers a comprehensive selection of products such as DSL-based high-speed Internet access, data, local exchange, long distance, and enhanced telecommunications services throughout the southern United States. NewSouth Communications serves business customers in the BellSouth (NYSE: BLS), Sprint United (NYSE: FON), and GTE (NYSE: GTE) service regions. The Company offers service in Florida, South Carolina, Tennessee, North Carolina, Georgia, Alabama, Kentucky, Mississippi, and Louisiana. For more information, visit the Company's web site at www.newsouth.com.

About UniversalCom):

Headquartered in Destin, Florida, UniversalCom is a privately held broadband ICP serving commercial customers across the entire Gulf South region. The Company has offices in Destin, Pensacola, and Panama City, Florida; Mobile and Montgomery, Alabama; Ocean Springs and Jackson, Mississippi; and New Orleans and Lafayette, Louisiana. UniversalCom employs over 270 talented professionals dedicated to carrying out the Company's vision of digital convergence to its customers. The Company' s product range includes local dial tone, long distance, Internet access, telecommunications equipment, shared tenant services, LAN/WAN services, thin client computing, data security/firewall services, e-commerce applications, Voice over Internet Protocol (VoIP), Virtual Private Network (VPN), and Voice over Digital Subscriber Line (VoDSL) solutions. UniversalCom is controlled by New Orleans-based investment company Stewart Capital, LLC, one of the Gulf South' s largest privately held investment companies.

STAKING A CLAIM

Competitive DSL providers vie for colocation space, but market turmoil and regulatory rulings could slow the pace.



By David Fairchild

There's a land rush on in the competitive DSL-service sector. Much like the Sooners of 1889, who burst westward from Oklahoma hoping to be first to reach prime homestead acreage, a growing number of upstart competitive DSL providers are racing to stake their claims at key locations. But the prize in this land rush is not pristine, wide-open prairie land. Rather, it is a precious few cubic feet of colocation space at incumbent-owned COs throughout the nation's urban centers.

The starting gun in this land grab sounded almost five years ago when congress passed the Telecommunications Act of 1996, opening the doors of COs nationwide to competitive voice and data carriers. Since then, data CLECs and other emerging carriers have been installing their own systems at incumbent facilities, first at those situated in the country's biggest cities and, more recently, at facilities in mid-tier markets.

In the third quarter of last year alone, the leading trio within the data CLEC arena, namely Covad Communications, Rhythms NetConnections, and NorthPoint Communications, readied DSL systems at more than 600 additional COs nationwide. To date, the three carriers have colocated their own equipment at more than 5,000 COs nationwide.

"I think the big three have expanded their networks significantly, and now they may have plateaued a little," says Craig Clausen, COO of the CLEC research and consulting company, New Paradigm Resources Group Inc. "But there seems to be plenty of new competitors coming in."

In fact, other competitive DSL providers continued DSL colocation efforts at a fevered pitch late into last year, as well. New Edge Networks said in November that it had topped 400 CO locations and was gearing up to debut services from 150 other COs. New Edge Networks even inked a reciprocal-service pact with NorthPoint, effectively expanding the colocation efforts of both carriers by

David Fairchild is a freelance writer and the former editor of the online trade publication CLEC.com. He may be reached via e-mail at dfairchild@newworldcontent.com.

allowing the DSL providers to offer their own brand of services from each other's sites in non-overlapping areas. Together the carriers ultimately plan to provide services from more than 4,000 COs.

Meanwhile, DSL.net says that in November it had added 62 CO locations during the third quarter. By the end of October the carrier had 540 CO sites. And despite disappointing revenues in the third quarter, DSL.net officials said that their firm was in a position to ramp up marketing activities with colocations at as many as 600 COs nationwide by the end of the year.

Settling down

But now the rush for colocation space may be slowing somewhat amid a massive investor pullback coupled with ongoing operational troubles that have left competitive DSL providers across the board reeling. A summer-long tech-sector selloff sent the share prices of virtually all publicly traded data CLECs tumbling to mere fractions of their springtime highs. In fact, many competitors were trading well below their IPO prices as 2000 drew to a close.

Rhythms, Covad, and NorthPoint found it especially hard going on the NASDAQ marketing during the fall. Each were trading at below $2 per share in the waning trading sessions of 2000. Meanwhile, most private DSL providers haven't faired much better financially in recent months.

Among the first signs of major turmoil in the DSL sector was Denver-based Jato Communications' surprise announcement in late September that its President and CEO Gerald Dinsmore had resigned and that it was letting go a significant number of employees. Reports put that number near 350. Since then, nearly all DSL competitors that began the year busily colocating their own systems in incumbent COs have announced similar staff reductions or other negative news.

Telecom industry observers say the market downturn during the second half of 2000 prompted a fundamental shift in the game plans of many DSL competitors.

"My gut instinct tells me that in the near future, perhaps over the next year, you'll see a shakeout in the industry," says Nick Regas, a DSL analyst with *Atlantic-ACM Inc.*, a telecom consulting firm. "And consequently, there is not going to be the same rush for space"

Such a shakeout may already be under way. Just two weeks after announcing it had reached the 400 central-office milestone, New Edge Networks says it was cutting 135 positions, including about 100 jobs at its Vancouver headquarters. The carrier cited a tight bank debt market.

Covad followed New Edge Networks' disappointing news with an announcement that it was releasing 13 percent of its own work force — or about 400 staffers — to cut its costs by 20 to 30 percent. The data CLEC also said it was stemming its colocation efforts, at least for now, after reaching a total of just more than 2,000 COs.The company's CEO Robert Knowling also resigned from his post.

Also in November, DSL-service firm Network Access Solutions said it was eliminating 145 positions, or about 23 percent of its roster.

"In the worst extreme, DLECs are saying, 'Maybe we can't support this footprint," Regas says. "'Maybe we need to cut back and focus on some of the more lucrative markets.'"

And so the sector-wide cuts continue with NorthPoint taking perhaps the biggest hit among the data CLECs so far.

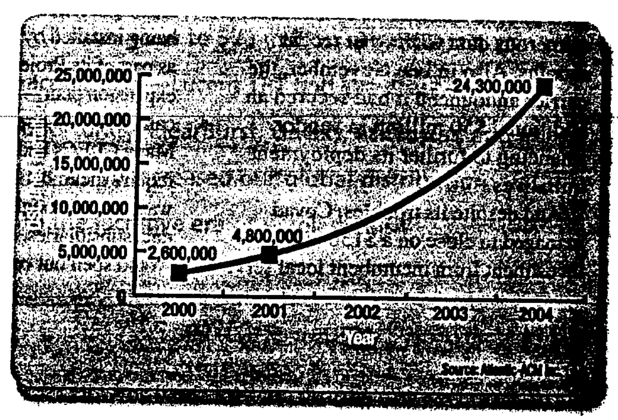
NorthPoint, which saw its DSL connections skyrocket 41 percent to 87,300 lines installed during the third quarter, entered the fourth quarter with high hopes of completing its planned operational merger with RBOC Verizon Communications in the first half of 2001. The $1.3 billion deal would have given the joined carriers an operational base of more than 3,000 COs and would have allowed NorthPoint to offer DSL connectivity to about 63 million homes and businesses nationwide.

After Verizon turned its back on NorthPoint, the data CLEC announced it was slashing nearly 250 jobs and filed a $1 billion suit against the incumbent.

But in December, Verizon cancelled the deal, citing poor operational and financing performance on the part of NorthPoint. Verizon's rejection dealt a major blow not only to NorthPoint's expansion plans, but to the carrier's prospects for survival, as well. After Verizon turned its back on NorthPoint, the data CLEC announced it was slashing nearly 250 jobs and filed a $1 billion suit against the incumbent, alleging Verizon unfairly terminated its contract with NorthPoint to get out of investment obligations outlined in the merger agreement. Verizon had pledged an $800 million investment in NorthPoint as part of the merger pact.

"This is a very difficult time at NorthPoint Communications," Liz Fetter, NorthPoint CEO, said in a statement.

Cumulative DSL lines nationwide



Also in December, HarvardNet said it was cutting 280 jobs and ending its DSL offerings altogether. The carrier said it would instead focus on its Web-hosting and ASP lines.

"There's obviously an expansion slowdown going on with this (investment) pullback," Clausen says. "I think the focus is really shifting to selling services and increasing revenues as opposed to continuing expansions into new areas."

In line with that trend, DSL.net said late in 2000 that it was releasing 141 employees, or about 28 percent of its work force. As part of its cost cutting measures, DSL.net also said it was slowing its network deployment efforts in new areas.

"It's the nature of the beast," Regas says. "[Earlier,] people really focused on expansion and getting customers. Now they're really looking at profitability. So, the focus is much less on going into new colocation space."

But the news isn't all bad among competitive DSL providers as some carriers continue their expansion efforts at a rapid pace.

Rhythms said in December that its customer base is shifting toward well-established, national Internet service firms and major broadband integrators, and away from many smaller ISPs that have proved a source of bad debt for numerous data CLECs in recent months. Also in late November, the carrier announced it had secured an additional $50 million in vendor financing to further its deployment initiatives.

And despite its troubles, Covad managed to close on a $150 million investment from incumbent local service provider SBC Communications in early November.

"With a burgeoning market economy bolstered by evidence that Covad can generate strong sales and provision DSL lines at an accelerating pace, we do not believe that 'the wheels are falling off' the business," *Bear Stearns & Co. Inc.* telecom analyst James Henry wrote in a recent investment opinion.

> "The ball is in the CLEC industry's court now. There's no doubt it is time to sell, service, and provision. That's what it is all about."
>
> — *Craig Clausen*

Going forward

At present, competitive DSL providers await a pair of important FCC decisions on colocation issues that could play major factors in their success. The first ruling will dictate what specific types of equipment competitors will be allowed to deploy at incumbent COs.

Last summer the Commission ruled that incumbent local service providers must grant data CLECs, as well as voice-service competitors, so-called "cageless" colocation space at COs within 90 days after a request is filed. The FCC also said it would reconsider a detailed list of necessary network systems approved for deployment in colocation space after first soliciting comments from CLECs, ILECs, and others. That list is expected in the coming months.

More recently, the Commission said it would allow incumbents to directly operate neighborhood gateways — like those being installed by SBC Communications as part of its Project Pronto network expansion plan — designed to dramatically extend the reach of DSL services. Many CLECs had wanted the FCC to require incumbents to operate such gateways only through separate, competitive data subsidiaries. But the FCC also said it would spell out competitors' rights to colocate their own systems at such gateways in a forthcoming follow-up ruling.

Neighborhood gateways let incumbents extend the reach of residential-class DSL services to virtually unlimited distances. Typically, DSL connections are available only to customers within about 18,000 feet of a CO unless gateways are used.

"I think this issue is critical for the entire industry — integrated voice and data providers, as well as data only CLECs," says Jonathan Lee, vice president of regulatory affairs at *CompTel*, a trade association representing CLECs and other competitive telecom service firms.

Lee says *CompTel* wants the FCC to rule that CLECs will be permitted to access unbundled packet-switching elements at gateway locations. He also says he's not sure how quickly the Commission will make its decision.

For its part, SBC Communications is more than willing to work with CLECs wanting to use neighborhood gateways being deployed along local networks throughout its 13-state territory, says Michael Coe, SBC spokesman. SBC recently announced Project Pronto market trials with 10 CLECs, and more trials are under discussion, SBC officials say.

Yet regardless of how the Commission rules on the pending colocation issues at COs and neighborhood gateways, competitive DSL providers must find a way to quickly reap increasing revenues from the colocation space they've already claimed, Clausen says.

"The ball is in the CLEC industry's court now," he says. "There's no doubt it is time to sell, service, and provision. That's what it is all about."

"The financial markets are now saying, 'It's not all about network expansion and growth across the US any longer, it's about profitability,'" Regas says. "The space issue will become less and less of a problem as there become fewer CLECs." ◆

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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of)
)
Application by SBC Communications Inc.,)
Southwestern Bell Telephone Company,) CC Docket No. __________
And Southwestern Bell Communications)
Services, Inc. d/b/a/ Southwestern Bell Long)
Distance for Provision of In-Region)
InterLATA Services in Texas)

AFFIDAVIT OF JOHN S. HABEEB

STATE OF TEXAS)
)
COUNTY OF TRAVIS)

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STATE OF COMPETITION AFFIDAVIT

I, John S. Habeeb, being of lawful age and duly sworn upon my oath, do hereby depose and state as follows:

1. My name is John S. Habeeb. My title is Director-Industry Analysis for Southwestern Bell Telephone Company (SWBT). My business address is 1616 Guadalupe, Room 512, Austin, Texas, 78701.

PROFESSIONAL EXPERIENCE AND EDUCATIONAL BACKGROUND

2. I began my career with SWBT in 1975 in Outside Plant Operations. From 1979 through 1988, I continued my career in Valuations and Separations. From 1989 to 1993, I worked as an Internal Auditor for the National Exchange Carrier Association (NECA) in New Jersey. In 1993, I joined the Industry Analysis group of SWBT where I am responsible for the accumulation and analysis of data on state and national telecommunications issues. This assignment includes preparing a detailed report on the "Scope of Competition" in all telecommunications markets in Texas. This report is used by the Public Utility Commission of Texas (PUC) in preparing its biennial report to the Texas Legislature on the scope of competition in regulated telecommunications markets.

3. I have a Bachelor of Business Administration degree from Texas A&M-Kingsville, Kingsville, Texas.

EXECUTIVE SUMMARY

4. My affidavit describes the status of local exchange competition in the State of Texas since the enactment of the Federal Telecommunications Act of 1996 (1996 Act) and proves that SWBT has met the requirements of "Track A" under 47 U.S.C. § 271(c)(1)(A). This affidavit will focus specifically on Competitive Local Exchange Carriers (CLECs), how and where they operate in Texas, and the markets in which they are competing. All

information is as of October 1999 unless otherwise noted. Other affidavits describe SWBT's steps to open its network to competition.

5. Consumers in Texas now have a choice in local telephone service providers. CLECs operate throughout the state and have more than 1.3 million customer telephone lines. Facilities-based CLECs have concentrated their efforts in the major metropolitan areas of Texas and have positioned themselves to reach SWBT's largest and most lucrative local markets. Facilities-based CLECs in Texas are targeting both business and residential customers through the use of their own facilities, and by resale of SWBT's services. Both facilities-based and resale CLECs target the more profitable business market. These competitors now serve 23.5 percent of the business market in Texas with 1,073,099 access lines.

6. Competitive local exchange carriers now operate in 299 of SWBT's 300 local calling areas. In all, more than 12 percent of the telephone lines in SWBT's serving areas are served by a carrier other than SWBT. Since April 1998, CLECs have captured more than 4 out of every 5 new business access lines in SWBT's serving areas.

7. As of October 1999, 48 facilities-based providers and 114 resale providers offered local telephone service to residential and business customers in SWBT's service area, as shown in Table 1 on the following page.

(Table 1)
Activity of Competitive Local Exchange Companies in SWBT's Service Area in Texas (October 1999)

	Number of Providers	Number of Access Lines		Percent of Lines In SWBT's Territory	
		Residential	Business	Residential	Business
Facilities-based Providers	48	73,619	925,143	1.2%	20.3%
Resale Providers	114	170,464	147,956	2.7%	3.2%
Totals		**244,083**	**1,073,099**	**3.8%**	**23.5%**

Source: Southwestern Bell internal records (does not include coin)

8. The following facts also demonstrate the level of CLEC activity in Texas:

- SWBT has 237 approved interconnection agreements with competitors as of November 30, 1999;
- SWBT has processed over 3.5 million service orders requested by competitors; and
- SWBT's competitors have been assigned more than 10.7 million telephone numbers.

9. Facilities-based providers are a particularly important part of local telephone service competition in Texas. These companies have:

- received 16.9 billion minutes of traffic from SWBT customers to their customers between January 1997 and September 1999;
- sent more than 1.1 billion minutes of traffic from their customers to SWBT customers; and,
- used approximately 140,000 of SWBT's unbundled loops, including more than 103,000 loop/port combos (or UNE Platforms) and more than 36,000 stand-alone loops, to provide local service in Texas.

10. Facilities-based CLECs concentrate on the lucrative business markets in Texas, with heaviest concentrations occurring in Dallas/Fort Worth, Houston, San Antonio, Austin, and

Corpus Christi. In these and other cities, facilities-based competitors account for at least 4,221 network route miles with at least 73 voice or data switches.

11. Facilities-based CLECs target the lucrative business market in Texas. As shown in Table 1, facilities-based CLECs serve 20.3 percent of the business market in Texas and resale providers serve 3.2 percent.

12. As of October 1999, facilities-based and resale competitors have 30.1 percent of the business customer lines in San Antonio; 29.5 percent in Houston; 28.1 percent in Austin; 28.1 percent in Corpus Christi; and 26.0 percent in Dallas/Fort Worth. This represents a combination of new customers and customers previously served by SWBT. In comparison, CLECs have captured 5.8 percent of the residential customer lines in Dallas/Fort Worth; 4.7 percent in Houston; 3.6 percent in Austin; 2.9 percent in Corpus Christi, and 2.9 percent in San Antonio.

13. This emphasis on SWBT's business market is significant because the top 10 percent of the company's business customers account for 58 percent of SWBT's business revenues; the top 30 percent of SWBT's business customers account for 80 percent of the company's total business revenues.

14. CLECs in Texas are providing real competition in an open local telephone service market. Local competition in Texas is at least as developed as any other state for which we have information. For example, CLEC activity in SWBT's service areas in Texas is at least as strong as CLEC activity in Bell Atlantic's service areas in New York, even though SWBT serves fewer access lines in Texas than Bell Atlantic-New York serves.

15. The Public Utility Commission of Texas, one of the most active and respected commissions in the country, has concluded that the SWBT Texas 271 Agreement (T2A),

satisfies the requirements of a 14-point checklist as required in 47 U.S.C. §271(c)(1)(A). At the December 16, 1999 Public Utility Commission of Texas Open Meeting, Chairman Wood stated, "The Chair will entertain a motion to find that Southwestern Bell is compliant with Section 271(c) of this Federal Telecom Act, and that it is in the public interest for it to receive intraLATA relief. And for those reasons, it has earned our full support for its application." Commissioner Walsh 'so moved' and Commissioner Perlman 'seconded'.[1] With this vote, SWBT has the full support of the Commission for its 271 application and an affirmation that local competition numbers indicate the market is open.

16. This transition to a competitive marketplace started as early as 1984 when cellular companies began offering wireless service in Texas. In 1986, competitive access providers (CAPs), such as Metropolitan Fiber Systems (MFS) and Teleport, began competing for the local service customers of local exchange companies. In 1995, with the enactment of landmark telecommunications reform legislation, H.B. 2128, the Texas Legislature initiated competition for basic local service. The 1996 Act mandated on a national scale many of the competitive advances already enabled by the Texas Legislature. CLECs have taken advantage of Texas' open local telephone service market. Although competitors were slow to enter the local market in the first two years after the enactment of H.B. 2128, competitive activity in SWBT's service area in Texas began increasing rapidly in early 1998. As demonstrated below, due to steps taken by SWBT to open its markets to competition as required by the 1996 Act, competition is flourishing in the state of Texas. In fact, competition in Texas has matured to the point where the "Track A" requirements for

[1] Kennedy Reporting Service, Public Utility Commission Open Meeting condensed transcript, page 76, lines 9-17 (December 16, 1999)

SWBT's entrance into the intraLATA long-distance market under 47 U.S.C. §271(c)(1)(A) easily are met.

17. In addition to the ***Executive Summary***, this affidavit consists of the following sections addressing telecommunications local service competition in Texas:

- the section titled ***Statewide Profile of Competition from CLECs in Texas*** provides statewide data showing that competition exists today in our local service market in Texas;
- the section on ***RMTS–An Alternative to CLEC Competition*** illustrates that significant local market competition is exerted by providers of other telecommunications services;
- the ***Company Profiles*** section describes some of the competitors providing local service in Texas;
- the ***City Profiles*** section outlines competitive activity in major urban areas in Texas;
- the ***Conclusion*** illustrates that competition will continue to increase as companies merge and computer and telecommunications technologies converge; and
- the ***Attachments*** provide additional material illustrating the scope of competition in Texas.

STATEWIDE PROFILE OF COMPETITION FROM CLECS IN TEXAS

18. SWBT faces significant competition from CLECs in Texas. CLECs provide service either as facilities-based providers or as resellers of other providers' services. Attachment A is a listing of the 303 CLECs the Texas PUC has certified to provide local service as of October 1999. Other indicators of local competition include the following:

- 237 CLECs have approved interconnection agreements with SWBT as of November 30, 1999 (Attachment B);

- SWBT has processed over 3.5 million service orders requested by CLECs; and
- CLECs have been assigned more than 10.7 million telephone numbers.

19. The following explains how SWBT has determined the extent to which CLECs are serving customers over their own facilities. This information will be used later in profiles of the more dominant CLECs.

Competitive Indicator	Description
Collocation Instances	This refers to the number of central office collocations (physical and/or virtual) that are pending or complete. This information is obtained from SWBT's Interexchange Carrier Service Center (ICSC) and is used by a facilities-based, local exchange service provider.
Interconnection Trunks	This refers to trunks a CLEC has ordered to connect their switches to SWBT's switches. This information is obtained from SWBT's trunk forecasting system database (TRDB) and is only of use to a facilities-based, local exchange service provider.
UNEs	This refers to the number of unbundled local loops or switch ports the CLEC has purchased from SWBT. This information is obtained from SWBT's Carrier Access Billing System (CABS) and indicates customer lines in SWBT territory being served through UNEs obtained by the CLEC.
E911	This refers to the number of telephone numbers of business and residence subscribers the facilities-based CLEC has placed in SWBT's E911 database.
NXX Codes Assigned	This refers to the number of telephone prefixes (blocks of 10,000 telephone numbers) which have been assigned to the CLEC. This information is obtained from the Local Exchange Routing Guide (LERG) and is needed by a facilities-based, local exchange service provider that owns telephone switches.
Resold Lines	This refers to the number of business and/or residence lines served by SWBT's facilities that are being ordered by the CLEC at the wholesale discount rate in SWBT's service area.

20. As shown in Table 2, CLECs serve more than 1.3 million customer access lines, which is more than 12 percent of all access lines in SWBT's territory in Texas.

(Table 2)
Estimated Business and Residential Access Lines in SWBT's Territory Served by Facilities-based and Resale CLECs in Texas as of October 1999

	Access Lines	Percent of Texas Lines in SWBT's Territory
Residential Customers	244,083	3.8%
Business Customers	1,073,099	23.5%
Total	**1,317,182**	**12.0%**

Source: Southwestern Bell internal records

Facilities-based Local Service Providers

21. As of October 1999, 48 facilities-based CLECs are serving an estimated 925,143 business customer access lines and an estimated 73,619 residential customer access lines in SWBT's territory in Texas.

22. SWBT cannot provide an exact count of access lines served by CLECs over their own facilities. This information is known only by the CLECs themselves. However, several sources of information are available in SWBT's own records that demonstrate the existence of these access lines, and provide a means of estimating the number of them.

23. Interconnection trunks between SWBT's central office switches and a CLEC's central office switch are one indication of the number of customer lines served over the CLEC's network. In SWBT's analysis, the ratio of 2.75 access lines per trunk is used to estimate the total number of customer lines served by a CLEC in a given area.

24. The 2.75 ratio of access lines per trunk is conservative as compared to the average PBX environment where the ratio of lines served to trunks is 10 access lines per trunk. The nature of CLEC networks calls for a lower number of trunks. Their networks are rapidly evolving and expanding, which would cause the number of trunks ordered relative to lines

served to be higher than in a stable, mature network environment. In a stable environment, optimization techniques would be employed to maximize the number of lines served per trunk. US LEC Corp., for example, is a nationwide CLEC that reports their ratio of customer lines per trunk to be 5.0.[2]

25. The division between residential and business lines in SWBT's data relies on information in the state's E911 database (only in SWBT's territory), which is administered by SWBT. Facilities-based CLECs place the telephone numbers of their customers in the E911 database. The database shows the class of service of the telephone numbers: residential or business. SWBT's analysis assumes the ratio of residential and business lines in the E911 database is the correct ratio for the division of all facilities-based CLEC access lines. E911 listings, however, only represent those customer lines from which outbound calls can be made. As a result, business customers such as call centers, reservationists, telemarketing centers, and Internet providers will have few of their access lines represented in the E911 database. Thus, the E911 database likely *under reports* business lines. In using the E911 database, business lines may be understated while residential lines will likely be accurate by taking the E911 count.

26. Unbundled network elements (UNEs) ordered from SWBT by a CLEC may be used by the CLEC to provide access lines to its customers. UNE loop/port combos are counted as CLEC facilities-based lines for the purposes of this affidavit.

27. The method used in this affidavit for estimating access lines served by facilities-based CLECs thus is as follows:

- For each appearance of a particular CLEC in a particular city:

[2] US LEC Corp. Web Site, "Legal Information."

- Multiply the number of interconnection trunks to the CLEC's switch, if any, by 2.75.
- Add the number of UNE loop/port combos to this amount, resulting in the number of access lines.
- Split the resulting number of access lines by Residence and Business using the CLEC's Residence-to-Business ratio found in the E911 database (only in SWBT's territory).
- If the result is zero lines for Residence or Business, and there are E911 lines in the database, adopt the E911 counts for that class of service. This will ensure that CLECs that use none of SWBT's UNEs and have no interconnection trunks to SWBT, but that interconnect with another carrier, will have their E911 counts used as a proxy for access lines. E911 counts do not represent all access lines served by a facilities-based CLEC, but will be more accurate than reporting no lines at all.

28. Table 3 is based on the above methodology and shows the estimated number of facilities-based access lines serving residential and business customers in Texas by provider and community.

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(Table 3)

Communities Served and Access Lines Provided by Facilities-based Providers in SWBT's Territory in Texas as of October 1999

Metropolitan Area	Facilities-based Providers	Estimated Facilities-based Business Lines	Estimated Facilities-based Residence Lines	Resold Business Lines	Resold Residence Lines
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB					

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Metropolitan Area	Facilities-based Providers	Estimated Facilities-based Business Lines	Estimated Facilities-based Residence Lines	Resold Business Lines	Resold Residence Lines

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Metropolitan Area	Facilities-based Providers	Estimated Facilities-based Business Lines	Estimated Facilities-based Residence Lines	Resold Business Lines	Resold Residence Lines
Total 5 Cities					
Other Cities					
Totals					

Source: Southwestern Bell internal records

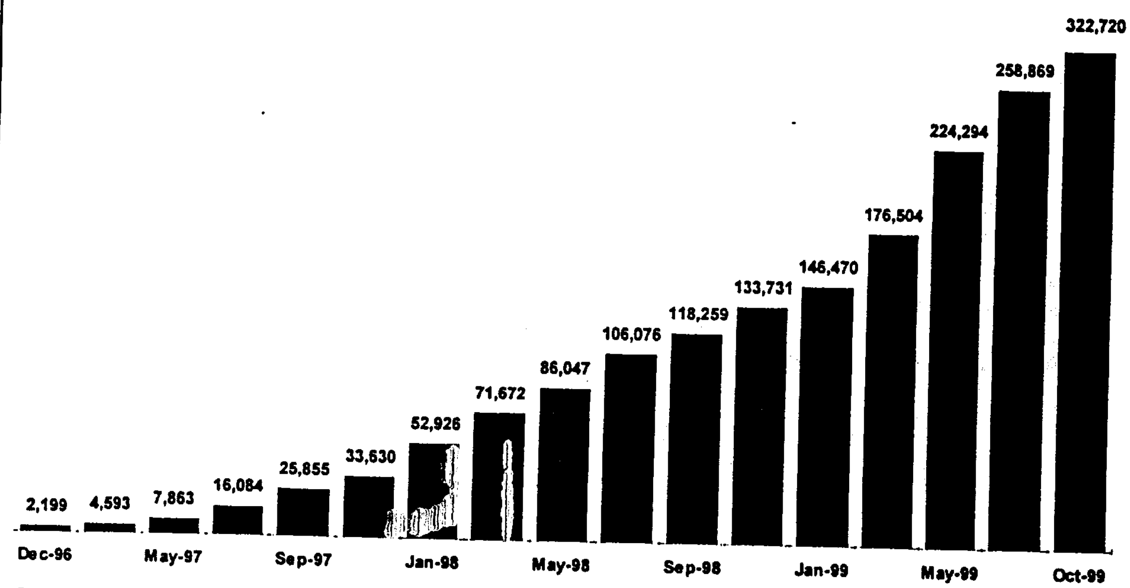
29. Facilities-based companies serving SWBT's area in Texas:

- have received 16.9 billion minutes of traffic from SWBT customers to their customers between January 1997 and September 1999;
  - More than 1.3 billion of these are local telephone minutes of use;
  - The other 15.6 billion minutes represent internet traffic whose jurisdiction is currently in dispute, but has been designated as Interstate by the FCC;
- have sent more than 1.1 billion minutes of traffic from their customers to SWBT's customers; and,

- used approximately 140,000 of SWBT's unbundled loops, including more than 103,000 loop/port combos (or UNE Platforms) and more than 36,000 stand-alone loops, to provide local service in Texas.

30. The increase in use of interconnection trunks provided by facilities-based companies in SWBT's area since the first months of 1997 is shown below.

Interconnection Trunks for Facilities-based CLECs in SWBT's Territory in Texas February 1997 through November 15, 1999



Source: Southwestern Bell internal records

31. Texas' 48 facilities-based CLECs are providing local service by building their own networks, leasing unbundled network elements (UNEs) from SWBT, or combining those two approaches, as shown in Table 4 below.

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(Table 4)

Facilities-based CLECs in Texas and Their Methods of Providing Service as of October 1999

Facilities-based Provider	Use Own Facilities	Lease UNEs
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Facilities-based Provider	Use Own Facilities	Lease UNEs

Source: Southwestern Bell internal records

32. These facilities-based competitors are concentrating on urban markets in Texas, with heaviest concentrations of facilities-based CLEC activity occurring in Dallas/Fort Worth, Houston, San Antonio, Austin, and Corpus Christi. Table 5 shows that, in these and other cities, facilities-based providers account for at least 4,221 network route miles and 73 voice or data switches.

(Table 5)
Known Networks and Operations of Facilities-based Providers in Major Urban Areas as of October 1999

	Fiber-based CLEC Operations	Network Route Miles	Operational Voice Switches	Operational Data Switches
Austin	9	368	6	1
Corpus Christi	4	277	2	NA
Dallas/Fort Worth	11	1,061	16	8
Houston	15	1,550	11	5
San Antonio	7	839	9	2
Other urban areas	14	126	11	2
Totals	**60**	**4,221**	**55**	**18**

Source: Company press releases, trade journals and other publicly available information

33. The collocation of the network equipment of facility-based providers in SWBT's central offices also demonstrates local competitive activity. Not every collocation facility is used for voice telephone service. Some are used for providing private line services or services for other companies. Nevertheless, each collocation represents a step in the development of a competitive network by a CLEC. Table 6 represents the collocation activity in urban central offices in Texas. The "pending" column includes arrangements where as of October 31, 1999 SWBT had provided a price quote, where construction was under way, or where the competitor had already paid part of the cost of collocation.

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(Table 6)

Collocations in SWBT Central Offices through October 31, 1999

City	Physical		Virtual	
	Complete	Pending	Complete	Pending
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB				

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City	Physical		Virtual	
	Complete	Pending	Complete	Pending
Totals				

Source: Southwestern Bell internal records

Resale Providers

34. In addition to facilities-based providers, 114 resale providers also provide a significant number of residential and business lines in SWBT's service territory, as shown in Table 7.

(Table 7)
Business and Residential Lines Served by Resale Providers in SWBT's Territory in Texas as of October 1999

	Access Lines	Percent of Lines SWBT's Serving Areas
Residential Customers	170,464	2.7%
Business Customers	147,956	3.2%
Total	**318,420**	**2.9%**

Source: Southwestern Bell internal records

35. These companies serve all but one of SWBT's 300 local calling areas in Texas.

36. A breakout of resale activity by Texas communities in SWBT's service area is shown in Table 8.

(Table 8)

Texas Communities in SWBT's Territory Served by Resale Providers as of October 1999

City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Abilene	28	524	1,220	1,744
Adamsville	5	1	7	8
Albany	7	23	17	40
Alice	33	189	261	450
Allison	3		10	10
Alpine	12	4	44	48
Alvarado	25	11	98	109
Alvin	34	198	301	499
Amarillo	35	4,547	3,268	7,815
Angleton	31	132	202	334
Anna	9	19	17	36
Anson	14	2	46	48
Anthony	13	4	39	43
Asherton	7	2	8	10
Atlanta	19	104	137	241
Aubrey	10	6	24	30
Austin	66	9,427	9,799	19,226
Bandera	15	31	26	57
Bartlett	9	3	30	33
Bastrop	34	196	149	345
Batesville	5	3	3	6
Bay City	23	39	384	423
Bayside	6	1	6	7
Beaumont	45	907	2,011	2,918
Beeville	29	224	184	408
Bellevue	10	7	12	19
Bellville	25	26	46	72
Belton	30	175	276	451
Benavides	9	4	29	33
Big Spring	21	363	328	691
Big Wells	3	1	4	5
Borger	17	266	242	508
Bowie	13	147	80	227
Brackettville	11	22	27	49
Breckenridge	23	156	88	244
Brenham	32	56	259	315
Bridge City	16	73	139	212
Brownsville	36	458	767	1,225

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City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Bruni	3	1	2	3
Buna	11	25	102	127
Burkburnet	19	68	98	166
Calvert	9		22	22
Cameron	17	35	90	125
Campbellton	4	1	4	5
Canadian	10	184	110	294
Canutillo	11	43	45	88
Canyon	16	140	226	366
Carrizo Springs	19	18	40	58
Carthage	20	160	144	304
Castroville	14	12	22	34
Celina	13	3	25	28
Center	20	69	226	295
Childress	13	128	72	200
Chillicothe	4	10	9	19
China	8		14	14
Chireno	3		7	7
Christine	4	1	3	4
Cisco	11	2	42	44
Cleburne	46	215	376	591
Cleveland	32	79	300	379
Clint	17	9	86	95
Clute	34	168	314	482
Colorado City	16	18	73	91
Columbus	25	33	70	103
Corpus Christi	53	3,664	2,891	6,555
Corrigan	21	4	89	93
Corsicana	34	635	392	1,027
Cotulla	14	31	37	68
Crane	8	3	47	50
Crystal City	12	18	52	70
Cuero	20	34	80	114
Dallas-Ft. Worth	87	43,099	45,514	88,613
Dayton	21	20	169	189
Deadwood	6		35	35
Denison	29	196	205	401
Devine	23	55	73	128
Deweyville	14	36	62	98
Donna	23	58	140	198
Eagle Lake	19	8	57	65

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City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Eagle Pass	27	274	277	551
Eastland	15	52	36	88
Edcouch	18	33	95	128
Edgewood	9	42	33	75
Edinburg	30	281	343	624
Edna	24	34	103	137
El Campo	33	140	208	348
El Paso	39	3,160	2,758	5,918
Elgin	15	20	47	67
Encinal	3		4	4
Ennis	39	198	192	390
Euless	5	110		110
Evadale	5	5	22	27
Falcon Heights	3	2	1	3
Fannett	13	10	38	48
Farmersville	23	20	43	63
Flatonia	14	2	30	32
Floydada	12	34	66	100
Forney	14	55	28	83
Fort Davis	3	1	10	11
Fort Stockton	19	19	134	153
Freeport	35	60	223	283
Freer	14	49	54	103
Gainesville	33	289	253	542
Galveston	46	175	715	890
Garwood	7	1	8	9
Goldsmith	2	2	2	4
Goliad	17	10	31	41
Gordon	1		1	1
Graham	21	311	131	442
Granbury	28	122	207	329
Grandfalls	7	1	13	14
Greenville	38	282	342	624
Gruver	8	84	33	117
Hale Center	9	16	46	62
Hallettsville	17	30	71	101
Hamlin	13	5	35	40
Harlingen	31	535	522	1,057
Hearne	20	9	162	171
Hebbronville	15	27	110	137
Hempstead	17	11	110	121

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City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Henrietta	14	57	57	114
Hereford	22	206	169	375
Hermleigh	6		9	9
Hillsboro	24	63	194	257
Hondo	17	25	75	100
Honey Grove	7	16	22	38
Houston	77	31,805	39,055	70,860
Huntsville	30	100	585	685
Iowa Park	15	29	56	85
Iraan	6		12	12
Italy	9	1	17	18
Itasca	8		40	40
Jacksboro	13	60	35	95
Jasper	19	299	545	844
Jefferson	15	20	80	100
Jewett	11	10	39	49
Karnes City	19	33	38	71
Kenedy	17	18	44	62
Kermit	18	100	101	201
Kingsville	24	256	239	495
Kirbyville	16	20	182	202
Kountze	17	5	102	107
La Belle	6		9	9
La Pryor	7	2	8	10
La Coste	5	1	8	9
Ladonia	6	10	12	22
Lampasas	14	47	110	157
Laredo	37	768	1,058	1,826
Lefors	6	13	16	29
Liberty	23	55	97	152
Liberty Hill	13	4	29	33
Lindale	22	68	90	158
Lockhart	31	14	161	175
Lockney	6	24	40	64
Longview	31	1,967	1,305	3,272
Los Fresnos	14	17	59	76
Lubbock	39	5,559	8,198	13,757
Luling	19	20	86	106
Lumberton	16	33	91	124
Lytle	19	17	39	56
Madisonville	19	20	84	104

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City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Marathon	3		4	4
Marfa	5	8	5	13
Marion	6		12	12
Marlin	21	33	145	178
Marshall	27	673	397	1,070
Matagorda	5	1	5	6
Mathis	22	81	77	158
Mauriceville	13		88	88
McAllen	37	1,992	618	2,610
McCamey	8	9	44	53
McKinney	45	396	315	711
McLean	6	21	30	51
Medina Lake	5		8	8
Mercedes	21	76	133	209
Meridian	10	1	25	26
Mexia	21	25	145	170
Midkiff	2	1	2	3
Midland	31	1,079	1,425	2,504
Midlothian	17	17	61	78
Mineola	24	88	104	192
Mineral Wells	33	133	163	296
Mission	32	257	544	801
Monahans	14	40	139	179
Moulton	5	5	7	12
Mount Pleasant	31	522	483	1,005
Nacogdoches	26	236	503	739
Nederland-Port Neches	29	211	368	579
New Braunfels	38	705	280	985
Nordheim	8	6	9	15
Odessa	34	948	2,125	3,073
Oglesby	1		2	2
Omaha	9	5	19	24
Orange	23	105	551	656
Owentown	16	40	53	93
Pampa	20	596	440	1,036
Paris	6	8	22	30
Pasadena	35	84	212	296
Pearsall	16	17	83	100
Pharr	31	464	535	999
Pinehurst	29	116	172	288
Pipe Creek	7	4	7	11

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City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Pittsburg	18	40	100	140
Plainview	17	530	607	1,137
Pleasanton	19	57	74	131
Port Arthur	36	225	1,300	1,525
Port Bolivar	9	1	11	12
Port Isabel	18	69	54	123
Poteet	13	21	37	58
Pottsboro	15	8	73	81
Prairie View	10	1	19	20
Princeton	20	8	37	45
Prosper	12	1	21	22
Pyote	1		1	1
Quanah	11	62	48	110
Ranger	10	30	26	56
Rankin	7	2	14	16
Reagan	4		5	5
Red Oak	20	40	68	108
Refugio	15	66	30	96
Richmond-Rosenberg	37	840	673	1,513
Rio Hondo	14	11	36	47
Roby	5		9	9
Rockdale	19	13	108	121
Rockport	27	65	153	218
Rockwall	31	238	106	344
Roscoe	8		17	17
Rotan	8	8	18	26
Royse City	17	74	36	110
Runge	9	3	13	16
Sabinal	11	3	24	27
Sabine Pass	5	2	9	11
San Antonio	68	11,066	10,829	21,895
San Augustine	17	62	131	193
San Benito	21	120	257	377
San Diego	17	41	59	100
Sealy	25	41	77	118
Seguin	37	360	298	658
Seminole	13	9	82	91
Shamrock	10	56	47	103
Shiner	12	1	28	29
Silsbee	23	34	255	289
Sinton	24	40	78	118

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City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Skellytown	6	8	7	15
Skidmore	4	5	7	12
Slaton	9	75	217	292
Smithville	16	29	72	101
Snyder	18	22	155	177
Sour Lake	11	21	29	50
Splendora	28	41	124	165
Spurger	9	3	60	63
Stamford	14	8	73	81
Stanton	9	46	29	75
Stinnett	10	13	41	54
Strawn	3	2	3	5
Sullivan City	8	10	10	20
Sweetwater	20	38	159	197
Taylor	21	38	117	155
Teague	16	22	47	69
Temple	40	881	839	1,720
Terminal	13	95	40	135
Terrell	42	181	199	380
Texas City	45	145	833	978
Timpson	10	2	61	63
Troy	10	25	33	58
Tyler	41	1,371	1,478	2,849
Uvalde	22	186	171	357
Valley Lodge	11	4	26	30
Vernon	18	251	188	439
Victoria	39	1,066	834	1,900
Vidor	27	33	285	318
Waco	47	1,583	2,095	3,678
Waller	18	20	69	89
Warren	10	1	50	51
Waxahachie	35	119	264	383
Weatherford	39	188	204	392
Westbrook	2		2	2
Westbury	5	1	7	8
Wharton	28	65	179	244
Wichita Falls	34	1,968	1,140	3,108
Wildwood	5		9	9
Wills Point	17	63	58	121
Wink	5	3	11	14
Wolfe City	7	19	13	32

City or Exchange	Number of Resale Providers	Business Lines	Residence Lines	Total
Woodsboro	13	20	31	51
Woodville	20	40	114	154
Wortham	9	1	13	14
Yoakum	20	33	73	106
Yorktown	17	11	43	54
Zapata	17	42	38	80
Total		**147,956**	**170,464**	**318,420**

Source: Southwestern Bell internal records

37. Resale activity, by CLEC, in SWBT's serving areas in Texas is shown in Table 9 below.

*****(Table 9)*****
Resale Providers in SWBT's Territory as of October 1999

Resale Provider	Number of Cities Served	Business Lines	Residence Lines	Total
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB				

REDACTED For Public Inspection

Resale Provider	Number of Cities Served	Business Lines	Residence Lines	Total

REDACTED For Public Inspection

Resale Provider	Number of Cities Served	Business Lines	Residence Lines	Total

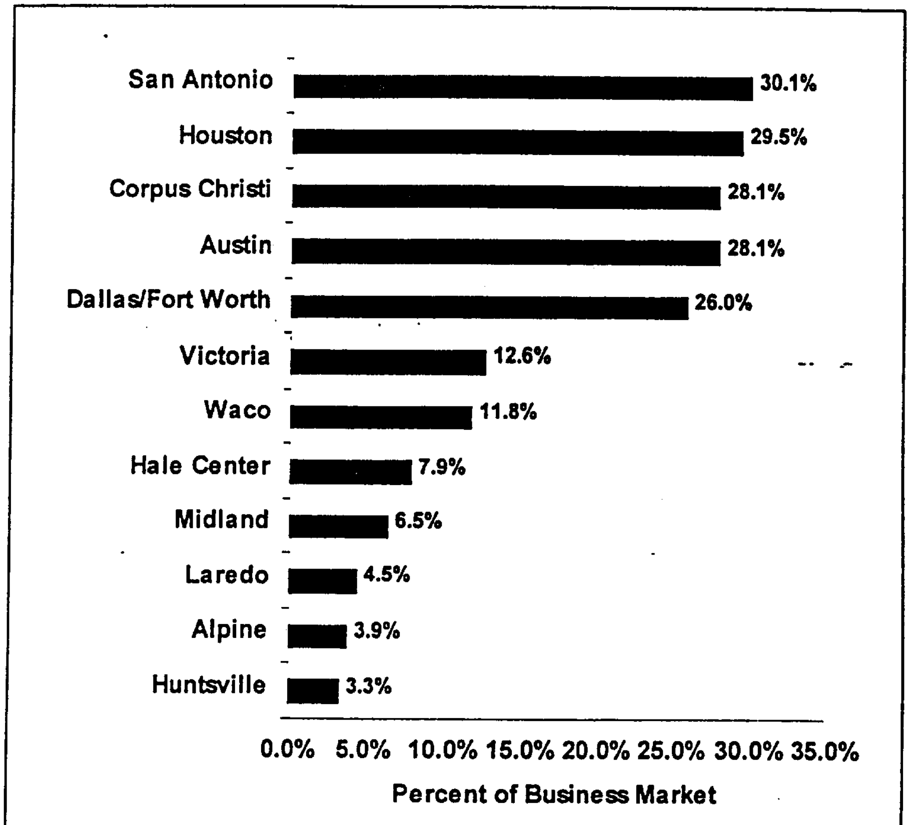
Resale Provider	Number of Cities Served	Business Lines	Residence Lines	Total
Totals				

Source: Southwestern Bell internal records

CLECs and the Business Market

38. Both facilities-based and resale providers target the more profitable business market. These competitors now serve 23.5 percent of the business market in Texas with 1,073,099 access lines (925,143 facilities-based lines and 147,956 resold lines). As the following graph shows, CLECs focus most of their attention on the state's largest urban areas.

CLEC Share of Business Lines in Urban Areas Served by SWBT in Texas as of October 1999



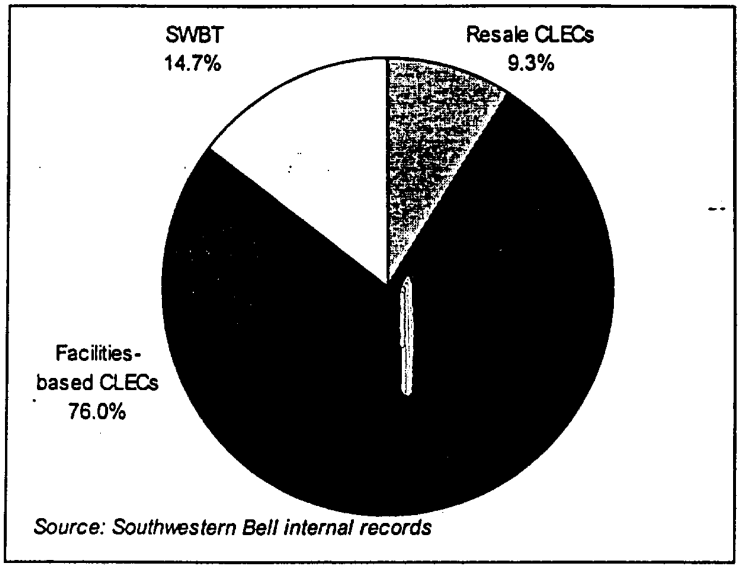
Source: Southwestern Bell internal records

39. In addition to their strong business market penetration in the state's largest urban areas, CLECs have captured 5.8 percent of the residential customers in Dallas/Fort Worth; 4.7 percent in Houston; 3.6 percent in Austin; 2.9 percent in Corpus Christi, and 2.9 percent in San Antonio. This smaller residential penetration shows that CLECs have made a conscious effort to target business rather than residential customers.

40. CLEC activity in the business market has soared since April 1998. From that date through October 1999, facilities-based and resale CLECs captured most of the growth in the business market, gaining 863,865 business access telephone lines compared to 148,653 for SWBT. CLECs thus captured 85.3 percent of the growth in the business market in Texas

during this period. The pie chart below breaks out this growth among facilities-based and resale competitors and SWBT.

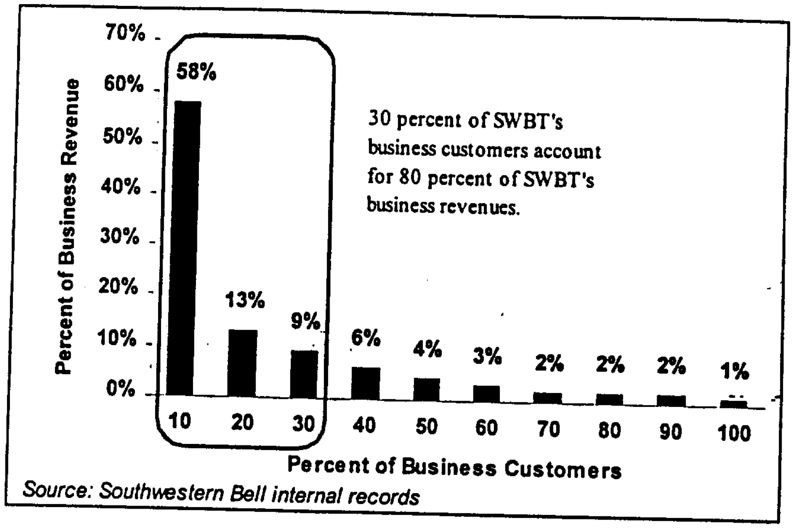
Business Line Growth in SWBT's Serving Areas
April 1998 to October 1999



Source: Southwestern Bell internal records

41. Competitors target business customers because of the potential for higher revenues. If successful in attracting large business customers, CLECs can earn an attractive revenue stream from a small number of accounts. The top 10 percent of SWBT's business customers account for 58 percent of SWBT's business revenues; the top 30 percent of SWBT's business customers account for 80 percent of the company's total business revenues.

SWBT Business Customers



RMTS – AN ALTERNATIVE TO CLEC COMPETITION

42. A Residential Multi-Tenant Services (RMTS) provider is just one example of an alternative provider of local service whereby consumers can connect locally using services other than those offered by traditional providers like SWBT and CLECs. These local service providers often promote their local service to residential tenants of apartment complexes and office buildings. Major cities are the customary targets of these providers because of their large residential population in high-density apartment developments.

43. A Yankee Group study[3] released in February 1998 predicted that by the year 2000, more than 50 percent of the households located in apartment buildings and other types of high-density clustered communities will have a choice of facilities-based local service provider. A fiber network serving high-density business developments can be extended profitably to nearby high-density residential developments. Local service competitors are pursuing the business opportunity presented by the roughly 20 million households living in apartment complexes.

44. At the end of 1997, there were about 14 RMTS providers in Texas serving 325 apartment complexes containing almost 94,500 apartment units throughout the state. The six major cities listed in Table 10 contain almost 85 percent of these apartment complexes.

(Table 10)
Residential Multi-Tenant Services in Large Texas Cities

City	Number of Apartment Complexes	Number of Units	Number of RMTS Providers
Houston	100	32,865	6
Austin	55	15,126	9
San Antonio	51	14,767	7
Fort Worth	8	2,397	2
Arlington	8	2,026	2
Dallas	55	1,627	9
Total	**277**	**68,808**	**35**

Source: Southwestern Bell internal records

COMPANY PROFILES

45. CLECs demonstrate a variety of approaches to providing local telephone service in Texas. These approaches have grown out of the historical services provided by these businesses. The following profiles are representative of the dynamic and diversified nature of CLECs in Texas today.

Allegiance Telecom, Inc.

Allegiance Telecom	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

46. Allegiance Telecom is a facilities-based competitive local exchange carrier operating in Texas that offers small and medium-sized businesses a complete package of

[3] Warren Publishing, Inc., *Telecom A.M.* (February 9, 1998) Vol. 4, No. 26, p. 1

telecommunications services, including local, long distance, international calling, high-speed data transmission, and Internet access services.[4]

Allegiance Telecom, Inc. Nationwide Profile

Corporate Headquarters	Dallas, Texas
1998 Revenues[5]	$9.8 million
1998 Capital Expenditures[6]	$113.5 million
1998 Total Assets[7]	$637.9 million
Markets Served[8]	17
Number of Employees[9]	1,525
Number of Switches Deployed[10]	13
Central Office Collocations[11]	260

47. Allegiance Telecom has the following operations in Texas:

- Allegiance Telecom is offering facilities-based local service to business customers in Dallas, Fort Worth, and Houston, and is in the process of installing a second switch in Dallas to expand capacity in this market.[12]
- ***SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB***[13]
- An officer of Allegiance Telecom has stated that the company will collocate in 35 of SWBT's central offices across the Dallas/Fort Worth metroplex, addressing about 70 percent of access lines that medium and small businesses use.[14]
- Allegiance Telecom has a capital budget this year of $250 million and estimates that as much as $100 million of that could be spent in Texas.[15]

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4 Company Press Release, "Allegiance Telecom Initiates Service in Houston Metro Area" (April 8, 1999)
5 Allegiance Telecom Annual Report (1998), p. 32
6 *Id.* at p. 33
7 *Id.*
8 Allegiance Telecom, Inc. Web Site, "Allegiance Telecom Announces Third Quarter Results" (October 18, 1999)
9 *Id.*
10 *Id.*
11 *Id.*
12 Company Press Release, "Allegiance Telecom Announces First Quarter Results" (April 21, 1999)
13 Southwestern Bell internal records (August 1999)
14 Texas House State Affairs Committee Public Hearing (April 29, 1999)
15 *Id.*

- In April 1999, SBC Communications and Allegiance Telecom launched electronic bonding between their operations support systems in Texas, thereby reducing the initial time required to process customer orders by more than 75 percent on average.[16]

*****AT&T Communications of the Southwest*****

AT&T	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

48. AT&T Communications of the Southwest is a facilities-based competitive local exchange carrier operating in Texas that provides basic local exchange service and switched access services.[17]

AT&T Corporation Nationwide Profile

Corporate Headquarters	New York, New York
1998 Revenues[18]	$53.2 billion
1998 Capital Expenditures[19]	$8 billion
1998 Total Assets[20]	$59.6 billion
Number of Employees[21]	109,000
Fiber Route Miles[22]	40,000

This information does not reflect the acquisition of TCI.

49. AT&T has the following operations in Texas:

- AT&T began offering local residential service to Texans during the summer of 1997 by reselling SWBT's local service.[23]

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[16] Company Press Release, "Southwestern Bell and Allegiance Telecom Accelerate Competition; Electronic Bonding Slashes Times to Process Orders" (April 28, 1999)
[17] AT&T SPCOA Filing (February 29, 1996)
[18] AT&T Annual Report (1998), p. 50
[19] *Id.*
[20] *Id.*
[21] Company Press Release, "When layoffs and labor shortages coexist, where do all the workers go?" (February 27, 1999)
[22] Company Press Release, "AT&T Chairman Unveils Plans to 'Future Proof' World's Largest Network; Announces Technology, Capacity Enhancements" (January 26, 1998)
[23] Company Press Release, "AT&T Offers Texas Consumers New Local Phone Service Choice" (July 15, 1997)

- AT&T is now offering business and residential local service in Texas by reselling SWBT's service, by purchasing unbundled network elements from SWBT, and by using their own facilities.[24] AT&T also plans to provide local telephone service using facilities acquired through its cable investments.[25]
- Teleport Communications Group (TCG) was acquired by AT&T in 1998. As a result of the purchase, AT&T gained assets in 66 major markets throughout the country, which included more than 9,400 fiber route miles, 41 local switches, and 300,000 access lines.[26]
- Using a holiday promotion in December 1997, AT&T became the first company to offer customers one-stop shopping for local and wireless communications. AT&T offered eligible customers in the Dallas/Fort Worth area, who signed up for both services, one month of free basic local phone service and statewide toll-free wireless calling.[27]
- In November 1998 in Plano, Texas, AT&T conducted an experiment that offered unlimited wireless local calls for $39.99 per month.[28]
- As of August 1999, AT&T employed nearly 9,700 people in Texas.[29]
- In March 1999, AT&T completed its merger with Tele-Communications Inc. (TCI). TCI, a leading cable television company in the U.S., employs 32,000 people. It has nearly 11 million customers and passes approximately 18 million homes.[30]

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[24] Company Press Release, "State Lagging in Telecommunications Competition" (August 5, 1999)
[25] *The Philadelphia Inquirer*, "AT&T Moves Closer to Local Phone Service by Cable with Time Warner Deal" (February 2, 1999)
[26] AT&T-TCG Company Presentation (January 8, 1998)
[27] Company Press Release, "Happy Holidays: AT&T Offers Free Month's Local Phone Service with Purchase of Wireless Local Service in Dallas/Fort Worth" (November 27, 1997)
[28] *Forbes*, "Technology cut the cord: AT&T wants to stop sharing its long distance revenues with the local phone monopolies. Hey, why not just give out cell phones?" (January 25, 1999)
[29] Company Press Release, "AT&T in the Lone Star State: Serving Texans for 118 years" (August 30, 1999)

- As a way to encourage customers to think about TCI and AT&T as a single company, AT&T mailed notices in March 1999 to customers in Dallas offering a $10 monthly discount if they subscribed to both TCI digital cable and AT&T long-distance service.[31]

50. Other Significant Data:

- In February 1999, AT&T announced an alliance with Time Warner, Inc. which will allow it to provide local telephone and Internet service to 20 million U.S. households over Time Warner's cable network. With the agreement, AT&T is awarded the exclusive right to sell telephone service over Time Warner's network for 20 years.[32]
- MediaOne accepted a $62 billion bid from AT&T in 1998. This acquisition comes less than two months after AT&T completed a $54 billion acquisition of TCI. AT&T gains exclusive access to cable systems reaching over 60 percent of U.S. cable households at the completion of the MediaOne merger.[33]
- A majority of TCI and MediaOne networks will be capable of two-way services by the end of 1999, according to AT&T.[34]

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[30] AT&T Web Site, "AT&T Fact Book" (May 1999)
[31] *The Dallas Morning News*, "AT&T Tests One-Stop Communications Shopping in Dallas" (March 28, 1999)
[32] *National Post*, "AT&T, Time in alliance: Deal is part of AT&T's strategy of diving into local phone business" (February 2, 1999)
[33] *The Atlanta Constitution*, "AT&T-ComCast deal averts MediaOne fight. $62 billion buyout will make long-distance giant the top cable TV provider" (May 5, 1999)
[34] AT&T Investment Community Briefing (April 23, 1999)

*****e.spire Communications, Inc.*****

e.spire	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

51. e.spire Communications is a facilities-based competitive local exchange carrier operating in Texas. e.spire is a leading provider of integrated communications services, including dedicated access, local, long distance, advanced data, Internet access and networking.

e.spire Communications, Inc. Nationwide Profile

Corporate Headquarters	Annapolis Junction, Maryland
1998 Revenues[35]	$156.8 million
1998 Capital Expenditures[36]	$249.3 million
1998 Total Assets[37]	$983 million
Number of Employees[38]	1,324
Markets Served[39]	50
Fiber Networks[40]	35
Fiber Route Miles[41]	1,781
Number of Switches Deployed[42]	25 voice, 66 data
Central Office Collocations[43]	93

52. e.spire Communications has the following operations in Texas:

- e.spire is offering facilities-based local service in cities such as: Amarillo, Arlington, Austin, Corpus Christi, Dallas, El Paso, Euless, Fort Worth, Grand Prairie, Greenville, Houston, and Irving.[44]

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[35] e.spire Annual Report (1998), p. 18
[36] *Id.*
[37] *Id.* at p. 32
[38] Company Press Release, "e.spire's First Quarter Revenue Up 110% to $58 Million; Strong Growth Accelerates EBITDA Turn-Around" (May 6, 1999)
[39] e.spire Web Site, "Frequently Asked Questions"
[40] e.spire Communications, Inc. Quarterly Report, SEC Form 10-Q (March 31, 1999)
[41] *Id.*
[42] *Id.*
[43] Company Press Release, "e.spire Reports Continued Strong Growth in 1998; 4Q Revenue Up 108%; Full Year Increase Tops 165%" (February 18, 1999)
[44] e.spire Web Site, "Network Locations"

- e.spire has made a capital investment of more than $80 million in Texas to build an advanced fiber optic network. It has installed 10 state-of-the-art switches and has laid more than 500 miles of fiber optic cable in Texas.[45]
- e.spire plans to enter more Texas markets, install more fiber and switches, and invest more than $75 million in the next year.[46]
- Through its subsidiary, ACSI Network Technologies, e.spire is currently constructing a 38-mile local network in Houston for GST Telecom.[47]
- In the past three years, e.spire has created more than 100 jobs in Texas and anticipates creating 50-60 new jobs in the next year.[48]

ICG ChoiceCom

ICG ChoiceCom	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

53. ICG ChoiceCom, a facilities-based competitive local exchange carrier operating in Texas, offers one-stop voice and data services, including local, long distance, high-speed Internet access, and data products and services to small and medium-sized businesses. ICG ChoiceCom is a subsidiary of ICG Communications, Inc.

[45] Company Press Release, "e.spire Opposes SB 560" (April 30, 1999)
[46] *Id.*
[47] Company Press Release, "GST and e.spire To Build Houston Network" (April 22, 1999)
[48] Company Press Release, "e.spire Opposes SB 560" (April 30, 1999)

ICG Communications, Inc. Nationwide Profile

Corporate Headquarters	Englewood, Colorado
1998 Revenues[49]	$397.6 million
1998 Capital Expenditures[50]	$368.9 million
1998 Total Assets[51]	$1.6 billion
Number of Employees[52]	2,753
Fiber Route Miles[53]	4,406
Number of Switches Deployed[54]	29 voice, 16 data
Central Office Collocations[55]	126

54. ICG ChoiceCom has the following operations in Texas:

- ICG ChoiceCom is a Texas-based company which has five regional central office switches located in Austin, Corpus Christi, Dallas, Houston, and San Antonio.[56]

55. Other significant data:

- In December 1998, ICG Communications completed its acquisition of ChoiceCom for $55 million.[57]

*****KMC Telecom Holdings, Inc.*****

KMC Telecom	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

56. KMC Telecom, formed in 1995, is a facilities-based, privately held competitive local exchange carrier operating in Texas. KMC Telecom offers a broad range of retail services

[49] Company Press Release, "ICG Communications, Inc. Reports Positive EBITDA for Fourth Quarter and Year End 1998 Results" (February 23, 1999)
[50] *Id.*
[51] *Id.*
[52] ICG Communications, Inc. Quarterly Report, SEC Form 10-Q (October 25, 1999)
[53] *Id.*
[54] *Id.*
[55] *Id.*
[56] Company Press Release, "ICG ChoiceCom Completes Texas Communications Network; Company Opening of Houston Switch Tops-off 1998 Service Expansion Plans" (January 13 1999)
[57] Company Press Release, "ICG Common Completes $55M ChoiceCom Acquisition" (December 31, 1998)

including local, private line, long distance, data, and Internet access.[58] KMC also provides wholesale services to other telecommunications providers.[59]

KMC Telecom Holdings, Inc. Nationwide Profile

Corporate Headquarters	Bedminster, New Jersey
1998 Revenues[60]	$22.4 million
1998 Capital Expenditures[61]	$161.8 million
1998 Total Assets[62]	$311.3 million
Number of Employees[63]	620
Number of Cities Served[64]	50
Fiber Route Miles[65]	913
Number of Switches Deployed[66]	22
Central Office Collocations[67]	56

57. KMC Telecom has the following operations in Texas:

- KMC Telecom presently has local fiber-optic networks operational in Longview and is offering one-stop shopping for a broad array of advanced telecommunications services.[68]
- ***SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB***[69]
- KMC Telecom recently announced that it has signed a five-year agreement with MCI WorldCom to provide dedicated local access services in 18 smaller markets predominantly in the Southeast and Midwest United States, including Longview.[70]

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[58] *Telecommunications Reports International, Inc.*, "The 1998 Competitive Local Exchange Carriers Directory"
[59] Company Press Release, "KMC Telecom Reports First Quarter Financial Results" (April 28, 1999)
[60] Company Press Release, "KMC Telecom Reports Fourth Quarter and Full Year 1998 Financial Results" (February 4, 1999)
[61] *Id.*
[62] *Id.*
[63] Company Press Release, "KMC Telecom Reports First Quarter 1999 Financial Results" (April 28, 1999)
[64] Company Press Release, "Steve Kreider Named Vice President of Finance for KMC Telecom, Inc." (March 4, 1999)
[65] Company Press Release, "KMC Telecom Reports First Quarter 1999 Financial Results" (April 28, 1999)
[66] *Id.*
[67] *Id.*
[68] Company Press Release, "Longview Gains Local Telecommunications Choice; KMC Telecom Promises Creative Solutions with a Hometown Touch" (February 4, 1999)
[69] Southwestern Bell internal records (August 1999)

*****MCI WorldCom*****

MCImetro	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

58. MCImetro is a facilities-based competitive local exchange carrier operating in Texas that provides basic local exchange service and switched access service. MCImetro is a subsidiary of MCI WorldCom.

MCI WorldCom Nationwide Profile

Corporate Headquarters	Jackson, Mississippi
1998 Revenues[71]	$30.4 billion
1998 Capital Expenditures[72]	$5.4 billion
1998 Total Assets[73]	$86.4 billion
Number of Employees[74]	77,000
Fiber Route Miles[75]	8,811 (local), 47,529 (long distance)
Number of Switches Deployed[76]	273
Central Office Collocations[77]	367

59. MCImetro has the following operations in Texas:

- MCImetro is providing local service over its own facilities to business customers in Austin, Dallas, Fort Worth, Houston, and San Antonio.[78]

60. Other significant data:

- MCI WorldCom has 10 local switches in Texas.[79]

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[70] Company Press Release, "KMC Telecom Signs Agreement With MCI WorldCom; Five-Year Agreement Provides Dedicated Local Access Service in 18 Markets" (May 5, 1999)
[71] MCI WorldCom, Inc. Annual Report (1998), p. 6
[72] *Id.* at p. 24
[73] *Id.* at p. 21
[74] *Id.* at p. 1
[75] MCI WorldCom, Inc. Annual Report, SEC Form 10-K (December 31, 1998), p. 11
[76] *Id.*
[77] *Id.*
[78] MCI WorldCom Web Site, "MCI WorldCom Facilities-Based Local MSA Overview"
[79] Texas Senate Subcommittee on Technology and Business Growth, Public Hearing (April 8, 1999)

- MCI WorldCom offers a full range of telecommunications services. These include local, long distance, wireless, data, Internet, information technology, and outsourcing services.

*****Sage Telecom*****

Sage Telecom	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

61. Sage Telecom is a facilities-based competitive local exchange carrier, operating in Texas, which provides local, long-distance, Internet access, and other communications services to residential and business customers in suburban and rural exchanges.

Sage Telecom Nationwide Profile

Corporate Headquarters	McKinney, Texas
Number of Employees[80]	75
Number of Cities Served[81]	93

62. Sage Telecom has the following operations in Texas:

- Sage Telecom, a privately held company, began marketing its services in August 1998 and was serving about 1,000 customers after the first two months in business.[82]
- Sage Telecom is providing facilities-based service to business customers in communities outside the Dallas/Fort Worth metro area. ***SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB***[83]
- Sage Telecom concentrated first on serving 44 rural and suburban cities around the Dallas/Fort Worth area, but has now expanded to 93 Texas cities.[84] [85]

[80] *McKinney Courier-Gazette*, "New McKinney business offering local competition for phone service" (August 23, 1998)
[81] Sage Telecom Web Site, "Sage Telecom City List" (July 1999)

- Sage Telecom provides local telephone service by using UNEs of incumbent local exchange carriers.[86]

- Sage Telecom has recently announced plans to relocate its corporate office from McKinney, Texas to Allen, Texas. The new 40,000 square-foot facility will quadruple Sage Telecom's current office space in order to accommodate the number of employees required to serve its rapidly growing customer base.[87]

- Sage Telecom plans to enter new markets in South Texas later in 1999 and will be adding more than 100 employees in upcoming months to support this expansion. The company expects its personnel count to grow to more than 350 employees by the end of 2001.[88]

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[82] *The Dallas Morning News*, "Small-Town Sensibilities, Sage Telecom Targets Local-Phone Subscribers in Oft-Ignored Areas" (October 18, 1998)
[83] Southwestern Bell internal records (August 1999)
[84] *The Dallas Morning News*, "Small-Town Sensibilities, Sage Telecom Targets Local-Phone Subscribers in Oft-Ignored Areas" (October 18, 1998)
[85] Sage Telecom Web Site, "Finally, the Choice is Yours" (July 19, 1999)
[86] *The Dallas Morning News*, "Texas Based Phone Company Targets Small Town Subscribers" (October 19, 1998)
[87] Sage Telecom Web Site, "Sage Telecom Plans Headquarters Expansion in Allen" (April 26, 1999)
[88] *Id.*

*****Teligent, Inc.*****

Teligent	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

63. Teligent, Inc. is a full service communications company operating in Texas. It offers local, long distance, high-speed data and dedicated Internet access services to small and medium-sized business customers over its digital local networks.[89]

Teligent, Inc. Nationwide Profile

Corporate Headquarters	Vienna, Virginia
1998 Revenues[90]	$960,000
1998 Capital Expenditures[91]	$183.1 million
1998 Total Assets[92]	$763.4 million
Number of Employees[93]	1,477
Number of Cities Served[94]	400

64. Teligent has the following operations in Texas:

- Teligent is offering local service to business customers in Austin, Dallas/Fort Worth, Houston, and San Antonio.[95]
- Teligent uses a fixed wireless network to provide its services. For example, it has installed small rooftop antennas on 25 office buildings in San Antonio. These antennas transmit digitized voice and data signals from customers within the buildings to a base station, which relays them to the company's local switch in San Antonio.[96]

[89] Company Press Release, "Teligents Reports 1998 Financial Results, Sets Operating Benchmarks for 1999" (March 1, 1999)
[90] Teligent Annual Report (1998), p. 15
[91] *Id.* at p. 29
[92] *Id.* at p. 25
[93] Company Press Release, "Teligent Reports 1998 Financial Results, Sets Operating Benchmarks for 1999" (March 1, 1999)
[94] *Id.*
[95] *Id.*
[96] *San Antonio Business Journal*, "Telecom company eyes S. A. for customer-service center" (October 16, 1998)

- Teligent has also installed antennas on 25 buildings in downtown and northwest Austin. Teligent officials have stated that they will probably install a switch in Austin during 1999.[97]

- Teligent is looking at four Texas cities as a potential site for a new support facility that will initially employ 200 customer service representatives and technical personnel. The new facility could ultimately employ 500 people.[98]

*****Time Warner Telecom*****

Time Warner Telecom	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

65. Time Warner Telecom is a facilities-based competitive local exchange carrier operating in Texas that offers a variety of dedicated and switched broadband data services, voice services, dedicated Internet access, and long distance services. Time Warner Telecom is a subsidiary of Time Warner, Inc.

Time Warner Nationwide Profile

Corporate Headquarters	Greenwood Village, Colorado
1998 Revenues[99]	$26.8 billion
1998 Capital Expenditures[100]	$2.1 million
1998 Total Assets[101]	$53.9 billion
Number of Employees[102]	67,534

66. Time Warner Telecom has the following operations in Texas:

[97] *Austin American-Statesman*, "A new kind of telephone company is scheduled to begin operating in downtown and northwest Austin" (October 27, 1998)
[98] *San Antonio Business Journal*, "Telecom company eyes S. A. for customer-service center" (October 16, 1998)
[99] Time Warner Annual Report (1998), p. 88
[100] *Id.* at p. 89
[101] *Id.*
[102] Time Warner Web Site, "Time Warner Fact Book" (1999)

- Time Warner Telecom offers dedicated transport and local switched services to business customers in Austin, Houston, and San Antonio, Texas. The company has announced its intention to enter the Dallas market by the end of 1999.[103]
- ***SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB*** [104]
- Time Warner Telecom has invested over $100 million in Texas' infrastructure since 1995.[105]
- Time Warner Cable has about 250 miles of fiber network in Austin; 450 miles of fiber network in Houston, and 480 miles of fiber network in San Antonio.[106]
- Time Warner Telecom provides full Local Number Portability (LNP) in all of the cities where it offers switched telephone service.[107]
- In November 1998, Time Warner Telecom signed a three-year contract with Lucent Technologies worth up to $250 million to purchase optical networking, communications software, switching and access products. Through this contract, Time Warner Telecom is able to offer its customers integrated, multi-service voice, data, and Internet services.[108]
- In March 1999, Time Warner Telecom and Level 3 Communications entered into a 20-year agreement to provide Time Warner Telecom access to Level 3's facilities in the Greater Dallas metropolitan area.[109]

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[103] Company Press Release, "Time Warner Telecom and Alcatel Sign Contracts for Comprehensive Network Solutions; Alcatel Selected for Key Dallas Market Build-out" (May 3, 1999)
[104] Southwestern Bell internal records (August 1999)
[105] Texas House State Affairs Committee, Public Hearing (April 13, 1999)
[106] Time Warner Telecom Web Site, "Time Warner Telecom Fact Sheet for Austin, Houston, and San Antonio"
[107] Company Press Release, "Time Warner Telecom Announces Full Local Number Portability" (December 15, 1998)
[108] Company Press Release, "Time Warner Telecom Awards Lucent up to $250 Million Contract" (November 11, 1998)
[109] Company Press Release, "Time Warner Telecom to Launch Business Phone Service in Dallas" (March 10, 1999)

- In July 1999, Time Warner Telecom completed the installation of local telephone service for business lines at Lackland Air Force Base and Kelly Air Force Base, both in San Antonio, Texas. The five-year contract is valued at more than $17 million and includes 35,000 local phone numbers, nearly 1,000 digital trunks, ISDN, commercial subscriber lines, voice grade and high-speed circuits, and advanced SONET services.[110]
- The University of Texas in Austin is one of Time Warner Telecom's largest customers.[111]

67. Other significant data:

- Time Warner, Inc., with 13 million cable subscribers,[112] has strategically entered into several joint ventures with various leaders in the data communications industry,[113] such as IXC Communications in Austin, Texas.[114]
- IXC Communications' network will be used by Time Warner Telecom to connect several major U.S. cities, including Austin, Houston, and San Antonio.[115]

[110] Company Press Release, "Time Warner Telecom Installs $17 Million Contract For San Antonio Air Force Base" (July 15, 1999)
[111] *The Wall Street Journal*, "Group Seeks to Block Phone Rules" (February 17, 1999)
[112] Company Press Release, "Time Warner Businesses Report Record Third Quarter" (October 13, 1999)
[113] *Telecommunications Reports International*, Inc., "The 1998 Competitive Local Exchange Carriers Directory"
[114] Company Press Release, "IXC and Time Warner Telecom Form Partnership for Nationwide Business Long Distance Services" (July 23, 1998)
[115] Company Press Release, "IXC and Time Warner Telecom Form Partnership for Nationwide Business Long Distance Services" (May 9, 1999)

*****CoServ, L.L.C.*****

CoServ	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

68. CoServ, headquartered in Corinth, Texas, is a limited liability company owned by Poka Lambro Telecommunications, Inc. and a subsidiary of Denton County Electric Cooperative, Inc. It provides telecommunications services such as local, long distance, wireless, Internet, cable TV, security/fire systems, electric, and natural gas.[116]

- CoServ has acquired a Texas certificate of authority to provide services and operate in Wise, Denton, and Collin counties, and portions of Dallas and Tarrant counties.[117]

*****ETS Telephone*****

ETS	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

69. ETS Telephone, formerly known as Kingsgate Telephone Company, is a wholly owned subsidiary of Mid-South Telecommunications, Inc., and is headquartered in Houston, Texas. ETS Telephone provides an entire range of voice grade telecommunications services, including residential and business services, as well as data services.[118]

- ETS Telephone provides facilities-based services to residential and business customers in Fort Bend and Harris counties.[119]

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[116] *Inside Collin County Business* Ad, (April 1999)
[117] *The Frisco Enterprise*, "CoServ and Poka Lambro open new facility in Frisco" (November 27, 1998)
[118] ETS Telephone Company Amended COA Application
[119] *Id.*

- The company utilizes a digital switch capable of providing features such as ISDN and custom calling.[120]

*****Golden Harbor of Texas, Inc.*****

Golden Harbor of Texas	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

70. Golden Harbor of Texas, a regional Competitive Local Exchange Carrier, is based in San Marcos, Texas. The company is an integrated network service provider which offers local telecommunications service and switched access service. Golden Harbor is a wholly owned subsidiary of Thrifty Call, Inc., a long-distance company serving residential and small businesses in a nine-state region.[121]

- Golden Harbor is providing facilities-based service to business and residential customers in Austin, Dallas/Fort Worth, Houston and San Antonio, and to business customers in Corpus Christi.[122]

*****GST Telecommunications, Inc.*****

GST Telecom-munications	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

71. GST Telecommunications is a facilities-based, full-service, telecommunications provider headquartered in Vancouver, Washington. It provides a broad range of integrated

[120] *Id.*
[121] Thrifty Call, Inc. Web Site, "About the Company"
[122] Company Press Release, "Tekelec's EAGLE STP Purchased by Thrifty Call; Major Texas CLEC Selects Tekelec's Proven LNP Solution" (June 2, 1998)

telecommunications products and services, including local, long distance, Internet access, and enhanced data services throughout California and the western United States.[123]

- GST Telecommunications continues to focus on its western regional strategy by connecting its networks in local markets via long haul fiber networks. The company's fiber optic network stretches nearly 2,000 miles, with plans to expand to over 6,000 miles by the end of 1999.[124]
- GST Telecommunications presently operates in Dallas/Fort Worth, Houston, Abilene, Lubbock, San Angelo, and Stephenville.[125]

*****Intermedia Communications*****

Intermedia	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

72. Intermedia Communications is one of the nation's fastest growing communications companies, providing voice and data, local and long distance, and advanced network access services in major U.S. markets. Headquartered in Tampa, Florida. The company is certified in more than 30 states and Washington D.C. for local service and in all 50 states and Washington D.C. for toll and long-distance service.[126]

- Intermedia Communications has more than 46,000 miles in networks across the U.S.[127]

[123] GST Telecom Web Site, "Company Overview"
[124] GST Telecom Web Site, "GST Network"
[125] GST Telecom Web Site, "Texas Locations"
[126] Intermedia Communications Web Site, "Overview"
[127] Intermedia Communications Web Site, "Operating Statistics"

*****Level 3 Communications*****

Level 3	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

73. Level 3 Communications is a communications and information services company headquartered in Broomfield, Colorado.[128] It is in the process of building an international network based on Internet Protocol technology. The company has operational local networks in 19 U.S. markets.[129]

- Level 3 Communications offers a full range of communications services including local, long distance, international, and Internet access services to business customers. The company is serving customers in Dallas and Houston over its own network.[130]

*****Logix Communications*****

Logix	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

74. Oklahoma City-based Logix Communications Enterprises is a full-service communications company operating under the names of Logix Communications Corporation, Dobson Telephone Company, McLoud Telephone Company, American Telco, Inc. and Dobson Fiber. Logix Communications is an integrated communications provider of local, long

[128] Company Press Release, "Level 3 Communications Opens World Headquarters in Colorado" (November 1, 1999)
[129] Level 3 Web Site, "Network Today"
[130] Level 3 Web Site, "Network Plan"

distance, wireless, Internet Access, enterprise network services and customer premise equipment.[131]

- Logix Communications is a facilities-based provider and currently serves business customers in Austin, Dallas/Fort Worth, Houston, and San Antonio.[132]

*****OpTel, Inc.*****

OpTel	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

75. OpTel, headquartered in Dallas, Texas, is a facilities-based provider of integrated communications services, including local and long distance telephone, cable television, and high-speed Internet access services, to residents of multiple dwelling units in the United States.[133]

- OpTel currently provides cable television and telecommunications services in a number of metropolitan areas including Austin, Dallas/Fort Worth, and Houston. The company has central office switches in Dallas and Houston.[134]

*****Taylor Communications*****

Taylor Communi-cations	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

[131] Company Press Release, "Logix Communications Enterprises, Inc. to Expand Business Operations and Services to Customers" (June 25, 1999)
[132] Company Press Release, "Logix Communications Enterprises, Inc. Reports Second Quarter 1999 Operating Results" (August 13, 1999)
[133] Company Press Release, "OpTel, Inc. Reports Results for Third Quarter and First Nine Months of Fiscal Year 1999" (July 6, 1999)

76. Taylor Communications, formerly known as Lightlink, Inc., is headquartered in San Antonio, Texas. The company provides local telephone service.

- Taylor Communications is providing facilities-based service to business customers in Austin, Dallas/Fort Worth and Houston, and to business and residential customers in San Antonio.

*****WinStar Communications*****

WinStar	Collocation Instances	Cumulative MOU as of 9/99	Resold Lines	Inter-connection Trunks	UNEs	E911 Listings	Telephone Numbers Assigned
Texas State Total	SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB						

Source: Southwestern Bell internal records

77. WinStar Communications is a facilities-based communications company which offers local, long distance, high speed data, Internet access, and information services over a fixed wireless broadband network to business customers. Winstar's headquarters are in New York, New York.[135]

- WinStar provides switched voice, data and Frame Relay services in more than 30 U.S. markets, including Dallas, Fort Worth and Houston.[136]

78. Attachment C is a collection of CLEC advertisements, which further demonstrates that competition exists in the local telephone market.

CITY PROFILES

79. The following material presents a snapshot of significant competitive activity in local telephone service in Texas' urban centers.

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[134] Company Press Release, "OpTel Reports Results for Third Quarter and First Nine Months of Fiscal Year 1999" (July 6, 1999)

[135] Company Press Release, "WinStar Completes Integration of Voice and Data Networks in Key Markets; Co-Locates ATM, Frame Relay, ISP and Voice Switches" (September 23, 1998)

[136] *Id.*

Austin

80. As shown in Table 11, Austin has at least 20 CLECs providing local telephone service over their own facilities. About 104,005 Austin telephone lines are provided by facilities-based companies other than SWBT.

*****(Table 11)*****
Estimated Facilities-based CLEC Access Lines in Austin as of October 1999

	Business	Residence
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB		
Totals		

Source: Southwestern Bell internal records

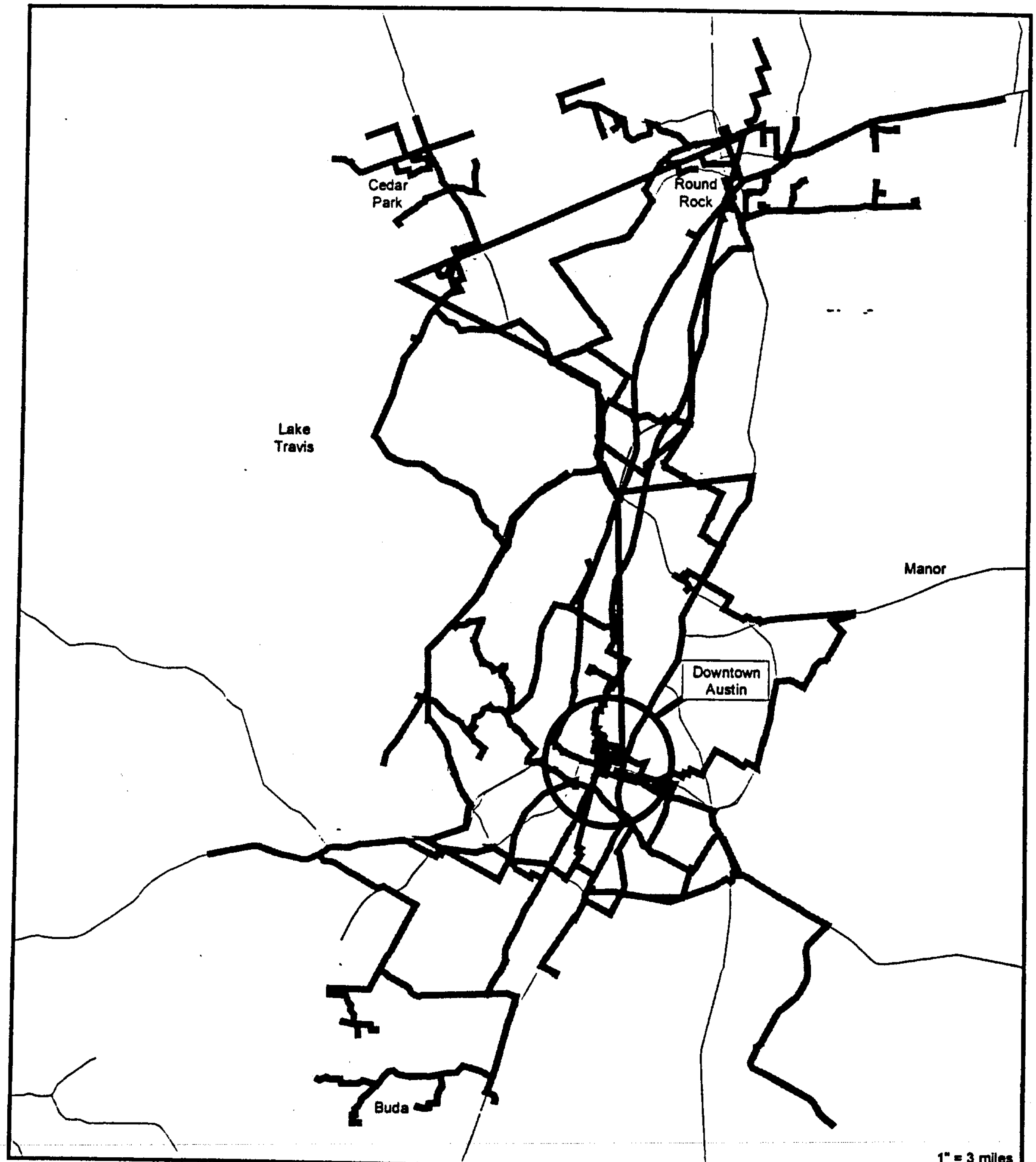
81. Another 19,226 lines are provided by 66 CLECs reselling SWBT's service.

82. CAPs, cable TV companies, and CLECs all have networks in Austin and the surrounding areas. These companies are known to have at least 368 miles of fiber and five local telecommunications switches used to provide local telephone service. At least 44 percent of all businesses in Austin are no more than 1,000 feet away from a competitor's network.

83. Companies such as MCI, Teligent, US Telco, Waller Creek, and GST Telecom have announced plans to build or extend existing network infrastructure in Austin.

84. The following map shows that competitors have built a significant facilities-based infrastructure in the area.

Known Fiber Networks in Austin



Source: Company press releases, trade journals and other publicly available information

Known CLEC Fiber Networks	
e.spire Communications	MCI WorldCom
ICG ChoiceCom	Time Warner

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85. Table 12 shows that facilities-based CLECs have a significant investment in their Austin area networks.

(Table 12)
Known CLEC Infrastructure in Austin as of October 1999

	Network Route Miles	Local Switches	Year Network Started
e.spire Communications (fka ACSI)	73	1	1994
ICG ChoiceCom	NA	1	NA
MCI WorldCom	45	1	1995
Time Warner	250	2	1994
Waller Creek	NA	1	NA
Totals	368	5	
In addition, GST Telecom, Intermedia Communications, and Teligent are known to have network facilities in Austin.			

Source: Company press releases, trade journals and other publicly available information

86. Table 13 shows that CLECs have used their network facilities to serve thousands of customers in Austin previously served by SWBT.

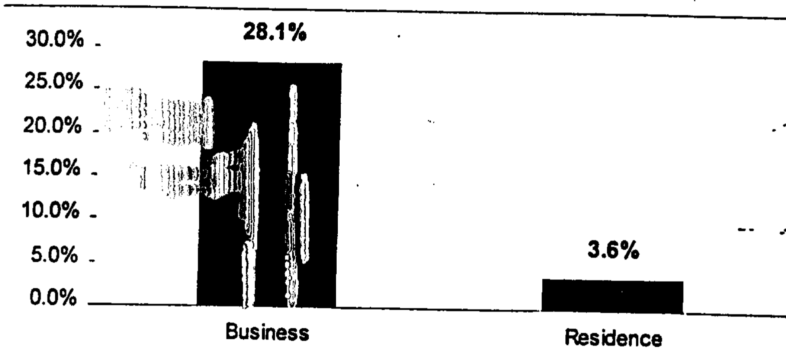
*****(Table 13)*****
Indicators of CLEC Market Penetration in the Austin Area as of October 1999

	Trunks	E911		UNE			Collocation		NXX	
		Bus.	Res.	Combos	Loops	Ports	Pend.	Comp.	In Use	Assigned
		SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB								

Source: Southwestern Bell internal records

87. The following chart clearly shows that SWBT's competitors have been able to acquire a significant portion of the Austin market.

Percentage of the Austin Market Served by Facilities-based and Resale CLECs as of October 1999



Source: Southwestern Bell internal records

88. Major competitors known to be providing local service in Austin include the following:

- **ICG ChoiceCom** provides customers with local service over its extensive fiber network. The company has its own central office switch in Austin.[137] ICG ChoiceCom focuses on the business market. ICG ChoiceCom has aggressively promoted its services in Austin through billboards and print advertising.
- **e.spire Communications** announced a 70-mile expansion to its existing fiber optic network in Austin. The expansion will stretch 30 miles southeast to the new airport and 40 miles northwest to the Arboretum and Research Park areas.[138] e.spire operates at least one central office switch in Austin.[139]

[137] Company Press Release, "ChoiceCom Begins Local Telephone Service in Dallas and Houston" (January 19, 1998)
[138] *Austin American-Statesman*, "Company to Expand Phone Network" (October 23, 1997)
[139] e.spire Web Site, "ACSI Service Locations" (January 8, 1998)

- **Time Warner** has at least 250 miles of fiber in the Austin area and is using its network to provide customers with local telephone service.[140] Time Warner Telecom has recently added a second phone switch in Austin.[141] In 1997, the University of Texas switched to Time Warner Telecom's local service. They have 1,392 telephone lines.[142] The company offers dedicated and switched broadband data services, voice services, dedicated Internet access and long-distance services to medium and large business customers, Residential Multi-Tenant Providers, and Shared Tenant Service Providers. The company is currently targeting ISPs and other businesses with high terminating minutes of use.
- **Waller Creek Communications, Inc.** serves several student residential facilities near the University of Texas campus using its own facilities and facilities provided by Time Warner Telecom.[143] Waller Creek is an Austin company that competes by offering consumers local, long distance, Internet connections, and Caller ID in a package that is 25 to 45 percent less expensive than SWBT's rates.

89. Local telephone directory listings for Austin CLECs are shown in Attachment D.

Dallas/Fort Worth Metroplex

90. A high concentration of businesses and densely populated residential areas make the Dallas/Fort Worth Metroplex one of the most desirable targets in the country for new providers of local telephone service.

91. Several CLECs have selected this area as their initial point of entry to the Texas local telephone market. In addition, companies that have traditionally provided other

[140] Time Warner Telecom Web Site, "Time Warner Telecom Fact Sheet"
[141] *Austin Business Journal*, "Switching Station Will Serve CBD Businesses" (April 2, 1999)
[142] *Multichannel News*, "Time Warner Takes Telephony to Austin" (April 21, 1997)
[143] Waller Creek Communications Web Site, "About Waller Creek Communications"

telecommunications services, such as competitive access and long distance providers are now providing local telephone service in the Dallas/Fort Worth area.

92. Downtown business districts and suburban business parks are two main areas where CLECs are providing local service. In the Dallas area, competitors are marketing local service in Las Colinas, the I-35 Corridor, the Central Telecom Corridor, Addison, Farmers Branch, and downtown. In the Fort Worth area, competitors are marketing in areas that include downtown, Centerport Business Park, Western Center Business Park, and Arlington.

93. The marketing efforts of these companies have provided customers with lower rates, free telephones, and discounts on packaged services that bundle local telephone service with wireless or long distance. AT&T has even offered free local telephone service for a limited time with the purchase of wireless services.

94. The Dallas/Fort Worth Metroplex has at least 31 companies providing local telephone service over their own facilities. Table 14 shows that about 330,926 Dallas/Fort Worth telephone lines are provided by facilities-based providers other than SWBT.

*****(Table 14)*****
Estimated Facilities-based CLEC Access Lines in the Dallas/Fort Worth Metroplex as of October 1999

	Business	Residence
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB		

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	Business	Residence
Totals		

Source: Southwestern Bell internal records

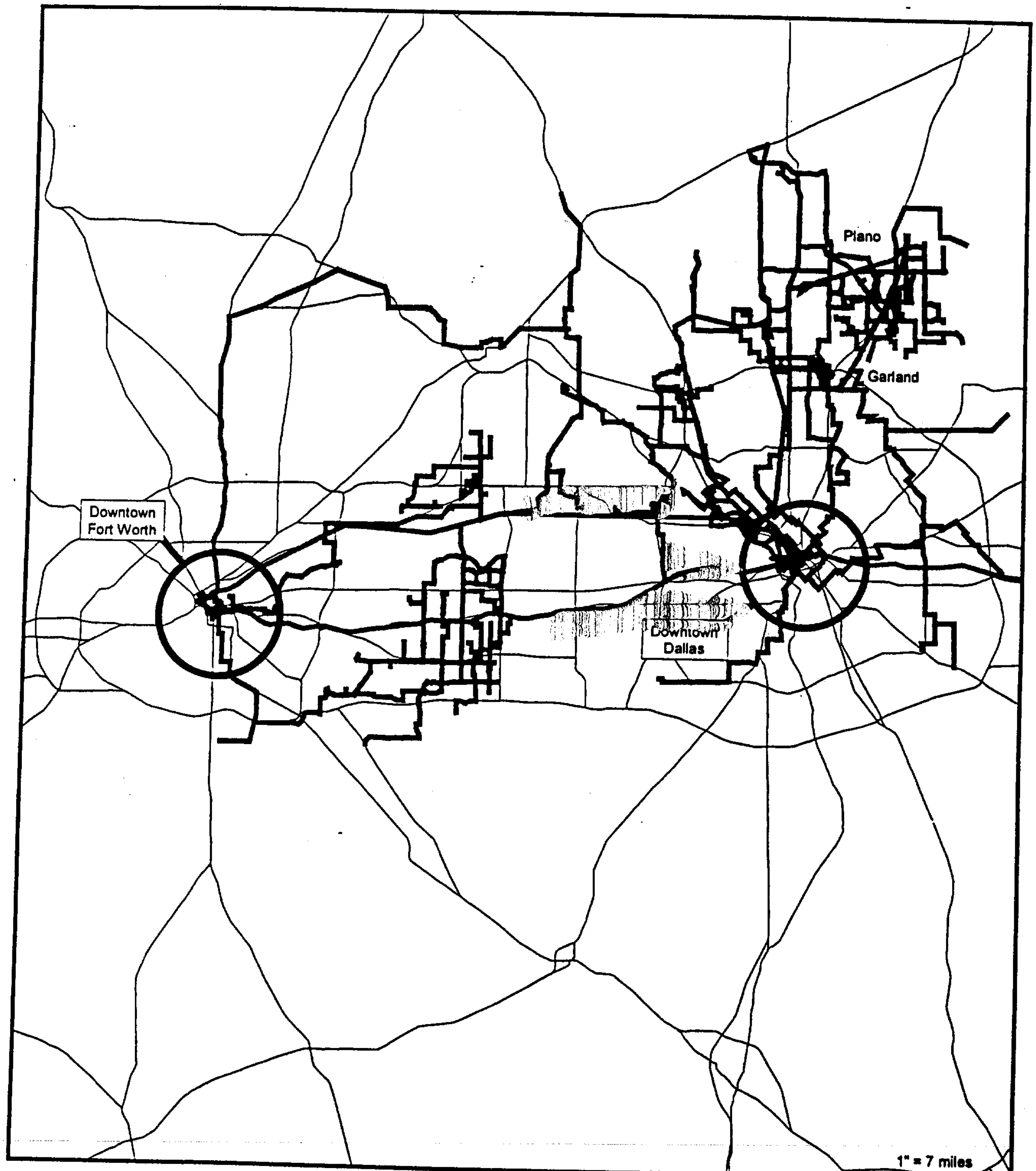
95. Another 88,613 lines are provided by 87 CLECs reselling SWBT's service.

96. The facilities-based companies have more than 1,061 miles of fiber and 16 switches in the area. CLECs have been known to extend their fiber as far as 5,000 feet from their main route to reach certain customers. In Dallas alone, over 31,000 businesses are no more than 500 feet from at least one competitive local service provider's fiber network.

97. Time Warner, Switched Services Communications, Teligent, U.S. Metroline Services, U.S. One Communications Services, Waller Creek and CoServ have all announced plans to build or extend existing networks in the Dallas/Fort Worth area.

98. The following map shows that competitors have built a significant facilities-based infrastructure.

Known Fiber Networks in the Dallas/Fort Worth



Source: Company press releases, trade journals and other publicly available information

Known CLEC Fiber Networks	
AT&T (Teleport, TCI)	MCI WorldCom
e.spire Communications	

99. Facilities-based CLECs have a significant investment in infrastructure in the Dallas/Fort Worth Metroplex as shown in Table 15 below.

(Table 15)
Known CLEC Infrastructure in the Dallas/Fort Worth Metroplex as of October 1999

	Network Route Miles	Local Switches	Year Network Started
Allegiance Telecom	NA	2	1998
AT&T/Teleport	450	1	NA
ICG ChoiceCom	NA	1	NA
e.spire Communications	195	2	1995
GTE	NA	1	NA
Intermedia Communications, Inc.	NA	1	NA
MCI WorldCom	416	3	1994
OpTel (Texas) Telecom	NA	1	1997
U.S. Metroline	NA	1	NA
U.S. One Communications	NA	1	NA
WinStar	NA	2	NA
Totals	1,061	16	
In addition, American Telco, CoServe, and GST Telecom are known to have network facilities in the Dallas/Fort Worth Metroplex.			

Source: Company press releases, trade journals and other publicly available information

100. Table 16 shows that, by various measures, the CLECs have established a strong presence in the Dallas/Fort Worth Metroplex.

*****(Table 16)*****
Indicators of CLEC Market Penetration in the Dallas/Fort Worth Metroplex as of October 1999

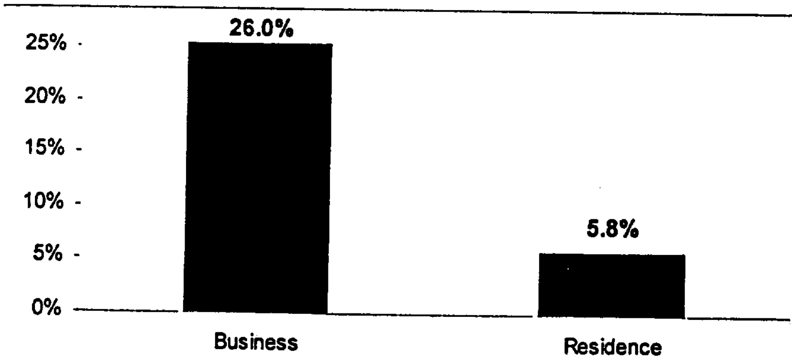
	Trunks	E911		UNE			Collocation		NXX	
		Bus.	Res.	Combos	Loops	Ports	Pend.	Comp.	In Use	Assigned
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB										

	Trunks	E911		UNE			Collocation		NXX	
		Bus.	Res.	Comb.	Loops	Ports	Pend.	Comp.	In Use	Assigned

Source: Southwestern Bell internal records

101. The following chart shows SWBT's market share lost to competitive local providers in the Dallas/Fort Worth Metroplex.

Percentage of the Dallas/Fort Worth Market Served by Facilities-based and Resale CLECs as of October 1999



Source: Southwestern Bell internal records

102. The following major competitors are some of the companies competing with SWBT in the Dallas/Fort Worth Metroplex:

- **MCI WorldCom, Inc.'s** own telecommunications network serves many of the key business customers in the Dallas/Fort Worth area, including Arlington. This expanded network was made possible with the acquisition of Brooks Fiber. ***SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB***[144]
- **Allegiance Telecom, Inc.** has two switches in the Dallas/Fort Worth Metroplex and is marketing to business customers with six to ten lines. Allegiance and SWBT have established electronic bonding between their operations support systems, making it easier for Texas telephone customers to switch rapidly from one local telephone company to another. Allegiance recently began to offer DSL services to its customers.
- **LCI International, Inc.** is advertising its local service throughout the Metroplex.
- **CapRock Communications**, in a joint venture with Enron Communications, is currently building a 1,000-mile fiber optic network that will connect Amarillo, Lubbock, Dallas, Fort Worth, Waco, Bryan, Austin, San Marcos, San Antonio and Houston. CapRock is a facilities-based provider which offers local, long distance, Internet, data, and private line services to business customers. In addition, CapRock also provides services to carrier customers.[145]
- **Millennium Telcom** offers cable television service, Internet access, home security, and telephone service over a fiber-optic network that runs from north of Saginaw to Southlake. The company has applied for franchises in Fort Worth, Keller, Trophy Club, and several other suburbs. The marketing strategy is to extend its network into new subdivisions before houses are built in order to reduce start-up costs.

[144] Southwestern Bell internal records

[145] Company Press Release, "CapRock Communications Joins with Enron Communications to Build $100 Million Fiber Network" (February 3, 1999)

- **AT&T** is testing its wireless local loop service in Dallas. The company began offering the service to Dallas area consumers during the summer of 1999.[146]
- **AT&T Wireless Services Inc.** is offering a pricing plan, the "Home Phone Option", aimed at Plano consumers who are considering an additional line. Customers can choose from two pricing plans that include unlimited local airtime. When customers leave the local Plano area and enter the Dallas/Fort Worth calling area, they have a set amount of free airtime, depending on the plan purchased. AT&T expects to see customers who select these plans to use their wireline service for Internet access and fax service and the existing wireless phone for voice calls.[147]
- **Teleport Communications Group (TCG),** an affiliate of AT&T, began operations in Dallas as a competitive access provider and now operates as a facilities-based local provider and as a reseller. It is concentrating on large businesses. Teleport utilizes its own extensive fiber optic network facilities and those of cable TV providers TCI and Marcus Communications. Its Dallas network includes at least one central office switch and 450 miles of fiber serving 130 buildings. Since it was acquired by AT&T, Teleport has become a major part of AT&T's local services unit.[148]
- **ICG ChoiceCom** has a central office switch in Dallas.[149]
- **WinStar Communications, Inc.** provides business customers with broadband communications services, including local and long distance phone service, as well as high-speed data, Internet access, and information services. WinStar provides these Wireless Fiber [sm] services over its own end-to-end broadband networks. With its

[146] Company Press Release, "AT&T Started Fixed Wireless Phone Trials in Dallas" (May 19, 1999)
[147] RCR Radio Communications Report, "AT&T Tests Wireless for Second Line" (November 30, 1998)
[148] AT&T Web Site, "TCG Fact Sheet"

wireless local loop and a central office switch located in the Dallas, WinStar is able to bypass much of SWBT's local telephone network and city rights-of-way. WinStar has been concentrating its marketing efforts toward government, educational, and residential and business consumers.[150]

- **Time Warner Telecom** is deploying fiber and installing a communications switching office and hubs.
- **Teligent, Inc.** is targeting small to medium-sized businesses with five to 350 phone lines and offers services at a 20 to 25 percent discount off SWBT's basic rates. Local service is provided over its own digital wireless network.[151]

103. Local telephone directory listings for Dallas and Fort Worth CLECs are shown in Attachment D.

Houston

104. Houston's commercial districts and dense residential areas have attracted many companies that are now giving consumers a choice of local telephone service providers. In Texas, only the Dallas/Fort Worth Metroplex has a higher concentration of competitors.

105. CAPs have been active in the Houston market for over ten years. Many of these companies are now offering discounted local telephone service as part of a package of services. Most of the major long-distance companies and most of the larger CLECs are now providing local service in the area. Houston also has several companies that are exclusively reselling SWBT's services.

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[149] Company Press Release, "ICG ChoiceCom Completes Texas Communications Network; Company Opening of Houston Switch Tops-off 1998 Service Expansion Plans" (January 13, 1999)
[150] FCC Bandwith Forum, Statement of Doug Morgan, WinStar Wireless, Inc. (January 23, 1997)
[151] Company Press Release, "Teligent Reports 1998 Financial Results, Sets Operating Benchmarks for 1999" (March 1, 1999)

106. As shown in Table 17, Houston has at least 30 CLECs providing local telephone service over their own facilities. Facilities-based companies other than SWBT provide about 347,181 Houston telephone lines.

*****(Table 17)*****

Estimated Facilities-based CLEC Access Lines in Houston as of October 1999

	Business	Residence
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB		
Totals		

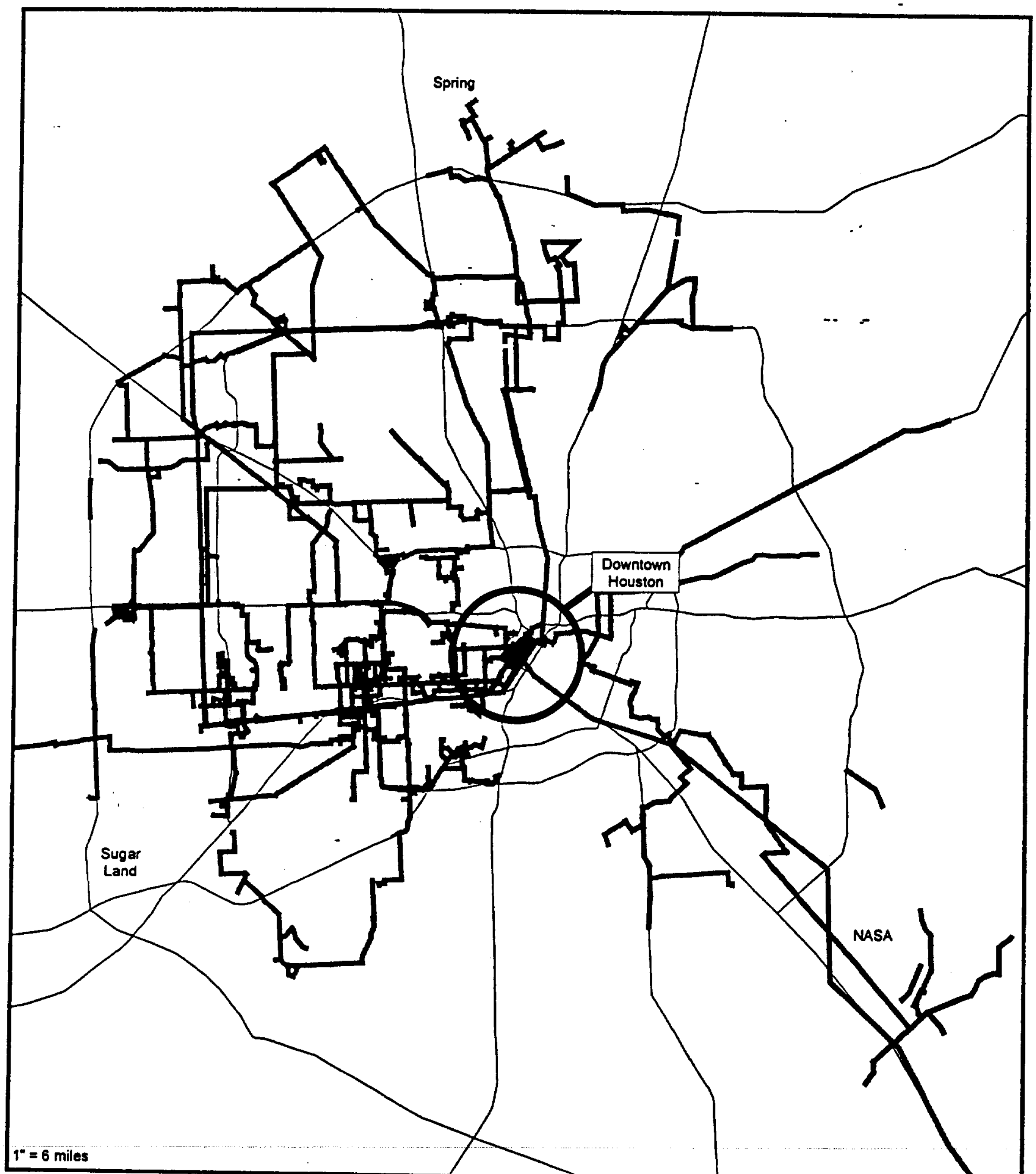
Source: Southwestern Bell internal records

107. Another 70,860 lines are provided by 77 CLECs reselling SWBT's service.

108. CAPs, cable TV companies, and CLECs all have networks in Houston and the surrounding areas. These companies are known to have at least 1,550 miles of fiber and 11 local telephone switches that they use to provide local telephone service. The heaviest concentrations of fiber are in the downtown and Galleria areas. About 39 percent of Houston businesses are within 1,000 feet of a competitive provider's network. Several companies including Teligent, US Telco, and US One Communications Services have announced plans to build or extend existing networks in Houston.

109. The following map shows that competitors have built a significant facilities-based infrastructure.

Known Fiber Networks in Houston



Source: Company press releases, trade journals and other publicly available information

Known CLEC Fiber Networks	
AT&T/TCG	OpTel (Texas) Telecom
MCI WorldCom	Time Warner

110. Table 18 also shows that facilities-based CLECs have a significant investment in network infrastructure in Houston.

(Table 18)
Known CLEC Infrastructure in Houston as of October 1999

	Network Route Miles	Local Switches	Year Network Started
Allegiance Telecom	NA	1	NA
AT&T/Teleport	400	1	NA
ICG ChoiceCom	NA	1	NA
e.spire Communications	NA	1	NA
GST Telecom	NA	1	NA
MCI WorldCom	300	1	1994
OpTel (Texas) Telecom	400	1	1989
Teligent, Inc.	NA	1	1998
Time Warner	450	1	1994
U.S. One Communications	NA	1	NA
WinStar	NA	1	NA
Totals	**1,550**	**11**	
In addition, American Telco, ETS Telephone, Intermedia Communications, IWL Communications and U.S. Long Distance are known to have network facilities in Houston.			

Source: Company press releases, trade journals and other publicly available information

111. As shown in Table 19, the CLECs have established a strong market presence in Houston.

*****(Table 19)*****
Indicators of CLEC Market Penetration in the Houston Area as of October 1999

	Trunks	E911		UNE			Collocation		NXX	
		Bus.	Res.	Combos	Loops	Ports	Pend.	Comp.	In Use	Assigned
		SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB								

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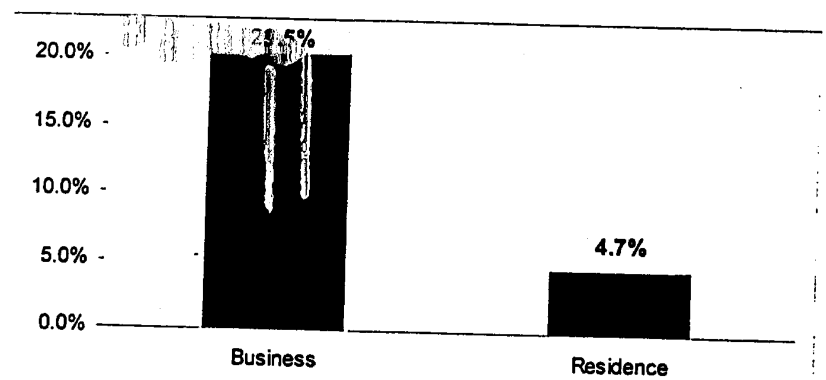
	Trunks	E911		UNE			Collocation		NXX	
		Bus.	Res.	Combos	Loops	Ports	Pend.	Comp.	In Use	Assigned

Source: Southwestern Bell internal records

112. SWBT's competitors have been able to acquire a significant share of the local telephone market in Houston.

Percentage of the Houston Market Served by Facilities-based and Resale CLECs as of October 1999



Source: Southwestern Bell internal records

113. Consumers have a choice of several facilities-based competitors in the Houston area, including:

- **Allegiance Telecom, Inc.** began service in the Houston area in April 1999. The company provides service through a network that reaches into the surrounding suburbs.

- **MCI WorldCom, Inc.** frequently advertises in Houston-area business journals that it is a "one-stop" provider that allows consumers to receive local, long distance, data, and Internet services from a single source and on one bill. With the acquisition of Brooks Fiber, MCI WorldCom's local network in Houston has at least one switch and approximately 300 miles of fiber that it uses to provide service over its own facilities. MCI WorldCom's network serves the Galleria area, Greenspoint, Westchase, and the Johnson Space Center, and is expanding into Houston's business-intensive suburbs. MCI WorldCom is also providing service to both business and residential subscribers through resale of SWBT's service. MCI WorldCom has aggressively sold local service in the Houston metro area by offering a package called MCI Local Service^{SM}. The company has also offered a "Customer Conversion Bonus," a credit on the customer's bill, as an incentive to win over business customers. MCI has offered three months of free local service as one promotional approach.
- **GST Telecom,** in an agreement with e.spire Communications, announced in April 1999 plans to expand its presence with the addition of a 40-mile long haul fiber route in the metropolitan area of Houston to be completed in fourth quarter 1999. The network will be used to provide long distance, voice, and data services.[152]
- **American Telco, Inc.** has several contracts for buildings throughout Houston, including the 515,000-square-foot Wedge International Tower where it provides local telephone service to half the building's tenants.[153] American Telco was the first company to sign an interconnection agreement with SWBT to compete in the local service arena in Texas. The company targets small and medium-sized businesses and

[152] Company Press Release, "GST Telecommunications and e.spire to Build Houston Network" (April 22, 1999)
[153] American Telco Web Site, "American Telco Claims 50 Percent of Local Phone Service"

offers local and long-distance services at a 10 percent discount off Southwestern Bell's charges.[154]

- **ICG ChoiceCom** concentrates on local telephone service for the business market. ICG ChoiceCom has at least one central office switch in Houston.[155]
- **ETS Telephone Company (fka Kingsgate)** owns fiber/coax networks that enable it to package cable television, security-system monitoring, and long distance with local telephone services. ETS offers these services to residents in upscale housing developments such as Summerwood, Sienna Plantation, and Greenleaf.[156]
- **Time Warner Inc.** has a 450-mile network and two operational central office switches in Houston.[157]
- **OpTel (Texas) Telecom, Inc.** serves Houston customers with local telephone service using its 400-mile fiber optic network and at least one central office switch.[158] ***SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB***[159] The company purchased Phonoscope's residential cable television and associated fiber optic network in August 1997. Phonoscope offers cable modem service in Houston giving residential customers high-speed access to the Internet.
- **Teleport Communications Group's (TCG)** network reaches the Energy Corridor, the Galleria area, Greenspoint, Westchase, and Brook Hollow and is expanding into Houston's suburbs. At least 200 large, multi-tenant buildings are served by Teleport.[160]

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154 American Telco Web Site, "American Telco History"
155 Company Press Release, "ICG ChoiceCom Completes Texas Communications Network; Company Opening of Houston Switch Tops-off 1998 Service Expansion Plans" (January 13, 1999)
156 ETS Telephone Company's Application for Revision to Certificate of Operating Authority No. 50002
157 Time Warner Telecom Web Site, "Time Warner Telecom Fact Sheet"
158 Company Press Release, "OpTel, Inc. Results for Fiscal 1997's 4th Quarter & Full Year; Significant Milestones Achieved" (November 5, 1997)
159 Southwestern Bell internal records
160 AT&T Web Site, "TCG Fact Sheet"

- **AT&T Corporation** began providing resold services in August 1997. The company made significant competitive progress charging monthly rates that are comparable to SWBT's. AT&T has cut back its marketing efforts, but selectively takes new customers while continuing to provide service to its existing local service customers.
- **Teligent, Inc.** is targeting small to medium-sized businesses with five to 350 phone lines. The company offers service at a 20 to 25 percent discount off SWBT's basic local rates. Local service is provided over its own digital wireless network.[161]
- **WinStar Communications, Inc.** is also providing local service in downtown Houston over a wireless network. One of WinStar's product promotions offers Houston business customers free local service up to $1,000 per month when bundled with other products.[162]

114. Local telephone directory listings for Houston CLECs are shown in Attachment D.

San Antonio

115. San Antonio has at least 16 CLECs providing local telephone service over their own facilities. Table 20 shows that about 111,300 San Antonio telephone lines are provided by companies other than SWBT.

[161] Company Press Release, "Teligent Reports 1998 Financial Results, Sets Operating Benchmarks for 1999" (March 1, 1999)
[162] Company Press Release, "WinStar Launches Breakthrough Marketing Program" (October 27, 1998)

*****(Table 20)*****

Estimated Facilities-based CLEC Access Lines in San Antonio as of October 1999

	Business	Residence
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB		
Totals		

Source: Southwestern Bell internal records

116. Another 21,895 lines are provided by 68 companies reselling SWBT's service.

117. Several companies have networks in San Antonio and the surrounding areas. These companies are known to have at least 839 miles of fiber and nine local switches that they use to provide local telephone service. At least 58 percent of all businesses in San Antonio are no more than 1,000 feet away from a competitor's network.

118. The following map shows that competitors have built a significant facilities-based infrastructure in the San Antonio area.

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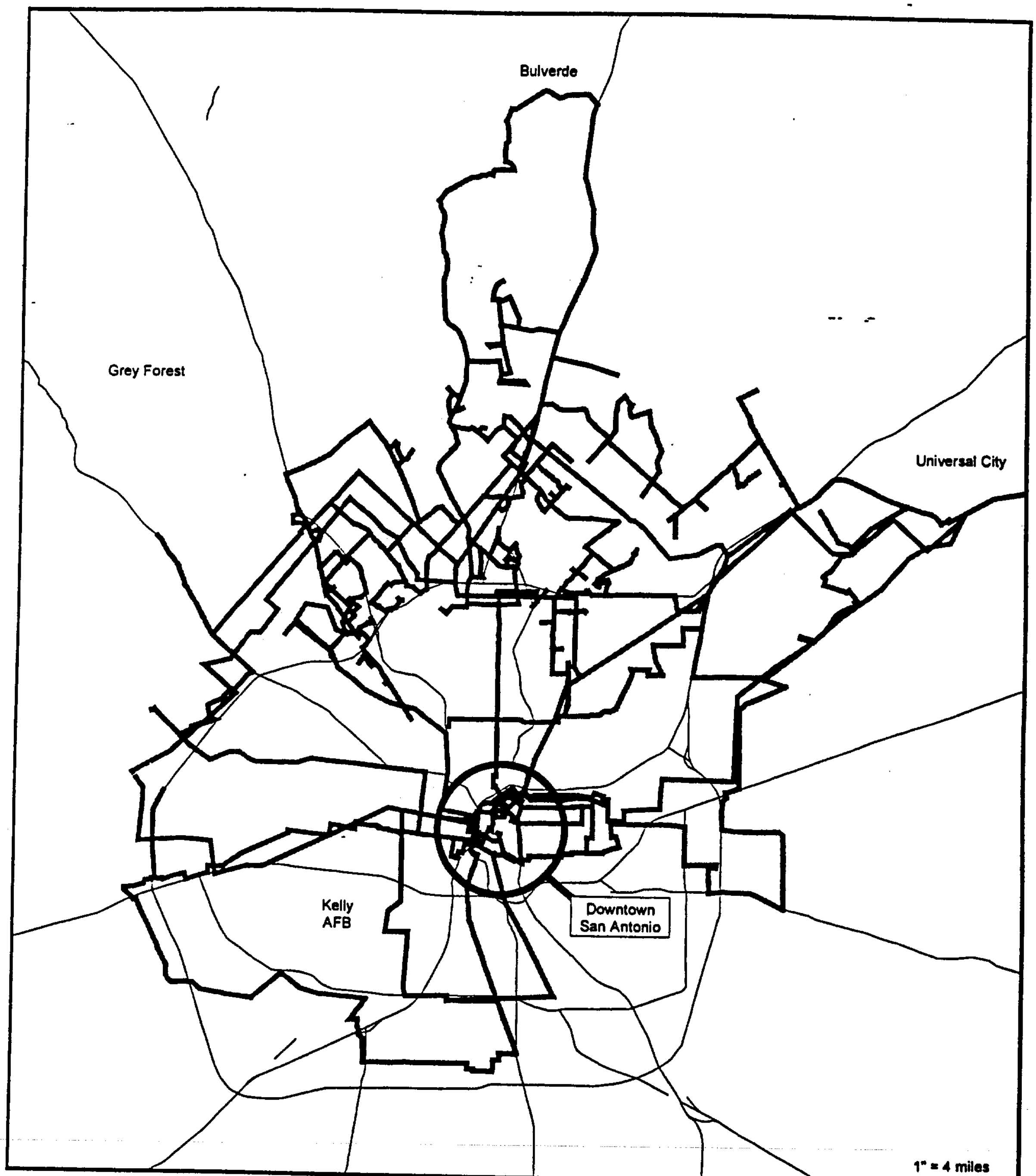
Known Fiber Networks in San Antonio



Source: Company press releases, trade journals and other publicly available information

Known CLEC Fiber Networks	
ICG ChoiceCom	Time Warner
MCI WorldCom	

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119. Facilities-based CLECs have a significant investment in infrastructure in San Antonio, as shown in Table 21 below.

(Table 21)
Known CLEC Infrastructure in San Antonio as of October 1999

	Network Route Miles	Local Switches	Year Network Started
ICG ChoiceCom	306	1	NA
e.spire Communications	NA	1	NA
Logix	NA	1	1999
MCI WorldCom	53	1	1997
Taylor Communications Group	NA	1	NA
Teligent, Inc.	NA	1	1998
Time Warner	480	1	1994
U.S. Long Distance, Inc.	NA	1	NA
U.S. One Communications	NA	1	NA
Totals	839	9	

Source: Company press releases, trade journals and other publicly available information

120. Table 22 shows the various facilities that CLECs use to compete for SWBT's customers.

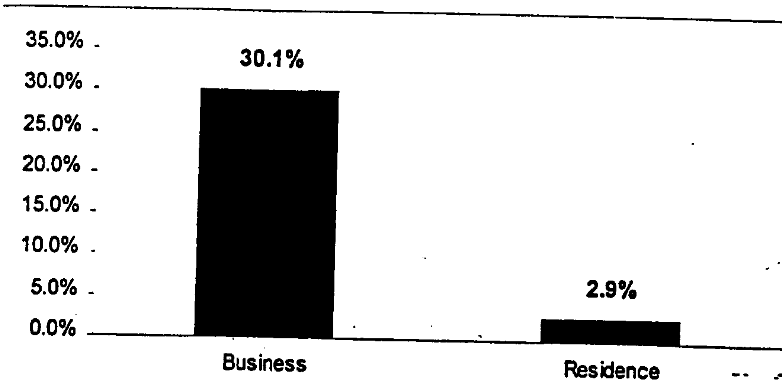
*****(Table 22)*****
Indicators of CLEC Market Penetration in the San Antonio Area as of October 1999

		E911		UNE			Collocation			NXX
		Bus.	Res.	Combos	Loops	Ports	Pend.	Comp.		Assigned
		SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB								

Source: Southwestern Bell internal records

121. SWBT's competitors have been able to acquire a substantial share of customer access lines in San Antonio.

Percentage of the San Antonio Market Served by Facilities-based and Resale CLECs as of October 1999



Source: Southwestern Bell internal records

122. Major competitors known to be providing local service in San Antonio include the following:

- **ICG ChoiceCom** has provided local phone service, long distance, and data transmission services in San Antonio since September 1997.[163] ICG ChoiceCom has an extensive fiber network in the city.
- **e.spire Communications** has invested $20 million in a fiber optic loop around downtown and additional facilities extending into northwest San Antonio, including areas around the International Airport and the medical center. e.spire offers voice, Internet and data services to small and medium-sized businesses in central and northwest San Antonio.[164]
- **Teligent** provides local service in San Antonio using its fixed wireless network. The company has installed one switch in San Antonio and has placed rooftop antennas on 25 office buildings throughout the city. Teligent customers pay a flat monthly rate for a

[163] Company Press Release, "ChoiceCom Begins Local Telephone Service in Dallas and Houston" (January 19, 1998)

[164] *San Antonio Express News*, "e.spire Reaches for S.A. Market" (June 30, 1998)

package of services including local telephone service, long distance and Internet access.

123. Local telephone directory listings for San Antonio CLECs are shown in Attachment D.

Corpus Christi

124. Competitive local exchange carriers are not limiting their activity to the largest Texas cities, but rather have expanded into smaller cities as well. Consumers in Corpus Christi, for example, have several choices of local service providers.

125. Competition first developed in Corpus Christi when CAPs invested in networks in the downtown area. These fiber networks have expanded as the CAPs became CLECs and began to provide local telephone service.

126. Corpus Christi has at least eight CLECs providing local telephone service over their own facilities, as shown in Table 23. About 16,666 Corpus Christi telephone lines are provided by facilities-based companies other than SWBT.

*****(Table 23)*****

Estimated Facilities-based CLEC Access Lines in Corpus Christi as of October 1999

	Business	Residence
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB		
Totals		

Source: Southwestern Bell internal records

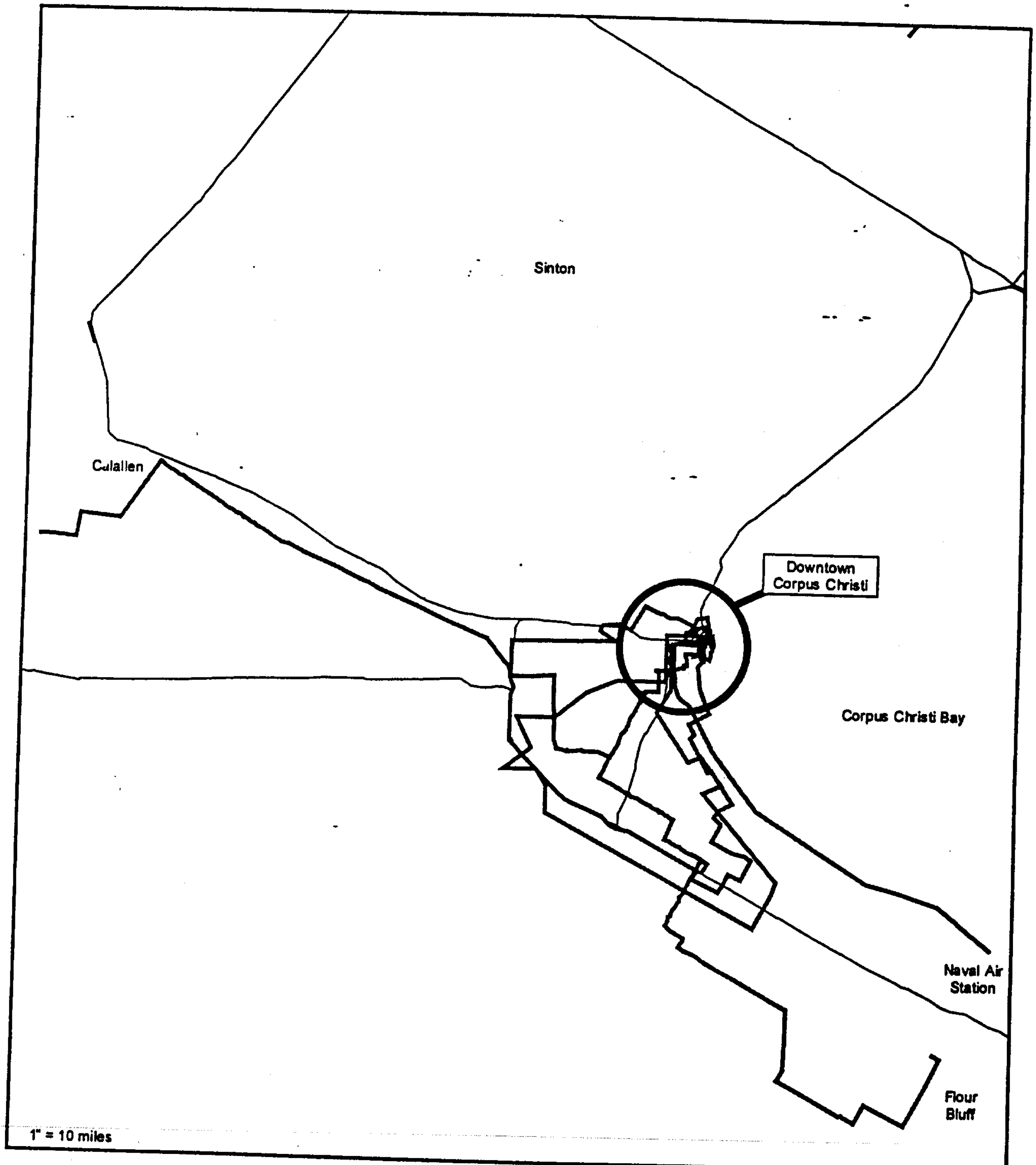
127. Another 6,555 lines are provided by 53 companies reselling SWBT's service.

128. There are now over 277 miles of known fiber optic cable and at least two central office switches in networks that stretch from suburban areas in the northwest down to the Naval

Air Station. At least 29 percent of all businesses in Corpus Christi are within 1,000 feet of fiber optic cable owned by a company other than SWBT. CLECs use this fiber to selectively provide local telephone service to the most profitable customers.

129. The following map shows that competitors have built a significant facilities-based infrastructure in Corpus Christi.

Known Fiber Networks in Corpus Christi



Source: Company press releases, trade journals and other publicly available information

Known CLEC Fiber Networks	
e.spire Communications	KMC Telecom
ICG ChoiceCom	Tele-Communications Inc. (TCI) / AT&T

130. Table 24 shows that facilities-based CLECs have a significant investment in infrastructure in Corpus Christi.

(Table 24)
Known CLEC Infrastructure in Corpus Christi as of October 1999

	Network Route Miles	Switches	Year Network Started
e.spire Communications (fka ACSI)	41	NA	1996
ICG ChoiceCom	200	1	NA
KMC Telecom	34	1	NA
MCI WorldCom	2	NA	1997
Totals	277	2	

Source: Company press releases, trade journals and other publicly available information

131. CLEC facilities in Corpus Christi are used to provide local telephone service to several thousand lines, as shown in Table 25.

*****(Table 25)*****
Indicators of CLEC Market Penetration in the Corpus Christi Area as of October 1999

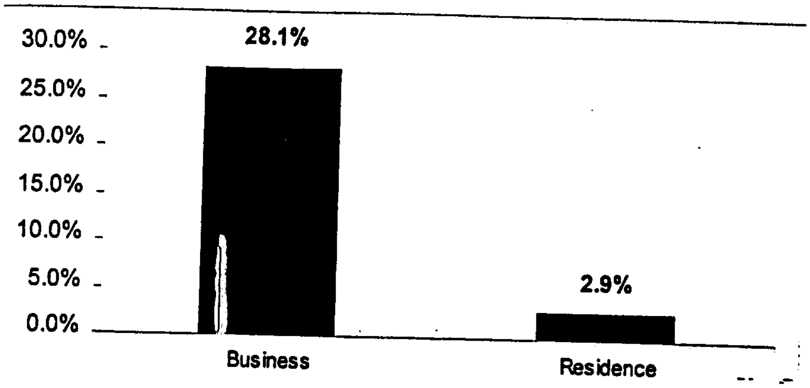
	Trunks	E911		[illegible]	UNE		Collocation		NXX	
		Bus.	Res.		Loops	Ports	Pend.	Comp.	In Use	Assigned
SEE CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB										

Source: Southwestern Bell internal records

132. The following chart clearly shows that SWBT's competitors have been able to compete effectively in Corpus Christi.

REDACTED For Public Inspection

Percentage of the Corpus Christi Market Served by Facilities-based and Resale CLECs as of October 1999



Source: Southwestern Bell internal records

133. Major competitors known to be providing local service in Corpus Christi include the following:

- **ICG ChoiceCom** uses its 200-mile fiber network to provide its customers with packages of local, long distance, and data transport services. ICG ChoiceCom has been active in Corpus Christi since August 1997.[165] The company provides telephone service using the same poles and underground cables that Central and South West Corporation uses to supply electricity.[166]

- **e.spire Communications'** strategy had previously been to market aggressively to provide local service through resale, then migrate customers to its own facilities. Over the last year, e.spire has been transferring its Corpus Christi resale customers to its own network.[167] The company offers customers a package of services including special access, switched service, and high-speed data.

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[165] Company Press Release, "ChoiceCom Begins Local Telephone Service in Dallas and Houston" (January 19, 1998)

[166] *The Journal Record*, "Utility Enters Phone Combat" (January 15, 1997)

[167] Company Press Release, "e.spire to Phase Out Local Switched Resale" (December 14, 1998)

- **KMC Telecom** offers local service, long distance, special access, and private lines, along with high-speed data and video on its 34-mile SONET ring. KMC owns at least one central office switch in Corpus Christi.[168]
- **MCI WorldCom** also serves Corpus Christi customers over its own fiber network.

134. Local telephone directory listings for Corpus Christi CLECs are shown in Attachment D.

135. Facilities-based competition likewise has spread to other, smaller cities and towns in Texas. Table 26 reflects the extent of competition outside the metropolitan areas discussed above.

*****(Table 26)*****
Indicators of CLEC Market Penetration in Texas' Smaller Cities and Towns as of October 1999

City	CLEC	Trunks
CONFIDENTIAL AFFIDAVIT OF JOHN S. HABEEB		

[168] *Telecommunications Reports International, Inc.*, "1998 Competitive Local Exchange Carriers Directory"

REDACTED For Public Inspection

City	CLEC	Trunks

REDACTED For Public Inspection

City	CLEC	Trunks

City	CLEC	Trunks
Source: Southwestern Bell internal records		

CONCLUSION

136. Texas state law opened the Texas local telephone service market to competition in 1995. Federal legislation in 1996 complemented and reinforced the Texas law.

137. These laws have been successful in promoting local telephone service competition in the state. As this affidavit has shown, strong competition in local telephone service exists in Texas. As of October 1999, 48 facilities-based providers and 114 resale providers serve business and residential customers over 1.3 million access lines. Chairman Wood stated

during the December 16th Open Meeting that based on Staff's "Track A" information for Texas, a rough number for access lines of facilities-based competitors was about 400,000 and the number of resale access lines was about 600,000. Both CLEC and some SWBT records treated UNEs and UNE Combos as resale lines. This appears to be reflected in the report of Chairman Wood, insofar as facilities-based lines were understated by approximately the amount of the UNE Combos being provided to Texas CLECs. The point made by Chairman Wood remains valid however. Chairman Wood was correct in noting CLECs in Texas are serving over a million access lines and CLECs are using hundreds of thousands of facilities-based lines and hundreds of thousands of resale lines to provide their service.

138. Facilities-based and resale providers are particularly significant in Texas' local business telephone service market. From April 1998 through October 1999, CLECs captured 85.3 percent of the growth in the business market in Texas, gaining 863,865 business access telephone lines compared to 148,653 for SWBT.

139. The city and company profiles, set out previously, demonstrate that facilities-based companies are providing service in Texas. The facilities-based providers have been particularly successful in penetrating SWBT's business market, where they now serve 23.5 percent of the business market statewide.

140. The Texas PUC, one of the most progressive and respected commissions in the country, has found that the local service market in Texas is open to competition and that SWBT has met all requirements for in-region, interLATA relief in Texas.

