Concerns about “net discrimination” and Proposal for amendments Directive 2002/22/EC - Universal Service.

February 18th, 2009

- Today's innovation in Web services is extremely demanding on quality of service, and particularly equity of service. As more and more applications are developed that enable co-operative activities (collaborative on-line work, shared media) whose yesterday's equivalents were done on stand-alone machine, the response time of the Internet has become a critical resource for all.

- Discrimination on network performance is unacceptable. An economic model allowing network operators to discriminate in this way would discourage innovation and result in rent-seeking behaviour by the established players.

- Network operators should be incentivised to invest in bandwidth, and “traffic management” should only be necessary to deal with specific temporary congestion such as bottlenecks in the backhaul (part of the network which runs from the user’s home to the main network).

- Development of new services should not require restrictions on existing services. Operators are free to develop services which run separately to the Internet, or which run ‘over the top’ of the Internet, in each case competing equally with other players.

- Different, unregulated quality of service standards will create a patchwork quilt of networks, and the EU’s objective of harmonising the internal market will not be achievable.

- Many of the ‘traffic management’ issues are not related to competition law and would normally fall under the duties of the regulator, as indeed they did in the US in the Comcast case [2]. They include whether or not “traffic management” is interception of communications, or in any other way infringes on the users’ fundamental rights. These issues need to be better understood at a policy level, and until then, legislation should enable regulatory oversight with possibilities for intervention at EU and Member State level.

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Equitable networking

An equitable network is one where information travels end-to-end according to performances that are independent of who is the originator of this information, what is its content or media, or what protocol is used on top of the basic network protocol. The equitable character of networks is essential when they are « universal » networks used for the exchange of information in many diverse protocols.

The typical case is the Internet, the joining together or interconnection of all networks that use the Internet Protocol or IP. Tens of different protocols are used on top of the Internet for the exchange of generic information (Web information for instance) or for specific media or communication. The most generic protocols have adopted a commitment similar to IP's to equitable transmission (for instance the HTTP protocol that supports the World Wide Web). In other protocols, there can be a differentiated treatment of packets in order to achieve some desirable property of efficiency or media-specific quallity.

New -partially deployed- versions of the Internet Protocol (IPv6) make possible to signal various levels of priority that can be used to discriminate between transmission of various kinds of packets. This possibility does not imply that an IPv6 network will stop being equitable: it depends how this information will be used in routers, network management and commercial contracts between peer networks. Finally, it is well accepted that subscribers, local networks or Virtual Private Networks can implement network management methods of their choice.

The requirement for equity of networks essentially applies to the Internet as an infrastructural network. But within this frame, it applies « end-to-end » that is from any source to any destination, in particular to and from individual subscribers.

Innovation on the Internet

Since the birth of the Internet, innovation has been bound to the possibility to innovate « without a permit or licence » because it was possible to design, implement and deploy new services and secondary protocols « from the periphery ». This was critical to the success of the Internet, the Web and the extraordinary growth that has resulted.

It can be said that the Internet exists because DARPA, the US government organisation which originally set up the Internet, did not adopt what was the dominant telecom operators view in the 1960s and early 1970s regarding what the « network of the future » should look like. This has made Internet the one invention in the history of mankind that has scaled seamlessly from an experiment connecting 4 or 5 local networks of research centers to a global network connecting a billion and a half humans on which information is transmitted that represents ten orders of magnitude (10000 millions times) more trafic in 20 years[1].

