EUROPEAN COMMISSION Directorate-General for Communications Networks, Content and Technology

Electronic Communications Networks & Services

Public Consultation on specific aspects of transparency, traffic management and switching in an Open Internet

This document does not represent an official position of the European Commission, but is intended to stimulate debate on the part of stakeholders and the public. It does not prejudge the form or content of any future proposal by the European Commission.

Questionnaire

Questions 1, 2, 5, 11-14, 16-22, 26 and 29 are addressed to all respondents, including private individuals. The other questions aim at gathering detailed, often technical, information. Private individuals are therefore not requested to reply to those questions. If you consider that you can provide useful factual contributions also to those questions, you are invited to answer them.
If your answer contains confidential information, please provide a non-confidential version as well.

General information

Question 1: (all respondents)I answer as: a) Private individual b) Consumer or user association c) Organisation providing service information to consumers (e.g. comparison website) d) Internet network or service provider e) Association of Internet network or service providers f) Internet content and applications provider g) Association of Internet content and applications providers h) Public administration i) Other

C, D, F and I

Question 2: (all respondents)a) Please provide a brief description of your organisation and of your interest in open Internet issues.

Netnod is a non-profit, neutral and independent Internet infrastructure organisation based in Sweden. Netnod is owned by the foundation TU-stiftelsen (Stiftelsen för Telematikens utveckling).

Netnod operates six Internet exchange points (IXPs) in five different cities where Internet operators can connect and exchange traffic (peer). The Netnod IX has among the highest amount of traffic per peer in Europe and is fully IPv6 enabled.

At the Netnod IXPs, Netnod provides a variety of value adding services such as the RIPE Internet Routing Registry (IRR), Bredbandskollen (a consumer broadband speed test), slave services for several DNS TLDs, the DNS root server i.root-servers.net, as well as distribution of official Swedish time through NTP. These services are provided as part of Netnod's AS number AS8674.

Netnod also manages a variety of DNS services. Netnod provides anycast and unicast slave service to TLDs worldwide through its highly respected DNSNODE product.

Netnod is also the proud operator of i.root-servers.net, one of the thirteen logical DNS root name servers in the world. This service is provided as a public service to the Internet community at-large, as part of Netnods goal to work for the Good of the Internet.

b) If your organisation is registered in the Transparency Register, please indicate your Register ID number.

Not applicable.

c) Please provide the postal and e-mail address of your organisation and, if you wish, the name of a contact person (including telephone number and e-mail address) for any questions on your contribution.

Netnod AB
Franzéngatan 5, Stockholm, Sweden
Email: info@netnod.se
Tel: +46 (0)8 562 860 00

d) In which Member State(s) are you established and where do you perform your activity?

Sweden

1. Traffic management

Traffic management is the term used to describe a wide range of technical practices undertaken to manage traffic across networks, which includes prioritization, slowing down, throttling or blocking of certain data packets. There seems to be consensus that traffic management is a legitimate tool to effectively protect the security and integrity of networks, to restrict the transmission to end-users of unsolicited communication (e.g. spam) or to give effect to a legislative provision or court order.

It is also widely understood that certain traffic management techniques are involved in the provision of "managed/specialised services"[1] (that provide a generally guaranteed quality of service and a strict admission control). This questionnaire focuses on cases where traffic management is applied by ISPs for such purposes, or for other contractual or operational purposes such as congestion management, the enforcement of contractual restrictions etc. Furthermore, BEREC's traffic management investigation showed that a number of traffic management techniques are actually applied by ISPs.

For instance, ISPs commonly apply certain traffic management practices in order to avoid or manage traffic congestion in a network. Traffic management is also sometimes deployed to provide a guaranteed quality of service for "managed services", for example IP-TV, video on demand (VoD), etc. Another issue is that traffic management often involves monitoring practices that may raise privacy concerns. The following questions ask for additional information regarding these traffic management techniques.

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.

I am deeply concerned over the description above under (1) as it mixed a multitude of issues and compile them into something called *traffic management*. It is also worrying that the text is using terminology like *...it is also widely understood...* without any references to any sources that can validate that.

