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Sub: Comments on TRAI Consultation Paper on Net Neutrality dated January 4, 2017

Dear Sir,

AT&T Global Network Services India Private Limited (AGNSI) is pleased to submit its response to TRAI consultation paper dated January 4, 2017 on Net Neutrality.

We trust that our submission will merit the kind consideration of the Hon'ble Authority.

Thanking you,

Respectfully submitted,
for AT&T Global Network Services India Private Limited

Naveen Tandon

Naveen Tandon
Authorised Signatory

Encl.: As above



AT&T Comments on TRAI Consultation on Net Neutrality January 4, 2017

Introduction

AT&T Global Network Services India Private Limited ("AT&T India"), an affiliate of AT&T, Inc. ("AT&T"), is pleased to have the opportunity to contribute to the Consultation on Net Neutrality issued by the Telecom Regulatory Authority of India ("TRAI") on 4 January 2017 (the "Consultation") as part of the TRAI's continuing review and analysis of Net Neutrality.

As the TRAI moves towards the formulation on its final views on Net Neutrality (NN) policy, AT&T would like to recognize the significant consideration the TRAI has given to the comments provided by stakeholders during the pre-consultation, as well as the TRAI's thoughtful review of NN policy globally. Over the course of this consultation process, AT&T has offered comments directly, or through trade associations, including:

- **TRAI's Pre Consultation on Net Neutrality dated 30th May, 2016**
- **TRAI Consultation Paper on Free Data, Consultation Paper No. 7/2016, May 19, 2016**
- **TRAI Consultation Paper on Regulatory Framework for Over-the-Top (OTT) Services, Consultation Paper No. 2/2015, March 27, 2015**

These prior comments are equally applicable to this phase of the Consultation. As reflected in our comments, and further explained in our responses below, AT&T endorses the policy and principles of an Internet ecosystem that enables users to exchange ideas and communicate freely, gives them freedom to access the lawful applications and content they wish to use, and affords them the ability to choose and assemble packages of services and equipment that meet their needs. We believe, however, that effective NN policy, in India and globally, must be appropriately targeted and limited to (1) the adoption of meaningful transparency requirements, and (2) to the prohibition of blocking, degrading or otherwise unreasonably disfavoring some Internet traffic over other Internet traffic.

AT&T agrees with the TRAI that it is critical to recognize that the unique challenges faced by wireless network operators require different strategies for network management than those employed by fixed wireline services and that NN policy should avoid apply prescriptive network management policies on network operators. AT&T supports the broader traffic management approach under consideration by the TRAI as such policies should not interfere with service providers' ability to manage their network in a reasonable and fair manner.

As the TRAI continues this consultation to define the core principles of NN in this consultation, the TRAI has the opportunity to establish the foundations of a regulatory framework that can preserve internet freedom and openness, and promote the free flow of Internet-based content and services, without over-regulation so as to enhance broadband investment and deployment. AT&T is pleased to have contributed our views on these important issues through our prior comments which we may, supplement further as the Consultation progresses.

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?

As the TRAI looks to develop an approach that is best for India to define Internet Traffic or Internet services in the NN context in India, AT&T encourages the TRAI to follow the model of other jurisdictions, and to limit the definition of internet services to only mass-market retail broadband Internet access services with the capability to transmit and receive data from all or substantially all Internet end-points and to expressly exclude from such definition specialised services, such as Internet VoIP or IPTV, the internet of things (IoT), and also enterprise services such as managed services and virtual private networks, content delivery networks (CDNs), hosting or data storage services, or Internet backbone services.

(a) Specialized Services, Enterprise Services and Internet of Things etc. should be excluded from the definition of internet services for the following reasons:

We believe that the TRAI should continue to exempt enterprise services, specialized services and IoT from any Open Internet rules.

Enterprise services, also sometimes called business services, are typically offered to larger organizations through customized or individually negotiated arrangements. An example of such a service would be virtual private networks. Various jurisdictions that have reviewed open Internet policies have proposed to exempt such enterprise or specialized services from open Internet rules. In the United States, for example and as also noted by the TRAI in the Consultation Paper, both the *FCC's 2010 Open Internet* rules and the additional regulation adopted by the FCC in 2015



apply only to mass-market retail broadband Internet access service, with the capability to transmit and receive data from all or substantially all Internet end-points.¹

¹See FCC, *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Report and Order On Demand, Declaratory Ruling and Order, rel. March 12, 2015 ("FCC 2015 Internet Order"), ¶¶ 186-187; FCC, *Preserving the Open Internet*, 25 FCC. Rcd. 17905, ¶ 44 (2010) ("FCC 2010 Internet Order").

