

ETNO Response to the BEREC Consultations on: Guidelines for Quality of Service in the scope of Net Neutrality – BoR (12) 32 and Differentiation practices and related competition issues in the scope of Net Neutrality – BoR (12) 31



July 2012

Executive Summary

- ETNO supports the central goal of BEREC and the European Commission to preserve an open Internet in Europe, ensuring that consumers and businesses have access to all content, applications and services of their choice in competitive electronic communications markets.
- The NRA competence to set minimum quality of service (QoS) requirements under Article 22 (3) of the Universal Service Directive (USD) is an important reserve power available to regulators if a serious degradation of the quality of citizens' access to the Internet would occur. Its use should be confined to situations where competition, underpinned by the transparency provisions of the regulatory framework, would no longer ensure that access to information, applications and services of the user's choice is provided by the market.
- Minimum QoS requirements under Art. 22 (3) USD are not an appropriate tool to regulate commercially agreed service differentiation of the Internet access service. BEREC's draft QoS guidelines unfortunately address the technical implementation of such differentiated commercial offers as a quality of service issue. This is *inter alia* reflected in an artificial technical categorisation of traffic management into "reasonable" and "unreasonable" practices. The final QoS guidelines should acknowledge that the EU framework does not preclude differentiated Internet access offers and does not include a preference for a neutral delivery of data packages over networks.
- Differentiated service offers for the Internet access service that respond to different consumer needs improve the market outcome for consumers, CAPs operators and support investment and innovation in the Internet. Offers providing different quality for access to the Internet or specific types of applications at different price points should be supported as long as they do not unduly discriminate between individual applications.
- A monitoring of quality of service in view of potential quality degradations should be considered only with regard to the Internet access service as a whole,

not regarding individual applications delivered over the IAS or regarding 'specialised services'.

- ETNO in principle supports the proposed differentiation between the Internet access service and 'specialised services'. The definitions may, however, need further clarifications. Depending on the approach to specialised services, a broader definition of the latter may also be required.
- ETNO challenges the idea of an asymmetric SMP-based QoS related regulation. ETNO believes that all transparency requirements and any kind of QoS rules must – if at all – apply to all market players.

I. Introduction

ETNO welcomes the opportunity to further broaden the constructive dialogue with BEREC on the European regulatory approach to the Open Internet and net neutrality. ETNO supports the central goal of BEREC and the European Commission to preserve an open Internet in Europe, ensuring that consumers and businesses have access to all content, applications and services of their choice in competitive electronic communications markets.

In pursuing this goal, the whole value chain should be taken into view as consumers' ability to access content and applications can be affected also by technical and commercial choices of Content and Application Providers (CAPs), device manufacturers or CDN providers.

The present comments cover both the BEREC draft "Guidelines for Quality of Service in the scope of Net Neutrality – BoR (12) 32" as well as the draft BEREC report "Differentiation practices and related competition issues in the scope of Net Neutrality – BoR (12) 31".

ETNO acknowledges BEREC's important work in the implementation of the Open Internet related provisions of the EU framework so far. ETNO members actively contributed to the BEREC fact finding exercise on traffic management practices in Europe, resulting in the market overview contained in BoR (12) 30.

ETNO is concerned that the two present draft documents, building on previous BEREC work on quality of service could trigger disproportionate intervention in the future. Our comments therefore challenge a number of the assumptions underlying the reports.

At a procedural level, the present set of three BEREC consultations could have benefited from a stronger coordination.¹ Transparency, quality of service and 'competition issues', as well as certain elements of IP Interconnection, could in the future be covered by one set of experts / one Expert Working Group of BEREC.

ETNO also notes that several days before expiry of the ongoing three BEREC consultations on the topic, the European Commission has launched its second consultation on net neutrality. Although we welcome all steps that can help to improve transparency and the quality of EU regulation, we invite the institutions involved to coordinate even more in the future.

II. Specific comments on BoR (12) 32

1. Comments on chapter 3 of the draft guidelines:

In order to facilitate the understanding of the responses to questions 1 - 4 of the consultation document, it is appropriate to comment on the general regulatory approach of BEREC as outlined in chapter 3 referring, where appropriate, also to the previous chapters.

The NRA competence to set minimum quality of service (QoS) requirements under Article 22 (3) Universal Service Directive (USD) is an important reserve power available to regulators if a serious degradation of the quality of citizens' access to the Internet would occur. Its use should be confined to situations where competition, underpinned by the transparency provisions of the regulatory framework, would no longer ensure that access to information, applications and services of the user's choice is provided by the market.

ETNO welcomes the assessment of BEREC that the imposition of minimum QoS requirements should be considered as an intrusive remedy and that applying any such measures pre-emptively would require proving the seriousness of a problem or threat (p. 11).

We also fully agree with BEREC in the central role of transparency, and that it is a precondition for a competitive and transparent market that end users are aware of the contractual terms of the services offered.²

¹ There are for example numerous overlaps between the two consultation documents on quality of service and competition issues, witnessed by many cross-references

² Which need not, in our view, necessarily comprise the measurement tools for users to control that terms and conditions are fulfilled, as stated on p. 21. This would at least be deviation from practice in other fields of commercial activity.

ETNO is concerned, however, that the conceptual framework outlined by BEREC in chapter 3 of the consultation document introduces a bias that could lead to a disproportionate intervention at a later stage in the analysis, namely resulting in regulation in cases where the regulatory objectives of the EU framework – such as the ability of users to access information and run services and applications of their choice (ART. 8 (4) g Framework Directive) – are not under threat.

Without entering into all details of the conceptual discussions in chapter 3 and in BEREC’s framework for analysing quality of service issues, ETNO believes the following steps/distinctions are not appropriate and should not form the basis of QoS requirements under Article 22 (3) USD.

- Contractual limitations in IAS services are not a trigger for QoS requirements

- Article 22 (3) empowers NRAs to impose quality of service requirements, and as such is not a legitimate basis for regulating retail service offers. Measures under Art. 22 (3) should not be triggered by contractual elements of an individual service package.
- If consumers – provided they are duly informed under the open Internet-related transparency provisions of the framework - opt for a service package that, for example, limits access to a certain application that foresees a user-specific service provision in the case of network congestion, then managing networks in line with these contractual terms and conditions clearly does not constitute a problem of quality of service.
- Accordingly ETNO invites BEREC to reconsider its understanding of ‘“*traffic management*” in a broad sense including both contractually binding and technically enforced restrictions’ (p. 27)
- More importantly, contractual limitations and their implementation should not trigger a “regulatory process” as described on p. 31 f. of BoR 12 (32). This would only be the case where the overall market is characterised by these types of offers which would in turn result in limitations to the overall Internet access service for citizens.