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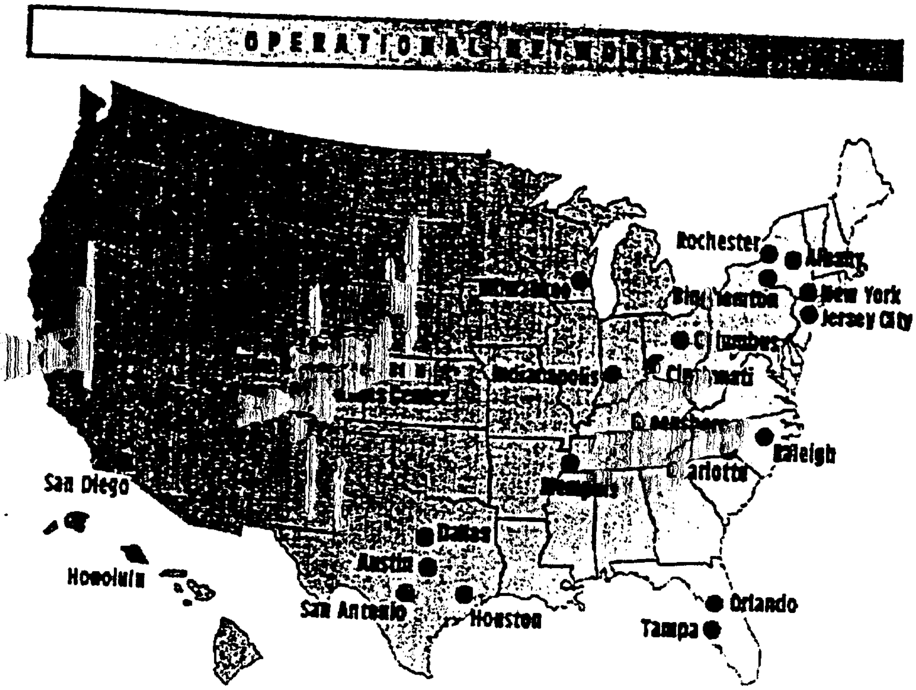
YEAR 2000

INVESTOR RELATIONS



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TIME WARNER TELECOM

AUSTIN, TEXAS

CAREER OPPORTUNITIES
TIME WARNER TELECOM CITIES
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Time Warner Telecom Fact Sheet

Fiber Optic Network

Time Warner Telecom provides 100% digital fiber optic connections to all its customers using state-of-the-art optical to electrical equipment. Time Warner Telecom delivers the most reliable and flexible communications services for all applications, without requiring the customer to buy additional equipment.

Synchronous Optical Network (SONET) Transmission

Time Warner Telecom uses a SONET network architecture comprised of self-healing rings to provide constant protection from potential disaster. In an unlikely event of a fiber cut or outage, the signal is electronically path-switched from the primary route to a "protect" route in less than 42 milliseconds. This reliability provides zero interruption of service, allowing you to have confidence in your ability to do business and never lose productivity because of access failure.

National Operations Center

Each of Time Warner Telecom' networks is managed and controlled locally. In addition to local monitoring, each location uses the National Operations Center (NOC) in Englewood, Colorado to provide network monitoring and service 24 hours a day, 7 days a week, 365 days a year. The NOC surpasses the national standards for network surveillance and monitoring for Local Telephone Exchange Carriers, which assures you the consistency, accuracy, and quality of service expected from Time Warner Telecom.

Total Fiber Miles

We have approximately 250 miles of fiber network.

Time Warner Telecom Transport Central Offices

12012 N. MoPac Expressway   4201 Guadalupe

Southwestern Bell Telephone Local Serving Office (LSO) Co-Location

Fireside LSO	5501 Spicewood Springs Rd.
Greenwood Tandem and CGO LSO	915 Colorado
Hickory LSO	201 Cumberland
Round Rock LSO	105 W. Bagdad
Tennyson LSO	11409 N. Lamar

InterExchange Carrier POP Co-locations

AT&T	909 Colorado
IXC Communications	621 N. Pleasant Valley
Sprint	1503 West 3rd
Westel	1122 Colorado
Bestline	1122 Colorado
MCI	702 Colorado
Qwest	1122 Colorado
Worldcom	807 Brazos

General Information

- Fully Trained & Certified Technical Staff
- 100% Lucent Electronics
- 99.99% network availabilty
- 60 plus buildings on network
- Network monitored 7 days a week, 24 hours a day, 365 days a year

---

Time Warner Connect telephone is available at the following locations:

- **Audubon Apartments** - 10631 Nacogdoches - Leasing office: 564-1111
- **Blanco Crossing Apartments** - 13999 Old Blanco Road - Leasing office: 479-4900
- **Carlyle Place Apartments** - 1751 Babcock Road - Leasing office: 321-1700
- **Carmel Apartments** - 1440 West Bitters Road - Leasing office: 479-4444
- **Chapel Ridge Apartments** - 7135 & 7207 Snowden Road - Leasing office: 615-4600
- **Gables Colonnade Apartments** - 9898 Colonnade Boulevard - Leasing office: 694-9898
- **Gables Great Hills Apartments** 11250 & 11266 Taylor Draper Lane - Leasing office: (512) 349-5100
- **Gables Town Lake Apartments** 2600 Lake Austin Boulevard - Leasing office: (512) 860-3000
- **Gables Wall Street Apartments** - 11700 Wall Street - Leasing office: 691-3777
- **Grand Cypress Apartments** - 453 Business 35 North - Leasing office: (830) 643-6400
- **Greystone Apartments** - 7585 Ingram Road & 2885 Mabe Road - Leasing office: 706-3000
- **Haverhill Apartments** - 12222 Vance Jackson - Leasing office: 694-3300
- **Hunters Run I Apartments** - 11900 Hobby Horse Court - Leasing office: (512) 339-5700
- **Hunters Run II Apartments** - 11901 Hobby Horse Court - Leasing office: (512) 339-5700
- **Independence Hill Apartments** - 20450 Huebner Road - Leasing office: 615-4000
- **Kenton Apartments** - 14650 Nacogdoches & 13860 Dreamwood - Leasing office: 564-2000
- **LaCalera Apartments** - 403 Heimer Road - Leasing office: 489-4500
- **Meridian Apartments** - 680 East Basse Road - Leasing office: 821-1333
- **Newport Apartments** - 3800 Perrin Central - Leasing office: 967-7777
- **Peppermill Apartments** - 2125 Universal City Boulevard - Leasing office: 945-1700
- **Saddlebrook Apartments** - 4032 East Southcross - Leasing office: 337-9400
- **Sagewood Apartments** - 6130 Ingram Road - Leasing office: 706-5100
- **Silver Rock Apartments** - 9830 & 9831 Camino Villa - Leasing office: 509-5050
- **Sterling Heights Apartments** - 384 Treeline Park - Leasing office: 283-5200
- **TaraVista Apartments** - 10800 SH 151 - Leasing office: 543-7600
- **University Oaks Apartments** - 6685 UTSA Boulevard - Leasing office: 354-7676
- **Villages of Thousand Oaks Apartments** - 2170 Thousand Oaks - Leasing office: 499-6000
- **Villas of Henderson Pass Apartments** - 16465 Henderson Pass - Leasing office: 615-4300
- **Vintage Apartments** - 7733 Louis Pasteur - Leasing office: 949-2900
- **Willow Creek Apartments** - 1530 Northwest Crossroads - Leasing office: 509-5700

TIME WARNER Connect

< back

TIME WARNER
Connect

2ND LINE SOLUTION

Order **2nd Line Solution** to connect your computer or fax modem without tying up the main telephone line. Surf the Internet and keep your other line open for important calls.

Use **2nd Line Solution** if there are others in your household who want their own private line, or for a 2nd line for yourself.

To order your second line

- Call Time Warner Connect or tell the leasing office you want **2nd Line Solution.**
- $9 a month will be added to the rate for your primary Time Warner Connect line.
- Free activation if ordered in conjunction with primary phone line installation. Activation at a later date will cost $30.00

$9.00 A MONTH.

TIME WARNER
Connect

GET YOUR
ONE NUMBER
WHEN YOU
GET YOUR
ARTMENT

TIME WARNER
Connect

Local Service

One Time Activation Charge	**$30.00**
Basic Monthly Service	
Unlisted Number	FREE
Inside Line and Jack Repair	FREE
FCC Line Charge	Paid by Time Warner Connect
Unlimited Local Calls	$15.00
(10% Senior Citizen Discount for 55+)	
Subtotal*	**$15.00**
Special Features	
Touch-tone	FREE
Call Waiting	2.40
Call Waiting Inhibit	FREE
Redial	1.20
Speed Calling	1.20
Call Forwarding	1.20
Do Not Disturb	1.20
Conference Calling	1.20
Subtotal*	**$8.40**
Super Service	**$20.00**
Includes Basic Service plus all Special Features listed above – A savings of $3.40	
Voice Mail	**$8.00**
Includes Pager Notification and Automatic Wake-up Call SPECIAL FEATURE - Voice mail will pickup while you are on the phone so you never miss a call.	
Total Monthly Service*	**$28.00**

*Does not include Local, State and Federal Tax or Activation Fees

TIME WARNER
Connect

Long Distance

Rate Plan

Continental U.S.
(including Alaska, Hawaii, Puerto Rico, Virgin Islands Guam, American Samoan)

8 a.m. - 5 p.m.	20 cents/min.
5 p.m. - 8 a.m.	12 cents/min.

Customer Service

7am - Midnight,
Monday through Saturday

1-800-366-4900

www.twconnect.com

TIME WARNER TELECOM

HOUSTON, TEXAS

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- TIME WARNER TELECOM CITIES
- ABOUT TIME WARNER TELECOM
- YEAR 2000
- INVESTOR RELATIONS
- CONTACT US

Time Warner Telecom Fact Sheet

Total Fiber Miles

We have approximately 450 miles of fiber network.

Time Warner Telecom Central Offices

Tidwell: 8495 W. Tidwell (HSTOTX42)
Royalton: 6015 Royalton (HSTXTXNS)

Fiber Network

Our network is served by our two Central Offices and consists of 14 OC48 rings, 24 OC12 rings, and 19 OC3 rings.

LSO Co-Locations

We are Co-Located at the following LSO addresses:

HSTNTXFA	14101 Aston	Fairbanks LSO
HSTNTXCL	1200 Clay Ave.	Clay LSO
HSTNTXBU	2101 Dairy Ashford	Buffalo LSO
HSTNTXSU	2538 Fondren Rd.	Sunset LSO
HSTNTXNA	2310 West Lane	National LSO
HSTNTXJA	1310 Richmond	Jackson LSO
SGLNDTXBI	12626 Dairy Ashford	Alltel LSO
HSTZTXCK	1019 Hooker St.	Lufkin Conroe Telephone LSO

Interexchange Carrier POP Co-Locations

We are Co-Located at the following Interexchange Carrier POPs:

AT&T 1407 Jefferson	Frontier 777 Walker	Williams 1124 Hardy
AT&T 5314 Richmond	Qwest 777 Walker	ETFL 1019 Hooker
MCI 5444 Westheimer	Cytel 777 Walker	IXC 293 N. Main
Sprint 8902 Point Six Circle	Worldcom 1701 Lyons Ave	Level 3 12001 I 45 N.
IFN 777 Walker		

General Information

- 100% SONET
- 100% Lucent transport electronics
- Lucent 5ESS local voice switching platform
- GDC ATM platform
- Fore Systems/Cisco Internet Platform
- 100% Fiber optic network with full redundancy
- No single point of failure
- 99.999% network availability
- 88 lit buildings on-net

Services Available

- DS1 - OC48 Transport (access and private line services)
- Private Sonet Rings
- Broadcast TV Quality Video (one way and two way)
- Native Rate LAN Interconnection (Ethernet, Fast Ethernet, FDDI)
- Local ATM Transport
- Local Frame Relay Transport
- Internet Service (DS1,DS3,ATM based burstable service)
- Business Switched Services (Local Dial Tone)
- ISDN Primary Rate Interface
- Integrated Business Line (Local, Long Distance, Internet on a single T1.5)
- Long Distance Service
- Interlata Private Line Transport (DS1-OC48)

[Business | US Market | By Industry | IPO | AP | S&P | International | PRNews | BizWire]

Wednesday March 10, 10:00 am Eastern Time

Company Press Release

SOURCE: Time Warner Telecom, LLC

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Time Warner Telecom to Launch Business Phone Service in Dallas

GREENWOOD VILLAGE, Colo., March 10 /PRNewswire/ -- Time Warner Telecom, LLC, today announced it will launch its integrated communications services to medium and large businesses in Dallas beginning in late summer 1999.

Time Warner Telecom, a full service integrated communications carrier, will construct a fiber optic network using leased conduit from Level 3 Communications, Inc. (Nasdaq: LVLT - news). Level 3 and Time Warner Telecom recently entered into a 20-year agreement to provide Time Warner Telecom access to Level 3's conduits in the Greater Dallas metropolitan area. Additional terms of the agreement were not disclosed. Currently the company offers service in Austin, Houston and San Antonio, Texas and 16 other cities throughout the United States.

Medium and large business customers will be able to purchase Time Warner Telecom dedicated transport, long distance, hi-speed dedicated Internet access and switched services. The company will begin deploying fiber and installing a communications switching office and hubs in April.

Time Warner Telecom is a fiber, facilities-based integrated communications carrier offering broadband data services, local switched voice services, long distance and integrated communications solutions for medium and large business customers. Headquartered in Greenwood Village, Colorado, Time Warner Telecom currently offers service in Austin, Houston and San Antonio, TX; Cincinnati and Columbus, OH; Charlotte, Greensboro and Raleigh, NC; Honolulu, HI; Indianapolis, IN; New York City, Albany, Binghamton and Rochester, NY; Milwaukee, WI; Memphis, TN; Orlando and Tampa, FL., and San Diego, CA. Time Warner Telecom's website is www.twtelecom.com.

For more information about Level 3 Communications, contact the company's website at www.Level3.com.

SOURCE: Time Warner Telecom, LLC

Waco Tribune-Herald
February 2, 1999

AT&T-Time Warner deal calling Waco, elsewhere

Local phone service, Internet access to be provided over cable

By MIKE COPELAND
Tribune-Herald business editor

The cable that brings variety to Waco TV screens will add telephone service, interactive digital TV capability, even high-speed Internet access.

AT&T has struck a deal to provide local calling over Time Warner cable in 33 states, including Texas, as it pushes to become a force in local telephone service nationwide, the companies announced Monday.

Customers will pay about 20 percent less for this package of long-distance and local phone service than for what other vendors could offer, said AT&T chief executive C. Michael Armstrong. In addition to phone service, the venture will offer interactive digital television and high-speed Internet service.

"We will be the low-cost provider compared to any other way to deliver these services, and we will be putting together more bundles (packages of services) on top of what we're announcing today," said Armstrong.

All divisions

"This applies to all Time Warner divisions, and that includes us," said Johnny Mankin, division president for Time Warner Cablevision in the Waco area. Waco likely will get the package in the year 2000.

Mankin said Time Warner Cablevision will proceed with plans to upgrade its local fiber-optic system at a cost of $20 million.

"AT&T needs a highway to run on," said Mankin, "and that's our highway."

The deal comes as AT&T prepares to buy Time Warner's biggest cable rival, Tele-Communications Inc.

AT&T said the venture with Time Warner, its buyout of TCI and arrangements with other cable TV companies will give it the potential to supply local phone service to 40 percent of U.S. households, or 25 million homes.

"Obviously, AT&T is pulling together the assets it needs to be a full-service provider nationally — and that's what we plan to do through our merger with Ameritech," said Brian Poznanski, a spokesman for SBC Communications. That's the parent of Southwestern Bell, the largest provider of local telephone service in Texas.

Poznanski said SBC "looks forward to competing", with AT&T in Waco for customers wanting local and long-distance telephone service and high-speed Internet access.

'We like our chances'

"We'll see," said Poznanski, when asked if SBC can offer competitive pricing. "They'll do theirs through cable; we'll do ours through an existing network. We like our chances."

Monday's bombshell "will have no impact on us at all," said Bear Poth, president of ClearSource, an Austin-based company that has announced it will build a citywide, $33 million fiber-optic network in Waco. It will provide residents and small businesses with cable television, local telephone and high-speed Internet services."

ClearSource already has bought a building in Waco's industrial district and received a city franchise.

"Having a variety of competitors is the nature of this business," said Poth. "We're not disappointed, and we don't plan to change a thing, though we certainly want to provide better value to our customers."

AT&T will own slightly more than 75 percent of the joint venture and Time Warner the rest. AT&T estimates it will spend $600 million its first two years. Later, it will spend $300 to $500 to install equipment in each home to handle telephone services over cable lines.

The arrangement is expected to have annual sales of $4 billion after three years.

AT&T has been spending furiously to break into the $110 billion local phone market at a time when its share of the long-distance business is slipping.

In addition to its planned acquisition of TCI, the nation's second-largest cable company, AT&T spent $11.3 billion last year on Teleport Communications, a smaller local phone company.

AT&T hopes consumers will be enticed by the convenience of receiving phone service channels through the same cable-TV circuits that deliver hundreds of channels, Internet access and online banking.

Mike Copeland can be reached at mcopeland@mail.wacotrib.com or at 757-5736.

San Antonio Business Journal
April 16-22, 1999

INTRODUCING

THE FIRST WIRELESS PHONE SERVICE THAT'S HANDY TO HAVE HANGING AROUND THE HOUSE.

Make unlimited calls from home and in Plano to the D/FW Metro Area with new AT&T Wireless Home Phone Option.

For only $39.99 a month, you get the convenience of a wireless phone with the affordability of a home phone. Plus, get 10¢ a minute long distance rates. So now you can use your wireless phone as your primary talk line and let your home phone become your computer/fax/kids' line. Stop by the Plano AT&T Store or call our toll-free number to sign up today. **AT&T Wireless Services**

AT&T HOME PHONE OPTION
$39.99 UNLIMITED PLANO CALLS
+30 D/FW Metro air-time minutes
A MONTH

- Digital PCS features including AT&T VoiceMail, AT&T Caller ID, Call Waiting, Three-Way Conference Calling and Call Forwarding
- No term contract
- No activation fee

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Willowbend Store, Plano
5974 West Parker Rd., Ste. 304
972-403-1665

It's all within your reach

AT&T

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This concludes my affidavit.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on ______________________, 2000

____

John S. Habeeb
Director-Industry Analysis

STATE OF TEXAS

COUNTY OF TRAVIS

Subscribed and sworn to before me

This ________ day of ____________________, 2000.

____
Notary Public

October 1999

Approved COA/SPCOA Report

Application	Name of Firm
SPCOA	1stel, Inc.
SPCOA	2nd Century Communications, Inc.
SPCOA	A-CBT System, Inc. DBA Budget Communications
SPCOA	A.R.C. Networks, Inc.
SPCOA	Access 21 Corporation, d/b/a New Edge Networks
SPCOA	Access Network Services, Inc.
SPCOA	Accutel of Texas, Inc.
SPCOA	ACI Corporation
SPCOA	Actel Integrated Communications, Inc.
SPCOA	Action Telcom Co.
SPCOA	Advanced Communicating Techniques
SPCOA	Advanced Communications Group, Inc.
SPCOA	Advanced TelCom Group, Inc.
SPCOA	Afaneh, Inc.
SPCOA	Affinity Network, Inc.
SPCOA	Allegiance Telecom of Texas, Inc.
SPCOA	Alliance Network, Inc.
COA	ALLTEL Communications, Inc.
SPCOA	Alternative Telephone Connections, Inc.
SPCOA	Amarillo CellTelCo
SPCOA	America's Conex, L.L.C.
SPCOA	America's Tele-Network, Corp.
SPCOA	American MetroComm/Texas, Inc.
SPCOA	American Phonecom, Inc.
SPCOA	Ameritech Communications International, Inc.
SPCOA	ARC Texas, Inc.
COA	AT&T Communications of the Southwest, Inc.
SPCOA	ATS
SPCOA	AustiCo Telecommunications, Inc.
SPCOA	Austin Bestline Company

October 1999

Approved COA/SPCOA Report

Application	Name of Firm
SPCOA	Austin Teleco U.S.A., Inc.
SPCOA	aXessa
SPCOA	Basicphone, Inc.
SPCOA	BellSouth BSE, Inc.
COA	Birch Telecom of Texas, Ltd., L.L.P.
SPCOA	BlueStar Networks, Inc.
SPCOA	Business Telecom, Inc.
SPCOA	Buy-Tel Communications, Inc.
SPCOA	C2C Fiber, Inc.
SPCOA	C3 Communications, Inc.
SPCOA	Cable & Wireless, Inc.
SPCOA	Cable Plus Company, L.P.
SPCOA	Call-For-Less Long Distance, Inc.
SPCOA	Capital Telecommunications, Inc.
SPCOA	CapRock Communications Corp.
SPCOA	Cellufone of Texas, Inc.
SPCOA	Central Texas Communications, Inc.
SPCOA	Choctaw Communications, LLC
SPCOA	Ciera Network Systems, Inc.
SPCOA	ClearSource, Inc.
SPCOA	ClearWorks Technologies, Inc.
SPCOA	CNG Communications, Inc.
SPCOA	CommcoTec Corporation
SPCOA	Communication Systems Development, Inc.
SPCOA	Communications Pearl, LLC.
SPCOA	Computer Business Sciences, Inc.
SPCOA	ComTel Services
SPCOA	CONNECT!
COA	CoServ, L.L.C.
SPCOA	CoServ, L.L.C.

October 1999

Approved COA/SPCOA Report

Application	Name of Firm
SPCOA	Covad Communications Company
SPCOA	CS Wireless Systems, Inc, dba THE BEAM
SPCOA	CTJ Investments, Inc.
COA	Cumby Telephone Cooperative, Inc.
SPCOA	Cypress Telecommunications Corporation
SPCOA	D.V.C Enterprises, Inc.
SPCOA	Dakota Services Limited
SPCOA	Data Delivery Network
SPCOA	Data Recall, LLC
SPCOA	DeLoach's Home Entertainment Centers, Inc.
SPCOA	Dial Tone USA, Inc
SPCOA	Diamond Communications International, Inc.
SPCOA	Diamond Telco -Your Home Telephone Store
SPCOA	Digital Network Services, Inc.
SPCOA	Digital Teleport, Inc.
SPCOA	Direct Communications, Inc.
SPCOA	Discount Calling, Inc.
SPCOA	DMJ Communications, Inc.
SPCOA	DPI-Teleconnect, Inc.
SPCOA	DSLnet Communications, LLC
SPCOA	e.spire
SPCOA	Eagle Communications
SPCOA	Eagle Communications Group, Inc.
SPCOA	Easy Cellular, Inc.
SPCOA	Eclipse Communications Corporation
SPCOA	Electric Lightwave, Inc.
SPCOA	ePhone Co.
SPCOA	Ernest Communications, Inc.
COA	ETS Telephone Company, Inc.
SPCOA	Excel Telecommunications, Inc.

October 1999

Approved COA/SPCOA Report

Application	Name of Firm
SPCOA	Express TeleCommunications
SPCOA	EZ Talk Telecommunications
SPCOA	Facilities Communications International, Ltd.
SPCOA	FaithNet Telecommunications, Inc.
SPCOA	Fast Connections, Inc.
SPCOA	Fiber Wave Telecom, Inc.
SPCOA	First Telecommunications Network
SPCOA	Firstlink Telecommunications, Inc.
SPCOA	FirstWorld Communications, Inc.
SPCOA	FlashNet Telecom, Inc.
SPCOA	Focal Communications Corporation of Texas
SPCOA	Fort Bend Communications
SPCOA	Frontier Local Services, Inc.
SPCOA	Frontier Telemanagement, Inc.
SPCOA	Future Communications
SPCOA	GlobalCom, Inc.
SPCOA	Go-Comm, Inc.
SPCOA	Golden Harbor of Texas, Inc.
SPCOA	Great West Services Ltd.
SPCOA	Griffin Communications & Security Systems, Inc
SPCOA	GST Texas Lightwave, Inc.
COA	GTE-CC
SPCOA	GTS
SPCOA	Guadalupe Valley Communications Systems, Inc.
SPCOA	Hollywood Communications, LTD
SPCOA	Hotelecom Communications Corporation
SPCOA	Hyperion Communications of Texas,L.P.
SPCOA	ICG ChoiceCom, L.P.
SPCOA	ILD
SPCOA	InfoCom Services, Inc.

Approved COA/SPCOA Report

Application	Name of Firm
SPCOA	Infolink Communications, Ltd.
SPCOA	Integral Telecommunication Networks, L.L.C.
SPCOA	Intellistar Communications, Inc.
SPCOA	Inter-Tel NetSolutions, Inc.
SPCOA	Intermedia Communications, Inc.
SPCOA	International Exchange Communications, Inc.
SPCOA	Intetech L.C.
SPCOA	IP Communications Corporation
SPCOA	ITC^DeltaCom
SPCOA	IVIT Communications Group, Inc.
SPCOA	JATO Operating Corp.
SPCOA	Kero Communications, Inc.
SPCOA	KMC Telecom (SPCOA 60039A)
SPCOA	KMC Telecom (SPCOA 60039B)
SPCOA	KMC Telecom (SPCOA 60039C)
SPCOA	Koyote Telephone, Inc.
SPCOA	LCI International Telcom Corporation
SPCOA	LCT Long Distance, Inc.
SPCOA	LEC Unwired, LLC
SPCOA	Level 3 Communications, LLC
SPCOA	LineDrive Communications of Addison
SPCOA	Listing Services Solutions, Incorporated
SPCOA	Local Fone Service, Inc.
SPCOA	Local Gateway Exchange, Inc.
SPCOA	Local Telecom Service, L.L.C.
SPCOA	Local Telephone Service Company, Inc.
SPCOA	Logix Communications Corporation
SPCOA	Lone Star Communications
SPCOA	Lone Star Telephone, Inc.
SPCOA	M-Tel Resources, Inc.

Approved COA/SPCOA Report

Application	Name of Firm
SPCOA	Matrix Telecom, Inc.
SPCOA	Max-Tel Communications, Inc.
COA	MCImetro Access Transmission Services, Inc.
SPCOA	Media Communication Consultants, L.L.C.
SPCOA	Megsinet-CLEC,Inc.
SPCOA	Metro Access Networks, Inc.
SPCOA	Metro Connection, Inc.
SPCOA	Metro-Link Telcom, Inc.
SPCOA	MetroPhone, Inc.
SPCOA	MFS of Dallas, Inc.
SPCOA	MFS-Houston
SPCOA	MiComm Services, Inc.
SPCOA	MIDCOM Communications, Inc.
SPCOA	Millennium Communications
COA	Millennium Telcom, L.L.C.
SPCOA	Momentum Telecom, Inc.
SPCOA	Morris Communications
SPCOA	MSN Communications, Inc.
SPCOA	Nations Bell, Inc.
SPCOA	Nationwide Communication
SPCOA	Navigator Telecommunications, LLC
SPCOA	NET-tel Corporation
SPCOA	network intelligence, inc.
SPCOA	Network Operator Services, Inc.
SPCOA	New Millennium Communications Corporation
SPCOA	Nexstar Communications, Inc.
SPCOA	NEXTLINK Texas
COA	Nortex Telcom, L.L.C.
SPCOA	North American Telecommunications Corporation
SPCOA	Northpoint Communications, Inc.

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Application	Name of Firm
SPCOA	NOS Communications, Inc.
SPCOA	NOW Communications, Inc.
SPCOA	NTS Communications, Inc.
SPCOA	Omni Prism Communications, Inc.
SPCOA	OmniCall, Inc.
SPCOA	Omniplex Communications Group
SPCOA	One Source Telecommunications, Inc.
SPCOA	OpTel (Texas) Telecom, Inc.
SPCOA	ORBIT Consultants, Inc.
SPCOA	PaeTec Communications, Inc.
SPCOA	Page-Master Etc.
COA	Panhandle Telecommunication Systems, Inc.
SPCOA	Pathnet, Inc.
SPCOA	Penthouse Suites, Inc.
SPCOA	People Link
COA	Peoples Telecommunications, Inc. (PTI)
SPCOA	Petroleum Communications, Inc.
SPCOA	Phone America
SPCOA	Phone Call Express
SPCOA	Phone Reconnect of America, L.L.C.
SPCOA	Phones For All
SPCOA	PhoneSense
SPCOA	Phonit, Inc.
SPCOA	Plexnet Communications Services, Inc.
COA	Plum Creek Telephone Company, Inc.
COA	Poka Lambro Telephone Company, Inc.
SPCOA	Posner Telecommunications, Inc.
SPCOA	Premiere Network Services. Inc
SPCOA	Prism Operations, LLC
SPCOA	Progressive Concepts, Inc.

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Application	Name of Firm
SPCOA	Qtel, Inc.
SPCOA	Quick-Tel Communications, Inc.
SPCOA	Quintelco, Inc.
SPCOA	Reach Direct, Inc.
SPCOA	Real Time Communications
SPCOA	Reliant Energy Communications, Inc.
SPCOA	Resource Innovations Group, Inc.
SPCOA	Rosebud Telephone
SPCOA	Sage Telecom
SPCOA	Sager Telecom, Inc.
SPCOA	SandStream Communication and Entertainment
COA	Santa Rosa Telephone Cooperative, Inc.
SPCOA	Scholl Interest, Inc., DBA CommServ
SPCOA	Shell Offshore Services Company
SPCOA	SmartCom Telephone, L.L.C.
SPCOA	Snappy Phone of Texas, Inc.
SPCOA	Source Communications LLC
SPCOA	SouthNet Telecomm Services, Inc.
SPCOA	Southside Communications, L.L.C.
SPCOA	SouthWest Teleconnect
COA	Sprint Communications Company, L.P. (COA 50006)
COA	Sprint Communications Company, L.P. (COA 50009)
SPCOA	Stargate Communications, Ltd.
SPCOA	Starway Communications, Incorporated
SPCOA	State Communications, Inc.
SPCOA	State Discount Telephone, L.L.C.
SPCOA	State Telephone - Texas
SPCOA	Sterling International Funding, Inc.
COA	STPCS Joint Venture, LLC
SPCOA	Supra Telecommunications and Information Systems, Inc.

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Application	Name of Firm
SPCOA	Suretel, Inc.
COA	SWBT
SPCOA	Switched Services Communications, L.L.C.
SPCOA	Talk Solutions
SPCOA	Taylor Communications Group, Inc.
COA	TCG Dallas
SPCOA	Tech Telephone Company,Ltd.
SPCOA	Tel-Link, L.L.C.
SPCOA	Tel-Save, Inc.
SPCOA	Tel-Star Utility Corp.
SPCOA	Tele-One Communications, Inc.
SPCOA	Telecom Licensing, Inc.
SPCOA	Telenetwork, Inc.
SPCOA	Telephone Plus
COA	Teleport Communications Houston, Inc.
SPCOA	Teligent Services, Inc.
SPCOA	Telstar Telecom Company, L.L.C.
SPCOA	Teltrust Communications Services, Inc.
SPCOA	Texas Comm South, Inc.
SPCOA	Texas HomeTel, Inc.
SPCOA	Texas Networking, Inc.
SPCOA	The Phone Pros
SPCOA	The Telephone Reconnection
SPCOA	Time Warner Connect
SPCOA	Time Warner Connect - San Antonio
SPCOA	Time Warner Telecom of Texas, L.P.
SPCOA	Tin Can Communications Company, L.L.C.
SPCOA	TotalTel, Inc.
SPCOA	Trans National Telecommunications, Inc.
SPCOA	TransAmerican Telephone, Inc.

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Application	Name of Firm
SPCOA	Transtar Communications, L.C.
SPCOA	Trinity Telephone
SPCOA	Trinity Valley Services, Inc.
SPCOA	Twister Communications Network, Inc.
SPCOA	TXNet Communications
SPCOA	U. S. Dial Tone, Inc.
SPCOA	U.S. Communications, Inc.
SPCOA	U.S. Long Distance
SPCOA	U.S. Telco, Inc.
SPCOA	U.S. West Interprise America, Inc.
SPCOA	Uni-Tel
SPCOA	United Communications Systems
SPCOA	United Tel-A-Call
SPCOA	USCom Telephone, Inc.
SPCOA	USN Communications Southwest, Inc.
SPCOA	USOL, Inc.
SPCOA	Utel
SPCOA	Valence Communications Services, Ltd.
SPCOA	Valu-Line of Longview
SPCOA	Valu-Net, Inc.
SPCOA	VarTec Telecom, Inc.
SPCOA	Voice 2, Inc.
COA	W. T. Services, Inc.
SPCOA	Waller Creek Communications, Inc.
SPCOA	Web Fire Communications, Inc.
SPCOA	Westel, Inc.
SPCOA	WESTEX Telecom
SPCOA	Wholesale Network, Inc.
SPCOA	WinStar Wireless, Inc.
SPCOA	World Access Communications Corp.

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Application	Name of Firm
SPCOA	WorldCom Technologies, Inc.
COA	XIT Telecommunications & Technology, Inc.
SPCOA	Z-Tel Communications, Inc.

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	Docket Number		Date Filed	Date Approved
1	21712	1stel, Inc.	11/24/99	11/24/99
2	21571	2d Century Communications, Inc.	10/27/99	10/27/99
3	21545	A-CBT Systems, Inc.	10/22/99	10/22/99
4	17377	ACSI	04/23/97	07/17/97
5	21590	Addison CLE Networks, Inc. dba LineDrive Comm.	11/01/99	11/01/99
6	20761	Advanced Communications Group, Inc.	04/19/99	05/24/99
7	21573	Allegiance Telecom of Texas, Inc.	10/28/99	10/28/99
8	19365	ALT Communications, LLC	05/20/98	07/01/98
9	17446	American MetroComm	05/14/97	08/06/97
10	20707	American MetroComm/Texas, Inc.	04/06/99	05/11/99
11	17149	American Telco, Inc.	02/28/97	05/21/97
12	17782	Ameritech	08/08/97	11/04/97
13	21658	ARC Networks d/b/a InfoHighway	11/15/99	11/15/99
14	17579	AT&T	02/10/98	04/02/98
15	20464	ATS Telecommunications Systems, Inc.	02/08/99	03/15/99
16	17754	Austin Bestline	08/01/97	10/22/97
17	20808	BellSouth BSE, Inc.	04/27/99	06/01/99
18	20349	Birch Telecom of Texas, Ltd.	01/19/99	02/23/99
19	21635	BlueStar Communications	11/10/99	11/10/99
20	17065	Brooks Fiber	07/22/97	10/22/97
21	19347	Business Telecom, Inc.	05/14/98	08/12/98
22	21005	C2C Fiber, Inc.	06/18/99	07/23/99
23	18742	Cable Plus Company	03/18/98	04/22/98
24	21685	CapRock Telecommunications Corp.	11/19/99	11/19/99
25	20319	CCCTX d/b/a Connect!	02/09/99	03/16/99
26	20663	ClearSource, Inc.	03/24/99	04/28/99
27	21560	ClearWorks, Inc.	10/27/99	10/27/99
28	19624	Computer Business Sciences, Inc.	07/17/98	10/08/98
29	18171	CoServ	10/27/97	01/14/98
30	21636	Cypress Telecommunications	11/10/99	11/10/99
31	20859	Dakota Services Limited	05/10/99	08/05/99
32	18630	Dobson Wireless, Inc.	01/08/97	02/13/98
33	21559	DSLnet Communications, LLC	10/27/99	10/27/99
34	20134	Ernest Communications, Inc.	11/23/98	12/28/98
35	21253	Excel Communications, Inc.	08/19/99	09/22/99
36	19986	Facilities Communications International d/b/a US Telcom	10/15/98	11/19/98
37	19348	FiberWave Telecom, Inc.	05/14/98	08/12/98
38	20423	FlashNet Telecom, Inc.	02/02/99	03/09/99
39	21177	Focal Communications Corporation	07/27/99	09/03/99
40	20530	Fort Bend Long Distance d/b/a Fort Bend Comm.	02/18/99	03/25/99
41	19194	Frontier Local Services, Inc.	04/20/98	07/07/98
42	19275	Great West Services, Ltd. d/b/a Simcom Communication	05/04/98	07/22/98
43	18999	GST Telecom, Inc.	03/11/98	05/21/98
44	17943	GTE Communications	09/05/97	12/04/97
45	20650	Hyperion Communications of Texas, L.P.	03/22/99	04/26/99
46	18205	ICG Choicecom	10/31/97	01/14/98
47	21684	iConnect Corporation	11/18/99	11/18/99

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	Docket Number		Date Filed	Date Approved
48	20775	InfoCom Services	04/22/99	05/27/99
49	21644	Intermedia Communications, Inc.	11/12/99	11/12/99
50	20780	IP Communications Corporation	04/22/99	05/27/99
51	21129	ITC DeltaCom	07/21/99	08/25/99
52	21645	IVIT Communications Group, Inc.	11/12/99	11/12/99
53	17932	IWL Communications	09/04/97	01/14/98
54	20106	JATO Communications Corporation	11/17/98	12/21/98
55	16123	Kingsgate	06/28/96	09/12/96
56	17411	KMC	05/01/97	07/17/97
57	19888	KMC Telecom II, Inc.	09/23/98	10/29/98
58	21671	Koyote Telephone, Inc.	11/17/99	11/17/99
59	20560	LEC Unwired L.L.C.	02/24/99	03/31/99
60	19428	Level 3 Communications, L.L.C.	06/02/98	07/07/98
61	21598	Logix Communications Corporation	11/03/99	11/03/99
62	16630	Lone Star Net, Inc	04/09/97	04/23/97
63	16285	MCI	12/30/96	01/29/97
64	16189	MFS	11/19/96	12/19/96
65	20462	MGC Communications, Inc.	02/08/99	03/15/99
66	19979	Millennium Telcom, L.L.C.	10/15/98	11/19/98
67	18743	MultiTechnology Services, L.P.	03/18/98	04/22/98
68	18733	Navigator	01/27/98	04/21/98
69	20683	Network Intelligence, Inc.	03/30/99	05/04/99
70	21580	New Edge Networks, Inc.	10/29/99	10/29/99
72	19858	NorthPoint Communications, Inc.	09/15/98	10/20/98
73	21697	NTS Communications, Inc.	11/24/99	11/24/99
74	17431	OpTel	05/09/97	08/06/97
75	20087	Premiere Network Services	11/12/98	12/17/98
76	21546	Reliant Energy Communications, Inc.	10/22/99	10/22/99
77	21731	Rig Telephones, Inc. d/b/a DataCom	11/29/99	11/29/99
78	20664	SandStream Communications and Entertainment, Inc.	03/24/99	04/28/99
79	19726	Shell Offshore Services Company	08/10/98	10/22/98
80	19993	Southside Communications, L.L.C.	10/16/98	11/20/98
81	19994	Sprint Communications Company, L.P.	10/16/98	11/20/98
82	21020	Supra Telecommunications and Information Systems	06/23/99	07/28/99
83	17244	Taylor Comm Group, Inc.	03/21/97	06/04/97
84	16196	TCG	11/19/96	12/19/96
85	19425	Tech Telephone Company, Ltd.	06/02/98	07/07/98
86	21009	Telenetwork, Inc.	06/21/99	07/26/99
87	18310	Teligent, Inc.	11/06/97	02/05/98
88	20279	Texas Networking, Inc.	12/28/98	02/01/99
89	17836	Time Warner	08/19/97	11/04/97
90	21620	Twister Communications Network, Inc.	11/08/99	11/08/99
91	21295	TXU Communications Telecom Services Company	08/31/99	10/05/99
92	21572	U.S. Dial Tone, L.P.	10/27/99	10/27/99
93	16420	U.S. L.D., Inc.	09/10/96	12/03/96
94	19230	U.S. Telephone Holding, Inc.	04/24/98	05/29/98

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	Docket Number		Date Filed	Date Approved
95	17862	U.S. West Interprise	08/22/97	11/19/97
96	19740	USN Communications Southwest, Inc.	08/12/98	09/16/98
97	21716	Valence Communications Services, Ltd.	11/24/99	11/24/99
98	21194	Vartec Telecom, Inc.	07/30/99	09/03/99
99	17922	Waller Creek	06/02/98	08/10/99
100	21661	WebFire Communications, Inc.	11/15/99	11/15/99
101	19727	Westel, Inc.	08/11/98	09/14/98
102	21652	Wes-Tex Telecommunications, d/b/a WESTEX Telecom	11/12/99	11/12/99
103	21604	Z-Tel Communications, Inc.	11/05/99	11/05/99

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	Docket Number		Date Filed	Date Approved
1	17269	AccuTel	03/26/97	06/04/97
2	19550	ADN Enterprises, Inc. d/b/a Trinity Telephone	07/01/98	10/27/99
3	18456	Advance Comm.	12/09/97	02/25/98
4	20798	AFANEH, Inc.	04/27/99	07/01/99
5	21061	Affinity Network, Inc.	07/01/99	08/05/99
6	19576	Alternative Telephone Connections, Inc.	07/06/98	09/23/98
7	18613	American Phonecom	12/31/97	03/12/98
8	17792	Austico Comm. Inc.	08/12/97	11/04/97
9	17593	Basicphone, Inc.	06/17/97	09/10/97
10	18382	Brooks Fiber	11/20/97	12/30/97
11	19076	Buy-Tel Communications, Inc.	03/18/98	06/11/98
12	20179	C2C Fiber, Inc.	11/30/98	01/08/99
13	16770	Call for Less	12/11/96	03/05/97
14	17148	Capital Telecomm, Inc	02/28/97	05/21/97
15	19180	Cellufone of Texas, Inc.	04/17/98	06/24/98
16	16737	Choctaw Comm	12/04/96	02/19/97
17	20894	Ciera Network Systems, Inc.	05/18/99	07/09/99
18	20609	Comm South Companies, Inc.	03/09/99	06/03/99
19	19852	Communications Pearl, Inc.	09/14/98	12/14/98
20	17796	Comtel	08/13/97	11/04/97
21	18571	CS Wireless, Inc.	12/23/97	03/12/98
22	19346	CTJ Investiments, Inc. d/b/a Texas Cellular Comm.	05/14/98	08/12/98
23	17895	Dialtone d/b/a Dial Svc	08/26/97	11/19/97
24	19285	Diamond Communications International, Inc.	05/06/98	07/22/98
25	19065	Diamond Telco-Your Home Telephone Store	03/16/98	06/11/98
26	20245	Discount Calling, Inc.	12/16/98	01/20/99
27	17548	DMJ Comm., Inc.	06/05/97	10/27/99
28	20246	DPI-Teleconnect, Inc.	12/16/98	01/20/99
29	16869	E Z Talk	01/08/97	03/26/97
30	16937	Easy Cellular	01/23/97	04/23/97
31	19539	Express Telecommunication, Inc.	06/26/98	09/23/98
32	19179	Faithnet Telecommunications, Inc.	04/17/98	06/24/98
33	16485	Fast Connections, Inc	09/30/96	10/27/99
34	17974	First Telecom. Ntwk.	09/12/97	12/04/97
35	20046	Fort Bend Long Distance d/b/a Fort Bend Comm.	11/03/98	01/20/99
36	18487	Frontier Telemgt.	12/16/97	03/12/98
37	17791	Hollywood Comm.	08/11/97	11/04/97
38	20969	JTC Communications, Inc.	06/14/99	07/19/99
39	17716	Local Fone Service	07/22/97	10/22/97
40	16950	Local Tel Svc Co	01/24/97	04/23/97
41	19946	Local Telecom Service, L.L.C.	10/06/98	11/10/98
42	17900	Lone Star Comm.	08/27/97	11/19/97
43	18080	Matrix Telecommun.	10/07/97	12/17/97
44	20819	Media Communications Consultants, L.L.C.	04/20/99	06/04/99
45	19363	Metro Connections, Inc.	05/19/98	08/12/98

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	Docket Number		Date Filed	Date Approved
46	16618	MetroLink	11/06/96	01/22/97
47	18022	Metrophone	09/23/97	12/17/97
48	18053	MiComm Services,Inc	09/30/97	12/17/97
49	19963	Morris Communications	10/08/98	12/14/98
50	16957	M-Tel Resources, Inc	01/27/97	04/23/97
51	18457	Nationwide Comm.	12/09/97	02/25/98
52	20177	Net-tel Corporation	12/01/98	02/18/99
53	18120	NHS d/b/a Maxtel	10/16/97	01/14/98
54	20254	NOS Communications, Inc.	12/17/98	03/11/99
55	18708	NOW Communications	01/20/98	04/01/98
56	17681	Ntwk. Oper. Svcs.	07/10/97	10/01/97
57	17524	Omni Prism	05/30/97	08/21/97
58	17663	Omniplex	07/07/97	10/01/97
59	17569	Penthouse Suites	06/11/97	09/10/97
60	20807	PhoneSence	04/27/99	07/01/99
61	17666	Phonit, Inc.	07/08/97	10/01/97
62	16789	Posner	12/13/96	03/05/97
63	16949	Preferred Carrier Svcs	01/24/97	04/23/97
64	17852	Preferred Payphones	08/20/97	11/04/97
65	17820	Premiere Ntwk Svcs.	08/15/97	11/04/97
66	17845	Progressive Concepts	08/20/97	11/04/97
67	19530	Quick-Tel	06/24/98	08/26/98
68	18361	Quintelco, Inc.	11/13/97	02/05/98
69	16669	Reconex	11/20/96	02/05/97
70	17291	Rent City	03/31/97	06/26/97
71	20791	Rosebud Cotton Co. d/b/a Rosebud Telephone	04/26/99	07/01/99
72	20867	Snappy Phone of Texas	05/11/99	07/09/99
73	19202	Stargate Communications, Inc.	04/21/98	06/24/98
74	20100	State Communications, Inc.	11/16/98	01/12/99
75	21467	State Discount Telephone	10/01/99	11/04/99
76	19427	Suretel, Inc.	06/02/98	08/26/98
77	17400	Telco USA, Inc.	04/29/97	07/17/97
78	18079	Telenetwork, Inc.	10/07/97	12/17/97
79	19064	Tele-One Communications, Inc.	03/16/98	06/11/98
80	17863	Teligent, Inc.	08/22/97	11/19/97
81	19082	Tel-Link LLC	03/20/98	06/11/98
82	21469	Tel-Star Utility Corp.	10/01/99	11/14/99
83	17243	Texas Comm So	03/21/97	06/04/97
84	19976	Texas Communications, Inc. d/b/a TXNET	10/14/98	12/14/98
85	18987	Texas Hometel, Inc.	03/09/98	05/21/98
86	16765	Texas Teleconnect	12/10/96	03/05/97
87	19637	The Telephone Reconnection, Inc.	07/21/98	10/08/98
88	17229	TIE	03/20/97	06/04/97
89	17275	Time Warner Connect	03/27/97	06/04/97
90	18405	Tin Can Comm.	11/26/97	02/05/98
91	19984	Trans National Telecommunications	10/15/98	12/14/98
92	19622	Transtar Communications, Inc.	07/17/98	10/27/99
93	18023	U.S. Online	09/23/97	12/17/97

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	Docket Number		Date Filed	Date Approved
94	16360	U.S. Telco, Inc.	08/28/96	12/03/96
95	21225	United Communications Systems, Inc.	08/10/99	09/14/99
96	19623	United Telephone Company d/b/a UTEL	07/17/98	10/08/98
97	17401	US Long Dist	04/29/97	07/17/97
98	18779	Value-Net, Inc.	02/04/98	04/21/98
99	17444	Valu-Line of Longview	05/14/97	08/06/97
100	19274	Wholesale Network, Inc. d/b/a Local Network	05/04/98	07/22/98

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	Docket Number		Date Filed	Date Approved
1	17210	GTE	03/14/97	05/21/97
2	17352	Galveston Cellular	04/16/97	10/27/99
3	17351	Houston Cellular	04/16/97	06/26/97
4	17150	AT&T Wireless Svc	04/23/97	06/26/97
5	17699	GTE Mobilnet-Austin	07/16/97	10/01/97
6	17699	GTE Mobilnet-Houston	07/16/97	10/01/97
7	17699	GTE Mobilnet-RSA11	07/16/97	10/01/97
8	17699	GTE Mobilnet-RSA16	07/16/97	10/01/97
9	17699	GTE Mobilnet-RSA17	07/16/97	10/01/97
10	17699	GTE Mobilnet-RSA21	07/16/97	10/01/97
11	17699	GTE Mobilnet-S.TX	07/16/97	10/01/97
12	17699	GTE Mobilnet-SW	07/16/97	10/01/97
13	17699	GTE Mobilnet-TX10B3	07/16/97	10/01/97
14	17708	360 Communications	07/18/97	10/01/97
15	17734	Western Wireless	07/25/97	10/22/97
16	17931	U.S. Cellular	09/04/97	12/04/97
17	18364	SWBT Wireless	11/14/97	02/05/98
18	18402	Dobson Cellular	11/25/97	02/05/98
19	18455	Sprint Spectrum	12/09/97	02/25/98
20	18525	Aerial Comm.	12/19/97	03/12/98
21	19937	Meretel Communications Limited Partnership	10/02/98	11/06/98
22	19985	Nextel of Texas, Inc.	10/15/98	12/14/98
23	20140	ASAP Paging Inc.	11/24/98	02/18/99
24	20139	Awesome Paging, Inc.	11/24/98	02/18/99
25	20142	Baystar	11/24/98	02/18/99
26	20141	Central Link	11/24/98	02/18/99
27	20137	GTE Mobilnet of South Texas Limited Partnership	11/24/98	10/27/99
28	20144	Digi Comm Communications, Inc.	11/25/98	02/18/99
29	20145	Highland Digital Paging	11/25/98	02/18/99
30	20146	Metrotel	11/25/98	02/18/99
31	20147	Texas Communications	11/25/98	02/18/99
32	21062	STPCS Joint Venture, LLC d/b/a Sol Communications	07/01/99	08/19/99
33	17190	Primeco Personal Comm.	6/5/97	10/27/99
34	20056	Amarillo Celltelco	11/498	12/09/98

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Approved Wireless

Docket Number	Date Filed	Date Approved
		1/14/1998
		10/27/1999

Habeeb Affidavit – Attachment D

Habeeb Affidavit – Attachment C

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Missouri	)	CC Docket No. ________

AFFIDAVIT OF DAVID R. TEBEAU

TATE OF TEXAS)
)
COUNTY OF DALLAS)

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STATE OF COMPETITION AFFIDAVIT

I, David R. Tebeau, being of lawful age and duly sworn upon my oath, do hereby depose and state as follows:

1. My name is David R. Tebeau. My title is Area Manager – Competitive Analysis for Southwestern Bell Telephone Company ("SWBT"). My business address is 311 S. Akard, Room

1840.04, Dallas Texas.

PROFESSIONAL EXPERIENCE

2. I began employment with SWBT in July 1962. In 1992, I was appointed to my current position, Area Manager - Competitive Analysis. In this position I am responsible for preparing competitor profiles, evaluating product and revenue impacts from competitive losses, advising management of strategic and policy issues raised by competitive activities, and testifying on 271 related issues in Missouri.

PURPOSE OF AFFIDAVIT

3. My affidavit describes the status of local exchange competition in the State of Missouri since the enactment of the Federal Telecommunications Act of 1996 ("1996 Act") and demonstrates that SWBT has met the requirements of "Track A" under 47 U.S.C. § 271(c)(1)(A). This affidavit will focus specifically on Competitive Local Exchange Carriers ("CLECs"), how and where they operate in Missouri, and the market segments in which they are competing. All information is as of February 2001, unless otherwise noted. (See Attachment A).

CLEC MARKET ENTRY IN MISSOURI

4. Local competition is thriving in Missouri. More than 70 CLECs are certified to operate in Missouri, and, as of February 28, 2001, SWBT had entered into 119 approved interconnection agreements in the State. (See Attachment B). As described in detail in Attachment C, many of these CLECs are providing facilities-based service to both business and residential customers, thereby demonstrating that Southwestern Bell satisfies Track A in Missouri.

5. The success of these CLECs also demonstrates that the local market in Missouri is open to competition. As discussed in more detail below, Southwestern Bell uses three conservative methodologies to estimate the number of lines served by facilities-based CLECs in Missouri. Two of these methodologies are based on the number of interconnection trunks leased by CLECs in the state, and the third is based on the CLECs' own entries in the E911 database. As Tables 1 and 2 demonstrate, each of these methodologies, whether considered in isolation or together with CLECs' resold service, shows that CLECs are taking advantage of Missouri's open local market.

Table 1
Facilities-Based CLEC Lines in
SWBT's Missouri Service Areas as of February 2001

Method Used	Number of CLEC Access Lines in SWBT Territory		
	Residential	Business	Total
Interconnection Trunks 2.75:1 Ratio + UNE-P	56,706	275,923	332,629
E911 Lines + UNE-P	24,464	142,406	166,870
Interconnection Trunks 1:1 Ratio + UNE-P	21,402	129,724	151,126

Table 2
Missouri CLEC Access Lines (Incl. Resale) – February 2001

Method Used	CLEC Lines	Estimated Market Coverage
Interconnection Trunks 2.75:1 Ratio + UNE-P +Resale	430,480	14.2%
E911 Lines + UNE-P + Resale	264,721	9.2%
Interconnection Trunks 1:1 Ratio + UNE-P + Resale	248,977	8.7%

6. Significantly, as Table 2 demonstrates, the current level of competition in Missouri is substantial. CLECs have already installed enough switching capacity in Missouri to serve every single SWBT customer in the State. (See Table 4). CLECs' existing collocation arrangements are in central offices that allow them to serve 88.3% percent of the business customers in SWBT's serving area, and 79.0% of the residential customers. (See Table 5). And CLECs are competing for business not just in central urban areas, but also in smaller communities such as Cedar Hill Lakes (pop. 234), Neosho (pop. 9,531), and Joplin (pop. 44,612).[1]

7. Moreover, nearly every measure of local competition in Missouri is growing rapidly. Between July 2000 and February 2001, for example, facilities-based E911 listings grew 64.2% in Missouri, and unbundled network elements ("UNE") loops grew 82.2%. During the same period, collocated wire centers Missouri grew 22.1%, and operational collocation arrangements grew 472.3%. (See Attachment D). And as experience in Texas demonstrates, these indicators of local competition can be expected to increase even more substantially in the wake of 271 relief, once the large interexchange carriers have a real incentive to serve the local market.

8. Competitors are employing a variety of innovative technologies and deployment strategies – including fixed wireless, cable, fiber, DSL, UNE, and resale – to provide services to the local market. And they are actively marketing those services: Attachment E to this affidavit contains

numerous articles and CLEC advertisements soliciting customers in Missouri. These advertisements demonstrate that the Missouri local market is open, and that CLECs are actively competing with SWBT to win customers.

FACILITIES-BASED PROVIDERS

9. Facilities based carriers are providing service in Missouri by building their own networks, leasing UNEs from SWBT, or combining those two approaches.

10. Table 3 below identifies 43 Missouri facilities-based carriers providing service. Twenty-one of these carriers currently appear to provide local voice service to Missouri customers. The remaining carriers appear to provide facilities-based services such as DSL or data services for Internet Service Providers. CLECs thus have demonstrated their ability to provide a variety of services to Missouri consumers. Further, as discussed in more detail later in this affidavit, CLECs currently providing data or DSL services are in no way precluded from deploying voice grade service when they choose to avail themselves of that option.

11. SWBT, of course, does not have access to an exact accounting of access lines served by CLECs in Missouri over their own facilities, nor does SWBT have access to a detailed inventory of CLEC network. Only the CLECs themselves have access to such data. However, as set out in detail below, CLEC records in SWBT's E911 database and CLEC interconnection trunk orders provide two means of estimating the number of access lines currently served by facilities-based carriers in Missouri. CLEC collocation arrangements further serve to identify the number of lines potentially targeted by those carriers for service in the future.

*****(Table 3)*****
Facilities-based Carriers in Missouri and
Their Methods of Providing Service - as of February 2001

Facilities-based Provider	Use Own Facilities	Lease UNEs
Allegiance Telecom		
Alltel Communications		
AT&T (Teleport)		
Birch Telecom		
@Links Network (Dakota Services)		

Bluestar Networks		
Broadspan (D.b.a. Primary Network),MCG		
Comm South		
Connect Communications		
Covad		
Digital Teleport Inc		
DSL Net		
Empire		
e.spire Communications (ACSI)		
Everest Connections		
Gabriel Communications		
Global Crossing / Frontier		
Intermedia Communications		
IP Communications		
Ionix (Feist)		
Jato		
KMC Telecom		
Level 3		
Logix Communications (Dobson)		
Maverix		
Mcleod USA		
Missouri Telecom		
Navigator Telecommunications		
New Edge		

New Path		
NextLink -		
NorthPoint		
Omniplex Comm. (USA Exchange)		
Prism Communications		
Qwest (U.S. West)		
Rhythms Links		
Sprint Communications Inc		
Teligent Inc		
Vectric Communications		
Wiliams Local Network		
Winstar		
Worldcom Technologies (MFS & Brooks)		
XO / Nextlink		

E911 DATABASE & UNE-P

12. Facilities-based CLECs that utilize their own switch(es) for providing service to their end users are responsible for directly inputting telephone numbers for those customers into the E911 database, and for designating whether the service provided to those telephone numbers is business or residential. Because facilities-based CLECs themselves are responsible for listing numbers in the E911 database, the E911 database contains information on customers' telephone numbers served by facilities-based CLECs that is not available through any other SWBT database or system. The E911 database therefore is a good basis for conservatively estimating the number of local subscriber lines served by facilities-based carriers.

13. Facilities-based carriers are identified in the E911 database by a specific Company ID Code. Among other things, this CLEC-specific ID Code allows the emergency services organization to

contact the serving CLEC for emergency services such as line interrupt and call trace. CLECs utilizing their own switches also obtain specific NXX codes assigned solely for their use. Using the CLEC's assigned NXX code and Company ID, the E911 database identifies which CLECs are providing local service from their switches (since the NXX codes are specific to the CLEC's switch), and whether service to a particular telephone number has been designated as business or residential by the CLEC. Attachment C to my affidavit identifies the carriers providing facilities-based service to business and residential customers based on E911 data.

14. Standing alone, the E911 database substantially understates the total number of lines served on a facilities-basis. Most significantly, a CLEC's E911 listings do not include lines the CLEC serves by leasing SWBT UNE switch ports or UNE-P arrangements, since these are still physically served off a SWBT switch. To obtain a more accurate estimate of CLEC facilities-based lines, Southwestern Bell therefore adds to the E911 listings the UNE-P arrangements that CLECs have purchased. (With recent enhancements to SWBT's LSC/DSS interface, Southwestern Bell now is able to determine the business/residence split of CLECs' UNE-P arrangements. A report of Missouri UNE-P lines, split by residence and business, is included in Attachment C.[2]

15. As of February 2001, the E911 database showed that CLECs were serving 119,460 lines on facilities based connections in Missouri. As of the same date, CLECs served 47,410 lines over UNE-P. Together, these measures show that CLECs were serving at least 166,870 lines on a facilities-basis in Missouri as of February 2001.

16. However, even when the E911-based estimate is adjusted to include UNE-P arrangements, it still results in an overly conservative estimate of CLECs' facilities-based lines. For example, E911 listings only represent those customer lines from which outbound calls can be made. As a result, business customers such as call centers, reservationists, telemarketing centers, and Internet providers will have few of their access lines represented in the E911 database. In addition, when a number is ported from an ILEC to the new serving CLEC, the NXX code remains the ILEC's NXX code, and will therefore appear as the ILEC's line in the E911 database. Finally, CLECs themselves may make errors in entering E911 listings, and SWBT does not 'police' those entries to ensure that they are accurate and complete. For all these reasons, the listings in the E911

database provide only a conservative estimate for the number of business and residential listings served by facilities-based CLECs.

INTERCONNECTION TRUNKS AND UNE-P

17. Interconnection Trunks are used by facilities-based CLECs to connect their switching facilities to SWBT's End-Office or Tandem switches for the purpose of passing traffic from their customers to SWBT's or vice versa. Interconnection trunks, therefore, provide another means of estimating the number of customer lines served over the CLEC's network. As of the end of February 2001, CLECs in Missouri installed 103,716 interconnection trunks.

18. Communications professionals use trunk-to-line ratios to determine the number of trunks required for delivering traffic to and from telecommunications networks. US LEC Corp. states that management experience indicates the use of a 5 to 1 lines-to-trunk ratio.[3] In its UNE Fact Report filed with the FCC during the UNE Remand proceeding, the United States Telecom Association ("USTA") noted that, based on ILEC engineering experience, a single trunk can support up to approximately 10 facilities-based lines. However, because CLEC networks may not yet be engineered with a high level of efficiency, and CLECs may target individual customers, such as ISPs, that require a high number of interconnection trunks, USTA found it conservative to assume that CLEC trunks are serving between 2.5 and 5 facilities-based lines per trunk.[4]

19. Taking the very conservative approach of 2.75 lines per trunk, the total facilities based CLEC lines served by these trunks is 103,716 * 2.75 = 285,219 lines.

20. Like E911-based estimates, interconnection trunks do not include lines which CLECs provision using UNE-P arrangements. UNE-P arrangements do not require interconnection trunks because the traffic need not be transported from the CLEC switch to the SWBT switch. Consequently, it is appropriate to add the number of UNE-P lines to the line-to-trunk ratio in order to estimate the access lines served by facilities-based CLECs. As noted, the total UNE-P lines currently served by carriers in Missouri as of the end of February is 47,410, making the total facilities-based lines serviced by CLECs an estimated 332,629.

21. As noted earlier, only the carriers themselves know the number of business and residential lines they are currently serving over their own facilities. However, absent specific data from the

CLECs themselves, 332,629 facilities based lines in Missouri is a conservative estimate based on the trunks currently being utilized CLECs.

22. The Missouri PSC Staff further confirmed the accuracy of this method of estimation in its survey of Missouri CLECs. According to information provided by the CLECs in response to a survey conducted at the end of August 2000,[5] the Missouri PSC staff determined that CLECs served 247,355 business and residential lines on a facilities-basis.[5] According to SWBT records, as of that date, CLECs were using 86,077 interconnection trunks and 28,949 UNE-P arrangements. Subtracting the UNE-P arrangements from the number of lines the CLECs themselves reported, and then dividing that total by the number of interconnection trunks then in service, yields a trunk-to-line ratio of 2.54:1. SWBT's 2.75:1 ratio is therefore only slightly different than the ratio that results from the number of lines reported by the CLECs themselves. In addition, the MoPSC order approving the SWBT's 271 application states, "the Staff's estimates based on data collected from Missouri CLECs is consistent with SWBT's estimates, and therefore, the Commission finds that CLECs serve approximately 12% of the access lines in SWBT territory."[6]

23. In its comments on Southwestern Bell's Texas 271 filing, the Department of Justice ("DOJ") disagreed with the 2.75 lines per trunk ratio used to estimate the number of access lines being served by facilities based CLECs. The DOJ instead recommended a 1:1 ratio as a "more reasonable multiplier."[7] That 1:1 ratio is unrealistic. As noted, the CLECs' own reported numbers reveal a line-to-trunk ratio of approximately 2.54:1. Nevertheless, even the unrealistically conservative 1:1 ratio shows substantial local competition in Missouri. Chart No.1 provides a graphic illustration of the growth in CLEC lines based on local interconnection trunks (at a 1:1 line ratio), plus UNE-Ps in Missouri - from February 2000 through February 2001. This chart clearly demonstrates extensive competition in Missouri, as well as rapid growth.

24.

Regardless of whether estimates of facilities-based competition are based on E911 data or on interconnection trunk orders, the numbers demonstrate that customers in Missouri have a choice in local service providers, and that competing providers have established themselves as a significant and growing presence in the market place.

CLEC SWITCHES

25. While CLEC switches are of limited utility in quantifying the exact number of customers and access lines served by CLECs, it is illuminating to consider the raw capacity contained in CLEC switch deployments. Before the advent of fiber optics, the practical distances that copper loops operated primarily determined wire center boundaries. Therefore, the number of SWBT local switches was initially determined by this limitation.

26. Today, through the use of fiber optic networks, switches can serve customers at a much greater distance than before. In addition, remote-switching modules can operate up to 600 miles from the main switch. In today's environment, local switching is limited by capacity, not distance, and modern switches are modular so that capacity can be added quickly as needed. As a result, CLECs can place a single switch in a metropolitan area and serve the entire surrounding community. As the following Table shows, the CLEC switches currently installed in Missouri have more than sufficient capacity to serve more access lines than SWBT currently serves in the entire State.

(Table 4)
CLEC Switches in Missouri
As of February 2001

No. of Operational CLEC Switches in Missouri	Maximum Capacity of CLEC Switches	SWBT Access Lines Missouri	% CLEC Access Line Coverage Based On Current Switch Placement
22	4,000,000 Lines	2,610,027	> 100%

Note: The number and type of operational CLEC Switches is from the CLEC Report 2001, 13th Edition, from New Paradigm. Additional CLEC switches may be deployed which are not here counted, and these would only further inflate the raw capacity reported above. Switches above are a mix of 5ESS, DMS-100/500, and Siemens EWSD - capacities are the aggregate of manufacturer's specifications.

27. The competitive significance of CLEC switching capabilities is particularly highlighted when the central offices where CLECs have chosen to collocate are more closely examined, as in the next section.

COLLOCATION

28. SWBT provides collocation to facilities-based carriers. These carriers use collocation as one means of obtaining interconnection and access to unbundled network elements. The existence of

collocated carriers – and the locations selected by those carriers for their collocation – therefore provides a strong indicator of both the existence and potential of facilities-based competition.

29. Not every collocation facility is used for voice telephone service. Some are used, for example, to provide data services, or private line services. Nevertheless, each collocation represents a step in the development of a competitive network by a facilities-based carrier. As of the end of February, SWBT has completed more than 681 physical and 13 virtual collocations in Missouri, with another 57 physical collocation arrangements pending.[8]

30. As set out in Table 5 below, CLECs have chosen to collocate in Missouri wire centers that serve a large portion of the business and residential lines provided by SWBT. Thus, through collocation, facilities-based CLECs have positioned themselves to directly compete for the vast majority of customers – both business and residential – currently served by SWBT.

Table 5
Total Lines versus Lines in Collocation Wire Centers
In SWBT Missouri Serving Areas – February 2001

		February 2001 All SBC Wire Centers	February 2001 Collocation Wire Centers	Feb. 2001 Percent of Total
Missouri	Number of Wire Centers	223	94	35.9%
	Access Lines			
	Business	832,000	734,102	88.3%
	Residence	1,752,154	1,383,642	79.0%
	Public	25,873	21,836	84.4%
	Total	**2,610,027**	**2,139,580**	**82.0%**

31. Including only completed collocations, facilities-based CLECs are in position to serve 79.0% of residential access lines, 88.3% of the business access lines currently served by SWBT in Missouri.

32. Several CLECs included in the calculations in Tables 5 above (@link, Covad, NorthPoint, and others) provide DSL or data services in other states and are now collocating in Missouri. A CLEC's decision to enter the market through data or DSL services in no way prevents that carrier from also providing voice grade telephone service. Further, the collocation activity of these CLECs demonstrates that they are positioning themselves to be able to provide a full range of services to the majority of Missouri customers in the future

RESALE PROVIDERS

33. In addition to the previously mentioned facilities-based providers, numerous resale providers also provide service in SWBT's service territory. Missouri resellers have attracted a significant number of residential customers, and several of the facilities-based providers also resell services, as seen in Table 6 below.

(Table 6)
Resold Lines in SWBT's Missouri Territory as of February 2001

CLEC	Business Lines	Residence Lines	Total
Pure Resellers' Resold Lines	3,072	21,357	24,429
Facilities-based CLECs' Resold Lines	59,291	14,131	73,422
Total Resale	62,363	35,488	97,851

NOTE: Coin Lines are included in Business Lines

COMPETITIVE BENEFITS

34. SBC filed its Texas 271 Application with the FCC in January 2000. Approval was granted at the end of June, and SBC began offering Long Distance Service to subscribers in Texas on July 10, 2000. As Table 7 below illustrates, the growth in local competition in Texas since SWBT's application was filed has been phenomenal.

Table 7
Growth in Competitive Indicators for Texas 271 Application
January 2000 to February 2001

Competition Indicators	Texas
Lines Lost to Facilities Based CLECs	1,243,000 / 2,656,000 (% growth = 114%)
Total Lines Lost (includes resale)	1,590,000 / 2,998,000 (% growth = 89%)
Interconnection Trunks	398,000 / 584,215 (% growth = 47%)
Operational Physical Collocations	1,012 / 2,360 (% growth = 133%)
Unbundled Stand-Alone Loops	49,000 / 121,954 (% growth = 148%)
Orders Processed per month (Electronic and Manual)	171,000 / 394,000 (% growth = 130%)
UNE Loop/Port Combinations	148,000 / 1,049,492 (% growth = 609%)
E911 Listings	368,327 / 532,741 (% growth = 44%)

35. Table 7 above encompasses the six months immediately before and after the approval of

Southwestern Bell's Texas 271 Application, and demonstrates that significant increases in competitive activity can be expected as SWBT moves toward and obtains long distance approval for Missouri.

36. For example, subsequent to the approval of the Texas application, Texas consumers joined New York consumers as the only states where AT&T Local One Rate® promotional services are offered. This plan – bundling local and long distance into one package offering – was promoted through direct mail and telemarketing in Austin, Dallas, Houston, San Antonio and South Texas, offering 60 minutes of free long distance to consumers as an incentive to choose AT&T Local One Rate for local and long distance service. Most importantly the AT&T Consumer Sales & Services Contacts for AT&T Local Service list only two geographical options for this service: New York – AT&T Local One Rate; and Texas – AT&T Local One Rate. No other states are apparently given these promotional alternatives; they are available ONLY in States in which the incumbent Bell Operating Company has been given access to AT&T's long distance marketplace. [9]

37. In July, coincident with SBC's entry into the Texas long distance market, AT&T also reduced its long distance rates in Texas (offered through the Texas One Rate Plan) by greater than 50% - from 15¢ a minute to 7¢ a minute. In addition, in a Wall Street Journal article on November 30, 2000[10], AT&T is cited as launching a separate promotion (excerpted below):

AT&T to Offer Free Cable Telephony In Campaign to Hit Subscriber Goals
AT&T Corp., scrambling to meet a year-end promise to Wall Street to sign up thousands of new cable-telephony customers, plans to offer as many as five months of free local and long-distance service to people who subscribe. The new marketing campaign, which is expected to begin in a number of big cities on Friday, is aimed at boosting the number of AT&T consumers for "cable telephony," industry parlance for phone service over cable-TV lines. The campaign offers free installation and as many as five months of free local and long-distance phone service.[9]

38. AT&T recently responded to SBC's entry into the Kansas and Oklahoma long distance markets by offering 30 free minutes of long distance to selected residential customers. This offer was announced just days before SBC began offering long distance in these two states. (See

Attachment E).

39. WorldCom responded to SWBT Texas 271 approval with the introduction of three new rate plans: MCI WorldCom 7¢ Anytime; 9¢ Anytime and WorldCom Weekends. Effective September 7, 2000 WorldCom also began offering Texas consumers different options (the One Company Advantage 200 and One Company Advantage 7 plans) for bundling local, local toll and long distance calling, as well as discounts on calling features.

40. These examples are only a sample of the competitive alternatives available to consumers in Texas today as a result of the approval of SBC's Texas 271 application. It is evident that opening the long distance market in Missouri will further attract competition in both the local and long distance markets, to the significant advantage of consumers.

CONCLUSION

41. The evidence is clear that CLECs are providing service to "one or more unaffiliated competing providers of telephone exchange service...to residential and business subscribers."[11] Numerous CLECs provide these services either exclusively or predominantly over their own facilities. The Track A provisions of the 1996 Act have been satisfied. In addition, the competition provided by these CLECs has spread to nearly every community in Missouri. The competitors have enlisted a wide variety of technologies to deploy networks and make services available to consumers.

42. The benefits to consumers from competition are evident and pervasive, and Southwestern Bell should be permitted to enter the long distance market in Missouri to bring these benefits to Missouri consumers.

43. This concludes my affidavit.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on ______________________, 2001

____

David R. Tebeau
Area Manager-Competitive Analysis

STATE OF TEXAS
COUNTY OF DALLAS

Subscribed and sworn to before me

This ________ day of ____________________, 2001.

____
Notary Public

[1] Based on E911 listing data.

[2] See Ex Parte Letter from Edwardo Rodriguez, SBC, to Magalie Roman Salas, FCC, Joint Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Kansas and Oklahoma, CC Docket No. 00-217 (FCC filed Dec. 20, 2000) (explaining the LSC/DSS enhancement); included as Attachment F to my Affidavit.

[3] US LEC Corp. Equivalent Access Lines, http://www.uslec.com/equiv.htm. Visited October 6, 2000.

[4] See, e.g., the United States Telecom Association's UNE Fact Report filed with the FCC during the UNE Remand proceeding: "First, we can estimate CLEC lines based on the number of interconnection trunks CLECs are using. Facilities-based CLECs do not obtain trunks unless they have local lines and traffic to support and use such trunks. Based on ILEC engineering experience, a single trunk can support up to approximately 10 facilities-based lines. Since CLEC networks may not be engineered for maximum efficiency (i.e., to serve the most efficient number of customers per trunk), and since CLECs disproportionately serve heavy-use Internet lines, we can conservatively assume that CLEC trunks are serving between 2.5 and 5 facilities-based lines per trunk." UNE Fact Report at III-14, attached to Comments of the United States Telecom Association, Implementation of the Local Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98 (FCC filed May 26, 1999).

[5] Staff's Motion For Leave To Late File Staff's Summary of Evidence, Comments and Positions at 4, Application of Southwestern Bell Telephone Company to Provide Notice of Intent to File and Application for Authorization to Provide In-region InterLATA Service Originating in Missouri Pursuant to Section 271 of the Telecommunications Act of 1996, Case No. TO-99-227 (MO PSC filed Dec. 22, 2000) and the Affidavit of William L. Voight at ¶23 as attached to the Staff's Response Comments to October Question and Answer Session, and To Interim Consultant Report, Application of Southwestern Bell Telephone Company to Provide Notice of Intent to File and Application for Authorization to Provide In-region InterLATA Service Originating in Missouri Pursuant to Section 271 of the Telecommunications Act of 1996, Case No. TO-99-227 (MO PSC filed Oct. 26, 2000).

[6] See Order Regarding Recommendation On 271 Application Pursuant To the Telecommunications Act of 1996 and Approving the Missouri Interconnection Agreement (M2A) at 20, Application of Southwestern Bell Telephone Company to Provide Notice of Intent to File an Application for Authorization to Provide In-Region InterLATA Services Originating in Missouri Pursuant to Section 271 of the Telecommunications Act of 1996, Case No. TO-99-227 (MO PSC filed Mar. 15, 2001) (App. C, Tab 98).

[7] See Comments of the United States Department of Justice at fn. 15, Application by SBC Communications, Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance for Provision of In-Region InterLATA Services in Texas, CC Docket No. 00-4 (FCC filed Feb.14, 2000).

[8] Pending collocations includes arrangements where SWBT has provided a price quote, where construction is under way, or where the CLEC/ALEC has already paid part of the cost of collocation.

[9] Three webpages may be consulted for this information: AT&T, *For Home:Customer Service Numbers, AT&T Residential Service*, http://www.att.com/help/callus/home/; AT&T, *As Advertised: AT&T Local One Rate*sm *New York*, http://www.att.com/local_service/ny/; and AT&T, *As Advertised: AT&T Local Service in Texas*, http://www.att.com/local_service/tx/. Interestingly, the AT&T Local One Rate promotion began in New York shortly before the FCC granted Bell Atlantic permission to offer long distance in New York. As of February 5, 2001, this promotional offering was not available in any other state.

[10] D. Solomon, *AT&T to Offer Free Cable Telephony in Campaign to Hit Subscriber Goals*, Wall Street Journal at A3 (Aug. 30, 2000).

[11] 1996 Act; 47 U.S.C. §271(c)(1)(A).

SWBT Missouri Section 271 Checklist Provisioning Status

Data through Feb. 2001 (unless otherwise noted)			
#	**CHECKLIST DESCRIPTION**	**PRODUCTS PROVIDED**	**MO**
1	Interconnection for the transmission and routing of telephone exchange service and exchange access at any technically feasible point within the carrier's network.	Total Interconnection Trunks Provided to CLECs (see Item #7 for more trunk information) a/o 3/5/01	103,716
		· One Way Trunks (SWBT/PT to CLEC)	9,633
		· One Way Trunks (CLEC to SWBT/PT)	5,010
		· Two Way Trunks	89,073
		Physical Collocation	
		· Operational	681
		· Pending	57
		Virtual Collocation	
		· Operational Arrangements	13
		· Pending Arrangements	3
		Number of Collocated Wire Centers	94
2	Nondiscriminatory access to network elements.	Number of CLECs passing orders	63
		Total orders processed in 1998	132,232
		· Manual	64,202
		· Electronic	68,030
		Total orders processed in 1999	267,899
		· Manual	171,082
		· Electronic	96,817
		Total orders processed in 2000	338,341
		· Manual	129,090
		· Electronic	209,251
		Total orders processed in Jan. and Feb. 2001	93,158
		· Manual	13,236
		· Electronic	79,922
3	Nondiscriminatory access to poles, ducts, conduits and rights of way.	· Total Number of Poles Attached	413
		· Total Feet of Duct Occupied	1,185,250
4	Local loop transmission from the central office to the customer's premises, unbundled from local switching or other services.	Stand Alone Loops	14,312
		Loop/port Combos	47,410
		· Residence	1,228
		· Business	46,182
		Total Unbundled Loops	61,722
5	Local transport from the trunk side of a wireline local exchange carrier switch unbundled from switching or other services.	Unbundled Transport	
		· Dedicated Transport Available	Yes
		· Shared Transport Available	Yes
6	Local switching unbundled from transport, local loop transmission or other services.	Stand Alone Switch Ports	171
		Loop/port Combos	47,410
		· Residence	1,228
		· Business	46,182

SWBT Missouri Section 271 Checklist Provisioning Status

Data through Feb. 2001 (unless otherwise noted)			
#	CHECKLIST DESCRIPTION	PRODUCTS PROVIDED	MO
		Total Unbundled Ports	47,581
7	Nondiscriminatory access to 911 and E911, directory assistance, and operator call completion services.	· E911 Trunks (not included in Item 1 Total)	111
		· DA/OA Trunks (not included in Item 1 Total)	395
		· CLECs using Directory Assistance Service	37
		· CLECs using "0" Call Completion Service	35
		· Are CLECs offered E-911 service directly to government bodies or interconnecting with SWBT/PTs existing service arrangements?	Yes
		Number of Facilities Based CLEC End User E-911 Listings SWBT/PT · Residence	23,236
		· Business	96,224
		· Total	119,460
8	White pages directory listing for customers of other carrier's telephone exchange service.	Number of CLEC End User White Pages Listings · Resale	112,591
		· Facilities Based	55,108
		· Total	167,699
9	Nondiscriminatory access to telephone numbers for assignments to the other carriers' telephone exchange service customers.	Telephone Numbers Provided to CLECs	
		· Numbers Assigned	4,140,000
		· Numbers Pending Assignment	110,000
10	Nondiscriminatory access to databases and associated signaling necessary for call routing and completion.	Access to 800, Line Information Database (LIDB), Calling Name Delivery Database (CNAM), and SS7 Signaling Network Available	Yes
11	Interim number portability through RCF or DID trunks. Each line ported represents conversion of an existing from AIT to a facilities-based provider.	Numbers Ported to CLECs via INP	
		· Residential Lines	0
		· Business Lines	8,749
		· Total	8,749
		Numbers Ported to CLECS via LNP	
		-Total In-Service Port Outs	245,320
12	Nondiscriminatory access to services and information required to allow implementation of dialing parity.	· Are additional access codes or digits needed to complete local calls to or from CLEC customers?	No
		· IntraLATA toll dialing parity available concurrent with AIT's provision of interexchange service?	Yes
13	Reciprocal compensation arrangements	Local and EAS Minutes of Use Exchanged Over Interconnection Trunks since 1/1/97	
		In Millions	
		· From SWBT/PT to CLEC	897.63
		· From CLEC to SWBT/PT	76.30
		· Total	973.93

SWBT Missouri Section 271 Checklist Provisioning Status

Data through Feb. 2001 (unless otherwise noted)			
#	CHECKLIST DESCRIPTION	PRODUCTS PROVIDED	MO
		Local and EAS Minutes of Use Exchanged Over Interconnection Trunks in December 2000	
		In Millions	
		· From SWBT/PT to CLEC	44.15
		· From CLEC to SWBT/PT	9.63
		· Total	53.78
		Local and EAS Minutes of Use Exchanged Over Interconnection Trunks in January 2001	
		In Millions	
		· From SWBT/PT to CLEC	62.66
		· From CLEC to SWBT/PT	6.61
		· Total	69.27
14	Offering for resale at wholesale prices any telecommunications services offered at retail to subscribers who are not themselves carriers.	Resold Access Lines	
		· Business Lines (Simple and Complex)	60,008
		· Private Coin Lines	2,355
		· Residential Lines	35,488
		· Total	97,851

SELECTED COMPETITIVE INDICATOR GROWTH					
		Missouri – July 2000 to February 2001 Growth			
ITEM	PRODUCTS PROVIDED	Jul-00	Feb-01	Jul00-Feb01 Growth	Jul00-Feb01 % Growth
CLEC E911 Listing	Number of Facilities Based CLEC End User E911 Listings	72,737	119,460	46,723	64.2%
Interconnection Trunks	Total Interconnection Trunks Provided to CLECs	85,249	103,716	18,467	21.7%
UNE Local Loop & Ports	Unbundled Stand Alone Loops	7,809	14,312	6,503	83.3%
	Unbundled Combos (Loop/Port Combos)	26,069	47,410	21,341	81.9%
	Total UNE Loops	33,878	61,722	27,844	82.2%
	Unbundled Switch Ports	2	171	169	na
	Total UNE Ports	2	171	169	na
Physical Collocation	· Operational *	119	681	562	472.3%
	· Pending	65	57	-8	-12.3%
Virtual Collocation	· Operational Arrangements *	0	13	13	na
	· Pending Arrangements	0	3	3	na
Number of Collocated Wire Centers		77	94	17	22.1%
Resale – Resold Access Lines	· Business Lines	47,745	60,008	12,263	25.7%
	· Private Coin Lines	628	2355	1,727	275.0%
	· Residential Lines	32,529	35,448	2,919	9.0%
	· Total	80,902	97,811	16,909	20.9%

* Collocation includes SBC ASI; 28 Physical, 8 Virtual collocation.

Monday March 5, 8:18 am Eastern Time

Press Release

AT&T Long Distance Customers in Oklahoma Get the Message: Thanks for Your Loyalty

BASKING RIDGE, N.J.--(BUSINESS WIRE)--March 5, 2001--AT&T said today that it is using an innovative new approach, a ``Customer Spot Award," to reward many of its loyal residential customers in Oklahoma.

During the brief time between their dialing of a call and its connection, AT&T will say ``thank you" and inform customers about their automatic award of free minutes of long distance service.

On March 3, a cross-section of AT&T residential customers began hearing a short message before their call from home is connected: ``Thank you for being a loyal AT&T customer. Please enjoy 30 minutes of free domestic long distance calling on us for a month. Look for the free-minute credit on your upcoming bill - and thanks again for using AT&T."

AT&T first tested this innovative way of rewarding residential customers in a trial with a cross-section of residential customers that ended in January 2001. The Customer Spot Award promotion in Oklahoma is part of the first broader application of this innovative technology.

``We found that customers loved being surprised with a reward that they can take advantage of so easily," said Leonard Mariani, vice president, Consumer Marketing, for AT&T Consumer. ``The combination of technology and real value is a winner. We are delighted to be able to say thank you to so many loyal customers in Oklahoma."

Customers don't have to call or sign up for the promotion. They can use their free domestic long distance minutes immediately, and they'll see the credit on an upcoming bill. Customers have to use the free minutes before they expire at the end of a month.

About AT&T

AT&T Corp. (www.att.com) is among the world's premier voice, video and data communications companies. With annual revenues of more than $62 billion and 160,000 employees, AT&T provides services to customers worldwide. Backed by the research and development capabilities of AT&T Labs, the company runs the world's largest, most sophisticated communications network and has one of the largest digital wireless networks in North America. The company is a leading supplier of data and Internet services for businesses and offers outsourcing, consulting and networking-integration to large businesses. Through its recent cable acquisitions, AT&T delivers broadband video, voice and data services to customers throughout the United States. Internationally, Concert, the AT&T/BT Global Venture, serves the communications needs of multinational companies and international carriers worldwide.

The foregoing are ``forward-looking statements" which are based on management's beliefs as well as on a number of assumptions concerning future events made by and information currently available to management. Readers are cautioned not to put undue reliance on such forward-looking statements, which are not a guarantee of performance and are subject to a number of uncertainties and other factors, many of which are outside AT&T's control, that could cause actual results to differ materially from such statements. For a more detailed description of the factors that could cause such a difference, please see AT&T's filings with the Securities and Exchange Commission. AT&T disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. This information is presented solely to provide additional information to further understand the results of AT&T.

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AT&T Readies Promotion for Local Service

Jennifer Files

08/30/2000
KRTBN Knight-Ridder Tribune Business News: San Jose Mercury News - California

AT&T Corp. plans to announce today that it will temporarily give away local phone service in 10 U.S. markets including some parts of the Bay Area, marking its biggest effort yet to capture a piece of the $60 billion local telephone business.

Customers who sign up for **AT&T** local service between Sept. 1 and Nov. 15 will receive free local calling through January. With some plans, subscribers can also get free long-distance. **AT&T**, of Basking Ridge, N.J., will waive most taxes and fees during the period for customers gained during the promotion.

AT&T's latest promotion covers two dozen Bay Area communities, where **AT&T** now provides phone service over its cable lines. It doesn't include San Jose, San Francisco or Oakland, which don't have the service.

The marketing initiative reflects the intensifying competition among the nation's largest phone service providers. As companies offer new services, they're slashing prices in a race to sign up subscribers before competitors lure them away.

That principle -- with its corollary -- that timely installation becomes more difficult as customers swarm to great deals -- is driving the war between phone and cable companies over high-speed Internet access, for instance.

AT&T's latest offer proves it's also true for the bread-and-butter phone business.

In the Bay Area, **AT&T** hopes to cut more deeply into Pacific Bell's near-monopoly on residential local phone service, a sector where no Pac Bell competitor has yet found a way to make a profit. Pac Bell has lost only about 2 percent of its residential phone customers in California in the four years since local phone deregulation, though competitors have captured a larger share of the more profitable business market.

Building new phone lines to customers' homes is prohibitively expensive, and while regulators have set up a system to let rivals piggy-back on Pac Bell's network, companies say it often doesn't make financial sense because of fees they must pay to Pac Bell.

MCI, for one, tried to sell local phone service in California but stopped signing up new customers because it said it was losing too much money.

So far, **AT&T** is Pac Bell's only sizable residential rival in the Bay Area, though alternative cable companies including Seren Innovations Inc. offer phone service in some cities.

"Cable is the most practical way of coming in and competing for residential customers," said Kelly Boyd, a senior analyst in the California Public Utilities Commission's Office of Ratepayer Advocates.

AT&T and other long-distance companies are beginning to lose market share, since local phone companies are slowly gaining regulators' permission to enter the long-distance business. For instance, by offering low rates and a well-known brand, Pacific Bell's sister company Southwestern Bell has signed up 500,000 **Texas** long-distance customers in less than three months after gaining the government's permission to sell the service.

In the Bay Area, **AT&T**'s local phone service costs $10 a month. Customers can also buy enhanced packages, including a $30.95 plan that offers unlimited local calling and 3 hours a month of local-toll and long-distance calling.

The company has previously given away installation and as much as one month's free **local service**, but not nearly on the scale of the current offer, which could give customers as much as 4 1/2 free months of service.

Overall, the company hopes to increase the number of local phone customers nationwide it serves via cable lines from 224,000 in June to more than 500,000 by the end of 2000.

The promotion extends to other metropolitan areas where **AT&T** sells telephone-over-cable service, including Chicago, Dallas, Denver, Hartford, Pittsburgh, Portland, Salt Lake City, Seattle and St. Louis.

AT&T has added installation workers to meet anticipated demand, said spokesman Andrew Johnson.

Currently, **AT&T** tells Bay Area customers it can hook up cable telephone service in seven to 10 days -- but only three days if they're ordering new service rather than transferring from Pac Bell. Increased demand from the promotion could lengthen the process to two weeks or more, said company spokesman Andrew Johnson.

"We know it's an aggressive offer, and we think it'll be a big splash in the market. We're going to do our darndest to get everybody through here as quick as we can," Johnson said.

In a separate development, Standard & Poor's warned Tuesday that it may cut **AT&T**'s credit and debt ratings, reflecting "concerns regarding **AT&T**'s cable television strategy, long-term prospects for **AT&T**'s core long-distance business, a more aggressive wireless expansion plan and the company's overall strategic direction."

Among other things, S&P said **AT&T**'s cable television strategy has "proven more time consuming and expensive" than expected. In a statement, **AT&T** said, "We have every reason for confidence in our long-term prospects."

AT&T shares rose $1.50 to $31.75 Tuesday.

AT&T touts free local phone-service deal

08/31/2000
Associated Press Newswires

DENVER (AP) - A bid by **AT&T** to lure local phone customers away from Qwest by offering a few months of free service might work if people stay with **AT&T** after the promotion expires, analysts say.

But analysts warn the deal could backfire if customers cancel.

New York-based **AT&T** is offering the deal in Denver; San Francisco; Chicago; Dallas; Hartford, Conn.; Pittsburgh; Portland, Ore.; Salt Lake City; Seattle; and St. Louis. **AT&T** is upgrading its television cable network in those areas to handle two-way communications.

In the Denver metro area, the promotion is being offered to about 260,000 households, in areas including northwest Denver, Wheat Ridge, Arvada, Lakewood, Golden and Aurora.

Customers have to sign up between Sept. 1 and Nov. 15. The free offer ends Jan. 31.

"It's an aggressive marketing promotion to be able to acquire customers and to remind people that they have a choice for local phone service," said Sarah Duisik, a spokeswoman for **AT&T** Broadband, the division based south of Denver that sells local phone service, high-speed Internet access and TV services through cable networks.

"They are essentially buying customers to get them there," Qwest spokeswoman Jane Morrissey said of **AT&T.**

Industry analysts speculate the promotion is a ploy to help **AT&T**, the nation's largest long-distance phone and cable-television company, reach its goal of signing up more than 500,000 local phone customers, more than double its most recently reported total, by year's end.

"They are under enormous pressure to more than double the number of customers they sign up per month to get to more than half a million by the end of the year," Morrissey said

Qwest, formerly U S West, is one of several regional companies that had a monopoly on local phone service for decades. Federal and state deregulation of the industry requires local markets be opened to other companies.

Jeff Kagan, an independent telecommunications analyst in Atlanta, said **AT&T**'s promotion might help it make inroads into the local phone market.

"If they can pull it off, then they will look like a hero and maybe they can gain some traction. The strategy could be to give phone service away so people love it, and they will want to keep it," he said.

"If they give the phone service away and customers cancel, that could be devastating to **AT&T**," Kagan added.

Monday March 5, 8:15 am Eastern Time

Press Release

AT&T Long Distance Customers in Kansas Get the Message: Thanks for Your Loyalty

BASKING RIDGE, N.J.--(BUSINESS WIRE)--March 5, 2001--AT&T said today that it is using an innovative new approach, a ``Customer Spot Award,'' to reward many of its loyal residential customers in Kansas. During the brief time between their dialing of a call and its connection, AT&T will say ``thank you'' and inform customers about their automatic award of free minutes of long distance service.

On March 3, a cross-section of AT&T residential customers began hearing a short message before their call from home is connected: ``Thank you for being a loyal AT&T customer. Please enjoy 30 minutes of free domestic long distance calling on us for a month. Look for the free-minute credit on your upcoming bill - and thanks again for using AT&T.''

AT&T first tested this innovative way of rewarding residential customers in a trial with a cross-section of residential customers that ended in January 2001. The Customer Spot Award promotion in Kansas is part of the first broader application of this innovative technology.

``We found that customers loved being surprised with a reward that they can take advantage of so easily,'' said Leonard Mariani, vice president, Consumer Marketing, for AT&T Consumer. ``The combination of technology and real value is a winner.

We are delighted to be able to say thank you to so many loyal customers in Kansas.``

Customers don't have to call or sign up for the promotion. They can use their free domestic long distance minutes immediately, and they'll see the credit on an upcoming bill. Customers have to use the free minutes before they expire at the end of a month.

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** VT.--@oud -iuioi **

Southwestern Bell
Telephone

News Media Report

Publication/Station St. Louis Post-Dispatch

Location

Date/Time 1/11/01

Page(s)

Connnents

Overland City Council will help MCI WorldCom build facility By
]Dawn Grodsky
Special To The Post-Dispatch

MCI Wor]dCom Network Services Inc. is getting a boost from Overland in building a network services facility on Meeks Road off Page Boulevard at Dielman Road.

The City Council has unanimously approved issuing up to $80 million in taxable industrial revenue bonds to finance the project, to be paid off by MCI WorldCom. in exchange, Overland is offering abatement of real-estate and property taxes.

The deal means MCI will transfer the title of the property and later the 100,000-square-foot building to Overland, which will lease it back to the company, says Laura Lashley, a senior manager with KPMG, the firm that is helping to negotiate the deal.

The arrangement, called private-placement bonds, is allowable under Missouri's Chapter I 00, though Lashley says it is Dot Commonly Used in St. Louis or St. Louis County. It is widely used in St. Charles County and other parts of the state, she adds.

Lashley noted that the arrangement sounded more complicated than it acwally was, Overland is the issuer of the bonds, and MCI is the investor, she says. The lease transfer is necessary because municipal property is tax-exenipt and that status will save the corporation money in tax dollars,

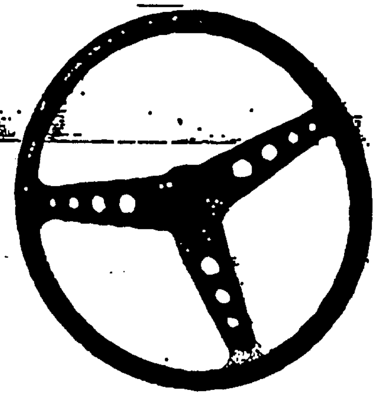
Economic development was cited as the key factor in issuing the bonds, and Overland City Clerk Linda Downs said that in the end, the deal wouldn't cost Overland a ponny. "We have no cost whatsoever," she said, "We are the entity issuing the bonds. They will buy the bonds."

Lashley added, "It's pretty standard for these types of transactions. The benefit of using Chapter 100 ftom a government perspective is to attract economic growth. The benefit for the corporation is helping to deter the costs of putting in capital investments, which are always inefficient in their first few years."

She explained that her firm helped companies find these types of deals to spur economic development and to keep the corporations competitive.

The foundation already has been laid at the construction site, and the bonds' issuance was approved in December, Last June the council adopted a resolution that approved a plan for an industrial development for MCI or a related entity. The $90 million deal requires MCI to pay the bonds with revenue from the project over 10 years.

Lashley said the building should be complete in the first quarter of 2001, and once it was operational between 10 and 15 employees would work there, www.xo.com



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News Media Report

Publication/Station St. Louis Post-Dispatch

Location

Page(s) Date/Time 1/12/01

Comments

Posted: Friday, January 12, 2001 1 3:29 a, m.

MORNING BREEMG

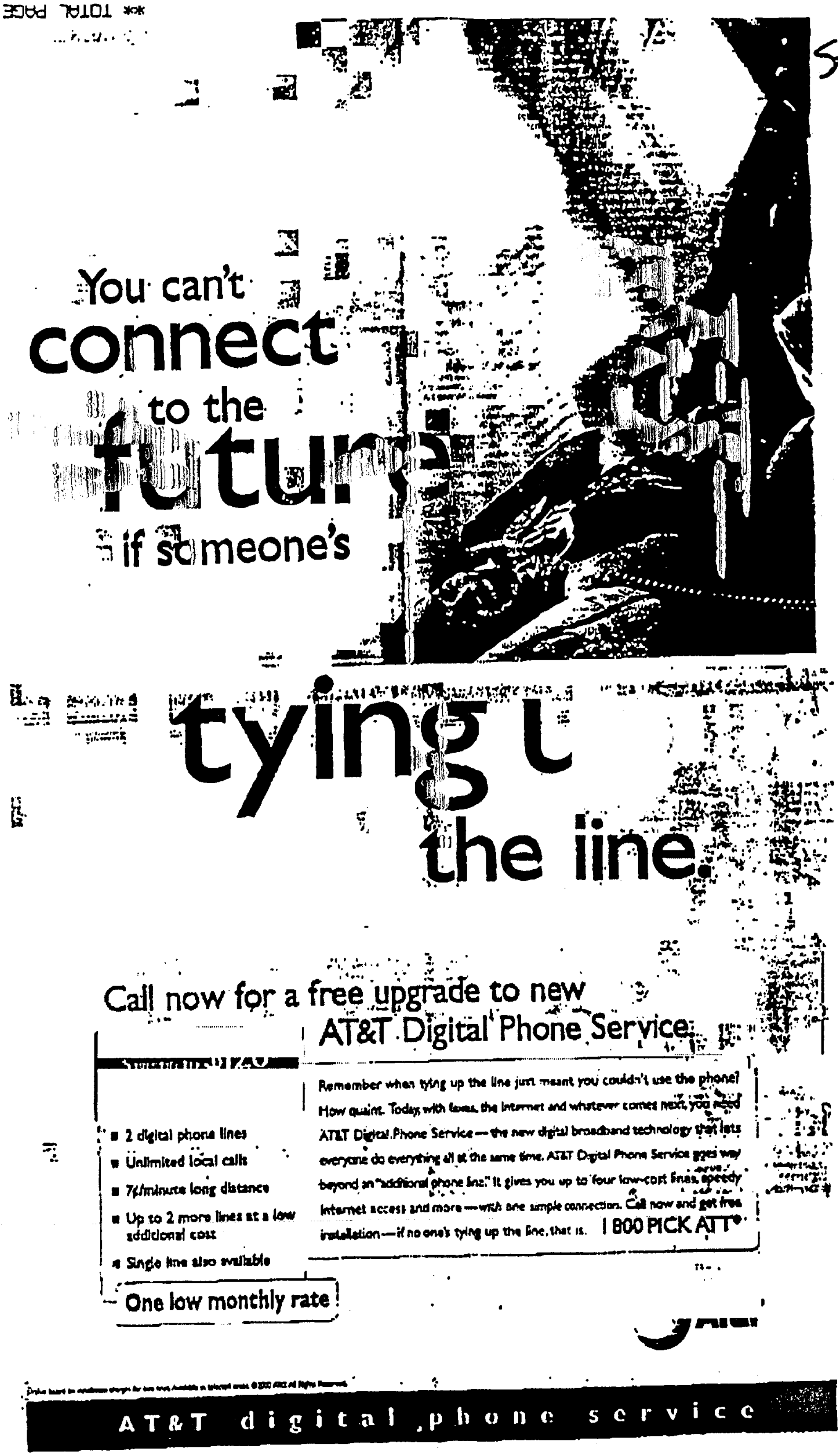
From 13100mberg News, Associated Press, Dow Jones News Service And Post-Dispatch Reports,

Birch Telecom expsknds into BellSouth states

Birch Telecom Inc. of **Kan&m** City **plans** to **expand** into five new **states,** bringing its brand of local **telephone service to small** businesses in **BellSouth territory.**

Birch Telecom will bring its services to Alabama, Georgia, North Cuolina, South Carolina and Tennessee, all of which are served by BellSouth, Birch provides local telephone service to small businesses in Kanus, Missouri, Oklahoma, and Texas, where the largest local carrier is Southwestem Bell. The expansion comes two months after Birch Telecom laid off about 7 percent of its work force.

St. Peters Journal
4-26-00



Southwestern Bell
Telephone

News Media Report

Publication/Station Hannibal Courier-Post

Location

Page(s) 5 Date/Time July 24, 2000

Comments

You'll love the SOUND of this offer.

Subscribe to AT&T Cable Services for digital service today and receive two complimentary tickets to one of these Riverport concerts.

The only thing better than a Riverport concert is that you'll also get Digital Installation for only $4.95 and more movies, more channels, more choices than ever before with digital quality picture and sound. Call AT&T Cable Services to reserve your seat for both today.

July 28, Nickelodeon's All That Festival
August 1, Christina Aguilera
August 6, Def Leppard
August 13, Alabama
August 16, Reggae Fest
August 20, Lord of the Dance
August 22, Duran Duran
August 23, Motley Crue

221-0060

AT&T | **DIGITAL CABLE**

$4.95 installation applies to primary outlet only. Custom and wall fish installation not included. Installation offer expires July [illegible], 2000. Call for complete details about prices and services. You must subscribe to Basic Service to receive Expanded Basic Service or other optional services. Additional installation or equipment, additional outlet charges, change-of-service charges and other restrictions may apply. Offer is for new customers only.

MAR 07 2001 10:16 FR PSI ST LOUIS 314 247 0123 TO 8214858077S P.08/15

St. Charles County
Post Dispatch

For Media Tips

Special Attention
Lisa Wilder
Tom Hughes
Joan Berkman
LeRoy Grant
Mike Peterson

Waiting for a web site to download is about as exciting as sitting at a stop light, right? Well, after you subscribe to our high speed Internet cable modem service, surfing the web will seem more like racing at Indy. It works at lightning speeds–much faster than your computer's conventional dial-up modem. It makes the Internet more responsive and more personal. Best of all, you get it through the cable you already have in your home, and right now you get FREE installation and your first two months of service FREE*. So call today.

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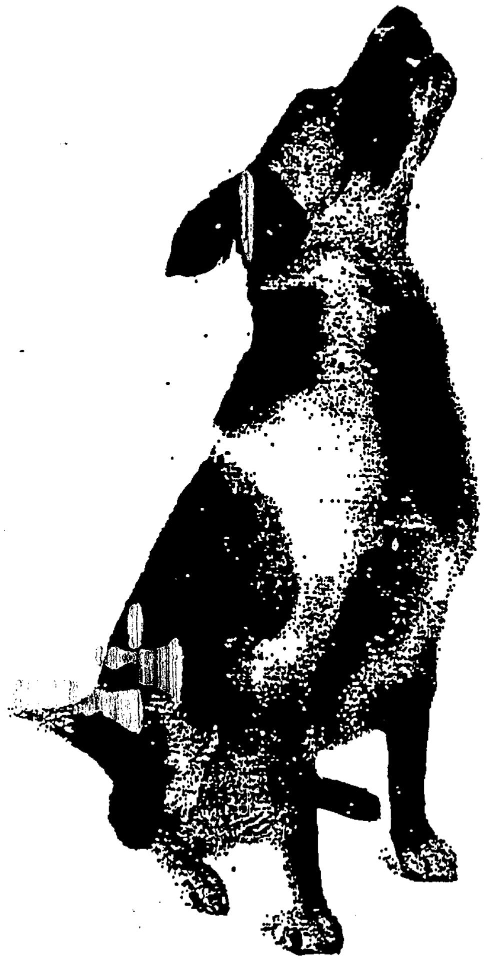
Southwestern Bell

News Media Report

Publication: St. Louis Business Journal
Page: 13 Date: July 31-Aug. 6, 2001
Comments:



Tell the world how good it feels to fire Southwestern Bell.

There's something Birch Telecom wants to tell you: Southwestern Bell is not what you want. Not for service, savings or your business. What you do want, however, is the face-to-face service you get with Birch. Local, long distance, Internet, even DSL. One easy bill, way less money. And if you need phone systems, we have those too. C'mon St. Louis, 100% of our customers fired Southwestern Bell. Tell the world you're ready to join 'em. **Call 314-961-7070 or check out birch.com.**

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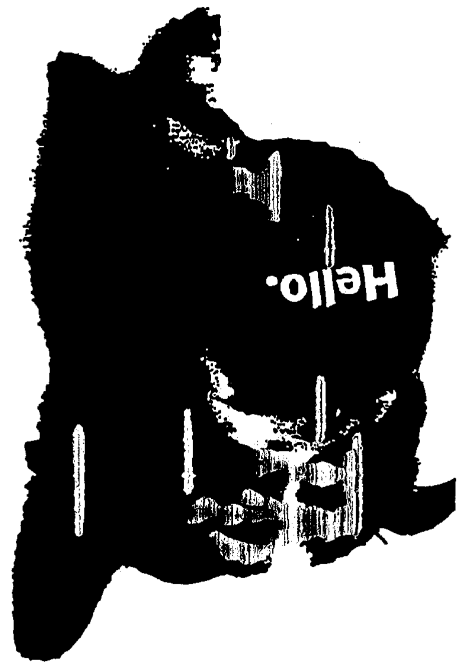


Need another reason to call Birch? Here's what business folks like yourself are saying.

"We have been very pleased with the service and support we have received from Birch Telecom since we moved our business from Southwestern Bell. Birch delivered on every promise."

Forshaw of St. Louis
St. Louis, MO

"I have a lot of nice things to say about Birch. Their support is wonderful. Champion Electric regularly opens and closes job trailers on construction sites. I think I have more changes than most companies...it's really nice to be able to reach a person for service."

Judy Smith,
Champion Electric
St. Louis, MO

"Switching to Birch saved my company $1,400 a month. That's almost $17,000 a year. Yet what impressed us the most is Birch's personal service."

Peter Shaw
Capital Title
St. Louis, MO

Birch telecom

Birch is a fresh alternative for a complete line of quality telecommunications services. Join the growing numbers and see in a heartbeat why 100% of our customers fired Southwestern Bell. Call us today or visit our web site at birch.com.

We're Birch, the young pup of a phone company, and we can save your business a bundle.

That's bundle as in 12% to 42% less than Southwestern Bell. That's bundle also as in local, long-distance and Internet services all bundled on one bill. And from one friendly place.

With us, it's all about you.

Birch specializes in serving small and mid-sized businesses. Our company is young and frisky, and our people have years of experience in this industry. In less than two years, Birch has grown to nearly 100,000 lines. We have customers just like you in St. Louis, Kansas City, Dallas/Fort Worth, and dozens of markets across Texas and Kansas.

We know our stuff so you don't have to.

You don't need a Ph.D. in deregulation to make the best choice for your business. We focus only on small and mid-sized businesses. Birch will put some of the brightest bulbs in this industry at your service. We figure out the smartest ways to customize a personal solution for all your local, long-distance and Internet service needs. We promise to deliver a better customer experience than what you're used to.

Complete Internet service from one source.

We've got a solution for every bandwidth need, from dial-up service to high-speed dedicated two-way Internet access. With Birch, you get the line, Internet connection, the router and technical assistance. Better still, you get the unexpected–complete Internet service from one source.

Customized telephone systems.

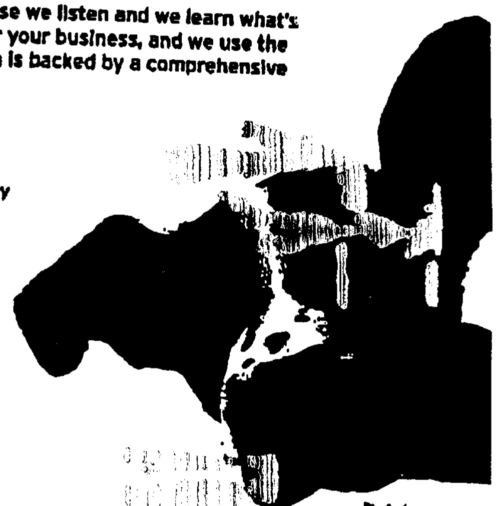
We outdo ourselves when it comes to business telephone systems. That's because we listen and we learn what's important to you. Then we help you find just the right phone system solution for your business, and we use the latest equipment from the leading providers to make it all happen. Every system is backed by a comprehensive five-year warranty that even covers acts of God.

Birch makes it personal.

Birch has opened an office right here in your area. We'll come visit you personally to assess your current service and bill, and show you how we can save you time, headaches and money. No generalities. No trying to fit your needs into a packaged deal. You'll work with people who specialize in knowing how phone services work for a business like yours.

It will no longer hurt to read your bill.

And not just because of the significant savings you'll see. Our bill bundles local, long distance and Internet all on one easy-to-follow invoice. We found out straight from our customers what makes a bill easy to understand, then we built our systems to deliver it.



Ralph Trask
Account Executive

Birch telecom

1327 Harvey Industrial Court
St. Louis, Missouri 63144
314.[illegible]61.7070
fax 314.[illegible]61.7221

Southwestern Bell

News Media Report

Publication: St. Louis Business Journal
Page: 39 Date: Aug. 7-13, 2000
Comments:

It's time to get your Internet connection off its short leash.

Got a small business that's being chained up by shoddy Internet service? Then switch to Birch. Get superspeed Internet or our business class DSL in a liberating bundle that includes the line, the service and the router. Oh yeah, we install the router, too. So, as soon as our tech leaves, you're surfing the Web. Add the fact that we put your local, long distance and Internet on one easy bill, and the choice is easy. Break free and switch to Birch today. **We're right here in St. Louis at 314-961-7070. Or check out birch.com/internet.**

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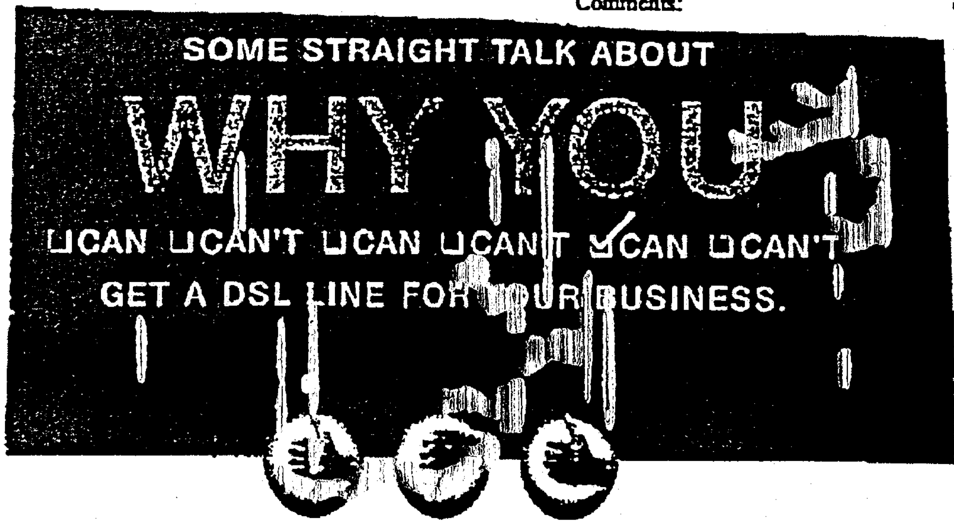
Southwestern Bell

News Media Report

Publication: St. Louis Business Journal
Page: 17 Date: Aug. 7-13, 2000
Comments:



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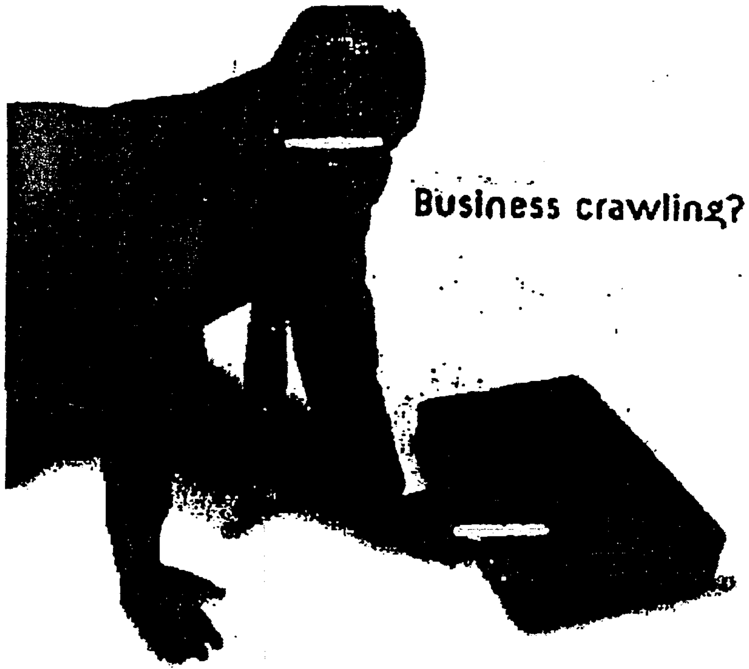
Publication: St. Louis Business Journal
Page: 8 Date: Aug. 7-13, 2000



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Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Ex Parte Presentation

RE: *Application by SBC Communications Inc. for Authorization Under Section 271 of the Communications Act to Provide In-Region InterLATA Service in the States of Kansas and Oklahoma. Docket No. 0C-217*

Dear Ms. Salas:

As indicated in its Reply Brief at page 73, note 46, SBC was still investigating the status of facilities-based service provided to residential customers in Kansas via UNE-P at the time the brief was filed. This letter provides the results of that investigation.

SWBT recently enhanced its Local Service Center/Decision Support System (LSC/DSS) interface to include Uniform Service Order Codes (USOCs) for business and residence class of service designations (XRU for residence and XPU for business). LSC/DSS is a WEB based GUI utilized by the LSC and LOC organizations for various purposes, including the tracking of service order volumes for force modeling purposes, and for calculating average work time on a per product basis. LSC/DSS also is used to perform root cause analysis on Performance Measurements, as well as to measure service representative productivity and quality.

Although UNE-P service is billed out of the CABS database, each UNE-P line has an associated CRIS toll file guide, which establishes the end user's directory listing, as well as billing for toll service. On an existing SWBT retail or CLEC resold account, the class of service remains the same (i.e. residence remains residence and business remains business) upon migration to UNE-P. On a UNE-P new connect, the CLEC must populate a mandatory field on the LSR, which classifies the type of service (TOS) as either business or residence for directory listing purposes.

With the addition of the class of service USOCs referenced above, LSC/DSS is able to query the CRIS database for a report of all residence and business UNE-P lines aggregated by CLEC and by State, as well as by NPA and NXX code. Reports containing residence/business UNE-P data for Kansas CLECs as reflected in SWBT's

CRIS database are provided as confidential attachments to this letter. As the data indicate, Kansas CLECs are providing facilities-based service to a significant number of both residence and business customers via UNE-P.

An original and one copy of this letter are enclosed.

Sincerely,

Edwardo (Eddie) Rodriguez Jr.
Director – Federal Regulatory

Attachment (Confidential)

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FACILITIES-BASED CLEC COMPANY PROFILES

1. The following profiles provide further information on the facilities-based CLECs providing local service in the Missouri serving area today. All of these CLECs are providing service under one or more approved interconnection agreements with Southwestern Bell Telephone Company in Missouri. (See Attachment B).
2. Several competitors profiled here meet the criteria for "Track A" competition by providing service to both Residence and Business customers either exclusively or predominantly over their own facilities.

TABLE A
TRACK A COMPETITORS IN MISSOURI

TRACK A COMPETITORS	FACILITIES-BASED LINES (E911 LISTINGS)		FACILITIES-BASED LINES (UNE-Ps)	
	BUSINESS	RESIDENCE	BUSINESS	RESIDENCE

Individual company profiles:

AT&T

***

AT&T	Collocation Arrangements	MOUs 01/01 Exchanged*	Resold Lines	Interconnection Trunks	UNE-Ps	E911 Listings	Telephone Numbers Assigned
Missouri State Total							

*** *Note: MOUs are local only and do not include ISP MOUs.

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3. AT&T is a communications and information services company, serving more than 90 million consumer, business, and government customers. AT&T operates in more than 200 countries and territories around the world, offering long-distance and wireless services, as well as online services and access to home entertainment; it has also begun to deliver local telephone and Cable TV services. Furthermore, AT&T gets about 44% of its revenue from telecom service to businesses, about 31% from services to consumers, about 15% from its wireless business, and about 11% from AT&T Broadband (including Cable TV).[1]

4. Nationwide, AT&T's total assets are over $161 Billion with 2000 revenues of over $64 Billion.[2]

Missouri operations:

- AT&T has operational data switches in Kansas City, St. Louis and Creve Coeur.[3]
- AT&T has operational voice switches in Kansas City, St Louis, Springfield and Creve Coeur.[4]
- AT&T has at least ***   *** facilities-based business lines in Missouri as evidenced by its E911 listings, with at least ***   *** of these serving residential customers.

---

[1] Current Analysis, AT&T Description, http://www.currentanalysis.com.
[2] Market Guide, *Research: AT&T Annual Balance Sheet*, http://www.marketguide.com/mgi /MG.asp?nss=www&rt=abalancestd&rn=A0034.
[3] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – AT&T at 24-26 of 29 (13th ed. 2000).
[4] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – AT&T at 20, 22-23 of 29 (13th ed. 2000).

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WorldCom

***

WorldCom	Collocation Instances	MOUs* [illegible] (I/O) Exchanged	Resold Lines	Inter-connection Trunks	UNE-Ps	E911 Listings	Telephone Numbers Assigned
Missouri State Total							

*** *Note: MOUs are local only and do not include ISP MOUs.

5. WorldCom is a leading player in the U.S. telecom service industry and offers services in 65 countries worldwide. The company is best known for its long-distance services, but it also provides a wide range of data, Internet, local, international, network access, and facilities management solutions. By segment, corporate revenues are as follows: consumer and wholesale, 28%; data, 19%; business voice, 17%; international, 16%; small business/alternative channels, 10%; dedicated Internet, 6%; and dial Internet, 4%.[5]

6. Nationwide, WorldCom had total assets in 2000 of over $98 Billion with 2000 Revenues of over $39 Billion.[6]

Missouri operations:

- WorldCom has operational voice switches in Kansas City, Missouri and Kansas City, Kansas.[7]
- WorldCom serves at least *** *** facilities-based lines in Missouri using E911 as a measure, with at least *** *** of these serving residential customers.

---

[5] Current Analysis, WorldCom Description, http://www.currentanalysis.com.
[6] Market Guide, *Research: WorldCom, Annual Balance Sheet*, http://www.marketguide.com/mgi/MG.asp?nss=www&rt=abalancestd&rn=50715; Market Guide, *Research: WorldCom, Annual Income Statement*, http://www.marketguide.com/mgi/MG.asp?nss=www&rt=qincomestd&rn=50715.
[7] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – WorldCom at 14 of 21 (13th ed. 2000).

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- WorldCom may have as many as ***   *** facilities-based in Missouri using interconnection trunks as a measure.
- WorldCom has ***   *** instances of collocation in Missouri as of January 2001. Further, MCI WorldCom (through its subsidiary, UUNET) itself is a provider of collocation services, which it sells to other communications companies.[8]

Sprint
***

Sprint	Collocation Instances	MOUs* 01/01 Exchanged	Resold Lines	Inter-connection Trunks	UNE-Ps	E911 Listings	Telephone Numbers Assigned
Missouri Total							

*** *Note: MOUs are local only and do not include ISP MOUs.

7. Sprint, known for its long-distance and PCS services, provides a wide range of data, Internet, local, international, network access, and facilities management solutions and has a robust fiber optic network. Sprint gets 39% of its revenues from its Global Markets Division (long-distance is 67% of GMD, data is 18%, and Internet is 9%), 29% from its PCS division, 24% from its local division, and 8% from its directory and supply division. The company has about a 9% share of the U.S. long-distance market. Sprint is supplementing its ILEC operations by building out as a CLEC in Missouri.[9]

---

[8] WorldCom, *Products and Services*, http://www.wcom.com/for_your_business/e_business/web_host.phtml.
[9] Current Analysis, Sprint Description, http://www.currentanalysis.com.

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8. Nationwide, Sprint's total assets are over $23.6 Billion, with total 2000 revenues of $17 Billion.[10]

Missouri operations:

- Sprint has *** *** collocation arrangements in Missouri wire centers.
- Sprint has *** *** facilities-based access lines as measured by E911 listings, with *** *** of these serving residential customers.
- Sprint has *** *** local interconnection trunks.

Birch Telecom

***

Birch	Collocation Instances	MOU 01/01 Exchanged	[illegible]	Interconnection Trunks	UNE-P [illegible]	E911 [illegible]	Telephone [illegible]
Missouri State Total							

*** *Note: MOUs are local only and do not include ISP MOUs.

9. Birch Telecom offers state-of-the-art telecommunications services for small and mid-sized businesses currently located throughout Missouri, Kansas, Texas and Oklahoma. It offers packages for voice and high-speed data services, including local and long distance telephone service, Internet access, web hosting, integrated voice and data transmission over broadband lines and customer premise equipment sales and services. These services are offered through a combination of leased and owned network facilities.[11]

---

[10] Market Guide, *Research: Sprint AnnualBalance Sheet*, http://www.marketguide.com/mgi /MG.asp?nss=www&rt=abalancestd&rn=A041C; Market Guide, *Research: Sprint Annual Income Statement*, http://www.marketguide.com/mgi/MG.asp?nss=www&rt=aincomestd&rn=A041C.
[11] Birch Telecom, *Investor Relations*, http://www.birch.com/investors/corporate_profile.shtml.

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10. Nationwide, Birch Telecom's total assets are over $222.8 Million with 3rd quarter 2000 revenues of over $83.8 Million.[12]

Missouri operations:

- Birch Telecom has operational voice switches in Kansas City and St. Louis.[13]
- Birch Telecom has operational data switches in Kansas City, St. Joseph, and St. Louis.[14]
- Birch Telecom has *** *** instances of collocation in Missouri as of January 2001.
- Birch Telecom serves at least *** *** facilities-based lines in Missouri using E911 listing and UNE-Ps as a measure, with *** *** of these serving residential customers.

Global Crossing/Frontier

***

Global Crossing [illegible]	Collocation Instances	MOU* [illegible] Exchanged	Resold Lines	Inter-connection Trunks	UNE-P [illegible]	E911 Listings	Telephone Number Assigned
Missouri State Total							

*** *Note: MOUs are local only and do not include ISP MOUs.

11. Global Crossing is a global provider of wholesale and resale telecom services. It's services are centered on an expansive IP-based network that will span 101,000 announced route miles, serving five continents, 27 countries, and more than 200 major cities. Global Crossing has several subsidiaries, including its GlobalCenter subsidiary, which operates seven data centers (five in the U.S., one in London, and

[12] Birch Telecom, Form 10-Q (SEC filed Nov. 14, 2000).
[13] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Birch Telecom at 7 of 8 (13th ed. 2000).
[14] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Birch Telecom at 7 of 8 (13th ed. 2000).

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one near Melbourne, Australia) and offers an array of Web hosting, e-commerce, and related services.[15]

12. Nationwide, Global Crossing had total assets in 2000 of over $26.6 Billion with 2000 revenues of over $3.8 billion.[16]

Missouri operations:

- Global Crossing has operational data switches in Kansas City and Springfield.[17]
- Global Crossing has an operational voice switch in Kansas City.[18]
- Global Crossing is serving over *** *** facilities-based lines, using E911 listings and UNE-P as a measure, with *** *** of these lines serving residential customers.
- Global Crossing may have as many as *** *** facilities-based lines using interconnection trunks as a measure, with over *** *** of these serving residential customers.

Intermedia Communications

***

Intermedia	Collocation Instances	UNE MOUs* 01/01	Resold Lines	Interconnection Trunks	UNE-P	E911 Listings	Telephone Numbers Assigned
Missouri State Total							

*** *Note: MOUs are local only and do not include ISP MOUs.

---

[15] Current Analysis, Global Crossing Description, http://www.currentanalysis.com.
[16] Market Guide, *Research: Global Crossings Ltd. AnnualBalance Sheet*, http://www.marketguide.com/mgi/MG.asp?nss=www&rt=abalancestd&rn=A1C3D; Market Guide, *Research: Global Crossings Ltd. Annual Income Statement*, http://multex.marketguide.com/mgi/MG.asp?nss=www&rt=aincomestd&rn=A1C3D.
[17] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Global Crossing at 12-13 of 16 (13th ed. 2000).
[18] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Global Crossing at 11 of 16 (13th ed. 2000).

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13. Founded in 1987, Intermedia Communications, headquartered in Tampa, FL, is a publicly-held integrated communications provider that delivers voice, broadband data, and business-class Internet-related services to businesses and the government. The company supports services by utilizing a network comprised of both owned and leased facilities, and with the exception of some international Frame Relay NNI connectivity, limits its service availability to the continental U.S. At last count, the company had 90,000 business customers.[19]

14. Nationwide, Intermedia had total assets in 2000 of over $3.6 Billion with 2000 revenues of over $767 Million.[20]

Missouri operations:

- Intermedia has an operational data switch in Kansas City and St. Louis.[21]
- Intermedia has an operational voice switch in St. Louis.[22]
- Intermedia is serving over *** *** facilities-based lines in Missouri as measured by E911 listings, serving *** *** of these to residential customers.
- Intermedia serves as many as *** *** facilities-based lines in Missouri using interconnection trunks as a measure, with *** *** of these lines serving residential customers.

---

[19] Current Analysis, Intermedia Description, http://www.currentanalysis.com.
[20] Intermedia Communications, Form 10-Q (SEC filed Oct. 26, 2000).
[21] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Intermedia Communications at 24-25 of 28 (13th ed. 2000).
[22] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Intermedia Communications at 21 of 28 (13th ed. 2000).

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Ionex Communications (Feist Long Distance)

***

Ionex	Collocation Instances	MOU Exchanged	Resold Lines	Inter-Connection Trunks	UNE-Ps	E911 Listings	Telephone Numbers Assigned
Missouri State Total							

***

15. Ionex Telecommunications is an Integrated Communications Provider (ICP) deploying a next generation digital network to provide broadband communication services, providing data as well as voice services to business and residential customers. Currently, Ionex is providing voice services to residential and business customers in Missouri exclusively over UNE-Ps and/or Voice-Over-DSL (in limited areas).[23] The company currently serves 60,000 customers in a 14-state footprint (including Missouri) and is one of the fastest growing providers of digital broadband communication services in the states that it serves. Ionex was formed in 1999 through the acquisition of four businesses from Advanced Communications. The management team is led by a former a senior executive at AT&T and a former executive at Sprint.

16. Nationwide, Ionex had 2000 revenues of over $150 Million.[24]

Missouri operations:

- Ionex is serving over *** *** facilities-based lines based on UNE-Ps, with *** *** of these serving residential customers.

Services offered in Missouri include Local, Long Distance, Toll Free, Internet Access.

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[23] Ionex Communications, *Local Services*, www.ionex.com/products/services_local.html.
[24] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – Ionex Communications at 1 of 9 (13th ed. 2000).

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Navigator Telecommunications

***

Navigator	Collocation Instances	[illegible]	Resold Lines	Interconnection Trunks	[illegible]	E911 Listings	Telephone Numbers Assigned
Missouri State Total							

***

17. Navigator Telecommunications is a growing super-regional ICP that offers bundled services to small and medium sized business customers, large multi-state multi-unit corporations and multi-talent customers, primarily in the Midwest and Southern regions of the United States.[25]

18. Founded in 1997, Navigator offers both resale and switched-based local, long-distance, high-speed data and enhanced telecom services.[26]

19. Navigator is a competitive local exchange carrier that implements a "smart-build" strategy, building and owning the intelligent components of our network-switches and other facilities while leasing unbundled loops and transport from other carriers. It believes this "smart-build" strategy will allow it to quickly establish a large footprint at a comparatively low cost while maintaining control of the access to its customers.[27]

Missouri operations:

- Navigator has *** *** facilities-based access lines in Missouri using UNE-Ps as a measure, with at least *** *** of these serving residence customers.

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[25] NationJob Network Company Profile, *Navigator Telecommunications, LLC*, http://www.nationjob.com /showcomp.cgi/navt.html.
[26] *Id.*
[27] *Id.*

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OTHER SERVICE PROVIDERS

DSL.net Communications

20. DSL.net Communications, L.L.C. provides high-speed data communications and Internet access services through xDSL technology to small and medium sized businesses in second and third tier cities, generally with populations of less than 900,000. DSL.net's services, marketed under the NetGAIN brand name, offer customers high-speed digital connections at prices similar to T-1, ISDN, or frame relay. The Company also supports both local and virtual private networks. DSL.net was incorporated in March 1998 and began marketing itself in March 1999. Commercial service from the first point of presence (POP) located in Stanford, CT began in May 1998.[28]

21. DSL.net has adopted a different strategy than other xDSL providers. The Company focuses on selling directly to small and medium sized businesses outside of large metropolitan areas. In contrast, other xDSL providers sell primarily to Internet Service Providers (ISPs) who, in turn, resell services to end-users.

22. DSL.net recently began collocating equipment in SWBT's Missouri central offices and currently provides services in Kansas City and Springfield. DSL.net has completed *** *** collocation arrangements in Missouri. While it is unknown to SBC if DSL.net is offering voice services to its customers, its method of provisioning services provides an excellent platform for provisioning voice over DSL. It sells directly to end-users. This affords DSL.net an excellent opportunity to expand data

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[28] New Paradigm Resources, Inc., CLEC Report 2001, Chapter 9 – DSL.net at 2 of 16 (13th ed. 2000).

services to include services competitive with SWBT's local telephone services. In a Business Wire article on May 4, 2000, DSL.net announced it had successfully tested both voice service and DSL Internet access over the same standard telephone wire, a strong indication that it intend to offer voice services in the future.[29]

Covad

23. Covad Communications is a national broadband CLEC that offers high-speed Internet and network access via DSL. The company offers DSL service primarily via more than 250 ISPs, but also via telecom carriers, enterprises, PC OEMs, affinity programs, and ASPs to small and medium businesses and home users. Covad is primarily a wholesaler, but on June 16, the company announced that it is changing its strategy and is now also selling directly to end-users.

24. In September, Covad acquired BlueStar Communications, a southeastern DSL provider, for $215 million in stock and debt -- a purchase that significantly expands the company's southeastern footprint in Tier 2 and Tier 3 markets.

25. Covad's services are currently available across the U.S. in 99 of the top metropolitan statistical areas (MSAs), including Kansas City and St. Louis. It expected to serve 165 markets by the end of 2000 and its year-end 2000 footprint was expected to include 45% of all U.S. homes and 50% of all U.S. businesses. Markets currently served include all the leading markets, most Tier 1 markets, and many Tier 2.[30]

26. Covad has *** *** completed collocation arrangements in Missouri central offices. While it is unknown to SWBT if Covad is offering voice services to its customers,

---

[29] Business Wire, *DSL.net Announces Successful Test of Voice and Data Line Sharing* (May 4, 2000).
[30] Current Analysis, Covad Description, http://www.currentanalysis.com.

many DSL CLECs have successfully tested voice over DSL capability, such as DSL.net mentioned above.

New Edge Networks

27. New Edge Networks was formed in June 1999 and provides Broadband services nationally in small, midsize and semi-rural markets with populations generally ranging from 5,000 to 250,000.

28. New Edge Networks has installed DSL network equipment in 29 states and built a national data communications network with 16 regional aggregation points and almost 600 nodes, making it one of the largest ATM networks in the United States. Through this network, New Edge Networks delivers a full range of consumer and business-class DSL options in 302 cities, as well as advanced Broadband Services such as VPNs, LAN-to-LAN internetworking, Virtual Private Lines, and frame relay.

29. New Edge Networks plans to overlay voice, video, and other value added Broadband services.[31]

30. New Edge Networks has *** *** completed collocation arrangements in Missouri central offices. While it is unknown to SWBT if New Edge Networks is offering voice services to its customers, many DSL CLECs have successfully tested voice over DSL capability. New Edge has developed a national data network, which also provides a platform on which competitive local voice services could be carried. New Edge advertises the benefits of using Virtual Private Networks (VPNs) over DSL

[31] New Edge Networks, *Investor Relations*, http://www.newedgenetworks.com/investors/strategy.

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connections. Its ATM backbone is capable of transmitting data, IP, voice, and video.[32] This is a further indication of the ability of DSL providers in general, and New Edge in particular to use high speed data connections to compete with conventional voice telephony.

[32] New Edge Networks, *Products and Services*, http://www.newedgenetworks.com/services/getconnected/wanproducts.html.

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of Application by Verizon New England Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions), and Verizon Global Networks Inc., for Authorization To Provide In-Region, InterLATA Services in Massachusetts	))))))))))	CC Docket No. _____

APPLICATION BY VERIZON NEW ENGLAND FOR AUTHORIZATION TO PROVIDE IN-REGION, INTERLATA SERVICES IN MASSACHUSETTS

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September 22, 2000

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APPENDICES

INTRODUCTION AND SUM

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The local market in Massachusetts is open, the checkli now entitled to the enormous benefits that experience has show entry into the long distance business. Verizon's Application to originating in Massachusetts should be granted.

Local competition in Massachusetts is thriving; competito than 675,000 lines. Given the relative size of Massachusetts — ab -third as many access lines as New York — the degree of competitive entry in Massachusetts is proportionately even greater than in New York at the time Verizon filed its application there. As in New York, competitors in Massachusetts have invested heavily in competing facilities, demonstrating their own belief that the local market is open and will remain so. Indeed, even by conservative estimates, local competitors are serving approximately 60 percent of their lines in Massachusetts over their own facilities. Moreover, these competitors already have collocated in central offices serving more than 95 percent of Verizon's lines in Massachusetts. And they are exchanging roughly two billion minutes of traffic each month with Verizon over a local interconnection network that is more than two-thirds the size of Verizon's own local interconnection network in the State.

These numbers by themselves prove that Verizon's local markets in Massachusetts are open. They also reflect the fact that Verizon's checklist offerings in Massachusetts, as well as the systems and processes used to provide them, are substantially the same as those in New York. Therefore, many of the conclusions that the Commission reached in approving Verizon's section 271 application in New York apply in Massachusetts as well.

Indeed, both the manner in which Verizon provides the checklist items and the Operation Support Systems used to deliver them are in most cases substantially the same in Massachusetts as they are in New York. In fact, in most respects the systems are carbon copies of each other. As in New York, these systems are handling large commercial volumes, and they have been subjected to an independent third-party test that Verizon passed with flying colors. Verizon satisfied 800 of the 804 test criteria — more than 99 percent. These test results are confirmed by actual market experience. Verizon's performance in provisioning checklist items in Massachusetts is at least as good as, and in several important respects even better than, it was when Verizon filed its application to provide long distance service in New York. And, to the extent the Commission has added new requirements since the time of the New York application, Verizon complies fully with those as well.

Verizon also is subject to performance assurance plans in Massachusetts that mirror those in New York, and which the Commission found provide "strong assurance that the local market will remain open after [Verizon] receives section 271 authorization." These plans place more than $147 million in bill credits at risk annually in Massachusetts, which is proportionately greater than the amounts at risk in New York.

