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Taking control of the connected home



The defensive business models around multi-screen TV suggest increased competition is having an impact on the Pay TV market and it could be time to think about where future revenue growth is coming from after HDTV. The answer could be the 'connected home', with service providers taking more responsibility for managing the entertainment and multimedia experience and also providing new home management services ranging from energy monitoring to security.

BY JOHN MOULDING

You could argue that multi-screen TV is the first major defensive play from the Pay TV industry, whose stellar rise is threatened by increased competition from over-the-top (OTT) providers. Obviously this does not mean the end of Pay TV growth, given the potential for digital and subscription TV worldwide and the number of homes in mature Pay TV markets that could still upgrade to DVR and HDTV. Nonetheless, operators are having to deliver more to maintain customer loyalty and work harder for new revenues. Perhaps it is time to start looking more carefully at how they can differentiate from OTT providers, the CE industry and fellow operators, and where future revenue streams are going to be generated.

The answer could be the 'connected home'. The customer premise is going to become a battleground not only for competing multimedia and entertainment offers but a range of new broadband-related services that could be delivered by service providers or specialist third-parties going 'over-the-top' on their broadband connections. These broadband services include home automation, control and energy management. There is an opportunity for somebody to integrate and manage the different networks, services and devices that are converging in the home, take greater responsibility for them and make them more user friendly, whether that means providing multi-screen viewing of both managed and unmanaged video with guaranteed quality, or a unified portal from where consumers can remotely monitor and control their door entry system, for example.

Until now, the 'connected home' has been built ad-hoc by consumers themselves and there is no unifying presence that ensures everything works together, other than the knowledge of a tech-savvy user. This connected home model works for the early adopter but probably not for the mass market. So a new phrase is now entering the industry vocabulary: the 'connected home platform'. This describes the customer premise equipment and software that can be used by a service provider to deliver multiple services and applications to multiple devices, to maintain and update them, and to ensure they can be provisioned and controlled easily by the service provider or consumers themselves.

The connected home platform gives a service provider the means to take greater responsibility for what happens inside the home and, to an extent, to become the ►►



◀ The ADB-5723 DVR provides access to broadcast and IP services

● MEDIA SHARING AND WHOLE-HOME TV

◀ gatekeeper to the home, even as more services appear. There is an argument that service providers can use a connected home platform to expand their traditional role as an aggregator of content to become an aggregator of services, which means opening up the platform to third-parties but exploiting their existing strengths,

Pay TV operators are already demonstrating how they can take greater responsibility for the connected home and deliver more compelling services. One fairly simple offer, which has an immediate impact for consumers, is multimedia sharing. Using a remote software upgrade for its set-top boxes, A1 Telekom Austria, for example,

DIRECTV USES RVU SERVER / CLIENT ARCHITECTURE AND IS A GOOD EXAMPLE OF HOW MULTI-ROOM DVR IS LEADING PAY TV OPERATORS INTO SOPHISTICATED HOME VIDEO NETWORKS.

such as an established presence in the home, a trusted billing relationship, customer support functions and often a strong brand.

There are companies who are such masters of pure-play Pay TV that they will continue to thrive on the basis of delivering a great TV service, but even they must master the connected home for their own video offer. But this new model could work for successful Pay TV operators looking for a new value proposition beyond aggregating video. And it could be even more important for service providers for whom broadband and telephony are still the most important revenue streams, where TV is only a churn buster rather than a profit centre.

enabled its subscribers to start viewing a range of digital content, including user-generated content, from their PC, the Internet and mobile phones on their TV sets through the aonTV set-top boxes.

Telekom Austria uses ADB set-top boxes and is harnessing open-standards like DLNA and UPnP so content can be accessed through any compliant device. Customers wanted the ability to watch more content on their TV sets, including DivX files stored on their own hard drives. So the IPTV provider responded. In the case of Telekom Austria, this innovation was combined with virtual storage so digital memories can also be uploaded to the Internet and accessed via the set-top box as well as PC.

For Pay TV operators, the other major connected home development to date is multi-room (or whole-home) DVR. Consumers are getting so accustomed to DVR functionality that they want it in every room rather than just the living room, and the same will be true of HDTV wherever that has been available for a few years. In the U.S., where there are more TVs per household and the wider availability of coax makes it easier to deliver a reliable, high-bandwidth managed video service between rooms (generally using MoCA) multi-room DVR is becoming a competitive battleground.

DIRECTV provides a good example of how multi-room DVR is leading Pay TV operators into creating sophisticated home video networks. The company makes multi-room DVR available using separate set-top boxes today, with customers paying \$3 per month for the functionality, and the service is so popular the company has not been able to keep up with demand. However, the multiple set-top box approach is too expensive to take into every home and has led the satellite TV giant to a model where the main DVR acts as a server and distributes video over IP to client devices like its IP-based C30 Home Media Clients.

DIRECTV is harnessing MoCA to provide the capacity it needs to guarantee QoS for premium, managed HD content around the home. And the company is innovating on a number of fronts. For example, it is using the RVU standard server/client architecture to deliver not just content but a pixel accurate replication of its User Interface (UI) to any RVU certified client device. This could include set-top boxes but notably it could also mean connected TVs (like Samsung Smart TVs) and Blu-ray players. Thus the company will be one of the first to harness open CE devices, bought by its customers in retail, to deliver managed multi-room Pay TV services.

Andrew Ladbrook, Analyst at Informa Telecoms and Media, says there is still



▲ Nick Fielibert from Cisco

no established business model for service providers that want to exploit the connected home but, in his view, multi-room TV is the biggest opportunity to pursue. "Your ARPU goes up and customers are less likely to churn," he predicts. "Customers are less likely to need OTT when you go multi-room. Why would you need OTT services to watch premium content if you have it in all rooms from your service provider?"

Pay TV operators introducing whole-home TV services also demonstrate how video can be used as the driver to build home networks that they can later exploit for other purposes. Because there are direct revenues attached to managed multi-room TV (which is not necessarily the case with multi-screen TV), they can justify an investment to develop a client-server architecture for IP video distribution that includes the ability to manage Quality of Service (QoS). Once this capability is in place, managed through a 'home gateway' like a DVR, a Pay TV provider has a presence in the home that few, if any, pure OTT providers could afford to match.

