

**Reliance Communications Ltd. (RCOM) Response to TRAI Consultation Paper on
Review of Network related Quality of Service Standards for
Cellular Mobile Telephone Service**

Executive Summary

- A. Service area wise benchmarking is the best fit option for the measurement of the network performance of a TSP.**
- B. The existing methodology of measuring network related QoS parameters at service area wise should continue.**
- C. The existing methodology of licensed service area wise QoS reporting, along with the current QoS thresholds should be continued with.**
- D. In case the option of measuring and reporting of sub-service area wise KPIs is mandated then the same should be implemented LDCA wise and as a prerequisite, the operators should be provided with approved error free digital maps of each LDCA.**
- E. No modification is required to measure the call drop rate and the set benchmark as defined in the existing Regulations should be continued.**
- F. It is not feasible to define technology agnostic network parameters and hence existing defined QoS benchmarks should be continued.**
- G. RLT parameters must be left to the service providers' discretion and a particular value for the same should never be mandated.**
- H. Using CDR Meta data analysis will not be an appropriate method to calculate the call drop rate and hence should not be used as for setting of any benchmarks.**
- I. Calculation of customer satisfaction index being based on subjectivity of perceptions should not be used as a metric for arriving at the QoE for the entire subscriber base of TSP.**
- J. Graded financial disincentives based on performance should not be imposed on the TSPs.**
- K. There should not be any financial disincentives on the QoS parameters and the existing financial disincentive provisions should be withdrawn.**
- L. Financial incentives in the form of lesser levies, simpler audits, etc should be introduced for motivating the TSPs for provisioning better QoS services.**

Our comments on the issues raised in the consultation paper are as below

Question 1: In case QoS is mandated at a sub-service area level, which option (LDCA-wise or District Headquarters/ City/ town-wise or BTS-wise) you would recommend? Please comment with justifications.

Question 3: How should the benchmark for the parameters be revised? Should it be licensed service area wise or district wise or BTS-wise or a combination? In such cases what should be the benchmarks? How should the benchmarks be measured? Please give your views on each parameter, with justification.

Our Response

QoS should not be mandated at a sub-service area level.

- 1. Cellular Systems are Area Systems.** Though Cellular Systems are an RF system, however, they are characterised by being an area coverage system instead of a point to point link. The radio and all other resources that make up the entire system are utilized on a sharing basis by a large number of users. Accordingly, the QoS measurement in a cellular system is dependent on the performance parameters of the entire system instead of being limited to individual links / smaller sub-systems.
- 2. Area Wise Licenses.** In line with the basic philosophy and characteristic of cellular systems, the licenses too have been allotted, by the DoT to the TSPs, service areas wise. All the requirements and provisions, as mandated under the license, are required to be complied based on the service area. E.g. the roll out obligations imposed upon the TSPs, too is service area wise. The TSP while rolling out their network for providing the services to the subscribers considers the entire service area as one and plans the network so as to provision the best Quality of Service in that service area. Accordingly, there is no provision in the license or in any of the Regulations issued by TRAI to allow the TSPs to have specific arrangements based on sub-service area level. Therefore, **the inherent characteristics of the Cellular Systems necessitate that the network KPIs should be mandated at the service area wise.**
- 3. Uneven Distribution of Population in a Service Area.** The table below shows the uneven population distributions in the Country in different districts:

District Population (Census 2011)	Count of District
<50K	8
50K to 100K	18
100K to 250K	32
250K to 500K	37
500K to 750K	53
750K to 1Mn	47
1Mn to 2Mn	214
2Mn to 3Mn	107
3Mn to 4Mn	67
4Mn to 5Mn	36
5Mn to 6Mn	9
6Mn to 7Mn	3
7Mn to 8 Mn	3
8Mn to 9Mn	1
>9Mn	5

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Population per 1Sq km area (Census 2011)	Count of District
<50	39
50 to 100	22
100 to 250	150
250 to 500	185
500 to 1000	146
1000 to 2500	76
2500 to 5000	8
5000 to 10000	3
10000 to 15000	2
>15000	9

