

ETNO response to the Commission Public Consultation on specific aspects of transparency, traffic management and switching in an open Internet



October 2012

I. Executive Summary

ETNO welcomes the present consultation. ETNO members provide access to the Internet over more than 300 millions broadband connections (fixed and mobile) in the 27 EU Member States and beyond, making ETNO companies a guarantor of an open, accessible and sustainable Internet ecosystem.

We welcome the focus of the Commission's questionnaire on transparency measures. Today's fierce competition in EU broadband markets together with proportionate and effective transparency requirements under the revised EU regulatory framework will ensure that markets provide users with access to the content, services and applications of their choice. The results of a BEREC investigation in May 2012 demonstrate that only in isolated cases the market has not yet delivered this choice.

Traffic management by operators is indispensable to ensure a robust, secure and efficient functioning of their network. It is also an essential tool to support new and innovative services as well as new business models in the Internet. Within the EU legal framework for competition and consumer protection, any restrictions of operators' ability to manage their networks would have to be justified by an overriding policy objective, necessary and proportionate to the goal pursued.

The 2009 revision of EU regulatory framework has introduced reinforced obligations on operators to facilitate consumer switching. Levels of churn in EU markets and consumer surveys on switching behaviour clearly indicate that no further measures to facilitate switching are needed at this stage.

ETNO does not call for regulation of IP-Interconnection, be it at global, EU or national level. IP-Interconnection should be covered by commercial agreements, including on the provision of enhanced quality of service, allowing the development of new sustainable models of traffic and payment flows in the internet value chain, and supporting sustained investment in network infrastructure.

II. Answers to the consultation questionnaire

1. Traffic management

1.1 Traffic management and differentiation

Question 3:

Please explain **briefly** which traffic management techniques are usually applied by network operators or ISPs and how they are technically implemented.

S. joint answer to questions 3 and 4 below.

Question 4:

Congestion management is one of the reasons for applying traffic management measures.

- a) Please describe **briefly** how congestion management normally works.
- b) If possible, please provide a **definition** and **examples** of genuine congestion management measures, i.e. measures which are **necessary** to avoid or tackle network congestion, as opposed to measures which may be called congestion management but actually pursue other purposes.

Different forms of traffic management today ensure a robust, secure and efficient functioning of the network and support the provision of new and innovative services.

Traffic management practices are used both for congestion management and other purposes.

Congestion management can be “application agnostic”, understood as traffic management measures that operate in complete unawareness of what kind of traffic is being transported, In use in networks today as the most basic form of traffic management is the TCP/IP functionality which reduces the data transmission rate in case of congestion.¹ Operators also make use of Equal-Cost Multi-Path Routing (ECMP) in order to balance the load across the available transmission paths.

Besides the technical measures there are also contractual measures which may be classified as application agnostic measures. First and foremost the application of volume caps in the context of Fair Use Policies as featured in some contracts with end customers of network operators and applied to a different extent in different member states.

Introducing traffic prioritization and service specific QoS-differentiation allow for a more cost effective and future-proof approach to satisfy demand in the face of rapidly growing traffic volumes than the traditional model of over-provisioning. The increasing quality of transmission-requirements of new applications require additional investments by network operators. Whether the same quality of service has to be provided to all applications has a huge impact on the scope of investment: economic research finds that, to provide the same level of quality to new and traditional applications, ISPs would need to invest 60% more into infrastructure capacity than if differentiation in quality of service is allowed.²

¹ As specified in RFC 793, S. <http://tools.ietf.org/html/rfc793>

² ESMT CA, Assessment of a sustainable Internet model for the near future, p. 4 (of 94)

The most basic application agnostic traffic management mechanisms described above apply for both wireline and mobile networks and congestion as a phenomenon is not limited to mobile networks. Due to limited spectrum availability resources in mobile access networks capacity limitations in mobile are more acute, however. These economically scarce resources have to be allocated in the most efficient way. This requires, to a larger extent than in fixed networks, to distinguish between specific traffic 'types' and to manage the traffic based on policies that reflect customer choice with regard to chosen tariff plans (e.g. Fair Use Policy).³

Question 5: (all respondents)

Please provide your views on the following ways/situations where traffic management may be applied by ISPs.

Are traffic management measures:

a) applied to deliver managed services (e.g. to ensure a guaranteed quality of service for a specific content/applications)

Necessary and appropriate. Individual services have specific requirements. Traffic management is the necessary means to assure that these requirements are adequately met. Without traffic management, control admission and guarantee of capacity, one could not provide services at guaranteed quality which correspond to an essential part of the customer demand. Neither could one provide services requiring a high performance of the network (ex TV on ADSL).

b) taking into account the sensitivity of the service to delay or packet loss

Necessary and appropriate. In many cases, IP service provision will depend on traffic management which caters for specific service requirements, for example as regards delay and packet loss, making it both necessary and appropriate.⁴

c) used to implement or manage compliance with the explicit contractual restrictions (e.g. on P2P or VoIP) of the Internet access product accepted by the user

Appropriate. Where tariff portfolios contain products with restrictions or so called "optional tariffs" traffic management measures are necessary to ensure the terms of the contracts are respected. As long as the relevant transparency obligations are met and the market provides end-users with a variety of offers providing access to Internet content and applications of their choice, this is also appropriate.

d) targeting types/classes of traffic contributing most to congestion

Appropriate. As long as transparency obligations are met, this is to be considered appropriate. Whether such measures are necessary depends largely on available

³ The specifications of the GSM Association have featured the following functions from the very beginning: performance management, security management, subscriber and equipment tracing, subscriber and equipment administration and charging administration. Bandwidth management (implemented in the Home Location Register, HLR), QoS steering and Radio Access Network (RAN) selection. Without such traffic management techniques an operator is neither in a position to use the limited network resources efficiently, namely guaranteeing an appropriate quality of service to the benefit of all customers, nor capable to protect the network infrastructure against congestion or outage.

