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Unlimit / Reg / TRAI / 19-20 / 01

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**Shri Syed Tausif Abbas,**  
Advisor (Networks, Spectrum & Licensing)  
Telecom Regulatory Authority of India,  
Mahanagar Doorsanchar Bhawan,  
Jawaharlal Nehru Marg  
New Delhi 110002

**Subject: Unlimit's response to TRAI's Pre-Consultation Paper on "Enabling Unbundling of Different Layers Through Differential Licensing"**

Sir,

Kindly find enclosed herewith Unlimit's response to TRAI's Pre-Consultation Paper on "Enabling Unbundling of Different Layers Through Differential Licensing".

It is requested that same may be taken on records.

Thanking you,

Yours sincerely,  
For, Unlimit IoT Pvt Limited.

  
**Pradeep Sreedharan**  
Sr. Vice President

Encl: As above

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## Unlimit's Response to the Pre-Consultation Paper on Enabling Unbundling of Different Layers Through Differential Licensing

### Executive Summary

- A. The existing regulatory regime is based on the voice based networks and needs to be aligned to the modern day data predominant networks.
- B. Each network technological advancement viz, 3G, 4G, 5G, NFV, SDN, fog & edge computing have been directed towards enhancing the QoS experience for the digital services being provided over the network.
- C. The process for regulation therefore, has to shift from being network centric to services centric.
- D. There is a teething need for revisiting the existing licensing and regulatory regimes of the voice centric networks and splitting them into multiple layers to create the environment conducive for enabling innovative digital services.
- E. Suggested layers of licensing are (a) Network Infrastructure Services Layer, (b) Network Services Layer and (c) Digital Services Layer.
  - a. **Network Infrastructure Services layer** would comprise of the physical infrastructure, active and passive elements and cloud based instances of the network elements that are required to deploy a telecom network.
  - b. **Network Services layer** would be associated with selling only the basic native network services viz, Voice, Messaging and Data connectivity.
  - c. **Digital Services layer** would entail a substantial value add to the basic native network services viz, Voice, Messaging and Data connectivity, of Network Infrastructure Services before selling these network native services as a bundled service, e.g. IoT Services, OSP services, etc.
- F. Voice, Messaging and Data services would be considered as the product of the Network Infrastructure layer which would be sold (Not Re-Sold), on a non-discriminatory basis, only through DoT registered dealers / retailers. i.e. Network Services Providers (NSPs) and Digital Services Providers (DSPs).
- G. Only the infrastructure layer would be provided under a license from DoT. The services would be provided by service providers who are registered with DoT.
- H. An administrative fee of 1% of the annual audited revenues of the Network Infrastructure Services Provider (NISP), should be levied, instead of LF or SUC.
- I. Only GST to be levied on the services provided by the NSPs or the DSPs.
- J. Unbundling of the licensing shall promote sharing to increase utilization of the existing resources as well as it shall catalyse investments and innovation in Digital Communications sector.
- K. There should be a new regime of licensing on which the existing licensees should migrate within a specified time frame.



- L. **With the impetus being given to adoption of cloud computing, the licensing of the telecom networks too needs to evolve and permit virtual cloud instances, of various network elements, to be considered as a physical part of the network itself.**
- M. **Network Infrastructure services viz, voice, messaging and data volumes are required to be classified as 'Bottleneck Services' and bulk provisioning and configuring of the same under a B2B agreement, for provisioning digital services, should be mandated with reasonable ceiling of the commercial terms.**

