

With households now containing a plethora of devices on which media can be consumed, the challenge is for service providers and their vendor partners to ensure safe and seamless transport around the home. Colin Mann finds out how a range of industry experts tackle the issue.

**W**ith households varying significantly across continents and even within countries, is one network solution likely to emerge to carry all the rich media and value added services around the home? According to Dr Neale Foster, VP sales, marketing and strategy, TV, at ACCESS, there will be a number of network solutions and associated operators that carry media and services around the home. “Consumers will most likely chose the one that makes most sense for them from Wi-Fi, HomePlug/powerline, Ethernet. What is perhaps most important is that whichever network is chosen, most major players have chosen DLNA as the standard that enables interoperability for the host of devices that will look to share content in the multi-screen future.”

“I wish!” exclaims Paul Bristow, VP strategy, middleware and consumer experience at ADB. “This seems less likely as time goes by. We are seeing a need for ‘multi-phy’ solutions that can use all the physical networks – Ethernet, various flavours of Wi-Fi, MoCA – in such a way as to maximise the quality of service for all the different things subscribers want to do.”

Yaron Agami, product marketing, Cisco service

provider video technology group, suggests that if one solution that manages all media and services will prevail, it will be an operator-managed gateway device that will be the centre of the converged digital home, providing triple play and value added services around the home.

Hui Zhang, founder and CEO of Conviva considers it unlikely that one solution will emerge, but rather



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**DR NEALE FOSTER, ACCESS**

today’s home networks are diverse and are likely to remain so. “Key factors driving selection of particular interfaces for Home Gateways (HGs) are wide availability and acceptance by consumers, performance, reliability, ease of set-up and use, and security. The most widely chosen home networking solutions for HGs are technologies that have the most general acceptance in the consumer electronics market (e.g., Wi-Fi, Ethernet, DECT). Beyond that, some services have particular attributes that may influence the choice of certain interfaces on the HG.”

According to John Egan, president of the HomeGrid Forum, G.hn will be the home network backbone. “It has all of the characteristics needed to meet the challenge for passing and managing huge amounts to data, like OTT and HD IPTV,” he asserts. “It has the highest robustness to noise and best performance over any wire type, and its universal nature adds the flexibility needed for system designers to maximise their design investments, service providers to integrate into their architectures and offerings, and consumers to plug and play with G.hn devices anywhere there is a wired

there will multiple competing solutions. “To add to this, there will be many critical advances in the application layers in end devices that will play a dominant role in the evolution of OTT and the Gateway,” he predicts.

**DIVERSITY.** Duncan Bees, CTO of the Home Gateway Initiative (HGI), notes that

connection point in the home... power socket, coax outlet, phonenumber jack, whatever.”

In the short term, Rudy Zijlstra, CTO at Hitron, suggests the answer is clearly “no” when taking into account a number of the drivers, such as legacy deployment, related CAPEX investment, user experience and user lethargy. “As a result of these conflicting aspects, we can expect to see different solutions in the short to mid-term, even within the same category of operators (cable, telco, Satellite,” he predicts.

Jon Black, director, CPE marketing at Ikanos, says that a hybrid approach will be needed on the home gateway. “Wireless technology will continue to rise as a percentage of connectivity to devices in the home, but there will continue to be a need for reliable wired solutions.”



**INTEGRITY.** According to Peter Oggel, VP products at Irdeto, the integrity of the end to end service delivery that is necessary for the distribution of interactive and premium services across a home network requires a stable, highly resilient infrastructure. “The tar-

geted nature of rich media or personalised content may mean that a specific technology is better adapted, such as WiFi / PLC or BPL / DLNA / UpnP.”

For Rob Gelpman, VP of marketing and member relations at MoCA, the solution to the networked home is a blend of wired and wireless technology standards seamlessly working in concert. “Fortunately, there is a new standard, recently ratified by the IEEE, called P1905.1, which will essentially recognise which technology is in use without disruption to others. Operators and consumers can add devices *ad hoc* without disruption to services and consumer preferences,” he notes.