⁴ As an example, Voice over LTE (VoLTE) will be prioritised in LTE networks to ensure voice quality and satisfactory call setup times. Both from their characteristics and the value attached to them by the customer, high-quality voice over IP services should not be treated as 'any other IP service'.

capacities. In the mobile context, for example, such measures are necessary, because capacity is strictly limited by the availability of spectrum. Such measures could be deemed inappropriate if they were carried out in a non-transparent manner for anti-competitive purposes. Fierce retail competition in Europe's broadband markets and strengthened transparency obligations make such a scenario highly unlikely in the EU (s. below under 5 i).

e) targeting heavy users whose use is excessive to the extent that it impacts on other users

Necessary and appropriate. As far as Fair Use Policies are concerned, the measure is appropriate to target heavy users in line with contractual provisions. These policies are indispensable to ensure a fair access for all customers by targeting exceptional cases, for example the case of an end-user who uses his connection as a permanent download link. Other measures are currently not used to specifically target heavy users.

f) applied during busy times and places, when and where congestion occurs

Necessary and appropriate: in order to preserve the integrity and the optimal performance of the network and in order to guarantee the access for all the users and to all the applications such measures are necessary and appropriate.

g) affecting all applications/content providers in the same way (application-agnostic)

Necessary and appropriate. These mechanisms are already built into the TCP/IP protocol; hence we consider them to be necessary to assure network stability across the Internet. (please see also Q4). In line with our recent response to the BEREC consultation on draft guidelines for quality of service in the scope of Net Neutrality, ETNO does not consider application agnostic traffic management to be generally preferable to application specific measures. The latter may constitute the more economic and efficient manner to manage a network in given circumstances.

h) affecting (similar) applications/content providers of the same category in the same way

Appropriate. Such mechanisms may be appropriate but are currently not widely deployed. It should be possible to reserve a specific treatment to certain applications. ISPs may have concluded partnerships with content providers that offer improved access condition to the web site or application. If regulation were to impose application agnostic traffic management measures, this would jeopardize current and future commercial agreements with partners on other levels of the value chain.

i) used, without other grounds, against services competing with the ISP's own services

It depends. The wording "without other grounds" is not fully clear. We understand measures covered in answers to lit. a) – f) would not be addressed by this question. In particular, service differentiation which allows lower price packages for users that do not value access to certain applications as much as others is *a priori* legitimate under the EU regulatory framework and its provisions for internet openness. Such measures, for example restrictions on VoIP in line with the end-users' contract, are therefore appropriate as long as the relevant transparency obligations are met and the market provides end-users with a variety of offers providing access to Internet content and applications of their choice (s. above response to 5 c)). In the same way, restrictions on P2P traffic, e.g. at peak load times, can be an effective and appropriate measure if made transparent to the end-user. To the contrary, any traffic management measures that would exploit market power to undermine competition

and cause consumer harm (an abuse under general competition law) would be in breach of EU law and hence not admissible. In practice, fierce retail competition in Europe's broadband markets and strengthened transparency obligations under the revised EU regulatory framework make such a scenario appear highly unlikely in the EU.

j) implemented at the full discretion of the ISP

Necessary and appropriate. The question may not be fully clear. Network operators should, within the existing legal framework, of course have discretion to manage their networks. If "at the full discretion" was to be understood as not in line with contractual terms or policies published under the transparency requirements, this would be in breach of legal requirements and hence no longer appropriate.

k) other differentiation criteria (please specify)

The economic value of specific IP traffic will most likely become an essential differentiator in the near future. Traffic management is also an appropriate mechanism to enable the differentiation of products and services. Different services have specific quality requirements that go well beyond mere bandwidth⁵. Some new services for example in the field of eHealth will depend on guaranteed levels of quality (QoS). In this respect, traffic management is an enabler for increased variety in products and services as well as for further innovation on the Internet.

The ongoing discussions on quality of service show that it will be necessary to further develop QoS-mechanisms in order to meet customer demand and to ensure true interoperability across network borders. In doing so network operators will in their own interest be mindful of not restricting future innovation (technologically as well as economically) on the networks themselves as well as on their edge, e.g. in services. To the contrary, ETNO members' aim is to enable the development of new and innovative services by evolving traffic management best practices to the benefit of the consumers and the whole internet ecosystem.

Question 6:

The use of managed services may affect the Internet access service in some cases, due to the sharing of access resources.

a) Please explain the impact of managed services on the standard Internet access service ("best effort") in terms of available bandwidth and quality of service.

To assess the relationship between managed services and internet access, it is worth recalling that the use of managed services allows on the one hand to save resources and on the other hand to inject innovation into the Internet world.

- For a similar use at the same quality, the use of managed services saves transport resources compared to providing the service over the best effort Internet. This facilitates the parallel use of Internet services.
- Managed services have fostered innovation and higher speeds in both parts of the fixed network, access and backhaul. As far as access is concerned, it was in many cases the managed service "TV" that motivated operators to move to ADSL2, 2+, VDSL; in other words, managed TV services lay at the origin of the high bit rates currently benefiting Internet services. For backhaul,

⁵ The most relevant parameters today are delay, jitter and packet loss.

managed TV has also motivated the move to GbE that minimises the use of resources and consequently maximises the available resources for the Internet.

The impact of managed services on access to Internet services will depend on the actual implementation of managed services. The three main options are 1) building specific and physically separated capacities beyond the access network, i.e. in the aggregation and backbone networks, and implement traffic management on the access lines. 2) using the same physical infrastructure but implementing logically separate virtual networks (End to End) and 3) using the same physical infrastructure and implement a traffic management mechanisms according to the 'diff serv' conception. All three options are technically and economically feasible but come with their respective advantages and disadvantages.

