



**Telecommunications Authority of Trinidad and Tobago**

**DISCUSSION PAPER ON  
NET NEUTRALITY AND OTT  
SERVICES IN TRINIDAD AND  
TOBAGO**

**(First round)**

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## **List of Abbreviations**

<b>BEREC</b>	Body of European Regulators for Electronic Communications
<b>CANTO</b>	Caribbean Association of National Telecommunication Organizations
<b>DPI</b>	Deep packet inspection
<b>GoRTT</b>	Government of the Republic of Trinidad and Tobago
<b>IoT</b>	Internet of Things
<b>IP</b>	Internet Protocol
<b>IPTV</b>	Internet Protocol TV
<b>ISP</b>	Internet service provider
<b>ITU</b>	International Telecommunication Union
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>OTTs</b>	Over-the-Top services
<b>NGN</b>	Next Generation Networks
<b>P2P</b>	Peer-to-peer
<b>PSTN</b>	Public Switch Telephone Network
<b>QoS</b>	Quality of service
<b>TATT</b>	Telecommunications Authority of Trinidad and Tobago
<b>TV</b>	Television
<b>VoIP</b>	Voice over Internet Protocol
<b>WiFi</b>	Wireless fidelity

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# 1 Introduction

## 1.1 Background

In June 2015, the Telecommunications Authority of Trinidad and Tobago (the Authority) issued its consultative document, *Towards the Treatment of Over-the-Top (OTT) Services*. That document explored the concept of OTTs and, in particular, sought to examine the interaction between the markets in which OTT service providers and authorised providers operate in Trinidad and Tobago. In addition to evaluating the impact of OTT VoIP services within the telecommunications industry, that document also aimed to engage the public on issues relating to OTTs.

In reviewing the comments received, it was evident that the treatment of OTT services could be addressed within the larger context of net neutrality. Generally, the term net neutrality refers to the idea that all Internet traffic should be treated equally, without regard to its content, destination or source. The decision was thus taken to subsume previous discussions on OTT issues, as they relate to net neutrality, within an overarching framework. This framework would provide guiding principles and regulatory approaches to net neutrality, and, ultimately, the treatment of OTT services.

## 1.2 Rationale

The subject of net neutrality has sparked intense debates by politicians, policy makers, service providers and consumers worldwide. Despite its prolific appearance in today's media, net neutrality is hardly a new topic. Some principles of the debate go as far back as the origin of the commercial Internet itself. (Downes n.d.) In general terms, these principles advocate an open and indiscriminate network, while recognising the need for prudent traffic management practices by network operators.

Trinidad and Tobago is no stranger to these discussions, as the local market has not been spared nor is it immune to practices that may potentially challenge the principles of net neutrality, particularly as they relate to OTT services.

The issues relating to net neutrality are a matter of national interest. It is thus imperative that policy considerations be given to the concept of net neutrality from a national perspective. As such,

decisions taken on the subject should align with policies geared towards the development of the sector and, by extension, the country.

### 1.3 Purpose

This discussion paper examines both sides of the net neutrality debate within the context of Trinidad and Tobago and proposes guiding principles and recommendations for net neutrality. The paper considers to what extent net neutrality regulation is desirable in an era of growing OTT applications and services, and proposes policy positions to this effect.

### 1.4 Objectives

The objectives of this paper are to:

- i. explore the nature of OTT services as they relate to voice, media and messaging.
- ii. present the key principles underlying both sides of the net neutrality debate.
- iii. examine the policy issues relating to net neutrality and OTT services.
- iv. propose guiding principles for net neutrality in Trinidad and Tobago.
- v. make recommendations for the regulation of net neutrality and OTTs in Trinidad and Tobago.

### 1.5 Legal and Regulatory Framework

The Authority, in its strategic and operational duties, is governed by its legal and regulatory framework, which comprises the following instruments:

- i. *The Telecommunications Act, Chap. 47:31 (the Act)*
- ii. *Concession for the Operation of a Public Telecommunications Network and/or Provision of Public Telecommunications Services and/or Broadcasting Services*

The Act provides the regulatory background for net neutrality and Internet services. Section 3 establishes the objects of the Act, which include, *inter alia*, establishing conditions for:

- (a) *an open market for telecommunications services, including conditions for fair competition, at the national and international levels;*

*(b) the facilitation of the orderly development of a telecommunications system that serves to safeguard, enrich and strengthen the national, social, cultural and economic well-being of the society;*

*(c) promoting and protecting the interests of the public by—*

*(i) promoting access to telecommunications services;*

*(iii) providing for the protection of customers;*

*(iv) promoting the interests of customers, purchasers and other users in respect of the quality and variety of telecommunications services and equipment supplied;*

*(d) promoting universal access to telecommunications services for all persons in Trinidad and Tobago, to the extent that is reasonably practicable to provide such access;*

*(f) promoting the telecommunications industry in Trinidad and Tobago by encouraging investment in, and the use of, infrastructure to provide telecommunications services...*

Section 18 (1) outlines the functions and powers of the Authority, which include, *inter alia*:

*(d) to establish national telecommunications standards; and*

*(p) to ensure the orderly and systematic development of telecommunications throughout Trinidad and Tobago.*

Under section 18 (3), the Authority is required to consider the interests of consumers, in particular:

*(a) to the quality and reliability of the service provided at the lowest possible cost;*

*(b) to fair treatment of consumers and service providers similarly situated;*

*(c) in respect of consumers similarly placed, to non-discrimination in relation to access, pricing and quality of service.*

## **1.6 Other Relevant TATT Documents**

Other relevant policies, plans and regulations to be read in conjunction with this document include:

- i. *Towards the Treatment of Over-the-Top (OTT) Services, 2015*
- ii. *Authorisation Framework for the Telecommunications and Broadcasting Sectors of Trinidad and Tobago, 2005*
- iii. *Telecommunications Authority of Trinidad and Tobago Draft Consumer Rights and Obligations Policy, 2014*

- iv. *Telecommunications Authority of Trinidad and Tobago Draft Telecommunications (Consumer) (Quality of Service) Regulations, 2015*
- v. *Telecommunications Authority of Trinidad and Tobago Guiding Principles in Regulatory Decision Making, 2015*

## 1.7 Review Cycle

This paper will be revised periodically to meet changing needs, taking account of technological advancements. The Authority will review this document as necessary and, in consultation with stakeholders, ensure that it is guided by relevant policy guidelines and objectives.

Questions or concerns regarding the maintenance of this document may be directed to the Authority via e-mail to [policy@tatt.org.tt](mailto:policy@tatt.org.tt)

## 1.8 Consultation Process

In accordance with its *Procedures for Consultation in the Telecommunications Sector of Trinidad and Tobago (2010)*, the Authority will seek the views and opinions of the general public and other stakeholders regarding the proposals made herein. Consideration will be given to comments and recommendations made during the consultation process, and the document will be revised accordingly.

This document will be made available for public consultation for a four (4) week period according to the Authority's procedures. Comments should be submitted to [policy@tatt.org.tt](mailto:policy@tatt.org.tt) or mailed to:

**Telecommunications Authority of Trinidad and Tobago**  
**#5, Eighth Avenue Extension, off Twelfth Street,**  
**Barataria, Republic of Trinidad and Tobago**

## 2 Over-the-Top (OTT) Services

### 2.1 Definition of OTT and OTT Services

In a policy paper presented at the Caribbean Association of National Telecommunication Organizations (CANTO) meeting held in 2014, OTT was described as “*a general term used for services that a customer may use which rides on top of a network to which the customer is connected*” (CANTO 2014).

The Body of European Regulators for Electronic Communications (BEREC) defines OTT service as “*content, a service or an application that is provided to the end user over the open Internet*” (BEREC 2015).

The Organisation for Economic Co-operation and Development (OECD) Communications Outlook 2013 has described OTT services as “*video, voice and other services provided over the Internet rather than solely over the provider’s own managed network*” (OECD 2013).

OTTs are a prime example of a converged technology that exists in today’s telecommunications industry enabled by the Internet Protocol (IP) — a technology that has facilitated the separation of carriage from content, thus allowing OTT providers to use existing networks to deliver content or services to end users without any involvement by network owners in the transaction (ITU 2012).

OTT services can take the form of messaging, media or voice services, competing directly with similar services offered by authorised telecommunications service providers.

### 2.2 Classification of OTT Services

#### 2.2.1 OTT Voice Services

OTT voice services are a VoIP offering, where voice is transported over the Internet as packet switched traffic (Detecon 2014). This is not to be confused with VoIP telephony provided by authorised telecommunications providers who rely on this technology to deliver voice over a

public or private IP network<sup>1</sup>. Examples of OTT voice services include Skype, Facetime, Viber and WhatsApp.

### **2.2.2 OTT Messaging Services**

OTT messaging is similar to OTT voice services as it relies on IP technology to provide instant messaging services to consumers over the Internet. It is as an alternative to the text messaging services (SMS) provided by authorised telecommunications mobile operators. Examples of OTT messaging services include WhatsApp and Facebook Messenger.

### **2.2.3 OTT Media**

OTT media is described as broadband delivery of video and audio without a cable or satellite service operator being involved in the control or distribution of the content itself. It is understood that the content arrives from a third party and is delivered to an end user device, leaving the Internet service provider (ISP) responsible only for providing the transport medium for the IP packets. It refers to video or audio content being streamed and/or downloaded over the Internet. Examples of OTT media services include Netflix, Hulu and Spotify.

## **2.3 The Changing Landscape and OTTs**

The OTT services described in this chapter have revolutionised the communication and entertainment landscape. Consumers, in some regard, have adopted them as their preferred mode of communication and source of entertainment as they are accessible at little to no cost. Service providers on the other hand are faced with competitive pressure from these services that are similar to their staple services. Moreover, OTTs, and in particular OTT media, have stimulated an insatiable hunger for high Internet speeds which service providers strive to satisfy.

In light of this revolution, service providers are faced with changing their traditional business models or risk losing market share or, in the more extreme cases, being driven out of the industry. The adoption of traffic management strategies is one of the measures they embrace to achieve optimum network performance so consumers have access to a satisfactory level of quality of service, whilst also alleviating any strain on network capacity. This has given rise to the concern

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<sup>1</sup> The Authority's consultative document, *Towards the Treatment of OTT Services*, provides further details on OTT VoIP services.

that ISPs may manipulate their traffic management strategies for reasons unrelated to network optimisation and integrity. Governments and regulators are now being prompted to address these concerns as they relate to the principle of net neutrality.

