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PAY TV AS THE 'COMPLETE ENTERTAINER'

- RE-APPRAISING 'DIGITAL NATIVE' DESIRES
- PAY TV ON EVERY SCREEN
- PVR AND 'HOME VS CLOUD'
- ENSURING THE BEST QoE

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VIDEONET ISSUE 19

PAY TV AS THE 'COMPLETE ENTERTAINER'
INTRODUCTION

After five years of unprecedented threats to Pay TV, it turns out that people do still appreciate what it offers, including linear TV, PVR and the potential for everything in one place. The 'digital natives' might be more conservative than predicted. So after disruption and 'survival' comes the re-appraisal.

Pay TV responded to customer demands with more on-demand, better UIs and multiscreen TV. Like the man who fixed the hole in his ceiling to find everyone admiring his chandelier again, platform operators have turned attention back to their strengths.

In this report we consider the future shape of Pay TV services, from UHD to tablet TV. We look at how operators can deliver the best experiences on every screen in their home, which means taking a look at the 'Cloud versus Gateway' debate and how you deliver a great QoE. We review why Pay TV operators are best placed to be the 'Complete Entertainer'. ●

John Moulding, Editor, Videonet

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'COMPLETE ENTERTAINER'

● RE-APPRAISING 'DIGITAL NATIVE' DESIRES
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Videonet explores the business and technology challenges faced by the TV industry as it introduces more high-definition and on-demand content and evolves towards a multiplatform and connected TV experience.

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● THE COMPLETE ENTERTAINER

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PAY TV AS THE 'COMPLETE ENTERTAINER'

Why Pay TV providers are best placed to be the 'Complete Entertainer' in customer homes, fighting off the threat of OTT by giving consumers more of what they want through one service but across many screens. Multiscreen and multiroom are increasingly important, including for PVR, but everything still revolves around linear TV.

By JOHN MOULDING

The Pay TV industry has survived five years of unprecedented threat and disruption and is still standing. One of the reasons is the speed with which platform operators introduced their own multiscreen offers; another is the expansion of on-demand to include catch-up TV. But it also turns out that linear TV, far from dying, remains central to the home entertainment experience, meaning the network investments that made it possible to deliver high quality, multichannel HD have not been wasted after all!

Even if linear programming is not the purpose of the TV journey it is often the starting point. Sometimes it leads to PVR, sometimes to catch-up and increasingly this could be on any screen. There is a growing view that nobody is going to displace platform operators from their position as the primary aggregator for entertainment without a strong linear proposition.

Meanwhile, the in-home PVR is being publicly recognized for what it is: a compelling solution for time-shifting, thanks to live pause, instant playback, replay rights on all programmes, ad skipping and guaranteed HD quality no matter how good or bad your broadband connection is. Network recording services will tick many of these boxes in time but for now, PVR remains an important Pay TV advantage.

Most commentators have decided that YouTube and even the many online subscription VOD stores like LOVEFiLM are complementary to Pay TV and do not substitute it. Cord shaving is still an issue but most analysts have stopped worrying about serious cord cutting. Pay TV operators still have the content that most of their customers want and, having got to grips with

Image courtesy of Ericsson

convergence, they have more ways than ever to exploit their content rights.

More than anything, the last five years demonstrates the value of diversity, whether you are talking about content, customer profile or the services on offer. Pay TV operators serve homes as well as individuals. While they were developing their multiscreen and on-demand offers the money kept flowing because Dad wanted his sport and his daughter was desperate for Disney Channel, even if his teenage son was spending most of his time watching YouTube on a laptop.

Where there is weak OTT competition, Pay TV operators are cementing their customer relationship on the living room TV first with next-generation platforms that provide smart User Interfaces and better content discovery. Where there are OTT alternatives on portable devices the imperative is to make the Pay TV bouquet available on as many screens as possible, including on more televisions.

Once Pay TV operators provide multiscreen and, increasingly, multiroom TV services, they begin a new chapter in their history. Having diminished the threat of disintermediation, they can start to think about the opportunity presented to them thanks to their uniquely diverse services, available everywhere. They have the chance to be the 'Complete Entertainer' at the heart of an increasingly connected home.

● RE-APPRAISING 'DIGITAL NATIVE' DESIRES

Drawing on its global insights, Ericsson ConsumerLab revealed in August 2012 that 41% of consumers are willing to pay for HD quality and image quality becomes more important as screen sizes grow. 60% of people watch on-demand content every week and 67% use tablets, smartphones or laptops in their everyday TV viewing, either for video consumption or to enable a social media experience.

It also found that scheduled broadcast TV is still the dominant form of content consumption, despite a slight decrease over recent years. It added: "Consumers have access to a multitude of different on-demand services as well as linear TV

Daniel Simmons, IHS ▲

SCHEDULED BROADCAST TV IS STILL THE DOMINANT FORM OF CONTENT CONSUMPTION, DESPITE A SLIGHT DECREASE OVER RECENT YEARS.

channels. These sources offer a good service, yet consumers are struggling to merge them together. People are eagerly looking for an aggregated service which can bring all content into one experience."

The researchers concluded that there is an opportunity for someone to take this new role. They could be an on-demand service provider, a social networking brand or a traditional TV provider. "Whoever takes this mantle will need to expand their business to support all ways that consumers watch TV," the report says.

Many of the predictions about the likely entertainment viewing behaviour of young adults who grew up with the Internet are now being challenged. The recent 'Screen Life: TV in demand' study from Thinkbox, the marketing body for UK commercial TV, contained a significant insight. "When given a choice between having the option to download a new series they liked in one go or waiting to watch it week by week on live TV, 73% of 18-24s in the research sample said they prefer to watch it week by week. This was more than the older audience of 35-55s (57%)."

The DIRECTV whole-home solution ▲

Steve Christian, Verimatrix ▲

"GIVEN A CHOICE BETWEEN HAVING THE OPTION TO DOWNLOAD A NEW SERIES IN ONE GO OR WAITING TO WATCH IT WEEK BY WEEK, 73% SAID THEY PREFER TO WATCH IT WEEK BY WEEK."

Thinkbox used a technology-centric, VOD-centric UK audience for the study and the conclusion was that young people are happy to wait to watch TV so they can enjoy a shared experience. The organization concluded that man cannot live by VOD alone. In fact: "Live TV is our daily food whereas VOD is more like a box of chocolates."

Earlier this year, Niclas Ekdahl, CEO at Viaplay, the online multiscreen service from Modern Times Group (owners of free and pay channels and the Viasat DTH platform) countered the idea that younger consumers will be happy to search for content from multiple locations and effectively become their own aggregators. "Our research suggests that our future customers do not want a user experience based on multiple apps downloads and multiple credit card relationships," he said. "Having most of what they want in one place will still be a differentiator for a Pay TV platform."

