Satellite broadband - closing the digital divide in Asia Pacific

by Robert Feierbach, Vice President, International Division, Hughes

Satellite technology can quickly bring broadband to rural and remote areas and help close the digital divide. Satellite technology has made it economically feasible to bring broadband communications to remote regions. Satellite broadband improves access to medical services, education, e-government and other services that are hard to find and expensive in remote communities. Satellites serve many small communities where - without the high cost and difficult deployment of terrestrial networks - it is an important tool for economic and social development.

Robert Feierbach is the Vice President, Sales & Marketing for the International Division at Hughes Network Systems, LLC. Mr Feierbach joined Hughes in his current position; he is responsible for sales of Hughes' broadband satellite products and systems. Mr Feierbach has more than twenty-five years of international experience in the satellite television, media, and broadband services industries. Prior to Hughes, Mr Feierbach headed Eutelsat's high-throughput Ka-band satellite project and its 'Tooway' consumer broadband service. Previously, Mr Feierbach was managing director of Europe/Middle East/Africa and the Americas for ViaSat, Inc. and before that was executive director and board member of Skylogic S.p.A.in Turin, Italy. Mr Feierbach's Other positions have included business director of the Broadband Interactive Group at SES-Astra in Luxembourg and Vice President, Corporate and Direct-to-Home Services at SATLYNX. Mr Feierbach has been a member of several boards of directors and advisory councils.

Robert Feierbach holds a Master of Business Administration degree from the Garvin Graduate School of International Management in Arizona and a Bachelor of Computer Science degree from the University of Utah.

Home to nearly 50 percent of the world's population, the Asia Pacific region has become a growing influence on the future of the world economy, but impressive economic growth rates, the environmental impact of the region's consumption, and disparities among countries are presenting new challenges. For example, broadband penetration, which is a critical factor impacting social and economic development worldwide, shows significant disparities throughout Asia Pacific. While penetration is high in some countries such as Japan and Korea, in others it remains very low.

Raising the standard of living

Satellite technology provides the most cost-effective broadband solution to help close the digital divide in the rural and remote areas of all countries. Satellite broadband has especially high promise in the varied geography of Asia Pacific. For example, projects utilizing satellite broadband, such as universal service obligation projects (*USO*) in Indonesia and education networks in India, have had a significant impact on the development of populations. Its ubiquity and high availability, compared to other communications technologies, ranks satellite broadband as one of the highest impact technologies for the region.

The challenges in Asia Pacific require the use of technology that can be deployed quickly and at low cost to create a rapid impact. Recent developments in satellite technology have reduced the costs of operating and maintaining networks while at the same time increasing performance and overall service reliability/availability.

Improving health care

Satellite broadband is used around the world to improve access to medical services. In 2010, for example, during the devastating earthquake in Haiti, trained medical representatives used a satellite broadband network to provide crucial health care services, including sharing X-rays with medical experts across continents to get the quickest possible help to victims.

Similarly, communities in northern India receive second opinion services using satellite broadband. Trained medical representatives help elderly and low-income citizens connect with a panel of experts in cities such as Delhi, Mumbai, and Chennai by sending a scan of their reports and medications. Studies suggest that the majority of patients benefit from this simple service since it avoids the expensive travel and consultation fees that would otherwise be required. In addition, Indonesian communities now have access to new medical facilities that utilize satellite

broadband for Voice Universal Service Obligation (*USO*) networks subsidized by the Indonesian government

Expanding high-quality education

Satellite broadband technology is also being used to overcome the challenges of providing access to quality education. Many school and college networks in parts of semi-urban and rural India are using distance education to provide virtual classrooms that can connect a large number of students simultaneously. Professors and students can see each other in two-way, interactive video and audio sessions that simulate a classroom environment. Using this technology helps these communities take advantage of the teaching resources available in urban areas.

Asia Pacific countries could also benefit from educational applications used in Brazil where schools connect over a satellite network and use knowledge-sharing tools and applications, to provide modern educational aids to teachers and students. Education networks like these can also train the large number of new teachers required in rural areas and help train existing teachers in methods to improve the quality of education.