## 3 Net Neutrality and Traffic Management

### 3.1 Definition of Net Neutrality

Professor Tim Wu, one of the earliest proponents of equal treatment of data, has asserted that all content, sites and platforms should be treated equally. He defined net neutrality as *“a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites, and platforms equally. This allows the network to carry every form of information and support every kind of application”* (Wu, Net Neutrality FAQ n.d.).

Within the industry, it has therefore been construed that ISPs should treat all Internet traffic equally, independent of type, source or origin. It is on this premise that the Internet has been regarded as an open platform — one upon which innovation flourishes and one where consumers have unprecedented access to information.

### 3.2 Traffic Management

In the open Internet model described above, data transmitted was primarily on “best effort”, which is on a first come, first served basis. This best effort scenario (according to T. Wu 2003) is based on the inherent end-to-end design of the IP suite, where the network merely acts as a pipe through which packets traverse without any interference by ISPs. In an era of a large volume of Internet users and a variety of bandwidth intensive applications, net neutrality opponents have debated that the end-to-end principle is unsustainable. They argue that congestion experienced as a result of the increasing Internet traffic deteriorates the overall performance of the network, forcing ISPs to manage the deluge of traffic, either by overprovisioning network capacity or implementing quality of service (QoS) traffic management policies. The latter has implications for net neutrality as it entails the provision of preferential treatment to identified classes of traffic.

## 4 Net Neutrality Interferences

It is usually conceded that traffic management mechanisms are required to manage the influx of data intensive applications and services. As a result, network operators implement traffic management policies that seek to address the problem of congestion and the ensuing degradation of QoS in order to protect the integrity of their networks. This may entail the use of traffic management technologies, such as deep packet inspection (DPI)<sup>2</sup>. DPI and other similar technologies can be used for innocuous purposes, such as identifying malware, or for intentional traffic discrimination activities that further the economic interests of authorised network providers.

This chapter provides an overview of the different discriminatory actions that a service provider may employ in an attempt to manage traffic on the network. These actions may be considered as a deviation from the generally accepted principles of net neutrality and, as such, are referred to as net neutrality interferences in this document.

The discussion centres on how traffic management practices, along with, in some cases, marketing and pricing strategies are used in the treatment of OTT services.

### 4.1 Blocking

One traffic management practice that has been at the forefront of the net neutrality discussion is the intentional blocking of lawful content. Advanced traffic management methods such as DPI provide network operators with unprecedented information on the data packets that traverse their networks. This form of data profiling assists network operators in the application of traffic management policies that sometimes include blocking of identified lawful applications, services or websites that are either data intensive or in direct competition with their own service offerings, e.g., OTT voice applications. Blocking of this nature is regarded as net neutrality interference and is, therefore, frowned upon by net neutrality advocates.

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<sup>2</sup> “Deep packet inspection (DPI) is an advanced method of examining and managing network traffic. It is a form of packet filtering that locates, identifies, classifies, reroutes or blocks packets with specific data or code payloads that conventional packet filtering, which examines only packet headers, cannot detect” (Search Networking 2017).

## 4.2 Throttling

Throttling is the intentional slowing of Internet traffic to reduce bandwidth congestion. Like blocking, service providers rely on sophisticated traffic management methods to engage in this practice at certain times of the day when data transfer is at its peak; if the traffic is of a particular type or from a particular website; or all types of data once a certain threshold is reached by the end user (Fisher 2016).

With respect to the type of traffic or website of origin, it has been found that throttling is prevalent with peer-to-peer (P2P) services<sup>3</sup>, e.g., BitTorrent, streaming sites such as Netflix and OTT services such as Skype that directly compete with services provided by the ISP.

## 4.3 Paid Prioritisation

Paid prioritisation is the practice that allows ISPs to offer preferential treatment or prioritised delivery to a content provider's traffic in exchange for monetary compensation. The imposition of fees for prioritised delivery has been a focal point of the net neutrality debate, as it is viewed as an exploitation of traffic management practices by ISPs for financial gain. According to proponents of net neutrality, such behaviour counters the established code of conduct for the treatment of traffic over the Internet. They believe that such a practice interferes with the net neutrality model that has been a catalyst for creativity and innovation.

This perspective is not shared by all, in particular ISPs who, in some instances, demand flexibility in their traffic management practices and business models in light of challenges they face with the rise of OTT services. Moreover, paid prioritisation may be regarded as product differentiation and not product discrimination. ISPs should therefore be able to offer higher quality services based on the customer's willingness to pay (Gharakheili 2017).

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<sup>3</sup> P2P programmes allow each client (computer/smart phone etc.) to connect to each other to participate in file sharing or media transfer. This arrangement counters the client-server model, thus evading network co-ordination by the server. Peers in the P2P network share resources such as bandwidth and disk storage. Examples of P2P programmes include Napster, BitTorrent and Gnutella.

#### 4.4 Zero-Rated Pricing

To gain a competitive advantage, ISPs have employed various pricing and marketing strategies to differentiate their network's services from those of their competitors. A common pricing strategy is zero-rating. This practice allows mobile subscribers to access certain online content (e.g., a website or application) "for free" — that is, without having the data counted against their usage (Eisenach 2015). In addition to operator-initiated zero-rating, that is, where ISPs employ the practice on their own initiative as part of their marketing campaign, there is also sponsored zero-rating. This occurs when a third-party content provider enters into a business arrangement with the ISP to zero-rate the data associated with the use of their service. The ISP is compensated by the content provider, who agrees to cover the cost of the data charges. Facebook Zero is an example of this type of zero-rating.

The general concept of net neutrality is that all traffic on the Internet should be given equal treatment by ISPs. It is argued that zero-rating violates this principle as it involves manipulation through economic means to give preferential treatment to some forms of data over others. Some proponents of net neutrality go as far as referring to zero-rated services as having, *de facto*, the same effect as blocking and/or throttling. As one article states:

*"At first glance it may appear that all traffic is handled equally in this charging model, but the fact is that once you have used your quota, the traffic that is exempted will be allowed to continue, while all other traffic will be throttled or blocked. This is clearly a case of discrimination between different types of traffic"* (Sørensen 2014).

However, others argue that zero-rating is a legitimate business development strategy used by ISPs to drive demand for their services by capitalising on the network effects<sup>4</sup> gained. Moreover, in light of the growing demand for broadband infrastructure, it is argued that such a pricing strategy may prove beneficial to broadband investment, as it may improve operators' revenues (Johns 2015). Further, it is also often argued that zero-rating helps to broaden access to the Internet by those who would otherwise be excluded from its use, thereby bridging the digital divide.

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<sup>4</sup> Network effects occur when the customer's perceived value of a product increases with the number of people using that same product or a complementary product.

## 5 Net Neutrality and OTT Services: Key Policy Issues

The principle of net neutrality and, in particular, the extent to which it is observed by service providers in their treatment of OTT services, raises several policy issues. This section focuses on the key issues surrounding the net neutrality and OTT debate, and particularly examines the extent to which the absence of net neutrality rules affect innovation, investment, competition and consumer choice.

### 5.1 Net Neutrality and Internet Innovation

Net neutrality is based on the end-to-end principle of the Internet architecture. This principle has been a major impetus for growth and innovation of the Internet. It has facilitated innovators, who operate at the edge of the network<sup>5</sup> (content providers), to introduce their innovations to large audiences with great speed and low barriers to entry (Lemley and Lessig 2001). OTT service providers are among the content providers who have benefited from the open platform and have thus heralded a new age in communications and entertainment with the likes of applications such as Skype, Facebook, WhatsApp and Spotify. In this regard, it has been the view by some experts that lifting net neutrality is a departure from the end-to-end principle that facilitated innovation at the edge of the network without interference from network operators (Economides and Tag 2012). It is in this vein that the principle of net neutrality is defended so that innovation at the edge of the network is protected (Reggiani and Valletti 2016).

Similarly, innovative technologies, such as cloud services (e.g. Amazon Web Services, Microsoft Azure and Google Cloud Platform) and the Internet of Things (IoTs), have emerged and are burgeoning in the face of an open Internet (Finley 2017). Policy decisions that allow for the control of the Internet by ISPs, therefore, pose a threat to these services, hampering their growth and stifling innovation (Corbin 2017).

On the other hand, it is contended that other innovative services have arisen that should be exempted or given special consideration when implementing net neutrality policies. These services, which are often referred to as specialised services, rely on the use of IP for their delivery

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<sup>5</sup> A network located on the periphery of a centralised network. The edge network typically feeds the central or core network. It is also typically connected to subscribers or consumers, both business and residential.

to end users over a private and managed network. That is to say that specialised services do not form part of the public Internet and should, therefore, be excluded from net neutrality's ambit. Examples of these services are:

- i. Internet Protocol TV (IPTV)
- ii. E-health services

While it is generally accepted that these services require delivery that goes beyond best effort to meet QoS requirements, the provision of these services should not compromise the quality of consumers' Internet experience, i.e., that the broadband transmission capacity for the public Internet should not be infringed upon such that it severely degrades broadband QoS.

## 5.2 Net Neutrality and Network Investment

Investment in broadband networks is imperative to satisfy the increasing demand<sup>6</sup> for broadband capacity. ISPs are, therefore, advocating for the right to experiment with alternative business models so they can gain a reasonable return on their investment. They argue that the current model limits their earnings as content providers use the ISPs' infrastructure to access customers without compensating them for it. ISPs further argue that not only do OTT voice, messaging and media service providers "free ride" their networks, but the services they offer are in direct competition with traditional services, thereby threatening the ISPs' main sources of revenue. This ultimately impacts the ISPs' ability to reinvest in their networks.

The paid prioritisation scheme is one such business model ISPs endorse, as it allows them to charge content providers for preferential delivery of certain websites or services in the face of a congested network. It is suggested that paid prioritisation creates positive effects as revenues generated can be used to invest in network capacity expansion or upgrading network technologies.

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<sup>6</sup> Global mobile data traffic alone grew by 63% in 2016 (CISCO 2017).

