

The Fixed/Mobile Broadband Battle: Is It Time for “Smart Broadband”?

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Executive Summary

Mobile broadband has emerged as a new phenomenon that is poised to take significant market share from fixed broadband. The key question all broadband operators (fixed, mobile, and integrated) are asking is: How do I deal with this new development?

Offering a compelling broadband customer experience helps retain/maximize average revenue per user (ARPU) from existing customers, while increasing the chance of attracting new ones. The Cisco® Internet Business Solutions Group (IBSG) believes this experience should be about making it easy for end customers to access fixed or mobile broadband, wherever they are, with whatever devices and applications they are using.

Cisco IBSG calls this approach “smart broadband”—taking advantage of different broadband connection modes to deliver a more valuable and compelling, application-aware broadband service to users.

Cisco IBSG is already starting to see deployment of some embryonic smart broadband services, but we feel that more investment is needed to fully realize the benefits. While integrated operators are perhaps in the best position to exploit a smart broadband service, we believe that any operator embracing smart broadband will deliver greater value to customers and distance itself from the competition.

Introduction

Fixed broadband, including digital subscriber line (DSL) and cable, has been a phenomenal growth story around the globe over the past five years. Today, however, it suffers from a number of challenges: massive growth of high-bandwidth video traffic; squeezed margins from carrying “revenueless” video traffic; and ongoing price erosion—all of which are stressing operators’ business models.

In contrast, the growth of mobile broadband has taken many people by surprise, with two major questions emerging: “Can it/will it overtake fixed broadband as the broadband connection mode of choice? What does this mean for broadband operators in terms of strategic options?”

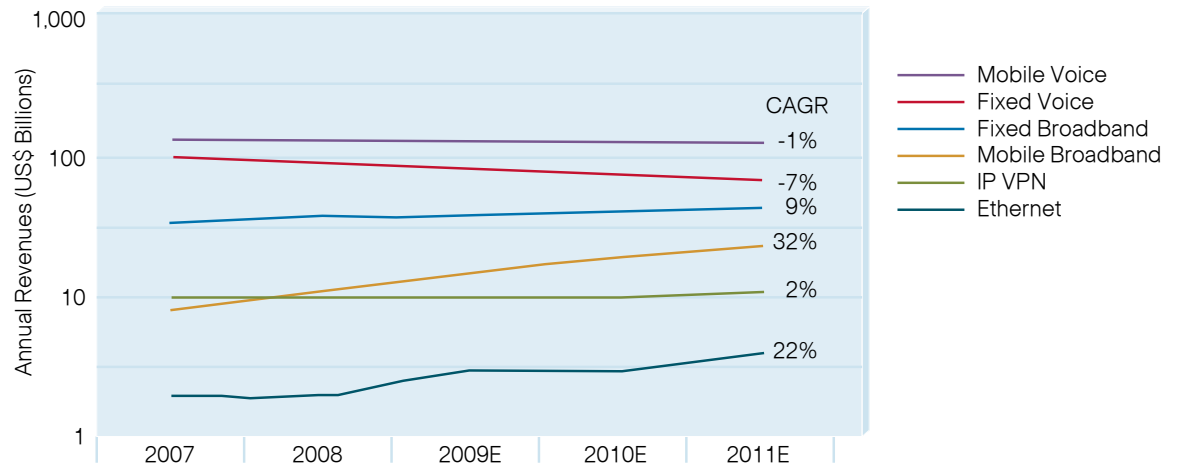
This paper explores these questions and proposes there may be a holistic outcome that offers consumers a more appealing, integrated broadband service. Cisco® Internet Business Solutions Group (IBSG) calls this “smart broadband.” This new concept provides an integrated, fixed, mobile, and Wi-Fi broadband offering, automatically delivering the best experience, based on the available connection and the consumer’s application use and cost profile.

This paper also examines the implications for different operators (integrated, mobile-only, and fixed-only), identifying strategic options for each in this exciting and dynamic, new broadband world.

Fixed-Broadband Operators: Ongoing Pain from Margin Squeeze

By 2011, it is predicted that many telecommunications services will experience either flat revenues (from mobile voice) or declining revenues (from traditional fixed services). With 9 percent growth expected, fixed broadband remains one of the few bright spots (see Figure 1).

