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The new TV experience

We are still talking about IPTV. This is no longer a concept, but a reality and it is revolutionising the way people consume TV, the Internet and keeping in touch. Satellite Evolution tracks the latest developments in the world of IPTV.

IPTV demand is really picking up. A recent study by the Multimedia Research Group, projects that the amount of worldwide subscribers will swell from 13.5 million to 72.6 million by 2011. That is an impressive number. Telecommunication companies are pushing IPTV services in a big way as they represent a new and impressive revenue opportunity that they badly need to succeed. It certainly looks as though they will. Spending on IPTV middleware is expected to see healthy growth over the next few quarters due to the growing number of telcos offering IPTV services. The IPTV and switched digital video equipment market has grown 12 percent in the first quarter of June alone.

At CommunicAsia in June 2008 there was a real buzz surrounding IPTV. In Asia, there is true demand. Japan for example is home to 28.73 million broadband-based communications service subscribers. Asia has recognised the need for standards within the IPTV industry and a number of Japanese telecoms providers and technology vendors have joined together to unify the technical standards for

IPTV services in Japan with the first compliant devices expected to emerge by March 2009. These standards will be pitched to the ITU. In addition, the Association of Southeast Asian Nations (ASEAN) has also reached an agreement on a common set of specifications for standard and high definition set top boxes (STBs) at the end of the ASEAN Digital Broadcasting meeting that was recently held in Singapore. This agreement has been reached in advance of the anticipated transition from analogue to digital broadcasting and is expected to help lower prices for consumers in the region.

Why IPTV?

Let's remind ourselves about IPTV and why it is expected to shape our viewing experiences in years to come. IPTV or Internet Protocol Television, is a system that allows digital television to be delivered over a network infrastructure, often via a broadband connection. This may then be integrated with other IP-based services such as VoIP and Internet access and even mobile voice services creating triple



and quadruple play. The interactive and personal nature of IPTV gives the viewer a unique entertainment experience that is flexible and easy to use. It may also be used to deliver television over corporate networks. IPTV is now being adopted en-masse. Deployment is growing at a rapid pace and services are available worldwide. Already taken on by operators such as France Telecom, BT and Deutsche Telekom, Pay TV operators are also taking an interest, creating competition. Several services have already been launched and have high numbers of subscribers with many new services planned for rollout by the end of 2008. Upgrades to existing networks and the high-speed connectivity that they provide are laying the foundations for widespread IPTV deployment. In addition, with the emergence of HDTV, the whole entertainment experience is sure to be taken to a new and exciting level.

The power of advertising

Let's not be naive. The key to the overall success of IPTV will obviously be making money and this revenue will be generated through advertising. However, the advertising used will differ from the advertising that we are currently used to. In fact, we can expect a revolution in advertising over the coming months and years as Telcos move into media. TV consumers are very used to watching commercials between their favourite programmes but they are very general. They go to the entire subscriber base. There is a certain element of targeted advertising on standard television. For example, during a children's programme the level of advertisements showing toys will go up. However, generally there tends to be a mixture of different advertisements for different ages and interests in the hope that one will have the desired effect. Advertising on IPTV will be very different. It is known as Addressable Advertising. Unlike standard TV, IPTV can give the service provider valuable information on their viewer demographics.

The telcos are all-powerful in the world of IPTV. They glean a great amount of data about their customers through their direct relationship with them. They know how old they are, where they live, where they like to shop, what their interests are. This information is golden as they may now build up a profile of each customer and can use this analytical advantage to get the correct genre of advertisements out to the correct sector of the population. Let's face it, no-one wants to view hundreds of commercials that are irrelevant and completely uninteresting to them. Here is the solution – and it is going to make the telcos a lot of money.

Let's look at the technology behind Addressable Advertising. Packet Vision, the pioneer of advanced video advertising and TANDBERG Television, part of the Ericsson Group have partnered to deliver an advanced targeted advertising solution. The companies have built what they believe to be the world's only solution capable of delivering truly frame-accurate splicing in H.264 over IPTV, which is a key component in ensuring seamless delivery of addressable advertising.

