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Dear Stephanie,

Re. Ofcom Discussion Document: Traffic Management and ‘Net Neutrality’

As an independent observer of this debate, I read with great interest the above discussion document and would like to congratulate Ofcom on both the thoroughness of its analysis and its well-reasoned arguments – particularly the conclusion that, in most cases, early intervention is unwarranted. While references to ‘net neutrality’ are inevitable in this context, Ofcom clearly recognises the semantic imprecision of that term, and its focus on pragmatic traffic management issues provides a welcome departure from some of the more alarmist rhetoric common to earlier regulatory debates on internet development.

In Section 2 of the Discussion Document, Ofcom rightly rehearses its proper role in relation to traffic management, concluding that the principal grounds for its intervention lie with consumer concerns regarding overt discrimination (in the provision of content and services), pricing or transparency of information. These issues clearly fall within the scope of Ofcom’s principal duty under Section 3 of the Communications Act to ‘further the interests of citizens in relation to communication matters, where appropriate by promoting competition’. However, a possible criticism of the Discussion Document is that its justified attention to such consumer concerns is not always matched by similar consideration of Section 3’s duty to promote competition. While the document does not ignore the wider competitive landscape, a more balanced assessment of the risks of regulatory intervention could provide a very valuable steer to those contemplating further investment in the provision of advanced broadband services. These, pro-competitive aspects of the net neutrality debate include the following:

1. The generic arguments against premature regulation of a complex (and dynamic) economic sector;
2. The benign aspects of various forms of economic discrimination;
3. The potential impact of ex ante traffic management rules on innovation and investment;

Forbearance - *Primum non nocere*

At several points in the Discussion Document, Ofcom notes that ‘appropriate forbearance from regulation’ may be the best response to so-called net neutrality concerns. Nonetheless, a clearer message that possible infringements will be considered only on their merits would have been welcome. For instance, the Discussion Document properly cites the FCC’s consideration of the Comcast dispute with BitTorrent but perhaps fails to reflect how the FCC chose to evaluate the Comcast case – not through the establishment of permanent regulatory principles but instead through a choice to “adjudicate disputes regarding federal Internet policy on a case-by-case basis.”

The FCC gave three specific reasons for judging traffic management concerns on an ad hoc basis: first, the Commission noted that the Internet is still at a formative stage and that the FCC therefore hoped to provide some guidance to consumers and the industry “without unduly tying our hands should the known facts change.” Second, the FCC explained that because Internet networks are so complex, the Commission was not confident that a “one-size-fits-all approach is good policy.” Finally, the FCC argued that the restraint of a case-by-case approach best suited the wider recognition that “broadband services should exist in a minimal regulatory environment that promotes investment and innovation in a competitive market.”

Ofcom’s Discussion Document recognises the need to ‘guard against premature conclusions about the nature and extent of the ‘net neutrality’ problem, and a more general ‘need for caution’ in applying any broad regulatory remedies (para. 3.58). Nonetheless, these caveats could usefully have been supplemented by a broader articulation of policy that Ofcom will seek to avoid *ex ante* market intervention wherever possible.

In this context, the development of Content Distribution Networks (CDNs) may be instructive. As Ofcom’s Discussion Document explains, CDNs such as those supplied by Akamai provide a caching and redirection service for clients in order to speed up load times and relieve congestion in the core network. Ofcom points to the development of these CDNs as an inevitable – and largely welcome – response to the problem of network latency. However, the irony not addressed by Ofcom’s discussion is that CDNs actually represent a direct threat to ‘traditional’ Net Neutrality principles. This point has been well documented by Christopher Yoo, a University of Pennsylvania law professor¹:

"The problem is that content delivery networks violate network neutrality. Not only does URL redirection violate the end-to-end argument by introducing intelligence into the core of the network; the fact that content delivery networks are commercial entities means that their benefits are available only to those entities willing to pay for their services."

While not all commentators agree with Professor Yoo’s analysis, it seems clear that premature imposition of so-called neutrality principles could easily frustrate important developments in internet architecture. This is the danger recognised in the FCC’s handling of the Comcast case: without arguing against intervention under any circumstances, the Commission’s predisposition in favour of minimal interference of internet development left it very reluctant to engage in any strict or permanent establishment of traffic management regulation.

¹ Akamai As Proof Of A Non-Neutral Net?, *Webpronews*, January 2008

The benefits of discrimination

As an experienced regulator, Ofcom hardly needs to be reminded of the potential welfare benefits of economic discrimination but the weight of this evidence is occasionally lacking in its discussion of traffic management policies.

While the Internet was originally designed to assign equal treatment and rights of delivery to every packet of data, modern telecommunications networks allow quality of service prioritisation by allowing the labelling of some types of traffic as higher priority than others. To an extent, elements of prioritisation already exist. For example, search engines charge content providers in a variety of ways, e.g., for sponsored links, for priority in search results, or on a click-through basis. This is effectively a way of prioritising between different content providers.

The ability to discriminate on the basis of the quality of service (QoS) is an efficient way of dealing with excess demand which, in networks, appears as congestion. When congestion arises, all traffic is delayed irrespective of its value. As this is an economically inefficient outcome, charging more for priority is an efficient way to ration demand and allow highly valued traffic to experience a better quality of service. Even when no congestion exists, discrimination on the basis of differences in consumers' willingness to pay is an efficient way to recover fixed and common costs (i.e. Ramsey pricing).