Option 2, which is implemented by a number of ETNO members for their managed IP TV presents many advantages in terms of efficiency and makes bandwidth available to internet access when the managed service is not used.

One should note that on the fixed access line, it is the user's choice what managed services he or she is using, and depending on the deployed traffic management mechanisms this may result in reduced bandwidth for the Internet access service. This user choice does not affect the openness of the internet or traffic management practices for internet services carried over the network. It should not be covered by the forthcoming guidance instrument, which otherwise would become a regulatory instrument affecting retail broadband offers in a competitive market place.

In a mobile access network overall capacity is dynamically attributed and shared among all active users in a given cell. The allocation will be done through policy-based network management. Mobile network operators have a strong incentive to allocate the limited bandwidth in such a manner that the greatest possible number of customers experiences a functional service.

b) Please explain whether it is possible to offer separate capacity for managed services and the standard Internet access service. If yes, please provide information on the circumstances (costs, technologies) of separating them.

As explained under a), this is possible beyond the access networks only. Physical separation will not require specific technologies. The same technologies would be deployed in parallel. Therefore it is generally more efficient to not physically separate the transport capacities and instead rely on traffic management mechanisms to attribute the shared capacity to managed services and standard Internet access service dynamically. Given that managed services will have to meet specified Service Level Agreements it is likely that priority will be given to those services in case of congestion. At the same time the additional revenue that is generated will allow to build up the capacity that is required to carry all traffic.

Question 7:

a) Please give examples of "new business models" which could be developed on the basis of managed services by
(i) Network operators/ISPs:

QoS differentiation will allow attributing network capacity according to service requirements and the economic value of content and services. Besides TV and a few

other applications such as certain forms of gaming, managed services are still evolving and new models and services are being tested. These may relate to:

- partnerships and revenue sharing mechanism between ISP and content provider
- Two-sided market models are able to develop if the necessary price flexibility and cross subsidies between the two ends of the chain are not constrained by regulation,
- RCS: Rich Communication Suit messaging services,
- Retail offers at specific terms and conditions that allow the client access to certain types of applications/content at better quality or improve its connection speed or service performance in comparison with clients that have not subscribed to a similar retail offer. As long as such models are offered in a competitive market place and the user chooses his or her preferred services, such models should be encouraged by regulation as they foster efficient use of capacity as a scarce resource.

(ii) Content providers (on the basis of agreements with ISPs):

Assured service quality will allow for a price premium over best effort delivery and enable the development of new managed services offerings depending on assured high quality delivery, for example “free viewpoint” movies and interactive entertainment.

b) How important are these innovative business models likely to become in the next three years? Please substantiate your view by means of available forecasts or studies.

In the absence of established standards for quality based interconnection and legal certainty for business models based on quality differentiation it is safe to assume that the next three years will mainly see pilot deployments. The models need to be tested in the market place before it is possible to derive valid projections regarding their uptake and commercial potential.

c) What would be the expected benefits in terms of innovation and investment through new businesses (content or applications) benefitting from guaranteed levels of quality of delivery through managed services?

Traffic management remains indispensable to enable the development of new and innovative services. If mechanisms for prioritization were no longer allowed, so called quality insensitive services that require a relatively large bandwidth would crowd out quality sensitive services. For example, ambient video could deteriorate video conferencing services to the point of unacceptable Quality of Experience (QoE).

Traffic management is also an essential mechanism to enable the differentiation of products and services and develop jointly with actors on other layers of the internet sustainable new business models supporting investment networks and services. Different services have specific quality requirements that go well beyond mere bandwidth. Some new services for example in the area of e-Health even depend on guaranteed levels of quality (QoS). In this respect, traffic management is an enabler for increased variety of products and services as well as for further innovation along the Internet value chain.

Question 8:

What are likely positive and negative effects of certain traffic management practices on the Internet ecosystem, in particular on innovation and investment, by (i) network operators/ISPs and (ii) content providers? Please explain your view and, if appropriate, distinguish between different traffic management practices.

Please see above, answers to questions 5 and 7. We encourage the Commission to focus on the positive effects of traffic management on investment and innovation. The opportunities that traffic management provides will contribute to the long-term robust functioning of the Internet and to finding sustainable business models which enable investments in fixed and mobile infrastructure. ISPs' investments in fixed and mobile networks will strengthen distribution reach for content providers. This creates a larger market, entry opportunities for new content providers, more alternatives to choose from for consumers, and more room for innovation from both current and new content providers

1.2. Traffic management and privacy issues

Question 9:

It appears that the implementation of traffic management measures requires ISPs to analyse certain information about individual data packets, for instance by deep packet inspection (DPI) techniques. Please explain which type of information needs to be read by ISPs to implement the different traffic management measures. In which layer can this information normally be found?

'DPI' is an imprecise term as it may cover a range of management practices from what often is called PI (Packet Inspection) where just the header of a package is analysed, to an analysis beyond this point. It is important to note that DPI is not used by ISPs to analyse end-users' communication data ⁶, i.e. the content transmitted.

To generate traffic statistics and analysis it is sufficient to process the information in the IP header, therefore 'PI' is used for this purpose. PI is also used to enforce specific tariff plans and options in mobile networks. Also for the implementation of commercial QoS classes and business models based on quality differentiation DPI is not necessarily required.

When analysing packets beyond the IP header payload patterns can be recognised, which is for example necessary for the detection of malware and to defend against cyber attacks. DPI is normally not deployed in for this purpose in public networks in view of the added processing cost but on customer request to protect their systems and servers. In this function DPI is the core technology of Intrusion Detection and Intrusion Prevention Systems (IDS / IPS). In order to detect viruses transported through e-mail DPI is also deployed on mailservers. In order to implement advanced traffic management in cases which require understanding and identifying the different patterns of traffic flows for each service or application, DPI may also be necessary.