Despite all of this, the long distance incumbents and others will no doubt attempt to use this proceeding to generate delay in order to maintain a competitive advantage. As they have in other proceedings, they will focus narrowly on isolated aspects of Verizon's performance to argue that this Application should be denied because Verizon has not yet reached an unattainable level of absolute, metaphysical perfection in every conceivable respect. But, as the Commission and the D.C. Circuit have made clear, perfection, metaphysical or otherwise, is not the standard, and they will "not allow 'the infeasible perfect to oust the feasible good.'" AT&T Corp. v. FCC, 220 F.3d 607, 633 (D.C. Cir. 2000) (citation omitted). And here, the simple fact is that local markets in Massachusetts are open, Verizon's performance is excellent, and its Application to provide long distance should be granted.

Moreover, actual experience in New York proves that Verizon's entry will produce enormous benefits and will further promote local, as well as long distance, competition. Verizon's entry in New York forced AT&T, WorldCom, and Sprint to make that the first State in which they finally began providing competitive local telephone service to mass-market customers on a widespread basis. In fact, AT&T and WorldCom now have approximately one million mass-market local customers in New York, all in addition to the hundreds of thousands of business customers served by each over its own facilities. And, altogether, competitors in New York now have approximately 2.5 million local customers — a number that has grown steadily since Verizon entered the long distance business.

In addition to prompting the long distance incumbents to enter the local mass market for the first time, Verizon's entry also has allowed it to introduce simpler and less expensive long distance services tailored to benefit the mass-market customers that the incumbents historically have preferred to abandon or ignore. Indeed, a recently released consumer group report estimates that the consumers in New York who have switched to Verizon's competitive long distance offerings could save $120 million dollars a year compared to the prices of the Big 3 long distance incumbents.

By any measure, Verizon's entry into the long distance market in New York has greatly enhanced both local and long distance competition. Verizon now seeks to generate the same benefits in Massachusetts — where Verizon's local markets are open to competition just as they are in New York.

I. VERIZON'S APPLICATION SATISFIES THE REQUIREMENTS OF TRACK A.

This Application unquestionably satisfies the requirements to file an application under so-called "Track A." See 47 U.S.C. § 271(c)(1)(A). Whether they are viewed collectively or individually, competitors in Massachusetts are providing service predominantly over their own facilities to both residential and business subscribers.

As in New York, competitors in Massachusetts have invested enormous sums in competing facilities throughout the State. See Taylor Decl. ¶ 27. This not only means the requirements of Track A easily are satisfied, but it also means that competitors have voted with their wallets, demonstrating their own belief that local markets in Massachusetts are open and will stay that way. As the Department of Justice has explained, the fact that competitors have "commit[ted] significant irreversible investments to the market (sunk costs) signals their perception that the requisite cooperation from incumbents has been secured or that any future difficulties are manageable."[1]

On a collective basis, even by the most conservative of estimates, competing carriers in Massachusetts serve more than 400,000 subscribers over their own facilities,[2] a figure approaching double the number they serve through resale. See id. Att. A ¶ 1. And competing

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1 Affidavit of Marius Schwartz ¶ 174, Competitive Implications of Bell Operating Company Entry Into Long Distance Telecommunications Services (May 14, 1997) ("Schwartz Aff."), attached at Tab C to Evaluation of the United States Department of Justice, Application of SBC Communications Inc. et al. Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in the State of Oklahoma, CC Docket No. 97-121 (FCC filed May 16, 1997) ("DOJ Oklahoma Evaluation").

2 Because this figure is based on the number of E911 subscriber listings, it necessarily understates the number of facilities-based lines that competitors have obtained. While each E911 subscriber listing necessarily represents at least one customer access line, it often may represent more than a single line. In the case of business customers, for example, a single E911 listing may represent many individual lines.

carriers serve some 90,000 residential subscribers over their own facilities,[3] which is more than double the number of residential subscribers served through resale. See id. Overall, therefore, competing carriers in Massachusetts unquestionably are providing service on a predominantly facilities basis.

Moreover, just as this is true overall, it also is true of individual carriers. For example, looking just at the three largest carriers in Massachusetts, they too are providing service predominantly over their own facilities to business and residential subscribers, both individually and collectively.

1. AT&T. — AT&T has invested heavily in competing facilities in Massachusetts and is the largest facilities-based competitor operating in the State. See id. Att. A ¶ 16. While the available information necessarily is incomplete, AT&T already has a network in place that consists of at least four local switches and at least 450 fiber-route miles. See id. Att. A ¶ 18. In addition, AT&T provides residential telephone service over its cable networks in Massachusetts — networks that already reach more than two million cable subscribers in the State. See id. Att. A ¶ 19.

AT&T has put its investments in competing facilities to work, providing service exclusively over its own facilities to both business and residential subscribers.[4] Although the

[3] The number of facilities-based residential lines is based on the listings submitted for inclusion in Verizon's white pages directory. Unlike E911 listings, facilities-based directory listings may include lines that CLECs serve using so-called unbundled element platforms. Of course, the Commission previously has held that unbundled network elements qualify as a competitor's own facilities for purposes of the Track A requirements. See Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services In Michigan, Memorandum Opinion and Order, 12 FCC Rcd 20543, ¶ 101 (1997) ("Michigan Order").

[4] AT&T is providing competing local telephone service under three interconnectio agreements with Verizon that the Massachusetts Department of Telecommunications and En ("Massachusetts DTE") has approved. The first was signed by ACC and approved in 19

information available to Verizon necessarily understates the number of facilities-based lines, AT&T serves at least **** **** access lines in Massachusetts over facilities that it has deployed. See id. Att. A ¶ 16. In addition, AT&T's white pages listings reveal that it already serves at least **** **** residential subscribers over its own facilities. See id. In contrast, AT&T appears to serve **** **** residential or business customers in Massachusetts through resale. See id.

2. **WorldCom.** — WorldCom also has made extensive investments in local facilities throughout Massachusetts, including at least seven local voice switches and at least 325 fiber miles. See id. Att. A ¶ 4.[5] Like AT&T, WorldCom is providing service in Massachusetts predominantly over its own facilities. Again, while the information available to Verizon necessarily understates the number of facilities-based lines, WorldCom serves at least **** **** access lines over facilities that it has deployed. See id. Att. A ¶ 20. In contrast, WorldCom serves only **** **** lines via resale, **** **** of which are business customers. See id.

3. **RCN.** — RCN began providing competitive local telephone service in Massachusetts on a resale basis in 1996, but now focuses its marketing efforts on facilities-based service. See id. Att. A ¶ 24.[6] In order to do so, RCN has deployed a network in Massachusetts that consists of at least one local voice switch and at least 1,400 fiber-route miles. See id. Att. A ¶ 4. Again,

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second and third were signed by TCG and AT&T itself, and both were approved in 1998. See Taylor Decl. Att. A Exh. 5.

[5] WorldCom is providing competing local telephone service under DTE-approved interconnection agreements with Verizon approved in 1998 and 2000. See Taylor Decl. Att. A Exh. 5.

[6] RCN is providing competing local telephone service under two DTE-approved interconnection agreements that it signed — one approved in 1996, and the other approved in 1999. See Taylor Decl. Att. A Exh. 5.

while the information available to Verizon necessarily is incomplete, RCN serves approximately **** **** access lines over its own facilities. See id. Att. A ¶ 24. RCN's white pages listings reveal that most of these lines serve residential customers. See id. By contrast, RCN serves approximately **** **** lines through resale, far fewer than it serves over its own facilities. See id. Att. A ¶ 24 n.34.

II. VERIZON SATISFIES ALL REQUIREMENTS OF THE COMPETITIVE CHECKLIST IN MASSACHUSETTS.

Just as Verizon satisfies the "Track A" requirements, it also unquestionably satisfies the requirements of the competitive checklist in Massachusetts. Verizon is making all 14 checklist items available under the legally binding obligations in its tariffs and more than 70 interconnection agreements approved by the Massachusetts DTE. See Br. Att. A Exh. 1; Taylor Decl. Att. A Exh. 5.[7] Moreover, Verizon is providing the checklist items in large and rapidly increasing commercial quantities. For example, as of July 2000, Verizon had provided some 290,000 interconnection trunks, 1,600 collocation sites, 56,000 unbundled loops (including platforms), 246,000 resold lines, 192,000 directory listings, and 203,000 ported numbers. See Br. Att. A Exh. 1.

Verizon provides most of the checklist items in Massachusetts in the same manner and using the same processes and procedures that the Commission found met the Act's requirements

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[7] The only ongoing litigation under 47 U.S.C. § 252(e)(6) that relates to these approved agreements includes a WorldCom challenge to one aspect of the DTE's pricing determination for loops, see MCI Telecomms. Corp., et al. v. New England Tel. & Tel. Co., et al., No. 1:98cv12375 (RCL) (D. Mass.), and appeals by GNAPs and WorldCom of DTE orders addressing the issue of reciprocal compensation on Internet-bound traffic, see Global NAPs, Inc. v. New England Tel. & Tel. Co., et al., No. 1:00cv10502 (RCL) (D. Mass.); Global NAPs, Inc. v. New England Tel. & Tel. Co., et al., No. 1:00cv10407 (RCL) (D. Mass.); MCI WorldCom Communications, Inc. v. New England Tel. & Tel. Co., et al., No. 1:00cv11513 (RCL) (D. Mass.).

in New York. See Lacouture/Ruesterholz Decl. ¶¶ 6-7; New York Order ¶¶ 63-400.[8] Likewise, it provides those checklist items in Massachusetts using the same interfaces to access substantially the same underlying Operations Support Systems ("OSS") as in New York. See McLean/Wierzbicki Decl. ¶ 8. In fact, the OSS used in Massachusetts are in most instances carbon copies of those used in New York. See id.

The significance of this is straightforward: It establishes a presumption that the manner in which Verizon provides the checklist items in Massachusetts likewise meets the Act's requirements. As the Commission has previously held, where an aspect of an applicant's checklist showing is "materially indistinguishable" from a showing in another State, the Commission will use its prior determination "as a starting point for [its] review" and only "review any new data or information" from the parties "to determine whether a different result is justified."[9]

Moreover, this presumption is doubly strong in Massachusetts, where competitors are successfully using the checklist items in large volumes to enter the local market statewide using all three entry paths available under the Act. As the Department of Justice has explained, "[i]f

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[8] See Application by Bell Atlantic New York for Authorization Under Section 271 of the Communications Act To Provide In-Region, InterLATA Service in the State of New York, Memorandum Opinion and Order, 15 FCC Rcd 3953 (1999) ("New York Order"), aff'd, AT&T Corp. v. FCC, 220 F.3d 607 (D.C. Cir. 2000).

[9] See Application by BellSouth Corporation, et al. Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services In Louisiana, Memorandum Opinion and Order, 13 FCC Rcd 6245, ¶¶ 1, 3 (1998) ("First Louisiana Order"); see also Application of BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance, Inc., for Provision of In-Region, InterLATA Services in Louisiana, Memorandum Opinion and Order, 13 FCC Rcd 20599, ¶ 8 (1998) ("Second Louisiana Order") (Bell operating company ("BOC") may "incorporate by reference its prior [successful] showing for these checklist items" in a subsequent application for a given State, in which case the Commission "will only consider arguments from commenters relating to new information that [the BOC] fails to satisfy" these checklist items); id. ¶ 56 (where BOC "provides access to a

actual, broad-based entry through each of the entry paths contemplated by Congress is occurring in a state, this will provide invaluable evidence supporting a strong presumption that the BOC's markets have been opened." DOJ Oklahoma Evaluation at 43.

In the case of Massachusetts, overwhelming evidence backs up the presumption of openness. As in New York, Verizon's systems in Massachusetts are not only handling large commercial volumes, but also have undergone "extensive third party testing" by KPMG. New York Order ¶ 10; see McLean/Wierzbicki Decl. ¶¶ 9-17. The KPMG test in Massachusetts was modeled on the test in New York, which the Commission found to be "persuasive evidence of [Verizon's] OSS readiness." New York Order ¶ 100. Altogether, the KPMG test evaluated 804 separate items relating to pre-ordering, ordering, provisioning, maintenance and repair, billing, relationship management, and performance measurements. See McLean/Wierzbicki Decl. ¶ 17. As in New York, Verizon passed the test with flying colors, satisfying 800 of the 804 test elements. See id.

Verizon's real-world performance in Massachusetts has also been excellent. Verizon provides the checklist items at a rate that keeps pace with already large and growing demand, and consistently provides them on time, when competitors request them.[10] Verizon tracks its

particular checklist item through a region-wide process, such as its OSS, [the Commission] will consider both region-wide and state specific evidence in [its] evaluation of that checklist item").

[10] The performance data provided here cover Verizon's performance through July 2000, the most recent month for which data currently are available. In August, Verizon experienced a work stoppage in connection with negotiations over a new collective bargaining agreement. See Lacouture/Ruesterholz Decl. ¶¶ 309-312. During the work stoppage (and the subsequent recovery period), Verizon implemented processes and procedures that were expressly designed to provide nondiscriminatory treatment to wholesale and retail customers. See id. While the occurrence of the work stoppage undoubtedly will cause Verizon to miss some standards for August in cases where its performance is measured against absolute benchmarks, that fact does not undercut Verizon's demonstration of checklist compliance. On the contrary, the performance data through the month of July provide abundant proof that Verizon has

performance using the same performance measurements as in New York — measures that the Commission found "have done much to foster the development of consistent and meaningful data concerning [Verizon's] performance." New York Order ¶ 11; see Guerard/Canny Decl. ¶¶ 10, 13-16. And Verizon is subject to performance assurance plans in Massachusetts that mirror those in New York. These plans put a total of $147 million in bill credits at risk annually in Massachusetts alone, an amount that is directly proportionate to the amount at risk in New York. Consequently, the plans provide added assurance that Verizon will continue to provide high-quality service to competing carriers. See Guerard/Canny Decl. ¶¶ 18, 134-168; DTE Performance Plan Order at 26.[11]

Of course, as noted above, competitors still will claim that this Application should be denied because Verizon has not yet attained an unattainable level of absolute perfection. But the Commission repeatedly has made clear that perfection is not the standard. See, e.g., New York Order ¶ 5; Texas Order ¶ 358;[12] Michigan Order ¶ 278. Instead, where retail analogues exist, the standard is "parity," which means simply that, where differences do exist, they are not so large as to be competitively significant. And, where retail analogues do not exist, access must be sufficient to "allow an efficient competitor a meaningful opportunity to compete." New York Order ¶ 5.

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satisfied the checklist and that its systems and processes are capable of handling commercial volumes.

[11] DTE, Order Adopting Performance Assurance Plan, No. 99-271 (Sept. 5, 2000) (App. B, Tab 559) ("DTE Performance Plan Order").

[12] Application by SBC Communications Inc., Southwestern Bell Telephone Company, And Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance Pursuant to Section 271 of the Telecommunications Act of 1996 To Provide In-Region, InterLATA Services In Texas, Memorandum Opinion and Order, CC Docket No. 00-65, FCC 00-238 (rel. June 30, 2000) ("Texas Order").

Under either of these standards, the Commission evaluates a BOC's performance "based on the totality of the circumstances," and "an apparent disparity in performance for one measure, by itself, does not provide a basis for finding noncompliance with the checklist" if the disparity is not "large enough to be deemed discriminatory under the statute." Texas Order ¶ 58.[13] Similarly, the fact that a measure may appear to reflect such a disparity also does not necessarily mean that the applicant has not complied with the checklist if the disparity can be traced to competitors' own behavior or other factors that are not competitively significant. See, e.g., New York Order ¶¶ 202-205.

Applying these standards here, it is abundantly clear that the checklist requirements are satisfied.

A. Interconnection (Checklist Item 1).

Verizon provides competing carriers in Massachusetts with the same forms of interconnection and collocation using the same processes and procedures that Verizon uses in New York, and which the Commission found satisfy the checklist. See id. ¶ 67. Moreover, real-world experience in Massachusetts proves that Verizon is able to meet large and increasing demand for interconnection.

[13] See also Evaluation of the United States Department of Justice at 28, Application by BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance, Inc., for Provision of In-Region, InterLATA Services in South Carolina, CC Docket No. 97-208 (FCC filed Nov. 4, 1997) (Commission should not "require 'perfection' in OSS offerings as a condition of section 271 approval"; relevant inquiry is whether differences that do exist "materially impact competition"); Performance Measurements and Reporting Requirements for Operations Support Systems, Interconnection, and Operator Services and Directory Assistance, Notice of Proposed Rulemaking, 13 FCC Rcd 12817, App. B ¶ 7 (1998) ("even if statistically significant differences appear between results for the incumbent LEC and the competing carrier, these differences may be too small to have any practical competitive consequence").

1. Interconnection Trunks.

Verizon provides competing carriers in Massachusetts with the same kinds of interconnection trunks using the same processes and procedures that Verizon uses in New York. See Lacouture/Ruesterholz Decl. ¶ 8. In New York, the Commission found that Verizon's provision of interconnection to competing carriers was "equal-in-quality to the interconnection [Verizon] provides to its own retail operations, and on terms and conditions that are just, reasonable, and nondiscriminatory." New York Order ¶ 68. It also found that Verizon "provides interconnection at all technically feasible points, as required by our rules, and therefore demonstrates checklist compliance." Id. ¶ 76.[14] The same is true in Massachusetts.

Through July 2000, Verizon has provided 27 competing carriers with 290,000 interconnection trunks in Massachusetts. See Lacouture/Ruesterholz Decl. ¶ 9; Taylor Decl. Att. A ¶ 7. This is equal to more than *three-fourths* of the total number of trunks that Verizon has connecting its switches in its entire interoffice network in the State. See Lacouture/Ruesterholz Decl. ¶ 9. Through these trunks, CLECs have exchanged an average of approximately two billion minutes of traffic per month with Verizon in 2000. See id. ¶ 10.

Verizon provides interconnection trunks on time, even in the face of increasing demand. As in New York, there are different performance intervals and associated measurements for providing interconnection trunks based on whether a competing carrier's request is associated with a timely forecast (i.e., submitted at least six months in advance) and on the number and

[14] As in New York, the interconnection trunks provided by Verizon under its legally binding tariffs and interconnection agreements include interconnection to the trunk sides of end office and tandem switches, and to Verizon's signaling network. See Lacouture/Ruesterholz Decl. ¶¶ 8, 258. In addition, Verizon provides both one-way and two-way trunks, 64 Kbps Clear Channel trunks, and traditional 56 Kbps trunks. See id. ¶¶ 8-13. Verizon will also accept requests from CLECs for interconnection at other technically feasible points under processes approved by the Massachusetts DTE. See id. ¶ 8.

complexity of the trunks requested. See id. ¶¶ 16-18. From May through July 2000, Verizon met the various intervals for providing interconnection trunks to CLECs nearly 100 percent of the time. See id. ¶ 20. Moreover, it has provided interconnection trunks in intervals that are comparable to the intervals it has provided Feature Group D trunks for its own interexchange carrier customers. See id. ¶ 21; see also New York Order ¶¶ 70, 72 (relying on comparable interconnection trunk performance).

Moreover, Verizon has undertaken extraordinary efforts to accommodate growth in demand for interconnection trunks. For example, Verizon nearly doubled its number of trunk terminations in 1999, and is in the process of adding an additional 320,000 trunk terminations. See Lacouture/Ruesterholz Decl. ¶ 11. Verizon also has adopted the same trunk forecasting process that it uses in New York. See id. ¶¶ 16-18.

Verizon also provides trunks to competing carriers that are of equal or better quality than it provides to itself. For example, from May through July 2000, only 1.07 percent of the dedicated final trunk groups provided to CLECs exceeded their blocking design, compared to 1.08 percent of Verizon's common trunks. See id. ¶ 28; see also New York Order ¶ 69 (relying on comparable interconnection trunk performance); Texas Order ¶¶ 70-71. In addition, the ratio of "trunks required" to "trunks in service" is far better for competing carriers (currently 33.4 percent) than it is for Verizon's own common final trunk groups (currently 68 percent). See Lacouture/Ruesterholz Decl. ¶ 27. And other performance measures for interconnection trunks during this same period show comparable performance overall between CLEC interconnection trunks and Verizon's Feature Group D trunks. See id. ¶ 23.

2. Collocation.

Verizon provides competitors in Massachusetts with collocation in essentially the same manner as it does in New York. See id. ¶ 31. In New York, the Commission found that Verizon "satisfies the requirements of sections 271 and 251 of the Act," that Verizon's collocation offerings are consistent with the Commission's Collocation Order,[15] that Verizon "responds to applications for collocation space in a timely manner," and that Verizon offers collocation at "just, reasonable, and nondiscriminatory prices" as determined by the State commission. New York Order ¶¶ 73, 74, 75, 77, 78. Again, the same is true in Massachusetts.

Through July of this year, Verizon has placed in service over 1,600 collocation sites in central offices located throughout Massachusetts, more than double the number in New York at the time that application was filed. See Lacouture/Ruesterholz Decl. ¶ 34. Competitors are now collocated in central offices that serve 96 percent of Verizon's business access lines and 94.5 percent of its residential lines in Massachusetts. See id.

As in New York, Verizon provides every form of collocation that is required by the Commission's rules. See id. ¶ 31.[16] The Massachusetts DTE has confirmed this fact. See DTE Collocation Tariff Order. First, in addition to standard physical arrangements, Verizon provides mini, shared, and "cageless" forms of collocation in accordance with the Commission's rules.

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15 Deployment of Wireline Services Offering Advanced Telecommunications Capability, First Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 4761 (1999) ("FCC Collocation Order").

16 Verizon also provides collocation at remote terminals in accordance with the UNE Remand Order, see Implementation of the Competition Provisions of the Telecommunications Act of 1996, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696 (1999), through both amendments to interconnection agreements and the terms of a tariff. See Lacouture/Ruesterholz Decl. ¶¶ 59, 140; DTE, Order on Motion of Verizon for Reconsideration and Clarification; Motion of AT&T for Clarification; Motion of RNK for Clarification; Late-Filed Motion of NAS for Limited Intervention; and Review of Verizon's Compliance Filings at 65, No. 98-57 (Sept. 7, 2000) (App. K, Tab 72) ("DTE Collocation Tariff Order"). Under Verizon's offering, where space is available, a CLEC can collocate within Verizon's remote terminals and gain access to the subloop element serving the customer premises through a cross-connect within the remote terminal. See Lacouture/Ruesterholz Decl. ¶ 140. Where space is not available within a remote terminal, the CLEC can deploy its own adjacent cabinet, and Verizon will provision an interconnecting cable

See Lacouture/Ruesterholz Decl. ¶¶ 44-45, 53-54; FCC Collocation Order ¶¶ 41-42. Indeed, "cageless" collocation arrangements, which have more than doubled this year, represent more than half of the collocation arrangements in Verizon's central offices. See Lacouture/Ruesterholz Decl. ¶¶ 34-35; Br. Att. A Exh. 2. Second, Verizon permits CLECs the option of establishing controlled-environment vaults or similar structures adjacent to Verizon central offices in which physical collocation space is unavailable. See Lacouture/Ruesterholz Decl. ¶ 55; FCC Collocation Order ¶ 44; FCC Collocation Reconsideration Order ¶¶ 45-47.[17] Third, Verizon offers virtual collocation, and has provided three such arrangements. See Lacouture/Ruesterholz Decl. ¶¶ 48-49. Finally, Verizon provides collocation within intervals (typically 76 business days) adopted by the Massachusetts DTE. See id. ¶¶ 37, 50; March 24, 2000 DTE Order at 73;[18] DTE Collocation Tariff Order at 66.

Verizon is providing collocation in a timely manner despite the fact that requests for collocation have grown enormously. For example, from May through July 2000, Verizon has processed an average of 120 collocation requests *per month*. See Lacouture/Ruesterholz Decl. ¶ 35.[19] During this period, Verizon met the standard or agreed-upon interval for physical

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from the remote terminal to the CLEC's cabinet. See id. Verizon has not received any applications for collocation in remote terminals in Massachusetts. See id.

17 Deployment of Wireline Services Offering Advanced Telecommunications Capability, Order on Reconsideration and Second Further Notice of Proposed Rulemaking in CC Docket 98-147 and Fifth Further Notice of Proposed Rulemaking in CC Docket No. 96-98, FCC 00-297, 2000 WL 1128623 (rel. Aug. 10, 2000) ("FCC Collocation Reconsideration Order").

18 DTE, Order Approving Revisions to Resale Tariff No. 14 and Denying Interconnection Tariff No. 17, No. 98-57 (Mar. 24, 2000) (App. E, Tab 260) ("March 24, 2000 DTE Order").

19 To ensure that quality is not sacrificed in order to meet its collocation requests on time, Verizon has adopted the same quality-review process that it uses in New York. Auditors check each collocation arrangement prior to turning it over to a CLEC. See Lacouture/Ruesterholz Decl. ¶¶ 60-62.

collocation 96 percent of the time. See id. ¶ 38; see also New York Order ¶ 75 (endorsing application with comparable performance).

Finally, as in New York, Verizon has taken the same extraordinary steps to make collocation space available in its central offices. Verizon allows CLECs to tour the central offices within 10 days in those rare instances where it cannot accommodate a request for physical collocation, and promptly files space exhaustion notifications as required by the Massachusetts DTE upon determining that space is not available. See Lacouture/Ruesterholz Decl. ¶¶ 40-41.

B. Unbundled Network Elements (Checklist Items 2, 4, 5, and 6).

Verizon provides competing carriers in Massachusetts with large commercial volumes of unbundled network elements, including unbundled local loops, local switching, and local transport. It does so, moreover, using substantially the same processes and procedures that it uses in New York, and which the Commission found satisfy the requirements of the Act. See New York Order ¶¶ 82, 231, 273, 338, 346. Through July 2000, Verizon has provided 56,000 unbundled loops, including nearly 12,000 that were provided as part of an unbundled element "platform" that also included switching and transport. See Lacouture/Ruesterholz Decl. ¶ 66. Moreover, Verizon has kept pace with rapidly increasing demand; it consistently delivers unbundled elements on time, when competing carriers request them. And, to the extent the Commission has adopted new unbundling requirements since the time of the New York application, Verizon complies with those requirements as well.

1. Unbundled Local Loops.

Overall, Verizon's unbundled loop performance in Massachusetts is excellent.[20] Verizon provides all the same types of unbundled loops in Massachusetts in the same manner as it does in New York, tracks its performance in Massachusetts using the same measures as in New York, and performs at a level that is equal to or even better than in New York.[21] Verizon, therefore, "provisions loops in the quantities that competitors reasonably demand, at an acceptable level of quality, and within a reasonable timeframe." See New York Order ¶ 280.

Through July 2000, Verizon has provided competing carriers in Massachusetts with 56,000 unbundled loops. See Lacouture/Ruesterholz Decl. ¶ 66. More than 44,000 of these loops were provided on a stand-alone basis (new loops or hot cuts), including over 13,000 loops designed specifically to provide DSL service. See id. ¶¶ 66, 95. In addition, Verizon has provided nearly 12,000 unbundled loops as part of network element platforms. See id. ¶ 66. The demand for platforms in particular is growing rapidly: Verizon's platform volumes through the end of July alone represent a 12-fold increase over the end of 1999. See id. ¶ 67. And the

[20] The Commission has correctly concluded that its "analysis of this checklist item cannot focus on [Verizon's] performance with respect to any single metric or any single type of loop," but rather should be based on a "comprehensive picture of whether [Verizon] is providing unbundled local loops in accordance with the requirements of checklist item 4." See New York Order ¶ 278; see also AT&T Corp. v. FCC, 220 F.3d at 624 (upholding Commission's decision to review Verizon's "overall provisioning of loops, as opposed to mandating pass-fail analysis with respect to" a single category). As explained in text below, however, Verizon's loop performance in Massachusetts is excellent across the board.

[21] As in New York, Verizon provides unbundled loops pursuant to tariff and interconnection agreements, and therefore "has a concrete and specific legal obligation to provide unbundled local loops." See New York Order ¶ 273; Lacouture/Ruesterholz Decl. ¶ 65. Verizon provides analog and digital, 2-wire and 4-wire loops, which permit CLECs to offer a full range of services including Integrated Services Digital Network ("ISDN"), Asymmetrical Digital Subscriber Line ("ADSL"), High-bit-rate Digital Subscriber Line ("HDSL"), 1.544 Mbps digital ("DS1") transmission, and 45 Mbps digital ("DS3") transmission. See Lacouture/Ruesterholz Decl. ¶ 65.

number likely will balloon further just as it did in New York once AT&T and WorldCom — the two biggest platform purchasers in New York, accounting for 90 percent of the more than one million platforms there[22] — decide to finally enter the mass market in Massachusetts.

As demand has increased, Verizon has continued to provide unbundled loops on time, when competitors ask for them. For example, from May through July 2000, Verizon completed 99.9 percent of platform orders, and almost 97 percent of new loop orders, on time. See id. ¶ 68; see also New York Order ¶ 283 (relying on comparable on-time loop performance). Verizon has not sacrificed quality in providing unbundled loops on time. For example, from May through July 2000, CLECs reported installation troubles within seven days on fewer than 1 percent of POTS loop orders. See Lacouture/Ruesterholz Decl. ¶ 70; see also New York Order ¶ 284 (relying on comparable loop-quality performance). Verizon also is providing maintenance and repair for loops on a nondiscriminatory basis. Indeed, with respect to most maintenance and repair performance measurements for unbundled loops — including those measuring the percentage of times that CLECs' customers file initial and repeat trouble reports — Verizon's performance for CLECs is comparable to its reported performance for its own retail operations. See Lacouture/Ruesterholz Decl. ¶ 71.

Of course, as the Commission recognized in its New York Order, this does not mean that all the various loop measures on their face will show perfect results. On the contrary, the reported measures can be affected by CLEC behavior or other factors that are not competitively significant. For example, in its New York Order, the Commission correctly recognized that installation intervals will differ to the extent competing carriers request longer intervals than

[22] See Reinhardt Krause, Verizon's New York Fight Key To AT&T Challenge, Investors' Bus. Daily, Aug. 15, 2000, at A6.

those that are made available to them, order a different mix of products that includes more services with longer intervals, or order a proportionately larger share of their services in geographic areas of the State where intervals are longer. See New York Order ¶¶ 202-205. Under these circumstances, "the disparity . . . is not the result of discriminatory conduct, but rather is the result of factors outside of [Verizon's] control and unrelated to the timeliness and quality of [its] provisioning." Id. ¶ 202; see also id. ¶¶ 285-290.

This is precisely what is happening in Massachusetts to the extent there is an apparent disparity in loop installation intervals. Indeed, the missed installation appointment measure in Massachusetts, which the Commission described as "the most accurate indicator of [Verizon's] ability to provision unbundled loops," id. ¶ 288, shows that Verizon's on-time performance for CLECs is *better* than for its own retail customers. See Guerard/Canny Decl. ¶ 83; see also id. Att. E. As in New York, to the extent there is any meaningful disparity in the installation intervals for unbundled loops, it is attributable to the fact that CLECs are requesting longer intervals or are requesting a different mix of products that includes more services with longer intervals. See id. ¶¶ 66-75. Once these factors are accounted for, the comparative intervals for wholesale and retail orders are well within the range the Commission found to be acceptable in New York. See id.; New York Order ¶ 210. In short, as in New York, Verizon provides service on-time as requested by the CLECs.

Likewise, the maintenance and repair intervals for loops and other unbundled elements also are skewed by CLECs' own behavior. These measures track the interval from when Verizon receives a trouble report to when it completes the repair associated with that trouble report. See Guerard/Canny Decl. ¶¶ 100-102. As with installation intervals, the reported results for certain of the maintenance and repair measures depend on the intervals actually requested by

CLECs, as well as other factors that are not within Verizon's control. See id. ¶¶ 103-105. Collectively, these factors account for any meaningful difference between the reported wholesale and retail performance results.

For example, CLECs frequently choose not to schedule repair appointments at the earliest available date, even though they are offered the same repair intervals (including weekend appointments) as Verizon's retail customers. See Lacouture/Ruesterholz Decl. ¶¶ 73-75; Guerard/Canny Decl. ¶¶ 103-105. From May through July of this year, for instance, approximately half of the UNE POTS repair requests that CLECs made on a Friday requested a repair date of the following Monday rather than over the weekend, whereas approximately 90 percent of the Friday repair requests from Verizon's retail customers were for weekend appointments. See Lacouture/Ruesterholz Decl. ¶ 73.

In addition, CLECs frequently submit maintenance and repair requests that do not identify the trouble that they are experiencing with a loop, even though they are responsible for doing so. See id. ¶ 78. As a result, Verizon has no sure way to know where the trouble with the loop is occurring — for example, at the customer's premises, in the central office, or somewhere in between — and may, as a result, dispatch personnel to the wrong location, eating up valuable time in the race to fix the problem. See id. From May through July 2000, 59 percent of the maintenance requests were not properly isolated, and the loop was found to be okay or the problem was traced to customer premises equipment. See id. The problem has been compounded by the fact that Verizon technicians, in an effort to accommodate CLEC requests, frequently assigned expedited repair appointments for CLECs that are shorter than Verizon will assign for itself. See id. ¶ 76.

Just as Verizon's overall loop performance is strong, so too is its performance on the specific sub-categories of this checklist item on which competitors historically have focused their attention.

Hot Cuts. There can be no legitimate issue with respect to Verizon's hot-cut performance in Massachusetts. While Verizon uses the same systems and procedures to perform hot cuts in Massachusetts that it uses in New York, see id. ¶ 80, its performance in Massachusetts is substantially *better* than what the Commission found to satisfy the checklist in New York. See New York Order ¶ 291; see also AT&T Corp. v. FCC, 220 F.3d at 625-28 (upholding Commission's decision regarding Verizon's hot-cut performance).

By any standard, Verizon's hot-cut performance in Massachusetts is excellent. For example, from May through July 2000, Verizon completed more than 99 percent of its hot-cut orders on time and as requested. See Lacouture/Ruesterholz Decl. ¶ 83; see also New York Order ¶¶ 292-296 (finding 91- to 94-percent performance acceptable); Texas Order ¶ 264 (finding "a substantial percentage" acceptable). Moreover, this is nothing new. KPMG reviewed Verizon's hot-cut performance between October 1999 and January 2000 and found that 98 percent also were completed on time during that earlier period. See Lacouture/Ruesterholz Decl. ¶ 83 (citing KPMG Report at 198-99 (POP-6-2-6)).[23]

Verizon is also providing hot cuts at a very high level of quality. From May through July 2000, fewer than 1 percent of the hot cuts that Verizon performed resulted in installation trouble related to the actual hot-cut process. See id. ¶¶ 84, 89; see also New York Order ¶¶ 300-303 (describing similar levels of installation troubles as "extremely low"). Moreover, KPMG has confirmed that Verizon's technicians in Massachusetts adhere to the hot cut provisioning

[23] KPMG Consulting, Bell Atlantic OSS Evaluation Project: Final Report (Sept. 7, 2000) (App. I, Tab 1) ("KPMG Report").

procedures. See Lacouture/Ruesterholz Decl. ¶ 80 (citing KPMG Report at 216-17, 220-21 (POP-7-1-2-A&B; POP-7-1-3-A&B)); New York Order ¶¶ 304-307. And Verizon has implemented additional measures since the New York proceeding that further ensure that directory listings are not inadvertently dropped on hot-cut orders. See Lacouture/Ruesterholz Decl. ¶ 91; New York Order ¶ 355 (finding that Verizon already had "taken adequate measures to detect any dropped listings and restore them to the directory assistance database promptly").

Indeed, during the course of the Massachusetts proceeding, the CLECs that are using the vast majority of hot cuts did not complain about Verizon's performance. See Lacouture/Ruesterholz Decl. ¶ 87. Only AT&T, which accounts for less than 13 percent of the hot cuts, challenged Verizon's reported hot-cut performance. See id. And its claims proved to be just as bogus as its similar claims were in New York. In the course of a "reconciliation" undertaken by the Massachusetts DTE, AT&T initially claimed that it had "proof" that Verizon had mis-scored 36 hot-cut orders — all of which turned out to be from 1999. See id. Faced with scrutiny by the DTE, AT&T quickly halved its claim to only 18 orders, and ultimately provided support on only six of its claims. See id. The bottom line is a reduction of less than one percentage point in Verizon's hot-cut performance for AT&T, and an even smaller percentage reduction in Verizon's overall on-time percentage. See id. And there is no dispute for more recent periods. Since May 2000, Verizon has provided AT&T with weekly hot-cut performance reports showing that it has delivered 98.7 percent of AT&T's nearly 400 hot-cut orders in Massachusetts on time. See id. AT&T failed to challenge Verizon's performance on any of these orders. See id.

xDSL-Capable Loops. Verizon's performance on unbundled loops for use by competing carriers to provide DSL services is equally strong. Indeed, even Covad, the most outspoken critic of Verizon's DSL-related performance historically, now readily concedes outside of regulatory forums that Verizon "has significantly improved their provisioning performance, and we are getting great results."[24]

At the time Verizon filed its New York application, competitors had just begun ordering loops to provide xDSL services. As a result, data were "not reported in accordance with a common set of definitions" because the New York Public Service Commission ("PSC") had not yet established performance measures specific to DSL loops. See New York Order ¶¶ 326-327. Now, in contrast, Verizon measures the timeliness of its DSL performance using measurements that were developed in collaborative proceedings with CLECs, and were adopted by both the New York PSC and the Massachusetts DTE. See Lacouture/Ruesterholz Decl. ¶ 94. And these measures show that Verizon's on-time performance for DSL loops is excellent.

First, Verizon provides DSL loops on time when competing carriers request them. See New York Order ¶ 335; see also Texas Order ¶¶ 286-288. Through July 2000, Verizon has provided more than 13,000 xDSL-capable loops to competing carriers in Massachusetts. See Lacouture/Ruesterholz Decl. ¶ 95. During June and July, Verizon's on-time performance for DSL loops met or exceeded 95 percent in each of the separate reporting categories included in Verizon's Performance Assurance Plan ("PAP") in Massachusetts. See id. ¶ 96.[25] These results are substantially *better* than the Commission previously has found will provide "an efficient

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[24] Transcript of Covad's 2000 First Quarter Earnings Release Conference Call at 29-40 (Apr. 18, 2000).

[25] While Verizon also tracks its on-time performance using a second measure, this latter measure does not exclude orders for which facilities were not available. See Lacouture/Ruesterholz Decl. ¶ 96. Rather than reject these "no facilities" orders, Verizon takes additional time to try to make facilities available. See id. ¶ 98. Because it makes no sense to count against Verizon efforts to provide CLECs with better service than is required, only the measure that excludes "no facilities" orders is included in the PAP. This measure provides a more accurate picture of Verizon's on-time performance. See id.

competitor a meaningful opportunity to compete." See New York Order ¶¶ 291, 296 (relying on on-time performance between 88 and 94 percent).

As with other unbundled elements, however, installation interval measures for DSL are less meaningful than the on-time (i.e., missed installation appointment) measure because they are affected by the CLECs' behavior. For example, one issue that is unique to DSL loops is that CLECs include loops that have not been pre-qualified in their mix of DSL orders. See Lacouture/Ruesterholz Decl. ¶ 100; Guerard/Canny Decl. ¶ 78. This issue is significant because, for loops that are not pre-qualified, an extra three days must be added to the interval that would otherwise apply. See Lacouture/Ruesterholz Decl. ¶ 100; Guerard/Canny Decl. ¶ 78. For example, if the standard interval for completing a particular loop order is six days, then three additional days would have to be added if the loop had not been pre-qualified. See Lacouture/Ruesterholz Decl. ¶ 100.

In Massachusetts, however, the loops that have not been pre-qualified are included in the data that go into the same interval measures as those that have. The result of this is that the intervals appear in one instance (the percentage of loops completed in six days) as though Verizon is providing better service to itself than it is to CLECs. See id. ¶¶ 100-101; Guerard/Canny Decl. ¶¶ 78-80. But this simply is not the case. When the different types of loops included in the measure are disaggregated, it is clear that, where the loop has been pre-qualified as it is supposed to be, Verizon has filled DSL loop orders at least as quickly as its own retail orders. See Lacouture/Ruesterholz Decl. ¶ 101; Guerard/Canny Decl. ¶ 80.

Once the CLECs' own behavior is taken into account, therefore, the intervals within which Verizon provides DSL loops to CLECs are comparable to the intervals within which Verizon provides its own retail DSL services. See Lacouture/Ruesterholz Decl. ¶ 101;

Guerard/Canny Decl. ¶¶ 79-80. This is all the more significant here because retail DSL orders are not a good analogue for unbundled DSL loops. On the contrary, unbundled DSL loops require a dispatch and are significantly more difficult to install than retail DSL services. See Lacouture/Ruesterholz Decl. ¶ 100. Consequently, the fact that performance is comparable for these two services means that CLECs actually receive service that is superior to what Verizon provides itself.

Second, Verizon is providing DSL loops that are at a level of quality "sufficiently high to permit competitors to compete meaningfully." New York Order ¶ 335; see also Texas Order ¶¶ 299-300 (same). As with loops generally, however, an evaluation of certain maintenance and repair measures, such as the interval and trouble reports within seven days (so-called "I-codes") measures, also have to take CLEC behavior into account. For example, one issue that has a disproportionate impact on DSL loops is that Verizon frequently cannot gain access to the premises of the customer to complete a repair. See Lacouture/Ruesterholz Decl. ¶ 106; New York Order ¶ 326 ("We do not believe it is appropriate to include legitimate 'no access' situations in a measure of missed appointments."). Obtaining access to a customer's premises is a particular problem with DSL loops because there often are three companies involved — Verizon, the CLEC, and the Internet service provider ("ISP") that buys service from the CLEC and that actually deals with the customer. See Lacouture/Ruesterholz Decl. ¶ 106. From April through July 2000, Verizon was unable to gain access to the customer's premises to complete a repair in connection with nearly 59 percent of CLECs' complex loop repair requests compared to only 3.4 percent of the maintenance requests from Verizon's own retail customers. See id.

Another issue that uniquely affects DSL loops is the apparent failure by some CLECs to perform properly or to heed the results of acceptance testing. For example, the vast majority (more than 80 percent) of the "repair" requests that are submitted on DSL loops either are traced to problems that should have been revealed during acceptance testing, or are closed with no trouble found. See id. ¶¶ 104-105. In the case of one major CLEC, 56 percent of repair requests were resolved with no trouble found, and 90 percent of the remainder were outside facilities issues that a properly performed acceptance test by the CLEC would have disclosed. See id. ¶ 105. The fact that CLECs are submitting these trouble reports within short periods after the loops are installed — and after they provide a serial number accepting the loops as working — suggests that CLECs are accepting loops that are not capable of supporting the services they wish to provide and then submitting "repair" orders in an effort to force Verizon to rebuild or replace the loop. See id. ¶ 103. Verizon has presented this issue to the New York collaborative, and the major CLEC involved has agreed to work collaboratively to prevent these types of repair requests in the future. See id. ¶ 105.

Third, Verizon provides competing carriers with "nondiscriminatory access to OSS pre-ordering functions associated with determining whether a loop is capable of supporting xDSL advanced technologies." New York Order ¶ 140; see also Texas Order ¶ 165. As in New York, Verizon provides CLECs with access to the same loop-qualification database that Verizon's retail personnel use to qualify an end user customer's line for DSL service. See Lacouture/Ruesterholz Decl. ¶ 108. Since the New York proceeding, Verizon has enhanced this database further to provide CLECs with additional information as to why loops they have requested do not qualify for DSL service. See id.; see also UNE Remand Order ¶ 426. As of July 2000, Verizon had completed the loop-qualification inventory necessary to include in the database 93 percent of its central offices with collocation arrangements in place in Massachusetts. See Lacouture/Ruesterholz Decl. ¶ 108. For those few loops not yet included in the database, Verizon also will perform a manual loop qualification, and, if a CLEC wants still further information about a loop, it will perform an engineering query on request. See id. ¶¶ 109-110. And, for loops that are not qualified, Verizon will provide loop "conditioning" services under the terms of a standardized offering, including the removal of bridge taps or load coils. See id. ¶ 107.

Finally, Verizon is in the process of moving its retail DSL business in Massachusetts into a separate affiliate, and will complete this process by the end of this year. See id. ¶¶ 111-112. Specifically, Verizon will provide its retail DSL services in Massachusetts through the same separate affiliate that provides retail DSL services in New York. See id. This separate affiliate will provide further assurance that Verizon will continue to provide nondiscriminatory service to CLECs in the future. See id. ¶ 111; New York Order ¶¶ 330-331 ("[W]e have further assurance that competing carriers in New York will have nondiscriminatory access to xDSL-capable loops in the future as a result of [Verizon's] commitment to establish a separate affiliate through which it will offer retail advanced services."); see also Texas Order ¶¶ 307-318 (discussing SBC's separate advanced services affiliate).

Line Sharing. Since the time of its New York Order, the Commission adopted a new requirement — typically referred to as line sharing — to provide unbundled access to the "high frequency portion of the loop." See Line Sharing Order ¶ 13;[26] 47 C.F.R. § 51.319(h). Line sharing enables a competing carrier to provide high-speed data service over the same loop on which a customer receives basic local voice service from Verizon. Verizon has complied with this new requirement in Massachusetts, and stands ready to fill CLECs' line-sharing orders.

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[26] Deployment of Wireline Services Offering Advanced Telecommunications Capability, Third Report and Order in CC Docket No. 98-147, Fourth Report and Order in CC Docket No. 96-98, 14 FCC Rcd 20912 (1999) ("Line Sharing Order").

In response to the Commission's Line Sharing Order, Verizon has devoted an enormous amount of resources to successfully implementing line sharing, and has done so with input from competing carriers. For example, Verizon has actively participated in collaborative proceedings conducted under the auspices of the New York PSC. See Lacouture/Ruesterholz Decl. ¶ 115. As part of these collaboratives, Verizon met on a weekly basis with CLECs and the New York PSC's staff to identify and resolve the technical and operational issues associated with the implementation of line sharing. See id. In addition, Verizon conducted a line-sharing "pilot," and invited all interested CLECs to participate. See id. ¶ 116. Although only three chose to participate, Verizon provisioned all of their test orders successfully and obtained useful information to aid its implementation of line sharing. See id.

Based on the collaborative proceedings and line-sharing pilot, Verizon deployed methods and procedures for providing line sharing that it has adopted for Massachusetts, and any further agreements reached in the continuing collaborative sessions in New York will be implemented in Massachusetts as well. See id. ¶¶ 115-117. Verizon also has developed standard contract amendments covering line sharing. Through August, Verizon has entered into line-sharing agreements with nine CLECs in Massachusetts, and has also amended its tariffs to include line sharing. See id. ¶¶ 113-114. The Massachusetts DTE is currently reviewing this tariff.

Under the terms of its agreements and tariffs, Verizon provides CLECs with their choice of two kinds of line-sharing arrangements.[27] In one, the CLEC installs, owns, and maintains a splitter in its own collocation arrangement. See id. ¶ 118. In the other, a splitter owned by the

[27] Based on the New York collaborative proceedings, Verizon has also developed means by which CLECs can test their circuits in a line-sharing arrangement. See Lacouture/Ruesterholz Decl. ¶ 119. Verizon has also developed procedures for handling interruptions that may occur to a customer's voice service when line sharing on their line is implemented. See id. ¶ 120.

CLEC is located in Verizon's central office space, and installed by either the CLEC or an approved vendor. See id. Regardless of which of these options they choose, CLECs may submit line-sharing orders electronically using either the Web-GUI or the application-to-application EDI interface discussed in the OSS section below. See id. ¶ 129.

Verizon also has taken the steps necessary to ensure that it can timely provision significant commercial volumes of line-sharing orders in the future. See id. ¶¶ 131-132. For example, it has established two wholesale centers exclusively devoted to provisioning orders for line-sharing and unbundled xDSL loops, one of which is located in Boston. See id. ¶ 131. Since March 2000, Verizon has more than doubled the number of service representatives in its Boston center (and will also add additional personnel as necessary). See id. ¶ 132. As a result, these centers have already handled up to 50,000 xDSL and line-sharing service requests in a single month. See id.

Moreover, Verizon has demonstrated through actual experience that it is capable of handling significant volumes of line-sharing orders. While it has received only a handful of line-sharing orders in Massachusetts, the systems, processes, and procedures for provisioning line-sharing orders are the same in Massachusetts as they are in New York, where Verizon has completed close to 7,000 line-sharing orders. See id. ¶ 114. While many of these orders were from Verizon's own separate data affiliate, they were submitted over the same interfaces using the same ordering processes as are used by the CLECs. See id. ¶¶ 111, 114. And, based on the consensus line-sharing measures developed in New York,[28] 100 percent of the 2,275 line-sharing orders completed in July (the first month the separate data affiliate submitted orders) were

[28] On August 25, 2000, the Carrier Working Group — which includes Verizon and CLECs participating in the collaborative — submitted a proposal for line-sharing performance measurements to the New York PSC, which is expected to review it at its October session. See Guerard/Canny Decl. ¶ 15.

completed on time for both CLECs and the separate data affiliate. See id. ¶ 136; Guerard/Canny Decl. Att. N.

2. Unbundled Local Transport (Including Interoffice Facilities).

Verizon offers competing carriers in Massachusetts access to local transport unbundled from switching, including both dedicated and shared transport, using the same checklist-compliant processes and procedures that it uses in New York. See Lacouture/Ruesterholz Decl. ¶ 159; New York Order ¶ 338.[29]

Through July 2000, Verizon has provided shared transport on each of the nearly 12,000 platforms that it has provided. See Lacouture/Ruesterholz Decl. ¶ 165. Moreover, because shared transport is provided as part of platforms, it has been delivered at the same time as the accompanying loops and unbundled switching. As discussed above, Verizon provides platforms on time 99 percent of the time, and the same is true of unbundled shared transport. See id. ¶ 68.

Verizon also has provided more than 1,200 dedicated local transport facilities to competing carriers. See id. ¶ 161. From May through July 2000, Verizon's on-time completion rate for dedicated transport was 97.3 percent on average, which is comparable to the on-time completion rate for Verizon's closest retail analogue. See id. ¶ 162.

3. Unbundled Switching.

Verizon offers CLECs in Massachusetts local and tandem switching unbundled from loops and other network components using the same processes and procedures that it uses in

[29] Verizon provides both shared and dedicated transport under its tariffs and approved interconnection agreements. See Lacouture/Ruesterholz Decl. ¶ 159. This includes shared transport between Verizon's end office switches, between end office and tandem switches, and between tandem switches. See id. ¶¶ 160, 163. As described above, Verizon also provides unbundled dark fiber for interoffice transport where spare facilities are available. See id. ¶¶ 160, 167.

New York, and which the Commission found satisfy the checklist. See id. ¶ 145; New York Order ¶ 346.[30]

Verizon has provided nearly 12,000 unbundled local switching elements in Massachusetts, all of which were provided as part of platforms. See Lacouture/Ruesterholz Decl. ¶ 146. It also has provided unbundled tandem switching in connection with each of these platform orders. See id. ¶ 155. As with unbundled loops and transport for platforms, moreover, Verizon consistently provided unbundled switching on time. From May through July 2000, Verizon provided 99 percent of local switching elements by the due date. See id. ¶ 68. And Verizon meets the installation dates for platform (and therefore local switching) orders at least as often as it meets the dates for its own retail customers. See id.

As in New York, Verizon also provides customized routing (using line-class codes) so that CLECs can direct directory-assistance and operator-services traffic to their own platforms, to a third-party platform, or to Verizon's platform. See id. ¶ 149. Verizon also offers the same option that it does in New York of using a standardized local switching configuration that gives CLECs the same local call routing as Verizon itself, but with the option of branding their directory-assistance and operator-services traffic as they choose. See id. ¶ 151. Finally, as in New York, Verizon is capturing and providing usage data to CLECs that enable them to bill for exchange access. See id. ¶ 155.

[30] Verizon makes unbundled switching available pursuant to legally binding interconnection agreements and tariffs. See Lacouture/Ruesterholz Decl. ¶ 145. Unbundled local switching is available as a line side or a trunk side port (shared and dedicated) and includes all of the vertical features available to Verizon's retail customers on a line-by-line basis. See id. In addition, Verizon provides CLECs with access to other features resident in its switches that Verizon does not offer its retail customers. See id. ¶ 150. Unbundled tandem switching consists of dedicated tandem trunk ports, shared tandem trunk ports and features, tandem usage, and group routings. See id. ¶ 145.

4. New UNE Requirements.

Since the time of the New York proceeding, the Commission also has adopted additional requirements with respect to dark fiber, subloops, and stand-alone access to network interface devices, or NIDs. See UNE Remand Order ¶¶ 167, 174, 205-207, 232-234; 47 C.F.R. § 51.319(a)(1) and (2). Verizon complies with each of these requirements. See Lacouture/Ruesterholz Decl. ¶¶ 137, 143, 167.

First, Verizon provides "dark fiber" — fiber that has not been activated through the connection of the electronics used to carry communications services — and has been doing so in Massachusetts since before the UNE Remand Order took effect. See id. ¶¶ 167-168.[31] As of July 2000, Verizon has completed a total of 185 orders for unbundled dark fiber in Massachusetts, all of which were unbundled dark-fiber transport. See id. ¶ 174.[32] These orders represent 1,170 miles of dark fiber. See id. Verizon also is providing dark fiber on time. For example, from May through July 2000, it completed 100 percent of the orders it received for dark fiber on time. See id. ¶ 175.

Second, Verizon provides competing carriers in Massachusetts with unbundled access to subloops. See id. ¶ 137.[33] This offering includes access to house-and-riser cable, and access to remote terminals either through collocation (where space is available) or by establishing a connection between Verizon's remote terminal and a CLEC's adjacent facilities. See id. ¶¶ 138-140; see also UNE Remand Order ¶ 205. No competitor has yet ordered subloop elements in

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[31] Verizon has amended 13 of its interconnection agreements to provide dark fiber, and in May 2000 filed a tariff to make dark fiber generally available. See Lacouture/Ruesterholz Decl. ¶ 167.

[32] Verizon also has adopted procedures to notify CLECs whether spare dark-fiber facilities are available to fulfill their request. See Lacouture/Ruesterholz Decl. ¶ 171.

[33] Verizon has entered into eight agreements to provide subloops, and in May 2000 filed a tariff to make subloops generally available. See Lacouture/Ruesterholz Decl. ¶ 137.

Massachusetts, but Verizon has provided one type of subloop in New York since before the UNE Remand Order. Specifically, Verizon has provided CLECs in New York with more than 1,500 house-and-riser cable pairs. See Lacouture/Ruesterholz Decl. ¶ 138.

Finally, Verizon provides CLECs with access to NIDs both as part of an unbundled loop and on a stand-alone basis to CLECs that deploy their own loop facilities. See id. ¶ 143; UNE Remand Order ¶¶ 233-235. Verizon permits competing carriers that deploy their own loop facilities to connect their loops directly to Verizon's NIDs, or to connect indirectly through their own adjacent NIDs. See Lacouture/Ruesterholz Decl. ¶¶ 143-144.

5. Combining Unbundled Network Elements.

Verizon provides both preassembled combinations of network elements and access to unbundled elements that allows competing carriers to assemble the elements themselves. See id. ¶ 176.

First, Verizon provides existing combinations of elements. See id. ¶¶ 180-185. As noted above, Verizon has provided competing carriers with nearly 12,000 complete preassembled platforms of network elements through July of this year. See id. ¶ 182. As in New York, Verizon also provides a "switch sub-platform" (local switching in combination with other shared network elements such as shared transport, shared tandem switching, and SS7 signaling). See id. ¶ 183. And Verizon provides loop and transport combinations in accordance with the Commission's rules and the rules of the Massachusetts DTE. See id. ¶184.

Second, Verizon offers CLECs essentially the same methods of access to combine unbundled network elements themselves as it provides in New York, see id. ¶¶ 176-179, and which the Commission found satisfy the checklist, see New York Order ¶ 231. For example, Verizon offers competing carriers a variety of forms of access that permit them to combine network elements, including physical, virtual, and various forms of cageless collocation. See

Lacouture/Ruesterholz Decl. ¶¶ 177-178; see also New York Order ¶ 232 (finding that Verizon "provides a variety of methods that allow competitive carriers to combine unbundled network elements with their own facilities").[34]

Verizon also provides CLECs with the ability to perform "line splitting" — that is, to permit a CLEC that supplies its own splitter to obtain "an unbundled xDSL-capable loop terminated to a collocated splitter and DSLAM equipment and unbundled switching combined with shared transport." Texas Order ¶ 325; see Lacouture/Ruesterholz Decl. ¶¶ 185-186. And, of course, a CLEC may combine these elements with its own splitter using the alternatives that the Commission previously found satisfy the checklist. See Lacouture/Ruesterholz Decl. ¶ 186.

C. Poles, Ducts, Conduits, and Rights-of-Way (Checklist Item 3).

Verizon provides access to poles, ducts, conduit, and rights-of-way that it owns or controls in Massachusetts. See id. ¶ 187. Through July 2000, Verizon has provided more than one million pole attachments and more than 2.6 million feet of conduit in Massachusetts. See id.

Verizon provides access to poles, ducts, and conduits on a timely basis. For example, for requests that do not require project management, Verizon is committed to completing field surveys and responding to pole and conduit requests within 45 days, and does so more than 90 percent of the time. See id. ¶ 192. In the second quarter of 2000, Verizon was able to satisfy a competing carrier's request for poles and for conduits without make-ready work about 90 percent of the time. See id. ¶ 194. In these cases, Verizon provides access immediately upon issuance of a license. See id. In other cases, make-ready or construction work may be needed. From May

[34] Verizon does not offer assembly rooms and assembly points in Massachusetts. See Lacouture/Ruesterholz Decl. ¶ 179. These arrangements were made available in New York before Verizon was required to provide preassembled combinations of network elements; however, only one CLEC in New York made use of this offering, and now that preassembled combinations of network elements are available, the CLEC has discontinued its usage. See id.

through July 2000, Verizon completed the make-ready work for CLECs and cable operators' pole attachments and conduit occupancy in approximately half the time that it performs such work for itself. See id. ¶ 201.

Moreover, Verizon has maintained this performance in the face of significantly increased demand (and will continue to add resources as needed to meet increases in demand). See id. ¶¶ 198-199. During the second quarter of 2000, Verizon licensed more than 5,000 pole attachments, a 60 percent increase compared to the same period in 1999. See id. ¶ 198. Likewise, Verizon licensed more than 170,000 feet of conduit in the first half of 2000, nearly three times as much as was licensed during the same period in 1999. See id. ¶ 199.

D. E911, Directory Assistance, and Operator Call-Completion Services (Checklist Item 7).

E911. Verizon provides competing carriers in Massachusetts with nondiscriminatory access to E911 services and databases under tariffs and approved interconnection agreements using the same processes and procedures that it uses in New York. See id. ¶ 203. No competitor even challenged Verizon's performance on this checklist item in New York, and the Commission found that Verizon satisfies the requirements of the Act. See New York Order ¶ 350. Through July 2000, CLECs with their own switches have obtained nearly 420,000 E911 subscriber listings in Massachusetts. See Lacouture/Ruesterholz Decl. ¶ 209.

As in New York, CLECs that have their own switches make their own entries in the E911 database using an electronic interface that gives them the same ability as Verizon to input information. See id. In addition, through July 2000, Verizon has provided more than 500 E911 trunks to 28 CLECs in order to establish connections to Verizon's E911 tandems. See id. ¶ 207. Verizon provides competing carriers with E911 trunks on a timely basis, within the same standard intervals as for interconnection trunks generally. See id.

Moreover, for a competing carrier without its own switch, Verizon will enter all the necessary E911 data for that carrier's customers in exactly the same way Verizon enters its own customer data. See id. ¶ 212. Verizon also commingles CLECs' E911 database entries with Verizon's own entries to ensure that they are maintained with the same accuracy and reliability that Verizon maintains for its own retail customers. See id. ¶¶ 213-215.

Directory Assistance. Verizon provides access to Directory Assistance services in Massachusetts in essentially the same way that it does in New York, see id. ¶ 216, and which the Commission found satisfies the checklist, see New York Order ¶ 354. Competing carriers have the option of purchasing Directory Assistance services from Verizon, or establishing their own Directory Assistance centers and using Verizon's or a third-party's Directory Assistance database. See Lacouture/Ruesterholz Decl. ¶ 216.[35]

As of July 2000, Verizon was providing Directory Assistance services to 18 CLECs in Massachusetts using 1,300 dedicated trunk facilities, and another 14 CLECs were purchasing Directory Assistance services using shared transport. See id. ¶ 219. Verizon provides trunks to competing carriers for Directory Assistance in the same manner and within the same intervals that it provides interconnection trunks generally. See id. Moreover, when CLECs purchase Verizon's Directory Assistance services, they have their choice of branding options,[36] and calls

[35] For CLECs that establish their own Directory Assistance centers, Verizon provides nondiscriminatory access to its Directory Assistance listings. See Lacouture/Ruesterholz Decl. ¶ 220. Verizon allows CLECs to use Direct Access to Directory Assistance, a database service that provides for read-only access to Verizon's Directory Assistance listings by CLECs. See id. Verizon also makes the contents of its Directory Assistance database available to CLECs in an electronic format for their use in providing local Directory Assistance services. See id. ¶ 221.

[36] As in New York, Verizon permits CLECs that purchase Verizon's Directory Assistance services to order such services "unbranded," "rebranded," or with a Verizon brand. See Lacouture/Ruesterholz Decl. ¶ 224.

from CLEC customers are handled in a nondiscriminatory fashion and answered as quickly as calls from Verizon's own customers. See id. ¶¶ 224, 226.

Operator Services. Verizon likewise provides access to Operator Services in Massachusetts using the same processes and procedures that it uses in New York, and which the Commission found satisfy the checklist. See id. ¶ 227; see also New York Order ¶ 354. Competing carriers again have the option either to purchase Operator Services from Verizon or to rely on their own centers. See Lacouture/Ruesterholz Decl. ¶ 227.

As of July 2000, 16 competing carriers that have their own local switch were purchasing Operator Services from Verizon using more than 1,300 dedicated transport facilities. See id. ¶ 231. Another 14 CLECs were purchasing Operator Services using shared transport. See id. As with Directory Assistance, Verizon provides trunks to competing carriers that provide their own Operator Services in the same time and manner and in the same intervals as it provides interconnection trunks generally. See id.

Moreover, when CLECs purchase Verizon's Operator Services, they have their choice of branding options, and calls from CLEC customers are handled in a nondiscriminatory fashion and answered as quickly as calls from Verizon's own customers. See id. ¶¶ 233-234.

E. White Pages Directory Listings (Checklist Item 8).

Verizon provides access to its white pages directory listings in Massachusetts using the same processes and procedures as in New York. See id. ¶ 235.[37] The Commission found that, under these procedures, CLECs' listings "are nondiscriminatory in appearance and integration,

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[37] Verizon provides white pages directory listings under interconnection agreements and tariffs. See Lacouture/Ruesterholz Decl. ¶ 236. Verizon commingles the listings of CLECs' customers alphabetically with Verizon's own customers, using the same type face and format and with no distinguishing features. See id. ¶ 237. Verizon enters CLECs' listings using the same procedures as for its own listings, see id. ¶ 240, and provides CLECs the ability to preview their directory listings before publication, see id. ¶ 247.

and have the same accuracy and reliability that [Verizon] provides for its own customers." New York Order ¶ 360 (footnote omitted). Through July 2000, Verizon has provided competing carriers in Massachusetts with more than 190,000 basic white pages directory listings, including approximately 122,000 for residential customers. See Lacouture/Ruesterholz Decl. ¶ 245. Moreover, as noted above, Verizon has implemented software changes to ensure that directory listings are not inadvertently dropped when a customer switches from Verizon to a competing carrier. See id. ¶¶ 250-251.

F. Number Administration (Checklist Item 9).

Verizon is no longer responsible for assigning telephone numbers either to itself or to competing carriers. See id. ¶ 252. NeuStar is now the North American Numbering Plan Administrator. See id. Through July 2000, more than 1,400 NXX codes have been assigned to CLECs in Massachusetts. See id. Verizon ensures accurate and complete programming of NXX codes in its switches in Massachusetts using the same implementation and testing procedures that it uses in New York, see id. ¶¶ 253-256, and which the Commission found satisfy the checklist, see New York Order ¶ 364.[38]

G. Databases and Associated Signaling (Checklist Item 10).

Verizon provides competing carriers in Massachusetts with access to its databases and signaling using substantially the same nondiscriminatory processes and procedures that it uses in New York. See Lacouture/Ruesterholz Decl. ¶ 257. No competitor even challenged Verizon's

[38] As in New York, Verizon offers a mechanized testing process — the Verification Evaluation and Testing System ("VETS") — to verify the accurate and complete programming of NXX codes in its switches. See Lacouture/Ruesterholz Decl. ¶¶ 255-256.

performance on this checklist item in New York, and the Commission found that Verizon satisfies the requirements of the Act. See New York Order ¶ 366.[39]

Through July 2000, Verizon was providing 35 CLECs with access to its SS7 signaling network, nine through direct interconnection to Verizon's Signaling Transfer Points, and the remainder through hub providers. See Lacouture/Ruesterholz Decl. ¶ 260. Verizon has also provided four CLECs with access to its Toll Free database, eight CLECs with access to its Calling Name database, and one CLEC with direct access to its Line Information database. See id. ¶¶ 265, 268, 273. Verizon has processed approximately 1.6 billion, 77 million, and 29 million CLEC queries for these databases, respectively. See id. In addition, six CLECs have made the necessary arrangements to access Verizon's Local Number Portability database. See id. ¶ 277.

As in New York, Verizon also provides competing carriers with access to its Service Management System database, which enables competitors to enter, modify, or delete entries in Verizon's call-related databases. See id. ¶ 279. CLECs may also obtain access to Verizon's Service Management System/Service Creation Environment, which enables them to create and test their own Advanced Intelligent Network ("AIN")-based telecommunications services. See id. ¶ 280.

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[39] Verizon provides access to signaling and databases under interconnection agreements and tariffs. See Lacouture/Ruesterholz Decl. ¶¶ 258, 264, 267, 272, 276. With respect to signaling, Verizon uses the same facilities, equipment, and personnel to provision signaling links for CLECs and itself. See id. ¶ 260. And all signaling traffic on Verizon's network is queued and routed on a nondiscriminatory basis. See id. ¶ 263. With respect to databases, Verizon adds information for CLEC customers to its databases in the same manner as for Verizon's own customers, see id. ¶ 271, and CLEC queries to the databases are commingled with Verizon's own queries and processed on a first-come, first-served basis, see id. ¶¶ 266, 269, 274, 278.

H. Number Portability (Checklist Item 11).

Verizon has implemented long-term number portability ("LNP") in all of its end offices in Massachusetts. See id. ¶ 283; see also New York Order ¶ 369.[40] Through July 2000, Verizon provided 22 CLECs with LNP on more than 200,000 telephone numbers. See Lacouture/Ruesterholz Decl. ¶ 284. From May through July, Verizon met the due date on more than 98 percent of the orders for pure LNP. See id.

I. Local Dialing Parity (Checklist Item 12).

Verizon provides local dialing parity throughout its service area in Massachusetts under tariffs and interconnection agreements using the same nondiscriminatory processes and procedures that it uses in New York, see id. ¶ 287, and which the Commission found satisfy the checklist, see New York Order ¶ 374.[41] From January through July 2000, Verizon exchanged an average of nearly two billion minutes of traffic per month over local interconnection trunks on calls that were completed with dialing parity. See Lacouture/Ruesterholz Decl. ¶ 290. In addition, while intraLATA toll dialing parity is not a checklist requirement, Verizon has implemented intraLATA toll dialing parity in Massachusetts pursuant to the Massachusetts DTE's requirements. See id. ¶ 291.

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[40] Verizon provides LNP under interconnection agreements and tariffs. See Lacouture/Ruesterholz Decl. ¶ 283. Verizon also continues to maintain interim number portability ("INP") capabilities for CLECs, though it is no longer taking orders for INP. See id. ¶ 285; see also New York Order ¶ 368. Where CLECs have existing INP arrangements, Verizon is converting those arrangements to LNP on a mutually agreed-upon schedule. See Lacouture/Ruesterholz Decl. ¶ 285. Through July 2000, Verizon continues to provide INP on approximately 7,600 telephone numbers. See id. ¶ 286.

[41] CLEC customers can dial local calls without dialing extra digits or access codes. Once these calls reach Verizon's network, they are treated the same as any call that originates on Verizon's network. See Lacouture/Ruesterholz Decl. ¶¶ 287, 289. Accordingly, no differences exist in dialing delays, call completion, or transmission quality between calls made by CLECs' customers and calls made by Verizon's customers.

J. Reciprocal Compensation (Checklist Item 13).

Verizon is providing reciprocal compensation for transportation and termination of local calls to competing carriers in Massachusetts. See id. ¶ 292. As of July 2000, Verizon is paying reciprocal compensation to some 24 CLECs, nine broadband CMRS providers, and seven paging companies. See id. ¶ 293.

Verizon is making reciprocal compensation payments for this traffic in accordance with the Massachusetts DTE's requirements, which specifically has held that Internet-bound traffic is not subject to reciprocal compensation. See id. ¶ 294.[42] In addition, the Massachusetts DTE has created a rebuttable presumption that the minutes of traffic *to* a CLEC will be presumed local (i.e., non-Internet) and subject to reciprocal compensation up to an amount that is twice the amount of traffic *from* the CLEC to Verizon. See id. Under the Massachusetts DTE's rules, the CLEC may rebut this presumption by demonstrating that the local component of the traffic it exchanges with Verizon exceeds this 2:1 ratio. See id.

K. Resale (Checklist Item 14).

Verizon makes available for resale at wholesale rates established by the Massachusetts DTE all of the telecommunications services it offers at retail to subscribers that are not telecommunications carriers. See id. ¶ 295.[43] Verizon makes resale services available in the same manner as in New York, see id., and which the Commission found satisfies the checklist, see New York Order ¶ 381. Through July 2000, Verizon has provided more than 44 CLECs with

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[42] See also New York Order ¶ 377 (Commission requires BOCs to comply with state requirements for paying reciprocal compensation on Internet-bound traffic); Texas Order ¶ 386 (finding Southwestern Bell Telephone Company in compliance with Texas requirements regarding reciprocal compensation on Internet-bound traffic).

[43] Verizon is making available services for resale under interconnection agreements and tariffs. See Lacouture/Ruesterholz Decl. ¶ 296. The Massachusetts DTE established

about 246,000 resold lines, including 214,000 business lines and 32,000 residential lines. See Lacouture/Ruesterholz Decl. ¶ 297.

Verizon provides resale services on time, when CLECs request them.[44] For example, from May through July 2000, Verizon met 99 percent of its installation appointments for CLECs that did not require the dispatch of a Verizon technician and 95 percent of the installation appointments that did require a dispatch. See id. ¶ 306. This is consistently better than Verizon's performance in meeting installation appointments for its retail customers during this period. See id.

As with unbundled elements, this does not mean that the reported intervals for filling wholesale and retail orders are the same. On the contrary, because CLECs frequently request longer intervals than are available to them and order proportionately more products with longer intervals, the reported intervals necessarily will differ. See id. ¶ 307; Guerard/Canny Decl. ¶¶ 66-67; New York Order ¶¶ 204, 205, 209, 400. As in New York, however, Verizon provides competing carriers with confirmed installation dates and meets those dates in a nondiscriminatory manner. See Guerard/Canny Decl. ¶¶ 71-72; New York Order ¶¶ 199, 200. This "demonstrates that [Verizon] is provisioning resale services . . . to competing carriers in substantially the same time and manner as for its retail operations." New York Order ¶ 209.

Finally, resellers may resell any of Verizon's customer-specific arrangements ("CSAs") to any customer (or customers) that meet the terms and conditions of that particular arrangement. See Lacouture/Ruesterholz Decl. ¶ 299. While a customer that elects to terminate its service

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wholesale discounts of 24.99 percent (for lines with Verizon's Operator Services and Directory Assistance) and 29.47 percent (for lines without these features). See id. ¶ 295.

[44] Verizon also provides CLECs with billing details for calls and service usage made by their resale customers in a timely and accurate manner. See Lacouture/Ruesterholz Decl. ¶ 303; KPMG Report at 458 (BLG-5-4-3).

with Verizon may be subject to reasonable and nondiscriminatory termination liabilities to the extent they were part of the original terms of the CSA agreed to by the customer, the Commission has held that this is not "unreasonable or discriminatory." New York Order ¶ 390; see Lacouture/Ruesterholz Decl. ¶ 300.

L. Operations Support Systems.

Verizon provides CLECs with access to various checklist items through substantially the same Operations Support Systems ("OSS") and interfaces that it uses in New York, see McLean/Wierzbicki Decl. ¶ 8, and which the Commission concluded satisfy the requirements of the Act, see New York Order ¶ 82.

As noted above, the OSS used in Massachusetts and New York are in most instances carbon copies of one another — that is, while they are physically separate systems, they are functionally identical. See McLean/Wierzbicki Decl. ¶ 8.[45] In addition, Verizon provides the same pre-ordering, ordering, and maintenance and repair interfaces to access the underlying OSS in both States. See id. ¶¶ 8, 18, 39, 82. Likewise Verizon provisions orders in the same manner in Massachusetts and New York and most of Verizon's billing systems are also the same (with the exception of message and payment processing). See id. ¶ 8. Verizon also provides competing carriers with the same degree of technical support to help them use Verizon's OSS interfaces as is available in New York. See id. ¶ 113.

[45] See, e.g., First Louisiana Order ¶ 21 (using findings of South Carolina Order, see Application of BellSouth Corporation, et al. Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services In South Carolina, Memorandum Opinion and Order, 13 FCC Rcd 539 (1997), as starting point for examining same OSS in Louisiana); Second Louisiana Order ¶ 88 (same); id. ¶ 56 (where BOC "provides access to a particular checklist item through a region-wide process, such as its OSS, [the Commission] will consider both region-wide and state specific evidence in [its] evaluation of that checklist item"); id. ¶ 86 (commercial usage of OSS in other BellSouth States is probative of checklist compliance).

In addition, while Verizon continues to offer the same versions of the application-to-application pre-ordering and ordering interfaces as it did in New York when its application for that State was approved, it now offers CLECs the option of using updated versions of those interfaces that are based on the most recent set of industry standards. See id. ¶¶ 22, 41. Among other things, these updated versions use uniform fields and formats that make it even easier for CLECs to integrate their pre-ordering and ordering systems. See New York Order ¶ 139 & n.417 (noting that implementation of LSOG 4 would "minimize inconsistencies in fields and formats and simplify the use of pre-ordering and ordering interfaces").

As in New York, Verizon's OSS in Massachusetts are in place, fully operational, and handling large commercial volumes. See, e.g., id. ¶¶ 150, 164. For example, Verizon's ordering systems already processed nearly 300,000 transactions in Massachusetts in just the first seven months of 2000, or more than 1,300 transmissions per day on average, and its pre-ordering systems (which handle New York and New England) processed more than 2.7 million transactions. See McLean/Wierzbicki Decl. ¶¶ 34, 45. And, of course, Verizon's systems passed the third-party test conducted by KPMG, satisfying 800 of the 804 separate items evaluated and providing still further "persuasive evidence of [Verizon's] OSS readiness." New York Order ¶ 100.

1. Pre-Ordering.

As it does in New York, Verizon provides three electronic pre-ordering interfaces in Massachusetts. The first is a Web-based Graphical User Interface ("Web-GUI") that can be used with a personal computer. The second is an application-to-application interface based on the industry standard Electronic Data Interchange ("EDI") protocol. Verizon actually offers CLECs two versions of the EDI interface: one is the same version (EDI-9 with LSOG 3) that was in place when the New York application was approved; the other (EDI-10 with LSOG 4) is an updated version based on the newest industry standards. See McLean/Wierzbicki Decl. ¶ 22.[46] The third is another application-to-application interface known as Common Object Request Broker Architecture ("CORBA"). See id. ¶ 21; see also New York Order ¶ 131. At present, there are seven CLECs using the EDI interfaces, two CLECs using the CORBA interface, and over 75 carriers using the Web-GUI for pre-ordering. See McLean/Wierzbicki Decl. ¶ 21.

Verizon's pre-ordering interfaces already handle large commercial volumes. For example, during the first seven months of this year, Verizon processed more than 2.7 million pre-ordering transactions through the existing interfaces that handle New York and New England. See id. ¶ 34. To put this number in perspective, it is double the number that Verizon's pre-ordering systems were handling at the time of its New York application, and is more than the number that were handled in New York and New England during all of 1999. See id.; see also New York Order ¶ 150.

Even at these large and increasing volumes, the performance of Verizon's pre-ordering systems is excellent. For example, from May through July 2000, the application-to-application interfaces were available to CLECs more than 99 percent of the time they were scheduled to be available, as was the Web-GUI in July after some earlier issues were resolved. See McLean/Wierzbicki Decl. ¶¶ 31-33. In addition, Verizon has consistently met the same response time standards that the Commission found to be "reasonable and appropriate" in New York. New York Order ¶ 146. Specifically, from May through July 2000, Verizon has consistently met

46 Verizon implemented this upgrade pursuant to the Change Management Process originally developed in New York and now applied throughout the former Bell Atlantic region. This process incorporated input from CLECs and allowed them to test the release before it was implemented in production. See McLean/Wierzbicki Decl. ¶¶ 102-103. Because Verizon continues to support two versions of a pre-ordering interface as specified in the Change Management Process, CLECs can make the transition to the new versions on a schedule that is convenient for them.

the response time standard for pre-ordering transactions generally, as well as the separate standard for providing so-called "parsed" Customer Service Records. See McLean/Wierzbicki Decl. ¶ 35; New York Order ¶¶ 146-147 (relying on comparable performance).

Verizon also has in place a comprehensive capacity management process to ensure that its interfaces will continue to handle increasing volumes. On a daily basis, Verizon collects and analyzes key usage data, extrapolates anticipated demand, and takes specific steps to ensure that its systems are capable of meeting that demand. See McLean/Wierzbicki Decl. ¶ 38. As a result of following these procedures, in the first seven months of this year, Verizon was able to process without any visible strain as many pre-ordering transactions as it processed in all of 1999. See id. ¶ 34. Moreover, KPMG has confirmed that these procedures are sufficient to ensure that Verizon's pre-ordering systems will continue to handle increasing traffic volumes with acceptable performance. See id. ¶ 38; KPMG Report at 235-38; see also New York Order ¶ 150 (relying in part on similar KPMG finding).

Finally, the Commission previously found that Verizon's application-to-application pre-ordering interfaces and the corresponding ordering interfaces described below "are readily integratable" — that is, they "allow competing carriers to integrate pre-ordering information into [Verizon's] ordering interface and the carriers' back office systems." New York Order ¶¶ 137-138. With the implementation of LSOG 4, integration has become even easier. See id. ¶ 139 & n.417. Indeed, several CLECs have successfully integrated Verizon's pre-ordering functions into their back office systems. See McLean/Wierzbicki Decl. ¶ 27.

2. Ordering.

As it does in New York, Verizon provides CLECs with a choice of two ordering interfaces for resale and unbundled elements in Massachusetts. The first is the same Web-GUI that is available for pre-ordering. See id. ¶ 40. The second is an application-to-application EDI interface. See id. As with pre-ordering, there are two versions of this latter interface: one is the same version (EDI-8 with LSOG 2) that was available when the New York application was approved; the other (EDI-10 with LSOG 4) is an updated version that is based on the newest national standards. See id. ¶ 41. According to the Commission, these interfaces "provide competing carriers with electronic access for a full range of ordering functionality." New York Order ¶ 159. At present, there are 15 CLECs using EDI interfaces (including three using the new version), and more than 75 CLECs using the Web-GUI (including 25 using LSOG 4). See McLean/Wierzbicki Decl. ¶¶ 40, 42.

Verizon's ordering interfaces are already handling large commercial volumes in Massachusetts. For example, in the first seven months of this year, these interfaces processed nearly 300,000 order transactions in Massachusetts, id. ¶ 45, an average of more than 1,300 per day. During this period, Verizon's interfaces successfully processed orders for more than 47,000 resale lines, more than 27,000 stand-alone loops, and almost 10,000 platform lines. See Br. Att. A Exh. 2.[47]

Verizon performs the various ordering functions on a timely basis. For example, from May through July 2000, Verizon's on-time performance for returning confirmation notices (LSRCs), reject notices, and completion notices for both UNE and resale orders exceeded the 95 percent standard adopted by the Massachusetts DTE. See McLean/Wierzbicki Decl. ¶¶ 57, 77. Significantly, these are the same "strict benchmark standards" that Verizon adheres to in New York. New York Order ¶¶ 164, 180. Verizon's strong real-world performance also is

[47] Through July of this year, CLECs operating in the former Bell Atlantic States had submitted over 432,000 local service requests using LSOG 4 (about half made through the EDI interface and half through the Web-GUI). See McLean/Wierzbicki Decl. ¶ 42. In the month of July, 36 percent of all local service requests submitted by CLECs in these States used LSOG 4. See id.

backed by KPMG, which tested Verizon's ability to process normal, peak, and stress order volumes and found that it satisfies all of the test criteria. See McLean/Wierzbicki Decl. ¶ 45; KPMG Report at 47-60.

In addition to processing orders on time, Verizon processes them accurately. See McLean/Wierzbicki Decl. ¶ 60. For example, Verizon measures service order accuracy by reviewing key fields on manually processed orders to determine whether the information on the orders was accurately input into Verizon's service order processors. See id. From May through July 2000, Verizon has exceeded the 95-percent standard for correctly inputting the information in these fields. See id. As the Commission previously recognized, moreover, this and other service order accuracy measures actually understate Verizon's performance because they attribute to Verizon as errors all differences between the original order submitted by a CLEC and the information that is entered into the service order processor — including instances where Verizon *corrects* a CLEC's error. See New York Order ¶¶ 173-174. As in New York, therefore, once this fact is taken into account, Verizon's "actual level of service order accuracy is significantly higher than reflected in its performance data" for these measurements. Id. ¶ 174 & n.548; see also McLean/Wierzbicki Decl. ¶¶ 61-62. This fact is confirmed by Verizon's installation quality measurements, which measure whether services ordered by end users were correctly installed. See New York Order ¶ 174. And the generally low percentages of installation troubles confirm that the orders were, in fact, installed correctly. See McLean/Wierzbicki Decl. ¶ 62.

Verizon's systems in Massachusetts also are capable of "flowing through" a large percentage of CLEC orders, as long as they are properly submitted. All of the order types that were designed to flow through in New York also flow through in Massachusetts. See id. ¶ 46.

Moreover, Verizon has implemented a flow-through capability for a number of additional order types since the time of the New York application. See id. As in New York, moreover, KPMG confirmed that properly formatted orders for service types that are designed to flow through will in fact do so. See id. ¶ 48. In fact, during KPMG's volume test, Verizon showed a perfect 100-percent flow-through rate for resale, platform, and unbundled loop orders that are designed to flow through. See id.

In addition, the actual flow-through rate observed on commercial orders in Massachusetts is the same or higher for each of the three main order types (platform, resale, and unbundled loops) than the corresponding flow-through rate at the time the New York application was approved. See id. ¶ 46; New York Order ¶ 166.[48] Likewise, the rates at which CLEC orders are rejected are similar to or better than what the reject rates were in New York. See McLean/Wierzbicki Decl. ¶ 52.

Of course, as the Commission itself has recognized, aggregate flow-through measures are not necessarily "reflective of the actual flow-through capabilities of [Verizon's] systems" for the simple reason that they "are dependent, in part, on the performance of competing carriers to achieve high rates." See New York Order ¶ 166. As in New York, however, an examination of the flow-through and reject rates disaggregated by carrier shows that some carriers have performed significantly better than others. For example, one large reseller has averaged better than 80 percent flow through, while individual CLECs have achieved flow-through rates on platform orders of up to more than 90 percent. See McLean/Wierzbicki Decl. ¶ 50. And some

48 Because platform orders currently comprise a smaller percentage of unbundled element orders in Massachusetts than they did in New York when Verizon filed its application there, the overall UNE flow-through rate in Massachusetts is lower. See McLean/Wierzbicki Decl. ¶ 46. When viewed separately, however, both loop and platform orders flow through at a rate that is equal to or better than it was in New York when that application was approved. See id.

individual CLECs also have achieved reject rates that are significantly lower than others. See id. As in New York, this experience further confirms that the capabilities of Verizon's systems are significantly better than the aggregate reported results on their face would suggest.

Moreover, while Verizon is "not accountable for flow-through problems that are attributable to competing carriers' errors," it has nevertheless taken steps to assist CLECs in improving their flow-through rates. New York Order ¶ 167; see McLean/Wierzbicki Decl. ¶ 53. For example, since November 1999 Verizon has conducted monthly CLEC education workshops that focus on common CLEC errors in submitting orders. See McLean/Wierzbicki Decl. ¶ 53. Moreover, to help CLECs self-diagnose the causes of their flow-through rates, Verizon provides a complete inventory of flow-through errors, sorted by individual CLEC and mode of entry. Id. ¶ 54.

Finally, Verizon has modified its systems to eliminate a problem it experienced earlier this year as a result of a latent software defect that caused delays in the return of status notices to CLECs. That problem, which affected only a small number of CLEC orders in Massachusetts (less than one-half of 1 percent), has been fully resolved. See id. ¶¶ 63-67.[49] Verizon's performance since implementing the system fixes has been excellent.[50] Moreover, as noted

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49 Verizon entered into a Consent Decree with the Commission to resolve this issue on March 9, 2000. See Bell Atlantic-New York Authorization Under Section 271 of the Communications Act to Provide In-Region, InterLATA Service In the State of New York, Order, 15 FCC Rcd 5413, ¶ 1 (2000); New York Telephone Company (d/b/a Bell Atlantic-New York), Consent Decree, 15 FCC Rcd 5415, ¶ 1 (2000) ("Consent Decree"). Under the terms of that decree, Verizon agreed to file regular performance reports with the Commission to demonstrate its improved performance. See McLean/Wierzbicki Decl. ¶ 66. The decree terminated on June 20, 2000, after Verizon demonstrated that it met the performance standards established in the decree. See id. ¶ 67.

50 See Letter from David H. Solomon, Chief, Enforcement Bureau, FCC, to Edward D. Young, III, Senior Vice President — Regulatory, Bell Atlantic, re: Bell Atlantic-New York Consent Decree (FCC No. 99-02) (June 20, 2000) (acknowledging that Verizon "has satisfied the

above, for the period from May through July 2000, it has consistently *exceeded* the 95-percent on-time standard for the return of status notices adopted by the DTE. See id. ¶¶ 57, 77.

3. **Provisioning.**

Verizon provisions competing carriers' orders in Massachusetts using substantially the same systems and process that it uses in New York. See id. ¶ 79. There are no separate provisioning interfaces because provisioning is essentially internal to Verizon once an order is submitted. See id. ¶ 78. Rather, the systems and processes for most CLEC orders are the same as those used to provision Verizon's retail orders. See id. ¶ 80. As the Commission concluded in New York, these systems "are set up to provide parity of service for provisioning wholesale and retail orders," and Verizon "provides nondiscriminatory access to its provisioning processes." New York Order ¶¶ 193, 197. Moreover, as in New York, KPMG evaluated Verizon's retail and wholesale provisioning processes, and found that they were nondiscriminatory. See McLean/Wierzbicki Decl. ¶ 81; KPMG Report at 193-204; New York Order ¶ 198 ("Our conclusion is buttressed by KPMG's finding that overall, [Verizon's] provisioning processes for competing carriers are provided at parity with its retail operations.").

4. **Maintenance and Repair.**

Verizon provides access to its maintenance and repair OSS through two interfaces, the Web-GUI and an electronic bonding interface. The Web-GUI system is identical to the one used in New York, which the Commission concluded provides "a requesting carrier . . . access [to] all the same functions that are available to [Verizon's] retail representatives." New York Order ¶ 213; see McLean/Wierzbicki Decl. ¶ 8. The Electronic Bonding Interface ("EBI") is an application-to-application interface that was implemented after Verizon filed its application in

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requirements" in the Consent Decree, and concluding "that [Verizon's] obligations under the Consent Decree have terminated").

New York and that allows CLECs to connect directly to Verizon's maintenance and repair OSS. See McLean/Wierzbicki Decl. ¶ 88. There currently are three CLECs in Massachusetts that have implemented the EBI, and approximately 75 that are using the Web-GUI. See id. ¶ 82.

Competing carriers in Massachusetts use Verizon's maintenance and repair interfaces in commercially significant volumes. For example, during the first half of 2000, CLECs in Massachusetts used the maintenance and repair interfaces to perform an average of more than 4,300 maintenance transactions per month, and more than 4,900 in June alone. See id. ¶ 89. These systems are, therefore, capable of handling large commercial volumes, as KPMG has confirmed and as this Commission has recognized. See id. ¶ 9; KPMG Report at 247-58; New York Order ¶ 214.

Verizon's maintenance and repair OSS and interfaces process trouble reports from competing carriers in substantially the same time and manner as Verizon processes reports for its own retail customers. See McLean/Wierzbicki Decl. ¶ 90; New York Order ¶ 219. From May through July 2000, response times for five of the six relevant measures were consistently better than the applicable standard. See McLean/Wierzbicki Decl. ¶ 90. And, after a system change was implemented at the end of May, the response times for the sixth measure were better than the standard in both June and July. See id.

5. Billing.

Verizon uses the same systems to generate billing information in Massachusetts that it uses for its own retail operations, and (with one exception) the same systems that it uses in New York.[51] See id. ¶ 8. In New York, the Commission found that these systems provide

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[51] The one internal billing system that is different in Massachusetts and New York is the system used for message and payment processing. See McLean/Wierzbicki Decl. ¶ 8. In Massachusetts, Verizon uses the Message Processing System ("MPS"), which performs the very

"nondiscriminatory access to [Verizon's] billing functions" by "provid[ing] competing carriers with billing information through Daily Usage Files (DUFs) and carrier bills." New York Order ¶ 226. The same is true here.

Verizon currently produces more than 1,500 bills per month on the Customer Record Information Systems (used for billing resale services and unbundled loops) and more than 300 bills per month on the Carrier Access Billing System (used for billing other unbundled elements) in New England. See McLean/Wierzbicki Decl. ¶ 96.[52] It also produces more than 48 million call records (i.e., Exchange Message Interface ("EMI") records) per month on average in New England. See id. Moreover, Verizon delivers these bills and usage data on time. For example, from May through July 2000, Verizon has exceeded the 95-percent on-time standard for providing customer-usage data and the 98-percent on-time standard for providing wholesale bills to competing carriers. See id. ¶ 97; see also New York Order ¶ 227 (relying on comparable performance under this measurement). Finally, Verizon provides accurate bills. From May through July, when corrected to take into account one-time credits resulting from settlement agreements, the bill adjustment rate for CLECs was significantly less than for Verizon's retail bills. See McLean/Wierzbicki Decl. ¶ 98.

6. Technical Support and Change Management.

As in New York, Verizon provides the "documentation and support necessary to give competing carriers nondiscriminatory access to its OSS" in Massachusetts. New York Order ¶ 101; see McLean/Wierzbicki Decl. ¶ 113. Moreover, Verizon uses the exact same Change

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same functions as the Message/Customer Record Information System ("MCRIS") that is used in New York.

52 Verizon's billing systems process wholesale bills on a regional basis, and its performance measures therefore cover New England rather than solely Massachusetts. See McLean/Wierzbicki Decl. ¶ 96.

Management Process in Massachusetts that it uses in New York, see McLean/Wierzbicki Decl. ¶ 101, and which the Commission endorsed because it "provides an efficient competitor with a meaningful opportunity to compete," New York Order ¶ 111.

First, Verizon provides the same extensive information, training, and assistance to CLECs doing business in Massachusetts as it provides to CLECs in New York. See McLean/Wierzbicki Decl. ¶ 113. This includes handbooks, technical documentation that Verizon frequently updates and supplements, numerous training sessions, and a well-staffed Help Desk that provides a single point of contact for a wide variety of problems that CLECs may encounter. See id. ¶¶ 113-128; see also New York Order ¶ 127 (finding that Verizon's training and assistance "provides efficient competitors a meaningful opportunity to compete").[53]

Second, Verizon has adopted the same Change Management Process in Massachusetts that it uses in New York. See McLean/Wierzbicki Decl. ¶ 101; see also New York Order ¶ 107. As in New York, moreover, Verizon "provides competing carriers with timely change management notification and documentation." New York Order ¶ 114. In fact, from May through July 2000, Verizon met the Change Management on-time standards for 100 percent of the Verizon-initiated changes and all but one of the emergency maintenance changes (which was one day late). See McLean/Wierzbicki Decl. ¶ 107; see also New York Order ¶¶ 114-115 (relying on comparable performance). In addition, KPMG examined the Change Management Process in Massachusetts and found it satisfactory in all respects. See McLean/Wierzbicki Decl. ¶ 107; see also New York Order ¶ 115 (relying in part on similar KPMG finding).

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[53] To provide additional assistance to CLECs, Verizon has developed and makes freely available the Integrated Documentation Application ("IDA"), which provides CLECs a side-by-side comparison of the Local Service Ordering Guidelines for various electronic interfaces and Verizon's Business Rules regarding those interfaces. The IDA greatly simplifies CLECs' task of programming their systems to communicate with Verizon. See McLean/Wierzbicki Decl. ¶¶ 116-117.

Third, Verizon provides a testing environment in Massachusetts to allow CLECs to test the interaction of their systems and interfaces with Verizon's pre-ordering and ordering interfaces and OSS. See McLean/Wierzbicki Decl. ¶ 108; New York Order ¶ 119. KPMG conducted an extensive review of the CLEC test environment and test procedures — using it to test Verizon's implementation of its updated EDI ordering interface (based on LSOG 4) as well as the prior version of the interface — and found that Verizon satisfied all test criteria. See McLean/Wierzbicki Decl. ¶ 112 (citing KMPG Report at 526-39); New York Order ¶ 121 (relying in part on similar KPMG finding).

III. VERIZON IS FULLY IN COMPLIANCE WITH THE REQUIREMENTS OF SECTION 272.

As in New York, Verizon will provide all services that are subject to the requirements of section 272 through one or more separate affiliates that comply fully with the requirements of that section and the Commission's rules (collectively, the "272 Affiliates").[54] The Commission found in the New York Order that Verizon "demonstrated that it will comply with the requirements of section 272." New York Order ¶ 403.

A. Verizon's Separate Affiliates Comply Fully with the Structural and Transaction Requirements of Section 272(b).

Verizon's 272 Affiliates will be operated as independent carriers and will conduct business with Verizon (and all of its other local BOC affiliates) on an arm's-length basis. Accordingly, the 272 Affiliates comply with the five requirements of section 272(b).

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[54] As required by the Act, the services that will be provided through separate 272 Affiliates include any manufacturing activities under section 272(a)(2)(A), and any interLATA services originating in Massachusetts that are covered by section 272(a)(2)(B). Under section 271(j), private line and 800 services receive unique treatment for these purposes: any such services that terminate in Massachusetts are deemed to originate there, while such services that originate in Massachusetts are deemed to terminate there. As a result, these types of services are subject to the requirements of sections 271 and 272 on the terminating (rather than the originating) end.

First, as in New York, the 272 Affiliates will operate independently as required by section 272(b)(1). See Browning Decl. ¶ 10a-10c; New York Order ¶ 406. Second, the 272 Affiliates will maintain separate books, records, and accounts. See Browning Decl. ¶ 11; New York Order ¶ 408.[55] Third, the 272 Affiliates will have separate officers, directors, and employees. See Browning Decl. ¶ 12a-12c; New York Order ¶ 409. Fourth, the 272 Affiliates will not obtain credit under any arrangement that would permit a creditor to have recourse to the assets of Verizon. See Browning Decl. ¶ 13a-13e; New York Order ¶ 410. Finally, Verizon will use the same practices as in New York to ensure that transactions between it and the 272 Affiliates will be conducted on an arm's-length basis, reduced to writing, and available for public inspection. See Browning Decl. ¶ 14a-14e; New York Order ¶¶ 411-414.

B. Verizon Will Comply with the Nondiscrimination Safeguards of Section 272(c).

The Commission's finding in New York that Verizon "will comply with section 272(c)(1)" applies equally to Massachusetts. See New York Order ¶¶ 417-418. Specifically, as in New York, Verizon will not discriminate between the Long Distance Affiliates and any other entity in the provision or procurement of goods, services, facilities, and information, or in the establishment of standards. See Browning Decl. ¶ 17a-17o.

Likewise, the Commission's finding that Verizon has "demonstrate[d] that its BOCs account for all transactions with its section 272 affiliates in accordance with the accounting

[55] As explained below, Verizon also meets the requirements of section 272(c). See Implementation of the Telecommunications Act of 1996: Accounting Safeguards Under the Telecommunications Act of 1996, Report and Order, 11 FCC Rcd 17539, ¶ 170 (1996). As in New York, certain accounting and record-keeping services for each of Verizon's 272 Affiliates will be performed by other affiliated centralized services companies that are not separated under section 272. See Browning Decl. ¶ 14e. The Commission has made clear, however, that such shared-service arrangements are permitted. See Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Communications Act of 1934, as amended, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 21905, ¶¶ 168, 178-186 (1996).

principles designated or approved by the Commission" also applies to Massachusetts. New York Order ¶ 415. As in New York, Verizon will account for any transactions with the Long Distance Affiliates as required by section 272(c)(2) and fully comply with the Commission's cost allocation and affiliate transactions rules. See Browning Decl. ¶¶ 24-31.

C. Verizon Will Comply with the Audit Requirements of Section 272(d).

Verizon also "will comply with section 272(d), which requires an independent audit of a BOC's compliance with section 272 after receiving interLATA authorization." New York Order ¶ 416. As in New York, Verizon has the mechanisms in place for retaining independent auditors and making records available to verify compliance with the Commission's rules in order to comply with section 272(d). See Browning Decl. ¶ 29. Indeed, Verizon has already begun the initial steps in the first-ever biennial Federal/State joint audit of section 272 compliance. See id.

D. Verizon Will Fulfill All Requests in Accordance with Section 272(e).

In addition, Verizon will not discriminate in favor of its 272 Affiliates with respect to requests for exchange and exchange access services. New York Order ¶ 418. First, Verizon will fulfill requests for telephone exchange and exchange access services from unaffiliated entities within the same time period in which Verizon fulfills such requests for its own retail operations. See 47 U.S.C. § 272(e)(1); Browning Decl. ¶ 18a-18g; see also New York Order ¶ 418 (finding Verizon in compliance with this requirement). Second, Verizon will not provide any facilities, services, or information concerning the provision of exchange access to its Long Distance Affiliates unless such facilities, services, or information are made available to other providers of interLATA service on the same terms and conditions. See 47 U.S.C. § 272(e)(2); Browning Decl. ¶ 19a-19b. Third, Verizon will charge its Long Distance Affiliates or impute to itself (if using access for the provision of permitted interLATA services of its own) an amount for telephone exchange and exchange access services that is no less than the amount charged to unaffiliated interexchange carriers for such service. See 47 U.S.C. § 272(e)(3); Browning Decl. ¶ 20a-20b. Fourth, Verizon will provide interLATA or intraLATA facilities or services to the Long Distance Affiliates only if such services or facilities are made available to all carriers at the same rates and on the same terms and conditions. See 47 U.S.C. § 272(e)(4); Browning Decl. ¶ 21.

E. Verizon and Its Affiliates Will Comply with the Joint Marketing Provisions of Section 272(g).

As in New York, Verizon will comply with the requirements of section 272(g). New York Order ¶ 419. Specifically, Verizon's 272 Affiliates will not market or sell local exchange service provided by Verizon except to the extent that Verizon permits non-affiliated long distance carriers to do the same. See Browning Decl. ¶¶ 22-23. Moreover, Verizon will not market or sell interLATA service provided by its Long Distance Affiliates in an in-region State until Verizon has received authorization to provide such service in that State. See id.

While Verizon plans to jointly market its services with those of its Long Distance Affiliates as permitted by section 272(g)(3), the Commission has made clear that submission of a joint marketing script is not a requirement of an application under section 271. See New York Order ¶ 419. The D.C. Circuit recently affirmed that decision, expressly holding that the nondiscrimination requirements of section 272(c)(1) do not apply to joint marketing under section 272(g)(3). See AT&T Corp. v. FCC, 220 F.3d at 632. Verizon also plans to permit the sharing of Customer Proprietary Network Information ("CPNI") with its Long Distance Affiliates in accordance with 47 U.S.C. § 222 and the Commission's holdings that CPNI is not subject to section 272(c). See Browning Decl. ¶ 17m.[56]

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[56] See also Implementation of the Telecommunications Act of 1996: Telecommunications Carriers' Use of Proprietary Network Information and Other Customer Information, Second Report and Order and Further Notice of Proposed Rulemaking, 13 FCC Rcd

F. Verizon's Compliance Program Will Ensure Satisfaction of Its Obligations Under Section 272.

Finally, the Commission found that Verizon had "demonstrate[d] that each affiliate has implemented internal control mechanisms to prevent, as well as detect and correct, any noncompliance with section 272." New York Order ¶ 405. Verizon will continue its compliance efforts, which are designed to ensure compliance with the requirements of section 272. See Browning Decl. ¶¶ 32-45. For example, Verizon has established an Affiliated Transactions Compliance Office ("ATCO"), which centralizes the corporation's compliance efforts, reviews affiliate transactions, maintains Verizon's Affiliate Transactions Policy, and conducts employee training on section 272 compliance. See id. ¶¶ 34-37.

IV. APPROVING VERIZON'S APPLICATION IS IN THE PUBLIC INTEREST.

The Commission has held that "compliance with the competitive checklist is, itself, a strong indicator that long distance entry is consistent with the public interest." New York Order ¶ 422. As described above, there is no question that the checklist is satisfied in Massachusetts. In addition, the Commission has explained that it "may review the local and long distance markets to ensure that there are not unusual circumstances that would make entry contrary to the public interest." Id. ¶ 423. No such unusual circumstances exist here; to the contrary, the evidence is overwhelming that Verizon's entry into long distance in Massachusetts is in the public interest.

8061 (1998) ("CPNI Order"); Implementation of the Telecommunications Act of 1996: Telecommunications Carriers' Use of Customer Proprietary Network Information and Other Customer Information, Order on Reconsideration and Petitions for Forbearance, 14 FCC Rcd 14409 (1999) ("CPNI Reconsideration Order"). Although in U.S. WEST, Inc. v. FCC, 182 F.3d 1224 (10th Cir. 1999), cert. denied, 120 S. Ct. 2215 (2000), the Tenth Circuit vacated the CPNI Order on other grounds, the portion of the CPNI Order concluding that section 272(c)(1) does not apply to CPNI was never challenged before the Tenth Circuit and therefore remains the relevant law on the subject.

First, the local market in Massachusetts unquestionably is open and local competition is thriving. As Verizon's experience in New York unambiguously demonstrates, Verizon's entry into the long distance market in Massachusetts will further promote local competition.

Second, mechanisms are in place to ensure that the local market will remain open. The Massachusetts DTE has set TELRIC rates for unbundled network elements. It has adopted the same strict performance standards as the New York PSC. And it has approved a comprehensive performance assurance plan that mirrors the plan adopted in New York.

Finally, Verizon's entry will greatly enhance long distance competition. Verizon's provision of long distance service in New York provides empirical proof that Bell company entry into long distance leads to lower prices and increased demand for long distance service.

A. Local Competition in Massachusetts Is Already Thriving, and Verizon's Entry Will Increase Local Competition Further Still.

Local markets in Massachusetts are unquestionably open to competition.[57] There is extensive competition — from all types of competitors using all three entry paths provided under the Act — throughout Massachusetts. Moreover, as experience in New York and Texas unambiguously proves, Verizon's entry into the long distance market will prompt still further

[57] Verizon disagrees as a legal matter that the Commission may conduct any analysis of local competition in its public-interest inquiry. Under the terms of the Act, the public-interest inquiry should focus on the market to be entered: the long distance market. The statute requires that "the requested authorization" be consistent with the public interest. 47 U.S.C. § 271(d)(3)(C). The "requested authorization" is to provide in-region, interLATA services. See id. § 271(b)(1). Therefore, the statute's public-interest focus is clearly on the long distance market, not the local market. This reading finds strong support in section 271(c)(2)(B), which sets forth an intricate competitive checklist, and section 271(d)(4), which states that "[t]he Commission may not . . . extend the terms used in the competitive checklist." It is simply implausible that Congress would have spent countless hours honing the checklist, would further have enjoined the Commission from improving or expanding upon it, but somehow would also have authorized the Commission to add local competition-enhancing requirements in the context of its public-interest review.

local competition by forcing the long distance incumbents to finally get off the dime and enter Verizon's local markets.

First, competitors have entered the local market in Massachusetts using all three entry paths provided under the Act, and facilities-based competition is particularly well-established. See Taylor Decl. ¶ 25. As graphically illustrated by the maps and exhibits attached to this Application, competitors are entering the local market in all areas of the State and are using all three entry paths provided under the Act to do so. This, of course, is precisely the set of circumstances envisioned by the Department of Justice when it explained that, "[i]f actual, broad-based entry through each of the entry paths contemplated by Congress is occurring in a state, this will provide invaluable evidence supporting a strong presumption that the BOC's markets have been opened." DOJ Oklahoma Evaluation at 43.

The fact that facilities-based competition is well-established is equally significant. According to the Commission, "in the long term, the most substantial benefits to consumers will be achieved through facilities-based competition."[58] Among other things, "[t]he construction of new local exchange networks" benefits consumers, the Commission has explained, because facilities-based carriers "can exercise greater control over their networks, thereby promoting the availability of new products that differentiate their services in terms of price and quality." UNE Remand Order ¶ 110.

The Justice Department has also recognized that the presence of facilities-based competitors not only disciplines behavior in the *retail* business, but also creates an enormous incentive to provide superior *wholesale* service. To recoup its own investment, Verizon must

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[58] Promotion of Competitive Networks in Local Telecommunications Markets, Notice of Proposed Rulemaking and Notice of Inquiry in WT Docket No. 99-217 and Third Further Notice of Proposed Rulemaking in CC Docket No. 96-98, FCC 99-141, 1999 WL 459319, ¶ 4 (rel. July 7, 1999).

generate revenue from traffic flowing over its network. If Verizon provides poor wholesale service to CLECs, they will move traffic that otherwise would have traveled over Verizon's network — either through resale or unbundled network elements — onto competing facilities. See Schwartz Aff. ¶ 77. This is precisely what the Justice Department's economic expert meant when he explained that "facilities-based entry options . . . can discipline an incumbent's behavior in more segments, not only on the retailing side but also in certain *network* functions." Id. ¶ 177 (emphasis added).

Moreover, as the Department of Justice has observed, competitors' willingness to sink enormous sums of precious investment dollars to construct facilities is itself an unmistakable expression of confidence that the local market is open and will remain so. The fact that competitors have "commit[ted] significant irreversible investments to the market (sunk costs) signals their perception that the requisite cooperation from incumbents has been secured or that any future difficulties are manageable." Id. ¶ 174. Even in the unlikely event that competitors making the initial investments withdraw from the market, once facilities are in the ground, they remain available for use by other competitors. See Taylor Decl. ¶ 27.

As noted above, competing carriers in Massachusetts have voted with their wallets on the openness of the local market by investing heavily in competing facilities. Competitors in Massachusetts already serve a very conservatively estimated 400,000 lines in Massachusetts over their own facilities, see id. ¶ 25, which is proportionately equal to the number of facilities-based lines that competitors served in New York at the time Verizon filed its application there.[59] Even

[59] At the time Verizon filed its New York application, competitors were serving 652,000 lines over their own facilities, New York Order ¶ 14, and Verizon was serving approximately 14.1 million access lines, FCC, ARMIS Data Retrieval System, Report 43-08, Table III (as of Dec. 31, 1999). In Massachusetts, competitors are serving approximately [400,000] lines over their own facilities, and Verizon serves approximately 5.4 million access lines. See id.; Taylor Decl. ¶ 25.

based on incomplete information, competitors in Massachusetts have deployed at least 22 voice switches and more than 2,000 fiber-route miles in Verizon's service territory. See id. ¶ 27. And they have spent literally hundred of millions of dollars to do so. See id.

Moreover, competitors are now able to reach virtually all of Verizon's customers in the State using those facilities. As of July 2000, competitors have established nearly *1,600* collocation arrangements, and have access to *more than 94 percent* of Verizon's residential access lines and *more than 96 percent* of Verizon's business lines in the State through those collocation arrangements. See Lacouture/Ruesterholz Decl. ¶ 34; compare New York Order ¶ 75 (667 collocation arrangements in New York at time of application).

Moreover, cable operators in Massachusetts have invested large sums to upgrade their networks to compete directly against Verizon in the provision of broadband access and voice telephony. For example, AT&T Broadband (formerly MediaOne) spent $1.3 billion in the last five years upgrading its New England cable facilities to provide telephone and Internet services. See Taylor Decl. Att. A ¶ 38. That company currently has access to some 2.1 million existing cable subscribers, provides cable modem service to 148 cities in Massachusetts, and serves at least 150,000 cable modem customers and 20,000 cable telephony customers. See id. ¶ 22 & Att. A ¶¶ 19, 38. Likewise, RCN has constructed "overbuild" cable networks in Massachusetts and currently offers cable modem service to complement its local telephone services in Boston, Arlington, Newton, Somerville, and Waltham. See id. Att. A ¶¶ 23-25, 39.

Second, competition in Massachusetts comes in all shapes and sizes and is being provided throughout the State. Massachusetts has attracted competition from both the biggest CLECs in the country (e.g., AT&T and WorldCom) and the many smaller ones (e.g., PaeTec Communications and Broadview Networks). See id. Att. A ¶¶ 16-35 & Exh. 4. Numerous cable operators are providing local service, including the largest cable operator in the country (AT&T), the largest overbuild cable operator (RCN), and several smaller operators (Adelphia and Shrewsbury Cable). See id. There are also several fixed wireless providers offering service (e.g., NEXTLINK and WinStar), and a wide variety of "pure" resellers. See id. Att. A ¶¶ 45-49 & Exh. 8.

Competing carriers are serving both residential and business customers. As of June 2000, CLECs were serving more than 120,000 residential customers in Massachusetts, more than two-thirds of whom were served over their own facilities. See id. ¶¶ 25-26 & Att. A Exh. 2.

And, as the attached maps show, competitive entry in Massachusetts is taking place across the State. In fact, there is every form of competition in every part of the State. While competition is most intense in Boston and its surrounding metropolitan area, there also is intense competition throughout Eastern Massachusetts (e.g., Plymouth and New Bedford), in Central Massachusetts (e.g., Worcester), and in more rural Western Massachusetts (e.g., Springfield). See Br. Att. A Exh. 3. As of June 2000, competing carriers were serving customers using both some or all of their own facilities and through resale in each of the area codes in Massachusetts. See Taylor Decl. Att. A Table 1.

Third, as actual experience in both New York and Texas now unequivocally proves, granting Verizon long distance relief will prompt still further local competition. A Bell company's entry into the long distance market is the catalyst that forces long distance incumbents to finally enter local markets for mass-market customers. See id. ¶ 20. New York was the first State in which a Bell company received long distance relief, and it was the first State in which AT&T, WorldCom, and Sprint began extensively serving mass-market customers. See id. ¶ 21. Texas was the second State in which a Bell company received long distance relief, and it was the second State in which these three incumbents began extensively serving mass-market customers.

In both New York and Texas, the long distance incumbents responded to impending BOC entry by rolling out new, lower-priced bundles of local and long distance service that typically are marketed uniquely to customers in those States. See Breen Decl. ¶¶ 24-26. The long distance incumbents have made significant headway in marketing these bundles. In New York, for example, WorldCom has more than 400,000 mass-market customers, and AT&T — which began providing service about six months after WorldCom — has more than 500,000 mass-market customers. See Taylor Decl. ¶ 21.[60] And these numbers are in addition to the literally hundreds of thousands of additional business customers served by each over their own facilities. AT&T recently boasted: "We've won more local customers in New York than we've lost residential long-distance customers to [Verizon]."[61]

Verizon's entry in New York has not only sparked increased competition from the long distance incumbents, but has sparked added local competition across-the-board. In the first six months since Verizon's entry in New York, the number of local lines served by competitors there has increased at least 70 percent, including a 163 percent increase in UNE-Platform lines and a 30 percent increase in facilities-based lines. See id. There has also been a 142 percent increase in stand-alone loops, a 70 percent increase in collocation sites, and a 33 percent increase in interconnection trunks. See id.

[60] In Texas, AT&T has already signed up 220,000 customers for local service, and plans to have 650,000 by the end of the year. See Reinhardt Krause, Verizon's New York Fight Key To AT&T Challenge, Investors' Bus. Daily, Aug. 15, 2000, at A6 (citing PaineWebber analyst Eric Strumingher).

[61] See Reinhardt Krause, Verizon's New York Fight Key To AT&T Challenge, Investors' Bus. Daily, Aug. 15, 2000, at A6 (quoting AT&T spokesman, Gary Morgenstern).

B. Local Markets in Massachusetts Will Remain Open After Verizon Obtains Section 271 Approval.

Even apart from the marketplace realities demonstrating that the local market not only is open, but irreversibly so, there simply is no realistic risk that Verizon could close the local market or deter further entry. For one thing, Verizon's compliance has been, and will continue to be, closely scrutinized by both competitors and state and federal regulators. For another thing, Verizon is subject to comprehensive performance reporting and performance assurance plans that put $147 million in bill credits at risk annually — an amount directly proportionate to the parallel plans in New York.

1. The Regulatory Framework in Massachusetts Strongly Favors Competition.

As in New York, the process of opening local markets began in Massachusetts even before the Act was enacted, and has continued since.

Most significantly here, the Massachusetts DTE has conducted extensive proceedings to evaluate Verizon's compliance with the competitive checklist.[62] In fact, nearly 16 months ago, in May 1999, the DTE opened a docket specifically devoted to evaluating Verizon's compliance with the checklist: Case No. 99-271. Since that time, it has intensively analyzed every aspect of Verizon's checklist compliance down to the minutest detail, all with constant input from competing carriers — both through formal filings and hearings and through informal "collaborative" sessions. The formal record in Case No. 99-271 has seen approximately 500 submissions totaling more than 30,000 pages from more than 32 parties. There have been about

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[62] Throughout the course of these proceedings, Verizon has continued to work with all interested parties (including the Massachusetts DTE, the Department of Justice, and competing carriers) in the context of the formal proceedings, the informal collaboratives, and individual discussions to attempt to resolve disputed issues. See Revised Procedures for Bell Operating Company Applications Under Section 271 of the Communications Act, Public Notice, 12 FCC Rcd 18590, 18593 (1997).

36 days of hearings, filling more than 6,000 pages of transcript. This process only recently wrapped up with the presentation of oral argument by all interested parties, and the Massachusetts DTE has indicated that, based on this exhaustive record, it is now prepared to deliver its evaluation in response to Verizon's Application.

Of course, the DTE's efforts have not been limited to its checklist proceeding. Like the New York PSC, the Massachusetts DTE has also conducted an "active review and modification of [Verizon's] proposed unbundled network element prices," and has demonstrated its "commitment to TELRIC-based rates." New York Order ¶ 238. The DTE consolidated issues raised in five separate arbitrations in a proceeding that became known as the "Consolidated Arbitrations." Mudge Decl. ¶¶ 5-6. The DTE divided the proceeding into four phases. Phase I investigated issues that were appropriate for abbreviated proceedings and primarily addressed resale of Verizon's telecommunications services. Phase II determined permanent resale discounts. Phase III addressed non-cost issues that were too complex to be included in a proceeding with an abbreviated format. And Phase IV investigated and adopted permanent rates for unbundled network elements. Id. ¶ 7. After receiving literally thousands of pages of testimony and briefing from all interested parties, the DTE ultimately adopted comprehensive orders establishing the rates and wholesale discounts that Verizon could charge. Id. ¶ 11.

The Massachusetts DTE's resolution of the pricing issue is entirely consistent with the Act and Commission precedent, and the Commission should accordingly "place great weight" on the DTE's conclusions in this regard. See New York Order ¶ 238. As an initial matter, the Massachusetts wholesale discounts of 24.9 percent (for a CLEC that uses Verizon's Operator Services) and 29.4 percent (for a CLEC that does not use Verizon's Operator Services) are aggressive applications of the Commission's rules and produce among the largest discounts in the nation. In addition, the outcome of the proceedings to establish rates for unbundled network elements is fully consistent with the Commission's pricing rules, including the TELRIC methodology.[63] As the DTE stated, "the Department finds that it correctly applied the FCC's avoided cost and TELRIC methods."[64] And the DTE only recently reiterated that "the current UNE rates in Massachusetts *are in compliance with the FCC's TELRIC methodology* and related statutory requirements." See Letter from James Connelly, Chairman, Massachusetts DTE, to Kenneth W. Salinger, Esq., Denying AT&T's Petition to Review and Reduce UNE Rates at 3 (July 27, 2000) (App. B, Tab 481) ("Salinger Letter").

Nonetheless, as they did in New York, the long distance incumbents no doubt will try to resurrect here some of the same pricing arguments that already have been soundly rejected by the Massachusetts DTE. As it did in New York, the Commission must reject any such efforts to relitigate those issues here. See New York Order ¶¶ 242-243; AT&T Corp. v. FCC, 220 F.3d at 617.

First, the long distance incumbents presumably will repeat here the same argument they made in New York that the local switching rates set by the Massachusetts DTE are too high. But the basis for their claim — "that the switching inputs are based on the cost of switching upgrades rather than the lower cost of new switches," Salinger Letter at 2 n.1 — is the same argument that

63 The Commission's TELRIC pricing rules have been struck down by the Eighth Circuit as contrary to the Act. See Iowa Utils. Bd. v. FCC, 219 F.3d 744 (8th Cir. 2000). Once that court's decision takes effect, TELRIC-based prices will not be required for purposes of the checklist, which merely requires access to interconnection and network elements in accordance with section 252(d)(1). See 47 U.S.C. § 271(c)(1)(B). Nonetheless, in the absence of new rules implementing the Eighth Circuit's decision, the fact that Verizon's prices in Massachusetts comply with the rules previously in effect is sufficient for purposes of the present Application. See New York Order ¶ 30 (holding that the fact that Verizon provided all network elements required by the Commission's then-vacated rules was adequate for checklist purposes).

64 DTE, Order Granting Bell Atlantic's Motion to Adopt Permanent UNE Rates at 16, No. 98-15 (Mar. 19, 1999) (App. F, Tab 157).

the Commission rejected in the New York proceeding and that the D.C. Circuit upheld as reasonable. See New York Order ¶ 242; AT&T Corp. v. FCC, 220 F.3d at 617 ("The FCC's decision seems reasonable to us."). In addition, neither AT&T nor any other party chose to raise this issue in an appeal of the Massachusetts DTE's order. See Mudge Decl. ¶ 28. As such, they are precluded from raising it here.

Moreover, Verizon recently negotiated and contracted for local switching charges that are substantially below the rates that the Massachusetts DTE has already determined to be TELRIC-compliant, and those same rates are generally available. On July 24, 2000, the DTE approved an amendment to the interconnection agreement between Verizon and Z-Tel that, among other things, provides for a promotional discount of between 30 and 50 percent for local switching usage. See id. ¶¶ 32-33. This discount will be available until the Massachusetts DTE completes its reevaluation of TELRIC rates in 2001, and the amendment specifically provides that the same promotional discounts shall be made available to other carriers operating in Massachusetts. See id. ¶¶ 33-34. Therefore, these promotional below-TELRIC switching rates are available for all carriers that plan to use the UNE-Platform mode of market entry, including AT&T and WorldCom. Yet, much as they love to complain about the issue in regulatory forums, neither AT&T nor WorldCom has elected to take advantage of the substantially lower promotional rates.

Second, the long distance incumbents may again rehash their argument that the DTE made assumptions that were *too forward-looking* when it based its loop rates on all fiber feeder. They are wrong. The DTE found that the technology choices used by Verizon's model reflected the most efficient forward-looking technologies. See id. ¶ 16. In addition, this is the very same claim on which the Commission refused to overturn the judgment of the New York PSC, and it should do the same for the DTE here. New York Order ¶ 248; AT&T Corp. v. FCC, 220 F.3d at

618-19. In any event, because this is an issue that WorldCom did appeal, its arguments now must be made to the district court.

Third, the incumbents and their allies may repeat the claims they made in New York that Verizon's loop-conditioning charges are overstated. They are flat wrong. As in New York, those rates are undergoing thorough review by the Massachusetts DTE and a decision is expected soon. See Mudge Decl. ¶ 36; New York Order ¶ 250; AT&T Corp. v. FCC, 220 F.3d at 620-21.

2. Verizon Is Subject to Comprehensive Performance Reporting and Performance Assurance Mechanisms.

Verizon also is subject to extensive performance reporting requirements that, like the identical requirements in New York, allow competitors and regulators alike to identify and investigate potential problems before they pose a risk to competition. And it also is subject to comprehensive self-executing performance assurance mechanisms that provide still further incentives to provide the best wholesale performance possible.

First, Verizon is subject to performance reporting requirements in Massachusetts that mirror those in place in New York. See Guerard/Canny Decl. ¶¶ 10, 16; New York Order ¶¶ 438-439. In fact, the measurements used in Massachusetts are the same ones that were developed in the New York PSC's collaborative "Carrier-to-Carrier" process. See Guerard/Canny Decl. ¶ 16. The Massachusetts DTE adopted these measures as its own in January of this year. See id. It also ruled that it would adopt "all additions, deletions, or modifications" made to Verizon's performance measurements in New York. See id.; see also DTE Performance Plan Order at 26. As the Commission has found, these measurements allow regulators and competitors alike to monitor all aspects of Verizon's wholesale performance, including "pre-ordering, ordering, provisioning, maintenance and repair, network performance (interconnection trunks), collocation, billing and operator services." New York Order ¶ 431.

Likewise, Verizon also is subject to performance standards — either retail analogs or benchmarks — against which its performance is measured to ensure that it provides nondiscriminatory treatment to CLECs in Massachusetts. Where a measure tracks performance on a service that Verizon provides both to CLECs and to Verizon's own retail operations, the performance standards compare Verizon's performance for CLECs against "parity" — i.e., the performance Verizon provides to itself. Guerard/Canny Decl. ¶ 20. These standards ensure that Verizon provides service to CLECs in "'substantially the same time and manner'" as the service it provides to its own retail operations. New York Order ¶¶ 44, 431; Texas Order ¶ 44. Where no retail analog is available, the plan measures performance against benchmarks adopted by the New York PSC and Massachusetts DTE. See Guerard/Canny Decl. ¶ 20. These benchmarks represent "absolute standards" — rather than minimum performance levels — that provide Verizon with objectives for providing CLECs excellent service. See id.; see also New York Order ¶ 55 n.107 (recognizing that "states may choose to set their performance benchmarks at levels higher than what is necessary to meet the statutory nondiscrimination standard").[65]

Moreover, Verizon's Massachusetts performance data have been validated by an independent review conducted by KPMG. See Guerard/Canny Decl. ¶ 132; Texas Order ¶ 428 (noting importance of the "reliability of reported data"). And, by order of the DTE, Verizon's performance data and reporting processes in Massachusetts also will be subject annually to an independent audit, the first of which will begin six months after Verizon receives 271

[65] In measuring performance, Verizon employs the statistical methodology that the Commission endorsed in its New York Order. See Guerard/Canny Decl. ¶ 131 & Att. B Exh. 11; compare New York Order App. B. This methodology, which was initially proposed by CLECs, see New York Order App. B ¶ 6, uses a "modified z-test" to account for random variation in Verizon's performance on measurements with large sample sizes. See id. App. B ¶¶ 1-10. For measurements with smaller sample sizes, Verizon uses alternative tests that, like the modified z-test, were agreed to by "[a]ll parties in the New York Commission collaborative hearings." Id. App. B ¶ 13.

authorization from this Commission. See DTE Performance Plan Order at 32; New York Order ¶ 442 ("We note with approval that the performance data used in . . . New York appears to be subject to regular scrutiny.").

Second, Verizon is subject to a self-executing Performance Assurance Plan in Massachusetts that closely mirrors the plan it adopted in New York, and which the Commission found provides "strong assurance that the local market will remain open after [Verizon] receives section 271 authorization." New York Order ¶ 429; see Guerard/Canny Decl. ¶ 134.

Verizon's Massachusetts Performance Assurance Plan — which the Massachusetts DTE has approved — places $142 million in annual bill credits at risk. See DTE Performance Plan Order at 24; Guerard/Canny Decl. ¶ 137.[66] This amount is proportionally greater — based on relative number of lines — to the performance incentives approved in New York, which the Commission found provide "a meaningful incentive for [Verizon] to maintain high a level of performance." New York Order ¶ 435; see also Texas Order ¶ 424 & n.1235 (approving performance plan with total liability "comparable to the [liability] . . . deemed adequate for [Verizon] in New York").

The Massachusetts Plan also has a similar structure to the New York plan, which the Commission found is both "reasonably designed to detect and sanction poor performance when it occurs," and "reasonably self-executing." New York Order ¶¶ 440-441; Guerard/Canny Decl. ¶ 136. The Massachusetts Plan has two parts, which directly parallel the two parts of the New

[66] Prior to the Massachusetts DTE's adoption of Verizon's Performance Assurance Plan, CLECs in Massachusetts received bill credits for sub-standard performance under a program developed by the DTE in a consolidated arbitration. CLECs covered by that program will receive bill credits required under that program or under the Performance Assurance Plan, whichever are higher. See DTE Performance Plan Order at 29-30. In the alternative, CLECs covered by that pre-existing program may opt to continue it in lieu of the Performance Assurance Plan adopted by the DTE. See id. at 30.

York plan. See Guerard/Canny Decl. ¶ 136. The first part of the Massachusetts Plan, which looks to Verizon's overall wholesale performance, is designed to evaluate performance relating to four "Mode of Entry" categories: resale, unbundled network elements, interconnection, and collocation. Id. ¶ 139. This part puts $41.2 million in bill credits at risk, subject to doubling if performance falls below a specified threshold. See id. ¶¶ 136, 140. Bill credits for a particular mode of entry are distributed to competing carriers that use that mode in proportion to the volume of service used. See id. ¶ 150.

The second part of the Massachusetts Plan puts an additional $41.2 million in bill credits at risk. See id. ¶ 136. This part focuses on 12 specific performance measurements that are considered especially critical to CLEC entry. Id. ¶¶ 152-153. These 12 measurements include the same 11 measurements used in the parallel section of the New York plan, plus one additional set of measurements relating to DSL performance. See id. ¶ 153 & n.2. Whereas bill credits under the first part of the Plan do not kick-in unless Verizon's score for an entire category is sub-standard, see id. ¶ 140, bill credits under the second part of the Plan are due if Verizon's score for a single measure falls below the established threshold — even if overall performance is outstanding, see id. ¶ 155. Where Verizon misses a critical measure, all competing carriers that received sub-standard performance during the month will receive a bill credit. See id.

Beyond its two main parts, the Massachusetts Plan also contains a "Special Provisions" section that guarantees Verizon's performance on several specific measures that the Massachusetts DTE has deemed particularly relevant to CLECs' ability to win and keep customers in the first year following Verizon's entry into the long distance market. See DTE Performance Plan Order at 5-6; Guerard/Canny Decl. ¶ 156. This part of the Plan — which provides protections that go even beyond those contained in the New York plan — places an additional $18.4 million in bill credits at risk. Guerard/Canny Decl. ¶ 137. As with the second part of the Massachusetts Plan concerning critical measures, the bulk of the bill credits due for these special provisions will be issued to affected CLECs. Id. ¶ 159.

In addition to the Performance Assurance Plan, the Massachusetts DTE has ordered Verizon to implement a separate "Change Control Assurance Plan" to provide assurance that improvements to Verizon's OSS software are implemented smoothly, without disrupting CLECs' operations. See id. ¶ 166. The Change Control Assurance Plan provides for $5.28 million in bill credits, over and above the $142 million at stake in the Performance Assurance Plan. See id. ¶ 137. This amount is, again, proportionally equivalent to the performance incentives approved in New York. See New York Order ¶ 437 n.1334. The Change Control Assurance Plan also uses the same four performance measurements related to Verizon's Change Management Processes that are used in the New York plan. See Guerard/Canny Decl. ¶ 166; DTE Performance Plan Order at 34.

Finally, even aside from its own business interest in providing superior wholesale service in order to encourage other carriers to use its network, Verizon also is subject to a host of additional safeguards and remedial measures that provide abundant protection against the possibility of anticompetitive conduct. For example, competing carriers still have recourse to the appropriate regulatory and judicial forums to enforce their legal or contractual rights. Likewise, the Commission itself retains the ability to enforce the requirements of section 271 with penalties, up to and including possible revocation of long distance authority under section 271(d)(6)(A). And it already has made clear that it will not hesitate to invoke that authority.

C. Verizon's Entry Will Increase Long Distance Competition.

According to a recent consumer group report, Verizon's entry into the long distance market in New York will save the consumers who have switched to Verizon's service up to *$120* *million per year*. See Telecommunications Research & Action Center, A Study of Telephone Competition in New York (Sept. 6, 2000) (Breen Decl. Att. A) ("TRAC Study"); Breen Decl. ¶ 11. Verizon will offer equally attractive rates in Massachusetts, where its entry will undoubtedly have the same pro-competitive effects that it has had in New York.[67]

When Verizon entered the long distance market in January 2000, it introduced simpler and less expensive calling plans than most other carriers, particularly the Big 3 long distance incumbents. See Breen Decl. ¶¶ 5-21. Verizon has several calling plans with both very attractive per-minute rates and no monthly calling plan fees, as well as plans with no minimum charges. See id. ¶¶ 5-8. Verizon also offered pre-paid calling plans with some of the lowest rates in the industry. See id. ¶ 7. And it offered calling plans with longer off-peak hours than the industry norm at the time (5 p.m. to 8 a.m. instead of 7 p.m. to 7 a.m.). According to TRAC, six months after Verizon's entry, there was a Verizon long distance calling plan that was less expensive than any AT&T, WorldCom, or Sprint national plan for virtually all long distance customers with typical calling patterns, excepting only callers that make 1,290 minutes or more of long distance calls per month. See id. ¶ 12.[68]

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67 Moreover, Verizon's real-world experience in New York puts to rest once and for all the claims that the long distance incumbents have rehashed for more than 15 years — based on nothing more than far-fetched theories and hyperbole — that Bell company entry into long distance would have adverse competitive effects. The Commission has already determined that such claims have no place in the review of a section 271 application. See New York Order ¶ 428; see also Texas Order ¶ 419. In the event that the long distance incumbents nevertheless repeat these claims, the Declaration of William Taylor again explains why they are groundless. See Taylor Decl. ¶¶ 29-33.

68 Ninety-four percent of AT&T's residential customers in New York would have paid less for their interstate calls under the current rates of one of Verizon's calling plans than they paid to AT&T in July 1999. See Taylor Decl. ¶ 9. These customers would have saved an average of 35 percent off their AT&T interstate bill by taking Verizon's plan, and would also have benefited from lower prices for intrastate calls. See id.

Verizon's calling plans have been particularly attractive for the low-volume customers that the Big 3 long distance incumbents historically have tried to discard or ignore. See id. ¶ 13.[69] For example, not only does Verizon offer a number of plans with no monthly minimum and no calling plan fee, but it also automatically enrolls all of its customers in a lower-cost calling plan (known as its Timeless plan) if they fail to choose a plan. The Timeless plan is particularly attractive for low-volume users because it offers a flat, low rate of 10 cents per minute with no monthly calling plan fees or minimum usage fees. See id. ¶ 14. In contrast, the long distance incumbents require customers who do not enroll in a plan to pay relatively higher "basic" rates, or they put those customers in default plans with rates considerably higher than their most popular calling plans. See id. ¶¶ 14-19. And, even when the long distance incumbents do offer a flat-rate plan (i.e., with no monthly plan fee or minimum usage fee) that might otherwise be attractive to low-volume users, their rates typically are substantially higher than those offered by Verizon. For example, AT&T's cheapest flat-rate plan is its "AT&T One Rate Basic," which offers a flat rate of 16 cents per minute — *60 percent more expensive* than Verizon's Timeless plan. See id. ¶ 15.[70]

Both in anticipation of and in response to Verizon's entry into the long distance market, the incumbent long distance carriers have been forced to introduce special, lower-priced bundled services offerings to customers in New York. See id. ¶¶ 22-27. For example, WorldCom has rolled out a new "One Company Advantage" plan under which its customers receive unlimited

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69 See, e.g., Low-Volume Long-Distance Users, Notice of Inquiry, 15 FCC Rcd 6298 (1999).

70 See AT&T News Release, AT&T Radically Redesigns Basic Residential Calling Plan; Introduces New Family of No-Fee Offers; Lowers Prices for Low-Volume Callers, June 23, 2000. This rate became available for the first time on July 1, 2000, and according to AT&T represented "a decrease of three cents" in its per-minute rate. Id. Thus, for the first six months

local and long distance calls for 7 cents a minute, plus 200 free minutes of long distance calling. See id. ¶ 23. In contrast, its flagship national plan charges nearly 14 cents per minute for in-state long distance. See id. Likewise, AT&T introduced its "AT&T Local One Rate New York" package, which includes reduced rates of 7 cents per minute for interstate calls and 10 cents per minute for in-state calls, and which drops the monthly fee associated with AT&T's most comparable national plan. See id. ¶ 24. And Sprint likewise launched in New York a bundled local and long distance service plan known as "Sprint Local with 7 cents Long Distance." See id. ¶ 25. This plan both drops the long distance rate compared to Sprint's nationwide plan (to 7 cents per minute) and extends the off-peak calling hours when its rates are the lowest. See id.

As this experience makes clear, Verizon's entry not only has promoted additional local competition, but it also has produced substantial competitive benefits for long distance and bundled services packages. Consumers in Massachusetts are now entitled to the same benefits.

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of Verizon's long distance entry, AT&T's cheapest flat-rate offering was *nearly twice as expensive* as Verizon's comparable plan (19 cents compared to 10 cents).

Conclusion

Verizon's Application to provide interLATA service originating in Massachusetts should be granted.

