Telefonica answer to the BEREC report on Net Neutrality Regulatory Assessment Methodology

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1. General comments

Telefonica welcomes the BEREC regulatory assessment to help National Regulatory Agencies with the implementation of the net neutrality provisions of the Regulation 2015/2120.

Telefonica celebrates the recognition in the assessment that, to provide accuracy, the Internet Access quality of service measurements of a specific operator must be taken inside the ISP leg, avoiding third party networks. In that sense, Telefonica thinks that the proposal of placing the measurement server in (national) IXP is a step in the right way of isolating ISP performance. The use of other IXP beyond the borders need of further assessment as third parties might be involved. Furthermore, Telefonica considers that the conditions of the measurement tests must be replicable to avoid misleading results that might lead to wrong conclusions.

Telefonica fully shares BEREC considerations regarding end-user dependant factors that affects any measurements taken that are not based on traffic injection and controlled environment. This was an utmost concern raised by Telefonica in previous BEREC consultations regarding the reliability that the measurement scenario presents. Nonetheless, considering BEREC recognises that:

1. there are many different reasons to explain a certain result on performance when the measures are not made under a controlled environment,
2. it is impossible to differentiated whether the problem of performance lies in the ISP network or in the apps or software used, or in the servers of certain services monitored

Telefonica remains concerned on why BEREC still considers the use of such (crowdsourced) measurements method in its assessment. Consequently, it is of utmost relevance that NRAs analyse the results carefully and thoroughly in the crowdsourcing approach as it can easily derive into wrong conclusions

In the same line, the concerns, also highlighted by BEREC, on external factors beyond ISP control affecting measurements proposed in clause 4 can yield NRAs to wrong conclusions. This is relevant as Content and application providers have a great impact on how downstream traffic performs because:

1. The measurement includes the Content and application site performances.
2. The Content and application routing decisions have a great impact in the measurements as reflected in the MIT study of congestions[1]

[1] https://groups.csail.mit.edu/ana/Measurement-and-Analysis-of-Internet-Interconnection-and-Congestion-September2014.pdf

Consequently, Telefonica considers that BEREC should highlight in the document that the measurements of crowdsourcing approach should be taken as indicative and further explored by NRAS in collaboration with the ISP concerned.

Telefonica considers that, in general, in order to get measurements that could be used to compare countries results as BEREC seeks with this Net Neutrality Regulatory Assessment Methodology, a number of common parameters must be set. Such parameters would allow to consider differences between countries in terms of device market shares, contract offers, models of devices sold, operating systems version (out of the control of the operator), etc. As different conditions result in different measurements, if such condition differences are not considered, results may yield to erroneous conclusions.

In any case, Telefonica strongly demands BEREC to recommend NRAs such measurements remain not public, at least until the parties affected can provide feedback and its own measurements, as the consequences of disclosing such results may have a permanent impact in the business of such ISPs.

Finally, BEREC's advice to NRAs, saying different objectives may require different tools, is totally in line with Telefonica understanding and provides enough flexibility to NRAs to open a national process or consult to find the right and fair way to achieve it.

2. Detailed comments

For an easy follow up, comments respect the numbering of the original BEREC' document.

3. Measuring Internet access service quality

Telefonica wants to highlight that the performance monitoring of ISP leg may already be implemented by some of NRA and that this chapter should interfere the least possible with the well-established systems, in line to what BEREC considers in the paragraph 161 of NN guidelines: *"[…] If the NRA provides a monitoring mechanism implemented for this purpose it should be considered as a certified monitoring mechanism according to Article 4(4)."*

Telefonica celebrates the recognition that the quality of service measurements of a specific operator must be taken inside the ISP leg, avoiding third party networks. In that sense, Telefonica thinks that the proposal of placing the measurement server in (national) IXP is a step in the right way of isolating ISP performance. Similarly, Telefonica shares BEREC proposal of using tools that don't involve ISP in the measurements because Telefonica thinks it provides the highest level of transparency.

Furthermore, the recognition of end user dependent factors out of the control of ISPs (further developed in chapter 5 of this consult) is in line with Telefonica understanding and knowledge.

