

Response to Consultation Paper on Net Neutrality

Dear Sir,

We welcome the opportunity to submit our views on the Consultation paper on Net Neutrality, dated January 4, 2017, by Telecom Regulatory Authority of India (TRAI).

Regards.

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¹ All views expressed are personal.

The authors acknowledge the contributions made by Mr Rishabh Dara (Student, IIM Ahmedabad), Ms Radha Ravattu (IITCOE) and Mr Pranesh Prakash (CIS Bangalore) in framing the comments previously submitted to TRAI in response to the Consultation Paper on Regulatory Framework for Over-the-top (OTT) Services, dated March 27, 2015 and Pre-Consultation paper on Net Neutrality, dated May 30, 2016, on which the present submission is largely based.

Net Neutrality

Net Neutrality is not a singular construct. Thus, one is neither simply for nor against net neutrality. Net neutrality needs to be broken down into its various components and exceptions; and then contextualized to the unique features of the Indian policy environment.

Over time, net neutrality has become a political issue wherein individuals or groups have taken a for-or-against stance. Keeping that in mind, TRAI must, in essence, endorse the overall concept of net neutrality and the open nature of the Internet. Any contrary decision could send a wrong signal to activists, investors and friendly countries. Nevertheless, while endorsing net neutrality and an open Internet, TRAI must not treat net neutrality as a non-violable religion. TRAI must simultaneously recognize that net neutrality, as a policy construct, is not well defined and has different interpretations in different contexts. Specifically, in India, the interpretation of “net neutrality” is definitely a function of the Indian context. It is coloured by the evolving nature of technology, networks and markets.

Uniqueness of Indian Context:

Contextualizing Net Neutrality to India, one needs to understand that it is a one-of-its-kind market with unique characteristics, such as:

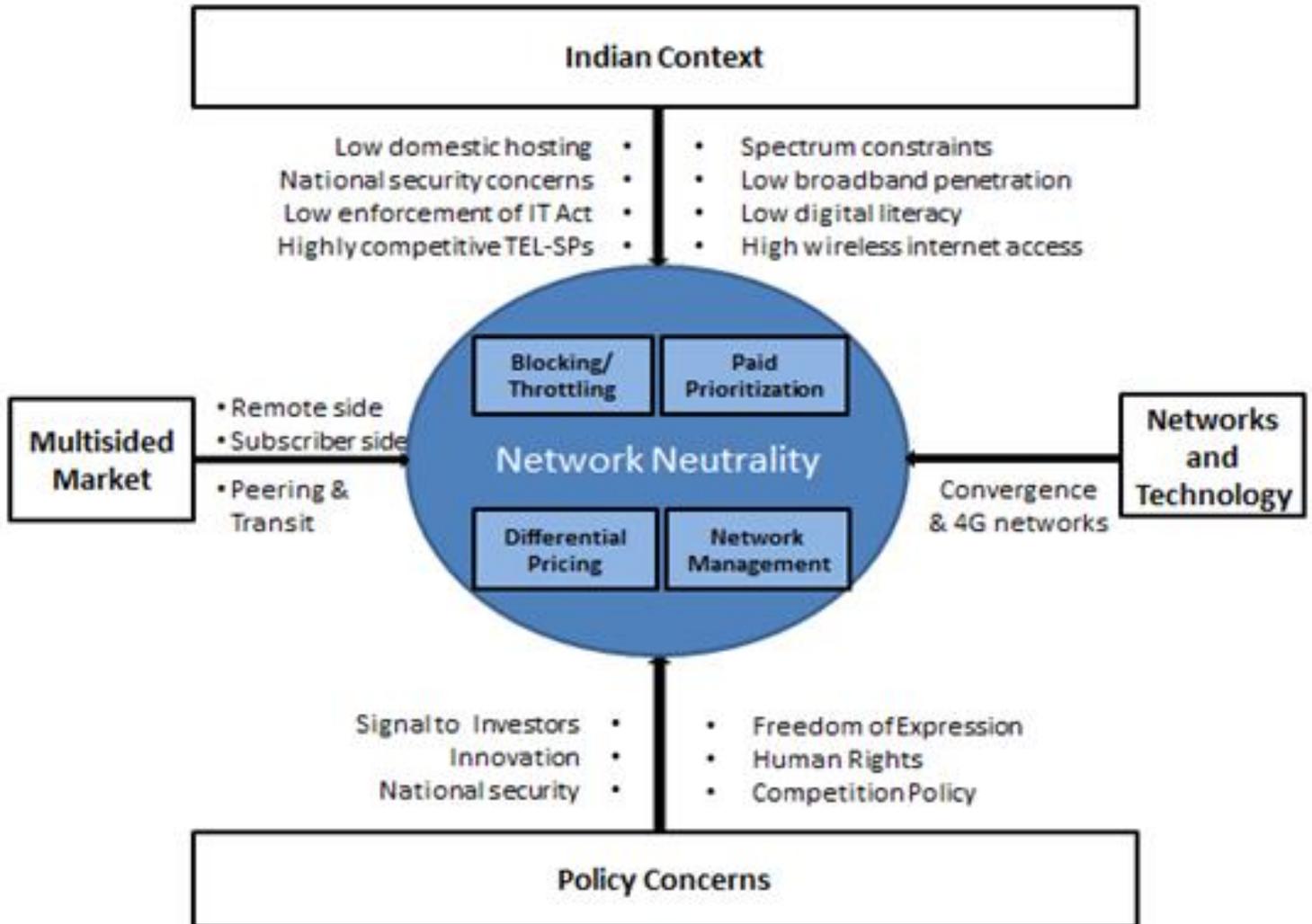
1. Dependence on wireless Internet access (in contrast to wireline broadband).
2. Limited, fragmented and non-contiguous spectrum available with Indian Telecom – Service Providers (TEL-SPs).
3. Low spectrum/population.
4. High cost of spectrum (price per MHz, per capita).
5. Low broadband penetration; Low penetration of 3G and 4G services.
6. Lack of content in vernacular languages.
7. Most content is hosted outside the country; most data is routed outside the country.
8. Low enforcement of IT Act with foreign intermediaries.
9. National security concerns are higher in India than most other countries.
10. High competition between TEL-SPs; relatively low switching costs.
11. Perceived relevance of Internet to a large number of people.
12. Low levels of digital literacy.
13. Perceived equivalence of Internet and Facebook + WhatsApp.
14. High sharing of passive and active infrastructure.

