



The North American Broadband Satellite Market

by **Virgil Labrador**
Editor-in-Chief

With over one hundred million households, the United States is currently the largest market in the world for broadband services. About sixty percent, or 60 million households currently access broadband services from various sources, mainly terrestrial. With the U.S. lagging behind other developed countries in broadband penetration (see OECD statistics next page), the US Federal Communications Commission has announced a National Broadband Plan which aims to reach 100 million households connected to 100 Megabits-per-second (Mbps) broadband service in the next ten years.

To reach that goal, large amounts of bandwidth will have to be made available not only in the densely-populated urban areas but in the rural areas where populations are more spread out. To reach the more sparsely-populated areas will require development of satellite or hybrid networks. Currently, satellite broadband service reach only one million households, or less than 2 percent of broadband households in the U.S., as opposed to the 30 percent penetration rate of satellite Direct-to-Home satellite broadcast services. Clearly, there is a lot more room to expand satellite broadband services in the U.S. market and major operators such as Hughes and Viasat are determined to develop the market to its full potential.

A recent study by NSR, *Broadband Satellite Markets*, revealed that the satellite broadband sector has weathered the effects of the depression of 2009, citing the achievement of the milestone of one million subscribers in the US as a good indicator of the potential and opportunities in the market.

The North American market for satellite broadband services heated up with Carlsbad-Calif.-based equipment manufacturer Viasat announced two years ago that it will be launching a new High Throughput Satellite (HTS) Viasat-1 and enter the service provision market. The announcement came in the heels of Hughes' launching in 2008 its all-Ka-band satellite Spaceway, which increased capacity available in North America. Viasat subsequently announced its purchase of broadband service provider WildBlue last year giving it much needed retail and distribution infrastructure for its services.



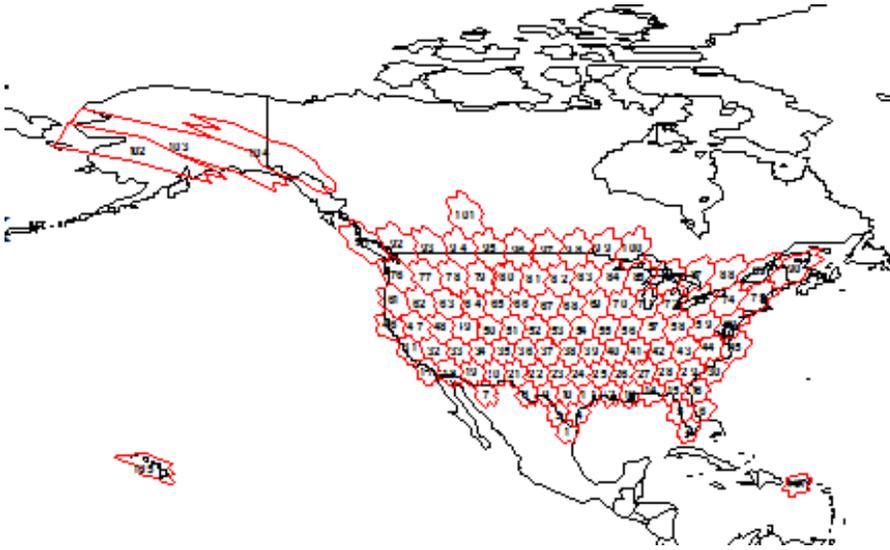
The US is the largest market for satellite broadband but penetration rates lag behind other developed countries.

WildBlue, which only launched its service five years ago is fast catching up to Hughes, currently the market leader with a little over 500,000 consumer subscribers to its HughesNet satellite broadband service. WildBlue's subscribers are at 424,000. However, WildBlue has reached almost the limit of its service capacity in some key areas of the country that forced it to halt its sales operations in 70 percent of the country due to bandwidth limitations. The expected launch of Viasat-1 in the first quarter of 2011 should make available in-

creased capacity from this all Ka-Band satellite, billed as the most powerful satellite to date.

Hughes subsequently announced that it will launch another all Ka-Band satellite to be called Jupiter, scheduled for launch in early 2012. Both Viasat-1 and Jupiter are promising over 100 Gigabits of capacity which can provide broadband services to over a million new customers per satellite.

Both Hughes and WildBlue are counting on the unserved and underserved markets for broadband services, mainly in rural areas, which both companies estimate to be in the 10-15 million household range. So, even with two HTS satellites coming up,



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

Ka-Band satellites are able to provide more power and flexibility with its unique frequency re-use spot beam system, as illustrated here with Spaceway-3 coverage map of North America. (image courtesy of Hughes)

which can serve a maximum of 3 million subscribers, there is still a relatively large addressable market for satellite broadband in North America.

