

Boundary blurring between telecom and the Internet

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Convergence has resulted in the blurring of boundaries between the telecom and the Internet worlds. Telecom operators fear the impact of over-the-top services will reduce their networks to dumb pipes. Nevertheless, concepts from the security world suggest one radical solution. Operators could extend their reach by embracing the de-perimeterisation of communication services, allowing the provision of secure services and data on a global basis irrespective of underlying network ownership.



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The convergence of technologies and architectures has led to the blurring of boundaries between the telecom and the Internet worlds. This has led to the business models of both worlds being subject to intense and constant change. The challenge for telecom operators is that their prime source of revenue has traditionally been voice and this is declining at an accelerating rate. Additionally the growth of data and Web

2.0 based services threatens to reduce the networks to dumb pipes - at the very same time that investment in the network is required. Still, the blurring of boundaries between technologies and the services they support creates an opportunity to rethink the telecom operator's perspective and leverage the concept of de-perimeterisation¹ from the security world to extend services on a global basis irrespective of underlying network ownership.

An environment of paradoxes

This blurred environment has resulted in apparently paradoxical phenomena and trends. The telecom mindset is obsessed with the dilemma of decreasing revenue and ever-increasing traffic on networks that are rapidly approaching saturation. From a Web perspective, however, the decreasing cost of access, pervasive coverage and increasing ubiquity afforded by a migration to an

¹ <http://en.wikipedia.org/wiki/De-perimeterisation>

increasingly IP network has encouraged the creation of Over the Top (OTT) services, such as Skype, at the edge of the networks. Meanwhile consumers, encouraged by low cost services, increasingly competitive and compelling consumer devices and easy to use applications including VoIP, are rapidly shifting the pattern of their usage and driving traffic.

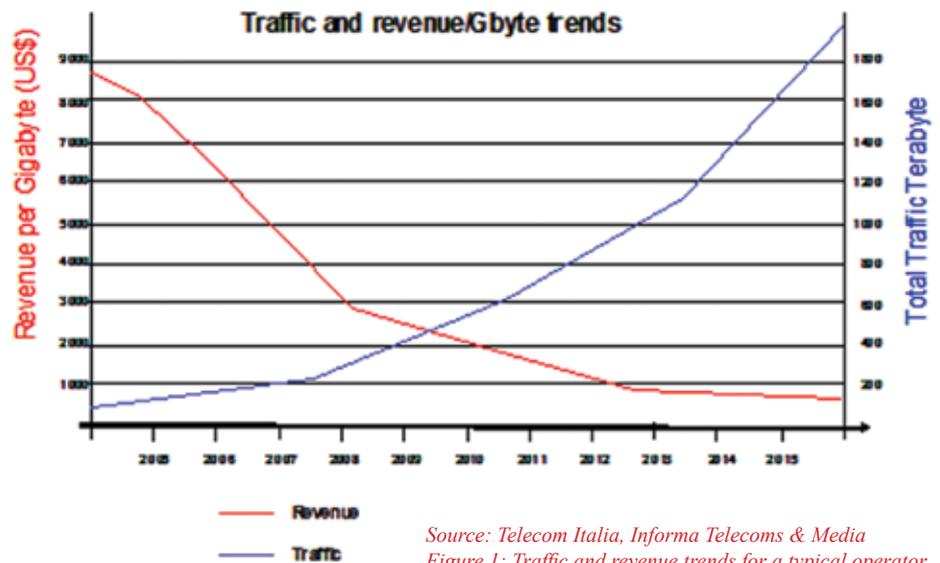
Seeking new revenue opportunities, operators sought a new programmable platform for enabling new classes of services. The investment was made and then the networks needed to be loaded and the flat rate era started. This strategy proved extremely successful, and data traffic soon exceeded voice traffic in wireline and, currently, is rapidly taking over in mobile as well. Ironically such success has resulted in increased usage of the network and contributed to still further decline of revenues (Figure 1).