### Introduction

1. The aim of every Telecom Network technology post 2G has been to enable development, deployment and availability of services that are delivered by utilizing the network, i.e. over the network. The initial services development phase was dominated by voice and messaging services but each subsequent telecom services network generations viz, 4G or 5G (or beyond) have been developed with the sole purpose of effecting improvement in QoS of the services by addressing the twin aspects of lowering the latency while simultaneously increasing the availability of bandwidth. **The existing regulatory regime is thus based on the voice based networks and needs to be aligned to the modern day data predominant networks.**
2. QoS apart, each progressive generation of telecom network service also enabled an entire eco-system of services. The introduction of mobility services provided the freedom of accessing services at all places and also leading to the evolution of cloud based computing and services which in turn also brought in the freedom of time for accessing services. Technologies like Network slicing (5G) empower the network to customise itself as per the needs of the service that is being provisioned by utilizing the network. Computing enhancements too have started shifting the computing prowess from the servers, machines and dedicated boxes that were placed centrally or within the network, towards the edge of the network viz fog computing and edge computing. The technological enhancements also lead to the requirement of reducing time for tweaking the existing services as per newer requirements or launching a new and innovative service too has got telescoped this leading to evolution of computing enhancements such as Network Function Virtualization (NFV) and Software Defined Networks (SDN). **Each network technological advancement viz, 3G, 4G, 5G, NFV, SDN, fog & edge computing have been directed towards enhancing the QoS experience for the digital services being provided over the network.**
3. Machines, as part of the M2M / IoT services, are the next generation of subscribers for the telecom networks. M2M / IoT services are a solution-oriented service that is provisioned by amalgamating together the services eco-system that has evolved due to the technological enhancements in the telecom networks. This evolution of individual services implies that the IoT service has to be viewed as a layered service. Though, each layer has its own independent nuances however, for forming a holistic services these layers have interdependencies on each other. The earlier regulatory regime was based on voice centric networks whereas with 5G specifically being data centric, the need to effect the paradigm shift of thought process is the need of the hour. **The process for regulation therefore, has to shift from being network centric to services centric.**



Our specific comments on the issues posed by the Authority are given in the subsequent paragraphs.

### Detailed Response

**Q1. In your view, what could be the possible benefits and anticipated problems in having an unbundled licensing regime? Kindly suggest the measures that can be taken to overcome the anticipated problems (if any).**

### Our Response

1. Digital services today are no more standalone by product of a network or a pair of boxes; they are firstly divorced from the network and secondly, are an amalgamation of multiple services, that are sourced from different sources, service providers and vendors. The construct of a digital service has a telecom device and the corresponding telecom connectivity as the base. Service like asset tracking or any smart city application or remote health monitoring, etc. utilise the network for accessing a host of servers such as a GPS tracking server, a Location based server for geo tagging / geo fencing solutions, device management platform, CRM platform, billing platform, security and trust services platforms, AI / ML engines, AR / VR services, multiple Content Data networks (CDN) for promotions and advertisements and even Google maps and update downloads. Even the computational eco-system for the service spans the entire network and includes its edge as well.
2. Since these services generate a lot of data, the data security, protection and privacy regulations have a direct bearing on their provisioning. Similarly, the policies for block chains, data analytics, data storing and transfer and cloud computing or cloud based services need to be developed in consonance with the aim of enabling digital services.
3. Additionally, these modern day digital services cut across a wide variety of market and functional sectors from health, to agriculture, to smart cities, to assembly lines of various industries, etc, the need for a cross sectoral policy and regulation synergy too assumes significance.
4. Till now the controlling plane for services viz, QoS, security, billing, etc, was limited to the physical network only, whereas the 4G or 5G networks, cloud computing and edge computing technologies empower these controlling abilities from the services plane, i.e. over the network; to provide the same level or at times even better level of controlling these aspects of services. Consequently, imposing restrictions / controls only in the telco domain, for securing / controlling digital services, potentially either stifles innovation or results in cost escalation for the service leading to adoption issues.
5. Therefore, for mass adoption of modern network technologies such as 5G and the enabled services thereof, it is essential to ensure that the canvas of thought process for the policy and regulatory support is enlarged and directed towards proliferation of the entire eco-system of digital services. Accordingly, there is a teething need for revisiting the existing licensing and regulatory regimes of the voice centric networks and splitting them into multiple layers to create the environment conducive for enabling innovative digital services. **The suggested layers for licensing / Registration are as follows,**

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- a. **Network Infrastructure Services layer.** This layer would comprise of the physical infrastructure, active and passive elements and cloud based instances of the network elements that are required to deploy a telecom network.
- b. **Network Services Layer.** This layer would be associated with selling only the basic native network services viz, Voice, Messaging and Data connectivity.
- c. **Digital Services layer.** This layer would entail a substantial value add to the basic native network services viz, Voice, Messaging and Data connectivity, before selling these network native services as a bundled service, e.g. IoT Services, OSP services, etc.

