



Satellite Broadband: Connecting America

November 2010

SIA MEMBER COMPANIES

















































Satellite broadband is an essential tool in fulfilling the three key goals outlined in the FCC's National Broadband Plan (NBP):

- 1. Achieving universal broadband access;**
- 2. Providing a robust communications infrastructure;**
- 3. Promoting technological leadership and innovation.**

Satellite platforms offer end-user broadband services, middle-mile connectivity and mobility to meet these goals.

- The NBP places particular emphasis on broadband access for *all* Americans:
 - “Every American should have access to robust broadband service...Not having access to broadband applications limits an individual’s ability to participate in 21st century American life.”
 - “Universal service has been a national objective since the Communications Act of 1934.”*

*All quotes are drawn from FCC National Broadband Plan and Technical Paper Series.

The Challenges of Achieving Universal Access

- 14 million Americans living in 7 million housing units are outside the reach of the existing terrestrial broadband infrastructure.
 - “Satellite has the advantage of being both ubiquitous and having a geographically independent cost structure, making it particularly well suited to serve high-cost, low-density areas.”
- Providing broadband access to the last 3.5% of unserved Americans accounts for 57% percent of the total cost to close the broadband availability gap.
- The FCC estimates a cost of almost \$24 Billion to serve these Americans with terrestrial broadband alternatives.



Satellites Can Reach All Americans with Cost-effective broadband

- Inclusion of satellites in the FCC's broadband technology mix reduces the FCC universal access cost estimates from \$24 Billion to \$10 Billion.
- Satellite-delivered broadband is an essential piece in providing broadband to all Americans:
 - The satellite industry provides broadband to more than 1 million Americans today, and is adding vast amounts of additional capacity in the next two years.
 - “Satellite operators are in the midst of building high capacity satellites that will dramatically augment the capacity available for subscribers in the next two years.”

Satellite technology offers:

- Affordable, immediate and ubiquitous broadband access in hard to reach areas and for mobility;
- A critical resource for consumers, businesses, and government users alike;
- A way to achieve the goal of universal broadband access at 50% less cost of terrestrial options alone.

Satellite broadband services are:

- Delivering greater capacity and higher speeds with extensive investments and innovative solutions;
- A critical element of the U.S. and global broadband sectors.

- Satellite broadband services are available virtually everywhere:
 - Throughout the 48 contiguous states, the District of Columbia, Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands - nearly 100% US geography;
 - Rural and remote areas, coastal and inland waterways, and offshore territories;
 - On-the-move access from ships, planes, and vehicles.

End-User Satellite Broadband: Capabilities for Consumers

- Current-generation end-user satellite broadband supports the needs of Americans:
 - Consumer service now available throughout the U.S. by two providers: Hughes' HughesNet service and ViaSat's WildBlue service;
 - Current speeds offered up to 5 Mbps.
- Next-generation end-user satellite broadband will dramatically increase speeds:
 - Hughes and ViaSat have both commissioned new satellites dedicated to expanding the bandwidth available to end-users; the through-put of these satellites will be up to 50Mbps, more than ten times what is available with current capabilities.



Middle-Mile Connectivity via Satellite: Providing a Robust Communications Infrastructure

Satellites provide connectivity and resiliency:

- 142 existing satellites operated by Fixed Satellite Service (FSS) providers are available to provide middle mile connectivity and meet consumer broadband demand;
- This leased satellite capacity provides middle-mile connectivity for Internet Service Providers, backhaul for wireless networks in rural and remote locales in the U.S. and around the globe, and surge capacity used to quickly restore services when terrestrial networks fail;
- Satellite connectivity is available quickly and throughout the U.S. and internationally, and only requires small, inexpensive ground equipment to connect each site;
- The resulting satellite-delivered broadband connectivity then may be delivered further via cable or terrestrial wireless services to end users.

Mobile Satellite Broadband: The Leading Edge of Mobility

- Current satellite-delivered mobility capabilities offer broadband speeds up to 500 kbps to commercial, military and first responder end users, with full nation-wide and world-wide coverage;
- Mobile satellite terminals in laptop- or PDA-form factors allow portability and immediate, ubiquitous availability;
- Satellites are flexible platforms capable of supporting a variety of users, whether in airplanes, ships, trains or vehicles on land, anywhere and anytime;
- Next-generation satellite systems are being constructed to offer mobile broadband speeds up to 50 mbps.

The Satellite Industry: A Leader in Innovation


- Innovation: a goal of the National Broadband Plan
 - “Today, innovations such as broadband and others like it drive the creation of a wide variety of products and services. The competitive forces that sparked these breakthroughs need to be nurtured...”
- The satellite industry invests in innovation:
 - The next-generation end-user broadband satellites represent \$800 million in investment by Hughes and ViaSat for advanced Ka-band technology;
 - FSS providers such as Intelsat, SES Worldskies, Inmarsat, Eutelsat, and Telesat have invested tens of billions of dollars of investment in their current on-orbit fleets and continue to expand their fleets to include even higher-speed capabilities.

Satellite Broadband Infrastructure: Scalable and Demand-Driven

- Satellite networks have a different infrastructure model than terrestrial wired or wireless networks :
 - Higher, up-front and fixed cost (\$200-500 million/satellite);
 - Satellites typically take 2-3 years from order to orbit;
 - Spacecraft generally have engineered life of 15 years.
- Satellite networks can expand as demand grows:
 - Satellite operators use advanced spot beam and on-board processing technologies to accommodate swells in demand that occur during any given day. As better software becomes available, it can and is routinely uploaded onto the satellite to make better use of on-board hardware;
 - As demand outpaces on-board technologies, satellite broadband providers may utilize transponders leased from other FSS operators, then migrate to new satellites that are dedicated and self-owned;
 - As demand grows further and is sustained, broadband providers can rapidly build and launch additional spacecraft to increase available bandwidth - as seen in the many next-generation broadband spacecraft planned for launch within two years.



