

Policy Watch

No. 2

Net Neutrality and Keeping the Internet Free in India

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THE HINDU CENTRE

for

Politics and Public Policy

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I. Introduction

In February 2016, the Telecom Regulatory Authority of India (TRAI), released the “Prohibition of Discriminatory Tariffs for Data Services Regulations, 2016”¹ (henceforth referred to as Regulations). This was a result of an elaborate consultation exercise that sparked a vigorous debate on the issue of network neutrality in India. The Regulations have divided opinion, with some sections lauding them as advancing net neutrality², and others criticising them as over-regulation.³ This paper seeks to understand the debate on network neutrality⁴, the principles underlying the debate, the key outcomes of the Regulations, and their impact on the stakeholders, and to answer some of the key criticisms.

¹ Telecom Regulatory Authority of India. [Prohibition of discriminatory tariffs for data service regulations, 2016](#). Last accessed February 02, 2015.

² Live Mint, 2016. “[TRAI begins to act like a real regulator](#)”, February 10.

³ Pranesh Prakash, 2016. “[TRAI order: A sledgehammer, not a scalpel](#)”, *The Indian Express*, February 11. Last accessed April 5, 2016.

⁴ The terms network neutrality and net neutrality are used interchangeably in the article.

II. Background and Context

This section provides a brief background on the concept of network neutrality. It also discusses the factors that have led to network neutrality becoming a relevant public policy issue in the recent years.

1 What is network neutrality?

The term “network neutrality” was coined by Tim Wu, a professor at the Columbia University in 2003. Network neutrality is the principle that all electronic communication networks should be agnostic to the content transmitted over it, the application used to transmit such content, the sender or receiver of the content, type of device used, etc., and must carry all data packets in a non-discriminatory manner.⁵ This principle touches on three aspects of neutrality: Speed, Access and Pricing.⁶

⁵ Luca Belli. “[End-to-end, Net Neutrality and Human Rights](#)”, Springer International Publishing (2013), pp. 13–29.

⁶ The recent regulation by TRAI only touches the third aspect, i.e. pricing of data. The other two aspects are still unaddressed by TRAI.

- i. **Speed:** Telecom service providers (TSPs) should not discriminate between content providers in terms of speed with which they can send their data to their users. This means that TSPs should not either throttle or increase speeds in providing access to some content over other.
- ii. **Access:** TSPs should act as agnostic carriers or “dumb pipes” in providing access to any content that a user of the internet might want to see. They should not allow/block access to any content on the internet at their discretion or based on their arrangements with content providers.
- iii. **Pricing:** TSPs should not provide varying levels of service for any content on the internet by pricing it differently, i.e. there should be no paid prioritisation or content based pricing.

2 Context for the debate on network neutrality

Since its advent in late 1980s, the internet as a communications network followed a unique pricing

structure.⁷ Users and content providers paid usage fees to TSPs to use the internet. However, content providers (such as Face-book, Google, Skype) did not have to pay TSPs for the users that they could reach. In recent years, TSPs have attempted to change this pricing structure and their revenue models and charge large content providers additional fees to reach their consumers. That is, as long as a content and application provider (CAP) pays carriage fees to a TSP, its subscribers would be able to reach these platforms. Conversely, platforms which do not enter into commercial agreements with TSPs would be blocked.

Secondly, since the late 1990s, technological innovations emerged which enabled TSPs to read contents in data packets being transmitted over their network.⁸ TSPs started employing these techniques for traffic management and to ensure Quality of Service (QoS) to their users. In the recent years, these internet traffic management (ITM) practices are being deployed to block applications that

⁷ Robin Lee and Tim Wu, 2009. "[Subsidizing creativity through network design: Zero-price and Net-neutrality](#)", *Journal of Economic Perspectives*, Vol. 23(3).