Evolving nature of Technology, Networks and Markets:

Technology, networks and markets are constantly evolving at a very fast rate. We capture a few important aspects that TRAI should keep in mind while developing its recommendations:

1. *Convergence and 4G Networks:* With the advent of 4G, networks have transitioned from circuit switched networks to fully packet based networks. Like Internet Based Services (e.g. Skype calls), now traditional services (e.g. PSTN voice calling) are also capable of being delivered over an IP based network and may share the same infrastructure as Internet based services. India has also moved forward to the Unified Licensing regime in which, the Unified License (with authorisation for Access Services) now allows for interconnection between IP Telephony and the PTSN/PLMN network.
2. *Evolving Nature of Market and Network:* The historical assumption of a TEL-SP only having a relationship with the local subscriber and peering/interconnecting networks is no longer true. Over time, the market for a last-mile network has evolved into a multi-sided market. Besides the “local” side of delivery of Internet access services to the subscriber, the TEL-SP also shares a “remote” side with Over the Top – Service Providers (OTT-SPs) that are not directly interconnected with the last-mile network. Increasingly, many content providers are now also directly interconnect with last-mile networks through content delivery networks. This evolving nature of the network architecture and market needs to be accounted for in the contextualization of constructs and issues.

The following diagram captures the essence of the submissions above and provides a framework for Net Neutrality.



Issues for Consultation

Q.1 What could be the principles for ensuring nondiscriminatory access to content on the Internet, in the Indian context? [See Chapter 4]

The following are the basic components and exceptions of net neutrality:

- 1) No Blocking
- 2) No Throttling
- 3) No Paid Prioritization
- 4) No Differential Charging
- 5) Transparency

No Blocking:

Views For

The basic concept of open Internet means that no lawful content or non-harmful device must be blocked from the Internet. No one other than the user must decide which services, contents or applications are available to them. Telecom Service Providers (TSP) may use blocking as a tool to increase their income from OTT services or to influence competition and favor certain services.

Views Against

Blocking may be useful in filtering the unlawful contents available on the Internet. Parental control can be a better tool to moderate the access of Internet by children. Blocking helps to minimize the effect of harmful devices on the network. In case of public Wi-Fi or shared network, users accessing websites with higher bandwidth consumption will reduce the QoS of other services².

International Practice

The FCC's Open Order 2015 bans blocking. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not block lawful content, applications, services, or non-harmful devices, subject to reasonable network management."³

² 'The Value of Network Neutrality for the Internet of Tomorrow', Edited by Luca Belli & Primavera De Filippi Preface by Marietje Schaake, accessed on February 28, 2017, <http://www.eurolinc.eu/IMG/pdf/NetNeutrality-Rapport.pdf>.

³ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, page no. 7, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

Recommendations:

The conditions of the Unified License agreement should be amended to enforce a no-blocking requirement for both incoming and outgoing traffic. Exceptions identified under reasonable network management must be incorporated into it. Blocking of content should be allowed under Section 69A or 79 of the Information Technology Act⁴. In case of a threat to security and stability of network, devices not complying with industry standards can be blocked.

