



Photo courtesy of Shin Satellite.

Broadening the experience

Giovanni Verlini, Editor of *Satellite Evolution Asia*, casts an eye on broadband via satellite, offering a review of the latest developments in this sector.

Satellite, it goes without saying, is by its very nature a broadband medium. Conceived as an efficient way to move large amounts of data over long distances, satellites can to this day deliver in this area. The evidence is plain to see.

When the Taiwan earthquake severed six major undersea fibre optic cables, disrupting telecommunications throughout the Asia-Pacific region, global satellite operator Intelsat was able to restore services for many voice, video and data providers, some within hours of the event.

Intelsat restored traffic to customers in Asia and the Middle East through its flexible satellite network and its GlobalConnex Managed Network Services infrastructure. Traffic delivery to the area has primarily used Intelsat's teleports and its six satellites serving the Asia-Pacific region. Specifically, Intelsat re-established international and intra-regional links for more than 20 telecommunications operators, broadcasters and network service providers.

"Continuing to serve the Asia market with our Hallmark Channel programming would not have been possible without the tireless efforts of Intelsat following the earthquake that hit Southeast Asia," said Chuck Zabalski, Vice President of Sparrowhawk Broadcast Services. "Intelsat went the extra mile and provided critical assistance in communicating with our uplink provider and getting the equipment properly configured, enabling us to resume our transmissions. We thank everyone at Intelsat for making this a priority and getting our restoration in place."

"Unfortunate events such as this earthquake spotlight the vital role that satellites play in providing backup to fibre-based networks," said Stephen Spengler, Intelsat's Senior Vice President, Europe, Middle East, Africa and Asia-Pacific Sales. "When satellite connections are an integrated part of a diverse telecommunications network, critical business continuity can be achieved for uninterrupted communications during emergency situations."

From the first reports of fibre communications disruptions, Intelsat was working around the clock to provide additional satellite capacity to customers throughout Southeast Asia. "Today, voice, video and Internet connectivity has been restored for customers throughout the region. In one instance, we were able to establish a new 56Mbit/s of Internet service for a Southeast Asian telecommunications provider within four hours after the fibre outage," Spengler added.

Intelsat has played a key role in providing capacity and critical network restoration services following many of the recent natural disasters including the 2004 tsunami, the 2005 Central Asian earthquake which severed the SEA-ME-WE3 fibre communications in Pakistan, and the Hurricanes Katrina and Rita that devastated the US Gulf Coast.

As we have seen, and as recent examples clearly demonstrate, satellite as a deliverer of a large broadband pipe from point-to-point is a well established reality. Over recent years, however, another concept of broadband via satellite has also been developed: that of broadband to the individual user, be it a Small and Medium Enterprise (SME) or a consumer. This is a concept that has taken years to develop efficiently, though it is now being implemented all over the world.

The Asia-Pacific experience

In the Asia-Pacific region, the largest consumer market in the world, broadband via satellite has largely been synonymous with IPSTAR, the direct-to-the-user broadband project developed by Shin Satellite of Thailand.



The Thaicom-4 (IPSTAR) Project was initiated by Shin Satellite and is the most ambitious broadband satellite project in the world. Not only is Thaicom-4 (IPSTAR-1) the heaviest commercial satellite ever launched in the world, but it is also the world's first dedicated broadband satellite with a total capacity of 45Gbit/s, or approximately 20 times more capacity than conventional satellites. This innovative technology results in a very efficient and cost-effective communications medium that is able to serve all types of multimedia applications.

The IPSTAR System consists of two main parts: the Space Segment (Thaicom-4 or IPSTAR Satellite), and the Ground System (IPSTAR User Terminal, Gateway and Network). IPSTAR can serve up to 10 million subscribers across the Asia-Pacific region in 14 countries – Thailand, China, India, Australia, New Zealand, the Philippines, Taiwan, Japan, Korea, Vietnam, Myanmar, Cambodia, Malaysia and Indonesia.

Shin Satellite has been developing the IPSTAR system since 1997 and has patented this innovative technology, which has had a significant impact on the broadband satellite industry. The IPSTAR project is one of "Thai Pride" as it was developed by Thai engineers and now recognised throughout the industry. Shin Satellite has always been known as Asia's pioneering satellite company, and now is among the top satellite operators in the region.

Shin Satellite and IPSTAR received a number of accolades in recognition of the development of IPSTAR system with the latest award given by the Society of Satellite Professionals International (SSPI) as the '2006 Industry Innovator for Technology Development and Application', in the private sector. The Industry Innovators Award programme was initiated by the SSPI in 1993 to highlight outstanding new contributions to the field of satellite communications by both private and public-sector organisations.

Currently, Shin Satellite has distributed approximately 70,000 sets of IPSTAR User Terminals to many countries including Thailand, China, India, Australia, New Zealand, Vietnam, Myanmar, Laos, Taiwan, Malaysia, Indonesia, and Cambodia. By the end of 2007, the total number of IPSTAR User Terminals is expected to reach approximately 150,000 sets due to market expansion in China, India, Australia, New Zealand, Japan and in many other countries in the Asia-Pacific region.