Satellite Capabilities for by Application: Residential Customers

CONTENT TYPE	APPLICATIONS	ACTUAL DOWNLOAD SPEED DEMANDS [MBPS]	
<i>Basic Download (or upload) usage</i>	<ul style="list-style-type: none"> • Basic email, E-book download • Web-browsing, job search, government website access 	0.1 - 0.3 (Speed impacts down/up time and render)	NON REAL TIME
<i>Large download (or upload) usage</i>	<ul style="list-style-type: none"> • Advanced web browsing, iTunes • Social networking, P2P, etc. • Medical records download/sharing 	0.5 - 5+ (Speed impacts down/up time and render)	
<i>Streamed audio</i>	<ul style="list-style-type: none"> • PBS, Rhapsody 	0.1 - 0.3	REAL TIME
<i>Voice over the Internet (VOIP)</i>	<ul style="list-style-type: none"> • Skype, Vonage 	0.1 - 0.3 Symm.	
<i>Basic interaction</i>	<ul style="list-style-type: none"> • Aleks (Online interactive education) • Pogo online games 	0.3 - 0.5 Symm.	
<i>Basic streamed video</i>	<ul style="list-style-type: none"> • Consumer generated education videos 	0.3 - 0.5	
<i>Video-conference + VOIP</i>	<ul style="list-style-type: none"> • Lower definition telemedicine 	0.6 - 1.0 Symm.	
<i>SD streamed video</i>	<ul style="list-style-type: none"> • Streamed classroom lectures • Hulu 	1 - 5	 Content supported by existing satellites
<i>IP TV</i>	<ul style="list-style-type: none"> • IPTV 	1 - 5+ Symm.	
<i>2-way advanced video interaction</i>	<ul style="list-style-type: none"> • Real-time interactive experiences and gaming 	2 - 5+ Symm.	
<i>Enhanced video teleconferencing</i>	<ul style="list-style-type: none"> • Video teleconference and TeleLearning • HD Telemedicine (diagnostic imaging) 	5 - 10+ Symm.	
<i>HD streamed video</i>	<ul style="list-style-type: none"> • Broadcast quality HDTV • HD streamed University lecture 	10+	



Satellite Capabilities by Application: Commercial Customers

CONTENT TYPE	EXAMPLE APPLICATIONS	Actual Download Speed Demands [MBPS]	
<i>Basic Download (or upload) usage</i>	<ul style="list-style-type: none"> • Basic email, E-book download • Web-browsing, job search, government website access 	0.1 - 0.3 (Speed impacts down/up time and render)	NON REAL TIME
<i>Large download (or upload) usage</i>	<ul style="list-style-type: none"> • Advanced web browsing, iTunes • Social networking, P2P, etc. • Medical records download/sharing 	0.5 - 5+ (Speed impacts down/up time and render)	
<i>Streamed audio</i>	<ul style="list-style-type: none"> • PBS, Rhapsody 	0.1 - 0.3	REAL TIME
<i>Voice over the Internet (VOIP)</i>	<ul style="list-style-type: none"> • Skype, Vonage 	0.1 - 0.3 Symm.	
<i>Basic interaction</i>	<ul style="list-style-type: none"> • Aleks (Online interactive education) • Pogo online games 	0.3 - 0.5 Symm.	
<i>Basic streamed video</i>	<ul style="list-style-type: none"> • Consumer generated education videos 	0.3 - 0.5	
<i>Video-conference + VOIP</i>	<ul style="list-style-type: none"> • Lower definition telemedicine 	0.6 - 1.0 Symm.	
<i>SD streamed video</i>	<ul style="list-style-type: none"> • Streamed classroom lectures • Hulu 	1 - 5	
<i>IP TV</i>	<ul style="list-style-type: none"> • IPTV 	1 - 5+ Symm.	
<i>2-way advanced video interaction</i>	<ul style="list-style-type: none"> • Real-time interactive experiences and gaming 	2 - 5+ Symm.	
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Content supported by existing satellites



Content supported by next generation satellites

Who Uses Satellite Broadband?

- Consumers/Small Home Offices: Both residential and business consumers located in or traveling to unserved areas rely on satellite broadband for their communications needs.
- Remote Critical Infrastructure Sites: Critical infrastructure providers, such as utilities and oil suppliers, need consistent and reliable access to fixed and mobile high-speed data from remote or rural locations. This access is often best provided by satellites.
- Emergency Responders: Fire, police, health and rescue professionals look to satellite broadband for their lifeline support of critical data and voice communications when outside of the reach of terrestrial fixed or wireless networks, whether because their community is not served or the terrestrial wired or wireless networks are unavailable.
- U.S. Government and Military Users: The U.S. Department of Defense relies increasingly on commercial fixed and mobile satellite applications for their advanced broadband solutions in the U.S. and around the world.
- Remote Retail Sites: Many individual and national chain retail businesses count on satellite for broadband access for locations well outside the reach of terrestrial broadband services.
- Media: Satellite is the leading solution for media reporting because it can provide live audio and video streaming from any location, sometimes with little advance notice.
- Mobile Business and Consumer Functions: Mobile broadband is essential for mobile telemedicine vans, insurance adjusters, and delivery personnel operating in remote locations. In addition, new satellite-based mobile broadband solutions are meeting expectations for connectivity on land vehicles, ships at sea and aircraft in flight.

For further information, please
contact the Satellite Industry Association at:

www.sia.org