Body of European Regulators for Electronic Communications

BEREC

BoR (14) 116

Consultation report

for

BEREC report monitoring quality of Internet access services in the context of net neutrality

25 September 2014

Contents

Introduction

In this consultation report BEREC summarises and provides comments to the submissions received from stakeholders in respect of the document entitled “BoR (14) 24 Draft BEREC report on Monitoring quality of Internet access services in the context of net neutrality”.

The consultation was published on the BEREC website, inviting stakeholders to send their replies by the 28th April 2014. A total of 20 replies were received from a range of organisations, including consumer associations, Internet service providers (ISPs), content & application providers (CAPs) as well as measurement providers. Comments were received from FFT, AFNIC, IP-Label, P3 Group, Telefonica, Belgacom, ETNO, VON Europe, EBU, GSMA, ANGA, Telecom Italia, Telecom Austria Group (TAG), FTTH Council Europe, Alladin (Specure), Cedexis, European Internet Science consortium (Sussex Law School), Cable Europe, BEUC and Wind.

This consultation report should be read in conjunction with the consulted document, the responses to the consultation and the final document as published on the BEREC website http://berec.europa.eu/. The Net Neutrality Expert Work Group has updated the final document taking stakeholders’ comments into account and also in an effort to improve clarity and readability of the document.

This consultation report is not intended to be a comprehensive compilation of the replies gathered. Its purpose is rather to provide a general overview of the main comments and views received around the key issue and questions raised concerning the draft document upon which BEREC sought consultation. BEREC welcomes and thanks the respondents for their efforts in compiling and submitting their feedback.

Respondents generally welcomed BEREC’s position regarding the need for efficient QoS monitoring methods both for transparency in matters relating to Internet access service (IAS) quality and regulatory supervision of IAS quality.

In this document, respondents’ comments falling within the same areas were grouped together and addressed in the corresponding document sections as laid out in the rest of this document.

Scope and background

Section 2.1 Scope and approach of the report

Some stakeholders expressed the view that competitive pressure and transparency can be sufficient to guarantee quality of service and net neutrality. They recall that ISPs already have significant transparency requirements. Therefore, they consider that regulatory intervention is not needed and the imposition of minimum quality requirements should not be the aim of a monitoring system. *In 2012, BEREC provided guidelines for using quality of service monitoring in the context of network neutrality which detail NRAs approach concerning these regulatory tools.*

A few stakeholders were sceptical of the efficiency of a quality monitoring system to guarantee net neutrality through market pressure. *BEREC agrees that such a system is not likely to be sufficient by itself and should only be part of a wider approach to be undertaken by the NRAs regading net neutrality. It is worth pointing out that BEREC has already developed a comprehensive approach to net neutrality[1] based on a wider strategy[2].*

Some stakeholders were concerned by the multiplicity of the goals defined by BEREC for quality monitoring systems. *BEREC did not want to hide or reduce the complexity of such topic. It acknowledges that these tools may be deployed for a set of different regulatory objectives and BEREC decided to precisely identify these use cases; categorise them and study how to develop tools and methodologies for each. Currently, BEREC does not consider that a single tool can address all the use cases and meet all the requirements identified in the report.*

Several stakeholders explained that the user's experience may be impacted by many factors which do not depend only on the IAS (settings of operating systems, hardware, third parties, etc.). *BEREC is conscious that degradations of the quality of IAS are not necessarily the consequence of net neutrality issues.*

Section 2.2 Background

Some stakeholders stated that they would have prefered BEREC to focus more on net neutrality issues and the impact of specialized services. *In this respect, BEREC highlights that it is aware of the ongoing discussions on the potential new regulations that may interact with the deployment of quality monitoring systems by the NRAs. For example, there may be a need to further assess the impact of the provision of specialized services on the quality of IASs. BEREC and NRAs will continuously adapt their practices to take into account any legal evolution.*

A few stakeholders commented on the legal basis for the development of quality of service monitoring system, requesting BEREC to stick to the legal provisions of the Universal Service Directive. *BEREC already provided guidelines for using QoS monitoring related to USD 22(3), in 2012.*

Section 2.3 Quality monitoring system requirements

Several additional requirements were suggested by stakeholders. *Minor amendments have been made to the report to include those which seemed relevant and which were not already*

[1] BEREC has described its approach in: BoR (12) 146 *Summary of BEREC positions on net neutrality*

[2] BEREC ongoing activity is presented in: BoR (13) 196 *BEREC Work Programme 2014*

expressed in some way. Moreover, BEREC will start a feasibility study which will provide the opportunity to further develop and discuss these requirements.

