

**Response to  
TRAI**

**Consultation Paper  
on  
Net Neutrality**

**Contributed by**

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

India is a telecom market that has the following unique characteristics:

1. Mobile devices and networks are predominant mode for accessing OTT and Internet services; the penetration of wired broadband in India is very poor (one-fourth that of mobile broadband subscriber base); hence the mobile network is the dominant network in India compared to wired network in most of the advanced telecom markets in the world.
2. Access network of mobile operators in dense urban areas are capacity constrained due to limited assignment of spectrum for each operator; spectrum HHI in India: 0.13
3. Competition is intense in the mobile sector with a market share HHI of 0.18. The average number of mobile operators in each service area is 10. Hence cost of multi-homing for OTT services is relatively less;
4. There is availability of multi-SIM 3G and even 4G handsets at reasonable prices; the subscriber base is largely pre-paid with completely unbundled handset market;
5. Mobile number portability is in place
6. Due to (3)-(5), the switching cost for subscribers from one TSP/ISP to another is relatively less compared to other world markets.

The issue of net neutrality takes on different hues in the context of different relative maturities of fixed and mobile networks in a market. If a country has a dominant means of access, either fixed line as in Bhutan, or mobile as in India then, and if net neutrality is established as an important principle, **it must be applied to the dominant network**. In case both means of access are well established in a country, then net neutrality can be applied on the high bandwidth fixed network and need not be mandated on the mobile networks as each consumer can be targeted in an undifferentiated manner by all OTTs using the fixed network. In case both fixed and mobile networks have low penetration, net neutrality may again need to be mandated on both networks, as fixed line networks have capacity, and mobiles are likely to be the chosen means of access.

The general principle is that the wired broadband network where capacity is not an issue, the zero charge rule may be in place. However, in the capacity constrained mobile network, less stringent rules should apply. We can expect wireless access to be the main medium of access to the internet for some time to come. This puts pressure on the network, making an adoption of pure net neutrality difficult.

In the opposite direction, it also makes it imperative to allow a dynamic innovation environment in the mobile OTT space.

1. **Content prohibition and blocking should not be allowed.** It is the basic right of every citizen to access lawful communication services/ apps/ content/. Hence as is being done internationally blocking of lawful OTT services by the TSPs should not be allowed.
2. **Vertical integration should be carefully monitored and regulated.** Given the extent of competition in mobile services in India and the perfect competition in the OTT services, vertical integration may cause imperfection in the market. Examples of vertical integration and the consequences have been discussed elsewhere in this response. Any threat to competition shall be taken by the Competition Commission of India on a case by case basis using Significant Market Power (SMP) analysis. We also propose increasing competition in Internet Service Provisioning beyond those that are offered by TSPs by allowing unrestricted Internet Telephony for Unified Licensees with Internet Service Provider authorization.

The TSP can recover its investment in the network and manages congestion by charging the OTT or the end user or both.

The TSPs should be allowed to have differential pricing along the following dimensions:

1. Time dependent pricing (all bits priced the same; however varies across time)
2. Location dependent pricing (all bits priced the same; however varies across location)
3. Application dependent pricing (bits of different applications IN DIFFERENT CLASSES OF SERVICE are priced differently). The different classes shall be enumerated by the Regulator or self-declared by the OTTs (e.g. synchronized narrowband application such voice/ messaging, synchronized broadband application such video).

However all differential pricing should be subject to monitoring by the competition regulator, especially in cases where vertical integration entities are involved.

## 2. How should “Internet traffic” and providers of “Internet services” be understood in the NN context? [See Chapter3]

- a. **Should certain types of specialized services, enterprise solutions, Internet of Things, etc. be excluded from its scope? How should such terms be defined?**

Any application/ service or content that is transported across Public Data Network (PDNs) shall

come under the purview of NN. If the network is strictly private, such as Enterprise Intranet, Managed VoIP services within the Intranet, then these services shall be excluded. A PDN shall be defined as a data network that may use Internet Protocol at the network layer and is not restricted in access to a defined Closed User Group (CUG). In other words, any network that is interconnected to any other network whose users are not specified in the defined CUG, it cannot be construed as non-PDN.

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

The Internet value chain is illustrated below:

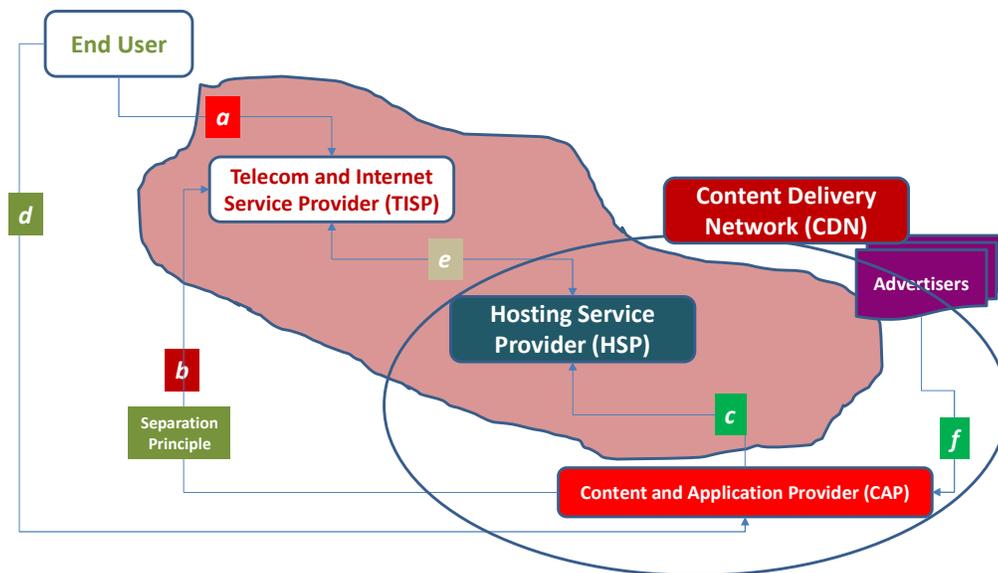


Figure 1. The Internet Value Chain

- i. There can be vertical integration between the different entities. For example, the large CAPs such as Amazon, Facebook, and Google started out as pure CAPs but now are HSPs and CDNs as well. In this situation the old definition of net neutrality that treated the Internet as a simple two sided market does serious injustice to the complexity of the Internet today and overlooks many links of the network that could do serious damage to the spirit of the end to end design principle.
- ii. **One of the main questions that net neutrality advocates must examine today is vertical integration of CAPs and CDNs. "Equal access" doctrine shall be applicable to both**

TSP and CDNs, so that TSPs do not discriminate CDNs and CDNs in turn do not discriminate CAPs. Hence direction connectivity between CDNs and TSPs shall be available for all CDNs.

- iii. Timothy Wu, the person who coined the definition of net neutrality, advocates the “**Separations Principle**” that creates *salutatory distance* between each of the many layers of the information economy. The *salutatory distance* shall mean no collusion between CDNs and TSPs and equal access to both CDNs and TSPs.

**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.**

A broad approach is appropriate when the possible TMPs are reasonably well known and understood, and innovation in TMPs is incremental. At this stage of the evolution of technologies and markets a broad approach is preferable. However, the **broad approach** should have the following negative list of non-reasonable TMPs:

- i. No application/ service/ content available on the PDN to a **user** shall be blocked unless explicitly requested by a user.
- ii. No Emergency services, and public services provided by the governments over PDN shall be blocked.
- iii. If the TSP uses reasonable TMP, and throttles some traffic due to possible congestion or failure of the network the throttling speed should not be below the government mandated broadband speed (i.e. 512 Kbps/ 2 Mbps as the case may be).

**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?**

One approach is to define the different categories as follows:

Nature of Traffic \ Type of Content	Lean Multimedia*	Intense Multimedia
Time sensitive	Web browsing, chat,	Video streaming,

Synchronous	peer-to-peer messaging, Emergency broadcasts, Internet Telephony	video calling
Time delayed Synchronous	Chat with audio/video clips, Advertisements	Broadcast/ multicast video
Time sensitive Asynchronous	Email	
Time delayed Asynchronous	Email with file attachments	Video downloads, Software updates, large file transfers

\*Lean Multimedia refers to multimedia that requires just the defined minimum defined broadband speed for good QoS; Intense Multimedia requires x times the minimum defined broadband speed

A reasonable TMP can be defined as one that provides priority in the following order: (i) Time sensitive synchronous (ii) Time delayed synchronous (iii) Time sensitive asynchronous (iv) Time delayed asynchronous. However, even if TMP results in throttling of category (iii) and (iv), the minimum speed should not drop below the defined broadband speed.

**i. Should application-specific discrimination within a category of traffic be viewed more strictly than discrimination between categories?**

Yes. App specific discrimination within category should be strictly viewed as compared to discrimination across categories.

**ii. How should preferential treatment of particular content, activated by a user's choice and without any arrangement between a TSP and content provider, be treated?**

User choice should be given priority. If a user wants discriminatory treatment across applications, then it shall be allowed.

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

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.**

Yes. The above shall be treated as exceptions to any regulation. However, the user shall be informed if any of the above events happen and while the TSP administers any TMPs outside the purview of being "unreasonable TMP".

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?).**

We suggest a **crowd sourced** option to gather data regarding any violations of reasonable TMP. The regulator shall arrange to develop a platform for general public and users of telecom/ Internet service to provide feedback on any violations to reasonable TMPs. Such platform collected data set shall be made as "open data" after anonymising any personal information. Open Application Program Interface (APIs) shall be made available for anyone to access the data and figure out any possible violations and report to the regulator.

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?**

We prefer options (b) and (c). The public disclosure shall be in the form of Open Data. This overlaid with the crowd sourced violations data base as specified in Q:7 will provide the much needed transparency regarding TMPs followed by the TSPs.

**9. Please provide comments or suggestions on the Information Disclosure Template at Table 5.1? Should this vary for each category of stakeholders identified above? Please provide reasons for any suggested changes. [See Chapter 5]**

**10. What would be the most effective legal/policy instrument for implementing a NN framework in India? [See Chapter 6]**

- a. Which body should be responsible for monitoring and supervision?
- b. What actions should such body be empowered to take in case of any detected violation?
- c. If the Authority opts for QoS regulation on this subject, what should be the scope of such regulations?

TRAI shall be responsible for monitoring and supervision of NN, Quality of Service including TMPs. However, the Competition Commission of India (CCI) shall be responsible for any competition issues surrounding NN such as vertical integration, abuse of dominancy, bundling of products/ services, and pricing.

**11. What could be the challenges in monitoring for violations of any NN framework? Please comment on the following or any others suggested mechanisms that may be used for such monitoring: [See Chapter 6]**

- a. Disclosures and information from TSPs;
- b. Collection of information from users (complaints, user-experience apps, surveys, questionnaires); or

- c. **Collection of information from third parties and public domain (research studies, news articles, consumer advocacy reports).**

The disadvantage of any form of reporting by the TSP is that it may not be complete and accurate. There is a huge regulatory overhead of pruning the information submitted by the TSP in (1).

In (2), the information sent to the user may not be in an easily cognizable form.

In (3), the audit done by the third parties may lack statistical robustness.

Hence we advocate crowd sourced information reporting and analysis of this open data by TRAI appointed consultant for period reviews and assessment.

- 12. **Can we consider adopting a collaborative mechanism, with representation from TSPs, content providers, consumer groups and other stakeholders, for managing the operational aspects of any NN framework? [See Chapter6]**
  - a. **What should be its design and functions?**
  - b. **What role should the Authority play in its functioning?**

- 13. **What mechanisms could be deployed so that the NN policy/regulatory framework may be updated on account of evolution of technology and use cases? [See Chapter6]**

Due to the precise nature of technology evolution that we propose a broader approach with a list of negative DON'Ts. The negative list shall be updated by TRAI in consultation with the stakeholder community as needed.

- 14. **The quality of Internet experienced by a user may also be impacted by factors such as the type of device, browser, operating system being used. How should these aspects be considered in the NN context? Please explain with reasons.[See Chapter4]**

There is a need to define QoS parameters for Internet Service at the defined broadband speed. As long as the user has a choice over device, browser, operating system these should not be included as variables in the NN context. In case of device/ service bundling if the user choice is not honored, then it can be taken based on anti-trust issue and referred to CCI for further investigation and action.