



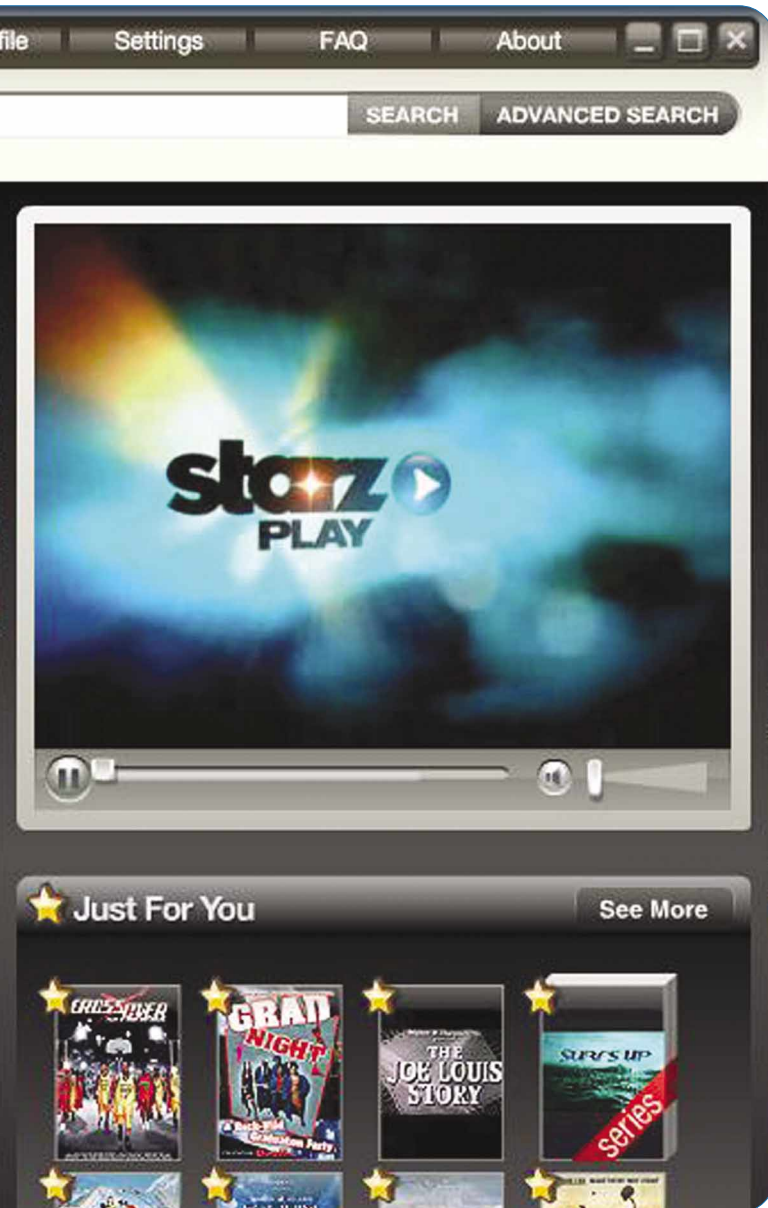
IPTV, photo courtesy Verizon Mediasseed.

IPTV: a new role for satellite

IPTV sounds great – the ability to tailor your entertainment to fit your needs and lifestyle - but what impact will it have on the satellite industry? Can it rival DTH services? Does satellite have a role to play?

At Satellite Evolution we have looked at IPTV before. It is a technology that represents true convergence and brings together Internet, telephony, gaming, mobile, cellular and networking services. Overall, IPTV provides viewers with a heightened television experience due to its interactive nature. We are all very busy and IPTV enables

us to choose the content we wish to watch whenever we wish to watch it. Over and above this, IPTV creates a personalised TV experience enabling the viewer to stop, pause, or rewind live TV, to interact with a TV programme, to receive a phone call, even to do shopping or book concert tickets.