Question 10:

a) Are there any privacy risks arising from the use of DPI for traffic management purposes, and, if so, what are the implications for transparency and consumer protection?

⁶ As defined in Art. 2 d) of EU Directive 2002/58

The existing European legal framework on Data Protection constitutes an appropriate tool to guarantee individuals' right to privacy and to ensure a proper use of DPI.

ETNO understands that the specific use of DPI could potentially have privacy risks if - and only if - an ISP did not comply with the current EU rules on Data Protection, the e-Privacy Directive (on confidentiality of communications), but also the revised Framework Directive and Universal Service Directive (on transparency requirements regarding traffic management).

Particular attention should therefore be placed on the appropriate degree of transparency for the customers in order to ensure trust and confidence.

This is in line with the EDPS Opinion on Net neutrality, Traffic Management and protection of privacy and personal data adopted in October 2011, which states:

“In principle, the EDPS considers that the existing EU privacy and data protection framework, if properly interpreted, applied and enforced, would be appropriate to guarantee that the right to confidentiality is upheld and overall that the protection of the privacy and data protection of individuals is not jeopardized”.

b) Are there alternative techniques for traffic management that do not involve deep packet inspection? Please provide examples and explain your response. Please compare those alternative techniques with deep packet inspection, in particular in terms of their effectiveness, potential impact on privacy and costs for operators.

As explained above in our response to question 9, traffic management measures today mostly do not involve DPI. Packet Inspection and standard router functionalities are sufficient to produce traffic statistics and analysis and support other traffic management measures. The 'alternative techniques' are therefore in fact standard techniques and effectively deployed. We do not expect this situation to change fundamentally in the foreseeable future as using DPI to analyse all traffic on IP networks would come at a significant extra cost. DPI may however play a larger role as the complexity and range of applications delivered over networks increases, and help to support network and service innovation. Policy makers should not to preclude efficient and legitimate use of the technology within the limits of the current rules for consumer transparency, data protection, competition etc.

Question 11: (all respondents)

Where the user's consent is required for traffic management measures, particularly where such measures might entail access to and analysis of certain personal data by ISPs, please explain how (e.g. in which format) this consent should be sought by the ISP, what prior information needs to be provided by the ISP to the user, and how the user consent should be given, in order to optimise user awareness and user convenience.

The e-Privacy Directive already foresees legal grounds that may legitimate ISP's processing of traffic and communication data without the need of prior consent. Those legal grounds are (1) delivering the service, (2) safeguarding the security of the service, and (3) minimizing congestion.

In those cases, service providers process the necessary information for delivery of the service without the need of prior consent. The customer relies on the ISP to provide the service and acknowledges that the ISP may need to monitor and process certain type of data for that purpose.

Again, the EDPS has made it clear in its above mentioned Opinion on Net neutrality that in these cases and for these purposes there would be a general legal ground for processing personal data, if needed, without the need of an specific consent by users.

2. Transparency and switching (consumer choice)

2.1. Transparency and general characteristics of the Internet access offer

Question 12: (all respondents)

In order to allow consumers to make informed choices, on the basis of clear, meaningful, and comparable information, which elements should be communicated to consumers?

- Elements related to traffic management practices:

a) Contractual restrictions (blocking, throttling, other restrictions on application use)

Important. Transparency on contractual restrictions is essential to the customer to compare offers and to make an informed choice with full knowledge of the characteristics of the offer. Network operators are obliged to provide that information by the EU framework.

b) Traffic management policy applied to prioritise certain traffic in specific circumstances

Less important. While the specific policy itself may be of lesser interest for the consumer, he or she should, however, be put in the position to understand the consequences of the policy, especially its effects on the user experience.

c) Whether and to what extent managed services may affect the quality of the best effort Internet (e.g. the possibility of the Internet connection being affected when watching IP-TV or when using other managed services)

Less important. It can be appropriate to inform the user on how managed services such as IP-TV consumption is affecting the available bandwidth on a specific access line. The information may in many cases not be very relevant in practice as an operator will only propose managed services to the customer if the quality of the access line remains sufficient for parallel high-speed Internet access.

In the fixed context such effects are easily measurable and it may be specified which amount of bandwidth will be reserved for the IP-TV service. In the mobile context bandwidth allocation to provide specified service quality is fully dynamic and measuring is consequently extremely complex.⁷

⁷ We do not discuss the definition of “managed services” in this response. ETNO believes that the forthcoming guidelines by the European Commission should not include a legal definition of ‘best-effort’ and ‘managed/ specialised services’ while commercial and technical conditions for quality of service offers are still evolving. For example, the question whether “managed services” in mobile exist may be answered differently in a few years time. A definition of these terms, especially if these categories were treated differently under regulation, might directly distort commercial and technical developments and foster innovation in some areas while stifling it in others.

It should be underlined that as a general principle, transparency requirements should apply in a technologically neutral manner, for example not be limited to DSL-connections, but also cover competing infrastructures.

d) Other restrictions, please specify:

e) Data allowances (caps), download limits

Important. These are standard elements in a customer contract and hence an integral part of the service description.

f) What these data allowances enable customers to do in practice (download x hours of video; upload y photos etc.)

Less important. This information is very specific for individual use cases. In order to illustrate what data allowances signify in practice it may be helpful for consumer transparency to give an indication in the form of a “stylized” or generic use case.

Elements related to speed and quality:

a) Average speed, typical speed ranges and speed at peak times (upload and download)

Important. It appears important to give the customer a valid indication of the average speed that may be expected. As measuring speeds itself creates costs and traffic load on the network it is important to determine what data is meaningful to the customer. Currently network operators usually measure the performance of specific network elements and segments. End-to-end metrics for service quality – including peak and average speeds for up and downloads – are still in development.