No Throttling:

Views For

Throttling is nearly same as blocking because the consumption of a service would be reduced if the quality of service is reduced. Throttling will also act as a tool of increasing income by the TSP.

Views Against

Because of the spectrum constraints (limited, fragmented and non-contiguous), network management practices are necessary in India. Different services require different QoS. For example, services like voice/video call require higher priority than web surfing. Effective network management may require throttling of non-real time services. Services like torrents consume a lot of network resources and degrade the quality of service for essential services and hence may require throttling.

International Practice

The FCC's Open Order 2015 bans throttling. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not impair or degrade lawful Internet traffic on the basis of Internet content, application, or service, or use of a non-harmful device, subject to reasonable network management."⁵ The laws in Netherlands states that "Providers of public electronic communications networks over which Internet services are provided and providers of Internet access services hinder or delay any services or applications on the Internet."⁶

⁴ 'The Information Technology Act, 2000', published by Ministry Of Law, Justice And Company Affairs (Legislative Department) on June 9, 2000, http://www.dot.gov.in/sites/default/files/itbill2000_0.pdf.

⁵ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, page no. 7, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

⁶ 'Why not "Go Dutch" and Protect Net Neutrality without Defining Specialised Services?', accessed on February 28, 2017, <http://blogs.lse.ac.uk/mediapolicyproject/2014/04/04/why-not-go-dutch-and-protect-net-neutrality-without-defining-specialised-services/>.

Recommendations:

The rules for throttling should be similar to that of blocking. Exceptions for throttling must be based on types of services: real-time or non real-time. Throttling may be allowed for reasonable network management.

No Paid Prioritisation:

Views For

Cash rich OTT-SPs will enter into deals with TSPs to priorities them. Other OTT-SPs will not be able to afford prioritization. This will affect competition and innovation in the sector. Prioritization of some services will have a negative impact on other services, in case of congestion. Paid prioritization will be a threat to non-commercial users like individual bloggers, libraries, schools and advocacy organizations. For TSP, this may serve as an incentive to limit the quality of service provided to non-prioritized traffic.

Views Against

Prioritization of services that require higher quality of service is necessary. Example: Emergency health services. Service provision is free market deals and there is no need of regulatory intervention. Some users can purchase higher bandwidth packages, which will have a negative impact on other users. Certain services like voice calling needs to be prioritized over other services so as to maintain quality of service. Paid prioritization will not affect the competition if an alternate channel for content delivery comes up in the future.

International Practice

The FCC's open order 2015 states that paid prioritization should be banned. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not engage in paid prioritization."⁷ According to US open order, "Paid prioritization refers to the management of a broadband provider's network to directly or indirectly favor some traffic over other traffic, including through use of techniques such as traffic shaping, prioritization, resource reservation, or other forms of preferential traffic management, either (a) in exchange for consideration (monetary or otherwise) from a third party, or (b) to benefit an affiliated entity."⁸ As paid prioritization is a business practice and not a network management practice so there is no exceptions to this.

⁷ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, page no. 8, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

⁸ Ibid.

Recommendations:

Paid prioritization must not be allowed. As paid prioritization is business practice so there should be no exceptions to this. However paid peering, CDNs, etc. should not be considered as prioritization because they do not change the priority of the data packets. TSP must not be allowed to charge OTT-SPs termination or content-carriage fee for terminating data on their network. They must not engage in any degradation of quality of service in a way to earn revenue by paid prioritization.

No Differential Charges:

Views For

Charging less for certain applications will restrict user's access to only certain services. This will reduce competition and reduce innovation. This will also create wastage of network resources. Charging more for certain applications will serve as a tool to earn more and will hamper competition. Deep packet inspection will bring in privacy concerns. Setting up charges for a class of service, like VoIP calling and those apps providing mixed services, like gaming with VoIP, may lead to difficulty in classification.

Views Against

Charging less for certain applications will allow economically under-privileged people to access the services. This will help increasing the Internet penetration. Free access to e-governance services will promote the concept of Digital India. It can serve as an instrument for promoting proliferation of content in vernacular languages.

Users can choose a bouquet of services they want. Different services consume different bandwidth, voice call or video call, thus imposing different use of network. Similarly, different apps affect the TSP differently like VoIP calling, messenger services, etc. so they must be allowed to charge higher price for these.