However, as previously indicated, this practice is viewed by some as a deviation from the open Internet model and that congestion is best managed through network expansion. Moreover, advancements in technologies (e.g., fibre optics and compression technologies) have enhanced the carrying capacity of wireline networks, thus weakening the capacity limitation defence. With respect to mobile networks, there is a de-loading of traffic off the network when users opt for free WiFi access offered by businesses and hotspots<sup>7</sup>.

### **5.3 Net Neutrality and Competition Concerns**

As indicated earlier, there are several traffic management and marketing strategies that a service provider can adopt in the provision of his services. Often, these strategies come with the concomitant risk of creating barriers to competition. Specifically, many commentators fear that the absence of net neutrality rules creates opportunities for providers to exercise discrimination that results in anti-competitive practices. This fear is particularly compounded when a provider has, or is suspected of having, a position of dominance.

Firstly, there is the concern that arises from the potential incentives for existing network operators to protect their traditional services, such as voice or cable services, from competition. In this case, discriminatory practices may be directed at providers of OTT services such as Skype or Netflix that threaten to place competitive constraints on the network owner's traditional services. The network operator may apply a number of discriminatory strategies to either directly block the competing service or make it unattractive to consumers by influencing its price or degrading its quality of service. These actions, which can result in a reduction of consumer choice of services, may not only be anti-competitive in nature, as the operator uses his position of dominance to foreclose rival services, but it may stifle innovation within the industry, as discussed above.

Similarly, arrangements involving paid prioritisation raise additional competition concerns. There is the concern that such arrangements potentially create incentives for service providers to give a competitively advantageous edge to some OTT applications or content over others. For example,

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<sup>7</sup> For example, in the US, the Nielsen Mobile Performance Panel for August 2016 found that more than three times as much data consumed on Android mobile phones is delivered through WiFi networks as opposed to cellular. In some developing countries, however, there has been a trend towards the use of mobile Internet as either complementary to fixed Internet or as the primary or only form of Internet access (Stork, Calandro, & Gillwald, 2013).

such incentives may exist where a network operator partners or forms an affiliation<sup>8</sup> with a content provider. In this instance, the network provider may provide through its affiliate, services within the content market. Thus, there may now be an added incentive for the operator to employ a number of strategies that minimise competition downstream because it now has an economic interest within the service provision market. Such strategies may include, amongst others, degrading the quality of the affiliate's competitor's services, raising their prices or even blocking entirely access to their services by the end user. It is also said that paid prioritisation creates a "pay to play" culture where only businesses that are able and willing to pay operators can readily reach consumers. In this sense, the practice acts as a significant barrier to entry into the content market, as newer providers are less likely to have access to the same financial resources as incumbent firms.

In defence of this practice, it has been asserted that paid prioritisation is not unique to telecommunications and is, in fact, a ubiquitous practice adopted throughout economies (Ohlhausen 2017). For example, online advertising companies allow firms that are willing to pay more to enjoy greater exposure, and supermarkets carry selected brands and give superior placement to the goods of firms that pay the most. These commentators purport that paid prioritisation is a vertical commercial arrangement<sup>9</sup> which generally does not harm the competitive process. In fact, economists agree that vertical restraints often boost efficiency and competition (Slade 2008). They can spur capital investment, coordinate optimal network usage, deter free riding and reduce Cournot competition problems<sup>10</sup> (Cooper 2005). Thus, it is only in limited circumstances that vertical restraints harm competition.

The concern about competition also extends to the zero-rated pricing strategy adopted by some service providers. This concern, however, is viewed by some as unwarranted. Supporters of differential pricing practices, as zero-rated pricing is sometimes called, argue that these practices represent an opportunity for ISPs and content providers to compete in the market by catering to

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<sup>8</sup> This involves a type of inter-company relationship in which one of the companies has ownership of the other, or in which the two different companies are subsidiaries of a larger company.

<sup>9</sup> That is an arrangement between firms at different levels of the supply chain.

<sup>10</sup> An economic problem occurring in markets with limited players, where the behaviour of the players ultimately leads to the suppression of output and increased prices.

the different needs of consumers. They submit that differential pricing practices give ISPs a way to differentiate themselves in the market, to expand their customer base and, ultimately, to help drive investment and economic growth. For these parties, differential pricing practices are a sign of normal, healthy market activity.

On the other hand, it is often argued that the practice of zero-rating is anti-competitive and causes market distortions. It is also contended that the practice fundamentally violates the principles of net neutrality, i.e., the provision of zero-rated services gives network operators the ability to discriminate among sources of online content or services. In other words, exempting some content from being counted against the consumer's data usage creates strong incentives for the user to choose the zero-rated services over those that are not. This, as is frequently argued, has the effect of creating a "walled garden" Internet, meaning that the user's view of the Internet will be limited to the zero-rated content. Moreover, it creates a barrier to entry and additional costs for content providers by requiring them to negotiate separate arrangements with various ISPs. There is also a concern over the presence of anti-competitive conduct where the zero-rated content or services are owned by the network operator or its affiliate.

Some opponents go as far as referring to zero-rated services as having *de facto* the same effect as blocking and/or throttling (Sørensen 2014). Additionally, it is feared that network operators, in their capacity as "gatekeepers" of the Internet, may attempt to extract exorbitant fees from content providers seeking to have their content zero-rated.

#### **5.4 Consumer Choice and Access to Information**

Net neutrality often centres on whether its absence gives operators the opportunity to exercise discretionary control on the information Internet users are able to access. This is a matter worth addressing effectively since continuous access to information is a major driver of innovation, technological advancement and economic progress today.

There is also a concern that, without net neutrality, consumer choices may be curtailed by the fostering of preferential treatment and/or a "pay to play" culture (Fox 2013). When this occurs, consumers are likely to be worse off in the future, as innovation is stifled. As innovation and access

to information are reduced, so too is a society's capacity for increased economic growth and social welfare.

There is also the ethical issue as to whether the lack of protection governing net neutrality is an infringement of consumers' right to use the Internet free of "censorship". For example, a network owner may choose to limit access to websites hosting opposing views to those of the network owner, or may block access to a consumer advocacy group's website that routinely hosts complaints about the services offered by the network operator.

## 6 The Trinidad and Tobago Context: An Analysis of the Net Neutrality Doctrine

In addressing net neutrality issues, many jurisdictions employ a variety of strategies that are designed to reflect the idiosyncrasies of their operating environment. Some of these strategies are outlined in Appendix I. In the case of Trinidad and Tobago, proposed approaches to net neutrality must be made within the context of achieving the country's wider policy objectives, paying specific regard to the development and functioning of the telecommunications sector.

This section seeks to examine the case of Trinidad and Tobago and the role that approaches to net neutrality (as discussed in section 4) may play in the achievement of the policy objectives envisioned by the Act. These objectives include but are not limited to: promoting investment in, and the use of infrastructure; establishing conditions for fair competition; promoting and protecting consumer interests; and promoting universal service. Additionally, a key tenet of the net neutrality debate is the role that innovation plays in the development of society. As a result, this section also considers the role of net neutrality in fostering innovation in Trinidad and Tobago, which the GoRTT has highlighted as a strategy for ICT sector development.

### 6.1 The Promotion of Broadband Development and Uptake

One of the strategic thrusts of Trinidad and Tobago's Draft National ICT Plan 2017 – 2021, *fastforward II* is to improve connectivity. This involves initiatives for enhancing ICT infrastructure, specifically through the ubiquitous deployment of Next Generation Networks (NGN)<sup>11</sup>. According to the ICT Plan 2017 – 2021, meeting the objectives of the Plan:

‘will require significant public and private sector capital investment and partnership’  
(Ministry of Public Administration and Communications 2017).

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<sup>11</sup> Next Generation Networks is a packet-based network able to provide telecommunications services to users and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent of the underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and services of their choice. It supports generalised mobility which will allow consistent and ubiquitous provision of services to users. [ITU-T Recommendation Y.2001 (12/2004) - General overview of NGN]

This imperative is supported by one of the objects of the Act, which calls for the promotion of investment and the use of infrastructure. Further to this, in the interest of creating an enabling environment to ensure that opportunities exist for all to be connected in a digital age, actions taken regarding the subject of net neutrality should ensure that the industry remains sustainable, attracts investors and fosters a digitally inclusive environment.

A preliminary assessment of broadband development and uptake in Trinidad and Tobago, using data from the Authority's statistical repository, reveals the following statistics:

- i. Fixed broadband Internet is provided by 11 service providers who provide services in the niche and national coverage areas (TATT 2017).
- ii. The fixed Internet penetration per 100 household stood at 57.2% as at December 2016 (TATT 2017).
- iii. Approximately 19 out of every 100 inhabitants subscribe to fixed broadband Internet (TATT 2017).
- iv. Active<sup>12</sup> mobile broadband penetration stood at 52% of the population as at December 2016 (TATT 2017).
- v. 75% of the population is covered by at least a 3G mobile network (TATT 2017).

From the data, it is seen that, despite the presence of 11 ISPs operating in Trinidad and Tobago, there are significant pockets of the population that remain unserved. Internet penetration rates remain on the medium to the lower end of the international spectrum<sup>13</sup>, particularly with respect to mobile penetration rates. Policy prescriptions should thus be prompted by the drive for the further roll-out of infrastructure and ensuring the presence of conditions apt for increasing consumer take-up. In other words, rules on net neutrality should not be so restrictive as to inhibit investment within the sector.

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<sup>12</sup> Active refers to having used the Internet within the last three months.

<sup>13</sup> Based on the ITU's *Measuring the Information Society Report 2017*, Trinidad and Tobago's fixed broadband penetration rate stood at 19.0, compared to the Americas' 19.1 and the world's average of 12.4. Active mobile broadband penetration rate as of June 2017 stood at 47.3 compared to the Americas' 82.7 and the world average of 52.2.

## 6.2 Fostering Effective Competition within Trinidad and Tobago

In accordance with section 3, another object of the Act is to establish conditions for

*‘an open market for telecommunications services, including conditions for fair competition, at the national and international levels.’*

Any regulatory framework established by the Authority with respect to addressing net neutrality issues should, therefore, work towards the achievement of this objective. This requires a determination on the effects of net neutrality interferences on competition. This would, in turn, indicate if net neutrality rules are required, and the nature and form they should take.