These paradoxical trends are in reality the result of the rapid IP adoption curve and are having a profound effect on the entire telecom and Internet ecosystems. Operators are responding to this situation by focusing on optimising their infrastructure to reduce costs and trying to provide new services with increasing margins. Such issues were central to many contributions at the recent ICIN 2009 conference on networks and intelligence (www.icin.biz) - see for example Manzalini et al.² - and subsequent debate at that conference led to the ideas presented in this article.

The next big challenge

Against this backdrop, operators now face the challenge of making huge investments to deploy next generation networks - fixed, mobile or converged. In a situation of declining revenue, the return on investment in new infrastructure needs careful consideration and new deployments should identify the new and enhanced business models and services that will stem the revenue decline.

In the communications sector, conventional business models are under extremely intense competitive pressure from OTT companies that are making the most of lightweight Web 2.0 technologies. They are enabling the availability of consumer-appealing



Source: Telecom Italia, Informa Telecoms & Media
Figure 1: Traffic and revenue trends for a typical operator

'freemium' data and new business models: free basic functions for all and premium services for paying customers. At the heart of the success of OTT services lies the end-to-end principle of concentrating intelligence at the edges of the network in terminals, and gigantic data centres. The network is simply the means to distribute packets at the highest speed and the lowest price.

This is a huge difference from the traditional model of operators where communications services have been strongly coupled with the network. The network operator has provided voice service to customers and extended its service portfolio by offering additional services and functionalities. In this approach the 'reach' of the network was an enabler for the service offering. New Web-based competitors have disrupted the traditionally regulated and regionally segmented telecom markets. In fact, the application of the end-to-end principle has enabled the blurring of data services and business models. Nowadays, any small Web company can offer its services to a global audience just by exposing functionalities over the Web (Figure 2).

The essence of the blurred world is cheap connectivity that makes it possible to distribute 'intelligence' and nodes almost everywhere, enabling new pervasive communication mediums and classes of services like machine-to-machine, Internet of things and the like. These blurred service models will have a deep impact

on the lives of people, because they will facilitate the further democratisation of data and knowledge.

This blurred world will also challenge businesses' and consumers' current beliefs about the openness of Web 2.0 systems and platforms. Developer communities hail Facebook and Apple, but at the same time they create barriers making it difficult for customers to easily move to other service providers. The explosion of open Application Programming Interfaces (APIs) has been generally regarded as a major achievement of Web 2.0 with respect to openness, interoperability and the ability to re-use functions and data. However, those same APIs are also frequently used to 'stick' users to the applications of specific platforms and providers. Effectively, these are the new 'walled gardens'; similar to, but more effective than, those the telecom operators initially attempted to create. Other examples of walled gardens are the application stores from Apple and Amazon. The app store approach has been very successful and many companies and operators are flocking to adopt similar approaches. In doing this, they may be increasing the risk that consumers will rebel against being caged.

Changing the rules of the game

There are signs that consumers are becoming increasingly worried about the usage of data and the constraints imposed by OTT companies on the usage of services. Ultimately the market seems likely to reject the walled gardens that entrap customers, seeking instead the freedom to move between service providers. This is the

“The challenge for telecom operators is that their prime source of revenue has traditionally been voice and this is declining at an accelerating rate.”

² A. Manzalini et al., "If the Web is the platform, then what is the SDP?" in 2009 13th Int. Conf. Intelligence in Next Generation Networks: Beyond the Bit Pipes (ICIN 2009), Bordeaux, France, 2009 © IEEE

“Operators have a tremendous opportunity at this time to leverage the connectivity between peers and networks of networks in order to guarantee the freedom to interconnect any two endpoints and to build open systems that are not proprietary. The creation of architectures that enable adaptive, overlay and self-organising technologies will guarantee the possibility to exceed the limitation of the single physical (and local) network, creating global virtual networks for services.”

opportunity space created by the blurring of boundaries that will require new strategies and tactics to leverage.

