

TeliaSonera's response to the European Commission consultation on net neutrality and the open Internet

Summary

- We are not aware of any current problems of net neutrality and openness in relation to EU network operators that would need additional political attention at European level.
- We believe that traffic management will be essential for both mobile and fixed network operators in order to be able to offer better services to end-users through efficient networks.
- We acknowledge the need for provision of transparent and meaningful information towards end-users on Internet service offerings and on traffic management policies and practices.
- We consider network operators, ISPs and providers of content/applications/devices all to be parts of the Internet value chain, and equally important for the quality of the end-user experience.
- We believe that end-users would benefit from increased transparency by all actors in the Internet value chain.

Introduction

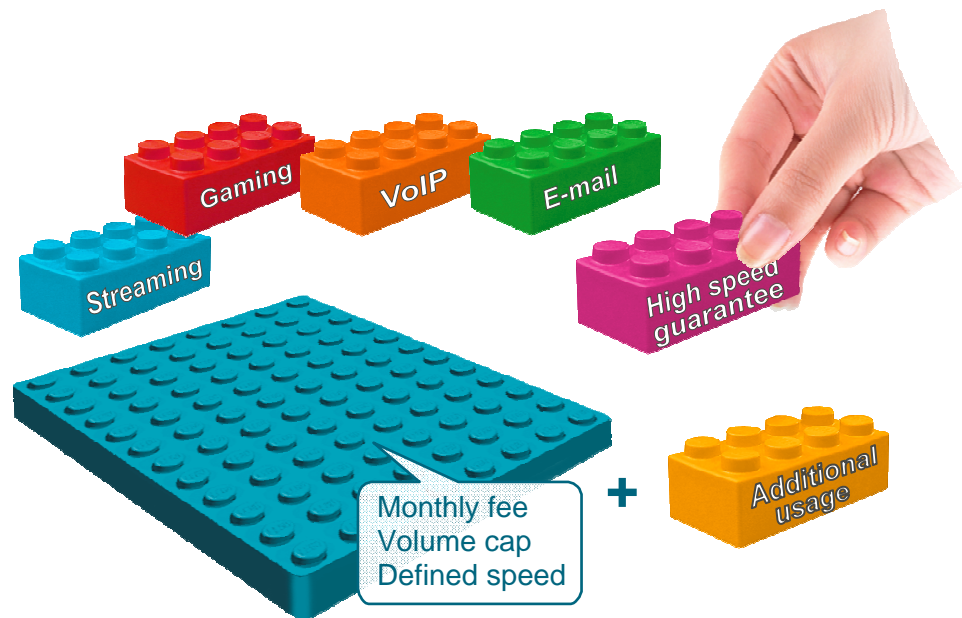
TeliaSonera welcomes the opportunity to comment on the issues of net neutrality and the open Internet. TeliaSonera will be looking at these issues from the perspective of a local access provider of both fixed and mobile Internet connections. Already in 2009, TeliaSonera addressed some of the issues in a position paper on openness (pdf file [attached](#)).

TeliaSonera is a firm supporter of the open nature of the Internet. We believe that the value of the Internet comes from the ability of everyone to innovate and participate in using the Internet and enjoy the benefits that come from being a part of a connected society. Openness mainly means that there should be no limitations or restrictions to innovation and participation.

Question 1: Is there currently a problem of net neutrality and the openness of the Internet in Europe? If so, illustrate with concrete examples. Where are the bottlenecks, if any? Is the problem such that it cannot be solved by the existing degree of competition in fixed and mobile access markets?

Question 2: How might problems arise in future? Could these emerge in other parts of the Internet value chain? What would the causes be?

1. An open Internet environment implies not only openness in relation to the operators of the 'network of networks' called Internet. It also implies openness in other parts of the Internet value chain to ensure that end-users have access to content, applications and services of their choice. Competition and transparency in all parts of the value chain will be necessary to promote consumer choice and true net neutrality.
2. As to net neutrality and openness in relation to EU network operators, TeliaSonera is not aware of any current problems that would need additional political attention at European level. TeliaSonera believes that the revised regulatory framework and competition law give adequate legal protection. However, we acknowledge that there is a need for increased transparency towards end-users on Internet service offerings and on traffic management policies and practices.
3. There is the potential for capacity problems to arise in the future with regards to network resources if operators do not have the potential to adequately manage their networks to cope with the extremely rapid increase in Internet traffic volumes. This is of course in terms of physical management of the network but also in terms of creating incentives for efficient use of bandwidth, which could be through differentiated pricing.
4. Capacity constraints could be a problem as we have already seen with mobile Internet access in some major urban environments. There is a need to incentivise end-users, as well as content and application providers, to be more efficient in all networks and initially especially in mobile networks. That could be achieved by innovative offerings such as certain services being included or excluded from a particular Internet connection offering. The simplified illustration below tries to capture the idea.