IPTV integrates TV with the Internet, VoIP and mobile devices and provides the consumer with an enhanced viewing experience that is delivered using Internet Protocol over a network infrastructure that usually includes a broadband connection. Instead of being delivered in the usual way, through broadcast and cable, TV is received via the technology used for computer networks. In addition, the IPTV consumer also has access to a variety of different services including Video-on-Demand or VoIP – known as Triple Play. Furthermore, Quadruple Play may be achieved by adding mobile devices to the variety of services. The decline in the use of landline services has seen telecommunications companies keen to push IPTV to their customers as it represents a new revenue stream, welcome in the current environment where they are increasingly finding themselves in direct competition with satellite and cable TV providers. It sounds great – it's a service that provides multiple entertainment sources from news and weather on demand to time shift TV but the principal problem with IPTV is down to consumer behaviour. Is IPTV easy to use? Do I have to buy new equipment? What are the cost implications? IPTV providers must be careful not to spook the horses. There is also the case that IPTV is delivered over existing infrastructure -

convenient, but not everyone has access to cable or fibre.

The beauty of an IP network is the fact that it allows much more content to be delivered. Whereas satellite or cable providers constantly stream their content to the user who selects their choice through a set top box, IPTV works on demand and the user is simply sent only the content that they wish to view. By doing this, precious bandwidth is freed up and restrictions are avoided. The ability of the user to interact with the programme they are viewing also help give a 'personal' feel to the IPTV – even down to the camera angle. The attraction of Video on Demand is also obvious. Users have a ready-made library of movies at their fingertips – no more trips down to the local rental outlet necessary. Phone calls may even be received through the television set and handled using the remote control with a caller ID facility available. It appears to be true convergence. And, according to US firm Pyramid Research, IPTV's share of the worldwide subscriber base will grow from three percent in 2008 to 14 percent in 2013.

Where does satellite come in?

A cable network transmits every channel to every user whilst the IPTV network only transmits the channel that the viewer is actually watching at any time. IPTV therefore, can transmit an unlimited amount of channels and satellite can help telecommunication companies with its point-to-multipoint distribution capabilities. An IPTV 'super headend' can aggregate content from satellite downlinks and distribute that content to local access points or regional headends over IP. Now, building an IPTV super headend is extremely expensive. It involves many antennas that will receive content from multiple satellites. On top of this, there are encryption issues, regulatory issues and the acquisition of content. So, for many telecommunication companies involved in the delivery of IPTV content, a super headend prepared fully and offered to the telecommunication company by a satellite company, is the most viable and cost-effective solution.

The Super Headend

Globecomm has developed an IPTV solution that includes design, integration and maintenance for satellite distribution of IPTV. Globecomm engineers and installs satellite super head-ends to put IPTV content onto satellite transponders and regional head-ends that receive IPTV content for terrestrial distribution. Globecomm also provides lifecycle support services to maximise uptime and to ensure Quality of Service.

Skyborne super head-ends are the programme distribution points for IPTV distribution. Globecomm develops IPTV SHEs for the acquisition, management, encoding, origination and satellite distribution of TV content.

The Skyborne head-end is the local gateway to IPTV programming for telcos, broadband carriers and other new entrants into video services. The Regional Head-end provides content acquisition, content management, subscriber management, packaging and delivery to the carrier's distribution network.

Intelsat's Ampage

In 2006, Intelsat introduced Ampage to the market. Ampage is modelled on the satellite super head-end approach that we have already spoken about here. The goal of the system is to bring down telecommunication operator's capital expenditure whilst providing the upgrade of signals to MPEG-4 for the expansion of programming and without having to invest in new equipment. It is based on an open architecture and deals with content delivery and management of the service. It has been developed to help telecommunication companies to enter the IPTV market.

Modelled on a "super head-end" for content distribution Ampage upgrades and converts video stream for MSOs from MPEG-2 to MPEG-4 using state-of-the-art equipment. The move to MPEG-4 is being driven by the desire for both higher transmission quality and



efficient utilisation of bandwidth. The service is designed to include fully redundant facilities and transmission capacity.

Telco customers realise significant cost savings by taking advantage of Intelsat's packaged offering, which, if the elements were procured separately and on their own, would cost them millions of dollars.

Telco customers benefit from Intelsat's volume relationships with content creators worldwide, and its ability to secure transport rights and its relationships with coveted niche and international programmers, which will enable them to create local packages that are highly customised to demographic concentrations.

