Network Neutrality: Anticompetitive Issues in Internet Legislation

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Abstract

This article seeks to illustrate current policies over the so-called network neutrality in the United States and in the European Union.

In short, network neutrality, which lacks any exact definition and is under constant debate, consists of principles that allow public information networks to treat all content, sites and platforms equally. In practice, hindrance or exclusion of certain types of lawful Internet traffic or content by the Internet service providers would be contrary to these principles. Due to the US-centric nature of the Internet, the US stance over network neutrality will also affect the Internet policies of the European Union as well. Thus, the aim of this article is to stimulate academic discussion about network neutrality in Finland.

The focus of this descriptive article is on exemplifying network neutrality's impact on technological development, the evolution of business models in the Internet space, and especially, potential antitrust issues. Finally, this article asks how network neutrality will be legislated in the future and whether it will survive as a network design principle.

Full Article

1 Introduction

"How do you think they're [Internet Content Providers] *going to get customers? Through a broadband pipe. Cable companies have them. We have them. Now what they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it. So there's going to have to be some mechanism for these people who use these pipes to pay for the portion they're using. Why should they be allowed to use my pipes?"*[1]

– Edward Whitacre, former CEO of AT&T

1 Herman 2006, p. 104.

Network neutrality has been the subject of debate, especially in the United States. Essentially network neutrality is about the question of whether legislation guaranteeing a neutral network to all users should be enacted. In practice, network neutrality is also about answering the question of who gets to hold the power to control the information moving in information networks, specifically the Internet. Currently and historically, content in the Internet has been relatively free, most significant restrictions on Internet content occurring outside of Western countries – for example in China and the Middle East. In the Western World, Internet content is rarely controlled, with the exception of illegal content, such as child pornography. While the governments want to control content in the Internet, Internet Service Providers (ISPs) have shown a growing interest in controlling information flows as well. Unlike governmental interests motivated by political views, the ISPs' reasons to strive for more control are usually business-oriented.

Network neutrality is an increasingly important topic due to the growing role of the Internet in our society. The rapid commercialization of the Internet since the mid-1990s has transformed the previously research-oriented network into a marketplace with millions of vendors and possible buyers. While most of the discussion has taken place in the United States, any decisions made in the US will affect the European Union as well due to the US-centric nature of the Internet. Because it is not possible to cover all aspects of network neutrality in a short article, the focus here is on anticompetitive issues. Furthermore, since the topic is relatively new in Europe and it has not been discussed thoroughly before, the article focuses on the situation in the United States.

The supporters of neutral Internet range from the research community to Internet content providers like Google and Yahoo. Major Internet companies have also found unlikely allies from consumer advocacy groups in their defence of network neutrality. The most vocal group against network neutrality has been the ISPs.

The precise definition of the term "network neutrality" has never been completely formed. Generally the term is understood to mean that a network should treat all data neutrally and allow all users to connect to the network without restrictions. While the definition concerns networks in general, the discussion on network neutrality has mostly been focused on the Internet. The US Telecommunications Industry Association defines net neutrality as a set of principles, such as

that the ISPs should not hinder how consumers (lawfully) use the network, nor discriminate against content providers in gaining access to the network.[2] The research community has adopted a network design principle view, which means striving for a maximally useful public information network that aspires to treat all content, sites, and platforms equally.[3]

A practical example of the relevance of network neutrality is Voice Over Internet Protocol (VoIP), or more commonly, Internet telephone calls. As a large share of ISPs offer cell phone or landline telephone services in addition to providing Internet service, the business model of VoIP is directly competing with the business of the majority of ISPs. As ISPs can often have a *de facto* local monopoly on Internet access especially in the rural areas, they have an incentive to use that power against competing business models. For example, consumers could be required to pay a premium price for an Internet connection that enables the use of VoIP applications such as Skype.

Technically, ISPs can control the flow of data in their networks through traffic (or packet) shaping, a method used in practice to limit bandwidth usage. A major concern with traffic shaping is that it is hard to detect or prove even for IT professionals, let alone end users, who might only perceive a slower Internet connection when using certain applications.[4] Furthermore, besides the anticompetitive issues, traffic shaping may be problematic from the point of view of consumer rights. Potentially, actions like these, which are taken without notifying the consumers, could be contrary to the objectives of the EU Directive on Unfair Commercial Practices (2005/29/EC) that concerns misleading business actions related to influencing consumers' transactional decisions.

2 Current legal situation in the US & EU

The current regulatory environment in the United States concerning the Internet is based on the Telecommunications Act of 1996. Due to the slow incorporation of the laws into practice through both houses of the United States parliament and legal systems, its effects have only begun to show in the 21st century. The Telecommunications Act of 1996 is a continuation of the traditional US policy of utilizing the Federal Communications Commission (FCC) to con-

2 Telecommunications Industry Association 2006, p. 1.
3 Wu, 2007.
4 Sidak 2006, p. 416.

trol industries related to communication and information.[5] The FCC itself was established in the Communications Act of 1934, giving it the responsibility to regulate interstate and international communications by radio, television, wire, satellite and cable.

The most significant development in the recent years has been the proposed H.R. 5252, "The Communications Opportunity, Promotion, and Enhancement Act" (also known as the "Barton bill"). The Barton bill would clarify the FCC's power over the ISPs. The Barton bill would also limit the amount of antitrust legislation applicable to the ISPs. While the Barton Bill would increase the power of FCC over ISPs, it does not include any guarantees for network neutrality itself. Amendments to the H.R. 5252 that would favour network neutrality were also proposed, but they were rejected by the House Committee on Energy and Commerce. Another communications bill that has passed the committee is S. 2686 that would in effect decrease the network neutrality.[6] The United States government is generally seen as somewhat against the network neutrality legislation. However, there have also been active developments for more aggressive network neutrality regulation. H.R. 5273, "The Network Neutrality Act of 2006", (so called "Markey bill") would have limited the broadband provider's ability to charge for increased service levels. However, the 2006 Markey Bill was defeated 34–22 in the committee, with a majority of republicans and some democrats voting against it. The current EU legal framework for regulating telecoms services came into effect in 2003. The Framework Directive (2002/21/EC) consists of regulations for electronic communications networks and services, covering all forms of fixed and wireless telecoms, data transmission and broadcasting. While the Directive covers the Internet, its focus is on other forms of electronic communication and thus its coverage of the network neutrality issue itself is fairly limited. For example, the current Directive exempts all services providing or exercising editorial control over content and information society services (art. 2).

This framework has three major mechanisms for National Regulatory Authorities (NRAs). The first of these is the Significant Market Power ("SMP") regime. Significant market power is defined in article 14 of the Framework Directive as being possessed by an undertaking which "either individually or jointly with others… enjoys a position equivalent to dominance, that is to say a position

5 FTC Staff 2007, p. 37–38.
6 Herman 2006, p. 105–106.

of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers." If undertakings with such a market position are found, under the "Specific Directives"[7], the NRAs may impose additional duties such as transparency requirements and price control. The second mechanism enables the NRAs to regulate ISPs without defined SMP regimes. Article 5 of the Access Directive (2002/19/EC) enables regulations when it is required to ensure end-to-end connectivity. The third mechanism is the Universal Service Directive (2002/22/EC), which however in its current form does not include broadband service according to a 2006 review by EU Commission on the directive.[8]

3 Examples of regulation violations

The first case of a wide misuse of power by an ISP was revealed in 2005, when Madison River Communications, a North Carolina based broadband provider, was accused of blocking its customers from accessing a popular VoIP service called Vonage. In the end, the United States Federal Communications Committee settled with Madison River.[9] Madison consented to stop the blocking of Vonage and to pay a $15,000 fine.[10] Since the case was settled out of court, the US legal framework concerning network neutrality remains untested.

While the case of Madison River Communications was the first where regulatory authorities have been forced to intervene, it is common knowledge among the technology industry that various broadband providers are using traffic shaping technologies to limit the usage of bandwidth intensive applications. Various traffic shaping technologies and companies offering similar services have emerged in the recent years. [11]

Another example of faltering network neutrality is the new e-mail service Goodmail which some major Internet content providers like AOL have already adopted. Goodmail is an e-mail certification system which, for a fee, guarantees that an e-mail sent by their customer gets through all filters. In effect, it segments the

7 The Specific Directives are: Directive 2002/20/EC (Authorisation Directive), Directive 2002/19/EC (Access Directive), Directive 2002/22/EC (Universal Service Directive) and Directive 97/66/EC.
8 EU Comission, 2006. Report regarding the outcome of the Review of the Scope of Universal Service, p. 5.
9 FCC Decree of Consent 2005
10 Weiss 2006, p. 23.
11 FTC Staff 2006, p. 96.

current e-mail market into two tiers, those who are in the Goodmail system and those who are not.[12]

A recent occurrence related to network neutrality is the case of Sandvine and Comcast. Comcast is the market leader in United States broadband services and it has been recently accused of cooperating with Sandvine, a Canadian company which specializes in traffic shaping technologies, to limit the bandwidth usage of its customers without their prior consent. A United States based non-profit organization Free Press has recently filed a class-action lawsuit and a complaint to FCC about Comcast's actions.[13]

Comcast's traffic shaping actions have recently prompted action from the FCC which declared that "…Comcast has unduly interfered with Internet users' right to access the lawful Internet content and to use the applications of their choice".[14] Comcast limited the bandwidth of BitTorrent, a popular file-sharing application that allows users to share, for example, video and music files. This recent ruling has been described as a new start for network neutrality discussion and legislation efforts in the US. Comcast has filed an appeal to the decision in September 2008, so the final outcome remains to be seen.[15]

In the EU, there have not been any court cases over network management or bandwidth limiting. However, there have been reports of German operator Vodafone blocking VoIP content.[16] Also, the pressure from US industry organizations such as MPAA (Motion Picture Artist Association) and RIAA (Recording Industry Artists Association) to block peer-to-peer traffic in European Union has been increasing during the recent years.[17]

4 Arguments for and against Network Neutrality

4.1 Antitrust issues

Actions by ISPs that are not network neutral can be in breach of Article 82 of the EC Treaty and US antitrust legislation. Article 82 is aimed at preventing

12 Weiss 2006, p. 24.
13 Free Press, 2007.
14 FCC, Commission Orders, 2008.
15 Reuters, September 4, 2009: "Comcast files appeal of FCC Web traffic order". Available at: http://www.reuters.com/article/internetNews/idUSN0442726520080904 (visited 1 Oct. 2008).
16 BBC News, December 22, 2005: "Towards a two-tier Internet". Available at: http://news.bbc.co.uk/1/hi/technology/4552138.stm (visited 1 Oct. 2008).
17 Ibid.

abuse by those parties which hold a dominant position in the market. It concerns *unilateral* conduct of firms in a dominant position which are acting in an abusive manner.[18] The actions described in the Article range from tying and price discrimination to exploitative pricing. The list given in the Article itself is not meant to be exhaustive, so in principle the way in which abuse is conducted is not limited *a priori*.[19] The concept of abuse is according to the European Court of Justice an objective one, so even the lack of intent to abuse does not exclude the possible application of Article 82.[20]

The most important factor to be considered when applying monopoly legislation to network neutrality is how to establish the dominance or define the market share that an ISP has. The definition of "relevant market" is essential in this context. Even though there are many ISPs in the US, competition in the "last-mile" of the Internet services is fairly limited. "Last-mile" in this context means the connection from the end customer to the Internet. Much of the United States is only covered by two alternate providers, a telephone or a cable provider. [21]

While there have been many independent ISPs in the past, the situation is rapidly changing. In the past DSL lines were held to have the same status as landline phone lines or electrical power networks, and thus the broadband owners who owned lines were required to let independent service providers to use their lines.[22] A recent ruling by the FCC classified DSL lines as an information service. This stance has raised concern amongst independent ISPs, since in the current situation landline operators are free to charge market prices from the independent internet service providers on the use of their lines. The reason for this change is that FCC sees that the competitive environment has changed in the recent years so that strict regulation is no longer needed.[23]

On the regional level, the competition in the US is sufficient; the market shares of the largest ISPs are below 15 percent, with 75 percent of customers divided between 12 ISPs.

18 Whish 2003, p. 174.
19 Ibid, p. 194.
20 See e.g. Case 85/76 *Hoffmann-La Roche v Commission*, para 91.
21 FTC Staff 2007, p. 133.
22 FCC 2005.
23 Yoo 2005.

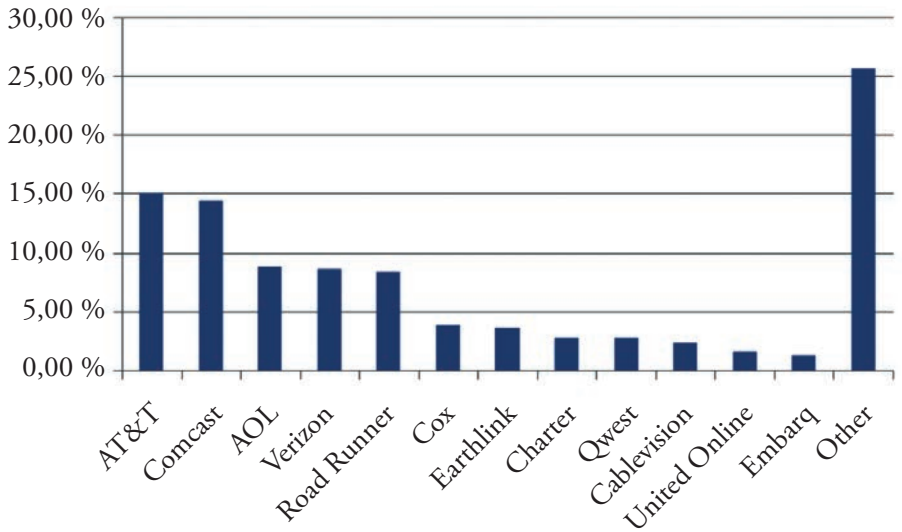

Figure 1: US Broadband providers market share in July 2008[24]

The most recent figures on US broadband development show that the amount of selection for consumer Internet connection is growing.[25] 91.5 percent of the consumers in the US have three or more different broadband providers to choose from, and over 50 percent have six or more. However, it is crucial to note that this survey does not differentiate those ISPs which lease the connection from proper ISPs. Taking this into account, it is still unclear how the recent improvements will affect the consumers. Scholars of network neutrality on different sides of the debate usually disagree on the definition of relevant market.[26] Without a clear definition from legislators, estimation of market power among ISPs remains difficult.

A common method of anti-competitive action by ISPs is the tying of their product with some other product. This enables vertical integration to software and additional services. If ISPs are allowed to integrate vertically in their value chain, it could enable them to further use their monopoly power. For example, ISPs could bundle their own web software to the Internet connection service and force the end customers to use only that alternative. Forcing customers to only

24 ISP-Planet.com, 2008. Available at http://www.ispplanet.com/research/rankings/2008/usa+history+q12008.html (visited 1 Oct. 2008).
25 National Telecommunications and Information Administration, Jan 2008.
26 See e.g., Yoo 2007 and Wu 2007.

use certain software platforms would be technologically trivial to implement. This forced application bundling is one of the main consumer fears relating to network neutrality.[27]

Price discrimination between the different types of information transferred takes place as well. There are examples of ISPs limiting certain types of undesired traffic, e.g., peer-to-peer file sharing traffic.[28] If the ISP halves the speed for certain types of traffic, this forces the consumer who wishes to transfer this kind of traffic to purchase additional speed from the ISP. As a result, the ISP has forced a group of consumers to pay more for the same amount of service.

4.2 Technological development

One of the key arguments for legislated network neutrality is that without regulation the ISPs would limit technological innovation. The current open nature of the Internet is seen as a breeding ground for new innovative ideas. In this context, actions that "limit production, markets or technical development to the prejudice of consumers" could potentially be considered anticompetitive in the view of Article 82 EC.

An often quoted example of service providers limiting technological innovations relates to the time when AT&T, a US telecoms giant, had monopoly over US telephone landlines and prohibited the use of unapproved external devices its telephone system[29]. This limitation hindered the telephone system development for several years.

ISPs have incentives to block or limit unwanted traffic applications. The applications that the ISPs do not wish to be operated in their networks are in many cases peer-to-peer file sharing applications. Peer-to-peer applications may utilize the whole bandwidth of a single user in both directions, while a user normally does not use the whole bandwidth available, especially the bandwidth available for uploading. Though peer-to-peer applications often have illegal uses, they have in several cases lead to legitimate innovations. One example is the peer-to-peer software Kazaa invented by Niklas Zennström. After Kazaa, Zennström used the same technology to found Skype, one of the most popular VoIP software solutions.[30]

27 FTC Staff, 2007.
28 Financial Times, August 2, 2008: "Ruling against Comcast web traffic handling."
29 Herman 2006, p. 110.
30 Sidak 2006, p. 360.

ISPs also have incentives to promote applications that would have high commercial yield, like the virtual private network (VPN) software often used by companies. This would limit technological development and innovations in areas where there would not be clear benefits for the ISPs. The feared Internet segmentation would also affect innovation. The so-called "edges of Internet" located in developing countries would be in a way a second tier compared to the Internet of Western countries. Many innovations would be lost due to the Internet no longer being a single unified entity.[31]

According to network neutrality supporters, current antitrust legislation is not enough to keep ISPs from engaging in uncompetitive measures.[32] However, the Federal Trade Committee (FTC) has come to the conclusion that the argument lacks clear evidence. In addition, regulatory authorities of United States have taken a permissive stance on vertical integration in the recent decades.[33]

On the other hand, the technological development argument in the context of antitrust issues serves those who oppose network neutrality as well. The main problem with network neutrality legislation and innovation is its effect on the business models of the ISPs. Competition among ISPs would lead to differentiation and new services. For example, one ISP could specialize in very cost efficient basic Internet where only e-mail and simpler http applications could be used. Strict network neutrality laws would force every ISP to a single business model.[34]

The main reason ISPs are against network neutrality legislation is that they see the content providers benefiting from their investment on capacity and networks. While ISPs seem to support network neutrality in general, they feel that it is their right to manage the networks through traffic shaping. ISPs argue that currently their incentives to invest into networks are minimal. This lack of incentives is often claimed as the reason why the United States is lagging behind other developing countries such as Sweden and Japan in broadband access development. Externalities involved in high network usage rates are another argument that opposes the network neutrality legislation. By utilizing more innovative pricing models, ISPs could grow more effectively and find Pareto optimal improvements.[35]

31 Herman 2006, p. 110–111.
32 FTC Staff 2007, p. 140.
33 Yoo 2007, p. 495–496.
34 Lehr et al 2007, p. 26.
35 Sidak 2006, p. 359.

On a more general level, the demands of the ISPs are seen as too excessive. If the pricing models would change, the incidence of the costs would almost certainly fall on the end customer. Price discrimination in the network neutrality sense is often perceived as a negative matter. It can be argued that ISPs use the pricing models in anticompetitive ways, but in their opinion they should be given the benefit of doubt.

ISPs also argue that currently there is insufficient evidence of harm to justify new regulation. Generally, end customers seem to be satisfied with the current service levels. Factual information also supports this argument. The Vonage vs. Madison River Communications case is currently the only example where it has been proven that use of a service was blocked by an ISP.[36] ISPs use the case of Vonage vs. Madison River also as an example of how the current regulatory environment is working correctly and no additional legislation is needed.[37]

4.3 The concerns of Internet Content Providers

The Internet content providers are most afraid of ISPs using their position to gain an unfair competitive advantage. Major Internet content providers like Microsoft, eBay, Google, AOL and Yahoo! see the rising power of broadband providers as a threat and thus are strongly supporting network neutrality legislation. The viewpoint of content providers is summarized in a public letter from Vincent Cerf, creator of Internet Protocol and a current Google Vice President: "Allowing broadband carriers to control what people see and do online would fundamentally undermine the principles that have made the Internet such a success."[38] ISPs have also found allies from the network industry companies like Cisco and QUALCOMM, who would have large new markets for Quality of Service capable routers and other network devices [39]

Many broadband providers have issued strong statements about their intentions to get a larger share of the profit that content providers are making. Their view is that content providers are basically using their services for free. This argument as a whole is very questionable because the end users and the content providers are already paying for their bandwidth. For each bit transmitted both the sender and the receiver pay a fee, but the broadband providers still want more. [40]

36 FCC, Degree of Consent, 2005.
37 Weiss 2006, p. 23.
38 Cerf 2007.
39 Zhu 2007, p. 625–626.
40 Weiss 2006, p. 23–24.

Traffic shaping also brings difficulties for the content providers, because the end customers might attribute the bad service levels to the products of content providers instead of the actions by ISPs. Similarly, the product supported by the ISP through traffic shaping would appear to be of better quality.[41] The content providers also argue that the whole debate about network neutrality should not focus on who should pay for Internet usage. The ISPs focus primarily on monetary issues, but the debate takes place also on a higher level, especially among the research community that views network neutrality as a design principle.

In addition to antitrust issues, the debate has a fundamental rights dimension as well, namely in connection to the freedom of speech. It can be argued that if permitted, ISPs would have an incentive to restrict speech based on the claim that offensive content is bad for their business. Offering a cleaner version of the Internet for the consumers would be a good value proposition for example to parents. However, in the current situation most service contracts between end users and ISPs already have clauses that enable ISPs to block content if they wish to do so. While content blocking has been somewhat widespread in the Western countries, its effects on the public have been fairly limited. [42]

Opponents of network neutrality legislation also argue that the antitrust framework is enough to govern the ISPs. A question for legal scholars is whether antitrust legislation is enough to protect the freedom of speech or not. Also taking into account free speech issues the recent FCC rulings are counterintuitive, since one of the main priorities of FCC has always been to promote the freedom of speech. [43]

5 Outlook comparison on future EU & US legislation

Recent US legal developments consists of two proposed bills. First, the H.R. 5353 "Freedom Preservation Act of 2008" which is a revised version of the previously mentioned Markey Bill that would define high-level policies for broadband operations and give the FCC more authority on policies it has issued in recent years without the force of law. Network neutrality in the Markey Bill can be defined as open access to lawful content and applications and protection against unreasonable discriminatory favouritism. This bill has encountered significant

41 Van Schewick 2005, p. 3–4.
42 Cherry 2007, p. 589.
43 Ibid, p. 591–592.

resistance in the congress. The arguments used by those who resist the bill vary from it promoting piracy to it limiting Internet development.[44]

The second new bill, H.R. 5994, was proposed by representatives Conyers and Lofgren in May of 2008 and titled "Internet Freedom and Non-discrimination Act of 2008". It also is a renewed version of an older bill number H.R. 5417 proposed in 2006 that even carried the same name, apart from the year. The Conyers/Lofgren bill would expand the current antitrust legislation (Clayton Antitrust Act) to outlaw discrimination by broadband ISP. This bill would require ISPs to treat data from different service providers and customers indiscriminately. It would enable ISPs to offer extended service for example to VoIP users, but it could not promote some VoIP service over others. Since the Conyers/Lofgren bill was introduced recently it has not yet been thoroughly discussed.

Likewise, the European Union is developing a new regulatory framework due to come into force in 2010 and replace the old legislation given in 2002. An overview of the new proposals suggests that the EU is going to take a more permissive stance on network neutrality, i.e. give more power to the ISPs.

In the view of the European Commission, the current regulation does not provide adequate tools for solving network data prioritization issues. It does not, for example, regulate data prioritization, such as, an ISP offering a much better quality of service for a single VoIP operator.[45] As previously discussed in Chapter 4.2, prioritization may also have a positive effect on technological development. The Commission considers that the ability of ISPs to differentiate brings more benefits than strict network neutrality.[46] The Commission's current viewpoint is summarized in its impact assessment: "Competitive market together with the current provisions on access and interconnection should therefore be sufficient to protect 'net freedoms' and to offer suitably open environment for both European consumers and service providers".[47]

6 Conclusions

As demonstrated in this article, there has not yet been much debate in Europe on network neutrality. Even less so in Finland, even though some related issues

44 Stanley 2008.
45 EU Commission, Impact Assesment, p. 92.
46 Ibid, p. 91–92.
47 Ibid.

have stirred controversy after actions taken by National Bureau of Investigation (Keskusrikospoliisi) in trying to block child pornography from the networks of Finnish ISPs. All in all, there has not been much coverage by the media about the issue, but it is increasingly being discussed on the academic level. In any case, the overwhelming majority of the debate and academic studies on network neutrality still take place in the United States. The scarcity of discussion on the topic in Europe so far might be seen as somewhat surprising, since the upcoming revision of EU-level legislation is making steady progress within the preparatory process.

The possible anticompetitive effects of non-neutral networks remain subject to debate. While the benefits that the neutral Internet has so far brought about are widely acknowledged, the ISPs persistently state that neutrality may have an adverse effect on the development of the Internet Service sector – a claim which should be subjected to further study. In addition to arguments concentrating on the economic development, network neutrality – and especially the lack thereof – connects to other important legal and social issues such as the constitutional right to free speech and the rights of individuals as consumers. At the moment, the future of network neutrality seems undecided. It should in any case be recognized as an issue of not mere technical interest to a narrow business niche but as something that can have wide-reaching influence, either positive or negative, to economic and technological development of the communications industry and the future of society as a whole.

Bibliography, Legislation and Cases

Literature

Atkinson, R. et al, 2006. A "Third Way" on Network Neutrality. Information Technology Foundation III/2006 2–3.

Cherry, B., 2007. Analyzing the Network Neutrality Debate Through Awareness of Agenda Denial. International Journal of Communication Vol 1/2007.

Herman B., 2006. Opening Bottlenecks: On Behalf of Mandated Network Neutrality. Federal Communications Law Journal, Dec 2006, 1–107.

Lehr, W. et al, 2006. Scenarios for the Network Neutrality Arms Race. The 34th Research Conference on Communication, Information and Internet Policy; Sep 29-Oct 1; Arlington, Virginia, USA.

Saltzer et al, 1984. End-to-End Arguments in System Design. ACM Transactions in Computer Systems 2 November 1984, 277–288.

Schewick van, B., 2005. Towards an Economic Framework for Network Neutrality Regulation. The 33rd Research Conference on Communication, Information and Internet Policy; Sep 23–25; Arlington, Virginia, USA.

Sidak, J., 2006. A consumer-welfare approach to network neutrality regulation of the Internet, Journal of Competition Law and Economics, 2(3), 349–474.

Stanley, L., 2008. Markey, Pickering Defend Internet Bill Against Charges It Would Protect Piracy, Promote FCC Regulation. Telecommunications Reports, 5/15/2008, Vol. 74 Issue 10, p1–35,

Waverman, L., 2006. Comments on Network Neutrality. Journal of Competition Law and Economics, 2(3), 475–477.

Whish, R., Competition Law, Fifth Edition. London, LexisNexis 2003.

Wu, T. & Yoo, C., 2007. Keeping the Internet Neutral?: Tim Wu and Christopher Yoo Debate. Federal Communications Law Journal Jun 2007.

Yoo, C., 2005. Beyond Network Neutrality Harward. Journal of Law & Technology, Vol 19, no. 1 2005.

Yoo, C., 2007. What Can Antitrust Contribute to the Network Neutrality Debate? International Journal of Communication Vol 1/2007.

Zhu, K., 2007. Bringing Neutrality to Network Neutrality. Berkeley Technology Law Journal, Vol 22, 615–646.

Administrative documentation

EU Commission Staff, 2008. Working Document Impact Assessment Accompanying document to the Commission proposal for a Directive of the European Parliament and the Council amending European Parliament and Council Directives 2002/19/EC, 2002/20/EC, 202/21/EC, 2002/22/EC, and 2002/58/EC. Available at http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/ia_en.pdf (visited 1 Oct. 2008).

EU Commission, 2006. "Report regarding the outcome of the Review of the Scope of Universal Service in accordance with Article 15(2) of Directive 2002/22/EC".

EU Commission, 2002. Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03).

Federal Communications Committee 2008. Commission orders Comcast to end discriminatory network management practices, press release on August 1, 2008.

Federal Trade Committee Staff, 2007. Broadband Connectivity Competition Policy: FTC Staff Report June 2007.

Federal Communications Committee 2005. Consent Decree In the Matter of Madison River Communications LLC and affiliated companies. File No. EB-05-IH-0110. Available at: http://www.fcc.gov/eb/Orders/2005/DA-05-543A2.html (visited 1 Oct. 2008)

Federal Communications Committee, 2005. FCC Eliminates Mandated Sharing Requirement on Incumbents' Wireline Broadband Internet Access Services Aug 5th 2005. Available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260433A1.pdf (visited 1 Oct. 2008).

Free Press, 2007. Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation For Secretly Degrading Peer-to-Peer Applications. Available at: http://www.freepress.net/docs/fp_pk_comcast_complaint.pdf (visited 1 Oct. 2008).

Telecommunications Industry Association, 2006. Broadband Internet Access Connectivity Principles. Available at: http://tiaonline.org/news_events/press_room/press_releases/2006/documents/TIABroadbandInternetAccessConnectivityPrinciples.pdf (visited 1 Oct. 2008).

United States Department of Commerce Washington, 2008. Networked Nation: Broadband in America 2007 National Telecommunications and Information Administration.

U.S. Senate Committee on Commerce, Science, and Transportation. Prepared Statement of Vinton G. Cerf Vice President and Chief Internet Evangelist Google Inc Hearing on "Network Neutrality" February 7, 2006. Available at http://commerce.senate.gov/pdf/cerf-020706.pdf (visited 1 Oct. 2008).

Cases

Case 85/1976 Hoffmann-La Roche & Co. AG v Commission of the European Communities. ECR 1979 p. 461.