TeliaSonera is of the strong opinion that the business model for mobile data shall be value based, having a clear link between price and usage. For this reason we have, in most markets, introduced fair usage levels in our mobile broadband and mobile data usage (handheld) flat rate offerings. The fair usage levels vary between handheld usage, 3G mobile broadband and 4G mobile broadband. When the monthly fair usage level is reached the customer is downgraded to a lower speed (120 kbit/s) and is given the possibility to buy additional data volume. In case the customer chooses not to buy additional data volume he/she can still continue using the mobile data service to the lower speed, but it will still allow e.g. surfing. Other differentiators for the pricing of mobile data are also speed, coverage and quality of service.

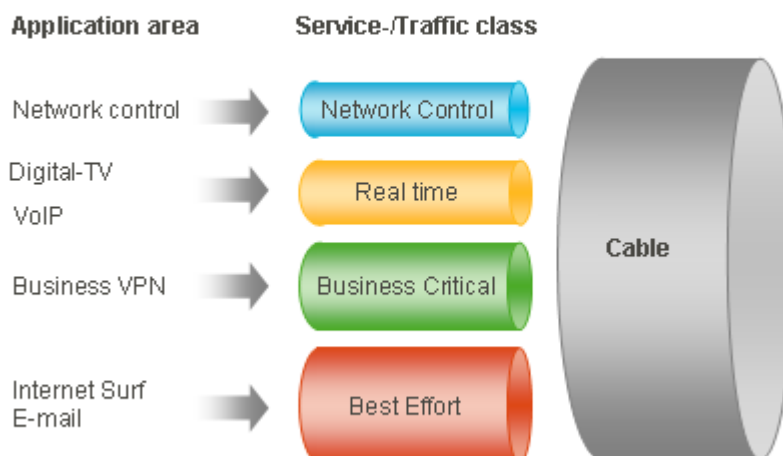
Question 3: Is the regulatory framework capable of dealing with the issues identified, including in relation to monitoring/assessment and subsequent enforcement?

5. Yes, along with competition law the regulatory framework provides adequate monitoring, assessment and enforcement capabilities.

Question 4: To what extent is traffic management necessary from an operators' point of view? How is it carried out in practice? What technologies are used to carry out such traffic management?

6. Managing today's very dynamic traffic situation is an essential part in the operation of an efficient network operation and constitutes an important element in the competition between operators. Traffic management will be best developed with full freedom and with the incentive for operators to constantly increase their efficiency, in order to be able to provide better and more value for money services to customers. Also, there must be incentives for application and content providers to develop as traffic efficient services as possible.
7. It should also be noted that there will be new challenges for traffic management as the traffic from the end-user is foreseen to grow significantly (video, broadcast, etc). This holds true both for fixed and mobile Internet connections.
8. Any operator operating a large IP network must conduct to some extent traffic management. In its IP network, TeliaSonera provides QoS differentiated services which also require specific traffic management.
9. Quality of Service is implemented as follows in TeliaSonera's IP network:

"All-IP";
Common packet based network to carry different services



"All-IP" - one IP packet based network for all different services needs is our strategic target network model. The picture above aims to illustrate how the data flows of different applications are carried within the same transmission channels.

