

Telekom Austria Group Response to the European Commission Consultation on the Open Internet and Net Neutrality in Europe

Telekom Austria Group (TAG) welcomes the opportunity to respond to the questionnaire of the European Commission on the open internet and net neutrality in Europe.

Before giving comments on the quite specific questions of the consultation document, TAG would like to make a few general comments to describe the overall situation of network operators today as this is fundamental to understand the reasoning behind our answers to the questionnaire given below.

Introduction:

Since 2007 the data traffic volumes passing over both fixed and mobile networks are increasing more or less exponentially and continue to do so. The compound average growth rate for our Austrian fixed net affiliate was, for example, from 2007 to 2009 95% and for our Austrian mobile subsidiary 142% respectively.

Simultaneously, retail prices for data services were falling rapidly - especially for mobile broadband access as mobile network operators tried to stimulate the usage of their 3G networks which were, to this point, under-used . In highly competitive retail markets, mobile internet access providers even introduced mobile data price plans at a price that is lower than comparable fixed net offers, and which do not seem to cover the incremental costs of providing the technical 3G service.

In order to perform the balancing act between increasing data traffic volumes and decreasing revenues per data unit, internet access providers have to operate their networks to be as efficient as possible. In order to provide the internet experience that customers expect, operators invest in additional data network capacity - and apply, already today, a variety of technical network management measures.

However, even though the situation operators find themselves in today is very challenging, a look at Austria as one of the most advanced mobile broadband markets in Europe¹ indicates that the discussion about possible negative effects of traffic management on customers still seems premature. While it is safe to assume that the Austrian mobile networks are by far more used to capacity than those of most European network operators, there is no slowing down in the efforts of all Austrian (mobile) network providers to provide customers with the best internet access quality possible. On the contrary, they even go to great lengths to increase the QoS they offer their customers. Accordingly, it seems very unlikely that operators with a comparatively *lower* traffic load on their networks will engage in traffic management practices detrimental to their customers. In fact, TAG is convinced that the existing level of competition will prevent operators from relying too much on traffic management. As customers will always choose the network operator which provides the highest speeds with the fewest restrictions on usage, operators have a strong incentive to offer exactly that - fast and unrestricted internet access - in order to prevent customers from churning to another provider².

¹ Mobile broadband penetration rate in Austria with dedicated data service cards/modems/key was over 15% in January 2010 while the average penetration across the EU was 5,2%. See: Progress Report on the single European Electronic Communications Markets 2009 (15th Report). These figures, however, do not include broadband usage with other devices such as Smartphones or tablets which are also extensively used for accessing the internet.

² According to a study by Nokia Siemens Networks 40% of German, British and US-American Smartphone and Datacard-User are willing to change their provider in order to obtain better quality of service (i.e. coverage and speed of the internet access). See: <http://www.pressetext.at/news/100915030/mobilfuncker-koennen-smartphone-user-kaum-halten/>

Therefore, TAG believes that the discussion about potential negative effects of network management measures comes at least two to three years too early. Only at the point in time when the costs of incremental network capacity are higher than the according incremental retail revenue, network operators might have a strong incentive to limit network use - in a customer friendly way - via network management measures. However, even then, operators will do their best to provide their customers with the best internet experience possible; therefore network management measures will be the least intrusive possible.

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?*

Due to the number of fixed and mobile access providers in all European Member States the access markets in Europe today are highly dynamic and competitive. In most Member States there are more than three mobile and several fixed net operators, as well as additional service providers, competing for customers with a huge variety of internet/broadband connectivity offers that differ widely in terms of price, speeds, traffic volumes included, etc, etc.

This competitive environment strongly incentivises operators to give customers access to any (legal) content, applications and services at the best possible QoS. If one operator excluded access to certain content/applications/services or degraded the QoS to an unacceptable degree, customers would simply switch as soon as possible to (or choose) another access provider (see also answer to question 2). Accordingly, TAG believes that no openness issues or bottlenecks exist in Europe at the moment.

TAG itself as access provider in several European countries is fully committed to provide open access for all its customers to all (legal) content/applications/services available on the public internet and does not intend to block access to any of these contents/applications/services.

