



SSTL/Reg/TRAI/ 1405/187

May 19, 2014

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Advisor, CA & QoS
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawahar Lal Nehru Marg (Old Minto Road)
New Delhi – 110 002

Subject: Response to TRAI Consultation Paper on "Amendment to the Standards of Quality of Service for Wireless Data Services Regulations, 2012" dated: 21st April 2014

Dear Sir,

At the outset we appreciate and welcome the Authority's consultation paper on Amendment to the Standards of Quality of Service for Wireless Data Services Regulations, 2012 at this juncture.

With reference to above please find enclosed our comments and point wise response to the consultation paper on "Amendment to the Standards of Quality of Service for Wireless Data Services Regulations, 2012" dated 21st April 2014.

We hope that the Authority will consider our views and comments enclosed while, reviewing Amendments to the Standards of Quality of Service for Wireless Data Services Regulations, 2012.

Thanking you,

With Regards,

For Sistema Shyam TeleServices Limited

Suresh Yadav
Dy. Director, Corporate Regulatory

Enclosed: As above

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Consultation Paper on Amendment to the Standards of Quality of Service for Wireless Data Services Regulations, 2012

1. Sistema Shyam Teleservices Ltd (SSTL) welcomes opportunity given by the TRAI to share our views on important to issue of regulating Standard of QoS for Wireless data Services.
2. As mobile internet service is becoming popular and increasingly being used, the need for QoS is becoming more relevant. Although QoS needs are genuine but it would have to be appreciated that the quality of mobile internet service depends on several parameters inherent to mobile networks such as coverage, quantum of spectrum, spectrum band. Many exogenous variables like user behavior and their mobility, location and consumption pattern, also impacts quality of service of mobile internet. Thus mobile network QoS for download speeds should not be regulated.
3. Each mobile network has unique topology as on a single network many technologies or various version of a technology are coexisting. It could be possible that with the change in a cell site, there is change in technology and user may have different experience in these two cell sites which user may perceive to be improvement or degradation of service. Thus same subscriber would get different service experience at different locations.
4. The quality of service also depends on the number of users and their location within cell and signal strength. As user moves away from the centre of cell, the quality deteriorates. Thus configuring a minimum download speed on mobile networks seems problematic.
5. TRAI has generally followed free market economics and allowed markets to address tariff concerns. We expect similar forbearance regulations with regard to quality of service as the mobile internet market is highly competitive. In the competitive market the quality of service is a differentiator and consumer decision to choose a particular network based on tariff and quality ensures effective market competition.
6. The uniform quality enforced through Regulation would not be correct as mobile networks are unique in terms of technologies deployed, total quantum of spectrum used, number of consumers on network etc. The benchmark specified through regulation may not match or create compatibility with mobile service conditions and impose unnecessary cost on networks. Thus external Regulation may be detrimental to the growth of service.
7. Minimum download guarantees may also impact other important parameters like coverage, capacity and technology deployment as resources could be used to



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meet the mandatory QoS benchmarks. Thus Regulation may cause long term effect on mobile internet growth and the timely adoption of new technologies.

8. Mobile Data services are at a very nascent stage with penetration for less than specified in policy targets. Imposing regulation like minimum download speed at this stage would impose unnecessary cost on service provider which otherwise could be used for expansion of coverage and acquiring addition spectrum which could provide long term benefit for consumer and service providers. The data market is highly competitive and consumers have easy option to change service provider in case they are not satisfy with the quality of service. Considering the nascent stage of data service market and market being highly competitive, it is suggested that QoS benchmark relating to minimum download speed should not be mandated.

9. Our specific comments on issues raised in the consultation paper are given below:

Question 1: What are your views on prescribing benchmarks for Minimum Download Speed as above? Please give your comments with Justification.

SSTL Response

1. For mobile networks, the QoS experienced by the customer in terms of throughput depends on the number of parameters including (i) multiple users, (ii) their position on the cell and signal strength, (iii) the device used by the customer (iv) climatic factors (v) topology of the propagation media (urban or rural), (vi) user behavior and their mobility and consumption pattern, among others have a substantial impact on the user experience. Configuring a minimum QoS on mobile networks is problematic as all these variables effect minimum download speed and it is not possible to ensure a sufficiently high level of QoS over a minimum threshold. The investment in the mobile network capacity is unequal and the location of bottlenecks may be unpredictable or temporary. Thus any QoS requirement would not be efficient

2. Various parameters which affect minimum download speed are given below:

- (i) **Quality of Spectrum:** The user experienced throughput is a function of spectrum and depends on the quality of spectrum and quantum of spectrum dedicated for data services. In case of CDMA spectrum in 800 MHz band if frequency spots are not adjacent to each other and separated by more than 10 MHz. In CDMA Carrier Aggregation beyond 5MHz is not possible as



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per the existing algorithms & chipset available in the market. Thus disaggregated or non-contiguous spectrum allocated to to a service provider would not help to deliver efficient EVDO services across all carriers. Thus EVDO deployment across all circles would not necessarily give same throughput

