

# Home truths

In a world of potential Over The Top providers, implementing the Home Gateway is vital for service providers who want to maintain customer loyalty and enhance their services and monetisation opportunities. But with a myriad of in-home and portable devices to connect, and an array of content types, this is no easy task. Colin Mann talked to a range of industry experts to unlock some answers.

“There are many different classes of Home Gateway that are emerging,” advises Matthew Huntington, Nagra VP product marketing, “with different features, functionality and use cases. One vendor’s gateway is another vendor’s set-top box. For Nagra, a video gateway is any device that can propagate a video signal to any device within the home, performing some form of transformation on the signal, be it simply changing the transport medium or performing complex transcoding and transposing, while keeping the video signal secure,” he explains.

With the exponential rise in broadband speeds, and the growing sophistication of Over The Top (OTT) services. Is there a risk that the Home Gateway will not be able to keep pace with such requirements? “There will clearly be rapid evolution in this space, and this year’s home gateway will rapidly be replaced with next year’s home gateway, leading to a rapid replacement cycle,” he responds. “During this period of rapid innovation, it is valuable for the gateway functionality to be broken down into different sub-components, so only the elements that are affected by such rapid change need to be replaced by the



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**MATTHEW HUNTINGTON,**  
NAGRA

service provider or the consumer.”  
“In countries with advanced pay-TV offerings, but with low broadband speeds unable to deliver high-quality streaming, leveraging the STB as a Home Gateway makes sense. Where broadband speeds are at or better than 10

mb/s, then an over-the-top strategy may be the best option,” observes Christopher Schouten, senior director, solution marketing at Irdeto.

**BUNDLED SERVICES.** Geir Bjørndal, EVP, innovation and strategy, Conax, agrees that there are challenges with the introduction of Home Gateways to the market. “One of these challenges is the growing number of on-line devices in the homes, as many homes are already using numerous devices such as smartphones, tablets and even TVs with a direct Internet connection. TVs generally have increased functionality, thus an online-TV with a CI module is functioning quite well as the household’s main TV. For Home Gateways to succeed in markets where such a legacy is already in place and growing rapidly, a Home Gateway must provide a unique offering or bundled services that offer extremely attractive pricing.”

Paul Bristow, VP strategy, middleware and consumer experience, ADB, says that as broadband access speed hits 100mbps and above, we see the limitation of older generation WiFi and Ethernet routers. “Back in the days of ADSL1 and even ADSL2, if you could only get a data throughput of 30mbps or so, it didn’t matter since you didn’t have a faster connection to the outside and only the most devoted consumers would measure their Ethernet network speed inside their home.”

He predicts that with the ever increasing access speeds – 160, 360, and even 1Gbps - and the availability of bandwidth consuming services, any gateway device will become obsolete – the length of time that it will take will be proportional to how much the operator over-specified the device at the time of launch. “So keeping up with higher access speeds will be a costly proposition in an all-inclusive Home Gateway device. We think a distributed solution, like ADB’s virtual gateway, that lets you upgrade the edge device separately will be more cost effective over time.”

**SMART ROUTING.** Jim Lomax, EVP, sales



and marketing at AirTies, notes that Home Gateway technology is evolving at a fast pace and increased functionality is being added as it evolves, pointing out that the company’s new Home Gateways can now support 1 Gigabit and soon will add 4x4 Wi-Fi (600Mbps) to facilitate distribution of the five to six streams that today’s high broadband speeds allow. “Yet smart routing will still be key to distinguishing between the different types of traffic such as multicast video, TCP/Internet video, gaming, casual browsing, etc, while also satisfying latency/jitter needs accordingly.”

Anthony Landamia, executive director, product management, SeaChange International, feels the Home Gateway will be able to keep up. “While broadband access is giving unprecedented data speeds to the home allowing for over-the-top media services, download and streaming content services need to share the delivery path with general network traffic. It is subject to traffic shaping and prioritisation policies of intermediary network gear. As a result, it is difficult for over-the-top services to guarantee the same Quality of Service that can be offered by service providers that provide dedicated content channels. The Home Media Gateway can take advantage of the dedicated content channels offered by the service providers and equip them with the tools necessary to protect their revenue streams and advertising outlets.”