As part of its FutureMedia 2013 Programme, the UK media consultancy Decipher found that in BSkyB satellite homes where consumers have the same on-demand 'player' services available in a Smart TV and on their connected set-top box, 73% of them preferred to access it via the STB. The two biggest reasons were that it is quicker to access (47%) and the catch-up content is in the main room (45%).

"The power of inertia cannot be overstated," the company says. "It is simply easier to switch from live TV to the on-demand library on a set-top box than it is to switch from live TV to the Smart TV portal, load a broadcaster app and browse for a show." Decipher concludes that the 'ace in the hole' for Pay TV operators in the battle for our attention is that it is easier to move around within the environment they create than move in and out of it.

Pay TV operators still have to give us the content we want, where we want it…and at the right price. The 2012 Ericsson ConsumerLab report noted that, "The biggest barriers to consuming on-demand are cost, or not finding the content that the user is looking for, and not being able to watch the content on the household's main TV screen."

Kevin Nolan, Vice President at the User Experience Practice at Strategy Analytics says the viewing of content from OTT sources within the home is typically driven by two main motivations. Either, 'there is nothing on regular TV' or different family members want to watch different things.

"In the first scenario, viewers often leave the operator UI because, while they know that premium Pay Per View content is available from their provider, they perceive ▶▶

T-We, Canal Digital ▲

DIVERSITY IS A STRENGTH AT CANAL DIGITAL

Canal Digital is currently piloting its new cable TV platform for Norway, which will launch in the autumn. Called T-WE, it will provide a one week catch-up service across 30 channels and a larger archive service, plus universal search.

These new features will be available on the current Canal Digital HD PVR (provided by ADB) but the operator is also deploying a new HD DVR in the autumn (also ADB) that will also serve as a multimedia gateway for distributing content to multiple screens around the home.

A Canal Digital spokeswoman says the new platform will provide live TV, SVOD, VOD and OTT in one place. She says this is an advantage when the solution is easy to use. "Our customer base is diverse, with 500,000 households. For the older demographic ease-of-use is highly important. The younger demographic is more demanding in terms of Quality of Service," she reveals.

The company recognizes that diversity is not just about the services available, but how they are packaged and priced. "We have been making major changes to make sure our customers have more freedom to tailor their packages," says the spokeswoman. "For instance, we launched a new basic package for TV last year where customers get the 30 largest TV channels but can then choose 15 channels individually from a total of 70. We believe we have to provide a more diverse offering for our customers in the future."

Roland Mestric, Alcatel-Lucent ▲

THE 'COMPLETE ENTERTAINER' CAN DELIVER A GROWING RANGE OF ON-DEMAND CONTENT WHILE REMAINING THE GUARDIAN OF LINEAR TV AND PVR.

other content sources like Netflix to be better value for money. If operators were able to convince viewers that their on-demand offerings were price competitive with alternative providers then we believe that the convenience of being able to access all services from a single UI would be very appealing."

Strategy Analytics has found that when people opt out of watching what the rest of the family has chosen on the large screen, and go to the tablet or PC, there is much more interest in trying out new content that they would not normally watch at home, and new sources of the content. "As such, the threat from alternative sources is definitely more acute in the personal device domain," Nolan cautions.

It is hardly surprising then that the next-generation platforms that Pay TV operators are deploying are focused on improving the living room TV experience as much as extending the Pay TV service to other screens. On the television the focus is on a much-improved User Interface, better content discovery and the provision of complementary broadband content, from YouTube and Spotify to broadcaster catch-up services.

The term, 'Complete Entertainer' was aired at the Connected TV Summit in May as a way to describe the future role of platform operators who, thanks to hybrid broadcast/broadband delivery, can deliver a growing range of on-demand content while remaining the guardians of linear TV and PVR. Ian Mecklenburgh, Director Consumer Platforms at the UK cable operator

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"YOUNG PEOPLE ARE VERY CLEAR THAT THEY ARE HAPPY TO GET THEIR CONTENT FROM ONE PLACE IF YOU MAKE IT EASY FOR THEM."

Virgin Media said the 'Complete Entertainer' is a good vision, with big Hollywood blockbusters at one end of the Pay TV scale and cats on skateboards, courtesy of YouTube, at the other. But as well as providing depth and diversity, everything must be easy to use. At Virgin Media this is enabled on the TiVo platform.

Mecklenburgh says the platform operator role is not just about aggregating content but surfacing it. "We will surface the best and most relevant content and make it easy for customers to get hold of it," he notes. "We want the customer to have our remote control in their hand and our service on the TV."

Being a Complete Entertainer invariably means giving access to some third-party OTT content via the set-top box. This does not have to be a defensive play. In Spain, the cable operator ONO is leading the

way in making online video available on the television set in a convenient setting, with YouTube and broadcaster catch-up apps including from RTVE and Antena 3, and even some regional broadcasters like TV3.

ONO also provides 130 linear channels, 25+ channels of very high bitrate HDTV and its own managed VOD offer called Videoclub. The Videoclub content surfaces in search results already and in the next software upgrade to its TiVo platform some of the OTT content will be integrated into the search function.

German Sanz, TV Product Development Manager at ONO, has no doubt that making everything available in one place is one of the reasons behind the company's high customer satisfaction levels. ONO is recording churn rates that are several times lower for customers of its next-generation platform compared to its standard proposition. Sanz says ONO is definitely in a stronger position than it was 2-3 years ago, which was the ambition when investing in

the new technology. He adds: "Young people are very clear that they are happy to get their content from one place if you make it easy for them."

● PAY TV ON EVERY SCREEN

ONO has strengthened its relationship with customers thanks to a focus on the living room TV; the company has yet to deploy multiscreen TV. But in several other markets multiscreen is now a must-have for Pay TV operators. Parks Associates figures show that 60% of TV viewing on the mobile phone and 70% of TV viewing on tablets is performed within the user's home, which is why multiscreen is more a part of the 'whole-home' strategy than the TV-on-the-go strategy.

Ben Schwarz, CEO at CTOi Consulting, a consulting firm in the TV and telecoms sector, says content is still king so if you want to extend your reach to all screens the biggest challenge is knowing what content you need, then securing the rights before it is already out of fashion. So the role of curator remains key.

If you get this right, is there a ▶▶

Ian Mecklenburgh, Virgin Media ▲

chance for Pay TV operators to actually increase the time we spend looking at their aggregated content, at the expense of rival broadband services? "I'd even say that platform operators are starting the race against CE vendors with a clear head start because they own the billing relationship," Schwarz answers.