1 See: Andrew Odlyzko, *Internet traffic growth: Sources and implications*, http://www.dtc.umn.edu/~odlyzko/doc/itcom.internet.growth.pdf .There is debate on whether this ability to scale up is today endangered by an accelleration of the growth rate of traffic. Andrew Odlyzko, the leading expert on Internet statistics and modelling stresses that this claim is not founded. See Andrew Odlyzko, Threats to the Internet: Too Much or Too Little Growth?, http://www.internetevolution.com/author.asp?section_id=592&doc_id=146747& . For an in-depth analysis of the issues that lie behind the debates on net neutrality or equitable netwotks, see : Andrew Odlyzko, *Network neutrality, search neutrality, and the never-ending conflict between efficiency and fairness in*

But this was only the start of a long story of innovation. The large successes in this history, such as Google, should not hide the immense wealth created by hundred of thousands of small firms, from simple web sites designers to innovators in Web services. Even the large successes did start as small ventures, innovating at the periphery of the Net.

Is this story finished? Is it now the network operators who know what are the promising innovative functionality and business models. 25 years of Internet history and 15 years of Web history indicate that it is extremely unlikely. The operators, suppliers (Nokia) or ISPs (Free) that have been truly successful are those who were early recognizers of the innovation by users and small innovating firms and developed offers building on their innovation or serving it.

Is « minimal quality of service » enough for today's distributed innovators? Definitely not. Today's innovation in Web services, even for media such as text, is extremely demanding on quality of service, and particularly equity of service. As more and more applications are developed that enable co-operative activities (collaborative on-line work, shared media, playing network game) whose yesterday's equivalents were done on stand-alone machine, the response time of the Internet has become a critical resource for all. Other applications such as operating personal video channels mean that the individual customer may have requirements of quality of service of a similar nature to professionnal providers. It is by nature restricted by physical constraints (speed of light, the physical location of information sources).

Adding discriminatory performance to the inevitable performance constraints is unbearable for innovation. An economic implementation of discrimination that would require providers or users of these services to pay higher prices to obtain would be even more harmful. It would discourage innovation and result in rent-seeking behaviour for already established players.

It is of fundamental importance to save the equity of infrastructural networks. It is key to European innovation in times where it is badly needed.

- ✗ Maintain freedom to use broadband networks for any purpose with due respect to national and international laws without any kind of discrimination by ISP;

- ✗ Prevent any kind of discrimination against content based on source, ownership, protocol or destination.

markets , http://www.dtc.umn.edu/~odlyzko/doc/net.neutrality.pdf .

Concerns and propositions about "Industry coalition" recital 14b

Summary : AT&T's amendment about a recital 14b to Universal Service directive of the telecoms package opens the door to practices that :

- **are mainly targeted to allow a net discrimination**
- **are harmful for the growth and innovation models of the Internet,**
- **are a clear disincentive to the model based on cost-efficient bandwidth-based investments,**
- **against the benefit of the consumers,**
- **raise concerns about the protection of fundamental rights and freedom of European citizens.**

> *"(14b) Management of networks in order to, for example, address congestion and capacity constraints and to enable new services should not per se be considered an example of a restriction requiring intervention under Directive 2002/22/EC, and due account should be taken of the right of network and service operators to diversify their offerings in a competitive market, including through the imposition of reasonable usage restrictions, price differentiation and other legitimate competitive practices. Temporary non-compliance with any minimum quality of service requirements due to unforeseeable circumstances beyond the reasonable control of the service and/or network provider (force majeure) should not be subject to sanctions."*

This paragraph refers to all networks, which could include voice, mobile, data, and Internet. Our concern here is in relation to the Internet, and the use of traffic management technology incorporating deep packet inspection techniques.

- ***for example*:**

  Acceptable network management policies must be better defined and the intentions of the operators should be clearly understood at a policy level. This open list is unacceptable, since it opens doors to any justification for network discrimination.

- *[network management to address]* ***capacity constraints*:**

  The model of development of the Internet has always been based on addressing capacity constraints by investing on bandwidth. This investment model allows for new resources added by the operators to be used for the benefit of all users, thus enabling the growth of the network and its usages. This crucial parameter enables the bottom-up model of innovation, where people and companies located on the edge (often on the "bleeding" edge) of the network can reach their customers without discrimination, with the same chance as the dominant players. Going against this investment model would allow operators, in order to gain more control over their part of the network, to dissociate it in practice from the interconnected network, leading to anti-competitive barriers.