⁸ Nate Anderson, 2007. "[Deep packet inspection meets net neutrality. CALCEA](#)", *Ars Technica*, July 26. Last accessed April 5, 2016.

compete with TSPs services (E.g.: VoIP calls)⁹, to downgrade or throttle data guzzling content (such as videos)¹⁰, prioritise their own content offering, and other similar measures. This has initiated a debate on issues such as privacy and legitimate forms of traffic management.

These factors have forced a re-think among regulatory agencies across the world on the principles that underlie the internet and the safeguards that are necessary to protect changes in its basic architecture. Network neutrality has since been a subject of academic and public scrutiny.

⁹ Manish Singh, 2015. "[Ringo halts domestic calls service in India, after telcos allegedly block it](#)", Gadgets 360, December 1. Last accessed April 5, 2016.

¹⁰ John Brodtkin, 2016. "[T-Mobile's Binge on: When throttling may not break rules](#)", *Ars Technica*, January 7.

III. A Principle-based Approach to Net Neutrality

This section discusses the design principles, economic arguments and legal principles that have guided the internet since its inception. It attempts to bring out the risks or consequences that may result if any fundamental or structural change in the original design of the internet is brought about.

1. **End-to-end design principle:** In the end-to-end (E2E) design framework, communications networks (provided by TSPs) serve simply as passive infrastructure of “dumb pipes” which simply carry data packets from one point to another, whereas intelligence is located at the end points of the network.

That is, users located at the end points of the network, are tasked with creating and running applications to read these data packets, detect and solve data delivery problems. The network itself is completely agnostic to the contents, senders and recipients of the packets of data.

Advocates of net neutrality argue that it is this original design principle of the internet, that has enabled it to become a decentralised and general purpose network.¹¹ It has enabled the internet to become much larger than traditional communication networks like cable television.¹² It has also fostered free communication and constant innovation.

Therefore, any attempt by TSPs, who are simply network/infrastructure providers, to control/determine what content can be accessed by users and on what terms, likens them to become “content gatekeepers” and violates this basic design principle of the internet. Network neutrality is therefore essential to protect this design feature and unique architecture of the internet.

2. **Innovation and Competition:** In its current form, the internet serves as a market place which provides a level playing field for every CAP to compete. It provides every CAP, whether a big corporation or a start-up, the same

¹¹ J.H. Saltzer, D.P. Reed, and D.D. Clark, 1984. “[End-to-end arguments in system design](#)”, ACM Transactions on Computer Systems Vol. 2 (4), pp. 277–288.

¹² Belli, see n. 5.

ease of access to its potential customers. This application blind nature of the internet has fostered constant innovation.¹³ Further, interactive qualities of the internet allow feedback on products and services. Platforms such as Google, Skype, Facebook, and YouTube have emerged because the design of the internet has empowered millions of users around the world to judge the utility of these services themselves.¹⁴

Network neutrality enables innovation at the core (on the platform layer) and innovation at the edges (at the application layer) of the internet, as it allows application and content service providers to either innovate or build new products at little investment cost.¹⁵ In general, competition decreases market power and increases incentives to innovate. By disallowing any preferential access to select content, network neutrality increases competition as well as incentivises innovation. This is

¹³ Barbara Van Schweik, 2010. “[Internet Architecture and Innovation](#)”, The MIT Press.

¹⁴ Lee and Wu, see n. 7.

¹⁵ V Kocsis and J Weda, 2013. “[The innovation enhancing effects of network neutrality](#)”. *SEO Economic Research*, June 12.

because in a competitive market, service providers (TSPs and CAPs) do not compete only on the basis of price but also on other factors that determine demand such as quality of service and product differentiation.

If TSPs are allowed to charge access fees based on content, it will not only increase the market power of TSPs and large content providers but will simultaneously break down the low-cost innovation model that the internet provides to small entrepreneurs.

