

QUALITY OF SERVICE

This fact sheet has been developed for the Consumer Education Program by the Communications Commission of Kenya. It was compiled by studying material from various authoritative sources and adopting what is universally acceptable and relevant to the Kenyan situation. The fact sheet is intended to enable Consumers have a good understanding of the issues discussed and hence empower them when making decisions regarding ICT products and systems.

INTRODUCTION

Before a Consumer purchases communication's products or services, there are some aspects that should be taken into consideration besides the price. Some service providers may at some point even limit the number of subscribers that they accept concurrently and not every service provider has an easy process for Consumers to subscribe to their services. Consumers are also faced with the fact that the services that they subscribe to are sometimes not satisfactory for example, instances when the network is inaccessible making it impossible for one to make a phone call or when the call is disconnected during a conversation due to some fault of the network or when one cannot hear the other party on the phone.

Consumers should also be aware of the fact that some of the telecommunication networks may lack the capacity to handle all traffic or simultaneous requests for services from the various users. In most cases applications with very different characteristics and requirements compete for scarce network resources. For such networks, where the capacity is a limited resource, the Consumer cannot expect to always get the highest possible level of service but must accept a certain level of degradation. For networks, where the capacity is a limited resource, it's important for the service provider or the network operator to guarantee certain levels of performance

WHAT IS QUALITY OF SERVICE (QoS)

Quality of service is the level of performance a communication's service provider guarantees its customers. The QoS offered by a service provider is the statement of the level of Quality for the services offered to the customer by the service provider. For communication networks, Quality of Service (QoS) deals with the ability to provide different priorities and/or resources to different applications. This should be stated in all contracts and service level agreements entered into with the communication service provider.

There is a major difference however in how consumers of communication services and how network engineers describe QoS. From a consumer's point of view, consumers have some expectations in terms of quality in relation to the communication service that they would purchase or are using. These qualities (service indicators) include but not limited to;

- Value for money
- Ease of use of the service or product
- Professionalism of the service provider in the provision of the services

- Flexibility: the ease in which the consumers is able to switch from one operator to another or switch communication equipments and other resources e.g. telephone numbers
- Productivity of the product and service
- Reliability; how reliable the communication service provider in providing service whenever its needed
- Security; How secure are conversations and data sent and received

On the other hand the qualities (technical indicators) that communication network engineers look for are mainly

- Latency : The time it takes to send a signal across a network
- Jitter: the variability in time it takes to send a signal across a network
- Packet Loss: number of packets of data that are lost during transmission.
- Rate: the rate at which signals are transferred
- Errors: The amount of traffic unit that had been corrupted
- Delivery failure, which may or may not be associated to loss e.g. misdirected information or incorrectly duplicated information

These aspects of Quality of service can be termed as parameters. QoS parameters are designed to meet specified targets that are quantified. These targets are determined in order to improve the quality of a service within a specified period of time. Depending on the service aspect that is to be improved, targets are fixed for specific QoS parameters. Consumers should make sure that they are aware of the parameters that their service providers have committed to meet and also the defined targets for those parameters. They can cross-check the targets set by the different service providers and choose the provider they deem to be more efficient. They can also use the parameters for comparison purposes with the actual QoS provided or the perceived QoS to ensure that they are getting the level of quality specified in their contractual agreements

THE VALUE OF QUALITY OF SERVICE

A proper understanding of QoS enables consumers to choose communication service providers in a way that satisfies their needs. Consumers are also able to make informed decisions by comparing performance levels and QoS levels of communication service providers in the market. QoS helps service providers differentiate themselves from competitors in their service provision and to scale capacity more effectively. A consumer who takes a service from a service provider, who does not follow the best practices of deploying QoS, will most likely experienced some adverse problems e.g. face packet drops, or transaction losses, or delayed data which may result in severe financial losses.

MEASUREMENT AND SETTING TARGETS/STANDARDS FOR QoS

Measurement and monitoring of QoS is important to the consumers, service providers and regulator (CCK) since this information

- Helps customers make informed choices when purchasing communication services

- Can also be used by service providers to manage and improve the way they offer their services, as well as by the customers to ensure that they are getting the level of quality specified in their contractual agreements.
- Used by regulatory authorities to define quality levels for regulatory purposes such as ensuring interconnection and interoperability of networks and services.
- Helps the regulator understand the state of the market
- Can be used to assess the quality of certain aspects of a service e.g. billing, service response time, call set-up time etc.
- Quality of service parameters may also be selected to measure the overall quality of a service as perceived by the user.
- Helps operators to achieve fair competition
- Ascertains the services levels committed to by communication service providers
- Helps maintain or improve quality in the presence and absence of competition.

Measurement of QoS of communication services can be carried out by consumers, communication service providers and the Commission. The Commission is in the process of redefining the measurements (parameters/indicators) that are to be measured. Quality of service parameters as earlier indicated can either be Service indicators e.g. number of complaints resolved in a given period of time, number of disconnections for non-payment or Technical indicators e.g. loss of data, Noise. QoS parameters could also be technology specific e.g. call success rate or technology neutral e.g. durations for service provisioning.