- Traffic management should not be categorised as “reasonable” and “unreasonable”

- ETNO strongly opposes the categorisation of traffic management as “reasonable” and “unreasonable” as is done in BoR 12 (32) and earlier BEREC documents.³

³ In the context of transparency it may be useful to differentiate between purely technical measures (e.g. to fight Spam), and commercial restrictions, in order to ensure that information to consumers focuses on measures mostly affecting their access to content, services etc. These categories of information could be termed “technical” and “commercial”. The use of “reasonable” and “unreasonable” appears inappropriate also in the BEREC transparency guidelines, BoR 11 (67).

- The EU framework does not provide a basis for this differentiation. Any categorisation of traffic management should be factual and neutral regarding consumers' choices.
- As regards the *a priori* categorisation of certain service-specific traffic management measures as “unreasonable”, BEREC’s approach contradicts Article 1 (3) of the Universal Service Directive which clarifies that the EU framework “neither mandates nor prohibits conditions [...] limiting end-users’ access to services and applications”.⁴
- It should be clarified that this does not mean that ETNO considers all traffic management practices as admissible. Anti-competitive traffic management practices inflicting harm on consumers should be sanctioned by regulators.

- General preference for “application agnostic” traffic management appears unjustified

- Chapter 3 introduces the distinction between service-specific and service agnostic traffic management. Later in the QoS draft (s. chapter 5.3.2), BEREC expresses a preference for “application-agnostic” management over service-specific measures.
- This preference is not derived from the EU framework and appears to contradict an efficient state-of-the-art management of electronic communications network, as measures tailored to specific types of services can provide better outcomes for consumers overall.

- Asymmetric regulation is not an appropriate means to safeguard the Open Internet

- In the draft QoS Guidelines, BEREC appears to open the door to an asymmetric regulation, not only at the level of network access (SMP-regime) where asymmetric regulation is applied under the EU framework, but also in relation to specific open Internet-related obligations.
- In part 3.2.1, an imposition of obligations only on the SMP-operator is considered. Also, stricter or more comprehensive minimum QoS requirements on SMP providers are considered.
- ETNO members believe that transparency requirements and potential further guidance must apply irrespective of the market position of operators. An asymmetric approach would have the consequence of distorting competition and inducing different levels of regulation affecting different end-users.

- Definition of IAS should not exclude “technical limitations”

- BEREC states that “By default, an Internet access service is provided with neither contractual nor technical limitations on the use of the service, whether this is in the shape of throttling or blocking of specific content or applications. This kind of

⁴ Article 1 (3) Universal Service Directive 2002/22/EC “This Directive neither mandates nor prohibits conditions [...] limiting end-users’ access to, and/or use of, services and applications, where allowed under national law and in conformity with Community law, but lays down an obligation to provide information regarding such conditions.”

limitations is in this report referred to as “restrictions”. Deviations from this default rule may be categorised as being either reasonable or unreasonable restrictions.”⁵

This definition is not helpful as it limits the term “Internet Access Service” to a completely unmanaged access line, which may prove to be an inefficient way of providing Internet access in the future. “Technical limitations” stemming from congestion could prove to be more severe than those resulting from efficient traffic management on the Internet access service. As in other parts of the report, the definition reveals an apparent preference of BEREC for a “neutral” transport of data packages which cannot be derived from the EU framework.

- Definition of specialised services should be further clarified

- ETNO supports in principal the distinction made by BEREC between Internet access services and specialised services.
- BEREC’s definition of specialized services is however to be clarified and eventually broadened. The concept of “closed networks” is not defined accurately and may lead to an excessively narrow definition of specialised services. For instance, specialised services cannot be understood as necessarily run over the network of only one ISP (“closed” within one network). End-to-end QoS connectivity between different networks should also be considered. Furthermore, as specialized services do not always fulfil the statement on page 27 "only encompasses the underlying electronic communications service component, and excludes the application layer" we find this paragraph questionable and notably the concept of “vertically integrated services”.

- The “regulatory process” should be simplified and aligned with Art. 22 (3) USD

- The process described on p. 33 should in particular avoid any foregone conclusions on the appropriateness of certain traffic management practices. Comments on this point are summarised under 3. / comments on question 3 below.

2. Q1 and 2/Chapter 4:

What are your views on:

- 1. The criteria proposed for the assessment of degradation of Internet access service as a whole? (Ref. chapter 4)**
- 2. The criteria proposed for the assessment of issues regarding individual applications run over the Internet access service? (Ref. chapter 5)**

⁵ BoR (12) 32, p. 27

Note: *The response will focus on the assessment of degradation of IAS as a whole and not elaborate on issues regarding individual applications.*

For an objective and comparable approach to assessing IAS, quality monitoring activity should be limited to the IAS as such, i.e. the Internet access provisioning,

- without a specific focus on individual applications in the public Internet
- (ii) without a focus on the performance of specialized/managed services.

(i) The quality features of the Internet access service reflect all the relevant parameters that determine the functioning of individual applications and services. Measuring the performance of individual applications would therefore not provide information which goes beyond the measuring of the quality of the general Internet access service, but would introduce major complexity and expose NRAs to criticism on the choice of applications they would measure. Measuring the performance of individual applications will moreover be impracticable in many cases as it is difficult to identify whether problems stem from network deficiencies, the application software itself or terminal incompatibility. Moreover, commercial restrictions such as possible service-specific limitations that the user has agreed to in his contract should not be considered as an issue of quality of service (s. above).

(ii) As explained by BEREC, specialised services are characterised by a contractually agreed level of quality and should be outside of the scope of application of Art. 22 (3) USD.

Regarding the criteria proposed for the assessment of degradation of the Internet access service as a whole, ETNO agrees that it should be judged over a longer time period and notes that BEREC considers that different approaches could be followed by NRAs if deemed necessary.

It is important to note that the decision as to whether monitoring measures need to be undertaken must in itself be proportionate. In the field of the performance of the IAS as a whole in the overall market, there could be market situations in which quality monitoring would be a proportionate supplement to transparency measures. This should be established in each case and subject to a proportionality test.

Where it is carried out, quality measurement should be done according to common, well established and if possible international standards to assure the validity of the measurements. Measurement should focus on the elements of the network that the ISP is solely responsible for (i.e. the aggregation and access network, excluding for example the Interconnection port). Such an approach best corresponds to BEREC's concept of network performance laid out in chapter 1 of the draft report.