This definition for the scope of the Open Internet rules excludes enterprise service offerings and specialised services such as virtual private networks.²

Other regulators have also avoided imposing net neutrality regulation on these enterprise or specialized services. Telecommunications and Internet providers throughout the world have long provided IP-based services to enterprise business customers. These services include enterprise-grade Internet access and Internet Protocol services, with the capability to prioritize packets associated with performance-sensitive applications. This is provided to a wide range of customers, including healthcare providers, community service organizations, restaurant chains, car dealers, electric utilities, banks, municipalities, security/alarm companies, hotels, labor unions, charities, and video-relay service providers. And the market of services that merit different network performance requirements is expanding with Smart Grid, healthcare, emergency-response, and a variety of other services that may involve or require packet prioritization capabilities. These services are pro-consumer, and indispensable to key social objectives. Just as other jurisdictions have recognized the merit for keeping these services outside the scope of open Internet rules, India also should not prescriptively regulate these services.

More specifically, it needs to be noted that

- (i) while mass-market retail broadband Internet access service are generally delivered on a “best efforts” basis, enterprise business applications such as VoIP and Video require the application of class of service to enable the near real time delivery of voice applications or to support streaming video.
- (ii) different applications have varying needs for delay, delay variation (jitter), bandwidth, packet loss, and availability. Hence, enterprise customers negotiate service level agreements to ensure that the network supports the Quality of Service (QoS) that they need in order to meet the differing requirements of such applications.
- (iii) enterprise customers require custom enterprise solutions that best meet their business needs, including the movement of their traffic over the shortest or the most reliable path or bypass choke points or to build in required redundancy.

²See FCC 2015 Internet Order, ¶ 190; FCC 2010 Internet Order, ¶ 47.

- (iv) The enterprise services include enterprise-grade Internet access and Internet Protocol services, with the capability to prioritize packets associated with performance-sensitive applications that are provided to a wide range of customers, including healthcare providers, community service organizations, restaurant chains, car dealers, electric utilities, banks, municipalities, security/alarm companies, hotels, labor unions, charities, and video-relay service providers.

- (v) IoT services generally, and M2M more specifically, should likewise be outside of NN policy. Internet connectivity is but a piece of any IOT solution provided by one of the many stakeholders involved in the IOT chain that includes Network Operators, System Integrator (Sis), software developers, vendor companies, solution providers, distributor or sellers, etc. Also, IOT applications require a connectivity neutral platform that will work so long as there is underlying connectivity (from any operator). As connectivity is but one element of a larger solution, IOT applications should not be subject to NN policy as done in the United States, EU and several other jurisdictions.

Notably, in the United States, the U.S. Department of Commerce (“Department”) after public consultation, just issued a [report](#), *Fostering the Advancement of the Internet of Things*, advising just that:

“The Department has a longstanding approach to encouraging innovation in new technologies, while taking steps to address policy matters in a proactive, multi-stakeholder manner. We have approached emerging market trends and technologies with restraint and an eye toward allowing new entrants room to experiment and mature before they encounter significant government intervention. These guiding principles worked well as the Internet developed, and – as gleaned from our commenters – are appropriate to apply in the IoT sphere as well.”³

- (vi) Keeping in mind the Digital India vision ushered in by Hon’ble Prime Minister of India, there is also a need to adopt a light touch regulatory policy and framework that fosters innovation, investment and the development of new and emerging cutting edge technologies and services based thereon such as enterprise services that form the backbone of India’s IT/ITES business, specialized services and internet of things,

³ See https://www.ntia.doc.gov/files/ntia/publications/iot_green_paper_01122017.pdf at page 14.

which will help in bridging the digital divide and make India a top destination for such services and related business development and economic growth.

It is pertinent to point out that the report of DoT committee on Net-Neutrality⁴[AN1] has also recommended the exclusion of Enterprise Services from the scope of open internet rules by making the necessary observation:

Given that demands of customers of enterprise services, special services and IOT are distinct and different from consumers of mass-market retail broadband Internet access services, any endeavor to bring enterprise, specialised or IOT etc. services within the fold of NN rules will only have a negative impact on innovation and investment in such services.

In view of the above, we request the Hon'ble Authority to note the following broad principles while making its decision on the matter:

1. The "One size fits all" approach should be discouraged as specialized services, enterprise services and Internet of Things need to be distinguished from mass-market retail broadband Internet access services and hence should be kept out of the definition of internet services.
2. Regulators and policy makers worldwide have exempted Specialized Services, Enterprise Services and Internet of Things from any prescriptive regulation and have also recognized the benefits of Free Data platform offers in the digital economy.

Thus we believe that the TRAI should exempt enterprise services, specialized services and Internet of Things etc. from any NN policy or regulation.