Traffic management, according to the board description (which I believe is wrong) in the question, covers everything from providers of transmission dedicating special virtual paths for fixed allocation of bandwidth to certain customers. Including but not limited to selling frequency spectrum in fibre in the form of wavelengths. To the diffserv family of queuing mechanisms used in active network equipment that with the help of multiple queues and queuing technologies could maximize the user experience.

Because the question is so unclear on what it covers, it is impossible to go into more detail than that.

Question 4:

Congestion management is one of the reasons for applying traffic management measures. a) Please describe briefly how congestion management normally works.

---

[1] "Managed services" are sometimes also called "specialised services". For the purposes of this public consultation both terms shall be deemed to be synonyms.

First of all, congestion management is something that is only needed when a network is congested. It is implementation of a policy that is applied to active network equipment, but the policy is only applied in the time of (temporary) congestion. On a packet-based network like the Internet, this is today mostly applied using diffserv family of techniques.

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.

See (a).

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 appropriate problematic

Please explain your response

On a packet based network you cannot do traffic management as is implied in this question. Specifically, the traffic management that it is described here, has nothing to do with congestion management as discussed in 4(a) and 4(b).

A managed service can also imply many different things. It can be a hosted VPN service where two locations are to communicate between each other (and no one else) and a service provider manages that virtual path. It can in some cases also imply that a party A that want to communicate with anyone get a better service level in the form of dedicated customer support, or redundancy in the transmission to increase the likelihood of uptime.

The question seems to instead (given follow-up questions) believe that it in a packet based network is possible to implement in reality quality of service for various services. It is possible in theory, but in reality the policy (which I classify as congestion management) only helps a) if a link is full, and b) if the link is not too full.

What because of this is important to look at has to do with whether the management of different types of traffic is done by intentional creation of limited resources (i.e. artificial limitation of resources) or whether the limitation is correct. How the mechanisms are applied that handle the situation and finally whether the limitation by being in the interest of the one providing transport is accepted as a substitution of investment of new capacity.

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

Please explain your response

As described above, the problems only exist when links are full.

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 necessary appropriate problematic

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

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

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

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

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

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

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full. At those situations, traffic management mechanisms might help some kind of services that are sensitive to for example delay. End users because of this will be helped by some degrees of congestion management, but it is important the management that is implemented matches the product that is sold to the customer.

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

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

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

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

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

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

j) implemented at the full discretion of the ISP necessary appropriate

Please explain your response

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

k) other differentiation criteria (please specify)

Please explain your response.

See above explanation why this question does not make any sense in general. Issues only exist if links are full.

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.

What is described here does not make any sense. See above in question 5 on a description on why traffic management only is needed if links are full. Depending on where in the value chain the managed service is provided (no description exists) there are different kind of

scenarios that can happen. Only very limited of them can affect non-managed services and the reason for that is that the total amount of resources is not enough. Because of this, it is not the existence of the managed service that is problematic, but the lack of total amount of resources.

What the question could have been is whether traffic that is prioritized in a congestion management mechanism does have impact on the non-prioritized traffic, and the answer to that is of course yes. That is the whole idea by having traffic management in congestion situations. But that was not the question asked.

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.
The managed services provided are provided on for example separate VLAN or such virtual path technologies where bandwidth allocation and prioritization is either static or dynamic where the dynamic allocation is more to be viewed as congestion management. See question 5 above.

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:

Impossible to answer the question because the answer depends on in what direction regulation related to network neutrality, competition etc. is moving. If regulation do allow artificial limitation of resources as a mechanism to control flow of information and a tool that ensures the prices on the market of the limited resources (bandwidth specifically) is high, then there are many different business models possible.

On the other hand, if the regulator manages to separate temporary issues where congestion management is needed (and acceptable) from artificial limitation of resources, and have tools that make intervention of the regulator effective, then the business models and innovation are not in the products delivered, but in how those products are produced.

I strongly prefer the 2nd of these two alternatives.

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

See (i) above.

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.

As long as question lined up in (a)(i) above is not answered, it is not possible to answer. If the answer is my preferred option two, that kind of innovation (on how to produce the standardized product) is essential for effective build out of broadband networks to all of the EU Citizens, and more specifically for EU to reach the goals listed in the digital agenda. The goals for EU 2020.

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?

Part from issues related to robustness and service levels in the case of for example cable cuts, none. Or rather, as the guaranteed level of quality of delivery only can be guaranteed on a packet based network by deployment of new resources (except as described above in the time of temporary congestion) such a guarantee together with effective regulation and oversight is ensuring innovation is on production of access and deployment of broadband.