The solution was used to provide addressable advertising to university students subscribed to Inuk's Freewire Service - an IPTV network that provides triple play services to universities across the UK. Ads played out during Channel 4 commercial breaks that weren't relevant to students were replaced with ads for a major UK convenience food brand during May 2008. It was the second such campaign to be completed successfully.

Both campaigns were achieved using Packet Vision's addressable advertising service, and employed Packet Vision's PV1000 and TANDBERG's EN8030 encoder. The PV1000 is Packet Vision's fully integrated appliance with ad server, splicer and router. Powered by the Video Switching Engine, the PV1000 is architected to provide optimum addressability and unparalleled video quality to the network edge. The TANDBERG EN8030 encoder is based on the company's MPEG-4 AVC compression platform and provides a feature-rich solution with industry-leading performance to deliver the best quality pictures at the lowest bit rates. A frame accurate splice was

defined as a splice occurring with an error margin of no more than two frames. Packet Vision and TANDBERG Television believe that the next-best available solution would have an error margin of at least six frames or ¼ second, which is clearly visible to the human eye.

Accurate splicing is an essential element of ad insertion or replacement, and therefore a basic but critical component of addressable advertising. Without such accuracy ad spots can either cut into the spots that follow them, or run short – leaving holes in the commercial break when an ad is inserted, or showing the original ad when that ad is replaced.

Packet Vision provided TANDBERG Television with a sophisticated analysis of Channel 4's programming feed and with the tools required to fine-tune the legacy TANDBERG E5720 MPEG-2 encoder and the new EN8030 MPEG-4 AVC encoder – making them the only encoders currently available that can enable such frame-accurate splicing. The solution developed through collaboration between Packet Vision and TANDBERG Television adheres to SCTE35 and SCTE104 standards.

Patrick Christian, CTO and founder of Packet Vision said: "It's easy to forget that standards within television are about ensuring the quality of viewer experience. If IPTV is going to meet those standards – and it has to – then collaboration is critical for all members of the ecosystem. Working closely together, Packet Vision and TANDBERG Television have developed the first solution for frame-accurate IPTV ad replacement – a significant step towards achieving true targeted addressable advertising."

Roger Bolton, EVP of compression systems at TANDBERG Television said: "The opportunity to deliver targeted advertising is highly attractive to our customers as it opens up new revenue generating channels to drive the next generation of personalised television. Packet Vision has earned high regard in the industry for its innovative advertising solutions and we are pleased to be working with the Packet Vision team to deliver the technologies that enable our customers to introduce new advertising models today."

Video on demand

Probably one of the most attractive aspects of IPTV to a consumer would be the option of Video on Demand (VOD). When a consumer wishes to watch a film or specific TV programme, instead of reaching for a DVD, they can simply call the relevant item up on their IPTV system and watch it. VOD is the storage of video and other multimedia content so that it may be accessed at any time from a TV or PC. It is obviously used widely for entertainment purposes but is also finding niche markets in areas such as telemedicine and e-learning.

Once the user has selected their choice of film or programme, they have complete control over the content. They can fast-forward, rewind, pause or stop and also adjust the size of the picture. VoD is easily augmented to support multiple users and does not require any additional cabling. It also boasts a high standard of picture quality and security.

SeaChange has unveiled entry-level solutions to put small cable and telco/IPTV system operators on a fast track toward capturing on-demand and multichannel television advertising revenues. The digital television leader's VOD Now™ and Spot Now™ solutions economically deliver SeaChange's trademark reliability, scalability and extensibility for operators with less than 20,000 subscribers and startup advertising operations.

"We've ensured that operators of any size can move very quickly to break churn, attract new subscribers and establish revenue streams with VOD and advertising," said Yvette Kanouff, CSO, SeaChange. "Our entry-level solutions enable customers at this end of the market to make a modest investment to kick off, but leave plenty of room for growth in content, channels and advanced services. They like that they're getting their own edition of the most powerful VOD and advertising brands like Axiom software, MediaCluster servers and Spot insertion, backed by the best professional service in the industry."