ETNO does not share BEREC's assessment that platforms allowing end users to carry out quality measurements of their IAS for themselves are good sources of information about the general quality level of IAS offers in the market.⁶ With regard to the monitoring of quality as perceived by end users (QoE), BEREC acknowledges that this does not give an accurate measurement on which a regulatory decision should be based.⁷ Issues like the impact of end user's equipment and/or operating system and the fact that any ISP has only the ability to control his own network are determining factors in this regard. As BEREC points out, specifying relevant quality parameters and measurement methods for electronic services in general – and for the IAS in particular – should be subject to European and international standardisation.

ETNO agrees with BEREC in stating that it is particularly complicated to evaluate performance of mobile IAS because of the varying conditions for the wireless access links and because the mobility of the end users causes rather unpredictable loads in different cells.⁸

Regarding prioritized IAS (4.1.4 p. 40), in particular on mobile networks, it should be recalled that in a competitive environment, it is in the ISP's obvious interest to provide quality for its non-prioritized services with which the end users will be happy. It is the ISP's duty to manage its network in a way all its clients receive the expected quality, in function of the offer for which they subscribed.

Finally, ETNO believes the discussion on advertised vs. actual speeds is an important consumer protection issue, but not one related to the open Internet debate or Art. 22 (3) USD. It is mainly a transparency issue to be addressed within the dedicated BEREC work stream.

3. Question 3 / Chapter 6:

What are your views on the aspects proposed regarding the conditions and process for regulatory intervention?

The "regulatory process" designed by BEREC and described on p. 33 of BoR 12 (32) is based on a number of the assumptions that are challenged under points 1. and 2. above.

Some elements in the regulatory process description (id., p. 33) are welcome and should be maintained, such as the subsidiarity of minimum QoS requirements to other tools such as transparency requirements and the reference to the functioning of

⁶ BoR (12) 32, p. 38.

⁷ BoR (12) 32, p. 41.

⁸ BoR (12) 32, p. 39.

the market as a whole (“market level situation”). NRA should also take into account the complexity of the Internet value chain as other players’ choices can impact the end-user experience as well (for example manufacturers of connected TV or smartphones, tablets).

In light of the previous comments and notwithstanding these positive elements, we invite BEREC to propose in its final guidelines a more simple analysis framework, which would be closer to the technical nature of quality of service requirements and more in line with the underlying EU legal framework. Such a regulatory process could comprise four cumulative conditions which would have to be met:

- i) There is a degradation of the quality of Internet access service which affects the Internet access of citizens in the market as whole in a significant and not only temporary manner
- ii) the NRA demonstrates that the market itself is not able to provide users with access to content, applications and services at a sufficient quality level, i.e. there is a market failure, and
- iii) the NRA demonstrates that less distortive instruments such as transparency requirements have proven insufficient to solve the problem
- iv) Given all these conditions are met, the measure would be proportionate as a ‘last resort’ remedy, balancing costs and benefits of a regulatory intervention.

Would the four conditions be met, stakeholders should have the opportunity to comment on the intended measures through a public consultation similar to what is provided for in Article 6 of the Framework Directive.

This approach would in particular prevent any foregone conclusions on the appropriateness of certain traffic management measures - a clear weakness of BEREC’s current approach (s. in particular pt. 5.3.2 of BoR 12 (32)).

The four conditions are in fact not likely to be met in EU broadband markets today and, if current trends continue, in the future. Due to strong competition in the broadband access markets any network operator that would intentionally degrade the best effort Internet provision, e.g. in order to promote managed, QoS-based services (this is implied as a realistic option in the BEREC draft report “An assessment of IP-interconnection in the context of Net Neutrality⁹), would lose customers to alternative ISPs and seriously undermine its reputation as a high-quality provider. As shown by comparison websites, blogs, advertising etc., fixed and mobile network operators do not only compete on price but also on the quality of their Internet access offers. BEREC rightly observes that in a competitive market, ISPs have incentives not to degrade their end users’ traffic.¹⁰ For the same reason, one should not consider specialised services as a threat to

⁹ BoR (12) 33

¹⁰ BoR (12) 32, p. 52.

the quality of the open Internet. On the contrary, specialized services are one of the main drivers allowing for the monetization of network investment needs and therefore increase the overall capacity of the network, thus also the quality of the open best effort Internet.

Equally, differentiated retail service packages which limit access to certain services and applications will exist alongside unlimited offers both by the same operator and by competitors. We agree therefore with BEREC that any measure aimed at preventing a potential anti-competitive practice would be second best compared with a scenario where the market develops in an effectively competitive manner.¹¹ Differentiated retail offers provide customers with the choice of opting for simpler offers at a lower price. Vice President Neelie Kroes has recalled in a recent statement that it is essential for operators to be able to offer differentiated bundles¹². BEREC appears to focus unilaterally on the negative effect of limited offers for subscribers. It can be legitimate for subscribers to choose not to have access to some applications that they view as non-essential or even intrusive / impracticable.

Also, minimum QoS requirements should not be applied as a substitute for universal service requirements, i.e. in order to reach a desirable level of service, but exclusively serve the purpose of safeguarding against active and persistent degradation of the IAS service level under Art. 22 (3).

Finally, ETNO is concerned with the draft report's finding that in some cases, *i.e.* full implementation of other regulatory tools taking too much time, it "may be necessary to establish minimum QoS requirement relatively quickly as a temporary measure"¹³. It is contrary to the rationale of Article 22 (3) being a last resort competence which requires deep assessment of the situation before any regulatory intervention.

4. Question 4:

To what extent are the scenarios described in these guidelines relevant with respect to your concerns/experience? Are there additional scenarios that you would suggest to be considered?

In this context, it is important to recall that there is only one country with serious restrictions of VoIP in the mobile market according to the BEREC survey on network management practices. Most of the European operators are either allowing their customers to access VoIP or are providing them with specific bundles to do so.

¹¹ BoR (12) 31, p. 9.

¹² Speech reference

¹³ BoR (12) 32, p 57

Competition is thus efficient in delivering wide access to services and applications to customers.

III. Selected comments on BoR 12 (31), differentiation practices and related competition issues

BEREC acknowledges the important and increasing role of manufacturers of devices, software and hardware solutions in the broadband market but does not include this in its draft report on competition issues.

This category of actors should also be addressed by the report, notably manufacturers of connected TV devices and the associated software providers. They are usually multi-national companies with a strong market position, often stronger than that of the access providers, and their behaviour on the market vis-a-vis the end-user and operators should be the subject of an investigation of competition issues in the context of the Open Internet as well.

