



Telecom Regulatory Authority of India



**Consultation Paper**

**on**

**Regulatory Framework for Over-The-Top  
(OTT) communication Services**

**November 12, 2018**

**Mahanagar Door Sanchar Bhawan,  
J.L. Nehru Marg, (Old Minto Road)  
New Delhi - 110002, India**

**Stakeholders are requested to send their comments, preferably in electronic form to the following address:**

Shri. Asit Kadayan,  
Advisor (QoS),  
Telecom Regulatory Authority of India (TRAI),  
Mahanagar Door Sanchar Bhawan,  
J.L. Nehru Marg, (Old Minto Road)  
New Delhi - 110002, India  
Email: [advqos@trai.gov.in](mailto:advqos@trai.gov.in)

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Comments will be posted on TRAI website [www.trai.gov.in](http://www.trai.gov.in).

For any clarification/information, Advisor (QoS) may be contacted at

Tel. No.+91-11-2323-0404, Fax: +91-11-2321-3036.

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# Chapter 1

## Introduction

### 1.1 Background

**1.1.1** The Department of Telecommunication (DoT) vide a reference letter dated March 3, 2016, sought the recommendations of the Telecom Regulatory Authority of India (the Authority) on “*Net Neutrality including traffic management system, economic, security and privacy aspects of OTT services apart from other relevant standpoints covered in the TRAI’s (the Authority) consultation paper on Regulatory Framework for Over-the-top (OTT) services issued earlier on March 27, 2015*”. In light of the complexity of issues, referred to in DoT’s letter, and other interrelated issues, the Authority chose to deal with specific issues through distinct consultation processes. The Authority has already issued the following recommendations and regulations pertaining to issues referred to in DoT’s reference letter dated March 3, 2016:

- The Prohibition of Discriminatory Tariffs for Data Services Regulations, 2016, which restrict TSPs from directly or indirectly charging discriminatory prices to consumers based on the content, applications, services or any other data being used by them. This predates the letter under reference.
- The recommendations on “Encouraging data usage in rural areas through provisioning of free data” submitted to DoT on December 19, 2016.
- The recommendations on “Regulatory framework for Internet Telephony” sent to DoT on October 24, 2017, which includes recommendations related to numbering resources, interconnection, quality of services and emergency services in the context of internet telephony services provided by TSPs.
- The recommendations on “Net Neutrality” sent to DoT on November 28, 2017. While initiating the consultation process on Net Neutrality, the Authority chose to focus

only on the core areas of Net Neutrality to prevent digression into other areas, which although important, were not central to the determination of specific issues pertaining to Net Neutrality.

- The recommendations on Privacy, Security and Ownership of Data in the Telecom Sector sent to DoT on July 16, 2018.

**1.1.2** The remaining issues are related to regulatory imbalance between Telecom Service Providers (TSPs) and OTT players providing services that can be regarded as same/similar to services offered by TSPs and issues related to economic aspects of such OTT services.

## **1.2 Overview**

**1.2.1** The commonly used definitions of OTT services are given in Chapter 2. As elaborated further at “Scope of Consultation” only a subset of OTT services are covered in this consultation.

**1.2.2** The telecom industry and the technology sector, more broadly, is fast evolving in nature and has witnessed a number of developments over the past few years and significant growth in the sector. Accessibility of OTT services is dependent upon accessibility of Internet. OTT services may be practically more convenient to use when mobile broadband connectivity is available. To serve OTT traffic, there is demand to enhance the network capacity. In turn, OTT has led to higher utilization of data network capacity. Some of the key developments and factors relevant from OTT perspective that could have a bearing on the issues to be consulted upon are :

- Internet has become accessible to significantly more number of customers than ever before and it is now available at more affordable prices.
- Recently, geographical and population coverage of mobile broadband technologies such as LTE has increased significantly. Telecom Service Providers have already launched mobile broadband services in many cities and are adding more and more cities day by day.
- Competitive data tariff plans are being offered by TSPs and data tariff is quite affordable than earlier. Unlimited Voice calls are being offered along with the data tariff plans.

- Penetration of smart phones which supports mobile broadband and provides capability to download new applications has increased significantly. It has led to higher consumption of data by the subscriber.

Economic aspects, in the context of OTT players and TSPs, is to be seen in terms of investment cycle of telecom network which is required to cater to the need of OTT traffic and return on the investment by higher utilization of the network (more details are in chapter 3).

**1.2.3** Since 2015, OTT services have witnessed a significant increase in adoption and usage. Technologies and networks for delivery of such services have also evolved during this period. The demand for examination of regulatory imbalance between OTT players and TSPs need to be taken up in this context.

## 1.3 Scope of the consultation

**1.3.1** As noted above, the aim of this consultation paper is to delve into the issues that remain pending from the reference letter from DoT, i.e. issues relating to OTT services. OTT services could theoretically be considered in the broadest sense to mean all online services (for instance, e-commerce platforms or applications offering aggregating services). However, in the background of DoT's reference letter dated March 3, 2016 and the issues already covered in the consultations that have preceded this one, **the Authority has chosen in this consultation to focus only on regulatory issues and economic concerns pertaining to such OTT services as can be regarded the same or similar to the services provided by TSPs.** Unless otherwise implied or explicitly stated in the context, the term OTT services used in this consultation paper is restricted within this scope. While analysing the issues and responding to the consultation paper, it may also be noted that current deliberations are not intended to revisit regulations or recommendations referred earlier, which have broader implications and were therefore concluded first following due consultation and diligence.

**1.3.2** Accordingly, this consultation paper seeks to analyse and discuss the implications of the growth of OTT services as can be regarded the same or similar to the services provided by TSPs, the relationship between TSPs and OTT players, whether any change is required in the current regulatory framework and the manner in which such changes should be effected, if any.

## **1.4 Structure of the consultation paper**

Chapter 2 deals with the definitions of OTT services and approaches adopted by different countries. Chapter 3 covers economic and competition perspectives regarding regulation of OTT services. Chapter 4 sets out the licensing and regulatory obligations on TSPs and OTTs and their approach to addressing relevant consumer issues. Chapter 5 deliberates on the different regulatory approaches for achieving the Authority's objectives of consumer protection and orderly growth of the sector. Chapter 6 summarizes the issues for consultation.

# Chapter 2

## Definition of OTT Services in different jurisdictions and contexts

### 2.1 Defining OTT services

**2.1.1** Presently, there is no globally accepted definition of OTT services. Governments, regulatory agencies, international agencies and other forums have adopted varying definitions depending on the context before them. OTTs offering services such as voice calls and messaging overlap with the services being offered by TSPs. However, the OTT ecosystem is large and consists of OTTs offering all kinds of services, which may also include services other than voice calls or messages. This section presents an overview of some of the definitions that have been adopted in different contexts.

**2.1.2 Definition of OTT in TRAI Consultation Paper 2015:** The Authority in its 2015 consultation paper on Regulatory Framework for OTT services defined “OTT provider” as a service provider which offers Information and Communication Technology (ICT) services, but neither operates a network nor leases network capacity from a network operator. Instead, OTT providers rely on the global internet and access network speeds (ranging from 256 kilobits for messaging to speeds in the range of Megabits (0.5 to 3) for video streaming) to reach the user, hence going “over - the - top” of a TSP’s network. Based on the kind of service they provide, there are basically three types of OTT apps:

- Messaging and voice services (communication services);
- Application ecosystems (mainly non-real time), linked to social networks, e-commerce; and
- Video/audio content.

**2.1.3 Broad definition of OTT in ITU discussions:** The leader of ITU-T Study Group 3's Rapporteur Group on OTT outlined a broad definition of OTT based on discussions at ITU:<sup>1</sup>

*“As yet there is no widely accepted definition of OTT. It is important that this is addressed by ITU, given that the definition will affect the scope of ITUs analysis of OTT. Our current discussions consider OTT to be any Internet application that may substitute or supplement traditional telecommunication services, from voice calls and text messaging to video and broadcast services.”*

**2.1.4 Classification of OTT in DoT Committee Report on Net Neutrality, 2015:**

The report of the Committee set up by DoT on net neutrality does not provide any specific definition of OTT. However, it explains that OTT applications are enabled by delayering of communications networks through Internet Protocols (IP) that permit the applications layer to function independent of the media layers. Further, the report classified OTT services into two categories:

- OTT communication services (VoIP) providing real-time person to person telecommunication services using the network infrastructure of the TSP and competing with them; and
- OTT application services such as media services (gaming), trade and commerce services (e-commerce, radio taxi, financial services), cloud services (data hosting and data management platforms or applications), social media etc using the network infrastructure of the TSP but not competing with them.

