Achieving a symbiotic relationship

Despite the experience of the dotcom bust in the early 2000s, the perception is still widespread that the normal commercial rules do not apply to the Internet. In any other industry, network operators and ISPs would be regarded as key suppliers to online application and content providers, and they would be rewarded accordingly. However, the network neutrality argument supposes that bandwidth should be provided unconditionally to all applications on an equal basis. At first sight, this might appear to protect consumers against ISPs and network operators seeking to degrade or block access to bandwidth-heavy online services. But in fact a regulatory approach based on net neutrality also ultimately risks cutting off the financial lifeblood of innovation on the Internet. As a result, it would result in less, not more, choice for consumers and limit the social, economic, and lifestyle benefits that could be delivered by Internet-based services.

In the authors' view, online application and content providers should stop chasing the false economies that network neutrality offers, and instead collaborate commercially with bandwidth providers to deliver the new, differentiated, high-value services that customers will value and be happy to pay for.

by Alastair Macpherson and Darren Waterman

Picture the scene…

An innovative medical software company has invested several million dollars in developing a high-definition, remote medical diagnosis service for use over the Internet. The system presents health authorities and hospitals with a ground-breaking opportunity to remotely diagnose conditions quickly and accurately, thereby improving the quality of patient care and saving money.

For the system to work, however, the application provider needs access to reliable bandwidth of 20 Mbps with very little latency. This does not pose a problem, since the healthcare benefits and cost savings offered by the new remote diagnosis service mean the application provider and ultimately the health authorities and hospitals are happy to pay for the differentiated network service they need.

If the application provider and network operator can conclude a deal in which the application provider can purchase the superior network performance needed to make its product work, then health providers, patients, the developers, the communications operator selling the bandwidth, and ultimately society at large all will benefit.

It sounds like a win/win arrangement. But in a net-neutral world, this type of arrangement has a problem—and therefore so do all the participants in the value chain who stand to benefit from it. Under the concept of net neutrality (see sidebar, "What is network neutrality?"), all Internet traffic must be treated equally,[1] with no priority given to any one application over another. So the communications provider cannot provide the 20 Mbps, low-latency service to the medical application provider unless it makes the same level of service available to all comers, whether they want and need it or not. That would be hugely expensive—and the service probably would never come to market.

So, strong-form net neutrality throws the viability of our fictional "medical diagnosis service" into doubt[2]. The application provider cannot negotiate with network operators for the required bandwidth and quality of service. Health authorities cannot be sure the service will work when they need it, so they may decide not to buy it. Patients will lose out on the opportunity for rapid, lower-cost, remote diagnoses. The application developer will lose out on revenues that would have rewarded its innovation and helped to fund further innovation in the future. And the communications provider will lose out on the revenues from selling the differentiated bandwidth to support the application—money that would have been invested in a higher capacity, quality-of-service-differentiated network and associated technologies, which, in turn, could drive further innovation.

Breaking the shackles

If you take our fictional example and extrapolate the effects of network neutrality across the Internet as a whole, the negative implications are all too clear. The return on investment in Internet-related innovation—whether focused on applications or network infrastructure—becomes less certain, making other opportunities relatively more attractive for investors. As a result, consumers have more restricted choice, as well as benefiting from less creativity and probably lower quality in the services offered to them. And the Internet's potential to benefit society's well-being is not fully realized.

To sum up, an overbearing application of net neutrality is bad news all round. So let's examine another approach—one that could benefit all parties. Suppose the online medical diagnostic provider was able to negotiate a collaborative commercial deal with network providers to guarantee that the required amount and quality of bandwidth would be made available

What is network neutrality?

Network neutrality is the principle that neither network operators nor Internet service providers (ISPs) should place restrictions on content, sites, platforms, applications connected to the Internet, or most importantly, the level of network service available to each. In effect, this means that irrespective of their needs, their willingness to pay, or the impact on other users, network operators and ISPs must treat all content and applications equally.

For some years, supporters of net neutrality—including providers of bandwidth-heavy online applications and content—have raised concerns that broadband providers could use their infrastructure to block users' access to Internet applications and content or to degrade their level of service. However, broadband providers point to the fact that online application providers are generating substantial revenues from services that depend on their network infrastructure, but do not pay toward building or maintaining that infrastructure. Moreover, innovative new services that rely on differentiated network quality would not be built because application providers would be precluded from buying the enhanced quality needed.

each time the application is being accessed. The cost of this guarantee could be incorporated into the sale price of the application. As well as buying the right to use the online application, health authorities would be buying certainty that it would work properly over the Internet, irrespective of the time of day or the level of contention for network bandwidth from other users.