Some stakeholders expressed concerns about the comparability of the results, especially at a cross-country level. They recall that geographical and demographic features, technological and strategic choices or even differences in usage should be taken into account.

Regulatory environment

Section 3.1 Introduction

There were no specific comments regarding the introduction.

Section 3.2 Governance

The majority of respondents stated their position regarding BEREC's recommended criteria for selecting the most appropriate regulatory approaches to quality monitoring in a regulatory environment. Several respondents from different stakeholders groups (CAPs, consumer organisations and ISPs) expressed their preference to the traditional regulatory approach, where NRAs are in full control of the monitoring system.

The main argument for traditional regulation is that control by NRAs guarantees a higher degree of independence and accountability to the system. In this regard, several respondents stressed that certified measurements by independent authorities and, more generally, NRAs' control are important for the overall trustworthiness of the system.

According to some respondents (mainly test developers and research institutions) specific regulatory objectives, such as accuracy and reliability of results could be better achieved through collaboration with independent third parties to perform specific technical duties. For instance, one network operator suggested that, in order to obtain trustworthy, replicable and comparable measures, the whole QoS monitoring and measurement system (including the software client) has to be appropriately designed and certified by a national or European independent body under the NRA's supervision.

Several other respondents expressed their preference for a collaborative approach between the NRAs and key market players. Other respondents (most ISPs and operators) responded to the public consultation by indicating both co-regulation and self-regulation as suitable regulatory approaches.

The self-regulation advocates amongst the respondents argued that NRAs should not impose a single "fit-for-all" solution on all ISPs, nor the incurring of any additional costs if the market is self-sufficient in providing consumers with a variety of test tools. Two respondents opposed the adoption of different governance systems in parallel, such as to complement a stakeholder controlled hardware-based system by a regulator-controlled software-based tool.

In light of the above, responses to the public consultation support BEREC's recommendations that the choice between different regulatory approaches should be made according to specific market situations, based on a careful assessment of specific regulatory needs.

In spite of different positions regarding the role of NRAs in quality monitoring, there was still a certain degree of consent amongst the various stakeholder groups on the benefits of educative and information campaigns. *In this regard, BEREC believes that moral suasion by the NRAs is a useful element of the overall governance system – this would further increase the level of transparency*.

As for stakeholders' involvement, and other procedural issues described in the Chapter 3, there is general consensus among respondents that the NRAs should take into account the views of interested parties and encourage proactive involvement of certain specific stakeholders categories among those listed in section 3.2.2. Most respondents indicated that the NRAs should involve not only traditional stakeholders (e.g. consumer organisations and ISPs) but also independent third parties, namely: neutral and independent bodies, standardization organisations, research centres, independent measurement organisations and independent advisors. One network operator stressed the need of involving OTT players in the assessment of selective degradation of IAS.

It is worth nothing that there were opposite views among respondents on the number and types of stakeholders to be involved as well as the benefits and potential risks of stakeholders' participation. For instance, one network operator suggested that a collaborative approach is effective only when the number of collaborating stakeholders is limited to those who play an active role in measurements (e.g. ISPs, CAPs and consumers). Furthermore, most respondents also suggested that NRAs should seek stakeholders' involvement according to the different roles they play in a given quality monitoring system.

In this respect, BEREC considers that the relevant recommendations set out in section 3.7 are appropriate, in that it is explicitly stated that "These forms are non-exclusive participatory methods which may be used to achieve different goals, or to include different stakeholder categories, according to the relevant stages of quality monitoring system development and operation." Also, the NRAs and BEREC have the option to organize dialogues with external parties prior to any potential initiatives regarding quality monitoring in the scope of net neutrality.