International Practice

Netherlands law states "The level of tariffs set by the Internet access service providers for Internet services should not depend on the services and applications offered through it."⁹ FCC doesn't treat all zero rating in the same way. According to FCC's open order 2015, "zero

⁹ 'Why not "Go Dutch" and Protect Net Neutrality without Defining Specialised Services?', accessed on February 28, 2017, <http://blogs.lse.ac.uk/mediapolicyproject/2014/04/04/why-not-go-dutch-and-protect-net-neutrality-without-defining-specialised-services/>.

rating falls within the legal grey area of the FCC's "general conduct" rule, which demands a case-by-case analysis to determine whether the conduct causes unreasonable discrimination or disadvantage, based on an array of factors including effects on end-user control, competition, consumer protection, innovation and free expression."¹⁰

Recommendations:

TRAI must change the Regulation on Differential Pricing and allow zero rating of some services such as e-governance initiatives. As the data charges reduce over a period of time, zero rating will become redundant. It is recommended that zero rating be permissible if and only if it is done in a non-discriminatory and transparent manner. In this, the platform should be open to all Internet based service providers without discrimination, like free rural Internet. The terms for using the platform and the charges should be transparently published and uniformly applicable to all.

Transparency

Views For

Information asymmetry needs to be corrected so that consumers can make informed choices about the service they use. It makes it easier to identify net neutrality violations. It will ensure that OTT-SPs have the requisite technical information for providing predictable services using TSP infrastructure. It will increase the consumer's confidence in the operator and the effectiveness of regulator.

Views Against

It will impose high regulatory costs on TSP. By making operational data available, the network will become more vulnerable to hackers. It will reduce the effectiveness of network management practices, as people will know how to bypass them. The details of network management practices will be too technical for all the users to understand.

International Practice

Norwegian guidelines provide that "if the physical connection is shared with other services, it must clearly be stated how the capacity is shared between Internet traffic and other services."¹¹ The FCC's open order 2015 states that "A person engaged in the provision of broadband Internet access service shall publicly disclose accurate information regarding the network management practices, performance, and commercial terms of its broadband Internet access services sufficient for consumers to make informed choices regarding use of such

¹⁰ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, page no. 66, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

¹¹ 'Why not "Go Dutch" and Protect Net Neutrality without Defining Specialised Services?', accessed on February 28, 2017, <http://blogs.lse.ac.uk/mediapolicyproject/2014/04/04/why-not-go-dutch-and-protect-net-neutrality-without-defining-specialised-services/>.

services and for content, application, service, and device providers to develop, market, and maintain Internet offerings.”¹² The US Open Order of 2010 suggests disclosure of network practices (congestion management, application-specific behaviour, device attachment to network, security), performance characteristics (service description, impact of Specialised Services), and commercial terms (pricing, privacy policy and redress options). The FCC’s Open Order report of 2010 states “The rule does not require public disclosure of competitively sensitive information or information that would compromise network security or undermine the efficacy of reasonable network management practices. For example, a broadband provider need not publicly disclose information regarding measures it employs to prevent spam practices at a level of detail that would enable a spammer to defeat those measures.”¹³

Recommendations:

Transparency is required for standardized reporting of network management practices, commercial terms of service, sharing of traffic between Internet based services and specialized services, exercise of exceptions to net neutrality, service information including privacy policy and redressal options. Information that may affect network security and stability might not be disclosed. Reports should be available in a free, simple and accessible format.

Q.2 How should “Internet traffic” and providers of “Internet services” be understood in the NN context? [See Chapter 3]

(a) Should certain types of specialised services, enterprise solutions, Internet of Things, etc be excluded from its scope? How should such terms be defined?

(b) How should services provided by content delivery networks and direct interconnection arrangements be treated?

Please provide reasons.

Net Neutrality means that all the traffic on the network is treated neutrally without any discrimination. This principle was easily applicable in the past due to homogeneity of data, services, content, investment, etc. With growth in Internet traffic, evolution of new services, increase in investments, spectrum crunch in the sector, etc. these principals are becoming

¹² ‘Report And Order On Remand, Declaratory Ruling, And Order’, published on March 12, 2015, page no. 9, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

¹³ ‘Report And Order’, by FCC, published on December 23, 2010, https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf.

difficult to follow. Some users or services are not QoS dependent but for some ensuring QoS is extremely important¹⁴.

Specialized Service:

There is a need to recognize the concept of Specialized Services and use it as a construct that is applicable across different issues such as VoIP regulation and Net Neutrality. Specialized Services refers to services provided on a network that is either physically distinct from the Internet using different pipes or logically distinct from the Internet using access controls over the same pipes. Thus, all services provided over a Closed Electronics Communications Network (CECN), or any other network not connected to the Internet, would be called Specialized Services. Accordingly, facility based VoIP services or managed VoIP services (including VoLTE) would be classified as Specialized Services. Similarly, the concept of specialized services would be applicable to services such as remote surgeries, self-driving cars etc. that demand a higher QoS which the best efforts delivery over the Internet cannot guarantee.