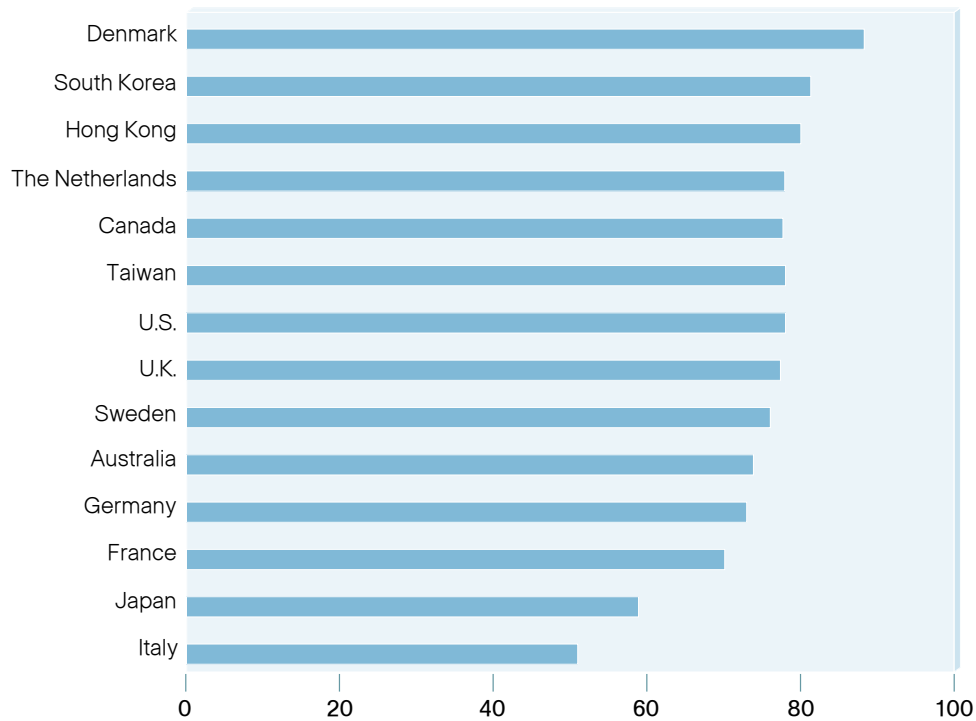
Figure 1. Western European Telecommunications Services Revenues, 2007–2011



Source: IDC, 2007

A number of forces, however, are stressing the fixed-broadband business model. First, fixed-broadband penetration is approaching a point of saturation (70 to 80 percent) in many markets, which will see revenue growth decline over time, as shown in Figure 2.

Figure 2. Fixed-Broadband Penetration of Households in 2012



Source: Screen Digest, 2008

Second, fixed-broadband operators are suffering from a margin squeeze, driven specifically by an increase in “revenueless” video traffic. The majority of this is user-generated content (UGC) from sites such as YouTube. Recent global traffic forecasts by Cisco (see Figure 3) show that in the future, “video to TV” will become a key traffic driver, with services such as BBC iPlayer making a successful transition from the PC to TV. (Virgin Media launched iPlayer on its TV platform and saw 11 million program views in the first month.)¹ The root cause of the margin squeeze is that current business models do not allow this traffic to be monetized by fixed operators.

As traffic volumes increase, there will be added pressure to migrate to higher-speed broadband services. Cable operators are already migrating to 50- to 120-million-bps services (for example, Numericable, France—100 million bps;² Virgin Media, United Kingdom—50 million bps;³ UPC Broadband, Europe-wide—120 million bps),⁴ leaving DSL operators little choice but to contemplate next-generation access investments in fiber to the curb (FTTC) and fiber to the home (FTTH). These investments are not to be taken lightly, with studies over the past three years by Merrill Lynch and Analysys Mason (among others) identifying a likely cost range from \$250 to \$1,500-plus per home passed for FTTC and FTTH, respectively.^{5, 6}

1. <http://www.guardian.co.uk/media/2008/nov/07/bbc-erikhuggers> (accessed Dec. 19, 2008).

