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Quality of Service Guideline

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This document is produced by the Office of the Telecommunications and Radiocommunications Regulator where it sets out the guidelines for service providers to follow concerning quality of telecommunications services.

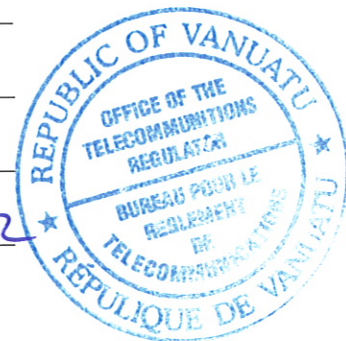
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1 Introduction

- 1.1 In exercising the powers conferred by section 7 (1) of the Telecommunications and Radiocommunications Regulation Act No. 30 of 2009 and clause 16.7 of the Telecommunication Licences ("Licences"), the Regulator hereby developed the following guidelines concerning quality of service.
- 1.2 This document is the "Quality of Service Guideline".

2 Definitions

Any terms and or capitalized terms not otherwise defined shall have the meaning attributed to them in the Act. For the purposes of this document, unless the context otherwise requires:

Act means the Telecommunications and Radiocommunications Regulation Act No. 30 of 2009;

billing means the administrative function of preparing bills, prompting payments, obtaining revenues and taking care of customer claims;

call set-up time means the period starting when the address information required for setting up a call is received by the network (recognized on the calling end user's access line) and finishing when the called party busy tone, or ringing tone or answer signal is received by the calling party;

complaint means a statement by an end user expressing dissatisfaction due to a gap between the expected and the delivered benefits from the use of a service;

coverage map means a graphical representation of the area(s) in which a service is offered, superimposed on a map of Vanuatu;

direct service means a service where the service provider that provides the telecommunications service(s) also provides the access network or provides an un-switched local loop (unbundled local loop) for the provision of service to the end user;

directory service means a service to search and retrieve information from a catalogue of well-defined objects, which may contain such information as telephone numbers, access conditions and addresses;

dropped call ratio means the proportion of incoming and outgoing calls which, once they have been correctly established and therefore have an assigned traffic channel, are dropped or interrupted prior to their normal completion by the end user;

end user has the meaning set out in the Act.

fault means the inability of an item to perform a required function, excluding that inability due to preventive maintenance, lack of external resources or planned actions;

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fault repair time means the duration from the instant a fault has been notified by the end user to the published point of contact of the service provider to the instant when the service or service element has been restored to normal working order;

fault report means a report of disrupted or degraded service that is made by an end user and is attributable to the network of the service provider or any interconnected public network, and that is not found to be invalid;

Guideline refers to this quality of service guideline;

indirect service means a service where the service provider that provides the telecommunications service(s) does not provide the access network but is selected by the end user using a form of carrier selection;

internet access service means a public telecommunications service consisting of providing end users with an access to the global Internet;

measure means a unit by which a parameter may be expressed;

parameter means a quantifiable characteristic of a service with specified scope and boundaries;

planned disruption of service means the scheduled or planned interruption of the telecommunication service by the service provider;

public fixed telephone service means public telephone services other than public mobile telephone services;

public mobile telephone service means a public telephone service typically provided to a mobile terminal (i.e., a terminal which can be used while the end user is on the move, without being restricted to an area served by one base station);

quality of service (QoS) means the totality of characteristics of a telecommunications service that bear on its ability to satisfy stated and implied needs of the end user of the service;

quarter means a period of three months starting on 1 January, 1 April, 1 July and 1 October of a calendar year;

Regulator has the same meaning in the Act.

repair means the maintenance carried out after fault recognition and intended to restore an item to a state in which it can perform a required function;

service means a set of functions offered to an end user by a service provider which has a set of Terms and Conditions as notified or where required approved by the Regulator in accordance with the Act and Licence

service provider has the meaning set out in the Act;

SMS means Short Message Service;

supply time means the duration from the instant of a valid service order being received by a direct service provider to the instant a working service is made available for use;

3 Purpose

- 3.1 The purpose of this Guideline is to establish a framework for the provision of information to assist end users with their selection of services and to assist in the maintenance and the improvement of the QoS provided by service providers.
- 3.2 A separate Regulation covering Publication of Information or Data will enable QoS and other criteria to be published and inform consumers on the performance of service providers and the market.