Innovation that is based on artificially limited resources (including delayed investments) is not helpful in the longer run for the society.

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.

See earlier questions.

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?

First of all, what here is called *traffic management* is a very special subset of all traffic management principles described above. This question seems to concentrate on the kind of traffic management that only makes sense when there is either temporary congestion (congestion management) or when it is an artificial limitation of resources in a network. Not traffic management that is deployed where fixed allocation of bandwidth is in use and similar technologies, which as described earlier

results in a situation where the amount of resources for non-managed traffic is artificially limited (due to lack of addition of resources).

DPI is not the only technology that can be used for classification of traffic. And classification of traffic is only one of the two pieces needed when doing traffic management. The other being the actual management of the traffic in the form of differentiated packet forwarding.

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?

It is unclear whether the question is about DPI or about classification. Both might have privacy implications. Specifically if the result of the action is matched with information about the ends of the flows that are identified and/or inspected.

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.

See above. The question is confusing as DPI is not traffic management.

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.

An access provider (the term *ISP* is not well defined) is to describe to the customer before contracts are signed how congestion management is implemented.

2. Transparency and switching (consumer choice)

Transparency is a key tool in the EU electronic communications framework to protect users and to ensure competition. Transparency enables consumers to optimise their informed choices and thus benefit fully from competition, in particular at a time when ISPs are developing new business models.

The BEREC investigation has revealed that many consumers have Internet access subscriptions with a number of restrictions. Moreover, the development of new business models is likely to lead to a broad range of offers which may contain different traffic

management restrictions. These may address the needs or interests of specific consumers at prices which might not otherwise be available. It is, however, not clear whether ISPs are sufficiently transparent about such restrictions allowing consumers to make a deliberate choice. Customers, therefore, need clear, meaningful and comparable information on any limitations of their subscriptions comprehensible to all.

These requirements raise the question whether a restricted Internet access product may still be described, without qualification, as "Internet access" or whether the unqualified label "Internet access" should be reserved to (largely) unrestricted access offers. This debate has already been opened in some Member States and this public consultation seeks also views on this issue. Another aspect of transparency concerns broadband speed, and in particular possible discrepancies between advertised speeds and actual speeds. Transparency should be complemented with measures aimed at ensuring easy switching from one provider to another, and from one offer to another offer of the same service provider, to empower consumers to choose the service which best matches their individual needs. The electronic communications framework facilitates switching of operators by imposing the obligation to implement number portability within one day, by limiting the initial commitment period in contracts with consumers or by specifying that the conditions and procedures for contract termination shall not act as a disincentive against changing service provider. It further specifies that subscribers have a right to withdraw from their contract without penalty upon notice of modification to the contractual conditions. It is also important to ensure that barriers do not arise as a result of the growing trend towards bundled services. This may require that switching processes and contractual arrangements are consistent between services offered in bundled packages, e.g. the most common "triple play" package of fixed voice, broadband and pay- TV.

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?

In general, consumers do not understand these kinds of specifications. Instead the only thing I believe work is to define *Internet Access* with some base criteria that include such parameters described below. Further, nothing can be sold or even talked about that is *limited* Internet access. Either it is *Internet Access* or not. It is not forbidden to sell other kinds of *broadband access* but it is not *Internet Access.* Then further, various providers of *Internet Access* can differ their products in the form of transmission mechanisms, redundancy, bandwidth, reachability parameters, customer service and price.

- Elements related to traffic management practices:

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

Please provide reasons for your answer:

For Internet Access, no such limitations should exist at all.

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

Please provide reasons for your answer:

Specification of Internet Access should specify what maximum delay, packet drop etc is acceptable under what time spans during congestion management situations. The provider of the service can if needed also specify more specifically how they meet those goals.

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) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

Definition of Internet Access is to be neutral regarding transmission technologies and independent of other services using the same transmission.

d) Other restrictions, please specify:

There are many different requirements on Internet Access that needs to be specified. Sweden has in the digital agenda of Sweden[2] said the following:

> *To achieve more secure communication for authorities, there is a need for material for an Internet specification that can be used in the procurement of Internet con- nections by authorities. A joint Internet specification with different robustness and security requirements (model cases) is therefore due to be produced by 2013.*

e) Data allowances (caps), download limits important less important

Please provide reasons for your answer:

A provider of Internet Access is to specify such limitations.