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

Broadband Subscribers Per 100 Inhabitants (2009)

Rank		DSL	Cable	Fiber/ LAN	Other	Total	Total subscribers
1	Netherlands	22.5	13.7	1.1	0.8	38.1	6 262 500
2	Denmark	22.4	9.9	3.9	0.9	37.0	2 031 000
3	Norway	22.7	7.7	3.5	0.7	34.5	1 645 619
4	Switzerland	23.3	10.0	0.2	0.3	33.8	2 603 400
5	Korea	7.2	10.5	15.1	0.0	32.8	15 938 529
6	Iceland	30.7	0.0	1.3	0.7	32.8	104 604
7	Sweden	18.5	6.3	6.7	0.1	31.6	2 915 000
8	Luxembourg	26.0	5.3	0.0	0.0	31.3	153 172
9	Finland	24.9	4.1	0.0	0.8	29.7	1 579 600
10	Canada	13.2	15.2	0.0	1.3	29.7	9 916 217
11	Germany	26.7	2.4	0.1	0.1	29.3	24 043 000
12	France	27.5	1.6	0.1	0.0	29.1	18 675 000
13	United Kingdom	22.8	6.1	0.0	0.1	28.9	17 742 676
14	Belgium	16.3	11.8	0.0	0.2	28.4	3 041 311
15	United States	10.3	13.8	1.6	0.9	26.7	81 170 428

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 the current one million to the 10 million projected

subscribers for satellite broadband services in the U.S.

The SOHO/ Enterprise Market

To achieve the full market potential of satellite broadband, according to many analysts, would require reaching not only

to consumers but to other markets as well. Hughes has traditionally been serving the enterprise market and are focusing on both enterprise and consumer markets. Viasat has announced that its new satellite Viasat-1 will be serving not just the consumer market but the enterprise, government, military and other vertical markets as well.

Finding niche opportunity in today's satellite environment

How Davids make profits while Goliaths fight

The consumer and Small Office Home Office (SOHO) satellite market has followed the pattern of virtually all the other communications industries:

- Initial market acceptance
- Mass adoption of the technology
- Market dominance by a few large companies
- Fierce competition and intense marketing for the remaining market

Consumer/SOHO satellite is clearly dominated now by a few large players aggressively fighting for each other's customers or for the remaining market share. From the outside, finding opportunity in this environment might seem a daunting challenge. However, like all other communications industries, there is an opportunity for niche players to carve out a lucrative business for themselves and even take advantage of the environment created by their largest competitors.

One such company is StarBand from Spacenet. Formed in 2000, StarBand was the first to offer a two-way, always-on, high-speed satellite Internet service available for consumers across the U.S. While its largest competitors undertook massive (and expensive) mass media expansion plans, StarBand targeted a select segment of users and focused their efforts on the ones that best complemented their greater corporate strategy.

According to Glenn Katz, the President and COO of Spacenet, "Our StarBand division has benefitted tremendously from the competitive environment in the US consumer satellite market today. The increase in advertising and public awareness has removed a lot of the skepticism of satellite and made it a very widely accepted product. Within this environment we made a conscious decision to focus on the higher end of this market and not get drawn into a no-win shootout. Not only is the high end consumer and SOHO market much closer to our core competen-

cies of serving Enterprise and SME customers, maintaining this focus has provided our Master Dealers a larger suite of Spacenet products to choose from. Ultimately our StarBand strategy leverages our core strengths and creates a win-win for StarBand, our dealers and most importantly our customers."



"One of the key components of the StarBand model is its relationship with its dealer community," added Steve D'Argenio, Vice President of Channel Sales & Management at Spacenet. "Not only have we strived to provide StarBand dealers with a more lucrative commission structure for selling StarBand service, but by maintaining our core strategic focus we tend to deliver these dealers higher end customers with more customer loyalty, lower churn, higher spending and a higher propensity to migrate to higher service levels."

Today, the company remains a niche satellite Internet service provider. However, the company is revitalizing its efforts and has found a way to expand to a broader range of customers, while at the same time remaining a profitable and viable business. With its latest product portfolio, the Nova series, StarBand offers a wide range of service levels and pricing options to customers across the U.S. with many different levels of broadband requirements.