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- Being an area based system, the KPIs of the cellular system depend on several factors e.g. network traffic, area population, geographic locations (hilly, Forest areas). The commercial viability of the telecom services mandates that the uneven distribution of population in an area is given due consideration for deployment of an optimized network. This varying population density in a district makes it impractical to maintain the same threshold of network deployment at each geographical location. Therefore, **the service area wise benchmarking is the best fit option for the measurement of the network performance of a TSP.**
- Hyper Competitive Telecom Market.** Provisioning of free telecom services, by an operator, are a testimony to the hyper-competitive Indian telecom market. With operators matching / trying to outdo each other's pricing for services, the preferred choice of subscribers is the operator provisioning best quality services. With MNP facility being available to the subscribers, **the Indian telecom operators are functioning in a self regulated QoS mode, to ensure stickiness of subscribers to their networks.**

6. **Requirement of Digital Maps.** Notwithstanding the above, if TRAI decides to mandate sub-service area wise network KPI, then it should be done LDCA wise and as a prerequisite, the operators should be provided with approved error free digital maps of each LDCA.

Our Recommendations

7. In view of the foregoing, following are recommended,
 - a. **The existing methodology of measuring network related QoS parameters at service area wise should continue.**
 - b. **The existing methodology of licensed service area wise QoS reporting, along with the current QoS thresholds should be continued with.**
 - c. **In case the option of measuring and reporting of sub-service area wise KPIs is mandated then the same should be implemented LDCA wise and as a prerequisite, the operators should be provided with approved error free digital maps of each LDCA.**

Question 2: How should the call drop rate be calculated - either at the Licensed service area level calculated during TCBH, or calculated during the Cell Bouncing Busy Hour (CBBH) at BTS level should be the benchmark? Please give your views on each parameter, with justification.

Our Response

It is brought out that the KPIs for Call drop measurement and the corresponding performance of the service provider is already being done during the TCBH as well as CBBH periods. The parameters e.g. Call Drop Rate (in 2G) and Call drop & circuit switched Voice drop rate (in 3G) measures the drop during TCBH whereas Worst affected cell as % of TCH drop (in 2G) and worst affected cell as % of TCH and circuit switched voice drop rate is being measured during the CBBH. Thus, all possible scenarios which can be used to measure the call drop are already factored in the existing QoS Regulations and the same should be continued without any modification.

Our Recommendation

No modification is required to measure the call drop rate and the set benchmark as defined in the existing Regulations should be continued.

Question 4: How could the network parameters be technology agnostic? What are the parameters and benchmarks that are required to be defined? Please give your views with justifications.

Our Response

It is not feasible to define technology agnostic network parameters.

1. The earlier generations of telecom networks, viz, 2G and 3G employed similar, circuit switched, connection oriented philosophy, for network formation and services provisioning. However, the introduction of LTE networks has brought in a paradigm shift from these circuit switched, connection oriented voice based networks to packet switched, connectionless data networks with voice being just another application over

the network. The most important and discernable paradigm shift introduced with data networks is the separation of networks and the services.

- Despite similarities of basic philosophy of provisioning services, different network protocols use distinctive, inherent characteristics for provisioning the same service and hence, it is not feasible to define technology agnostic network parameters. It is because of this reason that the parameters monitored for measuring the life cycle of a call, viz, Network Availability, Service Accessibility, Service Retainability and Service Integrity were defined differently, by TRAI, for different technologies like 2G and 3G as is seen from the table given below.