In our comments on the draft QoS guidelines above, we have raised concerns about the fact that one element used by BEREC to define relevant regulatory tools lies in the presence of SMP. BEREC refers to a provider having SMP on a retail market, while retail markets in the EU are mostly competitive. Similarly in the draft Competition report, chapter 4, BEREC proposes to analyse the functioning of two specific markets: the retail broadband market and the traffic delivery market as described in figure 5 of that report, whereas:

- retail broadband markets have not been regulated within the EU as they are competitive, especially when looking at the mobile segment;
- the traffic delivery market, market 5 in that report, is equally not included in the list of markets susceptible to ex-ante regulation, and moreover not clearly defined by BEREC.

While BEREC's analysis is thus based on a rather theoretical situation, it still risks giving the negative impression that an ISP may have SMP and behave wrongly. We invite BEREC to nuance this analysis and mention explicitly that those markets have not been identified as relevant for ex-ante regulation, and are thus governed by competition law only. An ex-ante regime can only apply in cases where competition law has proven to be insufficient and requires the 3 criteria test, included in the Commission Recommendation on relevant products and services markets, and to find SMP in those markets.

Finally, it seems important to highlight that the conclusions of the two consultation documents do not seem fully aligned. It appears that QoS provisions are qualified as an appropriate tool to intervene in case there is no SMP (draft Competition report p 44 § 204 and p 66 § 340) while the draft QoS report concludes that promoting competition through the SMP regime, or in case there is no SMP through transparency and switching may be a sufficient response (p 56).

We therefore invite BEREC to ensure consistency of the two reports and confirm that the best way to ensure the quality consumers require is through competition and transparency, as clearly stated in the BEREC explanatory paper on the 3 consultations: “NRAs will first rely on their competition powers and their ability to impose transparency obligations.” Article 22 USD must be seen as a kind of last resort remedy as further explained above.

- VoIP as an example for limitations on accessibility of services and applications

BoR 12 (31) refers to the situation where a number of mobile providers do not allow the unlimited usage of VoIP services from third-party providers in every tariff. This measure cannot be considered *per se* as anti-competitive discrimination as customers always have the option to choose a specific tariff plan which allows the use of VoIP services or to change network operator. Some operators have opted to proactively integrate third party VoIP offers in their own products and have adapted their network design to accommodate for this. While there has been a time when mobile VoIP services were not accessible on any network in certain countries this situation, according to the BEREC overview of traffic management measures in Europe this has been remedied by competition with the exception of one country. This demonstrates that market solutions will provide the offers that meet customers’ needs.

While acknowledging that “ECPs should have the opportunity to, [on] a non-discriminatory basis, manage their networks to increase efficiency, minimising the resources needed to provide the service and assuring the best deal to all end users” the draft report so far does not acknowledge the economic efficiency gains resulting from an increasingly tiered portfolio of products and services. Diversity of offerings is a key characteristic of competitive market outcomes and therefore should be supported in principle. Commercial differentiation is the best means to achieve an efficient allocation of a scarce resource.

In this context, both draft documents should put in perspective the consideration of a network effect resulting from (non-)accessibility of certain applications. Any negative effects of a network would have to be balanced against positive welfare effects of efficient resource allocation on electronic communications networks. To take the example of VoIP, the degree of the network effect may be less marked than presented in the draft report. If a customer does not value a specific application such as VoIP, he or she will be unlikely to install it on an end-device, effectively leading to a similar result as in the case of contractual limitations.

- P2P as an example of application-specific traffic management

Evidence has shown a tendency for high-value quality-sensitive services to be crowded out by services which have a low economic value (e.g. file sharing) and are less sensitive to the quality of the transport service. This results in economic inefficiency due to decreased user experience as well as limited business revenues in

these markets. In such situations, innovative services requiring high quality levels may not be developed at all even if they would meet a willingness to pay in the marketplace. This in turn has a negative impact on economic growth and employment.

In theory, it might be possible to avoid severe congestion problems by building up large reserve capacities in order to assure that all network traffic can be forwarded immediately, even in the situation of extremely short-run peak loads. In view of expected traffic volume and service trends, ETNO believes that such a strategy of over-provisioning capacity is not economically efficient and unnecessarily burdens network operators with costs of investing in capacity upgrades where efficient traffic management solutions are available.

ETNO is confident that the current framework grants markets the necessary freedom to develop innovative products in a competitive environment. ETNO members aim to meet their customers' expectations with regard to service quality and choice, and only apply traffic management measures that support this goal. NRA intervention should encourage, not artificially impede such solutions.

ETNO response to BEREC Consultation on "An Assessment of IP-IC in the context of Net Neutrality" - BoR (12) 33



July 2012

Executive Summary

- ETNO welcomes the opportunity to comment on BEREC's draft report on IP Interconnection ('IP IC') in the context of Net Neutrality.
- ETNO supports BEREC's overall finding that regulation in the area of IP Interconnection is currently not appropriate.
- ETNO members are confident that market forces can also in the future arrive at efficient charging mechanisms for best effort and QoS traffic. The principles outlined in this response are relevant in the context of commercial negotiations and should be taken into account by regulators when confronted with interconnection disputes between market parties and in the context of policy initiatives in the field of net neutrality.
- The future IP Interconnection environment should encompass both best effort and Quality of Service-based Interconnection. Introducing Quality of Service-based Interconnection as a supplement to current models for improving the quality of content, applications and services provided over the Internet would benefit both consumers and the different industry players in the internet ecosystem.
- The current system of IP peering does not mean that traffic is transported 'for free' but that peering partners turn to billing exchanged traffic under certain conditions, typically a near symmetry of the amount of traffic exchanged between them. Transport of data traffic comes at a cost which should be acknowledged in BEREC's conclusions on IP IC.

I. General Comments

1. Starting point for BEREC's assessment

ETNO encourages BEREC to aim for consistency between the present report and BEREC's draft QoS guidelines in the scope of net neutrality BoR (12) 32.

Parts of the present report discuss potential "violations of net neutrality", starting from a literal interpretation of the net neutrality concept included as a general reference in an earlier report of BEREC.¹ BEREC's draft QoS guidelines acknowledge that the main EU framework provision guiding the BEREC work stream on net neutrality is Article 8 (4) g Framework Directive which states the objective of promoting end-users' ability to access and distribute information and run services and applications of their choice.

We believe it is also important that in the present report the effects of different IP IC practice on the open internet are assessed strictly on the basis of the EU Directives and not in relation to net neutrality concepts from literature or other jurisdictions.