## 2.2 Definition of “OTT services” in other jurisdictions

The increasing adoption of OTT services has spurred discussions regarding appropriate regulatory framework in many parts of the world. Jurisdictions such as European Union, Indonesia etc., are deliberating upon the issue of regulating OTT services in different manners. This section provides an overview of the definitions that have been adopted in some other countries.

**2.2.1 European Union:** The draft Electronics Communication Code released by the EU Commission in September 2016 (ECC),<sup>2</sup> proposes to expand the definition of electronic

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<sup>1</sup>ITU News, Q&A: Whats the economic impact of ‘over-the-top’ (OTT) players?, available at <http://news.itu.int/impact-of-ott-players/>

<sup>2</sup>European Commission, Proposal for a Directive of the European Parliament and of the Council Establishing the European Electronic Communications Code, available at <http://eur-lex.europa.eu/resource>.

communication services to inter alia include ‘interpersonal communication services’ meaning a service that allows direct interactive interpersonal exchange of information via an electronic communications network between a finite number of people, where the persons initiating/participating in the interaction determine its recipients. This definition would therefore exclude broadcasting, general websites, content, web-hosting, gaming and unidirectional information services (such as Twitter), while it would include VoIP services, video calls, text messaging (WhatsApp, SMS, Facebook Messenger, etc.) and emails. Aggregated platforms would be classified based on whether they constitute a “minor ancillary feature that is intrinsically linked to another service”.

### **2.2.2 Body of European Regulators for Electronic Communications (BEREC):**

BEREC defines OTTs broadly as “content, a service or an application that is provided to the end user over the public Internet”.<sup>3</sup>

OTTs are classified into three categories:

- OTT-0 : which indicates OTTs that qualify as electronic communication services (ECS) under extant definitions;
- OTT-1 : which indicates OTTs that do not qualify as ECS but potentially compete with traditional TSPs; and,
- OTT-2 : a residual category of services that do not qualify as ECS and do not compete with traditional TSPs.

**2.2.3** Interestingly, BEREC notes that national regulatory authorities (NRAs) can only regulate OTT-0 within the framework of extant regulations (though their impact may be considered when analysing market situations qua regulated entities). It also highlights the uncertainty over the definition of ‘electronic communication services’ and its applicability to various new types of OTTs and therefore recommends amendment of the definition in the overall review of the telecommunications framework by the EU.

**2.2.4** Pursuant to release of the draft ECC by the European Commission, BEREC has broadly accepted the proposed expansion in definition of the term ECS to include all inter-

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[html?uri=cellar:c5ee8d55-7a56-11e6-b076-01aa75ed71a1.0001.02/D0C\\_3&format=PDF](https://cellar:c5ee8d55-7a56-11e6-b076-01aa75ed71a1.0001.02/D0C_3&format=PDF)

<sup>3</sup>BEREC released a ‘Report on OTT Services’ in January 2016, wherein they examined the nature of OTT services, their impact on the electronic communication sector and their impact on the European regulatory framework for electronic communication services. The term is therefore used to refer to a method of service provision rather than a specific service itself. Available at [https://berec.europa.eu/eng/document\\_register/subject\\_matter/berec/reports/5751-berec-report-on-ott-services](https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/5751-berec-report-on-ott-services).

personal voice communications.<sup>4</sup>

**2.2.5 Indonesia:** In 2017, Indonesia’s Ministry of Communication and Informatics Regulation released a draft ministerial regulations on OTT services. These draft regulations define OTT Services as the provision of applications and/or content services through the internet. Further, the draft regulations define “application service” to include short messages, voice call, video call, electronic mail, and online conversation (chatting/instant messaging), financial transactions service, etc. Content services, on the other hand is the provision of digital information in form of text, sound, image, animation, music, video, movie, game, or combination of part and/or all that includes streaming form or download form by using internet access service through telecommunication network operation.<sup>5</sup>

**2.2.6 United Kingdom:** UK’s telecommunication regulator, Ofcom, in its response to European Commission’s public consultation on the review of the regulatory framework for electronic communications submitted that the Commission’s definition of ECS should remain flexible, continuing to allow regulators to determine, on a case-by-case basis, whether (or not) a specific service consists wholly or mainly in the conveyance of signals on electronic communications networks.

**2.2.7 Commonwealth Telecommunication Organisation :**CTO defined OTT as online services which can potentially substitute traditional telecommunications services such as voice telephony and messaging(SMS) services. OTT services are grouped into three broad groups namely:

- Voice over IP (VoIP) for voice calling and video chatting services;
- Instant Messaging services- chat application; and
- Video and Audio Streaming services

**2.2.8** Many OTT applications provide multiple services within or using the same platform. This may lead to problem of disaggregating relevant services that need to be regulated. As an example, many services provide a voice chat or messaging function together with their main service. Google docs, as an example, is primarily an online text editor but allows users to chat with one another in real time. Similarly, many online games allow users to

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<sup>4</sup>BEREC high level opinion on the EU Commissions proposals for a review of the Electronic Communications Framework. BoR (16) 213.

<sup>5</sup>Clause 1 and 2, Draft Provision of Application Service and/or Content Through Internet(2017), available at [https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/9078/File/ICT/2017/OTT\\_Public\\_Hearing/ApplicationandContentServiceMinisterRegulationDraftFinal002.pdf](https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/9078/File/ICT/2017/OTT_Public_Hearing/ApplicationandContentServiceMinisterRegulationDraftFinal002.pdf).

speak to one another while playing. Facebook also provides multiple means of real time communication ranging from video to messaging. The multiplicity of functionality offered by such platforms may make it difficult to practically segregate communication from non-communication related OTTs. Certain jurisdictions such as the EU (in its draft Electronic Communications Code) have therefore suggested applying the test of whether the functionality forms a ‘substantial’ or ‘ancillary’ part of the service/platform.

**Q. 1. Which service(s) when provided by the OTT service provider(s) should be regarded as the same or similar to service(s) being provided by the TSPs. Please list all such OTT services with descriptions comparing it with services being provided by TSPs.**

**Q. 2. Should substitutability be treated as the primary criterion for comparison of regulatory or licensing norms applicable to TSPs and OTT service providers? Please suggest factors or aspects, with justification, which should be considered to identify and discover the extent of substitutability.**

# Chapter 3

## Economic Aspects

The telecom landscape has changed in significant ways in the recent times, especially in India. Data volume has surged, the mix of services (call, text and data) has altered, customer expectations are high, and unit prices for telecom services have fallen.

In last two years the adoption of 4G technologies and the convergence of disparate communication services into a single ip-based network has accelerated. The competitive environment has caused lowering of prices for both data and traditional services. Better data connectivity at a lower prices has in turn accelerated adoption of OTT services and fuelled demand for more data in what looks like a virtuous cycle.

OTT Services are products of the permissionless innovation that has made the Internet what it is today. These services are mainly free to consumer, but monetized through advertisement or other use of customer data, such as for development of technologies that are priced in future products. The telecom services are licensed and paid for directly by the consumer.

The Quality of Service (QoS) in OTT space largely depends upon the QoS of underlying telecom services. The former are offered as is with their consumption dependent upon consumer choice. The latter are controlled by regulation and also driven by consumer expectations.

To ensure its orderly growth, there is a need for sustainable investment in the telecom sector. This chapter explores the relevant issues from an economic perspective.

## 3.1 The telecommunication services market in India

Reports had suggested that India's Internet traffic will grow fourfold from 2016 to 2021, at a compound annual growth rate of 32 percent<sup>1</sup>. It is seen that the total wireless data usage in India has already increased from 4.6 exabytes during year 2016 to 20 exabytes during year 2017<sup>2</sup>.

The growth in OTT services and the consequent increase in data traffic is also growth for TSP's business. However, average price per GB has sharply declined from the average of Rs 75.57 per GB in the year 2016 to Rs 12.06 per GB in the year 2018<sup>3</sup>.

TSPs may be required to invest in telecom infrastructure to enhance traffic handling capabilities and to cater to growing demand of data traffic. Following paragraphs deliberate upon requirements for such investment and the factors that may govern these requirements.

## 3.2 Investment in infrastructure for the growing data traffic

To meet increasing customer demand (in this case for data), a business may invest in expanding capacity. Such a decision is usually based on cost-benefit analysis of options by the business itself. Alternatively, such a decision may be forced upon a sector to maintain the Quality of Service (QoS) mandated through regulations or license conditions.

**3.2.1** Network traffic handling capability consists of two parts: one part relates to payload or the typical volume of data consumed by the customer, and the other part to control and management of profile of customers, their mobility and sessions to deliver services. Capacity enhancements for payload part may be dependent upon types of services such as unicast, multicast or broadcast. Network may cater to more traffic either by getting bigger in size or by upgrading to new, more efficient technologies, such as IP multi cast or caching to handle traffic in an efficient manner. In the actual case, of course, they would follow a combination of both approaches.