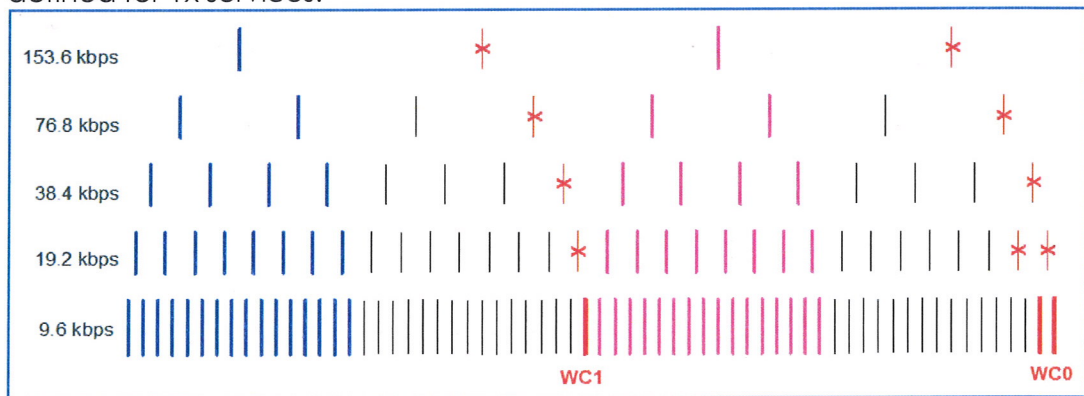
- (ii) **Quantum of Spectrum used for Data services:** The throughput is directly propotion of quantum of spectrum. Eg. In EVDO RevB one carrier provides peak speed of 4.9 mbps but 2 carriers provide 9.8 mbps. Since different amount of spectrum may be dedicated for data services within an operator's network in a service area, the throughput experienced by the user will be different using the same data device in different geographies with varying amount of spectrum.
- (iii) **User environment:** In CDMA network, the voice services are independent of the network coverage strength. However, for data services, the DRC (requested data rate) is based on the carrier to interference ratio as per the table given below. The data network is designed and optimized to have best possible C/I in the intended coverage geography as per the rollout obligation guidelines specified in the license conditions. As indicated from the table below , higher C/I means higher DRC.

S N	EVDO	DRC Index	Slots	Modulation	Preamble Chips	Payload bits	Raw Kb/s	C/I dB
1	Rev 0	0x0	n/a	QPSK	n/a	0	null rate	n/a
2	Rev 0	0x1	16	QPSK	1024	1024	38.4	-11.5
3	Rev 0	0x2	8	QPSK	512	1024	76.8	-9.2
4	Rev 0	0x3	4	QPSK	256	1024	153.6	-6.5
5	Rev 0	0x4	2	QPSK	128	1024	307.2	-3.5
6	Rev 0	0x5	4	QPSK	128	2048	307.2	-3.5
7	Rev 0	0x6	1	QPSK	64	1024	614.4	-0.6
8	Rev 0	0x7	2	QPSK	64	2048	614.4	-0.5
9	Rev 0	0x8	2	8PSK	64	3072	921.6	2.2
10	Rev 0	0x9	1	QPSK	64	2048	1,228.8	3.9
11	Rev 0	0xa	2	16QAM	64	4096	1,228.8	4
12	Rev 0	0xb	1	8PSK	64	3072	1,843.2	8
13	Rev 0	0xc	1	16QAM	64	4096	2,457.6	10.3
14	Rev A	0xd	2	16QAM	64	5120	1,536.0	8.3
15	Rev A	0xe	1	16QAM	64	5120	3,072.0	11.3



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- (iv) **User mobility:** Data throughput is lower when the user is in mobility compared to the data services being used in stationary mode.
- (v) **Time of access:** The user behavior of data services varies across the day. At lower radio network utilization conditions the throughput experienced will be higher compared to scenarios when the network is more utilized.
- (vi) **Number of users in the network:** There might be instances where for a short span of time, the users are high, during such periods the throughput experienced by each of the users will be lower, even if all the users are in best of the radio network environment.
- (vii) **Concentrated usage:** The data usage is non uniform across the network coverage geography. There are many pockets like commercial areas, office complexes, educational institutional areas, railway stations, airports etc. where the usage is higher compared to other areas and as a result the throughput experienced will be lower in such areas of higher data usage.
- (viii) **Coverage:** The user is unlikely to experience the same network coverage across the operator's network in a telecom circle. There may be multiple technologies deployed and therefore seamless coverage of same technology- 1X or EVDO across the circle geography may not be possible. Customer may face different experience on EVDO and 1X network. There are no algorithms defined for hand up back to EVDO services. Since 1X networks are solely designed for voice services, they merely act as service continuity fallback option for HSD services. No portion of 1X voice network is dedicated for Data services & voice services always get priority in such networks. Even if entire 1x network is dedicated for 1x data services, only a maximum of 2 data users can achieve a throughput of 153Kbps each. In case of additional users, the data throughput would gradually reduce to 9.6 kbps as shown in the table below. Therefore, no guaranteed minimum data throughput can be defined for 1x services.





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- (ix) **User device settings:** User end device also plays an important role in data services. The variable hardware configurations and software settings can impact the user experience. In addition to this any unknown applications or virus etc on the user end device (laptop/desktop) may also impact the throughput. The telecom service providers have no control or check mechanism on these user devices.

3. **Given the evidence mentioned above, mandating minimum download speed may not be appropriate.**

Question 2: Should the service provider be mandated to inform the Minimum download speed to customers along with each tariff plan? Please give your comments with justification.

SSTL response:-

We have submitted in the response to question 1 above that minimum throughput cannot be guaranteed and it would not be appropriate to mandate minimum standards., Hence service providers should not be mandated to inform the minimum download speed to the customers along with the tariff plan.