Javier Lucendo de Gregorio, DTH and End Devices Manager at Telefónica Digital, certainly expects more time in front of customers. "The deployment of multiscreen services provides more accessibility and convenience to customers. The expectation is, of course, to increase the viewing time, but also the attention that the user pays to the content, since multiple screens allow a much more personal consumption," he observes.

The Polish DTH platform NC+, which resulted from the merger of 'n' and Cyfra Plus, launched its

NC+Go multiscreen offer earlier this year and declares itself very satisfied with the early results. "What is crucial is that this product is targeted at the best client group, who are usually young and who are very actively looking for content," a spokesman says.

In an example of where things are heading in multiscreen TV, all the linear channels that are routed through the NC+ PVR (the main home gateway) are made available across the home network to view on iOS devices. For technical reasons (cited as the limitations of Android devices) only MPEG-2 broadcast channels can be redistributed to the Android handhelds today.

Redistribution of broadcast channels to multiscreen devices is the next big step for multiscreen services. The main reason is the popularity of tablets as a consumption device. The NC+ spokesman says, "We believe the tablet can be used as an extra television set for individual use. Such a service [making linear channels available on them] differentiates us from pure OTT offerings."

Multiroom viewing is where you make content available on every television, but a growing number of Pay TV operators are reporting that tablets are now being treated like secondary televisions. The NC+ spokesman confirms that the company now views the tablet as an alternative to multiroom.

NC+ is well advanced in its whole-home strategy. It provides a standard and premium multiroom DVR service, with the latter using

Joerg Eggink, ACCESS ▲

a master PVR to share its content with multiple 'zapper' set-top box clients. All the DVR/STB devices on the home network are connected and their tuners are treated as a common resource, including the DTT tuner on a zapper box. According to the NC+ spokesman, "The sales figures show that the multiroom solution is very important."

● THE POWER OF LINEAR TV

John Barrett, Director of Consumer Analytics at Parks Associates does not buy into the much publicized theory that on-demand viewing will take over from linear. "Our studies show that people like linear channels and want linear channels." He points to service provider networks, built to distribute linear channels, as a key advantage moving forwards.

People love HDTV and at ONO it is viewed as an important service differentiator. The company is broadcasting some of its HD channels in an impressive 20Mbps in H.264.

"THE DEPLOYMENT OF MULTISCREEN PROVIDES MORE CONVENIENCE TO CUSTOMERS. THE EXPECTATION IS TO INCREASE THE VIEWING TIME"

4K REPRESENTS A MORE NATURAL PROGRESSION FOR THE INDUSTRY THAN 3D IN THE HOME

In some mature HD markets thoughts are turning to what comes next. 3DTV in its current iteration, with glasses, has failed to ignite consumers' imagination for home viewing, so the smart money is on Ultra HD (in particular 4K video) as the next big thing. The CE manufacturers are certainly wishing it so.

Simon Bryant, Head of Consumer Electronics at Futuresource Consulting, believes 4K represents a more natural progression for the industry than 3D in the home, but one that brings its own challenges. These start with the intricacies of producing 4K panels at high yield rates and the complexities of delivering the bandwidth-hungry content.

Edward Border, Analyst, TV Technology at IHS Screen Digest noted the arrival in July of a 39-inch, UHD LED television in the U.S. for $699. He said the launch of the model, from Seiki Digital, is significant in several aspects. "It represents the first sub 50-inch UHD launch in the US; it is the first sub-$1000 UHD launch, marking the technology's entry at a lower price range; and it demonstrates the first step in competitive pricing in the UHD market."

There is a debate about whether consumers will notice the benefits of 4K on screens smaller than 60 inches, and doubts about whether UHD has a large enough addressable market if they cannot. Regardless, Vassilis Seferidis, Director of European Business Development at Samsung is working on the basis of a viable starter mass-market for Ultra

HD in 2017 in Europe.

Futuresource Consulting says 4K has a 2-3 year incubation period ahead and is on track to become a significant technology segment. The company forecasts that global 4K TV shipments will grow to 22 million units in 2017.

UHD has been trialled by broadcasters and platform operators, including Sky Deutschland, the German DTH operator. In June the French Tennis Federation and France Télévisions cooperated to broadcast live multi-camera UHD from the French Open at Roland-Garros.

The big question is whether UHD is the next 3DTV or the next

ACCESS is enabling DVR sharing with its NetFront Living Connect DLNA technology ▲

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FUTURESOURCE CONSULTING SAYS 4K HAS A 2-3 YEAR INCUBATION PERIOD AHEAD AND IS ON TRACK TO BECOME A SIGNIFICANT TECHNOLOGY SEGMENT

HDTV. After much fanfare, 3D has had to endure some body blows recently as the BBC announced it was putting 3D on hold and ESPN decided to discontinue ESPN 3D at the end of the year.

Paul Gagnon, Director, North American TV Research for Display-Search, cites a long list of reasons for why 3D has shown no meaningful growth in North America. The most important is cost; 3D as a feature still carries a big premium. "The average 3D premium for a 55 inch TV in North America was more than 40% in Q1 2013, almost exactly the same as it was in Q1 2011," he observes.

Dr Giles Wilson, Head of TV Compression Business at Ericsson, a company whose encoders paved the way for standard-definition and then HD television, and which is now working on UHD with the HEVC compression standard, believes UHD will be universally enjoyed in time, making it the next HDTV rather than 3DTV. "The quality of the experience makes this a significant step forward for the consumer. It is a very immersive experience," he says.

His colleague, Carl Furgusson, Head of Business Development, TV Compression at Ericsson, predicts that first generation real-time HEVC encoders will deliver UHD at 15-36Mbps. By the second generation bandwidth demands will be down to 10-24Mbps for live broadcast content. On-demand content will need less because you can take longer to encode it (non real-time encoding). We need a new generation

of set-top boxes that can decode HEVC but these are coming. Furgusson reckons the complete ecosystem, from camera lens to television screen, will be ready to support meaningful deployments of UHD services during 2015.

Ben Schwarz at CTOi Consulting is another commentator who thinks UHD is the real thing. "3D in

Christy Thomas, Alcatel-Lucent ▲

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the living room was always a gimmick whereas UHD is to HD what HD was to SD," he contends.

However it evolves, Pay TV operators need linear TV at the centre of their offers. Lucendo de Gregorio at Telefónica Digital states: "The TV experience usually starts in a lean-back situation and then the customer can move to lean-forward if there is something that is catching their eye, stepping up to enriched experiences, companion devices, catch-up and recommendations, for example. That feeling of something happening, that you can look at, is only provided by linear TV."