2. <http://offres.numericable.fr/internet-tres-haut-debit-wifi-box.php> (accessed Oct. 5, 2009).

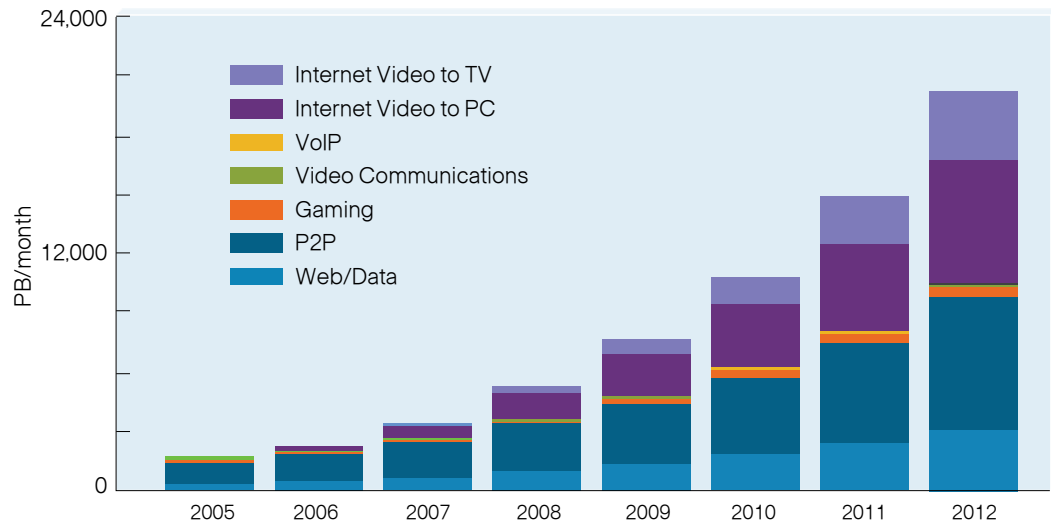
3. <http://allyours.virginmedia.com/websales/50Mb/index.do?vmsrc=vmhpld> (accessed Dec. 19, 2008).

4. http://www.upc.nl/internet/fiber_power_120/ (accessed Dec. 19, 2008).

5. “European Broadband Matrix Q3 05,” Merrill Lynch, January 2006.

6. “Final Report for the Broadband Stakeholder Group: The Costs of Deploying Fibre-Based Next-Generation Broadband Infrastructure,” Analysys Mason, September 2008.

Figure 3. Global Consumer Internet Traffic Forecast



Source: Cisco Visual Networking Index, 2008

The third factor is price erosion, which has accelerated with the introduction of new dual- and triple-play bundles advertising low-cost—or even “free”—broadband. France has been a leader in low-cost broadband with triple-play services offered by Free and Neuf Cegetel costing from €30 per month. Operators in the United Kingdom are offering broadband at £5 per month—or even for free, when taken with a bundle of telephony and/or TV services (such as BSkyB).⁷

As a result, fixed broadband is a tough market, with differentiation opportunities few and far between.

Mobile Broadband Applies Additional Pressure

In addition to these challenges, mobile operators are now attacking fixed operators on three fronts:

- They are launching fixed-broadband (DSL) services. O2, Vodafone, and Orange have acquired, built, or partnered to obtain DSL capabilities in many countries. These services match other DSL offerings in these countries in both speed and price. They are looking to win share through aggressively priced bundles. For example, O2 in the United Kingdom is offering a DSL/mobile broadband bundle from £20 per month.⁸
- Mobile broadband operators have deployed 3G broadband on a wide scale, initially to mobile handsets, and more recently to USB dongle-/aircard-equipped laptops/PCs. These services have been aggressively marketed and priced.⁹

7. Sky offers 2-Mbps broadband free with TV package, <http://www.sky.com/portal/site/skycom/skyproducts/broadband> (accessed Dec. 19, 2008).

8. Buy O2 Mobile Broadband for £15 a month and save £2.45 a month on O2 home broadband, <http://broadband.o2.co.uk/discount/discounthomebroadbands.jsp> (accessed Dec. 19, 2008).