To allow the end user to have comparable information, the measurement methodology must be developed in a technology neutral way, considering the specificities of each of the available technologies.

b) Respect of guaranteed minimum speed (if applicable)

Less important. On mobile access, it is not possible to guarantee a technical minimal speed because a mobile can be outside the coverage area or the cell could be overloaded in specific locations. Many parameters are not under the operator’s control.

In fixed access measuring respect of a “minimum speed” would be technically possible. We note that the imposition of ‘minimum speed’ or quality requirements under Article 22 (3) Universal Service Directive is subject to strict conditions under the EU framework. The cost of measuring a guaranteed minimum speed for each individual user moreover appears disproportionate, unless severe quality degradations would occur on the level of the overall market which could justify such intervention.

The metrics for average “speed” – or more technically correct transmission rates – could give a meaningful indication about the actual level of service delivery.

c) What these speeds allow customers to do in practice (video-streaming, audio-download, video-conferences etc.)

Less important. As the data transmission rate on the networks involved in producing end-to-end connectivity is not the only factor determining the actual user experience for a specific service it would be impossible to provide valid and meaningful information on a per service basis. It is however possible and may be helpful to consumers to give an indication what transmission rate a typical service in the above mentioned classification of traffic types will require.

d) Latency/network responsiveness (a measure of traffic delay) and which services would be affected thereby (e.g. certain applications such as IP-TV or videoconferencing would be more seriously impacted by higher traffic delays in the network of the provider)

Less important It would not be practicable to provide valid and meaningful information on a per service basis and the value of such information for non-professional users in particular would be low. Professional users would be informed on such parameters as part of their contractual arrangements, SLAs etc.

e) Jitter (a measure of the variability over time of latency) and which services would be affected thereby (e.g. echoing in VoIP calls)

Less important. It would neither be possible nor provide valid and meaningful information on a per service basis. In any case, the practical value of such information for non-professional users in particular would be very limited.

f) Packet loss rate (share of packets lost in the network) and which services would be affected thereby (e.g. VoIP)

Less important. Our response to lit. e) above applies.

g) Reliability of the service (network accessibility and retainability), i.e. measure for successful start and completion of data sessions

Less important. Given the number of IP sessions that are being established on the Internet it appears extremely complex to derive generic metrics. This might be attempted on a per service basis but would only make sense for prioritized IP traffic, i.e. to measure the service availability in scenario where reserved capacities need to be accessed in order to produce the service. In a best effort only scenario this metric does not produce information that is meaningful to the customer.

h) Quality parameters for (mobile) voice telephony (call setup success rate, dropped calls, speech quality, other)

The relation of the question to the open Internet debate is unclear. There are a number of quality parameters that are prescribed for mobile voice telephony which are actively being monitored by NRAs.

i) Other, please specify:

(-)

Question 13: *(all respondents)*

Some ISPs currently apply 'fair use policies', which give them wide discretion to apply restrictions on traffic generated by users whose usage they consider excessive. Do you consider that, in case of contractual restrictions of data consumption, quantified data allowances (e.g. monthly caps of x MB or GB) are more transparent for consumers than discretionary fair use clauses?

The established practice of defining Fair Use Policies (FUP) is highly transparent and cannot be qualified as discretionary, as they are an integral part of the terms of the contract with the customer. Their consequences should be spelled out in a clear manner. The terms and conditions of an internet access service describe the performance of the service and specify exactly what restrictions may be applied when specific thresholds are passed. FUPs are non-discriminatory restrictions, in that they will not be applied to individual services but either to all IP traffic of a certain type or – and this is the most widely applied implementation – to all best effort Internet traffic.

Question 14: *(all respondents)*

a) When should the elements of information referred to in question 12 be provided to the consumer by the ISP?

In order to contribute meaningfully to an informed customer decision they should be provided before contracts are signed. This means they need to be easily accessible, understandable and publicly available. It is industry best practice that this level of transparent information is maintained after contracts have been signed or even independently of contract signing (via the operator's website etc.). Significant changes that require modifications in the contracts will need to be communicated separately in order to comply with the provisions of the Universal Service Directive and with contract law.

b) Which format (e.g. contract, general terms and conditions, separate and specific information, other (please specify)) do you consider appropriate to communicate this information to consumers?

All of the above mentioned formats are in principle appropriate to communicate the information. The most appropriate format for specific information should be pragmatically determined by applicability and relevance for the information concerned.

Question 15:

What would be the (additional) costs for ISPs to (i) collect the various data mentioned in the table in question 12 (e.g. measuring of average speed, jitter, delay etc.) and (ii) communicate the information to their customers. Please provide an estimate of the above costs for your own company or an ISP of your choice explaining your assumptions and methodology, and details about the technical tools used to collect the various data. If possible, please provide a breakdown of the costs.

As industry and regulatory authorities are still in the stage of conducting 'explorative studies' and determining which metrics are relevant and in what frequency and granularity the measurements need to be communicated it is too early to provide cost estimates. Costs will vary significantly depending on the parameters at stake, on where in the network the measurement is conducted and at which frequency. A cost-benefit assessment is required in this context to avoid a costly general provision of information which in the end adds no value for the vast majority of users.

Question 16: *(all respondents)*

a) In order to promote transparency and consumer choice, do you consider it necessary that comparable data on the Internet access provided by ISPs is collected and published by NRAs or another independent organisation?

Guaranteeing for the validity and accuracy of data as well as rendering it comparable is a role that NRAs could fulfil. The logical second step is that the so “authorized” data is then made available to the public. Whether NRA publications are the appropriate and necessary channel may be debatable. Once publication is approved NRAs should provide the raw data for comparisons also to independent organisations (including all interested stakeholders) for further processing and publishing.

Do you think this information should be broken down by geographic areas or different data plans?