He says this applies to multiscreen as well. "When customers want to take their TV experience to other screens it is not in the format of canned content; they want to replicate the linear TV experience by having access to linear content."

Even when people are not watching according to the schedules, their viewing can be driven by the multichannel offer. Sanz at ONO points to how linear TV is responsible for the most popular time-shifted viewing because people are recording the channels on their PVR. "Customers do not want to be constrained by

the linear schedules so they want the content there, but also the ability to record it. When we try to push the same content to them from VOD we do not get the same results, so linear is something you need to promote."

● PVR AND 'HOME VS CLOUD'

In a white paper he authored that partly looks at Pay TV versus Smart TV, Hamish McPharlin, Director at Decipher Media Research, called the absence of PVR on Smart TVs a big and damaging omission. "Our FutureMedia research shows that, after live broadcast, the most compelling features that a TV device can offer are live pause and record." As Decipher has noted, these functions are all closely related to, and reliant upon, broadcast TV.

Lucendo de Gregorio says, "It is crystal clear by now that PVR increases customer satisfaction and stickiness. It is one of the elements that add value to Pay TV."

Offering her personal views, Christine Mitchell, Head of Video Content, Consumer Home, Access

Bruce McClelland, ARRIS ▲

& Video at Vodafone says PVR is a must-have function in any market where the service already exists. And however it is made available, whether using home or network recording, the functionality must be closely integrated with the rest of the service so consumers can find everything in one place. This includes content search.

As broadband connections improve, a key industry debate is whether this crucial functionality can be supported from the cloud, in the form of network PVR. John Civiletto, Executive Director of Technology Architecture at Cox Communications, the U.S. cable operator, told Connected TV Summit in May that the economics ▸▸

TV IS RESPONSIBLE FOR THE MOST POPULAR TIME-SHIFTED VIEWING BECAUSE PEOPLE ARE RECORDING THE CHANNELS ON THEIR PVR

NETWORK   DIRECTV | HD
DIRECTV   DOLBY DIGITAL   RVu   ENERGY STAR

▲ **DIRECTV's DVR server**

of distribution will determine where video is stored and in what quantities.

"There are some instances where it is more economic to have storage in the customer premise. In other cases, where the cost of connectivity is lower, storage in the cloud becomes the more attractive model. There will be pull and push over time in this debate. The tipping point is based on the cost of connectivity more than the cost of storage."

Charles Cerino, the President of MoCA and former VP at Comcast, points out that as a consumer, local storage gives you guaranteed permanent access. "Cloud storage has an expiration date, which might be two weeks from now. At that point the content is no longer available because the content owner has pulled the rights on that."
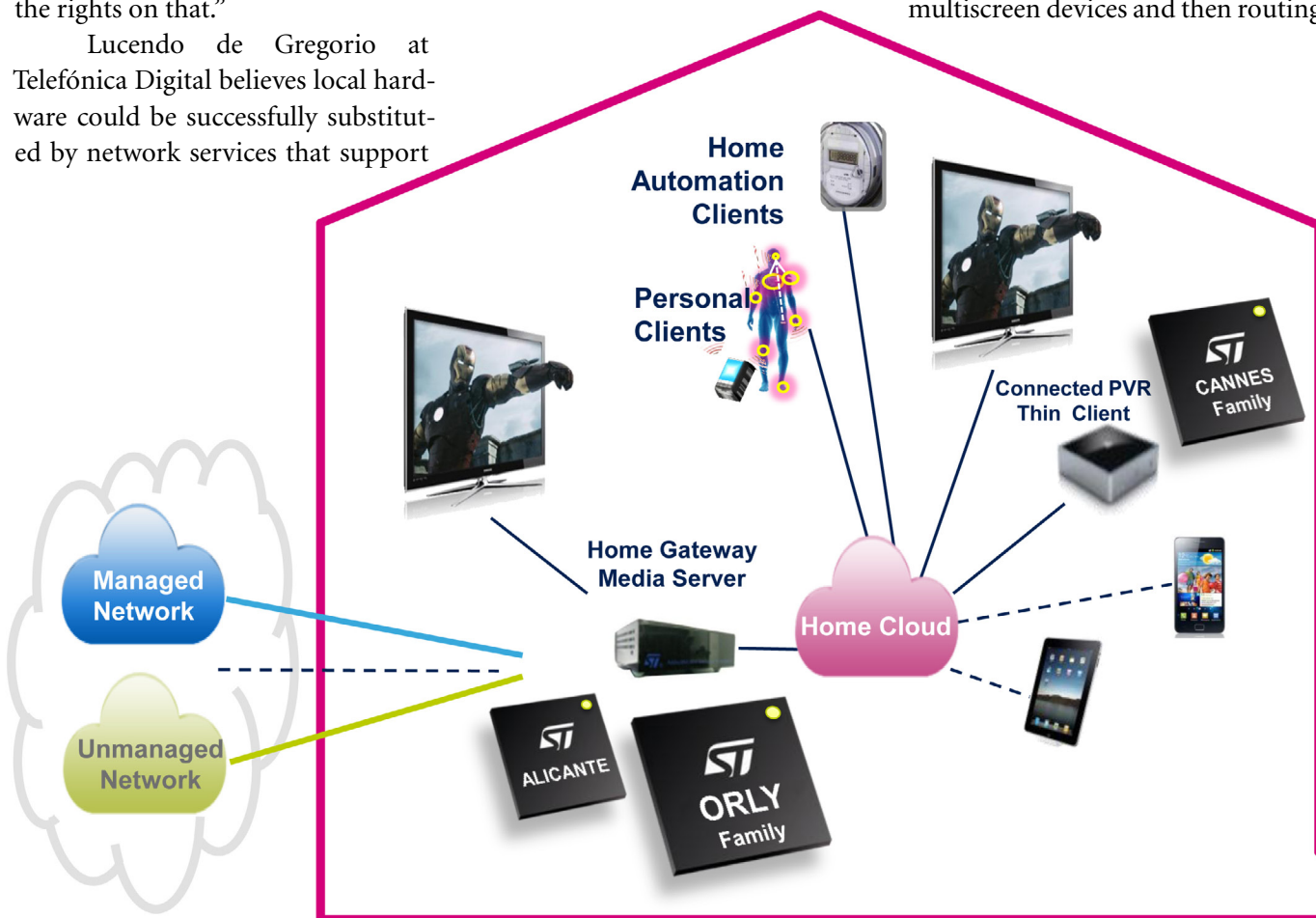
Lucendo de Gregorio at Telefónica Digital believes local hardware could be successfully substituted by network services that support

catch-up, archives and some user-selected recordings with persistent access rights. "But, of course, this is not possible with all access technologies and has some cost-effectiveness issues." The answer, therefore, is a hybrid of cloud and home storage.