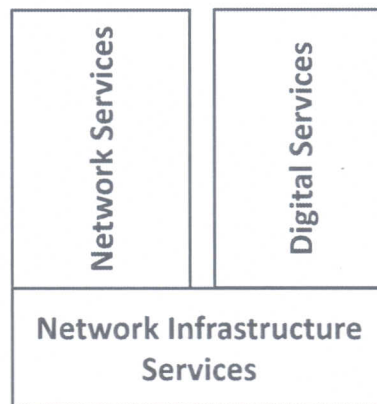


Figure Showing the Proposed unbundled 3 Layers of Services Licenses

6. Implementation of this layered concept would require a major shift in the thought process of sale of the native services of the network viz, **voice, messaging and data wherein these services would be considered as the product of the Network Infrastructure layer.** Just as a product manufacturer sells its products through dealers / retailers, similarly the **products of this layer would be sold (Not re-sold), on a non-discriminatory basis, only through DoT registered dealers / retailers. i.e. Network Services Providers (NSPs) and Digital Services Providers (DSPs).** The NSPs and DSPs would source these services from the NISPs in bulk for sale to their customers.
7. The **envisaged advantages** of such layered / unbundled approach to licensing / registration are as given below,
  - a. Simplification of accounting and taxation process as it involves only selling and no re-selling of services.
  - b. Simplifies the auditing process and prevents chances of under reporting as the sale of services would be accounted for and corroborated at multiple layers.
  - c. Lends itself to light touch regulations for the entire multi-layered services eco-system.
  - d. Can facilitate investment into the network infrastructure by multiple (Upper Layer) service providers instead of only the network Infrastructure services providers.
  - e. Enhances competition for retail of services as larger number of players can be accommodated.
  - f. Lends itself to maximizing the capacity utilization of the infrastructure leading to better ROI for the capex infused into infrastructure building.



- g. Lends itself towards provisioning of services without any discrimination / biases.
- h. Creates a homogeneous environment conducive for innovation in the entire digital services eco-system.
- i. Creates an environment for better and focused security control through mandated implementation of security by design principle.
- j. Lends itself for faster and better evolution of innovative technology services and their adoption.
- k. Would facilitate faster and better implementation of the government's Smart City and other Digital programs.

#### 8. Envisaged Challenges

- a. **Change in mindset from the existing concept of sale and resale of services to just sale of services as a product of the respective layers.**
- b. **Permitting services tariff definition by the NSPs and DSPs.** The service utilization measurement metric for the consumption of network and digital services would be based on consumption of voice calls, number of messages and data volume, i.e. the product of the Network Infrastructure layer. Consequently, definition of the tariff by the NSPs and DSPs is required to be permitted as an independent activity without looking it through the prism of re-sale of services.

Measures that can be taken to overcome this challenge:

Elimination of the concept of re-sale of services will lend itself to levying of only GST as the tax on the services of each layer. Consequently, NSPs and DSPs can define their respective tariffs and pay the GST without any apprehension of evasion of taxes by any layer of the digital services eco-system.

- c. **Requirement of closer interdepartmental co-ordination for digital services policy formulation.** Development and deployment of services over the network would necessitate close coordination between the policies formulated for each layer lest restrictions imposed in one layer inhibit innovation in the other layers. E.g. MoRTH came out with its Gazette Notification for safe public transportation viz, Automotive India Standard 140 (AIS 140), on 28 Nov 2016, wherein provisioning of dual subscription eSIM was mandated for public transport vehicles. But the supporting guidelines for the multi subscription eSIM from DoT were issued only in May 2018. Consequently, the TSPs i.e. the licensees of DoT, were reluctant to support the dual subscription SIMs fearing penalization by the licensor later.

Measures that can be taken to overcome this challenge:

- i. DoT and TRAI to be compulsorily informed and kept in loop during the deliberations for any standards being developed for digital service by different ministries / government agencies.
- ii. DoT & TRAI to start a parallel consultation process with the relevant stake holders.
- d. **Super-imposition of Existing Policy Guidelines on Newer Concepts / other services layers.** Sustained deliberations over a substantial time by TRAI, DoT and the

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industry stakeholders resulted in evolution of the VNO guidelines; but on ground VNO's have failed to takeoff. From the policy perspective, it is felt VNO's found it challenging to work out a tangible business case due to the following policy guidelines that were replicated, thus imposed, from the existing licensing guidelines.