As Ofcom's Discussion Document points out, however, the appropriate level of discrimination is complicated by the fact that internet access is an example of a two-sided market – making the optimal pricing structure for an ISP wishing to develop a broadband platform hard to predict. However, the peculiar features of all sides of the market suggest that charging only end users for access is unlikely to be an optimal strategy – as Ofcom itself concludes – and a regulatory mandate to preserve such an arrangement would in any case amount to price regulation. In reality, many similar multi-sided platforms opt to charge a very low price to end users, in order to build an adequate customer base, and then invite application and content providers to pay for reaching these users with sufficient QoS. However, under mandatory net neutrality rules, an ISP or access provider would be forced to charge only consumers, at most offering variants in terms of access speed (i.e. consumer-tiering). This, in turn, means that the price of Internet access to end users will be relatively high, as subscribers bear the full cost faced by the ISP in setting up and running the platform. By contrast, allowing ISPs to subsidise access through QoS fees and a certain degree of application-tiering would rebalance the pricing structure of the platform, allowing for greater demand and participation of all users to the platform.

Approaching net neutrality from a multi-sided market perspective is also useful as it implies that no real difference exists between consumer-tiering and application-tiering: they are both forms of user-tiering, but users belong to different sides of the market. From an economic viewpoint, there is therefore no difference between price discrimination applied to one side of the market (users) and discrimination on another side (content, services). Even more importantly, the economics of two-sided markets explains very clearly that the only player able to devise an optimal way of balancing interests on all sides of the platform is the ISP itself. Only platform operators will know whether pricing tools to segment demand, such as peak load pricing or volume pricing, are suitable for their own platform and subscriber base. A rigid regulatory environment that discourages mixed pricing structures and quality management will simply frustrate attempts to set up successful platforms, and consequently also impede service differentiation, infrastructure deployment, broadband uptake, and ultimately consumer welfare.

Being platform operators in two-sided markets, access players and ISPs can increase social welfare by engaging in network management and more effectively matching the demand of end users with the demand by content/application providers. Even without specific regulation, ISPs would be unlikely to block applications or to foreclose content from their platforms: to some extent, what is bad for content provision is also bad for the ISP, as indirect network effects ensure that the platform's value to end users increases along with the applications and services available on it. This, alone, suggests that mandating net neutrality through rigid *ex ante* regulation makes little sense from an economic viewpoint. Doing so also runs the risk of locking networks into a business model where increased capital spending is the only way to relieve traffic congestion. In other network industries, such as energy distribution, the clear trend is away from dumb pipes and toward smart grids that help the network deal with surges in demand. The regulatory regime ought not to discourage that kind of initiative among ISPs.

Innovation and investment

Finally, *ex ante* traffic management rules could have perverse – and damaging – effects on the process of innovation and investment. In the first place, mandating non-discriminatory access threatens to favour content and applications that have been designed for the network as it exists today over content and applications that depend on newer or different network architecture. Indeed, preventing network providers from prioritising certain content or applications over others may reduce innovation by making it more difficult to develop advanced services that depend on guaranteed quality of service.

Secondly, there is a real sense in which the innovation fears often voiced by net neutrality proponents are actually addressing the wrong policy problem. Network neutrality proposals are aimed at preserving competition in applications and content, which are those portions of the industry that are already the most competitive and the least protected by entry barriers (and the most likely to remain that way). Arguably, the real focus should instead be on the impact network neutrality regulation would have on the competitiveness of the internet access market.

Ofcom's Discussion Document makes the point that avoidance of net neutrality rules could facilitate investment in new network capacity, e.g.

"Permitting traffic management would allow network operators and ISPs to address short-term capacity problems, whilst making longer-term capacity investment at the time when it is efficient to do so" (para. 4.52).

While this is undoubtedly true, traffic management could also enhance competition by allowing the introduction of differentiation in the access market. That is, if some customer groups place sufficiently different value on different types of applications, multiple networks may be able to coexist simply by targeting their networks towards the needs of those subgroups. Professor Christopher Yoo, cited earlier, has illustrated how this might work in practice², i.e.

"...it is conceivable that network diversity might make it possible for three different last-mile broadband networks to coexist: one optimized for traditional internet applications such as e-mail and website access, another incorporating security

² Network Neutrality, Consumers, and Innovation. University of Chicago Legal Forum, Vol. 25, 2008

features to facilitate e-commerce and to guard against malware, and a third that prioritizes packets in the manner needed to facilitate time-sensitive applications such as streaming media and virtual worlds...These examples illustrate how deviations from network neutrality may benefit consumers by facilitating greater competition in the last mile".

Professor Yoo concludes that mandating network neutrality can have the perverse effect of reinforcing sources of market failure by limiting networks to competing on price and network size, factors that favour the largest providers.

Conclusion

As usual, Ofcom's Discussion Document takes an evidence-based approach to its consideration of traffic management issues, and such pragmatism is to be welcomed. Nonetheless, the document might have benefited from a clearer statement by Ofcom that it will continue to adopt a regulatory regime that permits experimentation with different practices, but stands ready to intervene should evidence of consumer harm emerge. In other words, an endorsement that an ex post, case-by-case approach is seen as the best way to promote investment in and competition among broadband access networks while at the same time providing meaningful protection against any demonstrated anticompetitive harm that might arise.

I hope these comments are helpful.

Yours sincerely,

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