An overly broad understanding of the regulatory objective (i.e. an understanding of "net neutrality" not derived from the EU regulatory framework) could unduly bias BEREC's policy conclusions against IP Interconnection models that treat different types of traffic differently, for example to enable Quality of Service (QoS), where such practices are fully in line with the promotion of the open Internet.

The final report should therefore analyse the effects of different Interconnection regimes on end-users' access to content, services and applications in a neutral manner.

2. IP interconnection and Quality of Service

To assess specific elements of the report, it is necessary to outline the technology and market context for IP IC today and in a forward-looking manner.

¹ BEREC's 'Response to the European Commission's consultation on the open Internet and Net Neutrality in Europe' quoted on p. 4 of the consultation document

ETNO believes that the IP Interconnection regime should evolve in line with the requirements imposed by new services, end-user usage patterns and resulting trends in IP traffic flows.

In particular, the provision of service-specific quality of service (QoS) in addition to best effort delivery, including ensured end-to-end QoS-connectivity, will enable new IP-based services and QoS-based business models. Network operators should be in the position to provide QoS-based services to both end-customers and 'over the top' (OTT) content and application providers.

- Future IP-networks as multiservice networks

In the past, every service was realised on its own service-specific network (for example telephony over the PSTN network), to ensure service specific quality requirements were met and to realise certain service specific features.

In contrast, future IP-networks are multiservice-networks. Many services having different requirements in terms of quality (e.g. loss, delay, jitter...) and different service specific features are transported over the same infrastructure. These service specific requirements should be taken into account in IP-based networks and in the context of IP-interconnection among networks.

As described in the BEREC consultation document, today's Internet is based on the best-effort-principle with every service transported via IP-based networks being treated equal on the transport layer independent of service requirements. This means that in the case of congestion services, which are quality-sensitive, these could only be provided with a low QoS performance or would even be crowded out because service provision is not possible in the presence of low network performance.

In order to avoid congestion and the crowding out of quality-sensitive applications, capacity extensions should be complemented by service and customer oriented network management, leading to an improved performance for services with specific quality requirements. Such improvements will be driven by competition. Because Internet access is offered through competition on retail markets, not meeting the performance challenge would result in a loss of customers.

Product differentiation based on quality will increase the variety of offered products and services. This by itself is assumed to increase total welfare.

- Service categories in the context of QoS-requirements

On a general level, one can identify three kinds of services in respect to their QoS requirements:

- services which do not have any QoS requirement (e.g. E-mail, web browsing, P2P)
- services which need relative QoS (e.g. cloud computing, quality-sensitive online gaming, e-health)
- services which need guaranteed QoS (e.g. high-quality-voice (Voice over NGN), IP-TV, but also e-health or gaming applications requiring guaranteed QoS)

The first category of services is characterized by no special QoS requirements, meaning that best effort delivery is sufficient for their realisation.

Compared to the first category, the services of the second category are highly QoS-sensitive (e.g. cloud computing, certain online games, e-Health). For those services, today's best effort IP-transport in the Internet does not produce optimal results and in many cases is not sufficient for their realisation. They are particularly negatively affected by congestion.

The requirements of these services are best met by the implementation of network management supporting different QoS-classes on a transport level (cf. p. 26 f. of the draft report). This means that each traffic flow is mapped into a special class of quality adequate to the requirements associated with the different types of services (jitter, delay, packet loss...). With the IP-typical separation of service/application level from the network/transport level, different QoS-classes on the transport level could enable "relative QoS". This means that the quality could be associated with an IP-traffic flow shared by many applications and services requiring the same quality objectives of IP-transport.

ETNO notes in this context the observation made by BEREC in the draft report that

"Generally, QoS classes at the network layer can be welfare enhancing as long as [users] can make an informed decision. This requires transparency. " (p. 49)

The third category of services, such as high-quality voice or IP-TV, requires guaranteed QoS as known from today's PSTN or TV-networks (also referred to as "managed services" or "specialised services" in the consultation documents). These services will be realised outside the public Internet based on dedicated network resources and, in the case of voice, with dedicated interconnection between these

networks to guarantee the voice specific quality and the voice specific features as described in the consultation document.² At the point of interconnection, session border controllers with dedicated interconnection lines between them will be implemented. In contrast to the other two service categories, in this case an additional control plane builds a link between the application and the network layer to control and manage the service realisation and to ensure and guarantee service specific quality as well as service specific features. QoS for these services is not affected by other services running over the network.

- Status quo of QoS-implementation

As stated in the consultation document, QoS-interconnection has not played a role in the public Internet until now and “the creation of traffic classes within IP-based networks (intra-network performance) is common, [but] the agreement on traffic classes across interconnected networks is either not or hardly available in practice”³.

For the best effort Internet and best effort services which interconnect without regard to QoS this would remain unchanged, also with the introduction of QoS-classes on top of the best effort Internet for the realisation of higher quality for QoS-sensitive services.

Yet with the growth of quality-sensitive services and business models which require at least relative QoS, the need for QoS-differentiated-IP-interconnection will also rise. The realisation of relative QoS in the form of several QoS-classes on top of the best effort-Internet on the IP-transport-layer as well as QoS-differentiated interconnection should therefore be supported and practical problems in this field, especially relating to the coordination among the players, overcome. International standards for QoS-classes over network boundaries should be developed and international standardisation bodies should harmonise their standardisation process on this topic.⁴

As regards services which require guaranteed QoS also over network boundaries (e.g. high-quality voice) via a dedicated IP-based interconnection, there are already initiatives in several countries (e.g. in Germany). The so-called NGN-Interconnection for high-quality voice based on a dedicated transfer of the voice traffic combined with a dedicated interconnection is being introduced notably in France and Germany at present. This NGN-Interconnection is based on technical specifications of national

² BEREC (2012), An assessment of IP-interconnection in the context of Net Neutrality, Draft report for public consultation, 29 May 2012, p. 29

³ BEREC (2012), An assessment of IP-interconnection in the context of Net Neutrality, Draft report for public consultation, 29 May 2012, p. 27

⁴ In this context, ETNO has recently underlined that also the revisions of the ITU- International Telecommunication sRules (ITR) should acknowledge the challenges of the new Internet economy. Particularly, the ITRs should promote more efficient use of networks and support a new IP-interconnection ecosystem that provides both, best effort delivery and end-to-end QoS delivery thus allowing new business models and supporting innovation to provide value-added services and a better use of the assets of telecommunications operators

standardisation bodies which in turn are based on international standardisation work.

- Interconnection regime

In the consultation document, BEREC analyses the charging mechanisms for IP-interconnection. Up to now, Peering and IP-transit arrangements are the dominant charging mechanisms in the Internet.