  Network management measures should only be used to temporarily address network congestion and capacity constraints, when they are due to an attack or any kind of unexpected and unusual event. If the problem persists, the only sustainable solution, for the benefit of all, is to **buy more bandwidth**. This is the investment model that should be incentivised.

•*[Management of networks] (**and) to enable new services**:*

By default an Internet access service allows, with due respect to national laws, access to any content and service, and usage of any application or hardware of user's choice. The wording of the recital only means that "new services" can be offered with restricted access to content, services and applications. This is in total contradiction with the essence of Internet, where the operators don't regulate or influence their customers' personal usage. It leaves doors opened to "sub-internet" access, where Voice over IP, Peer-to-peer, sometimes video and audio streaming are restricted, in order to unduly favor the operators services. Access in such conditions is anti-competitive and cannot technically be called "Internet". It cannot be beneficiary to the users nor to the growth of Internet.

We also have to question why the enabling of new services requires a restriction to be imposed. A network operator is still free to either offer a new service separately. For example, he could offer a package of conventional TV services which is offered alongside his internet service – or he could offer an "over-the-top" service of paid-for content. But what he should not be allowed to do is offer an Internet service which is limited in any way or restricts the user from going to any particular content.

Some of the new services suggested by AT&T are services which more properly belong for considering within the European Commission's 'Internet of Things' concept, and do not belong in a review of telecommunications law. For example, medical monitoring. Furthermore, this type of service is one which traditionally would not be offered over a public network, but would instead be offered over a private or dedicated network, precisely because the quality of service is critical to the application.

•*[diversify their offerings] **including through the imposition of reasonable usage restrictions**:*

Operators shall not regulate their customer's usages. The only acceptable offering diversification for them is: **higher price for more bandwidth.** Options could be sold to give the ability to prioritize such or such service (including "High QoS demanding" services), as long as it remains the user choice.

•*[beyond the] **reasonable** [control of the ..provider]:*

What is or is not beyond the control of the provider have to be precisely assessed. There is no justification for that vague wording. Quality of service on an Internet Protocol network is generally measured in terms of criteria such as error rates, latency and contention ratios. An Internet protocol network is by its nature interconnected, and a change in one place may have ramifications elsewhere in the network, which may not always be predictable. The more 'intelligence' you put in to the network, the more you will get issues with quality of service, and as a minimum, need to monitor it.

•*[management of networks to] **address congestion***

The issue here is whether it is legitimate network congestion or whether it is about dealing with types of traffic which the operator doesn't like. In reality, we know that operators are using 'traffic management' equipment to 'control peer-to-peer' traffic. In the US, the FCC declared that such behaviour was not legitimate practice in its order to the network operator Comcast[2].

The traffic management equipment that the network operators are installing, and to which these amendments apply, uses a technology known as deep packet inspection. It enables, among other things, traffic shaping, where different types of traffic such as video, P2P, voice over IP, and

2 Commission Orders Comcast to End Discriminatory Network Management Practices
FCC Affirms Its Authority to Protect Vibrant and Open Internet
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-284286A1.pdf

standard email and web, can be slowed down, stopped or re-prioritised according to the operator's priorities. It also enables what is known as 'policy managment' which will allow the operators to set different rules for different customers. As a simple example of how powerful this technology is, the network operator's monitoring screen displays the types of games people are playing on the network, and distinguishes between World of Warcraft and Lord of the Rings.

We know that controlling P2P traffic is just the beginning. The network operators and ISPs want to use it for 'traffic prioritisation' and 'preferred service delivery'. They are also looking towards preferred partnerships with content providers, for revenue sharing. Indeed, the equipment is being explicitly sold to them for this purpose, and this sales pitch can be seen in the brochures of the equipment vendors.