Discussing the service provider market generally, Ladbrook emphasises that multi-room video is the business model that will drive the connected home. "Furthermore, if

THE GROWING PENETRATION OF BLU-RAY PLAYERS, TABLETS AND CONNECTED TVS IS CREATING AN INCENTIVE TO CONNECT EVERYTHING TOGETHER. THE DRIVER IS VIDEO: SERVICES LIKE NETFLIX OR YOUTUBE ON CONNECTED TV OR BLU-RAY.

you build the home network now, while you are rolling out your multi-room services, then you are positioning yourself well for the future connected home services like home automation and energy monitoring. If you already have a good home network in place you are in a better place to deliver these services in the future."

devices as mobile viewing. So whole-home TV will need to be complemented by a multi-screen TV offer that makes Pay TV aggregated content available on laptops, games consoles, smartphones, tablets and, increasingly, connected TVs.

Nick Fielibert, CTO Cable, Digital Media and IPTV Business, Service Provider European Markets at Cisco, believes the driving force for the connected home is the proliferation of devices that can actually be connected to add value to the consumer experience. Thus the growing penetration of Blu-ray players, tablets and connected TVs, with their potential to access content and interactive services, is creating an incentive to connect everything together. He is not only talking about Pay TV provided content, either.

"People want to connect those devices because they see the value those devices bring to them," he explains. "With ▶▶

● VIDEO POWERS THE CONNECTED HOME

Managed whole-home services are only part of the story, of course. Consumers also want to enjoy Pay TV content on their favourite Consumer Electronics (CE) devices like the Apple iPad and iPhone. In-home consumption is just as important for these

◀ Cisco Videoscape, enabling multi-screen TV



▶ What the modern consumer wants at home, illustrated by ADB



◀ them, they can access content that is not available in any other way, including from their service provider. So that is the reason for most people to build the connected home. The driver is video: services like Netflix or YouTube on a connected TV or a Blu-ray player."

Fielibert believes one of the value-adds a service provider can offer in this connected environment is the availability of their own aggregated services on multiple devices, rather than just the set-top box. This is reflected by the launch of TV Everywhere services worldwide, making subscription TV channels available on the PC/laptop and then other screens via apps. Meanwhile, service providers hope that by introducing 'companion screen' experiences, where consumers can interact with the content on the TV set via tablets and smartphones, they can encourage them to actually engage with the Pay TV service on several screens simultaneously.

The multi-screen TV services from Pay TV providers look compelling and have the potential to increase loyalty but they are also harder to monetize directly than a managed multi-room offering. Free TV Everywhere, bundled with channel subscriptions, is the most common business model today, though there are realistic hopes that this can be tied to higher-tier subscription packages and consumers can be encouraged to upgrade. Parks Associates has conducted research showing that 10-20% of consumers will be willing to pay "a little extra" for TV Everywhere type services.

TV Everywhere is an example of where, for possibly the first time, a major new Pay TV service is more about increasing loyalty than generating revenue. This is a reflection of a more competitive video landscape. Meanwhile, the arrival of OTT multi-screen television highlights the value of diversification because a Pay TV provider who owns the broadband infrastructure can look to

TV EVERYWHERE IS AN EXAMPLE OF WHERE, FOR POSSIBLY THE FIRST TIME, A MAJOR NEW PAY TV SERVICE IS MORE ABOUT INCREASING LOYALTY THAN GENERATING REVENUE.

exploit its own multi-screen services (whether for loyalty or revenue) and at the same time monetize third-party video services through the sale of bandwidth.

A number of cable operators have been making this point during 2011. German operator Net Cologne, which pioneered 100Mbps broadband on VDSL and then DOCSIS 3.0, has noted how OTT video consumption on multiple screens in the home is driving the demand for its higher broadband speeds. And Dr. Manuel Cubero, Chief Operating Officer at Kabel Deutschland, has stated that he views the growth of OTT video consumption, including on the television set, as a good development for his company.

"This is an enormous opportunity for us because we invested in a parallel [broadband] infrastructure," he declared at ANGA Cable in May. "It is not only a television world but a broadband world as well, so this is great for us." Cubero actually admitted that the classic TV business might suffer as a result of

OTT content arriving on TV screens but he believes that cable can ride this wave by offering excellent broadband services while continuing to deliver great video offers including managed VOD.

LOOKING BEYOND VIDEO FOR FUTURE REVENUES

It looks like the market is changing in a way that could favour companies who are diversified. Stephen Froehlich, Senior Analyst with IMS Research notes: "It is becoming harder to make big money on video so you have to make it on broadband, telephony and other services." He believes it will become more common for video to become a loss-leader that attracts consumers to other services, where they can be monetized.

Addressing the most talked about new broadband service opportunities, namely home security, automation and remote

▶ Cisco HealthPresence typifies the services possible in a more connected world



health, Froehlich says service providers can create some extra money if these offers deliver enough value to consumers. "To encourage people to spend more you need to create efficiencies in their lives," he points out. Although each service may have limited market appeal, he believes service providers are thinking about a longer-tail for their service proposition, and that even niche services can help to make subscribers more sticky.

"Service providers are definitely looking into this," he comments. "They are trying to expand their service package and create more value for their broadband connection and lock people into their broadband service by making it harder to switch providers. If you have to change security providers as well as broadband and phone providers when you swap supplier, it becomes even more of a hassle and makes you more sticky. And if you, as a service provider, can increase loyalty and reduce price sensitivity then you can increase profit."

Energy monitoring and management is the broadband delivered, connected home service that is getting most attention right now. This could encompass smart metering, where an energy company can 'read the

meter' showing total energy consumption (in order to bill customers) remotely. Where energy management merges with home automation you could find washing machines that adjust start times automatically or even adjust their cycles according to the time of day and the cost of energy.

Remote health monitoring, like taking regular measurements of the pulse, blood pressure and weight for a heart patient, is a potentially important market, given the ageing populations in western economies and the increasing cost of healthcare. This market requires a partnership model, as illustrated by Verizon and the health services company Healthsense in the U.S, where Healthsense provides wellness and health monitoring to assisted-living

and senior-living communities. Functions include health care alert systems to notify caregivers of emergency medical needs, electronic health monitoring and medication prompts, and remote vital-sign monitoring systems.

