



CONSULTATION PAPER

Draft Rule on Telecommunications Quality of Service Performance Monitoring

Issued on 17 September 2019

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1 INTRODUCTION

Under the *Standard and Special Conditions of Individual Licences Rule 2011 (the Licence Conditions Rule)*, certain classes of licensees are subject to obligations relating to quality of service. For example, mobile network operators are required to:

- (a) maintain a call drop-out rate of no more than 2%;
- (b) maintain a rate of call failure due to network congestion of no more than 2%;
- (c) maintain a network availability rate of at least 99.99% in specified main centres and mid-sized centres, and 98.00% in specified administrative district centres and other localities;
- (d) repair of 95% of mobile network faults occurring in specified:
 - main centres within 6 hours;
 - mid-sized centres within 24 hours;
 - administrative districts within 2 working days; and
 - small population centres within 3 working days.

In addition, the Licence Conditions Rule also requires Telikom:

- (a) to maintain a rate of network availability in respect of its fixed network of at least 99.9% in specified main centres and mid-sized centres, and 98% in specified administrative district centres and other localities;
- (b) connect 95% of new fixed telephony services in specified main centres and mid-sized centres within:
 - three working days where there is an existing fixed line connection; and
 - five and ten working days, respectively; and
- (c) repair of 95% of fixed network faults occurring in specified:
 - main centres within four working days;
 - mid-sized centres within seven working days.

All of these obligations were carried over from the original licences issued by the Independent Consumer and Competition Commission under the former telecommunications law (the *Telecommunications Act 1996*, since repealed).

As part of a review of the Licence Conditions Rules, NICTA has reviewed the continuing relevance and appropriateness of these quality of service obligations with a view to establishing a set of parameters that

- (a) relate to the telecommunications services that are of greatest significance to users in PNG, namely mobile telephony and fixed and mobile broadband internet access;
- (b) relate to the aspects of those services that have the biggest impact on customers;

- (c) are well-defined and can be measured cost-effectively;
- (d) will help inform NICTA’s understanding of the state of telecommunications markets and the level of performance;
- (e) may in time help customers to make better informed choices.

2 PROPOSED QOS FOCUS

NICTA intends to focus its future quality of service performance monitoring on the criteria identified in Figure 1. For each criterion NICTA has identified a relevant quality parameter that is standardised and able to be measured to provide an indication of a service provider’s performance with respect to that criterion. This is reflected in the draft rule at Attachment A. NICTA would welcome feedback on the appropriateness of the proposed quality parameters given NICTA’s intention to focus on the identified quality criteria. Respondents are welcome to submit specific proposals for alternative (standardised) quality parameters to measure the identified quality criteria.

The draft rule contemplates that NICTA may specify the form and manner in which service providers will report on quality of service performance. In order to add some further detail at this stage an indication of the approach to implementation that NICTA is considering is set out in Attachment B for mobile telephony and in Attachment C for fixed and mobile broadband internet. Attachments B and C are indicative only at this stage and have been added to encourage discussion not only on the broader principles of what should be measured, but how implementation might feasibly proceed in PNG. Respondents are encouraged to submit alternative approaches for consideration.

NICTA does not propose to specify minimum quality of service targets or standards at this time given that the purpose is essentially to inform. However, if in the future NICTA’s performance monitoring indicates poor quality of service in particular areas, then NICTA may then consider introducing mandatory performance standards.

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)	

3 PUBLIC CONSULTATION

NICTA invites interested parties to consider and comment on the draft rule at Attachment A, in particular what additional testing protocols might need to be standardised and specified in the rule and what those protocols should be in practice. **Written submissions should be submitted via email to consultation.submission@nicta.gov.pg and must be received by Close of Business on Tuesday 15 October 2019.**

Copies of all submissions received will be published on NICTA's Public Register consistent with the requirements on NICTA under subsection 229(3) of the Act. Additional procedural information is set out in the *Guidelines on the submission of written comments to public consultations and public inquiries*, which are available on NICTA's Public Register.