The first step, therefore, is to examine if the market is sufficiently competitive to self-regulate against any potentially adverse effects of practices such as blocking, throttling, paid prioritisation and zero-rating. Theories on self-regulation suggest that where the market is sufficiently competitive, market forces would correct any anti-competitive conduct adopted by providers. Where it is determined that conditions within the local broadband market are sufficiently competitive, corrective policy actions may not be required.

Currently, broadband providers in Trinidad and Tobago operate primarily within a facilities-based competition<sup>14</sup> market. Given the capital-intensive nature of network deployment, these markets tend to have a limited number of ISPs, thereby increasing the opportunities for anti-competitive practices relating to traffic management practices. On the other hand, service-based competition markets usually facilitate competition by encouraging a large number of players in the market, thus limiting opportunities for anti-competitive behaviour.

Additionally, the existence of competition laws within a country can also present a defence against anti-competitive practices. In Trinidad and Tobago, while the Authority was established for the purpose of, *inter alia*, monitoring the telecommunications sector’s transformation from a monopoly to a competitive environment and, in particular, to prevent anti-competitive activities, its powers to enforce competition rules are specific to price regulation. Section 29 of the Act

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<sup>14</sup> In telecommunications, this is competition between providers of the same or similar services, where each provider deploys its own network in order to provide service.

specifies the circumstances in which the Authority regulates the prices of a telecommunications service, namely, where it detects anti-competitive pricing or acts of unfair competition.

Thus, where these anti-competitive conducts arise outside of pricing, as net neutrality issues often fall, the scope for regulatory oversight may be limited.

It should be noted, however, that the Authority has proposed amendments to the Act that will grant it wider powers relating to competition issues.

### **6.3 Promoting and Protecting the Interest of Consumers**

As at December 2016, the following statistics were reported:

- i. There were 775,100 fixed Internet users<sup>15</sup> (TATT 2017) and 707,300 mobile Internet users<sup>16</sup> (TATT 2017).
- ii. The number of active mobile broadband Internet users increased by 47% in 2016 (TATT 2017) while active mobile narrowband Internet subscriptions experienced a sharp decline of 67% (TATT 2017).
- iii. The growth in mobile Internet users has narrowed the gap between fixed Internet users and mobile Internet users.

This suggests that consumers are more inclined to use the Internet on the go, and are demanding greater speeds. In their use of the Internet, consumers expect an “open” Internet and high quality service, which is sometimes compromised by service providers’ attempts to manage congestion on their networks and, in some instances, to protect their revenue stream from competing OTT services.

The Authority has a mandate under section 3 of the Act to protect and to promote the interests of customers, purchasers and other users of telecommunications services. Additionally, section 18 (3) requires the Authority to pay regard to the interests of consumers in carrying out its functions.

*“In the performance of its functions, the Authority shall have regard to the interests of consumers and in particular—*

- (a) to the quality and reliability of the service provided at the lowest possible cost;*
- (b) to fair treatment of consumers and service providers similarly situated;*

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<sup>15</sup> The Authority estimates the number of fixed Internet users as the number of residential fixed Internet subscriptions for the year, multiplied by the average number of persons residing within a household.

<sup>16</sup> Fixed Internet users may also be mobile Internet users.

*(c) in respect of consumers similarly placed, to non-discrimination in relation to access, pricing and quality of service.”*

There is general concern that net neutrality interferences can hamper the quality of Internet experienced by consumers. For example, there may be an incentive for ISPs to degrade customers’ Internet speeds for reasons unrelated to network management. It is, therefore, imperative that net neutrality policies safeguard the interests of consumers from ISPs’ unreasonable traffic management practices. Consumers should, therefore, have the requisite information that allows for informed choices, particularly with respect to the traffic management policies and quality of service offered by their ISPs.

Additionally, as discussed in section 3, policies on net neutrality must also weigh the benefits of any net neutrality interferences against the cost. For example, currently in Trinidad and Tobago, ISPs engage in zero-rated pricing. The Authority must, therefore, consider the benefits that such practices may bring, such as facilitating increased access to the Internet by vulnerable consumer groups as well as enhancing competition within the wireless marketplace. On the other hand, a “closed” Internet could mean that customers may only have access to selected content and pay extra for everything else.

#### **6.4 Promoting Local Innovation**

One of the strategies presented within *fastforward II* is the diversification of the economy through ICT sector development. Under this vision, a key initiative is to increase digital content production, thereby transforming the ‘country from a “Download” to an “Upload” culture that celebrates the ingenuity of its people’ (Ministry of Public Administration and Communications 2017). This requires a shift in the country’s focus from being at the base of the value chain, that is, end-consumers of foreign content, to actually creating content of both local and international relevance.

Moreover, fostering local innovation creates opportunities for customised solutions to local issues, thereby resulting in increased social gains. For example, local applications, such as Ins & Outs TT, MAVERICK (an app that allows persons in Trinidad and Tobago living with visual impairment to identify their local currency bills) and DROP Taxi Service, may bring significant benefits to the quality of life experienced by citizens. Furthermore, the cultivating of such creativity may provide

opportunities for economic diversification within the export market. There is, therefore, value in shaping policies that ensure a level playing field for all, including emerging local content providers.

## 7 Guiding Principles for Net Neutrality in Trinidad and Tobago

In addressing the topic of net neutrality within the Trinidad and Tobago market, the Authority recognises the need for a policy approach that acknowledges the value of protecting the “openness” of the Internet, while making allowance for “reasonable”<sup>17</sup> traffic management practices.

The five principles set out below seek to balance these two competing interests. Furthermore, they are informed by the Authority’s overarching *Guiding Principles for Regulatory Decision Making* and, in particular, seek to: promote fair and effective competition; encourage investment within the sector; facilitate market development; and promote and protect the interests of consumers.

### **Principle 1: Reasonable Traffic Management**

The Authority recognises that well-functioning broadband networks require operators to manage their networks reasonably. Thus, traffic management techniques that are reasonable and serve to address specific needs should be allowed. This principle is based on the Authority’s mandate to promote the advancement and development of the sector as found in section 3 (b) of the Act.

While reasonable traffic management remains quite a subjective term, the research suggests that traffic management is reasonable when there is adherence to the following best practices. The traffic management solution should:

1. be geared towards solving a specific, legitimate and demonstrable technical need and nothing more.
2. have proportional and reasonable effects in relation to the problem at hand.
3. be auditable<sup>18</sup> and demonstrable in relation to satisfying the above three criteria.

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<sup>17</sup> The FCC describes network management practice as reasonable “if it is appropriate and tailored to achieving a legitimate network management purpose, taking into account the particular network architecture and technology of the broadband Internet access service” (FCC 2015).

<sup>18</sup> This means a log should be kept of the traffic management controls that were initiated on the network for a period of one year after the event. The log should include information as to who initiated the command, the time and date the command was conducted, and the requisite effects of the commands on resolving the traffic management issue.

### ***Guiding Principles on Reasonable Traffic Management***

- 1. The Authority recognises that well-functioning broadband networks require operators to manage their networks reasonably.*
- 2. Traffic management techniques that are reasonable and serve to address specific needs should be allowed.*

#### **Discussion Points:**

1. Do you agree with the criteria identified in Principle 1 to determine reasonable traffic management practices? Please explain your response.
2. Which traffic management principles should be upheld by ISPs in the determination of reasonable traffic management measures, e.g., transparency, non-discrimination, proportionality and non-commercial considerations? Please explain your response.
3. To what extent should ISPs be allowed to utilise technologies with traffic monitoring capabilities such as DPI, to identify specific type or content of data traffic, as part of their traffic management practices?

#### **Principle 2: No Unreasonable Discrimination**

The principle of no unreasonable discrimination follows from the Authority's commitment to addressing anti-competitive pricing and acts of unfair competition pursuant to its legislative mandate included in section 29 of the Act. The enforcement of this principle, however, shall require an expansion of the Authority's competition powers to address issues outside of pricing.

Sophisticated technologies have emerged that give network operators unprecedented knowledge of the activities taking place within their networks. Such knowledge can be used to the benefit or detriment of both end users and content providers. Considering this, it is imperative that network

operators refrain from exploiting these technologies to engage in unreasonable traffic discrimination.

The Authority considers unreasonable discrimination as practices that harm actual or potential competitors (e.g., the degradation of competing VoIP applications or services) and end users (e.g., blocking end users from accessing lawful content of their choice). It also includes acts that impair free expression, such as the deliberate slowing down of lawful traffic due to the nature of the content.

Additionally, in cases where service providers (who do not own or operate a network) provide a service to consumers from the edge of the network, such service providers should not be unjustly discriminated against by other service providers (wholesalers) on whom they depend to get access to the Internet.

The Authority thus proposes net neutrality rules that specifically prohibit network operators from intentionally downgrading and/or blocking lawful content, applications and/or services so as to render them effectively unusable to consumers. Conversely, discriminatory practices may be allowed for societal issues that are of paramount importance. These include but are not limited to: public safety, emergency situations, national security issues and child pornography. Discriminatory practices should also allow for the filtering of unlawful content, inclusive of violations of intellectual property rights. For an application of this, with respect to the proliferation of Android boxes in Trinidad and Tobago, see “Telecommunications Authority of Trinidad and Tobago Discussion Paper on Android Boxes in Trinidad and Tobago 2018.”

### ***Guiding Principles on No Unreasonable Discrimination***

- 1. The Authority proposes net neutrality rules that specifically prohibit network operators from intentionally downgrading and/or blocking lawful content, applications and/or services.*
- 2. Discriminatory practices may be allowed for societal issues such as: bridging the digital divide, public safety, emergency situations, law enforcement and national security issues, and child pornography.*

### **Discussion points:**

4. Do you agree with the potential effects of each of the net neutrality interferences (blocking, throttling, zero-rating and paid prioritisation) on consumers, content providers, service providers and other stakeholders as discussed in chapters 4 and 5? Please explain your response.
5. Should ISPs be permitted to employ marketing strategies (such as zero-rated pricing) through partnerships with content providers? Please explain your response.
6. Should ISPs be permitted to receive financial compensation from content providers to give preferential treatment (such as paid prioritisation) to certain Internet traffic? Please explain your response.
7. Should ISPs be permitted to charge premium prices to consumers who are willing to pay for preferential treatment of certain Internet traffic? Please explain your response.
8. In addition to those mentioned in questions 5, 6, and 7 what other forms of discrimination would you consider to be reasonable? Please explain why.
9. Can effective competition deter ISPs from engaging in discriminatory practices that negatively impact the market? Please explain your response.