Healthsense provides the monitoring devices and equipment, Wi-Fi technology and 24-hour monitoring, and is responsible for installation and maintenance. Verizon provides the reliable broadband connection it needs and a market among the multi-housing communities it serves with FiOS.

Perhaps the more promising opportunity in the medium term is security, which can now look beyond hardcore services like intruder alarms or panic buttons to include the ability to monitor door entry systems (and perhaps talk to a delivery driver ▶)



◀ Stephen Froehlich: more likelihood that video will be a loss-leader

"IT IS BECOMING HARDER TO MAKE BIG MONEY ON VIDEO SO YOU HAVE TO MAKE IT ON BROADBAND, TELEPHONY AND OTHER SERVICES."

Smartphones make Comcast's Xfinity home automation service more compelling

who arrived when you are at work) or even watch what is happening at home using Wi-Fi cameras. This last example would let you know that the children are home safely from school. The ability to monitor services on smartphones as well as computers will help make security services more compelling than they once were.

With its new Xfinity Home Security Service, Comcast offers traditional home security components, like police and fire alarm protection backed by 24/7 professional monitoring, as well as the ability to adjust digital thermostats, turn lights on or off and watch secure live streaming video from wireless cameras when you are away from home. The service also comes with a new Xfinity Security app that is available free on the Apple iTunes App Store and a tablet-like touch screen.

According to a Comcast spokesperson, customers love the new service. "It makes a lot of what used to be very high-end technology very affordable. So, digital thermostats and live streaming video cameras, with an anywhere, anytime experience, has been really positively received."

The company views security and control as an important new opportunity as a broadband services provider. "The fact that we are already in people's homes for video, voice and data, coupled with the fact that people typically call when they move into a new home, means that we can make the offer before traditional home security services firms can. Plus, we can provide an integrated experience with our technology platform that other companies cannot provide."

Comcast is already monetizing this offering, marketing the Xfinity Home Security Preferred Package for "as low as" \$39.95 per month. The company is also hopeful that this service can increase loyalty among customers who take it. "We



COMCAST IS ALREADY MONETIZING XFINITY HOME SECURITY AND, BACKED BY RESEARCH, IS ALSO HOPEFUL THAT IT CAN INCREASE LOYALTY AMONG CUSTOMERS WHO TAKE IT.

think the research suggests that is the case and it is something we are going to look at very closely going forward," the spokesperson reveals.

Parks Associates noted recently that service providers like telcos are now going into security and monitoring very aggressively because this may end up being the fifth play in the home. And Paul Bristow, Vice-President of Strategy at ADB, which provides the software and hardware needed to support Pay TV and broadband services in the home, points out that this could be just the beginning of the diversification. "We think that eventually the idea of a triple-play or quad-play offer will seem quaint because you will be bringing a dozen services to market, and the more services you have, the stickier you get."

For Bristow, maintaining ARPU is the key and he believes operators are flexible about where it comes from. "When we talk to operators it is clear that they want to maintain the ARPU. How that is maintained and what services make up the revenue is less important," he says.

In his opinion, service providers will not be concerned if subscribers start to spend a little less on television if this is counter-balanced by them spending more on broadband access. And it does not matter if they spend less on telephony if they spend more on home monitoring, providing the operator has the flexibility to reshape themselves according to market requirements.

Bristow points out that there is a finite household budget for entertainment and communications, but that this budget has extended over the last decade to include Pay TV, broadband, telephony and mobile. So consumers can find money for services they value. Nevertheless, there is downwards price pressure in the market today. So while operators may yet be able to add a new discretionary item to the household bill, they might also be happy to bundle more services just to maintain the price points for their existing triple-play or quad-play offers.

Brett Sappington, Senior Analyst at the research and consulting company Parks Associates, also believes service providers



Brett Sappington believes service providers will look to offer many more services

will look to offer many more services in a bid for new revenues and increased loyalty. "Home management services, including automation, control and energy are certainly one option for additional revenues, but they will not be a panacea for TV and broadband service providers," he says.

"More likely, the next pillar of revenues for operators will consist of a variety of value-added services, of which home management will be one facet. Other services will include premium tech support, entertainment like video games, and convergence

PCCW's eye2 tablet and right, the company's CTO Paul Berriman



"INDIVIDUALLY, NONE OF THE NEW VALUE-ADDED SERVICES WILL RIVAL THE REVENUES OF AN OPERATOR'S CORE SERVICE BUT THE PORTFOLIO TOGETHER IS MUCH MORE COMPELLING."

services. Individually, none of these will rival the revenues of an operator's core service but the portfolio of these together is much more compelling."

Paul Berriman, Chief Technology Officer at the Hong Kong quad-play provider PCCW, points out that this expansion of services presents practical and organisational challenges. If you introduce services like door entry systems, for example, it requires a new set of skills from his engineers but also a new approach to how the company markets and sells services. "There is a whole new area of complexity that people have to come to terms with," he explains. "These are the kinds of services where you would want to get engineering more involved in the marketing when they are in the home, offering to extend a managed solution to other devices."

