

This brochure has been developed as part of the **Consumer Education Programme** of the **Communications Commission of Kenya**. It was compiled as a result of a review of material from various sources and presents the current perception of the information available on ‘Quality of Service’, with particular reference to Kenya.

**Introduction**

Before purchasing communications products or services, there are a number of aspects that should be taken into consideration by the consumer - apart from the price. They are:

- The fact that some service providers may, in the future, limit the number of subscribers they accept.
- That the process of subscribing to a service provider can be time-consuming
- That the services offered may not always be entirely satisfactory due to the fact that all networks are subject to periodic inaccessibility, faults, interruptions and other technical malfunctions
- That some telecommunication networks may lack the necessary capacity to handle all the traffic undertaken
- That a wide range of applications (displaying different characteristics) often compete for relatively scarce network resources

Given the above, it is possible that consumers may, at certain times, find that they are not being provided with the highest level of service; and it is for this reason that all network providers, no matter what the degree of their capacity is, should undertake to guarantee a certain level of performance or ‘Quality of Service’ to the consumer.

**What is ‘Quality of Service’?**

‘Quality of Service’ is the level of performance (or ‘quality’) that a service provider provides to its subscribers. In telecommunications, ‘Quality of Service’ relates to the ability to provide different resources for different applications; and to accord different priorities to each. Consequently, the level of service offered must be stated in any contract or Service Level Agreement that is offered by a service provider to a consumer.

**What levels of service should the consumer expect?**

The consumer is entitled to expect the following levels of service – or ‘Quality of Service’ provision:

- Value for money
- Ease of use of the service or product
- Professionalism, on the part of the service provider, in the provision of the service
- Flexibility in the use of the service on the part of the consumer – for instance; the ease with which the consumer is able to switch from one operator to another; from one resource to another; one piece of equipment to another – or even in the requirement for the change of a telephone number
- That the product or service should perform according to expectations and as specified
- That the service be reliable and fulfill the needs of the consumer as specified
- That the service be secure in terms of privacy of ALL data sent and received.

**What about technical ‘Quality of Service’?**

There are certain technical indicators, which serve as benchmarks by which the ‘Quality of Service’ delivery may be judged. Such benchmarks are, of necessity, of a technical nature, but they are crucial in assessing the profile of the service delivered. They are also instrumental in assessing by what measures the ‘Quality of Service’ can be improved in a certain period of time. The consumer, therefore, should ensure that he or she is provided with all the necessary information regarding these technical indicators so that, should the need arise, they will have the means with which to compare actual performance with guaranteed performance. The relevant technical indicators are as follows:

<b>Latency:</b>	the time taken to send a signal across a network
<b>Jitter:</b>	what variability may be expected as regards the above
<b>Packet loss:</b>	the number of ‘packets’ of data lost during transmission
<b>Rate:</b>	the rate at which signals are transferred
<b>Errors:</b>	the amount of traffic units that have been corrupted
<b>Delivery failure:</b>	the amount of data which is misdirected or incorrectly duplicated

**Why ‘Quality of Service’ matters**

‘Quality of Service’ is a major factor in ensuring optimum consumer/provider relations because:

**By demanding a certain ‘Quality of Service’, the consumer is empowered to:**

- Select the service provider that best satisfies their specific needs
- Obtain optimum value for money
- Judge the level of service with which they are provided
- Evaluate Service Level Agreements correctly
- Make informed decisions

**By providing a certain ‘Quality of Service’, the service provider is empowered to:**

- Differentiate the level of quality offered, in relation to that offered by their competition
- Accurately scale capacity-load to meet optimum demand
- Follow and promote ‘best practice’ within the industry
- Qualify the pricing structure
- Judge the level of service delivery and make any adjustments that may be required.

**The evaluation of standards and the setting of targets in relation to ‘Quality of Service’**

The evaluation of standards and the setting of targets for optimum performance are invaluable in ‘Quality of Service’ terms – to the consumer, the provider and the Communications Commission of Kenya alike. The generation of such information:

- Enables the consumer to make informed choices
- Enables the provider to ensure optimum continuity of service
- Enables the regulatory authorities (such as the Communications Commission of Kenya) to define optimum quality levels in relation to such considerations as ensuring the interconnection and inter-operability of all networks and services
- Assists the regulator in accurately assessing the state of the marketplace
- Facilitates such considerations as; billing, service-response-time and call set-up time
- Facilitates the setting of such service parameters as will measure the overall quality of service delivery to the consumer
- Ensures the operation of fair competition

- Evaluates the various levels of service to which the service providers commit themselves
- Maintains or improves delivery of ‘Quality of Service’ both in the presence and the absence of competition.