---

[2] http://www.sweden.gov.se/sb/d/2156/a/163994

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

Please provide reasons for your answer:

Impossible to specify. Any provider of Internet Access can talk about such parameters to explain how their Internet Access is different from competitors, but it is not to be part of a more formal specification.

Elements related to speed and quality:

a) Average speed, typical speed ranges and speed at peak times (upload and download) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

Is to be provided by the provider of Internet Access, but the way of doing it must be independent of transmission technology

b) Respect of guaranteed minimum speed (if applicable) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

See (a) and earlier questions.

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

Please provide reasons for your answer:

See 12(f).

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) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

The limitations of such parameters is to be specified as part of a definition of Internet Access, but the provider is free to provide *better* versions of the service.

e) Jitter (a measure of the variability over time of latency) and which services would be affected thereby (e.g. echoing in VoIP calls) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

See (d) above.

f) Packet loss rate (share of packets lost in the network) and which services would be affected thereby (e.g. VoIP) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

See (d) above.

g) Reliability of the service (network accessibility and retainability), i.e. measure for successful start and completion of data sessions important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)

Please provide reasons for your answer:

See (d) above.

h) Quality parameters for (mobile) voice telephony (call setup success rate, dropped calls, speech quality, other) important less important measuring technically feasible (fixed) measuring technically feasible (mobile) currently measured (fixed) currently measured (mobile)
Please provide reasons for your answer:

See (d) above.

i) Other, please specify:

Other parameters might be included in a final specification of *Internet Access*.

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? yes no

Please provide reasons for your answer.

Yes.

Transparency is important and although consumers might have issues understanding caps in the form of number of bytes, they would be even more confused over artificial "bad behaviour" decisions by the access providers.

a) When should the elements of information referred to in question 12 be provided to the consumer by the ISP? before signing the contract regularly updated during the contract period during the contract period if changes occur other, please specify:

It should as described above first of all be covered in a specification of *Internet Access* and secondly as information on what the difference is between competing providers of the service what the difference is.

It is to be described before contract is signed.

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.

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.

None.

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?
Yes No Please explain your response.

It could help, but the market would hopefully sort that out. What is more important is that access provider associations, consumer rights organisations and NRAs do ensure that what is claimed to be *Internet Access* really is fulfilling at least the minimum requirements for such a service.

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

Given response to (a), n/a.

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.

NRAs must do whatever they think they have to do to ensure Internet Access that is marketed fulfil the minimum requirements. See (a).

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? Yes No

Please reason your answer.

Access product that do have unacceptable limitations is not to be called *Internet Access*.

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

Extremely limited restrictions based on for example a few number of ports blocked.

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 reality "none" as they market today access as *broadband access*. What is important is for the consumers to understand what services do fulfil the requirements they have on access. In reality, providers can with the help of such a label make more money instead of less. So such a labelling would be a help for ISPs to increase their income.

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.)

What is needed is for the providers of passive infrastructure to have enough infrastructure installed so that exclusive access to the passive infrastructure is not created (such as happened with LLUB oversight for the copper network). Given such a situation, there will be situations that for fibre are very similar to the investment ladder described for copper access. I.e. all products from dark fibre via bitstream to VPN tunnelling will exist.

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

If with ISP this question implies a provider of *Internet Access* the only changes are within the definitions of the term.

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?

A specific breach is if they who deliver Internet Access do some changes that implies the service do no longer fulfil the requirements. See (b) above.

d) Should customers be able to easily opt out from certain contractual restrictions (up to a completely unrestricted offer) by the same operator? Yes No
Please explain your response. If yes, how could this be facilitated?

For *Internet Access* there are not many parameters part from such as caps, bandwidth etc, and of course the end user should be informed on such changes. See (c) above.

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? Yes No

Please provide reasons for your response.

First of all, there should not be something that is *unrestricted* Internet Access. Either it is Internet Access or not.

Secondly, if the provider of the Internet Access is suddenly changing the service to no longer fulfil the requirements, of course a customer must be able to change provider. This is it is a breach of the contractual agreement.