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<sup>1</sup>Cisco, India - 2021 Forecast Highlights, available at [https://www.cisco.com/c/dam/m/en\\_us/solutions/service-provider/vni-forecast-highlights/pdf/India\\_2021\\_Forecast\\_Highlights.pdf](https://www.cisco.com/c/dam/m/en_us/solutions/service-provider/vni-forecast-highlights/pdf/India_2021_Forecast_Highlights.pdf).

<sup>2</sup>TRAI, Yearly Performance Indicators of Indian Telecom Sector (Second Edition) 2017, available at <http://www.trai.gov.in/sites/default/files/YPIRReport04052018.pdf>

<sup>3</sup><https://www.trai.gov.in/sites/default/files/PIRJune03102018.pdf>.

**3.2.2** Another part of network traffic handling capability is related to control and management of network resources, including the requirements for signalling. These requirements vary for real time services, such as conversational voice or video; near real time services such as streaming audio or video; non real time services such as file download or service enablers such as presence, location, etc. Efficient utilization of control resources depends upon typical size of IP packets required by the services. To cater to increased load on control and management of resources, one way may be to simply increase size of currently deployed resources or through other technological solutions, such as those included in 5G technologies (context awareness, content awareness, information centric networking, etc). These capabilities may handle same volume of data traffic more efficiently. Solutions developed in 5G technologies to scale up to handle IoT traffic is one example.

**3.2.3** In mobile networks, traffic varies for several reasons, such as number of subscriptions, penetration of services, usage patterns and mobility of the customers. The time variation in traffic at a particular location influences the gap between peak and average demand of traffic. This ratio of peak to average is also dependent upon type of service. Networks are engineered considering peak demands of traffic while total consumption of data is related to the average demand. The capacity of nodes and pipes may be provisioned based on the absolute peak traffic or the 2nd or 3rd peaks of demands, which would lead to some rejection of traffic.

Network capacity planning needs to consider these aspects in design and deployment, which adds to the lead time in enhancing capacity. OTT services also add to the uncertainty in anticipating and predicting the demand as TSPs remain agnostic to type of traffic. With convergence of voice and data services and the variability in peak demands, it may be necessary to introduce adaptive technologies such as Software Defined Networks (SDN) and Network Function Virtualization (NFV). TSPs may need to understand the requirements and watch closely the types of services offered by OTT players to make appropriate investment in their own network infrastructure.

**3.2.4** Convergence of delivery network for voice and data into single Internet Protocol (IP) based network is driving the telecom sector from circuit switched network to VoLTE for voice services. Reports suggest that in FY17, of the total 4G phone shipments to India, 45 percent comprised VoLTE phones<sup>4</sup>. These phones can carry voice in the form of IP traffic or data in the access network. This trend may help the TSP invest in single type of network for voice and data, which is also advantageous where peak demand of data and voice traffic is time

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<sup>4</sup>Rashi Varshney, Share of VoLTE phones in 4G handset sales rises in Financial Express available at <https://bit.ly/2q1Aq0D>.

incoherent. Moreover, on October 24, 2017, the Authority submitted recommendations on Regulatory framework for Internet Telephony which was accepted by DoT on June 19, 2018. The DoT have issued amendment to the Unified Access Service License (UASL) allowing TSPs to offer internet telephony, or voice over internet protocol (VoIP) service, even from applications developed by TSPs as long as the service is untethered from the underlying network.<sup>5</sup>

**3.2.5** New technologies such as LTE have come up with many new capabilities and features to serve real-time services on IP networks by utilizing network resources in an optimal manner. However, such optimal utilization of resources requires that network be aware of the type of services, and behave accordingly. For example, in case of VoLTE services, LTE network may be aware of and assign or allocate resources in a manner which is more suitable for voice services. Dealing with voice services simply as a form of data creates more stress than required. Data services have traditionally seen traffic in bursts and asymmetrically between downlink and uplink. Mechanism in telecom Networks for assigning and allocating resource for data traffic were designed to handle such kind of traffic. In case of OTT, networks are usually not aware of about the type of services and cannot behave differently for different technical QoS requirement. 5G technologies will cater to more varieties of traffic such as IoT, augmented and virtual reality and may require smarter ways to deal with it. For that purpose, networks may not be just dumb pipes for Internet traffic and may require to serve Internet traffic with optimal utilization of resources by exchanging critical information as part of signalling.

**3.2.6** In summary, TSPs shall need to make investments, from time to time, in the telecom infrastructure to handle increase in demand of data traffic. This may be done either by enhancing capacity of networks or upgrading their networks with latest technologies or a combination of both. Requirement of investments may be dependent upon nature and variety of traffic, types and characteristics of services being delivered. OTT traffic may be difficult to predict and ramp up quickly.

### **3.3 Revenue Opportunities for TSPs due to growth in data traffic**

The increase in OTT services has fuelled an increase in data consumption, leading to more revenue flow from use of data. This shift in the revenue streams calibrated to the demand/consumption of data is being observed worldwide. A GSMA report on the Internet

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<sup>5</sup>Available at <https://bit.ly/2thfjtF>.

value chain notes that revenue from traditional voice services are declining globally for both fixed and mobile providers as price and volumes decrease, replaced by new forms of communication services, most of them internet based. In some cases this is reflected in tariff structures; in other cases it is visible in customer buying and usage patterns. The report predicts that the ongoing decline in revenues associated with TSP voice services, combined with this modest growth in internet connectivity revenues, means that the majority of global telecommunications operators revenues in both the fixed and mobile sectors will come from internet-related services by 2020<sup>6</sup>.

**3.3.1** Shift of voice calls from circuit switched network to IP based networks has resulted in TSPs charging consumers for data services only, while unlimited voice calls are offered as part of bundled tariff packages in a trend that is also likely to continue. In such a scenario, voice calls provided by TSPs using IP networks and voice calls provided by OTT players using Internet might be comparable from charging perspective as both charged on basis of data consumed. In this context, it is unclear whether there is a price arbitrage between OTT and traditional services.

**3.3.2** The increase in video traffic may be a major component of current revenue stream for the TSPs. The share of video in mobile data traffic over past years has increased substantially. According to the Indian Media and Entertainment Report 2017 by KPMG India and the Federation of Indian Chambers of Commerce and Industry (FICCI), between 2016 and 2021, mobile video traffic in India is expected to grow at a compound annual growth rate of 68% and the number of video capable devices and connections is expected to grow 2.2 times, crossing 800 million in number. Video is expected to grow to 78% of the overall mobile data traffic by 2021<sup>7</sup>. For delivering video traffic, multicast and broadcast IP technologies solutions may be the optimal solution, consuming less network resource compared to unicast delivery to individual customers. Increased mobile internet penetration, affordable data and the availability of low cost smartphones and video capable devices has led to a rapid increase in OTT messaging, voice calls and video calls.

**3.3.3 Pricing of Services in Telecom Sector** The telecom access networks must provide an acceptable QoS to all its customers and equal treatment to all services that depend upon it. Theoretically, therefore, they are mandated to invest in their own expansion, even

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<sup>6</sup>GSMA, The Internet Value Chain- A study on the economics of the internet (May 2016) p. 20, available at [https://www.gsma.com/publicpolicy/wp-content/uploads/2016/05/GSMA\\_The-internet-Value-ChainWEB.pdf](https://www.gsma.com/publicpolicy/wp-content/uploads/2016/05/GSMA_The-internet-Value-ChainWEB.pdf).

<sup>7</sup>KPMG India and FICCI, Media for the masses: The promise unfolds (2017), available at <https://assets.kpmg.com/content/dam/kpmg/in/pdf/2017/04/FICCI-Frames-2017.pdf>

when such expansion benefits OTT services that directly compete with telecom networks offerings to its customers, e.g. voice calls and text messaging.

By itself this may not be a problem because the networks are free to determine the price of offered services. If all services are considered data (due to convergence in telecommunication), the telecom service providers are only required to fix a price for their data services.

Under conditions of perfect competition in the market for access services, the price of data would be determined by the intersection of demand and supply curves. The point where they intersect is known as the equilibrium point, and it determines not only the equilibrium price, but also the quantity of data services that are demanded and supplied.

**3.3.4 Implication of uniform price for all data** The mix of services consumed by different customers, however, is not the same. And as we have seen earlier, neither is the load on network infrastructure a direct function of data transport. Therefore, one price for all data has implications that need to be considered.