Peering arrangements are typically settlement free but peering is in principle a paid interconnection regime. It would therefore be a misinterpretation of the current system to consider that traffic is carried for free. It is not without cost to transport data traffic and therefore this service needs to be acknowledged and remunerated. The fact that a good has a price signals that it is scarce and has to be used in an efficient manner. If such a price signal would be missing, the resource – e.g. transport capacity – would soon risk being depleted.

Therefore and as stated by BEREC, there are several requirements set out in the peering policies of network operators as to what extent settlement free peering arrangements come into application.⁵ One of the important conditions is the exchange of a nearly symmetric amount of traffic between the peering partners. In other words, peering partners with a nearly symmetric amount of traffic or nearly symmetric peering partners turn to billing the traffic.

If traffic flows are imbalanced, at present IP-transit arrangements apply (s. responses to consultation questions below). If significant traffic asymmetries occur, access network operators should be in a position to negotiate an adequate compensation for carried traffic, subject to commercial arrangements in place. Perpetuating an 'unpaid peering' approach for IP Interconnection that developed when traffic patterns were largely symmetric can hamper the efficient use of a scarce resource as described above and can negatively affect the incentive to invest in transport capacity and network quality.

An implementation of QoS-classes on the IP-transport level on top of today's best effort Internet would *a priori* not affect peering policies for IP-traffic exchange for best effort delivery. In contrast, the interconnection regime for QoS-classes on top of best effort would reflect the provision of end- to-end QoS and its higher value for costumers and the OTTs compared to best effort. Therefore it is rational and efficient that the charging mechanism for the QoS-classes leads to higher prices than for the best effort Internet-class. Moreover, this also would increase the incentive to further invest in QoS-mechanisms.

⁵ Idem, p. 19f.

The established regime whereby the sending party pays for the transport of traffic would be a possibility, and possibly the most welfare enhancing charging mechanism for QoS traffic.⁶ As in the peering arrangement, both interconnection partners pay for using the network of the other for transporting traffic. But in contrast to peering and IP-transit agreements, in an SPNP-regime both parties pay for the amount of traffic they send to the other network independent of whether the amount of traffic each interconnection partner sends is symmetric or asymmetric.

In the case of guaranteed QoS via a dedicated traffic transfer as well as a dedicated interconnection for highly quality-sensitive services like high-quality voice (Voice over NGN), today's Calling Party's Network Pays-Regime would be an efficient and welfare-enhancing charging mechanism as stated in the ETNO reflection document in response to the ERG consultation on "Regulatory Principles of IP-IC/NGN-Core" (ERG(08) 26 rev1), July 2008.

ETNO is confident that market forces can also in the future arrive at efficient charging mechanisms, be it for best effort or QoS traffic.

- Regulatory implications of QoS

In general, ETNO strongly supports the BEREC statement in the consultation document that "any [regulatory] measure could potentially be harmful, so that it should be carefully considered"⁷. ETNO also shares BEREC's observation that the best effort-Internet so far has worked well without regulation.

QoS-classes would be implemented in an open and non-discriminatory manner ensuring free choice for end-users and/or application and content providers in the manner that their traffic should be carried. Additionally, they could still use the best effort Internet as today, which would not be altered by QoS.

The availability of differentiated products at competitive prices will further stimulate the digital economy and ultimately benefit all users. Consequently, competition in the provision of QoS-levels would manifest in the form of price competition and in quality competition.

In summary, the introduction of quality classes will increase the variety of offers and customer choice. The provision of end-to-end quality is expected to create added value and enable new and innovative services. This will not only increase total welfare but also stimulate competition and innovation that will be beneficial for the Internet as well.

⁶ Cf. ETNO's proposals to the ITU

⁷ Idem, p. 50

II. Responses to the consultation questions

Question 1 (Chapter 2): Are any other important players and/or relationships missing?

No

Question 2 (Chapter 2): Do you agree with the classifications of CAPs as outlined above?

All important characteristics of a Content and Application Provider (CAP) are described. The classification of individual services provided by CAPs, in particular whether they constitute electronic communications services, should however be clearly distinguished from this categorization.

Question 3 (Chapter 2): Do you agree with the classifications of CAUs as outlined above?

We have no comment on the classification of Content and Application Users (CAUs) itself. However, the 'absolute' statement that the services provided by the CAUs would not have been possible without the Internet and its characteristic feature – the separation of application and network layers – takes too apodictic a view. Services and applications can also be created if the application/service layers are linked to the network layer. As described in chapter 2.3 "ISP (network provider)" in the consultation document, one can distinguish between services which are controlled at the application/service layer and 'over-the-top' content and applications.⁸

Question 4 (Chapter 2): Do you agree with the classifications of ISPs as outlined above?

ETNO suggests a common classification of ISPs across the BEREC consultation documents. For example, in BoR (12) 31, BEREC refers to ECPs (end-user connectivity providers) and HCPs (hosting and connectivity providers). Also, there are backbone ISPs that provide transit service to other ISPs as mentioned in the present IP IC consultation.

ETNO also questions whether the use of the term "closed communications networks" (top of p. 14) for networks over which managed services are provided is appropriate as these are open public communications networks.

Question 5 (Chapter 2): Do you agree with the classifications of CDNs as outlined above?

⁸ See BEREC (2012), An assessment of IP-interconnection in the context of Net Neutrality, Draft report for public consultation, 29 May 2012, p. 13f.

The classification of CDNs, particularly whether they offer electronic communications services (ECS) or whether they operate a telecommunications network (ECN), depends on the individual case and cannot be answered in a global way. As CDN operators are rarely operating a public network, they can be more easily classified as an electronic communications services provider.

BEREC should also acknowledge that if a CDN provider runs its servers within the premises of an ISP to physically interconnect with the ISP's network, it is then legitimate that the CDN is charged for collocation (powering, cooling, maintenance, etc.) fees.

Question 6 (Chapter 3): To what extent are requirements regarding traffic ratios still important in free peering arrangements?

As was explained above, peering arrangements are *not* free. Peering partners turn to bill the traffic only if certain requirements are met. One of those requirements is that the traffic flows are (not too un-)balanced.

Against this background, traffic ratios are important in peering arrangements because they reflect the costs incurred by each interconnection partner on the other network. If a great imbalance of traffic occurs and therefore an imbalance of network usage with an imbalance of incurred costs between the interconnection partners develops, the solid basis for settlement free peering is no longer present. As a consequence of continued settlement free peering, the interconnection partner who sends a smaller amount of traffic to the interconnected network would bear negative effects in form of higher costs compared to the interconnection partner who sends a larger amount of traffic. Accordingly, settlement free peering should no longer be assumed to apply in such a case.