9. “The Power of Mobile Broadband: Implications for European Telcos and Equipment Vendors,” J.P. Morgan, 2008.

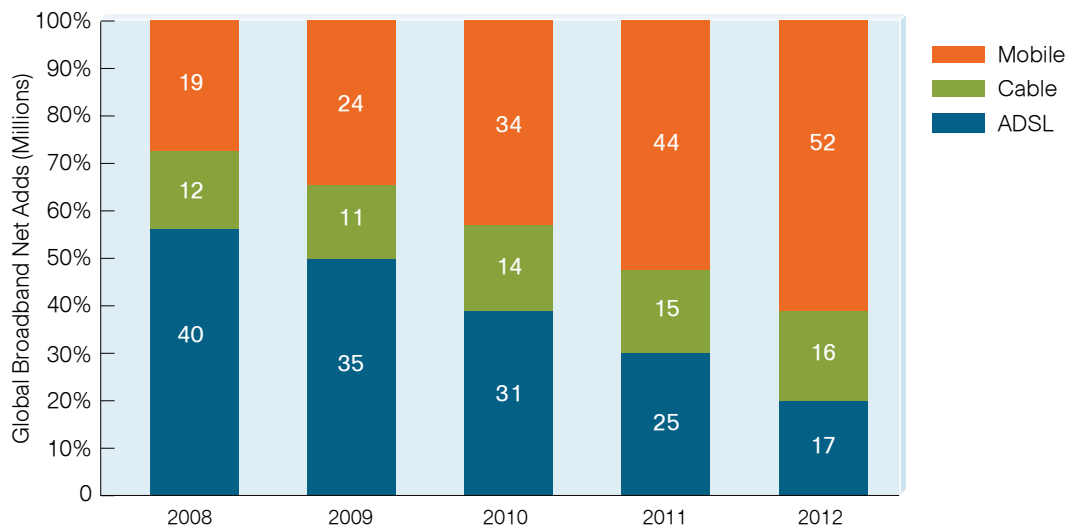
- 2 to 7 Mbps downstream, at €15 to €40 per month
- Ranging from fixed download quota to “unlimited” download with a fair-use policy
- Users just plug in a USB dongle/aircard and are online in minutes
- Further pressuring fixed operators, mobile operators are now aggressively marketing laptop-based mobility and incorporating 3G broadband with Wi-Fi hotspot access (and in the future, WiMAX). A number of operators are providing mobile broadband with a “free” or subsidized laptop/netbook (such as SFR¹⁰ and Orange¹¹ in France and 3¹² and Vodafone¹³ in the United Kingdom). Some mobile phone retailers are now expanding their business model to include laptops and laptop mobility solutions (such as The Carphone Warehouse,¹⁴ a pan-European retailer).

As a result, mobile broadband is now a hot topic, receiving a great deal of positive coverage in the mainstream press.

Mobile broadband subscriber growth is forecast to be double or triple that of fixed broadband over the next few years. In-Stat predicts that in 2012, approximately one-third of all global broadband connections will be mobile (242 million), more than cable (141 million) and catching up to ADSL (372 million).¹⁵

Even more dramatic is the mobile broadband share of all broadband net adds, as illustrated in Figure 4.

Figure 4. Global Broadband Net Adds, by Access Type



Source: In-Stat, August 2008

10. SFR subsidized netbook offer, http://www.sfr.fr/mobile/internet-3g-plus-portable.jspe?sfrintid=HPI_BOL (accessed Dec. 19, 2008).

11. Orange subsidized netbook offer, <http://abonnez-vous.orange.fr/residentiel/mobilite/Cle3G.aspx?idnode=147> (accessed Dec. 19, 2008).

12. 3 subsidized laptop offer, http://www.three.co.uk/Mobile_Broadband/Laptop_Packages (accessed Dec. 19, 2008).

13. Vodafone subsidized netbook offer, <http://www.vodafonebusinessshop.co.uk/LaptopsWelcome.html> (accessed Dec. 19, 2008).