Charging in proportion to consumed data has different impact on consumers with low and high usage pattern. That's because they don't use the same services. Elasticity of demand is specific to a service and so is the network load per unit data, though the TSP charges the same for all data. An average rate discourages those users who may have consumed more if offered a lower rate, while at the same time wasting resources on another user who gets something cheaper than what he would agree to pay.

On the production side, all data doesn't cost the same: demand peaks and nature of service impacts the cost, for which reasons have already been given earlier. Maintaining QoS under extreme conditions could cause significant increase in price.

**3.3.5** Obligations such as license fee, spectrum usage charges, taxes, etc., described in detail in chapter 4, affect profits to TSPs. The burden of these levies on non-telecom services further restricts the TSPs revenue. For example, the DoT, on March 23, 2017, notified that subscribers can purchase digital content through their prepaid account balance or using the post-paid bill payment mechanism up to a maximum value of Rs 20,000. However, the notification clarifies that such purchase of digital content shall not be treated as pass-through revenue for the purpose of computing Adjusted Gross Revenue(AGR) used for calculating license fee and spectrum usage charges.

**3.3.6 DoT Committee's view on revenue impact for TSPs** The DoT committee on Net Neutrality in its report, published in May, 2015 noted that over the years, consumers have

shifted from conventional messaging services and international calling (provided by TSPs) to OTT based services owing to substantially lower costs of communication. Although this did affect the revenue of TSPs, the effect was not appreciable enough to disrupt the business model of TSPs. In terms of revenue, international voice calls contributed 3.45% of the adjusted gross revenues (AGR) for the Indian telecom industry as of September 2014. The report highlighted that voice revenues contribute approximately three-fourths of total TSP revenues. As per the report, OTT domestic voice call (local plus national) communication services thus have the potential of significantly disrupting existing revenue models of TSPs. The committee recommended that:

- Over-The-Top (OTT) application services should be actively encouraged and any impediments in expansion and growth of OTT application services should be removed.
- Specific OTT communication services dealing with messaging should not be interfered with through regulatory instruments. For OTT application services, there is no case for prescribing regulatory oversight similar to conventional communication services.
- In case of Voice Over Internet Protocol (VoIP) OTT communication services, there exists a regulatory arbitrage, wherein such services also bypass the existing licensing and regulatory regime creating a non-level playing field between TSPs and OTT providers both competing for the same service provision. This aspect is under deliberation in other countries as well. European Commission has made a policy pronouncement on May 6, 2015 for a Digital Single Market Strategy for Europe arguing, inter alia, that there is a need to review telecom rules to look at ways of ensuring a level playing field for players in the communications market to the extent that they provide competing services and also for meeting the long term connectivity needs of the European Union.
- Under existing telecom licensing conditions, Internet Telephony is permitted under restricted conditions. However, pricing arbitrage of OTT domestic voice communication services has the potential of significantly disrupting existing telecom revenue models. This may decelerate the pace of telecom infrastructure expansion, whereas the need is to boost investment in telecom infrastructure to increase broadband reach, speeds, bandwidth capacity and enhanced quality of service. With complete transition of Telecom Network to IP Network, the pricing arbitrage between voice communications by TSPs and OTT service providers would be substantially reduced. The key public policy imperative is to manage the transition from voice-centric to data-centric networks with the concomitant change in technology.
- The existence of a regulatory arbitrage in addition to the pricing arbitrage adds a degree of complexity that requires a graduated and calibrated public policy response

to bring about a level playing field. In case of OTT VoIP international calling services, a liberal approach may be adopted. However, in case of domestic calls (local and national), communication services by TSPs and OTT communication services may be treated similarly from a regulatory angle for the present. The nature of regulatory similarity, the calibration of regulatory response and its phasing can be appropriately determined after public consultations and TRAI's recommendations to this effect.

The above facts and figures quoted in the report are based on data of year 2014, since then situation may have changed significantly.

### **3.4 Fair and reasonable opportunities to all market players**

Level playing field for all market players is an important part of requirements for any regulatory framework. It is argued that OTT players do not have licensing and regulatory obligations while TSPs incur license fees and have to meet regulatory obligations as detailed in chapter 4. It is also argued that OTT players have opportunity to earn revenue from alternative sources using data of their subscribers and can offer services which may be prohibited for TSPs. Following paragraphs highlight some of these issues.

**3.4.1** According to reports, the digital advertising market in India was estimated at INR 77 billion in 2016, registering a CAGR of 28% from 2011-2016. While search and display retains the largest share of the digital ad pie at 45%, the robust growth has been driven by the now ubiquitous mobile phone, with social media and video advertising accounting for 25-28% and 17-20% of the overall digital ad revenues in 2016 respectively.<sup>8</sup> TSPs do collect charges from the customers for the consumption of data either on account of usage of OTT services or on account of voice services offered by them. But due to regulatory constraints, they may not be allowed to generate revenues from such other sources as the OTT players.

**3.4.2** A report on the Internet value chain highlights that some of the largest OTT players are able to exploit scale and growing revenue streams to build stronger networks of services and use it to entrench their positions, leading to survival of the largest. The report notes that since 2008, an increasing concentration of market power has been observed as many US-based OTT players set out to expand globally. Consistent with the characteristics of a maturing segment and helped by the winner-takes-all nature of many internet businesses, the large

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<sup>8</sup>Economic Times, Digital Consumption Realizing the Data Dividend, available at <https://economictimes.indiatimes.com/articleshow/59158088.cms>

OTT players are able to maintain their positions and there is less turnover and dynamism than may be expected. The largest players in any segment are taking full advantage of the inherent network and scale effects of the internet to build their business and strengthen their position and using this to deliver higher returns and profit margins.<sup>9</sup>

**3.4.3** The rise of big multinational OTT players coupled with strong network effects in this space has also lead to concerns pertaining to abuse of dominance. Non-interoperability among different OTT services causes network effect with lock-in. In such situations, an OTT service user cannot exit from a particular service and opt for another, which introduces stickiness that creates a barrier to competition. At present, there are no regulations for interoperability between OTT platforms and large OTT players exploit this lacuna by switching off access to rival companies on devices and operating systems.

**3.4.4** Any impact on revenue streams to TSPs from growth of traffic due to OTT services on account of regulatory imbalances, if any, may require a fix, while other reasons of impact may be left to the market to deal with. The growth of OTT services has undeniably led to tremendous social and economic benefits. These benefits range from ease of communication among persons situated in different parts of the world, access to information, entertainment and business opportunities, improved transparency and e-governance solutions. In all this, the TSPs networks have served as the backbone for enabling access to the services. At the same time, TSPs themselves have also benefited from increased data consumption due to the proliferation of OTT services. With amendment to the unified access service licence TSPs are now allowed to offer internet telephony, or VoIP service, from applications developed by TSPs which is untethered from the underlying network.

**Q. 3. Whether regulatory or licensing imbalance is impacting infusion of investments in the telecom networks especially required from time to time for network capacity expansions and technology upgradations? If yes, how OTT service providers may participate in infusing investment in the telecom networks? Please justify your answer with reasons.**

**Q. 4. Would inter-operability among OTT services and also inter-operatbilty of their services with TSPs services promote competition and benefit the users? What measures may be taken, if any, to promote such competition? Please justify your answer with reasons.**

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<sup>9</sup>Ibid, p. 37,38.

# Chapter 4

## Factors relating to the regulatory framework

This chapter deals with the licensing and regulatory obligations of TSPs for providing communication services which are also being provided by OTT players.

### 4.1 License conditions imposed on TSPs

TSPs are regulated by a number of laws, including the Indian Telegraph Act, 1885 (Telegraph Act), TRAI Act, 1997, the terms of the license agreement entered into between the TSP and the Government and the rules and regulations framed by the Government and TRAI from time to time. This section outlines some of the licensing obligations that are applicable to TSPs.

**4.1.1 Lawful Interception** The License Agreements require Licensee to ensure that the traffic passing through the its network can be monitored in the network of the Licensee and ensure connectivity upto the nearest point of presence of Multi Packet Label Switching network of CMS at their own cost for interception and monitoring of traffic.<sup>1</sup>

**4.1.2 Privacy and security** TSPs are required to “ensure the protection of privacy of communication” and to ensure that unauthorized interception of message does not take place.<sup>2</sup> The license agreement also restricts licensees from employing bulk encryption equipment in its network<sup>3</sup> and mandates the ensuring of network security.<sup>4</sup>

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<sup>1</sup>Cl 8 of the Unified License Agreement

<sup>2</sup>Cl 37 of the Unified License Agreement and Cl 41 of the Unified Access Service License Agreement

<sup>3</sup>Cl 37.1 of the Unified License Agreement

<sup>4</sup>Cl 41 of the Unified Access Service License Agreement and Cl 39 of the Unified License Agreement

**4.1.3 Roll-out obligations** As per the license conditions, TSPs are required to roll out specific network services within specified timelines (Cl 34 of Unified Access License Agreement).