Proponents of network neutrality might argue that such a guarantee of bandwidth availability would be anticompetitive because it effectively discriminates against other Internet users. In our view, the benefits far outweigh such considerations. Taking each stakeholder in turn:

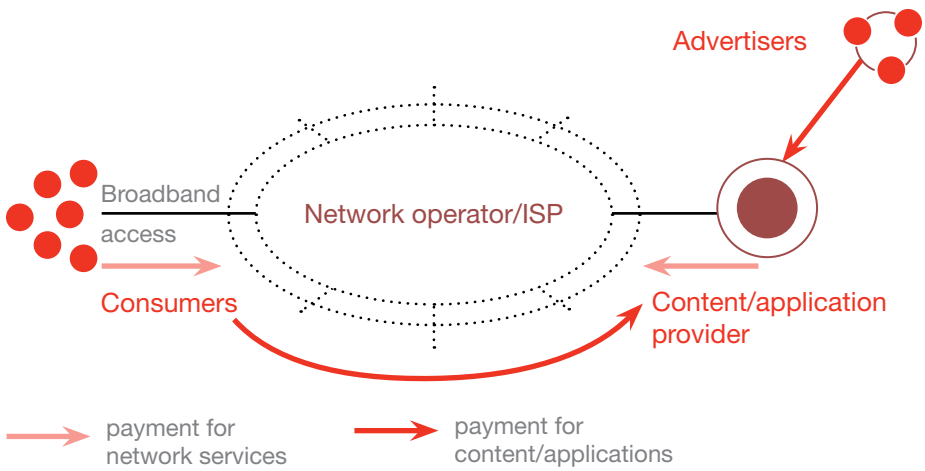
- Network operators and ISPs invest in network capacity to meet the willingly paid-for demands of the application provider.
- The innovation and growth of online application developers is not constrained by an inability to negotiate with network operators for the inputs required to make their future services work.
- End users get new and better services and greater choice.

What is more, all this is achieved by letting normal commercial rules apply rather than through costly and restrictive regulation.

The same principle applies more generally. Network operators could sell different pricing and quality-of-service levels to content and application providers to fulfill the needs of the particular content or application providers. The range and choice of products available to end users would reflect consumers' demands and the value they attach to the products. This situation is illustrated in Figure 1, which depicts the relationships between end users, network operators/ISPs, and content or application providers. The arrows show payments for network services and payments for content or applications. The figure also contemplates an advertising revenue stream for content and application providers.

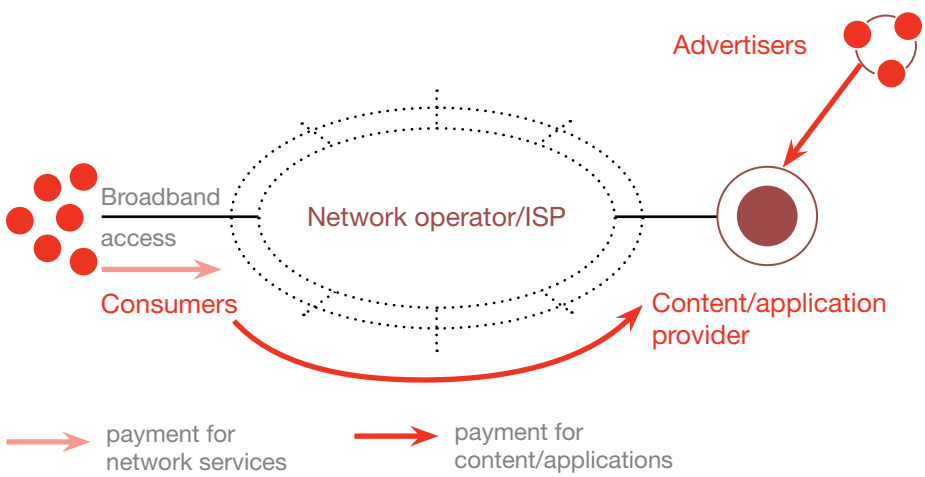
In Figure 2, the same relationships and transactions are shown in a world where strict network neutrality rules apply. In this world, networks cannot provide a differentiated network experience to application and content providers and so cannot access this revenue stream. Revenues for applications and content are lower because the range and quality of content services and applications which differentiated network service would facilitate and consumers would value are foregone. Advertising revenues, which rely on consumer take-up of these services, therefore, are lower also.

Figure 1: Collaborative relationships stimulate service innovation and value creation



Content/application providers negotiate and pay for differentiated service.

Figure 2: Network neutrality constrains service innovation and value creation



Content/application providers ride for free on ubiquitous grade network.

Navigating the debate

In our view, the type of model shown in Figure 1 would help to unlock the promise of Web 2.0 services, and beyond, on both fixed and wireless networks. However, in looking at how these forms of commercial collaboration and choice might come about, it is first necessary to navigate the twists and turns of the network neutrality debate. What is needed is a way forward that balances the interests of network operators and ISPs with the sometimes competing interests of publishers and Internet applications developers.