10. There are different types of services where some packets need to be treated as more important than others; they need different handling preferences in the nodes. To ensure the quality across IP routers and Ethernet switches in our network we have implemented "DiffServ" (differentiated services) model, where packets are marked according to the type of service (Real Time, Business Critical, Best Effort, Network Control) and treatment they need. In response to these markings, routers and switches use various queuing strategies to tailor performance to requirements.
 - Real Time is meant for services with user demands on low packet loss, low unavailability and also with strict demands on low delay and delay variation. The Real Time class includes services like VOIP, Video Conferencing and IPTV.
 - Business Critical is originally designed for important but not so delay critical traffic with user demands on low packet loss and low unavailability to help to guarantee good throughput. An example of such traffic is Business VPN.
 - Best Effort is the usual main traffic class where most elastic traffic is carried. No delay or delay variation values are guaranteed here and users can accept higher packet loss and unavailability values than in the Real Time and Business Critical traffic classes. Internet surf and email are typically carried in Best Effort traffic class.
 - Network Control service class is used for transmitting information that is needed to keep the network operational, routing information exchange between network devices (routers). Such traffic needs to be forwarded in a timely manner to the benefit of all users. No customer traffic is carried in this traffic class.
11. Technologies such as Deep Packet Inspection (DPI) are used as a statistical tool to gather information about the usage of the networks and as an analyzing tool whenever abnormal traffic or fault situations occur.
12. In mobile networks traffic management has been an important element since the start of GSM and it will become even more important with the growth of mobile data services. The main distinguishing feature for a mobile Internet connection is that it is realised via a radio access network, which puts special demands on traffic management. Mobile operators will continuously build out

the capacity in their networks but there will always be bottlenecks due to the lack of full predictability as to customer demand and behaviour. The rapid growth of mobile Internet connections has made this very evident.

13. Traffic management is done to safeguard the customer experience for all customers in the mobile network. The measures TeliaSonera have implemented are driven by the need to adjust to available capacity, which in turn is limited by the availability of spectrum, or by the need to safeguard the quality of certain services, like real time voice conversation. In the mobile network the voice service could be 'outside or inside' the Internet, i.e. the customer's radio access could be used both for traditional voice services in the telephone network and for new voice services on the Internet.
14. In order to protect the customer experience, TeliaSonera has set a limitation for certain types of data traffic in its mobile networks since this traffic would otherwise severely damage the overall user quality in the network. Some time sequential services are more sensitive compared to other services. For instance voice and videoconferencing services require network management measures to meet acceptable quality. Also, a number of current and coming services, such as alarm services, require a certain priority in order to function properly.

Question 5: To what extent will net neutrality concerns be allayed by the provision of transparent information to end users, which distinguishes between managed services on the one hand and services offering access to the public Internet on a 'best efforts' basis, on the other?

15. Openness is also about being open and transparent towards customers regarding the characteristics and capabilities of the products and services. This goes both for fixed and mobile. We believe that the provision of transparent and straight forward information about the products that customers buy and the way we manage and deliver those products, are the most important parts in alleviating many of the concerns about net neutrality and the openness of the Internet.
16. Customers should be aware of the type of service they are buying, which includes a realistic estimation of the speed and quality that can be expected from their service. Customers should also get an explanation of what type of traffic will be managed and in what situations. It is also important to carefully consider how to make the information relevant and comparable for the end-user.

Question 6: Should the principles governing traffic management be the same for fixed and mobile networks?

17. We believe that the only real consideration in the short term is some differences between the way mobile and fixed networks are managed as explained above in reply to Q4.
18. In the long term perspective there should in principle be no difference in governing mobile and fixed networks. From a convergence perspective it will even be harder to have different traffic management governance principles. If different rules were to be applied that would even jeopardize the development of new converged services.
19. The regulatory framework does not specify any difference between the treatments of fixed or mobile Internet connections with regard to traffic management.

Question 7: What other forms of prioritisation are taking place? Do content and application providers also try to prioritise their services? If so, how – and how does this prioritisation affect other players in the value chain?

20. There is a variety of different players in the Internet value chain who offers content providers a way of delivering their content faster to the end-user. Operators of Content Delivery Networks (CDN) for example offer a way of by-passing the public best effort Internet in order to achieve an enhanced quality of service. Some large content providers have built a very significant international network of data centres which places their content closer to the customer. These arrangements ultimately produce the same result of content arriving quicker and with better technical quality to the end-user.
21. This is a trend which is likely to continue and to enhance the rich content available on the Internet. The rise of cloud computing opens up a range of opportunities for the further development and evolution of the Internet. For these services to continue to develop, commercial agreements between service providers and others who can deliver that content with a guaranteed service level will be essential.
22. The players who are delivering content faster based on a commercial agreement with a third party are providing a good and valuable service. ISPs should be able to offer such commercial

agreements to content providers and create a competitive market place for content delivery, driving innovation in the Internet.

Question 8: In the case of managed services, should the same quality of service conditions and parameters be available to all content/application/online service providers which are in the same situation? May exclusive agreements between network operators and content/application/online service providers create problems for achieving that objective?