- i. Non-permission of Multi-Parenting.
- ii. Dual taxation due to non availability of pass through on account of LF initially, and later due to the calculation of LF on a notional AGR. In this hyper competitive Indian market such provisions for governmental revenue maximization have prevented business entity(s) to opt for becoming a VNO.

Measures that can be taken to overcome this challenge:

- i. Formulation of policies for newer concepts cannot and should not be based on the template of existing services.
  - ii. A more liberal and open environment needs to be created for mushrooming of innovative services by the young fertile minds.
- e. **Indulgence in anti-competitive practices by the Network Infrastructure Services Providers (NISPs).** Voice, Messaging and Data services are the blood line for the digital services. In case NISPs' refuse or even cause selective delay in provisioning / configuring their services, the enablement of the services over the network get affected accordingly. Such anti-competitive practices of the NISPs would inhibit proliferation of Digital services in the country.

Measures that can be taken to overcome this challenge: Declaring Network Infrastructure Services as 'Bottleneck Services' and hence mandating time bound provisioning and configuring of Network Infrastructure Services that are requisitioned for developing and delivering the services over the network by the NSPs and DSPs.

**Our Recommendations**

1. There is a teething need for revisiting the existing licensing and regulatory regimes of the voice centric networks and splitting them into multiple layers to create the environment conducive for enabling innovative digital services.
2. Suggested layers of licensing are (a) Network Infrastructure Services Layer, (b) Network Services Layer and (c) Digital Services Layer.
3. Voice, Messaging and Data services should be considered as the product of the Network Infrastructure layer which would be sold (Not Re-Sold), on a non-discriminatory basis, only through DoT registered dealers / retailers. i.e. Network Services Providers (NSPs) and Digital Services Providers (DSPs).





**Q2. In case it is decided to unbundle the different layers of licensing,**

(a) what should be the different layers and their scope? What changes would be required in licensing regime to enable such a framework?

(b) Should there be a new regime of licensing on which the existing licensees should migrate within a specified time frame or there should be a parallel incentivized licensing regime for unbundled layers of license?

**Our Response to Q2 (a)**

1. The very fact that modern telecom technologies, especially 4G onwards, are totally oriented towards providing better services experience of the digital services that are provided over the network warrants a change in the erstwhile licensing regime which is based on voice centric networks. Other aspects necessitating a change to layered / unbundled licensing regime for modern day digital services have been explained in detail in our response to Q1 above. As proposed in the response to Q1 above, the licensing regime should be split into the 3 layers viz, Network Infrastructure Services layer, Network Services layer and Digital Services layer. The scope of these layers has been described in detail in the paragraphs later in response to this question.
2. Such a layered approach would require the following major changes in the existing licensing regime viz,
  - a. Complete separation of the telecom infrastructure from telecom services thereby aligning with modern day technological requirements.
  - b. The network's native services viz, voice, messaging and data to be considered as a product of the Network Infrastructure Services layer.
  - c. Doing away with the concept of re-selling of telecom services. Services layers above the network viz, Network Services Layer and Digital Services Layer, would be selling (and not re-selling) the product of the Network Infrastructure Services Layer either as it is or with due value add as part of a bundled service.
  - d. Only the infrastructure layer would be provided under a license from DoT. The services would be provided by service providers who are registered with DoT.
  - e. Levying of an administrative fee of 1% of the annual audited revenues of the Network Infrastructure Services Provider (NISP) instead of LF or SUC.
  - f. Only GST to be levied on the services provided by the NSPs or the DSPs.
3. **Network Infrastructure Services.** This layer would comprise of the physical infrastructure, active and passive elements and cloud based instances of the network elements that are required to deploy a telecom network.
  - a. Scope: It is proposed that the scope of this layer should be as follows,
    - i. Physical towers.
    - ii. RAN.
    - iii. OFC / Copper based terrestrial network.
    - iv. Submarine Cable Network and the Cable Landing Stations.