**4.1.4 Identification of callers** Calling Line Identification (CLI) is to be provided by TSP and can not be tampered (Cl 39.21 of the Unified License and Cl 41.18 of the Unified Access Service License Agreement).

**4.1.5 Customer Acquisition Form** The Licensee is under an obligation to ensure adequate verification of each and every customer before enrolling him as a subscriber, by checking the bonafide of the customer, verifying details as per Customer Acquisition Form (CAF) prescribed from time to time and physical inspection of the site.<sup>5</sup>

**4.1.6 Customer Grievance Redressal** The license conditions require TSPs to be responsive to the complaints lodged by his subscribers, rectify the anomalies within the MTTR (mean time to restore) specified and maintain the history sheets for each installation, statistics and analysis on the overall maintenance status.<sup>6</sup> Further TSPs are also mandated to notify in writing to its customers, all the policy and arrangements with respect to repair, fault rectification, compensation or refunds.<sup>7</sup>

**4.1.7 Network interconnection** TSPs are required to provide interconnection between the networks of different service provider for carrying circuit switched traffic as per national standards of CCS No.7 issued from time to time by the Telecom Engineering Centre and are under an obligation to abide by the IUC charges set out under the TRAI Interconnection Regulations, 2018.<sup>8</sup>

**4.1.8 Merger conditions** The license conditions require that whenever amalgamation or restructuring i.e. merger or demerger is sanctioned and approved by the High Court or Tribunal, scheme of amalgamation or restructuring shall be effective only after the written approval of the licensor for transfer/merger of Licenses.<sup>9</sup>

**4.1.9 Emergency services** TSPs are required to provide independently or through mutually agreed commercial arrangements with other TSPs all public utility services as well as

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<sup>5</sup>Cl 39 of the UL

<sup>6</sup>Cl 29.3 of the UL

<sup>7</sup>Cl 30.9 of the UL

<sup>8</sup>Cl 27 of the UL and Cl 26 of the UASL

<sup>9</sup>Cl 6.4 (ib) of the Unified License Agreement

emergency services including toll free services like police, fire, ambulance.<sup>10</sup> These emergency numbers are specified by the DoT under the National Numbering Plan (NNP) from time to time.<sup>11</sup> Further TSPs are required to follow prescribed SOP for disasters/emergency and facilitate the priority routing of emergency/public utility or any other type of user calls as per guidelines/ directions.<sup>12</sup>

**4.1.10 Entry/ Exit obligations** : TSPs are required to have a minimum paid up equity capital and minimum net-worth for each opted service.<sup>13</sup> In case a TSP wants to surrender its license, it may surrender the license or any service authorization under this license, by giving notice of at least 60 Calendar days in advance. In that case it shall also notify all its subscribers by sending a 30 Calendar days notice to each subscriber. The TSP shall pay all fees payable by it till the date on which the surrender of the license/service authorization becomes effective.<sup>14</sup> Further, the amount of spectrum that can be held by any TSP in a given band within a Licensed Service Area (LSA) is limited to 50%. Also, the total amount of spectrum that can be held by an operator across all bands in an LSA is set to 25%. These restrictions have also been incorporated into the Mergers and Acquisitions Guidelines of 2014 (M&A Guidelines) as prescribed by the DoT and affect the manner in which players can exit the telecommunication space by selling spectrum.

## 4.2 Regulatory obligations on TSPs

**4.2.1 Requirements under the Telegraph Act** The following are some of the requirements applicable to TSPs under the provisions of the Telegraph Act.

- *Interception*: The Telegraph Act puts a general obligation on service providers to prevent unauthorized interception of messages and to maintain secrecy. The law also restricts any 'telegraph officer', which includes any person employed by a license holder, from altering, intercepting or divulging the contents of any message, except as required by law (S. 26). Designated public officials have the right to intercept telephonic communications under identified circumstances (S. 5) and as per rules framed under the Telegraph Act.
- *Universal service obligation*: The Telegraph Act requires licensed TSPs to provide access to basic telegraph services to people in the rural and remote areas at affordable and

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<sup>10</sup>Cl 4.4 of the Unified License

<sup>11</sup>Available at <http://www.dot.gov.in/sites/default/files/nnp2003.pdf>

<sup>12</sup>Cl 7 of the UL

<sup>13</sup>Cl 1.5 and Cl 1.6 of the Unified License Agreement

<sup>14</sup>Cl 10.3 of Unified License

reasonable prices. Further, the Indian Telegraph (Amendment) Rules, 2004 for Universal Service Obligation Fund (USOF) set out the services which can be supported by the USOF. These services include provision of public telecom and information services, provision of household telephones in rural and remote areas, provision of additional rural community phones in areas after achieving the target of one Village Public Telephone in every revenue village etc. In this regard, TSPs are required to pay a Universal Access Levy of 5% of their AGR, as part of their license fee.<sup>15</sup>

**4.2.2 Requirements under TRAI's regulations:** The following are some of the key obligations applicable to TSPs under the regulations framed by TRAI.

- **Interconnection:** TSPs are mandated to pay origination charge, carriage charge and termination charge that are specified under the The Telecommunication Interconnection Usage Charges (IUC) Regulations from time to time.
- **Billing & Metering (Code of Practice):** TSPs are also required to follow the Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulation 2006.
- **Tariff protection:** The Telecommunication Tariff Orders requires TSPs to abide by obligations pertaining to transparency, continuity, billing methods etc. in tariffs.
- **Quality of Services (QoS):** TSPs are required to meet the QoS benchmarks notified by the Authority. In case of non compliance, TSPs are liable to pay financial disincentives.
- **Grievance redress:** Under the Telecom Consumers Complaint Redressal Regulations, 2012 , each TSP is required to have a complaint resolution centre which must resolve complaints within the time frame specified by TRAI. Consumers can contact this center on a toll free number to register their complaints.
- **Unsolicited Customer Communication (UCC):** Under the Telecom Commercial Communication Customer Preference Regulation, 2010, a Customer Preference Registration Facility is to be established by TSPs, to facilitate registration of preference from customers who do not wish to receive UCC or wish to receive messages for a preferred category. The regulations impose financial disincentives for non-compliance of regulatory provisions by the TSPs. Recently, new framework for UCC regulations have been introduced under the Telecom Commercial Communication Customer Preference Regulation, 2018.

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<sup>15</sup>Chapter III, Cl 18.2.1 of the Unified License Agreement

- **Mobile number portability (MNP):** Telecommunication Mobile Number Portability regulations give customers the freedom to port to another TSP without notifying any person or telecom user about the change since the phone number is retained by the customer. TSPs have to maintain a database and route the calls meant for customer to its current serving TSP. This regulation helps to make the market competitive and encourage TSPs to provide better QoS and offer attractive tariff plans to retain customers.

### 4.3 Information Technology Act, 2000 (IT Act)

The IT Act and the rules framed under it place certain regulatory obligations on body corporates or intermediaries which includes TSPs and OTT services that can be regarded as same/similar to the services provides by TSPs. They are as follows:

- **Lawful Interception obligations:** Section 69 of the IT Act gives the power to the Government to intercept, monitor or decrypt any computer resource. This provision also lays down a penalty of imprisonment upto seven years for an intermediary who does not assist the government in interception or monitoring. Further Section 69B also empowers the Central Government to monitor and collect traffic data or information through any computer resource for cyber security.
- **Takedown obligations:** Section 69A of the IT Act empowers the Central Government to issue directions to any intermediary for blocking for public access of any information in any computer resource. The provision also prescribes a punishment of imprisonment upto seven years for any intermediary who fails to comply with the direction issued under it.
- **Privacy and cybersecurity obligation:** Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information), 2011 requires every service provider to outline a detailed privacy policy that is applicable to all users, that articulates nature of data collected, type of data that is collected and for what purpose including retention and further use. Additionally, India has consumer protection laws, financial regulations, competition law that ensures different aspects of user interest is protected. For example, as per section 43A of IT (Amendment) Act, 2008, only "Sensitive Personal Data or Information (SPDI) is to be protected using "Reasonable Security Practices" by "Body Corporates". Further, Section 72 A of the IT Act provides for adequate punishment for disclosure of information in breach of lawful contract.