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

Content Delivery Networks (CDNs) likewise should not be subject to NN policies. Content Delivery Networks ("CDN") enable the acceleration and compression of data through the cloud to allow for a faster browsing experience to be enjoyed by end-users. This is achieved through the use of a global network of service nodes containing specialized web acceleration and streaming servers, dynamic site acceleration, secure delivery of HTTPs traffic and additional security and

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11.9 Since the managed services and public Internet share the same telecom resources at different points in the network, therefore, issues of inter se priority in traffic emanating from the two would arise. Managed services, perceived as enterprise-related services, gets the highest priority of QoS along with voice and video. This may be allowed without affecting the minimum guaranteed QoS of "Best Efforts public Internet". **The Committee is of the considered view that managed services are a necessary requirement for businesses and enterprises, and suitable exceptions may be made for treatment of such services in the Net Neutrality context**



reporting features. As recognized by the FCC in the *2015 Open Internet Order*, broadband Internet access service does not include virtual private network (VPN) services, content delivery networks (CDNs), hosting or data storage services, or Internet backbone services (to the extent those services are separate from broadband Internet access service).

Internet traffic exchange should also be outside the scope of NN policy. Since its inception, internet traffic has been exchanged under two basic types of interconnection arrangements. Under the first type, which are known as peering arrangements, networks of like size and scope enter into barter arrangements and exchange their respective customers' traffic on a settlement-free basis. Under such arrangements, the two networks agree to certain criteria to ensure the networks are providing equivalent levels of value. One of the key components of the equal value criteria is that traffic exchanged between the parties be roughly balanced. When traffic is not roughly balanced, typically caused by one network providing Internet connectivity to a high volume over-the-top video provider, the network receiving the traffic for distribution to its customers is providing more network resources than the network originating the traffic. Because of the resulting inequity, measures are taken to bring the arrangement back to equal value which may include traffic routing rearrangements and/or compensation for carriage of the out-of-balance traffic. Under the second type of interconnection arrangement, which is known as transit, content providers, smaller ISP networks and businesses purchase Internet connectivity from large backbone networks that have access to the entire Internet. Transit providers are compensated for the network resources they provide such as transport and routing for distributing traffic.

These large backbone networks are capable of reaching every point on the Internet because of the scope of their networks and extensive connectivity with other backbone networks, their transit customers and their end user customers. Transit is highly competitive service as purchasers can choose from many backbone providers to deliver traffic to any destination on the Internet. Evidence of the competitive nature of transit is the significant and consistent price declines - approximately 25-30% year over year. The longstanding industry practice is for providers to manage network infrastructure costs through privately negotiated arrangements.

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

- (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.**

AT&T supports a broad approach towards oversight of TMP network management practices and believes that the concern that the Internet network traffic management or the differentiation of products may cause discriminatory or anticompetitive practices such that a negative list narrowly prescribing TMP network management practices does not have a certain basis and does not justify the imposition of strong regulatory burdens.

Reasonable forms of traffic management have always been employed by operators so that the Internet can function effectively, efficiently and successfully. This is of increasing importance as uses of the Internet increase in their heterogeneity, data volume, latency demands, and price sensitivity. As noted by the TRAI in this Consultation, such reasonable traffic management has been recognized and allowed by the other regulatory authorities worldwide, including in the United States, Canada and the European Union. Furthermore, the need for service providers to have the flexibility to manage network traffic and performance has also been recognized by the report of the DoT Committee on Net Neutrality, which has recommended that reasonable traffic management practices may be allowed but should be “tested” against the core principles of Net Neutrality.

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?**
- (c) 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?**



We encourage the TRAI to focus in this NN consultation on developing guidelines that recognize the many types of network management practices that are reasonable and vary by circumstance and type of network. Internet operators have used traffic management practices for their networks for many years, since this is necessary to assure the quality of the service that they offer to the users. As stated in the pre-consultation, there is no incentive for the operators to degrade the quality of the services or impact their users, as the competitive pressure of the market prevents such conduct, given that it would generate a migration of customers towards rival operators that offer no restrictions.

As previously explained, the convergence of different electronic communications in the IP Platform (voice, video, and text) and the massive growth of data transmission with these heterogeneous services, inherent in the evolution of the internet service, has increased the need to use traffic management practices in order to assure that the users may access the information contents and services that they wish. Any restriction to the use of reasonable traffic management practices can negatively affect the quality of the service and reduces the usefulness of the Internet for the users. There is a very high risk to the health of Internet networks, to expect that the operators have such concern with regulatory uncertainty that they refrain from carrying out investment and network management activity to render more efficient the network traffic or rate, to avoid running afoul of overly prescriptive regulatory measures. Instead, network operators must have the flexibility to employ reasonable network management that is beneficial to the user, and is required to be made, such as temporary storage of content, management of IP addresses for new users, blocking of a content because a parent wishes to prevent his children from having access to undesirable material.