With regards to other procedural requirements, some respondents pointed out the need for impact assessments and cost benefit analysis before the adoption of a quality monitoring system, in line with BEREC's own best practices guidelines. *In this respect, BEREC believes that this aspect should be left to the discretion of NRAs as there is not a harmonized administrative framework in this matter, and national situations could be very diverse. BEREC notes that such assessments can be part of a future feasibility study as recommended in section 5.*

Section 3.3 Legal value of the measurement results

The issue of the legal value of measurement results was addressed by a number of respondents, mainly operators, who pointed out the following:

- It should be made clear to consumers that indicators create no legal obligations on ISPs.
- It is legally debatable whether measurements that depend on user equipment, and which are solely under user control, can be used for a dispute/court case as part of evidence.
- Due to lack of robustness of current QoS monitoring tools, measurement results cannot be part of evidence of the ISP's compliance or non-compliance etc. Thus legal usage of such data is unjustified (particularly in case of fixed broadband).
- Most technical difficulties in measurement tools result from influences that lie outside the ISPs' sphere. Thus, such results do not provide any valid information about the ISP's services and must not lead to any legal consequences.
- A monitoring system must ensure that measurements have sufficient legal validity for consumers to use the measurements as part of evidence in different scenarios, whether in a direct dispute with the ISPs, before an Alternative Dispute Resolution (ADR) body, or in court.

Providing a quality measurement system always implies that, among others, the results might be used by end users in order to resolve problems directly with the operator, when bringing a complaint before an alternative dispute resolution / regulatory conciliation body, or during a court case. It implies further, that regulators will most probably use the quality monitoring system for their regulatory supervision tasks. In this regard, it has to be noted that in each specific case when measurement results are presented as part of evidence, the circumstances differ. Also these results are, usually, subject to free evaluation of evidence. Additionally, all relevant legal aspects, especially contractual and consumer-rights aspects (as in any alternative dispute resolution / regulatory conciliation body or court case, need to be considered.

Section 3.4 Openness about methods and results

Regarding the openness of methods and results, ISPs stated that:

- The dissemination of the results would be important and consumers should have a viable choice.
- Regulatory supervision should be objective, robust, open and clear. However, the need to make raw data publicly available is questionable and raw data should only be analysed by NRA experts because raw data could seriously jeopardize personal data and business confidentiality. Furthermore, non-experts or users "with an agenda" could draw erroneous conclusions from such raw data.
- Open data and open source allow cross-examination and enables checking of aggregated results.
- "Uncleansed raw data" would be a major concern if made publicly available.
- Openness would have to be dealt with considering data confidentiality and privacy requirements.
- Proper guidance on correct interpretation of measurement results would be needed; raw data should not be published as it would lead to misinterpretation by non-experts and provide a misleading view on the telecom landscape,
- Future-proofing would be important.
- Data shall be publicly provided only in aggregated form.
- Measurement tool needs to be independent, open, transparent, open source and open data.

BEREC shares the view that transparency, open source and open data are of major importance. At the same time privacy, accuracy and future-proofing are essential for quality monitoring systems.

Section 3.5 Privacy

Also, a number of respondents, mainly operators, remarked regarding the privacy issue the following:

- Releasing raw data could seriously put in danger personal data protection of their consumers, business confidentiality and their own commercial data.
- Raw data that could breach customer or ISP business confidentiality should not be published.
- BEREC's quality criteria of accuracy, comparability, trustworthiness, openness and future-proofing are of major importance.
- The distribution of raw data raises privacy issues. For example, some interested parties could have access to the raw data (analysis and study of ICT sector) within the limits imposed by privacy law.
- Any monitoring system must fully respect consumers' privacy.

BEREC is fully aware that privacy is a crucial point that needs to be taken into account from the very beginning when establishing a quality monitoring system. It is of utmost importance

that the provider of such a tool strictly abides by the respective European and national legal requirements, and also provides users and the public with adequate information about this.

