HIGH SPEED ACCESS REPORT

Quarterly Report Covering the Current State of High Speed Access Including xDSL, Cable Modems, and FTTx

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First Quarter 2008 HIGH SPEED Access Report

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6. **Customer's Corner has been added –** an opportunity to state your thoughts on these issues, or ask questions.

Note: These reports typically are issued a month and a half or so after the end of the quarter. The delay is caused by the need to wait for the service providers to make their quarterly financial reports. We only take data from those reports, so we must wait for their availability. This report contains estimated data for Rogers, and Charter because of their extended reporting times.

High Speed Access Report – First Quarter 2008

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HIGH SPEED Access News for the Quarter

RBOCs Are Continuing to Be the Story – but It Has a Changed Plot Line!

We have been writing about the slowness of the RBOCs in re-adjusting their marketing efforts to the new realities of their advanced access programs (FiOS, and U-Verse.) Until this quarter, it appeared that both major RBOCs were going to settle for less quarterly growth in h-s lines to achieve the penetration of their advanced service networks. This had been in progress at Verizon since the second quarter of 2006, and for AT&T (but not so pronounced) for the last three quarters. It appeared (and various company spokesmen admitted that it was the case, but not so bluntly) that the job of installing the new networks in customer's homes was just more than the RBOCs could do at previous levels of gain. They appear to be dropping their legacy business (xDSL) to focus on the advanced networks.

To get a clear picture of this, Verizon just added 4000 xDSL lines this last quarter (they also added 262,000 FiOS h-s Lines) compared to their 2006 first quarter adds of over 500,000! (A few of those were FiOS in early 2006, but very few.)

This Quarter a change has occurred in this pattern. Verizon is still struggling along with its excellent FiOS results, but poor overall h-s addition results, while AT&T has surged back to, at least close, its old form in h-s adds. It added 491,000 h-s lines (including 148,000 U-Verse video services – they do not report U-Verse h-s separately, but a representative indicates that almost all U-Verse lines are video and h-s access.) While 491,000 is less than it 'should' add considering the BellSouth properties, it is still a very respectable quarter, and clearly indicates that AT&T is not solely focusing on its new network for h-s additions. (See the chart below.)

Cable Companies Going Strong!

Comcast, particularly and to a only slightly lesser extent Time Warner, are growing with numbers that exceed last year's first quarter, and certainly don't appear to be impacted by any national economic problems. Although it would be very hard to prove, it appears to this analyst that some of that vigor is coming from taking the growth that the telcos would have without their preoccupation with advanced networks.

What Does this New Plot Mean?

For one thing, Verizon's apparent strategy is going to result in their losing (perhaps irreplaceably) about half their growth in h-s access. This loss is going to the cable companies, who are generally instituting forms of their own advanced networks. (For example, this writer's home service from Time Warner was just up-graded to 10 Megs, at no added cost!) AT&T seems now to be taking a much more balanced approach that is putting them back into meaningful competition with the cable companies.

Telcos Becoming Wireless Companies

In what must be one of the greatest of ironies, Verizon, the company with arguably the very best access network, is quickly becoming more of a wireless carrier than it is a traditional telephone company. Its 1Q 2008 financial results illustrate this fact. Its wireline revenues dropped approximately $200 million (year over year), but this included a gain of over $600 million in data service. The total drop in wireline without data is actually over $800 million. As Senator Dirksen once said, "A billion here, a billion there, pretty soon you are talking real money."

At the same time, wireless revenues increased by over $1.3 billion for Verizon. While Wireline is still about $1 billion bigger than wireless at Verizon, **at this rate by some time next year, Verizon will be a wireless company.**

Another Result of the New Plot – We Have A New H-S Access Forecast!

Because of what we have just described, and for other reasons that we will enumerate in a later section, IGI is producing a new forecast for h-s access growth. This forecast will replace our existing forecast developed in 2005 and originally used in early 2006. This forecast will be introduced in later sections.

VERIZON – FIOS – Great Again! But …

This was another record quarter for Verizon in adding FiOS and FiOS video. This quarter they added slightly more video customers than high-speed internet! They added 262,000 FiOS lines and 263,000 video customers. However, they only added 4,000 xDSL

customers, for a total add of 266,000 h-s customers. This is about the same as last quarter and that was the lowest number of h-s customers added by Verizon since 2003. It is the lowest number of xDSL h-s adds by any major telephone company since we began keeping this data in 2000!

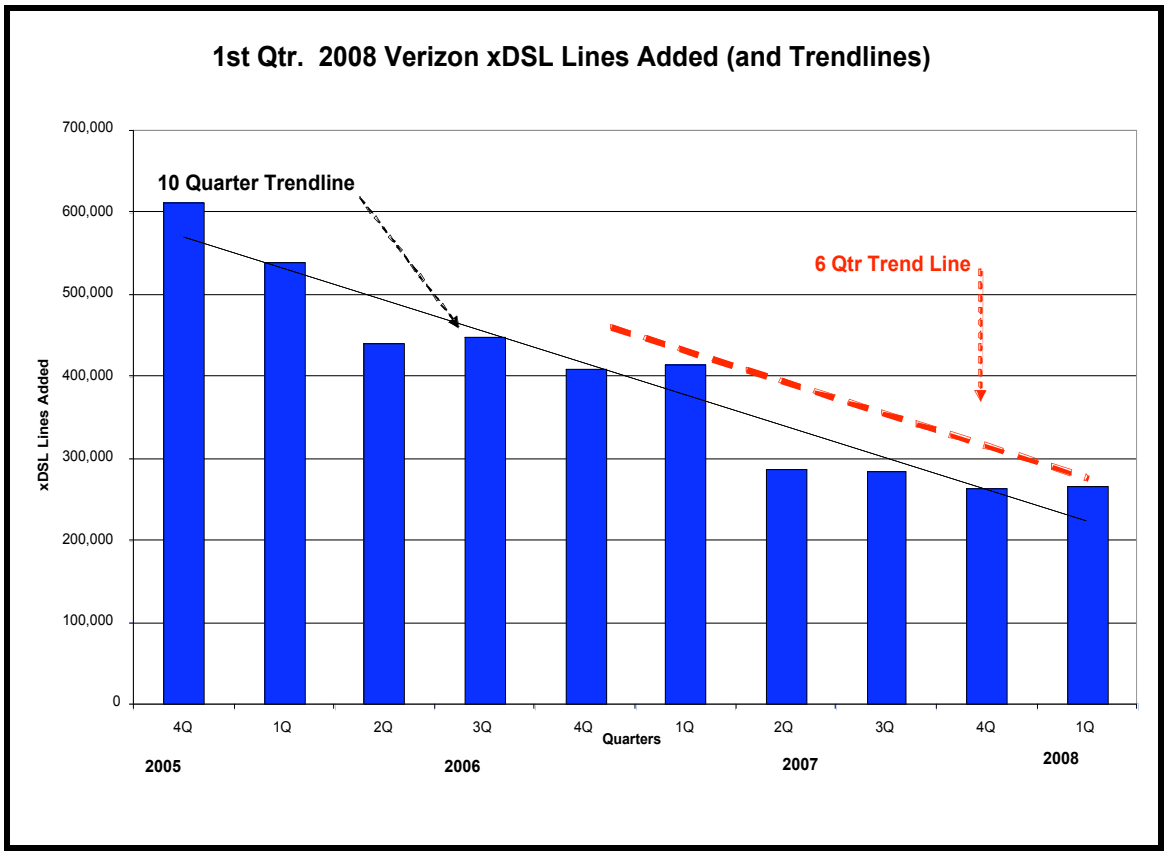
We Know What Is Wrong!