Much like under question 15 the answer to this question strongly depends on a few key variables that are not yet determined: most importantly the applied measurement methodologies and the costs of measurement. The methodology will determine whether or not a geographic breakdown is feasible and meaningfully interpretable. In any case the measurement costs need to be proportionate.

b) What are the advantages and corresponding costs of this data collection and publication being undertaken by NRAs or by another type of organisation (please specify which one). Please provide an estimate at EU-level or for an EU Member State of your choice.

It is impossible to give reliable cost estimates at the current point in time.

Question 17: *(all respondents)*

a) Do you consider it necessary to regulate the labelling as "Internet access" of subscriptions that restrict access to some Internet services, content or applications?

No. Customer experience and satisfaction should be in the centre of any transparency policy, not terminology. Communication should help consumers to make a choice while maintaining the ability of network operators to provide differentiated offers and to highlight their advantages as well as their limitations. Creating negative labelling of products and services would not be helpful for either players or end-users in the market. As the EU regulatory framework is *a priori* open to the marketing of differentiated offers, restrictions on labelling may also risk raising legal issues.

As regards the term “internet access”, it is such a widespread concept in a highly diversified and competitive market that alone for practical reasons such a labelling can be meaningless or even misleading. A definition of the “Internet” appears to go beyond what public authorities at European, i.e. regional level, should aim for under a future-proof policy approach. The customer has a right to know the key performance characteristics of any Internet access product before signing a contract. This includes information about any limitations and restrictions. As long as transparency is established there appears to be no need for a regulation on product labelling.

b) If yes, which restrictions would be acceptable before a subscription could no longer be marketed, without qualification, as an “Internet access” product”?

S. above. This is not a meaningful approach in ETNO’s view.

c) What would be the consequences (including the cost) for ISPs if they were not allowed to market as ‘Internet access’ an offer with certain restrictions, or if such marketing was subject to mandatory qualification? Please provide quantification for your own company or an ISP of your choice explaining your assumptions and methodology.

In the absence of information about the concrete modalities it is impossible to give a reliable cost estimate. Operators would incur significant added costs however, for changing contracts, web pages, CRM staff training, Increase of calls to CRM centers etc.

2.2 Switching

Question 18: *(all respondents)*

a) Please explain what barriers to switching ISPs still exist (if any) and how they can be overcome. Please mention in your reply all direct and indirect factors dissuading consumers from switching (e.g. obstacles linked to the terminal equipment, burden of proof regarding a possible breach of contract, etc.)

There are no barriers to switching in EU markets that require regulatory action. Fixed and mobile broadband markets in the EU show very high levels of competition and customers change operator continuously. The figures of number portability in fixed and mobile markets published by the European Commission in its 2012 Digital Agenda scoreboard provide a good proof for that.

Reasons for not switching operators are manifold. For a sound impact assessment before taking policy or regulatory measures it is decisive to analyse which factors actually prevent switching. DG CONNECT’s recent representative survey⁸ provides a good overview of factors for consumers and their market relevance⁹ (EU average):

1. Switching is not considered (62 % of EU subscribers)
2. Subscribers are satisfied with the service they get (10 %)
3. Subscribers have already switched and are in minimum contract terms (8 %)¹⁰
4. It will take too much effort and time to do it (5 %)
5. No other provider with good value for money is available (4 %)
6. Eventually the provider offered better conditions to stay (3 %)
7. Fear of a temporary loss of service during the switching process (3 %)
8. Internet access is part of a package (bundle) (3 %)
9. Fear of having to pay for more than one provider during the switching process (2 %)

⁸ DG CONNECT: Special Eurobarometer 381, E-Communications Household Survey, June 2012.

⁹ Question QC13: „Have you or someone in your household ever considered changing Internet service provider?“, Special Eurobarometer 381, p. 98.

¹⁰ Though this question is misleading because of course the subscribers have „ever“ considered switching otherwise they would not have switched as the answer provides for. I. e. it is not clear if subscribers actually want to switch their new service provider.

10. Internet access is connected to webpage hosting and email address (2 %)
11. It is unclear what steps have to be taken (1 %)

The following conclusions can be drawn from the Commission's survey:

- Irrespective of intense competition and marketing offers subscribers in their vast majority are not tempted to consider switching (re no. 1). Services and qualities received in relation to their needs and offers marketed by competitors are at least no push factor to consider switching. It is questionable in how far regulatory requirements for the provision of more and comparable information can contribute to reducing this share of subscribers. An increased differentiation in the Internet access offers including service differentiation by individual operators seems most meaningful to increase competition.
- Satisfaction is also the second-most-cited reason not to switch although switching was already considered (re no. 2). Answers regarding no. 5 and 6 as well indicate that competition is functioning as subscribers deliberately decided not to switch their provider as it offers better value for money compared to others.
- Often, complicated process and technical issues when switching providers are raised regularly as key reasons for customers not to switch. This has for example led to the one-day-switching rule¹¹ in the latest review of the telecoms regulatory framework. However, the survey (re no. 4, 7, 9, 11) does not prove that a relevant number of subscribers feel this being a major hurdle. In any case, in practice switching will be much smoother now that the new rule has been put in place. This new rule should be given a few years to show in how far it has actually helped to ease switching.
- The question regarding no. 3 could be understood as if bundles would hinder customers to switch. However, the question is misleading as of course customers have considered switching as they actually have just switched their provider. As well the new regulatory framework¹² requires a maximum contract term of 24 months and the obligation to offer services on a maximum contract term of 12 months. Customers can benefit from lower prices if they opt for a longer contract term and bundled offers (re no. 8, 10). This, in fact, does contribute to increased competition as undertakings try to attract customers from other providers. Again, these very new rules still need time to unfold full effect on the market.

b) How should an ISP inform consumers of changes to their packages?

Customers should be notified about any changes to their contract. The new regulatory framework¹³ massively increased the items which have to be included in consumer contracts. There should not be any obligation to inform customers individually about the many parameters which could change over time, often without influence by the provider, beyond what has been laid down in the contract. Moreover, the new regulatory framework¹⁴ already foresees rules for the publication of information. For these recent rules to show their effect on the market, more time is necessary.