- **Intermediary liability:** Rule 3(7) of the Information Technology (Intermediaries Guidelines), 2011 lays down a positive obligation on part of intermediaries like Internet Platforms and Services to comply with all lawful orders and render assistance to government agencies that are lawfully authorized.<sup>16</sup> Section 79 of the IT Act states that intermediaries are exempted from liability for third party information or communication links made available or hosted by them subject to certain conditions. This includes the condition that the intermediary must observe due diligence while discharging its functions. However, this exemption does not apply if (i) the intermediary has conspired or abetted or aided or induced the commission of an unlawful act; or (ii) upon receiving actual knowledge, or on being notified by the appropriate agency that any information, data or communication link controlled by the intermediary is being used to commit the unlawful act, the intermediary fails to expeditiously remove or disable access to that material.<sup>17</sup>
- **Encryption obligations:** Section 69 of the IT Act requires entities to abide by any order to decrypt a computer resource. Section 84 A allows the Government to prescribe suitable modes or methods of encryption for promotion of e-commerce and e-governance in the country.

## 4.4 Fees and applicable taxes

At present, TSPs are required to pay a one time non-refundable entry fee prior to signing of the license agreement.<sup>18</sup> Additionally, TSPs are also under an obligation to pay an annual license fee which is a percentage of the Adjusted Gross Revenue (AGR). Under the Unified License Agreement, The license fee currently is 8% of the AGR. Further, in case the TSPs obtain spectrum, they also pay spectrum related charges, including payment for allotment and use of spectrum, as per provisions specified in the relevant NIA document of the auction of spectrum or conditions of spectrum allotment/ LoI/ directions/ instructions of the Licensor/ WPC Wing in this regard.<sup>19</sup>

## 4.5 OTTs’ approach to addressing consumer issues

OTT players may, without license, provide the same services as provided by TSPs. They do not require permissions from any regulatory body or from TSPs. There is no requirement

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<sup>16</sup>An intermediary “with respect to any particular electronic records, means any person who on behalf of another person receives, stores or transmits that record or provides any service with respect to that record.”

<sup>17</sup>Section 79(3) of the IT Act.

<sup>18</sup>Cl 18.1 of the UASL

<sup>19</sup>Cl 18.3 of the Unified License Agreement

of interconnection or for any commercial agreements between OTT providers and TSPs. They are also not bound by any regulatory obligations to address consumer concerns such as quality of service, interconnection and unsolicited communication, etc. Currently, these concerns are being addressed through a self-regulatory or market driven approach. The following are some examples of the areas in which such protections are being offered by OTT providers.

- Unsolicited Commercial Communications (UCC): OTT players usually provide an option to report and block unwanted messages and calls. OTT players may have their own mechanism to block communications to individuals who have reported against it. It is not known how OTT players deal with cases of multiple complaints against same number. It is also not known what remedial measures are available to person who is victimized due to motivated campaign against an individual. There are no statistics available in the public domain about the effectiveness of mechanism adopted by them.
- Quality of service: Some OTT service provider take periodic feedback from the customer about the quality of voice calls. However, objective ways to assess QoS by such OTTs are not known, if any. There is no mandatory obligation on OTT providers if QoS is below the expected level.
- Grievance redressal: Most OTT players facilitate users to report their grievances through their app. However, it is not known what mechanisms are available to escalate issue to a higher level in the organization or what are the options available with user to appeal, if he is not satisfied with the resolution of a grievance. There are no reports or statistics available to examine and analyse the functioning of OTT provider in this area.

## **4.6 Security issues related to provision of OTT services**

OTT services are offering communication with encryption. At the time of subscription they are authenticating via OTP. These authentications might be done only at the time of installation and activation of service. No further details about the user may be available with OTT players. It has been observed that sometimes this can lead to security related issues such as no trace of the user or interception of content of communication in case of misuse. Further, this may help miscreants to exploit OTT services for spreading rumour without getting traced. Security agencies may feel helpless to control such situations.

## 4.7 Jurisdiction related issues

**4.7.1** OTT services store, process and transfer data belonging to citizens or companies of one country in another country or countries. They usually collect data pertaining to call detail records and demographic details of users. This transfer of data across national borders creates issues. First, it creates ambiguity regarding the territorial application of data protection norms i.e. countries are unsure if the privacy of their citizens data is adequately protected when it is hosted in other countries. Secondly, this technology has made it difficult for law enforcement authorities to investigate or gather evidence in criminal and taxation matters, as evidence data may be hosted in a different jurisdiction from where the offence was committed. OTTs situated in other jurisdictions may refuse to comply with request for cooperation or information sharing. Lastly, it might be difficult to obtain information despite the existence of mutual legal assistance treaties (MLAT) with some countries as the MLAT process is fraught with inefficiencies and delays.<sup>20</sup> Countries across the world have sought to evolve a range of solutions to tackle this issue such as:

1. Data localisation: Data localisation refers to measures that specifically inhibit the transfer of data across countries and may include regulations prohibiting information from being sent offshore, or requiring prior consent of the data subject before information is transmitted across national borders, or requiring backup of such information to be stored domestically, and even the levying of a tax on the export of data.<sup>21</sup>
2. Treaties under CLOUD Act: The CLOUD Act creates a framework for the US government to access data held by technology companies worldwide. The Act creates a framework for new bilateral agreements with foreign governments for cross-border data requests. Under these bilateral agreements, the US and participating foreign governments would remove legal restrictions that otherwise prohibit technology providers from complying with the other country's legal requests.<sup>22</sup>
3. Budapest Convention: Among other things, the Budapest Convention provides for procedure to make the investigation of cybercrime and the securing of e-evidence in relation to any crime more effective, and international police and judicial cooperation

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<sup>20</sup>Andrew K Woods, Data Beyond Borders: Mutual Legal Assistance in the Internet Age, available at <https://bit.ly/1zyXqGq>.

<sup>21</sup>Anupam Chander and Uyen P. Le, Data Nationalism, Emory Law Journal Vol. 64:677 available at [http://law.emory.edu/elj/\\_documents/volumes/64/3/articles/chander-le.pdf](http://law.emory.edu/elj/_documents/volumes/64/3/articles/chander-le.pdf).

<sup>22</sup>Covington, CLOUD Act Creates New Framework for Cross-Border Data Access, available at <https://www.insideprivacy.com/cloud-computing/cloud-act-creates-new-framework-for-cross-border-data-access/>

on cybercrime and e-evidence. However, foreign policy considerations have prevented India's accession to the convention so far. <sup>23</sup>

**Q. 5. Are there issues related to lawful interception of OTT communication that are required to be resolved in the interest of national security or any other safeguards that need to be instituted? Should the responsibilities of OTT service providers and TSPs be separated? Please provide suggestions with justifications.**

**Q. 6. Should there be provisions for emergency services to be made accessible via OTT platforms at par with the requirements prescribed for telecom service providers? Please provide suggestions with justification.**

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<sup>23</sup>Alexander Seger, India and the Budapest Convention: Why not?, available at <http://www.orfonline.org/expert-speaks/india-and-the-budapest-convention-why-not/>

# Chapter 5

## Possible regulatory and market approaches

If a regulatory imbalance is found to exist between TSPs and OTT players providing services that can be regarded as being the same/ similar to the services provided by TSPs, the next logical step would be to examine whether there is a need for any regulatory intervention to address that imbalance. On one hand, it is possible that the qualitative differences in the nature of services being provided by these different stakeholders may justify the application of different regulatory frameworks. On the other, it could also be found that such OTT services are offering communication services that are directly substitutable with the services provided by regulated entities and therefore need to be bound by similar regulatory requirements. This section discusses some possible options that may be considered in this regard.