The way operators provide access to PVR content is part of a much wider technology debate about the role of the cloud and the customer premise gateway. Pay TV providers also need to decide the best way to deliver their TV Everywhere multiscreen offers to laptops, tablets and smartphones around the home. Meanwhile there is a debate about whether you can remove Pay TV operator STBs from the home and instead stream video to apps in Smart TVs, which is the ultimate CPE versus cloud debate.

When it comes to multiscreen viewing, one option is that multiscreen devices make direct requests to an Internet server and are fed adaptive bit rate (ABR) video over broadband that is passed via the home Wi-Fi router, without any intervention by the in-home equipment. If you wanted to get rid of the primary set-top box (or DVR) in a home then this is how all television could be delivered, including to TV sets. The decoding and content security requirements would then be taken care of by an app inside a Smart TV or game console.

The other option for multiscreen devices is to take the broadcast TV feeds into the STB/DVR, which then acts as a processing hub and gateway, repurposing the content into forms that are acceptable to the multiscreen devices and then routing

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Personal Clients

Connected PVR Thin Client

CANNES Family

Home Gateway Media Server

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Unmanaged Network

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▲ **Home networking thanks to STMicroelectronics**

▲ **Multiscreen in the home boosts loyalty**

CUBOVISION FROM TELECOM ITALIA

The multiscreen on-demand service made available by Telecom Italia is called Cubovision and is available on Smart TVs, connected Blu-ray players, PCs, games consoles, smartphones and tablets. It is also available through a dedicated streaming device in an offer called 'Cubovision-ready'. For EUR 9.99 per month consumers can watch 30 on-demand 'channels' via the 'STB' plus another six devices. This fee includes free customer care.

them around the home network as IP video. If the primary operator STB is removed in favour of Smart TV apps then there is no equivalent to this gateway function and all content going around the customer premise begins as a multiscreen feed, in effect.

Key issues that shape this debate are the reliability of delivery, the availability of content for the different distribution scenarios, and the extent to which you can manage and guarantee the customer experience. The storage debate has little relevance when feeding tablets, smartphones or laptops but clearly network PVR becomes a necessity if you rely on Smart TVs as the only customer premise equipment.

In June Guilhem Poussot, Head of Connected Devices at Vodafone, noted the cost considerations for shipping gateways versus upgrading the cloud infrastructure. He sees the attractions of the cloud but thinks a gateway is an important means by which Pay TV operators

can manage the experience at home. In conclusion, he says, "I think the more cloud we have, the more gateway we will have. This is not gateway versus cloud."

Paul Bristow, VP Strategy, Consumer Experience and Middleware at ADB, bemoans the 'cloud pushers' who assume there is infinite reliable bandwidth to the home. He dismisses the concept of Smart TV (or other connected TV) apps as a replacement for the primary STB or DVR on the grounds that it would greatly diminish the customer experience. Unreliable video streams, lack of insight into what happens in the home, and a cumbersome navigation paradigm, where consumers have to go in and out of apps to reach content, are among the reasons given.

His company is firmly in favour of the gateway redistribution model when it comes to feeding multiple televisions and multiscreen devices. When it comes to PVR, Bristow says one benefit of taking content from the local hard drive is that you can skirt around any cloud rights issues. It is also easier to guarantee the QoE. "You have a much better connection to the hard drive in your home than to the cloud," he argues.

ARRIS, which now includes the former Motorola Home business, is preparing for a hybrid world where we have powerful gateway devices in the home and cheaper thin client secondary STBs but then a decade-long migration of secondary device functions into the cloud.

Bruce McClelland, Group President, Products & Services at ARRIS, has seen a shift towards ▶▶

"I THINK THE MORE CLOUD WE HAVE, THE MORE GATEWAY WE WILL HAVE. THIS IS NOT GATEWAY VERSUS CLOUD."

▼ How SoftAtHome sees the connected home

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Access any content in the cloud or at home and distribute accross multiple screens in the home

- Single application accross multiple screens
- Centralized search
- Live TV and recording from any device
- User profiles
- Aggregated content from the cloud
- Personalized home screen
- Content sharing
- Playlist based on media type

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cloud-based thinking over the last 12 months, especially when it comes to storage and UI functions. "This could provide an alternative to doing things on a heavy client architecture but for the next three years or so we will see pretty powerful devices in the home with their own storage, streaming and transcoding," he comments.

Ben Schwarz says the most likely architecture for the future Pay TV home is a gateway device feeding multiple IP clients, which could be operator STBs or CE devices bought in retail by the customer. "Either the gateway will get more intelligent or the STB will get more network savvy," he suggests. "But even if the cloud can greatly enrich services to the home, there will be a role for a central device in the home for the foreseeable future."
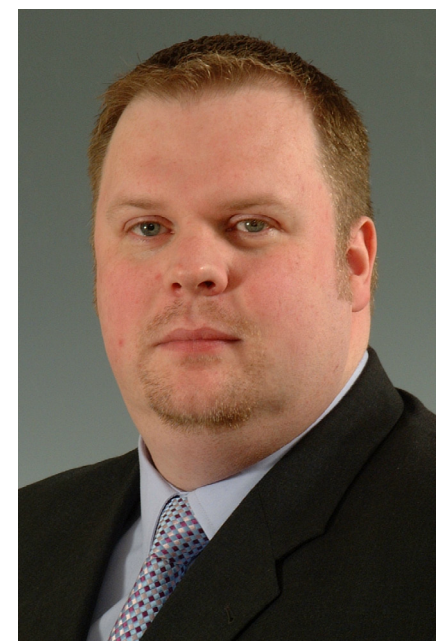
● THE CONNECTED ENTERTAINMENT HOME

STMicroelectronics provides the chipsets that support the in-device video processing and connectivity needed for the multimedia gateway redistribution model, plus the receive/decode SoC solutions for basic zapper boxes that will act as clients on an entertainment home network. Mustapha Bouraoui, Vice President Marketing & Applications EMEA for the company, outlines the role of the multimedia gateway as seen at a growing number of operators.

This device bridges the Wide Area Network (WAN) and the home network where the WAN delivers

managed (operator-controlled) and unmanaged (OTT) services. It then delivers both types of services through the home network to clients ranging from IP set-tops to smartphones, tablets and Smart TVs. "We believe both operator-controlled second and third room STBs will co-exist with CE devices, all of them connected to the home gateway," he confirms.