Shin Satellite is able to successfully export the IPSTAR technology to countries in the Asia-Pacific region bringing in tremendous foreign income into the country since over 90 per cent of the IPSTAR users will be from overseas. In addition, the IPSTAR project has been successful in placing Thai engineers at the forefront of the satellite industry.

IPSTAR can be used for a variety of applications in both the public and private sectors. It is especially valid for Universal Service Obligation (USO), initiatives to ensure everyone, including remote villages and towns, have access to voice and data services. In the past, this has proved very difficult due to the high cost of rolling out terrestrial infrastructures. With IPSTAR, basic communication services can now reach everyone – no matter how close or far.

At present, IPSTAR is now providing voice and high-speed Internet access services in many remote areas throughout Thailand. IPSTAR is a more cost-effective method of providing such services to remote areas, as compared to terrestrial networks. More than 7,000 small communities in Thailand are now enjoying the benefits of IPSTAR and it has been able to effectively close the communications gap between societies, or so called 'Digital Divide', allowing equal access to information.

In terms of education, the distance education programme named MOENet (or SchoolNet), initiated by the government agency, has also enjoyed significant benefits from the IPSTAR technology. Approximately 10,000 remote schools out of 40,000 under the project are using IPSTAR for broadband internet access and voice services. In addition, this has enabled a reduction of cost in distribution of content and course materials, as this can now be done electroni-

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cally. Teachers and students alike in these schools can now download course materials and content easily from the centralised server.

With close co-operation with the public and the private sectors in Thailand and overseas, Shin Satellite has been able to successfully deploy the IPSTAR services in seven countries across the Asia-Pacific region. The Company will continue its expansion plan to provide broadband satellite services in 14 countries in the Asia-Pacific region and thus contribute more foreign income for Thailand.

In India too

But IPSTAR is not, by any means, the only provider of broadband via satellite in the Asia-Pacific region. In India, for example, Microsoft Corporation India Pvt Ltd and Hughes India are partnering to set up a network of 5,000 broadband-enabled rural kiosks, giving a whole new meaning to the much-talked about concept of bridging the digital divide.

The two companies have recently announced their commitment to work together on rolling out 5,000 broadband-enabled Information & Communications Technology (ICT) rural kiosks across the country. These kiosks will be deployed across 200 small towns and rural regions and will be operated on a franchisee-based model offering budding entrepreneurs across the rural landscape to use technology for e-commerce, education and e-governance.

"Today's partnership delivers a variety of digital services nationwide, empowers people and affects the way people live, work and communicate. The ICT kiosks will not only provide a platform for the exchange of information and knowledge, but also serve as a platform to create over 15,000 jobs and self-employment opportunities," said Pranav Roach, President and CEO, Hughes Network Systems India.

Speaking on the occasion, Rohit Kumar, Country Head, Public Sector, Microsoft, said: "Connectivity is a key challenge in creating a digitally inclusive society and this partnership is a step towards our aim of providing a holistic ecosystem under 'Project Saksham' at the ground level and enable the rural ecosystem."

Speaking on the partnership, Tarun Malik, Head, Rural Computing, Microsoft said: "This is a reiteration of our efforts to forge successful partnerships to create a highly sustainable and scalable ecosystem. Together we aim to drive technology access at the grass root level to enable socio economic development of rural communities."

As part of the project, Hughes will provide a comprehensive business model to enable successful kiosk penetration in rural India offering B2B and B2C services. Hughes will leverage its satellite broadband platform to the remotest pockets of India. Among other services, Hughes will offer various broadband services, Internet access, value-added services, prepaid top ups, international voice calling and education services through the Hughes Fusion centres.

Microsoft under its 'Saksham' initiative will create an engagement model with kiosks service providers & various governments for delivering e-government and other B2B services. As an effort to im-



pact the sustenance of the kiosk owner, Microsoft Corporation will also offer a 12 day IT literacy programme for kiosks operators aimed at helping the operator to become IT literate so as to enable him to further offer IT literacy programmes to the community. This training will be provided free of cost to the Kiosk operator and will be conducted in more than 60 locations across India.

Powered by HughesNet satellite broadband network and Microsoft's platform, the kiosks will be run and managed by local entrepreneurs for providing the content and services to the people ensuring a sustainable return on investment.

US

Meanwhile, in the US, which is arguably the most sophisticated consumer market in the world, broadband via satellite is also making a significant inroad thanks to companies such as WildBlue and Hughes.

Recently, the Space Systems/Loral-built (SS/L) Wildblue-1 satellite was successfully launched. The satellite was launched on 8 December 2006 aboard an Ariane 5 ECA rocket from the European Spaceport in Kourou, French Guiana.

This is a significant milestone for the company, as WildBlue-1 is the world's first commercially dedicated all-Ka-band, multiple spot-beam broadband satellite.

"We are pleased by the successful launch and initial performance of all satellite systems," said Dave Leonard, CEO of WildBlue Communications, Inc. "SS/L was an excellent partner to work with throughout the manufacturing process and we relied on its support and expertise to make this project a success."

