Connected Homes: Enabling a Digital Lifestyle

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Introduction

The pervasiveness of high speed broadband, smartphones and tablets is having a remarkable effect on home networking technologies. Practically every home appliance and piece of consumer electronics is moving towards acquiring an Internet Protocol (IP) address, making it addressable and connected on the net. Consumers today already own multiple types of connected devices and this number will continue to increase over the next few years.

Connected homes are rapidly moving towards reality; the age of smart, automated homes is here.

We have already seen remote automation technologies such as controlling a thermostat on an air-conditioning unit via SMS or a security camera sending images to a remote monitor. More recently, TV sets are becoming Internet enabled, blurring the boundaries between a TV and a PC, bringing together a host of services such as online shopping, checking email, video calling and banking.

There are other facets of connected home that are interesting from an enterprise perspective. Smart metering and remote infrastructure monitoring is already a mature concept in many developed markets.

And with appliances connected to the manufacturer’s servers it will be possible for manufacturers to prevent break downs through remote diagnostics, provide predictive maintenance and thereby provide enhanced warranties ensuring a competitive edge. In addition, advances in cloud computing technologies and applying big-data analysis to the appliance data exhaust can help provide real-time service responses, and significant insights on usage patterns for various demographics to help create new products, services and business models.

Major innovation for service providers, device manufacturers and consumers is on the way. We are about to witness an exciting revolution, the catalyst for which is the emerging opportunity of connected home.

According to ABI Research, connected home devices are potentially the “Next Big Thing” in the consumer electronics industry and could reach a global market value of US$10 billion by 2014. The figure will balloon with growth in sensor and control technologies, mobile applications, network traffic, big data management, analytics and cloud computing.
The drivers of connected homes

According to Nielsen\(^1\), 46% of the mobile subscribers have smartphones while an enormous 60% of recent acquirers are opting for smartphones. The numbers point to a vast population that already owns remote “monitoring” and “controller” devices with connectivity.

Consumers are demanding more mobility, monitoring and controlling capabilities, centered on their desire for an always-on digital lifestyle. There are several other factors driving the demand for connected home. With growing energy consumption, rising energy costs and environmental concerns, consumers want to have better control over their energy management. Residences in the US account for nearly a quarter of the total energy demand, while globally, residences use about 15% of the total energy consumed, indicating an opportunity in energy-related remote management solutions (see figure 2).

\(^1\)Source: Q4, 2011 Nielsen Mobile Insights
Interestingly, consumers are also willing to pay for such solutions. A recent survey by Ovum found that - although the uptake of home security and monitoring, smart energy control and media sharing services is currently low, they offer tremendous potential, with consumers expressing strong interest in receiving them in future.

The emerging opportunities

Connected home presents numerous growth opportunities for businesses. However, to leverage this looming opportunity, service providers will need to create new partnerships, develop innovative business models, embrace new technologies and address new markets:

- **New partnerships:** The demand for online content is not slowing down in the near future and the migration to an all-IP environment will enable seamless anytime, anywhere media and on any device. Media sharing services that can connect all the devices used in a home is already in demand and the surge in demand for personalized entertainment services will call for new partnerships.

- **Technological convergence:** As networking technologies evolve and move towards uniform standards, there will be new possibilities emerging out of this convergence. For instance, a call on a mobile phone could automatically and seamlessly switch to the home’s wi-fi network once the user is home. Or a data download can raise a notification if it is already present on any device in the connected home. Such convergence will give rise to many new services.

- **Innovative business models:** With connected devices, healthcare and assisted living will be transformed with patient monitoring, device management and communication merging seamlessly in real time. This will enable better collaboration between medics, hospitals and drug companies, improve diagnostics and give rise to innovative business models. The billing, for instance could be based on usage/time or nature of intervention, rather than a fixed consultation fees.

- **New revenue sharing arrangements:** Advertisers will be able to target customers with content based on screen size, location, season and even an understanding of the home’s technological ecosystem (devices owned, usage, etc). This will lead to more flexible and effective advertising models. An advertisement delivered on TV over cable can result in an immediate purchase via the TV’s online connectivity.