Net neutrality cannot be applied to traditional telecommunications services that have now migrated to an IP based infrastructure; for example, PSTN calls (VoLTE) are expected to deliver high quality of service and cannot be treated equivalent to Skype, R-Jio using packet switched VoLTE network. TSPs should be free to use their networks to provide any services that require higher quality of service as long as they keep such services logically distinct from Internet Based Services. Specialized Services can help satisfy the need to guarantee the quality of certain forms of communication such as emergency health services. TSPs should be able to prioritize their own services on their own infrastructure as Internet Based Services are competing with Specialized Services using the same IP architecture; for example, WhatsApp killing voice calls, video calls and SMS. “Specialized Services for data-intensive or time-sensitive applications would allow operators to charge for providing guaranteed levels of service and hence would provide the certainty and the financial incentives that are needed to justify infrastructure investments.”¹⁵

The TSPs may expand the limit of “Specialized Services” for their benefit if it is not clearly explained. If the Specialized Services will consume a large part of the existing bandwidth, TSP will start to downgrade the general open Internet service, so as to increase their revenue.

FCC open order report 2010 recognizes that “Our rules against blocking and unreasonable discrimination are subject to reasonable network management, and our rules do not prevent broadband providers from offering specialized services such as facilities-based VoIP”. FCC

¹⁴ ‘Net neutrality in Europe’ by Ron Davies, Members' Research Service European Parliamentary Research Service published on March 25, 2014,

[http://www.europarl.europa.eu/RegData/bibliotheque/briefing/2014/140773/LDM_BRI\(2014\)140773_REV2_EN.pdf](http://www.europarl.europa.eu/RegData/bibliotheque/briefing/2014/140773/LDM_BRI(2014)140773_REV2_EN.pdf).

¹⁵ Ibid.

open order 2010 states that “The specialized services such as some broadband providers’ existing facilities-based VoIP and Internet Protocol-video offerings, differ from broadband Internet access service and may drive additional private investment in broadband networks and provide end users valued services, supplementing the benefits of the open Internet.”¹⁶ Amendment 236 in EU states that “Providers of Internet access, of electronic communications to the public and providers of content, applications and services shall be free to offer Specialized Services to end-users. Such services shall only be offered if the network capacity is sufficient to provide them in addition to Internet access services and they are not to the detriment of the availability or quality of Internet access services. Providers of Internet access to end-users shall not discriminate between functionally equivalent services and applications.”¹⁷ In Netherlands, the concept of Specialized Services is not included. Reason stated is “by restricting the scope of application of net neutrality rules to Internet services, it is not necessary to rely on the concept of Specialized Services to protect the functioning of managed, non-Internet Based Services. Both the open Internet and the functioning of non-Internet Based Services are better guaranteed without defining Specialized Services.”¹⁸

Recommendations:

Specialized Services should be taken as an exception to net neutrality. Quality of service to Specialized Services should not be provided at the cost of Internet Services. A service for which best-efforts delivery is possible should not be considered as a specialized service.

Q.3 In the Indian context, which of the following regulatory approaches would be preferable: [See Chapter 3]

- (a) Defining what constitutes reasonable TMPs (the broad approach), or**
- (b) Identifying a negative list of non-reasonable TMPs (the narrow approach).**

Please provide reasons.

And

Q.4 If a broad regulatory approach, as suggested in Q3, is to be followed: [See Chapter 3]

- (a) What should be regarded as reasonable TMPs and how should different categories of traffic be objectively defined from a technical point of view for this purpose?**
- (b) Should application-specific discrimination within a category of traffic be viewed more strictly than discrimination between categories?**

¹⁶ ‘Report And Order’, by FCC, published on December 23, 2010, https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf.

¹⁷ ‘European Parliament passes strong net neutrality law, along with major roaming reforms’ by David Meyer, April 3, 2014, <https://gigaom.com/2014/04/03/european-parliament-passes-strong-net-neutrality-law-along-with-major-roaming-reforms/>.

¹⁸ ‘Why not “Go Dutch” and Protect Net Neutrality without Defining Specialised Services?’, accessed on February 28, 2017, <http://blogs.lse.ac.uk/mediapolicyproject/2014/04/04/why-not-go-dutch-and-protect-net-neutrality-without-defining-specialised-services/>.

(c) How should preferential treatment of particular content, activated by a users choice and without any arrangement between a TSP and content provider, be treated?