14. The Carphone Warehouse mobile broadband and laptop offers, <http://www.carphonewarehouse.com/commerce/servlet/gben-server-PageServer?article=MAIN.UK.INTERNET.TRADEWIRELESS.IMAG> (accessed Dec. 19, 2008).

15. “Worldwide Broadband Subscriber Forecast,” In-Stat, September 2008.

The most aggressive mobile broadband growth (and, hence, fixed-broadband substitution) has taken place in Austria, as described in the following case study.

Case Study: Austrian Broadband Market

Austria has seen a huge uptake in mobile broadband since the end of 2006. According to analysis by Arthur D. Little,¹⁶ this growth has been driven by a combination of services targeted at high-volume users (10 to 15 GB per month for about €25), as well as by three out of the four operators offering a prepaid service.

The result is that the majority of broadband net adds in Austria have come from mobile broadband since Q1 2009.¹⁷ Mobilkom reported in Q1 2009 that mobile broadband now accounts for 38 percent of all broadband connections.¹⁸

The overall data and the Austrian example illustrate that the substitution effect will be different in each country. The extent to which fixed operators in a given country could lose will depend on three key factors:

- Presence of an aggressive, mobile-only player
- Absence of bundled, fixed-line video services (IPTV or CATV)
- Relative price levels of fixed and mobile broadband

Using the criteria listed above, France provides an example of a country with a low substitution effect, as it has no aggressive mobile players, IPTV is important in the market, and there is low fixed-broadband pricing. In contrast, Austria suffers from a high substitution effect due to its aggressive mobile players, the fact that IPTV is of low/medium importance in the market, and its relatively high fixed-broadband pricing.

How Can Operators Thrive as Mobile Broadband Replaces Fixed Broadband?

Given all these factors, there is a key question around the potential substitution effect of mobile broadband on fixed broadband: What does this mean for fixed and mobile broadband operators in terms of strategic options?

Understanding and Delivering the Right Customer Experience Is Critical

Broadband in most developed countries is now approaching household penetration levels of 70 to 80 percent, which can be considered a saturated market. In a saturated market, customer behavior moves from acquisition of a service to switching among services. It is, therefore, critical for operators to adopt the right strategies to maximize success.

A key strategy in this situation is to focus on delivering the right customer experience, as this can help not only to retain customers but also to acquire new ones. Companies who have a clear focus on customer experience have been demonstrably successful.

16. "Telecom Operators: In the Eye of the Media Telecom Storm," Arthur D. Little, Exane BNP Paribas, February 2008.

17. "Communications Report 2008," Rundfunk & Telekom Regulierungs GmbH, June 2009.

18. "Results for the First Quarter 2009," Telekom Austria Group, May 2009.

For example, the many Virgin group companies share a common culture around customer experience. Google and Apple also have common, declared company goals around focusing on the customer experience. Simply stated, they all focus on making their services easy to understand and use, they hide all of the underlying complexity from the consumer, and they work hard to deliver a number of “wow” factors throughout the customer journey.

To help understand what the right customer experience should be in this evolving broadband landscape, an important starting point is to identify the customer’s needs, as not all broadband users will have the same requirements. Based on research from Cisco IBSG and others, there are key differences among various demographic segments based on the following requirements:

- **Applications:** Some user applications just won’t work today using mobile broadband—IPTV, video on demand (VoD), P2P file transfer.
- **Degree of Mobility:** Users have differing requirements in terms of the degree and range of mobility that they want or need in a broadband service.
- **Price:** 3G roaming charges can be high, and heavy users may have to pay excess charges for mobile broadband.

In addition, there are some technology-specific issues with Wi-Fi and 3G/HSPA (high-speed packet access) that have an impact on the customer experience:

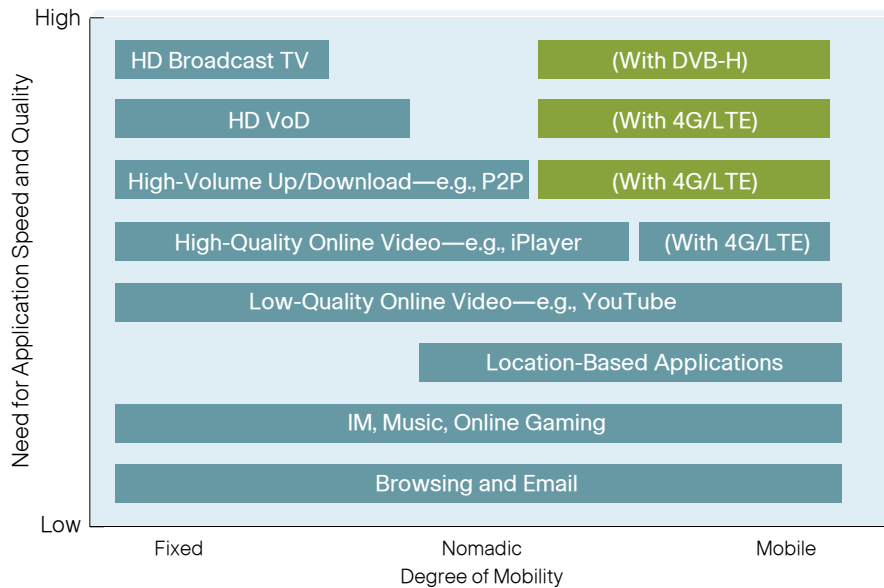
- 3G/HSPA provides greater broadband coverage than Wi-Fi hotspots and connection is easier (no cumbersome logins).
- 3G/HSPA tends to be available only in built-up areas, and even in these areas, signal quality can be poor inside homes and offices, reducing performance.
- Wi-Fi access is currently offered by both fixed and mobile operators, but it has challenges around price, security, setup, and its availability from many providers.
- Until 4G/LTE (long-term evolution) is available, actual download/upload speeds will not match the higher speeds available on fixed broadband from FTTC-/FTTH- and DOCSIS 3.0-based services, limiting use for bandwidth-intensive applications like streaming video.

To maximize broadband connectivity, providers will ideally need coverage provided by a combination of fixed, mobile, and Wi-Fi. People spend varying amounts of time in different locations using broadband access. A recent study by O2 on a mobile TV trial showed mobile broadband being used in the following locations: home (35 percent); office (23 percent); bus/train (21 percent).¹⁹ Different combinations of fixed, Wi-Fi, and mobile broadband can serve these disparate locations:

- Fixed works best at home and in the office.
- Wi-Fi is best at home, and in airports, hotels, and the office.
- Mobile can work in any location, subject to 3G coverage.

19. Results from a 2006 O2 Mobile TV trial in the United Kingdom.

Figure 5. How Degree of Mobility Relates to Application Speed and Quality



Source: Cisco IBSG, 2009

A New Approach: “Smart Broadband”

While there could be a high degree of substitution (of fixed broadband by mobile broadband) among certain niche user segments, we believe that most users don’t want to bother having to understand the underlying technology of various broadband connection modes—they just want to obtain the best broadband connection speed/quality for their money, wherever they happen to be.

The majority of users will benefit from a simple, hybrid broadband solution—something that enables them to connect in the most appropriate way, based on where they are, the connectivity options available to them, the devices and applications they are using, and their budget/cost preferences—but with all of the complexity hidden from them.

This is “smart broadband.” At a high level, it means that an operator provides an integrated broadband service comprising a combination of fixed (at home or work), mobile (for example, using a USB dongle/aircard), and Wi-Fi (at home and work, and for hotspot roaming). The “smart” part is based on a number of technology elements that work to provide a simple, easy-to-use connectivity experience:

- The device (TV, mobile, laptop, etc.) continuously monitors the connectivity options.
- It automatically selects the best option based on user-defined preferences for speed and cost as well as applications being used. It does this based on its own capabilities, which the SP should be able to detect—TV, mobile, laptop, etc.
- It automatically changes modes to best meet these preferences, requiring little/no user intervention (cumbersome Wi-Fi hotspot logon is a thing of the past).
- It keeps users informed of connectivity modes, especially when preferred options aren’t available, and gives them an option to override.

From a user's perspective, it is all about providing a better broadband customer experience for the average "tech-wary" user.

From an operator's perspective, smart broadband could provide a number of positive benefits to both the top and bottom lines of its business:

- Smart broadband will *attract customers* with its ease of use, ubiquitous coverage, and cost effectiveness.
- Smart broadband is effectively a bundled service of higher perceived value to the consumer than just fixed or mobile broadband. Operators could choose to charge more, generating *higher broadband monthly ARPU*, or they could include it "free" within an existing bundle to *sell more connections* and *increase market share*. In both cases, they would want to tie this to a 12- to 24-month fixed term. A great customer experience will ensure subscribers stay for this period—and maybe even longer.
- Good customer experience has been shown to yield positive benefits on *customer retention* (for instance, 50 percent of U.K. satellite operator BSKyB's personal video recorder subscribers—Sky+—stated they "couldn't live without it"). Even small increases in customer retention can yield significant financial benefits. Broadband-based services (including triple play) have relatively high subscriber acquisition costs—in the range of €100 to €300—so retaining them longer increases customers' lifetime value and profitability.

Integrated Operators Will Be First To Deploy Smart Broadband

What Will It Take for This To Happen?

The market shift has already started to some extent in a number of countries. We have already seen that there is a strong set of drivers to deploy such a service—acquiring new customers, increasing revenue with bundled services, and retaining customers. In addition, declining growth in voice revenues leads fixed and mobile operators to identify alternative sources of revenue, resulting in operators such as O2 and BT introducing integrated fixed/mobile broadband offers in the United Kingdom. Orange has also introduced an integrated mobile/Wi-Fi offering in the United Kingdom.

Case Study: Orange Business Everywhere

Orange offers a mobile broadband service in the United Kingdom that works across HSPA, 3G, EDGE (enhanced data rates for GSM evolution), GPRS (general packet radio service), and Wi-Fi connections. Software on the laptop manages all the connections, automatically choosing the fastest available. It also provides information on usage. A variety of contracts is available, providing different mixes of connection capabilities and download quotas.

What Are the Trigger Points?

These are already visible; the key is the launch of fixed broadband by a mobile operator in a particular market. Another trigger point is when mobile broadband net adds meet or exceed fixed net adds.

What Might the Evolution Path Look Like?

The service roadmap will be governed to a large extent by operator capabilities and by consumer reaction and uptake. As with all new ideas, the market needs both education and stimulation to create demand. The stages of smart broadband development may well follow this path:

- **Marketing a price-based bundle** of fixed, mobile, and Wi-Fi (although not an integrated service). This is happening now with O2 in the United Kingdom (fixed plus mobile).
- **Phase 1 of integrated smart broadband service**, based around 3G USB dongle/aircards and embedded Wi-Fi, a fixed-broadband connection at home, plus software to automate the selection process. This will be operator-driven, in partnership with laptop and USB dongle/aircard providers, and will happen over the next 18 months. As seen, Orange and others already provide this capability for mobile plus Wi-Fi.
- **Phase 2 of integrated smart broadband service** is similar to Phase 1, except now laptops have embedded Wi-Fi and 3G *modems* in laptops, with smart broadband decision capabilities *embedded in firmware*. This will be driven more by laptop providers, in partnership with operators. Expect to see this capability in high-end laptops in 18 months to two years. The fixed-broadband connection in the home will also be augmented with femtocells, and connectivity will be fully integrated in the solution.

How Can Operators Maximize Their Success?

In addition to understanding the needs of target customers and delivering the appropriate customer experience, operators must make the right network investments. Key issues for fixed-only or mobile-only operators relate to the type and scale of the investment—do they build, buy, or rent? The economic arguments around whether it is better to build, buy, or rent network capabilities are complex, and not easy to generalize. Key decision factors include the ability of the chosen option to enable a differentiated customer offer, leading to a larger market share and greater profitability. Next, we consider the three types of operators, their starting points, and the strategic implications for both network investments and service offerings.

Integrated Operator: The integrated operator owns and operates both fixed and mobile network infrastructures—as do national incumbent telcos Orange (France), Telefonica (Spain), and AT&T (United States). They are clearly in the best situation, as they have already made the infrastructure investments, have good customer bases on both fixed and mobile broadband, and have the most control over making changes to the network infrastructure necessary to enable smart broadband. There may be

regulatory and competitive constraints around sharing customer information, pricing, and so forth—but these typically will be on a country or regional basis.