According to Jaime Fink, SVP of technology at Pace, there is no question that both the silicon processing and advanced software needed in Home Gateways has evolved to meet the higher access speeds needed for TV



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upgrading more frequently.”  
**CONTROL POINT.** Dr Anton Monk, MoCA CTO/founder and VP technology, Entropic

Communications, predicts that next generation Home Gateways will have significant performance improvements

over current gateways. “These improvements include processor speeds, high-speed packet processing and video streaming and distribution capabilities. They will be able to handle significantly higher access bandwidths, enabling both managed and unmanaged traffic and services.” He also points out that with the advent of new home networking technologies based on the Multimedia over Coax (MoCA) 2.0 standard, the opportunity for future Home Gateways to deliver the performance and sophistication required by advanced multimedia services increases tremendously.

Benoit Joly, SVP, operational marketing, at Technicolor, describes the Home Gateway as the control point for the operator and the service provider to guarantee the right quality of service, at the required speed and feature level, and cope with the end users demand of deploying even more bandwidth-hungry services in the home. “The Gateway will be able to keep up with higher access speeds while enabling service providers to measure and maintain high-end performances and applications’ responsiveness in the home. Beyond the ‘conversion’ between the operator’s network and the home network, it enables it to create strategies for deploying services, controlling security and constantly checking all technical parameters attached to those.”

Yaal Eshel, Jungo's VP of marketing and business development, suggests that over the past 10 years, gateway technologies are always ahead of market demand for access speed and performance. “Using our software acceleration technologies, we are already shipping products that were designed for ADSL2+ performance, but deliver connections of up to



**Home Gateways can range in functionality, from basic devices, to those with advanced services.**

and OTT delivery. “There will really be two classes of gateways. The first are basic gateways - retail devices that simply provide elementary home networking and routing functions. These devices have minimal content enablement and lack the technology to deal with distribution within the home with sufficient quality. The second category, which Pace delivers, is advanced media convergence-enabled gateways that are uniquely designed hardware and software solutions that focus on enabling a high reliability video distribution experience within the home to set-top boxes, and other pay-TV, mobile and tablet devices. These gateways take the huge complexity of delivering disparate content and services to various devices around the home and make the process and management simple for the operator and end user.”

**FUTURE-PROOF.** Kevin Neely, director, product management video CPE, Arris, suggests that as the entry point into the home for High Speed Data (HSD) services, and also a platform for use cases representing some of the major consumers of HSD bandwidth, Arris expects the Home Gateway to be both an enabler and a driver of demand for higher access speeds. “In the cable industry, today’s DOCSIS3.0-based Gateway architectures offer future-proof bandwidth coupled with increasing levels of processor performance and sophistication, allowing ever-more complex packages of capabilities to be deployed. Simultaneously, CPE remote management and monitoring capabilities are also being improved to support closer visibility of service quality of experience. Certainly we see additional capabilities and capacity being

added into gateway products as time goes on, but we also see operators planning very carefully for the long lifetime of products shipping today, including requirements for storage and processor performance, expansion ports such as SDHC, USB and eSATA, *etcetera*.”

Stijn Coppetiers, marketing engineer at Genexis, claims his company has set the standard for FTTH gateways by premiering Gigabit-per-second functionality in its products. “Our vision is that the home gateway should provide practically unlimited bandwidth. This enables service providers to come up with new services without having bandwidth boundaries. So the answer is yes, Genexis home gateways are future-proof and deliver service providers and end-users the bandwidth they need now, and in the future. It is not only the home gateway that is essential though. The biggest bottleneck for future services will be outdated network architectures that cannot cope with the bandwidth requirements,” he warns.

Mark Evensen, founder and chief technology officer of Entone, suggests that as with any evolving technology, Home Gateways are engineered to balance features and cost at a given point in time and cannot cost effectively anticipate state of the art five or 10 years down the road. “They are built and selected with a usable life time goal in mind. For most consumers’ needs, the useable lifetime of a Home Gateway is at least five years. There will be more expensive options available for those early adopters who want the latest, most advanced features and higher performance. Those options include starting with a more expensive, more advanced Home Gateway or

**AirTies predicts the Home Gateway will initially remain a triple-play device.**

100Mbps over a fibre network. Current generation gateways' chipsets already support speeds of up to 1 Gbps while in most cases service providers only offer their customers connection speeds of up to 100 Mbps and the average connection speed is much lower. We are confident that the residential gateway will not be the bottleneck to delivering high access speeds and sophisticated over the top services," he declares.

**POINT-OF PRESENCE.** Duncan Bees, chief technical and business officer, Home Gateway Initiative (HGI) suggests that as the Broadband Service Providers (BSP) rollout higher speed access (GPON, VDSL2, point to point fibre) the performance demands on the Home Gateway (HG) related to data routing and service class identification and prioritisation (QoS) increase in lockstep.