Respectfully submitted,

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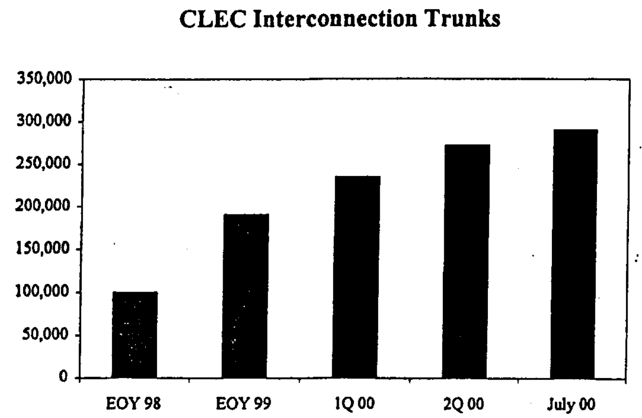
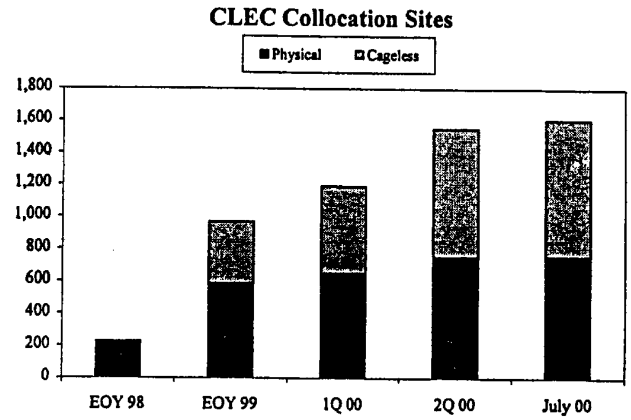
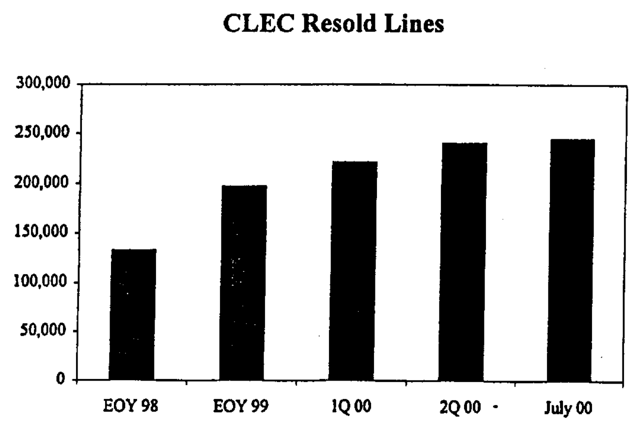
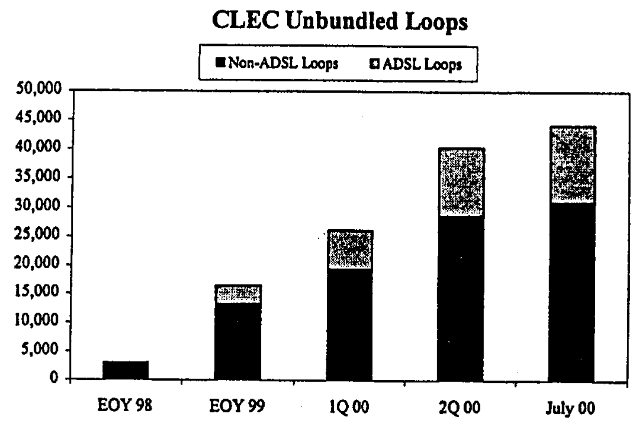
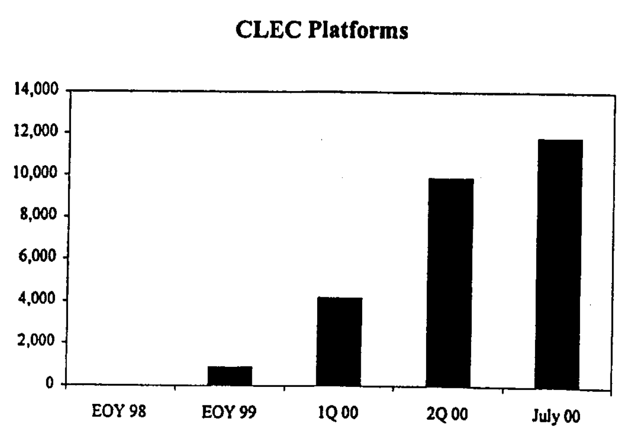
Exhibit 2. Local Competition in Massachusetts











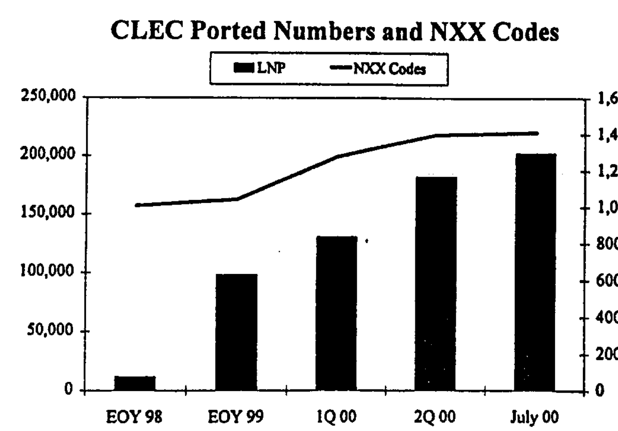


Exhibit 3. Total CLEC Lines by Area Code
Total: 676,000

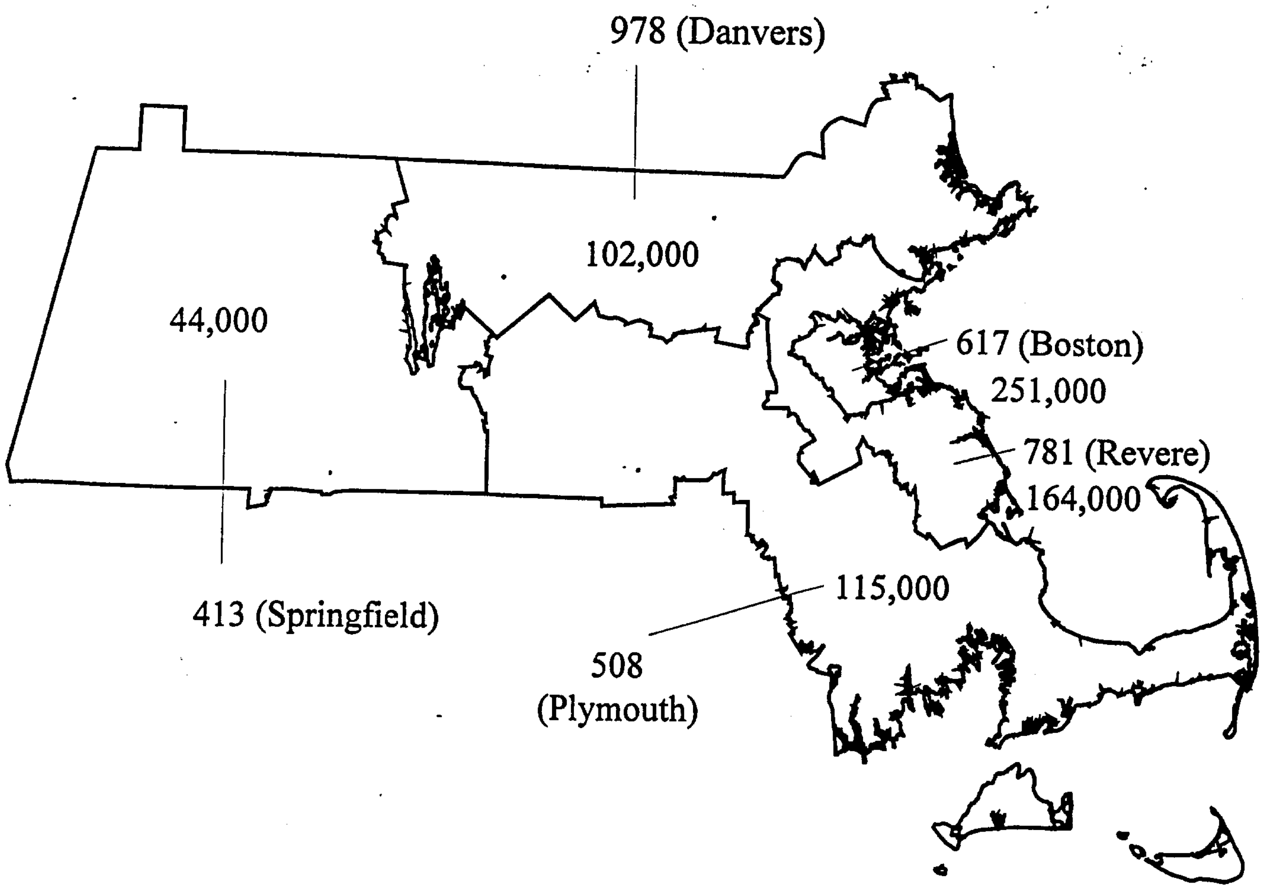


Exhibit 4. CLEC Facilities-Based Lines by Area Code
Total: 418,000

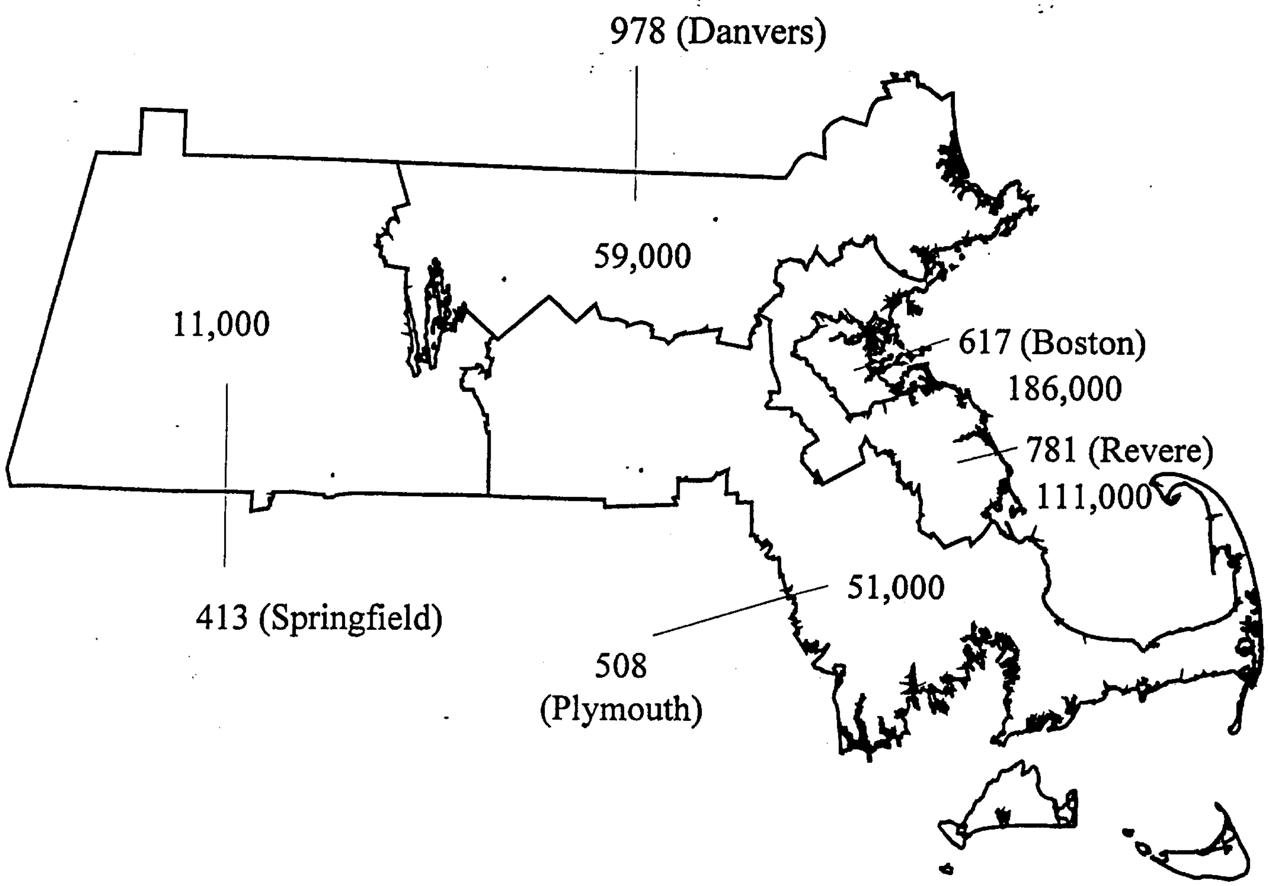


Exhibit 5. CLEC Resold Lines by Area Code
Total: 246,000

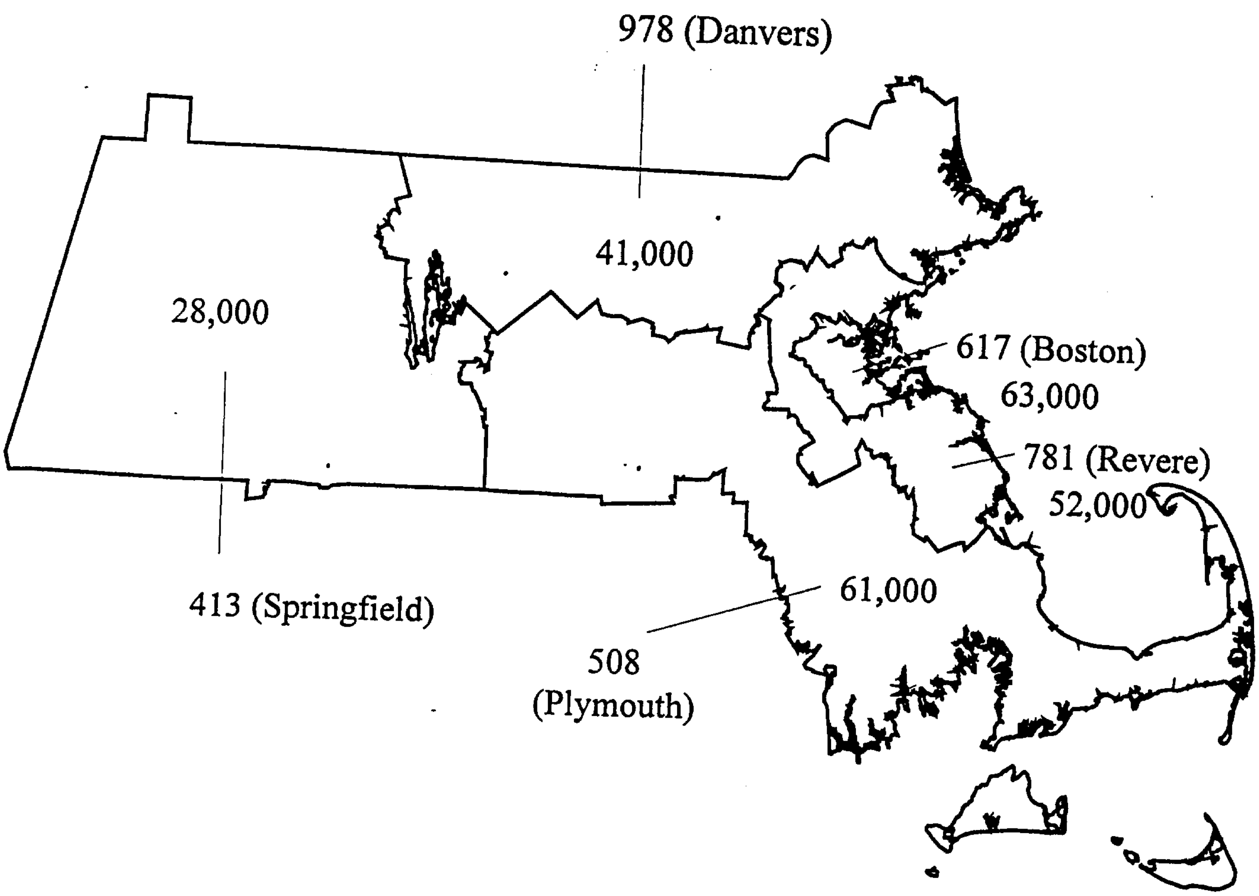
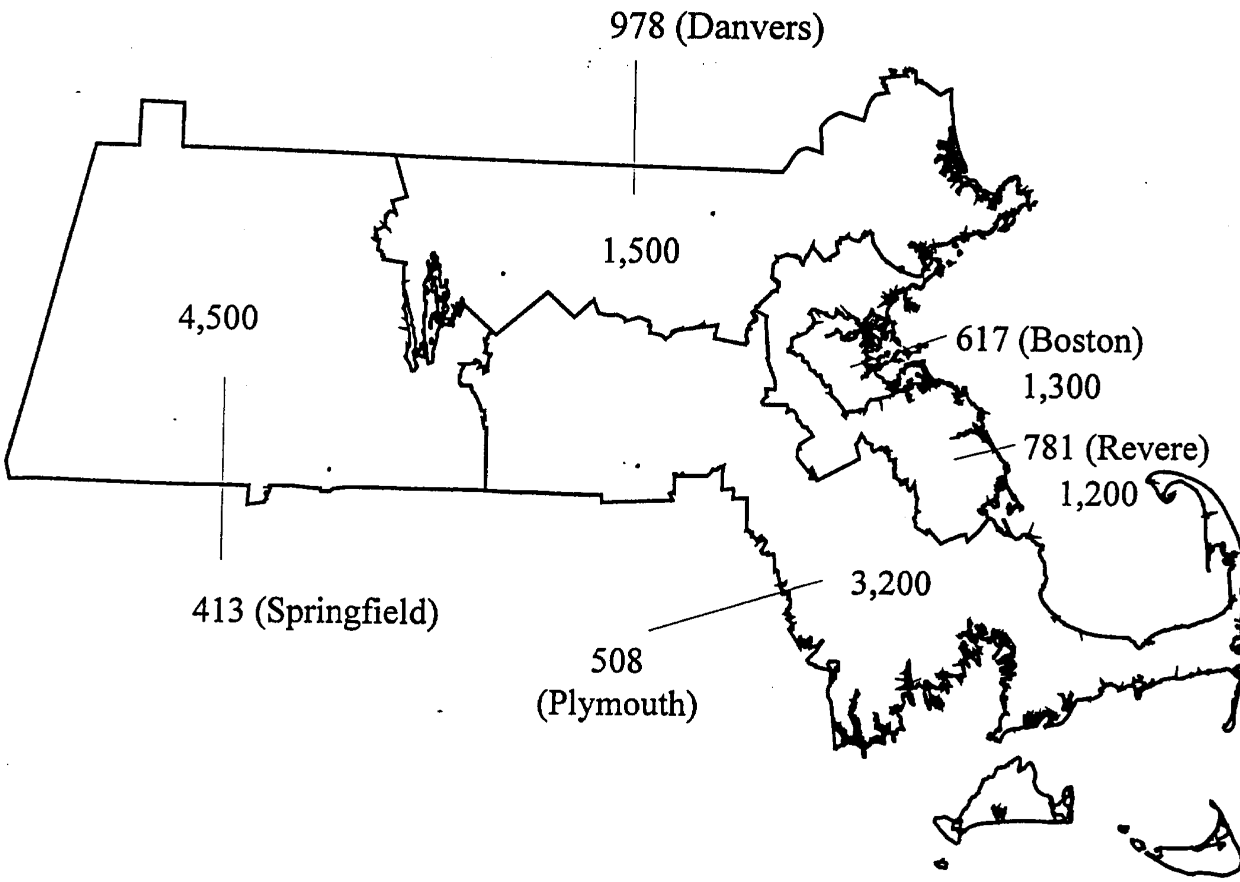


Exhibit 6. CLEC Platforms by Area Code
Total: 12,000



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

In the Matter of Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Missouri	))))))))	CC Docket No. 01-88

EVALUATION OF THE
UNITED STATES DEPARTMENT OF JUSTICE

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May 9, 2001

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DOJ Texas I Evaluation	Evaluation of the United States Department of Justice, *In re: Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc., d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Texas*, CC Docket No. 00-4 (Feb. 14, 2000), *available at* <http://www.usdoj.gov/atr/public/comments/sec271/sec271.htm>.
DOJ New York Evaluation	Evaluation of the United States Department of Justice, *In re: Application by New York Telephone Company (d/b/a Bell Atlantic - New York), Bell Atlantic Communications, Inc., NYNEX Long Distance Company, and Bell Atlantic Global Networks, Inc., for Authorization to Provide In-Region, InterLATA Services in New York*, CC Docket No. 99-295 (Nov. 1, 1999), *available at* <http://www.usdoj.gov/atr/public/comments/sec271/sec271.htm>.

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FCC New York Order	Memorandum Opinion and Order, *In re: Application by Bell Atlantic New York for Authorization Under Section 271 of the Communications Act To Provide In-Region, InterLATA Services in the State of New York*, 15 FCC Rcd 75 (Dec. 22, 1999), *aff'd, AT&T Corp. v. FCC,* 220 F.3d 607 (D.C. Cir. 2000), *available at* <http://www.fcc.gov/Bureaus/Common_Carrier/ in-region_ applications>.
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SBC Cost Model *Ex Parte*	SBC Communications Inc., Cost Material Spreadsheets, SBC *Ex Parte* Submission to the FCC, CC Docket No. 01-88 (Apr. 23, 2001).
SBC DOJ Questions *Ex Parte*	SBC Communications Inc., SBC Answers to DOJ Questions, SBC *Ex Parte* Submission to the FCC, CC Docket No. 01-88 (May 4, 2001).
SBC Missouri Performance Data *Ex Parte*	SBC Communications Inc., State of Missouri Performance Measurement Tracking for March 2001, SBC *Ex Parte* Submission to the FCC, CC Docket No. 01-88 (Apr. 27, 2001).
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AT&T Lieberman Decl.	Declaration of Michael Lieberman on Behalf of AT&T Corp., *attached to* Comments of AT&T Corp. in Opposition to SBC Communications, Inc.'s Section 271 Application for Missouri, Declarations to the Comments of AT&T Corp. Vol. I as Tab A (Apr. 24, 2001).
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Verizon Connecticut Brief	Application by Verizon New York for Authorization to Provide In-Region InterLATA Services in Connecticut, *In re: Application by Verizon New York Inc., Verizon Long Distance, Verizon Enterprise Solutions, Verizon Global Networks Inc., and Verizon Select Services Inc., for Authorization to Provide In-Region, InterLATA Services in Connecticut*, CC Docket No. 01-100 (Apr. 23, 2001), *available at* <http://newscenter.verizon.com/policy/ct>.

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

In the Matter of	)	
	)	
Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Missouri	)))))))	CC Docket No. 01-88

EVALUATION OF THE UNITED STATES DEPARTMENT OF JUSTICE

Introduction and Summary

SBC's application to offer long distance service in Missouri follows on the heels of its successful applications for Texas, Kansas, and Oklahoma. Many of the terms and conditions governing the availability of interconnection and unbundled network elements ("UNEs") match those that have already been approved in those applications. Moreover, the operational processes by which these wholesale inputs are made available to competitive entrants are alleged to be the same.

This Evaluation focuses on the prices at which SBC offers UNEs in Missouri.[1] The implementation of proper pricing is a key prerequisite to section 271 approval. Although the Department of Justice continues to rely upon the Commission for its ultimate determination of

[1] The Department expresses no view as to SBC's compliance with checklist requirements that are not specifically addressed in this Evaluation.

whether the prices supporting this application are appropriately cost-based,[2] we urge the Commission to undertake an independent scrutiny of the prices at issue rather than rely on the Missouri Public Service Commission's ("PSC") price-setting decisions. Prices in Missouri are higher than those in neighboring states which the Commission has found to be compliant with TELRIC, and this disparity does not appear to be accounted for by cost differences between states. Although the Missouri PSC appears to have focused on many forward-looking principles in its pricing docket, the record suggests that its actual decisions on several key questions of method and inputs may not comply with the Commission's forward-looking requirements. Taken together, these factors suggest that non-cost-based considerations may have resulted in prices outside the range that the reasonable application of TELRIC would produce. Moreover, competitive entry using UNEs to reach residential customers is almost nonexistent, suggesting that entry may have been impeded by above-cost rates.

In addition, the Department recognizes that there are serious concerns pertaining to SBC's resale of advanced services, namely, whether SBC is offering digital subscriber line ("DSL") services to end users without making those services available for resale at a wholesale discount. The Department urges the Commission to thoroughly investigate whether SBC is complying with its resale obligations.

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[2] In part for this reason, the Department has not attempted to review in this Evaluation every pricing criticism raised by commenters in this docket. The Department's omission of any particular pricing issue should not be read as support for or rejection of the position of any particular commenter.

I. Entry in the Local Telecommunications Market in Missouri

To determine whether SBC has fully and irreversibly opened the local telecommunications market in Missouri to competition for both business and residential customers, the Department examines the three modes of entry contemplated by the Telecommunications Act of 1996 ("the 1996 Act")[3]: facilities-based entry, which is least dependent on the incumbent's wholesale inputs and cooperation; use of the incumbent's UNEs; and resale of the incumbent's services.[4] The Department first looks to actual competitive entry, because the experience of competitors seeking to enter a market can provide highly probative evidence about the presence or absence of artificial barriers to entry.[5] The degree to which such existing competition is broad-based determines the weight the Department places on it as evidence.[6]

For those entry modes where competitively significant entry is reasonably foreseeable but broad-based commercial entry is absent, the Department examines whether new technical and operational arrangements are available and working to support the entry mode, and whether performance benchmarks have been established to detect backsliding by the incumbent after long distance entry.[7] Small market shares held by competitors or even the absence of entry, standing

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[3] Pub. L. No. 104-104, 110 Stat. 56 (1996) (codified as amended in scattered sections of 47 U.S.C.).

[4] *See* DOJ Schwartz Aff. ¶¶ 149-192; DOJ Schwartz Suppl. Aff. ¶¶ 26-60; DOJ Oklahoma I Evaluation at vi-vii, 36-51.

[5] *See, e.g.*, DOJ Oklahoma I Evaluation at vi-vii, 41-42.

[6] *See, e.g.*, DOJ Schwartz Aff. ¶ 176.

[7] *See, e.g.*, DOJ Oklahoma I Evaluation at 48-51.

alone, are neither conclusive evidence that a market remains closed to competition nor a basis for denying an application under section 271.[8]

SBC figures indicate that competitive local exchange carriers ("CLECs") serve at least 265,000 lines, or approximately 9 percent of the total lines, in SBC's Missouri service territory.[9] This aggregate level of CLEC penetration is approximately the same as those in New York, Texas, and Kansas at the time applications pertaining to those states were filed.[10] CLECs provide at least 22 percent of business lines in the SBC service territory in Missouri; only 3 percent of residential lines are provided by CLECs.[11]

CLECs provide service over their own facilities, in whole or in part, to approximately 4 percent of the lines in SBC's Missouri service territory ("facilities-based lines"). Such lines may constitute almost half of the lines served by CLECs in Missouri.[12] The great majority of facilities-based lines serve business customers; CLECs provide facilities-based local phone

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[8] *See, e.g., id.* at 29-30; DOJ Louisiana II Evaluation at 26-27.

[9] *See* SBC Tebeau Aff. at 3 tbl.2. SBC serves 2.6 million access lines in Missouri. *Id.* at 14 tbl.5. Estimated market share will vary depending on the methodology used to estimate facilities-based lines. The Department relied on entries in the E-911 data base. SBC, using multiple methodologies, estimates that CLECs serve between 9.2 and 14.2 percent of Missouri access lines. SBC Brief at iii. The Missouri PSC Order approving SBC's section 271 application concluded that CLECs serve approximately 12 percent of access lines. *MPSC Final 271 Order* at 20.

[10] In New York, CLECs served approximately 8.9 percent of total access lines. DOJ New York Evaluation at 9. The Department estimated that CLECs served approximately 8 percent of the market in Texas and 9 percent in Kansas. DOJ Texas I Evaluation at 8-9; DOJ Kansas/Oklahoma Evaluation at 7.

[11] *See* SBC Tebeau Aff. Attachs. C-1, C-2 & C-5 (CLEC lines are 77 percent business and 23 percent residential.). The Department's calculations are based on these attachments and FCC statistics on the proportions of total switched access lines comprised by business and residential customers. *FCC Common Carrier Statistics* at 22 tbl.2.4.

[12] *See* SBC Tebeau Aff. ¶ 15. Counting such lines by E-911 entries, CLECs in SBC's Missouri service territory serve 119,460 lines using their own facilities. *Id.* The number of such facilities-based lines includes lines served by stand-alone UNE-loops and thus is not comprised entirely of "pure" facilities-based lines.

service for approximately 1 percent of residential lines.[13] AT&T provides the substantial majority of these lines using its own facilities, including its cable systems in Missouri; however, AT&T is planning on selling the Missouri cable systems over which it provides cable telephony services.[14] The development of cable telephony for residential customers is encouraging, but the extent to which it will be an economically feasible alternative for local phone service in the future is unknown.

Resellers also are active in Missouri.[15] Resale accounts for most CLEC service to residential customers in Missouri, although CLEC resale penetration is approximately 2 percent of residential lines.[16] CLEC resale reaches approximately 7 percent of business lines.[17]

[13] *See* SBC Tebeau Aff. Attach. C-1 (At least 10 percent of all business lines in SBC's Missouri territory are served by CLECs using at least some of their own facilities; only 1.2 percent of residential lines are so served.); *see supra* note 11.

[14] *See id.*; AT&T Comments at 56-57. AT&T has agreed to sell its cable systems in the St. Louis area to Charter Communications, Inc., and notes that Charter's web-site "does not even mention" local telephone service as one of the company's products. AT&T Comments at 56-57. Thus, according to AT&T "the prospect of *any* future facilities-based competition for residential service in Missouri is, at best, questionable." *Id.* at 57.

[15] *See* SBC Tebeau Aff. at 15 tbl.6 (97,851 CLEC lines are resale lines, which constitute approximately 3.5 percent of total lines in SBC's Missouri service territory.); *see supra* note 9.

[16] *See* SBC Tebeau Aff. at 15 tbl.6 (35,488 of residential lines in SBC's service territory are served by CLECs using resale.); *see supra* note 11.

[17] *See* SBC Tebeau Aff. at 15 tbl.6 (62,363 of business lines in SBC's service territory are served by CLECs using resale.); *see supra* note 11.

CLECs have made limited use of the UNE-platform in Missouri, almost none to reach the residential market.[18] This use of the UNE-platform contrasts sharply with the New York and Texas markets, where its use accounts for rapid CLEC expansion into the residential market.[19]

DSL entry appears modest: there are approximately 4,500 CLEC DSL lines in Missouri.[20]

The Department presumes that opportunities to serve business customers by fully facilities-based carriers and resellers are available in Missouri, based on the entry efforts reflected in SBC's application.[21] There is significantly less competition to serve residential customers. There also is less competition by firms seeking to use UNEs, including the UNE-

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[18] Approximately 47,000 UNE-platform lines are in use in Missouri, SBC Tebeau Aff. ¶ 15, approximately 1,200 of which serve residential customers, SBC Tebeau Aff. Attach. C-2. These lines constitute approximately 1.5 percent of total lines, and less than one-tenth of 1 percent of residential lines, in the SBC Missouri service territory. *FCC Common Carrier Statistics* at 22 tbl.4.

[19] At the time of the New York application, approximately 152,000 lines were served through the UNE-platform. *FCC New York Order* ¶ 14. By February 2001, CLECs in New York served approximately 1.5 million additional customers over the UNE-platform. *See* Verizon Connecticut Brief Attach. A.4. At the time of SBC's second Texas application, approximately 244,000 lines were served through the UNE-platform. *FCC Texas Order* ¶ 5. By September 2000, CLECs in Texas served 569,000 customers over the UNE-platform. SBC Kansas/Oklahoma Smith/Johnson Aff. at 19 tbl.10.

[20] *See* SBC Missouri Performance Data *Ex Parte* at 65c (PMs 65-08, 65-09) (Mar. 2001).

[21] However, in addition to the pricing and performance issues affecting UNEs, *see infra* text Part II and notes 22 & 23, competitive entry may have been constrained by SBC's refusal to allow CLECs to participate in Missouri's Metropolitan Calling Area Plan ("MCA"). *See generally* McLeod Comments at 3-13. Several of the facilities-based CLECs (including those using UNE-loops, although not providers using solely the UNE-platform) complained to the Missouri PSC that SBC's unilateral re-rating of the CLECs' NXX codes to exclude the CLECs' end-user customers from the MCA required people calling those CLEC customers to dial extra digits and pay toll charges. *See id.* at 4-5. The Missouri PSC took more than a year to act on the CLECs' complaint, eventually ruling last October that CLECs were proper MCA participants. *See id.* at 9-10. Meanwhile, at least one CLEC, McLeod, claims to have delayed its launch of facilities-based service in Missouri pending final resolution of this matter. *Id.* at 6-7.

platform,[22] and there are some indications that a failure by SBC to satisfy all of its obligations may have constrained this type of competition.[23]

II. The Commission Should Independently Determine Whether Prices for Unbundled Network Elements in Missouri Are Properly Cost-Based

The Department has consistently stressed the importance of forward-looking cost-based pricing for the development of local competition.

> Local telecommunications markets cannot be fully and irreversibly open to competition unless the prices for the interconnection and UNEs are properly based on costs. The FCC has established the basic principles that must be followed in establishing these prices, requiring that the prices "must be based on an incumbent LEC's forward-looking, long-

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22 The allegation that SBC has failed to provide nondiscriminatory access to its maintenance and repair functions due to the failure to correctly update its records of resale and UNE-P circuit ownership, *see* AT&T Comments at 44-47, deserves careful attention. This problem may affect SBC's ability to provide CLECs with parity performance and may call into question the reliability of some of SBC's reported performance measures. The Department, however, has not been able to determine the scope or competitive impact of the problem because it was not addressed in SBC's Application. In particular, although SBC has apparently implemented a means of correcting new records, it has agreed to correct old records (those pertaining to orders processed before March 2001) only on a case-by-case, manual basis. *See id.* at 45-46.

23 SBC's performance in provisioning high-capacity (DS-1) loops has been poor on certain measures and, in some cases, worse for CLECs than for its retail customers. Despite some improvement, during the past three months SBC has missed, on average, nearly one-quarter of installation commitments for CLECs. *See* SBC Missouri Performance Data *Ex Parte* at 58b (PM 58-06). In March, average delay days caused by such missed due dates for CLECs were four times as long as those for SBC's retail customers. *Id.* at 62b (PM 62-06). Finally, the rate of repeat trouble reports for CLECs has deteriorated from 7 percent in January, to 14.6 percent in February, to 21.6 percent in March. *Id.* at 69b (PM 69-05). By contrast, the repeat trouble report rate for SBC's retail customers in March was only 8.3 percent. *Id.*

Poor performance in this area is particularly troubling given the unique attributes of high-capacity loops, which are key inputs for CLECs competing for business customers. *See* NuVox Comments at 13 (DS-1 service is superior alternative for serving business customers and therefore at core of business plan); *cf. FCC UNE Remand Order* ¶ 184 (recognizing commenters' statements noting "the call concentration and revenue potential of 'high-capacity' lines (DS[-]1 and higher)"). Thus, the fact that DS-1 loops account for a small percentage of orders for all loop types may understate their competitive significance. The Commission had previously warned that it "will be actively monitoring SWBT's performance in this area and . . . will take swift and appropriate enforcement action in the event SWBT's provisioning performance for high capacity loops fails to improve." *FCC Kansas/Oklahoma Order* ¶ 213; *cf. FCC Massachusetts Order* ¶ 156 (recognizing Verizon's "poor" performance in provisioning high-capacity loops on certain measures). SBC's DS-1 performance in Missouri may be no worse than that described in the *FCC Kansas/Oklahoma Order*, yet the lack of significant improvement should occasion attention by the Commission.

> run incremental costs for each network element." *Prices which are not properly cost-based act as a barrier to entry; such prices may prevent entry entirely, or limit entry in type or scale.*[24]

In a number of instances, the FCC has reasonably concluded that it will rely heavily on the pricing decisions made by the state commission. This deference, however, has its limits. The FCC may find that particular prices violate section 252 of the 1996 Act if "basic TELRIC principles are violated or the state commission makes clear errors in factual findings on matters so substantial that the end result falls outside the range that the reasonable application of TELRIC principles would produce."[25] Prices outside that range would preclude the approval of a section 271 application.[26] Ultimately, the FCC has the responsibility to make its own, independent finding regarding the propriety of the prices that are at issue in a section 271 application.[27]

Analysis of both the price-setting process and the level of the resulting prices is relevant to determining whether to subject a state's prices to further scrutiny.[28] The Department has previously noted that factors to consider may include a comparison of the prices at issue with those set in other states (as well as a comparison of the states' respective costs, to the extent that

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24 DOJ Kansas/Oklahoma Evaluation at 10 (citation omitted) (emphasis added).

25 *FCC New York Order* ¶ 244.

26 DOJ Kansas/Oklahoma Evaluation at 11.

27 *Id.* (citing 47 U.S.C.A. § 271(d)(3) (West Supp. 1999)).

28 *See FCC Massachusetts Order* ¶¶ 38-40 (analyzing both listed inputs used to set Massachusetts loop rates as well as the level of the resulting rates for compliance with TELRIC).

information is available),[29] the extent of entry pursuant to the prices in question,[30] and an examination of the state commission's record for significant departures from the prescribed TELRIC principles in determining costs and prices.[31] Not only must the state commission have endorsed forward-looking cost principles, but the state must also have properly selected forward-looking methodologies and inputs for the resulting rates to be judged TELRIC-compliant.[32]

In sum, the factors outlined above, when applied to the record in this application, suggest that the Missouri rates may fall outside the range that the reasonable application of TELRIC principles would produce. For this reason, the Department recommends that the Commission

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29 SBC contends that such cross-state comparisons are invalid, except in cases where the state in question has failed to apply TELRIC principles. SBC Brief at 36. SBC claims that as Missouri *did* set TELRIC prices, comparing the resulting Missouri rates to those from other states for which it has obtained section 271 approval, is inappropriate. *Id.* (noting that the FCC compared Oklahoma UNE rates to Texas UNE rates only after finding TELRIC errors in the Oklahoma record); SBC DOJ Questions *Ex Parte* at Question 2, USF Chart. *But see infra* text Part II.C. (possible TELRIC errors in the Missouri record). Although the Department agrees that "differences in prices from one state to another do not necessarily indicate that the prices in either state are not appropriately cost based, ... [i]n the absence of persuasive evidence of differences in costs between states, substantial differences in prices should trigger more careful scrutiny by the Commission." DOJ Kansas/Oklahoma Evaluation at 12. The FCC appears to have endorsed this view in its recent *Massachusetts Order*, where it evaluated the adequacy of Massachusetts loop rates by comparing them to New York's previously approved loop rates, using data from its Universal Service Fund ("USF") model as a proxy for legitimate cost differences between the two states. *See FCC Massachusetts Order* ¶¶ 32, 40.

30 *See supra* text Part I. "As in the case of price comparisons between states, this factor does not necessarily indicate whether prices are or are not cost-based, because the level of demand may reflect factors other than price. Nonetheless this factor may be a useful indicator of whether closer scrutiny of prices by the Commission is appropriate." DOJ Oklahoma/Kansas Evaluation at 12; *see also FCC Massachusetts Order* ¶ 42 ("Even if competitors can gain 'efficient entry' to a market through the availability of TELRIC-based UNE rates, they may still decide not to enter based on their independent determinations that they cannot turn a sufficient profit in the market."). *See also supra* note 21 (regarding MCA issue).

31 DOJ Kansas/Oklahoma Evaluation at 11-13; *see also FCC Massachusetts Order* ¶¶ 39-40 (questioning the propriety of the low fill factor used by the Massachusetts Department of Telecommunications and Energy but concluding that "any errors made" did not result in loop "rates outside the range that a reasonable application of TELRIC principles would produce," based on an evaluation of the resulting Massachusetts loop rates as compared to New York loop rates).

32 *FCC Massachusetts Order* ¶ 20.

independently determine whether the prices conform to the requirements of the 1996 Act and the Commission's rules.

A. The Rates Adopted by the Missouri PSC in Docket Nos. 97-40 and 98-115 Appear to Be Excessive Compared to Other States' Approved Rates

1. The Rates Set in Docket No. 97-40

The Missouri PSC set permanent prices for many of the basic UNEs, such as loops, ports, and switches, in a July 1997 Order ("*MPSC Final Pricing Order*") in Docket No. 97-40, an SBC-AT&T arbitration docket.[33] The *MPSC Final Pricing Order* incorporated and attached a lengthy staff recommendation that reviewed both SBC's originally proposed cost studies and the modifications to those studies requested by staff.

The UNE recurring rates set in Docket No. 97-40 exceed by a significant margin those rates set in states in which SBC has already obtained section 271 approval.[34] The disparity is particularly striking for switch rates: prices in Missouri are higher than in other SBC-region states, and exceed switch prices for both Texas and Kansas by 22 to 60 percent.[35] Loop rates for

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[33] *MPSC Final Pricing Order* at 4-5.

[34] In both its *Kansas/Oklahoma* and *Massachusetts* orders, the FCC compared rates between a state at issue and a state whose rates had previously been approved in a section 271 proceeding (i.e., Oklahoma/Texas and Massachusetts/New York, respectively), and explicitly granted a presumption of TELRIC compliance if a state adopted a set of previously approved rates "and could demonstrate that its costs were at or above the costs in that state whose rates it adopted." *FCC Kansas/Oklahoma Order* ¶ 82 & n.244; *see also FCC Massachusetts Order* ¶¶ 22-27. The FCC's analysis suggests that comparison to such a safe harbor or benchmark is particularly appropriate when the states are adjoining and have the same rate structures. *See FCC Massachusetts Order* ¶ 28.

[35] AT&T Baranowski Decl. at 22 tbl.2 (comparison chart showing Missouri switch usage rates 60.8 percent higher than Texas rates and 45.9 percent higher than Kansas rates, although only 3 percent higher than Oklahoma rates); WorldCom Fentrup Decl. ¶ 7 ("The switch usage rate in Missouri is nearly 50 percent greater than the same rate in Kansas and Texas."); Z-Tel Walters Statement at 2 (comparison chart representing Z-Tel's typical payments to SBC for switching, usage, and port, and showing Missouri rates 22 percent higher than Texas rates and 48 percent higher than Kansas rates); *see also* SBC DOJ Questions *Ex Parte* at Question 1, UNE-P Chart (showing Missouri weighted average local switching MOU rate more than 50 percent higher than Kansas or Texas average rates, although slightly lower than that in Oklahoma).

Missouri also exceed those in other SWBT states, averaging approximately $3, or 20 percent, higher.[36]

Certain non-recurring rates ("NRCs") in Missouri, in particular those associated with analog line ports, also are significantly higher than those in other states.[37]

2. The Rates Set in Docket No. 98-115

The Missouri PSC set interim prices for additional UNEs in a December 1997 Order ("*MPSC Interim Pricing Order*") in Docket No. 98-115, a follow-on SBC-AT&T arbitration. The *MPSC Interim Pricing Order* adopted SBC's proposed rates, without modification, as interim prices for some of the items in dispute, pending more thorough analysis and permanent resolution "no later than July 1, 1998."[38] These prices remain interim to date. Not until February

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[36] AT&T Lieberman Decl. ¶ 22 & tbl.2 (statewide average loop rates $17.15 in Missouri, as compared to $13.76 in Kansas, $14.33 in Texas, and $15.87 in Oklahoma); WorldCom Fentrup Decl. at 4 n.3 (statewide average loop rates are $17.40 in Missouri, as compared to $14.04 in Kansas, $14.15 in Texas, and $14.84 in Oklahoma); *see also* SBC DOJ Questions *Ex Parte* at Question 1, UNE-P Chart (showing Missouri weighted average loop rate 26 percent higher than Kansas rate, 19 percent higher than Texas rate, and 7 percent higher than Oklahoma rate).

[37] SBC Price Comparison Charts *Ex Parte* at 4 (Non-Recurring Charge Comparison Chart) (Missouri analog line port NRC of $29.53, as compared to Texas NRC of $1.27 and Oklahoma NRC of $1.20 (Kansas listed as N/A)). NRCs "would be expected to vary minimally from state to state" within a particular region. DOJ Kansas/Oklahoma Evaluation at 16 (citation omitted). Recognizing that "in most instances, Missouri NRCs were substantially more than Texas NRCs," the Missouri PSC as part of its section 271 review required SBC to reduce the NRCs by an additional 25 percent, "but not to a level below the corresponding NRC found in the Texas agreement." *MPSC Final 271 Order* at 33.

[38] *MPSC Interim Pricing Order* at 52. SBC's proposed rates were adopted as interim subject to true up for multiplexing, digital cross-connect, dedicated transport cross-connect, NXX migration, and additional elements, as well as loop cross-connect to DSC, subloop cross-connect, access to directory assistance database, dark fiber cross-connect, and dark fiber record research. *See id.* at 19-20, 24-25. Other rates (including NRCs for UNE-platform simple migrations and for vertical features in the switch) were set at zero, pending further cost analysis by the Missouri PSC. *Id.* at 21-22, 24-25. Although the *MPSC Interim Pricing Order* did not appear to limit the true-up period, the Missouri PSC's final order approving the M2A and SBC's section 271 application determined that "the interim rates contained in the M2A are subject to a limited true-up ... a true-up period that is six months retrospectively from the date of the Commission's order establishing a permanent rate is appropriate." *MPSC Final 271 Order* at 35.

15, 2001, more than three years after its *MPSC Interim Pricing Order*, did the Missouri PSC open a new proceeding, Docket No. 2001-438, to set permanent rates for these and other UNEs.[39]

The rates set in Docket No. 98-115 exceed by a vast margin the rates for similar UNEs set in states in which SBC has already obtained section 271 approval. Missouri monthly recurring charges exceed Texas, Kansas, and Oklahoma rates by two to six times; Missouri NRCs exceed Texas, Kansas, and Oklahoma rates by two to thirteen times.[40]

B. Cost Differences Between States Do Not Appear to Explain the Disparity

Differences in prices between two states may legitimately arise from differences in costs between those states. In both its *Kansas/Oklahoma Order* and *Massachusetts Order*, the FCC used its Universal Service Fund ("USF") cost model as a "reasonable basis for comparing cost differences between states."[41] A comparison of USF costs for Missouri with those of Texas and Kansas, however, suggests that the difference in the tariffed prices described above exceeds any cost differences between the states. The comparison of Missouri and Kansas is particularly telling as these are adjacent states[42] with nearly identical costs, according to the USF model.[43]

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39 *MPSC UNE Pricing Proceeding Order* at 2-3.

40 NuVox Comments at 3-4; SBC Price Comparison Charts *Ex Parte* at 8-9 (Non-Recurring Charge Comparison Chart) (e.g., DS-1 Entrance Facility NRC of $471(first)/$342 (each additional) in Missouri as compared to $73.25/$26.68 in Texas, $165.86/$65.78 in Kansas, and $214.36/$84.56 in Oklahoma). These disparities between Missouri and Texas prices are as striking as those between the original 1998 Oklahoma and Texas or Kansas prices: Oklahoma recurring rates were as much as twice those comparable in Texas or Kansas; Oklahoma NRCs were two to thirteen times those comparable in Texas. DOJ Kansas/Oklahoma Evaluation at 15-16.

41 *FCC Massachusetts Order* ¶ 22.

42 *See id.* ¶ 28.

43 AT&T Baranowski Decl. at 22 tbl.2 (showing USF switch usage costs 2.6 percent higher in Kansas than in Missouri, and 20 percent lower in Texas than in Missouri); AT&T Lieberman Decl. ¶ 22 & tbl.2 (showing 0 percent difference between USF loop costs for Kansas and Missouri, and costs 14 percent higher in Missouri than in Texas); WorldCom Fentrup Decl. ¶ 9 (Regarding switch costs, "[t]he cost relationships from the [FCC's Synthesis

Despite this apparently close cost relationship, Missouri average loop rates exceed Kansas rates by 20 to 25 percent, and Missouri switch usage rates exceed those in Kansas by more than 50 percent.[44] This significant price differential, which is greater than the apparent cost differential, compels further scrutiny of the Missouri rates.

An analysis of the differences between Missouri and Texas or Missouri and Oklahoma prices also suggests that non-cost-based considerations may account for the differences in prices between the states: although the USF model lists Missouri costs as exceeding Texas costs, the tariffed UNE price differential between the two states is greater than this USF-suggested cost differential,[45] and although the USF model suggests that some Missouri rates should be lower than those in Oklahoma, these tariffed Missouri rates are higher than those in Oklahoma.[46]

Model] suggest that the Kansas and Missouri costs are nearly identical, and less than 20 percent above the Texas cost."); *id.* ¶ 11 (Regarding loop costs, the "model indicates that loop costs in Kansas and Missouri are almost identical, both being about 14 percent above the cost in Texas."); SBC DOJ Question *Ex Parte* at Question 2, USF Chart (showing 0 percent difference between USF loop costs between Kansas and Missouri, and costs 14 percent higher in Missouri than in Texas).

44 *See supra* notes 35-36.

45 AT&T Baranowski Decl. at 22 tbl.2 (showing USF switch usage costs 20 percent higher in Missouri than in Texas while tariffed switch usage costs are 60 percent higher in Missouri than in Texas); AT&T Lieberman Decl. ¶ 22 & tbl.2 (showing USF average loop costs 14 percent higher in Missouri than in Texas while tariffed average loop rates are 20 percent higher in Missouri than in Texas); WorldCom Fentrup Decl. ¶¶ 8-11 (showing USF switch usage rate about 20 percent higher in Missouri than in Texas while the tariffed switch usage rate is about 50 percent higher in Missouri than in Texas; as well as a USF average loop cost about 14 percent higher in Missouri than in Texas while the tariffed average loop cost is about 20 percent higher in Missouri than in Texas); *see also* SBC DOJ Questions *Ex Parte* at Question 1, UNE-P Chart, and Question 2, USF Chart (showing USF switch usage costs 21 percent higher in Missouri than in Texas while tariffed average switch usage rates are 57 percent higher in Missouri than in Texas, and USF loop costs 14 percent higher in Missouri than in Texas while tariffed average loop rates are 19 percent higher in Missouri than in Texas).

46 AT&T Baranowski Decl. at 22 tbl.2 (showing USF switch usage costs 5 percent higher in Missouri than in Oklahoma, while tariffed switch usage costs are 3 percent higher in Missouri than in Oklahoma); AT&T Lieberman Decl. ¶ 22 & tbl.2 (showing USF average loop costs 7 percent lower in Missouri than in Oklahoma, while tariffed average loop rates are 8 percent higher in Missouri than in Oklahoma); WorldCom Fentrup Decl. ¶ 11 (USF average loop costs are about 6 percent higher in Oklahoma than in Missouri, while tariffed average loop costs are about 20 percent higher in Missouri than in Oklahoma); *see also* SBC DOJ Questions *Ex Parte* at Question 1, UNE-P Chart, and Question 2, USF Chart (showing USF switch usage costs 5 percent higher in Missouri than in

C. The Missouri PSC Record Suggests that the Rates May Not Reflect Proper Application of the TELRIC Methodology

1. Possible Errors Affecting the Rates Set in Docket No. 97-40

While the Missouri PSC appears to have endorsed many of the appropriate principles in the record of its pricing docket, a review of its actual decisions on several key questions of method and inputs raise a number of serious questions as to compliance with forward-looking cost principles. It is difficult to assign any one of these possible errors a particular dollar effect,[47] and yet, in sum, they cast doubt on the compliance of the resulting rates with the forward-looking cost requirement.

Roughly speaking, the questionable decisions can be grouped as those which relate to the development of switch costs (e.g., switch discounts), those which relate to the development of loop costs (e.g., fill factors), and those which relate to the development of all UNE costs (e.g., depreciation and common cost allocation).

Switch discounts are a "key lever" in the proper development of forward-looking switch costs.[48] SBC's Missouri switch cost models did not fully reflect the switch discounts that it was receiving. Missouri staff required SBC to modify its models to reflect discounts for growth jobs,

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Oklahoma while tariffed average switch usage rates are 15 percent less in Missouri than in Oklahoma, and USF loop costs are 7 percent less in Missouri than in Oklahoma while tariffed average loop rates are 7 percent higher in Missouri than in Oklahoma).

[47] This difficulty appears to stem, at least in part, from SBC's failure to make electronic versions of its cost models available for review and rerunning by interested parties. *See* AT&T Baranowski Decl. ¶ 3 ("SWBT apparently claims that electronic versions of its cost studies no longer exist. For this reason, my efforts to evaluate SWBT's cost studies and to quantify the impact of certain of its TELRIC violations have been considerably hampered."); WorldCom Fentrup Decl. ¶ 12 ("Without these cost models, WorldCom cannot quantify the effect of these issues on rates."). SBC filed additional cost model spreadsheets with the FCC the day before third-party comments were due in this proceeding. SBC Cost Model *Ex Parte* (Apr. 23, 2001).

[48] *MPSC Final Pricing Order* at 31.

which "are typically less than the discounts for new switches,"[49] despite recognizing that this limited discount left SBC with a stated "investment per line [that] is still greater than that which staff believes is standard in the industry."[50] This "conservative"[51] decision appears not to have reflected forward-looking cost principles applied to an efficient firm.[52] Other possible errors that may have affected the Missouri switch prices include SBC's particular application of the "hardware factor," an additive factor applied to SBC's switching investment which has a "substantial effect on switching costs."[53] Missouri staff expressed concern that the data to develop the factor may have been gathered from old technology (recognizing that this possibly overstates costs) and that maintenance port costs may have been double-counted, but staff resolved neither concern in the record.[54]

Fill factors are a key input in the proper development of forward-looking loop costs. SBC's Missouri loop cost models used its actual, historical fill factors as proxies for forward-

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49 *Id.* at 32.

50 *Id.*; *see also id.* at 53 ("Staff believes that SWBT's reported discount for SCP equipment may be less than the discounts actually received. Based on information discovered while attempting to determine the SCIS/MO discounts, Staff has reason to suspect that SWBT may be receiving additional discounts. Staff does not have data to propose an alternative discount. . . . Staff notes that discount levels were not verified and could very well be incorrect.").

51 *Id.* at 32.

52 *See FCC Massachusetts Order* ¶ 251 (expressing concerns that repetition of some of the assumptions, including low switch discounts, incorporated into the original Massachusetts switching prices may result in rates outside the range that reasonable application of TELRIC principles would produce).

53 *MPSC Final Pricing Order* at 43.

54 *Id.* at 42-43.

looking fill factors.[55] Although Missouri staff recognized that "the use of actual fill factors is not forward-looking," the PSC only adjusted SBC's proposed distribution fill to 40 percent,[56] a level that the Commission specifically questioned in its *Massachusetts Order*.[57] Other possible errors that may have affected Missouri loop prices include the failure to allow for tapering of feeder cable,[58] and the allocation of all conduit costs to active, rather than dark, fiber.[59]

SBC's original cost models appear to have included aggressively short asset lives, which would have resulted in high depreciation costs. Although the Missouri PSC modified SBC's proposals, the asset lives chosen are still significantly shorter than those used (both by the Missouri PSC and other state commissions) in other proceedings.[60] States are not required to use the FCC's depreciation rates in setting TELRIC prices, but they must use "economic," i.e.,

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55 *See id.* at 13, 23. SBC's use of actual fill as a substitute for forward-looking fill factors was specifically rejected in the *FCC Kansas/Oklahoma Order*, which determines that SBC's 30 percent fill factor used in Oklahoma was too low to be considered forward-looking. *FCC Kansas/Oklahoma Order* ¶ 80.

56 *MPSC Final Pricing Order* at 13-14.

57 *FCC Massachusetts Order* ¶¶ 39-40 (expressing concern about Verizon's 40 percent distribution fill factor in the absence of any state-specific justification, as compared to the 53 percent distribution fill factor adopted by Kansas and a 50 percent distribution fill factor adopted by New York).

58 SBC's Missouri loop cost model did not reflect cable tapering, whereby "a feeder segment may originate as a very large cable and taper as the cable terminates to multiple [feeder distribution interfaces]." *MPSC Final Pricing Order* at 18. Although staff recognized that this assumption "increase[s] the cost of the feeder segment," SBC maintained that it could not modify its cost model to revise this assumption. *Id.* Staff listed the lack of cable tapering as a concern that could not be addressed at that time, adding "[i]t is important to remember that SWBT's assumption of a single feeder cable terminating to an FDI will overstate the cable costs and overstate the cost of the loop." *Id.* at 18-19.

59 SBC's Missouri loop cost model assigned all of the cost of conduit to the active fiber within it. Missouri staff verified that SBC's dark fiber cost model did not include any conduit cost "so the issue of double recovery does not apply." *Id.* at 18. AT&T points out that this allocates the entire cost of conduit to the active (or "lit") fiber rather than between active and dark fiber (which is a separate UNE, separately priced). AT&T Baranowski Decl. ¶ 35.

60 AT&T Baranowski Decl. ¶ 20 & tbl.1 (showing depreciation lives used by Missouri PSC in setting UNE rates "as little as 1/2" of those used in other Missouri rate-making proceedings and in other section 271 approved states).

forward-looking, depreciation rates.[61] Missouri staff appeared to acknowledge this requirement, but its stated goal was less clear: "to recommend depreciation rates based on parameters that SWBT is likely to experience for financial purposes so as to fully recover its long run capital costs in a timely fashion and be fair to customers."[62] Staff constructed its own benchmark range by figuring the depreciation rates based on the financial statements for nineteen different companies[63]; staff concluded that, as adjusted, SBC's depreciation rates fell within the low end of the calculated benchmark range, so were reasonable.[64] The record does not reflect any determination of whether the benchmark range of rates was consistent with forward-looking principles or was a reflection of financial depreciation rates.[65]

SBC's original cost models included a common cost allocator of approximately 16 percent, which is significantly higher than the allocators used in Texas (13 percent) and Kansas (10 percent).[66] Missouri staff did not recommend any changes specific to SBC's common cost

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61 *FCC Kansas/Oklahoma Order* ¶ 76 (rejecting AT&T's challenge to the Oklahoma depreciation rates, based on the conclusion that although the Oklahoma Administrative Law Judge did not explicitly adjust SBC's proposed lives, he found that issues regarding the propriety of those lives were "amply addressed within the stipulation results which reduce recurring costs").

62 *MPSC Final Pricing Order* at 99. Missouri staff rejected the use of the FCC depreciation ranges because of concern that they did not reflect "true plant mortality experience," but rather were the result of "expediency, sometimes involving compromise." *Id.* at 99-102.

63 *Id.* at 102.

64 *Id.* at 104.

65 *Id.* at 102-04. In fact, Missouri staff noted that "[t]he resulting range of implied [depreciation] rates is puzzling and begs the reviewer to search for an answer. Unfortunately, no actual explanation is available other than to state that for the most part, each company chooses its own depreciation rates for the particular type of assets in the particular market and the industry it is in. There is no requirement to report details of how depreciation is calculated." *Id.* at 103-04.

66 AT&T Baranowski Decl. ¶¶ 22, 25; *see also* SBC Smith Aff. ¶¶ 23-27 (describing development of common cost factor).

model, and therefore discussed the model little in its recommendation.[67] This seemingly high figure may be accounted for by SBC's reliance on historical overhead costs as its starting point for calculating the amount of common costs that need to be allocated,[68] or SBC's particular method of calculating the percentage allocator[69] (rather than any legitimate forward-looking cost concern), or both.

2. Possible Errors Affecting the Rates Set in Docket No. 98-115

It is not possible to pinpoint TELRIC errors in Docket No. 98-115 because there is no detailed Missouri PSC order discussing the cost models and inputs that produced those interim rates. The *MPSC Interim Pricing Order* issued in December 1997 adopted SBC's proposed rates as interim rates, subject to true up, without discussing their specific cost basis. It appears that the models used to generate the rates set in Docket No. 98-115 were the same as those SBC had originally proposed for use in Docket No. 97-40, and did not include the modifications that were required by Missouri staff in that docket.[70] This blanket adoption of SBC's proposed rates

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[67] *MPSC Final Pricing Order* at 125-26 ("Staff has no specific concerns or proposed modifications to this study other than Staff's proposed modifications affecting all studies (Cost of Money, Depreciation, etc.).").

[68] SBC Smith Aff. ¶¶ 23-24 (SBC used 1995 actual overhead costs, less certain retail, executive, planning, general, and administrative expenses, plus new general network supervision and wholesaling expenses, to calculate the total amount of common costs that needed to be allocated.); *see also* AT&T Baranowski Decl. ¶ 23 (SBC's 16.47 percent common cost factor "is based entirely on SWBT's pre-1996 Act monopoly level of common costs and is, therefore, not reflective of the forward-looking common costs that an efficient provider would incur. SWBT has since conceded that it has become more efficient.").

[69] AT&T Baranowski Decl. ¶ 24 (alleging a "fundamental mismatch" between the numerator and denominator SBC used to calculate the per-unit percentage markup common cost allocator).

[70] With regard to NRCs in Docket No. 97-40, for example, Missouri staff had expressed strong concern that SBC's proposed NRCs may have been based on unreliable labor estimates and may have reflected double-recovery of an amount of labor costs, and had attempted to remedy these flaws by reducing SBC's proposed NRCs by 50 percent. *MPSC Final Pricing Order* at 121, 123-24. Eight months after SBC's prices had been adopted by the Missouri PSC as interim rates for Docket No. 98-115, Missouri staff apparently repeated the recommendation to reduce by 50 percent the NRCs generated by SBC's cost model in Docket No. 98-115. *See* SBC Comments on Costing and Pricing Rep. at 1, 3; *see also id.* Supp'g Affs.

suggests that not only are the rates set in Docket No. 98-115 possibly tainted by the TELRIC errors, as discussed *supra*, but that they may be even more significantly flawed.

D. The Large Number of Interim Rates Exacerbates Concerns Regarding the Missouri PSC's Rate-Making

While the existence of interim rates in and of itself has not led the Commission to deny any section 271 application,[71] the Commission should carefully consider the adequacy of interim rates to support the present application. SBC's Missouri section 271 application is predicated upon a large number of rates that have remained interim for a long time. The interim rates set in Docket No. 98-115 are troublingly high and have been left as interim for years, despite concerns having been raised that the rates were not forward-looking.[72]

In addition to the UNE rates set on an interim basis in Docket No. 98-115, the Missouri PSC has yet to finalize rates for collocation as well as for certain other UNEs that had not previously been requested in Missouri. While the current level of these rates (having been borrowed from Texas for the interim) does not appear problematic, the continued uncertainty of so many rates remaining interim, coupled with doubts about pricing discussed *supra*, gives rise to doubts that the market is open to competition by firms that seek to use these elements.

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[71] The Commission has accepted interim rates where the interim solution to a particular rate dispute is reasonable and the state commission has demonstrated a commitment to proper pricing rules. Provision for true ups once permanent rates are set may give additional comfort regarding interim rates. *See FCC Kansas/Oklahoma Order* ¶ 238; *FCC Massachusetts Order* ¶ 34.

[72] The Missouri PSC apparently decided to leave these rates in place still longer because they already "have been used by SBC and some of those [competitive] carriers for a substantial period of time." NuVox Comments at 8. This determination may not be an adequate proxy for a forward-looking cost analysis, even on an interim basis.

III. Concerns Regarding Resale of Advanced Services

The Department recognizes that there are serious concerns pertaining to SBC's resale of advanced services, namely, whether SBC is offering DSL services to end users without making those services available for resale at a wholesale discount.[73] If true, this refusal would raise an issue with regard to SBC's compliance with section 251(c)(4) of the 1996 Act as interpreted in *Association of Communications Enterprises v. FCC.*[74] Given the current state of the record, the Department is not in a position to make such a determination. The Department urges the Commission to thoroughly investigate whether SBC is complying with its resale obligations.

[73] *See generally* AT&T Comments at 32-38.

[74] 235 F.3d 662 (D.C. Cir. 2001) (An incumbent local exchange provider cannot avoid obligations pursuant to section 251(c) of the Telecommunications Act of 1996 with respect to resale of advanced services by providing them through a subsidiary.).

IV. Conclusions and Recommendations

The Commission should independently determine whether the UNE prices in Missouri conform to the requirements of the 1996 Act and the Commission's rules, rather than rely on the decision of the Missouri PSC approving these prices. In addition, the Commission should thoroughly investigate whether SBC is complying with its resale obligations pertaining to advanced services.

Respectfully submitted,

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May 9, 2001

Certificate of Service

I hereby certify that I have caused a true and accurate copy of the foregoing Evaluation of the United States Department of Justice to be served on the persons indicated on the attached service list by first class mail, overnight mail, hand delivery or electronic mail on May 9, 2001.

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THE "OPEN LOCAL MARKET STANDARD" FOR AUTHORIZING BOC INTERLATA ENTRY: REPLY TO BOC CRITICISMS

by

MARIUS SCHWARTZ

Supplemental Affidavit on behalf of U.S. Department of Justice

November 3, 1997

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Professional Background

1. My name is Marius Schwartz. I am a Professor of Economics at Georgetown University. I received my B.Sc. degree with first-class honors from the London School of Economics and my Ph.D. in economics from the University of California at Los Angeles. My research areas are in industrial organization, antitrust and regulation. I have published on these subjects and have taught courses in these areas to students and to executives and government officials in the U.S. and other countries.

2. From April 1995 to June 1996, I was the senior staff economist at the President's Councl of Economic Advisers responsible for antitrust and regulated industries. Much of my work was on regulatory reform in telecommunications, and I participated in the development of the Administration's policy leading up to the enactment of the 1996 Telecommunications Act. From 1980 to the present, I have served intermittently as a consultant to the Antitrust Division of the Department of Justice on a variety of competition matters. I have also consulted for international agencies and private companies. My curriculum vitae is attached as Exhibit 1.

3. I submitted an affidavit to the Federal Communications Commission on behalf of the U.S Department of Justice ("DOJ") in connection with the application by SBC to provide interLATA services in Oklahoma, and of Ameritech to provide such services in Michigan.[1]

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[1] Affidavit of Marius Schwartz, "Competitive Implications of Bell Operating Company Entry into Long-Distance Telecommunications Services," May 14, 1997, filed with the FCC as an appendix to the Department of Justice's evaluation of SBC's application to provide interLATA services in Oklahoma, May 16, 1997 (In the Matter of Application of SBC Communications, Inc. Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Oklahoma, CC Docket 97-121), and of Ameritech's application in Michigan, June 25, 1997 (In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in the State of Michigan, CC Docket 97-137). The affidavit is available on the Internet at: *www.usdoj.gov/atr/statements/Affiwp60.htm*.

Scope and Purpose of This Affidavit

4. My original affidavit analyzed the competitive implications of authorizing BOC in-region interLATA entry and explained why the Department of Justice's Open Local Market standard for authorizing such entry ("DOJ standard" or "Open Local Market standard") is economically sound. That standard requires the local market in the applicant BOC's state to have been fully and irreversibly opened to competition through all three entry modes envisioned by the Telecommunications Act—facilities based, resale, and unbundled network elements.

5. The most reliable demonstration of such opening is observing meaningful local entry of al three modes. Failing that, one looks to verify that the main conditions for an open market are in place. These are: (1) meaningful implementation of the competitive checklist items, notably establishment of the various new wholesale systems (such as Operations Support Systems) and network unbundling needed to facilitate local competition, and demonstration—over a duration sufficient to yield useful performance benchmarks—that these systems are capable of functioning under real business conditions and of being scaled up appropriately to accommodate entrant demand; (2) assurance that BOC prices for inputs needed by local entrants (interconnection, unbundled network elements) will remain reasonable and cost based after BOC interLATA entry is approved; and (3) the absence of major state or local regulatory barriers or any other barriers likely to significantly impede competition.

6. This standard has since been criticized by both BOCs and IXCs. From the IXC end, the standard is criticized as too permissive. It allegedly understates the danger that premature BOC entry poses to competition in the long-distance market by overstating the efficacy of regulatory safeguards, and therefore errs in not requiring effective local competition as a prerequisite for authorizing BOC entry.[2] As I explained, however, effective local competition—while it may be the appropriate standard for complete deregulation—is an overly stringent standard for allowing BOC entry subject to ongoing regulatory and antitrust safeguards. (Schwartz Affidavit, ¶¶ 150-153.) Such safeguards

[2] See, e.g., Comments of MCI Telecommunications Corporation, CC Docket No. 97-137 (June 10, 1997) and Reply Comments of MCI Telecommunications Corporation, CC Docket No. 97-121 (May 27, 1997).

will remain available after BOC entry is authorized.

7. The more numerous criticisms have come from the other end: the BOCs and their economic experts argue that the standard is too restrictive and unworkable. The present affidavit addresses those criticisms.[3]

I. WHY BENEFITS FROM THE "OPEN MARKET STANDARD" ARE LIKELY TO SUBSTANTIALLY OUTWEIGH THE COSTS

8. Rather than respond to the BOC experts individually, I focus on their main criticisms of the DOJ standard—as they portray it:

(a) *The standard needlessly delays BOC interLATA entry.* Such delay is not necessary to advance local competition and may retard local competition—by giving IXCs strategic incentives to hold back from aggressively entering local markets for fear that doing so would hasten approval of BOC entry. (Kahn and Tardiff Reply Aff, ¶¶ 62, 64.)

(b) *The standard is overly regulatory and involves micro-management by the DOJ* (Kahn and Tardiff Reply Aff., ¶ 65.) Rather than letting competition determine market outcomes, it requires actual success of competitors to demonstrate that the market is open. For example, it requires metric tests of local competition—a BOC

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[3] See, e.g., in the Oklahoma proceeding, Reply Affidavit of Alfred E. Kahn and Timothy J. Tardiff on behalf of SBC, May 20, 1997 ("Kahn and Tardiff"), and SBC's Response to DOJ's Evaluation, May 27, 1997 ("SBC Response"). In the Michigan proceeding, see: Reply Affidavit of BellSouth in support of Ameritech's application ("BellSouth Reply, Michigan"), July 7, 1997, and the appended Declaration of Jerry Hausman ("Hausman 1"); and the following submissions on behalf of Ameritech: Affidavit of Robert Crandall and Leonard Waverman, April 11, 1997 ("Crandall and Waverman") and Reply Affidavit, July 3, 1997 ("Crandall and Waverman Reply"); Reply Affidavit of Richard J. Gilbert and John C. Panzar, July 2, 1997 ("Gilbert and Panzar"); and Reply Affidavit of Paul W. MacAvoy, July 2, 1997 ("MacAvoy"). In the application by BellSouth in South Carolina, see: Affidavit of Richard J. Gilbert, September 30, 1997 ("Gilbert"); Declaration of Jerry A. Hausman, September 30, 1997 ("Hausman 2"); and Declaration of Richard L. Schmalensee, September 30, 1997 ("Schmalensee"), all on behalf of BellSouth.

must lose a certain number of customers in order to prove that new wholesale support systems work. (SBC Response, at 13.) And it requires observing all three entry modes—through own facilities, unbundled elements, and resale—in order to prove that market is open to all these three modes. (Gilbert and Panzar Reply Aff., ¶ 9.)

(c) *The costs resulting from the delay of BOC entry caused by the restrictive DOJ standard are huge and outweigh any benefits.* All BOC experts referenced in footnote 3 make this claim, explicitly or implicitly. For example, Professor Kahn and Dr. Tardiff assert: "Perhaps most fundamentally, Professor Schwartz's conclusion that the benefits from delay outweigh the cost is speculative...he has provided no basis whatever for an objective assessment of the comparative benefits or losses..." (Kahn and Tardiff Reply Aff., ¶ 65.)

9. Let me begin by refuting the last and most important point. It is true that my affidavit did not attempt to explicitly quantify the benefits or costs of delayed BOC entry. While I am sympathetic to attempts by some BOC experts to try and quantify such effects, forecasts are only as good as their underlying assumptions. Given the tremendous uncertainty involved in the case at hand, forecasting exercises are inherently speculative. Moreover, as I will show in Part II of this affidavit, some forecasts of the benefits of BOC entry produce the illusion of precision, when in fact they hinge on dubious assumptions that cause the estimates of the benefits to be grossly inflated

10. Instead of speculative forecasting, my affidavit highlighted transparent and robust factors which are likely to ensure that, under a range of plausible assumptions, the benefits of delaying BOC entry as necessary to implement the key measures needed to open local markets will significantly outweigh the costs. To reiterate my argument, these key factors are as follows:

Different current conditions in the local and interLATA markets

A. The "local market" refers to the full set of services that require access to LECs' underlying local network facilities, including basic local service, exchange access, and "vertical" services. The local market, so defined, is considerably larger than the interLATA market. In addition, the local market is a regulated monopoly rife with distortions, while the long-distance market is far more competitive. For both reasons, the scope for improving economic performance by increasing the degree of competition is considerably greater in the local market than in long distance.

Differential impact of Open Market Standard on competition in the two markets

B. The standard would advance local competition much more rapidly and efficiently than would a weaker entry standard that did not insist on significant BOC cooperation as a condition for opening local markets but instead relied largely on post-entry measures.

C. In contrast, the standard need not impose a significant delay of BOC interLATA entry. The extent of delay in BOC entry is largely under BOC control and in most cases could be modest if the BOCs cooperate in implementing the measures required by the Act as important for facilitating local competition.

11. In short, the above logic implies that adhering to the Open Market Standard rather than a more permissive alternative will yield large benefits in advancing local competition at the expense of comparatively modest and short-lived costs in the long distance market; moreover, authorizing BOC entry while failing to open local markets to competition could over time pose growing risks also to long distance competition.

12. This logic also addresses BOC criticisms that delaying BOC entry imposes intolerable costs by delaying the availability of integrated services—the provision by a supplier of local and long distance services (and perhaps other services as well). It is widely acknowledged that integrated services are valuable to consumers (e.g., one-stop shopping) and can reduce retailing costs for suppliers, and I noted in my initial affidavit that delaying BOC interLATA entry and thus BOCs' ability to offer such services comes at a cost. But this cost is short lived, and is outweighed by the benefit: instead of leaving provision of integrated services as a monopoly of the local BOC, opening the local market enhances the ability of all other providers to compete for providing integrated services. Therefore, if one views integrated services as important, then permitting broad competition in their provision—by making currently monopolized local inputs and services widely and efficiently available to competitors—should be a central goal of good public policy.

13. The remainder of Part I of this affidavit elaborates on points A through C above. In so doing, it addresses the previously mentioned BOC criticisms, and corrects some misconceptions about the DOJ's Open Market Standard and its implementation. Part II examines more closely some inflated claims about foregone benefits in the long distance markets from delaying BOC entry. Part III concludes that the DOJ Standard indeed is likely to advance the competition goals of the Telecommunications Act more effectively than would a more permissive entry standard..

A. The Larger Potential Gains from Increasing Competition in the Local Market Than in the InterLATA Market

14. My affidavit discussed at length the potentially significant benefits of BOC entry. (Schwartz Aff., ¶¶ 7, 59-61, 82-98.) I noted that these benefits might include: enabling the BOCs to realize savings on retailing costs by jointly offering local and long-distance services; providing consumers the benefits of one-stop shopping and other integrated services (such as new bundles of services) and increasing the degree of competition in long-distance markets. Indeed, various BOCs and their experts have quoted my affidavit extensively on this point, as supposedly confirming that the DOJ standard imposes intolerable costs by delaying the realization of such efficiencies. This inference, however, is incorrect: one must consider not only the costs that the DOJ standard might impose

relative to a more permissive standard, but also its benefits in promoting local competition.

15. The goal of the 1996 Telecommunications Act is to open *all* markets to competition. This includes, in particular, the local market which is both much larger than long-distance and is currently the least open to competition. It is important not to lose track of this point—the key bottleneck that needs to be unclogged is in the local market. As I explained in my affidavit, an appropriate standard for BOC interLATA entry can play a key role in advancing the Act's local competition objectives: incumbents' cooperation is vital in opening local markets, and cooperation will be secured more effectively through a Section 271 standard that conditions entry on the prior implementation of key market-opening measures.

16. Thus, in evaluating the DOJ standard it is imperative to address the benefits from permitting accelerated development of competition in local services, and therefore also in integrated services—whose provision requires access to the currently-monopolized local services and inputs of LECs. It is bad policy to consider only the possible costs of delaying BOC entry, without recognizing the tradeoff involved. The remainder of this Section A explains why the potential benefits of increasing competition in the local market are so much greater than the potential losses in the long distance market from delaying BOC entry. Unfortunately, BOC experts are silent on the benefits of local competition, or even contend that the Open Market standard for BOC interLATA entry can play no major role in fostering local competition and could even retard it. I refute these claims in Section B, and in Section C, I refute the claims that the delay in BOC entry is likely to be unduly long.

1. The Local Market Is Much Larger

17. Some BOC experts as well as other commentators frequently refer to the "$76 billion long-distance market." This is an unfortunate exaggeration: in 1995, long-distance carriers' revenues were $76 billion ($73 billion was from interLATA services, including international), but $26 billion was paid to the BOCs and other incumbent local exchange carriers (LECs) in access charges Including these access charges for interLATA and intraLATA toll calls, LECs' total revenues exceeded $100 billion. (Schwartz Aff., ¶ 31 and Table 1.) In revenue terms the local market is

therefore about *twice as large* as long-distance.[4] The local market is also considerably larger by various other measures, *e.g.*, employment and embedded capital. Thus, the markets from which BOCs are temporarily precluded—interLATA services—are considerably smaller than the local markets which we are attempting to open to competition. The same *percentage* improvement in economic performance in both markets in response to increased competition would therefore generate considerably greater *total* benefits in the local market.

2. The Local Market is Largely a Regulated Monopoly, While the InterLATA Market Is Substantially More Competitive

18. Putting aside the much larger size of the local market, there is much more room to improve economic performance in the local market than in the interLATA market by fostering additional competition—because of the different current competitive conditions in the two markets. The interLATA market is substantially more competitive (though certainly not perfectly competitive) and largely unregulated. Moreover, absent consolidation, long-distance competition will continue to increase even without BOC entry. By contrast, the local market is largely a regulated monopoly rife with distortions. The fundamental tenet of the Telecom Act is that, as a vehicle for delivering good economic performance, competition is far superior to regulated monopoly. Thus, even a modest dose of increased competition in the local market can be expected to generate major benefits—in the form of reduced costs, improved quality, increased variety of offerings, rationalization of the price structure in local markets, as well as spillover benefits in adjacent markets for interexchange and integrated services.

19. The BOCs' own experts, in justifying their estimates of the gains that BOC entry would bring

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4 In 1996, long-distance carriers' revenues rose to $82 billion, and $58.4 billion net of access charges (compared to $50 billion in 1995). Federal Communications Commission, *Preliminary Statistics of Communications Common Carriers*, at Tables 1.4, 2.9 (1997). Total LEC operating revenues were, according to Table 2.9, $100.7 billion ($78.7 billion for the BOCs). The FCC's *TRS* data, however, which was used in computing Table 1 of my earlier affidavit, would likely give the LECs a higher revenue in 1996 than the $100.7 billion reported by *SCCC* (in 1995, *TRS* put LECs' revenue at the $102.8 billion cited in my Table 1, while the *SCCC* put it at only $95.6 billion.) Thus, the two-to-one revenue relationship between the local and long distance markets is approximately preserved in 1996.

by stimulating interLATA competition, identify substantial benefits that increased competition has brought in other industries. Dr. Robert Crandall and Professor Leonard Waverman, in their affidavit on behalf of Ameritech in Michigan (April 1997), survey the effect of increased competition in several previously tight oligopolies (in their view): the U.S. luxury car market; the U.S. carbon steel industry the U.K. mobile telecom market; long distance telecom services in Chile; and interLATA and intraLATA services in Connecticut. In all cases they report impressive gains in economic performance.

20. For example, Japanese entry into the U.S. luxury car markets in the early 1990s led to "quality improvements and innovation..." by all producers (Crandall and Waverman Aff., ¶¶ 19) Competition by steel producing minimills in the U.S. led them to cut prices by about 20% more than the dominant vertically integrated steel producers for "long" products (such as rebars and wire rods) in the 1970s and early 1980s (*id.*, ¶ 27); and served to reduce industry prices for sheet steel products between 1970-1994 by about 9% (*id.*, ¶ 31). Entry by two additional cellular providers into the previous U.K. duopoly since 1993 stimulated innovation in pricing, such as the introduction of "location pricing" (*id.*, ¶ 39) and reduced the effective rate per minute (total fixed and variable charges averaged over the number of minutes) paid by business subscribers in peak periods by about 32% (*id.*, ¶¶ 40-41). In Chile, liberalization was introduced in 1994 and "[b]y September 1996 average long distance rates had fallen by more than 50 percent. . ." (*id.*, ¶ 48). And the entry of SNET into interLATA (interstate) services in Connecticut in 1994 "has resulted in effective reductions in intrastate toll rates of at least 10 percent per year" (*id.*, ¶ 58) as AT&T responded by cutting its intrastate rates rather than interstate rates, which are subject to national geographic averaging requirements. (The SNET experience is discussed further in Part II of this affidavit.)

21. I agree wholeheartedly that increasing competition in an industry is likely to deliver substantial economic benefits to consumers. My only quarrel on this score with BOC experts is this: if additional competition can deliver such impressive gains in oligopolies, why do they not expect even greater benefits from stimulating competition in local BOC markets that today are largely *monopolies*?

22. The objection that fewer gains can be expected because BOC prices are regulated, and in some cases are set perhaps even below incremental cost (e.g., for basic residential service at least

in rural areas), is not persuasive. The very premise of the Telecommunications Act is that regulated monopoly is a vastly inferior institution to competition. The gains from competition can be expected to come from the usual stimulus that competition provides to improve productivity and thereby cut cost; to offer innovative products and services (including new pricing options for existing services); and to improve quality. These benefits can be expected to be at least as large in local telecommunications markets that are starting from a position of far less competition than many if not all the examples cited by Crandall and Waverman. Moreover, competition can deliver still further gains, by reducing the need for cumbersome regulation that can reduce firms' incentives to operate efficiently and their flexibility to do so.

23. While these gains may not show up, at least initially, in lower prices for particular services whose prices are being held below incremental costs (such as may well be the case for basic residential service in some places), competition will deliver substantial benefits overall. *Lower prices* will emerge for services that today are substantially overpriced, thereby benefitting consumers as well as increasing overall welfare by stimulating usage of such services. Such over-priced services include: intraLATA toll; "vertical" services (caller ID, call waiting); high speed lines such as ISDN (in some states); and exchange access for interLATA services. Moreover, as universal service subsidies become competitively neutral and available to entrants and not solely to incumbent LECs, competitive forces should enhance efficiency also in the provision of the currently under-priced services. Consumers will enjoy *better customer service* (such as 24 hour customer service currently offered by IXCs, as opposed to nine-to-five hours offered by many LECs). And consumers will benefit from expanded options of products and services. Indeed, the BOCs themselves have acknowledged that competition from Competitive Access Providers have prompted the BOCs to upgrade their own offerings.[5]

24. Professor David Newbery reports some revealing statistics about the scope for improved

[5] "This competition (from CAPs) was driving the Bell companies to lower the price *and raise the quality* (emphasis added) of their local exchange services even before the 1996 Act." Joint Response of Bell Atlantic and US West to letter from then acting Assistant Attorney General Joel Klein, December 13, 1996, 32-33.

productivity that competition can spur.[6] British Telecommunications (BT) was privatized in 1984, but there was little change in its rate of growth of productivity relative to UK manufacturing as a whole after privatization until the entry of a large number of new competitors after the "Duopoly Review" in 1991, which allowed additional entry into long distance (beyond the initial BT and Mercury duopoly), and competitive facilities entry into local markets. Professor Newbery's work suggests that the ratio of BT's productivity per worker relative to that of the UK manufacturing industry rose only a few percent from 1984 to 1991, but about 30 percent from 1992 to 1995.[7]

25. In short, economic theory as well as evidence from other industries lead one to expect substantial gains from introducing more competition into today's heavily regulated and predominantly monopoly local markets, and a subsequent move towards more light-handed regulation. Indeed, the emergence of competition could permit greater efficiencies also from BOC interLATA entry, by making it appropriate to reconsider the design of safeguards such as strict separate affiliate requirements (§ 272) that are deemed necessary in a less competitive environment but that entail certain inefficiencies. Thus, large improvements in economic performance are likely to flow from the accelerated development of local competition made possible by appropriately conditioning BOC interLATA entry on prior implementation of market-opening measures.

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6 David M. Newbery, "Privatization and Liberalization of Network Utilities," Presidential Address to the Eleventh Annual Congress of the European Economic Association, Istanbul, August 22, 1996, available as Working Paper No. 9620, Department of Applied Economics, University of Cambridge. See also OFTEL, *Consultative Document, Pricing of Telecommunication Services from 1997,* Annex B, Table B2(a) (1997).

7 Newbery's Figure 3 also shows that even more dramatic acceleration in the rate of productivity growth was observed in the *electricity* sector, following its privatization—which was coupled with the introduction of competition in both the generation and supply functions (but not transmission or local distribution). Since privatization of BT was not by itself sufficient to generate large productivity improvements, a reasonable inference is that a large part of the gains in electricity also can be attributable to the advent of competition.

B. The Open Market Standard Advances Local Competition More Rapidly and More Efficiently Than Would a Weaker Entry Standard

26. BOC experts maintain that the Open Market Standard may delay local competition; that one could and should permit BOC interLATA entry and rely on post-entry safeguards against BOC conduct to open local markets; and that the Standard entails unnecessary intrusive regulation. This section rebuts these contentions. Subsection 1 addresses claims that the Standard induces potential entrants to strategically delay their own entry into local markets. Subsection 2 explains that local entry requires not only incentives but also ability, and that the ability of entrants to enter rapidly and efficiently hinges on incumbents' cooperation. Subsection 3 notes the dangers of relying primarily on post-entry enforcement to secure opening of local markets, rather than requiring sufficient market opening measures as a precondition for authorizing BOC interLATA entry. Subsection 4 explains why, by insisting on such measures as a precondition, the Open Market Standard will ultimately *reduce* the need for intrusive regulation.

1. Alleged Incentives for Strategic Delay by Local Entrants

27. BOC experts argue that authorizing BOC interLATA entry is likely to accelerate rather than delay local competition, by removing the alleged incentive of the major IXCs to strategically postpone their own local entry for fear that it would trigger approval of BOC interLATA entry. Indeed, various BOC experts cite this strategic incentive rather than BOC-mounted barriers as the main cause of the slow development of local competition. This argument is erroneous for several reasons.

28. First, the Open Market Standard does not require local entry by IXCs. Indeed, the DOJ has made clear that its standard does not require entry by any particular competitor.[8] As explained in Section C below, the extent and diversity of actual local competition that is observed does establish—and properly so—important presumptions for whether the market indeed is open. But

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[8] See DOJ Oklahoma Section 271 Evaluation at 41, 48-50.

the standard recognizes that lack of entry may be due to independent business decisions unrelated to artificial entry barriers. For this reason, the Open Market Standard can support entry, even if no competitor chooses to enter, so long as the BOC has established that the absence of entry is not due to the artificial barriers to competition that the Act intended to eliminate.[9]

29. Second, whatever the merit of the claim about strategic delay incentives of IXCs, one must distinguish between IXCs and other potential local competitors ("CLECs") that are absent from the long distance market. Such CLECs have no long-distance base to protect and thus would have considerably weaker incentives to delay their local entry for purposes of delaying BOC interLATA authority.[10] Moreover, it is difficult to believe that such diluted incentives could suffice to induce *all* potential local entrants—including CLECs that have no major initial business in either the long distance or local markets—to hold back on expanding aggressively into the local market. If other entrants were to engage in such strategic delay then, assuming the local market were truly open to competition, it would pay any firm that currently has no presence (or only a small one) in the local and long distance markets to enter the local market aggressively to seize market share and explot any first-mover advantages.

30. Third, the theory that local entry is delayed primarily due to CLECs' reluctance to trigger approval of BOC interLATA authority is not supported by the experience in states where non-BOC LECs already offer interLATA services. In Connecticut, SNET has offered interLATA services for several years. Therefore, the strategic delay motive that BOC experts allege should be considerably weaker in SNET's territories, at least for smaller, non-IXC CLECs. Yet the extent of local entry,

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9 Among other things, the BOC must demonstrate that at the time of application it has made wholesale support systems legally and practically available at appropriate prices and levels of performance; benchmarked such performance; and demonstrated that such systems can be scaled or extended to meet future demand. On the DOJ Standard, see DOJ Oklahoma Section 271 Evaluation at 27-29, 41, 48-50.

10 Conceivably, even such entrants may gain somewhat by delaying BOC entry. Delaying BOC entry *might*: (a) allow such CLECs to extract from state commissions additional measures to open local markets prior to authorizing the BOC interLATA entry; or (b) delay IXCs' entry into local markets (if BOC experts are correct about IXCs' strategic incentives to refrain from local entry in order to delay BOC's interLATA authority), for purposes of forestalling the IXCs as competitors to the CLECs in local markets. But such incentives would be rather weak and, as explained in the text, are unlikely to outweigh the benefits to a CLEC of accelerating its own local entry.

including by small, non-IXC CLECs, has, to my knowledge, been no greater than in BOC states. Similarly, to my knowledge local entry into GTE's territories in California has not been greater than into those of Pacific Bell; even though Pacific Bell is still precluded from offering interLATA services, while GTE, like SNET, already may and does offer such services. Nor has there been more entry into GTE's Florida territories than into most other urban regions.

31. In short: (a) the alleged incentives of IXCs to strategically delay their local entry in order to delay triggering BOC interLATA entry would not apply nearly as much to other potential local entrants; (b) the strategic incentive theory is not supported by the facts; and both IXCs and other potential local entrants are equally adamant about BOC-imposed entry barriers and the need to withhold BOC interLATA authority until the local market is opened.[11] A reasonable reading of the evidence in the SBC and Ameritech applications is that the respective BOCs have failed to undertake fully the major market-opening measures required by the Act. Thus, the main issue is *ability* to enter.

2. The Ability of Local Entrants to Enter Rapidly and Efficiently Hinges on BOC Cooperation

32. As mentioned, some BOC experts argue that BOC interLATA entry would force IXCs to accelerate their own facilities-based entry into local markets in order to better compete in offering one-stop shopping and other integrated services. But the policy objective articulated in the 1996 Act is not the promotion of facilities-based entry at all costs; forcing entrants to build duplicative facilities, such as local loops everywhere, is neither practical in the foreseeable future nor desirable. Rather, the goal of the Act's local competition sections is to elicit the requisite cooperation from incumbent LECs so that entry can occur as rapidly and efficiently as is dictated by technological

[11] See Motion To Dismiss by the Association For Local Telecommunications Services (June 10, 1997), Opposition of Brooks Fiber Communications of Michigan to Ameritech's Application (June 10, 1997), Comments of WorldCom, Inc. in Opposition to Ameritech-Michigan Application for InterLATA Authority (June 10, 1997).

conditions and market opportunities. As I explained in my initial affidavit, BOC cooperation would be vital to all entrants, regardless of which of the three entry modes envisioned in the Act they seek to employ (¶¶ 8, 52-57).

33. Professor Kahn and Dr. Tardiff take exception to the notion that BOC cooperation is important for local entry. They write: "One need look no further than Professor Schwartz's intraLATA toll example to see why specific requirements may not be necessary for competition to develop. Despite the fact that dialing parity has not been universally required, the IXCs have already captured 22 percent of the market nationwide..."[12] (Schwartz Aff. ¶ 62.) Unfortunately, they neglect the main part of my intraLATA toll discussion (¶¶ 141-143), which demonstrates precisely the reverse of what they claim. The point of that discussion is that intraLATA toll dialing parity offers a compelling case study of incumbents' ability and incentive to stall the introduction of new arrangements important to local competition.

34. The BOCs repeatedly and successfully delayed the introduction of dialing parity, long after it was determined to be in the public interest. In Minnesota, the delay caused by repeated legal and administrative challenges was close to a decade. Presumably the BOCs would not have resisted dialing parity so bitterly if they had perceived it as inconsequential to entrants' success. And experience proves them right. In Minnesota, for example, the share of the one major IXC that I checked with approximately tripled within six months after intraLATA dialing parity was introduced. Thus, the issue is not whether IXCs succeeded in capturing 22% of the intraLATA toll revenue nationwide—which is an average figure across states that do have dialing parity and those that do not—even without ubiquitous dialing parity, but what their market share and competitive influence *would have been with ubiquitous dialing parity.* Judging by BOCs' vigorous resistance and by the Minnesota evidence, the impact would have been considerably greater. Indeed, beyond competitors' greater success following the introduction of dialing parity, there is also evidence that introducing dialing parity reduces prices substantially.[13]

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12 For the 22 percent figure, they cite p. 11, ftn. 4 of my affidavit, which reported 1995 intraLATA toll revenues of about $3.3 billion to IXCs v. $10.1 billion for ILECs.

13 For example, the Michigan Attorney General said that in Illinois, Ameritech customers pay only 0.4 cents per minute above access charges for intraLATA toll with full dialing parity, whereas they pay 10 cents

35. An additional example of the BOCs' perception of the significance of intraLATA toll dialing parity may be found in Michigan. The Michigan Public Service Commission (MPSC) issued an order requiring Ameritech to implement statewide intraLATA toll dialing parity within 30 days and to implement a 55% discount on access charges in central offices where it failed to provide such parity.[14] Ameritech discounted access charges by 55% instead of expanding dialing parity beyond the 10% of access lines for which parity had already been implemented.[15]

3. Pitfalls of Relying Primarily on Post-Entry Measures to Secure BOC Cooperation in Opening Local Markets

36. My discussion of what can be learned from the experience with intraLATA toll was intended to highlight the dangers of relying primarily on post-entry safeguards to secure BOC cooperation in implementing *new* access arrangements, such as those needed to foster local competition. There I

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per minute above access charges for intraLATA toll in Michigan without full dialing parity. He also indicated that prices in Illinois fell from 12 cents per minute to 3 cents per minute on the introduction of dialing parity. Ameritech Michigan v. Michigan Public Service Commission, Michigan Supreme Court No. 110338, Attorney General Frank J. Kelley's Response at 3, ¶ 6 (Sept. 2, 1997) and statement issued on July 23, 1997 accompanying brief filed in Michigan Supreme Court.

14 June 26, 1996 Order of the Michigan Public Service Commission. This order considered the effect of the Michigan Telecommunications Act of 1995 ("MTA") on prior-issued MPSC orders dealing with intraLATA toll dialing parity. The MPSC determined that the MTA had amended the prior-ordered conversion schedule but had not voided the earlier orders. This conclusion was repeated in the MPSC's October 7, 1996 Order on Rehearing.

15 *See* Ameritech News Release, "Ameritech to cut access rates to long distance companies" (July 26, 1996), and Ameritech Michigan v. Michigan Public Service Commission and MCI Telecommunications Corporation and AT&T Telecommunications of Michigan, Inc., Court of Appeals Case No. 198706, Appelant Ameritech Michigan's Brief on the Merits at 12 ("Ameritech complied with the Commission's June 26, 1996 Order by implementing the 55% access charge discount.") (Jan 2, 1997.) Ameritech also pursued rehearing at the MPSC and appeals at both the federal and state level, arguing that the MPSC orders were unlawful. Ameritech did not challenge the feasibility of implementing toll dialing parity.. On December 4, 1996 the Michigan Court of Appeals granted a stay. Oral argument on the merits of the matter was heard October 14, 1997. Despite the pendency of the appeal, Ameritech has now implemented intraLATA toll dialing parity for 70% of Michigan, consistent with the commitments made to the MPSC in its section 271 checklist compliance case. *See* Case No. U. 11104, Ameritech Compliance Filing at 12 (November 27, 1996).

explained why requiring the prior implementation of such arrangements is an appropriate precondition for BOC interLATA entry.

37. As a general matter, exclusive reliance on policing conduct and on undoing competitive damage ex post is problematic; this is why, for example, antitrust merger policy places such weight on preventing anti-competitive mergers rather than allowing all mergers and attempting to address anti-competitive conduct after the fact. In the present context, authorizing BOC entry prematurely and relying solely on post-entry safeguards to attempt to open BOC local markets to competition is especially dangerous.

38. As my affidavit explained, many of the local competition arrangements required by the Act, such as wholesale support services and network unbundling, are novel and hence offer great scope for gaming and delay by incumbents. Post entry enforcement without adequate prior performance benchmarks would be difficult: the great asymmetry of information between a BOC and outsiders about what constitutes unreasonable delay in implementing new systems is likely to make enforcers leery of imposing heavy penalties for perceived foot-dragging. Indeed, BOCs' potential ability to delay the new local competition arrangements is at least as great as for intraLATA toll dialing parity, because arrangements such as loop unbundling and operations support systems are considerably more complex technologically than was dialing parity. The FCC's experience with trying to pursue Open Network Architecture in the face of incumbent LECs' resistance (Schwartz Affidavit, ¶¶ 145-148) illustrates the difficulties involved.

39. Therefore, there is real value on insisting that a BOC establish the main requisite new systems before being allowed entry. A BOC's own incentive to expedite its interLATA entry will then induce it to implement these systems more efficiently and expeditiously than if entry were authorized and regulators had to then force the recalcitrant BOC to implement these systems.

40. This does not mean that one must dot every "i " and cross every "t" prior to allowing BOC entry. And it also does not mean that a BOC has to do competitors' work for them. But it *does* require that the elements which Congress viewed as important for fostering local competition be in place. Loop unbundling and operations support systems are hardly trivial details, and they would

be difficult to enforce if not already in place.[16]

4. The Open Market Standard Ultimately Reduces Intrusive Regulation

41. Some have argued that, as a legal matter, the DOJ Standard entails discretion that lies outside DOJ's proper role under the Act; and that such discretion would result in regulatory micro-management by the DOJ, moving us in the direction of more rather than less intrusive regulation On the role for discretion, it is mystifying why Congress included in the Act the Public Interest test to be conducted by the FCC and a substantial DOJ role in advising the FCC, ifit did not intend to give these agencies discretion. The inescapable—and economically correct—conclusion is that one needs a reality check, in the form of agency "discretion"—rather than a formulaic analysis—to verify that local markets indeed are being opened.

42. The more interesting issue is whether, as critics claim, such discretion indeed entails moe intrusive regulation than would a more permissive BOC entry standard and reliance on post entry enforcement to open BOCs' local markets. In fact, the reverse is true. Allowing BOC entry before the main systems for local competition are in place and attempting to mandate their implementation ex post would embroil us in a regulatory morass as it has in the past: having little incentive to comply, the BOCs would fight every requirement, and regulators would be hard pressed to dispute them especially as regards implementation of new arrangements. Moreover, attempting to enforce such requirements by specifying very specific measures would itself be highly intrusive.

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16 In his South Carolina Declaration on behalf of BellSouth, Professor Hausman portrays the FCC as insisting on a "standard of regulatory perfection" and criticizes the FCC for denying Ameritech's Michigan application: "If all significant barriers to local entry have been removed, the Commission should permit BOC entry into long distance markets. However, even if say 95% of the barriers to entry had been eliminated and 5% remained, it would not be in the consumers' best interest to forgo the billions of dollars of consumers benefits from long distance competition to achieve the last 5% of entry barrier removal." (¶ 11, footnote omitted.) I completely agree that one should examine the *marginal* benefits and costs of any policy. But Professor Hausman is wrong in suggesting that only minor details remained to be implemented in Michigan; and he sets up a straw man in stating "I recommend that approval be granted as soon as Sections 271 and 272 have been satisfied." (¶42.) We all agree that approval should be granted once Sections 271 and 272 have been met. The point is, they have *not* been met in any of the three BOC applications to date, and the remaining barriers cannot be accurately portrayed as minor. (See Section C below.)

43. Judicious use of the § 271 entry authority is superior: the DOJ Standard insists on implementation of certain market-opening measures as a condition for BOC entry, while leaving to the BOCs—whose information on these issues is vastly superior to that of outside enforcers—the flexibility of how to best meet these requirements. The BOCs' incentives to meet these requirements efficiently and expeditiously will be far greater—hence the need for regulatory micro-management will be less—if BOC interLATA entry is conditioned on the local market first being open to competition.

44. In short, the DOJ's entry standard will greatly reduce the need for future regulation. By doing more to open local markets to competition now, it permits a more rapid move towards substantially lighter regulation later; indeed, this is the underlying philosophy of the Act's entire local competition provisions. A more permissive BOC entry standard ultimately would invite far more micro-management.

C. The Open Market Standard Does Not Unduly Delay BOC InterLATA Entry

45. It is important to be clear about the workings of the DOJ Standard, in order to understand why the Standard does not impose undue delay of BOC entry.

1. Assessing Market Openness: No Metric Tests or Other Rigid Markers

46. Kahn and Tardiff portray my standard accurately: "[Schwartz's] preferred metric is the presence of competition (par. 20). In situations where rapid competitive entry was not economic, he would allow the RBOCs to rebut the presumption that their actions were responsible for the delay (par. 21)." (Kahn and Tardiff, ¶ 60.) This approach is no more than common sense: the best evidence that the local market has indeed been opened to competition through all three entry modes—facilities, resale, and unbundled elements—is to observe such competition on a meaningful scale. Failing to observe this for one or more of the entry modes is not taken as proof that the market has not been opened. Rather, it calls for further inquiry to satisfy oneself that the lack of entry is not due to lingering artificial barriers. The BOCs, who would be in the best position to demonstrate that

they have indeed removed artificial barriers under their control, would bear the burden of proof. Such a shifting of presumptions in light of observed market outcomes is neither novel nor unreasonable.

47. *No metric tests.* Contrary to some claims, the DOJ Standard does *not* require incumbents to lose any specified number of customers. It does require adequate demonstration that incumbents' wholesale support systems be capable of permitting large numbers of customers to switch to competitors reasonably rapidly and smoothly should customers wish to switch. Such switching capability is critical. Since the vast majority of local subscribers are currently customers of the incumbent, if switching of customers is impeded then entry—through any of the three modes—would be stopped dead in its tracks. In California, for example, MCI and AT&T's efforts to enter the market were frustrated when PacBell's systems for processing resale orders broke down, causing substantial delays before a customer could be switched to a competitive carrier and leading those companies to end their marketing campaigns.[17]

48. A BOC's mere assertion that the relevant systems are ready to go obviously should not suffice. While the best evidence of such systems' capability would come in the form of observing actual competitors making significant use of such systems, both the DOJ and the FCC have made it clear that other evidence also would be acceptable. Such evidence, can include: experience in other states using the same system(s); carrier-to-carrier testing; independent audits; and, if these options are not available, even self testing by the BOCs.[18]

49. *Observing all three entry modes.* Professors Gilbert and Panzar write:

> "We however respectfully disagree (with Schwartz ¶20) . . . that '*use on a commercial scale of the new access arrangements needed to support all three modes of local entry envisioned in the Act [facilities-based, unbundled elements and resale] demonstrates that competitors are obtaining what they need from the BOC.*' A requirement to show checklist compliance for all three entry modes would be contrary to conventional economic theory. The dispersion of actual entry between the three modes depends critically on the prices and conditions for

17 See MCI v. PacBell, Cal. PUC No. 96-12-026 (Sept. 24, 1997), at 27 (finding that MCI ceased marketing after PacBell built up backlogs of 4,000 to 5,000 orders and that, by PacBell's own admission, its systems did not offer their competitors resold services at parity).

18 See DOJ Oklahoma Evaluation, App. A, 81-89; DOJ Michigan Evaluation 22-23.

the UNEs and resold service from the incumbent. . ." (Gilbert and Panzar Reply, ¶ 9.)

50. I fail to see why there is disagreement. I made it clear in my affidavit that:

> "Opening the market does not require evidence of local competition of all forms and in all regions of a state. . . (Schwartz Aff., ¶ 19.) . . . If sufficiently diverse competition fails to develop,...one possibility is simply lack of interest by entrants in pursuing certain entry modes in certain regions. (Schwartz Aff., ¶ 21). . . . if we are successful in ensuring that incumbents make available unbundled network elements at prices reasonably close to incremental cost and if such arrangements work smoothly, then it would be wasteful to insist that entrants build entirely their own facilities." (¶ 170.)

51. Precisely for these reasons, I said that observing all three entry modes on a significant scale would be *sufficient* to establish that the market has been opened to this mode of entry; I did *not* state that it was *necessary*. Rather, it shifts the presumption: "...we do not expect to see all forms of competition everywhere. However, if sufficiently diverse competition is not observed, . . . it is important to ascertain that competition is not being stifled by artificial barriers. . . Reversing this presumption requires verifying that the main elements of an open market indeed are in place." (¶ 179.)

52. Professors Gilbert and Panzar also criticize this approach of shifting presumptions, by arguing that one could not hope to observe all three entry modes concurrently: "A requirement to show checklist compliance for all three entry modes would be contrary to conventional economic theory (because only the most profitable mode will be chosen)." But they overstate the case. It is perfectly plausible to observe all three entry modes concurrently, for at least two reasons.

53. First, a given entrant may well find that different entry modes are best suited for serving different classes of customers (*e.g.*, small residential v. large business) or different geographic regions (*e.g.*, rural v. urban). Such a pattern is not unlikely given that the Act stipulates different pricing rules governing unbundled network elements, and resale, and that cost conditions vary for serving different regions or different customer classes. Thus, an entrant may prefer to serve: low

volume users by reselling the incumbent's services; medium volume users through unbundled loops; and high volume users by building its own facilities.[19]

54. Second, entrants are heterogeneous in the skills that they bring to the market and in what they require from incumbents. Thus, an entrant whose comparative skills are in retailing may opt to pursue resale, while another who plans to offer innovative vertical services may prefer to provide its own switch and lease other unbundled elements.

55. Indeed, we do observe all three entry modes attempted in the same state. In Michigan Brooks Fiber serves some customers entirely over its own facilities, and others over unbundled loops leased from Ameritech; and other entrants, such as USN and AT&T, entered through resale.[20] Entrants are also employing all three entry paths in New York.[21]

2. Meeting the Standard is Largely Within BOCs' Control

56. Kahn and Tardiff, while accurately characterizing the DOJ Standard, argue that it would be extremely contentious and unworkable: "Rather than requiring regulators to satisfy themselves only that 'the requisite *arrangements* necessary to open the local market are made available...' it would require them additionally to assess the degree to which that availability has *proved effective*—that is, whether 'meaningful local competition' has 'emerged' and, if not, 'why'—both complicated

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19 The greater a customer's volume, the greater the traffic-sensitive charges an entrant would pay the incumbent for leasing its switch; to avoid these charges, the entrant may prefer serving medium volume users not through resale but through its own switch, while leasing the incumbent's loop. For high volume customers, such as large businesses in dense business centers, the entrant may prefer building entirely its own facilities, including loops, *e.g.*, because this allows the entrant better quality control and greater ability to customize and vary services later.

20 Application of Ameritech Michigan Pursuant to Section 271, CC Docket No. 97-137, Evaluation of the Department of Justice at 31-32 and Appendix B (June 25, 1997).

21 In the Matter of the Application to the FCC by New York Telephone for Approval to Provide In-Region InterLATA Services in New York, Vol. 1. Filed with the NYPSC February 18, 1997. (As in Michigan, use of unbundled elements was in combination with the entrant's own facilities—no BOC is yet providing a "platform" of all the unbundled elements.)

questions." (¶ 65.) This alleged vagueness "... gives opponents of RBOC entry into interLATA markets new opportunities to use the regulatory process to delay that entry." (¶ 63.)

57. To some extent, our disagreements are semantic. The surest way to confidently ascertain that arrangements have truly been made available is to observe meaningful local competition. I know of no other easy way to ascertain this. Thus, if meaningful local competition fails to develop, there is no escaping the admittedly complex inquiry as to whether the market is open..

58. Though I am sympathetic to Kahn and Tardiff's concerns that complexity and vagueness offer scope for gaming by opponents of BOC entry, it is not opponents who decide whether to authorize BOC entry. One must also remember that a permissive BOC entry standard also would encourage abundant gaming— by the BOCs against local entrants. And whereas delaying BOC interLATA entry will not stop other entities from entering that market, delays by BOCs in opening their local market will substantially impede the development of local competition. Let us not forget—it is the BOCs not the IXCs who control the key bottlenecks in telecommunications.

59. Finally, compliance with the DOJ standard need not unduly delay BOC interLATA entry. It entails steps that are largely under a BOC's control.

60. To the extent BOCs are complaining about their interLATA entry being delayed, experience to date shows that it is *not solely* because of the public interest standard and the DOJ's examination of whether local markets are fully and irreversibly open to competition. SBC's Oklahoma application was denied because SBC failed to meet the Track A or B threshold tests; Ameritech's Michigan application was denied because Ameritech failed to meet checklist requirements such as OSS for resale and for unbundled elements, adequate nondiscriminatory interconnection, and provision of unbundled transport. I recognize that future situations may arise where a BOC has met the other minimum legal criteria but, because of the continued existence of *significant* additional entry barriers, its local markets are not fully and irreversibly open to competition. If such a situation arose, I would conclude that denial of the application would still be justified, for reasons discussed in my original affidavit (Section V.D, especially ¶¶ 189-190). But to date, there is no basis for suggestions that the DOJ's entry standard is to blame for denial of BOC interLATA entry.

II. INFLATED ESTIMATES OF GAINS IN INTERLATA MARKET FROM BOC ENTRY

61. In my original affidavit I stressed that, all other things equal, there were likely benefits from earlier authorization of BOC entry. A BOC in its region enjoys certain advantages over many other potential entrants into interLATA services, notably its established reputation and relations with virtually all customers. These advantages may enable it to economize on retailing costs by offering integrated services, and to provide consumers with the benefits of one-stop shopping. And since long-distance competition is not perfect, BOC entry could further benefit consumers by forcing down IXCs' margins.

62. As explained in Part I of this affidavit, however, the existence of potential benefits from BOC entry does not imply that early authorization is desirable on balance, as one also must consider the potential costs from delayed opening of local markets. I now wish to address two issues raised by BOC experts: (1) that by virtue of also providing exchange access, a BOC has stronger incentives than do other interLATA competitors to reduce interLATA prices, because stimulating calling volume would also increase its profits from *access*; and (2) that, for this and other reasons, the benefits of BOC entry are likely to be enormous. For instance, Professor Jerry Hausman, in his Michigan Declaration on behalf of BellSouth, forecasts nationwide benefits of $6.7 billion annually to residential consumers alone (Hausman 1, ¶ 13); and Professor Paul MacAvoy "conservatively" projects $1.9 billion annually to long-distance consumers (residential and business) in just Ameritech's region (MacAvoy Michigan Reply Aff., ¶ 35).

63. Section A below examines BOC incentives to cut interLATA prices, demonstrating that the analytic basis for expecting large reductions of the magnitude predicted by Professors Hausman or MacAvoy is dubious. Moreover, the same argument Professor Hausman uses to justify BOC entry—reduction of "double marginalization"—also supports a standard that speeds up local competition. Section B shows that the evidence from interLATA entry by two major non-BOCs, SNET and GTE, also does not support dramatic gains of the size projected by Professors Hausman and MacAvoy.

A. BOCs' "Unique Incentives" to Cut Prices Are Far Weaker Than Asserted, and Such Incentives Do Not Support Early BOC Entry If That Would Retard Local Competition

1. Increasing Access Profits by Stimulating InterLATA Minutes Through Reducing "Double Marginalization"

64. Professor Hausman argues that a BOC has far stronger incentives to cut prices in an imperfectly competitive interLATA market than do existing IXCs or any interLATA entrants that are not integrated into providing exchange access services. Each additional long-distance minute increases access use and thus BOC profit from access. Since this consideration is absent for providers that lack their own access facilities, a BOC's incentive to cut long-distance prices is stronger.

65. It is worth noting at the outset that Section 272 of the Act requires a BOC to charge to an affiliate or to impute to itself an access charge no lower than what is charged to IXCs. This requirement would seem to restrict BOCs' ability to behave in the manner stipulated by Professor Hausman and some other BOC experts.. Nevertheless, let us consider this argument as it relates to BOC *incentives*. While there is an element of validity to the argument, one should recognize its serious limitations: (a) IXCs and other carriers would have similar pricing incentives if they were able to provide *local* services, an ability that the Act aims to ensure by promoting local competition; (b) in the absence of significant local competition, BOCs would have incentives to attempt access discrimination against long distance carriers (raising their costs of accessing local networks or degrading their quality), for purposes of *raising* interLATA prices; and © even if such behavior could be adequately prevented, BOC incentives to cut prices would be considerably less than claimed, since BOC margins on access are falling and—according to BOC experts—are already lower than interLATA retail margins, margins that would be threatened by aggressive BOC price cutting.

66. ***Incentives for others to vertically integrate into local services.*** The argument that BOCs would have uniquely powerful incentives to cut interLATA prices by virtue of being vertically integrated overlooks the incentive of others, such as IXCs, to vertically integrate into the provision of exchange access. Like BOC interLATA entry, such integration also could eliminate the "double marginalization" which arises today because access is priced well above marginal cost (and because the interLATA market is not perfectly competitive). Just as a BOC, if allowed interLATA entry, would recognize the positive impact on its access business from stimulating interLATA output, so would an IXC if it could integrate into providing exchange access. Indeed, it is inaccurate to couch the "double marginalization" distortion as arising solely due to imperfect competition in interLATA services. Rather, the distortion arises whenever non-integrated and imperfectly competitive firms at *both* stages—exchange access and interLATA retail—choose their prices ignoring the beneficial impact that a price cut would have on sales and profits at the other stage. One could just as accurately portray "reduction of double marginalization" as requiring entry by IXCs into exchange access to reduce inflated access prices. The key to reducing double marginalization is vertical integration, in either direction, and firms would have incentives to do so if they had the ability.

67. The *ability* of IXCs and other non-BOCs to accomplish such vertical integration, however, depends heavily on obtaining adequate cooperation from the BOCs in providing interconnection to and unbundling of their local networks. Consequently, a consideration of double marginalization does not necessarily suggest a more lenient standard for BOC entry, in large part because such a standard is less likely to elicit adequate BOC cooperation. Moreover, to stress a BOC's unique ability to operate as an integrated provider would be to concede that the prospects for local competition in access are not rosy, a far cry from positions taken by BOCs in various proceedings.

68. ***BOC incentives to attempt non-price access discrimination against IXCs.*** The argument that the BOCs would like to see a lower average interLATA price than currently prevailing assumes that a BOC can compete only by lowering price, not by increasing competitors' costs or degrading their quality through network access discrimination. (It also assumes, as discussed shortly, that a BOC would not capture a large share of the interLATA market.) Since the average elasticity of demand for long-distance services is estimated to be well below 1 (0.7 is a consensus figure)

interLATA industry revenue would be increased by raising price and accepting the reduction in output, hence profits would also be increased (as costs would decrease due to reduced output). Thus, an integrated monopolist over both access and downstream long-distance sales *would prefer to raise, not to lower, the average interLATA retail price* from today's level. (A perfect cartel of IXCs—if it existed as some BOC experts claim—would prefer an even higher price, since IXCs do not collect access profits and thus perceive higher marginal cost of offering interLATA service than would an integrated monopolist that would collect such profits.)

69. Following this logic, a BOC entering interLATA retail services and that was capable of expanding its own output rapidly would have incentives to nudge the industry towards the higher monopoly price, by using technological access discrimination to inflate competitors' costs or degrade their quality, thus enabling the BOC to raise its own price. (It would have a similar incentive also for purposes of shifting sales from competitors to itself if competitors were earning supra-competitive margins, but the current discussion does not require the existence of such margins.) Hausman's contrary argument, that a BOC would prefer *lower* prices, assumes away the ability of a BOC to undermine IXCs through such access discrimination. (It also assumes that a BOC would capture only a relatively small share of the IXC market unless it cut price vigorously, an assumption questioned below.)

70. My affidavit noted that regulatory and other safeguards can render the threat to IXCs' access arrangements tolerable, at least in the short run (Schwartz Aff., ¶ 14). However, if local competition fails to develop exchange access alternatives, then BOC interLATA entry is likely, over time, to pose a growing threat to the ability of IXCs to compete (Schwartz Aff., ¶ 160), since IXCs' access needs will change over time and preventing discrimination in the establishment of new access arrangements is considerably harder than preventing the degradation of established arrangements. In the longer run, therefore, the BOCs would have strong incentives and perhaps also the ability to raise interLATA prices by impeding IXCs' access to local networks.[22]

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22 For these reasons, Professor Hausman, in his Declaration on behalf of BellSouth in South Carolina, mischaracterizes my initial affidavit somewhat when he writes: "Indeed, Professor Marius Schwartz . . . concluded that no competitive problems are likely to exist from BOC entry into long distance, . . . " (¶ 41).

71. *Profit from BOC interLATA entry may come largely from diverting sales from IXCs than from expanding access use.* Assume for the sake of argument that a BOC would not be able to raise competitors' costs of providing interLATA services via access discrimination, as discussed above. BOC incentives to cut retail interLATA prices aggressively would still be more muted than suggested by BOC experts. This is because a BOC's increase in profit from expanding access minutes is likely to be considerably smaller than its profit from retail long-distance sales, hence BOC behavior is likely to be guided primarily by the latter rather than by access profits.

72. To see this, let us do some simple calculations using Professor Hausman's own figures from his Michigan Declaration on behalf of BellSouth. He estimates that BOC entry would reduce interLATA price to residential customers by about 18%. To be generous to Hausman, assume that this reduction would apply also to business customers.[23] Using his 0.7 estimate of long distance demand elasticity an 18% price reduction implies an increase in interLATA minutes of about 12.6%. The revenue to all BOCs from usage-sensitive access charges in 1995 was about $16.7 billion (Schwartz Affidavit, Table 1). With an unchanged access price, the implied increase in access revenue from the 12.6% increase in minutes is $2.1 billion. Hausman's figure for the *margin* of access above cost, 3 cents/minute, puts the access margin at about half of the average national access price in 1995. Thus, the implied increase in BOC annual *profit* from increased access minutes is less than $1.05 billion.

73. By comparison, let us apply Hausman's projected price reduction of 18% to the entire interLATA market and assume that the BOCs market share within a few years would be 20%.[24] The

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[23] In fact, the likely decrease is far smaller for business customers, as well as for many high volume residential customers, since competition for such customers is generally acknowledged to be stronger, leaving far less room for price reductions than in the case of low volume residential customers.

[24] For example, Professor Schmalensee cites a Yankee Group study indicating that BOCs could capture 10-15% of the market within 18 months of entry (Schmalensse Declaration on behalf of BellSouth in the South Carolina application, at paragraph 21). Within 18 months of its interLATA entry in 1996, GTE has already captured close to 10% of presubscribed long distance lines in their service areas, and without being a vigorous price competitor. SNET is said to have captured about 30% of long-distance lines and about 20% of revenues.

BOCs' resulting interLATA retail revenue would be $7.1 billion.[25] The BOCs' profit from this $7.1 billion in interLATA retail revenue is likely to exceed the extra $1.05 billion profit from increased access minutes. For the ranking to be reversed, two things would have to hold: (a) typical IXC costs of providing interLATA services would have to be high relative to revenues; *and* (b) the BOCs' cost of providing interLATA retail services would have to be not significantly lower than those of a typical IXC. Condition (a) contradicts claims of certain BOC experts (such as Professor MacAvoy) that IXCs earn enormous profits; condition (b) contradicts BOC claims that their entry would realize substantial economies of scope from joint provision of local and interLATA services. Thus, if the BOCs' increased profit hinged primarily on expanded access usage, the implied conditions would undermine other BOC arguments for the great benefits that their interLATA entry would deliver. However, I believe that, even today, profit from BOC interLATA entry would come mainly from interLATA retail revenues. More importantly, looking ahead the profit contribution from BOC interLaTA retail revenues is likely to outweigh considerably the additional profit from expanded access minutes. This is because the FCC's Access Charge Reform Order will reduce usage sensitive (i.e., per minute) access charges substantially over the coming years.[26]

74. The key point in stressing that the bulk of BOC interLATA profits are likely to come from retail revenues rather than from increased access minutes is this: an increase in BOCs' share of interLATA revenues might be achieved largely by *diverting* output away from IXCs *not by expanding industry output.* Therefore, it need not hinge on reducing industry price significantly; and

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[25] Long-distance revenue net-of-access in 1995 was $50 billion (Schwartz Affidavit, Table 1). Since only 77% of interLATA minutes originate in BOC regions, suppose that so does 77% of the revenue, or $38.5 billion. Assuming Hausman's price reduction of 18% and output increase of 12.6% due to BOC entry, the new revenue would be about 92% of the old figure (0.82Px1.126Q = 0.92PQ), or $35.4 billion. A 20% share of this is $7.1 billion.

[26] For example, see the May 8, 1997, presentation of Professor Joseph Farrell, at that time Chief Economist at the Commission. Average usage-sensitive charges affected by the Order were predicted to fall from 2.8 cents per minute at each end of an interstate call to approximately 1.2 cents per minute at the terminating and approximately 1.4 cents per minute at the originating end by January 1, 1999.

[27] Indeed, if a BOC could capture a sufficient share of the interLATA market without cutting price, it would seek a higher price than prevailing today. This follows from the earlier discussion showing that an integrated monopolist's preferred long-distance price exceeds the current average interLATA price.

hence a BOC may not have strong incentives to cut interLATA prices.[27]

2. Disrupting an Allegedly Non-Competitive InterLATA Oligopoly

75. The extent of price reductions (if any) following BOC entry will depend on the competitive interactions in the interLATA market. One view offered by Bell affiants is that IXC's are tacitly colluding to some degree. This view has been espoused repeatedly by Professor Paul MacAvoy. The hypothesis of perfect collusion is inconsistent with estimates of long-distance demand elasticity of 0.7, that is, significantly less than 1; as noted previously, a perfect cartel in such case would have raised price in order to increase revenue and profit. However, assuming for the sake of argument that IXCs are engaging in imperfect tacit collusion, it is not obvious why the addition of one player should destroy such collusion. An alternative outcome is that IXCs would choose to accommodate the BOC. Indeed, there is evidence that the BOCs would like to avoid a price war, including the fact that BellSouth has announced that its prices will be at least 5% below AT&T's, but has not promised the 15-20% price cuts that Professor Hausman predicts.[28]

76. Dr. Crandall and Professor Waverman, while not claiming that IXCs are colluding, argue that much of IXCs' currently high margins are being dissipated by wasteful non-price competition such as advertising, and that BOC entry would reduce margins and therefore also the incentive to engage in wasteful non-price competition. Putting aside the question of just how much of the non-price expenditures are truly wasteful as opposed to valuable to consumers, it is again not obvious why adding a competitor would so drastically alter the nature of competition.[29]

77. I am not suggesting that BOC entry will yield no price reductions. I expect price reductions, and said so in my affidavit. However, the analytical basis for expecting *dramatic* reductions is weak, and I therefore believe that any price reductions would be considerably more modest than projected by some BOC experts such as Professors Hausman or MacAvoy.

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28 Brief in Support of Application by BellSouth for Provision of In-Region InterLATA Services in South Carolina, September 30, 1997, at 4, 78.

29 Indeed, conceivably even more would be spent on advertising and other forms of non-price competition in order to "be heard" above the increased noise.

B. Other Reasons Why Estimates of Gains From BOC Entry Are Inflated

78. Professor Hausman's and Professor MacAvoy's figures are likely to overstate the benefits for several important additional reasons, beyond those discussed in Section A above.

1. Not All InterLATA Traffic Originates in BOC Regions

79. Professor Hausman assumes that BOC entry would bring about a price reduction of about 18% and applies this figure to *all* interLATA revenues from residential customers. But in 1995 only 77% of all interLATA minutes originated in BOC service areas (Schwartz Affidavit, ¶ 31). A BOC's impact on interLATA competition is likely to be far less outside its service regions, e.g., in regions served by other LECs such as GTE or SNET; moreover, the BOCs already are allowed to offer interLATA service originating out-of-region.[30] It is therefore inappropriate to extrapolate whatever interLATA price reduction one expects to emerge in a BOC's region—about 18% according to Hausman—also to regions served by non-BOC LECs. Making this correction would deflate Hausman's projected benefits to consumers by about one quarter—even assuming, counter factually, that his projected percentage price reduction in region is accurate.[31]

2. High-Volume Customers Already Enjoy Substantial Competition

80. Second, Professors Hausman and MacAvoy overestimate the scope of the likely price reduction in BOC regions. Even if BOC entry might plausibly yield price reductions of the order of 15% to *low-volume* residential customers that do not participate in IXCs' discount plans, the majority

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30 The fact that BOCs have made remarkably few attempts to enter out of region also casts doubt on claims by some BOC experts that interLATA markets are so hugely profitable today.

31 It is certainly true that when evaluating the benefits from increased local competition made possible by a suitable § 271 entry standard one also should focus primarily on BOC regions, not on those served by other LECs. But my affidavit did not attempt to present quantitative estimates of such gains extrapolated to all regions, and therefore is not subject to the criticism that I too "over-counted" the benefits from local competition.

of interLATA *expenditures* are made by higher-volume customers who do participate in discount plans and for whom competition already is more intense. For example, AT&T already offers 10 cents/minute anytime, anywhere with a relatively low flat monthly fee.[32] High-volume residential customers subscribing to such plans are likely to see considerably smaller price reductions than those assumed by Professor Hausman.

3. Lessons from the Experiences of SNET and GTE

81. *Extent of price reductions.* The significant shares of interLATA residential customers migrating to SNET and GTE in their regions suggest the potential for welfare gains from BOC interLATA entry. However, the 17-18% average residential rate reductions predicted by Professor Hausman based on his interpretation of the SNET and GTE experiences overstates this potential substantially, for at least two reasons.[33]

82. First, Professor Hausman selectively focuses on certain relatively high-priced AT&T rate plans and fails to consider lower rate plans already offered by AT&T and other IXCs. These low

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[32] A $25-$50/month residential customer on SNET's best rate plan pays 12 cents/minute for anytime, interstate calling. (The same SNET customer would have paid more in the January 1997 time frame used in Professor Hausman's affidavit because this favorable rate schedule was not available at the time.) An MCI customer with the same bill and "anytime" calling plan pattern also pays 12 cents/minute (less on Sundays); an AT&T customer between pays 11-13 cents/minute. For off-peak calling, Sprint's dime-a-minute rates beat SNET's rates for all but the largest residential customers (to whom SNET offers a dime-a-minute), and LCI's 9 cents/minute beats both of them.

[33] As explained shortly, even the price reductions projected based on the SNET record are exaggerated. However, Professor Hausman does not offer good support for his claims that GTE has priced competitively to the same degree as SNET. In fact, available evidence indicates that GTE has not priced aggressively against the major IXCs, but relied more on its in-region brand name recognition. For example, GTE's initial entry pricing strategy was simply to offer volume discounts of 10% off competitors' basic rates for bills of $10/month and 25% for bills of at least $25/month. (See Merill Lynch, Telecom Services - Long Distance, August 12, 1996.) These discounts are comparable to the volume discounts off basic rates that customers could already get from AT&T. GTE today has only two long distance rate plans: one is the flat rate of 14 cents/minute under Total Call, which is only one cent below AT&T's 15 cent flat rate, and is above AT&T's 10 cents flat rate and MCI's 12 cent flat rate available to users who meet some basic volume requirements or pay a monthly fee. The other is the Easy Savings plan, with discounts from AT&T's basic rate for customers with bills of at least $10/month and 25% for bills of at least $25/month. As noted, such customers can obtain similar discounts from AT&T.

rate plans should induce customers to migrate from the particular, relatively high-priced AT&T schedules that Professor Hausman selected for his LEC/AT&T rate comparison, even absent the availability of SNET or GTE interLATA service.[34] In fact, for the *off-peak* callers that make up the bulk of the residential market, SNET and GTE do *not* offer the best interLATA rates available in their respective territories, *for any customer calling volume*.[35] For *on-peak* calling, competing carriers also have lower rates than GTE *for most service levels*, while the comparison of their rates with those of SNET's is mixed.[36]

83. Second, although Hausman's submissions do not state how he weighted the rate schedules that he does compare, his 17-18% projected average price reduction appears to be based on initial average prices that are computed by weighting prices in discount and non-discount plans according to the number of customers in each. This ignores the fact that customers in discount plans tend to be the heavier users and account for a much higher share of both minutes and total expenditure.

84. This is not to deny that some SNET and GTE customers may well be enjoying better rates as a result of interLATA entry by these LECs. A likely benefit of in-region interLATA entry by the incumbent LEC is its marketing access to its broad customer base. Incumbent LECs that marketed

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[34] In his submission in the present BellSouth proceeding, Professor Hausman does mention two of the more competitive standard AT&T calling plans. However: (a) he only compares the least favorable of these with SNET rates; (b) he makes the unrealistic assumption that the average call duration is only four minutes (thereby exaggerating the impact of SNET's shorter billing increments); and (c) he also applies discounts to the SNET rates that, according to SNET's customer representative, are not available on that schedule.

[35] As mentioned, GTE's best off-peak rate plan is a straight 14 cents/minute, anytime rate. For off-peak callers, AT&T, Sprint, and LCI all offer rates that beat GTE's by 30-35%. Sprint's and LCI's respective off-peak rates of 10 cents and 9 cents/minute dominate SNET's offers. (Sprint rebates a further 10% off the bill for customers spending at least $25/month who maintain service for a year.) AT&T's 10 cents per minute off-peak rate matches SNET's.

[36] MCI beats SNET's best on-peak offer for customers with lower calling volumes. Sprint's, AT&T's, and LCI's respective off-peak rates of 10 cents, 10 cents, and 9 cents/minute dominate SNET's offers. (Sprint rebates a further 10% of the bill for customers that maintain service for a year.) For customers using under $25 per month, MCI's 12 cents/ minute anytime beats SNET's 15 cents/minute anytime rate. At calling volumes over $50 per month, SNET's rates are the best of the major players' *standard* offers for callers with heavy on peak use, with the advantage around 10% at $50 per month; less at greater calling volumes. However, SNET's penetration at high calling volumes is disproportionately small, perhaps because of the competitive importance of IXCs' promotional calling plans offering very substantial additional savings at these calling volumes.

attractive interLATA rates would over time win some customers from incumbent IXCs, improving these customers' welfare directly. Indirectly, such ILEC offers ultimately would be a factor in inducing incumbent IXCs to improve their own offers or speed up the penetration of their more attractive current calling plans among their customer base. However, these effects are not measured well by Professor Hausman's comparisons; he does not distinguish the effect of ILEC entry from the effects of rate schedules already on the market.

85. ***Increased competition even absent BOC entry.*** Competition has been increasing in long-distance services to a significant extent even in the absence of BOC entry. AT&T's market share erosion has accelerated over the over the past 3 years as MCI, WorldCom, and particularly the smaller carriers have gained market share.[37] AT&T and its rivals have introduced residential rate plans that have reduced generally available rates.[38] Various Wall Street analysts refer to long-distance service as becoming increasingly a "commodity," and cite increased competitive pressures from resellers and smaller carriers.[39] Thus, it is misleading to argue that prices with BOC entry would be lower than without it by about 15-20% *in steady state*.[40] Rather, BOC entry would accelerate and perhaps deepen the already intensifying competition. Barring consolidation, this competition would bring interLATA prices lower even without BOC entry. The added reduction in

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37 See FCC "Long Distance Market Shares " Chart 2 and preceding tables, October 10 1997.

38 Nonpromotional plans available to all residential customers include *One Rate Plus* ($4.95 per month plus 10 cents/minute, anytime [AT&T]); *Simple Rate* (10 cents/minute, 7pm-7am, weekends; 25 cents/ minute, 7am-7pm [AT&T]); *MCI One Rate Plan* (12 cents/minute, anytime, for customers using more than $15 a month, and 15 cents/minute, anytime, for smaller customers; 5 cents/minute on Sundays for both type of customers); *Sprint Sense* (10 cents/minute, 7pm-7am, weekends; 25 cents/minute, 7am-7pm); *The LCI Difference* ($3 per month, waived if the bill is more than $15; 9 cents/minute, 7pm-7am, weekends; 15 cents/minute, 7am-7pm).

39 See, for example, Merrill Lynch, Telecom Services - Long Distance, 12 August, 1996.

40 For example, Professor MacAvoy lists "conservative" estimates of annual consumer benefits in Michigan of $0.4 billion ($1.9 billion for all of Ameritech's region) and puts the present value of this benefit stream at $5.5 billion ($23 billion for all region). This presumes that BOC entry gives a *permanent* increase in competition, as opposed to merely accelerating its evolution, as it presumes that consumers would get an additional $0.4 billion *each year* with Ameritech entry than without it (MacAvoy Michigan Reply Affidavit, July 2, 1997, p. 5).

prices that hinges on BOC entry is therefore likely to diminish over time.

III. CONCLUSION

86. My purpose in this affidavit is not to engage in skirmishes over quantification of the exact benefits and costs of BOC entry, an exercise that I view as quite speculative. Rather, my purpose is twofold. First, I want to suggest—based on the analysis of Part I—that there is a broad range of plausible assumptions under which the gains from increased local competition will comfortably outweigh any likely loss due to delayed BOC interLATA entry. Second, I want to identify the numerous and serious exaggerations in some of the figures that have been touted.

87. The Section 271 entry authority is a key, if not the key, tool for prying open local markets. Therefore, it is also the key to ensuring that all providers are able to compete on an equal footing in offering integrated services that require the now-monopolized local inputs and services. The Department of Justice's Open Local Market Standard strikes a good balance between the costs and benefits of delaying BOC entry as needed to accomplish the competition goals of the Telecommunications Act, and is likely to accelerate considerably the development of competition in local and in integrated services compared with a more lax standard. It need not impose an onerous delay in BOC entry. And it ultimately will result in less intrusive regulation than would a policy that authorizes BOC entry prior to full implementation of the main new systems required for local competition and instead counts on regulators to disentangle the mess later.

I hereby swear, under penalty of perjury, that the foregoing is true to the best of my knoweledge and belief.

____

Marius Schwartz

Subscribed and worn before me this ______ day of ______, 1997.