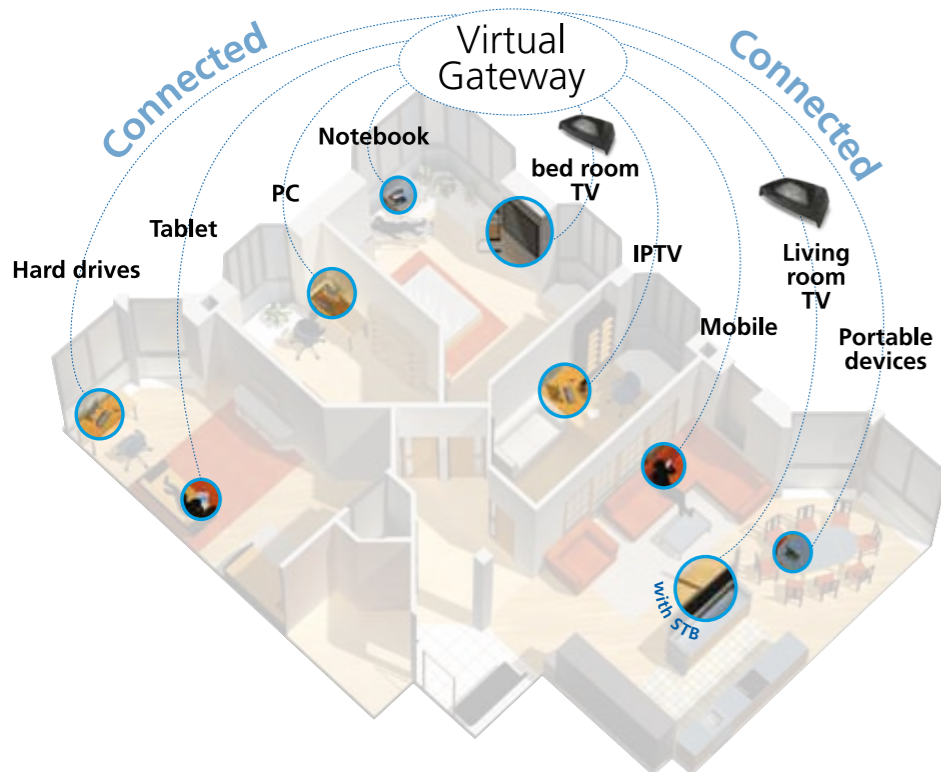
Berriman points out that a service provider like PCCW would also need to limit its responsibility, so for health solutions it is only responsible for the equipment working and raising the alarm, rather than what happens next. But he believes a broadband provider is generally well placed to offer more services and provide greater support for the home network

generally. "This is a natural evolution; it is an extension of the WAN," he suggests. He emphasises that this is a long-term process and will not happen overnight.

TAKING MORE RESPONSIBILITY IN THE HOME

Where operators do want to limit their responsibility, there are partnership opportunities with specialist companies that will make this possible. These third-parties could target a broadband home with an 'over-the-top' model that bypasses the service provider and uses them as the 'dumb pipe', installing their own customer premise equipment and pursuing a direct billing and customer care relationship with the consumer. But there are a number of reasons why specialist companies may want to partner with the broadband provider.

Andy Hooper is Director of Converged Experiences and Software at Motorola Mobility, which acquired 4Home last



year, the provider of connected home services covering energy, security, monitoring, media and health, and SDK software products that allow service providers as well as device vendors to deploy new applications and services. "There is a lot of value you can add to their [third-party provider] services," he says. "Adding a user-friendly interface on a smartphone or tablet into the security environment is an example of how you can take an already deployed platform and partner with someone to add extra value to the service, then share in the increasing value that the subscriber enjoys."

Paul Bristow at ADB says service providers with an existing connected home platform can offer an economic way for a specialist provider to reach scale. And according to Ben Geller, Senior Director of Marketing at the Motive Business Division at Alcatel-Lucent, service providers who have a robust backoffice that includes device and network management, and who provide a reliable and quality experience and good customer support, can go to potential third-parties in a position of strength and outline why they should work together and revenue share.

"In the context of the time it takes to reach the mass market, the service provider has a competitive advantage, with mil-

▲ ADB's Virtual Gateway enables a connected home without new hardware

lions of eyeballs, but if they can also make a case for being the administrator of the service and providing the customer support, because they already have that, they can suggest that they are paid a fee for managing the service. The service provider can take revenue off the top for finding the customer for them, as that has value," Geller continues. "But you can get revenue from them because you are managing the service, too. Service providers like that idea anyway because it allows them to keep

"ADDING A USER-FRIENDLY INTERFACE ON A TABLET INTO THE SECURITY ENVIRONMENT IS AN EXAMPLE OF HOW YOU CAN TAKE AN ALREADY DEPLOYED PLATFORM AND ADD VALUE."

control over the customer experience."

Sappington at Parks Associates says successful programmes will leverage the expertise of third-parties for vertical applications and keep the areas in which the broadband provider excels, like managing communications, access and delivery of con-

tent, in-house. "The consumer-facing brand will likely remain the operator's brand unless their partner's brand is well recognized among consumers and can contribute to early success," he predicts. He expects to see both partnership programmes and operator-run services in the market.

One big question for any broadband service provider is, therefore, whether to partner or not. Another is how much responsibility they are willing to take, not only for new applications/services but for the overall management of the connected home generally. This is the question that generates the most diverse views.

Berriman says there could be new revenues available for a service provider that can ensure that everything works for customers in the home but you need to tread carefully. "It is the right time for this," he states, noting that people are buying more and more connected devices for the home but they may not work together despite standards like UPnP. So the PCCW approach will probably be to limit its responsibility to products it has some control over, by evaluating and endorsing products and then installing and configuring them, and harnessing TR-069 or similar capabilities to provide visibility of what is happening in the home.

PCCW can already monitor devices like its set-top boxes and use the resulting knowledge to help with customer care, and

this visibility is also important for drawing a line between the devices you are responsible for and those for which you are not. "People can still hang anything off the home network and go over-the-top but if something breaks we can tell that it is not one of our devices." Berriman notes.

CONSUMERS COULD BE CONFUSED ABOUT WHO IS RESPONSIBLE WHEN SOMETHING GOES WRONG, WHICH COULD LEAD TO PEOPLE PHONING BROADCASTERS, DEVICE MANUFACTURERS OR THE ISP ANYWAY.

He points out that there is only so much responsibility the service provider should take on. "We have tried supporting the PC [for customers] and don't think there is any money in looking after that because it gets messed up by customers too often," he reveals. However, greater support for the home network generally is a possibility and Berriman believes the broadband provider is well placed for this. "We are in the best position of all because we have the presence in the home," he points out.

Anthony Rose, Co-Founder and CTO at the social TV platform provider tBone TV, which intends to exploit the proliferation of tablets and companion screen experiences at home, believes the only time a broadband provider should take responsibility for devices that are not its own, or indeed for the home network generally, is if it is getting paid handsomely for the service. With this exception, he believes (and he is not alone in this) that service providers should make a determined effort to limit their own responsibility in the customer premise.

Rose believes it would be disastrous for an ISP/broadband provider to make it their job to ensure everything at home works together. So they should carefully limit their involvement to their own set-top box or content portal, if that is what they provide as part of their service, and then concentrate on managing the provision of a reliable broadband pipe.