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- v. Satellite Uplink and Downlink stations.
  - vi. Gateway elements.
  - vii. Associated spectrum.
  - viii. Subscription Management.
  - ix. Bulk sale and Tariff definition of services.
4. **Network Services.** The Network Services Providers (NSPs) would be associated with selling only the basic network services viz, Voice, Messaging and Data connectivity. They would be permitted to sell these services to retail as well as the corporate (Bulk Usage) customers who requisition the services for their own end usage only.
- a. Scope: It is proposed that the scope of this layer should be as follows,
- i. Infrastructure Deployment: NSPs should be permitted to augment the complete network infrastructure of the NISPs, as listed at para 2 above, except the gateway elements for interfacing with other NISPs and spectrum.
  - ii. Sale of Services: The NSPs would have a B2B contractual arrangement with the NISPs and should be at liberty to sell these services to retail / corporate customers. Selling of these services shall not be construed as resale of the Network Infrastructure Services, albeit it should be viewed as a separate layer that is selling the product of the Network Infrastructure Layer.
  - iii. Tariff Definition: NSPs should be mandated to define the tariff of its services as per TRAI's tariff regulations for NSPs.
  - iv. Subscription Management: NSPs too can be entrusted with subscription management in terms of hosting the SMDP – SMSR infrastructure.
5. **Digital Services.** The classification of Digital Services Providers (DSPs) would be that they do a substantial value add to the basic network services viz, Voice, Messaging and Data connectivity, of NISP before selling it as a bundled service to the DSPs customers.
- a. Scope: It is proposed that the scope of this layer should include the M2M / IoT Service Providers and Other Service Providers (OSP).
- i. Infrastructure Deployment: DSPs may be permitted to augment the network infrastructure of the NISPs only within a limited campus area / within a building.
  - ii. Sale of Services: The NSPs would have a B2B contractual arrangement with the NISPs and these services would be sold as a component of the bundled services of the DSP.
  - iii. Tariff Definition: DSPs should be mandated to define the tariff of its bundled services.
  - iv. Subscription Management: DSPs can be entrusted with subscription management in terms of hosting the SMDP – SMSR infrastructure.



### Our Recommendations

There should be a new regime of licensing on which the existing licensees should migrate within a specified time frame.

Q3. In case you are of the opinion that there is no need of unbundling of different layers of the license, what changes should be made in the existing licensing regime to (i) promote sharing to increase utilization of the existing resources, and (ii) catalyse investments and innovation in Digital Communications sector?

### Our Response and Recommendations

There is a need of unbundling of different layers of the license, for which due changes should be made in the existing licensing regime.

Unbundling of the licensing shall promote sharing to increase utilization of the existing resources as well as it shall catalyse investments and innovation in Digital Communications sector.

Q4. What other reforms / changes are required in the existing licensing regime?

### Our Response

1. **Virtual Cloud Instances as part of the physical network.** Deployment of the telecom network is a capex heavy investment. The introduction of technologies such as Network Function Virtualization (NFV) and Software Defined Network (SDN) have enabled optimization of this capex investment. Both NFV and SDN allow leveraging the cloud services for building the physical network infrastructure. These technologies permit outsourcing various network infrastructure functions to the clouds and would be provided as a specialized instance by a single cloud to multiple networks. With the impetus being given to adoption of cloud computing, the licensing of the telecom networks too needs to evolve and permit virtual cloud instances, of various network elements, to be considered as a physical part of the network itself.
2. **Bottleneck Service.** Network Infrastructure services viz, voice, messaging and data volumes are required to be classified as 'Bottleneck Services' and bulk provisioning and configuring of the same under a B2B agreement, for provisioning digital services, should be mandated with reasonable base commercial terms. To realize the aim of Digital India, this is important for the development of innovative digital services, especially for M2M / IoT / Smart City kind of applications.

### Our Recommendations

1. With the impetus being given to adoption of cloud computing, the licensing of the telecom networks too needs to evolve and permit virtual cloud instances, of various network elements, to be considered as a physical part of the network itself.
2. Network Infrastructure services viz, voice, messaging and data volumes are required to be classified as 'Bottleneck Services' and bulk provisioning and configuring of the same under a B2B agreement, for provisioning digital services, should be mandated with reasonable ceiling of the commercial terms.

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