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Notary Public

Index of Full Citations

Short Citation	**Full Citation**
FCC Michigan Order	Memorandum Opinion and Order, *In re: Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services In Michigan*, 12 FCC Rcd 20543 (Aug. 19, 1997) ("*FCC Michigan Order*") <http://www.fcc.gov/Bureaus/Common_Carrier/ in-region_ applications>.
[redacted]	
Verizon LFACS *Ex Parte*	Verizon New England Inc., Access to Loop Information for Qualification of DSL Loops, *Ex Parte* Submission to the FCC, CC Docket No. 01-9 (Feb. 2, 2001) ("Verizon LFACS *Ex Parte*").
Verizon Dec. C2C *Ex Parte*	Verizon New England Inc., Massachusetts Carrier-to-Carrier Report for December 2000, *Ex Parte* Submission to the FCC, CC Docket No. 01-9 (Jan. 30, 2001) ("Verizon Dec. C2C *Ex Parte*").
Verizon Supp. Brief	Supplemental Brief in Support of Application by Verizon New England, *In re: Application by Verizon New England Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions), and Verizon Global Networks Inc., for Authorization To Provide In-Region, InterLATA Services in Massachusetts*, CC Docket No. 01-9 (Jan. 16, 2001) ("Verizon Supp. Brief").
[redacted]	
Covad Clancy Decl.	Declaration of Michael Clancy *attached to* Comments of Covad Communications Company ("Covad Clancy Decl.").
DOJ Schwartz Aff.	Affidavit of Dr. Marius Schwartz on behalf of the United States Department of Justice (May 14, 1997) ("DOJ Schwartz Aff.") <http://www.usdoj.gov/atr/public/comments/sec271/ bellatlantic/3813_exhibits.htm>.
DOJ Schwartz Supp. Aff.	Supplemental Affidavit of Dr. Marius Schwartz on behalf of the United States Department of Justice (Nov. 3, 1997) ("DOJ Schwartz Supp. Aff.") <http://www.usdoj.gov/atr/public/comments/sec271/ bellatlantic/3813_exhibits.htm>.

COMPETITIVE IMPLICATIONS OF BELL OPERATING COMPANY ENTRY INTO LONG-DISTANCE TELECOMMUNICATIONS SERVICES

AFFIDAVIT OF MARIUS SCHWARTZ

May 14, 1997

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Professional Background

1. My name is Marius Schwartz. I am a Professor of Economics at Georgetown University. I received my B.Sc. degree with first-class honors from the London School of Economics and my Ph.D. in economics from the University of California at Los Angeles. My research areas are in industrial organization, antitrust and regulation. I have published on these subjects and have taught courses at Georgetown University and to executives and government officials in the U.S. and other countries.

2. From April 1995 to June 1996, I served as the senior staff economist at the President's Council of Economic Advisers responsible for antitrust and regulated industries. Much of my work was on regulatory reform in telecommunications, and I participated in the development of the Administration's policy leading up to the enactment of the 1996 Telecommunications Act. From 1980 to the present, I have served intermittently as a consultant to the Antitrust Division of the Department of Justice on a wide variety of competition matters. I have also consulted for the OECD, World Bank, USAID, and private clients. My curriculum vitae is attached to this affidavit.

Scope of Assignment

3. I have been asked by the Antitrust Division of the U.S. Department of Justice to analyze the economic conditions under which authorizing regional Bell Operating Company (BOC) provision of in-region interLATA telecommunications services ("BOC entry") would be consistent with the public interest in competition, under the entry standard of § 271 of the Telecommunications Act of 1996 ("Act"). I have also been asked for my opinion, in light of my analysis, regarding the Justice Department's general standard for evaluating BOC applications under § 271 that is described in the Department's comments filed with the Federal Communications Commission. As part of my analysis I have considered both the potential costs

and benefits of authorizing interLATA entry by the BOCs, consistently with the specific provisions and overall competitive objectives of Act. I have not been asked to consider whether any individual BOC has met the requirements of § 271 in a particular state.

4. In connection with this assignment, I have drawn on the relevant economics literature and consulted with other academics, regulators, practitioners, and industry participants. I have also reviewed numerous documents, including but not limited to: submissions in connection with the Motion to Vacate the MFJ that was filed by four BOCs in 1995; submissions in the FCC's proceedings to implement the 1996 Act's provisions on local competition, accounting and non-accounting safeguards, and reform of universal service and access charges; the FCC's relevant Orders; regulatory filings with state commissions; documents submitted to the Department of Justice pursuant to the pending mergers between Bell Atlantic and NYNEX, and SBC and Pacific Telesis; and numerous responses submitted to the letter request of Acting Assistant Attorney General Joel Klein issued on November 21, 1996, concerning the competitive impact of interLATA entry by the BOCs ("responses to Joel Klein letter").

5. My assessment is that the Department of Justice's entry standard strikes a good balance between properly addressing the competitive concerns raised by BOC entry, and realizing the benefits from such entry as rapidly as can be justified in light of these concerns. The Department's standard, therefore, is consistent with the public interest in competition reflected in the entry test of section 271 of the Telecommunications Act.

Summary of Analysis and Conclusions

6. The 1996 Act aims to increase competition in *all* telecommunications markets; for the first time, this includes local markets that today are largely regulated monopolies. It is therefore necessary to evaluate the effects of BOC entry not only on competition in long-distance services, but also in local services and in "integrated services" (the offering of both local and long-distance

services—whether bundled or separately—by the same provider).

7. Under appropriate conditions, BOC entry holds the promise of yielding significant benefits to the BOCs and to consumers. The principal benefits may include: (a) reductions in retailing costs enabled by joint provision of local and long-distance services; (b) offering consumers valuable new options from dealing with providers of integrated services, e.g., the convenience of one-stop shopping for all their telecommunications requirements; and (c) increasing the degree of competition in long-distance services (both in interLATA services through BOC entry; and in intraLATA toll services in multi-LATA states that now lack dialing parity for entrants, since the Act requires intraLATA dialing parity in such a state when and only when BOC interLATA entry occurs in the state).

8. BOC entry, however, also raises potential concerns. The principal risk of authorizing premature BOC entry is that doing so will result in significantly less BOC cooperation, than could be induced by an appropriate entry standard, in providing good access at cost-based prices to the various functions and services of a BOC's local networks needed by entrants wishing to offer local or integrated services. These requisite "wholesale local services" include interconnection, unbundled network elements, and discounted local service for resale. Securing efficient access to these services of the BOCs' ubiquitous local networks will be critical for some time to the development of competition in local and integrated services. A BOC's monopolistic withholding of such access cooperation would be a potent and destructive form of rivalry: it would raise competitors' costs, degrade their quality, and deny consumers the benefits of new products. And if facilities-based local competition fails to develop, BOC entry could pose a growing threat to long-distance competition, since today's established access arrangements will increasingly require changes over time.

9. Authorizing premature BOC entry would prematurely reduce a BOC's cooperation incentives for two main reasons: (a) the BOC stands to gain if it can leverage its local market

power into the newly opened markets for long-distance and integrated services; and (b) the BOC is emboldened to stiffen its resistance to local competition having secured its coveted long-distance authority. After explaining these incentives, I argue that regulatory and other post-entry safeguards are considerably less likely to secure the new BOC arrangements for local competition than would a more procompetitive entry standard.

10. First, consider leverage incentives. Once the BOC offers long-distance retail services and thus integrated retail services, it becomes a competitor to its access customers—carriers that must purchase from it access services used to provide these retail services. A BOC then becomes less willing to provide access services to others than if it did not offer the retail services itself. This reduced willingness arises in large part, though by no means entirely, because a BOC's prices for wholesale local services and for local retail services are likely to remain more tightly regulated than its prices for long-distance retail services. Asymmetric regulation of this sort pushes a firm to evade regulation by leveraging the more tightly regulated market power into the less regulated services that require access to the regulated bottleneck services. To raise prices of unregulated services, a BOC must undermine competitors; this it might do—if unchecked by regulation—through various forms of "access discrimination" that raise competitors' costs or degrade their quality.

11. Leverage into long-distance services would entail a BOC's degrading of competitors' long-distance access arrangements; a BOC's ability to do so, however, is limited in the short run (see ¶ 14). But leverage into integrated services could entail degrading of competitors' long-distance access or denying to competitors good access to its wholesale *local* services—because competitors need both to offer integrated services. Undermining integrated-service competitors by restricting their access to wholesale local services could enable a BOC to charge higher prices for its unregulated long-distance services for two reasons: (1) competitors are denied cost savings from joint provision of services, which could raise their cost of providing long-distance services

and thus weaken the discipline they impose on the BOC's prices; and (2) some consumers would be willing to pay a premium for dealing with a provider of integrated services, reflecting, for example, the value of one-stop-shopping.

12. Second, and independent of such incentives to leverage market power into long-distance or integrated services, a BOC like any dominant incumbent is inclined to resist cooperating with local entrants that threaten its core local market power. This resistance can be softened—though not eliminated—by authorizing a BOC's long-distance entry only if its adequate cooperation with local entrants has first been secured. Before entry is authorized, the lure of added profit from long-distance and integrated services gives the BOC an incentive to expedite its required cooperation; after entry, however, time is on the BOC's side and its inclination to cooperate correspondingly diminishes. As a practical matter, rescinding a BOC's entry authority if it slows down its cooperation may well be difficult as well as disruptive. (Halting its future marketing efforts may be a more practical option, but is also less potent.)

13. For these reasons, once a BOC's entry is authorized, its incentives to cooperate in providing network access to competitors will diminish significantly. Therefore, a key question is: how effectively can regulatory and other safeguards enforce the requisite BOC cooperation post entry in the face of reduced BOC incentives? Economic reasoning suggests—and historical experience confirms—that the efficacy of regulatory and other "outside enforcement" varies widely with the economic environment. Regulation fares much better in a stable environment where regulators understand what is and is not standard practice, than in a rapidly changing environment where more frequent adjustments are needed and informational asymmetries are greater. Correspondingly, regulatory oversight can do a reasonable job of maintaining well-established arrangements; but it is far less adept at forcing incumbents to rapidly implement new arrangements, as the lack of historical benchmarks on acceptable performance gives incumbents great latitude to engage in plausible deniability. These observations have important implications.

14. Access arrangements for long-distance services are largely well established; hence regulatory and other safeguards can prevent significant degradation. Although the necessary access arrangements will certainly evolve over time, I understand that radical changes in technical arrangements governing the majority of interexchange revenues are not imminent. While customized arrangements pose a potential problem, such arrangements are used mainly by large customers for whom competitive access alternatives have developed more rapidly. On balance, therefore, regulatory and other safeguards can render the threat to technical arrangements for long-distance access tolerable, at least in the short run.

15. The picture is quite different for access arrangements to wholesale local services. These requisite arrangements are largely new; their implementation will require extensive cooperation by incumbents in developing a host of technical, operational and business protocols, and in establishing appropriate prices.

16. Mandating incumbents' cooperation, as the Act does, surely helps; but the process will evolve much more quickly and efficiently if incumbents have better incentives to cooperate. Thus, the Act sets up the § 271 process which, as is widely acknowledged, only allows for BOC entry when such local-competition access arrangements are meaningfully made available and the market is truly open to competition. This sequencing serves important purposes, as described below. Regulators and other outside enforcers have significantly inferior information than a BOC about how to implement these new systems and how long the task should take. These informational asymmetries hinder reliance on post-entry measures (such as halting BOC marketing of long-distance services, or imposing financial penalties) to force BOC implementation of these new arrangements, since enforcers' uncertainty about how long implementation should take makes it difficult (and inefficient) to specify rigid deadlines.

17. As the § 271 sequencing recognizes, however, these difficulties can be significantly mitigated by requiring as pre-conditions for BOC entry that all major new systems necessary to

open the local market have been made available to entrants, and that their performance has been sufficiently demonstrated; absent such a demonstration, one cannot be confident that the systems indeed do what they promise. Such an entry standard does a better job of aligning incentives: the more informed BOC then has stronger incentives to implement things rapidly in order to expedite opening the local market and thereby its own long-distance entry. And establishing performance benchmarks to gauge the functioning of these new arrangements before authorizing BOC entry renders post-entry safeguards—regulatory, antitrust and contractual—more effective at countering subsequent BOC incentives to degrade these arrangements. Thus, authorizing BOC entry only after a BOC institutes the new access arrangements that are necessary to open the local market to competition is likely to greatly accelerate the emergence of local competition.

18. Although delaying BOC entry until the local market is open may impose some costs, the more rapid opening of the local market that will result is likely to yield significantly larger benefits to consumers. The local market is more than twice as large as long distance (net of access charges), and is largely a regulated monopoly; thus, adding even a modest dose of competition could yield major gains in lower costs and prices, improved service, and product innovation. BOC cooperation in providing wholesale local services also could permit others to compete relatively quickly in integrated services (such as by reselling local services along with long-distance and other services); the ability to offer integrated services is important to enabling long-distance carriers and others to compete effectively with a BOC once it is authorized to offer long-distance service. And in the long run, facilities-based local competition can aid regulation—and eventually, one would hope, supplant it—in safeguarding access arrangements for long-distance services in a less intrusive manner.

19. The foregoing analysis persuades me that BOC entry is appropriate when, and only when, the market in the state has been irreversibly opened to local competition. I believe this entry standard will provide incentives to the BOCs to extend the cooperation necessary to open local

markets more rapidly and efficiently; will help establish the benchmarks enforcers need to maintain the new access arrangements post entry; and will permit BOC entry as rapidly as is consistent with these constraints. Opening the market does not require evidence of local competition of all forms and in all regions of a state sufficient to substantially discipline BOC market power. The Act aims to let market forces determine what forms of entry work best and where; and regulatory and other safeguards will still play a role in disciplining BOC abuse of market power. But, at a minimum, opening the local market requires full, meaningful implementation of the § 271 competitive checklist, not mere paper compliance.

20. By far the best test of whether the local market has been opened to competition is whether meaningful local competition emerges. Local competition establishes presumptions; the more widespread and varied it is, the greater our confidence that the market has been opened. In particular, use on a commercial scale of the new access arrangements needed to support all three modes of local entry envisioned in the Act—facilities-based, unbundled elements, and resale—demonstrates that competitors are obtaining what they need from the BOC. Local competition, even on a modest scale, can also signal entrants' willingness to commit investments and demonstrate their confidence in the openness of the market. Finally, the presence of local competitors can directly assist regulators in preventing future backsliding by the dominant incumbents.

21. If sufficiently diverse competition fails to develop, it is important to understand why. As implied earlier, one possibility is simply lack of interest by entrants in pursuing certain entry modes in certain regions. But before reaching such a conclusion, it is important to ascertain that competition is not being stifled by artificial barriers. Thus, if sufficient competition fails to develop, there should be a rebuttable presumption that this is not due to lack of entrants' interest, but to a failure to irreversibly open the local market. Rebutting this presumption requires ascertaining that the main elements of an open market indeed are in place. The most important

element, the logic for which was explained earlier, is the following. *New technical and operational arrangements must be available and shown to be working* to support all three entry modes envisioned in the Act; on a sufficient scale, and capable of being rapidly expanded and extended to regions where they are not initially implemented; and for sufficient duration and variety to provide reliable benchmarks to assess and enforce future cooperation.

22. *Procompetitive pricing* of these key inputs also is necessary to inspire confidence that, despite the absence of sufficient actual competition, the market is indeed open. Prohibitively high prices would render the new access arrangements meaningless; to permit efficient local entry, entrants must have adequate assurance that BOC prices for these inputs will remain reasonable and cost-based after interLATA relief is granted. (The FCC has determined that the appropriate costs are: forward-looking incremental cost for unbundled network elements and for transport and termination of local calls; and wholesale discounts off the retail price that are close to the incumbent's avoided retailing costs, in the case of local service sold to other carriers for resale.) Awareness that the § 271 entry process will weigh seriously whether key inputs are priced in a manner that supports efficient competitive entry will usefully complement state efforts in opening local markets.

23. Finally, one must ascertain that competition is not being hindered by any lingering *major state regulatory or other artificial barriers*. (Although such barriers may be subject to preemption under § 253 of the Act, the timeliness and effectiveness of any such FCC preemption decisions is uncertain.) If such barriers are likely for some time to seriously hinder competitors' ability to avail themselves of the new access arrangements put in place with BOC cooperation, these arrangements could become obsolete and the value of such BOC cooperation will decay; and securing this cooperation again once the barriers have been removed but after BOC entry has been authorized will be considerably harder.

24. In short, if sufficient local competition is observed, this demonstrates that the market has

been irreversibly opened; if not, one should exercise more caution in approving the BOC's entry, and insist on offsetting evidence that the market indeed has been irreversibly opened. I have reviewed the Department of Justice's entry standard in light of this analysis. I conclude that it strikes a good balance between properly addressing the competitive concerns raised by BOC entry, and realizing the benefits from such entry as rapidly as can be justified in light of these concerns. It therefore serves the public interest in fostering competition.

I. The 1996 Telecommunications Act and BOC Entry into Long-Distance Services

25. The 1996 Act represents a major shift in U.S. telecommunications policy by establishing as a federal goal the promotion of competition in all telecommunications services. The most significant change is the requirement that local telephone markets, heretofore regulated franchise monopolies, be opened to competition. In addition and relatedly, the Act establishes a procedure for authorizing the BOCs to offer long-distance (interLATA) telecommunications services originating in their service regions after a BOC has sufficiently opened its local markets to competition and BOC entry is judged to be in the public interest.

26. Section A below reviews the main relevant telecommunications markets and Section B discusses the Act's goals of increasing competition and improving performance in these markets. Section C stresses why BOC cooperation will be critical to achieving the Act's goals, and section D discusses the benefits and costs of authorizing BOC entry before there is effective local competition. Based on this analysis, section E discusses the main principles that a procompetitive entry standard should incorporate.

A. The Major Telecommunications Markets Relevant to BOC Entry

27. The 1982 consent decree that broke up the vertically integrated Bell system (Modification

of Final Judgment, "MFJ"[1]) created seven new regional BOCs, and divided those parts of the country served by the Bell system into Local Access and Transport Areas (LATAs); today, the BOCs serve 164 LATAs. Under the MFJ, a BOC could only offer telecommunications services within LATAs (intraLATA). InterLATA services have been provided by long-distance companies, also known as interexchange carriers (IXCs). Recently, however, some local exchange carriers (LECs) not subject to the Act's § 271 interLATA restriction on the BOCs, have been making serious inroads into long-distance services.

28. Superseding the MFJ, the 1996 Act authorizes any BOC immediately to offer long-distance (interLATA) services that originate in states outside its service regions. But to offer interLATA services originating in its region, a BOC must receive FCC approval under § 271 of the Act. A BOC applies for approval state-wide.[2] Approval is granted only after the FCC determines all of the following: (a) which if any of the two tracks stipulated in the Act the BOC is eligible to use at the time to satisfy the *competitive checklist* requiring it to open its local markets in the state to competition: Track A (interconnection agreement with a facilities-based competitor serving business and residential customers), or Track B (statement of generally offered terms to competitors where no request has been made by a provider for access and interconnection); (b) after consulting with the state commission, determines that the BOC, through Track A or B, has satisfied the competitive checklist; and (c) determines that such approval is in the *public interest*. In making its determination on a § 271 application, the FCC must consult with the Department of Justice and give substantial weight to its competitive

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1 *U.S. v. AT&T*, 552 F. Supp. 131 (D.D.C., 1982). Judge Greene entered the MFJ on August 24, 1984, and the divestiture was consummated January 1, 1984.

2 Once a BOC receives interLATA approval in any state, § 273 of the Act authorizes it also to enter manufacturing of telecommunications equipment, from which the BOCs are still barred. I have not been asked, in preparing this affidavit, to address equipment markets.

assessment. (In addition, § 272 requires the BOC to offer interLATA services, both in and out of region, through a separate affiliate subject to certain safeguards.)

29. Since the Act links a BOC's interLATA entry authority to the opening of its local markets, in advocating a particular entry standard one must consider its effects on competition in both interLATA and local markets.

1. The BOCs dominate key local networks and are regulated

30. Table 1 shows telecommunications revenues from local (intraLATA) markets now dominated by the BOCs in their regions, and from long-distance (interLATA) markets which the BOCs seek to enter. The data are for 1995, the most recent year for which comprehensive data are available.[3] Despite some changes since the passage of the Act, notably an increase in the activity of local entrants (discussed shortly), the basic market relationships shown by the 1995 data have not changed markedly. Two points stand out. First, local revenues are twice as large as long-distance revenues (net of access payments collected by LECs). Second, incumbent LECs account for the vast majority of local revenues: $102.8 bn compared with a combined $0.6 bn for CAPs and CLECs; although CAP plus CLEC revenue has risen to about $2 billion in 1996, it is still dwarfed by LEC revenues.

31. In their service regions the BOCs have virtual monopolies over *switched* services, both local exchange and exchange access to long-distance carriers. They also dominate special (or

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[3] The data come from the FCC's *Telecommunications Industry Revenue: TRS Fund Worksheet*, December 1996 (*TRS*). There are some relatively minor discrepancies between the *TRS* data and the FCC's *Statistics of Communications Common Carriers*, 1995/96 (*SCCC*). I use *TRS* data because it covers more local carriers. In most cases only LECs with annual revenues over $100 million are required to report to *SCCC* (the 53 such LECs reporting to *SCCC* for 1995 accounted for somewhat over 90% of all LEC revenues). In contrast, almost all telecommunications carriers (1,310) reported to *TRS* for 1995. Thus, *TRS* data cover more LECs (which helps explain some of the discrepancy between the *TRS* and *SCCC* data on LECs), and includes information on other local providers, CAPs (Competitive Access Providers) and CLECs (Competitive Local Exchange Carriers—new local entrants).

dedicated) access used by long-distance carriers. And in most states they also dominate intraLATA toll services, due to the BOCs' continuing ability in those states to deny to IXCs dialing parity (the ability of a customer to make intraLATA toll calls through an IXC without dialing more digits than through the BOC) before the BOCs begin providing interLATA services in these states.[4] In 1995, the ratio of LEC revenues nationwide to long-distance revenue net of access was about 2-to-1 (Table 1); the BOCs accounted for about 73% of all LEC revenues nationwide (Table 1) and about 77% of all interLATA minutes originated in BOC service areas (*SCCC*, Table 2.10). The 2-to-1 ratio therefore is also a reasonable approximation of the relative sizes of (a) those markets which a BOC now dominates (local markets in its service areas) versus (b) those markets now closed to a BOC and in which the BOC would have the greatest impact (interLATA calls originating in its service areas).[5]

32. In recent years, certain local competition has emerged. In central business districts, CAPs have constructed networks that enable large customers to bypass LECs and link directly to IXCs (mainly to send but not receive calls), and provide some links between local private networks. One can expect CAPs and CLECs to expand into switched services, since the 1996 Act preempts many legal barriers that had precluded competition for such switched services in many states.[6]

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[4] Competition has been growing in intraLATA toll service, especially in states that introduced dialing parity between the incumbent LEC and IXCs. IXCs' were estimated to account for about $3.3 billion of intraLATA toll revenues in 1995, compared with $10.1 billion for all LECs (Table 1). I discuss intraLATA dialing parity further in section II.B.

[5] The Act bars a BOC (until it secures § 271 authority) from providing interLATA services that originate anywhere in its states, including parts of a state where local service is provided by other LECs not the BOC. However, the BOC's competitive significance in interLATA services is likely to be greatest for calls originating in its service areas, where it dominates local networks. (Reflecting the difference that control of local networks can make, the Act permits the BOCs to offer interLATA services originating in out-of-region states.)

[6] Indeed, Table 1 understates the revenues of CAPs and CLECs today. New Paradigm Resources Group (NPRG), based on data it developed together with Connecticut Research, reports the following trends.

But CAPs and other local entrants face more than just legal hurdles.

33. Expanding local operations is expensive, and requires significant cooperation from incumbents. As mentioned, the BOCs in their regions retain the only ubiquitous switched local networks. These consist of several major elements. (a) The *local loop* is the sets of wires linking subscriber premises to the telephone company's wire centers (or "central offices"). This local distribution plant is by far the most expensive network element; duplicating it on a large scale would be prohibitively costly, and probably inefficient. (b) *Switching* facilities allow subscribers to communicate indirectly (as opposed to using point-to-point links) with others. Virtually all residential subscribers and small businesses depend on switched local access to originate and to terminate both their local and long distance calls, as non-switched access is only economical for large users. (c) *Local transport* facilities are high capacity trunk lines that connect central offices or other switches. (d) The BOCs also control key *databases*, and key network *signaling* functions—the flow of information associated with setting up, disconnecting, and otherwise controlling a telephone call (information such as the identity of the parties, the duration of the call and the signal being transmitted, e.g., voice or data).

34. In view of their substantial market power, the BOCs and other LECs remain regulated in their prices for most local services and exchange access. Moreover, as explained shortly, the new Act requires incumbent LECs to offer numerous new "wholesale" local services at regulated

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In 1996 CLECs, in which NPRG includes also CAPs, nearly doubled their revenues to $2.2 billion and increased their market shares for all service categories. Their estimated shares of national totals are: 0.4% of local services; 1.8% of intraLATA toll; 0.3% of switched access services; and 10.6% of dedicated access services. NPRG expects these shares to increase considerably in the mid-term future as CLECs are aggressively deploying switch facilities. Still, NPRG notes that these shares remain negligible when compared to incumbent LECs—consistent with the pattern in Table 1—and concludes that, although strong competition for dedicated access services may exist today for selected locations, for the overall local telecommunications market, robust competition does not exist today. NPRG, *Annual Report on Local Telecommunications,* 1996-97.

prices to other telecommunications providers.

2. Long-distance markets are relatively competitive and largely unregulated

35. The extent of competitiveness of long-distance markets is hotly debated (see section II.C); but it is surely greater than in local services. There are four national IXCs, which in 1995 had the following revenue shares: AT&T 53%, MCI 18%, Sprint 10%, LDDS/WorldCom 5%; there are also numerous other carriers, with a significant total market share of 14% (*SCCC* 1995/96, Table 1.4). And there is considerable switching of customers between carriers. In short, while there is not perfect competition, there is considerable competition.[7]

3. Inefficiencies in the present industry structure

36. While the MFJ succeeded in increasing competition in long-distance services, the current structure of the U.S. telecommunications industry is surely far from perfect.

37. *Losses from separation.* The MFJ's separation of activities based on LATAs imposes certain costs. As explained in section II, it precludes the BOCs from attempting to exploit various economies of scope, especially on the retailing side, associated with joint provision of local and long-distance services; from offering consumers the benefits of one-stop shopping and new services that require both local and interLATA facilities; and from bringing more competition to long-distance services (see the ensuing section I.D.1). LATA boundaries

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[7] In finding AT&T non-dominant, the FCC assessed that "most major segments of the interexchange market are subject to substantial competition today, and the vast majority of interexchange services and transactions are subject to substantial competition." *Motion of AT&T Corp. to be Reclassified as a Non-dominant Carrier*, 11 FCC Rcd 3271, 3288, ¶ 26 (1995). The FCC reiterated these views a year later: "Thus, we believe that market forces will generally ensure that the rates, practices, and classifications [of IXCs] are just, reasonable, and not unjustly or unreasonably discriminatory. . . . We also reject the unsupported suggestion that the current levels of competition are inadequate to constrain AT&T's prices." *Policy and Rules Concerning the Interstate, Interexchange Market*, CC Docket No. 96-61, Second Report and Order, FCC 96-424, ¶¶ 21, 22 (released October 31, 1996).

necessarily impose artificial separation between points near the boundaries, and do not always conform to economic markets or efficient network configurations. LATAs vary widely in size and population; intraLATA calls can travel hundreds of miles, thereby better resembling long-distance calls than local calls as regards the network facilities utilized.[8] For all these reasons, confining the BOCs (or any other firms) to particular geographic regions or types of services is not a first-best solution.

38. *Absence of local competition.* But the most glaring problem today is one that the MFJ was not designed to alter: the absence of local competition. Indeed, confining the BOCs may have been the best guardian of nascent long-distance competition in an era where persistence of the BOCs' regulated local monopolies was taken as given. Replacing such monopolies with local competition, however, can ultimately provide a better safeguard for long-distance competition,[9] while also allowing removal of current restrictions on the BOCs.

39. In addition to safeguarding competition in long distance, introducing local competition at this point is likely to yield even greater benefits by improving market performance in the provision of local services, including local exchange and exchange access, and of integrated services. The local market is more than twice as large as long distance (Table 1), and is largely monopolized by incumbent LECs. While regulation holds down some LEC prices, it introduces

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[8] To some extent this reflects the choice of relatively large LATA boundaries at divestiture (a typical LATA is much larger than a local exchange network). However, even if at divestiture LATAs had been drawn to maximize the degree of separation between the perceived local monopoly bottlenecks and the potentially competitive segments, airtight separation would still be impossible. The boundary between "monopoly" and "potentially competitive" segments is not stationary, but changes with technology and the advent of new services. Any rigid regulatory separation is therefore bound to become imperfect.

[9] The BOCs' own statements implicitly acknowledge that regulation is an inferior safeguard to competition. "This competition (from CAPs) was driving the Bell companies to lower the price *and raise the quality* (emphasis added) of their local exchange services even before the 1996 Act." Joint Response of Bell Atlantic and US West to Joel Klein letter, December 13, 1996, 32-33.

its own costs.[10] These include: a distorted price structure; rigidities in adjusting prices to changing conditions; and weakening firms' incentives to contain costs (if regulation is largely cost-based), to maintain quality (if regulation is of the price-cap variety), and to be innovative and responsive to customer demands. Where feasible, competition is far superior to regulated monopoly as a device for promoting cost reduction, innovation, and superior service.

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10 Robert W. Crandall and Leonard W. Waverman, *Talk Is Cheap: The Promise of Regulatory Reform in North American Telecommunications,* The Brookings Institution, 1995, chapters 3, 8 ("Crandall and Waverman, 1995"). Gerald W. Brock, *Telecommunications Policy for the Information Age: From Monopoly to Competition*, Harvard University Press, 1994, chapters 12, 14, 15.

B. The New Competitive Vision in the 1996 Act

40. The 1996 Act creates a clean slate and offers an unusual opportunity to remedy many of the above deficiencies in the present industry structure.

1. The Act aims to promote unfettered competition in all markets

41. The Act's unifying goal is increased competition in all markets and the eventual elimination of artificial service boundaries. This means more competition in providing: local services; long-distance services; and "integrated services"—the options of one-stop shopping for, or obtaining bundled packages of, these and other telecommunications services.[11]

42. If successful in promoting local competition, the Act will eventually allow the replacement of detailed, hands-on regulation of local retail prices and services with a combination of local competition and more confined and less intrusive regulation of only key bottleneck network services.[12] (Some regulation of interconnection, especially of termination charges, will be necessary for some time, as explained shortly.) And it will permit any firm to offer any service anywhere, including doing away with restrictions on what services the BOCs may offer and how. As the FCC put it:

> Indeed, the relationship between fostering competition in local telecommunications markets and promoting greater competition in the long distance market is fundamental to the 1996 Act. . . the opening of one of the last monopoly bottleneck strongholds in telecommunications -- the local exchange and exchange access markets -- to competition

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11 One-stop shopping and bundled packages are closely related notions, but not identical. One-stop shopping lets a customer obtain the same services as before, but from a single source. Bundled packages entail combining and pricing the individual services in new ways. Some customers may demand only one-stop shopping; others may value bundles, while continuing to shop for individual elements separately (e.g., in response to special promotions); still others may choose to purchase only integrated bundles and only from the same source. For brevity I will refer to these features collectively as "integrated services."

12 See, e.g., Joseph Farrell, "Creating Local Competition," Speech delivered at FCC, May 15, 1996 ("Farrell 1996").

is intended to pave the way for enhanced competition in *all* telecommunications markets, by allowing all providers to enter all markets.[13]

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13 *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, (Aug. 8, 1996) ("Local Competition Order"), ¶ 4.

2. The Act seeks to enable various forms of local competition

43. The Act discusses three forms of entry into local markets: facilities-based, resale, and unbundled network elements.

44. *Facilities-based entrants* serve their subscribers using their own network facilities except to exchange traffic with the incumbent LEC.

45. *Resellers* bring no independent network facilities, but resell under their own name the existing services provided by the incumbent (total service resale), combined perhaps with other services. They undertake all the relevant customer-interface functions such as billing and marketing ("retailers" is therefore a better description than the conventionally-used "resellers," since the latter suggests only an arbitrage function).

46. *Entrants using unbundled elements* may lease from the incumbent unbundled network elements, individually or in combination, for example, leasing the incumbent's unbundled loops but providing their own switching facilities.[14]

47. All the above entry modes can serve valuable competitive roles. Facilities-based entry potentially exerts the greatest competitive discipline on the incumbent. But it may not always be desirable, as it could require costly duplication of existing facilities such as loops that could more economically be obtained from the incumbent. Even where desirable, such entry could take considerable time. It is thus important to recognize the potential value of the other two entry modes.

48. Entry by firms that are not entirely facilities based can be beneficial in various ways. First, an entrant could bring direct competitive discipline to those segments it enters, in the form

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[14] Important differences between resale and the use of unbundled elements stem from the different standards for pricing stipulated in the Act in the two cases (as I explain in section V), and from increased opportunities that use of unbundled elements offers for access competition, product and service innovation, and eventual migration to facilities-based entry.

of lower costs and prices or higher quality. For example, resellers might perform retailing functions more effectively than an incumbent; loop unbundlers might limit an incumbent's ability to discriminate against IXCs through control over the intelligence embedded in the switch. Even entrants that are no more efficient could undercut the incumbent by accepting a lower profit margin—because regulation is unlikely to succeed in lowering the incumbent's prices all the way to cost. In addition to such direct competitive discipline, entrants can provide indirect discipline: by giving regulators a benchmark of true costs or technical capabilities, they can assist them in better regulating the incumbent.

49. Second, such entry can increase product variety and quality. For example, reselling local services enables entrants that provide also other services to offer one-stop shopping without having to build facilities for all their services or in all regions; the major IXCs among others view such ability as very important. Resellers or entrants using unbundled elements might offer new pricing plans better tailored to certain customers than are the incumbent's offerings. Entrants using unbundled loops might offer new switch-based ("vertical") services. More generally, smaller entrepreneurial firms could stimulate innovation if given the opportunity to specialize in segments where they enjoy a comparative advantage while obtaining from the incumbent at cost-based prices other unbundled elements they require.

50. Third, such entry modes can assist and accelerate the transition to full-facilities competition, by allowing entrants to attain a customer base before being forced to build extensive facilities. Requiring entrants to be entirely facilities-based at the outset would saddle them with unnecessarily high fixed costs and excess capacity (while subscribers are being added), making entry more risky and more costly. Conversely, granting entrants access at reasonable prices to complementary LEC facilities during the transition could permit a faster and more economical transition to full-facilities competition. Indeed, in the long-distance market some entrants began mainly as resellers and added their own capacity as their name recognition and subscriber base

grew.[15]

51. Recognizing the potential value of all entry modes, the FCC observes: "Section 251 neither explicitly nor implicitly expresses a preference for one particular entry strategy. Moreover, given the likelihood that entrants will combine or alter entry strategies over time, an attempt to indicate such a preference in our section 251 rules may have unintended and undesirable results. Rather, our obligation . . . is to establish rules that will ensure that all pro-competitive entry strategies may be explored." (Local Competition Order, ¶ 12.)

C. Cooperation by Incumbent LECs Will Be Critical

52. Removal of legal and regulatory barriers is enormously important to promoting local competition, which is the key to securing the Act's goals. But Congress recognized that removing legal barriers is only half the battle. One must also remove artificial obstacles mounted by incumbent LECs, since all local entrants need access to certain LEC inputs.

53. *Facilities-based entrants require interconnection.* A facilities-based entrant would still require good and reasonably-priced interconnection to the LEC's public switched network. Interconnection is vital because the essence of communication is the ability to reach and be reached by others. Thus, telephone service exhibits such unusually strong positive "network externalities"— the network's value to a subscriber increases greatly with the number of subscribers that can be reached through the network. Initially an entrant will have far fewer subscribers than the incumbent, so if networks were not adequately interconnected, customers would prefer the incumbent's even if the entrant's network was otherwise superior.

54. As a result, the incumbent can use ubiquity advantages that derive from control of its

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[15] In long distance, however, there is an active wholesale market because multiple facilities owners compete to provide bulk capacity. Before such competition emerged, regulation was required to induce AT&T to provide wholesale capacity to others. Similarly, implementing local resale today—and other wholesale local services—will require regulation as long as LECs retain dominance over local networks.

installed subscriber base and bottleneck facilities as strategic weapons to stifle entry.[16] For example, the incumbent might impose onerous interconnection terms or deny number portability (the ability of customers to maintain their telephone numbers if they switch to an entrant). Overcoming such ubiquity barriers in telecommunications would be very difficult without the aid of regulation. On this point, economists are—quite out of character—virtually unanimous. Thus, until the incumbent's share of subscribers is significantly eroded, even efficient facilities-based competitors will depend on continued regulation to discipline the incumbent's interconnection terms and prices; to secure number portability; to allow its customers to call any subscriber of the incumbent in the local area without dialing more digits than would another subscriber of the incumbent ("local dialing parity"); and to access common signaling facilities and databases.

55. *Resellers require adequate wholesale discounts*. Resellers require the incumbent's cooperation in switching over customers and in obtaining access to various operations support systems. In addition, since resellers undertake costly retailing functions such as marketing and billing otherwise performed by the LEC, to succeed even an efficient reseller must obtain the LEC services at wholesale prices discounted off the LEC's retail prices by an amount equal to the

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16 A transparent example of the importance of "interconnection" (or "compatibility") in the face of ubiquity, is directory assistance. A firm with only a small subscriber base would be inherently limited in its ability to offer adequate such services—whether through operator services, yellow pages, or other modes—if denied access to the necessary information about the incumbent's subscribers. Industrial organization economists have recognized the importance of ubiquity and installed-base advantages in industries characterized by strong (positive) network externalities. Non-technical surveys of this literature and relevant bibliography can be found in Michael L. Katz and Carl Shapiro, "Systems Competition and Network Effects," *Journal of Economic Perspectives*, vol. 8, no. 2, Spring 1994, 93-115, and Stanley M. Besen and Joseph Farrell, "Choosing How to Compete: Strategies and Tactics in Standardization," same journal and issue, 117-131. The need for interconnection (broadly defined) is probably more acute in telecommunications than in any other industry. For a recent formal analysis of strategic use of interconnection pricing (what the 1996 Act calls "transport and termination" charges) to reduce competition see Jean-Jacques Laffont, Patrick Rey, and Jean Tirole, "Network Competition: I. Overview and Nondiscriminatory Pricing," and "Network Competition: II. Price Discrimination," Institut d'Economie Industrielle, Toulouse, 1997.

LEC's avoided retailing costs.

56. *Partial-facilities entrants require network unbundling.* Like a full-facilities entrant, a partial-facilities entrant also requires interconnection so its subscribers can communicate with the incumbent's. But it requires also network unbundling—access at economical pricing to that *subset* of network elements it wishes to lease from the LEC. The degree of incumbent cooperation needed to make unbundling work efficiently is probably even greater than for the other two entry modes, since unbundling can involve reaching deeper into the network.[17]

57. The Act (§§ 251, 252) requires incumbent LECs to provide the above requisite cooperation to all local entrants. But requiring incumbent cooperation and attaining it are two different things. Incumbents are naturally inclined to resist any encroachment by competitors, and regulators will have their work cut out for them in implementing the Act's requirements for promoting local competition. Softening incumbents' resistance and inducing greater cooperation would therefore be quite valuable. As I will show, this point is critical for developing a procompetitive BOC entry standard.

D. The Potential Benefits and Costs of BOC Entry: Overview

58. There is broad agreement that BOC interLATA entry is in the public interest once the BOC faces sufficient local competition to eliminate its local market power. But what are the tradeoffs from authorizing earlier BOC entry?

1. Potential benefits

59. The potential benefits of earlier BOC entry are conceptually straightforward. Briefly,

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[17] As a general matter, although unbundling requirements may generate competitive benefits, such requirements potentially create organizational diseconomies as well. The extent of these benefits and costs vary from industry to industry, and depend also on the degree of unbundling that is required. The 1996 Act reflects a policy judgment that it will be economically beneficial to require the unbundling of certain elements of the networks of incumbent LECs, and I have assumed here that this Congressional judgment is correct.

BOC entry could allow realization of *economies of scope*, especially in retailing functions: offering local and long-distance services jointly could produce large savings in billing, marketing, and other costs. Moreover, it is widely believed that many consumers would value highly the simplicity and convenience of a single bill, a single customer service representative, and other advantages of *one-stop shopping* for all their telecommunications services, as well as being able to obtain new bundled packages of such services. The BOC in its region is unusually well positioned to tap these advantages on both the supply and demand side of joint provision because it is the dominant provider of a key ingredient, local services, and enjoys an established reputation and customer base.

60. In the longer run, these advantages of joint provision are not unique to the BOCs; other telecommunications providers with established reputations (such as the major IXCs) could realize these benefits provided the BOCs and state regulators have effectively opened the local markets to competition as required in the Act. However, in the short run the BOCs do possess some special advantages in joint provision (see section II.A).

61. Aside from these benefits of joint provision, BOC entry could bring more competition in long-distance services. The BOC is unusually well placed to provide such additional competition, especially for residential and low-volume business customers, due to various advantages deriving from its powerful brand name and established customer links in its region (see section II.C.2). Indeed, because there are always potential benefits from letting any firm try its luck in any market, economists' normal instinct is to avoid placing artificial entry restrictions, unless there are strong offsetting considerations.

2. Potential costs

62. In this case, however, there are offsetting considerations. It is important to understand these potential costs in order to appreciate why BOC entry cannot be analyzed as just generic entry by any other firm. Because the potential costs and how to best address them are less

transparent than the benefits, this affidavit devotes more attention to analyzing these issues.

63. In a nutshell, a BOC's control over key local network inputs needed by others to compete in local services, long-distance services, and integrated services could enable it to inefficiently handicap rivals and distort competition in all these services. A BOC's incentives to handicap such rivals will increase after entry, compared to its pre-entry incentives under a suitably structured entry standard. These altered incentives can be very damaging, since regulatory (and other) oversight cannot always secure BOC cooperation in supplying inputs to rivals as effectively as would be forthcoming if incentives were better aligned. I outline next why BOC incentives to cooperate will diminish post entry, then discuss the ability of regulatory oversight to enforce cooperation in the face of these reduced BOC incentives. Section E draws out the implications for the design of a procompetitive entry standard.

64. Authorizing BOC entry affects BOC incentives through two main channels: (a) leverage into long-distance and integrated services; and (b) emboldened resistance to local competition.

a. Leverage into long-distance and integrated services

65. *Long-distance services*. The Department of Justice sought the Bell System's 1984 divestiture of its local telephone operating companies to prevent misuse of these key monopoly local networks to stifle competition in related markets—notably long-distance services, equipment manufacturing, and information services—that were viewed as potentially competitive but heavily dependent on access to these local networks. Incentives to artificially favor one's affiliates in adjacent markets flow in large part (though certainly not entirely) from asymmetric regulation. A firm whose prices are regulated at the bottleneck, as the Bell system was for local telephone services and as the BOCs are today, has strong incentives to circumvent such regulation by favoring its unregulated (or less tightly regulated) operations in adjacent

markets.[18] The favoritism can involve cross-subsidization (see section III.B.1.a). More importantly, it can involve non-price access discrimination—hampering rivals' access to the bottleneck, for example, by imposing conditions that inflate rivals' costs or degrade their quality (see section III.A.1). This enables the firm to raise its (less regulated) prices in those adjacent markets, while distorting competition and harming consumers in the process.

66. The choice to seek divestiture of the regulated local telephone monopolies from long-distance segments reflected a judgment that, at that time, regulation could not—without being overly intrusive—adequately control the myriad types of (non-price) access discrimination that a vertically-integrated entity could employ. If allowed into long distance, BOC incentives would resurface to attempt access discrimination against IXCs in order to circumvent regulation. Indeed, today there may be a new motive for access discrimination, namely, to weaken the major IXCs as potential entrants into local services; BOC entry reduces the cost to it of engaging in such behavior since lost access revenue from reduced IXC sales is partly offset by increased BOC long-distance sales (see section III.B.2.a). However, a BOC's *ability* to act on its incentives and engage in such access discrimination is weaker today, as explained shortly.

67. *Integrated services*. The ability to offer integrated services is widely emphasized as competitively important, both due to cost savings from joint provision and to the willingness of some consumers to pay a premium for dealing with integrated providers. The key inputs that non-BOCs lack to offer integrated services in a BOC's region are the monopolized *local* services; long-distance and other services can be readily obtained from alternative providers. A BOC's entry into long-distance—and hence integrated services—directly reduces its incentives to supply others key wholesale local services which they need to provide integrated services. As

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18 See, for example, Timothy J. Brennan, "Why Regulated Firms Should Be Kept Out of Unregulated Markets: Understanding the Divestiture in United States v. AT&T," *Antitrust Bulletin* 32 (1987), 741–793.

with long-distance services, a main driver of BOC leverage incentives into integrated services is asymmetric regulation: the BOCs are likely for some time to remain regulated in their prices for local services or inputs, but would become unregulated (or less regulated) in retail sales of long-distance services. The wrinkle here is that undermining competitors in integrated services by withholding from them good access to wholesale local services could benefit a BOC beyond attempting to degrade only long-distance access.

68. The reasoning is as follows. Regulation is likely to be more effective in preventing a BOC from degrading existing long-distance access arrangements than in prodding it to establish the largely new arrangements for wholesale *local* services (see section I.E below and section IV). Thus, impeding access to wholesale local services can be a more potent way for the BOC to weaken competitors in integrated services. This in turn could be profitable for at least two reasons. (a) Limiting rivals' ability to realize cost savings from joint provision of services also limits the downward pressure they can exert on the BOC's unregulated prices for long-distance services. (b) Some customers are willing pay a premium to deal with a provider of integrated services (e.g., they value one-stop shopping); hence, a BOC could extract higher (unregulated) prices from such customers for its long-distance services if can impede other providers of integrated services.

b. Emboldened resistance to local competition

69. *Local services.* Promoting local competition is a key stand-alone goal of the Act (witness the §§ 251, 252 requirements on all incumbent LECs), but one whose attainment will require considerable LEC cooperation. Naturally, all other things being equal, the LECs are reluctant to extend such cooperation to competitors that could threaten their local dominance (this reluctance does not hinge on a LEC's status as subject to price or profit regulation). Providing LECs with incentives to cooperate can greatly accelerate the process. In the case of the BOCs, the promise of interLATA entry *conditional* on having first provided appropriate cooperation can be a potent

tool for enticing cooperation. This point is very important.

70. The BOC is likely to be far better informed than regulators about how to establish the new local access arrangements and how long this should take. Thus, authorizing BOC entry only after the requisite arrangements necessary to open the local market are made available puts the onus in the right place: the BOC's desire for earlier entry prods it to implement its part quicker. Conversely, the ability to prod a BOC to implement new systems diminishes significantly once entry authority is granted. Absent meaningful benchmarks, penalty threats are problematic, because regulators and courts lack the information about what are reasonable implementation lags for new systems. Authorizing BOC entry before its local market is open would thus prematurely embolden the BOC to stiffen its resistance to opening its market.

E. Principles for a Procompetitive Entry Standard

71. By itself, allowing a BOC to offer long-distance and integrated services is desirable; the potential benefits could be substantial. The danger with premature BOC entry, however, is certainly not that it will enhance the BOC's ability to compete; the danger is that it will allow the BOC to impede others' ability to compete. A procompetitive BOC entry standard should strive to ensure that all parties are given an opportunity to compete on the merits. As the FCC's former chief economist has put it, our goal should always be to level the playing field upwards (Farrell, 1996).

72. Given the importance of good access to BOC local networks for protecting competition in long-distance services and for promoting it in local and in integrated services, the costs of "early" BOC entry are likely to outweigh the benefits if regulatory and other safeguards cannot assure good access in the face of reduced BOC incentives to cooperate. A key question therefore for developing a procompetitive entry standard concerns the efficacy of various post-entry safeguards in enforcing BOC cooperation.

73. Economic reasoning suggests—and historical experience confirms (see section IV)—that

the efficacy of regulatory oversight varies widely with the economic environment. Regulation, while never perfect, fares much better in a stable environment where information is reasonably symmetric, than in a rapidly changing environment where informational asymmetries are greater and more frequent adjustments are needed. Correspondingly, regulatory oversight does much better at enforcing existing access arrangements than at overcoming incumbents' resistance to rapidly implement new arrangements, for which the lack of historical benchmarks on what constitutes acceptable performance gives incumbents great latitude for plausible deniability.

74. These observations have important implications. Because access arrangements for long-distance services have had over a decade to develop, the combination of regulation and established voluntary arrangements among IXCs and LECs is likely to prevent any significant degradation of these established arrangements. Although the necessary arrangements will certainly evolve over time, my understanding is that radical changes in access arrangements governing the majority of interexchange revenues are not imminent. The evidence thus suggests that, when weighed against the potential benefits of BOC entry, the threat to long-distance access arrangements from allowing BOC entry is tolerable in the short run.[19]

75. The picture is quite different regarding access arrangements for local competition. These arrangements—for interconnection and, especially, for network unbundling and total service resale—are largely new and untested. Implementing them will require substantial cooperation by incumbent LECs in developing a host of new technical, operational and business protocols, and in establishing appropriate prices. Incumbents will have wide latitude to stall the process by foot dragging, slow rolling, and otherwise withholding cooperation. "Sins of omission" of this sort are especially difficult for outsiders to detect and prevent, since there is no historical benchmark

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19 Over the longer term, technical evolution could give rise to greater problems for regulators in safeguarding long-distance access if local competition fails to develop.

to guide what is possible and to gauge deviations from this norm. Thus, local competition will evolve more expeditiously and more efficiently if the BOCs have greater incentives to cooperate in putting in place the new access arrangements needed to open their local markets to competition.

76. An appropriately structured interLATA entry standard can play a major role in stimulating BOC cooperation. One should harbor no illusions: incumbent LECs have great latitude to help or hinder the evolution of local competition, and a suitable BOC entry standard can elicit much more BOC cooperation in establishing and properly pricing the key new arrangements.

77. On the other hand, once the major new arrangements have been established and shown to be commercially operable, and once reasonable prices for them have been set, a track record is created for what constitutes "good performance." Post-entry safeguards—regulatory, antitrust and contractual—then become more effective at countering BOC attempts to reduce cooperation, since the performance benchmarks can help enforcers to prevent future backsliding and to extend these arrangements to other regions or other entrants.[20] Thus, authorizing BOC entry only after the major new access arrangements are in place—or demonstrably made available—can cement important steps to irreversibly open local markets to competition.

78. It is important, however, that these new access arrangements be demonstrated to work on a commercially significant scale, under real-world strains; arrangements that exist only on paper

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20 I understand that several CLECs have incorporated certain performance benchmarks into their contracts with penalty clauses if BOCs fail to meet such standards. Moreover, several state commissions such as in Illinois and Georgia have or may soon receive authority to enforce performance standards by levying fines where appropriate. Peter Elstrom, "Let the Telecom Dogfight Begin," *Business Week*, April 7, 1997. Finally, even after BOC entry the Act authorizes the FCC to halt a BOC's signing of additional customers. All these safeguards become much more effective once there is a clearer notion of what constitute violations.

or have not been meaningfully tested do not provide much comfort. As with any new ventures, there will be inevitable growing pains; it is important to iron out the kinks while the BOC is still relatively inclined to cooperate—that is to say, before interLATA entry has been authorized. The § 271 entry authority thus is a potent one-time measure that, if properly used, can achieve a real advance in local competition—with favorable effects also on competition in integrated services, and in the longer run also on competition in long distance.

79. Weighing the potential benefits and costs of BOC entry leads me to advocate the following entry standard: BOC interLATA entry should be authorized only if there is sufficient confidence that the local market in the state has been irreversibly opened to competition. Authorizing earlier entry would raise serious competitive concerns; while delaying entry once the local market is open would unnecessarily deprive consumers of potentially large benefits. This open-market standard does not require the presence of effective local competition of all forms and in all regions of the state; the Act aims to let market forces determine what modes of competition work best and where, and regulatory and other safeguards will still play a role in preventing abuse of BOC market power. But it does require considerably more than paper compliance with the competitive checklist.

80. By far the best test of whether the local market has been opened is observing the emergence of meaningful local competition. Local competition establishes presumptions; the more widespread and varied it is, the greater our confidence that the local market has been irreversibly opened. Use on a commercial scale of the new access arrangements needed to support all three local-entry modes envisioned in the Act—facilities-based, unbundled elements, and resale—demonstrates that competitors are obtaining what they need. If sufficiently diverse competition fails to develop, it is important to understand why. An absence of sufficient competitive entry calls for skepticism in approving an entry application, requiring offsetting evidence that the absence of competition reflects lack of interest by entrants. In the absence of

such a showing, the presumption would be that the market has not been irreversibly opened. For reasons sketched in the earlier Summary and explained further in section V.D, the main requirements for an open market are: full, meaningful implementation of the major new technical and operational access arrangements for local competition; adequate assurance that BOC prices are reasonable and cost-based and will continue to remain so after interLATA relief is granted; and removal of major state regulatory or other artificial barriers that are likely to significantly delay local competition.

81. The remainder of this affidavit fleshes out the basis for these conclusions. Section II discusses the likely benefits from early BOC entry. Section III discusses the competitive concerns, and section IV addresses the efficacy of regulatory and other post-entry safeguards in counteracting these concerns. Section V elaborates on the requirements needed to determine that the local market is irreversibly opened to competition, and concludes that the Justice Department's entry standard correctly incorporates these requirements and therefore serves the public interest in promoting competition.

II. Potential Benefits of BOC Entry

82. There are potentially significant benefits from early BOC interLATA entry. The argument rests on two points: (1) BOC entry can bring certain efficiencies; and (2) these efficiencies cannot be attained by other providers as fully or expeditiously without BOC entry (if they could, BOC entry would not be necessary). Step (2) arises because the BOCs today would possess certain unique advantages in providing integrated services; and because the Act ties the removal of certain constraints on the ability of other firms to compete to the approval of BOC interLATA entry. The resulting potential benefits from BOC entry include: A) cost savings and introduction of new integrated services, made possible by joint provision of local and long-distance services; B) increased competition in intraLATA toll services in states that now lack

dialing parity; and C) increased competition in interLATA services.

A. Joint-Provision Efficiencies: Cost Savings and New Integrated Services

83. The efficiencies from jointly providing local and long-distance services largely involve: (a) on the supply side, the cost savings from joint retailing of services; and (b) on the demand side, the value to consumers of one-stop shopping and other new integrated services.

1. Cost savings

84. *Technological economies* on the network side exploitable only through BOC interLATA entry seem modest. First, IXCs' network costs are only a relatively small share of their total cost of providing long-distance services, so there is only relatively little cost to cut; several BOCs reportedly have signed contracts with IXCs to lease wholesale long-distance capacity at prices between 1 and 2 cents per minute.[21] Second, the separate affiliate requirement in § 272, aimed at combating cross-subsidization and discrimination, appears to preclude network integration and therefore to restrict attainment of network economies in providing local and long-distance services, to the extent such economies did exist. Finally, I am not aware of compelling evidence that significant such economies do exist. Consistent with these arguments that the economies exploitable on the network side are only modest, various BOCs plan to offer long-distance services—at least initially—not by expanding their own facilities but primarily by leasing wholesale IXC capacity.

85. *Retailing economies* however do appear significant. Offering an additional service (i.e., long-distance) to existing customers entails lower incremental costs of marketing, billing, customer service, and other retailing functions than the corresponding costs of providing that

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[21] Merrill Lynch, *Telecom Services—RBOCs & GTE*, November 13, 1996. Salomon Brothers, *Telecommunications Services*, April 17, 1996.

service alone.[22] A BOC offering long-distance services could plausibly realize cost savings in these retailing functions of around 2 to 2.5 cents per minute compared to an IXC that is not providing integrated services (see discussion below, however). Taking the average price of a domestic interLATA call to be roughly 13.5 cents, this would represent a 15%-19% savings.

2. New integrated services

86. Quite aside from cost savings, joint retailing of local and long-distance services can provide direct benefits to consumers, akin to obtaining a new, higher-quality product. Consumers therefore could benefit even if the prices of the underlying services did not fall due to cost savings. Consumers are said to value highly the convenience and simplicity of one-stop shopping and other advantages offered by an integrated services provider. The impressive success of GTE and other non-BOC LECs at capturing long-distance business, sometimes without undercutting IXCs' prices, attests to the importance of offering integrated services.[23] If provided interLATA authority, a BOCs could make available the benefits of such integrated services to consumers in its service regions.

3. The ability of other carriers to attain these efficiencies

87. A BOC, if allowed interLATA entry, would currently enjoy certain advantages over most

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22 Whereas §§ 272(a), (b) appear to restrict network integration, § 272(g) permits joint marketing of local and long-distance services by a BOC or its affiliate, thus allowing the realization of certain retailing economies. Retailing costs are significant. Crandall and Waverman (1995, p. 142) estimated AT&T's 1993 costs per interstate conversation minute net of access payments as: Plant and operations costs, 3.7 cents (Crandall and Waverman as well as others believe the figure is lower today); Marketing and customer service, 3.9 cents; General and Administrative, 2.9 cents.

23 GTE, the largest LEC, signed more than 750,000 long-distance customers between March 1996 and December 1996 (and by February 1997 over 1 million), and cited a big reason for this success to be customers' preference for a single bill and a single number for customer service. Gautam Naik, "GTE to Introduce Flat-Rate Toll Calls For Business Users," Wall Street Journal, December 18, 1996. Reportedly, GTE did not engage in any substantial under-pricing of the major IXCs, based on published plans. Merrill Lynch, *Telecom Services—Long Distance*, Second Quarter Review, August 12, 1996.

or all other carriers in the joint provision of telecommunications services in its region: (a) its established brand name allows it to market additional telecommunications services at relatively low costs of advertising and promotion; (b) its existing relations with virtually all local subscribers allows it to offer billing and customer service for added services at relatively low cost; (c) partly for these reasons, it can obtain lower wholesale prices for long-distance capacity from IXCs than can others; and, most importantly, (d) its control of local networks makes it the dominant source of key local services needed to offer integrated services.

88. The largest IXCs similarly enjoy strong reputations and established customer relations with telephone subscribers in the BOC's region. Thus, they could match many if not all of the efficiencies deriving from (a) and (b), *provided* they could obtain comparable access to (c)—the key local services now controlled by the BOCs.[24] The Act, of course, requires all incumbent LECs to provide such access to wholesale local services; however, delaying BOC interLATA entry until such comparable access has been secured would delay the advent of benefits from joint provision. The basic reason is that implementation and proper pricing of access to the various new wholesale local services required by the Act will take time.[25] Thus, there is a benefit

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[24] IXCs may still face some disadvantages in joint retailing, e.g., IXCs sometimes rely on BOCs for local billing, hence would face a cost disadvantage unless the BOC offered billing services to them at cost. One must also distinguish BOC retailing advantages that reflect cost savings from those that reflect misappropriation of IXC "assets." For example, when an IXC requests from the BOC a local access arrangement needed to provide a new long-distance capability to a customer, the BOC may alert its long-distance operation to the customer's needs and beat the IXC to the punch. Such behavior constitutes misappropriation of IXC information, essentially free riding on the marketing efforts of the IXC; the separate affiliate requirements in § 272 of the Act bars such behavior, as well as other forms of discrimination.

[25] In addition to these inevitable delays, there may be binding constraints imposed by the Act itself. The quickest route for non-BOCs to offer integrated services on a large scale would be to obtain local services from the BOCs at discounted wholesale prices for resale. But § 271(e)(1) of the Act prohibits the three largest IXCs (any carrier that at enactment served more than 5% of U.S. presubscribed access lines)—who are also the most likely large-scale potential competitors to the BOCs in integrated services—from jointly marketing resold local services with long distance-services until February 1999, unless the BOC is authorized to offer interLATA services in the state before this date. It remains unclear

side to allowing early BOC entry. (The cost side of authorizing BOC entry before certain market-opening measures have been implemented is discussed later.)

B. Increasing the Competition in IntraLATA Toll Services via Dialing Parity

89. Section 271(e)(2)(B) of the Act prohibits a non-excepted state from requiring a BOC to implement intraLATA toll dialing parity before February 1999 unless the BOC is authorized to offer interLATA services in the state.[26] Section 271(e)(2)(A) requires a BOC to implement intraLATA toll dialing parity when it begins offering interLATA services. Thus, BOC interLATA entry would indirectly boost competition in intraLATA toll services by triggering dialing parity; such dialing parity has proven to be very important for stimulating intraLATA toll competition. In Minnesota, for example, competitors have captured over 30% of the market since toll parity was implemented in February 1996.

C. Increasing the Competition in InterLATA Services

90. The argument for why BOC entry would increase competition in interLATA services rests on three premises. First, interLATA markets exhibit imperfect competition. Second, the BOC is uniquely positioned to offer increased competition (otherwise other entrants would do just as well). Third, BOC entry indeed would bring such competition.

1. Competitiveness of interLATA markets

91. The extent of interLATA competition is hotly contested. BOCs and their experts characterize it as "anemic" and "tacit collusion" while IXCs portray it as "robust" and "intensely

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whether the restriction also would apply to local services obtained by purchasing all required unbundled network elements from the BOC (the so called "platform").

[26] Single-LATA and states that ordered dialing parity by December 19, 1995 are excepted. As of April 22, 1997, there were 26 multi-LATA states where toll dialing parity is thus precluded by the Act. In 1995, 62% of all completed intraLATA toll calls originated in these states. *SCCC* 1995/96, Table 2.6.

competitive."[27] It is helpful to review some salient points.

92. *Market Structure.* Supply of interLATA services is quite concentrated: in 1995, AT&T accounted for about 53% of revenues, MCI for 18% and Sprint for 10%. On the other hand, concentration has declined considerably since divestiture (when AT&T's share of market revenue was over 90%) and is continuing to decline. Four carriers have national networks (AT&T, MCI, Sprint, and WorldCom) and at least one more national network is being assembled; many carriers have regional networks; and there are hundreds of resellers. The market share of carriers other than AT&T, MCI and Sprint has grown from under 12% in 1991 to over 19% in 1995;[28] and, as the FCC observed in October 1995 when finding AT&T non-dominant, these carriers exert considerable competitive discipline. Nevertheless, the growth of independents is in theory consistent with supracompetitive ("umbrella") pricing by the majors. In gauging competition therefore one must, as usual, look beyond concentration and other aspects of market structure and examine performance.

93. *Performance.* Crandall and Waverman (1995, chapter 5) survey the literature on interLATA competition and remark: ". . . existing studies. . . are not particularly convincing and do not lead to a single conclusion" (p. 165). This literature has generated so much heat but remarkably little light for reasons of data limitations[29] and methodological problems.[30] Crandall

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[27] For a sampling of the contrasting views compare Paul W. MacAvoy, *The Failure of Antitrust and Regulation to Establish Competition in Long-Distance Telephone Services*, MIT Press and AEI Press 1996, with Douglas B. Bernheim and Robert D. Willig, *The Scope of Competition in Telecommunications*, AEI Studies in Telecommunications Deregulation, Working Paper, October 1996, 84-85, forthcoming, MIT Press and AEI Press.

[28] FCC, *Statistics of Communications Common Carriers*, 1995/96, Table 1.4.

[29] Available price data generally reflect published tariffs ("posted prices") not actual transaction prices; the discrepancy between these is large and growing due to increasing use of discount plans. Recovering average revenue data per minute from published figures on total revenues is complicated by the absence of accurate data on quantities—the number of minutes of network use. More and more usage minutes of large

and Waverman perform additional analysis using interLATA *intrastate* data, which offers more observations than interstate data (there are 38 multi-LATA states but only one national jurisdiction), and more sophisticated estimates of quantities. They find that between 1987 and 1993 prices fell much more than access charges; prices net of access fell 4% per year by one estimate (pp. 156-7). Moreover, the data used (*tariffs* for peak period, switched five-minute calls) fail to capture the impact of various discount plans. Finally, while falling prices could be due to non-competition factors, such as technological cost-reductions, there are other signs of increased competition. Notably, the narrowing of dispersion in prices of calls (a) across states for a given distance, and (b) across different distances suggests that competitive pressures are pushing prices to more closely track costs (pp. 151-3).

94. Crandall and Waverman's overall assessment is that the interLATA market displays

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business customers are unswitched (private lines, virtual private networks) or switched only at one end (WATS, 800 calls), and therefore are not captured in conventional statistics on use of the public switched network. Comparing trends in telephone rates measured by Bureau of Labor Statistics (that use tariffs not transactions prices), Crandall and Waverman (pp. 133-6) observe: "The temporal patterns. . . are so wildly inconsistent that they cast doubt on the validity of any of these data." For example, from 1986-93 there was an apparent acceleration in the degree of competition and rate declines, yet reported growth of network use slowed markedly.

[30] For example, the widely cited study by Taylor and Taylor (*American Economic Review Papers and Proceedings*, May 1993) which finds that AT&T's rate reductions have been less than the reductions in its access costs mandated by the FCC, uses not actual data on AT&T's price reductions but projected reductions; such *ex ante* calculations "are suspect" and "unreliable." (Crandall and Waverman, "CW," 130, 168-9). A study by MacAvoy purporting to find tacit collusion among the three largest IXCs (*Journal of Economics and Management Strategy*, 1995) uses tariffs, not transactions prices; and it includes in IXCs' long run incremental cost net of access charges (LRIC) only "incremental operating expenses incurred for transporting switched calls," estimated by the WEFA group to be 1 cent per minute; all sales and administrative costs are left out. The much touted WEFA study that projects $490 billion in savings to consumers by 2003 from BOC entry assumes among other things: the above LRIC figure of 1 cent; that existing IXC competition is characterized by a simple Cournot model with equal sized firms; that adding a fourth player in a region—the BOC—would decrease rates by 50%; and that these price declines would stimulate the overall economy and add 3.6 million additional jobs over the next ten years. (CW, 169-70.)

"considerable competition" that is "more vigorous than that predicted by the Cournot model" (p. 163) and that "has been effective in reducing prices" (p. 132). However, they add that "(interLATA) markets are not fully competitive so that further entry would be of real value" (p. 132). I share this overall assessment. Allegations that interLATA price competition is nonexistent defy common sense: if there is no competition, why do so many customers switch back and forth between carriers each year?[31] More likely, of course, is that there is considerable competition not captured in published price data, such as the familiar $50 or $100 checks as inducements to switch between carriers. On the other hand, though competition exists and is increasing,[32] there is surely room for more competition.[33]

2. BOC Advantages over other long-distance entrants

95. A BOC in its region enjoys significant efficiency advantages over other potential entrants into long-distance services. It stretches credulity to argue—as some have—that a BOC has nothing uniquely positive to offer, for example, that if it leases others' facilities to provide long-distance services then it is no different from the hundreds of existing resellers.

96. A BOC's reputation and established billing and customer service arrangements with local subscribers would enable it to market long-distance services more effectively than could other entrants. A BOC would be especially well placed to address lower-volume customers. First,

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[31] In 1994, 19 million customers (20% of all customers) changed carriers 27 million times. In 1995, customers changed carriers over 42 million times, and the 1st quarter of 1996 saw an even faster pace. Peter K. Pitsch, "The Long Distance Market Is Competitive," Pitsch Communications, September 3, 1996, p. 2.

[32] Merrill Lynch, *Telecom Services — Long Distance*, November 13, 1996. John J. Keller, "AT&T Results Hit by Cost of Changing Marketplace," Wall Street Journal, October 18, 1996 ("cutthroat competition in long distance services").

[33] The publicized flat-rate plans recently offered by major IXCs, such as Sprint's 10 cents per minute at off peak times and AT&T's 15 cents per minute any time, do suggest increased competition; but they also call into question previous claims that the market was intensely competitive already.

billing and other "fixed and common costs" of serving a customer are relatively large compared to the revenue from low-volume customers, and a BOC already incurs most of these costs in providing local service. Second, low-volume customers are often reluctant to switch from a major IXC to an unfamiliar vendor, and a BOC in its region is often the only carrier with a comparable reputation to those of the major IXCs.[34] These advantages which would render the BOC a powerful retailer of long-distance services also enable it to obtain wholesale long-distance capacity from IXCs at unusually low prices, further increasing its cost advantage over other potential entrants into retail long-distance services.

3. How much competition will BOC entry in fact add?

97. The flip side of the BOC's unique advantages, however, is that the BOC may not feel compelled to pass through most of its competitive advantages to consumers. For example, a BOC may elect to pass on to consumers only a fraction of the unusually large discounts it obtains from IXCs on wholesale long-distance capacity. The degree of pass-through is important: it not only influences the distribution of gains between the BOC and consumers, but also influences the degree to which long-distance calling volume will increase, which in turn affects the gains to society from BOC entry.[35] Precisely how much a BOC's entry will (a) lower prices or (b) largely reshuffle profits from IXCs is an open question. Those who argue that BOC entry will greatly lower prices by increasing competition must explain why—if the long-distance market is far

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[34] These unique BOC advantages in retailing would yield benefits from BOC interLATA entry even if there was perfect competition in interLATA services, because they allow a BOC to realize various efficiencies (discussed earlier) from joint provision of local and interLATA services. However, if interLATA competition is seriously imperfect and if BOC entry would substantially increase this competition, then the value of such entry is magnified, because it also serves to correct a competitive distortion.

[35] Benefits from joint provision of local and long-distance services (cost savings or new services—see section A) will endure even if long-distance calling volume does not expand; but the focus here is on the added gains from increased long-distance competition.

from competitive despite the presence of several major IXCs—adding one (albeit potent) competitor in the state would radically alter matters.

98. In my opinion BOC entry would not yield as dramatic an increase in competition as some claim, in part because of the rapid increase in competition that is already occurring.[36] Nevertheless, some further price declines can be expected from BOC entry. Still greater benefits are likely from joint provision of local and long-distance services (cost savings, availability of new integrated services), whose advent would be delayed by delaying BOC interLATA entry. However, authorizing BOC interLATA entry before the local market has been opened to competition also carries competitive risks; to these I now turn.

III. Potential Competitive Concerns Raised by BOC Entry

99. Section A below discusses more comprehensively the various practices a BOC might employ against long-distance carriers or local entrants, and section B why BOC incentives to do so will increase post entry. Section C addresses whether BOC entry would be inefficient solely because BOC access prices to IXCs, with whom BOCs would compete, are well above BOC costs of providing such access.

A. Anticompetitive Practices: Access Discrimination and Exclusionary Pricing

100. In various ways, both long-distance carriers and local entrants depend on good access to a BOC's ubiquitous local network. Control of these vital local inputs gives a BOC an unusual

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[36] Merrill Lynch, *Telecom Services—Long Distance*, February 14, 1997, reports that increased supply of long-distance capacity has led to "very competitive bidding in the wholesale market" and that the resulting stiffer competition from entities that benefit from this steep resale discount—independent LECs, resellers, dial around companies and pre-paid calling cards—has forced the larger IXCs to pursue more aggressive pricing tactics. As an example, AT&T has begun offering 10 cents per minute anytime, anywhere with a $5 monthly fee, or without any fee for calls at off-peak times. John J. Keller, "Best Phone Discounts Go to Hardest Bargainers," Wall Street Journal, February 13, 1997, B1.

ability, if unchecked by regulation, to engage in anticompetitive practices. It is useful to distinguish between exclusionary practices that involve non-price terms of access to a BOC's facilities ("access discrimination") and those that involve prices—because the welfare effects of the two sets of practices can differ, as can the incentives to engage in them.

1. Access discrimination

101. *Types of practices*. A BOC could impede the ability of rivals to compete by misusing its control of the local network in various ways. It might *raise competitors' costs*, for example, by imposing unnecessarily costly requirements for network interconnection or providing them inferior support or maintenance functions. Increasing competitors' costs induces them to raise prices and thereby indirectly diverts retail sales from competitors to the BOC or its affiliate. A BOC might also divert demand away from competitors and towards its affiliates directly, without forcing them to raise prices. This might be done by *degrading competitors' quality*, such as by foot-dragging in providing new access arrangements, or by *appropriating competitively sensitive information* about customers obtained in the course of supplying rivals with bottleneck inputs. I will label all these non-price methods to weaken rivals—both in long-distance and in local services—under the general rubric of "access discrimination."

102. *Inefficiencies*. Access discrimination is a particularly inefficient form of rivalry. Raising competitors' costs is directly harmful, even if it does not lead to higher prices. In fact, prices are likely to rise; this both harms consumers, and creates additional social losses from output reduction. Degrading competitors' quality too is directly inefficient, harming both competitors and consumers. In addition, these practices and the misappropriation of competitively sensitive information could—by weakening competitors or discouraging entry—reduce the variety of products available the other innovations that competitors might bring to a market. These inefficiencies will be borne by both competitors and consumers.

2. Over-pricing of inputs

103. Overpricing of inputs needed by competitors, or of outputs that are complementary to those sold by competitors, also is inefficient. The social harm here occurs not because of the high prices themselves but because these high prices inefficiently reduce the quantities purchased. However, setting prohibitively high prices for bottleneck inputs, such as call termination, is tantamount to refusing to supply such inputs and thus can create inefficiencies of comparable magnitudes to those under access discrimination. Steep overpricing of inputs can be seriously anticompetitive even well short of complete exclusion of rivals: by greatly inflating rivals' costs, it can artificially and significantly depress their market presence.

3. Under-pricing of outputs

104. BOC entry conceivably could stifle competition also by giving the BOC a new instrument—charging artificially low prices for long-distance services. The arguments can be usefully grouped into three categories, that differ in their plausibility and welfare effects.

105. The first is *predatory pricing* or variants thereof: a BOC would set prices temporarily low in order to stifle competition and subsequently raise prices.[37] Economists are somewhat skeptical of predation arguments, especially when some rivals are well-financed corporations such as the major IXCs, absent regulatory cross-subsidy.

106. The second argument invokes such *cross-subsidy*. A BOC may set an artificially low price that could be profitable to the BOC whether or not price can be subsequently raised in the targeted market; such behavior could be profitable because it entails cross-subsidy from the BOC's regulated activities. As such, it also is inefficient. Section B.1.a below addresses this

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[37] For instance, some have argued that a BOC could use low prices of long-distance services to stifle not only long-distance competition but also *local* competition. A BOC's prices for many local services are likely to be regulated but not its long-distance prices; by marketing complex bundles of both services a BOC might offer targeted discounts through its long-distance prices to those local customers most vulnerable to competition. The greater complexity of detecting and proving predatory pricing when part of a complex bundle of services might help the BOC escape antitrust scrutiny of such pricing.

argument, concluding that cross-subsidy incentives are likely to be weaker for the BOCs today due to increased reliance on price caps and other "incentive regulation."

107. The third argument does not invoke predation or cross-subsidy, but a *price squeeze*. Because a BOC charges IXCs access prices well above its costs, it has an artificial advantage in competing with IXCs for long-distance services. This argument is evaluated in section C.

B. Why BOC Entry Increases Anticompetitive Incentives

108. It is helpful to distinguish anticompetitive incentives driven by attempts to circumvent regulation of price or profit, from incentives that do not hinge on the presence of regulation.

1. Regulatory Evasion

a. Cost misallocation ("cross-subsidization")

109. *Incentives and methods*. Traditional U.S. regulation of public utilities, including local telephone companies, was known as cost-of-service or rate-of-return regulation, because prices were intended to offer the firm a reasonable opportunity to cover its costs including a fair rate of return on capital. A firm whose prices are regulated in such a manner and which also has unregulated (or more lightly regulated) operations in competitive markets will have incentives to shift profit from the regulated to the unregulated side: the higher profit earned by unregulated operations flows directly to shareholders, while the lower profit of the regulated side allows it to "justify" requests for higher allowable prices. Such profit shifting can occur by misallocating various costs of the unregulated entity to the regulated one, behavior more commonly known as "cross-subsidization."[38]

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[38] These cost misallocations can involve purely accounting manipulations, such as mischaracterizing costs attributable to the unregulated side as "joint and common" to both operations; actual payments, such as overpaying the unregulated affiliates for services or assets they provide or undercharging them for services or assets provided to them; or real resource misallocations, such as selecting production methods that are not cost-minimizing but display more common costs that can then be misattributed. Misallocating revenues of the regulated operation to the unregulated one is conceptually similar, as it leaves the regulated side with a greater deficit which can be used to defend requests for rate increases. I prefer the term "cost misallocation"

110. *Anticompetitive effects.* The incentives to engage in cost misallocation stem from a desire to circumvent regulation; but such behavior can have incidental effects of distorting competition. Overpaying an affiliate for its services artificially favors it in competing for sales to the regulated side; misallocating the affiliate's costs to the regulated side (and thus ratepayers) favors it in competing for outside customers by artificially reducing its costs and thereby allowing it to set artificially low prices. These competitive distortions mean that winners are no longer determined on the merits.[39]

111. *Accounting safeguards and separate subsidiaries.* To help detect and prevent cost misallocations, regulators often subject firms to detailed accounting safeguards and sometimes require that unregulated, competitive activities be undertaken through separate subsidiaries. Section 272 of the Act imposes such requirements on BOCs wishing to offer long-distance services. Although such safeguards have some bite, it is widely acknowledged that they have not eliminated cost misallocation in the past, and it is naive to believe they could do so in the future if the firm has strong incentives to engage in cost misallocation.

112. *Price cap regulation.* Importantly, however, the BOCs argue that incentives to misallocate costs no longer exist because in recent years the FCC and state commissions have moved from traditional cost-of-service regulation towards pure price-caps, that sever the link between a firm's allowable regulated price and its costs. Cost misallocation then loses its

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to cross-subsidization because the latter is sometimes wrongly taken to require that the price of the unregulated service must be below marginal cost. As the preceding examples indicate, the phenomenon is more general.

[39] Additional inefficiencies arise quite aside from the distortion of competition in the unregulated markets. First, prices increase to consumers of the regulated products. Second, any real resource misallocations are directly costly, for example, biasing the choice of production methods towards ones that entail excessive common costs. Finally, even if prices of unregulated services fall (which they need not do, e.g., if the cost misallocation involves only fixed and not variable costs), they would be artificially below cost, causing consumption of unregulated services to be excessive.

purpose, because higher reported costs for the regulated side no longer yield higher prices.

113. These claims overstate the extent of the regulatory changes, for two reasons. First, traditional regulation exhibited some lag between rate cases, during which period prices were not continuously adjusted towards cost. Second, today's regulation does not—and cannot— amount to pure price caps. Price caps can never be pure, but are periodically revised.[40] In addition, some schemes of "incentive regulation" do not involve price caps, but require adjustment of prices to share profits (or losses) with consumers once profits are outside certain specified bands. Therefore, a regulated firm's allowable future prices will ultimately depend on its past costs, which re-introduces some incentives to engage in cost misallocation.

114. Nevertheless, these regulatory changes do seem to have markedly altered BOCs' incentives. The BOCs have embarked on aggressive cost-cutting programs, which financial analysts and others attribute to the regulatory changes.[41] These efforts suggest the BOCs assign some credibility to the new regulatory promises. But in that case, they also would not seem to have a strong basis for counting on regulators to allow rapid price increases beyond stipulated levels in response to increased costs due to cost misallocation (or other reasons).[42] In short,

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[40] Pure price caps would establish a permanent formula for determining the firm's maximum allowable prices at all future dates, based on initial forecasts of the firm's attainable costs (and perhaps indexed to variables that influence costs but lie outside the firm's control, e.g., the overall inflation rate); allowable prices would not be revised in light of the firm's actual cost realizations. But in practice, revisions will necessarily occur. One reason is forecasting errors: if regulators underestimate the firm's true costs and stick to the allowed prices, the firm will go bankrupt; if they overestimate costs, the firm will earn large profits that invite strong political pressure to lower allowable prices. Another reason for revising price caps is the introduction of new services, *if* these services are to make a contribution towards covering the firm's fixed and common costs. In light of all this, it is not surprising that the FCC and most if not all states have already revised their initial formulas.

[41] See, for example, Merrill Lynch, *Telecom Services—RBOCs & GTE*, Second Quarter Review, August 9, 1996.

[42] Moreover, regulators are especially protective of important customer classes for which local competition is likely to develop more slowly, such as rural and low-volume residential customers. They

incentives to engage in cost misallocation are certainly more attenuated today, which also serves to lower the risks of the BOCs engaging in anticompetitively low pricing.

b. Leverage incentives due to asymmetric regulation

115. A different and more serious anticompetitive incentive involves leveraging of market power from the price-constrained bottleneck to adjacent, unregulated markets, by engaging in the myriad forms of (non-price) access discrimination. As was explained in section I.D.2, incentives for leverage stem in large part from asymmetric regulation: the firm's prices for bottleneck services are regulated, but its prices for other services that rely on the bottleneck services are not regulated (or less tightly regulated). Here it is worth clarifying a few points.

116. First, contrary to some claims, access discrimination is not costless to a BOC since it reduces BOC input sales to the targeted carriers.[43] Nevertheless, a BOC generally will have some incentives to attempt access discrimination if it is selling unregulated services that compete with those offered by firms that depend on its regulated inputs. And unfortunately the more stringent is price regulation of the firm's bottleneck inputs, i.e., the more "successful" is price regulation, the stronger is the incentive to attempt access discrimination.

117. Second, § 272's requirement that a BOC sell its long-distance services only through a separate affiliate by itself does little to dilute a BOC's incentives to attempt access discrimination against the affiliate's competitors (e.g., IXCs)—because the affiliate's and parent's profits accrue to common shareholders. Regulators can dilute the common interests of a firm's different units

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would thus be especially reluctant to allow price increases in these "monopoly" segments due to cost misallocation from the relatively competitive segments.

[43] The firm must compare this revenue loss with the increased profits from selling its unregulated services. For example, the tradeoff is worse when: (1) its services are poorer substitutes for those of rivals, because a smaller fraction of rivals' lost output and thus access revenue is offset by increased demand for the firm's own services; and (2) the firm's ability to expand sales of unregulated is constrained, by capacity limits or other factors.

by imposing further requirements, e.g., that managers be rewarded based only on the performance of their units, not of the overall firm; they also can attempt to block avenues of discrimination. But to eliminate *all* incentives and ability to favor affiliates would require eliminating all commonality of interest (including via personnel rotation or central oversight) and sharing of resources. This would require not separate affiliates but separate firms.[44] Thus, as long as a BOC is subject to asymmetric price regulation, incentives will persist to attempt access discrimination for purposes of leverage.

118. Finally, it is worth stressing that motives of leverage into integrated services—once a BOC has secured interLATA entry and thus may offer also integrated services—would drive a BOC to reduce cooperation not only in providing access for long-distance services, but also for the host of new wholesale local services needed by integrated-services competitors and called for by the Act.

2. Protecting the core local market

a. Reduced cost of harming IXCs to delay their local entry

119. The major IXCs are among the most likely *large-scale* potential entrants into local markets. Through access discrimination, a BOC may be able to damage the IXCs' reputations in its region and reduce their customer base, thereby also delaying their entry into its local markets. Long-distance entry lowers a BOC's cost of pursuing access discrimination, because while the BOC loses access revenue due to reduced sales of IXCs, some of these reduced sales are now diverted to the BOC's affiliate instead of being lost altogether.[45]

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[44] As a matter of logic, it will be impossible to eliminate *all* potential avenues of discrimination without also vitiating economies of scope—in which case requiring separate firms would seem preferable to awkward regulatory quasi-separation within a firm. There is no perfect way out of this dilemma; the hope is to block the main avenues of harmful discrimination without unduly foreclosing efficiencies.

[45] This is the same as the logic underlying discrimination incentives for purposes of leveraging the price-regulated local access monopoly into higher long-distance prices (see B.1.b above). But the purpose

b. Reduced incentives to cooperate with local entrants

120. Finally and importantly, a BOC's incentives to cooperate with local entrants would be inadequate even putting aside leverage motives into adjacent markets (as would be relevant if integrated services were unimportant, and if regulation could perfectly prevent access discrimination against IXCs). Like any dominant incumbent a BOC is inclined to resist entry, because dominance in providing even purely local services is profitable, notwithstanding regulation.[46] At the same time, the BOC could value entry authority into long distance; for example, its strong brand name locally and ability to realize cost savings through joint retailing functions could allow it to earn profits in long distance (section II.C). Therefore, to receive long-distance authority it would be willing to extend some cooperation to local entrants. Granting such authority before the local market is open, however, will prematurely reduce the BOC's incentives to continue cooperating in opening its market.

C. Artificial Cost Advantage in Competing for Long-Distance Services

121. Among the concerns voiced by major IXCs is that a BOC would have artificial cost

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here is not to raise price in long distance, rather, to delay entry by IXCs into the local market; hence the argument does not hinge on the BOC being able to offer unregulated long distance services or any other form of asymmetric regulation. Note that this was not an issue at divestiture, as local monopoly was protected by state franchises.

[46] This requires only that price regulation not be capable of reducing prices perfectly to cost, hardly a stringent assumption. Perfect "global price-cap" regulation might in theory eliminate incentives to discriminate against competitors. See Jean-Jacques Laffont and Jean Tirole: "Creating Competition through Interconnection: Theory and Practice," February 1996, forthcoming in *Journal of Regulatory Economics*, and "Global Price Caps and the Regulation of Interconnection," July 1996. But in practice price caps are never pure, so allowing entry is likely to end up hurting the firm by ultimately contributing to the tightening of price caps. It is true that the incumbent's incentive to cooperate with output-market competitors may well be greater if it could sell to them the inputs they require at unregulated rather than regulated prices. But even then, the incentive is likely to be inadequate. Once competition is established, it limits the ability to extract profits from customers; it is highly unlikely—for reasons involving contracting problems or antitrust—that the incumbent could collect sufficient profit through overpricing of inputs to competitors initially to offset these lost future profits. Predictably, dominant incumbents often resist entry into their markets.

advantages in competing for long-distance business because their access prices to IXCs are well above cost.[47] The IXCs are right that even if imputation rules required a BOC to charge its affiliate the same access price as it charges IXCs, an affiliate would treat such a price as merely an internal transfer, and would try to base its retail prices on the true cost of obtaining access.[48] A BOC's affiliate would then be able to undercut IXCs' prices selectively to certain customers and capture such business even if it is inherently less efficient than IXCs.

122. The IXCs' argument is correct as far as it goes. But it overlooks the fact that selective discounts by a BOC could well increase total long-distance output and benefit consumers. One must be clear about the alternatives being compared. Assuming that access charges by BOCs to IXCs would be no higher if BOC entry is authorized than if it is not, an assumption discussed below, a BOC's ability to offer selective discounts should increase total long-distance output and benefit long-distance consumers, as compared with barring BOC entry. (This assumes that BOC entry does not induce IXCs to exit the market as a result of being unable to profitably operate at a reduced scale; if exit does occur, a BOC may be able to raise price.) The basic reason is that

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47 Responses to Joel Klein letter by AT&T (p.21), MCI (pp. 9-10), Sprint (p.3), December 1996. The FCC's recent actions on access charges and price caps, while helping to bring down access charges, do not purport to bring them down to cost and in fact are likely to leave them well above costs for some time. Moreover, intrastate access charges, which now typically exceed interstate charges, will remain under the jurisdiction of state commissions and considerable uncertainty remains about their levels. Thus, the issue raised by the IXCs remains pertinent.

48 The IXCs are implicitly assuming that imputation rules would not be capable of seriously constraining a BOC affiliate's retail prices. This assumption is probably realistic, given the difficulties of comparing the other relevant variables necessary to conduct an imputation test. (The test prohibits: $p \leq c + w + d$, where p is the affiliate's retail price, c the affiliate's cost of non-bottleneck inputs, w the input price to its rival, and d the firm's extra cost of providing the bottleneck inputs to the rival than to the affiliate. In practice, estimating c and d, can be especially problematic; even agreeing on the relevant services to be used when comparing w and p can be contentious.) Moreover, there is a general question about the wisdom of zealously enforcing any price floors. Such policies can easily stray from protecting competition to protecting competitors.

IXCs' cost has not increased—because by assumption access prices are no higher—but a new competitor (the BOC) enjoys lower cost of serving the long-distance market (albeit artificially lower, because it charges to IXCs access prices well above its own incremental cost of providing access, while basing its own retail pricing behavior on the latter).[49]

123. The assumption that regulation will prevent a BOC from subsequently raising access prices to IXCs (or failing to lower them as much as would otherwise have occurred) is important, however. In particular, there are dangers of regulating access pricing by including in a common basket both access services "sold" to the BOC's affiliate and to IXCs and subjecting the basket to an overall price cap. By lowering the price to its affiliate a BOC would then be allowed to raise prices to IXCs while adhering to the cap; the BOC gains, of course, since the additional profits earned by its affiliate are unregulated. Thus, a BOC will have strong incentives to try and give its affiliate preferential discounts, in order to justify raising the access prices charged to IXCs.

124. The Act and current regulation prohibit such discrimination in access pricing. However, a BOC may plead "nondiscrimination" by designing discounted offers that are nominally available to all but are targeted to its affiliate. It can make discounts conditional on terms that (a) are alleged to provide cost savings and (b) are contrived such that the affiliate is more likely to accept, for example, a buyer's agreeing to make very long-term purchase commitments.[50] The

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[49] Observe that the concern is not with the BOC raising the access price or engaging in access discrimination against IXCs, but with reducing its retail price given that access to IXCs is priced above cost.

[50] Of course, discounts for long-term commitments can reflect legitimate business reasons. In the guise of such reasons, however, one also could contrive contracts of such long duration and such stringent terms for breach that only an affiliate would feel comfortable accepting. An affiliate would realize that if changed circumstances made it efficient to breach its commitment, it would be allowed to do so (in the interest of maximizing overall firm profit) far more readily than would an outsider such as an IXC. A BOC also might try to rationalize discounts based on the *percentage* of a long-distance carrier's minutes committed to the BOC. An IXC might value the option of flexibility, such as splitting its minutes between a BOC and a CAP (especially if CAPs continue to expand), while a BOC's affiliate

scope for such gamesmanship can be reduced by having separate price caps for access services sold to competitors and to affiliates. And in general, if competitively significant "nondiscriminatory" discounted offers are disproportionately accepted by affiliates, some scrutiny may be warranted of whether discounts reflect genuine cost savings.[51]

125. In sum, I would be reluctant to advocate delaying a BOC's interLATA entry solely on the grounds that its access prices to IXCs are currently well above its incremental cost—as long as the BOC can adequately be prevented from raising access prices to IXCs post entry.[52] It is certainly true, however, that the best course is to reduce access charges closer to cost. Assuming that (non-price) access discrimination could be prevented, reducing access prices would both expand downstream output and prevent distortion of competition.

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would far more readily accept exclusivity with the parent.

[51] Unfortunately, it is not easy to police against true price discrimination when buyers require significantly different arrangements, leading to potentially different costs of service. See, for example, Marius Schwartz, "The Perverse Effects of the Robinson-Patman Act," *Antitrust Bulletin*, 31 (Fall 1986), 733-757.

[52] Authorizing BOC entry, of course, does not foreclose subsequent antitrust action if price squeezes are deemed to be anticompetitive.

IV. The Ability of Regulatory Safeguards to Negate Concerns Raised by BOC Entry

126. Based on the preceding analysis, the main potential competitive concerns raised by BOC entry are access discrimination against long-distance carriers and, especially, the withholding of cooperation in implementing and pricing appropriately the various new wholesale local services. How serious these potential concerns in fact are depends on how effectively and expeditiously they can be addressed by regulatory and other safeguards. Section A below discusses generic shortcomings of regulation, showing by implication that there is real value to having a BOC be more disposed to cooperate than having to rely exclusively on forcing its cooperation. Nevertheless, while never perfect, regulatory and other safeguards are far more adept at preventing degradation of established access arrangements than at forcing implementation of new arrangements; this difference has key implications for the design of a pro-competitive standard for BOC entry (see section V). Sections B and C document this difference drawing on past experience with LEC behavior.

A. Generic Shortcomings of Regulation, and Existing vs. New Arrangements

127. Regulation faces several inherent shortcomings in trying to curb a firm's incentives to discriminate against competitors, which caution us against relying on it exclusively.[53]

1. Generic shortcomings of regulation

128. *Detecting abuses*. In order to be effective, regulators must be able to detect a violation. This requires knowing, among other things, what the firm actually did (not what it claims) and often what alternatives it could have pursued. Outsiders such as regulators, courts, and even

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[53] For good discussions of the limitations of state and FCC regulation prior to the 1996 Act, see the December 1994 Declarations of Nina W. Cornell (focusing on state regulation, especially pp. 35-63) ("Cornell, 1994") and of Daniel Kelley (FCC regulation, especially pp. 37-75) opposing the motion by four BOCs to vacate the MFJ. *Unites States of America v. Western Electric Company, Inc. and American Telephone and Telegraph Company*, United States District Court for the District of Columbia, Civil Action No. 82-0192.

competitors possess vastly inferior information than the firm about its business environment and conduct. And while a regulator can learn a great deal by consulting with interested industry parties, to eliminate the informational disadvantage entirely the regulator would have to become the firm.

129. *Proving abuses.* Detecting a violation is not the same as being able to prove it. Regulated firms enjoy—for good reasons—procedural safeguards including the right, which they often exercise, to challenge regulatory decisions in court. A non-specialist court is likely to be less informed about conditions in the industry than is a regulator, and the adversarial court proceedings offer the better-informed firm ample opportunity to raise various objections. Thus, even if a regulator is convinced there is a violation, proving it to the standard needed to take corrective action may be too costly or simply not feasible.

130. The issue of proof is important. The BOCs have repeatedly argued that preventing discrimination is easy because a service difference great enough to influence the behavior of customers assuredly would be detected by competitors and by regulators. However, simply showing such a difference is not sufficient to prove a BOC has discriminated, especially with new or customized arrangements—there could be "innocent" explanations with a sufficient ring of plausibility (different circumstances of transactions, events beyond the firm's control, etc.). Indeed, a major advantage of competition over regulation in taming market power is that a competitor is not constrained by the same rules as a regulator: if a competitor believes the incumbent's price is excessive or its service is inferior it can simply offer customers better options—without having to prove to anyone that the firm is misbehaving.

131. *Deterring abuses.* Effective deterrence requires the expected penalty to exceed the expected gain from engaging in an abuse. The requisite penalty may have to be large given (a)

the potentially large gains to a firm and (b) the limited chance that a violation will be detected and proved, hence that the penalty will be imposed. Regulators may not always have the legal rights or the political ability to impose penalties large enough to achieve meaningful deterrence. Imposing high penalties is especially problematic when violations are not demonstrably blatant, as is likely with new (as opposed to established) access arrangements.

132. *Correcting abuses.* Since deterrence will not be perfect, a regulator also must be able to rectify the effects of abuses quickly and effectively. But the damage to a competitor imposed, for example, by technical discrimination can be difficult to reverse: discrimination may have allowed the regulated firm to beat the rival to market with a new product. This first-mover advantage could have a durable impact, for example, if consumers would have to incur significant switching costs should they wish to move to the entrant. (For this reason, the Act tries to minimize these costs through such means as requiring number portability.)

133. *Cost-effective regulation.* Finally, regulation would have to accomplish the above tasks in a cost-effective manner. It does little good to prevent abuses if doing so means intruding into the firm's decisions to a suffocating degree, or expending vast resources on regulation. As a practical matter, the resources made available to regulators may limit their ability to engage even in the efficient degree of oversight. The FCC and state commissions are operating under tight budgetary and personnel constraints that may not be commensurate with their responsibilities: the new Act has vastly increased the FCC's duties, and state commissions must grapple also with the rapidly changing electric utility industry.

2. Existing vs. new arrangements

134. Assuring equal access to BOC local networks—for both long-distance carriers and local competitors—in the face of reduced BOC incentives to cooperate requires policing against sins of *commission* and *omission*: a BOC might attempt to reduce cooperation from existing levels by degrading existing access arrangements, or fail to provide a greater level of cooperation as it

should in establishing new arrangements.

135. It is difficult for regulators to eliminate entirely even sins of commission—the degradation of existing arrangements.[54] Nevertheless, once arrangements are in place and there is some track record against which to benchmark "good behavior," preventing access discrimination becomes much more manageable.

136. Conversely, enforcing the implementation of new arrangements is much harder. It is particularly difficult to prevent such sins of omission, since there are no good historical benchmarks to guide what is feasible for the firm. Implementing the new Act's local-competition requirements of interconnection, unbundling and resale will require dramatic and wide ranging changes in the way a LEC does business. For example, loop unbundling will require physical (not just electronic) changes. And new electronic interfaces will be needed to coordinate ordering, billing and other functions for carriers that resell a BOC's local service. With reduced incentives to cooperate once allowed into long distance, a BOC could delay such arrangements considerably. It may initially refuse to provide a new arrangement, citing prohibitive costs; then relent and "merely" delay or give priority to requests from its affiliate to place it at a competitive advantage. The point is not that such excuses are never true, but that it will be difficult for regulators to discern which are true and which are not.

B. Enforcing Existing Access Arrangements

137. By and large, the U.S. experience with participation by regulated LECs in long-distance markets suggests that once access arrangements for competitors are established, subsequent

[54] For example, requiring a BOC to meet "objective" performance measures such as average provisioning intervals is not a perfect safeguard. A BOC could discriminate while showing identical average intervals for its affiliates and outsiders, because the same average can conceal important variations: when it is very important for an IXC to get rapid service the BOC can delay it, while meeting the overall average requirement by providing expeditious service when the IXC least needs it.

problems become much more manageable. To cite a recent example, IXCs have made substantial inroads competing for intraLATA toll services in states such as Minnesota and Alaska that had implemented intraLATA dialing parity prior to the 1996 Act. I am not aware of backsliding by LECs on providing such dialing parity.

138. It is of course possible that we have yet to see the full arsenal of incumbent responses; intraLATA dialing parity is a recent phenomenon and incumbents may still be mulling their options. However, certain LECs such as Rochester Telephone (which is part of Frontier), United (which is part of Sprint) and Lincoln Telephone were not subject to the MFJ and have offered long-distance (interLATA) services in competition with IXCs for some time. I understand that IXCs have made few complaints against these LECs about degradation of existing access arrangements.

139. More recently, Sprint has owned Centel in Nevada since 1992, yet IXCs have made no significant complaints to Nevada regulators. Southern New England Telephone Company (SNET) has begun offering interLATA service jointly with its local service; so has GTE since the passage of the Act (which ended the consent decree that prevented GTE's local operating companies from jointly marketing long-distance services). GTE and SNET have been very successful in capturing long-distance business, but neither has elicited serious complaints concerning their degradation of existing long-distance access arrangements for IXCs.

140. In short the scope for a BOC, after allowed interLATA entry, to degrade existing access arrangements used by IXCs is relatively limited in the short run. Most importantly, regulatory and antitrust safeguards can do a far better job of enforcing such existing access arrangements given the long track record of experience with them. In addition, a BOC would face some technical difficulties today in finely targeting for discrimination only pieces of the network that serve IXCs or their customers. Finally, some of the markets which the BOCs are said to target if allowed interLATA entry, low- to medium-volume residential and business customers, are also

ones where IXCs require relatively simpler access arrangements.[55]

C. Implementing New Access Arrangements

1. IntraLATA toll dialing parity

141. The main long-distance markets in which the BOCs have participated since the MFJ are those for intrastate, intraLATA toll services. Dialing parity—the ability to reach a carrier other than the LEC without dialing additional digits—is very important to subscribers who must dial manually, such as most residential subscribers and small businesses lacking a PBX. Indeed, LECs consistently opposed dialing parity on the grounds that implementing it would cause them to lose massive amounts of traffic. Until a few years ago, no BOC provided dialing parity anywhere. Often regulators did not seek to enforce dialing parity (partly on grounds of protecting this LEC revenue in order to support cross-subsidies of other services such as basic residential access and most services in rural areas). But even where they did, incumbents successfully delayed the process through protracted appeals.

142. The case of Minnesota is instructive.[56] The Public Utilities Commission (PUC) determined in October 1985 that dialing parity to IXCs for intraLATA toll calls (through "1+ presubscription") was in the public interest, and in November 1987 created a committee to develop an implementation schedule and a means of paying the costs of presubscription. U S

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[55] About 80% of LECs' interstate access revenues comes from switched traffic (Table 1, note 6), where access arrangements are largely standardized. Dedicated access is used mainly by large customers, and competition from CAPs and CLECs is developing faster for such dedicated arrangements. However, if local competition fails to develop for broader segments of the market, the BOCs if allowed into long-distance could pose a growing threat to access arrangements used by IXCs: new arrangements will become increasingly necessary, and local networks might be re-configured to permit more subtle forms of access discrimination.

[56] The ensuing discussion draws on Cornell (1994), and on interviews conducted by the Department of Justice. My purpose here is not to single out the Minnesota Public Utilities Commission or the incumbent BOC, U S West, but to illustrate generic problems.

West, the incumbent BOC, asked the PUC to reconsider its public interest finding, but was denied in January 1988. In June 1989 the study committee filed a report stating that presubscription could be done and proposing a method of implementation and funding.

143. In September, 1992, U S West again petitioned the PUC essentially to reconsider its decision that presubscription was in the public interest. The PUC denied the request but reconvened the study committee, having decided that the earlier report might be outdated. The committee submitted an updated report in August, 1993. In July, 1994, the PUC set implementation guidelines for intraLATA equal access by incumbent LECs not already providing it. After further unsuccessful efforts by U S West to challenge the PUC's order in court, intraLATA presubscription was finally implemented in February 1996—over a decade after the PUC had determined that it was in the public interest.

144. This episode, and others like it, are all the more striking given that claims challenging the technical feasibility of dialing parity had long been refuted. In exchanges serving most traffic in Alaska dialing parity was implemented in 1991-92. GTE implemented a comparable capability for itself in Hawaii in 1986; but only in July 1996 did the Hawaii PUC compel it to provide intraLATA dialing parity to others. Thus, technological uncertainty is not the sole problem; incumbents have considerable ability to stall the process through regulatory and legal challenges.[57]

2. "Open Network Architecture"

145. One of the toughest challenges to meeting the new Act's local competition requirements

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[57] The BOCs continue to resist intraLATA dialing parity today. For example, in states such as Michigan and Wisconsin where commissions have ordered such parity, Ameritech has mounted numerous regulatory and legal challenges. Technical barriers are sometimes cited; however, Michigan regulators found that 82% of Ameritech switches could be converted immediately, while the remaining ones would require only some software development.

will be in assuring competitors access to unbundled network elements. The FCC's experience with attempting to implement Open Network Architecture (ONA), while different in some respects, nevertheless is instructive.[58]

146. The FCC's *Computer II* rules (1980) allowed BOCs to offer unregulated enhanced services (such as computerized data processing that also require access to telephone networks) only through separate subsidiaries, in part to help prevent access discrimination to telephone networks against competing enhanced service providers. Ameritech proposed an early version of ONA partly as a substitute safeguard against discrimination: by offering access to disaggregated network elements which enhanced service providers could use flexibly, ONA would reduce a BOC's ability to discriminate. Other BOCs similarly argued that ONA would void the need for the structural separation required by *Computer II.* The FCC concurred: in *Computer III* (1986), it ordered the BOCs to develop plans for ONA and determined that ONA requirements would be "self-enforcing in controlling discrimination."

147. Backsliding from initial ONA promises began almost immediately, though much of this was not conscious discrimination but inevitable in view of the unrealistic expectations initially touted for ONA. And major, protracted controversy ensued over whether the BOCs had actually implemented the reduced version of ONA that they did promise. The FCC, while acknowledging that ONA had not been fully implemented, ruled the BOCs had nevertheless done enough to justify lifting the separate subsidiary requirement. The Ninth Circuit (1994) strongly disagreed, finding that the FCC had failed to explain how these scaled back safeguards, that fell well short of the "fundamental unbundling" originally envisioned in *Computer III*, would suffice to prevent discrimination.

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[58] A summary of the main episodes in the history of ONA and the relevant references can be found in the decision *California v. FCC*, 39 F.3d, 919 (9th Cir. 1994).

148. There are important differences between the network unbundling envisioned in ONA and that required by the 1996 Act. We have a much clearer idea today of the services local competitors might provide and their requirements than we did then for enhanced service providers. And the technological advances needed for ONA were more pathbreaking than the measures required to implement the Act's unbundling requirements (as spelled out in the FCC's Local Competition Order). Still, ONA offers important lessons: backsliding from initial promises, whether deliberate or not, is likely; and so are disputes over the details of what has—and has not—been implemented. These lessons highlight the dangers of relying on "paper implementation" of new requirements and, to avoid protracted regulatory and legal skirmishes, the importance of authorizing a BOC's interLATA entry only after there is enough confidence that it has indeed implemented key local competition requirements.

V. Principles for a Procompetitive Entry Standard

149. At the risk of oversimplification, the stylized pattern emerging from section IV is that once access arrangements are in place and there is a track record against which to benchmark "good behavior," the task of preventing access discrimination becomes much more manageable. It is very difficult, however, to impose new arrangements against the firm's will. These considerations, and the earlier analysis of the potential benefits from BOC entry, lead me to the following principles for a procompetitive BOC entry standard.

A. Fully Effective Local Competition Is Not a Prerequisite

150. Withholding BOC entry authority until there is sufficient local competition to eliminate a BOC's market power would not be appropriate on economic grounds. Even if barring the BOCs from long distance was justified at divestiture in order to promote the nascent long-distance competition, such competition could be protected today while allowing BOC entry well before there is effective local competition.

151. There are now several major established long-distance carriers. Regulators today are more attuned to risks of discrimination and, importantly, long-distance access arrangements are well established. The new Act prohibits many discriminatory practices that were not specifically prohibited pre-divestiture. In addition and importantly, the Act provides for opening of the local market which over time should yield additional safeguards for long-distance competition, both by providing direct alternatives, and by offering benchmarks to assist regulators in regulating BOC conduct.

152. Moreover, the development of local competition—a central goal of the Act—can itself be accelerated by authorizing BOC entry before there is effective local competition, *provided* that such authority is appropriately conditioned on prior BOC cooperation with local entrants. Local competition will develop sooner if the BOCs cooperate, and the BOCs should be more willing to cooperate if in so doing they secure earlier entry into long distance. This logic, I believe, is integral to the particular sequencing adopted in § 271.

153. Finally, as noted earlier, BOC entry has the potential to yield significant benefits in provision of integrated services and increased long-distance competition. Since the potential costs can be mitigated through regulatory, antitrust and other safeguards once the market is open and benchmarks are in place, coupled with some local competition, the value of attaining earlier the benefits of BOC entry reinforces the case for approving such entry well before effective local competition is in place.

B. The Local Market Must Be Irreversibly Open to Competition

154. While section IV showed that regulators can do a reasonable job of preserving established arrangements, it also raised significant doubts about their ability to expeditiously enforce new arrangements in the face of BOC resistance. This is particularly an issue for the new local-competition arrangements required by the Act, many of which entail radical departures from past practice. Given the pivotal role of these arrangements in laying the foundation for local

competition as envisioned in the Act, and that local competition holds the key to achieving the Act's goals, I believe that BOC entry should be authorized only once there is sufficient confidence that the BOC's local market has been irreversibly opened to competition through all three entry modes contemplated by the Act. Several steps, discussed next, lead to this conclusion.

1. BOC incentives to cooperate can make a great difference

155. The BOCs themselves seem quite aware of their latitude, within the regulatory and legislative constraints, to affect the pace and efficacy of the process to open up local markets to competition. The importance of BOC cooperation is illustrated by contrasting the experiences of intraLATA toll versus interLATA markets. BOCs successfully delayed implementation of dialing parity for intraLATA toll markets, where they were allowed to compete. In contrast, establishing the physical and administrative arrangements for equal access to IXCs after divestiture was a considerable achievement for the industry; and it was made possible in large part by BOCs' willingness to cooperate given that they were barred from directly participating in long distance and thus had strong interests in ensuring efficient operation of the exchange access business.

2. Importance of securing BOC cooperation before authorizing entry

156. As explained previously, relying on penalty threats to force implementation of new systems is problematic, because enforcers will have far less information than the BOC about how long the process should take. Providing a BOC with incentives to act faster—by authorizing its entry only once sufficient implementation has occurred—will accomplish the process more quickly and more efficiently. Once these main new technical and organizational access arrangements for local competition are in place and shown to be working, they can establish performance benchmarks to assist enforcers in preventing future backsliding. That is, pre-entry implementation of the new systems makes regulatory and other safeguards considerably more effective and less burdensome.

157. On the other hand, once entry is authorized, BOC incentives to continue cooperating will diminish significantly. As a practical matter, rescinding a BOC's long-distance authority would be difficult and, in any event, would be disruptive. While freezing a BOC's future marketing authority would be a more practical option, it also is less potent. Faced with a loss of an important incentive mechanism—the § 271 entry authority—BOC cooperation would have to be induced by threatening penalties which, as noted, are less effective when the issue is implementation of new measures. Thus, it is important to grant BOC entry only after sufficient cooperation has first been secured.

3. The benefits from delayed BOC entry outweigh the costs

158. The Department of Justice's standard would involve some delay in BOC entry relative to adopting an "early" entry standard that required only checklist compliance on paper. This will impose non-trivial costs, by temporarily depriving consumers of increased availability of integrated services, as well as increased competition in long-distance services (see section II). But the costs of delay are outweighed by the prospective benefits.

a. Local versus long-distance markets

159. A BOC's local markets are about twice as large as its in-region long-distance markets. In addition, the local market is a regulated monopoly, with substantial room for improvement in performance. In contrast long-distance markets, though not perfectly competitive, exhibit considerable rivalry and are becoming more competitive even without BOC entry. The gains from injecting even a modest dose of local competition can thus easily outweigh those from adding one, albeit major, competitor into long-distance markets in a BOC's region. (Recall that BOCs already may offer long-distance service outside their regions.)

160. Aside from its inherent benefits, local competition can also help safeguard long-distance competition in the longer run. A BOC's entry into long distance is likely, over time, to pose a

growing threat to the ability of IXCs to compete with it on an equal footing, or invite more intrusive regulation to prevent this, than if local competition emerged sooner. Finally, local competition holds the key to robust competition in offering integrated services—since the key monopolized pieces are local inputs and services.

b. Integrated services

161. *"Competitive parity."* The BOCs argue that any delay of their entry into long distance would give their competitors—especially the major IXCs—important and unfair first-mover advantages in competing to provide integrated services (such as offering one-stop shopping). In addition, and somewhat inconsistently, they argue that delaying BOC entry would deny consumers the benefits of these offerings which the BOCs—if allowed into long distance—would be *uniquely* positioned to provide. I address first the issue of competitive parity, then the more important questions of impact on consumers and on overall welfare.

162. In general, the competitive process works best when no artificial handicap is placed on competitors and all firms are allowed to compete on the merits. At first glance, delaying BOC entry while IXCs and others make inroads into local markets may seem to violate this principle of respecting competitive parity in offering integrated services. This, however, overlooks the fundamental asymmetry in the position of a BOC versus other players.

163. The BOC is the sole major source of local services in its region. In contrast, there are several national and many regional facilities-based providers of long-distance services. If reciprocal entry is allowed concurrently—that is, if BOC entry into long distance is allowed immediately—the BOCs will have a major and artificial advantage in offering integrated services. They will be able to obtain long-distance services rapidly, seamlessly, and at prices very close to cost—because of the vigorous competition among IXCs vying to sell such services to a large wholesale customer as the BOC. In contrast, other would-be providers of integrated services have only one major source for local services: the BOC. Once allowed into long

distance, a BOC would have strong incentives to deny to others the various wholesale local services they need to offer integrated services. Potential competitors would have to wrangle with this sole provider for every new access arrangement or discount. Regulatory and antitrust intervention can certainly help, but it cannot in a cost-effective manner eliminate entirely the disadvantage resulting from the absence of local competition; if it could, we would rely on regulation and not insist on competition.

164. Moving towards parity in competition for integrated services therefore calls for insisting that the BOCs first take substantial measures to open up their local markets—even if by doing so they expose themselves to some entry—because once they are allowed into long distance they can rapidly make up any advantage the IXCs might have temporarily gained.[59]

165. *Effect on consumers.* More important than the effect on competitive parity for its own sake, is the effect delayed BOC entry has on consumers of integrated services and on overall welfare. Delaying BOC entry would delay delivering the benefits of integrated services to consumers through the BOC. However, integrated services will be available to some extent from non-BOC sources. Competitors other than the largest three IXCs could attempt to obtain BOC local services for total service resale. And all competitors could attempt to provide their own local services through facilities-based entry or through use of unbundled local elements

[59] The structure of the Act reflects a desire to prevent either the BOCs or the IXCs from gaining a substantial "first mover" advantage in offering packages of local and long-distance services, and does so by attempting to deny either one a significant head start. Thus, § 271 requires the opening of the local market to competition—for both resale and unbundled element competition—before BOCs may enter the long-distance market. Similarly, § 271(e) prohibits large IXCs from jointly marketing resold local services in a state prior to the BOC's long-distance entry and, except where already required by a state, limits the implementation of intraLATA toll dialing parity prior to the BOC's entry. Finally, the Act requires the FCC to act on § 271 applications within 90 days, a requirement that ensures that BOC entry will occur promptly after—but not before—all prerequisites for such entry have been satisfied. I believe these requirements are consistent with the above reasoning.

leased from the BOC.[60]

166. Admittedly, competitors are unlikely to obtain such local inputs or services as efficiently and expeditiously as the BOC would have offered its own long-distance affiliate. It will take time and regulatory pressure to implement the necessary new arrangements for supplying competitors with wholesale local services. Quite aside from BOC reluctance, there may be genuine transaction costs in making local inputs available to others as smoothly as to one's own affiliate; transaction costs often explain why in many settings firms prefer vertical integration over arm's length contracting with others. Thus, the local components of integrated services available from non-BOC suppliers are likely to be inferior to or not available as promptly as those that would be available from a BOC if it were immediately allowed to offer long-distance and thus integrated services. This inferiority will show up in the price or quality of the integrated services offered to consumers by non-BOC providers.

167. However—and this is the rub—the BOC will more willingly supply to others its local services or inputs and on better terms if it is barred from long-distance and thus integrated services. As explained earlier, a BOC's incentives to promote such wholesale products increases if it is barred from selling, especially at unregulated prices, competing retail services.

168. In short, barring a BOC from long distance creates a tradeoff regarding integrated services. No other competitor is likely to have as good a set of local services as quickly as would a BOC if allowed immediate interLATA entry. But while a BOC is barred from offering retail integrated services, it has incentives to supply others with wholesale local services on better terms than after it secures interLATA entry. This availability of "better" local inputs to a broader

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60 Although the Act prohibits the three largest IXCs from jointly marketing long-distance services with local services obtained from the BOC for total service resale, until BOC interLATA entry is authorized (or until February 1999), it allows joint marketing of local services provided via one's own facilities or via unbundled BOC elements.

set of players is valuable; additional players bring greater variety and other benefits (improved customer service, more experimentation with new pricing plans, and other creative offerings). The net effect of earlier BOC entry on market performance in delivering integrated services is thus theoretically ambiguous in the short run. In the long run, competition in integrated services is likely to be far more robust and performance thus superior if strong local competition emerges. That goal is better advanced by authorizing BOC entry only after the conditions of the Department's standards have been met.

169. For all these reasons, accepting a modest delay in BOC entry to comply with the Department's standard is a worthwhile price. BOC cooperation in implementing the § 271 competitive checklist requirements would go a long way towards laying the foundation for healthy local competition. And securing such cooperation is far more likely by making it a prerequisite for BOC interLATA entry. Accepting a modest delay of BOC entry does not foreclose future options; but once entry authority is granted, we may have lost an important tool for opening the local market.

C. Local Competition as Evidence of an Open Market

170. Seeing significant and diverse local competition take root provides by far the best evidence that the market indeed has been irreversibly opened to competition. On the other hand, even with an open market, local competition may still be delayed for other reasons.[61] In particular, we should not expect to see all forms of local competition in all locations, and certainly not right away; indeed, the guiding philosophy of the Act is that market forces should be allowed to dictate what works and what doesn't, once artificial barriers have been removed. For example, if we are successful in ensuring that incumbents make available unbundled network

[61] For instance, some potential entrants are re-evaluating plans to build their own loops and waiting for technological advances that would allow broad-band delivery capability and let them offer not only telephone service but also video and data services.

elements at prices reasonably close to incremental cost and if such arrangements work smoothly, then it would be wasteful to insist that entrants build entirely their own facilities.

171. Balancing these two considerations, I see the role of observing local competition as establishing presumptions: if sufficient competition is observed, the market is presumed open. If not, one should ask why not; the BOC would face a heavier burden to demonstrate that the market is truly open and that the absence of actual competition was not for lack of BOC cooperation in opening up its networks to competitors.

172. The best proof is in the pudding: the emergence of local competition provides by far the best evidence and assurance that the local market indeed has been irreversibly opened. Observing local competition is helpful for several reasons.

173. *Checklist implementation.* Seeing some actual competition is the most convincing demonstration of meaningful checklist implementation. Without seeing new access arrangements in use by competitors, there will be lingering doubt as to whether these arrangements are truly adequate or whether their pricing is appropriate to make entry by efficient competitors feasible.

174. *Signal of entrants' confidence.* Competitors' willingness to commit significant irreversible investments to the market (sunk costs) signals their perception that the requisite cooperation from incumbents has been secured or that any future difficulties are manageable. Since competitors are knowledgeable about the industry and have an obvious stake in making competition work, their actions speak loudly.[62] Indeed, firm plans to commit substantial investments to the market could be a better indicator than observing a more limited amount of

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[62] In general, it is instructive to observe the actions of parties that have a direct interest in the outcome, because they are likely to have better information than outsiders or find it in their incentives to obtain such information. This principle of "follow the money" has led economists to place substantial weight on how the stock market interprets various events.

competition already in place. (It is important, however, that the plans be firm, e.g., involving contracts for specialized equipment that entail substantial penalty clauses for cancellation. There is a long record of plans to enter local phone service that have been perennially revised, such as by the cable companies to cite one example.)

175. *Entrants' direct role in safeguarding competition.* Quite aside from signaling confidence that local competition can be successful, the presence of competitors can directly help to prevent backsliding on cooperation by incumbents. The presence of competitors can provide regulators with additional benchmarks of what is possible and at what cost, thereby helping regulators (or the courts) to better enforce incumbent cooperation. In addition, established competitors create an additional constituency with a stake in preventing backsliding by incumbents or regulators. Once established competitors are in place, they can help to limit discrimination by acting as whistle blowers.

176. In all cases, of course, the more widespread is the local competition geographically, in the types of services offered, and in the range of access services used from the incumbent, the greater is our degree of confidence that the market has been opened.

177. *Resale versus other entry modes.* It is important to ensure that facilities-based entry options (including through unbundled elements) are truly made possible, as they have important potential advantages over total service resale. They can discipline an incumbent's behavior in more segments, not only on the retailing side but also in certain network functions; for example, entrants renting unbundled loops but bringing their own switches can help curb switch-based discrimination against long-distance carriers in securing local access, and can allow the introduction of new services based on the electronic features in the switch.

178. In addition, entry using unbundled elements can often exert stronger downward pressure on retail prices than can entry through resale—partly due to the different pricing standards

adopted in the Act: wholesale prices for total service resale are computed "top down," by starting with retail prices and subtracting only the avoided retailing costs; in contrast, unbundled elements are priced "bottom up," by starting with the estimated facility costs of these elements. Since retail prices for many services are well above the underlying costs of both retailing and network elements, subtracting only the estimated retailing costs to obtain wholesale prices for total service resale is likely to still leave these wholesale prices above the underlying costs of facilities.

D. Assessing Local-Market Openness in the Absence of Sufficient Competition

179. As mentioned, we do not expect to see all forms of competition everywhere. However, if sufficiently diverse competition is not observed, it is important to understand why. Before concluding that this is simply for lack of interest by entrants in pursuing certain entry modes in certain regions, it is important to ascertain that competition is not being stifled by artificial barriers. Indeed, absent a showing by the BOCs that lack of entry simply reflects a lack of interest, the presumption should be that the market is not open. Reversing this presumption requires verifying that the main elements of an open market indeed are in place. The main elements are discussed below.

1. Full, meaningful implementation of new access arrangements

180. Many of the access arrangements required by the Act for local competition are new. They raise a host of novel issues in technical areas (e.g., loop unbundling), business protocols (e.g., for switching customers from the incumbent to entrants under total service resale), and sharing operations support systems. A condition for finding the local market open, when sufficiently diverse local competition is not yet observed, should be that all such major systems and protocols (including but not limited to loop unbundling, electronic interfaces, operations support systems, access to signaling and databases) are readily available for commercial usage. They should provide regulators sufficient confidence that the conditions have been established to facilitate

efficient entry through all three entry modes contemplated in the Act (facilities based, unbundled network elements, and resale), and for serving all major types of customers. And they should provide a sufficient track record of performance to give regulators reliable benchmarks for gauging and enforcing future cooperation.

181. Moreover, the scale of operations is critical. Systems that stringently cap the rate at which the incumbent's customers can switch to competitors, for example, by processing orders manually or having only a few and perennially busy fax machines, are a sure way to stifle competition. In order not to significantly impede competitors' ability to expand, the above systems should also be capable of being scaled up relatively quickly to accommodate reasonably foreseeable expansion demanded by entrants in a given geographic region (e.g., the ability to rapidly switch over to the entrant a large number of customers, through loop unbundling or total service resale); and capable of being rapidly extended to regions where they are not initially implemented. In addition, a BOC must have implemented number portability and local dialing parity.

182. These new access arrangements must be proven to work in practice. Many of the arrangements called for by the Act (such as loop unbundling) are unprecedented. Implementing such radical new arrangements often proves more difficult than expected even where there is goodwill on both sides.[63] These difficulties increase by an order of magnitude, however, when one side is recalcitrant; there is then endless scope for acrimony and mutual finger pointing, creating a regulatory morass. It is therefore important to have some practical experience with these arrangements, under real-world business conditions and not just in the laboratory, and iron out the major kinks while incumbents are still relatively predisposed to cooperate. The absence of (non-trivial) competition calls for waiting longer to test the new access arrangements, because experience with them under competitive conditions could help pinpoint potential problems more quickly. One should conclude that the market is open only if there is sufficient confidence that

[63] For example, I learned from Bell Atlantic in July 1996 that it had been working with MFS in Baltimore since February 1995 to implement loop unbundling and had encountered considerable difficulties despite both parties' attempts to work cooperatively.

the major implementation problems have been resolved.[64]

2. Cost-based pricing of new local-competition access arrangements

183. "Availability" of the above access arrangements will be illusory if prices are prohibitively high. Thus, interconnection agreements forming the basis for § 271 entry authority under Track A, or interconnection offers under Track B, should provide entrants with satisfactory pricing assurances. Prices should be reasonably close to cost, as stipulated in the Act. And competitors must have adequate assurance that prices will remain reasonable and cost-based after interLATA relief is granted, in order to make efficient entry viable. Thus, if interim prices are used in the BOC's agreements or offers, there should be some assurance that after interLATA entry is authorized the BOC's prices to local competitors will remain within a tolerable range of these interim levels (e.g., indexed to inflation plus or minus a modest deviation) for a sufficient duration.

184. Even entrants building their own networks will require reasonable prices for terminating their calls on the incumbent's network; assuring such prices is thus critical to the development of facilities-based local competition. Reasonable prices also are necessary for unbundled network elements if, as Congress intended, we are to facilitate also partial facilities-based competition; it would be tremendously costly, slow, and often inefficient for entrants to duplicate the incumbent's entire local network, especially its local loop. Finally, reasonably-priced local service for total service resale is needed in order to provide other carriers a meaningful opportunity to compete quickly and widely in providing integrated services.

185. *Pricing standards.* Section 252 (d) of the Act requires state commissions to use the following pricing standards in arbitrating disputes between incumbents and local competitors: (1) prices of interconnection and unbundled network elements should be based on each party's cost of providing these items; (2) prices of transport and termination of local calls should provide for

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[64] Indeed, the arbitration process has not addressed all the relevant issues. (1) Many states have yet to establish performance standards and in certain cases have been reluctant to involve themselves at all in private negotiations on such matters despite appeals by entrants to do so. (2) Some states have determined that certain issues (such as liquidated damages), were outside their jurisdictional boundaries, wholly precluding their consideration in arbitration. Thus, insistence on appropriate performance benchmarks through the § 271 process can usefully complement state efforts.

mutual and reciprocal recovery by each carrier of (a reasonable approximation of) the additional costs of terminating such calls; and (3) wholesale prices should be based on retail prices for these services minus the marketing, billing and other costs that will be avoided by the LEC by selling at wholesale versus at retail.

186. The FCC in its Local Competition Order, while acknowledging that responsibility for arbitrating specific price levels rests with state commissions, proposed a methodology for arriving at prices: (1) for interconnection and unbundled elements, use forward looking Total Element Long-Run Incremental Cost (TELRIC); and (2) for transport and termination, require symmetric prices based on the incumbent LEC's TELRIC. It suggested proxy ranges for these prices, and for wholesale discounts for total service resale, that a state commissions could use pending completion of its own cost study. These pricing rules and interim proxies were generally praised by competitors, but have been stayed by the Eighth Circuit. Considerable uncertainty remains about the course of these key prices.

187. *Role of § 271 entry authority.* Denying BOC interLATA entry when local competition is seriously impeded by inappropriate BOC pricing of key local inputs can accelerate opening of the local market. Although state commissions are empowered to arbitrate pricing disputes between incumbents and competitors, awareness that the § 271 process will weigh seriously whether key inputs are priced in a manner that supports efficient local entry will usefully complement state efforts to enforce procompetitively low input prices by the BOC to competitors in order to open the local market. This point merits elaboration.

188. State arbitration of interconnection agreements does not occur in a political vacuum. Rather, prices emerging from arbitration are likely to reflect the demands and bargaining powers of the incumbent and its potential competitors. There is great asymmetry in these bargaining powers—since the dominant incumbent is content to preserve the status quo, while the entrant is clamoring for an agreement. By making procompetitive BOC prices to local competitors a requirement for finding the local market to be open one can help reduce the bargaining-power asymmetry, and thus reduce the BOC's prices—thereby complementing state efforts to foster local competition.

3. Removal of substantial regulatory and other barriers

189. Finally, in order to be confident that the local market is irreversibly open, one must ascertain that there remain no major state regulatory or other artificial barriers likely to significantly delay local competition. The Act requires removal of such barriers,[65] but there are gray areas. States have some latitude to impose obligations under the rubric of protecting universal service; local authorities may manage public rights-of-way or require fair and reasonable compensation for their use. Although all such actions must be on a competitively neutral and nondiscriminatory basis, there is sure to be controversy over the precise meaning of these terms.[66] Thus, the timeliness and effectiveness of FCC preemption of such barriers is uncertain. In addition, the BOCs themselves may have latitude to engage in certain practices which, while not explicitly unlawful, may hinder competition.[67]

190. If such barriers are likely to seriously delay competitors' ability to avail themselves of new technical and pricing arrangements for access put in place with BOC cooperation, these arrangements could become obsolete. The value of BOC cooperation in establishing these arrangements will then decay; and securing BOC cooperation again in establishing new arrangements once these barriers have been removed but after BOC entry has been authorized will be far harder.[68]

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[65] Section 253(a) states: "No State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." Section 253(d) empowers the FCC to preempt such barriers.

[66] For example, Texas has imposed certain "buildout" requirements on entrants, requiring them to provide service over at least a certain area which may hamper their ability to enter effectively; requests are pending with the FCC to preempt this and other provisions of the Texas statute. Numerous municipalities reportedly plan to impose fees on new telecommunications providers—but not on incumbents—for use of rights-of-way and local infrastructure. Bryan Gruley, "Disputed Call: Detroit Suburb Sparks Fight by Levying Fees on Telecom Concerns," Wall Street Journal, December 23, 1996. The FCC has decided not to challenge such fees in the case of Troy, Michigan.

[67] For example, some incumbent LECs are said to be signing exclusive access agreements with landlords of multi-unit buildings, housing a high density of customers. Such agreements could stifle the ability of entrants to compete, by denying them the opportunity to attain economies of density in a given area. A provision prohibiting such agreements was dropped from the Act; nevertheless, permitting such agreements can hinder competition.

[68] A concern is that a standard which links BOC entry to removal of regulatory barriers beyond its influence may discourage BOC cooperation, because cooperation may fail to yield a reward. There are several responses to this concern however. First, a BOC's ability to influence the regulatory process in a

E. Conclusion: The Department of Justice's Entry Standard Is Procompetitive

191. The major remaining bottleneck in telecommunications today, controlled by the BOCs in most regions, is local networks. These regulated local monopolies are an inefficient institution, whose replacement by a mix of local competition and lighter regulation can generate large net social benefits in local services, in integrated services, and in protecting and promoting competition in long-distance services while allowing BOC entry. This is the guiding philosophy of the 1996 Act.

192. Authorizing BOC entry when—and only when—the BOC's local market is open would go a long way to promoting local competition and achieving the goals of the Act. The Department of Justice's entry standard embodies this principle. It strikes a good balance between attempting to rapidly realize the benefits from BOC entry while properly addressing the competitive concerns, and therefore serves the public interest in competition.

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state should not be underestimated. Second, requiring an open market as a condition for BOC entry can help persuade states to do more to remove remaining barriers. Third, and most importantly, dismantling such barriers need not impose onerous delay; whereas authorizing BOC entry before the local market is open can seriously jeopardize prospects for opening it in the future. The reasons are twofold. (a) Such barriers may prevent commercial use by entrants of the BOCs wholesale inputs and prevent the BOC from demonstrating that their systems will work under actual usage. (b) As noted in the text, even if the systems would work today, these systems could require major changes if sufficient time elapses before entry. Thus, if entrants cannot avail themselves of these new systems for some time due to the presence of residual barriers, the initial BOC cooperation in establishing these new systems will have had only limited value; and securing future BOC cooperation in updating these systems once these barriers have been removed will be more difficult if BOC entry has already been authorized. As a practical matter, however, I believe that meaningful BOC implementation of the competitive checklist is likely to result in opening the local market in most cases.

I hereby swear, under penalty of perjury, that the foregoing is true to the best of my knowledge and belief.

____

Marius Schwartz

Subscribed and sworn before me this ______ day of ____________, 1997.

____

Notary Public

Table 1: Telecommunications Revenues (1995) [1]

1. All LECs, and BOCs alone	(1) All LECs ($ billion)	(2) % of Total Telecom Revenues[2]	(3) BOCs ($ billion)	(4) % of Revenues of All LECs[2]
Local Revenues	**56.6**	**36.9%**	**43.0**	**76%**
Local Exchange Service [3]	45.0	29.3%	35.2	78%
Local Private Line	1.2	0.8%	0.9	75%
Miscellaneous Local Revenues [4]	10.4	6.8%	6.9	66%
Network Access Services [5]	**33.4**	**21.8%**	**22.5**	**67%**
Federal Subscriber Line Charges	7.0	4.6%	5.8	83%[6]
Access Charges paid by LD Carriers	26.4	17.2%	16.7	64%[6]
Toll Revenues	**12.8**	**8.3%**	**9.5**	**74%**
Switched Service (intraLATA toll)	10.1	6.6%	7.3	73%
Miscellaneous Toll Revenues [7]	2.7	1.7%	2.2	81%
Total All Reporting LECs	**102.8**	**67.0%**	**75.0**	
2. CAPs and CLECs	**0.6**	**0.4%**		
3. LD Carriers' Net Toll Revenues [8]	**50.0**	**32.6%**		

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[1] Source: FCC, Telecommunication Relay Service (TRS) Fund Worksheet Data, December 1996. All data are for 1995. Abbreviations: LECs – Local Exchange Carriers; CAPs - Competitive Access Providers; CLECs - Competitive Local Exchange Carriers; BOCs – Bell Operating Companies; LD – Long Distance.

[2] Col. (2) is $ bn in Col. (1) ÷ $153.4 bn (Total Telecommunications Revenues). Col. (4) is Col. (3) as % of Col. (1).

[3] Includes primarily revenues from Basic Local Services (approx. $34 bn) and some vertical services.

[4] Includes primarily Directory Revenues (approx. $4 bn), Nonregulated Revenues (approx. $3.6 bn), and Carrier Billing and Collection Revenues (approx. $1 bn).

[5] Of which $8.9 bn is intrastate access, and $24.5 bn is interstate (including $7 bn in Federal Subscriber Line Charges). The FCC's Statistics of Communications Common Carriers 1995/96 (table 2.9) breaks down interstate access charges paid by LD carriers (i.e. not including SLC) into switched and dedicated access, with switched access accounting for 80%. No comparable breakdown is reported for intrastate access.

[6] This percentage is computed using data from the FCC's Statistics of Communications Common Carriers 1995/96 (table 2.9, lines 154 to 158), which reports the break-down of BOCs' Network Access Revenues in SLC and Access Charges paid by LD Carriers. TRS Fund Worksheet Data does not report such information.

[7] Includes $1.6 bn in Operator Service, Pay Telephone and Card Revenues, $.9 bn in Long Distance Private Line Service, and $.25 bn in All Other Long Distance Revenues.

[8] Total Gross Revenues of Long-Distance Carriers are $76.4 bn, of which $26.4 bn were paid in access charges to LECs. The $76.4 bn figure includes approx. $3.3 bn from intraLATA toll (AT&T estimate), and the rest is interLATA. Of the $76.4 bn, 93% accrued to IXCs, 5% to Toll Resellers and the rest to Operator Service Providers, Pre-Paid Calling Card Providers, Pay Telephone Providers and Others.

	All LECs ($ billion)	Telecom [2]	BOCs	% of Revenues of All LECs[2]
	153.4	100.0%		

No More Faking It.