Repeating what we have said before, the installation of FiOS is deterring them from achieving the same level of h-s access gains, because of the added time to install and cutover each new FiOS customer. We see this in the results very clearly. They are hitting records every quarter for FiOS installs, but their xDSL installs are going to nearly zero. The total of the two is much less than they were achieving with just xDSL.
We have noticed in ourt local market (Dallas – Ft. Worth) that Verizon has of late started advertising its xDSL service again. Maybe they have seen the writing on the wall to maybe they read this report!

As we noted the last few quarters, there is a real risk of losing the initiative to the cable companies. Once a customer is lost in this business, they are very hard to get back! Verizon, particularly, and AT&T need to do better; and not just a little better!

The following graphs will illustrate these points.

Figure 1, Verizon H-S Additions – Ten Quarters



The above chart shows this Verizon problem continuing and getting worse! Both trend lines are now sloping down with the six-quarter trend line more decidedly downward, and the ten-quarter trend line has been brought down by the last four quarters' performance.

Please note that this chart includes FiOS as well as xDSL.

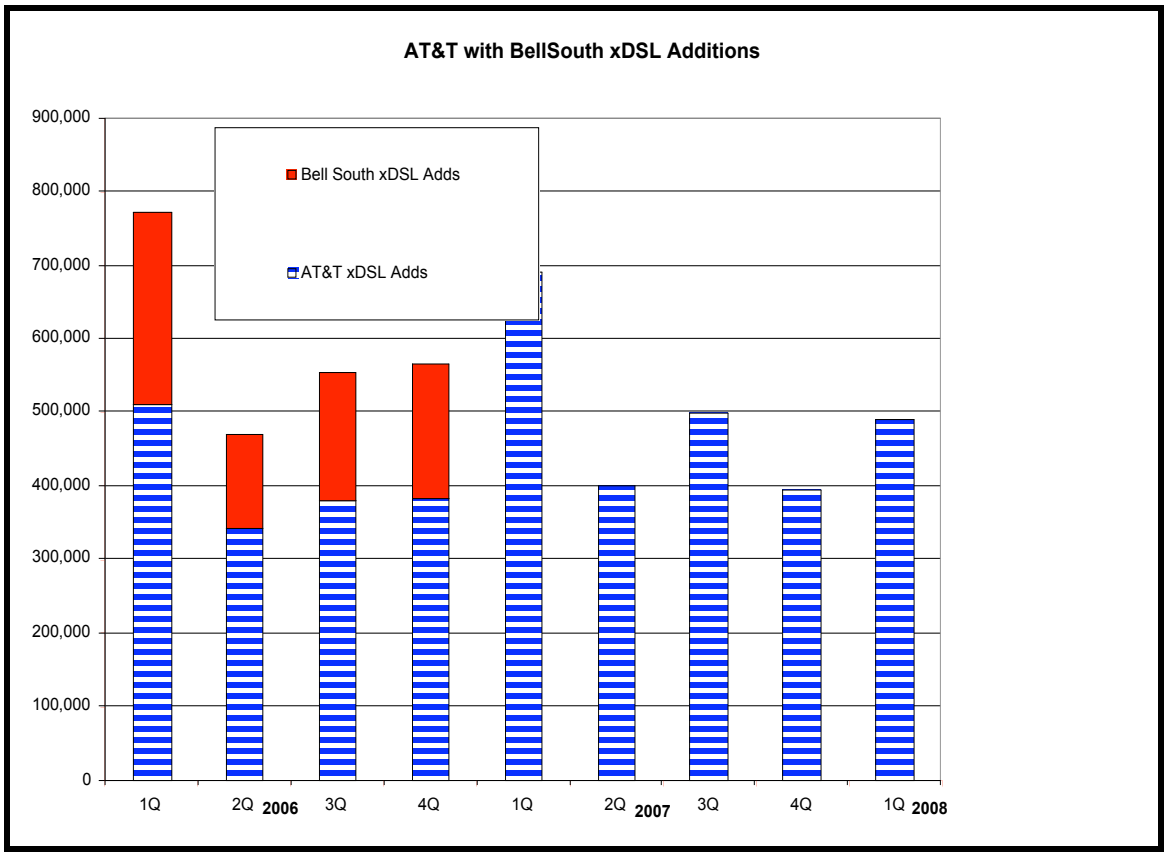
AT&T

Now let us turn to AT&T. The picture here is more complicated because of the BellSouth merger, but we will work through that. First, let's recount the results. For the Quarter AT&T added 491,000 h-s lines. It added 148,000 U-Verse video services. AT&T does not report U-Verse h-s lines installed without video, but they indicate that this is very uncommon. These numbers tell a story of a very different approach from Verizon. AT&T is keeping its emphasis on its legacy xDSL market and continuing to grow it, almost as fast as ever, and it is growing its advanced network presence, simultaneously. It is not expanding U-Verse as fast as Verizon is FiOS, but it is also not losing

potential gained customers to the competition, either.

The following chart shows the additions by quarter for AT&T, and includes the pre-merger BellSouth for comparison. While AT&T is not gaining as fast s the combined companies, it is still making very substantial gains every quarter.

Figure 2, AT&T's H-S Gain Performance by Quarter



Other News

Fiber to the Home

Fiber-to-the-home (FTTH) is now being marketed to more than 10 million North American homes, according to a recent report and FTTH networks pass nearly 12 million homes, or nearly 10 percent of all the homes in North America. Nearly 3 million homes are connected to fiber, and 770,500 of those (or 26 percent) were added in the last six months.

RBOCs (mainly Verizon Communications) account for 2,079,000 FTTH subscribers (or 72 percent of the total), while a mix of 593 other providers collectively claim the other 833,500. Non-Bell incumbents own 14 percent of all FTTH customers. CLECs own nearly 5 percent, municipalities own 4 percent, developers and integrators own less than 4 percent and cable companies own nearly 1 percent.

The most fiber-rich areas of the United States are those within the territory of Verizon or third-tier telcos, where a third of all households are located and 5.8 percent of them are connected to fiber. In areas served by AT&T, Qwest or tier-two telcos — where two-thirds of U.S. homes are found — only 0.6 percent of homes have fiber.

Survey Says: U.S. Needs Big Broadband Boost and Redistribution

Tellabs calls to close the gap between the 'haves' and 'have nots.' According to a new telecom industry survey from Tellabs, America's growing economic inequality is coming to broadband service access as well, making the country one of data-rich haves and have-nots. While 65 million Americans depend on broadband services almost daily for work, education, entertainment and/or general communications, "too many other Americans have no access to broadband services," in Tellabs' words.