How it works

Ampiage cost-effectively packages the acquisition, aggregation, encoding, encapsulation and encryption of licensed TV programming from content providers and has the ability to redistribute it in MPEG-2 or MPEG-4 format to cable and telecom service providers. This allows MSOs and telcos either to establish or enhance their digital programming line-ups quickly and with low capital investment.

Ampiage completely centralises the aggregation of national TV programmer content and offers hundreds of video and audio channels in full digital quality. This enables telcos to efficiently bundle an attractive standard and high definition programming package with their voice and broadband services without incurring a significant upgrade cost.

Ampiage originates from Intelsat's Video Operations Centre, where video and audio are received and processed for distribution to telco and MSO video hubs nationwide. Leveraging the complete coverage of North America offered by the Intelsat Americas fleet,

Ampiage distributes the programming to regional telecom and cable service providers. Telcos and MSOs then distribute this programming content via xDSL, fibre, conventional cable networks and other broadband networks to their residential subscribers across North America.

Other Ampiage features will include:

- Full IP-multicast capability employing the latest advanced video codecs;
- Hundreds of all-digital video and audio programming channels;
- Tailor-made solutions for local affiliate stations and regional sports networks;
- Integrated conditional access solution;
- Compatibility with existing access networks; and
- Multiple set-top box integration.

Ampiage will be equipped with an open architecture to enable operators to either leverage existing equipment (including set top boxes) or choose new equipment from multiple CPE providers. The product is designed to offer two different service models that have been created to respond to different operator requirements.

IP Prime continues to build on successes

SES AMERICOM announced that more than sixty-five telcos in 31 states throughout the US have signed up for IP-PRIME. The market has adopted IP-PRIME either as a complete IPTV programming solution offering more than 200 standard definition and more than 50 high definition channels transported to the head end, or as an exclusive HD solution installed as an overlay to existing IPTV operations.

Series recording scheduled

2:00 PM	2:30 PM	3:00 PM	3:30 PM
From Castro to Fidel			Hemingway's ▶
Alien Insect: Praying Mantis	Bugs, Bugs, Bugs!		Insects ▶
Wyoming Waters			DIY Fly Fishing ▶
Giada's Italian Holiday	Cooking with Giada		Roman Holiday ▶
Fine Living		Extreme Living	
Vans Warped Tour		Alternative Music Week	

Insects

●● SERIES RECORD · 3:30–4:15 PM

Penetrate the compelling world of the praying mantis. Witness the never-before-seen images that detail the lives, loves and deaths of a...

Microsoft Mediaroom IPTV, courtesy Microsoft.



What we can expect from IPTV

At IBC2008, Microsoft unveiled technology that makes it easy for service providers and content owners to develop a new generation of groundbreaking interactive TV services. Microsoft showcased interactive applications that point the way to how people could experience TV in the future.

The demonstrations displayed at IBC included the first public viewing of an interactive application developed for the Microsoft Mediaroom platform by emuse technologies using content from the BBC. The application shows how the broadcaster's original journalistic content, including news, sports and weather, could look in the future. Building on the success of Red Button and BBC iPlayer, the application provides interactive access to a huge breadth and depth of the broadcaster's content and services via an intuitive and easy-to-use interface.

The BBC application also brings user-generated content and social networking functionality to the TV screen. Viewers can access images and video uploaded by others, and recommend and share programmes with friends. Important for publishers, the application demonstrates how they can integrate interactive TV as part of a multiplatform system. No extra journalistic effort is required to make content available on Web, mobile and Internet Protocol Television (IPTV) platforms.

Other interactive Mediaroom demos included an application that overlays information widgets, developed by ES3. This application focuses on the collation of real-time content and information from the Web, including stock prices, horoscopes, local weather and famous quotes. It demonstrates how TV operators can cost-effectively repurpose content onto the TV in a highly personalized and easy-to-use way.

Another application being shown is a social-networking-on-TV application, also designed and built by emuse technologies, connecting viewers to their social networks through the TV via Windows Live services and enabling them to share personal pages that exist online and on the TV.