MONITORING THE QUALITY OF SERVICE

The Commission regulates performance of key services offered by service providers or operators by monitoring the QoS levels of some communication services and requires the service providers to submit periodic reports of their service quality. The QoS levels are based on the parameters published in the table below. Consumers should try to understand the parameters in this table and whenever subscribing to a service they should always seek to know from the service provider the level offered for that specific service. For example, when a service provider gives a *call centre answer time* of 1 minute, it means that whenever one makes a call to the call centre, it should be answered within one minute. If the Consumer notices that the service obtained significantly deviates from what is subscribed to, s/he can report their complaints regarding poor quality of service to their service provider. If the issue is not addressed adequately, the Consumer can seek further assistance from the Commission.

In the near future the Commission will be making the QoS levels committed by the various service providers public thereby making it easier for the Consumers to procure the most appropriate services for their needs as well as ensure that the service levels are maintained.

Important QoS parameters

	QoS parameter	Scope	Parameter Name	Definition
1.	Service Parameters	All communication services (Voice telephony, Data services, capacity resale services e.t.c)	Accessibility	This represents the degree a system is capable of serving a service request.
			Integrity	This is the quality aspect that measures how the system maintains the correctness of the interaction in respect to the source.
			Reliability	This refers to the assured and ordered delivery of messages being sent and received by service requestors and service providers.
			Availability	Time that the network resources are available to the consumer (including base stations, switching centers e.t.c)
			Call centre answer time	The call centre answer time is the time from when a call setup has been successful to when the call is answered by a person. The call centre services covered are those for operator assistance calls, directory assistance calls and emergency calls.
			Bill complaint rate	A bill complaint is a complaint that an account is inaccurate either due to incorrect call data used, incorrect charging rate, services are billed incorrectly, call discounts, credits or debits are handled incorrectly, or the total charge including tax is calculated incorrectly. The rate is the frequency at which this occurs.
			Complaint resolution time	The time to resolve an account complaint is the elapsed time (not the working time) from when the complaint is received by a Service provider to when the cause for the complaint has been removed.
			Miscellaneous complaint rate	A miscellaneous complaint is a complaint other than a disconnection complaint, an account complaint or a fault report. A miscellaneous complaint may be submitted by phone, by personal contact at a customer service centre or in written form.
			Fault repair time	The fault repair time is the elapsed time from when a valid fault report is received by a Service provider to when the service has been restored to normal working order.
	Service Activation/provisioning		The service supply time is the elapsed time from when a service request is accepted by a Service provider to when a working service is made available for use	

	QoS parameter	Scope	Parameter Name	Definition
2.	Technical parameters	Voice telephony including Mobile (and voice band related services e.g. fax, SMS)	Completed Calls	These are calls that were successfully set up and received by the called party including the release failed calls.
			Call Setup Rate	These are the percentage of calls that are successfully setup to a valid number, properly dialed and where called party busy tone, ringing tone or answer signal is recognized at the Network Termination Point of the calling user.
			Call Drop Rate	A percentage of calls that are unintentionally disconnected in the middle of the conversation without the user's intervention.
			Call Success Rate	Call success rate refers to the percentage of calls that are successfully set up and terminated as a percentage of the total call attempts. CSR exclude dropped calls or that experience no network condition, low speech quality calls and calls with long set up time
			Call Block Rate	These are calls that are unsuccessful because of lack of resources for connection due to congestion expressed as a percentage of total call attempts
			Speech Quality	Refers to the clarity of the conversational speech without noise or echo interference.
			Congestion	Probability of not accessing the services (a traffic channel)
			Hand over Success Rate	Handover success rate refers to the percentage of handovers that are successfully completed out of the total handover requests made.
			Call setup time	The call setup time is the time from a send button is pressed or when the address information required for setting up a call is received by the network to when the called party busy tone or ringing tone or answer signal is received by the calling party.
			SMS message transmission success rate	A successful SMS message transmission is an SMS message transmission in which the message is transmitted completely without errors between the Network Termination Points.
		Internet access	Internet session login success ratio	A successful internet session login is a call to an internet point of presence that, following a successful call setup, establishes an internet session within 40 seconds from when the call is answered.
			Internet session retention Ratio	A retained internet session is an internet session that, following successful internet session login, continues until it is ended normally by a user.
			Internet data transmission success ratio	A successful internet data transmission is an internet data transmission in which the data is transmitted completely without errors between the Network Termination Points.
			Internet data transmission	The internet data transmission time is the time from when the internet data is

	QoS parameter	Scope	Parameter Name	Definition
			time	sent to the network to when the internet data is received by the receiving party.
			Internet data transmission capacity	The internet data transmission capacity is the percentage of the internet data transmission rate advertised for the service that is obtained by continuous transmission.
			Latency	The amount of time it takes to transmit the data between the source and destination and receiving the expected response.
			Packet Loss	This is the disappearance of data packets or other message units in a network during transit



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Please note that this Fact Sheet is intended as a guide only and should not be relied on as legal advice or regarded as a substitute for legal advice in individual cases.

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Disclaimer

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