ADB provides gateway functionality through software that can reside in powerful new multi-tuner devices or within set-top boxes that already exist in a connected customer home. This means customers can deploy advanced whole-home services immediately if they need to. The tuners on any STB or DVR that reside on the home network can be treated as a shared resource. Even a DTT tuner

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Kevin Nolan, Strategy Analytics ▲

"OPERATOR-CONTROLLED SECOND AND THIRD ROOM STBs WILL CO-EXIST WITH CE DEVICES, ALL OF THEM CONNECTED TO THE HOME GATEWAY."

Paul Bristow will only reveal some of the details about how it works. "We are using a combination of capabilities inside the set-top box and inside the mobile device to manipulate the broadcast bit stream so that by the time it arrives at the player in the mobile device it can be played." The client-side processing is performed within the TV Everywhere app downloaded from the Pay TV operator. ADB is now developing such apps for customers.

Bristow says these TVE apps behave like a virtual set-top box. "Our role is to provide a secure, trusted environment for the Pay TV experience to come through. That means having a gateway device that can distribute the broadcast content and a combination of STBs acting as clients and providing a great experience, which we provide, and also apps for the tablets and smartphones."

Nigel Walley, MD at Decipher has been arguing that the connected PVR is the device that will enable

on a bedroom zapper STB can be utilized by the living room PVR, for example. PVR content is made available on other TVs and to multiscreen devices.

In order to feed tablets or smartphones the STB or DVR must be able to perform CA to DRM translations and the equivalent of transcoding to ensure the video is playable on the receive device. The 'equivalent to transcoding' refers to a technique that ADB has developed for homes where new gateways with transcoder chips are not yet present.

Pay TV to dominate in its own subscriber homes despite the growth of Smart TVs. The consulting firm says operators will use these devices to effectively piggy-back on the Smart TV revolution. "They will do this by putting their home network apps on any smart screen," it explains.

This could effect where people access 'player' services. "It also has implications for the ability of Pay TV channels to project themselves in a multi-room environment," the company says. "We forecast that pay channels will increase their share of total viewing, with both live channel and PVR viewing projected into every room."

Maybe DIRECTV, the U.S. satellite operator, provides a pointer to the future Pay TV home architecture. It provides a whole-home DVR service that uses a single DVR server to share content with its own IP zapper set-top boxes and a small but growing number of compatible connected TV devices, including Samsung and ▶▶

Virgin Media customers can use tablets to watch or control TV ▲

DECIPHER HAS BEEN ARGUING THAT THE CONNECTED PVR IS THE DEVICE THAT WILL ENABLE PAY TV TO DOMINATE IN ITS OWN SUBSCRIBER HOMES

soon Sony Smart TVs.

The DIRECTV Pay TV experience is ported to the CE devices using an application that provides the same features you would expect if there was a set-top box attached, including full programme guide and of course the PVR functions. The operator environment is launched automatically; this is not an app store experience where you go to the Smart TV portal to find DIRECTV. "It is DVR without a DVR," notes Alan Smith, Senior Product Manager at DIRECTV.

In another reminder of why multiroom is so important, Smith notes that the core business for his company is still viewing on the TV, something people will pay for. "The television set is still the social heart of the house. People predominantly watch television in the main room and most still consume television in linear form. They want to watch football on the big screen if they have that option."

There is a growing number of platform operators who believe that eventually they can replace second and third room STBs with apps, in what is termed the 'Operator as an App' model. DIRECTV is one of them. But there is little support for the idea of removing operator-supplied Customer Premise Equipment altogether.

At this year's Connected TV Summit, Daniel Simmons, Principal Analyst, TV Technology at IHS provided a list of what he sees as the flaws in the 'Operator as an App' model, and why primary STBs will merge

into home gateways provided by platform operators rather than into televisions provided by CE manufacturers. He pointed to the difficulty of managing QoS when feeding apps across an unmanaged network, and the fact that only sub-sets of content are available via apps, rather than full packages, due to rights issues.
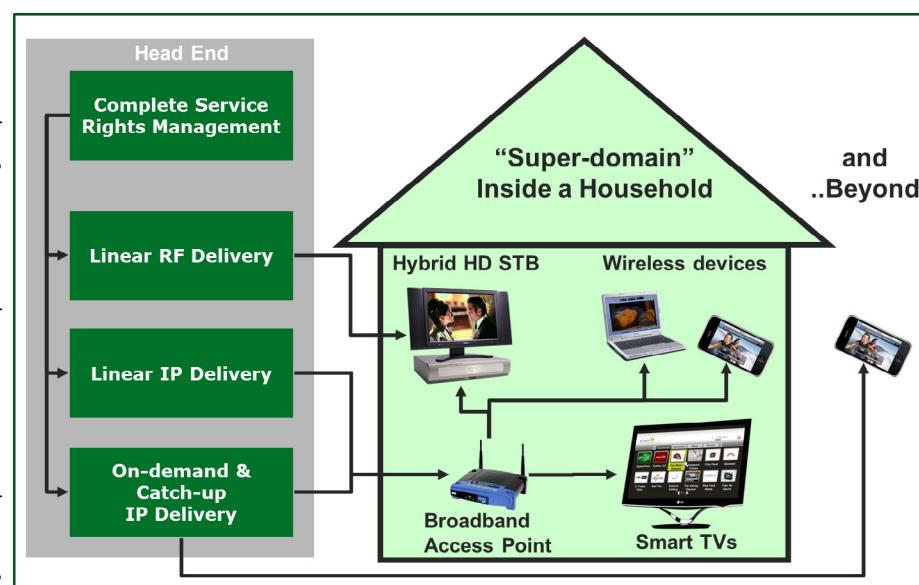
Perhaps more importantly, he pointed out that operators who remove STBs are limited in what they can do by the devices built by third-parties. This hardware is outside their control. "Connected devices do not replace set-top boxes; they minimize the number that you need," was his conclusion.

Arnaud Bensaid, VP Marketing at SoftAtHome, which provides home operating platforms for convergent digital home services, points to IHS Screen Digest forecasts for record STB shipments in the next two

years as proof that there is a long life ahead for this device category. He reckons multiscreen will boost the market as operators deploy gateways that can serve PCs, tablets and other devices.

Where the 'Operator as an App' is being considered seriously it is the kind of virtual STB app pioneered by TeliaSonera and Samsung, where the operator interface launches automatically and remains the default environment for the customer unless they choose to leave it. TeliaSonera is delivering a fully managed, multicast IPTV offer to Samsung Smart TVs in some customer homes and the identical service to other homes that use STBs.

