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What's Next for the Broadband Sector?

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The satellite broadband sector has gained a lot of ground as there are now approximately over one million individual users worldwide. These are families and small businesses who subscribe to service providers that address the individual consumer by providing a dish, modem and access to the Internet. With the familiar asymmetrical arrangement, these services deliver download speeds between 200 kbps and perhaps 1 Mbps; and upload speeds that hover at 100 kbps as a peak rate. Subscribers generally choose satellite broadband because they cannot obtain one of the more common terrestrial broadband services, namely DSL and cable modem. I encounter many who employ satellite broadband and they uniformly find it reasonably good and a worthwhile expenditure, since they need "always on" high speed access to the Internet for a combination of work and pleasure.

Many have suggested that the US lags behind countries like Singapore, Korea and Sweden in terms of providing broadband services to the individual household. However, recently published data from the FCC indicates that the US is the biggest broadband market in the world: 121.2 million total as of the end of 2007, up 22% from 2006 (FCC Data, released January 16, 2009). Of these, 74 million serve residential end users (the release also indicates that there are 80 million "advanced service links capable of greater than 200 kbps speeds", suggesting that the total is actually greater than 74 million). The trend in the market along with relevant market research conducted by groups such as Nielsen Online suggest that new adds are slowing as the service appears to be reaching saturation.

The FCC does not report satellite broadband subscribership individually, lumping it in with

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"other types of technology" such as terrestrial fixed and mobile wireless. This portion totals 14%, or about 10 million subscribers. Some specific data from the satellite broadband sector can be gleaned from results posted by the leader in this sector, Hughes Network Systems. Hughes subscribers as of December 2008 grew by a record 170,000 or 14% over 2007; 86,000 subscribers on SPACEWAY® 3 as of December 31, 2008; and total subscriber count climbed to 433,000 at December 31, 2008. If we add an estimated 250,000 for WildBlue and 150,000 for Starband, the total amounts to nearly 1 million US satellite broadband subscribers. That would be of the order of a little less than one percent of all broadband subscribers in the US today. WildBlue estimates that the potential market for satellite broadband in the US is between 15-25 million households and businesses not adequately served by terrestrial services.

We have to ask the question about whether satellite broadband can achieve better totals than it has since it was first introduced 10 years ago. The area where satellite broadband has the most attraction is where terrestrial broadband service is unavailable. The latter concentrate in cities and suburbs; rural areas have had great difficulty attracting the investment. Rural penetration for satellite TV is extremely high and it would not be surprising to see satellite broadband become nearly as popular. However, with equipment costing $300 or more and the service fee at more than $50 per month for the lowest data rates, satellite broadband does not attract a substantial customer base in outlying areas.

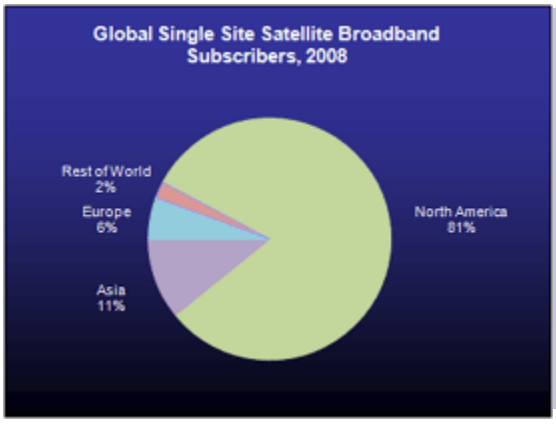
The newer Ka-Band offerings of satellite broadband could conceivably reduce the cost of the space segment portion of the system. Typically, this represents half the investment and ultimately operating cost as well. The WildBlue and Spaceway satellites incorporate multiple spot beams that can transmit high power carriers and reuse the frequency spectrum. ViaSat is developing the ViaSat 1 system at Ka band to deliver even greater bandwidth than the previously-mentioned systems. More

customers can be served and their data rates potentially increased relative to the current Ku band networks that support more than half of today's subscribers. Multiple spot beams have the technical ability to accomplish this feat; however, obtaining this in practice is dependent on where the subscribers appear within a national footprint.

Such is not the case for the single nationwide beam produced by the typical Ku-band satellite. Like the 80/20 rule that applies to revenue/customer performance, it's likely that the vast majority of the new customers needed to fill a high capacity satellite come from the eastern US and the major metro areas. That leaves out the vastness of the plains and western US. It is a paradox that the greatest attraction for satellite broadband is in these vast expanses, but the customers are clustered in regions heavily served by cable modem and DSL. Consequently, satellite broadband must steal terrestrial broadband customers if it wants to move from currently one million to the 10 million subscribers projected by ViaSat.