Network congestion typically occurs at specific points in the network, creating choke points or bottlenecks, and can be dealt without discriminating against specific services or protocols. Many providers experience congestion in the part of the network that carries the user's data back from the point of access to the network core (known as the backhaul), **and investment in more network facilities and bandwidth is an appropriate way to deal with this problem.** This principle applies to mobile and fixed networks alike.

The whole issue of traffic management and deep packet inspection needs more research at a policy level. Whilst the claim may be to deal with congestion, there are also experts who believe that by increasing the complexity of the network, 'traffic management technology' could slow down traffic and itself be the cause of quality of service issues.

In respect of traffic management systems, it is known that there are different effects, depending on whether the equipment is placed in the core of the network or towards the edge. For example, there is a case being examined in Canada[3], where a network provider slowed down P2P traffic in the core of the network, and it impacted on users of the downstream networks, which were operated by different companies.

If there are different QoS standards across Europe, created by the implementation of traffic management systems, the result will be a patchwork of networks and harmonisation of the internal market will be impossible.

Some of the techniques employed involve only the header data, which the network operators on an IP network routinely use to process and transmit traffic. However, some of the techniques involve the opening of the user's data packets – the 'deep' inspection. Such 'deep' inspection, which is carried out surreptitiously and without the users' knowledge, is technically interception and contravenes users' fundamental right to privacy. It is questionable whether it is legal under EU law.

AT&T argues that competition law takes care of disputes, but in fact, many of the issues are not related to competition law and would normally fall under the duties of the regulator, as indeed they did in the US in the Comcast case. These issues need to be better understood at a policy level, and until then, legislation should enable regulatory oversight with possibilities for intervention at EU and Member State level.

3 The Canadian Association of Internet Providers asked the regulator to order Bell Canada to stop throttling their traffic on its core network. http://www.p2pnet.net/stuff/CAIP%20finalanswer.pdf

Proposition for recital 14b

"(14b) A limitation on a subscriber's ability to access, use or distribute information or run applications or services is deemed non-discriminatory when it is ordered by a decision from the judicial authority, or when users can deactivate it at no extra cost, or when it is a temporary, short term, response to malicious activity or unpredictable occurrence threatening the integrity or security of the network, or end-user security. Such limitation must always be carried out without giving priority to selected users or content/service providers."

Proposition for a new article 22(4)

'4. Non-discriminatory network and traffic management policies are practices exclusively ordered by a judicial authority, or completely manageable by the end-user at no extra cost, or serving as temporary short-term remedies in response to malicious activity or unpredictable and unexpected occurrences threatening network security or integrity or end-user security. Such policies must always be carried out without giving priority to selected users or content/service providers.'

Justification: Open and non-discriminatory access is dependent on Internet users controlling their access to content. Users can access any website or internet service they want, at any time, at the fastest speed they are willing to pay for. Users do not want network operators to choose for them which websites and which services and applications they can use. They want to be able to experiment with new applications and protocols without having to ask for prior permission from the network operator. And they do not want content to be blocked or restricted by the network operator.

Annex I - Open letter to the European Parliament

We welcome the various statements by the EU to incorporate citizen's interests within the policy-making process for the Internet. We also note the Council Conclusions of 27 November 2008, on "Future Networks and the Internet" which state "that open and non discriminatory access to the Internet should be promoted in order to ensure effective competition and an innovation-friendly environment."

Our concerns relate to those amendments to the Telecoms Package which affect the Internet and Internet users. We welcome the Parliament's support for users' rights in First Reading, and we urge you to build on that support to improve the texts in the Second Reading.

The Internet plays a major economic and social role, and contributes to European welfare. It is a space for cultural exchange, technological innovation, and economic activity. It empowers all citizens alike, including innovators, entrepreneurs and consumers. It enables social interaction and democratic participation. It has become an important foundation for culture, scientific research, innovation, and education.

Europe has an opportunity to take a lead in the development of the next generation networks, and the products, services, and applications that will run on them.