Photo courtesy of Philips.

VOD Now: a new standard in on-demand performance

SeaChange's Axiom On Demand open content delivery platform – the intelligence behind billions of on-demand streams delivered globally – is at the heart of VOD Now. SeaChange Axiom software fully automates the intensive behind-the-scenes VOD processes from content propagation, to subscriber and stream management, to performance reporting and monitoring. Beyond VOD, SeaChange Axiom software also provides the foundation for adding SeaChange's growing range of content navigation, gaming, DVD and ad targeting applications.

Another VOD Now advantage is its fault-resilient storage and streaming with SeaChange's core MediaCluster video server technology. MediaCluster uses off-the-shelf disks and memory to provide VOD Now customers with as few as 50 and as many as 1,400 simultaneous MPEG-2 or MPEG-4/H.264 standard-definition and high-definition streams. SeaChange conserves storage with its patented single-copy approach, so only one copy of any video asset is required to meet any number of concurrent stream requests. VOD Now is available in configurations with up to 5,000 hours of storage. Motorola, Scientific-Atlanta and a wide range of IP set top boxes are fully supported.

One-stop-shop for on-demand television

SeaChange has also partnered with TVN Entertainment's VOD Complete service for small market systems. VOD Complete offers a fully customisable and scalable solution that features an optimised programming selection from TVN's 8,000 hours of standard-definition and HD programming, marketing and reporting services, as well as integration with VOD solutions providers like SeaChange.

Spot Now: high performance multichannel advertising

SeaChange Spot systems deliver billions of dollars of local multichannel ad revenue for cable and telco operators around the

world. The new Spot Now is a comprehensive, automated solution for reliable advertising insertion at the lowest operational expense and highest quality. Using spots loaded through an encoding station and schedules provided from an ad traffic and billing system, Spot Now handles every task necessary for fulfilment without operator intervention. Designed and packaged for any operator wanting to launch linear ad-supported content, Spot Now supports up to 48 insertable standard definition channels, or 16 high-definition channels. Operators can purchase Spot Now in 12 channel increments, enabling them to grow economically as their ad-supported business grows. For operators who grow beyond the 48 channel capacity of Spot Now, SeaChange has a program to migrate customers to a traditional SeaChange Spot linear ad insertion system.

Quality of experience

Quality of Experience or QoE is the key to maintaining subscribers for any IPTV service provider. If the quality is not high or if it is not consistent then customers will vote with their feet. It's as simple as that. The ITU recently held a meeting focused on standards for IPTV QoE where it approved two new standards. The first defines oE requirements from an end-user perspective, agnostic to network deployment architectures and transport protocols, with QoE requirements for video, audio, text, graphics, control functions and metadata (data about data).

The second recommendation focuses on performance monitoring for IPTV, with the aim of providing higher QoE and QoS (Quality of Service) to customers by identifying, localising and quantifying service and network issues using hardware and software solutions.

Measurement company, Agilent Technologies has worked on a new solution that will enable IPTV service providers to monitor, test and troubleshoot any problems that are identified by developing a multiplay test.

To help develop and deploy multiplay infrastructures faster and



more reliably, Agilent has introduced new solutions that simplify multiplay test.

Successful multiplay infrastructure testing must be able to:

- Confirm delivery of voice, video and data services to residential customers over a single access point;
- Handle an increasingly complex infrastructure;
- Ensure that subscriber quality of experience expectations can be met;
- Validate services under real-world conditions; and
- Precisely locate bottlenecks and troubleshoot configuration issues.