2G KPI	3G KPI
Network Availability	
BTSs Accumulated downtime (not available for service) (2G)	Node-B's Accumulated downtime (not available for service) (%age) (3G)
Worst affected BTSs due to downtime (2G)	Worst affected Node-B's due to downtime (%age) (3G)
Service Accessibility	
Call Set-up Success Rate (within licensee's own network) (2G) (3G)	Call Set-up Success Rate (within licensee's own network) (2G) (3G)
SDCCH/ Paging Channel Congestion (2G)	SDCCH/Paging Channel and RRC Congestion (%age) (3G)
TCH Congestion (2G)	TCH and Circuit Switched RAB Congestion (%age) (3G)
Point of Interconnection (POI) Congestion (on individual POI) (2G)	Point of Interconnection (POI) Congestion (3G)
Service Retainability	
Call Drop Rate (2G)	Call Drop and Circuit Switched Voice Drop Rate: (%age) (3G)
Worst affected cells having more than 3% TCH drop (call drop) rate (2G)	Worst affected cells having more than 3% TCH drop (call drop) and Circuit Switched Voice Drop Rate:- CBBH (3G)
Service Integrity	
Call Drop Rate (2G)	Call Drop and Circuit Switched Voice Drop Rate: (%age) (3G)
connections with good voice quality (2G)	Connections with good voice quality and Circuit Switch Voice Quality (CSV quality) (3G)

- Thus, to measure different QoS parameters, different KPIs and respective benchmarks have been prescribed by TRAI keeping in view the difference in the network architecture and protocols of 2G & 3G networks. Hence, it would not be appropriate to define same KPIs for both 2G & 3G.

Our Recommendation

- It is not feasible to define technology agnostic network parameters and hence existing defined QoS benchmarks should be continued.**

Question 5: Do you think it is essential to mandate the TSPs to set the RLT parameter? If so what should be the criteria to set the value and the value that needs to be set. Please comment with justifications.

Our Response

No, TSPs should not be mandated to set specific RLT parameters.

1. Radio Link Timeout (RLT) protocol is native to the GSM standard and is used to optimise the performance of the mobile downlink link. Likewise, the uplink is monitored at BTS, either based on the uplink SACCH error or based on the receiving level and quality of the uplink. This parameter defines the maximum value of the radio link counter expressed in SACCH blocks. This parameter indicates the call duration maintained when radio conditions are bad. This is a basic parameter which is not equipment specific and is being used by every operator / equipment provider in telecom for improving the QoS of his services.
2. Service providers can ill afford to play around with un-optimised values of RLT as the higher setting would lead to unnecessary loading and consequent congestion of the network by occupying the radio resources for a prolonged period than what is required.
3. Further, in certain situations, specifically based on the geographical locations e.g. road tunnels, escalators/lifts, basement floors, indoor corridors, etc. RLT is required to be optimised for ensuring that the customers do not experience frequent call drops due to screening of the signal.

Our Recommendation

4. In view of the forgoing, it is recommended that flexibility for setting of **RLT parameters must be left to the service providers' discretion and a particular value for the same should never be mandated.**

Question 6: Do you think it will be appropriate to calculate call drop rate through CDR meta data analysis? If so, what should be the benchmarks for such call drop rates calculated. Please comment with justifications.

Our Response

No, it would not be appropriate to calculate the call drop rate through CDR meta data analysis.

An analysis of the CDR's meta data, by the service providers and their vendors using cause code wise mapping of CDR's for identifying call drops, across all the vendors technologies viz Huawei, Ericsson, Nokia, ZTE for both 2G and 3G, that was undertaken during the SC hearing on the call drop case, revealed that there are no distinct cause codes that identify call drop due to originating network. These cause codes represent a mix of reasons, viz handset issues, customer behaviour, Backhaul network failure etc. Hence, **meta data derived from CDR's is not an accurate representation of call drops and therefore, cannot be used to calculate the call drop rate.**

Our Recommendation

Using CDR Meta data analysis will not be an appropriate method to calculate the call drop rate and hence should not be used as for setting of any benchmarks.

Question 7: Do you think calculation of customer satisfaction index will help in QoE of the consumer? If so elaborate the methodology of the calculation of such indexes. What are the latent variable that need to be defined and how are they to be calculated? Please comment with justifications.

Our Response

No, we do not subscribe to the idea that calculation of customer satisfaction index will help in QoE of the consumer.