With the introduction of StarBand's latest more cost effective offerings, StarBand is attracting more satellite retailers who are looking for ways to expand their business opportunities and attract more customers. Interested satellite service dealers can find more information by visiting www.starband.com/dealers.

A recent Frost and Sullivan study on the “Business Market for Ka-band Broadband Services” said that “The business market for Ka-band is more promising than the consumer market, and it will continue to be more profitable for the first few years during which Ka-Band service is available.”

“Operators that had built their business models around the consumer or small office/home office (SOHO) market may have to rework them to target the more viable enterprise market instead.” the Frost and Sullivan study said.

One company that is focusing exclusively on the higher end of the consumer market and the SOHO and enterprise markets is Spacenet (see sidebar article in previous page “*Finding Niche Opportunity...*”). By focusing on this specific market segment, it is using its core competencies as a distinct advantage to compete in the market.

“One of our main advantages has been our breadth of experience. StarBand was the original consumer satellite broadband service in the US. We’ve been doing this longer than anyone, and we feel this experience makes us better qualified to meet the changing requirements of our industry,” said Spacenet’s COO Glenn Katz.

“Another advantage which is really key to our higher end and SOHO customers is our hardware platform. The StarBand Nova Series is a very low cost highly reliable platform, but more importantly it’s a system that allows us to upgrade customers to a higher level of service, even enterprise class service, usually with no additional hardware requirements or change of satellite required,” Katz added.

Stimulus Funding for Satellite Broadband

While the market for broadband services in the U.S. shows great potential, it still lags behind among developed countries. The International Telecommunications Union (ITU) which ranks annual broadband penetration rates in every country, ranks the U.S. 15th behind South Korea, Iceland,

Satellite Broadband: Facilitating Access and Providing Vital Service

Hughes did a survey of 23,000 HughesNet high-speed satellite subs who say they use their sat-provided internet to stay in touch with the rest of the world. According to the survey 43% of HughesNet subscribers say that the high-speed access has helped them stay connected.

Satellites help connect customers in remote areas and during natural disasters when most terrestrial infrastructure are down. Here are just a few examples of how customers are connecting via satellite:

A customer of Freedom Satellite (Wasilla, Alaska) is using its StarBand satellite Internet on a ship. The customer has a six-foot dish mounted on shore, and it feeds 110 voltage to the unit. StarBand’s Nova modem is mounted in a weather resistant box on the back side of the dish, which feeds the Wi-Fi antenna mounted above the StarBand dish. The ship has a Wi-Fi receiver antenna which feeds a Linksys wireless modem on board the ship, enabling all the crew members the ability to use the StarBand system.



Patrick Sterlin, a Spacenet reseller located in Haiti, and his wife survived the devastating earthquake in Haiti despite his home being destroyed and his wife being buried under the rubble for a day. Despite the chaos and destruction taking place around him, his StarBand satellite Internet system also survived the earthquake and continued to work properly. It enabled him to communicate and stay in touch with family and friends during the traumatic situation.



Karen Davis, a volunteer located in Haiti who has worked with Missionary Flights International for over 20 years, uses her StarBand satellite Internet system to help coordinate donated supplies coming to Haiti that helps support relief efforts. MFI generously offered to assist one of StarBand’s partners, Orbital Enterprises, fly supplies into Haiti following the devastating earthquake.



U.S. Broadband Satellite Subscribers (1Q 2010)

Service Providers	Subscribers
Hughes	532,000
WildBlue	434,000
Spacenet	100,000
Total	1,062,000

Sweden and Norway among others. This has led the US to provide stimulus funding to promote broadband access especially in rural areas. Unfortunately, satellite companies were unsuccessful the first two rounds of funding from the American Recovery and Reinvestment Act, which earmarked US \$7.2 billion to extend broadband communications across the country.

A new program set to be announced in May 2010, however, will allocate specifically US \$ 100 million for satellite broadband services and both Hughes and Viasat will be actively participating in the process.

As NSR, noted in its Broadband Markets study, it believes that to achieve the widest broadband coverage in any country, will almost always include the use of satellite technology as the most economical way to reach the last few percent of households and businesses in remote areas. However, the leading challenge that service providers will face in the coming year is changing existing perceptions in government agencies, in addition to consumers, about what satellite broadband access can really do using the second generation of HTS, according to NSR. As Viasat's Mark Dankberg has been saying in many trade conferences: "the satellite industry needs to do a better job of selling itself to the broadband market."

Competition from Terrestrial

Both Hughes and Viasat are investing

heavily on the satellite broadband market in the U.S. But is it a viable market in the long run? Will terrestrial technologies such as Wi-Max, 3G, 4G wireless or LTE will eventually reach the markets that satellite companies are going after?