Question 9: If the objective referred to in Question 8 is retained, are additional measures needed to achieve it? If so, should such measures have a voluntary nature (such as, for example, an industry code of conduct) or a regulatory one?

23. A managed service is a term used for a service which is sensitive to certain network elements. Such services give an opportunity to guarantee a certain technical quality to the users of the service. It is important that managed services on the Internet are considered separately from the best-effort Internet.
24. Based on competition on a level playing field, network operators, like other players in the content value chain, should be allowed flexibility in deciding with whom and under what conditions an agreement is reached. Other players such as operators of CDNs currently have agreements in place to achieve the same thing, i.e. providing a higher quality of the end-user experience for a content provider.
25. Network operators, ISPs and providers of content/applications/devices are all parts of the Internet value chain, and equally important for the quality of the end-user experience. In TeliaSonera's opinion, they should all be free to enter into any agreement and partner with anyone in the delivery of their products.
26. A whole variety of ISPs offers managed Internet services to content and application providers. Due to EU regulation of the fixed access network and commercial agreements there are also often several access service providers operating on the same infrastructure. A content/application provider can therefore choose between several operators to reach a consumer and the consumer can choose among service providers that can deliver the desired content.

Question 10: Are the commercial arrangements that currently govern the provision of access to the Internet adequate, in order to ensure that the Internet remains open and that infrastructure investment is maintained? If not, how should they change?

27. Commercial arrangements between actors in the Internet value chain will need to evolve, and will do so to cope with the increasing demand for bandwidth and to ensure innovation and an improved end-user experience.

Question 11: What instances could trigger intervention by national regulatory authorities in setting minimum quality of service requirements on an undertaking or undertakings providing public communications services?

No response.

Question 12: How should quality of service requirements be determined, and how could they be monitored?

No response

Question 13: In the case where NRAs find it necessary to intervene to impose minimum quality of service requirements, what form should they take, and to what extent should there be co-operation between NRAs to arrive at a common approach?

No response

Question 14: What should transparency for consumers consist of? Should the standards currently applied be further improved?

28. Transparency should mean that end-users are given a realistic opportunity to make an informed decision before buying a service and to compare different offerings including prices. TeliaSonera provides information on terms and conditions for its services such as prices, fees, applicable minimum subscription periods, general notice periods etc. For mobile services information regarding coverage is also easily available.

29. TeliaSonera will in addition implement transparency measures in line with the revised regulatory framework. As to the provision of broadband services, in particular mobile broadband, TeliaSonera recognizes that there is a customer expectation to receive more specific information in some key areas. TeliaSonera's ambition is

therefore to implement the following **TeliaSonera transparency declaration on broadband** no later than early 2011.

When buying a broadband service, whether mobile or fixed, from TeliaSonera in the Nordic and Baltic countries the customer will always be informed of (when applicable):

- Realistic speed to be expected, not theoretically possible speed.
- Any restrictions or limitations in traffic types, services or applications of the service (for example P2P or VoIP).
- The amount of data included in the service -fair usage level- and the consequences when the fair usage level is reached, i.e. the speed to which the service will be downgraded, and the possibility to buy additional data volume and thereby recover original speed.
- Traffic management measures essential for the customer experience (for example possible limitations on through-put).

The information will be provided in a brief, unbiased and clear manner. If the customer wants to know more, additional information related to each item will be available on TeliaSonera's web site.

30. TeliaSonera will participate in industry or other collaborative processes to achieve a coherent transparency approach. We supported the Swedish initiative to agree between mobile operators and the Consumer Ombudsman on realistic mobile broadband speeds to be communicated to the end-users, compared to theoretical achievable speeds as was previously the case. We expect more markets to follow and will actively support such initiatives.

31. Finally, transparency should also mean that providers of search engines, content, applications and devices give end-users meaningful information on any restrictions or practices for their services on the Internet. Such information would indicate the interdependencies that exist on the Internet and facilitate informed choices by end-users.

Question 15: Besides the traffic management issues discussed above, are there any other concerns affecting freedom of expression, media pluralism and cultural diversity on the Internet? If so, what further measures would be needed to safeguard those values?

32. TeliaSonera considers these values as well as end-user privacy to be very important for the further development of the Internet but does not, in this response, develop its views.

ATTACHMENT

TeliaSonera's position on Openness – October 2009



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