3. **Two-sided markets and network effects:** The internet is a platform market, or a two-sided market, that connects users with CAPs. In two-sided markets, two sets of agents interact through a platform and the decision of each set of agents affects the outcome of the other set of agents.¹⁶ Each side has a stake in the growth of the other and the benefits that one group can achieve depends on the size of the other. These are called network effects.¹⁷ On the internet, content providers benefit from more end users

¹⁶ Marc Rysman, 2009. "[The Economics of Two sided markets](#)", *Journal of Economic Perspectives*, Vol. 23(3). pp. 125-143.

¹⁷ N Economides and B Hermalin, 2012. "[The economics of network neutrality](#)", *The RAND journal of Economics*, Vol. 43(4). pp. 602-629.

since that translates to more visits, more advertisement revenue and higher valuation. Similarly, end users benefit in terms of diversity and greater choice of content and applications.¹⁸

Historically, TSPs have followed a zero-price access rule, i.e. they do not charge any fees to CAPs to provide access to their content to the users. This in effect, has provided CAPs an incentive to creativity, to generate content. “It is a subsidy to the creative and entrepreneurial at the expense of the passive and consumptive.”¹⁹ Further, it has also reduced barriers to entry for users to become content providers.²⁰

If TSPs are allowed to charge fees to access specific content, this will result in them competing for content and bargain for exclusive arrangements with content providers. This phenomenon is already present in cable television where service providers attract customers based on the

¹⁸ Kocsis and Weda, see n. 15.

¹⁹ Lee and Wu, see n. 7.

²⁰ On the internet, unlike other traditional markets, producers and consumers are not distinct. Producers of content are also consumers and vice versa. For example: A user is not simply a passive consumer of content produced by others. A user becomes a producer of content through blogs, social media websites.

exclusivity of content/ channels that they provide.²¹ Such a model would be disastrous for the internet as it would lead to its fragmentation into multiple internets. This would result in negative externalities on the network and welfare losses as users will be foreclosed to some content and content providers will be foreclosed from the users with whom the TSP has no agreement. Therefore, it will also reduce the overall network effects of the internet.

4. **Privacy:** The original architecture of the internet was designed such that network providers could only read the headers of the data packets. However, today, there are techniques such as deep packet inspection (DPI) available to TSPs which can enable them to read the contents of data packets being transmitted over the network and apply a discriminatory treatment defined by the TSP.²² While some form of DPI, which is used by TSPs for filtering and blocking malicious content such as spam, malware, pornography, and copyright infringement²³ may be

²¹ Lee and Wu, see n. 7.

²² Alejandro Pisanty, 2016. “[Network neutrality under the lens of risk management](#)”, *Springer International Publishing*.

²³ For example: In 2012, the Calcutta High Court ordered TSPs to block 104 websites which were hosting pirated music content online. The

desirable, it must be regulated. For instance, if such advanced network management practices are used for invasive practices such as eavesdropping and data mining, it can have vicious consequences for a users' right to privacy.²⁴ Further, if left unregulated, blocking can have nefarious implications on the freedom of information and communication and jeopardise people's freedom of expression and choice.²⁵ Network neutrality regulation is therefore essential to ensure that there is no indiscriminate blocking of legitimate content on the internet and the users' privacy is protected.

5. **Freedom of speech and expression:** The internet has transformed communications around the world. It has qualitatively changed ways of outreach, organisation, commerce, research and governance, to mention a few transformations. The internet has enhanced not only values such as freedom of speech and expression but also

court asked TSPs to block this content through DNS or IP address blocking or through DPI based URL blocking.

²⁴ Francesca Musiani and Maria Loblich, 2015. "[Net neutrality from a public sphere perspective](#)", *Springer International Publishing*, November 6.

²⁵ In 2012, telecom operator Orange, blocked the website of French civil society organisation, La Quadrature du Net.

freedom of media and free flow of information. It has enabled plurality of information and views, which are especially critical for a democracy.