Carrier Class
Voice over Broadband
Gateways

GENERAL
BANDWIDTH

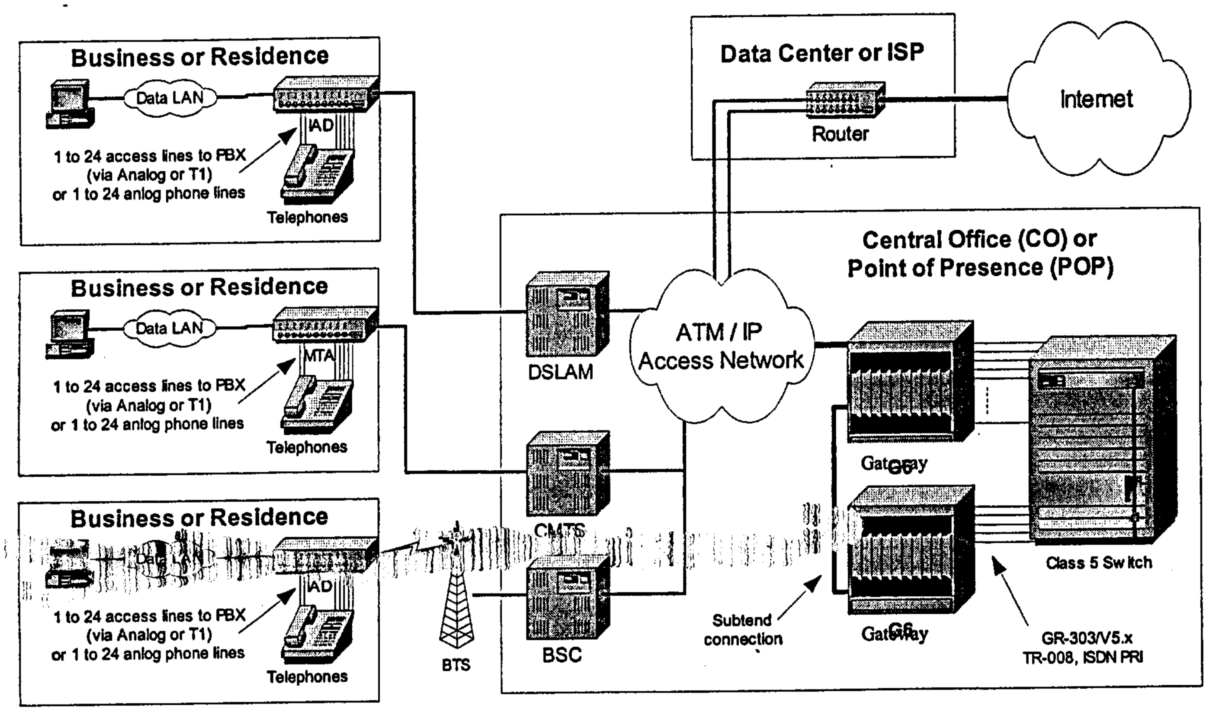
A General Bandwidth Whitepaper
June 2000

Table of Contents

Introduction

Voice over broadband technology has the potential to revolutionize the way voice services are delivered. Offering a true alternative to legacy POTS services, voice over broadband enables several channels of toll-quality voice over a single broadband connection, typically a DSL, cable or wireless network. Figure one outlines a voice over broadband network configuration.

Figure 1 Typical Voice over Broadband Network



The reason voice over broadband technology has received so much attention over the last year, is that it vastly improves the economics of deploying broadband services by enabling new ways to bundle voice and data services, alleviating concerns over copper pair shortage, and significantly improving the revenue power of a single copper pair.

However, to deliver on these economics, voice over broadband gateways have to move beyond the first generation trial platforms. The market now requires true carrier class platforms that take the risk out of deploying voice over broadband services. Carrier class voice gateways allow service providers to reliably provision toll-quality voice over broadband services to business *and* residential customers, creating an environment for real mass deployment

Moving Beyond First Generation Hardware To Enable Mass Deployment

Anxious to explore the value proposition of voice over broadband, service providers began evaluating voice over broadband hardware last year. Unfortunately, the result of these early evaluations has not been wide-scale deployment of this truly revolutionary technology.

The market problem? First generation voice gateways are not specifically designed for the voice over broadband application, and are better suited for the more tolerant enterprise environment than a telco central office. Generally utilizing off-the-shelf hardware, ***early voice gateways do not deliver on the requirements for carrier class systems***. They are unable to promise the reliability, density, and optimal power and space utilization service providers have come to expect after a century or more of deploying central office hardware.

Building to Carrier Class

The availability of true, carrier class voice over broadband gateways is the next, and only step to mass deployment of voice over broadband services. The answer to the market problem is a voice gateway architected specifically for the voice over broadband application and therefore able to meet stringent telco requirements.

An optimized, carrier grade platform must be designed to meet and exceed the service providers most strenuous requirements for:

- **Five Nine's Reliability**
- **Superior Density and Scalability**
- **Minimum Power Consumption**
- **Maximum Space Utilization**
- **Universal Deployability**

This paper will outline the minimum service provider requirements for mass deployable voice over broadband services, defining the requirements of carrier grade and providing tangible metrics for evaluating voice over broadband gateways.

Reliability – Meeting the Five Nines

Reliability is the single most important requirement of any carrier grade system, and the foundation of five nines (99.999%) reliability. In order to be considered for mass deployment by service providers, voice over broadband hardware has to meet this reliability requirement. Three characteristics are required to deliver five nines reliability: the voice over broadband gateway must be modeled after a telco system design, it must be based on a fully redundant backplane architecture that is able to support end-to-end QoS throughout the system, and it must be built around a design that eliminates peripheral systems from the failure equation.

Computing vs. Telco Design

Most early broadband voice gateways leveraged computing centric platforms to quickly make product available. While these platforms do have the advantage of being early to market, their PC foundation fundamentally limits their reliability. PC platforms are designed for data centric applications, not voice, which means they are architected with a completely different view of what tolerable down-time represents. A voice over broadband gateway must be based on a telco-design, purposely architected for the challenges and expectations of the voice network, and based on a real time operating system such as VX works, PSOS or Links.

Redundancy, Redundancy, Redundancy

Complete system redundancy is not optional in a system designed for service providers. For that reason, platforms destined for the central office should be custom designed to ensure complete redundancy. At minimum, redundancy typically includes physical card redundancy, power redundancy, software redundancy, and timing redundancy. However, a carrier class product must also have a redundant backplane. Off-the-shelf systems typically have backplane limitations that result in long term redundancy issues, leaving the system vulnerable, more vulnerable than tolerable in a five nines environment. In these off-the-shelf systems, if you lose one bus, you lose half of the chassis.

A fully redundant bus architecture is required to guarantee that the loss of any bus will not cripple the chassis. Service providers need to ensure that the voice gateway they deploy is redundant to every bus and to every slot, and that no single point of failure can bring down the system or impede performance. Please see Table 1.

Table 1 Carrier Class Gateway Redundancy Requirements

Component	Redundancy
Power	1+1
System Clock	1+1 & 1:N
Fans	N+1
Switch Engine/CPU	1+1
Network Cards	1+1
GR-303 Interfaces:	
STS-1	1+1
T1	1:N
Voice Processing Cards	1:N
Subtending Interfaces	1+1

End-to-End QoS

Toll-quality voice is very closely aligned with quality of service (QoS) guarantees. Carrier grade platforms are built from the core to support end-to-end QoS, which is only possible if the backplane architecture allows for guarantees on VBR and CBR traffic. Handling a data protocol, ie AAL1, AAL2 or IP, is not enough for a true carrier class system. The platform must also be able to make bandwidth guarantees through the entire system.

Eliminating All Possible Points of Failure

While the peripheral systems may not be the most glamorous of the platform's components, they are critical to the system's ability to perform to telco-standards of reliability. Custom designed peripheral systems will eliminate these components as a factor in system failure.

An ideal example is a custom designed, fault-tolerant, cooling system, built specifically for the board thermal parameters. The fan controller module must be able to sense external and internal cooling temperatures, adapt appropriately, and detect failures, reporting them via a local audible alarm, a local visual alarm, and a remote alarm or E2A. Any hardware platform that overlooks the optimal design of critical functions, such as the cooling system, is a liability in an environment requiring absolute reliability.

Service providers also require a configurable backplane that allows a CIM (cable interface module) to handle all of the GR1089 requirements. In the case of an electric surge, the adapter acts as a buffer, splitting off the card, allowing the rest of the box to remain functional, vastly improving availability, and only requiring a $200 replacement of the interface card, rather than the costly replacement of the entire module. These types of custom built features demonstrate the wide gap between designs optimized for the application, versus the limitations inherent in adapting a data centric, off-the-shelf alternative for a voice services related application.

Table 2 Service Provider Checklist – Reliability

Feature	Gateway Requirement
Operating System	Real time ie VX Works, PSOS, Links
Redundancy	Fully redundant to every bus and every slot
QoS	end-to-end bandwidth guarantees for VBR and CBR
Cooling	Custom architected, fault tolerant designed for board thermal parameters

Maximum Density and the Ability to Scale

A highly dense, highly scalable platform that lowers service provider risk and future proofs their investment is one of the toughest carrier grade requirements to fill. The lifespan of the voice over broadband gateway is a significant variable in the economics of deploying the service, and in the ultimate adoption of the new technology. The architecture of the backplane can be a tremendous enabler or an inhibitor of optimal density, scalable systems that eliminate the need for forklift upgrades, and the ability to leverage subtending and resource sharing to lower overall system cost.

Building a Scalable Backplane

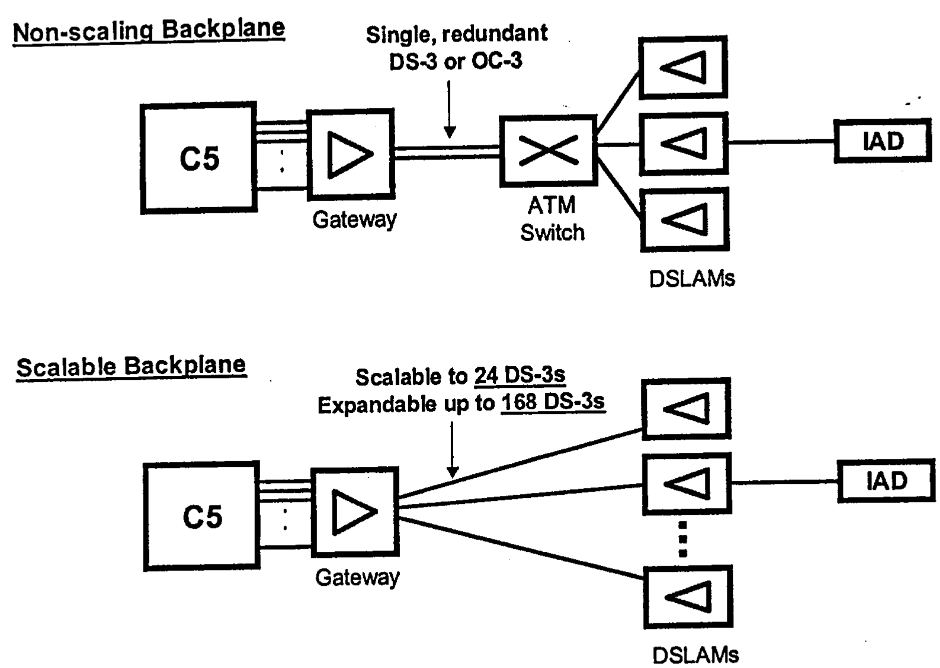
Service providers should expect at least 5 Gpbs from their gateway's switch fabric, and 38 Gpbs backplane throughput, anything less limits the ability of the gateway to scale over time. For example, compact PCI is a common architecture among first generation voice over broadband gateways. It limits backplane throughput to only 1 Gpbs uni-directional, or 500 mbps bi-directional, which when taking overhead into account, only allows 400 mbps throughput. While it can likely support up to 2000 calls today, this type of architecture ultimately limits where the system can go in the future.

Unable to scale to multiple STS-1's, and maxing out at three OC-3 connections, many systems today will not be able to take advantage of increases in processing power. The limits inherent in the backplane will not allow for simple trade-outs of cards in order to support 4000 - 8000 calls, but will instead force service providers to trade out the entire chassis in order to take advantage of increased processing power and the resulting density increases. Figure 2 compares the capability of a non-scaling vs. scalable backplane design.

A truly carrier class voice gateway will be able to support at least 3000 simultaneous calls today in order to offer the best economics for the service provider from a price/port perspective. It is only at this density that service providers are reaping the benefits of leveraging expensive resources, like ATM cell processing modules, across a greater number of revenue generating ports, drastically improving the cost per line.

Looking ahead, the backplane should be scalable to up to well over 8000 calls with STS-1 interfaces, allowing for over 48,000 calls per system today and 96,000 calls as processing speeds improve. This type of scalability is only possible with a custom designed architecture that is not reliant on the OEM partner for fulfillment of the product road map.

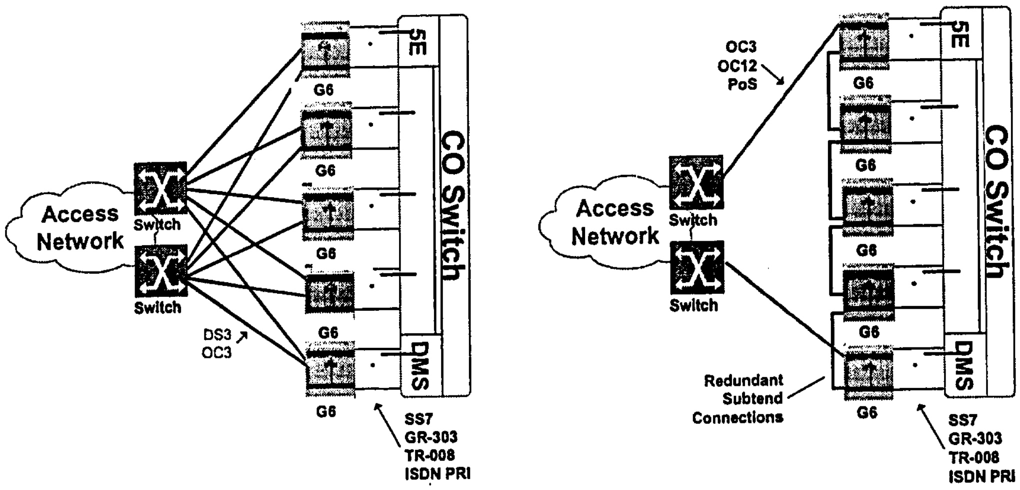
Figure 2 Scalable Backplane Architecture



Scalability is about more than just density. Contrary to an enterprise data environment, service providers will not tolerate fork-lift upgrades every 12 months, or even every five years. The ideal situation is to deploy the backplane technology only once – because in a telco environment, "once it goes in, it's not coming out." Service providers need to future proof their voice over broadband gateway investment to ensure that they will not be forced to make wholesale upgrades to their chosen gateway platform.

Finally, limited backplane throughput will not allow the system to take advantage of any type of subtending or resource sharing. These types of features dramatically improve the cost per line equation, and make management of multiple chassis simple, unleashing the potential of the system to scale beyond a single chassis. Figure 3 and Table 2 show the efficiencies a properly architected gateway can create through subtending and shared resources.

Figure 3 Non-capable Architecture vs. Subtending-Capable Architecture



Non-capable architecture

Subtended Architecture

Table 3 Non-capable Architecture vs. Subtending-Capable Architecture

Traditional, non-capable Architecture	Subtending Capable Architecture
Multiple Access Network Connections • High per-subscriber switch port and port provisioning cost **Independent Voice Gateways** • Multiple Configuration Files • Independent DSP resources, inaccessible to other voice gateways	**Fewer Access Network Connections** • Reduced per subscriber switch port and port provisioning cost **Single Voice Gateway System** • Unified Configuration, reduces back office costs • Shared DSP resources, maximizing utilization and minimizing per subscriber cost

Optimizing Power

Effective use of power resources is not just important in the central office, it is a determining factor in the deployment of new technology. A carrier grade gateway must utilize only the power required, based on a distributed architecture, eliminating unnecessary heat dissipation that would force the service provider to waste precious rack real-estate.

First generation voice gateway hardware designs are often limited by unnecessary circuitry. Designed in by the OEM partner, it is common to find useless electronics that are unnecessary for the application and take up more than the optimal power consumption. A carrier class voice over broadband gateway should require no more than 10 Amps, fully loaded.

Heat dissipation, a related and non-trivial issue, is highly limited in the central office. The lower the heat dissipation, the better the space utilization. Early voice over broadband gateway platforms dissipate so much heat, that only one, and in a few cases two chassis can be put in a rack, grossly wasting central office space. Broadband voice gateway chassis must conform to no higher than 425W of heat dissipation (1276 W per 7' rack), allowing for maximum utilization of rack space.

A final variable in how the voice over broadband system is powered is in the case of a power failure. In a power failure, a service provider must be able to guarantee the system is architected on a distributed power system, rather than a separate power supply. Distributed power systems, or "pay as you go" systems, are much more sophisticated than their dinosaur forefather, the bulk system. A loss of a power supply in a distributed system only brings down that module. A loss of a power supply in a bulk system, may bring down half of they system. Distributed power delivers high voltage but low current to the board modules, so heat is uniform in the chassis, unlike a bulk system, which is a hot spot in the chassis and does not allow for separate power on the card. A distributed system, does not provide power supply beyond what each card requires. Boards should take a direct dual 48V in/out, and generate their own power (ie 5, 3.3, 2.5V). .

Table 4 Service Provider Checklist – Scalability

Feature	Gateway Requirement
Simultaneous calls/chassis	minumum 4000, scalable to 8000
Backplane	5 Gbps or greater switch fabric 38 Gbps or greater backplane capacity Architected to Subtend
Service interfaces	DS3 and STS -1
Power	Distributed Architecture
	< 10 Amps fully loaded

Effective Utilization of Space

Space, power, and scalability are all closely aligned. While rarely a deal-breaker in the enterprise environment, these three factors are as critical as the enabling technology in the telco environment. The space in the central office is tied closely to the amount of heat dissipation allowed, requiring that any new hardware introduced into the central office be designed specifically to utilize minimum space by delivering the highest degree of density at the lowest power.

NEBS (Network Equipment Building Standards) defines a rigid and extensive set of performance, quality, environmental and safety requirements for equipment installed in carrier switching centers. A carrier class voice gateway must meet all NEBS requirements, not the least of which is depth requirements for the central office. So far ignored by early voice over broadband gateways, NEBS 63 compliance requires that the voice over broadband gateway be no more than 12" deep.

A carrier class gateway must meet this requirement, vastly improving space utilization within the central office, enabling a 42 U rack to support three 13 U chassis, with room to spare for fuse and alarm panels, etc.

Universal Deployability

Ultimately, a carrier grade product should address the undeniable phenomena that each service provider network is designed differently, and must be catered to with a gateway that is optimized to enable voice over broadband over the service provider's unique network. A gateway should not force service providers into a band-aid approach to voice over broadband deployment by dictating the access network or network architecture the gateway can be deployed in.

A carrier class voice over broadband gateway must enable the service provider to deploy the same system across broadband access networks and network topologies, supporting DSL, cable and wireless, and ATM, Frame Relay, IP and TDM. The gateway must seamlessly interwork between ATM and IP, not force a religious debate over which technology is superior.

Table 5 Service Provider Checklist – Universal Deployability

Feature	Gateway Requirement
Depth	12" - NEBS compliant Support 3 Chassis in 42U rack
Transport Integration	OC 3, DS-3
Protocol	ATM, IP and FR
Access Network	DSL, Cable, Wireless

Conclusion

Today the voice over broadband market is characterized by a series of first generation products that are unable to meet the stringent requirements of the telco environment, where reduced density means increased costs, poor utilization of power resources forces wasted space, and limited scalability in the backplane design limits reliability and shortens the lifetime of the investment.

Carrier grade. Carrier class. These terms are not flexible, there is no room for interpretation. While much of the recent innovation in the voice communications market has been a result of the rapid pace of development in data communications, we cannot undo years of end user expectations or telco experience by introducing new technology to enable voice services that does not meet and exceed service provider expectations.

The adoption of voice over broadband is reliant on the ability of voice gateway vendors to deliver custom designed hardware and software that takes the best from the data world, and delivers it on a fully redundant, scalable architecture that is optimized for delivering voice services in a telco environment, from its backplane design, to space and power utilization. Anything less will prevent this new and profoundly revolutionary technology from moving beyond limited deployment.

General Bandwidth's flagship product, the G6 VoBroadband™ gateway, is the only carrier class, custom architected gateway for voice over broadband applications. The G6 provides the optimum backplane design to future proof service provider investment, and a complete ground-up chassis design to offer service providers an architecture that can be mass deployed with confidence, today.

About General Bandwidth
General Bandwidth, Inc. is a telecommunications equipment manufacturer that enables toll quality voice services to residential and business customers across emerging broadband access networks such as digital subscriber line (DSL), cable and wireless. Founded in 1999, General Bandwidth is located at 12303 Technology Blvd., Austin, Texas 78727; phone: 512/681-5400; fax: 512/681-5401; toll free: 877/818-2160; www.generalbandwidth.com.

DAIN RAUSCHER WESSELS A DIVISION OF DAIN RAUSCHER INCORPORATED

EQUITY CAPITAL MARKETS ◆ INSTITUTIONAL RESEARCH

Bullish on Broadband

An Investor's Guide to Competitive Service Providers

Summary Themes

Compelling Broadband Opportunity: The growing demand for bandwidth and broadband services is an irreversible trend. We believe there will continue to be a solid and expanding opportunity to carry data and voice traffic and to own a customer base that can be leveraged to sell enhanced services on top of core bandwidth. As such, we are bullish on the growth and profit opportunities for competitive broadband providers. These companies are displacing incumbent market share in the $250-plus billion telecommunications services market and are well positioned to benefit from the ongoing growth in Internet, hosting, and content-related services.

Many Promising Enabling Technologies: Several technologies have emerged as viable broadband delivery options to businesses and residences—cable, digital subscriber line (DSL), broadband wireless, and fiber. Each has attracted pure-play services models that feature robust market demand, attractive unit economics, and high cash-flow visibility. As these technologies are in many respects complementary, and each has its relative strengths with respect to throughput, capital efficiency, and market reach, we expect many service providers to adopt a multi-technology approach to last-mile services in order to optimize network reach.

Numerous Viable Market-Entry Approaches: Using an abundance of market-entry options in major markets, including unbundled network element, lease, resale, and facilities-based approaches, many service providers are able to optimize such factors as capital deployment, network expense, speed to market, throughput, and customer reach. In our opinion, smart-build, hybrid-technology, and building-centric service providers show excellent promise as ways to play the demand for bandwidth and enhanced services.

Think Solutions, Not Bandwidth: In keeping with the technology-agnostic approach toward breaking the bandwidth bottleneck, we believe that sustainable value creation will result from delivering solutions, not just bandwidth. We believe that firms adding value to bandwidth by facilitating access to applications, content, and specialized services will experience the most sustainable growth.

Execution is Key: On balance, competitive providers find little difficulty in generating demand for their services, as they compete mostly against a slow-to-innovate incumbent. Thus, we believe success will hinge largely on competitors' abilities to accommodate rapid growth while offering superior service and reliability. We believe that this will come through strong execution on such items as provisioning, billing, service reliability, and customer support.

Market Catalysts: The competitive broadband segment has seen a steady wave of both smart-money investment and merger activity. We believe that the quest to incorporate additional technologies, offer enhanced services, and expand geographic and customer reach should continue to drive investment and M&A activity in the sector.

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June 8, 2000

DAIN RAUSCHER WESSELS
EQUITY CAPITAL MARKETS

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Public Companies Mentioned in this Report

Adelphia Business Solutions	ABIZ	FirstWorld Communications	FWIS	NorthEast Optic Network	NOPT
Advanced Radio Telecom	ARTT	Focal Communications	FCOM	Northpoint Communications	NPNT
Allegiance Telecommunications	ALGX	High Speed Access Corp.	HSAC	Nucentrix Broadband Networks	NCNX
Allied Riser Communications	ARCC	iBeam	IBEM	Pac-West Telecomm	PACW
Broadwing	BRW	ICG Communications	ICGX	RCN Corporation	RCNC
CAIS Internet	CAIS	Intermedia Communications	ICIX	Rhythms NetConnections	RTHM
CapRock Commuications	CPRK	Internet America	GEEK	SoftNet Systems	SOFN
Choice One	CWON	ITC^DeltaCom	ITCD	TALK.com	TALK
Convergent Communications	CONV	Log On America	LOAX	Teligent	TGNT
Covad Communications	COVD	McLeodUSA	MCLD	Telocity	TLCT
CTC Communications	CPTL	Metromedia Fiber Networks	MFNX	Time Warner Telecom	TWTC
Cypress Communications	CYCO	Mpower Communications	MPWR	Universal Access	UAXS
DSL.net	DSLN	Net2000 Communications	NTKK	US LEC Corp.	CLEC
eLEC Communications	ELEC	Netlojix	NETX	Williams Communications Group	WCG
Electric Lightwave	ELIX	Network Access Solutions	NASC	WinStar Communications	WCII
Excite@Home	ATHM	Network Plus Corp.	NPLS	Worldgate Communications	WGAT
FiberNet Telecom Group	FTGX	NEXTLINK Communications	NXLK	Z-Tel Technologies	ZTEL

Private Companies Mentioned in this Report

@Link Networks	CoreExpress	iSky	Picus Communications
2nd Century Communications	Darwin Networks	Jato Communications	PointOne Telecommunications
Actel Integrated Communications	Digital Access, Inc.	KMC Telecom	Prism Communication Services
AERIE Networks	Digital Broadband Communications	Knology	ReFlex Communications
America's Fiber Network	Edge Connections	LightNetworks	Road Runner
Arrival Communications	eLink Communications	LighTrade	Seren Innovations
ATG Group	Enron Broadband Services	LMA Systems	Skyway Partners
AuraServ Communications	Eschelon Telecom	Logix	SmartPipes
B2B Connect	Eureka Broadband	Maverix.net	SPEEDUS.COM
Birch Telecom	Everdream	Millennium Optical Networks	STSN
BlueStar Communications	Everest Broadband Networks	MobileStar Network	Switch & Data Facilities
Broadband Office	Extant	Netbeam, Inc.	TelePacific
Broadband Residential	EZ Net	NETtel Communications	Telseon
BroadbandNOW	Eziaz	Network Telephone	Tenant Connect
BroadlLink Communications	Fiberlink Communications Co.	New Edge Networks	TeraBeam Networks
Broadslate Networks, Inc.	Flashcom	NewSouth Communications	Touch America
BTI Telecom	Florida Digital Network	OneNetPlus.com	TriVergent Communications
Carolina Broadband	Fuzion Wireless Communications	OnePoint Communications	Urban Media
Cbeyond Communications	Gabriel Communications	OnSite Access	Vectris Communications
Centerbeam	Global Broadband	Onvoy	Vitts Networks
Cidera	HarvardNet	PaeTec	Wayport
Clearwire Technologies	HighSpeed.com	Pathnet	Western Integrated Networks
Cogent Communicationws	Integra Telecom	PF.Net	WideOpenWest
Colo.com	InterAccess	Phatpipe	Wired Business
ColoSolutions	Internet Connect	Phoenix Networks	Yipes Communications, Inc.
ConnectSouth	IP Communications	Phonoscope Communications	Zyan

Section 1:
Executive Summary and Investment Themes

Section 1: Executive Summary and Investment Themes

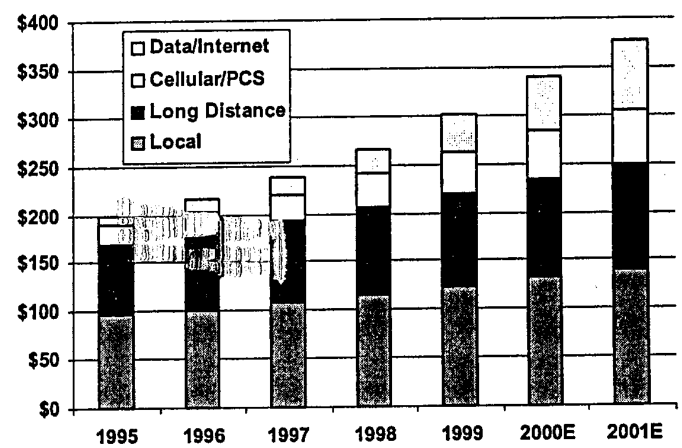
◆ The Market Opportunity

The market opportunity for competitive broadband providers can be summarized in the following points:

- There exists a large market for conventional telecommunications services.
- Internet and data-related opportunities should augment this market opportunity.
- Competitors currently occupy a small share of this market and are poised to grow their share significantly.
- Small and medium-sized businesses represent a particularly attractive sector for focus by competitive providers.

Large market exists for conventional telecommunications services. In raw numbers, the market for conventional voice and data communications is greater than $250 billion. This market is growing at slightly less than 10% per year, with the data portion growing at triple this rate, or approximately 30% per year.

Exhibit 1-1 ◆ United States Telecommunications Services Revenue



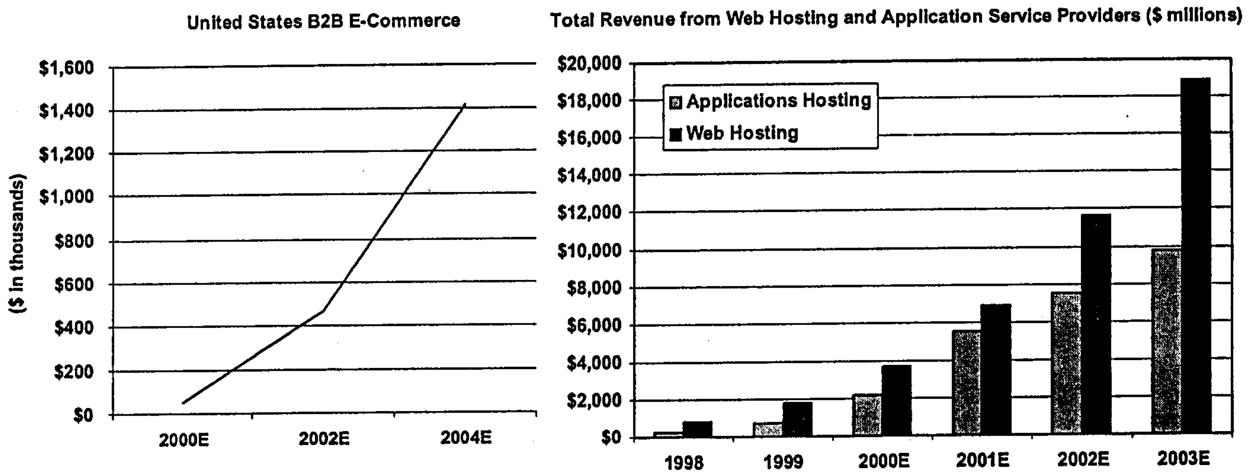
Source: FCC and Dain Rauscher Wessels estimates

Internet and data-related opportunities augment the current market. The Internet is a key driver of bandwidth demand among both businesses and consumers. New Web content and applications continue to proliferate at a rapid clip, increasing the utility and value of the Internet. On the consumer side, in addition to using e-mail to stay in touch with family and friends, individuals increasingly use the Web to conduct research, comparison shop, purchase products and services, and download content such as music and software.

Section 1: Executive Summary and Investment Themes

Among businesses, the Internet, high-speed access, hosting, and other enhanced services are likewise gaining in popularity. Forrester Research predicts that business-to-business (B2B) e-commerce will grow at more than 125% on a compounded annual basis, from approximately $54 billion this year to more than $1.4 trillion in 2004. Of note, no less than five separate industry vertical segments are expected to generate more than $100 billion in e-commerce revenues by 2004. Such widespread usage of data-intensive applications should further drive demand for bandwidth and for Internet outsourcing services such as Web applications hosting, which are expected to grow into grow into $19 billion and $10 billion markets, respectively, by 2003.

Exhibit 1-2 ◆ Business Internet Trends



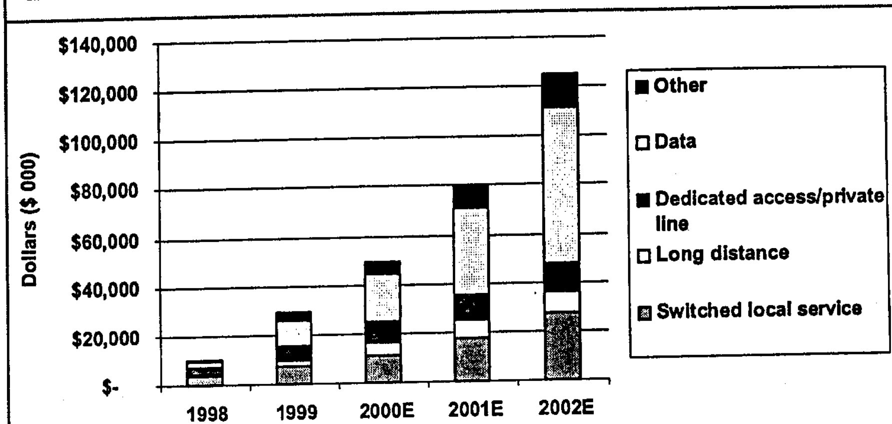
Source: DataQuest, Forrester Research, and International Data Corporation (IDC)

Competitors' share is poised to grow. Collectively, competitive providers served less than 5% of the telecommunications services market during 1999. Considering that they are generally able to offer more customized services than the slow-to-innovate, incumbent provider, competitors are finding few barriers to displacing the incumbent and gaining rapid market share. We believe that broadband access will fuel even greater competitive success in the coming years.

Section 1: Executive Summary and Investment Themes

All told, we expect revenue growth by competitive providers to approximate 85% CAGR over the next three years, with data accounting for roughly 125% annual growth. In dollar terms, this translates into $125 billion by 2002, accounting for only about 15% of the overall market at that time.

Exhibit 1-3 ◆ Revenue Growth Trends for Competitive Providers



Source: New Paradigm Resources Group

The sweet spot for competitors—small and medium-sized businesses. The market opportunity with the small and medium-sized business (SMB) segment is particularly attractive for competitive providers. In terms of overall size, there are an estimated 7.4 million businesses in this segment, according to IDC. Collectively, these businesses generate approximately $58 billion in telecommunications spending per year. Yet incumbent service providers have typically overlooked the SMB market, due in large part to greater operating efficiencies associated with serving enterprise customers. Removing the bandwidth bottleneck and offering enhanced services to SMBs at economical price points presents a unique and lucrative opportunity for competitive broadband providers, who are generally able to offer more targeted services than incumbent providers as well as provide more responsive customer care. As an extension to the core business market, we believe opportunities exist in non-traditional commercial settings, such as hotels, multi-dwelling units, and frequently trafficked public venues such as airports and convention centers.

◆ Multiple Broadband Technologies

Several technologies have emerged as viable broadband delivery options to businesses and residences—cable, digital subscriber line (DSL), broadband wireless, and fiber. Despite their relatively high capital intensity, each has attracted pure-play services models that feature robust market demand, attractive unit economics, and high cash-flow visibility.

Fiber: While not a new technology, the use of fiber optics in the local loop has gained considerable momentum in the last five years. Today, compared to enhancing the copper plant (DSL) or cable plant, or deploying broadband wireless equipment, fiber remains the most capital-intensive way of installing local broadband capacity. Nevertheless, the capacity of fiber far exceeds the capabilities of other transmission media. Local fiber deployment is largely restricted to business markets whose bandwidth requirements are large enough to justify the costs of deployment.

With respect to inter- and intra-city transport, several new carriers have emerged during the past five years that have pursued regional or national strategies. Often, these networks were constructed along railroad, energy pipeline, or utility rights of way, with active financial backing from entities in these other industries. Many long-haul carriers offer a mix of retail services, which are provided directly to end-users, and wholesale or carrier services, which are provided to other carriers.

Wireless: Broadband wireless technology can be deployed to offer any broadband service at throughputs ranging from DS-0 (64 kbps) to OC-3 (156 Mbps) or greater, depending on the amount of spectrum. The technology generally requires a clear line-of-sight between two transceivers and can provide voice, two-way data, or video services. At present, there are multiple spectrum bands commonly used for two-way broadband communications over the last mile.

- **Unlicensed Microwave Bands:** Unlicensed microwave spectrum has been used for several years for last-mile services. The unlicensed bands can support a variety of broadband applications and reach customers 15-20 miles or more from a given hub site, depending on the specific frequency and technology utilized.
- **2.5 GHz:** Services at this microwave frequency are commonly known as multi-channel multi-point distribution service, or MMDS. MMDS was originally licensed to provide video services but has now been authorized by the FCC for any two-way communications service. In the first half of 1999, Sprint and WorldCom each spent more than $1 billion in acquiring the MMDS licenses of several companies. Both carriers are planning multi-city rollouts of two-way broadband services to residential and small business customers during the coming quarters.
- **24 GHz/ 28 GHz/ 39 GHz Millimeter-Wave Bands:** Teligent, NEXTLINK Communications, Inc. (Nasdaq: NXLK; Not Rated), WinStar, and Advanced Radio Telecom are the major "anchor tenants" at these millimeter-wave frequencies, which are used to deliver shorter-range (2-3 miles) but higher-capacity (DS-3 to OC-3) services in metropolitan downtown areas and business parks.

Because they do not require extensive rights of way or access to incumbent-carrier central offices, broadband wireless operators can enter new markets relatively quickly. Further, independence from the incumbent provides wireless carriers with more control of their networks relative to other technologies.

Digital Subscriber Line (DSL): Digital subscriber line (DSL) technology is quickly emerging as an economic solution for high-speed Internet access and remote LAN connections. DSL technology simply upgrades the performance of existing copper lines by installing electronics at both ends of the connection. With DSL, the average analog connection of 56.6 kbps can be upgraded to 1.5 Mbps or higher.

In order to deploy their networks, DSL competitors must collocate their equipment in the incumbent carrier's facilities and lease the actual copper lines that connect to the end user. However, because DSL technology uses the existing copper plant, it is significantly less expensive to deploy on a broad scale than other approaches, such as new fiber or cable construction. In addition, since phone lines are nearly ubiquitous in the United States, DSL providers are not limited to one market segment (e.g., business or residential) as are some other access technology providers.

Section 1: Executive Summary and Investment Themes

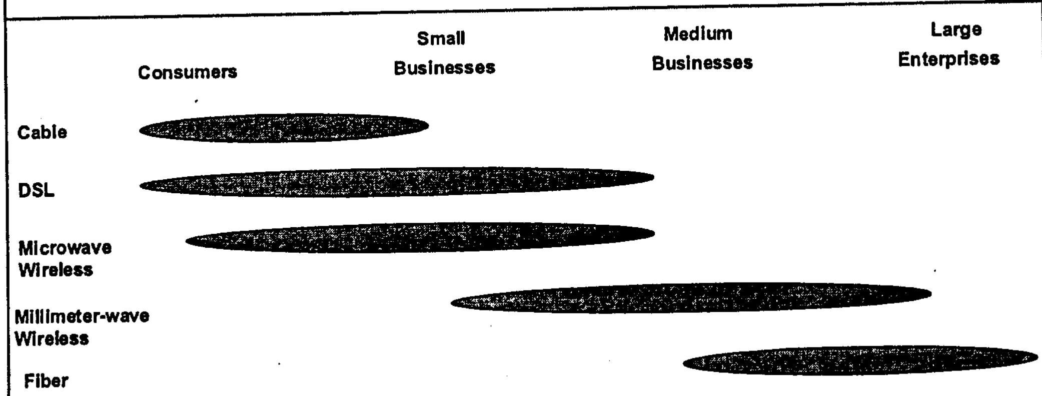
Cable (Hybrid Fiber/Coax): Aided by its conversion to digital technology as well as the growth of the Internet, the cable industry has emerged as a significant player in high-speed Internet services, especially for the residential segment. With nearly ubiquitous coverage, cable connections offer a powerful platform for providing residences and some businesses with broadband access. Leading operators in North America have formed ventures to address key technical, operating, content, and marketing challenges associated with the wide-scale deployment of cable Internet services. In addition, several cable overbuilders have emerged that are deploying state-of-the-art facilities in high-density residential markets and are offering bundled voice, video, and high-speed Internet services.

Cable Internet traffic utilizes the bandwidth of one or more analog television channels to provide downstream service from the Internet to the customer. This allows for a shared downstream bandwidth of between 27-39 Mbps, split between however many subscribers are served off a particular node. Upstream bandwidth usually exceeds analog speeds but is rarely greater than 500 kbps.

Overall Technology Perspective: Each technology has its strengths and weaknesses, and at these services' relatively early stage of commercialization, it is less a question of which technology will win than a question of how much share each will gain in the various market segments (enterprise vs. small business vs. residence, urban vs. suburban vs. exurban, national vs. regional vs. local). We believe that specialists in DSL, cable, wireless, and fiber can all gain significant share in their respective areas of strength and generate sustained value, as can companies that possess an array of technologies with which to address the local bottleneck.

Exhibit 1-4 provides a comparison of the various broadband technologies that have been commercially deployed as well as their target markets.

Exhibit 1-4 ◆ Broadband Technology Comparison



Source: Dain Rauscher Wessels

Given that these technologies are in many respects complementary, it is not surprising that many carriers are embarking on multiple facilities-based approaches and adopting a hybrid strategy. Two examples of this are NEXTLINK Communications and Adelphia Business Solutions, each of which holds LMDS spectrum in addition to fiber assets in its markets and is deploying DSL capabilities. In many other cases, carriers are choosing to partner with one another to expand their reach—examples include Intermedia Communications' partnership with Rhythms to provide DSL-based services, and Rhythms' strategic relationship with Excite@Home (Nasdaq: ATHM; Buy-Speculative; $20.50) to supplement that carrier's cable assets. We believe the future convergence of services will be fueled by the continued deployment of packet-switch architectures that are able to accommodate multiple types of traffic—this contrasts with many current deployments that utilize packet switches for data traffic and circuit switches for carrier-class voice traffic.

◆ Multiple Market-Entry Approaches

In keeping with our thesis that the strength of a services business does not rest with its technology alone, but rather with the quality of the solution that it is able to deliver to its end users, we believe it makes sense to consider additional categories of providers that are not as readily characterized by technology, namely smart-build providers and broadband facilitators.

Smart-build strategy accelerates time to market, reduces initial capex.

Smart-Build Strategy: In contrast to traditional network deployments, in which carriers install their own physical connections in each market, competitors employing the smart-build strategy often install their own switches in each market and then lease the local access from another provider. As with DSL-based approaches, the smart-build strategy leverages the regulatory framework of competitive access to incumbent unbundled network elements. Advantages of the smart-build approach include accelerated market entry and reduced initial capital expenditures in each market, allowing the competitor to focus its initial resources on sales, marketing, and operations support systems.

The clear tradeoff with this strategy is that the competitor is reliant upon the incumbent (or other carriers) to ensure that physical connections to the customer are maintained. Further, smart-build operators incur monthly costs for each line they provide, whereas facilities-based providers generally do not.

UNE-P—A Specialized Form of Smart-Build: As discussed in Section 3, UNE-P refers to the combination of several unbundled network elements to form a complete service platform. UNE-P competitors usually forego investment in local access and central office facilities, but their services go far beyond simple resale of the incumbent's in that they are customized offerings that often utilize their own (rather than the ILEC's) network intelligence and back-office capabilities. Further, many UNE-P carriers have their own facilities for offering Internet access, Web hosting, long distance, and other services. Because of the details surrounding its implementation, this strategy is best suited for the residential and small business markets, where UNE-P margins provide opportunity for a competitor to enter a market, gain critical mass, and eventually migrate to a more facilities-based local network if it so chooses.

Beyond Smart-Build—Smart-Aggregation: Given the abundance of available options for last-mile access, not to mention the myriad of choices for such services as transport, wide-area networking, and hosting, several carriers have emerged that seek to combine many of these services, often from disparate carriers, into a customized service suite. Depending on the mix of services purchased from competitive or incumbent providers, these "smart-aggregation" carriers can in principle forego CLEC status altogether in cases where they do not require direct interconnection with the incumbent network. Freed of having to construct their own end-to-end networks, and able to choose from among best of breed network service suppliers, smart aggregators are often able to focus on providing customer solutions, rather than just offer bandwidth and connectivity.

The customers of "smart aggregation" carriers benefit from these providers' experience in ordering service from their suppliers as well as bulk purchasing synergies that come from aggregating the demand of multiple end users. As with many other competitive providers, "smart aggregators" seek to deliver a branded, one-bill, bundled service suite to customers.

Building-Centric Strategies: Broadband services are becoming a key component of value for commercial and residential properties. As real estate stakeholders rush to meet the demands of commercial and residential tenants, carriers are stepping up to the plate with a new generation of convergence products, engineered to distribute voice, data, and enhanced services to multi-tenant properties. Recently, a new crop of building-focused broadband service provider has emerged to meet tenant demand for high-speed services.

The building-centric service provider (BSP) strategy is to offer high-speed Internet access (and, in some cases, voice services), data networking, Web hosting, and enhanced services such as e-commerce and network-delivered applications to multi-tenant office buildings, multi-dwelling units, hotels, and/or public venues such as airports and convention centers. This approach is similar to that taken by the smart-build and smart-aggregation providers; however, it differs in execution due to the BSPs' strategic relationships with property owners, and the "pre-provisioned" nature of service installation (no truck roll required).

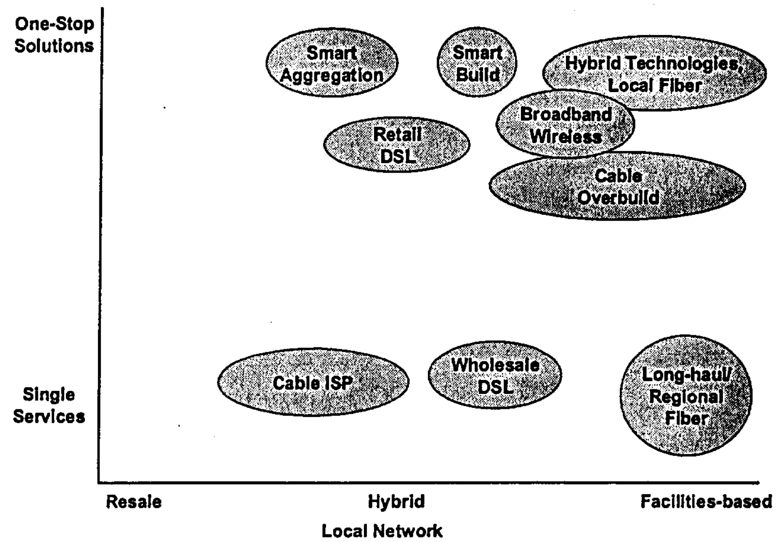
We summarize the various smart-build and related strategies along with other, technology-based market-entry approaches in the following exhibits.

Exhibit 1-5 ◆ Summary of Local Broadband Approaches

Approach	Strengths	Drawbacks/Limitations	Suitable Market Segments	Representative Public Players
Local Fiber	Highest bandwidth solution. Reliability. Flexibility (voice, video, data).	Expensive and labor-intensive deployment.	High-density business districts. Bandwidth-intensive enterprises.	ABIZ, ELIX, ESPI, ICIX, ICGX, T, TWTC, WCOM
Broadband Wireless	Quick deployment. Success-based deployment limits capital risk. Deployment is not dependent on establishing collocation with ILEC.	Requires clear line of site between transmitter and receiver. Susceptible to rain fade.	Businesses, Apartment buildings	ARTT, FON, NXLK, TGNT, WCII, WCOM
Cable	Cable plant passes nearly all homes. Deployment of two-way data services leverages ongoing investment in digital upgrades. No involvement with ILEC required.	Limited reach in businesses districts. Shared medium-requires special attention to data security as well as guaranteed minimum throughput. Provisioning currently requires one or more installers.	Residences, Multiple Dwelling Units.	ATHM, HSAC, RCNC, SOFN
DSL	Copper infrastructure reaches nearly all homes and businesses.	Distance limitations and certain technology barriers currently disqualify about 15-30% of local loops from DSL enhancement. Deployment of DSL service requires extensive involvement with the ILEC. Provisioning requires one or more installers.	Small Businesses, Residences	COVD, DSLN, NASC, NPNT, RTHM
Building-Centric	Focus on in-building infrastructure and customer base simplifies network deployment and provides marketing and operational efficiencies.	Reliance on third parties for access and transport may not enable full end-to-end network control.	Businesses in Multi-Tenant Buildings, Multiple Dwelling Units, Hotels, Airports, Convention Centers.	ARCC, CAIS, CYCO, SOFN
Hybrid Facilities-based	Multiple technologies expands network reach, increases addressable market, and reduces technology risk.	Requires multiple technology and network competencies.	Businesses	NXLK, ABIZ
Smart-Build, Smart-Aggregation	Utilizes multiple access technologies and leverages network assets of varied suppliers.	Reliance on third parties for access and transport may not enable full end-to-end network control.	Businesses or Residences	ALGX, CONV, CPTL, CWON, FCOM, MPWR, NTKK, PACW
UNE Platform	Potential for rapid market entry and network scalability.	Not yet implemented in all states.	Residences, Small Businesses	TALK, ZTEL

Source: Dain Rauscher Wessels

Exhibit 1-6 ◆ Relative Positioning of the Various Market-Entry Strategies



Source: Dain Rauscher Wessels

◆ Market Catalysts

The competitive broadband segment has seen a steady wave of both smart-money investment and merger activity. We believe that the quest to incorporate additional technologies, offer enhanced services, and expand geographic and customer reach should continue to drive investment and M&A activity in the competitive broadband segment and underscore the appeal of this sector.

Access to Capital

As mentioned earlier, the broadband services business is capital intensive. Although the typical business model has a high degree of cash flow visibility, significant funding is required in the early stages for network deployment and market expansion. Given that the average competitive provider is funded until sometime in first half 2001, many companies will need to access the capital markets during the next few quarters.

The following exhibits depict the major public equity and public debt financings in the competitive broadband services sector during the past 18 months.

Section 1: Executive Summary and Investment Themes

Exhibit 1-7 ◆ Major Broadband Services Public Equity Financings

Date	Company	Amount ($mil.)	Details
Apr-00	Network Plus	130.5	Follow-on offering
Apr-00	TriVergent Communications	172.5	IPO
Apr-00	Teligent	200.0	Follow-on offering
Mar-00	Teligent	191.0	Follow-on offering
Mar-00	FirstWorld Communications	170.0	IPO
Mar-00	Net2000 Communications	200.0	IPO
Feb-00	Choice One Communications	164.0	IPO
Feb-00	Mpower Communications	332.8	Follow-on offering
Feb-00	Cypress Communications	170.0	IPO
Feb-00	DSL.net	149.5	Follow-on offering
Jan-00	Allegiance Telecom	665.6	Follow-on offering
Nov-99	Adelphia Business Solutions	262.5	Follow-on offering
Nov-99	Covad Communications	503.0	Follow-on offering
Nov-99	Pac-West Telecom	126	IPO
Oct-99	Allied Riser Communications	283.5	IPO
Oct-99	DSL.net	62.0	IPO
Aug-99	Rhythms NetConnections	114.9	Follow-on offering
Aug-99	Splitrock Services	90.0	IPO
Jul-99	Mpower Communications	146.0	Follow-on offering
Jul-99	Voyager.net	135.0	IPO
Jul-99	Convergent Communications	126.0	IPO
Jun-99	Covad Communications	285.0	Follow-on offering
Jun-99	Network Access Solutions	90.0	IPO
May-99	RCN Corp.	312.0	Follow-on offering
May-99	NEXTLINK Communications	321.5	Follow-on offering
May-99	CAIS Internet	114.0	IPO
May-99	McLeodUSA	500.6	Follow-on offering
May-99	TimeWarner Telecom	178.0	IPO
May-99	NorthPoint Communications	360.0	IPO
Apr-99	Log On America	22.0	IPO
Apr-99	Allegiance Telecom	449.0	Follow-on offering
Apr-99	Rhythms NetConnections	226.4	IPO
Mar-99	CapRock Communications	88.0	Follow-on offering
Feb-99	Winstar Communications	175.4	Follow-on offering
Jan-99	Covad Communications	161.5	IPO

Source: Bloomberg and Dain Rauscher Wessels

Section 1: Executive Summary and Investment Themes

Exhibit 1-8 ◆ Major Broadband Services Public Debt Financings

Date	Company	Amount ($mil.)	Details
May-00	McLeodUSA	$1,300.0	Senior secured credit facility
May-00	Choice One Communications	350.0	Senior secured facility and senior unsecured bridge facility
Apr-00	Net2000 Communications	200.0	Senior secured facility
Apr-00	Time Warner Telecom	475.0	Senior secured facility
Apr-00	FiberNet	75.0	Senior secured facility
Apr-00	ITC Deltacom	160.0	Syndicated secured bank facility.
Apr-00	CTC Communications	225.0	Revolving credit facility and Term Loans.
Mar-00	Winstar Communications	1,880.0	Senior Notes and Euros.
Mar-00	Mpower Communications	250.0	13.0% Senior notes due April 2010.
Mar-00	Network Plus	225.0	Senior secured credit facility.
Mar-00	Winstar Communications	1,000.0	Senior secured credit facility
Feb-00	TriVergent Communications	120.0	Senior secured credit facility
Feb-00	Birch Telecom	125.0	Senior secured credit facility, revolver, and multi-draw loan
Feb-00	Rhythms NetConnections	300.0	14% senior notes due 2010
Feb-00	Allegiance Telecom	500.0	Senior secured credit facilities.
Feb-00	NEXTLINK Communications	1,000.0	Senior secured credit facility
Feb-00	NorthPoint Communications	400.0	12.875% senior notes due 2010
Jan-00	CTC Communications	225.0	Senior secured credit facility
Jan-00	Covad Communications	425.0	12% senior notes due 2010.
Jan-00	Intermedia Communications	400.0	$400 million bank facility
Jan-00	Focal Communications Corp.	275.0	11.875% senior notes due 2010.
Jan-00	Allegiance Telecom	500.0	Secured credit facility.
Dec-99	RCN Corporation	375.0	Senior notes due Dec 2009.
Dec-99	NorthPoint Communications	250.0	Senior secured credit facilities.
Nov-99	US LEC	150.0	Credit facility.
Nov-99	Metromedia Fiber Networks	1,000.0	$1.0 billion of senior notes.
Aug-99	ICG Communications	200.0	Loan facility repayable in 2005 and 2006.
Jun-99	RCN Corp.	1,000.0	$1 billion bank facility.
Jun-99	TALK.com	50.0	Senior secured credit facility.
May-99	NEXTLINK Communications	1,263.9	10.75% and 12.25% senior notes
Apr-99	ITC Deltacom	125.0	9.75% Senior notes due 2008.
Apr-99	Electric Lightwave	325.0	Senior unsecured notes due Apr 2004.
Apr-99	Rhythms NetConnections	325.0	Senior notes
Apr-99	e.spire Communications	200.0	Senior secured credit facility
Apr-99	Allegiance Telecom	225.0	Senior secured credit facility.
Mar-99	CapRock Communications	210.0	11.5% Senior notes due May 2009.
Feb-99	Covad Communications	215.0	12.5% Senior notes due February 2009.

Source: Bloomberg and Dain Rauscher Wessels

Section 1: Executive Summary and Investment Themes

When the public markets become tight, it becomes crucial for companies to be pre-funded and/or to be able to tap alternative sources of capital to fund their business plans. The past 18 months have seen a significant infusion of equity capital into the broadband services sector from private-equity and strategic investors. **Exhibit 1-9** highlights several of these investments.

Exhibit 1-9 ◆ Major Broadband Services Private Equity Investments

Date	Company	Investors	Amount ($mil.)
May-00	NEXTLINK Communications	Forstmann Little & Co.	$400.0
Apr-00	Convergent Communications	Texas Pacific Group Sandler Capital Management	175.0
Apr-00	US LEC	Bain Capital Thomas H. Lee Partners	200.0
Apr-00	ICG Communications	Liberty Media Group Hicks, Muse, Tate & Furst Gleacher Capital Partners Teligent	750.0
Apr-00	ITC DeltaCom	Morgan Stanley Banc of America Securities Goldman Sachs	160.0
Mar-00	CTC Communications	Bain Capital Thomas H. Lee Partners Credit Suisse First Boston	200.0
Mar-00	Talk.com	Soros Private Equity Partners	80.0
Feb-00	CAIS Internet	Kohlberg Kravis Roberts & Co.	73.9
Feb-00	e.spire Communications	Honeywell International Allied Capital Management Greenwich Street Capital Partners' Huff Alternative Income Fund	175.0
Feb-00	Intermedia Communications	Kohlberg Kravis & Roberts Microsoft & Compaq	200.0 100.0
Feb-00	Rhythms NetConnections	Hicks, Muse, Tate & Furst	250.0
Feb-00	WinStar Communications	Microsoft Credit Suisse First Boston Welsh, Carson, Anderson & Stowe Cascade Investments	900.0
Dec-99	NEXTLINK Communications	Forstmann Little & Co.	850.0
Nov-99	Teligent	Microsoft Hicks, Muse, Tate & Furst DB Capital Partners Olympus Partners	500.0
Oct-99	FiberNet Telecom	Signal Equity Partners	12.5
Oct-99	RCN Corp.	Vulcan Ventures	1,650.0
Sep-99	Allegiance Telecom	Vulcan Ventures	75.0

continued on following page

Source: Bloomberg, Company reports, and Dain Rauscher Wessels

Section 1: Executive Summary and Investment Themes

Exhibit 1-9 ◆ Major Broadband Services Private Equity Investments, cont.

Sep-99	Advanced Radio Telecom	Qwest Communications Oak Investment Partners Meritech Capital Partners Advent International Columbia Capital Accel Partners Brentwood Venture Capital Worldview Technology Partners Bessemer Venture Partners Adams Capital Management	251.0
Aug-99	McLeodUSA	Forstmann Little & Co.	1,000.0
Apr-99	Mpower Communications	Providence Equity Partners JK&B Capital Wind Point Partners	47.5
Mar-99	RCN Corp.	Hicks, Muse, Tate & Furst	250.0
Apr-98	CTC Communications	Spectrum Equity Investors	12.0

Source: Bloomberg, Company reports, and Dain Rauscher Wessels

Consolidation Themes

The rapid growth in broadband services is fostering the much-heralded industry objective of convergence. The move toward integrated services is not new, and in fact has steadily progressed since the passage of the 1996 Telecommunications Act. Competitive providers have accomplished this through M&A activity as well as through home-grown efforts. On the acquisition front, MFS, the largest CLEC at the time, started the ball rolling with its 1996 acquisition of UUNet, a major Internet service provider. This was followed by Teleport Communications Group's acquisition of Cerfnet, an Internet service provider, and AT&T's acquisition of Teleport.

Strategic investment and M&A activity in the broadband services sectors have been driven by a combination of factors, including:

- **Geographic Expansion:** Mergers among competitive local providers are often motivated by a desire to expand the addressable market by creating a larger service footprint.
- **Service Breadth:** As with the original MFS-UUNet deal, mergers between CLECs and ISPs create a powerful broadband capability, often combining multiple voice, data, and Internet-related services into a bundled offering. Carriers with the capability of providing multiple services in one connection have the potential to realize cost efficiencies, higher customer retention, and ultimately higher margins.
- **Technology Breadth:** As the various broadband technologies entail tradeoffs with respect to performance, cost, and market reach, carriers must increasingly rely on multiple technologies and market-entry approaches to reach their objectives.
- **Strategic Entry:** Deals between long-haul carriers and local competitors provide a broader service portfolio and facilitate the long-distance carriers' entry into the local market through the acquisition of local infrastructure assets.

The following exhibit highlights the major strategic investments and M&A deals that have taken place in the competitive broadband sector.

Section 1: Executive Summary and Investment Themes

Exhibit 1-10 ◆ Broadband Services: Major Strategic Investments and Merger and Acquisitions Activity

Date Announced	Date Completed	Acquirer	Target	Price ($mil.)		Rationale
May-00	May-00	DSL.net	VISI.com	$12.8		Expansion of Web hosting and collocation services.
May-00	Pending	Choice One	US Xchange	517.5		Footprint expansion.
Apr-00	Pending	Mpower Communications Corp.	Primary Network Holdings	145.0		Footprint expansion.
Jan-00	Apr-00	Z-Tel Technologies	Touch 1 Communications	37.6		Expansion of back-office capacity.
Jan-00	Apr-00	McLeod USA	Splitrock	2,100.0		Enhancement of Internet and data-related services.
Mar-00	Pending	TALK.com	Access One	200.0		Acceleration of local market entry.
Feb-00	Mar-00	SBC/Telmex	Network Access Solutions	150.0	*	Funds NAS' expansion to BLS and USW regions.
Mar-00	Completed	Covad Communication	Laserlink.net	409.0		Provision of wholesale Internet services.
Oct-99	Mar-00	Bell Atlantic Corp.	Metromedia Fiber Network	1,700.0	*	Access to regional and local fiber assets.
Jan-00	Pending	NEXTLINK	Concentric Networks	2,900.0		Acceleration of data, Internet, and hosting offerings.
Dec-99	May-00	RCN Corp.	21st Century Telecom	510.0		Footprint expansion to Midwest.
Jul-99	Nov-99	Broadwing (Cincinnati Bell)	IXC Communications	3,200.0		Combination of local and long-haul capabilities.
Sep-99	Sep-99	Qwest-led group	Advanced Radio Telecom	251.0	*	Access to broadband wireless assets.
Jun-99	Sep-99	Metromedia Fiber Network	AboveNet Communications	1,370.0		Expansion of Internet, collocation, and hosting offerings.
Jun-99	Aug-99	McLeodUSA	Access Communications	248.0		Footprint expansion.
Apr/Jul-99	Sep/Oct-99	MCI Worldcom	Four wireless cable operators **	1,000.0		Broadband wireless assets.
Apr/Jul-99	Sep/Oct-99	Sprint	Six wireless cable operators ***	1,200.0		Broadband wireless assets.
Jan-99	Mar-99	McLeodUSA	Ovation Communications	375.0		Footprint expansion
Oct-98	Mar-99	McLeodUSA	Dakota Telecom	76.6		Footprint expansion.
Jan-98	Jul-98	AT&T	Teleport	11,300.0		Acceleration of local market entry.
Jan-98	Jan-98	NEXTLINK	WNP Communications	695.0		Acquisition of LMDS broadband wireless assets.
Oct-97	Jan-98	MCI Worldcom	Brooks Fiber	2,900.0		Accelerates local market entry.
Oct-97	Jan-98	ICG Communications	NetCom	283.5		Accelerates Internet service offerings.
Jun-05	1998	RCN Corporation	Four regional ISPs ****	N/A		Accelerates Internet service offerings.
Jun-97	Jul-97	Intermedia	Digex	150.0		Accelerates Internet service offerings.
Aug-96	Dec-96	MCI Worldcom	MFS Communications	12,600.0		Enter Local Markets.

* Strategic investment

** In 1999, MCI Worldcom acquired CAI Wireless, Prime One, CS Wireless, and Wireless One for approximately $1.0 billion

*** In 1999, Sprint acquired People Choice TV, American Telecasting, Wireless Broadcasting, Nashville Cable Joint Venture, Videotron and Transworld Communications for approximately $1.2 billion.

**** In 1998, RCN Corporation acquired Erol's, UltraNet, JavaNet and Interport.

Source: Dain Rauscher Wessels

In each of these cases, the transactions provided carriers with the ability to offer not just competitive local services, but also a combination of data, long distance, hosting, collocation, and Internet access services. We believe that the quest to offer additional services, deliver them using the most cost-efficient technology, and expand market reach should continue to drive strategic investment and consolidation in the broadband sector.

Of note, pursuit of these goals is not limited to M&A activity. Many competitors have expanded their services by becoming their own ISPs, acquiring long-haul capacity from fiber providers, and private-labeling the hosting and collocation services of third parties.

◆ Solutions, Not Bandwidth

In keeping with our technology-agnostic thesis, we believe sustainable value creation will result from providing customer solutions, and not just by delivering high-speed connectivity over one transmission medium or the other. While we see a solid and growing opportunity to carry data and voice traffic over broadband networks, we think one of the keys to achieving high-margin growth and avoiding price competition will be to own a customer base that can be leveraged to sell enhanced services and solutions on top of core bandwidth.

Competitive providers that can take advantage of their broadband assets and freedom from legacy back-office systems to deliver differentiated services will be particularly well positioned. We believe that firms that add value to bandwidth by facilitating access to applications, content, and specialized services will experience the most sustainable growth. Key elements of this strategy include maintaining a robust operations support system (OSS); offering a compelling service bundle; and facilitating access to content, portals, and applications.

OSS as a Service Differentiator

Given the high demand for broadband services, the key challenge facing most carriers lies in keeping up with this demand rather than convincing customers of the need for a particular service. Among the most important facilitators of successful market entry, service execution, network scalability, and product differentiation is a smoothly functioning operations support system (OSS). The topic of OSS is worthy of special mention because it influences so many different success factors for a competitive carrier, such as product development and marketing; timely service installation, additions, or changes; efficient network operations; accurate billing; and responsive customer support. OSS thus plays a central role in tying together the network with many different business functions. The following items are the major elements of an OSS:

Order Management and Service Installation: This function includes the processing of service requests, coordinating the activities of field service technicians, and every step in between, which often entails services that are leased or resold from other carriers. Much of the complexity in these processes is not that each step is time consuming, but rather that so many different tasks must flow between departments (and often between companies), which introduces delay and the potential for miscommunication. Although still largely a manual process, many service providers are using automation to complete order entries, qualify service requests, and coordinate installation.

Network Operations and Maintenance: This function includes monitoring the performance of the overall network as well as customers' traffic to and from the network. Given the frequent interdependence of multiple carriers in delivering service to a single end user, a carrier's ability to monitor service performance and quickly diagnose problems becomes critical. A strong OSS can enable a service provider to efficiently diagnose network faults and reduce system downtime, which is an important consideration when carriers are held financially accountable for living up to quality of service agreements.

Billing and Customer Support: This function entails tracking customer usage data and correlating with the terms of specific service bundles to ensure an accurate and integrated bill. This process can be highly complex when customers take multiple services that are delivered across the networks of multiple suppliers. Beyond the goal of delivering accurate bills on a timely basis, many carriers use OSS billing tools to allow for Web-based bill presentment, which enables customers to sort through usage data and use the bill as more of a management tool, rather than simply a means of paying invoices.

Given the preponderance of commercially available OSS modules for individual functions, the integration of different OSS components is a significant challenge. However, carriers that are able to successfully integrate disparate OSS modules (or develop them on their own) have a significant competitive advantage.

With a well-coordinated OSS, service providers are better able to react to market changes by implementing pricing changes or designing new service bundles. An early illustration of this was MCI's Friends and Family pricing plan, which AT&T was not able to match because its OSS was not robust enough. As a more recent example of service differentiation through OSS, many carriers are finding that providing customers with the ability to monitor in detail their billing and usage patterns through the Web can be a powerful tool for sales and customer retention. For wholesale carriers, OSS can be a key success factor as customers increasingly look for the ability to link their provisioning, customer care, and network monitoring tools with their suppliers.

The Importance of Service Bundles

As consumers and businesses subscribe to more varied services, the value proposition between service providers and customers is expanded. Carriers that have the ability to offer a full array of service offerings are increasingly valued by customers, and it is becoming more common to find bundled service offerings aimed at SMBs that include a combination of local and long-distance service; high-speed Internet access; Web hosting; and remote LAN access. Depending on their network assets, firms can use various strategies to implement such offerings, from providing all services over their own facilities to partnering with an ISP, hosting firm, voice provider, or other party to fill out the service bundle. Regardless of the strategy, firms that are able to participate in multiple, broadband-related revenue streams are generally able to achieve the following advantages:

- **Margin Enhancement:** Carriers with the capability of providing multiple services in one connection have the potential to realize efficiencies in overhead (billing and other back-office operations). Further, providing a multi-service bundle to a new customer or cross-selling additional services to an existing customer usually reduces the incremental cost of selling a particular service.
- **Customer Retention:** Offering a customized service bundle to a business customer generally makes it less likely that the customer will switch for another service provider. Such targeted offerings are a key factor behind the low churn rates posted by industry-leading integrated carriers.
- **Competition Based on Value, Not Price:** While many firms that subscribe to broadband service bundles are certainly looking for the best value they can obtain, we believe that the primary reason they opt for broadband services is for increased productivity as opposed to cost savings.

Section 1: Executive Summary and Investment Themes

As we pointed out in the previous section, the design and delivery of a multi-service bundle is closely related to the capabilities of a carrier's OSS. Also, as indicated in M&A discussion, the enhancement of service bundles has proven to be a primary factor in many acquisitions and strategic investments.

Facilitating Access to Content, Portals, and Applications

Many broadband providers have begun trials aimed at bringing video, audio, and other content to their broadband customer bases. The idea is to utilize these operators' decentralized infrastructure to host content and caching servers at the edges of the Internet, closer to end users; and leverage their high-speed, last-mile connections to those end users. As the emerging business relationships sort themselves out among ISPs, hosting companies, content delivery firms, and broadband service providers, these firms can be each other's customers and partners. In some cases, content delivery firms may pay carriers to place servers in their networks, while in others, fees may not be exchanged because of the mutual benefit each derives in bringing about faster content delivery.

Beyond content delivery, some providers have begun exploring ways in which to facilitate access to business applications and value-added services. These moves can benefit carriers in multiple ways, for instance by contributing to a "stickier" customer relationship and potentially creating additional revenue streams. **Exhibit 1-11** depicts several recent initiatives that broadband competitors have undertaken in conjunction with content delivery, portal, and application partners.

Exhibit 1-11 ◆ Selected Partnerships Between Broadband Carriers and Content/Application/Portal Providers

Carrier	Content/Application Partners	Description
Covad	iBeam, Intervu, Real Networks	content delivery, streaming media
Rhythms	iBeam, Digital Island, Akamai	content delivery, streaming media
Northpoint	iBeam, Akamai, ClearBand, CoolCast, Digital Island	content delivery, streaming media
Mpower	Biztro, BizBuyer.com	payroll, procurement, quote requests, and other applications
Allegiance	Go2Net	small business resource portal, with future applications planned
DSL.net	ADP	payroll and human resource applications
WinStar	Office.com, Microsoft	office software applications, small business resource portal
McLeodUSA	Intel Internet Media Services	business-to-business streaming media presentations

Source: Company reports and Dain Rauscher Wessels

IT and Desktop Management Services: Over time, we believe that broadband service providers will be able to extend their relationships with customers to not only provide value-added content and applications, but also outsourced services such as desktop and local-area-network management. By installing specialized equipment, such as integrated access devices, at the customer site, and hooking up clients' servers, PCs, and routers, broadband competitors can gain a high degree of visibility to the business customer and position themselves as a full-service provider of outsourced IT services. We believe that small and medium-sized businesses are prime targets for such services because they often lack dedicated or trained resources to support a presence on the Web or install and maintain enterprise software. Outsourcing provides the added benefit of reducing customers' capital outlays and ongoing maintenance requirements and allowing them to focus on their core businesses.

Section 1: Executive Summary and Investment Themes

◆ Investment Summary

Compelling Broadband Opportunity

The growing demand for bandwidth and broadband services is an irreversible trend. We believe there will continue to be a solid and expanding opportunity to carry data and voice traffic and to own a customer base that can be leveraged to sell enhanced services on top of core bandwidth. As such, we are bullish on the growth and profit opportunities for competitive broadband providers. These companies are displacing incumbent market share in the $250-plus billion telecommunications services market and are well positioned to benefit from the ongoing growth in Internet, hosting, and content-related services.

Many Promising Enabling Technologies

Several technologies have emerged as viable broadband delivery options to businesses and residences—cable, digital subscriber line (DSL), broadband wireless, and fiber. Each has attracted pure-play services models that feature robust market demand, attractive unit economics, and high cash-flow visibility. As these technologies are in many respects complementary, and each has its relative strengths with respect to throughput, capital efficiency, and market reach, we expect many service providers to adopt a multi-technology approach to last-mile services in order to optimize network reach.

Numerous Viable Market-Entry Approaches

Using an abundance of market-entry options in major markets, including unbundled network element, lease, resale, and facilities-based approaches, many service providers are able to optimize such factors as capital deployment, network expense, speed to market, throughput, and customer reach. In our opinion, smart-build, hybrid-technology, and building-centric service providers show excellent promise as ways to play the demand for bandwidth and enhanced services.

Think Solutions, Not Bandwidth

In keeping with the technology-agnostic approach toward breaking the bandwidth bottleneck, we believe that sustainable value creation will result from delivering solutions, not just bandwidth. We believe that firms adding value to bandwidth by facilitating access to applications, content, and specialized services will experience the most sustainable growth.

Execution is Key

On balance, competitive providers find little difficulty in generating demand for their services, as they compete mostly against a slow-to-innovate incumbent. Thus, we believe success will hinge largely on competitors' abilities to accommodate rapid growth while offering superior service and reliability. This will come through strong execution on such items as provisioning, billing, service reliability, and customer support.

Market Catalysts

The competitive broadband segment has seen a steady wave of both smart-money investment and merger activity. We believe that the quest to incorporate additional technologies, offer enhanced services, and expand geographic and customer reach should continue to drive investment and M&A activity in the sector.

Section 1: Executive Summary and Investment Themes

◆ Solutions at Hand

We believe that central to breaking the bandwidth bottleneck and providing enhanced services are numerous access technologies and market-entry strategies, each of which has attracted significant investment. Since each of these approaches solves essentially the same problem and involves numerous pros and cons, we believe it is important for investors to take a comprehensive approach to broadband connectivity and enhanced services, and not devote exclusive focus to one or the other technology or strategy.

As such, we provide in this report a primer on the following topics for investors:

Regulatory Framework: Regulation and public policy shape competition and exert considerable influence on the capital markets.

Fiber-Based Competitors: While not a new technology, the use of fiber optics in the local loop has gained considerable momentum in recent years as a premium business solution in urban areas.

Broadband Wireless Competitors: Broadband technologies are able to offer high-throughput connections for both business and residential applications, depending on the spectrum band used.

Digital Subscriber Line (DSL) Providers: DSL technology has quickly emerged as an economic solution for high-speed Internet access and remote LAN connections. Because it leverages the existing copper plant that passes nearly all businesses and residences, DSL services can be tailored for multiple market segments.

Cable-based Broadband Providers: By upgrading (or overbuilding) existing networks, cable operators and ISPs have developed a powerful platform for delivering high-speed Internet services to the 90%-plus of households that are passed by the cable plant.

Building-Centric Service Providers: This category of provider targets the highly concentrated user base located within multi-tenant buildings. It includes the four vertical sub-sectors of multi-tenant commercial buildings; multi-dwelling residential units; hotels; and public access in airports, convention centers, and the like.

Smart-Build Providers: This category includes firms with **hybrid approaches** to technology and market entry that focus on solutions, as opposed to raw bandwidth.

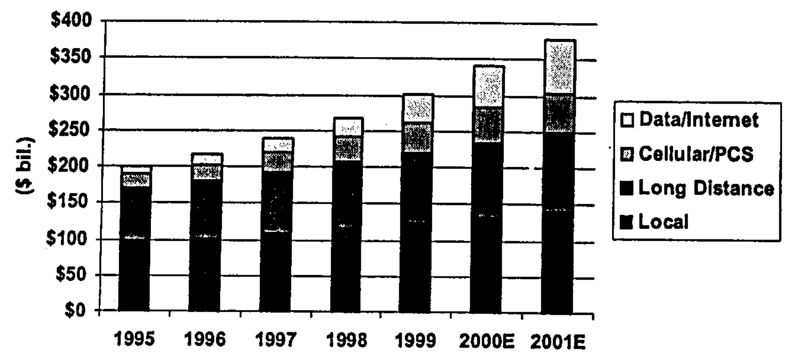
Section 2:
The Broadband Opportunity

Section 2: The Broadband Opportunity

Data is the fastest growing segment of the $250 billion telecom services sector.

According to the FCC and industry sources, U.S. telecommunications service revenue, including traditional voice and data services, exceeded $250 billion in 1999. During the latter half of the 1990s, the industry's 10% compound annual growth nearly doubled the rate of the first half of the decade. Data-related revenues are growing at approximately triple the rate of the overall industry, creating tremendous opportunities for competitors and incumbents alike. Although much of this improvement can be attributed to increased competition as well as the growth of the Internet, we expect broadband access and enhanced services to drive future growth at these levels or higher.

Exhibit 2-1 ◆ United States Telecom Service Revenues



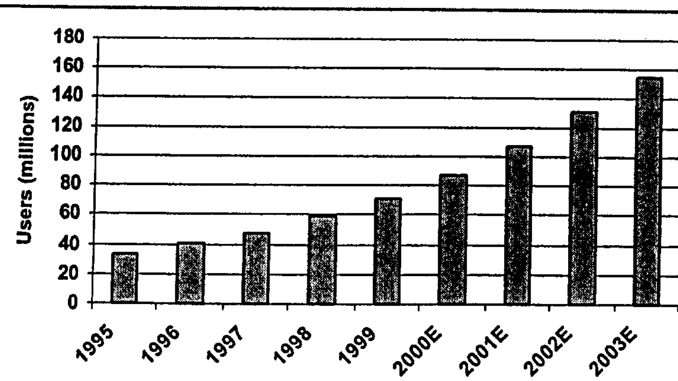
Source: FCC, and Dain Rauscher Wessels estimates

◆ Internet Growth Should Fuel Further Expansion

Affordable, available broadband access should accelerate Internet growth.

While it took television 13 years to reach the 50 million user level, it took only four for the Internet. This tremendous growth occurred while the industry has been largely reliant on slow-speed, analog lines. Today the Internet counts some 90 million residential users in the United States alone, and Internet services revenues have grown at more than 30% CAGR over the last five years with no slowdown in sight. Once access to the Web becomes as convenient as turning on a television—a real possibility if the services we examine in this report live up to their potential—we believe the opportunities will accelerate.

Exhibit 2-2 ◆ United States Residential Internet Growth



Source: Strategis Group

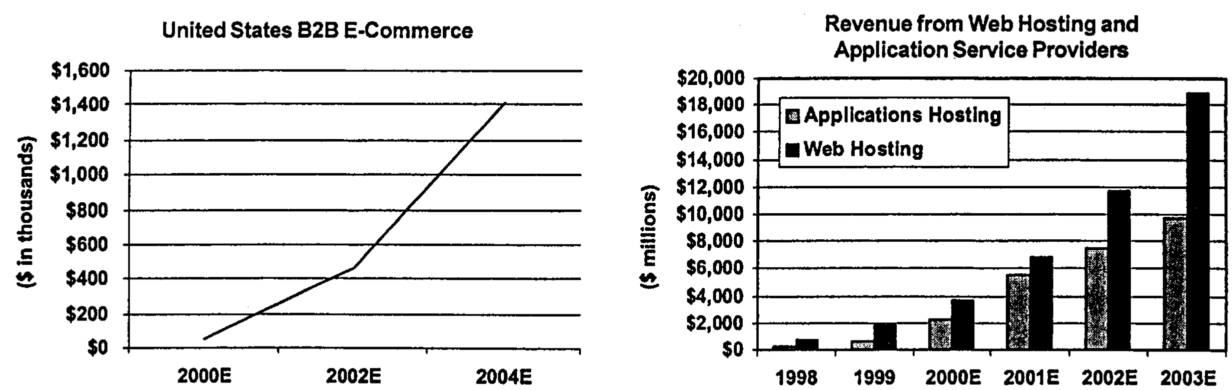
Section 2: The Broadband Opportunity

Broadband access drives further growth.

With a wider user community comes the opportunity to provide a broader set of products and services. Further, as bandwidth becomes more affordable and widely available, the types of applications provided over the Internet are expected to expand. According to a study by Mercer Management Consulting, people with high-speed access search for information and make purchases online at approximately double the rate of those with lower-speed analog modems. This is not a surprising conclusion given the meaningful reduction in transmission speeds achievable with broadband technology.

Yet, while much attention has focused on consumer online purchases, the potential of the Internet to affect the way businesses operate is far more significant as they utilize this technology for internal communications, coordination with customers and suppliers, business exchanges, inventory and supply-chain management, enterprise resource planning, and other applications. Forrester Research predicts that business-to-business e-commerce will grow at more than 125% on a compounded annual basis, from approximately $54 billion this year to more than $1.4 trillion in 2004. Of note, no less than five separate industry vertical segments are expected to generate more than $100 billion in e-commerce revenues by 2004. Such widespread usage of data-intensive applications should further drive demand for bandwidth and for Internet outsourcing services such as applications hosting, which is projected to grow into a $10 billion market by 2003, and Web hosting, which is projected to grow to nearly $20 billion during that time frame.

Exhibit 2-3 ◆ Business Internet Trends



Source: DataQuest and Forrester Research

According to IDC, small and medium-sized businesses are expected to account for more than 75% of the Internet hosting opportunity. This is a significant finding because SMBs are one of the primary markets targeted by competitive broadband providers (see following section entitled "Small and Medium-Sized Business Market"). As described in later sections, broadband carriers are rapidly adding hosting to their voice and data service bundles.

Section 2: The Broadband Opportunity

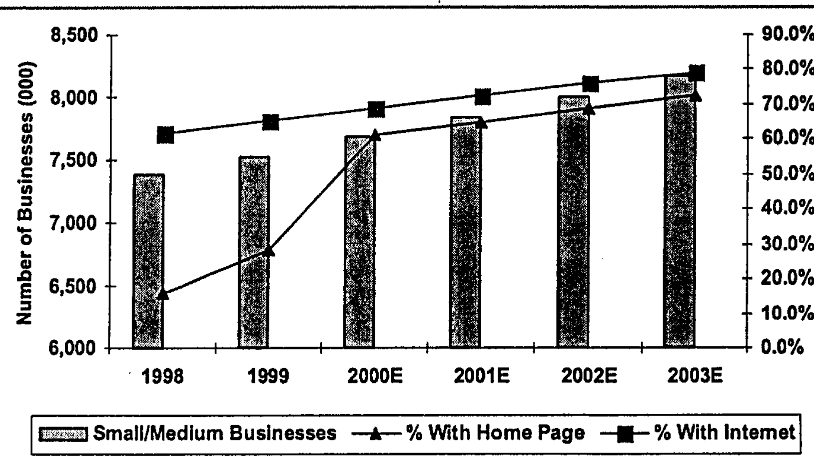
◆ Small and Medium-Sized Business Market

Even businesses are hamstrung by current local access speeds.

Broadband Internet access and wide-area data networks are neither widely used nor widely available today at affordable rates. Among businesses using the Internet, 57% have only simple dial up access over a modem that, at best, offers speeds of 56 kbps. Removing this bottleneck presents a tremendous opportunity for local carriers able to offer broadband connections at economical price points.

The market opportunity presented by the small and medium-sized business (SMB) segment is particularly attractive for competitive providers. In terms of overall size, there are an estimated 7.4 million businesses in the SMB segment, according to IDC. Collectively, these businesses generate approximately $58 billion in telecommunications spending per year. Yet incumbent service providers have typically overlooked the SMB market, due in large part to greater operating efficiencies associated with serving enterprise customers.

Exhibit 2-4 ◆ Small and Medium-Sized Business Internet Use



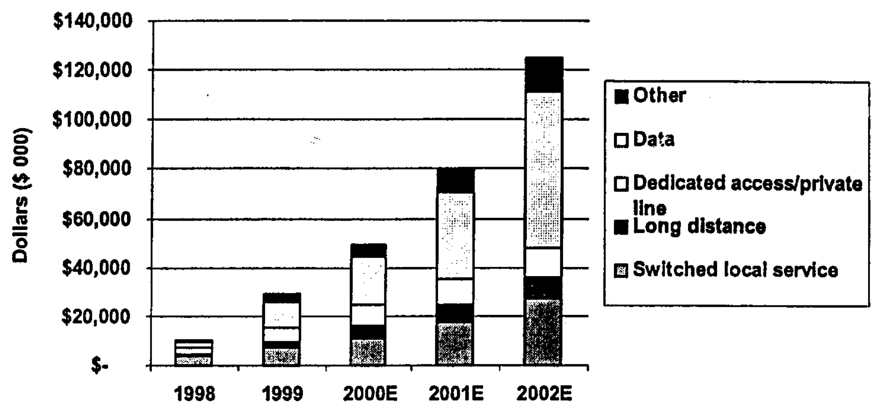
Source: International Data Corporation (IDC)

Considering that competitive providers collectively served well under 10% of the SMB market and that they are generally able to offer more customized services than the incumbent provider, it is no surprise that they continue to find few barriers to displacing the incumbent and gaining market share. We believe that broadband access, which fewer than 10% of SMBs use today but more than 40% are forecasted to use by 2003 (not to mention broadband-enhanced services such as hosting and network-delivered applications), will fuel even greater competitive success in the coming years. We think that incumbent efforts, meanwhile, will likely stay focused on the residential and large enterprise segments.

All told, we expect revenue growth by competitive providers to approximate 85% CAGR over the next three years, with data accounting for roughly 125% annual growth. In dollar terms, this translates to $125 billion by 2002, accounting for only about 15% of the overall market at that time.

Section 2: The Broadband Opportunity

Exhibit 2-5 ◆ Competitive Local Exchange Provider Revenue Growth Trends



Source: New Paradigm Resources Group

We expect the following factors to contribute to and supplement the core broadband business opportunity addressed in **Exhibit 2-5**:

- **Telecommuting:** The nation's 30-plus million teleworkers offer strong opportunities for broadband service providers because of the large number of users, their relative insensitivity to price compared to consumers, and the proximity of many residences to high-speed infrastructure (both the cable and copper plants pass most homes).
- **Small Branch Offices:** Today, 80% of the 1.5 million U.S. enterprise locations can be classified as small or branch offices with six to 75 employees (Gartner Group). Branch offices typically need connectivity to the corporate network and are willing to pay a premium for high-speed access.
- **Enhanced Services Bundle:** SMBs are looking not just for high-speed access or advanced voice services. Increasingly they want to be able to use the same tools available to large businesses and are seeking out enhanced services such as Web site development and hosting, outsourced enterprise applications, and network and IT support. To varying degrees, each of the business models profiled in this report targets the enhanced services bundle as a way to continue to generate sustainable, high-margin revenue growth.

Section 3:
Regulatory Framework for Competition

Section 3: Regulatory Framework for Competition

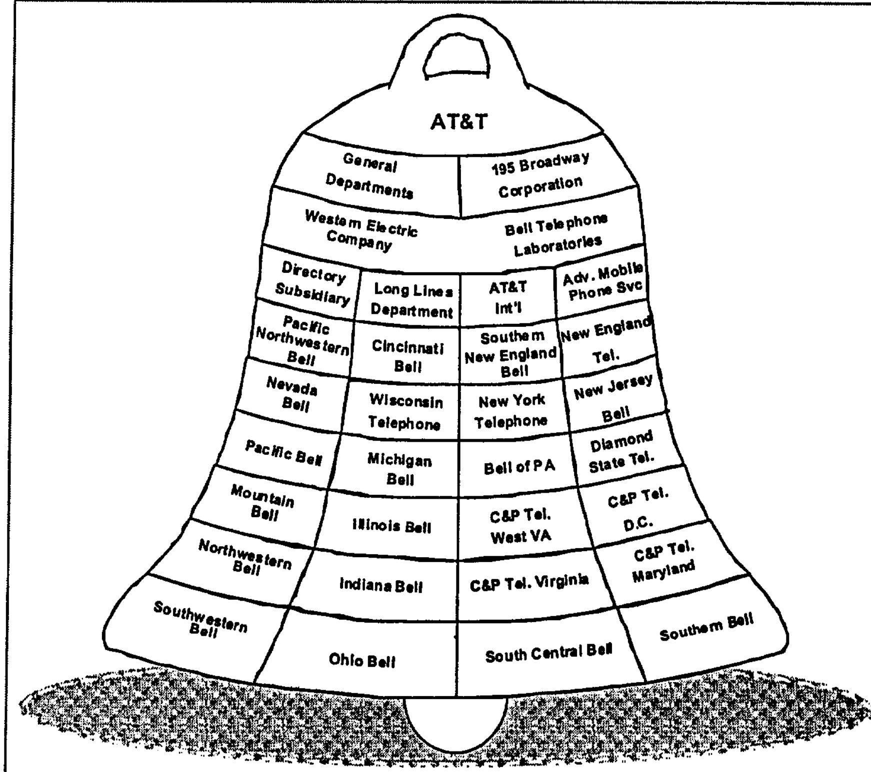
Simply put, regulation is the basis by which nearly all competitors offer broadband access. Over the past 16 years, several landmark laws and court rulings have spurred the development of competition, initially in the long-distance market and more recently in the local market. Although current trends point to a generally favorable environment for competitive providers, the regulatory climate is always fraught with some degree of contention and is therefore worthy of investor scrutiny. In this section, we describe the key role that regulation plays in the development of competitive broadband services.

◆ **The 1984 AT&T Divestiture**

Evolution of the Current Structure

The genesis of today's local market structure was created in the wake of a 1984 federal court ruling, the Modified Final Judgement (MFJ), which mandated the separation of AT&T's local operations from its long-distance operations. The local operations were divided into seven Regional Bell Operating Companies (RBOCs), each serving a separate, contiguous set of states, and each prohibited from providing long-distance services.

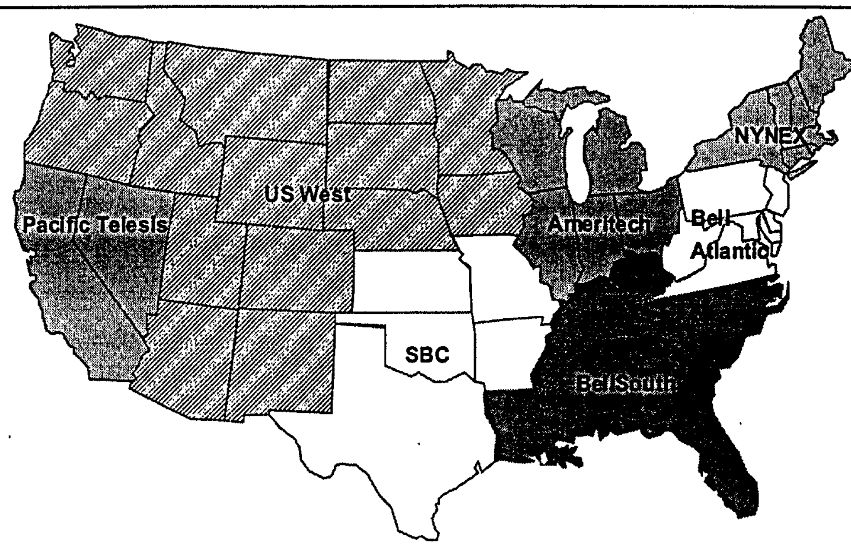
Exhibit 3-1 ◆ Pre-Divestiture: One Monopoly



Source: San Francisco Consulting Group

Section 3: Regulatory Framework for Competition

Exhibit 3-2 ◆ Post-Divestiture: Several Local Monopolies



Note: Mergers have since taken place between Bell Atlantic/NYNEX and SBC/Pacific Telesis/Ameritech.

Source: FCC

During the twelve years between the MFJ and the Telecommunications Act of 1996, the telecommunications industry changed significantly. In the long-distance market, MCI, Sprint, and a host of other long-distance carriers built networks and took approximately 50% of AT&T's market share. In the local market, several firms, known as competitive access providers (CAPs), attempted to replicate the success of the early long-distance competitors by building new local networks. While no federal laws authorized this local competition, these competitors took their case to the state governments. By the time the 1996 Telecommunications Act was enacted, some 30 states had already authorized some form of local competition.

Section 3: Regulatory Framework for Competition

◆ The Telecommunications Act of 1996

The Telecommunications Act of 1996 was the first major piece of telecommunications legislation to be enacted since 1934. While the Act resulted in numerous federal laws aimed at opening the local market to competition, implementation of specific rules were left to the FCC and state commissions. Nearly every order issued by the FCC after the passing of the Act was contested in the courts, leading in most cases to significant delay in the deployment of competitive services. Only during the last 15 months, which have seen Supreme Court rulings and a spate of final FCC decisions regarding various elements of the Act, has a relatively stable set of rules for local competition emerged. A brief review of the major points of the Act is outlined in **Exhibit 3-3.**

Exhibit 3-3 ◆ Basic Principles of the 1996 Telecommunications Act

Regulatory Principle	Description	Current Status
Interconnection	Enables competitors to connect their networks to that of the incumbent, thereby allowing multiple providers to access the public-switched telephone network.	The FCC sets standards for interconnection rates and conditions. Individual agreements are negotiated at the state level between carriers. Competitors may generally "opt in" to agreements previously established between any competitor and the incumbent.
Resale and unbundled network elements	Allows competitors to resell the incumbent's local service, or to purchase certain portions of the network for use in their own service offerings.	In September 1999, the FCC issued a final decision defining specific elements of the ILEC network that competitors are permitted to use.
Number portability	Enables customers who switch from one carrier to another to keep the same phone number.	The FCC has issued a set of standards and requirements. In some cases, number portability is not an option due to technical incompatibility among networks.
Universal service	Ensures that as competition develops, a basic, affordable level of communications services is maintained in rural and underserved areas. Calls for the broadening of definitions of universal service to include access to advanced services such as Internet access.	Intricate subsidies and access charges fund the costs associated with universal service. Universal service funds are administered by the National Exchange Carrier Association.
Access charge reform	Revisits the prices that long distance carriers must pay to connect their traffic with the local carriers. Access charges include implicit and explicit payments related to universal service.	Several carrier-sponsored proposals are being considered that would simplify the current structure.
RBOC entry into the long distance market	The oft-referred to "section 271" of the Telecommunications Act establishes a 14-point checklist that RBOCs must fulfill prior to being allowed to offer long distance service in a given state.	In December 1999, Bell Atlantic won approval from New York state and the federal government to provide long distance service in New York, thereby becoming the first RBOC to win 271 approval. Upcoming decisions are expected in Texas (SBC Communications) as well as Pennsylvania, New Jersey, and Massachusetts (all Bell Atlantic).

Source: FCC and Dain Rauscher Wessels

Section 3: Regulatory Framework for Competition

◆ Regulation of Local Competition

Near the top of most competitors' regulatory agendas are items concerning access to incumbent local loops, central office collocation space, and operations support systems; followed closely by clear terms with respect to inter-carrier access payments. Following are more detailed descriptions of some of the key regulatory issues affecting local competition.

Interconnection is the basis by which all competitors enter the local market.

Interconnection: Interconnection is critical to competition since without it, users of competitive networks would not be able to communicate with users of the incumbent or other networks. Under the 1996 act, LECs are required to offer interconnection at "just and reasonable rates" and on the same terms they offer to any other carrier. In 1999, the Supreme Court and the FCC firmly established the ability of competitors to opt in to specific provisions of other carriers' agreements when creating their own interconnections with incumbents. Despite requirements that ILECs offer interconnections to competitors, the process of establishing one can take several months and typically requires the involvement of state authorities and even arbitration courts. Thus, interconnection plays a key role in determining time to market for a new business or an existing business looking to expand its footprint.

OSS coordination is important for delivering reliable service.

Operations Support Systems (OSS): Speedy and reliable access to incumbents' OSS is crucial to the ability of companies to pass data to one another concerning network operations; billing; service installations, changes, and additions; and other aspects of daily operations. OSS coordination plays a particularly important role when customers switch their service providers, since unless customers can change local carriers as quickly and efficiently as they can switch long-distance carriers today, meaningful local competition is significantly hampered. Inadequate OSS result in lost orders, delayed service, inaccurate billing, dropped telephone directory listings, and even loss of telephone service. OSS are also important in facilitating *number portability*, which allows a customer to switch local carriers while keeping the same phone number.

Inter-Carrier Payments: Inter-carrier access charges are the payments made from one carrier to another for connecting traffic between networks. Inter-carrier compensation schemes, which are occasionally tweaked by lawmakers and regulators, contribute to investor uncertainty because changes in them are heavily influenced by political factors, which places a layer of uncertainty on the affected revenue streams. Nevertheless, such mechanisms are deeply ingrained in the current system, so it pays for investors to examine carrier exposure to these charges as well as which charges are subject to change. The following two types of charges are particularly significant:

1. **Long-Distance Access Charges:** Long-distance providers generally pay two types of fees to local carriers for originating and terminating traffic—the PICC (pre-subscribed inter-exchange carrier charge), which is a flat-rate access charge; and the SLC (subscriber line charge), usually a per-minute fee. Under a recently adopted proposal, these two charges are slated to merge into a single line item on subscribers' phone bills.
2. **Reciprocal Compensation:** Under the Telecom Act, interconnecting LECs must establish reciprocal compensation with one another. This means incumbents must pay competitors when calls are terminated on the competitors' networks, just as competitors must pay ILECs when calls terminate on the incumbent network. In 1998, this issue gained visibility with investors, as many firms reported revenue shortfalls related to their difficulty in receiving ILEC reciprocal compensation payments. At issue were ILEC claims that calls placed to Internet service providers (which frequently use modem banks and phone

numbers belonging to competitive providers) are not local in nature and therefore should not be subject to local interconnection fees. Since that time, the issue has subsided somewhat in importance, as many of the ILEC disputes have been resolved. Further, many newer interconnection agreements directly address reciprocal compensation and thereby remove many of the uncertainties surrounding this revenue stream.

Collocation: Collocation, which refers to the physical point at which one network is connected with another, is an important factor in the business plans of competitors that wish to deploy their own facilities. When space is available in the ILEC central office (CO), incumbents are required to allow competitors to place their equipment in the CO in exchange for a cost-based rent. Traditionally, competitors have been required to pay for the construction of a caged area within the CO for their equipment. However, a 1999 FCC ruling that ILECs cannot require caged collocation has made it easier for competitors to gain access to COs by lowering the capital requirements of collocation. Although an appeals court recently questioned certain parts of the FCC collocation ruling, the Commission will continue to enforce its regulations during this reexamination and appears to be moving toward retaining the existing rules.

Resale: Under the Act, incumbent carriers must establish wholesale rates for their services to promote resale by competitors. Resale allows competitors to provide services to customers in areas not directly served by owned facilities and is important because carriers often use it as a transitional strategy to gain customers prior to investing in network infrastructure. Some carriers choose to use resale as a stand-alone strategy, devoting their focus exclusively to marketing and customer service. The range for wholesale discounts set by the FCC is typically 17%-25% of the retail rate.

Access to unbundled network elements gives competitors an option for entering the market with less up-front capital.

Unbundled Network Elements: Access to unbundled network elements (UNEs) allows competitors to use individual portions of the ILEC network in exchange for a fee roughly equal to the cost of operating those elements. Incumbents are required to provide access to a minimum set of network elements on a non-discriminatory basis at just and reasonable rates. The major categories of network elements include loops, network interface devices, local switching facilities, transport between central offices, signaling and call-related databases, and operations support systems. Access to UNEs is the basis by which both "smart build" competitors and DSL-based CLECs provide services. In addition to using individual UNEs, competitors may also use UNE combinations to deploy networks. Two UNE combinations that are growing in popularity and whose use was approved in a November 1999 FCC ruling are the *UNE-P* (UNE platform) and the *EEL* (enhanced extended link).

UNE-P: The UNE-P principle allows carriers to lease multiple UNEs and combine them into a full-service platform. This eliminates the need to deploy either a local switch or last-mile infrastructure and significantly reduces the need for competitors to establish local collocations.

EEL: EELs are combinations of last-mile loops and leased transport between the terminating ILEC central office and the nearest point of presence of the competitive provider. By using EELs, competitive providers can limit their use of collocation by relying on ILEC facilities to port traffic to a central node.

Section 3: Regulatory Framework for Competition

◆ RBOC Entry into the Long-Distance Market

To provide long-distance services to customers within their operating regions, RBOCs are required to meet the following 14-point checklist, contained in the oft-cited section 271 of the Telecommunications Act. Although the Act allows RBOCs to immediately provide interLATA (long distance) services in regions outside of their operating territory, but with limited market presence out of region, few RBOCs have been active on this front.

1. Provide interconnection at a reasonable rate.
2. Provide access to unbundled network elements at reasonable rates.
3. Provide access to poles, ducts, and rights of way.
4. Provide unbundled transmission from RBOC central office to customer premise.
5. Provide local transport from trunk site of switches.
6. Provide unbundled local switching.
7. Provide access to emergency, directory, and other operator services.
8. Offer directory listings to competitors' customers.
9. Offer access to telephone numbers.
10. Provide access to databases for call routing.
11. Offer number portability.
12. Offer local dialing parity.
13. Offer mutual compensation arrangements.
14. Offer service for resale.

In December 1999, Bell Atlantic in New York became the first RBOC to win state and federal approval for in-region long-distance services. Upcoming decisions regarding RBOC long-distance approval are expected in Texas (SBC Communications) as well as Pennsylvania, New Jersey, and Massachusetts (all Bell Atlantic). In each case, many issues remain to be clarified, particularly relating to in-region competition and competitive access to operations support systems. The lifting of RBOC long-distance restrictions will continue on a state-by-state basis, as the state utility commissions must approve all applications.

RBOC entry to the long-distance market could change the face of competition.

RBOC entry into the long-distance market could gradually have a significant effect on competition, since these carriers will be able to offer an expanded service bundle to their customers. Since approximately 60% of all toll calls originate and terminate in any given RBOC region, RBOCs would have an attractive opportunity to provide full, end-to-end services to many of their customers. This factor, coupled with the synergies that come with larger service footprints, is a primary motivation in the numerous RBOC consolidations over the last few years.

In-Region Competition and OSS Compatibility: Many RBOC long-distance applications to date have been dismissed because state regulators have not found enough quantifiable evidence of local competition. In addition, OSS compatibility has come to be considered an important part in determining whether an RBOC can accommodate competition and be allowed to offer in-region long-distance services. The issues of OSS and electronic bonding to the ILEC have recently come to the fore in light of difficulties that competitors encountered in early 2000 in New York with Bell Atlantic's back-office systems for switching customers over to their networks. These difficulties were traced to software glitches and faulty procedures for order acknowledgement, confirmation, and completion. This led to punitive payments to the U.S. Treasury as well as service credits to competitors. We believe the New York experience will serve as somewhat of a measuring stick on such items as OSS compatibility, number portability, and e-bonding scalability in the long-distance approval process in other states. In the US WEST region, 13 states have begun a joint effort to establish compatibility of that carrier's OSS with competitors' networks, with similar efforts under way in other states within the regions of BellSouth and SBC as well as other states in Bell Atlantic's territory.

◆ RBOC Data Relief

Under the Telecom Act, RBOCs are prohibited from providing advanced services, including long-distance data offerings, without first opening up their local networks to competitors. Several RBOC-support "data relief" bills have been proposed in Congress that seek to weaken RBOC interconnection and unbundling requirements. Supporters of these bills argue that current policies are impeding the widespread availability of advanced services, and that granting data relief would accelerate the rollout of broadband services to the disenfranchised and give consumers and businesses a wider choice of services. Although such legislation has gained significant visibility, we believe chances for success are limited. However, as political winds are unpredictable, any attempts to revise interconnection and unbundling rules are worth monitoring because of their potentially significant impact on the ability of competitors to deploy their networks.

◆ Technology-Specific Regulation

In the sections that follow, we present brief summaries of regulatory issues that affect specific classes of broadband competitors. These are generally organized by technology. More comprehensive discussions of these regulatory issues are contained in the individual chapters pertaining to the various types of competitors.

Broadband Wireless Regulation: Any carrier with the appropriate wireless license may offer a full range of voice and data communications and is entitled to the same rights as other carriers under the 1996 Telecommunications Act, including interconnection, collocation, number portability, and access to unbundled network elements. To the extent that broadband wireless operators use their own wireless links to connect customers, they are unaffected by issues related to gaining access to incumbent loops and circuits. Further, broadband wireless carriers offering exclusively data/Internet services over their own facilities are entirely free from the need to establish interconnection agreements with the incumbent carrier.

Wireless providers' rooftop rights remain a point of controversy.

However, to deploy their equipment, broadband wireless operators must also obtain access to rights-of-way, buildings, and, in most cases, rooftops. Building owners are not subject to any law requiring them to allow wireless providers access to their rooftops. This has led to several disputes between commercial building owners and wireless operators concerning licensing, antenna siting, and rights of way. Although the FCC has ruled in favor of non-discriminatory access to buildings in order to promote competition, commercial building owners have asserted their rights as private property owners and resisted legal attempts to force access to their facilities. The FCC is currently conducting proceedings on competitive access to buildings. In practice, wireless operators usually gain rooftop and building access through direct, private negotiations with building owners.

Each of the four licensed wireless bands that has seen commercial deployment (MMDS, 24 GHz, LMDS, and 39 GHz) is subject to its own licensing rules. In general, each of the four bands has been authorized for provision of any voice, data, or video service. The amount and characteristics of spectrum licensed for each band vary significantly. These distinctions are discussed at length in Section 6. The primary unlicensed bands used to provide broadband services are the 2.4 GHz band and the 5 GHz band. These frequencies are unregulated and accessible by any carrier wishing to provide service. Commercial operators at these frequencies are not entitled to exclusive use, and the FCC has provided little formal guidance concerning the resolution of interference among multiple carriers.

Cable-ISP exclusivity will likely remain through each operator's franchise expiration.

Cable and Cable Internet Regulation: Cable television systems are subject to state and local regulation through the franchising process. Local officials usually provide significant input on decisions concerning franchise selection, service rates, billing practices, and community-related programming and services. Cable television systems generally are operated pursuant to non-exclusive franchises that are granted for fixed terms and terminable if the operator fails to comply with agreed-upon provisions. Franchises usually call for the payment of fees, often based on a percentage (typically under 5%) of the operator's revenues, to the granting authority.

Although the role of regulation in the cable industry has traditionally focused on deregulating basic service rates, the key regulatory issues pertaining to cable-based Internet service center around "open access" and the nature of today's often exclusive arrangements between cable ISPs and cable operators. At issue is the ability of competitive Internet service providers to offer services using the same cable plant as the primary cable ISP. Some local authorities have attempted to condition the transfer of cable franchises on the provision of third-party access. This issue has been examined by the FCC, which has discouraged mandatory cable unbundling due to the legal and technical complexities of implementation and the associated delays in fostering its desired "inter-modal" (e.g., cable vs. DSL vs. MMDS) competition in the local residential market. Thus, as a practical matter, we believe the exclusive arrangements that currently exist between cable ISPs and cable operators will likely continue through each operator's franchise expiration.

Digital Subscriber Line Regulation: Regulations that affect DSL fall into two categories, depending on whether the incumbent or a competitor provides the service.

1. **Incumbent DSL Regulation:** The FCC considers DSL services provided by the ILEC to be special access services. As such, they receive less restrictive regulatory oversight than other ILEC services. In particular, ILECs are not required to file DSL tariffs at the state level, which provides them far greater pricing flexibility than for voice services, where the requirement to obtain approval to alter tariffs has hampered their ability to respond to competitive pressures.

2. **Competitive DSL Regulation:** The principal regulatory concerns of competitive DSL providers pertain to access to unbundled network elements, access to collocation space, and two related areas—line sharing and remote port access. Each of these areas corresponds to language in the 1996 Telecommunications Act that requires each telecommunications carrier to interconnect with other carriers and prohibits the installation of network features that would inhibit interconnection.

FCC rulings in 1999 significantly clarified definitions and terms for UNEs.

Unbundled Network Elements: Access to unbundled network elements allows DSL providers to purchase local loops at rates roughly equal to the cost of operating those loops. Following the FCC's UNE decision in September 1999, much of the uncertainty surrounding the terms and conditions for ILEC delivery of DSL-capable copper loops was removed.

The most contentious UNE-related issue pertaining to DSL are regulations concerning access to remote ports. This refers to nodes in the ILEC network that terminate approximately 30% of copper loops. At issue is competitive access to these ports, which is necessary in order for non-ILECs to provide meaningful broadband throughput to subscribers that are served off these ports. Remote ports are typically space-constrained and lack the types of environmental, network, and security controls found in ILEC central offices.

Collocation: Traditionally, CLECs have been required to construct a caged area within the CO for their equipment. DSL-based CLECs, especially those serving less dense markets and whose equipment requires relatively little space, have benefited from the FCC's requirement that ILECs offer "cageless" collocation, which reduces collocation expenses.

Line Sharing: In November 1999, the FCC mandated "line sharing" as a separate UNE. Under this ruling, competitors may provide high-speed data services over existing ILEC-operated voice lines by using only the high-frequency portion of those lines. This approach is compatible with asymmetric variants of DSL that provider faster downstream than upstream speeds. Line sharing, once implemented in scale, is expected to benefit competitive DSL providers, particularly those serving residential markets, through significant reductions in monthly loop costs as well as provisioning time and expense. ILECs must make line sharing widely available in their regions by June 2000.

Section 4:
Fiber-Based Competitors

Section 4: Fiber-Based Competitors

Fiber optic capacity was first deployed for long distance voice traffic in the late 1970s. These initial deployments carried DS-3 traffic (45 Mbps) for about 15-20 miles before requiring repeaters to regenerate the signal. Fiber was typically restricted to long-haul applications and backhaul transport until local builds emerged in the mid 1980s. Today, fiber-optic links can support throughputs as high as 1 terabit/sec for distances spanning several thousand miles without the need for electrical signal regeneration.

◆ Brief History—CAPs, the Early Fiber Competitors

CAPs opened the door for pre-Telecom Act competition.

Until 1988, only one carrier, the incumbent, provided local service to virtually every home and business in a given market. The first wave of local competition began with the emergence of Teleport Communications Group (TCG), a start-up that built fiber-optic lines to connect large businesses in Manhattan directly to their long distance providers, thereby bypassing the incumbent local loop. Additional firms with similar strategies soon emerged, such as Metropolitan Fiber Systems (MFS), ICG Communications, Inc. (Nasdaq: ICGX; Not Rated), and Intermedia Communications Inc. (Nasdaq: ICIX; Not Rated). These firms collectively became known as competitive access providers (CAPs). The CAPs fought many permitting and other regulatory battles that have since paved the way for today's competitive environment. Included among their early achievements were state approvals to provide competitive services, municipal approvals to dig up city streets for fiber deployment, and the acceptance of their services among end users and long-distance carriers.

The CAPs had to earn every mile of fiber they deployed. By 1995, CAPs had expended some $3.8 billion in capital and laid 15,000 miles of fiber connecting 14,000 buildings—all of this prior to the enactment of the 1996 Telecommunications Act. While this effort yielded the new competitors a relatively small portion of the overall business market, the incumbents' response to their activities was dramatic. ILEC deployment of fiber nearly doubled and the effective price of access, both in terms of T1 lease rates and the access fees paid by long-distance carriers to terminate local traffic, was halved.

◆ From CAPs to Fiber-Based CLECs

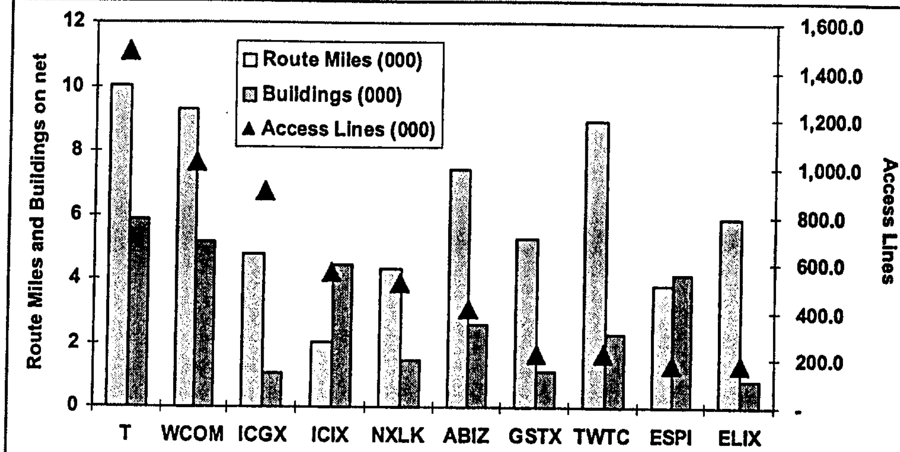
Evolution toward broader services.

As competition increased, CAPs shifted their business focus from providing special access to offering a broader set of services. In so doing, many CAPs installed extensive switching facilities, acquired Internet service providers (ISPs), and merged with long distance carriers. Early examples of telecom-Internet convergence include the following mergers: MFS-UUNet, followed by WorldCom-MFS; AT&T-Teleport; Intermedia-Digex; and ICG-Netcom. As their service offerings changed, these competitors became known as CLECs (competitive local exchange carriers) to reflect their local switching capacity, while carriers with long-haul and Internet assets were also labeled ICP (integrated communications provider).

Competitive providers, now operating in more than 200 local markets, collectively earned local revenues of more than $13 billion in 1999. Over the last ten years, competitors laid some 190,000 route-miles of fiber and installed more than 2,400 voice and data switches. As with the early CAPs, each mile deployed was hard won due to the time-consuming and expensive process of obtaining permits, digging up city streets, and connecting buildings. As a rough guide, it costs approximately $100,000-$250,000 per mile to deploy fiber in a metropolitan area.

Section 4: Fiber-Based Competitors

Exhibit 4-1 ◆ Leading Fiber-Based CLEC Operations



Notes: AT&T data includes the former Teleport Communications Group. Worldcom data includes the former MFS Communications and Brooks Fiber Properties. Definition of access line differs by company.

Source: Company data and Dain Rauscher Wessels

While fiber constitutes these carriers' core access medium, many of these companies also used leased facilities, broadband wireless, and other approaches to reach customers.

◆ Regional and Long-Haul Fiber Competitors

Until the mid-1990s, long-distance traffic was carried almost exclusively over the networks of the leading national carriers, AT&T, MCI WorldCom, and Sprint. During the last five years, however, several new long-haul carriers have deployed their own regional or national fiber networks. Often, these networks were constructed along railroad, energy pipeline, or utility rights of way, with active financial backing from entities in these other industries. The emergence of these new carriers was supported by a rapidly growing long-haul services market fueled by increased long distance voice usage, and, more significantly, dramatic growth in Internet traffic.

Among the competitors that have built new long-haul networks (or acquired companies that built new networks) on a national scale are Williams Communications, Qwest, Level 3, Enron Broadband Services, Global Crossing, and Broadwing. Regional fiber competitors include Metromedia Fiber Network, NorthEast Optic Network, CapRock Communications, Touch America, and a host of energy and utility-affiliated companies that are likewise constructing their own networks. Two recent entrants to the long-haul market are Aerie Networks, which is affiliated with several energy pipeline companies, and America's Fiber Network, a consortium of six electric utilities and communications firms.

Many long-haul carriers offer a mix of retail services, which are provided directly to end-users, and wholesale or carrier services, which are provided to other carriers. Although most long-haul carriers provide services over their own facilities, many use the facilities of their competitors for redundancy purposes or to provide interim service in markets that are under construction. In addition, many of these firms lease portions of their fiber networks to other carriers. Pricing is generally based on the amount of capacity provided, minutes of use, distance of communication, or other factors.

Section 4: Fiber-Based Competitors

Exhibit 4-2 ◆ Regional and Long-Haul Fiber Construction

Carrier	Domestic route miles constructed	Footprint
Williams Communications Group	26,000	National inter-city network connecting 79 metro areas; 33,000 route miles planned connecting 125 metro areas.
Global Crossing	19,000	National inter-city network connecting 27 metro areas; 20,000 route miles planned.
Qwest	18,815	Long-haul and major metro area network connecting 136 metro areas.
Broadwing	16,888	National inter-city network connecting 30 major metro areas.
Enron Broadband Services	14,400	National inter-city network connecting 52 major metro areas.
TouchAmerica	12,000	Inter-city network connecting 30+ cities in West and Midwest. Nationwide expansion planned.
Level 3 Communications	11,800	Long-haul and major metro area network connecting 30 metro areas; 16,000 route miles planned connecting 150 metro areas.
CapRock Communications	3,700	Six-state build in Southwest connecting 50+ cities; 7,100 route miles planned.
Metromedia Fiber Network	1,455	Metro area networks in 17 cities; 3,500 route miles planned.
NorthEast Optic Network	1,000	Eleven-state build on East-coast between Maine and Virginia connecting 31 cities.

Source: Company reports and Dain Rauscher Wessels

Apart from pure fiber-based delivery services, many long-haul and regional carriers leverage their networks to offer additional services on a wholesale or retail basis, such as collocation, server hosting, and local access services.

Lit Vs. Dark Fiber

When choosing to add fiber assets to its network, a carrier that does not wish to construct its own facilities can typically acquire lit or dark fiber.

Lit Fiber: Lit fiber refers to leased capacity (usually measured in bandwidth units such as T1, DS-3, OC-3, and so forth) between two points for a fixed period, typically one to five years. This is a relatively short-term, speed-to-market option for a carrier that does not wish to enter into the complexities of customizing its own long-haul capacity. Lit fiber is often offered in conjunction with service-level guarantees that provide for credits in the case of unforeseen outages.

Lit fiber leases are usually priced according to bandwidth and distance, but fixed-charge and hybrid arrangements are not unusual. The long-distance portion of a T1 circuit can run on the order of $1.50-$2.50 per DS0-mile per month, depending on volume commitments and contract length. Coast-to-coast T1 capacity usually costs between $4,500-$6,000 per month, whereas a regional segment, such as Cleveland-Pittsburgh or Philadelphia-New York would be priced on the order of $700 per month, not including local access charges.

Section 4: Fiber-Based Competitors

Dark Fiber: The alternative to obtaining lit fiber it is to lease or buy dark fiber, which appears as an asset on the acquiring carrier's balance sheet and refers to one or more strands of fiber, or even wavelengths on a particular strand. It is then the carriers' responsibility to convert this asset into bandwidth by placing optical electronics (optronics) at the end points of the fiber. Dark fiber is usually obtained by entering into a long-term (typically 10-20 years) indefeasible right of use, or IRU. This arrangement provides the purchaser with absolute control over that strand, including the ability to deploy its own optronic equipment and scale to meet its capacity needs within the time frame of the IRU.

Dark fiber IRUs are typically priced per fiber strand by distance. Monthly rates of $1,200-$1,800 per fiber mile are typical of today's pricing, with significant variations depending on carrier, market (urban vs. rural), and contract duration. Often, a carrier deploying new conduit (which can accommodate 72, 96, or even more strands) will lease out several strands to other carriers to help pay for the fiber build.

Exhibit 4-3 ◆ Recent Fiber Transactions

Date	Buyer	Seller	Price (mil.)	Comment
May-00	SBC Communications	Metromedia Fiber Network	$432.0	20-year agreement
May-00	Touch America	Williams Communications Group	$80.0	
May-00	Teligent Inc.	Level 3 Communications	NA	
May-00	ITC DeltaCom, Inc.	Metromedia Fiber Network	NA	20-year agreement
Apr-00	Viatel	Level 3 Communications	$150.0	
Mar-00	Shaw Communications	360 Networks	$170.0	
Mar-00	Lightship Telecom	NorthEast Optic Network	NA	5-year agreement
Mar-00	Yipes	Metromedia Fiber Network	$125.0	20-year agreement
Mar-00	KPNQwest	360 Networks	NA	
Mar-00	PSINET	360 Networks	$120.0	10-year agreement
Feb-00	Cogent Communications	Metromedia Fiber Network	$100.0	20-year agreement
Jan-00	Logix Communications Corp.	CapRock Communications	NA	20-year agreement
Jan-00	360 Networks	GST Telecommunications	$30.0	
Jan-00	Adelphia Business Solutions	Allegheny Communications Connect	NA	
Jan-00	Adelphia Business Solutions	Level 3 Communications	NA	
Jan-00	Adelphia Business Solutions	Williams Communications Group	$23.0	25-year agreement
Jan-00	Adelphia Business Solutions	Metromedia Fiber Network	NA	
Jan-00	RNK Telecom	NorthEast Optic Network	$2.9	5-year agreement
Jan-00	Allegiance Telecom, Inc.	Metromedia Fiber Network	$130.0	20-year agreement
Jan-00	Allegiance Telecom, Inc.	Level 3 Communications	$20.0	
Dec-99	FiberNet Telecom Group	Metromedia Fiber Network	5 million shares	20-year agreement
Dec-99	Winstar Communications	Williams Communications Group	$640.0	7-year agreement
Dec-99	360 Networks	Williams Communications Group	$26.5	20-year agreement
Dec-99	RCN Communications	NorthEast Optic Network	NA	20-year agreement
Oct-99	Bell Atlantic	Metromedia Fiber Network	$550.0	5-year agreement
Oct-99	Adelphia Business Solutions	CapRock Communications	$7.2	30-year agreement
Oct-99	Storage Networks, Inc.	Metromedia Fiber Network	$96.0	20-year agreement
Oct-99	Winstar Communications	Metromedia Fiber Network	$300.0	20-year agreement
Aug-99	ZipLink	NorthEast Optic Network	NA	
Jul-99	MCI Worldcom	NorthEast Optic Network	NA	3-year agreement
Jul-99	Winstar Communications	Metromedia Fiber Network	$40.0	25-year agreement
Jul-99	Williams Communications Group	CapRock Communications	$18.0	
Jul-99	Frontier Communications	NorthEast Optic Network	NA	3-year agreement
Jul-99	Vitts Networks	NorthEast Optic Network	$3.0	5-year agreement
Jun-99	Williams Communications Group	GST Telecommunications	$62.5	
Jun-99	Focal Communications	Metromedia Fiber Network	$57.0	20-year agreement

Source: Company reports and Dain Rauscher Wessels

Section 4: Fiber-Based Competitors

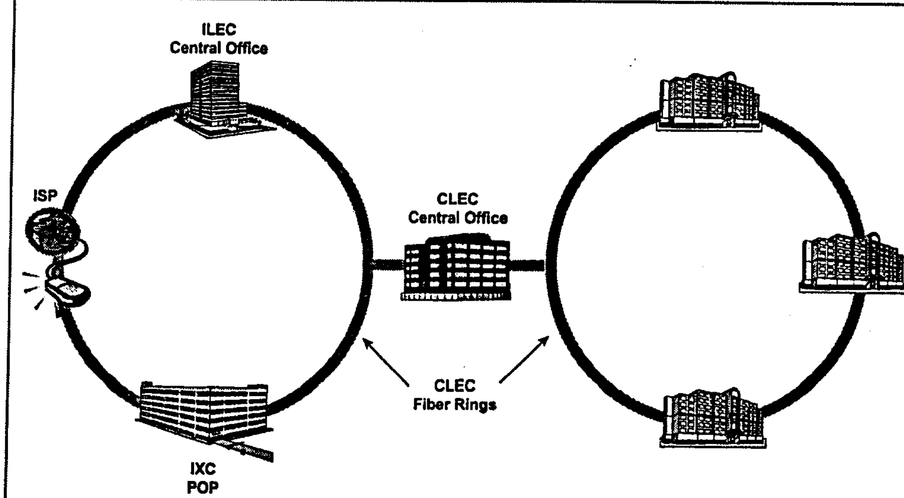
Role of the Utilities: As mentioned earlier, much of today's fiber capacity was constructed along the rights of way and with the financial support of gas and power utilities, many of which have used the free cash flow coming from their core operations to fund fiber deployment. With significant rights of way as well as existing customer relationships, many of these firms have found the addition of telecom capacity to be so attractive that they formed their own telecommunications subsidiaries. In many cases, telecom competitors continue to partner with utilities to jointly build fiber networks, and in other cases, the utilities have set up their own commercial telecom subsidiaries. Notable examples include Enron Broadband Services, Williams Communications, and Montana Power's Touch America subsidiary. In addition, two recent consortia have been formed to construct national or multi-regional fiber networks—America's Fiber Network, supported by a group of electric utilities, and Aerie Communications, supported by group of pipeline companies.

◆ Local Fiber Networks

Fiber is expensive to deploy but offers unparalleled performance.

Because of their high deployment costs, early local fiber networks targeted office buildings in dense downtown business districts. Today, compared to enhancing the copper plant (DSL) or cable plant, or deploying broadband wireless equipment, fiber remains the most capital-intensive way of installing local broadband capacity. Nevertheless, the capacity of fiber far exceeds the capabilities of other transmission media. New fiber deployment is still largely restricted to business markets whose bandwidth requirements are large enough to justify the cost.

Exhibit 4-4 ◆ Local Fiber Network Configuration



Source: Dain Rauscher Wessels

Central Office: Just like the ILECs, fiber-based competitors maintain a central office in each of their operational markets. The central office typically contains Internet and data routing equipment and, for voice services, a circuit switch to route traffic and provide enhanced calling features such as three-way calling, call waiting, and caller ID. The switching equipment also monitors the network and collects customer data. Newer types of telecommunications switches supply both local and long-distance traffic routing functions. As a rough guide, class 5 local switches cost $1-$3 million, depending on capacity and features.

Section 4: Fiber-Based Competitors

Fiber Ring: The fiber ring is deployed throughout central business districts and from downtown locations to outlying office parks. Fiber networks are expensive to deploy not because fiber itself is expensive, but because city streets literally have to be dug up to lay the fiber. The networks are typically deployed using the synchronous optical network (SONET) standard, which facilitates interoperability with other networks and supports advanced data services such as frame relay and ATM. Fiber deployment costs can amount to $20 million for a medium-sized metropolitan area. Often, local fiber is purchased from wholesale providers.

Building Access: While CLEC fiber rings pass hundreds of thousands of buildings, actual connections to buildings are not made until paying customers are contracted. This last connection may only be several yards or a few blocks, but again the construction process itself is expensive. In addition, each building must be equipped with the appropriate electronics to turn the optical signals back into electrical signals for connection to customers' voice and data networks.

ILEC Interconnection: Competitors must establish interconnections with the incumbent network in order for their customers to communicate with ILEC customers, and vice versa. Despite interconnection provisions in the 1996 Telecommunications Act and efforts by state commissions to make the process more efficient, it can take several months for a competitor to establish interconnections in new markets.

Long Distance Access: Similar to the early CAP days, numerous CLEC customers purchase special access lines that connect them directly to long distance providers, thereby bypassing the incumbent network altogether. Similarly, long distance companies often purchase lines from CLECs to gain access to their large customers.

Dedicated Internet Access: With direct physical connections to customers, fiber-based CLECs have a significant competitive advantage in the provision of high-speed data links to Internet service providers. Fiber provides as much capacity as any ISP or Internet customer can handle.

◆ Metropolitan Optical Access Carriers

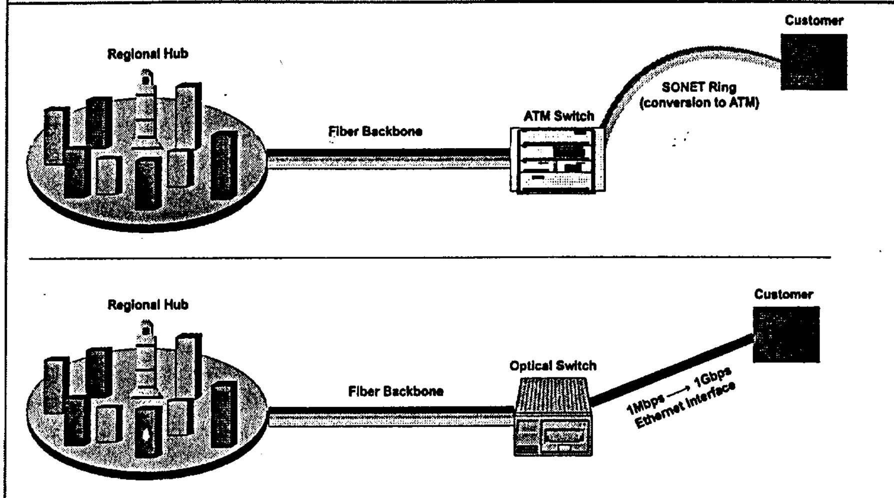
Historically, local area network (LAN) speeds inside a corporate office have exceeded metropolitan and wide-area networking speeds. However, the extensive build-out of long-haul fiber networks has significantly increased the bandwidth available for wide-area networks. Despite this abundance of long-haul bandwidth, carriers have been limited in their ability to provision incremental capacity or manage bandwidth in the metropolitan area. In recent months, many technology developers have promoted products intended to increase both raw bandwidth in the metropolitan network as well as improve the ability of carriers to manage bandwidth.

Optical access carriers offer the potential for more affordable and dynamically configurable bandwidth.

Leveraging some technological advances in optical switching and transport, a new category of carrier, the *metro optical access carrier* (OAC) has emerged that seeks address the metropolitan bottleneck by providing high-speed optical connectivity not just over long-haul and regional links, but all the way to the local area network and even desktop. This model, also referred to as "IP over glass," seeks to take advantage of fiber optic links that already extend to enterprises, multi-tenant office buildings, and (with the recent fiber deployments by building-centric service providers) many small businesses, while eliminating the conversion of traffic from the optical layer to the electrical layer. By using Ethernet as the transport protocol all the way to the end user, instead of using ATM switches in the metro area and then converting back to Ethernet once it reaches the customer, carriers have the potential to realize significant network efficiencies and flexibility advantages for their customers.

Section 4: Fiber-Based Competitors

Exhibit 4-5 ◆ Conventional SONET/ATM Architecture vs. Optical Access Architecture



Source: Dain Rauscher Wessels

Commercialization of OAC services hinges on the introduction of next-generation routers that combine several advantages, including:

1. the ability to carry traffic at terabit speeds through advances in dense wave division multiplexing (DWDM);
2. the ability to switch IP traffic at terabit speeds; and
3. the ability to switch optical wavelengths without converting them to electronic signals.

Service Offerings: OAC services are still largely in the initial rollout stages. Nevertheless, a number of pricing models are being explored by various carriers. On balance, carriers we have spoken with envision offerings on the order $1,000-$2,000 per month for 100 Mbps access. By comparison, a DS-3 installation from the ILEC could cost the customer on the order of $2,500 for set-up and $4,000 on a recurring monthly basis.

Advantages: Once fully implemented, these services should allow for greater control over bandwidth by offering services that can be tailored to fit customers' needs. For instance, businesses that wish to expand beyond the capacity of T1 connections can purchase incremental bandwidth in 1 Mbps increments as needed, rather than step up to a full DS-3. More important for some customers, the provisioning cycle for these new OAC services could well take a fraction of the time (hours or days) than is currently the norm with leased capacity (often weeks or even months). Further potential advantages include the ability to pay for each connection according to usage (by the day or even hour), the ability to flexibly route corporate connections among different locations or even outside parties, and a general level of network control that far surpasses existing offerings.

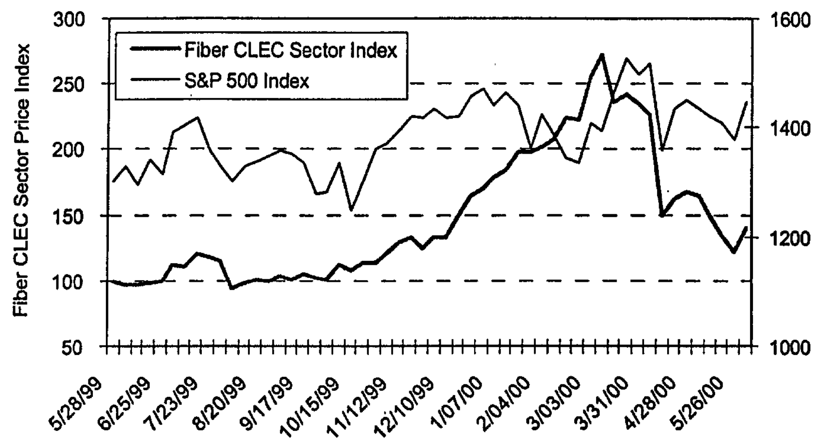
Disadvantages: Even though optical access carriers forego the relative switching inefficiencies of converting from optical waves to ATM/SONET, they face number of additional challenges with respect to quality and availability of service. In many cases, optical access offerings may lack the quality of service features of ATM (such as 99.999% availability) and the redundancy and restoration mechanisms inherent in SONET ring architectures. Thus, early optical access services may be most appropriate for corporate Internet access rather than mission-critical internal applications. By using mesh networks, which differ from SONET rings in that they create multiple paths through a network by establishing point-to-point connections among all nodes, these carriers hope to emulate the reliability of the current network.

One of the issues surrounding optical access services is whether to enhance the current SONET and ATM infrastructures to support the next generation of high-speed, data services, or to replace them. SONET's key benefit is its reliability, but it is optimized for circuit switching and is less dynamic than Ethernet or WDM in terms of service provisioning. ATM is an efficient, reliable technology with strong quality-of-service attributes, and although competing technologies are certainly expected to make inroads, the ability of "data-optimized" SONET/ATM architectures to mesh with alternative approaches could well extend their longevity.

Incumbents also getting in the optical access game: Bell Atlantic recently announced a partnership with two optical networking firms to roll out a transparent wavelength service for high-speed applications (up to 1.25 Gbps). In addition, SBC Communications has announced plans to offer a fiber-based, point-to-point Ethernet interconnection service that links local area networks (LANs) within a single metropolitan area at transmission rates of 1 Gbps. Once these services are fully deployed, Bell Atlantic and SBC will likely be among the first RBOCs to provide corporate customers with dedicated, point-to-point gigabit Ethernet links.