"OTT services present a good example – in order to make the correct prioritisation decisions, OTT service types may need to be identified using a sophisticated algorithm. At the same time, the HG role is expanding, as it is becoming a point of presence for applications ranging from Home Energy Management to diagnostics. To address the increasing performance requirements, the HGI is specifying up to date test plans and performance metrics for the HG, and bringing a testing programme to the industry that allows the HG performance corner cases to be tested under a sophisticated test bed. At the same time, chips at the centre of the HG are increasingly powerful to match these requirements," he advises.

According to Keith Kelley, VP and GM, global telco and DVB home devices, Motorola



"There will be two classes of gateways: basic and advanced, media convergence-enabled."

**JAIME FINK,  
PACE**

Mobility, speed won't be driven by the Home Gateway but by access. "If someone brings Fibre-to-the-kerb or Fibre-to-the-hub, the gateway is not going to restrict bandwidth in any meaningful way," he says, adding that people are looking at removing analogue or even switched



video to IP, "so there's a proliferation of various data delivery services coming into the various termination points that I think is going to continue to grow."

**RETAIL MARKET.** Will the Home Gateway continue to be provided by the network operator, or will a retail market emerge? Nagra's Huntington suggests that service providers will look to both retain a traditional subsidised device model to maximise control, as well as promote a retail model to minimise their investment. "The componentised gateway model also aids this as some elements can be more easily moved to a retail model, for instance disks. Consumers can understand the value of increased disk space and may accept this as a retail purchase. On the other hand, consumers do not understand the retail value of the cable modem or IP telephony function. This should be compared to the electricity or gas metering equipment: it is provided by the operating company and is not offered for purchase in retail."

"Network operators have an edge in helping consumers manage the complexity of installing and servicing a Home Gateway, so they will likely maintain an advantage," notes Irdeto's Schouten. "There is, however, an opportunity for an innovative equipment manufacturer to provide a media-enhanced Home Gateway that offers compelling services that solve real problems in the home. These services could include a solution that would economically deliver content to multiple rooms and screens via the Home Gateway, or the functionality to stream content to tablets and smartphones."

According to Conax's Bjørndal, it is hard to foresee a retail market for Home Gateways, as they are very network-dependent. "Operators who can offer a triple-play solution will be the vendors who are in the best position to provide such devices. What is seen in the market these days are some aggregators that are working to collect a bundle of services and offer a Home Gateway where TV, broadband, and mobile TV are included in an integrated solution. This is seen mostly in the 'non-cable' environment. A challenge exists in successful-

ly creating an attractive package to compete with existing offerings."

**CONSUMER DESIRE.**

AirTies' Lomax says that there has always been a retail market for Gateways as a result of either the replacement of a faulty unit, or the consumer desire to upgrade to a product with more functionality and better performance. "To date, the type of Customer Premises Equipment (CPE) supplied by broadband service providers has been dictated by the type of services they wish to deliver to their customers. With the increased desire to access OTT content by the consumer, the forward-thinking ISPs will provide higher-specified Gateways for an increased market share while also reducing churn in an increasingly competitive market," he predicts.

"We believe that mass market gateways will be provided by network operators, as it is just easier for most consumers – not many consumers are ready to become network administrators," notes ADB's Bristow.

"For basic data services, I can see a retail market emerging, and to some degree it already exists," suggests Pace's Fink. "However, when consumers start to look at consuming either OTT content, media shifting or differentiated pay-TV content, it becomes clear that more advanced devices are needed to enable the very high speeds required to distribute content throughout the home and address any troubleshooting issues. Some may argue that this could be delivered via retail. However, from our experience of providing customer support directly for millions of pay-TV subscribers, nearly 75 per cent of the issues reported with the set-top box or TV services over IP are not to do with the end device, but rather the grey area of the home network." He recommends that to provide the level of service that customers are demanding, and to make the home entertainment experience simple and enjoyable, there must be a managed service provided by a network operator.



"It remains a question as to whether or not the Smart Home will make solid moves toward implementation."

**CHRISTOPHER  
SCHOUTEN, IRDETO**

"This delivers a better experience for the consumer and as a result



**“Forward-thinking ISPs will provide higher-specified gateways for an increased market share while also reducing churn.”**  
**JIM LOMAX, AIRTIES**

much better end user satisfaction and customer retention for the operator,” he advises.

According to Arris’s Neely, “there is clearly a market for retail gateway and DVR products, and it is right that the industry should continue to support and develop that; but as things stand today we expect the majority of gateways – especially the higher-functionality devices that may deliver multiple services and consequently need tight integration with the operators network – will continue to be operator provided,” he predicts, noting that the Gateway itself can play a role in opening up the operator’s services to retail devices within the home, and that many operators are exploring the possibilities that widely-recognized and supported standards such as DLNA offer in allowing gateway products to deliver content to consumer electronics devices such as smartphones, tablets and connected TVs.