### **Principle 3: Encouraging Investment**

This principle builds on section 3 (f) of the Act, which posits that one of the objects of the Act is ‘promoting the telecommunications industry in Trinidad and Tobago by encouraging investment in, and the use of, infrastructure to provide telecommunications services.

There are conflicting views on the effect of net neutrality regulation on sector investment. Some critics fear that net neutrality regulation will invariably hamper investment incentives, while others discount this notion.

Given these complexities, the Authority believes that any policy position taken on net neutrality should ensure that market opportunities and investment prospects are not unduly disrupted by regulation. In fact, policy decisions should seek to ensure that the market environment sends out the correct signals that encourages rather than hamper investment through regulatory certainty, e.g., through sector stability and the expectation of reasonable rates of return on investment opportunities.

#### ***Guiding Principles on Fostering Investment***

- 1. Net neutrality policy decisions should ensure that market opportunities and investment prospects are not unduly disrupted.*
- 2. Net neutrality policy decisions should encourage a climate of regulatory certainty that incentivises investment, e.g., through sector stability and the expectation of reasonable rates of return on investment opportunities.*

#### **Discussion points:**

10. What evidence is there to support or refute the argument that pro net neutrality-based rules stymie investment opportunities? Please explain your response.
11. What role, if any, can a framework for net neutrality play in increasing broadband uptake in Trinidad and Tobago?

#### **Principle 4: Transparency**

Pursuant to section 3 (c) of the Act, one of the objects of the Act is to promote and protect the interests of the public by providing for the protection of customers. This involves ensuring consumers are able to make informed choices in their decision-making process. Customers must therefore have access to information regarding the Internet services they intend to purchase. This in turn promotes competition within the industry, as informed consumers are more likely to select service providers offering the best service.

This principle calls for network operators to exercise due diligence in disclosing their traffic management policies to customers in a format that is easily comprehended. This includes disclosure of network practices (for e.g. paid prioritisation and zero rating), inclusive of traffic management practices and application-specific behaviour<sup>19</sup>. In addition, commercial terms and conditions, inclusive of pricing and privacy policies, are to be adequately provided to the customer. Moreover, all data privacy policies should be established in accordance with the relevant laws of Trinidad and Tobago.

Notwithstanding the above, the Authority recognises the disclosure of traffic management information that is commercially sensitive in nature, or which may compromise the security of a network, should be exempted from the principle of transparency.

#### ***Guiding Principles on Transparency***

- 1. Network operators should disclose their network practices inclusive of traffic management practices and application-specific behaviour.*
- 2. The disclosure of traffic management information that is commercially sensitive in nature, or which may compromise the security of a network, should be exempted from the principle of transparency.*

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<sup>19</sup> This includes disclosure as to whether and why the provider blocks or rate-controls specific protocols or protocol ports, modifies protocol fields in ways not prescribed by the protocol standard, or otherwise inhibits or favours certain applications.

**Discussion point:**

12. In addition to commercially sensitive information or network security information, what network practices should not be publicly disclosed? Please provide reasons to support your answer.

**Principle 5: Promoting Local Innovation and Entrepreneurship**

The basis of this principle can be found in the National ICT Plan, *fastforward II* which aims for the diversification of the economy through ICT sector development.

Innovation has played a critical role in the economic development of countries and is therefore key for economic diversification. In particular, it is articulated that the development of local digital systems is vital for building digital literacy, serving local needs and boosting competition in international digital services markets (World Economic Forum 2015). To capitalise on these opportunities, there should, therefore, be a thrust towards cultivating digital innovation within Trinidad and Tobago.

As such, any policy framework on net neutrality should be guided by the stimulation of local innovation and entrepreneurship, as this would allow for customised solutions to meet the specific needs of Trinidad and Tobago.

***Guiding Principle on Promoting Local Innovation and Entrepreneurship***

- 1. Any policy framework on net neutrality should be guided by the stimulation of local innovation and entrepreneurship.*

**Discussion point:**

13. What role, if any, should the stimulation of local innovation play in sector-wide regulations on issues such as net neutrality? Please explain your response.

## 8 Recommendations

The above guiding principles strive to strike the delicate balance between protecting the “openness of the Internet” while preserving and promoting the conditions required for a vibrant and competitive free market.

The Authority thus proposes the adoption of a “targeted approach” to the net neutrality interferences introduced in section 3, i.e., the adoption of regulations that proscribe practices expected to cause anti-competitive/detrimental effects within the market, while taking a light-touch approach towards those interferences that may provide pro-competitive<sup>20</sup> effects.

### 8.1 Blocking and Throttling

A key component of ensuring the openness of the Internet is the ability of users to send and receive lawful content without fear of being blocked by their ISPs. Notwithstanding the reasonable traffic management practices discussed above, the Authority proposes the implementation of rules which prohibit ISPs from blocking end-users from freely accessing lawful information, content, services and applications. Additionally, in the interest of safeguarding the open Internet, ISPs should not be allowed to intentionally restrict, alter, degrade or impair specific content, services or applications.

#### ***Policy Statements on Blocking and Throttling***

- 1. An ISP should not prevent (through blocking) end users from freely accessing and/or providing lawful information, content, services and applications.*
- 2. Subject to the principle of reasonable traffic management, an ISP should not intentionally restrict, alter, degrade or impair specific content, services or applications.*

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<sup>20</sup> These are effects that promote competition within the marketplace.

## 8.2 Paid Prioritisation and Zero-Rated Pricing

The Authority proposes a more flexible approach to paid prioritisation and zero-rated pricing. The adoption of this approach is based on the argument that paid prioritisation and zero-rating practices are not universally harmful and may provide opportunities where consumer welfare can be enhanced. Placing a general ban on such practices may therefore result in the loss of substantial benefits to society. For example, it has been contended that the practice of zero-rating may result in lower prices and increased Internet uptake (Eisenach, Jeffrey A. 2015). Similarly, allowing practices such as paid-prioritisation has been linked to advancements in the field of medicine through the use of applications and services, for example telemedicine (Pai 2017).

There may however, be instances of harmful offences of paid prioritisation and zero-rating practices, for example conducts involving anticompetitive behaviour. The recommended approach thus calls for the punishment of actual harmful and proven offences, as opposed to the absolute banning of paid prioritisation and zero-rating practices. It is, therefore, proposed that each case be evaluated on its individual merit and that regulatory action be taken only where one or more of the guiding principles are violated. In the adoption of this light-touch approach to regulation, the Authority proposes that an operator engaging in either paid prioritisation or zero-rating may be required, upon request by the Authority, to prove that his actions have provided some pro-competitive effects within the market, do not cause undue harm to consumers<sup>21</sup>, and do not constitute anti-competitive practices.

### ***Policy Statements on Paid Prioritisation and Zero-Pricing***

- 1. The Authority proposes penalising harmful and proven offences as opposed to the absolute banning of paid prioritisation and zero-rating practices.*
- 2. Each case should be evaluated on its individual merit and regulatory action would only be warranted where there is violation of one or more of the guiding principles.*

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<sup>21</sup> This involves an assessment of whether prices have increased, consumer choices and quality of service have decreased, and/or whether product/service innovation has fallen.

## 9 Regulation of OTT Services

Closely related to the topic of net neutrality is the issue of the regulation of OTT services. OTT providers and their concomitant services now form part of the Internet's ecosystem. The disruptive nature of these technologies has sparked network operators in Trinidad and Tobago to advocate for some form of regulation to create a more level playing field within the industry. They contend that the current regulatory environment is imbalanced and has thus created an unfair competitive advantage for OTT providers. On the other hand, supporters of net neutrality, including consumer interest groups within Trinidad and Tobago, have expressed concerns over the regulation of the Internet and its content, inclusive of OTT services. They fear the effects of interfering with a model that has worked to the benefit of consumers and businesses alike.<sup>22</sup> These opposing views highlight the complexity of the subject at hand as well as its regulatory solution.

The issue of OTT regulation was first considered by the Authority in 2015 within its consultative document *Towards the Treatment of Over-The-Top (OTT) Services*. At that time, OTT voice was the primary focus of the document, and it included the Authority's preliminary assessment of whether OTT voice services could be considered a telecommunications service and, therefore, subject to regulation by the Authority, in accordance with section 21 of the Act. That document concluded that OTT voice **may** be classified as a public telecommunications service.

Recognising that other types of OTTs are making waves within the telecommunications and broadcasting sectors, it is imperative that the Authority broadens its assessment on the regulation of OTTs to include OTT messaging and OTT media.

This section explores the case for the regulation of OTT services. It provides the definitions of telecommunications service and broadcasting service and examines the extent to which the Authority's regulatory scope covers OTT services.

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<sup>22</sup> See comments contained within the Decisions on Recommendations published from the first round of consultation on the document titled *Towards the Treatment of Over-The-Top (OTT) Services*.

## 9.1 Definition of a Telecommunications Service

### 9.1.1 Literal Interpretation of the Telecommunications Service Definition

As a starting point, it must be determined whether the scope of the current legislative framework includes OTT communication (voice and messaging) and media services (audio visual content). The definitions of “telecommunications”, “telecommunications service”, and “public telecommunications service” are thus examined to ascertain if OTTs<sup>23</sup> fall under the umbrella of telecommunications.

The Act defines “telecommunications”, “telecommunications service” and a “public telecommunications service” as follows:

“Telecommunications” includes the transmission, emission or reception of signals, writing, pulses, images, sounds or other intelligence of any kind by wire, wireless, optical or electromagnetic spectrum or by way of any other technology.

“Telecommunications service” means a service using telecommunications whereby one user can communicate with any other user in real time, regardless of the technology used to provide such a service, and includes a public telecommunications service, a private telecommunications service, a closed user group service, and a radio communication service.

“Public telecommunications service” refers to a telecommunications service, including a public telephone service, offered to members of the general public, whereby one user can communicate with any other user in real time, regardless of the technology used to provide such service.

The preceding definitions suggest that a service which uses telecommunications, where telecommunications means the transmission, emission or reception of signals, writing, pulses, images, sounds or other intelligence of any kind, to facilitate real time communication is a telecommunications service. Further to this, provisions were made within the definitions for such services to be provided regardless of the technology employed.

