Managing Intellectual Property
The Global IP Resource

PROVIDERS FACE CONCERNS OVER NET NEUTRALITY

01 December 2010

To what extent should governments try to regulate the internet? After the Netflix dispute, Winston Maxwell and Daniel Brenner compare approaches in Europe and the US

ONE-MINUTE READ

European and US regulators are determining whether net neutrality, which ensures the global accessibility of content made available online, needs to be regulated. While there is reluctance to interfere with the dynamic nature of the net, there are some who believe minimum standards should be laid down for internet access providers. EU governments are set to consider rules to this effect in the coming year, while in the US the FCC is due to adopt regulations this month. The most controversial aspect of net neutrality relates to whether access providers can discriminate in how they treat different packets that cross its network. The question is becoming increasingly urgent with the growth of video streaming, as seen in a recent US case between Comcast and Level 3, arising from demand caused by Netflix's traffic. Further questions are likely to arise, especially with the growth of mobile networks.

Net neutrality refers to the current situation in which a content or service provider need only pay its own hosting provider to make its content or service available to the global population of internet users. The ability to make content universally available through a single connection is one of the most magical aspects of the internet. Regulators in Europe and in the United States are trying to determine whether regulations are needed to make sure that this universal availability will not be compromised in the future.

At the same time, the internet has functioned since its inception without regulation, and regulators are wary of imposing rules that might interfere with its dynamic and innovative aspects. As one telecom operator said, the internet is not a historical monument that needs to be preserved, but rather a spaghetti-like tangle of networks in constant evolution to deal with ever-new services, applications and challenges.

The EU has adopted rules on net neutrality via amendments to its directives on electronic communications. These amendments require national regulators to impose rules of transparency on internet service providers (ISPs) (also referred to as internet access providers (IAPs)) so that they disclose to their customers any traffic management techniques and any restrictions that the IAP imposes on access to certain services or content. For example, European mobile operators sometimes limit their customers' ability to use Voice over IP (VOIP) services over 3G data connections or charge different fees for such usage. In the future, these practices would have to be fully disclosed. The European rules also permit, but do not require, national regulatory authorities to impose minimum quality of service obligations on IAPs should the quality of internet access be degraded.

In the US, the FCC is scheduled to adopt net neutrality rules in late December. The FCC's proposal is tied to two plans, one announced in the autumn of 2009 and one in the aftermath of the DC Circuit's 2010 decision in the *Comcast* case that the FCC had not established its authority to regulate network management practices. In October 2009, the FCC proposed a six-part net neutrality package, drawing on its 2005 Policy Statement on internet freedoms and adding in particular the duty of disclosure and of absolute non-discrimination.

This last provision, which would have outlawed paid prioritization according to the FCC's Notice, was strongly opposed by internet service providers – both cable and telco – if left unqualified. Both in Europe and the US, there is a general consensus that IAPs should be subject to increased transparency obligations vis-à-vis their customers, and disclose all traffic management practices. The US also allows IAPs to charge customers on a graduated scale based on how much capacity they use, although most operators base pricing on speeds rather than bit usage. On the issue of prioritisation, however, the views of telecom providers and content providers often differ.

Different types of discrimination

The most controversial aspect of the net neutrality debate relates to whether an IAP may discriminate in how it treats different packets that traverse its network. In the internet today, there are already multiple forms of discrimination, the vast majority of which (such as spam filters) are legitimate. Discrimination that seeks to achieve a valid technical objective, such as protecting the network and guaranteeing a quality of service for all users, are quintessential reasonable network management and do not violate net neutrality. Discrimination based on economic motivations may or may not be legitimate depending on the circumstances. Discrimination with an anticompetitive objective will be forbidden, whereas discrimination based on legitimate business objectives might be allowed.

This is where the regulatory debate becomes complex and extremely important for content providers. Communications operators are seeking new business models as IAPs to compensate for diminishing voice revenues, and they may in the future be experimenting with new wholesale service offerings to content providers that would guarantee the content provider enhanced quality of service over the internet. Net neutrality advocates view this as a violation of the egalitarian nature of the internet, because some rich content providers would be able to get a better quality of service than poor content providers.