¹¹ Art. 30 para. 4 Universal Service Directive (USD) 2002/22/EC as amended by 2009/136/EC.

¹² Art. 30 para. 5 USD.

¹³ Art. 20 USD.

¹⁴ Art. 21 USD.

c) What actions by an ISP would constitute a breach of contract or modifications to the contractual conditions which would enable a consumer to be released from a contract?

The new regulatory framework¹⁵ provides an exhaustive response to this question. Customers have a right to withdraw in case of unilateral changes to the contract.

d) Should customers be able to easily opt out from certain contractual restrictions (up to a completely unrestricted offer) by the same operator?

Not if the restriction was made transparent and the customer has willingly and deliberately entered the contract.

If this would constitute signing a new contract, however, no provider is likely to object such an upgrade of the contract value.

e) Do you think that a customer should be allowed to switch **to another operator** within a reduced contract termination period in case his/her current operator does not at all offer an unrestricted Internet access product or does not allow switching to such unrestricted offer?

The question appears largely hypothetical. Network operators offer their customers a range of access offers, many of them without service-specific restrictions. An operator would moreover not have an incentive to prevent a customer upgrade to a higher-value tariff.

In the specific situation described in the question, if the customer has willingly and deliberately signed up to an offer including restrictions of specific services it would not be appropriate to grant an exceptional right to early contract termination. The new regulatory framework allows differentiated services offers and moreover protects the customer from service degradation after entering into a contract. We note that the legal situation may however vary in function of the way the regulatory framework has been transposed in member state.

Question 19: *(all respondents)*

While there may be valid (technical) reasons why consumers do not always get the advertised service speed or quality, should there be a limit on the discrepancy between advertised and actual service parameters (e.g. speed)?

No.

Please explain your response. If you consider that there should be a limit on the discrepancy, how should this limit be defined?

Telecoms is not the only industry where discrepancies between advertised quality parameters and actual delivery may occur. Explicit obligations on network operators in this field have been introduced with the implementation of the EU framework into national law. Operators for example have been required to specify the minimal service quality directly in the contracts. Operators also advertise the minimal service quality on their websites, in order to ensure transparency

¹⁵ Art. 20 para. 2 USD.

to consumers. Information on up-to speeds as well as minimum speeds provides consumers with the essential information on the performance of the connection (s. above responses on transparency requirements on average speeds).

To limit the discrepancy between advertised and minimum speeds would not be technologically neutral, as deviations, e.g. depending on the number of customers using a shared capacity (in a mobile cell, over cable or over DSL) vary between technologies. In mobile, the sharing of limited resources (spectrum) among different users and the mobility of users make it almost impossible to predict the number of customers present at one location (one cell) in a given time and make it more complex to ensure the expected QoS and availability performance in the mobile networks. In the case of internet access through smartphone or tablet it must also be considered that the quality of the customer's device significantly influences the quality of service and is outside the operator's control.

Question 20: *(all respondents)*

Pursuant to Article 30 (6) of the Universal Service Directive conditions and procedures for contract termination shall not act as a disincentive against changing service providers. How could changing of operators be facilitated? Please provide examples and explain your response.

The freedom of customers to terminate contracts with the ISP and switch to another ISP is protected by contract law and has been strengthened by the revised EU Directives of 2009. The new EU framework has introduced a shorter timing of migration, imposing a one day number portability prescription and has reinforced consumer protection in the field of contract lengths. The framework strikes a pro-consumer balance in this field and we do not see a need to further encourage a change of service providers outside of an effective implementation of the new provisions.

Question 21: *(all respondents)*

How could the transparency of bundles (packages including telephony, Internet, TV) be improved for consumers and how could switching be facilitated in the presence of bundles?

Bundles are offered in a transparent manner today as the corresponding contract is often composed of various sub-contracts that define the terms of conditions for specific elements of a bundle product.

As explained in question 18 a) switching is not considered to constitute a value in itself. As the production of bundled products involves economies of scope, bundled products may be offered at more favourable prices than the sum of the single components which constitute a bundle. Thus, customers are incentivized to choose a bundle both because of the price as well as for the convenience of "one stop shopping". As long as alternative offerings can produce a similar bundle- a question covered by the competition framework - it is up to the customer to choose the product of his or her liking. ETNO believes that there is no need to interfere in competitive retail markets by creating artificial switching incentives by facilitating the opting out of bundles through regulation.

Question 22: *(all respondents)*

a) How important would be the benefits for end-users of improved transparency and facilitated switching?

Improved transparency is enabling informed customer decisions. It is important to enable customers to make an informed choice for the product that best meets their needs. Once a contract is concluded, there needs to be legal certainty for all parties involved.

b) What would be the expected benefits in terms of innovation by new businesses (content or applications) as a consequence of improved consumer choice and increased competition between ISPs?

European member states have highly competitive fixed and mobile broadband markets. The added value of measures to encourage switching increases with the degree of market failure. On EU markets, such actions would appear to result in extra costs rather than benefits, by increasing competition and reducing planning certainty on an already competitive market which can translate into reduced incentives to invest and innovate

What could be beneficial for innovation is to maintain flexibility to segment offers in order to better answer consumer needs that may not be satisfied today.

Question 23:

Would the facilitation of switching for consumers trigger any (administrative) costs for ISPs?

Yes. If the consequence was a large increase of switching activity this would increase the required administrative resources to process transactions within the legally prescribed time frames. This would ultimately result in increased (administrative) costs.

3. IP interconnection issues

Question 24:

a) In your view, are there any problems regarding IP interconnection arrangements (between network operators, ISPs, transit providers and/or content providers) that could have an impact on the quality of the best effort Internet?