To date, the debate has been characterized—especially in the US—by headline-grabbing rhetoric. Stakeholders on both sides accuse each other of stifling access and innovation, or free riding. However, the real issue is the extent to which regulation enables industry players to develop and evolve multiple business models for broadband and Internet services that:

- Support efficient investment decisions on fixed and wireless networks;
- Foster innovation in new services that utilize high-speed and high-quality broadband; and,
- Lead to the provision of wider choice and quality of services for all broadband consumers.

Efforts to foster these capabilities are complicated by the fact that it is impossible to know what new services may emerge and change the way we do business, consume media and communicate with each other. However, we are beginning to glimpse what might be possible through developments such as cloud computing and digital content delivery, both of which require high-quality Internet access.

What is clear is that to optimize investment, innovation, and competition in the fast-expanding marketplace for online services, the shackles of the network neutrality debate need to be broken. Supporters of network neutrality often portray it as a freedom-of-speech issue. But our view is that the core concept of network neutrality is actually an extremely intrusive regulatory restriction on the business models for the Internet, because it prevents network operators and ISPs from offering differentiated prices for differentiated services—which is a fundamental principle of any free market.

Just think of the effect if the same restriction were applied in other sectors. We would not benefit from the choice between first- and second-class post, or from different road toll charges for motorcycles as opposed to heavy-goods lorries. Put simply, market choice would be stunted. With this in mind, it is ironic that support for network neutrality regulation is at its greatest in the US—a country we might have expected to be a natural advocate of entrepreneurial freedom.

Considering this background, there is no need to create strong regulations that demand network neutrality. Instead, we can afford to rely on market forces, since the right model will emerge from the everyday experimentation and competition that come from commercial freedom. Through those means—not through onerous and restrictive regulation—the best outcomes will be realized for consumers, businesses, and the wider economy.

ISPs and network operators: Stifling access and innovation?

In moving to a market-based solution, one key issue to be tackled is the frequent accusation that ISPs and network operators are seeking to stifle end consumers' access—and thereby stifling service innovation on the Internet—through walled gardens, selective access, and variable wholesale and retail pricing.

Such a charge ignores the need for network operators and ISPs to generate a reasonable return on investment while also providing high-quality access. These companies are facing the prospect of an ongoing decline in their current core revenues as they compete with each other for subscribers. At the same time new players have emerged whose business models are based on customers having ready access to the Internet—with examples ranging from location-based services that will find the nearest Chinese restaurant to the growing raft of catch-up and archive TV services.

As such services gather momentum and users, the opportunity cost of bandwidth is rising with increasing broadband penetration and demand for bandwidth, and operators are considering the business case for further investment. Despite ongoing growth in demand for capacity and the degree of contention on networks, operators are facing increasing difficulties in realizing any incremental value from consumers through their current unmetered business model for Internet access. Restricting access to the Internet is not the answer. Network operators and ISPs compete fiercely with each other for subscribers, and a provider that offered only restricted access would be at a major competitive disadvantage.

Online application and content providers: Free riders?

At the same time, the other group of key players in the Internet value chain—content publishers and Internet application developers—are accused of free riding on the large, risky investments that network operators and ISPs have made. The Internet has reduced barriers to entry for existing and new content publishers, and its fostering of an environment of innovation and risk has led to a new breed of online content creators and broadcasters. As already discussed, such companies rely on the availability of bandwidth to generate their revenues but do not pay toward the underlying infrastructure or access services.

However, this lack of payment does not necessarily mean these providers are free riders simply benefiting from the efforts of others. It is undeniable that they are responsible for both stimulating the demand for Internet access and building consumers' willingness to pay for access. Their revenue streams are an increasingly diverse mix of free, advertiser-funded, and pay services. And the optimal business models and levels of demand for different services—B2B or B2C, content streaming, and downloading—are still being explored.

In our view, the competing allegations of companies being stiflers of access on the one hand, or free riders on the other, are obscuring the real issue. ISPs/operators and online content providers need one another. Theirs is essentially the symbiotic, interdependent relationship between producer and distributor. The current standoff over network neutrality is denying consumers a potential explosion in innovation and consumption following investment to enable higher-speed, higher-quality bandwidth and tailoring of the network experience. To

Different jurisdictions, different approaches

The proposed introduction of rules to require the neutrality of the Internet has been a subject of fierce debate, particularly in the United States and more latterly in Europe. Different approaches have emerged in each jurisdiction. However, there is general agreement that the Internet's increasingly pivotal role in peoples' lives and in society as a whole means that operators should not be allowed to cut people off from accessing it or seriously degrade their service levels.

While there are national specifics, the European Commission's current proposals essentially would provide "backstop" protection for users—meaning that network operators and ISPs cannot degrade or block access in an anticompetitive way—but would not extend to full network neutrality. Differentiated quality of service would be allowed subject to a minimum level being available to all.

