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Always there!

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Our Ref: CA-38/1/1

6 December 2019

Mr. Charles Punaha
Chief Executive Officer
National Information and Communications Technology
~~P O Box 8444~~
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N.C.D

Deliver by hand and email

Dear Mr. Punaha,

SUBJECT: DRAFT RULE ON TELECOMMUNICATIONS QUALITY OF SERVICE MONITORING WRT MOBILE BROADBAND SERVICES

We thank NICTA for the opportunity to respond in the attached submission to the comments by other industry players in this second round of consultation. We take the opportunity also to make mention our thoughts on the original NICTA published discussion paper.

We submit our emphasis on the need to take into consideration the unique challenges facing PNG operators in maintaining quality of service levels nationwide or to localized areas and not merely use technical measurements and data of other countries.

Furthermore, QoS Monitoring, data collection, assessment and reporting method needs to be re-looked in terms of equitable participation of all stakeholders, which in turn should provide all industry players and users with appropriate and independent measure of quality measurement data.

We request NICTA to coordinate a technical group of industry players to discuss on an ongoing basis such technical issues as quality of service and quality of customer experience among others and that NICTA plays an active role in appropriately monitoring quality measurements and reporting results to the relevant operators and stakeholders.

We further submit that the treatment of setting/measurement of QoS for mobile and fixed services be classified as separate categories in order to take into consideration the effects of the differing nature of resources used and differing modes of supply of these services.

Lastly, other than the above we agree in general with the views of Bemobile, Digicel and Speed checker.

Xavier Victor
Chief Executive Officer

Telikom PNG Limited

Response to Public Consultation on the

DRAFT RULE ON TELECOMMUNICATIONS QUALITY OF SERVICES PERFORMANCE MONITORING

(FURTHER COMMENTS)

Friday, 6 December 2019

PUBLIC CONSULTATION ON THE "DRAFT RULE ON TELECOMMUNICATIONS QUALITY OF SERVICES PERFORMANCE MONITORING

1.0 INTRODUCTION

This paper is in response to NICTA's request for public to "*engage in public consultation in accordance with Section 229 of the Act in relation to draft rule on Telecommunications Quality of Service with regards to mobile telephony and broadband internet access services*"

Telikom did not provide a response in the first round of input, therefore this response retains our original view and also provides our counter view on what others have provided earlier.

Quality of service (QoS) is paramount to any Telecommunications Network operator and ultimately the end user experience matters. The technical measurements and data merely serve to confirm the quality experienced.

The QoS Monitoring, data collection, assessment and reporting method needs to be re-looked in terms of equitable participation of all stakeholders, which in turn should provide all industry players and users with appropriate and independent measure of quality measurement data.

2.0 BACKGROUND

The NICTA proposal "*proposed approach to QoS measurements concentrates on the objective measurement against standards in order to provide a time series of measurements that can enable all parties – including operators, regulators and customers – to have a good indication of how the operators are going over time, and against each other.*"

Under the *Standard and Special Conditions of Individual License Rule 2011, Certain classes of licenses are subject to obligations relating to quality of services. All these obligations are carried over from the original licenses issued by ICCC under the former telecommunications Act 1996 which was since repealed*).

NICTA intends to focus its Quality of services performance monitoring on a set of Technical criteria's or parameters identified as follows in figure 1.0 table below:

Figure 1: Overview of proposed QOS criteria and parameters to be monitored.

Service	QOS Criteria	Service type	QOS parameter
Mobile telephony	Availability		Telephony service non-accessibility
	Call set-up time		Telephony set up time [s]
	Speech quality		Telephony speech quality on sample basis
	Reliability		Telephony cut-off call ratio [%]
Broadband internet access	Availability	Mobile	HTTP Service non-accessibility [%]
		Fixed	Availability of internet access
	Speed	Mobile	HTTP mean data rate [kbit/s]
			FTP {download | upload} mean data rate [kbit/s]
		Fixed	Data transmission speed achieved
			Web page download Speed
	Latency	Mobile	Ping round trip time
		Fixed	IP packet transfer delay
	Reliability	Mobile	HTTP IP-service access failure ratio [%]
			FTP {download | upload} data transfer cut-off ratio [%]
		Fixed	IP packet loss ratio (IPLR)

These will be "*part of a review of the Licensed conditions Rules, NICTA has reviewed the continuing relevance and appropriateness of these quality of services obligations with a view of establishing a set of parameters....*"

NICTA also does not intend to "*specify minimum quality of services target or standards at this time*" so we would understand that it is for monitoring purposes only at this point in time.

3.0 TELIKOM VIEWS

Telikom as the Largest Network operator in PNG has had a fair share of real impediments and challenges to providing the expected standard quality Telecommunications services. We have been saying that the challenges faced in PNG cannot be compared to other developed countries as each have its own unique challenges. For example, difficulties in restoring core infrastructure in the remote mountains or reconnecting fibre or copper cable that is frequently being vandalized, including regular power outages, all contribute to the overall network availability performance. The overall performance quality also is very much dependent on the medium of transmission nationwide, whereby Terrestrial Microwave Radio is predominant, unlike other developed countries where Optical fibre is primary and standard mode.

The Terrestrial Microwave Radio link traverses multiple hops and number of node devices in between which also introduces added latency, therefore the end to end performance and quality objective or target will be unique to PNG. The trunk Radio link (HCN) are usually designed for longer hops of more than 60km mainly to reduce number of repeater sites. Therefore performance quality does degrade from the radio path fading phenomenon.