The guarantee of freedom of speech and expression, enshrined in Article 19(1) (a) of the Constitution, includes the right to receive information from multiple sources of media.²⁶

To ensure that these rights are protected and advanced, unhindered access to a range of opinions and information on all public issues is imperative. Further, given the decisive impact of the internet on these fundamental values and the public sphere, the state has an obligation to advance these freedoms. Blocking, throttling, filtering of

²⁶ Supreme Court of India. [*Shreya Singhal vs. Union of India, Writ Petition\(Criminal\) no. 167 of 2012*](#). Last accessed August 08, 2015. Also see Secretary, Ministry of Information and Broadcasting, Govt. of India v. Cricket Association of Bengal (1995) 2 SCC 161, the Supreme Court held that, “*The right of free speech and expression includes the right to receive and impart information. For ensuring the free speech right of the citizens of this country, it is necessary that the citizens have the benefit of plurality of views and a range of opinions on all public issues. A successful democracy posits an aware citizenry. Diversity of opinions, views, ideas and ideologies is essential to enable the citizens to arrive at informed judgement on all issues touching them. This cannot be provided by a medium controlled by a monopoly, whether the monopoly is of the State or any other individual, group or organisation.*”

content, done at the discretion of a TSP, when not mandated by law, inhibit the dissemination of information and plurality of views that an individual can access.

Mediated access creates information control and discriminates between quality of access based on users who can pay for it and users who cannot. Private entities, who provide telecommunications and internet services (TSPs) are driven by profit maximisation incentives, often to the detriment of human rights. This necessitates regulatory intervention to ensure that these fundamental values are protected.

Allowing TSPs to discriminate based on content is likening them to serve as arbiters of the relevance or usefulness of some content over other to users. Such “gatekeeping” powers to monopolise the content and information is detrimental to interests of users. This strengthens the case for having a regulatory framework for network neutrality, which can ensure a well-functioning public sphere, which fosters variety of information, ideas and opinions.²⁷

²⁷ Musiani and Loblich, see n. 24.

IV. India's Regulatory Framework

India has been a latecomer to the global debate on network neutrality. While the issue of network neutrality was first raised by the TRAI in one of its consultation papers in 2006, no regulatory intervention followed. Debate on the issue was reignited in 2015, when an Indian TSP, Airtel urged TRAI to regulate “over-the-top” services such as WhatsApp and Skype. Following this, the TRAI released a consultation paper on the “Regulatory framework for Over-the-top (OTT) services” in March 2015. Though it did not take any action on OTT services following this consultation, it initiated a discussion on the broader issue of differential pricing (of which OTT services form a part) based on content in December 2015.²⁸ It released a consultation paper on the issue, which posed four specific questions. In summary, the questions asked were:

- a) Should Telecom Service Providers (TSPs) be allowed have differential pricing for data usage?

²⁸ Telecom Regulatory Authority of India, 2015. “[Consultation Paper on Differential Pricing for Data Services](#)”. Last accessed February 02, 2015.

- b) If permitted, what measures should be adopted to ensure that principles of non-discrimination, transparency, affordable internet access, competition, market entry and innovation are addressed?
- c) What are the alternative models that can achieve the objective of providing internet access to consumers?
- d) Any other issues that should be considered.

The process allowed stakeholders to submit comments and counter comments for a month. The TRAI also conducted an open house discussion for all stakeholders to raise issues and respond to concerns raised in the paper. The consultation exercise was conducted in an open, participatory and transparent manner and provided a refreshing change from closed door policy making, that often characterises government decision making.

A month after the consultation process was closed, the TRAI released the Regulations. These were accompanied by an explanatory memorandum that explains legal principles and the rationale for the Regulations in simple language.

Summary of the Regulations

1. They prohibit TSPs from charging or offering discriminatory tariffs for data services based on the content being accessed. The Regulations, therefore, addresses the last aspect of neutrality, that of pricing.
2. The Regulations make two exemptions; one for Closed Electronic Communication Networks (CECNs) and other for provisioning of emergency services. CECNs have been defined in the Regulations as networks where “data is neither received nor transmitted over the internet”. The second exemption allows TSPs to reduce tariffs for data services for providing emergency services at the time of public emergencies.
3. The Regulations impose a pecuniary liability on a TSP for its violation at the rate of Rs. 50,000 for each day of contravention.