Nandini Iyer, senior product manager, NAGRA, predicts the new digital home will not only feature seamless consumption of media across devices, but also include lifestyle

(i.e. 802.11n to 802.11ac, HPAV to HPAV2, etcetera)."

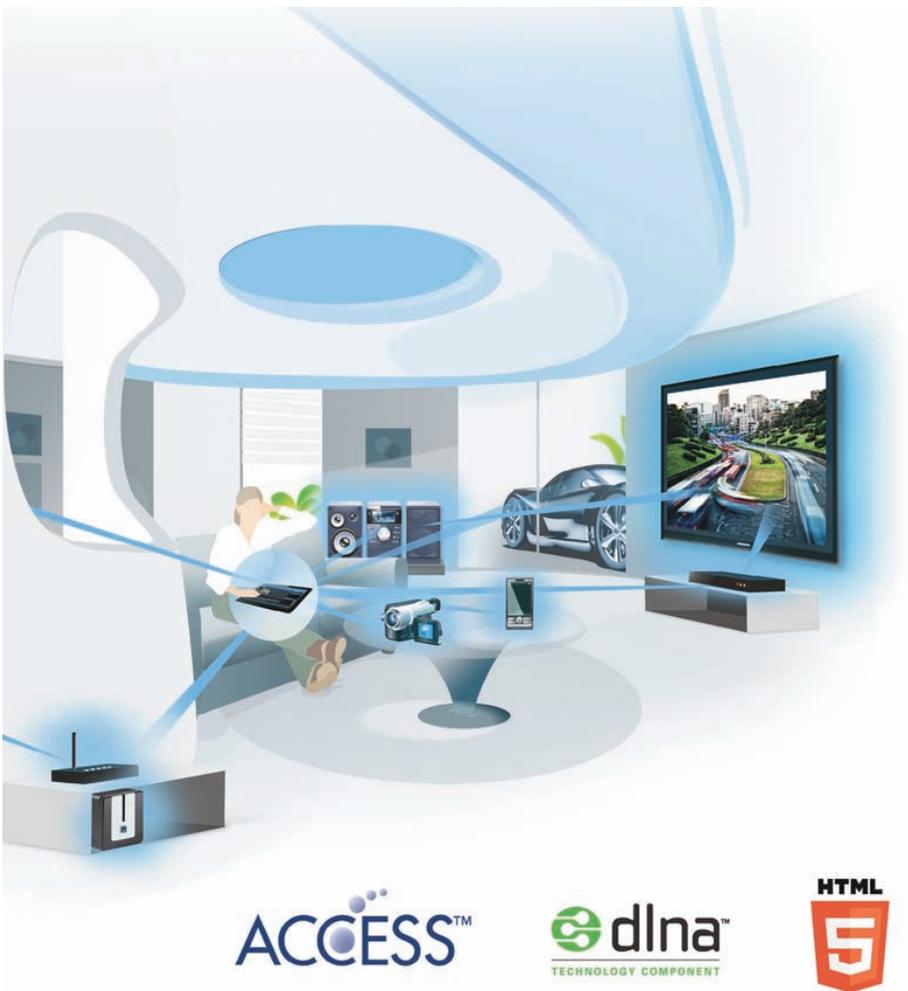
Steve Christian, vice president of marketing, Verimatrix, admits it is hard to look into the crystal ball and predict a single solution at this point in the development of the market, but nevertheless anticipates that there will be a mixture of cloud-based and gateway-based media delivery for various services. "Operators around the world have widely varying attitudes to the central importance of a gateway CPE device and the services it might provide. As media sources and media viewing devices multiply in and out of the home, digital rights management (DRM) interoperability based on any architectural option will continue to be a significant challenge," he suggests, adding that one way to address this challenge is to deliver video to the home over a wholly-IP infrastructure.

**THORNY.** As to the thorny question of who controls the gateway to the home and where the responsibility for ensuring quality lies, ACCESS's Foster foresees "a big struggle" between TV operators, broadband operators, OTT operators and CE device manufacturers. "There will be different winners in different markets. Competitors will work together in some markets while competing in others. It's almost certain that there will be a number of winners rather than just one winner. There will be revenue sharing models and of course there will be a huge battle to 'own the consumer relationship,'" he predicts. "Quality will be the main problem of the company billing for content delivery – even if they don't have ultimate control of the network. Broadband operators presently have to solve in-home networking issues, perhaps this gives them an initial advantage as more and more valuable content is transferred over home networks."