"These applications set the benchmark for a new generation of interactive TV," said Stephen Petheram, Director of Media Services, EMEA and APAC, for Microsoft Mediaroom. "They show the potential of connected TV powered by Microsoft Mediaroom to deliver consumer experiences that seamlessly blend real-time content and services from the Internet and private data sources with broadcast TV."

Petheram added, "With leading service provider customers around the world, Microsoft Mediaroom provides a common platform for content owners to deliver enhanced TV experiences for their worldwide audiences in an exciting and cost-effective manner."

The applications are built using Microsoft's new Mediaroom Presentation Framework, which provides the building blocks needed for creating innovative, robust and intuitive user experiences for TV. Microsoft released the beta software to 100-plus customers and developers in May this year. The full release of the technology is expected to begin to be deployed on customer networks this year, with the first live applications expected in 2009.

Microsoft Mediaroom has a global customer base including leading telecommunications operators such as AT&T, BT and Deutsche Telekom. To date, these customers have connected more than 1.5 million subscriber homes, and the number is growing rapidly.

Of the current telco customers, more than two-dozen are commercially delivering IP-PRIME to subscribers today, with another dozen expected to "turn on" by the year's end.

To meet the network development and local head-end technical requirements of the telco, IP-PRIME is leveraging experienced partners such as technology developers Cisco, Falcon and Nortel to design, deploy and support the telco's video distribution solution from the head end to the subscriber's set top box.

Also telcos can successfully rely on trusted network engineering firms, many of whom are already familiar with the local network infrastructure, to deliver the head end and network equipment, middleware, billing system and set top boxes necessary to complete

the terrestrial IPTV system.

"We are signing more IP-PRIME contracts every month, and we are especially pleased that almost one third of the telcos that pioneered IPTV in MPEG-2 have adopted our HD-4 solution," said Jim Ducay, Chief Operating Officer, SES AMERICOM. "We are also very fortunate that most of our world-class partners are here at the show and are featuring live IP-PRIME feeds in their booths. Naturally, we are very excited to be working with them to provide telcos with the end-to-end managed solution that best meets their specific commercial needs."

IP-PRIME's full transport solution gives operators a broad selection of programming from literally hundreds of SD and HD channels, plus more than 50 audio/music channels that are sent via satellite for integration into the operators' head ends and local distribution networks. The HD-4 service offers operators, who are currently delivering IPTV services, access to dozens of channels of HD in MPEG-4, that are received via satellite for integration into their head ends and local distribution networks. When implementing either IP-PRIME solution, the operator saves as much as 90 percent when compared to the cost of building their own MPEG-4 IPTV solution.

"IP-PRIME was the quickest solution we had to bring HD services to the community. Speed to market was key – from contract signing to actual implementation, equipment installation and actual turn up was about eight weeks," said Scott Walter, Director of Network Services, Hickory Tech, Mankato, Minnesota.

A rival to DTH?

Concerns have been voiced that IPTV represents a serious threat to the DTH market and that DTH providers must move quickly in order to counter this threat. However, it seems that, although there can be no doubt that IPTV does present a challenge to DTH and cable TV, it

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is still very much a niche market. At present, there is no sign of IPTV becoming any real threat to DTH services – cable TV will continue to be the main rival. According to Northern Sky Research, this year just one percent of the pay-TV share will go to IPTV. In their report, 'DTH Satellite Services: An Analysis of Ten Emerging DTH Markets', ten countries were focused upon (Brazil, Czech Republic, India, Indonesia, Philippines, Poland, Russia, Slovakia, Turkey and Vietnam) and NSR forecast that by 2015, two percent of the Pay-TV share would go to these countries.

This is healthy growth but cannot realistically threaten DTH or

cable. IPTV's take up rate will obviously be higher in those countries and regions where broadband penetration is high, such as Hong Kong. For those members of the population who live outside of the larger towns and cities, DTH is the true winning technology as regardless of location reception is possible.

IPTV in EMEA

The Middle East and Africa boast the fastest growing broadband markets on the world. They have grown a total of 89.1 percent between quarter one 2005 and quarter two 2006. This is quite a stunning acceleration. The EMEA region also accounts for a huge 48 percent of worldwide IPTV service revenue. As broadband coverage continues to cover this region, the Middle East and Africa hold huge growth potential for the telecoms sector and therefore for IPTV as they strive to hold customer's attention by introducing new service offerings and attract new business.