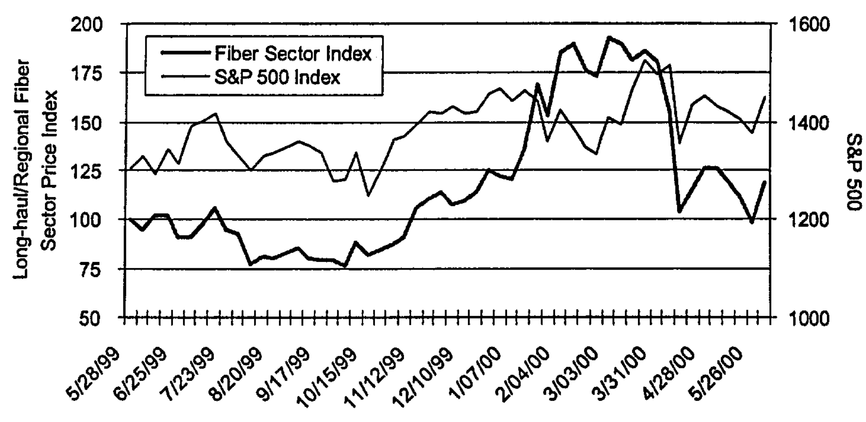
Section 4: Fiber-Based Competitors

Exhibit 4-6 ◆ Fiber CLEC Sector Price Index vs. S&P 500



Source: FactSet

Exhibit 4-7 ◆ Long-Haul/Regional Fiber Sector Price Index vs. S&P 500



Source: FactSet

Exhibit 4-8 ◆ Publicly Traded Fiber-Based Local Competitors

(Amounts in millions, except per share figures)

			Stock Price Information					Balance Sheet						Revenue			Enterprise Value / Rev.	
			Price	52 Week Range		Shares	FD Shares	Market	Long Term	Preferred		Enterprise						
Company	Symbol	FYE	06/01/00	High	Low	Out.	Out.	Cap.	Debt	Stock	Cash	Value	CY 99	CY 00	CY 01	CY 00	CY 01
Adelphia Business Solutions, Inc.	ABIZ	Dec	$27.25	$70.44	$14.75	34.22	69.44	$1,892	$845	$261	$2	$2,996	$155	$411	$953	7.3 x	3.1 x
Electric Lightwave, Inc.	ELIX	Dec	17.50	27.00	10.50	9.26	50.13	877	625	0	21	1,481	187	273	446	5.4 x	3.3 x
e.spire Communications, Inc.	ESPI	Dec	3.69	16.19	3.00	51.12	52.20	192	796	282	81	1,189	247	349	450	3.4 x	2.6 x
ICG Communications	ICGX	Dec	19.88	39.25	13.94	48.60	48.60	966	2,129	534	41	3,587	476	829	1,180	4.3 x	3.0 x
Intermedia Communications, Inc.	ICIX	Dec	28.88	77.38	18.13	51.83	53.30	1,539	2,935	917	251	5,140	906	1,193	1,541	4.3 x	3.3 x
Time Warner Telecom, Inc.	TWTC	Dec	60.13	93.00	19.88	33.00	105.22	6,326	404	0	265	6,465	269	424	582	15.3 x	11.1 x

Source: FactSet

Exhibit 4-9 ◆ Publicly Traded Long-Haul/Regional Fiber Competitors

(Amounts in millions, except per share figures)

			Stock Price Information									Revenue			Enterprise Value / Rev.	
			Price	52 Week Range		FD Shares	Market	Long Term	Preferred		Enterprise					
Company	Symbol	FYE	06/01/00	High	Low	Out.	Cap.	Debt	Stock	Cash	Value	CY 99	CY 00	CY 01	CY 00	CY 01
Broadwing, Inc.	BRW	Dec	$25.19	$41.06	$16.31	213.51	$5,378	$2,136	$358	$80	$7,792	$1,699	$2,095	$2,607	3.7 x	3.0 x
CapRock Communications Corp.	CPRK	Dec	21.38	58.50	17.25	33.29	712	348	0	188	871	193	287	384	3.0 x	2.3 x
Global Crossing Ltd.	GBLX	Dec	25.69	61.81	20.25	817.65	21,003	5,019	2,085	1,727	26,380	1,665	4,800	NA	5.5 x	NM
Level 3 Communications, Inc.	LVLT	Dec	79.50	132.25	45.25	365.71	29,074	3,989	0	3,492	29,571	515	1,102	2,002	26.8 x	14.8 x
Metromedia Fiber Networks	MFNX	Dec	35.19	51.88	10.56	544.23	19,150	2,673	0	2,535	19,289	75	160	331	120.3 x	58.2 x
NorthEast Optic Network, Inc.	NOPT	Dec	34.75	159.00	14.00	16.66	579	180	0	94	665	6	17	57	39.1 x	11.8 x
Qwest Communications International, Inc.	Q	Dec	43.00	66.00	25.75	754.50	32,444	2,368	0	349	34,463	3,928	5,090	6,490	6.8 x	5.3 x
Williams Communications Group, Inc.	WCG	Dec	38.44	61.81	23.25	463.60	17,820	2,971	0	1,914	18,876	2,023	2,495	3,850	7.6 x	4.9 x

Source: FactSet

Section 4: Fiber-Based Competitors

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Broadwing	www.broadwing.com	Broadwing is the merger between ILEC Cincinatti Bell and long-haul provider IXC Communications. The combined carrier provides local, long distance, and wireless voice services as well as a 16,888-mile inter-city fiber backbone, hosting, collocation, and e-commerce services.	5000 Plaza on the Lake Austin, TX 79746		BRW
CapRock Commuications	www.caprock.com	CapRock owns and operates a six-state fiber backbone that, once completed, will span 7,500 miles connecting tier 1, 2, and 3 markets in TX, AZ, NM, OK, LA, and AR over a packet-switched IP/ATM platform. CapRock generates revenues primarily from wholesale services to more than 160 carrier customers, as well as integrated local, long distance, and data services to several thousand business customers. The company's provides local services using a base of more than 50 collocations (200 planned by year-end) coupled with a smart-build strategy employing leased circuits, UNEs, UNE-P, and DSL.	15601 Dallas Parkway Dallas, TX 75001		CPRK
ICG Communications	www.icgcomm.com	ICG Communications provides integrated voice and data services to businesses in more than 700 cities. In addition, the company provides services to ISPs and long-haul carriers over its intercity network.	161 Inverness Drive West Englewood, CO 80112	Liberty Media Group; Hicks, Muse, Tate & Furst; Gleacher Capital Partners	ICGX
Intermedia Communications	www.intermedia.com	Intermedia Communications is an integrated broadband provider of voice, data networking (DSL, frame relay, ATM), and Internet-related offerings. The company also delivers broadband services to multi-tenant buildings and holds a majority stake in Digex, a provider of high-end managed hosting services.	3625 Queen Palm Drive Tampa, FL 33619	Kolhberg Kravis Roberts, Microsoft, Compaq	ICIX
ITC^DeltaCom	www.itcdelta.com	ITC^DeltaCom is a full-service broadband provider serving business customers in 10 Southeastern states. The company operates an 8,320-mile fiber optic network and switching infrastructure over which it provides long-distance, local, data networking, and Internet access, hosting, and collocation services. The company's offerings also include managed modem services for ISPs, network services for other carriers, and network management services for business customers.	1791 O.G. Skinner Drive West Point, GA 31833	SCANA Corp.	ITCD
Metromedia Fiber Networks	www.mmfn.com	Metromedia Fiber Network provides fiber capacity and Internet infrastructure services. Together with its subsidiaries, AboveNet Communications and PAIX.net, the company provides collocation and Internet connectivity services along with its wholesale bandwidth services.	One North Lexington Avenue White Plains, NY 10607		MFNX
NEXTLINK Communications	www.nextlink.net	NEXTLINK Communications provides end-to-end broadband services to businesses in over 50 U.S. markets via its fiber optic, wireless, and DSL facilities. Through its acquisition of Concentric Network, NEXTLINK is now a leading provider of Internet and Web hosting services. The company recently announced acquisition of multiple European metropolitan fiber networks, an inter-city pan-European fiber network, and transatlantic fiber-optic capacity.	1505 Farm Credit Drive McLean, VA 22102	Eagle River Investments LLC.(Craig McCaw), Ampersand Telecom, Forstmann Little, Level 3	NXLK

Section 4: Fiber-Based Competitors

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
NorthEast Optic Network	www.neoninc.com	NorthEast Optic Network owns and operates a fiber optic network in the Northeastern United States. The company provides transmission capacity to other service providers over its 1,000+ route miles.	391 Totten Pond Road Waltham, MA 02154	CMP Group, Inc., Gilder Gagnon Howe & Co., Northeast Utilities and several other regional utilities	NOPT
Time Warner Telecom	www.twtelecom.com	Time Warner Telecom is a fiber facilities-based integrated communications provider in selected metropolitan markets across the U.S. The company offers local businesses "last mile" broadband connections for data, high-speed Internet access, local voice, and long distance services, with future Internet-related product	10475 Park Meadows Drive Littleton, CO 80124	Time Warner, Media One Group, Newhouse Capital	TWTC
Williams Communications Group	www.williamscommunications.com	Williams Communications operates a nationwide fiber-optic network focused on providing voice, data, Internet and video services to communications service providers. The company also sells, installs, and maintains communications equipment and network services to business customers.	One Williams Center Tulsa, OK 74172	The Williams Companies	WCG
AERIE Networks	www.aerienetworks.com	Aerie Networks is building a high-capacity inter-city network in the U.S. encompassing more than 20,000 miles connecdting approximately 200 cities. The majority the company's network will be built along 14,958 miles of rights of way of 12 natural gas, oil and liquid petroleum pipeline companies and communications companies.	1400 Glenarm Place Denver, CO 80202	VantagePoint Venture Partners	private
America's Fiber Network	www.americasfibernetwork.com	America's Fiber Network is a super-regional fiber-optic joint venture of six energy and telecommunications companies. The company initially plans to offer 7,000 route miles of fiber connecting major markets in the eastern and central United States.	221 N. Front Street Columbus, OH 43215	AEP Communications, GPU Telcom, Allegheny Communications Connect, FirstEnergy Telecom, CFW Communications, R&B Communications.	private
BTI Telecom	www.btitele.com	BTI is a facilities-based broadband provider of voice and data communications services to primarily small and medium-sized business customers in the Southeast. The company's services include local, long distance, data, Internet, and enhanced services as well as wholesale switched, private-line, and calling-card services to other carriers. BTI's fiber network covers approximately 3,700 route miles of fiber optics along the East Coast as well as local fiber linking major cities in North Carolina.	4300 Six Forks Road Raleigh, NC 27609	Welsh, Carson, Anderson & Stowe	private
Cogent Communicationws	www.cogentco.com	Cogent provides dedicated, high-bandwidth Internet services to businesses in multi-tenant commercial buildings as well as carrier customers over a metro-area, all-optical network. The company plans to deploy its services initially in 13 major cities. Strategic partners include Chromatis Networks, Cisco, Williams, and Metromedia Fiber Network.	1015 31st Street NW Washington, DC 20007	Jerusalem Venture Partners, Worldview Technology Partners, Oak Investment Partners, Boulder Ventures, C.Blair Asset Management.	private
Enron Broadband Services	www.enron.net	Enron Broadband Services operates a nationwide fiber backbone to provide transport services as well as content delivery, bandwidth trading, and bandwidth intermediation services. The company's carrier customers include long-distance providers, incumbent local phone companies, wireless data network providers, and Internet service providers.	2100 SW River Parkway Portland, OR 97201	Subsidiary of Enron Corp.	private

Section 4: Fiber-Based Competitors

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
KMC Telecom	www.kmctelecom.com	KMC Telecom provides facilities-based broadband services to business customers in 17 tier 2 and tier 3 markets in the Mid-Atlantic, Midwest and South. The company operates its own fiber-optic and switching facilities in each of its markets.	1545 Route 206 Bedminster, NJ 07921	Nassau Capital Partners, Newcourt Capital, CoreStates Holdings, General Electric Capital, Lucent Technologies.	private
Millennium Optical Networks	www.mopticalnets.com	Millennium Optical Networks provides a managed network of high capacity OC-n services to carriers in the New York metropolitan area, with planned expansions to additional markets. The company's customers include Internet service providers and telecommunications carriers.	200 Madison Avenue New York, NY 10016		private
PF.Net	www.pf.net	PF.Net is a facilities-based provider of fiber-optic communications infrastructure to communications carriers, Internet service providers corporations with enterprise network needs and government entities. PF.Net's planned fiber-optic network of duct and fiber will extend beyond 10,800 miles and is scheduled to be completed in 2001.	1625 B Street Washougal, WA 98671	Odyssey Investment Partners, Koch Telcom Ventures, Inc.	private
Phonoscope Communications	www.phonoscope.com	Phonoscope Communications owns and operates a major fiber optic network in Houston. Its offerings include high-speed Ethernet connectivity, dark fiber leasing, data, voice, video conferencing, cable TV, and cable modem services.	6105 Westline Drive Houston, TX 77036		private
Telseon	www.cmetric.com	Telseon is a metropolitan optical access carrier that provides gigabit Ethernet services to enterprise and carrier customers. The company's services include a variety of network deployments for high-bandwidth point-to-point, multi-location, and multicasting applications. Telseon plans to deploy its services in 20 metropolitan areas by year-end 2000. Strategic partners include 3Com, Cabletron, Cisco, Extreme Networks, Foundry Networks, AboveNet, Colo.com, Equinix, and Verio.	480 South California Avenue Palo Alto, CA 94306	Sevin Rosen Funds, Crosspoint Ventures, Morgan Stanley Dean Witter, The Goldman Sachs Group, Inc., Donaldson Lufkin, & Jenrette, Hunt Ventures, Level 3 Communications, NEXTLINK, and Enron.	private
Touch America	www.tamerica.com	Touch America, the telecommunications subsidiary of The Montana Power Company, is the owner, operator, and developer of a 12,000-mile fiber-optic network. Through its network and expanding alliances, the company offers high-speed access to the Internet, including a full-line of long distance services, as well as dedicated voice, data, video and frame relay solutions. In addition, Touch America offers last-mile services using its wireless spectrum assets.	40 East Broadway Butte, MT 59701	subsidiary of Montana Power Company	private
Yipes Communications	www.yipes.com	Yipes provides managed optical IP networking services, including Ethernet-based LAN-to-LAN and LAN-to-Internet connectivity for enterprise and carrier customers. The company's initial service deployments include seven major markets, with a planned national footprint by year-end 2000. Strategic partners include Micromuse, Extreme Networks, Juniper Networks, Level 3, Metromedia Fiber Networks, Lucent, and Akamai.	114 Sansome St. San Francisco, CA 94104	Sprout Group, Norwest Venture Partners, New Enterprise Associates, Soros Fund Management, Chase Capital Partners/H&Q, BancBoston Ventures/Robertson Stephens, NewSpeed Capital, Extreme Networks, Intel Capital, Juniper Networks	private

Section 5:
Digital Subscriber Line Services

Section 5: Digital Subscriber Line Services

DSL's foundation—existing copper lines—already reaches nearly every home and business.

Digital subscriber line (DSL) technology has rapidly emerged as a powerful enabling technology for economic high-speed Internet access and remote LAN connections. DSL technology upgrades the performance of existing copper lines by utilizing specialized electronics at both ends of the connection. With DSL, the analog access speed barrier of 56 kbps is quickly surpassed, allowing potential throughputs of 1.5 Mbps or higher over a single line. DSL installations are quickly surpassing integrated services digital network (ISDN) deployments, which operate at just 128 kbps. Because of distance limitations associated with the technology, as well as the need to install equipment at each end of a copper loop, DSL service is limited to users who are located less than approximately three miles from a DSL-equipped central office.

Like other broadband technologies, DSL has diverse applications. Today, DSL carriers principally market two services—high-speed Internet access and remote LAN access—although many are introducing Web hosting, remote back-up, and other enhanced services. Prices for DSL service vary by bandwidth for the up and downstream channels. For example, a symmetrical 1.5 Mbps line runs on the order of $200 per month (without Internet access), while a line that offers 384 kbps downstream and 144 kbps upstream goes for approximately $70 per month. Residential DSL services that offer similarly high speeds but fewer throughput guarantees are now priced in the $40 per month range in many major markets. Compared to T1 lines that cost anywhere from $500 to $1,000 per month or more, DSL pricing represents a significant price reduction.

While incumbent carriers have deployed the most DSL lines to date, competitive providers have surpassed the incumbents in geographic reach (as measured by markets served) as well as network ubiquity (as measured by addressable lines). DSL competitors ("DLECs") must collocate their equipment in the incumbent carrier's facilities and lease the actual copper lines that connect to the home or business. Although deployment of DSL by competitive providers has been made more economic by favorable regulatory decisions concerning collocation and access to unbundled network elements, the day-to-day provisioning of new lines remains a highly manual process that entails ongoing coordination with the incumbent. In fact, eliminating the provisioning bottleneck is the principal gating factor in the mass deployment of DSL deployment.

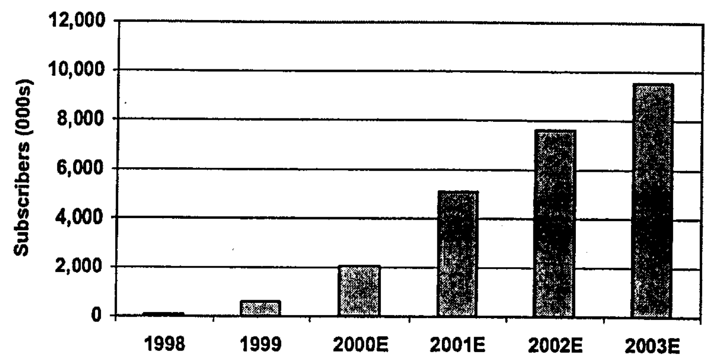
DSL capital is partially success based—a significant portion of required equipment can be purchased immediately following a customer win.

Because DSL technology uses the existing copper plant, it is significantly less expensive to deploy on a broad scale than other approaches, such as new fiber or cable construction. As a result, a significant portion of the investment in a DSL network is success-based, requiring a comparatively lower initial fixed investment. Subsequent variable investments in DSL technology are directly related to the number of paying customers.

Since phone lines are nearly ubiquitous in the United States, DSL providers are not limited to one market segment (e.g., business or residential) as are some other access technology providers. DSL has a competitive advantage in the small business sector since cable plant typically does not serve this market, and fiber optics are too expensive to deploy on a wide geographic basis. In many cases, we believe that DSL providers may face broadband wireless carriers as a primary competitor. In view of its potential to attract large numbers of users in disparate segments, DSL is expected to grow rapidly over the next five years.

Section 5: Digital Subscriber Line Services

Exhibit 5-1 ◆ Projected DSL Line Growth

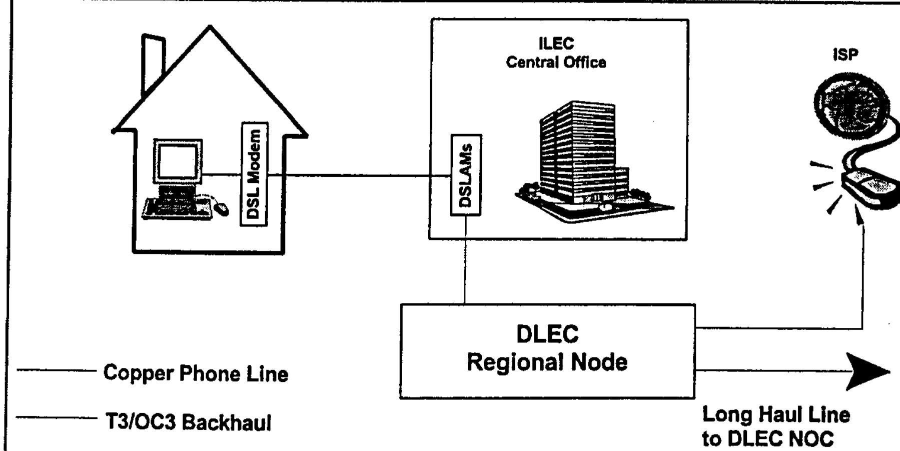


Source: Telechoice.com

◆ DSL Network Architecture and Economics

The configuration of a DSL network varies by application, target market, and provider (incumbent or competitor). A competitive DSL network consists of DSL equipment located in an ILEC central office that transmits high-speed data over copper lines between the central office and the end user. The DSL equipment is connected, in turn, from the central office to a regional network node, where data is collected in each metropolitan area. These connections typically run over leased T1 or DS-3 backhaul lines, depending on the amount of traffic. The regional node is connected, in turn, to a wide-area network (such as ATM or frame relay) or the Internet.

Exhibit 5-2 ◆ Competitive DSL Provider Network



Source: Dain Rauscher Wessels

Network Components

Customer Premise Equipment: DSL modems, located at the customer premise, receive and transmit data over copper telephone lines that are provided by the local telephone company. DSL modems cost between $200 and $300 and are dropping steadily in price—in 1998, the equipment ran at more than $500. In some cases, carriers choose to lease the equipment to end users. We anticipate that equipment prices will continue to fall as a result of advances in technology and increases in production volumes.

Local Transport: DSL-capable copper lines run from the end-user location to the ILEC central office. When a competitive provider supplies the service, the copper loop must be leased from the local telephone company (ILEC). These costs typically range from $7-$24 per loop per month. In light of recent regulatory and technical advances in the area of line sharing, competitors may now lease the data portion of an existing voice loop and pay significantly less (from zero to approximately $6 per month) in recurring costs than for a full copper loop.

Central Office Equipment: At the ILEC central office, a DSL access multiplexer (DSLAM) is required to terminate the DSL connections and interconnect with wide area networks. DSLAMs and associated loop management equipment currently cost in the $20,000-$30,000 range and can be upgraded to accommodate additional capacity simply by installing new line cards (about $4,000 each for a 24-32 port card). It is because capacity can be added at modest incremental cost that DSL is commonly noted for its "success-based" cost model relative to more capital-intensive bandwidth solutions such as fiber deployment. Up-front costs for the initial collocation are approximately $135,000, split approximately evenly between DSL equipment and fees to the incumbent carrier for cage construction, line conditioning, and other items. If carriers choose to forego a cage ("cageless") collocation, initial costs can be roughly halved.

Network Access Point and Operations Center: In each market, the DSL provider typically maintains a regional network node, which is connected to the carrier's network operations center (NOC). The regional node contains the DLEC's central operating facilities, including network monitoring equipment and operational support systems (OSS) for customer care, billing, and monitoring. At this location, the DLEC may install additional hardware to supply additional layers of service, such as Internet routers, content servers, and voice switching facilities.

Backhaul Transport: DLECs require at least two levels of back-haul transport—one to connect their NAP to the central offices on their network, and the second to connect their NAP to ISPs and potentially to long distance carriers. Depending on traffic volumes, back-haul transport requirements could range from fractional DS-3 to even OC-3 levels. Transport can be leased from the incumbent carrier or from a competitive provider.

Unit Economics

Exhibit 5-3 illustrates the central-office economics of two representative DSL deployments.

Exhibit 5-3 ◆ Unit Economics for DSL Deployment

	Wholesale	Direct
Assumptions:		
Business lines per central office	3,600	3,600
Penetration	4%	2%
Fixed Costs:		
Collocation fee to ILEC	$ 60,000	$ 30,000
DSLAM/router/other	$ 30,000	$ 30,000
Semi-Fixed Costs:		
Heating/lighting/power (monthly)	$ 495	$ 495
DS-3 backhaul (monthly)	$ 1,400	$ 1,100
CPE	$ 300	$ 300
Customer acquisition	$ 400	$ 800
Line charge (conditioning etc.)	$ 80	$ 80
Variable Costs:		
Recurring loop cost	$ 15	$ 15
Revenues:		
Blended rev/line/month	$ 80	$ 150
CPE (one-time)	$ 200	$ 200
Installation fee (one-time)	$ 100	$ 100
Margins:		
Margin/line/month	$ 49	$ 110
Gross margin	61%	73%
Payback Period:	21	15

Note: Collocation fee varies depending on cage construction; line charge amortized over 24 months; recurring loop fee assumes no benefit from line sharing.

Source: Dain Rauscher Wessels

The first column depicts a wholesale distribution model in which the DSL carrier sells high-speed connectivity to other operators (e.g., an ISP or CLEC). The second column depicts a direct-sales model in which the DSL carrier sells connectivity, Internet access, and other enhanced services directly to the end user.

We note that the individual line items in these figures can vary widely based on the specifics of the individual deployment, business model, and the central office being constructed.

Section 5: Digital Subscriber Line Services

◆ The State of DSL Deployment

DSL is still in its relative infancy as a broad-based solution to the local bottleneck. At first quarter 2000, some 4,000 central offices were equipped with DSL facilities, with the potential of serving approximately 35% of all telephone connections (there are some 22,000 central offices nationwide). At the close of the first quarter of 2000, there were approximately 755,000 DSL lines installed in the United States, with a backlog of at least that amount. By year end, we expect DSL coverage will reach 50%-plus of the entire market and serve 2.1 million lines.

Exhibit 5-4 ◆ DSL Deployment Summary

Service Provider	1Q00 Lines In Service	% Residential	% Business
ILECs	563,000	84%	16%
CLECs	179,000	22%	78%
IXCs	12,770	29%	61%
Total	754,770	69%	31%

Source: Telechoice, Inc.

DSL technology consists of numerous technological standards. As a result, the components of one vendor are often incompatible with those of other vendors, and many carriers choose to focus their deployments on a limited set of DSL variants. As discussed later, a DSL standard known as G.Lite is gaining traction in the market, which should facilitate faster deployment of asymmetric DSL services. G.Lite caters to residential customers because of the asymmetric nature of the service (faster downstream than upstream speeds) and the potential for a simpler installation process that can be handled by the layperson.

As indicated above, the day-to-day provisioning of new DSL service is a highly manual process that requires ongoing coordination with the incumbent carrier. The provisioning process typically entails separate procedures for order entry, order confirmation, loop qualification, and loop activation. Each of these steps carries the risk of miscommunication with or mismanagement by the incumbent, which is a primary factor behind today's lengthy service installation intervals of approximately 30-45 days. Eliminating the provisioning bottleneck through automation and "electronic bonding" with the incumbent is the principal factor that could lead to mass-scale deployment of DSL service.

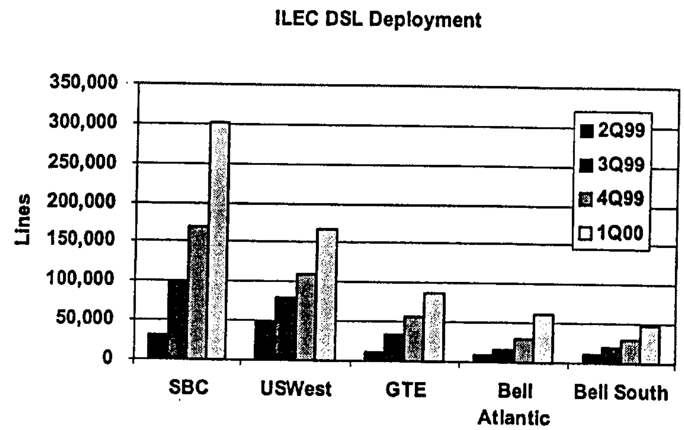
As we discuss later, DSL deployment received two significant regulatory catalysts during 1999—an FCC order mandating easier and lower-cost collocation of competitive equipment in the incumbent central office, and a separate FCC order that explicitly defined "line sharing" as an unbundled network element and set in motion state-level implementation of line sharing by June 2000.

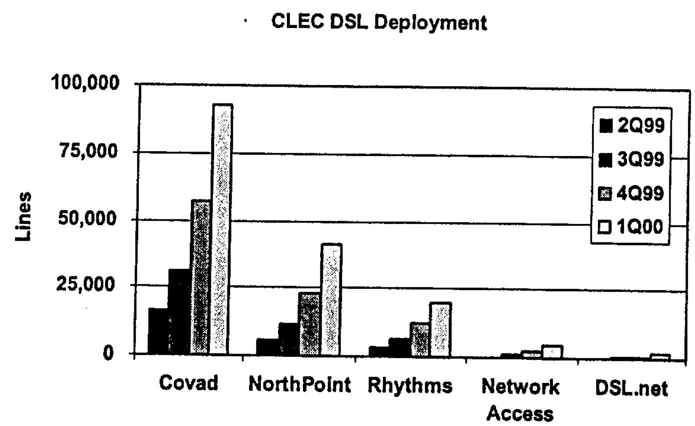
Coverage

While DLECs have garnered the most public attention among DSL providers, to date the incumbents have deployed approximately three times as many DSL lines as competitors. However, DLECs surpass ILECs in geographic reach as well as network ubiquity (as measured by DSL-equipped central offices and addressable lines). On an individual carrier basis, several DSL competitors have networks on a national scale, with the RBOCs handicapped by their focus on in-region service. By year end 2000, we expect that total DSL service will be available to more than 50% of all telephone lines.

Section 5: Digital Subscriber Line Services

Exhibit 5-5 ◆ DSL Line Deployments by Carrier





Source: Company reports

Section 5: Digital Subscriber Line Services

◆ Incumbent Providers

With respect to new DSL deployment over the last mile, the ILECs generally have focused on asymmetric DSL to residences and, in some cases, small businesses. This contrasts with DSL deployment for internal backhaul transport, which the ILECs have employed for years. The ILEC residential strategy appears to be rooted in avoiding the cannibalization of profitable T1 business with larger commercial customers and focusing on the competitive threat posed by cable modems. Moreover, DSL has the added benefit of relieving traffic on the ILEC voice network since DSL traffic goes directly to the Internet and other data networks, bypassing voice switches. Incumbent ADSL offerings generally are provided in conjunction with Internet access. Pricing is typically in line with cable Internet service.

Exhibit 5-6 ◆ ILEC ADSL Pricing for Residences (most favorable pricing)

Company	Downstream Speed	Monthly Rate	Installation
SBC/Pac Bell	384 kbps	$39.95	Free
Bell Atlantic	640 kbps	$49.95	$99.00
Bell South	1.54 mbps	$49.95	150.00
US West	256 kbps	$19.95	69.00
GTE	768 kbps	$32.50	Free

Note: 1. Downstream speeds are typically quoted on a "best efforts" basis and are not guaranteed. 2. The US WEST offering is not an "always on" service.

Source: Dain Rauscher Wessels

◆ Competitive Providers—DLECs

As noted earlier, DLECs have quickly surpassed the incumbents in coverage, but lag considerably in actual line installations. That said, the DLEC business is less than two years old, and an initial group of industry leaders is being followed by a growing wave of start-ups. The five publicly traded DSL competitors—Covad, Rhythms, Northpoint, DSL.net, and Network Access Solutions—have attracted considerable investment interest from strategic partners, financial backers, and the public markets (all completed their IPOs during 1999). Additional DSL providers with a regional focus (at least initially) have begun offering service, often in secondary markets, and in many cases have likewise embarked on the IPO path. Finally, several competitive voice/data "smart build" providers have begun to leverage their existing networks and central office collocations with the addition of DSL technology.

Distribution Strategies

DLECs have largely focused on the small business market, whose demand for DSL capabilities is immediate and whose alternatives are few. The business market represents a more focused opportunity for DLECs, whose sales and provisioning staffs are fairly limited at this early stage. Monthly revenues from business customers of DLEC services currently average in the $85 range for wholesale carriers and up to $280 for retail carriers (whose offerings often include Internet access, remote LAN access, hosting, or other value added services). Residential customers, who produce monthly revenues of roughly $45 to wholesale providers, have been served largely through ISP resellers of DSL service.

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Many DSL services are sold through third-party channels such as ISPs.

Some DLECs, including Covad, Northpoint, and New Edge Networks, distribute their services through third-party Internet service providers, long distance companies, network services firms, and other CLECs. These arrangements allow the DSL carriers to focus on securing interconnections and collocations, deploying equipment, and activating their networks while other carriers market the service. However, this strategy limits the potential revenue stream per line since the services are sold at wholesale rates to other providers. Further, by relying on third parties to market and sell the services, wholesale-oriented DLECs must find innovative ways in which to earn brand assets.

DLECs such as Rhythms and NAS are leveraging an existing skill base in developing corporate networks to directly sell DSL-based networking services. Customers receptive to such value-added capabilities are by nature higher-revenue customers, since their network needs warrant such services. This direct strategy allows the DLEC to earn a larger share of the customer's bill and facilitates the development of brand equity. However, this approach is by necessity more labor-intensive and costly, and may be more difficult to scale.

Value-Added Services

To differentiate their offerings, many DLECs are developing value-added services such as hosting, content delivery, and voice telephony.

Hosting: By and large, those DSL providers that offer hosting services are choosing to partner with specialized hosting firms, at least initially, rather than build the required competencies in house. At present, most of these services are basic, shared-server hosting, although over time, there is nothing that would prevent DSL providers from offering more sophisticated services such as dedicated hosting or applications hosting.

Voice over DSL: DLEC deployment of packetized voice over DSL (VoDSL) services is still largely in the trial phase. By offering multiple phone and data lines collapsed into one DSL pipe, DLECs are expected to be able to significantly undercut incumbent rates. VoDSL provides DLECs with access to the approximately $40-plus billion voice market among small and medium-sized businesses and accounts for more than 80% of their telecom spending. In many cases, DLECs are partnering with CLECs or long distance providers in their development of voice offerings. Examples include Covad's partnership with ICG, Northpoint's partnership with Focal Communications, and Rhythms' partnership with WorldCom. Mpower Communications, a voice/data "smart build" CLEC, has one of the more significant deployments of VoDSL to date.

Content Distribution: Many DSL providers have begun trials aimed at bringing cached Web content, streaming media, and other value-added content to their customer bases. Because these carriers have decentralized infrastructures in which to host content, caching servers, and content distribution servers at the edges of the Internet, they are an attractive option for content delivery providers to speed distribution to end users. Many DSL carriers have entered into content distribution partnerships with firms such as Akamai, Digital Island, Inc. (Nasdaq: ISLD; Strong Buy-Aggressive; $23.56), and iBeam.

Section 5: Digital Subscriber Line Services

Exhibit 5-7 ◆ Publicly-traded DLECs: Deployments and Strategies

Carrier	Current Coverage/Deployment	Targetted Footprint	Strategic Partners	Services	Distribution/Strategy
Covad	1,350 COs, 93,000 lines deployed at 3/31/00.	Nationwide tier 1 and tier 2 markets.	NEXTLINK, Concentric, AT&T, Qwest, PSINet	Dedicated Internet access as well as wholesale ISP services to other carriers through LaserLink subsidiary. Voice services under development.	Wholesale distribution through ISPs, some direct distribution to enterprises.
Northpoint	1,260 COs, 41,300 lines deployed at 3/31/00.	Nationwide tier 1 and tier 2 markets.	MCI WorldCom, Verio, Frontier, Intel, Microsoft, Tandy	Primarily provides dedicated Internet access. Voice offering under development.	Wholesale distribution through ISPs, retailers, IXCs, and CLECs.
Rhythms	1,380 COs, 20,000 lines deployed at 3/31/00.	Nationwide tier 1 and tier 2 markets.	MCI WorldCom, Qwest, Microsoft	Dedicated Internet, remote LAN, back-up, hosting, and other services. Voice offering under development.	Direct distribution to enterprises. Focus on enhanced services. Wholesale distribution through carrier partners.
NAS	477 COs, 4,900 lines deployed at 3/31/00.	Deep coverage in Northeast and mid-Atlantic tier 1 and tier 2 markets, expanding to US WEST and BellSouth territories.	SBC/Telmex, Sterling Commerce, Prodigy, Infonet, Williams	Enhanced data networking services to multi-location medium/large enterprises.	Direct distribution to enterprises. Also wholesale to CLECs, IXCs, and ISPs.
DSL.net	265 COs, 2,300 lines deployed at 3/31/00.	Nationwide tier 2 and tier 3 markets.	Microsoft, Staples, Webhosting.com	Dedicated Internet and hosting services. Voice offering under development.	Direct distribution to small/medium businesses using direct mail, telesales, and local partners.

Note: This table does not include several CLECs offering voice/data services, including Allegiance, Mpower, and ChoiceOne, which have signficant DSL deployments.

Source: Company reports and Dain Rauscher Wessels

DSL is not restricted to data—it can deliver multiple voice lines as well.

Other Deployments of DSL

In addition to the data-centric deployments by the DLECs, DSL is being deployed by some of the longer-established competitive carriers. Mpower Communications, Allegiance, and Choice One are three competitors that are installing DSL equipment to facilitate cóst reductions and lay the groundwork for more data-centric offerings in the future. By deploying an integrated access device at the customer location, these carriers can provide both a high-speed data line and as many as 12 voice lines using one copper loop. Since these carriers already have their voice switches installed, as well as ILEC central office collocation space, they are well prepared to offer integrated voice and data service using DSL.

Exhibit 5-8 illustrates the market entry strategies of several privately held DSL-based competitors. We stress that DSL should be considered an enabling technology, not a service, and therefore the value propositions of these businesses should not be judged simply based on factors such as retail vs. wholesale distribution, size of target market, or geographic footprint.

Exhibit 5-8 ◆ Private DLEC Market Entry Approaches

	Retail Distribution	Wholesale Distribution	Current/Planned Deployment
Arrival Communications	x		tier 2/3 markets, Western states
@Link	x	x	tier 2/3 markets, Midwest
ConnectSouth	x	x	tier 2/3 markets, BellSouth, SW Bell regions
BlueStar	x		tier 2/3 markets, BellSouth region
Broadslate	x		tier 2/3 markets, mid-Atlantic, Southeast, Midwest
HarvardNet	x		tier 1/2 markets, Bell Atlantic Region
IP Communications	x	x	tier 1/2/3 markets, SBC regions
Jato	x	x	tier 2 markets, Midwest/West/Southwest
Maverix.net	x		tier 2/3 markets, Midwest
New Edge		x	tier 3/4 markets nationwide
Picus	x		tier 1/2 markets, Bell Atlantic region
Vectris	x	x	tier 2/3 markets, Southwest/Midwest

Source: Dain Rauscher Wessels

The DLEC's primary supplier is also a primary competitor.

Competition and Risks

The primary risk for all competitive DSL providers is that their primary supplier, the ILEC, is also their primary competitor. In order for a DLEC to provide service, it must:

- Negotiate an interconnection agreement with the ILEC;
- Obtain collocation space for its equipment within desired ILEC central offices;
- Order the unbundled loop from the ILEC;
- Wait for the ILEC to install the DSL-compatible line; and then
- Dispatch its own or contracted staff to the customer site for the final installation.

To date, the speed by which all this is accomplished has not facilitated mass-scale rollouts. Ultimately, the DLEC service and provisioning are only as good as the underlying quality of the ILEC network and service.

DSL pricing could fall significantly.

DSL providers also face considerable pricing uncertainty. With their initial deployments, competitive DSL providers have shaved some 50% off the effective price of a 1.5 Mbps access line, and we would not be surprised if prices were to tumble significantly in the near future in view of the low marginal cost ($20 or less) of provisioning DSL service. Thus, the evolution of DSL providers could well mirror that of CAPs, and to stay competitive, carriers will have to add value to their bandwidth. In addition, the existing base of full-service CLECs, which already have numerous ILEC collocations, are beginning to enter the fray by deploying their own DSL equipment—further increasing the pressure on DLECs to expand their service portfolio.

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◆ Competitive DSL Regulation

Competitive DSL providers are regulated like any other CLEC, but as data-oriented providers, they are free of much of the regulatory oversight to which voice-centric providers are subject. Nevertheless, regulatory issues are of paramount importance to DLECs, since regulations facilitate their use of ILEC networks.

FCC rulings in 1999 significantly clarified definitions and terms for UNEs.

Competitive providers of DSL services have two principal regulatory concerns, both covered under the auspices of interconnection—access to unbundled network elements and access to collocation space. Each of these issues corresponds to language in the 1996 Telecommunications Act that requires each telecommunications carrier to interconnect with other carriers, and prohibits the installation of network features that would inhibit interconnection. Further, the Act mandates that certain network components of the ILEC network be provided to competitors at cost.

Unbundled Network Elements: Access to unbundled network elements allows DSL providers to purchase local loops at rates roughly equal to the cost of operating those loops. Following the FCC's UNE decision in September 1999, much of the uncertainty surrounding the terms and conditions for ILEC delivery of DSL-capable copper loops has been removed.

Collocation: Traditionally, CLECs have been required to construct a caged area within the CO for their equipment. DSL-based CLECs, especially those serving less dense markets and whose equipment requires relatively little space, have benefited from the FCC's requirement that ILECs offer "cageless" collocation, which reduces collocation expenses.

Line Sharing: In November 1999, the FCC mandated "line sharing" as a separate UNE. Under this ruling, competitors may provide high-speed data services over existing ILEC-operated voice lines by using only the high-frequency portion of those lines. Of note, this approach is compatible only with ADSL, which suggests its fullest impact will be seen in the residential market.

Currently, competitors that purchase unbundled copper loops from the incumbent carrier must pay to install a separate line to the customer, which entails significant time and cost. By using only the data portion of existing voice loops, line sharing enables DSL, thereby reducing service installation expenses, reducing the monthly lease expense of the circuit (from an average of $20 to $10 or lower), and significantly speeding provisioning times (currently roughly 30-40 days). At current consumer price points, we estimate that line sharing could lead to gross margin improvements on the order of 1,000 basis points and accelerate EBITDA breakeven per line by several months.

ILECs must make line sharing widely available in their regions by June 2000. Recent interim rate agreements between competitors and several ILECs suggest that DSL competitors will be able to gain access to the data portion of existing loop for monthly rates that are less than half the rate for a full copper loop.

Remote Port Access: As we describe later in this chapter, a major technological limitation of DSL is that it only functions over copper lines and cannot function through a digital loop carrier unless a remote port is installed. Since digital loop carriers serve a significant percentage of the population, remote ports must be installed in these units in order to enable high-speed DSL services. This, in essence, lies behind SBC's announced $6 billion Project Pronto, which pushes fiber deeper into residential neighborhoods via DLCs, then uses remote ports with DSL line cards connected to the final copper loop. Although this has the advantage of expanding the addressable market for DSL by removing many of the distance and network limitations of the technology, controversy has arisen around the issue of compatibility with competitors' networks. For competitors to address users served off these remote terminals, their networks must either be compatible with the specific type of line card the incumbent has deployed in the remote terminal, or there must be enough room in the remote terminal for them to place their own equipment. Since SBC's current plan does not address compatibility with competitors' networks or guaranteed space in the remote terminal for them to locate their equipment, many DLECs have protested to the FCC. Despite the generally pro-competitive environment in the Commission, there is no assurance that the CLECs will accomplish their goals on this issue because SBC will be expanding broadband access to a wider base of users, which furthers a major FCC policy goal. Although competitors would presumably be able to gain access to SBC's remote-terminal line cards, they would be forced to comply with SBC's equipment vendor selection.

◆ DSL Technology Variants

DSL is an umbrella term that includer various kinds of digital subscriber line technologies, including ADSL, RADSL, HDSL, SDSL, and VDSL. DSL employs advanced modulation techniques to take advantage of frequency spectrum within existing copper wires that is not utilized by telephone traffic. Standard voice calls utilize the spectrum between 0-4 kHz, while DSL utilizes frequencies between 26 kHz and 1 MHz and thus can encode more data and achieve higher data rates. DSL is an "always on" service, which means the connection is always available for transmission and the time-consuming dial-up sequences of analog modems are not required.

Key points to keep in mind are the trade-offs between signal distance and speed, and the differences in symmetry of upstream and downstream traffic. DSL is distance-dependent because the higher frequency signals associated with DSL attenuate, or lose strength, faster than lower frequency signals.

Asymmetric Digital Subscriber Line (ADSL) allows more bandwidth downstream (from CO to the customer) than upstream (from the customer to the CO). As many Internet users download much more information than they send, ADSL can be an attractive option for a large segment of the market. ADSL supports downstream speeds between 1.5 and 8 Mbps and upstream speeds between 640 kbps and 1.5 Mbps. ADSL can provide 1.54 Mbps transmission rates at distances of up to 18,000 feet over one wire pair. ILECs such as US West, GTE, SBC, BellSouth, and Bell Atlantic have focused almost exclusively on ADSL as their means of penetrating the consumer market, while competitive carriers are turning their attention to ADSL as a way to take advantage of line sharing.

Once the G.Lite standard gains traction in the market, deployment of ADSL can be expected to accelerate, as "truck rolls" for installation will be eliminated or significantly reduced. Further, computer makers will have a set specification to which to construct G.lite-compatible internal modems, potentially leading to a more seamless "plug and play" provisioning experience for the end user (no need for external hardware and software configuration).

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Rate Adaptive Digital Subscriber Line (RADSL) operates within the same transmission rates as ADSL, but adjusts dynamically to varying lengths and qualities of copper loops during a connection. Thus, RADSL allows each end user to access the full capability of the underlying copper line. To date, Rhythms NetConnections has deployed RADSL most extensively in its network. Target customers for RADSL connections are typically small and medium-sized businesses and branch offices of large businesses needing T1 or higher speeds.

ISDN Digital Subscriber Line (IDSL) provides full symmetrical throughput at speeds up to 144 kbps in each direction. While IDSL uses the same modulation code as ISDN to deliver service without special line conditioning, it differs from ISDN in a number of ways. First, unlike ISDN, IDSL is a non-switched service, so it does not cause switch congestion at the service provider's central office. Second, unlike ISDN, ISDL, like all DSL technologies, is an "always on" service that requires no call set-up. IDSL is the only DSL technology today that can circumvent issues related to digital loop carriers (DLCs) situated between the central office and the customer location. IDSL thus allows carriers to reach virtually all end users within a central office serving area.

High Bit-Rate Digital Subscriber Line (HDSL) technology is symmetric, providing the same amount of bandwidth upstream as downstream. HDSL is the most developed of the DSL technologies, and it has been widely deployed for T1 installations. Due to its speed (1.5 Mbps over two copper pairs and 2 Mbps over three pairs), carriers commonly deploy HDSL for point-to-point T1 connections. Although HDSL's 12,000-15,000-foot operating restriction is shorter than ADSL's, phone companies can install signal repeaters to extend its useful range.

HDSL 2 is the next generation of HDLS—it offers the same performance as HDSL, but over a single copper pair.

Symmetric Digital Subscriber Line (SDSL), like HDSL, supports symmetrical T1 transmissions, but SDSL differs from HDSL in that it uses a single copper-pair wire and has a maximum operating range of 8,000-10,000 feet. Within its distance limitation, SDSL is capable of accommodating applications that require identical downstream and upstream speeds, such as video conferencing or collaborative computing. SDSL is a precursor to HDSL 2.

Very High Bit-Rate Digital Subscriber Line (VDSL) technology is the fastest DSL technology, supporting a downstream rate of 13 to 52 Mbps and an upstream rate of 1.5 to 2.3 Mbps over a single copper-pair wire. VDSL can be viewed as a cost-effective alternative to fiber to the curb. However, the maximum operating distance for this asymmetric technology is only 1,000 to 4,500 feet. VDSL deployments can be supported by running fiber optic cable from the central office to digital loop carriers and copper from that point to the user location up to 4,500 feet away. In addition to supporting the same applications as ADSL, VDSL's additional bandwidth can potentially enable carriers to deliver high-quality video services. VDSL is currently being trialed by US WEST in Phoenix and a few other markets.

Exhibit 5-9 ◆ Summary of DSL Variants

DSL Type	Maximum Downstream Speed	Maximum Upstream Speed	Maximum Distance from User to CO	Comments
ADSL	1.5 - 8 Mbps	640 kbps	18,000 ft.	Assymmetric offering most suited to residential users.
IDSL	144 kpbs	144 kbps	35,000 ft.	Slowest speed DSL variant – currently the only solution for the DLC problem.
HDSL	1.5 Mbps	1.5 Mbps	12,000 ft.; 24,000 ft. with repeater	T1 equivalent – requires two copper pairs.
HDSL2	1.5 Mbps	1.5 Mbps	12,000 ft.; 24,000 ft. with repeater	HDSL enhanced – requires only one copper pair.
SDSL	2.3 Mbps	2.3 Mbps	10,000 ft.	Symmetrical service, unchannelized.
RADSL	7.1 Mbps	1 Mbps	12,000 ft.	Rate-adaptive ADSL
VDSL	52 Mbps	1.5 - 2.3 Mbps	4,500 ft.	Fastest DSL variant.

Source: Company reports and Dain Rauscher Wessels

◆ DSL Performance Obstacles

There are several reasons why certain locations may not qualify for DSL. The principal ones pertain to loop length; the fact that some portion of the phone line is carried to the premises on fiber optic cable; and loop obstructions.

Loop Length: Signals fade with increasing distance, especially so for the high-frequency signals utilized by DSL. As indicated in the above discussion, the various DSL technologies (except for IDSL) have distance limitations ranging from 4,000 to 18,000 feet from the central office. As technologies improve, these limitations may ease, but as a practical matter, high-speed DSL service is currently limited to locations within a three-mile maximum loop length from the central office. As upwards of 70%-85% of end-user locations meet this requirement, the loop-length limitation is not a show-stopper. However, increased distance from the central office, even within the 18,000-foot limit, leads to slower connection speeds.

Digital Loop Carriers: Digital loop carriers, sometimes called SLICs, are refrigerator-sized units that phone companies deploy between the customer site and a central office in order to increase the effective coverage area of a central office. Typically, the DLC is connected to the central office through a fiber link, and extends to the customer site over conventional copper wiring. With the exception of IDSL, DSL technologies only function over continuous copper—thus, it is not possible to deploy them in DLC-served locations by simply installing a DSLAM in the central office. Typically, newer suburban subdivisions contain a greater proportion of DLCs than denser, downtown locations, presenting a challenge for carriers that target residential customers. Roughly 30% of local loops in the United States are affected by the DLC issue, although this varies by region.

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Newer DSL technologies address the issue of digital loop carriers.

A Solution to DLCs—Remote Ports: Other than to deploy IDSL, which is limited to 144 kpbs in either direction, the main workaround to the DLC problem is to install a mini-DSLAM or remote port in the DLC. Remote DSLAM deployment is challenging because of space limitations, difficulties in supplying power, and the lack of environmental controls such as temperature or humidity. However, carriers and vendors are addressing these challenges, and the deployment of remote DSLAMs or unbundled ports is increasing. A major portion of SBC's $6 billion Project Pronto is devoted to deploying remote ports in that carrier's region to extend the reach of DSL service.

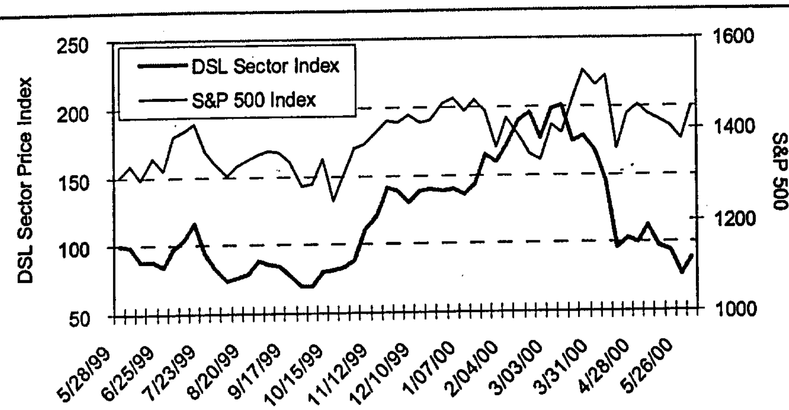
Spectral Interference (Cross-Talk): Individual copper lines are bundled together in what is known as a binder group (typically 20 or more lines per cable). Wires in a binder group are susceptible to spectral interference, or crosstalk, among lines. Cross-talk has always existed with respect to T1 services and has been managed successfully. However, the spectral interference issue is magnified by the prospect of wide-scale deployment of DSL services that deliver several orders of magnitude greater power into the loop than conventional voice services or 56 kbps analog traffic. The more power that is put in (which is directly related to loop length and speed), the more chance there is of cross-talk and interference with other services. Standards bodies are working on rules relating to binder group management and other tools to govern how DSL and other high-speed services can be offered. The FCC has struck a DLEC-favorable posture on this issue by indicating that the burden of proof relative to spectral interference should fall on the incumbent, not the competitor.

Bridged Taps: These are repeaters or portions of a loop that are not in the direct line between the end user equipment and the central office. These must be removed in most cases to enable DSL transmission.

Load Coils: Load coils allow better voice transmission over extended distances—usually beyond 18,000 feet from the central office. In longer loops, load coils are placed at approximately 6,000-foot intervals. These coils must be removed to enable DSL services. While some local carriers have few load coils in their network, others have coils in as much as 20% of local loops.

Section 5: Digital Subscriber Line Services

Exhibit 5-10 ◆ DSL Sector Price Index vs. S&P 500



Source: FactSet

Exhibit 5-11 ◆ Publicly Traded DSL-Based Competitors

(Amounts in millions, except per share figures)

			Stock Price Information						Balance Sheet					Revenue			Enterprise Value / Rev.		Operating Metrics	
			Price	52 Week Range		Shares	FD Shares	Market	Long Term	Preferred		Enterprise							Lines	Central
Company	Symbol	FYE	06/01/00	High	Low	Out.	Out.	Cap.	Debt	Stock	Cash	Value	CY 99	CY 00E	CY 01E	CY 00E	CY 01E	Installed	Offices
Covad Communications Group, Inc.	COVD	Dec	$24.31	$66.63	$19.06	144.86	165.28	$4,018	$375	$0	$767	$3,626	$66	$274	$560	13.2 x	6.5 x	93,000	1,350
DSL.net, Inc.	DSLN	Dec	6.41	32.56	6.13	58.38	65.23	418	2	0	79	340	1	30	112	11.3 x	3.0 x	2,300	265
mPower Communications Corp.	MPWR	Dec	48.63	78.00	15.00	23.24	35.58	1,730	157	85	125	1,847	55	106	NA	17.5 x	NM	168,786	446
Network Access Solutions Corp.	NASC	Dec	12.25	40.00	8.19	46.75	46.96	575	18	0	43	550	17	37	142	14.9 x	3.9 x	4,888	477
NorthPoint Communications Group, Inc.	NPNT	Dec	14.94	44.00	11.00	126.47	131.99	1,972	87	0	210	1,848	21	110	260	16.8 x	7.1 x	41,300	1,260
Rhythms NetConnections, Inc.	RTHM	Dec	18.00	71.00	14.38	77.15	78.58	1,414	506	0	377	1,543	1,225	2,000	2,050	0.8 x	0.8 x	20,000	1,380

* Lines installed for mPower includes non-DSL circuits

Source: FactSet

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Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Covad Communications	www.covad.com	Covad Communications provides high-speed, broadband access services to businesses and residences utilizing DSL technology. The company primarily distributes its services through several hundred carrier partners. Through its recent acquisition of LaserLink.net, the company provides wholesale ISP services. The company's network includes all major U.S. markets, with 200 markets slated to be operational by year-end 2000.	2330 Central Expressway Santa Clara, California 95050	Warburg Pincus Ventures, Crosspoint Venture Partners, Intel.	COVD
DSL.net	www.dsl.net	DSL.net, Inc. is a CLEC and ISP that uses DSL technology to provide high-speed Internet solutions to small and medium-sized businesses, primarily in tier 2 and tier 3 cities throughout the United States. The company primarily uses direct distribution channels to market its Internet access, Web hosting, and other services. As of March 31, 2000, DSL.net provided service in 186 cities.	545 Long Wharf Drive New Haven, CT 06511	VantagePoint Venture Partners, Prism Venture Partners, Oak Investment Partners, Microsoft	DSLN
Network Access Solutions	www.nas-corp.com	Network Access Solutions provides DSL-enabled networking solutions to businesses. NAS offers customers broadband local, metropolitan and wide-area connectivity services using DSL access technology and its inter-city backbone. As a complement to its DSL services, the company offers customers a complete suite of value-added enterprise networking solutions, including network integration, network management, network security, and professional services.	100 Carpenter Drive Sterling, VA 20164	Spectrum Equity Investors, FBR Technology Partners, SBC Communications, Telmex	NASC
Northpoint Communications	www.northpointcom.com	NorthPoint Communications provides DSL services in all major U.S. markets. The company distributes its services through partnerships with other carriers. Through its relationships with Versatel in Europe and Call-Net in Canada, the company is building international DSL networks. The company has also embarked on a number of partnerships with streaming media and content delivery companies in order to leverage its local broadband assets.	303 2nd Street San Francisco, CA 94107	Microsoft, Tandy, Carlyle Group, Accel Partners, Benchmark Capital, Greylock, Vulcan Ventures	NPNT
Rhythms NetConnections	www.rhythms.com	Rhythms NetConnections provides DSL-based, broadband communication services to businesses and consumers in North America. The company offers an array of voice, Internet access, data networking, remote LAN access, back-up, and security services. Rhythms currently serves 49 markets covering 86 metropolitan statistical areas, and utilizes both direct, retail distribution to enterprise customers and wholesale distribution via carrier partners.	6933 South Revere Parkway Englewood, Colorado 80112	Enterprise Partners, Kleiner Perkins Caufield & Byers, Brentwood Venture Capital, MCI Worldcom Venture Fund, The Sprout Group, Enron Communications Group, Microsoft, Hicks Muse Tate & Furst, Qwest.	RTHM
Telocity	www.telocity.com	Telocity provides broadband Internet access and content services aimed primarily at the residential market. The company partners with last-mile broadband providers and utilizes a proprietary access device at the customer site that simplifies service installation and facilitates the delivery of enhanced services.	10355 North De Anza Blvd Cupertino, CA 95014	Mohr Davidow Ventures, RRE Investors, August Capital, Bessemer Venture Partners, Comdisco, Standford University	TLCT
@Link Networks	www.atlinknetworks.com	@Link Networks provides DSL-based Internet access, VPN, and other enhanced services in tier 2 and tier 3 markets, primarily in the Midwest. The company distributes its services using a mix of retail and indirect channels.	361 Centennial Parkway Louisville, CO 80027	Madison Dearborn Partners, Columbia Capital, TeleSoft Partners	private

Section 5: Digital Subscriber Line Services

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Arrival Communications	www.arrival.com	Arrival Communications is a DSL-based CLEC and ISP targeting small and medium-sized businesses in tier 2 and tier 3 markets. The company employs a direct, retail distribution approach and has rolled out service in several California markets. Arrival intends to expand its network to other Western states.	601 Montgomery St. San Francisco, CA 94111	Alta Communications, Housatonic Partners, BancBoston Capital and certain partners of Hellman & Friedman LLC	private
BlueStar Communications	www.bluestar.net	BlueStar Communications, founded in 1998, is a DSL-based CLEC and ISP targetting tier 2 and tier 3 markets in the Southeastern U.S. The company provides DSL-based high-speed Internet access, wide-area networking, Web hosting, remote backup, security, and other services to small and medium-sized businesses. The company distributes its products and services to end-users through direct sales channels as well as through value-added resellers. BlueStar has launched operations in 40+ markets across its 10-state region.	414 Union Street Nashville, TN 37219	Crosspoint Venture Partners, Intel, Lucent	private
Broadslate Networks, Inc.	www.broadslate.com	Founded in 1999, Broadslate Networks provides DSL-based IP, data, and hosting services small and medium-sized businesses. The company is planning to deploy its network in tier 2 markets in the Southeast, Mid-Atlantic, and Midwest. Broadslate distributes its services through a direct sales force and local partners.	675 Peter Jefferson Parkway Charlottesville, VA 22911	Columbia Capital, JP Morgan Capital, Bessemer Venture Partners, Charles River Ventures	private
ConnectSouth	www.connectsouth.com	ConnectSouth provides a range of DSL-based Internet connectivity and communications services to small- and medium-sized businesses as well as other carriers. The company's initial markets include Austin, Biloxi, Birmingham, Mobile, New Orleans, Oklahoma City, Tulsa and Waco, and the company plans to expand into 22 additional markets in the fall of 2000 and to 80 southern markets by the end of 2002.	9600 Great Hills Trail Austin, TX 78759	Morgan Stanley Venture Partners, Morgan Stanley Capital Partners, Fleet Equity Partners, and Waller-Sutton Media Partners	private
Flashcom	www.flashcom.com	Flashcom provides DSL-based Internet access in over 80 metropolitan areas, serving residences, small businesses, and telecommuters, relying on partnerships with facilities-based wholesale carriers. The company also offers virtual private network, remote access, and Web hosting capabilities.	5312 Bolsa Avenue Huntington Beach, CA 92649	Communications Ventures, Mayfield Fund, Intel Corp., Behrman Capital, Capital Research and Management, Blueprint Ventures, BancBoston Ventures, The Carlyle Group, Kohlberg Kravis Roberts & Co., Tudor	private
HarvardNet	www.harvardnet.com	HarvardNet is a CLEC and ISP that provides a range of high-speed Internet and e-commerce related services business customers. The company also offers DSL-based teleworker services. The company's current markets are in New England and the mid-Atlantic.	500 Rutherford Avenue Boston, MA 02129	M/C Venture Partners, Fidelity Ventures	private
InterAccess	www.interaccess.com	InterAccess is a data CLEC and ISP based in the Chicago area. The company provides Internet access through an array of offerings, ranging from DSL, dedicated 56K to T1 and T3, ISDN, dialup and remote web hosting. InterAccess intends to expand its DSL service throughout the Midwest starting with locations in Wisconsin and Indiana.	1687 North Clinton Chicago, IL 60661		private

Section 5: Digital Subscriber Line Services

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Jato Communications	www.jato.net	Jato provides high-speed Internet access, network connectivity and associated broadband applications and services to small and medium-sized businesses. Jato uses digital subscriber line (DSL) and other high-speed communications transport technologies to offer a wide array of Internet-based services including Internet access, Web hosting, e-mail, and e-business applications. The company distributes its products and services directly to end-users and indirectly through Internet Service Providers (ISPs), Value Added Resellers (VARs), and other local market partners.	1099 18th Street Denver, CO 80202	Mayfield Fund, Crest Communications Partners, CEA Capital Partners, USA, ABN AMRO Capital, Inc., Access Technology Partners, TCI Satellite Entertainment, Inc., Lucent Technologies, Qwest.	private
LightNetworks	www.lightnetworks.com	LightNetworks is a broadband CLEC utilizing DSL technology to provide voice and data services to small and medium-sized businesses. The company is currently offering service in Atlanta and plans to launch operations in Nashville, Charlotte, Memphis, Miami, and Louisville in the near future.	2700 Northeast Expressway Atlanta, GA 30345	EnTrust Capital, Banc of America Securities, Goldman Sachs, Lucent Technologies.	private
Maverix.net	www.maverix.net	Founded in 1999, Maverix.net provides DSL-based Internet access, data connectivity, hosting, and other services to small and medium-sized businesses. The company distributes its services through a direct sales force, with an initial deployment in tier 2 markets in the central U.S.	20 South Clark Street Chicago, IL 60603	Schroder Ventures, Lucent Technologies	private
New Edge Networks	www.newedgenetworks.com	Founded in 1999, New Edge Networks provides DSL services on a wholesale basis to ISPs, communications companies, and other strategic partners. End users include both residential and business customers in tier 3 and tier 4 markets. The company is building out a national footprint spanning all 50 states, and uses reciprocal agreements with other carriers to provide coverage in tier 1 and tier 2 markets.	3000 Columbia House Blvd Vancouver, WA 98661	Accel Partners, Comdisco Ventures, Crosspoint Venture Partners, Greylock, Goldman Sachs, Intel Corporation, Morgan Stanley Dean Witter, Meritech Capital	private
Phoenix Networks	www.phoenixdsl.com	Phoenix Networks is a national broadband services provider that specializes in network access, hosting, and integration services. The company delivers a full range of products using DSL, ISDN and other high-speed technologies under the Phoenix DSL brand in 44 cities across the U.S.	1842 Lackland Hill Parkway St. Louis, MO 63146		private
Picus Communications	www.picus.com	Picus Communications provides a variety of voice, Internet, and high-speed data services to businesses and residences. The company is has deployed a DSL network in several mid-Atlantic markets and plans to expand to additional markets. Picus' partners include Nortel Networks, Nokia, and Coppercom.	2877 Guardian Lane Virginia Beach, VA 23452	numerous private sponsors	private
Vectris Communications	www.vectris.com	Vectris is a CLEC and ISP that uses DSL technology to provide broadband services in tier 2 and tier 3 markets in the Southwest and Midwest. The company's service offerings include data networking, Internet access, remote LAN access, and Web hosting. Vectris employs a direct-sales model for its higher-value business offering. It also offers its services through ISPs, carrier partners, and resellers.	5000 Plaza on the Lake Austin, TX 78746	Trinity Ventures, Stolberg Equity Partners, Weiss, Peck & Greer, Austin Ventures	private

Section 6: Broadband Wireless Services

Section 6: Broadband Wireless Services

Broadband wireless approaches allow competitors to bypass the incumbent's local infrastructure.

Broadband wireless technology can be deployed to offer any broadband service at throughputs ranging from DS-0 (64 kbps) to OC-3 (156 Mbps) or greater, depending on the amount of spectrum available. Terrestrial wireless networks are cellular in nature, employing small two-way antennas (transceivers) at a hub site and at a customer's premise. With a relatively small number of these cell sites, an operator can rapidly achieve broad coverage of any given market. Broadband wireless technology generally requires a line-of-sight between two transceivers. Broadband wireless networks can provide voice, two-way data, or video services. At present, there are four licensed spectrum bands commonly used for two-way broadband communications over the last mile:

- **2.5 GHz:** Services at this frequency are commonly known as multi-channel multi-point distribution service, or MMDS. MMDS was originally licensed to provide video services over approximately 120-200 MHz of spectrum but has now been authorized by the FCC for any two-way communications service. In the first half of 1999, Sprint and WorldCom each spent more than $1 billion in acquiring the MMDS licenses of several companies.
- **24 GHz:** Teligent holds the only commercial licenses for services at this frequency. The company obtained these licenses free of charge and possesses 80-400 MHz per market.
- **28 GHz:** This frequency band is known as local multi-point distribution service, or LMDS. The FCC auctioned off two LMDS licenses for each of 493 license areas in the United States during 1998 and 1999. The A band license holds 1,150 MHz and the B band license holds 150 MHz. NEXTLINK Communications is the largest holder of LMDS spectrum.
- **39 GHz:** Initially these licenses were awarded free of charge, although additional spectrum was recently auctioned by the FCC (see following discussion entitled "Spectrum-Specific Considerations"). WinStar is the largest holder of licenses at this spectrum, possessing on average 1,000 MHz per market. Other players include Advanced Radio Telecom and AT&T.

In addition, several operators provide two-way broadband services using **unlicensed** spectrum, which is free of charge and available for use by any carrier. The two most commonly offered unlicensed services are in the 2.4 GHz band and the 5 GHz band.

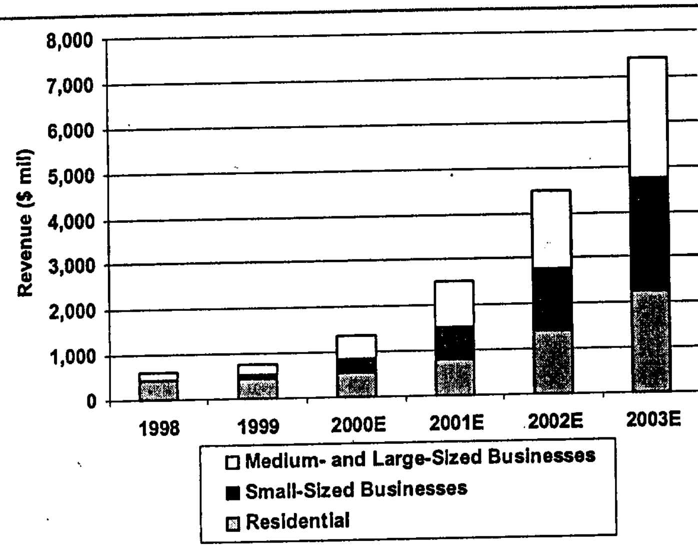
Because they do not require extensive rights of way or access to ILEC central offices, broadband wireless operators can enter new markets relatively quickly. Further, this technology offers carriers full control of their networks and service since they do not rely on the facilities of incumbent local carriers.

However, this technology presents a number of challenges. First, broadband wireless is only now being deployed on a large commercial scale, and the equipment is just reaching full production status. Second, because broadband wireless generally requires a line of sight between transceivers, the presence of obstacles such as foliage, buildings, and even heavy rain affects the availability of the signal. This restriction reduces the effective reach of broadband wireless to between 60%-70% of potential customer sites, although newer repeater-based approaches now being introduced may significantly improve coverage.

Depending on the frequency band used, broadband wireless deployments can be economical in dense areas, where a relatively small number of cell sites can reach a larger number of customers, or in more remote areas that are not conducive to fiber, DSL, or cable-based access. Driven by increasing demand and well-capitalized service providers, broadband wireless is expected to grow to a $7.4 billion annual market over the next three years.

Section 6: Broadband Wireless Services

Exhibit 6-1 ◆ Broadband Wireless U.S. Market Forecast



Source: IDC

◆ Broadband Wireless Players and Deployment

Major carriers have invested nearly $3 billion to acquire broadband wireless spectrum.

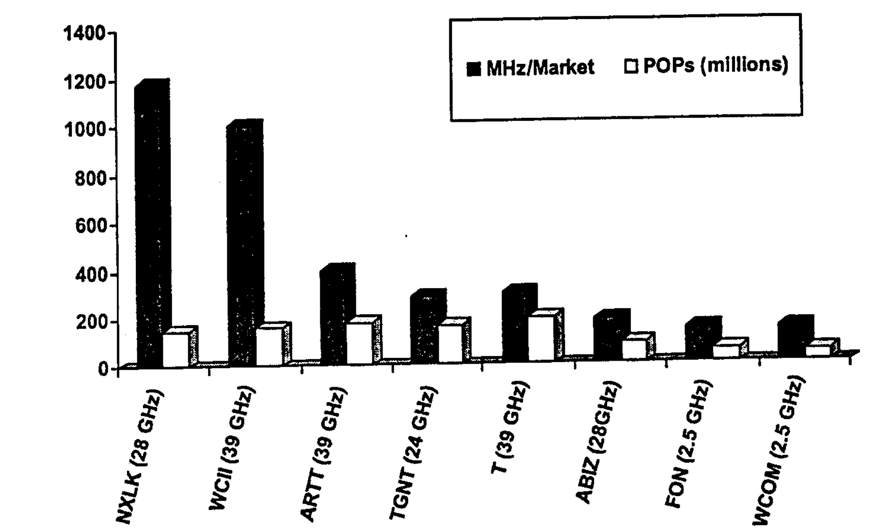
WinStar and Teligent have been the most active providers of broadband service to date, with several major players, including WorldCom, Sprint, Advanced Radio Telecom (ART), and NEXTLINK, slated to roll out services nationwide during the coming quarters. Several events have brought significant attention to the broadband wireless arena—with nearly $3 billion of new investment by major communications firms.

- In early 1999, NEXTLINK Communications became the largest holder of LMDS with its $695 acquisition of WNP Communications and its acquisition of the remaining 50% in NEXTBAND Communications. NEXTLINK is now deploying its LMDS network in major markets across the country.
- In several transactions starting in March 1999, Sprint and WorldCom each committed more than $1 billion to acquire several MMDS license holders. Trials of high-speed, two-way data services are under way, with broad-scale commercialization expected later this year and during 2001.
- In June 1999 Qwest communications and a group of private capital firms made a $251 million strategic investment in Advanced Radio Telecom. In April 2000, ART enhanced its spectrum position by purchasing 39-GHz licenses spectrum from two private firms.
- In May 2000, the FCC concluded its $400 million auction of 39-GHz licenses, with significant participation by WinStar, Advanced Radio Telecom, Adelphia Business Solutions, AT&T, and NEXTLINK.
- In May 2000, AT&T Wireless made its PCS-based fixed wireless service widely available in the Ft. Worth market. Users can subscribe to a bundle of voice and high-speed data offerings.

Section 6: Broadband Wireless Services

While the major broadband wireless players employ different frequencies and technologies, the services each plans to offer will be aimed at high-speed, last-mile access, coupled with various additional offerings. As the capabilities and capital expenditures associated with wireless technology are affected by available spectrum, it is useful to compare the respective holdings of the major broadband wireless firms.

Exhibit 6-2 ◆ Broadband Wireless Capacity Comparison



Source: FCC, Company reports, and Dain Rauscher Wessels estimates

Because signals propagate differently in the various bands, these capacity comparisons are only approximate. For instance, MMDS signals, which occupy spectrum that is only a modest amount higher than the 1.9 GHz frequency used by PCS operators, travel a much greater distance and are less affected by rain fade than higher-frequency services
Like other competitive providers, a major focus of broadband wireless operators is small and medium-sized businesses, which historically have not received customized offerings from incumbent carriers. This market provides enough density to justify network deployment costs while avoiding dense urban areas that are already served by high-capacity fiber networks.

Despite the capabilities of the technology, the most common services offering to broadband wireless customers in its initial deployment stages were conventional voice telephony. However, in view of the expanding data connectivity and Internet-related needs of small and medium-sized businesses, data-related revenues are the fastest growing portion of broadband wireless revenues. This trend toward data applications should be accelerated as the MMDS-based broadband offerings of Sprint and WorldCom go beyond the trial phase to full commercialization.

Section 6: Broadband Wireless Services

◆ Broadband Wireless Technology Overview

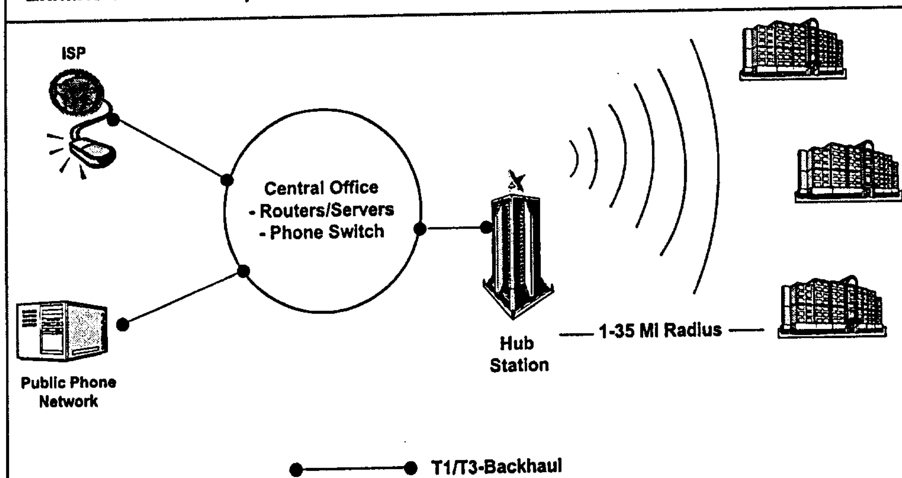
In general, broadband wireless networks are cellular in nature, employing two-way antennas (transceivers) at a hub site and at a customer's premise. Hub sites are typically connected by fiber, wireless, or other high-capacity backhaul links to a central node that contains routers (for data connectivity), switches (for interconnection with the public switched telephone network if the operator provides voice service), and servers (for content storage and delivery).

Hubs are placed between one and three miles apart for high-frequency systems such as LMDS, 24 GHz, and 39 GHz; and as much as 30 miles apart for lower frequency systems such as MMDS and the unlicensed bands. Since high-frequency signals travel a shorter distance than low-frequency signals, the hub radius is largely determined by the spectrum band at which the system operates. Frequency is thus a significant determinant of system build-out costs. Also, as spectrum is re-used from cell to cell, carriers with relatively less spectrum per market may use a smaller hub radius to increase the total capacity of its network.

Broadband wireless capital expenditures are largely success-based.

In a typical broadband wireless network, after a limited number of cells are constructed, service areas can be extended almost immediately once an order is placed, allowing operators to delay full capital costs. In a wired network, by contrast, the core infrastructure must be built out to reach all targeted customers before a network can be commercialized.

Exhibit 6-3 ◆ Representative Broadband Wireless Network Architecture



Source: Dain Rauscher Wessels

Because broadband wireless requires a line-of-sight between transceivers, a given cell may only reach 55%-60% of the buildings within its radius (depending on specific markets and topological obstructions). To address this limitation, hubs or repeaters with overlapping coverage areas can be deployed to expand effective coverage to approximately 70%-85% of buildings. Using repeaters to alleviate line of site restrictions is becoming a cost effective alternative to deploying new base stations (a repeater costs on the order of $10,000, while a new base station can cost on the order of $250,000). Apart from physical obstacles such as buildings and trees, rainfall has the most significant impact on broadband wireless performance.

Section 6: Broadband Wireless Services

As with other technologies, broadband wireless systems use special adapters installed at the customer site to integrate the last-mile transmissions with existing customer equipment (such as routers, PBXs, and integrated access devices).

Microwave Vs. Millimeter Wave

Broadband wireless services can be classified into two groups: microwave, which refers to all spectrum below the 15 GHz range; and millimeter wave, which refers to all spectrum above the 15 GHz range.

Microwave: Spectrum allocated in the microwave band for broadband applications consists largely of MMDS and various unlicensed bands (such as 2.4 GHz and 5 GHz). As noted, these bands have superior propagation characteristics, with signals reaching as far as 30 miles. Further, the line of sight issue does not affect these bands to as large an extent as it affects the higher-frequency bands. However, these bands contain significantly smaller amounts of spectrum (80 MHz to 200 MHz) than the higher-frequency bands, thereby limiting the available bandwidth per cell. These microwave bands still qualify as a robust broadband delivery platform, and firms using microwave technology have successfully demonstrated broadband services over their networks, with throughputs ranging from fractional T1 speeds up to multiple T1s. By comparison, cellular and PCS carriers, which also operate in the microwave band, typically have no more than 25-40 MHz of spectrum, largely limiting their capability to basic voice or specialized narrowband services.

Exhibit 6-4 ◆ Representative Unit Economic Analysis for Microwave-Based Deployment

Assumptions:	
Homes/buildings per base hub	10,000
Customers per home or building	1
Fixed costs	
Base station/hub cost (one-time)	$30,000
Semi-fixed costs	
Installation cost/incremental capex (per sub or building)	$400
Customer acquisition cost (one-time)	400
Customer premise equipment (one-time)	600
Gross semi-fixed costs (subscriber acquisition cost)	**$1,400**
Revenue from customer premise equipment (one-time)	(300)
Revenue from installation fee (one-time)	(100)
Net semi-fixed costs (subscriber acquisition costs)	**$1,000**
Variable costs	
Backhaul (monthly)	$1,700
Heating, lighting and power cost per colo (monthly)	$450
Total variable costs per sector (monthly)	**$2,150**
Recurring monthly revenue per customer	**$100**
Customer revenue margin	**$99**
Breakeven (customers)	**429.9** *
Breakeven (penetration)	**4.3%** *

* capital expenditures amortized over 36 months

Source: Dain Rauscher Wessels

Millimeter Wave: As discussed previously, there are three bands currently used commercially in the millimeter wave band—24 GHz, 28 GHz (LMDS), and 39 GHz, with Teligent, NEXTLINK, and WinStar as the respective "anchor tenants" at each frequency. Each of these bands is subject to far greater propagation limitations than microwave (three miles compared to 30 miles) and is highly influenced by physical objects such as buildings, trees, and even rain drops. Nevertheless, as the signals in this band travel more directly, individual transmissions are less likely to interfere with each other, and therefore frequency re-use can achieve significant increases in capacity, providing transmission speeds of up to OC-3 (155 Mbps) with carrier-grade reliability. This implies the use of millimeter wave frequencies as viable competitors to fiber in certain applications.

Exhibit 6-5 ◆ Representative Unit Economic Analysis for Millimeter-Wave System (Point-to-Multipoint)

Assumptions	
Buildings per hub	30
Prospects per building	30
Data penetration (as percentage of core voice customers)	30%
Fixed costs	
Hub Cost:	$398,600
Semi-fixed costs	
Receiver radio cost per building	$5,000
Installation cost per building	18,500
Customer acquisition cost (one-time)	800
Customer premise equipment (one-time)	600
Gross semi-fixed costs (subscriber acquisition cost)	**$24,900**
Revenue from installation fee (one-time)	(400)
Net semi-fixed costs (subscriber acquisition cost)	**$24,500**
Variable costs	
Backhaul (monthly)	$400
Roof Right Cost (monthly)	2,000
Heating, lighting and power cost per colo (monthly)	500
Total variable costs	**$2,900**
Total variable costs per customer	**$21**
Revenues:	
Recurring monthly voice revenue per customer	$70
Recurring monthly data revenue per data customer	500
Recurring monthly revenue per building	990
Recurring monthly revenue per customer (weighted average)	220
Customer revenue margin	**$199**
Breakeven (customers)	**71.2** *
Breakeven (penetration)	**7.9%** *

* assumes capital expenditures amortized over 36 months.

Source: Dain Rauscher Wessels

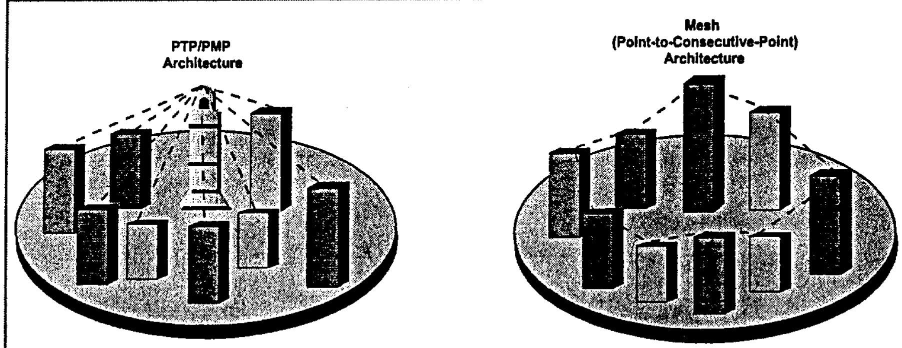
Broadband Wireless Architectures: Point-to-Point, Point-to-Multipoint, and Mesh

The following three primary system architectures are currently in use for millimeter-wave systems: point-to-point, point-to-multipoint, and mesh. Each architecture entails tradeoffs between bandwidth capacity and capital efficiency.

To date, the majority of broadband wireless systems have used point-to-point (PTP) technology. PTP systems require two transceivers for each connection—one at the hub and one at the customer site. Newer point-to-multi-point (PMP) technology enables a single hub radio to communicate with multiple customers, thereby reducing capital requirements. In practical terms, a PTP system serving 50 customers would require 100 transceivers, while an equivalent PMP system would require only 51 transceivers.

The mesh architecture works around the line of sight issue as each building radio performs most of the functions of a hub radio to form a virtual ring connecting multiple buildings. This architecture is handicapped in terms of scalability since it increases the cost of each customer radio. Mesh-based systems are initially oriented towards higher-bandwidth applications.

Exhibit 6-6 ◆ PTP/PMP vs. Mesh Architecture



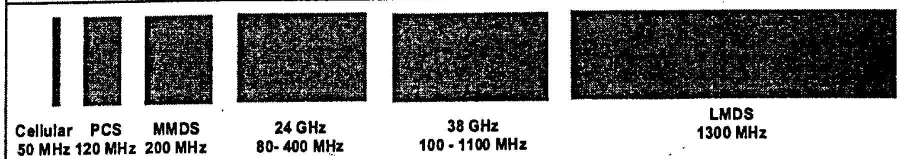
Source: Dain Rauscher Wessels

◆ Spectrum-Specific Considerations

Each of the four licensed bands considered in this report is subject to its own licensing rules. In general, each of the four bands is now authorized for the provision of any voice, data, or video service. The amount of spectrum licensed for each band varies dramatically. LMDS carriers have significantly more spectrum (typically 150-1,300 MHz) than any other frequency band, and MMDS carriers typically have the least (approximately 120-200 MHz). WinStar, which operates in the 39 GHz band, has obtained through acquisition an average of 1,000 MHz per market, while other 39 GHz carriers, such as ART and AT&T, have approximately 100-400 MHz per market. Teligent, the only operator at 24 GHz, holds approximately 80-400 MHz per market. As mentioned earlier, cellular and PCS carriers typically have no more than 25-40 MHz of spectrum per market, limiting their throughput potential.

Section 6: Broadband Wireless Services

Exhibit 6-7 ◆ Comparison of Available Spectrum per Market



Source: FCC

MMDS Spectrum

Initially licensed for one-way video services, the FCC authorized MMDS to provide two-way communications services in 1998. There are several wireless spectrum blocks in the 2.1 to 2.7 GHz band that can be used for cable television and Internet services, including multi-point distribution service (MDS), multi-channel multi-point distribution service (MMDS), and instructional television fixed service (ITFS). Many MMDS operators have aggregated available MDS, MMDS, and ITFS spectrum in a given market, providing up to 200 MHz of bandwidth.

Exhibit 6-8 ◆ MMDS Spectrum in the 2.1-2.7 GHz Band

Frequency Range	Service Type	Number of Channels	Channel Width
2.15-2.162	MDS	2	6 MHz
2.305-2.32	WCS	2	5 & 10 MHz
2.345-2.36	WCS	2	5 & 10 MHz
2.5-2.596	ITFS	16	6 MHz
2.596-2.644	MMDS	8	6 MHz
2.644-2.686	ITFS	4	6 MHz
2.686-2.689	MMDS	31	125 KHz

Source: FCC

Due to its long signal reach, MMDS may well be deployed in areas that are not reachable via DSL or cable-based approaches. We expect the primary growth in MMDS-based services to be in the delivery of high-speed Internet services at DSL-like speeds of 384 kbps to 1.5 Mbps. Despite its long reach compared with other frequencies, MMDS spectrum comes with certain challenges, including an obligation to coordinate with educational facilities in the case of the ITFS band.

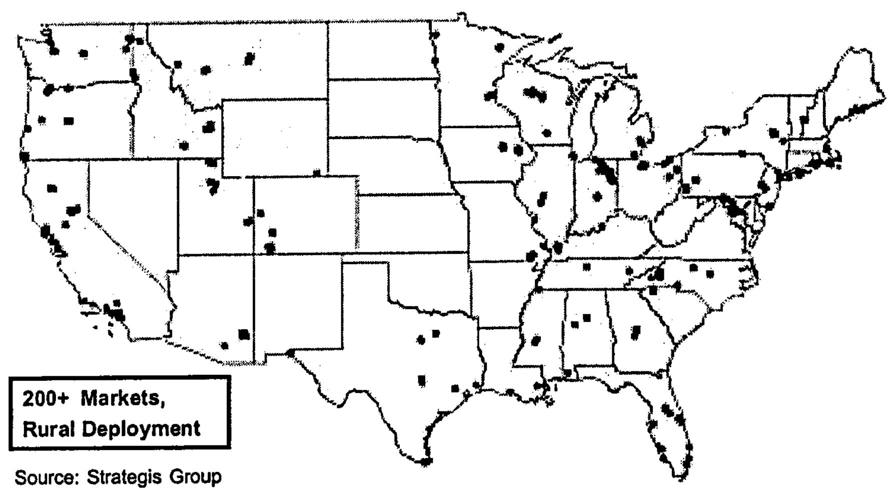
Following a series of acquisitions in 1999, Sprint and Worldcom have emerged as the largest MMDS spectrum holders. Each carrier has numerous pilot markets deployed and intends to roll out two-way MMDS-based services on a broad commercial scale later this year and during 2001. WorldCom, with MMDS spectrum covering some 58 million households, is holding commercial trials in Memphis, Jackson, and Baton Rouge, while Sprint, which is expected to tap into the tower assets of the Sprint PCS group, is testing MMDS in Phoenix, Arizona, Detroit, Michigan, and the San Francisco Bay Area in California. BellSouth and Nucentrix are also significant MMDS spectrum holders.

Section 6: Broadband Wireless Services

Unlicensed Bands: 2.4 GHz and 5 GHz

Service providers have the option of using unlicensed frequency to provide voice and data services to end users. The two primary unlicensed bands used for last-mile broadband applications are the 2.4 GHz ISM (industrial, scientific, and medical) band, which contains about 80 MHz of spectrum, and the 5 GHz U-NII (unlicensed national information infrastructure) band, which contains about 200 MHz of spectrum suitable for last-mile services. There are more than 200 current deployments of unlicensed spectrum for last-mile services, primarily by regional ISPs.

Exhibit 6-9 ◆ Unlicensed Spectrum



Source: Strategis Group

The benefits of using unlicensed frequency are immediate availability and "free" frequency, which reduces service provider costs. Potential drawbacks include the possibility of interference with other users in the same frequency band, although this has yet to become a serious issue. As with MMDS, the long signal propagation of fixed wireless systems that utilize the unlicensed spectrum bands make them suitable for delivering services to customers that are beyond the reach of DSL or cable-based services. Alternatively, unlicensed spectrum may be used as an interim solution prior to installation of landline facilities, or as backup capacity.

2.4 GHz

The 2.4 GHz band has been used for several years for last-mile applications. Equipment operating in this band must operate in spread-spectrum mode in order to minimize interference with other devices. Privately held Clearwire Technologies, which operates commercial data services in Dallas, Texas, Buffalo, New York, and Albuquerque, New Mexico, is one of several providers using this band. In addition, Bell Atlantic has announced that it intends to use this band, in conjunction with its WCS spectrum holdings at 2.3 GHz, to provide high-speed services to locations that are not readily accessible using DSL technology. 2.4 GHz services can be used for high-speed (fractional T1 to T1 or even greater, depending on the technology) applications and reach customers 15-20 miles or more from a given hub site. Some deployments we have seen of this technology indicate that the signals are able to propagate through windows—this suggests potentially quicker and less complicated deployment of customer-premise equipment compared to placing devices on rooftops or on the sides of buildings, which requires access to in-building wiring.

5 GHz

Use of the U-NII band, although unlicensed and free of charge, is restricted in the sense that equipment operating in this frequency range is limited in the power it can transmit. This confines the effective range to roughly three miles, but because of the limited cell size, enables throughputs on the order of multiple T1s. Operators using this band include Fuzion Wireless Communications.

24 GHz Band (DEMS)

The only commercial provider currently holding spectrum in the 24-GHz band is Teligent, which holds between 80 and 400 MHz in tier 1 and tier 2 markets. Like other broadband wireless carriers, Teligent is authorized to use its spectrum for any commercial or private use. These licenses, categorized by the FCC as Digital Electronic Messaging Service, were obtained free of charge without auction. Teligent originally held similar licenses in the 18-GHz band, but the FCC, to protect certain government satellite communications services, transferred these to the 24-GHz band. As part of the order that moved the licenses from 18 GHz to 24 GHz, Teligent was granted additional spectrum (100-400 MHz) in several markets.

LMDS—28 GHz

With a total of 1,300 MHz of spectrum in any given market, the LMDS bands contain more spectrum than any other single commercial wireless service. Two licenses in each of 493 "basic trading areas" were auctioned by the FCC in 1998. The LMDS A license, 1,150 MHz, consists of the following two parts: 850 MHz in the 28 GHz band, and 300 MHz in the 31 GHz band. The B license, 150 MHz in the 29 GHz band, is provided on a shared basis to accommodate both LMDS providers and certain satellite service providers.

Exhibit 6-10 ◆ Major LMDS Licensees

Carrier	A Pops	B Pops	Total Paid	Price Per Pop	Price Per GHZ-Pop
1 NEXTLINK	116,899,138	84,473,332	$900,053,588	$4.47	$6.12
2 Adelphia Bus.	2,585,945	88,229,857	$46,602,533	$0.51	$2.88
3 WinStar	14,673,277	2,165,646	$43,372,050	$2.58	$2.52
4 Eclipse	2,514,598	8,950,977	$14,330,559	$1.25	$3.38
5 Actel	7,797,465	2,820,780	$9,728,690	$0.92	$1.04
6 Cortelyou	10,573,982	-	$25,241,133	$2.39	$2.08
7 ARNet	5,971,882	3,122,799	$11,566,685	$1.27	$1.58
8 Telecorp	852,056	7,303,200	$3,824,700	$0.47	$1.84
9 CoServ	-	7,519,988	$10,293,750	$1.37	$9.13
10 Vanguard	7,121,234	-	$8,884,527	$1.25	$1.08
11 ALTA	6,846,284	-	$15,152,500	$2.21	$1.92
12 U S WEST	-	6,846,072	$9,923,000	$1.45	$9.66
13 HighSpeed	3,988,067	2,001,209	$3,982,424	$0.66	$0.81
14 Blackwater	4,579,724	-	$3,114,260	$0.68	$0.59
15 Touch America	2,138,153	2,219,741	$7,021,055	$1.61	$2.51
16 BTA Assoc.	2,988,453	675,483	$16,996,500	$4.64	$4.80
17 PCTV Gold	107,714	2,404,760	$3,221,400	$1.28	$6.65
18 LMDS Ltd.	2,284,569	-	$1,651,650	$0.72	$0.63
19 Command Connect	1,835,008	324,397	$1,958,670	$0.91	$0.91
20 ABS LMDS Venture	291,811	1,606,729	$772,750	$0.41	$1.34

Source: FCC and Company reports

Section 6: Broadband Wireless Services

The major carriers planning to deploy LMDS-based systems include a number of fiber competitors such as NEXTLINK Communications, Adelphia Business Solutions, and Touch America, as well as Highspeed.com and several independent telephone companies.

39 GHz Band

Licensing for the 39 GHz band was historically administered on a site-by-site basis, rather than the geographic basis (BTAs) followed for the LMDS spectrum allocation. However, the FCC has allowed license holders to aggregate site licenses into regional block licenses. Further, the FCC slated BTAs as the licensing designation for the recently concluded auctions of additional 39 GHz licenses. During these auctions, WinStar, Advanced Radio Telecom, and other carriers enhanced their spectrum assets in existing markets, with relatively little bidding by new entrants.

WinStar, Advanced Radio Telecom, and other 39 GHz licensees have aggregated multiple licenses in markets to gain as much as 1,200 MHz per market. The FCC has ordered that there are no restrictions on the aggregation of 39 GHz licenses. Many of the 39 GHz licenses that were granted prior to this year's auction are slated for expiration during 2001. However, it has been the FCC's practice to renew licenses when the current holder is shown to be providing "substantive service." In the past, substantive service has come to mean a mere four hub sites operational for a given one million in population.

Non-RF Wireless Approaches: Free Space Lasers

Free space laser technology uses invisible light, rather than radio frequencies, and can transmit fiber-like (1 Gbps or greater) capacities over distances of one to two miles, subject to stringent line of sight restrictions. Similar to RF-based wireless approaches, this technology offers the potential for the highly cost effective deployment of high-capacity links without relying on incumbent or other wireline infrastructure over the last mile. However, like unlicensed spectrum, it avoids licensing procedures and even has the potential to penetrate windows, thereby alleviating potential deployment headaches associated with building access rights. We believe this technology is still in its relative infancy and probably will not see commercialization for some time. Once commercialization nears, however, we see no reason why established competitors, including most likely broadband wireless operators, would not be able to leverage free space laser technology for existing and new uses.

◆ Broadband Wireless Regulation

Broadband wireless competitors are regulated in the same manner as other carriers. Any prospective entrant with the appropriate wireless license may offer a full range of voice and data communications and is entitled to the same rights as other competitors under the 1996 Telecommunications Act, such as interconnection, collocation, number portability, and access to unbundled network elements. To the extent that competitors use their own wireless links to connect customers, they are unaffected by problems typically associated with access to ILEC copper loops. Further, broadband wireless carriers offering exclusively data/Internet services over their own facilities are entirely free from the need to establish interconnection agreements with the incumbent carrier.

Section 6: Broadband Wireless Services

Access to rooftops is a point of contention between wireless operators and building owners.

Rooftop Rights

Most wireless operators must obtain access to building rooftops as well as inside wiring and phone closets in order to deploy their networks. While access to building wiring and telephone closets does not present any issues that are unique to wireless carriers (see chapter on Building-Centric Service providers), building owners are not subject to any law requiring them to allow wireless providers access to their rooftops. This has led to several disputes between commercial building owners and wireless operators concerning licensing, antenna siting, and rights of way. Although the FCC has ruled in favor of non-discriminatory access to buildings in order to promote competition, commercial building owners have asserted their rights as private property owners and resisted legal attempts to force access to their facilities. The FCC is currently conducting proceedings on competitive access to buildings. In practice, wireless operators usually gain rooftop and building access through direct, private negotiations with building owners at the local level, and we expect this to continue regardless of how the issue gets settled in Washington.

Future Auctions and Spectrum Allocations

Standing FCC spectrum policies make it likely that the agency will continue to seek out for public comment and propose rules for the allocation of additional spectrum for broadband and narrowband applications. Three areas of particular interest to broadband investors in the near and medium terms are the 700 MHz auctions, the 4.9 GHz auctions, and the allocation of spectrum for so-called "3G" (third-generation) mobility services.

4.9 GHz: The FCC recently proposed rules for spectrum auctions in the 4940-4990 MHz (4.9 GHz) band, which is intended for fixed and mobile services. This band was approved for transfer from government to private use, but auction plans in 1998 were abandoned due to concerns over interference with U.S. Navy systems. The commission is currently evaluating proposals on the geographic and spectrum blocks that should be used in licensing this band.

700 MHz: The FCC recently adopted auction and service rules governing spectrum that currently occupies channels 60-69 of the television UHF band. This spectrum is slated to be vacated by broadcasters by 2006 as they roll out digital television services, but the FCC may allow new licensees to offer payments to the broadcasters to speed the relocation of their stations. The 30 MHz of spectrum between 747-762 MHz and 777-792 MHz is to be split into the following 12 licenses nationwide: one 20-MHz license and one 10-MHz license, each to be auctioned across six regions nationwide. Another 6-MHz of spectrum, known as the 700-MHz "guard band," is slated to be auctioned in 4-MHz and 2-MHz blocks across 52 regions nationwide. Parties that obtain rights to the guard-band spectrum (so-called "guard band managers") will be able to lease the spectrum to third parties. Auctions are currently scheduled for September 2000.

3G Spectrum: Although spectrum has been allocated for "third generation" (3G) broadband mobility services in several international markets, the FCC has not formally set aside a band dedicated to 3G. The United States is advocating a flexible approach on this issue, with the following three possible bands proposed thus far: the 1.7 GHz band, portions of which are currently used by the military; the 2.5 GHz band, partially occupied by MMDS operators; and the 690 MHz band. We do not expect 3G spectrum allocation issues in the United States to be resolved for some time.

◆ Satellite-Based Services

No discussion of broadband wireless is complete without mention of satellite-based services. While traditional satellite networks have been limited to video or narrowband services (at least as a local-loop bypass), several newly proposed broadband satellite systems may have the potential for wider commercial applications. Although many of these services will be more oriented toward developing markets with less developed terrestrial alternatives, some may gain traction in the United States in regions that are underserved by fiber, cable, DSL, or fixed wireless services. In addition, as exhibited by the initial market acceptance of such firms as iBeam Broadcasting and Cidera, satellite-based services are gaining ground as a delivery mechanism for Internet content.

A major force behind the proposed satellite systems is Internet access (carrier-grade telephony services are not as well suited to the latency and complexity associated with sending signals to, from, and possibly between satellites). Two of the more likely near-term satellite-based entrants for two-way broadband services are iSky and Gilat-To-Home, which leverage existing relationships with DBS-based video networks DirectTV and Echostar. AOL's announced $1.5 billion investment in Hughes (the backer of DirecTV and DirecPC) in 1999, coupled with EchoStar's investments of $50 million in both iSky and Gilat-To-Home and Microsoft's investment of $50 million in Gilat-To-Home, have brought visibility to the prospect of consumer access to Internet at high speeds, without the need for terrestrial connections.

The **Exhibit 6-11** describes several proposed two-way broadband satellite projects. While we do not purport to provide a detailed description of satellite technology, the following key points should be kept in mind:

- LEO (low-earth orbit) systems have many potential advantages, including lower orbital altitude (and therefore less latency).
- The complexity and investment required for the LEO projects make them medium to longer term possibilities.
- GEO (geostationary earth orbit) systems employ less costly equipment and fewer satellites and are the basis for many of today's commercial one-way applications.
- With respect to spectrum usage, Ku-band architectures are generally more bandwidth constrained than Ka-band.

Section 6: Broadband Wireless Services

Exhibit 6-11 ◆ Proposed Broadband Satellite Systems

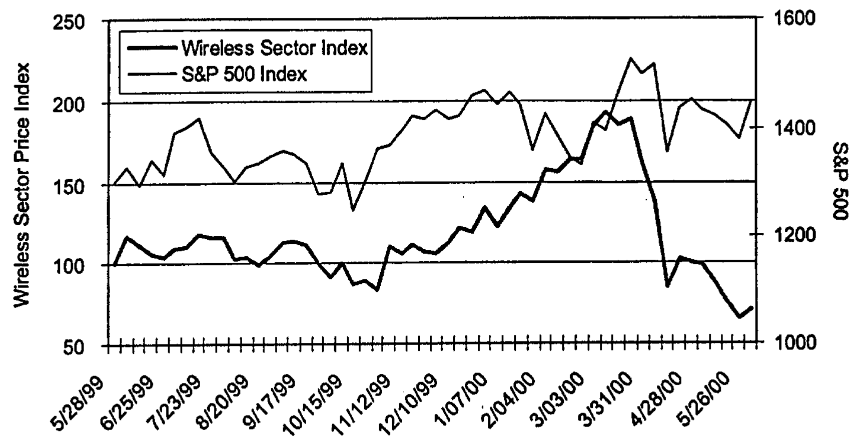
System	Operator	Number of new Satellites	Estimated Service Date	Frequency	Cost	Orbit	Coverage
Gilat-To-Home	Gilat-To-Home	uses existing capacity	2001	Ku	N/A	GEO	Regional
Skybridge	Alcatel	80	2002	Ku	$6.1 billion	LEO	Global
GE*Star	GE Americom	9	after 2002	Ka	$4 billion	GEO	Global
Spaceway	Hughes	8	2002	Ka	$5.1 billion	GEO	Global
iSky	iSky	2	2001	Ka	$750 million	GEO	Regional
Astrolink	Lockheed Martin	9	2003	Ka	$3.6 billion	GEO	Global
Cyberstar	Loral	3	2003	Ka	$1.6 billion	GEO	Regional
Teledesic	Teledesic	288	2003/4	Ka	$10 billion	LEO	Global

Source: Company reports, Pioneer Consulting, and Dain Rauscher Wessels

As with competing broadband services, the success of these projects will come down in large part to achieving competitive price points for customer premise equipment and monthly subscriptions. That said, it remains an open question as to how many broadband subscribers these services can accommodate simultaneously given the shared, not dedicated, nature of their spectrum resources and limits on transponder capacity. Therefore, we believe pricing and customer expectation setting will be critical success factors.

Section 6: Broadband Wireless Services

Exhibit 6-12 ◆ Broadband Wireless Sector Price Index vs. S&P 500



Source: Company reports, Pioneer Consulting, and Dain Rauscher Wessels

Exhibit 6-13 ◆ Publicly Traded Broadband Wireless Competitors

(Amounts in millions, except per share figures)

(Amounts in millions, except per share figures)

			Stock Price Information									Revenue			Enterprise Value / Rev.	
			Price	52 Week Range		FD Shares	Market	Long Term	Preferred		Enterprise					
Company	Symbol	FYE	06/01/00	High	Low	Out.	Cap.	Debt	Stock	Cash	Value	CY 99	CY 00E	CY 01E	CY 00E	CY 01E
Advanced Radio Telecom Corp.	ARTT	Dec	$10.38	$49.25	$7.50	29.18	$303	$109	$244	$193	$462	$1	$2	$16	288.7 x	29.8 x
Nucentrix Broadband Networks, Inc.	NCNX	Dec	22.50	36.00	18.63	10.15	228	15	0	29	214	70	NA	NA	NM	NM
Teligent, Inc.	TGNT	Dec	21.25	100.00	18.38	59.38	1,262	809	479	595	1,954	31	159	391	12.3 x	5.0 x
WinStar Communications, Inc.	WCII	Dec	30.25	66.50	24.00	89.28	2,701	2,324	431	246	5,210	356	703	1,008	7.4 x	5.2 x

Source: FactSet

Section 6: Broadband Wireless Services

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Advanced Radio Telecom	www.artelecom.com	Advanced Radio Telecom is a broadband wireless provider of high-speed, IP-based services. The company's customers include Internet service providers, long-distance carriers, building-centric service providers, hosting companies, and applications service providers. ART plans to deploy its 100 Mbps metro-area networks in 40 markets over the next several years.	500 108th Avenue, NE Bellevue, WA 98004	Qwest Communications, Oak Capital Partners, Columbia Capital, Meritech, Adams Capital Management, Advent International, Accel Partners, Brentwood Venture Partners, Worldview Technology Partners, Bessemer Venture Partners	ARTT
iBeam	www.ibeam.com	iBEAM provides an Internet broadcast network that delivers streaming media directly to ISP points of presence using satellite technology. The company's customers include media, technology and entertainment companies.	645 Almanor Avenue Sunnyvale, CA 94086	Sony Corporation, Microsoft Corporation, Intel Corporation, Covad Communications, Standford University, Liberty Media, Media Technology Ventures, Accel Partners, Crosspoint Venture Partners	IBEM
Nucentrix Broadband Networks	www.nucentrix.com	Nucentrix is a broadband wireless provider with MMDS spectrum in over 90 tier 2 and tier 3 markets in the Southwest and Midwest. The company currently provides multi-channel video services in 58 of these markets and plans to launch two-way, high-speed data services in 20 markets by 2001. The company is partnering with Cisco for its MMDS network deployment.	200 Chisholm Place Plano, TX 75075		NCNX
Teligent	www.teligent.com	Teligent provides local, long-distance, high-speed data, Internet access, and hosting services to small and medium-sized business over its broadband wireless network as well as landline facilities. The company has deployed its network in all major U.S. markets and is pursuing joint venture opportunities in numerous international markets.	8065 Leesburg Pike Vienna, VA 22182	Microsoft, Hicks Muse Tate & Furst, DB Capital Partners, Olympus Partners.	TGNT
WinStar Communications	www.winstar.com	WinStar provides telecommunications services directly to business customers in more than 35 major U.S. markets and several international markets. The company provides several services over its broadband wireless and leased network facilities, including local and long distance voice services, high-speed data transport, Internet access, Web hosting, and a growing set of Internet content-related services.	230 Park Avenue New York, NY 10169	Microsoft, CS First Boston, Welsh Carson Anderson & Stowe, Cascade Investments, Lucent, Williams, Metromedia Fiber Network, Hicks Muse Tate & Furst	WCII
BroadlLink Communications	www.broadlink.com	BroadLink Communications provides wholesale, broadband access to ISP and CLEC customers using unlicensed-band spectrum. The company is operational in Northern California and is planning to expand to additional markets during the coming quarters. BroadLink partners with other carriers for transport services and with major collocation providers to interconnect with other carriers.	1300 N. Dutton Ave. Santa Rosa, CA 95401-4610	numerous private sponsors	private
Cidera	www.cidera.com	Cidera is building and operating a global satellite broadcast overlay network that delivers Internet, audio/video, and streaming media content to the edge of the Internet. Cidera serves several hundred POPs in North America and Europe, and plans to open service in Latin America and Asia by the end of 2000.	8037 Laurel Lakes Ct. Laurel, MD 20707	Carlyle Venture Partners, Intel, Institutional Venture Partners, New Enterprise Associates	private
Clearwire Technologies	www.clearwire.com	Clearwire Technologies is a developer and manufacturer of fixed wireless local access products as well as a provider of broadband wireless connectivity using unlicensed-band spectrum. The company's services arm provides high-speed, IP connectivity to carrier customers as well as business end users. Clearwire typically partners with local ISPs to enable them to provide high-speed access to their customers. The company's services have been commercially launched in three markets, with expansions planned to additional markets.	2000 East Lamar Arlington, Texas 76006	numerous private sponsors	private

Section 6: Broadband Wireless Services

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Fuzion Wireless Communications	www.gofuzion.com	Founded in early 1999, Fuzion offers an array of Internet and data connectivity services using unlicensed 5-GHz spectrum.	5255 North Federal Hwy. Boca Raton, Florida 33487	numerous private sponsors	private
HighSpeed.com	www.highspeed.com	HighSpeed.Com is a CLEC and LMDS licensee in five Western states. The company provides an array of Internet access and data connectivity services.	1520 Kelly Place Walla Walla, WA 99362		private
iSky	www.isky.netflash.htm	iSKY intends to deliver affordable high-speed Internet access services via satellite to homes and small offices in North America and Latin America during 2001. The company is targeting users that are under-served by terrestrial broadband	9137 East Mineral Circle Englewood, CO 80112	Kleiner Perkins Caufield & Byers, TV Guide, Liberty Media	private
LMA Systems	www.lmasys.com	LMA Systems is a provider of broadband wireless services. The company has deployed high-speed data services primarily in the MMDS band, and is targeting tier 3 and tier 4 markets along the East Coast.	14 Commerce Street Flemington, NJ 08822		private
Netbeam, Inc.	www.netbeam.net	Netbeam provides high-speed network access for businesses and individuals in small population centers and rural markets using unlicensed-band spectrum. The company typically partners with local ISPs to enable them to provide high-speed access to end users.	325 South Main Street Breckenridge, CO 80424	numerous private sponsors	private
SPEEDUS.COM	www.speedus.com	SPEEDUS.COM is a facilities-based broadband wireless carrier. The company also provides standard direct dial-up and ISDN service, as well as web hosting and e-mail.	140 58th Street Brooklyn, NY 11220		private
TeraBeam Networks	www.terabeam.com	Founded in 1997, TeraBeam Networks is developing a high-bandwidth service based on free-space-laser technology. The company is trialing its technology in several markets and plans to launch commercial service during 2000-2002.	2300 Seveth Avenue Seattle, WA 98121	Softbank Venture Partners, Oakhill Venture Partners, Madrona Investments, Morgan Stanley, Merrill Lynch, Fidelity Management and Research, T. Rowe Price, Capital Research and Management Co., and five other major telecommunications strategic partners	private

Section 7: Cable Modem-Based Internet Access

Section 7: Cable Modem-Based Internet Access

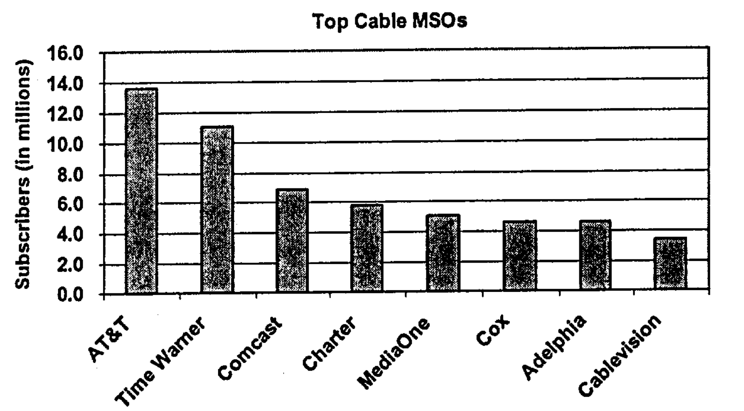
◆ Cable Industry Overview

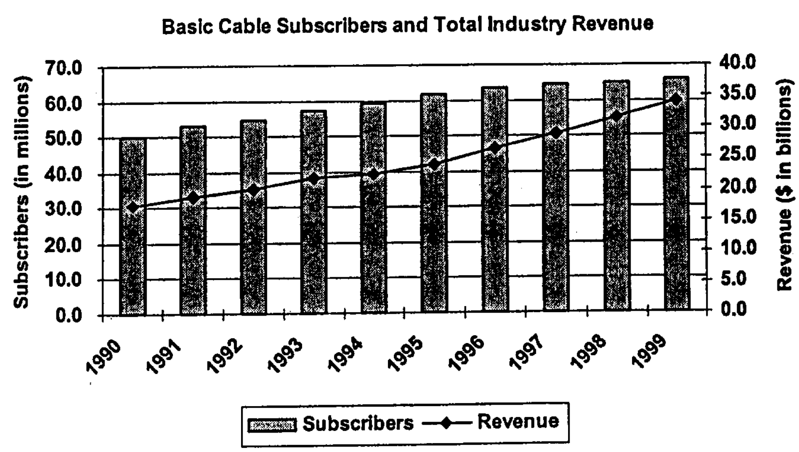
The cable industry's origins date back to the late 1940s. In order to reach residences in geographically remote regions, operators mounted antennas on mountain-top towers, and homes were wired to these towers to receive the broadcast signals. Since those early days, some 11,000 cable systems have been deployed that collectively pass approximately 95% (96 million) of all U.S. television households. At present, there are approximately 67 million households subscribing to basic cable service, contributing to overall industry revenues of approximately $34 billion.

For more information on the cable industry, please see Dain Rauscher Wessels industry report of December 9, 1999, entitled "The Cable Industry Strikes Up the (Broad) band for the New Millennium."

As a result of municipal franchising requirements, cable systems were originally developed as disparate individual networks. As the industry grew and cable technology developed, a wave of consolidations swept the industry. The leading groups of cable system owners became known as Multiple System Operators (MSOs). Today, the top eight MSOs control more than 83% of cable subscribers.

Exhibit 7-1 ◆ Leading Cable Operators and Industry Growth





* Data as of March 31, 2000.

Source: *Cablevision Magazine*, Cahners In-Stat, and Company reports.

Section 7: Cable Modem-Based Internet Access

A number of significant developments characterize the cable industry today:

- **Subscriber Growth:** Basic cable subscribers have grown at a compound annual rate of 3% over the last five years, reaching 67 million subscribers and a 70% penetration of homes passed in the United States.
- **Revenue Per Subscriber:** Average revenue per subscriber (unit) has increased over the last several years as a result of rate increases and new service offerings, such as pay per view. While the average basic cable rate is on the order of $25, the average revenue per subscriber is more than $40.
- **Upgrades:** Through the installation of digital video compression, fiber optic, and bandwidth amplification technologies, cable operators have been incrementally upgrading their systems. Average channel capacity has increased significantly, and the number of homes that can access cable Internet service has grown steadily to reach approximately 50% of homes passed.
- **Consolidation:** Over the past decade, the cable industry has witnessed mass consolidation, including most notably AT&T's acquisitions of TCI (completed) and MediaOne (pending), as well as several acquisitions each by Adelphia, Time Warner, Comcast Corporation (Nasdaq: CMCSK; Buy-Average; $37.56), Cox Communications, Inc. (NYSE: COX; Buy-Average; $45.13), and Charter. Today, the top eight MSOs control 83% of all subscribers.
- **Broadband Access:** Coupled with the cable industry's transition to digital technology and the enhanced services it enables, one of the major stories in the cable industry today is high-speed Internet access.

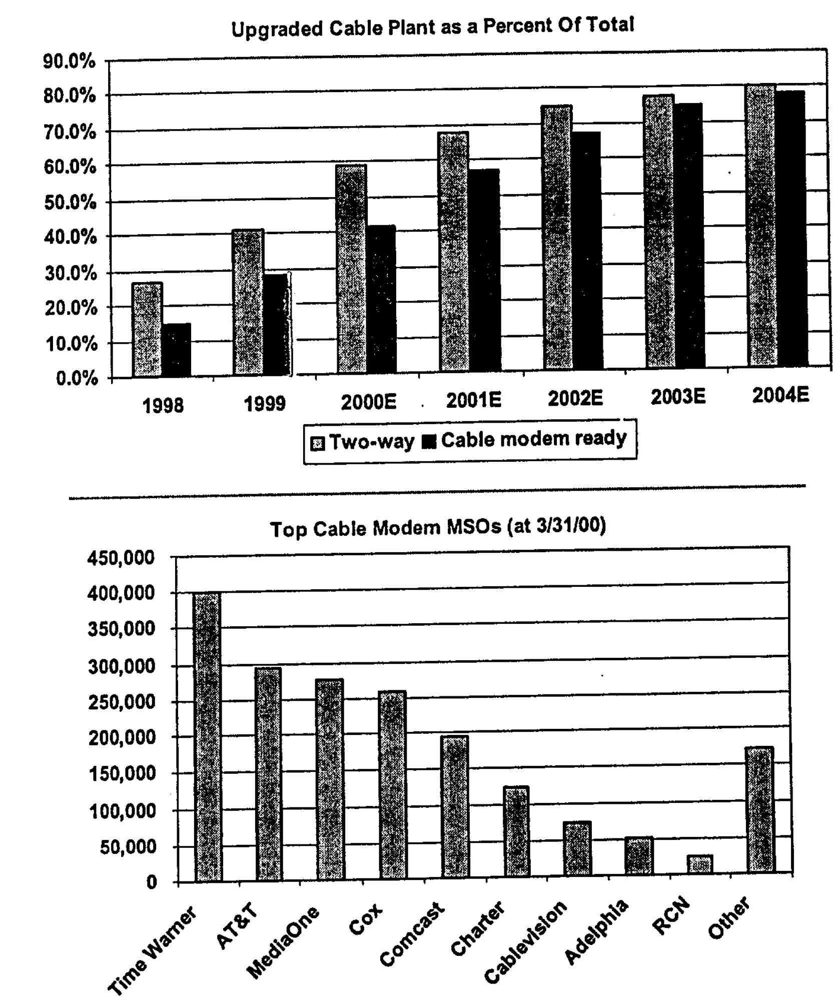
◆ Two-Way Broadband Services

The development of two-way cable Internet systems arose from several factors, including the industry's desire to generate higher revenue per subscriber and competition posed by Digital Broadcast Satellite (DBS) systems in delivering video programming. One of the first methods cable operators used to boost average revenue per subscriber was to offer expanded channel packages for a higher price. However, there exists a limit on the number of channels a cable system can offer. To expand channel offerings, cable operators have expanded the existing analog infrastructure to accommodate more bandwidth, as well as installed digital video compression technology and fiber optic capacity.

Traditional coaxial cable systems typically operate with 330 MHz or 450 MHz of capacity, whereas modern hybrid fiber/coax (HFC) systems are expanded to 750 MHz or more. Each standard television channel occupies 6 MHz of RF spectrum. Thus, a traditional cable system with 400 MHz of downstream bandwidth can carry the equivalent of 60 analog TV channels and a modern HFC system with 700MHz of downstream bandwidth has the capacity for some 110 channels. Over the last ten years, the average channel capacity of cable systems has approximately doubled to close to 60 channels. As a result of this process, cable operators have shortened the transition between the one-way offering of video programming and the two-way provision of broadband services.

Section 7: Cable Modem-Based Internet Access

Exhibit 7-2 ◆ Two-Way Cable Modem Trends



Source: IDC, Kinetic Strategies, and Company reports

Aided by its conversion to digital technology as well as the growth of the Internet, the cable industry has emerged as a significant player in high-speed Internet services, especially for the residential segment. With near ubiquitous coverage, cable connections provide a potentially powerful platform for providing residences and some businesses with broadband access. Leading operators in North America have formed ventures to address key technical, operating, content, and marketing challenges associated with the wide-scale deployment of cable Internet services. The major cable Internet service providers are Excite@Home and Road Runner, which together account for more than 80% of U.S. cable modem-based Internet subscribers. **Exhibit 7-3** lists several two-way cable Internet players and their major affiliates.

Section 7: Cable Modem-Based Internet Access

Exhibit 7-3 ◆ U.S. Cable-Based Internet Access Players

Cable Internet Access Provider	Major Cable Affiliates	Cable Internet Subscribers
Excite@Home	AT&T, Cox	1,500,000
Road Runner	MediaOne, Time Warner	730,000
Optimum Online	Cablevision Systems	31,474
RCN	own cable system	26,700
High Speed Access Corp.	Charter	26,000
Worldgate	various cable operators	19,000
Earthlink	selected Charter systems	12,000
Knology	own cable system	7,662
Adelphia Power Link	various cable operators	7,566
ISP Channel	various cable operators	7,044
Convergence.com	various cable operators	5,518
Internet Ventures	various cable operators	1,700
Befera Interactive Cablenet	Range TV Cable, Midwest Communications	500

Source: *Cablevision Magazine*, Cahners In-Stat and Company reports

Of note, RCN, Knology, and several new operators are deploying newly constructed cable plant in markets with an incumbent operator already present (this is known as *cable overbuilding*) to offer bundled Internet, video, and telephony services. In addition, some firms' offerings enable subscribers to access the Internet through their televisions—this is in contrast to the majority of cable Internet offerings, which deliver Internet access via the user's personal computer. PC-based cable Internet services are generally priced in the $40 per month range for existing cable subscribers.

Television Delivery of Cable Internet Services: Some cable Internet services deliver access to the television rather than the personal computer. Such services are provided using a dedicated browsing device that links to the set-top box to offer basic applications such as e-mail and casual Web browsing. These services are typically priced in the $10 per month range, significantly lower than most PC-based services. Television-based cable Internet services allow operators to serve the approximately 50% of U.S. households that do not currently own PCs. In addition, Internet-to-television services allow operators to offer a more entertainment-oriented Internet experience (e.g., casual e-mail and Web browsing on a TV screen in the living room) to households that already have one or more PCs.

Section 7: Cable Modem-Based Internet Access

Exhibit 7-4 ◆ Two-Way Cable Internet Deployment

Cable Company	ISP Relationships	Markets Deployed
AT&T Broadband	At Home	Arlington Heights, IL; Moline, IL; Pittsburgh, PA; Cedar Rapids, IA; Portland, OR; Dallas, TX; Rochester, NY; Denver, CO; Royal Oak, MI; Des Moines, IA; San Francisco Bay Area, CA; East Lansing, MI; Seattle, WA; Hartford, CT; Spokane, WA; Woodhaven, MI
Adelphia	Power Link, ISP Channel (SoftNet)	Coudersport, PA; Mt. Lebanon, PA; Lansdale, PA; Pittsburgh, PA; Toms River, NJ; Amherst, NY; Grand Island, NY; Plymouth, MA; Adams, MA; Berkshire, MA; Palm Beach, FL; Stuart, FL; Delray Beach, FL; West Seneca, NY; Niagra Falls, NY; Burlington, VT; Blacksburg, VA; Staunton, VA; Winchester, VA; Charlottesville, VA; Hilton Head, SC; Butler County, OH; Clermont Country, OH; Warren County, OH; Canaan, OH; Sturgis, KY
Bresnan Communications	At Home, BresnanLink	Marquette, MI; Midland, MI; Bay City, MI; Escanaba, MI; Manistique, MI; Duluth, MN; Mankato, MN; Madison WI
Cable One	Own ISP	Ada, OK; Biloxi, MS; Sioux City, IA; Fargo, ND
Cablevision of Lake Havasu	ISP Channel (SoftNet)	Lake Havasu City, AZ
Cablevision of Lake Travis	ISP Channel (SoftNet)	Lakeway, TX
Cablevision of Loudoun	Pulse Internet service	Loudoun County, VA
Cablevision Systems	At Home, Optimum Online	Long Island, NY; Westport, CT
Century Communications	Road Runner	Norwich, NY
Charter	HSA Corp., Earthlink, WorldGate	Pasadena, CA; Riverside, CA; Newtown, CT; Maryville, IL; St. Louis MO; Logan, UT; Birmingham, AL; Hickory, NC; Vincennes, IN; Stevens Point, WI; Guntersville, AL; Tangipahoa, LA; Turlock, CA; Morristown, TN
Classic Cable	ClassicNet.net (HSA Corp.)	Lebanon, MO; Neosho, MO; Burkburnet, TX; Iowa Park, TX; Center, TX; Clarksville, TX; Eastland, TX; Breckenridge, TX; Terrell, TX
Comcast	At Home	Atlanta, GA; Augusta, GA; Orange County, CA; Sacramento, CA; Baltimore, MD; Philadelphia, PA; Charleston, SC; Sarasota, FL; Chesterfield, VA; Union, NJ; Detroit, MI; Ft. Wayne, IN; Indianapolis, IN; Olathe, KS; Allenhurst, NJ; Cherry Hill, NJ; East Rutherford, NJ; Cranbury, NJ; Jersey City, NJ
Covington Cable	HSA Corp.	Covington, GA
Cox	At Home	Newport News, VA; Orange County, CA; Meriden, CT; Eureka, CA; Jefferson Parish, LA; Phoenix, AZ; Providence, RI; Oklahoma City, OK; San Diego, CA; Omaha, NE; College Station, TX; Baton Rouge, LA
FrontierVision	Maine Internetworks	Camden, ME; Rockland, ME
Full Channel TV	HSA Corp.	Bristol, RI; Barrington, RI; Warren, RI
Galaxy	ISP Channel (SoftNet)	Alma, MO; Waverly, MO; Higginsville, MO; Concordia, MO; Maltabend, MO; Houstonia, MO; Emma, MO; Blackburn, MO; Seneca, KS; Sabetha, KS; Clay Center, NE; Geneva, NE; Syracuse, NE
Garden Isle	HSA Corp.	Lihue, HI
Grafton Cable	HSA Corp.	Grafton, OH
InterMedia Partners	At Home, Online System Services	Athens, GA; Louisville, KY; Greenville/Spartanburg, SC; Lexington, KY; Nashville, TN; Kingsport, TN
Insight Communications	Road Runner	Columbus, OH
Jones Intercable	At Home	Northern Virginia
Knology	Knology	Augusta, GA; Charleston, SC; Panama City, FL; Montgomery, AL; Columbus, GA; West Point, GA; Huntsville, AL
Marcus	At Home, HSA Corp.	Highland Park, TX; University Park, TX; Eau Claire, WI; Rice Lake, WI
Massillon Cable	WorldGate	Massillon, OH
Mediacom	ISP Channel (SoftNet)	Chillicothe, IL; Hutchinson, MN; Henry, IL; Dagsboro, DE; Eveleth, MN; Jacksonville, IL; Waseca, MN; Huntsville, AL; Franklin/Sylva, NC; Gulf Breeze, FL; Pace, FL
MediaOne	Road Runner, MediaOne Express	Los Angeles, CA; Chicago, IL; Atlanta, GA; Miami, FL; Ft. Myers, FL; Jacksonville, FL; Richmond, VA; Minneapolis, MN; Massachusetts/New Hampshire; Northville/Plymouth, MI; Fresno, CA
Mid-Atlantic Communications	ISP Channel (SoftNet)	Rockville, MD
RCN	Own ISP	Northeast corridor; Chicago, IL; SF Bay Area; Southern California
Rifkin & Associates	Convergence.com	Bedford, VA; Cookeville, TN; Lebanon, TN; Columbia, TN
Tennessee Cablevision	ISP Channel (SoftNet)	Oak Ridge, TN
Time Warner	Road Runner	New York, NY; Los Angeles, CA; San Diego, CA; Twin Cities, MN; Cincinatti, OH; Houston, TX; Austin, TX; Kansas City, MO; Albany, NY; Syracuse, NY; Troy, NY; Saratoga, NY; Raleigh, NC; Charlotte, NC; Akron, OH; Canton, OH; Columbus, OH; Youngstown, OH; Portland, ME; El Paso, TX; Oahu, HI; Austin, TX; El Paso, TX; Tampa, FL; Memphis, TN; Binghamton, NY; Corning, NY; Elmira, NY
Western Shore Cable	HSA Corp.	St. Mary's, MD

Source: Company reports and Dain Rauscher Wessels

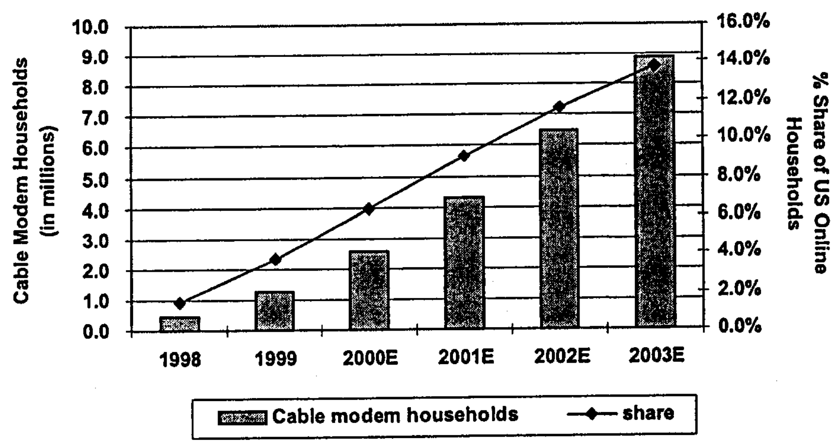
Section 7: Cable Modem-Based Internet Access

◆ Cable Internet Projections

We believe that the following factors are fueling the move toward cable-based Internet access:

- **Revenue:** High-speed Internet access enhances the monthly revenue potential per subscriber for the cable operator. Internet access revenues are typically split between the cable operator and the cable ISP. Cable overbuilders, since they act as both the ISP and the cable operator, do not incur revenue sharing.
- **Response to DBS Threat:** DBS-based services compete directly with cable-based video offerings in terms of both content and price. By deploying two-way Internet capability, cable operators are able to add services that cannot be matched cost-effectively by DBS competitors.
- **Internet Growth:** Like all broadband access media, cable modem growth is clearly driven by the popularity of the Internet usage. This relates not simply to subscription growth, but also to the increasing usage of bandwidth fostered by complex content on the Web, including audio and video.
- **New Players:** In just the last year, the cable landscape has shifted considerably with the entry of new players. AT&T's commitment to become a leading provider of broadband services, coupled with Paul Allen's (Vulcan Ventures) and Microsoft's presence in this space, is speeding the pace of cable Internet infrastructure deployment.

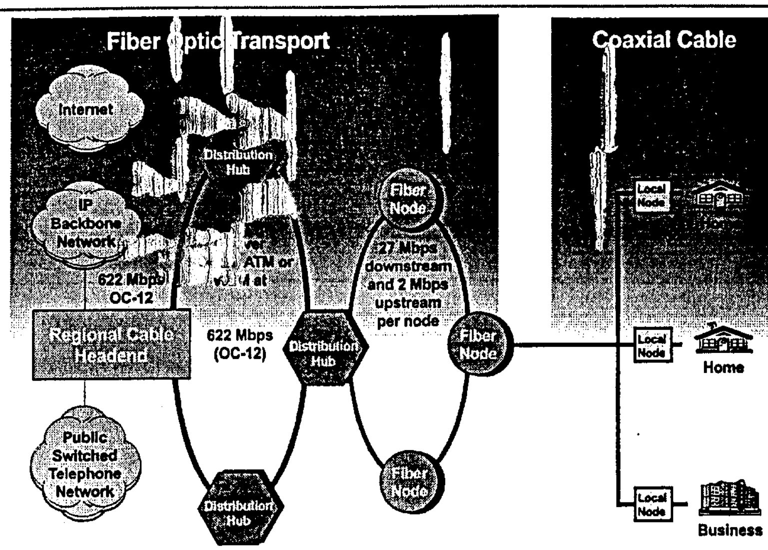
Exhibit 7-5 ◆ Cable Modem Projections



Source: IDC

Section 7: Cable Modem-Based Internet Access

Exhibit 7-6 ◆ Representative Cable Internet Architecture



Source: Kinetic Strategies

◆ Cable Internet Architecture

Head-end: The head-end is the central point in a cable system. At this location, cable operators install the equipment necessary to receive video programming and the transmission equipment that sends the signals to customers' homes. In order to provide Internet access, the head-end must be upgraded with IP routers, servers, and, often, caching equipment. Head-end upgrades can cost on the order of $100,000.

Backhaul: The head-end typically is connected to the Internet via landline, wireless, or satellite data links, depending on the particular system. Depending on the system, network management tools as well as security and billing systems must be also be linked via backhaul to the head-end.

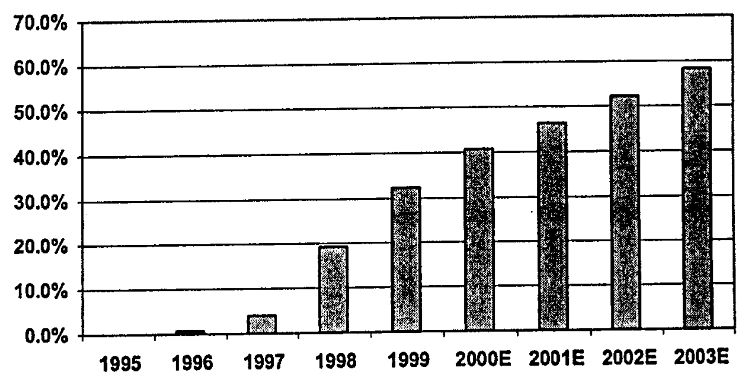
Fiber Deployment: The most common method for upgrading analog systems is to install optical fiber from the head-end to a local node. Such fiber is able to handle additional video channels and large data traffic volumes and is two-way capable.

Local Node: Typically, multiple fiber optic lines carry Internet traffic from the head-end to cable nodes in each neighborhood, which in turn connect through coaxial cable connections into the home. Cable nodes typically serve up to about 500-1,500 homes in a modern system.

Cable Modem: The cable modem acts as the physical link between the cable plant and the personal computer. The North American cable industry, in cooperation with cable modem manufacturers, adopted hardware and software interface standards known as DOCSIS to support the delivery of data services over the cable infrastructure. Adoption of this standard should contribute to lower-cost modems, less complex installation procedures, and, potentially, self installation by subscribers. Cable modem pricing is currently in the $250-$300 range, depending on the vendor.

High Throughput: While the peak data transmission speed of a cable modem is 27 Mbps downstream and nearly 1 Mbps upstream, the performance that subscribers actually experience is often constrained by the shared nature of the service. Cable Internet traffic utilizes the bandwidth of one or more 6 MHz video channels to provide downstream service from the Internet to the customer. This allows for a shared downstream bandwidth of between 27-39 Mbps, or approximately 1,000 times the speed of a 28.8 kbps analog connection. Each of the subscribers on a single fiber node shares this bandwidth, so cable ISPs are generally not able to guarantee throughput levels. Upstream traffic is generally handled on a portion of the cable spectrum not used for video service (5-42 MHz range) and is slower—usually not more than 768 kbps upstream—than downstream speeds but often on par with or faster than ISDN speeds of 128 kbps. In some markets, cable ISPs limit users' upstream bandwidth usage or charge extra for heavy upstream traffic in order to manage system resources. Availability of upstream transmission on the cable plant depends on the individual operators' plant upgrade programs. Roughly 40% of the cable plant in the United States is two-way capable today.

Exhibit 7-7 ◆ Cable System Upgraded for High-Speed Internet Access



Source: IDC

Always-On Connection: Like other broadband services, most two-way cable Internet systems keep the customer's connection active even during idle periods. Thus, users who leave their PCs switched on can instantly access the Web without having to experience the dial-up or logon delays of conventional Internet services.

One-Way Services: Some cable Internet deployments use an approach known as *one-way with telco return,* in which the cable plant carries the downstream traffic, and conventional telephone lines are used for the upstream traffic. This approach, besides offering lower upstream speeds than full two-way deployments, ties up the user's existing phone line or requires the installation of a second phone line, thereby increasing the monthly cost of the service. As such, one-way cable Internet services are seen by most operators and ISPs as an interim solution along the path to full two-way capability.

Caching and Content Delivery: Most cable ISPs incorporate caching technology at the head-end servers to reduce the time and cost associated with transporting popular content repeatedly across the Internet.

Section 7: Cable Modem-Based Internet Access

Exhibit 7-8 depicts representative unit economics of a cable ISP and cable overbuilder. As mentioned earlier, a cable ISP typically splits revenue with the cable operator, and, depending on the arrangement, may share in the upgrade expenditures. A cable overbuilder controls the entire connection from the Internet to the customer and thus does not incur a revenue share.

Exhibit 7-8 ◆ Cable Internet Unit Economics

	Cable ISP	Cable Overbuilder
Assumptions:		
Homes per head-end	60,000	40,000
Voice penetration per customer	0%	75%
Fixed costs		
Two-way upgrade (one-time)	$2,400,000	$20,000,000
Router, Other equipment cost (one-time)	70,000	70,000
Total fixed costs (network capex)	$2,470,000	$20,070,000
Semi-fixed costs		
Customer acquisition cost (one-time)	100	100
Customer premise equipment (one-time)	425	425
Gross semi-fixed costs (subscriber acquisition cost)	$700	$700
Revenue from customer premise equipment (one-time)	(200)	(200)
Revenue from installation fee (one-time)	(100)	(100)
Net semi-fixed costs (subscriber acquisition costs)	$400	$400
Variable costs		
Backhaul, power (monthly)	$1,500	$1,500
Recurring monthly revenue per customer	$40	$110
Share of recurring monthly revenues	$20	$110
Customer revenue margin	$20	$110
Breakeven (customers)	8,501.4	5,573.3 *
Breakeven (penetration)	14.2%	13.9% *

* capital expenditures amortized over 36 months

Source: Dain Rauscher Wessels

◆ Cable Broadband Regulation

The 1996 Telecom Act affects the cable industry in the following ways:

- Telephone companies are allowed to provide cable TV service in their local telephone service areas if they agree to provide interconnection for local telephone service to the local cable television operator. To date, this has been done on a relatively limited scale, with Ameritech being the notable exception (Ameritech has deployed cable systems in several Midwest markets).
- Cable operators are permitted to provide local telephone service in their franchise areas through their facilities or as resellers of the current local provider's services. AT&T, Cablevision Systems (NYSE: CVC; Strong Buy-Average; $62.81), Comcast, Cox, and Time Warner are among the major cable operators that provide local telephone service over their own facilities.
- A cable television operator may own up to 10% of the local exchange carrier, and the LEC may, in turn, own up to 10% of the local cable television operator in the same service area.