Much of those "other Americans" can be found in rural or under-served areas that have been marginalized by service providers for economic or geographic reasons. These potential customers can't even get broadband at the current FCC-defined rate of 200 kbps, at which speed the survey notes, it takes longer to download a movie than to watch the movie.

Breaking down the survey results, 451 readers of major U.S. telecom publications shared a general concern for lost productivity, including:

• 89 percent think that lack of broadband access hurts an individual's educational, productivity, and employment potential.

• 81 percent think that America should some of the current Universal Service Fund to expand rural broadband.
• 79 percent think where you live should not dictate broadband availability.
• 77 percent think that economic status should not determine broadband availability.

Broadband for All USA?

For a slightly different take from the story above, here is a repeat of a story from last Quarter's HSAR.

A recent report from the National Telecommunications and Information Agency claims that the Administration's goal of "Broadband for All" has largely been achieved. Many critics disagree. The conclusion is based on the data that at least 99% of the Zip Codes in the country are served by at least one broadband provider. However, if you olive on a backcountry road in eastern Kentucky, the fact that somebody can get broadband service in the county seat does not make much difference to you.

A better measure is penetration, and we present some data on that in the charts with this report. In terms of the world the US has dropped from being the 4th highest country in 2001 to being now only the 15th highest. The slowdown due to installing the new super high-speed accesses will only exacerbate this.

Digital Sales Will Account for 40% of Music Purchases by 2012

Digital sales of music represented 10% of the total worldwide music market in 2007, up from 6% in 2006, according to recent reports. By 2012, digital music sales will represent an impressive 40% of all music purchased worldwide, the high-tech market research firm says. Factors contributing to this growth include the global expansion of broadband, continued demand for single-track downloads, and expanding music catalogues. Another key driver is the potential for market growth in full-track downloads to mobile handsets in markets other than Japan, which currently is the primary market for this type of digital music format.

Digital piracy continues to represent the primary challenge to online music service providers. Other obstacles still include the lack of interoperability between services and devices due to differing digital rights management (DRM) technologies, and weak consumer demand for subscription-based services. Another potential market inhibitor is the fact that content owners, cellular service providers and handset

manufacturers are increasing the amount of marketing and promotion for mobile music.

Verizon beefs up DSL

Verizon Communications, which has come under fire for neglecting its non-FiOS customers, is establishing 7 Megabit per second DSL service in 12 Eastern states and the District of Columbia by the end of 2008.

As noted in the opening of this Newsletter, we have raised concerns that with Verizon's fixation on building fiber-to-the-home, the company was falling behind the industry in offering copper-based solutions to the detriment of customers in neighborhoods that may never be part of FiOS. Sales of DSL lines had slowed considerably.

In January, Verizon announced faster DSL service for 400,000 customers in what was formerly GTE turf, including the West Coast, Great Lakes, South and Southeast. With this announcement, the 7 Mb/s service is now also available in Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, Washington, D.C. and West Virginia.

The new 7 Mb/s service costs $39.99 as part of a yearly contract or $47.99 on a month-to-month basis. According to a Verizon spokesman, the service is available to any customer living within 8000 feet of a Verizon CO.

Verizon to cease broadcasting analog channels on FiOS

Verizon said it will cease broadcasting analog channels on its FiOS TV service. Verizon is making the move in advance of the federal mandate to phase out analog television broadcasts in February 2009. The telco said that by eliminating analog signals now, it will avoid customer confusion later.

In fact, Verizon had cut a deal with the Federal Communications Commission (FCC) to cease analog transmission prior to the 2009 date in exchange for a waiver exempting it from the ban on set-top boxes (STBs) with integrated security, which was put into effect in July. Some FiOS customers elect to receive video service without a STB, and therefore they can see only the analog channels. As Verizon phases out the transmission of all analog channels, on a region-by-region basis, it will provide a STB to all FiOS customers who lack one for no additional fee.

The company will use the opportunity to upsell to a higher tier of service. The major cable companies have agreed to transmit both an analog and a digital version of must-carry channels for an additional three years after the transition.

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AT&T adds VoIP in Austin, San Diego

AT&T Inc. is launching its U-verse Voice service in Austin, Tex., and San Diego, joining Kansas City, Detroit and Connecticut with U-verse-based triple play options.
The VoIP service, which completes its IP triple play with U-verse data and TV service, comes with two tier options: a $40 monthly U-verse Voice Unlimited service offering unlimited local and nationwide calling in the U.S., Canada or U.S. territories; and the $30 monthly U-verse Voice 1000, offering 1,000 anywhere minutes of local and long-distance calling in the U.S., Canada and U.S. territories.
Customers also can add a second phone line for $20 monthly.
The two service tiers also offer combined wireline and wireless voice mail for U-verse customers that also subscribe to AT&T Mobility cell phone service, as well as an online portal allowing users to set call preferences, contacts, and voice mail options.

FairPoint Seals Deal; Wall Street not Sold

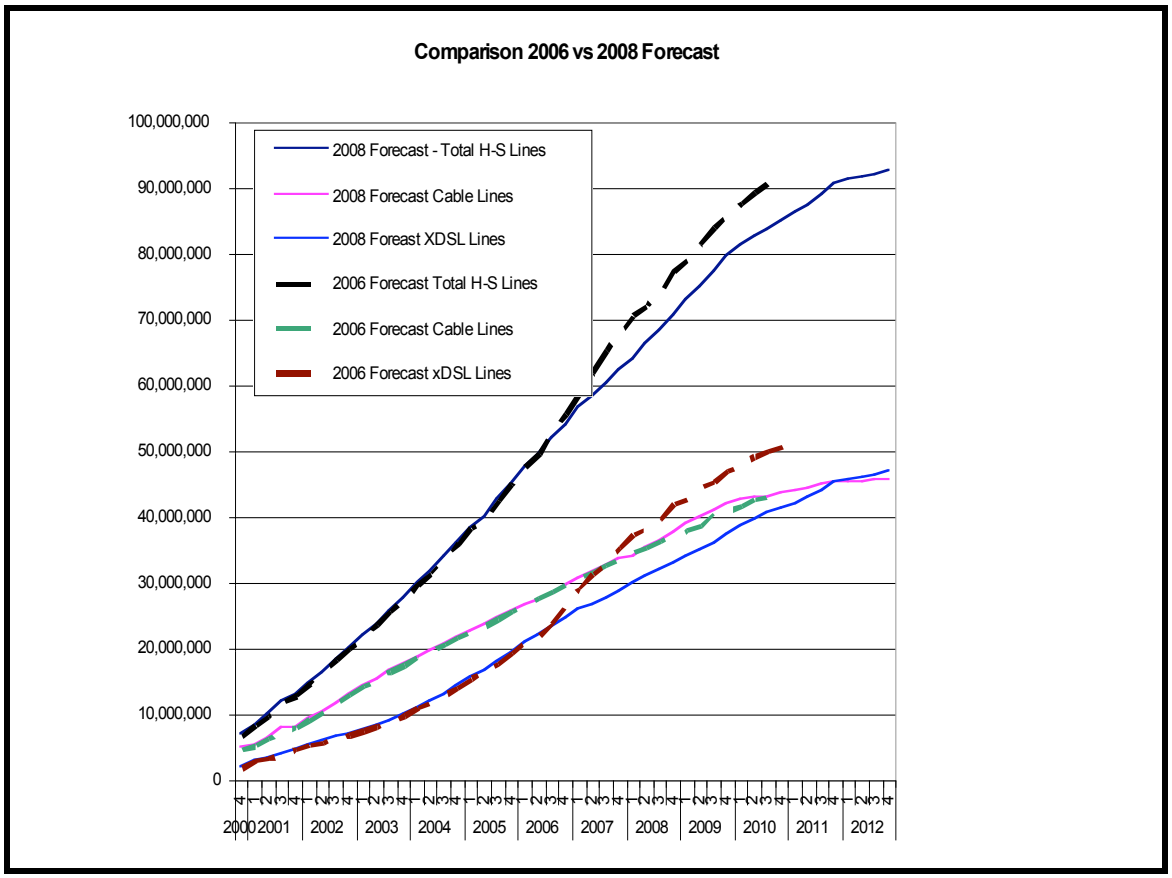
FairPoint Communications Inc. acquired Verizon's wired telephone lines and high-speed Internet service in northern New England recently, and its stock plunged on the news.
As his company's shares tumbled, CEO Gene Johnson was in New York touting the deal, which makes the North Carolina-based phone company one of the nation's largest.
"Many dedicated employees have worked tirelessly to achieve this milestone and I am ever grateful," Johnson said. "The result of our efforts is the creation of the eighth-largest telephone company in the United States."
The $2.3 billion deal transfers about 1.6 million telephone lines and 230,000 high-speed Internet customers in Maine, New Hampshire and Vermont from Verizon Communications to North Carolina-based FairPoint.