We note the Council Conclusions of 27 November 2008, on Future Networks and the Internet [1] which state "that open and nondiscriminatory access to the Internet should be promoted in order to ensure effective competition and an innovationfriendly environment." Indeed, the Internet has grown very fast precisely because there was no discrimination between traffic, based on content, services or applications. European companies and operators, as well as users, have benefited greatly from this development.

Open and non-discriminatory access is dependent on the internet and future networks remaining neutral.

We are concerned that certain amendments which remain in the Telecoms Package will put those values and benefits, as well as fundamental rights such as privacy and freedom of speech, in jeopardy. We have consistently stated, and we still believe, that it carries a number of risks, namely that:

1. it will permit the filtering of content, applications and services;
2. the denial of access to on-line copyright material through attempts at enforcement, even when access is lawful, via "cooperation" between network providers and "the sectors interested in the promotion of lawful content";
3. the threat to user's privacy via the retention and processing of personal data for "security purposes".

We request that the amendments related to the three risks we have highlighted are removed from the Package, in order that they may be given due consideration without delaying the wider objectives.

At the same time,

1. Safeguards for users against discriminatory practices, disproportionate sanctions or unfair restriction of service have been removed Framework Directive Article 8 (4ga) and Universal Services Directive Article 32a.
2. Regulatory controls on the activities of the service providers, which would protect against discriminatory, restrictive or unfair practices, have been weakened Universal Services Directive, Article 22(3).

We believe that those safeguards and regulatory controls should be reinstated, in order to ensure the fair treatment of users across Europe.

We recognise the critical nature of the overriding objective of the Telecoms Package, namely to complete the internal market for telecommunications in Europe.

We would warn however, that the Telecom Package amendments on filtering, cooperation and traffic processing will have in fact the effect of further distorting the internal market and most of all, compromise user's rights (which should be taken into account in defining and implementing any Community policies and activities).

We very much share the desire of the EU to promote the growth and competitiveness of the European economy, as we recognise that such growth will only be beneficial for all citizens.

However we believe that the measures to achieve that goal might not be detrimental to citizen's rights and democratic participation. We also believe that European welfare will only happen if the Internet can remain free and open and that the type of measures entailed in the Telecommunications package highlighted above will not contribute to Europe's economic objectives.

For these reasons, We request the Parliament rejects [2]

- **Universal Services Directive.**
  - Article 22(3),
  - Article 33(3),
  - Article 20(1b.1st), and
  - Article 21 (4a).
- **Eprivacy Directive.**
  - Article 6(7);

and we request support for [3]:

- **Framework Directive**
  - Art. 8.4(ga), (Amendment 138),
- **Universal Services Directive**
  - Art. 32a, (Amendment 166).

The undersigned groups and individuals represent thousands of European citizens and Internet users, in EU member states.

Within our coalition we have experts in areas relevant to the Internet and citizens' rights including filtering, network technologies, digital rights management, privacy and data protection, policy, law, media and software. We would like to assist the European Parliament in order to address the very important public policy areas related to the Internet, telecommunications, privacy and copyright, and find equitable solutions for business and for citizens.

The undersigned,

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References

[1] Council Conclusions on future networks and the internet 2907th TRANSPORT, TELECOMMUNICATIONS and ENERGY Council meeting Brussels, 27 November 2008

[2] Articles refer to the Council Common position adopted on 16 February 2009

Universal Service Directive (DIRECTIVE 2002/22/EC) Article 22(3)

Universal Services Directive, (DIRECTIVE 2002/22/EC) Article 33(2a) ; Article 20(2b); Article 21 (4a)

Eprivacy Directive, (Directive 2002/58/EC) Article 6(6a)

Universal Services Directive (DIRECTIVE 2002/22/EC) Article 22(3)

[3] Amendments refer to 1st reading in European Parliament

Framework Directive, (DIRECTIVE 2002/21/EC) Amendment 138

Universal Services Directive (DIRECTIVE 2002/22/EC) Amendment 166.