And

Q.5 If a narrow approach, as suggested in Q3, is to be followed what should be regarded as non reasonable TMPs? [See Chapter 3]

Reasonable Network Management / Reasonable Traffic Management Practices

Given the current situation of spectrum constraints in India (limited, fragmented and non-contiguous), reasonable network management practices are important for network congestion management and assuring quality of service. Reasonable network management is essential for maintaining the security, stability and integrity of the network. This is essential because different applications and services require different quality of service. For example, voice calling services require higher priority than messaging services and health services require preference over a gaming service. Network management practices like parental control, can be user specific. Policy for network management has to be developed on a case to case basis. Network management is required to deal with UCC, Spam, Denial of Service, network attacks, etc.

Reasonable network management is a reasonable exception to net neutrality as long as it is not application or service specific. Network management should not involve deep packet inspection where the TSP has traffic management rules based on content or application. TSPs should not use network management to throttle services of competitors or small innovators.

The FCC's Open Order 2015 states "Reasonable Network Management is an exception to the no-blocking rule, no-throttling rule, and no-unreasonable interference/disadvantage standard, but not to the rule against paid prioritization."¹⁹ The FCC's Open Order report of 2010 states "Legitimate network management purposes include: ensuring network security and integrity, including by addressing traffic that is harmful to the network; addressing traffic that is unwanted by end users (including by premise operators), such as by providing services or capabilities consistent with an end user's choices regarding parental controls or security capabilities; and reducing or mitigating the effects of congestion on the network."²⁰ The Amendment 243, the European directive stated that "Reasonable traffic management measures shall be transparent, non-discriminatory, proportionate and necessary to a) implement a legislative provision or a court order, or prevent or impede serious crimes; b) preserve the integrity and security of the network, services provided via this network, and the end-users' terminals; c) prevent the transmission of unsolicited communications to end-users

¹⁹ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

²⁰ 'Report And Order', by FCC, published on December 23, 2010, https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf.

who have given their prior consent to such restrictive measures; d) minimize the effects of temporary or exceptional network congestion provided that equivalent types of traffic are treated equally. Reasonable traffic management shall only entail processing of data that is necessary and proportionate to achieve the purposes set out in this paragraph.”²¹ Netherlands law allows an exception to net neutrality “for the benefit of the integrity and security of the network, the service provider or the end user”²².

“As exceptions to the neutrality rule, reasonable network management activities should be consistent with international human rights standards regarding transparency, narrow tailoring, and proportionality. Wherever possible, traffic management practices should be content- and application-neutral. This is the most reliable way to ensure that traffic management is applied fairly and evenly, and that the ISP is not selecting which specific content or applications to favor or disfavor.”²³

In the Open Internet NPRM, the Commission proposed that “open Internet rules be subject to reasonable network management, consisting of reasonable practices employed by a provider of broadband Internet access service to: (1) reduce or mitigate the effects of congestion in its network or to address quality-of-service concerns; (2) address traffic that is unwanted by users or harmful; (3) prevent the transfer of unlawful content; or (4) prevent the unlawful transfer of content.” The FCC’s Open Order 2015 states unreasonable interference/disadvantage in addition to throttling and blocking: “We agree that a network management exception to the no-blocking rule, the no-throttling rule, and the no-unreasonable interference/disadvantage standard is necessary for broadband providers to optimize overall network performance and maintain a consistent quality experience for consumers while carrying a variety of traffic over their networks.” Further, the first filter for determining whether network management is reasonable could be “For a practice to even be considered under this exception, a broadband Internet access service provider must first show that the practice is primarily motivated by a technical network management justification rather than other business justifications. If a practice is primarily motivated by such justification, such as a practice that permits different levels of network access for similarly situated users based solely on the particular plan to which the user has subscribed, then that practice will not be considered under this exception”²⁴. The FCC has adopted a case-by-case

²¹ ‘Amendment 237 Catherine Trautmann on behalf of the S&D Group Amelia Andersdotter on behalf of the Verts/ALE Group Cornelia Ernst, Rina Ronja Kari on behalf of the GUE/NGL Group’, <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+AMD+A7-2014-0190+237-244+DOC+PDF+V0//EN>.

²² ‘Why not “Go Dutch” and Protect Net Neutrality without Defining Specialised Services?’, accessed on February 28, 2017, <http://blogs.lse.ac.uk/mediapolicyproject/2014/04/04/why-not-go-dutch-and-protect-net-neutrality-without-defining-specialised-services/>.

²³ ‘The Value of Network Neutrality for the Internet of Tomorrow’, Edited by Luca Belli & Primavera De Filippi Preface by Marietje Schaake, accessed on February 28, 2017, <http://www.eurolinc.eu/IMG/pdf/NetNeutrality-Rapport.pdf>.