### 5.1 Types of approaches

**5.1.1** One approach could be to subject OTT players providing services that can be regarded as being the same/ similar to the services provided by TSPs to licensing/ registration obligations or brought under some kind of regulatory framework. Regulators in some jurisdictions are considering this approach:

- The EU has been in the process of revising its ECS sectoral regulation. As Per the European Commissions provisional proposals for the revision of the framework, it is expected that:
  - Efforts will be made to achieve a ‘level playing field and focused end user protection’ through a “targeted mix of deregulation and application of a limited set of sector specific rules to OTT services”;

- The definition of ECS will be expanded to include various digital communication services. The proposed definition would exclude broadcasting, websites, content, webhosting, gaming and unidirectional information services (such as Twitter), while it would include VOIP services, video calls, text messaging (Whatsapp, SMS, FB messenger etc) and emails. Aggregated platforms would be classified based on their ‘substantial functionality’.
  - Certain obligations may be imposed on all providers falling within the scope of the new definition of ECS including emergency related obligations, privacy obligations, portability of numbers, interoperability, porting and security.
- Ofcom, in its response to European Commission’s public consultation on the review of the regulatory framework for electronic communications submitted that it would be disproportionate to automatically extend the scope of the framework to incorporate all OTT services.<sup>1</sup> Ofcom is of the view that regulators should be able to consider the case for extending individual regulatory obligations to individual OTT services or service types based on criteria such as their substitutability for traditional electronic communication services. Any new regulatory obligations imposed on OTTs should be proportionate, and continue to support innovation and market entry. Ofcom has previously considered OTTs and their impact while examining various regulatory issues. In its Mobile Call Termination Market Review to assess competition in the provision of services, Ofcom provisionally concluded that the use of OTT applications was unlikely to be a sufficiently close substitute for calls to a mobile number at the time of the review.<sup>2</sup> In 2008, Ofcom came up with a regulation that treated VoIP service providers, who enable their users to make calls to the PSTN, as traditional service providers. This regulation required VoIP service providers to provide the ability to make 999 and 112 emergency calls. The regulation did however exclude VoIP service providers which use peer-to-peer services to make and receive voice calls over the Internet only, usually within the same application community.<sup>3</sup>
  - ECC Report 273 on E.164 Numbering and Over-The-Top (OTT) Communications Services released on 30th May, 2018 considers the OTT communication services (VoIP, Instant messaging, etc.) that use E.164 numbers for call/message routing to/from circuit-switched networks (e.g. PSTN/ISDN), authentication, billing, and/or identification. These services are categorised as OTT-0 and OTT-1 communication services

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<sup>1</sup>Ofcom, Response to Commission public consultation on the review of the regulatory framework, 2015

<sup>2</sup>Ofcom, Mobile Call Termination Market Review 2018-2021, available at [https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0022/111397/draft-statement-mobile-call-termination.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0022/111397/draft-statement-mobile-call-termination.pdf)

<sup>3</sup>Ofcom, Regulation of VoIP Services: Access to the Emergency Services, available at [https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0023/42926/voipstatement.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0023/42926/voipstatement.pdf)

by BEREC. The report highlighted that certain OTT services assign E.164 numbers to end users to enable access to and from the PSTN/ISDN other OTT services use E.164 numbers to generate unique identifiers for their user community. The E.164 numbers used to generate unique identifiers are already assigned to end-users by their respective service providers. They use E.164 numbers for identification and authorisation over circuit-switched networks. The report concluded that OTT providers which require national E.164 numbers for interconnection to circuit-switched networks should have the right to apply for and be assigned national numbering resources, provided they meet national eligibility criteria and regulatory obligations. These include e.g.:

- Consumer protection rules and end-user rights (including number portability) should apply to OTT services that use national E.164 numbers;
  - Any OTT service that uses or connects to services using numbers from national and/or international numbering plans should support access to emergency services numbers.
  - OTT providers should be required to comply with law enforcement requirements in accordance with relevant national and European legislation.
  - In order to maintain integrity and trust in E.164 numbers and CLI, OTT providers should implement validation techniques as described in ECC Report 248 [21]. The validation should be made periodically in order to prevent the number being used by two different end-users at the same time when the number is re-assigned to a new end user by the original provider.
- In Indonesia, the Ministry of Communication and Informatics issued 2017 Draft OTT Regulation. The draft regulations require OTT service providers to comply with laws on consumer protection, data protection, content regulation, advertisement, finance, tax, guarantee access for lawful interception and extracting evidence for investigative purpose etc. These regulations permit foreign OTT service providers to operate in Indonesia provided they establish a permanent venue in Indonesia or their existing employees reside in Indonesia permanent and act for an on behalf of the foreign OTT provider.<sup>4</sup> Further, the draft regulations state that all OTT providers will be required to submit an “application” to the Minister alongwith documents such as copy of tax payer number, details regarding information contact centre etc. before the provision of OTT services in Indonesia. They also set out that OTT service providers will be

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<sup>4</sup>Part 3 Clause 3, Draft Provision of Application Service and/or Content Through Internet(2017), available at [https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/9078/File/ICT/2017/OTT\\_Public\\_Hearing/ApplicationandContentServiceMinisterRegulationDraftFinal002.pdf](https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/9078/File/ICT/2017/OTT_Public_Hearing/ApplicationandContentServiceMinisterRegulationDraftFinal002.pdf).

given bandwidth management related sanctions if they are found to violate provisions of the regulations.

- The French telecom regulator ARCEP (Autorite de Regulation des Communications Electroniques et des Postes) does not currently regulate OTTs in general (despite the view that all VOIP providers fall within the definition of telecommunications operators). However, ARCEP has treated VoIP providers who connect to Public Switched Telephone Networks (PSTN) as equivalent to traditional TSPs. Accordingly, such VoIP providers must follow the registration requirements that are also imposed on traditional TSPs. However, there is no general licensing requirement. Such service providers are therefore subject to the same obligations and restrictions as traditional TSPs — regulations on emergency calls, payment of fees, interception rules etc. all apply to such service providers.<sup>5</sup>
- In Germany, the Federal Ministry for Economic Affairs and Energy published a white paper on Digital Platforms on the 20 March 2017, where it provided an outlook on possible forms of digital regulatory policy in Germany and potentially also in Europe. The White Paper has proposed measures like ensuring a level playing ground in the telecommunication market by subjecting OTTs to the same rules of consumer protection, data protection (EU data protection framework) and security as applicable to telecommunication service providers. Further, the paper states that the European data protection must also apply without exception to communication OTT services. This therefore means that terms and conditions of use according to which consumers accept the application of non-European law will no longer be admissible in future.<sup>6</sup>
- Commonwealth Telecommunications Organisation (CTO) conducted a study on Over-The-Top (OTT) services in order to understand the market dynamics, both policy and regulatory issues of OTT services, both in the context of their impact on traditional business models and the opportunities for innovation and the potential of these services in stimulating economic growth.<sup>7</sup> This study paper highlighted that:

- OTT services, which run over the mobile and fixed networks of incumbent operators represent a major disruption to their traditional business models, profitability

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<sup>5</sup>Practical Law, Communications: regulation and outsourcing in France: overview, available at [https://uk.practicallaw.thomsonreuters.com/3-619-2685?navId=BF65C058C54995FC55DC109B19D5374A&comp=pluk&transitionType=Default&contextData=\(sc.Default\)](https://uk.practicallaw.thomsonreuters.com/3-619-2685?navId=BF65C058C54995FC55DC109B19D5374A&comp=pluk&transitionType=Default&contextData=(sc.Default))

<sup>6</sup>Federal Ministry for Economic Affairs and Energy, White Paper on Digital Platforms of the Economic Affairs Ministry, available at <https://bit.ly/2K8CKMF>

<sup>7</sup>Commonwealth Telecommunications Organisation (CTO) conducted a study on Over-The-Top (OTT) services, available at <https://cto.int/wp-content/uploads/2018/06/CTO-OTT-Study-Report-Final-Stakeholders-Copy-18-Jun-2018.pdf>

and investment models.

- OTT providers and consumers have benefited from the massive investments in networks and network quality by mobile operators. The capacity of carriers to build and upgrade their networks, however, is ultimately dependent upon the sustainability of their business models reflected in their growth and profitability.
- Regulating both carriers and OTT providers to achieve the best outcome for consumers requires navigating the trade-off between the benefits OTT services bring to consumers and creating an economic environment that provides operators with the appropriate incentives to continue investing.
- Key OTT challenges identified by the study are Licensing obligations, Taxation (jurisdiction), QoS/QoE, Data protection and privacy, Net neutrality, Interconnection, Universal service fund (USF).

**5.1.2** Though interconnection and pricing issues for OTT services on mobile networks have not been satisfactorily resolved in any jurisdiction, comparative analysis identifies the contours of some emerging practices in terms of access, interconnection and pricing for OTT services. Other key practices include:

- Separate regulatory practices for communication services and non communication services. (e.g., Germany, France.)
- Use of price discrimination on traffic to ensure development of broadband infrastructure. (e.g. United Kingdom. Korea)
- Use of a FRAND approach in dealing with regulatory issues concerning OTT players.(e.g. Korea, ETNO)

**5.1.3** Another approach is to relax the regime governing TSPs and make it sector-neutral instead of proposing equal regulation for OTTs.