Results for the Quarter

Now we will turn to the results for the quarter. **We will first present our new forecast.**

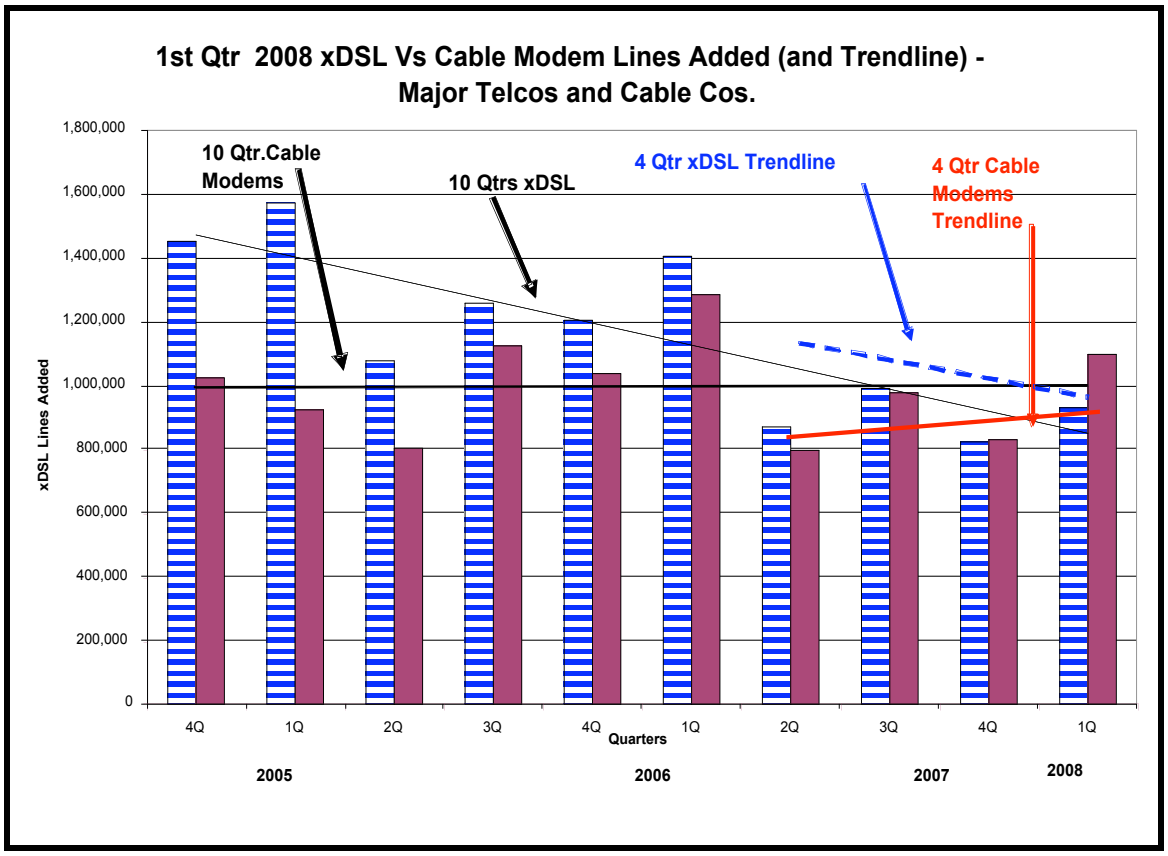
We found it necessary to change primarily because the Telco h-s growth (xDSL plus the telco advanced networks) was falling far behind our 2006 forecast. The reasons for this are outlined in the above material about Verizon, and their reemphasis on the FiOS development. In addition, we want to add two more years to the forecast and to slightly downtrend the tail of the forecast. This 'downtrending' allowing for a slightly lower cap on the penetration ratios achieving about 79% in the last year of the forecast and remaining fairly stable. This recognizes that some households will perhaps never (at least way out of our forecast range) have computers, and certainly not h-s access. The new forecast has left the cable modem business virtually unchanged as it was (and continues) right on our 2006 forecast. The new forecast and the comparison to the old one is as follows.

Figure 3, New Forecast - 2008



Our next chart and all subsequent ones will use the new forecast in all places where "forecast" is indicated. The next chart will show

Figure 4: Change in Trend lines - Last Four Quarters – Cable vs. Telcos



In the above chart, note that the trend lines for the telcos are all negative, this is not a good situation, as they are losing potential customers, that will be very hard to recapture. The telcos need to find a marketing technique that will allow them to retain a focus on their legacy xDSL business will introducing the new, higher speed access options.

The cable companies have a positive trend the last four quarters, but an even trend for the long term. In total the cable companies remain right on our forecast, while the telcos continue to fall further behind.