Similarly, satellite networks are used to educate farmers in Southeast Asia on better farming practices. The reliable and ubiquitous nature of satellite networks was the reason why the Indian Government created the EduSat project, which helps connect India's education infrastructure, to enable the delivery of interactive distance learning programs. The acceptance of this technology is so high that it is also being adopted by private industry players in India. Such organizations are using the interactivity provided by the satellite solution to aid primary schools implement smart classes. Many specialized content providers have emerged to provide content for these networks, including primary education, vocational courses, and continuing education.

E-Learning provides another avenue of delivering educational content and practices to rural areas. In the hands of trained teachers, these information and communication technology (*ICT*) tools address the gap between rural and urban communities. In addition to bettering education, the benefits of these programs to society include better living conditions and a rising gross domestic product (*GDP*), which in turn, improves the HDI (*human development index*) for the community.

E-governance

In the past, the Asia Pacific region depended mostly on C-band-based satellite networks. But with the availability of robust networks on Ku-band, capital costs for implementing such networks have come down by a factor of 30 to 50 per cent. Ku-band networks can provide higher data throughputs, and technologies such as DVB-S2, Adaptive Coding and Modulation (*ACM*), and Automatic Inbound Selection (*AIS*) help provide high uptimes. These higher speeds and lower costs open the door to more e-governance projects.

The e-governance project in India, for example, has benefited from the use of Ku-band technology. In an effort to speed up access to government services, the Indian government created a Public Private Partnership (*PPP*) model in which the government, rather than providing capital subsidies, instead provides revenue support for Internet kiosks set up by private industry across the country. More than 40 percent of the first 100,000 of the installed kiosks use satellite technology, and communities now enjoy much easier access to government services. Access to electronic land record certificates, for instance, helps Indian farmers get loans from local banks. Earlier, a local government representative -who was hard to locate - provided land record certificates manually. Now it takes minutes and less than 50 cents to get a copy of the record. In total, the government has identified 22 applications they will make available to Indian citizens, improving local governance and administration, and potentially increasing the GDP for local communities, which in turn, improves the HDI for the community.

Similarly, a private network of more than 5,000 sites, run by ITC Ltd., a multi-business conglomerate in India, connects farmers. The network, called e-chaupal (a chaupal is a village centre; an e-chaupal is a village centre with a computer and Internet installed), is considered a landmark in the use of ICT networks by businesses. Farmers use the network to gain access to the latest prices for farm produce. ITC has also used the network to educate the Indian farmer and procure the best crop directly, bypassing the many levels of intermediaries. The network also links the farmer to information about better crop-growing practices to help improve the quality of the final produce and increase the yield from the land. Satellite technology has played an important role in this network, and over the years more and more beneficiaries are connecting to the eco-system, which continues to offer new applications and processes to farmers.

The cellular connection

Cellular customers also benefit from the use of satellite networks. In Indonesia, for example, the population relies heavily on waterways to connect the remote communities of its 17,000 islands. As part of the USO program, satellite networks and terminals support cellular backhaul for voice networks. In addition, satellite-based GSM networks deployed on boats use picocells so people can stay within the network coverage area even when travelling on a ship.

Closing the gap

Recently governments of developed nations in the region have also acknowledged the role of satellite technology in providing rural communities with Internet access. For example, businesses and consumers in Australia's rural communities already receive government support for using satellite networks. Now under its National Broadband Network (*NBN*) program, the Australian government has announced a next-generation satellite network with two Ka-band satellites. Using Ka-band, the government hopes to provide high-speed services of up to 12 to 16 Mbps to its rural communities. The move acknowledges the development of satellite technology and demonstrates how broadband over satellite networks is well suited to serve underserved rural areas.

The satellite broadband opportunity

Satellite technology continues to support governments and businesses in their pursuit to provide a level playing field to communities living in the Asia Pacific region. The technology serves many small pockets of communities - without the high cost and lengthy deployment needed for terrestrial networks. In addition, advances in satellite technology continue to bring down the costs of ownership and use associated with satellite networks.

Governments and businesses in Asia Pacific that recognize the opportunities satellite broadband technology provides will reap the benefits as they use it to connect urban and rural communities and improve access to health care, education, and government services - enabling them to better meet their social and economic goals. ●