In any case, peering arrangements (whether free or paid) always reflect the cost/benefit relation that the parties involved see for themselves and may also be dependent on other factors (like different infrastructure localisation or the overall scope of the business relation between the parties).

Question 7 (Chapter 3): To what extent does the functioning of the peering market hinge on the competitiveness of the transit market?

Today's peering- and IP-transit-regime are interrelated. If a peering partner would not fulfil the requirements of the peering policy any more, the peering arrangement can be dissolved and an IP-transit arrangement can be negotiated. It should be noted that the former peering partner then has a choice among a number of transit providers and is not forced to negotiate a paid transit arrangement directly with the network that initiated the de-peering.

The exchange of traffic between operators at peering points, namely regional, may allow cost savings in terms of bandwidth contracted to transit operators on the one hand, and on the other hand can lead to an optimisation of QoS in the traffic exchanges between users of these operators.

Question 8 (Chapter 3): Does an imbalance of traffic flows justify paid peering?

As stated above, traffic ratios are important in peering arrangements because they reflect the costs incurred by each interconnection partner on the other network. If an imbalance of traffic occurs and therefore an imbalance of network usage with an imbalance of incurred costs between the interconnection partners develops the solid basis for settlement free peering is not provided anymore. As stated above there is a perfect substitute for paid peering in the form of transit arrangements which are being offered by various competitors across Europe. As also stated earlier, for the proper functioning of a market it is important that a scarce good like the transport of data traffic has a price. Peering partners merely turn to bill the traffic if this traffic is to be balanced to save transaction costs.

Currently, an IP-transit arrangement would normally apply in case of traffic imbalances, but paid peering is a useful alternative to that. With the introduction of paid peering it is also possible to cover the cost of the interconnection partner, in whose network the bulk of the traffic is exchanged and routed. Compared to IP-transit arrangements, paid peering would lead to a 'softer' transition from settlement free peering to a regime where the traffic exchanged is paid for.⁹

The so called "paid peering" in the BEREC consultation document is therefore not unlike the Sending Party's Network Pays-Regime as outlined above as an economically efficient charging mechanism for data interconnection. As mentioned before, peering arrangements may also depend on other factors other than traffic ratios (some specificity of a given ISP's network, for example) allowing different cost/benefit relations for the parties involved.

Question 9 (Chapter 3): Does paid peering increase (number of contracts and volume handled under such contracts)?

Paid peering could become more attractive because it ensures that the costs of each interconnection partner are covered. The same holds true for a Sending Party's Network Pays-Regime which we propose as an optimal charging mechanism for QoS-interconnection.

Question 10 (Chapter 3): To what extent does regional peering increase in relevance and affect transit services?

⁹ Another way of billing following the same principle would be for the sending party creating the asymmetry to pay the delta compared with the 'symmetry threshold' agreed upon

In general it could be stated, that if regional peering between lower tier ISPs increases, the demand for transit will decrease. Regional peering could increase if paid peering becomes more prevalent. Smaller tier2 and tier3 carriers who today are not peering with tier1s could look to regional locations for paid peering interconnects because these smaller carriers would incur less network costs than having to extend to more distant core sites, making the buying of transit vs. peering business case argument attractive. In addition, regional peering allows the exchange of traffic between networks closer to the end-users.

Question 11(Chapter 3): Are any important services missing from the list of services provided by IXPs?

[No]

Question 12 (Chapter 3): Are there any further developments regarding IXPs to be considered?

[No]

Question 13 (Chapter 3): Should in future Europe evolve to have more decentralised IXps closer to CAUs?)

In our view more decentralised IXPs would not be necessary because on the one hand distance is no cost driver in IP-based networks and on the other hand at that one central IXP there would be all interconnection partners, thus one ISP could peer with all the others. Moreover building and operating additional IXPs would imply additional costs. We note that the creation and development of IXPs is a market response to specific market circumstances in which regulation should not play a role.

Question 14 (Chapter 3): Will traffic classes ever become available in practice on a wide scale?

S. above, chapter I. pt. 2.: As all services including those with specific quality requirements will be provided over IP-based networks, the implementation of traffic classes will become a necessity in order to comply with service specific QoS-requirements as well as service specific features and their permanent availability. Today's best effort Internet cannot provide this due to the equal treatment of all traffic also in the presence of congestion, independent of service specific QoS requirements.

ETNO acknowledges that interconnectivity between networks involving control and management to implement traffic classes across networks is complex. The important condition for a widespread and eventually global implementation of QoS-classes over network boundaries is the availability of international standards for QoS-IP-interconnection. The work of international standardisation bodies should be coordinated and supported in this context.

Question 15 (Chapter 3): Will interconnection for specialised services be provided across networks?

The development of Interconnection for specialised services is ongoing. An example is high-quality Voice (Voice over NGN) provided across networks.¹⁰ Such NGN-interconnection for voice is a dedicated IP-based interconnection as described in the BEREC consultation document¹¹, using Session Border Controllers and a dedicated interconnection line between the Session Border Controllers of each interconnected network at the Point of Interconnection.

Question 16 (Chapter 3): Will other solutions for improving QoE like CDNs become more successful rather than traffic classes?

The benefits of QoS-traffic classes could never be fully achieved by CDNs as CDNs would not solve the problem of congestion. This means that CDNs could not substitute the implementation of QoS-traffic classes, because CDNs aggregate only a special kind of content which could be stored and which is often downloaded so that it would be useful to store the content nearby the customers (e.g. software, videos).

The implementation of QoS-classes on the other hand allows all kinds of services that are particularly time critical and involve not storable content like e-health or individual cloud services to be provided in line with their service specific QoS-requirements both end-to-end communication between customers and by CAPs to customers. As concerning individual business decisions, it will be for the ISP to decide, in line with the traffic volume and the size and the area of its network, to assess what mix of solutions is the most effective in a given set of circumstances.

Question 17 (Chapter 4): Which of the factors impacting on the regionalisation of traffic is most important: language, CDNs, direct peering?

As described in the BEREC consultation document all of these factors could influence the regionalisation of traffic. But it is hard to estimate or evaluate which of them would have the most impact on the regionalisation of traffic.

Question 18 (Chapter 4): Are any further issues missing?

The regionalisation of traffic could also depend on the kind of service which is transported, e.g. if the service is produced and/or consumed regionally.

¹⁰ NGN-interconnection for voice is for example being introduced in the German fixed telecommunications market at present, cf. .