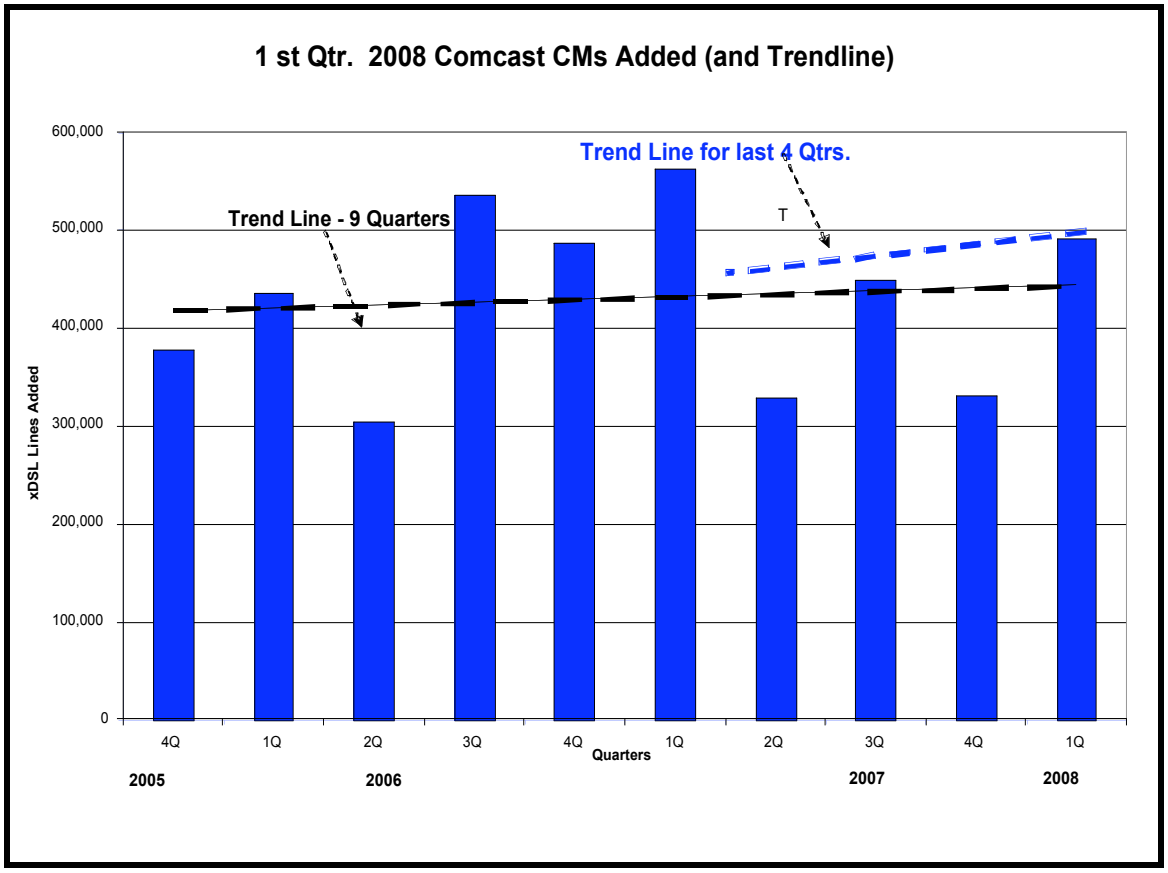
The telcos are so distracted by the new programs (FiOS It is interesting to note that Verizon has just launched an advertising campaign for its total broadband (including xDSL) products. This author saw the first of these ads on CNBC just before this report went to press.

Comcast H-S Growth Strong Again!

Three of the last four quarters we reported that Comcast had great results for several quarters in a row but not so 4th Q 2007! Comcast has returned to a strong growth pattern this Quarter. Comcast added 492,000 cable modem lines this quarter.

The following chart shows Comcast's additions over the last 10 quarters.

Figure 5: Comcast CM Additions



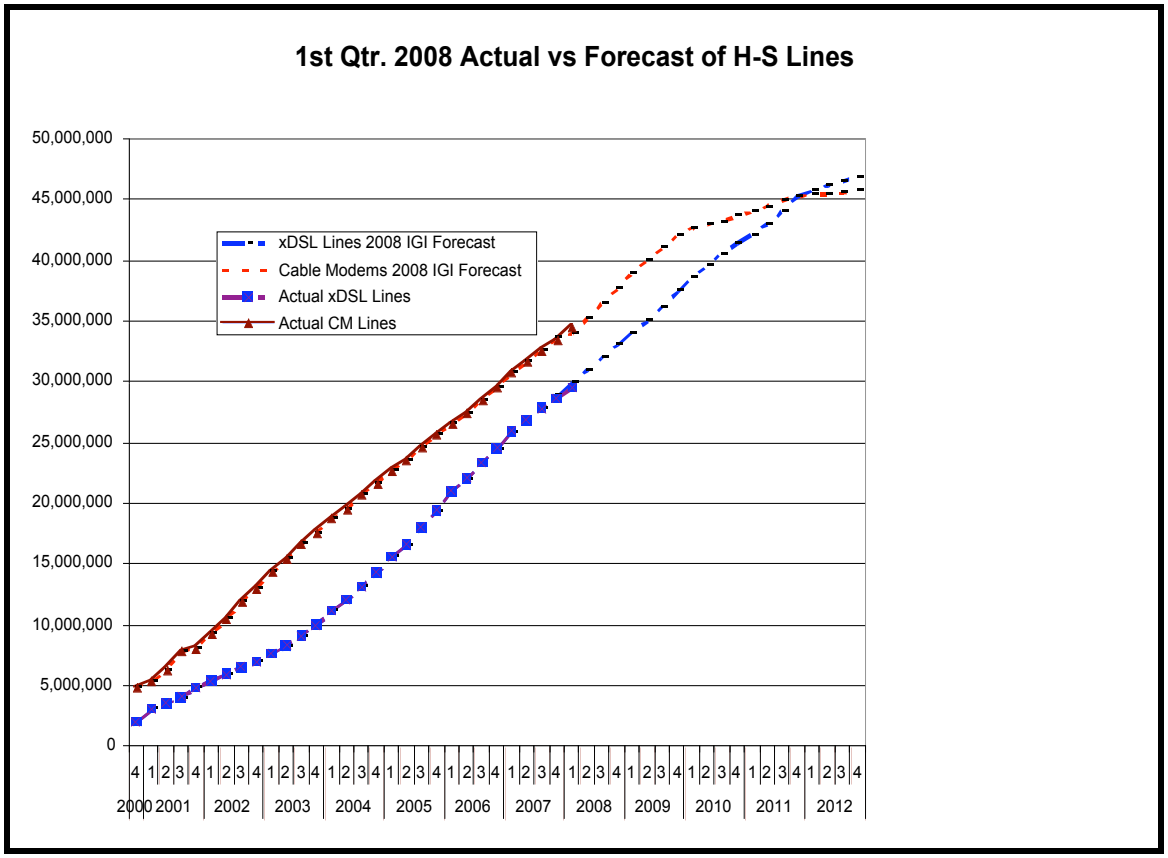
The long-term has now turned somewhat negative, while the four quarter trend is decidedly negative.

Telcos Continue to Fall Behind

As noted elsewhere the telcos did not have a very good quarter as a group. None of the telcos really performed very well this quarter. SBC is above its last year's quarter, but still its performance is weak if the BellSouth properties are included as on a previous graph.

The following chart shows the additions for xDSL (the RBOCs) vs. cable modems.