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

Data traffic was increasing rapidly over the last few years and data demand is not slowing down but will continue to grow in the future as more and more data intensive applications and services (e.g. internet video, in the future even HD video traffic) will be passing over the internet. A study by Cisco estimates that the Global IP traffic will quadruple from 2009 to 2014 and the global mobile data traffic will double every year through 2014, increasing 39 times between 2009 and 2014³.

If network operators increased their capacities *only gradually*, customer experience and general attractiveness of the internet as a medium for all kinds of services would be severely impaired in the mid/long term. This, however, is neither in the interest of customers nor in the interest of operators and content/application/service providers (CAS providers).

The following options might be considered:

- increase the application of traffic management techniques, and/or,
- trying to fund additional infrastructure investments by an overall *increase* in retail prices, and/or,
- introduce price/QoS differentiation on customer level, and/or,
- introduce wholesale charging models towards content/application/service providers.

Traffic management:

Traffic management has two vital functions: (i) prevention of congestions which leads to all customers suffering from harm and (ii) meeting the demand of customers of delay-sensitive applications/services such as, for example, telemedicine or online gaming.

If operators were forced to give up traffic management a high risk would occur for congestion slowing down the “best-effort” internet experience for all customers.

³ These numbers are also valid for the traffic volumes in Europe. See: Cisco Visual Networking Index: Forecast and Methodology, 2009-2014.

Accordingly, we believe that traffic management is an appropriate tool to ensure an attractive internet experience. Despite increasing data traffic volumes it will enable operators to continue to provide customers with the quality of service they require and expect.

Nevertheless, the remaining question is whether a risk exists that traffic management could be used as a means against the best interest of customers. Provided that network management measures are sufficiently transparent to customers in a way which enables them to make a well informed buying decision we believe that competitive forces in the access markets will immediately penalise those operators using traffic management in the best overall customer interest (see also the answer to question 5). It is, however, highly questionable if “traffic management only” will be the solution to serve all future capacity needs.

Funding capacity investments:

A general increase in retail prices for internet access is highly unlikely due to the fierce competition in the national markets for internet access. Accordingly, operators will have to find other means to finance additional capacity.

One way is to allow for a higher degree of service differentiation through different QoS classes at different charges. This will allow access providers to respond to different customer needs and customers value a certain QoS (e.g. hospitals who use telemedicine applications during surgery or customers participating in online games etc) will be able to receive the internet access which meets their demands. We do not believe that such a regime of stronger product differentiation at the access level will endanger the “best-effort” internet experience of the overall customer base:

Customers who (already today) are used to a high quality level will not accept a deterioration of their services. If any operator reduced this level in a way which is noticeable, customers would as soon as possible switch to an alternative access provider (see also footnote 2).

It is not unlikely that the process leading to stronger product/QoS segmentation for internet access services is speeded up by CAS providers. For certain CAS providers it might make sense to increase the quality of customer experience when using their content/applications/services through higher speed/better access quality. This might lead them to the introduction of wholesale charging models for content/application/service providers. The rationale behind such a pricing regime stems from the fact that internet access is a two sided market with customers purchasing internet connectivity on one side and CAS providers on the other side. Network operators are the platform between these two sides bringing the two sets of preferences together. We believe that the outcome of this process will lead to more innovation and to more customer benefit.

An operator’s inherent goal is to act in the best interest of their customers. We therefore do not see any reason for operators acting to the detriment of customers.

Any preliminary regulation prohibiting this kind of innovative charging might even have the effect of decreasing infrastructure investment and in the long run even constricting the usage of applications/services/content.

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

TAG believes that any possible concerns can be dealt with either by competition law, or, if specific measures are needed on national level by NRA’s based on the revised regulatory framework (by e.g. setting minimum standards). Any legislative measures going beyond the existing level might prove to have even adverse effects: on innovation as well as on the level of investment.

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?*

Traffic management and network engineering is nothing new. The telecommunication industry has been using traffic management for decades to provide customers with the desired services and the desired quality of these services. However, as demand for data services continues to increase, operators are increasingly required to manage services on their networks in order to deal with congestion and provide customers with the quality of service they have become accustomed to. If

network operators provided all services on a best-effort only basis instead of responding to congestion by rationing demand, customers would be negatively affected. At best, only time sensitive services, but at worst, all traffic and services would be adversely affected.