Satellite Broadband and Stimulus Package II

Enter the US Congress and its recently enacted American Recovery and Investment Act of 2009 (the "Stimulus II Package"). Broadband technology has received a shot in the arm through an appropriation of $US 7.2 billion. The Satellite Industry Association and industry leaders like ViaSat and Intelsat have argued effectively that satellite broadband has its place in the government's strategy to make broadband Internet service available to all Americans, no matter where they are or their income. The Act does not specify the technology, leaving the door open for satellite-based service providers to participate. One of the objectives of Stimulus II is to improve our emergency response capabilities, something that definitely plays to the inherent strengths of our technology.



Source: NSR.

The vast majority of satellite broadband subscribers are currently in North America as seen from this graph from the research firm NSR. A start-up company, O3b Networks, aims to change that by providing satellite broadband access exclusively to developing countries.

There are actually two broadband features of the Act: Title I deals with rural development through the Department of Agriculture, and Title VI under the Department of Commerce. It is important to note that the US Government was already funding broadband initiatives through both agencies and the FCC; the Act adds funds and pushes harder for their use in the near term. One feature which could prove important is the requirement that the Assistant Secretary of Commerce, "develop and maintain a comprehensive nationwide inventory map of existing broadband service capability and availability in the United States depicting the geographic extent to which broadband service capability is deployed and available from a commercial provider or public provider throughout each State." This provision is particularly interesting when applied to Hawaii and Alaska. Spaceway, WildBlue and ViaSat do not cover these states, while traditional Ku band satellites do.

And The Rest of the World....

Satellite broadband as we know it in the US is virtually non-existent in the rest of the world. Industrial-strength VSATs are a commodity in many regions, but their greater cost can only be justified by corporations and agencies that find them essential. To make satellite broadband into an affordable proposition means the equipment and service must not cost more than, say, a cell phone, and there needs to be a service provider in the area who can distribute equipment and collect money.

This is the proposition behind the latest entrant in the satellite broadband field: O3b Networks. This startup plans to operate a system of 8 satellites in a circular orbit 8063 km above the Equator. In a video interview by Virgil Labrador of Satellite Markets, CEO Greg Wyler painted a bright picture for O3b (which he said means, Other 3 Billion people) and discussed the benefits of an inexpensive broadband service to regions in Africa and Latin America (to view the video, go to: www.satellitemarkets.com/media/videolist.php) . His system, which is under contract already, would in 2010 begin serving the populace in developing regions within ±40 degrees latitude of the Equator. The basic geometry of the O3b equatorial constellation (at 8063 km) can conceivably serve this footprint, although the mechanics of delivering a reliable broadband service at above 1 Mbps from moving satellites are still unproven. The satellites may be under contact,

photo: Hughes Network Systems

but it is the ground segment that is the challenge: user terminals that track birds and perform seamless handoffs and Ka band links that need to operate in tropical regions where rainfall is the highest on the planet. Technical challenges like these have been met in the past and there could be time (and money) to overcome them.

Meanwhile, GEO satellites provide good service to VSATs in these same places and the current approach is to aggregate users in schools and Internet cafés. There are also many examples of how Internet access can be extended within a community using WiFi technology. By sharing the cost of the VSAT and satellite bandwidth, broadband Internet service has reached many millions of individuals that otherwise wouldn't experience what is so commonplace in the US.

So, Where is Satellite Broadband Going?

There is reason for cautious optimism about this sector simply because it has expanded in the last year and, in spite of the current recession, new money is available to produce more. Terrestrial broadband may be reaching saturation in developed countries, but that does not address the needs of rural and semi-rural districts where many either do or would prefer to live. Tele-working from home nowadays demands good Internet connectivity, and satellite broadband is often the best approach for people in remote areas.

A recent web article from the New York Times discussed broadband penetration in the US and the Pew Internet and American Life project that "undercut the idea that Americans are starving for broadband." The article reviews some key points from the Pew Study: 57% of Americans are broadband subscribers while only 9% still use dialup. Some 9% go to the library or other place access the Internet while fully 25% of the population doesn't access the Internet at all. The latter breaks down into 17% who believe it's either too difficult or too expensive to use and the rest just do not see it as relevant to their lives. An unexpected output of Pew's research is that there is just 4.5% of the population who say they don't have broadband because they can't get it.

If we accept the Pew research on face value, the addressable market for satellite broadband could be as high as 43%, which for an assumed 100 million households, represents a whopping 43 million of population. The 4.5% that can't get it would appear to be easy new

customers – a market of 4.5 million. To this we could add some fraction of the 17% who might be persuaded, based on cost and convenience. That could exceed the 10 million subscriber number attributed to ViaSat.

Many of these issues are the result of a lack of need or appreciation for the service. Perhaps it is a matter of education or just that the lives of some don't involve the kinds of interactivity that the Internet affords. By encouraging greater user of satellite broadband, governments and telecommunications firms contribute to greater prosperity. This can only approach the 100% level by including within the national infrastructure an affordable and usable satellite broadband service.

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