Telefonica considers that, in general, a number of common parameters have to be set in order to get measurements that could be used to compare countries results, which is one of the aims BEREC seeks with this Net Neutrality Regulatory Assessment Methodology. It means that for the

measurements all the countries should have the same conditions in device market share. Some to mention

1. models of devices
2. operating systems version
3. time of the day
4. granularity
5. scope (number of test performed)
6. etc.

Additionally, as BEREC recognises in the document, in order to compare results between countries, users must set the devices and environment conditions equally, which would mean stopping adjacent or hidden processes, etc. Telefonica considers that this is not viable in a crowdsourcing approach so a thoroughly investigation should be raised if deviations from countries are detected.

4. Detecting traffic management practices that impact individual applications

Telefonica considers that, in general, the adoption of ad-blockers as well as other protection measures has increased year over year and are part of the general scenario. Furthermore, after the recent worldwide wannacry attack, the adoption of such measures increased as a natural measure fostered by administrations to protect citizenry for cyberattacks.

Consequently, NRAs should take this situation of utmost relevance when assessing and traffic management practices, especially in the crowdsourcing approach, as it can easily derive into wrong conclusions.

Additionally, Telefonica is worried by BEREC assessment on network based ad-blocking without differentiating the cases when the customer has opted-in, that is, when there is transparency and informed consent by end-user. In this case, any traffic management should be further assessed in collaboration with the operator.

Telefonica has also concerns about the result of regular and accepted actions like NAT practices or proxy solutions in fix and especially mobile environments, where the scarcity of IPv4 addresses has forced ISPs to invest in the technical solutions provided by the industry suppliers, that can be wrongly assessed as a non-compliance with Net Neutrality.

Telefonica wants to highlight with concern that despite BEREC acknowledges that there are many different reasons to explain certain performance measurements and thus that it is impossible to identify where the problem of performance lies:

1. in the ISP network,
2. in the apps or software used,
3. in the servers of certain service monitored,
4. In any intermediary carrier or provider (CDN, etc.) involved,

still BEREC considers in its report such measurements for the purpose of measuring QoS and assessing compliance with Net Neutrality legislation.

In any case, Telefonica strongly demands that such measurements remain not public as the consequences of disclosing such results may have a permanent impact in the business of such ISPs. Such measurements shall remain out of public domain until they have been fully contrasted, and affected ISP can provide its own, or third parties, certified measurements evaluating actual performance of ISPs network avoiding factors out of ISP control.

4.1. Connectivity measurements

Telefonica agrees with BEREC note about using NAT in mobile networks may led to have ports blocked and that this is not a Net Neutrality violation.

Telefonica fully disagrees with the inclusion of clause "4.1.4 Detection of an HTTP proxy" within troublesome connectivity practices such as IP address blocking, port blocking or DNS manipulation because HTTP proxies are used not just by ISP, but also by other agents in the Internet, to enhance customer experience.

Furthermore, BEREC is not referring to specific actions by proxies which may have a negative impact according to Net Neutrality legislation. As such, HTTP proxies, should not be included in BEREC report.

4.2. Detecting practices that impact QoS of individual applications

Telefonica agrees with BEREC consideration about how difficult or impossible is to identify whether a problem is in the ISP in scenarios where traffic is affected by ISP, the terminal used by the end-user and the content server itself. Again, a cautious and transparent approach towards the ISP seems to be the best way to deal with these cases.

Additionally, Telefonica consider that in order to be able to compare different countries, a common list of services or applications must be set. As preferred or most used applications and services may differ from country to country, comparison should be carefully analysed.

5. End user dependent factors that may impact the measurement results

Telefonica welcomes that BEREC had considered to introduce the end-user dependant factor that affects to all the measurements taken that are not based on traffic injection and controlled environment. This was an utmost concern raised by Telefonica in previous BEREC consults regarding the reliability that the measurement scenario presents.

Telefonica, in light with the large different factors listed here, is highly concerned on the way NRA can circumvent them and take reliable results, especially when users have to actively shut down processes or apps in their devices (fix or mobile), when the majority of them don't know how to do it or event don't know what it means.