Figure 6: Comparison of RBOCs' 3rd Quarters 2006 vs. 2007

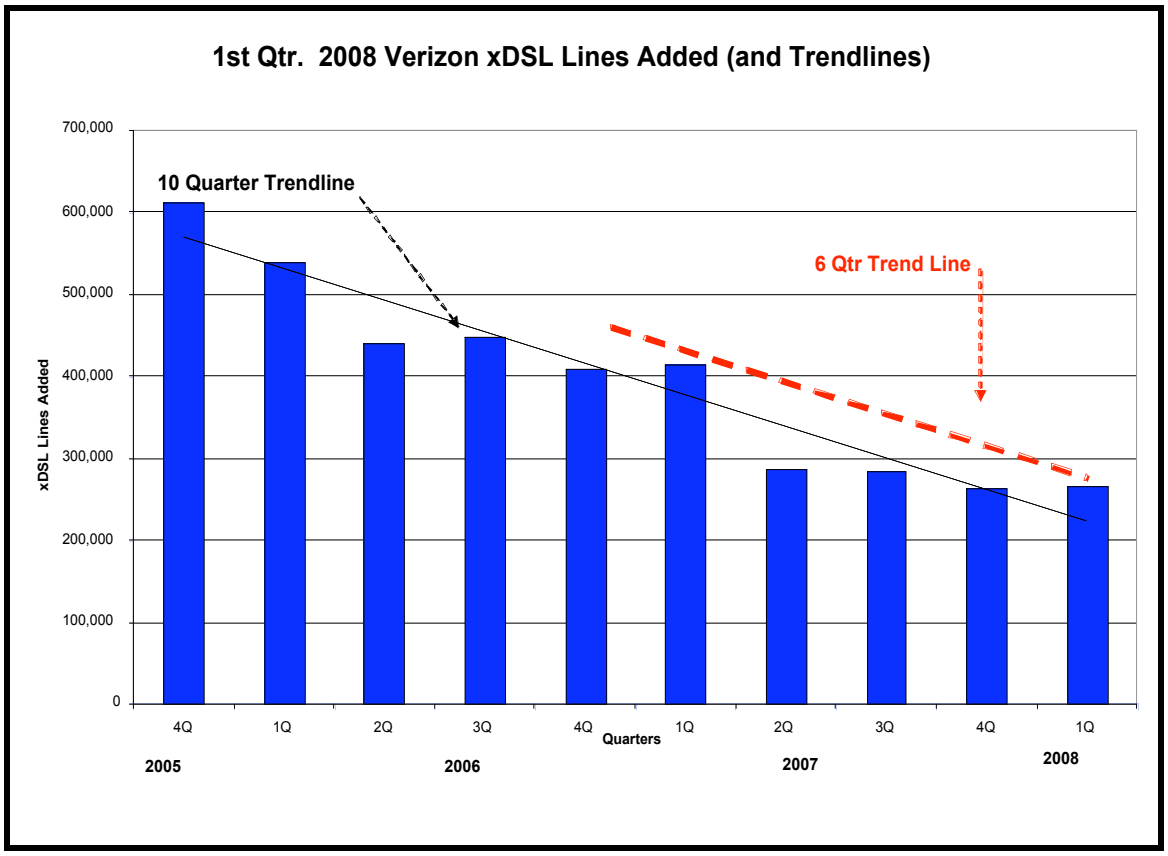


As can be seen xDSL is now right on the new forecast.. Cable modems continue to be right on forecast.

Verizon Has a Lackluster Quarter

As noted in our lead story and elsewhere, Verizon had a bad quarter. The following chart illustrates this.

Figure 7: Verizon xDSL Additions – through 4Q 2007

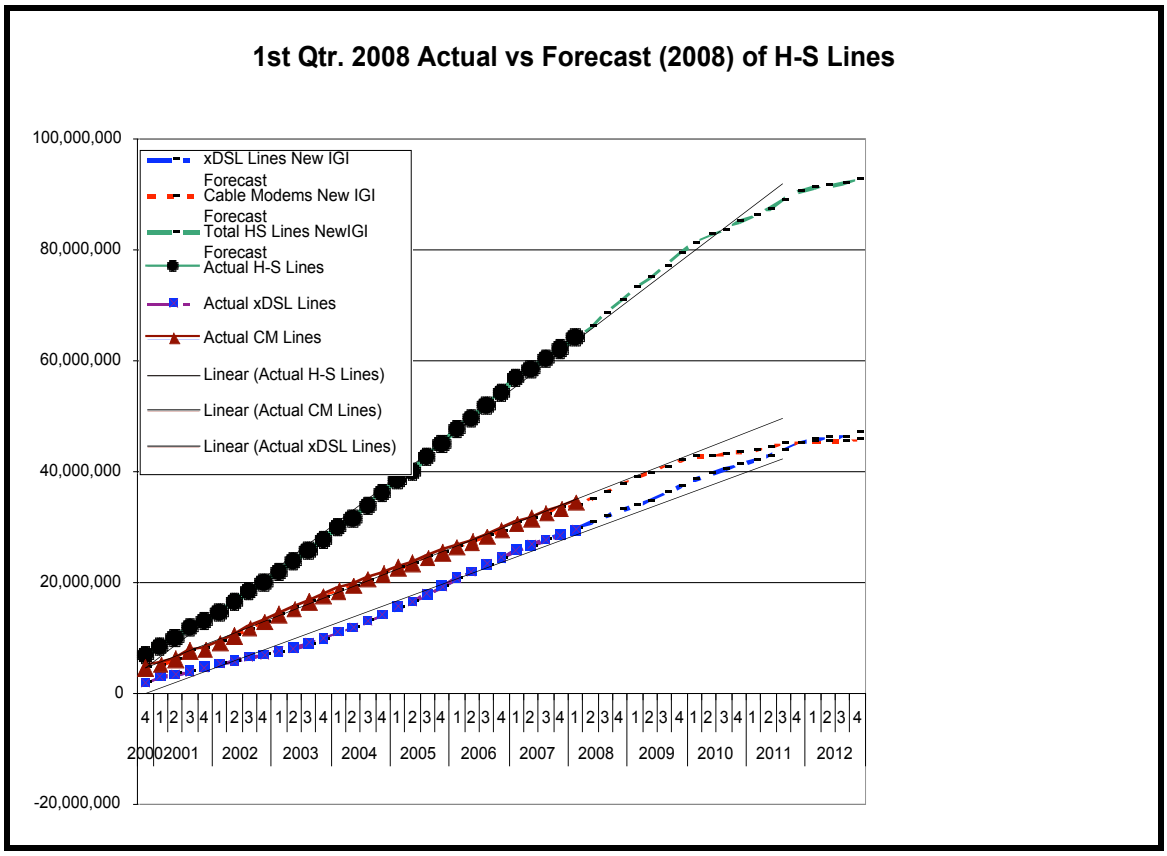


Note that the 10-quarter trend line is decidedly negative. Also, note that the six-quarter trend line, which was already negative, is now even more so.

Comparison of Telcos and Cable Companies

The following chart illustrates the historical relationship between the major cable companies and the major US telcos, as well as this quarter's results. It also provides a linear trend line for both CMs and xDSL.

Figure 8: Comparison of CMs to xDSL Additions and Comparison to Forecast



The above chart illustrates the overall situation and provides comparison to our forecasts. To help reading the chart, the straight black lines are linear trend line projections of (from the bottom) xDSL lines, cable modem lines and total high speed access lines. The dashed lines for these three quantities are our new forecast for each of these (made in early 2008.) The heavier symbol lines (squares for xDSL, pyramids for CMs, and circles for total) are the actuals (actual in-service quantities as of the selected date) for each of the statistics.