Impact of the Regulations

The Regulations will have an impact on all stakeholders in the internet ecosystem. The three main stakeholders in this debate

are TSPs, CAPs and users. The impact on these stakeholders is summarised in this section.

1. **TSPs:** TSPs cannot enter into new agreements with content providers for preferential access to content. They will also have to terminate existing contracts/agreements where preferential treatment is being given to certain websites/platforms. For instance, Reliance will have to terminate its agreement with Free Basics.
2. **Content providers:** Content providers can no longer enter into agreements with TSPs for preferential treatment of their content on the internet. The Regulations will, therefore, ensure a level playing field for all content providers on the internet. They will ensure that there are no entry barriers for small content creators (such as bloggers, start-ups and competitive service providers) to the internet, thereby fostering innovation.
3. **Users:** Users will be able to access the open internet, without any intermediation or interference by TSPs or content providers. However, it will adversely impact those users who have been accessing content through zero rating platforms since such plans will have to be discontinued and

usage of internet to access this content will now be chargeable.

Criticism of the Regulations

While the Regulations received a favourable verdict from academia and civil society, they have also been criticised on some aspects. This section discusses the three main criticisms and presents counter arguments and responses.

- 1. Over-regulation:** TRAI has adopted an *ex-ante* approach to the Regulations by imposing a blanket prohibition on any plans/off by TSPs which differentially price content. Critics argue that the *ex-ante* method is over-regulation by TRAI. They argue that *ex-post* systems like the one adopted in the U.S., should have been adopted by TRAI. The U.S. regulator, Federal Communications Commission has adopted an *ex-post* system, where pricing packages by TSPs are analysed on a case-by-case basis to determine whether a certain practice is discriminatory or not.

The regulator in its explanatory memorandum accompanying the Regulations has stated that its approach towards not allowing a case by case examination of

different packages that TSPs may develop, is in order to foster an environment of regulatory certainty and prevent discretion. The arguments advanced by TRAI in its explanatory memorandum on *ex-ante* regulation draw on the work of Barbara Van Schweik who has extensively studied the costs and benefits of an *ex-ante* vs. *ex-post* system of regulation.²⁹

An *ex-post* system creates an environment of regulatory uncertainty and disincentivises innovation as it does not provide the market clear signals about the acceptability of its pricing plans, network management practice by the regulator. This uncertainty remains until a regulatory outcome is reached, which affects investments as well as users. Further, the costs of regulation are higher in an *ex-post* system since regulatory decisions can be subject to challenge, investigations, appeals. Therefore, it favours stakeholders who have the means to tilt the playing field in its favour.

²⁹ Barbara Van Schewick, 2012. "[Network Neutrality and Quality of Service: What a Non-Discrimination Rule Should Look Like](#)", *The Center for Internet and Society*, June 11.

On the other hand, an *ex-ante* system, provides clear signals to the market on acceptable and unacceptable forms of discrimination. This prevents the threat of regulatory capture by well-financed actors since there is no scope for regulatory discretion to be exercised for every case.

2. Exception for Closed Electronic Communications

Network: The Regulations exempt “Closed Electronic Communications Networks” from its ambit. Critics argue that this exception creates a loophole in the Regulations that can be used by TSPs and CAPs to create platforms that offer access to specific websites at lower costs and therefore subverts the intent of the Regulations.

In the Regulations, a “CECN” has been defined as a communications network where data is neither received nor transmitted over the internet. A plain vanilla reading of the definition makes it apparent that if any program/application created by a TSP touches the public internet or requires the use of the internet to be operated, such service will not be exempted from the Regulations. This exception is necessary and seems to be created in order to allow telecom service providers offer innovative

products to customers/businesses for their private networks or intranets.