ATTACHMENT A: DRAFT RULE

TELECOMMUNICATIONS (QUALITY OF SERVICE) RULE 2019

National Information and Communications Technology Act 2009

The NATIONAL INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY makes these Rules under section 218 of the *National Information and Communications Technology Act 2009*.

Dated [date] [month] 2019

[THIS VERSION NOT FOR SIGNATURE]

[Name]

Chairman

Charles Punaha

Chief Executive Officer

National Information and Communications Technology Authority

PART I – PRELIMINARY

1 Name of Rules

These Rules may be cited as *Telecommunications (Quality of Services) Rules 2019*.

2 Commencement

These Rules take effect from 2019.

3 Definitions

- (1) Subject to subsection (2), unless the context otherwise requires, terms used in these Rules have the same meaning as in the Act.
- (2) In these Rules:
 - (a) **“Act”** means the *National Information and Communications Technology Act 2009*;
 - (b) **“B-party”** is a Retail Customer located in Papua New Guinea to whom a Call is made;
 - (c) **“call”** means a continuous communication;
 - (d) **“cell”** means a geographic area served by a base station;
 - (e) **“fixed network”** means a Network that is not a Mobile Network;
 - (f) **“broadband internet access services”** means an Applications Service whereby a person is able to access internet services and applications via a connection with a minimum download speed of 512 kbit/s;
 - (g) **“mobile network”** means a Network that:
 - (i) comprises multiple base stations that transmit and receive Radiocommunications to and from Apparatus of a B-party located in a cell associated with each base station; and
 - (ii) detects the Apparatus within which the cell is located and causes the base station supporting that that cell to transmit and receive Calls to and from that Customer Equipment;
 - (iii) enables Calls to continue without interruption when such Apparatus moves between cells;
 - (h) **“measurement period”** means the six (6) month period from 1st January to 30th June, or 1st July to 31st December.

NOTE: The following terms are defined in the Act:

- apparatus;
- applications licensee;
- applications services;
- communication;
- customer equipment;
- network;
- NICTA;

- Radiocommunications;
- retail customer.

PART II – MEASUREMENT OF QUALITY OF SERVICE PARAMETERS

4 Mobile telephony services

- (1) An Applications Licensee that supplies a voice Call Communications service using a Mobile Network shall:
 - (a) measure each of the quality of service parameters specified in column 2 in Schedule 1 in relation to its supply of that voice Call Communications service during a Measurement Period;
 - (b) carry out the measurements required under paragraph (a) in accordance with the methods specified for such measurements in the technical standard or standards listed in corresponding entry in column 4 in Schedule 1; and
 - (c) provide NICTA with the results of its measurements under paragraph (b) within thirty (30) Days of the end of each Measurement Period.
- (2) NICTA may specify the form of the report mentioned in subsection (1)(c).

5 Mobile broadband services

- (1) An Applications Licensee that supplies a Broadband Internet Access Service using a Mobile Network shall:
 - (a) measure each of the quality of service parameters specified in column 2 in Schedule 2 in relation to its supply of that Broadband Internet Access Service during a Measurement Period;
 - (b) carry out the measurements required under paragraph (a) in accordance with the methods specified for such measurements in the technical standard or standards listed in corresponding entry in column 4 in Schedule 2;
 - (c) provide NICTA with the results of its measurements under paragraph (b) within thirty (30) Days of the end of each Measurement Period.
- (2) NICTA may specify the form of the report mentioned in subsection (1)(c).

6 Fixed broadband services

- (1) An Applications Licensee that supplies a Broadband Internet Access Service using a Fixed Network shall:

- (a) measure each of the quality of service parameters specified in column 2 in Schedule 3 in relation to its supply of that Broadband Internet Access Service during a Measurement Period;
 - (b) carry out the measurements required under paragraph (b) in accordance with the methods specified for such measurements in the technical standard or standards listed in corresponding entry in column 4 in Schedule 3;
 - (c) provide NICTA with the results of its measurements under paragraph (b) within thirty (30) Days of the end of each Measurement Period.
- (2) NICTA may specify the form of the report mentioned in subsection (1)(c).