According to ADB's Bristow, such considerations depend on the gateway. "If we're talking about a broadcast-enabled media gateway, this is usually the responsibility of the pay-TV operator. If we're talking about the broadband gateway, it's the broadband operator.

Whatever you call it, STB, gateway or something else, some form of physical presence in the home is essential to manage what's happening in the home network. Without controlling the routing function in the home, it's impossible to control the Quality of Service," he admits. "This has a direct impact on the Quality of Experience for your subscribers. If you are selling a service of mixed multi-screen TV, VoIP and Internet Access, and your subscribers can't make a phone call while streaming video to a connected TV you should expect complaints. If you don't get this right any savings you may have made on CPE will be destroyed very quickly by support calls."

Cisco's Agami argues that the service provider controls the gateway. "The service



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**HUI ZHANG, CONVIVA**

enhancing services such as home monitoring and home automation.

"In delivering this converged experience, the challenge for service providers is to make the new digital home more reliable while being affordable. We believe that both the home gateway and the cloud are equally important in addressing these challenges. As network operators continue to invest in augmenting their IP networks to support delivery of premium TV services to multiple-screens, the digital home gateway allows operators to deliver premium content to multiple screens using their existing network infrastructure with a high quality of experience and reduced upfront capex costs," she advises.

Darren Fawcett, chief technical engineer at Pace, suggests that nowadays, content consumption is constrained by what devices operators want to support, they select a number of devices, for example applications often are iOS first, then Android, then Xbox. "As

service operators drive forward an agenda of extending their content reach, they will want to connect to as many devices as possible. In addition service operators will need to meet their obligations to the content owners namely maintaining the rights, quality and security of the content.

Today the best way to do this is through a gateway/media server which also offers value add services such as acting a single point of management to maintain and manage the experience."

**POTENTIAL.** John Marcolini, senior director, product management at Qualcomm Atheros, is another to note the potential of the IEEE's P1905.1 for the standardisation of hybrid networks. "This specification brings together the top commercially deployed networking technologies (Ethernet, Wi-Fi, HPAV, and MoCA) to raise the bar on whole home network coverage," he advises. "P1905.1 has three primary objectives: 1. Provide a user extensible, easy-to-use home networking solution that is interoperable with the most popular networking technologies deployed world wide; 2. Enable the use of multiple LAN technologies simultaneously (i.e. HPAV + Wi-Fi) to provide a scalable, robust transport for premium and over the top services; 3. Transparently benefit from the evolution of each of the individual networking technologies



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HOMEGRID FORUM**

provider is and will continue to be responsible for its

managed services and their quality, but not for the quality of unmanaged services.”

Conviva’s Hui Zhang accepts that the service provider plays a big role in controlling the gateway to the home but predicts that we will begin to see a battle between the service provider and device manufacturers. “Some

device manufactures are even introducing their own home gateway equivalent in order to own responsibility. When it comes to quality however, both parties are responsible. While the service provider controls the infrastructure, this is only a fraction of the end to end path. There are certain complications that end devices have to deal with when it comes to the quality of the end user experience. End devices may leverage all the services that the service provider offers, including the home gateway, but ultimately it is the device itself that deals with the final quality that the end user will experience.”