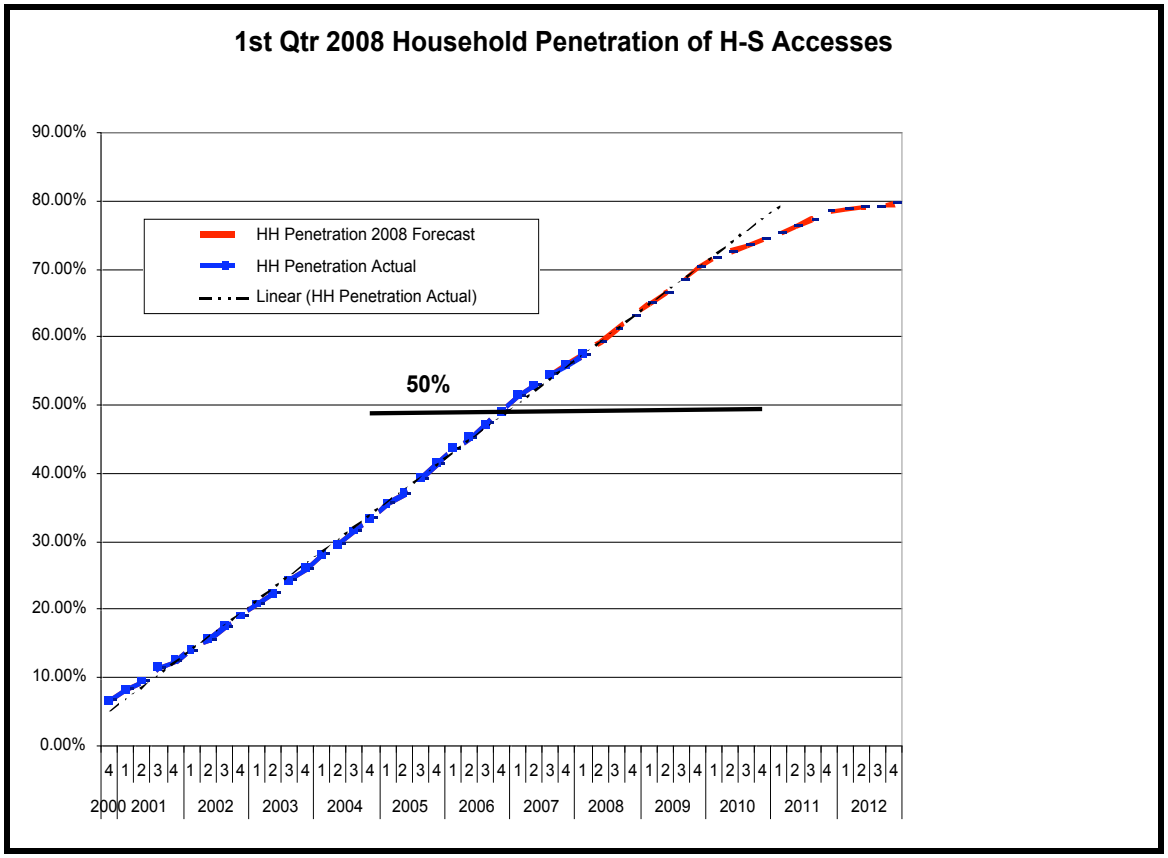
Cable continues to follow the trend line and our forecast (which has built in corrections for historically bad quarters). The telcos had been following what appears to be a somewhat parabolic curve, and were rapidly catching up to the cable linear trend.

Household Penetration

This heading refers to the percentage of households in the US with installed and working high speed access service. This is a very important statistic, because it really measures how many Americans have residential access to high speed service. It is an indication of how good a job the carriers have done in making the service available, and how well it is being accepted by the public. Beware of

other measures that suggest a much higher percentage than is included in the following graph. While we are a 'fan' of high speed access, we feel it is irresponsible to report achievements for it based on surveys or polls, as some have done. The only way to measure household penetration is to count it, and that's what we do.

Figure 9, Household Penetration of H-S Access



While the penetration rate is now well over 50% (over half the US households have h-s access installed), it is also well behind our forecast.

Summary of HIGH SPEED Activities for the Major Carriers

The following chart illustrates the quarterly additions for xDSL and Cable Modems for the moist recent quarters for the largest carriers.

Figure 10: Summary of Major Carrier Activity

Major Cable Companies

	2006	2006	2007	2007	2007	2007	2007	2008
	4Q	Total to Date	1Q	2Q	3Q	4Q	Total	1Q
Charter	59,000	2,611,000	123,900	60,300	53,000	50,000	2,898,200	60,000
Comcast	488,000	10,269,200	563,000	330,000	450,000	331,000	11,943,200	492,000
Rogers	44,800	1,310,400	42,000	21,100	55,000	40,000	1,468,500	41,000
Cox	100,000	3,300,000	100,000	100,000	100,000	100,000	3,700,000	100,000
Time Warner	246,000	6,644,000	356,000	188,000	224,000	214,000	7,626,000	304,000
Totals	937,800	24,134,600	1,184,900	699,400	882,000	735,000	27,635,900	997,000

Major Telcos

	2006	2006	2007	2007	2007	2007	2007	2008
	4Q	Total to Date	1Q	2Q	3Q	4Q	Total	1Q
BellSouth	183,000	3,632,000	0	0	0		3,632,000	0
Embarq		1,017,000	87,000	52,000	60,000	61,000	260,000	63,000
Bell Can.	59,000	2,474,000	43,000	29,000	34,000	29,000	2,609,000	10,000
Qwest	165,000	2,137,000	167,000	100,000	111,000	95,000	2,610,000	90,000
SBC	383,000	8,537,000	691,000	400,000	499,000	396,000	10,523,000	491,000
Verizon	409,000	7,062,000	416,000	288,000	285,000	264,000	8,315,000	266,000
Totals	1,199,000	24,859,000	1,404,000	869,000	989,000	845,000	27,949,000	920,000
Total	2,136,800	48,993,600	2,588,900	1,568,400	1,871,000	1,580,000	55,584,900	1,917,000
H-S Accesses								

Note: The numbers for BCE (Bell Canada) are not completely consistent due to a spin-off of rural lines in Ontario and Quebec. We will correct this on a going forward basis.

FTTP Watch

Verizon FiOS

Verizon added 262,000 FiOS customers this quarter. Of these (and apparently some upgrades) 263,000 also subscribed to FiOS TV. This is the biggest quarter yet for FiOS additions and shows a growth trend of about 30,000 per quarter (each quarter is growing about 30,000 more than the last.)

At the end of 2006, Verizon claimed to have over 6 million homes pasted with the basic service. This is almost exactly the forecast contained in our latest FTTP Report "FTTP – The New Standard and How It Is Changing Already." The above chart from that report illustrates our forecast for Verizon FTTP. It appears that Verizon is well on target with its program.

AT&T Lightspeed (U-verse)

AT&T U-verse added 148,000 in the last quarter.