A safeguard that prevents the abuse of this provision lies in the proviso of regulation 3(2) which prohibits any TSP from classifying a network as a CECN in order to evade the Regulations. Additionally, regulation five specifies financial disincentives for breach of the Regulations. This requires the TSP to pay a penalty besides withdrawing the tariff plan in case of contravention. Therefore, the proviso along with financial disincentives specified for contravention of the regulation will act as a deterrent against any misuse of the exception.

- 3. Impact of zero-rating on consumer choice:** The Regulations disallow TSPs from differential pricing based on content. Therefore, they disallow operators from offering any zero-rating, usage based pricing plans, sponsored data plans etc. Some critics argue that zero-rating plans do not skew consumer choice and users who are on-boarded to the internet through such plans understand the difference between the whole internet and zero rated content.

Zero rating is the practice where a users' data usage for specific content or applications is not counted towards their data billing. Therefore, if a CAP such as Jabong/Skype has a commercial agreement with a TSP for zero rating their content, when users use these applications, zero data usage will be assumed. There are several arguments which establish that zero-rating affects consumer choice. There are several studies in behavioural economics which suggest that consumers perceive benefits from free products to be higher than when the same product is priced.³⁰

The net value perceived from the free good is so high that it leads to the choice of the free good. Further, zero-rating favours larger and established content providers as they can afford to enter into commercial agreements with TSPs for prioritisation of their content, at the cost of small content providers. The harm is even more when the TSP is also the content provider and zero rates its own

³⁰ Kristina Shampanier, Nina Mazar, and Dan Ariely, 2007. "Zero as a Special Price: The True value of free products", *Marketing Science*. 26:6, pp. 742-757

offerings. This creates a lock-in effect on the customer and has anti-competitive impacts.

Secondly, users (especially) first-time users, who have never used or experienced the power of the internet cannot understand its value or inherent benefits. This circles back to the regulators' argument about internet being an "experience good" rather than a "search good", where zero-rating service providers can have the ability to shape (or limit) the users' experience of the internet. There is at least one study to prove that zero rating limits users to a narrow experience of the internet.³¹

³¹ A study by Quartz conducted in Indonesia and Nigeria shows that 11% of Indonesians who said they used Facebook also said they did not use the internet. In Nigeria, nine per cent of Facebook users said they do not use the internet. Quartz. *Millions of Facebook users have no idea they're using the internet*. Feb. 9, 2015.

V. The Way Ahead

India's telecommunications regulator, TRAI, has taken important first steps in initiating regulatory intervention on the subject of network neutrality through powers that it derives from the TRAI Act. However, there are other aspects of network neutrality such as differential pricing based on acceleration or throttling of content, search neutrality, and legitimate forms of traffic management, that remain to be addressed and are outside the jurisdiction of TRAI.

The rapid evolution of internet technologies requires that any intervention on network neutrality is dynamic in nature, since any application/technique specific prohibition/permission can become redundant in no time. Therefore, a principle-based legislation on these aspects is imperative as a logical next step to enshrine protections for network neutrality.

The debate on network neutrality in India has been posited by those supporting differential pricing as “some access is better than no access at all”. While debunking this statement is simple through economic and principle based arguments, solving the

question of access is not. More than 800 million people in India still have no access to any form of internet. Unless the government unleashes a large scale programme of expanding internet access in the near future, pressures to allow a non-neutral internet will remain. The faster that access to the open internet for the internet have-nots is enabled, the more compelling the reasons for having a neutral and open internet will be.

Lastly, in its Regulations, TRAI has provided for a review of after two years. Though a welcome step, any such review must adopt a systematic regulatory impact assessment (RIA) framework which includes a cost-benefit analysis of the social costs and economic costs imposed by the Regulations as well as the benefits of preserving an open internet.

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Published by :

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