In a world of increasing OTT video and multi-screen viewing, he anticipates consumer confusion about who is actually responsible when something goes wrong, which could lead to people phoning broadcasters, device manufacturers or the ISP anyway. He believes that any general 'invitation' by an ISP to contact them would result in them being swamped with support calls, ramping up their costs.

Geller at Motive/Alcatel-Lucent believes that while service providers can take responsibility for ensuring that devices work together, they need to be clear on the boundaries of what is supported as part of



▲ Anthony Rose warns ISPs to limit their responsibility in the home

their monthly broadband charge and what is supported as part of a premium helpdesk offering. But there is a real danger that broadband providers are going to get the calls anyway so there is an opportunity for service providers, if they dare, to try to handle what they can, even as part of the standard support, and turn that into a service differentiator for their offering.

Curtis Howe, President and CEO of Mariner Partners, the QoE specialist, makes a similar point. He thinks the challenge now is that the telco or cable operator is going to be held responsible for the end-to-end delivery of video services to multiple devices even though they only control their own managed part of the infrastructure. "It is very difficult for them to divest themselves from QoE responsibility and they will get customer calls whether or not it is justified," he says.

Howe points out that some paid OTT providers are starting to provide some rudimentary customer care of their own, in the form of email apologies and credits to customers who experience service issues. So this raises the danger that if the broadband service provider does wash their hands of multi-screen and unmanaged video issues, they open the way for other companies to extend their relationship with their subscribers.



▲ Multi-screen viewing at home with PCCW now SPORT

CONSUMERS DO NOT THINK IN TERMS OF NEEDING THEIR HOME NETWORK MANAGED SO THIS HAS TO BE WRAPPED INTO A SERVICE PROPOSITION THAT THEY WILL THEN PAY FOR.

◀ If service providers do take more responsibility, visibility of the home network becomes critical, Howe notes. Fortunately, the new breed of portable devices, particularly tablets, are well suited to providing QoE visibility to a service provider using the necessary standards and protocols to interrogate them.

The bigger challenge, according to Mariner Partners, is the need to radically reduce the cost of customer support, because even when talking about a service provider TV Everywhere offer that is monetized at EUR 3-5 a month, a EUR 60 truck roll is completely unaffordable. This points towards more self-installation and self-help.

Clearly the line between free support and paid support could become an important boundary in future, with implications for cost but also how competitive you are. Nick Fielibert at Cisco says the improvements to in-home connectivity and standards will help service providers take on more responsibility as improvements to Wi-Fi, the wider adoption of MoCA and the wider reach of Cat5 resolve many of the technical issues associated with home networking. He points out that the physical home network is still the biggest challenge, where the biggest problems are.

He believes service providers should look to take more responsibility where



they can and make that a positive service attribute. As he points out, there is always going to be someone who builds their own home network and then adds a connected TV to it from retail, then calls the service provider because the content is supplied [over-the-top] through their residential gateway. "That is a big hurdle for service providers," he points out. "They have to really get engaged into the services related to the home network, but I think that is inevitable. If you own the gateway and everything is connected through there, you may as well just get on and take responsibility."

There are already ways that a service provider can take on more responsibility and gain customer credit for it without hanging a large sign around their neck, anyway. Trying to give broadband subscribers the best QoS on all their OTT video services as well as managed TV services would be a good start and one that would surely lead to word-of-mouth recommendations and favourable consumer reviews once people compare experiences.

Vince Pizzica, President, Digital Delivery Group at Technicolor, points out that where there is complexity, there is opportunity. "Because it is such a complicated mixture of bandwidth and interfaces, and there could be interference on your Wi-Fi network from your neighbour, and there are lots of things affecting the home network experience, that requires some kind of management," he points out.

For him, the service provider value-adds for the connected home, where they can look to differentiate, are consumer friendliness and higher Quality of Experience (QoE). But he points out that consumers do not think in terms of needing

◀ Curtis Howe, President and CEO of Mariner

their home network managed so this has to be wrapped into a service proposition that they will pay for.

He believes the quality of connected home services will shine through but says it is a long-term game. And while consumers clearly value good QoE, as their desire to pay a premium for Apple devices illustrates, there is a possibility that for the service provider the prize will be increased loyalty that is then monetized indirectly, rather than any direct new revenues for providing the best connected home experience.

Broadband providers could also create a unified User Interface that starts to pull everything together into one place (virtually) for consumers, providing a single point for whatever provisioning, control and account management functions the user needs. Sappington at Parks Associates says a comprehensive but easy-to-use interface for a variety of services is the Holy Grail for operators. "They would ultimately like to have a unified user experience, but adding services, benefits and features for the consumer increases the complexity of the UI. Over the next few years, the UI will be an increasingly important differentiator for service providers."

Bristow at ADB believes this is an important route to service differentiation and one that is achievable for service providers that start thinking in terms of providing a 'connected home platform'. He points out that while two devices may be compatible on paper, since they both meet an interoperability standard like DLNA, this does not mean it will be an easy job to get them working in harmony on the home network. Often there has been a minimal investment in the User Interface needed to manage the DLNA on the CE device, making it hard for the average consumer to handle.

Bristow points out that the DLNA specification provides for a central control

▶ Compelling content is at the heart of the connected home (pic Motorola)



point. This means that instead of leaving consumers to struggle with multiple low-cost device UIs, a service provider could create an umbrella UI that acts as the control interface for the whole home network, making it easier to introduce any new device. This UI could be presented on the PC, a tablet or even the television screen. While another entity, like a CE vendor, could decide to take more responsibility for providing an overall interface with the home network, it is the service provider that has the ongoing relationship with the customer and the biggest incentive to help them, Bristow argues.

This approach could be complemented by an active involvement in the validation of devices that can work with the service provider home network, according to Hooper at Motorola Mobility. Outlining where service providers can add value to the home network generally, he notes that someone needs to take responsibility for the ongoing support of devices and the maintenance of the services upon them. Somebody also has to ensure that the platform and applications remain free of malware.

The bottom line is that everything must work. "There is nothing more frustrating than if something is not working," he declares. "Unless you are a hobbyist that is not fun, which is why telcos are in a great position to capitalize on this opportunity."