By the end of this year (2008,) AT&T says 18 million homes will be able to receive fiber to the node.

There are still questions about the adequacy of the bandwidth provided by Lightspeed. Our report noted below covers this issue, and forecasts a big change in the AT&T plans. It is certainly open to question as to the viability of using their FTTn based architecture to provide services that will be competitive in the near future.

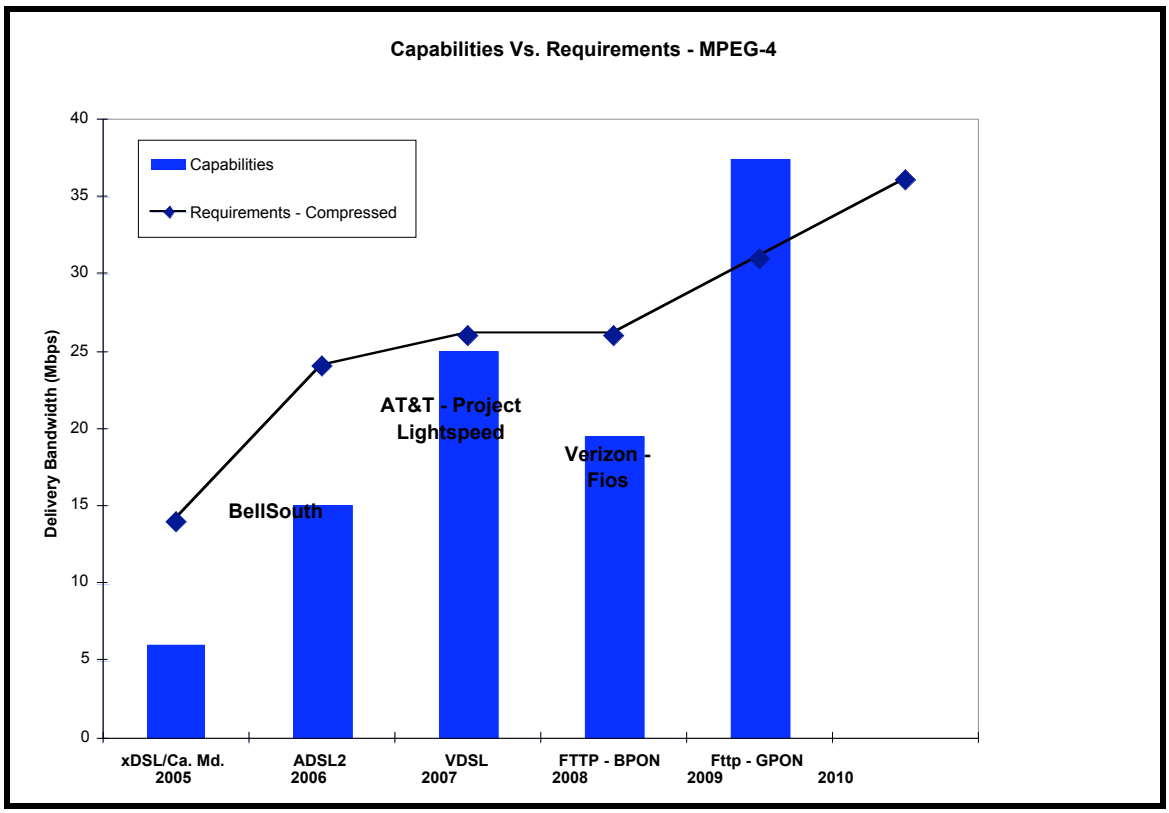
The latest 'Rumor' is that AT&T is only getting 20-24 Mbps from its FTTn architecture rather than the 24-28 Mbps anticipated at 2500 feet. This small a difference could make a very tight situation as to available bandwidth vs. required, almost untenable.

The other big question at AT&T is what to do with the FTTC (fiber to the curb) legacy from the acquired BellSouth properties. This architecture is enough different form AT&T's FTTN to be very significant. FTTC is much closer to FTTP, and much more capable than FTTN. A recently passed law in South Carolina that requires only statewide (as opposed to citywide) television franchises has been the instigator for AT&T to announce that it plans to upgrade the network in this state to bring U-verse to it. (The same situation exists in Georgia.) It appears now that AT&T will choose the FTTN architecture for South Carolina.

We continue to forecast that AT&T will quietly convert to GPON on most of its upgrades for U-verse. This forecast is beginning to look less secure, as we get more announcements of FTTN. However, the physical facts haven't changed, and we continue to believe that the consumer needs for bandwidth will drive AT&T ultimately to PON architecture.

Our report, "How Much Bandwidth Is Enough in the Access Network," outlines the argument for needing more bandwidth than FTTN can deliver. The following chart from that report illustrates the forecast bandwidth needs and the capabilities of the various architectures.

Figure 11, Bandwidth Needs and Architecture Capabilities



Note that the capabilities of BPONs illustrated in this graph are based on very conservative assumptions, while the VDSL assumptions are very positive. This difference is what has trapped the FTTN advocates. This chart also suggests why we continue to believe that **GPONs in a passive network** will be the standard for all telco carriers, ultimately.

Customer's Corner

Every quarter we will offer our clients the opportunity to sound off, ask questions, and make comments on the forecasts – whatever you like. We will publish the best to the comments with or without names as directed by you. If you send me something and don't want your name included, please say so. To submit something for our 1st Quarter 2008 report, just send an e-mail to Clif Holliday. The address is c.holliday@ieee.org. **We look forward to hearing from you!!**

We have a few questions and comments from our last report and we will include them below without names, since we had not warned that we may use the comments.

1. ***Q.** "Can I re-use the figures and material in this report for publication elsewhere." (Repeat – FYI)
   Answer: Yes, you may as long as you give us proper credit.

2. **Q**. "Will FTTP begin to have an effect on H-S Access Lines and when will this start to show up?" (From C.D.T. in Lexington, KY, Repeated again – again because of the Verizon results this quarter.)
   Answer: "It really showed up in the 4th Q 07 and with AT&T. We think the reason for Verizon's (and AT&T's) poor showing this quarter is the focus they are giving FiOS."

3. **Q.** "Could you include more on the side issues of the carriers?" Mary D., Tampa.
   Answer, "See the 'Other News' section above. We have included these issues where appropriate."

4. Q. "Why do you brag about your correct forecasts?" Rose Marie, Los Angles. (Repeat) **Answer**, "If we don't brag about them, no one else will. Seriously, we need to let our readers know of the accuracy (and sometimes the in-accuracies) of our forecasts, so they can better judge how to use them."

5. **Q**. "Your report – HSAR – is most useful in our marketing business. Keep up the good work!" Sam V., Chicago. Repeat – We liked it so much.

Answer. Great – tell your friends! We hope you will find it even more useful as we expand its scope.

Notes to the media:
For interviews with Dr. Polishuk or Clif Holliday (author of the Lightwave Reports) please contact Dr. Polishuk at 617-782-5033 or at marketing@igigroup.com
Charts and graphs from the latest IGI telecom reports, noted above, can be made available to media outlets as needed, as can information from our latest reports on Network Traffic, FTTP, NGN, and R-OADMs.