4 Scope

- 4.1 This Guideline applies to all licensed service providers.
- 4.2 This Guideline sets out the measuring and reporting of QoS parameters.

5 Quality of Service Targets

- 5.1 The Regulator may periodically conduct surveys to assess end user perceptions of services and service providers and to investigate which, if any, QoS targets should be Published. The Regulator may determine standards on all service providers providing a specific service or on an individual service provider as it sees fit in accordance with the Act and Licence.

6 Parameters

- 6.1 The parameters for QoS are set out in the Schedules as outlined below:
 - a) Public fixed telephone service in Schedule I;
 - b) Public mobile telephone service in Schedule II; and
 - c) Internet access service in Schedule III.
- 6.2 Before concluding a contract with an end user, a service provider should make available to that end user up-to-date and clear information on its QoS performance.
- 6.3 A wholesale service provider, who makes available services to a service provider, which are used as inputs in provision of the services, should provide to the Service provider and the Regulator, the measured QoS for such services.

7 Reporting of QoS

- 7.1 Service providers should start measuring QoS parameters from the start of the calendar year.
- 7.2 The reporting periods over which measurements are made should be quarterly.
- 7.3 Service providers should provide the data as specified in section 7 to the Regulator no later than thirty (30) days after the end of the reporting period in the format specified in Schedules I, II,

and III. This data should be provided via email in Microsoft Excel format to the email address provided by the Regulator.

- 7.4 Service providers should, on a quarterly basis, publish coverage maps for each of the services covered by this Guideline as well as calculations of coverage in terms of territory and population. The coverage maps should:
- a) be shown against an outline map of Vanuatu;
 - b) clearly indicate the areas in which each of the services covered are available;
 - c) in the case of a wireless service, the map should indicate the signal strength in dBm (decibels reference to 1 milliwatt) at the edge of the coverage area.

8 Additional Parameters

- 8.1 Service providers may, in addition to the parameters set out herein, adopt additional QoS parameters to determine its QoS level.
- 8.2 Where a service provider adopts additional parameters and introduces procedures and information systems intended for the treatment of QoS criteria, it should provide the Regulator with the detailed methodologies of the measurements.
- 8.3 Any notice sent by a service provider to the Regulator should detail all relevant matters including the methods and systems used for their measurements.

9 Publication of QoS Information

- 9.1 For each reporting period service providers should, no later than thirty (30) days after the end of each reporting period publish on its website:
- a) clear and up-to-date information on the QoS performance levels achieved during the previous reporting period compared with each parameter detailed in the Schedules;
 - b) clear and up-to-date information on the QoS levels it proposes to provide to customers in the course of the next twelve (12) months; and
 - c) service coverage maps as per section 8 (4).
- 9.2 Subject to any Confidential Information or Data indicated by a Service provider, the Regulator may publish the appropriate Information and Data provided.

10 Record Keeping

- 10.1 All QoS data as well as measurements and related records that a service provider collects should be retained by the service provider for a minimum period of twenty four (24) months after the end of the reporting period or until directed otherwise by the Regulator.

11 Supply Time

- 11.1 Service providers should include in the QoS measurements the number of requests for a service which cannot be provided to an end user because they:
- a) cannot install the service because it is not technically feasible; or

- b) do not supply the particular service in the requested geographical area;

- 11.2 Service providers should bear the burden of proving that the service cannot technically be installed.

12 Force Majeure

- 12.1 In the event of a natural disaster or other case of force majeure affecting QoS, a service provider should provide the measured QoS and may additionally provide a second figure which excludes the effects of the exceptional circumstances. A note clearly explaining the difference should also be provided.
- 12.2 In the event that a service provider is unable to submit a report during the relevant reporting period as a result of a case of force majeure, he may apply to the Regulator for an extension of time. The Regulator will then determine if such an extension will be granted.
- 12.3 In the event of a case of force majeure, the Regulator reserves the right to exempt a service provider from the obligation to submit a report for the reporting period in which the case of force majeure occurred until the subsequent reporting period.