²⁴ ‘Report And Order On Remand, Declaratory Ruling, And Order’, published on March 12, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

standard by recognizing that “reasonable network management exception will not be used to circumvent the open Internet rules while still allowing broadband providers flexibility to experiment and innovate as they reasonably manage their networks.”²⁵ The case by-case review also allows sufficient flexibility to address mobile-specific management practices because, by the terms of our rule, a determination of whether a network management practice is reasonable takes into account the particular network architecture and technology.”²⁶

Traffic Management

Ideally, traffic management detection needs to:

- a. Clearly find the exact location of traffic management in the network structure.
- b. Be reliable, minimizing false detections.
- c. Be precise to give the exact location of traffic management and yet have minimum cost and network disturbance.

However, using tool based approaches to regulate traffic management has several challenges. Since the underlying network structure represents a very complex ecosystem, identifying the location of traffic management is a challenge. For example, traffic management may happen at any remote location prior to the ISP (outside India), inside the ISP, after ISP or in the local network of the user. Thus, even after knowing that traffic management is happening, it is difficult to point to its specific point of occurrence²⁷.

Tools can help capture only a part of data appropriate for measuring metrics relevant from a customer’s perspective. For example, metrics usually used to measure Quality of Experience (QoE) is the bandwidth or bit rate, whereas the QoE encapsulates many other parameters. Further, traffic management practices need to clearly define processes to improve QoE and to keep services within their operational limits. The more any service uses the network resources, the more network management practices it requires.

Further, there are problems in proper detection of traffic management²⁸. Traffic management detection if applied throughout will itself generate huge traffic, thus reducing the QoE of other users besides the cost. On the other hand, it is required that the network manager rather

²⁵ ‘Report And Order On Remand, Declaratory Ruling, And Order’, published on March 12, 2015, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

²⁶ Ibid.

²⁷ ‘A Study of Traffic Management Detection Methods & Tools’, by Predictable network solutions, published in June, 2015, https://www.ofcom.org.uk/_data/assets/pdf_file/0024/71682/traffic-management-detection.pdf.

²⁸ Ibid.

than the user does the test as the users may not be technically proficient to install the specific tools to detect²⁹.

Other challenges regarding use of tools is that sometimes traffic management practices being used to protect the network may seem unfair to some. None of the traffic management techniques can be taken as a universal one applicable to all situations. Moreover, as identified above, these tools can only detect the occurrence of traffic management and not the exact location or volume of the practice. Further, no specific tool or combination of these, is able to properly detect traffic management in all given scenarios³⁰. Traffic Management monitoring is only a part of overall Net Neutrality framework. Mandating removal of traffic management by itself will not ensure Net Neutrality.

Recommendations:

Reasonable network management should be a permissible exception to net neutrality.

In the following cases, network management may be service, application or user specific:

- (i) network security, stability and integrity
- (ii) end user security
- (iii) end-user request
- (iv) prevention of spam and unsolicited communications

All network management practices should be time bound and proportional. Network management rules for wireless may be stricter (or different from) than those for wire-line. A case by case approach must be followed to look into these issues. Network management rules must only be motivated with technical justifications rather business justifications. For example, network management may not specifically be applied to users with a particular tariff plan.

Network management rules should be reviewed on a case-by-case basis (rather than ex-ante) to allow flexibility and innovation; and any review should take into account network architecture and technology. Further, application agnostic rules and end user control are only indicative of reasonable network management.

To deal with network congestion, TSPs should be allowed to create classes of services to prioritize delivery of services; as long as it is able to establish a well-defined rationale for prioritizing one class of service over another. All network management practices which involve blocking, throttling, or prioritization of any service, class of service, or protocol must be transparently published, and made clear to customers, potential customers, and the

²⁹ 'A Study of Traffic Management Detection Methods & Tools', by Predictable network solutions, published in June, 2015, https://www.ofcom.org.uk/data/assets/pdf_file/0024/71682/traffic-management-detection.pdf.

³⁰ Ibid.

regulator. For example, where the TSPs provide a shared public Wi-Fi network such as at an airport, then throttling of certain classes of services (such as video streaming) may be permissible if it is causing degradation of other services.

Q.6 Should the following be treated as exceptions to any regulation on TMPs? [See Chapter 3]

- (a) Emergency situations and services;**
- (b) Restrictions on unlawful content;**
- (c) Maintaining security and integrity of the network;**
- (d) Services that may be notified in public interest by the Government / Authority, based on certain criteria; or**
- (e) Any other services.**

Please elaborate.

