White Paper

Rethinking Flat Rate Pricing for Broadband Services

How Service Providers Can Monetize Internet Traffic Growth via Value-Based Pricing

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Introduction

The telecommunications industry is facing a fundamental issue: on the one hand, increasing requirements for new investments in broadband Internet access and transport infrastructures that support continuous growth in broadband traffic; and on the other hand, reduced ability to exercise pricing power with customers and, thus, increase revenues.

At the same time, broadband is approaching maturity. In 2011, broadband services became mainstream in developed countries, with fixed-broadband penetration exceeding 60 percent of households and mobile broadband penetration reaching more than 40 percent of the population in two-thirds of Organisation for Economic Co-operation and Development (OECD) countries.[1]

Meanwhile, traditional voice and messaging revenues have strongly declined due to commoditization, and this trend is expected to continue. Therefore, operators are now relegated to connectivity products. The value that operators once derived from providing value-added services is migrating to players that deliver services, applications, and content over their network pipes.

As if this were not enough, Internet access prices are dropping, sales volumes are declining, and markets are shrinking. The culprit: flat rate "all-you-can-eat" pricing. Such a model lacks stability—sending service provider pricing into a downward spiral—because it ignores growth potential and shifts the competition's focus from quality and service differentiation to price.

This overall outlook does not indicate that the telecom industry has reached a standstill. New access products are emerging, creating immense potential for innovation: bandwidth-hungry applications such as video that require advanced access products and efficient networks, combined with the emergence of the digital connected home, present new opportunities to monetize networks, services, and operations.

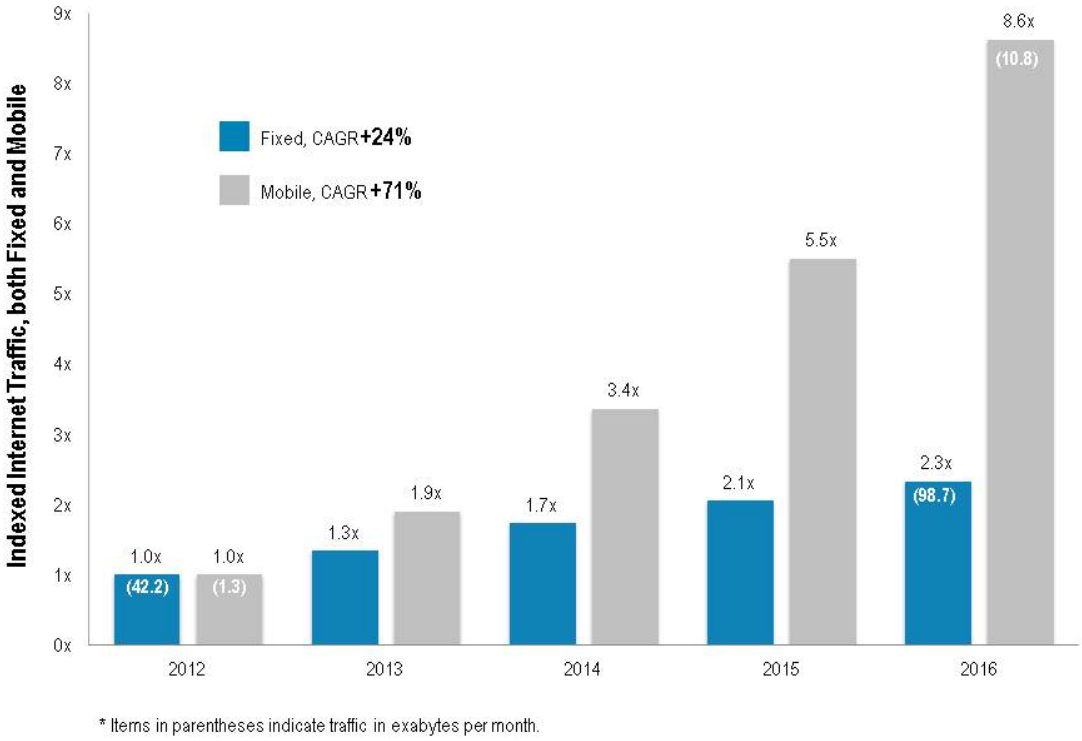
Now is the time for the telecom industry to consider innovative pricing models for broadband services to enable a better match between the price customers pay and the value they derive from services. Successful pricing strategies will be essential to directly managing profitability for both fixed and mobile broadband operators.

[1] Cisco Internet Business Solutions Group (IBSG) analysis of OECD broadband statistics (June 2011) and Economist Intelligence Unit data.

Unsustainable Internet Traffic Growth: Fact or Myth?

According to the Cisco® Visual Networking Index, global fixed Internet traffic is expected to more than double between 2012 and 2016, while global mobile Internet traffic is expected to grow more than eight times during the same time period (see Figure 1).

Figure 1. Global Internet Traffic Growth.

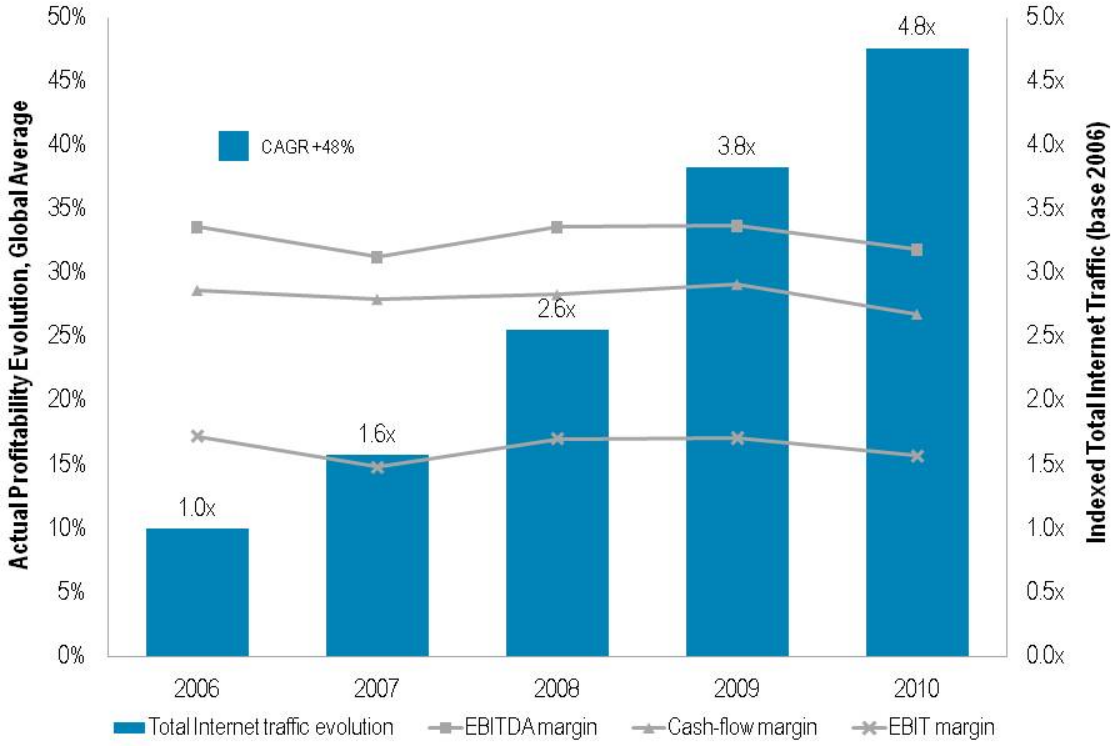


Source: Cisco Visual Networking Index, May 2012.

At the same time, advances in technology have enabled telecom operators to manage 33 percent more traffic each year at investment parity.

Between 2006 and 2010, the telecom industry sustained even higher traffic growth rates—without impacting profitability—by implementing efficiency and productivity measures. Looking at integrated players (those serving both fixed and mobile markets), profitability was stable even though total Internet traffic grew 48 percent per year during this period (see Figure 2).

Figure 2. Telecom Operators' Profitability Versus Internet Traffic Growth, 2006–2010.



Source: Cisco IBSG analysis of S&P Capital IQ. Data is based on figures from 124 publicly traded integrated telecom operators (fixed and mobile) from around the world, and on the Cisco Visual Networking Index, 2006-2010.

Fixed-broadband operators should be able to sustain forecasted traffic growth over the next few years with no negative impact on margins, as the incremental capital expenses required to support it are under control. Mobile operators, however, will have a more difficult situation to manage, as forecasted traffic growth is well above what technological evolution can absorb. Moreover, mobile telecom costs not only are linked to technological advances and productivity improvements, but also to spectrum scarcity. According to Rysavy Research, "[Mobile] operators cannot simply double their use of spectrum and double the number of cell sites in their network each successive year. If no changes are made, demand could exceed capacity within three to four years."[2]

For these reasons, many mobile operators are looking to offload parts of their mobile broadband traffic onto fixed networks (for example, via Wi-Fi). Fixed networks offer better performance than mobile networks when users are in high-traffic areas and/or spatially limited locations (such as homes, offices, shopping malls, and stadiums), while simultaneously limiting scarce mobile spectrum usage. About 80 percent of time spent accessing the Internet from a mobile device occurs from "fixed locations."[3]

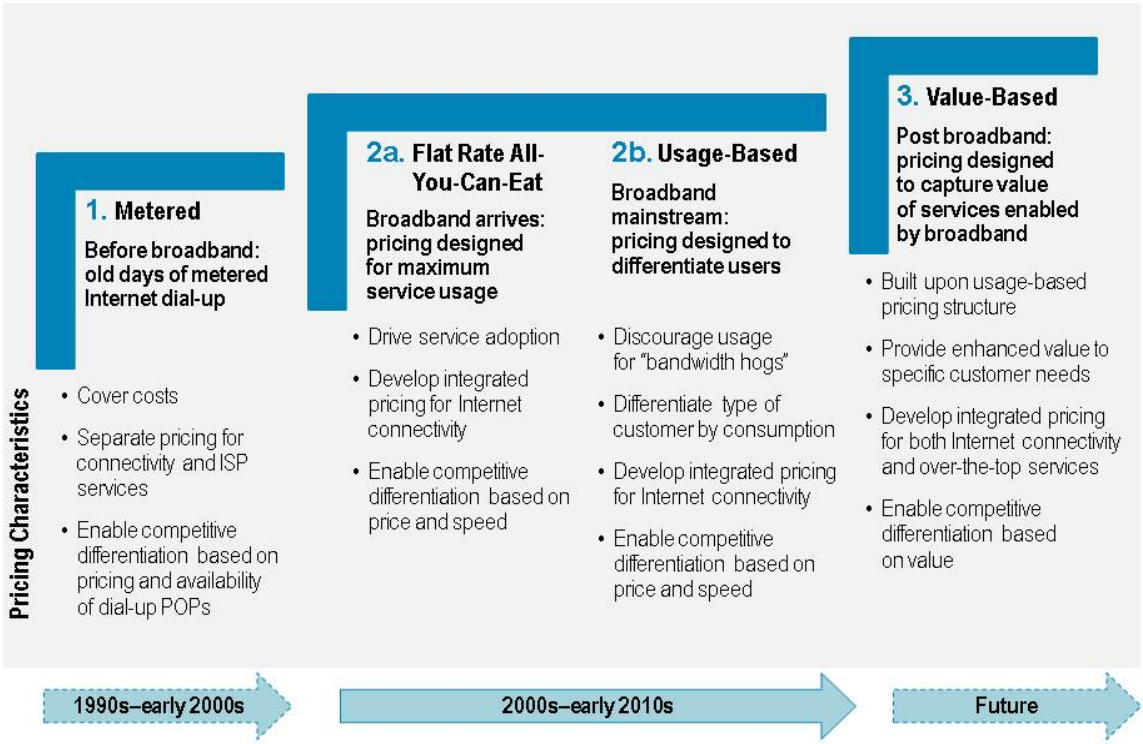
[2] "Optimizing the Mobile Application Ecosystem," 4G Americas, April 2011, with research from Rysavy Research, April 2011.
[3] Cisco IBSG Connected Life Market Watch, 2011. Fixed locations are defined as home, office, or other indoor location.

The "myth" in the industry is that Internet traffic growth is unsustainable from a cost perspective. This is both true and false: true for mobile broadband operators and false for fixed-broadband operators. Nonetheless, operators must fight the increasing commoditization of connectivity services and related price pressures that lead to decreasing revenues by developing new and appropriate pricing strategies.

Understand Pricing Evolution

Pricing for Internet access has undergone significant transformation since the early days of dial-up service. The Cisco Internet Business Solutions Group (IBSG) has defined four waves of Internet access pricing. Figure 3 summarizes these waves.

Figure 3. Internet Access Pricing Waves.



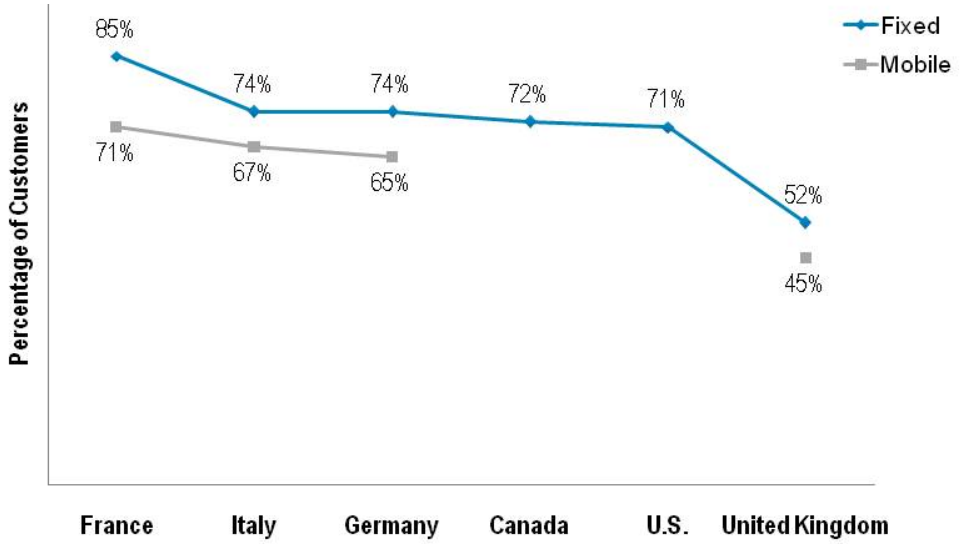
Source: Cisco IBSG, 2012

Metered. Before the advent of broadband, most Internet service providers offered Internet access as a dial-up service. Customers' monthly Internet access spending had two components: 1) Internet service subscription fee, and 2) metered fee related to the amount of time a customer was connected to the Internet. Competitive differentiation was based on price and availability of dial-up points of presence (PoPs).

Flat Rate. In the early 2000s, broadband Internet access services were introduced. In most countries, fixed telecom operators and Internet service providers adopted a flat rate all-you-can-eat pricing mechanism to encourage service adoption. Flat rate pricing was also extremely simple to implement and market. Competitive differentiation was based on price and access speed.

Usage-Based. Broadband became mainstream in the more advanced economies beginning in 2010. Competitive differentiation was, and still is, based on price and speed, but operators are now experimenting with different forms of usage-based pricing, adding traffic tiers (or traffic caps) to the mix. The introduction of traffic tiers and caps—especially for fixed broadband services—is not welcomed by the majority of customers, as they have learned to "love" flat rate all-you-can-eat pricing. Most customers consider usage-based pricing for broadband services "unfair," according to the 2011 Cisco IBSG Connected Life Market Watch study (see Figure 4).

Figure 4. Customers' Perception of Usage-Based Pricing by Country and Service Type, 2011.

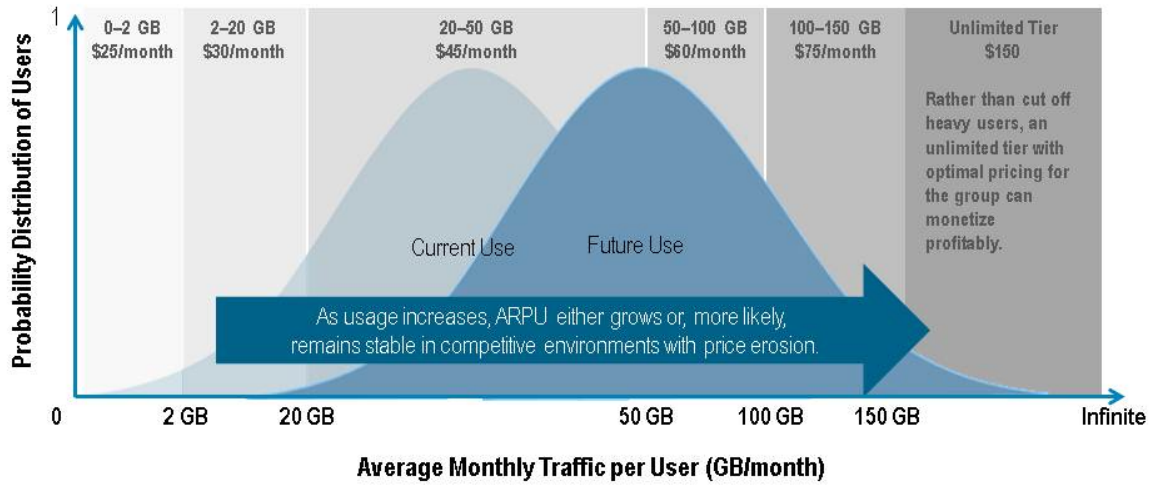


Source: "Moving Toward Usage-Based Pricing: A Connected Life Market Watch Perspective," Cisco IBSG, 2012. Mobile data was not available for Canada and the United States at the time this paper was published.

Operators must carefully manage the introduction of usage-based pricing mechanisms. They should employ tiers that sound reasonable and are properly priced to their customers, thus minimizing the risk of potential negative reaction. Ideally, in the midterm, newly introduced tiers should not impact what customers currently pay for most products/services. It is important, however, that operators start informing their customers that "traffic is not free"; otherwise, they may find themselves in the position of having to introduce usage-based pricing much later, with the potential for negative customer reaction.

Value-Based. Customers are starting to select broadband Internet access services (either fixed or mobile) based on access speeds and traffic tiers; customers will migrate from one tier to the next based on increased usage (see Figure 5).

Figure 5. Illustrative Example of Potential Usage Tiers.



Source: Cisco IBSG, 2012

In the midterm, it will be important for broadband providers to start defining tier levels that fit costumer profiles and usage needs without impacting customer spending. Marketing departments should develop and deliver new communications plans to clearly establish, in customers' minds, the benefits of new pricing. Any changes to pricing models should not occur without communicating to customers the benefits of those changes. Operators must also develop tools that enable customers to easily monitor their consumption levels and alert them when those levels are nearing tier limits—thus alleviating possible "bill shock." Competitive differentiation will be based on multiple value dimensions: prices, access speeds, traffic tiers, and service options.

Today's all-inclusive flat rate pricing model must evolve toward differentiated pricing. Network-driven service industries with a large share of fixed costs—airline, logistics, and railway, for instance—typically adopt differentiated pricing models once their businesses have matured.

Monetization Strategies for Fixed and Mobile Broadband

Monetization strategies for fixed and mobile broadband will differ greatly, reflecting that the cost to deliver mobile traffic is 10 to 100 times higher than the cost to deliver fixed traffic.[4]

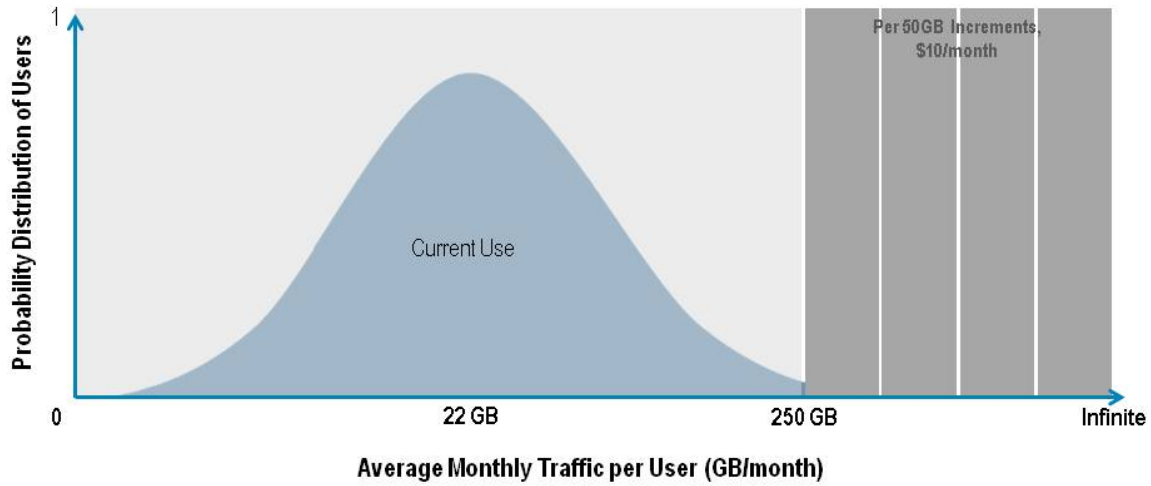
Penetration Pricing

The norm[5] in *fixed broadband* is penetration pricing: monetizing Internet access services via flat rate all-you-can-eat monthly fees. Some fixed-broadband operators are experimenting with monthly traffic caps to limit excessive traffic consumption by a small, but growing, proportion of their customers. For example, in 2011, AT&T and Comcast introduced a monthly cap of 250 GB per fixed-broadband access line. The cap signals to customers that "Internet traffic is not free," and addresses the issue of heavy service users ("bandwidth

[4] See Appendix A for further discussion on fixed and mobile broadband cost structure.
[5] In 21 of the 34 OECD member countries, fixed broadband Internet access is provided as a "flat fee" service with no caps for consumption. (Source: OECD Broadband Statistics, September 2010)

hogs") without impacting the average customer who consumes 22 GB per month[6] (see Figure 6).

Figure 6. Fixed-Broadband Service-Usage Tiers (Real Example).



Source: Cisco IBSG, 2012

AT&T and Comcast are two examples of best practices in the introduction of usage-based pricing. Based on Cisco IBSG's preliminary follow-up, the introduction of such a high, fixed cap did not generate any substantial negative reaction from these operators' customers.

The norm in *mobile broadband* is volume-based pricing: "...89 percent of mobile broadband operators employ volume-charging models, sometimes in conjunction with capped pricing plans."[7] Those few operators who still market unlimited flat rate pricing for mobile broadband usually have caps in the fine print of their offers. Caps in mobile broadband are set at low levels (for example, 1 GB, 3 GB, or 10 GB per month) compared with fixed broadband. The average mobile broadband Internet line consumption is well below 300 MB per month, with only 5 percent of mobile broadband customers using more than 2 GB of traffic per month.[8]

How these norms might evolve depends largely on competitive dynamics driven by market structure. Where all players experienced both low traffic and penetration, penetration pricing clearly ruled. The U.S. telecom industry is one example. As this market matures—with all players having reasonable market share and well-utilized networks—it will continue to evolve toward tiers and/or volume-based caps (such as AT&T and Comcast).

New entrants, however, may complicate matters. As demonstrated by the recent arrival of the mobile service from Free Mobile, a subsidiary of the Iliad group in France, new entrants might naturally adopt penetration pricing to win market share, putting pressure on competitors' volume-based schemes. This proves that tariffs alone are an insufficient strategy: value-based pricing should be based on improved network capabilities that can support value-added services for maximum differentiation and impact.

[6] Cisco Visual Networking Index, June 2011.
[7] "Global Mobile Broadband Traffic Report, H1/2011," Allot Mobile Trends, Allot Communications, 2011.
[8] Cisco Visual Networking Index, February 2011.

Value-Based Pricing

Research from British regulator Ofcom shows that consumers are becoming "addicted" to broadband services, and heavy broadband users are willing to pay more for improved broadband service options.[9] These findings may encourage broadband telecom operators to explore value-based pricing. Additionally, research from Wharton School professors Jagmohan Raju and John Zhang shows that price is the single most important lever to drive profitability.[10] Simon-Kucher & Partners illustrates how premium pricing is possible even for a commodity product like water (see Figure 7). This is an example of what excellent marketing can achieve.

Figure 7. Differentiated Pricing for Mineral Water.

Note: Retail price in Germany: €1.00 = US$1.31.
Sources: Cisco IBSG and Simon-Kucher & Partners, April 2012.

Premium value-based pricing has not been largely implemented in the telecommunications industry, although several levers do exist.

Value-Based Pricing for Business-to-Consumer and Business-to-Business

In light of the forecasted Internet traffic growth mentioned earlier and competitiveness in the telecommunications market, Cisco IBSG believes that fixed-line operators should consider

[9] "A Nation Addicted to Smartphones," Ofcom, August 4, 2011; "Is Bandwidth Addictive?", Kevin Walsh, Connected Planet, September 24, 2009.
[10] See Appendix B for a detailed discussion on pricing and profitability.

gradually introducing selected monthly traffic tiers to sustain ARPU, while a) signaling to customers that "traffic is not free," and b) monetizing bandwidth hogs more sustainably.

Mobile operators should maintain their established tier structures and continue to monitor customer consumption levels. Both fixed and mobile operators should then consider pricing mechanisms built on top of pricing models based on tiers. Those mechanisms should properly position the value of service options (such as faster speeds, guaranteed latency, and guaranteed bandwidth), thus supporting ARPU levels. Figure 8 summarizes value-based pricing options for broadband telecom operators.

Figure 8. Value-Based Pricing Structure.

Service Name	Description	Access	Target Customer
Fast Internet (base service)	Tiered broadband Internet access	Fixed and / or mobile	Consumer / Business
Faster Internet	Speed boost for fast Internet service		
Ultra Internet	Speed boost for faster Internet service		
Guaranteed bandwidth	Minimal guaranteed bandwidth for specific service / application		
Reduced latency	Reduced latency for specific service / application		
Time-of-day pricing	Lower price and quotas; Internet access with quotas calculated during peak hours only		
Dynamic or spot pricing	Pricing established on the basis of network capacity availability	Fixed and / or mobile	Business
Turbo button	Guaranteed bandwidth boost for limited time period in congested area	Mobile	Consumer / Business
Access bundle for multiple devices	Tiered broadband Internet access service shared among multiple devices		
Embedded connectivity	Service, device, or content that includes connectivity in the price	Fixed and / or mobile	Business
Guaranteed QoS service	Content delivery service for OTT providers with guaranteed bandwidth access	Fixed and / or mobile	OTT Provider (B2B2C)
Embedded guaranteed bandwidth	Minimal guaranteed bandwidth embedded in specific service / application		
Embedded guaranteed latency	Minimal guaranteed latency embedded in specific service / application		

■ = Optional service on top of base service

Source: Cisco IBSG, 2012

Fast Internet access, with options for **faster Internet** and **ultrafast Internet,** represents base service and base service plus higher/highest speeds.

Guaranteed bandwidth allocates bandwidth for a specific service/application to enable better performance. Managed backup and video communications are two examples of services that would work better with a sustained guaranteed rate of upload and/or download speeds. NBN Co Limited, the Australian government-owned fiber access operator, is developing offers that include guaranteed bandwidth for specific services.

Reduced latency reduces the time it takes for traffic to reach a specific destination. Online gaming is an example of a service that is sensitive to latency; online gamers would likely be

receptive to a reduced latency offer if it were priced and positioned properly. Telecom Italia, the Italian incumbent operator, recently launched the "Internet Play" option for its broadband access service, promising gamers a 40 percent reduction in latency when the option is activated. Internet Play is €3 a month (US$3.80), almost a 15 percent increase over Telecom Italia's least-expensive flat rate broadband offer.

To address price-sensitive customers and remove traffic from peak hours, broadband operators could consider **time-of-day pricing** options where—for a reduced price and a substantial reduction of monthly traffic allowances—customers will get off-quota Internet access during the night. For example, fixed wireless operator NGI SpA adopted time-of-day pricing for its EOLO Wireless service that allows customers 1 GB of traffic per day between 8 a.m. and midnight, but unlimited traffic between midnight and 8 a.m.

Dynamic or spot pricing would link broadband pricing to capacity availability. For such a model to work, operators would need real-time information on their networks' current load before offering capacity based on current or near-term resource utilization predictions. As a result, this would lead to significant improvements in network utilization and reductions in peak capacity requirements—one of the most significant causes of network cost increases. Dynamic or spot pricing could also be an effective mechanism to generate additional demand for new services, offering attractive prices during certain times of the day or to customers in specific locations.

Turbo button is one pricing option for mobile broadband. Turbo button enables the prioritization of traffic for a specific mobile line for a limited time period (minutes or hours) at a substantial premium. This option would be especially useful in congested mobile areas. Verizon Wireless is one company that announced plans to introduce a turbo button API to developers in late 2012.

Broadband access bundles shared by multiple devices are another pricing option worth mentioning. This option may consist of one contract covering multiple mobile devices (tablets, smartphones, e-readers, and more) that would share the same total traffic allowance. According to the 2011 Cisco IBSG Connected Life Market Watch, the average broadband user owns 2.4 portable electronic devices. Sharing mobile broadband connectivity among those devices would be very convenient. Many mobile broadband operators are currently considering this option.

Embedded connectivity is a new business proposition whose pricing model is currently evolving, especially in the mobile industry. The underlying principle calls for bundling the cost of connectivity into the service price, content, or connected device. Amazon popularized this concept for its Kindle e-book reader, which, for some models, includes connectivity. A pricing architecture comprised of a tiered fast Internet base service and incremental value options is intended for customers with advanced broadband requirements.

Value-Based Pricing for Over-the-Top Service Providers

Fixed and mobile broadband operators are in position to potentially improve the quality of over-the-top (OTT)[11] services—for example, video services from Netflix—due to specific

[11] OTT service providers such as, Google, Netflix, and Facebook deliver Internet-based services using open Internet connections and access network capabilities provided by telecom operators.

embedded technical capabilities that ensure sufficient guaranteed bandwidth between the service and end user. In practice, broadband providers can package a **guaranteed quality of service** (QoS) for OTT providers that would include two components: 1) content delivery network (CDN) service to host and facilitate the distribution of OTT content over the broadband operator footprint, and 2) guaranteed bandwidth for the specific service. Offering these in one bundle would enable service providers to capture CDN revenues, with a premium on market CDN tariffs. With this service, OTT providers would pay for the delivery cost of the traffic they generate, and broadband operators could exempt this traffic from their customers' quota calculations. Quota exemption would eliminate the potential risk of customers not adopting premium video services for fear of exceeding quota limits.

Additionally, **guaranteed latency** and **guaranteed bandwidth** options could also be offered in an embedded way—for example, in online gaming or managed backup services. It's possible for a broadband operator to partner with Microsoft, Sony, or Nintendo and jointly promote that Xbox, PlayStation, or Wii comes with guaranteed latency (for better play) if customers have broadband connectivity provided by a specific operator. Either game console manufacturer could pay a small percentage of its online gaming service revenues to the broadband provider and thus ensure gamers the best experience possible.

Conclusion

The time is *now* for most mobile and fixed-line operators to start experimenting with new pricing architectures. Network technologies enable sophisticated traffic analysis and traffic prioritization mechanisms that can result in more advanced pricing structures.

While the introduction of new pricing models is always a delicate matter, the industry should move away from flat rate penetration pricing and toward value pricing. If broadband access is suffering from anything, it is from flat rate pricing. Incumbents, in particular, should lead the market by creating more sustainable revenue models that focus not only on marketing new products immediately, but also on effectively positioning the value of more advanced services in the minds of their customers.

The examples in this paper show how to implement value-based pricing strategies over the long term. Pricing is the single most important choice telecommunications providers will make to drive profitability: if a new pricing scheme can either increase ARPU or slow its downward trend, it will have greater impact on the operator's bottom line than any other measure. Telecom operators should unearth dormant network capabilities to enable innovative value-based pricing schemes.

Tomorrow's innovations will replace flat rate pricing with value-based pricing supported by new services, as well as break new ground in customer relations.

Appendix A: Broadband Cost Structures

Fixed broadband and mobile broadband cost structures differ by orders of magnitude. The exact cost to deliver one unit of incremental traffic for broadband operators is the function of multiple variables. This cost differs from operator to operator, and based on feedback from Cisco IBSG customer engagements, is not fully understood by many operators themselves.

What we *do* know, however, is that network engineers dimension networks based on peak-hour capacity requirements. According to the 2011 Cisco Visual Networking Index, the average household today consumes about 20 GB per month. Considering the current industry peak-to-average ratio of 1.6, **fixed broadband networks** are dimensioned at peak-hour capacity of 0.1 Mbps per household. Actual traffic costs in fixed-line facility-based operators are roughly $10 per Mbps per month; this means that a 0.1 Mbps peak-hour capacity costs about $1 per user (household) per month.

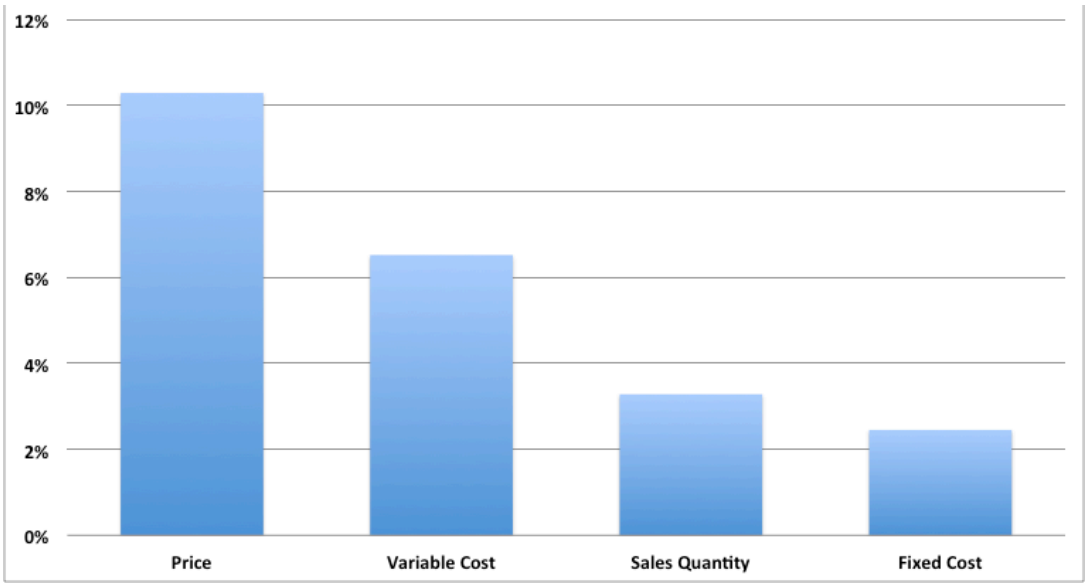
The cost of **mobile network peak-hour capacity** is 25 to 100 times (or more) greater than that of fixed-network capacity, equating to $250 to $1,000-plus per Mbps per month. The 2011 Cisco Visual Networking Index shows that the average mobile-line consumption today is less than 300 MB per month; thus, the required peak-hour capacity is 1.5 Kbps (0.0015 Mbps). This level of usage translates to $1 a month per user for mobile broadband access peak-hour capacity—the same peak-hour capacity cost as fixed-line broadband, but for delivering less than one-tenth of fixed-line capacity. Since nominal access speeds of mobile networks are now in the multi-Mbps range, the potential traffic cost problem is much larger than it is for fixed networks.

The huge price-performance differential between mobile and fixed broadband shows that mobile networks are at a disadvantage versus fixed networks in delivering large amounts of data traffic; thus, pricing models based on caps will continue to be the norm in mobile broadband networks.

Appendix B: Price and Profitability

According to the authors of *Smart Pricing: How Google, Priceline, and Leading Businesses Use Pricing Innovation for Profitability, "*A manager can pull only four levers to increase a firm's profitability: sales, variable costs, fixed costs, and price. When a manager bumps up his firm's advertising budget to gain a larger market share, he's pulling the sales lever. If he has found a cheaper way to source raw materials, he is pulling the variable cost lever. If he tries to reduce his firm's overhead, he is pulling the fixed cost lever. Yet for some reason, not all of these levers are treated equally. Price, in particular, is neglected. This is peculiar because a number of studies have found that although rarely pulled, the price lever is the most efficient lever to increase a firm's profitability." Those levers are shown in Figure 9.

Figure 9. Relative Improvement in Profitability.



Source: *Smart Pricing: How Google, Priceline, and Leading Businesses Use Pricing Innovation for Profitability*, Jagmohan Raju and John Zhang, May 2011.

Based on their research, which is published in their book, Raju and Zhang concluded: "If a firm can cut its fixed cost by 1% without affecting its operations, its profitability can increase, on average, by 2.45%. Similarly, if a firm can increase its sales by 1% without changing its cost structure or price, the firm's profitability can rise by 3.28%. The effect of lowering the variable cost by 1% is larger: Profitability can increase 6.52%. However, the effect of improving a firm's price by 1% is the largest of all: 10.29%. Remarkably this effectiveness ranking order holds for each of the eight industry groups using the standard industry classification (SIC) scheme."

These are the reasons broadband telecom operators, both fixed and mobile, should focus more on innovative pricing, testing customers' attitudes toward new potential pricing schemes and understanding the value they associate with specific service options.

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This white paper does not aim to assess any potential compatibility between the business models and pricing arrangements proposed and existing regulatory frameworks. Operators should assess the compatibility of the proposed business models and pricing arrangements with the specific regulatory framework of the countries in which they operate.

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