¹¹ See BEREC (2012), An assessment of IP-interconnection in the context of Net Neutrality, Draft report for public consultation, 29 May 2012, p. 29.

Question 19 (Chapter 4): Given the cost reductions and the economies of scale and scope observable in practice, why do network operators call for compensation?

ETNO questions the draft report's finding that cost reductions compensate for the costs of additional capacity. We observe that for the same number of users, traffic consumption has increased, meaning that the costs have increased over time for the same level of revenues or even accompanied by a decrease in revenues because of increased competition. As outlined in a study by A.T. Kearney, "A Viable Future Model for the Internet", there are clear structural issues in the current Internet economic model making it increasingly inefficient as traffic growth continues, usage patterns evolve and new applications are developed.

The draft report reflects two studies; published by Wik and Plum for Google and BBC et. al. respectively that investigate the development of traffic and network roll-out costs. We encourage BEREC to reflect earlier work by AT Kearney and ESMT coming to different conclusions on both QoS and investment costs. Similarly, ARCEP in its recent net neutrality consultation has produced estimates of additional costs incurred as a result of an increase in data consumption by end-users which are not identical to Wik's findings.

The comparison of volume increases and cost reductions also do not appear sound considering that the volume of fixed traffic increased by 30 to 40% and the unit cost is supposed to decrease by 20% whereas the volume of mobile is increasing by 100% when the unit cost is supposed to decrease by 50%. The delta between the volume increase and cost decrease can lead to a high risk of errors.

The present question moreover appears to put in doubt the legitimacy of commercial negotiations that involve compensation for services provided to another party, such as the transport of IP traffic. Even if costs are low and / or decreasing, the provider of a service should be able to request compensation. This holds true for every business model on every market and is not specific to telecoms network operators. In the absence of an economic incentive in form of a pricing signal, asymmetries can be expected to increase further and new network capacity to be used up rapidly, in turn increasing investment needs.

Finally, the BEREC consultation document focuses only on best effort traffic, i.e. a situation where there is no QoS-management that in case of congestion provides for the QoS-requirements of the specific services. As outlined above, with the integration of all types of services on IP-based networks and a further increase in the amount of traffic, traffic management measures such as the introduction of QoS-classes on the transport layer become more and more relevant to ensure all services are provided in line with their service specific QoS-requirements and features. Therefore, compensation will in the future reflect the value of the provision of higher end-to-end QoS-delivery for customers and 'CAPs' compared to best effort.

Question 20 (Chapter 4): Do you subscribe to the view that CDNs lead to improvement of QoS without violating the best effort principle?

The question appears highly questionable in a regulatory context as there is no “best effort principle” under the EU regulatory framework.

From an end-user and CAP perspective, CDNs can provide a relative improvement of QoE of the end-user. As outlined above, QoS-based solutions on top of best effort delivery support innovation and increase competition in the provision of higher service quality to end-users.

CDNs are most suitable for storable and often demanded services. They can provide a better QoE for a limited range of services, but not substitute other forms of delivery adapted to different service specific QoS-requirements and features.

Question 21 (Chapter 4): Is there a trend for CDNs to provide their own networks (i.e. integrating backwards)?

A CDN infrastructure consists of service specific server platforms. Such CDN infrastructure is connected to operators’ networks to gain the necessary connectivity to deliver the content. We do not see a trend for CDNs to provide their own networks.

Question 22 (Chapter 4): Is there a general tendency for eyeball (CAU) ISPs to deploy their own transit capacities and long distance networks or even to become Tier-1 backbones?

Any privately owned undertaking strives to maximise not only its profits but also its economic sustainability and independence. Therefore it is a rational strategy for eyeball ISPs to continually and carefully analyse the economics of IP transport, i.e. (re-)evaluate the “make or buy” decision. Looking at the number of global actors in the IP transit market today it is obvious that backbone capacity is competitively offered and profit margins for IP connectivity are low at best. Therefore, the tendency is to rather buy transport capacity when in doubt that one’s comparative advantages might not allow competition with globally competitive IP backbone providers. This notwithstanding, the number of Tier 1 networks has increased over time and it is safe to assume that this ‘trend’ will continue in the future. However, compared to the number of ‘eyeball’ networks, this growth is too marginal to be identified a general tendency.

Question 23 (Chapter 4): If an eyeball ISP becomes Tier-1 provider, does this increase the eyeball’s market power on the interconnection market because there are no alternative Tier-1 providers to reach the customers of this eyeball ISP?

If an ‘eyeball ISP’ becomes a Tier 1 provider it does not increase its market power on the interconnection market. Even if an eyeball ISP becomes a Tier 1 (or if a Tier 1 owns an eyeball network), other Tier 1 operators would also have the means to reach

the said eyeball ISP through their own peering or interconnection agreements: it is the very nature of a Tier 1 carrier. This is precisely what is happening today where two Tier 1 operators peer with one another and compete for transit customers.

Besides, the interconnection market consists of thousands of Autonomous Systems (ASs) worldwide, representing billions of potential eyeballs, and there exists today an extremely fierce competition for transit and connectivity. No single eyeball AS can be so important as to increase the market power of an actor on that market.

However it is worth noting that some global content providers, with significant market shares on, for example, the video or search markets, could very well acquire a Tier 1 status. Such actors could then have very strong market power on the interconnection market. ETNO regrets that BEREC does not seem to take this very real risk into account.

Question 24 (Chapter 5): Will Art. 5 become more relevant as some large Eyeballs have equally qualified as Tier 1 providers not having to rely on transit any more?

Art. 5 states that NRAs shall “encourage and where appropriate ensure... adequate access and interconnection, and the interoperability of services... in way that promotes efficiency, sustainable competition, efficient investments and innovation, and gives the maximum benefit to end-user.”

NRAs so far haven't imposed any obligation based on Art. 5 on this specific issue. ETNO does not think that “large” eyeball ISPs with Tier 1 status could be a threat to end-to-end connectivity. Indeed, eyeball ISPs in Europe are operating in highly competitive domestic markets, so that any loss of end-to-end connectivity, or degradation of QoS in Internet access could mean the loss of significant retail revenue. In the application of Article 5 in the field of IP Interconnection, the sustainability of competition and efficient investments would be at stake, if the economics of peering or action by regulators kept pushing the value of bandwidth towards zero.

ETNO would also like to draw attention to the interconnection of services under Article 5. ISPs and telecom operators have always developed interoperable services, maximizing value for end users. We encourage BEREC to investigate whether this is also the case with many over-the-top services running in closed systems; for instance Mobile Instant Messaging Services (MIMS) on smartphones. Action to ensure interoperability of services may be required in this field.