**NEW HORIZON.** Genexis’s Coppetiers suggests that the market of FTTH gateways is still pretty much a business-to-business market only, but he sees a range of new services on the horizon, giving the end-user more and more options to choose from. “With the consumer becoming more important, it is not unlikely that a retail market will emerge. For this to happen though, networks need to become more open. Currently the passive network, active network and services are often offered by one and the same party, creating a vertically integrated and closed model. The same goes for current home gateways, where the network termination and residential gateway are one and the same product. An open network, with an open home gateway platform, will enable multiple service providers to offer their services to the consumer at the same time. This may include retail solutions.”

“Expect to see both,” advises Entone’s Evensen. “But we believe the operator will supply the Home Gateway in the majority of deployments. Since the Home Gateway contains components that are specific to the operator, we expect most consumers will want the freedom to switch providers without the investment into operator specific equipment.”

According to MoCA’s Monk, the vast majority of gateways will be supplied by incumbent service providers and network operators. “The Home Gateway is a critical

element in the service provider network, providing a link between the access network and the home where managed services are to be delivered. As such, it is considered an important device for the service providers to maintain control over. In particular, because in most cases it will integrate the termination of the access network, there is a reasonable expectation that it will be provided by the service provider,” he says.

**PLATFORM PORTFOLIO.** “The network operator and the Home Gateway go hand in hand,” affirms Technicolor’s Joly. “There is already a limited retail market and some core modems and routers are available off-the-shelf. But Home Gateways offer services beyond core Internet connectivity and act as a platform to the providers’ services portfolio.”

If we compare it to buying a mobile phone, it would be like purchasing a mobile handset on its own – it offers the basic package, but doesn’t give you the advanced services unless you have a mobile phone provider’s subscription attached to it.”

Jungo’s Eshel notes that a clear market trend over the past years has been a switch over from the retail channel to free or subsidised devices provided by the service providers. “There are good reasons for this; customers expect the service provider to provide support for network and connectivity issues even if that customer purchased his WiFi router at retail. Therefore, supporting customers has become much more expensive for service providers and in the longer term providing a managed residential gateway can significantly reduce connectivity issues and thus support costs. In addition, service providers view the residential gateway as a service that actively increases customer loyalty.”

The HGT’s Bees suggests that while routing and wireless access points are already available on the retail market, the requirements for a broadband service provider-managed and supported Home Gateway platform seem as clear as ever.

**SMART HOME.** Can the Home Gateway become a precursor to the ultimate Smart Home, or will it remain predominantly a

triple-play device? According to Huntington, the concept of a gateway - other than a simple cable or DSL router - is new to most service providers and so they have not yet thought beyond their existing triple-play services. “An obvious next step is the inclusion of mobile technology, such as 3G Femtocells in the gateway, in the same way fixed line telephony EMTAs are being combined today. We are therefore a way away from gateway forming part of a true Smart Home. But as service providers look to provide further value added services to extract more ARPU from their subscribers, they will look at smart home services, including security, smart grid and home health. These will ultimately be IP-based services serviced from the cloud, limiting how much the home gateway actually needs to understand about



them,” he predicts. “The Smart Home has become a topic of great discussion at conferences, but it remains a question

as to whether or not it will make solid moves toward implementation,” observes Schouten. “The high cost of implementing the Smart Home could potentially be a barrier to its success. From a pay-TV operator’s perspective, there may be limited customer demand for services that go beyond triple play. If this is the case, these types of services will have very little value add for the operator,” he predicts.

Bjorndal accepts that the complexity of integrating the entire home into one ‘Home Gateway’ device is technically possible, but suggests that to make a completely integrated solution has proven challenging, as there are many parties that have to cooperate to create



**“The residential gateway will not be the bottleneck to delivering high access speeds and sophisticated over the top services.”**  
**YAAL ESHEL, JUNGO**



**“The Home Gateway is a critical element in the service provider network.”**

**ANTON MONK, MOCA**

a successful scenario. “The first wave of Home Gateways will consist mainly of triple-play devices,” he concludes.

**CONSUMER ADOPTION.**

Bristow predicts that timing of Smart Home deployment will be up to the consumer adoption of these new

services. “It’s important today to provide operators with technology that makes it easy for them to deploy these service-specific point solutions. Our Epicentro platform removes the last technical barrier to deploying the data collection and management services needed to truly enable the Smart Home. So energy control or remote health monitoring services can be deployed without delay on our existing gateway devices,” he advises.