Reasonable traffic management practices do not inherently degrade or impact other contents or applications that are less sensitive to transmission quality. The operation of the Internet network has been always based on algorithms that assure an adequate traffic handling and permit to assign each content the transmission capacity necessary as per its characteristics and specific critical nature. In order to make it possible, the internet operators have the potential to utilize IP transmission protocols that permit the identification of the different data packages that are transmitted over the network, so that the most critical ones or those requiring a greater transmission capacity may be reasonably prioritised over other types of traffic during the periods of greatest



congestion in the network. Such reasonable network management practices can improve the traffic delivery experience for all service types, with the data accorded its appropriate priority (e.g. real-time two-way video requires a higher priority than email, in order to ensure a quality end user experience).

Specifically, such network management policies must:

- Recognize, as the TRAI has done in this consultation, that Mobile Operators face operational constraints and manage networks to make the most efficient use of available spectrum. This challenges posed in managing exponential increase in traffic over the finite available spectrum will only accelerate, particularly as video streaming on mobile devices grows ever more popular. NN policies must effectively balance the objective of Internet openness with the vital need to support further investment in broadband networks—investment that is essential to the Internet’s continued growth.
- Open Internet Policies should not restrict user-driven traffic differentiation, which can enhance consumer welfare and is for essential for many enterprise applications, from banking, to emergency services, to streaming video. AT&T supports a distinction between traffic differentiation that is not directed by end users, and traffic-differentiation arrangements that are user-driven. There are myriad reasons consumers might want to differentiate certain Internet traffic, and just as many benefits that can enhance consumer welfare and should be permissible.

This light touch regulatory principle is all the more critical to meet the incredible projected demand for mobile broadband. While all broadband networks share the need for traffic management, given the ever rising demand for and proliferation of new quality-sensitive, bandwidth-intensive applications, mobile broadband networks also must contend with spectrum constraints, a shared “last mile” radio access network, interference sensitivity, and other concerns that make it far more challenging to provide mobile broadband than even fixed wireline broadband. Capacity and quality-of-service challenges for wireless broadband providers are particularly acute in the “last mile” radio access network, where spectrum is shared among both users and cell sites; bandwidth can fluctuate based on weather, interference and other issues; the number of users located in

particular cells and their dispersion within those cells at any given time is variable; and the spectrum available for use is not infinitely (or even readily) expandable.

While it is impossible to predict which business models and engineering solutions will best meet consumers' diverse needs in this environment, subjecting the mobile industry to restrictions on network management would preclude many service-enhancing business arrangements and practices altogether, undermine efforts to manage scarce spectrum resources, chill sensitive engineering and business decisions through endless regulatory second-guessing or pre-emptive fear of enforcement, and deter investment and innovation in new network technologies.

In India, where a reported 97.5% of the more than billion connections to the internet by wireless subscribers⁵, carriers must have the flexibility to use a range of dynamic network-management techniques to respond to or avert network failures or severe congestion and to ensure that customers can enjoy latency sensitive applications, such as voice calling and video streaming. As noted by the TRAI in the Consultation Paper No. 8/2015 on Differential Pricing for Data Services (9 December 2015), about 25% of the total wireless subscribers use wireless data (Internet) services in India. As of 30 June 2015, of the 300 million wireless Internet subscribers in the country, about 207 million subscribers used 2G (GPRS, EDGE and CDMA-1X) networks to access Internet, about 92 million subscribers use 3G (HSPA, WCDMA, EVDO etc.) and the rest used 4G LTE.

Mobile broadband service operators need to implement network traffic techniques to prevent or respond to network failures and handle congestion events in a fast and effective manner, thus preventing the service from being degraded and the user experience from being impacted. More invasive regulation of commercial and operational practices would cause significant difficulties if it was applied to mobile broadband, which comprises the large majority of Internet access services in many countries, including India.

For these reasons, AT&T encourages the TRAI to develop NN polices that are competitively- and technologically-neutral and avoid duplicative and inconsistent regulation and equally applicable to all service providers providing comparable services in the Internet eco-system.

⁵TRAI Pre-Consultation on Net Neutrality, 30th May, 2016, para. 1.

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.**

Yes, exceptions from regulations on TMP should be considered for emergency services, restriction on unlawful contents and to maintain security and integrity of the network. For example, Government emergency services traffic should be prioritized higher than standard Internet traffic, TCP ports that represent security vulnerabilities should be allowed to be blocked, etc. On the other hand, careful consideration needs to be given to any attempt to block or throttle contents that can impede freedom of speech and the right to access any lawful Internet contents.

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?).**

Detecting blocking, throttling and preferential treatment practices can be very challenging. With many factors contributing to application performance such as proximity to contents, caching, firewalls, different providers in the path of the contents, etc. it is difficult to establish with certainty that anti-net-neutrality practices are being deployed. It is important that TRAI establishes open channels with consumers, carrier and edge providers to report such practices if detected. Such channels should facilitate providing evidence of such claims and therefore enable TRAI to investigate and analyze the credibility of these assertions.
