

Response to the Consultation Paper
on

Bandwidth required for ISPs for better connectivity
and improved quality of service

I Contention Ratio

1. Contention ratio is an indication of the number of people connected to an ISP who share a set amount of bandwidth. It is often referred to as a measure of the throughput that users can expect from a broadband service. However, this measure could be of some use when dealing with unlimited broadband services, but in a 'capped environment', with very low monthly usage in India, the contention ratios are not relevant and not an indicator of quality of service.

2. The higher contention ratio generally gives an impression that the service is over subscribed but that is not the case especially in the Indian context and especially for wireless internet services. Taking the available bandwidth and dividing it by the number of subscribers multiplied by the maximum throughput that each subscriber requires, seems at face value to be ideal but in reality does not give a true picture where the number of concurrent users, and their time spent on-line are much lower..

3. The subscribers expect a maximum speed close to the theoretical limit of the relevant service but do not access this service on a 24x7 basis. Rather a typical user, especially wireless user, accesses his service on an ad-hoc basis and this typically is a function of his specific tariff plan like free data bundle download or bit cap which has been subsequently discussed in details, herewith.

4. Mobile internet services allow the number of on-line users to vary dynamically as users join and leave the network. There are also many different devices that are used to access the service. As there are a number of variables and they all can change dynamically, it becomes impossible to calculate a contention ratio for wireless internet services. Since wireless access especially mobile access is expected to fuel the growth of broadband services and the contention ratio cannot be easily measured for such services, the use of this ratio as QoS parameter is not suggested.

II Bit Caps or Data Allowance Caps

1. The contention ratio is relevant only when subscriber is offered unlimited download and it is assumed that the user will actually consume it. However, in reality there is a limited usage by users and they prefer plans with the bit caps or bundled data download. Once users reach the

bit/data cap threshold, they generally pay an additional fee per megabyte downloaded. In India payment on the basis of per MB download is also popular indicating the subscriber's lower download needs. These bit caps preference and availability of such tariff plans is now becoming universal. The information on availability of bit cap plans in OECD countries is given below:

Country	No explicit bit cap	Explicit bit cap
New Zealand	0%	100%
Canada	0%	100%
Belgium	0%	100%
Australia	0%	100%
Portugal	4%	96%
Czech Republic	28%	72%
Ireland	39%	61%
Luxembourg	50%	50%
Iceland	50%	50%
Slovak Republic	58%	42%
Austria	61%	39%
Turkey	69%	31%
United Kingdom	75%	25%
Greece	85%	15%
Spain	87%	13%
Denmark	87%	13%
Switzerland	90%	10%
Poland	92%	8%
Mexico	92%	8%
Hungary	93%	7%
United States	100%	0%
Sweden	100%	0%
Norway	100%	0%
Netherlands	100%	0%
Korea	100%	0%
Japan	100%	0%
Italy	100%	0%
Germany	100%	0%
France	100%	0%
Finland	100%	0%

Source: OECD.org

The consumer internet usage is affected by the bit caps as is evident from the report released by Statistics New Zealand in March 2007. The report explained how bit caps are

impacting the internet usage behaviour. The report revealed that among the 611 600 Internet subscribers, only 2.4% had no data allowance cap (bit cap) on their subscription plan. Additionally, 68.6% of subscribers used plans with a data cap of less than 5GB (419 600), 25.9% used plans with a data cap between 5GB and less than 20GB (158 700), and 3.1% had plans with a data cap of 20GB or more (18 700).

2. A broadband user with 256 Kbps speed can download around 22 GB per day, it stands to reason that a 400 MB bundle, stretched over a month, will result in a fraction of on-line time over the course of the month.

3. The analysis for OECD countries contained a study to estimate the implied Contention ratio when users prefer plans with the Bit cap. The results of the analysis are given below:

Country	Company	Plan	Down (kbit/s)	Bit cap (MB)	Minutes reach cap to bit	Implied contention ratio (x:1)
Denmark	Stofa	Flexrate 2 Mbit	2048	50	3.3	13455
Switzerland	Sunrise	ADSL 300 flex	300	20	8.9	4928
Slovak Republic	T-Com	Pohoda 600	1536	600	52.1	841
Austria	AON	aonSpeed 1000	2048	1000	65.1	673
New Zealand	TelstraClear	HighSpeed 1G	2048	1000	65.1	673
New Zealand	Woosh	Orbit 1	2048	1000	65.1	673
Spain	Telefonica	ADSL Mini 2 Mbps	2048	1000	65.1	673
Turkey	Turksat	2048/512	2048	1000	65.1	673
Iceland	Snerpa	2 Mbps	2048	1250	81.4	538
Australia	Bigpond	Fast	256	200	104.2	420
Australia	Optus	Optus DSL	256	200	104.2	420
Belgium	Telenet	BasicNet	512	400	104.2	420
Hungary	T-Com	Light	1280	1000	104.2	420
New Zealand	Woosh	Launch	256	200	104.2	420
Austria	AON	aonSpeed 500	512	500	130.2	336
Belgium	Belgacom	ADSL Light	1024	1000	130.2	336
Greece	OTE	OnDSL ECONomy 1000	1024	1000	130.2	336
Iceland	Vodafone	1 Mb/s	1024	1000	130.2	336
Luxembourg	EPT	LuxDSL / SpeedSurf Junior	2048	2000	130.2	336
Spain	Telefonica	ADSL Mini 1 Mbps	1024	1000	130.2	336
Turkey	Turksat	1024/256	1024	1000	130.2	336

Source: OECD.org

4. Considering the general preference of the consumer to subscribe to the broadband plans with the bit caps and corresponding much higher implied contention ratio, the contention ratio does not

seem to be the relevant QoS parameter. Since the implied contention ratio is much higher and therefore it would not be advisable to use a thumb rule to determine availability of average bandwidth with the subscriber.

III Real time contention ratios are more relevant

1. Since the internet speed is influenced by the active subscribers only and not by the number of subscriber enrolled for the bandwidth, the real-time contention ratio measurement is more relevant. The service providers constantly monitor throughput on the network and calculate contention ratio based on this measurement. As the measured variable changes, so does the contention ratio seen at any point in time. The corrective measures if needed are taken on the basis of real time contention ratio and not on the basis of general thumb rule.

2. The general thumb rule for contention ratio is an in-efficient measure to ensure the quality for service for the subscribers. Since the consumer usage is dynamic, there could be instances when even the adoption of contention ratio would fail to meet the QOS guidelines and fail in its objective.

3. The contention ratio is likely to result in large scale redundancy and in inefficient use of resources. This would increase the cost and tariffs for subscribers.

IV Sufficiency of existing Regulations

1. Broadband policy 2004 defines broadband connection as an always-on Internet access with a minimum speed of 256 Kbps from the Point of Presence (POP) of Internet Service Provider (ISP) to the customer premises equipment (CPE). This definition clearly lays emphasis on ‘an always on data connection’ and having minimum download speed of 256 Kbps to an individual subscriber.

2. The above definition is sufficient to protect the consumer interest as the service provider is duty bound to provide the minimum speed of 256 Kbps on broadband internet. As per regulation 8 of QoS standards for Broadband Service regulation, the service providers are also providing facility for measuring Broadband Connection Speed.

1. The service providers are in best position to design their network and decide the contention ratio. The contention ratio would depend on the actual subscriber use, number of subscriber using the unlimited usage plans or bit cap plans etc. The most optimum ratio can be decided on the basis of real time monitoring and not by a thumb rule. The regulatory intervention should be limited to prescribe the standards and not specify how to achieve those standards.
2. The Regulated contention ratio based on thumb rule would be unscientific mode to ensure quality which may not be in the interest of consumers as that would not result in optimum utilization of resources and likely to increase the cost of delivery of service.

V Conclusion

- (i) The contention ratio is not a good QoS indicator in the 'capped environment'.
- (ii) It is not easy to estimate contention ratio for mobile internet access
- (iii) The service providers monitor real time contention ratio and optimize resources to provide the promised speed to the subscribers.
- (iv) The regulatory intervention should be limited to prescribe the standards and not specify how to achieve those standards.
- (v) The contention ratio may result in inefficient utilization of resources and increase the cost of delivery of service. (reply to issue 3.2)
- (vi) For consumers the end result is relevant i.e. speed of the internet and not the contention ratio. The content ratio is not comparable between different technologies and different service providers as that would depend on the user profile and usage pattern.

VI Recommendation

1. The TRAI should not specify the contention ratio as QoS parameter.
2. Since wireless access, especially the mobile access is expected to fuel the growth of broadband services, and the contention ratio can not be easily measured for such services, the use of Contention Ratio as Quality of Service parameter is not suggested.