Nevertheless, standard based measurements and reports on quality of voice and broadband internet services can be provided as required, however, greater consideration for following the following recommendation should be given:

3.1 Method of Quality and Performance Monitoring

The method of monitoring suggested by NICTA requires for operators to supply performance data (Figure 1), however we believe that an independent monitoring method should be allowed to provide some measure of independent and give same credibility.

Alternatively, NICTA is encouraged to explore other quality monitoring options such as:

1) NICTA must also take up the role and on occasions must also do some independent monitoring of these QoS parameters. NICTA already has an IXP gateway, so they can go further by installing monitoring equipment in operators' networks or do drive tests on selected networks for independent assessments.

2) Poll or survey of different Network services users and customers must also be undertaken regularly to gauge own quality of experiences and level of satisfaction. Customer experience is very important and gives a real measure of quality perception.

3) Operators' products' advertised performance quality must also be monitored independently to maintain consistency.

Network monitoring and measuring network performance information does not necessarily translate into users' perceived quality or *Quality* of User Experience (QoE). QoE is now widely being seen as more realistic and becoming more preferable these days. The Term "customer" as used in this context covers the following:

1) Network users such as the ISP providers
2) Consumers such as Corporate or individual users

The regulator and the end users must also be part of the quality monitoring and assessment program. The ITU-T recommendations ITU-T G.1000 *"for viewpoints of QoS"* in figure 1.0 needs to be considered as a model.

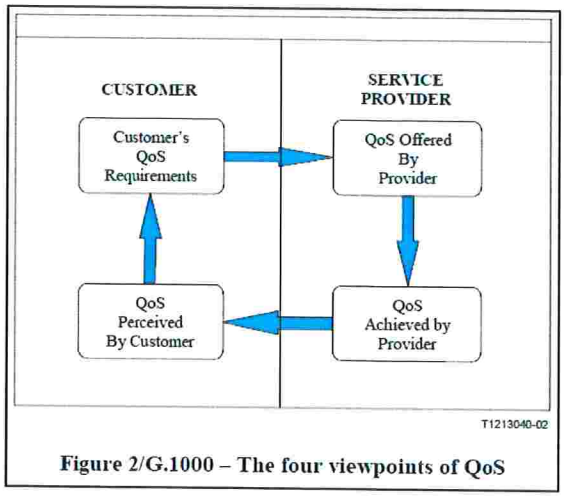

Figure 2/G.1000 – The four viewpoints of QoS

Figure 1.0: ITU-T G.1000

The following study finding by Alcatel-Lucent clearly supports:

"Alcatel-Lucent Bell Labs in the Bell Labs Technical Journal 15, [3] illustrates the difference between QoE and QoS as follows: 'QoE focuses on user-perceived effects, such as degradation in voice or video quality, whereas QoS focuses on network effects such as end-to-end delays or jitter. Of course, QoE is directly related to QoS, but the challenge for a service provider is to have the right set of tools and processes to map the QoS at the network level to the QoE at the user and session levels and have the ability to control these. Another important point to note is that measurements in individual nodes may indicate acceptable QoS, but end users may still be experiencing unacceptable QoE." (1)

3.2 Network Quality and Performance Report

For Fixed services operators like Telikom, we would be very much interested in how we fare against competition, therefore quality performance reports collected and published independently of operator influence would be much more valued.
It is recommended that NICTA take an active approach in taking responsibility of some of these measurement and reporting functions rather than relying only on the operators.

We would therefore recommend following by NICTA:

i) Data collected to be compiled and performance review and trend report to be published regularly for everyone to access.

4.0 TELIKOM RESPONSE TO INPUTS FROM OTHER INDUSTRY OPERATORS

Three response where provided from following two mobile operators and one independent network quality expert service provider:

1) Digicel
2) Bemobile and
3) Speedchecker.com

Generally Telikom shares the same view with these responses and agree generally with the views expressed so far.

We, however, share a differing view on following specific points:

4.1 Digicel

Point 1:

"Digicel believes that the fixed and Mobile distinction should be removed and, instead all networks assessed in a similar manner."

i) Reference : Broadband Internet Access: (Page 4, Paragraph 2)

ii) Reference Section 2.3 Broadband Internet Access

"Digicel believes that the fixed and Mobile distinction should be removed and, instead all networks assessed in a similar manner."

Fixed and mobile quality of services and expectation cannot be classified into one category as the end to end network traverses through some distinct transmission mode which are quite unique. Take for example, mobile technology in most part shares finite spectrum resources that is shared among users. Therefore, we expect more degradation such as packet losses than on fixed network. That can restrict or limit service providers to navigate around to provide improved experience when there is congestion. This is quite opposite to fixed services such as FTTx, ADSL and fixed broadband wireless where there is dedicated allocation.

PNG already has benchmark of broadband infrastructure whereby Triple play services and unlimited bundling product now being introduced into the market will put more pressure on mobile network quality than the fixed network. Therefore, it is more realistic to keep minimum quality measurement criteria separate.

4.2 Bemobile

Telikom generally agree and support the view expressed that the quality of services and the highlight support for "Confidentiality of information" collected by NICTA or its agent.

4.3 Speedchecker

Telikom generally agree and support the view expressed that the quality of services measurement emphasised on actual user experience or "Crowdsourced" Model proposed.

5.0 REFERENCES

1) Rec. ITU-T G.1000 (11/2001), ITU
2) Rec. ITU-T E.804 (02/2014), ITU
3) Traffic Management in Multi-Service Access Networks, Issue: 01, September 2017, Broadband Forum Market Report
4) Quality parameters and standards for Telecommunications and Broadcasting networks (Study of Specifications and Recommendations), Bureau of Telecommunications and Post St.Maartens. [1]