

Dear Sir/Madam,

I'd like to add my humble contribution to the net neutrality debate, based on the questionnaire for the related public consultation. I'm a French citizen, working as a freelance consultant in Free Software (also known as Open Source Software). My education includes the engineering school now known as Telecom ParisTech, where I majored in networking and computer science (and, to a lesser extent, signal processing, but that's less relevant). I have therefore had a certain amount of exposure both to the technical and the philosophical/political aspects of net neutrality, since many of the latter relate to themes common to Free Software (empowerment of the users, freedom of speech, and so on).

I'd first like to start with a remark: Section 2 of the questionnaire starts with a list of uses for the Internet. They are listed as examples, and this list isn't claimed to be complete, but it strikes me that only use cases where people "consume" resources from the net are listed. This is of course a biased vision: the net is also a terrific way to produce and publish and create. Publishing photos or music on the net has become the best way for artists to gain popularity; Wikipedia and its related projects (Wikibooks, Wikiversity, Wiktionary and so on) is the place where citizens can organize and catalogue human knowledge; the sharing of data amongst scientists has become indispensable to the progress of science; and of course, Free Software (and software in general) wouldn't have bloomed without reasonably cheap and almost universal access to the net. I believe that focusing on the traditional producer-consumer aspect of the Internet would be detrimental to a debate on net neutrality. Such a debate could of course be held, because that aspect is an important role of the net, but its results wouldn't apply to the actual Internet as a whole.

Having stressed this, let me go on to answering the actual questions.

Question 1. The most visible (to me) breach of net neutrality currently happening in France lies with the providers of mobile "Internet" access. The reason I use quotes here is that these providers ban whole ranges of use from their contracts: any kind of Internet telephony is explicitly banned (due, presumably, to the fact that this would compete with the providers' own mobile telephony services); peer-to-peer sharing of data is also banned, despite it being the most efficient way of spreading a given amount of data. More importantly, though, the mobile net access is designed not only as asymmetrical, but almost as one-way access: the connected device only gets a dynamic IP address that is hidden behind several layers of network address translation systems (and proxies, it seems). The device can't be used except as a consumer of content, and even then not all content is treated equally: some mobile network operators favour some websites, by imposing quota restrictions on the others and providing "unlimited access" to a handful of popular sites.

Questions 2&3: I don't have any reasoned answer to that question.

Question 4: Traffic management is an inherent part of keeping a functional network. Abuse needs to be kept to a low level, and some kinds of traffic need to be awarded some specific treatments in order

to be useful at all. For instance, Internet telephony, while using not a large quantity of bandwidth, requires that small amount of traffic to be routed within a bounded delay, so as not to introduce echo and parasitic sound artefacts in the conversation. Bulk traffic, on the other hand, can afford spending a few more milliseconds in transit, especially if these milliseconds can help bundling packets and increase the actual global throughput of the network (by reducing overhead). This traffic shaping can take several forms, that mostly deal with defining several classes of traffic and allocating each class a fixed amount of the available resource (throughput and latency). The classification of one particular packet into the appropriate class used to be based on its packet headers (address, destination, protocol, source or destination port, and so on). The increase in processing power available in network routers means that more advanced techniques can be used; globally known as "deep packet inspection", these techniques take into account the actual contents of the packet and the stream it's a part of, with obvious privacy concerns. Encrypted traffic can't be subjected to the same amount of deep packet inspection, but then there is a risk that encrypted traffic as a whole is treated as low-priority.

Question 5: I don't have enough experience to proffer an answer to that question.