Section 3.6 Security

Concerning security issues, the comments made further support BEREC security considerations with respect to the protection of the ISPs infrastructure and the avoiding of any impact on customer services.

Implementation aspects

Section 4.1 Measurement metrics

Many respondents indicated that the recommended QoS parameters could confuse the normal users, since they are more used to speed information and, in some cases, to delay of the connection. Other metrics like jitter, delay variation, packet loss ratio or packet error ratio were considered as more technical and less relevant to the consumer.

BEREC keeps the position to maintain the minimum set of QoS parameters that can influence the quality perceived by the consumer users but, in order to be clearer, has updated the meaning of the symbols used in table 4-1. Also, in this table, the source of the table was extended in order to clarify all the influences of the construction of this table.

Section 4.2 Measurements using injected test traffic

Most of the responding ISPs appear to be only in favour of monitoring and/or measuring the ISP leg as it lies within their sphere of control. The scenario of measuring the QoS beyond the ISP leg was not generally supported by the ISPs. On the other hand, consumer association and independent content providers supported BEREC's view that measuring the QoS beyond the ISP leg is more reflective of the IAS as perceived by users.

With regards to hardware-based versus software-based methods, there was no unanimous position from respondents. Most of respondents agree that the definition of the panel of users is critical for both methods, is in addition to the type of user equipment and software. Where cost was an issue, a number of respondents advocated the use of software method.

BEREC maintains its position on the subject of measurement beyond the ISP leg. BEREC considers that measuring the QoS beyond the ISP leg is more reflective of the IAS as perceived and could form the basis for comparing ISPs. Nevertheless, minor editorial amendments and modifications to the draft were made in order to further clarify the objectivity of this methodology. In addition, a number of clarifications were made in the text of the report to reflect the comments made relating to user equipment.

Section 4.3 Measurements using ordinary user traffic

A few respondents expressed concerns regarding use of passive monitoring of selected applications and that they should rather be regarded as a complementary method.

BEREC considers these aspects are already covered in the report.

Section 4.4 Current measurement systems

No specific comments were received on section 4.4. Stakeholders, especially QoS measurement providers, confirmed BEREC's observations on current measurement systems and the use cases for hardware and software based use cases.

BEREC notes that the conclusions on measurement approach and use cases given in the report are generally supported.

Section 4.5 Composition of test traffic

Several comments were received pointing out that when applying a crowd-sourcing approach, end user equipment and conditions under which measurements are performed, are likely to heavily influence the results. ISPs noted that measurements obtained by customers should not be used to draw any conclusion on the quality of the ISP infrastructure. QoS measurement providers stressed the need to properly qualify and validate measurement results especially when generated by crowd-sourcing methods. Some stakeholders doubted that data obtained by crowd-sourcing could be validated and post-processed in a way that it can be transformed into a reliable data base.

BEREC agrees that the crowd-sourcing approach has some drawbacks. For example, even though the number and distribution of volunteers is unknown at the start of the campaign the low threshold of participation is likely to generate huge numbers of samples. Thus, BEREC still believes that crowd sourcing is a valid practical approach for generating a large set of measurement samples. With panel based approaches such large amount of data is highly unlikely to be generated.

On the other hand, BEREC recognizes that measurement results acquired by crowd-sourcing still needs to be subjected to rigorous post-processing and validation. For example, it is important to ensure that factors not attributable to the ISP's infrastructure don't affect the results. This is the even more important when applying the crowd-sourcing to heterogeneous networks.

BEREC points out that the implications and possible drawbacks when using crowd-sourcing have been listed in the report. BEREC will further elaborate on methods to validate and post-process crowd-sourced data in its future work and provide respective recommendations.

In the present report no need is seen to modify the guidance given.

Section 4.6 Wireless/mobile aspects

Several stakeholders, including mobile operators pointed out that the QoS of mobile IAS should be treated differently from that of fixed IAS due to the fact that mobile IAS has more variables that affect QoS. These include limited resources (spectrum) shared among different users and the users' mobility which make it more complex for the ISPs to provide predefined and stable QoS on mobile networks. Few respondents warned that in case of mobile IAS it is hard to achieve meaningful (valid) QoS evaluation results due to the reasons mentioned above.