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<sup>23</sup> OTT voice and messaging services are often compared to traditional telecommunications services, while OTT media services are often compared to traditional broadcasting services. As such, the definitions of telecommunications services and broadcasting services were assessed.

A literal interpretation of these definitions implies that some OTT applications fall within the scope of telecommunications service on the premise that they use telecommunications for their delivery, users can communicate in real or near real time, and providers can employ any technology to provide the service. Further to this, OTTs which have satisfied the literal interpretation of telecommunications services and are offered to members of the public can be regarded as public telecommunications services. However, a determination as to the true scope of these definitions and whether they, in fact, cover OTTs requires an assessment as to the intention of Parliament in drafting the Act and the Authority's subsequent applications of these definitions.

In the case of regulatory oversight of OTT media service, which is a service that resembles broadcasting since it entails the distribution of audio visual content, the Act's definition of telecommunications is relevant. Given that telecommunications include the transmission or reception of images and sound, broadcasting essentially is telecommunications provided over a telecommunications network. However, in ascertaining if OTT media service is a broadcasting service to be regulated by the Authority, the definition of broadcasting service must be considered.

The Act defines a broadcasting service as:

*“the offering of the transmission of programmes whether or not encrypted, by any means of telecommunications, for reception by the general public, including sound, radio, television and other types of transmissions, such as those on a point to multipoint basis”.*

The preceding definition shows a connection between content (programmes) to be received by the public and transmission of same. This is suggesting that the service to be regulated by the Authority is one where the transmission of programmes (audio or visual content) is involved. Having previously established that broadcast transmission occurs by way of a telecommunications network, it can be further implied that it is only in cases where a dedicated network or infrastructure is used to broadcast that the service can be deemed as a broadcasting service.

### 9.1.2 Parliamentary Intention for the Regulation of Telecommunications Services

The intentions of Parliament play a key role in interpreting the definition and scope of telecommunications services. It was stated in Hansard that the 2001 Telecommunications bill would take into account “the entire communications sector” and applied to “all types of communications services” and to content services however delivered<sup>24</sup>.

Furthermore, the debate on the 2004 amendment to the legislation showed it was the intention of the legislators that the amended Act would give effect to a policy of technology neutrality in recognition of emerging technologies in the information and communication technologies (ICT) sector.

The amended Act introduced technology neutrality into the definitions of “public telecommunications service” and “telecommunications service”. The inclusion of the words “... regardless of the technology used to provide such service;” in the definitions was therefore meant to capture “*other technologies providing real time voice service or telecommunications services*”.

Additionally, the Explanatory Note to the Telecommunications Bill elaborates that amendments to the definitions of “public telephone service” were considered necessary for the following reasons:

*“As drafted, there may be an interpretation that this definition applies only to traditional switched telephony. The proposed amendment which will delete the words “the direct transport and switching of voice” and substitute the words “interactive voice communication” will make it abundantly clear that the Authority will regulate the delivery of all public voice services irrespective of the means used to provide the service (e.g., VOIP)”<sup>24</sup>*

There was, therefore, a deliberate attempt to ensure that the subject definitions covered not only the current situation but also covered what would take place in the future. There was recognition of the advancement of technology from Public Switch Transmission Network (PSTN) to packet switched networks, particularly IP-based. Based on the reading of Hansard and the Explanatory Note,

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<sup>24</sup> Explanatory Note – The Telecommunications (Amendment) Bill, 2004

this recognition led to attempts to draft legislative and regulatory frameworks that reinforced a technology neutral approach.

It should be noted that this forward-looking approach when applied to the current regulatory framework was mainly focused on the technology used to provide the service, i.e., “by wire, wireless, optical or electromagnetic spectrum or by way of any other technology”. However, as will be discussed below, OTT services are unique, not necessarily by the technology used to deliver the service, but because they have taken advantage of new and emerging technologies to deploy a business model that now separates services (voice, messaging and media) from the underlying telecommunications infrastructure. This challenges the suitability of the current regulatory framework.

### **9.1.3 A Review of the Application of Technology Neutrality to the Authority’s Regulatory Framework**

The principle of technology neutrality underpins the Authority’s regulatory framework, which undoubtedly provides flexibility in an era of rapid technological advancement that has given rise to new markets and services facilitated by the convergence of telecommunications, broadcasting and the Internet. It should be noted however, that the meaning and intent ascribed to technology neutrality varies within the international community and is therefore applied differently by regulators depending on their desired outcome.

The definitions of “telecommunications” and “telecommunications services” as contained within the Act provide the backdrop for the Authority’s interpretation and application of the technology neutrality principle. These definitions allude to the neutrality in the technologies of the medium of transmission that authorised service providers may deploy or rely on<sup>25</sup> to provide services i.e., fixed technology, wireless technology or any other as deemed appropriate by the service provider. It is in this vein that the Authority has adopted a neutral approach to its authorisation process where a specific technology is not imposed on authorised providers of telecommunications services. The

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<sup>25</sup> This is the case for authorised service providers who do not own a network but use the network of an authorised network operator to deliver their services.

goals are to ensure that there are minimal barriers to entry and to promote competition in a converged telecommunications market. Notwithstanding the flexibility given to service providers in electing their preferred technology, the Authority has been guided by a definition of technology neutrality which acknowledges that neutrality in regulations can include different regulations for different technological solutions, even where similar services are provided, as the technologies used do not essentially have the same features (TATT 2015).

With the emergence of newer technologies and different business models to provide services, ambiguity sometimes arises with respect to regulatory extension to these services on the premise of technology neutrality. A look at the Authority's application of the principle suggests that technological impartiality is tied to the technologies of the network rather than those of platforms or applications that have been able to separate services from the underlying physical network. This is seen within the "telecommunications service" definition. According to the Act, a "telecommunications service" means "a service using telecommunications" and "telecommunications" include<sup>26</sup> the "transmission, emission or reception of signals, writing, pulses, images, sounds or other intelligence". These activities are performed by the physical network, thus narrowing the scope or application of technology neutrality and its concomitant regulatory oversight to network technologies.

## **9.2 Review of the Fit of Traditional Regulation to OTT Services**

Taking the discussion one step further, one must also consider the fitness of the current framework in achieving the desired regulatory effects within the OTT landscape. In other words, even if OTTs fall under the literal interpretation of the legislative framework, the fact is some OTT providers do not directly employ the use of resources (i.e., spectrum and numbers), thus questioning the applicability of the Act and other regulatory instruments to these services.

In the interest of avoiding the imposition of obsolete regulation, the Authority must, therefore, assess the extent to which regulatory obligations apply to OTT providers. Such assessment can

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<sup>26</sup> According to statutory interpretation, the word "include" should follow the doctrine: "The inclusion of one is the exclusion of another".

also act as an aid to the interpretation of the Act. For instance, legal requirements establishing conditions for the deployment of networks and/or services, the quality of service, interconnection to the network or service, and other conditions are mandated by primary and subsidiary legislation but may not necessarily apply to some OTT providers who have limited to no control over these. Moreover, due to the unique zero-priced business model that some OTT providers have adopted, many regulatory instruments, such as pricing are irrelevant. In this regard, it may not be suitable to regulate these services, as the existing regulatory framework cannot be practically applied to their business models.

### **9.3 Future Outlook of OTT Regulation**

It is thus clear that OTTs have introduced a level of ambiguity within the legislative framework that has become apparent with the convergence of the market. To circumvent these issues, some jurisdictions such as the European Community are proposing the re-definition of “telecommunications services” to include not only technical but functional aspects as well. The intention is to ensure that consumers are effectively and equally protected when using functionally equivalent services. (European Commission 2016)

From an analytical point of view, it is not difficult to conclude that OTT communication services are a functional substitute for legacy telecommunications services. Similarly, OTT media services have been replacing traditional subscription-based television broadcasting services over a public telecommunications network. Policy makers and regulators, therefore, cannot ignore the potential impact of OTT services, as its exclusion may lead to a narrow definition of the market and likely regulatory gaps.

Furthermore, it has been suggested that the principle of technology neutrality should be reflected in the way services which are functionally equivalent are regulated. “Technology neutrality means that the same regulatory principles should apply regardless of the technology used. Regulations should not be drafted in ‘technological silos’ (Maxwell and Lovells 2014). This alternative<sup>27</sup>

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<sup>27</sup> The term “technology neutrality” has several meanings. Within the context described in the previous sections, it is taken to mean the Authority’s neutrality in the technology chosen by a network operator in its operations. This

interpretation of technology neutrality allows for the inclusion of newer and emerging technologies along with different business models under the ambit of the regulator. It is, therefore, argued that emerging Internet platforms, particularly those that offer services with similar functionalities as traditional communications and media services should be regulated in the same manner. The Authority shall consider the extent to which this interpretation may be applied to a changing industry within which OTTs reside. It should also be noted that both applications of technology neutrality are supported by the Authority's principle of service neutrality, where a network operator or service provider is not limited to providing a specific service to consumers (TATT 2014).

### **9.3.1 Classification 1: Functionally Equivalent OTT Services**

It has been argued that since some number-based OTTs<sup>28</sup> participate in and subsequently benefit from a publicly assured interoperable ecosystem, they should be treated differently from other OTT services (European Commission 2016). More specifically, where, by reason of their characteristics, these OTTs function equivalently to traditional services, and use numbering resources to connect to the PSTN, the case for regulation can be made. In other words, such OTT services should be regulated in the same manner as traditional services (voice and SMS) with certain minimal concessions obligations<sup>29</sup>. While types of OTT services may comfortably fit within the scope of the regulatory framework, amendments to the framework may be required to ensure efficient sector regulation. OTT service providers under this classification will be required to acquire a service authorisation from the Authority, and where these services use spectrum resources, the provider will be required to apply for an appropriate licence. This will be reflected in the revised Authorisation Framework.

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interpretation presents an alternative definition, meaning that the same regulatory principles should apply regardless of the technology used.

<sup>28</sup> Those which connect to the PSTN

<sup>29</sup> The ITU notes that technologies offering similar services do not necessarily have similar features in all aspects. As such, identical regulations may result in the competitive advantage of one technology over another. Consequently, this may call for slightly differing regulations for different technology solutions in the same market segments.