13 Planned Service Interruptions

- 13.1 Service providers should give end users advance notice of planned interruption of service by publishing a notice in the widely-read electronic media and/or the print media at least 48 hours before the planned interruption of service. Such notices may additionally be sent via email and/or SMS. Such notices must clearly indicate the number and types of subscribers that will be affected as well as the way they will be impacted;
- 13.2 Service providers should also provide the information for such service interruptions to the Regulator at least 48 hours before the planned interruption of service.

14 Un-planned Service Interruptions

- 14.1 In the event of any un-planned service interruption a service provider should:
 - a) within 3 hours of the event, notify the Regulator via email and/or SMS of the occurrence of the event, including details on areas affected and numbers of end users affected where possible;
 - b) continue to provide updates to the Regulator via email and/or SMS every 12 hours detailing progress in resolving the issue; and
 - c) within 24 hours of the resolution of the issue, provide to the Regulator a report detailing the circumstances attributing to the interruption of the service, and the action taken to remedy the situation. Additionally, the service provider is to indicate the number of end users that were affected and in what way they were impacted. The report must also state whether any reimbursements (or similar remedies) were or will be made to end users.

15 Relationship with service providers

- 15.1 The provisions of this Guideline do not replace, but rather supplements the requirements of the Licence terms and conditions of a service provider.
- 15.2 If this Guideline is not followed by service providers the Regulator will consider changing it to a Regulation in accordance with section 7 (3) of the Act.
- 15.3 This Guideline may be amended from time-to-time as required.

Made this day of October 2012.

Alan Horne

Telecommunications and Radiocommunications Regulator

SCHEDULE I

| Public Fixed Telephone Service | | |
|--|--|---|
| Parameter | Measure | Statistic |
| 1.0 Supply time for initial connection | Time for fastest 95% | elapsed days (direct services only) |
| | % supplied by agreed date |% |
| | Hours for taking orders | From to on weekdays From to on Saturdays From to on Sundays |
| | Periods for appointments | From to on weekdays From to on Saturdays From to on Sundays |
| 2.0 Fault rate | Faults/access line/year | reports per 100 lines |
| 3.0 Fault repair time | Time to repair 80% of faults on access lines | elapsed hours |
| | Time to repair 80% of all other faults | elapsed hours |
| | % repaired on target date | % |
| | Hours for reporting faults | From to on weekdays From to on Saturdays From to on Sundays |
| | Periods for appointments | From to on weekdays From to on Saturdays From to on Sundays |
| 4.0 Unsuccessful call | % for national calls | % Number of observations = |
| | % for international calls | % Number of observations = |
| | Mean time for national calls | Seconds Number of observations = |
| 5.0 Call set-up time | Time for fastest 95% for national calls | Seconds Number of observations = |
| | Mean time for international calls | Seconds Number of observations = |
| 6.0 Dropped call ratio | % Fixed - Fixed | % Number of observations = |
| | % Fixed – Mobile (Own Network) | % Number of observations = |
| | % Fixed – Mobile (Other Network) |% Number of observations = |
| 7.0 Response times for operator services | Mean time to answer | Seconds |
| | % answered within 20 seconds | % Number of observations = |
| 8.0 Response time for directory enquiry services | Mean time to answer | Seconds |
| | % answered within 20 seconds | ...% Number of observations = |
| 9.0 Working Public payphones | % in full working order | ...% Number of observations = |
| 10.0 Bill correctness complaints | % | % |

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Clause 5 and

ETSI EG 201 769 V1.1.2 (2000-10) “Speech Processing, Transmission & Quality Aspects (STQ); QoS parameter definitions and measurements; Parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC” Clause 5 for full definitions of the parameters used above.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex A for the methodology of combining weekly or monthly results to produce quarterly statistics.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex B for a full explanation of “fastest X%”.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex C for a method of calculating the number of observations required for measures of time.