The integrated operator should aim to reach the market quickly and innovate rapidly around smart broadband, with a focus on simplicity and customer experience. The emphasis should be on retaining existing fixed and mobile broadband customers and upselling smart broadband to both. An aggressive launch with femtocell-based home service may also help drive market share around a fixed/mobile proposition, although there is a risk of cannibalization of existing mobile revenues.

Mobile-Only Operator: Mobile-only operators have a choice of buying or renting; building a fixed network from scratch is not a viable economic option. They can buy an existing fixed-line operator (for example, Vodafone bought Arcor in Germany, and Telefonica/O2 bought broadband operator Be Unlimited in the United Kingdom). Where regulation has enabled a viable wholesale market, operators can use (rent) wholesale broadband services (Vodafone and O2 both use BT's wholesale broadband services in the United Kingdom). These strategies have helped both Vodafone and O2 effectively become semi-integrated broadband operators.

Mobile operators should grab late broadband adopters (via a simple “buy it and plug it in” message) as well as push for mobile broadband inside all devices (“Why bother wiring your home when everything is already directly connected to the 3G network?”). They should also target existing fixed-broadband users through a combination of ease-of-use and branding.

Fixed-Only Operator: Fixed-only operators have the same investment, customer, and control situation as integrated operators, but again have a choice of either buy or rent in terms of the wireless network. (Building a mobile network from scratch is not really an option, due to the availability/cost of spectrum licenses and the cost of network build). Buying a mobile network is an expensive venture (although Telefonica did recently buy U.K. mobile operator O2). In many countries (where regulation has enabled a viable wholesale market), fixed-line operators are able to rent access to mobile infrastructures through mobile virtual network operator (MVNO) agreements. These vary in scope and complexity. There are numerous examples where ventures have been successful. For instance, Virgin Mobile in the United Kingdom is based on an MVNO agreement with T-Mobile, and in addition to having about 4 million customers²⁰ (approximately 5 percent of the U.K. mobile customer base²¹), Virgin has won the award for best mobile customer service for eight years in a row.²²

Fixed operators should make fixed broadband indispensable by offering video-to-TV services and home hub-like services (personal video recorder, home security, and monitoring) so that users invest in a set of Wi-Fi-connected devices dependent upon an ADSL/cable connection. Providers should work hard to create easy, nomadic Wi-Fi access for their subscribers. Their message should be “You have Wi-Fi ‘free’ with your home broadband, so why bother with anything else?”

20. FY2009 first quarter results release, Virgin Media, May 5, 2009.

21. FY2008 Communications Market Report, Ofcom, August 2008.

22. <http://about.virginmobile.com/aboutus/media/news/2008/2008-10-07/> (accessed July 22, 2009).

From evidence in the market, it appears that the companies in the best positions are integrated operators, but only if they can use their ownership of all network assets to provide the right, differentiated broadband customer experience at the lowest cost (to maximize profitability). The fact that Virgin Mobile was able to win customer service awards while using someone else's mobile network infrastructure provides a counterpoint to this argument, however. Additionally, the moves over the past two or three years by operators such as Vodafone and Telefonica/O2 to develop fixed-line broadband capabilities indicate that they believe the investments to be worthwhile to bolster declining growth in their mobile-voice revenues.

The key to success for operators of all kinds is to develop an appropriate strategy to deal with this new market situation. We propose that operators focus on three main steps for smart broadband strategy formation:

- Consider their relative capabilities, depending on whether they are a fixed-only, mobile-only, or integrated operators, and compare those against their competitors and their probable strategic moves.
- Assess the likely level of substitution in the market by identifying the extent to which the three substitution factors (highlighted on page 6 of this paper) are in play in the country or countries in which they operate.
- Determine operators' options around deployment of smart broadband in terms of what to do and how to do it: Do they deploy a service or do they need to make a defensive move? If they deploy a service, what is required to create competitive advantage? Can they deploy on their own, or do they need to acquire or partner with another company?

For more information on smart broadband and hybrid fixed/mobile broadband delivery models, please contact:

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Notes

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