### ***Policy Statement***

- 1. OTTs which are functionally equivalent to traditional services and use numbering resources to connect to the PSTN should be regulated in the same manner as traditional telecommunications services.*
- 2. Amendments to the Authority's Authorisation Framework will be required to reflect classification 1 OTT services.*

### **9.3.2 Classification 2: Other OTT Services**

For other categories of OTT services, that is, which are not functionally equivalent to traditional services, and/or do not use numbering or spectrum resources, sector-specific regulation may not be required to the same extent. Such services may not offer their services for remuneration (therefore making pricing regulation irrelevant) or have control over the quality of the service offered, making the application of QoS obligations irrelevant. In this regard, the Authority may consider taking a light-handed regulatory approach to these services. Amendments to the Authorisation Framework of the Authority will be required to give effect to this.

Even in the presence of limited oversight on the part of the Authority, these services should not necessarily be precluded from facing regulatory constraints within the wider context of the laws and policy objectives of the country. Some key areas where regulatory control is very much relevant and needed in the digital era include, *inter alia*, cybersecurity, data protection, child pornography, intellectual property rights, national security and privacy, and other public interest matters. While jurisdictional issues can arise in the implementation of these controls, enforcement can take place, where possible, through local ISPs. This may require extensive collaboration with the relevant agencies which are ultimately responsible for establishing breaches and offences within the confines of the laws and policy objectives of Trinidad and Tobago.

***Policy Statement***

- 1. The Authority may consider taking a light-handed regulatory approach to OTT services not requiring numbering or spectrum resources.*
- 2. Amendments to the Authority's Authorisation Framework will be required to reflect classification 2 OTT services.*
- 3. General regulatory controls should be applied to these services. These include, inter alia, cybersecurity, data protection, child pornography, intellectual property rights, national security and privacy controls.*

## 10 Conclusion

This discussion paper examines both sides of the net neutrality debate within the context of Trinidad and Tobago. Principles of the debate centres around the value of an open and indiscriminate Internet while weighing the need for prudent and profitable traffic management and commercial practices.

The document provides an overview of the different discriminatory actions that a service provider may employ, that are considered deviations from the generally accepted principles of net neutrality (net neutrality interferences). In particular, it examines the extent to which these interferences affect key policy issues such as innovation, investment, competition and consumer choice.

The Authority proposes five guiding principles upon which any policy position on net neutrality should be built on. These principles were informed by the Authority's overarching *Guiding Principles for Regulatory Decision Making* that seek to: promote fair and effective competition; encourage investment within the sector; facilitate market development; and promote and protect the interests of consumers.

Discussion points are presented to stakeholders, on the key tenets of these principles. Feedback on these would further inform the Authority's final position on net neutrality. A summary of these discussion points is presented in Table 1.

**Table 1: Summary of Discussion Points**

1. Do you agree with the criteria identified in Principle 1 to determine reasonable traffic management practices? Please explain your response.
2. Which traffic management principles should be upheld by ISPs in the determination of reasonable traffic management measures, e.g., transparency, non-discrimination, proportionality and non-commercial considerations? Please explain your response.

3. To what extent should ISPs be allowed to utilise technologies with traffic monitoring capabilities such as DPI, to identify specific type or content of data traffic, as part of their traffic management practices?
4. Do you agree with the potential effects of each of the net neutrality interferences (blocking, throttling, zero-rating and paid prioritisation) on consumers, content providers, service providers and other stakeholders as discussed in chapters 4 and 5? Please explain your response.
5. Should ISPs be permitted to employ marketing strategies (such as zero-rated pricing) through partnerships with content providers? Please explain your response.
6. Should ISPs be permitted to receive financial compensation from content providers to give preferential treatment (such as paid prioritisation) to certain Internet traffic? Please explain your response.
7. Should ISPs be permitted to charge premium prices to consumers who are willing to pay for preferential treatment of certain Internet traffic? Please explain your response.
8. In addition to those mentioned in questions 5, 6, and 7 what other forms of discrimination would you consider to be reasonable? Please explain why.
9. Can effective competition deter ISPs from engaging in discriminatory practices that negatively impact the market? Please explain your response.
10. What evidence is there to support or refute the argument that pro net neutrality-based rules stymie investment opportunities? Please explain your response.
11. What role, if any, can a framework for net neutrality play in increasing broadband uptake in Trinidad and Tobago?

12. In addition to commercially sensitive information or network security information, what network practices should not be publicly disclosed? Please provide reasons to support your answer.

13. What role, if any, should the stimulation of local innovation play in sector-wide regulations on issues such as net neutrality? Please explain your response.

## 11 References

- BEREC. *Body of European Regulators for Electronic Communications* . 2015. [http://berec.europa.eu/eng/netneutrality/specialised\\_services/](http://berec.europa.eu/eng/netneutrality/specialised_services/) (accessed 5 15, 2017).
- Blak, M. *www.bridtv.com*. July 14, 2015. <https://www.brid.tv/tag/ott-revenues/> (accessed October 17, 2017).
- Buckley, Sean. "OTT Voice and Messaging: The Future of Telecom." *Fierce Telecom* (Fierce Telecom), 2013.
- CANTO. *OTT Services - Balancing Innovation, Investment and Competition*. Information Paper, CANTO, 2014.
- CANTO. *OTT Services- Balancing Innovation, Investment and Competition* . July 11, 2014.
- Carlson, J., and W Van Der Weiden. "Keeping the internet open for innovation: a perspective on the net neutrality debate." *Ericsson Business Review*, 2015.
- Cheng, H.K., Bandyopadhyay, S., and H Guo. "The debate on net neutrality: a policy perspective." *Information Systems Research*, 2011: 60-82.
- CISCO. *www.cisco.com*. February 7, 2017. <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html> (accessed October 26, 2017).
- CNET. *Democrats Introduce Bill to ban 'paid prioritization' on the Net*. June 17, 2014.
- Cooper, James. "Vertical Antitrust Policy as a Problem of Inference,." *INT'L J. INDUS. ORG*, 2005.
- Corbin, K. *CIO*. 1 18, 2017. <http://www.cio.com/article/3158801/internet/trump-administration-threatens-net-neutrality-cloud-and-iot.html> (accessed 5 31, 2017).
- Detecon. *Policy and Regulatory Framework for Governing Internet Applications*. March 2014.

- Downes, Larry. n.d. <http://www.forbes.com/sites/larrydownes/2014/09/12/vcdc-when-internet-neutrality-principles-conflict-with-engineering-everyone-loses/> (accessed August 12, 2015).
- Economides, N., and Joacim Tag. "Network neutrality on the Internet: A two-sided market analysis." *Information Economics and Policy*, 2012: 91-104.
- Eisenach, Jeffrey A. *The Economics of Zero Rating*. NERA Economic Consulting, 2015.
- FCC. "FCC." *fcc.org*. 03 12, 2015. [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-24A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf) (accessed 08 10, 2015).
- . *FCC.gov*. Jan 04, 2018. <https://www.fcc.gov/document/fcc-releases-restoring-internet-freedom-order> (accessed Jan 29, 2018).
- FCC. *REPORT AND ORDER ON REMAND, DECLARATORY RULING, AND ORDER*. Washington D.C.: FCC, 2015.
- . *www.fcc.org*. 2017. <https://www.fcc.gov/restoring-internet-freedom><https://www.fcc.gov/restoring-internet-freedom> (accessed November 13, 2017).
- . *www.fcc.org*. February 26, 2015. <https://www.fcc.gov/document/fcc-adopts-strong-sustainable-rules-protect-open-internet> (accessed November 11, 2017).
- Federal Communications Commission. *Preserving the Open Internet; Broadband Industry Practices*. GN Docket No. 09-191, WC Docket No. 07-52, 2010.
- Federal Communications Commission. *REPORT AND ORDER ON REMAND, DECLARATORY RULING, AND ORDER*. Washington DC: Federal Communications Commission, 2015.
- Finley, K. *Wired*. 1 13, 2017. <https://www.wired.com/2017/01/outgoing-fcc-chairman-tom-wheeler-net-neutralitys-not-dead/> (accessed 5 31, 2017).
- Fisher, Tim. *www.lifewire.com*. December 1, 2016. <https://www.lifewire.com/what-is-bandwidth-throttling-2625808> (accessed July 10, 2017).

- Fox, Jonathan. *Net Neutrality: What's At Stake & How to Protect it*. CALPIRG Education Fund, 2013.
- Gary Becker, Dennis Carlton, Hal Sider, Gary Becker, Dennis Carlton, Hal Sider. " Net Neutrality and Consumer Welfare." *Journal of Competition Law and Economics*, 2010: 497-519.
- Gharakheili, H. *The role of SDN in broadband networks*. Springer, 2017.
- iGovTT. *smarTT National ICT Plan 2012-2016*. Port-of-Spain, July 2012.
- ITU. "ICT Regulation Toolkit." *ICTregulationtoolkit.org*. 2012. <http://www.ictregulationtoolkit.org/toolkit/2.5> (accessed September 13, 2017).
- ITU, InfoDev. "ICT Regulation Toolkit." n.d. [www.ictregulationtoolkit.org](http://www.ictregulationtoolkit.org) (accessed November 2014).
- Johns, N. *Regulating the Digital Economy*. New Dehli: Observer Research Foundation , 2015.
- Krim, J. "Executive Wants to Charge for Web Speed." *Washington Post*, 2005.
- Lemley, M., and L Lessig. *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*. 2001.
- Lessig, L, and R McChesney. [www.washingtonpost.com](http://www.washingtonpost.com). June 8, 2006. <http://www.washingtonpost.com/wp-dyn/content/article/2006/06/07/AR2006060702108.html> (accessed October 19, 2017).
- McSherry, Corynne. May 1, 2014. <http://edition.cnn.com/2014/04/29/opinion/mcsherry-net-neutrality/> (accessed August 12, 2015).
- Ministry of Public Administration and Communications. "fastforward II Trinidad and Tobago's Draft National ICT Plan 2017 – 2021." 2017.
- Net Craft. *Net Craft* . 2017. <https://news.netcraft.com/archives/category/web-server-survey/> (accessed 5 12, 2017).
- OECD. *OECD Communications Outlook 2013*. OECD Publishing, 2013.