Erik Kruse, Strategic Marketing Manager, Business Unit Multimedia at Ericsson, says there are lots of opportunities for service providers to become what he calls 'real service providers'. "This means that as the complexity increases for the users, as technology density increases, with new standards and in some cases incompatible standards, then they need a service provider that takes away the complexity and enables the benefits of a connected home."

Kruse thinks new services like home security, home automation and energy management represent a huge opportunity. However, it is not enough just to deliver the services. "The experience is so important,"

"EVERYTHING MUST WORK, UNLESS YOU ARE A HOBBYIST, WHICH IS WHY TELCOS ARE IN A GREAT POSITION TO CAPITALIZE ON THIS OPPORTUNITY."

he says. "There is a huge opportunity with the managed home but not for everyone. The winners will be the ones that really understand the end users and can make the managed home a good experience for different segments of the market."

Kruse adds that there is a great opportunity for the service provider to enjoy a holistic view of all the new services that are being made available from third-party service providers upstream. They all need their service to work and unless the service provider takes care of this there will be lots of companies managing their own service in the home without any overall view of what is going on around them. "I think service providers can have the 'total view' and take the viewpoint of the end user and make it work from the user point of view," he says.

● BUILDING A CONNECTED HOME PLATFORM

For Paul Bristow at ADB, the big opportunity for the service provider is to make everything in the connected home work, and make it simple for consumers. He believes

this is the basis for increased loyalty, new revenues and growth, regardless of whether Pay TV is currently a profit centre or not.

ADB argues that in order to address this opportunity, service providers need to create a connected home platform. This is primarily a software function and it needs to enable service providers to open their network to trusted third-parties, provision new services efficiently and, where necessary, remove them again, manage and update services, manage QoS in the broadband network and inside the customer home, ensure devices can be added to the home network easily, and provide a user interface where services can be presented to, and controlled by, users.

The building blocks for the connected home platform will include a DLNA server, network resource management and smart routing capabilities. This platform will host management applications that are invisible to the consumer but which help to manage the network, like monitoring QoS and adjusting QoS settings to guarantee the delivery of OTT services to devices. Other applications could include data capture ▶▶



Paul Bristow at ADB and the company's Epicentro-PMP solution

TELECOM ITALIA HAS OUTLINED A SMART HOME WHERE A COMBINATION OF SERVICES INCLUDING MEDIA ENTERTAINMENT, AUTOMATION, SECURITY AND eHEALTH CO-EXIST ON A SERVICES PLATFORM THAT SUPPORTS THIRD-PARTY APPLICATIONS.

« from different devices in the home to either store or forward the information directly to other devices. Not surprisingly, an important function of the connected home platform is to provide an interface between the different devices in the home network.

For many years, ADB has been emphasising the need to make the video home network simple and user-friendly, ensuring that it is an extension of the TV experience we all know, meaning that above anything else it just works and everything happens instantly. With its software strengths, including its own middleware and User Interface, the company has combined standards with tight software integration to ensure its set-top boxes and DVRs can cater for the increasingly complex demands of hybrid (e.g. IP and broadcast) network delivery, multimedia sharing and multi-room viewing.

Last year the company acquired Pirelli Broadband Solutions, whose product lines included broadband access devices such as xDSL and FTTH gateways and software for the broadband platforms. By combining this with its set-top boxes and DLNA based whole-home entertainment solutions, ADB has positioned itself to help service providers take control of the converged home. Important new products for ADB

include the Epicentro-PMP solution, a suite of remote management applications that enable service providers to remotely manage the entire home network. Epicentro-PMP uses the TR-069 standards suite and enables management of multi-play offers and multi-vendor devices.

Bristow says a key challenge for service providers now is to become a platform that can support the growing range of connected home services, possibly starting with multi-room TV and multi-screen TV but then expanding to new broadband service offers like energy management. He expects to see a mixture of service provider and third-party applications hosted on the connected home platforms and points out that while they may not all be mainstream, in the sense that they would appeal to 90% of the market, there will be a number of niche services that could possibly attract new money as well as consumer interest.

Telecom Italia recently presented its

long-term vision for the connected home, outlining a range of new services and a smart User Interface to manage them. Tiziana Demaria, Strategy and Innovation Manager for the company, described a smart home where a combination of services like media entertainment, home monitoring and automation, eHealth and security, among others, co-exist on a services platform that supports third-party applications. In this model the home gateway becomes an ecosystem for the control of these services.

Telecom Italia already offers health-care services and has been investigating remote management and monitoring of smart appliances. The telco is also interested in providing assisted living and remote rehabilitation services.

Demaria said the platform needs to support the introduction of new services and the development of new network interfaces and an execution environment. It will

► For the consumer, everything has to be easy and convenient (pic ADB)

rely on open standards for communication and interoperability, like the discovery of a ZigBee-based device. It will also provide close integration of the different systems so that, in a far sighted example, the security alarm is not triggered when the house cleaning robot starts cleaning the floor!

In this vision, which the company is working towards, the home gateway becomes the point of presence for Telecom Italia in the home and the place where the company controls the home network and integrates the different systems, devices and networking technologies operating



access, manage and even buy their home services across various screens, whether it is a mobile or a tablet or television. "We need a comprehensive and effective user

experience and that, while the equipment needed for the connected home is already available, service providers still need to establish a position where there is interoperability between all devices. Then there is an obvious value proposition for a consumer who can move their content from their BlackBerry smartphone to a television, or record content on the TV and play it on the tablet, or back-up their other multimedia content in the cloud.

"The world is not BlackBerry or Sony or Apple," he points out. "The world is diverse. Standards are what the user wants and definitely what we need. Consumers do not want to know about technical details, they just want the services to work and do not want to be locked into a particular service provider or particular devices."

Rami Amit is CTO at Jungo, which among other things provides home gateway middleware and a Service Application Platform that makes it easier to introduce third-party services to the connected home. He thinks one of the keys to success is interoperability of devices and more effort is needed to ensure this is a reality.

"We all know that if interoperability is not good enough the service is not successful," he declares. Amit points to the growing importance of DLNA although, like many commentators, he bemoans the fact that this is not reliable. "I am sure this [true interoperability] will happen but it is not the case today. The simple answer is that you need interoperability and not just manufacturer claims to support some standards." ►►

"WE NEED A COMPREHENSIVE USER EXPERIENCE, A POINT WHERE YOU CAN CONTROL DEVICES IN THE HOME AND CHOOSE NEW SERVICES FROM TELECOM ITALIA AND THIRD-PARTIES."

within it. "We chose the access gateway because it is a widespread device in the home and is always on," Demaria explained at the Connected Home World Summit in London. "Through this device we want to enforce the Telecom Italia brand within the home and reduce customer churn and acquire new high value customers.