Orbit raising operations are being conducted from SS/L's Mission Control Center in Palo Alto, California. Within the next few weeks, following its final placement into geostationary orbit at 111.1 degrees West longitude and routine in-orbit testing, SS/L will hand over the satellite to WildBlue, expanding its broadband Internet service capability.

The satellite's powerful spot-beam design will enable WildBlue to more than triple its capacity to provide low-cost, high-speed Internet access throughout the contiguous US.

WildBlue-1 weighed approximately 4.7 metric tonnes at lift-off and its design was based on SS/L's highly reliable 1300 spacecraft bus. The satellite carries a unique, multiple antenna configuration that will power two-way data communications to homes and small businesses in communities where terrestrial broadband access is either limited or unavailable.

"Satellite technology has been critical in providing the communications needed to support a global economy," said John Celli, President of Space Systems/Loral. "We are pleased to work with WildBlue in support of its visionary effort to leverage the power of satellite systems for direct-to-user two-way data access. At SS/L, we see this as another step in the continued expansion of advanced services that will be delivered to both businesses and consumers by satellite."

Throughout the US, satellite broadband customers keep signing up for ever-increasing speed. Within this framework, Hughes Network Systems, LLC, has recently announced the rapid adoption of high-end HughesNet plans by its growing customer base, largely in the underserved areas of the US.

Buying preferences demonstrate the trend toward speed and features over price, indicating that performance is the most important driver of broadband purchasing decisions.

"Today's consumers want to download songs and video clips, and e-mail pictures to and from family and friends," said Jimmy Schaeffler, Chairman, and Senior Analyst at the Carmel Group. "Frustrated by slow dial-up, larger percentages of consumers living in areas overlooked by terrestrial broadband providers are choosing satellite for their broadband needs."

Since launching its broadband by satellite service, Hughes has continued to increase the range of service plans available, culminating in today's broad range of five plans offering download speeds as

high as two megabits per second.

"The new HughesNet high-performance service plans are generating considerable demand and we have seen a significant increase in the uptake of these premium services, doubling the approximately 20 per cent of new customers in 2005 to about 40 per cent in 2006," said Mike Cook, Senior Vice President of Hughes.

"Consumers living in areas not served by terrestrial broadband are finally taking a stance," said Cook. "They are making it clear that they want to enjoy all the benefits of a broadband connection and they want to do it at high speed. Hughes is meeting this demand by providing fast and reliable satellite broadband to consumers throughout the US, regardless of geography, putting all the benefits of the Internet right at their fingertips."

The HughesNet service is the leading, two-way broadband satellite Internet solution in the US, available anywhere in the contiguous States with a clear view of the southern sky.

A global phenomenon

Despite its popularity in defined markets such as the advanced economies of the Asia-Pacific region or the US, broadband via satellite remains a global phenomenon, and one of the companies behind its development in the four corners of the world remains Hughes.

In December 2006, Hughes announced that it is providing a C-band version of its advanced broadband hub to Direct On PC Ltd. (DOPC), providers of Very Small Aperture Terminal (VSAT) satellite networking services in Nigeria.

The new hub is fully compliant with the DVB-S2 industry standard, including Adaptive Coding Modulation (ACM).

The system has recently come online. At the time of the launch Munish Sharma, Managing Director (MD) of DOPC, said: "We are very pleased to be launching commercial availability of our C-band service in January of 2007 using the advanced Hughes DVB-S2 hub with ACM technology. We are committed to ensuring that Nigeria has access to the most advanced technology available."

The Hughes C-band version has similar features and advantages of the Ku-band hub. It supports the Hughes HN7000S family of high-speed satellite routers, with throughputs of up to 1.6Mbit/s uplink and 45Mbit/s downlink. DOPC's decision to launch the Hughes-based C-band service was based on the success of its recently launched Ku-band service, and that it is gearing up to capture the West African C-band market.

"We are proud that DOPC has again chosen Hughes as its broadband satellite network supplier, adding our advanced C-band solution to its recently launched Ku-band service using a Hughes DVB-S2 hub," said Soheil Mehrabanzad, Assistant Vice President (AVP) and Regional Director, Middle East/Africa Region, Hughes Network Systems. "Hughes broadband satellite technology is ideal for African nations, providing a powerful telecommunications infrastructure to spur economic growth and improve delivery of educational and social services."

Head of Operations, Anurag Garg commented: "We are going to change the C-band market in West Africa just as we did with our Ku-band service."

Conclusion

While some issues relating to broadband connectivity via satellite remain (such as the signal delay, the relatively speaking high costs of both the terminal and the airtime) there is no doubt that over the past 12 months this technology has finally taken off.

In fact, while pundits remain convinced that in this application satellite will never be able to compete directly with terrestrial technologies, there are billions of people living in infrastructure-poor areas who have no alternative but using satellite for their Internet connectivity.

Luckily for them, satellite technology can now meet their needs efficiently, cost-effectively and with a remarkable good Quality of Service (QoS). ■