In contrast, the US is moving much closer to stricter net neutrality, perhaps reflecting the more powerful influence of the online application and search industry. In October 2009, The Federal Communications Commission (FCC) voted to move forward with net neutrality guidelines encapsulated in six rules that formalize practice dating back to 2005 (rules 1-4) and add new strictures (rules 5 and 6):

1. A provider of broadband Internet access service may not prevent any of its users from sending or receiving the lawful content of the user's choice over the Internet.
2. A provider of broadband Internet access service may not prevent any of its users from running the lawful applications or using the lawful services of the user's choice.
3. A provider of broadband Internet access service may not prevent any of its users from connecting to and using on its network the user's choice of lawful devices that do not harm the network.
4. A provider of broadband Internet access service may not deprive any of its users of the user's entitlement to competition among network providers, application providers, service providers, and content providers.
5. A provider of broadband Internet access service must treat lawful content, applications, and services in a non-discriminatory manner.
6. Providers of broadband Internet access service must disclose such information concerning network management and other practices as is reasonably required for users and content, application, and service providers.

These are very general guidelines and their impact will be determined by their interpretation and application. In our opinion, it is rule 5 and its potential to limit commercial arrangements for differentiation between applications by providers of broadband Internet access services that is the most onerous and damaging.

bring consumers the new range of services promised under the auspices of Web 2.0, what is needed is collaboration among network operators, ISPs, publishers, and Internet applications developers.

Toward a new, collaborative model

The issue at the heart of the debate over network neutrality is how to share equitably the value from delivering services over the Internet between the providers of services to end consumers and the providers of access to enable consumption. Both groups are making risky investments and looking for ways to innovate and differentiate their services. In combination, this investment drives consumers' overall willingness to pay for the Internet.

The critical factor is how much of consumers' overall willingness to pay is appropriated by each party:

- Network operators and ISPs are accustomed to the old world where they were both provider of access and provider of service, as was the case with traditional telephony.
- Internet publishers and application developers have never had to consider the resource cost of bandwidth because with consumer demand below supply, capacity has always been plentiful.

Bandwidth is not infinite—a fact highlighted by the problems of contention and access performance that commonly arise with new bandwidth-hungry applications. So Internet publishers and application developers need network operators and ISPs to invest in their networks. And network operators and ISPs need Internet publishers and application developers to continue innovating to drive demand for network access services, and thereby provide the business case for further capital investment.

Aligning these interests sounds like a difficult problem that could require careful consideration and regulation. However, as shown earlier in this article, it is actually no different from any other commercial negotiation in other industries. There may be a useful precedent in the similar set of relationships that have evolved in the pay-TV market, where the interests of providers of access and of service providers are aligned to deliver a compelling range of services, differentiated for the varying demands of consumers. Pay-TV subscribers are offered a wide choice of packages with differing prices that meet their demands. Capacity is managed and investment takes place to meet demand, with competition for consumers driving innovation and quality.

Convergence is a widely used term, but maybe these emerging types of mutually beneficial commercial relationships are the clearest indication that convergence is now a reality. As we move to a new paradigm for the business models on the Internet, we should look carefully at the "old media" models to learn the lessons of how collaboration works between innovative, creative, content-driven companies and the providers of access. For example, there are parallels between the historical growth of the independent television-production industry that supplied compelling content to broadcasters, and Apple's success with the iPhone that spawned a whole industry of third-party application developers.

All participants in the Internet value chain, including application providers and consumers, need to accept that nothing valuable comes for free forever. The Internet is a huge, fast-changing, unpredictable environment in which a wide array of innovative and entrepreneurial forces need to be harnessed and aligned to deliver the highest level of value and benefit. Achieving that model requires new and innovative commercial arrangements and relationships, but overbearing network neutrality prevents such arrangements from being formed. For everyone to get the most from the Internet, it is time to move away from network neutrality and to embrace a new era of commercial collaboration with the minimum of regulatory intervention.

Endnotes

[1] Setting aside certain traffic shaping and network management required for legitimate operational purposes.

[2] While in general the FCC intends "that a broadband Internet access service provider may not charge a content, application or service provider for enhanced or prioritized access to the subscribers" it does contemplate dispensation in the case of certain categories of specialized services to enterprise customers—FCC 09-93 NPRM. It is possible that such a dispensation might apply to our medical diagnosis service at least insofar as it relates to the enterprise market.

Alastair Macpherson is a partner and Darren Waterman is a director in PricewaterhouseCoopers' Telecoms, Media, and Technology practice. For more information, contact Mr. Macpherson by phone at [44] 20 7213 4463 or by e-mail at alastair.macpherson@uk.pwc.com; or Mr. Waterman by phone at [44] 20 7213 5023 or by e-mail at darren.waterman@uk.pwc.com.

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