Agilent's new multiplay test solutions address these challenges

Agilent N2X Multiservices Test Solution is the industry's first multiplay test solution to combine line-rate, hardware-based performance statistics for video, voice and data services on the same test port. The Agilent N2X provides scalable hardware-based triple play traffic generation and analysis based on user-defined subscriber profiles. Each test port displays video media quality and IPTV channel-zapping metrics along with voice Mean Opinion Score and data forwarding performance measurements. This unique capability allows network equipment manufacturers and service providers to identify how the number and behaviour of subscribers and traffic mix impacts overall Quality of Experience, and to validate the triple play readiness of network infrastructure equipment prior to deployment.

Agilent Triple Play Analyser is a complete in-service monitoring, analysis and troubleshooting tool for voice, data and video applications. It is the world's first IPTV analysis and monitoring solution that

supports and analyses Microsoft's proprietary Microsoft Mediaroom command and control protocols. This solution empowers service providers and network equipment manufacturers to accelerate the development and deployment of Mediaroom-based IPTV networks and enables them to ensure the highest Quality of Service.

Agilent's Network Tester solution is able to generate realistic multiprotocol traffic mixes at high scale, allowing users to subject equipment to conditions of load and stress in order to simulate broadband networks. Agilent WireScope Pro is an all-in-one tool that serves network administrators and solution integrators from cabling installation to service turn-up and troubleshooting. It enables network administrators and network solution integrators to validate and pre-qualify the quality of VoIP services, and to stress test Ethernet connections. Together, Agilent's new test products offer true end-to-end performance monitoring and testing of fixed, mobile and converged networks, making it simpler to handle complex tasks more easily, rapidly and successfully.

Encoding, encoding, encoding

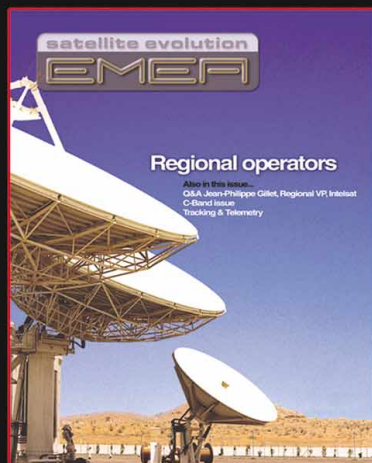
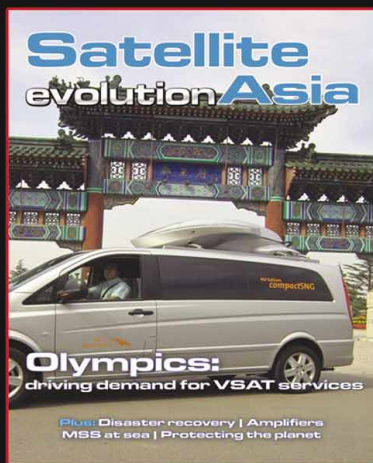
MPEG-4 AVC (Advanced Video Coding) is the standard for content delivery on IPTV platforms. It provides good video quality at substantially lower bit rates than previous standards such as MPEG-2. In these days of HDTV and lack of bandwidth, MPEG-4 AVC is ensuring that the delivery of all types of content is made possible in a very competitive market.

Microsoft chooses Harris

Harris Corporation has announced that the Harris® NetVX™ range of H.264/MPEG-4 standard-definition (SD) video networking encod-

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ers has successfully completed encoder conformance testing for use with the award-winning Microsoft® Mediaroom IPTV and multimedia software platform. The test was administered by Microsoft Corporation as part of the Microsoft Mediaroom Interoperability and Qualification Lab program, which is intended to enable the ongoing interoperability and compliance of encoders used in Microsoft Mediaroom deployments.

NetVX™ SD video encoding lets service providers offer a high quality and cost-effective platform for their IPTV deployments. It also allows IPTV service providers using this encoding at the head-end to seamlessly communicate with the set-top receiving device for the delivery of IPTV multimedia services to the consumer.

"Harris Corporation's investment in interoperability testing extends across the entire broadcast community and into the growing IPTV space, enabling our products and technologies to be reliable and efficient for virtually any application requiring the delivery of high-quality video," said Tim Thorsteinson, President of Harris Broadcast Communications. "We are pleased to announce compliance of our NetVX encoding products for Microsoft Mediaroom and Microsoft recognition of our commitment to provide interoperable solutions for the IPTV market."