Technically, network engineering and traffic management involve several methods to maintain an appropriate level of QoS for internet services. Usually, traffic management uses capabilities of the network elements or of protocols defined and provided through standards like 3GPP and IETF. TAG plans to continue to use well established and well proven methods for network engineering and capabilities for traffic management:

Network Engineering:

- Monitoring of network element load status
- Forecasting of network usage based on specific meaningful drivers
- Monitoring of network usage based on the same specific meaningful drivers
- Defining engineering limits that, once reached, will instigate new investments (capacity) in order to continue to deliver the high service quality desired by our customers
- Monitoring the number of events negatively impacting the service quality and deriving necessary countermeasures to eliminate such events for the future
- Monitoring jitter, round trip times, delay times, packet loss and average achievable throughput and deriving necessary countermeasures in case expected values are not met in order to optimize the service delivery experience for our customers
- Monitoring Session set-up times, session duration, premature session termination rate, session drop rates, successful session completion rate and deriving necessary countermeasures in case expected values are not met in order to optimize the service delivery experience for our customers

Traffic Management:

- Authorization of bandwidth consumption: in case of high quality services requiring predefined bandwidth for high quality service delivery, TAG will implement the authorization function as defined in 3GPP. Through authorization the end customer is ensured that he can get the requested service quality. In case those resources are not authorized, the end customer still has the choice to fall back to a best effort situation, which however will not guarantee the service quality. Yet that is transparent to the customer
- Assignment and use of QoS classes: high quality services like video, TV or voice will require guaranteed bandwidth in order to work appropriately in a packet data network. TAG will use the standardized mechanisms from 3GPP and IETF to implement the QoS classes. In order to be effective the QoS classes must be supported throughout the entire service chain from the radio back to the content network
- Monitoring of service level and initiating countermeasures if service level is not achieved.
- Monitoring of authorized resources and initiating countermeasures, if resources usage exceeds authorized resource usage
- Switch over of traffic paths, if service level cannot be kept up on the original path
- Protocol optimization in wireless networks systems that avoid the typical behaviour of TCP/IP over links of small bandwidth or congested situations and thus guarantee that required throughput for the respective service can be kept up and the customers experience a fully satisfactory quality of service
- Data compression in wireless networks: systems that will compress data sent across the wireless infrastructure. In this way the total amount of data can be reduced while at the same time the total amount of information is being preserved. The added value for the customer is a faster reaction time and quicker down- and upload times. Data compression can be client-based or client-less. Both options will most probably find deployment in TAG

- Caching of data: particularly for wireline networks caching may be of advantage and save transmission resources in the core and backhaul network (depending on the location of the caching server). TAG may be considering to deploy such capabilities

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?*

TAG believes that it is necessary to give customers access to meaningful information on network management policies that might affect their internet experience, including relevant traffic management practices applied by their internet access provider, fair usage policies, service restrictions and tariffs to be able to factor these effects in when making purchasing and/or switching decisions. Therefore, TAG supports the idea to introduce a common framework which facilitates the comparison of network practices from a customer perspective, on national or even European level.

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

TAG is convinced that traffic management was and will continue to be more important in the mobile context due to greater capacity constraints (shared resources, limited frequencies). So, even though the structure of thinking and of developing net neutrality policies has to be done in principal on a *technology neutral basis*, still specific net neutrality/network managements rules would in many circumstances (due to the access network specifics of mobile) *end up in different rules for mobile and fixed access networks*.

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 prioritization affect other players in the value chain?*

TAG has no specific insight into forms of prioritisation by CAS providers.

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?*

The introduction of managed services is not driven by network operators but reflects customer's preferences for new and high quality products. These products will also be a main driver for the faster take-up of high speed broadband connections - in line with the overall policy goals as set in the Digital Agenda.