According to Lomax, the Home Gateway will be a triple-play device for a few years until Smart Home standardisation is in place. “However, multimedia home applications such as baby cameras and home surveillance can be added relatively easily,” he notes.

According to Landamia at SeaChange International, the market is not yet ready to embrace ultimate Smart Home technologies, but that the Home Gateway could be seen as a stepping-stone to that day. “At this time, triple-play services are the technology *de jour*, and the Home Gateway is capitalising on that market. However, SeaChange is not limiting the scope of the Home Gateway’s purpose to these services only. We are actively investing in advanced research to help make the day of the ultimate Smart Home a reality. By deploying our Home Gateway solution, we are equipping our customers (i.e. the service providers) with a managed platform to leverage Smart Home technologies, thereby positioning the service provider as a major player in the Smart Home arena when the time is ripe.”

**NEW MARKETS.** Fink believes we are “very close” to realising the connected home in more advanced markets, considering all the technologies now available are becoming integrated to allow next generation applications to interact throughout the home and on mobile devices. “More importantly, modern gateways can support these capabilities at the best possible costs by leveraging the existing processing and memory available to us. For instance, Pace’s Home Content Sharing solution enables pay-TV viewers to move PVR

and live video content around the home and extends service opportunities for the operator,” he advises. “As expected in these new interactive markets, it is not the technology that limits evolution in pay-TV technology, but business issues such as the lack of industry alignment and support around particular standards both in physical distribution (e.g. Zigbee and low-powered WiFi). More importantly, the communication protocols to enable these services to stimulate the much wider set of application developers that is necessary to drive the excitement and maturity of this market as we’ve seen in the smartphone and tablet markets.”

Neely suggests that the gateway architecture is ideally suited to playing a role in Smart Home and home security applications. “Operators are starting to explore the combination of features and protocols that best enable these applications, and we expect that given favourable customer response, we will see this become an increasingly important role for the Gateway,” he says.

Coppetiers predicts that the fibre-to-the-home gateway will play an essential role in the evolution of the Smart Home. “The home gateway acts as a digital doorway, enabling end-users to enjoy a combination of new, high-end services such as On-demand health-care, E-learning, E-metering, HD/3D video streaming and more. But to enable this scenario, an open network is necessary and the home gateway has to evolve. It has to be fully flexible and open, giving the end-user the choice of which services he wants, and making it more cost-efficient for network operators and service providers to step in.”

**MODULAR OPTIONS.** Evensen predicts that the typical Home Gateway will be predominately a triple-play device, “but expect to see more modular options coming available. For example, it’s now simple to add smart home connectivity to a Home Gateway via a low-cost USB device. Emerging standards for removable storage also portend storage purchased by the consumer and added to the Home Gateway.”

Monk notes that service providers are now starting to look at integrating home management networking interfaces such as Zwave and Zigbee into gateways. “It is still early to assume we will see gateways integrating triple-play with home control and energy



**Future devices will cope with speed demands.**

management, but I believe it will happen in the three-year time-frame. In the meantime, home control and energy management standalone gateways will connect separately to the home network,” he advises.

Joly suggests that if Smart Home is all about deploying some additional applications and enabling more services across the digital home, then most service providers are deploying home gateways to develop such a Smart Home concept beyond legacy triple play. “There are numerous cases of providers having turned their gateways into personal media servers, home automation, personal security control or energy monitoring boxes,” he notes.

**MARKET DEMAND.** Eshel suggests that the technologies for the Smart Home already exist. “We are currently demonstrating residential gateways with a Zigbee dongle that can manage multiple home appli-

ances through a web portal or smart phone application. Currently this is not a mass market and we do not see this becoming mainstream in the foreseeable future. The reasons being that on the one hand there is not enough market demand from consumers as yet and on the other most appliances are not Smart Home-ready. What we are learning from our customers is that some of them do plan to start offering individual elements of the smart home such as home security, health monitoring, independent living, energy monitoring, etcetera, but this is still far from mass market adoption.”

Bees sees a clear trend to increasingly sophisticated applications based on the Home Gateway bringing together a variety of devices and services. “One example is next-generation communications services that bridge the traditional concepts of telephony with those of mobility and high-definition media, while delivering a superior user experience - controlling communications service from televisions and smart phones. Another example is the trend to intelligence in traditionally simple devices that allows them to be integrated with a home automation system, or a home energy management system. At the same time, BSPs are also interested in offering ‘cloud based’ services that extend control of in-home services to applications resident in the network. The Home Gateway is at the heart of these trends,” he says.