Such complexity will reduce the crowdsource solution sample space (and sample context) so to obtain biased results that won't reflect the general performance of IAS providers.

Consequently, it is of utmost relevance that NRAs analyse the results carefully and thoroughly in the crowdsourcing approach as it can easily derive into wrong conclusions. In-browser or app based measurements tools generate vague, uncontrolled, inconsistent and not-reliable results that

cannot be taken as representative, at least, until an exhaustive analysis in collaboration with involved players is made.

5.1. End user initiated measurements

5.2. End user environment

5.2.1. Fixed environment

- Telefonica would like to add software updates as an element that can disturb the measures taken that has not be considered by BEREC in the document. While it can be seen as an issue mainly affecting the mobile scenarios, it is becoming more relevant in the fix scenarios.

5.2.2. Mobile environment

- Telefonica would like to include software updates as an element to be included in the 'End-user dependent factor that may impact the measurements results" as well as the backups running on background and other traffic flows that permanently use mobile access updating location and other data that are controlled by APPs developer and that ISP cannot control. Actually, in most of the cases, the end user has low or no option to control it.
- Additionally, Telefonica would like to also include in the point 5.2.2 Mobile environment, the cross effect of bad performance of some terminals. Considering in Wifi and 3G/LTE connections the wireless networks adapt the radio path to the worst capable device, the bad performance of a specific devices not only reflected in such device but in any device connected to the same sector or radio band.

5.3. Hardware and software information retrieval methods

Telefonica agrees on BEREC comments regarding the strict compliancy with Privacy and the GDPR that in this matter NRAs must have.

5.4. Measurements data filtering

No comments

6. Measurement results assessment

Telefonica considers that, in light with the large different factors recognised by BEREC that can affect the crowdsource solution plus the concerns raised by Telefonica in this response, the assessment suggested in this clause must be deemed to be just an indication that a NRA should investigate in collaboration with all the stakeholders involved.

Furthermore, Telefonica insist in the recommendation of such measurements not being made public until the parties affected can provide feedback and its own measurements.

6.1. Data validation

Telefonica believes that, due to the complex steps that the users must take to provide reliable measurements, only a limited portion of advanced or knowledgeable users won't represent the average of users. Furthermore, the possibility of manipulation by bots and exploits as already showed by the last cyberattacks indicates and suggest that best approach is always cooperation between operators and NRAs when any issue arises.

6.2. Speed assessment for end users

No comments

6.3. Market level aggregation

Telefonica is highly concerned on the way to measure how Specialized Services might affect Internet Access Service in mobile environment. The devices and applications of Internet are defined to use all the bandwidth available in the connection (IAS).

It means that when both IAS and the specialized service share a path (radio path) the way suggested by BEREC to measure if there is an indication that the specialized services is impacting IAS should be further assess because in normal conditions, even a marginal impact might be detected. But it doesn't mean any practical detriment of IAS perception by the Internet user.

Additionally, the method of having a neighbor (A) with just IAS and another neighbor (B) using IAS + IPTV specialized service does not make any difference if substitute the neighbor B specialized service IPTV by and IPTV service through Internet. In both cases, neighbor A will be affected (and most probably, worse results in the second scenario)

6.4. Individual applications using IAS

Telefonica considers, in the same line as said in the measurements method, in order to be able to compare different countries, a common list of services must be set. As preferred or most used applications and services may differ from country to country, comparison should be carefully analysed.

7. Certified monitoring mechanism

Telefonica considers that not only the device should be certified, but also the conditions of the measurements. In this sense, on top of the conditions mentioned before those related to devices and its functioning, NRAs must also set aspects like:

1. how may tools are used
2. the test cycle length
3. the number of lines used for the test
4. the frequency

Telefonica want to stress that it is a must the replicability of the test to ensure nothing went wrong and conclusions are consequently neither wrong.

Telefonica agrees on the assessment made by BEREC regarding the legal consequences of the quality measurements this document covers and the cautious approach to 'evidence' that NRAs must have.

In this line, Telefonica want to stress that making public performances that cannot unequivocally be assigned to ISPs could provide misleading messages to the public about specific ISPs performance ***should be carefully considered*** by NRAs as (negative) consequences might be permanent.