SCHEDULE II

| Public Mobile Telephone Service | | |
|---|--|--|
| Parameter | Measure | Statistic |
| 1.0 Unsuccessful call | % for national calls |% Number of observations = |
| | % for international calls |% Number of observations = |
| 2.0 Call set-up time | Mean time for national calls | Seconds Number of observations = |
| | Time for fastest 95% for national calls | Seconds Number of observations = |
| | Mean time for international calls | Seconds Number of observations = |
| | Time for fastest 95% for international calls | Seconds Number of observations = |
| 3.0 Response times for operator services | Mean time to answer | Seconds |
| | % answered within 20 seconds |% Number of observations = |
| 4.0 Response time for directory enquiry services | Mean time to answer | Seconds |
| | % answered within 20 seconds |% Number of observations = |
| 5.0 Bill correctness complaints | % |% |
| 6.0 Dropped call rate | % Mobile - Fixed |% Number of observations = |
| | % Mobile – Mobile (Own Network) |% Number of observations = |
| | % Mobile – Mobile (Other Network) |% Number of observations = |
| 7.0 Successful SMS ratio | % of successfully sent SMS |% Number of observations = |
| 8.0 Completion rate for SMS | % of successfully sent and received SMS |%Number of observations = |
| 9.0 End-to-end delivery time for SMS | Mean time for SMS delivery | Seconds |
| | Time for fastest 95% | Seconds Number of observations = |
| NOTE: Where the number of observations is required, if a service provider chooses to observe all events then just “All” should be written on this form. | | |

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Clause 5, and ETSI EG 201 769 V1.1.2 (2000-10) “Speech Processing, Transmission

& Quality Aspects (STQ); QoS parameter definitions and measurements; Parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC” Clause 5, and ETSI EG 202 057-3 V1.1.1 (2005-04) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 3: QoS parameters specific to Public Land Mobile Networks (PLMN)” Clause 6 for full definitions of the parameters used above.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex A for the methodology of combining weekly or monthly results to produce quarterly statistics.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex B for a full explanation of “fastest X%”.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex C for a method of calculating the number of observations required for measures of time.

SCHEDULE III

| Internet Access Service | | |
|---|--|---|
| Parameter | Measure | Statistic |
| 1.0 Supply time for initial connection | Time for fastest 50% |Elapsed days |
| | Time for fastest 95% |Elapsed days |
| | % supplied by agreed date |% |
| | Hours for taking orders | From to on weekdays From to on Saturdays From to on Sundays |
| 2.0 Fault rate | Faults/access line/year |reports per 100 linesreports per 100 lines |
| 3.0 Fault repair time | Time to repair 95% of faults on access lines |elapsed hours |
| | Time to repair 95% of all other faults |Elapsed hours |
| | % repaired on target date |% |
| | Hours for reporting faults | From to on weekdays From to on Saturdays From to on Sundays |
| | Periods for appointments | From to on weekdays From to on Saturdays From to on Sundays |
| 4.0 Bill correctness complaints | % |% |
| 5.0 Login time | Time for fastest 80% Time for fastest 95% |Elapsed timeElapsed timeNumber of observations |
| 6.0 Data transmission speed achieved | Rate of highest 95% Rate of lowest 5% |Kbit/s achievedKbit/s achievedNumber of observations |
| 7.0 Unsuccessful data transmission ratio | % |% Number of observations |
| 8.0 Delay | Mean time |Seconds ...Number of observations |
| NOTE: Where the number of observations is required, if a service provider chooses to observe all events then just “All” should be written on this form. | | |

See ETSI EG 201 769 V1.1.2 (2000-10) “Speech Processing, Transmission & Quality Aspects (STQ); QoS parameter definitions and measurements; Parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC” Clause 5, and ETSI EG 202 057-4 “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS

parameter definitions and measurements; Part 4: Internet access” Clause 5 for full definitions of the parameters used above.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex A for the methodology of combining weekly or monthly results to produce quarterly statistics.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex B for a full explanation of “fastest X%”.

See ETSI EG 202 057-1 V1.3.1 (2008-07) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 1: General” Annex C for a method of calculating the number of observations required for measures of time.

See ETSI EG 202 057-4 V1.1.1 (2005-10) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 4: Internet access” Annex B for details on Internet Access measurement set-up.

See ETSI EG 202 057-4 V1.1.1 (2005-10) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 4: Internet access” Annex D for the specification of a test file.

See ETSI EG 202 057-4 V1.1.1 (2005-10) “Speech Processing, Transmission and Quality Aspects (STQ); End user related QoS parameter definitions and measurements; Part 4: Internet access” Annex F for guidance on technical performance aspects of Internet accesses: Delay, packet loss and jitter.