"The final goal is to support the customer with a growing number of applications within the home," she revealed. "There will be a growing number of applications that are provided by Telecom Italia or our partners within the ecosystem and then device vendors will be able to integrate their devices within the ecosystem and introduce their applications. The user will be able to access their home services from the device of their choice, wherever they are, like using their mobile phone."

Indeed, an important part of the vision is an intelligent home portal that provides the User Interface where consumers can

experience, a point where you can control devices in the home and choose new services from Telecom Italia and also third-party service providers," Demaria added. The company intends to provide some diagnostics and customer care functions via the portal and a key role for it is to present information relating to the service, of course, which could be reminders from active applications.

Clearly in a world where operator services and devices, third-party services (and possibly their tethered devices) and CE devices from multiple vendors have to co-exist, standards are going to be essential. Guilhem Poussot, Head of Connected Home at Vodafone Group in the UK, believes more standardisation efforts are needed in order to beat Apple in the connected home stakes (he holds up the CE giant as the best competing ecosystem for entertainment services).

Poussot believes the battleground for the next decade will be around the user

▶ Jungo makes it easier to introduce third-party services to the connected home.

◀◀ The criticisms concerning interoperability are usually aimed at DLNA because that is now the defacto solution for making multi-vendor devices work together in the home. The big problem for DLNA is that many consumers are used to the Apple ecosystem and the way a few devices from the same vendor work together seamlessly to deliver a sub-set of the overall entertainment experience. That is the benchmark but DLNA has to try to replicate it across more services and on a near-universal scale.

The DLNA Alliance rejects criticisms that the level of user-friendliness depends on the device software in each case. "Home networks can be complex and confusing to consumers but DLNA provides a simple way to connect and enjoy digital media content. DLNA Certified products provide consumers with an effortless set-up," a spokesman argues. "The consumer feedback has been very positive about how easy it is to manage, share and enjoy content."

With over 12,000 device models DLNA certified so far, one focus for the Alliance is to continue the expansion in the number and type of devices it supports. Alan Messer, a member of the DLNA Board of Directors and Senior Director of Connected



◀ Rami Amit, CTO at Jungo

THE WAY APPLE DEVICES WORK TOGETHER SEAMLESSLY IS THE BENCHMARK BUT DLNA HAS TO TRY TO REPLICATE IT ACROSS MORE SERVICES AND ON A NEAR-UNIVERSAL SCALE.

Consumer Technologies and Standardization at Samsung Electronics, points out, "Recently we have seen an expansion of DLNA's Certification categories to include the latest popular CE products like tablets, photo frames and appliances. Consumers have even more options available to connect and enjoy digital content throughout the home without boundaries. We expect this to continue as more products become fully connected."

The other focus today, according to Messer, is to continue to increase consumer awareness, which includes working with physical and online retailers to familiarize their employees with the wide selection of DLNA Certified products. He adds, "Participation from service providers and

cable operators will also be key to the success of the Alliance and this was recently demonstrated with the release of our new Interoperability Guidelines for the playback of high-quality, premium commercial video. These will make service provider content more easily available for playback across DLNA Certified televisions, Blu-ray disc players, game consoles and set-top boxes."

ADB believes DLNA has already had a game-changing impact for service providers because its decentralized services architecture gives them the option to harness deployed hardware (whether their own DVRs, set-top boxes or even consumer-purchased storage) to create a whole-home TV and multi-screen environment without the need for new hardware (like a separate home gateway). ADB can provide home gateways if service providers want to deploy new hardware but it now offers the ADB Virtual Home Gateway as a cost-effective solution that will deliver the same functionality.



▶ DLNA makes it possible for a growing number of devices to interoperate



▶ Alan Messer is focusing on increasing consumer awareness of DLNA

With a DLNA-enabled network, there is no need for a single server and ADB argues that it makes no difference whether functionality, such as tuning or memory or processing, resides in one product or sits across three. With the Virtual Home Gateway, ADB is looking to harness the strengths of all the devices in the home, which could include the extra 2Tb hard drive that someone bought in retail. It means whole-home TV, multi-screen TV and companion screen experiences can all be supported using deployed hardware.

For many service providers, deploying a new residential gateway is still the preferred approach, however, and UPC is among the cable operators pioneering the concept of an all-powerful device that creates a bridge between the cable network and the open CE devices around the customer premise and between the managed and unmanaged worlds. But whichever model is used for the connected home, software is increasingly important and part of its job is to make the service provider environment more open.

Nick Fielibert at Cisco highlights the need for an application framework that makes it easier to implement applications on a residential gateway. The idea is to give greater control to service providers, who will not have to rely on a middleware ven-

DLNA HAS HAD A GAME-CHANGING IMPACT FOR SERVICE PROVIDERS BECAUSE ITS DECENTRALIZED SERVICES ARCHITECTURE MEANS THEY CAN HARNESS DEPLOYED HARDWARE FOR MULTI-SCREEN TV.

dor to put new features on their roadmap. This is part of the strategy with Cisco Videoscape, a suite of products that among other things uses an open, IP-based software and hardware architecture to deliver virtually any consumer device or screen.

For the connected home, Videoscape supports a client framework that allows third-party applications like energy management to run on top of the service provider platform. "It is becoming more and more about software on the gateway," Fielibert points out.

Rami Amit at Jungo highlights the need to open up the home network to more application developers in future, so service providers can deliver the bundle of broadband services people want. One of the barriers could be the cost of developing separate software for different gateway hardware platforms, something his company aims to solve with its Service Application Platform, an end-to-end software solution

that enables service providers to introduce new services across their entire installed base, covering different makes of gateway, uniformly and quickly.

Part of the solution is automatic service installation and gateway configuration. Jungo highlights the opportunity to become a value added seller and turn the service provider portal into a one-stop shop for subscribers where they access their digital homes, somewhere that operators can use to market services to them.