**How to measure the ‘Quality of Service’ delivered**

‘Quality of Service’ levels can be evaluated by the consumer, the service provider and the Communications Commission of Kenya (who will shortly be publishing a set of guidelines for service assessment). At present the Commission is in the process of redefining all such parameters (the number of complaints made/resolved over a given period of time, the number of disconnections for non-payment and the incidence of such technical indicators as; loss of data, interference, call success rate and duration of service provision).

**How ‘Quality of Service’ is monitored**

The ‘Quality of Service’ offered to the consumer is monitored by various means.

The table below shows the parameters employed in such evaluations, and may prove useful to the consumer in compiling their own ‘Quality of Service’ assessments:

**Service parameters**

**Accessibility**

The degree to which a system is capable of servicing a request

**Integrity**  
The degree of quality with which the system maintains the correctness of the interaction

**Reliability**

The degree to which the delivery of the service is assured

**Availability**

The amount of time during which network resources are available to the consumer

**Call centre answer time**

The amount of time between successful call set-up and call-receipt by the consumer in relation to; operator-assisted calls, directory-assisted calls and emergency calls

### Bill complaint rate

The number of complaints lodged against a provider (and the rate at which they occur) in relation to the submission of inaccurate accounts. Such complaints may be in regard to; incorrect call data, incorrect rates of charge, incorrect account submission, incorrect application of discounts/debits/credits

### Complaint resolution time

The time between the service provider's receipt of a complaint to the time at which it is resolved to the satisfaction of the consumer

### Miscellaneous complaint rate

The rate at which Complaints regarding incidences other than disconnection (verbal, personal or written) are received

### Fault repair time

The amount of time between the service provider's receipt of a valid fault report and the time at which it is satisfactorily resolved

### Service activation/provisioning

The time between the service provider's acceptance of a service request and the time at which the service is restored to optimum use

### Technical parameters

Completed calls Calls successfully set up and received by the called party (including release failed calls)

### Call set-up rate

The percentage of calls successfully set-up (to a valid number, properly dialed and during which the 'party busy' tone, 'ringing' tone or 'answer' signal is recognized at the network termination point

### Call drop-rate

The percentage of calls, which are unintentionally disconnected mid-conversation without the user's intervention

### Call success rate

The percentage of calls that are successfully set up and terminated (as a percentage of the total call attempts and excluding dropped-calls, 'no network' connection, inferior speech quality and calls experiencing long set-up time)

### Call block rate

The percentage of calls that are unsuccessful due to lack of connection capacity

### Speech quality

The clarity of the speech delivered (without noise/echo/interference)

### Congestion

The condition that arises when a system or network experiences a level of calling activity or message traffic that exceeds its capacity

### Hand over success rate

The percentage of successful 'handovers' out of the total 'handover' requests made. Note: A handover is a process in which a mobile subscriber engaged in a telephone conversation is seamlessly transferred from one base station to another base station without the call being interrupted.

### Call setup time

The time from which a 'send' button is pressed (or address information supplied to the network) to when the 'party busy' tone, 'ringing' tone or 'answer' signal is received by the user

### SMS message transmission success rate

The number of successful error-free SMS message transmissions between network termination points

### Internet session log-in success ratio

The ratio of successful internet session log-ins (calls to an Internet point of presence, which follow a successful call set-up) that establish an Internet session within 40 seconds of answer

### Internet session retention ratio

The ratio of Internet sessions that are successfully set-up and continue until such time as the user elects to end them

### Internet data transmission success ratio

The ratio of successful Internet data transmission sessions (those in which the data is transmitted completely and without errors between the network termination points)

### Internet data transmission time

The interval from the moment Internet data is sent to the network and the moment it is received by the receiving party

### Internet data transmission capacity

The percentage of the Internet data transmission rate, advertised by the provider, that is actually achieved during a continuous transmission

### Latency

The transmission time between source and destination

### Packet loss

The disappearance of data 'packets' (or other message units) during transmission on the network

### Need to know more?

For further information on the above topic or any other aspect of health and safety with regard to communication equipment, please contact:

**Disclaimer:** while every attempt has been made to ensure that the information included in this document is accurate, it is intended ONLY as a guideline towards the safe operation of communications equipment and should not be regarded as (or used in lieu of) legal advice. The Communications Commission of Kenya will not, therefore, accept any liability for the consequences of any actions taken, or decisions made upon the information offered. **Acknowledgements:** This brochure was developed as part of the Consumer Education Outreach Programme of the Communications Commission of Kenya, working in partnership with Teknobyte (Kenya).

CONSUMER AFFAIRS DIVISION,  
COMMUNICATIONS COMMISSION OF KENYA  
P.O. BOX 14448, NAIROBI, 00800  
Email: [chukuahatua@cck.go.ke](mailto:chukuahatua@cck.go.ke)

TEL - 020 - 44 55 555, 0714 - 444 555, 0737 - 44 55 55

# Quality of Service



Communications  
Commission  
of Kenya

**CHUKUA  
HATUA**  
Pata huduma ya  
mawasiliano unayostahili