"The Harris® NetVX SD video encoding solution gives our service provider customers another way to help reduce costs and improve the overall performance of their Microsoft Mediaroom-based TV services," said Joe Seidel, Director of Global Partner Ecosystems for Microsoft Mediaroom. "We are looking forward to our ongoing collaboration with Harris to help service providers offer their customers the very best in connected TV services."

The Microsoft Mediaroom platform, which reached one million subscriber homes in the first quarter of 2008, is now powering connected TV services on more than two million TV sets worldwide — it took Mediaroom 18 months to reach its first million TVs and only five months, more than three times faster, to reach its second million TVs.

NetVX™ video networking encoders are among the wide range of Harris solutions that optimise the networking and infrastructure workflows of today's broadcast and IPTV operations.

HDTV and IPTV

Though it has still not managed to break into the mass market, HDTV is still considered to be a very important factor in the future viewing experience. For the viewing of sport and wildlife programmes HDTV really does come into its own but now IPTV providers see HD programming as the new must-have and are seeking to provide within their service offering as it is a great crowd-puller. IPTV could be HDTV's big break so telcos consider it to be vitally important that HD is offered as a matter of course. Delivery of HDTV is more bandwidth intensive and lack of bandwidth is an issue that has to be dealt with before HD over IPTV can be widely offered.

Avail Media, the customer service-focused aggregator and provider of both linear and video on demand IPTV content, has unveiled its ever-growing, all-MPEG-4 HD channel lineup. MPEG-4 encoding provides the highest-quality picture with reduced bandwidth costs. Avail Media's HD offering is designed to provide video service providers with an easy and profitable path to delivering world-class IPTV services.

"Avail Media's robust MPEG-4 HD distribution is the obvious next step for many cable television operators wanting to regain and reallocate bandwidth for the multiple services they now offer," according to Bill Bauer, CEO of Beyond Broadband Technology, which uses the Avail Media service as part of its end-to-end solution for cable operators. "It's unique in providing next-generation MPEG-4 delivery."

"Avail Media provides an amazing suite of HD channels available in MPEG-4 format," said John Egan, Chairman, Evolution Broadband. "To provide our customers with a program offering allowing them to compete successfully requires both quality content

and infrastructure efficiencies. Working with Avail Media gives operators the ability to take a leadership role in both quantity and quality of HD programming, while minimising bandwidth costs."

Avail HD is designed to deliver an attractive channel line-up while maximising infrastructure investments. The company currently offers 56 HD channels.

Changing the TV consumer's behaviour

The idea of IPTV and VOD, Pay-Per-View (PPV) and triple play are all very attractive to the consumer but they also demand that the consumer changes their viewing behaviour. A study carried out by Gartner in the last quarter of 2007 illustrated that encouraging customers to view VOD and PPV content is not an easy task for IPTV service providers. According to this particular study, less than a quarter of respondents had purchased VOD or PPV content in the past year.

So it seems that there is a long way to go in terms of changing the way in which users consume their television content. Since television became such a main feature in people's homes, viewers have been told what they have to watch — now they are being told that they can watch whatever they want, whenever they want. Although this appears to be heavenly for a TV fan, there are still changes that will have to be made to their 'TV behaviour'.

Converged entertainment in the home will certainly be the way of the future. To have all of these services in one place, on one bill is the height of convenience for the modern family. The viewer is given complete control over their entire viewing experience down to which camera angle they would like to watch a football match from to being able to accept phone calls through their television. The question is, are the people ready? Do they want their personal data to be analysed so that they can be 'targeted' by the advertisements that should suit them? Is this really what they want or is it just a revenue-making exercise for struggling telcos? As the IPTV saga plays out, and the initial challenges are overcome, we shall find out. One thing is for sure and that is that TV as we know it is undergoing a revolution. With the move from analogue to digital, who knows where it will take us? ■