- **New billing models:** Operators can bundle several services into a single mobile number eliminating the need to manage multiple bills. In addition, new billing models will emerge based on time of day, seasonality and location or even the type of device.

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Figure 2: Share of Energy Consumed by Sectors of the Economy, US, 2010


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<http://www.nmk.co.uk/article/2011/7/25/ovum-reveals-connected-home-services-with-best-potential-for-broadband-providers>
Key challenges to scaling: Fragmented systems, regulations, bottlenecks and consumer education

Connected home solutions have the potential to provide an unprecedented opportunity for Service Providers and other ecosystem players to reach new markets and add sustainable revenue streams. However, rapid technological evolution, fragmented systems and devices, security and privacy concerns present a challenge (see figure 3 above for Wipro’s analysis of the key business and technology related issues for connected home offerings).

Amongst the major concerns for players are regulatory requirements centered on privacy and security. With such vast amounts of user data being captured and stored, data management and security will need a very cautious approach. Compromised data could lead to legal costs and reputation damage.

While the mobile lifestyle of consumers is at the core of the connected homes development, consumer education is the key to success. Consumers are willing to pay – they already do for connectivity, content and other services – but they may not be able to select the optimum bundle of services. With the prospect of addressing a new breed of connected home users, creating competitive and easy-to-understand service packs will be essential. Additionally, with a plethora of devices on the net (see figure 4), consumers must be insulated from device complexity.

In an age when app installations on mobile devices have become painless, consumers will want unified, seamless, simple-to-use interfaces with interoperability across appliances and devices.
The war for home turf has already begun. However, winners and losers will be decided on the basis of their agility to embrace new technology, ability to create seamless experiences and their innovativeness. Service providers are making advances to embrace the opportunity, but they need to drive transformations that can help them deliver superior service and quickly roll-out new services in a multi-party environment. For success:

- Service providers must develop and adopt an open and flexible architecture that allows integration of devices and systems in the future. Creating new applications and integrating them with the backend, databases, etc., should be a swift and inexpensive process

- Operators need to build the capability to capture device usage data, store (securely), manage, analyze and distribute the insights across the enterprise and with partners in real time. Big-data analytics holds the key to new service discovery, customization, new product development and increased customer satisfaction

- Service providers should aim at creating an eco-system through symbiotic partnerships with device manufacturers, OTT service providers and system integrators that can help them bring everything together seamlessly. They must focus on creating end-to-end services and above all delivering superior quality of service for differentiated experiences

**Conclusion: It's about providing control, independence and peace of mind**

The consumer demand for a digital lifestyle is driving the adoption of connected home; and it is poised to grow; but the users of connected homes may not necessarily be tech savvy. These are not consumers who will want to grapple with the complexities of Wi-Fi and Bluetooth, 4G and IR and RFID and so on. They just want control, independence and peace of mind as they go about their daily lives. Reducing technological complexity and providing compelling experiences could easily be the winning strategy.
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Alan has a diverse background in the satcoms, financial services, media and telecoms industries across the globe. He is currently an independent consultant advising Wipro on telecoms and media matters. Most recently, he was Chief Technology Officer of SES WorldSkies where amongst other things he led product development including the development and implementation of the IP PRIME IPTV platform. Previously, he held executive positions at Citigroup in New York where he led development of mobile banking and then led the information security services group. A proven innovator with two patents to his name and two others applied for.

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Manoj brings over 18 years of experience with more than 7 years in design and deployment of Media services in telco networks. During these years, he has worked across R&D, Product Management and Implementation in various technology domains including legacy PSTN, GSM, VOIP, Broadband and IPTV. He brings vast experience in various domains of media including CDN, Apps, STBs and API platforms. He has been an invited speaker in various industry forums including ITU conference on NGN. He is also a co-lead in “IPv6 task force” of Indian Govt.

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Satish Singla is currently the Head for Connected Home Solution in the communication service provider business unit. He has over 16 years of experience in telecommunications industry in roles ranging from Lead Solution Architect, Program Manager to Solution Delivery head. He has extensive experience of architecting large end-to-end IT solutions as well as business transformation programs.

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