So, satellite does have a part to play in the age of IPTV. In fact, satellite companies are saving telcos incredible amounts of money by offering tailored Super Headends thus keeping the telcos' capital expenditure down when offering this new service. IPTV is especially popular in the EMEA region due to its ability to offer tailored content, such as Arabic content.

IPTV has a very bright future in the EMEA region and with the increase in broadband penetration it is expected to find the majority of its customers in this area of the world. It offers another entertainment alternative but should not be feared as a true rival to satellite DTH services. Cable is still satellite's biggest rival – not IPTV. ●

Globecomm responsible for development of SES AMERICOM's Super Headend

Much of the world's television and radio programming moves through digital transmission systems and studios built by Globecomm. The company earned its reputation by developing uplink, programme acquisition and digital video broadcast systems for DTH, cable and broadcast networks including DirecTV, CBS, ASkyB, Fox, Nile-Sat, Shinawatra, TVB/ERA, and Israel DBS.

In the past decade, Globecomm has also developed a speciality in engineering and operating next-generation IP networks that involve "a little bit of satellite." In theory, next-generation networks offer high performance with less complexity at a lower cost. But achieving these goals can be challenging, because most of today's network devices, particularly for broadcast video, were designed before IP became a dominant standard. Satellite links themselves can offer an inherent challenge to IP, because the time that signals take to reach the satellite and return is longer than IP was originally designed for. Unless the network is conditioned to handle these challenges, performance can suffer and costly bandwidth can be wasted. In developing networks for a broad range of applications – from military comms-on-the-move to video distribution – Globecomm has built expertise in managing the many protocol translations and "tweaking" the network interfaces for maximum throughput.

Designing for the future

With a new broadcast centre serving a completely new market, the one certainty is change, according to Tom Parish, Globecomm's Vice President for Broadcast Technology and leader of the broadcast centre project for IP-PRIME. The facility had to be engineered to acquire content from multiple sources. It needed a stable and robust technology platform that could be adapted and scaled as needed. And, it all had to meet the high availability and reliability criteria required by SES AMERICOM, and the quality standards that programme providers and operators would expect.

Globecomm covered the satellite access requirements with a 7-metre Simulstat multi-beam antenna from ATCi capable of accessing up to 37 satellites within a 75 degree arc at the same time. Supplementing this was a 4.5-metre motorised antenna capable of accessing the entire domestic arc. Feeds from the antennas were directed to Low Noise Block (LNB) down-converters located in an environmentally-controlled cabinet, and the resulting signals routed via Foxcom's Sat-Light L-band interfacility links to the broadcast centre.

The flexible design included Integrated Receiver Decoders (IRDs) for over one hundred programs in full 1:1 redundancy, with ability to scale as needed. The design featured IRDs for standard definition (SD) analog NTSC, SD Analog NTSC with VideoCypher II, SD Digital with encryption and SD Digital DVB without encryption. The integration included cabinets housing up to 10 IRDs with L-band divider-splitter assemblies for signal processing and video and audio monitoring equipment. The facility is HD-ready throughout.

To meet SES AMERICOM's demands for extensive and instantaneous quality control, Globecomm integrated SA's ROSA network Management System, its own AxxSys Network Management system for the programme acquisition hardware, and the Evertz MVP Multi-Signal Monitoring Solution, which provides automatic monitoring of the video and audio feeds.

As the systems integrator for the IP-PRIME broadcast centre, Globecomm worked closely with SES personnel to define the end-to-end design, as well as on construction, hardware and software acquisition and testing, integration, documentation, training and specification of spare parts. The company also coordinated closely with Scientific-Atlanta to ensure that its systems integrated seamlessly into the Super Headend solution.

The IP-PRIME assignment made Globecomm one of the first companies to design and deliver an all-IP, MPEG-4, satellite IPTV Super Headend. With the industry demand for IPTV-based services, the SES AMERICOM facility is certain to see heavy use in the months and years ahead.