The idea that small websites are treated the same as large ones is largely a myth, however. Large content providers already pay content delivery networks (CDNs) for services that help guarantee that their content will not be delayed or blocked when traversing the multitude of best effort interconnection points of the internet.

CDNs such as Akamai, Limelight and Level 3 operate large private networks that inject the content at points of the internet that are as close as possible to the end user, thereby avoiding the thousands of hops that an ordinary website might have to go through. Google has its own CDN, which is one of the largest private networks in the world. Consequently large content providers already get expedited service by paying CDNs for enhanced quality, or in the case of Google, building their own CDNs. IAPs would like also to be able to provide these enhanced services directly to content providers for the portion of the pathway they control, but it is not entirely clear under emerging net neutrality rules whether they can.

Video streaming and the Netflix case

Quality video streaming is radically changing the economics of traffic exchange on the internet and the dynamics of the net neutrality debate. The US video streaming provider Netflix, for example, offers high quality – and legal – video programming via streaming, and this is changing traffic patterns in the internet (one estimate places Netflix traffic at 20% of all downstream US traffic).

Its presence has led to disputes about how internet traffic should be charged between operators. In December 2010, a dispute arose between US cable operator Comcast and Level 3, an internet backbone provider, which also operates a CDN that provides QOS for a fee to video providers whose content require more than the internet's

best efforts transmission quality. Level 3 provides enhanced QOS to Netflix via Level 3's CDN. Comcast had a traffic peering agreement in place with Level 3, pursuant to which the two operators exchanged internet traffic without charge. Most peering agreements are based on the premise that traffic volumes are roughly balanced. The increased Netflix traffic led to traffic peering between Comcast and Level 3 to skew more than 2:1 in favour of Level 3's traffic versus Comcast's traffic load on Level 3 networks. This created a large traffic imbalance that Comcast wanted to charge for.

When Comcast baulked at continuing free peering, Level 3 claimed a violation of network neutrality, arguing that Comcast (which had its merger with NBCU pending at the FCC) was now charging more to primarily disadvantage its video competitor (Netflix). Level 3 tried to characterize Comcast's behaviour as anticompetitive discrimination. Comcast retorted that the dispute had nothing to do with anticompetitive discrimination, but instead reflected the legitimate need to adjust a commercial peering agreement to take account of out-of-balance traffic.

The Level 3 Comcast dispute is a good example of the kind of issues that will increasingly arise in both the US and Europe, as IAPs deal with new traffic patterns created by bandwidth-hungry applications and services such as video streaming. At the backbone, IAPs will seek remuneration for highly out-of-balance traffic exchanges. Today agreements for the exchange of internet traffic are unregulated, and left solely to commercial negotiation between internet backbone providers. Agreements for the free exchange of traffic between operators are called peering agreements, and when one party pays the other, the agreements are called transit agreements.

There are a multitude of variations in these traffic exchange agreements, which are completely unregulated both in Europe and the US. The new European rules do not subject these agreements to regulation, although some European regulators want more visibility of these agreements to better detect hidden abuses and intervene *ex post* in dispute resolution proceedings.

Impact on managed services

Commercial discussion on peering and transit agreements in most cases have nothing to do with discrimination against certain kinds of content. The trickier issue is whether an IAP can give preferential treatment to a certain kind of content based on its origin, particularly as it traverses the last mile. For example, could an IAP provide an enhanced QOS to a certain video-streaming provider with whom the IAP has entered into a strategic partnership?

This is more controversial. Most regulators will find that agreements for online managed services, such as IPTV, which do not operate on the public internet, fall outside net neutrality regulation and that IAPs are free to enter any kind of commercial agreement they want with content providers for these managed services. But the frontier between managed services and the public internet is not always clear. Also, it may be perfectly legitimate for an IAP to offer enhanced QOS for the internet as well, just as CDNs do. In that case, a key question will be whether the IAP will make its enhanced service available to all content providers on a non-discriminatory basis. If it does, then there is not a case of manifest discrimination, because similarly situated content providers are treated the same. The IAP would in that case be providing a service similar to what CDNs provide today: higher quality for content providers who have special needs and the ability to pay for enhanced QOS.