There may be exceptional reasons for giving up the primary STB, however. Due to competitive pressures, Swisscom expects that it will eventually have to give away a 100 channel television service, bundled with broadband. This probably explains why the IPTV provider is leading the hunt in Europe for an STB alternative. The likelihood is that the telco would deliver its free service via connected TV apps and provide STBs for higher-tier customers.

▲ The Verimatrix ViewRight Gateway for secure multiscreen sharing

A Samsung 2013 Smart TV in the Decipher labs ▲

"CONNECTED DEVICES DO NOT REPLACE SET-TOP BOXES; THEY MINIMIZE THE NUMBER THAT YOU NEED"

Where operator STBs and CE devices co-exist as clients on a home entertainment network, the STBs could become smaller over time. We already have set-back boxes (which are small enough to hide on the back of a television – ADB introduced these years ago) and there is growing interest in HDMI dongles that contain the essential tuning, decoding

Mustapha Bouraoui, STMicroelectronics ▲

and content security functions of an STB.

There are important efforts to reduce the cost of STBs and gateways and these could have a bearing on the future role of these devices. Zenterio has an interesting solution to make STBs easier and cheaper to manage, for example. The company provides its own Linux OS that it is porting onto different makes of set-top box. The aim is to create a homogeneous device environment where all the STBs in a network run the same OS.

Then there is RDK, the Reference Design Kit initiative led by Comcast, which is expected to reduce costs and time-to-market for STBs and gateways, including those delivering multiscreen viewing experiences around the home. As one example of how this is already making a difference, STMicroelectronics has pre-integrated RDK with its Orly family system-on-chip, reducing integration time for customers.

According to Philip Brennan,

MAKING DVR SHARING SECURE

DVR sharing to multiscreen devices, rather than just to secondary set-top boxes, could be one of the next big service innovations. It is something that ACCESS has been addressing, harnessing its NetFront Living Connect DLNA technology and making use of DTCP-IP link protection to enable greater operator/studio control over content once it leaves a local DVR drive.

ACCESS and Verimatrix announced a pre-integrated solution earlier this year that covers CA, DRM and secure DLNA redistribution, including any necessary decryption and re-encryption inside secure zones on chipsets on gateway devices. Verimatrix calls it the ViewRight Gateway solution and it also covers the redistribution of linear content.

The ACCESS part of this solution is CA agnostic but the companies are jointly marketing the productized pre-integration. Joerg Eggink, Product Director, Connected Home at ACCESS, says one of the primary requirements is device domain control, so operators can decide which devices, and how many, the Pay TV content is distributed to.

Vice President of TV Technology at S3 Group, which provides industrial-scale CPE testing, including for the interoperability between gateways and multiscreen devices, RDK reduces the time required on software stack development.

"RDK aims to standardise the base platform of the future STB while

BECAUSE RDK WILL HELP MAKE STBS CHEAPER, IT COULD SECURE THEIR ROLE AS THIN CLIENTS ON THE OPERATOR HOME NETWORK.

Nigel Walley, MD, Decipher ▲

allowing operators to control and differentiate on the User Experience. Cheaper STBs, faster, is the promise. One major advantage is that leading chipset vendors are investing in RDK, making sure the drivers they develop are compliant with the RDK. This allows STB OEMs to have the RDK software layer up and running on their new STBs very quickly."

He adds that because RDK will help make STBs cheaper, it could secure their role as thin clients on the operator home network.

● ENSURING GOOD QoE

Supporters of the multimedia gateway model say it provides the Quality of Experience guarantees that cloud delivery cannot. Charles Cerino at MoCA argues that "unless the CE industry wants to put some telemetry in every device they build, to tell you how good the data connection is, you cannot work with that model. You need to know when the set-top box is unhappy. You want to be proactive, telling the customer that their set-top

box has a problem so we are coming to fix it. But if the CE industry puts that onboard then yes, we can work with them."

ADB's Bristow dislikes the attitude, inherent in the 'Operator as an App' versus STB debate, that set-top boxes are a Capex burden rather than an investment. He says you only need to prevent a few customer care calls before hardware devices start paying for themselves. If you can anticipate problems you can prevent customer care calls and when calls do happen it is easier to pinpoint problems and work out remotely how you fix them, then reduce the chances of them happening again.

ADB provides the Epicentro PMP suite of remote management applications to support the best possible customer experience. Any gateway solution must also manage resources when different screens are competing for services, Bristow adds. This includes practical issues like telling customers that they cannot watch a channel on their tablet because too many other screens are being used.

Until now, resource allocation has been a weakness of the OTT/cloud delivery model for multiscreen. Adaptive bit rate streaming hands over control of bit rate allocation to the client devices. Each device then attempts to get the best bit rate it can, which means they all compete with each other.

This is about to change, though. Roland Mestric, Solution Marketing for IP Video at Alcatel-Lucent, points out that the latest generation of CDN technology from

Alcatel-Lucent Velocix includes network-side management software that takes the resource allocation decisions back from the client devices. This means you can set policies and then dynamically control session requests. As a use case example, if there is limited bandwidth in the home, a Smart TV can be given priority over a smartphone. In practice this can mean limiting the number of ABR bit rate profiles that the smartphone is allowed to access.

Christy Thomas, Director Business Strategy at Alcatel-Lucent, notes that this management solution is designed for operator TV Everywhere content and where the operator has its own CDN. It only takes effect when there are contention issues inside the home but when there is competition for bandwidth it overrules the greedy ABR clients and decides the allocation of resources based on the best total outcome for household customer satisfaction.

Service providers know they will get the customer care calls for failures in a TV Everywhere viewing session on a CE client, so reliability is crucial. That means there is a focus on interoperability and as John Maguire, Director of Strategy and Marketing, TV Technology at S3 Group points out, this puts an emphasis on testing.

"Interoperability is critical. There is good work going on at the standards body level, like Home Grid Forum's G.hn standard, to increase the degree of interoperability between the different transmission systems, which we see as crucial for

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"THE MULTI-SCREEN HOME ENVIRONMENT NOW REQUIRES IN EXCESS OF 5,000 INDIVIDUAL FUNCTIONAL TEST CASES IN THE LAB TO ENSURE A GOOD QoE."

Balázs Birck, Magyar Telekom ▲

a seamless multi-screen experience," he says. "There also needs to be an increased focus on interoperability testing of the product and application. The multi-screen home environment now requires in excess of 5,000 individual functional test cases in the lab to ensure a good QoE."