- 1. Extraneous factors beyond the control of the TSPs.** Cellular systems are RF transmission systems which are limited by the laws of physics. We can endeavour to control the service provisioning parameters to some extent but guaranteeing a typical behaviour of the RF system is not possible. RF environment is bound to provide varied performance depending on the weather condition, nearness / distance from the e-node / BTS, number of simultaneous subscribers accessing the system, etc. The TSPs have no control over these extraneous factors and accordingly, QoE for the same customer, at the same physical spot on earth, with the same user device, even at the same time during the day / night but on different days / nights could vary immensely.
- 2. Assessing Network KPIs:.** QoS is described as the ability of a network to provide services at a defined assured service level with respect to different KPIs. The objective of defining QoS KPIs and benchmarks is to ensure that the network of the service provider should be within some specified threshold values in order to provide satisfaction to the customers, whereas the benchmarks defined for such KPIs is to show a comparative analysis of the achieved values against the benchmarks by different service providers. The impact of network performance on user experience is important to know, as it determines the success or failure of a service and the QoE. However, it is very difficult to assess the network performance based on QoE. Monitoring of network-level performance criteria is easier and more usual whereas to correlate these network-level Quality of Service (QoS) to the Quality of Experience (QoE) perceived by the users is difficult and subjective in nature. Thus, the correlation of QoE with the network KPIs will not yield the true picture of the actual quality of the network of the service providers and hence should not be mandated as part of the TRAI QoS Regulations.
- 3. QoE: A Subjective Metric.** The Quality of Experience (QoE) metric is the customer's perceived quality of the services provided by the telecom service providers. This perception of a service provider is not limited to the online data access or the voice call quality, connectivity and uninterrupted performance alone. QoE also encompasses the customer care experience, the ease and integrity of billing, level of automation and host of other interactions that the customer has with his service provider. In this era of highly networked societies, it is easy to build a short time perception through extensive use of social networking and media blitzkrieg. It is highly possible that the same customer, at one point is highly satisfied with the services of the TSP and is highly dissatisfied at other times. Therefore, it is felt that **calculation of customer satisfaction index should not be used as a metric for arriving at the QoE for the entire subscriber base of TSP.**

4. **Subscription to Service: A Quantifiable and Tangible Metric for QoE.** As brought out in our response to Q Nos. 1 & 3, Indian telecom market is characterised by hyper competition amongst the TSPs. Perception of the consumers, about the services of the TSP, is a very important factor for acquiring and persistence of the customers in this kind of hyper market. Therefore, each TSP is continuously working towards improving and achieving levels of customer delight instead of just customer satisfaction for enhancing his market share of the subscriber base, especially high paying QoE conscious subscribers. Accordingly, it is felt that the subjectivity of QoE is converted into tangible quantifiable metric through the size of subscriber base that a TSP is able to corner.

Our Recommendations

5. **Calculation of customer satisfaction index being based on subjectivity of perceptions should not be used as a metric for arriving at the QoE for the entire subscriber base of TSP.**

Question 8: What are your views on introducing a graded financial disincentives based on performance and what should be such quantum of financial disincentives for various parameters? Please comment with justifications.

Our Response

Graded financial disincentives based on performance should not be imposed on the TSPs.

1. We firmly believe that the imposition of financial disincentive with an assumption that such financial disincentive shall act as deterrent for the TSPs and any increase in the amount of financial disincentive shall lead to better Quality of Service is a flawed philosophy. As brought out in our response to question no. 7 above, the service subscription number and the revenues thereof are a direct reflection of the popularity of the services of the TSP. In this Hyper competitive Indian telecom market the TSPs themselves are in a financial disincentive mode by virtue of keeping the tariffs at marginal levels. Therefore, penalising them further would be counterproductive instead of aiding in achieving the aim of better services.
2. **Financial Incentives Instead of Disincentives.** On the other hand it is felt that a financial incentives policy would be in the best interest of the consumers and would serve the purpose of motivating the TSPs for provisioning better services. By financial incentive we imply that the TSPs providing better services should be incentivised say in terms of lesser levies, simpler auditing, etc.

Our Recommendation

3. **In view of the foregoing following are recommended,**
 - a. **Graded financial disincentives based on performance should not be imposed on the TSPs.**
 - b. **There should not be any financial disincentives on the QoS parameters and the existing financial disincentive provisions should be withdrawn.**
 - c. **Financial incentives in the form of lesser levies, simpler audits, etc should be introduced for motivating the TSPs for provisioning better QoS services.**