Hughes' Senior Vice-President Mike Cook is not worried about competition from terrestrial-based service providers. "There will always be a segment of the market that will never be addressed by the terrestrial service providers such as wireless, Wi-Max and others. With the new high throughput satellites that we now have and will be deploying in the next few years, we will have a very competitive solution for consumers," he said.

WildBlue's President Tom Moore agrees. He estimates that about 20-25 percent of the market will never be cost effective to be served by any terrestrial service. He said that the wireline technologies are based on home density and the smaller the density of homes increases the cost of deployment by several orders of magnitude. The cost can be up to hundreds of thousands per home in areas where there are fewer than 50 homes per mile, he said.

Reason for Optimism

There is reason for cautious optimism about his sector simply because it has expanded in the last year and, in spite of the 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 or people in remote areas.

A recent 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 currently believed to be the potential market for satellite broadband.

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 na-

tional infrastructure an affordable satellite broadband service.

Ka-Band as the Future

The developments in the U.S. of using Ka-Band satellites for broadband services are being closely watch in other regions who are launching their own Ka-Band systems in the next few years. Viasat is involved in the rollout of Eutelsat's Tooway Ka-Band service next year and will be providing its SurfBeam 2 technology to the Ka-Band service Al Yahsat is launching in the Middle East in 2011.

Hughes, on the other hand, will be supply Avanti with advanced Ka-band networking infrastructure for Avanti's HYLAS 2 satellite which will cover Europe and the

Middle East. That's in addition to Hughes initial US \$24 million contract to supply Ka-band technology for HYLAS 1.

How these Ka-Band initiatives will do in the markets they are serving will bode well for future Ka-Band services in other bandwidth-hungry regions of the world.

Conclusion

The prospects for satellite broadband in North America certainly looks bright. Viasat's CEO Mark Dankberg, in a recent testimony before the US Congress on the National Broadband Plan, sees the potential in satellite broadband much like the introduction of satellite Direct-to-Home (DTH) services in the US in the 90s. He sees a viable market where there could be

several HTS satellites serving millions of consumers in this decade.

However, WildBlue's Tom Moore cautioned that for satellites to be continually viable, it has to keep up with the development in terms of quality, speed and reliability that terrestrial technologies. He said that at current rates, speeds are doubling every three years and satellites have to keep up or exceed this pace of development to remain competitive.

Probably one of the biggest success stories of 2009 was satellite broadband access, where research firm NSR noted that North America set a milestone by becoming the first region to top 1 million subscribers, and Western Europe will likely exceed 100,000 subscribers well before the end of 2010.

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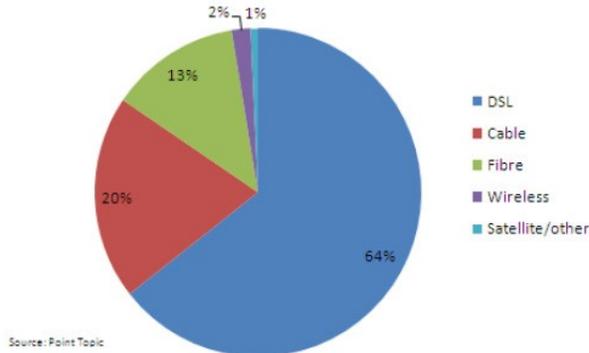
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Vital Statistics

Global Broadband Market Share by Technology (1Q-2010)



There are 484 million broadband subscribers worldwide as of the 1st quarter of 2010 according to the Broadband Forum. Of these number less than one percent get broadband from satellite. DSL gets the lion's share of 64 percent of the market.

Source: Broadband Forum (baseline data from Point Topic). 

According to NSR satellite broadband access providers saw that few consumers and businesses were willing to give up their broadband service in difficult times. Plus, the imminent launch of the second generation of high throughput satellites like ViaSat-1, KaSat, Jupiter and even Hylas-1 will finally change the core economics of satellite broadband access services. "This trend coincides in a very timely fashion with a number of national government initiatives to bring broadband to all residences and business in their respective countries," according to the NSR report.

Much is at stake in the satellite broadband market in North America. With Ka-Band broadband services rolling out in Europe and the Middle East next year, the world will be watching the developments in this region.

Will the investment in high throughput Ka-Band satellites pay off? How will Ka-Band broadband services fare in the consumer market? The next couple of years will be most interesting to watch. 



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