ATTACHMENT B: MOBILE TELEPHONY – INDICATIVE IMPLEMENTATION ARRANGEMENTS

Criterion	Parameter	Definition and measurement	Measurement method	Reporting
Call set up time (successful calls only)	Telephony set up time [s]	ITU-T E.804 (02/2014) cl.7.3.6.2 (GSM & UMTS)	Network internal counters	Times of the fastest 95% and 99%. 1) Record the set-up times; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., ... with the longest being #N; 3) Record and report the time of the entry closest to 95% of #N and of the entry closest to 99% of #N.
Reliability	Unsuccessful call ratio	ETSI EG 202 057-2 cl.5.1	Network internal counters	<5%* Average availability over the whole reporting period. Number of instances where the time between successive successful call attempts that are separated by unsuccessful ones exceeds 1 minute. (Measures outages) The sum of the times between successive successful call attempts that are separated by unsuccessful ones
Reliability	Dropped call ratio	E.804 cl. 7.3.6.5	Network internal counters	<3%*

* As per licence condition

Explanatory Note: For unsuccessful call ratio, it is important to measure not only the average over the reporting period but also to assess the occurrence of outages.

Reporting Form

Licensee:

Report for the 6 month period from/to:

Report prepared by: (Name in capitals and signature)

Report authorised by: (Name in capitals and signature)

Date:

Parameter	Detail	% of maximum possible number of instances on which the result is calculated	Result
1: Telephony set up time	Time of the fastest 95% of successful call setups	(e.g. 100%)	(Time in seconds to one decimal place)
	Time of the fastest 99% of successful call setups		(Time in seconds to one decimal place)
2: Unsuccessful call ratio and outages	Average unavailability over the whole reporting period - Number of unsuccessful call attempts divided by total number of call attempts		(% to one decimal place)
	Number of instances where the time between successive successful call attempts that are separated by unsuccessful ones exceeds 1 minute.		(Integer number of instances)
	Number of instances where the time between successive successful call attempts that are separated by unsuccessful ones exceeds 20 minutes.		(Integer number of instances)

<p>3: Dropped call ratio</p>	<p>The number of successful call attempts ended by a cause other than the intentional termination by A- or B-party, divided by the total number of successful call attempts.</p>		<p>(% to one decimal place)</p>
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Reasons why any results are calculated on less than the maximum possible number of instances:

Actions taken or planned to include 100% of instances in the calculations:

ATTACHMENT C: MOBILE AND FIXED BROADBAND INTERNET – INDICATIVE IMPLEMENTATION ARRANGEMENTS

Information required:

1. List of periods of more than 1 minute duration when the Internet network access system handling the control of access to the Internet and the allocation of dynamic IP addresses was not fully operational to the extent that user access was affected, together with the cause of the problem. Scheduled outages are to be included.
2. Total active international transmission capacity for Internet traffic contracted at the start and end of the reporting period.
3. List of periods of more than 10 minutes duration when the available international transmission capacity for Internet traffic was lower than 80% of the capacity contracted.
4. A description of the caching arrangements and capacity for caching international Internet traffic showing information for HTTP and streaming services separately.
5. The busy hour times for traffic handled by local servers and for international internet traffic, given separately for each month.

Reporting Form

Licensee:

Report for the 6 month period from/to:

Report prepared by: (Name in capitals and signature)

Report authorized by: (Name in capitals and signature)

Date:

List of periods of more than 1 minute duration when the Internet network access system was not fully operational.

Date	Time of start	Duration	Extent of network affected	Cause

Total active international transmission capacity for Internet traffic contracted at the start and end of the reporting period.

Date	Capacity

Where capacity is contracted on a statistical basis (e.g. a certain amount guaranteed and an additional amount available if not used for other purposes, then the guaranteed amount and the possible maximum should be shown separately.

List of periods of more than 10 minutes duration when the available international transmission capacity for Internet traffic was lower than 80% of the capacity contracted.

Date	Time of start	Duration	Approximate % of total capacity still available	Cause

Description of the caching arrangements and capacity for caching international Internet traffic

No format is specified, but NICTA may specify a format at a later date.

Busy hour times

Month	National traffic - See Note	International traffic

Note: If it is not practicable to distinguish national and international traffic then the busy hour can be specified for combined traffic.