- . *oecd.org*. July 11, 2013. <http://www.oecd.org/sti/broadband/oecd-communications-outlook-19991460.htm> (accessed October 25, 2017).
- Ohlhausen, Hon. Maureen K. "Antitrust Over Net Neutrality." *Colorado Technology Law Journal*, 2017.
- Pai, Ajit. *Conference on Aging and Technology: Creating opportunities to age well with innovation*. Washington DC: FCC, 2017.
- Park, Eun-A, and Richard Taylor. "Barriers to Entry Analysis of Broadband Multiple Platforms:." *Telecommunications Policy Research Conference*. Washington DC, 2006.
- Peha, John M. "The Benefits and Risks of Mandating Network neutrality, and the Quest for a Balanced Policy." *34th Telecommunications Policy Research Conference*. 2006.
- Reggiani, C., and T Valletti. "Net neutrality and innovation at the core and at the edge." *Internal Journal of Industrial Organization* , 2016: 16-27.
- Search Networking. *searchnetworking.techtarget.com*. September 18, 2017. <http://searchnetworking.techtarget.com/definition/deep-packet-inspection-DPI> (accessed October 23, 2017).
- Shimizu, S., Nakashima, N., et al. " International transmission of uncompressed endoscopic surgery images via superfast broadband Internet connections. ." *Surgical Endoscopy*, n.d.: PP. 167-170.
- Slade, Lafontaine &. "Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy,." *HANDBOOK OF ANTITRUST ECON.*, 2008.
- Sørensen, Frode. *Net neutrality and charging models*. November 18, 2014. <http://eng.nkom.no/topical-issues/news/net-neutrality-and-charging-models> (accessed September 10, 2015).
- Sydell, Laura. *www.npr.org*. April 25,, 2006. <http://www.npr.org/templates/story/story.php?storyId=5362403> (accessed July 10, 2017).

TATT. 2017.

TATT. *Telecommunications and Broadcasting Sectors Annual Market Report 2016*. Market report, Barataria: Telecommunications Authority of Trinidad and Tobago, 2017.

—. [www.tatt.org.tt](http://www.tatt.org.tt). 8 18, 2015.  
[https://tatt.org.tt/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core\\_Download&EntryId=584&PortalId=0&TabId=222](https://tatt.org.tt/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=584&PortalId=0&TabId=222) (accessed 8 21, 2017).

"Telecommunications Act S.C. 1993, c. 38 s.36." 1993.

The Innovation Policy Platform. <https://www.innovationpolicyplatform.org>. 2013.  
<https://www.innovationpolicyplatform.org/about> (accessed April 5, 2018).

tnt&t. *technewstt.com*. July 8, 2015. <http://technewstt.com/tcs-voip/> (accessed July 15, 2015).

van Schewick, Barbara, and David Farber. "Network Neutrality Nuance." *Communications Of The ACM* 52, no. 2, 2009: 31-37.

World Economic Forum. *Expanding Participation and Boosting Growth: The Infrastructure Needs of the Digital Economy*. World Economic Forum, 2015.

Wu, Tim. *Net Neutrality FAQ*. n.d. [http://www.timwu.org/network\\_neutrality.html](http://www.timwu.org/network_neutrality.html) (accessed July 15, 2015).

Wu, Tim. "Network Neutrality, Broadband Discrimination." *J. On Telecomm. & High Tech.* L 2 (2003): 141-176.

## Appendix I Key Trends: Global and Regional Perspectives

### Canada

In 2008, the Canadian Radio-television and Telecommunications Commission (CRTC) received an application by the Canadian Association of Internet Providers (CAIP) to order Bell Canada to desist from traffic shaping its Asynchronous Digital Subscriber Line (ADSL) and wholesale Gateway Access Services (GAS). After reviewing the positions of the parties involved, the CRTC denied the CAIP's application on various grounds. These include, *inter alia*:

- i. Bell Canada's traffic-shaping practices did not violate rules as they related to privacy.
- ii. Bell Canada's traffic-shaping practices involved controlling the speed and not the content.
- iii. Evidence was not brought forward to demonstrate that Bell Canada's traffic-shaping practices had reduced competition.
- iv. Bell Canada was not guilty of discriminating or applying preferential treatment in its traffic-shaping practices.

This case brought to light legitimate concerns with regard to traffic management practices deployed by operators. As such, in 2009, the Commission implemented strong net neutrality rules through the establishment of a framework for Internet Traffic Management Practice (ITMP). The framework was based on the following four key considerations:

- i. Transparency
- ii. Innovation
- iii. Clarity
- iv. Competitive neutrality

It is through this framework that the Commission implemented rules to assess and treat with traffic discrimination and the preferential treatment of traffic. In addition to the framework, the

Commission is guided by section 36 of the CTRC's Act to prevent blocking, delaying or slowing of traffic. Section 36 of the Act states:

“Except where the Commission approves otherwise, a Canadian carrier shall not control the content or influence the meaning or purpose of telecommunications carried by it for the public.”  
(Telecommunications Act S.C. 1993, c. 38 s.36 1993)

In April 2017, the CTRC expressed its view that differential pricing generally gives an unfair advantage or a disadvantage to certain content providers and consumers. As such, it published its *Framework for Assessing the Differential Pricing Practices of Internet Service Providers*, which sets out the evaluation criteria it will apply to determine whether an ISP's specific differential pricing practice is inconsistent with Canada's legislation.

## **Caribbean**

In 2016, the Eastern Caribbean Telecommunications Authority (ECTEL) issued a determination on net neutrality after consulting with various stakeholders. At the end of the consultation period, ECTEL put forward its position and approach to the subject but has deferred implementing any regulations relating to net neutrality. ECTEL, in its proposed approach, has acknowledged that the use of deep packet inspection (DPI) potentially violates the privacy of consumers. As such, ECTEL has urged ISPs to utilise the technology only to detect viruses and to maintain the integrity of the network. Additionally, recognising that this action might not be sufficient to achieve a free and open Internet, ECTEL proposes to review its quality of service (QoS) regulations to prescribe minimum Internet broadband speeds to safeguard against degradation of service. Moreover, ECTEL proposes to strengthen its legislative framework to address situations where DPI may be used for anti-competitive practices.

## **Europe**

### **The European Union (EU)**

In the EU, the issue of net neutrality was first addressed within the legislative context in the EU's 2009/140/EC Directive. This Directive sought to provide amendments to several other Directives, and served as the platform from which the European Commission (EC) noted the importance of preserving an open and neutral Internet and proposed the enshrining of net neutrality as a policy objective. The Directive also proposed that the following regulatory principles be promoted:

“the strengthening of related transparency requirements and the creation of safeguard powers for national regulatory authorities to prevent the degradation of services and the hindering or slowing down of traffic over public networks”

The revised rules also required regulatory authorities to promote “the ability of end users to access and distribute information or run applications and services of their choice” (Article 8(4)(g) of the Framework Directive). This was supported by rules within the Universal Service Directive calling for greater transparency in relation to informing consumers about:

1. conditions limiting access to and/or use of services and applications.
2. procedures put in place by the provider in order to measure and shape traffic and how these may impact service quality.

The revised regulatory framework also sought to ensure that consumers did not face significant switching barriers, by including rules that regulated the terms and conditions for consumer contract termination. Provision was also made for the setting of minimum QoS requirements by the various national regulators. Given the state of competition in the European broadband market, due partly to the regulatory infrastructure in place, the above rules were generally considered to be adequate in deterring network operators from engaging in anti-competitive traffic management practices.

In 2011, the Commission stressed the importance of transparency as a key part of the net neutrality debate, along with consumers' ability to easily switch services without incurring high switching costs. The Commission emphasised its commitment to an open Internet, relying on the above-mentioned rules to produce pro-competitive outcomes.

The EC stated that further investigations and observations within the market will ultimately determine whether more stringent measures will be required to ensure that competition and consumer choice are not negatively impacted. It also concluded that regulation should seek to

avoid deterring investment and innovative business models and should lead to the efficient use of networks and the creation of new business opportunities at different levels of the Internet value chain while preserving consumer choice.

In 2013, the Commission introduced its Telecoms Single Market proposals to the European Parliament, intended to end discriminatory blocking and throttling and deliver effective net neutrality. The proposed rules adopted a middle ground, where the openness of the Internet is preserved, but operators are allowed to offer specialised services to meet the specific needs of their customers. In April 2014, the proposals were adopted in the first reading by Parliament in April. In June 2015, after months of negotiations, the Parliament, European Council and the Commission reached two agreements, one relating to the end to roaming charges and the other on the first EU-wide rules on net neutrality. Specifically, Article 3 of the Regulations provided conditions for the safeguarding of open Internet access. The article mandates against ISPs engaging in traffic management measures that go beyond reasonable traffic management practices. In particular, it bans ISPs from blocking, slowing down, altering, restricting and discriminating between specific content, applications or services.

### **United States of America**

Over the two past decades, the US has experienced contention among network users and ISPs relating to net neutrality issues. Until 2015, there were no clear legal protections requiring net neutrality. In February 2015, the US regulator, the Federal Communications Commission (FCC), under Chairman Tom Wheeler, approved a new set of net neutrality regulations that focused on maintaining an open Internet. The rules classified broadband Internet service as a public utility, thereby subjecting it to government regulation in the same manner as services like landline telephones. The FCC's published Open Internet Order placed rules on ISPs, prohibiting paid prioritisation, blocking and throttling.

However, in November 2017, the new FCC chairman, Ajit Pai, unveiled plans to repeal the net neutrality policy in the United States. In December 2017, the FCC voted to repeal the Title II net neutrality rules passed in 2015. In the new Order, the FCC reverted to the "light-touch" framework that sought to restore "a favourable climate for network investment", which they considered key

to “closing the digital divide, spurring competition and innovation that benefits consumers” (FCC 2018). Key changes involved:

- i. the restoration of the classification of broadband Internet access service as an “information service” under Title I of the Communications Act.
- ii. the reinstating of the classification of mobile broadband Internet access service as a private mobile service.
- iii. the restoration of broadband consumer protection authority to the Federal Trade Commission.

The Order also requires that ISPs disclose information about their practices to consumers, entrepreneurs and the Commission, including any blocking, throttling, paid prioritisation or affiliated prioritisation.

In May 2018, the United States Senate approved a resolution to nullify the FCC’s net neutrality rollback. It is stated however, that this move is unlikely to derail the FCC’s repeal of 2015 Title II net neutrality rules, since the House of Representative does not intend to take similar action.