A spokesman at NC+ in Poland says ease of use and reliability are key factors in the success of multiscreen around the home. "And we do believe we deliver it. However, we sometimes face limitations beyond our control. As customers can use their own routers, access points and cabling, quite often these suffer from technical problems. We have to

provide support and guidance."

Complexity can be viewed as an opportunity as customers will be grateful to the company that makes everything work for them. Paul Bristow suggests that the more screens there are where people view Pay TV, the stickier the service should become. "If you want to swap providers you are not just changing what happens in the living room now, but changing what happens everywhere. Does the multiroom DVR service at Provider X work as well as mine? People will have to make a bigger leap of faith than they do today when changing providers."

Telecom Italia sees a big opportunity in providing a quality service from a trusted brand. Pier Luigi Gardini, Consumer Marketing Fixed Offer Director, explains: "Italians trust our brand's tradition. Quality of service means that a service works, it is easy to use, well designed and attractive. That is absolutely a key differentiator. We have a good reputation for quality and for technical

assistance."

He adds: "Quality, reliability and the usability of services is a key element if you want to win market share and avoid competing on price. We believe that all these elements effect a customer's willingness to pay and we are leveraging them to sustain ARPU, maintaining our premium price positioning in the market."
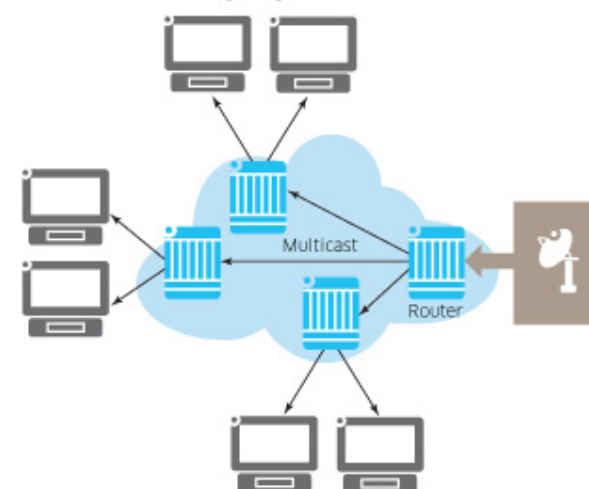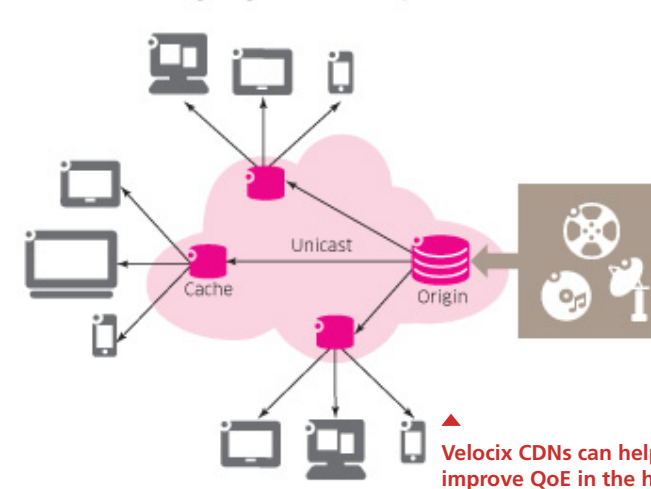
● CONCLUSION

The outlook looks pretty good for Pay TV operators and a good deal better than it did three years ago, but there is no room for complacency. Various consultants are predicting Smart TV consolidation around Android, Microsoft Windows TV or maybe even iOS. That could sharpen competition between the Pay TV and open CE ecosystems. Netflix is intent on becoming a new HBO except, for now at least, outside the Pay TV universe.

Catch-up TV is still ▶

RTSP multicast streaming using an IPTV infrastructure

HAS unicast streaming using a content delivery network

Velocix CDNs can help improve QoE in the home

"THE TRICK IS TO DO WHAT YOU DO WELL ACROSS DIFFERENT PLATFORMS AND DEVICES AND SO DEFEND YOUR TERRITORY AS THE COMPANY THAT BILLS THE CREDIT CARD EVERY MONTH."

Javier Lucendo de Gregorio, Telefónica Digital ▲

▶▶ dominated by the terrestrial broadcasters, never more than a tap away on tablets. And the free-to-air platforms have also raised their game with next-generation solutions of their own, offering good UIs and companion apps.

John Barrett at Parks Associates has a warning about pricing for Pay TV. He says cord cutting is more about economics than anything else. "In the U.S. lots of people try Pay TV but cancel because the price goes up and the reason the prices are going up is because the content providers are raising their prices.

"If you look at young people that don't have Pay TV, most tried it and left rather than never tried it. But one-third never tried it and that is significant because it is a much higher rate than among older adults. The problem with these consumers is that they don't seem to buy into the value proposition of Pay TV."

For the young adults who left, a price adjustment might be needed to get them back. Nobody is really catering for the low end of the Pay TV market anymore, Barrett explains, especially since the migration from analogue to digital.

Younger consumers, according to Parks Associates research, do not have quite the same connection and loyalty to television that their parents have and their grandparents had, when TV was *the* in-home entertainment rather than one of the options. Barrett says you can then start considering the way that free or low-priced Internet video can tip the scales towards cancellation.

For those consumers who can afford Pay TV, the connected home is the key to remaining at the centre of their world. Christine Mitchell at Vodafone points out that you can often find the same content in multiple places, and this puts the emphasis on the whole customer experience. As an operator you need to give people a reason to use you in the same way that supermarkets fight to sell the same branded food on their shelves.

"You choose a supermarket because their stores are nearer or they are priced better or they have the best customer service," Mitchell points out.

Balázs Birck, Head of Product Development & Innovation at Magyar Telekom, highlights the power of broadcast, the need for relevant on-demand services and the opportunity that multiscreen and OTT gives operators to increase their bundle, so exploiting an existing strength. "The Pay TV industry is good at bundling; it is our core competence so we need to create one core offering that is easy for customers to digest without having to educate them," he says.

Steve Christian, VP Marketing at Verimatrix, whose content protection solutions are helping a number of service providers extend their reach to multiscreen devices, says the aim should be to provide universal access rights to content, whatever screen you are using. "That is the role of a good service provider and it is why people pay their money to them," he says.

He thinks the 'Complete Entertainer' is a nice tagline for operators. "The trick is to do what you do well across different platforms and devices and so defend your territory as the company that bills the credit card every month. That is the bottom line – literally. It's the billing relationship. And bundling is a key aspect of what a Pay TV operator has provided and continues to deliver successfully." ■

Vassilis Seferedis, Samsung ▲