Could network operators exploit this opportunity? Should services be offered beyond those markets where the operator has a direct presence? Currently service offerings are strongly coupled to the physical network, disregarding the power of edge intelligence. But could the biggest operators move from strongly regional to global providers of services? This would have to be in cooperation with others, but is really no different than the model created by the success of Apple's iPhone, which created a sort of mobile virtual network operated by Apple. The result could be a mobile virtual network operator (MVNO) services ecosystem supported by enthusiastic customers and backed up by loyal application developers and by operators that share communication-generated revenues.

If operators want to play a relevant role in the emerging services arena, they have to act as innovators and change the rules of the game at both the business model and the technological levels. First, it is important to realise that entering into a new market requires differentiation. If the difference

is just price, then the effect could be to depreciate the entire market as has happened for instance with some IPTV offerings. There has to be a focus on innovation and creating unique reasons and value for people to want to adopt new products and services.

Second, operators should also promote the freedom behind the end-to-end principle. The power of the network should be focused on freeing users from Web 2.0 cages by providing them with the ability to connect with different social networking communities, stores and services, wherever and whenever they wish.

The telecom operator opportunity

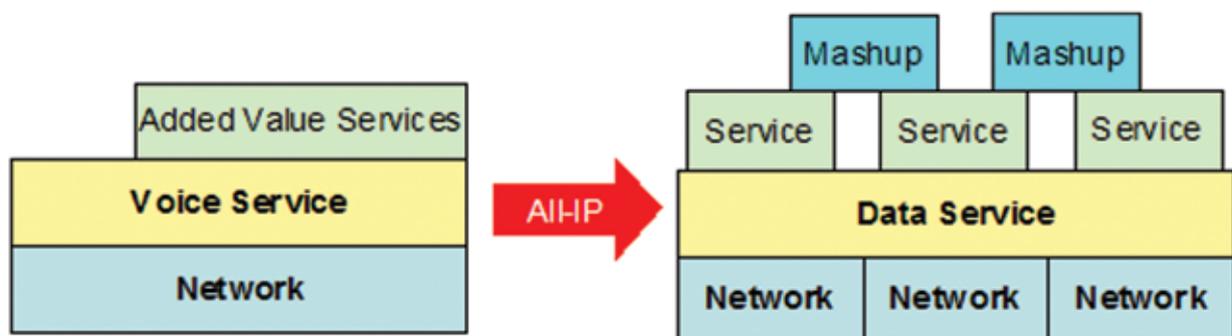
Operators have a tremendous opportunity at this time to leverage the connectivity between peers and networks of networks in order to guarantee the freedom to interconnect any two endpoints and to build open systems that are not proprietary. The creation of architectures that enable adaptive, overlay and self-organising technologies will guarantee the possibility to exceed the limitation of the single physical (and local) network, creating global virtual networks for services. Decentralisation of functionalities will guarantee the robustness and redundancy

of the platform and, at the same time, it will enable endpoints to provide highly personalised services.

Operators should embrace the open system 'mantra'; i.e. whenever others are building walled gardens, leverage connectivity to break the borders. Whenever others are putting together gigantic proprietary infrastructures, connectivity through non-proprietary access should be leveraged to collect a multitude of end nodes able to exceed any proprietary solution. This approach will lead to the de-perimeterisation of communication services, in other words the provision of secure services and data irrespective of a specific community or network. It will also enable the creation of an interworking peer-to-peer infrastructure on top of which one can freely build global service MVNOs for personalised services anywhere anytime.

These themes and related issues will be presented and discussed in depth in many of the sessions planned for ICIN 2010 to be held in Berlin, October 11-14, 2010³. ●

³ www.icin.biz



Traditional Telco Model:
A main service and additional features

Web 2.0 Model:
Decoupling Networks from Services

Source: Telecom Italia

Figure 2: The blurring of data services and business models