- The complexity of digital ecosystem markets increases regulatory uncertainty, and the rapid pace of change makes regulations to become quickly obsolete. Growing innovation and rapid entry by new competitors in digital ecosystem markets increase the costs and likelihood of regulatory distortions by, for example, deterring entry or skewing the path of technological progress. Outdated regulatory policies are creating harm in at least two specific ways:<sup>8</sup>

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<sup>8</sup>GSMA, A new regulatory framework for the digital ecosystem, 2016, available at [https://www.gsma.com/publicpolicy/wp-content/uploads/2016/09/GSMA2016\\_Report\\_NewRegulatoryFrameworkForTheDigitalEcosystem\\_English.pdf](https://www.gsma.com/publicpolicy/wp-content/uploads/2016/09/GSMA2016_Report_NewRegulatoryFrameworkForTheDigitalEcosystem_English.pdf)

1. Discriminatory regulation: market distortion is also increasing because of disparities in the way different sectors are regulated. In particular, legacy regulation of communications services and service providers is far more intrusive and prescriptive than regulation of other elements of the digital ecosystem.
  2. Static regulation of dynamic markets: In general, prescriptive, ex ante regulatory regimes like those traditionally governing communications markets are no longer effective in the face of rapid innovation. In many cases, as competition increases, the need for such regulation has disappeared altogether. The persistence of such outdated rules not only harms competition and slows innovation, but also fails to achieve regulatory objectives.
- GSMA commissioned study has suggested following three principles for a new regulatory framework that is market- and technology neutral:<sup>9</sup>
    1. Regulation should be functionality-based rather than based on structure or technology. That is, regulation should be designed to achieve its objective in the most efficient way (i.e., to be cost effective), without regard to technologies, industry structures, or legacy regulatory regimes.
    2. Regulation also needs to be flexible. It needs to accommodate rapidly changing markets and technologies and create enough regulatory confidence for companies to take risks. In general, performance-based approaches are superior to prescriptive, ex ante rules.
    3. Regulatory policies need to be rethought from the ground up. In many cases, intense competition in the digital ecosystem means that regulation is no longer needed, or can be significantly scaled back. In other areas, such as privacy and cyber-security, new regulatory challenges are emerging.

**5.1.4** Another option could be to leave the issue to be resolved through market forces, without the need for any specific regulatory intervention. One part of this solution may be for TSPs to evolve their own business models to compete more effectively with OTT services that can be regarded as being the same/similar to the services provided by TSPs. While OTTs may pose challenges for conventional TSPs in terms of their revenues, this also opens up new avenues for innovation, diversification and growth. TSPs may collaborate with OTTs to work on issues such as network optimisation, which in turn can create economic benefits for the entire telecom ecosystem. Further, TSPs may adopt new technologies and innovative business models to compete with OTTs.

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<sup>9</sup>Ibid.

- Technologies such as autonomous (zero touch) network, IoT, etc are some of the technologies which have already been adopted by TSPs in other jurisdictions. For instance, the White Paper on Digital Transformation Initiative shows that AT&T in US has emerged as a leading adopter of SDN<sup>10</sup> and NFV<sup>11</sup> technologies and has set a target of covering and controlling upto 75% of its network using these technologies. Further, the paper discusses the possible impact of digital transformation on the telecommunications industry which is estimated to unlock more than \$2 trillion for the industry, consumers and the society at large. In South Korea, for instance, SK Telecom launched SK Planet in 2011 (integrated platform offering commerce, digital contents, advertising and marketing businesses) and by the end of 2012, it had earned more than \$1 billion in revenue.
- TSPs can adopt platforms such as Rich Communication Services (RCS) — a protocol formed by a group of industry promoters in 2007 and brought under the wings of the GSM Association in 2008, it envisions a platform thats significantly more rich and capable than todays SMS. As of 2017, 49 operators have launched RCS, including KT and SK Telecom in South Korea and Vodafone and Deutsche Telekom in Europe.<sup>12</sup>
- TSPs in India are already exploring various business models which involve collaboration with content providers to distribute their content to TSPs’ customers. TSPs are looking at offering video in the form of video on demand (VoD), Live TV through aggregation partnership with content players in a move to create new revenue streams.<sup>13</sup>

**Q. 7. Is there an issue of non-level playing field between OTT providers and TSPs providing same or similar services? In case the answer is yes, should any regulatory or licensing norms be made applicable to OTT service providers to make it a level playing field? List all such regulation(s) and license(s), with justifications.**

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<sup>10</sup>Software-Defined Networking (SDN) is a network architecture approach that enables the network to be intelligently and centrally controlled using software applications. This helps operators manage the entire network consistently and holistically, regardless of the underlying network technology.

<sup>11</sup>Network Functions Virtualisation (NFV) involves the implementation of network functions in software that can run on a range of industry standard server hardware, and that can be moved to, or instantiated in, various locations in the network as required, without the need for installation of new equipment.

<sup>12</sup>Digital Trends, What is RCS messaging?, <https://www.digitaltrends.com/mobile/what-is-rcs-messaging/>

<sup>13</sup>Economic Times, How Huawei and Ericsson plan to help Indian telecom operators deliver better video services, <https://telecom.economictimes.indiatimes.com/news/how-huawei-and-ericsson-plan-to-help-indian-telecom-operators-deliver-better-video-services/59252663>

Q. 8. In case, any regulation or licensing condition is suggested to made applicable to OTT service providers in response to Q.7 then whether such regulations or licensing conditions are required to be reviewed or redefined in context of OTT services or these may be applicable in the present form itself? If review or redefinition is suggested then propose or suggest the changes needed with justifications.

Q. 9. Are there any other issues that you would like to bring to the attention of the Authority?

# Chapter 6

## Issues for Consultation

**Q.1** Which service(s) when provided by the OTT service provider(s) should be regarded as the same or similar to service(s) being provided by the TSPs. Please list all such OTT services with descriptions comparing it with services being provided by TSPs.

**Q.2** Should substitutability be treated as the primary criterion for comparison of regulatory or licensing norms applicable to TSPs and OTT service providers? Please suggest factors or aspects, with justification, which should be considered to identify and discover the extent of substitutability.

**Q.3** Whether regulatory or licensing imbalance is impacting infusion of investments in the telecom networks especially required from time to time for network capacity expansions and technology upgradations? If yes, how OTT service providers may participate in infusing investment in the telecom networks? Please justify your answer with reasons.

Q.4 Would inter-operability among OTT services and also inter-operability of their services with TSPs services promote competition and benefit the users? What measures may be taken, if any, to promote such competition? Please justify your answer with reasons.

Q.5 Are there issues related to lawful interception of OTT communication that are required to be resolved in the interest of national security or any other safeguards that need to be instituted? Should the responsibilities of OTT service providers and TSPs be separated? Please provide suggestions with justifications.

Q.6 Should there be provisions for emergency services to be made accessible via OTT platforms at par with the requirements prescribed for telecom service providers? Please provide suggestions with justification.

Q.7 Is there an issue of non-level playing field between OTT providers and TSPs providing same or similar services? In case the answer is yes, should any regulatory or licensing norms be made applicable to OTT service providers to make it a level playing field? List all such regulation(s) and license(s), with justifications.

Q.8 In case, any regulation or licensing condition is suggested to made applicable to OTT service providers in response to Q.7 then whether such regulations or licensing conditions are required to be reviewed or redefined in context of OTT services or these may be applicable in the present form itself? If review or redefinition is suggested then propose or suggest the changes needed with justifications.

Q.9 Are there any other issues that you would like to bring to the attention of the Authority?

# List of Abbreviations

**AGR** Adjusted Gross Revenue.

**BEREC** Body of European Regulators for Electronic Communications.

**CAF** Customer Acquisition Form.

**CAGR** Compound Adjusted Gross Revenue.

**CLI** Calling Line Identification.

**CLOUD** Clarifying Lawful Overseas Use of Data.

**CMS** Centralized Monitoring System.

**ECC** Electronics Communication Code.

**ECS** Electronics Communication Service.

**EU** European Union.

**FRAND** Fair, Reasonable and Non-discriminatory.

**GB** Gigabyte.

**ICT** Information and Communication Technology.

**IoT** Internet of Things.

**ITU** International Telecommunication Union.

**IUC** Interconnection Usage Charges.

**LoI** Letter of Intent.

**LSA** Licensed Service Area.

**LTE** Long-Term Evolution.

**MLAT** Mutual Legal Assistance Treaties.

**MTTR** Mean Time To Restore.

**NFV** Network Function Virtualization.

**NIA** Notice Inviting Application.

**NNP** National Numbering Plan.

**NRA** National Regulatory Authorities.

**OTT** Over The Top.

**PSTN** Public Switched Telephone Networks.

**QoS** Quality of Service.

**RCS** Rich Communication Services.

**SDN** Software Defined Networks.

**SPDI** Sensitive Personal Data or Information.

**TRAI** Telecom Regulatory Authority of India.

**TSP** Telecom Service Provider.

**UASL** Unified Access Service License.

**USOF** Universal Service Obligation Fund.

**VoIP** Voice over Internet Protocol.

**VoLTE** Voice over LTE.

**WPC** Wireless Planning & Coordination wing.