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)? Yes No
Please explain your response. If you consider that there should be a limit on the discrepancy, how should this limit be defined?

I refer to a needed definition of Internet Access where acceptable discrepancy is specified.

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.

See 18(a) for a more detailed explanation.

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?

Bundling must be separated from situation where for example competing TV providers are locked out. Bundling is only a question of price and payment terms, specifically as TV and telephony in a larger degree is delivered over an Internet Access. I.e. as long as customer buy Internet Access, there is competition regarding providers of TV, and bundling end up being a pricing structure.

Question 22: (all respondents)

a) How important would be the benefits for end-users of improved transparency and facilitated switching? very important important slightly important not important
Please explain your response.

Definition of Internet Access is very important for end users to get a more clear picture of comparison of access products on the market as well as increase ability for innovation.

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?

Definition of Internet Access would increase the innovation regarding production of the Internet Access product on the market, and also innovation regarding services delivered over Internet Access.

Question 23:

Would the facilitation of switching for consumers trigger any (administrative) costs for ISPs? Yes No If so, please quantify them.

Not more than what exists today. As explained above, we do have experience from the copper and DSL market already.

3. IP interconnection issues

Interconnection arrangements between networks take the form of transit and peering agreements. They have traditionally been based on the "best effort" principle. Disruptions of interconnection or deterioration of interconnection service quality at the wholesale level could lead to a situation where end-users and content providers cannot reach all destinations on the Internet. IP interconnection is therefore relevant for this consultation.

This description does not make complete sense as it is unclear what is meant by "best effort". The text is not written with packet-based architecture as Internet in mind. Because of this, responding to the questions below is hard.

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?
Yes No Please explain your response.

No. There are instead clear indication that, specifically in Europe, the market for interconnection negotiations works.

b) Are there any specific issues related to the vertical integration of ISPs and transit providers?
Yes No Please explain your response.

No.

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?

CDN providers provide a service to the providers of the services they accelerate, and to the providers of Internet Access that want to offload their network.

b) What opportunities and threats do they constitute for: (i) ISPs, (ii) content providers, (iii) transit providers and (iv) end users?

They are a player like anyone else. CDN providers only manage to sell their service to the access provider and to the content providers if the services are better than transit and original source hosting of the service itself. Because of this they are natural players in the market economy, and only a benefit for innovation and end users.

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? Yes No

Please explain and describe possible solutions to such issues.

It is in many cases too hard to deploy passive infrastructure, often because of local regulation in for example a city regarding right of way. Because of this, there is an artificial scarcity of dark fibre and other passive network products in some areas, and that in turn lead to difficulties for access providers to provide Internet Access.

Another problem is the lack of requirements in for example RFPs from public sector that Internet Access is the access product they procure.

4. Process

Question 26: (all respondents)

a) Do you consider that intervention by public authorities is necessary at this stage?
Yes No

Yes.

If so, what would be the appropriate level of such intervention?

Define the Internet Access product, or rather, stimulate the market players to define a definition of *Internet Access* in a similar way as the *green* or *eco* markings/certifications are defined.

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

Problems for end users and providers of services. Lack of harmonization will for these products and markets just like other similar situations have an impact on the goal to have a unified EU market.

Question 27:
a) Have you made use of the dispute resolution powers under the Framework Directive[3] in relation to a dispute about traffic management practices?
Yes No

No.

b) Have you also made use of these dispute resolution powers also in relation to disputes between an ISP and a content provider?
Yes No
No.

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?

N/a

Question 28:

Do you consider that regulators should monitor interconnection agreements between providers?
Yes No
Please explain your view.

No.

But, in reality the question is problematic. Experiences with the questionnaires that have been sent out by regulators have underestimated just the number of interconnection agreements that each provider has. We talk about hundreds if not thousands of agreements, for each provider.

Question 29: (all respondents)

---

[3] See in particular Article 20 of Directive 2002/21/EC (Framework Directive) which allows either party to request a binding decision by the NRA to resolve a dispute within the shortest possible time frame and normally within four months.

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? Yes No Please explain your response.

The question is hypothetical, and before *Internet Access* is defined we can not know if there are cases where no provider provide such an access. It is already now in the role of regulators to follow various markets and intervene if needed. To say now that intervention is needed is extremely premature.

Your response must reach the Commission by 15 October 2012!