BEREC maintains its position that, in terms of technological neutrality and in order to achieve sufficient transparency and comparability, general QoS parameters defining IAS and basic methodology for their evaluation (statistical evaluation approach, measurement server

locations, and basic technical requirements for evaluation system) should be the same regardless of IAS technology. On the other hand, BEREC recognizes the special nature of mobile IAS and this should be taken into account for the evaluation and as discussed in Section 4.6.

Two respondents expressed the view that software-based tools for individual measurements may not provide sufficient accuracy whilst a controlled hardware-based evaluation system (drive tests) can provide transparency and accuracy on the quality end-users are likely to receive. One respondent indicated that a hardware-based system for the evaluation of mobile IAS QoS is expensive and difficult to use.

BEREC agrees that there are advantages and disadvantages of software- and hardware-based IAS QoS measurement systems which were discussed in Chapter 4. On the other hand; BEREC recognises the differences between software and hardware approaches and their impact on in the case of mobile IAS. It should be pointed out that, in case of mobile IAS, hardware-based approach (e.g. those based on drive testing) is more practical than in case of fixed IAS because of its ability to achieve sufficient geographical coverage and sufficient amount of test results with fewer tests probes. However, BEREC does not wish to exclude software- based approach in case of mobile IAS since this approach is applicable within the context of crowd-sourcing.

Section 4.7 Complementary methods

Even though several positive comments was received from various stakeholders concerning complementary methods, various parties mentioned the facts that complementary methods are not adequate means to survey net neutrality and QoS; or are not in direct relation with objective measurements campaigns. Some other respondents further suggested that complementary methods should not be used to validate physical measurements.

Few ISPs questioned the fact that the report may encourage end users to take the initiative to investigate the use of traffic management.

Some mobile operators also pointed out that, given the high variability of the network conditions and diversity of equipment with regard to mobile services, it is not possible to guarantee a particular QoS on mobile networks. Consequently, any definition of QoS requirements should take into account the nature of mobile networks.

These proposed methods are complementary because they are not intended to build the initial base of an objective evaluation of the ISP performance offered to the end users. They could however facilitate and guide investigation in justified cases if some users lack satisfaction from the offers they receive. They may help in highlighting where potential issues could exist and thus provide some of degree of guidance in issue isolation.

Future perspectives

Chapter 5 presented BERECs initial thoughts for the potential a higher degree of harmonisation by quality monitoring solutions which would bring a number benefits to NRAs and further strengthen their ability in the discharge of their duties. Given that most NRAs are either engaged in or are planning to start quality measurement systems, BEREC considered the idea of multi-NRA monitoring system which would be on an NRA opt-in basis. The chapter concludes with BEREC's recommendation that a feasibility study is conducted to investigate

how an NRA-opt-in approach could be realised in practice – safeguarding systems currently in place and including NRAs with no existing systems.

BEREC notes that the majority of the respondents welcomed BERECs initial idea to harmonize measurement tools and methodologies. Some of the respondents shared BERECs cautious approach in pursuit of harmonized measurement tools and methodologies in further expressing the need for more detailed future work to study the feasibility of a multi-NRA measurement platform on an NRA-opt-in basis.

Some of the respondents agreed with BERECs initial thoughts on the benefits of higher degree of harmonization would bring about. BEREC agrees with other respondents that a future feasibility study must include a cost benefit analysis as well as an impact analysis on both the participating NRAs and operators. BEREC also agrees with the respondents that the feasibility study should consider the work of key standardization bodies such as IETF-LMAP, IETF-IPPM, Broadband Forum, as well as others.

BEREC acknowledges the high degree of complexity in seeking higher degree of harmonization which resulted in the concerns some of respondents expressed. BEREC intends to address these concerns in the envisaged future feasibility study.

Based on the response received, BEREC concludes that the idea of a multi-NRA measurement platform on an NRA-opt-in basis is reasonable and that its recommendation of a future feasibility study is necessary.