ETNO supports commercial agreements along the value chain for IP Interconnection. We do not call for regulation of IP Interconnection markets by national regulators, the European Commission or other bodies.

However, ETNO has expressed repeatedly its concern over a current imbalance in the internet value chain. In the field of IP Interconnection asymmetric traffic flows in many cases are not compensated through payments. While peering arrangements work fine between “peers” that transport roughly equal amounts of traffic the massive increase in particular of video traffic has created persistent imbalances that require a new equilibrium between network operators and content and application providers that reach end-users over the network. Adequate commercial arrangements – for example compensation based on specific quality of service or the value of the traffic - should be facilitated by a light-touch regulatory policy that does not asymmetrically burden one part of the internet value chain, namely access network operators.

Market driven economic arrangements along the internet value chain should ensure that network operators are in the position to deploy additional capacity to match increasing demand, thereby avoiding a scenario that involves more network congestion despite the absence of any quality degradation from the network operator side.

b) Are there any specific issues related to the vertical integration of ISPs and transit providers?

The interconnection business provides incentives to gain efficiency through vertical integration. This does not create a problem in the highly competitive global market for IP transit.

Question 25:

Direct peering, Content Delivery Networks (CDN) or Quality of Service Interconnection (between ISPs and content providers) are being developed to propose an enhanced quality of service for content providers and end users.

a) What role can they play in reducing the risk of network congestion?

The main contribution of Content Delivery Networks with regard to network congestion is that they reduce the volume of traffic on the international backbones. By hosting “blockbuster” content closer to the end user they free up capacity for “long tail” content (which will not be hosted on a CDN due to comparatively lower demand). It should be noted that not all types of content streams are delivered via CDNs (services like instant messaging or email are not).

Quality of Service Interconnection is contributing twofold. First it provides an efficient economic mechanism to prioritize traffic in the congestion case. Today packets are dropped randomly in the congestion case and there is no mechanism which allows prioritization according to economic value, i.e. its utility to the end user. Second, billing quality transport will bring additional revenue that may be invested in capacity increases. Hence, overall capacity is growing stronger due to increases in revenue and a portion of the previous best effort traffic is moved to alternative routes, thereby freeing up existing capacity to be used to transport best effort traffic.

b) What opportunities and threats do they constitute for:

(i) ISPs,

Both CDNs and quality based interconnection present opportunities to increase the revenue base for network operation as well as cost savings through more efficient utilization of transport capacities.

(ii) content providers,

Both CDNs and quality based interconnection present opportunities to CPs as they allow to further differentiate the offerings and allow tailoring the Quality of Experience according to the content. They present alternative production options in parallel and on top of best effort and hence increase choice as well as the basis to create innovative new services that depend on guaranteed quality.

(iii) transit providers and

Quality based interconnection present opportunities to increase the revenue base for transit providers as well as cost savings through more efficient utilization of the

transport capacities. CDNs will reduce the amount of traffic transported which as a first effect reduces revenue compared to a situation without CDNs. However, the freed up capacity may be sold to other customers and the revenue loss may be compensated.

(iv) end users?

End users profit in all cases from the increased quality of experience and from more differentiation in the commercial offerings.

c) Are there any barriers of a regulatory, technical or business nature that prevent market players other than ISPs from playing a more important role in reducing the risk of network congestion?

We are not aware of any such barriers. What is lacking to spark such a development, however, are clear economic signals that transport capacity is a scarce resource.

4. Process

Question 26: *(all respondents)*

a) Do you consider that intervention by public authorities is necessary at this stage?

No, there is no need to intervene in the competitive markets for retail broadband access or for IP connectivity.

b) What would be the consequences of divergent interventions by public authorities in the EU Member States?

Divergent intervention would risk creating distortions in the single market and in a global market for the provisioning of internet based services. ETNO invites the Commission to act in a decisive manner under the EU Treaties against legislation aimed at preserving 'net neutrality' but *de facto* undermining the development of differentiated service offers and/or new business models, as well as regulatory measures at national level with the same effect.

Question 27:

a) Have you made use of the dispute resolution powers under the Framework Directive in relation to a dispute about traffic management practices?

[ETNO as an industry Association is not a potential party to such proceedings.]

b) Have you also made use of these dispute resolution powers also in relation to disputes between an ISP and a content provider?

(-)

c) If you have made use, please explain under which circumstances. If you have not made use, please explain whether you consider that these dispute resolution powers would be an appropriate tool for such Internet traffic management disputes?

(-)

Question 28:

Do you consider that regulators should monitor interconnection agreements between providers?

There is no need to establish a systematic monitoring process in the globally competitive market place for IP connectivity. This applies notwithstanding the powers of NRAs under the provisions of the Access Directive

Question 29: *(all respondents)*

Under article 22(3) USD NRAs have the power to set minimum quality of service requirements on undertakings providing public communications networks. In a scenario where in a given Member State no unrestricted offer is available (for instance because all operators actually block VoIP), do you consider that the "minimum quality of service tool" should be applied by the NRA to require operators to provide certain unrestricted offers?

ETNO agrees that the availability of unrestricted offers should be analysed at the market level and that in a situation where the market does not provide unrestricted offers to end-users an NRA would have reason to act under the present framework. As emphasised by the Commission, the EU framework clearly allows for service limitations/restrictions as long as they are transparently communicated.

The outlined scenario is, however, currently relevant in one member state only. This indicates that as a rule market forces ensure that unrestricted offers are available without a need for regulatory intervention. In our interpretation, Article 22 (3) USD is a safeguarding power that provides NRAs with an instrument to react to market failures that result in active degradation of (best effort) transport capacities.

To conclude, we share Commission's view that the non availability of any unrestricted offer on a domestic market would legitimately attract the attention of regulators. The action to be taken and the legal means to be used would depend of an accurate diagnostic of the reasons explaining the situation in the market and should be tailored to the specific case.