(As discussed in Question No.: 2)

Q.7 How should the following practices be defined and what are the tests, thresholds and technical tools that can be adopted to detect their deployment: [See Chapter 4]

- (a) Blocking;**
- (b) Throttling (for example, how can it be established that a particular application is being throttled?); and**
- (c) Preferential treatment (for example, how can it be established that preferential treatment is being provided to a particular application?).**

(Blocking and Throttling as discussed in Question No.: 1)

No Preferential treatment / No Paid Prioritization:

Cash rich OTT-SPs will enter into deals with TSPs to prioritize them. Other OTT-SPs will not be able to afford prioritization. This will affect competition and innovation in the sector. Prioritization of some services will have a negative impact on other services, in case of congestion. Paid prioritization will be a threat to non-commercial end users like individual bloggers, libraries, schools and advocacy organizations. For TSP, this may serve as an incentive to limit the quality of service provided to non-prioritized traffic.

Prioritization of services that require higher quality of service is necessary. Example: Emergency health services. Service provision is free market deals and there is no need of regulatory intervention. Some users can purchase higher bandwidth packages, which will have a negative impact on other users. Certain services like voice calling needs to be prioritized over other services so as to maintain quality of service. In certain cases, cash rich OTT-SPs can use CDNs for direct data delivery. Therefore, paid prioritization will not affect the competition.

The FCC's open order 2015 states that paid prioritization should be banned. "A person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not engage in paid prioritization."³¹ According to US open order "Paid prioritization refers to the management of a broadband provider's network to directly or indirectly favor some traffic over other traffic, including through use of techniques such as traffic shaping, prioritization, resource reservation, or other forms of preferential traffic management, either (a) in exchange for consideration (monetary or otherwise) from a third party, or (b) to benefit an affiliated entity."³² As paid prioritization is a business practice and not a network management practice so there is no exceptions to this.

Recommendations:

Paid prioritization must not be allowed. As paid prioritization is business practice so there should be no exceptions to this. Paid peering, CDNs, etc. should not be considered as prioritization because they do not change the priority of the data packets. TSP must not be allowed to charge OTT-SPs termination or content-carriage fee for terminating data on their network. They must not engage in any degradation of quality of service in a way to earn revenue by paid prioritization.

³¹ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, page no. 7, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

³² Ibid.

Q.8 Which of the following models of transparency would be preferred in the Indian context: [See Chapter 5]

- (a) Disclosures provided directly by a TSP to its consumers;**
- (b) Disclosures to the regulator;**
- (c) Disclosures to the general public; or**
- (d) A combination of the above.**

Please provide reasons. What should be the mode, trigger and frequency to publish such information?

Transparency

Information asymmetry needs to be corrected so that consumers can make informed choices about the service they use. It makes it easier to identify net neutrality violations. It will ensure that OTT-SPs have the requisite technical information for providing predictable services using TSP infrastructure. It will increase the consumer's confidence in the operator and the effectiveness of regulator.

It will impose high regulatory costs on TSP. By making operational data available, the network will become more vulnerable to hackers. It will reduce the effectiveness of network management practices, as people will know how to bypass them. The details of network management practices will be too technical for all the users to understand.

Norwegian guidelines provide that "if the physical connection is shared with other services, it must clearly be stated how the capacity is shared between Internet traffic and other services."³³ The FCC's open order 2015 states that "A person engaged in the provision of broadband Internet access service shall publicly disclose accurate information regarding the network management practices, performance, and commercial terms of its broadband Internet access services sufficient for consumers to make informed choices regarding use of such services and for content, application, service, and device providers to develop, market, and maintain Internet offerings."³⁴ The US Open Order of 2010 suggests disclosure of network practices (congestion management, application-specific behaviour, device attachment to network, security), performance characteristics (service description, impact of Specialised Services), and commercial terms (pricing, privacy policy and redress options). The FCC's Open Order report of 2010 states "The rule does not require public disclosure of competitively sensitive information or information that would compromise network security or undermine the efficacy of reasonable network management practices. For example, a broadband provider need not publicly disclose information regarding measures it employs to

³³ 'Why not "Go Dutch" and Protect Net Neutrality without Defining Specialised Services?', accessed on February 28, 2017, <http://blogs.lse.ac.uk/mediapolicyproject/2014/04/04/why-not-go-dutch-and-protect-net-neutrality-without-defining-specialised-services/>.

³⁴ 'Report And Order On Remand, Declaratory Ruling, And Order', published on March 12, 2015, page no. 9, https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

prevent spam practices at a level of detail that would enable a spammer to defeat those measures.”³⁵

Recommendations:

Transparency is required for standardized reporting of network management practices, commercial terms of service, sharing of traffic between Internet based services and specialized services, exercise of exceptions to net neutrality, service information including privacy policy and redressal options. Information that may affect network security and stability might not be disclosed. Reports should be available in a free, simple and accessible format.

³⁵ ‘Report And Order’, by FCC, published on December 23, 2010, https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf.