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George Mattathil
george.mattathil@gmail.com
http://kbn.net.in

To

Telecom Authority of India
Mahanagar Doorsanchar Bhawan
Jawaharlal Nehru Marg
(Old Minto Road)
New Delhi - 110 002

TO WHOM IT MAY CONCERN

Subject: **Consultation Process on Differential Pricing for Data Services**.

Here are my answers to the questions on Differential Pricing for Data Services.

Question 1: Should the TSPs be allowed to have differential pricing for data usage for accessing different websites, applications or platform?

Breakthrough enabling internet capabilities are rich-media communication and mass-interactions (for example, social media), bypassing distance and time limitations. These capabilities must be made available universally, to maximize the economic benefits of the new medium in business, commerce, education, healthcare, culture, politics and governance. Differential pricing to limit access to internet capabilities will inherently create inequalities with cascading side effects.

Question 2: If differential pricing for data usage is permitted, what measures should be adopted to ensure that the principles of nondiscrimination, affordable internet access, competition and market entry and innovation are addressed?

Differential pricing for access to the internet medium must not be permitted. Internet access should be treated as a "common carrier" public utility. Differential pricing may apply for specific software applications, or service levels -- but not to internet content.

Question 3: Are there alternative methods/technologies/business models, other than differentiated tariff plans, available to achieve the objective of providing free internet access to the consumer? If yes, please suggest/describe these methods/technologies/business models. Also describe the potential benefits and disadvantages associated with such methods/technologies/ business models?

Access to internet is primarily a technology issue. Current market confusion is due to attempts to

bypass technology constraints through non-technology means. Providing "free internet" is a economic/social policy issue. Therefore, must be achieved through economic/financial methods (subsidies.) Trying to achieve social goals through technology constraints is futile.

There is a mismatch between currently promoted internet architecture and optimum network architecture to maximize economic benefits. Please see more information in the attached document, "Network Reference Model."

Question 4: Is there any other issue that should be considered in the present consultation on differential pricing for data services?

There is a market gap in the products currently available for effective and efficient internet access. Steps need to be taken to facilitate commercial availability of products that take maximum advantage of available technologies for access networks because internet access is an intrinsic bottleneck.

Additional details available upon request.

Supplementary information

Here are links to articles written when the "Net Neutrality" controversy/debate was raging in the USA.

(1) Net neutrality: issues and solution
http://blogs.strategygroup.net/wp2/viewpoint/2014/01/19/net-neutrality-issues-and-solution/

(2) Recommendations to the FCC for the path forward
http://blogs.strategygroup.net/wp2/viewpoint/2014/05/05/recommendations-to-the-fcc-for-the-path-forward/

(3) An Internet Transit Map
http://blogs.strategygroup.net/wp2/viewpoint/2014/05/16/an-internet-transit-map/

(4) Internet “Fast lane” and “Slow lane”
http://blogs.strategygroup.net/wp2/viewpoint/2014/05/23/internet-fast-and-slow-lanes/

(5) Tragedy of Internet Commons
http://blogs.strategygroup.net/wp2/viewpoint/2014/06/16/tragedy-of-internet-commons/

(6) Financialization in telecom
http://blogs.strategygroup.net/wp2/viewpoint/2014/09/15/financialization-in-telecom/

Additional information available upon request.

Contact:
George Mattathil <george.mattathil@gmail.com>
CEO, Strategy Group
http://strategygroup.net

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Network Reference Model

The network industry is stagnating -- after the collapse of the *Internet Bubble* and the *Telecom Meltdown*. Getting over this stagnation requires a new direction, a new approach to solving network problems.

Based on historical reasons that were valid in the 1980s, the industry has been using packet-centric models of networks, Fig. 1. These models assume that the future of networks consists of a single converged network -- capable of carrying voice, data and video -- over an all packet network.

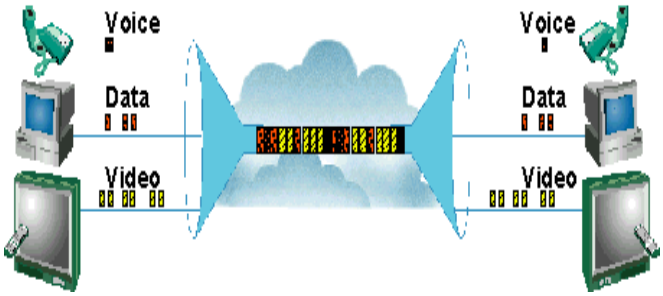

Fig. 1 Current Trend (Source: BellCore)

These models had historical validity in the 1980s, when bandwidth was at a premium. But can no longer serve as the guide for network design, if the infrastructure and technology capabilities developed in the 1990s and since are to be utilized fully.

There are several problems with packet-centric models. The first problem is that major parts of the current infrastructure does not fit neatly into packet-centric models, and will have to be replaced if the models are to be successfully adopted. The second difficulty is the technical challenges involved in the large-scale deployment of real-time voice and video traffic using packet systems, also known as the QoS (Quality of Service) problem. Another limitation of packet-centric models is they restrict deployment and product design choices to only one of the two switching technologies available, namely packet-switching.

An alternate top-level view of networks can be helpful in taking different technical approaches for solving network systems design problems. One such model is the Transfer Network Architecture (TNA)™, Fig.2.

The TNA model is created by superimposing an architecture framework to the existing network infrastructure; consisting of the Internet, Signaling System 7 (SS7) network, data circuits of the PSTN (Public Switched Telephone Network), and other networks. This super architecture is made possible with the introduction of a new network, the Access Network -- for access and transport functions between customer premise systems and the backbone network systems.

The TNA is a conceptual model that helps to make macro level decisions about network systems, and a framework for an evolutionary upgrading of the existing infrastructure. The key advantage of the TNA model is that it represents the current state of networks closely (compared to the packet-centric ideal, Fig. 1), and thus has more practical value for using in the design and deployment of next generation systems. Underlying the new model is the assumption that a revolutionary approach of replacing all existing systems with new systems is not viable, due to the

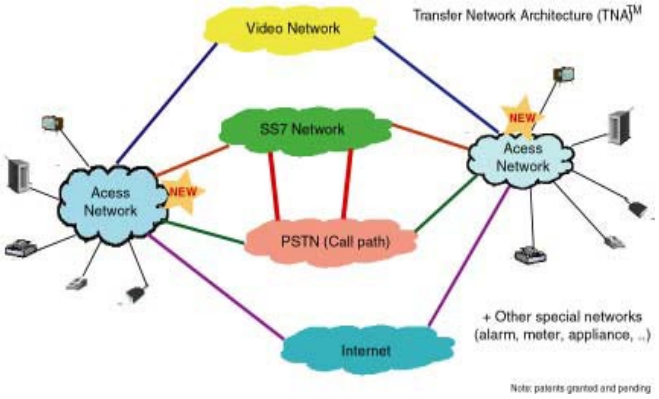

Fig. 2 Transfer Network Architecture (TNA)

costs and operational constraints. The TNA model, in contrast, provides an evolutionary approach that can coexist with current systems, and provides for gradual migration to superior solutions, constructed with best-of-breed heterogeneous systems. The TNA model permits the use of both packet and circuit switching technologies for designing and deploying network systems, and allows for interconnecting different networks using all possible combinations of network technologies.