We believe that managed services and offers based on guaranteed QoS should be open to all customers that are interested in such services ('downstream'). Looking upstream, however, we are deeply convinced that any non-discrimination rule (i.e. essentially an 'ex-ante' ban of exclusive agreements) will in fact prevent the introduction of such innovative services from the start: If network operators know that in case they guarantee a certain QoS to *one single* CAS provider, they will have to offer the same QoS guarantee to any other CAS, i.e. theoretically to an *indefinite number* of CAS providers, then they are essentially banned to offer any such deals from the start. In essence, however, this would result in a complete stop of further innovation on this side of the value chain from the very beginning.

Therefore, TAG argues not to introduce such a ban on differentiated commercial offers. Especially as the market for managed services is still in its infancy such a step would be unwarranted and excessive. Since any *truly* anti-competitive behaviour could (and for sure - would) be addressed under competition law anyway, the risk that we might see at some point in time an anti-competitive agreement between a CAS and a network operator, that then has to be dealt with under ex-post rules, is by far overcompensated by the opportunities and benefits such exclusive deals and managed services will bring for the customers.

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?*

As argued above, we do not see a likely risk of market outcomes that are against the best overall customer interest. Even if exclusive deals are made, competitive forces will lead to duplication and therefore effective competition. We are much more concerned that even in this very early stage of market/product development, ex-ante non-discrimination rules might effectively destroy any first mover incentives and consequently any further innovation.

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?*

Internet access is a two sided market as already illustrated above where network operators today recoup network costs mostly from retail customers in form of flat rates. In order to maintain (or create) a sustainable and efficient internet environment it is of utmost importance that network operators keep the flexibility to test new business models - on both sides of the market. Accordingly, some (mobile) network operators have e.g. started to abolish mobile internet flat rates and to use differentiated tariff models, which incentivise customers to use the network more efficiently and better reflect customer preferences⁴. At the same time there are until now no mechanisms at work incentivising a more efficient use of the internet access networks on the other side of the market where most of the traffic originates. So, the current situation *might* be an efficient market outcome at this point in time, however, this still has to be proven for mid/longterm. Accordingly, we argue to leave it first of all to the market players to define if today's business models will also be valid tomorrow.

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?*

Setting minimum quality of service requirements should be a measure of last resort, applied only if the overall QoS of best-effort internet access falls significantly below today's level (but of course expectations will have to be adapted from time to time) *and* only after having exhausted all other less intrusive instruments, such as transparency obligations or other means to fasten up competition among access providers. It has to be emphasised, however, that any possible minimum QoS requirements will have to be applicable to all market players operating in the same retail market.

How exactly such QoS criteria could look like (what KPIs, at what absolute level) is completely open for future discussion. What we currently see on the market is a huge variety of data QoS measurements used for marketing purposes.

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

Determining QoS requirements is a highly complex and challenging task as the competitive forces of the internet access markets have created a myriad of different retail offers focussing on different properties of the service which in turn offer just as many possibilities to compare them. Defining and setting a certain set of unilateral criteria will most certainly advantage one operator over the other. A better approach might be to establish an industry standard. This, however, bears the risk of a high degree of standardisation which in turn could reduce the level of competition.

Although no given formula currently exists which defines the most effective metrics to determine quality of service requirements TAG would support any efforts by national or international bodies and would work with them on any research activities.

⁴ E.g. AT&T and Verizon in the US: http://www.telecomseurope.net/content/verizon-end-unlimited-data-within-six-months?section=HEADLINE&utm_source=lyris&utm_medium=newsletter&utm_campaign=telecomseurope. But also some European Operators announced that they will refrain from offering flat fees much longer (e.g. Vodafone).

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?*

The imposition of any QoS requirements is first of all a task for individual NRAs as the characteristics of the national internet access markets differ across Member States, since different technologies are deployed to different degrees. However, if the goal is to have the same conditions for retail customers in all member states a certain degree of harmonising will be unavoidable. This could probably be achieved best if BEREC developed a common approach.

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

When the revised regulatory framework will be transposed in national law and implemented in all member states, the foreseen obligations will make sure that a set of specific information on internet connections will be given to customers. In addition, the introduction of a commonly defined transparency framework (as suggested in our answer to question five) will further increase the transparency for customers and will provide them with even more detailed information of what their internet access consist of and what QoS they can expect.

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?*