Section 7: Cable Modem-Based Internet Access

At present the key regulatory debate pertaining to cable Internet service relates to open access to the cable infrastructure for multiple ISPs. Currently, exclusive arrangements exist between cable ISPs, such as Excite@Home and cable operators, such as AT&T, to offer Internet service over the cable plant. With the expiration of most of these agreements in the 2001-2003 time frame, many cable ISPs and operators have announced the extension of their contracts but eliminated the exclusivity provisions.

The open access issue originated at the local level in 1999 in conjunction with franchise renewal and transfer proceedings. Although it is likely that lengthy court proceedings will accompany this issue over the coming quarters, we believe that as a practical matter, it is unlikely to lead to the mandated unbundling of the cable plant for several reasons. First, the cable plant has never fallen under the same common carrier classification as the telephone network, and to place both systems on parity by "regulating up," or imposing more regulation on the cable side, goes against the grain of current FCC thinking. Second, the FCC's primary policy objective of fostering broadband competition in the consumer market, which is currently taking place between cable and DSL-based providers, could be delayed if cable companies lose incentive to upgrade to two-way capability. Cable unbundling entails a host of technical complexities and capital outlays to be borne primarily by cable operators.

◆ Current Limitations of Cable Internet Services

Upgrade Requirements: Significant investment still is required to upgrade many cable systems for broadband compatibility. This expense is usually borne by the cable operator alone, although some ISPs offer financial incentives to operators to upgrade their plant and sign on Internet subscribers.

Back-Office Coordination: Since the cable ISP and the cable operator are usually separate companies (except in the case of cable overbuilders), significant coordination is required between both parties to effectively deliver and bill for service.

Limited Reach to Businesses: Although cable systems collectively pass 95% of homes in the United States, they generally do not extend to businesses. To reach this sizeable market with two-way capable, upgraded facilities, cable operators or ISPs would have to incur significant additional capital outlays or find other means, such as wireless, DSL, or fiber, to reach businesses. Business services would represent an effective complement to residential service as a significant amount of bandwidth goes unused during daytime hours.

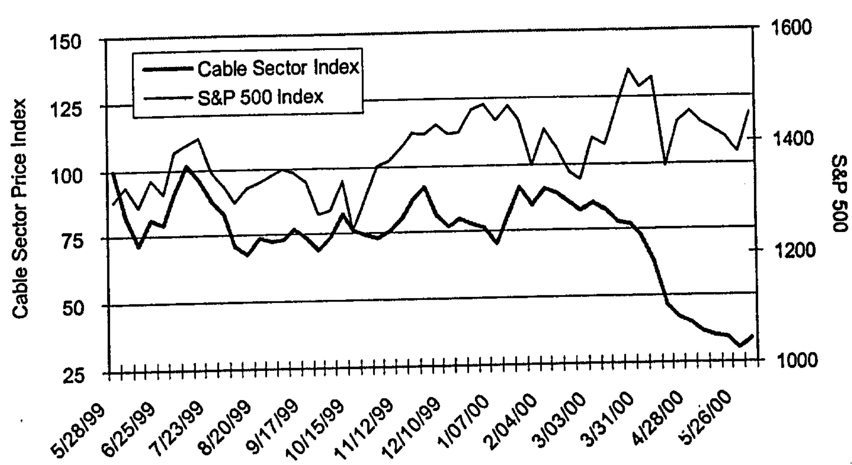
Shared Medium: Unlike other networks in which a user is allocated a dedicated connection, cable modem users do not occupy a fixed amount of bandwidth. Instead, they share the network with other active users and use the network's resources only when they actually send or receive data. Thus, Internet access speeds vary depending on how many users are using the connection at any one time and can slow appreciably during peak usage periods. To increase shared capacity and alleviate congestion, cable operators can perform node segmentation, which effectively limits the number of homes that share a single 6 MHz channel.

Section 7: Cable Modem-Based Internet Access

Provisioning Complexity: Obtaining a cable connection to the Internet entails making an appointment for installation and, often, opening up one's PC for Ethernet card installation. Cable modem products offering Universal Serial Bus (USB) connections to USB-enabled PCs should simplify the installation process and facilitate self-installation.

Network Security: Cable is a shared medium, unlike other technologies such as dial-up and DSL that offer a dedicated connection for each user. Such a shared medium poses security issues with respect to data interception, "packet sniffing," and hacking from other users along the same neighborhood network.

Exhibit 7-9 ◆ Cable Broadband Price Index vs. S&P 500



Source: Dain Rauscher Wessels

Exhibit 7-10 ◆ Publicly Traded Cable-Based Broadband Providers

(Amounts in millions, except per share figures)

			Stock Price Information						Balance Sheet				Revenue			Enterprise Value / Rev.	
			Price	52 Week Range		Shares	FD Shares	Market	Long Term	Preferred		Enterprise					
Company	Symbol	FYE	06/01/00	High	Low	Out.	Out.	Cap.	Debt	Stock	Cash	Value	CY 99	CY 00E	CY 01E	CY 00E	CY 01E
Excite@Home	ATHM	Dec	$20.50	$61.13	$15.88	395.19	395.19	8,101	$832	$409	$502	8,840	$420	$723	$1,310	12.2 x	6.7 x
High Speed Access Corp.	HSAC	Dec	4.97	49.19	4.16	54.28	55.67	277	12	0	179	109	3	14	67	7.9 x	1.6 x
RCN Corporation	RCNC	Dec	23.38	74.88	18.50	76.32	81.14	1,897	2,143	253	1,816	2,477	336	382	522	6.5 x	4.7 x
SoftNet Systems, Inc.	SOFN	Sep	11.69	50.25	8.38	26.66	26.72	312	12	0	251	74	5	16	NA	4.7 x	NM
WorldGate Communications, Inc.	WGAT	Dec	15.31	55.75	13.00	21.49	21.55	330	0	0	76	255	6	19	67	13.4 x	3.8 x

Source: FactSet

Section 7: Cable Modem-Based Internet Access

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Excite@Home	www.excite@home.com	Excite@Home is provider of broadband internet services, content and advertising over the cable television infrastructure. Its primary offering, the @Home service, allows residential subscribers to connect their personal computers through the cable television infrastructure to the company's high speed Internet backbone network. The company's @Work service provides a platform for the Internet and VPN connectivity for business over the cable infrastucture as well as DSL networks, in partnerships with AT&T, NorthPoint Communications and Rhythms NetConnections.	450 Broadway Street Redwood City, CA 94063	AT&T, Comcast, Cox, Cablevision	ATHM
High Speed Access Corp.	www.hsacorp.net	High Speed Access Corp. is a provider of high-speed Internet access via cable modem. The company's partners with exurban cable operators to enable subscribers – residential and commercial end users – to receive high-speed Internet access and enhanced services.	4100 East Mississippi Denver, CO 80246	Broadband Solutions, Vulcan Ventures, Chysalis Ventures, River Cities Capital, Cisco Systems, Com21, Microsoft Corp.	HSAC
RCN Corporation	www.reliantenergy.com	RCN Corporation is a facilities-based provider of bundled local and long distance phone, cable television and high-speed Internet services in dense residential markets. RCN is currently delivering broadband services over its networks in the Boston-Washington corridor, California, and Chicago.	105 Carnegie Center Princeton, NJ 08540	Level 3, Vulcan Ventures, Hicks Muse Tate & Furst.	RCNC
SoftNet Systems	www.softnet.com	Through its ISP Channel, SoftNet provides high-speed Internet access service with partnering cable operators. SoftNet's Intellicom subsidiary provides two-way satellite-based broadband services to schools, government institutions, and businesses. The company's SoftNet Zone unit provides Internet access to business travelers in airports and other public-access venues using wireless LAN technology and conventional wired T1 services.	650 Townsend Street Suite 225 San Francisco, CA 94103-4908	RGC International Investors, White Rock Capital, Stark International, CMGI, Compaq, Delta Airlines	SOFN
Worldgate Communications	www.wgate.com	WorldGate provides high-speed services that enable cable subscribers to access the Internet and e-mail on their cable television sets. The company is currently deployed domestically in several cable systems and has international deployment and trial agreements with 21 multiple system operators in 13 countries worldwide.	3190 Tremont Ave Trevose, PA 19053	Citicorp	WGAT
Carolina Broadband	www.carolinabroadband.com	Carolina BroadBand, a cable overbuilder, is targeting initially twelve markets in North Carolina and South Carolina to provide broadband Internet, video, streaming media, and voice services to residences and businesses.	9601-M Commons East Dr. Charlotte, NC	First Union Capital Partners, Bank of America Capital Investors, Carousel Capital, M/C Venture Partners, MSDW Private Equity, Chase Capital Partners, Providence Equity Partners, Spectrum Equity Associates, Fleet Equity Partners, HarbourVest PArtners LLC, Whitney & Co.	private

Section 7: Cable Modem-Based Internet Access

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Digital Access, Inc.	www.digaccess.com	Digital Access is building a broadband fiber/hybrid coa network in four markets: Indianapolis, Kansas City, Milwaukee, and Nashville. The company's network will offer business and residential customers access to local and long distance voice, digital television, and high-speed Internet access services.	3 Bala Plaza East Bala Cynwyd, PA 19004	Norwest Venture Partners, Bachow & Associates, California State Teachers Retirement System, Cornerstone Equity Investors, LLC, First Union Capital Partners, Fleet Equity Partners, Goldman Sachs Group, M/C Venture Partners, Providence Equity Partners, Spectrum Equity Partners	private
Knology	www.knology.com	KNOLOGY is a provider of bundled broadband communications services, including cable TV, telephone and high-speed Internet access, in the Southeast to residential and business customers. KNOLOGY is part of the ITC group of companies, which includes ITC DeltaCom, Powertel and InterCall.	1241 O.G. Skinner Drive West Point, GA 31833	ITC Holding Company	private
Road Runner	www.rr.com	Road Runner is a joint venture among cable MSO affiliates Time Warner and MediaOne Group as well as Microsoft, Compaq, and Advance/Newhouse. Road Runner cable modem service is delivered through a combination of the networks and technologies of Road Runner and its affiliated cable operators. Road Runner affiliated systems pass approximately 30 million homes.	13241 Woodland Park Rd. Herndon, VA 20171	Time Warner, MediaOne, Microsoft, Compaq, Advance/Newhouse	private
Seren Innovations	www.seren.com	Seren Innovations, a cable overbuilder, provides cable televsion, telephone, and high-speed Internet access over a hydrid fiber-coax infrastructure to residences and businesses. The company is licensed to provide these services in several markets in California and Minnesota.	15 South 5th Street Minneapolis, MN 55402	Northern States Power	private
Western Integrated Networks	www.winfirst.com	Western Integrated Networks is a cable overbuilder that is establishing a presence in California, Texas, and other markets. The company's offerings include voice, Internet, data, portal, and digital cable services.	Colorado Center Tower Two 2000 South Colorado Boulevard Suite 2-670 Denver, CO 80222	J.P. Morgan, First Union Capital, Madison Dearborn, Columbia Capital, Providence Equity, and The Blackstone Group.	private
WideOpenWest	www.wideopenwest.com	WideOpenWest is a cable overbuilder that is deploying a broadband infrastructure for Internet, digital cable television and IP telephony services in the several markets in the Western U.S. The company's network is intended to be an open platform for its own brand of Internet service, as well as for the services of competing ISP's on an open access non-discriminatory basis. The company plans to begin service in the metropolitan areas of Colorado, Oregon, Texas, and other markets this year.	10475 Park Meadows Drive Sixth Floor Littleton, CO 80124	Oak Hill Capital Partners, ABRY Partners	private

Section 8:
Building-Centric Service Providers (BSPs)

Section 8: Building-Centric Service Providers (BSPs)

Broadband services are becoming a key component of value for commercial and residential properties. As real estate stakeholders rush to meet the demands of commercial and residential tenants, carriers are stepping up to the plate with a new generation of convergence products, engineered to distribute voice, data, and enhanced services to multi-tenant properties. Recently, a new crop of broadband service providers has emerged to meet tenant demand for building-focused broadband services. Although the term "BLEC" is occasionally used to identify these carriers, we prefer to use the term BSP (building-centric service provider), as there is no requirement these companies carry LEC (local exchange carrier) status.

Fueling the BSP trend are the incentives that real estate owners have to increase property values and to take advantage of more favorable REIT (real estate investment trust) regulations through equipping their properties with broadband facilities. This is evidenced by the numerous REITs and REOCs (real estate operating companies) that have announced broadband initiatives. The BSP strategy is to offer high-speed Internet access (and, in some cases, voice services), data networking, Web hosting, and enhanced services such as e-commerce and network-delivered applications to multi-tenant and/or hospitality properties.

This approach is similar to that taken by other competitive providers; however, it differs in execution due to the BSPs' strategic relationships with property owners, and the "pre-provisioned" nature of service installation (no truck roll required) to individual suites. In addition, as distinct from many other local competitors, BSPs often lease rather than construct much of their last-mile and backbone infrastructure (at least initially).

Multi-tenant unit (MTU) office properties are an obvious potential market for the BSPs; however, significant opportunities extend into additional types of real estate, such as multi-dwelling unit (MDU) residential properties, hotels, and public access environments. In this chapter, we consider four vertical markets targeted by BSPs:

- multi-tenant commercial properties (or MTUs, multi-tenant units);
- multiple-dwelling units (MDUs);
- lodging; and
- public access (airports, convention centers, and so forth) for business travelers.

We recognize that the dividing line between these segments is occasionally blurred, and in fact many companies in this emerging sector are addressing multiple segments. In addition, not to be overlooked is the fact that many fiber-based and broadband wireless competitors (such as Intermedia Communications, Inc. (Nasdaq: ICIX; Not Rated) Time Warner Telecom, NEXTLINK Communications, Inc., WinStar Communications, Teligent, and Advanced Radio Telecom) have significant building-centric elements to their business models. Nevertheless, as we describe below, BSPs have several common features in their business models that distinguish them from these other classes of competitor and that warrant treating them as a separate category.

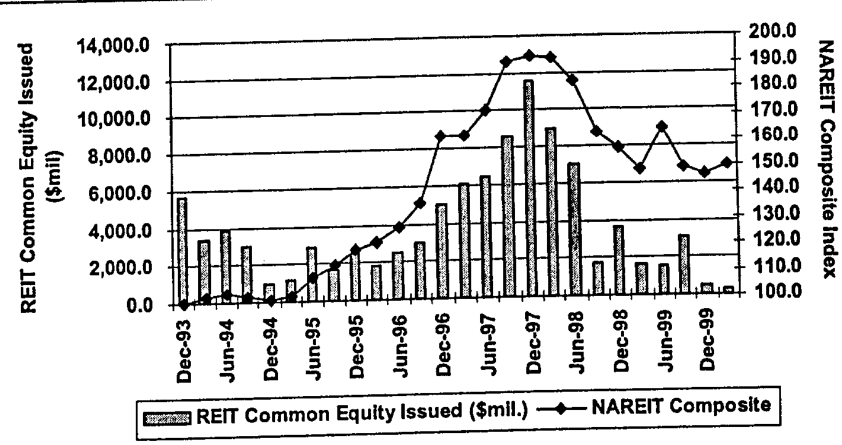
Section 8: Building-Centric Service Providers (BSPs)

◆ A Brief Primer on Real Estate

Real estate development is a complex business, with numerous entitlement processes, financial partners, public agencies, private entities, and management teams to deal with. Combined, these factors present a formidable barrier to competitive providers who wish to serve this market. As discussed in Section 3, the 1996 Telecommunications Act prohibits exclusive service agreements between broadband providers and real estate developers in commercial buildings. However, service providers and developers are frequently willing to enter into exclusive or preferred marketing deals. The following discussion highlights some of the events that have helped create the current opportunity for building-centric broadband service providers.

Despite strong tenant demand, the real estate market became increasingly competitive in the late 1990s, largely due to an increase in supply in most property sectors. As access to capital became tight for property owners, property-level revenues (as opposed to acquisitions) were the primary source of earnings growth for most property owners. Given this circumstance, coupled with greater tenant demand for broadband services, the role of the commercial real estate owner evolved in a new direction. REITs, as well as public and private real estate operating companies (REOCs), embraced telecom as a means to further enhance property values and tenant retention.

Exhibit 8-1 ◆ REIT Total Returns and Common Equity Issued



Source: National Association of Real Estate Investment Trusts

Broadband Deployment: More favorable REIT regulations helped spur broadband deployment. In January 1999, Equity Office Properties Trust, an office REIT, received a ruling from the IRS that allowed the company "to participate in the delivery of advanced telecommunication services to its customers without violation of current REIT rules." According to the ruling, revenue generated by Equity Office from telecommunication services would be deemed "rents from real property." By way of background, REITs must derive at least 75% of gross income from rents from real property, interest on mortgages on real property, or dividends from REIT shares. More recently, the REIT Modernization Act (RMA), passed in December 1999, provides REITs with greater latitude to generate income that is not derived from "rents on real property." Simply put, REITs can more aggressively provide non-core services to tenants without jeopardizing their REIT status.

Section 8: Building-Centric Service Providers (BSPs)

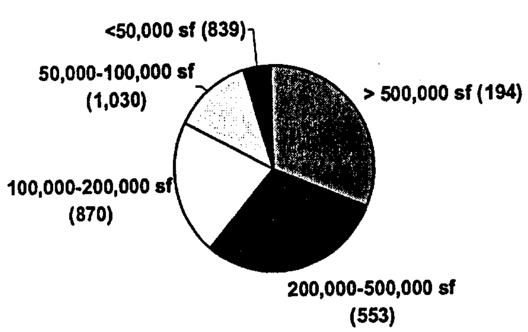
The Land Grab for Building Access: Prior to deploying an in-building broadband network, a BSP must secure access rights from the real estate owner in order to install and operate the proprietary networking equipment. The typical license and access agreement has an initial term ranging from five to ten years, with five- to fifteen-year renewal options. These agreements may also provide for a marketing arrangement, in which the property owner recommends the BSP's telecommunication services to existing or prospective tenants. Typically, BSPs target property interests, such as REITs, REOCs, property managers, real estate agents, as well as pension funds and insurance companies that own commercial real estate to form strategic relationships. These relationships have often included BSP warrant issuances to the property interests in exchange for building access rights.

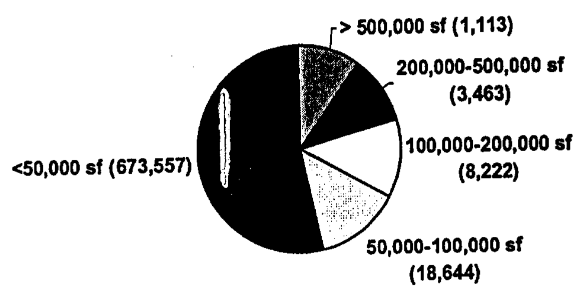
Although building access rights initially create a captive pipeline for BSPs to install their in-building network, the onus is on the BSP to install its network on a timely basis, since other BSPs are likely to have building access rights, given the non-exclusive nature of most agreements. For instance, hotel operators, such as Marriott International and Hilton Hotels, often do not own all of their branded-properties. Therefore, separate agreements with the property owner may be necessary, despite being the preferred high-speed access provider of a hotel chain. We outline several major BSP-real estate relationships in the following sections of this report, organized by vertical market segment.

◆ Multi-Tenant Unit (MTU)—Office BSPS

Traditional telecommunication service providers have typically overlooked small and medium-sized businesses that are located in MTUs. According to the U.S. Department of Energy, the commercial office market consists of approximately 705,000 properties, totaling 10.5 billion square feet. Based on the U.S. Department of Energy and SNL Securities, we conservatively estimate that there are close to 32,000 commercial office properties in the U.S. larger than 50,000 square feet. All told, this adds up to an estimated market opportunity on the order of $10 billion. To address the need for broadband services, BSPs install their own in-building infrastructure and attempt to be a complete provider of bundled services.

Exhibit 8-2 ◆ National Commercial Office Market





Note: Parenthetical figures refer to estimated number of buildings within each category.

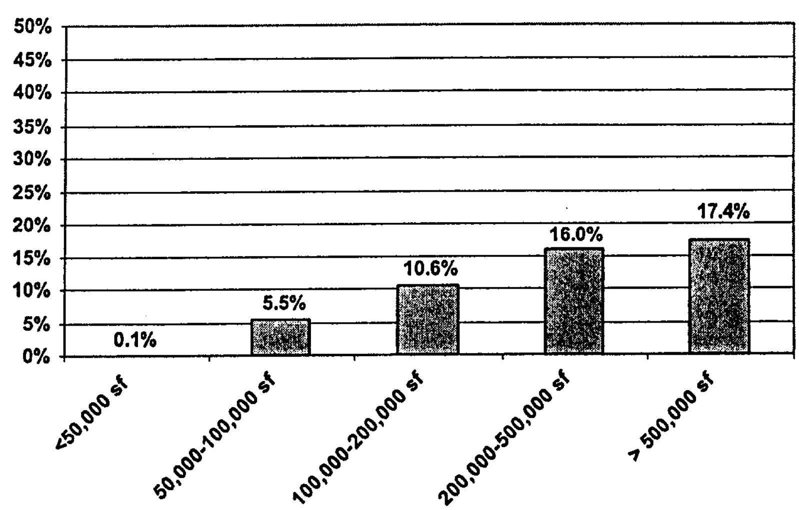
Source: Dept. of Energy and Dain Rauscher Wessels

Source: Dain Rauscher Wessels estimates

Section 8: Building-Centric Service Providers (BSPs)

In order to deploy their in-building networks, we believe that many BSPs are more likely to initially target office buildings greater than 50,000 square feet, given the economies of scale that larger properties afford. Accordingly, we believe that their strategic relationships with commercial real estate owners create a captive pipeline for BSPs in a relatively attractive segment of the commercial real estate market. As illustrated in **Exhibit 8-3**, REIT portfolios consist of larger properties relative to the national office market. Overall, we estimate that REITs own approximately 0.5% of total U.S. commercial office properties, representing 5.4% of total square footage. More specifically, we estimate that REITs own significantly less than 1% of properties with less than 50,000 square feet; meanwhile. This ownership increases to 16.0% and 17.4% of commercial office buildings that encompass 200,000-500,000 square feet and over 500,000 square feet, respectively. We believe the significance of the BSP relationships would be even more evident if the real estate portfolios of several of the major REOCs, such as Tishman-Speyer, Fisher Brothers, TrizecHahn, and Trammel Crow were considered; however, much of this data was unavailable during our analysis.

Exhibit 8-3 ◆ REIT Ownership as a Percentage of the Total U.S. Office Market



Source: Dain Rauscher Wessels

Typical Building-Centric Network Architecture: Although currently available "last-mile" technologies can deliver high-speed data from a local central office to the edge of the building, this does not fully solve the issue of competitive access to tenants inside a commercial building. Traffic must still move from the edge of the building to an end user's LAN, PBX, telephone, or PC over the building's internal network. Historically competitive providers have connected building tenants to their networks by way of the existing in-building wiring, often constructed and owned by the ILEC, through a network interface device typically located in the building basement.

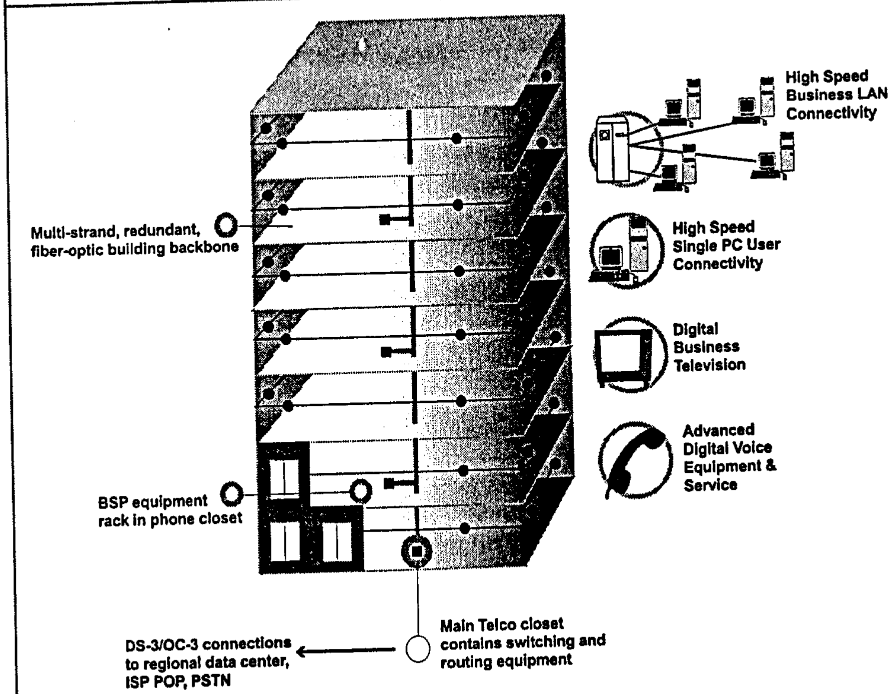
Section 8: Building-Centric Service Providers (BSPs)

As a result of numerous factors, including:

- the bandwidth limitations frequently found in existing in-building wiring;
- the desire to provide network control all the way to the tenant site and not rely on third-party facilities in the building; and
- the desire to offer bundled voice, data, Internet, hosting, and other services;

BSPs install their own telecommunications equipment in the basement phone closet and either speed up the existing copper connections using DSL technology, or run their own combination of fiber, coaxial cable, and clean copper through the building's vertical utility shafts (referred to as "risers") to reach individual business tenants. This is illustrated in **Exhibit 8-4.**

Exhibit 8-4 ◆ Typical BSP Network for Multi-Tenant Commercial Buildings



Source: Dain Rauscher Wessels

Section 8: Building-Centric Service Providers (BSPs)

The basement point of presence (POP) is customized according to the BSP's specific needs and contains data networking and voice communications (depending on the carrier) equipment as well as primary and back-up power supplies. These features allow the BSP to manage in-building networks and facilities independent of the ILEC. The copper, coaxial, and/or fiber-optic cabling installed in the served buildings extends from the basement POP to a termination block on each floor. When a tenant on a particular floor requests service, a technician extends a connection from the floor termination block to the business premise. Having each tenant essentially pre-provisioned eliminates costly service installation procedures such as truck rolls.

BSPs usually outsource in-building construction to contractor partners. The time required to deploy a building network can range from approximately two weeks to two months, depending on the size and type of property as well as the capital intensity of the BSP's network model. As noted earlier, some BSPs choose to utilize existing building copper and enhance it using DSL, while others choose to run their own cabling through the risers. Accordingly, deployment expenditures per building can vary widely, from roughly $30,000 to more than $200,000. In general, carriers use the "DLSAM in the basement" approach to achieve a more rapid time to market or to target buildings with a smaller tenant base.

To communicate with the PSTN, Internet, or other networks, the BSPs connect their building POPs via high-capacity lines (usually leased from a LEC) to a telco central office or metro-area data center, depending on the nature of the traffic. BSPs that do not operate their own hosting or wide-area network infrastructure provide these services on a private-label basis.

Strategic Partnerships for Building Access: Before wiring a building, BSPs must enter into agreements with property owners and operators to gain access rights. Examples of the many strategic agreements that have been reached between BSPs and real estate groups are shown in **Exhibit 8-5.**

Section 8: Building-Centric Service Providers (BSPs)

Exhibit 8-5 ◆ BSP-Real Estate Partnerships in the Multi-Tenant Office Sector

BSP	Real Estate Partners/Strategic Alliances	Company Type
Allied Riser	Angelo, Gordon & Co.	Office Property Manager
	Amerimar Enterprises	Office Property Manager
	Berwind Property Group	Diversified Property Owner
	Boston Properties	Office REIT
	Cornerstone Properties *	Office REIT
	Equity Office Properties Trust	Office REIT
	Fisher Brothers	Office Property Owner and Manager
	Hamilton Partners	Office Property Owner and Manager
	The Hines Organization	Office Property Owner and Manager
	Leggat McCall Properties LLC	Office Property Owner and Manager
	MetLife	Office Property Owner and Manager
	Minshall Stewart Shelby and Co.	Diversified Property Owner
	Pope and Land Enterprises, Inc.	Office Property Developer
	Rubenstein and Company, LP.	Commercial Real Estate Service Provider
	Shorenstein Company	Commercial Real Estate Service Provider
	Tishman Speyer	Office Property Owner and Manager
	Transwestern	Office Property Owner and Manager
	TrizecHahn Corporation	Office Property Owner and Manager
	Urdang & Associates Real Estate Advisors, Inc.	Commercial Real Estate Service Provider
	Vornado Realty Trust	Office/Retail REIT
	Whitehall Funds	Diversified Property Owner
Broadband Office	CarrAmerica Realty Corporation	Office REIT
	Crescent Real Estate Equities	Office REIT
	Duke-Weeks Realty Corp.	Office REIT
	Equity Office Properties Trust	Office REIT
	Highwoods Properties, Inc.	Office REIT
	The Hines Organization	Office Property Owner and Manager
	Mack-Cali Realty Corporation	Office REIT
	Spieker Properties, Inc.	Office REIT
Cypress Communications	Aldrich, Eastman and Waltch	Diversified Property Investor
	Boston Properties	Office REIT
	Brookfield Properties	Office Property Owner and Manager
	Boxer Property	Office Property Owner and Manager
	Cornerstone Properties *	Office REIT
	Cousins Properties	Office REIT
	Lend Lease	Commercial Real Estate Service Provider
	Pope & Land Enterprises, Inc.	Office Property Developer and Manager
	Shorenstein Company	Commercial Real Estate Service Provider
	Taylor & Mathis, Inc.	Office Property Manager
	Taylor Simpson	Commercial Real Estate Service Provider
	Tower Realty	Office REIT
	Transwestern	Office Property Owner and Manager
	TrizecHahn Corporation	Office Property Owner and Manager
	Vornado Realty Trust	Office/Retail REIT
Darwin Networks	MacFarlan Real Estate	Office Property Owner and Manager
	Koulter Property Management	Office Property Owner and Manager
eLink Communications	Jones Lang LaSalle	Commercial Real Estate Service Provider
	TrizecHahn Corporation	Office REOC
Eureka Broadband	Arden Realty, Inc.	Office REIT
	Max Capital Management	Office Property Owner and Manager
Everest Broadband Networks	Cohen Brothers Realty Corp.	Office Property Owner and Manager
	Muss Development Company	Office Property Owner and Manager

* Cornerstone Properties is being acquired by Equity Office Properties Trust.

Source: Company reports and Dain Rauscher Wessels

Exhibit 8-5 ◆ BSP-Real Estate Partnerships in the Multi-Tenant Office Sector, continued

BSP	Real Estate Partners/Strategic Alliances	Company Type
Eziaz	Berwind Property Group	Diversified Property Owner
	Catellus Development	Diversified Property Owner and Manager
	DLJ Real Estate Capital Partners	Diversified Property Owner
	Glenborough Realty Trust	Office, Hotel and Multi-Residential REIT
	Insignia Financial Group	Commercial Real Estate Service Provider
	The Irvine Company	Master Planned Community Developer
	Jones Lang LaSalle	Commercial Real Estate Service Provider
	Koll Development Company	Diversified Property Developer
	Layton-Belling	Commercial Real Estate Service Provider
	Olen Properties	Office and Multi-Residential Property Owner
	Paramount Group	Commercial Real Estate Service Provider
	Parkway Properties	Office REIT
	PM Realty Advisors	Commercial Real Estate Service Provider
	RM Crowe Property Management	Office/Residential Property Owner and Manager
	Rubenstein and Company, LP.	Commercial Real Estate Service Provider
	SKB	Commercial Real Estate Service Provider
	Taylor Simpson Group	Commercial Real Estate Service Provider
	Tishman Speyer	Office Property Owner and Manager
	Vornado Realty Trust	Office/Retail REIT
	JMB/Walton Street Capital	Diversified Property Investor
Fibernet Telecom Group	Tishman Speyer	Office Property Owner and Manager
Intellispace	Abramson Brothers Incorporated	Office Property Owner and Manager
	ATCO Properties and Management	Office Property Owner and Manager
	Bernstein Real Estate	Office Property Owner and Manager
	Brause Realty	Office Property Owner and Manager
	Cushman and Wakefield	Commercial Real Estate Service Provider
	Dakota Realty	Office Property Owner and Manager
	Falcon Properties	Office Property Owner and Manager
	GVA Williams	Office Property Owner and Manager
	Helmsley-Spear	Office Property Owner and Manager
	Jeffrey Management	Office Property Owner and Manager
	Jones Lang LaSalle	Office Property Owner and Manager
	Justin Management	Office Property Owner and Manager
	The Lincoln Building	Office Property Owner and Manager
	Max Capital Management	Office Property Owner and Manager
	Olympic Tower Associates	Office Property Owner and Manager
	Orda Management	Office Property Owner and Manager
	Rudin Management @ 55 Broad Street	Office Property Owner and Manager
	Sherwood 1600 Associates	Office Property Owner and Manager
	Taconic Investment Partners	Diversified Property Investor
	Tower 49®	Office Property Owner and Manager
	W and M Properties	Office Property Owner and Manager
	W and M Properties of Connecticut	Office Property Owner and Manager

Source: Company reports and Dain Rauscher Wessels

Section 8: Building-Centric Service Providers (BSPs)

Exhibit 8-5 ◆ BSP-Real Estate Partnerships in the Multi-Tenant Office Sector, continued

BSP	Real Estate Partners/Strategic Alliances	Company Type
OnSite Access	Angelo, Gordon & Co.	Office Property Owner and Manager
	Blumberg & Freilich Equities Properties	Office Property Owner and Manager
	Brannen Goddard Co.	Office Property Owner and Manager
	The Brookdale Group LLC	Office Property Owner and Manager
	Childress Klein Properties	Office Property Owner and Manager
	Cummings Properties	Office Property Owner and Manager
	Devnet	Commercial Real Estate Service Provider
	Emmes Realty Services	Commercial Real Estate Service Provider
	Equity Office Properties Trust	Office REIT
	Insignia Financial Group	Commercial Real Estate Service Provider
	JMB/Walton Street Capital	Diversified Property Investor
	John. K. Akridge Companies	Office Property Owner and Manager
	Legacy Partners Commercial	Commercial Real Estate Service Provider
	Lend Lease Real Estate Investments	Diversified Property Investor
	Newmark & Co. Real Estate, Inc.	Office Property Owner and Manager
	Oxford Properties Group Inc.	Office Property Owner and Manager
	The Parmenter Company	Office Property Owner and Manager
	Praedium Funds	Diversified Property Investor
	Prime Group Realty	Office REIT
	Reckson Associates	Office REIT
	Regent Partners	Office Property Owner and Manager
	SL Green Realty	Office REIT
	Starwood Capital Group Properties	Diversified Property Owner and Manager
	The Taylor Simpson Group	Commercial Real Estate Service Provider
	Tishman Speyer	Office Property Owner and Manager
	TMW Real Estate Group	Office Property Owner and Manager
	Tower Realty Management Corp.	Office Property Manager
	Transwestern	Office Property Owner and Manager
	TrizecHahn Corporation	Office Property Owner and Manager
	The Witkoff Group	Office Property Owner and Manager
Tenant Connect	Arden Realty	Office REIT
Urban Media	Jones Lang LaSalle	Commercial Real Estate Service Provider
	Liberty Property Trust	Office REIT
	Pinnacle Properties	Office Property Owner and Manager
	Prentiss Properties Trust	Office REIT
	Trammell Crow Company	Office Property Owner and Manager

Source: Company reports and Dain Rauscher Wessels

Section 8: Building-Centric Service Providers (BSPs)

Real estate owners affiliate with BSPs for the following reasons:

- **No-Cost Technology Upgrades:** BSPs usually install, at no direct monetary cost to the real estate owner, an in-building broadband network that becomes an amenity to the building and could increase the property's value.
- **Marketing and Leasing Amenity:** An in-building broadband network represents a significant marketing and leasing amenity to attract and retain tenants and guests. Over time, we expect most commercial properties to offer broadband access; therefore, we expect marginal benefit in the long run for a property that sports broadband access.
- **Recurring Incremental Revenue:** Building access agreements often provide real estate owners with the opportunity to participate in the telecommunications and even e-commerce service revenues within their buildings. A revenue share to the owner of commercial office space can be in the range of 5%-7%.
- **Equity Consideration:** As noted earlier, it is not uncommon for real estate owners to receive warrants or other equity-related incentives in exchange for providing preferred building access to BSPs.

BSP Regulation: Building Access Rights

The telephone closets in many buildings tend to be small facilities that were constructed many years ago for a monopoly service provider. Although CLECs can gain access to these facilities through the interconnection obligations of the 1996 Telecommunications Act, there are considerable physical limitations on how much proprietary telecommunications equipment a typical building can accommodate. Under current FCC regulations, commercial real estate owners have the right to control wiring within their premises, beyond the demarcation point (typically the phone closet) at which telecommunication carriers typically terminate their facilities. These rules allow the property owners to install and maintain their own wire, or to contract these services to other companies. Currently, there is no national requirement that property owners or managers give access to competitive telecommunications providers of communication services, but some such measures have been adopted at the state level. For instance, state laws in Connecticut and Texas generally require commercial real estate owners to provide nondiscriminatory access to communication carriers who have customers within a building, and limit what the property owner may charge for such access. These laws require that a carrier be permitted to install their own in-building wiring; however, there is no requirement that property owners allow these carriers to use existing wiring.

In June 1999, the FCC announced that it was considering adopting rules on a number of issues related to riser access in multiple tenant environments and requested comments on the following issues, among others:

- the FCC's tentative conclusion that utilities must allow communications and cable service providers access to rooftops and other rights-of-way as well as riser conduit in multiple tenant environments on just, reasonable and nondiscriminatory rates, terms, and conditions;
- whether incumbent phone companies should make available unbundled access to riser cable and wiring within multiple tenant environments; and
- whether real estate owners offering access to any communications provider should be required to make comparable access available to these providers on a nondiscriminatory basis, and whether the FCC has the authority to impose such a requirement.

Section 8: Building-Centric Service Providers (BSPs)

Arguing that their facilities (specifically phone closets and risers) should be considered as private property as opposed to public rights of way, building owners have opposed most of the Commission's moves. Although it is unclear how this issue will be resolved on the regulatory front, we think it is reasonable to assume that multiple, but not an unlimited number of, carriers will ultimately be able to obtain access to telecom-relevant facilities in commercial buildings. Furthermore, we believe that most such arrangements will be negotiated on a direct, private basis rather than be reached through litigation.

BSPs' Multi-Faceted Value Proposition to Building Tenants: As do other competitive broadband providers, BSPs generally attempt to offer customized bundles that combine numerous types of services—voice, data, long distance, Internet, hosting, and so forth. Because of their concentrated infrastructure deployment within the building, it can be argued that BSPs can deploy their capital and deliver these services more efficiently. In cases where the BSP relies on third-party providers for services such as hosting or Internet peering, BSPs, due to their generally high penetration rates within served buildings, can deliver concentrated demand to their suppliers, which potentially translates into attractive pricing and premium service levels.

An even more unique aspect of many BSP models is the on-site representative, who maintains a daily presence in a particular building or group of buildings and assumes multiple roles, including customer care representative, network engineer, communications consultant, IT administrator. By providing not just basic connectivity but ongoing customized service, BSPs can enhance customer retention and realize additional revenues.

Finally, on the e-commerce front, many BSPs attempt to provide value-added, proprietary content that is specific to individual locations. The idea here is to facilitate in-building or local business communities and share in the resulting transaction revenues. By aggregating multiple tenants into a single, building-centric portal, BSPs can offer dot-com firms, application service providers, local vendors, and other entities the opportunity to target a pre-selected group of prospects. The BSP e-commerce opportunity has given impetus to numerous efforts by third-party development firms to establish building-centric portals in major markets.

Sales and Marketing: BSP affiliations with the real estate companies enable them to take a different approach to providing telecommunication services to small and medium-sized tenants than traditional competitors normally take. This approach has the following unique features.

- **Preferred Marketing:** BSPs can utilize their relationships with real estate owners, building managers, and leasing representatives to market the services directly to the tenant in an on-network building.
- **Indirect Channels:** BSPs' real estate partners can feature the BSPs' broadband services in their own communications with tenants. In addition, "word of mouth" among tenants can be a powerful lead to generate interest in a BSP's services.
- **On-site Visibility:** BSPs can use lobby signage, direct mail, and in-building promotional events to create awareness of their services.
- **Efficient Marketing:** By utilizing teams whose territories consist of single buildings or small groups of buildings, BSPs can penetrate their addressable market efficiently.
- **On-site Presence:** The above-mentioned on-site representatives, who assume the role of a communications consultant and are responsible for developing and maintaining relationships with the tenants within the building, can help draw interest from tenants.

As a result of these building-centric marketing and sales efforts, BSP penetration rates among "mature" buildings (those in service for 12 months or longer) in the 30%-40% range are not uncommon–more than double the penetration rate of other competitors that are present in commercial office buildings. Although it is arguable that BSPs' economics are not as attractive as those of CLECs, since they usually lease access and transport from third parties and deploy relatively capital-intensive in-building networks, such metrics are a promising sign of the positive trade-off: superior in-building penetration.

Exhibit 8-6 depicts a break-even scenario for a commercial MTU-focused BSP. As noted, deployment costs can vary significantly among buildings and business strategies, as can the assumptions with respect to services offered and network costs.

Exhibit 8-6 ◆ Unit Economic Analysis for a Commercial MTU-Focused BSP

Assumptions:	
Customers per building	32
Voice penetration per customer	15.0%
Fixed costs	
DSLAM, Router, Other equipment cost (one-time)	25,000
Semi-fixed costs	
Installation cost/incremental capex (per tenant)	$5,000
Customer acquisition cost (one-time)	600
Customer premise equipment (one-time)	600
Gross semi-fixed costs (subscriber acquisition cost)	**$6,200**
Revenue from customer premise equipment (one-time)	(200)
Revenue from installation fee (one-time)	(150)
Net semi-fixed costs (subscriber acquisition costs)	**$5,850**
Variable costs	
Backhaul (monthly)	$1,500
Heating, lighting and power cost per colo (monthly)	$300
Rent (monthly)	250
Total variable costs	**$2,050**
Recurring monthly voice revenue per customer (weighted average)	$75
Recurring monthly data revenue per customer	$500
Recurring monthly revenue per customer	**$575**
Customer revenue margin	**$148**
Breakeven (tenants)	**4.9** *
Breakeven (penetration)	**15.2%** *

* fixed costs amortized over 36 months

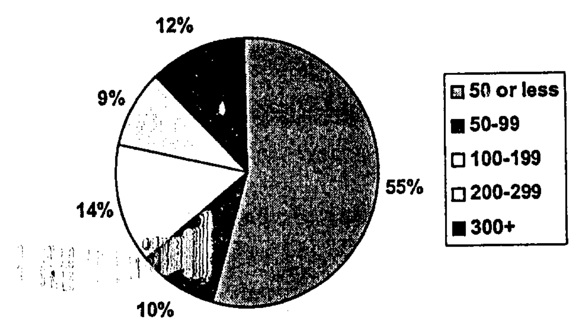
Source: Dain Rauscher Wessels

Section 8: Building-Centric Service Providers (BSPs)

◆ Multi-Tenant Dwelling (MDU)—Residential BSPS

Many of the same trends that support growth in residential DSL and cable modem services are supporting expansion in the residential BSP sector as well. According to the U.S. Census Bureau, 81.5 million residents, or 30.7% of the U.S. population, live in renter-occupied housing. Of this amount, approximately 9.4 million people live in apartment properties that contain 50 or more units, and 7.4 million live in properties with 100 or more units, indicating a significant concentration of potential Internet users. **Exhibit 8-7** illustrates the distribution of apartment properties based on the number of rental units in each property, based on data from the National Multi-Housing Council.

Exhibit 8-7 ◆ Rental Property Distribution by Number of Units



Source: National Multi-Housing Council

The network architecture of an MDU-focused BSP is roughly similar to that of providers that are focused on commercial multi-tenant units. Since apartment buildings tend to have more tenants than commercial buildings, it is often more economical for the BSP to install the necessary infrastructure to all apartment units. In this manner, new service activation can be centralized rather than have a technician visit the property each time service is requested. Some BSPs partner with private cable operators, utilities, or other non-telco providers to gain access to MDUs, while others use existing on-premise infrastructure from the incumbent. In general, relationships between MDU owners and BSPs lend themselves to a greater degree of exclusivity than those between MTU owners and BSPs. In **Exhibit 8-8**, we depict some of the major players in the MDU space and their real estate partnerships.

Section 8: Building-Centric Service Providers (BSPs)

Exhibit 8-8 ◆ BSP-Real Estate Partnerships in the Multi-Dwelling Unit Space

BSP	Real Estate Partners/Strategic Alliances	Company Type
Broadband Residential	The JBG Companies	Multi-Residential Property Owner
	other undisclosed partnerships	
BROADBANDnow	Archstone Communities	Multi-Residential REIT
	AvalonBay Communities	Multi-Residential REIT
	Camden Property Trust	Multi-Residential REIT
	Forest City Residential	Multi-Residential Property Owner
	Home Properties of NY	Multi-Residential REIT
	Summit Properties	Multi-Residential REIT
CAIS Internet	Mid-America Apartment Communities	Multi-Residential REIT
	Town & Country Trust	Multi-Residential REIT
	Tarragon Realty	Multi-Residential REIT
	United Dominion Realty Trust	Multi-Residential REIT
Darwin Networks	Post Properties	Multi-Residential REIT
	Southern Management Company	Multi-Residential Operator
	Wolff Management Company	Multi-Residential Operator
OnePoint Communications	Apartment Investment& Management Co.	Multi-Residential REIT
	AvalonBay Communities	Multi-Residential REIT
	Apex Management	Multi-Residential Operator
	Charles E. Smith Residential	Multi-Residential REIT
	Equity Residential Properties Trust	Multi-Residential REIT
	Harbor Management	Multi-Residential Operator
	Kay Management	Multi-Residential Operator
	Keystone Properties	Multi-Residential Owner
	Lane Properties	Multi-Residential Owner
	Panco Management	Multi-Residential Operator
	R&B Management	Multi-Residential Operator
	RIMSI Management	Multi-Residential Operator
	Scott Management	Multi-Residential Operator
	Southern Management	Multi-Residential Operator
	Summit Properties	Multi-Residential REIT
	Town & Country Trust	Multi-Residential REIT
	United Dominion Realty Trust	Multi-Residential REIT
	Walden Residential	Multi-Residential REIT
Reflex Communications	Multiple Undisclosed Alliances	
Skyway Partners	Not Available	

Source: Company reports and Dain Rauscher Wessels

Like many cable overbuilders that are focused on the residential market (see Section 7 for a discussion of cable-based broadband strategies), MDU-focused BSPs often attempt to provide a service bundle that includes a combination of high-speed Internet access, video, telephony, customized Web content, community-centric portals, and other offerings. Most BSPs focus on the more demographically attractive class A and class B properties, whose residents represent a more desirable target market in terms of discretionary income, PC ownership, and other factors. However, since the composition of Internet usage and PC ownership within many MDUs mirrors that of the general population (about 50% of households have a PC), some MDU-centric BSPs are examining ways in which to broaden their addressable market by delivering Internet services to television as well as the PC.

Section 8: Building-Centric Service Providers (BSPs)

Based on our conversations with service providers, services are typically priced in the range of $25-$80 per month, depending on the number of services offered. Revenue shares on the order of 10%-15% with the landlord are not uncommon. In **Exhibit 8-9** we provide a breakeven analysis for broadband service in multi-dwelling units.

Exhibit 8-9 ◆ Unit Economics for MDU-Focused BSP

Assumptions:	
Tenants per MDU	100
Fixed costs	
DSLAM, Router, Other equipment cost (one-time)	20,000
Total fixed costs (network capex)	**$20,000**
Monthly network capex *	**$556**
Semi-fixed costs	
Installation/provisioning costs	$800
Customer acquisition cost (one-time)	150
Customer premise equipment (one-time)	275
Gross semi-fixed costs (subscriber acquisition cost)	**$1,225**
Revenue from customer premise equipment (one-time)	(200)
Revenue from installation fee (one-time)	(100)
Net semi-fixed costs (subscriber acquisition costs)	**$925**
Variable costs	
Backhaul (monthly)	$800
Heating, lighting and power cost (monthly)	$150
Rent (monthly)	50
Total variable costs per sector (monthly)	**$1,000**
Total variable costs per customer (monthly)	**$67**
Recurring monthly revenue per customer	**$80**
Customer revenue margin	**$13**
Breakeven (customers)	**13.7 ***
Breakeven (penetration)	**13.7% ***

* fixed costs amortized over 36 months

Source: Dain Rauscher Wessels

◆ Lodging

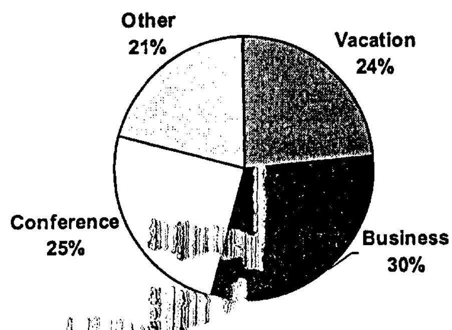
The vast majority of business travelers with laptop computers log onto the Internet or corporate networks at analog speeds when they are on the road. With the proliferation of broadband capacity in both the residential and business sectors, many businesses and employees are demanding faster access speeds while away from the office. The strong potential demand for high-speed access from business travelers, coupled with the burgeoning popularity of virtual private networks (and the ability to use Internet access as a means to gain access to one's corporate network), has created an attractive opportunity for broadband service providers to target the hospitality market.

Market Overview: According to the American Hotel & Motel Association (AH&MA), there are approximately 51,000 hotels in the United States with a total of 3.9 million rooms. The international hotel market totals approximately 250,000 properties with 8 million rooms. Based on AH&MA statistics, we estimate that approximately 55% of domestic lodging demand is from business travelers, who are the more likely users of broadband services. This is supported by an American Express report that estimates that 65% of business travelers carry laptop computers.

Section 8: Building-Centric Service Providers (BSPs)

The AH&MA profiles the typical business traveler as a male (74%), aged 35-54 (53%), employed in a professional or managerial position (52%), and earning an average annual income of $68,000. The average amount paid per room is $83 per night, which is 12.2% higher than that paid by a leisure traveler. Considering that business travelers are more likely to be traveling on their company's expense, we believe the higher daily rate reflects a degree of price insensitivity; thereby indicating a more receptive audience to utilizing broadband access.

Exhibit 8-10 ◆ Lodging Demand



Source: AH&MA

Those BSPs that are currently addressing the domestic lodging market charge travelers approximately $10 per night for high-speed access. We conservatively estimate an average of 750,000 business travelers with laptop computers stay in hotels each night. Based on today's 5% average usage rate for high-speed services, we estimate annual revenues in the domestic lodging market of approximately $140 million. We believe the overall market could easily increase multi-fold, to $1 billion or more, with increased usage (see following discussion of usage trends) and additional revenue opportunities that are possible from providing high-speed access from meeting rooms and conference facilities.

Section 8: Building-Centric Service Providers (BSPs)

The major players in the hospitality-focused broadband market are depicted in **Exhibit 8-11**. As with multi-tenant commercial buildings, this sector is in the land grab stage with most providers signing on major hotel owners and property managers as strategic partners. Although these agreements have varying degrees of exclusivity, we believe that in practice, multiple providers will rarely attempt to install infrastructure to the same set of hotel rooms.

Exhibit 8-11 ◆ Strategic Alliances Between BSPs and Real Estate Partner in the Hospitality Segment

BSP	Real Estate Partners/Strategic Alliances	Company Type
CAIS Internet	Hilton Hotels	Hotel Owner/Operator
	Carlson Worldwide Properties	Hotel Owner/Operator
	John Q. Hammons Hotels	Hotel Owner/Operator
	Haverford Hotels	Hotel Owner/Operator
	Staybridge Suites by Holiday Inn	Hotel Owner/Operator
	Prime Hospitality Corp.	Hotel Owner/Operator
	Bass Hotels & Resorts	Hotel Owner/Operator
Darwin Networks	Bass Hotels & Resorts	Hotel Owner/Operator
	Cavanaughs Hospitality Corp.	Hotel Owner/Operator
	Choice Hotels	Hotel Owner/Operator
	Focus Enterprises Hotels	Hotel Owner/Operator
	Pacifica Host Hotels	Hotel Owner/Operator
Mobilestar	Bass Hotels & Resorts	Hotel Owner/Operator
	Hilton Hotels	Hotel Owner/Operator
	MeriStar Hotels	Hotel Owner/Operator
	Starwood Hotels & Resorts Worldwide	Hotel Owner/Operator
STSN	Interstate Hotels	Hotel Operator
	Marriott International	Hotel Owner/Operator
	Sunstone Hotels	Hotel Owner/Operator
Wayport	JMH Hotels	Hotel Owner/Operator
	LodgeNet	Guest Room Entertainment and
	Marshall Management	Hotel Operator
	Shoney's Inn & Suites	Hotel Owner/Operator
	Stanford Hotels	Hotel Owner/Operator
	Wyndham International	Hotel Owner/Operator

Source: Company reports and Dain Rauscher Wessels

Usage Trends: Current usage rates for high-speed service is in the 3%-7% range; however, we believe this penetration level reflects only the "early adopters," as high-speed in-room access has only been available in small portion of hotels and has not achieved a high degree of public visibility. Further, Ethernet card-equipped laptops, which are generally required for high-speed access, are not yet standard fare for business travelers.

As marketing and network deployments increase, we expect usage rates to increase dramatically. Considering that today's analog modem usage penetration in hotel rooms is on the order of 60% and that the percentage of laptops equipped with high-speed compatible Ethernet cards is increasing rapidly, we believe overall penetration could increase many times over. In addition, we believe that the likelihood that a guest will abandon high-speed service and return to dial-up is remote.

Network Deployment: In the United States, deployment of broadband infrastructure in hotels is proceeding at a rapid pace—many BSPs have told us they are able to complete installation of the necessary equipment throughout a single property within a few days. As with MTUs and MDUs, hotel-focused broadband providers typically establish a local point of presence in each hotel, with the BSP usually footing the cost of deployment at no direct expense to the building owner. However, depending on the buildout plan, there could be a modest indirect cost to the building owner if the network deployment requires rooms to be taken temporarily out of service. The hotel POP contains the equipment that facilitates high-speed links to guest rooms, frequently using existing in-building wiring and employing a copper-enhancing technology such as DSL. In each equipped room, operators typically install Ethernet jacks, which business travelers can use to connect their laptop computers. As the use of wireless LAN technology becomes more common, many installations may forego the jack and utilize high-speed wireless alternatives. Installation costs per room average \$200-\$400, depending on the operator and the complexity of the build-out.

Depicted in **Exhibit 8-12** is a rough breakeven analysis for hotel-based broadband access. Although pricing is fairly standardized at \$10/night (approximately double that amount overseas), revenue shares with the hotel operator range from 20%-50%, depending on the specific arrangement.

Exhibit 8-12 ◆ Breakeven Scenario for Hotel Broadband Access

Assumptions:	
Rooms	200
Occupancy	65.0%
Rate per night	\$10.00
Revenue share	25.0%
Net revenue per night	\$7.50
Expenses	
Equipment cost	\$45,000
Capex (* annualized)	15,000
Network operations per year	18,000
Total annual expenses	**\$33,000**
Revenues	
Annual guest room revenue (at break-even penetration)	\$18,857
Annual meeting room revenues	14,143
Total annual revenues	**\$33,000**
Breakeven (penetration)	**5.3%**

* capital expenditures amortized over 36 months

Source: Dain Rauscher Wessels

Additional Revenue Opportunities from Advertising and E-Commerce: Given the attractive economic demographic profile of business travelers (high education, high income), many BSPs are attempting to mine additional revenue opportunities by adding specialized content onto the room start-up screen. This has the potential to generate advertising and e-commerce revenues.

Section 8: Building-Centric Service Providers (BSPs)

Public Access—High-Speed Access for the Business Traveler

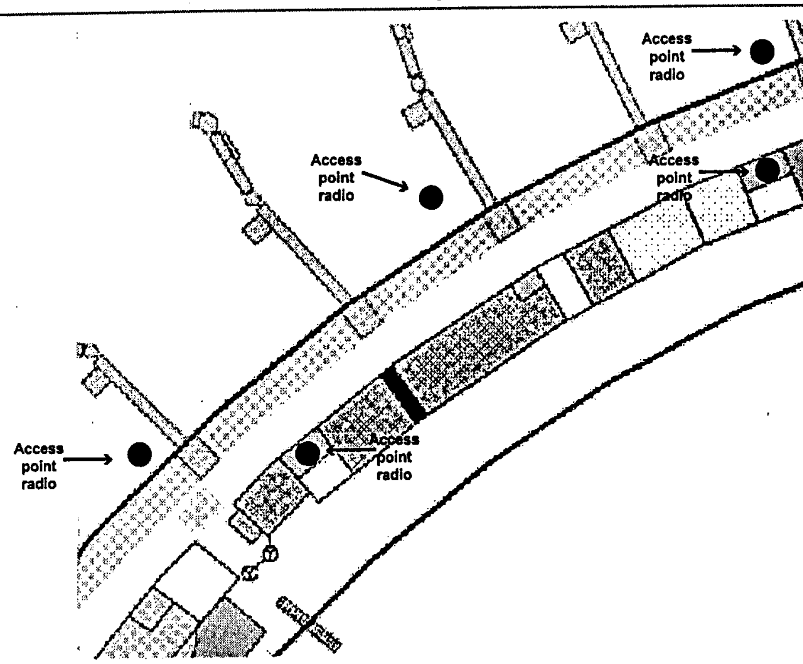
Demand for high-speed access to the Internet as well as corporate networks is contributing to the installation of broadband services in public venues that are frequented by business travelers, such as airport gate areas, frequent flyer lounges, conference facilities, and convention centers. With limited time on the go and a high degree of urgency, the nation's 12 million frequent business travelers represent a user base that is likely to place a premium on speed and be relatively insensitive to price.

For the frequent traveler, initial public access offerings have taken the form of an Internet-accessible public kiosk or a private office area containing high-speed connections that can be rented out for short periods of time. As the use of VPNs to gain access to corporate networks over the public Internet steadily increases, we believe that business travelers will derive greater value from public access and view it as a way accomplish meaningful amounts of work, as opposed to just obtain access to the Web.

In parallel with the trend toward VPNs, we believe that the adoption of high-speed wireless LAN technologies utilizing freely available, unlicensed frequencies (such as the 2.4 GHz and 5 GHz bands discussed in Section 6) will lead to far greater access to the Internet and corporate networks from public venues. Many laptop and modem manufacturers are now building equipment that is compatible with the newer wireless LAN standards such as 802.11b and BlueTooth. As wireless LAN cards coupled with this newer equipment penetrate the installed business user base, the addressable market for BSPs that are now deploying wireless LAN radios in airline terminals, frequent flyer lounges, and other high-business-traffic locations is expected to increase significantly. With wireless throughputs ranging from 700 kbps to 11 Mbps, business travelers will likely perceive no difference in access speed compared to their daily office environments.

Deployment: Exhibit 8-13 depicts a typical airport installation. The BSP deploys small wireless LAN radios at access points that cover frequently trafficked gate and lounge areas. Most current equipment designs operate in the unlicensed 2.4 GHz band, but it is possible that future deployments will utilize the unlicensed 5 GHz band. Each access point is connected to a central hub, which in turn is connected to the Internet.

Exhibit 8-13 ◆ Typical Airport Installation of Public Broadband Access System



Source: Dain Rauscher Wessels

Although current deployments are limited to a handful of airports today, a number of companies, such as Wayport, MobileStar, and SoftNet Zone, are aggressively building out their networks to include several dozen locations. The current focus tends to be airports, but future deployments could well extend to hotels, convention centers, and other public facilities.

Exhibit 8-14 depicts some of the major strategic relationships that have been formed in the public-access arena. As with the other BSP segments described in this chapter, the public-access sector is in the "land grab" phase as it relates to obtaining access for eventual network construction.

Exhibit 8-14 ◆ Strategic Relationships in the Broadband Public Access Sector

BSP	Strategic Alliances	Company Type
CAIS Internet	Royal Caribbean International	Cruise Operator
MobileStar	American Airlines	Airline Carrier
	Multiple hotel properties for public-area installation	Lodging
	Multiple U.S. and international airports	Transportation Authority
SoftNet Zone	Delta Airlines	Airline Carrier
	Multiple U.S. and international airports	Transportation Authority
	CMGI	Technology Incubator
	Nokia	Wireless Devices Manufacturer
Wayport, Inc.	Multiple North American airports	Transportation Authorities
	Toshiba	Electronics Firm
	IBM	Computer Firm

Source: Company reports and Dain Rauscher Wessels

Installation costs for, say, an airport, depend greatly on the complexity of the build-out and the amount of public area to be covered. As a rough estimate, it costs $5,000-$10,000 to deploy an access point today, including equipment costs and backhaul arrangements to the central point of presence, although equipment costs are expected to decline rapidly. A small airport can be equipped with wireless LAN and backhaul infrastructure for less than $50,000, while a major hub airport can run into the $200,000-$300,000 range or higher.

Apart from meeting capital requirements and possessing the requisite network know-how, an equally important factor in building out public-access broadband installations relates to process. Considering the example of airports, an operator must be able to coordinate relationships and processes among multiple parties, including several government jurisdictions (municipal, county, and/or state), airlines, and airport authorities.

Content, Marketing, and Distribution: Given the nascent stage of this industry segment, it is too soon to attempt to accurately depict the myriad of marketing and distribution arrangements that are being discussed or tested. In general, airline partners, travel companies, established telecommunications firms, and property owners and operators appear to be the most likely parties to co-market broadband services aimed at the business traveler. As with other segments in the BSP space, operators and strategic partners may in many cases attempt to add content-related features to their core broadband access offerings in order to take advantage of the attractive end-user demographic profile and "location-aware" nature of the service to generate additional revenue streams. The nature of potential revenue-sharing arrangements between core operators and the strategic partners will likely depend on a number factors related to brand, potential bundling of other services, and even site build-out arrangements.

Even the end-user pricing model for public broadband access is not uniform. Depending on the operator, users may be charged by the month, by the day, by individual access session, by the amount of bandwidth transferred, or some combination thereof. Monthly subscription arrangements akin to the cellular phone model, in which the monthly fee includes a fixed amount of usage but does not cover over-use, are just one plausible scenario. Since no one firm should have a monopoly on public sites that are frequently trafficked by business travelers, it is highly conceivable that operators will form alliances with one another in order to allow users to roam among multiple networks (also akin to the cellular model).

Exhibit 8-15 ◆ Publicly Traded Building-Centric Broadband Providers

(Amounts in millions, except per share figures)

			Stock Price Information						Balance Sheet				Revenue			Enterprise Value / Rev.		Operating Metrics	
			Price	52 Week Range		Shares	FD Shares	Market	Long Term	Preferred		Enterprise						Sq. Ft.	
Company	Symbol	FYE	06/01/00	High	Low	Out.	Out.	Cap.	Debt	Stock	Cash	Value	CY 99	CY 00E	CY 01E	CY 00E	CY 01E	in service	Customers
Allied Riser Communications	ARCC	Dec	$13.25	$48.75	$9.03	53.32	56.87	$753	$13	$0	$272	$494	$2	$11	$81	46.6 x	6.1 x	100,000,000	567
CAIS Internet, Inc.	CAIS	Dec	14.88	48.63	9.88	16.94	22.99	342	18	90	56	393	10	NA	NA	NM	NM	N/A	N/A
Cypress Communications, Inc.	CYCO	Dec	6.88	29.94	6.00	22.84	108.30	745	0	0	224	521	7	18	84	29.3 x	6.2 x	55,000,000	417
FiberNet Telecom Group, Inc.	FTGX	Dec	11.25	25.50	3.69	25.93	27.77	312	1	70	2	380	0	NA	NA	NM	NM	N/A	N/A

Source: FactSet

Section 8: Building-Centric Service Providers (BSPs)

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Allied Riser Communications	www.alliedriser.com	Allied Riser provides of broadband data, video, Web hosting, and advanced conference calling services to businesses located in commercial office buildings throughout the country. The company's network and services extend beyond commercial buildings to include a number of additional connectivity services. ARC delivers its services over fiber optic networks that it designs, constructs, owns and operates inside large and medium-sized office buildings.	1700 Pacific Avenue Dallas, TX 75201	Crescendo Venture Management, Norwest Venture Partners, Goldman Sachs, numerous real estate owners and operators.	ARCC
CAIS Internet	www.cais.com	CAIS Internet provides high-speed Internet and portal services to business travelers in hotels, meeting rooms, convention centers, and other public areas; as well as to residents of multi-dwelling units. The company also provides dial-up and dedicated Internet access as well as hosting and collocation services.	1255 22nd Street, NW Washington, DC 20037	Kohlberg Kravis Roberts; ING Capital; numerous hospitality chains and real estate interests.	CAIS
Cypress Communications	www.cypresscomm.com	Cypress Communications provides small and medium-sized businesses in commercial office buildings with a full line of communications services, including high-speed Internet access, digital desktop equipment, local and long distance phone service, voice mail, and digital satellite television. The company constructs in-building networks consisting of fiber optics, coaxial cable, and copper connections to provide a wide array of offerings.	Fifteen Piedmont Center Atlanta, Ga 30305	The Centennial Funds, Alta Communications, Beacon Ventures, Nassau Capital, Gramercy Communications Partners, AEW Partners III, L.P., Transwestern Commercial Services, Latona Cycom Investment, LLC., numerous real estate owners and operators	CYCO
FiberNet Telecom Group	www.ftgx.com	Fibernet provides broadband transport services for both inter and intra-building connections, as well as associated collocation services. The company operates in-building fiber networks as well as metropolitan-area fiber connections between major commercial office buildings and carrier interconnection points, such as central offices and "carrier hotels," and provides its services on a wholesale basis. The company's current operational focus is New York City, with plans to expand to additional markets.	570 Lexington Avenue New York, NY 10022	Signal Equity Partners, Trident Telecom Partners, Metromedia Fiber Network	FTGX
SoftNet Systems	www.softnet.com	Through its ISP Channel subsidiary, SoftNet provides high-speed Internet access service with partnering cable operators. SoftNet's Intellicom subsidiary provides two-way satellite-based broadband services to schools, government institutions, and businesses. The company's SoftNet Zone unit provides Internet access to business travelers in airports and other public-access venues using wireless LAN technology and conventional wired T1 services.	650 Townsend Street San Francisco, CA 94103	RGC International Investors, White Rock Capital, Stark International, CMGI, Compaq, Delta Airlines	SOFN
B2B Connect	www.b2bconnect.com	B2B Connect delivers high-speed data communications, information technology and support services to the desktop within multi-tenant buildings. The company's offerings include a voice telephony, Internet access, data networking, Web hosting, and managed services.	2350 Mission College Blvd. Santa Clara, CA 95054		private

Section 8: Building-Centric Service Providers (BSPs)

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Allied Riser Communications	www.alliedriser.com	Allied Riser provides broadband data, video, Web hosting, and advanced conference calling services to businesses located in commercial office buildings throughout the country. The company's network and services extend beyond commercial buildings to include a number of additional connectivity services. ARC delivers its services over fiber optic networks that it designs, constructs, owns and operates inside large and medium-sized office buildings.	1700 Pacific Avenue Dallas, TX 75201	Crescendo Venture Management, Norwest Venture Partners, Goldman Sachs, numerous real estate owners and operators.	ARCC
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SoftNet Systems	www.softnet.com	Through its ISP Channel subsidiary, SoftNet provides high-speed Internet access service with partnering cable operators. SoftNet's Intellicom subsidiary provides two-way satellite-based broadband services to schools, government institutions, and businesses. The company's SoftNet Zone unit provides Internet access to business travelers in airports and other public-access venues using wireless LAN technology and conventional wired T1 services.	650 Townsend Street San Francisco, CA 94103	RGC International Investors, White Rock Capital, Stark International, CMGI, Compaq, Delta Airlines	SOFN
B2B Connect	www.b2bconnect.com	B2B Connect delivers high-speed data communications, information technology and support services to the desktop within multi-tenant buildings. The company's offerings include a voice telephony, Internet access, data networking, Web hosting, and managed services.	2350 Mission College Blvd. Santa Clara, CA 95054		private

Section 8: Building-Centric Service Providers (BSPs)

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Broadband Residential	www.bbrez.com	Broadband Residential provides broadband services to tenants of multi-dwelling units, including a bundle of high-speed Internet, data networking, video, and e-commerce offerings. The company partners with property owners for building access and to establish a local presence for marketing and customer support. The company employs a variety of broadband technologies and backbone partners for high-speed connectivity to its in-building networks.	6708 Wisconsin Avenue Bethesda, MD 20815	Federal Capital Partners, JBG Companies, eLink Communications, and other private sponsors and network partners.	private
BroadbandNOW	www.bbnow.com	BroadbandNOW is a BSP that provides high-speed Internet access and multimedia content and applications to residential subscribers in multiple dwelling units and single-family homes in numerous regions of the country. The company's broadband network utilizes a variety of transmission technologies, including a private, national fiber backbone as well as cable modem, DSL, and wireless technologies.	1440 Corporate Drive Irving, TX	Lucent, Nortel, Liberty Media, GE Capital, Geneva Associates, Marcus & Partners, real estate partners	private
Darwin Networks	www.darwin.net	Darwin Networks provides broadband and Internet services to several vertical segments, including multi-tenant commercial buildings, multi-dwelling units, hospitality, and public access. The company provides access using multiple broadband technologies, including DSL, T1, and wireless services. The company has deployed its network in multiple regions of the country and is in progress to launch services in approximately 800 locations in almost 40 states.	National City Tower 101 S. Fifth Street Louisville, KY 40202	Chrysalis Ventures, Vulcan Ventures, Richland Ventures, River Cities Capital, AT&T	private
Edge Connections	www.edgeconnections.com	Founded in 1999, Edge Connections is deploying in-building DSL infrastructure aimed at providing bundled voice, high-speed data, hosting, and other advanced services to small and medium-sized businesses in multi-tenant commercial buildings. The company is initially launching its network in eight major markets using a network architecture that leverages relationships with numerous IXCs, LECs, and ISPs for long-haul, local, and Internet connectivity.	1200 Abernathy Rd. Atlanta, GA 30328	Great Hill Partners Meguntícook Fund	private
eLink Communications	www.elinkcommunications.com	eLink Communications partners with commercial building owners and property managers to wire their buildings with fiber-optic infrastructure in order to offer broadband Internet, data networking, and telecommunications services to business tenants. The company also provides on-site, in-person customer service through its CyberSuper Service program. eLink is preparing to roll out a tenant-centric portal, voice over IP services, and an applications hosting service for small and medium-sized businesses.	6708 Wisconsin Avenue Bethesda, MD 20815	Encore Venture Partners, Mayfield Fund, Avalon Investments, Communications Equity Associates, Lazard Technology Partners, The Greenwich Group	private
Eureka Broadband	www.eurekabroadband.com	Eureka Broadband provides broadband services to business customers in commercial office buildings. The company's in-building network is deployed in over 300 buildings, primarily in New York and Southern California. Eureka bundles broadband applications and content, such as Internet access, software rental, video streaming, business TV and other IT services over its packet-based fiber network.	270 Madison Avenue New York, NY 10016	AT&T Ventures, Spectrum Equity Investors, Eagle Financial Partners, Lineactive	private
Everest Broadband Networks	www.everestbroadband.com	Everest Broadband Networks provides broadband services to tenants of commercial office buildings and residential multi-dwelling units as well as to hotel properties. The company's services include high-speed Internet access, telephony, and video services.	One Executive Drive Fort Lee, New Jersey 07024	Pequot Capital Management, SOFTBANK Venture Capital, Worldview Technology Partners, Wolfson Equities	private

Section 8: Building-Centric Service Providers (BSPs)

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Ezlaz	www.ezlaz.com	Ezlaz provides broadband Internet communications and enhanced data services, such as Web hosting, e-commerce and virtual private networking, within multi-tenant commercial office properties. As of April 30, 2000, Ezlaz had expanded into 38 cities and established service in 209 buildings, representing 60 million rentable square feet.	550 West Van Buren Chicago, IL 60607	Crosspoint Venture Partners, Edgewater Funds, Insignia Financial Group, numerous real estate owners and operators	private
MobileStar Network	www.mobilestar.com	MobileStar is creating a network of high-speed, wireless Internet access locations for business travelers using wireless LAN technology. MobileStar's network is slated for installation in more than 700 hotels, airports and convention centers in 130 U.S. cities this year, with more than 100 sites currently in operation.	1601 N. Glenville Drive Richardson, TX 75081	Mayfield Fund, Blueprint Ventures, Norwest Venture Partners, Sienna Holdings, Tarrant Venture Partners	private
OnePoint Communications	www.onepointcom.com	OnePoint Communications provides communications services for residents of apartment communities. The company offers local and long-distance telephone service, cable television and high-speed Internet access, and serves more than 68,500 customers in 10 states.	150 Field Drive Lake Forest, IL 60045	SBC Communications, Ventures in Communications, and other private sponsors	private
OnSite Access	www.onsiteaccess.com	OnSite Access is a building-centric provider of integrated voice, data, and Internet services. The company has deployed broadband facilities covering over 350 million square feet of real estate in 29 markets.	1372 Broadway New York, NY 10018	Spectrum Equity Investors, Crosspoint Venture Partners, JP Morgan Capital, AT&T Ventures, Reckson Service Industries, Vertech Ventures, numerous real estate owners and operators.	private
Phatpipe	www.phatpipe.com	PhatPipe is a tenant-centric business services provider that enables commercial real estate owners the ability to offer products and services to their tenant base, while leveraging bulk tenant demand to negotiate discounts on services such as broadband access.	1902 Wright Place Carlsbad, CA 92008	AMB Properties	private
ReFlex Communications	www.reflexcomm.com	ReFlex Communications provides high-speed Internet, data, video, and voice services to apartment and condominium communities. The company's network spans 12 markets across nine states.	83 S. King St., Ste. 106 Seattle, WA 98104	The Sprout Group Enterprise Partners	private
Skyway Partners	www.skywaypartners.com	Skyway Partners provides broadband services to tenants of multi-tenant commercial and residential buildings. The company's offerings include data, voice, video, and Internet services over in-building broadband facilities.	200 Motor Parkway Hauppauge, NY 11788	numerous private sponsors	private
STSN	www.stsn.com	STSN provides high-speed Internet, VPN, and e-commerce services to the business traveler market. The company is partnering with business hotel chains to deploy wireless LAN and wireline broadband infrastructure in major U.S. and international cities.	5963 S. Redwood Drive Salt Lake City, UT 84123	APV Technology Partners, BankONe, First Media ST Holdings, Intel Corporation, Marriott International, Third Coast Capital, ThomVest, TransAmerica Technology	private
Tenant Connect	www.tenantconnect.com	Founded in 1994, TenantConnect is a BSP that provides voice and data telecommunication services to small to medium-sized businesses in more than 2,000,000 square feet of office space. The company is a registered CLEC in its operational markets, located primarily in Southern California.	2716 Ocean Park Blvd, Suite 1064 Santa Monica, CA 90405	Real estate owners and operators.	private
Urban Media	www.urbanmedia.com	Urban Media is a building-centric service provider offering free basic Internet connectivity to small and medium-sized businesses as well as an array of fee-based broadband services, such as local and long distance voice, e-mail services, domain name registration, remote access, Web hosting, and virtual private networking. Urban Media's services also include an integrated e-toolbar, which provides customers access to specialized services, content and applications.	101 University Avenue Palo Alto, CA 94301	SOFTBANK Venture Capital, Accel Partners	private
Wayport	www.wayport.com	Wayport uses wireless LAN technology to provide high-speed Internet access and VPN services to business hotels, airports, and meeting facilities.	8303 North MoPac Expressway Austin, TX 78759	Sevin Rosen Funds, New Enterprise Associates, Trellis Venture Partners, and GC Technology Fund	private
Wired Business	www.wiredbusiness.com	Wired Business is an in-building, facilities-based provider of broadband services to small and medium-sized businesses in multi-tenant office buildings. The company utilizes the building's existing copper infrastructure to provide broadband Internet access.	2 Penn Center Plaza Philadelphia, PA 19102	Dophin Communication Partners, Norwest Venture Partners, Forest City Enterprise	private

Section 9:
Smart-Build Carriers and Broadband Intermediaries

Section 9: Smart-Build Carriers and Broadband Intermediaries

In previous sections, we described the attractive performance and economic characteristics of four specific broadband transmission mediums: fiber, wireless, cable, and DSL. In addition, we highlighted companies that are, in large measure, pure-play services models based on these technologies. As noted earlier, each entails trade-offs with respect to capital cost, bandwidth, and ability to reach certain market segments. Given that the technologies are in many respects complementary, it is not surprising that many broadband carriers are embarking on multi-technology approaches and adopting a hybrid network strategy. Two examples of this are NEXTLINK Communications and Adelphia Business Solutions, each of which holds LMDS spectrum in addition to fiber assets in its markets and is deploying DSL capabilities. In many other cases, carriers are choosing to partner with one another to expand their reach—examples include Intermedia Communications Inc.'s (Nasdaq: ICIX; Not Rated) partnership with Rhythms to provide DSL-based services, and Rhythms' strategic relationship with Excite@Home to supplement that carriers' cable assets.

In keeping with the thesis that the strength of a services business does not rest with its technology alone, but rather the quality of the solution that it is able to deliver to its end users, we turn our attention in this section to two additional classes of provider that are not as readily characterized by technology, namely the smart-build provider and the broadband facilitator.

◆ The Smart-Build Strategy

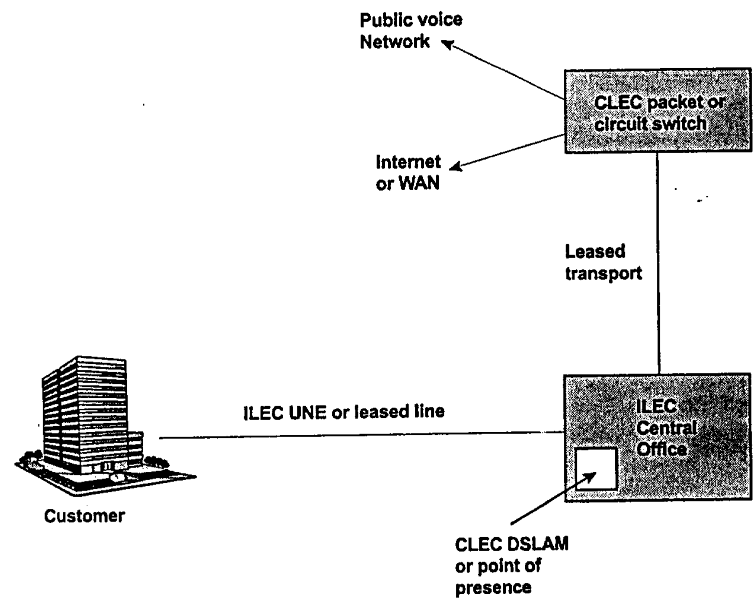
In contrast to traditional network deployments in which carriers install their own physical connections in each market, competitors employing the smart-build strategy often install their own switches in each market and then lease the local access from another provider. As with DSL-based approaches, the smart-build strategy leverages the regulatory framework of competitive access to incumbent unbundled network elements—this allows competitors to purchase certain portions of the incumbents' network for their own use (see Section 3 for a more detailed discussion of UNEs and resale). Advantages of the smart-build approach include:

Smart-build strategy accelerates time to market and reduces initial capex.

- Accelerated market entry by up to 9-18 months through the elimination or deferral of city franchise, right-of-way, or building access procedures.
- Reduced initial capital expenditures in each market, allowing the service provider to focus its initial resources on sales, marketing, and operations support systems. While fiber-based competitors may spend some $20 million on the fiber portion of their metropolitan network, "smart builders" avoid that cost.
- "Success-based" deployment and improved cash flow as capital expenditures for network assets are deferred to the time when revenue generated by customer demand is available to finance such expenditures.
- The option to address attractive service areas selectively and not just those areas where the service provider owns network facilities.

The clear tradeoff with this strategy is that the competitor is reliant upon the incumbent (or other carriers) to ensure that physical connections to the customer are maintained. Further, smart-build operators incur monthly costs for each line they provide, whereas facilities-based providers generally do not.

Exhibit 9-1 ◆ Representative Smart-Build Architecture



Source: Dain Rauscher Wessels

Examples of smart-build carriers are numerous. They include switch-based local competitors that lease last-mile capacity, long-haul carriers that lease local access, many hybrid-technology carriers, and, strictly speaking, nearly every DSL-based competitor (we discuss DSL separately in Section 5).

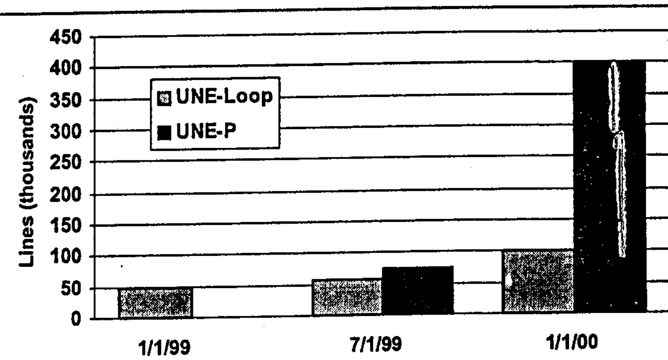
UNE-P—A Specialized Form of Smart-Build: As discussed in Section 3, UNE-P refers to the combination of several unbundled network elements to form a complete service platform. UNE-P competitors usually forego investment in local access and central office facilities, but their services go far beyond simple resale of incumbent services in that they are customized offerings that often utilize their own (rather than the ILEC's) network intelligence and back-office capabilities. Further, many UNE-P carriers have their own facilities for offering Internet access, Web hosting, long distance, and other services.

Section 9: Smart-Build Carriers and Broadband Intermediaries

UNE-P shows promise as a market-entry approach for the residential and small-business segments.

Although UNE-P pricing and implementation rules are still being worked out in many areas of the country, we believe the regulatory momentum behind UNE-P is irreversible, in large part because of its importance in fostering competition in residential and small business markets. The following figure depicts the rapid growth of UNE-P services in New York, one of the first states to implement guidelines for the service.

Exhibit 9-2 ◆ UNE-P Line Growth in New York



Source: PACE

Among the carriers that have leveraged UNE-P to enter such markets quickly and profitably are Z-Tel, Birch Telecom, Talk.com, the local services arms of AT&T and WorldCom, and other local and long-haul competitors.

Although the details vary by state, we estimate long-term gross margins from UNE-P based services to be in the 35%-40% range, compared to roughly 20% for simply reselling local service based on ILEC wholesale rates. The reason for the higher margins with UNE-P is that pricing falls under an FCC-mandated methodology that is based on the forward-looking, incremental costs associated with maintenance and service provision, rather than historical costs associated with equipment, software, or other infrastructure. We believe UNE-P margins provide ample opportunity for a competitor to enter a market, gain critical mass, and eventually migrate to a more facilities-based local network if it so chooses.

Smart aggregation combines multiple third-party services into a single service suite.

Beyond Smart-Build—Smart-Aggregation: Given the abundance of available options for last-mile access, not to mention the myriad of choices for such services as transport, wide-area networking, and hosting, several carriers have emerged that seek to combine many of these services, often from disparate carriers, into a customized service suite. Depending on the mix of services purchased from competitive or incumbent providers, these "smart-aggregation" carriers can in principle forego CLEC status altogether in cases where they do not require direct interconnection with the incumbent network.

As with many other competitive providers, "smart aggregators" seek to deliver a branded, one-bill, bundled service suite to customers. However, this offering is based on an array of access services (such as UNE loops, leased circuits, or wholesale DSL) from third-party suppliers; as well as other possible third-party services, such as Internet peering, collocation, hosting, wide-area networking, and long distance services that the "smart aggregator" offers directly or on a private-label basis. The customers of "smart aggregation" carriers benefit from these providers' experience in ordering service from their suppliers as well as bulk purchasing synergies that come from aggregating the demand of multiple end users. *Note: While many building-centric providers could theoretically fall within the "smart aggregator" category, we discuss those firms separately in Section 8 due to common differentiating features in their business models.*

As with traditional smart-build approaches, smart aggregation affords numerous advantages related to capital efficiency, speed to entry to new markets, and the ability to devote resources to areas such as marketing, service differentiation, customer care, and so forth. While some smart aggregation providers envision a future migration to a facilities-based network architecture, others intend to rely for a longer period of time on third parties for most network services and focus instead on other competencies. For example, some firms in this camp are choosing to take the customer relationship beyond conventional last-mile services and extend it directly into the LAN or even the desktop PC. Such managed services are enabled by placing network intelligence at the customer site in the form of integrated access devices. Section 1 discusses in more detail the strategy of outsourced LAN, desktop, and related services as a competitive differentiator.

We summarize the various smart-build strategies along with other, technology-based market-entry approaches in the **Exhibit 9-3.**

Exhibit 9-3 ◆ Market Entry Approaches

Approach	Strengths	Drawbacks/Limitations	Suitable Market Segments	Representative Public Players
Local Fiber	Highest bandwidth solution. Reliability. Flexibility (voice, video, data).	Expensive and labor-intensive deployment.	High-density business districts. Bandwidth-intensive enterprises.	ABIZ, ELIX, ESPI, ICIX, ICGX, T, TWTC, WCOM
Broadband Wireless	Quick deployment. Success-based deployment limits capital risk. Deployment is not dependent on establishing collocation with ILEC.	Requires clear line of site between transmitter and receiver. Susceptible to rain fade.	Businesses. Apartment buildings.	ARTT, FON, NXLK, TGNT, WCII, WCOM
Cable	Cable plant passes nearly all homes. Deployment of two-way data services leverages ongoing investment in digital upgrades. No involvement with ILEC required.	Limited reach in businesses districts. Shared medium-requires special attention to data security as well as guaranteed minimum throughput. Provisioning currently requires one or more installers.	Residences, Multiple Dwelling Units.	ATHM, HSAC, RCNC, SOFN
DSL	Copper infrastructure reaches nearly all homes and businesses.	Distance limitations and certain technology barriers currently disqualify about 15-30% of local loops from DSL enhancement. Deployment of DSL service requires extensive involvement with the ILEC. Provisioning requires one or more installers.	Small Businesses, Residences	COVD, DSLN, NASC, NPNT, RTHM
Building-Centric	Focus on in-building infrastructure and customer base simplifies network deployment and provides marketing and operational efficiencies.	Reliance on third parties for access and transport may not enable full end-to-end network control.	Businesses in Multi-Tenant Buildings, Multiple Dwelling Units, Hotels, Airports, Convention Centers.	ARCC, CAIS, CYCO, SOFN
Hybrid Facilities-based	Multiple technologies expands network reach, increases addressable market, and reduces technology risk.	Requires multiple technology and network competencies.	Businesses	NXLK, ABIZ
Smart-Build, Smart-Aggregation	Utilizes multiple access technologies and leverages network assets of varied suppliers.	Reliance on third parties for access and transport may not enable full end-to-end network control.	Businesses or Residences	ALGX, CONV, CPTL, CWON, FCOM, MPWR, NTKK, PACW
UNE Platform	Potential for rapid market entry and network scalability.	Not yet implemented in all states.	Residences, Small Businesses	TALK, ZTEL

Source: Dain Rauscher Wessels

◆ Bandwidth Intermediaries

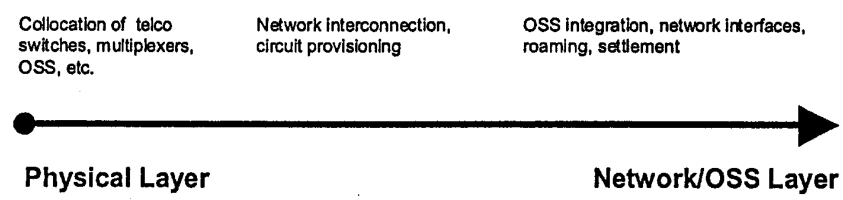
As demonstrated by the growth of such sectors as Web hosting and applications hosting, services firms do not necessarily need to operate an end-to-end network in order to benefit from the growth in demand for broadband services. Many types of facilities-based service providers have recently emerged that seek to benefit from the surging demand for bandwidth not through acquiring or constructing access and transport infrastructure, but rather by controlling the nodes and exchange points of telecommunications networks. Although these firms' business models vary significantly, they generally fall within the realm of interconnection/collocation services, which, as we discuss later, are a necessary ingredient that enhances the viability of the bandwidth trading model.

Bandwidth intermediation firms provide the "plumbing" of broadband networks.

Bandwidth intermediaries typically operate, and sometimes own, facilities that are located at the junction points of major long haul and local broadband networks. Their offerings can be compared to the "plumbing" of broadband networks. Services range from pure collocation of switches, multiplexers, cross-connects, OSS elements, power supplies, and related telecommunications equipment (the "carrier hotel" model); to more complex offerings such as inter-carrier connections, switch interfaces, OSS integration, circuit provisioning, and settlement. **Exhibit 9-4** depicts the continuum of services in the bandwidth intermediation category.

For more information on IP collocation and hosting, see the Dain Rauscher Wessels report of WebCom Service Providers published on February 25, 2000.

Exhibit 9-4 ◆ Continuum of Bandwidth Intermediation Services



Source: Dain Rauscher Wessels

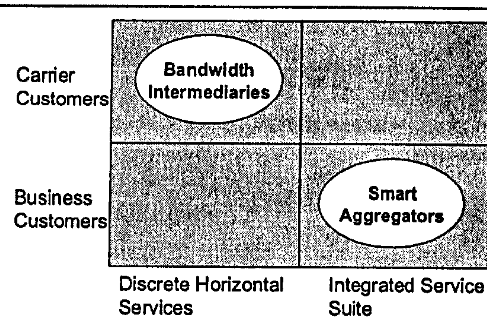
Section 9: Smart-Build Carriers and Broadband Intermediaries

The firms falling toward the left end of this continuum offer physical-layer services such as supplying facilities for the placement of switches, cross-connects, servers, and other telecommunications gear. These facilities are typically located along major fiber routes and are highly secure, with redundant power, emergency back-up, fire suppression, and other emergency precautions. They serve as central, network-neutral transfer points where ISPs, ASPs, network providers, hosting firms, and content delivery firms purchase each other's services and exchange traffic.

The network-layer services toward the right end of the continuum are more oriented toward back-office coordination, OSS integration, clearinghouse services, and other interfaces that take place at the network, rather than electronic or optical transport, level. In many cases, the services in the middle and right-hand portions of this exhibit are similar to the broadband aggregator model described earlier in that both sets of firms often purchase network services from a multitude of providers. However, we are inclined to draw the following distinction:

- The broadband aggregator model is focused on delivering a customized mix of services to businesses and tends to rely on a limited set of third-party suppliers for each type of service.
- The bandwidth intermediation model is focused on delivering network-level services to service providers and tends to rely on a multitude of third-party network suppliers, who also happen to be customers.

Exhibit 9-5 ◆ Smart-Aggregation vs. Bandwidth Intermediation Model



Source: Dain Rauscher Wessels

Trading exists now, but true bandwidth exchanges have yet to be developed.

Applicability to Bandwidth Trading and Exchanges: Many of the trends identified this report, including the discussion of optical access carriers in Section 4 and the description of interconnect/collocation models above, could pave the way for improvements in the management, control, and monitoring of broadband networks. One topic that has recently gained attention is the notion of bandwidth trading across disparate networks.

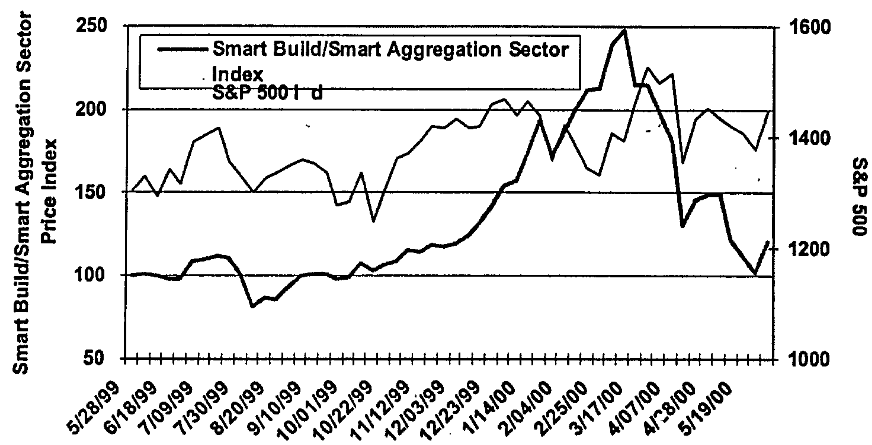
In one sense, bandwidth *trading* is not new. Carriers routinely lease capacity from one another based on specific routes, bandwidth requirements, and contract terms—these are typically negotiated on an individual basis. In the case of long distance voice networks, service providers trade minutes in near real-time with each other and through third-party exchanges.

Although these mechanisms make the market more efficient by rapidly matching supply and demand, few so far operate as true *exchanges* in the sense of facilitating forward-trading strategies that hedge against future drops or gains in bandwidth pricing. The development of a true derivatives market presents numerous challenges as the definition of bandwidth as a commodity has not been established. Standards on such items as capacity (Mbps increments such as DS-3, OC-3, OC-48; or optical wavelengths or other units), transfer between networks (latency, packet loss, committed information rate), and financial settlement have yet to be worked out.

The major players involved in the development of bandwidth trading and exchanges include the following operators:

- *Network operators*, such as Enron Broadband Services, Williams Communications, and others: These carriers possess the bandwidth, work with their peer providers regularly, and will be instrumental in developing the service standards and other requirements for bandwidth to be widely traded or auctioned among parties as well as transacted on an exchange.
- *Third-party operators*: This group includes many of the interconnect/collocation firms mentioned earlier, which control the "plumbing" and junction points between networks and effect physical delivery. In addition, it includes firms experienced in the trading of voice minutes, commodities, and risk management, such as Arbinet, RateXchange, Band-X, energy firms (including Enron Corporation [NYSE: ENE; Strong Buy-Average; $71.13] and The Williams Companies, Inc. [NYSE: WMB; Buy-Average; $43.50]), and insurance firms.

Exhibit 9-6 ◆ Smart Build/Smart Aggregation Sector Price Index vs. S&P 500



Source: Dain Rauscher Wessels

Exhibit 9-7 ◆ Publicly Traded Smart-Build Competitors

(Amounts in millions, except per share figures)

Company	Symbol	FYE	Stock Price Information: Price 06/01/00	52 Week Range: High	52 Week Range: Low	FD Shares Out.	Market Cap.	Long Term Debt	Preferred Stock	Cash	Enterprise Value	Revenue: CY 99	Revenue: CY 00E	Revenue: CY 01E	Enterprise Value / Rev.: CY 00E	Enterprise Value / Rev.: CY 01E
Adelphia Business Solutions, Inc.	ABIZ	Dec	$27.25	$70.44	$14.75	69.44	$1,892	$845	$261	$2	$2,996	$155	$411	$953	7.3 x	3.1 x
Allegiance Telecom, Inc.	ALGX	Dec	58.06	110.06	20.19	108.30	6,288	514	0	552	6,251	99	307	594	20.4 x	10.5 x
CTC Communications	CPTL	Mar	25.19	56.13	6.63	22.84	575	80	14	16	653	71	154	280	4.2 x	2.3 x
Convergent Communications	CONV	Dec	6.38	28.00	5.88	28.93	184	185	0	36	333		NA	NA	NM	NM
Choice One Communications, Inc.	CWON	Dec	24.00	71.38	19.63	31.79	763	52	0	4	811	5	45	128	17.9 x	6.3 x
Focal Communications Corp.	FCOM	Dec	29.88	85.00	15.50	60.97	1,821	245	0	188	1,878	127	215	406	8.7 x	4.6 x
ITC^DeltaCom, Inc.	ITCD	Dec	21.69	43.50	16.31	61.10	1,325	516	0	255	1,586	245	365	531	4.3 x	3.0 x
McLeod USA Incorporated	MCLD	Dec	23.00	35.94	7.50	578.20	13,299	1,764	1,000	1,261	14,801	904	1,302	1,995	11.4 x	7.4 x
mPower Communications Corp.	MPWR	Dec	48.63	78.00	15.00	35.58	1,730	157	85	125	1,847	55	106	NA	17.5 x	NM
NetLojix Communications, Inc.	NETX	Dec	2.34	9.25	1.63	13.40	31	0	0	1	30	17	23	42	1.3 x	0.7 x
Network Plus Corporation	NPLS	Dec	14.00	62.63	10.00	59.96	839	30	0	43	826	153	233	458	3.5 x	1.8 x
Net2000 Communications, Inc.	NTKK	Dec	12.63	40.00	8.00	37.48	473	46	81	9	591	28	59	160	10.1 x	3.7 x
NEXTLINK Communications, Inc.	NXLK	Dec	74.44	132.50	33.38	133.97	9,972	3,733	612	1,923	12,396	274	683	1,322	18.1 x	9.4 x
Pac-West Telecom, Inc.	PACW	Dec	16.88	41.75	14.13	35.86	605	150	0	163	592	96	NA	NA	NM	NM

Source: FactSet

Section 9: Smart-Build Carriers and Broadband Intermediaries

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Adelphia Business Solutions	www.hyperion.net	Adelphia Business Solutions provides integrated communications services to business customers using its own facilities as well as unbundled network elements. The company currently offers service in 58 markets and by the end of 2001, it expects to serve 200 markets throughout the United States including substantially all major Tier I and Tier II cities. The companies services include local and long-distance voice, high-speed Internet, data networking, and enhanced services.	Main at Water Street Coudersport, PA 16915	Adelphia Communications	ABIZ
Allegiance Telecommunications	www.allegiancetele.com	Allegiance Telecom, Inc. is a smart-build broadband provider targeting small and medium-sized businesses in major U.S. markets. The company's services include a package of local, long distance, Internet, hosting, and portal services. The company is deploying its own DSL circuits and switching facilities in each of its markets and is purchasing fiber capacity in several of its markets.	1950 Stemmons Freeway Dallas, TX 75207	Morgan Stanley Capital Partners, Madison Dearborn, Frontenac, Vulcan Ventures	ALGX
CapRock Commuications	www.caprock.com	CapRock owns and operates a six-state fiber backbone that, once completed, will span 7,500 miles connecting tier 1, 2, and 3 markets in TX, AZ, NM, OK, LA, and AR over a packet-switched IP/ATM platform. CapRock generates revenues primarily from wholesale services to more than 160 carrier customers, as well as integrated local, long distance, and data services to several thousand business customers. The company's provides local services using a base of more than 50 collocations (200 planned by year-end) coupled with a smart-build strategy employing leased circuits, UNEs, UNE-P, and DSL.	15601 Dallas Parkway Dallas, Texas 75001		CPRK
Choice One	www.choiceonecom.com	Choice One offers local, long distance, high-speed data, Internet access, hosting, and DSL services The company is employing a smart-build approach to target small and medium-sized businesses in second and third tier markets in the Northeast and Midwest.	100 Chestnut Street Rochester, NY 14604	Morgan Stanley Dean Witter Capital Partners, Fleet Equity Partners, Waller Sutton Media Partners.	CWON
Convergent Communications	www.converg.com	Convergent provides a comprehensive bundle of services to small and medium-sized businesses, including turnkey voice, data, Internet, hosting, and network management solutions. The company is currently operational in 35 markets.	400 Inverness Drive South Engelwood, CO 80112	Strategic Asset Management, First Continental Group, 21st Century Communications Partners, Texas Pacific Group, Sandler Capital.	CONV
CTC Communications	www.ctcnet.com	CTC Communications is a competitive provider of voice, data, and Internet services to businesses in the Northeast Corridor. Originally an agent of Bell Atlantic and a reseller of other carriers' local, long-distance, and data services, CTC is constructing its own packet-switched network and becoming a facilities-based carrier. The company specializes in providing integrated voice and data services to multi-location large and medium-size businesses in its territory. CTC currently serves more than 13,000 customers with 315,000+ access lines.	220 Bear Hill Road Waltham, MA 02451-1101	Spectrum Equity Investors, Bain Capital, Thomas H. Lee Partners, CS First Boston, Cisco, Williams	CPTL

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Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Electric Lightwave	www.eli.net	Electric Lightwave is a facilities-based provider of voice, Internet, data, video conferencing, and other broadband services in several major-market clusters in the western U.S. It markets primarily to large and medium-sized, retail, communications-intensive businesses as well as some wholesale customers. The company connects its clusters through a long-haul, ATM-based network.	4400 NE 77th Avenue Vancouver, WA 98662	Citizens Utility	ELIX
FirstWorld Communications	www.firstworld.com	FirstWorld Communications is a provider of Internet, data and communications services. The company's service offerings include high-speed Internet access, such as dedicated access and digital subscriber line; dial-up Internet access; Web hosting and design; data center services including co-location, access, application hosting and monitoring services; and Web integration and consulting services. To complement its data offerings, the Company provides telephony services in selected markets.	8390 E. Crescent Parkway Greenwood Village, CO 80111	Texas Pacific Group, Enron, Donald L. Sturm	FWIS
Focal Communications	www.focal.com	Focal offers data, voice and collocation services to large corporations, Internet service providers and value-added resellers across the United States. Focal currently services 18 major metropolitan markets and has announced plans to deploy services in a total of 24 markets across 56 metropolitan statistical areas nationwide.	200 N. LaSalle Street Chicago, IL 60601	Madison Dearborn, Frontenac, Battery Ventures	FCOM
Internet America	www.airmail.net	Internet America provides primarily dial-up and high-speed Internet services as well as hosting services to residential and business customers in the Southwest. The company's broadband offerings include DSL, ISDN, and T1 services.	One Dallas Centre 350 N. St. Paul, Suite 3000 Dallas, Texas 75201		GEEK
ITC^DeltaCom	www.itcdelta.com	ITC^DeltaCom provides broadband services to business customers in 10 Southeastern states. The company operates an 8,320-mile fiber optic network and switching infrastructure over which it provides long-distance, local, data networking, and Internet access, hosting, and collocation services. The company's offerings also include managed modem services for ISPs, network services for other carriers, and network management services for business customers.	1791 O.G. Skinner Drive West Point, Georgia 31833	SCANA Corp.	ITCD
Log On America	www.logonamerica.com	Log On America is a facilities-based broadband ISP and CLEC targeting the commercial and small office/home office markets throughout the Northeast. The company provides a variety of voice and Internet-related services using leased lines and DSL technology.	One Cookson Place Providence, RI 02903	Marshall Capital Management, Nortel Networks	LOAX
McLeodUSA	www.mcleod.net	McLeodUSA provides integrated local, long distance and data services in several Midwest and Rocky Mountain states. Through its acquisition of Splitrock Services, the company also operates a nationwide ATM backbone and provides data networking to carrier and business customers.	6400 C Street SW Cedar Rapids, IA 52406-3177	Forstmann Little	MCLD
Mpower Communications	www.mgccom.com	Mpower provides integrated broadband services, including data, telephony, Internet access, and Web hosting applications to small and mid-sized business customers. Mpower currently serves markets in several regions of the country and is expanding its presence to become a nationwide carrier. The company utilizes DSL technology in each of its collocation sites.	3301 North Buffalo Las Vegas, NV 89129	Providence Equity Partners, Wind Point Investors, West Highland Capital, JK&B Capital, Boston Capital, Westbury Capital Partners	MPWR
Net2000 Communications	www.net2000.com	Net2000 is a provider of broadband data and voice telecommunications services, primarily to medium and large businesses on the East coast. The company provides local, long distance, data, voice and Internet access services to bandwidth-intensive customers, delivered over a single broadband connection and billed on a single invoice. Net2000 currently operates sales offices in several East coast cities and is expanding its network and sales presence nationwide.	2180 Fox Mill Road Herndon, VA 20171	Carlyle Group, Blue Water Capital, SG Capital Partners, Mid-Atlantic Venture Fund, Nortel Networks	NTKK

Section 9: Smart-Build Carriers and Broadband Intermediaries

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Netlojix	www.netlojix.com	Formed in 1996, NetLojix is a provides an integrated bundle of data, voice and Internet services along with outsourced IT support. The company's offerings include dedicated voice and data connectivity; network design, installation, management, and monitoring; and hosting and e-commerce services.	501 Bath Street Santa Barbara, CA 93101		NETX
Network Plus Corp.	www.nwp.com	Network Plus provides broadband data and voice telecommunications service, primarily to small and medium-sized business customers located in major markets in the Northeast and Southeast. The company's services include a variety of DSL-based data and voice offerings.	234 Copeland St. Quincy, MA 02169		NPLS
NEXTLINK Communications	www.nextlink.net	NEXTLINK Communications provides end-to-end broadband services to businesses in over 50 U.S. markets via its fiber optic, wireless, and DSL facilities. Through its acquisition of Concentric Network, NEXTLINK is now a leading provider of Internet and Web hosting services. The company recently announced the acquisition of multiple European metropolitan fiber networks, an inter-city pan-European fiber network, and transatlantic fiber-optic capacity.	1505 Farm Credit Drive McLean, VA 22102	Eagle River Investments LLC.(Craig McCaw), Ampersand Telecom, Forstmann Little, Level 3	NXLK
Pac-West Telecomm	www.pacwest.com	Pac-West Telecomm provides voice and Internet services to small and medium-sized businesses as well as carrier customers. The company also installs and maintains customer-premise equipment as part of its bundled service offering. Pac-West is expanding from its base in California to include major markets in the Western U.S.	4210 Coronado Avenue Stockton, CA 95204	Safeguard Scientifics, SCP Private Equity Partners, TL Ventures, EnerTech Capital Partners, William Blair Capital Partners	PACW
TALK.com	www.talk.com	Talk.com provides long-distance as well as, with its announced acquistion of Access One, UNE-P based local telecommunications services to business and residential customers. The company sells its services through an agreement with America Online and through its Web site, direct mail, telemarketing, and independent resellers.	12020 Sunrise Valley Drive Reston, VA 22091	Soros Private Equity Partners, America Online	TALK
Time Warner Telecom	www.twtelecom.com	Time Warner Telecom is a fiber facilities-based integrated communications provider in selected metropolitan markets across the U.S. The company offers local businesses "last mile" broadband connections for data, high-speed Internet access, local voice, and long distance services, with future Internet-related product expansions under way.	10475 Park Meadows Drive Littleton, CO 80124	Time Warner, Media One Group, Newhouse Capital	TWTC
Universal Access	www.universalaccess.com	Universal Access is a provider of multi-carrier, end-to-end network connections and high-capacity bandwidth provisioning services. The company is an intermediary that facilitates the provisioning, installation and servicing of dedicated, point-to-point communications links for service providers who buy network capacity, and transport suppliers who sell network capacity. Universal Access leverages established relationships with network providers to deliver vendor-neutral network connections to Internet and telecommunications providers as well as enterprise customers.	100 North Riverside Plaza Chicago, IL 60606	ComVentures, Internet Capital Group, Broadmark Capital	UAXS

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Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
2nd Century Communications	www.2c2.com	2nd Century Communications provides a comprehensive bundle of broadband services to small and medium-sized businesses, featuring networking and desktop management services as well as voice, Internet, data, and hosting. The company currently has a presence in 21 cities nationwide, with plans to expand to 35 cities by year-end 2000.	1100 Wilson Blvd. Arlington, VA 22209	Accel Partners, Meritech Capital, Partners, North Bridge Venture Partners, Venrock Associates, Dell, Intel, Microsoft	private
Actel Integrated Communications	www.actel.net	Actel Integrated Communications provides integrated voice, data, Internet and broadband services to business customers in tier 2 and tier 3 markets across the Southeastern United States.	1509 Government St. Mobile, AL 36604	Sandler Capital, DB Capital Partners (the private equity arm of Deutsche Bank), Murdoch Communications	private
ATG Group	www.callatg.com	ATG Group is a facilities-based broadband provider offering bundled Internet, data, and voice services. The company targets customers in tier 3 and tier 4 markets. ATG currently offers services in eight markets across five states, and expects to commence operations in five additional markets by the end of the year and in another 15 markets by the end of 2001.	110 Stony Point Road Santa Rosa, CA 95401	Norwest Venture Partners, Texas Pacific Gropu, JP Morgan Capital Corporation, Alta Communications, Centennial Fund, Telecom Partners, II, LP, First Union Capital Partners, AT&T Ventures	private
AuraServ Communications	www.auraserv.com	AuraServ offers network systems with telephone service, including features such as messaging systems and conferencing capabilities. The company plans t offer services in approximately 15 markets during the next several quarters. AuraServ's first product, AuraVoice, packages a network-based telephone system with local and long-distance services.	7400 South Tucson Way Englewood, CO 80112	Crosspoint Venture Partners	private
Birch Telecom	www.birch.com	Birch Telecom provides bundled voice and data services to small and mid-sized business and residential customers in Kansas, Missouri and Texas. The company provides a full array of services and products, including local and long distance voice, Internet services, such as access and Web hosting.	2020 Baltimore Kansas City, MO 64108	Kohlberg, Kravis & Roberts, Advantage Capital Missouri Partners, Pacific Capital	private
BTI Telecom	www.btitele.com	BTI is a facilities-based broadband provider of voice and data communications services to primarily small and medium-sized business customers in the Southeast. The company's services include local, long distance, data, Internet, and enhanced services as well as wholesale switched, private-line, and calling-card services to other carriers. BTI's fiber network covers approximately 3,700 route miles of fiber optics along the East Coast as well as local fiber linking major cities in North Carolina.	4300 Six Forks Road Raleigh, NC 27609	Welsh, Carson, Anderson & Stowe	private
Cbeyond Communications	www.cbeyond.net	Cbeyond plans to offer a fully integrated suite of local, long distance, Internet, and enhanced data services over a common IP architecture. The company is targeting an initial buildout in 25 MSAs.	320 Interstate Parkway North Atlanta, GA 30339	Madison Dearborn Capital, Morgan Stanley Dean Witter Private Equity, Battery Ventures, VantagePoint Venture Partners, Thomas H.	private
Centerbeam	www.centerbeam.com	CenterBeam provides connectivity and fully outsourced solutions for desktop support, network management and security, Web hosting, e-commerce, remote access, and other enhanced services to small and medium-sized businesses. The company utilizes wireless LAN technology for on-site networking and partners with DSL, hosting, and collocation providers for network-delivered services.	2520 Mission College Blvd. Santa Clara, CA 95054	Dell, Intel, Microsoft, CrossPoint Venture Partners, Accel Partners, New Enterprise Associates, Impact Partners, Tangent Fund Management, MarchFirst.	private

Section 9: Smart-Build Carriers and Broadband Intermediaries

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
ColoSolutions	www.colosolutions.com	Colo Solutions provides carrier-neutral telecom colocation facilities in key business centers. The company offers a suite of colocation as well as wholesale Web hosting services for customers that include ISPs, ASPs, CLECs, and other carriers.	PO Box 411570 Melbourne, FL 32941		private
CoreExpress	www.coreexpress.com	CoreExpress is partnering with ISPs to create a national network to ensure delivery of business-class traffic with service-level guarantees. The company's network is intended to leverage customer's existing broadband Internet connections and serve as an alternative to frame relay and point-to-point private networks.	12655 Olive Blvd St. Louis, MO 63141	Benchmark Capital, Morgan Stanley	private
Digital Broadband Communications	www.digitalbroadband.com	Digital Broadband Communications provides a variety of high-end, customized voice, data, and Internet services to general businesses and large enterprises. The company utilizes a variety of access technologies (DSL, T1, frame relay) over its multi-city backbone. The company's strategic relationships include Cisco, Exodus, Level 3, Bell Atlantic, Frontier/Global Crossing, and MCI WorldCom.	200 West Street Waltham, MA 02451	Thomas H. Lee Partners, BancBoston Ventures	private
Eschelon Telecom	www.eschelon.com	Eschelon is provides facilities-based broadband voice and data services to small and medium-sized business customers in select markets within the western United States. The company's services include local voice, long distance and data services, including DSL connectivity, high-speed Internet access, private lines, Web hosting, and virtual private network services.	730 Second Avenue Minneapolis, MN 55402	Stolberg Partners, Bain Capital, J.P. Morgan	private
Everdream	www.everdream.com	Everdream provides fully outsourced support via the Internet for desktop applications, network management and security, and data connectivity. The company distributes its services through a combination of direct sales as well as carrier and strategic-partner channels.	6591 Dumbarton Circle Fremont, CA 94555	Canaan Partners, Draper Fisher Jurvetson, Ricoh Silicon Valley, and Portage Ventures	private
Extant	www.extant.net	Extant provides carrier transport, OSS interconnect, and clearinghouse solutions to communications and network service providers. The company offers service by connecting communication providers to ports on its national ATM backbone and simplifying the back office operation through its clearinghouse and settlement capabilities.	2821 South Parker Drive Aurora, CO 80014	Safeguard Scientifics, Inc., Exelon Capital Partners, Lucent Technologies, and EnerTech Capital Partners	private
EZ Net	www.ezwv.com	EZNet is a smart-build CLEC and ISP that uses a combination of access and transport media, including leased circuits, DSL, and fixed wireless. Services provided include high-speed Internet access, data networking, and Web design and hosting. The company's service area includes markets in West Virginia, Kentucky, and Ohio.	848 Fourth Avenue Huntington, WV 25701	numerous private sponsors	private
Fiberlink Communications Co.	www.fiberlink.com	Fiberlink is a network-independent broadband provider that provides data connectivity services to enterprise customers. Its services include remote access VPNs, LAN-to-LAN VPNs, firewall and router management, dedicated Internet access, point-to-point private lines, and frame relay.	794 Penllyn Pike Blue Bell, PA 19422	Edison Venture Fund, NewSpring Ventures	private
Florida Digital Network	www.floridadigital.net	Florida Digital Network provides voice, data, and Internet services to small and medium-sized businesses. The company launched operations in several Florida markets during 1999 and early 2000.	390 North Orange Avenue Orlando, FL 32801	M/C Partners	private

Section 9: Smart-Build Carriers and Broadband Intermediaries

Broadband Services Companies	Hyperlink	Description	Address	Financial & Strategic Partners	Ticker
Gabriel Communications	www.gabrielcom.net	Gabriel Communications is a facilities-based broadband provider offering voice, Internet, hosting, and other enhanced services. Gabriel has networks in operation or under development in 15 markets in Missouri, Kansas, Oklahoma, Arkansas, Illinois, Indiana, Ohio, Kentucky and Tennessee.	16090 Swingley Ridge Road Chesterfield, MO 63017	Goldman Sachs, JH Whitney, Centennial Funds, Telecom Partners, OneLiberty Ventures, Chase Capital Partners, Norwest Equity Partners	private
Global Broadband	www.glbbinc.com	Global Broadband is a facilities-based, broadband provider of high-speed data and packet voice services. The company employs a direct-sales approach that targets small and medium-sized businesses in metropolitan areas. Global Broadband is deploying a DSL network initially in New York and Massachusetts, with a planned expansion to several additional markets by year-end 2000.	70 West 36th Street New York, NY 10018	numerous private sponsors	private
Integra Telecom	www.ogitel.net	Integra Telecom is an integrated communications provider offering a full range of communications services, including local and long distance voice, and high-speed Internet and data services, including DSL to small and medium-sized businesses in several states in the West and Midwest.	19545 NW Von Neumann Dr. Beaverton, OR 97006	Boston Ventures, Fleet Equity Partners, Bank of America Capital, The CIT Group, CoBank	private
LighTrade	www.lightrade.com	Lightrade is constructing a network of exchange points to facilitate the delivery of traded or auctioned bandwidth. The company's network is designed to allow service providers to match availability with demand, thereby reducing provisioning cycles.	1667 K Street NW Washington DC 20006	numerous private sponsors	private
Logix	www.logixcom.net	Logix Communications is an integrated provider of information technology and telecommunications services to businesses throughout the Southwest. Logix services include local telephone services, long distance services, Internet access, Web hosting, and data networking.	3555 NW 58th Street Oklahoma City, OK 73112	Dobson CC, numerous private partners	private
NETtel Communications	www.nettel.com	NETtel Communications is a facilities-based broadband provider focusing on the mid- to small-sized business segment. With a presence in over 22 markets, NETtel offers Internet, long distance, and local voice services over a nationwide IP/ATM backbone.	1023 31st Street NW Washington, DC 20007	Gold & Appel, Nortel Networks, Williams	private
Network Telephone	www.networktelephone.net	Network Telephone is a provides local, long distance, Internet access and hosting services. The company is deploying a DSL network in a nine-state region in the Southeast.	815 S. Palafox St. Pensacola, FL 32501	Numerous private sponsors	private
NewSouth Communications	www.newsouth.com	NewSouth is a broadband provider that currently offers a comprehensive selection of products including high-speed Internet access, DSL, data, local exchange, long distance, and enhanced telecommunications services. The company is targeting southern U.S. markets, providing a full complement of data and telecommunications services to business customers.	130 Industrial Drive Greenville, SC 29607		private
OneNetPlus.com	www.onenetplus.com	OneNetPlus provides broadband connectivity, Web hosting, e-commerce, and managed desktop services.	1325 Tri-State Parkway Gurnee, IL 60031	NA	private
Onvoy	www.onvoy.com	Onvoy provides integrated voice, data and Internet services in several Minnesota markets. The company comprises former companies MEANS Telcom, MEANS Communications and MRNet and is a single-source provider of voice, frame relay, videoconferencing, operator, network and Internet services.	10405 Sixth Avenue North Plymouth, MN 55441		private

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PaeTec	www.paetec.com	PaeTec provides broadband services, including data, voice and an array of applications and integration services, to medium and large-sized businesses, institutions and other communications-intensive users in 25 markets. The services are actively marketed through a direct sales force as well as outside sales agencies.	290 Woodcliff Drive Fairport, NY 14450	Madison Dearborn, Blackstone Capital, Ares Management	private
Pathnet	www.pathnet.net	Pathnet is a wholesale telecommunications provider building a nationwide network that offers wholesale and retail telecommunications service providers access to under-served and second- and third-tier U.S. markets. Employing a "smart-build" strategy, Pathnet is developing its network utilizing both fiber and high capacity SONET microwave technologies.	1015 31st Street NW Washington DC 20007	Spectrum Equity Investors, New Enterprise Associates, ONSET Ventures, Grotech Capital Group, Toronto Dominion Capital, Kinetic Ventures, FBR Technology Venture Partners	private
PointOne Telecommunications	www.point-one.net	Founded in 1998, PointOne is deploying a low-latency, packet-based network designed to provide integrated voice, video and data services. PointOne's network comprises a national ATM backbone and local market points of presence throughout the United States and in select international cities. Combining managed bandwidth with IP technologies, the company offers packet-based voice, video, and data services to carrier customers.	6801 N. Capital of Texas Hwy. Austin, TX 78731	Soros Private Equity Partners LLC; J&W Seligman & Co. Inc.; Aurora Investments, Texas Growth Fund	private
Prism Communication Services	www.comdisco.comproducts/prism/	Prism Communication Services provides high-speed data connectivity, local and long-distance voice, video, and Internet services to business customers. The company is expanding its network beyond its current New York footprint, aided by its relationship with parent-company Comdisco.	8 West 19th Street New York, NY 10011	Comdisco	private
SmartPipes	www.smartpipes.com	Founded in 1999, SmartPipes leverages advances in network edge device technology as well as networking software to construct reliable, IP-based alternatives to private WANs. The company's targeted applications include corporate data networks as well as business-to-business extranets.	450 Broadway St. Redwood City, CA 94063	Jim Clark, Thomas Jermoluk, Chairman of Excite@Home, Kleiner Perkins Caufiled & Byers, David Roux, Founder and Managing Partner, Silverlake Partners	private
Switch & Data Facilities	www.switchfacilities.com	Switch & Data Facilities is constructing and operating a national network of carrier-neutral, colocation facilities for use by telecommunications carriers, Internet service providers, hosting firms, and applications service providers.	1715 North Westshore Blvd Tampa, FL 33607		private
TelePacific	www.telepacific.com	TelePacific Communications is an integrated communications provider delivering converged telecommunications services, including local and long distance voice, data and high-speed Internet. TelePacific provides broadband services to small and medium sized businesses and select corporate clients within the California and Nevada marketplace.	515 S. Flower Street Los Angeles, CA 90071	Investcorp., GE Capital, Rader Reinfrank & Co.	private
TriVergent Communications	www.trivergent.com	TriVergent provides a bundled offering of DSL, high-speed Internet access, Web site design and hosting services, as well as local and long distance telephone services. The company is constructing an ATM backbone intended to connect 26 cities in the Southeast.	PO Box 6068 Greenville, SC 29606	Moore Capital, Richland Ventures, First Union Capital Partners, Boston Millennia Partners, Southeast Technology Fund, TriVergent Management, Bank of America, CIBC, The CIT Group, TD Securities	private

Glossary

Access Charge: Charge levied by a local exchange carrier for the termination or origination of traffic.

ANSI: American National Standards Institute. The organization that defines network standards in the United States.

Antenna: A device for transmitting and/or receiving signals. Antenna shapes depend on the frequency signal they receive.

ATM: Asynchronous Transfer Mode. A standard for high-speed digital backbone networks that is used to consolidate different types of media (voice, video, data). ATM uses common-sized sized 53-byte cells—48 bytes of payload and 5 bytes of control information.

ADSL Transmission Unit, Central or Remote: The device at the end of an ADSL line that stands between the line and the first item of equipment in the subscriber premises or telephone switch. It may be integrated within an access node.

Attenuation: The reduction of a signal's power as it passes through the airwaves, copper, or other media. Usually proportionate to distance. Attenuation plays a role in distance limitations inherent in DSL and wireless services.

AWG: American Wire Gauge. A thickness measurement for copper wiring. The lower the AWG number, the heavier the gauge and the better the quality of the line for supporting DSL signals. Local loops usually use 24 AWG or 26 AWG copper wires.

Backbone: Very high-capacity, long-distance lines that carry enormous amounts of Internet traffic and data from one regional network to another.

Bandwidth: The number of bits of information that can move over a communications medium in a given amount of time; the capacity of a telecommunications circuit/network to carry voice, data, and video information. Typically measured in Kbps and Mbps. Bandwidth from public networks is typically available to business and residential end-users in increments from 56 Kbps to T-3.

Basic Cable: Primary level of cable service offered for subscription. Basic cable offerings may include retransmitted broadcast signals as well as local programming.

B-ISDN: Broadband Integrated Services Digital Network. A digital network with ATM switching operating at data rates in excess of 1.544 or 2.048 Mbps. ATM enables transport and switching of voice, data, image, and video over the same infrastructure.

Bridge: A device that connects two networks as a seamless single network using the same networking protocol. Bridges operate at the hardware layer and do not include IP routing capabilities.

Bridged Tap: An extension to a local loop used to attach a remote user to a central office (CO) switch without having to run a new copper pair. Bridged taps limit the speed of digital connections.

Broadband: A transmission that has a bandwidth greater than 128 Kbps.

CAP: Competitive Access Provider. Now called Competitive Local Exchange Carrier (CLEC).

CAP Modulation: Carrierless Amplitude Phase. Describes a version of QAM in which incoming data modulates a single carrier that is then transmitted down a telephone line. Used in ADSL systems.

Cell Site: A transmitter/receiver location operated by the wireless service provider, through which radio links are established between the wireless network and the end-user location. The area served by a cell site is referred to as a cell. A cell site consists of an antenna tower, transmission radios, and radio controllers.

Channel: A path for digital transmission signals. Within digital services, multiple channels can share the same medium using multiplexers.

Circuit: A path through a network from origin to destination. Circuit-switched networks use a fixed route and fixed amount of bandwidth for the duration of the connection between the two end points.

Glossary

CO: Central Office of an ILEC. The switching and control facility of the local telephone company (ILEC), where the subscriber's local loop terminates. COs handle calls within a geographic area, as identified by the first three digits of the telephone number.

CPE: Customer Premises Equipment. Equipment located either at the customer (ISP) or end user site.

Crosstalk: Signal interference caused by the transfer of energy from a collocated line. Crosstalk is a factor in delivering DSL services in the same cabling bundle.

CSA: Carrier Serving Area. Area served by a LEC, RBOC, or telco, often using Digital Loop Carrier (DLC) technology.

Dark Fiber: Fiber that has been deployed along a route but without optical electronics attached to it. Until the electronic equipment is attached, dark fiber is not immediately transferable to useable bandwidth.

Demarcation: The point at the customer's premises where the line from the telephone company meets the premises' wiring. From the demarcation point, the end user is responsible for the wiring.

Dial-Up Line: Communications circuit that is established by a switched-circuit connection using the telephone network.

DLC: Digital Loop Carrier. A network element that connects end users located more than 18,000 feet from the CO. DLCs consist of a box containing line cards that concentrate individual lines within a given area and then send the traffic over a high-speed digital connection. DLCs are commonly deployed in office parks and residential subdivisions.

DNS: Domain Name System. The name resolution service for IP addresses that provides the text-based addresses for Internet users and Web sites.

DOCSIS: Data Over Cable Service Interface Specification. Cable modem specification set by the MCNS partnership of North American cable operators.

Domain Name: Refers to a group of computers using the same DNS name servers and managed within the same administrative unit.

Downstream: The data path from service provider to customer.

DS-1: Digital Signal Level 1. A digital line at 1.544 Mbps (U. S.) carried on a T1 circuit.

DS-3: Digital Signal Level 3. A digital line at 44.736 Mbps (U. S.) carried on a T3 circuit.

DSL: Digital Subscriber Line. DSL services are point-to-point public network access technologies that allow multiple forms of data, voice, and video to be carried over standard twisted-pair copper wire on the local loop between a network service provider's central office and the customer site. Connections are "always on" between the end-user and the network. There are many type of DSL services available:

> **ADSL:** Asymmetric Digital Subscriber Line. Modems attached to twisted pair copper wiring that transmit from 1.5 Mbps to 9 Mbps downstream (to the subscriber) and from 16 kbps to 800 kbps upstream. Available speeds decrease as distance from the end user site to the CO increases.
>
> **HDSL:** High bit-rate Digital Subscriber Line. An xDSL technology that is symmetric, providing the same amount of bandwidth both upstream and downstream. Due to its speed, 1.544 Mbps over two copper pairs and 2.048 Mbps over three copper pairs, telcos sometimes deploy HDSL as an alternative to T1/E1.
>
> **IDSL:** ISDN Digital Subscriber Line (IDSL) provides full symmetrical throughput at speeds up to 144 kbps in each direction. Unlike ADSL, IDSL is restricted to carrying data only. While IDSL uses the same modulation code as ISDN to deliver service without special line conditioning, it differs from ISDN in a number of ways. First, unlike ISDN, IDSL is a non-switched service, so it does not cause switch congestion at the service provider's central office. Second, unlike ISDN, ISDL, like all DSL technologies, is an "always on" service that requires no call set-up. IDSL is the only DSL technology today that can circumvent issues related to digital loop carriers (DLCs) situated between the central office and the customer location. IDSL thus allows carriers to reach virtually all end users within a central office serving area.

Glossary

RADSL: Rate-Adaptive Digital Subscriber Line. An xDSL technology that adjusts dynamically to varying lengths and qualities of twisted-pair local access lines by testing the line at start up and adapting the connection speed to the fastest the line can handle. RADSL makes it possible to connect over different lines at varying speeds.

SDSL: Symmetric Digital Subscriber Line. An xDSL technology that supports symmetrical T1/E1 transmissions, with two exceptions. It uses a single copper-pair wire, and it has a maximum operating range of 10,000 feet and operates over POTS lines. SDSL provides a constant, reliable, and cost-efficient connection between the ISP and the end-user. Within its distance limitation, SDSL is capable of accommodating applications that require identical downstream and upstream speeds, such as videoconferencing or collaborative computing.

VDSL: Very high bit-rate DSL. The fastest xDSL technology—operating at data rates from 12.9 to 52.8 Mbps with corresponding maximum reach ranging from 4,500 feet to 1,000 feet of 24 gauge twisted pair. Same as BDSL.

DSLAM: Digital Subscriber Line Access Multiplexer, usually located at the Central Office. The DSLAM terminates all the DSL line services by the operator, consolidates all the data traffic coming in from individual DSL lines, and passes them on to a backbone network for distribution to ISPs or a corporate network.

DTM: Discrete Multi-Tone. Describes a version of multicarrier modulation in which incoming data is collected and then distributed over a large number of small individual carriers, each of which uses a form of QAM modulation. DMT creates these channels using a digitial technique known as Discrete Fast-Fourier Transform. DMT is the basis of ANSI Standard T1.413.

E1: A communications circuit for voice and data transmission utilized primarily in Europe operating at 2.054 Mbps equal to 30 separate 64 Kbps channels.

E3: European designation for T3. A point-to-point communications circuit service created operating at 44 Mbps equal to 672 channels of 64 Kbps.

Ethernet: A LAN technology/protocol used to connect different devices that can run over different media. Most Ethernet LANs use twisted-pair 10Base-T wiring that can support both standard Ethernet at 10 Mbps and the new Fast Ethernet at 100 Mbps.

FCC: Federal Communications Commission. The U.S. government agency that regulates the telecommunications industry.

Fiber Optics: A technology in which light is used to transport large amounts of data using thin filaments of glass. Fiber-optic transmission is generally used for backbone networks.

Firewall: A security device (hardware or software) that controls access from the Internet to a LAN.

Fractional T1: Any data transmission rate between 56 kbps and 1.54 Mbps that runs over a digital, dedicated line.

Frame Relay: A dedicated, public data networking service offered by telecommunications companies for LAN-to-LAN connections. Frame relay uses variable-length frame for packet-switching networks that efficiently handle bursts of data by quickly adjusting bandwidth to meet demands.

Frequency: The rate at which an electrical current alternates, usually measured in cycles per second, or Hertz.

Frequency Band: Range of frequencies between two defined limits.

G.Lite: An ADSL standard that supports self-installation at the customer site. Supports 1.5 Mbps downstream and 384 kbps upstream.

Headend: A facility that originates and distributes cable service in a given geographic area. Depending on the size of the area it serves, a cable system may consist of more than one headend.

Homes Passed: Households with the ability to receive cable service that may opt to subscribe.

Glossary

Hop: Each individual trip that packets make from router to router en route to their destination.

HSSI: High Speed Serial Interface. A physical port to interface device.

Hub: A passive network device that repeats all data traffic to all ports. A hub is at the center of a LAN, and all networked devices, including computers, printers, and routers, are connected to the hub through cable.

Hub Site: The locations on a network where many circuits are brought together to be multiplexed into a single higher speed connection.

IEEE: Institute of Electrical and Electronics Engineers. An engineering professional society and standards body. Advises on ANSI standards.

IETF: Internet Engineering Task Force. The organization that provides the coordination of standards for TCP/IP networking.

ILEC: Incumbent Local Exchange Carrier, e.g., Bell Atlantic, SBC, US WEST, or other RBOCs.

IP: Internet protocol. The connectionless network layer protocol that forms the networking functions of the TCP/IP protocol. IP networking forms the basis of networking over the Internet and allows information to be transmitted across dissimilar networks.

IP Address: The unique 32-bit numeric address used by a host on a TCP/IP network.

ISDN: Integrated Services Digital Network. An internationally accepted standard for voice, data, and signaling that makes all transmission circuits end-to-end digital and defines a standard out-of-band signaling system. Typically run at "2B+D" with two 64 Kbps data channels and a 16 Kbps control channel for 128 kbps symmetrical service.

ISP: Internet Service Provider. An organization offering and providing Internet services to the public and having its own computer servers to provide the services offered.

ITU: International Telecommunications Union, an international telecommunications standards body.

IXC: Interexchange Carrier. A long-distance telephone company.

Kbps: Abbreviation for Kilobits per second, or thousands of bits per second. 56 kbps is equivalent to a single high-speed telephone service line, capable of transmitting one voice call or 56 kbps of data.

LAN: Local Area Network, usually connected by Ethernet protocols.

Latency: A measure of the delay between the sending of a packet and the reception of that packet.

LEC: Local Exchange Carrier. Usually refers to the local phone company (Incumbent Local Exchange Carrier).

Lit Fiber: Fiber that has been deployed along with optical electronics at the end points. Unlike dark fiber, lit fiber is able to carry a discrete amount of capacity.

Loading Coil: A metallic device used to extend the reach of local loops. Loading coils severely limit the bandwidth in digital communications.

Mbps: Abbreviation for Megabits per second, or millions of bits per second.

MCNS: Multimedia Cable Network System Industry specification that defines the technical requirement for interoperability of high-speed cable modem and headend equipment.

Modem: A device for transmitting information over an analog communications channel, such as a POTS telephone circuit.

Glossary

Multiplexer: A device used to combine and later split multiple telecommunications circuits into channels. DSL lines coming into the CO are multiplexed to be carried over trunk lines.

Node: A single local area distribution point that is connected via high-speed fiber-optic lines to a headend. In a cable system, each town or city typically is divided into groups of approximately 500 homes that are connected to a single node.

MPOE: Minimum Point Of Entry. The ILEC demarcation port at the End User's or Customer's premises.

MSO: Multiple System Operator. A company owning two or more cable systems.

NAP: Network Access Point.

NCC: Network Control Center. The Network Management and Network Operations functions.

NOC: Network Operations Center. The Network Management and Network Operations functions.

Packet: A variable-sized unit of information that can be sent across a packet-switching network. A packet contains addressing information, error checking, user information, and application data. Packet-switching refers to a network that does not establish a dedicated path through the network for the duration of a session but instead transmits data streams broken down into packets.

POTS: Plain Old Telephone Service, i.e., an analog phone line—what most people have in their homes today.

PVC: Private Virtual Circuit. A static connection that has a predefined route. All information transferred across this connection traverses the same path throughout the network.

RJ-11: A standard jack or plug that supports two pairs of wires. Commonly used for most telephones, fax machines, and modems.

Router: A device for interconnecting local area networks that have dissimilar operating protocols but which share a common network interconnection protocol. A router receives and transmits data packs between segments in a network or different networks.

Section 271: A section of the 1996 Telecommunications Act that provides the framework for Bell-company entry into the long-distance market.

Server: A host that makes an application or service available to clients. A Web server transmits information to Web browser clients.

Splitter: A device installed at a customer location to separate POTS service from ADSL data service.