Question 6: I believe the same principles should apply. The distinction that is currently made is mostly linked to more or less artificial constraints. True, there is a bandwidth scarcity problem for mobile access, but the difference in treatment that can currently be observed, with ridiculously high prices per byte transferred over a mobile network compared to the price per byte on fixed lines, is mostly due to market segmentation. Since mobile Internet is fairly recent, the mobile ISPs can charge that amount and not lose all their customers — yet. However, my impression is that between 3G networks and wi-fi coverage in hot spots, the bandwidth problem is probably temporary anyway. There's already been some convergence between fixed networks for data, telephony and television on land-lines (triple-play); a similar convergence is likely to happen on mobile networks. Indeed, some people envision "4G" networks to be a patchwork of short-distance and medium-distance areas, where the network endpoints switch back and forth across GSM or UMTS cells, wi-fi in some areas, maybe Wimax in some even more densely populated areas, maybe Bluetooth when the device is within range of a fixed access, and so on; mobile IPv6 would roam across these essentially data-only networks, and telephony would happen mostly as VOIP above that data connection. The distinction between fixed and mobile devices, and therefore between fixed and mobile networks, is already getting blurred, and I don't see that trend reversing. So the principles governing them are not inherently different.

Question 7: One example of other prioritisation I can think of is the practice of "lying DNS servers". It's been observed that some DNS servers that some ISPs provide to their subscribers have returned altered or fake responses to DNS queries, in order to attract web traffic to some websites related or affiliated to the ISPs. This can be seen as abusing their position as provider; an ISP should only provide access to the actual Internet, and not take over parts of it in order to favour their own interests.

Question 8: The risk with allowing different traffic priorities to be determined based on agreements between services and operators is the formation of cartels very likely to assume and maintain an oligopoly. This can already be felt on mobile Internet contracts: many offer unlimited access to one instant messaging system, while access to the other systems is filtered from the data connection or actively discouraged, on the basis that instant messaging operator X struck an exclusive deal with mobile Internet provider Y. This is, in effect, private-sector regulation of what is and what isn't accessible for the users.

Question 9: I may come as cynical, but I have stopped believing in industries regulating themselves with simple code of conducts. Regulation strikes me as necessary, since the large corporations that ISPs and operators of popular web services have shown they intend to use their weight and push for ever less regulation of what is and what isn't "fair".

Questions 10 to 14: I don't have the necessary knowledge about the business part of the problem to provide insights.

Question 15: This is perhaps the most important question of all. A net favouring certain services over others is inevitably leading to some form of dampening of diversity. The Internet is the first time that humanity has a way of communicating easily between individuals or entities with very little barrier to entry. This ability of spreading ideas, art, and other digital creations by everyone with Internet access is what makes a neutral net most precious. As we've seen with previous generations of media, the corporate world has every incentive to restrict the diffusion of anything that goes beyond mainstream culture and well-accepted ideas. Independent media struggle to exist, while the big players wage a mostly symbolic concurrence among themselves; this is because access to the medium (whether print, TV or radio channels) involves substantial initial and ongoing costs. The Internet has no such overhead, and the cost of hosting a website is extremely small compared to the actual work done on the contents. Which means that all kinds of information, new uses, creations, collaborations and so on can happen where the previous generation of "one-way" mass-media couldn't provide. But this diversity, this ability to push content out to the world without needing large efforts just to access the medium but unrelated to the content itself, can only happen if there's no artificial barrier to entry. An Internet where some sites or services are considered second-class and hidden away or discriminated against by the major players would lack this diversity. Transposing the same problem into political terms, as soon as there are ties between the big players and the political powers in place (and experience shows that the powers are often elected with the help of the media), a net whose neutrality isn't guaranteed leads to censorship of some form. Unfortunately, some of the less democratic countries in the world (I'm thinking mostly of China) seem to be giving an example that even in our Western democracies some members of the political have been known to seek to emulate, with the help of the major ISPs and search engines. This is a slippery slope, and my feeling is that only a regulatory guarantee that this kind of behaviour is a no-go will ensure the continued usefulness of the Internet as a truly universal media.

Thanks for taking the time for reading this far. I hope my answers will help shed some light on why a neutral net is important. I think that the basic technical premise of the Internet, which was that the network is only meant to transmit packets and the smarts are located at the endpoints, also applies to the social and political aspects: just as there's no justification to delay "snail mail" or to charge more for it if its contents concern some subject, there's no justification that data packets should be discriminated against based on what actual data they transmit — which is another way of saying that the net should be neutral, and guaranteed so.

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