But the enquiry doesn't stop there. A second question is: does this enhanced quality of service provided by the IAP mean that other content providers who rely on the standard best efforts internet will see their service degraded by the IAP? Net neutrality advocates fear that if IAPs are allowed to offer enhanced QOS to content providers, the IAPs will have an economic incentive to degrade – or at least change investment decisions – regarding the normal best efforts internet service in order to motivate content providers to pay for the better premium service. Net neutrality advocates fear that premium services would lead to an inexorable decline in the quality of best efforts internet, which no one wants to see.

In Europe at least, regulators will be watching closely to ensure that service on the best efforts internet is not subtly degraded by IAPs. If degradation occurs, regulators in Europe have the power under the revised directives to impose minimum QOS obligations on IAPs to ensure that the best efforts internet remains relatively good. US policy has not developed on this score, primarily because IAPs do not routinely offer QOS, outside of public service applications like video links used by hospitals.

Emerging challenges

Today IAPs want to offer innovative new services and complain that companies such as Level 3 (and its competitor CDNs like Akamai and Limelight) can freely charge programmers such as Netflix a QOS fee but that network neutrality rules might forbid IAPs from offering enhanced QOS over the last-mile access network. CDNs can bulk up their networks by charging their QOS customers; ISPs must only collect from end users, only a small minority of whom use the service for continuous video streaming.

Some view this as retail customers subsidising content providers but see the subsidy as a net plus in terms of spurring more diverse content. In the US it remains to be seen whether the FCC will outlaw charges to content providers to routinely supply last mile QOS. In Europe, the new directives do not prohibit per se upstream charges by IAPs to content providers for enhanced QOS. But expect regulators to watch the situation closely and intervene if either the charges are anticompetitive or they lead to degradation of best efforts internet.

In Europe, legislatures have until May 2011 to incorporate the provisions of the electronic communications directives into national law. Regulators, governments and parliamentarians are debating whether the directives' provisions should be transposed as-is, or whether they should be supplemented and interpreted in light of national circumstances. The organisation of European telecom regulators, the BEREC, advised caution in an October report, noting that incidents of net neutrality abuse in Europe are rare and each case was resolved quickly without need for regulatory intervention. Even in the US, critics of net neutrality regulation say that net neutrality is a "solution in search of a problem," and that real problems and consumer harm have yet to be demonstrated.

Europe and the US also have different regulatory environments, which might lead to different outcomes. Unlike the United States, Europe adopted unbundling the local loop of the dominant telephone company and bitstream access as key levers to permit competitive providers to compete on the retail market for internet access. If that is competitive thanks to these regulatory levers, and provided switching costs are not too high, then in theory consumers will have a choice of access provider and will be able to change if a given access provider begins degrading traffic or blocking access to certain applications. As noted in the preamble to the November 25 2009 Consumer Rights Directive: "a competitive market should ensure that end-users enjoy the quality of service they require."

Consequently, if European regulatory authorities have done their job correctly by ensuring cost-effective access to the incumbents' networks, competition on the retail market for internet access should act as a sufficient constraint to prevent internet access providers from unduly discriminating against certain content. Where effective competition exists, further economic regulation in Europe would be unwarranted.

In the US, the context is different. Local loop unbundling and bitstream access are largely unavailable, meaning that local competition for internet access is more limited. US consumers are generally faced with a duopoly between the local cable operator and the local telephone company, although increasingly broadband wireless is viewed as a facilities-based competitor, particular as higher bandwidth Wi-Max and 4G technologies roll out. Where competition is less vibrant, the argument for regulation may be more sound, although even in that case, one most generally demonstrate consumer harm before regulatory intervention is warranted.

An unresolved question both in Europe and the US is the extent mobile operators should be held to the same standards as fixed-line IAPs until 4G is more widespread. In both continents, mobile operators have historically had more latitude to manage their networks and limit the kinds of services or applications that are available, and this has largely been tolerated because of the additional capacity constraints that mobile operators must deal with. Mobile operators have remained in some cases below the radar in the net neutrality debate, but with the massive uptake of smartphones, and the increased bandwidth promised by future 4G networks, mobile networks will be directly affected by the emerging net neutrality rules.


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