As Amit points out, while the broadband provider is likely to remain the entity that supplies the residential access point for the home, operators may have to compete with other connected home services providers. So the ability to deliver the bundle of services is important. He says the broadband operator will probably be the main application developer initially, as they want to control the process themselves, but he thinks that in future the APIs will be opened up to additional developers. ▶▶



Technicolor's Media Touch tablet can be integrated into the digital home ecosystem

Technicolor has just launched the Home Control and Security edition of its MediaTouch tablet, developed in partnership with iControl Networks, to support services like integrated home management, control, security and energy management. Pizzica points out that besides tablets, we will also see more in-built screens around the home to help with the presentation of the connected home services.

Technical support could hold back this market opportunity, which raises again the

TOWARDS BEING CONNECTED HOME PLATFORM OPERATORS

Ben Geller at Motive/Alcatel-Lucent is confident the technology foundations are now in place for service providers to think about exploiting their role as the managed service provider for all connected home services. For him, the business models are the main barrier now. Demaria at Telecom Italia highlights marketing as a key challenge. "Users are often not expecting the provision of these kinds of services from a telecom operator so we need to let people know that we are moving beyond our traditional service offering" she explains.

Sappington at Parks Associates also highlights this issue. "One of the primary



hindrances to adoption is consumers' lack of awareness of the benefits of home management services. Many consumers do not understand what 'home management' is and what value it provides to them. In fact, many of the benefits can only be truly appreciated by experiencing them. So, any marketing efforts that focus on allowing consumers to experience the service, like live demonstrations at events, for example, will be important."

Parks Associates believes that part of the reason for the revival of interest in home control and energy management is the emergence of apps that can be used with smartphones. And Vince Pizzica at Technicolor, whose Media Touch tablet can be deployed by service providers and integrated into the digital home ecosystem, is a firm believer that the tablet will actually push people towards home networking services because of the way it creates value in presenting the applications. Tablets will be able to handle the presentation and even control of complex services in a way that a remote control cannot.

Ben Geller at Motive/Alcatel-Lucent

PART OF THE REASON FOR INTEREST IN HOME CONTROL AND ENERGY MANAGEMENT COULD BE THE EMERGENCE OF APPS THAT CAN BE USED WITH SMARTPHONES.

question of how much responsibility a service provider is willing to take for making third-party devices and services work in the home, and whether they can charge for doing that. Sappington warns: "Any new home management service, or indeed any service, that requires consumers to perform installation or configuration or to learn how to use a system will result in increased tech support calls - costs that can ruin the profitability of a service.

"If consumers can add their own devices to the system as well, an operator can expect even more calls, truck rolls or dissatisfied customers. If the support is inadequate, operators may end up unprofitable with the service or even lose the subscriber altogether."

There is also the question of how you sell the connected home. While a service provider may gain credit with customers (and ultimately loyalty and new revenues) for making everything work in a user-friendly manner, the marketing might need to focus around the individual services that are possible rather than the 'connected home' in itself.

Ladbrook at Informa views Apple as a beacon for service providers looking at how to market connected home capabilities. He

SERVICE PROVIDERS DO HAVE THE CHANCE TO DIFFERENTIATE AGAINST CE RIVALS AND SPECIALIST PROVIDERS OF THIRD-PARTY SERVICES WHO COMPETE RATHER THAN PARTNER WITH THEM.

operators to duplicate," he says.

Erik Kruse at Ericsson says security and trust will be of utter importance. "That means that maybe you will not download applications to your cooker, energy system or security system from small independent application providers. You want the trusted, safe, secure applications and you want someone to be a trusted partner. This is somewhere I think the local service providers can play a major role."

Bristow at ADB believes operators can differentiate by making the connected home work and making it simple. "You need to solve the services fragmentation problem for the end user but in a way that does not limit them so you do not create a walled garden but let them have what they want within the single user experience framework," he suggests. "This connected home is where we will find more revenues that are not in communications and entertainment. That is how the service provider can also secure their place in the home."

Research firm Analysys Mason is convinced that service providers should now pursue the broader connected home opportu-

nity, adopting a two-stage approach to the digital home, focusing first on multimedia and then on home automation. At the Connected Home World Summit this summer it was clear that operators are exploring new service opportunities but there was a mood of caution, with worries about how much more money consumers will spend with them. However, Apple and in particular its iPad were again used as the example of how consumers can find money if they see value.

Parks Associates has actually put a figure on the value of the new market in home automation, home security and energy management, which it groups under 'Home management' services. The company is predicting that by 2015 this will deliver operator revenues of \$1.2 billion worldwide. It may be early days, but it looks like there could be a market beyond entertainment and multimedia for service providers who are willing to go beyond the triple- and quad-play and become true multi-play providers. Whether they go down that road or not, they have little option but to take command of the entertainment home, because if they do not, sooner or later somebody else will. ■

believes the Apple iTunes AirPlay offer, which allows consumers to stream music throughout their home wirelessly (integrating with speaker docks, AV receivers and stereo systems), is a good case study for the industry. "Apple sells home networking as a service, sold as part of Airplay," he explains. "Apple does not sell a device as a networking device but sells a device as part of a service and, as an added value, that service also has great home networking. People buy into it not because they want a home network but because they want iTunes around the home."

Ladbrook says there is everything still to play for in the connected home. "Nobody has come in and dominated this space like Google has with search," he points out. "Maybe nobody will but there are several players trying to get a piece of this pie. Microsoft, Apple and Sony are all making great strides."

This is a reminder that service providers are not the only companies who see a market opportunity, especially when it comes to multimedia and entertainment in the home. He urges service providers to start experimenting with connected home business models and wonders whether the 'connected home' needs to be rebranded into something more sexy, in the way that Samsung is trying to rebrand connected TV as Smart TV.

Service providers do have the chance to differentiate against CE rivals and specialist providers of third-party services who compete rather than partner with them. Sappington points out that bundling has become a valuable tool in their marketing arsenal and one that resonates with consumers. Clearly they can leverage their pre-installed network and CPE systems for additional services. "Importantly, operators have the ability to blend features of their core services, whether it is broadband, TV, voice or mobile, to provide enhanced services, such as a dashboard on the TV, control via mobile devices and other features that are difficult for non-

Connected TVs need to be connected!