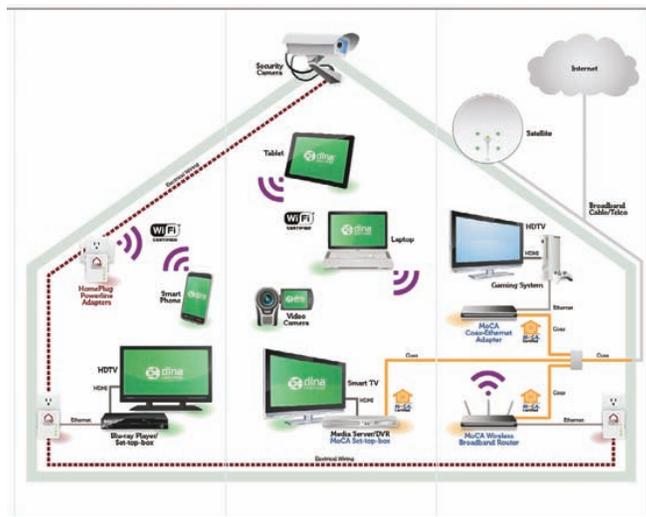
**QUALITY.** According to Andrew Glasspool, managing partner at Farncombe, the network operator or ISP owns the gateway to the home and they are the only people who can guarantee quality.

HGI’s Bees says that typically, Broadband Service Providers (BSP) provide a managed HG to the customer with support for Quality of Service. “The HG supports various home networking types. The BSP may also supply additional home network infrastructure devices to the consumer. While the BSP is not likely to own or be responsible for any home network physical wiring, the customer is still likely to contact the BSP regarding any problems with the configuration and quality of the home network,” he notes.

The Home Grid Forum’s Egan notes that G.hn-powered gateways may be retail sourced, and as such, the end user has their responsibilities as well as any remote service offered by vendors. And, as G.hn is fully TR-069 (the Broadband Forum specification for remote

management of customer premise equipment) compliant, the retail customer may find that their Service Provider may offer a service to manage the gateway for them remotely. “Many Service Providers are looking to have the ability to manage down to the

G.hn node in the home, if necessary, while initially looking to manage the gateway and its traffic policies to ensure downstream delivery of paid services is at a consistently maximum quality level,” he advises, adding that to protect their investment and the overall quality of experience of their customers Service Providers may need to step in and have traffic management policies in the gateway, otherwise their service metrics may appear poor to



the end user, and the cause be outside the realm of the SP.

According to Hitron’s Zijlstra, the natural behaviour of customers in such instances is to call the operator who provides the internet/media connection, except for clearly over-the-top content such as YouTube, where the customer is used to access from the PC, accepting the related Internet delays. “Operators will have to deploy a strategy to deal with this in a way that ensures customer satisfaction. In the end, although the home network is owned by the user, the operator that is able to manage this not-owned private network in the most user-friendly and cost effective manner will see the highest customer retention,” he suggests.

**MANAGEMENT.** Ikanos’s Black agrees that the consumer will likely look to their Service Provider to provide the quality broadband link to the outside world. “If an OTT service is performing poorly, the subscriber may blame the service provider and associate the lack of quality with them and not the OTT provider.

Today, there is little control with traditional

gateways beyond physical layer configuration settings. Over time, gateway management will become an important factor for more managed services in the broadband provider space. This includes management of devices on the local area network – both wired and wireless devices.”

Irdeto’s Oggel says that if the term ‘Home Network’ is taken to refer to the seamless [re-]transmission of content across multiple mobile devices and screens around the home environment from a single subscription service, then clearly the gateway needs to be controlled by the service provider, who is responsible for secure delivery and policy enforcement of their services to multiple devices as well as appropriate service levels.

“Quality of experience probably starts with the network service operator, as they are the ones that get the service call,” suggests MoCA’s Gelpmann. “As consumers bring more devices into the home, making it all work together could get harder, so the reliable delivery of content becomes imperative and probably should be managed by the operator.”

**DYNAMICS.** According to NAGRA’s Iyer, as the service operator’s realm of services and revenue generating opportunities extend beyond the main screen within the home, it becomes increasingly important for them to understand the dynamics of delivering and

controlling devices that are not operator owned. “The future home network means more than just a network infrastructure to move content around the home, it also brings with it the need for smarter device management, consistent and personalised user experiences, greater need for security and monitoring and the need to better control these devices using home automation.”

She suggests that in-home QoS is also critical when a multitude of devices are consuming services simultaneously. “Consumers expect reliable network and device performance but, instead, are increasingly encountering technical



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**PETER OGGEL,  
IRDETO**